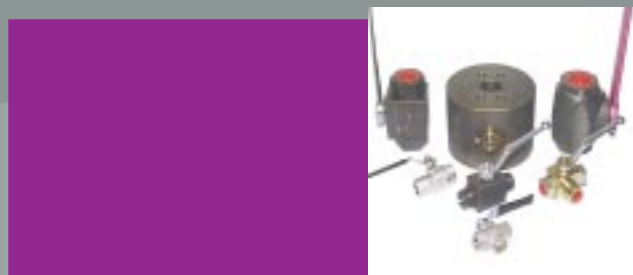
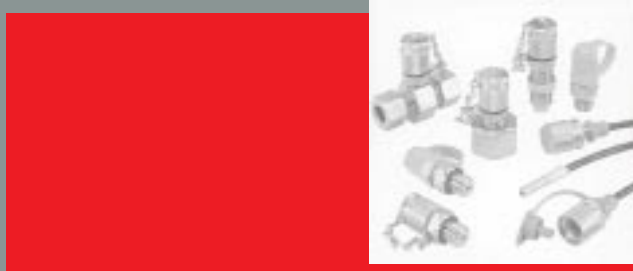


STAUFF



Quality
Endorsed
Company
ISO 9002 Lic 3765
Standards Australia



Hydraulic
Product & Services Guide
Quality and Service
worldwide

Pipe Supports



Complete range of Stauff Pipe Clamps for every tube, hose, pipe, and conduit clamping application.

- **Noise** reducing
- **Shock** absorbing
- **Vibration** damping
- **Weld base or rail** mount
- **Stackable** for multi-tier

Standard Series
for diameters from 6mm to 102mm

Heavy Series
for diameters from 6mm to 406mm

Twin Series
for diameters from 6mm to 42mm

Light Series single & twin
for diameters from 6mm to 25.4mm

Clamps for all reasons

in polypropylene, polyamide, aluminium, santoprene shells or with rubber inserts and metal parts of zinc plated steel or stainless steel.

Diagnostic Equipment

Pressure

Stauff-Test Analogue

The ideal, leak-free system for pressure and vacuum measurements without using spanners. Pressures from vacuum to 630 bar. Ideal for oil sampling. Test Couplings available in a wide variety of connecting threads to suit most systems.

- Stauff-Test 20** 400 bar
- Stauff-Test 15** 630 bar
- Stauff-Test 12** 630 bar
- Stauff-Test 10** 400 bar (push-in)
- Pressure Gauges** 63mm & 100mm
- Test Hoses** 2mm & 4mm I.D. to any length with wide range of hose ends.



Stauff-Test Digital

Digital system gives great accuracy and is capable of capturing pressure spikes. Can measure and display two readings simultaneously including pressure, peak pressure, differential pressure, speed (RPM), temperature and flow depending on the sensor.

- PPC 04** handheld unit with pressure transducers connecting to Stauff-Test couplings is powered by battery. The display gives instantaneous information and the output can also be sent to a related printer for permanent recording.
- Pressures** -1 to 630 bar
- Speeds** 20 to 10,000 RPM
- Temperatures** -25 to +125°C
- Flows** to 600 l/min



Flow Measurement & Data Logging

A comprehensive range of flow indicators for fluids and gases plus a variety of flow meters and data loggers for fluids covers most requirements. Portable as well as computer-based test bench applications are included in the range. Flow rates from millilitres per minute through to thousands of litres per minute are able to be measured by the equipment. Turbine and gear type units are able to measure flows in a wide variety of fluids and related readouts/controllers give flexibility to system designers in volume measurement, dispensing, flow control and other related functions. Bi-directional measurements are possible with the Kracht gear blocks making positioning control easy.



Filtration - a complete programme

Research and testing are fundamental to the continuous development that Stauff, as a specialist manufacturer, is committed to. The filtration programme includes pressure, suction, return, and off-line filters and ζ eta rated elements. A comprehensive range of interchange elements is a standard part of the filtration programme.

Pressure Filters

Filter housings and elements

- 3/4 , 1 \varnothing , 1 β port sizes; screwed or flanged
- Nominal Sizes: 014, 030, 045, 070, 090, 125, 160, 250, 300
- Valving: bypass, non-return, reverse-flow, multi-function
- Clogging Indicators: visual, electric, visual/electric
- Working Pressure: 420 bar (6000 psi)
- Element media: glass fibre, polyester fibre, cellulose, wire mesh
- Micron Ratings: 3 μ m, 5 μ m, 10 μ , 20 μ m, 25 μ , 40 μ , 100 μ m
- Interchange elements for many other housing makes



Magnetic Core Filters; Low Pressure Applications

Filter Housings and Elements

- Tank Top Return type: 60 l/min to 2000 l/min sizes
- In-Line Types: 30 l/min to 2000 l/min sizes
- Valving: bypass, blocked bypass
- Clogging Indicators: visual, differential visual, electric, visual/electric
- Element Media: glass fibre, cellulose, wire mesh, polyester fibre
- Micron Ratings: 1 μ m, 3 μ m, 6 μ m, 10 μ m, 20 μ m, 40 μ m, 60 μ m, 100 μ m, 120 μ m

Tank Top Return Filters

Filter Housings and Elements

- Element Media: cellulose, glass fibre, wire mesh
- Port sizes 1/2 to 2 BSPP
- Bypass Valving built into element
- Clogging Indicators: visual, electric



C.C. Jensen Off-line Filters

CJC Fine Filters and Filter Separators

- small to large units available
- 3 μ m rated elements
- massive dirt holding capacity
- continuous water separation possible
- manual or automatic operation



CJC filter separators are designed for continuous separation of water from oil. Outstanding for marine and industrial installations for gearbox and hydraulic system filtration.

LasPac1 Particle Counter

- operates at high pressure, low pressure, or on bottle sampling
- 8 channels giving total contamination picture
- laser counter for greater accuracy
- battery powered for field operation
- built-in printer for immediate print-out
- memory downloadable to PC
- calibrated to ISO 11171 and ISO 4402 (4406 and NAS 1638)



Fluid analysis allows optimum cleanliness levels to be maintained providing reliable long life of hydraulic systems. Particle counting on site permits a quick response to be made to system fluid changes.

Technical advice and recommendations for specific applications given freely. Simply call your nearest Stauff Office.

Pressure Gauges & Switches

Liquid Filled, Stainless Steel Case, Pressure Gauges

63mm (1/4 BSPP) and 100mm (1/2 BSPP) diameters standard
Rear entry (panel mount by rear clamp or front flange)
Bottom entry (stem mount)
Viscous glycerine filled for superior damping
Bar/PSI scale standard, others available on request
Pressure Range: Vacuum to 1000 bar



Pressure Switches - Hydrostar & Layher

Vacuum switches, pressure switches, & differential pressure models
Industrial quality, piston and diaphragm models
No drain ports necessary
High repeatability and simple pressure adjustment
Explosion-proof models available



Accessories

Reservoir Hardware

Fluid level gauges and level switches
Temperature switches
Suction strainers and diffusers
Breathers of all types and angled mounting brackets



Spin-on Filters

In-line and tank-top applications
Single and double canister models
Nominal and absolute micron ratings
European and USA style canisters

Bell Housings and Couplings

Power ratings to 30kW
Electric motor frame sizes D63 to D200 for 2 bolt SAE pumps, AA to C mounting
Electric motor frame sizes D63 to D200 for 4 bolt metric pumps, Group 0.5 to 3
Three piece flexible couplings to suit.



Stauff Clean System

Pneumatic launcher kits
Standard nozzle range from 6mm to 50mm
Larger sizes on request
Projectiles to suit different applications

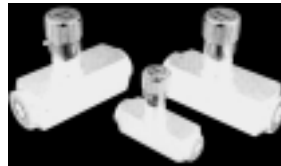


Tube, hose or pipe cleaning is the first stage of maintaining a clean hydraulic system. Removal of detritus before the introduction of oil reduces the contaminant load on filters and extends component life.

Valves & Couplings

Flow Control Valves

Needle valves, steel & stainless steel
Speed control valves, steel & stainless steel
Pressure compensated flow control valves



Line mount (BSPP) and manifold mount versions

Check Valves

1/4 to 2 BSPP, carbon steel & S.S.
0.5 bar cracking standard
1,2,3,4,& 5 bar cracking optional



Ball Valves

2 way, 3 way, multi-way,
screwed, flanged, manifold mount, staple-lock
high pressure models, carbon steel, stainless steel
locking devices available
low pressure models, chrome plated brass
seats and seals give long service life



Solenoid Operated Valves

Have brand ensuring high quality CETOP 3 mounting, wet solenoid type single & double solenoid models 12V & 24V DC, 110V & 240V AC range of optional spool configurations mounting plates & manifolds available



Miller Co-Axial & Lateral V valves

sizes from 2mm to 250mm
2 way and 3 way configurations
suitable for vacuum operation
pressure ranges to 500 bar
unique sliding tube element giving large flow rates
from gases to slurries, difficult fluids are handled easily
direct solenoid actuation or external pilot operation
range of body material options simplifies compatibility needs

Quick Release Couplings

poppet type and ball type
ball-locking and thread-locking (screw together) types
1/8 to 2 sizes, BSPP connection
couplings available on request for fluids other than oil



High Pressure Hydraulics

Have Pumps & Power Packs

radial piston, single and multiple outlet pumps
pressures to 700 bar
dual stage pump arrangements for hi-lo flows
electric and pneumatic drive power packs
miniature power packs
In-Line axial piston pumps



Have Valves, Cylinders & Accessories

proportional directional spool valves
directional seated valves (zero leakage)
pressure limiting valves, load holding valves
pressure reducing valves, sequence valves
flow controllers, flow dividers
check valves, pre-fill valves
clamping cylinders, small accumulators
pressure switches, electronic systems



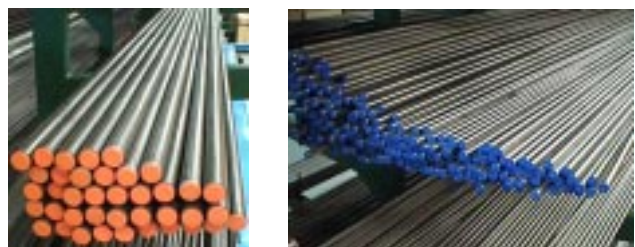
CDS Precision Tubing

Carbon Steel

annealed, St 37.4 material, 6 metre lengths
metric tubing, 4mm O.D to 42mm O.D.
inch tubing, 1/4 O.D to 1 1/2 O.D.

Stainless Steel

annealed, 316/316L material, 6 metre lengths
metric tubing, 6mm O.D. to 42mm O.D.
inch tubing, 1/4 O.D. to 1 O.D.



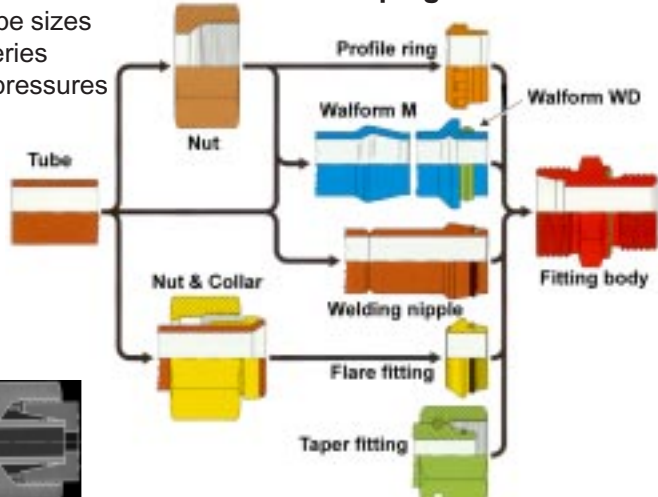
Tube Manipulation small runs; precision, mandrel bent



Hydraulic Fittings & Flanges

Walterscheid Walpro Profile Ring type and W alform tube reshaping

zinc-plated DIN 2353 fitting range for metric tube sizes
Walpro bite-type fittings in LL, L, and S series
high integrity connections giving high working pressures
tube sizes from 4mm to 42mm
flare type connection available
Walform tube reshaping for ultimate safety
bending, flaring & reshaping machines



Avit Weld-nipple type

DIN 2353 fitting range with weld nipples
DIN flanges
rotary swivel joints
carbon steel & stainless steel fittings



Exmar Stainless Steel Fittings

DIN2353 fitting range in 316Ti material
bite-type and flare type connections available

Ham-let Let-lok Tube Fittings

twin-ferrule type in stainless steel & brass
instrumentation pipe fittings in stainless steel & brass
stainless steel flare fittings from 1/8 to 1 1/2
instrumentation valves — ball, check, relief, etc.
hi-tech components for semi-conductor & pharmaceutical industries
single ferrule one-lock fittings for special applications



SAE Flanges, carbon steel & stainless steel

split & one-piece flange clamps for inserts
blanking flanges
socket weld flanges, code 61 & 62
butt weld flanges, code 61 & 62
BSP & NPT screwed flanges, code 61 & 62



Pumps & Motors

Kracht Hydraulik

low pressure transfer pumps for lube oil
low pressure transfer pumps for inks, dyes, resins, etc.
single & multiple high pressure gear pumps
high pressure gear motors



D sterloh Hydraulic Radial Piston Motors

speeds up to 3,600 rpm, torque to 450,000 Nm
pressures to 400 bar, power to 390 kW
motor & brake combinations
motor & gearbox combinations
fixed & variable displacements



D sterloh Pneumatic Gear Motors

winch drives, engine starter motors

Maximator Air-driven Pumps

air driven liquid pumps, pressures to 5,500 bar
fluids handled, oil, water and aggressive media
air driven hydraulic power packs
air amplifiers
compressors/boosters
pressure test benches



Pneumatic Products

Konan

solenoid valves
air filters/regulators/lubricators
pneumatic cylinders
rotary actuators



Servo Hydraulics

Hartmann & Lammler (H+L)

electro-hydraulic amplifiers for linear and rotary positioning
extreme linear accuracy of 0.001mm
rapid response times



Water Hydraulics

Elwood Valves for high pressure water & low viscosity hydraulic fluids

directional control valves
pressure control valves
proportional valves
cartridge valves
servo control valves
valve stands & manifolds
2-way descaling valves
accumulator control systems
check valves



very large flow rates possible
pressures to 420 bar

Fluid Measuring Systems

Kracht Volutronic

volume counters for a wide range of fluids and viscosities
readouts/controllers with great versatility
directional sensing of flow possible
gear and turbine meters in cast iron, S.S., and aluminium
hard coatings available



AW Company

flow measurement by turbine, gear, or screw sensors
tungsten carbide bearings available
stainless steel housings, optional coatings
programmable readouts/controllers
fibre-optic sensing for hazardous locations
on-line process sensors
flow monitors, batch controllers



Spray Nozzles & Accessories

Lechler Precision Spray Nozzles & Accessories

hollow cone, full cone,
flat jet, solid jet, & tank cleaning nozzles
air nozzles, & pneumatic atomising nozzles
descaling & cleaning nozzles
flue cooling systems
nozzles in brass and S.S.
tungsten carbide & sapphire nozzles
plastic nozzles
strainers and nozzle mounting accessories



Trusted Product Names from around the world



Proudly distributed by

STAUFF CORPORATION PTY LTD

HEAD OFFICE

24 - 26 Doyle Avenue
UNANDERRA NSW 2526
P.O. Box 227
UNANDERRA NSW 2526
Tel. (02) 4271 1877
Fax.(02) 4271 8432
E-mail: sales@stauff.com.au
http://www.stauff.com

ADELAIDE

1/3 Endeavour Drive
PORT ADELAIDE SA 5015
P.O. Box 208
PORT ADELAIDE SA 5015
Tel. (08) 8341 2260
Fax.(08) 8341 1604

BRISBANE

463 Boundary Road
RICHLANDS QLD 4077
P.O. Box 20
RICHLANDS QLD 4077
Tel. (07) 3217 0444
Fax.(07) 3217 0300

MELBOURNE

3B 14 - 16 White Street
OAKLEIGH EAST VIC 3166
P.O. Box 453
MULGRAVE VIC 3170
Tel. (03) 9543 5411
Fax.(03) 9543 5422

SYDNEY

27B Davis Road
WETHERILL PARK NSW 2164
P.O. Box 7180
WETHERILL PARK DC NSW 2164
Tel. (02) 9725 2733
Fax.(02) 9725 2744

STAUFF CORPORATION

(NZ) LTD AUCKLAND

Unit J 150 Harris Road
EAST TAMAKI
P.O. Box 58517
GREENMOUNT
Tel. (09) 271 4812
Fax. (09) 271 4832
E-mail: sales@stauff.co.nz

Clamps Standard-Series



Quality and Service
worldwide

**Australia:**

Stauff Corporation (Pty.) Ltd.
P.O. Box 227
24-26 Doyle Avenue, Unanderra
Wollongong, N.S.W.
AUS-2526 Unanderra
Tel: +61 2 42 71 18 77
Fax: +61 2 42 71 84 32

Brazil:

Stauff Brasil Ltda.
Avenida Gupe 10.767
Galpão 2, Bloco A
WT - Empresarial Parque Castello Branco
BRA-Barueri - SP
CEP: 06422-120
Tel: +55 11 4789 9020
Fax: +55 11 4789 9021

China:

Stauff International Trading (Shanghai) Co., Ltd.
Shangdian Mansion, Pudong
331 Binzhou Road
CHN-200126 Shanghai
Tel: +86 21 58 45 65 60
Fax: +86 21 58 45 66 80

France:

Stauff s. a.
230, Avenue du Grain d'Or
Z.I. de Vineuil-Blois Sud
F-41354 Vineuil cedex
Tel: +33 2 54 50 55 50
Fax: +33 2 54 42 29 19

India:

Stauff India Pvt. Ltd.
Gat. No. 2340
Pune-Nagar Road, Wagholi
IND-Pune - 412207
Tel: +91 20 705 19 90
Fax: +91 20 705 19 89

Italy:

Stauff Italia s.r.l.
Via Pola 21/23
I-20034 Birone di Giussano
Tel: +39 0362 31 21 13
Fax: +39 0362 33 55 36

Japan:

Ohtsuka Tec. Co. Ltd.
1-7-19 Minami Shinagawa
Shinagawa-Ku
JPN-Tokyo 140
Tel: +81 3 34 72 12 01
Fax: +81 3 34 72 12 09

Canada:

Stauff Canada, Ltd.
866 Milner Avenue
CAN-Scarborough, Ontario M1B 5N7
Tel: +1 416 282 46 08
Fax: +1 416 282 30 39

USA:

Stauff Corporation
7 Wm. Demarest Place
USA-Waldwick, N. J. - 07463
Tel: +1 201 444 78 00
Fax: +1 201 444 78 52

United Kingdom:

Stauff UK
332, Coleford Road
Darnall
GBR-Sheffield, S 9 5 P H
Tel: +44 1142 518 518
Fax: +44 1142 518 519

Distributors and warehouses in all industrial countries.

Walter Stauffenberg GmbH & Co. KG

P. O. Box 17 45, D-58777 Werdohl
Im Ehrenfeld 4, D-58791 Werdohl

Telefon: +49 (0) 23 92 916-0

Fax: +49 (0) 23 92 25 05

e-mail: sales@stauff.com

Internet: <http://www.stauff.com>

40 Years of Experience

Worldwide Distribution

Prompt Delivery

In most industrial countries STAUFF Clamps symbolize quick and easy pipe and hose installations as well as a clean distinct pipe layout.

The vibration and noise reducing features are appreciated as being an important contribution to environmental protection.

Apart from the technical sophistication of STAUFF Clamps, the second-to-none delivery, prompt service even for special constructions, STAUFF Clamps are also the most economical ones to install.

STAUFF Clamps applications are almost unlimited. Due to the extraordinary wide product range, all areas of pipe, tube and hose installation are covered:

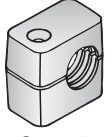

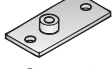
- Industrial Hydraulics
- Mobile Hydraulics
- Marine Hydraulics
- Offshore
- General Industrial Pipe Construction
- Mining Industry
- Nuclear Reactor Construction
- Instrumentation and Control Technology
- Pneumatics

Approved by:

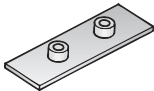
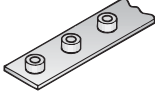

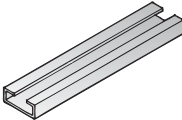
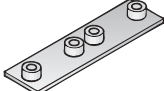
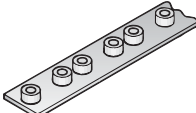
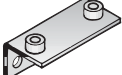
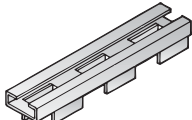

- Bureau Veritas
- Department of the Navy, New York
- Germanischer Lloyd
- Lloyd's Register of Shipping
- Registro Italiano Navale
- TÜV
- United States Coast Guard












acc. to DIN 3015, Part 1

Material Code					 Group 1	 Group 1	 Group 1
Materials and designs of clamps bodies XXX Polypropylene profiled inside with tension clearance - PP Polypropylene smooth inside without tension clearance - PPH Polyamide profiled inside with tension clearance - PA Polyamide smooth inside without tension clearance - PAH Santoprene profiled inside with tension clearance - SA Santoprene smooth inside without tension clearance - SAH Aluminum profiled inside with tension clearance - AL (AL group 1A – 6 only) Other thermoplastics and O.D. on request.							
Surface finishing (see also technical appendix)					–	DIN 50942 Fe/Znph r 10	DIN 50942 Fe/Znph r 10
STAUFF Group	DIN Group	Outside diameter Tube or Hose		Nominal bore Pipe	Clamp Body (2 halves) (xxx – see material code)	Single Weld Plate SP	Elongated Weld Plate SPV
		mm	inch	inch			
1	0	6			106 xxx	SP 1	SPV 1
		6,4	1/4		106,4 xxx		
		8	5/16		108 xxx		
		9,5	3/8		109,5 xxx		
		10		1/8	110 xxx		
1A	1	12			112 xxx	SP 1A	SPV 1A
		6			106 A xxx		
		6,4	1/4		106,4A xxx		
		8	5/16		108 A xxx		
		9,5	3/8		109,5A xxx		
2	2	10		1/8	110 A xxx	SP 2	SPV 2
		12			112 A xxx		
		12,7	1/2		212,7 xxx		
		13,5		1/4	213,5 xxx		
		14			214 xxx		
		15			215 xxx		
3	3	16	5/8		216 xxx	SP 3	SPV 3
		17,2		3/8	217,2 xxx		
		18			218 xxx		
		19	3/4		319 xxx		
		20			320 xxx		
4	4	21,3		1/2	321,3 xxx	SP 4	SPV 4
		22	7/8		322 xxx		
		25	1		325 xxx		
		26,9		3/4	426,9 xxx		
5	5	28			428 xxx	SP 5	SPV 5
		30			430 xxx		
		32	1 1/4		532 xxx		
		33,7		1	533,7 xxx		
		35			535 xxx		
6	6	38	1 1/2		538 xxx	SP 6	SPV 6
		40			540 xxx		
		42		1 1/4	542 xxx		
		44,5	1 3/4		644,5 xxx		
		48,3		1 1/2	648,3 xxx		
7	7	50,8	2		650,8 xxx	SP 7	SPV 7
		57,2	2 1/4		757,2 xxx		
		60,3		2	760,3 xxx		
		63,5	2 1/2		763,5 xxx		
		70	2 3/4		770 xxx		
		73	2 7/8	2 1/2 (except DIN 2448)	773 xxx		
76,1	3	2 1/2 (DIN 2448 only)	776,1 xxx				
8	8	88,9		3	888,9 xxx	SP 8	SPV 8
		102	4		8102 L xxx		

acc. to **DIN 3015, Part 1**

Size ▼						
	Group 1	Group 1	Group 1		TS	
						
	Group 1A - 6	Group 1A - 6	Group 1A - 6	Group 1A - 6	TSL	Group 1 - 8
	DIN 50942 Fe/Znph r 10	-	-	-	- (TSL z. p.)	-
	Twin Weld Plate DSP	Group Weld Plate RAP	Weld Plate, angled WSP	Bridge Weld Plate BSP	Mounting Rail TS/TSL	Hexagon Rail Nut SM
106 106,4 108 109,5 110 112	DSP 1/40 Pipe center spacing ←	RAP 1/30/10 Pipe center spacing ← Number of clamps ←	WSP 1			
106 A 106,4A 108 A 109,5A 110 A 112 A	DSP 1 A/37	RAP 1 A/37/10	WSP 1 A	BSP 1 A		
212,7 213,5 214 215 216 217,2 218	DSP 2/44	RAP 2/44/10	WSP 2	BSP 2	TS 11	
319 320 321,3 322 325	DSP 3/52	RAP 3/52/10	WSP 3	BSP 3	TS 14 TS 30 TSL 11 SM	
426,9 428 430	DSP 4/60	RAP 4/60/5	WSP 4	BSP 4	(available in 1 and 2 m lengths)	
532 533,7 535 538 540 542	DSP 5/75	RAP 5/75/5	WSP 5	BSP 5		
644,5 648,3 650,8	DSP 6/90	RAP 6/90/5	WSP 6	BSP 6		
757,2 760,3 763,5 770 773 776,1						
888,9 8102 L						

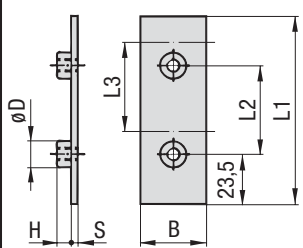
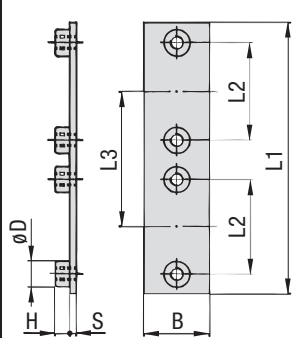
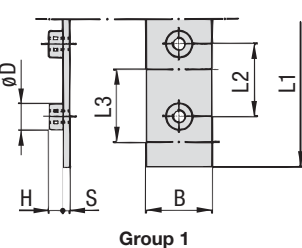
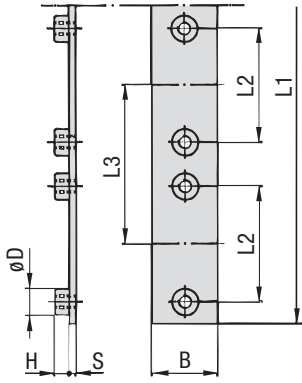
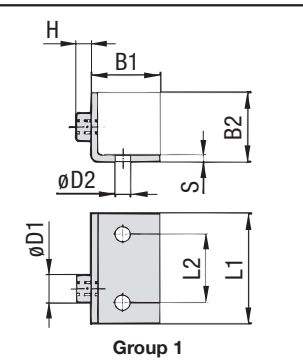
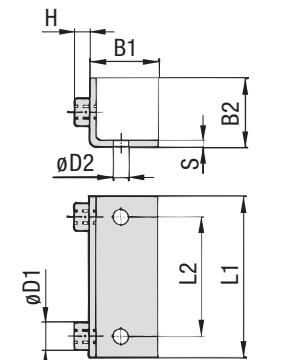
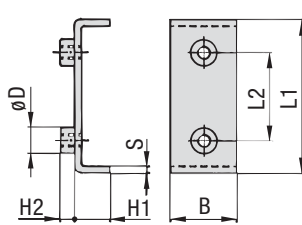
acc. to **DIN 3015, Part 1**

Size ▼	 Group 1					 Group 1	Only for Hexagon Head Bolts AS DIN 931/933
	 Group 1A - 8					 Group 1A - 8	 Group 1 - 8
	DIN 50961 Fe/Zn 8 C						
	Cover Plate DP	Hexagon Head Bolt AS DIN 931/933	Socket Cap Screw IS DIN 912	Slotted Head Screw LI DIN 84	Stacking Bolt AF	Safety Locking Plate SIG	Safety Washer SI DIN 93
106 106,4 108 109,5 110 112	DP 1	AS 1/1 A (M6 x 30)	IS 1/1 A (M6 x 20)	LI 1/1 A (M6 x 20)	AF 1/1 A	SIG 1	SI 6,4
106 A 106,4A 108 A 109,5A 110 A 112 A	DP 1 A					SIG 1 A	
212,7 213,5 214 215 216 217,2 218	DP 2	AS 2 (M6 x 35)	IS 2 (M6 x 25)	LI 2 (M6 x 25)	AF 2	SIG 2	
319 320 321,3 322 325	DP 3	AS 3 (M6 x 40)	IS 3 (M6 x 30)	LI 3 (M6 x 30)	AF 3	SIG 3	
426,9 428 430	DP 4	AS 4 (M6 x 45)	IS 4 (M6 x 35)	LI 4 (M6 x 35)	AF 4	SIG 4	
532 533,7 535 538 540 542	DP 5	AS 5 (M6 x 60)	IS 5 (M6 x 50)	LI 5 (M6 x 50)	AF 5	SIG 5	
644,5 648,3 650,8	DP 6	AS 6 (M6 x 70)	IS 6 (M6 x 60)	LI 6 (M6 x 60)	AF 6	SIG 6	
757,2 760,3 763,5 770 773 776,1	DP 7	AS 7 (M6 x 100)	IS 7 (M6 x 90)		AF 7	SIG 7	
888,9 8102 L	DP 8	AS 8 (M6 x 125)	IS 8 (M6 x 110)		AF 8	SIG 8	

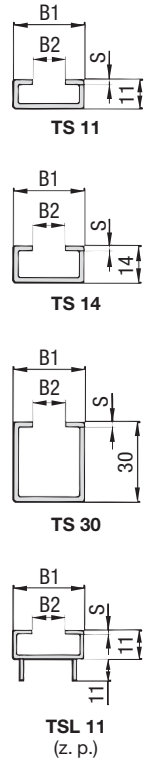
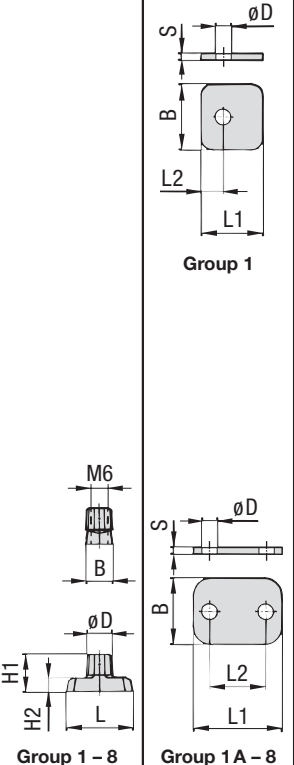


acc. to DIN 3015, Part 1

Material Code			Clamp Body (2 halves)							Single Weld Plate SP						Elongated Weld Plate SPV							
Materials and designs of clamp bodies	XXX	Pipe-O.D. Ø D1 [mm]	L1	L2	Inside surface			Width	L1	L2	B	S	H	ØD	L1	L2	L3	B	S	H	ØD1	ØD2	
					profiled		smooth																
					H	S	H																
Polypropylene, profiled inside, with tension clearance - PP Polypropylene, smooth inside, without tension clearance - PPH Polyamide, profiled inside, with tension clearance - PA Polyamide, smooth inside, without tension clearance - PAH Santoprene, profiled inside, with tension clearance - SA Santoprene, smooth inside, without tension clearance - SAH Aluminum, profiled inside, with tension clearance (AL group 1A - 6 only) - AL Other thermoplastics and O.D. on request.																							
Surface finishing (see also techn. appendix)			-																				
STAUFF Group	DIN Group	Pipe-O.D. Ø D1 [mm]	L1	L2	profiled H	profiled S	smooth H	Width	L1	L2	B	S	H	ØD	L1	L2	L3	B	S	H	ØD1	ØD2	
1	0	6 6,4 8 9,5 10 12	28	9,5	27	0,4 min.	26	30	31,5	10	30	3	6,5	12	58	24,5	44	30	3	6,5	12	6,5	
1A	1	6 6,4 8 9,5 10 12	37	20	27	0,4 min.	26	30	36	20	30	3	6,5	12	64	20	50	30	3	6,5	12	6,5	
2	2	12,7 13,5 14 15 16 17,2 18	42	26	33	0,6 min.	32	30	42	26	30	3	6,5	12	70	26	56	30	3	6,5	12	6,5	
3	3	19 20 21,3 22 25	50	33	36	0,6 min.	35,5	30	50	33	30	3	6,5	12	78	33	64	30	3	6,5	12	6,5	
4	4	26,9 28 30	59	40	42	0,6 min.	41,5	30	60	40	30	3	6,5	12	87	40	73	30	3	6,5	12	6,5	
5	5	32 33,7 35 38 40 42	71	52	58	0,8 min.	56,5	30	71	52	30	3	6,5	12	100	52	86	30	3	6,5	12	6,5	
6	6	44,5 48,3 50,8	86	66	66	0,8 min.	64,5	30	88	66	30	3	6,5	12	115	66	100	30	3	6,5	12	6,5	
7	7	57,2 60,3 63,5 70 73 76,1	121	94	93	0,8 min.	92	30	122	94	30	5	6,5	12	150	94	136	30	5	6,5	12	6,5	
8	8	88,9 102	147	120	118	0,8 min.	116	30	148	120	30	5	6,5	12	178	120	162	30	5	6,5	12	6,5	

acc. to DIN 3015, Part 1

Size	 <p>Group 1</p>								 <p>Group 1A - 6</p>								 <p>Group 1</p>								 <p>Group 1A - 6</p>								 <p>Group 1</p>								 <p>Group 1A - 6</p>								 <p>Group 1A - 6</p>							
	DIN 50942 Fe/Znph r 10								-								-								-																															
	Twin Weld Plate DSP								Group Weld Plate RAP								Weld Plate, angled WSP								Bridge Weld Plate BSP																															
	L1	L2	L3	B	S	H	øD	L1	L2	L3	B	S	H	øD	L1	L2	B1	B2	S	H	øD1	øD2	L1	L2	B	S	H1	H2	øD																											
6 6,4 8 9,5 10 12	87	40	40	30	3	6,5	12	314	31	31	30	4	6,5	12	30	14	30	30	3	6,5	12	6,5	48	20	30	3	13	6,5	12																											
6 6,4 8 9,5 10 12	77	20	37	30	3	6,5	12	373	20	37	30	4	6,5	12	36	20	30	30	3	6,5	12	6,5	54	26	30	3	13	6,5	12																											
12,7 13,5 14 15 16 17,2 18	86	26	44	30	3	6,5	12	442	26	44	30	4	6,5	12	42	26	30	30	3	6,5	12	6,5	62	33	30	3	13	6,5	12																											
19 20 21,3 22 25	102	33	52	30	3	6,5	12	521	33	52	30	4	6,5	12	50	33	30	30	3	6,5	12	6,5	71	40	30	3	13	6,5	12																											
26,9 28 30	120	40	60	30	3	6,5	12	300	40	60	30	4	6,5	12	60	40	30	30	3	6,5	12	6,5	85	52	30	3	13	6,5	12																											
32 33,7 35 38 40 42	145	52	75	30	3	6,5	12	378	52	75	30	4	6,5	12	70	52	30	30	3	6,5	12	6,5	98	66	30	3	13	6,5	12																											
44,5 48,3 50,8	178	66	90	30	3	6,5	12	450	66	90	30	4	6,5	12	88	66	30	30	3	6,5	12	6,5																																		
57,2 60,3 63,5 70 73 76,1 88,9 102																																																								

acc. to DIN 3015, Part 1

Size																														
	-			-				DIN 50961 Fe/Zn 8 C																						
	Mounting Rail TS/TSL	Hexagon Rail Nut SM			Cover Plate DP				Hexagon Head Bolt AS DIN 931/933		Socket Cap Screw IS DIN 912		Slotted Head Screw LI DIN 84			Stacking Bolt AF			Safety Locking Plate SIG			Safety Washer SI DIN 93								
B1	B2	S	L	B	H1	H2	ØD	L1	L2	B	S	ØD	G x L	G x L	D	S	G x L	D	S	G	L1	L2	L3	SW	L	B1	B2	S	ØD	
6 6,4 8 9,5 10 12								28	9,5	30	3	7	M6x30	M6x20	11	0,8	M6x20	11	0,8	M6	34	20	12 _{min.}	11	17	32	11,1	1	6,4	
6 6,4 8 9,5 10 12								34	20	30	3	7	M6x30	M6x20	11	0,8	M6x20	11	0,8	M6	34	20	12 _{min.}	11	34	28	11,1	1	6,4	
12,7 13,5 14 15 16 17,2 18								40,5	26	30	3	7	M6x35	M6x25	11	0,8	M6x25	11	0,8	M6	40	25	12 _{min.}	11	40	28	11,1	1	6,4	
19 20 21,3 22 25	28	11	2	25,4	10,4	13	5	12	48	33	30	3	7	M6x40	M6x30	11	0,8	M6x30	11	0,8	M6	44	30	12 _{min.}	11	47	28	11,1	1	6,4
26,9 28 30								57	40	30	3	7	M6x45	M6x35	11	0,8	M6x35	11	0,8	M6	48	35	12 _{min.}	11	56	28	11,1	1	6,4	
32 33,7 35 38 40 42								70	52	30	3	7	M6x60	M6x50	11	0,8	M6x50	11	0,8	M6	64	50	12 _{min.}	11	69	28	11,1	1	6,4	
44,5 48,3 50,8								86	66	30	3	7	M6x70	M6x60	11	0,8	M6x60	11	0,8	M6	73	60	12 _{min.}	11	85	28	11,1	1	6,4	
57,2 60,3 63,5 70 73 76,1								118	94	30	5	7	M6x100	M6x90	11	0,8				M6	99	85	12 _{min.}	11	117	28	11,1	1	6,4	
88,9 102								144	120	30	5	7	M6x125	M6x110	11	0,8				M6	124	110	12 _{min.}	11	143	28	11,1	1	6,4	

acc. to **DIN 3015, Part 1**

STAUFF Group	DIN Group	Outside diameter Tube or Hose		Nominal bore Pipe inch	Clamp Body (2 halves) (xxx – see material code)
		mm	inch		
1	0	6			106 xxx
		6,4	1/4		106,4 xxx
		8	5/16		108 xxx
		9,5	3/8		109,5 xxx
		10		1/8	110 xxx
		12			112 xxx
1A	1	6			106 A xxx
		6,4	1/4		106,4A xxx
		8	5/16		108 A xxx
		9,5	3/8		109,5A xxx
		10		1/8	110 A xxx
		12			112 A xxx
2	2	12,7	1/2		212,7 xxx
		13,5		1/4	213,5 xxx
		14			214 xxx
		15			215 xxx
		16	5/8		216 xxx
		17,2		3/8	217,2 xxx
		18			218 xxx
3	3	19	3/4		319 xxx
		20			320 xxx
		21,3		1/2	321,3 xxx
		22	7/8		322 xxx
		25	1		325 xxx
4	4	26,9		3/4	426,9 xxx
		28			428 xxx
		30			430 xxx
5	5	32	1 1/4		532 xxx
		33,7		1	533,7 xxx
		35			535 xxx
		38	1 1/2		538 xxx
		40			540 xxx
		42		1 1/4	542 xxx
6	6	44,5	1 3/4		644,5 xxx
		48,3		1 1/2	648,3 xxx
		50,8	2		650,8 xxx
7	7	57,2	2 1/4		757,2 xxx
		60,3		2	760,3 xxx
		63,5	2 1/2		763,5 xxx
		70	2 3/4		770 xxx
		73	2 7/8	2 1/2 (except DIN 2448)	773 xxx
		76,1	3	2 1/2 (DIN 2448 only)	776,1 xxx
8	8	88,9		3	888,9 xxx
		102	4		8102 L xxx

Material Code

Materials and designs of clamp bodies **XXX**

Polypropylene, profiled inside, with tension clearance **- PP**

Polypropylene, smooth inside, without tension clearance **- PPH**

Polyamide, profiled inside, with tension clearance **- PA**

Polyamide, smooth inside, without tension clearance **- PAH**

Santoprene, profiled inside, with tension clearance **- SA**

Santoprene, smooth inside, without tension clearance **- SAH**

Aluminum, profiled inside, with tension clearance **- AL**
(AL group 1A – 6 only)

Other thermoplastics and O.D. on request.

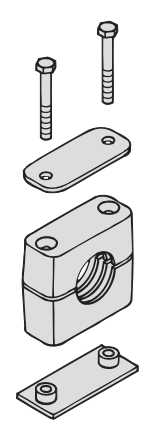
Design of clamp bodies see technical appendix, page 48.
Design and order codes for clamps with rubber insert RI see page 30 – Clamp Accessories –.

acc. to DIN 3015, Part 1

Order Code

SP * **,* xxx DP-AS

Material and design of clamp body
 → Pipe-O.D.
 → STAUFF Group

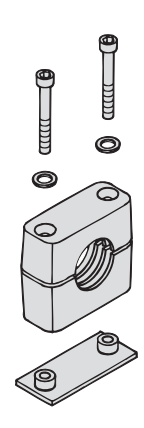


Clamp consisting of:
 1 x Single Weld Plate
 1 x Clamp Body (2 halves)
 1 x Cover Plate
 2 x Hexagon Head Bolt DIN 931/933

Order Code

SP * **,* xxx IS

Material and design of clamp body
 → Pipe-O.D.
 → STAUFF Group

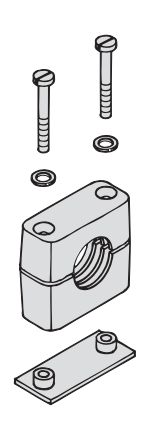


Clamp consisting of:
 1 x Single Weld Plate
 1 x Clamp Body (2 halves)
 2 x Socket Cap Screw DIN 912 with washer

Order Code

SP * **,* xxx LI

Material and design of clamp body
 → Pipe-O.D.
 → STAUFF Group

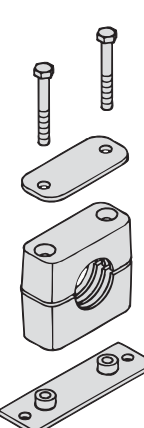


Clamp consisting of:
 1 x Single Weld Plate
 1 x Clamp Body (2 halves)
 2 x Slotted Head Screw DIN 84 with washer

Order Code

SPV * **,* xxx DP-AS

Material and design of clamp body
 → Pipe-O.D.
 → STAUFF Group

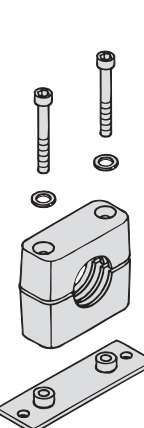


Clamp consisting of:
 1 x Elongated Weld Plate
 1 x Clamp Body (2 halves)
 1 x Cover Plate
 2 x Hexagon Head Bolt DIN 931/933

Order Code

SPV * **,* xxx IS

Material and design of clamp body
 → Pipe-O.D.
 → STAUFF Group

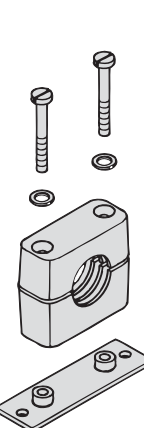


Clamp consisting of:
 1 x Elongated Weld Plate
 1 x Clamp Body (2 halves)
 2 x Socket Cap Screw DIN 912 with washer

Order Code

SPV * **,* xxx LI

Material and design of clamp body
 → Pipe-O.D.
 → STAUFF Group

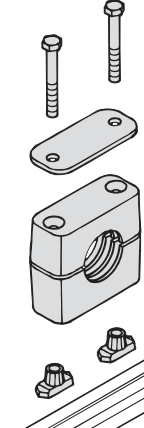


Clamp consisting of:
 1 x Elongated Weld Plate
 1 x Clamp Body (2 halves)
 2 x Slotted Head Screw DIN 84 with washer

Order Code

SM * **,* xxx DP-AS

Material and design of clamp body
 → Pipe-O.D.
 → STAUFF Group

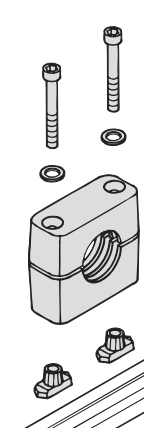


Clamp consisting of:
 2 x Hexagon Rail Nut
 1 x Clamp Body (2 halves)
 1 x Cover Plate
 2 x Hexagon Head Bolt DIN 931/933

Order Code

SM * **,* xxx IS

Material and design of clamp body
 → Pipe-O.D.
 → STAUFF Group

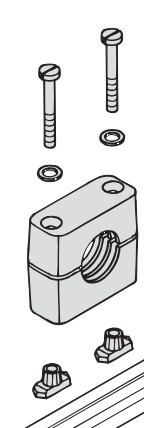


Clamp consisting of:
 2 x Hexagon Rail Nut
 1 x Clamp Body (2 halves)
 2 x Socket Cap Screw DIN 912 with washer

Order Code

SM * **,* xxx LI

Material and design of clamp body
 → Pipe-O.D.
 → STAUFF Group



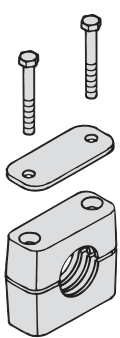
Clamp consisting of:
 2 x Hexagon Rail Nut
 1 x Clamp Body (2 halves)
 2 x Slotted Head Screw DIN 84 with washer

acc. to DIN 3015, Part 1

Order Code

*** **,* xxx DP-AS**

Material and design of clamp body
 Pipe-O.D.
 STAUFF Group

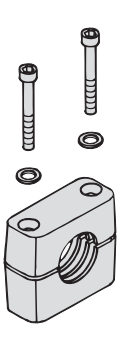


Clamp consisting of:
 1 x Clamp Body (2 halves)
 1 x Cover Plate
 2 x Hexagon Head Bolt DIN 931/933

Order Code

*** **,* xxx IS**

Material and design of clamp body
 Pipe-O.D.
 STAUFF Group

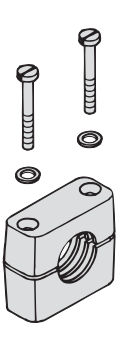


Clamp consisting of:
 1 x Clamp Body (2 halves)
 2 x Socket Cap Screw DIN 912 with washer

Order Code

*** **,* xxx LI**

Material and design of clamp body
 Pipe-O.D.
 STAUFF Group

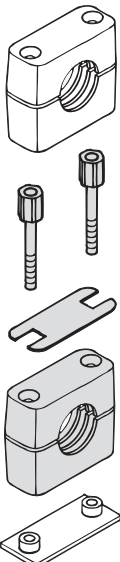


Clamp consisting of:
 1 x Clamp Body (2 halves)
 2 x Slotted Head Screw DIN 84 with washer

Order Code

*** **,* xxx SIG-AF**

Material and design of clamp body
 Pipe-O.D.
 STAUFF Group

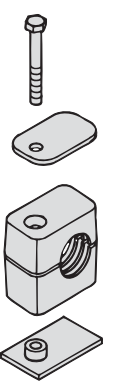


Clamp consisting of:
 1 x Clamp Body (2 halves)
 1 x Safety Locking Plate
 2 x Stacking Bolt

Order Code

SP 1 **,* xxx DP-AS

Material and design of clamp body
 Pipe-O.D.
 STAUFF Group

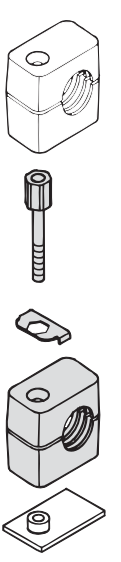


Clamp consisting of:
 1 x Single Weld Plate
 1 x Clamp Body (2 halves)
 1 x Cover Plate
 1 x Hexagon Head Bolt DIN 931/933

Order Code

1 **,* xxx SI-AF

Material and design of clamp body
 Pipe-O.D.
 STAUFF Group



Clamp consisting of:
 1 x Clamp Body (2 halves)
 1 x Safety Locking Plate
 1 x Stacking Bolt

Information

In order to protect hexagon head bolts against unscrew caused by vibrations safety washers acc. to DIN 93 are recommended.

Items are supplied non-assembled.

Clamps Heavy-Series



**Quality and Service
worldwide**

**Australia:**

Stauff Corporation (Pty.) Ltd.
P.O. Box 227
24-26 Doyle Avenue, Unanderra
Wollongong, N.S.W.
AUS-2526 Unanderra
Tel: +61 2 42 71 18 77
Fax: +61 2 42 71 84 32

Brazil:

Stauff Brasil Ltda.
Avenida Gupe 10.767
Galpão 2, Bloco A
WT - Empresarial Parque Castello Branco
BRA-Barueri - SP
CEP: 06422-120
Tel: +55 11 4789 9020
Fax: +55 11 4789 9021

China:

Stauff International Trading (Shanghai) Co., Ltd.
Shangdian Mansion, Pudong
331 Binzhou Road
CHN-200126 Shanghai
Tel: +86 21 58 45 65 60
Fax: +86 21 58 45 66 80

France:

Stauff s. a.
230, Avenue du Grain d'Or
Z.I. de Vineuil-Blois Sud
F-41354 Vineuil cedex
Tel: +33 2 54 50 55 50
Fax: +33 2 54 42 29 19

India:

Stauff India Pvt. Ltd.
Gat. No. 2340
Pune-Nagar Road, Wagholi
IND-Pune - 412207
Tel: +91 20 705 19 90
Fax: +91 20 705 19 89

Italy:

Stauff Italia s.r.l.
Via Pola 21/23
I-20034 Birone di Giussano
Tel: +39 0362 31 21 13
Fax: +39 0362 33 55 36

Japan:

Ohtsuka Tec. Co. Ltd.
1-7-19 Minami Shinagawa
Shinagawa-Ku
JPN-Tokyo 140
Tel: +81 3 34 72 12 01
Fax: +81 3 34 72 12 09

Canada:

Stauff Canada, Ltd.
866 Milner Avenue
CAN-Scarborough, Ontario M1B 5N7
Tel: +1 416 282 46 08
Fax: +1 416 282 30 39

USA:

Stauff Corporation
7 Wm. Demarest Place
USA-Waldwick, N. J. - 07463
Tel: +1 201 444 78 00
Fax: +1 201 444 78 52

United Kingdom:

Stauff UK
332, Coleford Road
Darnall
GBR-Sheffield, S 9 5 P H
Tel: +44 1142 518 518
Fax: +44 1142 518 519

Distributors and warehouses in all industrial countries.

Walter Stauffenberg GmbH & Co. KG

P. O. Box 1745, D-58777 Werdohl
Im Ehrenfeld 4, D-58791 Werdohl

Telefon: +49 (0) 23 92 916-0

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Prompt Delivery

In most industrial countries STAUFF Clamps symbolize quick and easy pipe and hose installations as well as a clean distinct pipe layout.

The vibration and noise reducing features are appreciated as being an important contribution to environmental protection.

Apart from the technical sophistication of STAUFF Clamps, the second-to-none delivery, prompt service even for special constructions, STAUFF Clamps are also the most economical ones to install.

STAUFF Clamps applications are almost unlimited. Due to the extraordinary wide product range, all areas of pipe, tube and hose installation are covered:

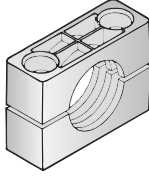
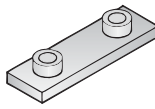
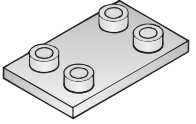
- Industrial Hydraulics
- Mobile Hydraulics
- Marine Hydraulics
- Offshore
- General Industrial Pipe Construction
- Mining Industry
- Nuclear Reactor Construction
- Instrumentation and Control Technology
- Pneumatics

Approved by:

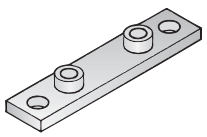
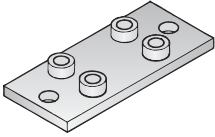
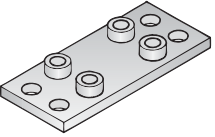
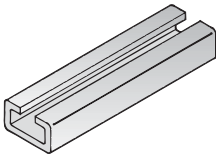
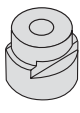
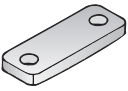
- Bureau Veritas
- Department of the Navy, New York
- Germanischer Lloyd
- Lloyd's Register of Shipping
- Registro Italiano Navale
- TÜV
- United States Coast Guard



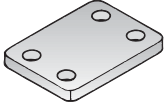



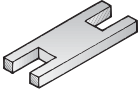

acc. to DIN 3015, Part 2

Material Code											
Materials and designs of clamp bodies XXX											
Polypropylene profiled inside with tension clearance - PP											
Polypropylene smooth inside without tension clearance - PPH (up to Gr. 6S)											
Polyamide profiled inside with tension clearance - PA											
Polyamide smooth inside without tension clearance - PAH (up to Gr. 6S)											
Santoprene profiled inside with tension clearance - SA (up to Gr. 6S)											
Santoprene smooth inside without tension clearance - SAH (up to Gr. 6S)											
Aluminum profiled inside with tension clearance - AL											
Other thermoplastics and O.D. on request.											
Surface finishing (see also technical appendix)								-	Group 3 S - 7 S: DIN 50942 Fe/Znph r 10	Group 3 S - 7 S: DIN 50942 Fe/Znph r 10	
STAUFF Group	DIN Group	Outside diameter Tube or Hose		Nominal bore Pipe				Clamp Body (2 halves) (xxx - see material code)	Weld Plate for Single Clamps SPAL	Weld Plate for Double Clamps SPAS	
		mm	inch	inch							
3S	1	6			3006 xxx	SPAL 3 S	SPAS 3 S				
		6,4	1/4		3006,4 xxx						
		8			3008 xxx						
		9,5	3/8		3009,5 xxx						
		10		1/8	3010 xxx						
		12			3012 xxx						
		12,7	1/2		3012,7 xxx						
		13,5		1/4	3013,5 xxx						
		14			3014 xxx						
		15			3015 xxx						
4S	2	16	5/8		3016 xxx	SPAL 4 S	SPAS 4 S				
		17,2		3/8	3017,2 xxx						
		18			3018 xxx						
		19	3/4		4019 xxx						
		20			4020 xxx						
		21,3		1/2	4021,3 xxx						
		22	7/8		4022 xxx						
		25			4025 xxx						
		26,9		3/4	4026,9 xxx						
		28			4028 xxx						
5S	3	30			5030 xxx	SPAL 5 S	SPAS 5 S				
		32	1 1/4		5032 xxx						
		33,7		1	5033,7 xxx						
		35			5035 xxx						
		38	1 1/2		5038 xxx						
		40			5040 xxx						
		42		1 1/4	5042 xxx						
		6S	4	38	1 1/2				6038 xxx	SPAL 6 S	SPAS 6 S
				42				1 1/4	6042 xxx		
				44,5	1 3/4				6044,5 xxx		
48,3				1 1/2	6048,3 xxx						
50,8	2				6050,8 xxx						
55					6055 xxx						
57	2 1/4				6057 xxx						
60,3				2	6060,3 xxx						
63,5	2 1/2				6063,5 xxx						
65					6065 xxx						
7S	5	70			6070 xxx	SPAL 7 S	SPAS 7 S				
		65			7065 xxx						
		70			7070 xxx						
		73	2 7/8	2 1/2 (except DIN 2448)	7073 xxx						
		75			7075 xxx						
		76,1	3	2 1/2 (DIN 2448 only)	7076,1 xxx						
		80			7080 xxx						
		82,5	3 1/4		7082,5 xxx						
		88,9		3	7088,9 xxx						
		88,9		3	8088,9 xxx						
8S	6	100			8100 xxx	SPAL 8 S	SPAS 8 S				
		102		3 1/2	8102 xxx						
		108	4 1/4		8108 xxx						
		114		4	8114 xxx						
		127	5		8127 xxx						
		133	5 1/4		8133 xxx						
		9S	7	133	5 1/4				9133 xxx	SPAL 9 S	SPAS 9 S
				140				5	9140 xxx		
				152	6				9152 xxx		
				159	6 1/4				9159 xxx		
165	6 1/2				9165 xxx						
168				6	9168 xxx						
168				6	10168 xxx						
177,8	7				10177,8 xxx						
193,7	7 5/8				10193,7 xxx						
216	8 1/2				10216 xxx						
10S	8	219		8	10219 xxx	SPAL 10 S	SPAS 10 S				
		219		8	11219 xxx						
		273		10	11273 xxx						
		324		12	11324 xxx						
		11S	9	356				14	12356 xxx	SPAL 11 S	SPAS 11 S
				406				16	12406 xxx		

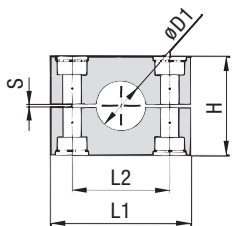
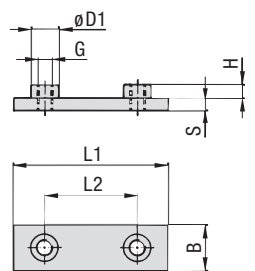
acc. to **DIN 3015, Part 2**

Size ▼		 Group 3S – 9S	 Group 10S – 12S	 up to Group 6S only	 up to Group 6S only	
	Group 3 S - 7 S: DIN 50942 Fe/Znph r 10	Group 3 S - 7 S: DIN 50942 Fe/Znph r 10	–	–	DIN 50961 Fe/Zn 8 C	Group 3 S - 7 S: DIN 50942 Fe/Znph r 10
	Elongated Weld Plate for Single Clamps SPAL/DÜB	Elongated Weld Plate for Double Clamps SPAS/DÜB	Elongated Weld Plate for Double Clamps SPAS/DÜB	Mounting Rail STSV	Mounting Rail Nut GMV	Cover Plate for Single Clamps DPAL
3006 3006,4 3008 3009,5 3010 3012 3012,7 3013,5 3014 3015 3016 3017,2 3018	SPAL/DÜB 3 S	SPAS/DÜB 3 S				DPAL 3 S
4019 4020 4021,3 4022 4025 4026,9 4028 4030	SPAL/DÜB 4 S	SPAS/DÜB 4 S		STSV (available in 1 and 2 m lengths)	GMV 10	DPAL 4 S
5030 5032 5033,7 5035 5038 5040 5042	SPAL/DÜB 5 S	SPAS/DÜB 5 S				DPAL 5 S
6038 6042 6044,5 6048,3 6050,8 6055 6057 6060,3 6063,5 6065 6070	SPAL/DÜB 6 S	SPAS/DÜB 6 S			GMV 12	DPAL 6 S
7065 7070 7073 7075 7076,1 7080 7082,5 7088,9	SPAL/DÜB 7 S	SPAS/DÜB 7 S				DPAL 7 S
8088,9 8100 8102 8108 8114 8127 8133	SPAL/DÜB 8 S	SPAS/DÜB 8 S				DPAL 8 S
9133 9140 9152 9159 9165 9168	SPAL/DÜB 9 S	SPAS/DÜB 9 S				DPAL 9 S
10168 10177,8 10193,7 10216 10219	SPAL/DÜB 10 S		SPAS/DÜB 10 S			DPAL 10 S
11219 11273 11324	SPAL/DÜB 11 S		SPAS/DÜB 11 S			DPAL 11 S
12356 12406	SPAL/DÜB 12 S		SPAS/DÜB 12 S			DPAL 12 S

acc. to **DIN 3015, Part 2**

Size ▼						
			Group 3S - 6S	Group 3S - 10S	Group 3S - 10S	Only for Hexagon Head Bolts AS DIN 931/933
	Group 3 S - 7 S: DIN 50942 Fe/Znph r 10	-	-	DIN 50942 Fe/Znph r 10	Group 3 S - 7 S: DIN 50942 Fe/Znph r 10	DIN 50961 Fe/Zn 8 C
	Cover Plate for Double Clamps DPAS	Hexagon Head Bolt AS DIN 931/933	Socket Cap Screw IS DIN 912	Stacking Bolt AF	Safety Locking Plate SIP	Safety Washer SI DIN 93
3006 3006,4 3008 3009,5 3010 3012 3012,7 3013,5 3014 3015 3016 3017,2 3018	DPAS 3 S	AS 3 S (M10 x 45)	IS 3 S (M10 x 30)	AF 3 S	SIP 3 S	SI 10,5
4019 4020 4021,3 4022 4025 4026,9 4028 4030	DPAS 4 S	AS 4 S (M10 x 60)	IS 4 S (M10 x 40)	AF 4 S	SIP 4 S	
5030 5032 5033,7 5035 5038 5040 5042	DPAS 5 S	AS 5 S (M10 x 70)	IS 5 S (M10 x 50)	AF 5 S	SIP 5 S	
6038 6042 6044,5 6048,3 6050,8 6055 6057 6060,3 6063,5 6065 6070	DPAS 6 S	AS 6 S (M12 x 100)	IS 6 S (M12 x 80)	AF 6 S	SIP 6 S	SI 13
7065 7070 7073 7075 7076,1 7080 7082,5 7088,9	DPAS 7 S	AS 7 S (M16 x 130)		AF 7 S	SIP 7 S	SI 17
8088,9 8100 8102 8108 8114 8127 8133	DPAS 8 S	AS 8 S (M20 x 190)		AF 8 S	SIP 8 S	SI 21
9133 9140 9152 9159 9165 9168	DPAS 9 S	AS 9 S (M24 x 220)		AF 9 S	SIP 9 S	SI 25
10168 10177,8 10193,7 10216 10219	DPAS 10 S	AS 10 S (M30 x 300)		AF 10 S	SIP 10 S	SI 31
11219 11273 11324	DPAS 11 S	AS 11 S (M30 x 450)				
12356 12406	DPAS 12 S	AS 12 S (M30 x 560)				

acc. to DIN 3015, Part 2

Material Code																	
Materials and designs of clamp bodies Polypropylene profiled inside with tension clearance - PP Polypropylene smooth inside without tension clearance - PPH (up to Gr. 6S) Polyamide profiled inside with tension clearance - PA Polyamide smooth inside without tension clearance - PAH (up to Gr. 6S) Santoprene profiled inside with tension clearance - SA (up to Gr. 6S) Santoprene smooth inside without tension clearance - SAH (up to Gr. 6S) Aluminum profiled inside with tension clearance - AL Other thermoplastics and O.D. on request.			XXX														
Surface finishing (see also technical appendix)					-										Group 3 S - 7 S: DIN 50942 Fe/Znph r 10		
STAUFF Group	DIN Group	Pipe-O.D. Ø D1 [mm]	Clamp Body (2 halves)						Weld Plate for Single Clamps								
			L1		L2	Inside surface		Width	SPAL								
			PP/PA	AL		H	S		H	L1	L2	B	S	H	G	ØD1	
3S	1	6															
		6,4															
		8															
		9,5															
		10															
		12															
		12,7	55	56	33	32	0,6 min.	30,5	30,5	74	33	30	8	8	M10	18	
		13,5															
		14															
		15															
16																	
17,2																	
18																	
4S	2	19															
		20															
		21,3															
		22															
		25	70	70	45	48	0,6 min.	46,5	30,5	86	45	30	8	8	M10	18	
		26,9															
		28															
30																	
5S	3	30															
		32															
		33,7															
		35	85	85	60	60	0,6 min.	58	30,5	100	60	30	8	8	M10	18	
		38															
		40															
6S	4	42															
		38															
		42															
		44,5															
		48,3															
		50,8	115	120	90	89	2 min.	87	45	140	90	45	10	8	M12	20	
		55															
57																	
60,3																	
63,5																	
65																	
70																	
7S	5	65															
		70															
		75															
		76,1	152	150	122	120	2 min.		60	180	122	60	10	12	M16	24	
		80															
		82,5															
88,9																	
8S	6	88,9															
		100															
		102															
		108															
		114	206	208	168	167	2 min.		80	226	168	80	15	18	M20	30	
		127															
		133															
9S	7	133															
		140															
		152															
		159	251	255	205	200	3 min.		91	270	205	90	15	21	M24	35	
		165															
168																	
10S	8	168															
		177,8															
		193,7															
		216	336	326	265	270	3 min.		120	340	265	120	25	21	M30	45	
219																	
11S	9	219															
		273															
		324	470	470	395	410	8 min.		162	520	395	160	30	38	M30	50	
12S	10	356															
		406 (max. 425)	630	630	534	530	20 min.		182	680	534	180	30	38	M30	50	

acc. to **DIN 3015, Part 2**

Size ▼	up to Group 6S only				up to Group 6S only					Group 3 S - 7 S: DIN 50942 Fe/Znph r10					Group 3 S - 7 S: DIN 50942 Fe/Znph r10					-		Group 3S - 6S					Group 3S - 10S					Group 3S - 10S					-
	Mounting Rail STSV				Mounting Rail Nut GMV					Cover Plate for Single Clamps DPAL					Cover Plate for Double Clamps DPAS					Hexagon Head Bolt AS DIN 931/933		Socket Cap Screw IS DIN 912		Stacking Bolt AF					Safety Locking Plate SIP					Safety Washer SI DIN 93			
	B1	B2	H	S	øD1	øD2	H1	H2	H3	G	L1	L2	B	S	øD	L1	L2	B1	B2	S	øD	G x L	G x L	G	L1	L2	L3	SW	L1	L2	B1	B2	S	øD			
	-				DIN 50961 Fe/Zn 8 C					Group 3 S - 7 S: DIN 50942 Fe/Znph r10					Group 3 S - 7 S: DIN 50942 Fe/Znph r10					-		DIN 50942 Fe/Znph r 10					Group 3 S - 7 S: DIN 50942 Fe/Znph r10					DIN 50961 Fe/Zn 8 C					
6,4 8 9,5 10 12 12,7 13,5 14 15 16 17,2 18	40	14	22	5	17,8	24	21,5	15,5	9	M10	55	33	30	8	11	56	33	60	30	8	11	M10 x 45	M10 x 30	M10	49	25	15 min.	15	56	13	30	15	8	10,5			
19 20 21,3 22 25 26,9 28 30											70	45	30	8	11	70	45	60	30	8	11	M10 x 60	M10 x 40	M10	65	40	15 min.	15	70	26	30	15	8	10,5			
30 32 33,7 35 38 40 42											85	60	30	8	11	84	60	60	30	8	11	M10 x 70	M10 x 50	M10	77	51	15 min.	15	85	40	30	15	8	10,5			
38 42 44,5 48,3 50,8 55 57 60,3 63,5 65 70					19,8	24	23	15	9	M12	115	90	45	10	14	116	90	90	46	10	14	M12 x 100	M12 x 80	M12	110	82	18 min.	17	116	69	45	17	10	13			
65 70 75 76,1 80 82,5 88,9											152	122	60	10	19	153	122	120	61	10	19	M16 x 130		M16	144	110	24 min.	21	153	97	60	22	10	17			
88,9 100 102 108 114 127 133											206	168	80	15	22	206	168	160	81	15	22	M20 x 190		M20	200	150	30 min.	27	206	130	80	28	15	21			
133 140 152 159 165 168											251	205	90	15	26	251	205	180	91	15	26	M24 x 220		M24	240	180	50 min.	30	251	166	90	31	15	25			
168 177,8 193,7 216 219											320	265	120	25	35	320	265	240	120	25	35	M30 x 300		M30	331	256	62 min.	46	317	205	120	49	25	31			
219 273 324											470	395	160	30	35	470	395	321	166	30	35	M30 x 450											31				
356 406 (max. 425)											630	534	180	30	35	630	534	361	186	30	35	M30 x 560											31				

acc. to DIN 3015, Part 2

STAUFF Group	DIN Group	Outside diameter Tube or Hose		Nominal bore Pipe inch	Clamp Body (2 halves) (xxx – see material code)
		mm	inch		
3 S	1	6			3006 xxx
		6,4	1/4		3006,4 xxx
		8			3008 xxx
		9,5	3/8		3009,5 xxx
		10		1/8	3010 xxx
		12			3012 xxx
		12,7	1/2		3012,7 xxx
		13,5		1/4	3013,5 xxx
		14			3014 xxx
		15			3015 xxx
		16	5/8		3016 xxx
		17,2		3/8	3017,2 xxx
4 S	2	18			3018 xxx
		19	3/4		4019 xxx
		20			4020 xxx
		21,3		1/2	4021,3 xxx
		22	7/8		4022 xxx
		25			4025 xxx
		26,9		3/4	4026,9 xxx
		28			4028 xxx
30			4030 xxx		
5 S	3	30			5030 xxx
		32	1 1/4		5032 xxx
		33,7		1	5033,7 xxx
		35			5035 xxx
		38	1 1/2		5038 xxx
		40			5040 xxx
6 S	4	42		1 1/4	5042 xxx
		38	1 1/2		6038 xxx
		42		1 1/4	6042 xxx
		44,5	1 3/4		6044,5 xxx
		48,3		1 1/2	6048,3 xxx
		50,8	2		6050,8 xxx
		55			6055 xxx
		57	2 1/4		6057 xxx
		60,3		2	6060,3 xxx
		63,5	2 1/2		6063,5 xxx
7 S	5	65			6065 xxx
		70			6070 xxx
		73	2 7/8	2 1/2 (except DIN 2448)	7073 xxx
		75			7075 xxx
		76,1	3	2 1/2 (DIN 2448 only)	7076,1 xxx
		80			7080 xxx
		82,5	3 1/4		7082,5 xxx
		88,9		3	7088,9 xxx
8 S	6	88,9		3	8088,9 xxx
		100			8100 xxx
		102		3 1/2	8102 xxx
		108	4 1/4		8108 xxx
		114		4	8114 xxx
		127	5		8127 xxx
9 S	7	133	5 1/4		8133 xxx
		140		5	9140 xxx
		152	6		9152 xxx
		159	6 1/4		9159 xxx
		165	6 1/2		9165 xxx
10 S	8	168		6	9168 xxx
		168		6	10168 xxx
		177,8	7		10177,8 xxx
		193,7	7 5/8		10193,7 xxx
11 S	9	216	8 1/2		10216 xxx
		219		8	10219 xxx
		219		8	11219 xxx
12 S	10	273		10	11273 xxx
		324		12	11324 xxx
		356		14	12356 xxx
		406		16	12406 xxx

Material Code

Materials and designs of clamps bodies **XXX**

Polypropylene, profiled inside, with tension clearance **- PP**

Polypropylene, smooth inside, without tension clearance **- PPH** (up to Gr. 6 S)

Polyamide, profiled inside, with tension clearance **- PA**

Polyamide, smooth inside, without tension clearance **- PAH** (up to Gr. 6 S)

Santoprene, profiled inside, with tension clearance **- SA** (up to Gr. 6 S)

Santoprene, smooth inside, without tension clearance **- SAH** (up to Gr. 6 S)

Aluminum, profiled inside, with tension clearance **- AL**

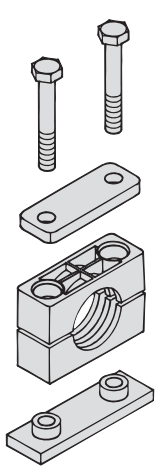
Other thermoplastics and O.D. on request.

Design of clamp bodies see technical appendix, page 48.

Design and order codes for clamps with rubber insert RI see page 30 – Clamp Accessories –.

acc. to DIN 3015, Part 2

Order Code

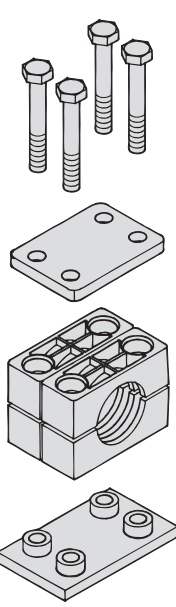


SPAL ** *,* xxx DPAL-AS**

↓
 Material and design of clamp body
 ↓
 Pipe-O.D.
 ↓
 STAUFF Group

Clamp consisting of:
 1 x Weld Plate for Single Clamp
 1 x Clamp Body
 (2 halves)
 1 x Cover Plate for Single Clamp
 2 x Hexagon Head Bolt
 DIN 931/933

Order Code

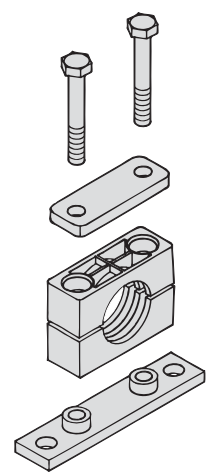


SPAS ** *,* xxx DPAS-AS**

↓
 Material and design of clamp body
 ↓
 Pipe-O.D.
 ↓
 STAUFF Group

Clamp consisting of:
 1 x Weld Plate for Double Clamp
 2 x Clamp Body
 (2 halves)
 1 x Cover Plate for Double Clamp
 4 x Hexagon Head Bolt
 DIN 931/933

Order Code

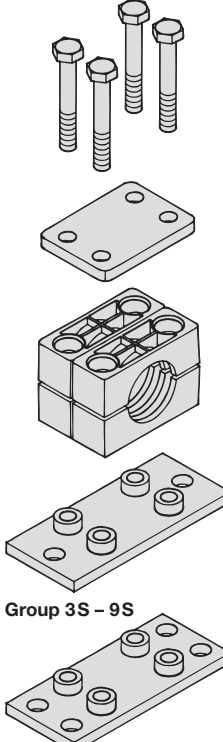


SPAL/DÜB ** *,* xxx DPAL-AS**

↓
 Material and design of clamp body
 ↓
 Pipe-O.D.
 ↓
 STAUFF Group

Clamp consisting of:
 1 x Elongated Weld Plate for Single Clamp
 1 x Clamp Body
 (2 halves)
 1 x Cover Plate for Single Clamp
 2 x Hexagon Head Bolt
 DIN 931/933

Order Code



SPAS/DÜB ** *,* xxx DPAS-AS**

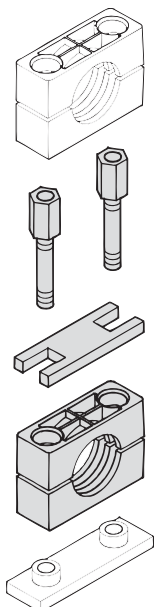
↓
 Material and design of clamp body
 ↓
 Pipe-O.D.
 ↓
 STAUFF Group

Clamp consisting of:
 1 x Elongated Weld Plate for Double Clamp
 2 x Clamp Body
 (2 halves)
 1 x Cover Plate for Double Clamp
 4 x Hexagon Head Bolt
 DIN 931/933

Group 3S - 9S

Group 10S - 12S

acc. to DIN 3015, Part 2



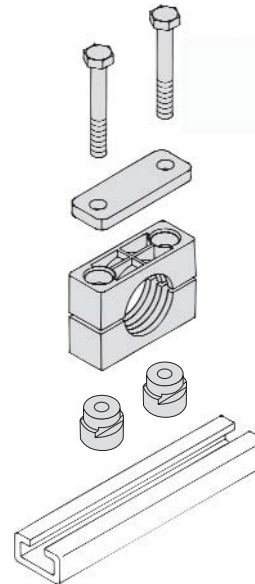
Order Code

**** ***,* xxx SIP-AF**

- ↓ Material and design of clamp body
- ↓ Pipe-O.D.
- ↓ STAUFF Group

Clamp consisting of:

- 1 x Clamp Body (2 halves)
- 1 x Safety Locking Plate
- 2 x Stacking Bolt



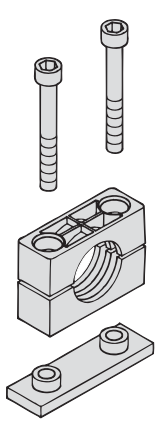
Order Code

GMV ** *,* xxx DPAL-AS**

- ↓ Material and design of clamp body
- ↓ Pipe-O.D.
- ↓ STAUFF Group

Clamp consisting of:

- 2 x Mounting Rail Nut
- 1 x Clamp Body (2 halves)
- 1 x Cover Plate for Single Clamp
- 2 x Hexagon Head Bolt DIN 931/933



Order Code

SPAL ** *,* xxx IS**

- ↓ Material and design of clamp body
- ↓ Pipe-O.D.
- ↓ STAUFF Group

Clamp consisting of:

- 1 x Weld Plate for Single Clamp
- 1 x Clamp Body (2 halves)
- 2 x Socket Cap Screw DIN 912

Information

In order to protect hexagon head bolts against unscrew caused by vibrations safety washers acc. to DIN 93 are recommended.

Items are supplied non-assembled.

Clamps Twin-Series



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Tel: +61 2 42 71 18 77
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Stauff Brasil Ltda.
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Galpão 2, Bloco A
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BRA-Barueri - SP
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China:

Stauff International Trading (Shanghai) Co., Ltd.
Shangdian Mansion, Pudong
331 Binzhou Road
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Tel: +86 21 58 45 65 60
Fax: +86 21 58 45 66 80

France:

Stauff s. a.
230, Avenue du Grain d'Or
Z.I. de Vineuil-Blois Sud
F-41354 Vineuil cedex
Tel: +33 2 54 50 55 50
Fax: +33 2 54 42 29 19

India:

Stauff India Pvt. Ltd.
Gat. No. 2340
Pune-Nagar Road, Wagholi
IND-Pune - 412207
Tel: +91 20 705 19 90
Fax: +91 20 705 19 89

Italy:

Stauff Italia s.r.l.
Via Pola 21/23
I-20034 Birone di Giussano
Tel: +39 0362 31 21 13
Fax: +39 0362 33 55 36

Japan:

Ohtsuka Tec. Co. Ltd.
1-7-19 Minami Shinagawa
Shinagawa-Ku
JPN-Tokyo 140
Tel: +81 3 34 72 12 01
Fax: +81 3 34 72 12 09

Canada:

Stauff Canada, Ltd.
866 Milner Avenue
CAN-Scarborough, Ontario M1B 5N7
Tel: +1 416 282 46 08
Fax: +1 416 282 30 39

USA:

Stauff Corporation
7 Wm. Demarest Place
USA-Waldwick, N. J. - 07463
Tel: +1 201 444 78 00
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Stauff UK
332, Coleford Road
Darnall
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Tel: +44 1142 518 518
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Walter Stauffenberg GmbH & Co. KG

P. O. Box 17 45, D-58777 Werdohl
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Apart from the technical sophistication of STAUFF Clamps, the second-to-none delivery, prompt service even for special constructions, STAUFF Clamps are also the most economical ones to install.

STAUFF Clamps applications are almost unlimited. Due to the extraordinary wide product range, all areas of pipe, tube and hose installation are covered:

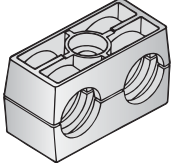
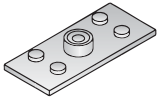
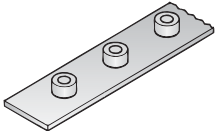
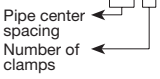
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- Marine Hydraulics
- Offshore
- General Industrial Pipe Construction
- Mining Industry
- Nuclear Reactor Construction
- Instrumentation and Control Technology
- Pneumatics

Approved by:

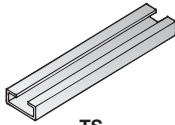

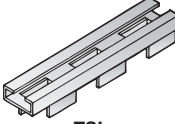

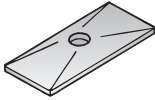



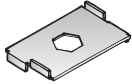
- Bureau Veritas
- Department of the Navy, New York
- Germanischer Lloyd
- Lloyd's Register of Shipping
- Registro Italiano Navale
- TÜV
- United States Coast Guard



acc. to **DIN 3015, Part 3**

Material Code							
Materials and designs of clamp bodies							
Polypropylene profiled inside with tension clearance – PP Polypropylene smooth inside without tension clearance – PPH Polyamide profiled inside with tension clearance – PA Polyamide smooth inside without tension clearance – PAH							
Other thermoplastics and O.D. on request.							
Twin clamps with different outside diameters are also available on request.							
XXX							
Surface finishing (see also technical appendix)					–	DIN 50942 Fe/Znph r 10	–
STAUFF Group	DIN Group	Outside diameter Tube or Hose		Nominal bore Pipe	Clamp Body (2 halves) (xxx – see material code)	Single Weld Plate	Group Weld Plate
		mm	inch	inch		SP	RAP
1D	1	6			106/06 xxx	SP 1-D	RAP 1-D/40/5 
		6,4	1/4		106,4/6,4 xxx		
		8			108/08 xxx		
		9,5	3/8		109,5/9,5 xxx		
		10		1/8	110/10 xxx		
		12			112/12 xxx		
2D	2	12,7	1/2		212,7/12,7 xxx	SP 2-D	RAP 2-D/58/5
		13,5		1/4	213,5/13,5 xxx		
		14			214/14 xxx		
		15			215/15 xxx		
		16	5/8		216/16 xxx		
		17,2		3/8	217,2/17,2 xxx		
		18			218/18 xxx		
3D	3	19	3/4		319/19 xxx	SP 3-D	RAP 3-D/72/5
		20			320/20 xxx		
		21,3		1/2	321,3/21,3 xxx		
		22	7/8		322/22 xxx		
		25	1		325/25 xxx		
4D	4	26,9		3/4	426,9/26,9 xxx	SP 4-D	RAP 4-D/90/5
		28			428/28 xxx		
		30			430/30 xxx		
5D	5	32	1 1/4		532/32 xxx	SP 5-D	RAP 5-D/112/5
		33,7		1	533,7/33,7 xxx		
		35			535/35 xxx		
		38	1 1/2		538/38 xxx		
		40			540/40 xxx		
		42		1 1/4	542/42 xxx		

acc. to **DIN 3015, Part 3**

▼ Size							for multi-level-assembly, prevents upper clamp from turning
							
	– (TSL z. p.)	–	DIN 50961 Fe/Zn 8 C			–	DIN 50961 Fe/Zn 8 C
Mounting Rail	Hexagon Rail Nut	Cover Plate	Hexagon Head Bolt	Stacking Bolt	Safety Locking Plate	Safety Locking Plate	
TS/TSL	SM	GD	AS DIN 931/933	AF	SI	SIV	
106/06 106,4/6,4 108/08 109,5/9,5 110/10 112/12		SM	GD 1-D	AS 1-D (M6 x 35)	AF 1-D	SI 1-D	SIV 1-D
212,7/12,7 213,5/13,5 214/14 215/15 216/16 217,2/17,2 218/18	TS 11 TS 14 TS 30		GD 2-D	AS 2-D (M8 x 35)	AF 2-D		SIV 2..3-D
319/19 320/20 321,3/21,3 322/22 325/25	TSL 11 (available in 1 and 2 m lengths)	SM 8	GD 3-D	AS 3-D (M8 x 45)	AF 3-D	SI 2..5-D	
426,9/26,9 428/28 430/30			GD 4-D	AS 4-D (M8 x 50)	AF 4-D		
532/32 533,7/33,7 535/35 538/38 540/40 542/42			GD 5-D	AS 5-D (M8 x 60)	AF 5-D		

acc. to DIN 3015, Part 3

Material Code			Clamp Body (2 halves)						Single Weld Plate SP						Group Weld Plate RAP											
Materials and designs of clamp bodies			L1		L2		Width	L		B		S	H	øD	G	L1		L2		L3	B		S	H	øD	G
Other thermoplastics and O.D. on request.			L1	L2	Inside surface profiled	Inside surface smooth		L	B	L1	L2					L3	B	S	H		øD	G				
Polypropylene, profiled inside, with tension clearance - PP Polypropylene, smooth inside, without tension clearance - PPH Polyamide, profiled inside, with tension clearance - PA Polyamide, smooth inside, without tension clearance - PAH																										
Surface finishing (see also techn. appendix)			-						DIN 50942 Fe/Znph r 10						-											
STAUFF Group	DIN Group	Pipe-O.D. Ø D1/D2 [mm]	L1	L2	Inside surface profiled	Inside surface smooth	Width	L	B	S	H	øD	G	L1	L2	L3	B	S	H	øD	G					
1D	1	6/6	36	20	27	0,6 min.	26,5	30	37	30	3	6,5	12	M6	196	40	18	30	3	6,5	12	M6				
		6,4/6,4																								
		8/8																								
		9,5/9,5																								
		10/10																								
12/12																										
2D	2	12,7/12,7	53	29	27	0,7 min.	26,5	30	55	30	5	6	14	M8	288	58	28	30	5	6	14	M8				
		13,5/13,5																								
		14/14																								
		15/15																								
		16/16																								
17,2/17,2																										
18/18																										
3D	3	19/19	67	36	37	0,7 min.	36,5	30	70	30	5	6	14	M8	358	72	35	30	5	6	14	M8				
		20/20																								
		21,3/21,3																								
		22/22																								
25/25																										
4D	4	26,9/26,9	80	45	40	0,7 min.	38	30	85	30	5	6	14	M8	445	90	42	30	5	6	14	M8				
		28/28																								
30/30																										
5D	5	32/32	106	56	53	0,7 min.	52	30	110	30	5	6	14	M8	558	112	55	30	5	6	14	M8				
		33,7/33,7																								
		35/35																								
		38/38																								
		40/40																								
42/42																										

acc. to **DIN 3015, Part 3**

Size	Mounting Rail				Hexagon Rail Nut							Cover Plate					Hexagon Head Bolt		Stacking Bolt					Safety Locking Plate				Safety Locking Plate				
	TS/TSL				SM							GD					AS		AF					SI				SIV				
	Nominal Size	B1	B2	S	L	B	H1	H2	øD	G	L	B	H	S	øD	G x L	G	L1	L2	L3	SW	L	B1	B2	S	L	B1	B2	S	H		
6/6 6,4/6,4 8/8 9,5/9,5 10/10 12/12					25,4	10,4	13	5	12	M6	34	30	7	3	7	M6 x 35	M6	34	20	12 min.	11	27	22	11,1	0,5	27	28	11,1	1	7		
12,7/12,7 13,5/13,5 14/14 15/15 16/16 17,2/17,2 18/18	TS 11 TS 14 TS 30 TSL 11	28	11	2							52	30	7	3	9	M8 x 35	M8	33	20	12 min.	12	27	22	12,1	0,5	45	28	12,1	1	7		
19/19 20/20 21,3/21,3 22/22 25/25					25,4	10,4	14	5	14	M8	65	30	7	3	9	M8 x 45	M8	44	29	12 min.	12	27	22	12,1	0,5	45	28	12,1	1	7		
26,9/26,9 28/28 30/30											79	30	7	3	9	M8 x 50	M8	49	34	12 min.	12	27	22	12,1	0,5							
32/32 33,7/33,7 35/35 38/38 40/40 42/42											102	30	7	3	9	M8 x 60	M8	61	46	12 min.	12	27	22	12,1	0,5							

acc. to DIN 3015, Part 3

STAUFF Group	DIN Group	Outside diameter Tube or Hose		Nominal bore Pipe inch	Clamp Body (2 halves) (xxx – see material code)
		mm	inch		
1D	1	6			106/06 xxx
		6,4	1/4		106,4/6,4 xxx
		8			108/08 xxx
		9,5	3/8		109,5/9,5 xxx
		10		1/8	110/10 xxx
		12			112/12 xxx
2D	2	12,7	1/2		212,7/12,7 xxx
		13,5		1/4	213,5/13,5 xxx
		14			214/14 xxx
		15			215/15 xxx
		16	5/8		216/16 xxx
		17,2		3/8	217,2/17,2 xxx
		18			218/18 xxx
3D	3	19	3/4		319/19 xxx
		20			320/20 xxx
		21,3		1/2	321,3/21,3 xxx
		22	7/8		322/22 xxx
		25	1		325/25 xxx
4D	4	26,9		3/4	426,9/26,9 xxx
		28			428/28 xxx
		30			430/30 xxx
5D	5	32	1 1/4		532/32 xxx
		33,7		1	533,7/33,7 xxx
		35			535/35 xxx
		38	1 1/2		538/38 xxx
		40			540/40 xxx
		42		1 1/4	542/42 xxx

Material Code

Materials and designs of clamp bodies XXX

Polypropylene, profiled inside, with tension clearance **- PP**

Polypropylene, smooth inside, without tension clearance **- PPH**

Polyamide, profiled inside, with tension clearance **- PA**

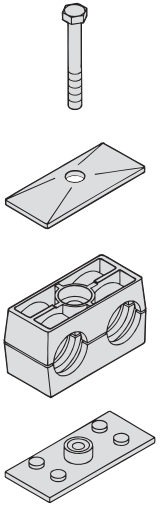
Polyamide, smooth inside, without tension clearance **- PAH**

Other thermoplastics and O.D. on request.

Twin clamps with different outside diameters are also available on request.

Design of clamp bodies see technical appendix, page 48.

acc. to DIN 3015, Part 3



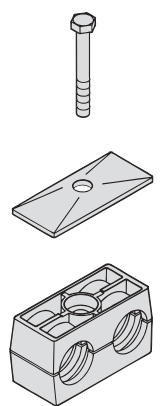
Order Code

SP *,*/**,* xxx GD-AS**

- Material and design of clamp body
- Pipe-O.D. 2
- Pipe-O.D. 1
- STAUFF Group

Clamp consisting of:

- 1 x Single Weld Plate
- 1 x Clamp Body (2 halves)
- 1 x Cover Plate
- 1 x Hexagon Head Bolt DIN 931/933



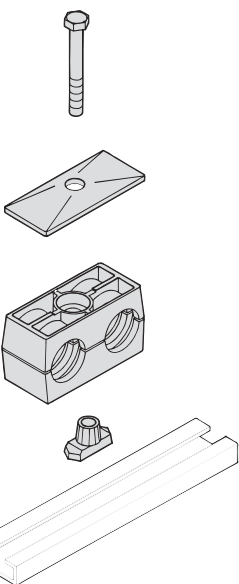
Order Code

*****,*/**,* xxx GD-AS**

- Material and design of clamp body
- Pipe-O.D. 2
- Pipe-O.D. 1
- STAUFF Group

Clamp consisting of:

- 1 x Clamp Body (2 halves)
- 1 x Cover Plate
- 1 x Hexagon Head Bolt DIN 931/933



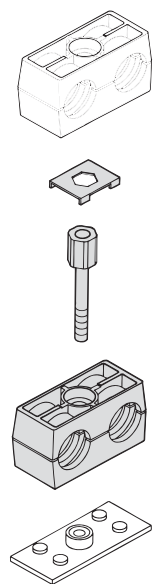
Order Code

SM *,*/**,* xxx GD-AS**

- Material and design of clamp body
- Pipe-O.D. 2
- Pipe-O.D. 1
- STAUFF Group

Clamp consisting of:

- 1 x Hexagon Rail Nut
- 1 x Clamp Body (2 halves)
- 1 x Cover Plate
- 1 x Hexagon Head Bolt DIN 931/933



Order Code

*****,*/**,* xxx SI-AF**

- Material and design of clamp body
- Pipe-O.D. 2
- Pipe-O.D. 1
- STAUFF Group

Clamp consisting of:

- 1 x Clamp Body (2 halves)
- 1 x Stacking Bolt
- 1 x Safety Locking Plate

Information

Items are supplied non-assembled.

Clamps Light-Series



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P.O. Box 227
24-26 Doyle Avenue, Unanderra
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AUS-2526 Unanderra
Tel: +61 2 42 71 18 77
Fax: +61 2 42 71 84 32

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Stauff Brasil Ltda.
Avenida Gupe 10.767
Galpão 2, Bloco A
WT - Empresarial Parque Castello Branco
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Tel: +55 11 4789 9020
Fax: +55 11 4789 9021

China:

Stauff International Trading (Shanghai) Co., Ltd.
Shangdian Mansion, Pudong
331 Binzhou Road
CHN-200126 Shanghai
Tel: +86 21 58 45 65 60
Fax: +86 21 58 45 66 80

France:

Stauff s. a.
230, Avenue du Grain d'Or
Z.I. de Vineuil-Blois Sud
F-41354 Vineuil cedex
Tel: +33 2 54 50 55 50
Fax: +33 2 54 42 29 19

India:

Stauff India Pvt. Ltd.
Gat. No. 2340
Pune-Nagar Road, Wagholi
IND-Pune - 412207
Tel: +91 20 705 19 90
Fax: +91 20 705 19 89

Italy:

Stauff Italia s.r.l.
Via Pola 21/23
I-20034 Birone di Giussano
Tel: +39 0362 31 21 13
Fax: +39 0362 33 55 36

Japan:

Ohtsuka Tec. Co. Ltd.
1-7-19 Minami Shinagawa
Shinagawa-Ku
JPN-Tokyo 140
Tel: +81 3 34 72 12 01
Fax: +81 3 34 72 12 09

Canada:

Stauff Canada, Ltd.
866 Milner Avenue
CAN-Scarborough, Ontario M1B 5N7
Tel: +1 416 282 46 08
Fax: +1 416 282 30 39

USA:

Stauff Corporation
7 Wm. Demarest Place
USA-Waldwick, N. J. - 07463
Tel: +1 201 444 78 00
Fax: +1 201 444 78 52

United Kingdom:

Stauff UK
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Im Ehrenfeld 4, D-58791 Werdohl

Telefon: +49 (0) 23 92 916-0

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- Mobile Hydraulics
- Marine Hydraulics
- Offshore
- General Industrial Pipe Construction
- Mining Industry
- Nuclear Reactor Construction
- Instrumentation and Control Technology
- Pneumatics

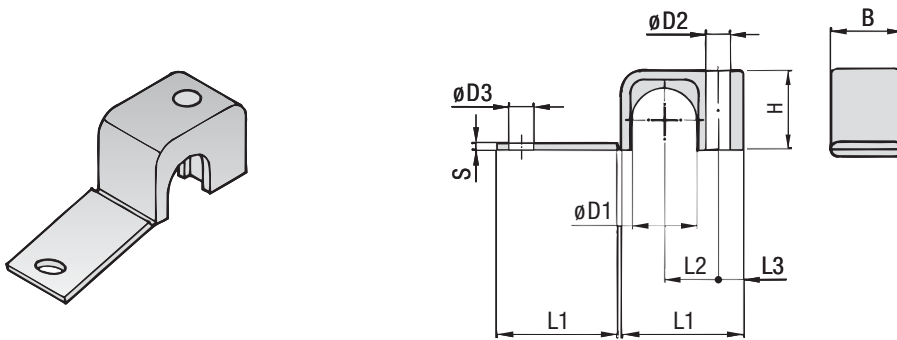
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Applications: Pneumatics, Instrumentation and Automotive Technology, Machine Tool Industry, Lubrication, Mechanical Engineering

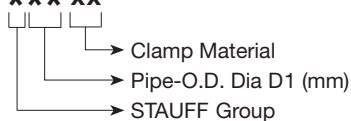
Type LB



STAUFF Group	Outside diameter Tube or Hose Ø D1 mm	Outside diameter Tube or Hose Ø D1 inch	Nominal bore Pipe inch	L1	L2	L3	B	H	S	øD2	øD3	Clamp Material XX	Colour
1	06			22	9	6,5	12	10,5	2	6,8	7	PP PA	black yellow
	06,4	1/4											
	08												
2	09,5	3/8		27	11	7	16	15	2	6,8	7	PP PA	black yellow
	10		1/8										
	12												
3	12,7	1/2		34	15	7	20	22,5	2	6,8	7	PP PA	black yellow
	13,5		1/4										
	14												
	15												
	16	5/8											
	17,2		3/8										
18													
4	19	3/4		42	19	7	20	30	2	6,8	7	PP PA	black yellow
	20												
	21,3		1/2										
	22												
	25	1											

Order Code

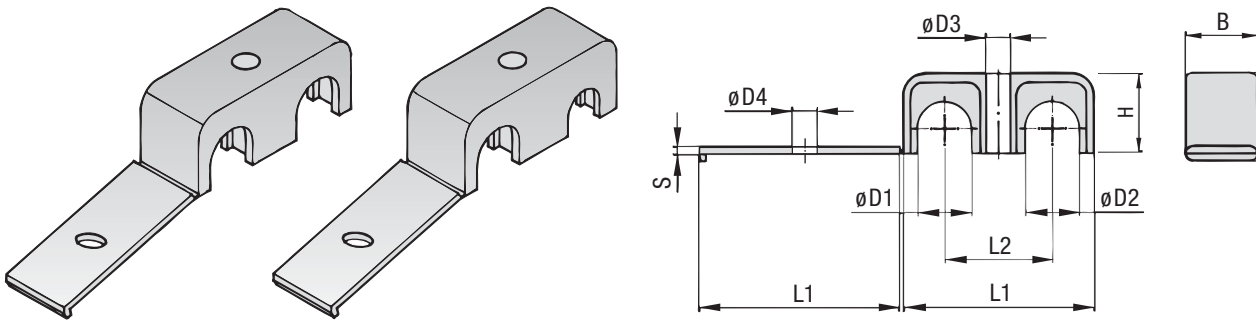
LB *** xx



Other thermoplastics and O.D. on request.

Applications: Pneumatics, Instrumentation and Automotive Technology, Machine Tool Industry, Lubrication, Mechanical Engineering

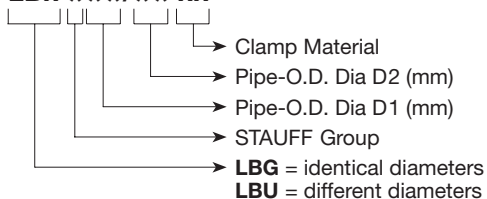
Type LBG (identical diameters) · **Type LBU** (different diameters)



STAUFF Group	Outside diameter Tube or Hose ØD1/D2 mm		Nominal bore Pipe inch	L1	L2	B	H	S	øD3	øD4	Material XX	Clamp Colour
		inch										
1	06/06			31	18	12	10,5	2	6,8	7	PP	black
	06,4/06,4	1/4 / 1/4									PA	yellow
	08/08											
2	09,5/09,5	3/8 / 3/8		39	22	16	14,5	2	6,8	7	PP	black
	10/10		1/8 / 1/8								PA	yellow
	12/12											
3	12,7/12,7	1/2 / 1/2		53	30	20	22,5	2	6,8	7	PP	black
	13,5/13,5		1/4 / 1/4								PA	yellow
	14/14											
	15/15											
	16/16	5/8 / 5/8										
	17,2/17,2		3/8 / 3/8									
18/18												
4	19/19	3/4 / 3/4		70	38	20	30	2	6,8	7	PP	black
	20/20										PA	yellow
	21,3/21,3		1/2 / 1/2									
	22/22											
	25/25	1 / 1										

Order Code

LBx ***/** xx



Type

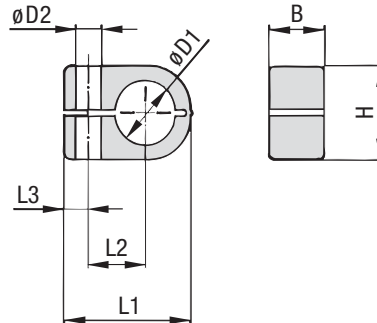
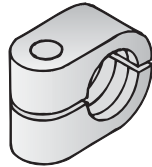
- LBG** Double pipe clamp for two identical diameters
- LBU** Double pipe clamp for two different diameters

Other thermoplastics and O.D. on request.

Applications:

Pneumatics, Instrumentation and Automotive Technology, Machine Tool Industry, Lubrication, Mechanical Engineering. Also suitable for cables and hoses.

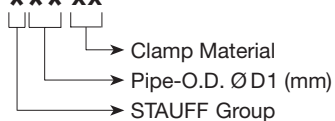
Type LN



STAUFF Group	Outside diameter Tube or Hose Ø D1		Nominal bore Pipe inch	L1	L2	L3	B	H	øD2	Clamp Material XX	Colour
	mm	inch									
1	06			22	9	7	14,5	13,5	6,8	PP PA	green black
	06,4	1/4									
	08										
2	08			27	11	7	14,5	18,5	6,8	PP PA	green black
	09,5	3/8									
	10		1/8								
	12										
3	12,7	1/2		33	15	7	14,5	23,5	6,8	PP PA	green black
	10		1/8								
	12										
	13,5		1/4								
	14										
	15										
4	16	5/8		40	19	7	14,5	30,5	6,8	PP PA	green black
	14										
	15										
	17,2		3/8								
	18										
	19	3/4									
	20										
	21,3		1/2								
22											

Order Code

LN *** xx



Other thermoplastics and O.D. on request.

Clamps - Accessories (WAG, RI, CRA)



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worldwide**

**Australia:**

Stauff Corporation (Pty.) Ltd.
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Wollongong, N.S.W.
AUS-2526 Unanderra
Tel: +61 2 42 71 18 77
Fax: +61 2 42 71 84 32

Brazil:

Stauff Brasil Ltda.
Avenida Gupe 10.767
Galpão 2, Bloco A
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China:

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Shangdian Mansion, Pudong
331 Binzhou Road
CHN-200126 Shanghai
Tel: +86 21 58 45 65 60
Fax: +86 21 58 45 66 80

France:

Stauff s. a.
230, Avenue du Grain d'Or
Z.I. de Vineuil-Blois Sud
F-41354 Vineuil cedex
Tel: +33 2 54 50 55 50
Fax: +33 2 54 42 29 19

India:

Stauff India Pvt. Ltd.
Gat. No. 2340
Pune-Nagar Road, Wagholi
IND-Pune - 412207
Tel: +91 20 705 19 90
Fax: +91 20 705 19 89

Italy:

Stauff Italia s.r.l.
Via Pola 21/23
I-20034 Birone di Giussano
Tel: +39 0362 31 21 13
Fax: +39 0362 33 55 36

Japan:

Ohtsuka Tec. Co. Ltd.
1-7-19 Minami Shinagawa
Shinagawa-Ku
JPN-Tokyo 140
Tel: +81 3 34 72 12 01
Fax: +81 3 34 72 12 09

Canada:

Stauff Canada, Ltd.
866 Milner Avenue
CAN-Scarborough, Ontario M1B 5N7
Tel: +1 416 282 46 08
Fax: +1 416 282 30 39

USA:

Stauff Corporation
7 Wm. Demarest Place
USA-Waldwick, N. J. - 07463
Tel: +1 201 444 78 00
Fax: +1 201 444 78 52

United Kingdom:

Stauff UK
332, Coleford Road
Darnall
GBR-Sheffield, S 9 5 P H
Tel: +44 1142 518 518
Fax: +44 1142 518 519

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Walter Stauffenberg GmbH & Co. KG

P. O. Box 1745, D-58777 Werdohl
Im Ehrenfeld 4, D-58791 Werdohl

Telefon: +49 (0) 23 92 916-0

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In most industrial countries STAUFF Clamps symbolize quick and easy pipe and hose installations as well as a clean distinct pipe layout.

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Apart from the technical sophistication of STAUFF Clamps, the second-to-none delivery, prompt service even for special constructions, STAUFF Clamps are also the most economical ones to install.

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- Industrial Hydraulics
- Mobile Hydraulics
- Marine Hydraulics
- Offshore
- General Industrial Pipe Construction
- Mining Industry
- Nuclear Reactor Construction
- Instrumentation and Control Technology
- Pneumatics

Approved by:

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- TÜV
- United States Coast Guard



Angle Adjustment Clamps WAG (Clamps with a Ball-and-Socket Joint)

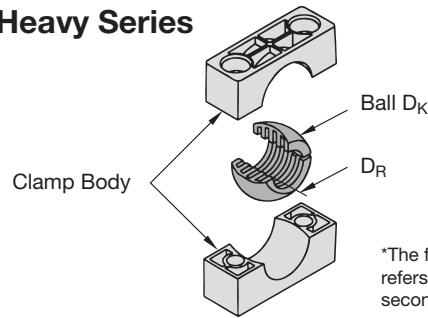
Material Code

Materials and designs of clamp bodies and ball-and-socket joints **XXX**

Polypropylen	profiled inside of the ball	with tension clearance	- PP
Polypropylen	smooth inside of the ball	without tension clearance	- PPH
Polyamid	profiled inside of the ball	with tension clearance	- PA
Polyamid	smooth inside of the ball	without tension clearance	- PAH
Santoprene	profiled inside of the ball	with tension clearance	- SA
Santoprene	smooth inside of the ball	without tension clearance	- SAH

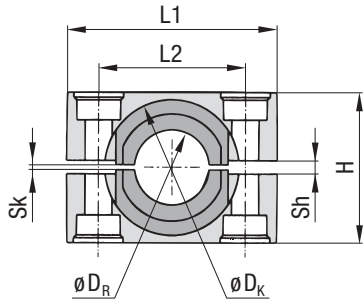
Other materials and O. D. on request.

Heavy Series



Material combinations (standard)
Clamp body: PA/PP
Ball: PA-PAH/PP-PPH/SA-SAH

*The first material specification refers to the clamp body, the second one to the ball.



STAUFF Group	Dimensions									
	DR	DK	L1	L2	profiled inside			smooth inside		B
					H	Sh	Sk	H	Sh	
4S WAG	6									
	6,4									
	8									
	9,5									
	10									
	12									
	14									
	16	38,4	70	45	48	min. 0,6	min. 0,8	48	min. 0,6	30
	18									
	19									
20										
21,3										
22										
25										
26,9										
5S WAG	26,9									
	28									
	30									
	32									
	33,7	56	85	60	60	min. 0,8	min. 0,8	60	min. 0,8	30
	35									
	38									
	40									
42										
6S WAG	38									
	42									
	44,5									
	48,3									
	50,8	84	115	90	89	min. 2	min. 2	89	min. 2	45
	55									
	57									
	60,3									
63,5										

Other dimensions on request.

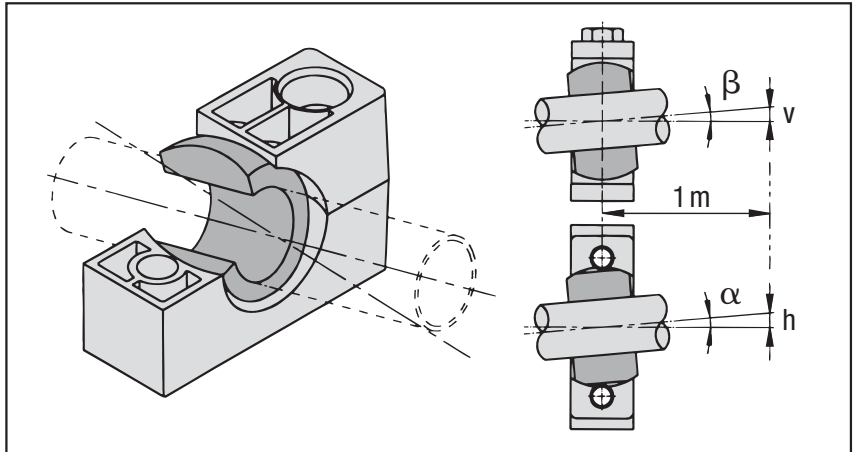
STAUFF Group	Pipe OD DR	Order Code			
		Ball	Clamp Body	*Clamp Body and Ball	
4S WAG	6	KUG 4006 xx	4S xx WAG	WAG 4006 xx/xx	
	6,4	KUG 4006,4 xx	4S xx WAG	WAG 4006,4 xx/xx	
	8	KUG 4008 xx	4S xx WAG	WAG 4008 xx/xx	
	9,5	KUG 4009,5 xx	4S xx WAG	WAG 4009,5 xx/xx	
	10	KUG 4010 xx	4S xx WAG	WAG 4010 xx/xx	
	12	KUG 4012 xx	4S xx WAG	WAG 4012 xx/xx	
	14	KUG 4014 xx	4S xx WAG	WAG 4014 xx/xx	
	16	KUG 4016 xx	4S xx WAG	WAG 4016 xx/xx	
	18	KUG 4018 xx	4S xx WAG	WAG 4018 xx/xx	
	19	KUG 4019 xx	4S xx WAG	WAG 4019 xx/xx	
	20	KUG 4020 xx	4S xx WAG	WAG 4020 xx/xx	
	21,3	KUG 4021,3 xx	4S xx WAG	WAG 4021,3 xx/xx	
	22	KUG 4022 xx	4S xx WAG	WAG 4022 xx/xx	
	25	KUG 4025 xx	4S xx WAG	WAG 4025 xx/xx	
	26,9	KUG 4026,9 xx	4S xx WAG	WAG 4026,9 xx/xx	
	5S WAG	26,9	KUG 5026,9 xx	5S xx WAG	WAG 5026,9 xx/xx
		28	KUG 5028 xx	5S xx WAG	WAG 5028 xx/xx
		30	KUG 5030 xx	5S xx WAG	WAG 5030 xx/xx
32		KUG 5032 xx	5S xx WAG	WAG 5032 xx/xx	
33,7		KUG 5033,7 xx	5S xx WAG	WAG 5033,7 xx/xx	
35		KUG 5035 xx	5S xx WAG	WAG 5035 xx/xx	
38		KUG 5038 xx	5S xx WAG	WAG 5038 xx/xx	
40		KUG 5040 xx	5S xx WAG	WAG 5040 xx/xx	
42	KUG 5042 xx	5S xx WAG	WAG 5042 xx/xx		
6S WAG	38	KUG 6038 xx	6S xx WAG	WAG 6038 xx/xx	
	42	KUG 6042 xx	6S xx WAG	WAG 6042 xx/xx	
	44,5	KUG 6044,5 xx	6S xx WAG	WAG 6044,5 xx/xx	
	48,3	KUG 6048,3 xx	6S xx WAG	WAG 6048,3 xx/xx	
	50,8	KUG 6050,8 xx	6S xx WAG	WAG 6050,8 xx/xx	
	55	KUG 6055 xx	6S xx WAG	WAG 6055 xx/xx	
	57	KUG 6057 xx	6S xx WAG	WAG 6057 xx/xx	
	60,3	KUG 6060,3 xx	6S xx WAG	WAG 6060,3 xx/xx	
63,5	KUG 6063,5 xx	6S xx WAG	WAG 6063,5 xx/xx		

Other dimensions on request.

Angle Geometry (There are maximum angles resulting from the WAG's angle geometry.)

The horizontal angle α describes the direction of the tube within the horizontal plain.

The vertical angle β describes the direction of the tube within the vertical plain.



The maximum deflection angle is limited by the pipe contacting the clamp on the one hand, and by the adjustment socket within the clamp body fouling on the bolts, on the other hand. As a result of these limiting factors of the adjustment angle, the vertical deflection

for a given horizontal deflection can be determined from diagrams 1, 2 and 3. The maximum horizontal and vertical angles for individual clamp groups and sizes are detailed in the following tables 1 – 3.

Table 1 WAG	Ø mm	Angle			Deflection		
		α max with $\beta = 0^\circ$ bolt thread metric	α max with $\beta = 0^\circ$ bolt thread UNC	β max with $\alpha = 0^\circ$	h max with $v = 0$ bolt thread metric	h max with $v = 0$ bolt thread UNC	v max with $h = 0$
4S-WAG	10,0	17,1°	19,1°	39,6°	309	346	827
	12,0	17,1°	19,1°	36,5°	309	346	739
	14,0	17,1°	19,1°	33,3°	309	346	657
	16,0	17,1°	19,1°	30,1°	309	346	579
	18,0	17,1°	19,1°	26,7°	309	346	504
	19,0	17,1°	19,1°	25,0°	309	346	467
	20,0	17,1°	19,1°	23,3°	309	346	431
	21,3	17,1°	19,1°	21,0°	309	346	384
	22,0	17,1°	19,1°	19,7°	309	346	359
	25,0	14,1°	14,1°	14,1°	250	250	250
26,9	10,2°	10,2°	10,2°	180	180	180	

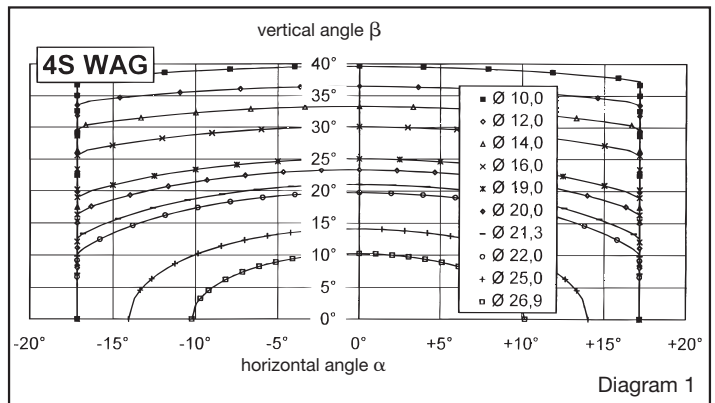


Table 2 WAG	Ø mm	Angle			Deflection		
		α max with $\beta = 0^\circ$ bolt thread metric	α max with $\beta = 0^\circ$ bolt thread UNC	β max with $\alpha = 0^\circ$	h max with $v = 0$ bolt thread metric	h max with $v = 0$ bolt thread UNC	v max with $h = 0$
5S-WAG	26,9	14,8°	16,5°	28,9°	265	296	552
	28,0	14,8°	16,5°	27,6°	265	296	523
	30,0	14,8°	16,5°	25,2°	265	296	471
	32,0	14,8°	16,5°	22,8°	265	296	419
	33,7	14,8°	16,5°	20,6°	265	296	376
	35,0	14,8°	16,5°	18,9°	265	296	343
	38,0	14,8°	14,9°	14,9°	265	267	267
	40,0	12,0°	12,0°	12,0°	213	213	213
	42,0	9,0°	9,0°	9,0°	159	159	159

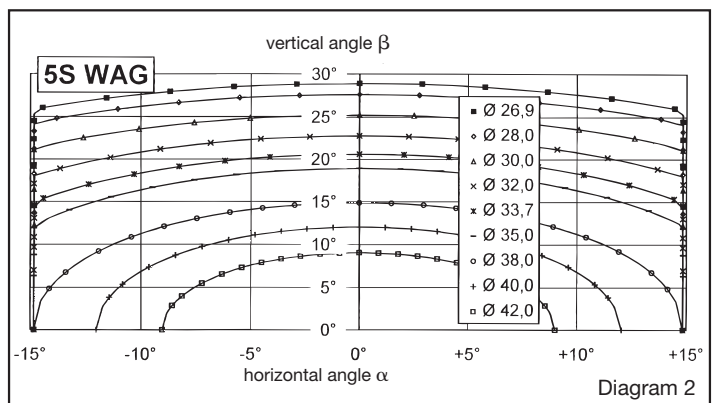
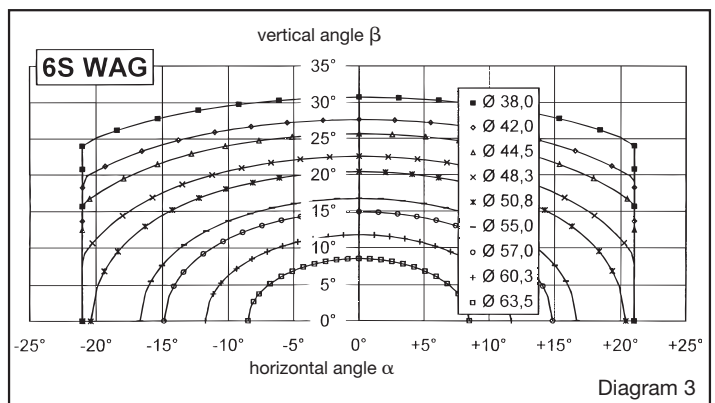
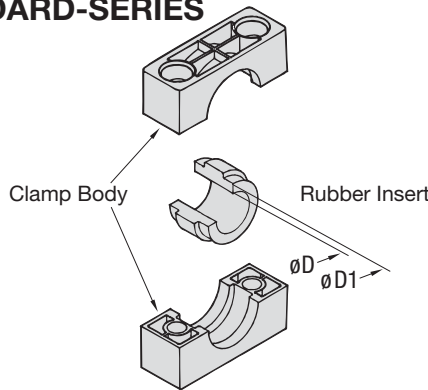


Table 3 WAG	Ø mm	Angle			Deflection		
		α max with $\beta = 0^\circ$ bolt thread metric	α max with $\beta = 0^\circ$ bolt thread UNC	β max with $\alpha = 0^\circ$	h max with $v = 0$ bolt thread metric	h max with $v = 0$ bolt thread UNC	v max with $h = 0$
6S-WAG	38,0	21,0°	22,5°	30,7°	385	415	594
	42,0	21,0°	22,5°	27,6°	385	415	523
	44,5	21,0°	22,5°	25,6°	385	415	480
	48,3	21,0°	22,5°	22,5°	385	414	414
	50,8	20,4°	20,4°	20,4°	372	372	372
	55,0	16,7°	16,7°	16,7°	300	300	300
	57,0	14,9°	14,9°	14,9°	266	266	266
	60,3	11,7°	11,7°	11,7°	206	208	208
	63,5	8,5°	8,5°	8,5°	149	149	149

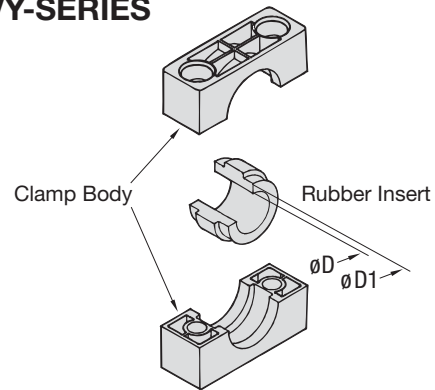


RI-Clamps (Clamps with Rubber Insert)

STANDARD-SERIES



HEAVY-SERIES



STAUFF Group	DIN Group	Pipe-O.D.		Order Code		
		ØD [mm]	ØD1 [mm]	Rubber Insert	Clamp Body	Rubber Insert + Clamp Body
4	4	6	25,5	RI 406	4 xxR	406 xxR
		8		RI 408	4 xxR	408 xxR
		10		RI 410	4 xxR	410 xxR
		12		RI 412	4 xxR	412 xxR
		12,7		RI 412,7	4 xxR	412,7 xxR
		14		RI 414	4 xxR	414 xxR
		15		RI 415	4 xxR	415 xxR
		16		RI 416	4 xxR	416 xxR
		17,2		RI 417,2	4 xxR	417,2 xxR
		18		RI 418	4 xxR	418 xxR
19	RI 419	4 xxR	419 xxR			
6	6	20	39	RI 620	6 xxR	620 xxR
		21,3		RI 621,3	6 xxR	621,3 xxR
		22		RI 622	6 xxR	622 xxR
		25		RI 625	6 xxR	625 xxR
		26,9		RI 626,9	6 xxR	626,9 xxR
		28		RI 628	6 xxR	628 xxR
		30		RI 630	6 xxR	630 xxR
		32		RI 632	6 xxR	632 xxR

Other O.D. on request.

STAUFF Group	DIN Group	Pipe-O.D.		Order Code		
		ØD [mm]	ØD1 [mm]	Rubber Insert	Clamp Body	Rubber Insert + Clamp Body
4S	2	06	25,5	RI 4006	4S xxR	4006 xxR
		08		RI 4008	4S xxR	4008 xxR
		10		RI 4010	4S xxR	4010 xxR
		12		RI 4012	4S xxR	4012 xxR
		12,7		RI 4012,7	4S xxR	4012,7 xxR
		14		RI 4014	4S xxR	4014 xxR
		15		RI 4015	4S xxR	4015 xxR
		16		RI 4016	4S xxR	4016 xxR
		17,2		RI 4017,2	4S xxR	4017,2 xxR
		18		RI 4018	4S xxR	4018 xxR
19	RI 4019	4S xxR	4019 xxR			
5S	3	20	39	RI 5020	5S xxR	5020 xxR
		21,3		RI 5021,3	5S xxR	5021,3 xxR
		22		RI 5022	5S xxR	5022 xxR
		25		RI 5025	5S xxR	5025 xxR
		26,9		RI 5026,9	5S xxR	5026,9 xxR
		28		RI 5028	5S xxR	5028 xxR
		30		RI 5030	5S xxR	5030 xxR
		32		RI 5032	5S xxR	5032 xxR

6S	4	32	65	RI 6032	6S xxR	6032 xxR
		33,7		RI 6033,7	6S xxR	6033,7 xxR
		35		RI 6035	6S xxR	6035 xxR
		38,7		RI 6038,7	6S xxR	6038,7 xxR
		40		RI 6040	6S xxR	6040 xxR
		42		RI 6042	6S xxR	6042 xxR
		45,5		RI 6045,5	6S xxR	6045,5 xxR
		48		RI 6048	6S xxR	6048 xxR
		51		RI 6051	6S xxR	6051 xxR
		53,4		RI 6053,4	6S xxR	6053,4 xxR
56,4	RI 6056,4	6S xxR	6056,4 xxR			
7S	5	55	89	RI 7055	7S xxR	7055 xxR
		57		RI 7057	7S xxR	7057 xxR
		60		RI 7060	7S xxR	7060 xxR
		65		RI 7065	7S xxR	7065 xxR
		70		RI 7070	7S xxR	7070 xxR
		72		RI 7072	7S xxR	7072 xxR
76	RI 7076	7S xxR	7076 xxR			
8S	6	80	116	RI 8080	8S xxR	8080 xxR
		88,9		RI 8088,9	8S xxR	8088,9 xxR

Other O.D. on request.

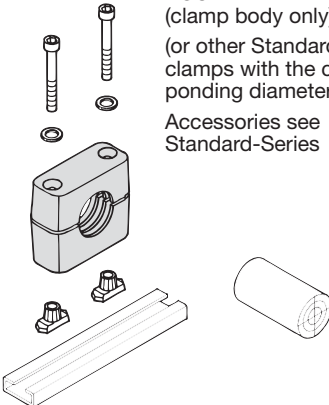
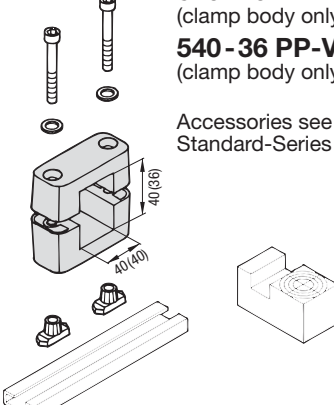
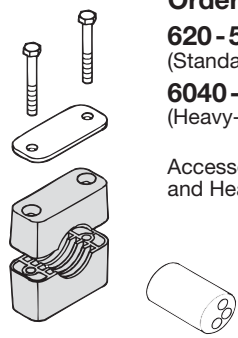
Clamp Body	Material XX
Polypropylene	PP
Polyamide	PA
Elastomer	Material
	Thermoplastic Elastomer (TPE) 70° Shore A

Clamp Body	Material XX
Polypropylene	PP
Polyamide	PA
Elastomer	Material
	Thermoplastic Elastomer (TPE) 70° Shore A

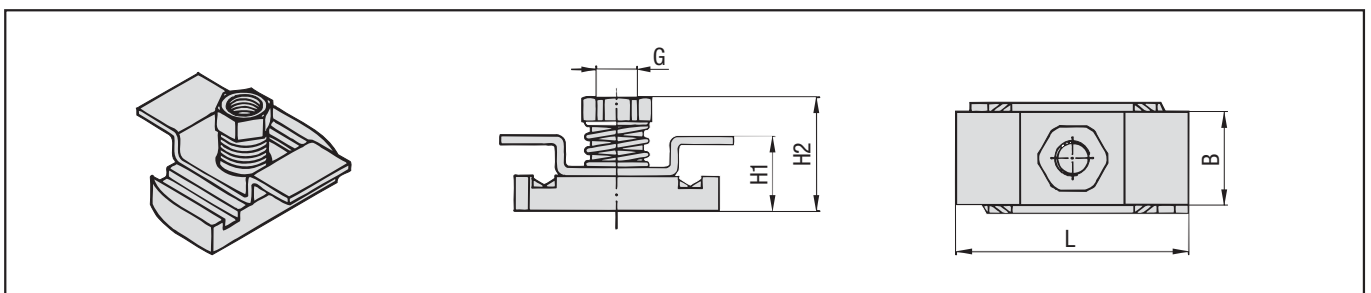
Attention!

For RI-clamps the relationship between the diameter and the group is not the same as in the Profile- or H-clamp.

Pipe Clamps For Industrial Electric Applications And Electric Cables

<p>Order Code 430 PP (clamp body only) (or other Standard-Series clamps with the corresponding diameter) Accessories see Standard-Series</p>  <p>For proximity switches acc. to EN 50008/50036/50040 or similar Proximity switch – round construction, 30 mm dia.-fastened with a Group 4 Standard-Series clamp mounted on mounting rail with hexagon rail nuts. Loosening of the bolts provides axial and horizontal position adjustment.</p>	<p>Order Code 540-40 PP-VK (clamp body only) 540-36 PP-VK (clamp body only) Accessories see Standard-Series</p>  <p>For proximity switches acc. to EN 50025/50037 Proximity switch – rectangular construction, 40 mm square-fastened with Group 5 Standard Duty clamp mounted on mounting rail with hexagon rail nuts. Loosening of the bolts provides axial and horizontal position adjustment.</p>	<p>Order Code 620-50 PP (Standard-Series) 6040-72 PP (Heavy-Series) Accessories see Standard- and Heavy-Series</p>  <p>For clamping of electric cables: STAUFF-Oval Clamps Group 6 Standard-Series for cable diameters between 20 and 50 mm. Group 6 S Heavy-Series for cable diameters between 40 and 72 mm. Bolt types: Standard-Series: Hexagon Head Bolt in conjunction with cover plate. Socket Cap Screw with washer Slotted Head Screw with washer. Heavy Series: Hexagon Head Bolt in conjunction with cover plate. For varying cable diameters only the bolt length needs to be varied.</p>
---	--	---

CRA C-RAIL-ADAPTOR



STAUFF Series	STAUFF Group	Thread G		Dimensions				Lengths of Bolts (for clamps with cover plates)	
		Metric	UNC	L	B	H1	H2	Metric	UNC
Standard	CRA 1-8	M6	1/4	40	16	13	20,5	see Standard-Series	see Standard-Series
Heavy	CRA 3S	M10	3/8	38	22	18,5	27,5	M10 x 40	3/8 x 1 1/2 UNC
	CRA 4S							M10 x 55	3/8 x 2 1/8 UNC
	CRA 5S							M10 x 65	3/8 x 2 5/8 UNC
	CRA 6S	M12	7/16	45	25	17	27,5	M12 x 100	7/16 x 4 UNC
Twin	CRA 1D	M6	1/4	40	16	13	20,5	M 6 x 35	1/4 x 1 UNC
	CRA 2D	M8	5/16	38	53	18,5	27,5	M 8 x 35	5/16 x 1 3/8 UNC
	CRA 3D							M 8 x 45	5/16 x 1 3/4 UNC
	CRA 4D							M 8 x 50	5/16 x 2 UNC
	CRA 5D							M 8 x 60	5/16 x 2 1/2 UNC

Material: Carbon Steel, zinc plated (Fe/Zn 8 B), Stainless Steel on request.

Information

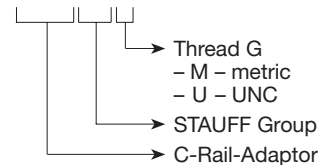
The C-RAIL-ADAPTOR Type CRA is suitable for the following C-rails:

UNISTRUT-Rails
P1000, P1000T, P1000V, P1000VT, P1001
P2000, P2000T
P3003, P3003T, P3300V, P3300VT, P3301
P4000, P4000T
P5000, P5000T, P5001, P5500, P5500T, P5501

HALFEN-Rails
HM 41/41
HZA 41/22
HZA 41/41
HZA 41/22
HL 41/41, HL 41/B2

Order Code

CRA xx x



Clamps

Clamps acc. to DIN



Quality and Service
worldwide

**Australia:**

Stauff Corporation (Pty.) Ltd.
P.O. Box 227
24-26 Doyle Avenue, Unanderra
Wollongong, N.S.W.
AUS-2526 Unanderra
Tel: +61 2 42 71 18 77
Fax: +61 2 42 71 84 32

Brazil:

Stauff Brasil Ltda.
Avenida Gupe 10.767
Galpão 2, Bloco A
WT - Empresarial Parque Castello Branco
BRA-Barueri - SP
CEP: 06422-120
Tel: +55 11 4789 9020
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China:

Stauff International Trading (Shanghai) Co., Ltd.
Shangdian Mansion, Pudong
331 Binzhou Road
CHN-200126 Shanghai
Tel: +86 21 58 45 65 60
Fax: +86 21 58 45 66 80

France:

Stauff s. a.
230, Avenue du Grain d'Or
Z.I. de Vineuil-Blois Sud
F-41354 Vineuil cedex
Tel: +33 2 54 50 55 50
Fax: +33 2 54 42 29 19

India:

Stauff India Pvt. Ltd.
Gat. No. 2340
Pune-Nagar Road, Wagholi
IND-Pune - 412207
Tel: +91 20 705 19 90
Fax: +91 20 705 19 89

Italy:

Stauff Italia s.r.l.
Via Pola 21/23
I-20034 Birone di Giussano
Tel: +39 0362 31 21 13
Fax: +39 0362 33 55 36

Japan:

Ohtsuka Tec. Co. Ltd.
1-7-19 Minami Shinagawa
Shinagawa-Ku
JPN-Tokyo 140
Tel: +81 3 34 72 12 01
Fax: +81 3 34 72 12 09

Canada:

Stauff Canada, Ltd.
866 Milner Avenue
CAN-Scarborough, Ontario M1B 5N7
Tel: +1 416 282 46 08
Fax: +1 416 282 30 39

USA:

Stauff Corporation
7 Wm. Demarest Place
USA-Waldwick, N. J. - 07463
Tel: +1 201 444 78 00
Fax: +1 201 444 78 52

United Kingdom:

Stauff UK
332, Coleford Road
Darnall
GBR-Sheffield, S 9 5 P H
Tel: +44 1142 518 518
Fax: +44 1142 518 519

Distributors and warehouses in all industrial countries.

Walter Stauffenberg GmbH & Co. KG

P. O. Box 17 45, D-58777 Werdohl
Im Ehrenfeld 4, D-58791 Werdohl

Telefon: +49 (0) 23 92 916-0

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In most industrial countries STAUFF Clamps symbolize quick and easy pipe and hose installations as well as a clean distinct pipe layout.

The vibration and noise reducing features are appreciated as being an important contribution to environmental protection.

Apart from the technical sophistication of STAUFF Clamps, the second-to-none delivery, prompt service even for special constructions, STAUFF Clamps are also the most economical ones to install.

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- Mobile Hydraulics
- Marine Hydraulics
- Offshore
- General Industrial Pipe Construction
- Mining Industry
- Nuclear Reactor Construction
- Instrumentation and Control Technology
- Pneumatics

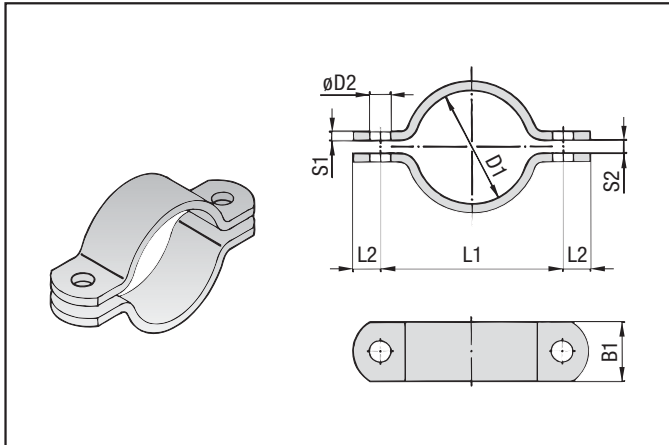
Approved by:

- Bureau Veritas
- Department of the Navy, New York
- Germanischer Lloyd
- Lloyd's Register of Shipping
- Registro Italiano Navale
- TÜV
- United States Coast Guard



Metal Pipe Clamps

acc. to **DIN 3567 Type A**



STAUFF Group D1	Nominal Size		L1	L2	S1	S2	D2	B1	Accessories Hexagon Head Bolts Hexagon Nuts						
	mm	Pipe													
20	15		57	15	5	7	11,5	30	M10 x 30 M10						
22			59												
25	20	3/4	66												
27			68												
30	25	1	72												
34			76												
38	32	1 1/4	82												
43			84												
45	40	1 1/2	88												
49			104												
57	50	2	108	18	6	9	14	40	M12 x 35 M12						
61			122												
77	65	2 1/2	136												
89	80	3	172							24	8	11	18	50	M16 x 45 M16
108	100	4	178												
115			196												
133	125		204												
140			222												
159	150		232												
169			258												
194	175		280												
216			284												
220	200		342	30	8	14	23	60	M20 x 50 M20						
267	250		348												
273			392												
318	300		398												
324			444												
368	350		498												
407			510												
419	400		614												
521			500												

Order Code

DIN 3567 A - ***

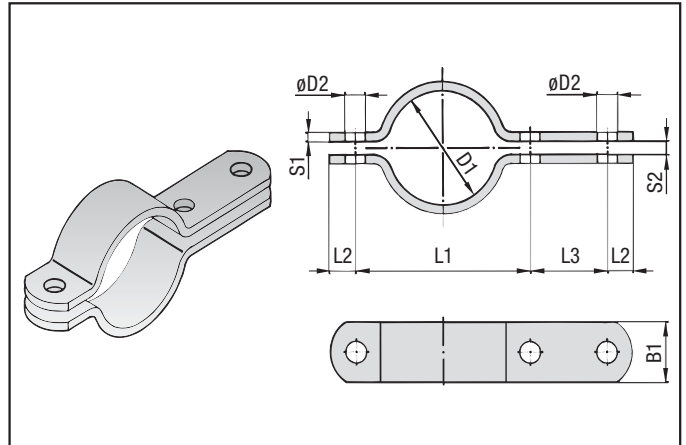
→ STAUFF Group D1

Material:

St37, no surface finishing

Other materials, O.D. and surface finishings on request.
Bolts and nuts do not belong to the delivery standard.

acc. to **DIN 3567 Type B**



STAUFF Group D1	Nominal Size		L1	L2	L3	S1	S2	D2	B1	Accessories Hexagon Head Bolts Hexagon Nuts							
	mm	Pipe															
20	15		57	15	46	5	7	11,5	30	M10 x 30 M10							
22			59														
25	20	3/4	66														
27			68														
30	25	1	72														
34			76														
38	32	1 1/4	82														
43			84														
45	40	1 1/2	88														
49			104														
57	50	2	108	18	54	6	9	14	40	M12 x 35 M12							
61			122														
77	65	2 1/2	136														
89	80	3	172								24	70	8	11	18	50	M16 x 45 M16
108	100	4	178														
115			196														
133	125		204														
140			222														
159	150		232														
169			258														
194	175		280														
216			284														
220	200		342	30	86	8	14	23	60	M20 x 50 M20							
267	250		348														
273			392														
318	300		398														
324			444														
368	350		498														
407			510														
419	400		614														
521			500														

Order Code

DIN 3567 B - ***

→ STAUFF Group D1

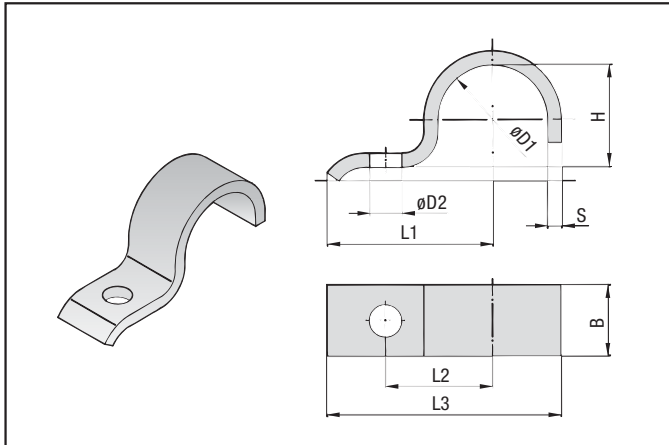
Material:

St37, no surface finishing

Other materials, O.D. and surface finishings on request.
Bolts and nuts do not belong to the delivery standard.

Heavy Saddles

acc. to **DIN 1592**



STAUFF Group ØD1	Diameter range	L1	L2	L3	H	D2	B	S
7	5,5 – 7	22	14	27,5	5	6,6	16	2
9	7 – 9	27	18	33,5	6		20	
13	9,5 – 13	40	25	49,5	9	11	25	3
15,5	13 – 15,5	41	26	52	12			
19	15,5 – 19	43	28	55,5	15	14	30	5
23	20 – 23	51	35	67	19			
26	23 – 26	52	36	70	22			
28,5	26 – 28,5	53	37	73	24			
31	28,5 – 31	55	39	75,5	27	18	40	5
36	33 – 36	57	41	81	32			
39	36 – 39	59	43	83,5	34	18	40	5
43	39 – 43	68	48	94,5	38			
46	43 – 46	70	50	98	41	18	40	8
49	46 – 49	73	53	105,5	44			
52*	49 – 52	76	56	110	47	18	40	8
58	53 – 58	78	58	115	52			
61	58 – 61	80	60	118,5	57			

* similar to DIN 1592

Order Code

DIN 1592-***

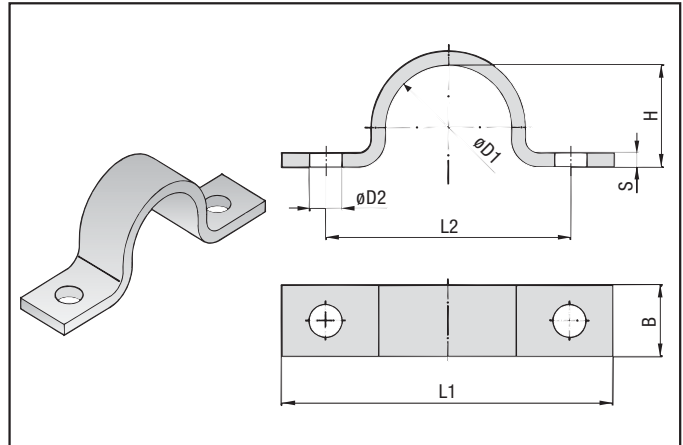
→ STAUFF Group ØD1

Material and surface finishing

STAUFF Group 7 – 49 St37 Fe/Zn 8 C
 STAUFF Group 52 – 61 St37 no surface finishing
 (Surface finishing on request only)

Other materials and diameters on request.

acc. to **DIN 1593**



STAUFF Group ØD1	Diameter range	L1	L2	H	D2	B	S
7	5,5 – 7	44	28	5	6,6	16	2
9	7 – 9	48	32	6	6,6	20	2
13	9,5 – 13	52	36	9			
15,5	13 – 15,5	56	40	12	11	25	3
19	15,5 – 19	60	44	15			
23	20 – 23	82	56	19	11	25	3
26	23 – 26	84	58	22			
28,5	26 – 28,5	90	64	24	11	30	5
31	28,5 – 31			27			
36	33 – 36	106	80	32	11	30	5
39	36 – 39	110	84	34			
43	39 – 43	120	88	38	14	40	5
46	43 – 46	122	90	41			
49	46 – 49			44	14	40	5
58	53 – 58	142	110	52			
61	58 – 61			57	14	40	5
71	67 – 71	152	120	66			
77	73 – 77	176	136	72	18	40	8
81	77 – 81	184	144	76			
91	86 – 91	198	158	85	18	40	8
103	99 – 103	214	174	98			
109	105 – 109	220	180	104	18	40	8
115	110 – 115	226	186	109			

Order Code

DIN 1593-***

→ STAUFF Group ØD1

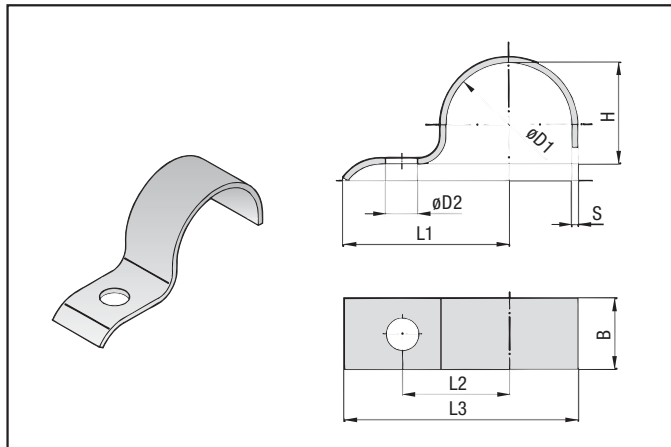
Material and surface finishing

STAUFF Group 7 – 77 St37 Fe/Zn 8 C
 STAUFF Group 81 – 115 St37 no surface finishing
 (Surface finishing on request only)

Other materials and diameters on request.

Light Saddles

acc. to **DIN 1596**



STAUFF Group ØD1	Diameter range	L1	L2	L3	H	D2	B	S
7	5,5 – 7	26	14	31,5	5	6,6	16	2
9	7 – 9	28	16	34,5	6			
13	9,5 – 13	30	18	38,5	9			
15,5	13 – 15,5	32	20	41,75	12			
19	15,5 – 19	34	22	45,5	15			
23	20 – 23	43	28	57,5	19	9	25	3
26	23 – 26	44	29	60	22			
28,5	26 – 28,5	47	32	64,25	24			
31	28,5 – 31			65,5	27			
33*	31 – 33	56	36	75,5	29			
36	33 – 36	57	40	78	32	11	30	3
39	36 – 39	59	42	81,5	34			
43	39 – 43	61	44	85,5	38			
46	43 – 46	62	45	88	41			
49	46 – 49	67	48	95,5	44			
52*	49 – 52	72	53	102	47	14	40	4
58	53 – 58	74	55	107	52			
61	58 – 61	77	58	111,5	56			

* similar to DIN 1596

Order Code

DIN 1596 - ***

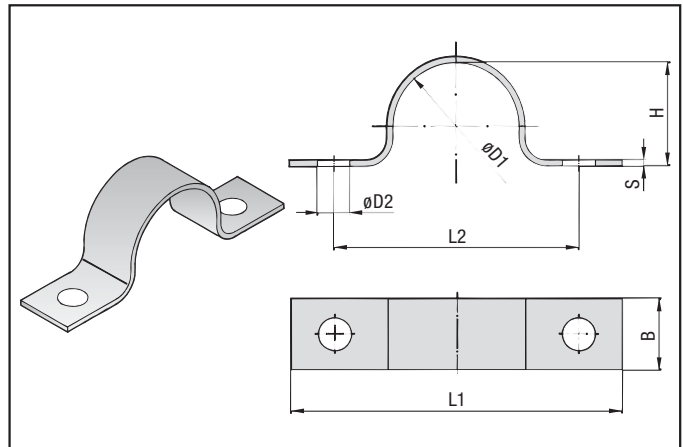


Material and surface finishing

St 37, Fe/Zn 8 C

Other materials and diameters on request.

acc. to **DIN 1597**



STAUFF Group ØD1	Diameter range	L1	L2	H	D2	B	S
7	5,5 – 7	44	28	5	5,5	16	1,5
9	7 – 9	48	32	6			
13	9,5 – 13	52	36	9			
15,5	13 – 15,5	56	40	12			
19	15,5 – 19	60	44	15			
23	20 – 23	76	56	19	6,6	20	2
26	23 – 26	78	58	22			
28,5	26 – 28,5	84	64	24			
31	28,5 – 31			27			
33*	31 – 33	92	72	29			
36	33 – 36	104	80	32	9	25	3
39	36 – 39	108	84	34			
43	39 – 43	112	88	38			
46	43 – 46	114	90	41			
49	46 – 49	118	90	44			
52*	49 – 52	134	106	47	11	30	3
58	53 – 58	138	110	52			
61	58 – 61			56			

* similar to DIN 1597

Order Code

DIN 1597 - ***



Material and surface finishing

St 37, Fe/Zn 8 C

Other materials and diameters on request.

Clamps

Technical Appendix



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**Australia:**

Stauff Corporation (Pty.) Ltd.
P.O. Box 227
24-26 Doyle Avenue, Unanderra
Wollongong, N.S.W.
AUS-2526 Unanderra
Tel: +61 2 42 71 18 77
Fax: +61 2 42 71 84 32

Brazil:

Stauff Brasil Ltda.
Avenida Gupe 10.767
Galpão 2, Bloco A
WT - Empresarial Parque Castello Branco
BRA-Barueri - SP
CEP: 06422-120
Tel: +55 11 4789 9020
Fax: +55 11 4789 9021

China:

Stauff International Trading (Shanghai) Co., Ltd.
Shangdian Mansion, Pudong
331 Binzhou Road
CHN-200126 Shanghai
Tel: +86 21 58 45 65 60
Fax: +86 21 58 45 66 80

France:

Stauff s. a.
230, Avenue du Grain d'Or
Z.I. de Vineuil-Blois Sud
F-41354 Vineuil cedex
Tel: +33 2 54 50 55 50
Fax: +33 2 54 42 29 19

India:

Stauff India Pvt. Ltd.
Gat. No. 2340
Pune-Nagar Road, Wagholi
IND-Pune - 412207
Tel: +91 20 705 19 90
Fax: +91 20 705 19 89

Italy:

Stauff Italia s.r.l.
Via Pola 21/23
I-20034 Birone di Giussano
Tel: +39 0362 31 21 13
Fax: +39 0362 33 55 36

Japan:

Ohtsuka Tec. Co. Ltd.
1-7-19 Minami Shinagawa
Shinagawa-Ku
JPN-Tokyo 140
Tel: +81 3 34 72 12 01
Fax: +81 3 34 72 12 09

Canada:

Stauff Canada, Ltd.
866 Milner Avenue
CAN-Scarborough, Ontario M1B 5N7
Tel: +1 416 282 46 08
Fax: +1 416 282 30 39

USA:

Stauff Corporation
7 Wm. Demarest Place
USA-Waldwick, N. J. - 07463
Tel: +1 201 444 78 00
Fax: +1 201 444 78 52

United Kingdom:

Stauff UK
332, Coleford Road
Darnall
GBR-Sheffield, S 9 5 P H
Tel: +44 1142 518 518
Fax: +44 1142 518 519

Distributors and warehouses in all industrial countries.

Walter Stauffenberg GmbH & Co. KG

P. O. Box 17 45, D-58777 Werdohl
Im Ehrenfeld 4, D-58791 Werdohl

Telefon: +49 (0) 23 92 916-0

Fax: +49 (0) 23 92 25 05

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- Mobile Hydraulics
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- General Industrial Pipe Construction
- Mining Industry
- Nuclear Reactor Construction
- Instrumentation and Control Technology
- Pneumatics

Approved by:

- Bureau Veritas
- Department of the Navy, New York
- Germanischer Lloyd
- Lloyd's Register of Shipping
- Registro Italiano Navale
- TÜV
- United States Coast Guard



Materials, Material Properties, Technical Data

Clamp Body Materials				
Clamp Body Material Properties	Copolymeric Polypropylene PP Colour: green	Polyamide PA Colour: black	Aluminum AISi 12	Santoprene SA Colour: black
Mechanical Properties				
Flexural Deflection	DIN 53 452* 36 N/mm ²	130 . . . 200 N/mm ²		
Impact Resistance	DIN 53 453* no failure	60 KJ/m ²		
Compressive Strength	DIN 53 454* 90 N/mm ²	120 N/mm ²	60 – 80 HB 5/250	Hardness: 73 – 87° Shore A
Modulus of Elasticity	DIN 53 452* 1150 N/mm ²	3000 N/mm ²	70.000 N/mm ²	3,5 – 6,9 N/mm ²
Tensile Stress	DIN 53 455* 28 N/mm ²	140 N/mm ²	220 – 300 N/mm ²	8,5 – 15,5 N/mm ²
Thermal Properties				
Max. Temperature Resistance	– 30 . . . + 90° C	– 40 . . . + 120° C	up to 300° C	– 40 . . . + 120° C
Chemical Properties				
Weak acids, solvents	cond. consistent	cond. consistent	cond. consistent	consistent
Benzine, mineral oils	cond. consistent	consistent	consistent	cond. consistent
Alcohol, other oils, seawater	consistent	consistent	consistent	consistent
* DIN specifications refer to plastics only				
Other thermoplastics and materials for clamp bodies on request.				

Metal Parts
<p>– All metal parts made of steel St 37, no surface finishing, unless otherwise stated (see order code – components)</p> <p>– Surface finishing In addition to the standard surface finishings stated alternative finishings are available on request (e.g. Fe/Zn 12 C)</p> <p>– Stainless Steel Metal Parts All metal parts are also available ex stock in two different stainless steel qualities: – Noncorrodible Stainless Steel A2 - 1.4301/1.4305 (AISI 304) – Noncorrodible and acid-proof Stainless Steel A4 - 1.4401/1.4571 (AISI 316/316Ti)</p> <p>– Threads All threaded parts are available with UNC-threads on request. (see thread-chart page 50)</p>

The outlined particulars are approximate values and are only valid as references, which are not binding, also with regard to possible protection of third parties, and they do not exempt you from your own examination of suitability of the products delivered by us.

Therefore, these values can only be used in a limited sense for construction purposes.

The application of the products is carried out outside our control possibilities and, therefore, is exclusively subject to your own area of responsibility.

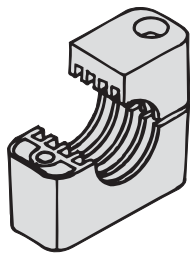
If, however, liability should be possible, it would be limited for all damages to the value of the goods supplied by us and in use by you.

It goes without saying, that we guarantee the perfect quality of our products according to our general sales and delivery conditions.

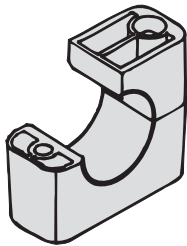
**Because of technical advances, dimensions subject to change without notification.
This catalog supersedes all previous catalogues.**

Design of Clamp Bodies

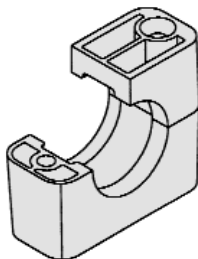
STANDARD-SERIES



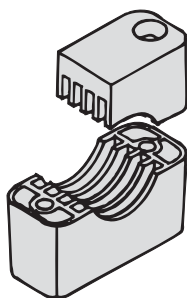
Standard design – profiled inside –



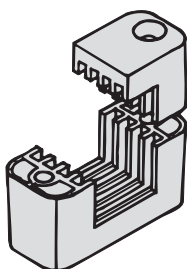
H-design – smooth inside –
(recommended for hoses)



RI-design
for rubber inserts

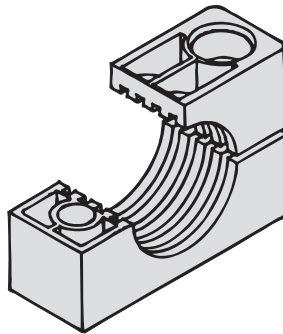


Oval-design

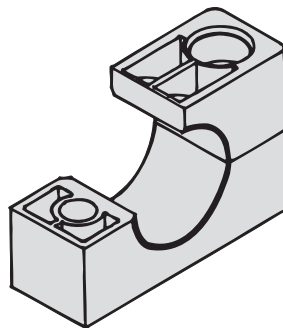


Rectangular-design

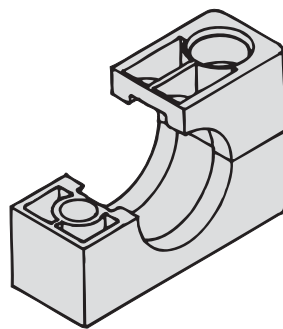
HEAVY-SERIES



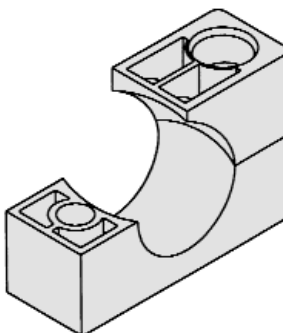
Standard design – profiled inside –



H-design – smooth inside –
(recommended for hoses)

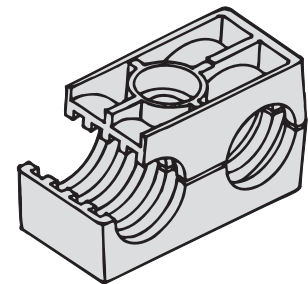


RI-design
for rubber inserts

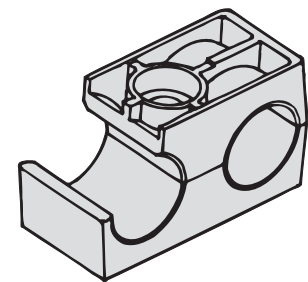


WAG-design
for ball inserts

TWIN-SERIES



Standard design – profiled inside –



H-design – smooth inside –
(recommended for hoses)

Installation Information

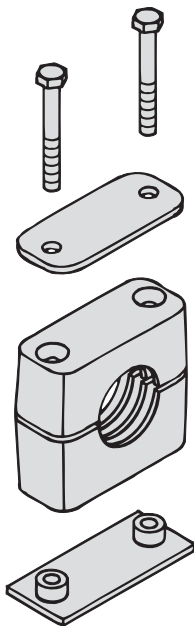
Installation on Weld Plates

STAUFF weld plates are available for the following Series:

- Standard-Series
- Heavy-Series
- Twin-Series
- Special Clamps

For best alignment of STAUFF clamps it is recommended to mark their location first. Weld plates, push on bottom half of clamp, install pipe, mount top half of clamp and cover plate and bolt unit together.

In order to avoid damage to the clamp bodies it is recommended to mount the plastic clamp bodies after having welded the weld plates.



Installation on Mounting Rails

STAUFF mounting rails can be used with the following Series:

- Standard-Series
- Heavy-Series (Group 3S-6S)
- Twin-Series
- Special Clamps

STAUFF mounting rails are available in four different height sizes.

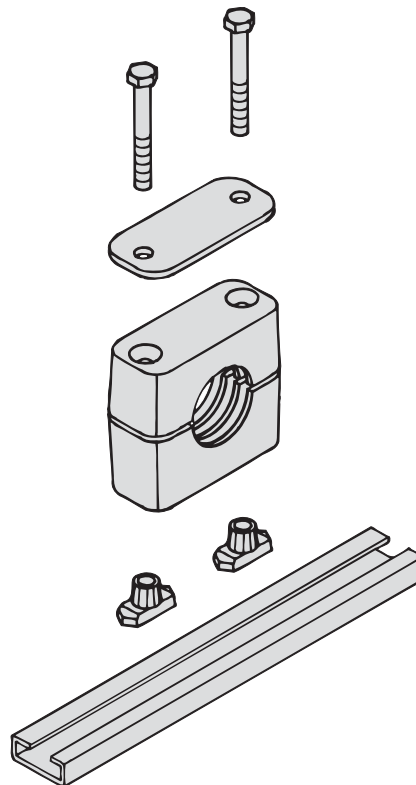
The rails are either welded or bolted to the supporting construction.

For Standard- and Twin-Series insert hexagon rail nut and turn to lock.

For Heavy-Series slide in rail nut.

Push on bottom half of clamp, install pipe, mount top half of clamp and cover plate and bolt unit together.

Clamp units can be adjusted before being firmly bolted.



Multi-Level Assembly

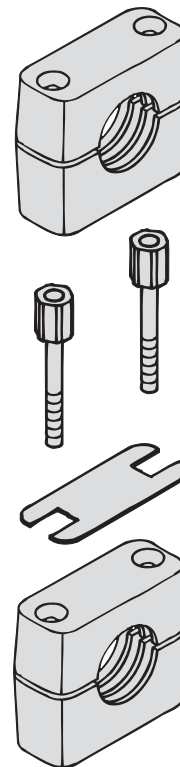
STAUFF multi-level pipe clamps permit easy stacking of several tubes or pipes of the same group.

(Twin-Clamps group 2 - 5 allow stacking of different group sizes.)

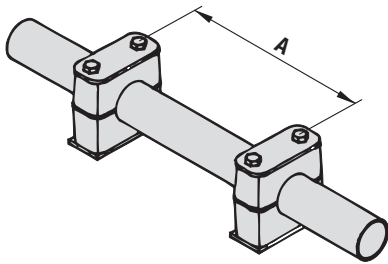
The clamps are connected by stacking bolts (AF).

Safety plates (SIG/SIP/S) inserted between the clamps prevent stacking bolts from turning.

STAUFF stacking assembly can be fitted to weld plates or to rails.



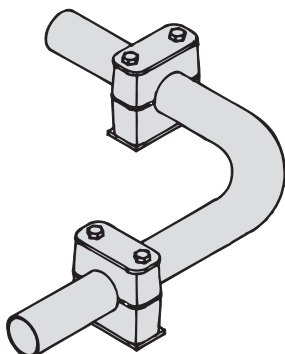
Spacings for Clamps



The recommended spacings for clamps stated below are standard values and are valid for static loads.

Pipe-O.D. [mm]	Spacing A [m]
6,0 – 12,7	1,0
12,7 – 22,0	1,2
22,0 – 32,0	1,5
32,0 – 38,0	2,0
38,0 – 57,0	2,7
57,0 – 75,0	3,0
75,0 – 76,1	3,5
76,1 – 88,9	3,7
88,9 – 102,0	4,0
102,0 – 114,0	4,5
114,0 – 168,0	5,0
168,0 – 219,0	6,0
219,0 – 324,0	6,7
324,0 – 356,0	7,0
356,0 – 406,0	7,5
406,0 – 419,0	8,2
419,0 – 508,0	8,5
508,0 – 521,0	9,0
521,0 – 558,0	10,0
558,0 – 800,0	12,5

Pipe Bend Installation



Pipe bends should be supported by STAUFF clamps as near to the bends as possible. Furthermore, it is recommended to design these clamps as fixed point clamps.

Thread Chart

Metric Thread / UNC Threads

STANDARD-SERIES

STAUFF Group	Metric Thread	UNC Thread
1	M 6	1/4 – 20 UNC
1A		
2		
3		
4		
5		
6		
7		
8		

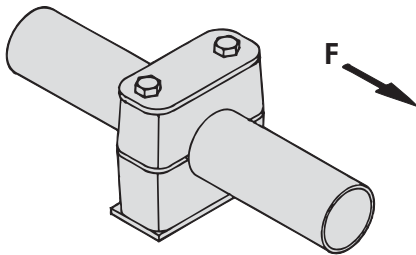
HEAVY-SERIES

STAUFF Group	Metric Thread	UNC Thread
3S	M 10	3/8 – 16 UNC
4S		
5S		
6S	M 12	7/16 – 14 UNC
7S	M 16	5/8 – 11 UNC
8S	M 20	3/4 – 10 UNC
9S	M 24	7/8 – 9 UNC
10S	M 30	1 1/8 – 7 UNC
11S	M 30	1 1/4 – 7 UNC
12S		

TWIN-SERIES

STAUFF Group	Metric Thread	UNC Thread
1D	M 6	1/4 – 20 UNC
2D	M 8	5/16 – 18 UNC
3D		
4D		
5D		

Tightening Torques And Maximum Loads In Pipe Direction



All tightening torques and maximum loads in pipe direction refer to clamps with cover plates and hexagon head bolts acc. to DIN 931/933.

The max. load in pipe direction (acc. to DIN 3015, part 10) is an average value, determined by three tests at 23° C with a steel pipe acc. to DIN 2448, St37 – rolled surface – taking static friction into consideration.

Sliding starts when the shown values (**F**) are reached.

STANDARD-SERIES (acc. to DIN 3015, part 1)

STAUFF Group	Hexagon Head Bolt DIN 931/933	Polypropylene		Polyamide		Aluminum	
		Tightening torque [Nm]	Max. load in pipe direction F [kN]	Tightening torque [Nm]	Max. load in pipe direction F [kN]	Tightening torque [Nm]	Max. load in pipe direction F [kN]
1	M 6	8	0,6	10	0,6	12	3,5
1A		8	1,1	10	0,7	12	4,2
2		8	1,3	10	0,8	12	4,3
3		8	1,4	10	1,6	12	4,9
4		8	1,5	10	1,7	12	5,0
5		8	1,9	10	2,0	12	7,3
6		8	2,0	10	2,5	12	8,9

HEAVY-SERIES (acc. to DIN 3015, part 2)

STAUFF Group	Hexagon Head Bolt DIN 931/933	Polypropylene		Polyamide		Aluminum	
		Tightening torque [Nm]	Max. load in pipe direction F [kN]	Tightening torque [Nm]	Max. load in pipe direction F [kN]	Tightening torque [Nm]	Max. load in pipe direction F [kN]
3S	M 10	12	1,6	20	4,2	30	12,1
4S		12	2,9	20	4,5	30	15,1
5S		15	3,3	25	5,1	35	15,5
6S	M 12	30	8,2	40	9,3	55	29,4
7S	M 16	45	11,0	55	25,8	120	34,9
8S	M 20	80	14,0	150	21,0	220	70,6
9S	M 24	110	28,0	200	32,0	250	50,0
10S	M 30	180	40,0	350	48,0	500	84,5
11S		200	119,0	370	125,0	500	181,5
12S		270	168,0	450	180,0	600	244,5

TWIN-SERIES (acc. to DIN 3015, part 3)

STAUFF Group	Hexagon Head Bolt DIN 931/933	Polypropylene		Polyamide	
		Tightening torque [Nm]	Max. load in pipe direction F [kN]	Tightening torque [Nm]	Max. load in pipe direction F [kN]
1D	M 6	5	0,9	5	0,9
2D	M 8	12	2,1	12	2,2
3D		12	1,9	12	2,0
4D		12	2,7	12	2,9
5D		8	1,7	8	2,5

Product range



STAUFF CLAMPS:

Clamping systems for tubes, hoses, pipes, cables and components

Original STAUFF Clamps:

The tube fastening system in accordance with DIN 3015
Dimensional range from 6 to 800 mm
Different materials available

U-Bolt and DIN clamps

Angle Adjustment Clamps

Special clamps and supports:

Custom built solutions



STAUFF TEST:

Pressure test systems
Venting and sampling of liquid and gas pressure systems

nominal working pressure: 630 bar maximum
100% closeness control
components tested in accordance with DIN 40.080

Test couplings and accessories:

Adaption threads M16x2 - M16 x 1,5 -
S12,65x1,5- Plug-in system

Test hoses:

DN 2 and DN 4; hose length and fittings on request

MINITESTER PPC-04:

Digital measuring device
for:

- Working pressure
- Differential pressure
- Temperature
- Flow
- RPH

Data output via
PC or printer



STAUFF FILTERS:

Hydraulic filtration systems

High pressure filters for in-line mounting:

maximum working pressure: 630 bar

Return line tank top filters:

maximum working pressure: 16 bar

Replacement filter elements:

Compatible quality and dimensional interchange to suit most filter makes
produced in own facilities

Filter materials: Glass fibre, Metal fibre, Polyester fibre, Wire mesh, Paper



STAUFF HYDRAULIC ACCESSORIES:

Components for the construction of tanks
and power units and mobile hydraulics

- Level gauges
- Filler breathers
- Check valves
- Diffusers
- Spin-On - Filters
- Return line bushes
- Gauge isolator valves
- Level temperature switches
- Throttle and shut-off valves
- Desiccant air breathers
- Suction strainers
- Stainless steel pressure gauges
- Flow indicators
- Air filters

Test 20

Typ SMK (M 16 x 2)



Quality and Service
worldwide

Australia:

Stauff Corporation (Pty.) Ltd.
P.O. Box 227
24-26 Doyle Avenue, Unanderra
Wollongong, N.S.W.
AUS-2526 Unanderra
Tel.: + 61 2 42 71 18 77
Fax: + 61 2 42 71 84 32

Brazil:

Stauff Brasil Ltda.
Avenida Gupe 10.767
Galpão 2, Bloco A
WT - Empresarial Parque Castelo Branco
BRA-Barueri - SP
CEP: 06422-120
Tel: +55 11 47899020
Fax: +55 11 47899021

China:

Stauff International Trading (Shanghai) Co., Ltd.
Shangdian Mansion, Pudong
331, Binzhou Road
CHN-200126 Shanghai
Tel.: + 86 21 58 45 65 60
Fax: + 86 21 58 45 66 80

France:

Stauff s.a.
230, Avenue du Grain d'Or
Z.I. de Vineuil-Blois Sud
F-41354 Vineuil-cedex
Tel.: + 33 2 54 50 55 50
Fax: + 33 2 54 42 29 19

India:

Stauff India Pvt. Ltd.
Gat. No. 2340
Pune-Nagar Road, Wagholi
IND-Pune - 412207
Tel.: + 91 20 705 19 90
Fax: + 91 20 705 19 89

Italy:

Stauff Italia s.r.l.
Via Pola 21/23
I-20034 Birone di Giussano
Tel.: + 39 0362 31 21 13
Fax: + 39 0362 33 55 36

Japan:

Ohtsuka Tec. Co. Ltd.
1-7-19 Minami Shinagawa
Shinagawa-Ku
JPN-Tokyo 140
Tel.: + 81 3 34 72 12 01
Fax: + 81 3 34 72 12 09

Canada:

Stauff Canada Ltd.
866 Milner Avenue
CAN-Scarborough, Ontario M1B 5N7
Tel.: + 1 416 282 46 08
Fax: + 1 416 282 30 39

USA:

Stauff Corporation
7 Wm. Demarest Place
USA-Waldwick, N.J. - 07463
Tel.: + 1 201 444 78 00
Fax: + 1 201 444 78 52

United Kingdom:

Stauff UK
332, Coleford Road
Darnall
GBR-Sheffield, S 9 5 P H
Tel.: + 44 1142 518 518
Fax: + 44 1142 518 519

Distributors and warehouses in all industrial countries.

Walter Stauffenberg GmbH & Co. KG

P.O. Box 17 45 · D-58777 Werdohl
Im Ehrenfeld 4 · D-58791 Werdohl
Tel.: + 49 (0) 2392 916-0
Fax: + 49 (0) 2392 2505
e-mail: sales@stauff.com
Internet: http://www.stauff.com

40 Years of Experience**Worldwide Distribution****Prompt Delivery**

In most industrial countries STAUFF Clamps symbolize quick and easy pipe and hose installation as well as a clean distinct pipe lay-out.

The vibration and noise reducing features are appreciated as being an important contribution to environmental protection.

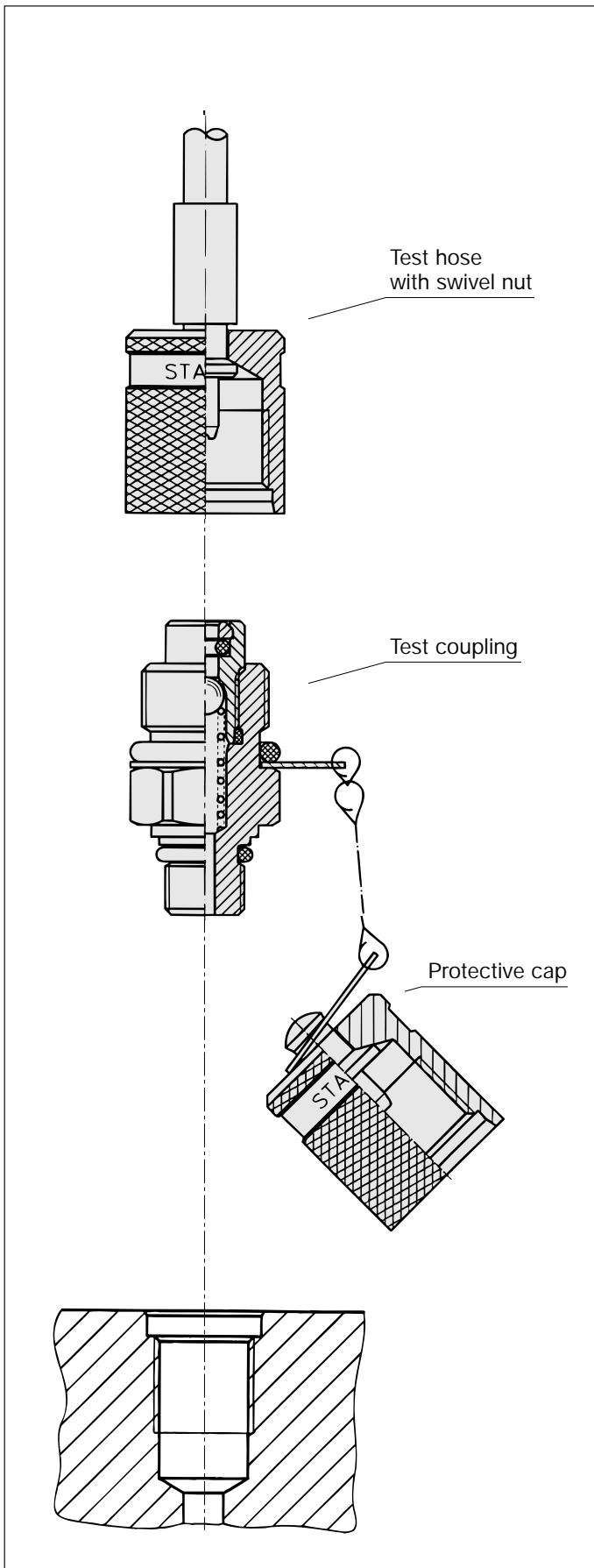
Apart from the technical sophistication of STAUFF Clamps, the second-to-none delivery, prompt service even for special constructions, STAUFF Clamps are also the most economical to install.

STAUFF Clamp applications are almost unlimited. Due to the extraordinary wide programme range, all areas of pipe, tube and hose installation are covered:

- Industrial Hydraulics
- Mobile Hydraulics
- Marine Hydraulics
- General Industrial Pipe Construction
- Mining Industry
- Nuclear Reactor Construction
- Instrumentation and Control Technology
- Pneumatics

Approved by:

- Bureau Veritas
- Department of the Navy, New York
- Germanischer Lloyd
- Lloyd's Register of Shipping
- Registro Italiano Navale
- TÜV
- United States Coast Guard



Fast coupling for:

- Monitoring and control of pressure
- Venting
- Sampling in high, low and vacuum systems

Advantages:

- Coupling at system pressure level
- Leakproof connection before **ball valve** is open
- Simple connection to measuring, control and switching devices
- Self locking metal guard cap

Working pressure:

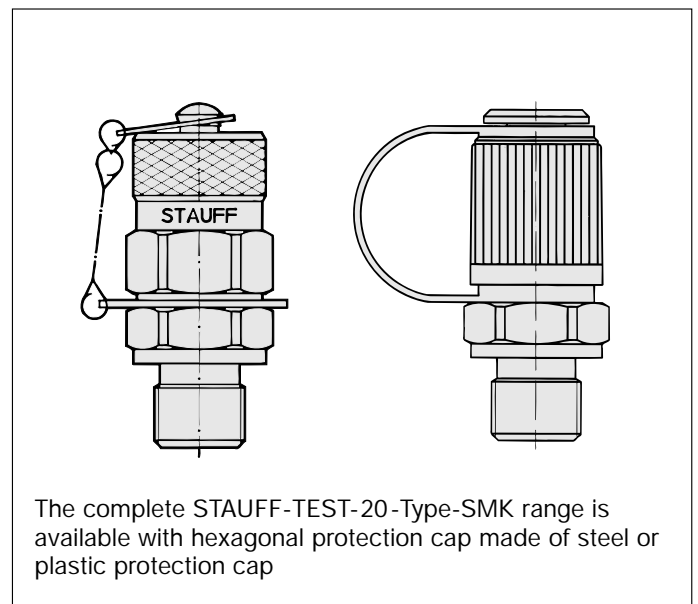
- Max. working pressure 630 bar
For SMK style G, K and S the recommended working pressure of fitting manufacturer has to be applied
- Joining under pressure up to 400 bar max.

Materials:

- Metal parts: Steel, Stainless Steel on request
- Ball: Stainless Steel
- Seals:
P = NBR (Temperature range - 20° C to + 90° C)
V = FPM (Temperature range - 20° C to + 200° C)
E = EPDM Ethylene Propylene (for Break Fluid)
Temperature range - 40° C to + 150° C
- Hose: Polyamide (Temperature range -35° C... 100° C max.)

Media:

- Suitable for hydraulic oils and other mineral oil based fluids (Please pay attention to the sealing materials used!)
- For use in conjunction with other liquid media please consult STAUFF



Test coupling with protective cap SMK

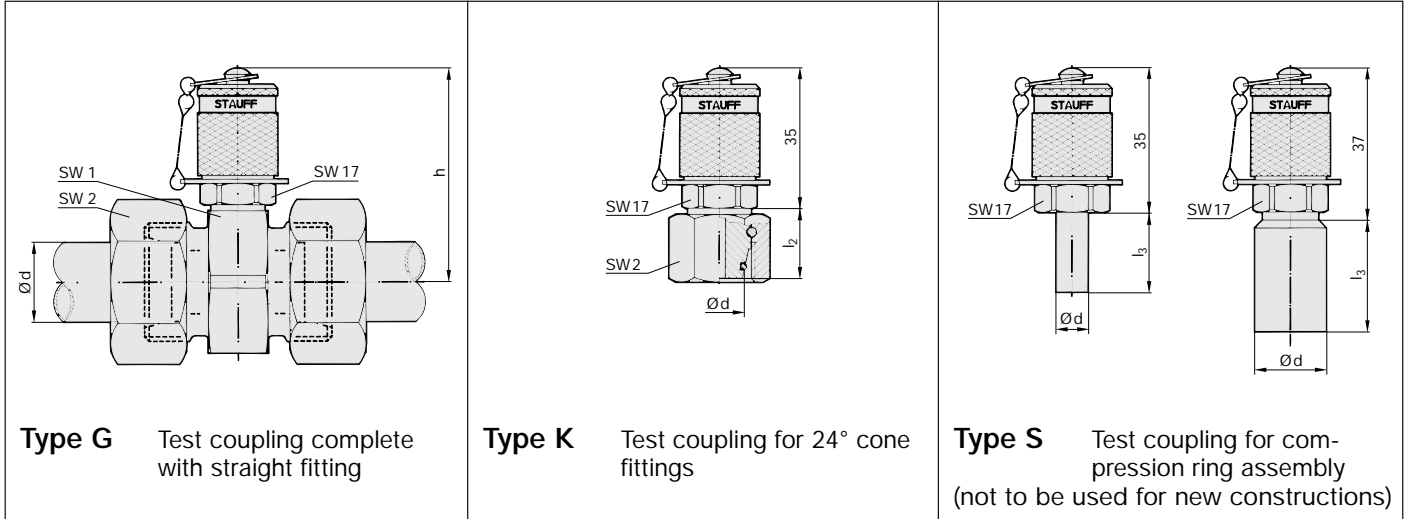
	Thread G	h	SW	Order No.		Seal
				NBR	FPM	
	M8 x 1	37	17	SMK 20 - M8 x 1 - PA	SMK 20 - M8 x 1 - VA	O-Ring Type A
	M10 x 1	37	17	SMK 20 - M10 x 1 - PA	SMK 20 - M10 x 1 - VA	O-Ring Type A
	M12 x 1,5	37	17	SMK 20 - M12 x 1,5 - PC	SMK 20 - M12 x 1,5 - VC	O-Ring Type C
	M14 x 1,5	37	19	SMK 20 - M14 x 1,5 - PB	SMK 20 - M14 x 1,5 - VB	Metal joint Type B
	M16 x 1,5	37	22	SMK 20 - M16 x 1,5 - PB	SMK 20 - M16 x 1,5 - VB	Metal joint Type B
	G 1/8	39	17	SMK 20 - G 1/8 - PC	SMK 20 - G 1/8 - VC	O-Ring Type C
	G 1/4	37	19	SMK 20 - G 1/4 - PB	SMK 20 - G 1/4 - VB	Metal joint Type B
	G 1/4	37	19	SMK 20 - G 1/4 - PC	SMK 20 - G 1/4 - VC	O-Ring Type C
	G 3/8	37	22	SMK 20 - G 3/8 - PB	SMK 20 - G 3/8 - VB	Metal joint Type B
	R 1/8 taper	37	17	SMK 20 - R 1/8 K-PD	SMK 20 - R 1/8 K-VD	Taper Type D
	R 1/4 taper	36	17	SMK 20 - R 1/4 K-PD	SMK 20 - R 1/4 K-VD	Taper Type D
	1/8 NPT	36	17	SMK 20 - 1/8 NPT-PD	SMK 20 - 1/8 NPT-VD	Taper Type D
	1/4 NPT	35	17	SMK 20 - 1/4 NPT-PD	SMK 20 - 1/4 NPT-VD	Taper Type D
	5/16 - 24 UNF	38	17	SMK 20 - 5/16 UNF-PE	SMK 20 - 5/16 UNF-VE	O-Ring Type E
	7/16 - 20 UNF	38	17	SMK 20 - 7/16 UNF-PE	SMK 20 - 7/16 UNF-VE	O-Ring Type E
	1/2 - 20 UNF	38	17	SMK 20 - 1/2 UNF-PE	SMK 20 - 1/2 UNF-VE	O-Ring Type E
9/16 - 18 UNF	37	19	SMK 20 - 9/16 UNF-PE	SMK 20 - 9/16 UNF-VE	O-Ring Type E	

Other port connections and seals on request.

Port connections and seals

Type A				Type B					Type C					Type D			Type E					
G	d ₁	t ₁	t ₂	G	d ₁	t ₁	t ₂	a	G	d ₁	t ₁	t ₂	a	G	t ₁	t ₂	G	d ₁	d ₂	t ₁	t ₂	a
M8 x 1	9,5 + 0,1	11	15,5	M14 x 1,5	20	12	18,5	1,5	M12 x 1,5	18	12	18,5	1,5	R 1/8 taper	5,5	9,5	5/16 - 24 UNF	9,1	17	10	12	1,9
M10 x 1	11,5 + 0,1	12	16,5	M16 x 1,5	22	12	18,5	1,5	G 1/8	15	8	13	1,0	R 1/4 taper	8,5	13,5	7/16 - 20 UNF	12,4	21	11,5	14	2,4
				G 1/4	19	12	18,5	1,5	G 1/4	19	12	18,5	1,5	1/8 NPT	6,9	11,6	1/2 - 20 UNF	14	23	11,5	14	2,4
				G 3/8	23	12	18,5	2						1/4 NPT	10	16,4	9/16 - 18 UNF	15,6	25	12,7	15,5	2,5

Test coupling SMK (compression ring fittings acc. to DIN 2353)

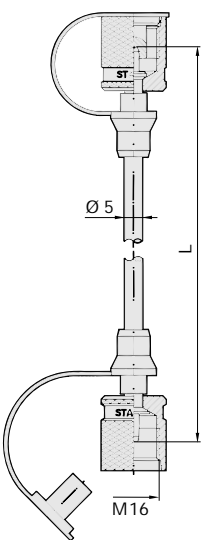
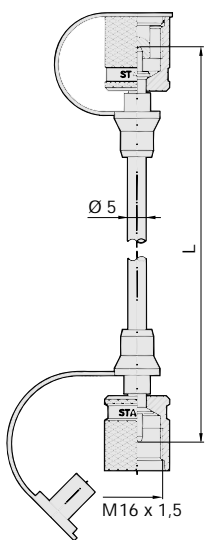
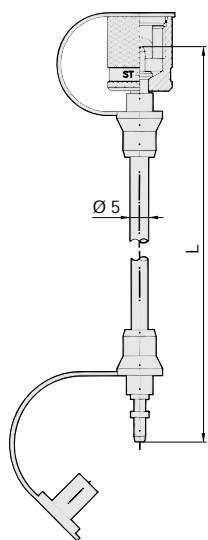
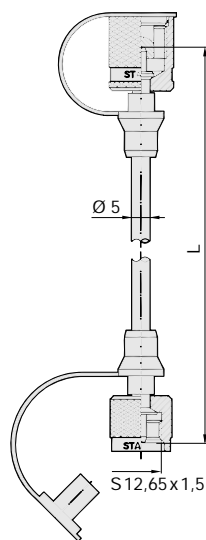
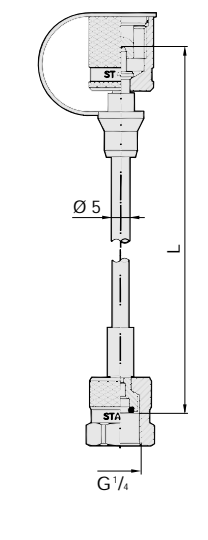


Series	PN	Pipe Ød	l ₂	l ₃	h	SW 1	SW 2	Order No.*		
								Type G	Type K	Type S
L	315	6	15,5	20	49	24	14	SMK 20 - 6L-PG	SMK 20 - 6L-PK	SMK 20 - 6-PS
		8	15,5	20	49	24	17	SMK 20 - 8L-PG	SMK 20 - 8L-PK	SMK 20 - 8-PS
		10	16,5	22	49	24	19	SMK 20 - 10L-PG	SMK 20 - 10L-PK	SMK 20 - 10-PS
		12	17,5	22	50,5	27	22	SMK 20 - 12L-PG	SMK 20 - 12L-PK	SMK 20 - 12-PS
		15	21	25	52	30	27	SMK 20 - 15L-PG	SMK 20 - 15L-PK	SMK 20 - 15-PS
		18	19,5	28	53	32	32	SMK 20 - 18L-PG	SMK 20 - 18L-PK	SMK 20 - 18-PS
	160	22	20,5	30	55	36	36	SMK 20 - 22L-PG	SMK 20 - 22L-PK	SMK 20 - 22-PS
		28	25	32	57,5	41	41	SMK 20 - 28L-PG	SMK 20 - 28L-PK	SMK 20 - 28-PS
35		30	42	60	46	50	SMK 20 - 35L-PG	SMK 20 - 35L-PK	SMK 20 - 35-PS	
42		31	45	64,5	55	60	SMK 20 - 42L-PG	SMK 20 - 42L-PK	SMK 20 - 42-PS	
S	630	6	14,5	20	49	24	17	SMK 20 - 6S-PG	SMK 20 - 6S-PK	SMK 20 - 6-PS
		8	16,5	20	49	24	19	SMK 20 - 8S-PG	SMK 20 - 8S-PK	SMK 20 - 8-PS
		10	16,5	22	49	24	22	SMK 20 - 10S-PG	SMK 20 - 10S-PK	SMK 20 - 10-PS
		12	17,5	22	49	24	24	SMK 20 - 12S-PG	SMK 20 - 12S-PK	SMK 20 - 12-PS
		14	19,5	22	50,5	27	27	SMK 20 - 14S-PG	SMK 20 - 14S-PK	SMK 20 - 14-PS
	400	16	18	28	52	30	30	SMK 20 - 16S-PG	SMK 20 - 16S-PK	SMK 20 - 16-PS
		20	24	30	55	36	36	SMK 20 - 20S-PG	SMK 20 - 20S-PK	SMK 20 - 20-PS
		25	26	36	57,5	41	46	SMK 20 - 25S-PG	SMK 20 - 25S-PK	SMK 20 - 25-PS
		30	30	41	60	46	50	SMK 20 - 30S-PG	SMK 20 - 30S-PK	SMK 20 - 30-PS
		315	38	34	48	64,5	55	60	SMK 20 - 38S-PG	SMK 20 - 38S-PK

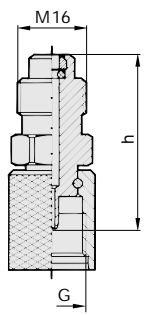
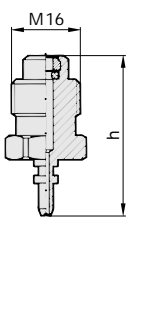
* For ordering FPM seals please replace "P" by "V"

* For EPDM seals replace "P" by "E"

Test hose SMS (for gaseous medium Type SGS)

Max. working pressure 400 bar Test hose: Nominal bore 2 mm Minimum bending radius 20 mm Nominal bore 4 mm also available Pressure/t° factor: to 0°C 122 % at 30°C 110 % at 50°C 100 % at 80°C 86 % at 100°C 77 % Hose construction: Hose-core and -cover PA Reinforcement: Synthetic fibre Bursting pressure: 1100 bar	Stauff-Test 20/20 STAUFF-TEST 20  STAUFF-TEST 20	Stauff-Test 15/20 STAUFF-TEST 20  STAUFF-TEST 15	Stauff-Test 10/20 STAUFF-TEST 20  STAUFF-TEST 10	Stauff-Test 12/20 ²⁾ STAUFF-TEST 20  STAUFF-TEST 12	Stauff-Test 20/M ¹ / ₂ -P-OR ³⁾ STAUFF-TEST 20  GAUGE ADAPTOR
	Length L ¹⁾	Order No.			
200	SMS-20 – 200-A	SMS-15/20 – 200-A	SMS-10/20 – 200-A	SMS-12/20 – 200-A	SMS-20/M ¹ / ₂ -P-OR – 200-A
400	SMS-20 – 400-A	SMS-15/20 – 400-A	SMS-10/20 – 400-A	SMS-12/20 – 400-A	SMS-20/M ¹ / ₂ -P-OR – 400-A
630	SMS-20 – 630-A	SMS-15/20 – 630-A	SMS-10/20 – 630-A	SMS-12/20 – 630-A	SMS-20/M ¹ / ₂ -P-OR – 630-A
800	SMS-20 – 800-A	SMS-15/20 – 800-A	SMS-10/20 – 800-A	SMS-12/20 – 800-A	SMS-20/M ¹ / ₂ -P-OR – 800-A
1000	SMS-20 – 1000-A	SMS-15/20 – 1000-A	SMS-10/20 – 1000-A	SMS-12/20 – 1000-A	SMS-20/M ¹ / ₂ -P-OR – 1000-A
1500	SMS-20 – 1500-A	SMS-15/20 – 1500-A	SMS-10/20 – 1500-A	SMS-12/20 – 1500-A	SMS-20/M ¹ / ₂ -P-OR – 1500-A
2000	SMS-20 – 2000-A	SMS-15/20 – 2000-A	SMS-10/20 – 2000-A	SMS-12/20 – 2000-A	SMS-20/M ¹ / ₂ -P-OR – 2000-A
2500	SMS-20 – 2500-A	SMS-15/20 – 2500-A	SMS-10/20 – 2500-A	SMS-12/20 – 2500-A	SMS-20/M ¹ / ₂ -P-OR – 2500-A
3200	SMS-20 – 3200-A	SMS-15/20 – 3200-A	SMS-10/20 – 3200-A	SMS-12/20 – 3200-A	SMS-20/M ¹ / ₂ -P-OR – 3200-A
4000	SMS-20 – 4000-A	SMS-15/20 – 4000-A	SMS-10/20 – 4000-A	SMS-12/20 – 4000-A	SMS-20/M ¹ / ₂ -P-OR – 4000-A
¹⁾ Bending protection and other lengths on request		²⁾ Special thread: buttress thread S 12,65 x 1,5		³⁾ Gauge adaptor 1/4 NPT, G 1/2 and 1/2 NPT on request	

Adaptor SAD

 Type A	 Type B	G	h	Type	Order No.		
					NBR	FPM	
		M16 x 1,5	39	A	SAD 20/15-P	SAD 20/15-V	
		plug in	37	B	SAD 20/10-P	SAD 20/10-V	
			S 12 ¹⁾	39	A	SAD 20/12-P	SAD 20/12-V
¹⁾ Special thread: buttress thread S 12,65 x 1,5							

Bulkhead SSK (for gaseous medium Type SSKK)

	G	h	Type	Order No.	
				NBR	FPM
	M16	72	A	SSK 20-P	SSK 20-V
	M16 x 1,5 ¹⁾	72	B	SSK 20/08 S-P	SSK 20/08 S-V
	M18 x 1,5 ¹⁾	72	B	SSK 20/12 L-P	SSK 20/12 L-V
¹⁾ Compression ring assembly 8 S/12 L acc. to DIN 2353					

Gauge adaptor SMA

	G	h	SW	Order No.	
				NBR	FPM
	G 1/4	54	19	SMA 20 - G 1/4 - P-OR	SMA 20 - G 1/4 - V-OR
	G 1/2	64	27	SMA 20 - G 1/2 - P-OR	SMA 20 - G 1/2 - V-OR
	1/4 NPT	54	19	SMA 20 - 1/4 NPT-P	SMA 20 - 1/4 NPT-V
	1/2 NPT	64	27	SMA 20 - 1/2 NPT-P	SMA 20 - 1/2 NPT-V
Damping element on request					

Direct gauge adaptor SMD

	G	h	SW	Order No.	
				NBR	FPM
	G 1/4	41	19	SMD 20 - G 1/4 - P-OR	SMD 20 - G 1/4 - V-OR
	G 1/2	51	27	SMD 20 - G 1/2 - P-OR	SMD 20 - G 1/2 - V-OR
	1/4 NPT	41	19	SMD 20 - 1/4 NPT-P	SMD 20 - 1/4 NPT-V
	1/2 NPT	51	27	SMD 20 - 1/2 NPT-P	SMD 20 - 1/2 NPT-V
Damping element on request					

Welding adaptor SAS

	Coupling thread G	h	Ød	Order No.
	M10 x 1	25	20	SAS - M10 x 1
	G 1/4	30	22	SAS - G 1/4
Material: St 37				

Thread adaptor SRS

	Thread G	h	SW	Order No.	Seal
	M16 x 1,5	8	22	SRS 20 - M16 x 1,5-B	Metal joint DIN 3852 Type B
	G 1/8	15,5	17	SRS 20 - G 1/8-B	
	G 3/8	10,5	22	SRS 20 - G 3/8-B	
	G 1/2	10,5	27	SRS 20 - G 1/2-B	Port Connection Type D
	R 1/4 taper	13	17	SRS 20 - R 1/4 K-D	

Product range



STAUFF CLAMPS:

Clamping systems for tubes, hoses, pipes, cables and components

Original STAUFF Clamps:

The tube fastening system in accordance with DIN 3015

Dimensional range from 6 to 800 mm

Different materials available

U-Bolt and DIN clamps

Angle Adjustment Clamps

Special clamps and supports:

Custom built solutions



STAUFF TEST:

Pressure test systems

Venting and sampling of liquid and gas pressure systems

nominal working pressure: 630 bar maximum

100% closeness control

components tested in accordance with DIN 40.080

Test couplings and accessories:

Adaption threads M16x2 - M16x1,5 -

S12,65x1,5- Plug-in system

Test hoses:

DN 2 and DN 4; hose length and fittings on request

MINITESTER PPC-04:

Digital measuring device for:

Working pressure

Differential pressure

Temperature

Flow

RPH

Data output via

PC or printer



STAUFF FILTERS:

Hydraulic filtration systems

High pressure filters for in-line mounting:

maximum working pressure: 630 bar

Return line tank top filters:

maximum working pressure: 16 bar

Replacement filter elements:

Compatible quality and dimensional interchange to suit most filter makes produced in own facilities

Filter materials: Glass fibre, Metal fibre, Polyester fibre, Wire mesh, Paper



STAUFF HYDRAULIC ACCESSORIES:

Components for the construction of tanks and power units and mobile hydraulics

Level gauges

Filler breathers

Check valves

Diffusers

Spin-On - Filters

Return line bushes

Gauge isolator valves

Level temperature switches

Throttle and shut-off valves

Desiccant air breathers

Suction strainers

Stainless steel pressure gauges

Flow indicators

Air filters



STAUFF BALL VALVES:

Ball valves for flow control in steel, stainless steel,

alloy and other materials.

Test 20 Typ SKK (M 16 x 2)



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Fax: + 61 2 42 71 84 32

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Galpão 2, Bloco A
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Fax: +55 11 47899021

China:

Stauff International Trading (Shanghai) Co., Ltd.
Shangdian Mansion, Pudong
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Tel.: + 86 21 58 45 65 60
Fax: + 86 21 58 45 66 80

France:

Stauff s.a.
230, Avenue du Grain d'Or
Z.I. de Vineuil-Blois Sud
F-41354 Vineuil-cedex
Tel.: + 33 2 54 50 55 50
Fax: + 33 2 54 42 29 19

India:

Stauff India Pvt. Ltd.
Gat. No. 2340
Pune-Nagar Road, Wagholi
IND-Pune - 412207
Tel.: + 91 20 705 19 90
Fax: + 91 20 705 19 89

Italy:

Stauff Italia s.r.l.
Via Pola 21/23
I-20034 Birone di Giussano
Tel.: + 39 0362 31 21 13
Fax: + 39 0362 33 55 36

Japan:

Ohtsuka Tec. Co. Ltd.
1-7-19 Minami Shinagawa
Shinagawa-Ku
JPN-Tokyo 140
Tel.: + 81 3 34 72 12 01
Fax: + 81 3 34 72 12 09

Canada:

Stauff Canada Ltd.
866 Milner Avenue
CAN-Scarborough, Ontario M1B 5N7
Tel.: + 1 416 282 46 08
Fax: + 1 416 282 30 39

USA:

Stauff Corporation
7 Wm. Demarest Place
USA-Waldwick, N.J. - 07463
Tel.: + 1 201 444 78 00
Fax: + 1 201 444 78 52

United Kingdom:

Stauff UK
332, Coleford Road
Darnall
GBR-Sheffield, S 9 5 P H
Tel.: + 44 1142 518 518
Fax: + 44 1142 518 519

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Im Ehrenfeld 4 · D-58791 Werdohl
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Fax: + 49 (0) 2392 2505
e-mail: sales@stauff.com
Internet: http://www.stauff.com

40 Years of Experience**Worldwide Distribution****Prompt Delivery**

In most industrial countries STAUFF Clamps symbolize quick and easy pipe and hose installation as well as a clean distinct pipe lay-out.

The vibration and noise reducing features are appreciated as being an important contribution to environmental protection.

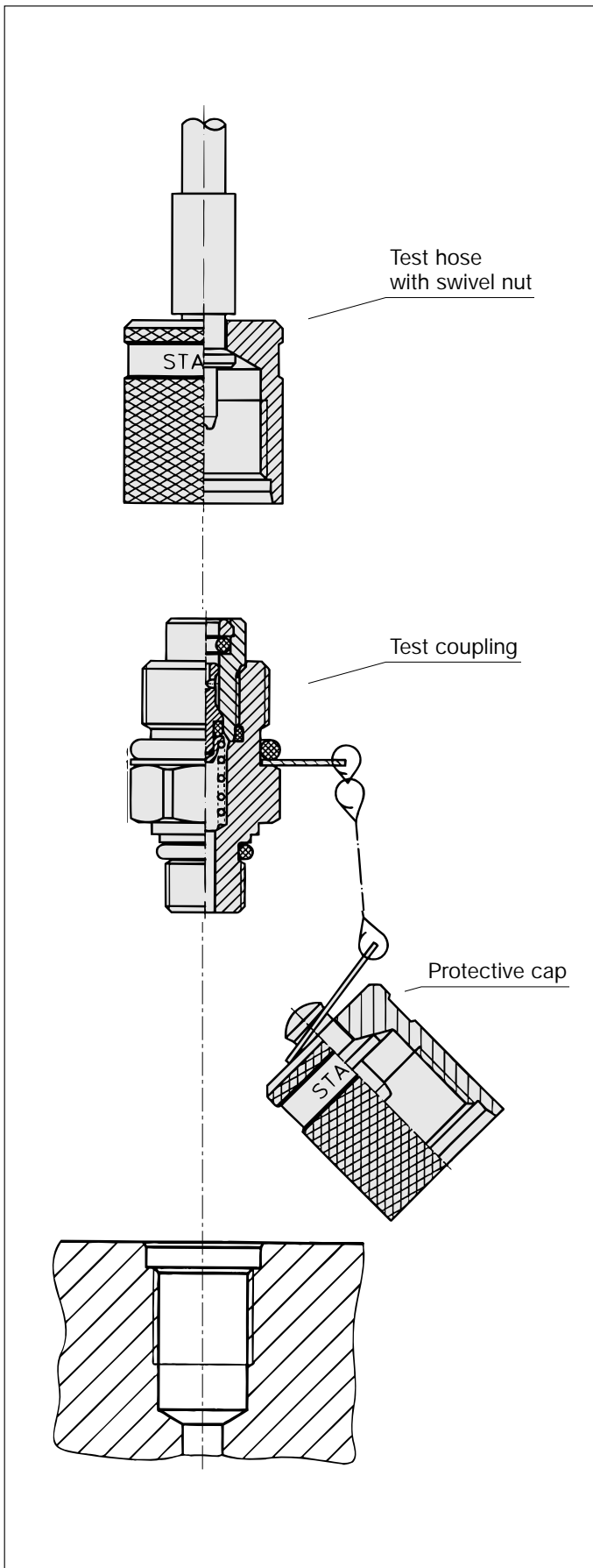
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STAUFF Clamp applications are almost unlimited. Due to the extraordinary wide programme range, all areas of pipe, tube and hose installation are covered:

- Industrial Hydraulics
- Mobile Hydraulics
- Marine Hydraulics
- General Industrial Pipe Construction
- Mining Industry
- Nuclear Reactor Construction
- Instrumentation and Control Technology
- Pneumatics

Approved by:

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- Department of the Navy, New York
- Germanischer Lloyd
- Lloyd's Register of Shipping
- Registro Italiano Navale
- TÜV
- United States Coast Guard



Fast coupling for:

- Monitoring and control of pressure
- Venting
- Sampling in high, low and vacuum systems

Advantages:

- Coupling at system pressure level
- Leakproof connection before **poppet valve** is open
- Simple connection to measuring, control and switching devices
- Self locking metal guard cap

Working pressure:

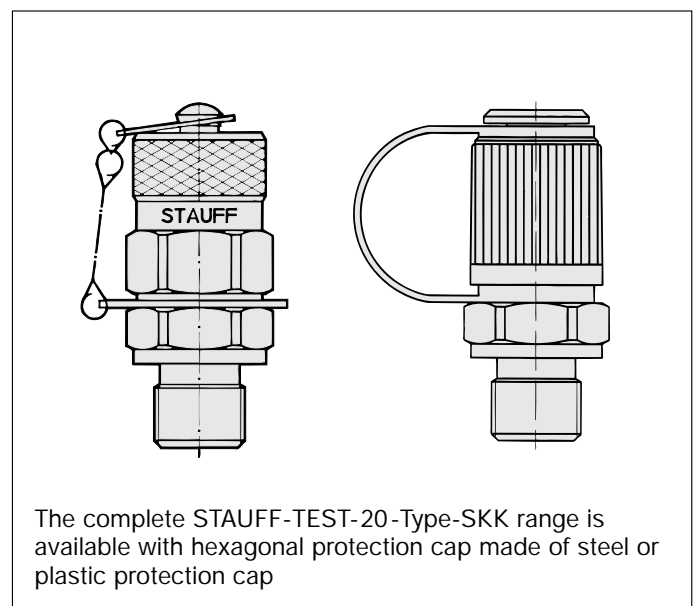
- Max. working pressure 630 bar
For SKK type G, K and S the recommended working pressure of fitting manufacturer has to be applied
- Joining under pressure up to 400 bar max.

Materials:

- Metal parts: Steel, Stainless Steel on request
- Seals:
P = NBR (Temperature range - 20° C to + 90° C)
V = FPM (Temperature range - 20° C to + 200° C)
E = EPDM Ethylene Propylene (for Break Fluid)
Temperature range - 40° C to + 150° C
- Hose: Polyamide (Temperature range -35° C... 100° C max.)

Media:

- Suitable for hydraulic oils and other mineral oil based fluids (Please pay attention to the sealing materials used!)
- For use in conjunction with other liquid or gaseous media please consult STAUFF



Test coupling with protective cap SKK

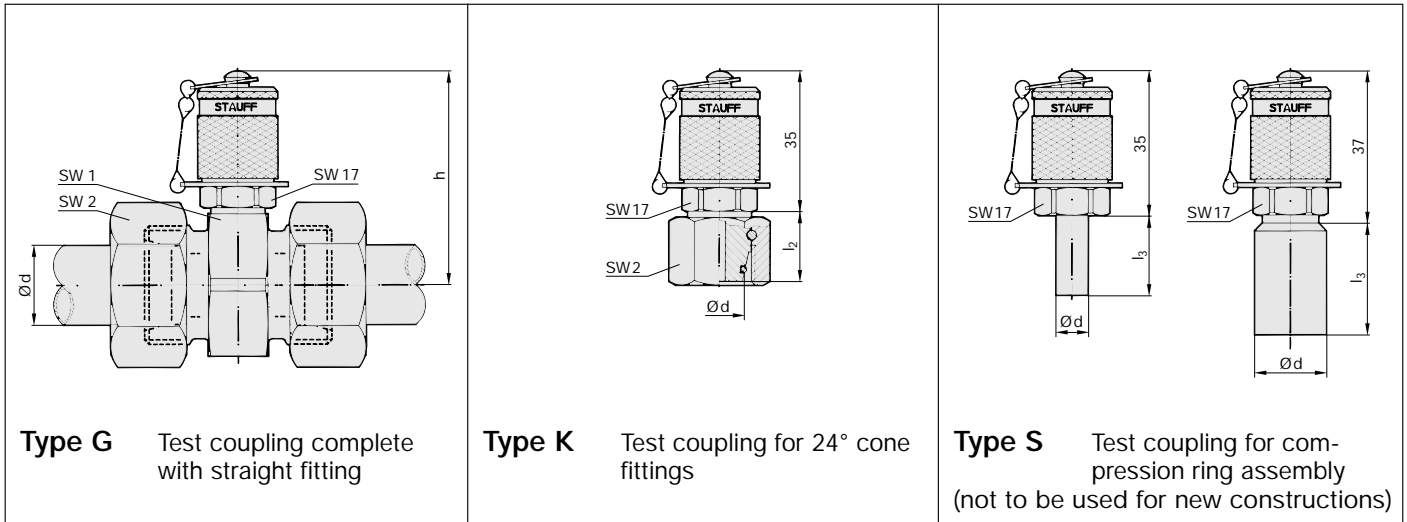
	Thread G	h	SW	Order No.		Seal
				NBR	FPM	
	M8 x 1	37	17	SKK 20 – M8 x 1 – PA	SKK 20 – M8 x 1 – VA	O-Ring Type A
	M10 x 1	37	17	SKK 20 – M10 x 1 – PA	SKK 20 – M10 x 1 – VA	O-Ring Type A
	M12 x 1,5	37	17	SKK 20 – M12 x 1,5 – PC	SKK 20 – M12 x 1,5 – VC	O-Ring Type C
	M14 x 1,5	37	19	SKK 20 – M14 x 1,5 – PB	SKK 20 – M14 x 1,5 – VB	Metal joint Type B
	M16 x 1,5	37	22	SKK 20 – M16 x 1,5 – PB	SKK 20 – M16 x 1,5 – VB	Metal joint Type B
	G 1/8	39	17	SKK 20 – G 1/8 – PC	SKK 20 – G 1/8 – VC	O-Ring Type C
	G 1/4	37	19	SKK 20 – G 1/4 – PB	SKK 20 – G 1/4 – VB	Metal joint Type B
	G 1/4	37	19	SKK 20 – G 1/4 – PC	SKK 20 – G 1/4 – VC	O-Ring Type C
	G 3/8	37	22	SKK 20 – G 3/8 – PB	SKK 20 – G 3/8 – VB	Metal joint Type B
	R 1/8 taper	37	17	SKK 20 – R 1/8 K-PD	SKK 20 – R 1/8 K-VD	Taper Type D
	R 1/4 taper	36	17	SKK 20 – R 1/4 K-PD	SKK 20 – R 1/4 K-VD	Taper Type D
	1/8 NPT	36	17	SKK 20 – 1/8 NPT-PD	SKK 20 – 1/8 NPT-VD	Taper Type D
	1/4 NPT	35	17	SKK 20 – 1/4 NPT-PD	SKK 20 – 1/4 NPT-VD	Taper Type D
	5/16 – 24 UNF	38	17	SKK 20 – 5/16 UNF-PE	SKK 20 – 5/16 UNF-VE	O-Ring Type E
	7/16 – 20 UNF	38	17	SKK 20 – 7/16 UNF-PE	SKK 20 – 7/16 UNF-VE	O-Ring Type E
	1/2 – 20 UNF	38	17	SKK 20 – 1/2 UNF-PE	SKK 20 – 1/2 UNF-VE	O-Ring Type E
	9/16 – 18 UNF	37	19	SKK 20 – 9/16 UNF-PE	SKK 20 – 9/16 UNF-VE	O-Ring Type E

Other port connections and seals on request.

Port connections and seals

Type A					Type B					Type C					Type D			Type E					
G	d ₁	t ₁	t ₂		G	d ₁	t ₁	t ₂	a	G	d ₁	t ₁	t ₂	a	G	t ₁	t ₂	G	d ₁	d ₂	t ₁	t ₂	a
M8 x 1	9,5 + 0,1	11	15,5		M14 x 1,5	20	12	18,5	1,5	M12 x 1,5	18	12	18,5	1,5	R 1/8 taper	5,5	9,5	5/16 – 24 UNF	9,1	17	10	12	1,9
M10 x 1	11,5 + 0,1	12	16,5		M16 x 1,5	22	12	18,5	1,5	G 1/8	15	8	13	1,0	R 1/4 taper	8,5	13,5	7/16 – 20 UNF	12,4	21	11,5	14	2,4
					G 1/4	19	12	18,5	1,5	G 1/4	19	12	18,5	1,5	1/8 NPT	6,9	11,6	1/2 – 20 UNF	14	23	11,5	14	2,4
					G 3/8	23	12	18,5	2						1/4 NPT	10	16,4	9/16 – 18 UNF	15,6	25	12,7	15,5	2,5

Test coupling SKK (compression ring fittings acc. to DIN 2353)



Series	PN	Pipe Ød	l ₂	l ₃	h	SW 1	SW 2	Order No.*		
								Type G	Type K	Type S
L	315	6	15,5	20	49	24	14	SKK 20 – 6L-PG	SKK 20 – 6L-PK	SKK 20 – 6-PS
		8	15,5	20	49	24	17	SKK 20 – 8L-PG	SKK 20 – 8L-PK	SKK 20 – 8-PS
		10	16,5	22	49	24	19	SKK 20 – 10L-PG	SKK 20 – 10L-PK	SKK 20 – 10-PS
		12	17,5	22	50,5	27	22	SKK 20 – 12L-PG	SKK 20 – 12L-PK	SKK 20 – 12-PS
		15	21	25	52	30	27	SKK 20 – 15L-PG	SKK 20 – 15L-PK	SKK 20 – 15-PS
		18	19,5	28	53	32	32	SKK 20 – 18L-PG	SKK 20 – 18L-PK	SKK 20 – 18-PS
	160	22	20,5	30	55	36	36	SKK 20 – 22L-PG	SKK 20 – 22L-PK	SKK 20 – 22-PS
		28	25	32	57,5	41	41	SKK 20 – 28L-PG	SKK 20 – 28L-PK	SKK 20 – 28-PS
35		30	42	60	46	50	SKK 20 – 35L-PG	SKK 20 – 35L-PK	SKK 20 – 35-PS	
42		31	45	64,5	55	60	SKK 20 – 42L-PG	SKK 20 – 42L-PK	SKK 20 – 42-PS	
S	630	6	14,5	20	49	24	17	SKK 20 – 6S-PG	SKK 20 – 6S-PK	SKK 20 – 6-PS
		8	16,5	20	49	24	19	SKK 20 – 8S-PG	SKK 20 – 8S-PK	SKK 20 – 8-PS
		10	16,5	22	49	24	22	SKK 20 – 10S-PG	SKK 20 – 10S-PK	SKK 20 – 10-PS
		12	17,5	22	49	24	24	SKK 20 – 12S-PG	SKK 20 – 12S-PK	SKK 20 – 12-PS
		14	19,5	22	50,5	27	27	SKK 20 – 14S-PG	SKK 20 – 14S-PK	SKK 20 – 14-PS
	400	16	18	28	52	30	30	SKK 20 – 16S-PG	SKK 20 – 16S-PK	SKK 20 – 16-PS
		20	24	30	55	36	36	SKK 20 – 20S-PG	SKK 20 – 20S-PK	SKK 20 – 20-PS
		25	26	36	57,5	41	46	SKK 20 – 25S-PG	SKK 20 – 25S-PK	SKK 20 – 25-PS
		30	30	41	60	46	50	SKK 20 – 30S-PG	SKK 20 – 30S-PK	SKK 20 – 30-PS
		315	38	34	48	64,5	55	60	SKK 20 – 38S-PG	SKK 20 – 38S-PK

* For ordering FPM seals please replace "P" by "V"

* For EPDM seals replace "P" by "E"

Product range



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Clamping systems for tubes, hoses, pipes, cables and components

Original STAUFF Clamps:

The tube fastening system in accordance with DIN 3015

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Replacement filter elements:

Compatible quality and dimensional interchange to suit most filter makes produced in own facilities

Filter materials: Glass fibre, Metal fibre, Polyester fibre, Wire mesh, Paper



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Components for the construction of tanks and power units and mobile hydraulics

Level gauges

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Check valves

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Return line bushes

Gauge isolator valves

Level temperature switches

Throttle and shut-off valves

Desiccant air breathers

Suction strainers

Stainless steel pressure gauges

Flow indicators

Air filters



STAUFF BALL VALVES:

Ball valves for flow control in steel, stainless steel,

alloy and other materials.

Test 15

Typ SMK (M 16 x 1,5)



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France:

Stauff s.a.
230, Avenue du Grain d'Or
Z.I. de Vineuil-Blois Sud
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Tel.: + 33 2 54 50 55 50
Fax: + 33 2 54 42 29 19

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Stauff India Pvt. Ltd.
Gat. No. 2340
Pune-Nagar Road, Wagholi
IND-Pune - 412207
Tel.: + 91 20 705 19 90
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Stauff Italia s.r.l.
Via Pola 21/23
I-20034 Birone di Giussano
Tel.: + 39 0362 31 21 13
Fax: + 39 0362 33 55 36

Japan:

Ohtsuka Tec. Co. Ltd.
1-7-19 Minami Shinagawa
Shinagawa-Ku
JPN-Tokyo 140
Tel.: + 81 3 34 72 12 01
Fax: + 81 3 34 72 12 09

Canada:

Stauff Canada Ltd.
866 Milner Avenue
CAN-Scarborough, Ontario M1B 5N7
Tel.: + 1 416 282 46 08
Fax: + 1 416 282 30 39

USA:

Stauff Corporation
7 Wm. Demarest Place
USA-Waldwick, N.J. - 07463
Tel.: + 1 201 444 78 00
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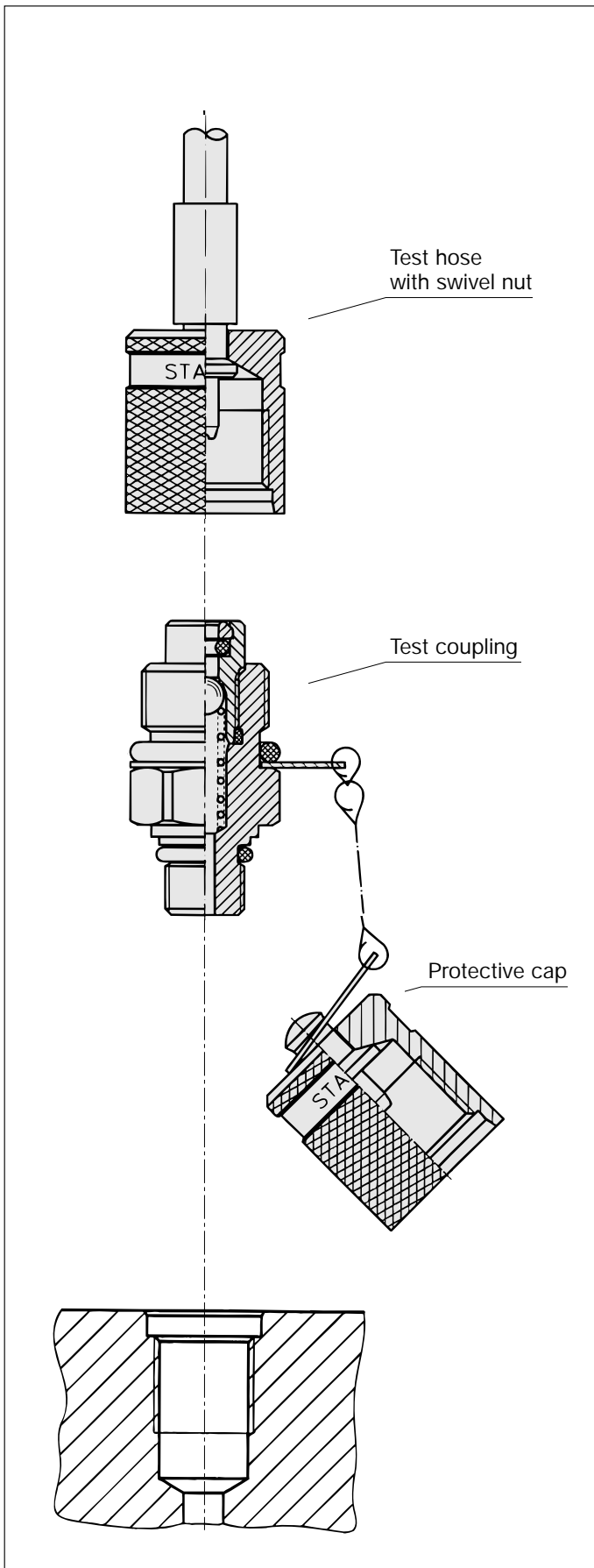
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Approved by:

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Fast coupling for:

- Monitoring and control of pressure
- Venting
- Sampling in high, low and vacuum systems

Advantages:

- Coupling at system pressure level
- Leakproof connection before **ball valve** is open
- Simple connection to measuring, control and switching devices
- Self locking metal guard cap

Working pressure:

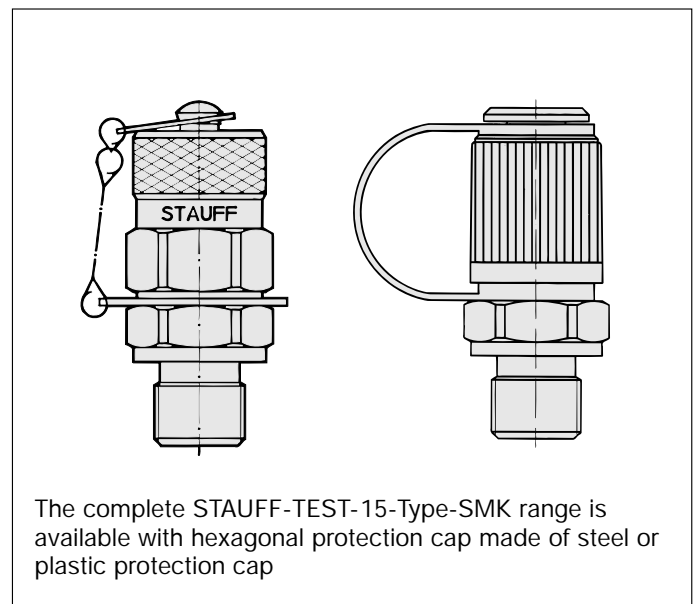
- Max. working pressure 630 bar
For SMK type G, K and S the recommended working pressure of fitting manufacturer has to be applied
- Joining under pressure up to 630 bar max.

Materials:

- Metal parts: Steel, Stainless Steel on request
- Ball: Stainless Steel
- Seals:
 - P = NBR (Temperature range - 20° C to + 90° C)
 - V = FPM (Temperature range - 20° C to + 200° C)
 - E = EPDM Ethylene Propylene (for Break Fluid)
 - Temperature range - 40° C to + 150° C
- Hose: Polyamide (Temperature range -35° C... 100° C max.)

Media:

- Suitable for hydraulic oils and other mineral oil based fluids (Please pay attention to the sealing materials used!)
- For use in conjunction with other liquid media please consult STAUFF



Test coupling with protective cap SMK

	Thread G	h	SW	Order No.		Seal
				NBR	FPM	
	M10 x 1	37	17	SMK 15 - M10 x 1 - PA	SMK 15 - M10 x 1 - VA	O-Ring Type A
	M14 x 1,5	37	19	SMK 15 - M14 x 1,5 - PB	SMK 15 - M14 x 1,5 - VB	Metal joint Type B
	M16 x 1,5	37	22	SMK 15 - M16 x 1,5 - PB	SMK 15 - M16 x 1,5 - VB	Metal joint Type B
	G 1/4	37	19	SMK 15 - G 1/4 - PB	SMK 15 - G 1/4 - VB	Metal joint Type B
	G 1/4	37	19	SMK 15 - G 1/4 - PC	SMK 15 - G 1/4 - VC	O-Ring Type C
	G 3/8	37	22	SMK 15 - G 3/8 - PB	SMK 15 - G 3/8 - VB	Metal joint Type B
	R 1/4 taper	36	17	SMK 15 - R 1/4 K-PD	SMK 15 - R 1/4 K-VD	Taper Type D
	1/4 NPT	35	17	SMK 15 - 1/4 NPT-PD	SMK 15 - 1/4 NPT-VD	Taper Type D
3/16 - 18 UNF	37	19	SMK 15 - 3/16 UNF-PE	SMK 15 - 3/16 UNF-VE	O-Ring Type E	

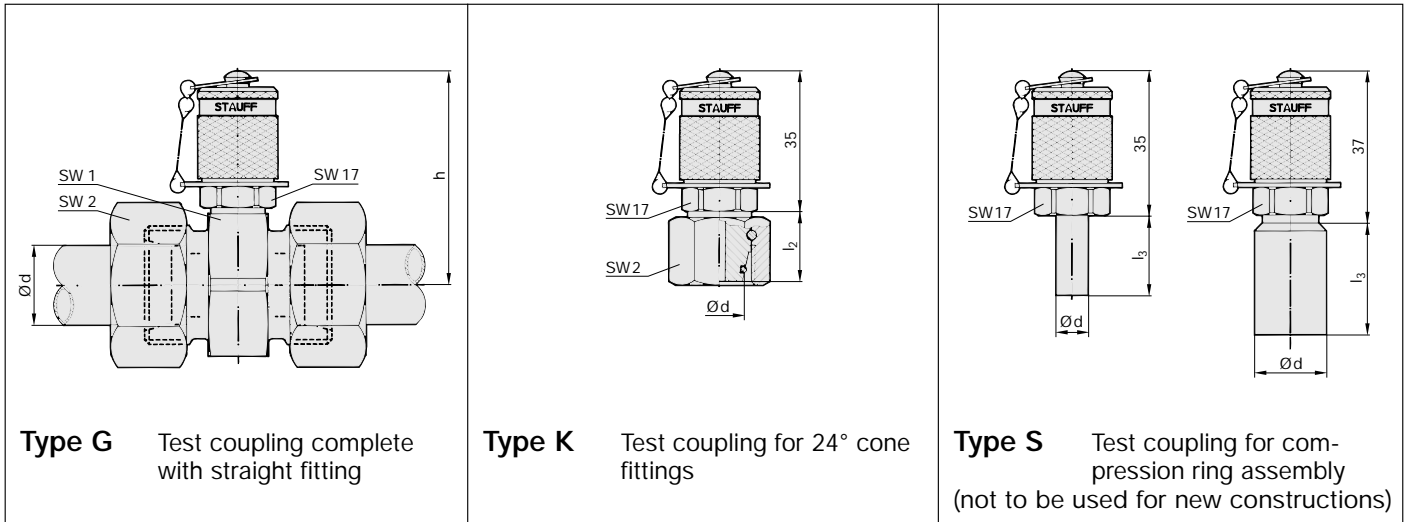
Other port connections and seals on request.

Thread adaptor SRS

	Thread G	h	SW	Order No.	Seal
	M18 x 1,5	24	24	SRS 15 - M18 x 1,5-B	Metal joint DIN 3852 Type B
	M20 x 1,5	10,5	27	SRS 15 - M20 x 1,5-B	
	G 3/8	24	22	SRS 15 - G 3/8-B	
G 1/2	10,5	27	SRS 15 - G 1/2-B		

Port connections and seals

Type A				Type B					Type C					Type D			Type E					
G	d ₁	t ₁	t ₂	G	d ₁	t ₁	t ₂	a	G	d ₁	t ₁	t ₂	a	G	t ₁	t ₂	G	d ₁	d ₂	t ₁	t ₂	a
				M14 x 1,5	20	12	18,5	1,5														
M10 x 1	11,5 + 0,1	12	16,5	M16 x 1,5	22	12	18,5	1,5														
				G 1/4	19	12	18,5	1,5	G 1/4	19	12	18,5	1,5	R 1/4 taper	8,5	13,5						
				G 3/8	23	12	18,5	2,0						1/4 NPT	10	16,4	3/16 - 18 UNF	15,6	25	12,7	15,5	2,5

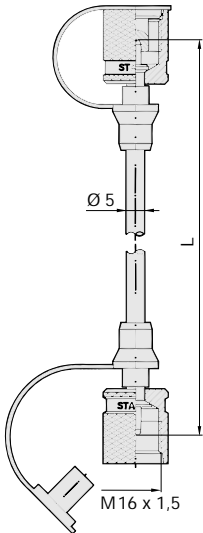
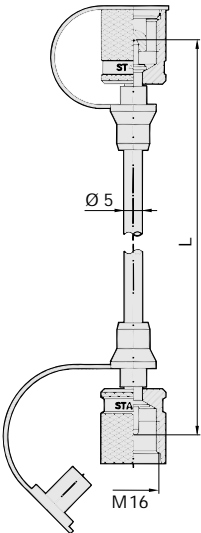
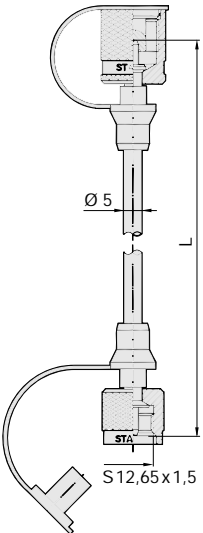
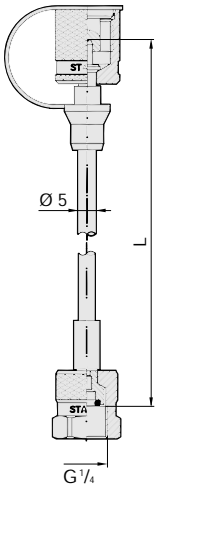
Test coupling SMK (compression ring fittings acc. to DIN 2353)


Series	PN	Pipe Ød	l ₂	l ₃	h	SW 1	SW 2	Order No.*		
								Type G	Type K	Type S
L	315	6	15,5	20	49	24	14	SMK 15 - 6L-PG	SMK 15 - 6L-PK	SMK 15 - 6-PS
		8	15,5	20	49	24	17	SMK 15 - 8L-PG	SMK 15 - 8L-PK	SMK 15 - 8-PS
		10	16,5	22	49	24	19	SMK 15 - 10L-PG	SMK 15 - 10L-PK	SMK 15 - 10-PS
		12	17,5	22	50,5	27	22	SMK 15 - 12L-PG	SMK 15 - 12L-PK	SMK 15 - 12-PS
		15	21	25	52	30	27	SMK 15 - 15L-PG	SMK 15 - 15L-PK	SMK 15 - 15-PS
		18	19,5	28	53	32	32	SMK 15 - 18L-PG	SMK 15 - 18L-PK	SMK 15 - 18-PS
	160	22	20,5	30	55	36	36	SMK 15 - 22L-PG	SMK 15 - 22L-PK	SMK 15 - 22-PS
		28	25	32	57,5	41	41	SMK 15 - 28L-PG	SMK 15 - 28L-PK	SMK 15 - 28-PS
35		30	42	60	46	50	SMK 15 - 35L-PG	SMK 15 - 35L-PK	SMK 15 - 35-PS	
42		31	45	64,5	55	60	SMK 15 - 42L-PG	SMK 15 - 42L-PK	SMK 15 - 42-PS	
S	630	6	14,5	20	49	24	17	SMK 15 - 6S-PG	SMK 15 - 6S-PK	SMK 15 - 6-PS
		8	16,5	20	49	24	19	SMK 15 - 8S-PG	SMK 15 - 8S-PK	SMK 15 - 8-PS
		10	16,5	22	49	24	22	SMK 15 - 10S-PG	SMK 15 - 10S-PK	SMK 15 - 10-PS
		12	17,5	22	49	24	24	SMK 15 - 12S-PG	SMK 15 - 12S-PK	SMK 15 - 12-PS
		14	19,5	22	50,5	27	27	SMK 15 - 14S-PG	SMK 15 - 14S-PK	SMK 15 - 14-PS
	400	16	18	28	52	30	30	SMK 15 - 16S-PG	SMK 15 - 16S-PK	SMK 15 - 16-PS
		20	24	30	55	36	36	SMK 15 - 20S-PG	SMK 15 - 20S-PK	SMK 15 - 20-PS
		25	26	36	57,5	41	46	SMK 15 - 25S-PG	SMK 15 - 25S-PK	SMK 15 - 25-PS
		30	30	41	60	46	50	SMK 15 - 30S-PG	SMK 15 - 30S-PK	SMK 15 - 30-PS
		315	38	34	48	64,5	55	60	SMK 15 - 38S-PG	SMK 15 - 38S-PK

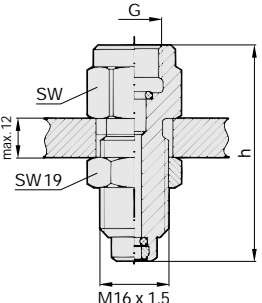
* For ordering FPM seals please replace "P" by "V"

* For EPDM seals replace "P" by "E"

Test hose SMS (for gaseous medium Type SGS)

Max. working pressure 630 bar Test hose: Nominal bore 2 mm Minimum bending radius 20 mm Pressure/t° factor: to 0° C 122 % at 30° C 110 % at 50° C 100 % at 80° C 86 % at 100° C 77 % Hose construction: Hose-core and -cover PA Reinforcement: Synthetic fibre Bursting pressure: 1900 bar	Stauff-Test 15/15 STAUFF-TEST 15  STAUFF-TEST 15	Stauff-Test 15/20 STAUFF-TEST 15  STAUFF-TEST 20	Stauff-Test 12/15 ²⁾ STAUFF-TEST 15  STAUFF-TEST 12	Stauff-Test 15/M ¹ / ₄ -P-OR ³⁾ STAUFF-TEST 15  GAUGE ADAPTOR
	Length L ¹⁾	Order No.		
200	SMS-15 – 200-B	SMS-15/20 – 200-B	SMS-12/15 – 200-B	SMS-15/M ¹ / ₄ -P-OR – 200-B
400	SMS-15 – 400-B	SMS-15/20 – 400-B	SMS-12/15 – 400-B	SMS-15/M ¹ / ₄ -P-OR – 400-B
630	SMS-15 – 630-B	SMS-15/20 – 630-B	SMS-12/15 – 630-B	SMS-15/M ¹ / ₄ -P-OR – 630-B
800	SMS-15 – 800-B	SMS-15/20 – 800-B	SMS-12/15 – 800-B	SMS-15/M ¹ / ₄ -P-OR – 800-B
1000	SMS-15 – 1000-B	SMS-15/20 – 1000-B	SMS-12/15 – 1000-B	SMS-15/M ¹ / ₄ -P-OR – 1000-B
1500	SMS-15 – 1500-B	SMS-15/20 – 1500-B	SMS-12/15 – 1500-B	SMS-15/M ¹ / ₄ -P-OR – 1500-B
2000	SMS-15 – 2000-B	SMS-15/20 – 2000-B	SMS-12/15 – 2000-B	SMS-15/M ¹ / ₄ -P-OR – 2000-B
2500	SMS-15 – 2500-B	SMS-15/20 – 2500-B	SMS-12/15 – 2500-B	SMS-15/M ¹ / ₄ -P-OR – 2500-B
3200	SMS-15 – 3200-B	SMS-15/20 – 3200-B	SMS-12/15 – 3200-B	SMS-15/M ¹ / ₄ -P-OR – 3200-B
4000	SMS-15 – 4000-B	SMS-15/20 – 4000-B	SMS-12/15 – 4000-B	SMS-15/M ¹ / ₄ -P-OR – 4000-B
¹⁾ Bending protection and other lengths on request		²⁾ Special thread: buttress thread S 12,65 x 1,5		³⁾ Gauge adaptor 1/4 NPT, G 1/2 and 1/2 NPT on request

Gauge adaptor SMA

 <p>Through-hole Ø 18</p>	G	h	SW	Order No.	
				NBR	FPM
	G ¹ / ₄	54	19	SMA 15 – G ¹ / ₄ – P-OR	SMA 15 – G ¹ / ₄ – V-OR
	G ¹ / ₂	64	27	SMA 15 – G ¹ / ₂ – P-OR	SMA 15 – G ¹ / ₂ – V-OR
	1/4 NPT	54	19	SMA 15 – 1/4 NPT-P	SMA 15 – 1/4 NPT-V
	1/2 NPT	64	27	SMA 15 – 1/2 NPT-P	SMA 15 – 1/2 NPT-V
Damping element on request					

Bulkhead SSK (for gaseous medium Type SSKK)

	G	h	Type	Order No.	
				NBR	FPM
	M 16 x 1,5	72	A	SSK 15-P	SSK 15-V
	M 16 x 1,5 ¹⁾	72	B	SSK 15/08 S-P	SSK 15/08 S-V
¹⁾ Compression ring assembly 8 S acc. to DIN 2353					

Direct gauge adaptor SMD

	G	h	SW	Order No.	
				NBR	FPM
	G 1/4	41	19	SMD 15 - G 1/4 - P-OR	SMD 15 - G 1/4 - V-OR
	G 1/2	51	27	SMD 15 - G 1/2 - P-OR	SMD 15 - G 1/2 - V-OR
	1/4 NPT	41	19	SMD 15 - 1/4 NPT-P	SMD 15 - 1/4 NPT-V
	1/2 NPT	51	27	SMD 15 - 1/2 NPT-P	SMD 15 - 1/2 NPT-V
Damping element on request					

Welding adaptor SAS

	Thread	h	Ød	Order No.
	G			
	M 10 x 1	25	20	SAS - M 10 x 1
	G 1/4	30	22	SAS - G 1/4
Material: St 37				

Product range



STAUFF CLAMPS:

Clamping systems for tubes, hoses, pipes, cables and components

Original STAUFF Clamps:

The tube fastening system in accordance with DIN 3015

Dimensional range from 6 to 800 mm

Different materials available

U-Bolt and DIN clamps

Angle Adjustment Clamps

Special clamps and supports:

Custom built solutions



STAUFF TEST:

Pressure test systems

Venting and sampling of liquid and gas pressure systems

nominal working pressure: 630 bar maximum

100% closeness control

components tested in accordance with DIN 40.080

Test couplings and accessories:

Adaption threads M16x2 - M16x1,5 -

S12,65x1,5- Plug-in system

Test hoses:

DN 2 and DN 4; hose length and fittings on request

MINITESTER PPC-04:

Digital measuring device

for:

Working pressure

Differential pressure

Temperature

Flow

RPH

Data output via

PC or printer



STAUFF FILTERS:

Hydraulic filtration systems

High pressure filters for in-line mounting:

maximum working pressure: 630 bar

Return line tank top filters:

maximum working pressure: 16 bar

Replacement filter elements:

Compatible quality and dimensional interchange to suit most filter makes produced in own facilities

Filter materials: Glass fibre, Metal fibre, Polyester fibre, Wire mesh, Paper



STAUFF HYDRAULIC ACCESSORIES:

Components for the construction of tanks and power units and mobile hydraulics

Level gauges

Filler breathers

Check valves

Diffusers

Spin-On - Filters

Return line bushes

Gauge isolator valves

Level temperature switches

Throttle and shut-off valves

Desiccant air breathers

Suction strainers

Stainless steel pressure gauges

Flow indicators

Air filters



STAUFF BALL VALVES:

Ball valves for flow control in steel, stainless steel,

alloy and other materials.

Test 12

Typ SKK (S 12,65 x 1,5)



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Stauff Corporation (Pty.) Ltd.
P.O. Box 227
24-26 Doyle Avenue, Unanderra
Wollongong, N.S.W.
AUS-2526 Unanderra
Tel.: + 61 2 42 71 18 77
Fax: + 61 2 42 71 84 32

Brazil:

Stauff Brasil Ltda.
Avenida Gupe 10.767
Galpão 2, Bloco A
WT - Empresarial Parque Castelo Branco
BRA-Barueri - SP
CEP: 06422-120
Tel: +55 11 47899020
Fax: +55 11 47899021

China:

Stauff International Trading (Shanghai) Co., Ltd.
Shangdian Mansion, Pudong
331, Binzhou Road
CHN-200126 Shanghai
Tel.: + 86 21 58 45 65 60
Fax: + 86 21 58 45 66 80

France:

Stauff s.a.
230, Avenue du Grain d'Or
Z.I. de Vineuil-Blois Sud
F-41354 Vineuil-cedex
Tel.: + 33 2 54 50 55 50
Fax: + 33 2 54 42 29 19

India:

Stauff India Pvt. Ltd.
Gat. No. 2340
Pune-Nagar Road, Wagholi
IND-Pune - 412207
Tel.: + 91 20 705 19 90
Fax: + 91 20 705 19 89

Italy:

Stauff Italia s.r.l.
Via Pola 21/23
I-20034 Birone di Giussano
Tel.: + 39 0362 31 21 13
Fax: + 39 0362 33 55 36

Japan:

Ohtsuka Tec. Co. Ltd.
1-7-19 Minami Shinagawa
Shinagawa-Ku
JPN-Tokyo 140
Tel.: + 81 3 34 72 12 01
Fax: + 81 3 34 72 12 09

Canada:

Stauff Canada Ltd.
866 Milner Avenue
CAN-Scarborough, Ontario M1B 5N7
Tel.: + 1 416 282 46 08
Fax: + 1 416 282 30 39

USA:

Stauff Corporation
7 Wm. Demarest Place
USA-Waldwick, N.J. - 07463
Tel.: + 1 201 444 78 00
Fax: + 1 201 444 78 52

United Kingdom:

Stauff UK
332, Coleford Road
Darnall
GBR-Sheffield, S 9 5 P H
Tel.: + 44 1142 518 518
Fax: + 44 1142 518 519

Distributors and warehouses in all industrial countries.

Walter Stauffenberg GmbH & Co. KG

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Im Ehrenfeld 4 · D-58791 Werdohl
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40 Years of Experience**Worldwide Distribution****Prompt Delivery**

In most industrial countries STAUFF Clamps symbolize quick and easy pipe and hose installation as well as a clean distinct pipe lay-out.

The vibration and noise reducing features are appreciated as being an important contribution to environmental protection.

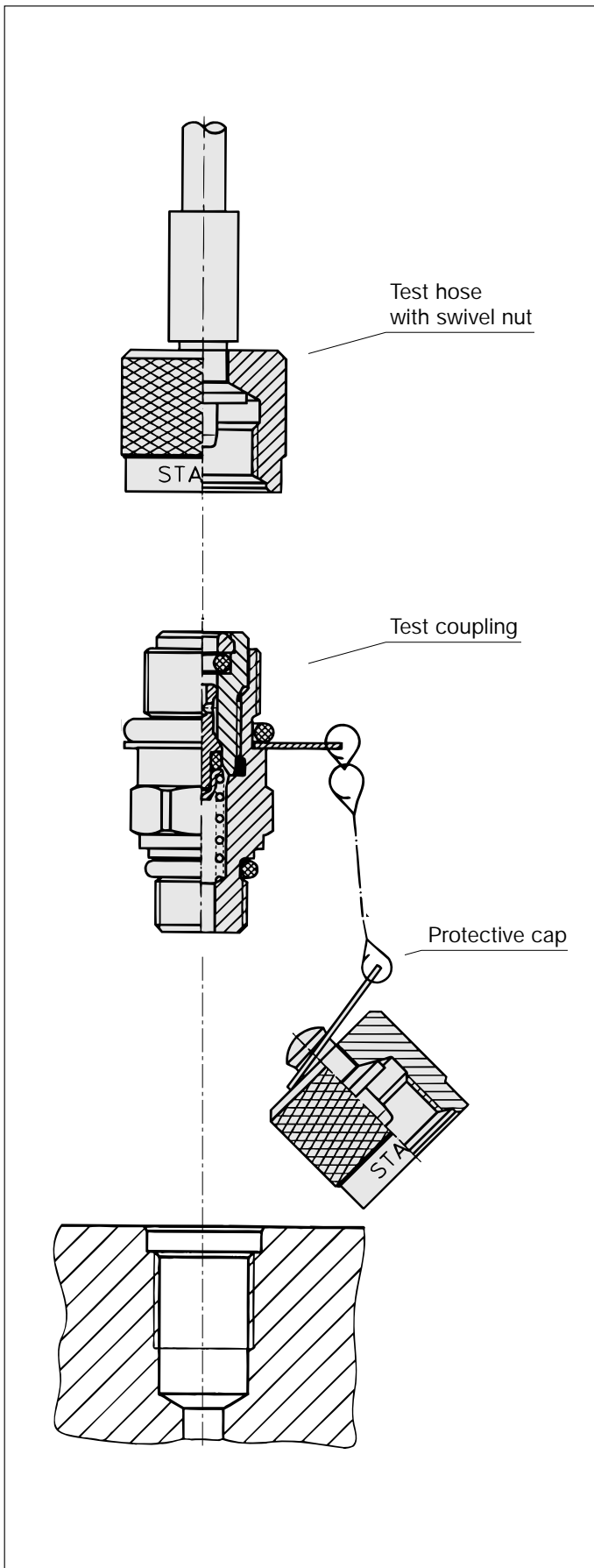
Apart from the technical sophistication of STAUFF Clamps, the second-to-none delivery, prompt service even for special constructions, STAUFF Clamps are also the most economical to install.

STAUFF Clamp applications are almost unlimited. Due to the extraordinary wide programme range, all areas of pipe, tube and hose installation are covered:

- Industrial Hydraulics
- Mobile Hydraulics
- Marine Hydraulics
- General Industrial Pipe Construction
- Mining Industry
- Nuclear Reactor Construction
- Instrumentation and Control Technology
- Pneumatics

Approved by:

- Bureau Veritas
- Department of the Navy, New York
- Germanischer Lloyd
- Lloyd's Register of Shipping
- Registro Italiano Navale
- TÜV
- United States Coast Guard



Fast coupling for:

- Monitoring and control of pressure
- Venting
- Sampling in high, low and vacuum systems

Advantages:

- Coupling at system pressure level
- Leakproof connection before **poppet valve** is open
- Simple connection to measuring, control and switching devices
- Self locking metal guard cap

Working pressure:

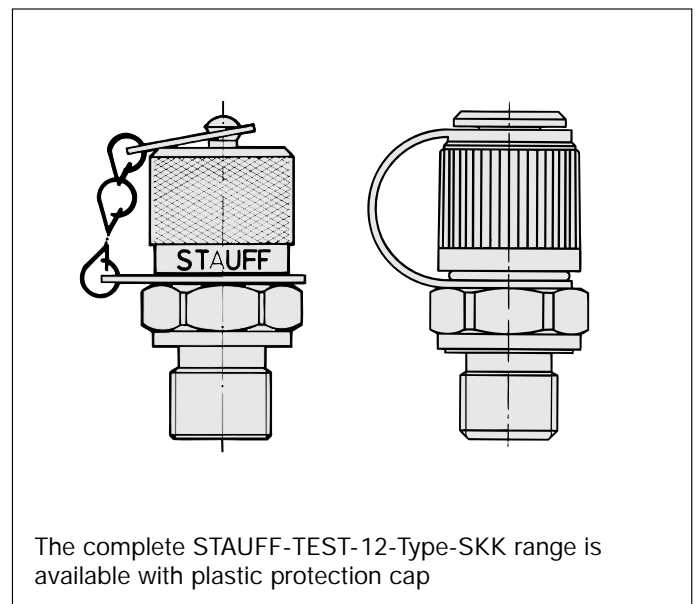
- Max. working pressure 630 bar
For SKK type G, K and S the recommended working pressure of fitting manufacturer has to be applied
- Joining under pressure up to 400 bar max.

Materials:

- Metal parts: Steel, Stainless Steel on request
- Seals:
P = NBR (Temperature range - 20° C to + 90° C)
V = FPM (Temperature range - 20° C to + 200° C)
E = EPDM Ethylene Propylene (for Break Fluid)
Temperature range - 40° C to + 150° C
- Hose: Polyamide (Temperature range -35° C... 100° C max.)

Media:

- Suitable for hydraulic oils and other mineral oil based fluids (Please pay attention to the sealing materials used!)
- For use in conjunction with other liquid media please consult STAUFF



Test coupling with protective cap SKK (former description SMK)

Thread G	h	SW	Order No.		Seal
			NBR	FPM	
M8 x 1	37	14	SKK 12 – M8 x 1 – PA	SKK 12 – M8 x 1 – VA	O-Ring Type A
M10 x 1	34	14	SKK 12 – M10 x 1 – PA	SKK 12 – M10 x 1 – VA	O-Ring Type A
M12 x 1,5	31	17	SKK 12 – M12 x 1,5 – PC	SKK 12 – M12 x 1,5 – VC	O-Ring Type C
M14 x 1,5	31	19	SKK 12 – M14 x 1,5 – PB	SKK 12 – M14 x 1,5 – VB	Metal joint Type B
M16 x 1,5	31	22	SKK 12 – M16 x 1,5 – PB	SKK 12 – M16 x 1,5 – VB	Metal joint Type B
G 1/8	40	14	SKK 12 – G 1/8 – PC	SKK 12 – G 1/8 – VC	O-Ring Type C
G 1/4	31	19	SKK 12 – G 1/4 – PB	SKK 12 – G 1/4 – VB	Metal joint Type B
G 1/4	31	19	SKK 12 – G 1/4 – PC	SKK 12 – G 1/4 – VC	O-Ring Type C
G 3/8	31	22	SKK 12 – G 3/8 – PB	SKK 12 – G 3/8 – VB	Metal joint Type B
R 1/8 taper	33	14	SKK 12 – R 1/8 K-PD	SKK 12 – R 1/8 K-VD	Taper Type D
R 1/4 taper	30	14	SKK 12 – R 1/4 K-PD	SKK 12 – R 1/4 K-VD	Taper Type D
1/8 NPT	33	14	SKK 12 – 1/8 NPT-PD	SKK 12 – 1/8 NPT-VD	Taper Type D
1/4 NPT	28	14	SKK 12 – 1/4 NPT-PD	SKK 12 – 1/4 NPT-VD	Taper Type D
5/16 – 24 UNF	34,5	17	SKK 12 – 5/16 UNF-PE	SKK 12 – 5/16 UNF-VE	O-Ring Type E
7/16 – 20 UNF	33	17	SKK 12 – 7/16 UNF-PE	SKK 12 – 7/16 UNF-VE	O-Ring Type E
1/2 – 20 UNF	32	17	SKK 12 – 1/2 UNF-PE	SKK 12 – 1/2 UNF-VE	O-Ring Type E
9/16 – 18 UNF	32	19	SKK 12 – 9/16 UNF-PE	SKK 12 – 9/16 UNF-VE	O-Ring Type E

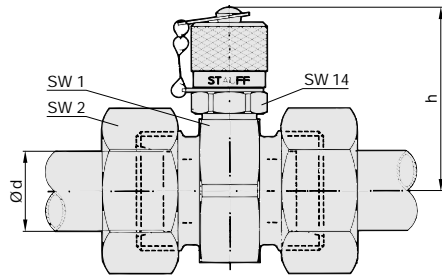
* Special thread:
buttress thread S 12,65 x 1,5

Other port connections and seals on request.

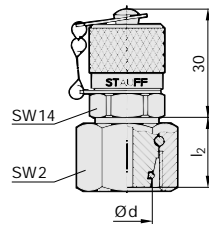
Port connections and seals

Type A					Type B					Type C					Type D			Type E					
G	d ₁	t ₁	t ₂		G	d ₁	t ₁	t ₂	a	G	d ₁	t ₁	t ₂	a	G	t ₁	t ₂	G	d ₁	d ₂	t ₁	t ₂	a
M8 x 1	9,5 + 0,1	11	15,5		M14 x 1,5	20	12	18,5	1,5	M12 x 1,5	18	12	18,5	1,5	R 1/8 taper	5,5	9,5	5/16 – 24 UNF	9,1	17	10	12	1,9
M10 x 1	11,5 + 0,1	12	16,5		M16 x 1,5	22	12	18,5	1,5	G 1/8	15	8	13	1	R 1/4 taper	8,5	13,5	7/16 – 20 UNF	12,4	21	11,5	14	2,4
					G 1/4	19	12	18,5	1,5	G 1/4	19	12	18,5	1,5	1/8 NPT	6,9	11,6	1/2 – 20 UNF	14	23	11,5	14	2,4
					G 3/8	23	12	18,5	2						1/4 NPT	10	16,4	9/16 – 18 UNF	15,6	25	12,7	15,5	2,5

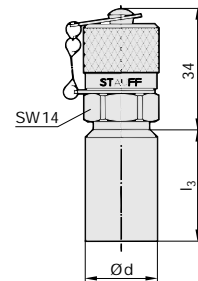
Test coupling SKK (compression ring fittings acc. to DIN 2353)



Type G Test coupling complete with straight fitting



Type K Test coupling for 24° cone fittings



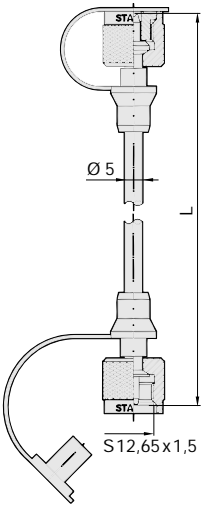
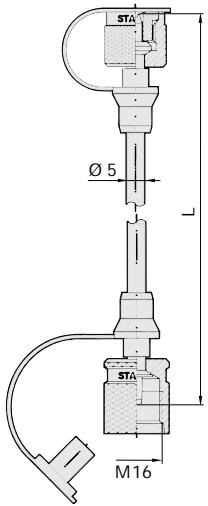
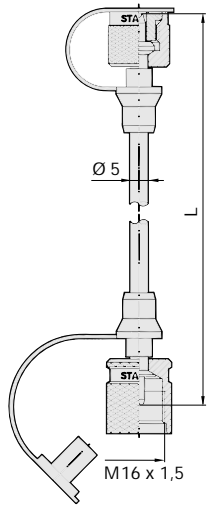
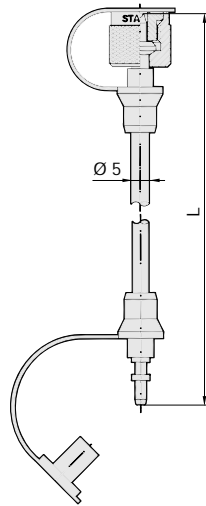
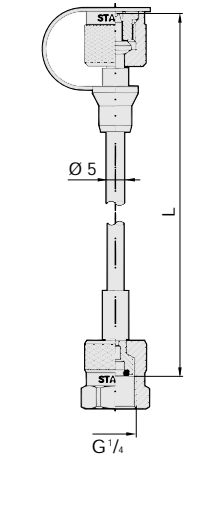
Type S Test coupling for compression ring assembly (not to be used for new constructions)

Series	PN	Pipe Ød	l ₂	l ₃	h	SW 1	SW 2	Order No.*		
								Type G	Type K	Type S
L	315	6	15,5	20	46	24	14	SKK 12 – 6L-PG	SKK 12 – 6L-PK	SKK 12 – 6-PS
		8	15,5	20	46	24	17	SKK 12 – 8L-PG	SKK 12 – 8L-PK	SKK 12 – 8-PS
		10	16,5	22	46	24	19	SKK 12 – 10L-PG	SKK 12 – 10L-PK	SKK 12 – 10-PS
		12	17,5	22	47,5	27	22	SKK 12 – 12L-PG	SKK 12 – 12L-PK	SKK 12 – 12-PS
		15	21	25	49	30	27	SKK 12 – 15L-PG	SKK 12 – 15L-PK	SKK 12 – 15-PS
		18	19,5	28	50	32	32	SKK 12 – 18L-PG	SKK 12 – 18L-PK	SKK 12 – 18-PS
	160	22	20,5	30	52	36	36	SKK 12 – 22L-PG	SKK 12 – 22L-PK	SKK 12 – 22-PS
		28	25	32	54,5	41	41	SKK 12 – 28L-PG	SKK 12 – 28L-PK	SKK 12 – 28-PS
		35	30	42	57	46	50	SKK 12 – 35L-PG	SKK 12 – 35L-PK	SKK 12 – 35-PS
		42	31	45	61,5	55	60	SKK 12 – 42L-PG	SKK 12 – 42L-PK	SKK 12 – 42-PS
S	630	6	14,5	20	46	24	17	SKK 12 – 6S-PG	SKK 12 – 6S-PK	SKK 12 – 6-PS
		8	16,5	20	46	24	19	SKK 12 – 8S-PG	SKK 12 – 8S-PK	SKK 12 – 8-PS
		10	16,5	22	46	24	22	SKK 12 – 10S-PG	SKK 12 – 10S-PK	SKK 12 – 10-PS
		12	17,5	22	46	24	24	SKK 12 – 12S-PG	SKK 12 – 12S-PK	SKK 12 – 12-PS
		14	19,5	22	47,5	27	27	SKK 12 – 14S-PG	SKK 12 – 14S-PK	SKK 12 – 14-PS
	400	16	18	28	49	30	30	SKK 12 – 16S-PG	SKK 12 – 16S-PK	SKK 12 – 16-PS
		20	24	30	52	36	36	SKK 12 – 20S-PG	SKK 12 – 20S-PK	SKK 12 – 20-PS
		25	26	36	54,5	41	46	SKK 12 – 25S-PG	SKK 12 – 25S-PK	SKK 12 – 25-PS
		30	30	41	57	46	50	SKK 12 – 30S-PG	SKK 12 – 30S-PK	SKK 12 – 30-PS
		315	38	34	48	61,5	55	60	SKK 12 – 38S-PG	SKK 12 – 38S-PK

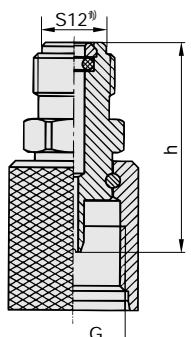
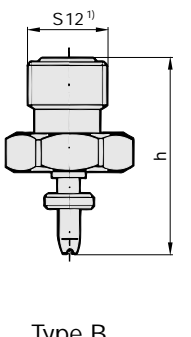
* For ordering FPM seals please replace "P" by "V"

* For EPDM seals replace "P" by "E"

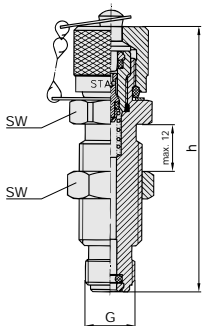
Test hose SMS (for gaseous medium Type SGS)

Max. working pressure 400 bar Test hose: Nominal bore 2 mm Minimum bending radius 20 mm Nominal bore 4 mm also available Pressure/t° factor: to 0°C 122 % at 30°C 110 % at 50°C 100 % at 80°C 86 % at 100°C 77 % Hose construction: Hose-core and -cover PA 11/12 Reinforcement: Synthetic fibre Bursting pressure: 1100 bar	Stauff-Test 12/12 ²⁾ STAUFF-TEST 12 	Stauff-Test 12/20 STAUFF-TEST 12 	Stauff-Test 12/15 STAUFF-TEST 12 	Stauff-Test 10/12 STAUFF-TEST 12 	Stauff-Test 12/M ¹⁾ /i-P-OR ³⁾ STAUFF-TEST 12 
	STAUFF-TEST 12	STAUFF-TEST 20	STAUFF-TEST 15	STAUFF-TEST 10	GAUGE ADAPTOR
Length L ¹⁾	Order No.				
200	SMS-12 - 200-A	SMS-12/20 - 200-A	SMS-12/15 - 200-A	SMS-10/12 - 200-A	SMS-12/M ¹⁾ /i-P-OR - 200-A
400	SMS-12 - 400-A	SMS-12/20 - 400-A	SMS-12/15 - 400-A	SMS-10/12 - 400-A	SMS-12/M ¹⁾ /i-P-OR - 400-A
630	SMS-12 - 630-A	SMS-12/20 - 630-A	SMS-12/15 - 630-A	SMS-10/12 - 630-A	SMS-12/M ¹⁾ /i-P-OR - 630-A
800	SMS-12 - 800-A	SMS-12/20 - 800-A	SMS-12/15 - 800-A	SMS-10/12 - 800-A	SMS-12/M ¹⁾ /i-P-OR - 800-A
1000	SMS-12 - 1000-A	SMS-12/20 - 1000-A	SMS-12/15 - 1000-A	SMS-10/12 - 1000-A	SMS-12/M ¹⁾ /i-P-OR - 1000-A
1500	SMS-12 - 1500-A	SMS-12/20 - 1500-A	SMS-12/15 - 1500-A	SMS-10/12 - 1500-A	SMS-12/M ¹⁾ /i-P-OR - 1500-A
2000	SMS-12 - 2000-A	SMS-12/20 - 2000-A	SMS-12/15 - 2000-A	SMS-10/12 - 2000-A	SMS-12/M ¹⁾ /i-P-OR - 2000-A
2500	SMS-12 - 2500-A	SMS-12/20 - 2500-A	SMS-12/15 - 2500-A	SMS-10/12 - 2500-A	SMS-12/M ¹⁾ /i-P-OR - 2500-A
3200	SMS-12 - 3200-A	SMS-12/20 - 3200-A	SMS-12/15 - 3200-A	SMS-10/12 - 3200-A	SMS-12/M ¹⁾ /i-P-OR - 3200-A
4000	SMS-12 - 4000-A	SMS-12/20 - 4000-A	SMS-12/15 - 4000-A	SMS-10/12 - 4000-A	SMS-12/M ¹⁾ /i-P-OR - 4000-A
¹⁾ Bending protection and other lengths on request		²⁾ Special thread: buttress thread S 12,65 x 1,5		³⁾ Gauge adaptor 1/4 NPT, G 1/2 and 1/2 NPT on request	

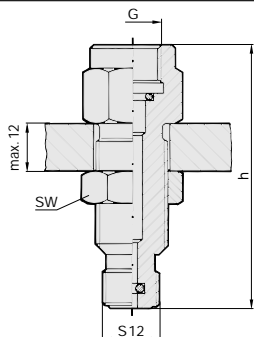
Adaptor SAD

 Type A	 Type B	G	h	Type	Order No.		
					NBR	FPM	
		M16 x 1,5	33	A	SAD 12/15-P	SAD 12/15-V	
		plug in	31	B	SAD 12/10-P	SAD 12/10-V	
			M16 x 2	33	A	SAD 12/20-P	SAD 12/20-V
¹⁾ Special thread: buttress thread S 12,65 x 1,5							

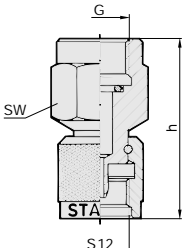
Bulkhead SSKK (former description SSK)

	G	h	SW	Order No.	
				NBR	FPM
	S 12	63	19	SSKK 12-P	SSKK 12-V

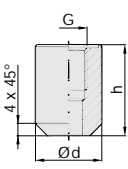
Gauge adaptor SMA

 <p>Through-hole Ø 18</p>	G	h	SW	Order No.	
				NBR	FPM
	G 1/4	51	19	SMA 12 - G 1/4 - P-OR	SMA 12 - G 1/4 - V-OR
	G 1/2	61	27	SMA 12 - G 1/2 - P-OR	SMA 12 - G 1/2 - V-OR
	1/4 NPT	51	19	SMA 12 - 1/4 NPT-P	SMA 12 - 1/4 NPT-V
	1/2 NPT	61	27	SMA 12 - 1/2 NPT-P	SMA 12 - 1/2 NPT-V
Damping element on request					

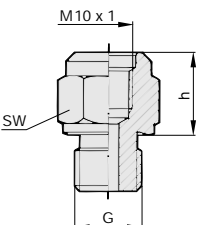
Direct gauge adaptor SMD

	G	h	SW	Order No.	
				NBR	FPM
	G 1/4	35	19	SMD 12 - G 1/4 - P-OR	SMD 12 - G 1/4 - V-OR
	G 1/2	45	27	SMD 12 - G 1/2 - P-OR	SMD 12 - G 1/2 - V-OR
	1/4 NPT	35	19	SMD 12 - 1/4 NPT-P	SMD 12 - 1/4 NPT-V
	1/2 NPT	45	27	SMD 12 - 1/2 NPT-P	SMD 12 - 1/2 NPT-V
Damping element on request					

Welding adaptor SAS

	Coupling thread G	h	Ød	Order No.
	M10 x 1	25	20	SAS - M10 x 1
	G 1/4	30	22	SAS - G 1/4

Thread adaptor SRS

	Thread G	h	SW	Order No.	Seal
	M16 x 1,5	8	22	SRS 20 - M16 x 1,5-B	Metal joint DIN 3852 Type B
G 1/8	15,5	17	SRS 20 - G 1/8-B		
G 3/8	10,5	22	SRS 20 - G 3/8-B		
	G 1/2	10,5	27	SRS 20 - G 1/2-B	Port Connection Type D
	R 1/4 taper	13	19	SRS 20 - R 1/4 K-D	

Product range



STAUFF CLAMPS:

Clamping systems for tubes, hoses, pipes, cables and components

Original STAUFF Clamps:

The tube fastening system in accordance with DIN 3015

Dimensional range from 6 to 800 mm

Different materials available

U-Bolt and DIN clamps

Angle Adjustment Clamps

Special clamps and supports:

Custom built solutions



STAUFF TEST:

Pressure test systems

Venting and sampling of liquid and gas pressure systems

nominal working pressure: 630 bar maximum

100% closeness control

components tested in accordance with DIN 40.080

Test couplings and accessories:

Adaption threads M16x2 - M16x1,5 -

S12,65x1,5- Plug-in system

Test hoses:

DN 2 and DN 4; hose length and fittings on request

MINITESTER PPC-04:

Digital measuring device for:

Working pressure

Differential pressure

Temperature

Flow

RPH

Data output via

PC or printer



STAUFF FILTERS:

Hydraulic filtration systems

High pressure filters for in-line mounting:

maximum working pressure: 630 bar

Return line tank top filters:

maximum working pressure: 16 bar

Replacement filter elements:

Compatible quality and dimensional interchange to suit most filter makes produced in own facilities

Filter materials: Glass fibre, Metal fibre, Polyester fibre, Wire mesh, Paper



STAUFF HYDRAULIC ACCESSORIES:

Components for the construction of tanks and power units and mobile hydraulics

Level gauges

Filler breathers

Check valves

Diffusers

Spin-On - Filters

Return line bushes

Gauge isolator valves

Level temperature switches

Throttle and shut-off valves

Desiccant air breathers

Suction strainers

Stainless steel pressure gauges

Flow indicators

Air filters



STAUFF BALL VALVES:

Ball valves for flow control in steel, stainless steel,

alloy and other materials.

Test Pressure gauge



Quality and Service
worldwide



Quality
Endorsed
Company

ISO 9002 Lic 3765
Standards Australia

STAUFF®



Pressure Gauges and Test Kits

**Quality and Service
worldwide**

STAUFF

HIGH QUALITY LIQUID FILLED PRESSURE GAUGES

SPECIFICATIONS

- * Copper alloy bourdon tube, argentan wear parts
- * Accuracy: +/- 1.6% of full scale (63mm dia.)
+/- 1% of full scale (100mm dia.)
- * Operating temperature:
Medium < 60bar – 60°C, > 60bar – 100°C
- * Ambient - 20°C to + 60°C
- * Liquid filled with 99.5% glycerine
- * Suitable for gaseous or non-obstructive liquid media compatible with copper alloys



STAINLESS STEEL CASE Dual Scale bar/psi 63 mm & 100 mm

Pressure Range	63mm Stem Entry 1/4"BSPP	63mm Rear Entry 1/4"BSPP	100mm Stem Entry 1/2"BSPP	100mm Rear Entry 1/2"BSPP
-1 - 0 bar (-14.5psi)	SPG63(-1/+0)1-SB	SPG63(-1/+0)1-RBU		
-1 - +3 bar (-14 to +42psi)	SPG63(-1/+3)1-SB	SPG63(-1/+3)1-RBU		
0 - 0.6 bar (9psi)	SPG63-0.6-1-SB	SPG63-0.6-1-RBU	SPG100-0.6-1-SB	SPG100-0.6-1-RB
0 - 1 bar (14.5psi)	SPG63-1-1-SB	SPG63-1-1-RBU	SPG100-1-1-SB	SPG100-1-1-RB
0 - 6 bar (85psi)	SPG63-6-1-SB	SPG63-6-1-RBU	SPG100-6-1-SB	SPG100-6-1-RB
0 - 10 bar (145psi)	SPG63-10-1-SB	SPG63-10-1-RBU	SPG100-10-1-SB	SPG100-10-1-RB
0 - 16 bar (230psi)	SPG63-16-1-SB	SPG63-16-1-RBU	SPG100-16-1-SB	SPG100-16-1-RB
0 - 25 bar (350psi)	SPG63-25-1-SB	SPG63-25-1-RBU	SPG100-25-1-SB	SPG100-25-1-RB
0 - 40 bar (580psi)	SPG63-40-1-SB	SPG63-40-1-RBU	SPG100-40-1-SB	SPG100-40-1-RB
0 - 60 bar (850psi)	SPG63-60-1-SB	SPG63-60-1-RBU	SPG100-60-1-SB	SPG100-60-1-RB
0 - 100 bar (1400psi)	SPG63-100-1-SB	SPG63-100-1-RBU	SPG100-100-1-SB	SPG100-100-1-RB
0 - 160 bar (2300psi)	SPG63-160-1-SB	SPG63-160-1-RBU	SPG100-160-1-SB	SPG100-160-1-RB
0 - 250 bar (3500psi)	SPG63-250-1-SB	SPG63-250-1-RBU	SPG100-250-1-SB	SPG100-250-1-RB
0 - 315 bar (4400psi)	SPG63-315-1-SB	SPG63-315-1-RBU	SPG100-315-1-SB	SPG100-315-1-RB
0 - 400 bar (5800psi)	SPG63-400-1-SB	SPG63-400-1-RBU	SPG100-400-1-SB	SPG100-400-1-RB
0 - 600 bar (8700psi)	SPG63-600-1-SB	SPG63-600-1-RBU	SPG100-600-1-SB	SPG100-600-1-RB
0 - 680 bar (10000psi)	SPG63-680-1-SB	SPG63-680-1-RBU	SPG100-680-1-SB	SPG100-680-1-RB
0 - 1000bar (14500psi)	SPG63-1000-1-SB	SPG63-1000-1-RBU	SPG100-1000-1-SB	SPG100-1000-1-RB

N.B. Gauges shown in shaded areas may not be a stocked item but available on request.

BRASS BODIED Dual Scale kPa/psi 63 mm & 100 mm

Pressure Range	63mm Stem Entry 1/4"BSPP	63mm Rear Entry 1/4"BSPP	100mm Stem Entry 1/2"BSPP
-100 - 0 kPa (-14.5psi)	BPG63(-100/0)6-SB	BPG63(-100/0)6-RBU	
-100 - +300kPa (-14 to +42psi)	BPG63(-100/300)6-SB	BPG63(-100/300)6-RBU	
0 - 60 kPa (9psi)	BPG63-60-6-SB		
0 - 100 kPa (14.5psi)	BPG63-100-6-SB		
0 - 600 kPa (85psi)	BPG63-600-6-SB	BPG63-600-6-RBU	
0 - 1000 kPa (145psi)	BPG63-1000-6-SB	BPG63-1000-6-RBU	
0 - 1600 kPa (230psi)	BPG63-1600-6-SB	BPG63-1600-6-RBU	
0 - 2500 kPa (350psi)	BPG63-2500-6-SB	BPG63-2500-6-RBU	
0 - 4000 kPa (580psi)	BPG63-4000-6-SB	BPG63-4000-6-RBU	BPG100-4000-6-SB
0 - 6000 kPa (850psi)	BPG63-6000-6-SB	BPG63-6000-6-RBU	BPG100-6000-6-SB
0 - 10,000 kPa (1400psi)	BPG63-10000-6-SB	BPG63-10000-6-RBU	BPG100-10000-6-SB
0 - 16,000 kPa (2300psi)	BPG63-16000-6-SB	BPG63-16000-6-RBU	BPG100-16000-6-SB
0 - 25,000 kPa (3500psi)	BPG63-25000-6-SB	BPG63-25000-6-RBU	BPG100-25000-6-SB
0 - 31,500 kPa (4400psi)	BPG63-31500-6-SB	BPG63-31500-6-RBU	BPG100-31500-6-SB
0 - 40,000 kPa (5800psi)	BPG63-40000-6-SB	BPG63-40000-6-RBU	BPG100-40000-6-SB
0 - 50,000 kPa (7200psi)	BPG63-50000-6-SB	BPG63-50000-6-RBU	
0 - 60,000 kPa (8700psi)	BPG63-60000-6-SB	BPG63-60000-6-RBU	
0 - 100,000 kPa (14500psi)	BPG63-100000-6-SB		



BRASS BODIED Dual scale bar/psi 63 mm

Pressure Range	63mm Stem Entry 1/4"BSPP	63mm Rear Entry 1/4"BSPP
0 - 10 bar (145psi)	BPG63-10-1-SB	BPG63-10-1-RBU
0 - 16 bar (230psi)		BPG63-16-1-RBU
0 - 40 bar (580psi)	BPG63-40-1-SB	BPG63-40-1-RBU
0 - 60 bar (850psi)	BPG63-60-1-SB	BPG63-60-1-RBU
0 - 100 bar (1400psi)		BPG63-100-1-RBU
0 - 160 bar (2300psi)	BPG63-160-1-SB	BPG63-160-1-RBU
0 - 250 bar (3500psi)	BPG63-250-1-SB	BPG63-250-1-RBU
0 - 400 bar (5800psi)	BPG63-400-1-SB	BPG63-400-1-RBU
0 - 600 bar (8700psi)		BPG63-600-1 RBU



BRASS BODIED Bar Scale 63 mm & 100 mm

Pressure Range	63mm Stem Entry 1/4"BSPP	63mm Rear Entry 1/4"BSPP	100mm Stem Entry 1/2"BSPP
-1 - +3 bar	BPG63(-1/3)2-SB		
0 - 10 bar	BPG63-10-2-SB		BPG100-10-2-SB
0 - 16 bar	BPG63-16-2-SB	BPG63-16-2-RBU	BPG100-16-2-SB
0 - 25 bar	BPG63-25-2-SB	BPG63-25-2-RBU	BPG100-25-2-SB
0 - 40 bar	BPG63-40-2-SB	BPG63-40-2-RBU	BPG100-40-2-SB
0 - 60 bar	BPG63-60-2-SB		BPG100-60-2-SB
0 - 100 bar	BPG63-100-2-SB	BPG63-100-2-RBU	BPG100-100-2-SB
0 - 160 bar	BPG63-160-2-SB		BPG100-160-2-SB
0 - 250 bar	BPG63-250-2-SB	BPG63-250-2-RBU	BPG100-250-2-SB
0 - 400 bar	BPG63-400-2-SB		BPG100-400-2-SB
0 - 600 bar	BPG63-600-2-SB		BPG100-600-2-SB



GAUGE ACCESSORIES

SPG63-BRACKET
SPG100-BRACKET
for panel mounting of SPG
gauges, both SB and RB types



FLANGE MOUNT BEZEL
PMB63
PMB100
for panel mounting
stem entry BPG gauges



SPG63-FLANGE
SPG100-F
for panel mounting
rear entry SPG
gauges



EXPANSION PLUGS
SPG100-FILLPLUG
SPG63-FILLPLUG

RUBBER GAUGE
PROTECTOR
72.500-00 to suit
63mm stem entry gauges



GAUGE SAVER / SNUBBER
GSB-1 138bar, brass, 1/4" BSP
GSB-3 138 bar, brass, 3/8" BSP
GSB-5 138 bar, brass, 1/2" BSP

GSS-7 210 bar, S.S., 1/4" BSP
GSS-9 210 bar, S.S., 3/8" BSP
GSS-11 210 bar, S.S., 1/2" BSP

GSH-13 700 bar, steel, 1/4" BSP
GSH-15 700 bar, steel, 3/8" BSP
GSH-17 700 bar, steel, 1/2" BSP

prevents gauge blockages and
chemical attack



COILED SNUBBER
SN0404 1/4" / 1/4"
SN0406 1/4" / 3/8"
SN0606 3/8" / 3/8"





SWIVEL ADAPTOR

(with O-ring seal for gauge)

- FT299/88 1/8"BSPP female to 1/8" BSPT male
- FT299/44 1/4"BSPP female to 1/4" BSPT male
- FT299/42 1/4"BSPP female to 1/2" BSPT male
- FT299/24 1/2"BSPP female to 1/4" BSPT male
- FT299/22 1/2"BSPP female to 1/2" BSPT male

GAUGE ISOLATION VALVES

(max. pressure – 350 bar, port sizes – 1/4" BSP)



SWS - B04 - S1
(single station valve)

SWS - B04 - M
(six station valve)

Push the central button to read the pressure. When the button is released, the gauge is vented back to tank.

KEY TO STAUFF GAUGE CODING

<p>SPG</p> <p>—</p> <p>GAUGE TYPE</p> <p>SPG = S.Steel case gauge BPG = brass body gauge</p>	<p>63</p> <p>—</p> <p>DIAL SIZE</p> <p>63 = 63mm dia. 100 = 100mm dia.</p>	<p>160</p> <p>—</p> <p>PRESSURE RANGE</p> <p>0 to indicated range unless otherwise shown (0 to 160 bar shown in example above)</p>	<p>1</p> <p>—</p> <p>SCALE</p> <p>1 - bar / psi 2 - bar 3 - psi 4 - kgm/cm² / psi 5 - kgm/cm² 6 - kPa / psi 7 - in. Hg</p>	<p>S</p> <p>—</p> <p>CONNECTION</p> <p>S - stem (bottom) R - rear entry</p>	<p>B</p> <p>—</p> <p>THREAD</p> <p>B - BSPP N - NPT BT - BSPT</p>	<p>U</p> <p>—</p> <p>ATTACHMENT</p> <p>- no attachment U - bracket assembly F - front flange (only available on some rear connection gauges)</p>
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The codes indicate that BSPP threaded gauges are normally stocked. There are additional gauges stocked with other scales and other thread connections and enquiries should be directed to a Stauff branch using the relevant code. Eg., BPG63-16-4-SB is a 63mm brass bodied gauge, 0 to 16 kg/cm² 0 to 230psi dual scale, with a 1/4" BSPP stem connection. An SPG63-250-5-RNU gauge is a 63mm dia. stainless steel case, 0 to 250 kg/cm² scale, 1/4" NPT rear entry model with a mounting bracket for panel mounting.

SHOCKPROOF PISTON PRESSURE GAUGES

1/2" BSPP thread on all gauges. Gauges shown may not be a stocked item. Enquire from your Stauff branch regarding availability.



Pressure Range bar / psi dual scale	Bottom Entry Stem Mount Aluminium Body	Bottom Entry Stem Mount Brass Body	Bottom Entry Panel Mount
0 - 10 bar (145 psi)	TKF 1047/ 10AL	TKF 1047/ 10MS	TKF 1053/ 10
0 - 16 bar (225 psi)	TKF 1047/ 16AL	TKF1047/ 16MS	TKF1053/ 16
0 - 25 bar (335 psi)	TKF 1047/ 25AL	TKF 1047/ 25MS	TKF 1053/ 25
0 - 30 bar (435 psi)	TKF 1047/ 30AL	TKF 1047/ 30MS	TKF 1053/ 30
0 - 40 bar (565 psi)	TKF 1047/ 40AL	TKF 1047/ 40MS	TKF 1053/ 40
0 - 63 bar (860 psi)	TKF 1047/ 63AL	TKF 1047/ 63MS	TKF 1053/ 63
0 - 100 bar (1420 psi)	TKF 1047/100AL	TKF 1047/100MS	TKF 1053/100
0 - 160 bar (2250 psi)	TKF 1047/160AL	TKF 1047/160MS	TKF 1053/160
0 - 200 bar (2840 psi)	TKF 1047/200AL	TKF 1047/200MS	TKF 1053/200
0 - 250 bar (3350 psi)	TKF 1047/250AL	TKF 1047/250MS	TKF 1053/250
0 - 315 bar (4480 psi)	TKF 1047/315AL	TKF 1047/315MS	TKF 1053/315
0 - 400 bar (5690 psi)	TKF 1047/400AL	TKF 1047/400MS	TKF 1053/400
0 - 630 bar (8600 psi)	TKF 1047/630AL	TKF 1047/630MS	TKF 1053/630
0 - 1000 bar (14500 psi)	TKF 1047/1000AL	TKF 1047/1000MS	

PRESSURE TEST KITS

STANDARD METAL GAUGE BOX ASSEMBLIES



Metal gauge boxes are available with two gauges, three gauges, and four gauges (illustrated) in a standard metal box which carries test points and hoses in the base. The top can be slipped off the hinges for hanging close to the test point by the top mounted handle. The test boxes use the SPG series of gauges and therefore the pressure ranges need to be selected from that section of this brochure. Either Stauff Test 20 or Stauff Test 12 can be selected as the means of connection.

Two Gauge Test Box DGB20-SPG2-x/x

Three Gauge Test Box DGB20-SPG3-x/x/x DGB12-SPG3-x/x/x

Four Gauge Test Box DGB20-SPG4-x/x/x/x DGB12-SPG4-x/x/x/x

Example. DGB20-SPG4-16/60/250/600

This will be a four gauge test box with a 0 to 16 bar, a 0 to 60 bar, a 0 to 250 bar and a 0 to 600 bar gauge. The gauge connections and the test hoses have Stauff 20 threads.

N.B. Each of the gauge boxes comes with two test hoses 2 metres long as standard.

Other Configurations of Test Boxes.

Five Gauge Boxes, Six Gauge Boxes or in fact, any number of gauges can be supplied in a test box. Inputs are not limited to pressure but could be speed (RPM), temperature, or any other input you need. Ask Stauff for a quotation for your specific requirements.

Examples of custom test kits made for specific requirements



PLASTIC CASE TEST KITS – HAND HELD GAUGES

Single Gauge Kit

SMB20-1-x

Two Gauge Kit

SMB20-2-x/x

Three Gauge Kit

SMB20-3-x/x/x



(for "x", select the pressure range from the BPG brass bodied 63mm gauges)

Contents

- 1 - STH20-2000 test hose 2m long
- 1 - Pressure Gauge 63mm dia (selected)
- 1 - SMA20G1/4 gauge to hose adaptor
- 1 - SMD20G1/4 direct gauge adaptor
- 1 - SMK20G1/4PC test coupling (1/4"BSPP)
- 1 - SMK20M10X1PA test coupling (M10x1)
- 1 - SRS20G3/8 thread adaptor 3/8"BSP
- 1 - SRS20G1/2 thread adaptor 1/2"BSP

- 1 - STH20-2000A test hose 2m long
- 2 - Pressure Gauges 63mm dia (selected)
- 1 - SMA20G1/4 gauge to hose adaptor
- 1 - SMD20G1/4 direct gauge adaptor
- 1 - SMK20G1/4PC test coupling (1/4"BSPP)
- 1 - SMK20M10X1PA test coupling (M10x1)
- 1 - SRS20G3/8 thread adaptor 3/8"BSP
- 1 - SRS20G1/2 thread adaptor 1/2"BSP

- 2 - STH20-2000A test hose 2m long
- 3 - Pressure Gauges 63mm dia (selected)
- 1 - SMA20G1/4 gauge to hose adaptor
- 2 - SMD20G1/4 direct gauge adaptor
- 3 - SMK20G1/4PC test coupling (1/4"BSPP)
- 3 - SMK20M10X1PA test coupling (M10x1)
- 1 - SRS20G3/8 thread adaptor 3/8"BSP
- 1 - SRS20G1/2 thread adaptor 1/2"BSP

ELECTRONIC DIGITAL PRESSURE GAUGE

PPC 04 – AP Minitester

The PPC 04 Minitester is a versatile hand-held unit which accepts the inputs from two sensors simultaneously allowing the user to read working pressure, peak pressure, and differential pressure as measured by the pressure transducers. Three pressure ranges are available and automatic sensor recognition is a feature of the PPC 04 thus minimising operator error. The unit can be easily configured by the user to give the pressure reading in either bar or psi.

The unit is not limited to pressure measurement alone but temperature, rotational speed, and flow can be measured as well if the relevant sensors are employed.



While the data can be read from the display easily, for situations where a permanent record is needed, an optional printer can be connected by fibre-optic cable to print data either as selected by the user or at pre-determined intervals. Both the PPC 04 – AP readout and the PR PPC thermoprinter are powered by rechargeable batteries making portability a normal feature of the units.

Ask for a demonstration of the PPC 04 or for the complete brochure on the Minitester from your local Stauff representative.

OTHER DIAGNOSTIC EQUIPMENT

A full range of diagnostic equipment from simple portable analogue instruments through to computer based data logging systems is available from Stauff Corporation Pty Ltd. Flow, pressure, temperature, and speed are normal inputs but other specific inputs can be accommodated as well.

For special requirements in diagnostic equipment, ask your local Stauff representative for a solution.



STAUFF CORPORATION PTY LTD

HEAD OFFICE

24-26 Doyle Ave
UNANDERRA NSW 2526
P.O. Box 227
UNANDERRA
NSW 2526
Tel. (02) 4271 1877
Fax (02) 4271 8432
e-mail stauff@stauff.com.au

ADELAIDE

1/3 Endeavour Drive
PORT ADELAIDE SA 5015
P.O. Box 208
PORT ADELAIDE
SA 5015
Tel. (08) 8341 2260
Fax (08) 8341 1604

BRISBANE

463 Boundary Road
RICHLANDS QLD 4077
P.O. Box 20
RICHLANDS
QLD 4077
Tel. (07) 3217 0444
Fax (07) 3217 0300

MELBOURNE

3B 14-16 White St
CLAYTON VIC 3168
P.O. Box 453
MULGRAVE
VIC 3170
Tel. (03) 9543 5411
Fax (03) 9543 5422

SYDNEY

27B Davis Rd
WETHERILL PARK NSW 2164
P.O. Box 7180
WETHERILL PARK DC
NSW 2164
Tel. (02) 9725 2733
Fax (02) 9725 2744

Australia:

Stauff Corporation (Pty.) Ltd.
P.O. Box 227
24-26 Doyle Avenue, Unanderra
Wollongong, N.S.W.
AUS-2526 Unanderra
Tel.: + 61 2 42 71 18 77
Fax: + 61 2 42 71 84 32

Brazil:

Stauff Brasil Ltda.
Avenida Gupe 10.767
Galpão 2, Bloco A
WT - Empresarial Parque Castelo Branco
BRA-Barueri - SP
CEP: 06422-120
Tel: +55 11 47899020
Fax: +55 11 47899021

China:

Stauff International Trading (Shanghai) Co., Ltd.
Shangdian Mansion, Pudong
331, Binzhou Road
CHN-200126 Shanghai
Tel.: + 86 21 58 45 65 60
Fax: + 86 21 58 45 66 80

France:

Stauff s.a.
230, Avenue du Grain d'Or
Z.I. de Vineuil-Blois Sud
F-41354 Vineuil-cedex
Tel.: + 33 2 54 50 55 50
Fax: + 33 2 54 42 29 19

India:

Stauff India Pvt. Ltd.
Gat. No. 2340
Pune-Nagar Road, Wagholi
IND-Pune - 412207
Tel.: + 91 20 705 19 90
Fax: + 91 20 705 19 89

Italy:

Stauff Italia s.r.l.
Via Pola 21/23
I-20034 Birone di Giussano
Tel.: + 39 0362 31 21 13
Fax: + 39 0362 33 55 36

Japan:

Ohtsuka Tec. Co. Ltd.
1-7-19 Minami Shinagawa
Shinagawa-Ku
JPN-Tokyo 140
Tel.: + 81 3 34 72 12 01
Fax: + 81 3 34 72 12 09

Canada:

Stauff Canada Ltd.
866 Milner Avenue
CAN-Scarborough, Ontario M1B 5N7
Tel.: + 1 416 282 46 08
Fax: + 1 416 282 30 39

USA:

Stauff Corporation
7 Wm. Demarest Place
USA-Waldwick, N.J. - 07463
Tel.: + 1 201 444 78 00
Fax: + 1 201 444 78 52

United Kingdom:

Stauff UK
332, Coleford Road
Darnall
GBR-Sheffield, S 9 5 P H
Tel.: + 44 1142 518 518
Fax: + 44 1142 518 519

Distributors and warehouses in all industrial countries.

Walter Stauffenberg GmbH & Co. KG

P.O. Box 17 45 · D-58777 Werdohl
Im Ehrenfeld 4 · D-58791 Werdohl
Tel.: + 49 (0) 2392 916-0
Fax: + 49 (0) 2392 2505
e-mail: sales@stauff.com
Internet: http://www.stauff.com

40 Years of Experience**Worldwide Distribution****Prompt Delivery**

In most industrial countries STAUFF Clamps symbolize quick and easy pipe and hose installation as well as a clean distinct pipe lay-out.

The vibration and noise reducing features are appreciated as being an important contribution to environmental protection.

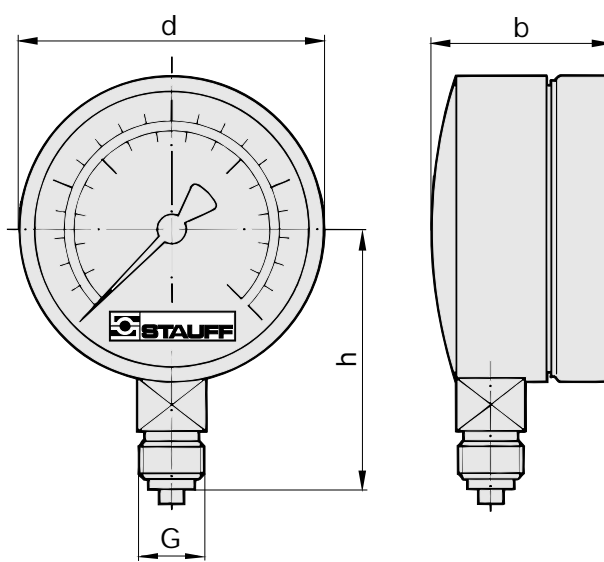
Apart from the technical sophistication of STAUFF Clamps, the second-to-none delivery, prompt service even for special constructions, STAUFF Clamps are also the most economical to install.

STAUFF Clamp applications are almost unlimited. Due to the extraordinary wide programme range, all areas of pipe, tube and hose installation are covered:

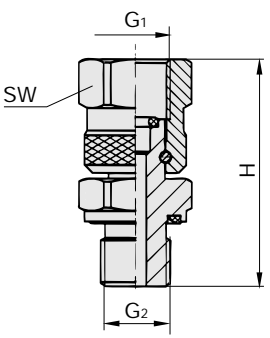
- Industrial Hydraulics
- Mobile Hydraulics
- Marine Hydraulics
- General Industrial Pipe Construction
- Mining Industry
- Nuclear Reactor Construction
- Instrumentation and Control Technology
- Pneumatics

Approved by:

- Bureau Veritas
- Department of the Navy, New York
- Germanischer Lloyd
- Lloyd's Register of Shipping
- Registro Italiano Navale
- TÜV
- United States Coast Guard

	d	b	h	Pressure range [bar]	Order No.	
					G = G ^{1/4}	G = 1/4 NPT
	63	36	53	-1 ... +3	SMM-G ^{1/4} -1-3 BAR	SMM-1/4 NPT--1-3 BAR
				10	SMM-G ^{1/4} -10 BAR	SMM-1/4 NPT-10 BAR
				16	SMM-G ^{1/4} -16 BAR	SMM-1/4 NPT-16 BAR
				25	SMM-G ^{1/4} -25 BAR	SMM-1/4 NPT-25 BAR
				40	SMM-G ^{1/4} -40 BAR	SMM-1/4 NPT-40 BAR
				60	SMM-G ^{1/4} -60 BAR	SMM-1/4 NPT-60 BAR
				100	SMM-G ^{1/4} -100 BAR	SMM-1/4 NPT-100 BAR
				160	SMM-G ^{1/4} -160 BAR	SMM-1/4 NPT-160 BAR
				250	SMM-G ^{1/4} -250 BAR	SMM-1/4 NPT-250 BAR
				400	SMM-G ^{1/4} -400 BAR	SMM-1/4 NPT-400 BAR
600	SMM-G ^{1/4} -600 BAR	SMM-1/4 NPT-600 BAR				
	d	b	h		G = G ^{1/2}	G = 1/2 NPT
<p>Other entries on request Stainless steel version: see catalogue "Stauff Hydraulic Accessories"</p>	100	53,5	87	-1 ... +3	SMM-G ^{1/2} -1-3 BAR	SMM-1/2 NPT--1-3-BAR
				10	SMM-G ^{1/2} -10 BAR	SMM-1/2 NPT-10 BAR
				16	SMM-G ^{1/2} -16 BAR	SMM-1/2 NPT-16 BAR
				25	SMM-G ^{1/2} -25 BAR	SMM-1/2 NPT-25 BAR
				40	SMM-G ^{1/2} -40 BAR	SMM-1/2 NPT-40 BAR
				60	SMM-G ^{1/2} -60 BAR	SMM-1/2 NPT-60 BAR
				100	SMM-G ^{1/2} -100 BAR	SMM-1/2 NPT-100 BAR
				160	SMM-G ^{1/2} -160 BAR	SMM-1/2 NPT-160 BAR
				250	SMM-G ^{1/2} -250 BAR	SMM-1/2 NPT-250 BAR
				400	SMM-G ^{1/2} -400 BAR	SMM-1/2 NPT-400 BAR
600	SMM-G ^{1/2} -600 BAR	SMM-1/2 NPT-600 BAR				

Adjustable Gauge Fitting EMV

	G ₁	G ₂	H	SW	Order No.	
					NBR	FPM
	G ^{1/4}	G ^{1/4}	42	19	EMV-G ^{1/4} -P-OR-PC	EMV-G ^{1/4} -V-OR-VC
	G ^{1/4}	G ^{1/2}	47	19	EMV-G ^{1/4} /G ^{1/2} -P-OR-PC	EMV-G ^{1/4} /G ^{1/2} -V-OR-VC
	G ^{1/2}	G ^{1/4}	51	27	EMV-G ^{1/2} /G ^{1/4} -P-OR-PC	EMV-G ^{1/2} /G ^{1/4} -V-OR-VC
	G ^{1/2}	G ^{1/2}	55,5	27	EMV-G ^{1/2} -P-OR-PC	EMV-G ^{1/2} -V-OR-VC

Product range



STAUFF CLAMPS:

Clamping systems for tubes, hoses, pipes, cables and components

Original STAUFF Clamps:

The tube fastening system in accordance with DIN 3015

Dimensional range from 6 to 800 mm

Different materials available

U-Bolt and DIN clamps

Angle Adjustment Clamps

Special clamps and supports:

Custom built solutions



STAUFF TEST:

Pressure test systems

Venting and sampling of liquid and gas pressure systems

nominal working pressure: 630 bar maximum

100% closeness control

components tested in accordance with DIN 40.080

Test couplings and accessories:

Adaption threads M16x2 - M16x1,5 -

S12,65x1,5- Plug-in system

Test hoses:

DN 2 and DN 4; hose length and fittings on request

MINITESTER PPC-04:

Digital measuring device

for:

Working pressure

Differential pressure

Temperature

Flow

RPH

Data output via

PC or printer



STAUFF FILTERS:

Hydraulic filtration systems

High pressure filters for in-line mounting:

maximum working pressure: 630 bar

Return line tank top filters:

maximum working pressure: 16 bar

Replacement filter elements:

Compatible quality and dimensional interchange to suit most filter makes produced in own facilities

Filter materials: Glass fibre, Metal fibre, Polyester fibre, Wire mesh, Paper



STAUFF HYDRAULIC ACCESSORIES:

Components for the construction of tanks and power units and mobile hydraulics

Level gauges

Filler breathers

Check valves

Diffusers

Spin-On - Filters

Return line bushes

Gauge isolator valves

Level temperature switches

Throttle and shut-off valves

Desiccant air breathers

Suction strainers

Stainless steel pressure gauges

Flow indicators

Air filters



STAUFF BALL VALVES:

Ball valves for flow control in steel, stainless steel,

alloy and other materials.

Minitester PPC 04



Quality and Service
worldwide

Australia:

Stauff Corporation (Pty.) Ltd.
P.O. Box 227
24-26 Doyle Avenue, Unanderra
Wollongong, N.S.W.
AUS-2526 Unanderra
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Approved by:

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Hand-held measuring unit ideal for maintenance, service and putting hydraulic fluid systems into operation

Today's hydraulic systems require a precise, quick and uncomplicated way of measuring important hydraulic parameters. For this purpose STAUFF offers the ideal solution: The PPC 04.

The mobile measuring device PPC 04 is controlled by its 8 buttons enabling the user of the device to access data on working pressure, peak pressure, differential pressure, temperature, flow and rotational speed very easily. This allows for a wide range of applications in the areas of:

- **Industrial hydraulics**
- **Mobile and Agricultural hydraulics**
- **Marine and Offshore hydraulics**
- **Chemical and Petrochemical industry**
- **Energy and Airconditioning industry**
- **Sanitary industry**

The PPC 04 provides two separate sensor inputs which automatically recognise the sensors connected to it and displays the unit and scale for the corresponding sensor. The unit and scale can be changed as the device is being put into operation.

For data output to a thermoprinter, or to a PC by an auxiliary adaptor, the PPC 04 - AP provides an optical data transmission to allow transfer of values measured.

The PPC 04 is unaffected by dirt and can be used under extreme conditions due to its heavy duty rubber cover to protect the device. The PPC is powered either by a 9 V block battery (**PPC 04 - B**) or an integrated rechargeable battery (**PPC 04 - AP**). Measuring for an extended period of time is possible by using an external power supply which also charges the rechargeable battery simultaneously.

PPC 04 - kits are supplied with a set of adaptors which allows the connection of the pressure transducers to STAUFF Test 20/15/12 and STAUFF Test 10 test points – even under pressure. Temperature- and flow sensors are supposed to be mounted in-line. Rotational speed measuring is accomplished without contact by a visual marking on rotating components.

In order to measure differential pressure two transducers of the same pressure range have to be used.

Hand-held unit PPC 04 - B and PPC 04 - AP

Measuring of:

- Pressure in bar and psi
- Temperature in °C and °F
- Flow in l/min and GPM (US)
- Rotational speed in U/min and RPM

PPC 04 - B hand-held unit with block-battery

PPC 04 - AP hand-held unit with rechargeable battery and data output

- 4-digit LCD-display, character height: 13 mm
- automatic recognition of sensors connected
- optical data transmission to transfer values measured to thermoprinter or PC (PPC 04 - AP only)
- Plastic housing made of ABS
- Protective rubber cover with integrated stand and carrying straps
- Auto power off after 15 minutes (except autoprint function)

Power supply:

9 V block battery IEC 6F 22 (PPC 04 - B)

Rechargeable battery - or by external power supply

Supply voltage 9 V (PPC 04 - AP)

12-bit-A/D-converter

Scanning rate ≤ 2 ms

Accuracy < 0,3 % ± 2 Digit

Two 4-pin round plug inputs 0,1...3,3 V, R_e = 470 kΩ

Temperature range 0...+50°C

Storage temperature -20...+60°C

Rel. Humidity < 85%

Dimensions l/w/h 145x70x40 mm

Weight approx. 340 g

Protection level DIN 40050/IP 54



EMC compatibility acc. to:

Interference emission DIN/EN 50081-1 (VDE 0839 part 81-1)

Resistance to jamming DIN/EN 50082-2 (VDE 0839 part 82-6)

Pressure Transducer PTD

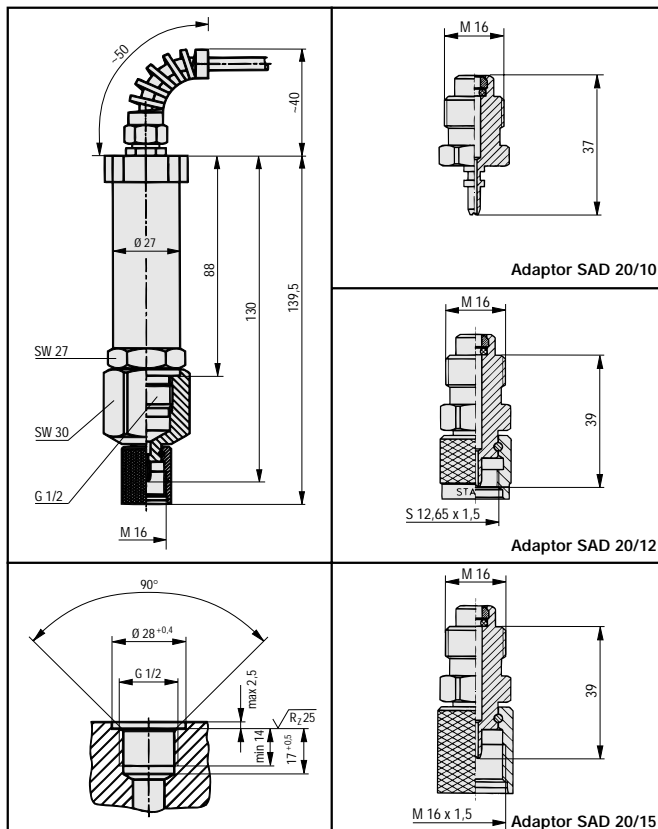
Type	PTD 015	PTD 063	PTD 630
Pressure range	-1...15 bar	0...63 bar	0...630 bar
Overload capacity	20 bar	150 bar	1000 bar
Burst pressure	45 bar	500 bar	1800 bar
Output signal	+0,1...+3,3 V	+0,3...+3,3 V	+0,3...+3,3 V
Reproducibility	<±0,15% FS*	<±0,18% FS*	<±0,15% FS*

Test system piezoresistive
 Temperature deviation <± 0,03 % FS*
 Characteristic curve deviation <± 0,5 % FS*
 Long-term stability < 0,5 % FS/year
 Response time < 1 ms
 Vibration resistance IEC 68-2-6 at 10...500 Hz
 Max. shock-load to IEC 68-2-29
 Peak pressure increase 15.000 bar/s
 Supply voltage +7V...+15V DC
 Current consumption ≤ 5 mA
 Media-temperature range -25...+105°C
 Ambient temperature range -20...+85°C
 Compensated temperature range 0...+85°C
 Storage temperature range -40...+125°C
 Endurance 10 million cycles
 Media application gas, fluids (for use with aggressive media please consult STAUFF)

Transducer connection with adaptor STAUFF Test 20 (M16 x 2) (without adaptor G 1/2 A)
 Material of housing stainless steel 1.4301
 Sealing material FPM
 Weight approx. 200 g
 Protection level DIN 40050 – IP 65

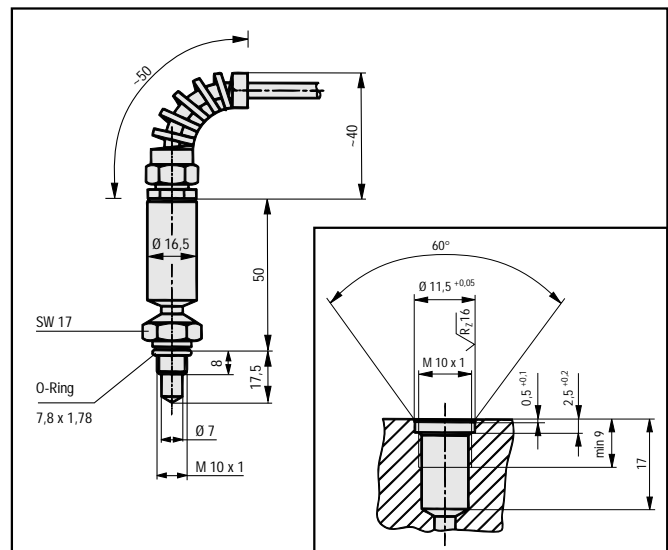
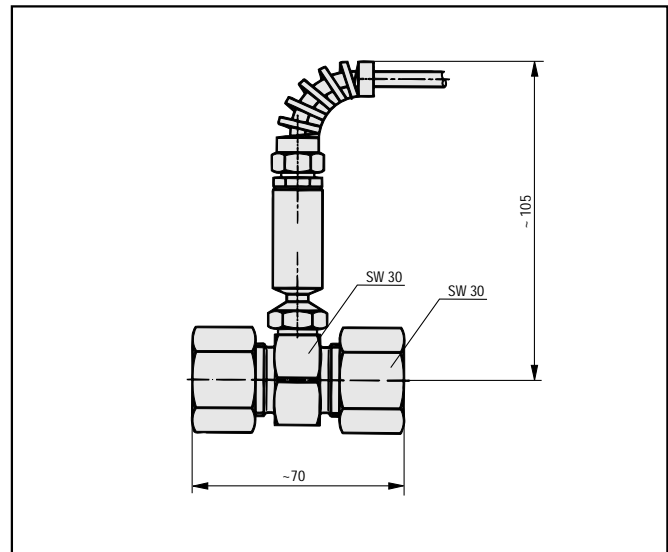
2 mtr.-cable connected with transducer; round plug series 712

*) FS = Full Scale



Temperature Sensor TS 04

Probe system Silicon chip
 Measuring range -25...+125°C
 Accuracy ± 1,5 % FS*
 Response time $T_{0,9}$ approx. 7 s
 Supply voltage +7...+15 V DC
 Current consumption ≤ 3 mA
 Output voltage +0,25...+1,75 V
 Max. working pressure 630 bar
 Ambient temperature range 0...+70°C
 Media-temperature range -25...+125°C
 Storage temperature range -25...+80°C
 Cable length 2 m, round plug
 Sensor connection a) STAUFF-Test-straight fitting SGV-16-S-G for in-line installation
 b) Port connection M10 x 1
 Material Steel 9SMnPb28k
 Surface treatment zinc plated, yellow chromated
 Sealing FPM
 Protection level DIN 40050 – IP 65



Flow-Turbines SFM

Type	SFM-015	SFM-060	SFM-300	SFM-600
Measuring range (l/min)	1...15	7,5...60	15...300	25...600
Pressure range (bar)	400	400	400	350
Characteristic curve deviation ($\pm\%$ FS)	1	1	1	1
Pressure drop (bar)	0,14	0,28	2,0	1,7
Port connection (BSP)	G 1/4	G 3/4	G 1	G 1 1/4
Length tolerance (mm)	± 2	± 2	± 2	± 2
Weight (g) approx.	650	750	1200	1800

Media-temperature range	-20...+150°C
Response time	approx. 200 ms
Reproducibility	$\pm 0,2\%$ FS
Calibration viscosity	30 mm ² /s (= 30 cSt)
Material of housing	Aluminium
Surface treatment	black anodized
Test point	SMK 20 (M16 x 2)
Additional connection	M10x1 (standard: screw-plug)
Protective system	DIN 40050/IP40

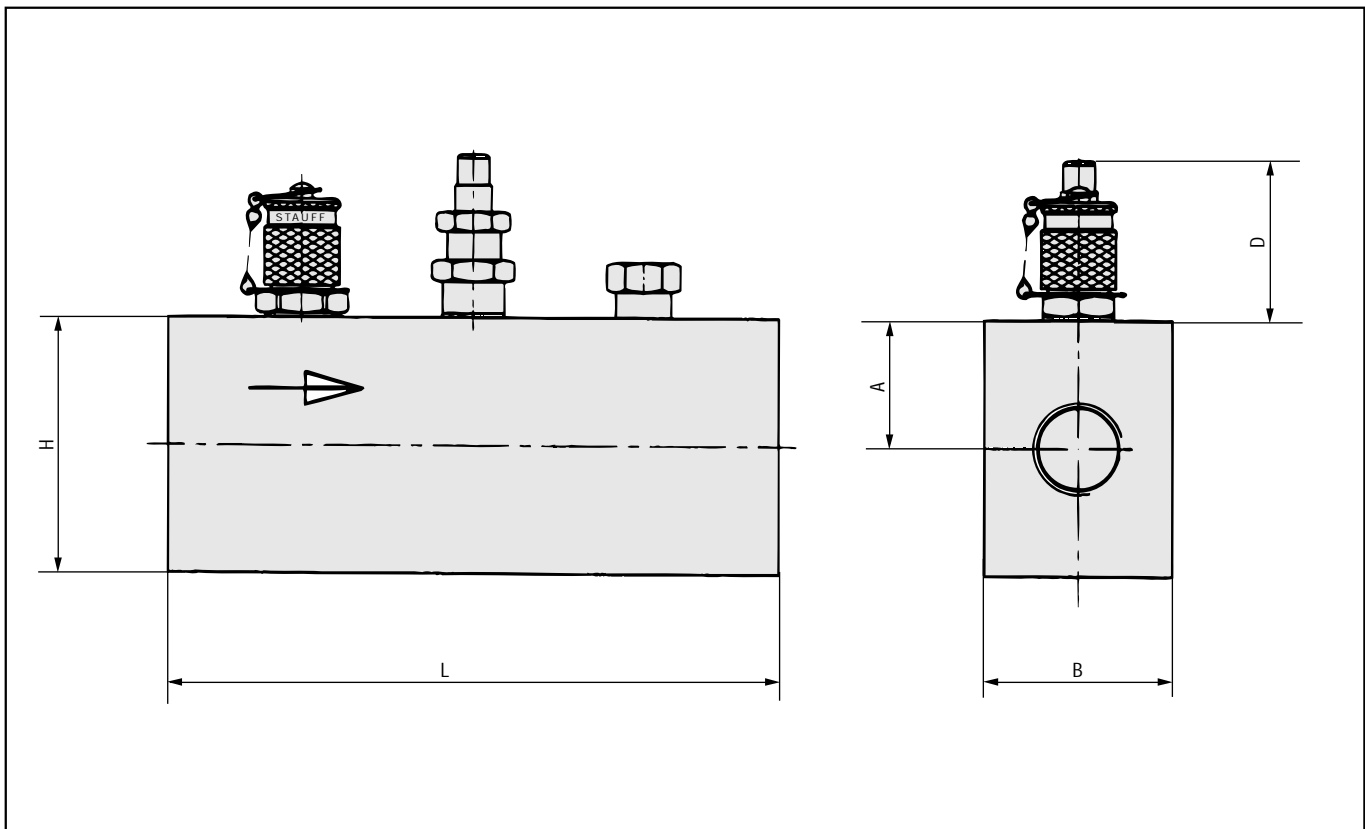
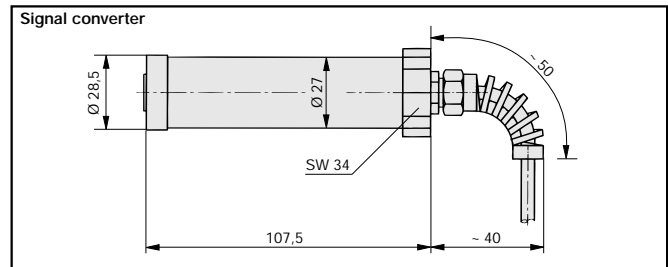
Type	SFM-015	SFM-060	SFM-300	SFM-600
A	22,5	26,5	30,5	33
B	31,5	38	50	62,5
D	58,5	57,5	57,5	57,5
L	120	129	149	173
H	37,5	46	56	63,5

Dimensions in mm

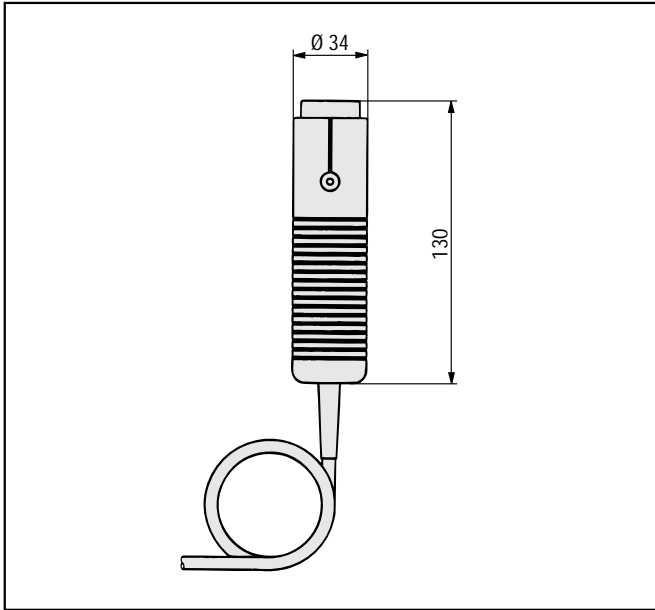
Signal Converter

The signal converter must be used for the connection of the flow turbine, and is supplied with each turbine. Flow turbine and signal converter are a coordinated unit. This unit must not be changed at all lateron. In order to connect the signal converter with the PPC 04, the SFM-04 cable must be used. This cable does not belong to the supply schedule of the flow turbine.

Input	10...2000 Hz, 10...100 mVss
Output	0...3 V and sensor recognition
Accuracy	$\leq 0,3\%$ FS
Response time	approx. 200 ms
Working temperature	0...+60°C
Storage temperatur	-20...+80°C
Supply voltage	+7...+15 V DC
Current consumption	approx. 8 mA
Electrical connection	Turbine end: cable (0,4 m) connected to signal converter with 5 pin plug connection to hand-held unit: cable SFM-04 (2 m)
Material of housing	stainless steel 1.4301
Weight	approx. 200 g



Rotational Speed Sensor SDS-04



Rotational speed measurement (RPM) is made possible with the use of the SDS 04 non-contact sensor. Speed measurement is achieved by using a photoelectric cell, which counts revolutions using a reflecting strip or marking on the rotating surface, thus resulting in a high level of accuracy.

Additionally a contact sensor is available. A mechanical contact adaptor is connected to the speed sensor, which is then held onto the rotating surface during measurement, also resulting in a high level of accuracy.

When used with particularly small surfaces, accurate speed measurements may be more readily obtained by using a special focussing adaptor.

Lengthening of the SVK 04 cable could result in inaccurate speed measurement and should be avoided. The standard cable length of 3 m, fixed to the sensor should not be altered for best results.

Technical Data

Input

Measuring range 20...10.000 RPM
 Measuring distance 25...600 mm
 Measuring angle $\pm 45^\circ$
 Measurement optical, red LED

Output

Output signal 0...3 V DC \triangleq 0...10.000 RPM
 Accuracy <0.5 %
 Resulotion ± 5 RPM
 Supply voltage 7...9 V DC (of the PPC 04)

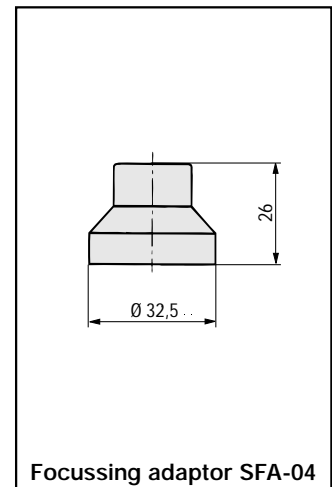
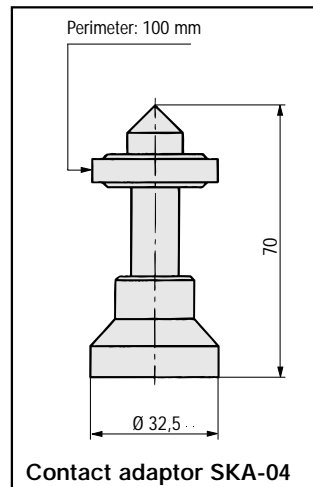
Electrical connection

Cable connected to the sensor lenght 3 m, round plug (extension cable not recommended)

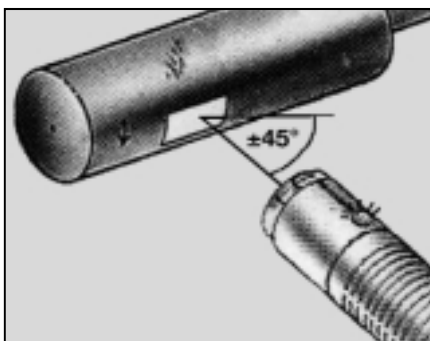
General

Material ABS
 Dimensions D= \varnothing 34, L=130 mm (without adaptor)
 Weight approx. 230 g

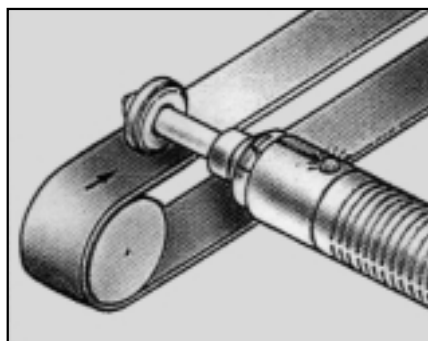
Accessories



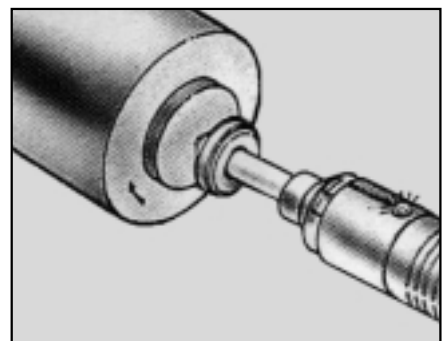
Applications



App. 1 – rotating shaft non-contact RPM



App. 2 – tangent RPM with contact adaptor



App. 3 – front-side RPM with contact adaptor

Thermoprinter PR PPC (for PPC 04 - AP only)

The thermoprinter PR PPC allows the recording of important hydraulic parameters such as maximum, minimum and current values, following a pre- set transmission interval from 1 to 100 s.

The power-off mode of the PPC 04 is switched off during long-period measuring. The thermoprinter PR PPC is powered by an external power supply KNG PR PPC to which the PPC 04 - AP can be connected as well.

All data measured by the PPC 04 - AP is transferred by a dirt-insensitive optical data transmission in conjunction with the glass fibre cable SDK-04.

PC-connection (PPC 04 - AP)

The PPC 04 - AP can also be connected to any PC by using the glass fibre cable (SDK - 04) and an auxiliary adaptor (SPA - 04). Together with the PC-adaptor, we supply a data record program for the measuring values, which is compatible to Microsoft Windows 3.1X, Windows 95 and Windows NT. All data can be displayed on a PC-screen, and it can be stored in Microsoft Excel.

Extension cable SVK-04

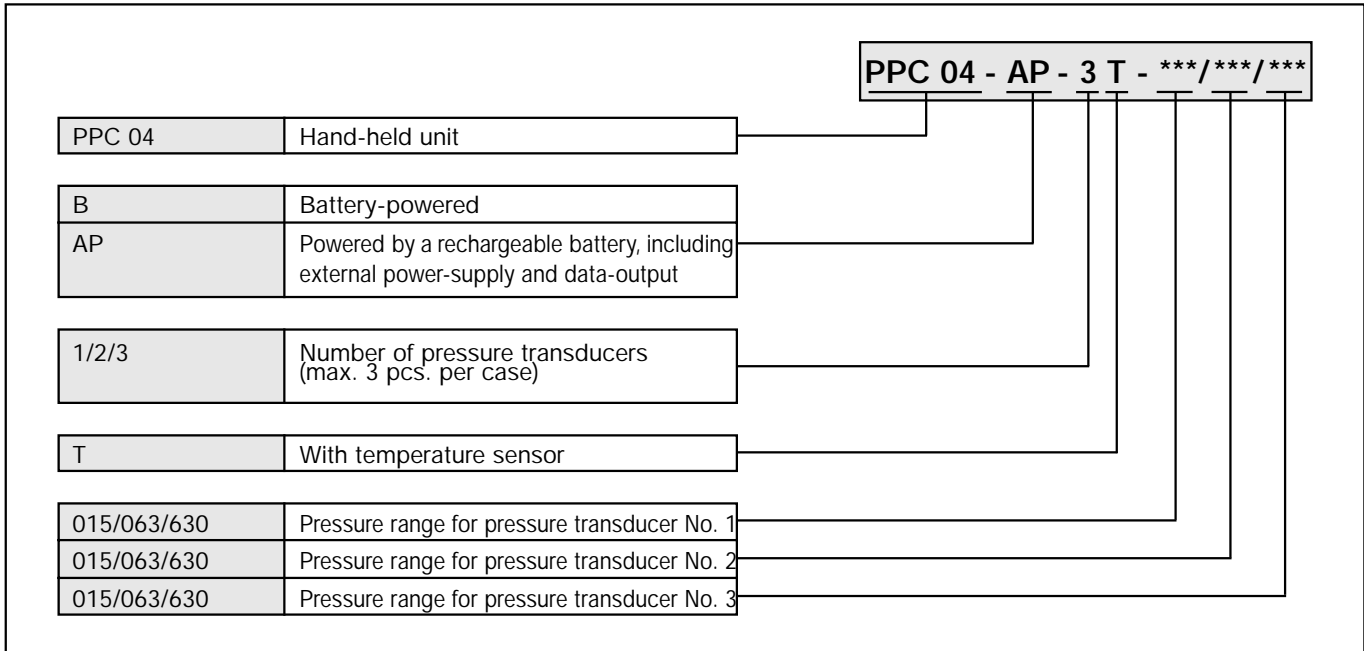
An extension cable can be supplied for all sensors, except the rotational speed sensor. Its length is 3 m. Accordingly, there is a maximum overall cable length of 5 m.



PPC 04 kits are supplied with a plastic case including foam inserts which provides room for the following components:

- 1 hand-held unit
- 1 external power supply
- 3 pressure transducers c/w STAUFF Test 20 adaptors
- 1 temperature sensor with straight fitting SGV-16 S-G
- 3 adaptors for STAUFF Test 15 / 12 / 10 (supplied with each PPC 04 kit)
- 1 operating instruction

Order Code for PPC 04 kits



In order to measure differential pressure two (2) transducers of the same pressure range have to be used.

Components

Description	Order Code
Hand-held unit with block battery Hand-held unit with rechargeable battery and data output External power supply ... input voltage 220 V or 110 V Rechargeable battery for PPC 04 - AP	HAG PPC 04 - B HAG PPC 04 - AP KNG-04 - *** V Akku - 9V
Pressure transducer; connection G ^{1/2} A *** = pressure range 015, 063 or 630 (bar) Pressure transducer c/w STAUFF Test 20 adaptor *** = pressure range 015, 063 or 630 (bar) STAUFF Test 20 adaptor for pressure transducer STAUFF Test 20 / STAUFF Test 15 adaptor STAUFF Test 20 / STAUFF Test 12 adaptor STAUFF Test 20 / STAUFF Test 10 adaptor	PTD *** PTD *** / SDA SDA 20 - G ^{1/2} SAD 20/15 - P SAD 20/12 - P SAD 20/10 - P
Temperature sensor (w/o straight fitting) Straight fitting 16 S with M 10 x 1 port connection for temp. sensor (Other dimensions on request)	TS-04 SGV - 16S - G
Plastic case c/w foam inserts	case PPC 04
Flow-turbine c/w signal converter *** = flow rate 015, 060, 300 or 600 (l/min) Connecting cable PPC 04 - signal converter	SFM - *** cable SFM - 04
Rotational speed sensor Contact adaptor Focussing adaptor	SDS - 04 SKA - 04 SFA - 04
Thermoprinter External power supply for thermoprinter PR PPC (110 V / 220 V change-over switch) Glass fibre cable PPC 04 - thermoprinter / PC-adaptor PC-adaptor to connect glass fibre cable to PC Paper for thermoprinter PR PPC	PR PPC KNG PR PPC SDK - 04 SPA - 04 SPR PR PPC
Plastic case with foam inserts (without printer) Plastic case with foam inserts (with printer)	case PPC-04 case PPC PR
Extension cable for sensors, lenght = 3 m	SVK-04

Product range



STAUFF CLAMPS:

Clamping systems for tubes, hoses, pipes, cables and components

Original STAUFF Clamps:

The tube fastening system in accordance with DIN 3015

Dimensional range from 6 to 800 mm

Different materials available

U-Bolt and DIN clamps

Angle Adjustment Clamps

Special clamps and supports:

Custom built solutions



STAUFF TEST:

Pressure test systems

Venting and sampling of liquid and gas pressure systems

nominal working pressure: 630 bar maximum

100% closeness control

components tested in accordance with DIN 40.080

Test couplings and accessories:

Adaption threads M16x2 - M16x1,5 -

S12,65x1,5- Plug-in system

Test hoses:

DN 2 and DN 4; hose length and fittings on request

MINITESTER PPC-04:

Digital measuring device

for:

Working pressure

Differential pressure

Temperature

Flow

RPH

Data output via

PC or printer



STAUFF FILTERS:

Hydraulic filtration systems

High pressure filters for in-line mounting:

maximum working pressure: 630 bar

Return line tank top filters:

maximum working pressure: 16 bar

Replacement filter elements:

Compatible quality and dimensional interchange to suit most filter makes produced in own facilities

Filter materials: Glass fibre, Metal fibre, Polyester fibre, Wire mesh, Paper



STAUFF HYDRAULIC ACCESSORIES:

Components for the construction of tanks and power units and mobile hydraulics

Level gauges

Filler breathers

Check valves

Diffusers

Spin-On - Filters

Return line bushes

Gauge isolator valves

Level temperature switches

Throttle and shut-off valves

Desiccant air breathers

Suction strainers

Stainless steel pressure gauges

Flow indicators

Air filters



STAUFF BALL VALVES:

Ball valves for flow control in steel, stainless steel,

alloy and other materials.

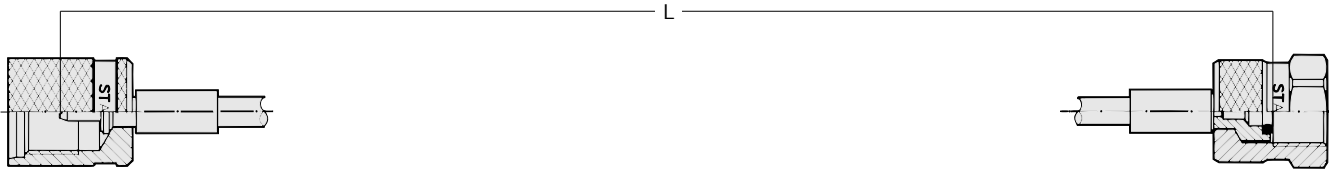
Technical data for Test-hoses

Ordering code		A	B	C	
Nominal bore (DN)	(mm)	DN 2	DN 2	DN 4	
max. working pressure (PN)	(bar)	400	630	340	
min. bursting pressure	(bar)	1100	1900	850	
Testing pressure	(bar)	600	950	570	
Pressure rating in bar at indicated temperature	at 0° C	(bar)	488	768	463
	at 30° C	(bar)	440	693	418
	at 50° C	(bar)	400	630	380
	at 80° C	(bar)	344	542	327
	at 100° C	(bar)	308	485	293
Working temperature	(° C)	- 35 ... 100 (120)			
Inside diameter	(mm)	2	2	4	
Outside diameter	(mm)	5	5	8,6	
Bending radius	at working pressure	(mm)	20	20	40
	at - 20° C	(mm)	30	30	60
max. coil length	(m)	100	100	100	
Weight/m	(g)	16	16	42	
Inner/outer tube		PA	PA	PA	
Reinforcement		Syntheticfibre	Syntheticfibre	Syntheticfibre	

Hose ends made of 9 S Mn Pb 28 (1.0718), zinc plated and chromated

Stainless steel on request

Ordering code



L

SMS — **20**

Hose End 1 (see Type page 28 - 31)		
20	A	J
15	S	D
12	K	B
10	L	U
M	G	P
N	F	
W	C	

/ M . . .

Hose End 2 (see Type page 28 - 31)

 only specify when
 2 different hose ends
 are required

3000

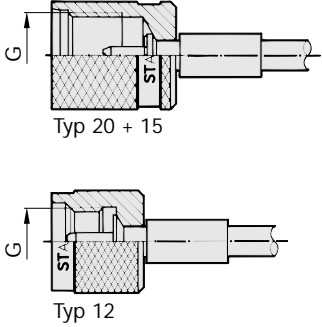
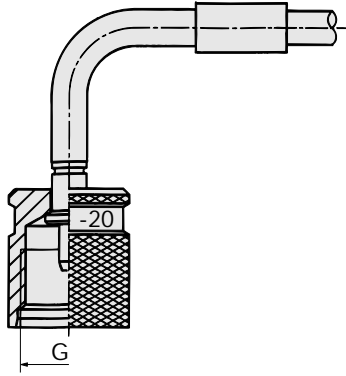

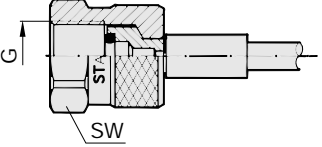
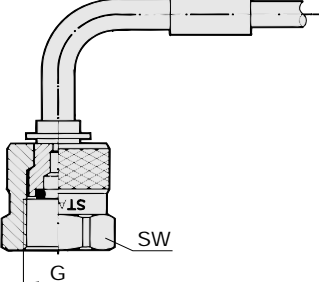
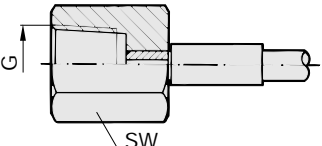
Length

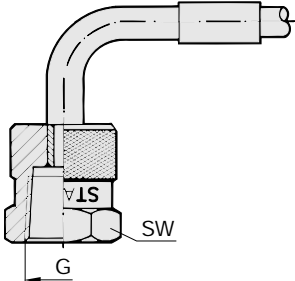
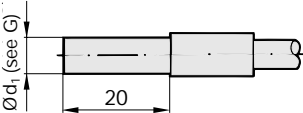
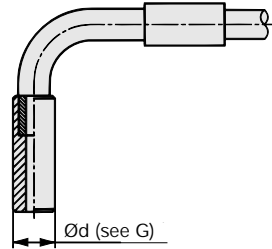
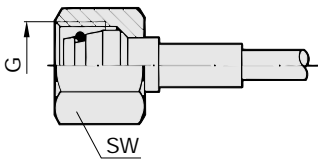
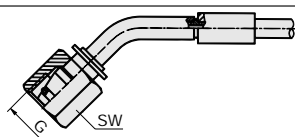
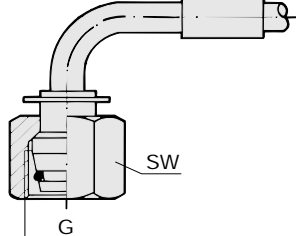
 Length in mm
 (see L above)

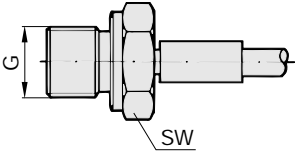
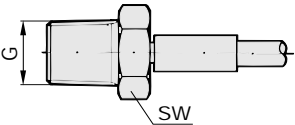
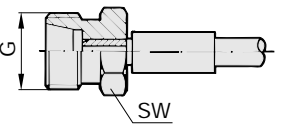
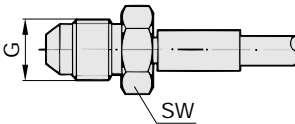

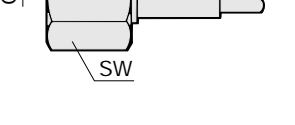
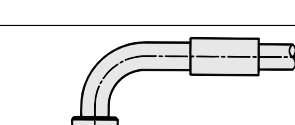
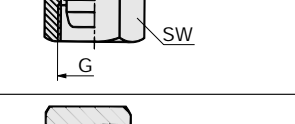
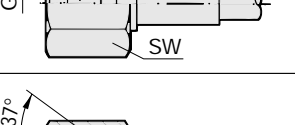
A

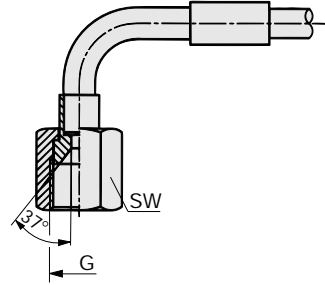
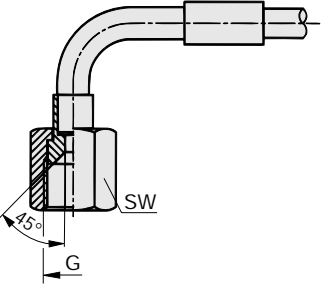
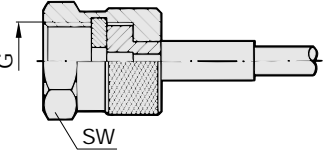
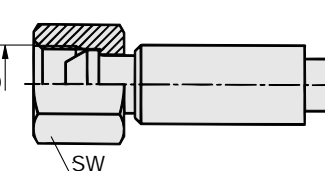
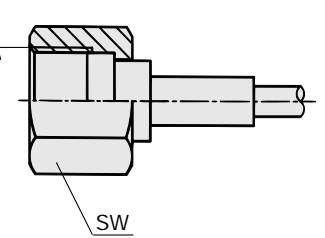
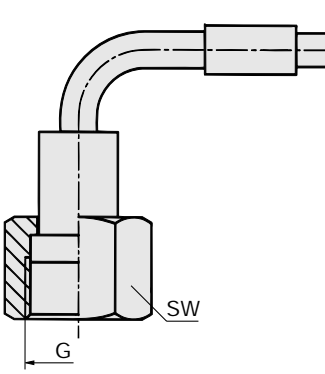
Nominal bore

 A = DN 2 400 bar
 B = DN 2 630 bar
 C = DN 4 340 bar

Description	Hose end	Type	G	SW	DN	
STAUFF-TEST Screw-type Suitable for test points			20	M16 x 2	2 and 4	
15	M16 x 1,5	12	S 12,65 x 1,5			
STAUFF-TEST Screw-type 90° elbow Suitable for test points		O	20	M16 x 2	2	
15	M16 x 1,5	12	S 12,65 x 1,5			
STAUFF-TEST Plug in-type			10	Plug in system	2	
Gauge adapter BSP-thread for G ³ / ₈ and G ¹ / ₂ BSP swivel nut like type N		M	1/4	G 1/4	19	2 and 4
		3/8	G 3/8		22	2
90° elbow gauge adapter BSP-thread for G ³ / ₈ and G ¹ / ₂ swivel nut like type N		W	1/4	G 1/4		2 and 4
		1/2	G 1/2		27	
Gauge adapter NPT-thread for 1/4 NPT swivel nut like type M		N	1/4	1/4 NPT	19	2
		1/2	1/2 NPT		27	

Description	Hose end	Type		G	SW	DN
90° elbow gauge adapter NPT-thread for 1/4"NPT swivel nut like type M		A	1/4	1/4 NPT	19	2 and 4
			1/2	1/2 NPT	27	
Standpipe according to DIN 2353		S	4	4 LL		2
			6	6 L - 6 S		2/4
			8	8 L - 8 S		2/4
			10	10 L - 10 S		2/4
			12	12 L - 12 S		2
			15	15 L		2
			1/4	1/4"		2/4
Standpipe according to DIN 2353 90° elbow		on request				2 and 4
Seal with O-ring for 24° cone fitting according to DIN 2353 c/w swivel nut		K	6 LL	M10 x 1,0	12	4
			6 L	M12 x 1,5	14	2/4
			8 L	M14 x 1,5	17	2/4
			10 L	M16 x 1,5	19	2/4
			12 L	M18 x 1,5	22	2/4
			6 S	M14 x 1,5	17	2/4
			8 S	M16 x 1,5	19	2/4
			10 S	M18 x 1,5	22	2/4
			12 S	M20 x 1,5	24	2/4
Seal with O-ring for 24° cone fitting according to DIN 2353 c/w swivel nut 45° elbow		R	6 S	M14 x 1,5	17	2 and 4
Seal with O-ring for 24° cone fitting according to DIN 2353 c/w swivel nut 90° elbow		L	6 L	M12 x 1,5	14	2 and 4
			8 L	M14 x 1,5	17	
			10 L	M16 x 1,5	19	
			6 S	M14 x 1,5	17	
			8 S	M16 x 1,5	19	
			10 S	M18 x 1,5	24	

Description	Hose end	Type	G	SW	DN	
Male thread according to DIN 3852		G	12	M12 x 1,5	17	2 and 4
			1/8	G 1/8	14	
			1/4	G 1/4	19	
			1/2	G 1/2	27	
Male thread NPT according to ANSI-Norm		F	1/8	1/8 NPT	13	
			1/4	1/4 NPT	17	
Male thread for 24° cone fitting according to DIN 3852		C	6 L	M12 x 1,5	14	
			8 L	M14 x 1,5	17	
			6 S	M14 x 1,5	17	
			8 S	M16 x 1,5	17	
Male thread according to SAE J 514		J	1/4	7/16 - UNF	14	
			5/16	1/2 - UNF	14	
			3/8	9/16 - UNF	17	
Universal sealing head with swivel nut for 24° cone fitting according to DIN 2353		D	6 L	M12 x 1,5	14	
			8 L	M14 x 1,5	17	
			10 L	M16 x 1,5	19	
			12 L	M18 x 1,5	22	
			6 S	M14 x 1,5	17	
			8 S	M16 x 1,5	19	
			10 S	M18 x 1,5	22	
			12 S	M20 x 1,5	24	
Universal sealing head with swivel nut for 24° cone fitting according to DIN 2353 90° elbow		Q	10 L	M16 x 1,5	19	
			10 S	M18 x 1,5	22	
Sealing head with swivel nut for cone fitting according to DIN 8542		B	1/4	G 1/4	17	
Sealing head with swivel nut according to SAE J 514 37° cone		U	1/4	7/16 - 20 UNF	14	
			5/16	1/2 - 20 UNF	17	
			3/8	9/16 - 18 UNF	19	
Sealing head with swivel nut according to SAE J 514 f 45° cone		UR	1/4	7/16 - 20 UNF	14	

Description	Hose end	Type	G	SW	DN			
Sealing head with swivel nut according to SAE J 514 37° cone 90° elbow		E	1/4	7/16 - 20 UNF	14			
Sealing head with swivel nut according to SAE J 514 f 45° cone 90° elbow			ER	1/4	7/16 - 20 UNF	14		
Test hose for air brake systems				P	2	M 16 x 1,5	19	
Sealing head with swivel nut 60° cone					H	1/4	G 1/4	17
Screw-type ORS according to SAE J 1453						T	1 1/16	1 1/16 - 16 UN
Screw-type ORS according to SAE J 1453 90° elbow		V		1 1/16			1 1/16 - 16 UN	21
						2 and 4		



WEBTEC

WEBSTER INSTRUMENTS (A DIVISION OF WEBTEC PRODUCTS LIMITED)



Hydraulic Data Acquisition System with
ViscoCorrect™ (Automatic Viscosity Correction)

AC100

Data
Logger

Introduction

Experience

Webster Instruments, a division of Webtec Products Ltd, designs and manufactures a wide range of hydraulic test equipment with thirty-five years experience in the fluid power industry.

Being at the leading edge of hydraulic diagnostic test equipment, Webster Instruments have always looked to improve their product range, and it is this philosophy which has led to the introduction of the Webster **C1000**.

The **C1000**, a dedicated hydraulic test system, has evolved from the PC100 that was originally designed for our own production testing and subsequently sold throughout the world.

In response to customer requirements, the **C1000** has been developed as a more rugged, easy-to-use system now incorporating all hardware and software.

The **C1000** software includes new features such as viscosity measurement and ViscoCorrect™ (a method of automatic viscosity correction for use with Webster turbine flow meters).



Webtec Products Ltd located at their new premises in St. Ives, Cambridgeshire, UK.

Webster C1000

The **C1000** is a complete hydraulic data acquisition system designed and built to your specification.

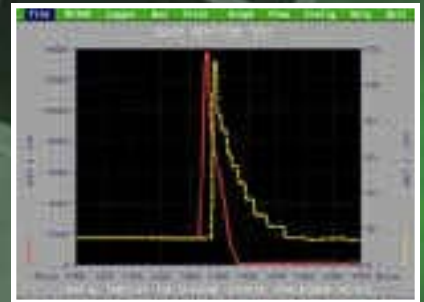
The system provides a complete solution for production and development testing of hydraulic components in a fast, efficient manner, without having to first learn complicated programming skills; all functions are controlled with simple on-screen menus while on-line help is never more than a key press away.

Principally designed for use with the Webster range of flow, temperature, pressure, and speed sensors, the **C1000** also allows you to customise input channels and perform real-time calculations.

You can display measurements in a variety of screens, while a host of data logging and report functions make the **C1000** a powerful test and diagnostics tool.

Features

The **C1000** allows you to display up to 28 'standard' inputs such as flow, speed, temperature and pressure. If required, different sensors can be added by defining special custom or 'soft' channels. Furthermore you can easily add 'virtual' channels to perform real-time calculations on any input.



Graph showing high speed data logging

All configuration details are stored in 'layout files' thus making the **C1000** highly flexible and allowing you to change the system set-up for different tests at the touch of a key.

The **C1000** is pre-configured with common fluid characteristics allowing you to easily monitor kinematic viscosity by measuring fluid temperature. In addition, ViscoCorrect™ can substantially reduce test times by allowing you to accurately measure flow over a wide range of temperatures.

Automatic Viscosity Correction Correct™

Applications

Whether your business involves fault-finding, calibrating or monitoring of hydraulic components, the **C1000** offers a method of data logging suitable for you. Five different methods allow data capture to be as fast as 2000 readings per second (0.5 ms), or as little as a reading every 10 minutes.

● Production / Rebuilding

Applications where the **C1000** excels are pump / motor manufacturers and rebuilders. The ability to supply component performance data quickly to a customer re-enforces the provider's expertise and assures original product performance. 'Log on a key press', 'online', and 'continuous' logs are designed for this type of testing.



A typical pump test rig using Webster test equipment in Edmonton, Canada.

● Condition monitoring

With a 'periodic log' the **C1000** can be left to run for an extended time to record trend information about a hydraulic system.

● Diagnostics

The 'quick profile log' is a very powerful diagnostics tool allowing the user to rapidly measure shock pressures and other unpredictable conditions within a hydraulic system.



Webster test equipment installed on the pump test facility at Heavyparts Hydraulics Ltd based in the UK.

● Quality control

Due to the **C1000**'s range of report and graphing capabilities the system is ideal for documenting equipment for ISO 9000 conformity.

● Research and development

The versatility of the **C1000** allows the engineer to measure viscosity and perform real-time calculations such as power, torque, Reynolds number and other custom measurements.

Ease of use

The **C1000** is supplied fully tested and pre-configured to your specifications.

The intuitive software means you do not have to learn any special programming language, as all functions are menu-driven. Individual test set-ups are stored in the **C1000** and can be called up as required.

Should you require technical assistance, help is available at the touch of a key within the software, in the fully illustrated manual or from one of our experienced technical staff who can be contacted by phone / fax or e-mail.

User input to the **C1000** can be via keyboard or two foot-activated switches.

ViscoCorrect™ provides consistently accurate flow readings over a wide viscosity range, allowing you to spend less time waiting for oil to warm up and more time testing.



At-a-glance viewing of data display

Menu-driven

Software

Data logging

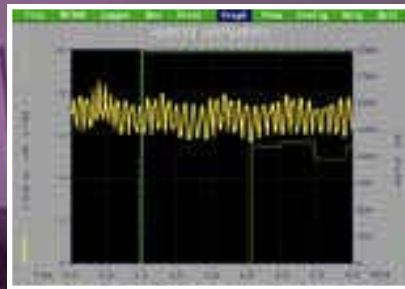
The **C1000** incorporates five methods of data logging, each one designed in answer to a specific situation. If, for example, you want to calibrate a piece of equipment logging results as and when appropriate, the test can be performed hands-free using 'log on a key press' with the foot pedals. Should you wish to graphically view results at a fixed rate then the 'online log' caters for that.

On other occasions you might want to log a hundred readings over ten seconds to measure a pump's performance. No problem, the 'continuous log' is designed for just that.



Normal panel display

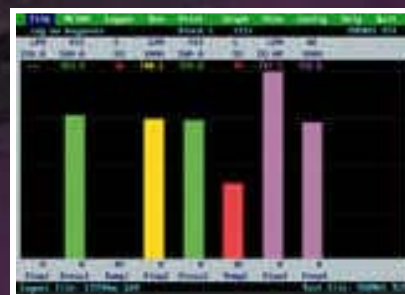
In unpredictable situations where you need to diagnose a fault the **C1000** comes into its own. The 'quick profile log' can be triggered on an input level's rise or decay past a pre-set value. A 'quick profile log' continuously records up to four channels in a buffer allowing you to see events before and after a trigger event.



Line graph display

Should you wish to measure a pressure spike in a system, you can log one flow and one pressure every 1/2 millisecond - fast enough to measure each piston on a piston pump.

For those of you in less of a hurry the 'periodic log' allows you to log results for an extended time, for example, to monitor equipment condition.



Histogram display

Channels

The **C1000** allows a maximum of 12 digital channels (flow and speed) and 16 analogue channels (temperature and pressure). If required, you can easily create customised 'soft' channels for different analogue and digital measurements.

Kinematic viscosity is automatically calculated by the **C1000** allowing you to measure the fluid viscosity wherever you have a temperature sensor. Should you wish to perform real-time calculations, 'virtual' channels can be used to create terms such as power, volumetric displacement, differential pressure, and Reynolds number.

All inputs whether 'standard', 'soft', or 'virtual' can be quickly configured using the on-screen menus.

The system flexibility allows 'screen layouts' to be created for particular applications; once configured you can store layout files using descriptive names for easy identification and later retrieval. Each layout file stores sensor configurations and software settings.

The end result is a flexible system that can be re-configured for a different application at the touch of a key.

Display

The **C1000** allows you to display readings in five different screens selected by a single key.

The 'normal panel' can simultaneously display all 28 inputs plus 'soft' and 'virtual' channels. During testing you may only want to see a select few measurements. The 'super panel' can display up to eight channels in **LARGE** (25 mm) numerals or as bar graphs allowing at-a-glance viewing.



Super panel display

In addition to the 'panel displays', the 'histogram' and 'line graph' graphically display readings in real-time allowing you to view a measurement trend as well as the exact value.

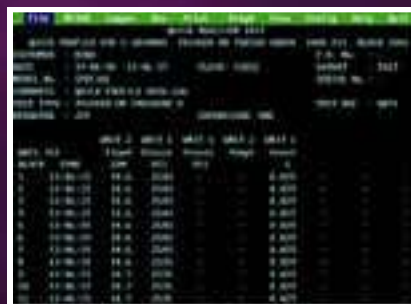
Once a test has been recorded data can be reviewed in any of these four panel screens, or as a 'data table' of the whole test.

Reports

An integral part of the **C1000** is its ability to quickly create text and graph reports either for your own records or to send to your customers.

Text reports can be 'narrow' to include eight specific measurements or 'wide' to include all active channels. When carrying out a test you can enter useful information such as test description, customer name, model number, serial number, and operator, etc. This information is automatically reproduced at the top of all text reports to ensure they play a valuable part in any ISO 9000 quality and certification system.

Both graph and text reports can be easily printed, using a variety of common printers, literally at the touch of a key.



From Data Table. . .



. . . to printed report (in one key press)

Specification

Channels

- Maximum 16 analogue, 12 digital
- 'Soft' and 'virtual' channels (maximum 44)

Display screens

- 'Normal panel' (1 to all channels)
- 'Super panel' (1 to 8 channels)
- 'Histogram' (1 to 10 channels)
- 'Line graph' (1 to 4 channels)

Data logging

- Five methods of data logging:
 - 'Log on a key press'
 - 'Online log'
 - 'Continuous log'
 - 'Quick profile log'
 - 'Periodic log'
- Maximum 2000 readings/second (sample rate 0.5 ms)
- Maximum number of readings 44 per block
- Maximum number of blocks 8000 / test

Output

- 'Wide' and 'narrow' text reports
- 'Line graphs'
- Colour printer and plotter support including:
 - HP inkjet
 - Laser postscript
 - HPGL plotter
 - Epson dot matrix
- Export files in ASCII format to commercial spreadsheeting packages
- Export data from the Webster MC100 to the C1000

2000 Readings/Sec

Micro processor based

Hardware

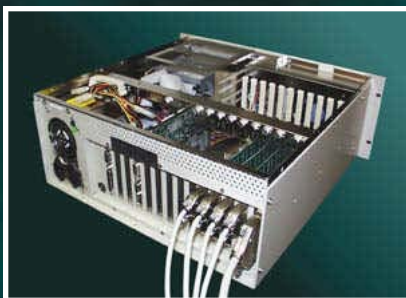
C1000-1



C1000-1

There are two standard variations of the C1000. The C1000-1 comprises two 19" units, the conditioning unit and an industrial computer, housed in a rugged 19" metal enclosure. The system can include up to 28 inputs, and is fitted with a 3.5" floppy disk and 2.1 Gb hard disk as standard. The computer has multiple ISA slots and sufficient space for additional hardware components to be added, (such as a network card or CD-ROM).

 All hardware CE compliant



19" industrial computer - detail

C1000-2



C1000-2

The C1000-2 offers a compact solution with all the basic functionality of the C1000-1.

The C1000-2 comprises of a 19" conditioning unit housed in a rugged metal case and a wall mountable industrial computer. The system can include up to 28 inputs, and is fitted with a 3.5" floppy disk and 2.1 Gb hard disk as standard. Due to its compact design no additional hardware may be added to the computer.

 All hardware CE compliant

Options & Accessories



17" Monitor and Keyboard

Both the C1000-1 and C1000-2 can be supplied with accessories, including VDU, keyboard, foot switches and printer. Optional Network card and CD-ROM are available for the C1000-1.

Customer modifications of both C1000 models are available on request.



Foot operated switches for 'hands free' data logging

Technical Specifications

General

Signal conditioning unit

Flow & temperature cards

- 3 channel
- Single Eurocard 100 x 160 mm
- 3 unit height
- 8 HP width front panel
- 5-pin locking DIN

Pressure cards

- 8 Channel
- Single Eurocard 100 x 160 mm
- 3 unit height
- 24 HP width front panel
- 5-pin locking DIN
- Independent variable gain instrumentation amplifiers
- Independent variable zero offset
- Nom. input sensitivity 100 mV
- 10 V excitation voltage

Post processing

Digital

- 16 bit pre-scalar
- 32 bit period counter
- Period clock: 1 MHz
- Maximum input frequency: 1 MHz
- Independent time-out counters
- Multiple period measurements
- Connection via four 9 way 'D' style connectors

Analogue

- 12 bit A/D, single channel 100 kHz maximum
- 16 channel multiplexer
- Connection via 37 way 'D' style connector

C1000-1

Industrial computer

- 19" rack mountable
- ISA BUS single board computer
- 14 slot ISA backplane
- 3.5" floppy disc drive
- 2.1 Gb hard drive
- Power supply 115 VAC / 230 VAC
- 300 W max. DC output (Optional CD-ROM) (Optional network card)

Dimensions:

C1000-1 metal enclosure

- H = 680 mm
- D = 600 mm
- W = 600 mm

C1000-2

Industrial computer

- Wall mountable
- ISA BUS single board computer
- 6 slot ISA backplane
- 3.5" floppy disc drive
- 2.1 Gb hard drive
- Power supply 115 VAC / 230 VAC
- 200 W max. DC output

Dimensions:

C1000-2 wall mountable industrial computer

- H = 266 mm
- D = 400 mm
- W = 175 mm

C1000-2 signal conditioning unit enclosure

- H = 200 mm (including feet)
- D = 450 mm
- W = 500 mm

Connections

- 5-pin locking DIN
- Mains via IEC (CE22) connector
- Keyboard via PS2 style 5 pin mini-DIN
- 1 Parallel port via 25 way 'D' style connector
- 2 serial ports via 9 way 'D' style connector
- VDU via High Density 'D' style connector

Options & Accessories

- Network card (BNC connector)
- CD-ROM
- 17" VGA VDU
- 102 key AT keyboard
- Printer

Fast & easy set-up

Associated products

Webster MC100

The Webster MC100 can simultaneously display and log eight inputs: two flows, two speeds, two temperatures, and two pressures. Advanced functions allow you to automatically measure differential pressure, peak pressure and power.



The MC100 with optional printer (MP100)

The MC100 portable flow computer is particularly aimed at on-site hydraulic diagnostic testing. The optional MP100 is ideal for printing performance graphs and test data for immediate analysis.

Data can be easily exported to the C1000 for advanced editing and report writing.

Webster Sensors

Bi-directional flow meters (Temperature output included with all these flow meters)

Without load valve		Flow
Model		
LT 5	0.1	5 lpm
LT10	0.2	10 lpm
LT20	0.3	20 lpm
LT50	2	50 lpm
LT125	4	125 lpm
LT250	10	250 lpm
LT400	15	400 lpm
LT500	20	500 lpm
LT750	25	800 lpm
VT125*	2	125 lpm
VT400*	5	400 lpm

* With ViscoCorrect™

With load valve		Flow
Model		
LT250R	10	300 lpm
LT400R	15	400 lpm
LT750R	25	800 lpm

Magnetic speed-pickup MT1A to measure shaft rpm

LPT pressure transducers

Model	Pressure
LPT 40	40 bar
LPT 100	100 bar
LPT 250	250 bar
LPT 400	400 bar

Temperature sensors

Model	Temperature
TP200	0 - 120°C

It is the aim of Webtec Products Ltd to design, develop and build new and innovative products to satisfy the requirements of our customers.

The company is committed to a programme of Total Quality incorporating all areas of manufacture, from product development through to after-sales support and has been approved to conform to BS EN ISO 9001.



WEBSTER INSTRUMENTS
(A DIVISION OF WEBTEC PRODUCTS LIMITED)

Nuffield Road, St. Ives, Cambridgeshire PE17 4LX
Tel: +44(0)1480 460690 Fax: +44(0)1480 466555

E-mail: wi-sales@webtec.co.uk

Internet: <http://www.webtec.co.uk>



Digital Flow Meter

Turbine Flow Blocks

To 800 lpm,
420 bar



The Webster DF Series Digital flowmeter system provides a complete solution to flow measurement on hydraulic test-stands, industrial machines and other fixed and mobile applications. The readout is electrically connected to the flow block which can be installed anywhere in the hydraulic circuit for production, commissioning and development testing.

The readout has a standard DIN aluminium case and the calibration can be easily adjusted.

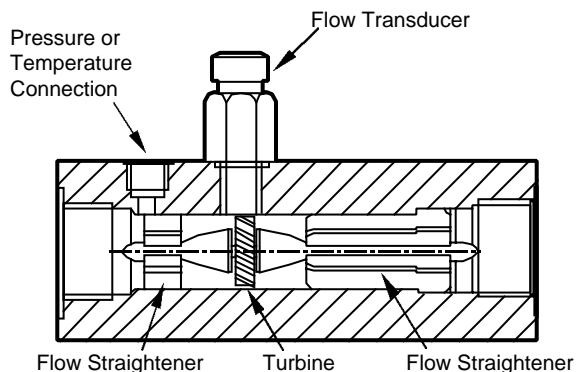
A wide range of turbine and positive displacement flow blocks are available which can accurately measure flow in both directions.

High accuracy, 1% of reading over a wide flow range, is obtained automatically without complicated programming of flow errors for each turbine.

These flow meters together with the Webster range of digital pressure meters, tachometers, thermometers and associated transducers, provide the instrumentation needed to analyse the performance of pumps, motors, valves and hydrostatic transmissions.

Features

- **FLOW:** 2.0 - 800 lpm
0.4 - 176 gpm
- **PRESSURE:** Up to 420 bar
6000 psi
- **ACCURACY:** $\pm 1\%$ of reading over a wide flow range
- **LARGE:** Easy to read 4 digit display
- **POWER:** Supply AC or DC
- **BI-DIRECTIONAL:** Flow Turbine



Another quality product from the Webster Range

Turbine Test System Specifications

Model Number	Normal Flow Range		Maximum Flow Range		Max. Cont. Pressure bar	Port Size
	lpm	gpm	lpm	gpm		
DF120 - 30*	4.5 - 30	1 - 7	0.8 - 30	0.17 - 10	420	3/4" BSPF
DF120 - 50	10 - 50	2.2 - 10	2 - 60	0.5 - 15	420	3/4" BSPF
DF120 - 125	10 - 125	2.2 - 27	5 - 150	1 - 33	420	3/4" BSPF
DF120 - 300	20 - 300	4.4 - 66	10 - 300	2 - 66	420	1" BSPF
DF120 - 400	20 - 400	4.4 - 88	10 - 400	2 - 88	420	1" BSPF
DF120 - 500	20 - 500	4.4 - 110	20 - 600	4.4 - 132	350	1 1/2" Flange
DF120 - 750	25 - 750	5 - 165	20 - 800	4.4 - 176	350	1 1/2" Flange

For flows between 0.1 and 20 lpm, please refer to Bulletin DF 2E

*Powered Transducer

Connections

Turbine blocks have BSPF female threaded ports except for the 500 & 750 sizes which have a SAE type 4 bolt flange.

Measurement and Indication

Flow

Measured by the electronic count of an axial turbine, designed to minimise the effects of variations in temperature and viscosity. The speed of the turbine is monitored by a magnetic transducer; each time a blade passes the transducer head an electrical pulse is generated. Built in flow straighteners reduce flow turbulence and allow flow measurements in both directions. Webster flow blocks can be used for intermittent or continuous measurement of hydraulic systems.

Accuracy: $\pm 1\%$ of reading over normal flow range. The flowmeter can be used continuously over the maximum flow range. Consult sales office for accuracy and operating conditions for this extended range.

Readout

Large easy to read 4 digit red LED display reading to 9999. Character 12.7mm (0.5") high. Decimal place selected automatically throughout the flow range to ensure a high degree of resolution. Readouts can be scaled in lpm Imperial and US gpm. The calibration of the Flow Block can be easily adjusted by selecting internal dip switches.

Input sensitivity 10mV at 10Hz to 100mV at 2 kHz.
Digital Readout Resolution: 1 part in 9999 \pm 1 count,
Accuracy: 1 part in 15,000

Construction

Flow Block

High tensile aluminium block houses a six blade turbine rotating on a stainless steel bearing and shaft.

The flow straighteners and turbine form a one piece assembly which can be easily removed for cleaning. The standard block has a 1/8" BSPF port for a pressure or temperature sensor. Alternatively one or two 1/4" BSPF ports can be provided. Optional loading valves are available. Consult Sales Office.

Transducer

The self energised magnetic reluctance transducer has an output of 80mV RMS at minimum flow. The transducer output frequency is proportional to flow rate and is typically 20 - 1500 Hertz. An alternative powered transducer is available when better accuracy over a wide flow range is required. Cable connection, Amphenol threaded DIN. Normal temperature Range -20 to +90 °C. Consult Sales Office for high temperature applications and powered transducers details.

Seals

Turbine: Viton seals compatible with oil, fuels, water glycol and water emulsions. EP seals for use with phosphate-ester are available. Consult Sales office.

Readout

The display is housed in a black robust aluminium case with DIN standard dimensions. Built-in power supply and electronic components are mounted on a circuit board accessible from the back of the case. The calibration factor is switch selectable and a standard correction curve is stored on an EPROM for the model of turbine flowmeter.

The readout is supplied complete with mounting clamps.
Voltage - 240 V AC / 110 V AC or 12/24 Volt DC.
Power Consumption - 5 Watts.
Mass - 0.67kg
Size - 96 x 48 x 190mm (includes cable gland)

Installation

LT turbines have built-in flow straighteners so the normal recommended length of straight tube can be reduced where space is limited. Inlet and Outlet connections should always be of an adequate size to prevent venturi constriction effects.

Standard transducer output is 5 pin DIN Amphenol threaded connection. Cannon MS type connectors are available.

General

Accessories

Flow Switches and Analogue Interface units with 4 - 20 mA or 0 - 10 Volt outputs are available. Complete range of temperature sensors, pressure transducers and pressure test points are available.

Cable connections

FT 8384 - * cable for connecting readout to flow block
* = length of cable in metres

How to Order

Specify readout DF 120 together with the model number of flow block from the above table. E.g. Webster Model DF 120 - 50 lpm & FT 8384-6 is a 2 - 60 lpm Turbine flow Meter System complete with a 6 metre long cable. If a longer cable is required, please specify when ordering.



Digital Hydraulic Testers Bi-Directional

Flow and
Temperature

50 lpm
151 lpm



Model DHC 151

The DHC Digital Testers accurately measure flow, pressure and temperature. Webster Testers are designed to conveniently check the performance of hydraulic pumps, motors, valves and hydrostatic transmissions.

The tester comprises a turbine flow block and a large easy to read digital display which indicates both flow and temperature.

The optional HV100 loading valve is used to simulate the working pressure during normal machine operation. The built-in safety discs protect the machine and operator in event of excessive pressure, allowing oil to safely bypass the loading valve INTERNALLY with no spillage of oil from the hydraulic circuit, eliminating clean-up costs and environmental hazards.

This easy to use diagnostic tester can pin point hydraulic system faults, reducing downtime and helping in preventive maintenance.

Features

- **ACCURATE:** measurement of flow, pressure and temperature.
- **SAFE:** to use in both directions of flow. The loading valve has Internal oil by-pass to protect system, tester and operator against over-pressure.
- **BI-DIRECTIONAL:** for unrestricted connection and simplified testing.
- **FAST:** checks on pumps, motors, valves, cylinders and power steering systems.
- **EASY:** to operate controls.
- **ECONOMICAL:** low power consumption from standard battery with Automatic "Power Off" feature.
- **PORTABLE AND LIGHTWEIGHT:** with robust steel construction.

Another quality product from the Webster Range

Specifications

Model No	Flow Range lpm	Pressure Range Range	Temperature Range	Port Size
DHC 51	2 - 60	0 - 420 bar	0 -120 °C	3/4" BSPF
DHC 151	5 - 150	0 - 420 bar	0 -120 °C	3/4" BSPF

Consult Sales office for US gpm models.

Connections

By flexible hoses (1 - 2 metre's recommended length).
Inlet and Outlet ports DHC 51 3/4" BSPF
DHC 151 3/4" BSPF

Adaptors

Adaptor fixing kit Part No. FT 6138 comprising 6 male-male adaptors and 2 bonded seals to provide 3/4" BSPF, 1/2" BSPF, 3/8" BSPF male connections

Measurement and Indication

Flow

Measured by the electronic count of an axial turbine designed to minimise the effects of variation in temperature and viscosity. The large digital display reads lpm.

Accuracy: $\pm 1\%$ of full flow

Pressure

Glycerine filled dual scale pressure gauge 0 - 420 bar, 0 - 6000 psi connected by capillary tube to the flowblock.

Accuracy: $\pm 1.6\%$ of full scale.

Temperature

Sensed by a thermistor pick-up in the oil flow for fast response. Temperature is permanently displayed in °C.

Accuracy: $\pm 1^\circ\text{C}$.

Construction

Readout

DHC Testers are microprocessor based instruments providing flexibility and high accuracy with varying oil viscosity.

Flow and Temperature are permanently displayed. Data presentation is by 8 digit liquid crystal display with 8mm high characters.

The readout is programmed to refresh the display each second. Optional "FAST" update, 1/3 second is available to show changing flow conditions when testing relief valves etc. Low power micro-circuitry minimises battery consumption.

An automatic switch turns the power off one hour after the last operation. The standard 9 volt battery is available worldwide and gives typically 6 months normal testing.

Seals

Viton seals compatible with oil, water/oil emulsion and phosphate-ester are fitted as standard.

Turbine Block

High tensile aluminium block houses a six blade turbine rotating on a stainless steel bearing and shaft. Built-in flow straighteners reduce flow turbulence and allows accurate flow measurement in both directions.

Loading Valve

The optional HV100 Loading Valve is directly connected to the Turbine Block to give progressive pressure loading in either flow direction. Replaceable safety discs relieve at 440 bar to internally by-pass the oil if the maximum pressure is exceeded. Safety discs with different pressure ranges are available.

Dimensions

DHC 51, DHC151: 191mm Wide, 225mm High, 84mm Deep, Mass 4kg.

General

Operators Manual

Full instruction manual supplied with the tester.

How to Order

Specify model from table above together with optional equipment and adaptor fitting kit as required e.g. DHC51 with HV100, FT6138 and FT5539 is a 2-60 lpm tester with loading valve, adaptor kit and carrying case.

Accessories



Carrying Case



HV100 Loading Valve



Certificate No.8242



WEBTEC

WEBTEC PRODUCTS LIMITED

Nuffield Road, St. Ives, Cambs., PE27 3LZ, UK
Tel: +44(0)1480 397400 Fax: +44(0)1480 466555
E-mail: sales@webtec.co.uk

<http://www.webtec.co.uk>

Digital Flow Test System

Positive Displacement Flowmeters:

0.1 - 16 lpm



The Webster DF Series Digital flowmeter system provides a complete solution to flow measurement of hydraulic systems on test-stands, machine tools and other fixed and mobile applications. The readout is electrically connected to the flow block which can be installed anywhere in the hydraulic circuit for production, commissioning or development testing.

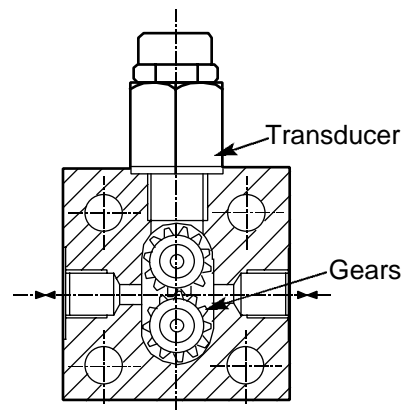
The readout has a standard DIN aluminium case and the calibration can be easily adjusted.

A wide range of positive displacement and turbine flow blocks are available which can accurately measure flow in both directions.

These flow meters together with the Webster range of digital pressure meters, tachometers, thermometers and associated transducers, provide the instrumentation needed to analyse the performance of pumps, motors, valves and hydrostatic transmissions.

Features

- **FLOW:** 0.1 - 16 lpm
0.03 - 3.5 gpm
- **PRESSURE:** Up to 210 bar (3000 psi)
- **ACCURACY:** $\pm 1\%$ of full flow
- **LARGE:** Easy to read 4 digit display
- **POWER:** Supply AC or DC
- **BI-DIRECTIONAL:** Flow Block



Design illustration only

Another quality product from the Webster Range

Specifications

Model Number	Normal Flow Range		Maximum Flow Range		Nominal Meter Factor		Max. Pressure
	lpm	gpm	lpm	gpm	per litre	per Imp. Gall	bar
DF 120 - 5	0.3 - 5	0.07 - 1.1	0.1 - 5	0.03 - 1.1	7400	33596	420
DF 120 - 10	0.4 - 10	0.09 - 2.2	0.2 - 10	0.05 - 2.2	6250	28375	420
DF 120 - 16	0.5 - 16	0.11 - 3.5	0.3 - 16	0.07 - 3.5	6250	28375	210

For flows between 2 and 800 lpm, refer to bulletin DF 1E Turbine Flowmeters

Connections LT5 1/4" BSPF Inlet and Outlet ports
LT10 & LT16 3/8" BSPF Inlet and Outlet ports

Measurement and Indication

Flow

Flow is measured by monitoring the speed of two precision gears. As each tooth of one of the gears passes by a magnetic transducer an electric pulse is generated. These pulses are converted into a frequency, which is directly proportional to the flow rate.

Accuracy: $\pm 1\%$ of full scale over normal flow range.
 $\pm 2\%$ of full scale outside normal range.

Webster positive displacement flow blocks are designed for intermittent or continuous testing of hydraulic systems using mineral oil, and 60/40 water-oil emulsion etc. For use with phosphate-ester based fluids EP seals can be fitted.

Construction

Flow Block

High tensile aluminium block houses two 14 tooth gears running on low friction stainless steel ball bearings.

Transducer

The self energized magnetic reluctance transducer has output of 80mV RMS at minimum flow. The transducer output frequency is proportional to flow rate and is typically 12 - 2100 Hertz. Cable connection, Amphenol threaded DIN. Normal temperature Range -20 to +90 °C. Consult Sales Office for high temperature applications.

Seals

Flow blocks: Viton seals compatible with oil, fuels, water glycol and water emulsions. EP seals for use with phosphate-ester are available. Consult Sales office.

General

Accessories

Optional loading valve with internal safety disc is available. Consult Sales Office.

Flow Switches and Analog Interface units with 4 - 20 mA or 0 - 10 Volt outputs are available.

Complete Range of temperature sensors, pressure transducers and pressure test points are available.

Cable connections

FT 8384 - * cable for connecting readout to flow block.

* = length of cable in metres.

Installation

The LT positive displacement flow blocks can be used to measure flow in both directions. We

Readout

Large easy to read 4 digit red LED display reading to 9999. Character 12.7mm (0.5") high. Decimal place selected automatically throughout the flow range to ensure a high degree of resolution. Readouts can be scaled in lpm Imperial and US gpm. The calibration of the Flow Block can be easily adjusted by selecting internal dip switches.

Input sensitivity 10mV at 10Hz to 100mV at 2 kHz.
Digital Readout Resolution: 1 part in 9999 \pm 1 count.
Accuracy: 1 part in 15,000.

Readout

The display is housed in a black robust aluminium case with DIN standard dimensions.

Built-in power supply and electronic components are mounted on a circuit board accessible from the back of the case. The calibration factor is switch selectable and a standard correction curve is stored on an EPROM for the model of turbine flowmeter.

The readout is supplied complete with mounting clamps.

Voltage - 240 V AC / 110 V AC or 12/24 Volt DC.

Power Consumption - 5 Watts.

Mass - 0.67kg

Size - 96 x 48 x 190mm (includes cable gland).

Options

12 or 24 Volt DC supply.

recommend the use of a 15 micron filter in the hydraulic system. Standard transducer output connection is a 5 PIN Amphenol threaded socket. Cannon MS type connections are available. Refer to the leaflet for installation information and pressure drop curves.

How to Order

Specify readout DF 120 together with the model number of flow block from the above table and flow calibration required. E.g. Webster Model DF 120 - 10 lpm & FT8384-6 is a 0.2 - 10 lpm positive displacement flowmeter complete with 6 metre long cable.



APPROVED

Portable Hydraulic Testers

- Up to 800 lpm
- 420 bar
- Bi-Directional

DHCR
Digital
Read out



10 lpm
Flow Block



420 lpm Flow Block
with Loading valve



420 lpm Flow Block



The Webster DHCR Series Digital Tester with remote flow block accurately measures flow, pressure, temperature and speed. Webster testers are designed for checking hydraulic pumps, motors, valves and hydrostatic transmissions.

This easy to use diagnostic unit can pin point hydraulic system faults, reduce downtime and help in preventative maintenance. Main hydraulic circuits, drain leakage flows and dual pumps can be measured simply at the turn of a switch.

The readout can be used in the most convenient position; for example, in the cab of a vehicle, with the flow blocks installed anywhere in the circuit.

The tester comprises a digital readout with two flow inputs and one flow block connected remotely by a 2 metre long cable and micro-bore hose assembly to the left hand side of the readout. An optional flow block can be connected via a cable to the front of the readout. Flow inputs can be easily calibrated by the operator to a wide range of Webster flow blocks. The readout is scaled in lpm, gpm, US gpm, selected by push button.

In addition to the range of flow blocks, other optional accessories include different length hoses, pressure loading valves and a phototachometer.

Features

- **ACCURATE** measurement of flow, with automatic linearisation giving an accuracy of 1% of reading over a wide range.
- **SAFE** to use in both directions of flow. Internal oil by-pass protects the system, tester and operator against over-pressure.
- **BI-DIRECTIONAL** for unrestricted connection and simplified testing up to 420 bar and 800 lpm.
- **FAST** checks on pumps, motors, valves, cylinders and hydrostatic transmissions.
- **REMOTE INPUTS**
 - 2 - Flow and Temperature
 - 1 - Pressure
 - 1 - Speed
- **ECONOMICAL** low power consumption from standard battery. Automatic "Power Off" feature.
- **PORTABLE AND LIGHTWEIGHT** Aluminium and steel construction.

Another quality product from the Webster Range

Specifications

Model No.	Normal Flow Range ± 1% of indicated reading			Max. Flow Range	Max Pressure	Port Size (SAE and metric threads available)
	lpm	gpm	US gpm	lpm	bar	
DHCR 5	0.3 - 5*	0.07 - 1.1*	0.08 - 1.3*	0.1 - 5	420	1/2" BSPF
DHCR 10	0.4 - 10*	0.09 - 2.2*	0.10 - 2.6*	0.2 - 10	420	3/8" BSPF
DHCR 20	0.5 - 20*	0.11 - 4.5*	0.13 - 5.3*	0.3 - 20	420	3/8" BSPF
DHCR 50	10 - 50	2.2 - 10	2.6 - 13	2 - 60	420	3/4" BSPF
DHCR 125	10 - 120	2.2 - 25	2.6 - 32	5 - 150	420	3/4" BSPF
DHCR 400	20 - 300	4.4 - 66	5.0 - 80	10 - 400	420	1" BSPF
DHCR 750	25 - 750	5.5 - 165	6.6 - 200	20 - 800	350	1 1/2" Flange

* ± 1% of full scale for DHCR05, DHCR10 and DHCR20

Add R suffix to model number i.e. DHCR400R for model supplied with Bi-Directional loading valve.

Connections

Flow block connection by flexible hoses or steel pipes (200 mm minimum length).

Adaptors

Adaptor Fitting kits and flanges are available to suit the range of flow blocks. Consult the sales office.

Measurement and Indication

Flow

Measurement by the electronic count of an axial turbine designed to minimise the effects of variation in temperature and viscosity. The large digital display reads in lpm, gpm or US gpm, selected by push button and indicated by a cursor arrow on the display.

Pressure

Glycerine filled dual scale pressure gauge
0 - 420 bar, 0 - 6000 psi.
Accuracy ± 1.6% of full scale.

Temperature

Sensed by a thermistor pickup in the oil flow for fast response. Temperature is permanently displayed in °C or °F for either the internal or external flow block.

Accuracy ± 1 °C, 2 °F.

Speed

Rotational speed of motors, shafts etc, can be measured by optional phototachometer and the readout can be programmed for one or more reflective marks.

Range 300 - 6000 rpm.

Accuracy ± 1/4% of full scale with one count per revolution.

Construction

Readout

DHCR Testers are microprocessor based instruments providing flexibility and high accuracy. Data presentation is by 8 digit liquid crystal display with 8mm high characters. Temperature is permanently displayed and flow input one or two or speed is selected by the rotary switch. The readout is programmed to refresh the display each second. "Fast" update, (1/3 second), can be selected to show changing flow conditions when testing relief valves, etc. Low power micro-circuitry minimises battery consumption while the tester is working and switches off automatically one hour from the last operation. A standard 9 volt

battery is available worldwide and gives typically 6 months normal testing.

Flow Block

Two flow blocks can be connected into the readout and selected as required. The readout can easily be calibrated to any Webster flow block by switching to program mode and keying the calibration number supplied with each block. A six blade turbine rotates on a stainless steel bearing which is housed in a high tensile aluminium block. Built-in flow straighteners reduce flow turbulence and allow accurate flow measurement in both directions.

General

Optional Loading Valve

The Bi-Directional loading valve which is built in to the flow block gives a smooth pressure loading in both directions. Internal safety discs give protection in both directions without external oil spillage. Replaceable discs are available up to 480 bar. HV100 loading valve for use up to 150 lpm is supplied as a separate unit.

Accessories

DHCR testers can be used with a wide range of accessories e.g. Phototachometer, Loading valve, Pressure test points and hose, Low pressure

gauge. Please refer to the Optional Equipment bulletin.

Operators Manual

Full operating instructions and test procedures are detailed in a manual supplied with the tester.

How to Order

Specify model from table above together with optional equipment and adaptor fitting kit as required e.g., DHCR 402R with TH IA and BA 10 is a 20 - 400 lpm tester with Bi-Directional loading valve tachometer and magnetic base.



Low Cost In-Line Flow Indicator with built in Thermometer for Water or Oil

- 30 lpm
- 60 lpm
- 120 lpm
- 200 lpm
- 400 lpm
- Up to 420 bar



Model FI 750-120-BBWT
Water / Oil Flow Indicator

Flow Indicators are designed for continuous monitoring or intermittent use commissioning and servicing hydraulic systems up to 420 bar, 6000 psi (FI 750) or 350 bar, 5000 psi (FI 1500)

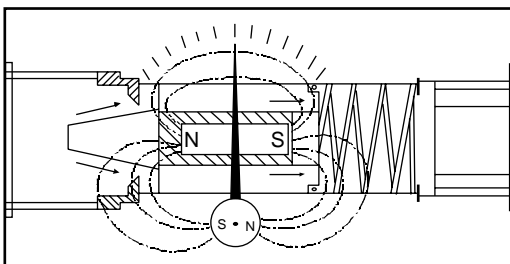
The large clear 63mm diameter dial ensures that quick checks can be made to determine pump performance and setting of flow control valves. They can be used on cooling systems, hydraulic machinery and mining equipment using water and water-oil emulsions.

These direct acting flow indicators can be installed in hazardous areas or on applications where no power is available. The flow indicator design ensures good reliability and is tolerant to contamination.

Features

- **LOW** cost rugged design
- **DIRECT** reading
- **HIGH** Pressure applications
- **ACCURACY** within 4% fsd
- **LARGE** clear easy to read dial
- **HORIZONTAL** or vertical mounting
- **BUILT-IN** thermometer available.

Operation



Section drawing of FI750 Flow Indicator

The flow indicator consists of a sharp edged orifice and tapered metering piston.

The piston movement is directly proportional to flow rate and the sharp edged orifice minimises the effects of viscosity. The piston is magnetically coupled to the rotary pointer assembly which registers on a clear 63mm (2 1/2") scale calibrated in lpm for water and oil.

Another quality product from the Webster Range

Specifications

Model No. without Thermometer	Model No. with Thermometer	Body Material	Flow Range lpm		Max. Working Pressure		Temperature Range	
			Water	Oil	psi	bar	°C	°F
FI 750 - 30 BBW	FI 750 - 30 BBWT	Bronze	2 - 35	2 - 30	6000	420	10 - 80	50 - 180
FI 750 - 60 BBW	FI 750 - 60 BBWT	Bronze	3 - 70	3 - 60	6000	420	10 - 80	50 - 180
FI 750 - 120 BBW	FI 750 - 120 BBWT	Bronze	5 - 140	5 - 120	6000	420	10 - 80	50 - 180
FI 1500 - 200 BBW	FI 1500 - 200 BBWT	Bronze	10 - 200	10 - 200	5000	350	10 - 80	50 - 180
FI 1500 - 400 BBW	FI 1500 - 400 BBWT	Bronze	40 - 400	30 - 400	5000	350	10 - 80	50 - 180

Connections

By flexible hoses or steel pipes. Inlet and Outlet ports **FI 750:** 3/4" BSPF. **FI 1500:** 1 1/2" BSPF

Measurement and Indication

Flow

Flow is measured by a tapered metering piston moving within a fixed, sharp edged orifice, designed to minimise the effects of changes in temperature and viscosity. The pressure drop across the variable orifice causes the piston to move and is proportional to the change in flow rate.

Accuracy $\pm 4\%$ of full flow

Temperature

Temperature is indicated in °C and °F by a thermometer set in rubber compound and built into the flow block to sense temperature changes in the fluid passage. Accuracy ± 2 °C.

Construction

Flow Block

The solid high strength bronze block houses a metering piston. The piston is magnetically coupled to a rotary pointer to provide a direct reading of flow on a clear 63mm (2 1/2") diameter flow scale calibrated in lpm. Both flow and temperature scales are shielded behind impact resistant polycarbonate windows. The bronze flow indicator is aluminium free and is fully sealed externally.

Loading Valve for Oil or Water/Oil Emulsion

Loading valves with **Internal** safety discs provide progressive control of system pressure during flow and pressure checks.
Consult Sales Office

General

Pressure Accessories

Optional 63mm diameter glycerine filled pressure gauge can be fitted directly into a 1/4" NPT connection in the block or remotely connected by micro-bore hose.

Accuracy $\pm 1.6\%$ of full scale.

Applications

Webster flow indicators are designed for continuous monitoring on mining, offshore and high pressure water applications.

Dimension / Weights

FI 750 146 x 75 x 50mm 3.8 kg
FI 1500 200 x 85 x 75mm 8 kg

Installation

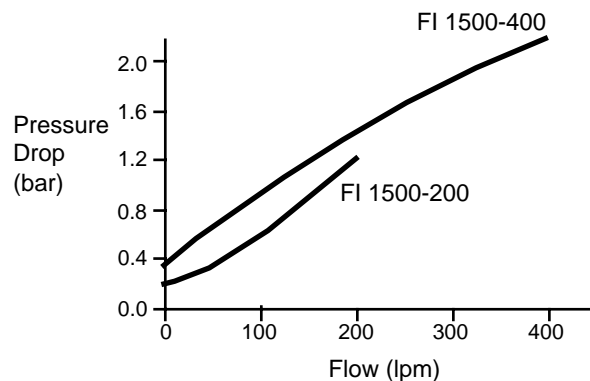
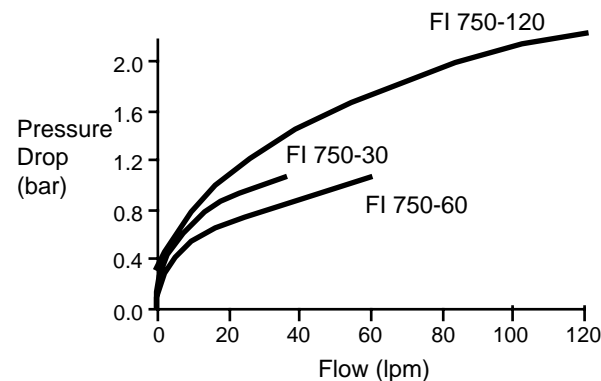
The indicator can be connected into pressure or return lines, however, do not reverse flow. The indicator will not be damaged but will act as a non return valve.

How to Order

Specify flow indicator from table. FI 750-60 BBWT is a 60 lpm bronze flow indicator with thermometer. Consult Sales Office for details of optional pressure gauges.

Performance

Typical pressure drop curves. Oil viscosity 25 centistokes.





WEBTEC

WEBTEC PRODUCTS LIMITED

Nuffield Road, St. Ives, Cambs., England. PE27 3LZ

Tel: +44(0)1480 397400

Fax: +44(0)1480 466555

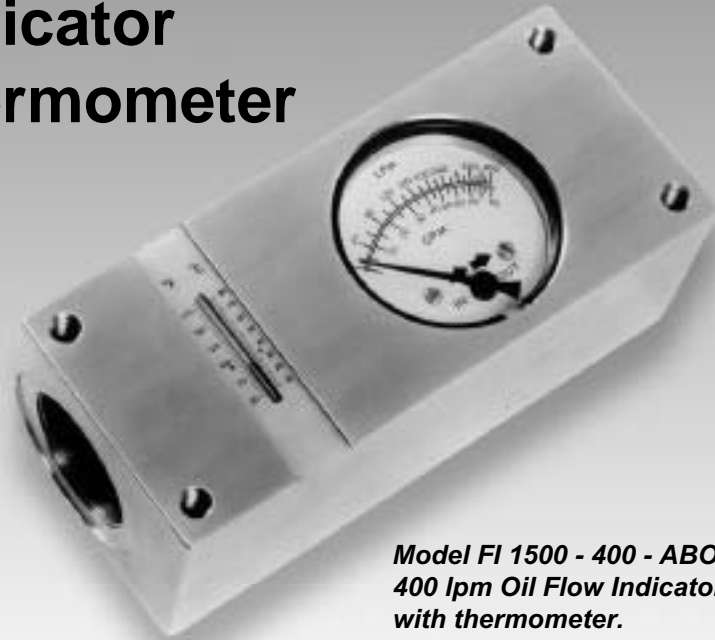
E-mail: sales@webtec.co.uk

<http://www.webtec.co.uk>

In-Line Flow Indicator with built in Thermometer for Oil

- 200 lpm
- 300 lpm
- 400 lpm

- Up to 350 bar



*Model FI 1500 - 400 - ABOT
400 lpm Oil Flow Indicator
with thermometer.*

The Webster In-Line Flow Indicator comprises a variable orifice flow meter with built in thermometer and optional pressure gauge.

The flow indicator provides the ideal solution for continuous or intermittent monitoring of hydraulic systems up to pressures of 350 bar; 5000 psi.

The large clear 63mm diameter dial ensures that quick checks can be made to determine pump performance and setting of flow control valves. It can be used on mobile and industrial hydraulic circuits and also on lubrication and coolant systems using oil, water or oil/water emulsions. (Bronze flow indicators are available calibrated for water).

The direct acting flow indicators can be installed in hazardous areas or on applications where no electrical power is available. The flow indicator design ensures good reliability and is tolerant to contamination.

The thermometer is set in rubber compound and angled deep into the block to sense the temperature changes in the fluid passage.

For external protection the readout scales of both thermometer and flow indicator are recessed and shielded behind impact resistant windows. The whole unit is fully sealed and mechanically robust.

Aluminium free flow indicators for Mining and Offshore applications are available.

Features

- **LOW** cost rugged construction
- **MEASURES** Flow, and Temperature
- **PRESSURE** 350 bar (5000 psi) max
- **ACCURACY** within 4% FSD
- **LARGE** clear easy to read dial
- **HORIZONTAL** or vertical mounting
- **WIDE** operating range
- **PRESSURE** gauge port
- **DUAL** scale

Another quality product from the Webster Range

Specifications

Model No. Aluminium	Model No. Bronze	Flow Range		Max Working Pressure		Temperature Range	
		lpm	gpm	bar	psi	°C	°F
FI 1500 - 200 ABOT	FI 1500 - 200 BBOT	10 - 200	2 - 44	350	5000	10 - 80	50 - 180
FI 1500 - 300 ABOT	FI 1500 - 300 BBOT	20 - 300	4 - 66	350	5000	10 - 80	50 - 180
FI 1500 - 400 ABOT	FI 1500 - 400 BBOT	20 - 400	4 - 90	350	5000	10 - 80	50 - 180

Connections

By flexible hoses or steel pipes. Inlet and Outlet ports 1 1/2" BSPF.

Measurement and Indication

Flow

Flow is measured by a tapered metering piston moving within a fixed, sharp edged orifice, designed to minimise the effects of changes in temperature and viscosity. The fluid flow causes a pressure drop across the variable orifice and the piston movement is proportional to the change in flow rate.

Accuracy \pm 4% of full flow.

Temperature

Indicated in °C and °F by a thermometer set in rubber compound and built into the flow block to sense temperature changes in the fluid passage.

Accuracy \pm 2°C.

Construction

Flow Block

Solid high tensile aluminium or bronze block houses a metering piston which moves against a calibrated spring. The piston is magnetically coupled to a rotary pointer to provide a direct reading of flow on a clear 63mm (2 1/2") diameter flow scale calibrated in lpm and gpm. Both flow and temperature scales are shielded behind impact

resistant windows. The whole unit is fully sealed and mechanically robust.

Dimensions

200 x 85 x 75mm (7.87 x 3.35 x 2.95 inches)

Aluminium 3.2 kg, 7 lbs

Bronze 8 kg, 17.6 lbs

General

Pressure

Optional 63mm diameter glycerine filled pressure gauge fitted directly into a 1/4" NPT port in the block or remotely connected by pressure test point.

Accuracy \pm 1.6% of full scale

See pressure gauge bulletin for more details.

Accessories

Loading valves, with **Internal** safety disc.

Pressure gauge.

Pressure gauge test adaptors.

How to Order

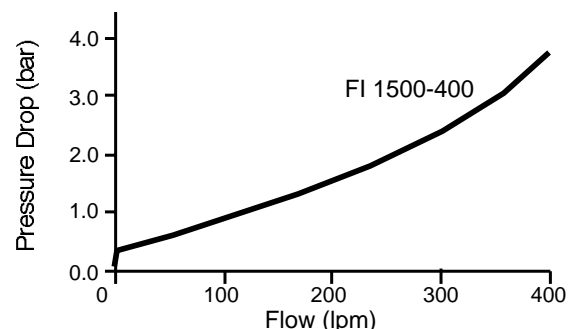
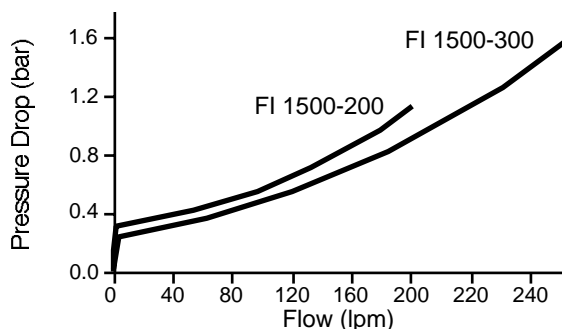
Specify flow indicator from table above detailing material. FI 1500-400 ABOT is a 400 lpm Aluminium flow indicator with thermometer.

Installation

The Indicator can be connected into pressure or return lines, however, the flow indicator is uni-directional and **closes** with reverse flow.

Performance

Typical pressure drop curves. Oil viscosity 25 centistokes.



Certificate No.8242

In-Line Flow Indicator with built in Thermometer for Oil

- 16 lpm
- 30 lpm
- 60 lpm
- 120 lpm
- 180 lpm

- Up to 420 bar



*Model FI 750-60- ABOT 60
lpm Oil Flow Indicator*

Flow Indicators are designed for continuous monitoring or intermittent use commissioning and servicing hydraulic systems up to 420 bar, 6000 psi.

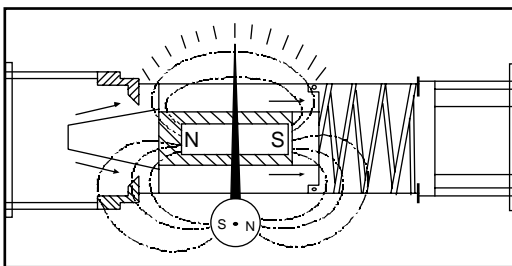
The large clear 63mm diameter dial ensures that quick checks can be made to determine pump performance and setting of flow control valves. They can be used on mobile and industrial hydraulic circuits. Also lubrication and coolant systems using oil/water.

These direct acting flow indicators can be installed in hazardous areas or on applications where no power is available. The flow indicator design ensures good reliability and minimises the effects of contamination.

Features

- LOW cost rugged design
- DIRECT reading
- 420 bar 6000 psi pressure
- ACCURACY within 4% fsd
- LARGE clear dial
- HORIZONTAL or vertical mounting
- BUILT-IN thermometer available.

Operation



Section drawing of FI750 Flow Indicator

The flow indicator consists of a sharp edged orifice and tapered metering piston.

The piston movement is directly proportional to flow rate and the sharp edge orifice minimises the effects of viscosity. The piston is magnetically coupled to the rotary pointer assembly which registers on a clear 63mm (2 1/2") scale calibrated in lpm and gpm.

Another quality product from the Webster Range

Specifications

Model No. With thermometer	Model No. Without thermometer	Fluid	Body Material	Flow		Weight kg
				LPM	GPM	
F1750- 16 ABOT	F1750- 16 ABO	Oil	Aluminium	1 - 16	0.25- 3.5	1.36
F1750- 30 ABOT	F1750- 30 ABO	Oil	Aluminium	2 - 30	0.50- 7.0	1.36
F1750- 60ABOT	F1750- 60 ABO	Oil	Aluminium	2 - 60	0.50-14.0	1.36
FI 750 -120ABOT	FI750 -120 ABO	Oil	Aluminium	4 - 120	1.00-26.0	1.36
FI 750 -180ABOT	FI750 -180 ABO	Oil	Aluminium	10 - 180	2.20-40.0	1.36
F1750- 16BBOT	F1750- 16 BBO	Oil	Bronze	1 - 16	0.25- 3.5	4.25
FI 750 - 30BBOT	FI 750- 30 BBO	Oil	Bronze	2 - 30	0.50- 7.0	4.25
FI 750 - 60BBOT	FI 750- 60 BBO	Oil	Bronze	2 - 60	0.50-14.0	4.25
FI 750 -120BBOT	FI750 -120 BBO	Oil	Bronze	4 - 120	1.00-26.0	4.25
FI 750-180BBOT	FI750 -180 BBO	Oil	Bronze	10 - 180	2.20-40.0	4.25

Pressure 420 bar, 6000 psi

Connections

By flexible hoses or steel pipes.
Inlet and Outlet ports 3/4" BSPF.

Adaptors

Adaptor Fitting Kit comprising male-male adaptors and bonded seals to provide 1" BSPF, 3/4" BSPF, 1/2" BSPF, male connections are available. Consult sales office.

Measurement and Indication

Flow

Measured by a tapered metering piston moving within a fixed, sharp edged orifice, designed to minimise the effects of changes in temperature and viscosity. A pressure drop occurs across the variable orifice and the piston movement is proportional to the change in flow rate.
Accuracy \pm 4% of full flow.

Temperature

Indicated in °C and °F by an optional thermometer set in rubber compound and built into the flow block to sense temperature changes in the fluid passage.
Accuracy \pm 2 °C.

Range 10-80°C, 50-180 °F

Consult sales office for flow indicators suitable for higher working temperatures.

Construction

Flow Block

The solid high tensile aluminium or bronze block houses a metering piston. The piston is magnetically coupled to a rotary pointer to provide a direct reading of flow on a clear 63mm (2 1/2") diameter flow scale calibrated in lpm and gpm. Both flow and temperature scales are shielded behind impact resistant windows. The whole unit is fully sealed and very strong.

Other Applications

Units suitable for Mining, Offshore and High Pressure Water applications are available. See FI 1500 series and FIK series bulletins for larger models and indicators with loading valves.

Accessories

Pressure

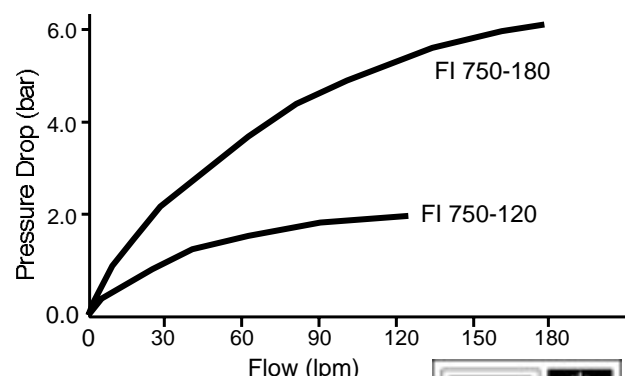
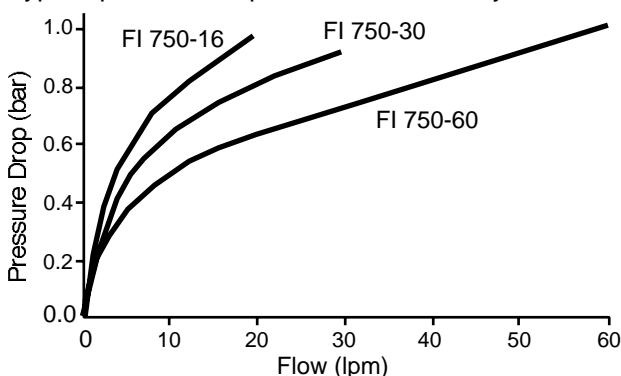
Optional 63mm diameter glycerine filled pressure gauge fitted directly into a 1/4" NPT connection in the block or remotely connected by micro bore hose. Accuracy \pm 1.6% of full scale.

How to Order

Specify flow indicator from table detailing material and thermometer pressure gauge options. FI 750 - 180 ABOT is a 180 LPM Aluminium flow indicator with thermometer.

Performance

Typical pressure drop curves. Oil viscosity 25 centistokes.



Certificate No. 8242

DT 120 & TP 200 Temperature Measurement System



DT 120 Digital Display



TP 200 Temperature Probe

The DT 120 is a 4 digit programmable panel meter, which when used in conjunction with the TP 200 temperature probe, forms a digital thermometer accurate to ± 1 °C.

The readout is housed in a case with DIN standard dimensions and is complete with all mounting hardware. The high intensity LED display makes this unit especially suitable for test stand applications. The DT120 is available calibrated in °C or °F.

The TP200 temperature probe utilises a thermistor which produces a signal which is proportional to temperature. The thermistor is mounted in a 1/4" BSPF high pressure fitting.

The DT120 is supplied factory set and ready for use. The temperature probe can be connected directly into a high pressure line or to the hydraulic tank, for accuracy with fast response.

Consult sales office for other temperature probes.

Features:

- **TEMPERATURE RANGE:** 1 - 100 °C
34 - 212 °C
- **DISPLAY:** 4 digit
- **ACCURACY:** ± 1 °C
- **RESOLUTION:** ± 0.5 °C
- **MAX. PRESSURE:** 420 bar
6000 psi
- **POWER SUPPLY:** 110 / 220 AC or
12 / 24 DC

Another quality product from the Webster Range

Connections

The TP200 probe has a 1/4" BSPF thread which enables the tip of the probe to be positioned within pressure lines or tanks for maximum accuracy and speed of response. The TP 200 is connected to the

DT 120 via a 6 metre cable FT8004-6. Longer lengths are available. The power supply cable is connected at the rear of the readout.

Measurement and Indication

TP 200 Temperature Probe

Temperature is sensed by a thermistor which produces a signal proportional to the temperature. The sensor is housed in a probe which can be connected directly into the high pressure line.

Normal Range:	1 to 80 °C 34 to 176 °F
Maximum Range:	1 to 100 °C 34 to 212 °F
System Accuracy:	±1 °C
Maximum Pressure:	420 bar 6000 psi
Connection Material:	Brass. Nickel plated.

DT 120 Digital Display

A large and easy to read 4 digit (9999) red LED display with 12.7mm (0.5") high characters is housed in a robust aluminium case with DIN standard dimensions. Calibration in °C or °F can be selected by internal switch.

Display:	High Intensity Red LED 4 digit display
Digit Height:	12.7mm (0.5")
Range:	1 to 100 °C 34 to 212 °C
Power Supply:	110 / 240 V AC standard 12 / 24 V DC available
Power Consumption:	5 Watts Internal 50 / 100 Milliamp Fuse.

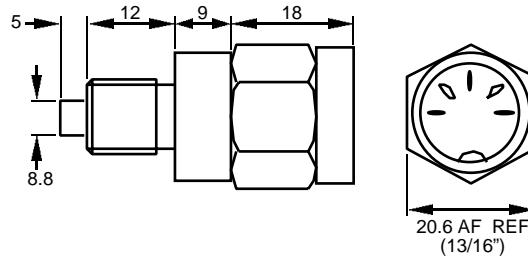
How to Order

Specify the temperature sensor and readout as required e.g. DT120, 240V AC with TP200 and

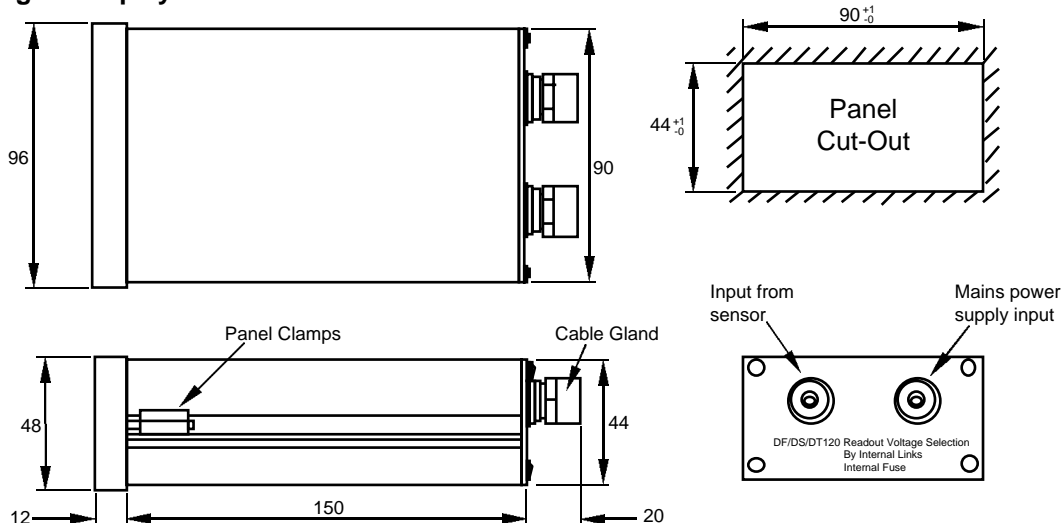
FT8004-6 is a digital display 240V AC with temperature probe and 6m cable assembly.

Installation

TP 200 Temperature Probe



DT 120 Digital Display



Portable Hydraulic Testers

Additional Input for Remote Flow, and Temperature Measurement

- Up to 800 lpm
- 350 bar - 420 bar - 480 bar models
- Bi-Directional



Model DHT752HP 480 bar

The Webster DHT Series Digital Tester accurately measures flow, pressure, temperature and speed. Webster testers are designed for testing hydraulic pumps, motors, valves and hydrostatic transmissions.

This easy to use diagnostic unit can pin point hydraulic system faults which reduces downtime and helps with preventive maintenance.

The remote flow input can be easily calibrated by the operator for any Webster flow block. The remote input feature allows main hydraulic circuits and drain leakage flows to be measured simply at the turn of a switch.

The tester comprises a turbine flow block and large easy to read digital display which indicates both flow and temperature. Speed and remote flow are selected by switch when required. The flow readout is scaled in lpm, gpm, and US gpm, selected by a push button.

Optional accessories for the tester include a phototachometer and remote flow blocks covering 0.1 - 800 lpm Flow Range.

Features

- **ACCURATE** measurement of flow, with automatic linearisation giving an accuracy of 1% of reading over a wide range.
- **SAFE** to use in both directions of flow. Internal oil by-pass protects system and operator against over-pressure.
- **BI-DIRECTIONAL** for unrestricted connection and simplified testing.
- **FAST** checks on pumps, motors, valves, cylinders and hydrostatic transmissions.
- **REMOTE INPUTS**
 - 1 - Flow
 - 1 - Temperature
 - 1 - Speed
- **ECONOMICAL** low power consumption from standard battery. Automatic "Power Off" feature.
- **PORTABLE AND LIGHTWEIGHT** with angled case for easier viewing and cleaning.

Another quality product from the Webster Range

DHT Series Tester Specifications

Model No.	Normal Flow Range			Max. Flow Range lpm	Max. Pressure bar	Temp Range	Port Size (SAE & metric threads available)
	lpm	gpm	US gpm				
DHT302	20 - 300	4.5 - 50	5.3 - 60	10 - 300	420	0 - 120°C	1" BSPF
DHT402	20 - 400	4.5 - 80	5.3 - 100	10 - 400	420	0 - 120°C	1" BSPF
DHT 752	25 - 800	5.5 - 180	6.6 - 200	20 - 800	350	0 - 250°F	1 1/2" Flange
DHT 752 HP	25 - 800	5.5 - 180	6.6 - 200	20 - 800	480	0 - 120°C	1 7/8" - 12 UN

Connections

Flow block connection by flexible hoses 1 - 2 metres (3 - 6ft) long.

Measurement and Indication

Flow

Measured by the electronic count of an axial turbine. The large digital display reads in lpm, gpm or US gpm, selected by push button and indicated by a cursor arrow on the display. Accuracy $\pm 1\%$ of reading over normal flow range.

Pressure

Glycerine filled dual scale pressure gauge bar / psi connected by capillary tube to the flow block. Accuracy $\pm 1.6\%$ of full scale.

Adaptors

Adaptor Fitting kits and flanges are available to suit the range of flow blocks. Consult the sales office.

Temperature

Sensed by a thermistor pick-up in the oil flow for fast response. Temperature is displayed in °C or °F for either the internal or external flow block. Accuracy $\pm 1\text{ }^{\circ}\text{C}$, $2\text{ }^{\circ}\text{F}$.

Speed

Rotational speed of motors shafts etc., can be measured by optional phototachometer using one or more reflective marks. Range 300 - 6000 rpm. Accuracy $\pm 1/4\%$ of full scale with one count per revolution.

Construction

Readout

DHT Testers are microprocessor based instruments providing flexibility and high accuracy. Data presentation is by 8 digit liquid crystal display with 8mm (0.32") high characters. Temperature is permanently displayed and the internal flow or external flow or speed is selected by the rotary switch. The readout is programmed to refresh the display each second. "Fast" update, (1/3 second), can be selected to show changing flow conditions when testing relief valves etc. Low power micro-circuitry minimises battery consumption. An

automatic switch turns the power off one hour after the last operation. The standard 9 volt battery is available worldwide and gives at least 6 months normal testing.

Turbine Block

High tensile aluminium block houses a six blade turbine rotating on a stainless steel bearing and shaft. Built-in flow straightener reduces flow turbulence and allows accurate flow measurement in both directions.

General

Loading Valve

The integral loading valve gives progressive pressure loading in either flow direction. Replaceable safety discs relieve to **internally bypass** the oil if the maximum pressure is exceeded. Safety discs with different pressure ranges up to 480 bar are available. Consult sales office for further information.

Remote Inputs

An additional flow block can be connected into the panel. This input can easily be calibrated by switching to program mode and keying in the calibration value supplied with each block. The tachometer input can be programmed for one or more reflective marks.

Seals

Viton seals compatible with oil, water/oil emulsion are fitted as standard. EP seals for phosphate-ester are available to special order.

Dimensions

DHT302, DHT402: 240mm Wide, 205mm High, 180mm Deep, Mass 8kg.

DHT752, DHT752HP: 255mm Wide, 215mm High, 205mm Deep, Mass 10kg.

Operators Manual

Full instructions are supplied with each tester

Accessories

DHT Testers can be used with a wide range of accessories. e.g. Remote Flow blocks, Low Pressure Gauge kit, and Phototachometer. Please refer to the Optional Equipment bulletin.

How to Order

Specify model from table above together with optional equipment and adaptor fitting kit as required e.g., DHT 752HP with TH 2 and BA 10 is a 20 - 800 lpm 480 bar tester with tachometer and magnetic base.



Portable Hydraulic Testers

Flow, Pressure and
Temperature

- Up to 800 lpm
- 350 bar - 420 bar models
- Bi-Directional



Model DHT 401

The Webster DHT401 and DHT751 Digital Testers accurately measure flow, pressure and temperature. Webster Testers are designed to conveniently check the performance of hydraulic pumps, motors, valves and hydrostatic transmissions.

This easy to use diagnostic tester can pin point hydraulic system faults, reducing downtime and helping in preventive maintenance.

The tester comprises a turbine flow block and a large easy to read digital display which indicates both flow and temperature.

The Tester has a built-in loading valve to simulate the working pressure during normal machine operation. The built-in safety discs protect the machine and operator in event of excessive pressure, allowing oil to safely bypass the loading valve INTERNALLY with no spillage of oil from the hydraulic circuit, eliminating clean-up costs and environmental hazards.

Features

- **ACCURATE** measurement of flow, pressure and temperature.
- **SAFE** to use in both directions of flow. Internal oil by-pass protects system and operator against overpressure.
- **Bi-DIRECTIONAL** for unrestricted connection and simplified testing.
- **FAST** checks on pumps, motors, valves, cylinders, hydrostatic transmissions.
- **EASY** to operate controls.
- **ECONOMICAL** low power consumption from standard battery. Automatic "Power Off" feature.
- **PORTABLE AND LIGHTWEIGHT** with angled case for easier viewing and cleaning.

Another quality product from the Webster Range

DHT Series Tester Specification

Model	Part No.	Flow Range	Temperature Range	Pressure Range	Port Size (SAE & metric threads available)
		lpm	°C	bar	
DHT401	FT8283	10 - 400	0 - 120	420	1" BSPF
DHT751	FT8840-1	20 - 800	0 - 120	350	1 1/2" Flange

Consult Sales office for US gpm models.

Connections

Flow block connection by flexible hoses 1 - 2 metres (3 - 6ft) long.

Adaptors

Adaptor Fitting kits and flanges are available to suit the range of flow blocks. Consult the sales office.

Measurement and Indication

Flow

Measured by the electronic count of an axial turbine designed to minimise the effects of variation in temperature and viscosity. The large digital display reads in lpm.

Accuracy: ± 1% of full flow.

Temperature

Sensed by a thermistor pick-up in the oil flow for fast response. Temperature is permanently displayed in °C.

Accuracy: ± 1°C.

Pressure

Glycerine filled dual scale pressure gauge 0 - 420 bar, 0 - 6000 psi connected by capillary tube to the flowblock.

Accuracy: ± 1.6 % of full scale.

Construction

Readout

DHT Testers are microprocessor based instruments providing flexibility and high accuracy with varying oil viscosity.

Flow and Temperature are permanently displayed. Data presentation is by 8 digit liquid crystal display with 8mm high characters.

The readout is programmed to refresh the display each second. An alternative "FAST" update, (1/3 second), can be supplied to show changing flow conditions when testing relief valves etc. Low power micro-circuitry minimises battery consumption.

An automatic switch turns the power off one hour after the last operation. The standard 9 volt battery is available worldwide and gives typically 6 months normal testing.

Turbine Block

High tensile aluminium block houses a six blade turbine rotating on a stainless steel bearing and shaft. Built-in flow straighteners reduce flow turbulence and allows accurate flow measurement in both directions.

General

Loading Valve

The integral loading valve allows progressive pressure loading in either flow directions. Safety discs relieve at 440 bar to internally by-pass the oil if the maximum pressure is exceeded. Safety discs with different pressure ranges up to 480 bar are available.

Consult the sales office for details.

Seals

Viton seals compatible with oil, water/oil emulsion are fitted as standard. EP seals for phosphate-ester are available to special order.

Dimensions

DHT401: 240mm Wide, 205mm High, 180mm Deep, Mass 8kg.

DHT751: 255mm Wide, 215mm High, 205mm Deep, Mass 10kg.

Operators Manual

Full instructions are supplied with each tester.

Accessories

A low pressure gauge kit BP40, which includes testpoint and micro bore hose is suggested as a useful accessory



How to Order

Specify the DHT401 together with optional equipment and adaptor fitting kit as required e.g. DHT401 and BP40 is a 10 - 400 lpm tester with low pressure gauge kit.



Certificate No.8242



WEBTEC

WEBTEC PRODUCTS LIMITED

Nuffield Road, St. Ives, Cambs, PE27 3LZ, UK
Tel: +44(0)1480 397400 Fax: +44(0)1480 466555
E-mail: sales@webtec.co.uk

<http://www.webtec.co.uk>

RFIK Series Low Cost Hydraulic Tester

- 120 lpm
- 180 lpm
- Up to 420 bar



Model RFIK 180 ABOT

The RFIK Reversible Flow Indicator Test Kit provides the ideal solution for servicing and commissioning hydraulic circuits on agricultural and other mobile machinery.

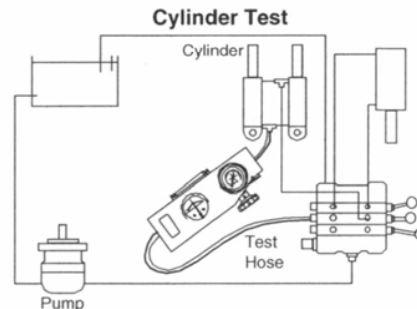
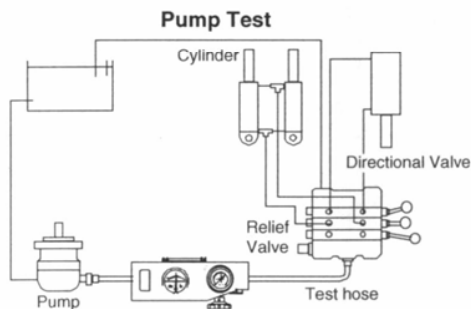
The kit comprises of a direct acting flow indicator with built in thermometer, a loading valve and a pressure gauge all built into a strong steel case with a removable lid.

The unit is self contained and requires no electrical power. The dials are clear and easy to read. Installation is extremely simple and the test kit can be connected into either the pressure or return lines. The loading valve and pressure gauge allow a progressive build up of system pressure in complete safety.

The test kit provides the service engineer with quick, accurate and simple performance testing of pumps, motors, valves, cylinders and complete hydraulic circuits.

Features

- Measures Flow, Pressure, Temperature
- Allows reversible flow
- Flow accuracy $\pm 4\%$ FSD
- Wide flow range
- Large easy to read dials
- No batteries required
- Smooth pressure control up to 420 bar (6000 psi)
- Safe to use, with INTERPASS internal safety protection system. Protects system and operator against accidental over-pressure in both flow directions



Another quality product from the Webster Range

Specification

Model No.	Part No.	Flow Range		Max. Working Pressure		Temperature Range	
		lpm	gpm	bar	psi	°C	°F
RFIK 120 ABOT	FT8686 - 03	5 - 120	1.2 - 26	420	6000	10 - 80	50 - 180
RFIK 180 ABOT	FT8686 - 09	8 - 180	2.0 - 40	420	6000	10 - 80	50 - 180

Connections

By flexible hose (1/2 - 1 metre recommended length)
Models RFIK 120 & 180 ABOT

Inlet Port 1" BSPF
Outlet Port 1/2" BSPF

Adaptors

Adaptors are fitted as standard to provide inlet & outlet connections

Model RFIK 120 ABOT 3/4" BSPF Male
Model RFIK 180 ABOT 3/4" BSPF Male

Measurement and Indication

Flow

Measured by a tapered metering piston moving within a fixed, sharp edged orifice designed to minimise the effects of changes in temperature and viscosity. The piston movement is proportional to the change in flow rate. In reverse the piston moves back to allow the flow to return at low pressure.

Accuracy: $\pm 4\%$ of full flow.

Pressure Drop (In both flow directions)

RFIK 120 ABOT 14 bar

RFIK 180 ABOT 29 bar

At full flow with oil viscosity 28 centistokes.

Pressure

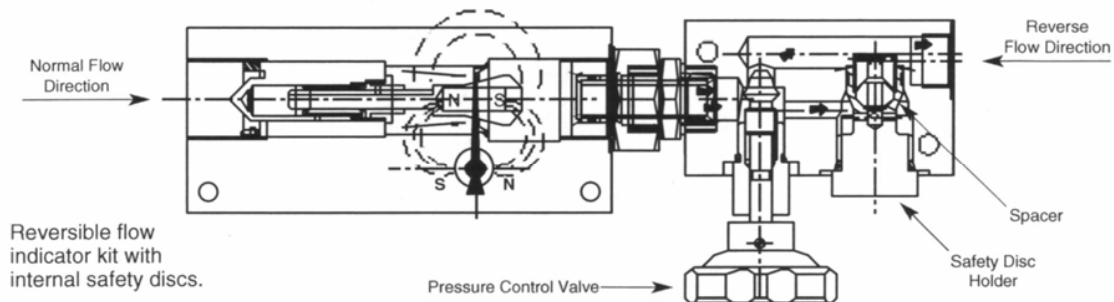
Glycerine filled 63mm (2 1/2") pressure gauge 0 - 420 bar (0 - 6000psi) gives a continuous reading of system pressure.

Accuracy: $\pm 1.6\%$ of full scale

Temperature

Indicated in °C and °F by a thermometer set in rubber compound and built into the flowblock to measure temperature changes in the fluid passage.

Accuracy: $\pm 2\text{ }^{\circ}\text{C}$



Construction

Flow Block

Solid high tensile flow block houses a metering piston and guide, the piston moves against a calibrated spring housed in a guide. The piston can move in both directions allowing flow from either the inlet and outlet port as required. The piston is magnetically coupled to a rotary pointer to provide a direct reading of flow from the inlet direction on a clear 63mm (2 1/2") diameter flow scale calibrated in lpm and gpm. Both the flow and the temperature scales are shielded behind impact resistant windows and protected by a metal cover. The whole unit is fully sealed within a strong metal cover.

Case

The complete unit is built into a strong steel case which provides full protection against accidental damage during testing. Adetachable lid provides access to the instrument dials and the safety disc cartridge is easily accessed to replace safety discs.

Dimensions/Weight

310 x 105 x 120 mm (12.25 x 4.125 x 4.875 inches)

5 kg (11 lbs)



Loading Valve and Pressure Gauge

The HV100 loading valve is connected directly to the flow block and a 420 bar, 6000 psi pressure gauge is mounted in the inlet section of the loading valve. The valve is easy to operate and, combined with the pressure gauge, allows sensitive and progressive control of system pressure throughout the working range.

Safety Discs

Protection against over pressure is provided by two internal safety discs which relieve at 440 bar, 6400 psi without external spillage. The safety discs are housed in a cartridge and are easily replaceable.

Other Products.

Aluminium free flow indicator test kits suitable for Mining / Offshore and High Pressure Water applications are available.

Consult sales office.



RFI Reversible Flow Indicator with Built-in Thermometer

120 lpm
180 lpm
200 lpm



Model RFI 1000 - 120 ABOT

The RFI reversible flow indicator is designed for continuous monitoring or intermittent use commissioning and servicing hydraulic systems up to 420 bar, 6000 psi.

The large 63 mm diameter dial ensures that quick checks can be made to determine pump performance and setting of flow control valves. They can be used anywhere on mobile and industrial hydraulic circuits to test pumps, motors, valves and cylinders.

These direct acting flow indicators can be installed in hazardous areas or on applications where no power is available. The flow indicator design ensures good reliability and minimises the effects of contamination.

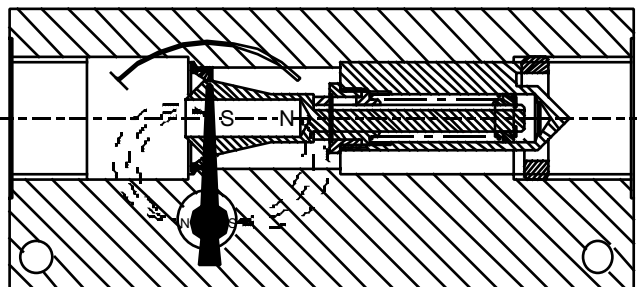
Features

- Allows reversible flow
- Low cost rugged design
- 420 bar, 6000 psi pressure
- Accuracy within 4% FSD
- Large clear dials
- Horizontal or vertical mounting
- Built-In thermometer available

Operation

The flow indicator consists of a sharp edged orifice and tapered metering piston.

The piston movement is directly proportional to flow rate and the sharp edge orifice minimises the effects of viscosity. In reverse the piston moves back to allow the flow to return at low pressure. The piston is magnetically coupled to the rotary pointer assembly which registers on a clear 63 mm (2 1/2") scale calibrated in lpm and gpm.



Another quality product from the Webster Range

Specification

Model No. with thermometer	Model No. without thermometer	Fluid	Body Material	Flow (lpm)	Flow (gpm)	Weight (kg)
RFI 1000 - 120 ABOT	RFI 750 - 30 ABO	Oil	Aluminium	5 - 120	1.2 - 28	1.93
RFI 1000 - 180 ABOT	RFI 750 - 60 ABO	Oil	Aluminium	5 - 180	1.2 - 40	1.93
RFI 1000 - 200 ABOT	RFI 750 - 120 ABO	Oil	Aluminium	5 - 200	1.2 - 44	1.93

Max. Pressure: 420 bar, 6000 psi

Connections

By flexible hoses or steel pipes. Inlet and outlet ports are 1" BSPF.

Measurement and Indication

Flow

Measured by a tapered metering piston moving within a fixed, sharp edged orifice designed to minimise the effects of changes in temperature and viscosity. A pressure drop occurs across the variable orifice and the piston movement is proportional to the change in flow rate.

Accuracy: $\pm 4\%$ of full flow.

Construction

Flow Block

The solid high tensile aluminium block houses a metering piston. The piston is magnetically coupled to a rotary pointer to provide a direct reading of flow on a clear 63mm (2 1/2") diameter flow scale calibrated in lpm or gpm. Both flow and temperature scales are shielded behind impact resistant windows. The whole unit is fully sealed and very strong.

Pressure Drop (in both flow directions)

RFI 1000 - 120 ABOT 1 bar
 RFI 1000 - 180 ABOT 2.4 bar
 RFI 1000 - 200 ABOT 3 bar

At full flow with oil viscosity of 28 centistokes

Adaptors

Adaptor Fitting Kit Part No FT 6201 comprising 6 male-male adaptors and 2 bonded seals to provide 1" BSPF, 3/4" BSPF, 1/2" BSPF, male connectors.

Temperature

Indicated in °C and °F by an optional thermometer set in rubber compound and built into the flow block to sense temperature changes in fluid passage.

Accuracy: ± 2 °C.

Range: 10 - 80 °C, 50 - 180 °F

Consult Sales Office for flow indicators suitable for higher working temperatures.

Accessories

Pressure Gauge

Optional 63mm diameter glycerine filled pressure gauge, accuracy 1.6% FSD, is fitted into a 1/4 NPT connection in the block or remotely connected by using a test point.

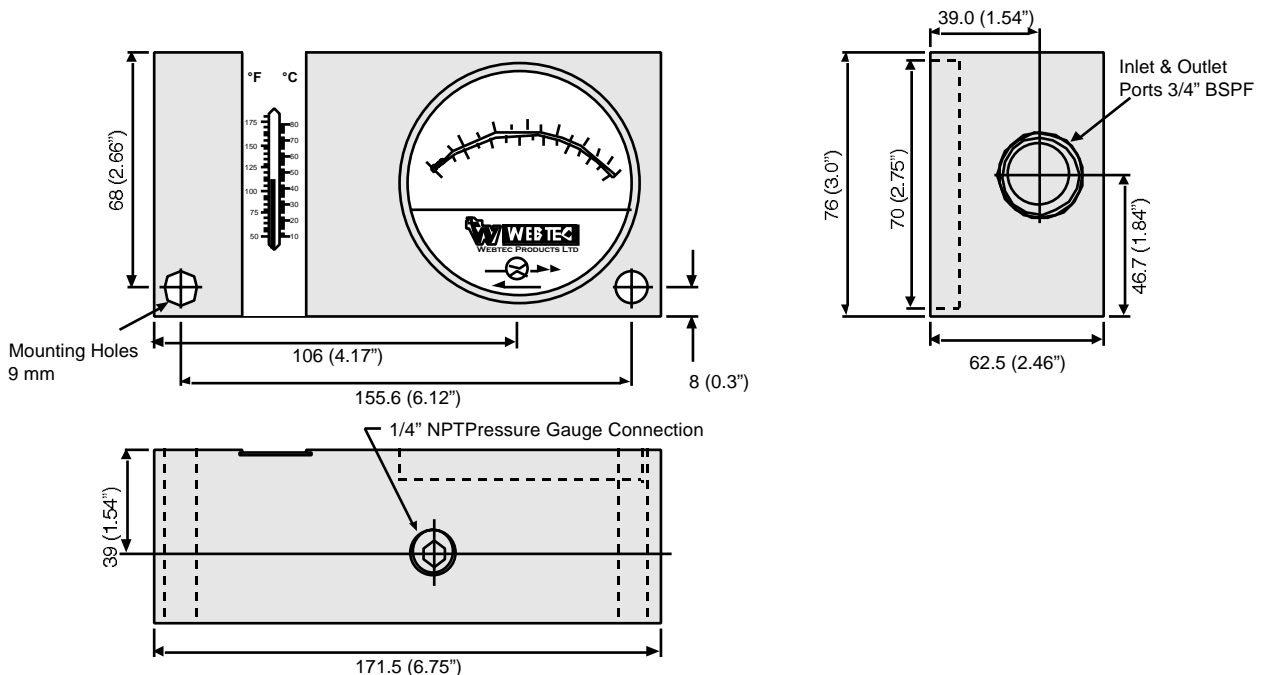
Loading Valve (Optional)

The HV100 loading valve is connected directly to the flow block. The valve is easy to operate and allows progressive control of system pressure. See Bulletin RFIK 1E for details.

Other Applications

Units suitable for Mining, Offshore and High Pressure Water applications are available.

See Bulletin F1 3E for details.



How to order

Specify flow indicator from table detailing thermometer and pressure gauge options. RFI 1000 - 120 ABOT is a 120 lpm Aluminium flow indicator with thermometer.



Certificate No.8242

MC100-5 Portable Flow Computer

Multi-Purpose Data Logger
Multi-Channel Display
Instant Result Print-Out

Displays and Logs:

- 2 Flows
- 2 Pressures
- 2 Temperatures
- 2 rpm
- 2 Peak Pressures
- 1 Pressure Differential
- 2 Horsepowers

The MC100-5 Readout/Data Logger and associated sensors are the basis of one of the most versatile test systems ever created; they make hydraulic field testing easy and quick and thus cost effective; and computer based technology makes the MC100-5 an advanced test stand or laboratory instrument.

It offers simultaneous displays of two flows, two pressures, two speeds and two temperatures. On line communication direct to PC gives data logging, min/max and actual values on PC screen.

Calibration for the various measuring sensors is achieved by simple keyboard entries. Test data for up to 96,000 readings in battery backed memory is available for later analysis or immediate printing of flow and pressure curves.

Webster testers. . . a complete range of hydraulic measuring equipment. . . engineered to make analysis of hydraulic system performance convenient and accurate.



MC100-5 Portable Flow Computer

Features

- Simultaneous display and recording of two flows, two pressures, two temperatures and two speeds.
- Displays two pressure peaks.
- Displays pressure differential.
- Displays two horsepowers.
- Data logger stores 96,000 readings.
- Start data logger from keypad or trigger by flow or pressure level.
- On-Line data transfer direct to PC, provides real-time display.
- Built-in printer for instant print out of tests in graphical or alphanumeric form.
- Printout up to 78cms long.
- Enter customized test titles from keypad.
- Easy to use menu shows on screen for all calibration and input selections.
- Powered by rechargeable battery, with built-in charger.

Another quality product from the Webster Range

Specifications

Display and Record 8 Inputs

2 x flows 2 x pressures
2 x temperatures 2 x speeds
Edited test titles and report titles.

Display and Print

2 x pressure peaks 1 x pressure differential
2 x horsepowers

Accuracy

Flow 1% of indicated reading
Pressure 0.5% of full scale
Pressure peaks 1 mSec peaks captured to
 95% peak value
Temperature Within 1°C up to 150°C
Speed 1% of full scale

Memory

48,000 optional 96,000 measurements in up to 9,999 tests.

Scanning Rate

Analog inputs 0.044 mS
Pulse inputs 160 mS multiple period

Minimum Recording Time

Half millisecond per reading.

Computer

128K RAM/optional 256K.
Baud rate: 19200 max. Real time clock.
RS232 communications port with user selected protocol.

Printer

Graphic and numeric 24 column dot matrix printer.
Standard 58mm paper roll.

Printout

Any two graphs from eight inputs can be printed on same graph. Selectable scaling and graph printout up to 78cm long gives improved resolution.

Dimensions

MC100-5 with printer.
303 x 202 x 126mm (closed),
303 x 404 x 63mm (open). Weight: 5.5kg.

Selectable Units

Flow lpm, USgpm, UKgpm, %FSD
Pressure bar, psi, MPa, KGS, %FSD
Temperature °C or °F
Power KW and HP
Speed rpm

Fully Compatible Sensors and Accessories

Photo-Tachometer

TH 1A to check shaft rpm.



Pressure Transducers LPT Series

Model	Pressure
LPT 40	40 bar
LPT 100	100 bar
LPT 250	250 bar
LPT 400	400 bar
LPT 600	600 bar



Bi-Directional Flow Meters

(temp. output is included with all these flow meters)

Without Load Valve

LT 5	0.1- 5 lpm
LT 10	0.2- 10 lpm
LT 20	0.3- 20 lpm
LT 50	2 - 50 lpm
LT 125	4 - 125 lpm
LT 250	10 - 250 lpm
LT 400	15 - 400 lpm
LT 500	20 - 500 lpm
LT 750	25 - 800 lpm



With Load Valve

LT 250R	10 - 300 lpm
LT 400R	15 - 400 lpm
LT 750R	25 - 800 lpm



Order separate load valve HV100 for flow meters LT5 to LT125.

Cables: 20' (6m) long

Flow/Temperature FT 7950
Pressure FT 7951
RS232 FT 7952





WEBTEC

WEBTEC PRODUCTS LIMITED

Nuffield Road, St. Ives, Cambs., England. PE27 3LZ

Tel: +44(0)1480 397400

Fax: +44(0)1480 466555

E-mail: sales@webtec.co.uk

<http://www.webtec.co.uk>

MC104 Portable Hydraulic Data logger

Display, store, datalog and print results

8 inputs
4 Pressures
2 Flows / Speeds
2 Temperatures

8 calculated channels
4 Peak Pressures
2 Differential Pressures
2 Power outputs



MC104 Portable Data logger

The MC104 portable hydraulic data logger builds on the tried and tested MC100 design. The MC104 can simultaneously display 4 pressures, 2 flows / speeds and 2 temperatures. In addition the user can display 4 peak pressures, 2 differential pressures and 2 power outputs (calculated from flow and pressure). Data can also be logged using any one of five modes giving the flexibility to record results at very high speed (2 channels every ½ ms) or over long periods (all channels every 300 sec) or anywhere in between. In addition you can also link the MC104 to your PC or laptop and graphically display the results.

A large range of sensors can be connected to the MC104 and quickly configured using the menu-driven display. Up to 96,000 readings can be stored in battery-backed memory available for later analysis or immediate printing of flow and pressure curves using the MP100. Results can also be downloaded onto a PC or laptop via the RS232 port for later analysis, archiving and importing into all common spreadsheet programs.

Features

- Menu driven with on-screen prompts
- Simultaneous display and recording of 4 pressures, 2 flow / speeds, 2 temps
- Display 4 peak pressures, 2 differential pressures, 2 power outputs
- Five data logging modes
- Trigger tests automatically or on a key-press
- Test on-line to a PC with real-time display
- Stores 96,000 readings
- Built-in printer for instant print out of test results/ graphs
- Enter customised test titles from keypad
- Quick to configure new sensors
- Rechargeable battery with built-in charger

Another quality product from the Webster Range

Specifications

Display and Record 8 Inputs

4 x pressures, 2 x flows / speeds
2 x temperatures
Edited test titles and report titles

Display and Print

4 x peak pressures, 2 x differential pressures
2 x power outputs

Input connectors

5-pin amphenol for use with Webster sensors
Pressure – 10 V supply
Flow / speed – include 5 V supply, for powered transducers

Accuracy

Flow 1% of indicated reading
Pressure 0.5% of full scale
Pressure peaks - 1 ms peaks captured to 95% peak value
Temperature better than +/- 1 °C up to 150 °C
Speed ±0.25% ± 1 digit

Data logging modes

Continuous log – all channels as fast as possible
Periodic log – all channels up to 300 seconds apart
Log on keypress – all channels on a key press
Profile log – up to 2 channels, up to 2000 blocks every ½ ms
Online log - all channels via PC / laptop

Memory & Battery

96,000 measurements in up to 9,999 tests
Rechargeable battery suitable for at least 16 hours continuous use

Minimum recording time

Half-millisecond per reading

Scanning Rate

Analogue inputs 0.044 ms
Multiple period measurement

Computer

256k RAM
Baud rate: 19200 max. Real time clock.
RS232 communications port with user selected protocol.

Printer

Graphic and numeric 24 column dot matrix printer.
Standard 58 mm paper roll.

Printout

Any two graphs from eight inputs can be printed on same graph. Selectable scaling and graph printout up to 78cm long gives improved resolution.

Dimensions

MC104 with printer
303 x 202 x 126 mm (closed),
303 x 404 x 63 mm (open). Weight: 5.5 kg.

Selectable Units

Flow lpm, USgpm, UKgpm, %FSD
Pressure bar, psi, MPa, KGS, %FSD
Temperature °C or °F
Power kW and HP
Speed rpm

Fully Compatible Sensors and Accessories

Photo-Tachometer

TH1A& TH3IR
to check shaft rpm



Pressure Transducers LPT Series

Model	Pressure
LPT 40	40 bar
LPT 100	100 bar
LPT 250	250 bar
LPT 400	400 bar
LPT 600	600 bar



Bi-Directional Flow Meters

(temp. output is included with all these flow meters)

Without Load Valve

LT 5	0.1 - 5 lpm
LT 10	0.2 - 10 lpm
LT 20	0.3 - 20 lpm
LT 50	2 - 50 lpm
LT 125	4 - 125 lpm
LT 250	10 - 250 lpm
LT 400	15 - 400 lpm
LT 500	20 - 500 lpm
LT 750	25 - 800 lpm



With Load Valve

LT 250R	10 - 300 lpm
LT 400R	15 - 400 lpm
LT 750R	25 - 800 lpm



Compatible with flow meters fitted with powered transducers
Order separate load valve HV100 for flow meters LT5 to LT125.

CABLES: 20' (6m) long

Flow/Temperature	FT 8525
Pressure	FT 7951
RS232	FT 7952



LPT Series

Pressure Transducers and Transmitters



Applications

The LPT pressure sensors are designed for continuous monitoring of oil, gas, water, hydraulic and other pressure media in mobile equipment, industrial hydraulics, compressors and process control equipment.

Economical price and rugged design allows the LPT transducers to be designed into O.E.M. machinery to give control and condition monitoring information.

Combined with one of the wide range of Webster digital readouts both continuous and peak pressures can be measured.

Construction

The LPT range of industrial pressure transducers and transmitters consist of a stress measuring element directly coupled to a stainless steel diaphragm. The diaphragm is vacuum brazed to a stainless steel fitting with 1/4 BSPF male thread.

Features

- **ACCURATE** ($\pm 0.25\%$ span)
- **ECONOMICALLY** priced
- **RUGGED** design
- **OUTPUTS** 100mV, 0-10V, 4-20mA
- **LOW POWER** (Typically 30mW)
- **STAINLESS** Steel wetted parts

The LPT series utilises thin film techniques along with fully automated production methods to produce a standard of performance previously only associated with high price pressure transducers.

Another quality product from the Webster Range

Specification

Pressure Ranges

10, 25, 40, 100, 250 or 400 bar Gauge*

* Consult sales office for range 1-10 bar

Accuracy

Better than $\pm 0.25\%$ span

Proof Pressure

2 times rated pressure up to 250 bar

1.5 times rated pressure up to 400 bar

Electrical Characteristics

Output Signal	0 - 100mV	0 - 10V	4- 20mA
Supply Voltage Requirement	10V	11.5 - 35Vdc	7-35Vdc
Zero Balance	$\pm 1\%$	$\pm 1\%$	$\pm 1\%$
Span	$\pm 1\%$	$\pm 1\%$	$\pm 1\%$

Mechanical Construction

LPT range of industrial pressure transducers and transmitters consists of a thin film (CVD) stress measuring element directly coupled to a stainless steel diaphragm.

Pressure Connection

1/4" BSPF male (1/8 BSPF female and 1/4 NPT male optional)

Material

17 - 4PH stainless steel wetted parts

Vibration Tolerance

35G peak sinusoidal 5 Hz to 2 kHz

Installation

The pressure transducers and transmitters are supplied with a miniature DIN type connector 6 metre 20' long cables are available. Consult sales office

Model	Dimensions				
	A	B	C	D	E
LPT **** mV	17	66	26	27.4	26
V	17	66	26	27.4	26
mA	17	66	26	27.4	26

Ordering Code Typical LPT 400 / B / B 100mV

Pressure Range (see Table 1)

Pressure Units (B) - bar

Porting (B) 1/4" BSPF

Output 100mV, 4-20 mA, 10V

Temperature Range

Compensated range - 20 to + 80°C

Operating range - 40 to + 120°C

Temperature Effects

$\pm 0.015\%$ span / °C compensated range

Burst Pressure

2000 bar for 400 bar range

Resistance

3000 ohms minimum 100 mV model

Electrical Connection

To accept miniatures DIN type connector sealed to IP65 and NEMA 3. Direct cable connection available. Consult sales office.

Mechanical Shock Tolerance

Withstands freefall to EC 68-2-32 Procedure 1.

Options and Accessories

Complete range of digital readouts, pressure test points and micro-bore hoses.

How To Order

Specify readout and transducer as follows: DP 110/LPT 400 BB 5V 240V is a pressure readout with a 400 bar transducer suitable for a 240 Volt supply.

Connecting Cable 6 metre (20') long. Specify FT7081-6

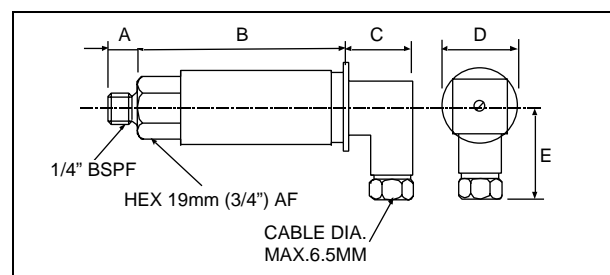


Table 1

Range	Code
10 bar	10
25 bar	25
40 bar	40
100 bar	100
250 bar	250
400 bar	400





WEBTEC

WEBTEC PRODUCTS LIMITED

Nuffield Road, St. Ives, Cambs., PE27 3LZ, UK
Tel: +44(0)1480 397400 Fax: +44(0)1480 466555
E-mail: sales@webtec.co.uk

<http://www.webtec.co.uk>

Analogue Hydraulic Testers

Remote Input of Flow, Temperature and Speed

- Up to 800 lpm
- Up to 480 bar
- Bi-Directional



Model HT 502 & HT 752

The Webster Series 2 Testers are designed for testing hydraulic pumps, motors, valves and hydrostatic transmissions. The remote input feature allows main hydraulic circuits and drain leakage flows to be measured at the same time. This easy to use diagnostic unit can pin point hydraulic system faults, reducing downtime and help in preventive maintenance.

Accurately measuring flow, pressure and temperature, testers are ideal for conveniently checking, hydraulic system performance or locating faults while operating directional control valves or adjusting valve settings. Webster turbines are designed for continuous monitoring or intermittent use commissioning and servicing hydraulic systems up to 420 bar, 6000 psi pressure.

The pressure loading valve with internal by-pass safety discs, allows progressive build up of pressure to check the flow throughout the working range.

Features

- **ACCURATE** measurement of flow, pressure, temperature and speed
- **BI-DIRECTIONAL** for unrestricted connection and simplified testing
- **SAFE** to use in both directions of flow. Internal oil by-pass protects system, tester and operator against over-pressure
- **REMOTE INPUT** of flow and temperature enables checks on double piston pumps etc.
- **FAST** checks on pumps, valves, motors, cylinders, hydrostatic transmissions
- **ECONOMICAL** low power consumption from standard battery. Automatic "Power Off"
- **WIDE RANGE** of operation 20 - 800 lpm
Maximum pressure 480 bar (HT 752HP)
- **PORTABLE AND LIGHTWEIGHT** with angled case for easier viewing and cleaning

Another quality product from the Webster Range

Specifications

Model No	Flow Range	Scales		Pressure Range	Temperature Range	Port Size (SAE & metric threads available)
		High	Low			
HT502	20-600 lpm	0-600 lpm	0-120 lpm	0-350 bar	0-120°C	1 1/2" Flange
HT752	20-800 lpm	0-800 lpm	0-160 lpm	0-420 bar	0-120°C	1 1/2" Flange
HT752HP	20-800 lpm	0-800 lpm	0-160 lpm	0-480 bar	0-120°C	1 7/8" - 12 UN

Connections

By flexible hoses (1 - 2 metre minimum length).
Inlet and Outlet ports:

Adaptors

Adaptor Fitting and flanges are available to suit the range of flow blocks. Consult the sales office

Measurement and Indication

Flow

Measured by the electronic count of an axial turbine designed to minimise the effects of variation in temperature and viscosity. The large analogue readout meter has high / low scales selected by a switch.

Accuracy \pm 2% of full scale

Pressure

Glycerine filled dual scale pressure gauge 0 - 420 bar, 0 - 6000 psi connected by capillary tube to the flow block.

Accuracy \pm 1.6% of full scale.

Temperature

Sensed by a thermistor pick-up in the oil flow for fast response. Temperature is displayed in °C for either the internal or remote flow block.

Accuracy \pm 2°C.

Speed

Rotational speed of motors, shafts etc., can be measured by optional phototachometer using one or more retro-reflective marks. Range 600 - 8000 rpm.

Accuracy \pm 2% of full scale.

Construction

Readout

HT Series Testers comprise a turbine flow block, pressure gauge and temperature sensor built into a steel case complete with read-out panel, selector switch, integral loading valve and connections for optional equipment. For clear accurate readings the tester has both High and Low scales.

Low power micro-circuitry minimises battery consumption. An automatic switch turns the power off one hour after the last operation.

The standard 9 volt battery is available worldwide and gives 12 months of normal testing.

Turbine Block

High tensile aluminium block houses a six blade turbine rotating on a stainless steel bearing and shaft. Built-in flow straightener reduce turbulence and allow accurate flow measurement in both directions.

General

Loading Valve

The integral loading valve gives progressive pressure loading in either flow direction. Replaceable safety discs relieve at 440 bar to internally by-pass the oil if the maximum pressure is exceeded.

Remote Inputs

An additional flow block can be connected into the panel. This input can be calibrated to the range of Webster Flow blocks, 0.1 to 800 lpm. Specify the additional flow block when ordering.

Seals

Viton seals compatible with oil, water / oil emulsion and phosphate-ester are fitted as standard.

Dimensions

255mm Wide, 215mm High, 205mm Deep, Mass 10Kg.

Operators Manual

Full instructions are supplied with each tester.

Accessory Equipment

HT testers can be used with a wide range of accessories e.g. Phototachometer, mechanical tachometer, low pressure gauge and separate flow blocks. For further information, see the optional equipment section.

How to Order

Specify model from table above together with optional equipment and adaptor fitting kit as required e.g. HT 402 with TH2, BAI 0 and FT 5781 is a 10 - 400 lpm tester with tachometer, magnetic base and adaptor kit.



Certificate No.8242

Analogue Hydraulic Testers

Remote Input of Flow, Temperature and Speed

- Up to 400 lpm
- Up to 420 bar
- Bi-Directional



Model HT 402

The Webster Series 2 Testers are designed for testing hydraulic pumps, motors, valves and hydrostatic transmissions. The remote input feature allows main hydraulic circuits and drain leakage flows to be measured at the same time. This easy to use diagnostic unit can pin point hydraulic system faults, reducing downtime and help in preventive maintenance.

Accurately measuring flow, pressure and temperature, testers are ideal for conveniently checking, hydraulic system performance or locating faults while operating directional control valves or adjusting valve settings. Webster turbines are designed for continuous monitoring or intermittent use commissioning and servicing hydraulic systems up to 420 bar, 6000 psi pressure.

The pressure loading valve with internal by-pass safety discs, allows progressive build up of pressure to check the flow throughout the working range.

Features

- **ACCURATE** measurement of flow, pressure, temperature and speed
- **BI-DIRECTIONAL** for unrestricted connection and simplified testing
- **SAFE** to use in both directions of flow. Internal oil by-pass protects system, tester and operator against over-pressure
- **REMOTE INPUT** of flow and temperature enables checks on double piston pumps etc.
- **FAST** checks on pumps, valves, motors, cylinders, hydrostatic transmissions
- **ECONOMICAL** low power consumption from standard battery. Automatic "Power Off"
- **WIDE RANGE** of operation 10 - 400 lpm
Maximum pressure 420 bar, 6000 psi
- **PORTABLE AND LIGHTWEIGHT** with angled case for easier viewing and cleaning

Another quality product from the Webster Range

Specifications

Model No	Part No	Flow Range	Scales		Pressure Range	Temperature Range
			High	Low		
HT252	FT6359	10-300 lpm	0-300 lpm	0-60 lpm	0-420 bar	0-120°C
HT402	FT6368	10-400 lpm	0-400 lpm	0-80 lpm	0-420 bar	0-120°C

Connections

By flexible hoses (1 - 2 metre minimum length). Inlet and Outlet ports:

HT252 1" BSPF
HT402 1" BSPF

Adaptors

Adaptor Kit Part No. FT 5781 comprising 10 adaptors and 2 bonded seals for HT 302 and HT 402 testers to provide 1" BSPF, 3/4" BSPF, 1/2" BSPF, 1 5/16" JIC Male, 9/16" SAE 'O' Ring Female.

Measurement and Indication

Flow

Measured by the electronic count of an axial turbine designed to minimise the effects of variation in temperature and viscosity. The large analogue readout meter has high / low scales selected by a switch.

Accuracy $\pm 2\%$ of full scale

Pressure

Glycerine filled dual scale pressure gauge 0 - 420 bar, 0 - 6000 psi connected by capillary tube to the flow block.

Accuracy $\pm 1.6\%$ of full scale.

Temperature

Sensed by a thermistor pick-up in the oil flow for fast response. Temperature is displayed in °C for either the internal or remote flow block.

Accuracy $\pm 2^\circ\text{C}$.

Speed

Rotational speed of motors, shafts etc., can be measured by optional phototachometer using one or more retro-reflective marks. Range 600 - 8000 rpm.

Accuracy $\pm 2\%$ of full scale.

Construction

Readout

HT Series Testers comprise a turbine flow block, pressure gauge and temperature sensor built into a steel case complete with read-out panel, selector switch, integral loading valve and connections for optional equipment. For clear accurate readings the tester has both High and Low scales.

Low power micro-circuitry minimises battery consumption. An automatic switch turns the power off one hour after the last operation.

The standard 9 volt battery is available worldwide and gives 12 months of normal testing.

Turbine Block

High tensile aluminium block houses a six blade turbine rotating on a stainless steel bearing and shaft. Built-in flow straightener reduce turbulence and allow accurate flow measurement in both directions.

General

Loading Valve

The integral loading valve gives progressive pressure loading in either flow direction. Replaceable safety discs relieve at 440 bar to internally by-pass the oil if the maximum pressure is exceeded.

Remote Inputs

An additional flow block can be connected into the panel. This input can be calibrated to the range of Webster Flow blocks, 0.1 to 800 lpm. Specify the additional flow block when ordering.

Seals

Viton seals compatible with oil, water / oil emulsion and phosphate-ester are fitted as standard.

Dimensions

240mm Wide, 205mm High, 180mm Deep, Mass 8Kg.

Operators Manual

Full instructions are supplied with each tester.

Accessory Equipment

HT testers can be used with a wide range of accessories e.g. Phototachometer, mechanical tachometer, low pressure gauge and separate flow blocks. For further information, see the optional equipment section.

How to Order

Specify model from table above together with optional equipment and adaptor fitting kit as required e.g. HT 402 with TH2, BAI 0 and FT 5781 is a 10 - 400 lpm tester with tachometer, magnetic base and adaptor kit.



Certificate No. 8242

Analogue Hydratest Hydraulic Tester

Flow, Pressure,
Temperature and Speed

- 300 lpm
- Bi-Directional



Model HC 300

Accurately measuring flow, pressure and temperature, testers in the HC Series are used to conveniently check hydraulic system performance or locate faults while operating directional control valves or adjusting valve settings.

The tester comprises a turbine flow block and large easy to read analogue meter which displays flow, speed or temperature.

Webster turbines are designed for continuous monitoring or intermittent use commissioning and servicing hydraulic systems up to 420 bar, 6000 psi pressure.

Optional accessories for the tester include a phototachometer kit for checking shaft or motor rpm and a pressure loading valve with internal by-pass safety discs. The loading valve allows progressive build up of pressure to check the flow throughout the range.

Features

- **ACCURATE** measurement of flow, pressure, temperature
- **FAST** checks on pumps, valves, motors, cylinders, hydrostatic transmissions
- **SAFE** to use in both directions of flow. Internal oil by-pass protects system, tester and operator against accidental over-pressure
- **BI-DIRECTIONAL** for unrestricted connection and simplified testing
- **ECONOMICAL** low power consumption from standard battery. Automatic switch off
- **WIDE RANGE** of operation
8-300 lpm
2- 60 gpm
Maximum pressure 420 bar, 6000 psi
- **PORTABLE** and lightweight

Another quality product from the Webster Range

Specifications

Model No.	Part No.	Flow Range	Scales		Pressure Range	Temp Range
			High	Low		
HC 300	FT5584-18	10-300 lpm	0-300 lpm	0-60 lpm	0-420 bar	120°C

Connections

By flexible hoses (1 metre minimum length) Inlet and Outlet ports: HC 300 1" BSPF

Adaptors

Adaptor Fitting Kit Part No. FT 5781 comprising 10 male-male adaptors and 2 bonded seals for HC 300 to provide: 1. BSPF, 3/4" BSPF, 1/2" BSPF, 1 5/16" JIC Male and 9/16" UNF Female connections.

Measurement and Indication

Flow

Measured by electronic count of the axial turbine, designed to minimise the effects of variation in temperature and viscosity. The large analogue readout meter has High / Low scales selected by a switch.

Accuracy $\pm 2\%$ of full scale.

Pressure

Glycerine filled dual scale pressure gauge 0 - 420 bar. 0 - 6000 psi.

Accuracy 1.6% of full scale.

Temperature

Sensed by thermistor in the turbine block for fast response and selected by switch on the analogue meter whenever required.

Accuracy $\pm 2^\circ\text{C}$

Speed

Rotational speed of motors, shafts etc., can be measured by an optional plug-in phototachometer. All necessary circuitry is built into the tester. Range 600 - 8000 rpm.

Accuracy $\pm 2\%$ of full scale.

Construction

Readout

HC Series Testers comprise a turbine flow block, pressure gauge and temperature sensor built into a steel case complete with read-out panel, selector switch and connections for optional equipment. For clear accurate readings the tester has both High and Low scales.

Low power micro-circuitry minimises battery consumption. An automatic switch turns the power off one hour after the last operation.

The standard 9 Volt battery is available worldwide and gives typically 12 months normal testing.

Turbine Block

High tensile aluminium block houses a six blade turbine rotating on a stainless steel bearing and shaft. Straightener reduce flow turbulence and allow measurement in both directions. Optional loading valve available.

General

Loading Valve

Optional HV400 loading valve can be directly connected to the Turbine Block to give progressive pressure loading in either flow direction. Replaceable safety discs relieve at 440 bar to internally by-pass the oil if the maximum pressure is exceeded.

Seals

Turbine - Viton seals compatible with oil, water / oil emulsion, phosphate-ester. Accessories and test points Buna seals compatible with oil. Other seals available. Consult Sales Office.

Dimensions

191mm Wide, 225mm High, 84mm Deep, Mass 4kg.

Operators Manual

Full operating instructions and test procedures are detailed in a manual supplied with the tester.

Accessory Equipment

HC testers can be used with a wide range of accessories. eg. phototachometer, mechanical tachometer, loading valve, and low pressure gauge. A carrying case is also available. Please refer to the Optional Equipment Section.

How to Order

Specify model from above table together with optional equipment and adaptor fitting kit as required eg. HC 300 with HV 400, TH 1A, BA 10, and FT 5781 is a 8 - 300 lpm tester with loading valve, tachometer, magnetic base and adaptor kit.



Certificate No.8242

Analogue Hydratest Hydraulic Testers

Remote Input of Flow,
Temperature and Speed

- Up to 125 lpm
- Up to 420 bar
- Bi-Directional



Model HC 125 tester with HV100 loading valve and low pressure gauge with automatic cut-out valve.

Accurately measuring flow, pressure and temperature, testers in the HC Series are used to conveniently check hydraulic system performance or locate faults while operating directional control valves or adjusting valve settings.

The tester comprises a turbine flow block and large easy to read analogue meter which displays flow, speed or temperature.

Webster turbines are designed for continuous monitoring or intermittent use commissioning and servicing hydraulic systems up to 420 bar, 6000 psi pressure.

Optional accessories for the tester include a phototachometer kit for checking shaft or motor rpm and a pressure loading valve with internal by-pass safety discs. The loading valve allows progressive build up of pressure to check the flow throughout the range.

Features

- **ACCURATE** measurement of flow, pressure, temperature
- **FAST** checks on pumps, valves, motors, cylinders, hydrostatic transmissions
- **SAFE** to use in both directions of flow. Internal oil by-pass protects system, tester and operator against accidental over-pressure
- **BI-DIRECTIONAL** for unrestricted connection and simplified testing
- **ECONOMICAL** low power consumption from standard battery. Automatic switch off
- **WIDE RANGE** of operation
2-125 lpm
0.5-26 gpm
Maximum pressure 420 bar, 6000 psi
- **PORTABLE** and lightweight

Another quality product from the Webster Range

Specifications

Model No.	Part No.	Flow Range	Scales		Pressure Range	Temp Range
			High	Low		
HC 50	FT2547-18	2-50 lpm	0-50 lpm	0-10 lpm	0-420 bar	120 °C
HC125	FT2525-1B	5-125 lpm	0-125 lpm	0-30 lpm	0-6000 psi	120 °C

Connections

By flexible hoses (1 metre minimum length) Inlet and Outlet ports: HC 50 3/4" BSPF
HC125 3/4" BSPF

Adaptors

Adaptor Fitting Kit Part No. FT 6138 comprising 6 male-male adaptors and 2 bonded seals for HC 125 and HC 50 to provide: 3/4" BSPF, 1/2" BSPF, 3/8" BSPF, male connections.

Measurement and Indication

Flow

Measured by electronic count of the axial turbine, designed to minimise the effects of variation in temperature and viscosity. The large analogue readout meter has High I Low scales selected by a switch.

Accuracy $\pm 2\%$ of full scale.

Pressure

Glycerine filled dual scale pressure gauge 0 - 420 bar. 0 - 6000 psi.

Accuracy $\pm 1.6\%$ of full scale.

Temperature

Sensed by thermistor in the turbine block for fast response and selected by switch on the analogue meter whenever required.

Accuracy $\pm 2^\circ\text{C}$.

Speed

Rotational speed of motors, shafts etc., can be measured by an optional plug-in photo-tachometer. All necessary circuitry is built into the tester.

Range 600 - 8000 rpm.

Accuracy $\pm 2\%$ of full scale.

Construction

Readout

HC Series Testers comprise a turbine flow block, pressure gauge and temperature sensor built into a steel case complete with read-out panel, selector switch and connections for optional equipment. For clear accurate readings the tester has both High and Low scales.

Low power micro-circuitry minimises battery consumption. An automatic switch turns the power off one hour after the last operation.

The standard 9 Volt battery is available worldwide and gives typically 12 months normal testing.

Turbine Block

High tensile aluminium block houses a six blade turbine rotating on a stainless steel bearing and shaft. Straightener reduce flow turbulence and allow measurement in both directions. Optional loading valve available.

General

Loading Valve

Optional HV100 loading valve can be directly connected to the Turbine Block to give progressive pressure loading in either flow direction. Replaceable safety discs relieve at 440 bar to internally by-pass the oil if the maximum pressure is exceeded.

Seals

Turbine - Viton seals compatible with oil, water I oil emulsion, phosphate-ester. Accessories and test points Buna seals compatible with oil. Other seals available. Consult Sales Office.

Weight

Tester 4.0Kg.

Loading Valve 1.4Kg.

Operators Manual

Full operating instructions and test procedures are detailed in a manual supplied with the tester.

Accessory Equipment

HC testers can be used with a wide range of accessories. eg. phototachometer, mechanical tachometer, loading valve, and low pressure gauge. A carrying case is also available. Please refer to the Optional Equipment Section.

How to Order

Specify model from above table together with optional equipment and adaptor fitting kit as required eg. HC 125 with HV 100, TH IA, BA10, FT 5539, and FT 6138 is a 4 - 125 lpm tester with loading valve, tachometer, magnetic base, carrying case and adaptor kit.



Certificate No.8242

FIK Test Kit Low cost in-line Pump Tester

- 30 lpm
- 60 lpm
- 120 lpm
- 180 lpm



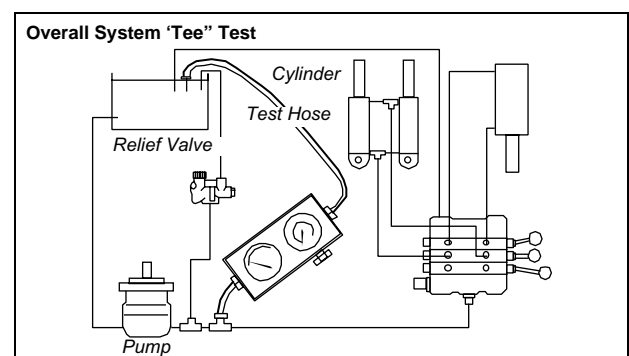
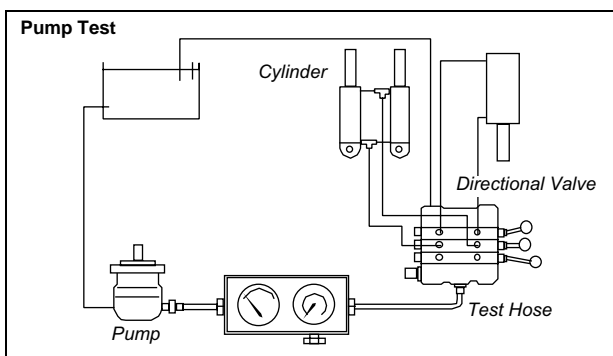
The uni-directional FIK pump tester comprises a direct acting flow indicator with built-in thermometer, a loading valve and a pressure gauge enclosed in a strong steel case with a removable lid. This kit provides the ideal solution for servicing and commissioning hydraulic circuits on agricultural and other mobile equipment.

The unit is self contained and requires no electrical power. The dials are clear and easy to read. Installation is extremely simple and the test kit can be connected into either the pressure or return lines. The loading valve and pressure gauge allow a progressive build up of system pressure in complete safety.

The test kit provides the service engineer with quick, accurate and simple performance testing of pumps, valves and other aspects of hydraulic circuits.

Features

- LOW cost, rugged construction
- MEASURES Flow, Pressure, Temperature
- ACCURACY within 4% FSD
- LARGE clear easy to read dials
- SMOOTH pressure control up to 420 bar (6000 psi)
- WIDE range of operation, 2 to 180 lpm (1/2 to 40 gpm)
- SAFE to use, Internal oil by-pass protect system and operator against accidental over-pressure.



Another quality product from the Webster Range

Specifications

Model No.	Part No	Flow Range		Max.Working Pressure		Temperature Range	
		lpm	gpm	bar	psi	°C	°F
FIK 30ABOT	FT5594-01	2 - 30	0.5 - 7	420	6000	10-80	50-180
FIK 60ABOT	FT5594-02	2 - 60	0.5 - 14	420	6000	10-80	50-180
FIK120ABOT	FT5594-03	4 - 120	1.0 - 26	420	6000	10-80	50-180
FIK180ABOT	FT5594-09	10 - 180	2.2 - 40	420	6000	10-80	50-180

Connections

By flexible hoses (1/2 - 1 metre recommended length)
 Inlet Port 3/4" BSPF
 Outlet Port 1/2" BSPF

Adaptors

Fittings are supplied as standard to provide inlet and outlet connections.

Models FIK 30 ABOT 1/2" BSPF Male.
 Models FIK 60 ABOT 1/2" BSPF Male.
 Models FIK 120 ABOT 3/4" BSPF Male.
 Models FIK 180 ABOT 3/4" BSPF Male.
 Other adaptor fittings available. Consult Sales Office.

Measurement and Indication

Flow

Measured by a tapered metering piston moving within a fixed, sharp edged orifice, designed to minimise the effect of changes in temperature and viscosity. The piston movement is proportional to the change in flow rate.
 Accuracy $\pm 4\%$ of full scale.

Pressure Drop

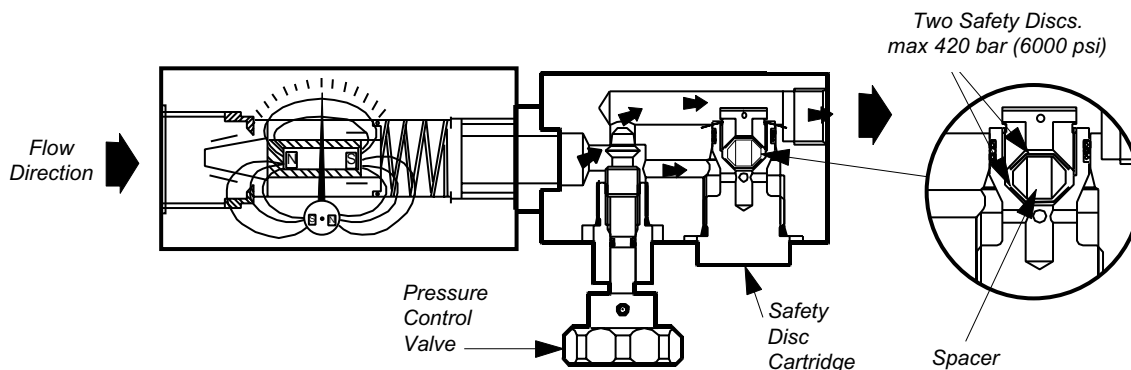
FIK 30 ABOT 3 bar FIK 60 ABOT 5 bar
 FIK 120ABOT 15 bar FIK 180 ABOT 25 bar
 At full flow with oil viscosity of 28 centistokes

Pressure

Glycerine filled 63mm (2 1/2") pressure gauge 0-420 bar (0 - 6000 psi) gives a continuous reading of system pressure.
 Accuracy $\pm 1.6\%$ of full scale.

Temperature

Indicated in °C and °F by a thermometer set in rubber compound and built into the flowblock to measure temperature changes in the fluid passage. Accuracy $\pm 2^\circ\text{C}$



Construction

Flow Block

Solid High tensile flow block houses a metering piston which moves against a calibrated spring. The piston is magnetically coupled to a rotary pointer to provide a direct reading of flow on a clear 63mm (2 1/2") diameter flow scale calibrated in lpm and gpm. Both flow and temperature scales are shielded behind impact resistant windows. The whole unit is fully sealed and very strong.

Case

The complete unit is built into a strong steel case which provides full protection against accidental damage during testing. A detachable lid and end plate allow easy removal to replace safety discs.

Dimensions / Weight

350x125x115mm (13.75x5x4.5 inches)
 4.5 kg (10 lbs)

Loading Valve and Pressure Gauge

The HV1 00 loading valve is connected directly to the flow block and a 420 bar, (6000 psi) pressure gauge is mounted in the inlet section of the loading valve. The valve is easy to operate and, combined with the pressure gauge, allows sensitive and progressive control of system pressure throughout the working range.

Safety Discs

Protection against over pressure is provided by two internal safety discs which relieve at 440 bar, 6400 psi without external spillage. The safety discs are housed in a cartridge and are easily replaceable.

General

Other Applications.

Aluminium free units suitable for Mining, Offshore and High Pressure Water applications are available. Consult Sales Office.

How to order

Specify Model from table above together with any adaptor fitting required. Webster Model FIK 120 ABOT is a 4 - 120 lpm, 1.0 - 26 gpm test kit suitable for up to 420 bar, 6000 psi operation.



Certificate No.8242



WEBTEC

WEBTEC PRODUCTS LIMITED

Nuffield Road, St. Ives, Cambs., England. PE27 3LZ

Tel: +44(0)1480 397400

Fax: +44(0)1480 466555

E-mail: sales@webtec.co.uk

<http://www.webtec.co.uk>

In-Line Flow Indicator with built in Thermometer for Water or Oil

- 30 lpm
- 60 lpm
- 120 lpm
- 200 lpm
- 400 lpm

- Up to 420 bar



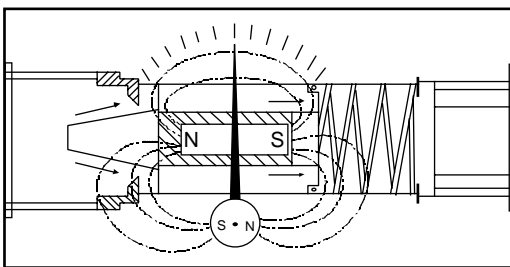
*Model FI 750-120-BBWT
Water / Oil Flow Indicator*

Flow Indicators are designed for continuous monitoring or intermittent use commissioning and servicing hydraulic systems up to 420 bar, 6000 psi (FI 750) or 350 bar, 5000 psi (FI 1500)

The large clear 63mm diameter dial ensures that quick checks can be made to determine pump performance and setting of flow control valves. They can be used on cooling systems, hydraulic machinery and mining equipment using water and water-oil emulsions.

These direct acting flow indicators can be installed in hazardous areas or on applications where no power is available. The flow indicator design ensures good reliability and is tolerant to contamination.

Operation



Section drawing of FI750 Flow Indicator

Features

- **LOW** cost rugged design
- **DIRECT** reading
- **HIGH** Pressure applications
- **ACCURACY** within 4% fsd
- **LARGE** clear easy to read dial
- **HORIZONTAL** or vertical mounting
- **BUILT-IN** thermometer available.

The flow indicator consists of a sharp edged orifice and tapered metering piston.

The piston movement is directly proportional to flow rate and the sharp edged orifice minimises the effects of viscosity. The piston is magnetically coupled to the rotary pointer assembly which registers on a clear 63mm (2 1/2") scale calibrated in lpm for water and oil.

Another quality product from the Webster Range

Specifications

Model No. without Thermometer	Model No. with Thermometer	Body Material	Flow Range lpm		Max. Working Pressure		Temperature Range	
			Water	Oil	psi	bar	°C	°F
FI 750 - 30 BBW	FI 750 - 30 BBWT	Bronze	2 - 30	2 - 30	6000	420	10 - 80	50 - 180
FI 750 - 60 BBW	FI 750 - 60 BBWT	Bronze	3 - 70	2 - 60	6000	420	10 - 80	50 - 180
FI 750 - 120 BBW	FI 750 - 120 BBWT	Bronze	4 - 140	4 - 120	6000	420	10 - 80	50 - 180
FI 1500 - 200 BBW	FI 1500 - 200 BBWT	Bronze	10 - 200	10 - 200	5000	350	10 - 80	50 - 180
FI 1500 - 400 BBW	FI 1500 - 400 BBWT	Bronze	20 - 400	20 - 400	5000	350	10 - 80	50 - 180

Connections

By flexible hoses or steel pipes. Inlet and Outlet ports **FI 750:** 3/4" BSPF. **FI 1500:** 1 1/2" BSPF

Measurement and Indication

Flow

Flow is measured by a tapered metering piston moving within a fixed, sharp edged orifice, designed to minimise the effects of changes in temperature and viscosity. The pressure drop across the variable orifice causes the piston to move and is proportional to the change in flow rate.

Accuracy \pm 4% of full flow

Temperature

Temperature is indicated in °C and °F by a thermometer set in rubber compound and built into the flow block to sense temperature changes in the fluid passage. Accuracy \pm 2 °C.

Construction

Flow Block

The solid high strength bronze block houses a metering piston. The piston is magnetically coupled to a rotary pointer to provide a direct reading of flow on a clear 63mm (2 1/2") diameter flow scale calibrated in lpm. Both flow and temperature scales are shielded behind impact resistant polycarbonate windows. The bronze flow indicator is aluminium free and is fully sealed externally.

Loading Valve for Oil or Water/Oil Emulsion

Loading valves with **Internal** safety discs provide progressive control of system pressure during flow and pressure checks.
Consult Sales Office

General

Pressure Accessories

Optional 63mm diameter glycerine filled pressure gauge can be fitted directly into a 1/4" NPT connection in the block or remotely connected by micro-bore hose.

Accuracy \pm 1.6% of full scale.

Applications

Webster flow indicators are designed for continuous monitoring on mining, offshore and high pressure water applications.

Dimension / Weights

FI 750 146 x 75 x 50mm 3.8 kg
FI 1500 200 x 85 x 75mm 8 kg

Installation

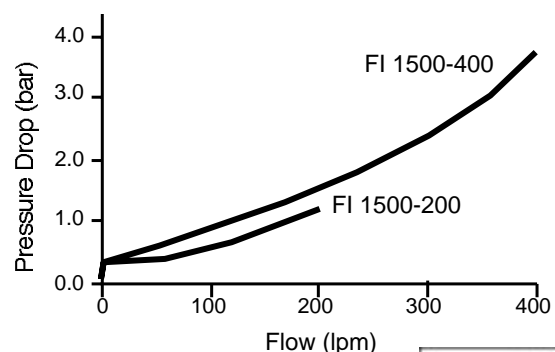
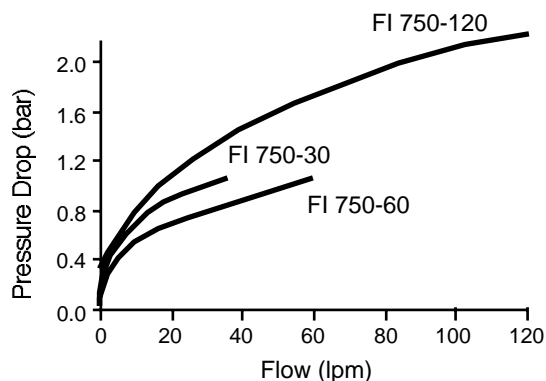
The indicator can be connected into pressure or return lines, however, do not reverse flow. The indicator will not be damaged but will act as a non return valve.

How to Order

Specify flow indicator from table. FI 750-60 BBWT is a 60 lpm bronze flow indicator with thermometer. Consult Sales Office for details of optional pressure gauges.

Performance

Typical pressure drop curves. Oil viscosity 25 centistokes.



Certificate No.8242



WEBTEC

WEBSTER INSTRUMENTS (A DIVISION OF WEBTEC PRODUCTS LIMITED)

Overview

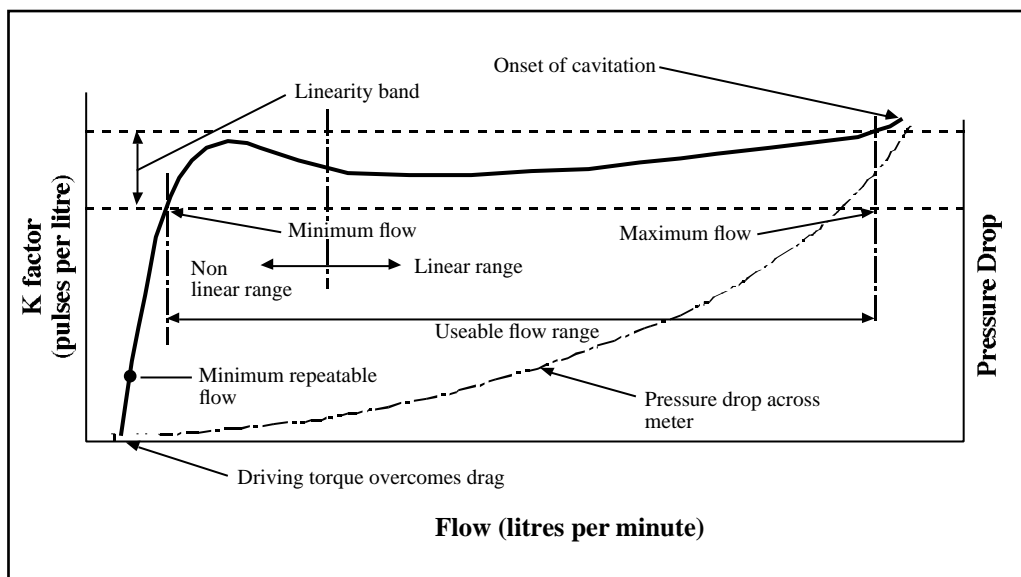
ViscoCorrect™ is a recent development in flow linearisation designed for use with the Webster VT series of turbine flow meters. ViscoCorrect™ allows VT type flow meters to be operated over a wide viscosity range whilst maintaining consistently good accuracy. This is achieved by monitoring fluid temperature to determine kinematic viscosity and using a custom dimensionless graph to calculate the true flow rate.

Background information on turbine flow meters

A turbine flow meter typically consists of a rotor mounted on a shaft fitted longitudinally within a housing. Fluid impacting on the turbine blades causes the turbine to rotate. A magnetic transducer mounted perpendicular to the shaft measures the passing of each blade. The relationship between flow and frequency is described by the meter factor, or K factor where:

$$\text{K factor} = \text{frequency} / \text{flow (pulses per litre)}$$

A typical K factor versus flow curve for a turbine flow meter is shown below.



Below approx. 20 lpm (dependent on flow meter size) a turbine flow meter is non-linear; this is characterised by a rapid increase in K factor and a pronounced 'hump'. At higher flows (above approx. 20 lpm) the curve becomes approximately linear, this region is known as the 'linear range'. The initial 'hump' shape of the curve is due to a combination of drag effects exerted on the turbine blade, specifically bearing friction, magnetic detent, and viscosity effects. Bearing friction is minimised by the use of precision ball-race bearings. Magnetic detent, the effect of magnet drag due to the inductive transducer attracting the turbine blade, is minimised by using a magneto-resistive type transducer and associated electronics. The third source of drag is influenced by the viscosity properties of the fluid being measured.

ViscoCorrect™

Data Sheet

K factor linearisation

At the simplest level, K factor linearisation involves dividing the frequency signal from the flow meter by a constant K factor to compute the volume flow rate. Whilst this method is quite effective over the short linear range of the turbine it severely limits the turndown ratio of the flow meter.

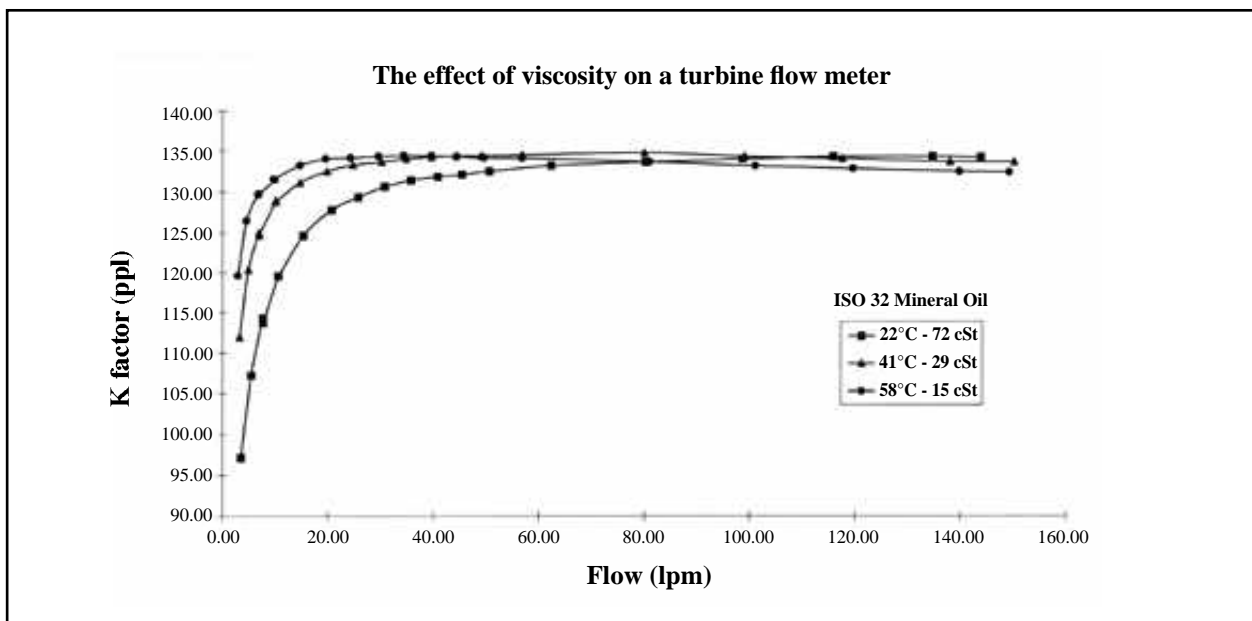
In order to extend the flow range whilst maintaining accuracy, K factor linearisation was improved to include a fifteen point K factor versus flow curve, similar to the one shown on the previous page. This method is very effective and provides accuracy of 1% of indicated reading over a 100:1 turndown ratio, i.e.: one flow meter can measure from 4 to 400 lpm.

Limitations

A K factor versus flow curve for a particular turbine flow meter is highly repeatable assuming it is operated and calibrated using the same fluid at the same temperature. These limitations are due to the effect of changes in viscosity on the performance of the turbine flow meter, particularly at low flows as previously mentioned.

$$\text{Kinematic viscosity} = \text{absolute viscosity} / \text{density (cSt or mm}^2\text{/s)}$$

Kinematic viscosity of a mineral oil is dependent on both temperature and pressure. A change in pressure can lead to a small change in kinematic viscosity, typically though, for working pressures under 100 bar the effect is minimal. A change in temperature however, is more important as an increase in temperature results in a decrease in kinematic viscosity. A typical mineral oil used in the fluid power industry will have a kinematic viscosity of 32 cSt at 40°C but a viscosity of over 80 cSt at 20°C. Changes in viscosity effect both the shape and the vertical offset of the K factor versus flow curve. The example below shows a turbine flow meter tested on the same oil, ISO 32, at three different temperatures. To obtain optimum accuracy, turbine flow meters that use K factor linearisation must be used under very strict fluid and temperature conditions dictated by the manufacturer.

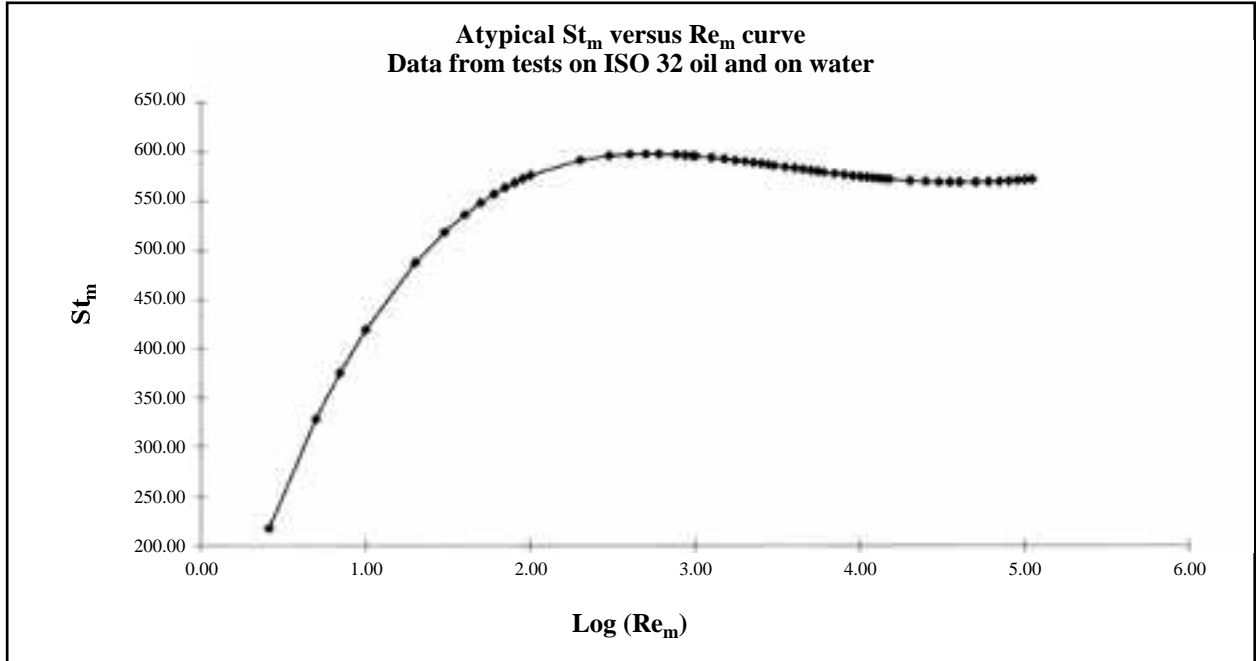


ViscoCorrect™

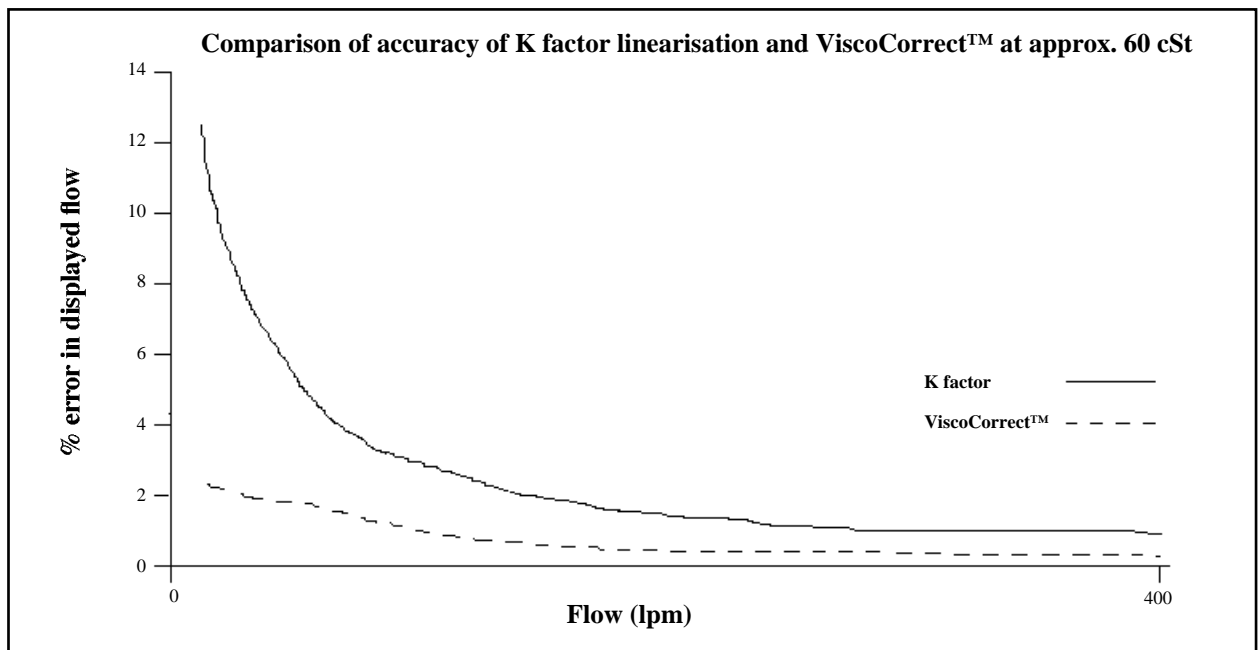
ViscoCorrect™ is a refined method of K factor linearisation that allows you to accurately measure flow over a wide range of viscosities. This means one turbine flow meter can be used on a variety of different fluids and over a range of temperatures, allowing you to choose your own test criteria.

The linearisation curve is created from a series of tests carried out over a range of different viscosities and flows. The resulting data is plotted against custom axes, the y-axis uses St_m , a dimensionless form of the K factor, whilst the x-axis uses Re_m , a modification of the Reynolds number. Because Re_m includes both frequency and kinematic viscosity, the tests carried out at different viscosities can be plotted together in one smooth curve. Since the axes are dimensionless, linearisation curves for different sizes of turbine flow meter can be combined together.

Once calibrated, a VT type turbine flow meter measures the fluid temperature and sends this signal along with the turbine frequency to the C1000. Using a look-up table for the fluid under test, the kinematic viscosity is quickly obtained from the temperature. Frequency, kinematic viscosity and constants defining the flow meter characteristics are combined to calculate Re_m . A mathematical model of the linearisation curve (shown below), stored within the C1000 evaluates the corresponding St_m value. The frequency and St_m value are then used to calculate the true volume flow rate.



ViscoCorrect™ is extremely effective at lower viscosities, typically providing accuracy better than 1% of indicated flow for viscosities between 1 and 40 cSt (highlighted in grey in table on following page). For viscosities between 40 and 60 cSt ViscoCorrect™ still provides considerable improvements in accuracy over K factor linearisation, this is demonstrated in the picture above, where the displayed error has been reduced from approx. 12% to approx. 2% for a test at 60 cSt.



Look-up table to calculate kinematic viscosity (cSt) of mineral oils at specific temperatures
Viscosities highlighted in grey indicate turbine flow meter accuracy of better than 1% of indicated reading (VT Range).

Fluid type Temp °C	ISO 15	ISO 22	ISO 32	ISO 37	ISO 46	ISO 68	Kerosene
0	85.9	165.6	309.3	449.9	527.6	894.3	3.5
10	49.0	87.0	150.8	204.7	244.9	393.3	2.8
20	30.4	50.5	82.2	105.5	127.9	196.1	2.3
30	20.1	31.6	48.8	59.8	73.1	107.7	2.0
40	14.0	21.0	31.0	36.6	44.9	63.9	1.7
50	10.2	14.7	20.8	23.9	29.4	40.5	1.4
60	7.7	10.7	14.7	16.5	20.2	27.2	1.3
70	6.0	8.1	10.9	12.0	14.6	19.2	1.1
80	4.8	6.4	8.4	9.1	11.1	14.3	1.0
90	4.0	5.2	6.6	7.2	8.7	11.1	
100	3.3	4.3	5.5	6.0	7.1	8.9	
110	2.9	3.6	4.6	5.1	5.9	7.5	
120	2.5	3.2	4.0	4.4	5.1	6.4	

ISO 15, 22, 32, 46 and 68 based on typical figures for the Esso Nuto range of HM oils. ISO 37 based on Shell Tellus HM oil. Typical figures used for Kerosene.

A unit of flow, like lpm is an inferred standard, as no standard for flow exists. Flow is a calculated measurement based on fluid volume and time. Tests have been carried out by measuring the mass of oil to flow through a turbine flow meter over a period of time. A hydrometer is used to ascertain density. True volume is computed from mass and density. Time is measured using a Droitwich frequency standard. The measurement of mass, density, and time are all traceable to national standards.

This document is based on research carried out at Sheffield University and has subsequently been named 'ViscoCorrect™'. The author of this document, Martin Cuthbert, has since been recognised by the BFPA with the Young Engineer's Award 1997 for his dissertation 'Turbine flow meters: a design tool and improved method of linearising flow'.

WEBSTER INSTRUMENTS reserve the right to make improvements and changes to the specification without notice.
 ViscoCorrect™ is a trade mark of Webtec Products Ltd.



Nuffield Road, St. Ives, Cambridgeshire PE17 4LX England
 Tel: +44 (0)1480 460690 Fax: +44 (0)1480 466555
 E-Mail: wi-sales@webtec.co.uk Internet: http://www.webtec.co.uk



RFIK Series Low Cost Hydraulic Tester

- 120 lpm
- 180 lpm
- Up to 420 bar



Model RFIK 180 ABOT

The RFIK Reversible Flow Indicator Test Kit provides the ideal solution for servicing and commissioning hydraulic circuits on agricultural and other mobile machinery.

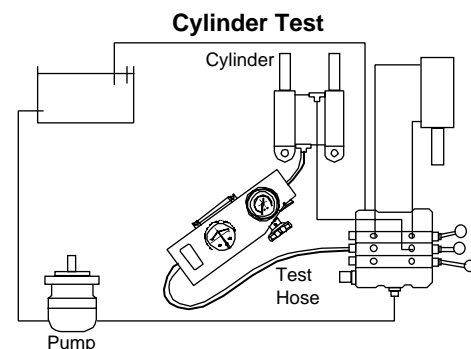
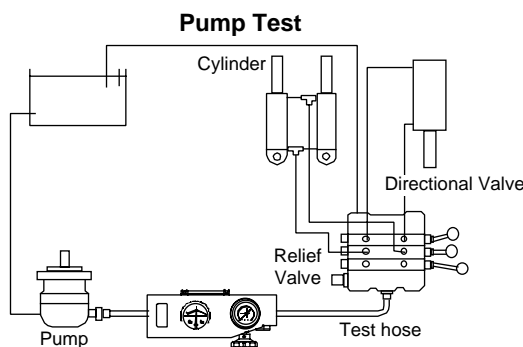
The kit comprises of a direct acting flow indicator with built in thermometer, a loading valve and a pressure gauge all built into a strong steel case with a removable lid.

The unit is self contained and requires no electrical power. The dials are clear and easy to read. Installation is extremely simple and the test kit can be connected into either the pressure or return lines. The loading valve and pressure gauge allow a progressive build up of system pressure in complete safety.

The test kit provides the service engineer with quick, accurate and simple performance testing of pumps, motors, valves, cylinders and complete hydraulic circuits.

Features

- Measures Flow, Pressure, Temperature
- Allows reversible flow
- Flow accuracy $\pm 4\%$ FSD
- Wide flow range
- Large easy to read dials
- No batteries required
- Smooth pressure control up to 420 bar (6000 psi)
- Safe to use, with INTERPASS internal safety protection system. Protects system and operator against accidental over-pressure in both flow directions



Another quality product from the Webster Range

Specification

Model No.	Part No.	Flow Range		Max. Working Pressure		Temperature Range	
		lpm	gpm	bar	psi	°C	°F
RFIK 120 ABOT	FT8686 - 03	5 - 120	1.2 - 26	420	6000	10 - 80	50 - 180
RFIK 180 ABOT	FT8686 - 09	8 - 180	2.0 - 40	420	6000	10 - 80	50 - 180

Connections

By flexible hose (1/2 - 1 metre recommended length)
 Models RFIK 120 & 180 ABOT
 Inlet Port 1" BSPF
 Outlet Port 1/2" BSPF

Adaptors

Adaptors are fitted as standard to provide inlet & outlet connections
 Model RFIK 120 ABOT 3/4" BSPF Male
 Model RFIK 180 ABOT 3/4" BSPF Male

Measurement and Indication

Flow

Measured by a tapered metering piston moving within a fixed, sharp edged orifice designed to minimise the effects of changes in temperature and viscosity. The piston movement is proportional to the change in flow rate. In reverse the piston moves back to allow the flow to return at low pressure.
 Accuracy: $\pm 4\%$ of full flow.

Pressure Drop (In both flow directions)

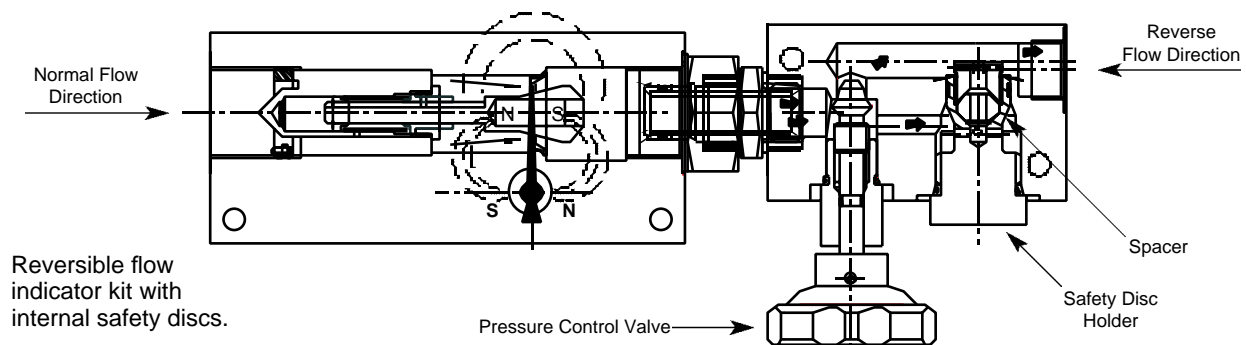
RFIK 120 ABOT 14 bar
 RFIK 180 ABOT 29 bar
 At full flow with oil viscosity 28 centistokes.

Pressure

Glycerine filled 63mm (2 1/2") pressure gauge 0 - 420 bar (0 - 6000psi) gives a continuous reading of system pressure.
 Accuracy: $\pm 1.6\%$ of full scale

Temperature

Indicated in °C and °F by a thermometer set in rubber compound and built into the flowblock to measure temperature changes in the fluid passage.
 Accuracy: $\pm 2\text{ }^{\circ}\text{C}$



Construction

Flow Block

Solid high tensile flow block houses a metering piston and guide, the piston moves against a calibrated spring housed in a guide. The piston can move in both directions allowing flow from either the inlet and outlet port as required. The piston is magnetically coupled to a rotary pointer to provide a direct reading of flow from the inlet direction on a clear 63mm (2 1/2") diameter flow scale calibrated in lpm and gpm. Both the flow and the temperature scales are shielded behind impact resistant windows and protected by a metal cover. The whole unit is fully sealed within a strong metal cover.

Case

The complete unit is built into a strong steel case which provides full protection against accidental damage during testing. A detachable lid provides access to the instrument dials and the safety disc cartridge is easily accessed to replace safety discs.

Dimensions/Weight

310 x 105 x 120 mm (12.25 x 4.125 x 4.875 inches)
 5 kg (11 lbs)

Loading Valve and Pressure Gauge

The HV100 loading valve is connected directly to the flow block and a 420 bar, 6000 psi pressure gauge is mounted in the inlet section of the loading valve. The valve is easy to operate and, combined with the pressure gauge, allows sensitive and progressive control of system pressure throughout the working range.

Safety Discs

Protection against over pressure is provided by two internal safety discs which relieve at 440 bar, 6400 psi without external spillage. The safety discs are housed in a cartridge and are easily replaceable.

Other Products.

Aluminium free flow indicator test kits suitable for Mining / Offshore and High Pressure Water applications are available.
 Consult sales office.



Certificate No.8242

Quality System



Quality
Endorsed
Company
ISO 9002 Lic 3765
Standards Australia



®



Flowtell

In-line
FLOW MONITORS
&
CONTROLLERS

Quality and Service
worldwide

STAUFF

In-Line Flow Monitors

Stauff's "FLOWTELL" in-line flow monitors and controllers offer a range of rugged flow rate gauges that are accurate and economical and are the perfect instruments for fixed in-line monitoring or for use as service tools for system commissioning.

"FLOWTELL" employs the well-established and reliable 'variable area orifice' measurement method together with a unique 'sharp edge technology' that ensures low pressure drops and high tolerance levels to changes in viscosity, resulting in repeatable flow rate measurements for both liquids and gases.

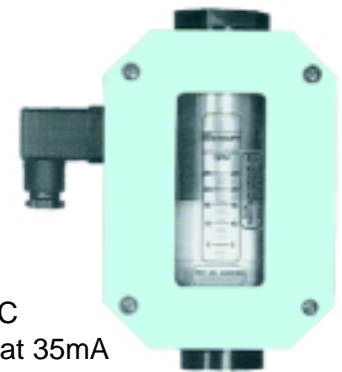
The product range is suitable for measuring Hydraulic Oils, Water and Air or Gas mediums and includes models for Phosphate Ester. A special range is also available for High Temperature applications. "FLOWTELL" is also available with the option of field-adjustable single or twin switches for High and Low flow rate alarms, or as a Transmitter giving a 4 - 20mA signal for system control capability.

To suit varying system demands, "FLOWTELL" monitors are available in a choice of materials comprising Aluminium, Brass or Stainless Steel with wetted parts materials to suit the fluid type.

"FLOWTELL" is capable of working in any plane and is read against the Dual Scale on the outer sleeve by the external magnetically coupled non-invasive annular cursor.

PERFORMANCE SPECIFICATIONS

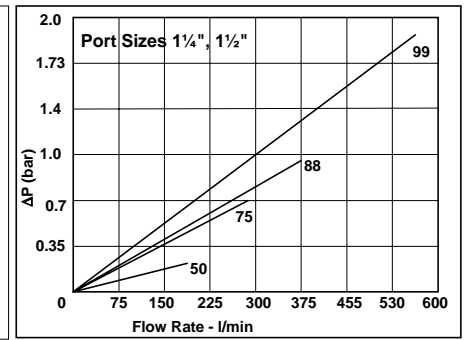
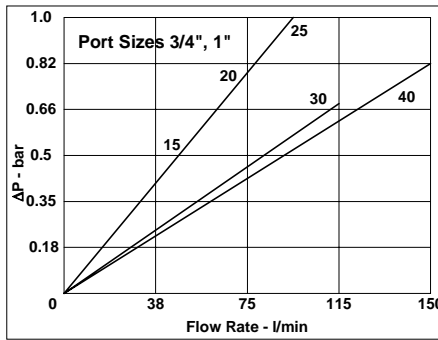
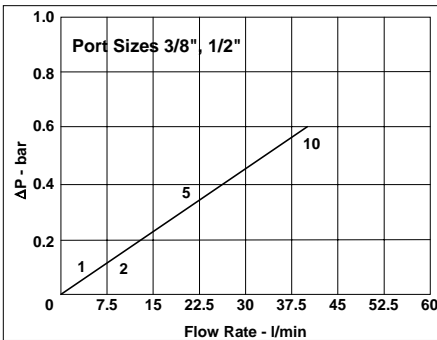
Measuring Accuracy:	better than 4% Full Scale	
Repeatability:	1% of Full Scale	
Flow Range:	Fluids	0.5 to 550 l/min (0.05 to 150 GPM)
	Gases	1.5 to 1300 scfm (0.5 to 600 l/sec)
Normal Viscosity Range:	1 to 150 cSt (mm ² /sec)	
Working Pressures:	Alu. & Brass	240 bar
	St. Steel	410 bar
Temperature Range:	Standard	116°C
	High Temp.	204°C (Ultra high on request - 315°C)
Pressure Differentials:	Refer to ΔP graphs on Page 3	
Standard Calibration:	Oil: 40 cSt and 0.873 SG	
	Water: tap water at 20°C and 1.0 SG	
	Gas: air at 21°C and 7 bar	
Enclosure Rating:	IP 65	
Electric Specifications:		
Flow Rate Alarm	SPDT switch	10A 250VAC 0.5A 125VDC 0.25A 250VDC 3A 125VAC bulb load
Flow Rate Transmitter	Power	12 - 35 VDC
	Output	4 - 20mA, 0 - 5 VDC, 1 - 5 VDC
	Over-current protection	self-limiting at 35mA
	Resolution	10bit (0.1%)
	Isolation	Inherently isolated from the process
	Response Time	< 100 milliseconds



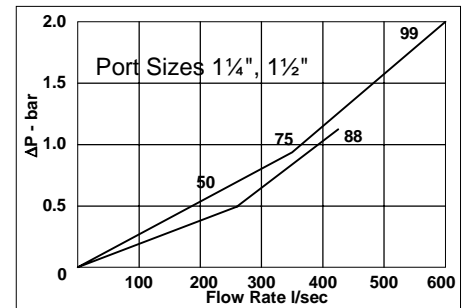
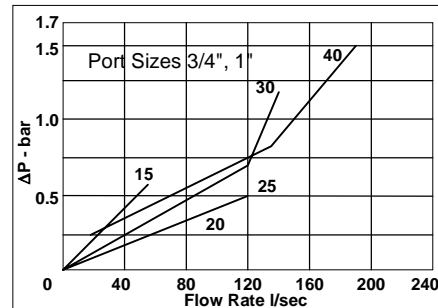
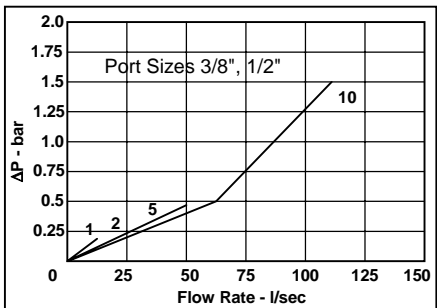
Part Number Build for Ordering

Type	Material	Pressure	Fluid	Port Size	Scale																																																																																										
FT	B	A	6	H	3																																																																																										
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ΔP curves at 40cSt. – Fluid Monitors



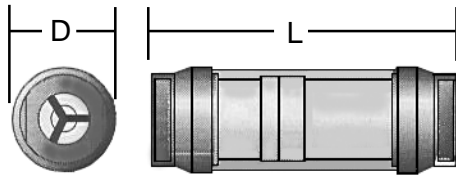
ΔP curves at 7 bar. – Gas Monitors



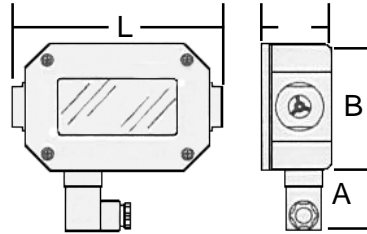
In-Line Flow Monitors

PHYSICAL DETAILS

Monitor



Switch Alarm / Transmitter



Port Size	"D"	"L"	Port Size	"L"	"B"	"W"	"A"
3/8", 1/2"	48	167	3/8", 1/2"	167	101	56	47
3/4", 1"	60	182	3/4", 1"	182	114	75	47
1 1/4", 1 1/2"	90	258	1 1/4", 1 1/2"	258	135	47	47

MATERIAL SPECIFICATIONS

Body Material	Aluminium	Brass	Stainless Steel
Wetted Components			
Casing, Ports & Cone	Aluminium	Brass	Stainless Steel
Seals	Buna-N	Buna-N	Viton with Teflon backup
Transfer Magnet	Teflon coated Alnico	Teflon Coated Alnico	Teflon Coated Alnico
Floating Disc	Stainless Steel	Stainless Steel	Stainless Steel
Other Internal Parts	Stainless Steel	Stainless Steel	Stainless Steel
Non-wetted Components (Flow Monitors)			
Window Tube	Polycarbonate	Polycarbonate	Polycarbonate
Window Seals	Buna-N	Buna-N	Buna-N
(Transmitters and Alarms)			
Enclosure & cover	Aluminium	Aluminium	Aluminium
Seals	Buna-N	Buna-N	Buna-N
Window	Pyrex	Pyrex	Pyrex
DIN connector	Polyamide	Polyamide	Polyamide

N.B. (1) The outer polycarbonate window tube is a replaceable part in case damage or scratching makes visibility difficult. Contact Stauff for specific part numbers.
 (2) A digital readout is available for use with the transmitter to permit remote flow readings.

Additional diagnostic equipment available from Stauff



Proudly distributed by

STAUFF CORPORATION PTY LTD

STAUFF CORPORATION (NZ) LTD

HEAD OFFICE

24 - 26 Doyle Avenue
 UNANDERRA NSW 2526
 P.O. Box 227
 UNANDERRA NSW 2526
 Tel. (02) 4271 1877
 Fax.(02) 4271 8432
 E-mail: sales@stauff.com.au
 http://www.stauff.com

ADELAIDE

1/3 Endeavour Drive
 PORT ADELAIDE SA 5015
 P.O. Box 208
 PORT ADELAIDE SA 5015
 Tel. (08) 8341 2260
 Fax.(08) 8341 1604

BRISBANE

463 Boundary Road
 RICHLANDS QLD 4077
 P.O. Box 20
 RICHLANDS QLD 4077
 Tel. (07) 3217 0444
 Fax.(07) 3217 0300

MELBOURNE

3B 14 - 16 White Street
 OAKLEIGH EAST VIC 3166
 P.O. Box 453
 MULGRAVE VIC 3170
 Tel. (03) 9543 5411
 Fax.(03) 9543 5422

SYDNEY

27B Davis Road
 WETHERILL PARK
 NSW 2164
 P.O. Box 7180
 WETHERILL PARK DC
 NSW 2164
 Tel. (02) 9725 2733
 Fax. (02) 9725 2744

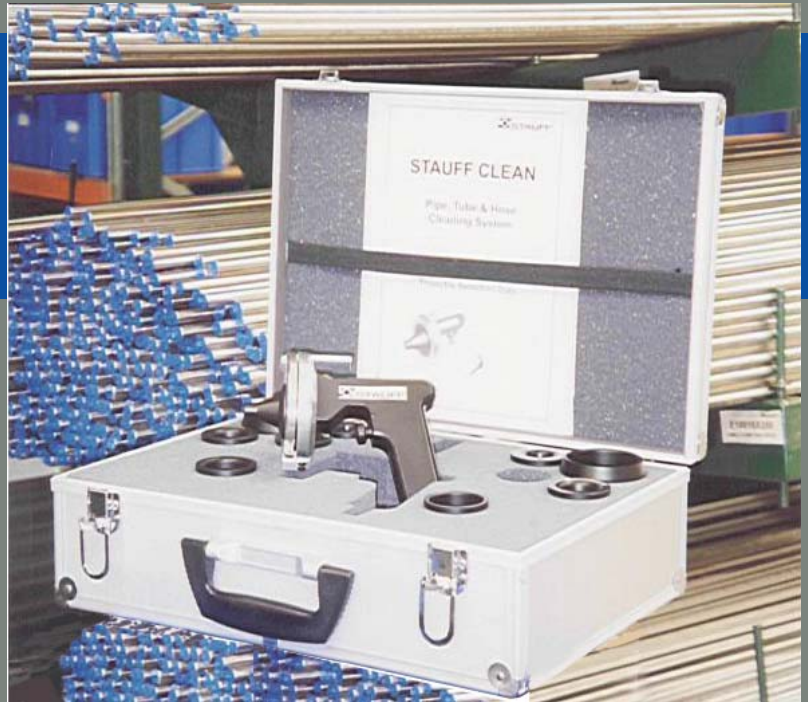
AUCKLAND

STAUFF CORP (NZ) Ltd
 Unit J 150 Harris Road
 EAST TAMAKI
 P.O. Box 58517
 GREENMOUNT
 Tel. (09) 271 4812
 Fax. (09) 271 4832
 E-mail: sales@stauff.co.nz





Quality
Endorsed
Company
ISO 9002 Lic 3765
Standards Australia



STAUFF CLEAN

Pipe, Tube & Hose Cleaning System

**Quality and Service
worldwide**

STAUFF

STAUFF CLEAN – SAVES TIME, SAVES COSTS.

The essential tool for all pipe fabricators and hose assemblers involved with:

HYDRAULICS – FOOD PROCESSING – FUEL LINES – CHEMICAL PLANTS – ETC.

THE SYSTEM – The Stauff Clean System provides a simple and low cost solution for the removal of contaminant from the inside surfaces of Pipes, Tubes and Hoses.

All manner of pipework configurations in the normal size range of 6mm to 60mm can be handled by the Stauff Clean System regardless of pipe length, type of fittings or components. Change of direction through tees, elbows, etc., of up to 90° can be accommodated by the projectiles.

THE PROJECTILE – The Stauff Clean System works on the principle of propelling foam pellets or projectiles of varying density and texture through pipework at very high velocities while maintaining sufficient contact with the inside surface to remove unwanted contaminant.

THE FORCE – The propelling force for the projectile is produced by standard industrial compressed air (7 bar/100 psi) via a lightweight, pistol-grip Launcher. This provides a safe and environmentally-friendly tool that requires little formal expertise to operate and apply.

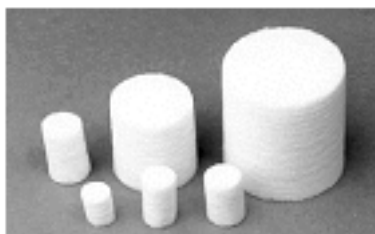
PERFECT PRE-CLEANING PARTNER – Pipework fabricators will find that the Stauff Clean System provides the perfect partner, as a pre-cleaning device, to dramatically reduce flushing times when preparing pipework to meet predetermined cleanliness specifications.

THE PROCESS – A variety of projectiles are available to suit the degree and type of contaminant likely to be experienced and these can be varied during the cleaning process as required. Projectiles can be visually inspected after use to determine the remaining cleanliness level and the need for further application. For good housekeeping and safe operation, a mesh projectile collection bag should be secured to the pipe exit.

Selection of projectiles and attachment nozzles is made simple by the easy reference selection charts provided on the adjoining pages.

The Stauff Clean System is available as separate components or in a variety of Kit forms comprising various nozzle types, adaptor and launcher, all contained in a heavy duty carrying case.

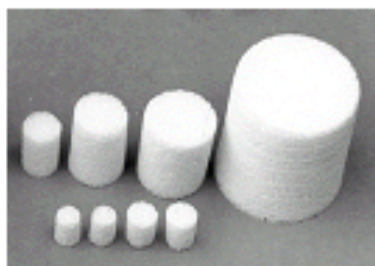
Four Styles of Projectiles



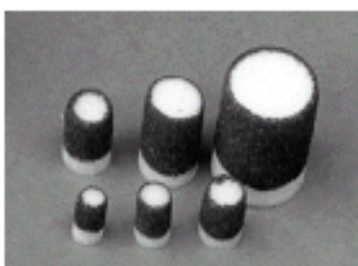
(S) Standard Series
- for the cleaning of
hose, tube or pipe
without end fittings



(A) Abrasive Series
- for the cleaning of
metal tube and pipe
to remove light rust
and scale



(C) Coupling Series
- for the cleaning of
hose assemblies
(hose with end
fittings) or the re-
moval of loose
particles from tube or
pipe



(G) Grinding Series
- to remove heavier
rust and buildup.
**These are available
on special order.**

PROJECTILE & NOZZLE SELECTION

To exploit the maximum cleaning capability of the system, careful selection of the nozzle and projectile is important. The nozzles are selected to suit the tube or hose end fitting and apart from the Universal Nozzles, there are specific nozzle sets for JIC, BSP, and Metric fittings. The Universal Nozzle is suitable for almost any thread type or hose or tube end.



The projectile selection will depend on what fittings, if any, are attached to the tube or hose and the degree of contamination. As a guide, users should select from the charts below with respect to fittings and contaminant. As a general rule, projectiles should be approximately 15% larger in diameter than the internal diameter of the pipe of hose.

For optimum cleaning, it is recommended that projectiles are used once and then discarded.

Safety Note. A mesh collection bag should be secured to the pipe exit to avoid possible injury to personnel by the projectile exiting at high velocity.

SELECTION CHARTS

Table No.1
For Hose and Tube

Hose or Tube Size		Nozzle	Projectile Size Range	
Inches I.D.	Metric O.D.		Universal Style	No End Fittings
1/4"	6 mm	UV06	TCS07 to TCS10	TCC07 to TCC09
5/15"	8 mm	UV08	TCS10 to TCS12	TCC10 to TCC12
3/8"	10 mm	UV10	TCS12 to TCS14	TCC12 to TCC14
1/2"	13 mm	UV13	TCS16 to TCS18	TCC14 to TCC16
5/8"	16 mm	UV16	TCS18 to TCS22	TCC18 to TCC20
3/4"	19 mm	UV19	TCS22 to TCS24	TCC20 to TCC22
1"	25 mm	UV25	TCS30 to TCS33	TCC30 to TCC33
1 1/4"	32 mm	UV32	TCS36 to TCS40	TCC36 to TCC40
1 1/2"	38 mm	UV38	TCS45 to TCS50	TCC40 to TCC50
2"	50 mm	UV50	TCS55 to TCS60	TCC55 to TCC60

Table No. 2
For Pipe – steel or plastic, etc.

Pipe Size			Nozzle	Projectile Size Range	
Inch N.B.	Inch O.D.	Metric O.D.		Sch. 40 Pipe without fittings	Sch. 80 pipe without fittings
1/4"	0.540"	13.7mm	UV06	TCS12 to TCS14	TCS09 to TCS10
3/8"	0.675"	17.1 mm	UV10	TCS14 to TCS16	TCS12 to TCS14
1/2"	0.840"	21.3 mm	UV13	TCS18 to TCS22	TCS16 to TCS20
3/4"	1.050"	26.7 mm	UV19	TCS26 to TCS30	TCS22 to TCS26
1"	1.315"	33.4 mm	UV25	TCS33 to TCS36	TCS24 to TCS30
1 1/4"	1.660"	42.2 mm	UV32	TCS40 to TCS45	TCS36 to TCS40
1 1/2"	1.900"	48.3 mm	UV38	TCS50	TCS45 to TCS50
2"	2.375"	60.3 mm	UV 50	TCS60	TCS60

Launcher Kits and Nozzle Sets

LK1	Launcher Kit without nozzles in carry case
10UV-K	Launcher Kit complete with 10 Universal Nozzles in carry case
18MT-K	Launcher Kit complete with 18 Metric Tube Nozzles in carry case
10J-K	Launcher Kit complete with 10 JIC Nozzles in carry case
7B-K	Launcher Kit complete with 7 BSP Nozzles in carry case
10UV-S	Universal Nozzles, Set of 10
18MT-S	Metric Tube Nozzles, Set of 18
10J-S	JIC Nozzles, Set of 10
7B-S	BSP nozzles, Set of 7
UV-AR	Adaptor Ring



A 10UV-K Kit is shown with the launcher and the nozzles in a convenient carry case.

Single nozzles are available in standard pipe sizes.

Projectiles

Size mm	Qty per bag	Standard Projectile Part No.	Coupling Projectile Part No.	Abrasive Projectile Part No.
7	100	TCS07	TCC07	TCA07
10	100	TCS10	TCC10	TCA10
12	100	TCS12	TCC12	TCA12
14	100	TCS14	TCC14	TCA14
16	100	TCS16	TCC16	TCA16
18	100	TCS18	TCC18	TCA18
20	100	TCS20	TCC20	TCA20
22	100	TCS22	TCC22	TCA22
26	50	TCS26	TCC26	TCA26
30	40	TCS30	TCC40	TCA40
33	40	TCS33	TCC33	TCA33
36	30	TCS36	TCC36	TCA36
40	30	TCS40	TCC40	TCA40
50	20	TCS50	TCC50	TCA50
60	15	TCS60	TCC60	TCA60



Selection of projectiles depends on the tube or hose assembly and the degree of contamination.

Material Specifications

Launcher Handle - Acetal
 Nozzles - Acetal
 Retaining Ring - Stainless Steel
 Latch and Face Plate - Aluminium
 O-Ring - Neoprene

Projectiles - Polyurethane foam

STAUFF CORPORATION PTY LTD

HEAD OFFICE

24 -26 Doyle Avenue
 UNANDERRA NSW 2526
 P.O. Box 227
 UNANDERRA NSW 2526
 Tel. (02) 4271 1877
 Fax. (02) 4271 8432
 E-mail. sales@stauff.com.au
 http://www.stauff.com

ADELAIDE

1/3 Endeavour Drive
 PORT ADELAIDE SA 5015
 P.O. Box 208
 PORT ADELAIDE SA 5015
 Tel. (08) 8341 2260
 Fax.(08) 8341 1604

BRISBANE

463 Boundary Road
 RICHLANDS QLD 4077
 P.O. Box 20
 RICHLANDS QLD 4077
 Tel. (07) 3217 0444
 Fax.(07) 3217 0300

MELBOURNE

3B 14-16 White Street
 OAKLEIGH EAST VIC 3166
 P.O. Box 453
 MULGRAVE VIC 3170
 Tel. (03) 9543 5411
 Fax.(03) 9543 5422

SYDNEY

27B Davis Road
 WETHERILL PARK NSW 2164
 P.O. Box 7180
 WETHERILL PK DC NSW 2164
 Tel. (02) 9725 2733
 Fax. (02) 9725 2744

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Quality
Endorsed
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®



Flowtell

In-line
FLOW MONITORS
&
CONTROLLERS

Quality and Service
worldwide

STAUFF

In-Line Flow Monitors

Stauff's "FLOWTELL" in-line flow monitors and controllers offer a range of rugged flow rate gauges that are accurate and economical and are the perfect instruments for fixed in-line monitoring or for use as service tools for system commissioning.

"FLOWTELL" employs the well-established and reliable 'variable area orifice' measurement method together with a unique 'sharp edge technology' that ensures low pressure drops and high tolerance levels to changes in viscosity, resulting in repeatable flow rate measurements for both liquids and gases.

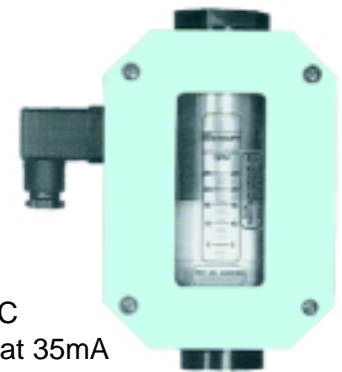
The product range is suitable for measuring Hydraulic Oils, Water and Air or Gas mediums and includes models for Phosphate Ester. A special range is also available for High Temperature applications. "FLOWTELL" is also available with the option of field-adjustable single or twin switches for High and Low flow rate alarms, or as a Transmitter giving a 4 - 20mA signal for system control capability.

To suit varying system demands, "FLOWTELL" monitors are available in a choice of materials comprising Aluminium, Brass or Stainless Steel with wetted parts materials to suit the fluid type.

"FLOWTELL" is capable of working in any plane and is read against the Dual Scale on the outer sleeve by the external magnetically coupled non-invasive annular cursor.

PERFORMANCE SPECIFICATIONS

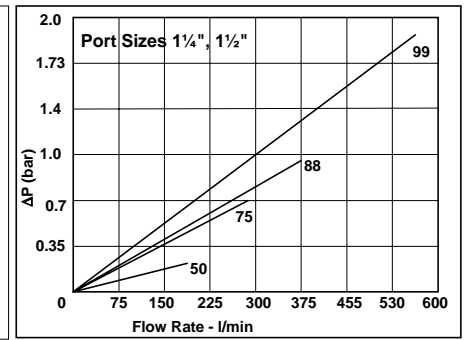
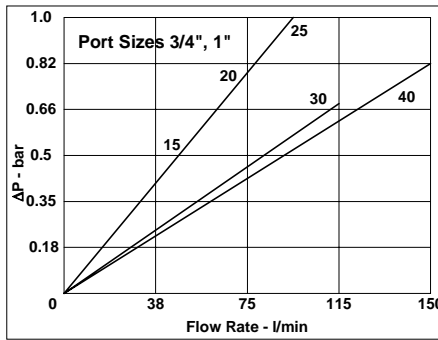
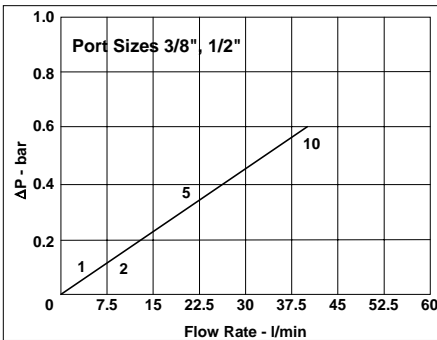
Measuring Accuracy:	better than 4% Full Scale	
Repeatability:	1% of Full Scale	
Flow Range:	Fluids	0.5 to 550 l/min (0.05 to 150 GPM)
	Gases	1.5 to 1300 scfm (0.5 to 600 l/sec)
Normal Viscosity Range:	1 to 150 cSt (mm ² /sec)	
Working Pressures:	Alu. & Brass	240 bar
	St. Steel	410 bar
Temperature Range:	Standard	116°C
	High Temp.	204°C (Ultra high on request - 315°C)
Pressure Differentials:	Refer to ΔP graphs on Page 3	
Standard Calibration:	Oil: 40 cSt and 0.873 SG Water: tap water at 20°C and 1.0 SG Gas: air at 21°C and 7 bar	
Enclosure Rating:	IP 65	
Electric Specifications:		
Flow Rate Alarm	SPDT switch	10A 250VAC 0.5A 125VDC 0.25A 250VDC 3A 125VAC bulb load
Flow Rate Transmitter	Power	12 - 35 VDC
	Output	4 - 20mA, 0 - 5 VDC, 1 - 5 VDC
	Over-current protection	self-limiting at 35mA
	Resolution	10bit (0.1%)
	Isolation	Inherently isolated from the process
	Response Time	< 100 milliseconds



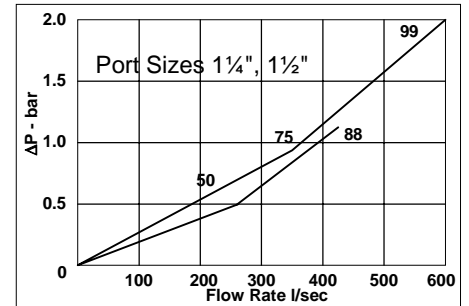
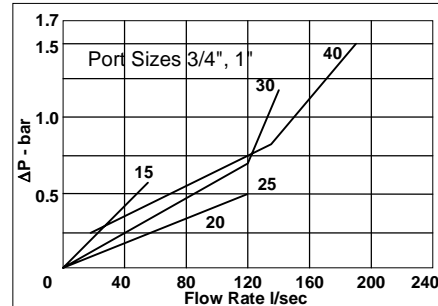
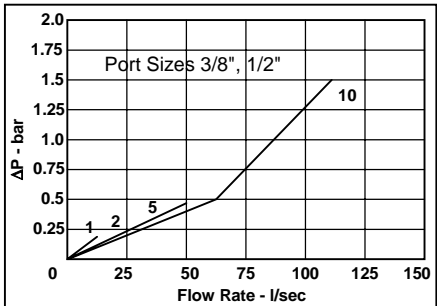
Part Number Build for Ordering

Type	Material	Pressure	Fluid	Port Size	Scale																																																																																										
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ΔP curves at 40cSt. – Fluid Monitors



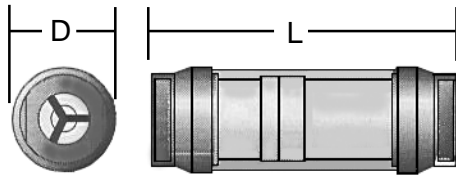
ΔP curves at 7 bar. – Gas Monitors



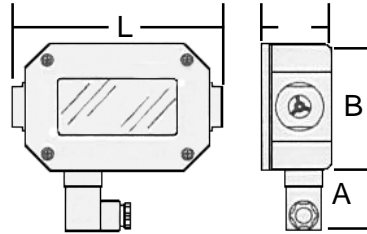
In-Line Flow Monitors

PHYSICAL DETAILS

Monitor



Switch Alarm / Transmitter



Port Size	"D"	"L"	Port Size	"L"	"B"	"W"	"A"
3/8", 1/2"	48	167	3/8", 1/2"	167	101	56	47
3/4", 1"	60	182	3/4", 1"	182	114	75	47
1 1/4", 1 1/2"	90	258	1 1/4", 1 1/2"	258	135	47	47

MATERIAL SPECIFICATIONS

Body Material	Aluminium	Brass	Stainless Steel
Wetted Components			
Casing, Ports & Cone	Aluminium	Brass	Stainless Steel
Seals	Buna-N	Buna-N	Viton with Teflon backup
Transfer Magnet	Teflon coated Alnico	Teflon Coated Alnico	Teflon Coated Alnico
Floating Disc	Stainless Steel	Stainless Steel	Stainless Steel
Other Internal Parts	Stainless Steel	Stainless Steel	Stainless Steel
Non-wetted Components (Flow Monitors)			
Window Tube	Polycarbonate	Polycarbonate	Polycarbonate
Window Seals	Buna-N	Buna-N	Buna-N
(Transmitters and Alarms)			
Enclosure & cover	Aluminium	Aluminium	Aluminium
Seals	Buna-N	Buna-N	Buna-N
Window	Pyrex	Pyrex	Pyrex
DIN connector	Polyamide	Polyamide	Polyamide

N.B. (1) The outer polycarbonate window tube is a replaceable part in case damage or scratching makes visibility difficult. Contact Stauff for specific part numbers.
 (2) A digital readout is available for use with the transmitter to permit remote flow readings.

Additional diagnostic equipment available from Stauff



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STAUFF CORPORATION PTY LTD

STAUFF CORPORATION (NZ) LTD

HEAD OFFICE

24 - 26 Doyle Avenue
 UNANDERRA NSW 2526
 P.O. Box 227
 UNANDERRA NSW 2526
 Tel. (02) 4271 1877
 Fax.(02) 4271 8432
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ADELAIDE

1/3 Endeavour Drive
 PORT ADELAIDE SA 5015
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BRISBANE

463 Boundary Road
 RICHLANDS QLD 4077
 P.O. Box 20
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MELBOURNE

3B 14 - 16 White Street
 OAKLEIGH EAST VIC 3166
 P.O. Box 453
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 Fax.(03) 9543 5422

SYDNEY

27B Davis Road
 WETHERILL PARK
 NSW 2164
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 Fax. (02) 9725 2744

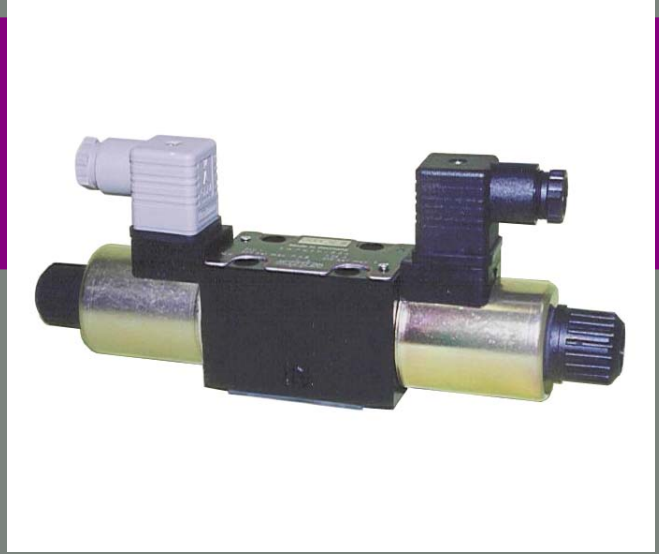
AUCKLAND

STAUFF CORP (NZ) Ltd
 Unit J 150 Harris Road
 EAST TAMAKI
 P.O. Box 58517
 GREENMOUNT
 Tel. (09) 271 4812
 Fax. (09) 271 4832
 E-mail: sales@stauff.co.nz





Quality
Endorsed
Company
ISO 9002 Lic 3765
Standards Australia



Solenoid Valves CETOP 3

**Quality and Service
worldwide**

STAUFF

Solenoid Valves

Directional solenoid valves from HAWE, type SWPN, CETOP 3

These 4/3- and 4/2-way directional spool valves from HAWE offer long, reliable life with optimum performance. They are directly actuated, wet armature types with easily replaceable coils for service or voltage changes. The valves conform to the DIN 24 340-A6 standard (ISO 4401-AB-03-4-A).



General Specifications

Max. flow	60 lpm (cylinders having unequal area ratios may cause an increased flow rate on the return stroke)
Max. pressure	(P,A,B ports) 350 bar (T port) 210 bar
Installed position	Any position but preferably horizontal. Mounting bolts 4x M5 x 30
Port coding	P = inlet (pump) A, B = actuator connections T = return (tank)
Flow direction	In accordance with the arrow direction in the flow pattern symbol. The flow direction cannot be reversed.
Recommended fluid cleanliness rating	ISO 4406 18/14 or better / NAS 1638 class 7 or better (10 - 20µm).
Hydraulic fluids	Mineral oils, HEPG Poly Alkylene Glycol, HEES Synthetic Ester
Viscosity range	3 mm ² /s to 400 mm ² /s
Fluid temperature	-20° C to + 70° C
Over-lap	zero
Protection class & Duty cycle	IP 65 (with plug properly mounted) 100% ED
Weight	Single solenoid valve, approx. 1.5 kg, double solenoid valve, approx 2.1 kg

Electrical Specifications

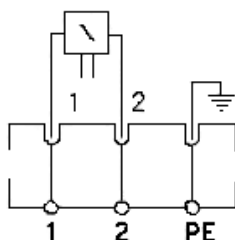
Solenoid Wet armature solenoid; coils are DC coils. The WG110 and WG230 units have rectifiers in the Hirschmann plugs. Coil voltages are 98V & 205V DC respectively.

Coding	G 12	G 24	WG 110	WG 230
Voltage (Nom)	12V DC	24V DC	110V AC	230V AC
Nom. Power	30W	30W	30W	30W
Nom. Current	2.5A	1.25A	0.37A	0.18A

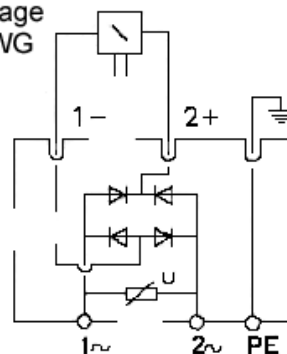
Switch-off energy = or < 0.3 Ws

Wiring Diagram

DC-voltage
Coding G

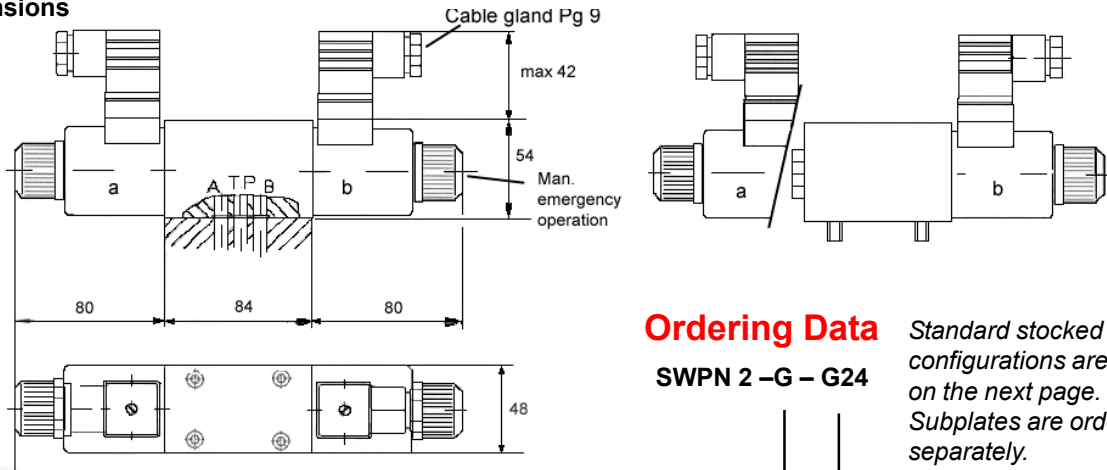


AC-voltage
Coding WG



Solenoid Valves

Dimensions



Ordering Data

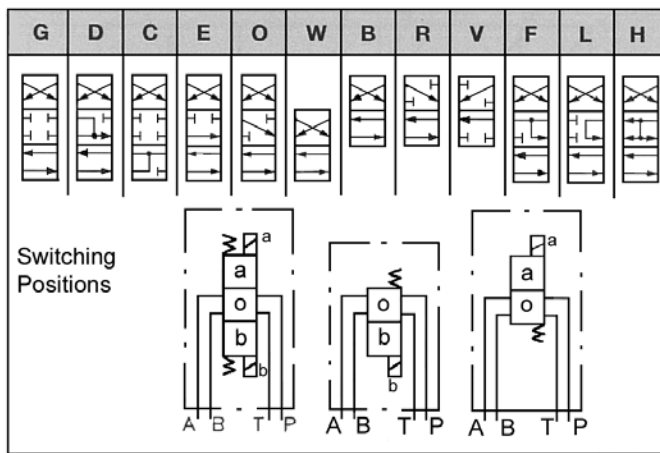
SWPN 2 -G - G24

Standard stocked valve configurations are listed on the next page. Subplates are ordered separately.

Spool Designations

Spool selection

Solenoid selection



Designation	Nominal Voltage
G 12	12V DC
G 24	24V DC
WG 110	110V AC
WG 230	230V AC

Maximum permissible flow rate to allow switching. System operating pressure at P port

Spool	100 bar	150 bar	200 bar	250 bar	300 bar	350 bar
G	60	60	60	60	25	20
D	55	40	25	23	22	20
C	60	60	60	60	60	60
E,O,R	47	47	47	47	47	47
H	60	59	59	57	55	54
F	37	34	32	28	24	22
B,W	60	60	60	50	32	30
V	23	23	21	19	17	16
L	52	52	52	52	52	52

Flow l/min

Switching the valve.

The table gives maximum flow rates for switching the valve at different working pressures. For intermediate pressures, the approximate flows can be interpolated.

Pressure Drop through the valve.

To calculate the ΔP through the valve, the table set out below gives the specific curve number which applies to the individual function, eg., from port P to port A (P - A) in switching position "a" for "L" spool, use curve No.2. Each flow path needs to be calculated separately and then added together to total the full ΔP through the valve.

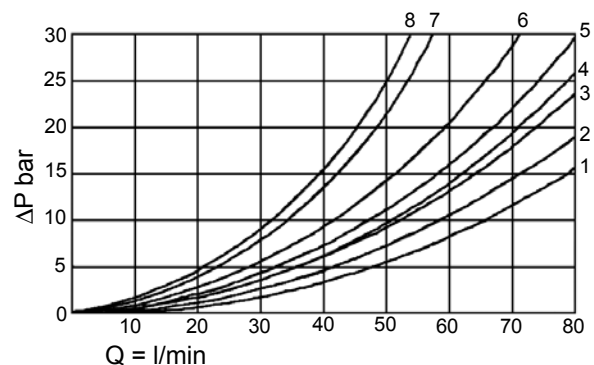
These curves are at 35 mm²/s and a correction factor needs to be applied for other viscosities. This factor is a multiplier and is the actual viscosity divided by 35.

Table for ΔP Curves

At switching position "o" at position "a" & "b"

Spool	At switching position "o"		at position "a" & "b"			
	P - A P - B	A - T B - T	P - T	A - B	P - A P - B	A - T B - T
H	3	1	5	1	4	2
L			7		2	2
G					3	1
D		6		8	3	2
B					4	1

ΔP Curves



Solenoid Valves

Standard Stocked Valves and Parts

Part No.	Description
SWPN 2-G-G12	Valve, CETOP 3, 4/3, closed centre, cylinder spool, 12V DC
SWPN 2-G-G24	Valve, CETOP 3, 4/3, closed centre, cylinder spool, 24V DC
SWPN 2-G-WG110	Valve, CETOP 3, 4/3, closed centre, cylinder spool, 110V AC
SWPN 2-G-WG230	Valve, CETOP 3, 4/3, closed centre, cylinder spool, 230V AC
SWPN 2-D-G12	Valve, CETOP 3, 4/3, closed centre, motor spool, 12V DC
SWPN 2-D-G24	Valve, CETOP 3, 4/3, closed centre, motor spool, 24V DC
SWPN 2-D-WG110	Valve, CETOP 3, 4/3, closed centre, motor spool, 110V AC
SWPN 2-D-WG230	Valve, CETOP 3, 4/3, closed centre, motor spool, 230V AC
SWPN 2-B-G12	Valve, CETOP 3, 4/2, changeover, 12V DC
SWPN 2-B-G24	Valve, CETOP 3, 4/2, changeover, 24V DC
SWPN 2-B-WG110	Valve, CETOP 3, 4/2, changeover, 110V AC
SWPN 2-B-WG230	Valve, CETOP 3, 4/2, changeover, 230V AC
SWPN 2-L-G12	Valve, CETOP 3, 4/3, open centre, cylinder spool, 12V DC
SWPN 2-L-G24	Valve, CETOP 3, 4/3, open centre, cylinder spool, 24V DC
SWPN 2-L-WG110	Valve, CETOP 3, 4/3, open centre, cylinder spool, 110V AC
SWPN 2-L-WG230	Valve, CETOP 3, 4/3, open centre, cylinder spool, 230V AC
SWPN 2-H-G12	Valve, CETOP 3, 4/3, open centre, motor spool, 12V DC
SWPN 2-H-G24	Valve, CETOP 3, 4/3, open centre, motor spool, 24V DC
SWPN 2-H-WG110	Valve, CETOP 3, 4/3, open centre, motor spool, 110V AC
SWPN 2-H-WG230	Valve, CETOP 3, 4/3, open centre, motor spool, 230V AC
4704 1000	Coil, G12V (12V DC) for Hawe SWPN 2 valve
4704 1001	Coil, G24V (24V DC) for Hawe SWPN 2 valve
4704 1002	Coil, WG98V (110V AC) for Hawe SWPN 2 valve
4704 1003	Coil, WG198V (230V AC) for Hawe SWPN 2 valve
MSD3-309	Plug for DC voltages, to suit Hawe SWPN 2 valve
MSD4-209-P10	Plug, rectified, for AC voltages, to suit Hawe SWPN 2 valves

Subplates

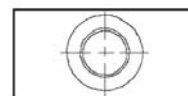
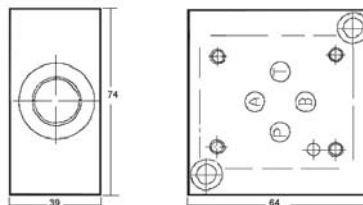
Subplates are available for simplified mounting of the valves. They are available in side ported and bottom ported versions. The standard aluminium version has a pressure rating of 210 bar.

A blanking plate is available for when a valve is removed from a manifold or subplate.

Multiple station manifolds in parallel and series configurations are available. Consult your local sales office. Steel subplates and manifolds are available on request.

Ordering Data

- SSPC3S Subplate, side entry (all ports)
- SSPC3B Subplate, bottom entry (P & T ports)
- SBPC3 Blanking plate
- SBKC3 Bolt kit, cap screws, M5 x 30mm.



STAUFF CORPORATION PTY LTD A

HEAD OFFICE

24 -26 Doyle Avenue
UNANDERRA NSW 2526
P.O. Box 227
UNANDERRA NSW 2526
Tel. (02) 4271 1877
Fax. (02) 4271 8432
E-mail. sales@stauff.com.au
http://www.stauff.com

ADELAIDE

1/3 Endeavour Drive
PORT ADELAIDE SA 5015
P.O. Box 208
PORT ADELAIDE SA 5015
Tel. (08) 8341 2260
Fax.(08) 8341 1604

BRISBANE

463 Boundary Road
RICHLANDS QLD 4077
P.O. Box 20
RICHLANDS QLD 4077
Tel. (07) 3217 0444
Fax.(07) 3217 0300

MELBOURNE

3B 14-16 White Street
OAKLEIGH EAST VIC 3166
P.O. Box 453
MULGRAVE VIC 3170
Tel. (03) 9543 5411
Fax.(03) 9543 5422

SYDNEY

27B Davis Road
WETHERILL PARK NSW 2164
P.O. Box 7180
WETHERILL PK DC NSW 2164
Tel. (02) 9725 2733
Fax. (02) 9725 2744



Quality
Endorsed
Company

ISO 9002 Lic 3765
Standards Australia

STAUFF®



Ball Valves

2 Way, 3 Way, Multi-way,
Manifold Mount, Flanged
High Pressure, Low pressure

**Quality and Service
worldwide**

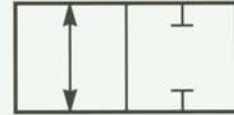
STAUFF

Stauff Ball Valves for High Pressure

- Zero Leakage
- High Pressure Capabilities
- Viton Static Seals
- Machined Delrin Seats
- Hard Chrome Plated Steel Balls

Built-in Features
for
Long, Reliable life

High Pressure 2 – Way Ball Valves



BSPP Series

Thread	Body Type	Size	Part Number	Pressure Rating
1/8"BSPP	block	DN4	BKHG1/8-1125	500 bar
1/4"BSPP	block	DN6	BKHG1/4-1125	500 bar
3/8"BSPP	block	DN10	BKHG3/8-1125	500 bar
1/2"BSPP	block	DN13	BKHG1/2-1125	500 bar
3/4"BSPP	block	DN20	BKHG3/4-1125	315 bar
1"BSPP	block	DN25	BKHG1-1125	315 bar
1 1/4"BSPP	block	DN25	BKHG11/4-1125	315 bar
1 1/4"BSPP	forged	DN32	MKHG11/4-2125	350 bar
1 1/2"BSPP	forged	DN40	MKHG11/2-2125	350 bar
2"BSPP	forged	DN50	MKHG2-2125	350 bar

NPT Series

Thread	Body Type	Size	Part Number	Pressure Rating
1/4"NPT	block	DN6	BKH1/4NPT-1125	500 bar
3/8"NPT	block	DN10	BKH3/8NPT-1125	500 bar
1/2"NPT	block	DN13	BKH1/2NPT-1125	500 bar
3/4"NPT	block	DN20	BKH3/4NPT-1125	315 bar
1"NPT	block	DN25	BKH1NPT-1125	315 bar
1 1/4"NPT	forged	DN32	MKH11/4NPT-2125	350 bar
1 1/2"NPT	forged	DN40	MKH11/2NPT-2125	350 bar
2"NPT	forged	DN50	MKH2NPT-2125	350 Bar



Metric DIN2353 Light Series

Connection	Body Type	Size	Part Number	Pressure Rating
10L	block	DN8	BKH10L-1125	500 bar
12L	block	DN10	BKH12L-1125	500 bar
15L	block	DN13	BKH15L-1125	500 bar
18L	block	DN16	BKH18L-1125	400 bar
22L	block	DN20	BKH22L-1125	315 bar
28L	block	DN25	BKH28L-1125	315 bar
35L	forged	DN32	MKH35L-2125	350 bar
42L	forged	DN40	MKH42L-2125	350 bar

Metric DIN2353 Heavy Series

Connection	Body Type	Size	Part Number	Pressure Rating
8S	block	DN4	BKH8S-1125	500 bar
10S	block	DN6	BKH10S-1125	500 bar
12S	block	DN8	BKH12S-1125	500 bar
16S	block	DN13	BKH16S-1125	500 bar
20S	block	DN16	BKH20S-1125	400 bar
25S	block	DN20	BKH25S-1125	315 bar
30S	block	DN25	BKH30S-1125	315 bar
38S	forged	DN32	BKG38S-2125	350 bar



Manifold Mounted Series

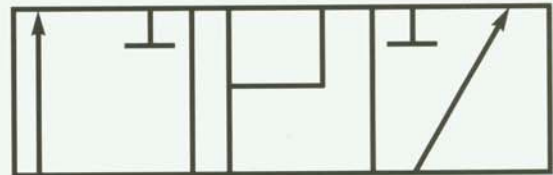
Part Number	Size	Pressure
PKHDN06-1125	DN6	500 bar
PKHDN06/10-1125	DN6/10	500 bar
PKHDN13/16-1125	DN13/16	400 bar
PKHDN20-1125	DN20	315 bar
PKHDN25-1125	DN25	315 bar
PKHDN32-1125	DN32	315 bar
PKHDN40-8125	DN40	315 bar
PKHDN50-8125	DN50	315 bar



Compact SAE Flanged Series

Part Number	Size	Pressure
KHSAE210/20-2125	DN20	210 bar
KHSAE210/25-2125	DN25	210 bar
KHSAE210/32-2125	DN32	210 bar
KHSAE210/40-2125	DN40	210 bar
KHSAE210/50-2125	DN50	210 bar
KHSAE210/65-2125	DN65	210 bar
KHSAE210/80-2125	DN80	210 bar
KHSAE210/100-2125	DN100	210 bar
KHSAE210/125-2125	DN125	210 bar
KHSAE420/15-2125	DN15	420 bar
KHSAE420/20-2125	DN20	420 bar
KHSAE420/25-2125	DN25	420 bar
KHSAE420/32-2125	DN32	420 bar
KHSAE420/40-2125	DN40	420 bar
KHSAE420/50-2125	DN50	420 bar

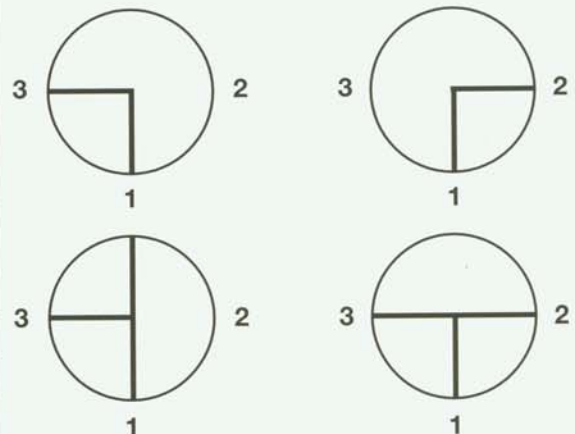
High Pressure 3 – Way Compact Ball Valves



“L” port with open changeover

Pressure inlet at Port No. 1 only

Thread	Size	Part Number	Pressure Rating
“L” Ported Version			
1/4”BSPP	DN6	BK3G1/4-1125L	315 bar
3/8”BSPP	DN10	BK3G3/8-1125L	315 bar
1/2”BSPP	DN13	BK3G1/2-1125L	315 bar
3/4”BSPP	DN20	BK3G3/4-8125L	315 bar
1”BSPP	DN25	BK3G1-8125L	315 bar
“T” Ported Version			
1/4”BSPP	DN6	BK3G1/4-1125T	315 bar
3/8”BSPP	DN10	BK3G3/8-1125T	315 bar
1/2”BSPP	DN13	BK3G1/2-1125T	315 bar
3/4”BSPP	DN20	BK3G3/4-8125T	315 bar
1”BSPP	DN25	BK3G1-8125T	315 bar



“T” port with 90° stop plate

Options available for Stauff Ball Valves

The standard range of ball valves are compatible with the normal hydraulic fluids used in industry. For specific applications, it may be necessary to utilise different seals or body materials. Other body materials such as stainless steel are available on request and alternative seals and seat materials are also available.

In addition, a wide selection of portings is available in the multi-way types and in the manifold mounted type, 3-way versions are available.

For specific applications or requirements or for detailed dimensions of valves, contact your nearest Stauff Office.

High Pressure Multi-way Ball Valves

Trunnion Mounted Ball (Disc)

Self compensating seats

MoS₂ impregnated Delrin Seats

Viton seals

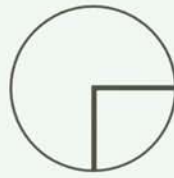
3 Way and 4 Way Bodies

“L”, “T”, and “X” porting standard

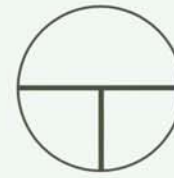
Other portings available



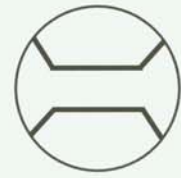
Standard Portings



“L”

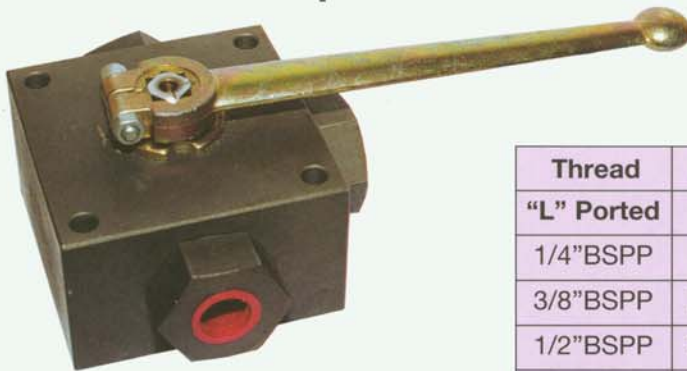


“T”



“X or LL”

3 Way BSPP Series with “L” and “T” ports



Thread	Size	Part Number	Pressure Rating
“L” Ported			
1/4”BSPP	DN6	3KHG1/4-1125L	500 bar
3/8”BSPP	DN10	3KHG3/8-1125L	500 bar
1/2”BSPP	DN13	3KHG1/2-1125L	400 bar
3/4”BSPP	DN20	3KHG3/4-8125L	315 bar
1”BSPP	DN25	3KHG1-8125L	315 bar
“T” Ported			
1/4”BSPP	DN6	3KHG1/4-1125T	500 bar
3/8”BSPP	DN10	3KHG3/8-1125T	500 bar
1/2”BSPP	DN13	3KHG1/2-1125T	400 bar
3/4”BSPP	DN20	3KHG3/4-8125T	315 bar
1”BSPP	DN25	3KHG1-8125T	315 bar

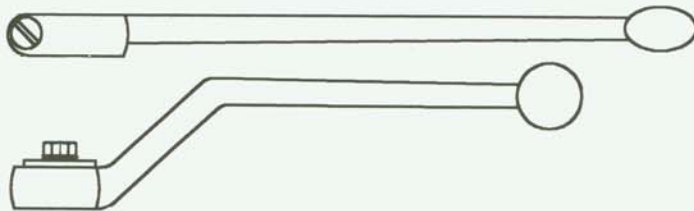
4 Way BSPP Series with "T" and "X" ports



Thread	Size	Part Number	Pressure Rating
"T" Ported			
1/4"BSPP	DN6	4KHG1/4-1125T	500 bar
3/8"BSPP	DN10	4KHG3/8-1125T	500 bar
1/2"BSPP	DN13	4KHG1/2-1125T	400 bar
3/4"BSPP	DN20	4KHG3/4-8125T	315 bar
1"BSPP	DN25	4KHG1-8125T	315 bar
"X" Ported			
1/4"BSPP	DN6	4KHG1/4-1125X	500bar
3/8"BSPP	DN10	4KHG3/8-1125X	500 bar
1/2"BSPP	DN13	4KHG1/2-1125X	400 bar
3/4"BSPP	DN20	4KHG3/4-8125X	315 bar
1"BSPP	DN25	4KHG1-8125X	315 bar

Accessories for H.P. Ball Valves

Handles – Diecast Zinc, Aluminium, & Steel



Size	Style	Material	Part No.
SW9	Stepped	Zinc	01315533
SW14	Stepped	Zinc	01302729
SW9	Straight	Aluminium	01300052
SW12	Straight	Aluminium	01304077
SW14	Straight	Aluminium	01306745
SW17	Straight	Aluminium	01301799
SW12	Stepped	Aluminium	01301741
SW17	Stepped	Aluminium	01303994
SW9	Stepped	Steel	01300063
SW14	Stepped	Steel	01308618
SW17	Stepped	Steel	01314083



Locking Devices

Simple, easy-to-fit, economical locking device for most ball valves.



Square Shaft Size (mm)	Part Number
9	SW09LOCK
10	SW10LOCK
12	SW12LOCK
14	SW14LOCK
17	SW17LOCK

Tamper-proof locking devices available on request.



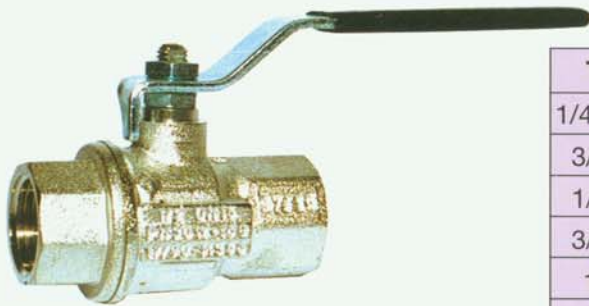
Actuators

Pneumatic, hydraulic or electric actuators are available on request. Ask your local Stauff Branch for details.



Ball Valves for Low Pressure

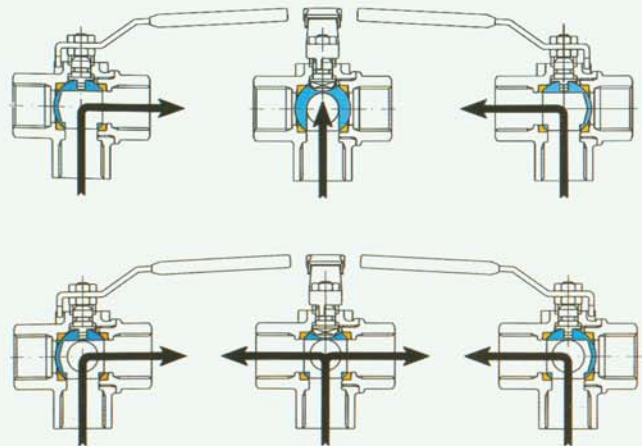
Chrome Plated, Bronze Body
 PTFE Seats, Buna N Stem Seal
 Approval by Australian Gas Association
 Stainless steel valves on request



2 Way, BSPP Series

Thread	Size	Part Number	Pressure Rating
1/4"BSPP	DN8	BV2LP1/4	64 bar
3/8"BSPP	DN10	BV2LP3/8	64 bar
1/2"BSPP	DN15	BV2LP1/2	30 bar
3/4"BSPP	DN20	BV2LP3/4	30 bar
1"BSPP	DN25	BV2LP1	30 bar
1 1/4"BSPP	DN32	BV2LP11/4	25 bar
1 1/2"BSPP	DN40	BV2LP11/2	25 bar
2"BSPP	DN50	BV2LP2	25 bar
2 1/2"BSPP	DN65	BV2LP21/2	16 bar
3"BSPP	DN80	BV2LP3	16 bar

3 Way, BSPP Series, "L" and "T" Ports



"L" Ported Series

Thread	Size	Part Number	Pressure Rating
1/4"BSPP	DN8	BV3LP1/4L	25 bar
3/8"BSPP	DN10	BV3LP3/8L	25 bar
1/2"BSPP	DN15	BV3LP1/2L	25 bar
3/4"BSPP	DN20	BV3LP3/4L	16 bar
1"BSPP	DN25	BV3LP1L	16 bar
1 1/4"BSPP	DN32	BV3LP11/4L	10 bar
1 1/2"BSPP	DN40	BV3LP11/2L	10 bar
2"BSPP	DN50	BV3LP2L	10 bar
3"BSPP	DN80	BV3LP3L	6 bar

"T" Ported Series

Thread	Size	Part Number	Pressure Rating
1/4"BSPP	DN8	BV3LP1/4T	25 bar
3/8"BSPP	DN10	BV3LP3/8T	25 bar
1/2"BSPP	DN15	BV3LP1/2T	25 bar
3/4"BSPP	DN20	BV3LP3/4T	16 bar
1"BSPP	DN25	BV3LP1T	16 bar
1 1/4"BSPP	DN32	BV3LP11/4T	10 bar
1 1/2"BSPP	DN40	BV3LP11/2T	10 bar
2"BSPP	DN50	BV3LP2T	10 bar
3"BSPP	DN80	BV3L3T	6 bar

Stainless Steel Ball Valves

Material - AISI 316Ti
Seat - MoS₂ impregnated Delrin
Stem Seal - Viton & PTFE
Other sizes on request



Part No	Size	Pressure Rating
BKHG3/8-4425	3/8"	500 bar
BKHG1/2-4425	1/2"	500 bar
BKHG3/4-4425	3/4"	500 bar

Instrumentation Valves

The Ham-Let range of instrumentation valves is available on request

Bodies of 316 stainless steel with PTFE seals

Straight and 90° versions in 2-way as well as normal 3-way valves with operation either manually or by pneumatic or electric actuators

A full range of Let-Lok instrumentation fittings is also available



ISO 9002 Certification
HAM-LET
 Valves & Fittings
 HTC HI-TECH COMPONENTS

Muller Co-axial Valves. The alternative to actuated Ball Valves

2 - way and 3 - way models
 Wide range of materials
 Wide range of seals
 Electric , pneumatic or hydraulic operation
 N/O and N/C versions
 Suitable for vacuums, gases, liquids, slurries, gelatinous, pasty, abrasive and contaminated media
 Specialist advice available with detailed information from Stauff Branches



STAUFF CORPORATION PTY LTD

HEAD OFFICE

24-26 Doyle Ave
 UNANDERRA NSW 2526
 P.O. Box 227
 UNANDERRA
 NSW 2526
 Tel. (02) 4271 1877
 Fax (02) 4271 8432
 e-mail stauff@stauff.com.au

ADELAIDE

1/3 Endeavour Drive
 PORT ADELAIDE SA 5015
 P.O. Box 208
 PORT ADELAIDE
 SA 5015
 Tel. (08) 8341 2260
 Fax (08) 8341 1604

BRISBANE

463 Boundary Road
 RICHLANDS QLD 4077
 P.O. Box 20
 RICHLANDS
 QLD 4077
 Tel. (07) 3217 0444
 Fax (07) 3217 0300

MELBOURNE

3B 14-16 White St
 CLAYTON VIC 3168
 P.O. Box 453
 MULGRAVE
 VIC 3170
 Tel. (03) 9543 5411
 Fax (03) 9543 5422

SYDNEY

27B Davis Rd
 WETHERILL PARK NSW 2164
 P.O. Box 7180
 WETHERILL PARK DC
 NSW 2164
 Tel. (02) 9725 2733
 Fax (02) 9725 2744

STAUFF

Quality System
Quality
Endorsed
Company
ISO 9002 Lic 3765
Standards Australia



SAE FLANGES

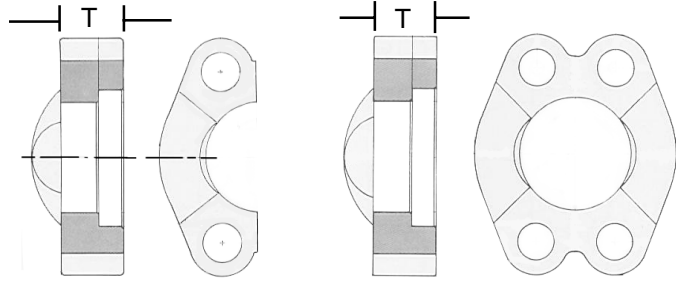
Quality and Service
worldwide

SAE Flanges

Stauff SAE one-piece flanges and solid and split flange clamps for use with flanged hose ends or inserts, make pipework assembly simple. Flanges are stocked in both code 61 (3000 psi) and 62 (6000 psi) configurations in versions for butt welding or socket welding as well as female screwed versions for BSP and NPT threads. Both the O-Ring half and the flat-face half are available in the one-piece flanges.

SPLIT and ONE-PIECE FLANGE CLAMPS

In both Code 61 and 62
Split flange clamps sold as a pair
Ask about related inserts



CODE 61 (3000psi)

Size	Split Clamp Part No.	One-Piece Part No.	Max. Pressure	"T"
1/2"	SFC 308	FC 308	210 bar	13 mm
3/4"	SFC312	FC 312	210 bar	14 mm
1"	SFC316	FC 316	210 bar	16 mm
1 1/4"	SFC320	FC 320	210 bar	14 mm
1 1/2"	SFC324	FC 324	210 bar	16 mm
2"	SFC332	FC 332	210 bar	16 mm
2 1/2"	SFC 340	FC 340	175 bar	19 mm
3"	SFC 348	FC 348	138 bar	22 mm
4"	SFC 364	FC 364	35 bar	25 mm
5"	SFC 380	FC 380	35 bar	28 mm

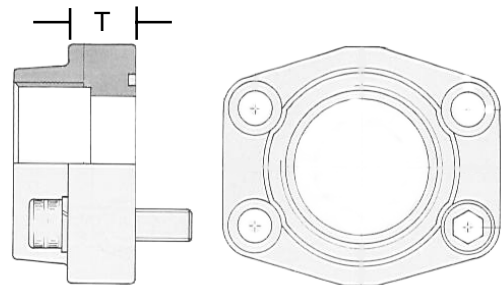
CODE 62 (6000psi)

Size	Split Clamp Part No.	One-Piece Part No.	Max. Pressure	"T"
1/2"	SFC 608	FC 608	420 bar	16 mm
3/4"	SFC 612	FC 612	420 bar	19 mm
1"	SFC 616	FC 616	420 bar	24 mm
1 1/4"	SFC 620	FC 620	420 bar	27 mm
1 1/2"	SFC 624	FC 624	420 bar	30 mm
2"	SFC 632	FC 632	420 bar	37 mm
2 1/2"	SFC 640	FC 640	420 bar	45 mm
3"	SFC 648	FC 648	420 bar	55 mm

NPT and BSP ONE-PIECE SCREWED FLANGES

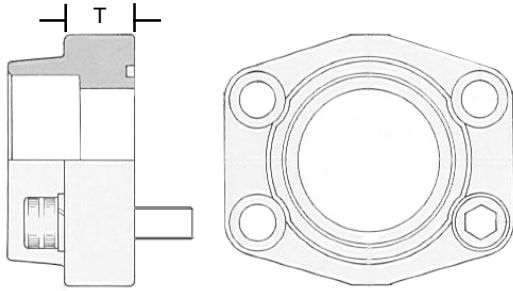
CODE 61		Flanges only - without bolts or O-ring			
Size	BSP	BSP	NPT	NPT	"T"
	O-ring face	flat face	O-ring face	flat face	
1/2"	FGY 308	FGW 308	FNY 308	FNW 308	16 mm
3/4"	FGY 312	FGW 312	FNY 312	FNW 312	18 mm
1"	FGY 316	FGW 316	FNY 316	FNW 316	18 mm
1 1/4"	FGY 320	FGW 320	FNY 320	FNW 320	21 mm
1 1/2"	FGY 324	FGW 324	FNY 324	FNW 324	25 mm
2"	FGY 332	FGW 332	FNY 332	FNW 332	25 mm
2 1/2"	FGY 340	FGW 340	FNY 340	FNW 340	25 mm
3"	FGY 348	FGW 348	FNY 348	FNW 348	27 mm

CODE 62		Flanges only - without bolts or O-ring			
Size	BSP	BSP	NPT	NPT	"T"
	O-ring face	flat face	O-ring face	flat face	
1/2"	FGY 608	FGW 608	FNY 608	FNW 608	16 mm
3/4"	FGY 612	FGW 612	FNY 612	FNW 612	19 mm
1"	FGY 616	FGW 616	FNY 616	FNW 616	24 mm
1 1/4"	FGY 620	FGW 620	FNY 620	FNW 620	27 mm
1 1/2"	FGY 624	FGW 624	FNY 624	FNW 624	30 mm
2"	FGY 632	FGW 632	FNY 632	FNW 632	37 mm
2 1/2"	FGY 640	FGW 640	FNY 640	FNW 640	45 mm
3"	FGY 648	FGW 648	FNY 648	FNW 648	55 mm

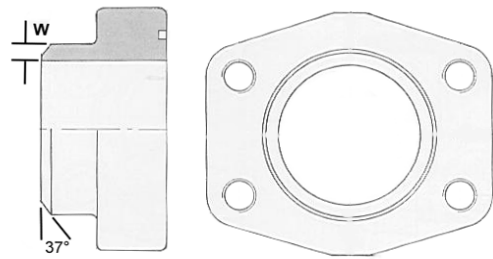


Flat face companion flange half is tapped with metric threads

SOCKET WELD FLANGES



BUTT WELD FLANGES



Flat face companion flange half is tapped with metric threads

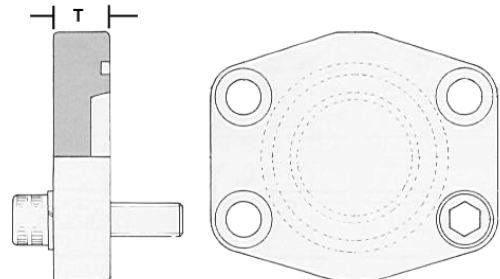
CODE 61		Flanges only - without bolts or O-ring					
Size	Socket weld O-ring face	Socket weld flat face	"T" socket weld	Butt weld O-ring face	Butt weld flat face	"T"	"W"
1/2"	FSY 308	FSW 308	16 mm	FBY 308	FBW 308	16 mm	4.3 mm
3/4"	FSY 312	FSW 312	18 mm	FBY 312	FBW 312	18 mm	4.1 mm
1"	FSY 316	FSW 316	18 mm	FBY 316	FBW 316	18 mm	4.7 mm
1 1/4"	FSY 320	FSW 320	21 mm	FBY 320	FBW 320	21 mm	6.0 mm
1 1/2"	FSY 324	FSW 324	25 mm	FBY 324	FBW 324	25 mm	5.3 mm
2"	FSY 332	FSW 332	25 mm	FBY 332	FBW 332	25 mm	5.5 mm
2 1/2"	FSY 340	FSW 340	25 mm	FBY 340	FBW 340	25 mm	6.8 mm
3"	FSY 348	FSW 348	27 mm	FBY 348	FBW 348	27 mm	8.0 mm

CODE 62		Flanges only - without bolts or O-ring					
Size	Socket weld O-ring face	Socket weld flat face	"T" socket weld	Butt weld O-ring face	Butt weld flat face	"T"	"W"
1/2"	FSY 608	FSW 608	18 mm	FBY 608	FBW 608	16 mm	4.3 mm
3/4"	FSY 612	FSW 612	18 mm	FBY 612	FBW 612	19 mm	4.6 mm
1"	FSY 616	FSW 616	24 mm	FBY 616	FBW 616	24 mm	6.3 mm
1 1/4"	FSY 620	FSW 620	25 mm	FBY 620	FBW 620	27 mm	7.4 mm
1 1/2"	FSY 624	FSW 624	29 mm	FBY 624	FBW 624	30 mm	8.3 mm
2"	FSY 632	FSW 632	35 mm	FBY 632	FBW 632	37 mm	10 mm
2 1/2"	FSY 640	FSW 640	45 mm	FBY 640	FBW 640	45 mm	13 mm
3"	FSY 648	FSW 648	55 mm	FBY 648	FBW 648	55 mm	16 mm

BLANKING FLANGES

Blanking Flange with O-ring groove

Size	Code 61	"T"	Code 62	"T"
1/2"	FL 08	16 mm	FLH 08	16 mm
3/4"	FL 12	18 mm	FLH 12	16 mm
1"	FL 16	19 mm	FLH 16	18 mm
1 1/4"	FL 20	21 mm	FLH 20	24 mm
1 1/2"	FL 24	24 mm	FLH 24	24 mm
2"	FL 32	24 mm	FLH 32	31 mm
2 1/2"	FL 40	25 mm	FLH 40	40 mm
3"	FL 48	25 mm	FLH 48	45 mm
4"	FL 64	25 mm		
5"	FL 80	25 mm		

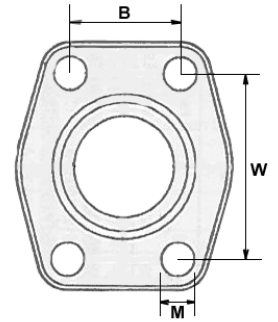


SAE FLANGE IDENTIFICATION

Code 61 (3000psi)

Code 62 (6000psi)

Size	"B"	"W"	"M" dia	"M" thread	Size	"B"	"W"	"M" dia	"M" thread
	mm	mm	O-ring half	flat-face half		mm	mm	O-ring half	flat-face half
1/2"	17.5	38.1	8.7 mm	M8	1/2"	18.3	40.5	8.7 mm	M8
3/4"	22.2	47.6	10.3 mm	M10	3/4"	23.8	50.8	10.5 mm	M10
1"	26.2	52.4	10.3 mm	M10	1"	27.8	57.1	13 mm	M12
1 1/4"	30.2	58.7	12.0 mm	M10	1 1/4"	31.7	66.7	15 mm	M14
1 1/2"	35.7	69.9	13.5 mm	M12	1 1/2"	36.7	79.4	17 mm	M16
2"	42.9	77.8	13.5 mm	M12	2"	44.4	96.8	21 mm	M20
2 1/2"	50.8	88.9	13.5 mm	M12	2 1/2"	58.7	123.8	25 mm	M24
3"	62	106.4	16.7 mm	M16	3"	71.4	152.4	32 mm	M30
4"	77.8	130.2	16.7 mm	M16					
5"	92.1	152.4	16.7 mm	M16					



BOLT KITS

(4 socket head cap screws)

SAE Flange Size	Cap Screw Size Code 61	4 x screws Kit Part No.	Cap Screw Size Code 62	4 x screws Kit Part No.
1/2"	M8 X 30	FBK8X30	M8 X 30	FBK8X30
3/4"	M10 X 35	FBK10X35	M10 X 35	FBK10X35
1"	M10 X 35	FBK10X35	M12 X 45	FBK12X45
1 1/4"	M10 X 40	FBK10X35	M14 X 50	FBK14X50
1 1/2"	M12 X 45	FBK12X45	M16 X 55	FBK16X55
2"	M12 X 45	FBK12X45	M20 X 65	FBK20X65
2 1/2"	M12 X 45	FBK12X45	M24 X 80	FBK24X80
3"	M16 X 50	FBK16X50	M30 X100	FBK30X100
4"	M16 X 50	FBK16X50		
5"	M16 X 55	FBK16X55		

O-RINGS for FLANGES

90° Durometer (Shore Hardness A)

SAE Flange Size	O-Ring Part No.	BS No.
1/2"	FOR08	-210
3/4"	FOR12	-214
1"	FOR16	-219
1 1/4"	FOR20	-222
1 1/2"	FOR24	-225
2"	FOR32	-228
2 1/2"	FOR40	-232
3"	FOR48	-237
4"	FOR64	-245
5"	FOR80	-253

Pipe clamps, tubing, fittings, and other associated products are available from Stauff



Proudly distributed by

STAUFF CORPORATION PTY LTD

STAUFF CORPORATION (NZ) LTD

HEAD OFFICE

24 - 26 Doyle Avenue
UNANDERRA NSW 2526
P.O. Box 227
UNANDERRA NSW 2526
Tel. (02) 4271 1877
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http://www.stauff.com

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RICHLANDS QLD 4077
P.O. Box 20
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MELBOURNE

3B 14 - 16 White Street
OAKLEIGH EAST VIC 3166
P.O. Box 453
MULGRAVE VIC 3170
Tel. (03) 9543 5411
Fax. (03) 9543 5422

SYDNEY

27B Davis Road
WETHERILL PARK
NSW 2164
P.O. Box 7180
WETHERILL PARK DC
NSW 2164
Tel. (02) 9725 2733
Fax. (02) 9725 2744

AUCKLAND

STAUFF CORP (NZ) Ltd
Unit J 150 Harris Road
EAST TAMAKI
P.O. Box 58517
GREENMOUNT
Tel. (09) 271 4812
Fax. (09) 271 4832
E-mail: sales@stauff.co.nz



RETURNS FOR CREDIT POLICY



1. **All claims** must be received **within 10 days from despatch date**, ex-our works.
2. Invoice number, date and Purchase Order number must be quoted.
3. A **restocking fee of 20% or \$50.00**, whichever is the greater, applies to returns except for faulty or incorrectly supplied items.
4. **Freight costs** for **faulty or incorrect goods** will be paid by Stauff Corporation, provided that goods are despatched on our nominated carrier.
5. **Freight costs** are the **client's responsibility** for all other authorised credit returns.
6. **Non stock items**, purchased on your request, or any cut lengths, **are not returnable**.
7. All returned goods **MUST** be in **original condition**. Damaged goods may be rejected or rectification costs deducted.
8. **No return** will be accepted without **prior authorisation** and a quoted authorisation number.



Stauff Corporation Australian Locations and Contact Details

HEAD OFFICE

24-26 Doyle Avenue
Unanderra NSW 2526

Tel: 02 42711877
Fax: 02 42718432
Email: sales@stauff.com.au

(PO Box 227, Unanderra NSW 2526)

SYDNEY BRANCH

27B Davis Road
Wetherill Park NSW 2164

Tel: 02 97252733
Fax: 02 97252744
Email: sales@stauff.com.au

(PO Box 7180, Wetherill Park DC NSW 2164)

BRISBANE BRANCH

463 Boundary Road
Richlands QLD 4077

Tel: 07 32170444
Fax: 07 32170300
Email: sales@stauff.com.au

(PO Box 20, Richlands QLD 4077)

MELBOURNE BRANCH

3B 14-16 White Street
Oakleigh East VIC 3166

Tel: 03 95435411
Fax: 03 95435422
Email: sales@stauff.com.au

(PO Box 453, Mulgrave VIC 3170)

ADELAIDE BRANCH

Lakeside Business Park
1/3 Endeavour Drive
Port Adelaide SA 5015

Tel: 08 83412260
Fax: 08 83411604
Email: sales@stauff.com.au

(PO Box 208, Port Adelaide SA 5015)

STAUFF CORPORATION PTY LTD



A.B.N. 44 001 338 487

Head Office: 24-26 Doyle Avenue, PO Box 227, UNANDERRA NSW 2526

TEL: 02 4271 1877 FAX: 02 4271 8432 email: admin@stauff.com.au

APPLICATION FOR CREDIT ACCOUNT

I/we wish to apply for a credit account with Stauff Corporation Pty Ltd, and supply the following up to date information.

Account Name

of Applicant:

(Full Legal Name)

This must be the full legal name of the company/person incurring debt.
(Eg: ABC Co Pty Ltd, or J Citizen trading as "XYZ Co")

A.B.N. Number

(If Company)

Delivery Address:

Postal Address:

.....
.....
If the postal address for mail is different from above please give it here.

Registered Office

Address:

Fax No:

Phone No:

Purchasing Contact:

Account Contact:

Please give **full names** and **addresses** of Directors or Proprietors

**Current Directors
or Proprietors:**

1. of

2. of

3. of

4. of

Credit References: Please provide below, details of three (3) firms you are currently dealing with;

- a) Company Name:
Fax: Telephone:
- b) Company Name:
Fax: Telephone:
- c) Company Name:
Fax: Telephone:

Bank Details:

Banker's Name:
Address:
Telephone:

Credit Limit: Estimated (Monthly) Usage of Credit Facility:

\$ This section must be completed to validate the application
--

I/we understand the attached conditions of sale and terms of trading and, being duly empowered, agree to adhere to them.

I/we understand that law prohibits entering into debt if there is no reasonable likelihood of paying, and to do so may create personal liability.

If Stauff Corporation considers it relevant to assess my/our application for commercial credit, I/we agree to Stauff Corporation making independent enquiries of third parties concerning my/our financial standing.

Signature:
Name:
(Please Print)
Position Held:
(Please Print)

GENERAL CONDITIONS OF SALE AND CONTRACTS

1. **GENERAL**
All quotations, offers, sales and contracts are subject to the following Terms and Conditions. These Terms and Conditions form part of and should be read in conjunction with each and every quotation, offer, sale or contract.
2. **DEFAULT IN PAYMENT**
Should the purchaser make any default in payment or commit any act of bankruptcy or assign his estate or make any arrangements with his creditors or go into liquidation or become subject to a receivership the Company may at its option cancel any undelivered portion of the within order and shall be entitled to recover from the purchaser the amount of all losses and damages suffered and all expenses incurred by reason of any such default.
3. **PASSING OF PROPERTY OF GOODS**
 - a) Property in goods supplied will not pass to you until you have paid for them in full.
 - b) You acknowledge that until that time you are in possession of the goods solely as bailee for us.
 - c) Your right to possession of the goods shall cease if payment for the goods is due under Section 7 but not paid. In the event, we may enter any premises where the goods are or are reasonably thought to be and repossess them.

Note: Section 3© and section (4) protect us if you fail to pay on time for the goods or you become insolvent or your solvency is threatened. It is only in those cases that we would use them. This does not mean that you can ignore them. You must strictly comply with them.
4. The following applies only to goods which have not been paid for in full:
 - a) Until you use or sell the goods or any products as referred to in 3(a), you must store them separately and so they are clearly identifiable as the property of Stauff Corporation Pty Ltd.
 - b) You may sell the goods or the products referred to in 3(a) in the ordinary course of your business on the following conditions;
 - You make the sale as our agent and bailee.
 - The proceeds of the sale are held by you in trust for us and you keep them separately and so that they are clearly identifiable as ours.
 - If you have not received the proceeds of the sale, you will, immediately upon request assign to us all your rights arising out of the sale.
5. **QUOTATION PERIOD**
Quotations are valid for a period of thirty days from date thereof; unless previously accepted the quotation will be deemed to have lapsed.
6. **GOODS AND SERVICES TAX**
 - a) The price and all other moneys payable by and on behalf of the Purchaser are exclusive of Goods and Services Tax or like impost (GST).
 - b) Liability for GST (payable in respect of any taxable supply) is additional. It is payable by the Purchaser to Stauff at the same time the price and other moneys are payable.
7. **TERMS OF PAYMENT**
All payments are strictly net cash payable 30 days from date of invoice except as provided in section (8) herein.
8. **PROGRESS PAYMENTS**
On any sale or contract where total quoted price exceeds \$1,000, the Company shall be entitled to monthly progress payments as follows:
 - (a) During manufacture, supply and/or erection. Progress Claims with payments of up to 90% of the total material purchased work done or erection completed payable 7 days from date of invoice.
 - (b) On completion of the contract the full outstanding portion of the adjusted contract value, payable 30 days from date of invoice.
9. **CANCELLATION**
Orders cannot be cancelled except with the Company's written consent which consent the Company shall be entitled to withhold if it so desires.
10. **PENALTY**
The Company does not accept orders under penalty for late delivery, unless duly agreed in writing.
11. **CLAIMS**
All claims with regard to quality, quantity or conditions, etc, shall be made in writing within ten (10) days of delivery, otherwise the goods delivered will be deemed to be in accordance with the Contract. The defective goods to be returned freight paid to our store at the customer's risk. In no instance shall any claim for damage or loss whether direct or indirect in respect of the goods howsoever arising out of them or their use be greater in amount than the actual invoice value of the goods in respect of which the claim is made. All damage or loss over and above such invoice price shall be borne by the purchaser.
12. **CHARGES FOR DESIGNS**
Where a sketch, model or other experimental or preliminary work is made or performed at the request of the customer and if an order therefrom does not eventuate, the cost thereof will be charged to the customer.
13. **LIABILITY**

As we are not the manufacturers of the goods, we give no guarantee as to quality nor as to fitness thereof for any particular purpose, and we accept no liability in respect of or resulting of or resulting from any defect in or failure of the goods supplied in lieu of any warranty, condition or liability implied by law, the purchaser is entitled only to such guarantees as given to us in respect of the goods by the Manufacturers thereof.

14. Unless otherwise stated in the quotation all information contained in drawings, and catalogues and other advertisement matter, is intended merely to present a general idea of the goods described therein and dimensions, weight, and other particulars must be taken as approximate only. Certified drawings will be furnished if required. All drawings are the exclusive property of our principals, and must not be lent, copied, or otherwise used without the written consent of our principals or of this Company and must be returned on demand. We reserve the right to amend specifications to such extent as may be thought fit by the manufacturer during the course of manufacture.
15. **ALTERATIONS, FAULTY INFORMATION**
All equipment supplied and delivered under this quotation will be completed strictly within the terms of the specification and drawings referred to. If the purchaser should for any reason, require any alteration or amendment thereto, such amendment and/or alteration shall be arranged and agreed upon in writing prior to commencement or during the currency of the contract. And further that a price allowance and amended delivery schedule therefore shall have been agreed to by the Company in writing.
16. **DELAYS**
We agree to do our utmost to effect delivery in the time named, but do not accept any responsibility if the delivery is not affected in the time stated. In case the procuring and/or shipment or delivery of the goods to the purchaser is prevented or delayed through any cause beyond our control the delivery and/or shipment may be suspended partially or totally; such suspension shall not be a breach of nor in any way invalidate this Contract and the period of shipment and/or delivery shall be extended accordingly.
17. **DEFAULT IN PAYMENT**
Failure to make payment when due constitutes a breach of the contract and the Company may repudiate the whole Contract without in any way jeopardising its right of payment for work done or money expended, or its other legal rights.
18. **PRICE VARIATION**
All quotations, offered, etc, are given by the Company on the basis of Federal Award Rates of Wages governing the Metal Trades Industry and the State Award Rates governing the NSW Division of the Association of Architects, Engineers, Surveyors and Draughtsmen of Australia at the date of quotation and the market prices of materials at that date. It is distinctly understood that any increase or decrease in wages or materials which may take place after the date of quotation or offer and before completion or delivery of the goods or equipment will be subject to an adjustment pro rata in the ultimate price payable for the work. All quotations for goods of overseas manufacture and quoted on indent basis, are subject to any variation in exchange rates, custom duty, overseas freight charges and government charges which may be imposed, other than those in effect as at the date of this quotation.
19. **INTERPRETATION**
All clerical and typographical errors and omissions shall be subject to subsequent correction on the quotation and subsequent contracts between the parties shall at all times be deemed subject to this right on the part of the Company.
20. The purchaser's property at any time in the possession of the Company shall be entirely at the purchaser's risk in all respects and the Company accepts no responsibility for any loss or damage occurring thereto while the same is in its possessions or through failure to re-deliver the same or any part thereof.
21. This document is to be read in conjunction with the "Australian Standard General Conditions of Tendering and Contract for General Engineering Works - Australian Standard No. CA24-1952". However, the clauses specifically mentioned above will take precedence.

I/We warrant that this information is correct and it is supplied in consideration of Stauff Corporation Pty Ltd granting credit facilities, and if the account is authorised, agree to abide by the Terms and Conditions of Sale printed in this application. I/We declare that the business is solvent and able to pay its accounts as and when due.

Signature: **Witness:**

Date:

Signature: **Witness:**

Date:

Company Seal (if applicable)

OFFICE USE ONLY

Credit References:

- a) Trading: Terms:
Rate of Pay: Limit:
- b) Trading: Terms:
Rate of Pay: Limit:
- c) Trading: Terms:
Rate of Pay: Limit:

Comments:
.....

Approved/Declined Date:/...../.....

Authorised by: Credit Limit: \$



To STAUFF CORPORATION PTY LTD of 24-26 DOYLE AVENUE (PO Box 227), UNANDERRA, NEW SOUTH WALES A.B.N. 44 001 338 487

In consideration of your having at our request agreed to supply

..... of

with goods for our business we agree to be responsible to you for the price of all such goods supplied or as you may hereafter supply to to a limit of \$.....

Payable within 30 days, whether or not any part of such price shall be paid to you but so that our liability to you shall be in respect of the whole debt but shall in no event exceed the sum of This guarantee is a continuing guarantee and security and our liability under it shall not be affected by Stauff Corporation Pty Ltd giving time or any other indulgence to We reserve the right for ourselves or our personal representatives by notice to revoke this guarantee at any time as to all future dealing by the said with you after the date of such notice.

Our liability hereunder is joint and several.

DATED: _____

Signature of Witness

Signature of Guarantor

Name of Witness

Name of Guarantor

Address of Witness

Address of Guarantor

Signature of Witness

Signature of Guarantor

Name of Witness

Name of Guarantor

Address of Witness

Address of Guarantor

STAUFF CORPORATION PTY LTD

A.B.N. 44 001 338 487

ENGINEERING CONSULTANTS AND DISTRIBUTORS

Website: www.stauff.com

Email: sales@stauff.com.au



ORDER / QUOTATION FORM

NAME: _____
PHONE: _____
FAX: _____
CONTACT PERSON: _____
PURCHASE ORDER: _____

COMPANY: _____
ADDRESS: _____
BILLING ADDRESS: _____

PRODUCT CODE	DESCRIPTION	QUANTITY	UNIT	PRICE	GST	TOTAL

Providing Quality and Service Worldwide

OFFICE LOCATIONS IN AUSTRALIA:

HEAD OFFICE:
24-26 Doyle Avenue
Unanderra NSW 2526
PO Box 227
Unanderra NSW 2526
Tel: (02) 4271 1877
Fax: (02) 4271 8432

ADELAIDE:
Lakeside Business Park
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Port Adelaide SA 5015
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Richlands QLD 4077
Tel: (07) 3217 0444
Fax: (07) 3217 0300

MELBOURNE:
3B 14-16 White Street
Oakleigh East Victoria 3166
PO Box 453
Mulgrave Victoria 3170
Tel: (03) 9543 5411
Fax: (03) 9543 5422

SYDNEY:
27B Davis Road
Wetherill Park NSW 2164
PO Box 7180
Wetherill Park NSW 2164
Tel: (02) 9725 2733
Fax: (02) 9725 2744

GENERAL

1. (a) All quotations, offers, sales and contracts are subject to the following Terms and Conditions. These Terms and Conditions form part of and should be read in conjunction with each and every quotation, offer, sale or contract.
- (b) All clerical and typographical errors and omissions shall be subject to subsequent correction on the quotation and subsequent contracts between the parties shall at all times be deemed subject to this right on the part of the Company.
- (c) This document is to be read in conjunction with the "Australian Standard General Conditions of Tendering and Contract for General Engineering Works - Australian Standard No. CA24-1952". However, the clauses in this document will take precedence.
- (d) "Company" means Stauff Corporation Pty Ltd.
- (e) These conditions (which may only be waived in writing signed by the Company) shall prevail over all conditions of the purchaser's order to the extent of any inconsistency.

QUOTATION PERIOD

2. Unless previously withdrawn, any quotation is valid for a period of thirty (30) days from its date. The Company reserves the right to refuse any order based on this quotation within seven (7) days after receipt of the order.

TERMS OF PAYMENT

3. All payments are strictly net cash payable thirty (30) days from date of invoice except as provided in clause 4 herein.

PROGRESS PAYMENTS

4. On any sale or contract where total quoted price exceeds one thousand dollars (\$1,000.00) and where the price is expressed to be payable by progress payments, the Company shall be entitled to monthly progress payments as follows:
 - (a) During manufacture, supply and/or erection - progress claims with payments of up to ninety percent (90%) of the total material purchased work done or erection completed payable seven (7) days from date of invoice; and
 - (b) on completion of the contract the full outstanding portion of the adjusted contract value, payable thirty (30) days from date of invoice.

GOODS AND SERVICES TAX

5. (a) Unless otherwise stated, all prices and all other moneys payable by and on behalf of the purchaser are exclusive of Goods and Services Tax or like impost (GST).
- (b) Liability for GST (payable in respect of any taxable supply) is additional. It is payable by the purchaser to the Company at the same time the price and other moneys are payable.

RIGHTS IN RELATION TO GOODS

6. (a) Ownership of goods supplied will not pass to you until you have paid for them in full.
 - (b) You acknowledge that until that time you are in possession of the goods solely as bailee for us.
 - (c) Your right to possession of the goods shall cease if payment for the goods is due under clause 3 but not paid. In such event, we may enter any premises where the goods are or are reasonably thought to be and repossess them.
7. Where goods have not been paid for in full:
 - (a) Until you use or sell the goods, you must store them separately and so they are clearly identifiable as the property of Stauff Corporation Pty Ltd.
 - (b) You may sell the goods in the ordinary course of your business on the following conditions:
 - (i) you make the sale as our agent and bailee;
 - (ii) the proceeds of the sale are held by you in trust for us and you keep them separately and so that they are clearly identifiable as ours; and
 - (iii) if you have not received the proceeds of the sale, you will, immediately upon request assign to us all your rights arising out of the sale.

Note: Clauses 6 and 7 protect us if you fail to pay on time for the goods or you become insolvent or your solvency is threatened. It is only in those cases that we would use them. This does not mean that you can ignore them. You must strictly comply with them.

CANCELLATION

8. Orders cannot be cancelled except with the Company's written consent which consent the Company shall be entitled to withhold if it so desires. Any consent will be on terms which indemnify the Company against all losses.

DELIVERY

9. (a) We agree to do our utmost to effect delivery in the time named, but do not accept any responsibility if the delivery is not effected in the time stated. In case the procuring and/or shipment or delivery of the goods to the purchaser is prevented or delayed through any cause beyond our control the delivery and/or shipment may be suspended partially or totally; such suspension shall not be a breach of nor in any way invalidate this contract and the period of shipment and/or delivery shall be extended accordingly.
- (b) The Company does not accept orders that include a penalty for late delivery, unless specifically agreed to in writing.

DEFAULT IN PAYMENT

10. Should the purchaser make any default in payment or commit any act of bankruptcy or assign his estate or make any arrangements with his creditors or go into liquidation or become subject to a receivership, the Company may at its option cancel any undelivered portion of the order and shall be entitled to recover from the purchaser all losses and damages suffered and all expenses incurred by reason of any such default.

CLAIMS

11. All claims with regard to quality, quantity or conditions, etc, shall be made in writing within ten (10) days of delivery, otherwise the goods delivered will be deemed to be in accordance with the contract. Any defective goods are to be returned freight paid to the Company at the purchaser's risk. In no instance shall any claim for damage or loss whether direct or indirect in respect of the goods howsoever arising out of them or their use be greater in amount than the actual invoice value of the goods in respect of which the claim is made. All damage or loss over and above such invoice price shall be borne by the purchaser.

CHARGES FOR DESIGNS

12. Where a sketch, model or other experimental or preliminary work is made or performed at the request of the purchaser and if an order therefrom does not eventuate, the cost thereof will be charged to the purchaser.

LIABILITY

13. The Company is not the manufacturer of the goods and gives no guarantee as to quality nor as to fitness thereof for any particular purpose and accepts no liability in respect of or resulting from any defect in or failure of the goods supplied. The purchaser accepts the guarantee of the manufacture of the goods is the only guarantee given to the buyer in respect of the goods. The Company agrees to assign to the purchaser on request the benefit of any warranty or entitlement to the goods that the manufacturer has granted to the Company under any contract or by implication or operation of law to the extent that the benefit of any warranty or entitlement is assignable.
14. Unless otherwise stated in the quotation all information contained in drawings, and catalogues and other advertisement matter, is intended merely to present a general idea of the goods described therein and dimensions, weight, and other particulars must be taken as approximate only. Certified drawings will be furnished if required. All drawings are the exclusive property of our principals, and must not be lent, copied, or otherwise used without the written consent of our principals or of this Company and must be returned on demand. We reserve the right to amend specifications to such extent as may be thought fit by the manufacturer during the course of manufacture.

ALTERATIONS, FAULTY INFORMATION

15. All equipment supplied and delivered under this quotation will be completed strictly within the terms of the specification and drawings referred to. If the purchaser should for any reason, require any alteration or amendment thereto, such amendment and/or alteration shall be arranged and agreed upon in writing prior to commencement or during the currency of the contract. And further that a price allowance and amended delivery schedule therefore shall have been agreed to by the Company in writing.

DEFAULT IN PAYMENT

16. Failure to make payment when due constitutes a breach of the contract and the Company may repudiate the whole contract without in any way jeopardising its right of payment for work done or money expended, or its other legal rights.

PRICE VARIATION

17. All quotations, offered, etc, are given by the Company on the basis of Federal Award Rates of Wages governing the Metal Trades Industry and the State Award Rates governing the NSW Division of the Association of Architects, Engineers, Surveyors and Draughtsmen of Australia at the date of quotation and the market prices of materials at that date. It is distinctly understood that any increase or decrease in wages or materials which may take place after the date of quotation or offer and before completion or delivery of the goods or equipment will be subject to an adjustment pro rata in the ultimate price payable for the work. All quotations for goods of overseas manufacture and quoted on indent basis, are subject to any variation in exchange rates, custom duty, overseas freight charges and government charges which may be imposed, other than those in effect as at the date of this quotation.
18. The purchaser's property at any time in the possession of the Company shall be entirely at the purchaser's risk in all respects and the Company accepts no responsibility for any loss or damage occurring thereto while the same is in its possession or through failure to re-deliver the same or any part thereof.



Profitieren Sie von unseren wirtschaftlichen und ökologischen Lösungen, denn ...

- Unsere Rohrverbindungen sind nicht nur absolut dicht, sondern benötigen auch in der Herstellung deutlich weniger Teile als üblich. Sie sind besonders langlebig und aus ausgezeichnet recyclebaren Rohmaterialien hergestellt.
- Umweltschutz ist ein integrierter Bestandteil unseres Managementsystems (Qualität DIN EN ISO 9001 und Umwelt DIN EN ISO 1401). Mit modernster Technik reduzieren wir zum Beispiel in unserem Unternehmen den Energie- und Wasserverbrauch, ersetzen kritische Materialien bei den Hilfs- und Betriebsstoffen durch umweltfreundliche Substitute und reagieren sofort auf Luft- und Lärmemissionen.
- Unsere Mitarbeiter sind umweltbewusst. In regelmäßigen Seminaren werden sie in Sicherheits- und Umweltfragen geschult und sind in kontinuierliche Verbesserungsprozesse eingebunden.

... Ökologie ist vorausschauende unternehmerische Verantwortlichkeit.

You will benefit from our economical, environmentally friendly solutions because ...

- Our tube connections not only form perfect seals but also require considerably fewer parts in the manufacturing process than is customary. They are particularly durable and are made from readily recyclable raw materials.
- The protection of the environment forms an integral element of our management system (quality to DIN EN ISO 9001, environment to DIN EN ISO 1401). Using the latest technologies, for example, we reduce energy and water consumption in our operations, replace critical substances in our process materials and consumables with environmentally friendly substitutes and react immediately to pollutant emissions and noise.
- Our employees are environmentally conscious, receive training in safety and environmental issues in regular seminars and participate in a continuous process of improvement.

... it is the responsibility of industry to safeguard our environment for the future.

Profitez de nos solutions économiques et écologiques car ...

- Nos raccords de tubes ne sont pas seulement absolument étanches, mais leur réalisation nécessite aussi nettement moins de pièces que celle des raccords usuels. Leur durée de vie est particulièrement longue et ils sont fabriqués avec des matières premières parfaitement recyclables.
- La protection de l'environnement est un élément constituant de notre système de management (qualité DIN EN ISO 9001 et environnement DIN EN ISO 1401). Grâce à une technologie ultramoderne, nous réduisons par exemple la consommation d'énergie et d'eau dans notre entreprise, nous remplaçons les matériaux critiques des produits auxiliaires et de fonctionnement par des substituts non polluants et nous réagissons immédiatement aux émissions d'air et de bruit.
- Nos collaborateurs sont conscients de l'environnement. Lors de séminaires réguliers, ils sont formés aux questions de sécurité et d'environnement et sont impliqués dans des processus d'amélioration permanents.

... l'écologie relève de la responsabilité et de la prévoyance de l'entreprise.

Überreicht durch:
Your agent:
Remis par:

WALTERSCHEID
Rohrverbindungstechnik GmbH

Hauptstraße 150
D-53797 Lohmar/Germany
Telefon (02246) 12-0
Telefax (02246) 12-3300, 12-3696

Postanschrift
Postal address / Adresse postale:
Postfach 1304, D-53786 Lohmar/Germany

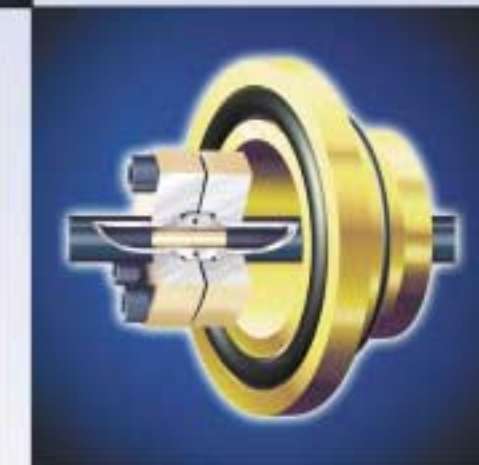
E-Mail: wrv.info@walterscheid.gknplc.com
<http://www.gknwrv.com>

WALTERSCHEID

Rohrverschraubungssysteme • Tube fitting systems • Systèmes de raccordement

Gesamtübersicht Complete overview Vue d'ensemble

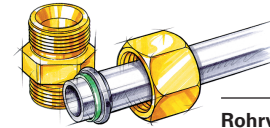
Rohrverschraubungssysteme Tube fitting systems Systèmes de raccordement



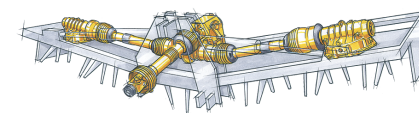
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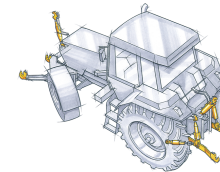
WALTERSCHEID
Rohrverbindungstechnik GmbH



Rohrverbindungstechnik	Tube Connection Technology	Technique de raccordement
WALPRO Profilring-Rohrverschraubungen WALPRO-X Profilring-Rohrverschraubungen in Edelstahl (1.4571)	WALPRO Profile ring tube fittings WALPRO-X Profile ring tube fittings in stainless steel (1.4571)	Raccords à bague profilée WALPRO Raccords à bague profilée WALPRO-X en acier inoxydable (1.4571)
WALFORMplus-Rohrverschraubungen in Stahl und Edelstahl (1.4571)	WALFORMplus tube fittings in steel and stainless steel (1.4571)	Raccords de tubes WALFORMplus en acier et acier inoxydable (1.4571)
Bördel-Rohrverschraubungen Bördelflansche 37° SAE J518/ISO 6162	Flare tube fittings 37° Flared flanges SAE J518/ISO 6162	Raccords pour tube évasé Brides d'évasement 37° SAE J518/ISO 6162
Schweißnippel-Rohrverschraubungen	Welding nipple tube fittings	Raccords avec embout à souder
Flansch-, Schwenk-, Dreh-, Dichtkegel-Verschraubungen	Flange, Banjo, Swivelling, Taper fittings	Raccords à bride, raccords orientables, raccords tournants, raccords avec cône d'étanchéité
Wechselventile	Shuttle valves	Soupapes à deux voies
Kugelhähne	Ball valves	Robinets à boisseau sphérique
Rückschlagventile	Non-return valves	Clapets anti-retour



DLS Drive Line System	DLS Drive Line System	DLS Drive Line System (Système d'entraînement)
Gelenkwellen Weitwinkel-Gleichlauf-Gelenkwellen Überlast- und Freilaufkupplungen Winkelgetriebe, Zahnradgetriebe	PTO Drive Shafts Wide-Angle CV PTO Drive Shafts Overload and Overrunning Clutches Bevel Gearboxes Gear Units	Transmissions, transmissions à joint(s) grand angle, homocinétique(s) Limiteurs de couple et roues libres Boîtiers renvoi d'angle Ensembles à engrenages



TAS Traktor-Anbau-Systeme	TAS Tractor Attachment Systems	TAS Systèmes d'attelage pour tracteur
Dreipunkt-Schnellkuppler für Heck und Front	Rear and Front-Mounted Three-Point Quick Coupler	Attelage rapide trois points à l'arrière et à l'avant du tracteur

Über Einzelheiten der Walterscheid-Fertigungsprogramme informieren Druckschriften, die bei Bedarf gerne zugesandt werden.

Printed documents with details on the individual Walterscheid product lines are available on request.

Toute documentation concernant les fabrications Walterscheid sera envoyée sur demande.



**WALTERSCHEID
Rohrverbindungstechnik GmbH**

Hauptstraße 150
D-53797 Lohmar/Germany
Telefon (02246) 12-0
Telefax (02246) 12-3300, 12-3696

Postanschrift
Postal address / Adresse postale:
Postfach 1304, D-53786 Lohmar/Germany
E-Mail: wrv.info@walterscheid.gknplc.com
<http://www.gknwrv.com>

QUALITÄTS- UND UMWELT-
MANAGEMENTSYSTEM



DQS-zertifiziert nach
DIN EN ISO 9001 DIN EN ISO 14001
Reg.-Nr. 3930-02

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WALTERSCHEID
Rohrverbindungstechnik GmbH

Hauptstraße 150
D-53797 Lohmar/Germany
Telefon (02246) 12-0
Telefax (02246) 12-3300, 12-3696

Postanschrift
Postal address / Adresse postale:
Postfach 1304, D-53786 Lohmar/Germany
E-Mail: wrv.info@walterscheid.gknplc.com
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QUALITÄTS- UND UMWELT-
MANAGEMENTSYSTEM



DQS-zertifiziert nach
DIN EN ISO 9001 DIN EN ISO 14001
Reg.-Nr. 3930-02

Allgemeine Informationen	General information	Généralités	A
Technische Informationen	Technical information	Informations techniques	B
Montageanleitungen	Assembly instructions	Instructions de montage	C
Rohr-Anschlußteile	Nuts and rings	Bagues et écrous	D
Einschraubstutzen Verbindungsstutzen Schottstutzen Schweißstutzen	Male stud couplings (body only) Tube connectors (body only) Bulkhead fittings (body only) Weld fittings (body only)	Union simple mâle (corps) Raccords pour tubes (corps) Raccords de cloison (corps) Raccords à souder (corps)	E
Richtungseinstellbare Stutzen	Adjustable fittings (body only)	Raccords orientables (corps)	F
Drehstutzen Rückschlagventile (Stutzen) Wechselventile (Stutzen) Kugelhähne (Stutzen)	Swivel banjos (body only) Non-return valves (body only) Shuttle valves (body only) Ball valves (body only)	Raccords tournants (corps) Clapets anti-retour (corps) Soupapes à deux voies (corps) Robinets à boisseau sphérique (corps)	G
Reduzierstutzen Flanschstutzen Aufschraubstutzen Manometerstutzen	Reducing fittings (body only) Flange fittings (body only) Female fittings (body only) Gauge fittings (body only)	Raccords de réduction (corps) Raccords à brides (corps) Raccords femelles (corps) Raccords pour manomètres (corps)	H
Einschraubverschraubungen Verbindungsverschraubungen Schottverschraubungen Schweißverschraubungen	Male stud fittings Tube connectors Bulkhead fittings Weld fittings	Raccords mâles Raccords pour tubes Raccords de cloison Raccords à souder	I
Richtungseinstellbare Verschraubungen	Adjustable fittings	Raccords orientables	K
Drehverschraubungen Rückschlagventile Wechselventile Kugelhähne	Swivel banjos Non-return valves Shuttle valves Ball valves	Raccords tournants Clapets anti-retour Soupapes à deux voies Robinets à boisseau sphérique	L
Reduzierverschraubungen Flanschverschraubungen Aufschraubverschraubungen Manometerverschraubungen	Reducing fittings Flange fittings Female fittings Manometer fittings	Raccords de réduction Raccords à brides Raccords femelles Raccords pour manomètres	M
Bördelflange 37° SAE J518/ISO 6162	37° flared flanges SAE J518/ISO 6162	Brides d'évasement 37° SAE J518/ISO 6162	N
Verschlussstopfen / Verschlusschrauben Einsteckhülsen Schweißnippel Hand-Vormontaggestutzen O-Ringe	Blanking plugs / Blanking ends Tube inserts Welding nipples Adapter for manual pre-assembly O-rings	Bouchons obturateurs / Vis d'obturation Fourrures Embouts à souder Bloc de pré-sertissage manuel Joints toriques	O
Maschinen und Werkzeuge Vertretungen	Machines and tools Agents	Machines et outils Représentants	P

■ = Seite / Page / Page

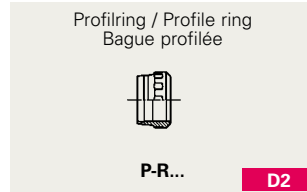
Zusätzlich abgebildet: Passende Komplettverschraubungen nur mit Profiling!
 Also shown: Complete matching tube fittings with profile ring!
 Egalement représenté: Raccords du tubes adaptés, complet avec bague profilée!

Rohr-Anschlußteile / Nuts and rings / Bagues et écrous

Rohr-Anschlußteile für Profiling-Rohrverschraubungen

Nuts and rings for profile ring tube fittings

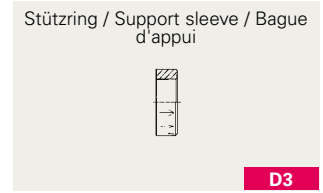
Éléments de raccord pour raccords à bague profilée



Rohr-Anschlußteile für WALFORM-Rohrverschraubungen

Nuts and rings for WALFORM tube fittings

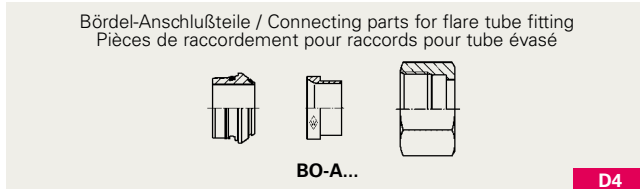
Éléments de raccord pour raccords à WALFORM



Bördel-Anschlußteile für Bördel-Rohrverschraubungen

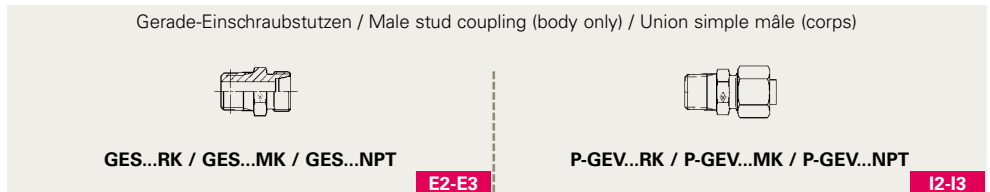
Connecting parts for flare tube fittings

Pièces de raccordement pour raccords pour tube évasé



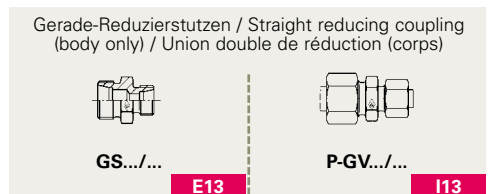
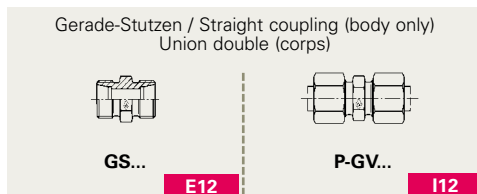
Einschraubstutzen / Male stud coupling (body only) / Union simple mâle (corps)

Einschraubstutzen
Male stud coupling (body only)
Union simple mâle (corps)



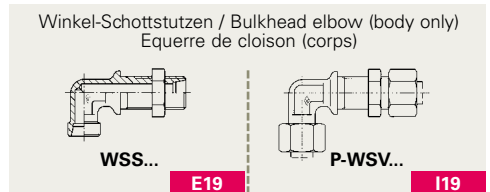
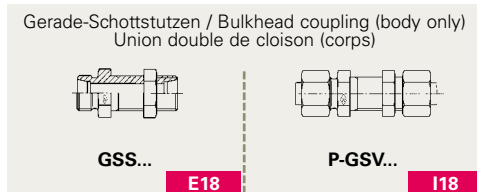
Verbindungsstutzen / Tube connectors (body only) / Raccords pour tubes (corps)

Verbindungsstutzen
Tube connectors (body only)
Raccords pour tubes (corps)



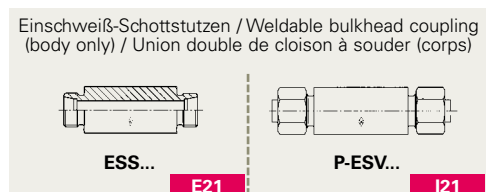
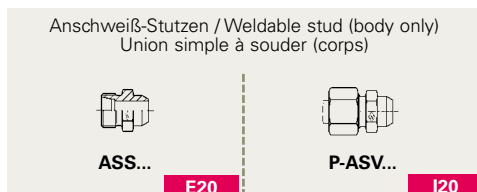
Schottstutzen / Bulkhead fittings (body only) / Raccords de cloison (corps)

Schottstutzen
Bulkhead fittings (body only)
Raccords de cloison (corps)



Schweißstutzen / Weld fittings (body only) / Raccords à souder (corps)

Schweißstutzen
Weld fittings (body only)
Raccords à souder (corps)



Druckring / Loose sleeve
Manchette



BO-DR...

D6

Überwurfmutter / Nut / Ecrou



BO-M...

D7

Schutzkappe für Zwischenring, rohseitig
Protection cap for centre unit, tube end
Capuchon protecteur pour cône intermédiaire, côté tube



D8

Gerade-Einschraubstutzen / Male stud coupling (body only)
Union simple mâle (corps)



**GES...R / GES...M / GES...R-WD
GES...M-WD / GES...UNF/UN**

E4-E8



**P-GEV...R / P-GEV...M / P-GEV...R-WD
P-GEV...M-WD / P-GEV...UNF/UN**

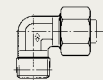
I4-I8

Winkel-Einschraubstutzen / Male stud elbow (body only) / Equerre mâle (corps)



WES...RK / WES...MK / WES...NPT

E9-E11



**P-WEV...RK / P-WEV...MK
P-WEV...NPT**

I9-I11

Winkel-Stutzen / Equal elbow
(body only) / Union équerre (corps)



WS...

E14



P-WV...

I14

T-Stutzen / Equal Tee (body only)
Union té (corps)



TS...

E15



P-TV...

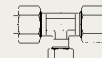
I15

T-Reduzierstutzen / Reducing Tee
(body only) / Union té de réduction
(corps)



TS.../...

E16



P-TV.../.../...

I16

Kreuz-Stutzen / Equal cross (body only)
Union croix (corps)



KS...

E17



P-KV...

I17

■ = Seite / Page / Page

Zusätzlich abgebildet: Passende Komplettverschraubungen nur mit Profiling!
 Also shown: Complete matching tube fittings with profile ring!
 Egalement représenté: Raccords du tubes adaptés, complet avec bague profilée!

Richtungseinstellbare Stutzen / Adjustable fittings (body only) / Raccords orientables (corps)

Schwenkstutzen
Banjo couplings (body only)
Raccords orientables (corps)

Winkel-Schwenkstutzen / Banjo coupling with one-piece bolt (body only) / Raccord orientable (corps)



RSWS...R / RSWS...M

F2-F5



P-RSWV...R / P-RSWV...M

K2-K5

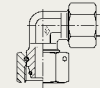
Einstellbare Stutzen
Adjustable fittings (body only)
Raccords orientables (corps)

Einstellbare Winkel-Stutzen / Adjustable male stud elbow (body only) / Equerre orientable (corps)



EWSD... / P-EWS...-SV

F10-F11



P-EWVD... / P-EWV...-SV

K10-K11

Einschraubstutzen
Male stud couplings (body only)
Union simple mâle (corps)

Gerade-Einschraubstutzen / Stud standpipe adaptor (body only) / Raccord d'orientation (corps)

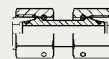


EGESD...R-WD / P-EGES...R-WD-SV
 EGESD...M-WD / P-EGES...M-WD-SV

F16-F19 + K16-K19

Verbindungen
Tube connectors
Raccords pour tubes

Gerade-Verbindung / Straight coupling / Union double



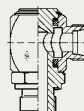
SNV

F21 + K21

Drehstutzen / Swivel banjos (body only) / Raccords tournants (corps)

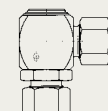
Drehstutzen
Swivel banjos (body only)
Raccords tournants (corps)

Winkel-Einschraub-Drehstutzen / Swivel banjo coupling (body only) / Raccord tournant équerre mâle (corps)



DGWES...R-WD / DGWES...M-WD

G4-G5



P-DGWEV...R-WD / P-DGWEV...M-WD

L4-L5

Rückschlagventile (Stutzen) / Non-return valves (body only) / Clapets anti-retour (corps)

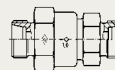
Rückschlagventile (Stutzen)
Non-return valves (body only)
Clapets anti-retour (corps)

Ventileinsatz / Valve insert /
 Insert clapet



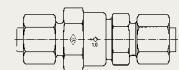
G8 + L8

Rückschlagventil (Stutzen) / Non-return valve (body only) / Clapet anti-retour mâle (corps)



RS...

G9



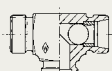
P-RV...

L9

Wechselventile (Stutzen) / Shuttle valves (body only) / Soupapes à deux voies (corps)

Wechselventile (Stutzen)
Shuttle valves (body only)
Soupapes à deux voies (corps)

Wechselventile (Stutzen) / Shuttle valves (body only) / Soupapes à deux voies (corps)



TWS...

G15



P-TWV...

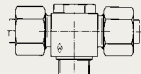
L15

T-Schwenkstutzen / Double banjo coupling with one-piece bolt (body only) / Raccord orientable (corps) exécution en Tè



RSTS...R / RSTS...M

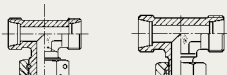
F6-F9



P-RSTV...R / P-RSTV...M

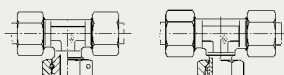
K6-K9

Einstellbare T-Stutzen / Adjustable branch Tee (body only) / Té orientable (corps)



ETSD... / P-ETS...-SV

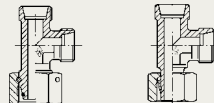
F12-F13



P-ETVD... / P-ETV...-SV

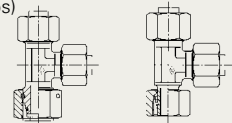
K12-K13

Einstellbare L-Stutzen / Adjustable male stud run Tee (body only) / Té renversé orientable (corps)



ELSD... / P-ELS...-SV

F14-F15



P-ELVD... / P-ELV...-SV

K14-K15

Gerade-Einschraubstutzen / Stud standpipe adaptor / Raccord d'orientation



EGESD...NPT

F20 + K20

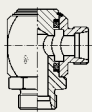
Gerade-Verbindung - Reduzierschraubung / Straight coupling - Reducing fitting / Union double - Raccord de réduction



SNV...L / SNV...S / SNV...L/S-S/L

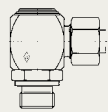
F22-F24 + K22-K24

Winkel-Drehstutzen / Swivel elbow coupling (body only) / Raccord tournant union équerre (corps)



DGWS...

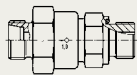
G6



P-DGWW

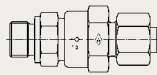
L6

Einschraub-Rückschlagventil (Stutzen) / Non-return valve with male stud (body only) / Clapet anti-retour mâle (corps)



RSV...R-WD / RSV...M-WD

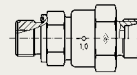
G10-G11



P-RVV...R-WD / P-RVV...M-WD

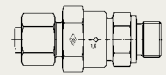
L10-L11

Einschraub-Rückschlagventil (Stutzen) / Non-return valve with male stud (body only) / Clapet anti-retour mâle (corps)



RSZ...R-WD / RSZ...M-WD

G12-G13



P-RVZ...R-WD / P-RVZ...M-WD

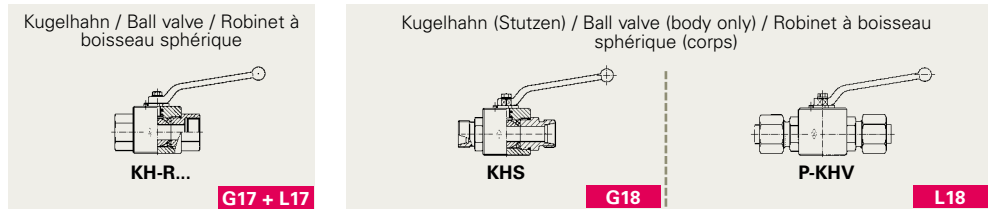
L12-L13

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Zusätzlich abgebildet: Passende Komplettverschraubungen nur mit Profiling!
 Also shown: Complete matching tube fittings with profile ring!
 Egalement représenté: Raccords du tubes adaptés, complet avec bague profilée!

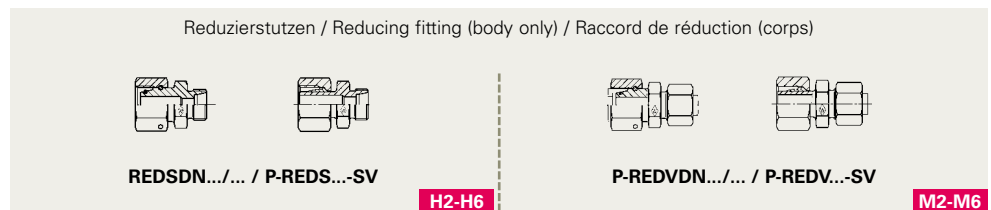
Kugelhähne (Stutzen) / Ball valves (body only) / Robinets à boisseau sphérique (corps)

Hochdruck-Kugelhähne (Stutzen)
High-pressure ball valves (body only)
Robinets à boisseau sphérique
pour hautes pressions (corps)



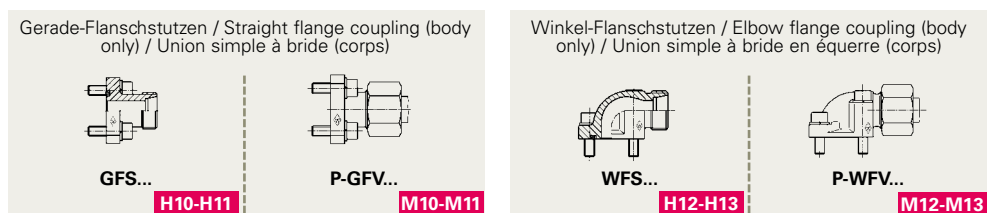
Reduzierstutzen / Reducing fittings (body only) / Raccords de réduction (corps)

Reduzierstutzen
Reducing fittings (body only)
Raccords de réduction (corps)



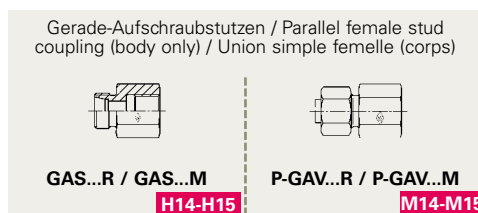
Flanschstutzen / Flange fittings (body only) / Raccords à brides (corps)

Flanschstutzen
Flange fittings (body only)
Raccords à brides (corps)



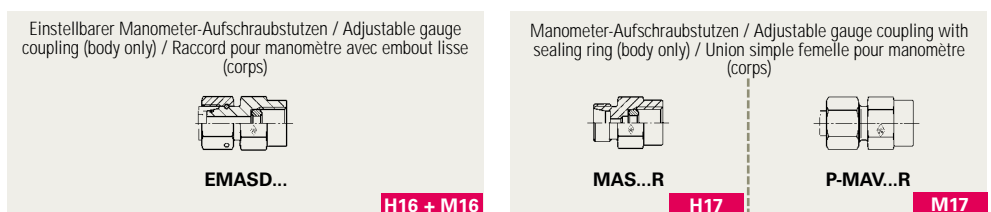
Aufschraubstutzen / Female fittings (body only) / Raccords femelles (corps)

Aufschraubstutzen
Female fittings (body only)
Raccords femelles (corps)

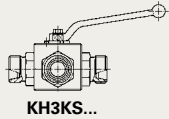


Manometerstutzen / Gauge fittings (body only) / Raccords pour manomètres (corps)

Manometerstutzen
Gauge fittings (body only)
Raccords pour manomètres (corps)

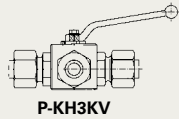


Kompakt-Umschalthahn (Stutzen) / Compact diverter valve (body only)
Robinet compact de renversement (corps)



KH3KS...

G19



P-KH3KV

L19

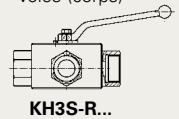
Kompakt-Umschalthahn (Stutzen) / Compact diverter valve (body only) / Robinet compact de renversement (corps)



KH3KS-R...

G20 + L20

Dreibege-Kugelhahn (Stutzen) / Three-way ball valve (body only) / Robinet à trois voies (corps)



KH3S-R...

G21 + L21

Gewinde-Reduzierstutzen mit Weichdichtung / Reducing adaptor with captive seal (body only) / Réduction fileté avec joint mou (corps)



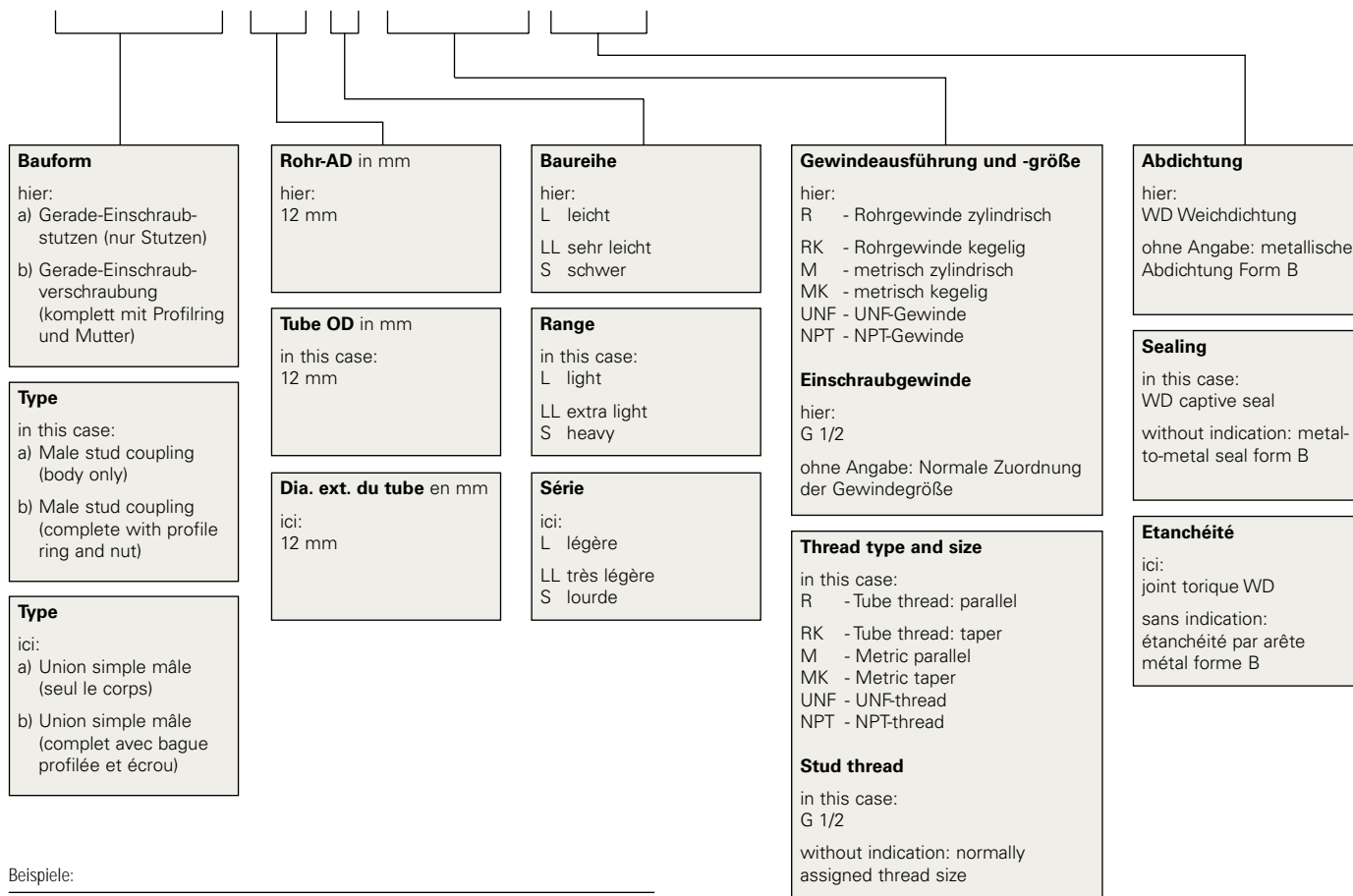
RED...-WD/...

H7-H8 + M7-M8



Bestellbeispiel / Ordering example / Exemple de commande

a) **GES 12 L/R 1/2-WD**
b) **P-GEV 12 L/R 1/2-WD**



Beispiele:

GES 10 LR	Gerade-Einschraubstutzen, 10 mm Rohr-AD, leichte Baureihe, Rohrgewinde zylindrisch
P-GEV 10 LR	Gerade Profilring-Einschraubverschraubung, 10 mm Rohr-AD, leichte Baureihe, Rohrgewinde zylindrisch
RSWS 38SM	Winkel-Schwenkstutzen, 38 mm Rohr-AD, schwere Baureihe, Gewinde metrisch zylindrisch
EGESD 12 S/R 1/2-WD	Gerade-Einschraubstutzen mit Dichtkegel, 12 mm Rohr-AD, schwere Baureihe, Rohrgewinde zylindrisch G 1/2, Weichdichtung

Examples:

GES 10 LR	Male stud coupling (body only), 10 mm tube OD, light range, tube thread parallel
P-GEV 10 LR	Male stud coupling with profile ring, 10 mm tube OD, light range, tube thread parallel
RSWS 38SM	Banjo coupling with one-piece bolt (body only), tube OD 38 mm, heavy range, thread metric parallel
EGESD 12 S/R 1/2-WD	Male stud coupling with taper (body only), 12 mm tube OD, heavy range, tube thread parallel G 1/2, captive seal

Exemples:

GES 10 LR	Union simple mâle (corps), dia. ext. du tube 10 mm, série légère, filetage du tube cylindrique
P-GEV 10 LR	Union simple mâle avec bague profilée, dia. ext. du tube 10 mm, série légère, filetage du tube cylindrique
RSWS 38SM	Raccord orientable (corps), dia. ext. du tube 38 mm, série lourde, filetage métrique cylindrique
EGESD 12 S/R 1/2-WD	Union simple mâle avec cône d'étanchéité (corps), dia. ext. du tube 12 mm, série lourde, filetage du tube cylindrique G 1/2, joint mou

Type et dimension de filetage

ici:
R - Filetage du tube: cylindrique
RK - Filetage du tube: conique
M - Métrique cylindrique
MK - Métrique conique
UNF - Filetage UNF
NPT - Filetage NPT

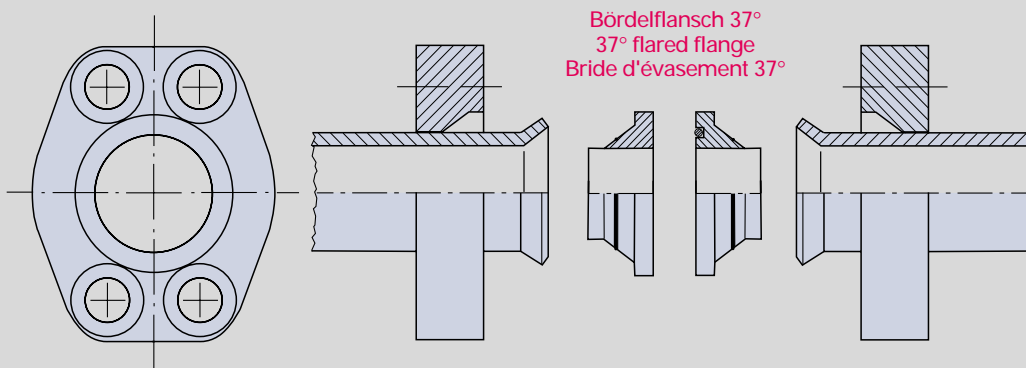
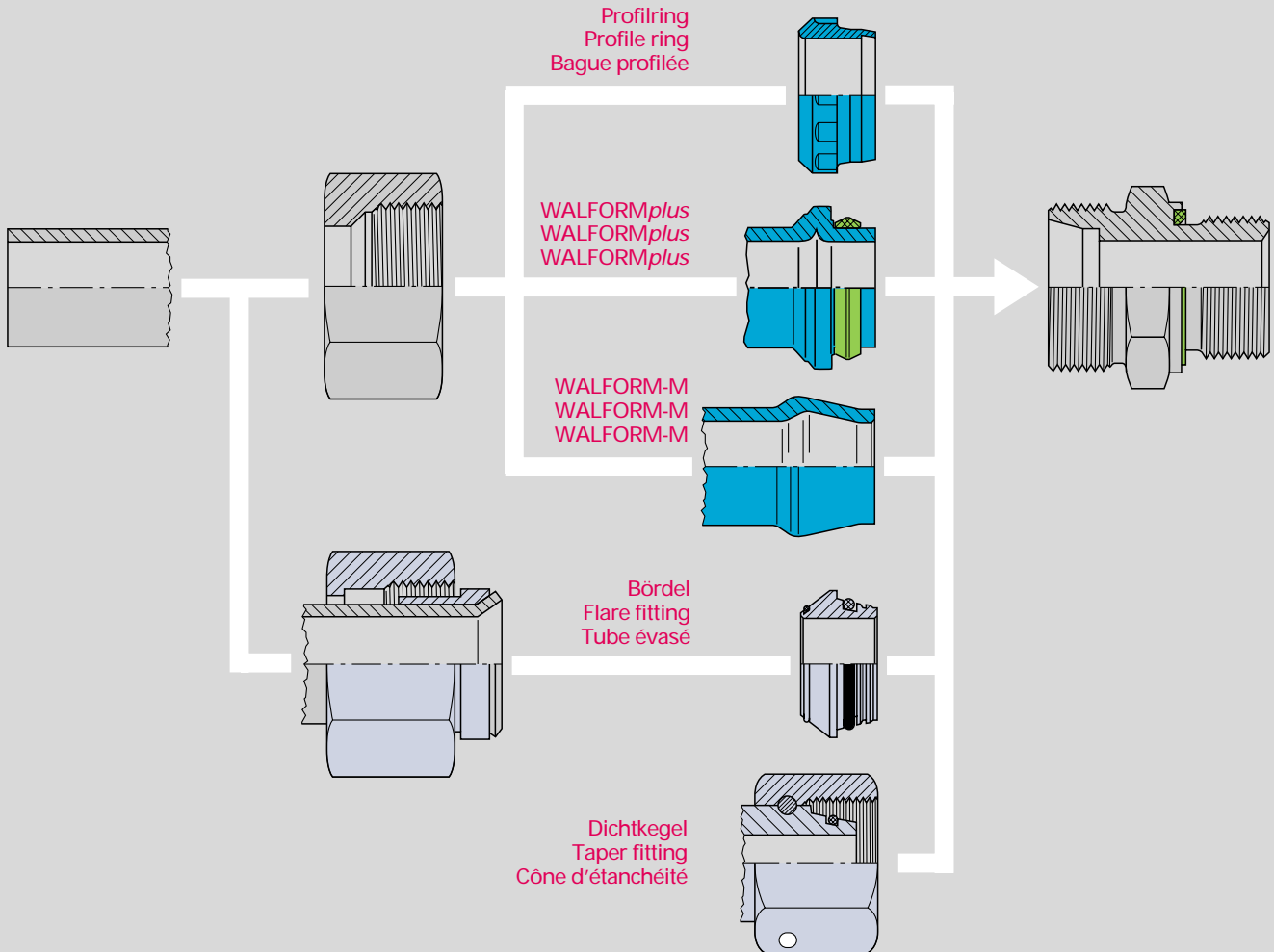
Filetage mâle

ici:
G 1/2
sans indication: dimension de filetage normalement attribuée

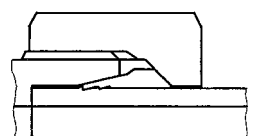


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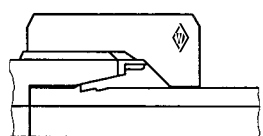
Für jedes Verbindungsproblem die wirtschaftlichste Lösung
 The economical solution to every coupling problem
 Pour tout problème de raccordement la solution la plus économique



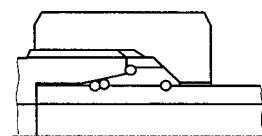
Systemvergleich / Comparison of systems / Comparaison des systèmes



Z-R



P-R



○ = mögliche Dichtungen / possible seals / joints éventuels

S-R / Z-R+WD

	Zweikanten-Schneidring	Profiling Zweikanten-Schneidring	Schneidring + Weichdichtung
Normung Teile nach Norm	DIN 2353 DIN EN ISO 8434-1 alle Einzelteile	DIN 2353 DIN EN ISO 8434-1 alle Einzelteile	DIN 2353 DIN EN ISO 8434-1 Stützen und Mutter
System-Merkmal	Kraftschluß = kombinierte Dicht- / Haltefunktion	Kraftschluß = kombinierte Dicht- / Haltefunktion	Kraftschluß = kombinierte Dicht- / Haltefunktion
Anzahl der Bauteile	3	3	4 (systemabhängig)
Anzahl der Leckpfade Dichtprinzip	2 metallisch	2 metallisch	2 elastomer
Anzugsweg/Kraftanzug*	360° (180° nach Vormontage)	360° (180° nach Vormontage) (30° Gesteuerte Endmontage)	360°
Risiko für Montagefehler	groß	mittel, gering bei Gesteuerter Endmontage	groß
Reparatur / Service üblich mit	Z-R, P-R	Z-R, P-R	S-R + WD Z-R, P-R

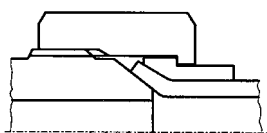
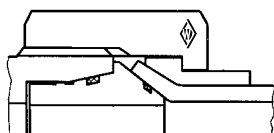
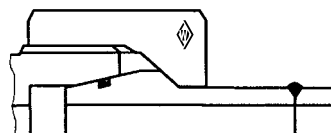
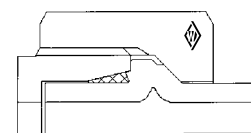
	Two-edge cutting ring	Profile ring Two-edge cutting ring	Cutting ring + captive seal
Standards Parts to standard	DIN 2353 DIN EN ISO 8434-1 all components	DIN 2353 DIN EN ISO 8434-1 all components	DIN 2353 DIN EN ISO 8434-1 body and nut
System characteristic	Non-positive fit = combined sealing / supporting function	Non-positive fit = combined sealing / supporting function	Non-positive fit = combined sealing / supporting function
Number of components	3	3	4 (depending on system)
Number of leak paths Sealing principle	2 metal-to-metal	2 metal-to-metal	2 elastomer
Tightening travel/ Tightening with excessive force*	360° (180° after pre-assembly)	360° (180° after pre-assembly) (30° controlled final assembly)	360°
Risk of assembly errors	high	moderate, low for controlled final assembly	high
Repair / Service usually with	Z-R, P-R	Z-R, P-R	S-R + WD Z-R, P-R

	Bague coupante à deux tranches	Bague profilée Bague coupante à deux tranches	Bague coupante + joint mou
Normes Pièces normalisées	DIN 2353 DIN EN ISO 8434-1 tous les composants	DIN 2353 DIN EN ISO 8434-1 tous les composants	DIN 2353 DIN EN ISO 8434-1 corps du raccord et écrou
Caractéristique du système	Adhérence = fonctions étanchéité / ancrage combinées	Adhérence = fonctions étanchéité / ancrage combinées	Adhérence = fonctions étanchéité / ancrage combinées
Nombre de composants	3	3	4 (en fonction du système)
Nombre de voies de fuite Principe d'étanchéité	2 métallique	2 métallique	2 élastomère
Course de serrage / Effort de serrage*	360° (180° après pré-sertissage)	360° (180° après pré-sertissage) (30° montage final contrôlé)	360°
Risque de défaut de montage	élevé	moyen, faible pour le montage final contrôlé	élevé
Réparation / Service normalement par	Z-R, P-R	Z-R, P-R	S-R + WD Z-R, P-R

Z-R = Zweikanten-Schneidring
P-R = Profiling
S-R / Z-R + WD = Schneidring + Weichdichtung
B = Bördel
BO = Bördel-Adapter mit O-Ring
SN = Schweißnippel
WFplus = WALFORMplus

Z-R = Two-edge cutting ring
P-R = Profile ring
S-R / Z-R + WD = Cutting ring + captive seal
B = Flare fitting
BO = Flare fitting with O-ring
SN = Welding nipple
WFplus = Captive seal WALFORMplus

Z-R = Bague coupante à deux tranches
P-R = Bague profilée
S-R / Z-R + WD = Bague coupante + joint mou
B = Raccord pour tube évasé
BO = Raccord pour tube évasé avec joint torique
SN = Embout à souder
WFplus = Joint mou WALFORMplus

**B****BO****SN****WFplus**

Bördel	Bördel-Adapter mit O-Ring	Schweißsnippel	WALFORMplus
SAE J 514 ISO 8434-2 alle Einzelteile	DIN 3949 alle Einzelteile	DIN 3865, Form A ISO 8434-4 alle Einzelteile	DIN 2353 DIN EN ISO 8434-1 Stützen und Mutter
Formschluß = getrennte Dicht- / Haltefunktionen	Formschluß = getrennte Dicht- / Haltefunktionen	Formschluß = getrennte Dicht- / Haltefunktionen	Formschluß = getrennte Dicht- / Haltefunktionen
3	4 (6 incl. O-Ringe)	3 (4 incl. O-Ring)	2 (3 incl. Dichtung)
1 metallisch	2 elastomer	1 elastomer	1 elastomer + metallisch
90°-180°	90° bzw. 180°	120°	Festpunkt
mittel	gering	mittel	sehr gering
B oft mit Z-R, P-R = neue Verschraubung	BO oft mit Z-R, P-R = neue Mutter	SN WF-WD / WFplus	WFplus, WF-WD, S-R + WD SN, Z-R, P-R

Flare fitting	Flare fitting with O-ring	Welding nipple	Captive seal WALFORMplus
SAE J 514 ISO 8434-2 all components	DIN 3949 all components	DIN 3865, Form A ISO 8434-4 all components	DIN 2353 DIN EN ISO 8434-1 body and nut
Positive fit= separate sealing and supporting functions	Positive fit= separate sealing and supporting functions	Positive fit= separate sealing and supporting functions	Positive fit= separate sealing and supporting functions
3	4 (6 incl. O-rings)	3 (4 incl. O-rings)	2 (3 incl. seal)
1 metal-to-metal	2 elastomer	1 elastomer	1 elastomer + metal-to-metal
90°-180°	90° or 180°	120°	Increase in force
average	low	average	very low
B often with Z-R, P-R = new fitting	BO often with Z-R, P-R = new nut	SN, WF-WD / WFplus	WFplus, WF-WD, S-R + WD SN, Z-R, P-R

Raccord pour tube évasé	Raccord pour tube évasé avec joint torique	Embout à souder	Joint mou WALFORMplus
SAE J 514 ISO 8434-2 tous les composants	DIN 3949 tous les composants	DIN 3865, forme A ISO 8434-4 tous les composants	DIN 2353 DIN EN ISO 8434-1 corps du raccord et écrou
Blocage mécanique = fonctions étanchéité / ancrage séparées	Blocage mécanique = fonctions étanchéité / ancrage séparées	Blocage mécanique = fonctions étanchéité / ancrage séparées	Blocage mécanique = fonctions étanchéité / ancrage séparées
3	4 (6, joints toriques inclus)	3 (4, joints toriques inclus)	2 (3, joint inclu)
1 métallique	2 élastomère	1 élastomère	1 élastomère + métallique
90°-180°	90° ou 180°	120°	Point de résistance
moyen	faible	moyen	très faible
B souvent avec Z-R, P-R = nouveau raccord	BO souvent avec Z-R, P-R = nouvel écrou	SN WF-WD / WFplus	WFplus, WF-WD, S-R + WD SN, Z-R, P-R

* siehe auch Herstellerangaben
* also see manufacturer's instructions
* voir aussi les indications du constructeur

In jeder Situation der richtige Partner

Walterscheid bietet hohe Service-Qualität. Flexibilität und individuell gestaltete Angebote spielen dabei eine wichtige Rolle. Walterscheid-Kunden kennen ihr vertrautes Team, das ihnen mit Rat und Tat zur Seite steht - ob Unterstützung am Telefon oder Service vor Ort.

Walterscheid Service-Checks

- Qualifizierte Einweisung
- Telefon-Notdienst außerhalb der üblichen Geschäftszeiten
- Service-Checks für Maschinen und Werkzeuge
- Reparatur und Austausch von Maschinen

Walterscheid Schulungen

- Produktschulungen und
- Montageschulungen der verschiedensten Verschraubungssysteme.

Walterscheid Leasing

- Leasingangebote für alle gängigen Maschinen und Werkzeuge auf Anfrage erhältlich

The right partner in every situation

Walterscheid offers high-quality service. Flexibility and customised offers play a major role in this context. Walterscheid customers know the team that is there to give them help and advice - be it telephone support or on-site service.

Walterscheid service checks

- Qualified instruction
- Emergency telephone service after normal business hours
- Service checks for machines and tools
- Repair and replacement of machines

Walterscheid training courses

- Product training and
- Assembly training for the various fitting systems.

Walterscheid Leasing

- Leasing offers for all common machines and tools available on request

Le bon partenaire dans toutes les situations

Walterscheid offre une qualité de S.A.V. de tout premier ordre. A cet égard, la flexibilité et les offres individuelles jouent un rôle important. Les clients de Walterscheid se sont familiarisés avec leur équipe qui les soutient en paroles et en actes - que ce soit par une assistance téléphonique ou un S.A.V. sur le tas.

Les chèques S.A.V. de Walterscheid

- Initiation qualifiée
- Service de secours téléphonique en dehors des heures d'ouverture normales
- Chèques S.A.V. pour machines et outils
- Réparation et échange de machines

Formations Walterscheid

- Des formations relatives aux produits et
- Des formations relatives au montage des différents systèmes de raccordement.

Leasing de Walterscheid

- Offres de leasing disponibles sur demande pour toutes les machines et les outils usuels



Walterscheid Projekt-Beratung

- Frühzeitige Unterstützung bereits in der Planungsphase von Rohrverbindungssystemen
- Vorschläge zu deren Optimierung
- Beratung bei kritischen Einbauverhältnissen
- Empfehlungen für Bereiche mit höchsten Sicherheitsanforderungen
- Unterstützung in Fragen der Auswahl und Verlegung von Rohrleitungen
- Hilfe bei Probeverrohrungen

Walterscheid Analysen

Am Ende eines aufwendigen Analyseprozesses bieten wir Ihnen herstellerunabhängig

- die Expertise oder
- das Schadensgutachten.

Walterscheid - Partner weltweit

Produktideen von Walterscheid haben sich erfolgreich durchgesetzt, denn Qualität kennt keine Ländergrenzen. Walterscheid-Rohrverschraubungen werden in alle Länder Europas und nach Übersee exportiert. Und durch ein weltweites dichtes Vertriebsnetz mit regionalen Lagern ist eine schnelle Belieferung sichergestellt.

Walterscheid project consulting

- Early assistance right at the planning stage of tube fitting systems
- Proposals for their optimisation
- Advice in case of critical installation conditions
- Recommendations for fields involving maximum safety requirements
- Support in the selection and installation of piping
- Help with sample piping installations

Walterscheid analyses

At the end of a complex analytical process, we offer you, regardless of manufacturer,

- an expert opinion or
- a damage appraisal.

Walterscheid - Worldwide partners

Product ideas from Walterscheid are a success - after all, quality knows no bounds. Walterscheid tube fittings are exported to every country in Europe and also overseas. And we can guarantee rapid delivery thanks to an extensive global sales network with regional warehouses.

Assistance Walterscheid aux projets

- Une assistance précoce dès la phase de planification de systèmes de raccordement de tubes
- Des propositions d'optimisation
- Des conseils dans les cas de conditions de montage critiques
- Des préconisations pour les secteurs à exigences sécuritaires maximales
- Une assistance dans la sélection et la pose de tuyauteries
- Une aide aux tubages d'essai

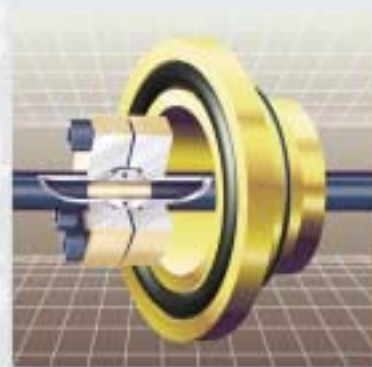
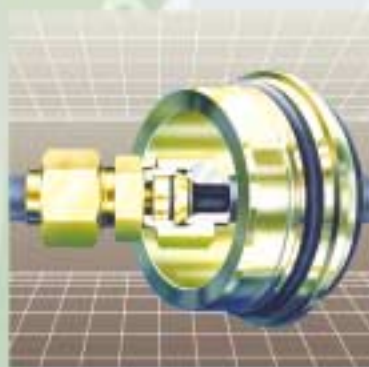
Analyses Walterscheid

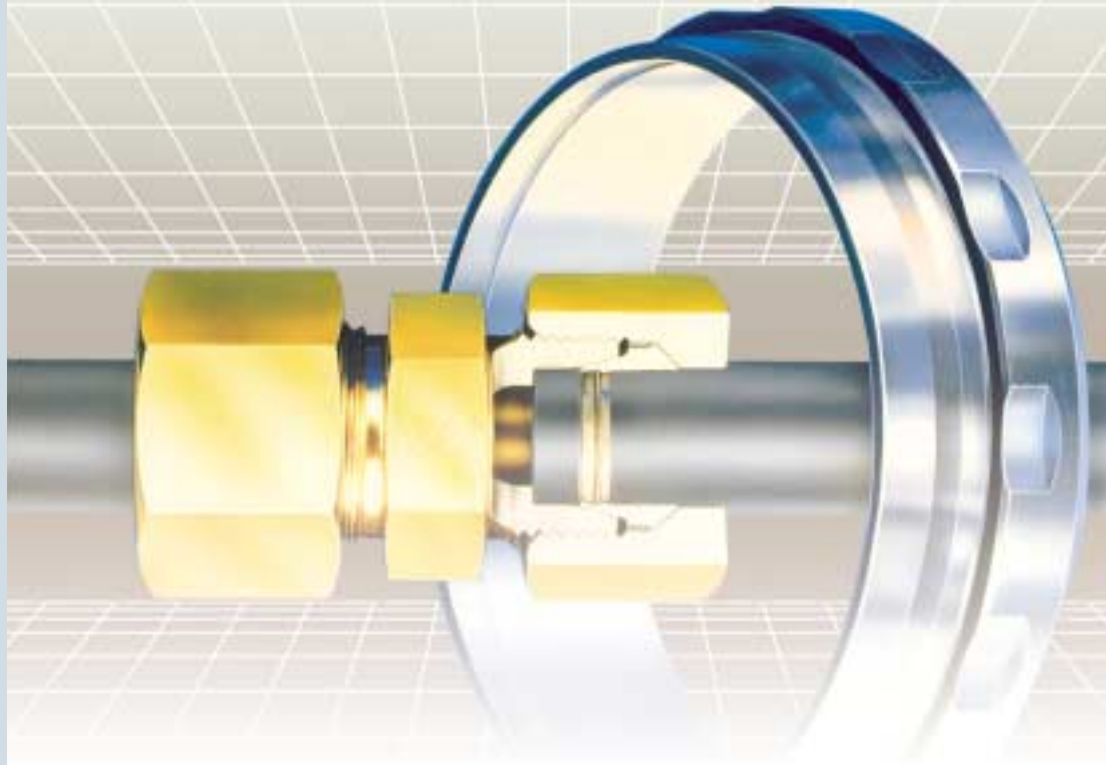
Au terme d'un processus d'analyse onéreux, nous vous proposons, indépendamment du constructeur:

- l'expertise ou
- le rapport d'expertise du dommage.

Walterscheid - Partenaire mondial

Les idées innovatrices de Walterscheid se sont imposées avec succès, car la qualité des produits ne connaît pas de frontières. Les raccords de tubes Walterscheid sont exportés dans tous les pays d'Europe et vers les territoires d'outre-mer. De plus, un réseau de distribution serré avec des entrepôts régionaux à l'échelle mondiale permettent d'assurer un approvisionnement rapide.





Funktionsbeschreibung
Functional characteristics
Description fonctionnelle

**Profiling-
Rohrverschraubungen
Profile ring tube fittings
Raccords à bague
profilée pour tubes**

Die WALPRO-Verschraubung gewährleistet aufgrund ihrer idealen Formgebung eine sichere und dichte Rohrverbindung.

Bei der Montage der WALPRO-Verschraubung schneidet der WALPRO-Ring mit seinen zwei Schneidkanten in das Rohr ein und erzeugt eine formschlüssige Rohrhalterung. Gleichzeitig wird durch den Konus der Überwurfmutter die profilierte Schneidringschulter so weit radial verformt, daß eine feste Einspannung des Rohres zur Aufnahme von Biegebelastung erreicht wird.

Die radiale und axiale Abdichtung wird durch das Verkeilen des Ringes zwischen Rohr und Verschraubungsstutzen erzielt.

Durch ein progressiv zunehmendes Anzugsdrehmoment bei Montageende wird eine hohe Montagesicherheit gewährleistet.

Die WALPRO-Verschraubung läßt sich beliebig oft lösen und wieder montieren.

Die angegebenen Leistungen der WALPRO-Verschraubung werden nur erreicht bei ausschließlicher Verwendung von WALPRO-Originalteilen und Ausführung der Montage entsprechend der Montagevorschrift.

Owing to its ideal shape, the WALPRO fitting ensures safe and tight tube connection.

During assembly of the WALPRO fitting, the two cutting edges of the WALPRO ring penetrate into the tube creating a safe connection. At the same time, the cone of the nut deforms the profiled cutting ring shoulder so that the tube is tightly clamped and able to absorb bending stresses.

Radial and axial sealing is assumed by the ring's being wedge between tube and fitting body.

A progressively increasing tightening torque guarantees high safety of assembly.

WALPRO fittings can be disassembled and reassembled as often as necessary.

The performance as indicated for the WALPRO fitting can only be achieved by original WALPRO components and completion of assembly according to instructions.

Grâce à sa conception idéale, le raccord WALPRO permet le raccordement sûr et étanche de tubes.

Lors du montage du raccord WALPRO, les deux tranches de la bague WALPRO pénètrent dans le tube ainsi ancrant celui-ci par blocage mécanique. En même temps, le cône de l'écrou déforme l'épaulement profilé de la bague coupante de façon qu'un ancrage étroit du tube soit atteint permettant l'absorption de forces de flexion.

Le calage de la bague entre le tube et le corps du raccord assure l'étanchéité radiale et axiale.

Grâce à l'augmentation progressive du couple de serrage, une haute sécurité de montage est obtenue.

Le raccord WALPRO peut être déserré et remonté à volonté.

Les capacités du raccord WALPRO ne peuvent être atteintes qu'avec les pièces d'origine WALPRO et le montage suivant les instructions correspondantes.

Computeroptimierte Rohrverbindungstechnologie

Die WALPRO-Profiling-Rohrverschraubung ist eine in ihrer Gesamtheit optimierte Entwicklung, die heutigen und zukünftigen Marktforderungen entspricht. Mit Hilfe modernster Berechnungsmethoden wurde eine wesentlich höhere Leistung und eine höhere Montagesicherheit geschaffen. Dies beruht maßgeblich auf einer axial steifen Ringkonstruktion, die im Schulterbereich gezielt eine Schwächung in radialer Richtung durch eine Profilingung erhielt. Durch eine neuartige Spangeometrie wurde eine hohe Dichtwirkung und das Eliminieren des Nachschneidens erreicht.

Der eindeutige Nutzenvorteil für den Anwender:

- höhere Funktionssicherheit
- Reduzierung der Montagekosten
- Reduzierung der Nacharbeitskosten
- Reduzierung der Betriebskosten

Computer-optimized technology for the connection of tubes

The WALPRO profile ring fitting has been optimized in its entirety to satisfy the market requirements of today and tomorrow. Greatly improved performance values and more reliable assembly have been achieved with the aid of modern computing methods. The improvements are due primarily to an axially stiff ring design which has been specifically weakened radially by profiling the shoulder. The new chip geometry results in a high degree of tightness and eliminates subsequent penetration.

The main benefits for the user are:

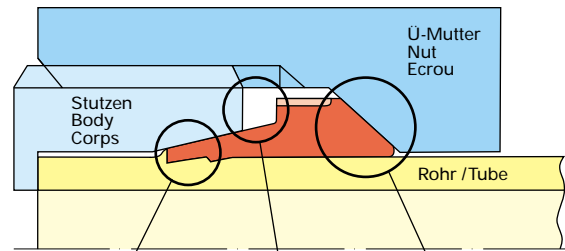
- greater functional reliability
- lower assembly costs
- lower reworking costs
- lower operating costs

La technologie optimale informatisée des raccords de tubes

Le raccord à bague profilée WALPRO constitue dans son ensemble une mise au point optimisée, satisfaisant les exigences actuelles et futures du marché. Sur la base de méthodes de calcul des plus modernes, il a été possible d'aboutir à des performances considérablement plus élevées ainsi qu'à une fiabilité accrue des montages. Ce résultat repose essentiellement sur la mise au point d'une bague à rigidité axiale qui, au niveau de l'épaule, a été affaiblie d'une manière dirigée dans le sens radial, au moyen d'un profilage adéquat. Une géométrie nouvelle des copeaux garantit un haut degré d'étanchéité, tout en supprimant la pénétration ultérieure.

Les avantages évidents pour l'utilisateur:

- Sécurité fonctionnelle plus élevée
- Réduction des coûts de montage
- Réduction des coûts de finissage
- Réduction des frais généraux



optimierter Schneidenbereich

- optimierter Schneidenwinkel
- keilförmige Schneidenflanke
- Spanstauchraum
- formstabile Schneide

optimized cutting area

- optimized cutting edge angle
- wedge-shaped cutting flank
- chip upsetting groove
- stable cutting area

tranchant optimisé

- angle de tranchant optimisé
- tranchant en forme de coin
- espace pour refoulement de la matière
- tranchant indéformable

optimierter Mittelbereich

- adaptierter Mittelkonus
- Begrenzungsanschlag gegen Überanzug

optimized center area

- ideal contact angle
- cone stop limit for assembly preventing excessive tightening

partie centrale optimisée

- cône central adapté
- butée de limitation évitant un serrage excessif

optimierte Schulterpartie

- Profilform mit Versteifungseffekt
- große Auflagefläche Ring-Mutter
- Auslaufradius

optimized shoulder area

- profile shape with strengthening effect
- large contact surface ring-nut
- end radius

épaulement optimisé

- forme profilée à effet de rigidification
- grande portée bague-écrou
- arrondi en bout de bague

radial nachgiebig

dadurch optimale Rohreinspannung

radial flexibility

thus positive clamping of the tube

flexibilité radiale

d'où serrage optimal du tube

kein Ausbeulen

dadurch optimale Ringbelastung

no bulging

thus positive load distribution on the ring

résistance au voilement

d'où distribution optimale de la charge sur la bague

axial steif

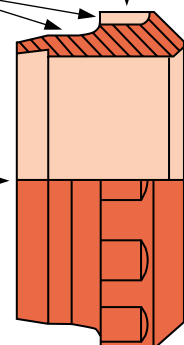
(Rippenversteifung) dadurch hohe Rohrhaltekraft, hohe Dichtheit

axial strengthening

(strengthening ribs) thus high degree of tube connection high degree of tightness

rigidité axiale

(par nervures) d'où capacité élevée d'ancrage du tube étanchéité élevée



Hohe Dichtheit durch . . .

- 100% Formschluß im Schneidenbereich
- hohe Dichtkraft (Vorspannung)
- kein Setzen und Nachschneiden

High degree of sealing efficiency

- 100% connection between the cutting ring and the tube
- High sealing strength (prestress)
- No settling or subsequent penetration

Étanchéité élevée

- Blocage mécanique à 100% au niveau du tranchant
- Capacité élevée d'étanchéité (précontrainte)
- Pas de tassement ni de repénétration



Schnittbild Profiling

Profilsystem = steifer Ring, kein Setzen
Spanstauchung = kein Nachschneiden
Freiwinkel negativ = zusätzliche Dichtzone, wesentlich höhere Dichtpressung

Cross section - Profile ring

Profile system = strengthened ring, no settling
Chip upsetting = no subsequent penetration
Negative clearance angle = additional sealing zone, essentially higher sealing pressure

Vue en coupe - Bague profilée

Profil = bague rigide, pas d'affaissement
Refoulement de la matière = pas de repénétration
Angle de dépouille négatif = zone d'étanchéité supplémentaire, pression d'étanchéité bien plus élevée



Schnittbild Zweischneidenring

dünner Ringquerschnitt = Setzen der Verbindung
partiell freiliegende Schneiden = Nachschneiden, Setzen
Freiwinkel an der Schneide ist Null = nur stirnseitige Abdichtung für die Stützseite

Cross section - Two-edge cutting ring

Thin cross section of ring = settling of connection
Partially uncovered cutting section = subsequent penetration, settling
Zero clearance at cutting edge = sealing for tube only on face, bad sealing to the body

Vue en coupe - Bague coupante double

Section transversale mince de la bague = affaissement du raccordement
Tranchants en partie dégagés = repénétration, affaissement
Angle de dépouille nul au niveau du tranchant = étanchéité côté tube seulement à la face, étanchéité insuffisante côté corps

Hohe Nenndrücke

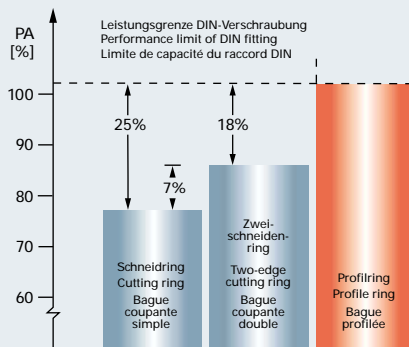
- L-Baureihe für Nenndrücke bis 500 bar
- S-Baureihe für Nenndrücke bis 800 bar
- Hohe Nenndrücke nur mit Walterscheid-Originalteilen

High nominal pressures

- L-series for nominal pressures up to 500 bar
- S-series for nominal pressures up to 800 bar
- High nominal pressures only obtained by original Walterscheid components

Pressions nominales élevées

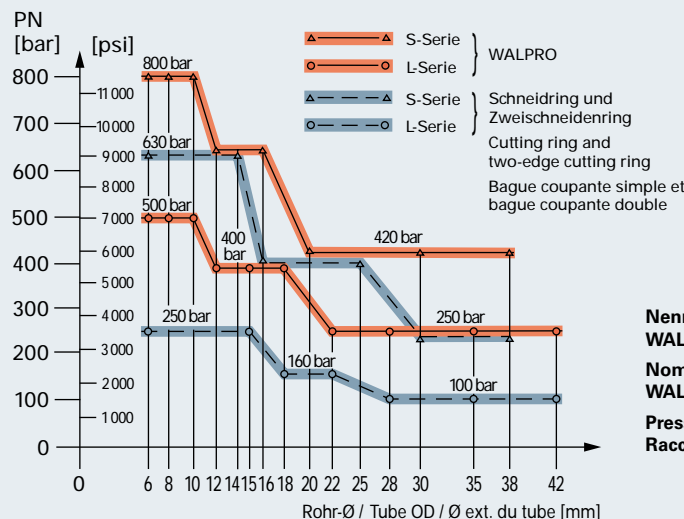
- Série L pour pressions nominales jusqu'à 500 bar
- Série S pour pressions nominales jusqu'à 800 bar
- Pressions nominales élevées uniquement avec pièces Walterscheid d'origine



Relative Druckbelastbarkeit von Ringverbindungen (Mittelwerte)

Relative pressure strength of different ring systems (mean values)

Résistance relative à la pression des raccords à bague (valeurs moyennes)



**Nenndruckstufen WALPRO-Verschraubung
Nominal pressure levels - WALPRO fitting
Pressions nominales - Raccord WALPRO**

Sichere Montage durch...

- sichere Erstmontage durch Anzugsbegrenzung
- sichere Wiederholmontage
- Kaltverfestigung und Spanstauchung im Einschnitt

Safe assembly

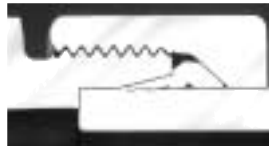
- Safe initial assembly due to limit stop
- Safe reassembly
- Molecular displacement and locking in the cut

Montage sûr

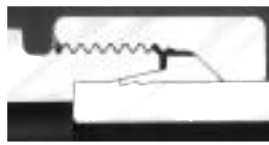
- Montage initial sûr grâce à la limitation du serrage
- Remontage sûr
- Écrouissage et refoulement de la matière dans l'entaille



Schneidring - Deformation bei Überanzug
Cutting ring - Deformation from excessive tightening
Bague coupante - Déformation par serrage excessif



Zweischneidenring - Deformation bei Überanzug
Two-edge cutting ring - Deformation from excessive tightening
Bague coupante double - Déformation par serrage excessif



Profiling - Keine Deformation bei Überanzug
Profile ring - No deformation from excessive tightening
Bague profilée - Pas de déformation lors du serrage excessif

Hohe Dauerfestigkeit durch...

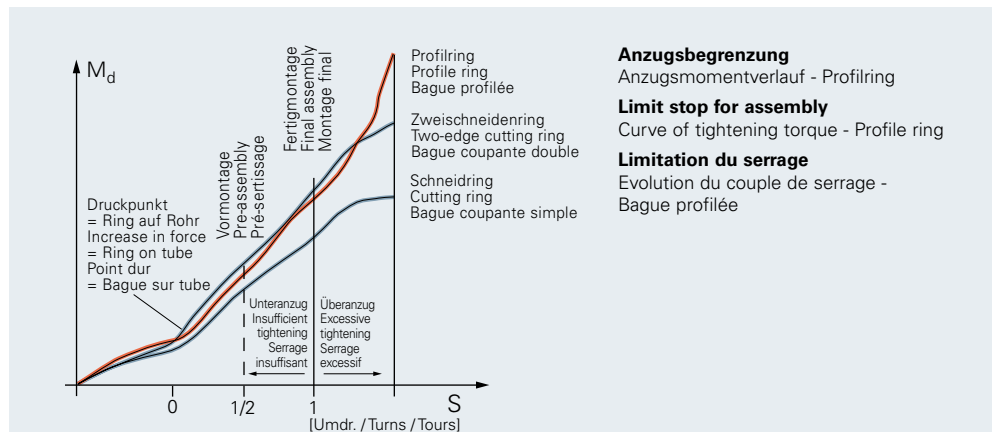
- sichere Rohrhalterung
- kerbfreie Rohreinspannung

High fatigue strength

- Safe tube connection
- Notch-free tube clamping

Résistance élevée à la fatigue

- Ancrage sûr du tube
- Serrage du tube sans entaille



Anzugsbegrenzung

Anzugsmomentverlauf - Profiling

Limit stop for assembly
Curve of tightening torque - Profile ring

Limitation du serrage

Evolution du couple de serrage - Bague profilée

Verhalten bei Überanzug von Schneidring und Profiling

Schneidring - Zweischneidenring

- kein deutlicher Drehmomentanstieg
- Wegverlust während der Montage durch Stauchen des Ringes
- verminderte Vorspannung durch gestauchten Ring

- erhöhte Kerbwirkung auf das Rohr

Profiling

- + deutlicher Drehmomentanstieg
- + kein Wegverlust, kein Stauchen des Ringes
- + hohe Vorspannung zur Aufnahme der Betriebslast. Aufgrund einer optimierten und stabilen Ringkonstruktion wird ein Stauchen vermieden
- + keine Kerbwirkung auf das Rohr

Durch das Verhalten bei Überanzug von Schneidringen entsteht eine Leistungseinbuße der Verschraubung. Die Profilingverschraubung verkräftet ohne eine gravierende Leistungseinbuße einen Überanzug von 1/2 Umdrehung.

Behaviour of cutting ring and profile ring with excessive tightening

Cutting ring - Two-edge cutting ring

- no evident torque increase
- loss of travel during assembly through upsetting of the ring
- reduced prestress from ring being upset

- higher stress concentration on the tube

Profile ring

- + evident torque increase
- + no loss of travel, no upsetting of the ring
- + high prestress for absorption of the service load. Owing to an optimized and stable ring design, upsetting is avoided
- + no stress concentration on the tube

The behaviour of cutting rings when excessively tightened results in a power loss of the fitting. The profile ring fitting is able to withstand excessive tightening by 1/2 of a turn without significant power loss.

Comportement de la bague coupante et de la bague profilée lors du serrage excessif

Bague coupante - Bague coupante double

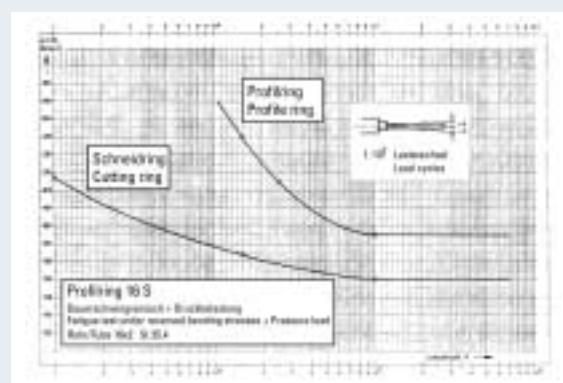
- pas d'augmentation nette du couple
- perte de course lors du montage par le refoulement de la bague
- précontrainte réduite par bague refoulée

- effet d'entaille plus élevé sur le tube

Bague profilée

- + augmentation nette du couple
- + pas de perte de course, pas de refoulement de la bague
- + pré-contrainte élevée pour l'absorption de la charge de service. Refoulement évité grâce à la construction optimisée et stable de la bague
- + pas d'effet d'entaille sur le tube

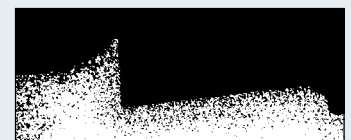
Le comportement de la bague coupante lors d'un serrage excessif provoque une perte de puissance du raccord. Le raccord à bague profilée résiste à un serrage excessif de 1/2 tour sans perte de puissance considérable.



Hohe Sicherheit durch Kaltverfestigung und Spanstauchung im Einschnitt

High degree of safety by molecular displacement and locking in the cut

Sécurité élevée par écrouissage et refoulement de la matière dans l'entaille



Sichere Rohrhalterung durch...

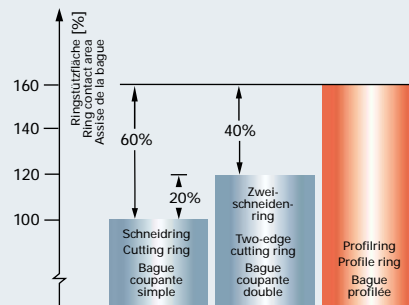
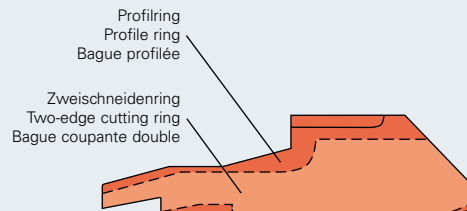
- große Ringstützfläche
- steifen Ring mit Profilform
- hohe Ausreißfestigkeit

Safe tube connection

- Large ring contact area
- High strength profile-shaped ring
- High tensile strength

Ancrage sûr du tube

- Large assise de la bague
- Bague rigide de forme profilée
- Résistance élevée à l'arrachement



Große Ringstützfläche
= Einschnitttiefe x Rohrumfang
Large ring contact area
= Cutting depth x circumference of tube
Large assise de la bague
= Profondeur de pénétration x circonférence du tube

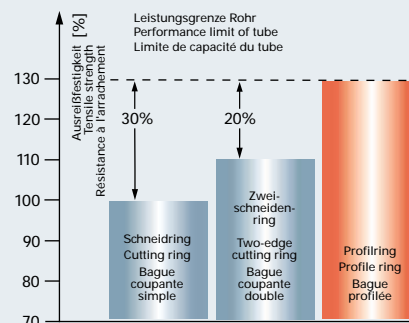
Optimierung Ringstützfläche (Mittelwerte)

Optimization of ring contact area
(mean values)

Assise optimisée de la bague
(valeurs moyennes)

Universelle Standardlösung durch..

- Alle Verschraubungsteile entsprechen DIN 2353 / DIN EN ISO 8434-1
- Verwendbarkeit für alle üblichen Rohrwerkstoffe
- Austauschbarkeit mit Schneidring und Zweischneidenring



Ausreißfestigkeit von Rohrverbindungen (Mittelwerte)

Tensile strength of tube connections
(mean values)

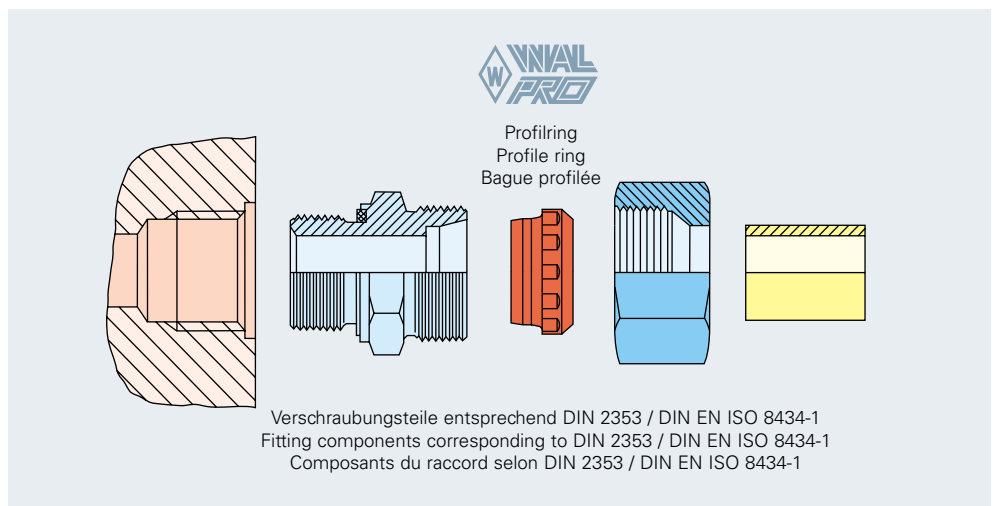
Résistance à l'arrachement des raccords de tubes
(valeurs moyennes)

Universal standard solution

- All fitting components are to DIN 2353 / DIN EN ISO 8434-1
- Suitable for all common tube materials
- Interchangeable with cutting ring and two-edge cutting ring

Solution standard universelle

- Tous les composants du raccord correspondent à la norme DIN 2353 / DIN EN ISO 8434-1
- Appropriée à tous les matériaux usuels des tubes
- Interchangeable avec la bague coupante simple et la bague coupante double



Verschraubungsteile entsprechend DIN 2353 / DIN EN ISO 8434-1
Fitting components corresponding to DIN 2353 / DIN EN ISO 8434-1
Composants du raccord selon DIN 2353 / DIN EN ISO 8434-1

Zulassungen und Prüfbescheinigungen
Approvals granted and test certificates
Homologations accordées et certificats d'essai

- Germanischer Lloyd
- Bureau Veritas
- Lloyd's Register of Shipping
- Det Norske Veritas
- American Bureau of Shipping
- US-Coastguard
- Polski Rejestr Statkow
- Registro Italiano Navale
- RWTH Aachen
- TÜV Rheinland
- DVGW
- Finnisches
Technisches Untersuchungsamt
- Universität Erlangen



Die Gesteuerte Endmontage von Profiling-Verschraubungen

Controlled final assembly of profile ring fittings

Le montage final contrôlé des raccords à bague profilée

Der konsequente Schritt zur "staubtrockenen" Hydraulikanlage.

Der Walterscheid-Profiling erlaubt die Anwendung einer neuartigen Montagetechnik, der Gesteuerten Endmontage. Mit der Gesteuerten Endmontage werden die in der Praxis am häufigsten auftretenden Fehler beseitigt.

The consistent step towards "dust-tight" hydraulic installations.

The Walterscheid profile ring permits the application of a novel assembly method - controlled final assembly. Through controlled final assembly, the most frequent errors encountered in the field are eliminated.

Le pas conséquent vers l'installation hydraulique «hors poussière».

La bague profilée Walterscheid permet l'application d'une nouvelle technique de montage, le montage final contrôlé. Grâce au montage final contrôlé, les défauts les plus souvent rencontrés dans la pratique sont éliminés.

Die häufigsten Montagefehler sind:
The most frequent assembly errors are:
Les défauts de montage les plus fréquents sont:

- Fehlerhafte Vormontage
Incorrect pre-assembly
Pré-sertissage incorrect
- Vergessene Fertigmontage
Final assembly neglected
Montage final oublié
- Übermontage
Excessive tightening
Serrage excessif
- Untermontage
Insufficient tightening
Serrage insuffisant

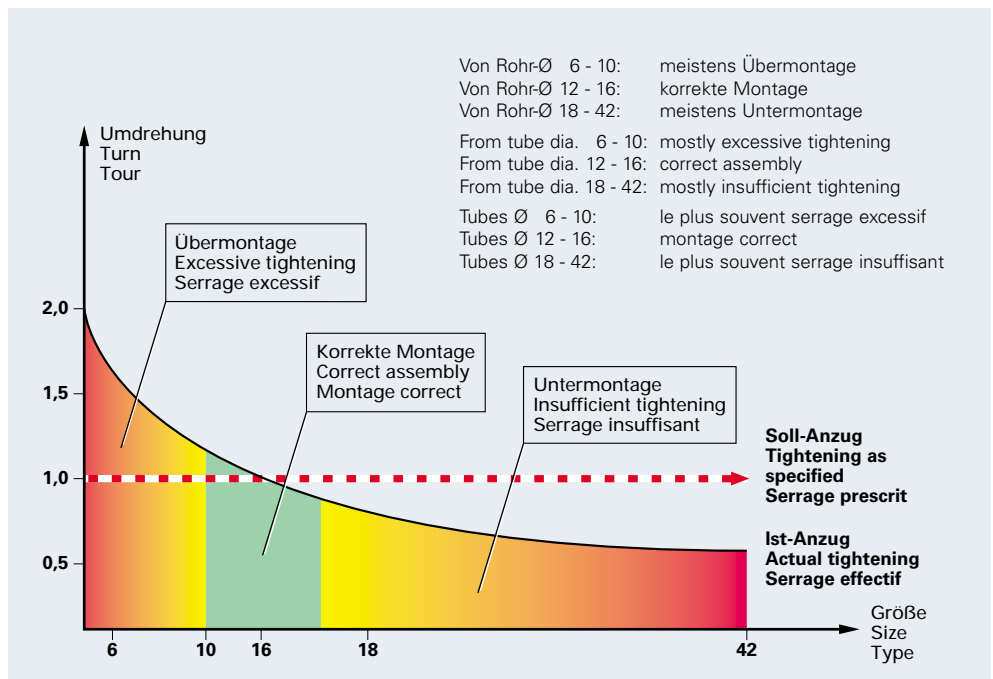
Die Folgen sind:
The consequences arising are:
Les conséquences en sont les suivantes:

- Unfallgefahr
Risk of accident
Risque d'accident
- Stillstandszeiten
Downtimes
Temps d'immobilisation
- Reparaturkosten
Repair costs
Coûts de réparation
- Leckagen
Leakages
Fuites
- Imageverlust
Loss of image
Dégradation de l'image de marque

Praxistest: Soll-Ist-Vergleich bei gefühlsmäßiger Montage

Field test: Comparison of specified and actual values during intuitive assembly

Essai pratique: Comparaison des valeurs prescrites avec les valeurs atteintes lors du montage intuitif



**Normalmontage,
 Fehlermöglichkeiten**

**Standard assembly -
 Possible errors**

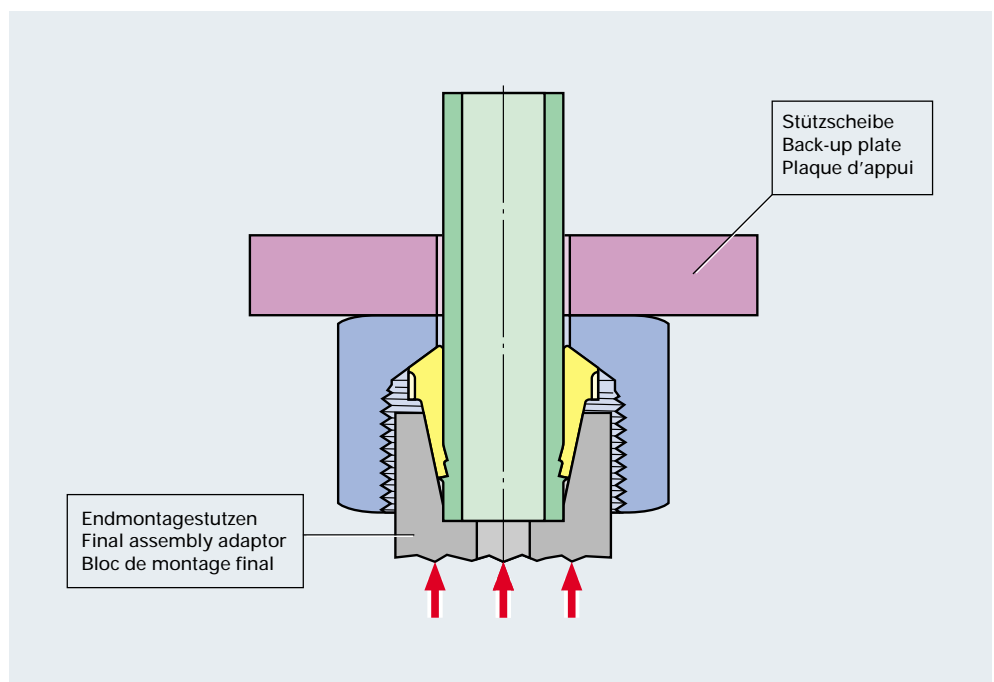
**Montage standard -
 Défaits possibles**



**Gesteuerte Endmontage
 mit Vormontagemaschine
 = 100% Ringeinschnitt**

**Controlled final assembly
 with pre-assembly machine
 = 100% cut and penetration
 of the ring**

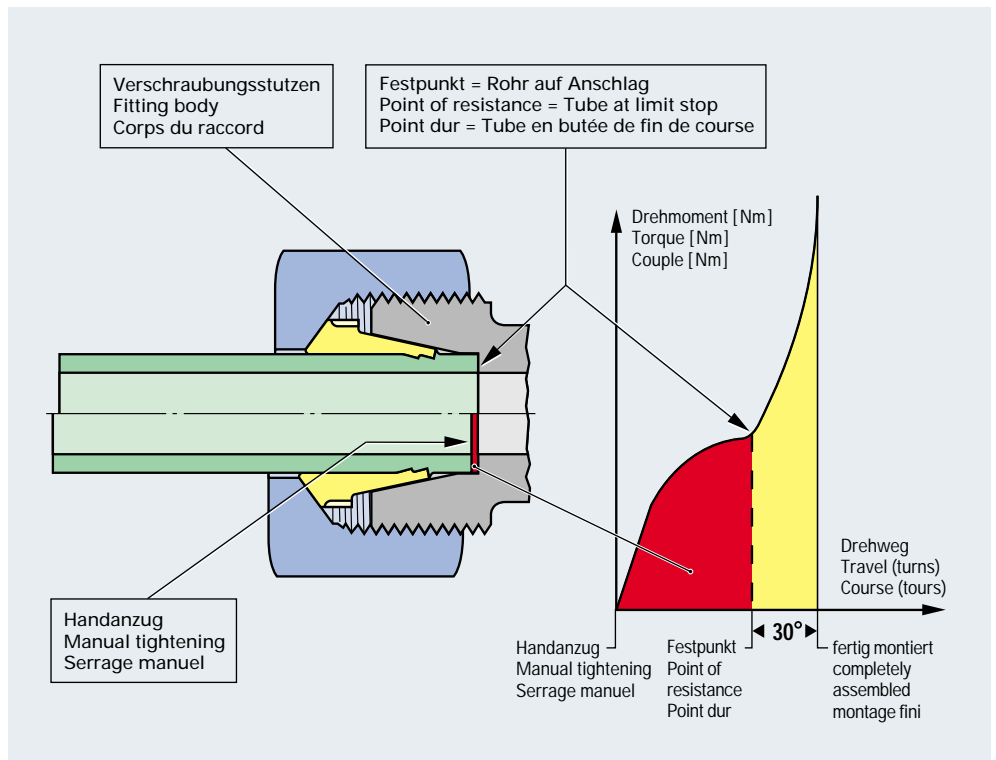
**Montage final contrôlé
 avec machine de
 pré-sertissage
 = Incision à 100% par la
 bague sur le tube**



**Gesteuerte Endmontage
= 30° Anzugsweg nach
Festpunkt**

**Controlled final assembly
= 30° tightening travel after
point of resistance**

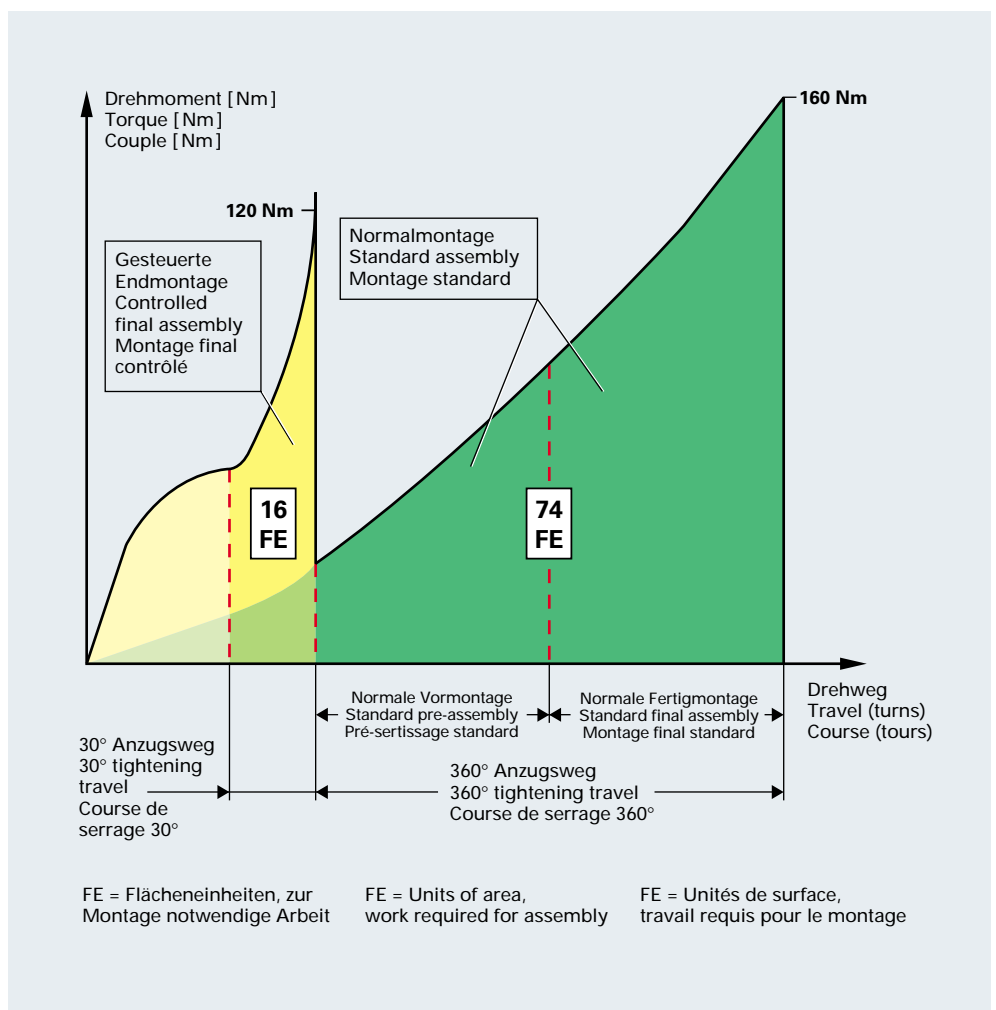
**Montage final contrôlé
= Course de serrage 30°
après le point dur**



**Vergleich der Montagearten,
Abmessung 16 S**

**Comparison of assembly
methods, Size 16 S**

**Méthodes de montage en
comparaison, Type 16 S**



**Rohrabmessungen und
 Montagedrehmomente**

**Tube dimensions and
 assembly torques**

**Dimensions des tubes
 et couples de montage**

Baureihe Series Série		
L		
Größe Size Dim.	Rohrwandstärke min. Min. tube wall thickness Epaisseur de paroi mini	Fertigmontage [Nm] oder 30° Final assembly [Nm] or 30° Montage final [Nm] ou 30°
6	6 x 1	25
8	8 x 1	40
10	10 x 1	50
12	12 x 1,5	70
15	15 x 1,5	90
18	18 x 1,5	115
22	22 x 2	210
28	28 x 2	310
35	35 x 3	500
42	42 x 3	600

Baureihe Series Série		
S		
Größe Size Dim.	Rohrwandstärke min. Min. tube wall thickness Epaisseur de paroi mini	Fertigmontage [Nm] oder 30° Final assembly [Nm] or 30° Montage final [Nm] ou 30°
6	6 x 2	35
8	8 x 1,5	55
10	10 x 1,5	70
12	12 x 1,5	85
14	14 x 2	110
16	16 x 1,5	120
20	20 x 2	200
25	25 x 2,5	340
30	30 x 3	480
38	38 x 4	850

Rohrwerkstoff / Tube material / Matériau du tube: DIN2391-1-C, St 37.4 / DIN 1630, NBK


Druckeinstellung für Maschine MEH-R und Handhabung von Fremdmaschinen auf Anfrage
 Pressure setting for machine MEH-R and handling of external machines on request
 Réglage de pression pour machine MEH-R et manipulation de machines extérieures sur demande


Bei anderen Rohrwandstärken und Rohrwerkstoffen bitte Rücksprache mit unserer Anwendungstechnik
 Please contact our application engineers for any other tube wall thicknesses and tube materials
 Veuillez contacter notre service application technique pour d'autres épaisseurs de paroi et matériaux des tubes


Die wichtigsten Merkmale und Kundennutzen


The most important characteristics and customer benefits


Les plus importantes caractéristiques et les avantages pur le client


- 


100% Ringeinschnitt durch Montagemaschine
100% cut and penetration of the ring through assembly machine
Incision à 100% par la bague sur le tube grâce à la machine de montage
- 


Geringer Fertigmontageweg (30°), reduzierter Kraftaufwand (-30%)
Short final assembly travel (30°), reduced necessary power (-30%)
Course réduite de montage final (30°), effort nécessaire réduit (-30%)
- 


Eindeutiges Fertigmontageverhalten, steiler Drehmomentanstieg
Distinct final assembly behaviour, steep increase in torque
Comportement net au montage final, couple montant en flèche
- 


Bauteile gemäß DIN 2353 / DIN EN ISO 8434-1
Components according to DIN 2353 / DIN EN ISO 8434-1
Pièces composantes suivant DIN 2353 / DIN EN ISO 8434-1
- 

Montagezeit bis zu 50% reduziert
Assembly time reduced by up to 50%
Temps de montage réduit jusqu'à 50%
- 

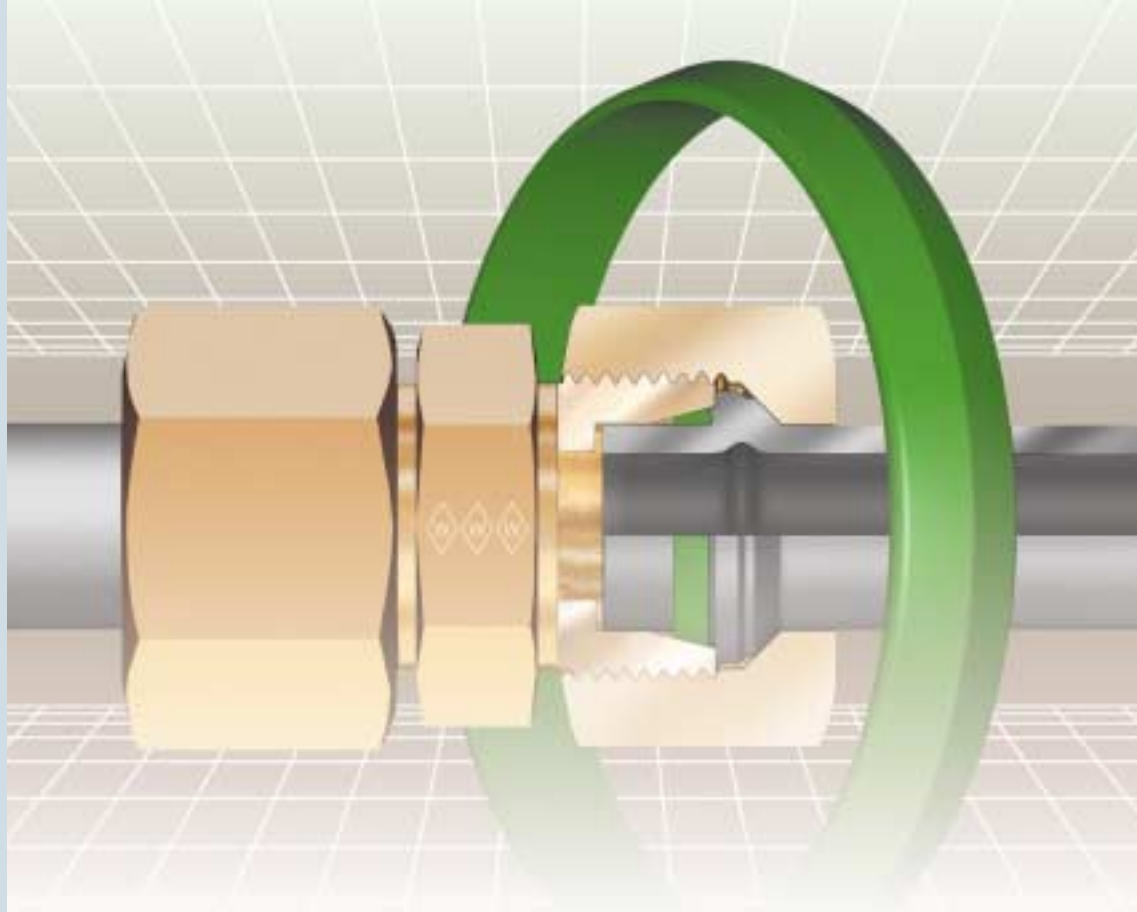
Montagemaschine sichert gleichbleibende Qualität
Assembly machine guarantees a constant quality
Machine de montage assure une qualité constante
- 

Gesteuerte Endmontage ermöglicht:
Drehweg- oder Drehmomentmontage
Controlled final assembly allows:
Turning-angle-controlled assembly or torque-controlled assembly
Le montage final contrôlé permet:
le montage suivant le nombre de tours ou le montage suivant le couple
- 

Montagevorteile bei engen Einbauverhältnissen
Advantages for assembly in cramped installation conditions
Avantages de montage dans un encombrement restreint d'installation
- 

Gravierende Einsparung der Montagekosten
Substantial reduction in assembly costs
Réduction importante des coûts de montage
- 

Die Gesteuerte Endmontage beseitigt Fehlerquellen und sichert die Zuverlässigkeit Ihres Produktes
Controlled final assembly eliminates sources of error and ensures the reliability of your product
Le montage final contrôlé élimine des sources de défauts et assure la fiabilité de votre produit



Funktionsbeschreibung
Functional characteristics
Description fonctionnelle

WALFORM-
Rohrverschraubungen
WALFORM tube fittings
Raccords
de tubes WALFORM

WALFORMplus

WALFORMplus ist ein formschlüssiges Verschraubungssystem und besteht aus lediglich drei Bauelementen. Das maschinell umgeformte Rohrende wird durch einen herkömmlichen DIN-Stutzen und eine DIN-Überwurfmutter formschlüssig verschraubt. Der einzig mögliche Leckageweg wird durch einen Elastomerring abgedichtet. Charakteristisch für die neue Baureihe ist die Stufe an der Planfläche des umgeformten Rohres, die in den 24°-Konus des Stutzens eintaucht. Dies führt zu einer deutlichen Verbesserung des Montageverhaltens und hoher Übermontagesicherheit.

WALFORMplus garantiert aufgrund der Formschlüssigkeit sicheren Halt, selbst bei hohen dynamischen Belastungen. Die einfache, praxisgerechte Montage, die von jedermann durchführbar ist, ermöglicht eine deutliche Kostensenkung. Weitere Sparpotenziale entstehen, da Vormontage und andere Zusatzoperationen entfallen. Zusätzlich verringern sich Material- und Logistikkosten aufgrund der wenigen Bauteile.

WALFORMplus is a positive tube fitting system that consists of just three components. The mechanically reshaped tube end is positively connected by a conventional DIN fitting body and a DIN nut, the only possible leakage path being sealed off by an elastomer ring. One characteristic feature of the new series is the shoulder on the end face of the reshaped tube, which is inserted into the 24° cone of the body. This results in a marked improvement in assembly behaviour and good protection against excessive tightening.

As a result of the positive fit, WALFORMplus guarantees reliable tube retention, even under high dynamic loads. The assembly process is simple and practical, can be carried out by anyone and substantially reduces costs. Additional savings can be derived from the fact that pre-assembly and other auxiliary operations are unnecessary. Moreover, the small number of components reduces material and logistics costs.

WALFORMplus est un système innovant de raccords sécants se composant uniquement de trois éléments. L'extrémité de tube formée à la machine est vissée par blocage mécanique d'un corps de raccord DIN traditionnel et d'un écrou DIN. La seule voie de fuite possible est étanchéifiée par un joint élastomère. La particularité de cette nouvelle série est le gradin de la surface plane du tube formé qui s'engage dans le cône de 24° du corps de raccord. Cet avantage assure une nette amélioration du montage et une haute sécurité contre tout serrage excessif.

WALFORMplus garantit, grâce à son blocage mécanique, un ancrage sûr et supporte même des charges dynamiques élevées. Le montage simple et éprouvé dans la pratique, pouvant être effectué par tout un chacun, permet une nette réduction des coûts. D'autres possibilités d'économies sont réalisables grâce à la suppression du pré-sertissage et d'autres opérations supplémentaires. De plus, la diminution du nombre de pièces permet de réduire les frais de matériaux et de logistique.





**MEG-WF2
MEG-WF2/BO**

Elektronisch gesteuerte Umformmaschinen sichern die rationelle Produktion bei hoher und gleichbleibender Qualität - sowohl stationär als auch vor Ort.

Electronically controlled reshaping machines - both stationary and mobile - guarantee efficient production with consistently high quality.

Des machines de formage à commande électronique assurent une production économique ainsi qu'une qualité élevée et constante - non seulement lors de l'application fixe mais aussi mobile.

Zur Umformung von Stahlrohren mit Rohr-AD 6 bis 42 mm und Rohren aus nicht rostendem Stahl mit Rohr-AD 6 bis 30 x 3 mm. Durch Werkzeugwechsel kann die Maschine MEG-WF2/BO auch als Bördelmaschine für Walterscheid-37°-SAE-Bördelflansche bis 60,3 mm verwendet werden.

For reshaping steel tubes with outside diameters from 6 to 42 mm and stainless steel tubes with outside diameters from 6 to 30 x 3 mm. By changing tools, the MEG-WF2/BO machine can also be used as a flaring machine for Walterscheid-37° SAE flared flanges up to 60.3 mm.

Machine pour le formage de tubes en acier de 6 à 42 mm et acier inox de 6 à 30 x 3 mm de diamètre extérieur. Un changement d'outil permet également de faire de la machine MEG-WF2/BO une machine à évaser pour les brides d'évasement 37° SAE de Walterscheid jusqu'à 60,3 mm.

MEG-WF3/BO

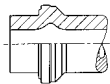


Zur Umformung von Stahlrohren und Rohren aus nicht rostendem Stahl mit Rohr-AD 6 bis 42 mm. Durch Werkzeugwechsel kann diese Maschine auch als Bördelmaschine für Walterscheid-37° SAE-Bördelflansche bis 101,6 mm verwendet werden.

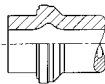
For reshaping steel tubes and stainless steel tubes with outside diameters from 6 to 42 mm. By changing tools, this machine can also be used as a flaring machine for Walterscheid-37° SAE flared flanges up to 101.6 mm.

Machine pour le formage de tubes en acier et acier inox de 6 à 42 mm de diamètre extérieur. Un changement d'outil permet également d'en faire une machine à évaser pour les brides d'évasement 37° SAE de Walterscheid jusqu'à 101,6 mm.

St 37.4/52.4 Verwendbare Rohrwandstärken
- Stahl
Suitable tube wall thicknesses
- Steel
Epaisseurs de paroi de tubes utilisables
- Acier



1.4571 Verwendbare Rohrwandstärken
- Nicht rostender Stahl
Suitable tube wall thicknesses
- Stainless steel
Epaisseurs de paroi de tubes utilisables
- Acier inox



WALFORMplus									
mit Weichdichtung / with captive seal / avec joint mou									
Rohr-AD Tube OD Ø ext. du tube [mm]	Wandstärke [mm] · Wall thickness [mm] Epaisseur de paroi [mm]								
	1	1,5	2	2,5	3	3,5	4	5	6
6	+								
8	+								
10	+								
12	+	●							
15		●	●	●					
16			●	●	●				
18			●	●	●				
20			●	●	●				
22			●	●	●				
25			●	●	●				
28			●	●	●				
30				●	●				
35					●				
38						●			
42						●	●	●	

Handelsübliche Hydraulikrohre, Werkstoff St 37.4/52.4 gemäß DIN 1630, NBK-3.1B. Maße und Toleranzen nach DIN 2391, Teil 1-C.
Commercial hydraulic tube, material St 37.4/52.4 according to DIN 1630, NBK-3.1B. Dimensions and tolerances according to DIN 2391, sheet 1-C.
Tube hydraulique courant, matériau St 37.4/52.4 suivant DIN 1630, NBK-3.1B. Dimensions et tolérances suivant DIN 2391, folio 1-C.

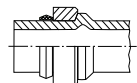
WALFORMplus									
mit Weichdichtung / with captive seal / avec joint mou									
Rohr-AD Tube OD Ø ext. du tube [mm]	Wandstärke [mm] · Wall thickness [mm] Epaisseur de paroi [mm]								
	1	1,5	2	2,5	3	3,5	4	5	6
6	+								
8	+								
10	+								
12	+								
15		●	●						
16			●	●	●				
18			●	●	●				
20			●	●	●				
22			●	●	●				
25			●	●	●				
28			●	●	●				
30				●	●				
35					●				
38						●			
42						●			

Hydraulikrohre aus nicht rostendem Stahl, Werkstoff 1.4571 (X6CrNiMoTi 17122), Ausführungsart „m“ nach DIN 17458. Maße und Toleranzen nach DIN 2391, Teil 1-C.
Stainless steel hydraulic tube, material 1.4571 (X6CrNiMoTi 17122) type 'm' according to DIN 17458. Dimensions and tolerances according to DIN 2391, sheet 1-C.
Tube hydraulique, en acier inox 1.4571 (X6CrNiMoTi 17122), type 'm' suivant DIN 17458. Dimensions et tolérances suivant DIN 2391, folio 1-C.

Umformung ohne Innenabstützung
Reshaping without internal support
Formage sans support intérieur

Umformung mit Innenabstützung
Reshaping with internal support
Formage avec support intérieur

Mit Stützring
With adapter ring
Avec bague de support



(Weitere Größen auf Anfrage)
(Further sizes on request)
(D'autres dimensions sur demande)

Absolute Dichtheit Absolutely leak-proof Étanchéité absolue

Die Abdichtung des einzig möglichen Leckagepfades erfolgt primär über die bewährte WALFORM^{plus}-Weichdichtung und sekundär über die metallische Abdichtung zwischen patentierter WALFORM^{plus}-Stufe und Verschraubungsstutzen.

The only possible leakage path is primarily sealed off by the tried-and-tested WALFORM^{plus} captive seal and secondarily by the metallic seal between the patented WALFORM^{plus} shoulder and the fitting body.

L'étanchéité de la seule voie de fuite possible s'effectue, dans un premier temps, au moyen du joint mou éprouvé WALFORM^{plus} et, dans un deuxième temps, au moyen du joint métallique situé entre le gradin breveté WALFORM^{plus} et le corps du raccord.

Montagevorteile

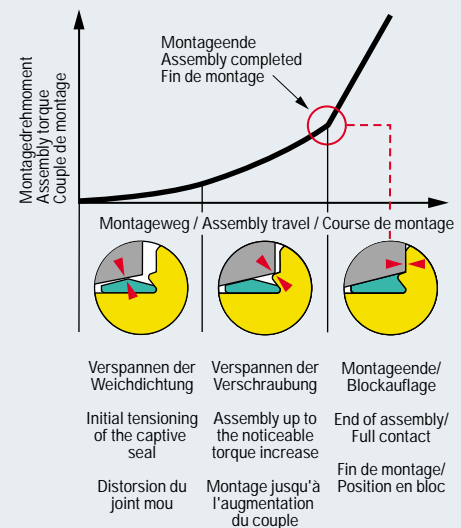
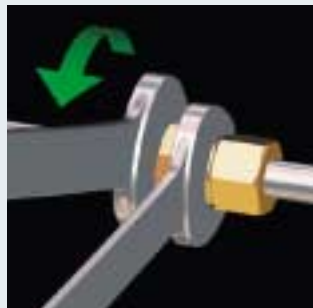
- Deutlich geringere Anzugsdrehmomente
- Kurzer Montageweg
- Deutlich spürbarer Drehmomentanstieg
- Hohe Sicherheit gegen Übermontage
- Beliebige Wiederholmontage

Assembly advantages

- Considerably lower tightening torques
- Short assembly travel
- Noticeable torque increase
- Reliable protection against excessive tightening
- Repeat assembly any number of times

Les avantages de montage

- Couples de serrage nettement plus faibles
- Course de montage courte
- Augmentation du couple nettement sensible
- Haute sécurité contre tout serrage excessif
- Remontage facultatif



Sichere Rohrhalterung Reliable tube retention Ancrage sûr du tube

Das System gewährleistet durch den Formschluß absolute Sicherheit auch bei extremsten Belastungen. Selbst bei Unter- oder Übermontage ist eine sichere Rohrhalterung gewährleistet. Herausrutschen des Rohres ist ausgeschlossen.

As a result of the positive connection, the system guarantees absolute reliability, even under extreme loads. Reliable tube retention is ensured even in the event of insufficient or excessive tightening - the tube cannot slip out.

Grâce au blocage mécanique, ce système est à même de supporter des charges extrêmes en toute sécurité. Un ancrage sûr du tube est assuré même en cas de serrage insuffisant ou excessif, une sortie du tube est exclue.

Ein Plus für Montagefreundlichkeit:

stark reduzierter Montageaufwand und garantiert reproduzierbare Montageergebnisse

A gain for ease of assembly:

greatly reduced assembly effort and assembly results that are guaranteed to be reproducible

Un atout facilitant le montage:

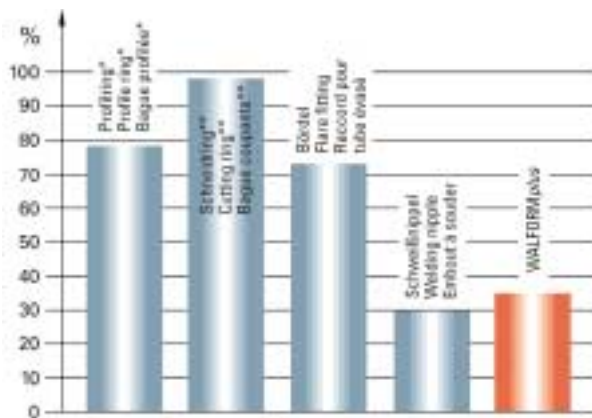
une forte réduction des frais de montage et des résultats de montage reproductibles garantis

Die einzigartige WALFORM^{plus}-Geometrie ermöglicht eine praxistgerechte Montage, wobei das Montageende durch einen deutlich spürbaren Kraftanstieg angezeigt wird. Die zu leistende Montagearbeit beträgt, bedingt durch den geringen Montageweg sowie das niedrige Montagedrehmoment, nur einen Bruchteil herkömmlicher Rohrverschraubungssysteme. Das Suchen anderer Anhaltspunkte und das Einhalten bestimmter Montagewinkel entfällt. Optional kann die Montage auch drehmomentbezogen erfolgen.

The unique WALFORM^{plus} geometry permits practical assembly, where the end of assembly is indicated by a noticeable increase in force. As a result of the short travel and low torque, the required assembly work is only a fraction of that for conventional tube fitting systems. There is no need to look for other indications or comply with specific angles. Optionally, the assembly process can also be based on the torque.

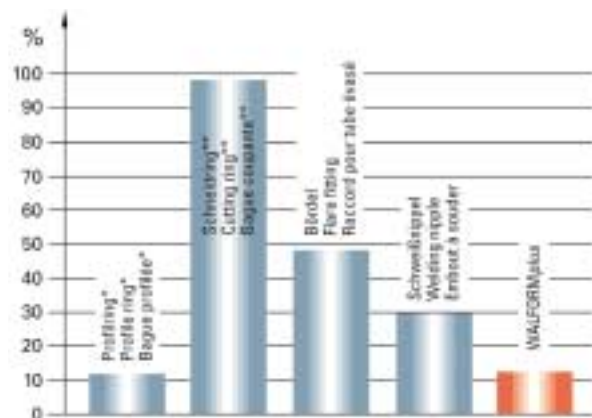
La géométrie du raccord WALFORM^{plus}, unique en son genre, permet un montage éprouvé dans la pratique. La fin de montage est indiquée par un effort nettement plus élevé. En fonction de la course de montage courte et du faible couple de montage, l'opération de montage ne représente qu'une fraction par rapport aux systèmes de raccordement de tubes traditionnels. La recherche d'autres points de repère et le respect d'un angle de montage déterminé sont devenus inutiles. En option, le montage peut également s'effectuer en fonction du couple.

Vergleich der erforderlichen Montagedrehmomente
Comparison of torques required for assembly
Comparaison des couples nécessaires au montage



*nach gesteuerter Endmontage
*after controlled final assembly
*après montage final contrôlé
**mit und ohne Weichdichtung
**with and without captive seal
**avec et sans joint mou

Vergleich der erforderlichen Montagewinkel
Comparison of the angles of rotation required for assembly
Comparaison des angles de rotation nécessaires au montage



Hohe dynamische Belastbarkeit

High dynamic load-bearing capacity

Haute résistance à la sollicitation dynamique

Durch die computeroptimierte Geometrie des umgeformten Rohres erreichen wir Spitzenwerte im Bereich der dynamischen Belastungen, wie Biegewechsel- und Druckimpulsfestigkeit. Das WALFORM-System hat sich in der Praxis und in umfangreichen Versuchen millionenfach bewährt.

Due to the computer-optimised geometry of the reshaped tube, outstanding values are achieved as regards dynamic stresses, e.g. for fatigue strength under reversed bending stresses and for pressure surge resistance. The WALFORM system has proven its worth millions of times, both in the field and in exhaustive tests.

Grâce à une géométrie optimisée par ordinateur du tube formé, les valeurs obtenues en sollicitations dynamiques, telles que la résistance à la flexion alternée et la résistance aux impulsions de pression, sont optimales. Le système WALFORM a fait ses preuves des millions de fois dans la pratique courante et au cours d'essais de grande envergure.

**Hohe
Nenndruckstufen**

**High nominal
pressure classes**

**Paliers de pressions
nominales élevés**

Wir garantieren Nenndruckstufen bis 800 bar für WALFORMplus-Verschraubungsteile bei 4facher Sicherheit und hundertprozentige Ausreißfestigkeit aufgrund der einzigartigen Ausformung.

We guarantee nominal pressure classes up to 800 bar for WALFORMplus tube fitting components, a safety factor of 4 and 100% stripping resistance as a result of the unique shape.

Nous garantissons pour les composants du raccord WALFORMplus des paliers de pressions nominales jusqu'à 800 bar, une sécurité quadruplée et une résistance à l'arrachement de cent pour cent grâce à leur formage unique.

Die Einzelteile der WALFORM-Verschraubung entsprechen der DIN EN ISO 8434-1. Das Verschraubungssystem kann jedoch nicht einzeln betrachtet werden. Deshalb gelten für die Druckbelastbarkeit die jeweils verwendeten Rohrgrößen und deren Wandstärke.

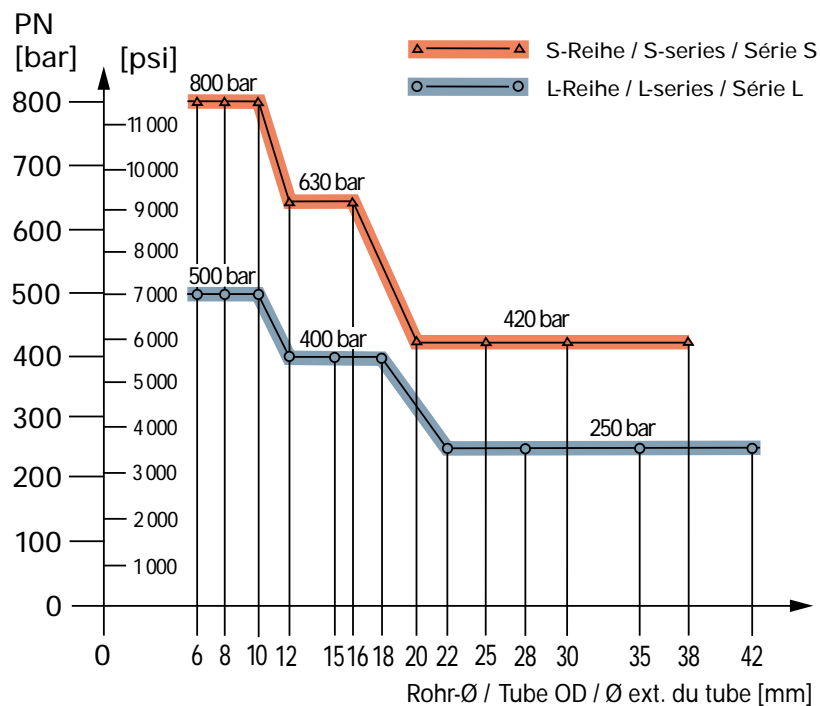
The individual components of the WALFORM tube fitting comply with DIN EN ISO 8434-1. However, the fitting system cannot be viewed in isolation. Consequently, the pressure loading capacity is always governed by the tube sizes used and their wall thicknesses.

Les composants du raccord WALFORM répondent aux normes DIN EN ISO 8434-1. Le système de raccords ne peut cependant être considéré séparément. La résistance à la pression est donc également fonction de la taille et de l'épaisseur de paroi du tube utilisé.

**Nenndruckstufen
WALFORMplus-
Verschraubung**

**Nominal pressure levels -
WALFORMplus fitting**

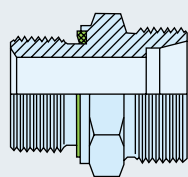
**Pressions nominales -
Raccord WALFORMplus**



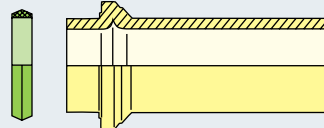
**Universelle
Standardlösung**

**Universal
standard solution**

**Solution standard
universelle**



DIN 2353
DIN EN ISO 8434-1



DIN 2391



DIN 3870
DIN EN ISO 8434-1

**WALFORMplus
Rohrverschraubungen**

**WALFORMplus
Tube fittings**

**WALFORMplus
Raccords de tubes**



**Ein Plus an
Wirtschaftlichkeit**

- wenige Teile (reduziert Material- und Logistikkosten)
- preiswert
- im Vergleich zum Schweißen keine Vor- und Nacharbeiten nötig

**Ein Plus an Sicherheit
durch Formschluß**

- fest/druckfest
- absolut dicht
- zugelassen in Sicherheitsbereichen
- verzeiht Montagefehler
- Druckabfall und Geräuschentwicklung vergleichbar mit anderen Verschraubungssystemen

**Ein Plus an
Montagefreundlichkeit**

- nur eine Trenn-/Dichtstelle
- einfache Montage/eindeutiges Montageende
- kurze Montagezeiten, geringes Drehmoment
- extrem leicht montierbar
- deutlich geringeres Anzugsdrehmoment gegenüber allen Schneidring-Verschraubungssystemen

A gain in economy

- Few parts (reduced material and logistics costs)
- Inexpensive
- Compared to welding, no preliminary or follow-up work

**A gain in safety due
to positive connection**

- Secure/Pressure-resistant
- Absolutely leak-proof
- Approved for use in safety areas
- Tolerates assembly errors
- Pressure drop and noise generation comparable to other fitting systems

**A gain in ease of
assembly**

- Only one separating/sealing point
- Simple assembly/Clear end of assembly
- Short assembly times, low torque
- Easy to assemble
- Far lower tightening torque compared to all cutting-ring tube fitting systems

**Un atout pour la
rentabilité**

- nombre réduit de pièces (réduction des frais de matériaux et de logistique)
- prix avantageux
- par rapport au soudage, pas de travail préparatoire ni postérieur

**Un atout pour
la sécurité grâce au
blocage mécanique**

- fixe/résistant à la pression
- absolument étanche
- admis dans les zones de sécurité
- pardonne les erreurs de montage
- chute de pression et niveau sonore comparable à d'autres raccords

**Un atout pour la facilité
de montage**

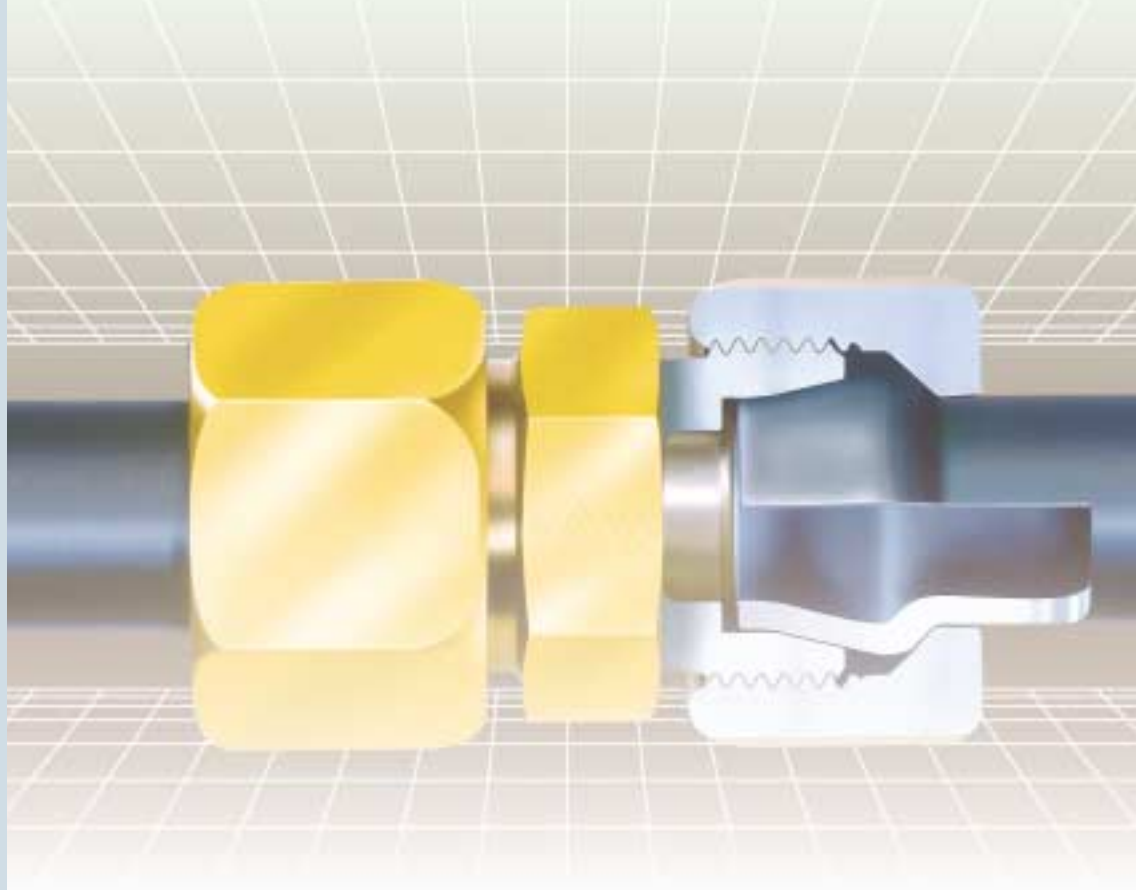
- un seul point de séparation et d'étanchéité
- montage simple/fin de montage claire et nette
- courtes durées de montage, couple réduit
- facile à monter
- couple de serrage nettement plus faible par rapport à tous les systèmes raccords à bague coupante

**Zulassungen
und Prüfbescheinigungen**

**Approvals
and test certificates**

**Homologations
et certificats d'essai**

- Germanischer Lloyd
- American Bureau of Shipping
- TÜV Bau und Betrieb
- RWTÜV
- Fachausschuss Eisen und Metall III



Funktionsbeschreibung
Functional characteristics
Description fonctionnelle

WALFORM-M
Rohrverschraubungen
WALFORM-M tube fittings
Raccords
de tubes WALFORM-M

M

WALFORM-M - die ringlose Rohrverbindung als richtungsweisende Alternative

Die WALFORM-M ist ein formschlüssiges Verschraubungssystem und besteht lediglich aus 2 Bauteilen. Das maschinell umgeformte Rohrende wird durch einen herkömmlichen DIN/ISO-Stutzen und eine DIN/ISO-Überwurfmutter formschlüssig verschraubt. Der einzig mögliche Leckageweg wird durch den angeformten 24°-Konus des Rohres abgedichtet. Charakteristisch für diese Baureihe ist die rein metallische Abdichtung, die den Anforderungen bestimmter Anwendungsfälle besonders gerecht wird, in denen eine rein metallische Abdichtung besonders gefordert wird.

WALFORM-M garantiert aufgrund der Formschlüssigkeit sicheren Halt, selbst bei hohen dynamischen Belastungen. Die einfache praxisgerechte Montage, die von jedermann durchführbar ist, ermöglicht eine deutliche Kostensenkung. Weitere Sparpotentiale entstehen, da Vormontage und andere Zusatzoperationen entfallen. Zusätzlich verringern sich Material- und Logistikkosten aufgrund der wenigen Bauteile.

WALFORM-M - the ringless tube fitting as a trend-setting alternative

The WALFORM-M is a positive tube fitting system consisting of just two components. The mechanically reshaped tube end is positively connected by a conventional DIN/ISO fitting body and a DIN/ISO nut. The only possible leakage path is sealed off by the integral 24° cone of the tube. One characteristic feature of this series is the purely metallic seal, which caters particularly well to the demands of certain applications where a metallic seal is specifically required.

As a result of the positive fit, WALFORM-M guarantees reliable tube retention, even under high dynamic loads. The assembly process is simple and practical, can be carried out by anyone and substantially reduces costs. Additional savings can be derived from the fact that pre-assembly and other auxiliary operations are unnecessary. Moreover, the small number of components reduces material and logistics costs.

WALFORM-M - Le raccord de tubes sans bague: une solution alternative prometteuse

WALFORM-M est un système de raccords à blocage mécanique se composant uniquement de 2 éléments. L'extrémité de tube formée à la machine est vissée par blocage mécanique d'un corps de raccord DIN/ISO traditionnel et d'un écrou DIN/ISO. La seule voie de fuite possible est étanchéifiée par le cône formé de 24° du tube. La particularité de cette nouvelle série est l'étanchéification purement mécanique qui répond parfaitement aux exigences de certaines applications nécessitant une étanchéification métallique.

WALFORM-M garantit, grâce à son blocage mécanique, un ancrage sûr et même des charges dynamiques élevées. Le montage simple et éprouvé dans la pratique, pouvant être effectué par tout un chacun, permet une nette réduction des coûts. D'autres possibilités d'économies sont réalisables grâce à la suppression du pré-sertissage et d'autres opérations supplémentaires. De plus, la diminution du nombre de pièces permet de réduire les frais de matériaux et de logistique.



MEG-WF2
MEG-WF2/BO

Zur Umformung von Stahlrohren mit Rohr-AD 10 bis 42 mm. Durch Werkzeugwechsel kann die Maschine MEG-WF2/BO auch als Bördelmaschine für Walterscheid-37° SAE-Bördelflansche bis 60,3 mm verwendet werden.

For reshaping steel tubes with outside diameters from 10 to 42 mm. By changing tools, the MEG-WF2/BO machine can also be used as a flaring machine for Walterscheid 37° SAE flaring flanges for all diameters to 60.3 mm.

Machines pour le formage de tubes en acier de 10 à 42 mm de diamètre extérieur. Un changement d'outil permet également de faire de la machine MEG-WF2/BO une machine à évaser pour les brides d'évasement 37° SAE de Walterscheid jusqu'à 60,3 mm.



MEG-WF3/BO

Zur Umformung von Stahlrohren mit Rohr-AD 10 bis 42 mm. Durch Werkzeugwechsel kann diese Maschine auch als Bördelmaschine für Walterscheid-37° SAE-Bördelflansche bis 101,6 mm verwendet werden.

For reshaping steel tubes with outside diameters from 10 to 42 mm. By changing tools, this machine can also be used as a flaring machine for Walterscheid 37° SAE flaring flanges for all diameters to 101.6 mm.

Machine pour le formage de tube hydraulique en acier de 10 à 42 mm de diamètre extérieur. Un changement d'outil permet également d'en faire une machine à évaser pour les Walterscheid-37° SAE brides d'évasement à 101,6 mm diamètres.

St 37.4/52.4

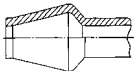
Verwendbare Rohrwandstärken
- Stahl

Suitable tube wall thicknesses

- Steel

Epaisseurs de paroi du tube utilisables

- Acier



Rohre aus nicht rostendem Stahl 1.4571 und weitere Rohrwerkstoffe auf Anfrage.

Tubes made of stainless steel 1.4571 and other tube materials on request.

Tubes en acier inoxydable 1.4571 et autres matériaux de tubes sur demande.

WALFORM-M									
metallisch dichtend / with metallic seal									
avec d'étanchéité par arête métal									
Rohr-AD Tube OD Tube Ø ext. [mm]	Wandstärke [mm] · Wall thickness [mm] Epaisseur de paroi [mm]								
	1	1,5	2	2,5	3	3,5	4	5	6
6									
8									
10									
12									
15									
16									
18									
20									
22									
25									
28									
30									
35									
38									
42									

Umformung ohne Innenabstützung
Reshaping without internal support
Formage sans support intérieur

Handelsübliche Hydraulikrohre, Werkstoff St 37.4/52.4 gemäß DIN 1630, NBK-3.1B. Maße und Toleranzen nach DIN 2391, Teil 1-C. Commercial hydraulic tube, material St 37.4/52.4 according to DIN 1630, NBK-3.1B. Dimensions and tolerances according to DIN 2391, sheet 1-C. Tube hydraulique courant, matériau St 37.4/52.4 suivant DIN 1630, NBK-3.1B. Dimensions et tolérances suivant DIN 2391, folio 1-C.

(Weitere Größen auf Anfrage)
(Further sizes on request)
(D'autres dimensions sur demande)

Absolute Dichtheit Absolutely leak-proof Étanchéité absolue

Die Abdichtung des einzig möglichen Leckagepfades erfolgt metallisch zwischen der WALFORM-M-Kontur und des 24° Innenkegels des Verschraubungsstutzens.

The only possible leakage path is sealed metallically between the WALFORM-M contour and the 24° internal cone of the fitting body.

La seule voie de fuite possible est étanchéifiée métalliquement entre le contour WALFORM-M et le cône intérieur à 24° du raccord.

Montagevorteile

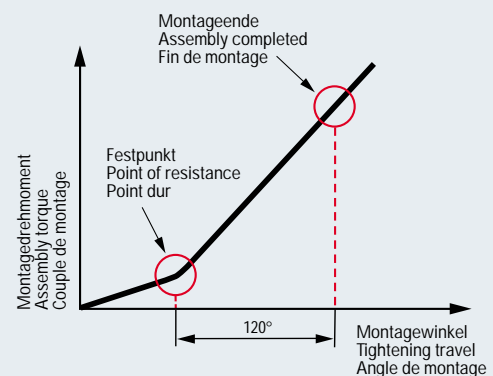
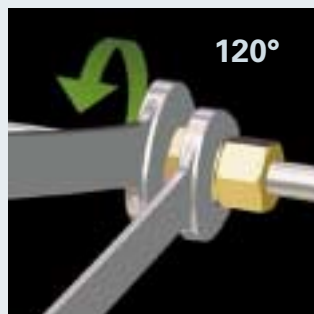
- Geringe Anzugsdrehmomente
- Kurzer Montageweg
- Spürbarer Drehmomentanstieg
- Sicherheit gegenüber Übermontage
- Beliebige Wiederholmontage

Assembly advantages

- Low tightening torques
- Short assembly travel
- Noticeable torque increase
- Reliable protection against excessive tightening
- Repeat assembly any number of times

Les avantages de montage

- Faibles couples de serrage
- Course de montage courte
- Augmentation sensible du couple
- Sécurité contre tout serrage excessif
- Nombre de remontages illimité



Sichere Rohrhalterung Reliable tube retention Ancrage sûr du tube

Das System gewährleistet durch den Formschluß absolute Sicherheit auch bei extremsten Belastungen. Selbst bei Unter- oder Übermontage ist eine sichere Rohrhalterung gewährleistet. Herausrutschen des Rohres ist ausgeschlossen.

As a result of the positive connection, the system guarantees absolute reliability, even under extreme loads. Reliable tube retention is ensured even in the event of insufficient or excessive tightening - the tube cannot slip out.

Grâce au blocage mécanique, ce système est à même de supporter des charges extrêmes en toute sécurité. Un ancrage sûr du tube est assuré même en cas de serrage insuffisant ou excessif, une sortie du tube est exclue.

Montagefreundlichkeit:

stark reduzierter Montageaufwand und garantiert reproduzierbare Montageergebnisse

A gain for ease of assembly:

greatly reduced assembly effort and assembly results that are guaranteed to be reproducible

Un atout facilitant le montage:

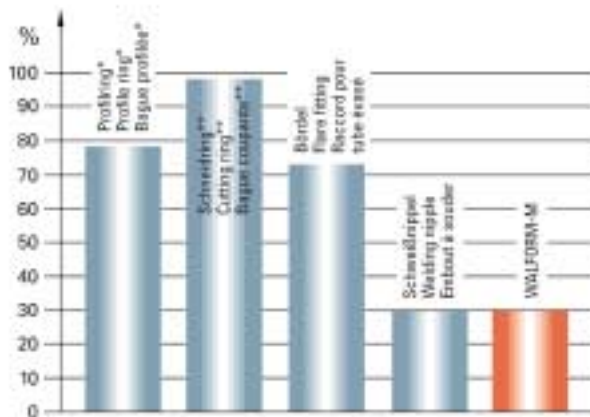
une forte réduction des frais de montage et des résultats de montage reproductibles garantis

Die einzigartige WALFORM-M-Geometrie ermöglicht eine praxisgerechte Montage mit einer Sicherheit gegenüber Überanzug. Die zu leistende Montagearbeit beträgt, bedingt durch den geringen Montageweg sowie das niedrige Montagedrehmoment, nur einen Bruchteil herkömmlicher Rohrverschraubungssysteme.

The unique WALFORM-M geometry permits practical assembly with reliable protection against excessive tightening. Due to the short tightening travel and the low tightening torque, assembly involves only a fraction of the work required for conventional tube fitting systems.

La géométrie du WALFORM-M, unique en son genre, permet un montage éprouvé dans la pratique avec une sécurité contre un serrage excessif. En fonction de la course de montage courte et du faible couple de montage, l'opération de montage ne représente qu'une fraction par rapport aux systèmes de raccordement de tubes traditionnels.

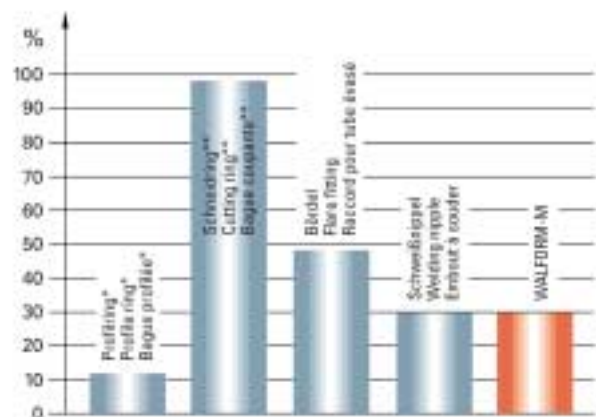
Vergleich der erforderlichen Montagedrehmomente
Comparison of torques required for assembly
Comparaison des couples nécessaires au montage



*nach gesteuerter Endmontage
*after controlled final assembly
*après montage final contrôlé

**mit und ohne Weichdichtung
**with and without captive seal
**avec et sans joint mou

Vergleich der erforderlichen Montagedrehwinkel
Comparison of the angles of rotation required for assembly
Comparaison des angles de rotation nécessaires au montage



Hohe dynamische Belastbarkeit

High dynamic load-bearing capacity

Haute résistance à la sollicitation dynamique

Durch die WALFORM-M-Geometrie des umgeformten Rohres werden Höchstwerte im Bereich der dynamischen Belastungen, wie Biege- und Druckimpulsfestigkeit erreicht. Das robuste WALFORM-M-System hat sich in der Praxis und in umfangreichen Versuchen bestens bewährt.

Due to the WALFORM-M geometry of the reshaped tube, outstanding values are achieved as regards dynamic stresses, such as fatigue strength under reversed bending stresses and pressure surge resistance. The sturdy WALFORM-M system has proven its worth both in exhaustive tests and in the field.

Grâce à la géométrie WALFORM-M du tube formé, les valeurs obtenues en sollicitations dynamiques telles que la résistance à la flexion alternée et la résistance aux impulsions de pression, sont optimisées. Le robuste système WALFORM-M a largement fait ses preuves dans la pratique courante et au cours d'essais de grande envergure.

Hohe Nenndruckstufen

High nominal pressure classes

Paliers de pressions nominales élevés

Wir garantieren Nenndruckstufen bis 800 bar für WALFORM-M-Verschraubungsteile bei 4facher Sicherheit und hundertprozentige Ausreißfestigkeit aufgrund der einzigartigen Ausformung.

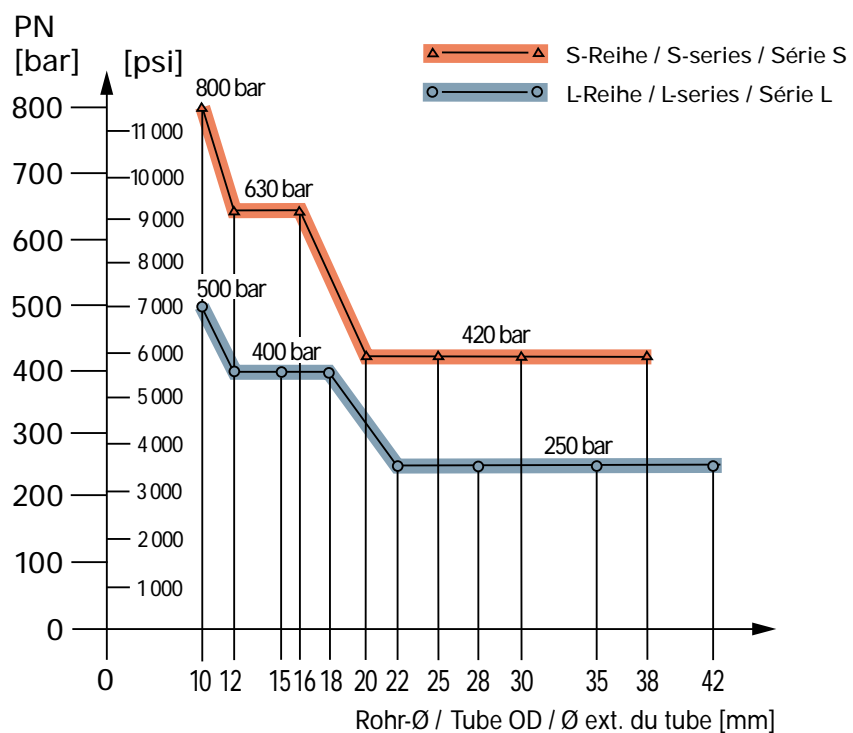
We guarantee nominal pressure classes up to 800 bar for WALFORM-M tube fitting components, a safety factor of 4 and 100% stripping resistance as a result of the unique shape.

Nous garantissons pour les composants du raccord WALFORM-M des paliers de pressions nominales jusqu'à 800 bar, une sécurité quadruplée et une résistance à l'arrachement de cent pour cent grâce à leur formage unique.

Nenndruckstufen WALFORM-M Verschraubung

Nominal pressure levels - WALFORM-M fitting

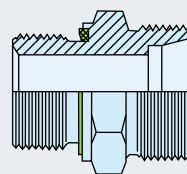
Pressions nominales - Raccord WALFORM-M



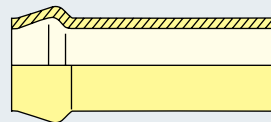
Universelle Standardlösung

Universal standard solution

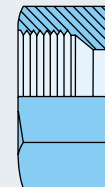
Solution standard universelle



DIN 2353
DIN EN ISO 8434-1



DIN 2391



DIN 3870
DIN EN ISO 8434-1

**WALFORM-M
Rohrverschraubungen**

**WALFORM-M
Tube fittings**

**WALFORM-M
Raccords de tubes**



Hohe Wirtschaftlichkeit

- Nur 2 Bauteile (reduzierte Material- und Logistikkosten)
- Sehr preiswert
- Im Vergleich zum Schweißen keine Vor- und Nacharbeiten notwendig

Hohe Sicherheit durch Formschluß und metallische Abdichtung

- Robust, metallische Abdichtung
- Absolut dicht
- Zugelassen in Sicherheitsbereichen
- Keine Einflüsse durch eine elastomere Dichtung
- Druckabfall und Geräuschentwicklung vergleichbar mit anderen Verschraubungssystemen

Sehr montagefreundlich

- Nur eine Trenn-/Dichtstelle
- Kurze Montagezeiten, geringes Drehmoment
- Extrem leicht montierbar
- Deutlich geringeres Anzugsdrehmoment gegenüber allen Schneidring-Verschraubungssystemen

Maximum economy

- Just 2 components (reduced material and logistics costs)
- Very inexpensive
- Compared to welding, no preliminary or follow-up work

High-level safety due to positive fit and metallic seal

- Sturdy, metallic seal
- Absolutely leak-proof
- Approved for use in safety areas
- No effects of an elastomer seal
- Pressure drop and noise generation comparable to other fitting systems

Very easy to assemble

- Only one separating/sealing point
- Short assembly times, low torque
- Extremely easy to assemble
- Far lower tightening torque compared to all cutting-ring tube fitting systems

Rentabilité élevée

- Seulement 2 éléments (réduction des frais de matériaux et de logistique)
- Prix très avantageux
- Par rapport au soudage, pas de travail préparatoire ni postérieur

Sécurité élevée grâce au blocage mécanique et à l'étanchéification mécanique

- Robuste, étanchéification mécanique
- Absolument étanche
- Admis dans les zones de sécurité
- Absence d'influence d'un joint élastomère
- Chute de pression et niveau sonore comparables à d'autres raccords

Grande facilité de montage

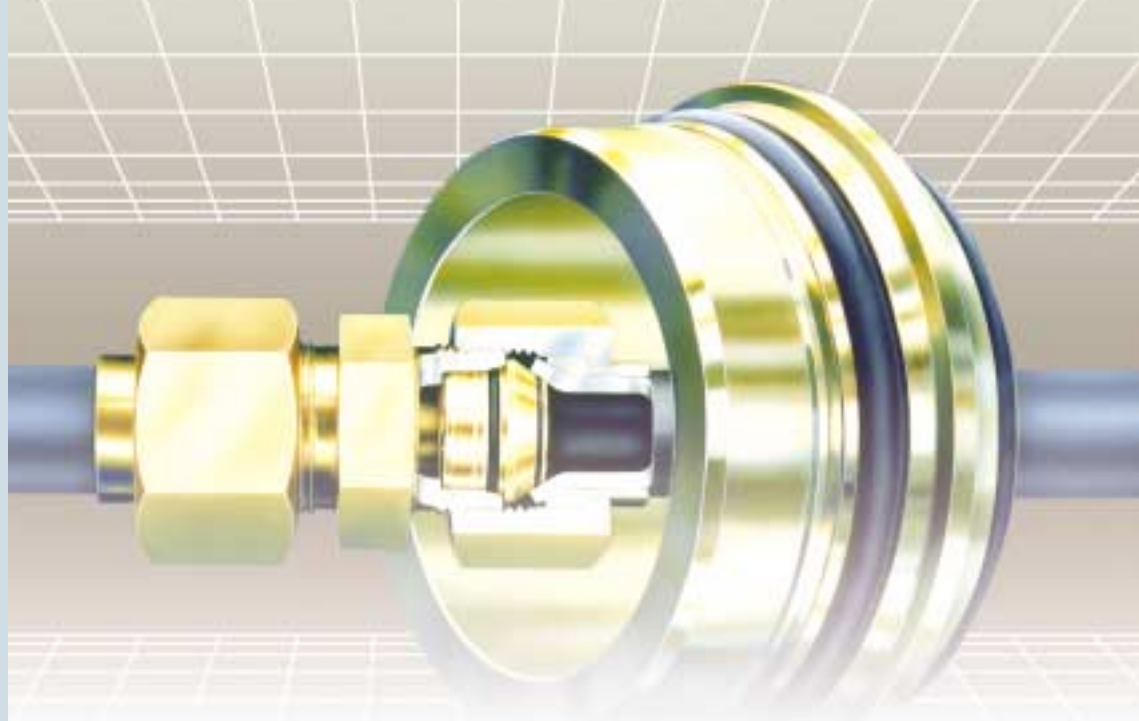
- Un seul point de séparation et d'étanchéité
- Courtes durées de montage, couple réduit
- Extrême facilité de montage
- Couple de serrage nettement plus faible par rapport à tous les systèmes raccords à bague coupante

Zulassungen und Prüfbescheinigungen

Approvals and test certificates

Homologations et certificats d'essai

- Germanischer Lloyd
- RWTÜV
- LEYBOLD AG
- TU Dresden
- Fachausschuss Eisen und Metall III
- American Bureau of Shipping



Funktionsbeschreibung
Functional characteristics
Description fonctionnelle

Bördel-
Rohrverschraubungen 37°
Flare tube fittings 37°
Raccords
pour tubes évasés 37°

Das vierteilige Walterscheid-Bördel-Verschraubungssystem ermöglicht aufgrund einer idealen Formgebung den sicheren und dichten Anschluß gebördelter Rohre an genormte Verschraubungsstutzen nach DIN 2353.

Die Bauteile der Verschraubung sind:

- Verschraubungsstutzen nach DIN
- Zwischenring
- Druckring
- Überwurfmutter

Das zentrale Bauelement - der Zwischenring - bildet den Übergang vom 24°-Konus des Verschraubungsstutzens zum 37°-Bördelanschluß nach SAE. Die Abdichtung zum Stutzenkonus sowie zum Bördelanschluß erfolgt durch O-Ringe. Damit wird, auch bei Druckimpulsbelastung, eine hohe Dichtwirkung gewährleistet. Beim Anzug der Überwurfmutter wird der Zwischenring unter Verformung der Verliersicherung in den Verschraubungskonus gedrückt, bis der Bund am Zwischenring zur Anlage kommt und den weiteren Vorschub begrenzt. Ein schädliches Aufweiten des Verschraubungsstutzens wird vermieden. Nach dem Anzug ist der Zwischenring unverlierbar mit dem Verschraubungsstutzen verbunden. Für den Monteur bedeutet dies eine entscheidende Arbeitshilfe bei der Wiederholmontage. Die Verschraubung läßt sich beliebig oft lösen und wieder montieren. Der Druckring bewirkt eine sichere und kerbfreie Rohreinspannung und gewährleistet dadurch eine hohe Dauerfestigkeit.

Owing to its ideal design, the Walterscheid flare fitting, which consists of four components, enables the safe and tight connection of flared tubes and standardised fitting bodies to DIN 2353.

The fitting components are

- fitting body to DIN
- centre unit
- loose collar
- nut

The central component - the centre unit - effects the transition from the 24° taper of the fitting body to the 37° flare connection to SAE. O-rings assure sealing at the body taper and the flare connection. Thus a high degree of sealing efficiency is ensured, even under alternating pressure load. As the nut is tightened, the centre unit is pressed into the fitting taper with deformation of the retaining collar, until the collar at the centre unit is in full contact with the fitting body thus preventing further penetration and detrimental expansion of the fitting body. Having been tightened, the centre unit is captivated in the fitting body - a great help to the operator during re-assembly. The fitting can be dismantled and re-assembled as often as necessary. The loose collar provides for safe and notch-free tube clamping and high fatigue strength under bending load.

Grâce à sa conception idéale, le raccord Walterscheid, en quatre éléments, pour tube évasé permet le raccordement sûr et étanche de tubes évasés aux corps de raccords standard suivant DIN 2353.

Le raccord est composé des éléments suivants:

- corps du raccord suivant DIN
- cône intermédiaire
- manchette
- écrou

L'élément central - le cône intermédiaire - assure la liaison entre le cône à 24° du corps et l'évasement du tube à 37° suivant SAE. L'étanchéité, côté cône du corps et côté évasement, est garantie par des joints toriques, ce qui donne lieu à une étanchéité élevée, même sous pression alternée. Quand l'écrou est serré, le cône intermédiaire est introduit dans le cône du raccord le collet de retenue se déformant, jusqu'à ce que la butée sur le cône intermédiaire soit pleinement en contact avec le corps du raccord, empêchant ainsi la pénétration ultérieure et l'élargissement nuisible du corps de raccord. Après le serrage, le cône est lié de manière définitive avec le corps du raccord, ce qui signifie, pour le monteur, une aide importante lors du remontage. Le raccord peut être déserré et remonté à volonté. La manchette assure le serrage sûr du tube sans entaillage, garantissant ainsi une résistance élevée de fatigue à la flexion.

Computeroptimierte Bördel-Technologie

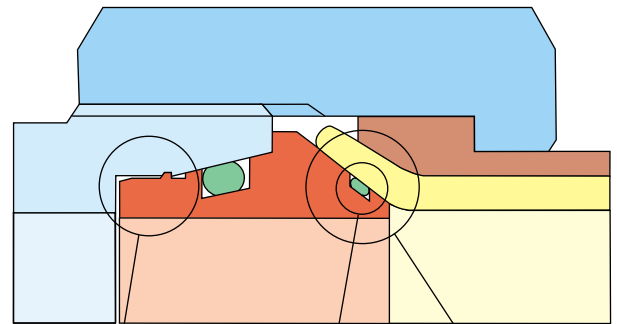
Die Walterscheid-Bördel-Rohrverschraubung ist eine in ihrer Gesamtheit optimierte Entwicklung, die heutigen und zukünftigen Marktforderungen entspricht. Mit Hilfe modernster Berechnungsverfahren wurde eine hohe Leistung und Montagesicherheit geschaffen. Dies beruht maßgeblich auf einer optimierten Teilegeometrie. Durch zwei elastomere Dichtungen wird eine hohe Dichtwirkung erzielt. Gleitbeschichtete Gewinde und eine Verliersicherung am Zwischenring bewirken eine sichere Handhabung.

Computer-optimised technology for the connection of tubes

The Walterscheid flare tube fitting has been optimised in its entirety and permits to satisfy the market requirements of today and tomorrow. High performance and safety of assembly have been achieved with the aid of latest computing methods, and are due primarily to an optimised component geometry. A high degree of tightness is obtained through the use of two elastomer seals. Anti-friction coated threads and a retaining collar at the centre unit ensure safe handling.

La technologie optimale informatisée des raccords de tubes

Le raccord pour tube évasé Walterscheid représente une mise au point optimisée dans son intégralité qui correspond aux demandes actuelles et futures du marché. Grâce à des méthodes de calcul les plus modernes, on a abouti à une haute performance et une sécurité élevée de montage, ce qui se base en premier lieu sur l'optimisation de la géométrie des composants. Deux joints élastomère assurent une étanchéité élevée. Des filetages avec revêtement de glissement et un bourrelet de retenue sur le cône intermédiaire garantissent la sécurité de maniement.



Verliersicherung am Zwischenring

Retaining collar at the centre unit

Bourelet de retenue sur cône intermédiaire

Zusätzliche elastomere Dichtung

Additional elastomer seal

Joint élastomère complémentaire

Optimierte Teilegeometrie

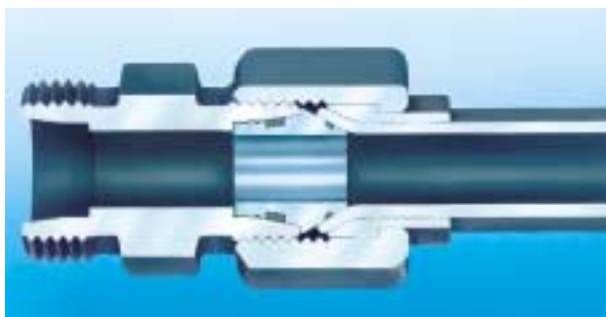
- große Bördeltulpe
- adaptierter Druckring
- kerbfreie Rohreinspannung

Optimised component geometry

- large flare
- adapted loose collar
- notch-free clamping of the tube

Géométrie optimisée des composants

- grand collet évasé
- manchette adaptée
- serrage du tube sans entailage



Zwischenring mit zwei elastomeren Dichtungen

Centre unit with two elastomer seals

Cône intermédiaire avec deux joints élastomère

Hohe Feindichtheit durch...

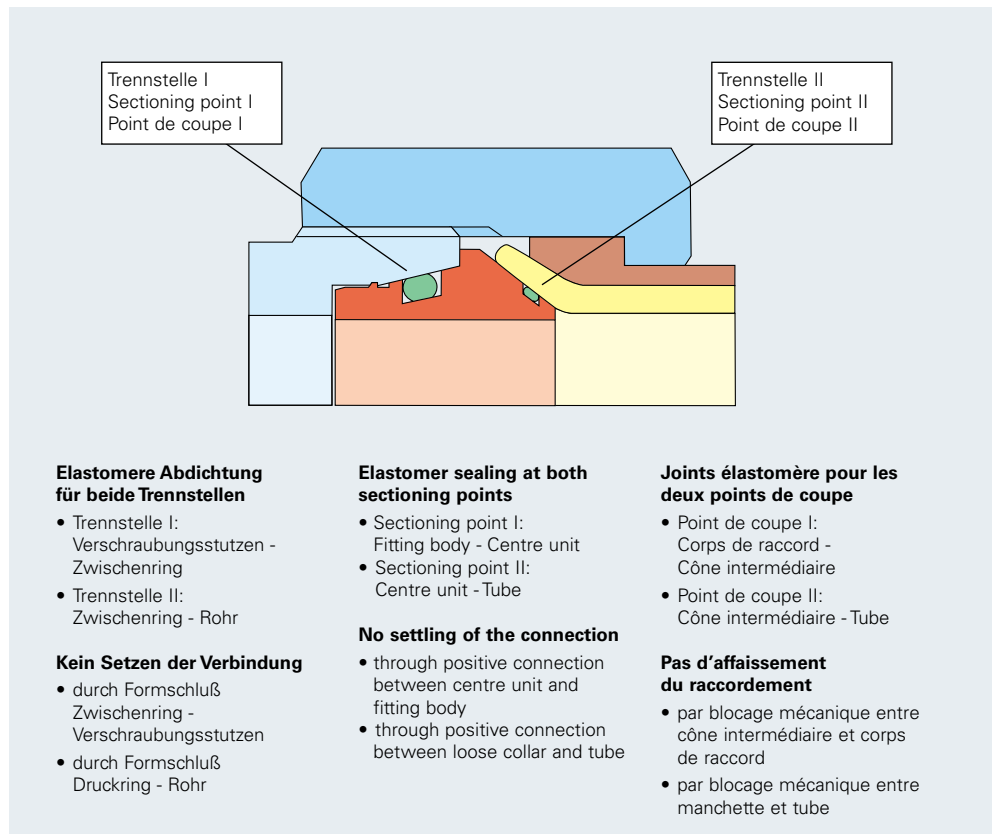
- elastomere Abdichtung für beide Trennstellen
- kein Setzen der Verbindung

High degree of fine sealing efficiency

- elastomer sealing at both sectioning points
- no settling of the connection

Haute étanchéité fine

- joints élastomère pour les deux points de coupe
- pas d'affaissement du raccordement



Sichere Rohralterung durch...

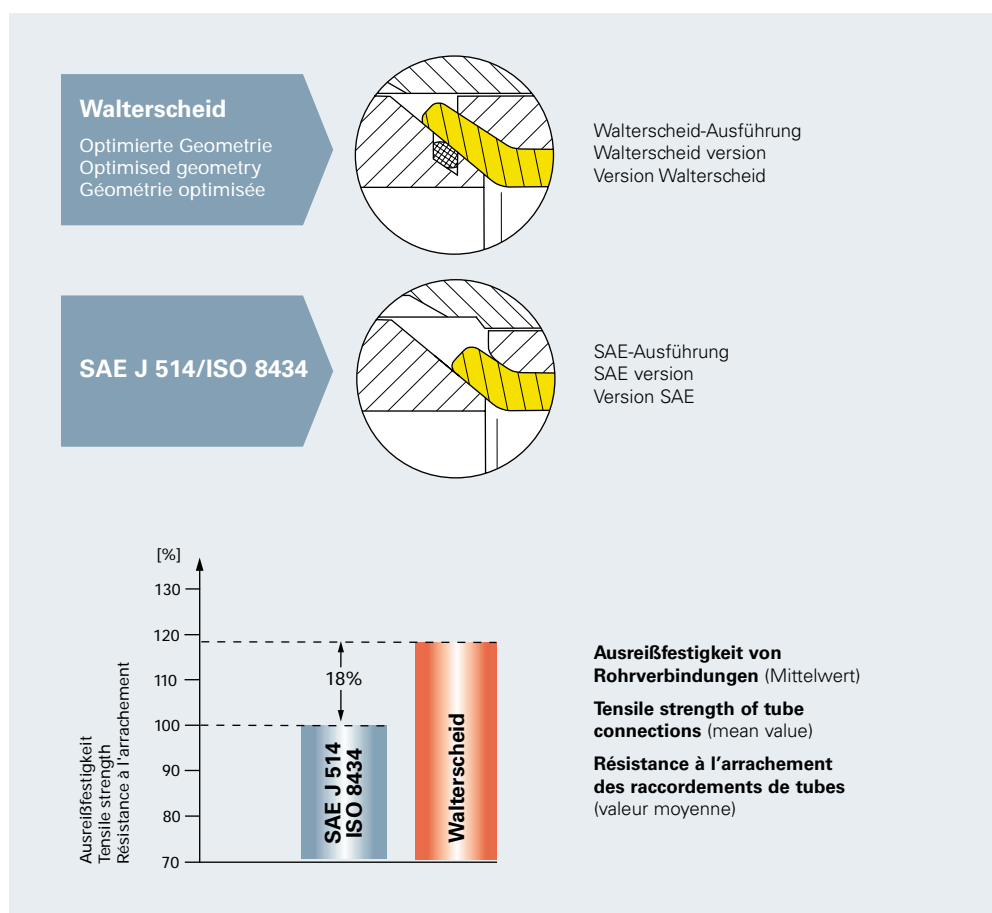
- große Bördeltulpe und adaptierten Druckring
- hohe Ausreißfestigkeit
- keine Gefahr des Ausreißens bei Unteranzug

Reliable tube retention

- large flare and adapted loose collar
- high tensile strength
- no risk of disconnection when tightened insufficiently

Ancrage sûr du tube

- grand collet évasé et manchette adaptée
- haute résistance à l'arrachement
- pas de risque d'arrachement lors de serrage insuffisant



Hohe Nenndrücke

- L-Baureihe für Nenndrücke bis 500 bar
- S-Baureihe für Nenndrücke bis 630 bar
- Hohe Nenndrücke nur mit Walterscheid-Originalteilen

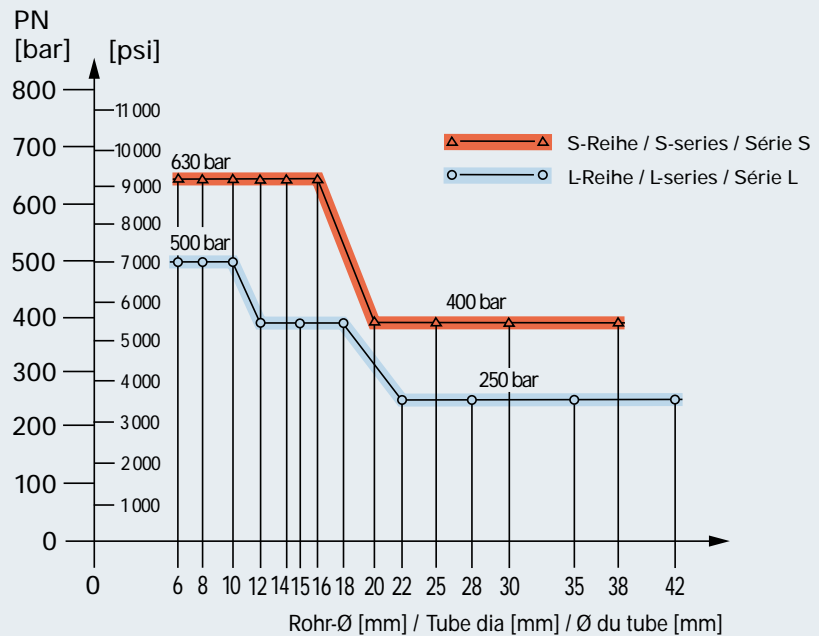
High nominal pressures

- L-series for nominal pressures up to 500 bar
- S-series for nominal pressures up to 630 bar
- High nominal pressures only obtained by original Walterscheid components

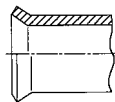
Pressions nominales élevées

- Série L pour pressions nominales jusqu'à 500 bar
- Série S pour pressions nominales jusqu'à 630 bar
- Pressions nominales élevées uniquement avec pièces Walterscheid d'origine

Nenndruckstufen Bördel-Verschraubung
Nominal pressure classes - Flare fitting
Paliers de pressions nominales - Raccord pour tube évasé



St 37.4/52.4



Verwendbare Rohrwandstärken
- Stahl
Suitable tube wall thicknesses
- Steel
Epaisseurs de paroi du tube utilisables
- Acier

Rohr-AD Tube OD Tube Ø ext. [mm]	Wandstärke [mm] · Wall thickness [mm] Epaisseur de paroi [mm]									
	0,75	1	1,5	2	2,5	3	3,5	4	5	6
6										
8										
10										
12										
14										
15										
16										
18										
20										
22										
25										
28										
30										
35										
38										
42										

Handelsübliche Hydraulikrohre, Werkstoff St 37.4/52.4 gemäß DIN 1630, NBK-3.1B. Maße und Toleranzen nach DIN 2391, Teil 1-C.
Commercial hydraulic tube, material St 37.4/52.4 according to DIN 1630, NBK-3.1B. Dimensions and tolerances according to DIN 2391, sheet 1-C.
Tube hydraulique courant, matériau St 37.4/52.4 suivant DIN 1630, NBK-3.1B. Dimensions et tolérances suivant DIN 2391, folio 1-C.

Sichere Montage durch...

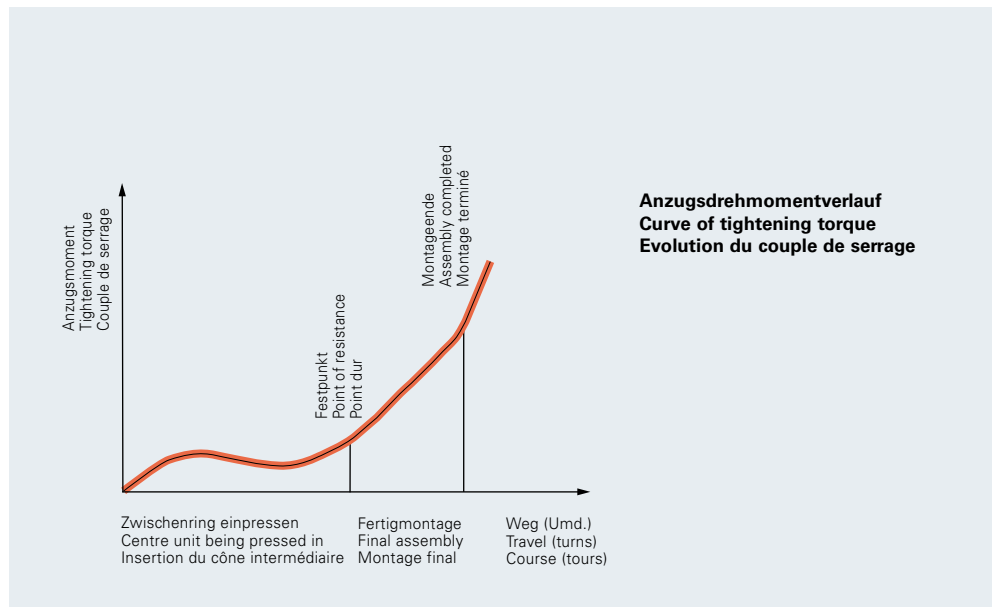
- sichere Erstmontage durch spürbaren Drehmomentanstieg
- sichere Wiederholmontage durch Verliersicherung des Zwischenringes

Safe assembly

- safe initial assembly by a noticeable torque increase
- safe re-assembly due to the retaining collar at the centre unit

Montage sûr

- montage initial sûr par augmentation sensible du couple
- remontage sûr par bouveret de retenue sur cône intermédiaire



Hohe Dauerfestigkeit durch...

- sichere Rohreinspannung
- kerbfreie Rohreinspannung

High fatigue strength

- reliable tube connection
- notch-free clamping of the tube

Résistance élevée à la fatigue

- ancrage sûr du tube
- serrage du tube sans entaille

Standardlösung durch...

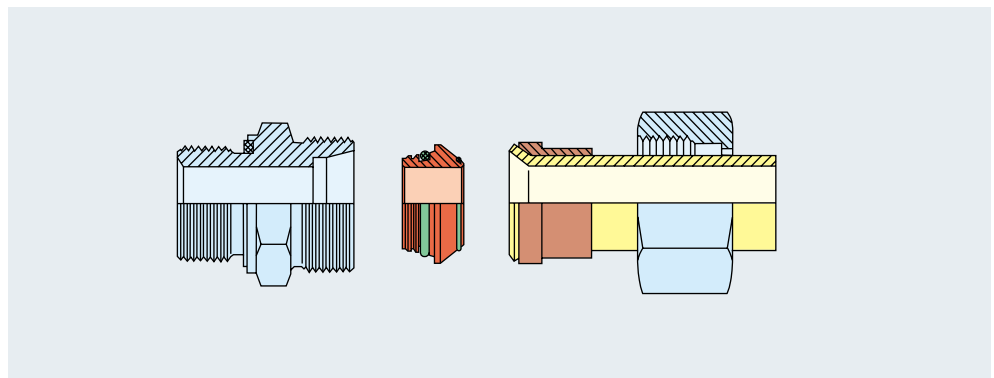
- Verwendung von Verschraubungsstützen entsprechend DIN 2353

Standard solution

- use of fitting bodies to DIN 2353

Solution standard

- utilisation de corps de raccord selon DIN 2353



Walterscheid-Bördel-Verschraubung (DIN 3949) im Vergleich zur Bördelverschraubung nach SAE J 514/ISO 8434

Durch die Verwendung des Verschraubungsstützens entsprechend DIN 2353 ist eine größere Rohrbördelung als bei dem Bördelsystem SAE J 514/ISO 8434 möglich. Hierdurch wird die Verwendung von größeren Rohrwandstärken und die elastomere Abdichtung rohreseitig ermöglicht.

Die Walterscheid-Bördel-Rohrverschraubung harmoniert außerdem mit der L- und S-Baureihe mit den allgemein verwendeten Anschlußarten Schneidring/Profiling, Schweißnippel und Dichtkegel mit O-Ring an Rohrverschraubungen und Schlauchanschlüssen. Eine einheitliche Lagerhaltung der Stutzen, Schläuche und Dichtkegel wird hierdurch gewährleistet.

Das Bördelsystem SAE J 514/ISO 8434 erfordert separate Stutzen und Schlauchanschlüsse.

Walterscheid Flare Fitting (DIN 3949) in comparison with the Flare Fitting to SAE J 514/ISO 8434

Owing to the use of a fitting body to DIN 2353, the tube flare, which can be obtained, is larger than in flare fittings to SAE J 514/ISO 8434. This results in the possibility to use a greater tube wall thickness and to provide elastomer sealing at the tube end.

Moreover, Walterscheid flare tube fittings complete the L and S-ranges of the connection systems with cutting rings/profile rings, welding nipples and taper fittings with O-ring commonly used for tube fittings and hose connections. Uniform storing of bodies, hoses and tapers can thus be guaranteed.

The flare system to SAE J 514/ISO 8434 requires separate bodies and hose connections.

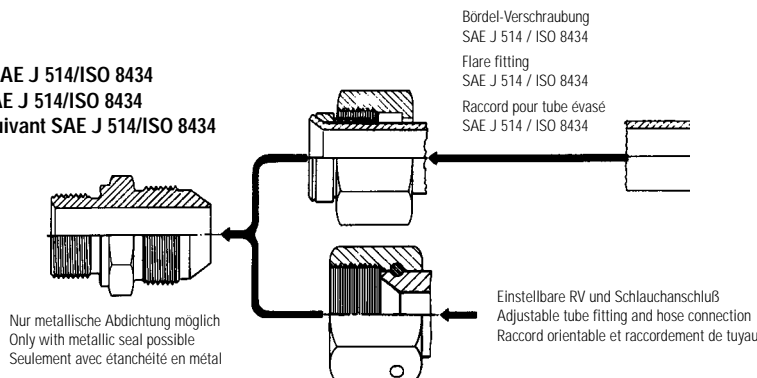
Comparaison entre le raccord pour tube évasé Walterscheid (DIN 3949) et le raccord pour tube évasé suivant SAE J 514/ISO 8434

Grâce à l'utilisation d'un corps de raccord suivant DIN 2353, un évasement du tube plus large que celui du système à évaser suivant SAE J 514/ISO 8434 est possible. Il en résulte la possibilité d'employer de plus grandes épaisseurs de paroi ainsi qu'une étanchéité élastomère côté tube.

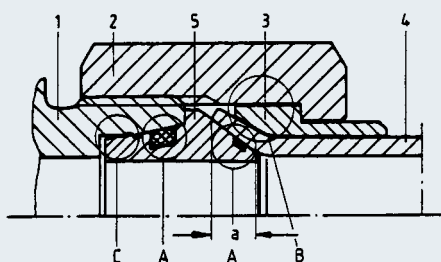
Le raccord pour tube évasé Walterscheid s'accorde avec les séries L et S des types de raccordement connus, c.-à-d. bague coupante/bague profilée, embout à souder et cône d'étanchéité avec joint torique qui sont utilisés dans les raccords et raccordements de tuyaux. Le stockage à l'unité des corps, tuyaux et cônes d'étanchéité peut ainsi être permis.

Le système pour tube évasé SAE J 514/ISO 8434 nécessite des corps et raccordements de tuyaux séparés.

Anschluß nach SAE J 514/ISO 8434 Connection to SAE J 514/ISO 8434 Raccordement suivant SAE J 514/ISO 8434

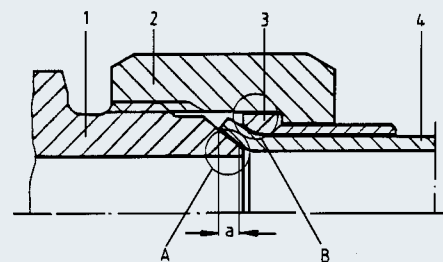


Walterscheid-Bördel-Verschraubung Walterscheid flare fitting Raccord pour tube évasé Walterscheid



Teil	Component	Composant
1 - Stutzen 24°, DIN EN ISO 8434-1	1 - Body 24°, DIN EN ISO 8434-1	1 - Corps de 24°, DIN EN ISO 8434-1
2 - Überwurfmutter, DIN 3949	2 - Nut, DIN 3949	2 - Ecrou, DIN 3949
3 - Druckring, DIN 3949	3 - Loose collar, DIN 3949	3 - Manchette, DIN 3949
4 - Rohr, DIN 2391	4 - Tube, DIN 2391	4 - Tube, DIN 2391
5 - Zwischerring mit O-Ringen, DIN 3949	S - Centre unit with O-rings, DIN 3949	5 - Cône intermédiaire avec joints toriques, DIN 3949
Bereich	Area	Zone
A - Elastomere Dichtungen	A - Elastomer seals	A - Joints élastomère
a - Große Überdeckung durch vergrößerten Bördelkragen	a - Extensive overlap through enlarged flare collar	a - Large recouvrement grâce au collet évasé plus grand
B - Große, formschlüssige Verbindung Druckring/Rohr	B - Large positive connection of loose collar and tube	B - Large liaison par blocage mécanique entre manchette et tube
C - Verliersicherung	C - Retaining collar	C - Bourrelet de retenue

SAE J 514/ISO 8434



Teil	Component	Composant
1 - Stutzen 74°	1 - Body 74°	1 - Corps de 74°
2 - Überwurfmutter	2 - Nut	2 - Ecrou
3 - Druckring	3 - Loose collar	3 - Manchette
4 - Rohr	4 - Tube	4 - Tube
Bereich	Area	Zone
A - Metallische Abdichtung	A - Metallic seal	A - Etanchéité en métal
a - Geringe Überdeckung	a - Short overlap	a - Peu de recouvrement
B - Kleine, nicht adaptierte Verbindung Druckring/Rohr	B - Short, non-adapted connection of loose collar and tube	B - Petite liaison non adaptée entre manchette et tube



Zulassungen und Prüfbescheinigungen
Approvals granted and test certificates
Homologations accordées et certificats d'essai

- Germanischer Lloyd
- Bureau Veritas
- Lloyd's Register of Shipping
- American Bureau of Shipping
- US-Coastguard
- Polski Rejestr Statkow
- TÜV Rheinland
- LEYBOLD AG
- Wehrtechnische Dienststelle WTD 71 (Flammtest)
- Staatliches Materialprüfamnt NRW
- Fachausschuß Eisen und Metall III
- Finnisches Technisches Untersuchungsamt
- Oberbergamt Clausthal-Zellerfeld
- RWTH Aachen

LR Type Approval Certificate Extension

CERTIFICATE OF TYPE APPROVAL

SCREW COUPLINGS

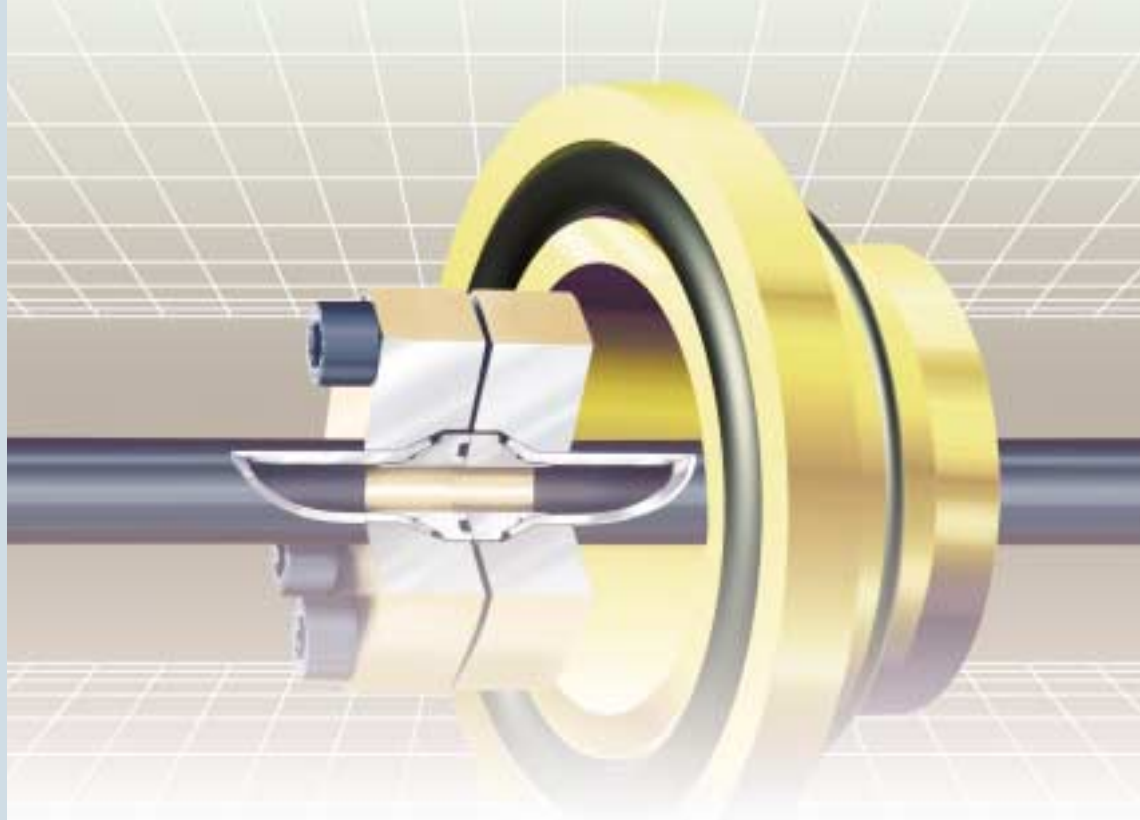
WALTERSCHEID ROHRVERBINDUNGSTECHNIK GmbH
 Leimer, GERMANY

Certificate No P-8702

THIS IS TO CERTIFY THAT

FLARE TUBE FITTINGS
 BO-WEV, BO-GV, BO-WV, BO-TV, BO-KV, BO-...
 BO-A,SV BO-ESV, BO-EWVD, BO-ETV...
 BO-EWVD, BO-ETVD, BO-...
 BO-RV, BO-RVV, BO-...
 BO-GAV

AS



Funktionsbeschreibung
Functional characteristics
Description fonctionnelle

Bördelflansche 37°
37° flared flanges
Brides d'évasement 37°

nach / according to / selon
SAE J518/ISO 6162

„SAE 37°“ ist die neue Bördelflansch-Produktreihe als kostengünstige Alternative zu Rohrverbindungen, die früher geschweißt werden mußten.

Kein Anheften, kein Schweißen, kein Beizen und eine drastische Senkung der Investition für erforderliche Fertigungsanlagen!

Und zum Bördeln bietet Walterscheid elektronisch gesteuerte Umformmaschinen. Das sichert die rationelle Produktion bei hoher und gleichbleibender Qualität - sowohl stationär als auch vor Ort.

"SAE 37°" is a new range of flared flange products offering a low-cost alternative to tube fittings which previously required welding.

No tack-welding, no full welding, no pickling, and a radical reduction in the investment outlay for the necessary manufacturing facilities!

And Walterscheid offers electronically controlled reshaping machines for flaring. That ensures efficient production and consistently high quality - both in the factory and in the field.

La nouvelle gamme de brides d'évasement «SAE 37°» est une solution alternative pour les raccords de tubes qui autrefois devaient être soudés.

Pas de pointage, ni de soudage, ni de décapage et une réduction drastique de l'investissement pour les installations de production requises!

De plus, pour l'évasement, Walterscheid propose des machines de formage à commande électronique. Ces machines - stationnaires ou mobiles - assurent une production rationnelle pour une qualité constante et de tout premier ordre.

Zulassungen und Prüfbescheinigungen
Approvals granted and test certificates
Homologations accordées et certificats d'essai

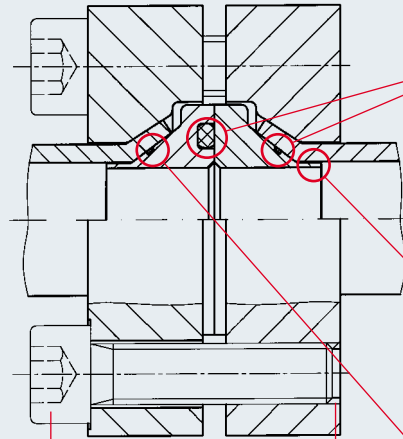
- Germanischer Lloyd



**Verbinden
 ohne Schweißen**

**Connecting
 without welding**

**Raccorder
 sans souder**



Optimale Dichtwirkung durch zwei elastomere Dichtungen im Zwischenring und Formschluß

Optimum sealing effect due to two elastomer seals in the centre unit and positive connection

Haut degré d'étanchéité grâce aux deux joints élastomère dans la bague intermédiaire et au blocage mécanique

Leichte Montage durch Zentrierhilfe am Zwischenring

Easy assembly due to a centring aid on the centre unit

Facilité de montage grâce à l'auxiliaire de centrage de la bague intermédiaire

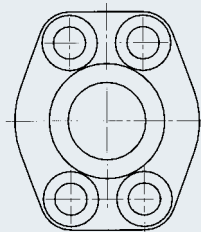
Schraube nach DIN 912
 Screw according to DIN 912
 Vis selon DIN 912

Einschraubgewinde metrisch
 Metric screw thread
 Filetage mâle au pas métrique

Maximale Montagesicherheit durch 37°-Bördeltechnik

Maximum reliability of assembly due to 37° flare technology

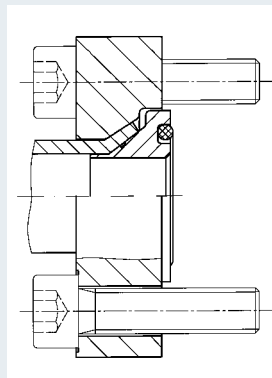
Un maximum de sécurité de montage grâce à la technique d'évasement à 37°



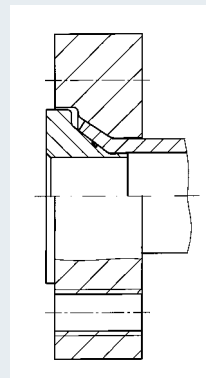
Die äußeren Abmessungen, der Abstand der Bohrungen zueinander (Lochbild) und die Anschlußmaße der Flansche entsprechen der SAE J 518 und der ISO 6162:1994 (E).

The outside dimensions, the relative hole spacing (hole pattern) and the connecting dimensions of the flanges correspond to SAE J 518 and ISO 6162:1994 (E).

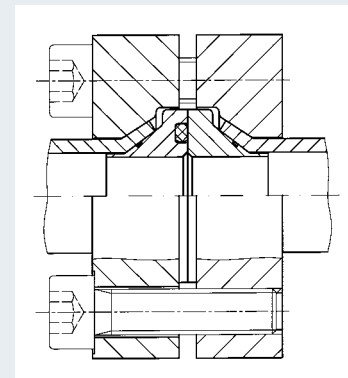
Les dimensions extérieures, l'espacement des trous (configuration de perçage) et les dimensions de raccordement des brides sont conformes aux normes SAE J 518 et ISO 6162:1994 (E).



BO-FK
 Flansch komplett
 Flange assembly
 Bride complète



BO-FGK
 Flansch Gegenstück komplett
 Flange counterpart assembly
 Pendant de la bride complet



BO-FVK
 Flansch Verbinder komplett
 Flange connector assembly
 Raccord de bride complet

Umformmaschinen Reshaping machines Machines de formage

MEG-BO2 MEG-WF1/BO2



Zur Bördelung von Rohren der Rohr-AD 16 bis 42 mm. Durch einfachen Werkzeugwechsel kann die MEG-WF1/BO2 auch als WALFORM-Maschine verwendet werden.

For flaring tubes with a tube OD of 16 to 42 mm. By simply changing the tool, the MEG-WF1/BO2 can also be used as a WALFORM machine.

Pour l'évasement de tubes d'un diamètre extérieur de 16 à 42 mm. Par un simple changement d'outil, la MEG-WF1/BO2 peut aussi être utilisée comme machine WALFORM.

MEG-WF2/BO



Zur Bördelung von Rohren der Rohr-AD 16 bis 60,3 x 8 mm. Durch Werkzeugwechsel (inkl. WF-Kopf) kann diese Maschine auch als WALFORM-Maschine verwendet werden.

For flaring tubes with a tube OD of 16 to 60.3 x 8 mm. By changing the tool (incl. the WF head), this machine can also be used as a WALFORM machine.

Pour l'évasement de tubes d'un diamètre extérieur de 16 à 60,3 x 8 mm. Par un changement d'outil (la tête WF incluse), cette machine peut aussi être utilisée comme machine WALFORM.

MEG-WF3/BO



Zur Bördelung von Rohren der Rohr-AD größer 60,3 mm. Durch Werkzeugwechsel (inkl. WF-Kopf) kann diese Maschine auch als WALFORM-Maschine verwendet werden.

For flaring tubes with a tube OD greater than 60.3 mm. By changing the tool (incl. WF head), this machine can also be used as a WALFORM machine.

Pour l'évasement de tubes d'un diamètre extérieur de plus de 60,3 mm. Par un changement d'outil (la tête WF incluse), cette machine peut aussi être utilisée comme machine WALFORM.

Verwendbare Rohrabmessungen Usable tube dimensions Dimensions de tubes utilisables

6000 psi / 420 bar		3000 psi / 210 bar	
SAE-Größe in Zoll SAE size in inches Taille SAE en pouce	Rohr-AD Tube OD Tube ø ext.	SAE-Größe in Zoll SAE size in inches Taille SAE en pouce	Rohr-AD Tube OD Tube ø ext.
- 1/2	- 16 x 2,5	- 1/2	- 16 x 2,0
	- 16 x 3,0		- 16 x 2,5
	- 20 x 2,5		- 20 x 2,0
	- 20 x 3,0		- 20 x 2,5
	- 20 x 3,5		- 20 x 3,0
- 3/4	- 20 x 2,5	- 3/4	- 22 x 2,0
	- 20 x 3,0		- 20 x 2,0
	- 20 x 3,5		- 20 x 2,5
	- 20 x 4,0		- 20 x 3,0
	- 25 x 3,0		- 25 x 2,5
	- 25 x 4,0		- 25 x 3,0
	- 25 x 4,0		- 25 x 4,0
- 1	- 25 x 2,5	- 1	- 28 x 3,0
	- 25 x 3,0		- 25 x 2,5
	- 25 x 4,0		- 25 x 3,0
	- 30 x 4,0		- 25 x 4,0
	- 30 x 5,0		- 30 x 4,0
	- 34 x 4,5		- 35 x 3,0
	- 38 x 5,0		- 38 x 4,0
- 1 1/4	- 30 x 5,0	- 1 1/4	- 38 x 4,0
	- 38 x 4,0		- 38 x 5,0
	- 38 x 5,0		- 42 x 3,0
	- 38 x 6,0		- 42 x 4,0
	- 43 x 5,5		- 38 x 4,0
- 1 1/2	- 38 x 5,0	- 1 1/2	- 38 x 5,0
	- 38 x 6,0		- 42 x 3,0
	- 50 x 5,0		- 42 x 4,0
	- 50 x 6,0		- 48,3 x 3,2
	- 50 x 8,0		- 50 x 2,5
- 2	- 60 x 6,0	- 2	- 50 x 3,0
	- 60 x 8,0		- 50 x 5,0
	- 60 x 10,0		- 60 x 3,0
	- 60,3 x 8,0		- 60 x 8,0
	- 60,3 x 10,0		- 60,3 x 3,6
			- 60,3 x 5,6
	- 60,3 x 8,0		
		- 2 1/2	- 76,1 x 2,9
			- 76,1 x 7,1
		- 3	- 60 x 8,0
			- 60,3 x 3,6
			- 60,3 x 5,6
			- 60,3 x 8,0
			- 76,1 x 2,9
			- 88,9 x 3,6
		- 3 1/2	- 76,1 x 2,9
			- 88,9 x 3,6
		- 4	- 76,1 x 2,9
			- 88,9 x 3,6
			- 101,6 x 8,8

Diese und weitere
Größen auf Anfrage
These sizes and additional
ones on request
Ces tailles ainsi que
d'autres sur demande

Zum Standardprogramm gehören Rohrabmessungen von 16 x 2 bis 60/60,3 x 8 mm. Es ist eine kaltbiege- und bördelfähige Rohrqualität zu verwenden. Wir empfehlen die Verwendung von nahtlosem Präzisionsstahlrohr mit Maßen nach DIN 2391, Teil 1-C, Werkstoff St 37.4 und St 52.4 gemäß DIN 1630, Ausführung NBK-3.1 B.

The standard range includes tube dimensions from 16 x 2 to 60/60.3 x 8 mm. A tube grade suitable for cold-bending and flaring is to be used. We recommend the use of seamless precision steel tubing with dimensions to DIN 2391, sheet 1-C, materials St 37.4 and St 52.4 to DIN 1630, Type NBK-3.1 B.

Font partie de la gamme de produits standard les dimensions de tube de 16 x 2 à 60/60,3 x 8 mm. On utilisera une qualité de tube apte au cintrage à froid et à l'évasement. Nous recommandons l'utilisation de tubes de précision en acier sans soudure dont les cotes sont conformes à la norme DIN 2391, folio 1-C, matériaux St 37.4 et St 52.4 selon DIN 1630, type NBK-3.1 B.

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Oberflächen Surface Surface	B2
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Berechnungsdrücke und Toleranzen von nahtlosem Präzisionsstahlrohr Calculated pressures and tolerances of seamless precision steel tubes Pressions théoriques et tolérances de tube de précision en acier sans soudure	B6-B7
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B

Werkstoffe

Verschraubungswerkstoffe

Walterscheid-Verschraubungen werden aus gezogenen und geschmiedeten Stählen hergestellt. Werkstoffe entsprechen DIN 3859 (Techn. Lieferbedingungen für Rohrverschraubungen). Die Überwurfmuttern sind kalt- bzw. warmgepreßt. Die Verschraubungen sind auch aus nicht rostendem Stahl, X6CrNiMoTi17122 nach DIN 17440, Werkstoff-Nr. 1.4571, lieferbar. Sonderwerkstoffe auf Anfrage.

Dichtungswerkstoffe

Serienmäßig: NBR (z.B. Perbunan®)
Auf Anfrage: FPM (z.B. Viton®)

Achtung!

Bei Verschraubungen mit Elastomerabdichtung ist DIN 7716 zu beachten (Elastomere: Lagerung, Reinigung, Wartung). Lagerung: trocken, nicht über 25°C, vor Sonnenlicht, Ozon und starkem künstlichen Licht schützen!

Oberflächen

Alle Baureihen aus Stahl sind galvanisch verzinkt und gelbchromatiert. Auch das Überlackieren mit branchenüblichen Lacken ist problemlos möglich (Aussagen der Lackhersteller beachten). Alle Überwurfmuttern sind zur Reduzierung der Montage Drehmomente gleitbeschichtet. Alle Anschweißverschraubungen sind phosphatiert.

Materials

Fitting materials

Walterscheid profile ring fittings are machined from drawn or forged steel. Materials according to DIN 3859 (technical specification for tube fittings). Nuts are either cold or hot pressed. Fittings made of stainless steel X6CrNiMoTi17122 to DIN 17440, material No. 1.4571, are also available for supply. Special materials on request.

Seal materials

Production seals: NBR (e.g. Perbunan®)
On request: FPM (e.g. Viton®)

Caution!

For fittings with elastomer seal, DIN 7716 should be taken into account (elastomers: storing, cleaning, maintenance). Storing: Keep in dry place, temperature not to exceed 25°C, protect from sunlight, ozone and strong artificial light.

Surface

All steel ranges (L and S) are cold-galvanized and yellow passivated. Subsequent painting with customary paints does not cause any problems (take information provided by paint manufacturers into account). In order to reduce assembly torques, all nuts are antifriction coated. All weldable fittings are phosphated.

Les matériaux

Les matériaux des raccords

Les raccords à bague profilée Walterscheid sont fabriqués en acier étiré ou matricé. Matériaux suivant la norme DIN 3859 (spécifications techniques raccords). Les écrous sont matricés à froid ou à chaud. Les raccords sont également livrables en acier inox, X6CrNiMoTi17122, suivant DIN 17440, réf. du matériau 1.4571. Matériaux spéciaux disponibles sur demande.

Les matériaux des joints

En série: NBR (p.ex. Perbunan®)
Sur demande: FPM (p.ex. Viton®)

Attention!

Pour les raccords avec joint élastomère, tenir compte de la norme DIN 7716 (élastomères: stockage, nettoyage, entretien). Stockage: Tenir au sec à une température ne pas dépassant 25°C, à préserver de la lumière solaire, de l'ozone et de toute lumière artificielle intense.

Surface

Toutes les séries en acier sont galvanisées et passivées en coloration jaune. La peinture ultérieure avec des colorants en usage dans la branche se fait sans problème (tenir compte des informations données par les fabricants de colorants). Pour réduire les couples de montage, tous les écrous sont couverts d'un revêtement de glissement. Tous les raccords à souder sont phosphatés.

Werkstoff Material Matériau	Beschreibung Description Description	Oberflächenschutz/Oberfläche Surface protection/Surface Protection de surface/Surface			
		A3L/A2L	A3L/A2L + Gleitbeschichtung + Antifriction coating + Revêtement de glissement	A3D/A2M	Znphr5f
Stahl Steel Acier	Verschraubungskörper / Fitting body / Corps du raccord	●			
	Überwurfmuttern / Nuts / Ecrous		●		
	Profilringe / Profile rings / Raccords à bague profilée			●	
	Anschweißstutzen / Weldable stud / Union simple à souder				●

Werkstoff Material Matériau	Beschreibung Description Description	Oberfläche / Surface / Surface	
		blank polished / nu	partiell versilbert partially silver coated / partiellement argenté
Nicht rostender Stahl 1.4571 Stainless steel 1.4571 Acier inox 1.4571	Verschraubungskörper / Fitting body / Corps du raccord	●	
	Überwurfmuttern bis Größe 12L/10S / Nuts up to size 12L/10S Ecrous pour la dimension 12L/10S	●	
	Überwurfmuttern ab Größe 15L/12S / Nuts from size 15L/12S and upwards / Ecrous à partir de la dimension 15L/12S		●
	Anschweißstutzen / Weldable stud / Union simple à souder	●	
	Profilringe / Profile rings / Raccords à bague profilée	●	

A3L / A2L / A2M nach DIN/ISO 4042
to DIN/ISO 4042
suivant DIN/ISO 4042

Znphr5f nach DIN/EN/ISO 3892 und DIN 50942
to DIN/EN/ISO 3892 and DIN 50942
suivant DIN/EN/ISO 3892 et DIN 50942

Medien

Walterscheid-Profilring-Verschraubungen sind für die Verwendung von handelsüblichen Hydraulikölen ausgelegt. Bei Verwendung von Sondermedien, wie etwa schwer entflammbare Flüssigkeiten oder nativen Ölen, ist Rücksprache mit der Anwendungsberatung zu halten.

Fluids

Walterscheid profile ring fittings are designed for the use of commercial hydraulic oils. If special fluids, such as hardly inflammable fluids or crude oils are used, please contact our application engineers.

Les fluides

Les raccords à bague profilée Walterscheid sont conçus pour l'utilisation d'huiles hydrauliques commerciales. Pour l'utilisation de fluides spéciaux tels que les fluides peu inflammables ou huiles natives, veuillez vous renseigner auprès de notre conseil d'application technique.



■ Druck- und Temperaturbelastbarkeit

Druckbelastbarkeit

PB - Betriebsdruck

Der zulässige Betriebsüberdruck für ein Bauteil ist der höchste Innenüberdruck, der für dieses Bauteil aufgrund des Werkstoffes und der Berechnungsgrundlagen bei der zulässigen Betriebstemperatur TB bei störungsfreiem Betrieb zulässig ist.

PN - Nenndruck

Der Nenndruck ist eine gebräuchliche, gerundete, auf den Druck bezogene Kennzahl.

■ Pressure strength and temperature resistance

Pressure strength

PB - Working pressure

The permissible excess working pressure for a component is identical with the max. internal excess pressure admissible for this component owing to the material and the bases of calculation at the permissible operating temperature TB during trouble-free operation.

PN - Nominal pressure

Nominal pressure is a common rounded characteristic value relating to pressure.

■ Résistance à la pression et résistance thermique

Résistance à la pression

PB - Pression de service

L'excès de pression de service admissible pour un composant est égal à l'excès maxi de pression intérieure admissible pour ce composant suivant le matériau utilisé et les bases de calcul pour la température de service TB admissible et pendant une utilisation en absence de perturbations.

PN - Pression nominale

La pression nominale est une valeur caractéristique usuelle, arrondie qui se réfère à la pression.

Druckbereiche

Pressure ranges

Plages de pressions

Baureihe Range Série	Stahl - Profilirung + WALFORM Steel profile ring tube fittings + WALFORM Raccords à bague profilée en acier pour tubes + WALFORM		Nicht rostender Stahl - Profilirung + WALFORM (1.4571) Stainless steel profile ring tube fittings + WALFORM (1.4571) Raccords à bague profilée en acier inox pour tubes + WALFORM (1.4571)	
	RAD Tube OD Tube Ø ext.	Nenndruck Nominal pressure Pression nominale	RAD Tube OD Tube Ø ext.	Nenndruck Nominal pressure Pression nominale
LL (sehr leicht, nur Schneidring) (very light, only cutting ring) (très légère, seulement bague coupante)	4-8	100 bar	4-8	100 bar
L (leicht) (light) (légère)	6-10 12-18 22-42	500 bar 400 bar 250 bar	6-12 15-18 22-42	400 bar 315 bar 160 bar
S (schwer) (heavy) (lourde)	6-10 12-16 20-38	800 bar 630 bar 420 bar	6-16 20-30 38	630 bar 400 bar 315 bar
Baureihe Range Série	Stahl - Bördel-Verschraubung Steel flare fitting Raccord en acier pour tube évasé		Nicht rostender Stahl - Bördel-Verschraubung Stainless steel flare fitting Raccord en acier inox pour tube évasé	
L (leicht) (light) (légère)	6-10 12-18 22-42	500 bar 400 bar 250 bar	6-12 15-18 22-42	400 bar 315 bar 160 bar
S (schwer) (heavy) (lourde)	6-16 20-38	630 bar 400 bar	6-16 20-30 38	630 bar 400 bar 315 bar

Achtung!

Bei einigen Bauformen weicht der Nenndruck von diesen Werten ab. Nenndruckangaben der einzelnen Typen beachten. Nenndrucke auch auf Anfrage erhältlich.

Caution!

For certain types of fittings the nominal pressure differs from the values shown above, in which case the ratings indicated for the individual types should be observed. Nominal pressures also available on request.

Attention!

Pour certains types de raccords, la pression nominale est différente. Il faut alors se référer aux pressions nominales indiquées par type individuellement. Pressions nominale aussi disponibles sur demande.



B

Temperaturbereiche

Verschraubungswerkstoff und Dichtungsmaterial müssen entsprechend der Betriebstemperatur ausgewählt werden.


Temperature ranges

Fitting and seal materials have to be chosen according to the working temperature.

Domaines de températures

Les matériaux des raccords et des joints doivent être choisis selon la température de service.

Werkstoff Material Matériau	Zulässige Betriebstemperatur TB °C Permissible working temperature TB °C Température de service admissible TB °C													
	-60	-40	-35	-25	+20	+50	+80	+100	+120	+175	+200	+250	+400	
Verschraubungen aus Stahl* Steel fittings* Raccords en acier*														
Verschraubungen aus nicht rostendem Stahl 1.4571 Stainless steel fittings 1.4571 Raccords en acier inox 1.4571														
Dichtungswerkstoff NBR (z.B. Perbunan®) Seal material NBR (e.g. Perbunan®) Matériau de joint NBR (p.ex. Perbunan®)														
Dichtungswerkstoff FPM (z.B. Viton®) Seal material FPM (e.g. Viton®) Matériau de joint FPM (p.ex. Viton®)														
Dichtungswerkstoff POM (z.B. Delrin®) Seal material POM (e.g. Delrin®) Matériau de joint POM (p.ex. Delrin®)														

 Zulässige Betriebstemperatur
 Permissible working temperature
 Température de service admissible

Bei Einsatz unterschiedlicher Verschraubungs- und Dichtungswerkstoffe gilt die jeweils niedrigste Temperaturangabe.
 If different fitting and seal materials are used, the lowest temperature indicated for each material is applicable.
 Lors de l'utilisation de raccords et joints en matériaux différents, la température la plus basse pour chaque matériau est applicable.

Eingetr. Warenzeichen: Perbunan Fa. Bayer, Viton Fa. Du Pont, Delrin
 Registered trademark: Perbunan of BAYER, Viton of DU PONT, Delrin
 Marque déposée: Perbunan Société Bayer, Viton Société Du Pont, Delrin

Sonderwerkstoffe auf Anfrage.
 Special materials on request.
 Matériaux spéciaux disponibles sur demande.

* Die Hersteller des Werkstoffs 9SMnPb28K oder vergleichbarer Stähle bestätigen eine Kältebeständigkeit von -40°C zur Zeit nicht.
 Die praktischen Erfahrungen der Schlauch- und Rohrverschraubungshersteller haben bis jetzt nichts Nachteiliges erbracht.

* The manufacturers of material 9SMnPb28K or comparable steel grades do not currently confirm low-temperature resistance down to -40°C.
 The practical experience of hose and tube fitting manufacturers has revealed nothing negative to date.

* Les fabricants du matériau 9SMnPb28K ou d'aciers comparables ne confirment pas une résistance au froid de -40°C pour le moment.
 Dans la pratique courante des fabricants de raccords pour tubes et flexibles, cela n'a pas été préjudiciable jusqu'à présent.



Sicherheit

Die Nenndrücke (PN) und Betriebsdrücke (PB) der Verschraubungen stellen die max. zulässigen Betriebsdrücke einschließlich Druckspitzen dar. Dabei sind die unter „Temperaturen“ und „Druckabschläge“ gemachten Angaben zu beachten.

Die Funktionssicherheit bei ruhender Belastung (bis 120°C) ist bei Verschraubungen mit Angabe PN: 4-fach, bei Angabe PB: 2,5-fach bzw. 1,5-fach. Bei Kugelhähnen, Schwenkverschraubungen und Drehverschraubungen sind die gesondert angegebenen Sicherheiten zu beachten. Starke Druckstöße und mechanische Beanspruchungen, z.B. Schwingungen, verlangen besondere Berücksichtigung.

Die vorgegebenen Druck- und Sicherheitsangaben setzen die Einhaltung der Walterscheid-Montagevorschrift voraus. Ebenso wird der spannungsfreie Einbau der Rohrleitungssysteme (ausreichend Rohrschellen verwenden) vorausgesetzt.

Hinweis:

Bei Temperaturen < -20°C liegt der Einsatz von Verschraubungen aus Automatenstahl im Ermessen des Anwenders.

Safety

The nominal pressure ratings (PN) and working pressures (PB) of the fittings represent the maximum permissible working pressures inclusive of pressure peaks. In this context the information provided in the chapters "Temperatures" and "Reduction in pressure" should be taken into account.

The safety factor for static load conditions (up to 120°C) is 4 for fittings with indication PN, and 2.5 or 1.5 if PB is indicated. For ball valves, banjo fittings and swivel banjos, the separately specified safety factors must be taken into account. Allowances must be made for working conditions involving heavy impact pressure and mechanical strain, such as vibrations.

The pressure ratings and safety factors as specified are only applicable on condition that the Walterscheid assembly instructions are strictly adhered to. Another prerequisite consists in the stress-free installation of the pipework (use a sufficient number of pipe clamps).

Note:

At temperatures below -20°C, the use of tube fittings made of free-cutting steel is at the user's discretion.

Sécurité

Les pressions nominales (PN) et pressions de service (PB) de raccords représentent les pressions maxi de service admissibles, y compris les pointes de pression. Dans ce contexte, il faut tenir compte des informations données dans les chapitres «Températures» et «Réduction de la pression».

Le coefficient de sécurité en présence de sollicitations statiques (jusqu'à 120°C) est de 4 pour les raccords avec indication PN, et de l'ordre de 2,5 ou 1,5 pour ceux repérés PB. Pour les robinets à boisseau sphérique, raccords orientables et raccords tournants, tenir compte des coefficients de sécurité spécifiés séparément.

Les applications comportant des coups de bélier et des sollicitations mécaniques, telles que des vibrations, exigent une attention particulière. Les données de pression et de sécurité indiquées impliquent le respect des instructions de montage de Walterscheid. De même, il faut s'assurer que les systèmes de tuyauterie installés soient exempts de contrainte (utiliser un nombre suffisant de colliers).

Remarque:

L'utilisation de raccords en acier de décolletage à des températures inférieures à -20°C est laissée à l'appréciation de l'utilisateur.

Druckabschläge

Der Werkstoff 1.4571 läßt einen Druckabschlag in Abhängigkeit der Temperaturen zu. (DIN 17440, DIN 17458)

Reduction in pressure

Material 1.4571 allows for a reduction in pressure as a function of temperature. (DIN 17440, DIN 17458)

Réduction de la pression

Le matériau 1.4571 permet une réduction de la pression en fonction de la température. (DIN 17440, DIN 17458)

Temperatur Temperature Température	Druckabschlag Reduction in pressure Réduction de la pression
- 60 ° bis + 20 °C	-
+ 50 °C	4,5 %
+ 100 °C	11,0 %
+ 200 °C	20,0 %
+ 300 °C	29,0 %
+ 400 °C	33,0 %

Achtung! Bei Einsatz unterschiedlicher Verschraubungs- und Dichtungswerkstoffe gilt die jeweils niedrigste Temperaturangabe!

Caution! If different fitting and sealing materials are used, the lowest temperature as indicated for each material is applicable!

Attention! Lors de l'utilisation de raccords et joints en matériaux différents, la température la plus basse indiquée pour chaque matériau est applicable!



B

■ Berechnungsdrücke und Toleranzen von nahtlosem Präzisionsstahlrohr, St 37.4 und 1.4571

Für stark beanspruchte Rohrleitungen mit geringer Wandstärke wird der Einsatz von Einsteckhülsen empfohlen.

■ Calculated pressures and tolerances of seamless precision steel tubes, St 37.4 and 1.4571

Parallel sleeves are recommended where thin-walled tubes are subject to severe strains.

■ Pressions théoriques et tolérances de tube de précision en acier sans soudure, St 37.4 et 1.4571

Pour les canalisations fortement sollicitées de faible épaisseur, il est recommandé d'utiliser des fourrures.

	Stahl St 37.4 Steel St 37.4 Acier St 37.4	Nicht rostender Stahl 1.4571 Stainless steel 1.4571 Acier inox 1.4571
Berechnung nach DIN 2413, Geltungsbereich I, für vorwiegend ruhende Belastung bis 120°C Calculation to DIN 2413, scope of application I, for primarily static load conditions at temperatures up to 120°C Calcul selon DIN 2413, domaine d'application I, portant sur les charges essentiellement statiques, les températures allant jusqu'à 120°C		
Streckgrenze/Rp _{1.0} : Yield point/Rp _{1.0} : Limite d'élasticité/Rp _{1.0} :	235 N/mm ² (DIN 1630)	245 N/mm ² (DIN 17458)
Sicherheitsbeiwert: Design factor: Coéfficient d'étude:	1,5	1,5
Zuschlagfaktor c ₁ : Allowance factor c ₁ : Coéfficient de surépaisseur c ₁ :	10% der Wandstärke 10% of wall thickness 10% de l'épaisseur de paroi	10% der Wandstärke 10% of wall thickness 10% de l'épaisseur de paroi
Zuschlagfaktor c ₂ : Allowance factor c ₂ : Coéfficient de surépaisseur c ₂ :	0 (kein Korrosionszuschlag) 0 (no allowance to corrosion) 0 (pas de surépaisseur en réserve de corrosion)	0 (kein Korrosionszuschlag) 0 (no allowance to corrosion) 0 (pas de surépaisseur en réserve de corrosion)
Berechnung nach DIN 2413, Geltungsbereich III, für schwellende Belastung bis 120°C Calculation to DIN 2413, scope of application III, for pulsating load conditions at temperatures up to 120°C Calcul selon DIN 2413, domaine d'application III, portant sur les efforts pulsatoires, les températures allant jusqu'à 120°C		
Dauerschwellfestigkeit: Pulsating fatigue limit: Résistance de fatigue aux efforts pulsatoires:	225 N/mm ² (siehe/see/voir DIN 2413, 4.2.3)	190 N/mm ² (angenommener Wert/assumed value/ valeur supposée)
Zuschlagfaktor c ₁ : Allowance factor c ₁ : Coéfficient de surépaisseur c ₁ :	10% der Wandstärke 10% of wall thickness 10% de l'épaisseur de paroi	10% der Wandstärke 10% of wall thickness 10% de l'épaisseur de paroi

Bei Problemfällen Rücksprache mit unserer Anwendungsberatung und dem Rohrhersteller halten.
 Please contact our application engineers and the tube manufacturer in the case of any particular application conditions.
 En cas de problèmes, veuillez contacter notre conseil d'application et le fabricant de tubes.

Achtung! Bei Temperaturen über 20°C müssen für den Rohrwerkstoff 1.4571 Druckabschläge nach Seite B5 beachtet werden.

Caution! In the case of temperatures over 20°C the pressure reductions shown on page B5 should be noted for tube material 1.4571.

Attention! A des températures supérieures à 20° Celsius, respectez les réductions de pression de la page B5 pour le matériau 1.4571.



Wir empfehlen die Verwendung von nahtlosem Präzisionsstahlrohr mit den Maßen nach DIN 2391 Teil 1-C, Werkstoff St 37.4 und St 52.4 gemäß DIN 1630, Ausführung NBK-3.1 B. Röhre aus nicht rostendem Stahl (z.B. 1.4571), Kurzname X6CrNiMoTi 17122, müssen nahtlos kaltgezogen, zunderfrei wärmebehandelt, Ausführungsart m nach DIN 17458 sein und Toleranzen nach DIN 2391, Blatt 1, aufweisen. We recommend the use of seamless precision steel tubes with dimensions to DIN 2391, part 1-C, material St 37.4 and St 52.4 to DIN 1630, type NBK-3.1 B. Stainless steel tubes (e.g. 1.4571), code X6CrNiMoTi 17122, must be cold-drawn seamless, scale-free heat-treated, type m to DIN 17458, and provide tolerances to DIN 2391, sheet 1.

Nous préconisons l'emploi de tubes de précision en acier sans soudure, aux dimensions suivant DIN 2391, partie 1-C, matériau St 37.4 et St 52.4 suivant DIN 1630, exécution NBK-3.1 B. Les tubes en acier inox (p. ex. 1.4571), désignation abrégée X6CrNiMoTi 17122, doivent être étirés à froid sans soudure, avec traitement thermique exempt de pailles, exécution m suivant DIN 17458, et avoir des tolérances suivant DIN 2391, page 1.

Außendurchmesser Outside dia Ø ext.	Toleranz Tolerance Tolérance	Wandstärke Wall thickness Epaisseur de paroi	Stahl/steel/acier St 37.4		Nicht rostender Stahl/stainless steel/acier inox 1.4571	
			*Berechnungsdruck I *Calculated pressure I *Pression théorique I	Berechnungsdruck III Calculated pressure III Pression théorique III	Berechnungsdruck I Calculated pressure I Pression théorique I	Berechnungsdruck III Calculated pressure III Pression théorique III
[mm]	[mm]	[mm]	[bar]	[bar]	[bar]	[bar]
6	±0,08	1,0	409	391	426	330
6	±0,08	1,5	576	551	600	465
8	±0,08	1,0	353	303	368	256
8	±0,08	1,5	452	433	472	366
8	±0,08	2,0	576	551	600	465
10	±0,08	1,0	282	248	294	209
10	±0,08	1,5	373	357	389	301
10	±0,08	2,0	478	458	498	386
10	±0,08	2,5	576	551	600	465
10	±0,08	3,0	666	638	694	539
12	±0,08	1,0	235	209	245	177
12	±0,08	1,5	353	303	368	256
12	±0,08	2,0	409	391	426	330
12	±0,08	2,5	495	474	516	400
12	±0,08	3,0	576	551	600	465
12	±0,08	3,5	651	624	679	527
15	±0,08	1,5	282	248	294	209
15	±0,08	2,0	336	321	350	271
15	±0,08	2,5	409	391	426	330
15	±0,08	3,0	478	458	498	386
16	±0,08	2,0	353	303	368	256
16	±0,08	2,5	386	370	403	312
16	±0,08	3,0	452	433	472	366
16	±0,08	3,5	515	493	537	417
16	±0,08	4,0	576	551	600	465
18	±0,08	1,5	235	209	245	177
18	±0,08	2,0	313	273	327	230
18	±0,08	2,5	348	333	363	281
18	±0,08	3,0	409	391	426	330
20	±0,08	2,0	282	248	294	209
20	±0,08	2,5	353	303	368	256
20	±0,08	3,0	373	357	389	301
20	±0,08	3,5	426	408	444	345
20	±0,08	4,0	478	458	498	386
22	±0,08	1,5	192	173	200	146
22	±0,08	2,0	256	227	267	192
22	±0,08	2,5	320	278	334	235
22	±0,08	3,0	343	328	357	277
22	±0,08	3,5	392	376	409	317
25	±0,08	2,0	226	201	235	170
25	±0,08	2,5	282	248	294	209
25	±0,08	3,0	338	292	353	247
25	±0,08	4,0	394	378	411	319
25	±0,08	4,5	437	418	455	353
25	±0,08	5,0	478	458	498	386
28	±0,08	2,0	201	181	210	153
28	±0,08	2,5	252	223	263	188
28	±0,08	3,0	302	264	315	223
28	±0,08	3,5	353	303	368	256
28	±0,08	4,0	357	342	372	289
28	±0,08	5,0	434	415	452	351
30	±0,08	2,0	188	170	196	143
30	±0,08	2,5	235	209	245	177
30	±0,08	3,0	282	248	294	209
30	±0,08	3,5	329	285	343	241
30	±0,08	4,0	336	321	350	271
30	±0,08	5,0	409	391	426	330
30	±0,08	6,0	478	458	498	386
35	±0,15	2,0	161	147	168	124
35	±0,15	2,5	201	181	210	153
35	±0,15	3,0	242	215	252	181
35	±0,15	3,5	282	248	294	209
35	±0,15	4,0	322	280	336	236
35	±0,15	5,0	357	342	372	289
35	±0,15	6,0	419	401	437	339
38	±0,15	2,5	186	168	193	142
38	±0,15	3,0	223	199	232	168
38	±0,15	3,5	260	230	271	194
38	±0,15	4,0	297	260	309	219
38	±0,15	5,0	332	318	346	268
38	±0,15	6,0	390	373	406	315
38	±0,15	7,0	446	427	465	360
42	±0,20	2,0	134	123	140	104
42	±0,20	2,5	168	153	175	129
42	±0,20	3,0	201	181	210	153
42	±0,20	3,5	235	209	245	177
42	±0,20	4,0	269	237	280	200
48,3	±0,20	3,2	187	169		
50	±0,20	2,5	141	129		
50	±0,20	3,0	169	154		
50	±0,20	5,0	282	248		
50	±0,20	6,0	338	292		
50	±0,20	8,0	394	378		
60	±0,25	3,0	141	129		
60	±0,25	6,0	282	248		
60	±0,25	8,0	336	321		
60	±0,25	10,0	409	391		
60,3	±0,25	3,6	168	153		
60,3	±0,25	5,6	262	231		
60,3	±0,25	8,0	334	320		
60,3	±0,25	10,0	407	390		

*Berechnungsdruck I = ruhende Belastung
 *Berechnungsdruck III = schwellige Belastung

*Calculated pressure I = static load
 *Calculated pressure III = pulsating load

*Pression théorique I = charge statique
 *Pression théorique III = charge pulsatoire



B

Metrisches ISO-Gewinde (zylindrisch) DIN 13
Whitworth-Rohrgewinde (zylindrisch) DIN-ISO 228 (bisher DIN 259)

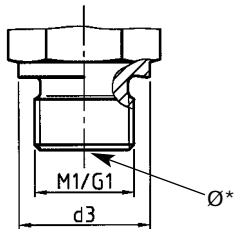
Metric ISO thread (parallel) DIN 13
BSP thread (parallel) DIN-ISO 228 (up to now DIN 259)

Filetage métrique ISO (cylindrique) DIN 13
Filetage Whitworth (cylindrique) DIN-ISO 228 (jusqu'ici DIN 259)

Einschraubzapfen Form B
 DIN 3852, Teil 1 / ISO 9974-3 (metrisch)
 DIN 3852, Teil 2 / ISO 1179-4 (Rohrgewinde)
 Abdichtung durch Dichtkante

Stud form B
 DIN 3852, part 1 / ISO 9974-3 (metric)
 DIN 3852, part 2 / ISO 1179-4 (BSP thread)
 metal-to-metal seal

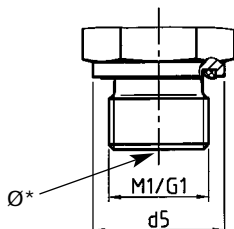
Implantation forme B
 DIN 3852, partie 1 / ISO 9974-3 (métrique)
 DIN 3852, partie 2 / ISO 1179-4 (filetage Whitworth)
 étanchéité par arête métal



Einschraubzapfen Form E
 DIN 3852, Teil 11 / ISO 9974-2 (metrisch)
 DIN 3852, Teil 11 / ISO 1179-2 (Rohrgewinde)
 Abdichtung durch Weichdichtung (WVD)

Stud form E
 DIN 3852, part 11 / ISO 9974-2 (metric)
 DIN 3852, part 11 / ISO 1179-2 (BSP thread)
 with captive seal (WD)

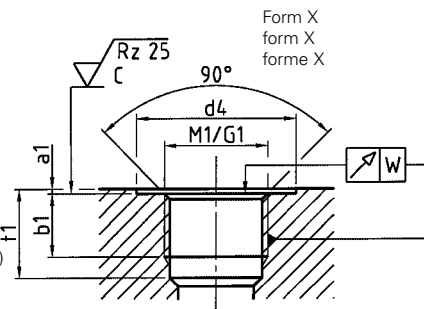
Implantation forme E
 DIN 3852, partie 11 / ISO 9974-2 (métrique)
 DIN 3852, partie 11 / ISO 1179-2 (filetage Whitworth)
 étanchéité par joint mou (WD)



Einschraubloch Form X,Y
 DIN 3852, Teil 1 / ISO 9974-1 (metrisch)
 DIN 3852, Teil 2 / ISO 1179-1 (Rohrgewinde)
 (für zylindrische und kegelige Einschraubgewinde)

Port form X,Y
 DIN 3852, part 1 / ISO 9974-1 (metric)
 DIN 3852, part 2 / ISO 1179-1 (BSP thread)
 (for parallel and taper stud threads)

Trou taraudé, forme X,Y
 DIN 3852, partie 1 / ISO 9974-1 (métrique)
 DIN 3852, partie 2 / ISO 1179-1 (filetage Whitworth)
 (pour filetages mâles cylindriques et coniques)



M ₁	d ₃	d ₄ ^{+0,4}	d ₅	a _{1 max}	b _{1 min}	t _{1 min}	Ø* LL	Ø* L	Ø* S	W
M 8 x 1	12	13	12	1	8	13,5	3,5	-	-	0,1
M 10 x 1	14	15	13,9	1	8	13,5	5	4	-	0,1
M 12 x 1,5	17	18	16,9	1,5	12	18,5	-	6	4	0,1
M 14 x 1,5	19	20	18,9	1,5	12	18,5	-	7	5	0,1
M 16 x 1,5	21	22	21,9	1,5	12	18,5	-	9	7	0,1
M 18 x 1,5	23	24	23,9	2	12	18,5	-	11	8	0,1
M 20 x 1,5	25	26	25,9	2	14	20,5	-	-	10	0,1
M 22 x 1,5	27	28	26,9	2,5	14	20,5	-	14	12	0,1
M 26 x 1,5	31	32	31,9	2,5	16	22,5	-	18	-	0,2
M 27 x 2	32	33	31,9	2,5	16	24	-	-	16	0,2
M 33 x 2	39	40	39,9	2,5	18	26	-	23	20	0,2
M 42 x 2	49	50	49,9	2,5	20	28	-	30	25	0,2
M 48 x 2	55	56	54,9	2,5	22	30	-	36	32	0,2

G ₁	d ₃	d ₄ ^{+0,4}	d ₅	a _{1 max}	b _{1 min}	t _{1 min}	Ø* LL	Ø* L	Ø* S	W
G 1/8A**	14	15	13,9	1	8	13	5	4	-	0,1
G 1/4A**	18	19	18,9	1,5	12	18,5	-	7	5	0,1
G 3/8A**	22	23	21,9	2	12	18,5	-	9	8	0,1
G 1/2A**	26	27	26,9	2,5	14	22	-	14	12	0,1
G 3/4A**	32	33	31,9	2,5	16	24	-	18	16	0,2
G 1 A**	39	40	39,9	2,5	18	27	-	23	20	0,2
G 1 1/4A**	49	50	49,9	2,5	20	29	-	30	25	0,2
G 1 1/2A**	55	56	54,9	2,5	22	31	-	36	32	0,2

Metrisches kegeliges Außengewinde DIN 158
Whitworth-Rohrgewinde (kegelig) DIN 3858

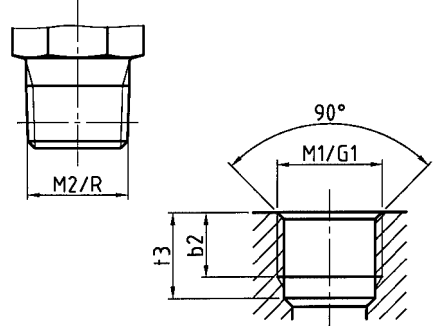
Metric taper thread to DIN 158
BSP thread (taper) DIN 3858

Filetage métrique (conique) DIN 158
Filetage Whitworth (conique) DIN 3858

Einschraubzapfen Form C
 DIN 3852, Teil 1 (metrisch)
 DIN 3852, Teil 2 (Rohrgewinde)
 Abdichtung durch Kegelform

Stud form C
 DIN 3852, part 1 (metric)
 DIN 3852, part 2 (BSP thread)
 taper thread

Implantation forme C
 DIN 3852, partie 11 (métrique)
 DIN 3852, partie 2 (filetage Whitworth)
 étanchéité par filetage conique



Einschraubloch Form Z
 DIN 3852, Teil 1 (metrisch)
 DIN 3852, Teil 2 (Rohrgewinde)
 (nur für kegelige Einschraubgewinde)***

Port form Z
 DIN 3852, part 1 (metric)
 DIN 3852, part 2 (BSP thread)
 (for taper stud threads only)***

Trou taraudé, forme Z
 DIN 3852, partie 1 (métrique)
 DIN 3852, partie 2 (filetage Whitworth)
 (exclusivement pour filetages mâles coniques)***

M ₂	b _{2 min}	t _{3 min}
M 8 x 1 keg	5,5	10
M 10 x 1 keg	5,5	10
M 12 x 1,5 keg	8,5	13,5
M 14 x 1,5 keg	8,5	13,5
M 16 x 1,5 keg	8,5	13,5
M 18 x 1,5 keg	8,5	13,5
M 20 x 1,5 keg	10,5	15,5
M 22 x 1,5 keg	10,5	15,5

R	b _{2 min}	t _{3 min}
R 1/8 keg	5,5	9,5
R 1/4 keg	8,5	13,5
R 3/8 keg	8,5	13,5
R 1/2 keg	10,5	16,5

* Bohrung des Einschraubzapfens. Sonderbauformen können abweichende Bohrungen haben.
 * Stud hole. For special types, deviating holes may be required.
 * Trou d'implantation. Pour quelques types spéciaux, des trous différents peuvent être nécessaires.
 ** Bei Innengewinde entfällt A.
 ** For female threads, A does not apply.
 ** Pour les taraudages, A n'est pas applicable.

***Achtung: Zusätzliches Dichtmittel erforderlich!
 ***Attention: Additional sealing material required!
 ***Attention: Il faut prévoir un produit étanchéité supplémentaire!



Metrisches ISO-Gewinde (zylindrisch) DIN 13
UNF/UN-Gewinde ISO 725 / ANSI B1.1-1974
Metric ISO thread (parallel) DIN 13
UNF/UN thread ISO 725 / ANSI B1.1-1974
Filetage métrique ISO (cylindrique) DIN 13
Filetage UNF/UN ISO 725 / ANSI B1.1-1974

NPT-Gewinde = ANSI/ASME B1.20.1 - 1983
NPT thread = ANSI/ASME B1.20.1 - 1983
Filetage NPT = ANSI/ASME B1.20.1 - 1983

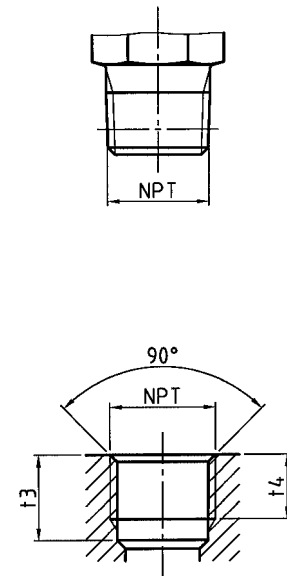
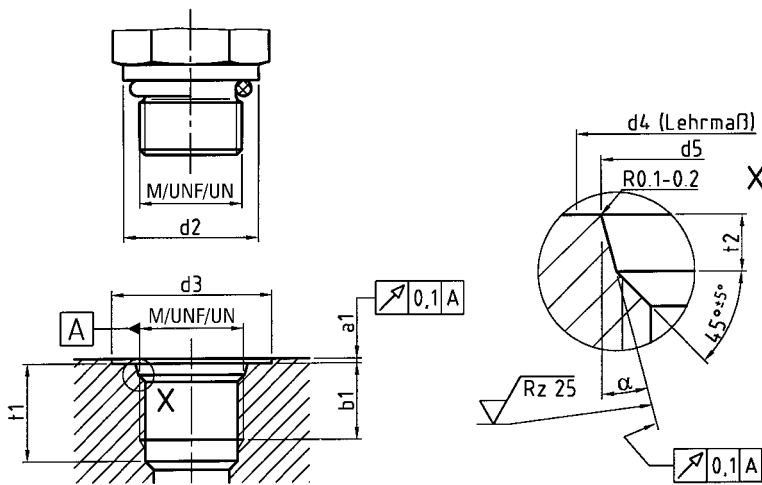
Einschraubzapfen (metrisch) Stud (metric)
 mit O-Ring-Dichtung with O-ring
 DIN ISO 6149-2 und -3 DIN ISO 6149-2 and -3

Einschraubzapfen UST Stud UST
 mit O-Ring-Dichtung with O-ring
 ISO 11926-2 und -3 ISO 11926-2 and -3

Implantation (métrique) avec étanchéité par joint torique
 DIN ISO 6149-2 et -3

Implantation UST avec étanchéité par joint torique
 ISO 11926-2 et -3

Einschraubzapfen Stud Implantation
 NPT NPT NPT
 ANSI/ASME ANSI/ASME ANSI/ASME
 B1.20.1-1983 B1.20.1-1983 B1.20.1-1983



Einschraubloch (metrisch) für O-Ring-Dichtung
 DIN ISO 6149-1
 ISO 11926-1 (UST)

Port form (metric) for O-ring
 DIN ISO 6149-1
 ISO 11926-1 (UST)

Taraudage (métrique) pour étanchéité par joint torique
 DIN ISO 6149-1
 ISO 11926-1 (UST)

Einschraubloch NPT ANSI/ASME B1.20.1-1983
 Port form NPT ANSI/ASME B1.20.1-1983
 Taraudage NPT ANSI/ASME B1.20.1-1983

M	d ₂	d ₃ min.	d ₄	d ₅ +0,1	a ₁ max.	t ₂	t ₁ min.	b ₁ min.	±1°
M 8 x 1	10,9	17	11	9,1	1	1,6	11,5	10	12°
M 10 x 1	12,9	20	13	11,1	1	1,6	11,5	10	12°
M 12 x 1,5	16,9	22	16	13,8	1,5	2,4	14	11,5	15°
M 14 x 1,5	18,9	25	18	15,8	1,5	2,4	14	11,5	15°
M 16 x 1,5	20,9	27	20	17,8	1,5	2,4	15,5	13	15°
M 18 x 1,5	22,9	29	22	19,8	2	2,4	16,5	14,5	15°
M 20 x 1,5	24,9	32	24	21,8	2	2,4	16,5	14	15°
M 22 x 1,5	26,9	34	26	23,8	2	2,4	18	15,5	15°
M 26 x 1,5	30,9	37	31	29,05	2	3,1	18,5	16	15°
M 27 x 2	31,9	40	32	29,4	2	3,1	22	19	15°
M 33 x 2	37,9	46	38	35,4	2,5	3,1	22	19	15°
M 42 x 2	47,9	56	47	44,4	2,5	3,1	22,5	19,5	15°
M 48 x 2	54,9	64	53	50,4	2,5	3,1	25	22	15°

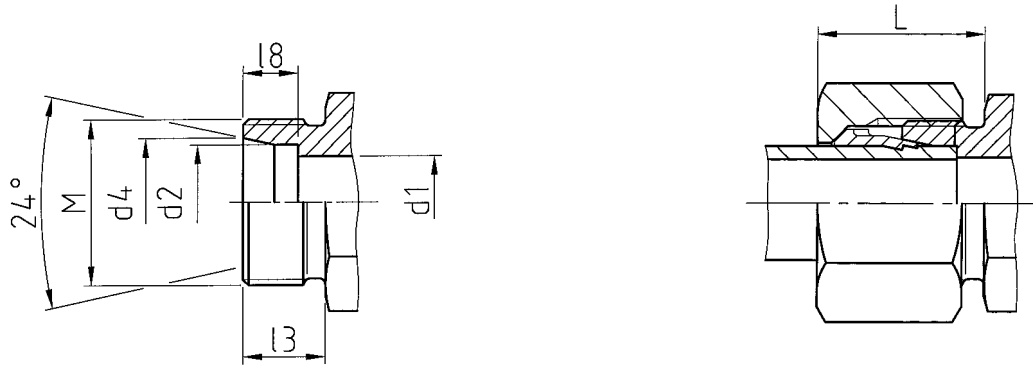
UNF/UN	d ₂	d ₃ min.	d ₄	d ₅ +0,1	a ₁ max.	t ₂	t ₁ min.	b ₁ min.	±1°
7/16 - 20 UNF	14,4	21	15	12,4	1,6	2,4	14	11,5	12°
9/16 - 18 UNF	17,6	25	18	15,6	1,6	2,5	15,5	12,7	12°
3/4 - 16 UNF	22,3	30	23	20,6	2,4	2,5	17,5	14,3	15°
7/8 - 14 UNF	25,5	34	26	23,9	2,4	2,5	20	16,7	15°
1 1/16 - 12 UN	31,9	41	32	29,2	2,4	3,3	23	19	15°
1 5/16 - 12 UN	38,2	49	39	35,5	3,2	3,3	23	19	15°
1 7/8 - 12 UN	47,7	58	48	43,5	3,2	3,3	23	19	15°

d ₁ NPT	t ₃ min.	t ₄ min.
1/8 - 27 NPT	11,6	6,9
1/4 - 18 NPT	16,4	10,0
3/8 - 18 NPT	17,4	10,3
1/2 - 14 NPT	22,6	13,6
3/4 - 14 NPT	23,1	14,1
1 - 11,5 NPT	27,8	16,8
1 1/4 - 11,5 NPT	28,3	17,3
1 1/2 - 11,5 NPT	28,3	17,3

Gewindezapfen nach DIN 3853/ISO 8434
 Bohrungsform W nach DIN 3861

Stud form to DIN 3853/ISO 8434
 Port form W to DIN 3861

Implantation selon DIN 3853/ISO 8434
 Taraudage forme W selon DIN 3861

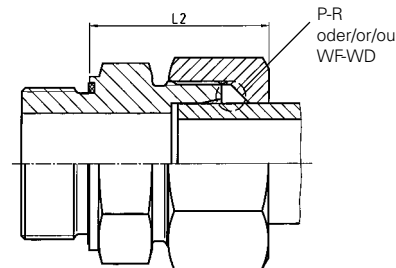


Reihe Series Série	PN	Rohr-AD Tube OD Tube Ø ext.	M	d ₁	d ₂ ^{B11}	d ₄ ^{+0,1}	l ₃	L	l ₈ ^{+0,3}
LL	100	4	M 8 x 1	3	4	5	8	14	4
		6	M 10 x 1	4,5	6	7,5	8	14	5,5
		8	M 12 x 1	6	8	9,5	9	15	5,5
	500	6	M 12 x 1,5	4	6	8,1	10	18	7
		8	M 14 x 1,5	6	8	10,1	10	18	7
		10	M 16 x 1,5	8	10	12,3	11	19	7
L	400	12	M 18 x 1,5	10	12	14,3	11	19	7
		15	M 22 x 1,5	12	15	17,3	12	20	7
		18	M 26 x 1,5	15	18	20,3	12	21	7,5
	250	22	M 30 x 2	19	22	24,3	14	23	7,5
		28	M 36 x 2	24	28	30,3	14	23	7,5
S	630	35	M 45 x 2	30	35,25 ^{+0,15}	38	16	27	10,5
		42	M 52 x 2	36	42,25 ^{+0,15}	45	16	28	11
		6	M 14 x 1,5	4	6	8,1	12	20	7
	400	8	M 16 x 1,5	5	8	10,1	12	20	7
		10	M 18 x 1,5	7	10	12,3	12	21	7,5
		12	M 20 x 1,5	8	12	14,3	12	21	7,5
	400	14	M 22 x 1,5	10	14	16,3	14	24	8
		16	M 24 x 1,5	12	16	18,3	14	24	8,5
		20	M 30 x 2	16	20	22,9	16	27	10,5
		25	M 36 x 2	20	25	27,9	18	30	12
30		M 42 x 2	25	30	33	20	33	13,5	
	38	M 52 x 2	32	38,25 ^{+0,15}	41	22	37	16	

Das Maß L2 entspricht bei allen Teilen dem ungefähren Längenmaß bei angezogener Überwurfmutter. Im Katalog bezieht sich dieses Maß immer auf eine montierte Profiling- oder Walformverschraubung.

For all parts, dimension L2 corresponds to the approximate length with tightened nut. In the catalogue, this dimension always refers to an assembled profile ring or Walform fitting.

La cote L2 correspond à la longueur approximative de toutes les pièces à écrou serré. Dans le catalogue, cette cote est toujours celle d'un raccord à bague profilée Walform.

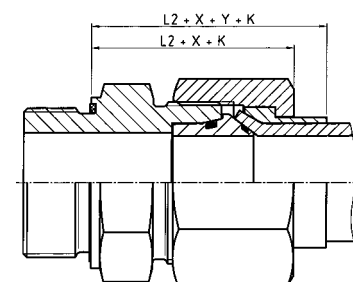


Längenmaße der BO-Komplettverschraubungen
Lengths of BO fitting assemblies
Longueurs des raccords complets BO

Für die Bördelverschraubung muß das Maß L2 für jede Größe durch addieren des X-Wertes (s. Tabelle 1: X/Y-Wert) und des Korrekturwertes K (siehe Tabelle 2: Korrekturwert), abhängig von der verwendeten Wandstärke, berechnet werden. Zur Ermittlung des Längenmaßes bis Ende Druckring muß zusätzlich das Maß Y addiert werden.

For the flare fitting, dimension L2 must be calculated for each size by adding the value of X (see Table 1: X/Y value) and the corrective dimension K (see Table 2: Corrective dimension), depending on the wall thickness used. Dimension Y must also be added in order to determine the length up to the end of the loose sleeve.

Pour le raccord pour tube évasé, la cote L2 doit être calculée pour chaque taille en additionnant la valeur X (voir tableau 1: valeur X/Y) et la valeur de correction K (voir tableau 2: valeur de correction) en fonction des épaisseurs de paroi utilisées. Pour déterminer la longueur jusqu'à l'extrémité de la manchette, il convient d'y ajouter la cote Y.



Beispiel: GES 15 LM-WD mit Rohr 15x2 Korrekturwert = +1
Example: GES 15 LM-WD with tube 15x2 Corrective dimension = +1
Exemple: GES 15 LM-WD avec tube 15x2 Valeur de correction = +1

$$L2 + X + K = 29 + 6,5 + 1 = 36,5$$

$$L2 + X + Y + K = 29 + 6,5 + 4 + 1 = 40,5$$

Reihe Series Série	X-Wert X-Dimension Valeur X	Y-Wert Y-Dimension Valeur Y		Reihe Series Série	X-Wert X-Dimension Valeur X	Y-Wert Y-Dimension Valeur Y
6L	3	3		6S	2,5	3
8L	3,5	3		8S	3,5	3
10L	5	4,5		10S	4	5,5
12L	5,5	4,5		12S	4,5	5,5
15L	6,5	4		14S	5	4,5
18L	7	3,5		16S	6,5	6
22L	8	6,5		20S	6	5,5
28L	9,5	5,5		25S	7	7,5
35L	8,5	6		30S	6,5	8,5
42L	11,5	6		38S	6,5	10,5

Tabelle 1: X/Y-Werte
Table 1: X/Y value
Tableau 1: valeur X/Y

Die in der nachfolgenden Korrekturtabelle mit einem • gekennzeichneten Rohrwandstärken sind für die Baulängen in den Maßlisten zugrunde gelegt. Bei anderen Rohrwandstärken sind die Baulängen um das aus der Tabelle zu entnehmende Korrekturmaß zu verändern.

The dimensions marked • in the following table represent the tube wall thicknesses on which the lengths in the lists of dimensions are based. For other tube wall thicknesses, the lengths have to be modified by the corrected dimension taken from the table.

Les épaisseurs de paroi du tube marquées par • sur le tableau ci-dessous ont été prises en considération pour la détermination des longueurs figurant sur les tableaux de mesures. Pour d'autres épaisseurs, il faut modifier les longueurs suivant la cote de correction indiquée sur le tableau.

Reihe Series Série	Rohr-AD Tube OD Tube Ø ext.	Korrekturmaß / Corrective dimension / Cote de correction								
		Rohrwandstärke / Tube wall thickness / Epaisseur de paroi du tube								
		1	1,5	2	2,5	3	3,5	4	5	6
L	6	•	+1							
	8	•	+1	+1,5						
	10	-1	•	+1						
	12	-1	•	+1						
	15		•	+1	+2					
	18		-1	•	+1					
	22		-1	•	+1	+1,5				
	28				-1,5	-0,5	•			
	35				-1,5	-1	•		+1,5	
	42				-1,5		•			
S	6	•	+1							
	8	•	+1	+1,5						
	10	-1	•	+1						
	12	-1	•	+1						
	14		-0,5	•	+1	+2				
	16		-1	•	+0,5	+1,5				
	20			•	+1	+2	+3			
	25				-1,5	-1	•		+1,5	
	30				-2	-1	•		+2	+3,5
	38					-0,5	•		+1,5	+3,5



B

Rohrverbindungssysteme / Tube connection systems / Systèmes de raccordement de tubes

	Schneidringverschraubung Profilingverschraubung WALFORM-Verschraubung	Cutting ring fitting Profile ring fitting WALFORM fitting	Raccord à bague coupante Raccord à bague profilée Raccord de tubes WALFORM	37°-Bördelverschraubung 37° flare tube fitting Raccord pour tube évasé de 37°	Dicht-/Schweißkegelverschraubung Taper fitting/Welding nipple fitting Raccords avec cône d'étanchéité/ embout à souder	
Verschraubungskörper Fitting body Corps du raccord	DIN 2353 DIN EN ISO 8434-1				DIN 3942 bis/to/jusqu'à DIN 3946	
Einzelteile Components Pièces détachées	DIN 3861 DIN 3870 DIN EN ISO 8434-1		DIN 3949		DIN 3865 DIN EN ISO 8434-4	
Rohranschluß Tube connection Raccordement pour tubes	DIN 3861 DIN EN ISO 8434-1					
Einschraubzapfen Male stud Embout mâle	DIN 3852-1 und/and/et -11 DIN EN ISO 9974-2 und/and/et -3 DIN ISO 6149-2 und/and/et -3					
metrisch metric métrique						
zöllig in inches en pouces						DIN 3852-2 und/and/et -11 ISO 1179-2 und/and/et -4
UN/UNF						ISO 11926-2 und/and/et -3
NPT	ANSI/ASME B 1.20.1-1983					
Technische Lieferbedingungen Technical specifications Spécifications techniques	DIN 3859-1					
Prüfungen Tests Essais	DIN 3859-3 ISO 8434-5					
Montagen Assembly Montage	DIN 3859-2					

SAE 37°-Bördelflanschsystem / SAE 37° flared flange system / Système bride d'évasement 37° SAE

Ausführung Version Type	Lochbild nach Hole pattern at Configuration de perçage conformément à	SAE J518 ISO 6162
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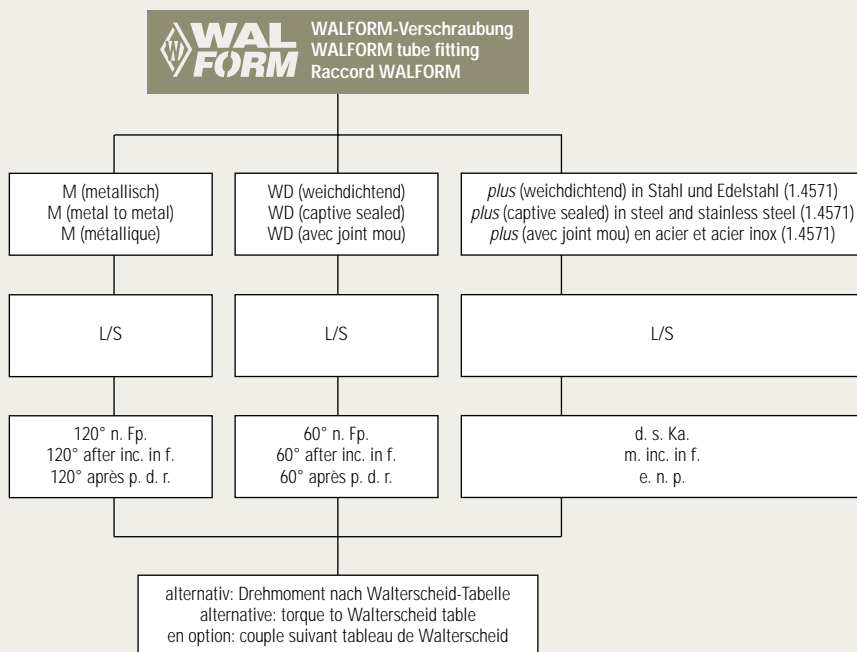
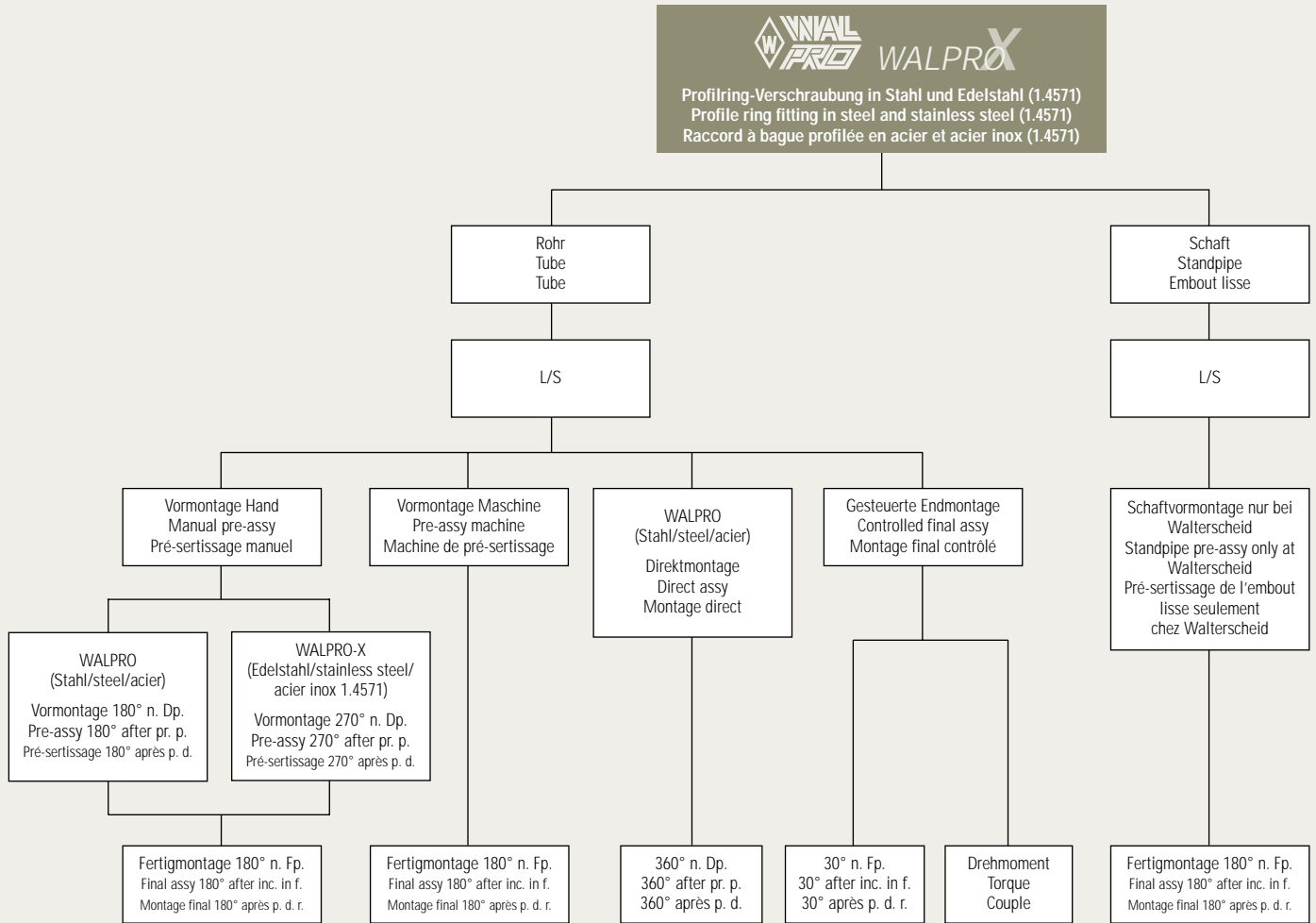
Rohre / Tubes / Tubes

	Stahl Steel Acier	Nicht rostender Stahl Stainless steel Acier inox
Technische Lieferbedingungen Technical specifications Spécifications techniques	DIN 1630-NBK-3.1B	DIN 17458-Ausführung/type/exécution „m“-3.1B
Maße Dimensions Dimensions	DIN 2391-1	DIN EN ISO 1127
Toleranzen Tolerances Tolérances	DIN 2391	DIN 2391
Berechnungsdrücke Calculated pressures Pressions théoriques	DIN 2413	

Montagearten Assembly modes Méthodes de montage			C2-C3
Profiling-Rohrverschraubungen Profile ring tube fittings Raccords à bague profilée pour tubes	Drehwegbezogene Montage im Vormontagegestutzen Turning-angle-controlled assembly in pre-assembly adaptor Montage suivant le nombre de tours prescrit dans le bloc de pré-sertissage		C4-C6
Profiling-Rohrverschraubungen Profile ring tube fittings Raccords à bague profilée pour tubes	Vormontage mit Walterscheid-Vormontagemaschine Pre-assembly with Walterscheid pre-assembly machine Pré-sertissage avec la machine de pré-sertissage de Walterscheid		C7-C9
Profiling-Rohrverschraubungen Profile ring tube fittings Raccords à bague profilée pour tubes	Drehwegbezogene Direktmontage im Verschraubungsstutzen für Reparaturzwecke Turning-angle-controlled direct assembly in the fitting body for repair purposes Montage direct suivant le nombre de tours dans le corps du raccord pour réparation		C10-C12
Profiling-Rohrverschraubungen Profile ring tube fittings Raccords à bague profilée pour tubes	Gesteuerte Endmontage mit der Walterscheid-Vormontagemaschine Controlled final assembly with the Walterscheid pre-assembly machine Montage final contrôlé avec la machine de pré-sertissage de Walterscheid		C13-C15
Profiling-Rohrverschraubungen Profile ring tube fittings Raccords à bague profilée pour tubes	Anwendung und Montage von Einsteckhülsen Application and assembly of tube inserts Utilisation et montage des fourrures		C16-C17
WALFORM-Rohrverschraubungen WALFORM tube fittings Raccords de tubes WALFORM	WALFORM-Verschraubung mit Weichdichtung WALFORM fitting with captive seal Raccord WALFORM à joint mou	WALFORMplus	C18-C23
WALFORM-Rohrverschraubungen WALFORM tube fittings Raccords de tubes WALFORM	WALFORM-Verschraubung mit Weichdichtung und Stützring für dünne Rohrwandstärken WALFORM fitting with captive seal and back-up ring for thin-walled tubes Raccord WALFORM à joint mou et bague d'appui pour tubes à faibles épaisseurs de paroi	WALFORMplus, WD	C24-C27
WALFORM-Rohrverschraubungen WALFORM tube fittings Raccords de tubes WALFORM	WALFORM-Verschraubung mit Weichdichtung WALFORM fitting with captive seal Raccord WALFORM à joint mou	WD	C28-C34
WALFORM-Rohrverschraubungen WALFORM tube fittings Raccords de tubes WALFORM	WALFORM-Verschraubung metallisch dichtend WALFORM fitting with metallic seal Raccord WALFORM avec joint d'étanchéité par arête métal	M	C36-C40
Bördel-Rohrverschraubungen 37° Flare tube fittings 37° Raccords pour tubes évasés 37°			C42-C48
Bördelflansche 37° SAE J518/ISO 6162 37° flared flanges SAE J518/ISO 6162 Brides d'évasement 37° SAE J518/ISO 6162			C50-C56
Anleitung für das Rohrbiegen Instructions for tube bending Instructions pour le cintrage du tube			C57-C61
Verlegungsgrundsätze von Rohrleitungen Laying principles of conduits Principes d'installation de tuyauteries			C62-C63
Schweißnippel-Verschraubung Welding nipple fitting Raccord à embout à souder			C64-C66
Dichtkegel-Verschraubung Taper fitting Raccord avec cône d'étanchéité			C67
Schaft-Verschraubung Standpipe assembly Raccord à embout lisse assemblé			C67
Winkel- und T-Schwenkstützen RSWS ... / RSTS ... Adjustable fittings (body only) RSWS ... / RSTS ... Raccords orientables (corps) RSWS ... / RSTS ...			C68
Anzugsdrehmomente für Einschraubzapfen nach DIN 3852 Tightening torques for studs to DIN 3852 Couples de serrage pour implantations selon DIN 3852			C69



C



n. Fp. = nach Festpunkt
 n. Dp. = nach Druckpunkt
 d. s. Ka. = deutlich spürbarer Kraftanstieg

after inc. in f. = after increase in force
 after pr. p. = after pressure point
 m. inc. in f. = marked increase in force

après p. d. r. = après le point de résistance
 après p. d. = après le point dur
 e. n. p. = effort nettement perceptible

Hinweis

Bei Edelstahl (1.4571) sind sämtliche Verschraubungsteile vor der Montage mit Spezialfett einzufetten. Geeignet ist das WALTERSCHEID ABF-Fett (Anti Block Fett).

Note

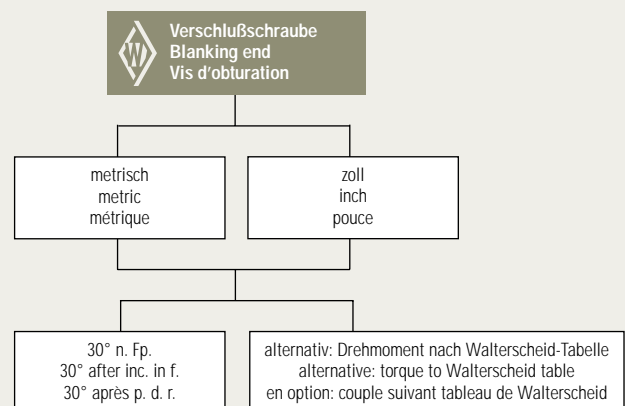
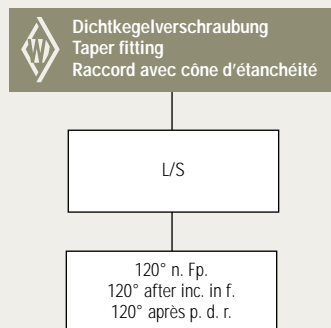
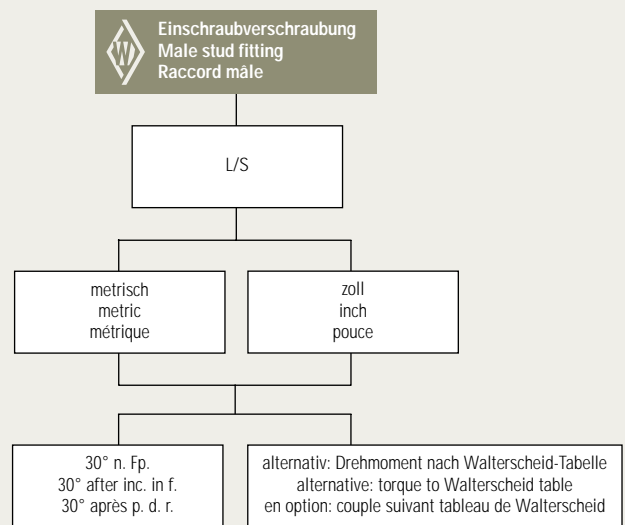
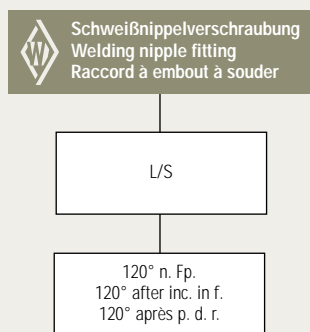
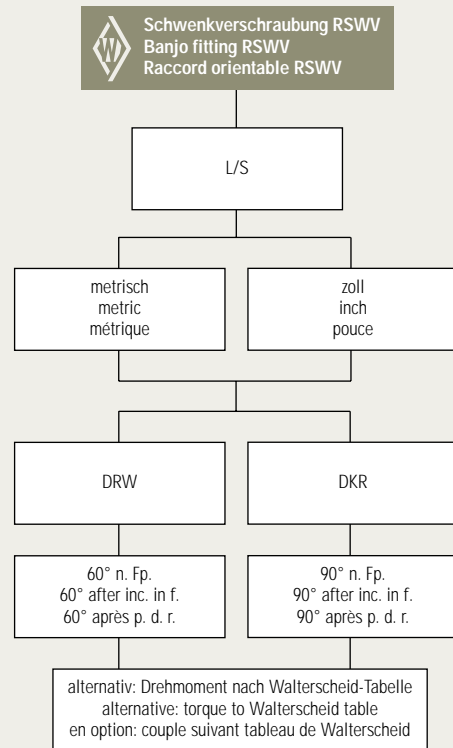
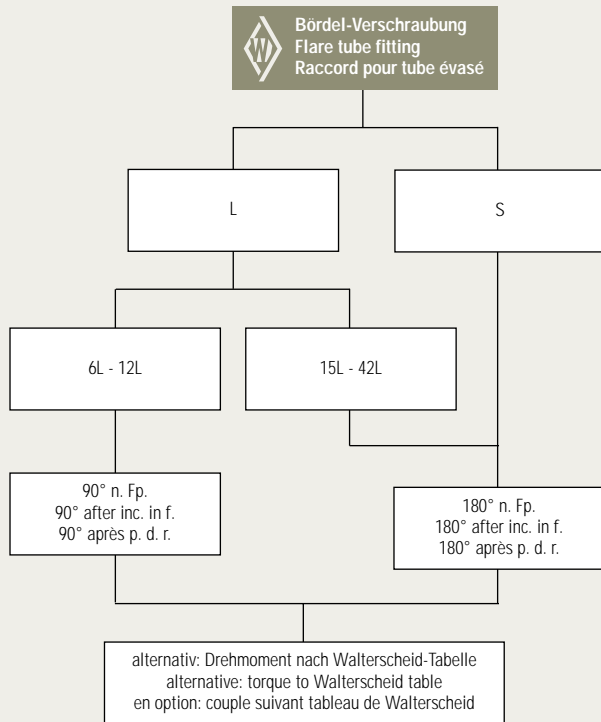
Prior to assembly, all stainless steel (1.4571) joint components must be greased with special grease, such as WALTERSCHEID ABF grease (anti-jamming grease).

Note

Avant de procéder au montage, tous les éléments de raccords en acier inoxydable doivent être graissés avec une graisse spéciale. La graisse WALTERSCHEID ABF (graisse anti-blocage) est la plus appropriée.



C



n. Fp. = Umdrehung nach Festpunkt
 n. Dp. = Umdrehung nach Druckpunkt
 after inc. in f. = after increase in force
 after pr. p. = after pressure point
 après p. d. r. = après le point de résistance
 après p. d. = après le point dur



Montageanleitung
 Assembly instructions
 Instructions de montage

Profiling-
 Rohrverschraubungen
 Profile ring tube fittings
 Raccords à bague
 profilée pour tubes

Drehwegbezogene Montage im Vormontagesutzen
Turning-angle-controlled assembly in pre-assembly adaptor
Montage suivant le nombre de tours prescrit dans le bloc de pré-sertissage

Rohrauswahl

Es ist eine kaltbiege- und bördelfähige Rohrqualität zu verwenden. Wir empfehlen die Verwendung von nahtlosem Präzisionsstahlrohr, Werkstoff St 37.4 bzw. St 52.4 gemäß DIN 1630, Ausführung NBK - 3.1 B. Rohre aus nicht rostendem Stahl 1.4571, nahtlos kaltgezogen, zunderfrei wärmebehandelt, Ausführungsart "m" nach DIN 17458, Toleranzen der Rohraußen- und innendurchmesser nach DIN 2391, Teil 1-C. Berechnungsdrücke nach DIN 2413. Wird diese Rohrauswahl nicht berücksichtigt, so kann dies zu einem Werkzeugbruch führen!

Tube selection

A tube grade suitable for cold-bending and flaring is to be used. We recommend the use of seamless precision steel tubes, material St 37.4 / St 52.4 to DIN 1630, type NBK-3.1 B. Tubes made of stainless steel 1.4571, cold-drawn seamless, scale-free heat-treated, form "m" to DIN 17458. Tolerances of tube outside and inside diameters to DIN 2391, sheet 1-C. Calculated pressure according to DIN 2413. Disregarding this tube selection may lead to tool failure!

Sélection de tube

On utilisera un tube dont la qualité est apte au cintrage à froid et à l'évasement. Nous recommandons l'utilisation de tubes de précision en acier, sans soudure, matériau St 37.4 ou St 52.4 selon la norme DIN 1630, type NBK-3.1 B. Tubes en acier inox 1.4571, étirés à froid sans soudure, soumis à un traitement thermique sans paille, type «m» selon DIN 17458. Tolérances des diamètres extérieurs et intérieurs des tubes selon DIN 2391, folio 1-C. Pressions théoriques selon DIN 2413. Si les tubes recommandés ne sont pas utilisés, une rupture d'outil en peut être la conséquence!

Hinweis

Zur Gewährleistung einer funktionsgerechten Montagequalität sollten WALPRO-Verschraubungen (Stahl) grundsätzlich im eingeölte(n), WALPRO-X-Verschraubungen (Edelstahl 1.4571) im mit WALTERSCHEID ABF-Fett (Anti Block Fett) eingefetteten Vormontagesutzen vormontiert werden.

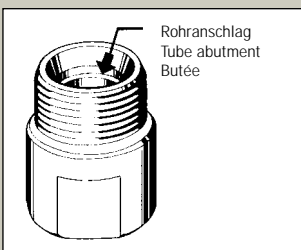
Direktmontagen sind nur bei WALPRO-Verschraubungen in Stahl möglich. Maschinelle Vormontagen und die WALTERSCHEID GE-Montage (maschinell gesteuerte Endmontage) sind sowohl bei WALPRO-Verschraubungen (Stahl), als auch bei WALPRO-X-Verschraubungen (Edelstahl 1.4571) möglich (vgl. separate Montageanleitungen).

Note

In order to ensure effective assemblies, WALPRO steel fittings should always be pre-assembled in an oiled pre-assembly adaptor. For WALPRO-X stainless steel (1.4571) fittings, the adapter should be greased with WALTERSCHEID ABF grease (anti-jamming grease). Direct assemblies can only be carried out using WALPRO steel fittings. Mechanical pre-assemblies and WALTERSCHEID GE assemblies (mechanically controlled final assembly) can be carried out using both WALPRO steel fittings and WALPRO-X stainless steel (1.4571) fittings (see separate assembly instructions).

Note

Afin d'assurer une qualité fonctionnelle du montage, le pré-sertissage des raccords WALPRO (acier) doit toujours se faire dans un bloc de pré-sertissage huilé, celui des raccords WALPRO-X (acier inox 1.4571) dans des embouts de montage lubrifiés à la graisse WALTERSCHEID ABF (graisse anti-blocage). Des montages directs sont uniquement possibles pour les raccords WALPRO en acier. Des pré-sertissages mécaniques et un montage final à commande mécanique WALTERSCHEID (montage GE) sont possibles tant pour les raccords WALPRO (acier) que pour les raccords WALPRO-X (1.4571) (voir notice de montage séparée).



1. Rechtwinklig absägen!

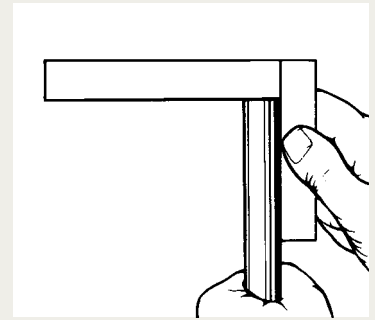
Vom Trennschnitt durch den Rohrhersteller 10 mm absägen (lieferbedingte Fehlerquelle). Rohr rechtwinklig absägen, 1/2° Winkelabweichung zur Rohrachse ist zulässig. Keine Rohrabschneider oder Trennscheiben verwenden; sie ergeben eine starke Gratbildung und Schrägschnitt. Sägemaschine / Vorrichtung benutzen.

1. Saw off at right angle!

Saw off 10 mm from the parting cut made by the tube manufacturer (delivery-related source of faults). Saw the tube off at rightangles, an angular deviation of 1/2° relative to the tube axis is permissible. Do not use pipe cutters or cutting-off wheels as they cause severe burring and inclined cuts. Use a sawing machine / sawing device.

1. Scier à angle droit!

Scier le tube à 10 mm de la coupe réalisée par le fabricant de tubes (source d'erreurs due à la livraison). Scier le tube à angle droit. Un écart angulaire de 1/2° par rapport à l'axe tubulaire est admissible. Ne pas utiliser de cisailles ni de meules tronçonneuses. Elles engendrent de nombreuses arêtes et une coupe en biais. On utilisera une scie mécanique / un dispositif.



2. Rohrenden leicht entgraten und Rohr reinigen!

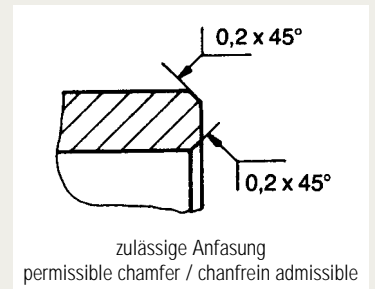
Entgratung und Reinigung innen und außen durchführen. Der Spann- und Umformbereich muß frei von Spänen, Schmutz, Fett, Öl und Farbe sein! Wenn fettig oder ölig, umweltfreundliches Lösungsmittel verwenden.

2. Lightly deburr the tube ends and clean the tube!

Remove burr and clean inside and out. The clamping and reshaping area must be clean and free of any chips, dirt, grease, oil and paint! Use an environment-friendly solvent to remove grease or oil.

2. Procéder à un léger ébarbage des extrémités du tube et au nettoyage du tube!

Procéder à l'ébarbage et au nettoyage à l'intérieur et à l'extérieur du tube. Veillez à ce que la zone de serrage et de formage soit exempte de copeaux, de saletés, de graisse, d'huile et de peinture! En cas de présence de graisse ou d'huile, on utilisera des solvants écophiles.



3. Hinweis

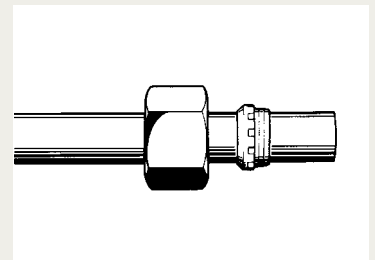
Bei Edelstahl (1.4571) sind sämtliche Verschraubungsteile vor der Montage mit Spezialfett einzufetten. Geeignet ist das WALTERSCHEID ABF-Fett (Anti Block Fett).

3. Note

Prior to assembly, all stainless steel (1.4571) joint components must be greased with special grease, such as WALTERSCHEID ABF grease (anti-jamming grease).

3. Note

Avant de procéder au montage, tous les éléments de raccords en acier inoxydable doivent être graissés avec une graisse spéciale. La graisse WALTERSCHEID ABF (graisse anti-blocage) est la plus appropriée.



4. Überwurfmutter und Profiling auf Rohr schieben, wie abgebildet.

4. Place nut and profile ring on tube as shown.

4. Positionner l'écrou et la bague profilée sur le tube comme ci-contre.

5. Voranzug

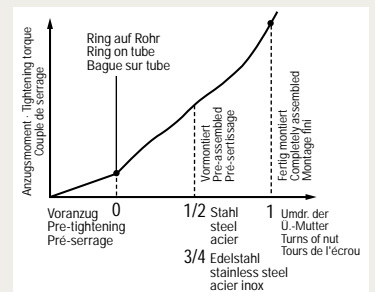
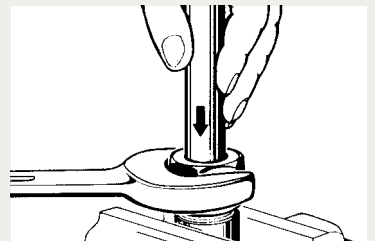
Rohr gegen Rohrerschlag im Vormontagesutzen drücken. Überwurfmutter anziehen, bis der Profiling das Rohr erfaßt. Dieser Punkt ist durch den zunehmenden Drehmomentanstieg spürbar (Druckpunkt).

5. Pre-tightening

Hold the tube firmly against the abutment in the pre-assembly adaptor and tighten nut until the profile ring grips the tube which is felt by a noticeable increase in torque (pressure point).

5. Pré-serrage

Presser le tube contre la butée dans le bloc de pré-serrage. Serrer l'écrou jusqu'à ce que la bague profilée pénètre dans le tube ce qui devient évident par un couple de serrage accru (point dur).



5.1 Vormontage

Überwurfmutter nach Druckpunkt bei Stahl 1/2 Umdrehung, bei Edelstahl (1.4571) 3/4 Umdrehung anziehen.

Achtung! Abweichende Anzugswege reduzieren die Nenndruckleistung und die Lebensdauer der Verschraubung. Leckagen oder Herausrutschen des Rohres sind die Folge.

5.1 Pre-assembly

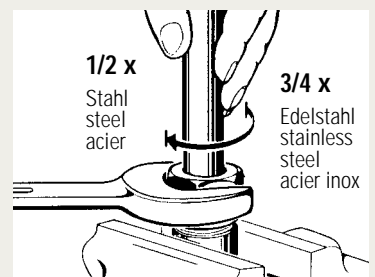
For steel fittings tighten nut 1/2 a turn, for stainless steel fittings (1.4571) tighten nut 3/4 a turn beyond the pressure point.

Caution! Application of deviating number of tightening turns reduces the nominal pressure rating and the life of the fitting which causes leakages or slipping of the tube.

5.1 Pré-serrage

Serrer l'écrou de 1/2 de tour pour l'acier, de 3/4 de tour pour l'acier inoxydable (1.4571) après avoir atteint le point dur.

Attention! Tout écart du nombre de tour de serrage prescrit donne lieu à une réduction de la pression nominale et de la vie du raccord, ce qui entraîne des fuites ou le désemmancement du tube.



5. Kontrolle

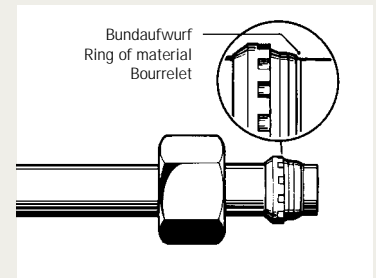
Einschnitt der Schneidkante prüfen. Aufgeworfener Bund muß vor der Profiling-Schneide sichtbar sein. Profiling darf sich drehen, jedoch nicht axial verschieben lassen.

5. Check

Check penetration of cutting edge. A ring of material must be visible in front of the profile ring's cutting edge. Profile ring may turn on tube, but must not be capable of axial displacement.

5. Contrôle

Vérifier la pénétration du tranchant. Un bourrelet doit être visible devant le tranchant de la bague profilée. La bague peut tourner, mais ne doit pas se déplacer axialement.



6. Fertigmontage im Verschraubungsstutzen

Überwurfmutter bis zum spürbaren Kraftanstieg anziehen, anschließend Fertigmontage mit 1/2 Umdrehung.

Wichtig: Verschraubungsstutzen mit Schlüssel gegenhalten. **Hinweis:** Bei Edelstahl (1.4571) sind sämtliche Verschraubungsteile vor der Montage mit Spezialfett einzufetten. Geeignet ist das WALTERSCHEID ABF-Fett (Anti Block Fett).

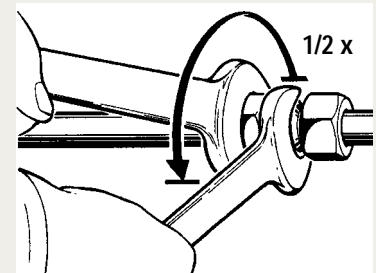
6. Final assembly in the fitting body

Tighten nut until a noticeable increase in force is required. Tighten nut by 1/2 a turn beyond this point for final assembly. **Important:** Hold fitting body firmly by means of a spanner.

Note: Prior to assembly, all stainless steel (1.4571) joint components must be greased with special grease, such as WALTERSCHEID ABF grease (anti-jamming grease).

6. Montage final dans le corps du raccord

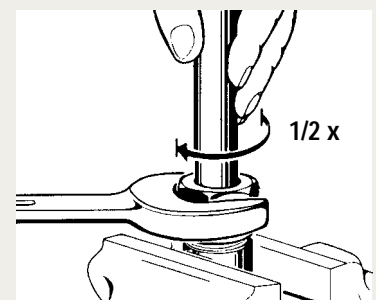
Serrer l'écrou jusqu'au point dur. Au montage final, serrer l'écrou de 1/2 tour au-delà de ce point. **Important:** Maintenir le corps du raccord avec une clef. **Note:** Avant de procéder au montage, tous les éléments de raccords en acier inoxydable doivent être graissés avec une graisse spéciale. La graisse WALTERSCHEID ABF (graisse anti-blocage) est la plus appropriée.



6.1 Bei ungünstigen Montagebedingungen und bei großen Rohrabmessungen ist die Fertigmontage im Schraubstock durchzuführen. Hierfür denselben Verschraubungsstutzen wie für den Einbau verwenden. **Achtung!** Abweichende Anzugswege reduzieren die Nenndruckleistung und die Lebensdauer der Verschraubung. Leckagen oder Herausrutschen des Rohres sind die Folge.

6.1 With unfavourable mounting conditions and great tube dimensions, final assembly must be completed in a vice with the fitting body to be subsequently installed. **Caution!** Any deviating number of tightening turns reduces the nominal pressure and the service life of the fitting which causes leakages or slipping of the tube.

6.1 Pour des conditions de montage défavorables et l'emploi de grandes dimensions de tube, le montage final doit être exécuté dans l'étau avec le corps du raccord utilisé lors de l'installation ultérieure. **Attention!** Toute course de serrage divergente entraîne une réduction de la pression nominale admissible et de la durée de vie du raccord, ce qui provoque des fuites ou le désemmancement du tube.



7. Wiederholungsmontage

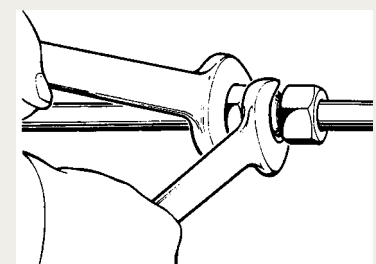
Nach jedem Lösen der Verbindung ist die Überwurfmutter wieder fest anzuziehen (gleiches Drehmoment wie bei Fertigmontage). **Hinweis:** Bei Edelstahl (1.4571) sind sämtliche Verschraubungsteile vor der Montage mit Spezialfett einzufetten. Geeignet ist das WALTERSCHEID ABF-Fett (Anti Block Fett).

7. Re-assembly

Each time the fitting is disassembled, the nut must be re-tightened firmly using the same torque as required for final assembly. **Note:** Prior to assembly, all stainless steel (1.4571) joint components must be greased with special grease, such as WALTERSCHEID ABF grease (anti-jamming grease).

7. Remontage

Après chaque démontage, l'écrou doit être resserré fermement lors du remontage (même couple qu'au montage final). **Note:** Avant de procéder au montage, tous les éléments de raccords en acier inoxydable doivent être graissés avec une graisse spéciale. La graisse WALTERSCHEID ABF (graisse anti-blocage) est la plus appropriée.



8. Mindestlänge für gerades Rohrende bei Rohrbögen

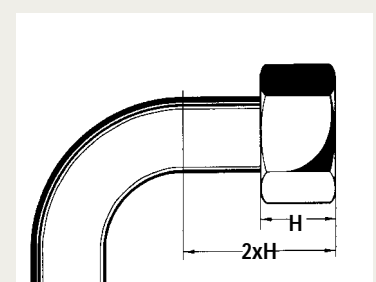
Bei Rohrbögen muß das gerade Rohrende bis zum Beginn des Biege-radius mindestens 2 x Überwurfmutterhöhe betragen.

8. Minimum length of straight tube end for tube bends

For tube bends, the length of the straight tube end up to the start of the bending radius must be at least twice the nut length.

8. Longueur droite minimale du tube dans un cintrage de tube

Dans un cintrage de tube, la longueur droite du tube jusqu'au rayon de courbure doit être au moins égale au double de la hauteur de l'écrou.





Montageanleitung
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Profilring-
 Rohrverschraubungen
 Profile ring tube fittings
 Raccords à bague
 profilée pour tubes

Vormontage mit Walterscheid-Vormontagemaschine
Pre-assembly with Walterscheid pre-assembly machine
Pré-sertissage avec la machine de pré-sertissage de Walterscheid

Rohrauswahl

Es ist eine kaltbiege- und bördelfähige Rohrqualität zu verwenden. Wir empfehlen die Verwendung von nahtlosem Präzisionsstahlrohr, Werkstoff St 37.4 bzw. St 52.4 gemäß DIN 1630, Ausführung NBK - 3.1 B. Rohre aus nicht rostendem Stahl 1.4571, nahtlos kaltgezogen, zunderfrei wärmebehandelt, Ausführung "m" nach DIN 17458, Toleranzen der Rohraußen- und innendurchmesser nach DIN 2391, Teil 1-C. Berechnungsdrücke nach DIN 2413. Wird diese Rohrauswahl nicht berücksichtigt, so kann dies zu einem Werkzeugbruch führen!

Tube selection

A tube grade suitable for cold-bending and flaring is to be used. We recommend the use of seamless precision steel tubes, material St 37.4 / St 52.4 to DIN 1630, type NBK-3.1 B. Tubes made of stainless steel 1.4571, cold-drawn seamless, scale-free heat-treated, form "m" to DIN 17458. Tolerances of tube outside and inside diameters to DIN 2391, sheet 1-C. Calculated pressure according to DIN 2413. Disregarding this tube selection may lead to tool failure!

Sélection de tube

On utilisera un tube dont la qualité est apte au cintrage à froid et à l'évasement. Nous recommandons l'utilisation de tubes de précision en acier, sans soudure, matériau St 37.4 ou St 52.4 selon la norme DIN 1630, type NBK-3.1 B. Tubes en acier inox 1.4571, étirés à froid sans soudure, soumis à un traitement thermique sans paille, type «m» selon DIN 17458. Tolérances des diamètres extérieurs et intérieurs des tubes selon DIN 2391, folio 1-C. Pressions théoriques selon DIN 2413. Si les tubes recommandés ne sont pas utilisés, une rupture d'outil en peut être la conséquence!



1. Rechtwinklig absägen!

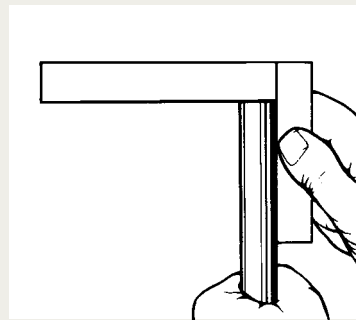
Vom Trennschnitt durch den Rohrhersteller 10 mm absägen (lieferbedingte Fehlerquelle). Rohr rechtwinklig absägen, 1/2° Winkelabweichung zur Rohrachse ist zulässig. Keine Rohrabschneider oder Trennscheiben verwenden: sie ergeben eine starke Gratbildung und Schrägschnitt. Sägemaschine / Vorrichtung benutzen.

1. Saw off at right angle!

Saw off 10 mm from the parting cut made by the tube manufacturer (delivery-related source of faults). Saw the tube off at right angles, an angular deviation of 1/2° relative to the tube axis is permissible. Do not use pipe cutters or cutting-off wheels as they cause severe burring and inclined cuts. Use a sawing machine / sawing device.

1. Scier à angle droit!

Scier le tube à 10 mm de la coupe réalisée par le fabricant de tubes (source d'erreurs due à la livraison). Scier le tube à angle droit. Un écart angulaire de 1/2° par rapport à l'axe tubulaire est admissible. Ne pas utiliser de cisailles ni de meules tronçonneuses. Elles engendrent de nombreuses arêtes et une coupe en biais. On utilisera une scie mécanique / un dispositif.



2. Rohrenden leicht entgraten und Rohr reinigen!

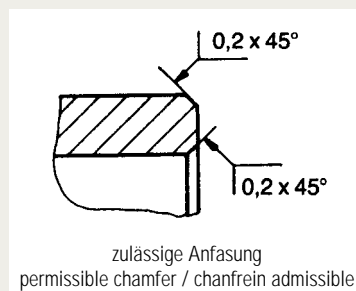
Entgratung und Reinigung innen und außen durchführen. Der Spann- und Umformbereich muß frei von Spänen, Schmutz, Fett, Öl und Farbe sein! Wenn fettig oder ölig, umweltfreundliches Lösungsmittel verwenden.

2. Lightly deburr the tube ends and clean the tube!

Remove burr and clean inside and out. The clamping and reshaping area must be clean and free of any chips, dirt, grease, oil and paint! Use an environment-friendly solvent to remove grease or oil.

2. Procéder à un léger ébarbage des extrémités du tube et au nettoyage du tube!

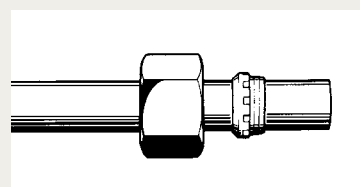
Procéder à l'ébarbage et au nettoyage à l'intérieur et à l'extérieur du tube. Veillez à ce que la zone de serrage et de formage soit exempte de copeaux, de saletés, de graisse, d'huile et de peinture! En cas de présence de graisse ou d'huile, on utilisera des solvants écophiles.



3. Überwurfmutter und Profiling auf Rohr schieben, wie abgebildet.

3. Place nut and profile ring on tube as shown.

3. Positionner l'écrou et la bague profilée sur le tube comme ci-contre.



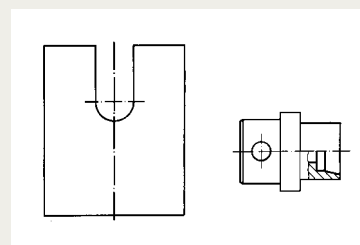
4. Stützscheibe und Vormontagesutzen in Vormontagemaschine einlegen. Nur Vormontagesutzen von Walterscheid verwenden. Bedienungsanleitung der Vormontagemaschine für Funktion ‚Vormontage‘ beachten.

Hinweis: Bei Edelstahl (1.4571) sind sämtliche Verschraubungsteile vor der Montage mit Spezialfett einzufetten. Geeignet ist das WALTERSCHEID ABF-Fett (Anti Block Fett).

4. Insert back-up plate and pre-assembly adaptor in the pre-assembly machine. Use only pre-assembly adaptors from Walterscheid. For the function "pre-assembly", the operating instructions for the pre-assembly machine have to be taken into account. **Note:** Prior to assembly, all stainless steel (1.4571) joint components must be greased with special grease, such as WALTERSCHEID ABF grease (anti-jamming grease).

4. Mettre en place la plaque d'appui et le bloc de pré-sertissage dans la machine de pré-sertissage. N'utiliser que des blocs de pré-sertissage de Walterscheid. Pour la fonction « pré-sertissage », il convient de tenir compte des instructions de service pour la machine de pré-sertissage.

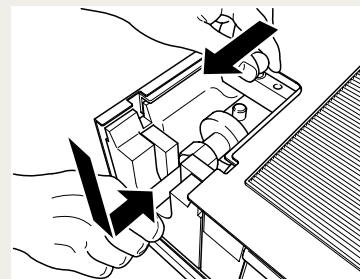
Note: Avant de procéder au montage, tous les éléments de raccords en acier inoxydable doivent être graissés avec une graisse spéciale. La graisse WALTERSCHEID ABF (graisse anti-blocage) est la plus appropriée.



5. Rohr mit Überwurfmutter und Profiling in Maschine einlegen. Rohr gegen Rohranschlag im Vormontagesutzen drücken. Sicherheitsklappe schließen. Der Montagevorgang läuft automatisch ab.

5. Insert the tube with nut and profile ring in the machine. Hold the tube firmly against the abutment in the pre-assembly adaptor. Close safety cover. Assembly is done automatically.

5. Mettre en place le tube avec écrou et bague profilée dans la machine. Presser le tube contre la butée dans le bloc de pré-sertissage. Fermer la capot de sécurité. Le montage se fait automatiquement.



6. Kontrolle

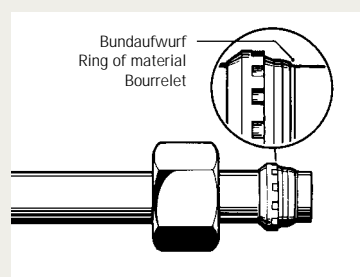
Einschnitt der Schneidkante prüfen. Aufgeworfener Bund muß vor der Profiling-Schneide sichtbar sein. Profiling darf sich drehen, jedoch nicht axial verschieben lassen.

6. Check

Check penetration of cutting edge. A ring of material must be visible in front of the profile ring's cutting edge. Profile ring may turn on tube, but must not be capable of axial displacement.

6. Contrôle

Vérifier la pénétration du tranchant. Un bourrelet doit être visible devant le tranchant de la bague profilée. La bague peut tourner, mais ne doit pas se déplacer axialement.



7. Fertigmontage im Verschraubungsstutzen

Überwurfmutter bis zum spürbaren Kraftanstieg anziehen, anschließend Fertigmontage mit 1/2 Umdrehung.

Wichtig: Verschraubungsstutzen mit Schlüssel gegenhalten. **Hinweis:** Bei Edelstahl (1.4571) sind sämtliche Verschraubungsteile vor der Montage mit Spezialfett einzufetten. Geeignet ist das WALTERSCHEID ABF-Fett (Anti Block Fett).

7.1 Bei ungünstigen Montagebedingungen und bei großen Rohrabmessungen ist die Fertigmontage im Schraubstock durchzuführen. Hierfür denselben Verschraubungsstutzen wie für den Einbau verwenden. **Achtung!** Abweichende Anzugswege reduzieren die Nenndruckleistung und die Lebensdauer der Verschraubung. Leckagen oder Herausrutschen des Rohres sind die Folge.

8. Wiederholungsmontage

Nach jedem Lösen der Verbindung ist die Überwurfmutter wieder fest anzuziehen (gleiches Drehmoment wie bei Fertigmontage). **Hinweis:** Bei Edelstahl (1.4571) sind sämtliche Verschraubungsteile vor der Montage mit Spezialfett einzufetten. Geeignet ist das WALTERSCHEID ABF-Fett (Anti Block Fett).

9. Mindestlänge für gerades Rohrende bei Rohrbögen

Bei Rohrbögen muß das gerade Rohrende bis zum Beginn des Biegeradius mindestens 2 x Überwurfmutterhöhe betragen.

7. Final assembly in the fitting body

Tighten nut until a noticeable increase in force is required. Tighten nut by 1/2 a turn beyond this point for final assembly. **Important:** Hold fitting body firmly by means of a spanner.

Note: Prior to assembly, all stainless steel (1.4571) joint components must be greased with special grease, such as WALTERSCHEID ABF grease (anti-jamming grease).

7.1 With unfavourable mounting conditions and great tube dimensions, final assembly must be completed in a vice with the fitting body to be subsequently installed. **Caution!** Any deviating number of tightening turns reduces the nominal pressure and the service life of the fitting which causes leakages or slipping of the tube.

8. Re-assembly

Each time the fitting is disassembled, the nut must be re-tightened firmly using the same torque as required for final assembly. **Note:** Prior to assembly, all stainless steel (1.4571) joint components must be greased with special grease, such as WALTERSCHEID ABF grease (anti-jamming grease).

9. Minimum length of straight tube end for tube bends

For tube bends, the length of the straight tube end up to the start of the bending radius must be at least twice the nut length.

7. Montage final dans le corps du raccord

Serrer l'écrou jusqu'au point dur. Au montage final, serrer l'écrou de 1/2 tour au-delà de ce point. **Important:** Maintenir le corps du raccord avec une clef. **Note:** Avant de procéder au montage, tous les éléments de raccords en acier inoxydable doivent être graissés avec une graisse spéciale. La graisse WALTERSCHEID ABF (graisse anti-blocage) est la plus appropriée.

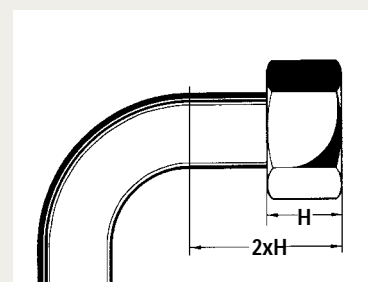
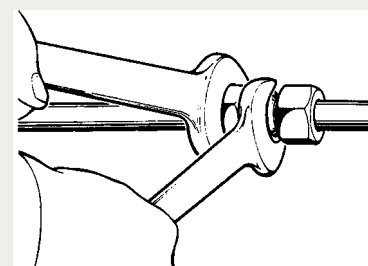
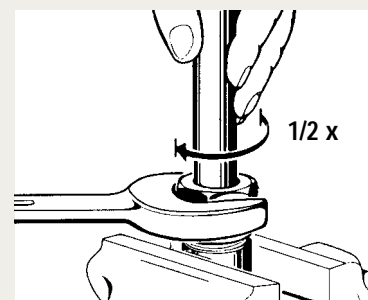
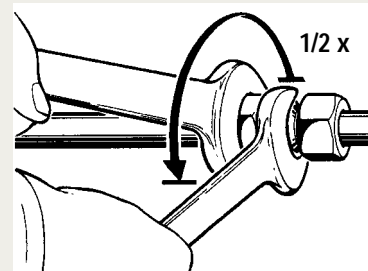
7.1 Pour des conditions de montage défavorables et l'emploi de grandes dimensions de tube, le montage final doit être exécuté dans l'étau avec le corps du raccord utilisé lors de l'installation ultérieure. **Attention!** Toute course de serrage divergente entraîne une réduction de la pression nominale admissible et de la durée de vie du raccord, ce qui provoque des fuites ou le désemmancement du tube.

8. Remontage

Après chaque démontage, l'écrou doit être resserré fermement lors du remontage (même couple qu'au montage final). **Note:** Avant de procéder au montage, tous les éléments de raccords en acier inoxydable doivent être graissés avec une graisse spéciale. La graisse WALTERSCHEID ABF (graisse anti-blocage) est la plus appropriée.

9. Longueur droite minimale du tube dans un cintrage de tube

Dans un cintrage de tube, la longueur droite du tube jusqu'au rayon de courbure doit être au moins égale au double de la hauteur de l'écrou.



C



Montageanleitung
 Assembly instructions
 Instructions de montage

Profiling-
 Rohrverschraubungen
 Profile ring tube fittings
 Raccords à bague
 profilée pour tubes

Drehwegbezogene Direktmontage im Verschraubungsstutzen für Reparaturzwecke (Stahl)
Turning-angle-controlled direct assembly in the fitting body for repair purposes (steel)
Montage direct suivant le nombre de tours dans le corps du raccord pour réparation (acier)

Rohrauswahl

Es ist eine kaltbiege- und bördelfähige Rohrqualität zu verwenden. Wir empfehlen die Verwendung von nahtlosem Präzisionsstahlrohr, Werkstoff St 37.4 bzw. St 52.4 gemäß DIN 1630, Ausführung NBK-3.1 B. Rohre aus nicht rostendem Stahl 1.4571, nahtlos kaltgezogen, zunderfrei wärmebehandelt, Ausführungsart "m" nach DIN 17458, Toleranzen der Rohraußen- und innendurchmesser nach DIN 2391, Teil 1-C. Berechnungsdrücke nach DIN 2413. Wird diese Rohrauswahl nicht berücksichtigt, so kann dies zu einem Werkzeugbruch führen!

Tube selection

A tube grade suitable for cold-bending and flaring is to be used. We recommend the use of seamless precision steel tubes, material St 37.4 / St 52.4 to DIN 1630, type NBK-3.1 B. Tubes made of stainless steel 1.4571, cold-drawn seamless, scale-free heat-treated, form "m" to DIN 17458. Tolerances of tube outside and inside diameters to DIN 2391, sheet 1-C. Calculated pressure according to DIN 2413. Disregarding this tube selection may lead to tool failure!

Sélection de tube

On utilisera un tube dont la qualité est apte au cintrage à froid et à l'évasement. Nous recommandons l'utilisation de tubes de précision en acier, sans soudure, matériau St 37.4 ou St 52.4 selon la norme DIN 1630, type NBK-3.1 B. Tubes en acier inox 1.4571, étirés à froid sans soudure, soumis à un traitement thermique sans paille, type «m» selon DIN 17458. Tolérances des diamètres extérieurs et intérieurs des tubes selon DIN 2391, folio 1-C. Pressions théoriques selon DIN 2413. Si les tubes recommandés ne sont pas utilisés, une rupture d'outil en peut être la conséquence!

1. Rechtwinklig absägen!

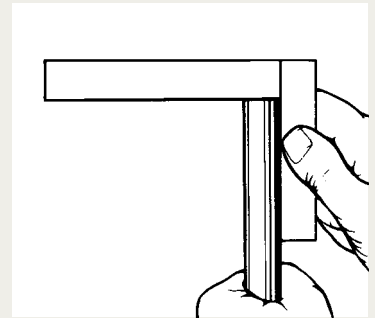
Vom Trennschnitt durch den Rohrhersteller 10 mm absägen (lieferbedingte Fehlerquelle). Rohr rechtwinklig absägen, 1/2° Winkelabweichung zur Rohrachse ist zulässig. Keine Rohrabschneider oder Trennscheiben verwenden; sie ergeben eine starke Gratbildung und Schrägschnitt. Sägemaschine / Vorrichtung benutzen.

1. Saw off at right angle!

Saw off 10 mm from the parting cut made by the tube manufacturer (delivery-related source of faults). Saw the tube off at rightangles, an angular deviation of 1/2° relative to the tube axis is permissible. Do not use pipe cutters or cutting-off wheels as they cause severe burring and inclined cuts. Use a sawing machine / sawing device.

1. Scier à angle droit!

Scier le tube à 10 mm de la coupe réalisée par le fabricant de tubes (source d'erreurs due à la livraison). Scier le tube à angle droit. Un écart angulaire de 1/2° par rapport à l'axe tubulaire est admissible. Ne pas utiliser de cisailles ni de meules tronçonneuses. Elles engendrent de nombreuses arêtes et une coupe en biais. On utilisera une scie mécanique / un dispositif.



2. Rohrenden leicht entgraten und Rohr reinigen!

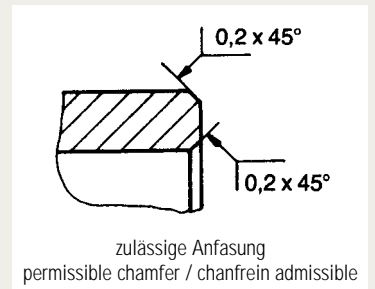
Entgratung und Reinigung innen und außen durchführen. Der Spann- und Umformbereich muß frei von Spänen, Schmutz, Fett, Öl und Farbe sein! Wenn fettig oder ölig, umweltfreundliches Lösungsmittel verwenden.

2. Lightly deburr the tube ends and clean the tube!

Remove burr and clean inside and out. The clamping and reshaping area must be clean and free of any chips, dirt, grease, oil and paint! Use an environment-friendly solvent to remove grease or oil.

2. Procéder à un léger ébarbage des extrémités du tube et au nettoyage du tube!

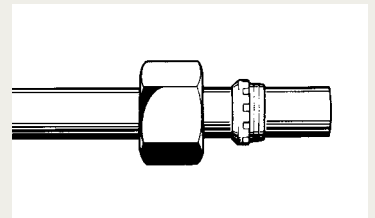
Procéder à l'ébarbage et au nettoyage à l'intérieur et à l'extérieur du tube. Veillez à ce que la zone de serrage et de formage soit exempte de copeaux, de saletés, de graisse, d'huile et de peinture! En cas de présence de graisse ou d'huile, on utilisera des solvants écophiles.



3. Überwurfmutter und Profiling auf Rohr schieben, wie abgebildet.

3. Place nut and profile ring on tube as shown.

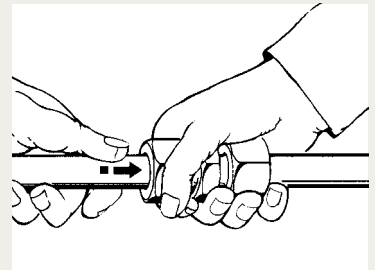
3. Positionner l'écrou et la bague profilée sur le tube comme ci-contre.



4. Rohr gegen Rohranschlag im Verschraubungsstutzen drücken. Überwurfmutter von Hand anziehen.

4. Press tube into fitting body up to tube abutment. Tighten nut by hand.

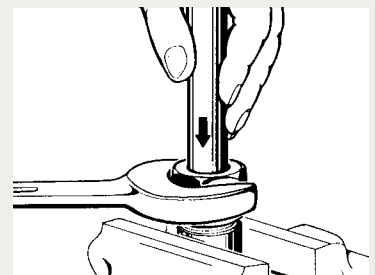
4. Presser le tube contre la butée du tube dans le corps du raccord. Serrer l'écrou à la main.



4.1 Bei ungünstigen Montagebedingungen und bei großen Rohrabmessungen ist der dazugehörige Verschraubungsstutzen im Schraubstock einzuspannen.

4.1 With unfavourable mounting conditions and great tube dimensions, the appropriate fitting body must be fixed in a vice.

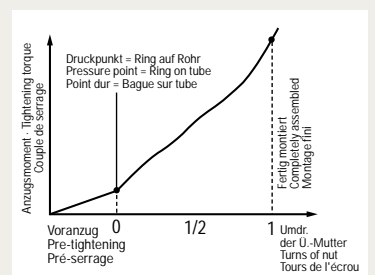
4.1 Pour des conditions défavorables de montage et l'emploi de grandes dimensions de tube, serrer le corps du raccord approprié dans l'étau.



5. Überwurfmutter anziehen, bis der Profiling das Rohr erfaßt. Dieser Punkt ist durch den zunehmenden Drehmomentanstieg spürbar (Druckpunkt).

5. Tighten nut until the profile ring grips the tube which is felt by a noticeable increase in torque (pressure point).

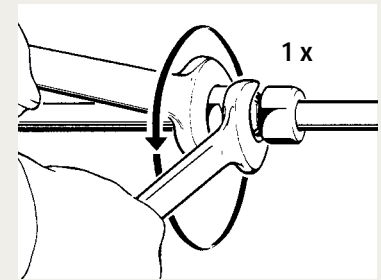
5. Serrer l'écrou jusqu'à ce que la bague profilée pénètre dans le tube ce qui devient évident par un couple de serrage accru. (Point dur)



C
6. Anschließend Fertigmontage mit 1 Umdrehung.
Wichtig: Verschraubungsstutzen mit Schlüssel gegenhalten.

6. Final assembly by 1 turn.
Important: Hold fitting body firmly by means of a spanner.

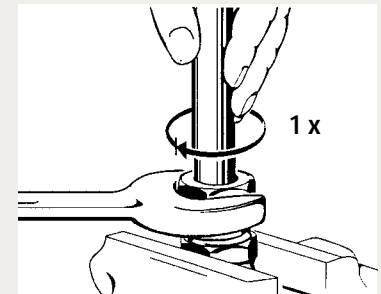
6. Montage final par 1 tour.
Important: Maintenir le corps du raccord avec une clef.



6.1 Bei ungünstigen Montagebedingungen und bei großen Rohrabmessungen ist die Fertigmontage im Schraubstock durchzuführen. Hierfür denselben Verschraubungsstutzen wie für den Einbau verwenden. **Achtung!** Abweichende Anzugswege reduzieren die Nenndruckleistung und die Lebensdauer der Verschraubung. Leckagen oder Herausrutschen des Rohres sind die Folgen.

6.1 With unfavourable mounting conditions and great tube dimensions, final assembly must be completed in a vice with the fitting body to be subsequently installed. **Caution!** Any deviating number of tightening turns reduces the nominal pressure and the service life of the fitting which causes leakages or slipping of the tube.

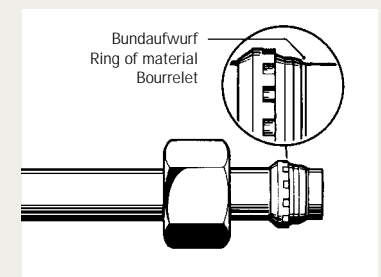
6.1 Pour des conditions de montage défavorables et l'emploi de grandes dimensions de tube, le montage final doit être exécuté dans l'étau avec le corps du raccord utilisé lors de l'installation ultérieure. **Attention!** Toute course de serrage divergente entraîne une réduction de la pression nominale admissible et de la durée de vie du raccord, ce qui provoque des fuites ou le désemmanchement du tube.



7. Kontrolle
Einschnitt der Schneidkante prüfen. Sichtbar aufgeworfener Bund muß den Raum vor der Profiling-Stirnfläche ausfüllen. Profiling darf sich drehen, jedoch nicht axial verschieben lassen.

7. Check
Check penetration of cutting edge. A visible ring of material should fill the space in front of the profile ring end face. Profile ring may turn on tube but should not be capable of axial displacement.

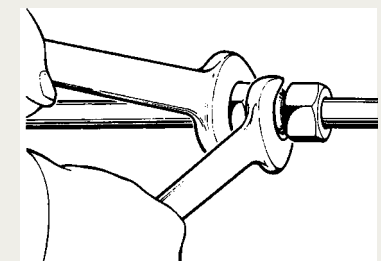
7. Contrôle
Vérifier la pénétration du tranchant. Un bourrelet circulaire doit être visible devant toute la face frontale de la bague profilée. La bague peut tourner, mais ne doit pas se déplacer axialement.



8. Wiederholungsmontage
Nach jedem Lösen der Verbindung ist die Überwurfmutter wieder fest anzuziehen (gleiches Drehmoment wie bei Fertigmontage).

8. Re-assembly
Each time the fitting is disassembled, the nut must be re-tightened firmly using the same torque as required for final assembly.

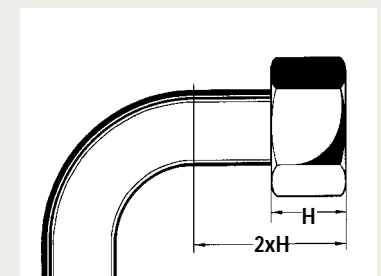
8. Remontage
Après chaque démontage, l'écrou doit être reserré fermement lors du remontage (même couple qu'au montage final).



9. Mindestlänge für gerades Rohrende bei Rohrbögen
Bei Rohrbögen muß das gerade Rohrende bis zum Beginn des Biegeradius mindestens 2 x Überwurfmutterhöhe betragen.

9. Minimum length of straight tube end for tube bends
For tube bends, the length of the straight tube end up to the start of the bending radius must be at least twice the nut length.

9. Longueur droite minimale du tube dans un cintrage de tube
Dans un cintrage de tube, la longueur droite du tube jusqu'au rayon de courbure doit être au moins égale au double de la hauteur de l'écrou.





Montageanleitung
 Assembly instructions
 Instructions de montage

Profilring-
 Rohrverschraubungen
 Profile ring tube fittings
 Raccords à bague
 profilée pour tubes

Gesteuerte Endmontage mit der Walterscheid-Vormontagemaschine
Controlled final assembly with the Walterscheid pre-assembly machine
Montage final contrôlé avec la machine de pré-sertissage de Walterscheid

Rohrauswahl

Es ist eine kaltbiege- und bördelfähige Rohrqualität zu verwenden. Wir empfehlen die Verwendung von nahtlosem Präzisionsstahlrohr, Werkstoff St 37.4 bzw. St 52.4 gemäß DIN 1630, Ausführung NBK-3.1 B. Rohre aus nicht rostendem Stahl 1.4571, nahtlos kaltgezogen, zunderfrei wärmebehandelt, Ausführungsart "m" nach DIN 17458, Toleranzen der Rohraußen- und innendurchmesser nach DIN 2391, Teil 1-C. Berechnungsdrücke nach DIN 2413. Wird diese Rohrauswahl nicht berücksichtigt, so kann dies zu einem Werkzeugbruch führen!

Tube selection

A tube grade suitable for cold-bending and flaring is to be used. We recommend the use of seamless precision steel tubes, material St 37.4 / St 52.4 to DIN 1630, type NBK-3.1 B. Tubes made of stainless steel 1.4571, cold-drawn seamless, scale-free heat-treated, form "m" to DIN 17458. Tolerances of tube outside and inside diameters to DIN 2391, sheet 1-C. Calculated pressure according to DIN 2413. Disregarding this tube selection may lead to tool failure!

Sélection de tube

On utilisera un tube dont la qualité est apte au cintrage à froid et à l'évasement. Nous recommandons l'utilisation de tubes de précision en acier, sans soudure, matériau St 37.4 ou St 52.4 selon la norme DIN 1630, type NBK-3.1 B. Tubes en acier inox 1.4571, étirés à froid sans soudure, soumis à un traitement thermique sans paille, type «m» selon DIN 17458. Tolérances des diamètres extérieurs et intérieurs des tubes selon DIN 2391, folio 1-C. Pressions théoriques selon DIN 2413. Si les tubes recommandés ne sont pas utilisés, une rupture d'outil en peut être la conséquence!

Hinweis

Die Gesteuerte Endmontage kann nur mit Original-Walterscheid-Teilen durchgeführt werden. Die Montage kann nur mit Endmontagestützen mit der Kennzeichnung GE durchgeführt werden.

Note

The use of original Walterscheid components is imperative for the accomplishment of controlled final assembly. Assembly can only be completed with final assembly adaptors marked GE.

Note

Le montage final contrôlé ne peut être réalisé qu'avec des pièces Walterscheid d'origine. Le montage peut seulement être effectué avec un bloc de montage final réperé GE.



C

1. Rechtwinklig absägen!

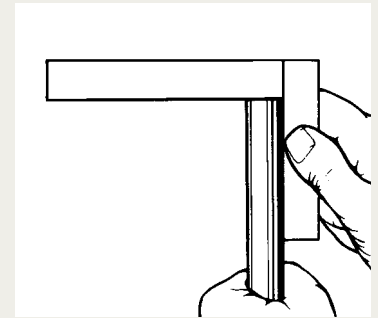
Vom Trennschnitt durch den Rohrhersteller 10 mm absägen (lieferbedingte Fehlerquelle). Rohr rechtwinklig absägen, 1/2° Winkelabweichung zur Rohrachse ist zulässig. Keine Rohrabschneider oder Trennscheiben verwenden; sie ergeben eine starke Gratbildung und Schrägschnitt. Sägemaschine / Vorrichtung benutzen.

1. Saw off at right angle!

Saw off 10 mm from the parting cut made by the tube manufacturer (delivery-related source of faults). Saw the tube off at right angles, an angular deviation of 1/2° relative to the tube axis is permissible. Do not use pipe cutters or cutting-off wheels as they cause severe burring and inclined cuts. Use a sawing machine / sawing device.

1. Scier à angle droit!

Scier le tube à 10 mm de la coupe réalisée par le fabricant de tubes (source d'erreurs due à la livraison). Scier le tube à angle droit. Un écart angulaire de 1/2° par rapport à l'axe tubulaire est admissible. Ne pas utiliser de cisailles ni de meules tronçonneuses. Elles engendrent de nombreuses arêtes et une coupe en biais. On utilisera une scie mécanique / un dispositif.



2. Rohrenden leicht entgraten und Rohr reinigen!

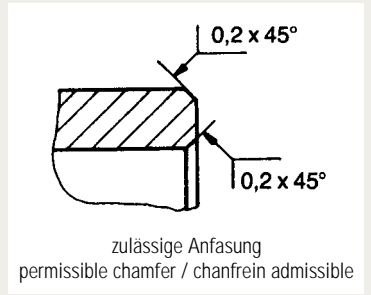
Entgratung und Reinigung innen und außen durchführen. Der Spann- und Umformbereich muß frei von Spänen, Schmutz, Fett, Öl und Farbe sein! Wenn fettig oder ölig, umweltfreundliches Lösungsmittel verwenden.

2. Lightly deburr the tube ends and clean the tube!

Remove burr and clean inside and out. The clamping and reshaping area must be clean and free of any chips, dirt, grease, oil and paint! Use an environment-friendly solvent to remove grease or oil.

2. Procéder à un léger ébarbage des extrémités du tube et au nettoyage du tube!

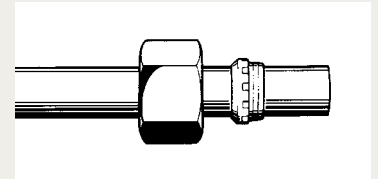
Procéder à l'ébarbage et au nettoyage à l'intérieur et à l'extérieur du tube. Veillez à ce que la zone de serrage et de formage soit exempte de copeaux, de saletés, de graisse, d'huile et de peinture! En cas de présence de graisse ou d'huile, on utilisera des solvants écophiles.



3. Überwurfmutter und Profiling auf Rohr schieben, wie abgebildet.

3. Place nut and profile ring on tube as shown.

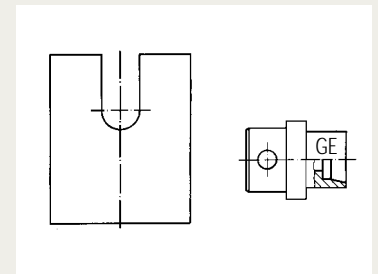
3. Positionner l'écrou et la bague profilée sur le tube comme ci-contre.



4. Stützscheibe und Endmontagestutzen (mit GE-Kennzeichnung) in Vormontagemaschine einlegen. Nur Endmontagestutzen (GE) von Walterscheid verwenden. Bedienungsanleitung der Vormontagemaschine für Funktion 'Gesteuerte Endmontage' beachten. Hinweis: Bei Edelstahl (1.4571) sind sämtliche Verschraubungsteile vor der Montage mit Spezialfett einzufetten. Geeignet ist das WALTERSCHEID ABF-Fett (Anti Block Fett).

4. Insert back-up plate and final assembly adaptor (marked GE) in the pre-assembly machine. Use only final assembly adaptors (GE) from Walterscheid. For the function "controlled final assembly", the operating instructions for the pre-assembly machine have to be taken into account. Note: Prior to assembly, all stainless steel (1.4571) joint components must be greased with special grease, such as WALTERSCHEID ABF grease (anti-jamming grease).

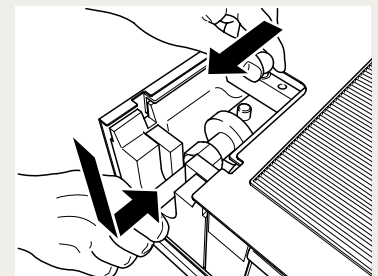
4. Mettre en place la plaque d'appui et le bloc de montage final (répéré GE) dans la machine de pré-sertissage. N'utiliser que des blocs de montage final (GE) de Walterscheid. Pour la fonction «montage final contrôlé», il convient de tenir compte des instructions de service pour la machine de pré-sertissage. Note: Avant de procéder au montage, tous les éléments de raccords en acier inoxydable doivent être graissés avec une graisse spéciale. La graisse WALTERSCHEID ABF (graisse anti-blocage) est la plus appropriée.



5. Rohr mit Überwurfmutter und Profiling in Maschine einlegen. Rohr gegen Rohranschlag im Vormontagestutzen drücken. Sicherheitsklappe schließen. Der Montagevorgang läuft automatisch ab.

5. Insert the tube with nut and profile ring in the machine. Hold the tube firmly against the abutment in the pre-assembly adaptor. Close safety cover. Assembly is done automatically.

5. Mettre en place le tube avec écrou et bague profilée dans la machine. Presser le tube contre la butée dans le bloc de pré-sertissage. Fermer la capot de sécurité. Le montage se fait automatiquement.



6. Kontrolle

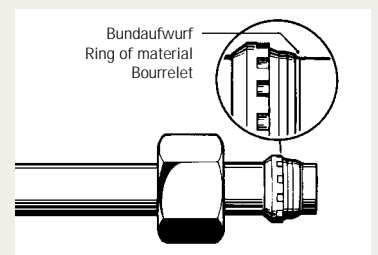
Einschnitt der Schneidkante prüfen. Sichtbar aufgeworfener Bund muß den Raum vor der Profiling-Stirnfläche ausfüllen. Profiling darf sich drehen, jedoch nicht axial verschieben lassen.

6. Check

Check penetration of cutting edge. A visible ring of material should fill the space in front of the profile ring end face. Profile ring may turn on tube, but must not be capable of axial displacement.

6. Contrôle

Vérifier la pénétration du tranchant. Un bourrelet circulaire doit être visible devant toute la face frontale de la bague profilée. La bague peut tourner, mais ne doit pas se déplacer axialement.



7. Wegbezogene Fertigmontage im Verschraubungsstutzen.

Überwurfmutter bis zum spürbaren Kraftanstieg anziehen, anschließend mit 1/12 Umdrehung (30°) fertigmontieren.

Achtung! Abweichende Anzugswege reduzieren die Nenndruckleistung und die Lebensdauer der Verschraubung. Leckagen sind die Folge. **Wichtig:** Verschraubungsstutzen mit Schlüssel gehalten.

Hinweis: Bei Edelstahl (1.4571) sind sämtliche Verschraubungsteile vor der Montage mit Spezialfett einzufetten. Geeignet ist das WALTERSCHEID ABF-Fett (Anti Block Fett).

7. Turning-angle-controlled final assembly in the fitting body.

Tighten nut until a noticeable increase in force is required. For final assembly, tighten nut further by 1/12 of a turn (30°).

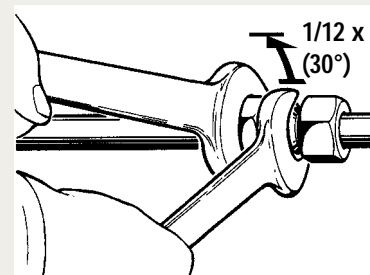
Caution! Any deviating number of tightening turns reduces the nominal pressure and the service life of the fitting which causes leakages. **Important:** Hold fitting body firmly by means of a spanner.

Note: Prior to assembly, all stainless steel (1.4571) joint components must be greased with special grease, such as WALTERSCHEID ABF grease (anti-jamming grease).

7. Montage final suivant le nombre de tours prescrit dans le corps du raccord.

Serrer l'écrou jusqu'au point dur. Au montage final, serrer l'écrou de 1/12 de tour (30°) au-delà de ce point. **Attention!** Toute course de serrage divergente entraîne une réduction de la pression nominale admissible et de la durée de vie du raccord, ce qui provoque des fuites.

Important: Maintenir le corps du raccord avec une clef. **Note:** Avant de procéder au montage, tous les éléments de raccords en acier inoxydable doivent être graissés avec une graisse spéciale. La graisse WALTERSCHEID ABF (graisse anti-blocage) est la plus appropriée.



7.1 Drehmomentbezogene Fertigmontage im Verschraubungsstutzen.

Überwurfmutter mit Drehmomentschlüssel anziehen (Drehmomente nach Tabelle).

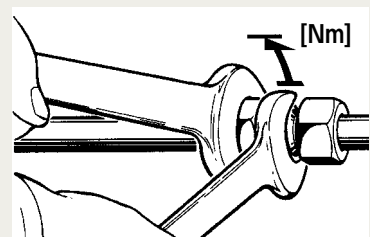
Achtung! Abweichende Drehmomente reduzieren die Nenndruckleistung und die Lebensdauer der Verschraubung. Leckagen sind die Folge. **Wichtig:** Verschraubungsstutzen mit Schlüssel gehalten.

7.1 Torque-controlled final assembly in the fitting body.

Tighten nut with torque wrench (torque according to table). **Caution!** Any deviating torque reduces the nominal pressure and the service life of the fitting which causes leakages. **Important:** Hold fitting body firmly by means of a spanner.

7.1 Montage final selon le couple dans le corps du raccord.

Serrer l'écrou avec une clef dynamométrique (couples, voir tableau). **Attention!** Tout couple divergeant entraîne une réduction de la pression nominale admissible et de la durée de vie du raccord, ce qui provoque des fuites. **Important:** Maintenir le corps du raccord avec une clef.



8. Wiederholungsmontage

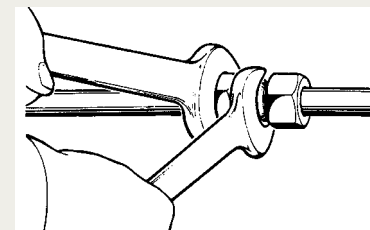
Nach jedem Lösen der Verbindung ist die Überwurfmutter wieder fest anzuziehen (gleiches Drehmoment wie bei Fertigmontage). **Hinweis:** Bei Edelstahl (1.4571) sind sämtliche Verschraubungsteile vor der Montage mit Spezialfett einzufetten. Geeignet ist das WALTERSCHEID ABF-Fett (Anti Block Fett).

8. Re-assembly

Each time the fitting is disassembled, the nut must be re-tightened firmly using the same torque as required for final assembly. **Note:** Prior to assembly, all stainless steel (1.4571) joint components must be greased with special grease, such as WALTERSCHEID ABF grease (anti-jamming grease).

8. Remontage

Après chaque démontage, l'écrou doit être resserré fermement lors du remontage (même couple qu'au montage final). **Note:** Avant de procéder au montage, tous les éléments de raccords en acier inoxydable doivent être graissés avec une graisse spéciale. La graisse WALTERSCHEID ABF (graisse anti-blocage) est la plus appropriée.



9. Mindestlänge für gerades Rohrende bei Rohrbögen

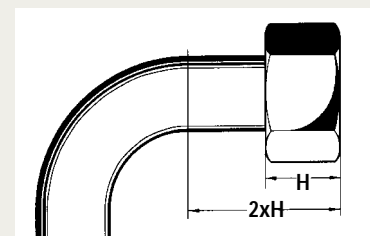
Bei Rohrbögen muß das gerade Rohrende bis zum Beginn des Biege-radius mindestens 2 x Überwurfmutterhöhe betragen.

9. Minimum length of straight tube end for tube bends

For tube bends, the length of the straight tube end up to the start of the bending radius must be at least twice the nut length.

9. Longueur droite minimale du tube dans un cintrage de tube

Dans un cintrage de tube, la longueur droite du tube jusqu'au rayon de courbure doit être au moins égale au double de la hauteur de l'écrou.



Gesteuerte Endmontage / Controlled final assembly / Montage final contrôlé

Angegebene Werte gelten nur für Stahl / The specified data apply only to steel fittings / Les valeurs indiquées s'appliquent exclusivement à l'acier

Rohr-AD Tube OD Tube Ø ext.	Reihe Series Série	Fertigmontage [Nm] oder 30° Final assembly [Nm] or 30° Montage final [Nm] ou 30°	Rohrwandstärke min. Min. tube wall thickness Épaisseur de paroi mini	Montagekraft* Assembly force* [kN] Force de montage*
6	L	25	6 x 1	17
8		40	8 x 1	22
10		50	10 x 1	30
12		70	12 x 1,5	40
15		90	15 x 1,5	44
18		115	18 x 1,5	46
22		210	22 x 2	77
28		310	28 x 2	77
35		500	35 x 3	100
42		600	42 x 3	125
6	S	35	6 x 2	23
8		55	8 x 1,5	40
10		70	10 x 1,5	37
12		85	12 x 1,5	40
14		110	14 x 2	46
16		120	16 x 1,5	46
20		200	20 x 2	77
25		340	25 x 2,5	95
30		480	30 x 3	120
38		850	38 x 4	145

Hinweis: Werte für Edelstahl auf Anfrage möglich.

Note: Data for stainless steel available on request.

Note: Les valeurs pour l'acier inoxydable sont disponibles sur demande.

Bei anderen Rohrwandstärken und Rohrwerkstoffen bitte Rücksprache mit unserer Anwendungstechnik.

Please contact our application engineers for any other tube wall thicknesses and tube materials.

Veuillez contacter notre service application technique pour d'autres épaisseurs de paroi et matériaux des tubes.

* Die ermittelten Montagekräfte sind Richtwerte. Diese sind abhängig von der Federkraft des Zylinders, der Vorspannkraft der Dichtungen und der Montagezeit.

* The assembly forces determined are reference values depending on the spring-loaded cylinder, the prestress of the seals and the assembly time.

* Les forces de montage déterminées sont des valeurs de référence en fonction du cylindre chargé par ressort, de la précontrainte des étanchéités et du temps de montage.

Anwendung und Montage von Einsteckhülsen Application and assembly of tube inserts Utilisation et montage des fourrures

C

Einsteckhülsen sind generell bei Verwendung von Kunststoffrohren erforderlich. In der Regel gilt dies auch für Rohre aus NE-Metall wie Kupfer, Messing und Aluminium. Werden, wie bei geringen Drücken üblich, dünnwandige Stahlrohre eingesetzt, sind auch hier Einsteckhülsen zu verwenden. Bei diesen Rohren sind die Materialfestigkeit, Wandstärke und damit die Widerstandskraft vielfach nicht ausreichend, um den bei der Montage auftretenden Radialkräften der Ringe entgegenzuwirken. Es kommt zu Rohreinschnürungen und Leckagen.

1. Einsteckhülsen für sichere Montage von Kunststoff-, NE-Metall- und dünnwandigen Stahlrohren.

2. Rohr rechtwinklig abtrennen (keinen Rohrabschneider verwenden). Rohrenden innen und außen leicht entgraten. Nicht anfasen! Reinigen.

3. Einsteckhülse bis zur Rändelung in das Rohr einstecken.

4. Mit Hammer (Hartgummi oder Kunststoff) ganz einschlagen. Rändelung wird in die Innenwand des Rohres eingedrückt und sichert die Hülse gegen Verschieben oder Herausfallen.

Tube inserts are always required in connection with plastic tubes. Usually this also applies to tubes made of non-ferrous metals such as copper, brass and aluminium. Tube inserts should also be used for thin-walled steel tubes in low-pressure applications. With such tubes, material strength and wall thickness are often insufficient to withstand the radial forces of the ring generated during assembly, which causes necking of the tube and leakage.

1. Tube insert for safe assembly of couplings on plastic, non-ferrous metal and thin-walled steel tubes.

2. Cut off the tube at right angles (do not use a tube cutter). Lightly deburr tube ends at the inside and outside. Do not chamfer! Clean.

3. Place the tube insert into the tube up to the knurl.

4. Using a hammer (hard rubber or plastic) drive the insert fully home. The knurled portion is forced into the inner wall of the tube and prevents the insert from turning or falling out.

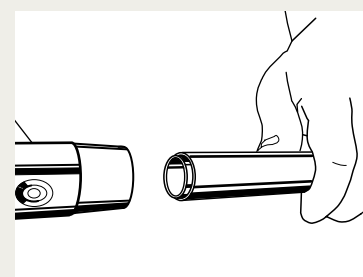
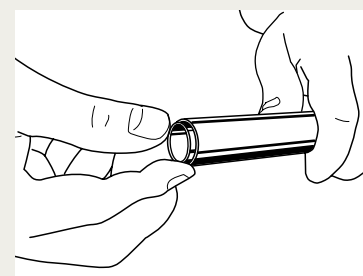
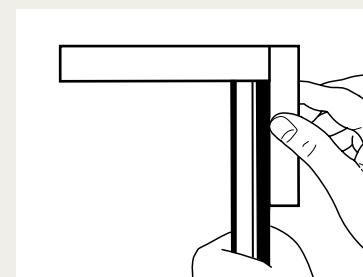
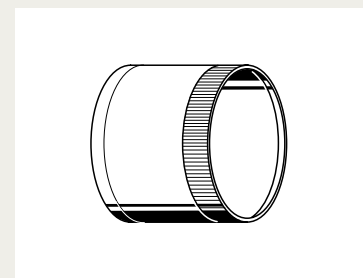
Lors de l'utilisation de tubes en matière plastique, l'emploi de fourrures s'impose ce qui est normalement aussi valable pour les tubes en métaux non-ferreux tels que le cuivre, le laiton et l'aluminium. L'emploi de fourrures est également préconisé pour des tubes en acier de faible épaisseur fréquemment utilisés sous basse pression. Pour ces tubes, la résistance du matériau, l'épaisseur de paroi et ainsi la force de résistance sont souvent insuffisantes par rapport à la force radiale de la bague lors du montage. L'étranglement du tube et des fuites en sont la conséquence.

1. Fourrure pour un montage sûr des tubes en matière plastique, métaux non-ferreux et acier de faible épaisseur.

2. Couper le tube à angle droit (ne pas utiliser de coupe-tube). Ebavurer légèrement les extrémités intérieures et extérieures du tube. Ne pas chanfreiner! Nettoyer.

3. Introduire la fourrure dans le tube jusqu'aux stries.

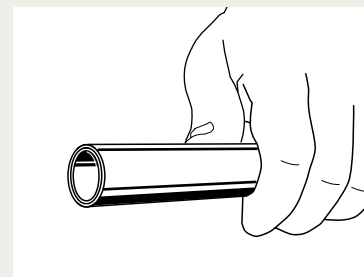
4. Avec un marteau (en plastique ou caoutchouc dur) l'emmancher complètement. Les stries pénètrent dans la paroi intérieure ainsi évitant tout déplacement ou désemmanchement de la fourrure.



5. Hülse muß mit Rohrende bündig abschließen.

5. The insert must be flush with the tube end.

5. La fourrure doit affleurer l'extrémité du tube.

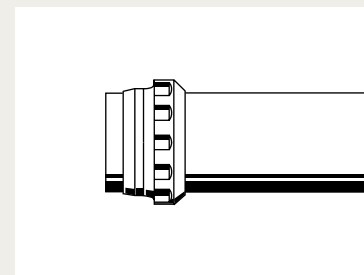


C

6. Keine Rohreinschnürung nach der Montage mit Einsteckhülse. Weitere Montage gemäß Montageanleitung Profiling-Verschraubung.

6. No tube necking after assembly with tube insert. Subsequent assembly should be carried out in accordance with assembly instructions for profile ring fittings.

6. Pas d'étranglement du tube après le montage avec fourrure. Pour les opérations ultérieures de montage, tenir compte des instructions de montage pour le raccord à bague profilée.



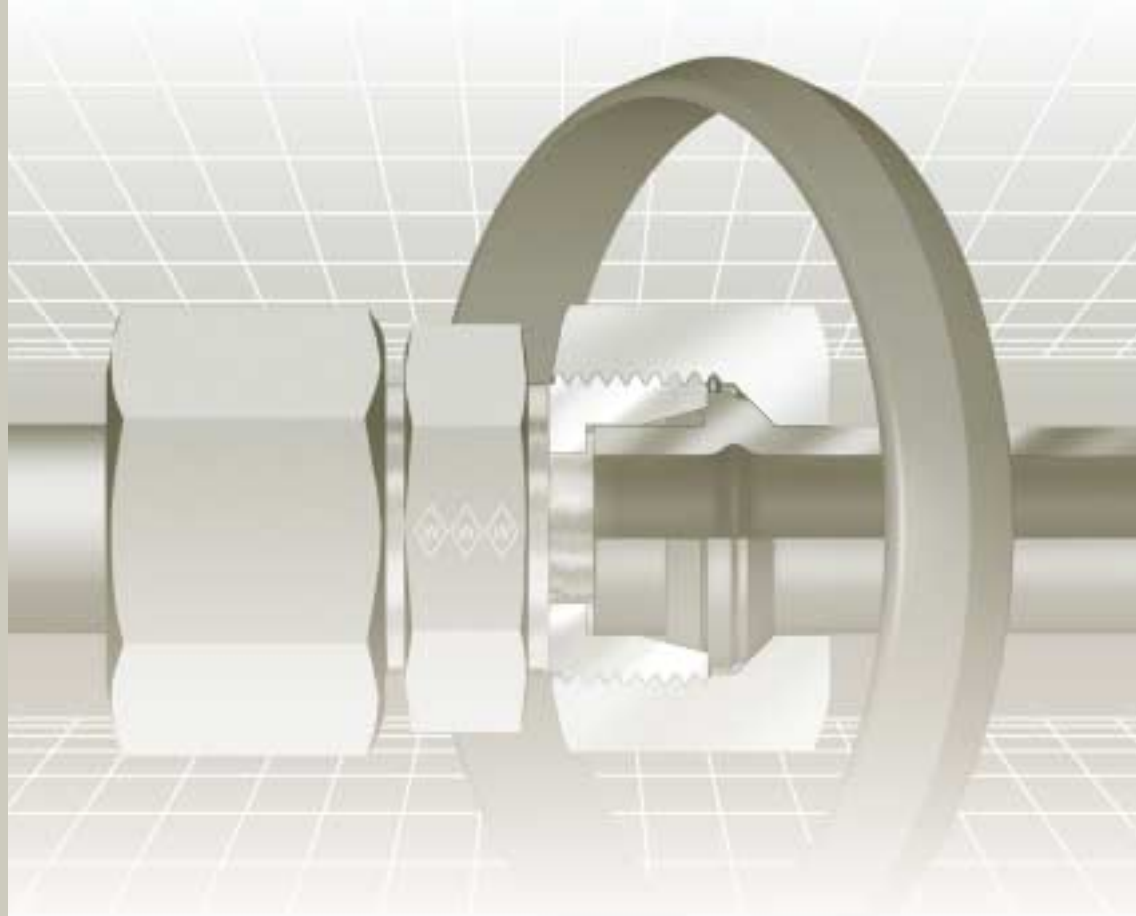
Für stark beanspruchte Rohrleitungen mit geringer Wandstärke wird der Einsatz von Einsteckhülsen empfohlen.

Parallel sleeves are recommended where thin-walled tubes are subject to severe strains.

Pour les canalisations fortement sollicitées de faible épaisseur, il est recommandé d'utiliser des fourrures.

Rohr-AD Tube OD Tube Ø ext. [mm]	Wandstärke [mm] · Wall thickness [mm] Epaisseur de paroi [mm]		
	1	1,5	2
12	●		
18		●	
22			●
25			●
28			●
35			●

Für Rohre aus Stahl (St 37.4 bzw. St 52.4) oder nicht rostendem Stahl (1.4571)
 For tubes made of steel (St 37.4 / St 52.4) or stainless steel (1.4571)
 Pour des tubes en acier (St 37.4 / St 52.4) ou en acier inox (1.4571)



Montageanleitung
 Assembly instructions
 Instructions de montage

WALFORM-
 Rohrverschraubungen
WALFORM tube fittings
 Raccords
 de tubes **WALFORM**

WALFORM*plus*

WALFORM-Verschraubung mit Weichdichtung
WALFORM fitting with captive seal
Raccord WALFORM avec joint mou

Rohrauswahl

Es ist eine kaltbiege- und bördelfähige Rohrqualität zu verwenden. Wir empfehlen die Verwendung von nahtlosem Präzisionsstahlrohr, Werkstoff St 37.4 bzw. St 52.4 gemäß DIN 1630, Ausführung NBK - 3.1 B. Rohre aus nicht rostendem Stahl 1.4571, nahtlos kaltgezogen, zunderfrei wärmebehandelt, Ausführungsart "m" nach DIN 17458, Toleranzen der Rohraußen- und innendurchmesser nach DIN 2391, Teil 1-C. Berechnungsdrücke nach DIN 2413. Wird diese Rohrauswahl nicht berücksichtigt, so kann dies zu einem Werkzeugbruch führen!

Tube selection

A tube grade suitable for cold-bending and flaring is to be used. We recommend the use of seamless precision steel tubes, material St 37.4 / St 52.4 to DIN 1630, type NBK-3.1 B. Tubes made of stainless steel 1.4571, cold-drawn seamless, scale-free heat-treated, form "m" to DIN 17458. Tolerances of tube outside and inside diameters to DIN 2391, sheet 1-C. Calculated pressure according to DIN 2413. Disregarding this tube selection may lead to tool failure!

Sélection de tube

On utilisera un tube dont la qualité est apte au cintrage à froid et à l'évasement. Nous recommandons l'utilisation de tubes de précision en acier, sans soudure, matériau St 37.4 ou St 52.4 selon la norme DIN 1630, type NBK-3.1 B. Tubes en acier inox 1.4571, étirés à froid sans soudure, soumis à un traitement thermique sans paille, type «m» selon DIN 17458. Tolérances des diamètres extérieurs et intérieurs des tubes selon DIN 2391, folio 1-C. Pressions théoriques selon DIN 2413. Si les tubes recommandés ne sont pas utilisés, une rupture d'outil en peut être la conséquence!

1. Rohrlängenbestimmung

a) Durch Messen Rohranschlag Stutzen zu Rohranschlag Stutzen. Hierbei wird dem entsprechend gemessenen Maß je Rohranschluß das Maß L1 hinzuaddiert.

b) Durch Messen von Stirnseite Stutzen zu Stirnseite Stutzen. Hierbei wird dem entsprechend gemessenen Maß je Rohranschluß das Maß L2 hinzuaddiert.

Achtung: Stahl und nicht rostender Stahl haben unterschiedliche Maße.

Die Maße L1 und L2 sowie minimale gerade Rohrlängen und Mindestlängen für gerade Rohrenden bei Rohrbögen sind der Bedienungsanleitung bzw. den entsprechenden Tabellenwerken zu entnehmen.

1. Tube length determination

a) The tube length is determined by measuring from stop face to stop face in the fitting bodies. Dimension L1 must then be added for each tube connection.

b) The tube length is determined by measuring from face end to face end of the fitting bodies. Dimension L2 must then be added for each tube connection.

Caution: For steel and stainless steel different dimensions apply.

Dimensions L1 and L2, minimum straight tube lengths and minimum lengths for the straight tube end on tube bends are indicated in the operating instructions and relevant tables.

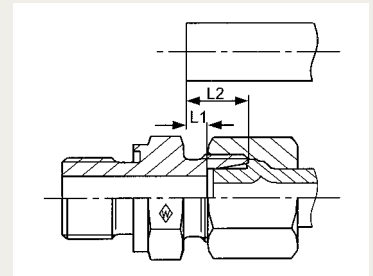
1. Détermination de la longueur des tubes

a) La longueur exacte d'un tube se mesure entre ses deux extrémités venant buter contre le corps des raccords. A cette longueur mesurée, on ajoutera, pour chaque raccord de tube, la cote L1.

b) La longueur exacte d'un tube se mesure entre les faces des corps de raccords. A cette longueur mesurée, on ajoutera, pour chaque raccord de tube, la cote L2.

Attention: L'acier et l'acier inox ont différentes dimensions.

Les cotes L1 et L2 ainsi que la longueur minimale de tubes en ligne droite et la longueur minimale pour une extrémité de tubes en ligne droite des tubes en coude figurent dans la notice d'utilisation et les tableaux correspondants.



2. Rechtwinklig absägen!

Vom Trennschnitt durch den Rohrhersteller 10 mm absägen (lieferbedingte Fehlerquelle). Rohr rechtwinklig absägen, 1/2° Winkelabweichung zur Rohrachse ist zulässig. Keine Rohrab-schneider oder Trennscheiben verwenden, sie ergeben eine starke Gratbildung und Schrägschnitt. Sägemaschine / Vorrichtung benutzen.

Achtung: Formabweichungen am Rohrende, wie z.B. schief gesägte oder falsch entgratete Rohre, reduzieren die Lebensdauer und die Dichtigkeit der Verbindung.

2. Saw off at right angles!

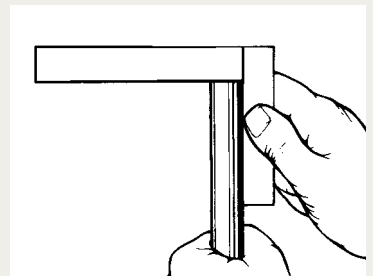
Saw off 10 mm from the parting cut made by the tube manufacturer (delivery-related source of faults). Saw the tube off at right angles, an angular deviation of 1/2° relative to the tube axis is permissible. Do not use pipe cutters or cutting-off wheels as they cause severe burring and inclined cuts. Use a sawing machine / device.

Caution: Form errors at the tube end, such as angular saw-cuts or inadequately deburred tubes, reduce the service life and the sealing capacity of the connection.

2. Scier à angle droit!

Scier le tube à 10 mm de la coupe réalisée par le fabricant de tubes (source d'erreurs due à la livraison). Scier le tube à angle droit. Un écart angulaire de 1/2° par rapport à l'axe tubulaire est admissible. Ne pas utiliser de cisailles ni de meules tronçonneuses. Elles engendrent de nombreuses arêtes et une coupe en biais. On utilisera une scie mécanique / un dispositif.

Attention: Des écarts de forme à l'extrémité du tube, tels que tube scié en biais ou ébarbage inadéquat, réduisent la durée de vie et l'étanchéité du raccord.



3. Rohrenden leicht entgraten und Rohr reinigen!

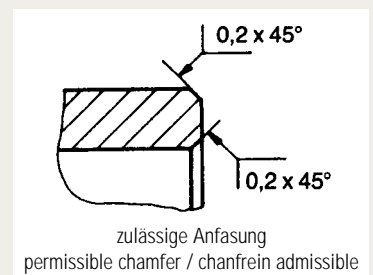
Innen und außen entgraten und reinigen. Der Spann- und Umformbereich muß frei von Spänen, Schmutz, Fett, Öl und Farbe sein! Wenn fettig oder ölig, umweltfreundliches Lösungsmittel verwenden.

3. Lightly deburr the tube ends and clean the tube!

Remove burr and clean inside and out. The clamping and reshaping area must be clean and free of any chips, dirt, grease, oil and paint! Use an environment-friendly solvent to remove grease or oil.

3. Procéder à un léger ébarbage des extrémités du tube et au nettoyage du tube!

Procéder à l'ébarbage et au nettoyage à l'intérieur et à l'extérieur du tube. Veillez à ce que la zone de serrage et de formage soit exempte de copeaux, de saletés, de graisse, d'huile et de peinture! En cas de présence de graisse ou d'huile, on utilisera des solvants écophiles.



4. Überwurfmutter auf das Rohr schieben. Rohr umformen.

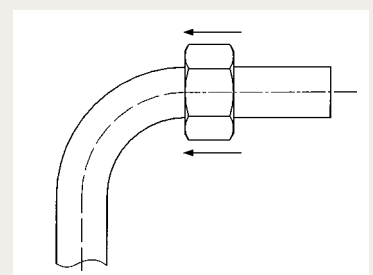
Rohrenden mit Walterscheid WALFORM-Umformmaschine umformen (siehe Bedienungsanleitung für WALFORM-Maschinen).

4. Slide the nut onto the tube. Reshape the tube.

Reshape the tube ends with the Walterscheid WALFORM machine (see instructions for WALFORM machines).

4. Glisser l'écrou sur le tube. Procéder au formage du tube.

Former les extrémités du tube en utilisant la machine WALFORM de Walterscheid. (Voir la notice d'utilisation pour machines WALFORM).



5. Kontrolle des fertig umgeformten Rohres

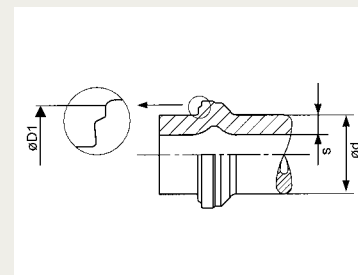
Den Durchmesser D1 des umgeformten Rohres auf Maßhaltigkeit prüfen (siehe Bedienungsanleitung bzw. entsprechende Tabellenwerke). Die Außenseite des umgeformten Rohres muß sauber sein. Nur eine einwandfreie Umformung ergibt eine lange Lebensdauer der Verschraubung.

5. Check the tube after reshaping

Check the diameter D1 of the reshaped tube for dimensional accuracy (see operating instructions and tables). The outer surface of the reshaped tube must be clean. Only faultless reshaping ensures a long service life of the fitting.

5. Contrôle du tube formé

Contrôler la précision dimensionnelle du diamètre D1 du tube formé (voir la notice d'utilisation et les tableaux). L'extérieur du tube formé doit être propre. Seul un formage impeccable assure une longue durée de vie du raccord.



6. Weichdichtung montieren

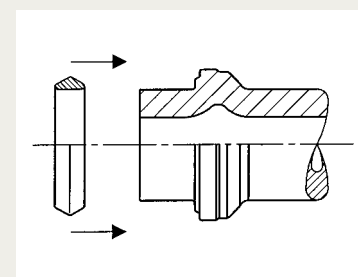
Die Weichdichtung bis zum Anschlag auf das Rohr aufziehen. Hierbei auf verdrehfreie und beschädigungsfreie Montage achten. Funktion und Sicherheit der Verschraubung sind nur mit Original Walterscheid WF-Weichdichtungen gewährleistet!

6. Mount the captive seal

Slide the captive seal onto the tube until it abuts. Make sure that no damage or torsion occurs during assembly. Function and reliability are guaranteed only with original Walterscheid WF-captive seals!

6. Montage du joint mou

Procéder au montage du joint mou sur le tube jusqu'à ce qu'il vienne buter. On veillera à ce que ce montage se fasse sans torsion ni dommage. Le fonctionnement et la sécurité du raccord ne sont assurés qu'en utilisant des joints mous originaux du type WF de Walterscheid!



7. Fertigmontage im Verschraubungsstutzen

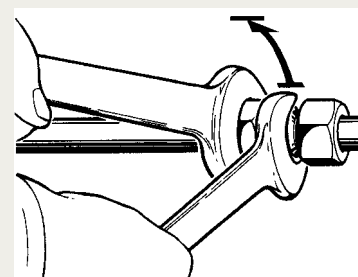
Überwurfmutter bis zum deutlich spürbaren Kraftanstieg (Montageende) mit geeignetem Montageschlüssel anziehen. Die mit dem Kraftanstieg vergleichbaren Drehmomente sind den zugehörigen Tabellenwerken zu entnehmen. Bei Verschraubungen aus nicht rostendem Stahl ist die Überwurfmutter im Gewindebereich und auf der 45°-Schräge mit ABF-Fett zu fetten.

7. Final assembly in the fitting body

Tighten the nut up to the point of a noticeable increase in force (end of assembly) using an appropriate wrench. The torques comparable to the increase in force are indicated in the relevant tables. For stainless steel fittings, the threaded portion and the 45° chamfer of the nut must be greased with ABF grease.

7. Montage final dans le corps du raccord

Serrer l'écrou avec la clé de montage appropriée jusqu'à ressentir un effort nettement plus élevé (fin de montage). Les couples comparables à l'augmentation de la force sont indiqués dans les tableaux correspondants. Pour les raccords en acier inox, on enduira l'écrou de graisse ABF dans la zone filetée et au niveau du chanfrein de 45°.



Achtung: Abweichende Anzugswege reduzieren die Druckbelastbarkeit und die Lebensdauer der Verschraubung. Leckagen oder Funktionsstörungen sind die Folge.

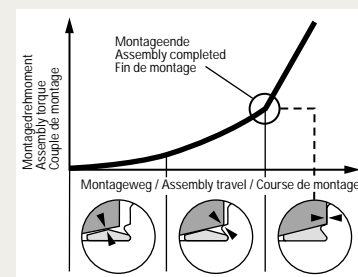
Caution: Any deviating number of tightening turns reduces the nominal pressure and the service life of the fitting and results in leakage or malfunction.

Attention: L'écart des couples de serrage réduit la pression nominale et la durée de vie du raccord. Conséquences: fuites et dysfonctionnements.

Wichtig: Verschraubungsstutzen mit Schlüssel gegenhalten.

Important: Hold fitting body firmly by means of a spanner.

Important: Maintenir le corps du raccord avec une clef.



8. Wiederholungsmontage

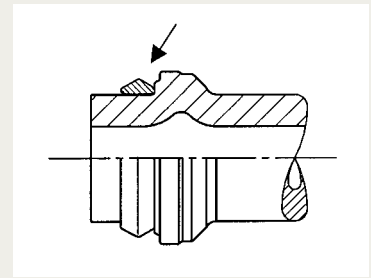
Nach jedem Lösen der Verbindung die Weichdichtung auf Beschädigungen prüfen und gegebenenfalls austauschen. Die Überwurfmutter wieder fest anziehen. Die Wiederholungsmontage ist mit dem gleichen Drehmoment wie bei der Erstmontage durchzuführen!

8. Repeat assembly

Each time the fitting is disconnected, the captive seal must be checked for possible damage and replaced if necessary. The nut must be firmly retightened. For reassembly, the same torque as for initial assembly must be applied.

8. Remontage

Après chaque desserrage du raccord, vérifier si le joint mou est endommagé et le remplacer si nécessaire. Resserrer l'écrou. Procéder au remontage en appliquant le même couple que pour le premier montage!



C

Hinweis

Rohrlängendifferenzen müssen durch entsprechende längenausgleichende Rohrverlegung, z.B. Rohrbögen, ausgeglichen werden. Über- und Unterschreitungen der gültigen Rohrlängenvorgaben können zu Undichtigkeiten führen. Kurze, gerade Rohrstücke ohne Längenausgleich zwischen den Einbauenden vor Einbau auf Endmaß überprüfen und ggf. anpassen.

Anmerkung: Die angegebenen Drehmomente sind Anhaltswerte für das Auffinden des Festpunktes (Montageende), die nur unter optimalen Bedingungen gelten. Durch Toleranzeinflüsse, verspannt eingebaute Rohre und besonders im Edelstahlbereich durch eine nicht ordnungsgemäße Schmierung, können diese Drehmomente deutlich abweichen. Bei der Anwendung der Drehmomente für die Erstmontage dürfen die vorgenannten Einflüsse nicht vorhanden sein.

Note

Differences in tube length must be compensated by adequate laying of tubes, e.g. tube bends. Exceeding or falling short of the applicable specified tube lengths may cause leakage. Prior to installation, short straight tube sections without length compensation between the installation ends must be checked for compliance with the final dimension and adapted if necessary.

Important: The torques as indicated are reference values for determining the point of resistance (end of assembly) and only apply under optimum conditions. They may vary considerably, the influencing factors being tolerances, installed tubes which are exposed to stress and inadequate lubrication, particularly for special steel grades. No such influences may be given if these torques are applied for initial assembly.

Nota

Pour égaliser les différentes longueurs de tubes, on procédera à un montage compensateur en utilisant p.ex. des tubes en coude. Tout écart en moins ou en plus de la longueur admissible des tubes peut engendrer des fuites. Avant de procéder au montage, on vérifiera et on adaptera si nécessaire la cote finale des tronçons de tubes en ligne droite de petites dimensions, sans compensation en longueur, situés entre les extrémités de montage.

Important: Les couples indiqués sont des valeurs de référence permettant de déterminer le point dur (fin de montage) et ne sont applicables que dans des conditions optimales. Ces couples peuvent s'écarter considérablement en raison de l'influence des tolérances, des tubes posés sous tension et d'une lubrification non conforme, notamment dans le secteur de l'acier inox. Les influences précitées ne doivent pas exister lors de l'application des couples pour le premier montage.

Montagedrehmomente
 Assembly torques/Couples de montage

Reihe Range Série	Rohr-AD Tube OD Dia. ext. du tube	Stahl Steel Acier Md [Nm]	Nicht rostender Stahl* Stainless steel* Acier inox* 1.4571 Md [Nm]
L	6	30	30
	8	35	35
	10	40	40
	12	55	55
	15	80	80
	18	110	120
	22	140	170
	28	210	250
	35	300	380
S	42	400	520
	6	35	35
	8	40	40
	10	55	55
	12	70	70
	16	110	110
	20	150	170
	25	210	260
	30	280	370
38	410	590	

*Bei Verschraubungen aus nicht rostendem Stahl ist die Überwurfmutter im Gewindebereich und auf der 45°-Schräge mit Walterscheid ABF-Fett zu fetten.

*For stainless steel fittings, the threaded portion and the 45° chamfer of the nut must be greased with Walterscheid ABF grease.

*Pour les raccords en acier inox, on enduira l'écrou de graisse ABF de Walterscheid dans la zone fileté et au niveau du chanfrein de 45°.

C



MEG-WF2



MEG-WF2/BO



MEG-WF3/BO



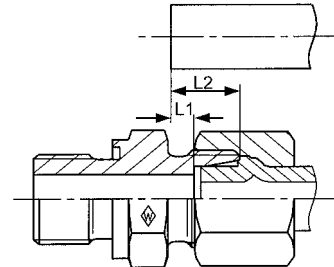
Stahl / Steel / Acier
St 37.4 / 52.4

WALFORMplus

d [mm]	s [mm]						L1 [mm]	L2 [mm]
	1,5	2	2,5	3	3,5	4	5	6
6 L/S	6,5 13,5							
8 L/S	7,0 14,0	6,5 13,5						
10 L	7,0 14,0	6,0 13,0	6,0 13,0	5,5 12,5				
10 S	6,5 14,0	5,5 13,0	5,5 13,0	5,0 12,5				
12 L	7,0 14,0	6,5 13,5	6,0 13,0	4,5 11,5				
12 S	6,5 14,0	6,0 13,5	5,5 13,0	4,0 11,5				
15 L	6,5 13,5	6,5 13,5	6,0 13,0					
16 S		7,0 15,5	6,5 15,0	7,0 15,5	5,5 14,0			
18 L		6,5 14,0	6,5 14,0	6,0 13,5				
20 S		8,5 19,0	8,0 18,5	7,5 18,0		7,5 18,0		
22 L		7,0 14,5	7,0 14,5	6,5 14,0				
25 S		9,0 21,0	8,0 20,0	8,0 20,0	8,5 20,5	8,0 20,0	7,5 19,5	
28 L		6,5 14,0	6,5 14,0	6,5 14,0	7,0 14,5			
30 S			8,5 22,0	9,0 22,5		9,0 22,5	9,0 22,5	8,5 22,0
35 L				8,0 18,5		8,5 19,0	8,0 18,5	
38 S				9,5 25,5		9,5 25,5	10,0 26,0	10,0 26,0
42 L				8,0 19,0		8,5 19,5		

d [mm]	A1* [mm]	A2* [mm]	B1 [mm]	B2 [mm]	ØD1min [mm]
6 L/S	69	56	90	64	9,2
8 L/S	66	52	88	60	11,3
10 L/S	62	48	84	57	13,6
12 L/S	62	48	85	57	15,8
15 L	69	56	90	64	18,6
16 S	73	58	99	68	19,8
18 L	79	65	102	74	21,6
20 S	85	66	115	77	24,5
22 L	87	72	112	83	25,6
25 S	114	93	148	106	29,6
28 L	103	87	129	98	31,6
30 S	121	98	157	112	34,7
35 L	112	93	144	106	39,2
38 S	127	102	169	116	42,8
42 L	114	94	146	107	46,2

Rohrlängenbestimmung (L1, L2)
Tube length determination (L1, L2)
Détermination de la longueur des tubes (L1, L2)

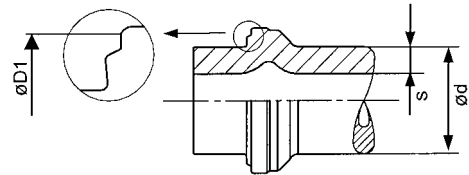


Hinweis: Für die Maße L1 und L2 ist nach der Umformung eine Toleranz von ± 0,5 mm zu berücksichtigen!

Note: A tolerance of ± 0.5 mm must be taken into consideration for dimensions L1 and L2 after reshaping!

Nota: Pour les cotes L1 et L2, il faut considérer une tolérance de ± 0,5 mm après le formage!

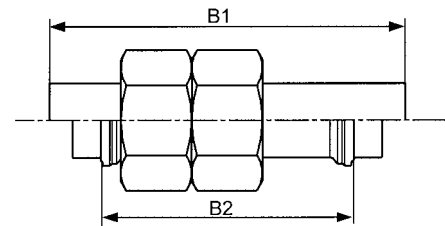
Kontrolldurchmesser (D1min)
Control diameter (D1min)
Diamètre de contrôle (D1min)



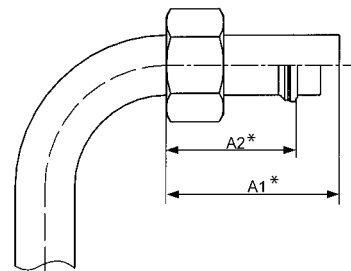
Mindestrohrängen zum Einspannen bei geraden und gebogenen Rohren
Minimum tube lengths for clamping for straight and bent tubes

Minimum tube lengths for clamping for straight and bent tubes

Longueurs de serrage minimales des tubes droits et cintrés



Gerade Rohrlänge (B)
Straight tube length (B)
Longueurs de tubes droits (B)



Minimale gerade Rohrlänge (A)
Minimum straight tube length (A)
Longueurs minimales de tubes droits (A)

* Soll das gerade Rohrende wegen Einbauschwierigkeiten kürzer sein als in Tabelle angegeben, muß das Biegen nach dem Umformen erfolgen (siehe Rohrbiegewerkzeuge).

* If installation problems require a shorter straight tube length than indicated in the table, bending must be carried out after reshaping (see Tube bending tools).

* Si, à cause de difficultés de montage, la longueur droite doit être plus courte qu'indiqué sur le tableau, le cintrage devra être effectué après le formage. (Voir les cintruses pour tubes)



MEG-WF2



MEG-WF2/BO



MEG-WF3/BO



Nicht rostender Stahl / Stainless steel / Acier inox

1.4571

WALFORMplus

d [mm]	s [mm]							L1 [mm] L2 [mm]
	1,5	2	2,5	3	3,5	4	5	6
MEG-WF2 MEG-WF2/BO MEG-WF3/BO								
6 L/S	6,5 13,5							
8 L/S	7,0 14,0	7,0 14,0						
10 L	7,5 14,5	7,0 14,0						
10 S	7,0 14,5	6,5 14,0						
12 L	7,0 14,0	6,5 13,5						
12 S	6,5 14,0	6,0 13,5						
15 L	7,5 14,5	7,0 14,0						
16 S		7,0 15,5	7,5 16,0	7,5 16,0		7,0 15,5		
18 L		7,0 14,5	7,0 14,5	6,5 14,0				
20 S		9,5 20,0	9,0 19,5	8,5 19,5				
22 L		7,5 15,0	7,0 14,5	7,0 14,5				
25 S			10,0 22,0	10,0 22,0		9,0 21,0		
28 L		8,0 15,5	8,0 15,5	8,0 15,5				
30 S			9,0 22,5	10,5 24,0		10,5 24,0	10,0 23,5	
MEG-WF3/BO								
35 L				8,5 19,0		9,5 20,0	9,5 20,0	
38 S				11,5 27,5		12,0 28,0	11,5 27,0	11,0 27,0
42 L				10,0 21,0				

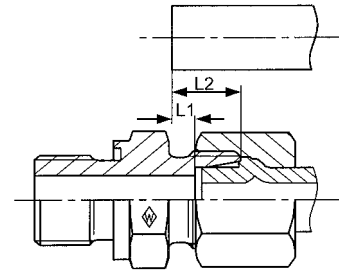
d [mm]	A1* [mm]	A2* [mm]	B1 [mm]	B2 [mm]	ØD1min [mm]
6 L/S	69	56	90	64	9,2
8 L/S	66	52	88	60	11,3
10 L/S	62	48	84	57	13,6
12 L/S	62	48	85	57	15,8
15 L	69	56	90	64	18,6
16 S	73	58	99	68	19,8
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20 S	85	66	115	77	24,5
22 L	87	72	112	83	25,6
25 S	114	93	148	106	29,6
28 L	103	87	129	98	31,6
30 S	121	98	157	112	34,7
35 L	112	93	144	106	39,2
38 S	127	102	169	116	42,8
42 L	114	94	146	107	46,2

* Soll das gerade Rohrende wegen Einbauschwierigkeiten kürzer sein als in Tabelle angegeben, muß das Biegen nach dem Umformen erfolgen (siehe Rohrbiegewerkzeuge).

* If installation problems require a shorter straight tube length than indicated in the table, bending must be carried out after reshaping (see Tube bending tools).

* Si, à cause de difficultés de montage, la longueur droite doit être plus courte qu'indiqué sur le tableau, le cintrage devra être effectué après le formage. (Voir les cintruses pour tubes)

**Rohrlängenbestimmung (L1, L2)
Tube length determination (L1, L2)
Détermination de la longueur des tubes (L1, L2)**

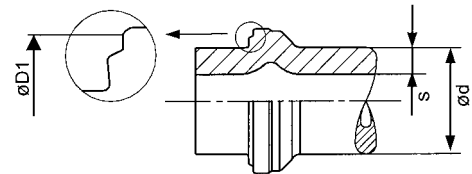


Hinweis: Für die Maße L1 und L2 ist nach der Umformung eine Toleranz von ± 0,5 mm zu berücksichtigen!

Note: A tolerance of ± 0.5 mm must be taken into consideration for dimensions L1 and L2 after reshaping!

Nota: Pour les cotes L1 et L2, il faut considérer une tolérance de ± 0,5 mm après le formage!

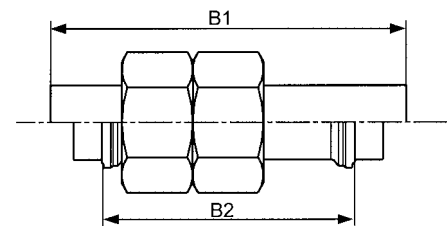
**Kontrolldurchmesser (D1min)
Control diameter (D1min)
Diamètre de contrôle (D1min)**



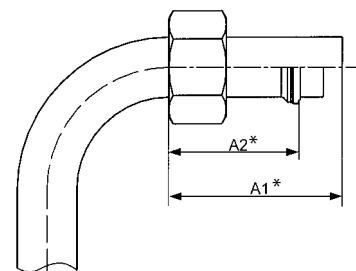
**Mindestrohrängen zum Einspannen bei geraden und gebogenen Rohren
Minimum tube lengths for clamping for straight and bent tubes**

Minimum tube lengths for clamping for straight and bent tubes

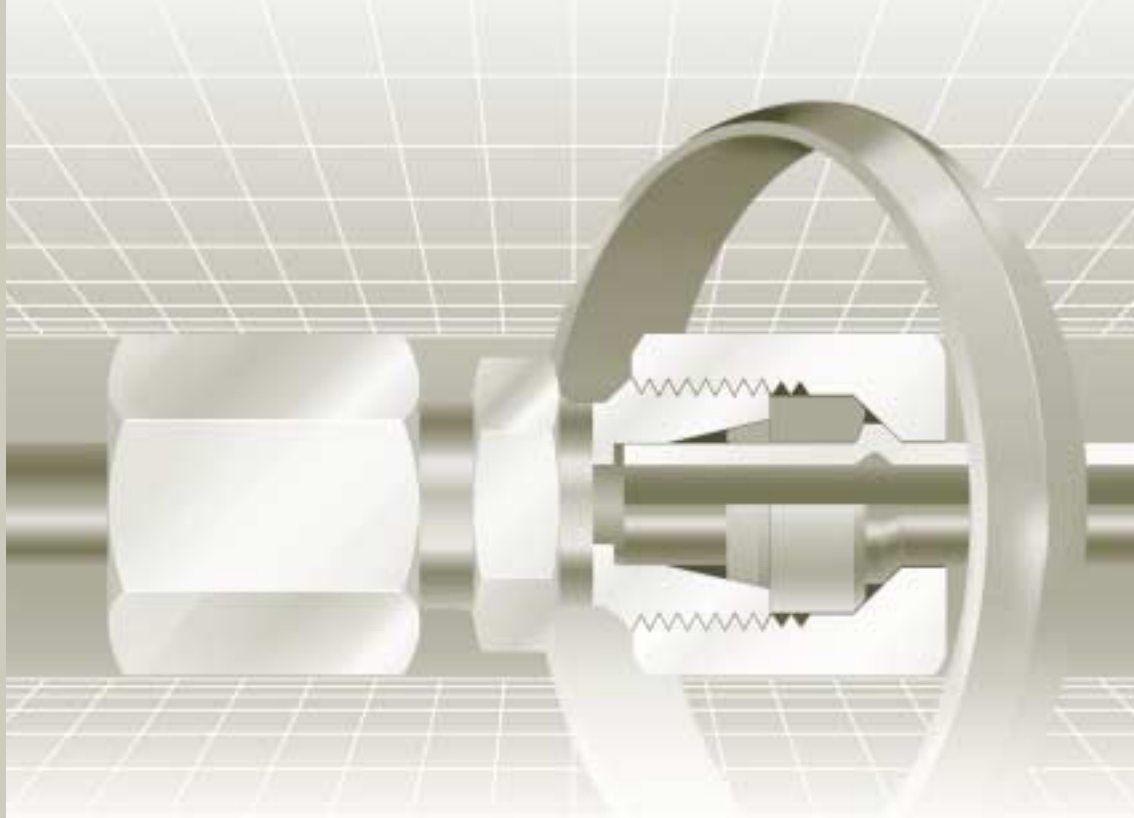
Longueurs de serrage minimales des tubes droits et cintrés



Gerade Rohrlänge (B)
Straight tube length (B)
Longueurs de tubes droits (B)



Minimale gerade Rohrlänge (A)
Minimum straight tube length (A)
Longueurs minimales de tubes droits (A)



Montageanleitung
 Assembly instructions
 Instructions de montage

WALFORM-
 Rohrverschraubungen
WALFORM tube fittings
 Raccords
 de tubes **WALFORM**

WALFORM^{plus}, WD

WALFORM-Verschraubung mit Weichdichtung und Stützring für dünne Rohrwandstärken
WALFORM fitting with captive seal and back-up ring for thin-walled tubes
Raccord WALFORM à joint mou et bague d'appui pour tubes à faibles épaisseurs de paroi

Rohrauswahl

Es ist eine kaltbiege- und bördelfähige Rohrqualität zu verwenden. Wir empfehlen die Verwendung von nahtlosem Präzisionsstahlrohr, Werkstoff St 37.4 bzw. St 52.4 gemäß DIN 1630, Ausführung NBK - 3.1 B. Röhre aus nicht rostendem Stahl 1.4571, nahtlos kaltgezogen, zunderfrei wärmebehandelt, Ausführungsart "m" nach DIN 17458, Toleranzen der Rohraußen- und innendurchmesser nach DIN 2391, Teil 1-C. Berechnungsdrücke nach DIN 2413. Wird diese Rohrauswahl nicht berücksichtigt, so kann dies zu einem Werkzeugbruch führen!

Tube selection

A tube grade suitable for cold-bending and flaring is to be used. We recommend the use of seamless precision steel tubes, material St 37.4 / St 52.4 to DIN 1630, type NBK-3.1 B. Tubes made of stainless steel 1.4571, cold-drawn seamless, scale-free heat-treated, form "m" to DIN 17458. Tolerances of tube outside and inside diameters to DIN 2391, sheet 1-C. Calculated pressure according to DIN 2413. Disregarding this tube selection may lead to tool failure!

Sélection de tube

On utilisera un tube dont la qualité est apte au cintrage à froid et à l'évasement. Nous recommandons l'utilisation de tubes de précision en acier, sans soudure, matériau St 37.4 ou St 52.4 selon la norme DIN 1630, type NBK-3.1 B. Tubes en acier inox 1.4571, étirés à froid sans soudure, soumis à un traitement thermique sans paille, type «m» selon DIN 17458. Tolérances des diamètres extérieurs et intérieurs des tubes selon DIN 2391, folio 1-C. Pressions théoriques selon DIN 2413. Si les tubes recommandés ne sont pas utilisés, une rupture d'outil en peut être la conséquence!

1. Rohrlängenbestimmung

a) Durch Messen Rohranschlag Stutzen zu Rohranschlag Stutzen. Hierbei wird dem entsprechend gemessenen Maß je Rohranschluß das Maß L1 hinzuaddiert.

b) Durch Messen von Stirnseite Stutzen zu Stirnseite Stutzen. Hierbei wird dem entsprechend gemessenen Maß je Rohranschluß das Maß L2 hinzuaddiert.

Achtung: Stahl und nicht rostender Stahl haben unterschiedliche Maße. Die Maße L1 und L2 sowie minimale gerade Rohrlängen und Mindestlängen für gerade Rohrenden bei Rohrbögen sind der Bedienungsanleitung bzw. den entsprechenden Tabellenwerken zu entnehmen.

1. Tube length determination

a) The tube length is determined by measuring from stop face in the fitting bodies. Dimension L1 must then be added for each tube connection.

b) The tube length is determined by measuring from face end to face end of the fitting bodies. Dimension L2 must then be added for each tube connection.

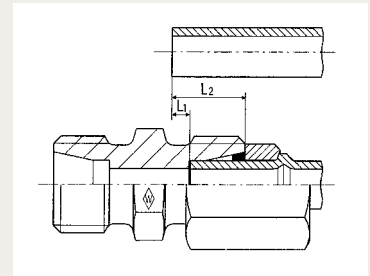
Caution: For steel and stainless steel different dimensions apply. Dimensions L1 and L2, minimum straight tube lengths and minimum lengths for the straight tube end on tube bends are indicated in the operating instructions and relevant tables.

1. Détermination de la longueur des tubes

a) La longueur exacte d'un tube se mesure entre ses deux extrémités venant buter contre le corps des raccords. A cette longueur mesurée, on ajoutera, pour chaque raccord de tube, la cote L1.

b) La longueur exacte d'un tube se mesure entre les faces des corps de raccords. A cette longueur mesurée, on ajoutera, pour chaque raccord de tube, la cote L2.

Attention: L'acier et l'acier inox ont différentes dimensions. Les cotes L1 et L2 ainsi que la longueur minimale de tubes en ligne droite et la longueur minimale pour une extrémité de tubes en ligne droite des tubes en coude figurent dans la notice d'utilisation et les tableaux correspondants.



2. Rechtwinklig absägen!

Vom Trennschnitt durch den Rohrhersteller 10 mm absägen (lieferbedingte Fehlerquelle). Rohr rechtwinklig absägen, 1/2° Winkelabweichung zur Rohrachse ist zulässig. Keine Rohrab-schneider oder Trennscheiben verwenden, sie ergeben eine starke Gratbildung und Schrägschnitt. Sägemaschine / Vorrichtung benutzen.

Achtung: Formabweichungen am Rohrende, wie z.B. schief gesägte oder falsch entgratete Rohre, reduzieren die Lebensdauer und die Dichtigkeit der Verbindung.

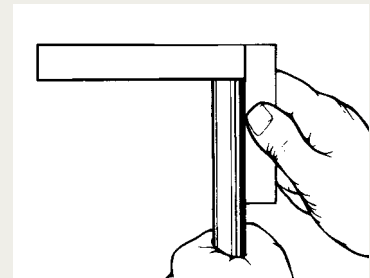
2. Saw off at right angles!

Saw off 10 mm from the parting cut made by the tube manufacturer (delivery-related source of faults). Saw the tube off at right angles, an angular deviation of 1/2° relative to the tube axis is permissible. Do not use pipe cutters or cutting-off wheels as they cause severe burring and inclined cuts. Use a sawing machine / device. **Caution:** Form errors at the tube end, such as angular saw-cuts or inadequately deburred tubes, reduce the service life and the sealing capacity of the connection.

2. Scier à angle droit!

Scier le tube à 10 mm de la coupe réalisée par le fabricant de tubes (source d'erreurs due à la livraison). Scier le tube à angle droit. Un écart angulaire de 1/2° par rapport à l'axe tubulaire est admissible. Ne pas utiliser de cisailles ni de meules tronçonneuses. Elles engendrent de nombreuses arêtes et une coupe en biais. On utilisera une scie mécanique / un dispositif.

Attention: Des écarts de forme à l'extrémité du tube, tels que tube scié en biais ou ébarbage inadéquat, réduisent la durée de vie et l'étanchéité du raccord.



3. Rohrenden leicht entgraten und Rohr reinigen!

Entgratung und Reinigung innen und außen durchführen. Der Spann- und Umformbereich muß frei von Spänen, Schmutz, Fett, Öl und Farbe sein! Wenn fettig oder ölig, umweltfreundliches Lösungsmittel verwenden.

Hinweis: Bei dünnwandigen Rohren wirkt sich eine unsachgemäße Rohrvorbereitung besonders kritisch aus (siehe Punkt 3.1).

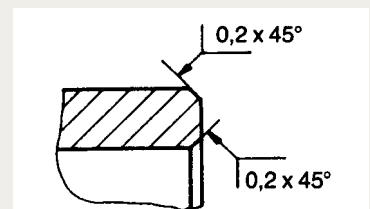
3. Lightly deburr the tube ends and clean the tube!

Remove burr and clean inside and out. The clamping and reshaping area must be clean and free of any chips, dirt, grease, oil and paint! Use an environment-friendly solvent to remove grease or oil.

Note: Incorrect tube preparation is particularly critical in the case of thin-walled tubes (see Item 3.1).

3. Procéder à un léger ébarbage des extrémités du tube et au nettoyage du tube!

Procéder à l'ébarbage et au nettoyage à l'intérieur et à l'extérieur du tube. Veillez à ce que la zone de serrage et de formage soit exempte de copeaux, de saletés, de graisse, d'huile et de peinture! En cas de présence de graisse ou d'huile, on utilisera des solvants écophiles. **Nota:** Les conséquences d'une préparation non conforme des tubes à faibles épaisseurs de paroi sont particulièrement critiques (voir point 3.1)



zulässige Anfasung
 permissible chamfer / chanfrein admissible

3.1 Fehler bei unsachgemäßer Rohrvorbereitung

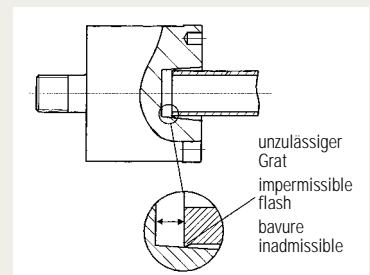
Bei unsachgemäßer Rohrvorbereitung kann das Rohr aufgrund der konischen Aufnahmebohrung im Formstutzen nicht ganz in das Umformwerkzeug eingeführt werden. Dies führt zu einer nicht ordnungsgemäßen Umformung wodurch die Leistung der Rohrverbindung beeinträchtigt werden kann.

3.1 Incorrect tube preparation

Due to the tapered locating hole in the shaper, the tube cannot be completely inserted into the reshaping tool in case of incorrect tube preparation. This leads to incorrect reshaping, which can be detrimental to the performance of the tube connection.

3.1 Défaillance dans le cas d'une préparation non conforme des tubes

Dans le cas d'une préparation non conforme, le tube ne peut pas être introduit entièrement dans l'outil de formage en raison de son alésage de réception conique. Il en résulte un formage non conforme aux règles de l'art, pouvant porter préjudice à la performance du raccord de tube.



4. Überwurfmutter auf das Rohr schieben. Rohr umformen.

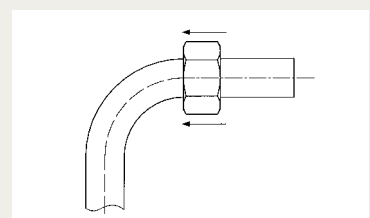
Rohrenden mit Walterscheid WALFORM-Umformmaschine umformen (siehe Bedienungsanleitung für WALFORM-Maschinen).

4. Slide the nut onto the tube. Reshape the tube.

Reshape the tube ends with the Walterscheid WALFORM machine (see instructions for WALFORM machines).

4. Glisser l'écrou sur le tube. Procéder au formage du tube.

Former les extrémités du tube en utilisant la machine WALFORM de Walterscheid. (Voir la notice d'utilisation pour machines WALFORM).



5. Kontrolle des fertig verformten Rohres

Den Durchmesser D des verformten Rohres auf Maßhaltigkeit (siehe Bedienungsanleitung bzw. entsprechende Tabellenwerke) und Verunreinigung prüfen. Die Außenseite des verformten Rohres muß sauber sein. Nur eine einwandfreie Verformung ergibt eine lange Lebensdauer der Verschraubung.

6. Stützring und Weichdichtung montieren

Nach der Rohrumformung Stützring auf das umgeformte Rohr aufschieben. **Achtung!** Auf richtige Montage- richtung des Stützringes achten. Pfeilkennzeichnung muß in Montage- richtung zeigen.

Die Weichdichtung auf das Rohr bis zum Anschlag aufziehen. Hierbei auf verdrehfreie und beschädigungsfreie Montage achten. Funktion und Sicherheit der Verschraubung ist nur mit Original Walterscheid WF-Weichdichtungen gewährleistet!

7. Fertigmontage im Verschraubungsstutzen

Überwurfmutter bis zum deutlich spürbaren Kraftanstieg (Festpunkt) mit geeignetem Montageschlüssel anziehen. Danach 60° (eine Schlüssel- fläche) endmontieren. Bei Verschrau- bungen aus nicht rostendem Stahl ist die Überwurfmutter im Gewindebe- reich und auf der 45°-Schräge mit ABF-Fett zu fetten. **Achtung:** Abwei- chende Anzugswege reduzieren die Druckbelastbarkeit und die Lebens- dauer der Verschraubung. Leckagen oder Funktionsstörungen sind die Folge. **Wichtig:** Verschraubungsstut- zen mit Schlüssel gehalten.

8. Wiederholungsmontage

Nach jedem Lösen der Verbindung die Weichdichtung auf Beschädigungen überprüfen und gegebenenfalls aus- tauschen. Die Überwurfmutter wieder fest anziehen. Die Wiederholungs- montage ist mit dem gleichen Dreh- moment wie bei der Erstmontage durchzuführen!

Hinweis

Rohrlängendifferenzen müssen durch entsprechende längenausgleichende Rohrverlegung, z.B. Rohrbögen, aus- geglichen werden. Über- und Unter- schreitungen der gültigen Rohrlängen- vorgaben können zu Undichtigkeiten führen. Kurze, gerade Rohrstücke ohne Längenausgleich zwischen den Einbauenden vor Einbau auf Endmaß überprüfen und ggf. anpassen.

5. Check the tube after reshaping

Check the diameter D of the reshaped tube for dimensional accuracy (see operating instructions and tables) and contamination. The outer surface of the reshaped tube must be clean. Only faultless reshaping ensures a long service life of the fitting.

6. Mount the back-up ring and the captive seal

After reshaping the tube, slide the back-up ring onto the reshaped tube. **Caution:** Make sure that the back-up ring is fitted in the right direction. The arrows must point in the direction of tube assembly.

Slide the captive seal onto the tube until it abuts. Make sure that no damage or torsion occurs during assembly. Function and reliability are guaranteed only with original Walterscheid WF-captive seals!

7. Final assembly in the fitting body

Tighten the nut up to the point of a noticeable increase in force (point of resistance) using an appropriate wrench. For final assembly, tighten the nut further by 60° (one wrench face). For stainless steel fittings, the threaded portion and the 45° chamfer of the nut must be greased with ABF grease. **Caution:** Any deviating number of tightening turns reduces the nominal pressure and the service life of the fitting and results in leakage or malfunction. **Important:** Hold fitting body firmly by means of a spanner.

8. Repeat assembly

Each time the fitting is disconnected, the captive seal must be checked for possible damage and replaced if necessary. The nut must be firmly retightened. For reassembly, the same torque as for initial assembly must be applied.

Note

Differences in tube length must be compensated by adequate laying of tubes, e.g. tube bends. Exceeding or falling short of the applicable speci- fied tube lengths may cause leakage. Prior to installation, short straight tube sections without length compen- sation between the installation ends must be checked for compliance with the final dimension and adapted if necessary.

5. Contrôle du tube formé

Contrôler la propreté et la précision dimensionnelle du diamètre D du tube formé (voir la notice d'utilisation et les tableaux). L'extérieur du tube formé doit être propre. Seul un forme- ge impeccable assure une longue durée de vie du raccord.

6. Montage de la bague d'appui et du joint mou

Après le formage du tube, glisser la bague d'appui sur le tube formé. **Attention!** Veiller à ce que le sens du montage de la bague d'appui soit correct. Les flèches doivent indiquer le sens du montage.

Procéder au montage du joint mou sur le tube jusqu'à ce qu'il vienne buter. On veillera à ce que ce montage se fasse sans torsion ni dommage. Le fonctionnement et la sécurité du rac- cord ne sont assurés qu'en utilisant des joints mous originaux du type WF de Walterscheid!

7. Montage final dans le corps du raccord

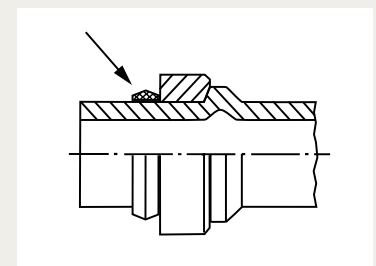
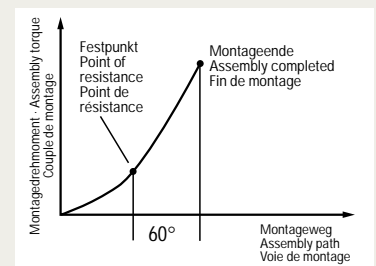
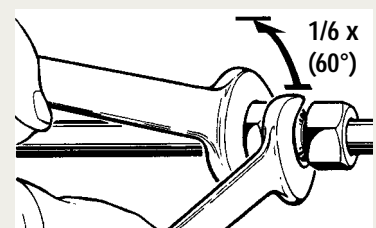
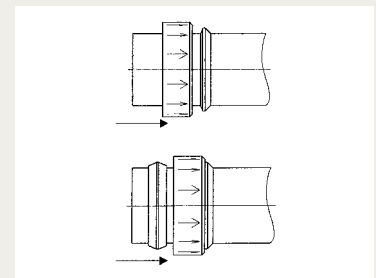
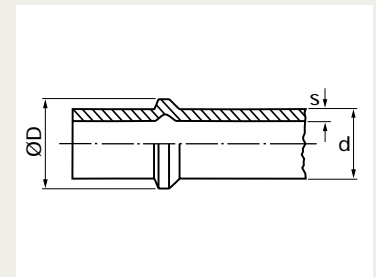
Serrer l'écrou avec la clé de montage appropriée jusqu'à ressentir un effort nettement plus élevé (point de résistance). Terminer ensuite le mon- tage par un serrage de 60° (une surface de clé). Pour les raccords en acier inox, on enduira l'écrou de graisse ABF dans la zone filetée et au niveau du chanfrein de 45°. **Attention:** L'écart des couples de serrage réduit la pression nomi- nale et la durée de vie du raccord. Conséquences: fuites et dysfonc- tionnements. **Important:** Maintenir le corps du raccord avec une clef.

8. Remontage

Après chaque desserrage du raccord, vérifier si le joint mou est endom- magé et le remplacer si nécessaire. Resserrer l'écrou. Procéder au remon- tage en appliquant le même couple que pour le premier montage!

Nota

Pour égaliser les différentes lon- gueurs de tubes, on procédera à un montage compensateur en utilisant p.ex. des tubes en coude. Tout écart en moins ou en plus de la longueur admissible des tubes peut engendrer des fuites. Avant de procéder au mon- tage, on vérifiera et on adaptera si nécessaire la cote finale des tronçons de tubes en ligne droite de petites dimensions, sans compensation en longueur, situés entre les extrémités de montage.





MEG-WF2



MEG-WF2/BO



MEG-WF3/BO



Stahl / Steel / Acier
St 37.4 / 52.4

WALFORMplus, WD

d [mm]	s [mm]	L1 [mm]	L2 [mm]	D ± 0,1 [mm]	A* [mm]	B [mm]
6 L	1	2,9	9,9	8	75	95
8 L	1	2,7	9,7	10	75	95
10 L	1	2,7	9,7	12	75	95
12 L	1	2,4	9,4	14	75	95



Nicht rostender Stahl / Stainless steel / Acier inox
1.4571

WALFORMplus, WD

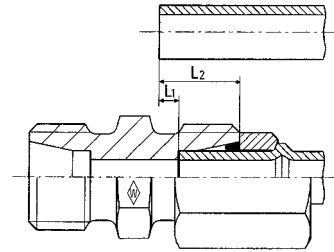
d [mm]	s [mm]	L1 [mm]	L2 [mm]	D ± 0,1 [mm]	A* [mm]	B [mm]
6 L	1	2,9	9,9	8	75	95
8 L	1	3,1	10,1	10	75	95
10 L	1	3,4	10,4	12	76	97
12 L	1	3,3	10,3	14	76	97

* Soll das gerade Rohrende wegen Einbauschwierigkeiten kürzer sein als in Tabelle angegeben, muß das Biegen nach dem Umformen erfolgen (siehe Rohrbiegewerkzeuge).

* If installation problems require a shorter straight tube length than indicated in the table, bending must be carried out after reshaping (see Tube bending tools).

* Si, à cause de difficultés de montage, la longueur droite doit être plus courte qu'indiqué sur le tableau, le cintrage devra être effectué après le formage. (Voir les cintruses pour tubes)

Rohrlängenbestimmung (L1, L2)
Tube length determination (L1, L2)
Détermination de la longueur des tubes (L1, L2)

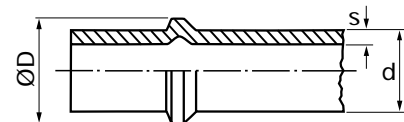


Hinweis: Für die Angabe L1 und L2 ist nach der Umformung eine Toleranz von ± 0,5 mm zu berücksichtigen!

Note: A tolerance of ± 0,5 mm must be taken into consideration for dimensions L1 and L2 after the forming process!

Attention: Pour l'indication L1 et L2 il faut considérer une tolérance de ± 0,5 mm après le formage!

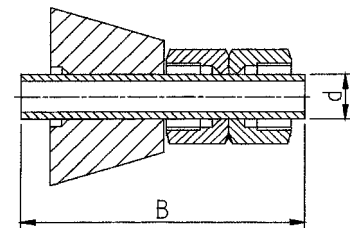
Kontrolldurchmesser (D ± 0,1)
Control diameter (D ± 0,1)
Diamètres de contrôle (D ± 0,1)



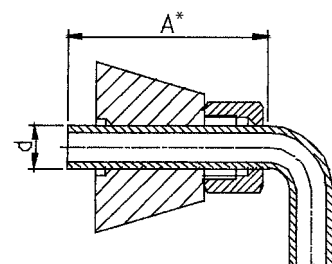
Mindestrohrängen zum Einspannen bei geraden und gebogenen Rohren

Minimum tube lengths for clamping for straight and bent tubes

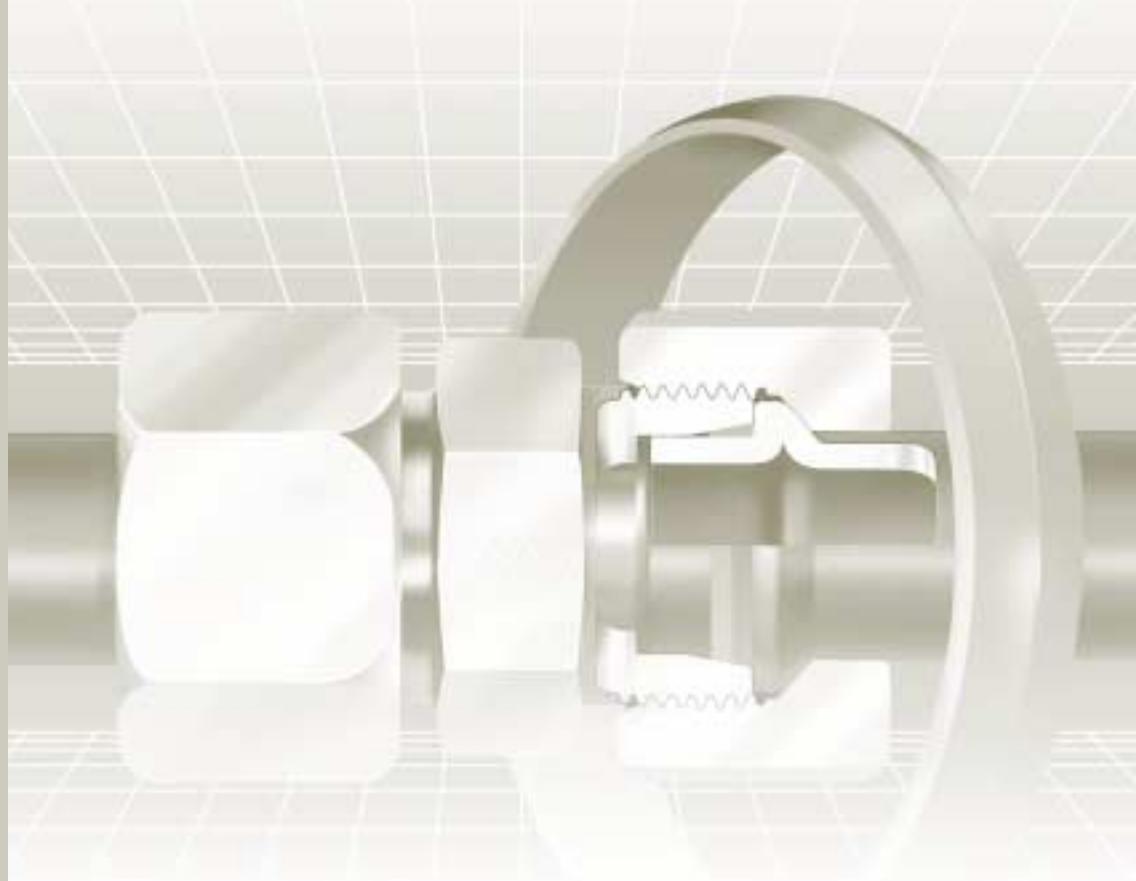
Longueurs de serrage minimales des tubes droits et cintrés



Gerade Rohrlänge (B)
 Straight tube length (B)
 Longueurs de tubes droits (B)



Minimale gerade Rohrlänge (A)
 Minimum straight tube length (A)
 Longueurs minimales de tubes droits (A)



Montageanleitung
 Assembly instructions
 Instructions de montage

WALFORM-
 Rohrverschraubungen
WALFORM tube fittings
 Raccords
 de tubes WALFORM

WD

WALFORM-Verschraubung mit Weichdichtung
WALFORM fitting with captive seal
Raccord WALFORM à joint mou

Rohrauswahl

Es ist eine kaltbiege- und bördelfähige Rohrqualität zu verwenden. Wir empfehlen die Verwendung von nahtlosem Präzisionsstahlrohr, Werkstoff St 37.4 bzw. St 52.4 gemäß DIN 1630, Ausführung NBK - 3.1 B. Rohre aus nicht rostendem Stahl 1.4571, nahtlos kaltgezogen, zunderfrei wärmebehandelt, Ausführungsart "m" nach DIN 17458, Toleranzen der Rohraußen- und Innendurchmesser nach DIN 2391, Teil 1-C. Berechnungsdrücke nach DIN 2413. Wird diese Rohrauswahl nicht berücksichtigt, so kann dies zu einem Werkzeugbruch führen!

Tube selection

A tube grade suitable for cold-bending and flaring is to be used. We recommend the use of seamless precision steel, material St 37.4 / St 52.4 to DIN 1630, type NBK-3.1 B. Tubes made of stainless steel 1.4571, cold-drawn seamless, scale-free heat-treated, form "m" to DIN 17458. Tolerances of tube outside and inside diameters to DIN 2391, sheet 1-C. Calculated pressure according to DIN 2413. Disregarding this tube selection may lead to tool failure!

Sélection de tube

On utilisera un tube dont la qualité est apte au cintrage à froid et à l'évasement. Nous recommandons l'utilisation de tubes de précision en acier, sans soudure, matériau St 37.4 ou St 52.4 selon la norme DIN 1630, type NBK-3.1 B. Tubes en acier inox 1.4571, étirés à froid sans soudure, soumis à un traitement thermique sans paille, type «m» selon DIN 17458. Tolérances des diamètres extérieurs et intérieurs des tubes selon DIN 2391, folio 1-C. Pressions théoriques selon DIN 2413. Si les tubes recommandés ne sont pas utilisés, une rupture d'outil en peut être la conséquence!

1. Rohrlängenbestimmung

a) Durch Messen Rohranschlag Stutzen zu Rohranschlag Stutzen. Hierbei wird dem entsprechend gemessenen Maß je Rohranschluß das Maß L1 hinzuaddiert.

b) Durch Messen von Stirnseite Stutzen zu Stirnseite Stutzen. Hierbei wird dem entsprechend gemessenen Maß je Rohranschluß das Maß L2 hinzuaddiert.

Achtung: Stahl und nicht rostender Stahl haben unterschiedliche Maße.

Die Maße L1 und L2 sowie minimale gerade Rohrlängen und Mindestlängen für gerade Rohrenden bei Rohrbögen sind der Bedienungsanleitung bzw. den entsprechenden Tabellenwerken zu entnehmen.

2. Rechtwinklig absägen!

Vom Trennschnitt durch den Rohrhersteller 10 mm absägen (lieferbedingte Fehlerquelle). Rohr rechtwinklig absägen, 1/2° Winkelabweichung zur Rohrachse ist zulässig. Keine Rohrab-schneider oder Trennscheiben verwenden, sie ergeben eine starke Gratbildung und Schrägschnitt. Sägemaschine / Vorrichtung benutzen.

Achtung: Formabweichungen am Rohrende, wie z.B. schief gesägte oder falsch entgratete Rohre, reduzieren die Lebensdauer und die Dichtigkeit der Verbindung.

3. Rohrenden leicht entgraten und Rohr reinigen!

Innen und außen entgraten und reinigen. Der Spann- und Umformbereich muß frei von Spänen, Schmutz, Fett, Öl und Farbe sein! Wenn fettig oder ölig, umweltfreundliches Lösungsmittel verwenden.

4. Überwurfmutter auf das Rohr schieben. Rohr umformen.

Rohrenden mit Walterscheid WALFORM-Umformmaschine umformen (siehe Bedienungsanleitung für WALFORM-Maschinen).

1. Tube length determination

a) The tube length is determined by measuring from stop face to stop face in the fitting bodies. Dimension L1 must then be added for each tube connection.

b) The tube length is determined by measuring from face end to face end of the fitting bodies. Dimension L2 must then be added for each tube connection.

Caution: For steel and stainless steel different dimensions apply.

Dimensions L1 and L2, minimum straight tube lengths and minimum lengths for the straight tube end on tube bends are indicated in the operating instructions and relevant tables.

2. Saw off at right angle!

Saw off 10 mm from the parting cut made by the tube manufacturer (delivery-related source of faults). Saw the tube off at rightangles, an angular deviation of 1/2° relative to the tube axis is permissible. Do not use pipe cutters or cutting-off wheels as they cause severe burring and inclined cuts. Use a sawing machine / sawing device.

Caution: Form errors at the tube end, such as angular saw-cuts or inadequately deburred tubes, reduce the service life and the sealing capacity of the connection.

3. Lightly deburr the tube ends and clean the tube!

Remove burr and clean inside and out. The clamping and reshaping area must be clean and free of any chips, dirt, grease, oil and paint! Use an environment-friendly solvent to remove grease or oil.

4. Slide the nut onto the tube. Reshape the tube.

Reshape the tube ends with the Walterscheid WALFORM machine (see instructions for WALFORM machines).

1. Détermination de la longueur des tubes

a) La longueur exacte d'un tube se mesure entre ses deux extrémités venant buter contre le corps des raccords. A cette longueur mesurée, on ajoutera, pour chaque raccord de tube, la cote L1.

b) La longueur exacte d'un tube se mesure entre les faces des corps de raccords. A cette longueur mesurée, on ajoutera, pour chaque raccord de tube, la cote L2.

Attention: L'acier et l'acier inox ont différentes dimensions.

Les cotes L1 et L2 ainsi que la longueur minimale de tubes en ligne droite et la longueur minimale pour une extrémité de tubes en ligne droite des tubes en coude figurent dans la notice d'utilisation et les tableaux correspondants.

2. Scier à angle droit!

Scier le tube à 10 mm de la coupe réalisée par le fabricant de tubes (source d'erreurs due à la livraison). Scier le tube à angle droit. Un écart angulaire de 1/2° par rapport à l'axe tubulaire est admissible. Ne pas utiliser de cisailles ni de meules tronçonneuses. Elles engendrent de nombreuses arêtes et une coupe en biais. On utilisera une scie mécanique / un dispositif.

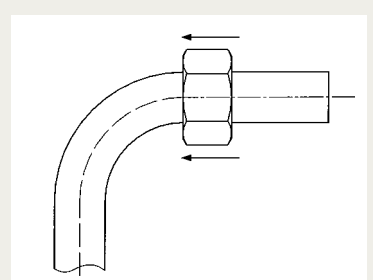
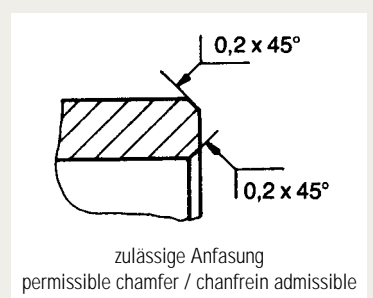
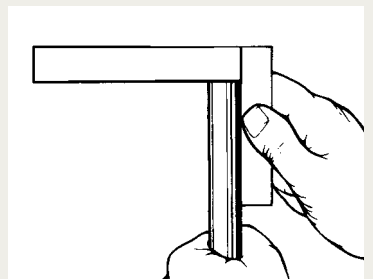
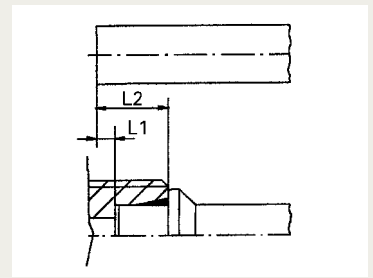
Attention: Des écarts de forme à l'extrémité du tube, tels que tube scié en biais ou ébarbage inadéquat, réduisent la durée de vie et l'étanchéité du raccord.

3. Procéder à un léger ébarbage des extrémités du tube et au nettoyage du tube!

Procéder à l'ébarbage et au nettoyage à l'intérieur et à l'extérieur du tube. Veillez à ce que la zone de serrage et de formage soit exempte de copeaux, de saletés, de graisse, d'huile et de peinture! En cas de présence de graisse ou d'huile, on utilisera des solvants écophiles.

4. Glisser l'écrou sur le tube. Procéder au formage du tube.

Former les extrémités du tube en utilisant la machine WALFORM de Walterscheid. (Voir la notice d'utilisation pour machines WALFORM).



5. Kontrolle des fertig umgeformten Rohres

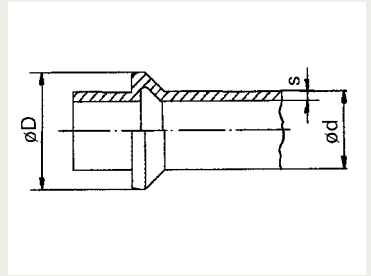
Den Durchmesser D des umgeformten Rohres auf Maßhaltigkeit prüfen (siehe Bedienungsanleitung bzw. entsprechende Tabellenwerke). Die Außenseite des umgeformten Rohres muß sauber sein. Nur eine einwandfreie Umformung ergibt eine lange Lebensdauer der Verschraubung.

5. Check the tube after reshaping

Check the diameter D of the reshaped tube for dimensional accuracy (see operating instructions and tables). The outer surface of the reshaped tube must be clean. Only faultless reshaping ensures a long service life of the fitting.

5. Contrôle du tube formé

Contrôler la précision dimensionnelle du diamètre D du tube formé (voir la notice d'utilisation et les tableaux). L'extérieur du tube formé doit être propre. Seul un formage impeccable assure une longue durée de vie du raccord.



6. Weichdichtung montieren

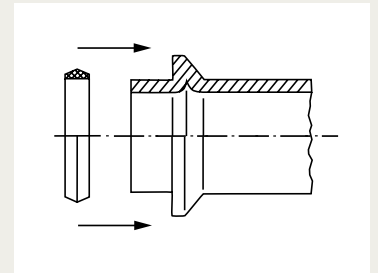
Die Weichdichtung bis zum Anschlag auf das Rohr aufziehen. Hierbei auf verdrehfreie und beschädigungsfreie Montage achten. Funktion und Sicherheit der Verschraubung sind nur mit Original Walterscheid WF-Weichdichtungen gewährleistet!

6. Mount the captive seal

Slide the captive seal onto the tube until it abuts. Make sure that no damage or torsion occurs during assembly. Function and reliability are guaranteed only with original Walterscheid WF-captive seals!

6. Montage du joint mou

Procéder au montage du joint mou sur le tube jusqu'à ce qu'il vienne buter. On veillera à ce que ce montage se fasse sans torsion ni dommage. Le fonctionnement et la sécurité du raccord ne sont assurés qu'en utilisant des joints mous originaux du type WF de Walterscheid!



7. Fertigmontage im Verschraubungsstutzen

Überwurfmutter bis zum deutlich spürbaren Kraftanstieg (Festpunkt) mit geeignetem Montageschlüssel anziehen. Danach 60° (eine Schlüsselfläche) endmontieren. Bei Verschraubungen aus nicht rostendem Stahl ist die Überwurfmutter im Gewindebereich und auf der 45°-Schräge mit ABF-Fett zu fetten.

Achtung: Abweichende Anzugswege reduzieren die Druckbelastbarkeit und die Lebensdauer der Verschraubung. Leckagen oder Funktionsstörungen sind die Folge.

Wichtig: Verschraubungsstutzen mit Schlüssel gegenhalten.

7. Final assembly in the fitting body

Tighten the nut up to the point of a noticeable increase in force (point of resistance) using an appropriate wrench. For final assembly, tighten the nut further by 60° (one wrench face). For stainless steel fittings, the threaded portion and the 45° chamfer of the nut must be greased with ABF grease.

Caution: Any deviating number of tightening turns reduces the nominal pressure and the service life of the fitting and results in leakage or malfunction.

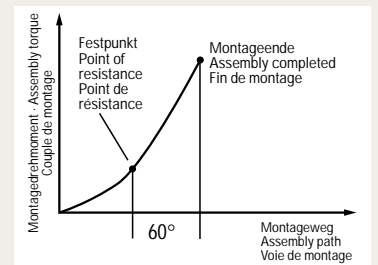
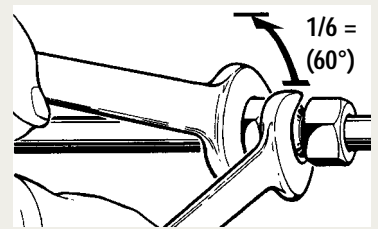
Important: Hold fitting body firmly by means of a spanner.

7. Montage final dans le corps du raccord

Serrer l'écrou avec la clé de montage appropriée jusqu'à ressentir un effort nettement plus élevé (point de résistance). Terminer ensuite le montage par un serrage de 60° (une surface de clé). Pour les raccords en acier inox, on enduira l'écrou de graisse ABF dans la zone filetée et au niveau du chanfrein de 45°.

Attention: L'écart des couples de serrage réduit la pression nominale et la durée de vie du raccord. Conséquences: fuites et dysfonctionnements.

Important: Maintenir le corps du raccord avec une clef.



8. Wiederholungsmontage

Nach jedem Lösen der Verbindung die Weichdichtung auf Beschädigungen prüfen und gegebenenfalls austauschen. Die Überwurfmutter wieder fest anziehen. Die Wiederholungsmontage ist mit dem gleichen Drehmoment wie bei der Erstmontage durchzuführen!

Hinweis

Rohrlängendifferenzen müssen durch entsprechende längenausgleichende Rohrverlegung, z.B. Rohrbögen, ausgeglichen werden. Über- und Unterschreitungen der gültigen Rohrlängenvorgaben können zu Undichtigkeiten führen. Kurze, gerade Rohrstücke ohne Längenausgleich zwischen den Einbauenden vor Einbau auf Endmaß überprüfen und ggf. anpassen.

Achtung: Die angegebenen Drehmomente sind Mindestwerte für eine eventuelle Kontrolle der Montage, die nur unter optimalen Bedingungen gelten. Durch Toleranzeinflüsse, verspannt eingebaute Rohre und besonders im Edelstahlbereich durch eine nicht ordnungsgemäße Schmierung, können die notwendigen Montage-drehmomente deutlich abweichen. Bei Anwendung der Drehmomente für Erstmontage dürfen die vorgenannten Einflüsse nicht vorhanden sein. Daher empfehlen wir generell die drehwinkelbezogene Montage.

8. Repeat assembly

Each time the fitting is disconnected, the captive seal must be checked for possible damage and replaced if necessary. The nut must be firmly retightened. For reassembly, the same torque as for initial assembly must be applied.

Note

Differences in tube length must be compensated by adequate laying of tubes, e.g. tube bends. Exceeding or falling short of the applicable specified tube lengths may cause leakage. Prior to installation, short straight tube sections without length compensation between the installation ends must be checked for compliance with the final dimension and adapted if necessary.

Caution: The torques given in the table are minimum values for checking assembly and only apply under optimum conditions. The necessary assembly torques may differ considerably and are influenced by tolerances, tubes installed under tension and, especially when dealing with stainless steel, by incorrect lubrication. The above influences must not be present when applying the torques for initial assembly. Therefore, we generally recommend assembly based on the tightening travel.

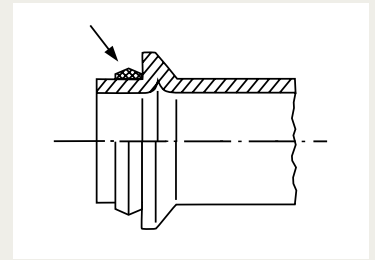
8. Remontage

Après chaque desserrage du raccord, vérifier si le joint mou est endommagé et le remplacer si nécessaire. Resserrer l'écrou. Procéder au remontage en appliquant le même couple que pour le premier montage!

Nota

Pour égaliser les différentes longueurs de tubes, on procédera à un montage compensateur en utilisant p.ex. des tubes en coude. Tout écart en moins ou en plus de la longueur admissible des tubes peut engendrer des fuites. Avant de procéder au montage, on vérifiera et on adaptera si nécessaire la cote finale des tronçons de tubes en ligne droite de petites dimensions, sans compensation en longueur, situés entre les extrémités de montage.

Attention: Les couples indiqués sont des valeurs minimales pour un contrôle éventuel du montage et ne sont applicables que dans des conditions optimales. Les couples de montage nécessaires peuvent s'écarter considérablement en raison de l'influence des tolérances, des tubes posés sous tension et d'une lubrification non conforme, notamment dans le secteur de l'acier inox. Les influences précitées ne doivent pas exister lors de l'application des couples pour le premier montage. Nous recommandons donc généralement le montage par angle de rotation.



Kontrolldrehmomente
 Check-torques/Couples de contrôle

Reihe Range Série	Rohr-AD Tube OD Dia. ext. du tube	Stahl Steel Acier Md [Nm]	Nicht rostender Stahl* Stainless steel* Acier inox* 1.4571 Md [Nm]
L	6	25	40
	8	40	55
	10	60	75
	12	70	90
	15	120	240
	18	180	320
	22	230	440
	28	330	500
	35	500	650
	42	600	860
S	6	30	50
	8	45	65
	10	65	85
	12	80	150
	16	160	280
	20	250	460
	25	390	550
	30	560	700
	38	890	1.200

*Bei Verschraubungen aus nicht rostendem Stahl ist die Überwurfmutter im Gewindebereich und auf der 45°-Schräge mit Walterscheid ABF-Fett zu fetten.

*For stainless steel fittings, the threaded portion and the 45° chamfer of the nut must be greased with Walterscheid ABF grease.

*Pour les raccords en acier inox, on enduira l'écrou de graisse ABF de Walterscheid dans la zone filetée et au niveau du chanfrein de 45°.

C



MEG-WF1/B02

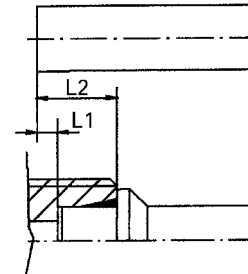


Stahl / Steel / Acier
 St 37.4 / 52.4

WALFORM-WD

d [mm]	s [mm]	L1 [mm]	L2 [mm]	D ± 0,3 [mm]	A* [mm]	B [mm]
6 L	1,5	7,5	14,5	10	71,5	100
6 S	1,5	7,5	14,5		73,5	102
8 L	1,5	7	14	12,3	71,5	96
	2	6	13		73,5	97
8 S	1,5	7	14		71,5	96
	2	6	13		73,5	97
10 L	1,5 / 2	7,5	14,5	14,3	72,5	99
	2,5	6,5	13,5		74,5	102
10 S	1,5 / 2	7	14,5		72,5	99
	2,5	6	13,5		74,5	102
12 L	1,5 / 2	9	16	16,3	72,5	100
	2,5	6,5	13,5		74,5	104
	3	5,5	12,5		72,5	100
12 S	1,5 / 2	8,5	16		74,5	104
	2,5	6	13,5		72,5	100
	3	5	12,5		74,5	104
15 L	1,5 / 2 / 2,5	7,5	14,5	20,2	74	101
16 S	2 / 2,5 / 3	7,5	16	21,5	77,5	108
	4	6,5	15		77,5	108
18 L	2 / 2,5 / 3	8,5	16	24,2	75	108
20 S	2 / 2,5	10,5	21	27	81	118
22 L	2	8,5	16	27	80	110

Rohrlängenbestimmung (L1, L2)
 Tube length determination (L1, L2)
 Détermination de la longueur des tubes (L1, L2)

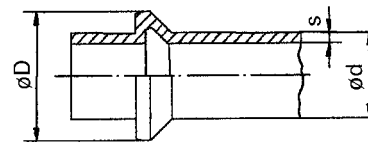


Hinweis: Für die Angabe L1 und L2 ist nach der Umformung eine Toleranz von ± 0,5 mm zu berücksichtigen!

Note: A tolerance of ± 0,5 mm must be taken into consideration for dimensions L1 and L2 after the forming process!

Attention: Pour l'indication L1 et L2 il faut considérer une tolérance de ± 0,5 mm après le formage!

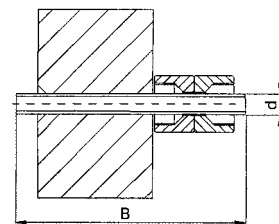
Kontrolldurchmesser (D ± 0,3)
 Control diameter (D ± 0,3)
 Diamètres de contrôle (D ± 0,3)



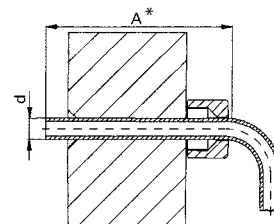
Mindestrohrängen zum Einspannen bei geraden und gebogenen Rohren
 Minimum tube lengths for clamping for straight and bent tubes

Minimum tube lengths for clamping for straight and bent tubes

Longueurs de serrage minimales des tubes droits et cintrés



Gerade Rohrlänge (B)
 Straight tube length (B)
 Longueurs de tubes droits (B)



Minimale gerade Rohrlänge (A*)
 Minimum straight tube length (A*)
 Longueurs minimales de tubes droits (A*)

* Soll das gerade Rohrende wegen Einbauschwierigkeiten kürzer sein als in Tabelle angegeben, muß das Biegen nach dem Umformen erfolgen (siehe Rohrbiegewerkzeuge).

* If installation problems require a shorter straight tube length than indicated in the table, bending must be carried out after reshaping (see Tube bending tools).

* Si, à cause de difficultés de montage, la longueur droite doit être plus courte qu'indiqué sur le tableau, le cintrage devra être effectué après le formage. (Voir les cintruses pour tubes)



MEG-WF2



MEG-WF2/BO



MEG-WF3/BO



Stahl / Steel / Acier
St 37.4 / 52.4

WALFORM-WD

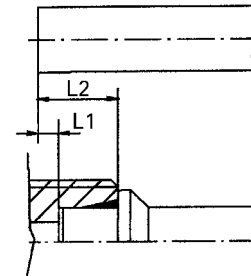
d [mm]	s [mm]	L1 [mm]	L2 [mm]	D ± 0,3 [mm]	A* [mm]	B [mm]
6 L/S	1,5	7,5	14,5	10	100	115
8 L/S	1,5	7	14	12,3	100	115
	2	6	13			
10 L	1,5 / 2	7,5	14,5	14,3	100	115
	2,5	6,5	13,5			
	3	6	13			
10 S	1,5 / 2	7	14,5	14,3	100	115
	2,5	6	13,5			
	3	5,5	13			
12 L	1,5 / 2	9	16	16,3	95	110
	2,5	6,5	13,5			
	3	5,5	12,5			
12 S	1,5 / 2	8,5	16	16,3	95	110
	2,5	6	13,5			
	3	5	12,5			
15 L	1,5 / 2 / 2,5	7,5	14,5	20,2	90	110
16 S	2 / 2,5 / 3	7,5	16	21,5	95	120
	4	6,5	15			
18 L	2 / 2,5 / 3	8,5	16	24,2	95	125
20 S	2 / 2,5	10,5	21	27	105	140
	3 / 4	9	19,5			
22 L	2 / 2,5 / 3	8,5	16	27	105	135
	3,5	7,5	15			
25 S	2	9,5	21,5	32,2	105	140
	2,5 / 3 / 3,5 / 4 / 5	8	20			
28 L	2	7,5	15	32,8	100	130
	2,5 / 3	6	13,5			
	3,5	5,5	13			
30 S	2,5 / 3 / 4 / 5 / 6	9	22,5	38,3	130	170
35 L	2 / 2,5 / 3 / 4 / 5	8	18,5	41,8	120	155
38 S	3 / 4 / 6	10,5	26,5	47,6	135	180
	5	11,5	27,5			
42 L	3 / 3,5 / 4	8,5	19,5	49	120	155

* Soll das gerade Rohrende wegen Einbauschwierigkeiten kürzer sein als in Tabelle angegeben, muß das Biegen nach dem Umformen erfolgen (siehe Rohrbiegewerkzeuge).

* If installation problems require a shorter straight tube length than indicated in the table, bending must be carried out after reshaping (see Tube bending tools).

* Si, à cause de difficultés de montage, la longueur droite doit être plus courte qu'indiqué sur le tableau, le cintrage devra être effectué après le formage. (Voir les cintruses pour tubes)

Rohrlängenbestimmung (L1, L2)
Tube length determination (L1, L2)
Détermination de la longueur des tubes (L1, L2)

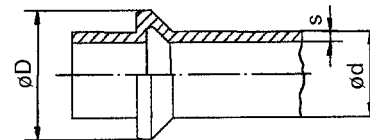


Hinweis: Für die Angabe L1 und L2 ist nach der Umformung eine Toleranz von ± 0,5 mm zu berücksichtigen!

Note: A tolerance of ± 0,5 mm must be taken into consideration for dimensions L1 and L2 after the forming process!

Attention: Pour l'indication L1 et L2 il faut considérer une tolérance de ± 0,5 mm après le formage!

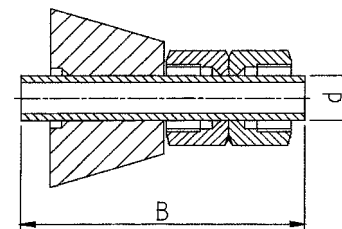
Kontrolldurchmesser (D ± 0,3)
Control diameter (D ± 0,3)
Diamètres de contrôle (D ± 0,3)



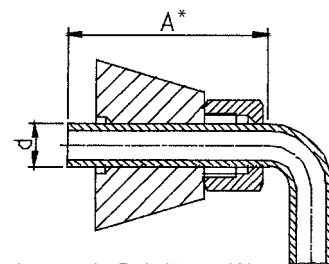
Mindestrohrängen zum Einspannen bei geraden und gebogenen Rohren
Minimum tube lengths for clamping for straight and bent tubes

Minimum tube lengths for clamping for straight and bent tubes

Longueurs de serrage minimales des tubes droits et cintrés



Gerade Rohrlänge (B)
Straight tube length (B)
Longueurs de tubes droits (B)



Minimale gerade Rohrlänge (A)
Minimum straight tube length (A)
Longueurs minimales de tubes droits (A)

C



MEG-WF2



MEG-WF2/BO



MEG-WF3/BO

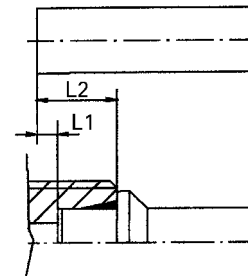


**Nicht rostender Stahl / Stainless steel / Acier inox
1.4571**

WALFORM-WD

d [mm]	s [mm]	L1 [mm]	L2 [mm]	D ± 0,3 [mm]	A* [mm]	B [mm]
MEG-WF2 MEG-WF2/BO MEG-WF3/BO						
6 L/S	1,5	7,5	14,5	10	100	115
8 L/S	1,5 / 2	7	14	12,3	100	115
10 L	1,5	8	15	14,3	100	115
10 S	1,5	7,5	15			
12 L	1,5 / 2	8,5	15,5	16,3	95	110
12 S	1,5 / 2	8	15,5			
15 L	1,5	8,5	15,5	20,2	90	110
15 L	2	8	15			
16 S	2 / 2,5 / 3	8,5	17	21,5	95	120
18 L	2 / 2,5 / 3	9,5	17	24,2	95	125
20 S	2 / 2,5 / 3	10,5	21	27	105	140
22 L	2 / 2,5 / 3	9	16,5	27	105	135
25 S	2,5 / 3 / 4	9,5	21,5	32,2	105	140
28 L	2 / 2,5 / 3	7,5	15	32,8	100	130
30 S	2,5 / 3 / 4 / 5	10,5	24	38,3	130	170
MEG-WF3/BO						
35 L	2 / 2,5 / 4	9,5	20	41,8	120	155
35 L	3	8	18,5			
35 L	5	10	20,5			
38 S	3 / 4	10,5	26,5	47,6	135	180
38 S	5 / 6	11,5	27,5			
42 L	3	8,5	19,5	49	120	155

Rohrlängenbestimmung (L1, L2)
Tube length determination (L1, L2)
Détermination de la longueur des tubes (L1, L2)

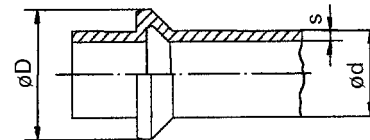


Hinweis: Für die Angabe L1 und L2 ist nach der Umformung eine Toleranz von ± 0,5 mm zu berücksichtigen!

Note: A tolerance of ± 0,5 mm must be taken into consideration for dimensions L1 and L2 after the forming process!

Attention: Pour l'indication L1 et L2 il faut considérer une tolérance de ± 0,5 mm après le formage!

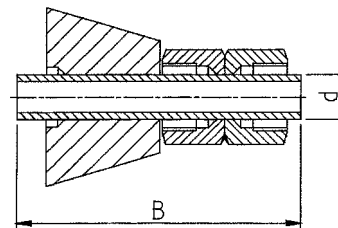
Kontrolldurchmesser (D ± 0,3)
Control diameter (D ± 0,3)
Diamètres de contrôle (D ± 0,3)



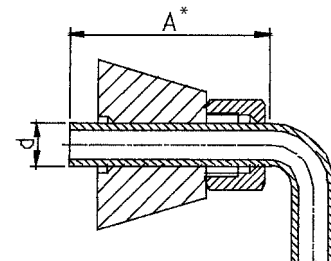
Mindestrohrängen zum Einspannen bei geraden und gebogenen Rohren
Minimum tube lengths for clamping for straight and bent tubes

Minimum tube lengths for clamping for straight and bent tubes

Longueurs de serrage minimales des tubes droits et cintrés



Gerade Rohrlänge (B)
Straight tube length (B)
Longueurs de tubes droits (B)

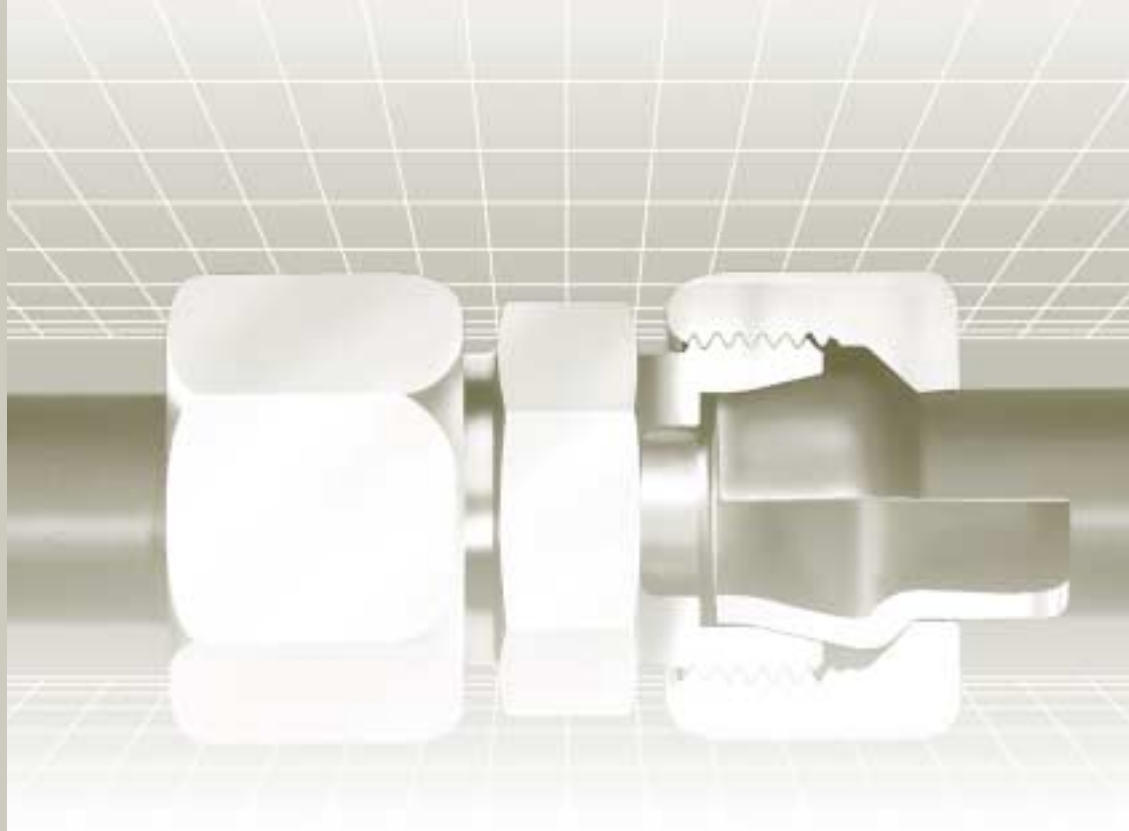


Minimale gerade Rohrlänge (A)
Minimum straight tube length (A)
Longueurs minimales de tubes droits (A)

* Soll das gerade Rohrende wegen Einbauschwierigkeiten kürzer sein als in Tabelle angegeben, muß das Biegen nach dem Umformen erfolgen (siehe Rohrbiegewerkzeuge).

* If installation problems require a shorter straight tube length than indicated in the table, bending must be carried out after reshaping (see Tube bending tools).

* Si, à cause de difficultés de montage, la longueur droite doit être plus courte qu'indiqué sur le tableau, le cintrage devra être effectué après le formage. (Voir les cintruses pour tubes)



Montageanleitung
 Assembly instructions
 Instructions de montage

WALFORM-
Rohrverschraubungen
WALFORM tube fittings
Raccords
de tubes WALFORM

M

WALFORM-Verschraubung metallisch dichtend
WALFORM fitting with metallic seal
Raccord WALFORM avec joint d'étanchéité par arête métal

Rohrauswahl

Es ist eine kaltbiege- und bördelfähige Rohrqualität zu verwenden. Wir empfehlen die Verwendung von nahtlosem Präzisionsstahlrohr, Werkstoff St 37.4 bzw. St 52.4 gemäß DIN 1630, Ausführung NBK - 3.1 B. Toleranzen der Rohraußen- und Innendurchmesser nach DIN 2391, Teil 1-C. Berechnungsdrücke nach DIN 2413. Wird diese Rohrauswahl nicht berücksichtigt, so kann dies zu einem Werkzeugbruch führen!

Nicht rostender Stahl 1.4571 und weitere Werkstoffe auf Anfrage.

Tube selection

A tube grade suitable for cold-bending and flaring is to be used. We recommend the use of seamless precision steel, material St 37.4 / St 52.4 to DIN 1630, type NBK-3.1 B. Tolerances of tube outside and inside diameters to DIN 2391, sheet 1-C. Calculated pressure according to DIN 2413. Disregarding this tube selection may lead to tool failure!

Stainless steel 1.4571 and other materials on request.

Sélection de tube

On utilisera un tube dont la qualité est apte au cintrage à froid et à l'évasement. Nous recommandons l'utilisation de tubes de précision en acier, sans soudure, matériau St 37.4 ou St 52.4 selon la norme DIN 1630, type NBK-3.1 B. Tolérances des diamètres extérieurs et intérieurs des tubes selon DIN 2391, folio 1-C. Pressions théoriques selon DIN 2413. Si les tubes recommandés ne sont pas utilisés, une rupture d'outil en peut être la conséquence!

Acier inox 1.4571 et autres matériaux sur demande.

1. Rohrlängenbestimmung

a) Durch Messen Rohranschlag Stutzen zu Rohranschlag Stutzen. Hierbei wird dem entsprechend gemessenen Maß je Rohranschluß das Maß L1 hinzuaddiert.

b) Durch Messen von Stirnseite Stutzen zu Stirnseite Stutzen. Hierbei wird dem entsprechend gemessenen Maß je Rohranschluß das Maß L2 hinzuaddiert.

Die Maße L1 und L2 sowie minimale gerade Rohrlängen und Mindestlängen für gerade Rohrenden bei Rohrbögen sind der Bedienungsanleitung bzw. den entsprechenden Tabellenwerken zu entnehmen.

1. Tube length determination

a) The tube length is determined by measuring from stop face to stop face in the fitting bodies. Dimension L1 must then be added for each tube connection.

b) The tube length is determined by measuring from face end to face end of the fitting bodies. Dimension L2 must then be added for each tube connection.

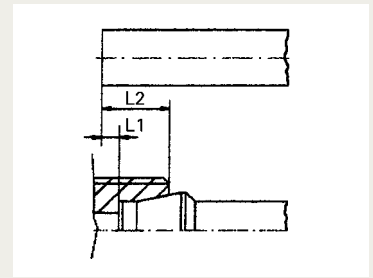
Dimensions L1 and L2, minimum straight tube lengths and minimum lengths for the straight tube end on tube bends are indicated in the operating instructions and relevant tables.

1. Détermination de la longueur des tubes

a) La longueur exacte d'un tube se mesure entre ses deux extrémités venant buter contre le corps des raccords. A cette longueur mesurée, on ajoutera, pour chaque raccord de tube, la cote L1.

b) La longueur exacte d'un tube se mesure entre les faces des corps de raccords. A cette longueur mesurée, on ajoutera, pour chaque raccord de tube, la cote L2.

Les cotes L1 et L2 ainsi que la longueur minimale de tubes en ligne droite et la longueur minimale pour une extrémité de tubes en ligne droite des tubes en coude figurent dans la notice d'utilisation et les tableaux correspondants.



2. Rechtwinklig absägen!

Vom Trennschnitt durch den Rohrhersteller 10 mm absägen (lieferbedingte Fehlerquelle). Rohr rechtwinklig absägen, 1/2° Winkelabweichung zur Rohrachse ist zulässig. Keine Rohrabstreifer oder Trennscheiben verwenden, sie ergeben eine starke Gratbildung und Schrägschnitt. Sägemaschine / Vorrichtung benutzen.

Achtung: Formabweichungen am Rohrende, wie z.B. schief gesägte oder falsch entgratete Rohre, reduzieren die Lebensdauer und die Dichtigkeit der Verbindung.

2. Saw off at right angle!

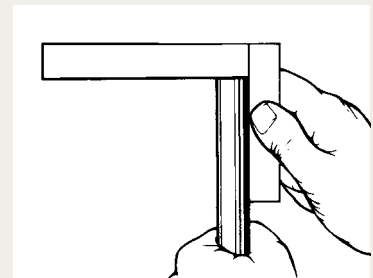
Saw off 10 mm from the parting cut made by the tube manufacturer (delivery-related source of faults). Saw the tube off at right angles, an angular deviation of 1/2° relative to the tube axis is permissible. Do not use pipe cutters or cutting-off wheels as they cause severe burring and inclined cuts. Use a sawing machine / sawing device.

Caution: Form errors at the tube end, such as angular saw-cuts or inadequately deburred tubes, reduce the service life and the sealing capacity of the connection.

2. Scier à angle droit!

Scier le tube à 10 mm de la coupe réalisée par le fabricant de tubes (source d'erreurs due à la livraison). Scier le tube à angle droit. Un écart angulaire de 1/2° par rapport à l'axe tubulaire est admissible. Ne pas utiliser de cisailles ni de meules tronçonneuses. Elles engendrent de nombreuses arêtes et une coupe en biais. On utilisera une scie mécanique / un dispositif.

Attention: Des écarts de forme à l'extrémité du tube, tels que tube scié en biais ou ébarbage inadéquat, réduisent la durée de vie et l'étanchéité du raccord.



3. Rohrenden leicht entgraten und Rohr reinigen!

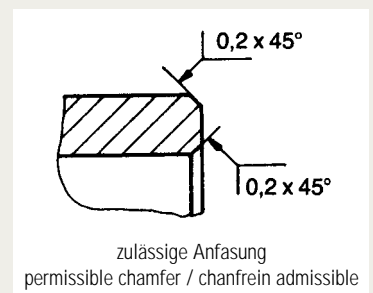
Entgratung und Reinigung innen und außen durchführen. Der Spann- und Umformbereich muß frei von Spänen, Schmutz, Fett, Öl und Farbe sein! Wenn fettig oder ölig, umweltfreundliches Lösungsmittel verwenden.

3. Lightly deburr the tube ends and clean the tube!

Remove burr and clean inside and out. The clamping and reshaping area must be clean and free of any chips, dirt, grease, oil and paint! Use an environment-friendly solvent to remove grease or oil.

3. Procéder à un léger ébarbage des extrémités du tube et au nettoyage du tube!

Procéder à l'ébarbage et au nettoyage à l'intérieur et à l'extérieur du tube. Veillez à ce que la zone de serrage et de formage soit exempte de copeaux, de saletés, de graisse, d'huile et de peinture! En cas de présence de graisse ou d'huile, on utilisera des solvants écophiles.



4. Überwurfmutter auf das Rohr schieben. Rohr umformen.

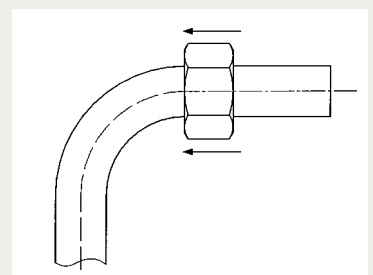
Rohrenden mit Walterscheid WALFORM-Umformmaschine umformen (siehe Bedienungsanleitung für WALFORM-Maschinen).

4. Slide the nut onto the tube. Reshape the tube.

Reshape the tube ends with the Walterscheid WALFORM machine (see instructions for WALFORM machines).

4. Glisser l'écrou sur le tube. Procéder au formage du tube.

Former les extrémités du tube en utilisant la machine WALFORM de Walterscheid. (Voir la notice d'utilisation pour machines WALFORM).



5. Kontrolle des fertig verformten Rohres

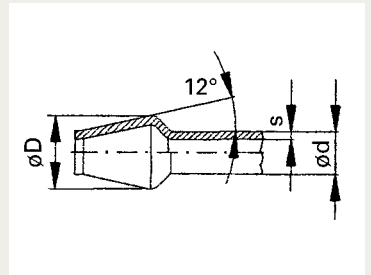
Den Durchmesser D des verformten Rohres auf Maßhaltigkeit (siehe Bedienungsanleitung bzw. entsprechende Tabellenwerke) und Verunreinigung prüfen. Die Außenseite des verformten Rohres muß sauber sein. Nur eine einwandfreie Verformung ergibt eine lange Lebensdauer der Verschraubung.

5. Check the tube after reshaping

Check the diameter D of the reshaped tube for dimensional accuracy (see operating instructions and tables) and contamination. The outer surface of the reshaped tube must be clean. Only faultless reshaping ensures a long service life of the fitting.

5. Contrôle du tube formé

Contrôler la propreté et la précision dimensionnelle du diamètre D du tube formé (voir la notice d'utilisation et les tableaux). L'extérieur du tube formé doit être propre. Seul un formage impeccable assure une longue durée de vie du raccord.



6. Fertigmontage im Verschraubungsstutzen

Überwurfmutter bis zum deutlich spürbaren Kraftanstieg (Festpunkt) mit geeignetem Montageschlüssel anziehen. Danach 120° (zwei Schlüsselflächen) endmontieren.

Achtung: Abweichende Anzugswege reduzieren die Druckbelastbarkeit und die Lebensdauer der Verschraubung. Leckagen oder Funktionsstörungen sind die Folge.

Wichtig: Verschraubungsstutzen mit Schlüssel gehalten.

6. Final assembly in the fitting body

Tighten the nut up to the point of a noticeable increase in force (point of resistance) using an appropriate wrench. For final assembly, tighten the nut further by 120° (two wrench faces).

Caution: Any deviating number of tightening turns reduces the nominal pressure and the service life of the fitting and results in leakage or malfunction.

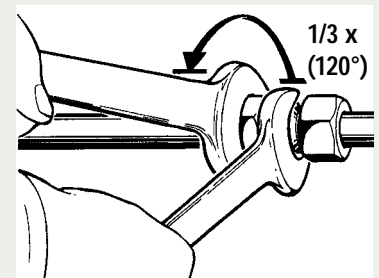
Important: Hold fitting body firmly by means of a spanner.

6. Montage final dans le corps du raccord

Serrer l'écrou avec la clé de montage appropriée jusqu'à ressentir un effort nettement plus élevé (point de résistance). Terminer ensuite le montage par un serrage de 120° (deux surfaces de clé).

Attention: L'écart des couples de serrage réduit la pression nominale et la durée de vie du raccord. Conséquences: fuites et dysfonctionnements.

Important: Maintenir le corps du raccord avec une clef.



7. Wiederholungsmontage

Nach jedem Lösen der Verbindung ist die Überwurfmutter wieder fest anzuziehen. Die Wiederholungsmontage ist mit dem gleichen Drehmoment wie bei der Erstmontage durchzuführen!

7. Repeat assembly

The nut must be firmly retightened again each time the fitting is disconnected. For reassembly, the same torque as for initial assembly must be applied.

7. Remontage

Après chaque desserrage du raccord, resserrer l'écrou. Procéder au remontage en appliquant le même couple que pour le premier montage!

Hinweis

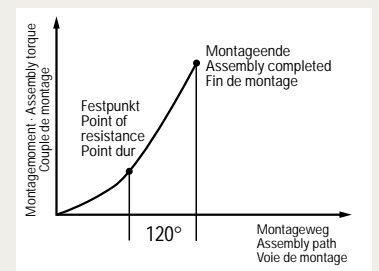
Rohrlängendifferenzen müssen durch entsprechend längenausgleichende Rohrverlegung, z.B. Rohrbögen, ausgeglichen werden. Über- und Unterschreitungen der gültigen Rohrlängenvorgaben können zu Undichtigkeiten führen. Kurze, gerade Rohrstücke ohne Längenausgleich zwischen den Einbauenden vor Einbau auf Endmaß überprüfen und ggf. anpassen.

Note

Difference in tube length must be compensated by adequate laying of tubes, e.g. tube bends. Exceeding or falling short of the applicable specified tube lengths may cause leakage. Prior to installation, short straight tube sections without length compensation between the installation ends must be checked for compliance with the final dimension and adapted if necessary.

Nota

Pour égaliser les différentes longueurs de tubes, on procédera à un montage compensateur en utilisant p.ex. des tubes en coude. Tout écart en moins ou en plus de la longueur admissible des tubes peut engendrer des fuites. Avant de procéder au montage, on vérifiera et on adaptera si nécessaire la cote finale des tronçons de tubes en ligne droite de petites dimensions, sans compensation en longueur, situés entre les extrémités de montage.





MEG-WF1/B02

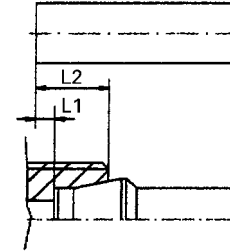


Stahl / Steel / Acier
 St 37.4 / 52.4

WALFORM-M

d [mm]	s [mm]	L1 [mm]	L2 [mm]	D ± 0,2 [mm]	A* [mm]	B [mm]
10 L	2	8	15	14	74,5	106
10 S	2	8	15,5		76,5	108
12 L	2	6	13	15,6	74,5	102
12 S	2	6	13,5		76,5	105
15 L	2 / 2,5	6	13	18,5	76,0	103
16 S	2 / 2,5 / 3	5,5	14	19,8	79,5	111
18 L	2 / 2,5 / 3	5,5	13	21,7	77,0	105
20 S	2,5 / 3	7,5	18	24,7	83,0	120
22 L	2 / 2,5 / 3	6,5	14	26	79,0	111

Rohrlängenbestimmung (L1, L2)
 Tube length determination (L1, L2)
 Détermination de la longueur des tubes (L1, L2)

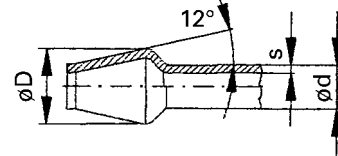


Hinweis: Für die Angabe L1 und L2 ist nach der Umformung eine Toleranz von ± 0,5 mm zu berücksichtigen!

Note: A tolerance of ± 0,5 mm must be taken into consideration for dimensions L1 and L2 after the forming process!

Attention: Pour l'indication L1 et L2 il faut considérer une tolérance de ± 0,5 mm après le formage!

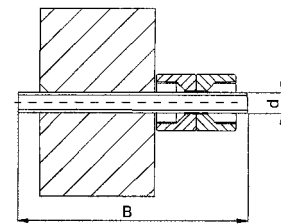
Kontrolldurchmesser (D ± 0,2)
 Control diameter (D ± 0,2)
 Diamètres de contrôle (D ± 0,2)



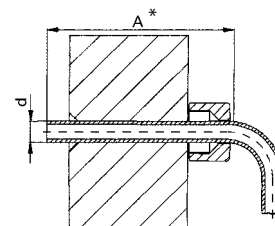
Mindestrohrängen zum Einspannen bei geraden und gebogenen Rohren
 Minimum tube lengths for clamping for straight and bent tubes

Minimum tube lengths for clamping for straight and bent tubes

Longueurs de serrage minimales des tubes droits et cintrés



Gerade Rohrlänge (B)
 Straight tube length (B)
 Longueurs de tubes droits (B)



Minimale gerade Rohrlänge (A)
 Minimum straight tube length (A)
 Longueurs minimales de tubes droits (A)

* Soll das gerade Rohrende wegen Einbauschwierigkeiten kürzer sein als in Tabelle angegeben, muß das Biegen nach dem Umformen erfolgen (siehe Rohrbiegewerkzeuge).

* If installation problems require a shorter straight tube length than indicated in the table, bending must be carried out after reshaping (see Tube bending tools).

* Si, à cause de difficultés de montage, la longueur droite doit être plus courte qu'indiqué sur le tableau, le cintrage devra être effectué après le formage. (Voir les cintruses pour tubes)

C



MEG-WF2



MEG-WF2/BO



MEG-WF3/BO

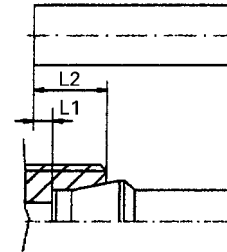


Stahl / Steel / Acier
St 37.4 / 52.4

WALFORM-M

d [mm]	s [mm]	L1 [mm]	L2 [mm]	D ± 0,2 [mm]	A* [mm]	B [mm]
10 L	2	8	15	14	113	140
10 S	2	8	15,5		113	142
12 L	2	6	13	15,6	111	136
12 S	2	6	13,5		111	136
15 L	2 / 2,5	6	13	18,5	94	115
16 S	2 / 2,5 / 3	5,5	14	19,8	104	134
18 L	2 / 2,5 / 3	5,5	13	21,7	95	119
20 S	2,5 / 3	7,5	18	24,7	106	141
22 L	2 / 2,5 / 3	6,5	14	26	99	128
25 S	2,5 / 3 / 3,5 / 4	9,5	21,5	29,7	112	153
28 L	2,5 / 3 / 3,5	8,5	16	32,4	104	138
30 S	2,5 / 3 / 3,5 / 4 / 5	9	22,5	34,9	133	177
35 L	3 / 3,5 / 4 / 5	9	19,5	39,9	126	165
38 S	3 / 3,5 / 4 / 5 / 6	9,5	25,5	42,9	142	189
42 L	3 / 3,5 / 4	9,5	20,5	46,8	130	168

Rohrlängenbestimmung (L1, L2)
Tube length determination (L1, L2)
Détermination de la longueur des tubes (L1, L2)

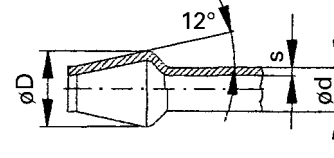


Hinweis: Für die Angabe L1 und L2 ist nach der Umformung eine Toleranz von ± 0,5 mm zu berücksichtigen!

Note: A tolerance of ± 0,5 mm must be taken into consideration for dimensions L1 and L2 after the forming process!

Attention: Pour l'indication L1 et L2 il faut considérer une tolérance de ± 0,5 mm après le formage!

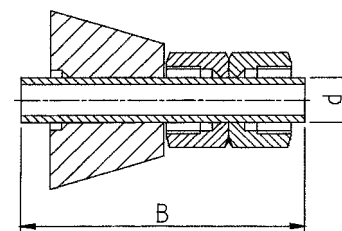
Kontrolldurchmesser (D ± 0,2)
Control diameter (D ± 0,2)
Diamètres de contrôle (D ± 0,2)



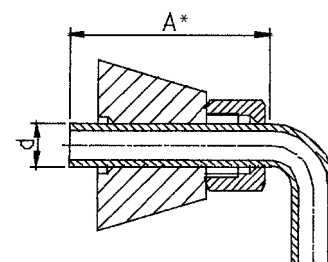
Mindestrohrängen zum Einspannen bei geraden und gebogenen Rohren
Minimum tube lengths for clamping for straight and bent tubes

Minimum tube lengths for clamping for straight and bent tubes

Longueurs de serrage minimales des tubes droits et cintrés



Gerade Rohrlänge (B)
Straight tube length (B)
Longueurs de tubes droits (B)

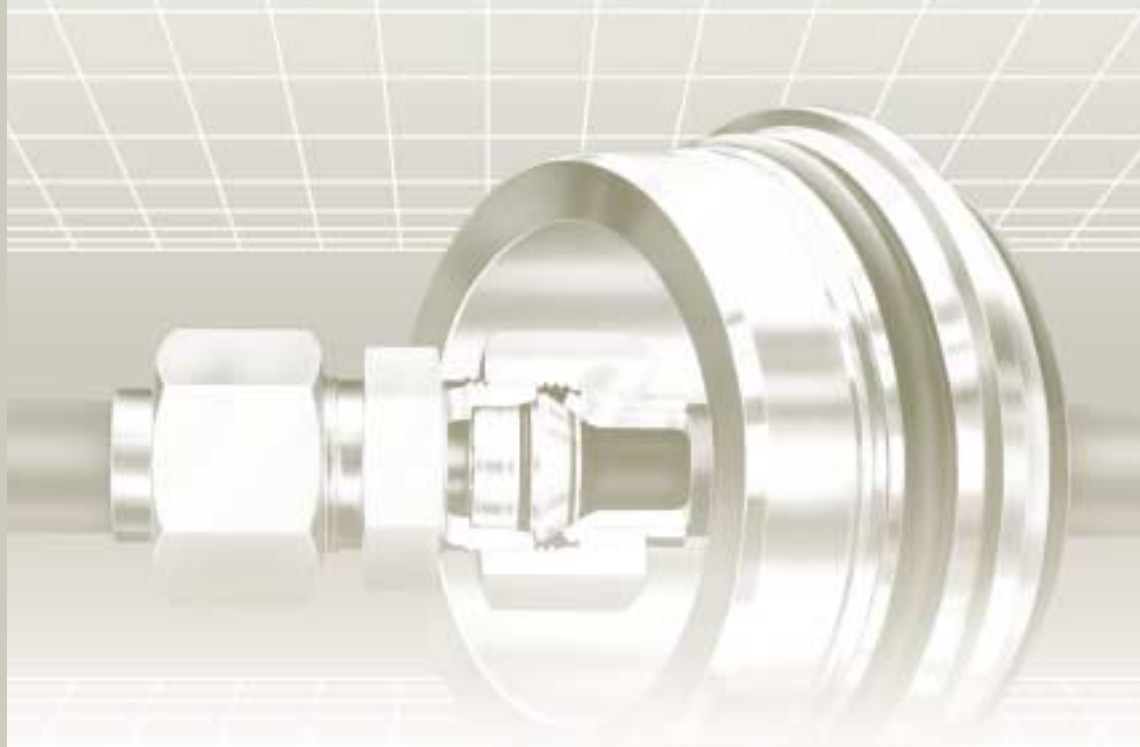


Minimale gerade Rohrlänge (A)
Minimum straight tube length (A)
Longueurs minimales de tubes droits (A)

* Soll das gerade Rohrende wegen Einbauschwierigkeiten kürzer sein als in Tabelle angegeben, muß das Biegen nach dem Umformen erfolgen (siehe Rohrbiegewerkzeuge).

* If installation problems require a shorter straight tube length than indicated in the table, bending must be carried out after reshaping (see Tube bending tools).

* Si, à cause de difficultés de montage, la longueur droite doit être plus courte qu'indiqué sur le tableau, le cintrage devra être effectué après le formage. (Voir les cintruses pour tubes)

**C**

Montageanleitung
Assembly instructions
Instructions de montage

**Bördel-
Rohrverschraubungen 37°
Flare tube fittings 37°
Raccords
pour tubes évasés 37°**

Rohrauswahl

Es ist eine kaltbiege- und bördelfähige Rohrqualität zu verwenden. Wir empfehlen die Verwendung von nahtlosem Präzisionsstahlrohr, Werkstoff St 37.4 bzw. St 52.4 gemäß DIN 1630, Ausführung NBK-3.1 B. Rohre aus nicht rostendem Stahl 1.4571, nahtlos kaltgezogen, zunderfrei wärmebehandelt, Ausführungsart "m" nach DIN 17458, Toleranzen der Rohraußen- und Innendurchmesser nach DIN 2391, Teil 1-C. Berechnungsdrücke nach DIN 2413.

Tube selection

A tube grade suitable for cold-bending and flaring is to be used. We recommend the use of seamless precision steel, material St 37.4 / St 52.4 to DIN 1630, type NBK-3.1 B. Tubes made of stainless steel 1.4571, cold-drawn seamless, scale-free heat-treated, from "m" to DIN 17458. Tolerances of tube outside and inside diameters to DIN 2391, sheet 1-C. Calculated pressure according to DIN 2413.

Sélection de tube

On utilisera un tube dont la qualité est apte au cintrage à froid et à l'évasement. Nous recommandons l'utilisation de tubes de précision en acier, sans soudure, matériau St 37.4 ou St 52.4 selon la norme DIN 1630, type NBK-3.1 B. Tubes en acier inox 1.4571, étirés à froid sans soudure, soumis à un traitement thermique sans paille, type «m» selon DIN 17458. Tolérances des diamètres extérieurs et intérieurs des tubes selon DIN 2391, folio 1-C. Pressions théoriques selon DIN 2413.



C

1. Rohrlängenbestimmung bei eingepreßtem Zwischenring

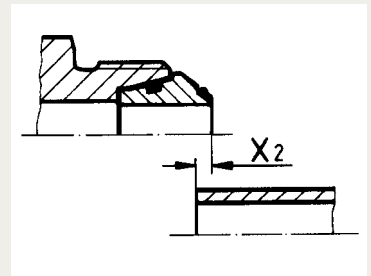
Die Rohrlängenbestimmung erfolgt durch Messen von Stirnseite Zwischenring zu Stirnseite Zwischenring. Es ist dann je Rohranschluß das Maß X2 zu addieren (siehe Tabellenteil).

1. Determining the tube length with inserted centre unit

The correct tube length is determined by measuring the distance between the centre unit ends. Dimension X2 is then added to each connection (see tables).

1. Détermination de la longueur du tube avec cône intermédiaire serti

La longueur exacte du tube se mesure entre les deux faces d'appui des cônes intermédiaires correspondants. Pour chaque raccordement il faut alors ajouter à cette longueur la cote X2 (voir tableaux).



Rohrlängenbestimmung ohne Zwischenring

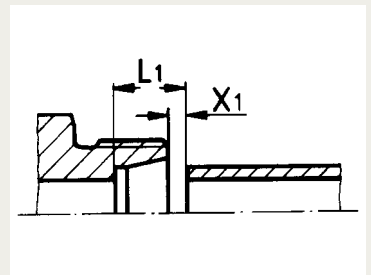
Die Rohrlängenbestimmung erfolgt durch Messen von Stirnseite Stutzen bis Stirnseite Stutzen. Es ist dann je Rohranschluß das Maß X1 abzuziehen (siehe Tabellenteil). Das Maß L1 entspricht der Rohrlängendifferenz zur Schneidring-Verschraubung nach DIN 2353. Im Falle des Umrüstens von Ringverbindung (z.B. Schneidring) auf Bördel-Anschlußteile, ist das Rohr um das Maß L1 zu kürzen.

Determining the tube length without centre unit

To determine the correct tube length, measure the distance between the fitting body ends. Then deduct dimension X1 from each connection (see tables). Dimension L1 corresponds to the difference in tube length against the cutting ring fitting to DIN 2353. When changing over from ring connection (e.g. cutting ring) to flare components, shorten the tube by dimension L1.

Détermination de la longueur du tube sans cône intermédiaire

La longueur exacte du tube se mesure entre les deux faces d'appui des corps de raccords correspondants. Pour chaque raccordement il faut alors déduire de cette longueur la cote X1 (voir tableaux). La cote L1 représente la différence de longueur par rapport au raccord à bague coupante suivant DIN 2353. Pour passer du raccordement à bague (p.ex. bague coupante) aux composants du raccordement évasé, il faut raccourcir le tube de la cote L1.



2. Rechtwinklig absägen!

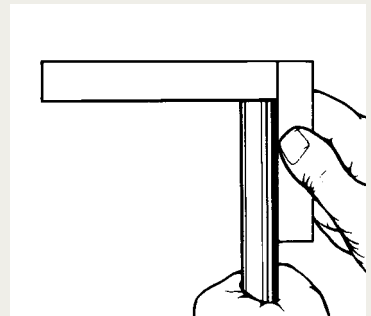
Vom Trennschnitt durch den Rohrhersteller 10 mm absägen (lieferbedingte Fehlerquelle). Rohr rechtwinklig absägen, 1/2° Winkelabweichung zur Rohrachse ist zulässig. Keine Rohrabschneider oder Trennscheiben verwenden; sie ergeben eine starke Gratbildung und Schrägschnitt. Sägemaschine / Vorrichtung benutzen.

2. Saw off at right angle!

Saw off 10 mm from the parting cut made by the tube manufacturer (delivery-related source of faults). Saw the tube off at right angles, an angular deviation of 1/2° relative to the tube axis is permissible. Do not use pipe cutters or cutting-off wheels as they cause severe burring and inclined cuts. Use a sawing machine / sawing device.

2. Scier à angle droit!

Scier le tube à 10 mm de la coupe réalisée par le fabricant de tubes (source d'erreurs due à la livraison). Scier le tube à angle droit. Un écart angulaire de 1/2° par rapport à l'axe tubulaire est admissible. Ne pas utiliser de cisailles ni de meules tronçonneuses. Elles engendrent de nombreuses arêtes et une coupe en biais. On utilisera une scie mécanique / un dispositif.



3. Rohrenden leicht entgraten und Rohr reinigen!

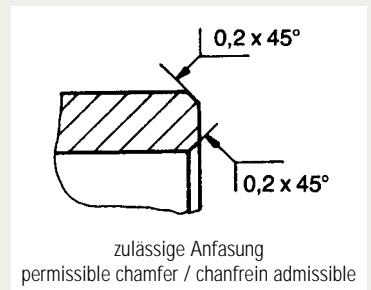
Entgratung und Reinigung innen und außen durchführen. Der Spann- und Umformbereich muß frei von Spänen, Schmutz, Fett, Öl und Farbe sein! Wenn fettig oder ölig, umweltfreundliches Lösungsmittel verwenden.

3. Lightly deburr the tube ends and clean the tube!

Remove burr and clean inside and out. The clamping and reshaping area must be clean and free of any chips, dirt, grease, oil and paint! Use an environment-friendly solvent to remove grease or oil.

3. Procéder à un léger ébarbage des extrémités du tube et au nettoyage du tube!

Procéder à l'ébarbage et au nettoyage à l'intérieur et à l'extérieur du tube. Veillez à ce que la zone de serrage et de formage soit exempte de copeaux, de saletés, de graisse, d'huile et de peinture! En cas de présence de graisse ou d'huile, on utilisera des solvants écophiles.



4. Rohrbördelung

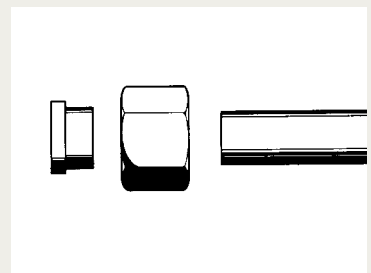
Überwurfmutter und Druckring auf Rohr schieben, wie abgebildet. Rohrende mit Walterscheid-Bördelmaschine bördeln (siehe Bedienungsanleitung für Bördelmaschinen).

4. Flaring the tube

Place nut and loose collar on tube as shown. Flare tube ends with Walterscheid flaring machine (see operating instructions for flaring machines).

4. Evasement du tube

Positionner l'écrou et la manchette sur le tube comme ci-contre. Evaser l'extrémité du tube avec la machine à évaser Walterscheid (voir notice d'utilisation pour machines à évaser).





C

5. Kontrolle des fertig gebördelten Rohres

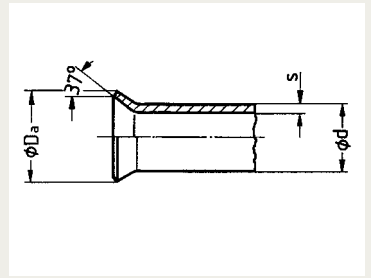
Den Bördelkragen auf Maßhaltigkeit (siehe Tabellenteil) und Verunreinigungen prüfen. Der Kontroll-Ø (Da) entspricht dem Außen-Ø des Bördelkragens. Der Bördelkragen muß rechtwinklig zur Rohrachse und konzentrisch zum Rohr und zum Druckring sein. Ungleiche und exzentrische Bördelungen deuten auf mangelhafte Werkzeuge oder auf Bedienfehler hin. Der Innenkegel des gebördelten Rohres muß sauber sein. Nur eine einwandfreie Bördelung ergibt eine lange Lebensdauer der Verschraubung.

5. Checking the flared tube

Verify the dimensional accuracy of the flare (see tables) and check for any impurities. The checking diameters corresponds to the (Da) outside diameter of the flared tube end. The flare must be at right angles to the tube axis and concentric with the tube and the loose collar. Irregular and eccentric flaring can be traced to the use of defective tools or inexpert handling. The inner taper of the flared tube must be clean. Perfect flaring is the prerequisite to a long service life of the fitting.

5. Contrôle du tube évasé

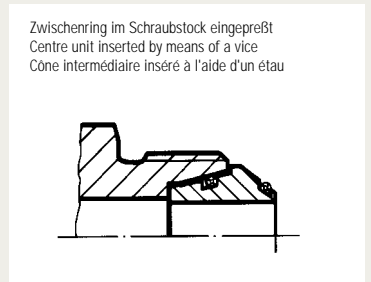
Veiller au respect des cotes du collet évasé (voir tableaux) et à la formation éventuelle d'impuretés. Le diamètre de contrôle (Da) correspond au diamètre extérieur du collet évasé. Le collet évasé doit être à angle droit par rapport à l'axe du tube et concentrique par rapport au tube et à la manchette. Un collet évasé irrégulier ou décentré révèle l'utilisation d'outils défectueux ou une erreur de manipulation. Le cône intérieur du tube évasé doit être propre. Seuls des évasements parfaits assurent une longue durée de vie du raccord.



6. O-Ringe ölen. Vorzugsweise ist der Zwischenring mittels Schraubstock einzupressen. Verschraubungsteile hierbei vor Beschädigung schützen.

6. Oil the O-rings. The centre unit should preferably be inserted by means of a vice. Care should be taken in this case that the fitting components are protected against damage.

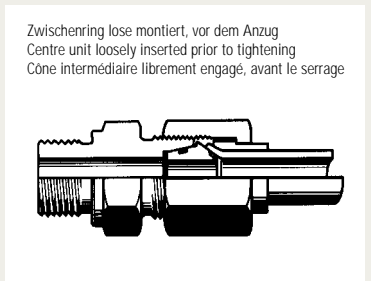
6. Huiler les joints toriques. L'insertion du cône intermédiaire se fait, de préférence, à l'aide d'un étau. Dans ce cas, veiller à ce que les composants du raccord soient protégés pour éviter toute détérioration éventuelle.



6.1 Alternativ kann der Zwischenring lose in den Verschraubungsstutzen eingesetzt werden. Überwurfmutter von Hand anziehen. Rohrverschraubungen aus nichtrostendem Stahl: Besonders den Gewindebereich vor der Montage mit einem Spezialfett versehen, z.B. Walterscheid ABF-Fett.

6.1 The centre unit can also be loosely inserted into the fitting body. Tighten nut by hand. Stainless steel tube fittings: Make sure that especially the threaded zone is greased with a special grease agent prior to assembly, e.g. with Walterscheid ABF grease.

6.1 Comme alternative, le cône intermédiaire peut aussi être librement engagé dans le corps du raccord. Serrer l'écrou à la main. Raccords en acier inox: Avant de procéder au montage, appliquer de la graisse spéciale, en particulier sur la zone filetée, p.ex. de la graisse ABF de Walterscheid.



7. Fertigmontage mit eingepreßtem Zwischenring (Pkt. 6.)

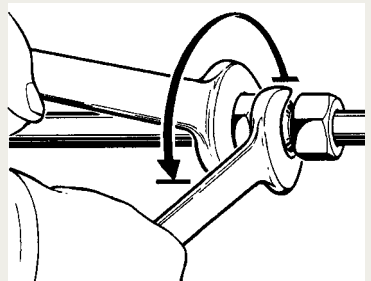
Überwurfmutter bis zum deutlich spürbaren Kraftanstieg (Festpunkt) anziehen. Anschl. Fertigmontage: 1/2 Umdrehung
 1/4 Umdrehung 6 L - 12 L

7. Final assembly with inserted centre unit (item 6.)

Tighten nut until a noticeable increase in force is felt (point of resistance). For subsequent final assembly, apply 1/2 a turn
 1/4 of a turn 6 L - 12 L

7. Montage final avec cône intermédiaire inséré (pos. 6.)

Serrer l'écrou jusqu'au point de résistance. Au montage final, serrer l'écrou de: 1/2 tour
 1/4 tour 6 L - 12 L



7.1 Fertigmontage mit lose montiertem Zwischenring (Pkt. 6.1)

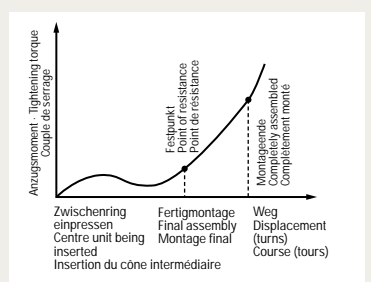
Überwurfmutter bis zum deutlich spürbaren Kraftanstieg (Festpunkt) anziehen. Dabei wird der Zwischenring in den Stutzen gepreßt. Anschließend Fertigmontage: 1/2 Umdrehung
 1/4 Umdrehung 6 L - 12 L

7.1 Final assembly with loosely inserted centre unit (item 6.1)

Tighten nut until a noticeable increase in force is felt (point of resistance). The centre unit is pressed into the fitting body. For subsequent final assembly, apply 1/2 a turn
 1/4 of a turn 6 L - 12 L

7.1 Montage final avec cône intermédiaire librement engagé (pos. 6.1)

Serrer l'écrou jusqu'au point de résistance. Le cône intermédiaire est ainsi introduit dans le corps. Au montage final, serrer l'écrou de: 1/2 tour
 1/4 tour 6 L - 12 L





7.2 Fertigmontage mit Drehmomentschlüssel*

Wichtig: Verschraubungsstutzen mit Schlüssel gegenhalten.

Achtung! Abweichende Anzugswege reduzieren die Nenndruckleistung und die Lebensdauer der Verbindung. Leckagen sind die Folge.

*Anzugsdrehmomente gelten nur für Stahlverschraubungen.

7.2 Final assembly with torque wrench*

Important: Hold fitting body firmly by means of a spanner.

Caution! Any deviating number of tightening turns reduces the nominal pressure and the service life of the connection which causes leakages.

*Tightening torques only apply to steel fittings.

7.2 Montage final avec clé dynamométrique*

Important: Maintenir le corps du raccord avec une clef.

Attention! Toute course de serrage divergeante entraîne une réduction de la pression nominale admissible et de la durée de vie du raccordement. Des fuites en sont la conséquence.

*Les couples de serrage ne s'appliquent qu'aux raccords en acier.

Reihe Range Série	Rohr-AD Tube OD Dia. ext. du tube	Stahl Steel Acier Md [Nm]*	Nichtrostender Stahl** Stainless steel** Acier inox** 1.4571 Md [Nm]
L	6	20	30
	8	40	55
	10	45	65
	12	55	110
	15	70	190
	18	120	250
	22	200	400
	28	300	550
	35	600	900
	42	800	900
S	6	30	85
	8	45	100
	10	55	130
	12	80	190
	14	90	260
	16	130	330
	20	250	350
	25	400	700
	30	500	900
	38	800	900

**Besonders der Gewindebereich muß vor der Montage mit einem Spezialfett versehen werden. Geeignet ist das Walterscheid ABF-Fett.

**Prior to assembly, particularly the threaded section must be provided with an appropriate special grease agent, e.g. the Walterscheid ABF grease.

**Avant de procéder au montage, il faut appliquer de la graisse spéciale appropriée, p.ex. de la graisse ABF de Walterscheid, en particulier sur la zone fileté.

8. Wiederholungsmontage

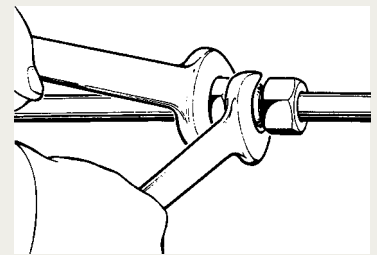
Nach jedem Lösen der Verbindung ist die Überwurfmutter wieder fest anzuziehen (gleiches Drehmoment wie bei der Fertigmontage).

8. Re-assembly

Each time the fitting is disconnected, the nut must be firmly re-tightened (same torque as for final assembly).

8. Remontage

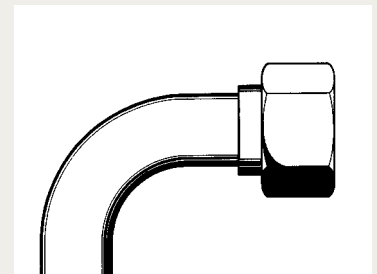
Après chaque démontage, l'écrou doit être reserré fermement (même couple qu'au montage final).



9. Mindestlänge für gerades Rohr-ende bei Rohrbögen und minimale gerade Rohrlänge (siehe Tabellen-teil.)

9. Minimum length of straight tube end in tube bends and minimum straight tube length (see tables.)

9. Longueur droite mini du tube dans un cintrage de tube et longueur droite mini du tube. (Voir tableaux.)

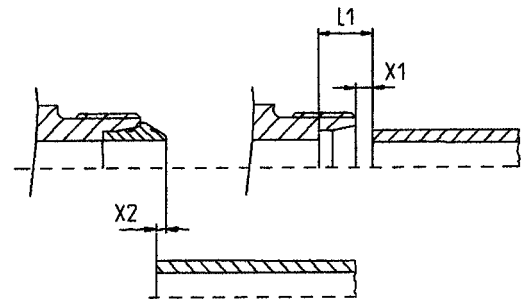




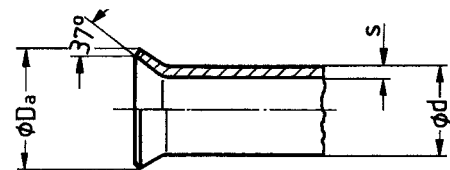
C

d [mm]	s [mm]	x1 [mm]	x2 [mm]	L1 [mm]	Da min [mm]	Da max [mm]
6	1	1	3,5	8	9,1	10
	1,5	2	2,5	9		
8	1	1	4	8	11,3	12
	1,5	2	3	9		
10	2	2,5	2,5	9,5	13,1	14
	1	1	4,5	8		
	1,5	2	3,5	9		
12	2	3	2,5	10	15,3	16
	1	1	4,5	8		
	1,5	2	3,5	9		
14	2	3	2,5	10	18,6	19,6
	1,5	0,5	5,5	8,5		
	2	1	5	9		
	2,5	2	4	10		
15	3	3	3	11	19,1	20
	1,5	1	4,5	8		
	2	2	3,5	9		
16	2,5	3	2,5	10	20,6	22
	1,5	0	6,5	8,5		
	2	1	5,5	9,5		
	2,5	1,5	5	10		
18	3	2,5	4	11	23,2	24
	1,5	0	5,5	7,5		
	2	1	4,5	8,5		
20	2,5	1,5	4	9	25,6	26,8
	2	1	7	11,5		
	2,5	2	6	12,5		
	3	3	5	13,5		
22	3,5	4	4	14,5	26,5	27,5
	1,5	1	5,7	8,5		
	2	2	4,7	9,5		
	2,5	3	3,7	10,5		
25	3	3,5	3,2	11	31,1	33
	2	1	7	13		
	2,5	1,5	6,5	13,5		
	3	2,5	5,5	14,5		
28	4	4	4	16	32,7	33,3
	2	1,5	5,7	9		
	2,5	2,5	4,7	10		
30	3	3	4,2	10,5	37	38,7
	2	-0,5	9	13		
	2,5	0,5	8	14		
	3	1	7,5	14,5		
	4	3	5,5	16,5		
35	5	4,5	4	18	41,8	42,7
	2	1,5	6,5	12		
	2,5	2	6	12,5		
	3	3	5	13,5		
38	4	4,5	3,5	15	46	47,2
	2,5	0	10	16		
	3	0,5	9,5	16,5		
	4	2	8	18		
	5	4	6	20		
42	6*	2,5	7,5	18,5	48,8	49,8
	2	1,5	7	12,5		
	3	3	6,5	14		
	4	4,5	5	15,5		

Rohrlängenbestimmung (x1, x2, L1)
 Tube length determination (x1, x2, L1)
 Détermination de la longueur des tubes (x1, x2, L1)



Kontrolldurchmesser (Da min, Da max)
 Control diameter (Da min, Da max)
 Diamètres de contrôle (Da min, Da max)



* Nur mit Bördelmaschine MEG-BO2, MEG-WF1/BO2 und Sonderbördelbacken
 * Only with flaring machine MEG-BO2, MEG-WF1/BO2 and special clamping jaws
 * Seulement avec machine à évaser MEG-BO2, MEG-WF1/BO2 et des mâchoires spéciales de serrage



C

Gerade Rohrlänge bis Beginn Biegeradius
Straight tube length to start of bending radius
Longueur droite du tube jusqu'au début du rayon de cintrage

„Erst Biegen - dann Bördeln“

Gerades Rohrende (**Maß L1**) bis zum Beginn des Biegeradius

- a) Handbördelwerkzeug,
- b) Bördelmaschine

"Flaring to be completed prior to bending"

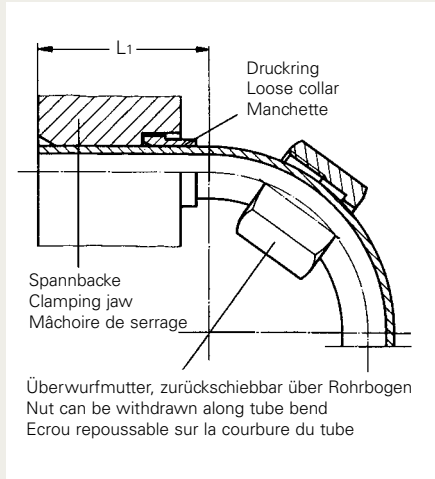
Straight tube length (**dimension L1**) to start of bending radius

- a) Manual flaring tool,
- b) Flaring machine

«Faire le cintrage avant l'évasement»

Longueur droite (**cote L1**) jusqu'au début du rayon de cintrage

- a) Outil manuel pour l'évasement,
- b) Machine à évaser



Rohr-AD Tube OD Ø ext. du tube	L1	
	Handbördelwerkzeug Manual flaring tool Outil manuel pour l'évasement	Bördelmaschine Flaring machine Machine à évaser MEG-BO2 MEG-WF1/BO2 MHH-BO
6	36	43
8	37	44
10	39	46
12	45	47
14	46	50
15	46	50
16	48	52
18	46	58
20	50	58
22	50	60
25	72	60
28	70	60
30	73	62
35	72	62
38	78	70
42	73	70

„Erst Bördeln - dann Biegen“

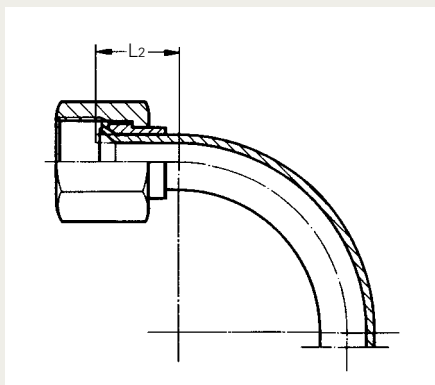
Soll das gerade Rohrende (**Maß L2**) wegen Einbauschwierigkeiten kürzer sein als in Tabelle angegeben, muß das Biegen nach dem Bördeln erfolgen, (siehe Rohrbiegwerkzeuge).

"Flaring to be completed prior to bending"

If installation problems demand that the straight tube length (**dimension L2**) is to be shorter than indicated in the table, bending must be carried out after flaring, (see tube bending tools).

«Faire l'évasement avant le cintrage»

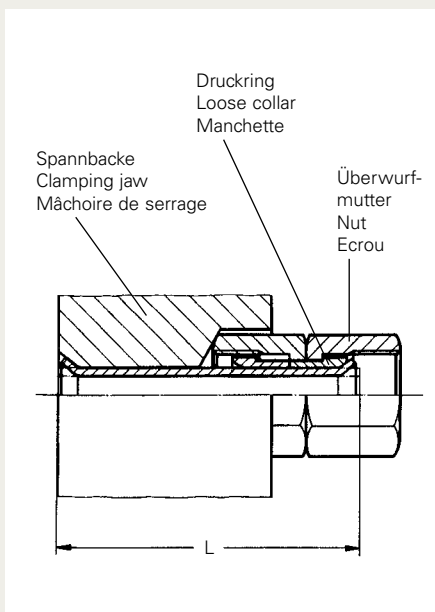
Si, à cause de difficultés de montage, la longueur droite (**cote L2**) doit être plus courte qu'indiqué sur le tableau, le cintrage doit être effectué après l'évasement, (voir les cintruses pour tubes).



Rohr-AD / Tube OD Ø ext. du tube	L2
10	15
12	15
15	17
16	21
18	18

Rohr-AD 6, 8 und 14 auf Anfrage.
 Tube OD 6, 8 and 14 on request.
 Tube Ø ext. 6, 8 et 14 sur demande.

Minimale gerade Rohrlänge L:
Minimum straight tube length L:
Longueur droite mini du tube L:



Rohr-AD Tube OD Ø ext. du tube	L		
	Handbördelwerkzeug Manual flaring tool Outil manuel pour l'évasement	Bördelmaschine Flaring machine Machine à évaser MEG-BO2 MEG-WF1/BO2 MHH-BO	
L	6	52	59
	8	54	62
	10	55	64
	12	63	67
	15	67	75
	18	67	76
	22	71	81
	28	93	88
	35	100	92
S	42	110	130
	6	51	61
	8	53	64
	10	54	66
	12	63	68
	14	67	74
	16	69	79
	20	73	82
	25	99	94
30	100	96	
38	110	136	



C

Rohr-AD Tube OD Tube Ø ext. [mm]	Wandstärke s [mm] Wall thickness s [mm] / Épaisseur de paroi s [mm]								
	1	1,5	2	2,5	3	3,5	4	5	6
	Druckeinstellung Pressure setting / Réglage de la pression								
6	24	26							
8	24	26	31						
10	22	27	32						
12	23	27	32						
14		28	33	46	51				
15		28	34	47					
16		29	34	47	51				
18		29	35	49					
20			35	49	55	63			
22		33	36	51	57				
25			39	51	58		73		
28			42	53	59				
30			45	55	61		75	84	
35			51	59	65		76		
38				61	67		77	84	
38									95
42			61		70		81		

**Druckeinstellung
der Bördelmaschine MEG-BO2 (MEG-WF1/BO2)**

**Pressure setting
of flaring machine MEG-BO2 (MEG-WF1/BO2)**

**Réglage de la pression
de la machine à évaser MEG-BO2 (MEG-WF1/BO2)**



**MEG-BO2
(MEG-WF1/BO2)**



**Stahl / Steel / Acier
St 37.4 / 52.4**

Rohr-AD Tube OD Tube Ø ext. [mm]	Wandstärke s [mm] Wall thickness s [mm] / Épaisseur de paroi s [mm]								
	1	1,5	2	2,5	3	3,5	4	5	6
	Druckeinstellung [bar] Pressure setting [bar] / Réglage de la pression [bar]								
6	110	160							
8	100	150	200						
10	90	140	180						
12	80	140	170						
14		140	160	270	370				
15		140	160	260					
16		140	140	250	370				
18		140	140	250					
20			150	250	350	440			
22		160	160	260	350				
25			200	280	360		500		
28			210	290	360				
30			230	300	370		500	600	
35			250	320	390		500		
38				360	410		600	600	
42			280		420		500		

**Druckeinstellung [bar]
der Bördelmaschine MHH-BO**

**Pressure setting [bar]
of flaring machine MHH-BO**

**Réglage de la pression [bar]
de la machine à évaser MHH-BO**



MHH-BO



**Stahl / Steel / Acier
St 37.4 / 52.4**

**C**

Montageanleitung
Assembly instructions
Instructions de montage

Bördelflansche 37°
37° flared flanges
Brides d'évasement 37°

SAE J518 / ISO 6162

Rohrauswahl

Es ist eine kaltbiege- und bördelfähige Rohrqualität zu verwenden. Wir empfehlen die Verwendung von nahtlosem Präzisionsstahlrohr, Werkstoff St 37.4 bzw. St 52.4 gemäß DIN 1630, Ausführung NBK-3.1 B. Toleranzen der Rohraußen- und Innendurchmesser nach DIN 2391, Teil 1-C. Berechnungsdrücke nach DIN 2413.

Tube selection

A tube grade suitable for cold-bending and flaring is to be used. We recommend the use of seamless precision steel, material St 37.4 / St 52.4 to DIN 1630, type NBK-3.1 B. Tolerances of tube outside and inside diameters to DIN 2391, sheet 1-C. Calculated pressure according to DIN 2413.

Sélection de tube

On utilisera un tube dont la qualité est apte au cintrage à froid et à l'évasement. Nous recommandons l'utilisation de tubes de précision en acier, sans soudure, matériau St 37.4 ou St 52.4 selon la norme DIN 1630, type NBK-3.1 B. Tolérances des diamètres extérieurs et intérieurs des tubes selon DIN 2391, folio 1-C. Pressions théoriques selon DIN 2413.



C

1. Rohrlängenbestimmung

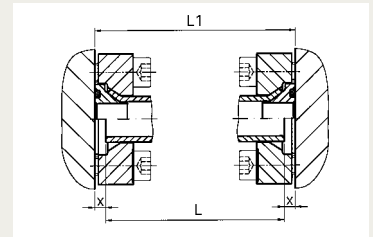
Die Rohrlängenbestimmung erfolgt durch Messen des Abstands der Verbindung (L1). Es ist dann je Rohranschluß das Maß X zu subtrahieren. Das Maß X ist der Bedienungsanleitung bzw. entsprechenden Tabellenwerken zu entnehmen.

1. Tube length determination

The tube length is determined by measuring the distance between the fittings (L1). Dimension X must then be subtracted for each tube connection. For dimension X, refer to the Operating Instructions or the appropriate tables.

1. Détermination de la longueur des tubes

La longueur exacte d'un tube se détermine en mesurant la distance extrême du raccord à brides (L1). Il convient ensuite de soustraire la cote X de chaque bride. Pour la cote X, voir la notice d'utilisation et les tableaux correspondants.



2. Rechtwinklig absägen!

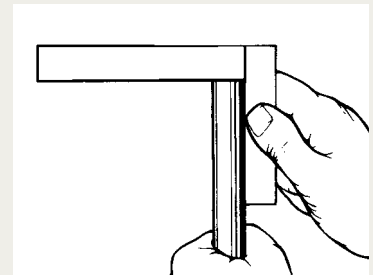
Vom Trennschnitt durch den Rohrhersteller 10 mm absägen (lieferbedingte Fehlerquelle). Rohr rechtwinklig absägen, 1/2° Winkelabweichung zur Rohrachse ist zulässig. Keine Rohrschneider oder Trennscheiben verwenden, sie ergeben eine starke Gratbildung und Schrägschnitt. Sägemaschine / Vorrichtung benutzen.

2. Saw off at right angle!

Saw off 10 mm from the parting cut made by the tube manufacturer (delivery-related source of faults). Saw the tube off at right angles, an angular deviation of 1/2° relative to the tube axis is permissible. Do not use pipe cutters or cutting-off wheels as they cause severe burring and inclined cuts. Use a sawing machine / sawing device.

2. Scier à angle droit!

Scier le tube à 10 mm de la coupe réalisée par le fabricant de tubes (source d'erreurs due à la livraison). Scier le tube à angle droit. Un écart angulaire de 1/2° par rapport à l'axe tubulaire est admissible. Ne pas utiliser de cisailles ni de meules tronçonneuses. Elles engendrent de nombreuses arêtes et une coupe en biais. On utilisera une scie mécanique / un dispositif.



Achtung: Formabweichungen am Rohrende, wie z.B. schief gesägte oder falsch entgratete Rohre, reduzieren die Lebensdauer und die Dichtigkeit der Verbindung.

Important: Form errors at the tube end, such as angular saw-cuts or inadequately deburred tubes, reduce the service life and the sealing capacity of the connection.

Attention: Des écarts de forme à l'extrémité du tube, tels que tube scié en biais ou ébarbage inadéquat, réduisent la durée de vie et l'étanchéité du raccord.

3. Rohrenden leicht entgraten und Rohr reinigen!

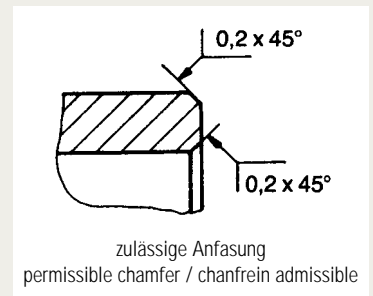
Entgratung und Reinigung innen und außen durchführen. Der Spann- und Umformbereich muß frei von Spänen, Schmutz, Fett, Öl und Farbe sein! Wenn fettig oder ölig, umweltfreundliches Lösungsmittel verwenden.

3. Lightly deburr the tube ends and clean the tube!

Remove burr and clean inside and out. The clamping and reshaping area must be clean and free of any chips, dirt, grease, oil and paint! Use an environment-friendly solvent to remove grease or oil.

3. Procéder à un léger ébarbage des extrémités du tube et au nettoyage du tube!

Procéder à l'ébarbage et au nettoyage à l'intérieur et à l'extérieur du tube. Veillez à ce que la zone de serrage et de formage soit exempte de copeaux, de saletés, de graisse, d'huile et de peinture! En cas de présence de graisse ou d'huile, on utilisera des solvants écophiles.



4. Rohrbördelung

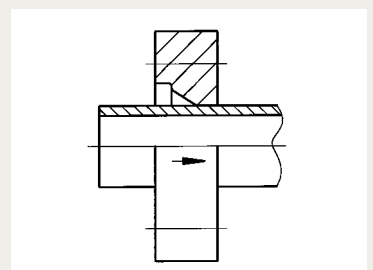
Flansch auf Rohr schieben. Rohrende mit Walterscheid-Bördelmaschine bördeln (siehe Bedienungsanleitung für Bördelmaschinen).

4. Flare the tube

Slide the flange onto the tube. Flare the tube end with the Walterscheid flaring machine (see Operating Instructions for flaring machines).

4. Evasement du tube

Glisser la bride sur le tube. Évaser l'extrémité du tube avec la machine à évaser de Walterscheid (voir la notice d'utilisation pour les machines à évaser).



5. Kontrolle des fertig gebördelten Rohres

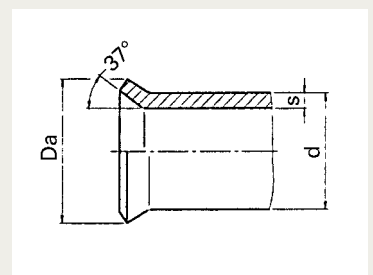
Den Durchmesser Da des gebördelten Rohres auf Maßhaltigkeit und Verunreinigung prüfen. Der Kontroll-Ø (Da) entspricht dem Außen-Ø des Bördelkragens. Die Maße sind der Bedienungsanleitung bzw. den entsprechenden Tabellenwerken zu entnehmen. Der Bördelkragen muß rechtwinklig zur Rohrachse und konzentrisch zum Rohr und Flansch sein. Ungleiche und exzentrische Bördelungen deuten auf mangelhafte Werkzeuge oder Bedienfehler hin. Nur eine einwandfreie Bördelung ergibt eine lange Lebensdauer der Verschraubung.

5. Check the flared tube

Verify the dimensional accuracy of diameter Da of the flared tube, and check for any impurities. The checking diameter (Da) corresponds to the outside diameter of the flared tube end. Please refer to the Operating Instructions and tables for the respective dimensions. The flare must be at right angles to the tube axis and concentric with the tube. Irregular and eccentric flares point to defective tools or operating errors. Perfect flaring is the prerequisite to a long service life of the fitting.

5. Contrôle du tube évasé

Procéder au contrôle dimensionnel du diamètre Da du tube et veiller à ce qu'il soit exempt d'impuretés. Le diamètre de contrôle (Da) correspond au diamètre extérieur du collet évasé. Pour les cotes correspondantes, voir la notice d'utilisation et les tableaux. Le collet évasé doit être à angle droit par rapport à l'axe du tube et concentrique par rapport au tube. Un collet évasé irrégulier et décentré indique l'utilisation d'outils défectueux ou une erreur de manipulation. Seul un évasement impeccable peut assurer une longue durée de vie du raccord.

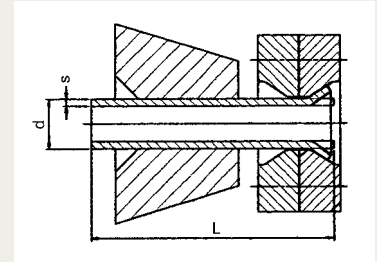




6. Mindestlänge für gerades Rohr bei Rohrbogen und minimale gerade Rohrlänge.
 (siehe Tabelle)

6. Minimum length of straight tube end in tube bends and minimum straight tube length.
 (see table)

6. Longueur minimale de l'extrémité du tube droit dans un cintrage de tube et longueur minimale de tube en ligne droit.
 (voir tableau)



7. Zwischenring in Flansch einlegen

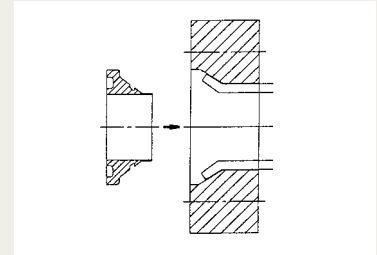
Auf ordnungsgemäßen Sitz der Weichdichtungen ist zu achten. Zwischenring mit der Zentrierung voran in das aufgebördelte Rohr legen. Flansch über Zwischenring schieben. Die Zentrierung dient nicht zur Befestigung des Zwischenringes im Rohr!

7. Insert the centre unit in the flange

Make sure the captive seals fit correctly. Fit the centre unit into the flared tube, centring element first. Slide the flange over the centre unit. The centring element does not serve to secure the centre unit in the tube!

7. Placer le cône intermédiaire dans la bride

On veillera à ce que les joints mous soient correctement ajustés. Engager le cône intermédiaire précédé du dispositif de centrage dans le tube évasé. Glisser la bride sur le cône intermédiaire. Le dispositif de centrage ne sert pas à fixer le cône intermédiaire dans le tube!



8. Schrauben montieren

4 Schrauben - Sechskant- oder Innensechskantschrauben - in die dafür vorgesehenen Durchgangslöcher stecken. Innensechskantschraube (DIN 912) - Sechskantschraube (DIN EN 24014) -

8. Fit the screws

Insert 4 screws - hexagon head or hexagon socket screws - in the through-holes provided for this purpose. Hexagon socket screw (DIN 912) - Hexagon head screw (DIN EN 24014) -

8. Montage des vis

Engager 4 vis - vis hexagonales ou vis à six pans creux - dans les trous débouchants prévus à cet effet. Vis à six pans creux (DIN 912) - Vis hexagonale (DIN EN 24014) -

9. Flansch anbringen

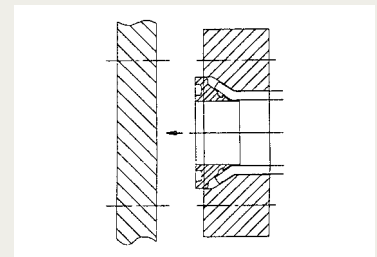
Flansch auf die Anschlußstelle auflegen. (Bei Verbindung zweier Rohre beide Flansche gegeneinander auf Anlage bringen). Schrauben in Einschraubgewinde mit der Hand eindrehen.

9. Fit the flange

Place the flange on the connecting point. (When connecting two tubes, bring the two flanges into contact). Screw the screws into the threads by hand.

9. Montage de la bride

Appliquer la bride sur le point de jonction. (Pour un raccord de deux tubes, mettre les deux brides en appui l'une contre l'autre). Procéder au serrage manuel des vis dans les trous taraudés.



10. Schrauben anziehen

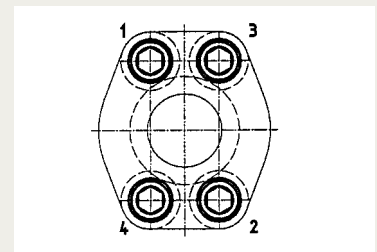
Schrauben müssen nach Drehmoment (siehe unten) angezogen werden. Eine drehwegbezogene Montage ist nicht zulässig! Schrauben in mehreren Drehmomentstufen über Kreuz (1-2-3-4) anziehen, bis max. Drehmoment erreicht ist!

10. Tighten the screws

The screws must be tightened according to torque (see below). Path-based tightening is not permissible! Tighten the screws in cross-over fashion (1-2-3-4) and in several torque steps until the maximum torque is reached!

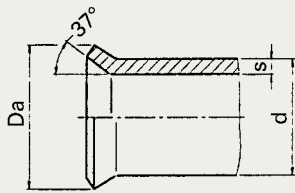
10. Serrage des vis

Les vis doivent être serrées en appliquant un couple défini (voir ci-dessous). Un montage par nombre de tours n'est pas admis! Serrer les vis en diagonale et en plusieurs étapes (1-2-3-4) jusqu'à ce que le couple maximal soit atteint!



Flansch / Flange Bride 3000 PSI ["]	Schraube Screw Vis	Flansch / Flange Bride 6000 PSI ["]	Schraube Screw Vis	Drehmoment M für Schraube 8.8 Torque M for screw 8.8 Couple M pour vis 8.8 (Nm)
1/2	M8 x 30	1/2	M8 x 30	25
3/4	M10 x 35	3/4	M10 x 35	53
1	M10 x 35			
1 1/4	M10 x 40			
1 1/2	M12 x 40	1	M12 x 45	95
2	M12 x 45			
		1 1/4	M14 x 55	150
		1 1/2	M16 x 60	220
				390
		2	M20 x 60	

Bei Schrauben der Festigkeit 8.8 besteht eine Sicherheit von 2,5
 For screws having a strength of 8.8, the safety factor is 2.5.
 Pour les vis ayant une résistance de 8.8, le coefficient de sécurité est de 2,5.



Einstellwerte Maschine / Kontrolldurchmesser Bördeltulpe
Setting values - Machine / Checking diameter - Flare
Valeurs de réglage - Machine / Diamètre de contrôle - Collet évasé



Stahl / Steel / Acier
St 37.4

C

Rohr-AD Tube OD Tube Ø ext. d [mm]	Wandstärke Wall thickness Epaisseur de paroi s [mm]	Einstellwert (Potentiometer) Setting value (potentiometer) Valeur de réglage (potentiomètre)			Tulpendurchmesser Flare diameter Diamètre du collet évasé Da [mm]	
		MEG-WF1/BO2	MEG-WF2/BO	MEG-WF3/BO	min	max
16	2,0	34	20	Auf Anfrage On request Sur demande	20,6	22,0
	2,5	47	28			
	3,0	51	30			
20	2,0	35	25		25,6	26,8
	2,5	49	28			
	3,0	55	30			
	3,5	63	35			
	4,0	-	45			
22	2,0	36	25		26,5	27,5
25	2,5	51	35		31,1	33,0
	3,0	58	32			
	4,0	73	39			
28	3,0	59	30		32,7	33,3
30	4,0	75	35		37,0	38,7
	5,0	84	40			
35	3,0	65	30		41,8	42,7
	5,0	-	50			
38	4,0	77	35	46,0	47,2	
	5,0	84	50			
	6,0	95*	50			
42	3,0	70	55	48,8	49,8	
	4,0	81	65			
48,3	3,2	-	50	58,0	59,0	
50	2,5	-	48	59,0	60,5	
	3,0	-	50			
	5,0	-	55			
	6,0	-	70			
	8,0	-	83			
60	3,0	-	40	70,0	71,0	
60,3	3,6	-	50			
	5,6	-	-			
60	5,0	-	65			
	6,0	-	80			
60/60,3	8,0	-	95	*Sonderbacke *Special jaw *Mâchoire spéciale		
	10,0	-	-			



Obige Einstellwerte gelten nur für Rohr aus St 37.4. Für Rohre mit einer höheren Festigkeit ist eine höhere Druckeinstellung erforderlich. Die Druckeinstellung ist soweit zu erhöhen, bis der vorgeschriebene Kragendurchmesser erreicht wird und die Bördeltulpe innen und außen geometrisch voll ausgeprägt ist. **Achtung!** Druckeinstellung nicht durch Nachbördeln ermitteln, jeweils ein neues Rohrstück verwenden (Probepördelung).
The above-mentioned setting values apply exclusively to tubes made of St 37.4. Tubes of higher strength require higher pressure settings. The pressure setting must be increased until the specified collar diameter is reached and the flare is developed to its full geometrical shape at the inside and outside. **Caution!** Pressure setting not to be determined by subsequent flaring. Use a new piece of tube for each test flaring.
Les valeurs de réglage indiquées ci-dessus sont seulement valables pour des tubes en St 37.4. Il faut donc prévoir de plus hautes pressions de réglage pour des tubes ayant une résistance plus élevée. Augmenter la pression de réglage jusqu'à ce que le diamètre prescrit du collet soit atteint et le collet évasé soit complètement effectué géométriquement à l'intérieur et à l'extérieur. **Attention!** Ne pas déterminer la pression de réglage par l'évasement ultérieur. Utiliser un nouveau bout de tube le cas échéant (évasement d'essai).

richtig / correct / correct



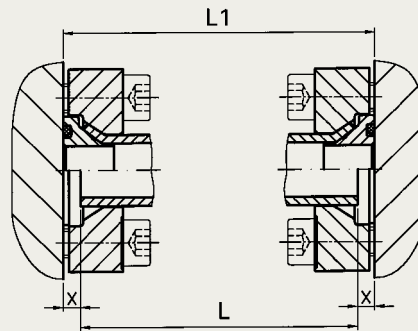
falsch / wrong / incorrect





C

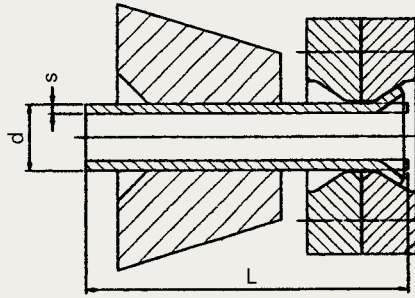
X-Maß ± 0,5 mm für Rohrlängenermittlung
Dimension X ± 0,5 mm for tube length determination
Cote X ± 0,5 mm pour déterminer la longueur des tubes



Rohr-AD Tube OD Tube Ø ext. [mm]	Wandstärke Wall thickness Epaisseur de paroi [mm]	1/2"	3/4"	1"	1 1/4"	1 1/2"	2"
		X ± 0,5 mm					
16	2,0	5,4					
	2,5	5,7					
	3,0	5,9					
20	2,0	6,0	7,6				
	2,5	6,1	7,7				
	3,0	6,2	7,8				
	3,5	6,3	7,9				
	4,0		7,5				
22	2,0	6,2					
25	2,5		6,7	8,6			
	3,0		6,5	8,4			
	4,0		6,3	8,2			
28	3,0		6,6				
30	4,0			7,4			
	5,0			7,5	8,1		
35	3,0			6,9			
	5,0			6,5			
38	4,0				6,6	7,7	
	5,0			4,8	5,8	6,4	
	6,0				4,7	5,1	
42	3,0				7,0	9,1	
	4,0				6,8	9,2	
48,3	3,2					7,5	
50	2,5					8,1	
	3,0					7,9	
	5,0					7,7	
	6,0					7,5	
	8,0					7,3	
60	3,0						10,6
60,3	3,6						10,3
	5,6						9,6
60	5,0						9,2
	6,0						8,8
60/60,3	8,0						8,1
	10,0						7,5



Minimale gerade Rohrlänge L
Minimum straight tube length L
Longueur droite mini du tube L



Flansch Flange Bride ["]	3000 PSI [mm]		
	MEG-BO2 MEG-WF1/BO2	MEG-WF2/BO	MEG-WF3/BO
1/2	112	112	
3/4	114	114	
1	118	118	
1 1/4	120	120	
1 1/2	124	124	124
2	128	128	128

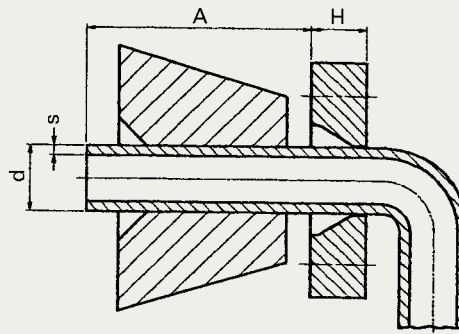
Flansch Flange Bride ["]	6000 PSI [mm]		
	MEG-BO2 MEG-WF1/BO2	MEG-WF2/BO	MEG-WF3/BO
1/2	112	112	
3/4	118	118	
1	129	129	
1 1/4	140	140	
1 1/2	144	144	144
2	144	144	144

C



Mindestlänge für gerades Rohrende bei Rohrbogen
Min. length of straight tube end in tube bends
Longueur minimale de l'extrémité du tube droit dans un cintrage de tube

C



Min. Rohrlänge A für alle Größen
 Min. tube length A for all sizes
 Longueur mini A du tube pour toutes les dimensions
 [mm]

MEG-BO2 MEG-WF1/BO2	MEG-WF2/BO	MEG-WF3/BO
80		

Gerade Rohrlänge bis Beginn Biegeradius ergibt sich in beiden Fällen aus der Addition der min. Rohrlänge A und der Flanschhöhe.

In both cases, the straight tube length up to the start of the bending radius results from adding the min. tube length A and the flange height.

Dans les deux cas, la longueur mini du tube droit jusqu'au début du rayon de cintrage résulte de l'addition de la longueur mini A du tube et de la hauteur de la bride.

Flansch Flange Bride ["]	Flanschhöhe H 3000 PSI Flange height H 3000 PSI Hauteur de la bride H 3000 PSI [mm]	Flanschhöhe H 6000 PSI Flange height H 6000 PSI Hauteur de la bride H 6000 PSI [mm]
1/2	16	16
3/4	17	19
1	19	24,5
1 1/4	20	30
1 1/2	22	32
2	24	32

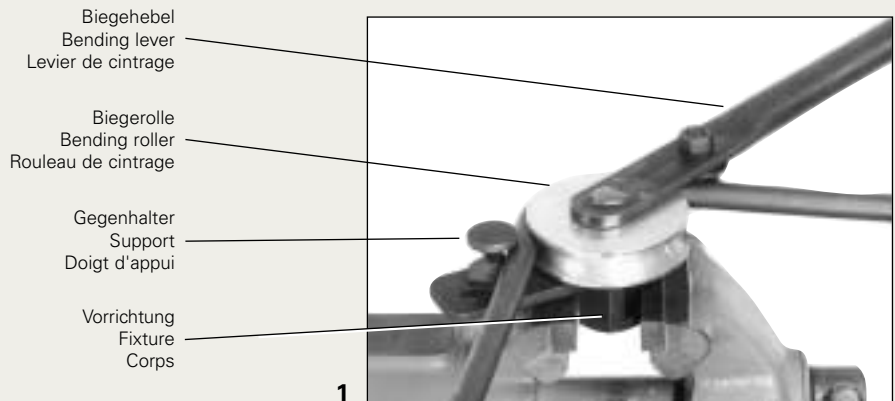
Für Rohr von 6-18 mm Rohr-AD
For tubes from 6-18 mm tube OD
Pour tubes Ø ext. 6 à 18 mm

6-12 mm Rohr-AD / 6-12 mm tube OD /
 Ø ext. 6 à 12 mm:

Best.-Nr. / Reference / Réf.: 033 012

10-18 mm Rohr-AD / 10-18 mm tube OD /
 Ø ext. 10 à 18 mm:

Best.-Nr. / Reference / Réf.: 033 020



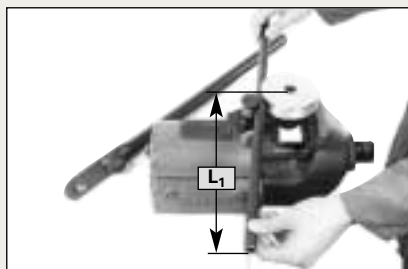
C



2 Vorrichtung einspannen, Gegenhalter einschrauben. Biegerolle (Rohr-AD eingestempelt) für das zu biegende Rohr aufsetzen.

Clamp the fixture. Screw in support. Attach required size of bending roller (Tube OD is stamped on bending roller).

Mettre le corps dans l'étau et visser le doigt d'appui. Placer le rouleau correspondant au tube à cintrer (Ø ext. marqué sur le rouleau).

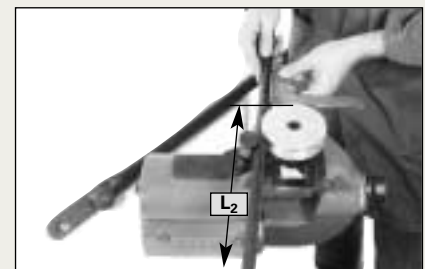


3 Rohrlängenbestimmung L₁

Gewünschter Abstand des geraden Rohrendes bis Beginn Rohrbogen markieren. Rohr einlegen und so ausrichten, daß Markierung im rechten Winkel zur Mitte der Biegerolle steht.

Determining the tube length L₁ Mark off the required distance between the tube end and the start of the tube bend. Insert tube and align the marking to the centre line of the bending roller.

Détermination de la longueur de tube L₁ Tracer sur le tube la longueur droite désirée. Positionner le tube dans la cintrreuse, de telle sorte que le traçage soit perpendiculaire au rayon du rouleau.



4 Rohrlängenbestimmung L₂ (nur für 90°-Bögen)

Gewünschte Schenkellänge (gerades Rohrende plus Rohrbogen) des Rohres markieren. Rohr einlegen und so ausrichten, daß die Markierung rechtwinklig zum äußeren Rand der Biegerolle steht.

Determining the tube length L₂ (for 90° bends only)

Mark off the required distance between the tube end and the outside bending radius of the tube. Insert tube and align marking to the outer edge of the bending roller.

Détermination de la longueur de tube L₂ (uniquement pour coude à 90°)

Tracer sur le tube la longueur souhaitée (partie droite + rayon de cintrage). Mettre le tube dans la cintrreuse de tube, de telle sorte que le traçage se retrouve perpendiculairement à l'extrémité du rouleau.



5 Biegehebel einsetzen, zügiges Biegen bis kurz vor die gewünschte Endform. Während des Biegevorganges Rohr von Hand leicht mitziehen.

Insert bending lever and bend without interruption until the required final shape is almost achieved. During this operation move the tube gently along by hand.

Mettre le levier. Cintrer d'une façon continue jusqu'à l'approche de la position finale désirée. Lors du cintrage, maintenir le tube à la main.



6 Durch langsames Nachbiegen wird gewünschter Biegewinkel erreicht.

Slowly pull the bending lever until the required bending angle is obtained.

Terminer lentement le cintrage jusqu'à ce que l'angle désiré soit obtenu.



7 Rohrbogen herausnehmen, bei komplizierten Biegeformen eventuell Biegehebel und Biegerolle entfernen

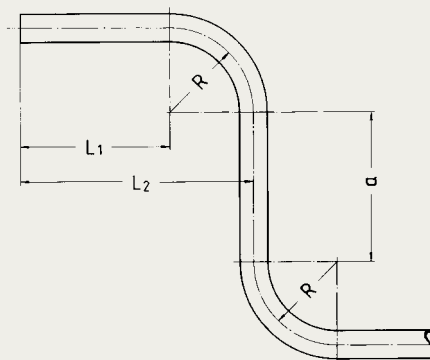
Remove the bent tube. With complicated tube bends, it may also be necessary to remove the bending lever and bending roller.

Sortir le tube cintré, en cas de formes de cintrage complexes, retirer également le levier et le rouleau de cintrage.



Für Rohr von 6-18 mm Rohr-AD
For tubes from 6-18 mm tube OD
Pour tubes Ø ext. 6 à 18 mm

C



6-12 mm Rohr-AD / 6-12 mm tube OD
 Ø ext. 6 à 12 mm

10-18 mm Rohr-AD / 10-18 mm tube OD
 Ø ext. 10 à 18 mm

Best.-Nr. / Reference / Réf.: 033 012

Best.-Nr. / Reference / Réf.: 033 020

Rohr-AD / Tube OD / Tube Ø ext. [mm]	Best.-Nr. / Reference / Réf.: 033 012		Best.-Nr. / Reference / Réf.: 033 020	
	R	a / L ₁ min	R	a / L ₁ min
6	20	36	-	-
8	20	36	-	-
10	25	32	36	64
12	25	32	36	64
15	-	-	43	53
16	-	-	44	53
18	-	-	51	73



Für Rohr von 10-18 mm Rohr-AD
For tubes from 10-18 mm tube OD
Pour tubes Ø ext. 10 à 18 mm

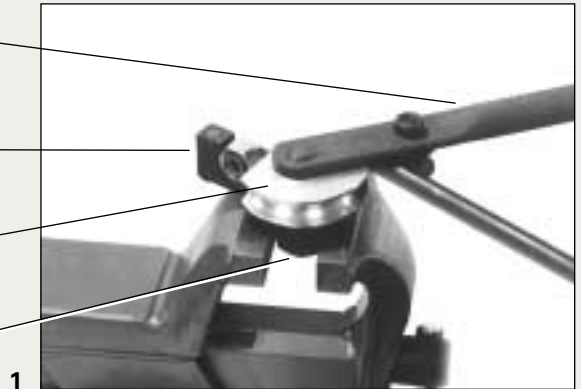
Das Rohrbiegewerkzeug SA1 ermöglicht das Biegen von Rohren direkt hinter der bereits aufgezogenen Mutter.

When using the tube bending tool SA1, tubes can be bent immediately behind the previously mounted nut.

Avec la cintreuse pour tubes SA1, il est possible de cintrer les tubes juste derrière l'écrou déjà monté.

Best.-Nr. / Reference / Réf.: 063 805

- Biegehebel mit Gegenhalter
Bending lever with support
Lever de cintrage avec doigt d'appui
- Gegenhalter (Prismenbacke)
Support (Holding attachment)
Doigt d'appui (mâchoire)
- Biegerolle
Bending roller
Rouleau de cintrage
- Vorrichtung
Fixture
Corps



C



2 Vorrichtung einspannen, Prismenbacke (entsprechend Rohr-AD) aufstecken. Biegerolle (Rohr-AD eingestempelt) für das zu biegende Rohr aufsetzen.

Clamp the fixture and fit the holding attachment (to match the tube OD). Attach the required size of bending roller (the tube OD is stamped on the bending roller).

Serrer le corps, emboîter le doigt d'appui (pour diamètre extérieur du tube). Mettre en place le rouleau de cintrage (diamètre extérieur du tube emboîté) adapté au tube à cintrer.



3 Rohr mit Mutter einlegen. Dabei wird die Mutter zwischen der Prismenbacke und der Biegerolle platziert. Biegehebel aufstecken.

Insert the tube with nut, positioning the nut between the holding attachment and the bending roller. Attach the bending lever.

Insérer le tube avec l'écrou. L'écrou est disposé entre le doigt d'appui et le rouleau de cintrage. Emboîter le levier de cintrage.



4 Zügiges Biegen bis kurz vor die gewünschte Endform. Während des Biegevorganges Rohr von Hand leicht mitziehen. Durch langsames Nachziehen wird gewünschter Biegewinkel erreicht.

Bend without interruption until the required final shape is almost achieved. During the process, guide the tube gently by hand. Slowly pull the bending lever until the required bending angle is reached.

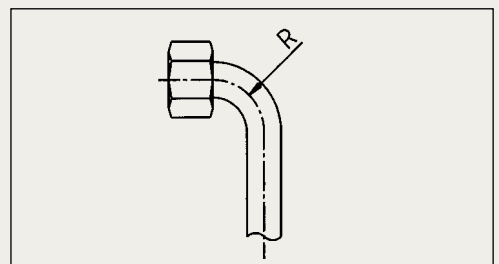
Cintrer sans interruption jusqu'à ce que la forme finale souhaitée soit presque atteinte. Tirer légèrement sur le tube pour l'accompagner pendant le processus de cintrage. L'angle de cintrage souhaité est obtenu par une lente traction finale.



5 Rohrbogen herausnehmen, bei komplizierten Biegeformen eventuell Biegehebel und Biegerolle entfernen.

Remove the bent tube. With complicated tube bends, it may also be necessary to remove the bending lever and bending roller.

Sortir le tube cintré, en cas de formes de cintrage complexes, retirer également le levier et le rouleau de cintrage.



10-18 mm Rohr-AD / 10-18 mm tube OD
 Ø ext. 10 à 18 mm

Best.-Nr. / Reference / Réf.: 063 805

Rohr-AD / Tube OD / Tube Ø ext. [mm]	R
10	36
12	36
15	44
16	44
18	52



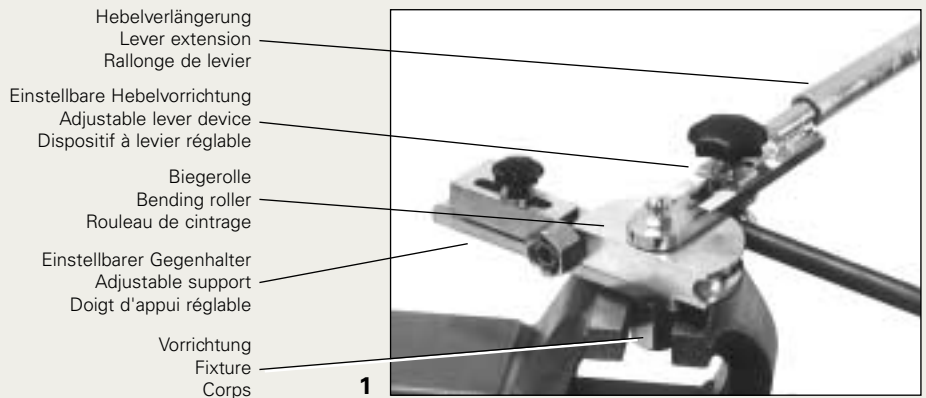
Für Rohr von 6-22 mm Rohr-AD
For tubes from 6-22 mm tube OD
Pour tubes Ø ext. 6 à 22 mm

Das Rohrbiegewerkzeug SA2 ermöglicht das Biegen von Rohren 24 mm hinter der bereits aufgezogenen Mutter.

When using the tube bending tool SA2, tubes can be bent 24 mm behind the previously mounted nut.

Avec la cintreuse pour tubes SA2, il est possible de cintrer les tubes 24 mm derrière l'écrou déjà monté.

Best.-Nr. / Reference / Réf.: 615 706



2 Biegen 24 mm hinter der Mutter

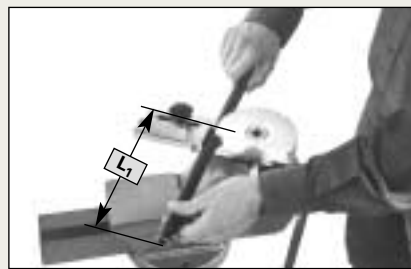
Vorrichtung mit einstellbarem Gegenhalter einspannen. Biegerolle (Rohr-AD eingestempelt) für das zu biegende Rohr aufsetzen. Rohr einlegen und den Gegenhalter entsprechend dem Rohr-AD fixieren. Die Mutter liegt in diesem Fall an der Planfläche von dem Gegenhalter und der Biegerolle an.

Bending 24 mm behind the nut

Clamp the fixture with the adjustable support. Attach the required size of bending roller (the tube OD is stamped on the bending roller). Insert the tube and fix the support in accordance with the tube OD. In this case, the nut lies against the flat surface of the support and the bending roller.

Cintrage 24 mm derrière l'écrou

Serrer le corps avec le doigt d'appui réglable. Mettre en place le rouleau de cintrage (diamètre extérieur du tube emboîté) adapté au tube à cintrer. Insérer le tube et fixer le doigt d'appui adapté au diamètre extérieur du tube. L'écrou s'appuie dans ce cas sur la surface plane du doigt d'appui et du rouleau de cintrage.



3 Biegen nach Rohrlängenbestimmung L₁

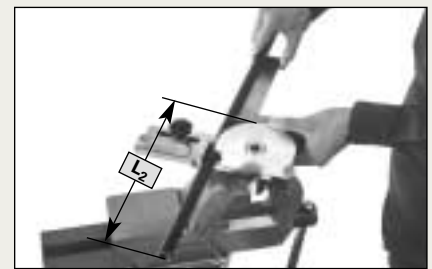
Vorrichtung mit einstellbarem Gegenhalter einspannen. Biegerolle (Rohr-AD eingestempelt) für das zu biegende Rohr aufsetzen. Gegenhalter drehen, so daß die breite Fläche in Richtung Biegerolle zeigt. Gewünschter Abstand des geraden Rohrendes bis Beginn Rohrbogen markieren. Rohr einlegen und so ausrichten, daß die Markierung im rechten Winkel zur Mitte der Biegerolle steht.

Bending after determining tube length L₁

Clamp the fixture with the adjustable support. Attach the required size of bending roller (the tube OD is stamped on the bending roller). Turn the support so that the wide surface faces the bending roller. Mark off the required distance from the straight tube end to the start of the tube bend. Insert the tube and align it with the mark at right angles to the centre of the bending roller.

Cintrage selon la mesure de longueur de tube L₁

Serrer le corps avec le doigt d'appui réglable. Mettre en place le rouleau de cintrage (diamètre extérieur du tube emboîté) pour le tube à cintrer. Tourner le doigt d'appui de sorte que la surface large soit dirigée vers le rouleau de cintrage. Marquer la distance souhaitée entre l'extrémité droite du tube et le début du coude du tube. Insérer le tube et l'ajuster de manière à ce que le repère soit perpendiculaire au milieu du rouleau de cintrage.



4 Biegen nach Rohrlängenbestimmung L₂ (nur für 90°-Bögen)

Vorrichtung mit einstellbarem Gegenhalter einspannen. Biegerolle (Rohr-AD eingestempelt) für das zu biegende Rohr aufsetzen. Gegenhalter drehen, so daß die breite Fläche in Richtung Biegerolle zeigt. Gewünschte Schenkellänge (gerades Rohrende plus Rohrbogen) des Rohres markieren. Rohr einlegen und so ausrichten, daß die Markierung rechtwinklig zum äußeren Rand der Biegerolle steht.

Bending after determining tube length L₂ (for 90° bends only)

Clamp the fixture with the adjustable support. Attach the required size of bending roller (the tube OD is stamped on the bending roller). Turn the support so that the wide surface faces the bending roller. Mark off the required distance between the straight tube end and the outside bending radius of the tube. Insert the tube and align it with the mark at right angles to the outer edge of the bending roller.

Cintrage selon la mesure de longueur de tube L₂ (uniquement pour coudes à 90°)

Serrer le corps avec le doigt d'appui réglable. Mettre en place le rouleau de cintrage (diamètre extérieur du tube emboîté) pour le tube à cintrer. Tourner le doigt d'appui de sorte que la surface large soit dirigée vers le rouleau de cintrage. Marquer la longueur souhaitée du côté (extrémité droite du tube plus le coude) du tube. Insérer le tube et l'ajuster de manière à ce que le repère soit perpendiculaire au bord extérieur du rouleau de cintrage.



C



5 Einstellbare Hebelvorrichtung aufstecken und entsprechend dem Rohr-AD arretieren.

Attach the adjustable lever device and lock in position in accordance with the tube OD.

Emboîter le dispositif à levier réglable et le bloquer en fonction du diamètre extérieur du tube.



6 Hebelverlängerung aufstecken. Zügiges Biegen bis kurz vor die gewünschte Endform. Während des Biegevorganges Rohr von Hand leicht mitziehen. Durch langsames Nachziehen wird gewünschter Biegewinkel erreicht.

Attach the lever extension. Bend without interruption until the required final shape is almost achieved. During the process, guide the tube gently by hand. Slowly pull the lever device until the required bending angle is reached.

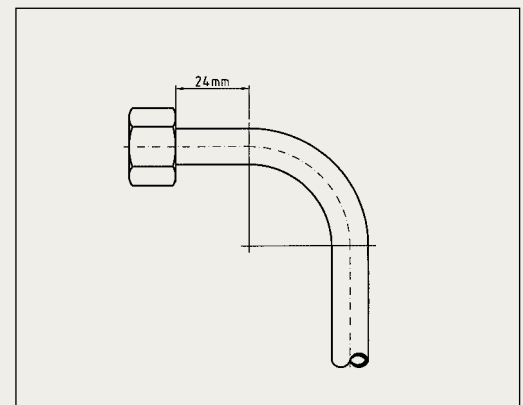
Emboîter la rallonge du levier. Cintrer sans interruption jusqu'à ce que la forme finale souhaitée soit presque atteinte. Tirer légèrement sur le tube pour l'accompagner pendant le processus de cintrage. L'angle de cintrage souhaité est obtenu par une lente traction finale.



7 Zum Herausnehmen des Rohrbogen Gegenhalter lösen. Rohrbogen herausnehmen, bei komplizierten Biegeformen eventuell Hebelvorrichtung und Biegerolle entfernen.

Release the support to remove the bent tube. Remove the bent tube. With complicated tube bends, it may also be necessary to remove the lever device and bending roller.

Débloquer le doigt d'appui pour sortir le tube cintré. Sortir le tube cintré, en cas de formes de cintrage complexes, retirer également le levier et le rouleau de cintrage.



6-22 mm Rohr-AD / 6-22 mm tube OD
 Ø ext. 6 à 22 mm

Best.-Nr. / Reference / Réf.: 615 706

Rohr-AD / Tube OD / Tube Ø ext. [mm]	R
6	36
8	36
10	36
12	36
14	36
15	44
16	44
18	52
20	64
22	63

Grundsätze der Verlegung

- Rohrlängendifferenzen und Temperaturdehnungen müssen durch entsprechende längenausgleichende Rohrverlegung, z.B. Rohrbögen, ausgeglichen werden.
- Über- und Unterschreitung der gültigen Rohrlängenvorgaben kann zu Undichtigkeiten führen.
- Kurze gerade Rohrstücke ohne Längenausgleich zwischen den Einbauenden vor Einbau auf Endmaß überprüfen und ggf. anpassen.
- Die gerade Verbindung zweier Fixpunkte ist zu vermeiden. Zum Spannungsausgleich sind Rohrbögen zu verwenden.
- Übersichtliche Anordnung anstreben.
- Leichter Zugang zu den Verbindungsstellen und zu Wartungskomponenten für Montage- und Wartungsarbeiten ermöglichen.
- Spannungsfreie Montage sicherstellen, Temperaturdehnungen ausgleichen, durch Berücksichtigung von Rohrbögen.
- Kompensation von Systembelastungen soweit wie möglich, Schwingungsdämpfung, Schwingungskopplung.
- Druckverlustarme Verlegung anstreben.

Weitere Hinweise für die Rohrverlegung und Gestaltung von hydraulischen Anlagen gibt die DIN 24346 sowie die Luftfahrtnorm DIN 65178.

Principles of laying

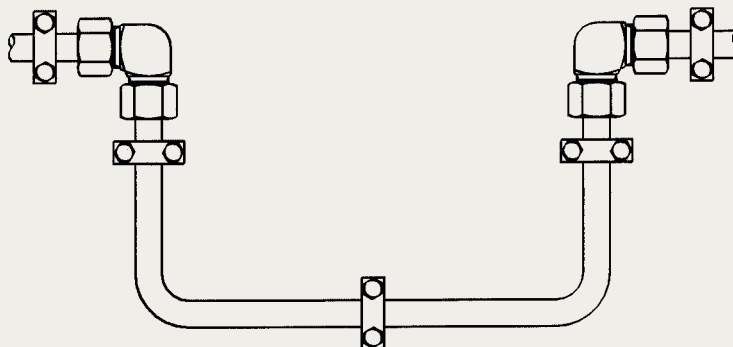
- Tube length differences and temperature dilatations have to be compensated by a corresponding length compensating pipe laying, e.g. tube bends.
- Exceeding the valid tube length settings and not achieving them can lead to leakage.
- Check the end measure of short straight pipe pieces without length compensation between the fitting ends prior to fitting and adapt, if necessary.
- Straight connection between two fixed points is to be avoided. Use pipe bends for stress compensation.
- Aim at a clear arrangement
- Enable easy access to the joints and to maintenance components for assembly and maintenance work.
- Guarantee a stressfree assembly, compensate temperature dilatations, by taking into account of tube bends
- Compensation of system stresses as far as possible, vibration damping, vibration decoupling
- Aim at a laying with low pressure drop

For further indications concerning the laying of pipes and the design of hydraulic installations, please see DIN 24346 as well as the aviation standard DIN 65178.

Principes d'installation

- Des différences d'allongement des tubes ainsi que des dilatations éventuelles dues aux différentes températures doivent être corrigées, p. ex. par des coudes compensateurs.
- Des tubes trop longs ou trop courts par rapport aux besoins peuvent entraîner des défauts d'étanchéité.
- Les parties de tubes courtes et droites sans compensation de longueur entre les extrémités doivent être vérifiées et adaptées, le cas échéant, avant la mise en place.
- La liaison droite entre deux points fixes est à proscrire. Pour compenser les tensions, mettre en place les coudes appropriés.
- Prévoir un montage clair et accessible.
- Permettre un accès aisé aux points de raccordement et aux composants pour montage, démontage et entretien.
- Assurer un montage hors contrainte, compenser des dilatations dues aux températures par la mise en place de coudes appropriés.
- Compensation des à-coups dans le système autant que possible, amortissement et absorption des vibrations.
- Prévoir une mise en place avec faible perte de pression.

Pour de plus amples informations en ce qui concerne les tuyauteries et leur mise en œuvre, voir la norme DIN 24346 pour les circuits hydrauliques et la norme DIN 65178 pour l'aéronautique.





Hinweise zur Befestigung

Rohrleitungen sind so zu befestigen, daß

- sie nicht unkontrolliert schwingen,
- sie nicht anliegen,
- ein gegenseitiges Berühren ausgeschlossen ist,
- die Art der Befestigung spannungsfreien Einbau gewährleistet,
- sie nicht zur Befestigung anderer Bauteile verwendet werden.

Ort der Befestigungen:

- Die erste Schelle soll unmittelbar nach der Anschlußverschraubung angebracht werden, Schwingungen werden hierdurch von der Verschraubung abgehalten - Tabelle 1.
- Rohrbögen sind unmittelbar vor und hinter den Bögen abzufangen.
- Es ist auf einen Mindestabstand der Schelle zur Überwurfmutter zu achten, um eine axiale Beweglichkeit der Überwurfmutter oder Überwurfschrauben für Demontagen zu gewährleisten - Tabelle 2.

Indications to fastening

Conduits have to be fastened so that

- they don't oscillate uncontrolled,
- they don't sit close,
- a mutual contact is excluded,
- the kind of fastening guarantees stressfree installation,
- they are not used for fastening of other components.

Fastening spot:

- The first clamp is to be directly fixed after the connection screwing, the screwing is thus prevented from vibrations - Table 1.
- Tube bends are to be directly blocked in front of and behind the bends.
- You have to pay attention to a minimum distance of the clamp to the union nut in order to guarantee an axial mobility of the union nuts or cap screws for dismantling - Table 2.

Informations sur la fixation

Les tuyauteries doivent être fixées de telle sorte

- qu'elles ne vibrent pas d'une manière incontrôlée,
- qu'elles ne soient pas en appui,
- qu'un contact réciproque n'est pas possible,
- que le mode de fixation permet une mise en place hors contrainte,
- qu'elles ne servent pas de fixation à d'autres composants.

Lieux de la fixation

- Il convient de disposer le premier collier juste après le raccordement, ainsi les vibrations ne seront pas transmises au raccord - voir tableau 1.
- Les coudes compensateurs doivent être fixés au moins avant et après les coudes.
- Le collier de fixation proche d'un écrou doit être positionné à une distance suffisante pour permettre un déplacement axial suffisant lors du démontage de l'écrou ou de la douille - voir tableau 2.

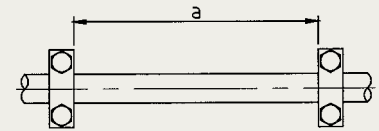


Tabelle 1 / Table 1 / Tableau 1

Empfohlene Befestigungsabstände (nach DIN 24346) Recommended fastening distances (as per DIN 24346) Distance recommandée de fixation (suivant DIN 24346)	
Rohraußendurchmesser RAD (mm) Tube outside diameter RAD (mm) Dia. ext. du tube (mm)	Maximaler Schellenabstand a (m) Maximum clamp distance a (m) Distance maxi du collier a (m)
6-10	1
10-25	1,5
über/over/plus de 25	2,0

Die Angaben sind Richtwerte, genauere Angaben sind den Herstellerangaben von Rohrschellen zu entnehmen.

These indications are only approximate values. For further details, please see the indications of the manufacturers of the pipe clamps.

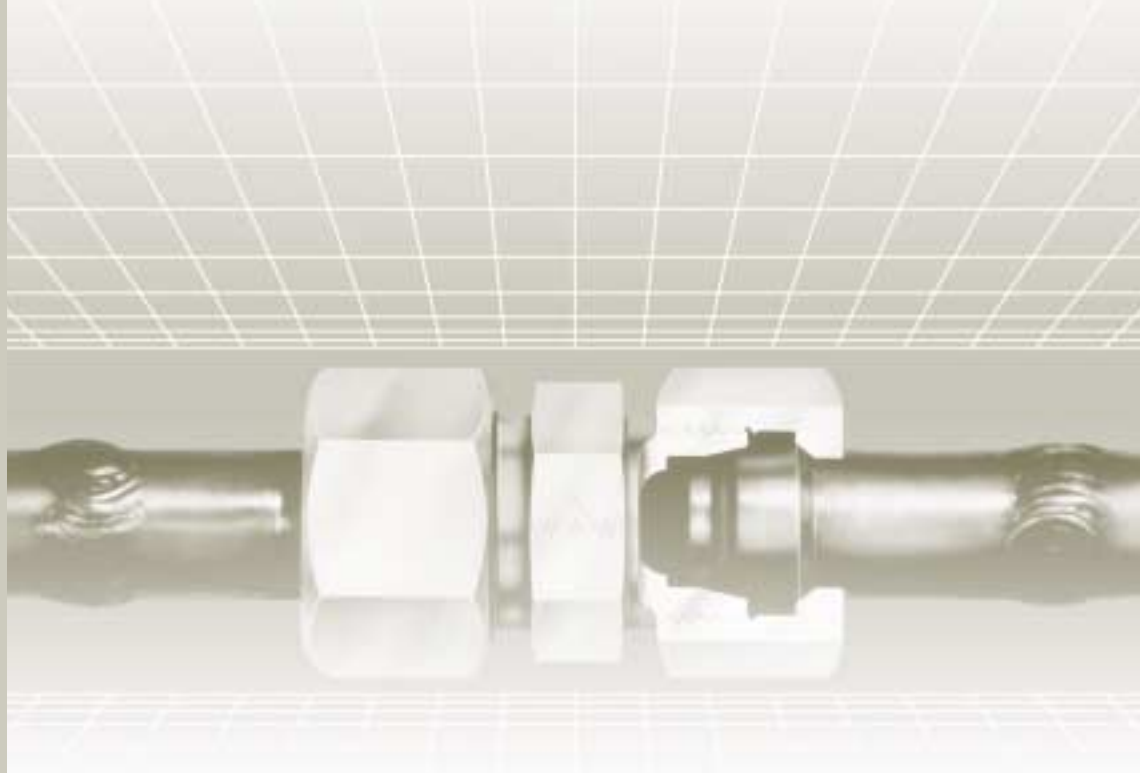
Les données sont communiquées ici à titre de recommandation. Pour des valeurs plus précises, se reporter aux documents du constructeur des colliers.

Tabelle 2 / Table 2 / Tableau 2

Axialer Freiraum für Überwurfmutter (min) Axial clearance for union nut (min) Espace libre axial pour l'écrou	
Rohraußendurchmesser RAD (mm) Tube outside diameter RAD (mm) Dia. ext. du tube (mm)	Abstandsmaß Schelle/Mutter (mm) Distance measure Clamp/Nut (mm) Distance entre collier/écrou (mm)
6, 8	13
10, 12, 15	15
16	16,5
18	15,5
20	19,5
22, 25	22,5
28	17,5
30	25,5
35	22,5
38	31,5
42	26

Verlegungsbeispiele / Examples for laying / Exemples d'installation	
günstig / favourable / favorable	ungünstig / unfavourable / défavorable



**C**

Montageanleitung
Assembly instructions
Instructions de montage

Schweißnippel-Verschraubung
Welding nipple fitting
Raccord à embout à souder

DIN 3865

Rohrauswahl

Es ist eine kaltbiege- und bördelfähige Rohrqualität zu verwenden. Wir empfehlen die Verwendung von nahtlosem Präzisionsstahlrohr, Werkstoff St 37.4 bzw. St 52.4 gemäß DIN 1630, Ausführung NBK - 3.1 B. Toleranzen der Rohraußen- und Innendurchmesser nach DIN 2391, Teil 1-C. Berechnungsdrücke nach DIN 2413.

Tube selection

A tube grade suitable for cold-bending and flaring is to be used. We recommend the use of seamless precision steel, material St 37.4 / St 52.4 to DIN 1630, type NBK-3.1 B. Tolerances of tube outside and inside diameters to DIN 2391, sheet 1-C. Calculated pressure according to DIN 2413.

Sélection de tube

On utilisera un tube dont la qualité est apte au cintrage à froid et à l'évasement. Nous recommandons l'utilisation de tubes de précision en acier, sans soudure, matériau St 37.4 ou St 52.4 selon la norme DIN 1630, type NBK-3.1 B. Tolérances des diamètres extérieurs et intérieurs des tubes selon DIN 2391, folio 1-C. Pressions théoriques selon DIN 2413.

1. Rohrlängenbestimmung

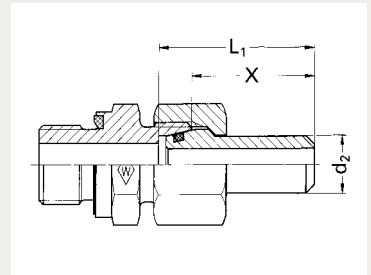
Die Rohrlängenbestimmung erfolgt durch Messen von Stirnseite Verschraubungsstutzen bis Stirnseite Verschraubungsstutzen. Es ist dann je Rohranschluß das Maß X abzuziehen. Bei Änderung von Schneidring auf Schweißnippel ist das Rohrende um das Maß L₁ zu kürzen.

1. Tube length determination

Measure the distance between the fitting body face ends. Then deduct dimension X from each fitting. When welding nipples are used to replace cutting rings, the tube end must be shortened by dimension L₁.

1. Détermination de la longueur du tube

La longueur exacte d'un tube se mesure entre les deux extrémités des corps de raccords correspondants. Pour chaque raccordement, il faut alors déduire de cette longueur la cote X. L'extrémité du tube doit être raccourci de la cote L₁ lors d'un changement de bague coupante à l'embout à souder.

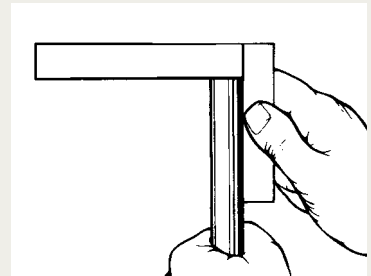


Rohr-AD Tube OD Tube Ø ext.	d ₂	L ₁	x
8	8	32	25
10	10	33,5	26
12	12	33,5	26
16	16	40,5	32
20	20	47	36,5
25	25	53,5	41,5
30	30	57,5	44
38	38	64,5	48,5

2. Rohr rechtwinklig abtrennen!

2. Cut the tube at right angles!

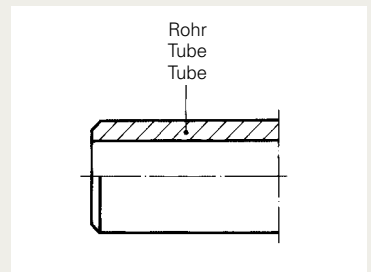
2. Couper le tube à angle droit!



3. Rohrende zum Schweißen außen anfasen, innen leicht entgraten. Reinigen!

3. Chamfer tube end at the outside and lightly debur at the inside for welding. Clean!

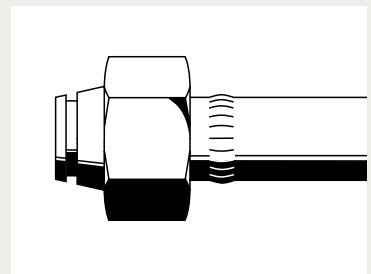
3. Chanfreiner l'extrémité du tube à l'extérieur et l'ébavurer légèrement à l'intérieur pour le soudage. Nettoyer!



4. Überwurfmutter wie abgebildet auf Schweißnippel schieben. Schweißnippel und Rohr nach Schweißrichtlinien verschweißen. Schweißstelle entzundern und O-Ring Nut reinigen.

4. Place the nut on the welding nipple, as shown. Weld nipple and tube according to the applicable guidelines for welding. Descal the weld and clean the O-ring groove.

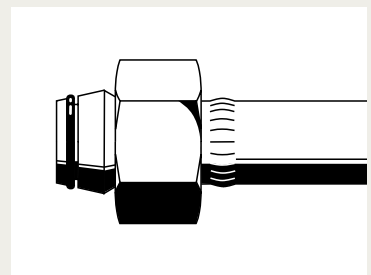
4. Mettre l'écrou sur l'embout à souder comme figuré. Souder l'embout et le tube suivant les procédés de soudure habituels. Décalaminer la soudure et nettoyer la gorge du joint torique.



5. Lose mitgelieferten O-Ring aufziehen. Gewinde und O-Ring ölen. **Beachten!** O-Ring darf nicht verdreht sein.

5. Place the separately supplied O-ring. Oil the thread and the O-ring. **Important!** O-ring must not be twisted.

5. Placer le joint torique. Huiler le filetage et le joint torique. **Important!** Le joint torique ne doit pas être vrillé.



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6. Fertigmontage

Überwurfmutter von Hand festziehen. Überwurfmutter 1/3 Umdrehung über den Punkt des deutlich spürbaren Kraftanstiegs anziehen. (Verschraubungsstutzen mit Schlüssel gegenhalten.)

Beachten! Rohr mit Schweißnippel muß spannungsfrei verschraubt werden.

Achtung! Abweichende Anzugswege reduzieren die Nenndruckleistung und die Lebensdauer der Verschraubung. Leckagen oder andere Ausfallursachen sind die Folge.

7. Wiederholungsmontage

Nach jedem Lösen der Verbindung ist der Wiederanzug der Überwurfmutter ohne erhöhten Kraftaufwand vorzunehmen (Verschraubungsstutzen mit Schlüssel gegenhalten).

6. Final assembly

Tighten nut by hand. Tighten nut further by 1/3 of a turn beyond the point of a noticeable increase in force. (Hold the fitting body by means of a spanner).

Important! When assembling welding nipples, torsion in the connecting tube must be avoided.

Caution! Application of deviating numbers of tightening turns reduces the nominal pressure rating and the life of the fitting which results in leakages or other causes of failure.

7. Re-assembly

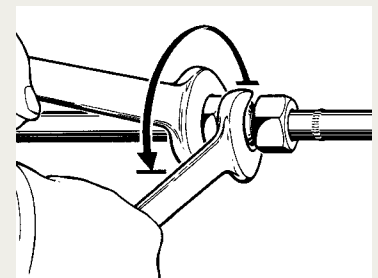
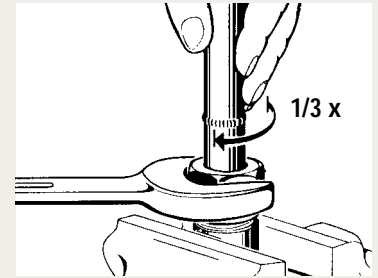
Each time the connection has been uncoupled, re-tightening the nut should be done without excessive force. (Hold the fitting body by means of a spanner).

6. Montage final

Visser l'écrou à la main. Serrer l'écrou de 1/3 de tour à partir du point dur. (Maintenir le corps du raccord avec une clef).

Important! Le tube muni de l'embout à souder doit être raccordé sans tension.

Attention! Tout écart du nombre de tour de serrage prescrit donne lieu à une réduction de la pression nominale et de la vie du raccord, se qui entraîne des fuites ou d'autres causes de défaillance.



Reihe Series Série	Rohr-AD Tube OD Tube Ø ext.	Montagedrehmoment Assembly torque Couple de montage [Nm]
L	6	20
	8	25
	10	45
	12	50
	15	60
	18	70
	22	130
	28	180
	35	300
	42	320
S	6	20
	8	35
	10	50
	12	65
	14	70
	16	85
	20	135
	25	170
	30	280
	38	320



Montage der Dichtkegel-Verschraubung

O-Ring ölen. Rohranschluß in gewünschte Richtung ausrichten und Überwurfmutter von Hand festziehen. Überwurfmutter 1/3 Umdrehung über den Punkt des deutlich spürbaren Kraftanstiegs anziehen.

Wichtig: Verschraubungsstützen mit Schlüssel gegenhalten.

Achtung! Abweichende Anzugswege reduzieren die Nenndruckleistung und die Lebensdauer der Verschraubung. Leckagen oder Herausrutschen der Verschraubung sind die Folge.

Assembly of taper fitting

Oil O-ring. Set the tube connection to the desired direction and tighten the nut by hand. Tighten nut 1/3 of a turn beyond the point of a noticeable increase in force.

Important: Hold fitting body firmly by means of a spanner.

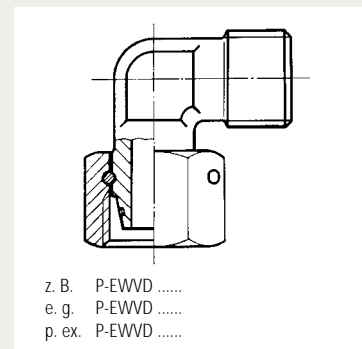
Caution! Any deviating number of tightening turns reduces the nominal pressure and the service life of the fitting which causes leakages or slipping of the fitting.

Montage du raccord avec cône d'étanchéité

Huiler le joint torique. Aligner le raccord sur le tube à la direction désirée et visser l'écrou à la main. Serrer l'écrou de 1/3 de tour à partir du point dur.

Important: Maintenir le corps du raccord avec une clef.

Attention! Toute course de serrage divergeante entraîne une réduction de la pression nominale admissible et de la durée de vie du raccord, ce qui provoque des fuites ou le désengagement du raccord.



Reihe Series Série	Rohr-AD Tube OD Tube Ø ext. [mm]	Montagedrehmoment Assembly torque Couple de montage [Nm]
L	6	20
	8	25
	10	45
	12	50
	15	60
	18	70
	22	130
	28	180
	35	300
S	42	320
	6	20
	8	35
	10	50
	12	65
	14	70
	16	85
	20	135
	25	170
30	280	
38	320	



Montage der Schaftteile

Schaftteile werden grundsätzlich mit vormontiertem Profilring angeliefert. Fertigmontage: Rohranschluß in gewünschte Richtung ausrichten und Überwurfmutter von Hand festziehen. Überwurfmutter 1/2 Umdrehung über den Punkt des spürbaren Kraftanstiegs anziehen.

Wichtig: Verschraubungsstützen mit Schlüssel gegenhalten.

Bei ungünstigen Montagebedingungen und bei großen Rohrabmessungen ist die Fertigmontage im Schraubstock durchzuführen. Hierfür denselben Verschraubungsstützen wie für den Einbau verwenden.

Achtung! Abweichende Anzugswege reduzieren die Nenndruckleistung und die Lebensdauer der Verschraubung. Leckagen oder Herausrutschen des Rohres sind die Folge.

Standpipe assembly

Standpipes are generally supplied with pre-assembled profile ring. Final assembly: Set the tube connection to the desired direction and tighten the nut by hand. Tighten nut by 1/2 a turn beyond the point of a noticeable increase in force.

Important: Hold fitting body firmly by means of a spanner.

With unfavourable mounting conditions and great tube dimensions, final assembly must be completed in a vice with the fitting body to be subsequently installed.

Caution! Any deviating number of tightening turns reduces the nominal pressure and the service life of the fitting which causes leakages or slipping of the fitting.

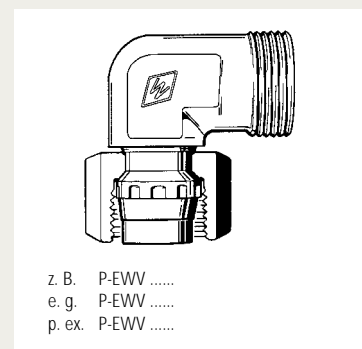
Montage d'embouts lisses

Les embouts lisses sont généralement fournis avec bague profilée pré-sertie. Montage final: Aligner le raccord sur le tube à la direction désirée et visser l'écrou à la main. Serrer l'écrou de 1/2 tour à partir du point dur.

Important: Maintenir le corps du raccord avec une clef.

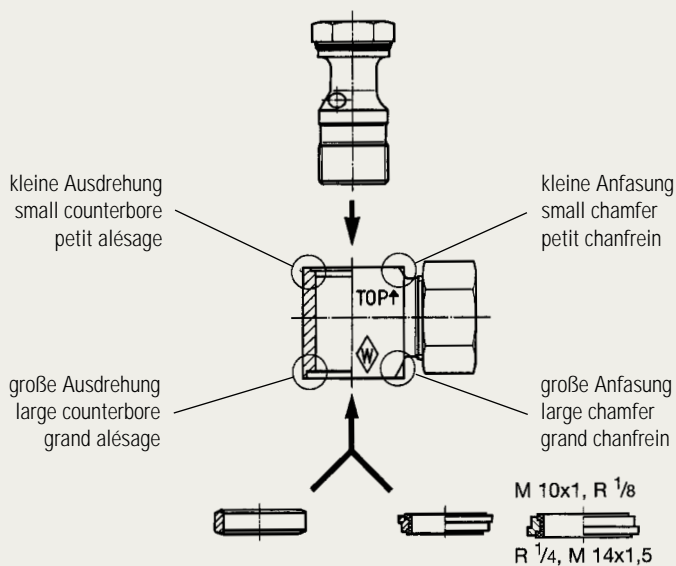
Pour des conditions de montage défavorables et l'emploi de grandes dimensions de tube, le montage final doit être exécuté dans l'étau avec le corps du raccord utilisé lors de l'installation ultérieure.

Attention! Toute course de serrage divergeante entraîne une réduction de la pression nominale admissible et de la durée de vie du raccord, ce qui provoque des fuites ou le désengagement du raccord.



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1. Einschraubgewinde und O-Ring der Hohl-
 schraube ölen.

2. Hohl-
 schraube durch das Schwenkgehäuse stecken
 (in die Seite mit der kleinen Ausdrehung).

3. Dichtkantenring oder Weichdichtungsring in die
 große Ausdrehung am Gehäuse einlegen. - Zentrie-
 rung über das Hohl-
 schraubengewinde, beim Weich-
 dichtungsring zusätzlich über die Ausdrehung im
 Gehäuse (kein Spiel zwischen Dicht-
 ring und Gehäuse
 zulässig; für die Gewinde M 10x1, R 1/8, R 1/4 und
 M 14x1,5 paßt nur der kleinere Durchmesser des
 Dicht-
 ringes in die Gehäuse-
 ansenkung, in den rest-
 lichen Abmessungen der größere).

4. Schwenkgehäuse ausrichten und Hohl-
 schraube mit dem Schraubenschlüssel bis zum Punkt des
 deutlich ansteigenden Drehmomentes (Druckpunkt)
 anziehen.

5.1 Mit Weichdichtungsring: Hohl-
 schraube mit dem Schraubenschlüssel unter Gegenhalten des
 Gehäuses 1/6 Umdrehung (60°) nach dem Druck-
 punkt anziehen.

5.2 Mit Dichtkantenring: Hohl-
 schraube mit dem Schraubenschlüssel unter Gegenhalten des Gehäuses
 1/4 Umdrehung (90°) nach dem Druckpunkt
 anziehen. Die Verschraubung ist hiermit fixiert und
 abgedichtet. Montage-Drehmomente auf Anfrage.

Achtung: In der Weichdichtungs-
 version kleinerer Anzugs-
 weg und geringeres Anzugs-
 drehmoment als bei der Schwenk-
 verschraubung mit Dichtkantenring.

6. Wiederholmontagen sind möglich. O-
 Ring und Weichdichtung auf Beschädigungen kontrollieren,
 ggf. austauschen .

Achtung: Abweichende Anzugs-
 wege reduzieren die
 Nenndruckleistung und die Lebens-
 dauer der Ver-
 schraubung. Leckagen oder andere Ausfall-
 ursachen sind die Folge.

1. Oil port thread and O-ring of bolt.

2. Insert bolt into banjo body (on the side with the
 small counterbore).

3. Place sealing edge ring or captive sealing ring into
 the large counterbore of the body. - Centering
 through the bolt thread. Captive sealing rings are
 additionally centered through the counterbore in the
 body (clearance between ring and body not permissi-
 ble; with threads M 10x1, R 1/8, R 1/4 and
 M 14x1.5, only the small diameter of the captive
 sealing ring fits into the counterbore of the body,
 whereas for all other threads the large diameter
 matches the counterbore).

4. Align banjo body and tighten bolt with spanner
 until a noticeable increase in torque is required
 (pressure point).

5.1 With captive sealing ring:

Tighten bolt with spanner by 1/6 of a turn (60°)
 beyond the pressure point while holding the body
 in position.

5.2 With sealing edge ring:

Tighten bolt with spanner by 1/4 of a turn (90°)
 beyond the pressure point while holding the body
 in position. The fitting is thus fixed and sealed.
 Assembly torques upon request.

Caution: For the version with captive seal, the
 tightening travel is shorter and the tightening torque
 lower than for the banjo fitting with sealing edge
 ring.

6. Repeated reassembly is possible. Check O-ring
 and captive seal for any damage and replace if
 necessary.

Caution: Deviating numbers of tightening turns
 cause a reduction in nominal pressure and service
 life. This results in leakages or other causes of
 failure.

1. Huiler le filetage mâle et le joint torique du
 goujon creux.

2. Passer le goujon creux à travers le corps orienta-
 ble (du côté au petit alésage).

3. Mettre la rondelle à arête d'étanchéité ou
 l'anneau joint mou dans le grand alésage du corps.
 Le centrage est assuré par le filetage du goujon
 creux. L'anneau joint mou est en plus centré par
 l'alésage du corps (aucun jeu entre l'anneau joint
 mou et le corps n'est admissible; pour les filetages
 M 10x1, R 1/8, R 1/4 et M 14x1,5, seul le petit
 diamètre de l'anneau joint mou s'adapte à l'alésage
 dans le corps. Pour tout autre filetage, le grand
 diamètre est à la mesure de l'alésage).

4. Aligner le corps orientable et, à l'aide d'une clef,
 visser le goujon creux jusqu'à l'augmentation nette
 du couple de serrage (point dur).

5.1 Avec anneau joint mou:

Visser le goujon creux à l'aide d'une clef de 1/6 de
 tour (60°) à partir du point dur en maintenant le
 corps.

5.2 Avec rondelle à arête d'étanchéité:

Visser le goujon creux à l'aide d'une clef de 1/4 de
 tour (90°) à partir du point dur en maintenant le
 corps. Le raccord est ainsi immobilisé et étanche.
 Couples de montage sur demande.

Attention: Le nombre de tours de serrage et le
 couple de serrage requis pour la version avec joint
 mou sont moins élevés que pour le raccord orienta-
 ble avec rondelle à arête d'étanchéité.

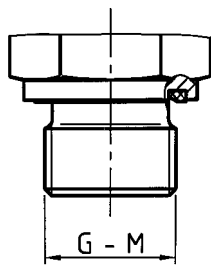
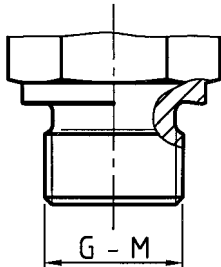
6. Possibilité de remontages. Contrôler le joint
 torique et le joint mou pour toute détérioration
 éventuelle, et les remplacer le cas échéant.

Attention: Tout nombre de tours de serrage diver-
 geant entraîne une réduction de la pression
 nominale et de la durée de vie du raccord ce qui
 donne lieu à des fuites ou d'autres causes de
 défaillance.



Form B
 Form B
 Forme B

Form E
 Form E
 Forme E

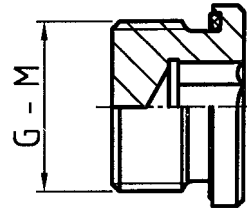


Reihe Series Série	G-M	Richtwert / Standard value / Valeur de référence	
		Form B / form B / forme B Md [Nm]	Form E / form E / forme E Md [Nm]
L	M 10 x 1	18	18
	M 12 x 1,5	30	25
	M 14 x 1,5	45	45
	M 16 x 1,5	65	55
	M 18 x 1,5	80	70
	M 22 x 1,5	140	125
	M 26 x 1,5	190	180
	M 33 x 2	340	310
	M 42 x 2	500	450
	M 48 x 2	630	540
S	M 12 x 1,5	35	35
	M 14 x 1,5	55	55
	M 16 x 1,5	70	70
	M 18 x 1,5	110	90
	M 20 x 1,5	150	125
	M 22 x 1,5	170	135
	M 27 x 2	270	180
	M 33 x 2	410	310
	M 42 x 2	540	450
	M 48 x 2	700	540
L	G 1/8 A	18	18
	G 1/4 A	35	35
	G 1/4 A	35	35
	G 3/8 A	70	70
	G 1/2 A	140	90
	G 1/2 A	100	90
	G 3/4 A	180	180
	G 1 A	330	310
	G 1 1/4 A	540	450
	G 1 1/2 A	630	540
S	G 1/4 A	55	55
	G 1/4 A	55	55
	G 3/8 A	90	80
	G 3/8 A	90	80
	G 1/2 A	130	115
	G 1/2 A	130	115
	G 3/4 A	270	180
	G 1 A	340	310
	G 1 1/4 A	540	450
	G 1 1/2 A	700	540

Verschlusschrauben
 VS-... R-WD, VS-... M-WD

Blanking ends
 VS-... R-WD, VS-... M-WD

Vis d'obturation
 VS-... R-WD, VS-... M-WD



G-M	PN	Richtwert / Standard value / Valeur de référence Md [Nm]	
G 1/8 A	400	10	
G 1/4 A		30	
G 3/8 A		40	
G 1/2 A		80	
G 3/4 A		120	
G 1 A		200	
G 1 1/4 A	250	350	
G 1 1/2 A		400	
G 1 1/4	400	400	
G 1 1/2		500	
M 10 x 1	400	10	
M 12 x 1,5		20	
M 14 x 1,5		30	
M 16 x 1,5		40	
M 18 x 1,5		50	
M 20 x 1,5		60	
M 22 x 1,5		80	
M 26 x 1,5		100	
M 27 x 2		120	
M 33 x 2		200	
M 42 x 2	250	350	
M 48 x 2		400	
M 42 x 2	400	400	
M 48 x 2		500	

Hinweis:

Einschraubzapfen vor dem Einschrauben einölen!
 Anzugsdrehmomente beziehen sich auf den Gegenwerkstoff Stahl.

Note:

Lubricate stud before screwing in!
 Tightening torques relate to counterpart made of steel.

Remarque:

Lubrifier l'implantation avant de la visser!
 Les couples de serrage sont valables pour une pièce réceptive en acier.













Zulässige Toleranz der Tabellenwerte + 10%

Permissible tolerance of the values indicated in the tables + 10%

Tolérance admissible des valeurs du tableau + 10%

C

C

		Abb. Fig. Fig.	Typ Type Désignation	Seite Page Page
Rohr-Anschlußteile für Profilring-Rohrverschraubungen Nuts and rings for profile ring tube fittings Éléments de raccord pour raccords à bague profilée	Überwurfmutter Nut Ecrou		M...	D2
	Profiling Profile ring Bague profilée		P-R...	D2
Rohr-Anschlußteile für WALFORM-Rohrverschraubungen Nuts and rings for WALFORM tube fittings Éléments de raccord pour raccords à WALFORM	Überwurfmutter Nut Ecrou		M...	D3
	Weichdichtung Captive seal Joint mou		WF-WD...	D3
	Stützring Support sleeve Bague d'appui			D3
Bördel-Anschlußteile für Bördel-Rohrverschraubungen Connecting parts for flare tube fittings Pièces de raccordement pour raccords pour tube évasé	Bördel-Anschlußteile Connecting parts for flare tube fitting Pièces de raccordement pour raccords pour tube évasé	  	BO-A...	D4
	Zwischenring Centre unit Cône intermédiaire		BO-ZR...	D5
	Druckring Loose sleeve Manchette		BO-DR...	D6
	Überwurfmutter Nut Ecrou		BO-M...	D7
	Schutzkappe für Zwischenring, rohseitig Protection cap for centre unit, tube end Capuchon protecteur pour cône intermédiaire, côté tube			D8

Rohr-Anschlußteile für Profiling-Rohrverschraubungen
 Nuts and rings for profile ring tube fittings
 Éléments de raccord pour raccords à bague profilée

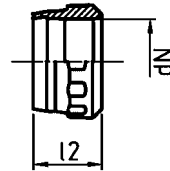
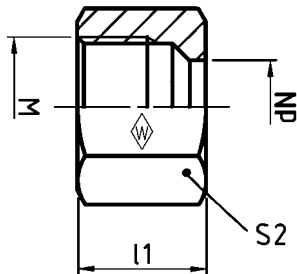


M

Überwurfmutter
 Nut
 Ecrou

P-R

Profiling
 Profile ring
 Bague profilée



Reihe Series Série	PN bar (psi)	Rohr-AD Tube OD Ø ext. d _N	Typ Type Désignation	Best.-Nr. Reference Réf.	kg per 100 St. kg per 100 pcs.			Typ Type Désignation	Best.-Nr. Reference Réf.	kg per 100 St. kg per 100 pcs.		
					M	l ₁	S ₂			l ₂		
LL	100 (1450)	4	M 4 LL	039838	0,4	M 8 x 1	11	10	S-R 4 LL	039862	0,05	6
		6	M 6 LL	039840	0,5	M 10 x 1	11,5	12	S-R 6 LL	039864	0,09	7
		8	M 8 LL	039841	0,7	M 12 x 1	12	14	S-R 8 LL	039865	0,1	7
L	500 (7252)	6	M 6 L	039842	0,9	M 12 x 1,5	14,5	14	P-R 6 L/S	372404	0,2	9,8
		8	M 8 L	039843	1,4	M 14 x 1,5	14,5	17	P-R 8 L/S	372405	0,29	9,5
		10	M 10 L	039844	2,0	M 16 x 1,5	15,5	19	P-R 10 L/S	372406	0,39	10
	400 (5801)	12	M 12 L	039845	2,5	M 18 x 1,5	15,5	22	P-R 12 L/S	372407	0,45	9,5
		15	M 15 L	039846	4,0	M 22 x 1,5	17	27	P-R 15 L	372408	0,58	9,8
		18	M 18 L	039847	6,0	M 26 x 1,5	18	32	P-R 18 L	372409	0,73	9,8
		22	M 22 L	039848	8,0	M 30 x 2	20	36	P-R 22 L	372410	0,86	10,5
250 (3626)	28	M 28 L	039849	8,5	M 36 x 2	21	41	P-R 28 L	372411	1,17	11	
	35	M 35 L	039850	13,0	M 45 x 2	24	50	P-R 35 L	372412	2,31	13	
S	800 (11603)	42	M 42 L	039851	21,0	M 52 x 2	24	60	P-R 42 L	372413	2,83	13
		6	M 6 S	039852	1,5	M 14 x 1,5	16,5	17	P-R 6 L/S	372404	0,2	9,8
		8	M 8 S	039853	1,7	M 16 x 1,5	16,5	19	P-R 8 L/S	372405	0,29	9,5
	630 (9137)	10	M 10 S	039854	3,0	M 18 x 1,5	17,5	22	P-R 10 L/S	372406	0,39	10
		12	M 12 S	039855	3,5	M 20 x 1,5	17,5	24	P-R 12 L/S	372407	0,45	9,5
		14	M 14 S	039856	5,0	M 22 x 1,5	20,5	27	P-R 14 S	372414	0,61	10
	420 (6091)	16	M 16 S	039857	6,0	M 24 x 1,5	20,5	30	P-R 16 S	372415	0,74	10,3
		20	M 20 S	039858	9,5	M 30 x 2	24	36	P-R 20 S	372416	1,13	12
		25	M 25 S	039859	19,5	M 36 x 2	27	46	P-R 25 S	372417	1,53	12
		30	M 30 S	039860	21,5	M 42 x 2	29	50	P-R 30 S	372418	2,13	13
38	M 38 S	039861	31,0	M 52 x 2	32,5	60	P-R 38 S	372419	2,55	13		

Rohr-Anschlußteile für WALFORM-Rohrverschraubungen
 Nuts and rings for WALFORM tube fittings
 Eléments de raccord pour raccords à WALFORM



M

Überwurfmutter

Nut

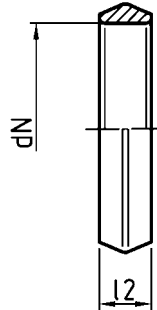
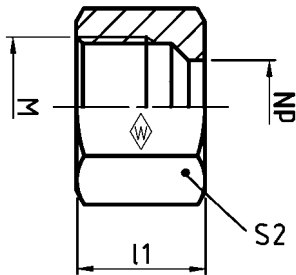
Ecrou

WF-WD

WALFORM-Weichdichtung FPM* (z. B. Viton)

WALFORM capitive seal FPM* (e. g. Viton)

Joint mou WALFORM FPM* (p. ex. Viton)



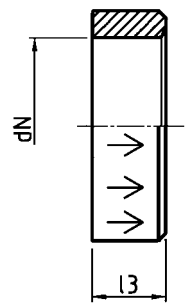
D

Reihe Series Série	PN bar (psi)	Rohr-AD Tube OD Tube Ø ext. d _N	Typ Type Désignation	Best.-Nr. Reference Réf.	kg per 100 St. kg per 100 pcs. kg par 100 p.	M	l ₁	l ₂	S ₂	Typ Type Désignation	Best.-Nr. Reference Réf.
L	500 (7252)	6	M 6 L	039842	0,9	M 12 x 1,5	14,5	2,7	14	WF-WD 6 L/S VI	610871
		8	M 8 L	039843	1,4	M 14 x 1,5	14,5	2,7	17	WF-WD 8 L/S VI	610872
		10	M 10 L	039844	2,0	M 16 x 1,5	15,5	2,95	19	WF-WD 10 L/S VI	610873
	400 (5801)	12	M 12 L	039845	2,5	M 18 x 1,5	15,5	2,95	22	WF-WD 12 L/S VI	610874
		15	M 15 L	039846	4,0	M 22 x 1,5	17	2,95	27	WF-WD 15 L VI	610875
		18	M 18 L	039847	6,0	M 26 x 1,5	18	2,95	32	WF-WD 18 L VI	610877
	250 (3626)	22	M 22 L	039848	8,0	M 30 x 2	20	2,95	36	WF-WD 22 L VI	610879
		28	M 28 L	039849	8,5	M 36 x 2	21	2,95	41	WF-WD 28 L VI	610881
		35	M 35 L	039850	13,0	M 45 x 2	24	3,5	50	WF-WD 35 L VI	610883
		42	M 42 L	039851	21,0	M 52 x 2	24	3,5	60	WF-WD 42 L VI	610885
S	800 (11603)	6	M 6 S	039852	1,5	M 14 x 1,5	16,5	2,7	17	WF-WD 6 L/S VI	610871
		8	M 8 S	039853	1,7	M 16 x 1,5	16,5	2,7	19	WF-WD 8 L/S VI	610872
		10	M 10 S	039854	3,0	M 18 x 1,5	17,5	2,95	22	WF-WD 10 L/S VI	610873
	630 (9137)	12	M 12 S	039855	3,5	M 20 x 1,5	17,5	2,95	24	WF-WD 12 L/S VI	610874
		16	M 16 S	039857	6,0	M 24 x 1,5	20,5	2,95	30	WF-WD 16 S VI	610876
	420 (6091)	20	M 20 S	039858	9,5	M 30 x 2	24	3,7	36	WF-WD 20 S VI	610878
		25	M 25 S	039859	19,5	M 36 x 2	27	3,7	46	WF-WD 25 S VI	610880
		30	M 30 S	039860	21,5	M 42 x 2	29	3,85	50	WF-WD 30 S VI	610882
		38	M 38 S	039861	31,0	M 52 x 2	32,5	3,5	60	WF-WD 38 S VI	610884

* NBR (z. B. Perbunan) auf Anfrage
 * NBR (e. g. Perbunan) on request
 * NBR (p. ex. Perbunan) sur demande

Stützringe für dünne Rohrwandstärken
 Support sleeves for thin-walled tubes
 Bagues d'appui pour des tubes à paroi mince

Abmessungen Dimensions Dimensions	Rohr-AD Tube OD Tube Ø ext. d _N	Typ Type Désignation	WF-WD-Stützring... Support sleeves WF-WD... Bague d'appui WF-WD...	Best.-Nr. Reference Réf.	l ₃
6 x 1,0	6	6 x 1,0 L/S A3L		612582	4,6
8 x 1,0	8	8 x 1,0 L/S A3L		612544	4,6
10 x 1,0	10	10 x 1,0 L/S A3L		612545	5,1
12 x 1,0	12	12 x 1,0 L/S A3L		612546	5,1



Bördel-Anschlußteile für Bördel-Rohrverschraubungen
 Connecting parts for flare tube fittings
 Pièces de raccordement pour raccords pour tube évasé

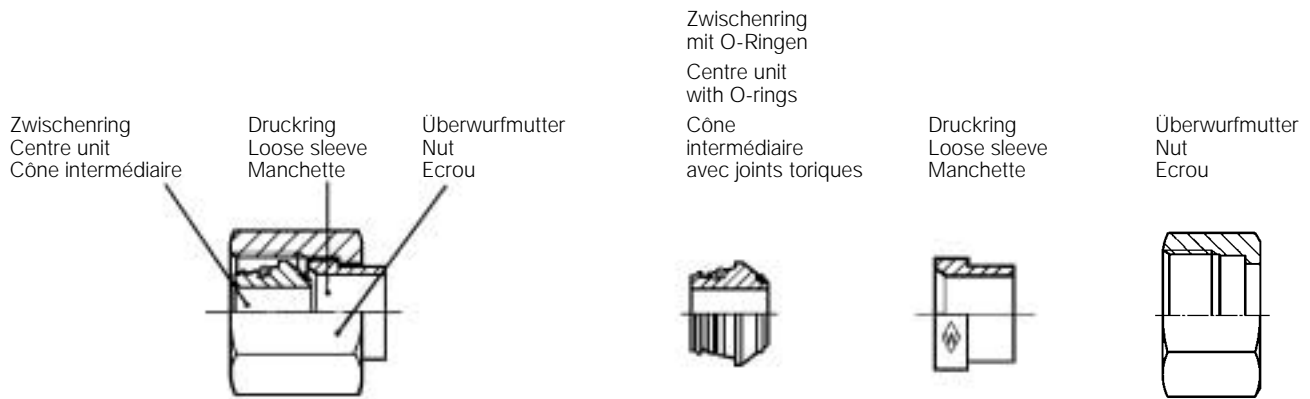


BO-A

Bördel-Anschlußteile bestehend aus:

Connecting parts for flare tube fitting consisting of:

Pièces de raccordement pour raccords pour tube évasé composées de:



Reihe Series Série	PN bar (psi)	Rohr-AD Tube OD Tube Ø ext.	Anschlußteile Connecting parts Pièces de raccordement	Best.-Nr. Reference Réf.	kg per 100 St. kg per 100 pcs. kg par 100 p.	Zwischenring mit O-Ringen Centre unit with O-rings Cône inter- médiaire avec joints toriques	Druckring Loose sleeve Manchette	Überwurfmutter Nut Ecrou
L	500 (7252)	6	BO-A 6 L	374800	1,6	BO-ZR 6 L/S	BO-DR 6 L/S	BO-M 6 L
		8	BO-A 8 L	374801	2,4	BO-ZR 8 L/S	BO-DR 8 L/S	BO-M 8 L
		10	BO-A 10 L	374802	3,2	BO-ZR 10 L/S	BO-DR 10 L/S	BO-M 10 L
	400 (5801)	12	BO-A 12 L	374803	4,4	BO-ZR 12 L/S	BO-DR 12 L/S	BO-M 12 L
		15	BO-A 15 L	374804	7,2	BO-ZR 15 L	BO-DR 15 L	BO-M 14 S/15 L
		18	BO-A 18 L	374805	10,1	BO-ZR 18 L	BO-DR 18 L	BO-M 18 L
	250 (3626)	22	BO-A 22 L	374806	14,2	BO-ZR 22 L	BO-DR 22 L	BO-M 20 S/22 L
28		BO-A 28 L	374807	15,9	BO-ZR 28 L	BO-DR 28 L	BO-M 28 L	
35		BO-A 35 L	374808	25,5	BO-ZR 35 L	BO-DR 35 L	BO-M 35 L	
42		BO-A 42 L	374809	42,2	BO-ZR 42 L	BO-DR 42 L	BO-M 42 L	
S	630 (9137)	6	BO-A 6 S	374810	2,4	BO-ZR 6 L/S	BO-DR 6 L/S	BO-M 6 S
		8	BO-A 8 S	374811	3,1	BO-ZR 8 L/S	BO-DR 8 L/S	BO-M 8 S
		10	BO-A 10 S	374812	4,5	BO-ZR 10 L/S	BO-DR 10 L/S	BO-M 10 S
	12	BO-A 12 S	374813	5,4	BO-ZR 12 L/S	BO-DR 12 L/S	BO-M 12 S	
		14	BO-A 14 S	374814	7,6	BO-ZR 14 S	BO-DR 14 S	BO-M 14 S/15 L
	16	BO-A 16 S	374815	10,8	BO-ZR 16 S	BO-DR 16 S	BO-M 16 S	
	20	BO-A 20 S	374816	15,5	BO-ZR 20 S	BO-DR 20 S	BO-M 20 S/22 L	
	400 (5801)	25	BO-A 25 S	374817	26,7	BO-ZR 25 S	BO-DR 25 S	BO-M 25 S
30		BO-A 30 S	374818	33,0	BO-ZR 30 S	BO-DR 30 S	BO-M 30 S	
38		BO-A 38 S	374819	51,5	BO-ZR 38 S	BO-DR 38 S	BO-M 38 S	

Bördel-Anschlußteile für Bördel-Rohrverschraubungen
 Connecting parts for flare tube fittings
 Pièces de raccordement pour raccords pour tube évasé

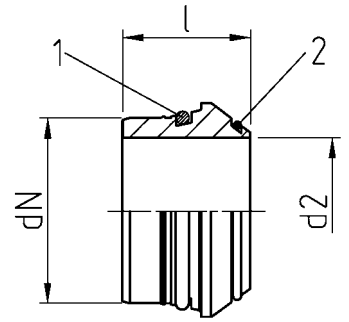


BO-ZR

Zwischenring
 mit O-Ringen NBR* (z. B. Perbunan)

Centre unit
 with O-rings NBR* (e. g. Perbunan)

Cône intermédiaire
 avec joints toriques NBR* (p. ex. Perbunan)



Reihe Series Série	PN bar (psi)	Rohr-AD Tube OD Ø ext. d _N	Typ Type Désignation	Best.-Nr. Reference Réf.	kg per 100 St. kg per 100 pcs. kg par 100 p.	d ₂	l	*O-Ring 1 *O-ring 1 *Joint torique 1	*O-Ring 2 *O-ring 2 *Joint torique 2
L	500 (7252)	6	BO-ZR 6 L/S	374408	0,3	3	11,5	4,5 x 1,5	4,4 x 0,8
		8	BO-ZR 8 L/S	374409	0,4	5	12	6 x 1,5	6 x 0,8
		10	BO-ZR 10 L/S	374410	0,6	6	12,5	8,5 x 1,5	7,5 x 0,8
	400 (5801)	12	BO-ZR 12 L/S	374411	0,8	8	12,5	10 x 1,5	9,5 x 0,8
		15	BO-ZR 15 L	374412	1,0	11	12,5	13 x 1,5	12,5 x 0,8
		18	BO-ZR 18 L	374413	1,3	14	13	16 x 1,5	15 x 1
	250 (3626)	22	BO-ZR 22 L	374414	2,1	17	14,2	20 x 2	18 x 1
		28	BO-ZR 28 L	374415	2,7	23	14,7	26 x 2	23 x 1
		35	BO-ZR 35 L	374416	5,4	28	18,5	32 x 2,5	30 x 1
		42	BO-ZR 42 L	374417	7,3	35	20,5	38 x 2,5	37 x 1
S	630 (9137)	6	BO-ZR 6 L/S	374408	0,3	3	11,5	4,5 x 1,5	4,4 x 0,8
		8	BO-ZR 8 L/S	374409	0,4	5	12	6 x 1,5	6 x 0,8
		10	BO-ZR 10 L/S	374410	0,6	6	12,5	8,5 x 1,5	7,5 x 0,8
		12	BO-ZR 12 L/S	374411	0,8	8	12,5	10 x 1,5	9,5 x 0,8
	400 (5801)	14	BO-ZR 14 S	374418	1,1	9	14	12 x 2	11 x 1
		16	BO-ZR 16 S	374419	1,5	11	15	14 x 2	12,5 x 1
		20	BO-ZR 20 S	374420	2,6	14	18,5	17,3 x 2,4	16 x 1
		25	BO-ZR 25 S	374421	3,7	19	20	22,3 x 2,4	20 x 1
		30	BO-ZR 30 S	374422	5,7	23	22	27,3 x 2,4	25 x 1
		38	BO-ZR 38 S	374423	8,8	30	26	35 x 2,5	32 x 1,78

* FPM (z. B. Viton) auf Anfrage
 * FPM (e. g. Viton) on request
 * FPM (p. ex. Viton) sur demande

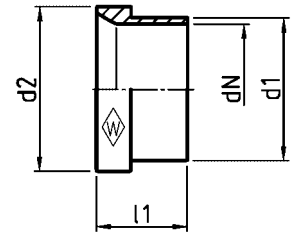
Bördel-Anschlußteile für Bördel-Rohrverschraubungen
 Connecting parts for flare tube fittings
 Pièces de raccordement pour raccords pour tube évasé



BO-DR

Druckring
 Loose sleeve
 Manchette

Kennzeichnung:
 Identification:
 Marquage:



Reihe Series Série	PN bar (psi)	Rohr-AD Tube OD Ø ext. d _N	Typ Type Désignation	Best.-Nr. Reference Réf.	kg per 100 St. kg per 100 pcs. kg par 100 p.	d ₁	d ₂	l ₁
L	500 (7252)	6	BO-DR 6 L/S	374376	0,2	7,6	10,2	10,5
		8	BO-DR 8 L/S	374377	0,3	9,3	12,2	11
		10	BO-DR 10 L/S	374378	0,4	11,5	14,2	12,5
	400 (5801)	12	BO-DR 12 L/S	374379	0,5	13,6	16,2	13
		15	BO-DR 15 L	374380	0,9	17,5	20,2	14
		18	BO-DR 18 L	374381	1,4	21	24,2	14,5
		22	BO-DR 22 L	374382	1,6	24,2	27,8	18
	250 (3626)	28	BO-DR 28 L	374383	2,0	30,2	33,8	17
		35	BO-DR 35 L	374384	3,7	38	42,7	19
		42	BO-DR 42 L	374385	5,0	45	49,7	21
S	630 (9137)	6	BO-DR 6 L/S	374376	0,2	7,6	10,2	10,5
		8	BO-DR 8 L/S	374377	0,3	9,3	12,2	11
		10	BO-DR 10 L/S	374378	0,4	11,5	14,2	12,5
	12	BO-DR 12 L/S	374379	0,5	13,6	16,2	13	
		14	BO-DR 14 S	374386	1,2	17,5	20,2	14,5
	16	BO-DR 16 S	374387	1,3	18,5	22	17	
		20	BO-DR 20 S	374388	2,4	24,2	27,8	17,5
	400 (5801)	25	BO-DR 25 S	374389	3,1	28,5	32,8	20
		30	BO-DR 30 S	374390	4,5	34	39	21,5
		38	BO-DR 38 S	374391	7,5	42	48,5	26,5

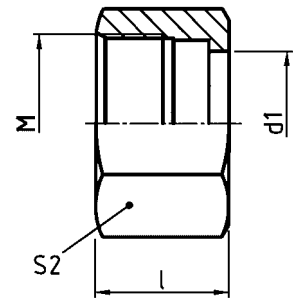
Bördel-Anschlußteile für Bördel-Rohrverschraubungen
 Connecting parts for flare tube fittings
 Pièces de raccordement pour raccords pour tube évasé



BO-M

Überwurfmutter
 Nut
 Ecrou

Kennzeichnung:
 Identification:
 Marquage:



Reihe Series Série	PN bar (psi)	Rohr-AD Tube OD Tube Ø ext.	Typ Type Désignation	Best.-Nr. Reference Réf.	kg per 100 St. kg per 100 pcs. kg par 100 p.	M	l	d ₁	S ₂
L	500 (7552)	6	BO-M 6 L	374510	1,1	M 12 x 1,5	17	7,8	14
		8	BO-M 8 L	374511	1,7	M 14 x 1,5	18	9,5	17
		10	BO-M 10 L	374512	2,2	M 16 x 1,5	19,5	11,7	19
	400 (5801)	12	BO-M 12 L	374513	3,1	M 18 x 1,5	20,5	13,8	22
		15	BO-M 14 S/15 L	374522	5,3	M 22 x 1,5	23	17,7	27
		18	BO-M 18 L	374514	7,4	M 26 x 1,5	23	21,2	32
	250 (3626)	22	BO-M 20 S/22 L	374524	10,5	M 30 x 2	27,5	24,4	36
		28	BO-M 28 L	374515	11,2	M 36 x 2	27,5	30,4	41
		35	BO-M 35 L	374516	16,4	M 45 x 2	30	38,3	50
42		BO-M 42 L	374517	29,9	M 52 x 2	34	45,3	60	
S	630 (9137)	6	BO-M 6 S	374518	1,9	M 14 x 1,5	18	7,8	17
		8	BO-M 8 S	374519	2,5	M 16 x 1,5	19	9,5	19
		10	BO-M 10 S	374520	3,5	M 18 x 1,5	20,5	11,7	22
	400 (5801)	12	BO-M 12 S	374521	4,1	M 20 x 1,5	21	13,8	24
		14	BO-M 14 S/15 L	374522	5,3	M 22 x 1,5	23	17,7	27
		16	BO-M 16 S	374523	8,0	M 24 x 1,5	26,5	18,7	30
	20	20	BO-M 20 S/22 L	374524	10,5	M 30 x 2	27,5	24,4	36
		25	BO-M 25 S	374525	19,9	M 36 x 2	30,5	28,7	46
		30	BO-M 30 S	374526	22,8	M 42 x 2	32	34,2	50
38	BO-M 38 S	374527	35,2	M 52 x 2	38	42,3	60		

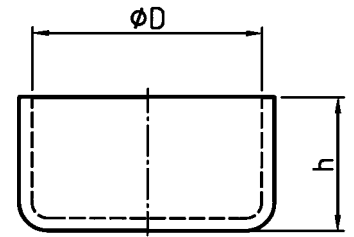
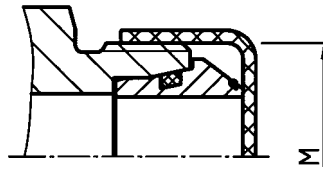
Bördel-Anschlußteile für Bördel-Rohrverschraubungen
 Connecting parts for flare tube fittings
 Pièces de raccordement pour raccords pour tube évasé



Kappe M
 Cap M
 Capuchon M



























Schutzkappe für Zwischenring, rohrrseitig
 Protection cap for centre unit, tube end
 Capuchon protecteur pour cône intermédiaire, côté tube

Werkstoff: HD-Polyäthylen
 Material: HD polyethylene
 Matière: Polyéthylène HD



Reihe Series Série	Rohr-AD Tube OD Tube Ø ext.	Typ Type Désignation	Best.-Nr. Reference Réf.	M	Ø D	h
L	6	Kappe M 12	050120	M 12 x 1,5	11,5	12
	8	Kappe M 14	050135	M 14 x 1,5	13,5	13,5
	10	Kappe M 16	050160	M 16 x 1,5	15,7	15
	12	Kappe M 18	050180	M 18 x 1,5	17,7	15
	15	Kappe M 22	050213	M 22 x 1,5	21,3	15,5
	18	Kappe M 26	064030	M 26 x 1,5	25,4	17,5
	22	Kappe M 30	050300	M 30 x 2	29,3	18
	28	Kappe M 36 / H=25	374826	M 36 x 2	34,8	25
	35	Kappe M 45	064031	M 45 x 2	44,5	35
	42	Kappe M 52 / H=29	374827	M 52 x 2	50,6	29
S	6	Kappe M 14	050135	M 14 x 1,5	13,5	13,5
	8	Kappe M 16	050160	M 16 x 1,5	15,7	15
	10	Kappe M 18	050180	M 18 x 1,5	17,7	15
	12	Kappe M 20	050200	M 20 x 1,5	19,7	14
	14	Kappe M 22	050213	M 22 x 1,5	21,3	15,5
	16	Kappe M 24	050240	M 24 x 1,5	23,5	18,5
	20	Kappe M 30	050300	M 30 x 2	29,3	18
	25	Kappe M 36 / H=25	374826	M 36 x 2	34,8	25
	30	Kappe M 42	050421	M 42 x 2	41,9	28
	38	Kappe M 52 / H=29	374827	M 52 x 2	50,6	29

Einschraubstutzen	Male stud couplings (body only)	Union simple mâle (corps)
Verbindungsstutzen	Tube connectors (body only)	Raccords pour tubes (corps)
Schottstutzen	Bulkhead fittings (body only)	Raccords de cloison (corps)
Schweißstutzen	Weld fittings (body only)	Raccords à souder (corps)

	Abb. Fig. Fig.	Sinnbild Symbol Symbole	Typ Type Désignation	Seite Page Page
Gerade-Einschraubstutzen Male stud coupling (body only) Union simple mâle (corps)			GES.....RK GES.....MK GES.....NPT	E2 E2 E3
			GES.....R GES.....M GES.....R-WD GES.....M-WD GES.....UNF/UN	E4 E5 E6 E7 E8
Winkel-Einschraubstutzen Male stud elbow (body only) Equerre mâle (corps)			WES.....RK WES.....MK WES.....NPT	E9 E10 E11
Gerade-Stutzen Straight coupling (body only) Union double (corps)			GS.....	E12
Gerade-Reduzierstutzen Straight reducing coupling (body only) Union double de réduction (corps)			GS.../...	E13
Winkel-Stutzen Equal elbow (body only) Union équerre (corps)			WS.....	E14
T-Stutzen Equal Tee (body only) Union té (corps)			TS.....	E15
T-Reduzierstutzen Reducing Tee (body only) Union té de réduction (corps)			TS.../.../...	E16
Kreuz-Stutzen Equal cross (body only) Union croix (corps)			KS.....	E17
Gerade-Schottstutzen Bulkhead coupling (body only) Union double de cloison (corps)			GSS.....	E18
Winkel-Schottstutzen Bulkhead elbow (body only) Equerre de cloison (corps)			WSS.....	E19
Anschweiß-Stutzen Weldable stud (body only) Union simple à souder (corps)			ASS.....	E20
Einschweiß-Schottstutzen Weldable bulkhead coupling (body only) Union double de cloison à souder (corps)			ESS.....	E21

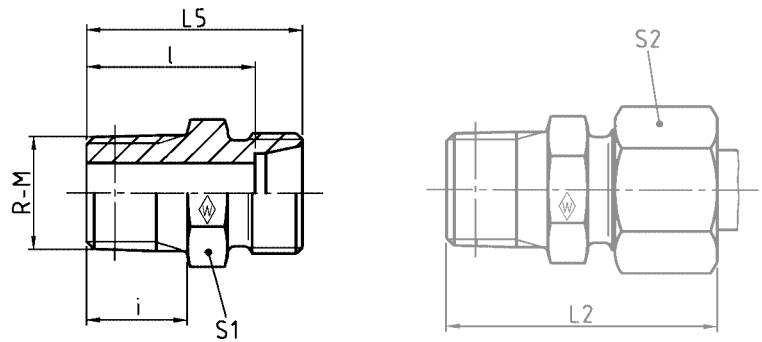
E

Gerade-Einschraubstutzen
Male stud coupling (body only)
Union simple mâle (corps)



GES RK
GES MK

Einschraub- Whitworth-Rohrgewinde (kegelig)
gewinde: Metrisches Gewinde (kegelig)
Stud thread: BSP thread (taper)
metric (taper)
Filetage mâle: Whitworth (conique)
métrique (conique)



Reihe Series Série	PN bar (psi)	Rohr-AD Tube OD Tube Ø ext.	R-M	Typ Type Désignation	Best.-Nr. Reference Réf.	kg per 100 St. kg per 100 pcs. kg par 100 p.	L ₂	L ₅	l	i	S ₁	S ₂
LL	100 (1450)	4	R 1/8 keg	GES 4 LLRK	037505	0,8	25,5	20	16	8	10	10
		6	R 1/8 keg	GES 6 LLRK	037507	1,0	26	20	14,5	8	11	12
		8	R 1/8 keg	GES 8 LLRK	037508	1,0	28	22	16,5	8	12	14
L	250 (3626)	6	R 1/4 keg	GES 6 L/R 1/4 K	037509	2,0	34,5	27	20	12	14	14
		8	R 1/4 keg	GES 8 LRK	037510	2,0	34,5	27	20	12	14	17
		8	R 3/8 keg	GES 8 L/R 3/8 K	037511	3,0	34,5	27	20	12	17	17
		10	R 1/4 keg	GES 10 LRK	037512	2,4	35,5	28	21	12	17	19
		10	R 3/8 keg	GES 10 L/R 3/8 K	037513	2,9	35,5	28	21	12	17	19
		12	R 1/4 keg	GES 12 L/R 1/4 K	037514	3,0	36,5	29	22	12	19	22
		12	R 3/8 keg	GES 12 LRK	037515	3,4	36,5	29	22	12	19	22
		12	R 1/2 keg	GES 12 L/R 1/2 K	037516	4,9	38,5	31	24	14	22	22
LL	100 (1450)	4	M 8 x 1 keg	GES 4 LLMK	037517	0,6	25,5	20	16	8	10	10
		6	M 10 x 1 keg	GES 6 LLMK	037519	0,8	26	20	14,5	8	11	12
		8	M 10 x 1 keg	GES 8 LLMK	037520	1,0	28	22	16,5	8	12	14
		6	M 12 x 1,5 keg	GES 6 L/M 12 x 1,5 K	037521	1,8	34,5	27	20	12	14	14
		8	M 12 x 1,5 keg	GES 8 LMK	037522	1,7	34,5	27	20	12	14	17
		8	M 14 x 1,5 keg	GES 8 L/M 14 x 1,5 K	037523	2,4	34,5	27	20	12	17	17
		10	M 14 x 1,5 keg	GES 10 LMK	037524	2,3	35,5	28	21	12	17	19
		10	M 16 x 1,5 keg	GES 10 L/M 16 x 1,5 K	037525	2,7	35,5	28	21	12	17	19
		12	M 16 x 1,5 keg	GES 12 LMK	037526	2,9	36,5	29	22	12	19	22
		12	M 18 x 1,5 keg	GES 12 L/M 18 x 1,5 K	037527	4,7	36,5	29	22	12	19	22

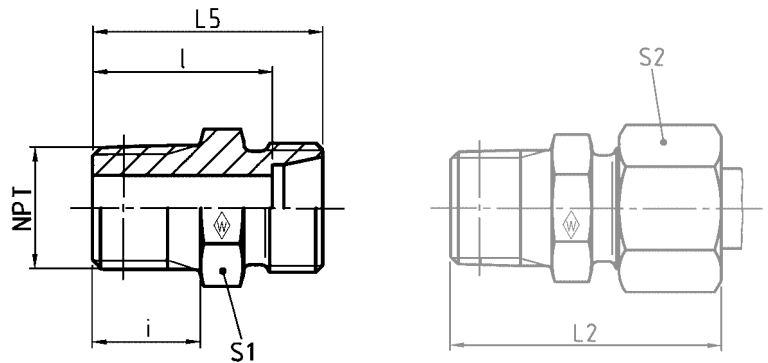
L₂ = Ungefährmaß bei angezogener Überwurfmutter
L₂ = approximate length with nut tightened
L₂ = longueur approximative, l'écrou étant bloqué

Gerade-Einschraubstutzen
Male stud coupling (body only)
Union simple mâle (corps)



GES NPT

Einschraub-
gewinde: NPT (ANSI/ASME B1.20.1-1983)
Stud thread: NPT (ANSI/ASME B1.20.1-1983)
Filetage mâle: NPT (ANSI/ASME B1.20.1-1983)



Reihe Series Série	PN bar (psi)	Rohr-AD Tube OD Tube Ø ext.	NPT	Typ Type Désignation	Best.-Nr. Reference Réf.	kg per 100 St. kg per 100 pcs. kg par 100 p.	L ₂	L ₅	l	i	S ₁	S ₂
LL	100 (1450)	4	1/8 NPT	GES 4 LL/1/8 NPT	037528	1,0	28	22	18	10	11	10
		6	1/8 NPT	GES 6 LL/1/8 NPT	037530	1,0	28	22	16,5	10	11	12
		8	1/8 NPT	GES 8 LL/1/8 NPT	037531	1,0	30	24	18,5	10	12	14
L	315 (4569)	6	1/8 NPT	GES 6 L/1/8 NPT	037532	1,2	32	24	17	10	12	14
		6	1/4 NPT	GES 6 L/1/4 NPT	037533	2,6	38	30	23	15	17	14
		8	1/4 NPT	GES 8 L/1/4 NPT	037534	2,6	38	30	23	15	17	17
		10	1/4 NPT	GES 10 L/1/4 NPT	037535	2,7	39	31	24	15	17	19
		10	3/8 NPT	GES 10 L/3/8 NPT	037536	3,7	40	32	25	15	19	19
		12	1/4 NPT	GES 12 L/1/4 NPT	037537	3,3	40	32	25	15	19	22
		12	3/8 NPT	GES 12 L/3/8 NPT	037538	3,6	40	32	25	15	19	22
		12	1/2 NPT	GES 12 L/1/2 NPT	037539	6,4	45	37	30	20	24	22
		15	1/2 NPT	GES 15 L/1/2 NPT	037540	6,3	46	38	31	20	24	27
		18	1/2 NPT	GES 18 L/1/2 NPT	037541	7,3	48	39	31,5	20	27	32
	160 (2321)	22	3/4 NPT	GES 22 L/3/4 NPT	037542	10,1	50	41	33,5	20	32	36
		28	1 NPT	GES 28 L/1 NPT	037543	17,9	56	47	39,5	25	41	41
		35	1 1/4 NPT	GES 35 L/1 1/4 NPT	037544	25,7	62	51	40,5	26	46	50
		42	1 1/2 NPT	GES 42 L/1 1/2 NPT	037545	35,1	65	53	42	26	55	60
S	630 (9137)	6	1/4 NPT	GES 6 S/1/4 NPT	037546	3,6	43	35	28	15	17	17
		8	1/4 NPT	GES 8 S/1/4 NPT	037547	3,8	43	35	28	15	17	19
		10	1/4 NPT	GES 10 S/1/4 NPT	037548	4,2	44	35	27,5	15	19	22
		10	3/8 NPT	GES 10 S/3/8 NPT	037549	4,9	44	35	27,5	15	19	22
		12	1/4 NPT	GES 12 S/1/4 NPT	037550	5,8	46	37	29,5	15	22	24
		12	3/8 NPT	GES 12 S/3/8 NPT	037551	6,1	46	37	29,5	15	22	24
		12	1/2 NPT	GES 12 S/1/2 NPT	037552	8,4	51	42	34,5	20	22	24
		14	1/2 NPT	GES 14 S/1/2 NPT	037553	9,0	54	44	36	20	24	27
		16	1/2 NPT	GES 16 S/1/2 NPT	037554	9,3	54	44	35,5	20	27	30
		20	3/4 NPT	GES 20 S/3/4 NPT	037555	14,9	59	48	37,5	20	32	36
400 (5801)	25	1 NPT	GES 25 S/1 NPT	037556	27,6	69	57	45	25	41	46	
	30	1 1/4 NPT	GES 30 S/1 1/4 NPT	037557	40,0	73	60	46,5	26	46	50	
	38	1 1/2 NPT	GES 38 S/1 1/2 NPT	037558	57,4	80	65	49	26	55	60	

L₂ = Ungefährmaß bei angezogener Überwurfmutter
L₂ = approximate length with nut tightened
L₂ = longueur approximative, l'écrou étant bloqué

Kegelige Einschraublöcher NPT (ANSI/ASME B1.20.1-1983)
Taper port form NPT (ANSI/ASME B1.20.1-1983)
Trous taraudés coniques NPT (ANSI/ASME B1.20.1-1983)



Gerade-Einschraubstutzen
Male stud coupling (body only)
Union simple mâle (corps)

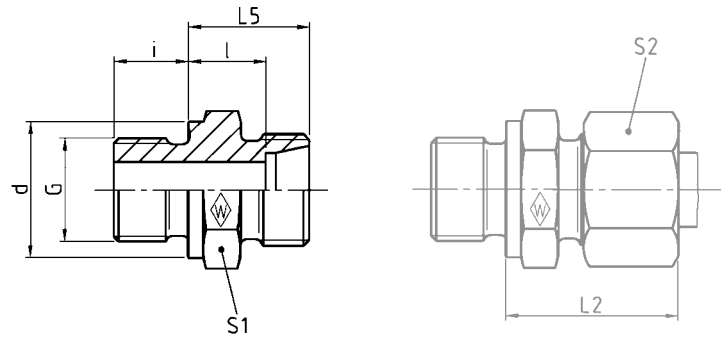


GES R

Einschraub-
gewinde: Whitworth-Rohrgewinde (zylindrisch),
Dichtkante Form B

Stud thread: BSP thread (parallel),
stud face form B

Filetage mâle: Whitworth (cylindrique),
arête d'étanchéité forme B



DIN-ISO 228 (R ..., DIN 259)

Reihe Series Série	PN bar (psi)	Rohr-AD Tube OD Tube Ø ext.	G	Typ Type Désignation	Best.-Nr. Reference Réf.	kg per 100 St. kg per 100 pcs. kg par 100 p.	L ₅	L ₂	l	i	d	S ₁	S ₂	
LL	100 (1450)	4	G 1/8 A	GES 4 LLR	037559	1,1	13,5	19	9,5	8	14	14	10	
		6	G 1/8 A	GES 6 LLR	037561	1,1	13,5	19,5	8	8	14	14	12	
		8	G 1/8 A	GES 8 LLR	037562	1,2	14,5	20,5	9	8	14	14	14	
	L	400 (5801)	6	G 1/8 A	GES 6 LR	037563	1,4	15,5	23	8,5	14	14	14	14
			6	G 1/4 A	GES 6 L/R 1/4	037564	2,9	17	24,5	10	12	18	19	14
			6	G 3/8 A	GES 6 L/R 3/8	027584	9,1	18,5	26	11,5	12	22	22	14
			8	G 1/4 A	GES 8 LR	037565	2,7	17	25	10	12	18	19	17
			8	G 1/8 A	GES 8 L/R 1/8	604870	1,7	16,5	24	9,5	8	14	14	17
			8	G 3/8 A	GES 8 L/R 3/8	037566	4,4	18,5	26	11,5	12	22	22	17
			8	G 1/2 A	GES 8 L/R 1/2	062578	7,3	19	16,5	12	14	26	27	17
10			G 1/4 A	GES 10 L/R	037567	2,9	18	26	11	12	18	19	19	
10			G 3/8 A	GES 10 L/R 3/8	037568	4,4	19,5	27	12,5	12	22	22	19	
10			G 1/2 A	GES 10 L/R 1/2	028087	7,1	20	27,5	13	14	26	27	19	
L		400 (5801)	12	G 1/4 A	GES 12 L/R 1/4	037569	3,3	19	27	12	12	18	19	22
			12	G 3/8 A	GES 12 LR	037570	4,3	19,5	27	12,5	12	22	22	22
			12	G 1/2 A	GES 12 L/R 1/2	037571	6,7	20	28	13	14	26	27	22
			15	G 3/8 A	GES 15 L/R 3/8	028669	5,1	20,5	28,5	13,5	12	22	24	27
			15	G 1/2 A	GES 15 LR	037572	6,7	21	29	14	14	26	27	27
			15	G 3/4 A	GES 15 L/R 3/4	028698	11,6	22	30	15	16	32	32	27
			18	G 1/2 A	GES 18 LR	037573	7,1	22	31	14,5	14	26	27	32
			18	G 3/4 A	GES 18 L/R 3/4	028701	11,1	22	31	14,5	16	32	32	32
L	250 (3626)	22	G 3/4 A	GES 22 LR	037574	10,2	24	33	16,5	16	32	32	36	
		22	G 1/2 A	GES 22 L/R 1/2	025257	8,7	24	33	16,5	14	26	32	36	
		28	G 1 A	GES 28 LR	037575	16,8	25	34	17,5	18	39	41	41	
		28	G 3/4 A	GES 28 L/R 3/4	060071	14,3	25	34	17,5	16	32	41	41	
		35	G 1/4 A	GES 35 LR	037576	27,6	28	39	17,5	20	49	50	50	
		42	G 1 1/2 A	GES 42 LR	037577	35,2	30	42	19	22	55	55	60	
S	630 (9137)	6	G 1/4 A	GES 6 SR	037578	3,6	20	28	13	12	18	19	17	
		8	G 1/4 A	GES 8 SR	037579	4,1	22	30	15	12	18	19	19	
		8	G 3/8 A	GES 8 S/R 3/8	370740	5,8	22,5	30,5	15,5	12	22	22	19	
		10	G 3/8 A	GES 10 SR	037580	5,7	22,5	31	15	12	22	22	22	
		10	G 1/4 A	GES 10 S/R 1/4	067917	4,0	22	30,5	14,5	12	18	19	22	
		10	G 1/2 A	GES 10 S/R 1/2	060170	9,7	25	33,5	17,5	14	26	27	22	
		12	G 3/8 A	GES 12 SR	037581	6,3	24	33	17	12	22	22	24	
		12	G 1/4 A	GES 12 S/R 1/4	371817	5,7	24	32,5	16,5	12	18	22	24	
		12	G 1/2 A	GES 12 S/R 1/2	037582	9,7	25	34	17,5	14	26	27	24	
		14	G 1/2 A	GES 14 SR	037583	9,6	27	37	19	14	26	27	27	
		16	G 1/2 A	GES 16 SR	037584	9,1	27	37	18,5	14	26	27	30	
		16	G 3/8 A	GES 16 S/R 3/8	024062	8,6	26,5	36,5	18	12	22	27	30	
		16	G 3/4 A	GES 16 S/R 3/4	025474	15,5	29	40	21,5	16	32	32	30	
		L	400 (5801)	20	G 3/4 A	GES 20 SR	037585	14,9	31	42	20,5	16	32	32
20	G 1/2 A			GES 20 S/R 1/2	028704	13,6	31	40	18,5	14	26	32	36	
25	G 1 A			GES 25 SR	037586	26,9	35	47	23	18	39	41	46	
25	G 3/4 A			GES 25 S/R 3/4	028789	24,3	35	47	23	16	32	41	46	
L	250 (3626)	30	G 1 1/4 A	GES 30 SR	037587	41,8	37	50	23,5	20	49	50	50	
		38	G 1 1/2 A	GES 38 SR	037588	56,8	42	57	26	22	55	55	60	
		38	G 1 1/4 A	GES 38 S/R 1/4	025223	56,7	42	57	26	20	49	55	60	

L₂ = Ungefährmaß bei angezogener Überwurfmutter
L₂ = approximate length with nut tightened
L₂ = longueur approximative, l'écrou étant bloqué

Gerade-Einschraubstutzen
Male stud coupling (body only)
Union simple mâle (corps)

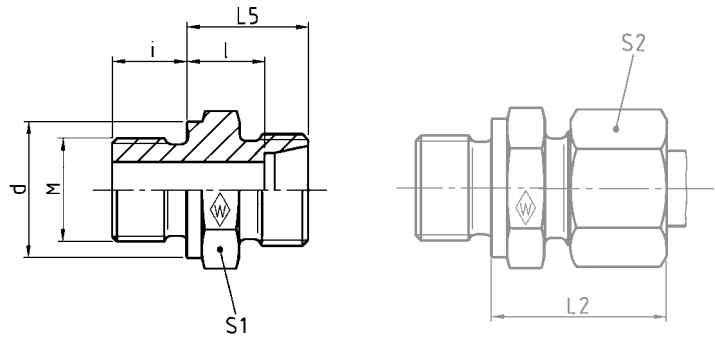


GES M

Einschraub-
gewinde: Metrisches Gewinde (zylindrisch),
Dichtkante Form B

Stud thread: metric (parallel),
stud face form B

Filetage mâle: métrique (cylindrique),
arête d'étanchéité forme B



Reihe Séries Série	PN bar (psi)	Rohr-AD Tube OD Tube Ø ext.	M	Typ Type Désignation	Best.-Nr. Reference Réf.	kg per 100 St. kg per 100 pcs. kg par 100 p.	L ₅	L ₂	l	i	d	S ₁	S ₂	
LL	100 (1450)	4	M 8 x 1	GES 4 LLM	037589	0,9	13,5	19	9,5	8	12	12	10	
		6	M 10 x 1	GES 6 LLM	037591	1,1	13,5	19,5	8	8	14	14	12	
		8	M 10 x 1	GES 8 LLM	037592	1,2	14,5	20,5	9	8	14	14	14	
L	400 (5801)	6	M 10 x 1	GES 6 LM	037593	1,4	15,5	23	8,5	8	14	14	14	
		6	M 12 x 1,5	GES 6 L/M 12 x 1,5	037594	2,6	17	24,5	10	12	17	17	14	
		8	M 12 x 1,5	GES 8 LM	037595	2,3	17	25	10	12	17	17	17	
		8	M 18 x 1,5	GES 8 L/M 18 x 1,5	024882	5,1	18,5	26	11,5	12	23	24	17	
		10	M 14 x 1,5	GES 10 LM	037596	2,9	18	26	11	12	19	19	19	
		10	M 16 x 1,5	GES 10 L/M 16 X 1,5	063190	4,0	19,5	27	12,5	12	21	22	19	
		10	M 18 x 1,5	GES 10 L/M 18 x 1,5	025287	5,0	19,5	27	12,5	12	23	24	19	
		10	M 22 x 1,5	GES 10 L/M 22 x 1,5	028692	7,6	20	27,5	13	14	27	27	19	
		12	M 16 x 1,5	GES 12 LM	037597	4,0	19,5	27	12,5	12	21	22	22	
		12	M 18 x 1,5	GES 12 L/M 18 x 1,5	037598	4,7	19,5	27	12,5	12	23	24	22	
		12	M 22 x 1,5	GES 12 L/M 22 x 1,5	028695	7,3	20	27,5	13	14	27	27	22	
		15	M 18 x 1,5	GES 15 LM	037599	5,2	20,5	29	13,5	12	23	24	27	
		15	M 22 x 1,5	GES 15 L/M 22 x 1,5	028117	7,4	21	29	14	14	27	27	27	
		18	M 18 x 1,5	GES 18 L/M 18 x 1,5	029643	6,4	21,5	30	14	12	23	27	32	
		18	M 22 x 1,5	GES 18 LM	037600	7,6	22	31	14,5	14	27	27	32	
		22	M 26 x 1,5	GES 22 LM	037601	10,1	24	33	16,5	16	31	32	36	
		250 (3626)	28	M 33 x 2	GES 28 LM	037602	16,7	25	34	17,5	18	39	41	41
		35	M 42 x 2	GES 35 LM	037603	28,2	28	39	17,5	20	49	50	50	
42	M 48 x 2	GES 42 LM	037604	35,8	30	42	19	22	55	55	60			
S	630 (9137)	6	M 12 x 1,5	GES 6 SM	037605	3,0	20	28	13	12	17	17	17	
		8	M 14 x 1,5	GES 8 SM	037606	4,3	22	30	15	12	19	19	19	
		10	M 16 x 1,5	GES 10 SM	037607	5,5	22,5	31	15	12	21	22	22	
		12	M 18 x 1,5	GES 12 SM	037608	7,2	24,5	33	17	12	23	24	24	
		14	M 20 x 1,5	GES 14 SM	037609	9,4	27	37	19	14	25	27	27	
		16	M 22 x 1,5	GES 16 SM	037610	9,8	27	37	18,5	14	27	27	30	
		400 (5801)	20	M 27 x 2	GES 20 SM	037611	15,3	31	42	20,5	16	32	32	36
		25	M 33 x 2	GES 25 SM	037612	26,9	35	47	23	18	39	41	46	
		250 (3626)	30	M 42 x 2	GES 30 SM	037613	42,8	37	50	23,5	20	49	50	50
		38	M 48 x 2	GES 38 SM	037614	57,5	42	57	26	22	55	55	60	

L₂ = Ungefährmaß bei angezogener Überwurfmutter
L₂ = approximate length with nut tightened
L₂ = longueur approximative, l'écrou étant bloqué



Gerade-Einschraubstutzen
Male stud coupling (body only)
Union simple mâle (corps)

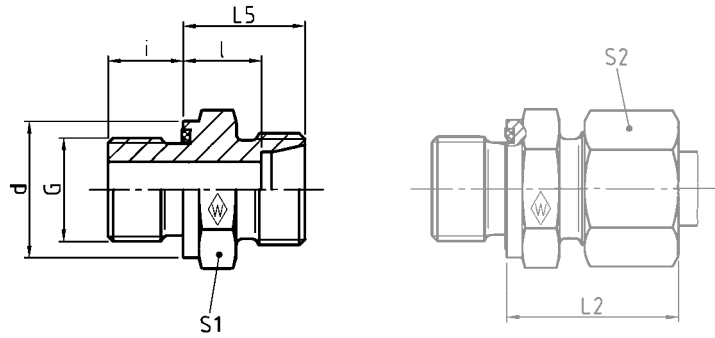


GES R-WD

mit Weichdichtung NBR* (z. B. Perbunan)
Einschraubgewinde: Whitworth-Rohrgewinde (zylindrisch)

with captive seal: NBR* (e. g. Perbunan)
Stud thread: BSP thread (parallel)

avec joint mou: NBR* (p. ex. Perbunan)
Filetage mâle: Whitworth (cylindrique)



DIN-ISO 228 (R ..., DIN 259)

Reihe Series Série	PN bar (psi)	Rohr-AD Tube OD Tube Ø ext.	G	Typ Type Désignation	Best.-Nr. Reference Réf.	kg per 100 St. kg per 100 pcs. kg par 100 p.	L ₅	L ₂	l	i	d	S ₁	S ₂
500 (7252)		6	G 1/8 A	GES 6 LR-WD	037615	1,5	15,5	23	8,5	8	13,9	14	14
		6	G 1/4 A	GES 6 L/R 1/4-WD	606456	3,0	17	24,5	10	12	18,9	19	14
		8	G 1/4 A	GES 8 LR-WD	037616	2,5	17	25	10	12	18,9	19	17
		8	G 1/8 A	GES 8 L/R 1/8-WD	606457	1,7	16,5	24	9,5	8	13,9	14	17
400 (5801)		8	G 3/8 A	GES 8 L/R 3/8-WD	606458	4,8	18,5	26	11,5	12	21,9	22	17
500 (7252)		10	G 1/4 A	GES 10 LR-WD	037617	3,0	18	26	11	12	18,9	19	19
		10	G 3/8 A	GES 10 L/R 3/8-WD	027596	4,0	19,5	27	12,5	12	21,9	22	19
		10	G 1/2 A	GES 10 L/R 1/2-WD	606414	5,2	21	27,5	13	14	26,9	27	19
400 (5801)		12	G 1/4 A	GES 12 L/R 1/4-WD	037618	3,5	19	27	12	12	18,9	19	22
		12	G 3/8 A	GES 12 LR-WD	037619	4,0	19,5	27	12,5	12	21,9	22	22
		12	G 1/2 A	GES 12 L/R 1/2-WD	024957	6,5	20	28	13	14	26,9	27	22
		15	G 1/2 A	GES 15 LR-WD	037620	6,5	21	28,5	13,5	14	26,9	24	27
		15	G 3/8 A	GES 15 L/R 3/8-WD	604985	4,9	20,5	29	14	12	21,9	27	27
		18	G 1/2 A	GES 18 LR-WD	037621	7,0	22	31	14,5	14	26,9	27	32
250 (3626)		18	G 3/4 A	GES 18 L/R 3/4-WD	605124	13,5	22	31	14,5	16	31,9	32	32
		22	G 3/4 A	GES 22 LR-WD	037622	10,5	24	33	16,5	14	26,9	32	36
		28	G 1 A	GES 28 LR-WD	037623	16,5	25	34	17,5	18	39,9	41	41
		35	G 1 1/4 A	GES 35 LR-WD	037624	27,0	28	39	17,5	20	49,9	50	50
800 (11603)		42	G 1 1/2 A	GES 42 LR-WD	037625	34,5	30	42	19	22	54,9	55	60
		6	G 1/4 A	GES 6 SR-WD	037626	3,5	20	28	13	12	18,9	19	17
		8	G 1/4 A	GES 8 SR-WD	037627	4,0	22	30	15	12	18,9	19	19
		8	G 3/8 A	GES 8 S/R 3/8-WD	371292	6,2	22,5	30,5	15,5	12	21,9	22	19
		10	G 3/8 A	GES 10 SR-WD	037628	5,5	22,5	31	15	12	21,9	22	22
		10	G 1/4 A	GES 10 S/R 1/4-WD	602927	4,7	22	30,5	14,5	12	18,9	19	22
S 630 (9137)		10	G 1/2 A	GES 10 S/R 1/2-WD	606460	13,9	25	33,5	17,5	14	26,9	27	22
		12	G 3/8 A	GES 12 SR-WD	037629	9,5	24,5	33	17	12	21,9	22	24
		12	G 1/4 A	GES 12 S/R 1/4-WD	606425	5,8	24	32,5	16,5	12	18,9	22	24
		12	G 1/2 A	GES 12 S/R 1/2-WD	027858	9,5	25	34	17,5	14	26,9	27	24
		14	G 1/2 A	GES 14 SR-WD	037630	9,5	27	37	19	14	26,9	27	27
		16	G 1/2 A	GES 16 SR-WD	037631	9,0	27	37	18,5	14	26,9	27	30
420 (6091)		16	G 3/8 A	GES 16 S/R 3/8-WD	371285	8,5	26	36,5	18	12	21,9	27	30
		16	G 3/4 A	GES 16 S/R 3/4-WD	066454	15,5	29	39	20,5	16	31,9	32	30
		20	G 3/4 A	GES 20 SR-WD	037632	15,0	31	42	20,5	16	31,9	32	36
		25	G 1 A	GES 25 SR-WD	037633	26,5	35	47	23	18	39,9	41	46
		25	G 3/4 A	GES 25 S/R 3/4-WD	066516	24,5	35	47	23	16	31,9	41	46
		30	G 1 1/4 A	GES 30 SR-WD	037634	42,0	37	50	23,5	20	49,9	50	50
38	G 1 1/2 A	GES 38 SR-WD	037635	56,5	42	57	26	22	54,9	55	60		

L₂ = Ungefährmaß bei angezogener Überwurfmutter
L₂ = approximate length with nut tightened
L₂ = longueur approximative, l'écrou étant bloqué

* FPM (z. B. Viton) auf Anfrage
* FPM (e. g. Viton) on request
* FPM (p. ex. Viton) sur demande

Gerade-Einschraubstutzen
Male stud coupling (body only)
Union simple mâle (corps)

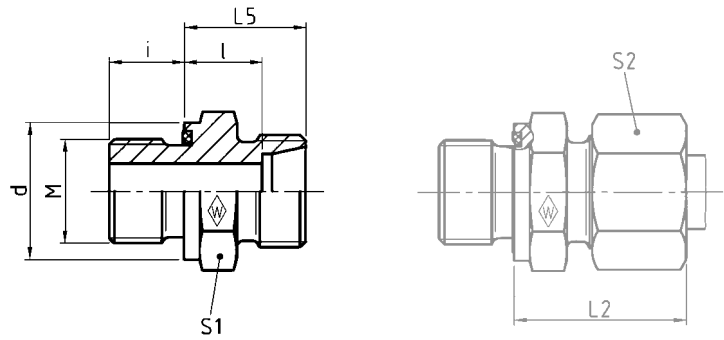


GES M-WD

mit Weichdichtung NBR* (z. B. Perbunan)
Einschraubgewinde: Metrisches Gewinde (zylindrisch)

with captive seal: NBR* (e. g. Perbunan)
Stud thread: metric (parallel)

avec joint mou: NBR* (p. ex. Perbunan)
Filetage mâle: métrique (cylindrique)



Reihe Series Série	PN bar (psi)	Rohr-AD Tube OD Tube Ø ext.	M	Typ Type Désignation	Best.-Nr. Reference Réf.	kg per 100 St. kg per 100 pcs. kg par 100 p.	L ₅	L ₂	l	i	d	S ₁	S ₂
L	500 (7252)	6	M 10 x 1	GES 6 LM-WD	037638	0,5	15,5	23	8,5	8	13,9	14	14
		8	M 12 x 1,5	GES 8 LM-WD	037639	2,0	17	25	10	12	16,9	17	17
		10	M 14 x 1,5	GES 10 LM-WD	037640	3,0	18	26	11	12	18,9	19	19
		10	M 18 x 1,5	GES 10 L/M 18 x 1,5-WD	606459		19,5	27	12,5	12	23,9	24	19
		10	M 22 x 1,5	GES 10 L/M 22 x 1,5-WD	604706	7,5	20	27,5	13	14	26,9	27	19
	400 (5801)	12	M 16 x 1,5	GES 12 LM-WD	037641	4,0	19,5	27	12,5	12	21,9	22	22
		12	M 18 x 1,5	GES 12 L/M 18 x 1,5-WD	024966	4,5	17	27	12,5	12	23,9	24	22
		12	M 22 x 1,5	GES 12 L/M 22 x 1,5-WD	604514	7,0	20	27,5	13	14	26,9	27	22
		15	M 18 x 1,5	GES 15 LM-WD	037642	5,0	20,5	29	13,5	12	23,9	24	27
		15	M 22 x 1,5	GES 15 L/M 22 x 1,5-WD	604266	7,0	21	29	14	14	26,9	27	27
18		M 22 x 1,5	GES 18 LM-WD	037643	7,5	22	30	14	14	26,9	27	32	
18		M 18 x 1,5	GES 18 L/M 18 x 1,5-WD	606294	9,3	21,5	31	14,5	12	23,9	27	32	
250 (3626)		22	M 26 x 1,5	GES 22 LM-WD	037644	20,0	24	33	16,5	16	31,9	32	36
	28	M 33 x 2	GES 28 LM-WD	037645	16,5	25	34	17,5	18	39,9	41	41	
	35	M 42 x 2	GES 35 LM-WD	037646	27,5	28	39	17,5	20	49,9	50	50	
	42	M 48 x 2	GES 42 LM-WD	037647	35,0	30	42	19	22	54,9	55	60	
S	800 (11603)	6	M 12 x 1,5	GES 6 SM-WD	037648	3,0	20	28	13	12	16,9	17	17
		8	M 14 x 1,5	GES 8 SM-WD	037649	4,0	22	30	15	12	18,9	19	19
		10	M 16 x 1,5	GES 10 SM-WD	037650	5,5	22,5	31	15	12	21,9	22	22
	630 (9137)	12	M 18 x 1,5	GES 12 SM-WD	037651	7,0	24,5	33	17	12	23,9	24	24
		14	M 20 x 1,5	GES 14 SM-WD	037652	9,5	27	37	19	14	25,9	27	27
		16	M 22 x 1,5	GES 16 SM-WD	037653	9,5	27	37	18,5	14	26,9	27	30
	420 (6091)	20	M 27 x 2	GES 20 SM-WD	037654	15,5	31	42	20,5	16	31,9	32	36
		25	M 33 x 2	GES 25 SM-WD	037655	26,5	35	47	23	18	39,9	41	46
		30	M 42 x 2	GES 30 SM-WD	037656	42,5	37	50	23,5	20	49,9	50	50
		38	M 48 x 2	GES 38 SM-WD	037657	58,5	42	57	26	22	54,9	55	60

L₂ = Ungefährmaß bei angezogener Überwurfmutter
L₂ = approximate length with nut tightened
L₂ = longueur approximative, l'écrou étant bloqué

* FPM (z. B. Viton) auf Anfrage
* FPM (e. g. Viton) on request
* FPM (p. ex. Viton) sur demande

Gerade-Einschraubstutzen
Male stud coupling (body only)
Union simple mâle (corps)

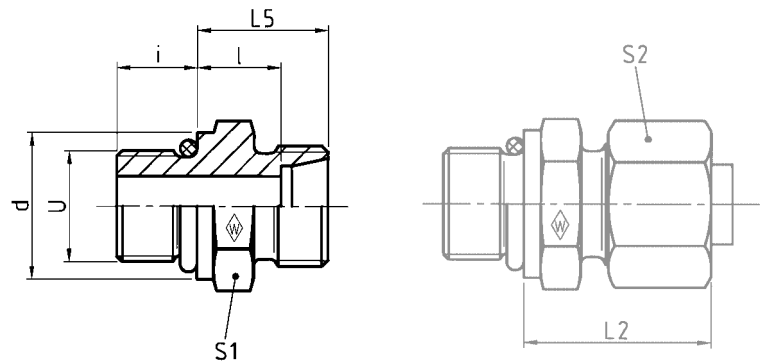


GES U

mit O-Ring NBR* (z. B. Perbunan)
Einschraubgewinde: UST (SAE J 514)

with O-ring NBR* (e. g. Perbunan)
Stud thread: UST (SAE J 514)

avec joint torique NBR* (p. ex. Perbunan)
Filetage mâle: UST (SAE J 514)



Reihe Series Série	PN bar (psi)	Rohr-AD Tube OD Tube Ø ext.	Typ Type Designation U	Best.-Nr. Reference Réf.	kg per 100 St. kg per 100 pcs. kg par 100 p.	L ₂	L ₅	l	i	d	S ₁	S ₂	*O-Ring *O-ring *Joint torique
L	400 (5801)	6	GES 6 L/ 9/16-18 UNF	065356	2,8	25	17	10	10	17,6	19	14	11,9 x 1,98
		8	GES 8 L/ 7/16-20 UNF	065358	2,0	25	17	10	9	14,4	17	17	8,92 x 1,83
		8	GES 8 L/ 9/16-18 UNF	065359	2,0	25	17	10	10	17,6	19	17	11,9 x 1,98
		10	GES 10 L/ 7/16-20 UNF	065361	2,0	26	18	11	9	14,4	17	19	8,92 x 1,83
		10	GES 10 L/ 9/16-18 UNF	065362	2,8	26	18	11	10	17,6	19	19	11,9 x 1,98
		10	GES 10 L/ 3/4-16 UNF	065363	5,5	28	20	13	11	22,3	24	19	16,36 x 2,20
		12	GES 12 L/ 9/16-18 UNF	065365	3,3	26	18	11	10	17,6	19	22	11,9 x 1,98
		12	GES 12 L/ 3/4-16 UNF	065366	4,8	28	20	13	11	22,3	24	22	16,36 x 2,20
		12	GES 12 L/ 7/8-14 UNF	065367	5,9	29	21	14	12,7	25,5	27	22	19,18 x 2,46
		15	GES 15 L/ 3/4-16 UNF	065369	5,4	29	21	14	11	22,3	24	27	16,36 x 2,20
		15	GES 15 L/ 7/8-14 UNF	065370	9,8	30	22	15	12,7	25,5	27	27	19,18 x 2,46
		18	GES 18 L/ 3/4-16 UNF	065371	6,5	31	22	14,5	11	22,3	27	32	16,36 x 2,20
		18	GES 18 L/ 7/8-14 UNF	065372	7,0	31	22	14,5	12,7	25,5	27	32	19,18 x 2,46
		L	250 (3626)	22	GES 22 L/ 7/8-14 UNF	065374	9,0	33	24	16,5	12,7	25,5	32
22	GES 22 L/1 1/16-12 UN			065377	16,5	33	24	16,5	15	31,9	32	36	23,47 x 2,95
28	GES 28 L/ 7/8-14 UNF			065378	20,6	34	25	17,5	12,7	25,5	41	41	19,18 x 2,46
28	GES 28 L/1 5/16-12 UN			065382	15,5	34	25	17,5	15	38,2	41	41	29,74 x 2,95
35	GES 35 L/1 5/8-12 UN			065384	26,5	39	28	17,5	15	47,7	50	50	37,46 x 3
42	GES 42 L/1 5/8-12 UN			065386	30,6	42	30	19	15	47,7	55	55	37,46 x 3
S	630 (9137)	12	GES 12 S/ 3/4-16 UNF	065389	7,6	34	25	17,5	11	22,3	24	24	16,36 x 2,20
		16	GES 16 S/ 3/4-16 UNF	065391	6,5	34	24	15,5	11	22,3	24	30	16,36 x 2,20
		16	GES 16 S/ 7/8-14 UNF	065392	9,5	37	27	18,5	12,7	25,5	27	30	19,18 x 2,46
	400 (5801)	20	GES 20 S/ 3/4-16 UNF	065393	13,1	42	31	20,5	11	22,3	32	36	16,36 x 2,20
		20	GES 20 S/ 7/8-14 UNF	065394	14,1	42	31	20,5	12,7	25,5	32	36	19,18 x 2,46
		20	GES 20 S/1 1/16-12 UN	065395	15,0	42	31	20,5	15	31,9	32	36	23,47 x 2,95
		25	GES 25 S/1 5/16-12 UN	065400	26,0	47	35	23	15	38,2	41	46	29,74 x 2,95
315 (4569)	30	GES 30 S/1 5/8-12 UN	065402	39,4	50	37	23,5	15	47,7	50	50	37,46 x 3	

L₂ = Ungefährmaß bei angezogener Überwurfmutter
L₂ = approximate length with nut tightened
L₂ = longueur approximative, l'écrou étant bloqué

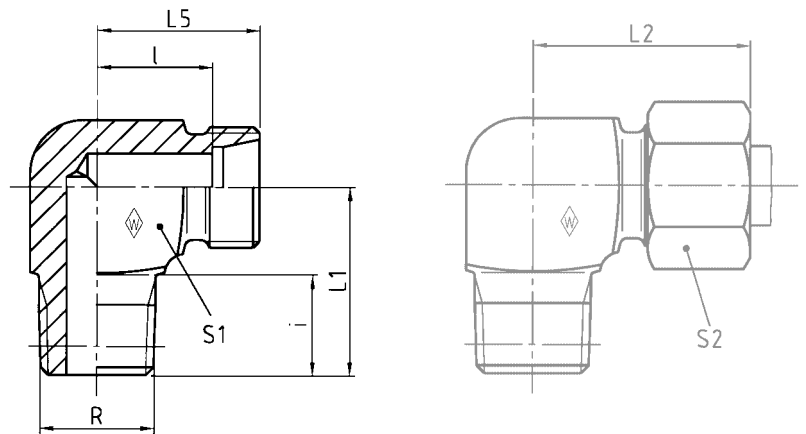
* FPM (z. B. Viton) auf Anfrage
* FPM (e. g. Viton) on request
* FPM (p. ex. Viton) sur demande

Winkel-Einschraubstutzen
Male stud elbow (body only)
Equerre mâle (corps)

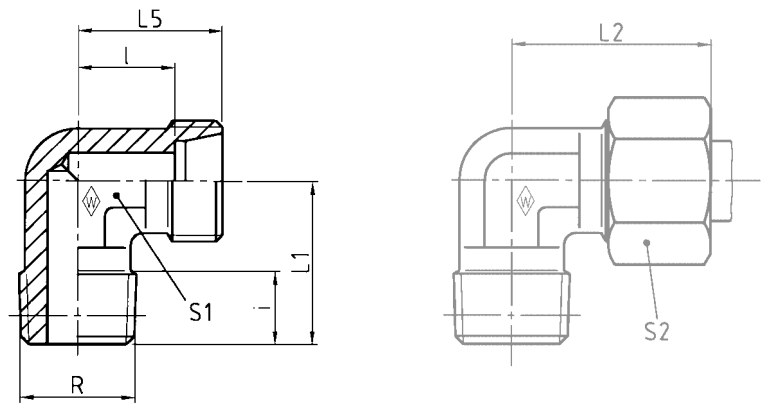


WES RK

Einschraub-
gewinde: Whitworth-Rohrgewinde (kegelig)
Stud thread: BSP thread (taper)
Filetage mâle: Whitworth (conique)



Rohr-AD 4 bis 12 mm = Profilmaterial
Tube OD 4 to 12 mm = profile material
Tube Ø ext. 4 à 12 mm = matériau profilé



Reihe Séries Série	PN bar (psi)	Rohr-AD Tube OD Tube Ø ext.	R	Typ Type Désignation	Best.-Nr. Reference Réf.	kg per 100 St. kg per 100 pcs. kg par 100 p.	L ₁	L ₂	L ₅	l	i	S ₁	S ₂
LL	100 (1450)	4	R 1/8 keg	WES 4 LLRK	037695	1,7	17	21	15	11	8	11	10
		6	R 1/8 keg	WES 6 LLRK	037697	1,6	17	21	15	9,5	8	11	12
		8	R 1/8 keg	WES 8 LLRK	037698	2,2	20	23	17	11,5	8	12	14
L	250 (3626)	6	R 1/8 keg	WES 6 LRK	037699	2,8	20	27	19	12	8	12	14
		6	R 1/4 keg	WES 6 L/R 1/4 K	037700	5,0	26	29	21	14	12	14	14
		8	R 1/4 keg	WES 8 LRK	037701	4,6	26	29	21	14	12	14	17
		10	R 1/4 keg	WES 10 LRK	037702	8,9	27	30	22	15	12	17	19
		10	R 3/8 keg	WES 10 L/R 3/8 K	037703	6,8	27	30	22	15	12	17	19
		12	R 1/4 keg	WES 12 L/R 1/4 K	037704	8,4	28	32	24	17	12	19	22
		12	R 3/8 keg	WES 12 LRK	037705	8,9	28	32	24	17	12	19	22
		15	R 1/2 keg	WES 15 LRK	037706	8,9	34	36	28	21	14	19	27
S	630* (9137)	160 (2321)	R 1/2 keg	WES 18 LRK	037707	12,0	36	40	31	23,5	14	24	32
		6	R 1/4 keg	WES 6 SRK	037708	5,4	26	31	23	16	12	14	17
		8	R 1/4 keg	WES 8 SRK	037709	7,7	27	32	24	17	12	17	19
		10	R 3/8 keg	WES 10 SRK	037710	10,1	28	34	25	17,5	12	19	22
		12	R 3/8 keg	WES 12 SRK	037711	12,7	28	38	29	21,5	12	22	24
		14	R 1/2 keg	WES 14 SRK	037712	10,6	32	40	30	22	14	19	27
		400 (5801)	R 1/2 keg	WES 16 SRK	037713	13,6	32	43	33	24,5	14	24	30

L₂ = Ungefährmaß bei angezogener Überwurfmutter
L₂ = approximate length with nut tightened
L₂ = longueur approximative, l'écrou étant bloqué

* PN 630 nur bei kegeligen Einschraubblöchern, sonst PN 400
* PN 630 only applies to taper port forms;
PN 400 is applicable to parallel port forms
* PN 630 seulement avec taraudage conique, sinon PN 400

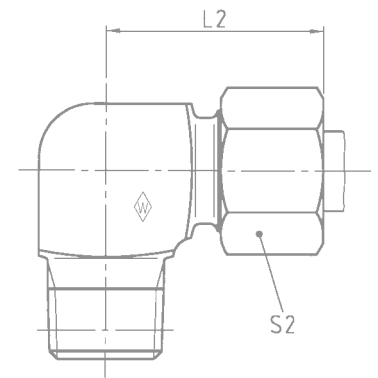
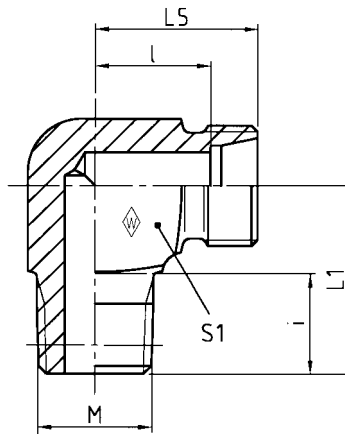
E

Winkel-Einschraubstutzen
Male stud elbow (body only)
Equerre mâle (corps)

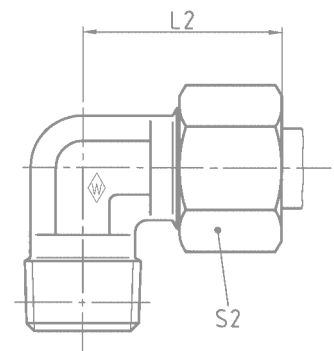
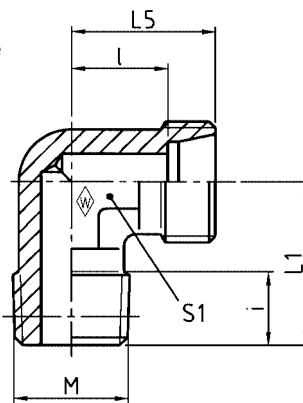


WES MK

Einschraub-
gewinde: Metrisches Gewinde (kegelig)
Stud thread: metric (taper)
Filetage mâle: métrique (conique)



Rohr-AD 4 bis 12 mm = Profilmaterial
Tube OD 4 to 12 mm = profile material
Tube Ø ext. 4 à 12 mm = matériau profilé



Reihe Series Série	PN bar (psi)	Rohr-AD Tube OD Tube Ø ext.	M	Typ Type Désignation	Best.-Nr. Reference Réf.	kg per 100 St. kg per 100 pcs. kg par 100 p.	L ₁	L ₂	L ₅	l	i	S ₁	S ₂	
LL	100 (1450)	4	M 8 x 1	keg	WES 4 LLMK	037714	1,5	17	21	15	11	8	11	10
		6	M 10 x 1	keg	WES 6 LLMK	037716	1,6	17	21	15	9,5	8	11	12
		8	M 10 x 1	keg	WES 8 LLMK	037717	2,3	20	23	17	11,5	8	12	14
L	250 (3626)	6	M 10 x 1	keg	WES 6 LMK	037718	2,9	20	27	19	12	8	12	14
		8	M 12 x 1,5	keg	WES 8 LMK	037719	4,4	26	29	21	14	12	14	17
		10	M 14 x 1,5	keg	WES 10 LMK	037720	6,1	27	30	22	15	12	17	19
		12	M 16 x 1,5	keg	WES 12 LMK	037721	8,7	28	32	24	17	12	19	22
		15	M 18 x 1,5	keg	WES 15 LMK	037722	8,1	32	36	28	21	12	19	27
	160 (2321)	18	M 22 x 1,5	keg	WES 18 LMK	037723	12,2	36	40	31	23,5	14	24	32
S	630* (9137)	6	M 12 x 1,5	keg	WES 6 SMK	037724	5,3	26	31	23	16	12	14	17
		8	M 14 x 1,5	keg	WES 8 SMK	037725	7,8	27	32	24	17	12	17	19
		10	M 16 x 1,5	keg	WES 10 SMK	037726	10,3	28	34	25	17,5	12	19	22
		12	M 18 x 1,5	keg	WES 12 SMK	037727	12,9	28	38	29	21,5	12	22	24
		14	M 20 x 1,5	keg	WES 14 SMK	037728	10,3	32	40	30	22	14	19	27
	400 (5801)	16	M 22 x 1,5	keg	WES 16 SMK	037729	11,4	32	43	33	24,5	14	24	30

L₂ = Ungefährmaß bei angezogener Überwurfmutter
L₂ = approximate length with nut tightened
L₂ = longueur approximative, l'écrou étant bloqué

* PN 630 nur bei kegeligen Einschraubblöchern, sonst PN 400
* PN 630 only applies to taper port forms;
PN 400 is applicable to parallel port forms
* PN 630 seulement avec taraudage conique, sinon PN 400

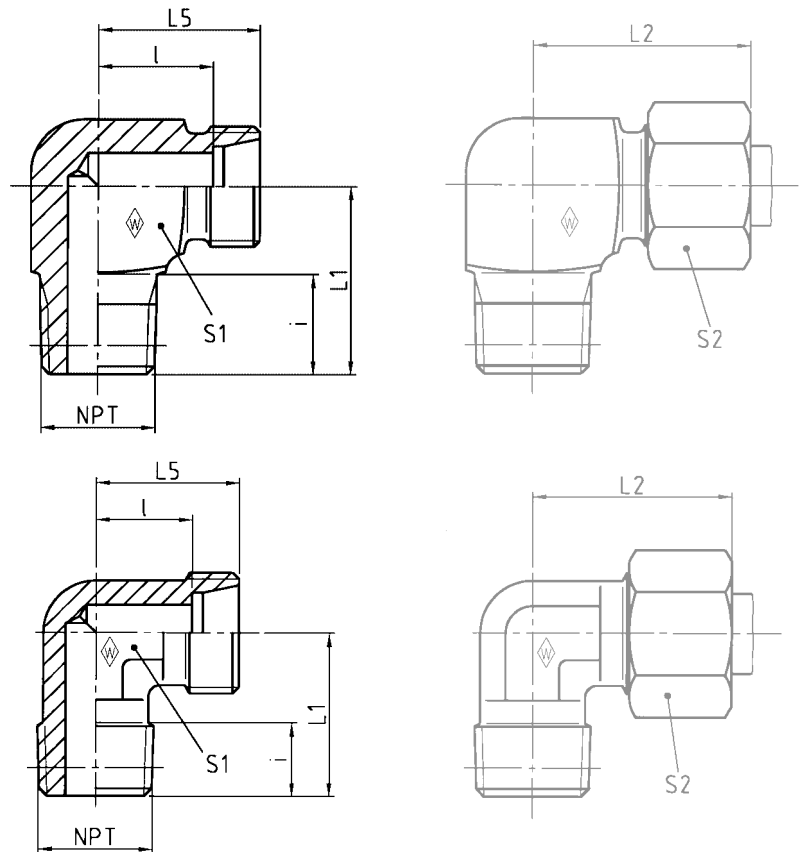
Winkel-Einschraubstutzen
Male stud elbow (body only)
Equerre mâle (corps)



WES NPT

Einschraub-
gewinde: NPT (ANSI/ASME B1.20.1-1983)
Stud thread: NPT (ANSI/ASME B1.20.1-1983)
Filetage mâle: NPT (ANSI/ASME B1.20.1-1983)

Rohr-AD 4 bis 12 mm = Profilmaterial
Tube OD 4 to 12 mm = profile material
Tube Ø ext. 4 à 12 mm = matériau profilé

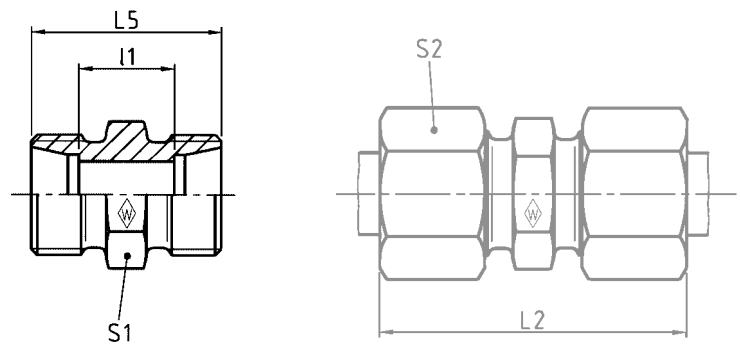


Reihe Series Série	PN bar (psi)	Rohr-AD Tube OD Tube Ø ext.	NPT	Typ Type Désignation	Best.-Nr. Reference Réf.	kg per 100 St. kg per 100 pcs. kg par 100 p.	L ₁	L ₂	L ₅	l	i	S ₁	S ₂
LL	100 (1450)	4	1/8 NPT	WES 4 LL/ 1/8 NPT	037670	1,4	17	21	15	11	10	10	10
		6	1/8 NPT	WES 6 LL/ 1/8 NPT	037672	1,7	17	21	15	9,5	10	10	12
		8	1/8 NPT	WES 8 LL/ 1/8 NPT	037673	2,3	20	23	17	11,5	10	12	14
L	250 (3626)	6	1/8 NPT	WES 6 L/ 1/8 NPT	037674	2,8	20	27	19	12	10	12	14
		8	1/4 NPT	WES 8 L/ 1/4 NPT	037675	4,5	26	29	21	14	15	14	17
		10	1/4 NPT	WES 10 L/ 1/4 NPT	037676	6,0	27	30	22	15	15	17	19
		12	1/4 NPT	WES 12 L/ 1/4 NPT	037677	8,1	28	32	24	17	15	19	22
		12	3/8 NPT	WES 12 L/ 3/8 NPT	037678	8,6	28	32	24	17	15	19	22
		15	1/2 NPT	WES 15 L/ 1/2 NPT	037679	8,8	34	36	28	21	14	19	27
	160 (2321)	18	1/2 NPT	WES 18 L/ 1/2 NPT	037680	13,1	36	40	31	23,5	20	24	32
		22	3/4 NPT	WES 22 L/ 3/4 NPT	037681	14,9	42	44	35	27,5	20	27	36
	100 (1450)	28	1 NPT	WES 28 L/1 NPT	037682	28,3	48	47	38	30,5	23	36	41
S	630 (9137)	6	1/4 NPT	WES 6 S/ 1/4 NPT	037685	5,3	26	31	23	16	15	14	17
		8	1/4 NPT	WES 8 S/ 1/4 NPT	037686	7,3	27	32	24	17	15	17	19
		10	3/8 NPT	WES 10 S/ 3/8 NPT	037687	9,7	28	34	25	17,5	15	19	22
		12	3/8 NPT	WES 12 S/ 3/8 NPT	037688	12,1	28	38	29	21,5	15	22	24
	14	1/2 NPT	WES 14 S/ 1/2 NPT	037689	10,3	33	40	30	22	15	19	27	
	400 (5801)	16	1/2 NPT	WES 16 S/ 1/2 NPT	037690	13,8	33	43	33	24,5	17	24	30
		20	3/4 NPT	WES 20 S/ 3/4 NPT	037691	19,7	42	48	37	26,5	20	27	36
25		1 NPT	WES 25 S/1 NPT	037692	36,0	48	54	42	30	23	36	46	

L₂ = Ungefährmaß bei angezogener Überwurfmutter
L₂ = approximate length with nut tightened
L₂ = longueur approximative, l'écrou étant bloqué



GS



E

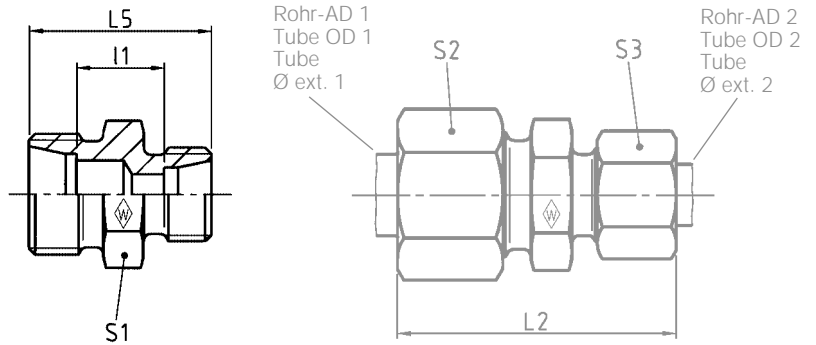
Reihe Series Série	PN bar (psi)	Rohr-AD Tube OD Tube Ø ext.	Typ Type Désignation	Best.-Nr. Reference Réf.	kg per 100 St. kg per 100 pcs. kg par 100 p.	L ₂	L ₅	l ₁	S ₁	S ₂
LL	100 (1450)	4	GS 4 LL	037844	0,6	31	20	12	9	10
		6	GS 6 LL	037846	0,7	32	20	9	11	12
		8	GS 8 LL	037847	1,1	35	23	12	12	14
	500 (7252)	6	GS 6 L	037848	1,3	39	24	10	12	14
		8	GS 8 L	037849	1,7	40	25	11	14	17
		10	GS 10 L	037850	2,5	42	27	13	17	19
L	400 (5801)	12	GS 12 L	037851	2,8	43	28	14	19	22
		15	GS 15 L	037852	4,8	46	30	16	24	27
		18	GS 18 L	028736	6,6	48	31	16	27	32
	250 (3626)	22	GS 22 L	028737	8,9	52	35	20	32	36
		28	GS 28 L	028738	13,5	54	36	21	41	41
		35	GS 35 L	028739	21,2	63	41	20	46	50
		42	GS 42 L	028740	29,2	66	43	21	55	60
S	800 (11603)	6	GS 6 S	037853	2,5	45	30	16	14	17
		8	GS 8 S	037854	2,9	47	32	18	17	19
		10	GS 10 S	037855	4,3	49	32	17	19	22
	630 (9137)	12	GS 12 S	037856	6,0	51	34	19	22	24
		14	GS 14 S	037857	7,5	57	38	22	24	27
		16	GS 16 S	037858	8,7	57	38	21	27	30
	420 (6091)	20	GS 20 S	037859	14,2	66	44	23	32	36
		25	GS 25 S	037860	24,9	74	50	26	41	46
30		GS 30 S	037861	32,8	80	54	27	46	50	
		38	GS 38 S	037862	54,0	90	61	29	55	60

L₂ = Ungefährmaß bei angezogener Überwurfmutter
 L₂ = approximate length with nut tightened
 L₂ = longueur approximative, l'écrou étant bloqué

Gerade-Reduzierstutzen
 Straight reducing coupling (body only)
 Union double de réduction (corps)



GS .../...



Reihe Series Série	PN bar (psi)	Rohr-AD 1 Tube OD 1 Tube Ø ext. 1	Rohr-AD 2 Tube OD 2 Tube Ø ext. 2	Typ Type Désignation	Best.-Nr. Reference Réf.	kg per 100 St. kg per 100 pcs. kg par 100 p.	L ₂	L ₅	L ₁	S ₁	S ₂	S ₃
LL	100 (1450)	6	4	GS 6/ 4 LL	060066	0,7	32,5	20	10,5	11	12	10
		8	4	GS 8/ 4 LL	025120	0,8	34	22	12,5	12	14	10
	500 (7252)	8	6	GS 8/ 6 L	029475	1,6	40	25	11	14	17	14
		10	6	GS 10/ 6 L	029476	2,0	41	26	12	17	19	14
		10	8	GS 10/ 8 L	029477	2,1	41	26	12	17	19	17
		12	6	GS 12/ 6 L	063441	2,3	42	27	13	19	22	14
L	400 (5801)	12	8	GS 12/ 8 L	029478	2,3	42	27	13	19	22	17
		12	10	GS 12/10 L	029479	2,5	43	28	14	19	22	19
		15	10	GS 15/10 L	060223	4,4	44,5	29	15	24	27	19
		15	12	GS 15/12 L	029480	4,2	44,5	29	15	24	27	22
		18	10	GS 18/10 L	024917	6,0	46	30	15,5	27	32	19
		18	12	GS 18/12 L	029663	5,9	46	30	15,5	27	32	22
	250 (3626)	18	15	GS 18/15 L	029482	6,1	47,5	31	16,5	27	32	27
		22	15	GS 22/15 L	024355	7,9	49,5	33	18,5	32	36	27
		22	18	GS 22/18 L	061992	8,3	50	33	18	32	36	32
		28	22	GS 28/22 L	024889	13,0	54	36	21	41	41	36
S	630 (9137)	16	12	GS 16/12 S	029481	8,2	54	36	20	27	30	24
	420 (6091)	20	16	GS 20/16 S	025197	13,1	62,5	42	23	32	36	30
		25	16	GS 25/16 S	060853	22,3	68	46	25,5	41	46	30
		25	20	GS 25/20 S	063230	23,4	71	48	25,5	41	46	36

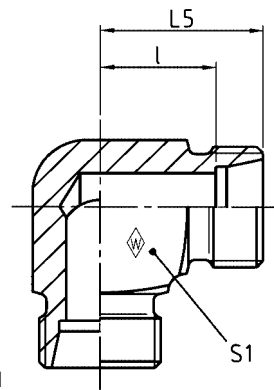
L₂ = Ungefährmaß bei angezogener Überwurfmutter
 L₂ = approximate length with nut tightened
 L₂ = longueur approximative, l'écrou étant bloqué



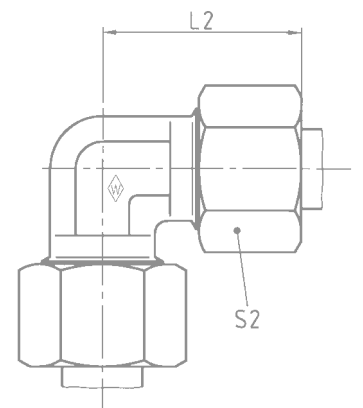
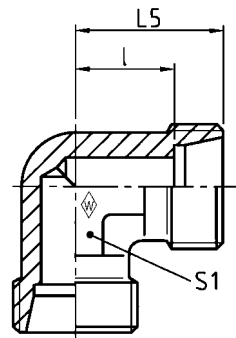
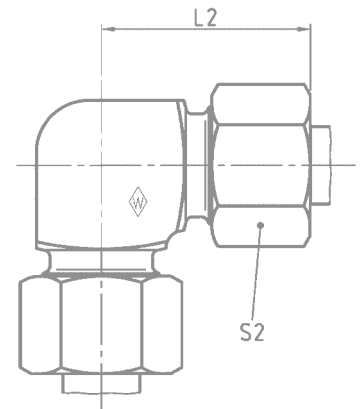
Winkel-Stutzen
 Equal elbow (body only)
 Union équerre (corps)



WS



Rohr-AD 4 bis 12 mm = Profilmaterial
 Tube OD 4 to 12 mm = profile material
 Tube Ø ext. 4 à 12 mm = matériau profilé



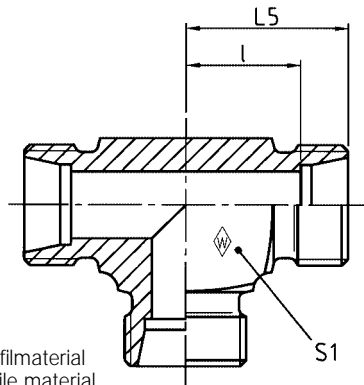
Reihe Series Série	PN bar (psi)	Rohr-AD Tube OD Tube Ø ext.	Typ Type Désignation	Best.-Nr. Reference Réf.	kg per 100 St. kg per 100 pcs. kg par 100 p.	L ₂	L ₅	l	S ₁	S ₂
LL	100 (1450)	4	WS 4 LL	037863	1,2	21	15	11	8	10
		6	WS 6 LL	037865	1,4	21	15	9,5	11	12
		8	WS 8 LL	037866	2,2	23	17	11,5	12	14
	500 (7252)	6	WS 6 L	037867	2,8	27	19	12	12	14
		8	WS 8 L	037868	4,1	29	21	14	14	17
		10	WS 10 L	037869	5,7	30	22	15	17	19
L	400 (5801)	12	WS 12 L	037870	8,0	32	24	17	19	22
		15	WS 15 L	037871	7,5	36	28	21	19	27
		18	WS 18 L	037872	11,2	40	31	23,5	24	32
	250 (3626)	22	WS 22 L	037873	14,9	44	35	27,5	27	36
		28	WS 28 L	037874	25,2	47	38	30,5	36	41
		35	WS 35 L	037875	46,5	56	45	34,5	41	50
S	800 (11603)	6	WS 6 S	037877	9,4	31	23	16	14	17
		8	WS 8 S	037878	7,2	32	24	17	17	19
		10	WS 10 S	037879	9,7	34	25	17,5	19	22
	630 (9137)	12	WS 12 S	037880	13,6	38	29	21,5	22	24
		14	WS 14 S	037881	9,8	40	30	22	19	27
		16	WS 16 S	037882	14,4	43	33	24,5	24	30
	420 (6091)	20	WS 20 S	037883	20,0	48	37	26,5	27	36
		25	WS 25 S	037884	36,5	54	42	30	36	46
		30	WS 30 S	037885	46,5	62	49	35,5	41	50
		400 (5801)	38	WS 38 S	037886	66,0	72	57	41	50

L₂ = Ungefährmaß bei angezogener Überwurfmutter
 L₂ = approximate length with nut tightened
 L₂ = longueur approximative, l'écrou étant bloqué

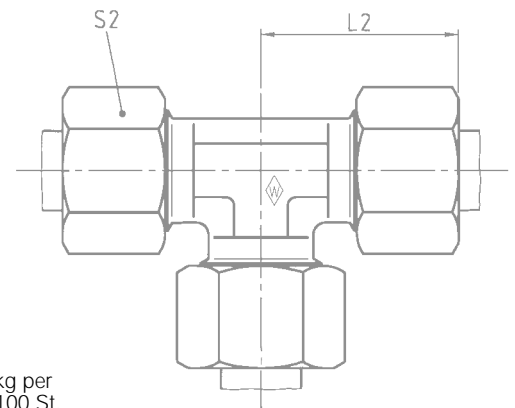
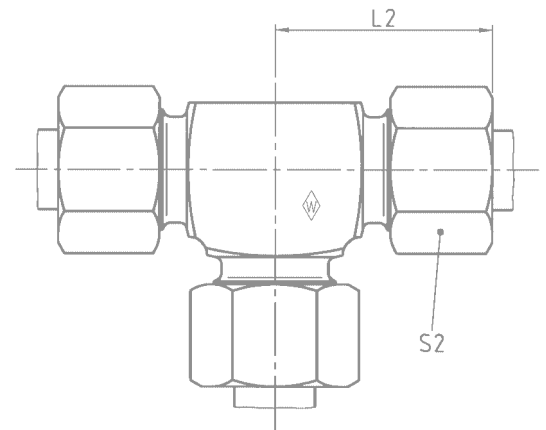
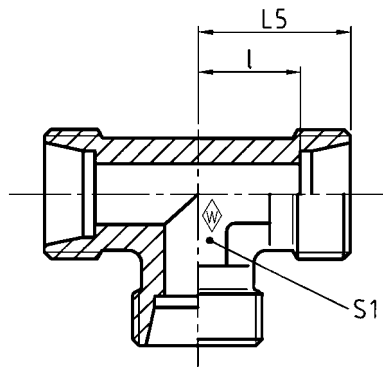
T-Stutzen
Equal Tee (body only)
Union té (corps)



TS



Rohr-AD 4 bis 12 mm = Profilmaterial
Tube OD 4 to 12 mm = profile material
Tube Ø ext. 4 à 12 mm = matériau profilé



Reihe Series Série	PN bar (psi)	Rohr-AD Tube OD Tube Ø ext.	Typ Type Désignation	Best.-Nr. Reference Réf.	kg per 100 St. kg per 100 pcs. kg par 100 p.	L ₂	L ₅	l ₁	S ₁	S ₂
LL	100 (1450)	4	TS 4 LL	037887	1,4	21	15	11	8	10
		6	TS 6 LL	037889	1,7	21	15	9,5	10	12
		8	TS 8 LL	037890	2,5	23	17	11,5	12	14
L	500 (7252)	6	TS 6 L	037891	3,4	27	19	12	12	14
		8	TS 8 L	037892	5,2	29	21	14	14	17
		10	TS 10 L	037893	6,3	30	22	15	17	19
	400 (5801)	12	TS 12 L	037894	8,6	32	24	17	19	22
		15	TS 15 L	037895	8,9	36	28	21	19	27
		18	TS 18 L	037896	14,7	40	31	23,5	24	32
22		TS 22 L	037897	19,6	44	35	27,5	27	36	
250 (3626)	28	TS 28 L	037898	33,4	47	38	30,5	36	41	
	35	TS 35 L	037899	49,5	56	45	34,5	41	50	
	42	TS 42 L	037900	67,5	63	51	40	50	60	
	S	800 (11603)	6	TS 6 S	037901	6,1	31	23	16	14
8			TS 8 S	037902	8,6	32	24	17	17	19
10			TS 10 S	037903	10,8	34	25	17,5	19	22
630 (9137)		12	TS 12 S	037904	16,0	38	29	21,5	22	24
		14	TS 14 S	037905	13,2	40	30	22	19	27
		16	TS 16 S	037906	16,0	43	33	24,5	24	30
420 (6091)	20	TS 20 S	037907	26,8	48	37	26,5	27	36	
	25	TS 25 S	037908	46,0	54	42	30	36	46	
	30	TS 30 S	037909	71,4	62	49	35,5	41	50	
	400 (5801)	38	TS 38 S	037910	103,5	72	57	41	50	60

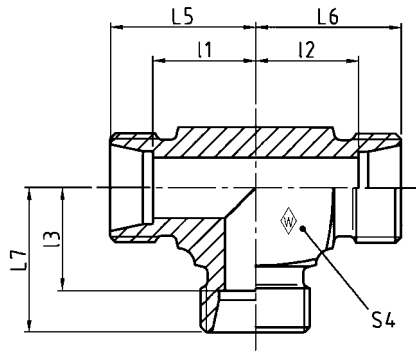
L₂ = Ungefährmaß bei angezogener Überwurfmutter
L₂ = approximate length with nut tightened
L₂ = longueur approximative, l'écrou étant bloqué

E

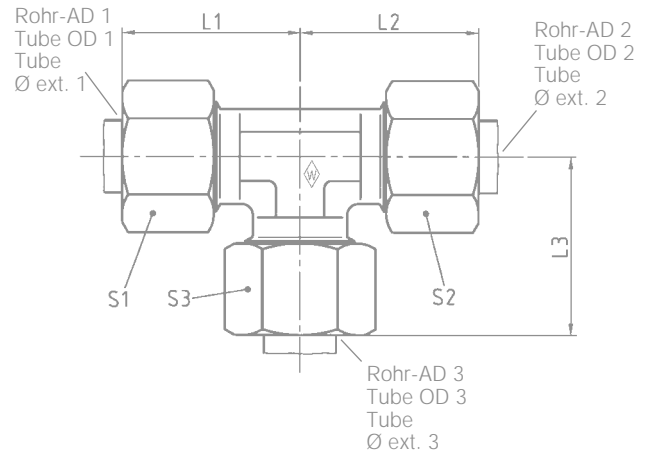
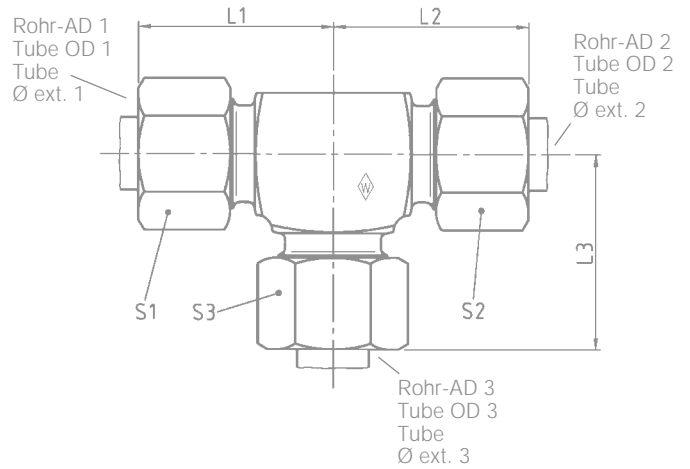
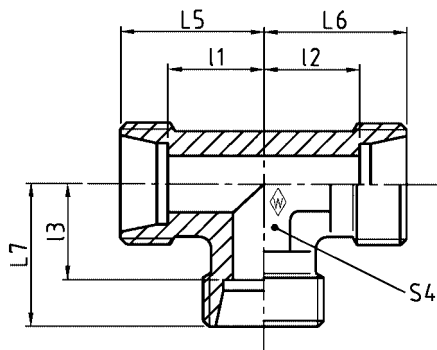
T-Reduzierstutzen
 Reducing Tee (body only)
 Union té de réduction (corps)



TS.../.../...



Rohr-AD 4 bis 12 mm = Profilmaterial
 Tube OD 4 to 12 mm = profile material
 Tube Ø ext. 4 à 12 mm = matériau profilé

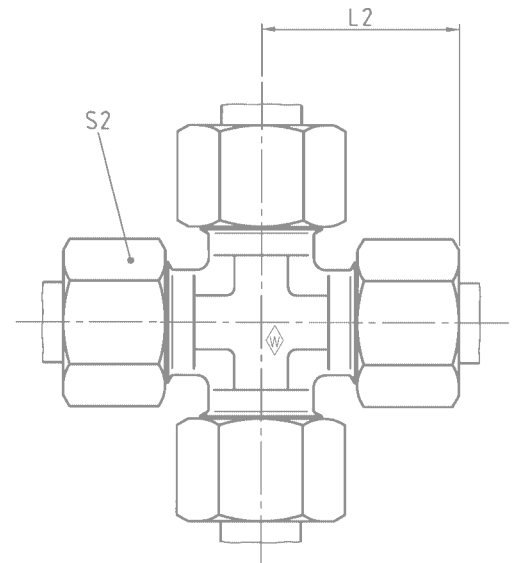
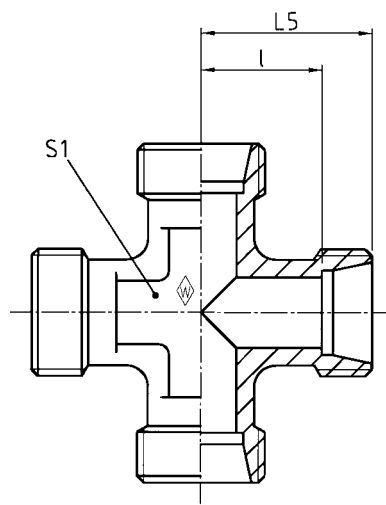


Reihe Série	PN bar (psi)	Rohr-AD Tube OD Tube Ø ext.			Typ Type Designation	Best.-Nr. Reference Réf.	kg per 100 St. kg per 100 pcs. kg par 100 p.	l ₁	l ₂	l ₃	L ₁	L ₂	L ₃	L ₅	L ₆	L ₇	S ₁	S ₂	S ₃	S ₄	
		1	2	3																	
L	500 (7252)	10	10	6	TS 10/10/ 6 L	027761	5,8	15	15	15	30	30	30	22	22	22	17	19	14	17	
		10	10	8	TS 10/10/ 8 L	029472	5,8	15	15	15	30	30	30	22	22	22	17	19	17	17	
			12	12	6	TS 12/12/ 6 L	025465	8,9	17	17	17	32	32	32	24	24	24	22	22	14	19
			12	12	8	TS 12/12/ 8 L	027710	8,7	17	17	17	32	32	32	24	24	24	22	22	17	19
			12	12	10	TS 12/12/10 L	024215	8,9	17	17	17	32	32	32	24	24	24	22	22	19	19
			12	12	15	TS 12/12/15 L	060044	7,9	21	21	21	36	36	36	28	28	28	22	22	27	19
			15	12	12	TS 15/12/12 L	028939	8,0	21	21	21	36	36	36	28	28	28	27	22	22	19
			15	12	15	TS 15/12/15 L	024959	8,0	21	21	21	36	36	36	28	28	28	27	22	27	19
		400 (5801)	15	15	8	TS 15/15/ 8 L	025033	7,7	21	21	21	36	36	36	28	28	28	27	27	17	19
			15	15	10	TS 15/15/10 L	060051	8,0	21	21	21	36	36	36	28	28	28	27	27	19	19
			15	15	12	TS 15/15/12 L	029473	8,7	21	21	21	36	36	36	28	28	28	27	27	22	19
			18	12	12	TS 18/12/12 L	064007	15,0	23,5	24	24	40	39	39	31	31	31	32	22	22	24
			18	18	10	TS 18/18/10 L	029620	15,0	23,5	23,5	24	40	40	39	31	31	31	32	32	19	24
			18	18	12	TS 18/18/12 L	028666	15,3	23,5	23,5	24	40	40	39	31	31	31	32	32	22	24
			18	18	15	TS 18/18/15 L	066450	15,5	23,5	23,5	24	40	40	39	31	31	31	32	32	27	24
			22	22	10	TS 22/22/10 L	025467	20,1	27,5	27,5	28	44	44	43	35	35	35	36	36	19	27
	250 (3626)	22	22	15	TS 22/22/15 L	060866	20,6	27,5	27,5	28	44	44	43	35	35	35	36	36	27	27	
		28	22	22	TS 28/22/22 L	063243	34,0	30,5	30,5	30,5	47	47	47	38	38	38	41	36	36	36	
		28	28	22	TS 28/28/22 L	060956	33,2	30,5	30,5	30,5	47	47	47	38	38	38	41	41	36	36	

L₁, L₂ und L₃ = Ungefährmaße bei angezogenen Überwurfmuttern
 L₁, L₂ and L₃ = approximate lengths with nuts tightened
 L₁, L₂ et L₃ = longueurs approximatives, les écrous étant bloqués



KS



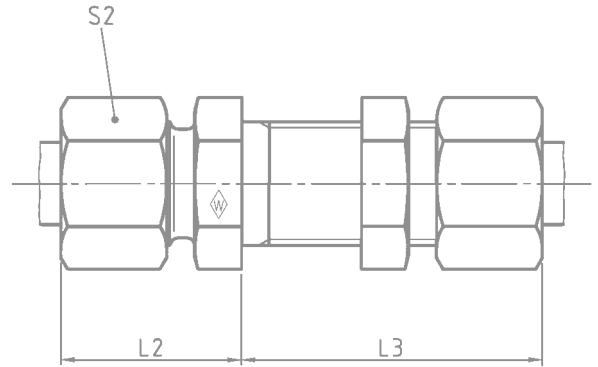
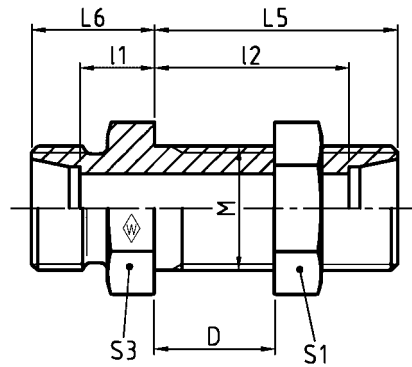
E

Reihe Series Série	PN bar (psi)	Rohr-AD Tube OD Tube Ø ext.	Typ Type Désignation	Best.-Nr. Reference Réf.	kg per 100 St. kg per 100 pcs. kg par 100 p.	L ₂	L ₅	l	S ₁	S ₂
LL	100 (1450)	4	KS 4 LL	037911	1,5	21	15	11	9	10
		6	KS 6 LL	037913	1,5	21	15	9,5	9	12
		8	KS 8 LL	037914	2,6	23	17	11,5	12	14
L	500 (7252)	6	KS 6 L	037915	3,5	27	19	12	12	14
		8	KS 8 L	037916	4,1	29	21	14	12	17
		10	KS 10 L	037917	4,6	30	22	15	14	19
	400 (5801)	12	KS 12 L	037918	7,3	32	24	17	17	22
		15	KS 15 L	037919	12,5	36	28	21	19	27
		18	KS 18 L	037920	18,2	40	31	23,5	24	32
S	250 (3626)	22	KS 22 L	037921	23,5	44	35	27,5	27	36
		28	KS 28 L	037922	64,0	47	38	30,5	36	41
		35	KS 35 L	037923	64,0	56	45	34,5	41	50
	800 (11603)	42	KS 42 L	037924	83,2	63	51	40	50	60
		6	KS 6 S	037925	6,1	31	23	16	12	17
S	630 (9137)	8	KS 8 S	037926	8,1	32	24	17	14	19
		10	KS 10 S	037927	10,4	34	25	17,5	17	22
		12	KS 12 S	037928	13,7	38	29	21,5	17	24
	420 (6901)	14	KS 14 S	037929	16,5	40	30	22	19	27
		16	KS 16 S	037930	22,4	43	33	24,5	24	30
		20	KS 20 S	037931	29,0	48	37	26,5	27	36
400 (5801)	25	KS 25 S	037932	43,5	54	42	30	36	46	
	30	KS 30 S	037933	58,5	62	49	35,5	41	50	
		38	KS 38 S	037934	73,5	72	57	41	50	60

L₂ = Ungefährmaß bei angezogener Überwurfmutter
 L₂ = approximate length with nut tightened
 L₂ = longueur approximative, l'écrou étant bloqué



GSS

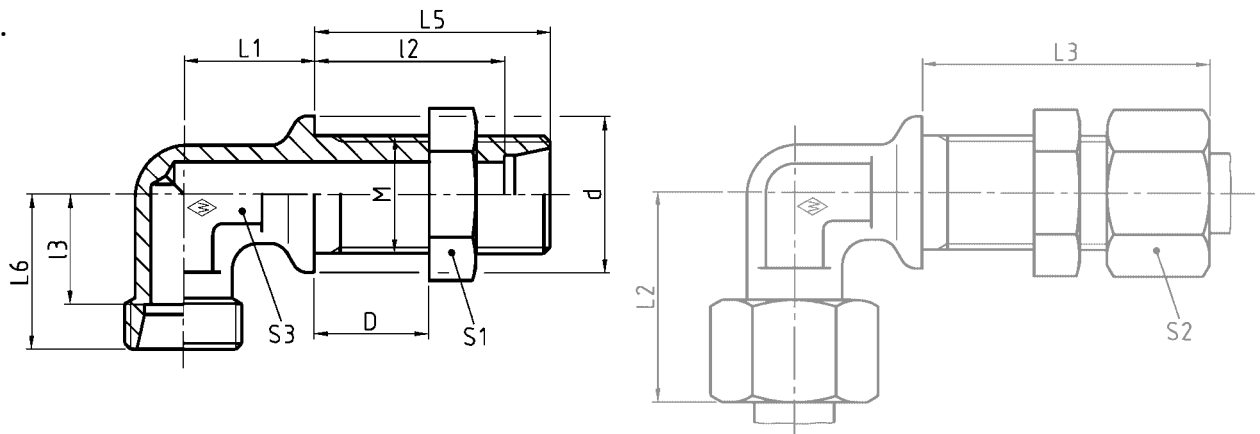


Reihe Series Série	PN bar (psi)	Rohr-AD Tube OD Ø ext.	M	D min.	D max.	Typ Type Désignation	Best.-Nr. Reference Réf.	kg per 100 St. kg per 100 pcs. kg par 100 p.	L ₂	L ₃	L ₅	L ₆	l ₁	l ₂	S ₁	S ₂	S ₃
L	500 (7252)	6	M 12 x 1,5	4	16	GSS 6 L m. 6kt M	063273	4,0	22	42	34	14	7	27	17	14	17
		8	M 14 x 1,5	4	16	GSS 8 L m. 6kt M	024147	5,0	23	42	34	15	8	27	19	17	19
		10	M 16 x 1,5	4	16	GSS 10 L m. 6kt M	061656	6,5	25	43	35	17	10	28	22	19	22
	400 (5801)	12	M 18 x 1,5	4	16	GSS 12 L m. 6kt M	061657	7,5	25	44	36	17	10	29	24	22	24
		15	M 22 x 1,5	4	16	GSS 15 L m. 6kt M	061995	13,0	27	45	38	19	12	31	30	27	27
		18	M 26 x 1,5	4	16	GSS 18 L m. 6kt M	061658	19,5	30	49	40	21	13,5	32,5	36	32	32
		22	M 30 x 2	5	16	GSS 22 L m. 6kt M	063759	25,5	33	51	42	24	16,5	34,5	41	36	36
250 (3626)	28	M 36 x 2	5	16	GSS 28 L m. 6kt M	063760	34,0	35	52	43	26	18,5	35,5	46	41	41	
	35	M 45 x 2	5	16	GSS 35 L m. 6kt M	063761	49,4	40	58	47	29	18,5	36,5	55	50	50	
	42	M 52 x 2	5	16	GSS 42 L m. 6kt M	063762	71,6	42	59	47	30	19	36	65	60	60	
S	800 (11603)	6	M 14 x 1,5	4	16	GSS 6 S m. 6kt M	063763	6,2	27	44	36	19	12	29	19	17	19
		8	M 16 x 1,5	4	16	GSS 8 S m. 6kt M	063764	9,0	28	44	36	20	13	29	22	19	22
		10	M 18 x 1,5	4	16	GSS 10 S m. 6kt M	063765	11,3	31	46	37	22	14,5	29,5	24	22	24
	630 (9137)	12	M 20 x 1,5	4	16	GSS 12 S m. 6kt M	063766	14,0	31	47	38	22	14,5	30,5	27	24	27
		14	M 22 x 1,5	4	16	GSS 14 S m. 6kt M	063767	18,0	35	50	40	25	17	32	30	27	30
		16	M 24 x 1,5	4	16	GSS 16 S m. 6kt M	063768	17,5	35	50	40	25	16,5	31,5	32	30	32
	400 (5801)	20	M 30 x 2	5	16	GSS 20 S m. 6kt M	063769	33,2	39	55	44	28	17,5	33,5	41	36	41
		25	M 36 x 2	5	16	GSS 25 S m. 6kt M	063770	49,5	44	59	47	32	20	35	46	46	46
		30	M 42 x 2	5	16	GSS 30 S m. 6kt M	063771	66,4	48	64	51	35	21,5	37,5	50	50	50
		38	M 52 x 2	5	16	GSS 38 S m. 6kt M	063772	105,9	53	68	53	38	22	37	65	60	65

L₂ und L₃ = Ungefährmaße bei angezogenen Überwurfmuttern
L₂ and L₃ = approximate lengths with nuts tightened
L₂ et L₃ = longueurs approximatives, les écrous étant bloqués



WSS

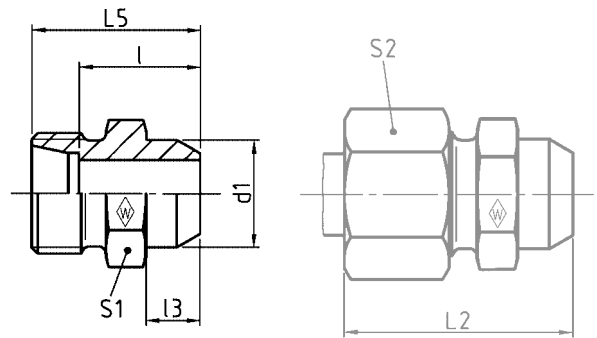


Reihe Series Série	PN bar (psi)	Rohr-AD Tube OD Tube Ø ext.		D min.	D max.	Typ Type Designation	Best.-Nr. Reference Réf.	kg per 100 St. kg per 100 pcs. kg par 100 p.	L ₁	L ₂	L ₃	L ₅	L ₆	l ₂	l ₃	d	S ₁ *	S ₂	S ₃
		M	M																
L	500 (7252)	6	M 12 x 1,5	4	16	WSS 6 L m. 6kt M	063274	5,0	14	27	42	34	19	27	12	17	17	14	12
		8	M 14 x 1,5	4	16	WSS 8 L m. 6kt M	024146	6,5	17	29	42	34	21	27	14	19	19	17	12
		10	M 16 x 1,5	4	16	WSS 10 L m. 6kt M	024127	8,0	18	30	43	35	22	28	15	22	22	19	14
	400 (5801)	12	M 18 x 1,5	4	16	WSS 12 L m. 6kt M	063773	10,0	20	32	44	36	24	29	17	24	24	22	17
		15	M 22 x 1,5	4	16	WSS 15 L m. 6kt M	063275	17,0	23	36	46	38	28	31	21	27	30	27	19
		18	M 26 x 1,5	4	16	WSS 18 L m. 6kt M	063774	24,0	24	40	49	40	31	32,5	23,5	32	36	32	24
		22	M 30 x 2	5	16	WSS 22 L m. 6kt M	063775	64,2	30	44	51	42	35	34,5	27,5	36	41	36	27
	250 (3626)	28	M 36 x 2	5	16	WSS 28 L m. 6kt M	063776	44,5	34	47	52	43	38	35,5	30,5	42	46	41	36
		35	M 45 x 2	5	16	WSS 35 L m. 6kt M	063777	68,8	39	56	58	47	45	36,5	34,5	50	55	50	41
		42	M 52 x 2	5	16	WSS 42 L m. 6kt M	063778	196,7	43	63	59	47	51	36	40	60	65	60	50
S	800 (11603)	6	M 14 x 1,5	4	16	WSS 6 S m. 6kt M	063779	7,5	17	31	44	36	23	29	16	19	19	17	12
		8	M 16 x 1,5	4	16	WSS 8 S m. 6kt M	063780	10,0	18	32	44	36	24	29	17	22	22	19	14
		10	M 18 x 1,5	4	16	WSS 10 S m. 6kt M	063781	12,2	20	34	46	37	25	29,5	17,5	24	24	22	17
	630 (9137)	12	M 20 x 1,5	4	16	WSS 12 S m. 6kt M	063782	16,0	21	38	47	38	29	30,5	21,5	27	27	24	17
		14	M 22 x 1,5	4	16	WSS 14 S m. 6kt M	063783	20,0	23	40	50	40	30	32	22	27	30	27	19
	400 (5801)	16	M 24 x 1,5	4	16	WSS 16 S m. 6kt M	063784	23,0	24	43	50	40	33	31,5	24,5	30	32	30	24
		20	M 30 x 2	5	16	WSS 20 S m. 6kt M	063785	38,5	30	48	55	44	37	33,5	26,5	36	41	36	27
		25	M 36 x 2	5	16	WSS 25 S m. 6kt M	063786	62,0	34	54	59	47	42	35	30	42	46	46	36
		30	M 42 x 2	5	16	WSS 30 S m. 6kt M	063244	88,5	39	62	64	51	49	37,5	35,5	50	50	50	41
		38	M 52 x 2	5	16	WSS 38 S m. 6kt M	063787	129,9	43	72	68	53	57	37	41	60	65	60	50

L₂ und L₃ = Ungefährmaße bei angezogenen Überwurfmuttern
L₂ and L₃ = approximate lengths with nuts tightened
L₂ et L₃ = longueurs approximatives, les écrous étant bloqués



ASS



E

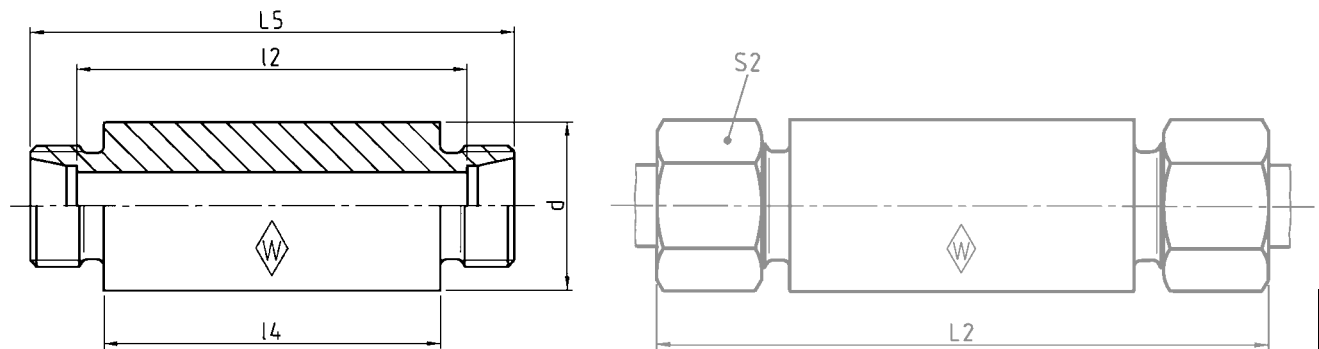
Reihe Series Série	PN bar (psi)	Rohr-AD Tube OD Tube Ø ext.	Typ Type Désignation	Best.-Nr. Reference Réf.	kg per 100 St. kg per 100 pcs. kg par 100 p.	L ₂	L ₅	l	l ₃	d ₁	S ₁	S ₂
L	500 (7252)	6	ASS 6 L	037975	1,1	29	21	14	7	10	12	14
		8	ASS 8 L	037976	1,5	31	23	16	8	12	14	17
		10	ASS 10 L	037977	2,2	33	25	18	8	14	17	19
	400 (5801)	12	ASS 12 L	037978	2,5	33	25	18	8	16	19	22
		15	ASS 15 L	037979	4,3	37	29	22	10	19	22	27
		18	ASS 18 L	037980	6,6	40	31	23,5	10	22	27	32
	250 (3626)	22	ASS 22 L	037981	9,8	45	36	28,5	12	27	32	36
28		ASS 28 L	037982	15,9	47	38	30,5	12	32	41	41	
35		ASS 35 L	037983	23,0	54	43	32,5	14	40	46	50	
42		ASS 42 L	037984	32,7	58	46	35	16	46	55	60	
S	800 (11603)	6	ASS 6 S	037985	2,1	34	26	19	7	11	14	17
		8	ASS 8 S	037986	3,1	36	28	21	8	13	17	19
		10	ASS 10 S	037987	4,1	39	30	22,5	8	15	19	22
	630 (9137)	12	ASS 12 S	037988	5,6	41	32	24,5	10	17	22	24
		14	ASS 14 S	037989	7,0	45	35	27	10	19	24	27
		16	ASS 16 S	037990	8,3	45	35	26,5	10	21	27	30
	420 (6091)	20	ASS 20 S	037991	12,9	51	40	29,5	12	26	32	36
		25	ASS 25 S	037992	21,9	56	44	32	12	31	41	46
30		ASS 30 S	037993	29,5	62	49	35,5	14	36	46	50	
		38	ASS 38 S	037994	44,7	69	54	38	16	44	55	60

L₂ = Ungefährmaß bei angezogener Überwurfmutter
 L₂ = approximate length with nut tightened
 L₂ = longueur approximative, l'écrou étant bloqué

Werkstoff der Verschraubungsstutzen ist schmelzsweißbarer Stahl
 Body manufactured in weldable quality steel
 Le corps est en acier soudable



ESS







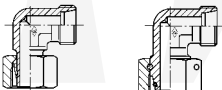

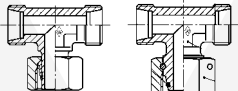

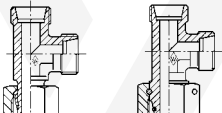

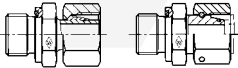

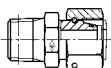

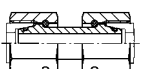


E

Reihe Series Série	PN bar (psi)	Rohr-AD Tube OD Tube Ø ext.	Typ Type Désignation	Best.-Nr. Reference Réf.	kg per 100 St. kg per 100 pcs. kg par 100 p.	L ₂	L ₅	l ₂	l ₄	d	S ₂
L	500 (7252)	6	ESS 6 L	037995	10,3	85	70	56	50	18	14
		8	ESS 8 L	037996	12,3	85	70	56	50	20	17
		10	ESS 10 L	037997	14,4	87	72	58	50	22	19
	400 (5801)	12	ESS 12 L	037998	17,9	87	72	58	50	25	22
		15	ESS 15 L	037999	26,5	100	84	70	60	28	27
		18	ESS 18 L	038000	33,4	101	84	69	60	32	32
	250 (3626)	22	ESS 22 L	038001	39,9	105	88	73	60	36	36
		28	ESS 28 L	038002	45,1	106	88	73	60	40	41
		35	ESS 35 L	038003	72,2	114	92	71	60	50	50
		42	ESS 42 L	038004	100,7	115	92	70	60	60	60
S	800 (11603)	6	ESS 6 S	038005	13,6	89	74	60	50	20	17
		8	ESS 8 S	038006	16,4	89	74	60	50	22	19
		10	ESS 10 S	038007	20,3	91	74	59	50	25	22
	630 (9137)	12	ESS 12 S	038008	25,3	91	74	59	50	28	24
		14	ESS 14 S	038009	16,8	107	88	72	60	30	27
		16	ESS 16 S	038010	44,5	107	88	71	60	35	30
	420 (6091)	20	ESS 20 S	038011	51,7	114	92	71	60	38	36
		25	ESS 25 S	038012	72,5	120	96	72	60	45	46
		30	ESS 30 S	038013	87,9	126	100	73	60	50	50
		38	ESS 38 S	038014	125,5	133	104	72	60	60	60

L₂ = Ungefährmaß bei angezogener Überwurfmutter
 L₂ = approximate length with nut tightened
 L₂ = longueur approximative, l'écrou étant bloqué

Werkstoff der Verschraubungsstutzen ist schmelzschweißbarer Stahl
 Body manufactured in weldable quality steel
 Le corps est en acier soudable

E

	Abb. Fig. Fig.	Sinnbild Symbol Symbole	Typ Type Désignation	Seite Page Page
Winkel-Schwenkstutzen Banjo coupling with one-piece bolt (body only) Raccord orientable (corps)			RSWS.....R RSWS.....M	F2-F3 F4-F5
T-Schwenkstutzen Double banjo coupling with one-piece bolt (body only) Raccord orientable (corps) exécution en Té			RSTS.....R RSTS.....M	F6-F7 F8-F9
Einstellbare Winkel-Stutzen Adjustable male stud elbow (body only) Equerre orientable (corps)			P-EWS.....-SV EWSD.....	F10 F11
Einstellbare T-Stutzen Adjustable branch Tee (body only) Té orientable (corps)			P-ETS.....-SV ETSD.....	F12 F13
Einstellbare L-Stutzen Adjustable male stud run Tee (body only) Té renversé orientable (corps)			P-ELS.....-SV ELSD.....	F14 F15
Gerade-Einschraubstutzen Stud standpipe adaptor (body only) Raccord d'orientation (corps)			P-EGES.....R-WD-SV EGESD.....R-WD P-EGES.....M-WD-SV EGESD.....M-WD	F16 F17 F18 F19
			EGESD.....NPT	F20
Gerade-Verbindung Straight coupling Union double			SNV.....	F21
Gerade-Verbindung Straight coupling Union double	Reduzierschraubung Reducing fitting Raccord de réduction		SNV.....L SNV.....S SNV.....L/S-S/L	F22 F23 F24

Winkel-Schwenkstutzen
 Banjo coupling with one-piece bolt (body only)
 Raccord orientable (corps)

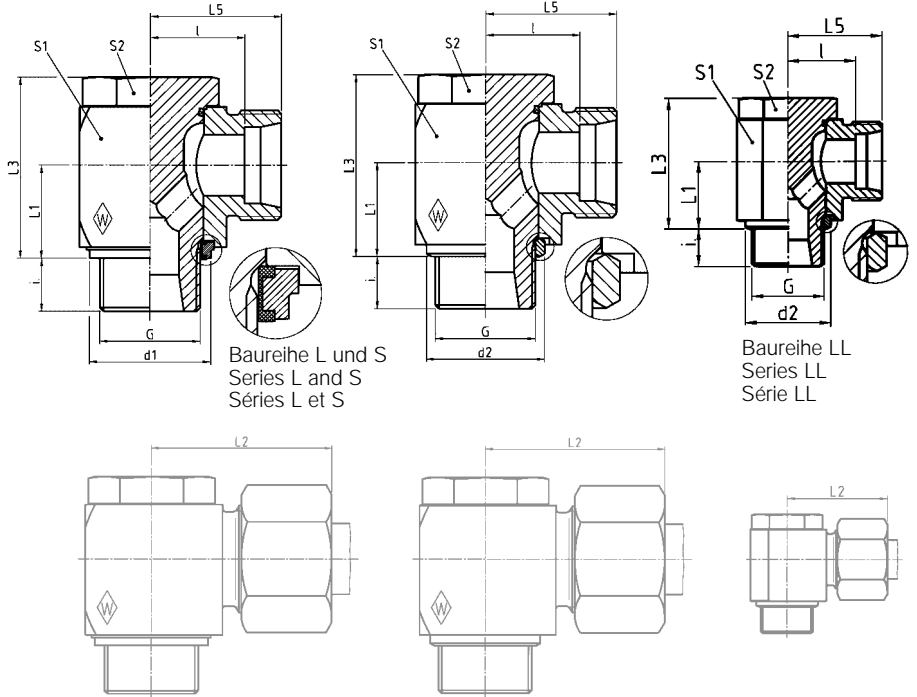


RSWS R

Einschraub-
 gewinde: Whitworth-Rohrgewinde (zylindrisch)
 Stud thread: BSP thread (parallel)
 Filetage m le: Whitworth (cylindrique)

mit Elastomer-Abdichtung
 with elastomer seal
 avec  tanch it  elastom re

mit metallischer Abdichtung
 with metallic seal
 avec  tanch it  par ar te m tal



DIN-ISO 228 (R...DIN 259)

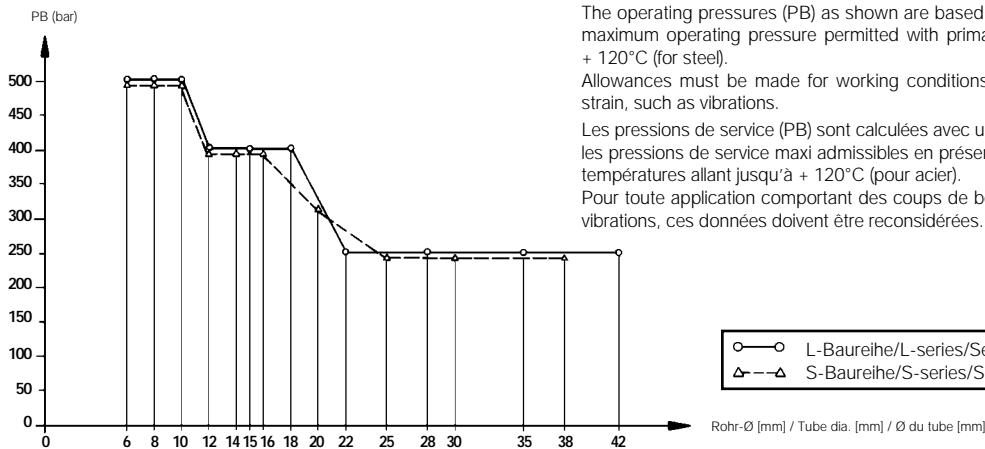
Reihe Series S�rie	PB bar (psi)	Rohr-AD Tube OD Tube � ext.	G	kg per 100 St. kg per 100 pcs. kg par 100 p.	L ₁	L ₂	L ₃	L ₅	l	i	d ₁ max.	d ₂	S ₁	S ₂
LL	100 (1450)	4	G 1/8 A	4,0	10	25,5	21	20	16	8		14,5	14	14
		6	G 1/8 A	4,2	10	26	21	20	14,5	8		14,5	14	14
		8	G 1/8 A	5,2	10	26	21	20	16	8		14,5	14	14
L	500 (7252)	6	G 1/8 A	5,9	10	27,5	21	20	13	8	14,9	13	14	14
		6	G 1/4 A	5,9	13,5	29,5	27	22	15	10	18,9	17,8	19	19
		8	G 1/4 A	9,3	13,5	28,5	27	21	14	10	18,9	17,8	19	19
	400 (5801)	10	G 1/4 A	10,2	13,5	29,5	27	22	15	10	18,9	17,8	19	19
		12	G 1/4 A	15,8	15,5	29,5	30	22	15	10	18,9	17,8	22	19
		12	G 3/8 A	15,9	16	32	32,5	24,5	17,5	10	21,9	22	24	22
250 (3626)	15	G 1/2 A	28,4	19,5	36	43	28	21	14	26,9	26	30	27	
	18	G 1/2 A	32,0	21,5	36,5	43	28	20,5	12	26,9	26	30	27	
	22	G 3/4 A	48,5	24	43	48	34,5	27	16	32,9	32	36	32	
	28	G 1 A	88,2	30,5	48	59	39	31,5	18	39,9	39	46	41	
S	500 (7252)	35	G 1 1/4 A	150,8	35,5	57	70	46	35,5	20	49,9	49	55	50
		42	G 1 1/2 A	234,1	40,5	62,5	80	51	40	22	55,9	55	65	55
		6	G 1/4 A	8,7	13,5	30,5	27	23	16	10	18,9	17,8	19	19
	400 (5801)	8	G 1/4 A	10,3	13,5	30,5	27	23	16	10	18,9	17,8	19	19
		10	G 3/8 A	17,0	16	34	32,5	25,5	18	10	21,9	22	24	22
		12	G 3/8 A	17,9	16	34	32,5	25,5	18	10	21,9	22	24	22
315 (4569)	14	G 1/2 A	30,3	19,5	39,5	41	30	22	12	26,9	26	30	27	
	16	G 1/2 A	31,6	21,5	39,5	43	30	21,5	12	26,9	26	30	27	
	20	G 3/4 A	51,8	24	47,5	48	36,5	26	16	32,9	32	36	32	
250 (3626)	25	G 1 A	103,0	30,5	55	59	43	31	18	39,9	39	46	41	
	30	G 1 1/4 A	163,7	35,5	63	70	50	36,5	20	49,9	49	55	50	
	38	G 1 1/2 A	262,7	40,5	71,5	80	57	41	22	55,9	55	65	55	

L₂ = Ungef hrma  bei angezogener  berwurfmutter
 L₂ = approximate length with nut tightened
 L₂ = longueur approximative, l' crou  tant bloqu 

Winkel-Schwenkstutzen Banjo coupling with one-piece bolt (body only) Raccord orientable (corps)



Betriebsdruck Operating pressure Pression de service



Die angegebenen Betriebsdrücke (PB) sind unter Berücksichtigung der mind. 2,5-fachen Sicherheit ausgelegt und stellen die maximal zulässigen Betriebsdrücke bei vorwiegend ruhender Belastung und Temperaturen bis + 120°C (für Stahl) dar.
Starke Druckstöße und mechanische Beanspruchungen, wie etwa Schwingungen, verlangen besondere Berücksichtigung.

The operating pressures (PB) as shown are based on a safety factor of at least 2.5 and represent the maximum operating pressure permitted with primarily uniform load conditions at temperatures up to + 120°C (for steel).

Allowances must be made for working conditions involving heavy impact pressure and mechanical strain, such as vibrations.

Les pressions de service (PB) sont calculées avec un coefficient mini de sécurité de 2,5 et représentent les pressions de service maxi admissibles en présence de sollicitations essentiellement statiques et des températures allant jusqu'à + 120°C (pour acier).

Pour toute application comportant des coups de bélier et des sollicitations mécaniques, telles que des vibrations, ces données doivent être reconsidérées.

Bei besonderen Anwendungsfällen (z. B. höheren Temperaturen oder aggressiven Medien) ist, bei der Ausführung mit metallischer Dichtkante, der O-Ring zu entfernen!

With special application conditions (e. g. higher temperatures or aggressive fluids) remove O-ring for the version with metallic sealing edge!

Pour des conditions particulières d'utilisation (p. ex. températures élevées ou fluides agressifs) enlever le joint torique pour la version avec étanchéité par arête métal!

RSWS mit Elastomer-Abdichtung RSWS with elastomer seal RSWS avec étanchéité élastomère

RSWS mit metallischer Abdichtung RSWS with metallic seal RSWS avec étanchéité par arête métal

Einzelteile/Individual components/Pièces composantes

Typ Type Désignation	Best.-Nr. Reference Réf.	Typ Type Désignation	Best.-Nr. Reference Réf.	Gehäuse Body Corps	Hohlschraube mit O-Ring (NBR)* Bolt with O-ring (NBR)* Goujon creux avec joint torique (NBR)*	O-Ring (NBR)* O-ring (NBR)* Joint torique (NBR)*	Abmessung Dimension Dimension	Best.-Nr. Reference Réf.	Haltering mit Weichdichtung (NBR)* Retaining ring with captive seal (NBR)* Bague de support avec joint mou (NBR)*	Dicht- kantening Sealing edge ring Rondelle à arête d'étanchéité
		RSWS 4LLR	606661	608333	606516	8,5 x 1,5	304288		605824	
		RSWS 6LLR	606662	608334	606516	8,5 x 1,5	304288		605824	
		RSWS 8LLR	606663	608335	606516	8,5 x 1,5	304288		605824	
RSWS 6LR-WD	606364	RSWS 6LR	606664	605763	606516	8,5 x 1,5	304288	606481	605824	
RSWS 6L/R¼-WD	606365	RSWS 6L/R¼	606665	605764	606519	11 x 2	023492	606482	606740	
RSWS 8LR-WD	606366	RSWS 8LR	607323	605766	606519	11 x 2	023492	606482	606740	
RSWS 10LR-WD	606367	RSWS 10LR	606508	605768	606519	11 x 2	023492	606482	606740	
RSWS 12L/R¼-WD	606368	RSWS 12L/R¼	606666	606076	606522	11 x 2	023492	606482	606740	
RSWS 12LR-WD	606369	RSWS 12LR	606642	605770	606523	14,5 x 2	605949	606485	605827	
RSWS 15LR-WD	606370	RSWS 15LR	607367	605775	606527	19,5 x 2	605951	606488	605831	
RSWS 18LR-WD	606371	RSWS 18LR	606667	605777	606527	19,5 x 2	605951	606489	606454	
RSWS 22LR-WD	606372	RSWS 22LR	606668	605779	607401	26 x 1,5	605952	606492	605833	
RSWS 28LR-WD	606373	RSWS 28LR	606669	605781	607403	31 x 2	250258	606495	605834	
RSWS 35LR-WD	606374	RSWS 35LR	606599	605783	607405	40 x 2	261157	606496	605835	
RSWS 42LR-WD	606375	RSWS 42LR	606670	605785	607407	46 x 2	605953	606498	605836	
RSWS 6SR-WD	606376	RSWS 6SR	606671	605765	606519	11 x 2	023492	606482	606740	
RSWS 8SR-WD	606377	RSWS 8SR	606672	605767	606519	11 x 2	023492	606482	606740	
RSWS 10SR-WD	606378	RSWS 10SR	606673	605769	606523	14,5 x 2	605949	606485	605827	
RSWS 12SR-WD	606379	RSWS 12SR	606674	605771	606523	14,5 x 2	605949	606485	605827	
RSWS 14SR-WD	606380	RSWS 14SR	606675	605774	606527	19,5 x 2	605951	606488	605831	
RSWS 16SR-WD	606381	RSWS 16SR	606643	605776	606527	19,5 x 2	605951	606489	606454	
RSWS 20SR-WD	606382	RSWS 20SR	606644	605778	607401	26 x 1,5	605952	606492	605833	
RSWS 25SR-WD	606383	RSWS 25SR	607324	605780	607403	31 x 2	250258	606495	605834	
RSWS 30SR-WD	606384	RSWS 30SR	606677	605782	607405	40 x 2	261157	606496	605835	
RSWS 38SR-WD	606385	RSWS 38SR	607326	605784	607407	46 x 2	605953	606498	605836	

* FPM (z. B. Viton) auf Anfrage
* FPM (e. g. Viton) on request
* FPM (p. ex. Viton) sur demande



Winkel-Schwenkstutzen
 Banjo coupling with one-piece bolt (body only)
 Raccord orientable (corps)

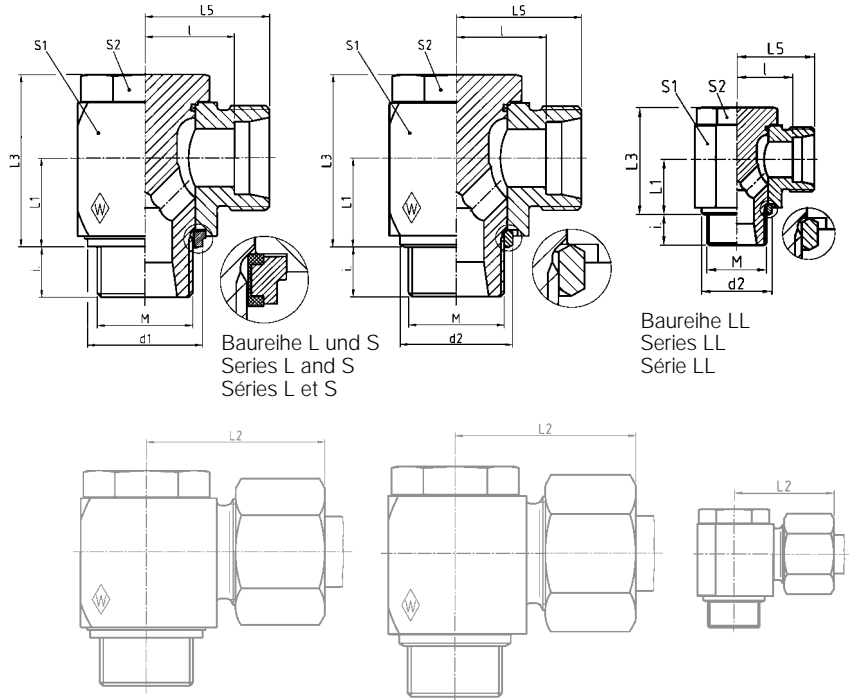


RSWS M

Einschraub-
gewinde: Metrisches Gewinde (zylindrisch)
 Stud thread: metric (parallel)
 Filetage mâle: métrique (cylindrique)

mit Elastomer-Abdichtung
 with elastomer seal
 avec étanchéité élastomère

mit metallischer Abdichtung
 with metallic seal
 avec étanchéité par arête métal



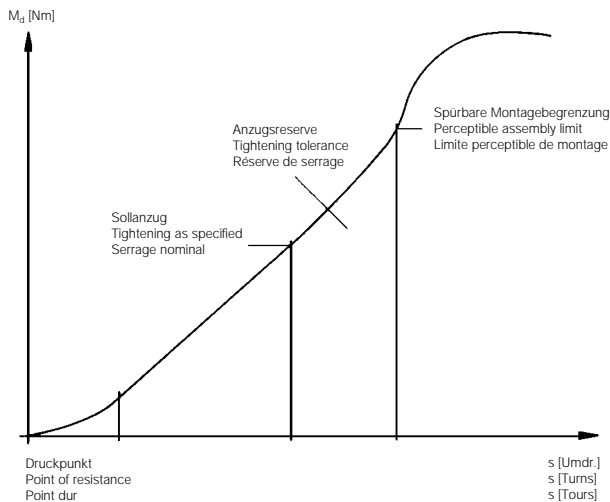
Reihe Series Série	PB bar (psi)	Rohr-AD Tube OD Tube Ø ext.	M	kg per 100 St. kg per 100 pcs. kg par 100 p.	L ₁	L ₂	L ₃	L ₅	l	i	d ₁ max.	d ₂	S ₁	S ₂
LL	100 (1450)	4	M 8 x 1	3,4	8	22,5	17	17	13	6	12,5	12	12	
		6	M 10 x 1	4,2	10	26	21	20	14,5	8	14,5	14	14	
		8	M 10 x 1	4,5	10	26	21	20	14,5	8	14,5	14	14	
L	500 (7252)	6	M 10 x 1	5,9	10	27,5	21	20	13	8	14,9	13	14	14
		8	M 12 x 1,5	9,0	13,5	28,5	27	21	14	10	17,9	17,8	19	19
		10	M 14 x 1,5	10,3	13,5	29,5	27	22	15	10	19,9	17,8	19	19
	400 (5801)	12	M 16 x 1,5	15,8	16	32	32,5	24,5	17,5	10	21,9	21	24	22
	315 (4569)	12	M 18 x 1,5	16,9	18,5	34,5	36	27	20	10	23,9	23	24	22
	400 (5801)	15	M 18 x 1,5	20,9	18,5	35	37	27	20	10	23,9	23	27	24
S	250 (3626)	18	M 22 x 1,5	31,9	21,5	36,5	43	28	20,5	12	27,9	27	30	27
		22	M 26 x 1,5	48,6	24	43	48	34,5	27	16	31,9	31	36	32
		28	M 33 x 2	88,5	30,5	48	59	39	31,5	18	39,9	39	46	41
	500 (7252)	35	M 42 x 2	151,0	35,5	57	70	46	35,5	20	49,9	49	55	50
		42	M 48 x 2	234,0	40,5	62,5	80	51	40	22	55,9	55	65	55
		6	M 12 x 1,5	8,5	13,5	30,5	27	23	16	10	17,9	17,8	19	19
400 (5801)	8	M 14 x 1,5	10,4	13,5	30,5	27	23	16	10	19,9	17,8	19	19	
	10	M 16 x 1,5	16,9	16	34	32,5	25,5	18	10	21,9	21	24	22	
	12	M 18 x 1,5	22,2	18,5	35,5	37	27	19,5	10	23,9	23	27	24	
315 (4569)	14	M 20 x 1,5	28,0	19,5	39,5	41	30	22	12	25	30	27	24	
	16	M 22 x 1,5	32,3	21,5	39,5	43	30	21,5	12	27,9	27	30	27	
	20	M 27 x 2	51,9	24	47,5	48	36,5	26	16	32,9	32	36	32	
250 (3626)	25	M 33 x 2	103,3	30,5	55	59	43	31	18	39,9	39	46	41	
	30	M 42 x 2	163,9	35,5	63	70	50	36,5	20	49,9	49	55	50	
	38	M 48 x 2	252,7	40,5	71,5	80	57	41	22	55,9	55	65	55	

L₂ = Ungefährmaß bei angezogener Überwurfmutter
 L₂ = approximate length with nut tightened
 L₂ = longueur approximative, l'écrou étant bloqué

Winkel-Schwenkstutzen Banjo coupling with one-piece bolt (body only) Raccord orientable (corps)



Hohe Montagesicherheit Very safe assembly Haute sécurité de montage



- easy assembly
- re-tightening under pressure is possible
- radial dismantling possible
- only three components
- one-piece bolt
- secure interconnection of elastomer seal and retaining ring
- high safety against excessive tightening

- einfache Montage
- unter Druck nachziehbar
- radiale Demontage möglich
- nur drei Bauteile
- einteilige Hohlsschraube
- Elastomerdichtung mit dem Haltering unverlierbar verbunden
- große Sicherheit gegen Überanzug

- montage aisé
- serrage ultérieure sous pression
- démontage radial possible
- trois composants seulement
- goujon creux monobloc
- intégration de sécurité de l'étanchéité élastomère et de la bague de support
- haut degré de sécurité contre le serrage excessif

Bei besonderen Anwendungsfällen (z. B. höheren Temperaturen oder aggressiven Medien) ist, bei der Ausführung mit metallischer Dichtkante, der O-Ring zu entfernen!
With special application conditions (e. g. higher temperatures or aggressive fluids) remove O-ring for the version with metallic sealing edge!
Pour des conditions particulières d'utilisation (p. ex. températures élevées ou fluides agressifs) enlever le joint torique pour la version avec étanchéité par arête métal!

RSWS mit Elastomer-Abdichtung RSWS with elastomer seal RSWS avec étanchéité élastomère

RSWS mit metallischer Abdichtung RSWS with metallic seal RSWS avec étanchéité par arête métal

Einzelteile/Individual components/Pièces composantes

Typ Type Désignation	Best.-Nr. Reference Réf.	Typ Type Désignation	Best.-Nr. Reference Réf.	Einzelteile/Individual components/Pièces composantes		Abmessung Dimension Dimension	Best.-Nr. Reference Réf.	Best.-Nr. Reference Réf.	Best.-Nr. Reference Réf.
				Gehäuse Body Corps	Hohlsschraube mit O-Ring (NBR)* Bolt with O-ring (NBR)* Goujon creux avec joint torique (NBR)*				
		RSWS 4LLM	606678	608332	606514	6,5 x 1,5	605948		608323
		RSWS 6LLM	607325	608334	606515	8,5 x 1,5	304288		605824
		RSWS 8LLM	606679	608335	606515	8,5 x 1,5	304288		605824
RSWS 6LM-WD	606389	RSWS 6LM	606640	605763	606515	8,5 x 1,5	304288	606481	605824
RSWS 8LM-WD	606390	RSWS 8LM	606680	605766	606517	11 x 2	023492	606483	606739
RSWS 10LM-WD	606391	RSWS 10LM	607321	605768	606518	11 x 2	023492	606484	605825
RSWS 12LM-WD	606392	RSWS 12LM	606681	605770	606520	14,5 x 2	605949	606485	605826
RSWS 12L/M18x1,5-WD	606393	RSWS 12L/M18x1,5	606682	607124	606521	14,5 x 2	605949	606500	605830
RSWS 15LM-WD	606394	RSWS 15LM	606683	605773	606524	16,5 x 2	605950	606486	605830
RSWS 18LM-WD	606395	RSWS 18LM	606684	605777	606526	19,5 x 2	605951	606490	605832
RSWS 22LM-WD	606396	RSWS 22LM	606685	605779	607399	26 x 1,5	605952	606491	606455
RSWS 28LM-WD	606397	RSWS 28LM	606686	605781	607402	31 x 2	250258	606495	605834
RSWS 35LM-WD	606398	RSWS 35LM	606687	605783	607404	40 x 2	261157	606496	605835
RSWS 42LM-WD	606399	RSWS 42LM	606688	605785	607406	46 x 2	605953	606498	605836
RSWS 6SM-WD	606400	RSWS 6SM	606689	605765	606517	11 x 2	023492	606483	606739
RSWS 8SM-WD	606401	RSWS 8SM	606690	605767	606518	11 x 2	023492	606484	605825
RSWS 10SM-WD	606402	RSWS 10SM	606691	605769	606520	14,5 x 2	605949	606485	605826
RSWS 12SM-WD	606403	RSWS 12SM	606692	605772	606524	16,5 x 2	605950	606486	605830
		RSWS 14SM	606693	605774	606525	19,5 x 2	605951		605831
RSWS 16SM-WD	606405	RSWS 16SM	606646	605776	606526	19,5 x 2	605951	606490	605832
RSWS 20SM-WD	606406	RSWS 20SM	606694	605778	607400	26 x 1,5	605952	606492	605833
RSWS 25SM-WD	606407	RSWS 25SM	607322	605780	607402	31 x 2	250258	606495	605834
RSWS 30SM-WD	606408	RSWS 30SM	606695	605782	607404	40 x 2	261157	606496	605835
RSWS 38SM-WD	606409	RSWS 38SM	606696	605784	607406	46 x 2	605953	606498	605836

* FPM (z. B. Viton) auf Anfrage
* FPM (e. g. Viton) on request
* FPM (p. ex. Viton) sur demande



T-Schwenkstutzen
 Double banjo coupling with one-piece bolt (body only)
 Raccord orientable (corps) exécution en Té

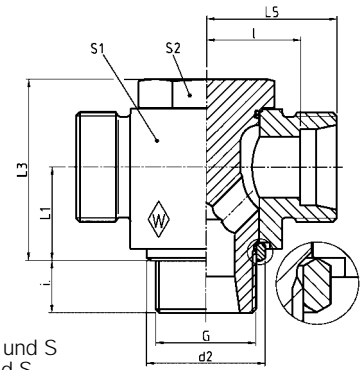
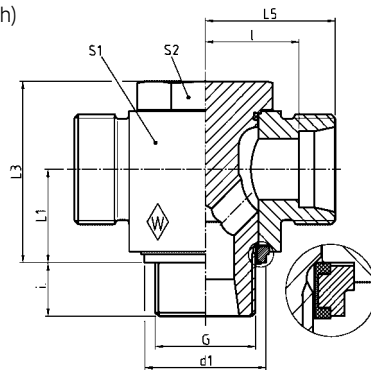


RSTS R

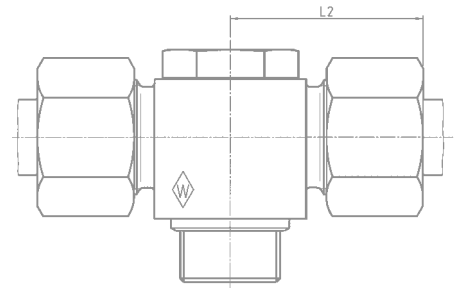
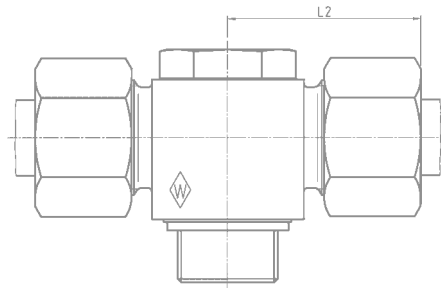
Einschraub-
 gewinde: Whitworth-Rohrgewinde (zylindrisch)
 Stud thread: BSP thread (parallel)
 Filetage mâle: Whitworth (cylindrique)

mit Elastomer-Abdichtung
 with elastomer seal
 avec étanchéité élastomère

mit metallischer Abdichtung
 with metallic seal
 avec étanchéité par arête métal



Baureihe L und S
 Series L and S
 Série L et S



DIN-ISO 228 (R...DIN 259)

Reihe Series Série	PB bar (psi)	Rohr-AD Tube OD Tube Ø ext.	G	kg per 100 St. kg per 100 pcs. kg par 100 p.	L ₁	L ₂	L ₃	L ₅	l	i	d ₁ max.	d ₂	S ₁	S ₂
L	500 (7252)	6	G 1/8 A	6,5	10	27,5	21	20	13	8	14,9	13	14	14
		6	G 1/4 A	6,5	13,5	29,5	27	22	15	10	18,9	17,8	19	19
		8	G 1/4 A	10,0	13,5	28,5	27	21	14	10	18,9	17,8	19	19
		10	G 1/4 A	11,0	13,5	29,5	27	22	15	10	18,9	17,8	19	19
	400 (5801)	12	G 1/4 A	16,7	15,5	29,5	30	22	15	10	18,9	17,8	22	19
		12	G 3/8 A	16,8	16	32	32,5	24,5	17,5	10	21,9	22	24	22
		15	G 1/2 A	28,8	19,5	36	43	28	21	14	26,9	26	30	27
		18	G 1/2 A	33,7	21,5	36,5	43	28	20,5	12	26,9	26	30	27
		22	G 3/4 A	50,0	24	43	48	34,5	27	16	32,9	32	36	32
		250 (3626)	28	G 1 A	89,5	30,5	48	59	39	31,5	18	39,9	39	46
S	500 (7252)	6	G 1/4 A	10,0	13,5	30,5	27	23	16	10	18,9	17,8	19	19
		8	G 1/4 A	11,6	13,5	30,5	27	23	16	10	18,9	17,8	19	19
		10	G 3/8 A	18,7	16	34	32,5	25,5	18	10	21,9	22	24	22
	400 (5801)	12	G 3/8 A	19,3	16	34	32,5	25,5	18	10	21,9	22	24	22
		14	G 1/2 A	32,1	19,5	39,5	41	30	22	12	26,9	26	30	27
		16	G 1/2 A	34,0	21,5	39,5	43	30	21,5	12	26,9	26	30	27
	315 (4569)	20	G 3/4 A	56,0	24	47,5	48	36,5	26	16	32,9	32	36	32
	250 (3626)	25	G 1 A	107,6	30,5	55	59	43	31	18	39,9	39	46	41
		30	G 1 1/4 A	175,3	35,5	63	70	50	36,5	20	49,9	49	55	50
		38	G 1 1/2 A	274,5	40,5	71,5	80	57	41	22	55,9	55	65	55

L₂ = Ungefährmaß bei angezogener Überwurfmutter
 L₂ = approximate length with nut tightened
 L₂ = longueur approximative, l'écrou étant bloqué

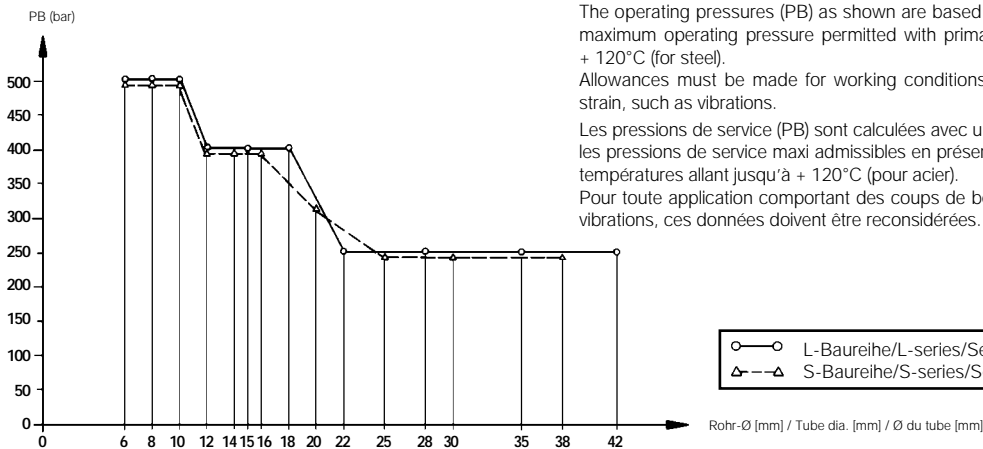
T-Schwenkstutzen

Double banjo coupling with one-piece bolt (body only)

Raccord orientable (corps) exécution en Té



Betriebsdruck Operating pressure Pression de service



Die angegebenen Betriebsdrücke (PB) sind unter Berücksichtigung der mind. 2,5-fachen Sicherheit ausgelegt und stellen die maximal zulässigen Betriebsdrücke bei vorwiegend ruhender Belastung und Temperaturen bis + 120°C (für Stahl) dar.
Starke Druckstöße und mechanische Beanspruchungen, wie etwa Schwingungen, verlangen besondere Berücksichtigung.

The operating pressures (PB) as shown are based on a safety factor of at least 2.5 and represent the maximum operating pressure permitted with primarily uniform load conditions at temperatures up to + 120°C (for steel).

Allowances must be made for working conditions involving heavy impact pressure and mechanical strain, such as vibrations.

Les pressions de service (PB) sont calculées avec un coefficient mini de sécurité de 2,5 et représentent les pressions de service maxi admissibles en présence de sollicitations essentiellement statiques et des températures allant jusqu'à + 120°C (pour acier).

Pour toute application comportant des coups de bélier et des sollicitations mécaniques, telles que des vibrations, ces données doivent être reconsidérées.

Bei besonderen Anwendungsfällen (z. B. höheren Temperaturen oder aggressiven Medien) ist, bei der Ausführung mit metallischer Dichtkante, der O-Ring zu entfernen!

With special application conditions (e. g. higher temperatures or aggressive fluids) remove O-ring for the version with metallic sealing edge!

Pour des conditions particulières d'utilisation (p. ex. températures élevées ou fluides agressifs) enlever le joint torique pour la version avec étanchéité par arête métal!

RSTS mit Elastomer-Abdichtung RSTS with elastomer seal RSTS avec étanchéité élastomère

RSTS mit metallischer Abdichtung RSTS with metallic seal RSTS avec étanchéité par arête métal

Einzelteile/Individual components/Pièces composantes

Typ Type Désignation	Best.-Nr. Reference Réf.	Typ Type Désignation	Best.-Nr. Reference Réf.	Gehäuse Body Corps	Hohlschraube mit O-Ring (NBR)* Bolt with O-ring (NBR)* Goujon creux avec joint torique (NBR)*	O-Ring (NBR)* O-ring (NBR)* Joint torique (NBR)*	Abmessung Dimension Dimension	Best.-Nr. Reference Réf.	Haltering mit Weichdichtung (NBR)* Retaining ring with captive seal (NBR)* Bague de support avec joint mou (NBR)*	Dichtkantenring Sealing edge ring Rondelle à arête d'étanchéité	Best.-Nr. Reference Réf.
RSTS 6LR-WD	609870	RSTS 6LR	615526	607341	606516	8,5 x 1,5	304288	606481	605824		
RSTS 8LR-WD	606305	RSTS 8LR	601153	607344	606519	11 x 2	023492	606482	606740		
RSTS 10LR-WD	609871	RSTS 10LR	613340	607346	606519	11 x 2	023492	606482	606740		
RSTS 12LR-WD	609872	RSTS 12LR	607290	607349	606523	14,5 x 2	605949	606485	605827		
RSTS 15LR-WD	608193	RSTS 15LR	606641	607354	606527	19,5 x 2	605951	606488	605831		
RSTS 18LR-WD	609873	RSTS 18LR	607772	607356	606527	19,5 x 2	605951	606489	606454		
RSTS 22LR-WD	607438	RSTS 22LR	615527	607358	607401	26 x 1,5	605952	606492	605833		
RSTS 28LR-WD	609874	RSTS 28LR	608289	607360	607403	31 x 2	250258	606495	605834		
RSTS 35LR-WD	608195	RSTS 35LR	615528	607362	607405	40 x 2	261157	606496	605835		
RSTS 42LR-WD	608196	RSTS 42LR	615529	607364	607407	46 x 2	605953	606498	605836		
RSTS 6SR-WD	615520	RSTS 6SR	615530	607343	606519	11 x 2	023492	606482	606740		
RSTS 8SR-WD	608191	RSTS 8SR	607435	607345	606519	11 x 2	023492	606482	606740		
RSTS 10SR-WD	615521	RSTS 10SR	607365	607347	606523	14,5 x 2	605949	606485	605827		
RSTS 12SR-WD	608192	RSTS 12SR	615531	607350	606523	14,5 x 2	605949	606485	605827		
RSTS 16SR-WD	615522	RSTS 16SR	615532	607355	606527	19,5 x 2	605951	606489	606454		
RSTS 20SR-WD	615523	RSTS 20SR	615533	607357	607401	26 x 1,5	605952	606492	605833		
RSTS 25SR-WD	615524	RSTS 25SR	615534	607359	607403	31 x 2	250258	606495	605834		
RSTS 30SR-WD	615525	RSTS 30SR	615535	607361	607405	40 x 2	261157	606496	605835		
RSTS 38SR-WD	612599	RSTS 38SR	607958	607363	607407	46 x 2	605953	606498	605836		

* FPM (z. B. Viton) auf Anfrage
* FPM (e. g. Viton) on request
* FPM (p. ex. Viton) sur demande



T-Schwenkstutzen
 Double banjo coupling with one-piece bolt (body only)
 Raccord orientable (corps) exécution en Té

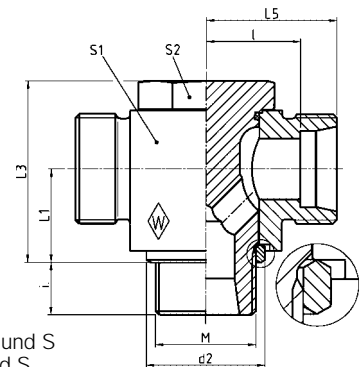
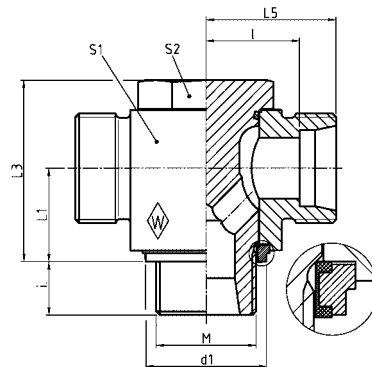


RSTS M

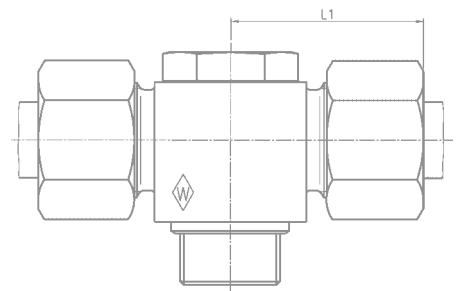
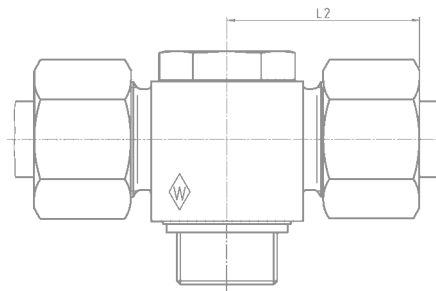
Einschraub-
 gewinde: Metrisches Gewinde (zylindrisch)
 Stud thread: metric (parallel)
 Filetage mâle: métrique (cylindrique)

mit Elastomer-Abdichtung
 with elastomer seal
 avec étanchéité élastomère

mit metallischer Abdichtung
 with metallic seal
 avec étanchéité par arête métal



Baureihe L und S
 Series L and S
 Séries L et S



Reihe Series Série	PB bar (psi)	Rohr-AD Tube OD Tube Ø ext.	M	kg per 100 St. kg per 100 pcs. kg par 100 p.	L ₁	L ₂	L ₃	L ₅	l	i	d ₁ max.	d ₂	S ₁	S ₂
L	500 (7252)	6	M 10 x 1	6,5	10	27,5	21	20	13	8	14,9	13	14	14
		8	M 12 x 1,5	9,6	13,5	28,5	27	21	14	10	17,9	17,8	19	19
		10	M 14 x 1,5	11,1	13,5	29,5	27	22	15	10	19,9	17,8	19	19
	400 (5801)	12	M 16 x 1,5	16,7	16	32	32,5	24,5	17,5	10	21,9	21	24	22
	315 (4569)	12	M 18 x 1,5	17,3	18,5	34,5	36	27	20	10	23,9	23	24	22
	400 (5801)	15	M 18 x 1,5	21,3	18,5	35	37	27	20	10	23,9	23	27	24
	400 (5801)	18	M 22 x 1,5	33,6	21,5	36,5	43	28	20,5	12	27,9	27	30	27
S	250 (3626)	22	M 26 x 1,5	50,2	24	43	48	34,5	27	16	31,9	31	36	32
		28	M 33 x 2	89,9	30,5	48	59	39	31,5	18	39,9	39	46	41
		35	M 42 x 2	156,0	35,5	57	70	46	35,5	20	49,9	49	55	50
	500 (7252)	42	M 48 x 2	248,1	40,5	62,5	80	51	40	22	55,9	55	65	55
		6	M 12 x 1,5	9,8	13,5	30,5	27	23	16	10	17,9	17,8	19	19
		8	M 14 x 1,5	11,7	13,5	30,5	27	23	16	10	19,9	17,8	19	19
		10	M 16 x 1,5	18,7	16	34	32,5	25,5	18	10	21,9	21	24	22
400 (5801)	12	M 18 x 1,5	22,7	18,5	35,5	37	27	19,5	10	23,9	23	27	24	
14	M 20 x 1,5	29,8	19,5	39,5	41	30	22	12		25	30	27		
16	M 22 x 1,5	34,7	21,5	39,5	43	30	21,5	12	27,9	27	30	27		
315 (4569)	20	M 27 x 2	54,3	24	47,5	48	36,5	26	16	32,9	32	36	32	
250 (3626)	25	M 33 x 2	108,0	30,5	55	59	43	31	18	39,9	39	46	41	
	30	M 42 x 2	175,5	35,5	63	70	50	36,5	20	49,9	49	55	50	
	38	M 48 x 2	264,5	40,5	71,5	80	57	41	22	55,9	55	65	55	

L₂ = Ungefährmaß bei angezogener Überwurfmutter
 L₂ = approximate length with nut tightened
 L₂ = longueur approximative, l'écrou étant bloqué

T-Schwenkstutzen

Double banjo coupling with one-piece bolt (body only)

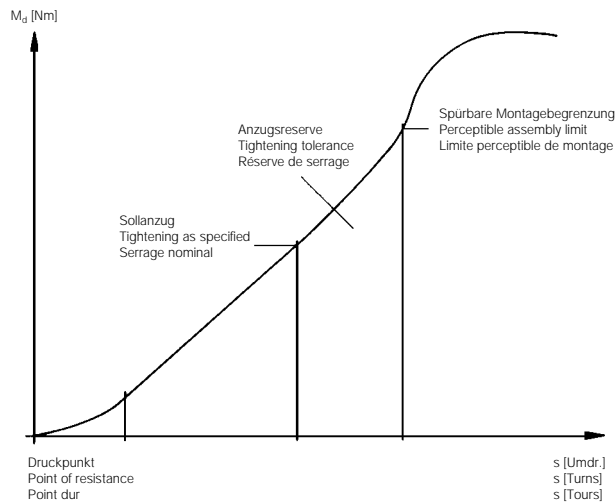
Raccord orientable (corps) exécution en Té



Hohe Montagesicherheit

Very safe assembly

Haute sécurité de montage



- easy assembly
- re-tightening under pressure is possible
- radial dismantling possible
- only three components
- one-piece bolt
- secure interconnection of elastomer seal and retaining ring
- high safety against excessive tightening

- einfache Montage
- unter Druck nachziehbar
- radiale Demontage möglich
- nur drei Bauteile
- einteilige Hohlsschraube
- Elastomerdichtung mit dem Haltering unverlierbar verbunden
- große Sicherheit gegen Überanzug

- montage aisé
- serrage ultérieur sous pression
- démontage radial possible
- trois composants seulement
- goujon creux monobloc
- intégration de sécurité de l'étanchéité élastomère et de la bague de support
- haut degré de sécurité contre le serrage excessif

Bei besonderen Anwendungsfällen (z. B. höheren Temperaturen oder aggressiven Medien) ist, bei der Ausführung mit metallischer Dichtkante, der O-Ring zu entfernen!

With special application conditions (e. g. higher temperatures or aggressive fluids) remove O-ring for the version with metallic sealing edge!

Pour des conditions particulières d'utilisation (p. ex. températures élevées ou fluides agressifs) enlever le joint torique pour la version avec étanchéité par arête métal!

RSTS mit Elastomer-Abdichtung

RSTS with elastomer seal

RSTS avec étanchéité élastomère

RSTS mit metallischer Abdichtung

RSTS with metallic seal

RSTS avec étanchéité par arête métal

Einzelteile/Individual components/Pièces composantes

Typ Type Designation	Best.-Nr. Reference Réf.	Typ Type Designation	Best.-Nr. Reference Réf.	Gehäuse Body Corps	Hohlsschraube mit O-Ring (NBR)* Bolt with O-ring (NBR)* Goujon creux avec joint torique (NBR)*	O-Ring (NBR)* O-ring (NBR)* Joint torique (NBR)*	Abmessung Dimension Dimension	Best.-Nr. Reference Réf.	Haltering mit Weichdichtung (NBR)* Retaining ring with captive seal (NBR)* Bague de support avec joint mou (NBR)*	Best.-Nr. Reference Réf.	Dichtkantenring Sealing edge ring Rondelle à arête d'étanchéité	Best.-Nr. Reference Réf.
RSTS 6LM-WD	615536	RSTS 6LM	609780	607341	606515	8,5 x 1,5	304288	606481	605824			
RSTS 8LM-WD	612600	RSTS 8LM	606718	607344	606517	11 x 2	023492	606483	606739			
RSTS 10LM-WD	611676	RSTS 10LM	608274	607346	606518	11 x 2	023492	606484	605825			
RSTS 12LM-WD	615537	RSTS 12LM	606719	607349	606520	14,5 x 2	605949	606485	605826			
RSTS 15LM-WD	615538	RSTS 15LM	615547	607352	606524	14,5 x 2	605949	606486	605830			
RSTS 18LM-WD	615539	RSTS 18LM	606762	607356	606526	19,5 x 2	605951	606490	605832			
RSTS 22LM-WD	615540	RSTS 22LM	615548	607358	607399	26 x 1,5	605952	606491	606455			
RSTS 28LM-WD	608194	RSTS 28LM	607957	607360	607402	31 x 2	250258	606495	605834			
RSTS 35LM-WD	608308	RSTS 35LM	615549	607362	607404	40 x 2	261157	606496	605835			
RSTS 42LM-WD	615541	RSTS 42LM	615550	607364	607406	46 x 2	605953	606498	605836			
RSTS 6SM-WD	615542	RSTS 6SM	615551	607343	606517	11 x 2	023492	606483	606739			
RSTS 8SM-WD	607568	RSTS 8SM	615552	607345	606518	11 x 2	023492	606484	605825			
RSTS 10SM-WD	615543	RSTS 10SM	615553	607347	606520	14,5 x 2	605949	606485	605826			
RSTS 12SM-WD	601136	RSTS 12SM	615554	607351	606524	14,5 x 2	605949	606486	605830			
RSTS 16SM-WD	608307	RSTS 16SM	608298	607355	606526	19,5 x 2	605951	606490	605832			
RSTS 20SM-WD	615544	RSTS 20SM	615555	607357	607400	26 x 1,5	605952	606492	605833			
RSTS 25SM-WD	615545	RSTS 25SM	615556	607359	607402	31 x 2	250258	606495	605834			
RSTS 30SM-WD	608324	RSTS 30SM	615557	607361	607404	40 x 2	261157	606496	605835			
RSTS 38SM-WD	615546	RSTS 38SM	615558	607363	607406	46 x 2	605953	606498	605836			

* FPM (z. B. Viton) auf Anfrage
 * FPM (e. g. Viton) on request
 * FPM (p. ex. Viton) sur demande



Einstellbare Winkel-Stutzen
Adjustable male stud elbow (body only)
Equerre orientable (corps)

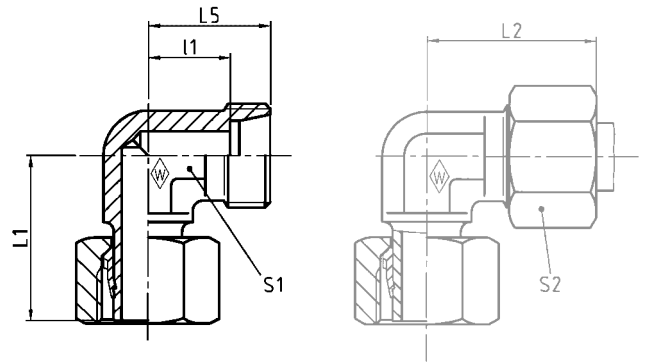


P-EWS-SV

mit Schaft vormontiert

standpipe with pre-assembled nut and profile ring

embout lisse avec écrou et bague profilée pré-sertis



F

Reihe Series Série	PN bar (psi)	Rohr-AD Tube OD Tube Ø ext.	Typ Type Désignation	Best.-Nr. Reference Réf.	kg per 100 St. kg per 100 pcs. kg par 100 p.	L ₁	L ₂	L ₅	l ₁	S ₁	S ₂
L	500 (7252)	6	P-EWS 6 L-SV	602582	2,5	26	27	19	12	12	14
		8	P-EWS 8 L-SV	602579	4,0	27,5	29	21	14	12	17
		10	P-EWS 10 L-SV	374926	5,0	29	30	22	15	14	19
	400 (5801)	12	P-EWS 12 L-SV	374927	7,5	29,5	32	24	17	17	22
		15	P-EWS 15 L-SV	374928	12,5	32,5	36	28	21	19	27
		18	P-EWS 18 L-SV	602501	17,5	35,5	40	31	23,5	24	32
250 (3626)	22	P-EWS 22 L-SV	602464	23,0	38,5	44	35	27,5	27	36	
	28	P-EWS 28 L-SV	602465	34,5	41,5	47	38	30,5	36	41	
S	800 (11603)	6	P-EWS 6 S-SV	602696	4,5	27	31	23	16	12	17
		8	P-EWS 8 S-SV	602881	6,0	27,5	32	24	17	14	19
		10	P-EWS 10 S-SV	602697	8,5	30	34	25	17,5	17	22
	630 (9137)	12	P-EWS 12 S-SV	602593	8,5	31	38	29	21,5	27	24
		14	P-EWS 14 S-SV	604826	13,9	35	40	30	22	19	27
		16	P-EWS 16 S-SV	602696	4,5	36,5	43	33	24,5	24	30

L₂ = Ungefährmaß bei angezogener Überwurfmutter
L₂ = approximate length with nut tightened
L₂ = longueur approximative, l'écrou étant bloqué

Einstellbare Winkel-Stutzen
Adjustable male stud elbow (body only)
Equerre orientable (corps)



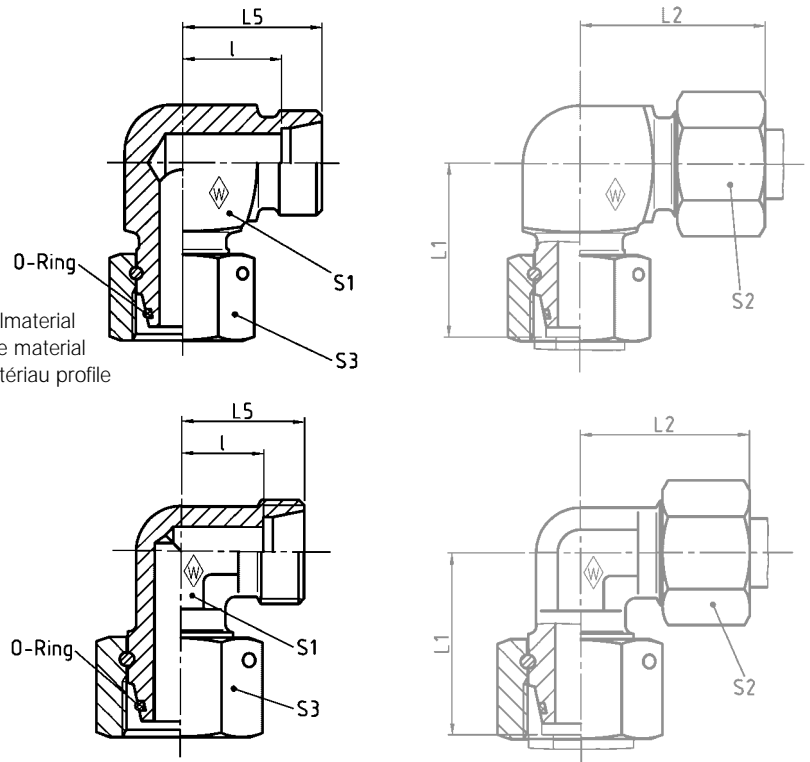
EWSD

mit Dichtkegel und O-Ring NBR* (z. B. Perbunan)

with taper and O-ring NBR* (e. g. Perbunan)

avec cône d'étanchéité et joint torique
NBR* (p. ex. Perbunan)

Rohr-AD 6 bis 12 mm = Profilmaterial
Tube OD 6 to 12 mm = profile material
Tube Ø ext. 6 à 12 mm = matériau profile



Reihe Series Série	PN bar (psi)	Rohr-AD Tube OD Tube Ø ext.	Typ Type Désignation	Best.-Nr. Reference Réf.	kg per 100 St. kg per 100 pcs. kg par 100 p.	L ₁	L ₂	L ₅	l	S ₁	S ₂	S ₃	*O-Ring *O-ring *Joint torique
L	500 (7252)	6	EWSD 6 L	063877	6,0	26	29	21	14	14	14	17	4,5 x 1,5
		8	EWSD 8 L	063878	6,0	27,5	29	21	14	14	17	17	6 x 1,5
		10	EWSD 10 L	063879	7,5	29	30	22	15	17	19	19	8,5 x 1,5
	400 (5801)	12	EWSD 12 L	063880	11,0	29,5	32	24	17	19	22	22	10 x 1,5
		15	EWSD 15 L	063881	12,0	32,5	36	28	21	19	27	27	12 x 2
		18	EWSD 18 L	063882	18,0	35,5	40	31	23,5	24	32	32	15 x 2
	250 (3626)	22	EWSD 22 L	063883	24,0	38,5	44	35	27,5	27	36	36	20 x 2
28		EWSD 28 L	063884	42,0	41,5	47	38	30,5	36	41	46	26 x 2	
35		EWSD 35 L	063885	55,5	51	56	45	34,5	41	50	50	32 x 2,5	
		42	EWSD 42 L	063886	84,5	56	63	51	40	50	60	60	38 x 2,5
S	800 (11603)	6	EWSD 6 S	063887	6,0	27	31	23	16	14	17	17	4,5 x 1,5
		8	EWSD 8 S	063888	8,5	27,5	32	24	17	17	19	19	6 x 1,5
		10	EWSD 10 S	063889	12,0	30	34	25	17,5	19	22	22	8,5 x 1,5
	630 (9137)	12	EWSD 12 S	063890	11,0	31	38	29	21,5	22	24	24	10 x 1,5
		14	EWSD 14 S	063891	14,5	35	40	30	22	19	27	27	12 x 2
		16	EWSD 16 S	063892	19,0	36,5	43	33	24,5	24	30	30	14 x 2
	420 (6091)	20	EWSD 20 S	063893	29,5	44,5	48	37	26,5	27	36	36	17,3 x 2,4
25		EWSD 25 S	063894	53,5	50	54	42	30	36	46	46	22,3 x 2,4	
400 (5801)	30	EWSD 30 S	063895	72,0	55	62	49	35,5	41	50	50	27,3 x 2,4	
	38	EWSD 38 S	063896	106,0	63	72	57	41	50	60	60	35 x 2,5	

L₂ = Ungefährmaß bei angezogener Überwurfmutter
L₂ = approximate length with nut tightened
L₂ = longueur approximative, l'écrou étant bloqué

*FPM (z. B. Viton) auf Anfrage
*FPM (e. g. Viton) on request
*FPM (p. ex. Viton) sur demande

Einstellbare T-Stutzen
Adjustable branch Tee (body only)
Té orientable (corps)

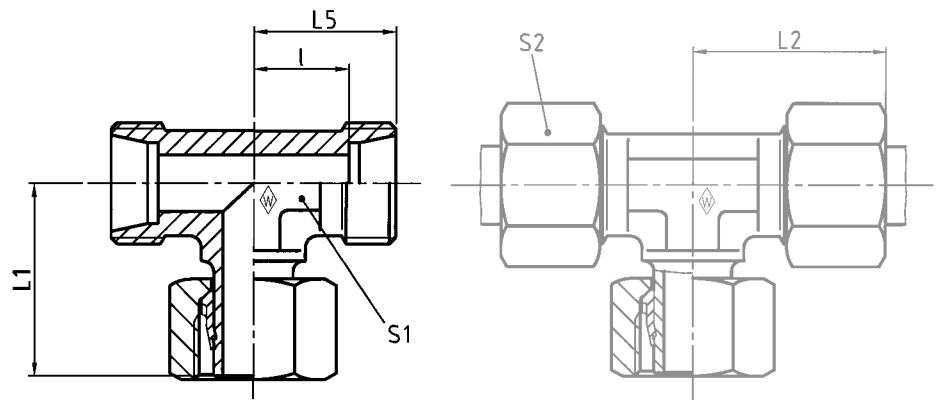


P-ETS-SV

mit Schaft vormontiert

standpipe with pre-assembled nut
and profile ring

embout lisse avec écrou et bague profilée
pré-sertis



F

Reihe Series Série	PN bar (psi)	Rohr-AD Tube OD Tube Ø ext.	Typ Type Désignation	Best.-Nr. Reference Réf.	kg per 100 St. kg per 100 pcs. kg par 100 p.	L ₁	L ₂	L ₅	l	S ₁	S ₂
L	500 (7252)	6	P-ETS 6 L-SV	602686	3,5	26	27	19	12	12	14
		8	P-ETS 8 L-SV	374929	5,0	27,5	29	21	14	12	17
		10	P-ETS 10 L-SV	602662	6,5	29	30	22	15	14	19
	400 (5801)	12	P-ETS 12 L-SV	602431	8,5	29,5	32	24	17	17	22
		15	P-ETS 15 L-SV	602597	15,0	32,5	36	28	21	19	27
		18	P-ETS 18 L-SV	602687	19,0	35,5	40	31	23,5	24	32
250 (3626)	22	P-ETS 22 L-SV	602688	28,0	38,5	44	35	27,5	27	36	
	28	P-ETS 28 L-SV	374930	42,5	41,5	47	38	30,5	36	41	
S	800 (11603)	6	P-ETS 6 S-SV	604060	5,3	27	31	23	16	12	17
		8	P-ETS 8 S-SV	602689	7,5	27,5	32	24	17	14	19
		10	P-ETS 10 S-SV	602912	10,2	30	34	25	17,5	17	22
	630 (9137)	12	P-ETS 12 S-SV	602907	13,5	31	38	29	21,5	17	24
		14	P-ETS 14 S-SV	615559	17,0	35	40	30	22	19	27
		16	P-ETS 16 S-SV	604098	24,0	36,5	43	33	24,5	24	30

L₂ = Ungefährmaß bei angezogener Überwurfmutter
L₂ = approximate length with nut tightened
L₂ = longueur approximative, l'écrou étant bloqué

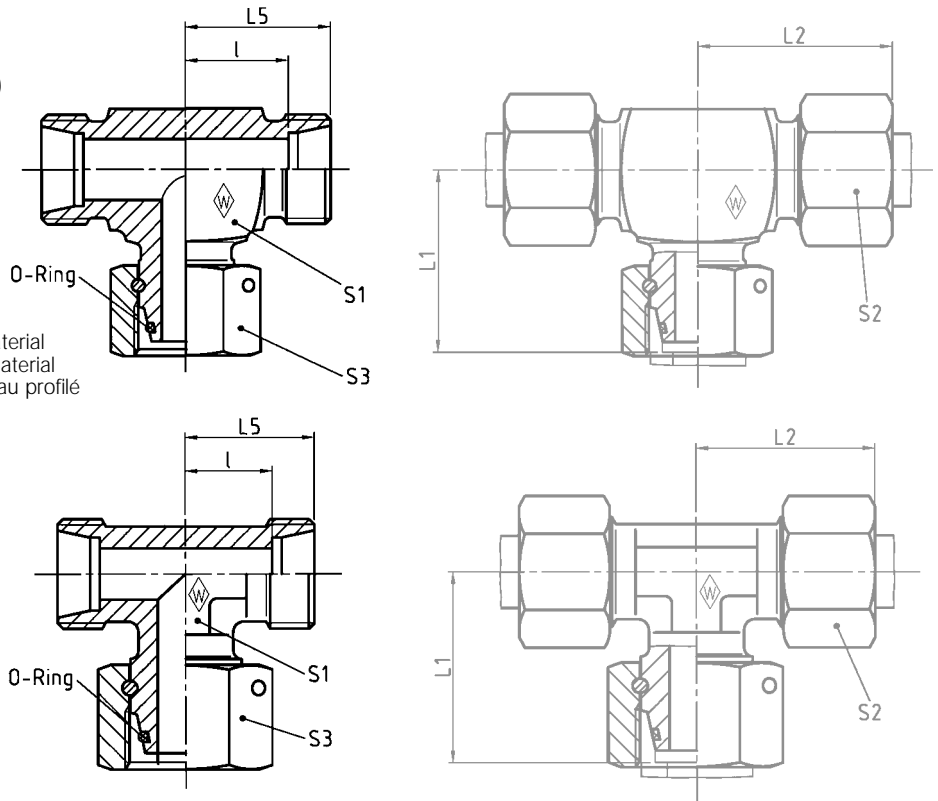
Einstellbare T-Stutzen
Adjustable branch Tee (body only)
Té orientable (corps)



ETSD

mit Dichtkegel und O-Ring NBR* (z. B. Perbunan)
with taper and O-ring NBR* (e. g. Perbunan)
avec cône d'étanchéité et joint torique
NBR* (p. ex. Perbunan)

Rohr-AD 6 bis 12 mm = Profilmaterial
Tube OD 6 to 12 mm = profile material
Tube Ø ext. 6 à 12 mm = matériau profilé



F

Reihe Series Série	PN bar (psi)	Rohr-AD Tube OD Tube Ø ext.	Typ Type Désignation	Best.-Nr. Reference Réf.	kg per 100 St. kg per 100 pcs. kg par 100 p.	L ₁	L ₂	L ₅	l	S ₁	S ₂	S ₃	*O-Ring *O-ring *Joint torique
L	500 (7252)	6	ETSD 6 L	063897	3,2	26	29	21	14	14	14	17	4,5 x 1,5
		8	ETSD 8 L	063898	6,5	27,5	29	21	14	14	17	17	6 x 1,5
		10	ETSD 10 L	063899	9,5	29	30	22	15	17	19	19	8,5 x 1,5
	400 (5801)	12	ETSD 12 L	063900	12,5	29,5	32	24	17	19	22	22	10 x 1,5
		15	ETSD 15 L	063901	14,0	32,5	36	28	21	19	27	27	12 x 2
		18	ETSD 18 L	063902	21,5	35,5	40	31	23,5	24	32	32	15 x 2
250 (3626)	22	ETSD 22 L	063903	28,0	38,5	44	35	27,5	27	36	36	20 x 2	
	28	ETSD 28 L	063904	49,0	41,5	47	38	30,5	36	41	46	26 x 2	
	35	ETSD 35 L	063905	60,9	51	56	45	34,5	41	50	50	32 x 2,5	
	42	ETSD 42 L	063906	89,2	56	63	51	40	50	60	60	38 x 2,5	
S	800 (11603)	6	ETSD 6 S	063907	8,0	27	31	23	16	14	17	17	4,5 x 1,5
		8	ETSD 8 S	063908	10,5	27,5	32	24	17	17	19	19	6 x 1,5
		10	ETSD 10 S	063909	14,0	30	34	25	17,5	19	22	22	8,5 x 1,5
	630 (9137)	12	ETSD 12 S	063910	19,0	31	38	29	21,5	22	24	24	10 x 1,5
		14	ETSD 14 S	063911	16,9	35	40	30	22	19	27	27	12 x 2
		16	ETSD 16 S	063912	23,0	36,5	43	33	24,5	24	30	30	14 x 2
	420 (6091)	20	ETSD 20 S	063913	35,0	44,5	48	37	26,5	27	36	36	17,3 x 2,4
		25	ETSD 25 S	063914	63,5	50	54	42	30	36	46	46	22,3 x 2,4
400 (5801)	30	ETSD 30 S	063915	87,0	55	62	49	35,5	41	50	50	27,3 x 2,4	
	38	ETSD 38 S	063916	131,0	63	72	57	41	50	60	60	35 x 2,5	

L₂ ist Ungefährmaß bei angezogener Überwurfmutter
L₂ = approximate length with nut tightened
L₂ = longueur approximative, l'écrou étant bloqué

*FPM (z. B. Viton) auf Anfrage
*FPM (e. g. Viton) on request
*FPM (p. ex. Viton) sur demande

Einstellbare L-Stutzen
Adjustable male stud run Tee (body only)
Té renversé orientable (corps)

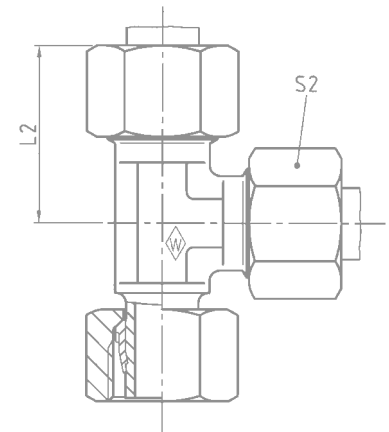
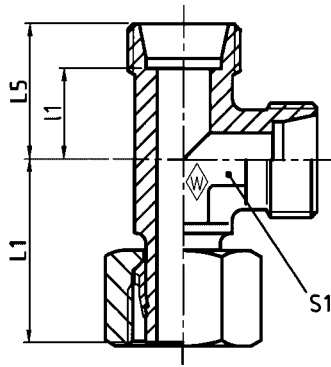


P-ELS-SV

mit Schaft vormontiert

standpipe with pre-assembled nut and profile ring

embout lisse avec écrou et bague profilée pré-sertis



F

Reihe Series Série	PN bar (psi)	Rohr-AD Tube OD Ø ext.	Typ Type Désignation	Best.-Nr. Reference Réf.	kg per 100 St. kg per 100 pcs. kg par 100 p.	L ₁	L ₂	L ₅	l ₁	S ₁	S ₂
L	500 (7252)	6	P-ELS 6 L-SV	602911	4,0	26	27	19	12	12	14
		8	P-ELS 8 L-SV	374931	4,4	27,5	29	21	14	12	17
		10	P-ELS 10 L-SV	374932	6,0	29	30	22	15	14	19
	400 (5801)	12	P-ELS 12 L-SV	602559	8,5	29,5	32	24	17	17	22
		15	P-ELS 15 L-SV	374933	14,5	32,5	36	28	21	19	27
		18	P-ELS 18 L-SV	602467	21,0	35,5	40	31	23,5	24	32
250 (3626)	22	P-ELS 22 L-SV	604092	25,6	38,5	44	35	27,5	27	36	
	28	P-ELS 28 L-SV	602583	41,5	41,5	47	38	30,5	36	41	
S	800 (11603)	6	P-ELS 6 S-SV	602998	6,0	27	31	23	16	12	17
		8	P-ELS 8 S-SV	602999	7,5	27,5	32	24	17	14	19
		10	P-ELS 10 S-SV	602913	10,5	30	34	25	17,5	17	22
	630 (9137)	12	P-ELS 12 S-SV	602908	13,5	31	38	29	21,5	17	24
		14	P-ELS 14 S-SV	606307	16,6	35	40	30	22	19	27
		16	P-ELS 16 S-SV	602910	24,0	36,5	43	33	24,5	24	30

L₂ = Ungefährmaß bei angezogener Überwurfmutter

L₂ = approximate length with nut tightened

L₂ = longueur approximative, l'écrou étant bloqué

Einstellbare L-Stutzen
Adjustable male stud run Tee (body only)
Té renversé orientable (corps)



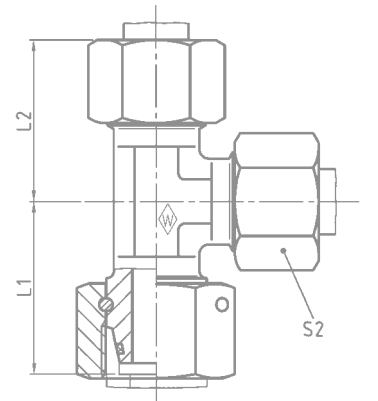
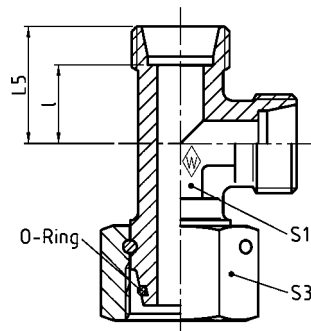
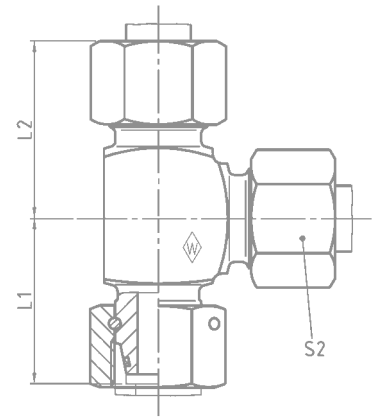
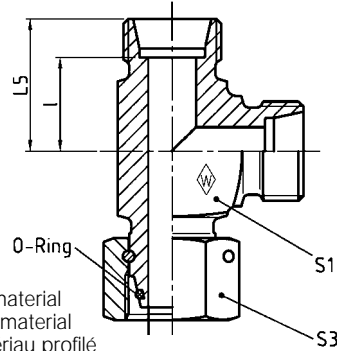
ELSD

mit Dichtkegel und O-Ring NBR* (z. B. Perbunan)

with taper and O-ring NBR* (e. g. Perbunan)

avec cône d'étanchéité et joint torique NBR* (p. ex. Perbunan)

Rohr-AD 6 bis 12 mm = Profilmaterial
Tube OD 6 to 12 mm = profile material
Tube Ø ext. 6 à 12 mm = matériau profilé



Reihe Series Série	PN bar (psi)	Rohr-AD Tube OD Tube Ø ext.	Typ Type Désignation	Best.-Nr. Reference Réf.	kg per 100 St. kg per 100 pcs. kg par 100 p.	L ₁	L ₂	L ₅	l	S ₁	S ₂	S ₃	*O-Ring *O-ring *Joint torique
L	500 (7252)	6	ELSD 6 L	063917	4,6	26	29	21	14	14	14	17	4,5 x 1,5
		8	ELSD 8 L	063918	7,0	27,5	29	21	14	14	17	17	6 x 1,5
		10	ELSD 10 L	063919	9,0	29	30	22	15	17	19	19	8,5 x 1,5
	400 (5801)	12	ELSD 12 L	063920	12,5	29,5	32	24	17	19	22	22	10 x 1,5
		15	ELSD 15 L	063921	13,1	32,5	36	28	21	19	27	27	12 x 2
		18	ELSD 18 L	063922	20,5	35,5	40	31	23,5	24	32	32	15 x 2
	250 (3626)	22	ELSD 22 L	063923	28,0	38,5	44	35	27,5	27	36	36	20 x 2
28		ELSD 28 L	063924	49,0	41,5	47	38	30,5	36	41	46	26 x 2	
35		ELSD 35 L	063925	65,0	51	56	45	34,5	41	50	50	32 x 2,5	
		42	ELSD 42 L	063926	100,0	56	63	51	40	50	60	60	38 x 2,5
S	800 (11603)	6	ELSD 6 S	063927	8,0	27	31	23	16	14	17	17	4,5 x 1,5
		8	ELSD 8 S	063928	11,0	27,5	32	24	17	17	19	19	6 x 1,5
		10	ELSD 10 S	063929	14,0	30	34	25	17,5	19	22	22	8,5 x 1,5
	630 (9137)	12	ELSD 12 S	063930	19,0	31	38	29	21,5	22	24	24	10 x 1,5
		14	ELSD 14 S	063931	16,5	35	40	30	22	19	27	27	12 x 2
		16	ELSD 16 S	063932	23,5	36,5	43	33	24,5	24	30	30	14 x 2
	420 (6091)	20	ELSD 20 S	063933	35,5	44,5	48	37	26,5	27	36	36	17,3 x 2,4
		25	ELSD 25 S	063934	63,5	50	54	42	30	36	46	46	22,3 x 2,4
400 (5801)	30	ELSD 30 S	063935	88,0	55	62	49	35,5	41	50	50	27,3 x 2,4	
	38	ELSD 38 S	063936	130,0	63	72	57	41	50	60	60	35 x 2,5	

L₂ = Ungefährmaß bei angezogener Überwurfmutter
L₂ = approximate length with nut tightened
L₂ = longueur approximative, l'écrou étant bloqué

*FPM (z. B. Viton) auf Anfrage
*FPM (e. g. Viton) on request
*FPM (p. ex. Viton) sur demande

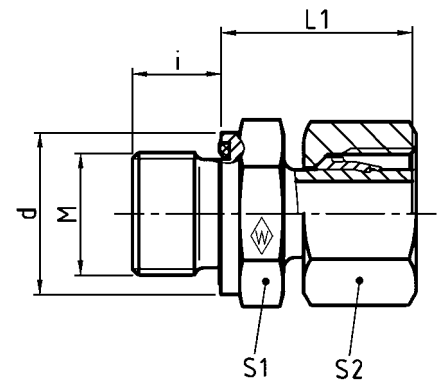


P-EGES R-WD-SV

mit Schaft vormontiert
 und Weichdichtung: NBR* (z. B. Perbunan)
 Einschraubgewinde: Whitworth-Rohrgewinde (zylindrisch)

standpipe with pre-assembled nut and profile ring
 and captive seal: NBR* (e. g. Perbunan)
 Stud thread: BSP thread (parallel)

embout lisse avec écrou et bague profilée pré-sertis
 et joint mou: NBR* (p. ex. Perbunan)
 Filetage mâle: Whitworth (cylindrique)



F

DIN-ISO 228 (R ..., DIN 259)

Reihe Series Série	PN bar (psi)	Rohr-AD Tube OD Tube Ø ext.	G	Typ Type Désignation	Best.-Nr. Reference Réf.	kg per 100 St. kg per 100 pcs. kg par 100 p.	i	d	L ₁	S ₁	S ₂
L	500 (7252)	6	G 1/8	A P-EGES 6 LR-WD-SV	373856	2,5	8	13,9	24,5	14	14
		8	G 1/4	A P-EGES 8 LR-WD-SV	373857	4,5	12	18,9	29,5	19	17
		10	G 1/4	A P-EGES 10 LR-WD-SV	373858	5,8	12	18,9	27,5	19	19
	400 (5801)	12	G 1/4	A P-EGES 12 L/R 1/4-WD-SV	373859	6,5	12	18,9	27,5	19	22
		12	G 3/8	A P-EGES 12 LR-WD-SV	373860	6,5	12	21,9	34	22	22
		15	G 3/8	A P-EGES 15 L/R 3/8-WD-SV	374482	11,0	12	21,9	34	27	27
		15	G 1/2	A P-EGES 15 LR-WD-SV	373861	11,6	14	26,9	32	27	27
18		G 1/2	A P-EGES 18 LR-WD-SV	373862	13,0	14	26,9	31,5	27	27	
250 (3626)	22	G 3/4	A P-EGES 22 LR-WD-SV	373863	17,6	16	31,9	32,5	32	36	
S	800 (11603)	6	G 1/4	A P-EGES 6 SR-WD-SV	373867	5,1	12	18,9	27	19	17
		8	G 1/4	A P-EGES 8 SR-WD-SV	373868	4,8	12	18,9	29,5	19	19
		10	G 3/8	A P-EGES 10 SR-WD-SV	373869	8,3	12	21,9	32	22	22
	630 (9137)	12	G 3/8	A P-EGES 12 SR-WD-SV	373870	7,3	12	21,9	34	22	24
		12	G 1/2	A P-EGES 12 S/R 1/2-WD-SV	373871	9,2	14	26,9	34,5	27	25
		14	G 1/2	A P-EGES 14 SR-WD-SV	373872	14,9	14	26,9	36,5	27	27
		16	G 1/2	A P-EGES 16 SR-WD-SV	373873	15,4	14	26,9	37	27	30
16	G 3/4	A P-EGES 16 S/R 3/4-WD-SV	373874	20,0	16	31,9	39	32	30		

* FPM (z. B. Viton) auf Anfrage
 * FPM (e. g. Viton) on request
 * FPM (p. ex. Viton) sur demande

Gerade-Einschraubstutzen
 Stud standpipe adaptor (body only)
 Raccord d'orientation (corps)

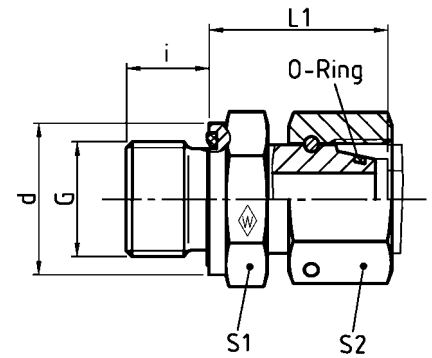


EGESD R-WD

mit Dichtkegel, O-Ring
 und Weichdichtung NBR* (z. B. Perbunan)
 Einschraubgewinde: Whitworth-Rohrgewinde (zylindrisch)

with taper, O-ring
 and captive seal NBR* (e. g. Perbunan)
 Stud thread: BSP thread (parallel)

avec cône d'étanchéité, joint torique
 et joint mou NBR* (p. ex. Perbunan)
 Filetage mâle: Whitworth (cylindrique)



DIN-ISO 228 (R ..., DIN 259)

Reihe Series Série	PN bar (psi)	Rohr-AD Tube OD Tube Ø ext.	G	Typ Type Désignation	Best.-Nr. Reference Réf.	kg per 100 St. kg per 100 pcs. kg par 100 p.	L ₁	i	d	S ₁	S ₂	*O-Ring *O-ring *Joint torique
L	500 (7252)	6	G 1/8 A	EGESD 6 LR-WD	063661	3,6	24,5	8	13,9	14	17	4,5 x 1,5
		8	G 1/4 A	EGESD 8 LR-WD	063662	5,7	29,5	12	18,9	19	17	6 x 1,5
		10	G 1/4 A	EGESD 10 LR-WD	063663	5,8	27,5	12	18,9	19	19	8,5 x 1,5
	400 (5801)	12	G 1/4 A	EGESD 12 L/R 1/4-WD	063664	6,8	27,5	12	18,9	19	22	10 x 1,5
		12	G 3/8 A	EGESD 12 LR-WD	063665	7,5	34	12	21,9	22	22	10 x 1,5
		15	G 1/2 A	EGESD 15 LR-WD	063666	14,4	32	14	26,9	27	27	12 x 2
		18	G 1/2 A	EGESD 18 LR-WD	063667	15,2	31,5	14	26,9	27	32	15 x 2
250 (3626)	22	G 3/4 A	EGESD 22 LR-WD	063668	20,2	32,5	16	31,9	32	36	20 x 2	
	28	G 1 A	EGESD 28 LR-WD	063669	35,6	35	18	39,9	41	46	26 x 2	
	35	G 1 1/4 A	EGESD 35 LR-WD	063670	50,7	42,5	20	49,9	50	50	32 x 2,5	
S	800 (11603)	42	G 1 1/2 A	EGESD 42 LR-WD	063671	66,4	46,5	22	54,9	55	60	38 x 2,5
		6	G 1/4 A	EGESD 6 SR-WD	063672	5,6	27	12	18,9	19	17	4,5 x 1,5
		8	G 1/4 A	EGESD 8 SR-WD	063673	6,2	29,5	12	18,9	19	19	6 x 1,5
	630 (9137)	10	G 3/8 A	EGESD 10 SR-WD	063674	9,2	32	12	21,9	22	22	8,5 x 1,5
		12	G 3/8 A	EGESD 12 SR-WD	063675	11,0	34	12	21,9	22	24	10 x 1,5
		12	G 1/2 A	EGESD 12 S/R 1/2-WD	063676	15,3	34,5	14	26,9	27	24	10 x 1,5
	420 (6091)	14	G 1/2 A	EGESD 14 SR-WD	063677	17,0	36,5	14	26,9	27	27	12 x 2
		16	G 1/2 A	EGESD 16 SR-WD	063678	23,0	37	14	26,9	27	30	14 x 2
	400 (5801)	20	G 3/4 A	EGESD 20 SR-WD	063679	28,6	43	16	31,9	32	36	17,3 x 2,4
		25	G 1 A	EGESD 25 SR-WD	063680	49,4	48	18	39,9	41	46	22,3 x 2,4
400 (5801)	30	G 1 1/4 A	EGESD 30 SR-WD	063681	67,4	51	20	49,9	50	50	27,3 x 2,4	
	38	G 1 1/2 A	EGESD 38 SR-WD	063682	93,1	60	22	54,9	55	60	35 x 2,5	

* FPM (z. B. Viton) auf Anfrage
 * FPM (e. g. Viton) on request
 * FPM (p. ex. Viton) sur demande

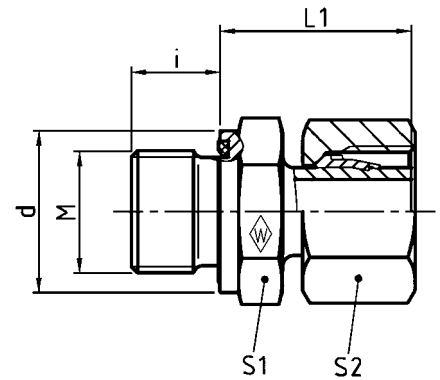


P-EGES M-WD-SV

mit Schaft vormontiert
 Weichdichtung NBR* (z. B. Perbunan)
 Einschraubgewinde: Metrisches Gewinde (zylindrisch)

standpipe with pre-assembled nut and profile ring
 captive seal NBR* (e. g. Perbunan)
 Stud thread: metric (parallel)

embout lisse avec écrou et bague profilée pré-sertis
 joint mou NBR* (p. ex. Perbunan)
 Filetage mâle: métrique (cylindrique)



F

Reihe Series Série	PN bar (psi)	Rohr-AD Tube OD Tube Ø ext.	M	Typ Type Désignation	Best.-Nr. Reference Réf.	kg per 100 St. kg per 100 pcs. kg par 100 p.	i	d	L ₁	S ₁	S ₂
L	500 (7252)	6	M 10 x 1	P-EGES 6 LM-WD-SV	373879	2,5	8	13,9	24,5	14	14
		8	M 12 x 1,5	P-EGES 8 LM-WD-SV	373880	4,0	12	16,9	26,5	17	17
		10	M 14 x 1,5	P-EGES 10 LM-WD-SV	373881	4,8	12	18,9	27,5	19	19
	400 (5801)	12	M 16 x 1,5	P-EGES 12 LM-WD-SV	373882	6,5	12	21,9	30,5	22	22
		15	M 18 x 1,5	P-EGES 15 LM-WD-SV	373883	9,6	12	23,9	31,5	24	27
		18	M 22 x 1,5	P-EGES 18 LM-WD-SV	373884	13,0	14	26,9	31,5	27	32
250 (3626)	22	M 26 x 1,5	P-EGES 22 LM-WD-SV	373885	17,6	16	31,9	32,5	32	36	
S	800 (11603)	6	M 12 x 1,5	P-EGES 6 SM-WD-SV	373889	4,6	12	16,9	27	17	17
		8	M 14 x 1,5	P-EGES 8 SM-WD-SV	373890	5,5	12	18,9	29,5	19	19
		10	M 16 x 1,5	P-EGES 10 SM-WD-SV	373891	8,3	12	21,9	32	22	22
	630 (9137)	12	M 18 x 1,5	P-EGES 12 SM-WD-SV	373892	11,5	12	23,9	34	24	24
		14	M 20 x 1,5	P-EGES 14 SM-WD-SV	373893	14,9	14	25,9	36,5	27	27
		16	M 22 x 1,5	P-EGES 16 SM-WD-SV	373894	15,4	14	26,9	37	27	30

* FPM (z. B. Viton) auf Anfrage
 * FPM (e. g. Viton) on request
 * FPM (p. ex. Viton) sur demande

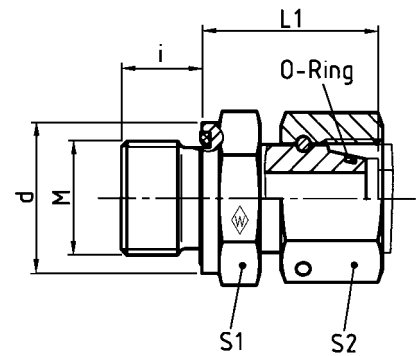


EGESD M-WD

mit Dichtkegel, O-Ring
 und Weichdichtung NBR* (z. B. Perbunan)
 Einschraubgewinde: Metrisches Gewinde (zylindrisch)

with taper, O-ring
 and captive seal NBR* (e. g. Perbunan)
 Stud thread: metric (parallel)

avec cône d'étanchéité, joint torique
 et joint mou NBR* (p. ex. Perbunan)
 Filetage mâle: métrique (cylindrique)



Reihe Series Série	PN bar (psi)	Rohr-AD Tube OD Tube Ø ext.	M	Typ Type Désignation	Best.-Nr. Reference Réf.	kg per 100 St. kg per 100 pcs. kg par 100 p.	L ₁	i	d	S ₁	S ₂	*O-Ring *O-ring *Joint torique
L	500 (7252)	6	M 10 x 1	EGESD 6 LM-WD	063641	3,6	24,5	8	13,9	14	17	4,5 x 1,5
		8	M 12 x 1,5	EGESD 8 LM-WD	063642	5,7	26,5	12	16,9	17	17	6 x 1,5
		10	M 14 x 1,5	EGESD 10 LM-WD	063643	5,8	27,5	12	18,9	19	19	8,5 x 1,5
	400 (5801)	12	M 16 x 1,5	EGESD 12 LM-WD	063644	7,5	30,5	12	21,9	22	22	10 x 1,5
		15	M 18 x 1,5	EGESD 15 LM-WD	063645	14,4	31,5	12	23,9	24	27	12 x 2
		18	M 22 x 1,5	EGESD 18 LM-WD	063646	15,2	31,5	14	26,9	27	32	15 x 2
	250 (3626)	22	M 26 x 1,5	EGESD 22 LM-WD	063647	20,2	32,5	16	31,9	32	36	20 x 2
		28	M 33 x 2	EGESD 28 LM-WD	063648	35,6	35	18	39,9	41	41	26 x 2
		35	M 42 x 2	EGESD 35 LM-WD	063649	50,7	42,5	20	49,9	50	50	32 x 2,5
	S	800 (11603)	42	M 48 x 2	EGESD 42 LM-WD	063650	66,4	46,5	22	54,9	55	60
6			M 12 x 1,5	EGESD 6 SM-WD	063651	5,6	27	12	16,9	17	17	4,5 x 1,5
8			M 14 x 1,5	EGESD 8 SM-WD	063652	6,2	29,5	12	18,9	19	19	6 x 1,5
630 (9137)		10	M 16 x 1,5	EGESD 10 SM-WD	063653	9,2	32	12	21,9	22	22	8,5 x 1,5
		12	M 18 x 1,5	EGESD 12 SM-WD	063654	11,0	34	12	23,9	24	24	10 x 1,5
		14	M 20 x 1,5	EGESD 14 SM-WD	063655	17,0	36,5	14	25,9	27	27	12 x 2
420 (6091)		16	M 22 x 1,5	EGESD 16 SM-WD	063656	23,0	37	14	26,9	27	30	14 x 2
		20	M 27 x 2	EGESD 20 SM-WD	063657	28,6	43	16	31,9	32	36	17,3 x 2,4
400 (5801)		25	M 33 x 2	EGESD 25 SM-WD	063658	49,4	48	18	39,9	41	46	22,3 x 2,4
		30	M 42 x 2	EGESD 30 SM-WD	063659	67,4	51	20	49,9	50	50	27,3 x 2,4
	38	M 48 x 2	EGESD 38 SM-WD	063660	93,1	60	22	54,9	55	60	35 x 2,5	

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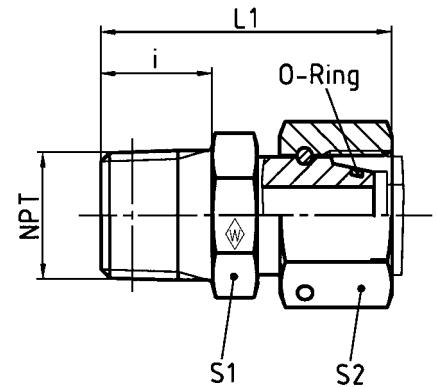


EGESD NPT

mit Dichtkegel und O-Ring NBR* (z. B. Perbunan)
 Einschraubgewinde: NPT (ANSI/ASME B1.20.1-1983)

with taper and O-ring NBR* (e. g. Perbunan)
 Stud thread: NPT (ANSI/ASME B1.20.1-1983)

avec cône d'étanchéité et joint torique NBR* (p. ex. Perbunan)
 Filetage mâle: NPT (ANSI/ASME B1.20.1-1983)



Reihe Series Série	PN bar (psi)	Rohr-AD Tube OD Tube Ø ext.	NPT	Typ Type Désignation	Best.-Nr. Reference Réf.	kg per 100 St. kg per 100 pcs. kg par 100 p.	i	L ₁	S ₁	S ₂	*O-Ring *O-ring *Joint torique
L	250 (3626)	6	1/8 NPT	EGESD 6 L/ 1/8 NPT	605721	3,7	10	36,5	11	14	4,5 x 1,5
		8	1/4 NPT	EGESD 8 L/ 1/4 NPT	605722	6,9	15	41,5	14	17	6 x 1,5
		10	1/4 NPT	EGESD 10 L/ 1/4 NPT	605723	5,9	15	40,5	17	19	8,5 x 1,5
		12	3/8 NPT	EGESD 12 L/ 3/8 NPT	605724	10,2	15	45,5	19	22	10 x 1,5
		15	1/2 NPT	EGESD 15 L/ 1/2 NPT	605725	15,9	20	48	22	27	12 x 2
	160 (2321)	18	1/2 NPT	EGESD 18 L/ 1/2 NPT	605726	15,8	20	47,5	27	32	15 x 2
		22	3/4 NPT	EGESD 22 L/ 3/4 NPT	605727	21,6	20	49	30	36	20 x 2
100 (1450)	28	1 NPT	EGESD 28 L/ 1 NPT	605728	43,9	25	57,5	36	41	26 x 2	
	35	1 1/4 NPT	EGESD 35 L/ 1 1/4 NPT	605729	50,5	26	65	46	50	32 x 2,5	
	42	1 1/2 NPT	EGESD 42 L/ 1 1/2 NPT	605730	77	26	65	50	60	38 x 2,5	
S	630 (9137)	6	1/4 NPT	EGESD 6 S/ 1/4 NPT	605731	6,1	15	41,5	17	17	4,5 x 1,5
		8	1/4 NPT	EGESD 8 S/ 1/4 NPT	605732	6,2	15	41,5	17	19	6 x 1,5
		10	3/8 NPT	EGESD 10 S/ 3/8 NPT	605733	9	15	44,5	19	22	8,5 x 1,5
		12	3/8 NPT	EGESD 12 S/ 3/8 NPT	605734	9,5	15	45,5	19	24	10 x 1,5
		14	1/2 NPT	EGESD 14 S/ 1/2 NPT	605735	17,7	20	53,5	22	27	12 x 2
	400 (5801)	16	1/2 NPT	EGESD 16 S/ 1/2 NPT	605736	23,6	20	53,5	24	30	14 x 2
		20	3/4 NPT	EGESD 20 S/ 3/4 NPT	605737	28,3	20	58	30	36	17,3 x 2,4
		25	1 NPT	EGESD 25 S/ 1 NPT	605738	50,4	25	68	36	46	22,3 x 2,4
250 (3626)	30	1 1/4 NPT	EGESD 30 S/ 1 1/4 NPT	605739	65	26	73,5	46	50	27,3 x 2,4	
	38	1 1/2 NPT	EGESD 38 S/ 1 1/2 NPT	605740	93,2	26	78	50	60	35 x 2,5	

* FPM (z. B. Viton) auf Anfrage
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 * FPM (p. ex. Viton) sur demande



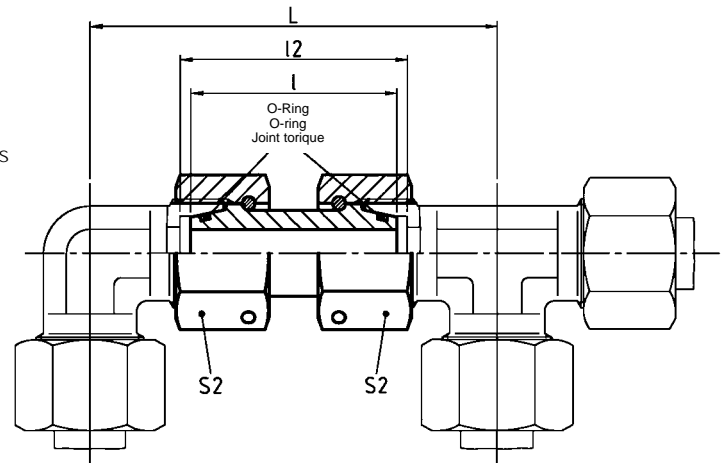
SNV

beidseitig Dichtkegel und O-Ring NBR* (z. B. Perbunan)
taper and O-ring NBR* (e. g. Perbunan) on both sides
cône d'étanchéité et joint torique NBR* (p. ex. Perbunan) des deux côtés

jeweils eine Mutter bis Hinterkante O-Ring Nut
zurückschiebbar

nuts on either side are retractable to back of
O-ring groove, but only one at a time

les écrous de chaque côté sont rétractables, l'un
par l'autre, jusqu'au bord arrière de la rainure du joint
torique



Reihe Series Série	PN bar (psi)	Rohr-AD Tube OD Tube Ø ext.	Typ Type Désignation	Best.-Nr. Reference Réf.	L	l	l ₂	S ₂	*O-Ring *O-ring *Joint torique
L	500 (7252)	6	SNV 6 L	372938	60	34	36	17	4,5 x 1,5
		8	SNV 8 L	372939	64	34	36	17	6 x 1,5
		10	SNV 10 L	372940	67	36	37	19	8,5 x 1,5
	400 (5801)	12	SNV 12 L	372941	71	36	37	22	10 x 1,5
		15	SNV 15 L	372942	82	39	40	27	12 x 2
		18	SNV 18 L	372943	89,5	40,5	42,5	32	15 x 2
		22	SNV 22 L	372944	101,5	45	46,5	36	20 x 2
	250 (3626)	28	SNV 28 L	372945	109,5	47	48,5	46	26 x 2
		35	SNV 35 L	372946	126,5	53	57,5	50	32 x 2,5
		42	SNV 42 L	372947	138,5	53	58,5	60	38 x 2,5
S	800 (11603)	6	SNV 6 S	372948	71	37	39	17	4,5 x 1,5
		8	SNV 8 S	069234	73	37	39	19	6 x 1,5
		10	SNV 10 S	068948	78	41	43	22	8,5 x 1,5
	630 (9137)	12	SNV 12 S	068950	87	42	44	24	10 x 1,5
		14	SNV 14 S	372949	92	45	48	27	12 x 2
		16	SNV 16 S	068088	99	46	50	30	14 x 2
	420 (6091)	20	SNV 20 S	068090	112,5	55	59,5	36	17,3 x 2,4
		25	SNV 25 S	061763	125,5	58	65,5	46	22,3 x 2,4
	400 (5801)	30	SNV 30 S	068099	143,5	62	72,5	50	27,3 x 2,4
		38	SNV 38 S	061765	164,5	67	82,5	60	35 x 2,5

* FPM (z. B. Viton) auf Anfrage
* FPM (e. g. Viton) on request
* FPM (p. ex. Viton) sur demande



SNV L

Reduzierschraubung
beidseitig Dichtkegel und O-Ring NBR* (z. B. Perbunan)

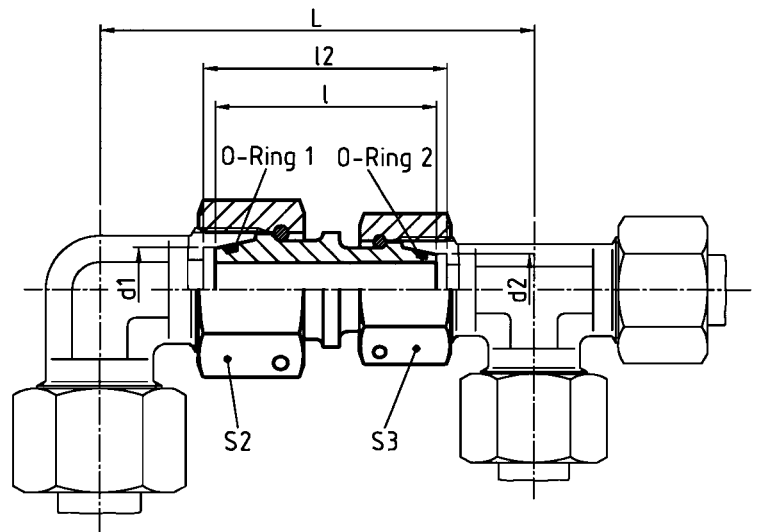
Reducing fitting
taper and O-ring NBR* (e. g. Perbunan) on both ends

Raccord de réduction
cône d'étanchéité et joint torique NBR* (p. ex. Perbunan)
des deux côtés

jeweils eine Mutter bis Hinterkante O-Ring Nut
zurückschiebbar

nuts at either end are retractable to back of
O-ring groove

les écrous de chaque côté sont rétractables jusqu'au
bord arrière de la rainure du joint torique



PN bar (psi)	Rohr-AD Tube OD Tube Δ ext.		Typ Type Désignation	Best.-Nr. Reference Réf.	L	l	l ₂	S ₁	S ₂	*O-Ring 1	*O-Ring 2
	d ₁	d ₂								*O-ring 1 *Joint torique 1	*O-ring 2 *Joint torique 2
500 (7252)	8	6	SNV 8/ 6 L	612675	64	34	36	17	17	6 x 1,5	4,5 x 1,5
	10	6	SNV 10/ 6 L	612676	65,5	35	36,5	19	17	8,5 x 1,5	4,5 x 1,5
	10	8	SNV 10/ 8 L	612677	65,5	35	36,5	19	17	8,5 x 1,5	6 x 1,5
400 (5801)	12	6	SNV 12/ 6 L	612678	67,5	35	36,5	22	17	10 x 1,5	4,5 x 1,5
	12	8	SNV 12/ 8 L	374258	68,5	36	37,5	22	17	10 x 1,5	6 x 1,5
	12	10	SNV 12/10 L	612679	69,5	36,5	37,5	22	19	10 x 1,5	8,5 x 1,5
	15	8	SNV 15/ 8 L	612680	73	36,5	38	27	17	12 x 2	6 x 1,5
	15	10	SNV 15/10 L	612681	74,5	37,5	38,5	27	19	12 x 2	8,5 x 1,5
	15	12	SNV 15/12 L	612682	83	44	45	27	22	12 x 2	10 x 1,5
	18	10	SNV 18/10 L	612683	78	38	39,5	32	19	15 x 2	8,5 x 1,5
	18	12	SNV 18/12 L	612684	80	38	39,5	32	22	15 x 2	10 x 1,5
	18	15	SNV 18/15 L	612685	91	45	46,5	32	27	15 x 2	12 x 2
250 (3626)	22	12	SNV 22/12 L	612686	86,5	40,5	42	36	22	20 x 2	10 x 1,5
	22	15	SNV 22/15 L	612687	92	42	43,5	36	27	20 x 2	12 x 2
	22	18	SNV 22/18 L	612688	98	45	47	36	32	20 x 2	15 x 2
	28	15	SNV 28/15 L	612689	96	43	44,5	41	27	26 x 2	12 x 2
	28	18	SNV 28/18 L	612690	100	44	46	41	32	26 x 2	15 x 2
	28	22	SNV 28/22 L	612691	106	46	48	41	36	26 x 2	20 x 2
	35	18	SNV 35/18 L	612692	109,5	48	51,5	50	32	32 x 2,5	15 x 2
	35	22	SNV 35/22 L	612693	115	49,5	53	50	36	32 x 2,5	20 x 2
	35	28	SNV 35/28 L	612694	118,5	50	53,5	50	46	32 x 2,5	26 x 2
	42	22	SNV 42/22 L	612695	121	49,5	53,5	60	36	38 x 2,5	20 x 2
42	28	SNV 42/28 L	612696	124,5	50	54	60	46	38 x 2,5	26 x 2	
42	35	SNV 42/35 L	612697	133	53	58,5	60	50	38 x 2,5	32 x 2,5	

* FPM (z. B. Viton) auf Anfrage
* FPM (e. g. Viton) on request
* FPM (p. ex. Viton) sur demande



SNV S

Reduzierschraubung
beidseitig Dichtkegel und O-Ring NBR* (z. B. Perbunan)

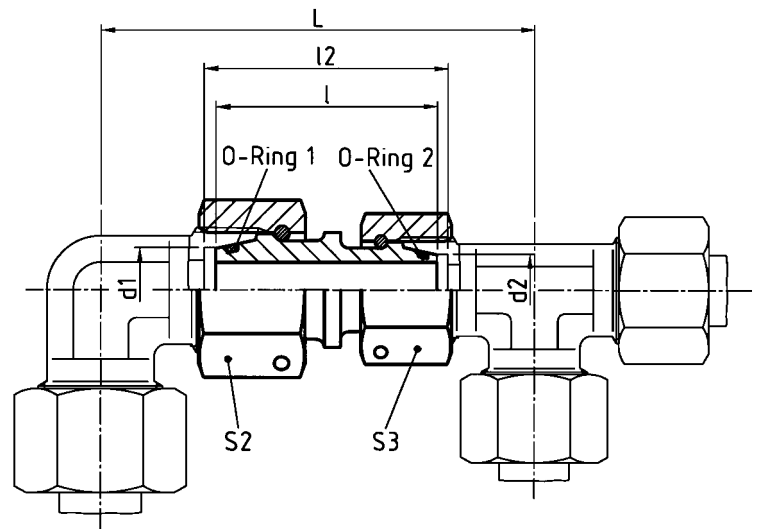
Reducing fitting
taper and O-ring NBR* (e. g. Perbunan) on both ends

Raccord de réduction
cône d'étanchéité et joint torique NBR* (p. ex. Perbunan)
des deux côtés

jeweils eine Mutter bis Hinterkante O-Ring Nut
zurückschiebbar

nuts at either end are retractable to back of
O-ring groove

les écrous de chaque côté sont rétractables jusqu'au
bord arrière de la rainure du joint torique



PN bar (psi)	Rohr-AD Tube OD Tube Δ ext. d ₁ d ₂		Typ Type Désignation	Best.-Nr. Reference Réf.	L	l	l ₂	S ₁	S ₂	*O-Ring 1 *O-ring 1 *Joint torique 1	*O-Ring 2 *O-ring 2 *Joint torique 2
800 (11603)	8	6	SNV 8/ 6 S	612698	72	37	39	19	17	6 x 1,5	4,5 x 1,5
	10	6	SNV 10/ 6 S	612699	76	40,5	42,5	22	17	8,5 x 1,5	4,5 x 1,5
	10	8	SNV 10/ 8 S	612700	75,5	39	41	22	19	8,5 x 1,5	6 x 1,5
630 (9137)	12	6	SNV 12/ 6 S	612701	80,5	39	43	24	17	10 x 1,5	4,5 x 1,5
	12	8	SNV 12/ 8 S	612702	84,5	44	46	24	19	10 x 1,5	6 x 1,5
	12	10	SNV 12/10 S	612703	82,5	41,5	43,5	24	22	10 x 1,5	8,5 x 1,5
	16	10	SNV 16/10 S	612704	88,5	43,5	46,5	30	22	14 x 2,0	8,5 x 1,5
	16	12	SNV 16/12 S	612705	96,5	47,5	50,5	30	24	14 x 2,0	10 x 1,5
420 (6091)	20	12	SNV 20/12 S	612706	100	48,5	52	36	24	17,3 x 2,4	10 x 1,5
	20	16	SNV 20/16 S	612707	108	52,5	57	36	30	17,3 x 2,4	14 x 2
	25	16	SNV 25/16 S	612708	112,5	52	58	46	30	22,3 x 2,4	14 x 2
	25	20	SNV 25/20 S	612709	121	58	64,5	46	36	22,3 x 2,4	17,3 x 2,4
400 (5801)	30	16	SNV 30/16 S	612710	121,5	54	61,5	50	30	27,3 x 2,4	14 x 2
	30	20	SNV 30/20 S	612711	128,5	58,5	66,5	50	36	27,3 x 2,4	17,3 x 2,4
	30	25	SNV 30/25 S	612712	135	60	69,5	50	46	27,3 x 2,4	22,3 x 2,4
	38	20	SNV 38/20 S	612713	139	61	71,5	60	36	35 x 2,5	17,3 x 2,4
	38	25	SNV 38/25 S	612714	145,5	62,5	74,5	60	46	35 x 2,5	22,3 x 2,4
	38	30	SNV 38/30 S	612715	154,5	64,5	78	60	50	35 x 2,5	27,3 x 2,4

* FPM (z. B. Viton) auf Anfrage
* FPM (e. g. Viton) on request
* FPM (p. ex. Viton) sur demande



SNVL/S - S/L

Reduzierschraubung
beidseitig Dichtkegel und O-Ring NBR* (z. B. Perbunan)

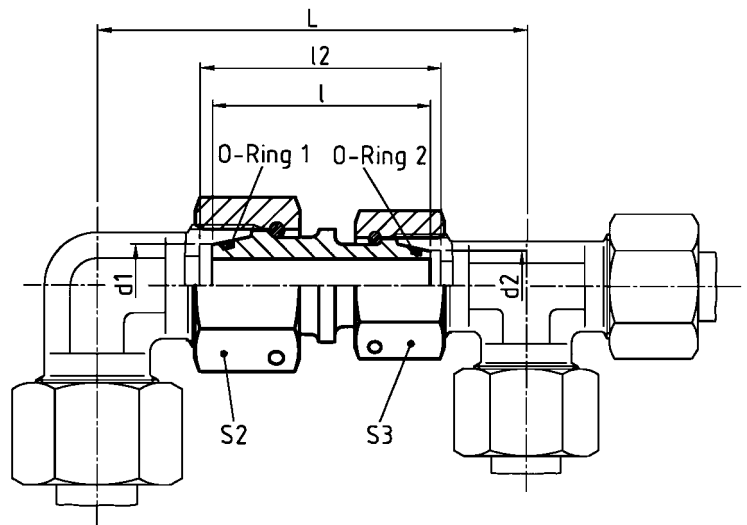
Reducing fitting
taper and O-ring NBR* (e. g. Perbunan) on both ends

Raccord de réduction
cône d'étanchéité et joint torique NBR* (p. ex. Perbunan)
des deux côtés

jeweils eine Mutter bis Hinterkante O-Ring Nut
zurückschiebbar

nuts at either end are retractable to back of
O-ring groove

les écrous de chaque côté sont rétractables jusqu'au
bord arrière de la rainure du joint torique



PN bar (psi)	Rohr-AD Tube OD Tube Δ ext.		Typ Type Designation	Best.-Nr. Reference Réf.	L	l	l ₂	S ₁	S ₂	*O-Ring 1	*O-Ring 2
	d ₁	d ₂								*O-ring 1	*O-ring 2
400 (5801)	6	6	SNV 6L/ 6 S	612716	67,5	35,5	37,5	17	17	4,5 x 1,5	4,5 x 1,5
	8	8	SNV 8L/ 8 S	612717	68,5	35,5	37,5	17	19	6 x 1,5	6 x 1,5
	10	10	SNV 10L/10 S	612718	72,5	38,5	40	19	22	8,5 x 1,5	8,5 x 1,5
	12	12	SNV 12L/12 S	612719	79	39	40,5	22	24	10 x 1,5	10 x 1,5
	18	16	SNV 18L/16 S	612720	94,5	43,5	46,5	32	30	15 x 2	14 x 2
250 (3626)	22	20	SNV 22L/20 S	612721	107,5	50	53,5	36	36	20 x 2	17,3 x 2,4
	28	25	SNV 28L/25 S	612722	118	52,5	57,5	46	46	26 x 2	22,3 x 2,4
	35	30	SNV 35L/30 S	612723	139	61	69	50	50	32 x 2,5	27,3 x 2,4
	42	38	SNV 42L/38 S	612724	147	55	66	60	60	38 x 2,5	35 x 2,5
400 (5801)	16	15	SNV 16S/15 L	612725	90,5	42,5	45	30	27	14 x 2	12 x 2
	20	18	SNV 20S/18 L	612726	101	47,5	51	36	32	17,3 x 2,4	15 x 2
250 (3626)	25	22	SNV 25S/22 L	612727	119,5	57	62	46	36	22,3 x 2,4	20 x 2
	30	28	SNV 30S/28 L	612728	131,5	59	65,5	50	46	27,3 x 2,4	26 x 2
	38	35	SNV 38S/35 L	612729	148	62	72,5	60	50	35 x 2,5	32 x 2,5

* FPM (z. B. Viton) auf Anfrage

* FPM (e. g. Viton) on request

* FPM (p. ex. Viton) sur demande

Drehstutzen Rückschlagventile (Stutzen) Wechselventile (Stutzen) Kugelhähne (Stutzen)	Swivel banjos (body only) Non-return valves (body only) Shuttle valves (body only) Ball valves (body only)	Raccords tournants (corps) Clapets anti-retour (corps) Soupapes à deux voies (corps) Robinets à boisseau sphérique (corps)	Abb. Fig. Fig.	Sinnbild Symbol Symbole	Typ Type Désignation	Seite Page Page
Drehstutzen Swivel banjo (body only) Raccord tournant (corps)	Technische Hinweise Technical details Détails technique					G2
	Drehzahlen und Anlaufdrehmomente Speeds and starting torques Vitesses et couples départ					G3
	Winkel-Einschraub-Drehstutzen Swivel banjo coupling (body only) Raccord tournant équerre mâle (corps)				DGWES.....R-WD DGWES.....M-WD	G4 G5
	Winkel-Drehstutzen Swivel elbow coupling (body only) Raccord tournant union équerre (corps)				DGWS.....	G6
Rückschlagventil (Stutzen) Non-return valve (body only) Clapet anti-retour (corps)	Technische Hinweise Technical details Détails techniques					G7
	Ventileinsatz Valve insert Insert clapet					G8
	Rückschlagventil (Stutzen) Non-return valve (body only) Clapet anti-retour mâle (corps)			RS.....		G9
	Einschraub-Rückschlagventil (Stutzen) Non-return valve with male stud (body only) Clapet anti-retour mâle (corps)			RSV.....R-WD RSV.....M-WD		G10 G11
	Einschraub-Rückschlagventil (Stutzen) Non-return valve with male stud (body only) Clapet anti-retour mâle (corps)			RSZ.....R-WD RSZ.....M-WD		G12 G13
Wechselventil (Stutzen) Shuttle valve (body only) Soupape à deux voies (corps)	Technische Hinweise Technical details Détails techniques					G14
	Wechselventil (Stutzen) Shuttle valves (body only) Soupapes à deux voies (corps)			TWS.....		G15
Hochdruck-Kugelhahn (Stutzen) High-pressure ball valve (body only) Robinets à boisseau sphérique pour hautes pressions (corps)	Technische Hinweise Technical details Détails techniques					G16
	Kugelhahn (Stutzen) Ball valve (body only) Robinets à boisseau sphérique (corps)			KH-R.....		G17
	Kugelhahn (Stutzen) Ball valve (body only) Robinets à boisseau sphérique (corps)			KHS.....		G18
	Kompakt-Umschalhahn (Stutzen) Compact diverter valve (body only) Robinets compact de renversement (corps)			KH3KS.....		G19
	Kompakt-Umschalhahn (Stutzen) Compact diverter valve (body only) Robinets compact de renversement (corps)			KH3KS-R.....		G20
	Dreiwege-Kugelhahn (Stutzen) Three way ball valve (body only) Robinets à trois voies (corps)			KH3S-R.....		G21

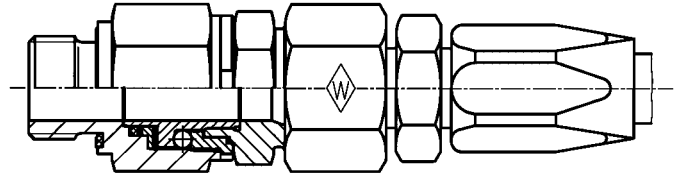
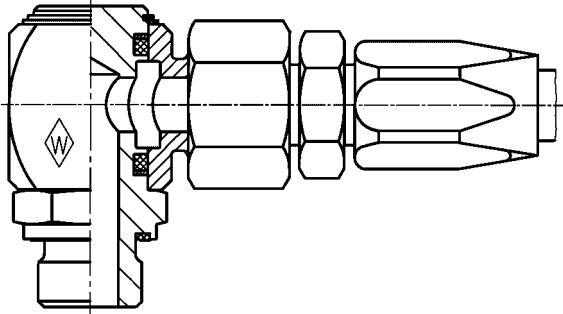
Drehstutzen Swivel banjo (body only) Raccord tournant (corps)



Technische Hinweise

Technical details

Détails technique



Sonderformen sind auf Anfrage lieferbar
Special designs are available on request
Types spéciaux disponibles sur demande

Anwendung

Walterscheid-Drehverschraubungen sind Verbindungselemente für die Übertragung von Schwenk- und Drehbewegungen mit geringer Winkelgeschwindigkeit zwischen Aggregaten und Leitungen.

Die Verbindungen sind wartungsfrei, ohne Leckverluste und haben niedrige Anlaufdrehmomente.

Hinweis: Zum Ausgleich jeder Fluchtungsungenauigkeit wird die Verwendung eines flexiblen Anschlusses empfohlen.

Sicherheit

Die Nenndrücke der Drehverschraubungen sind unter Berücksichtigung einer 2,5-fachen Sicherheit ausgelegt. Bei Anwendung in niedrigen Druckbereichen ergeben sich entsprechend höhere Sicherheiten.

Werkstoffe

Serienmäßig aus Stahl. Sonderwerkstoff nichtrostender Stahl (1.4571) ist auf Anfrage lieferbar.

Oberflächenschutz

Galvanisch verzinkt und gelb chromatiert (DIN ISO 4042)

Dichtungen

Sind standardmäßig aus NBR (z. B. Perbunan) und leicht auswechselbar. Bei speziellen Hydraulikflüssigkeiten oder höheren Betriebstemperaturen sind auf Anfrage spezielle Dichtungswerkstoffe lieferbar.

Die Lebensdauer der Dichtelemente ist abhängig vom Betriebsdruck und der Gleitgeschwindigkeit.

Dichtungssätze sind auf Anfrage lieferbar.

Betriebstemperatur

Temperaturbereich von -30 °C bis $+100\text{ °C}$

Application

Walterscheid swivel banjos are connecting components between pipework and equipment to allow swivel movement and slow speed rotation.

These connections have a low starting torque, are leak-free and require no maintenance.

Note: To compensate for any misalignment, the use of a flexible connection is recommended.

Safety

The nominal pressures of the swivel banjos are based on a safety factor of 2.5. The use at lower pressure ranges consequently results in higher safety.

Materials

Production type made of steel. Special material stainless steel (1.4571) is available on request.

Surface protection

Cold-galvanized and yellow passivated (DIN ISO 4042)

Seals

Standard seals are made of NBR (e. g. Perbunan) and are easily exchangeable. For special hydraulic fluids or higher operating temperatures, special seal materials are available on request.

Life of the sealing elements is dependent upon operating pressure and running speed.

Seal kits are available on request.

Working temperature

Temperature range from -30 °C to $+100\text{ °C}$

Utilisation

Les raccords tournants Walterscheid sont des éléments de liaison entre machines et conduites installés pour assurer la transmission de mouvements tournants ou rotatifs à basse vitesse angulaire.

Ces liaisons sont sans entretien, sans fuite et ont un faible couple départ.

Remarque: Afin de compenser tout déport éventuel, l'utilisation d'un raccordement flexible est préconisée.

Sécurité

Les pressions des raccords tournants sont calculées avec un coefficient de sécurité de 2,5. Par conséquent, l'utilisation dans des plages de pression plus basses donne lieu à des sécurités plus élevées.

Matériaux

Acier en série. Matériau spécial, c.-à-d. acier inox (1.4571), sur demande.

Protection de surface

Zingué et passivé en coloration jaune (DIN ISO 4042)

Joints

Joints standard en NBR (p. ex. Perbunan) faciles à changer. En cas de fluides hydrauliques spéciaux ou de températures de service plus élevées, des matériaux spéciaux d'étanchéité sont disponibles sur demande.

La durée de vie des éléments d'étanchéité dépend de la pression de service et de la vitesse de glissement.

Jeux de joints disponibles sur demande.

Température de service

Plage de température de -30 °C à $+100\text{ °C}$

Drehstutzen
Swivel banjo (body only)
Raccord tournant (corps)



Drehzahlen und Anlaufmomente
Speeds and starting torques
Vitesses et couples départ

DN [mm]	Typ Type Désignation		Zulässige Drehzahl [min ⁻¹] bei Betriebsdruck Permissible speed [min ⁻¹] at an operating temperature of Vitesse admissible [min ⁻¹] pour une pression de service de		Anlaufdrehmoment (Richtwert) Starting torque (Standard value) Couple départ (Valeur de référence) [Nm]
	DGWES	DGWS	200 bar	400 bar	
5	6 LR 6 L/R 1/4 6 SR 8 SR 6 LM 6 L/M 12 x 1,5 8 LM 6 SM 8 SM	6 L 6 S 8 S	50	25	0,5 bei 400 bar 0,5 at 400 bar 0,5 à 400 bar
	8 LR 10 LR 10 SR 12 L/R 1/4 8 L/M 14 x 1,5 10 LM 10 SM	8 L 10 S			
8	10 L/R 3/8 12 LR 12 SR 10 L/M 16 x 1,5 12 LM 12 SM	10 L 12 S	40	20	2,8 bei 400 bar 2,8 at 400 bar 2,8 à 400 bar
	12 L/R 1/2 14 SR 12 L/M 18 x 1,5 15 LM 14 SM	12 L 14 S			
10	15 LR 18 LR 16 SR 18 LM 16 SM	15 L 16 S	15	-	3,0 bei 200 bar 3,0 at 200 bar 3,0 à 200 bar
	22 LR 20 SR 22 LM 20 SM	18 L 20 S			
16	28 LR 25 SR 28 LM 25 SM	22 L 25 S	8	-	7,0 bei 200 bar 7,0 at 200 bar 7,0 à 200 bar
	35 LR 30 SR 35 LM 30 SM	28 L 30 S			
20	42 LR 38 SR 42 LM 38 SM	35 L 38 S	4	-	7 bei/at/à 200 bar
	40	42 L			

G

Die angegebenen Daten sind Richtwerte. Temperatur, Verschmutzung und spannungsfreier Einbau beeinflussen diese Werte.
The above-mentioned data represent recommended values subject to temperature, contamination and stress-free installation.
Les données ci-dessus représentent des valeurs de référence étant sous l'influence des conditions de température, de pollution et de l'installation sans effort de serrage.

Winkel-Einschraub-Drehstutzen
Swivel banjo coupling (body only)
Raccord tournant équerre mâle (corps)

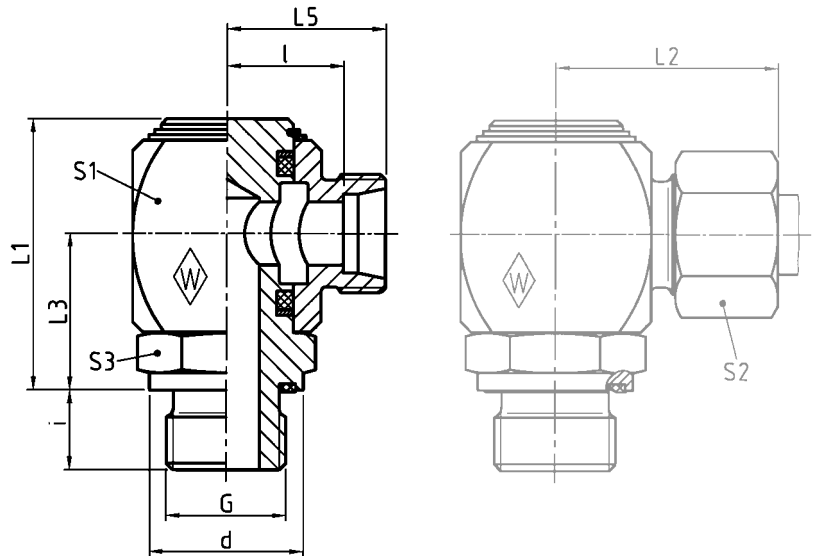


DGWES R-WD

mit Weichdichtung: NBR* (z. B. Perbunan)
Einschraubgewinde: Whitworth-Rohrgewinde (zylindrisch)

with captive seal: NBR* (e. g. Perbunan)
Stud thread: BSP thread (parallel)

avec joint mou: NBR* (p. ex. Perbunan)
Filetage mâle: Whitworth (cylindrique)



DIN-ISO 228 (R ..., DIN 259)

Reihe Series Série	PB bar (psi)	Rohr-AD Tube OD Ø ext.	G	Typ Type Désignation	Best.-Nr. Reference Réf.	L ₁	L ₂	L ₃	L ₅	l	i	d	S ₁	S ₂	S ₃		
L	250 (3626)	6	G 1/8 A	DGWES 6 LR-WD	608101	39	31	21,5	23,5	16,5	8	13,9	27	14	17		
			G 1/4 A	DGWES 6 L/R 1/4-WD	608102	40	31	22,5	23,5	16,5	12	18,9	27	14	19		
			G 1/4 A	DGWES 8 LR-WD	608103	45,5	32,5	25	25	18	12	18,9	30	17	22		
			G 1/4 A	DGWES 10 LR-WD	608104	45,5	33,5	25	26	19	12	18,9	30	19	22		
			G 3/8 A	DGWES 10 L/R 3/8-WD	608105	47,5	34,5	27	27	20	12	21,9	32	19	24		
	160 (2321)	12	G 3/8 A	DGWES 12 LR-WD	608106	47,5	34,5	27	27	20	12	21,9	32	22	24		
			G 1/2 A	DGWES 12 L/R 1/2-WD	608107	54	36,5	30	29	22	14	26,9	36	22	27		
			G 1/2 A	DGWES 15 LR-WD	608108	59	40	33	32	25	14	26,9	40	27	32		
			G 1/2 A	DGWES 18 LR-WD	608109	59	40,5	33	32	24,5	14	26,9	40	32	32		
			G 3/4 A	DGWES 22 LR-WD	608110	64	45	35,5	36,5	29	16	32,9	45	36	36		
S	100 (1450)	28	G 1 A	DGWES 28 LR-WD	608111	76	50,5	41,5	45,5	38	18	39,9	55	41	41		
			G 1 1/4 A	DGWES 35 LR-WD	608112	92	59,5	51,5	48,5	38	20	49,9	65	50	50		
			G 1 1/2 A	DGWES 42 LR-WD	608113	102	65	56,5	53,5	42,5	22	54,9	75	60	55		
			400 (5801)	6	G 1/4 A	DGWES 6 SR-WD	608114	40	33	22,5	25,5	18,5	12	18,9	27	17	19
					G 1/4 A	DGWES 8 SR-WD	608115	40	33	22,5	25,5	18,5	12	18,9	27	19	19
	G 3/8 A	DGWES 10 SR-WD			608116	45,5	35,5	25	27	19,5	12	21,9	30	22	22		
	G 3/8 A	DGWES 12 SR-WD			608117	47,5	36,5	27	28	20,5	12	21,9	32	24	24		
	G 1/2 A	DGWES 14 SR-WD			608118	54	41,5	30	32	24	14	26,9	36	27	27		
	250 (3626)	16	G 1/2 A	DGWES 16 SR-WD	608119	59	43,5	33	34	25,5	14	26,9	40	30	32		
			20	G 3/4 A	DGWES 20 SR-WD	608120	64	49,5	35,5	38,5	28	16	31,9	45	36	36	
G 1 A				DGWES 25 SR-WD	608121	76	57,5	41,5	45,5	33,5	18	39,9	55	46	41		
G 1 1/4 A				DGWES 30 SR-WD	608122	92	65,5	51,5	52,5	39	20	49,9	65	50	50		
G 1 1/2 A				DGWES 38 SR-WD	608123	102	74	56,5	59,5	43,5	22	54,9	75	60	55		

L₂ = Ungefährmaß bei angezogener Überwurfmutter
L₂ = approximate length with nut tightened
L₂ = longueur approximative, l'écrou étant bloqué

* FPM (z. B. Viton) auf Anfrage
* FPM (e. g. Viton) on request
* FPM (p. ex. Viton) sur demande

Winkel-Einschraub-Drehstutzen
 Swivel banjo coupling (body only)
 Raccord tournant équerre mâle (corps)

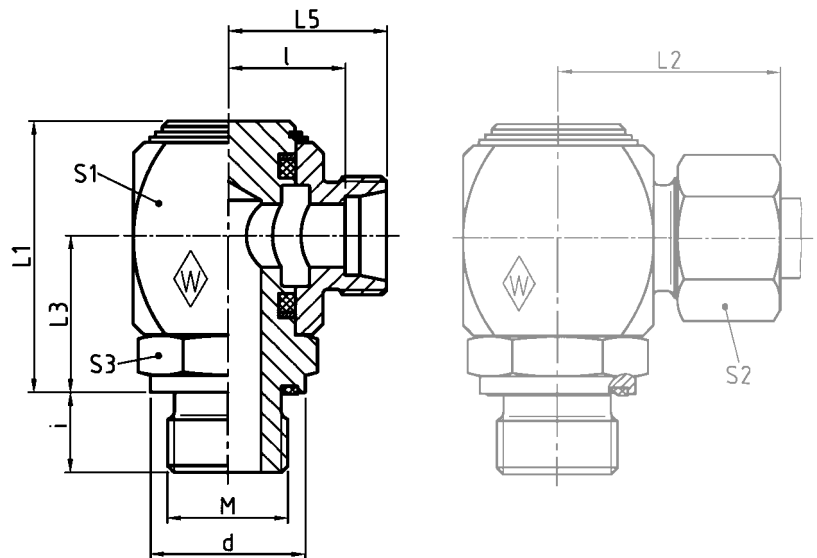


DGWES M-WD

mit Weichdichtung: NBR* (z. B. Perbunan)
 Einschraubgewinde: Metrisches Gewinde (zylindrisch)

with captive seal: NBR* (e. g. Perbunan)
 Stud thread: metric (parallel)

avec joint mou: NBR* (p. ex. Perbunan)
 Filetage mâle: métrique (cylindrique)



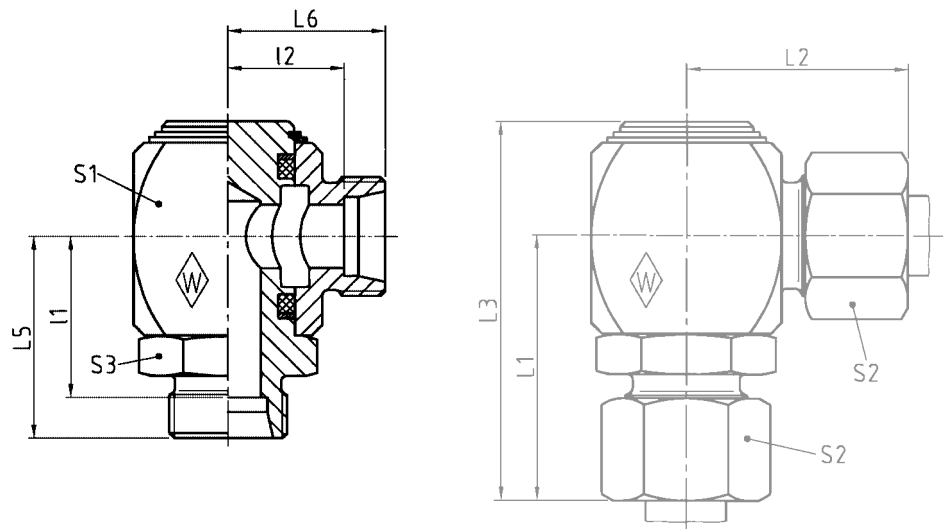
Reihe Series Série	PB bar (psi)	Rohr-AD Tube OD Tube Ø ext. M		Typ Type Désignation	Best.-Nr. Reference Réf.	L ₁	L ₂	L ₃	L ₅	l	i	d	S ₁	S ₂	S ₃
L	250 (3626)	6	M 10 x 1	DGWES 6 LM-WD	608124	39	31	21,5	23	16,5	8	13,9	27	14	17
		6	M 12 x 1,5	DGWES 6 L/M 12 x 1,5-WD	608125	40	31	22,5	23	16,5	12	16,9	27	14	19
		8	M 12 x 1,5	DGWES 8 LM-WD	608126	40	31	22,5	23	16,5	12	16,9	27	17	19
		8	M 14 x 1,5	DGWES 8 L/M 14 x 1,5-WD	608127	45,5	32,5	25	25	18	12	18,9	30	17	22
		10	M 14 x 1,5	DGWES 10 LM-WD	608128	45,5	33,5	25	26	19	12	18,9	30	19	22
		10	M 16 x 1,5	DGWES 10 L/M 16 x 1,5-WD	608129	47,5	34,5	27	27	20	12	21,9	32	19	24
		12	M 16 x 1,5	DGWES 12 LM-WD	608130	47,5	34,5	27	27	20	12	21,9	32	22	24
		12	M 18 x 1,5	DGWES 12 L/M 18 x 1,5-WD	608131	54	36,5	30	29	22	12	23,9	36	22	27
		15	M 18 x 1,5	DGWES 15 LM-WD	608132	54	38	30	30	23	12	23,9	36	27	27
		160 (2321)	18	M 22 x 1,5	DGWES 18 LM-WD	608133	59	40,5	33	32	24,5	14	26,9	40	32
	22	M 26 x 1,5	DGWES 22 LM-WD	608134	64	45	35,5	36	29	16	31,9	45	36	36	
S	100 (1450)	28	M 33 x 2	DGWES 28 LM-WD	608135	76	50,5	41,5	41	34	18	39,9	55	41	41
		35	M 42 x 2	DGWES 35 LM-WD	608136	92	59,5	51,5	48	38	20	49,9	65	50	50
		42	M 48 x 2	DGWES 42 LM-WD	608137	102	65	56,5	53	42,5	22	54,9	75	60	55
		6	M 12 x 1,5	DGWES 6 SM-WD	608138	40	33	22,5	25	18,5	12	16,9	27	17	19
		8	M 14 x 1,5	DGWES 8 SM-WD	608139	40	33	22,5	25	18,5	12	18,9	27	19	19
		400 (5801)	10	M 16 x 1,5	DGWES 10 SM-WD	608140	45,5	35,5	25	27	19,5	12	21,9	30	22
	12	M 18 x 1,5	DGWES 12 SM-WD	608141	47,5	36,5	27	28	20,5	12	23,9	32	24	24	
	14	M 20 x 1,5	DGWES 14 SM-WD	608142	54	41,5	30	32	24	14	25,9	36	27	27	
	16	M 22 x 1,5	DGWES 16 SM-WD	608143	59	43,5	33	34	25,5	14	26,9	40	30	32	
	20	M 27 x 2	DGWES 20 SM-WD	608144	64	49,5	35,5	38	28	16	31,9	45	36	36	
250 (3626)	25	M 33 x 2	DGWES 25 SM-WD	608145	76	57,5	41,5	45	33,5	18	39,9	55	46	41	
	30	M 42 x 2	DGWES 30 SM-WD	608146	92	65,5	51,5	52	39	20	49,9	65	50	50	
	38	M 48 x 2	DGWES 38 SM-WD	608147	102	74	56,5	59	43,5	22	54,9	75	60	55	

L₂ = Ungefährmaß bei angezogener Überwurfmutter * FPM (z. B. Viton) auf Anfrage
 L₂ = approximate length with nut tightened * FPM (e. g. Viton) on request
 L₂ = longueur approximative, l'écrou étant bloqué * FPM (p. ex. Viton) sur demande





DGWS



Reihe Series Série	PB bar (psi)	Rohr-AD Tube OD Tube Ø ext.	Typ Type Désignation	Best.-Nr. Reference Réf.	L ₁	L ₂	L ₃	L ₅	L ₆	I ₁	I ₂	S ₁	S ₂	S ₃
L	250 (3626)	6	DGWS 6 L	060910	39	31	56,5	31,5	23,5	24,5	16,5	27	14	19
		8	DGWS 8 L	060911	40,5	32,5	61	33	25	26	18	30	17	22
		10	DGWS 10 L	060912	43,5	34,5	64	36	27	29	20	32	19	24
		12	DGWS 12 L	060913	46,5	36,5	70,5	39	29	32	22	36	22	27
		15	DGWS 15 L	060914	50	40	76	42	32	35	25	40	27	32
	160 (2321)	18	DGWS 18 L	060915	55	43	83,5	46,5	34,5	39	27	45	32	36
		22	DGWS 22 L	060916	63	50	97,5	54,5	41,5	47	34	55	36	41
	100 (1450)	28	DGWS 28 L	060917	71,5	55,5	112	62,5	46,5	55	39	65	41	50
		35	DGWS 35 L	060918	80,5	64,5	126	69,5	53,5	59	43	75	50	55
		42	DGWS 42 L	060919	92,5	72,5	146,5	81	61	70	50	90	60	70
S	400 (5801)	6	DGWS 6 S	060920	41	33	58,5	33,5	25,5	26,5	18,5	27	17	19
		8	DGWS 8 S	060921	41	33	58,5	33,5	25,5	26,5	18,5	27	19	19
		10	DGWS 10 S	060922	43,5	35,5	64	35	27	27,5	19,5	30	22	22
		12	DGWS 12 S	060923	45,5	36,5	66	37	28	29,5	20,5	32	24	24
		14	DGWS 14 S	060924	51,5	41,5	75,5	42	32	34	24	36	27	27
	250 (3626)	16	DGWS 16 S	060925	63,5	43,5	79,5	44	34	35,5	25,5	40	30	32
		20	DGWS 20 S	060926	61,5	49,5	90	50,5	38,5	40	28	45	36	36
		25	DGWS 25 S	060927	70,5	57,5	105	58,5	45,5	46,5	33,5	55	46	41
		30	DGWS 30 S	060928	81,5	65,5	122	68,5	52,5	55	39	65	50	50
		38	DGWS 38 S	060929	90	74	135,5	75,5	59,5	59,5	43,5	75	60	55

L₁, L₂ und L₃ = Ungefährmaße bei angezogenen Überwurfmuttern
L₁, L₂ and L₃ = approximate lengths with nuts tightened
L₁, L₂ et L₃ = longueurs approximatives, les écrous étant bloqués

Rückschlagventil (Stutzen) Non-return valve (body only) Clapet anti-retour (corps)

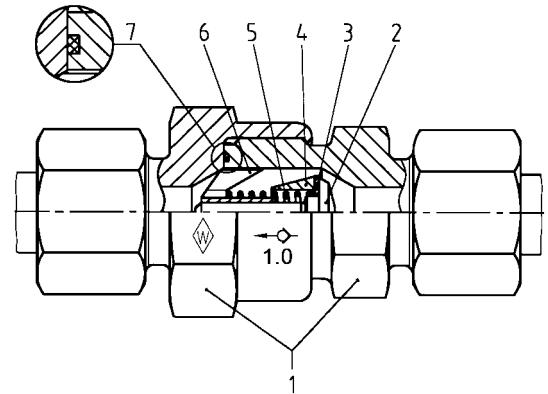


Technische Hinweise

Technical details

Détails techniques

1 Stutzen	1 Body	1 Corps
2 Bolzen	2 Cone	2 Clapet
3 Dichtungsscheibe	3 Sealing washer	3 Rondelle d'étanchéité
4 Hülse	4 Sleeve	4 Cuvette
5 Druckfeder	5 Pressure spring	5 Ressort de compression
6 Bolzenführung	6 Valve guide	6 Guide du clapet
7 O-Ring	7 O-ring	7 Joint torique



Verwendung

für Hydraulikflüssigkeiten und Druckluft.
Um die Eignung der Ventile für Ihre Einsatzfälle gewährleisten zu können, bitten wir um Angabe des Mediums, evtl. auch Konzentration, max. Betriebsdruck einschl. Drucksitzen, Temperatur und Häufigkeit der Ventilbetätigung.

Konstruktion

Walterscheid-Rückschlagventile sind ausgestattet mit 90°-Kegel und einer Dichtscheibe aus FPM (z. B. Viton). Die Formgebung der Innenteile ermöglicht einen strömungsgünstigen Durchfluß der Medien.

Betriebstemperatur

Temperaturbereich von - 20 °C bis + 100 °C.

Werkstoffe

1. Stutzen:	Stahl verzinkt
2. Bolzen:	Stahl verzinkt
3. Dichtungsscheibe:	FPM
4. Hülse:	Stahl verzinkt
5. Druckfeder:	Stahl
6. Bolzenführung:	
6-28 mm Rohr-AD: Messing	
30-42 mm Rohr-AD: Stahl verzinkt	
7. O-Ring:	FPM

Öffnungsdrücke

Serienmäßig sind die Rückschlagventile auf einen Öffnungsdruck von 1,0 bar eingestellt.
Abweichende Öffnungsdrücke von 0,5 bis 3,0 bar auf Anfrage.

Ausführung

Die Abdichtung am Einschraubgewinde der Rückschlagventile erfolgt mit Weichdichtung.
Die Ventile sind mit Öffnungsdruck und Strömungsrichtung gekennzeichnet.

Montage

Ventilgehäuse werden fertig montiert mit dem gewünschten Öffnungsdruck geliefert. Bei der Rohrmontage bzw. -demontage ist darauf zu achten, daß der Überwurfmutter nächstliegende Stutzensechskant gegengehalten wird, um ein Lösen der Dichtkante am Ventilstutzen (innen) zu vermeiden.

Application

for hydraulic fluids and compressed air. In order to guarantee the suitability of the valves for your particular application, we request a description of the medium, possibly also the concentration, maximum working pressure including peak pressure, temperature and frequency of the valve operation.

Design

Walterscheid non-return valves are fitted with a 90° taper and a sealing washer made of FPM (e. g. Viton). The design of the internal components provides favourable flow conditions for the fluids.

Working temperature

Temperature range from
- 20 °C to + 100 °C (- 4 °F to + 212 °F)

Materials

1. Body:	Steel, cold-galvanized
2. Cone:	Steel, cold-galvanized
3. Sealing washer:	FPM
4. Sleeve:	Steel, cold-galvanized
5. Pressure spring:	Steel
6. Valve guide:	
Tube OD 6-28 mm: Brass	
Tube OD 30-42 mm: Steel, cold-galvanized	
7. O-ring:	FPM

Opening pressures

The non-return valves are adjusted at the factory to an opening pressure of 1.0 bar. Additional pressure ratings from 0.5 to 3.0 bar available on request.

Design

Sealing at the stud thread of the non-return valve is achieved by a captive seal. Symbols indicating opening pressure and direction of flow are marked on the valve.

Assembly

The valve bodies are supplied ready-assembled and pre-set to the desired opening pressure. When connecting or dismantling tubes, the hexagon nearest to the nut must be held firmly to avoid the risk that the sealing edge at the inside of the valve body will work loose.

Utilisation

pour les fluides hydrauliques et l'air comprimé. Pour assurer l'aptitude des soupapes à leur domaine d'utilisation, nous vous prions de bien vouloir nous indiquer le fluide utilisé et, si possible, la concentration, la pression maximale de service, y compris les pressions de pointe, la température et la fréquence d'actionnement des soupapes.

Construction

Les clapets anti-retour sont munis d'un cône de 90° et d'une rondelle d'étanchéité en FPM (p. ex. Viton). La forme des pièces intérieures permet un bon écoulement des fluides.

Température de service

Plage de températures de - 20 °C à + 100 °C.

Matériaux

1. Corps:	Acier galvanisé
2. Clapet:	Acier galvanisé
3. Rondelle d'étanchéité:	FPM
4. Cuvette:	Acier galvanisé
5. Ressort de compression:	Acier
6. Guide du clapet:	
Ø ext. du tube 6-28 mm: Laiton	
Ø ext. du tube 30-42 mm: Acier galvanisé	
7. Joint torique:	FPM

Pressions d'ouverture

Les clapets anti-retour sont tarés en série, avec pression d'ouverture de 1,0 bar. Sur demande, ils sont livrables avec des tarages différents soit de 0,5 à 3,0 bar.

Exécution

L'étanchéité sur le filetage mâle du clapet anti-retour se fait par un joint mou. La pression de tarage et le sens de passage sont marqués sur les clapets.

Montage

Les corps de clapets sont livrés complètement assemblés, avec tarage pour la pression d'ouverture voulue. Lors du montage ou du démontage du tube, maintenir le six-pans du corps qui se trouve le plus proche de l'écrou, afin que l'arête d'étanchéité à l'intérieur du corps ne se détache pas.



Rückschlagventil (Stutzen)
 Non-return valve (body only)
 Clapet anti-retour (corps)

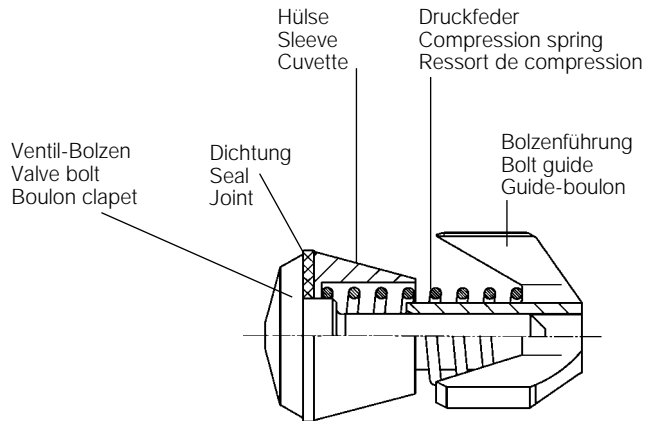


Ventileinsatz
 Valve insert
 Insert clapet

für Öffnungsdruck 1 bar
 for 1 bar opening pressure
 pour une pression d'ouverture de 1 bar

Einbaumaße auf Anfrage
 Fitting dimensions on request
 Cotes de montage sur demande

Nennweite Nominal width Largeur nomin.	Rohr-AD Tube OD Tube Ø ext.	Best.-Nr. Reference Réf.
6	6-12	032431
10	14-18	032438
16	20-28	032445
25	30	032451
32	35-42	032457



Der Ventileinsatz der Nennweite 16 kann beim Einbau nicht umgekehrt eingesetzt werden.

The valve insert for nominal width 16 can be fitted in this position only.

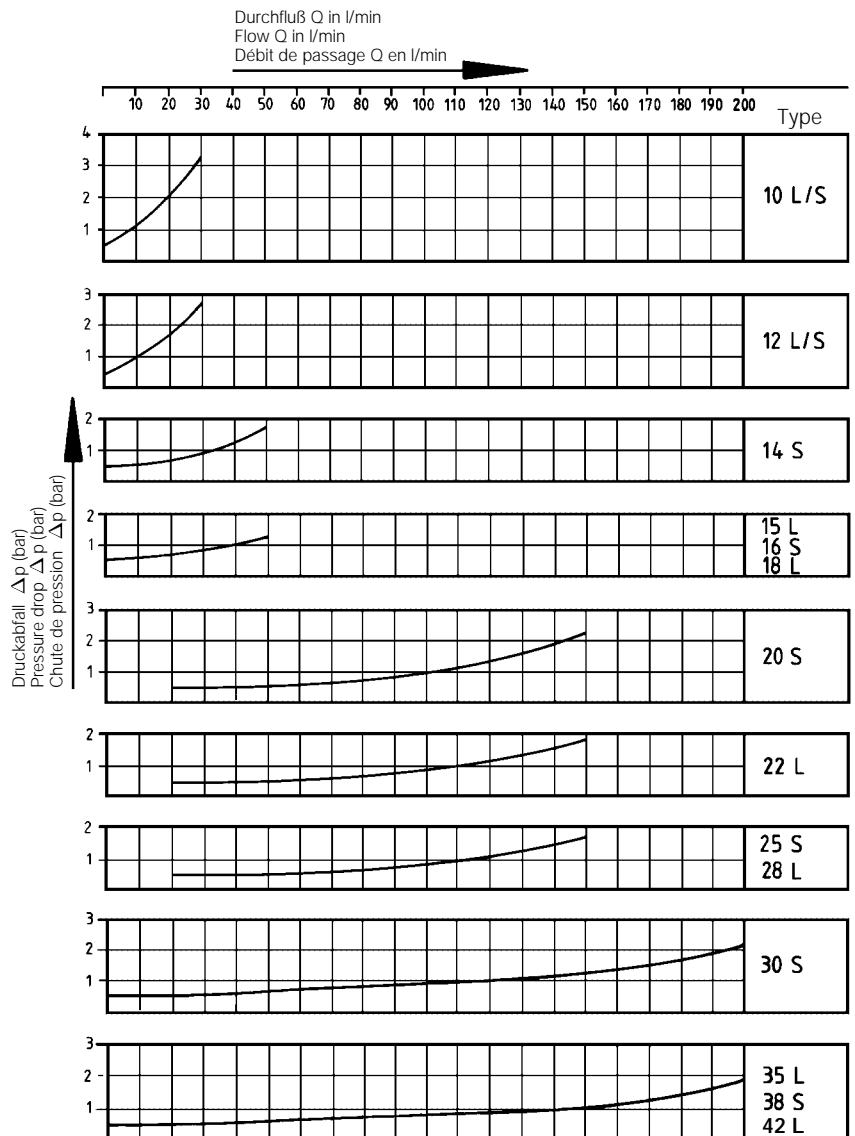
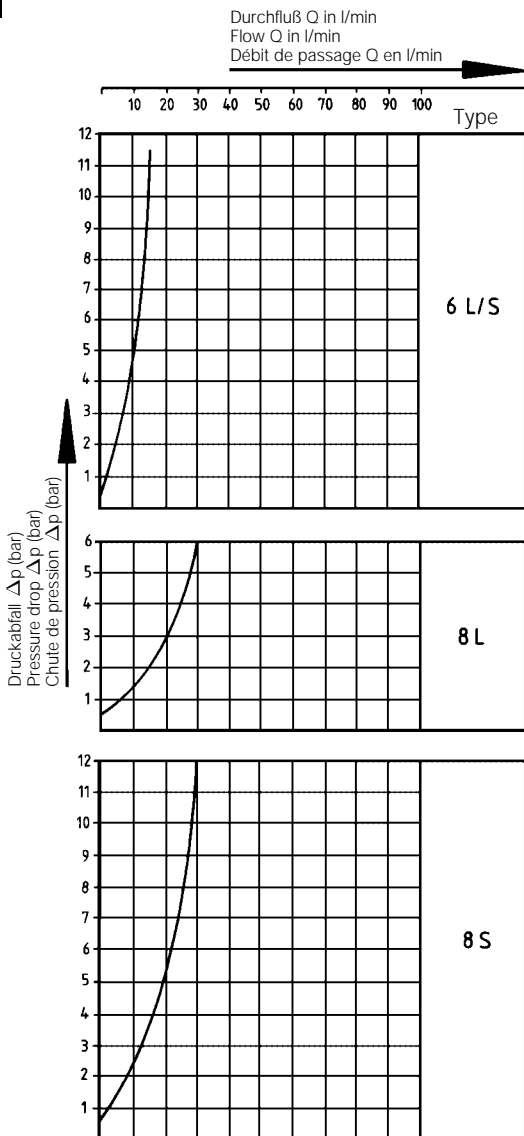
L'insert clapet de largeur 16 ne peut être installé que dans cette position.

G

Druckverlust bei Rückschlagventilen
 gemessen mit Hydrauliköl 35 mm²/s
 Öffnungsdruck 0,5 bar

Pressure loss - Non-return valve -
 measured with hydraulic oil 35 mm²/s
 Opening pressure 0.5 bar

Perte de pression - Clapet anti-retour -
 mesurée avec de l'huile hydraulique 35 mm²/s
 Pression d'ouverture 0,5 bar

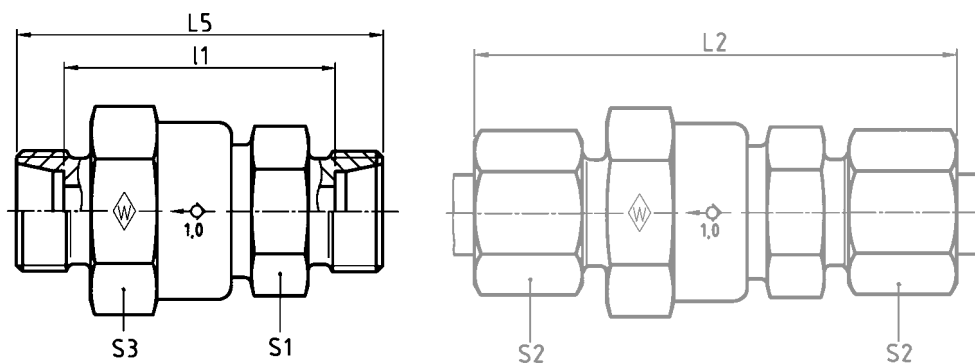


Rückschlagventil (Stutzen)
 Non-return valve (body only)
 Clapet anti-retour (corps)



RS

Beidseitiger Rohranschluß
 Tube connection both ends
 Raccord sur tube des deux côtés



Reihe Series Série	PN bar (psi)	Rohr-AD Tube OD Tube Ø ext.	Typ Type Désignation	Best.-Nr. Reference Réf.	kg per 100 St. kg per 100 pcs. kg par 100 p.	L ₂	L ₅	l ₁	S ₁	S ₂	S ₃	Ø entspr. Durchlaß Ø outlet Ø de pas- sage corres- pondant
L	400 (5801)	6	RS 6 L	068052	12,0	67	52	38	22	14	27	4,0
		8	RS 8 L	067394	12,5	67	52	38	22	17	27	6,0
		10	RS 10 L	067395	11,5	67	52	38	22	19	27	7,5
		12	RS 12 L	066490	12,5	68	53	39	22	22	27	7,5
		15	RS 15 L	067396	18,5	74	58	44	27	27	32	11,0
	18	RS 18 L	063191	23,0	80	63	48	27	32	32	11,0	
	250 (3626)	22	RS 22 L	067397	51,1	92	75	60	41	36	46	18,5
		28	RS 28 L	066743	57,0	99	81	66	41	41	46	18,5
		35	RS 35 L	067398	130,5	114	92	71	60	50	70	29,0
		42	RS 42 L	067399	123,4	101	87	65	60	60	70	29,0
S	400 (5801)	6	RS 6 S	067400	13,0	71	56	42	22	17	27	4,0
		8	RS 8 S	067401	12,0	67	52	38	22	19	27	5,0
		10	RS 10 S	067402	13,0	71	54	39	22	22	27	7,0
		12	RS 12 S	063381	14,0	72	55	40	22	24	27	7,5
		14	RS 14 S	067403	18,5	81	62	46	27	27	32	10,0
	16	RS 16 S	025190	22,0	84	65	48	27	30	32	11,0	
	20	RS 20 S	067404	66,2	100	78	57	41	36	46	16,0	
	250 (3626)	25	RS 25 S	067405	53,0	105	81	57	41	46	46	18,5
		30	RS 30 S	067406	81,0	117	91	64	50	50	55	24,0
		38	RS 38 S	067407	136,8	128	99	67	60	60	70	29,0

L = Ungefährmaß bei angezogenen Überwurfmuttern
 L = approximate length with nuts tightened
 L = longueur approximative, les écrous étant bloqués

G

Einschraub-Rückschlagventil (Stutzen)
 Non-return valve with male stud (body only)
 Clapet anti-retour mâle (corps)

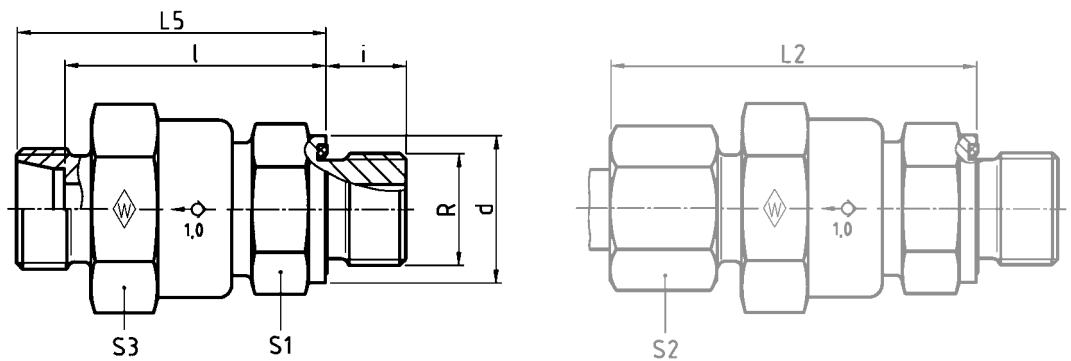


RSV R-WD

Strömung vom Einschraubzapfen
 mit Weichdichtung: NBR* (z. B. Perbunan)
 Einschraubgewinde: Whitworth-Rohrgewinde (zylindrisch)

Flow from male stud end
 with captive seal: NBR* (e. g. Perbunan)
 Stud thread: BSP thread (parallel)

Sortie par l'embout mâle
 avec joint mou: NBR* (p. ex. Perbunan)
 Filetage mâle: Whitworth (cylindrique)



DIN-ISO 228 (R..., DIN 259)

Reihe Series Série	PN bar (psi)	Rohr-AD Tube OD Tube Ø ext.	G	Typ Type Désignation	Best.-Nr. Reference Réf.	kg per 100 St. kg per 100 pcs. kg par 100 p.	d	L ₂	L ₅	l	i	S ₁	S ₂	S ₃	Ø entspr. Durchlaß Ø outlet Ø de pas- sage corres- pondant
L	400 (5801)	6	G 1/8	A RSV 6 LR-WD	374839	12,0	13,9	50,5	43	36	8	22	14	27	4,0
		8	G 1/4	A RSV 8 LR-WD	370763	12,0	18,9	50,5	43	36	12	22	17	27	6,0
		10	G 1/4	A RSV 10 LR-WD	371045	11,5	18,9	48,5	41	34	12	22	19	27	6,0
		12	G 3/8	A RSV 12 LR-WD	068470	14,0	21,9	53,5	46	39	12	22	22	27	7,5
		15	G 1/2	A RSV 15 LR-WD	371264	19,0	26,9	56	48	41	14	27	27	32	11,0
	250 (3626)	18	G 1/2	A RSV 18 LR-WD	602598	23,0	26,9	61,5	53	45,5	14	27	32	32	11,0
		22	G 3/4	A RSV 22 LR-WD	060241	47,0	31,9	69,5	61	53,5	16	41	36	46	18,0
		28	G 1	A RSV 28 LR-WD	371746	52,5	39,9	77	68	60,5	18	41	41	46	20,0
		35	G 1 1/4	A RSV 35 LR-WD	372025	137,0	49,9	88,5	77,5	67	20	60	50	70	29,0
		42	G 1 1/2	A RSV 42 LR-WD	609782	140,0	54,9	87,5	75,5	64,5	22	60	60	70	29,0
S	400 (5801)	6	G 1/4	A RSV 6 SR-WD	612743	13,0	18,9	52,5	45	38	12	22	17	27	4,0
		8	G 1/4	A RSV 8 SR-WD	372786	12,0	18,9	50,5	43	36	12	22	19	27	5,0
		10	G 3/8	A RSV 10 SR-WD	371265	13,5	21,9	53,5	45	37,5	12	22	22	27	7,5
		12	G 3/8	A RSV 12 SR-WD	061960	14,5	21,9	55,5	47	39,5	12	22	24	27	7,5
		14	G 1/2	A RSV 14 SR-WD	609976	19,5	26,9	59,5	50	42	14	27	27	32	10,0
	250 (3626)	16	G 1/2	A RSV 16 SR-WD	371105	23,0	26,9	62,5	53	44,5	14	27	30	32	11,0
		20	G 3/4	A RSV 20 SR-WD	371197	59,5	31,9	74	63	52,5	16	41	36	46	16,0
		25	G 1	A RSV 25 SR-WD	371745	54,0	39,9	77	65	53	18	41	46	46	20,0
		30	G 1 1/4	A RSV 30 SR-WD	370764	86,0	49,9	87	74	60,5	20	50	50	55	24,0
		38	G 1 1/2	A RSV 38 SR-WD	372026	144,1	54,9	96	81,5	65,5	22	60	60	70	29,0

L₂ = Ungefährmaß bei angezogener Überwurfmutter
 L₂ = approximate length with nut tightened
 L₂ = longueur approximative, l'écrou étant bloqué

* FPM (z. B. Viton) auf Anfrage
 * FPM (e. g. Viton) on request
 * FPM (p. ex. Viton) sur demande

Einschraub-Rückschlagventil (Stutzen)
 Non-return valve with male stud (body only)
 Clapet anti-retour mâle (corps)

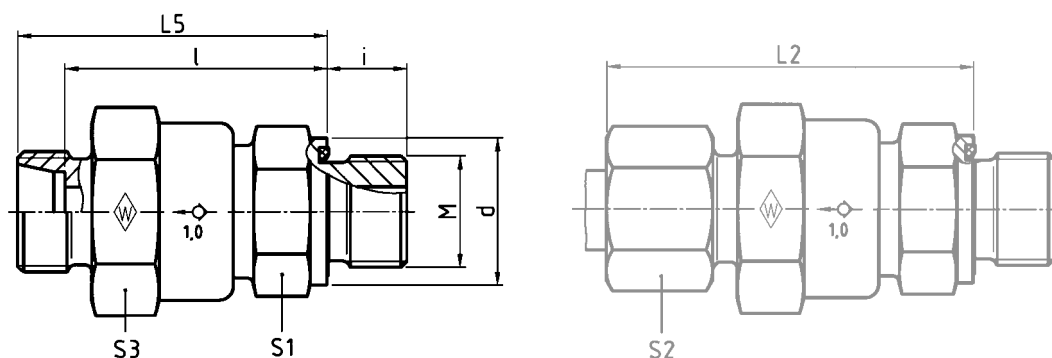


RSV M-WD

Strömung vom Einschraubzapfen
 mit Weichdichtung: NBR* (z. B. Perbunan)
 Einschraubgewinde: Metrisches Gewinde (zylindrisch)

Flow from male stud end
 with captive seal: NBR* (e. g. Perbunan)
 Stud thread: metric (parallel)

Sortie par l'embout mâle
 avec joint mou: NBR* (p. ex. Perbunan)
 Filetage mâle: métrique (cylindrique)



Reihe Series Série	PN bar (psi)	Rohr-AD Tube OD Tube Ø ext.	M	Typ Type Désignation	Best.-Nr. Reference Réf.	kg per 100 St. kg per 100 pcs. kg par 100 p.	d	L ₂	L ₅	l	i	S ₁	S ₂	S ₃	Ø entspr. Durchlaß Ø outlet Ø de pas- sage corres- pondant
L	400 (5801)	6	M 10 x 1	RSV 6 LM-WD	610475	12,0	13,9	50,5	43	36	8	22	14	27	4,0
		8	M 12 x 1,5	RSV 8 LM-WD	374842	12,1	16,9	50,5	43	36	12	22	17	27	6,0
		10	M 14 x 1,5	RSV 10 LM-WD	067897	11,0	18,9	48,5	41	34	12	22	19	27	7,0
		12	M 16 x 1,5	RSV 12 LM-WD	607416	14,0	21,9	53,5	46	39	12	22	22	27	7,5
		15	M 18 x 1,5	RSV 15 LM-WD	067988	18,0	23,9	56	48	41	12	27	27	32	11,0
	250 (3626)	18	M 22 x 1,5	RSV 18 LM-WD	372118	23,0	29,9	61,5	53	45,5	14	27	32	32	11,0
		22	M 26 x 1,5	RSV 22 LM-WD	061479	47,0	31,9	69,5	61	53,5	16	41	36	46	18,0
		28	M 33 x 2	RSV 28 LM-WD	604421	52,5	39,9	77	68	60,5	18	41	41	46	18,5
		35	M 42 x 2	RSV 35 LM-WD	615467	132,0	49,9	88,5	77,5	67	20	60	50	70	29,0
		42	M 48 x 2	RSV 42 LM-WD	615468	140,0	54,9	87,5	75,5	64,5	22	60	60	70	29,0
S	400 (5801)	6	M 12 x 1,5	RSV 6 SM-WD	615469	13,0	16,9	52,5	45	38	12	22	17	27	4,0
		8	M 14 x 1,5	RSV 8 SM-WD	615214	11,9	18,9	50,5	43	36	12	22	19	27	5,0
		10	M 16 x 1,5	RSV 10 SM-WD	371695	13,5	21,9	53,5	45	37,5	12	22	22	27	7,0
		12	M 18 x 1,5	RSV 12 SM-WD	371496	15,5	23,9	55,5	47	39,5	12	24	24	27	7,5
		14	M 20 x 1,5	RSV 14 SM-WD	609976	19,5	25,9	59,5	50	42	14	27	27	32	10,0
	250 (3626)	16	M 22 x 1,5	RSV 16 SM-WD	371266	23,0	26,9	62,5	53	44,5	14	27	30	32	11,0
		20	M 27 x 2	RSV 20 SM-WD	609900	47,0	31,9	74	63	52,5	16	41	36	46	16,0
		25	M 33 x 2	RSV 25 SM-WD	025201	54,0	39,9	77	65	53	18	41	46	46	18,5
		30	M 42 x 2	RSV 30 SM-WD	609901	86,0	49,9	87	74	60,5	20	50	50	55	24,0
		38	M 48 x 2	RSV 38 SM-WD	068471	143,5	54,9	96	81,5	65,5	22	60	60	70	29,0

L₂ = Ungefährmaß bei angezogener Überwurfmutter
 L₂ = approximate length with nut tightened
 L₂ = longueur approximative, l'écrou étant bloqué

* FPM (z. B. Viton) auf Anfrage
 * FPM (e. g. Viton) on request
 * FPM (p. ex. Viton) sur demande

Einschraub-Rückschlagventil (Stutzen)
 Non-return valve with male stud (body only)
 Clapet anti-retour mâle (corps)

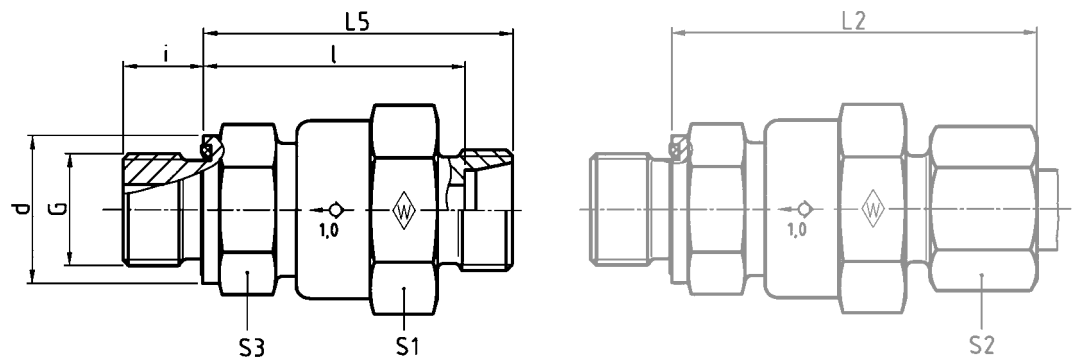


RSZ R-WD

Strömung zum Einschraubzapfen
 mit Weichdichtung: NBR* (z. B. Perbunan)
 Einschraubgewinde: Whitworth-Rohrgewinde (zylindrisch)

Flow towards male stud end
 with captive seal: NBR* (e. g. Perbunan)
 Stud thread: BSP thread (parallel)

Ecoulement vers l'embout mâle
 avec joint mou: NBR* (p. ex. Perbunan)
 Filetage mâle: Whitworth (cylindrique)



Reihe Series Série	PN bar (psi)	Rohr-AD Tube OD Tube Ø ext.		Typ Type Désignation	Best.-Nr. Reference Réf.	kg per 100 St. kg per 100 pcs. kg par 100 p.	d	L ₂	L ₅	l	i	S ₁	S ₂	S ₃	Ø entspr. Durchlaß Ø outlet Ø de pas- sage corres- pondant
		G	↓												
L	400 (5801)	6	G 1/8 A	RSZ 6 LR-WD	067531	12,0	13,9	50,5	43	36	8	22	14	27	4,0
		8	G 1/4 A	RSZ 8 LR-WD	370766	12,0	18,9	50,5	43	36	12	22	17	27	6,0
		10	G 1/4 A	RSZ 10 LR-WD	604922	10,4	18,9	48,5	41	34	12	22	19	27	6,0
		12	G 3/8 A	RSZ 12 LR-WD	371413	14,0	21,9	53,5	46	39	12	22	22	27	7,5
		15	G 1/2 A	RSZ 15 LR-WD	372065	19,5	26,9	56	48	41	14	27	27	32	11,0
	18	G 1/2 A	RSZ 18 LR-WD	067899	23,0	26,9	61,5	53	45,5	14	27	32	32	11,0	
	250 (3626)	22	G 3/4 A	RSZ 22 LR-WD	067989	47,0	31,9	69,5	61	53,5	16	46**	36	41**	18,0
		28	G 1 A	RSZ 28 LR-WD	370767	52,5	39,9	71	62	54,5	18	46**	41	41**	20,0
		35	G 1 1/4 A	RSZ 35 LR-WD	371378	132,0	49,9	88,5	77,5	67	20	60	50	70	29,0
		42	G 1 1/2 A	RSZ 42 LR-WD	610625	140,0	54,9	87,5	75,5	64,5	22	60	60	70	29,0
S		400 (5801)	6	G 1/4 A	RSZ 6 SR-WD	608275	13,0	18,9	52,5	45	38	12	22	17	27
	8		G 1/4 A	RSZ 8 SR-WD	370768	12,0	18,9	50,5	43	36	12	22	19	27	5,0
	10		G 3/8 A	RSZ 10 SR-WD	068967	13,5	21,9	53,5	45	37,5	12	22	22	27	7,0
	12		G 3/8 A	RSZ 12 SR-WD	604061	14,5	21,9	55,5	47	39,5	12	22	24	27	7,5
	14		G 1/2 A	RSZ 14 SR-WD	615470	19,5	26,9	59,5	50	42	14	27	27	32	10,0
	16	G 1/2 A	RSZ 16 SR-WD	067898	23,0	26,9	62,5	53	44,5	14	27	30	32	11,0	
	20	G 3/4 A	RSZ 20 SR-WD	068472	47,0	31,9	73	62	51,5	16	46**	36	41**	16,0	
	250 (3626)	25	G 1 A	RSZ 25 SR-WD	371067	54,0	39,9	77	65	53	18	46**	46	41**	20,0
		30	G 1 1/4 A	RSZ 30 SR-WD	067532	86,0	49,9	87	74	60,5	20	50	50	55	24,0
		38	G 1 1/2 A	RSZ 38 SR-WD	067900	143,5	54,9	96	81,5	65,5	22	60	60	70	29,0

L₂ = Ungefährmaß bei angezogener Überwurfmutter
 L₂ = approximate length with nut tightened
 L₂ = longueur approximative, l'écrou étant bloqué

* FPM (z. B. Viton) auf Anfrage
 * FPM (e. g. Viton) on request
 * FPM (p. ex. Viton) sur demande

** S₁ und S₃ entsprechen nicht der Darstellung
 ** S₁ and S₃ differ from the illustration
 ** S₁ et S₃ ne sont pas à l'échelle

Einschraub-Rückschlagventil (Stutzen)
 Non-return valve with male stud (body only)
 Clapet anti-retour mâle (corps)

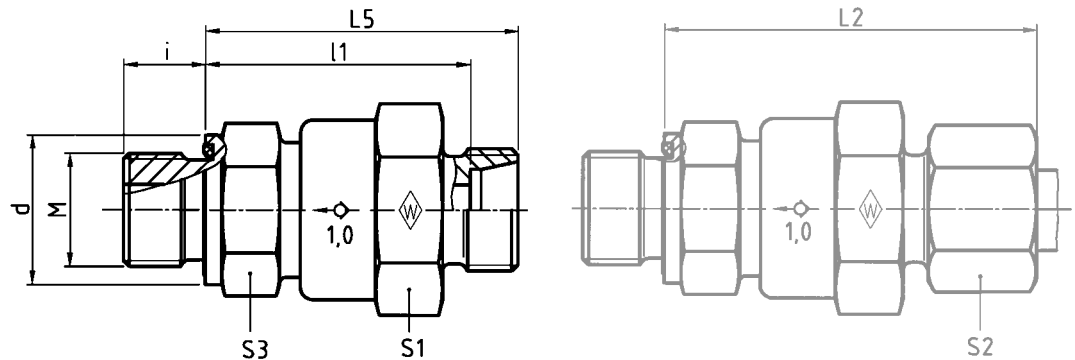


RSZ M-WD

Strömung zum Einschraubzapfen
 mit Weichdichtung: NBR* (z. B. Perbunan)
 Einschraubgewinde: Metrisches Gewinde (zylindrisch)

Flow towards male stud end
 with captive seal: NBR* (e. g. Perbunan)
 Stud thread: metric (parallel)

Ecoulement vers l'embout mâle
 avec joint mou: NBR* (p. ex. Perbunan)
 Filetage mâle: métrique (cylindrique)



G

Reihe Series Série	PN bar (psi)	Rohr-AD Tube OD Tube Ø ext.	M	Typ Type Designation	Best.-Nr. Reference Réf.	kg per 100 St. kg per 100 pcs. kg par 100 p.	d	L ₂	L ₅	l	i	S ₁	S ₂	S ₃	Ø entspr. Durchlaß Ø outlet Ø de pas- sage corres- pondant
L	400 (5801)	6	M 10 x 1	RSZ 6 LM-WD	615471	12,0	13,9	50,5	43	36	8	22	14	27	4,0
		8	M 12 x 1,5	RSZ 8 LM-WD	067925	12,1	16,9	50,5	43	36	12	22	17	27	6,0
		10	M 14 x 1,5	RSZ 10 LM-WD	602599	11,0	18,9	48,5	41	34	12	22	19	27	7,0
		12	M 16 x 1,5	RSZ 12 LM-WD	370765	14,0	21,9	53,5	46	39	12	22	22	27	7,5
		15	M 18 x 1,5	RSZ 15 LM-WD	602432	18,5	21,9	56	48	41	12	27	27	32	11,0
	250 (3626)	18	M 22 x 1,5	RSZ 18 LM-WD	371162	23,0	26,9	61,5	53	45,5	14	27	32	32	11,0
		22	M 26 x 1,5	RSZ 22 LM-WD	068991	47,0	31,9	70,5	62	54,5	16	46**	36	41**	18,0
		28	M 33 x 2	RSZ 28 LM-WD	604405	52,5	39,9	71	62	54,5	18	46**	41	41**	18,5
		35	M 42 x 2	RSZ 35 LM-WD	067533	132,0	49,9	88,5	77,5	67	20	60	50	70	29,0
		42	M 48 x 2	RSZ 42 LM-WD	615472	140,0	54,9	87,5	75,5	64,5	22	60	60	70	29,0
S	400 (5801)	6	M 12 x 1,5	RSZ 6 SM-WD	615473	13,0	16,9	52,5	45	38	12	22	17	27	4,0
		8	M 14 x 1,5	RSZ 8 SM-WD	602874	11,9	18,9	50,5	43	36	12	22	19	27	5,0
		10	M 16 x 1,5	RSZ 10 SM-WD	371694	13,5	21,9	53,5	45	37,5	12	22	22	27	7,0
		12	M 18 x 1,5	RSZ 12 SM-WD	371461	15,5	23,9	55,5	47	39,5	12	24	24	27	7,5
		14	M 20 x 1,5	RSZ 14 SM-WD	615474	19,5	25,9	59,5	50	42	14	27	27	32	10,0
	250 (3626)	16	M 22 x 1,5	RSZ 16 SM-WD	371043	23,0	26,9	62,5	53	44,5	14	27	30	32	11,0
		20	M 27 x 2	RSZ 20 SM-WD	610390	47,0	31,9	73	62	51,5	16	46**	36	41**	16,0
		25	M 33 x 2	RSZ 25 SM-WD	068992	54,0	39,9	77	65	53	18	46**	46	41**	18,5
		30	M 42 x 2	RSZ 30 SM-WD	615278	86,0	49,9	87	74	60,5	20	50	50	55	24,0
		38	M 48 x 2	RSZ 38 SM-WD	612045	143,5	54,9	96	81,5	65,5	22	60	60	70	29,0

L₂ = Ungefährmaß bei angezogener Überwurfmutter
 L₂ = approximate length with nut tightened
 L₂ = longueur approximative, l'écrou étant bloqué

* FPM (z. B. Viton) auf Anfrage
 * FPM (e. g. Viton) on request
 * FPM (p. ex. Viton) sur demande

** S₁ und S₃ entsprechen nicht der Darstellung
 ** S₁ and S₃ differ from the illustration
 ** S₁ et S₃ ne sont pas à l'échelle

Wechselventil (Stutzen)
Shuttle valve (body only)
Soupape à deux voies (corps)

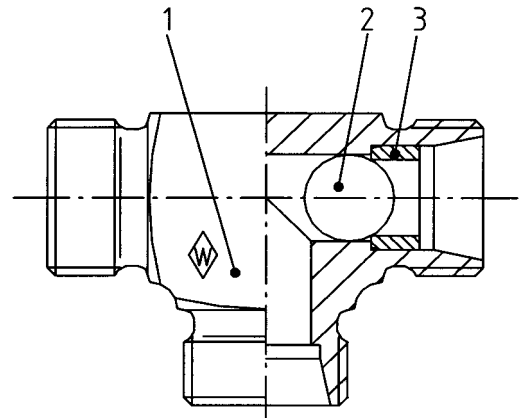


Technische Hinweise

Technical details

Détails techniques

- | | | |
|--------------------|------------------|------------------------|
| 1 Stutzen | 1 Body | 1 Corps |
| 2 Kugel | 2 Ball | 2 Bille |
| 3 Verschlussbuchse | 3 Sealing sleeve | 3 Douille de fermeture |



empfohlene Einbaulage
Recommended installation position
Position de montage recommandée

Werkstoff

Stahl

Material

Steel

Matériau

Acier

Oberflächenschutz

verzinkt, gelb chromatiert (A3L)

Surface protection

cold-galvanized, yellow chromated (A3L)

Protection de surface

galvanisée, à chromatisation jaune (A3L)

Verwendung

Als selbsttätige Weiche für Hydraulikflüssigkeiten innerhalb eines geschlossenen Hydraulikkreislaufes.

Zur Gewährleistung der Funktionalität im Einzelfall bitten wir um Angabe des Mediums, evtl. auch Konzentration, max. Betriebsdruck einschl. Druckspitzen, Temperatur und Häufigkeit der Ventilbetätigungen.

Nur für Verbindungen mit Anlage am Rohranschlag des Stutzens geeignet.

Application

The shuttle valve is used as an automatic switching device for hydraulic fluids within an enclosed hydraulic circuit.

To guarantee the functionality in a particular situation we request that you provide us with details of the medium, if possible also the concentration, the max. operating pressure including pressure peaks, the temperature and the frequency of valve actuations.

Only suitable for connections which fit closely against the tube end stop of the body.

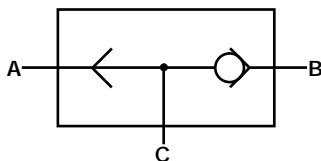
Utilisation

Comme distributeur automatique pour des liquides hydrauliques au sein d'un circuit hydraulique fermé.

Pour assurer la fonctionnalité au cas par cas, nous vous prions de bien vouloir nous indiquer le fluide utilisé, éventuellement la concentration, la pression maximale de service y compris les pics de pression, la température et la fréquence des actionnements des soupapes.

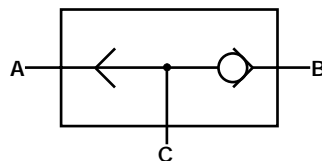
Convient uniquement à des raccordements avec appui sur la butée du tube du corps.

Wirkprinzip



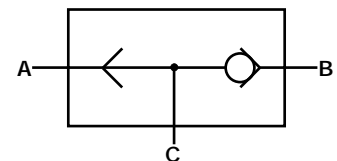
Entsprechend der anstehenden Druckölführung über den Anschluss A bzw. B, wird dieser mit dem Anschluss C verbunden. Der jeweils nicht beaufschlagte Anschluss wird durch eine bewegliche Kugel metallisch dichtend verschlossen.

Operating principle



According to whether the pressurized oil feed is applied via connection A or B, the respective tube is linked to connection C. The non-pressurized connection is closed off and sealed mechanically by a moving ball.

Principe d'action



En fonction de l'alimentation d'huile sous pression par le raccord A ou B, ce dernier est relié au raccord C. Le raccord non sollicité est fermé avec une étanchéité métallique à l'aide d'une bille mobile.

Betriebstemperatur

Temperaturbereich von -40° C bis 120° C

Working temperature

Temperature range from -40° C to 120° C

Température de service

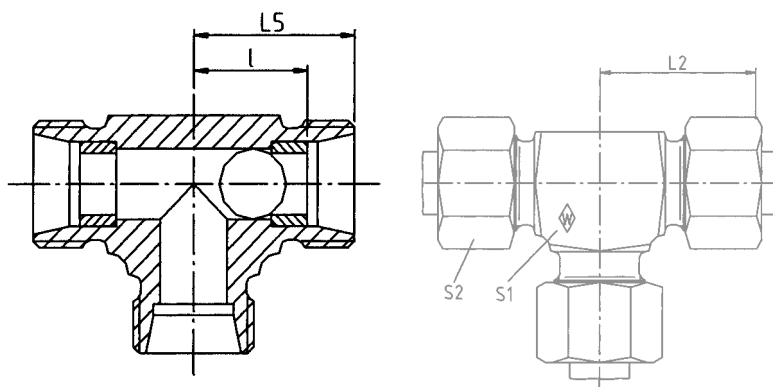
Plage de températures de -40° C à 120° C

Wechselventil (Stutzen)
 Shuttle valve (body only)
 Soupape à deux voies (corps)



TWS

Wechselventil
 Shuttle valve
 Soupape à deux voies



Reihe Series Série	PB* bar (psi)	Rohr-AD Tube OD Tube Ø ext.	Typ Type Désignation	Best.-Nr. Reference Réf.	L ₅	L ₂	l	S ₁	S ₂
		8	TWS 8L	611086	21	29	14	14	17
L	250 (3626)	10	TWS 10L	612901	22	30	15	17	19
		12	TWS 12L	612902	24	32	17	19	22

L₂ = ist Ungefährmaß bei angezogener Überwurfmutter
 L₂ = approximate length with nut tightened
 L₂ = longueur approximative, l'écrou étant bloqué

* bei 1,5 facher Sicherheit
 * at a safety factor of 1,5
 * avec un coefficient de sécurité de 1,5

Hochdruck-Kugelhahn (Stutzen)
 High-pressure ball valve (body only)
 Robinet à boisseau sphérique pour hautes pressions (corps)

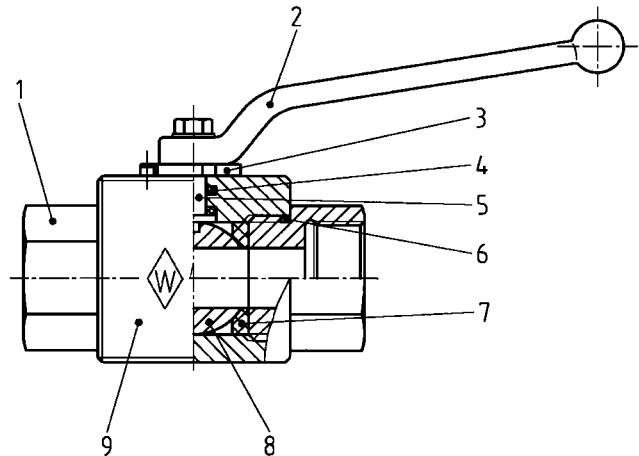


Technische Hinweise

Technical details

Détails techniques

1 Stutzen	1 Body	1 Corps
2 Bolzen	2 Cone	2 Clapet
3 Dichtungsscheibe	3 Sealing washer	3 Rondelle d'étanchéité
4 Hülse	4 Sleeve	4 Cuvette
5 Druckfeder	5 Pressure spring	5 Ressort de compression
6 Bolzenführung	6 Valve guide	6 Guide du clapet
7 O-Ring	7 O-ring	7 Joint torique



Verwendung

für Hydraulikflüssigkeiten und Druckluft.
 Bei Anwendungen für Druckluft über 200 bar,
 Kugelhähne auf Anfrage

Application

for hydraulic fluids and compressed air.
 Ball valves for applications involving compressed
 air of more than 200 bar available on request.

Utilisation

pour les fluides hydrauliques et l'air comprimé.
 Robinets à boisseau sphérique pour des cas
 d'utilisation à air comprimé de plus de 200 bar
 disponibles sur demande.

Konstruktion

Die Kugeldichtung gewährleistet durch die
 Vorspannung auch bei geringeren Drücken
 Dichtheit.

Durch die schwimmend eingebaute Kugel
 ergibt sich bei steigendem Druck eine
 höhere Anpressung der Kugel zur Dichtung.

Die Schalthebel lassen sich in beliebiger
 Stellung, jeweils 45° versetzt, montieren.

Design

The ball seal being pre-loaded, sealing is
 ensured even at low pressure.

Owing to the ball's floating position, any rise
 of the system's pressure has the effect that the
 ball is increasingly pressed towards the seal.

Handles may be fitted in any position,
 at 45° stages.

Construction

La tension initiale appliquée aux joints
 assure l'étanchéité de l'ensemble, même
 pour des pressions faibles.

L'étanchéité du boisseau sphérique contre
 le joint s'accroît quand la pression
 augmente, ce phénomène étant dû au
 montage flottant du boisseau.

Les leviers peuvent être montés en toute
 position, décalés toutefois de 45°.

Sicherheit

Die Nenndrücke der Kugelhähne sind unter
 Berücksichtigung einer 1,2/1,5-fachen
 Sicherheit ausgelegt. Bei Anwendung in
 niedrigen Druckbereichen ergeben sich
 entsprechend höhere Sicherheiten.

Safety

The nominal pressures of the ball valves are
 based on a safety factor of 1.2 /1.5. The use
 at lower pressure ranges consequently results
 in higher safety.

Sécurité

Les pressions des robinets à boisseau
 sphérique sont calculées avec un coefficient de
 sécurité de 1,2/1,5. Par conséquent,
 l'utilisation dans des plages de pression plus
 basses donne lieu à des sécurités plus élevées.

Werkstoffe

Standardmäßig aus:
 Gehäusewerkstoff – Stahl verzinkt
 Kugel und Schaltwelle – Stahl
 Kugeldichtung – bis DN 25 Polyamid
 – ab DN 32 POM
 (z. B. Delrin)
 O-Ringe – NBR (z. B. Perbunan)
 Sonderwerkstoffe für Gehäuse und
 Abdichtung auf Anfrage

Materials

Standard:
 Body – steel, cold-galvanized
 Ball and stem – steel
 Ball seal – up to DN 25 Polyamid
 – from DN 32 POM
 (e. g. Delrin)
 O-rings – NBR (e. g. Perbunan)
 Special body and seal materials
 on request

Matériaux

Matériaux standard:
 Corps – acier, galvanisé
 Boisseau sphérique – acier
 et dispositif d'entraînement – jusqu'à DN 25
 Polyamid
 Joint boisseau sphérique – à partir de DN 32
 POM (p. ex. Delrin)
 Joints toriques – NBR (p. ex.
 Perbunan)

Matériaux spéciaux pour corps et
 étanchéité sur demande.

Betriebstemperatur

Temperaturbereich von – 20 °C bis + 100 °C

Working temperature

Temperature range from – 20 °C to + 100 °C

Température de service

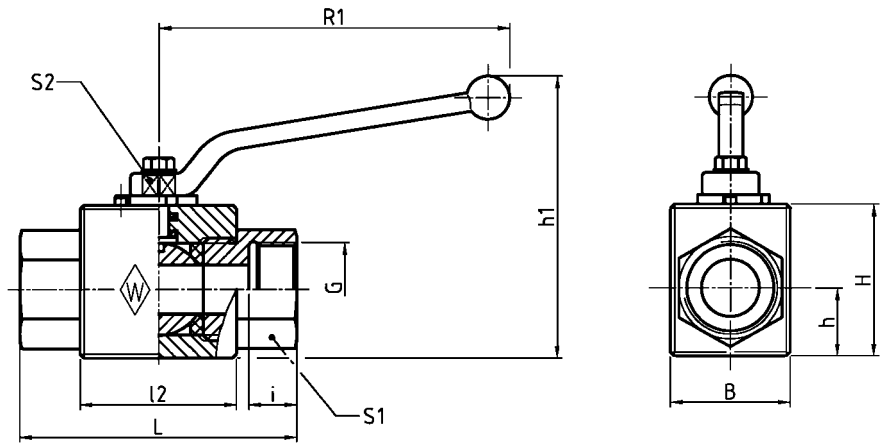
Plage de température de – 20 °C à + 100 °C

Kugelhahn (Stutzen)
 Ball valve (body only)
 Robinet à boisseau sphérique (corps)



KH-R

Whitworth-Rohrgewinde
 BSP thread
 Filetage Whitworth



DIN-ISO 228 (R ..., DIN 259)

PB* bar (psi)	G	Typ Type Désignation	Best.-Nr. Reference Réf.	B	H	h	h ₁ ±5	L	l ₂	i	S ₁	S ₂	R ₁	DN
630** (9137)	G 1/8	KH-R 1/8 /NW 4	029293	26	32	13	72	69	36	9	22	9	108	4
	G 1/4	KH-R 1/4 /NW 6	029294	25	35	13	72	69	35	14	22	9	108	6
500 (7252)	G 3/8	KH-R 3/8 /NW 10	029295	32	40	17	81	72	42	14	27	9	108	10
	G 1/2	KH-R 1/2 /NW 13	029296	35	40	17	80	85	48	14	30	9	108	13
400 (5801)	G 3/4	KH-R 3/4 /NW 20	029298	49	57	24,5	123	96	62	17	41	14	165	20
	G1	KH-R 1 /NW 25	029299	60	60	26,5	130	113,5	66	20,5	46	14	165	25
350 (5076)	G 1 1/4	KH-R 1 1/4 /NW 25	029300	60	60	26,5	135	121,5	66	20	50	14	165	25
	G 1 1/4	KH-R 1 1/4 /NW 32***	061806	75	85	37,5	160	110	84	21	60	17	210	32
	G 1 1/2	KH-R 1 1/2 /NW 40***	029301	84	92	42,0	168	120	85	23	65	17	210	40

* bei 1,5- / ** 1,2facher Sicherheit

* at a safety factor of 1.5 / ** 1.2

* avec un coefficient de sécurité de 1,5 / ** 1,2

*** Gehäuse in Schmiedeausführung

*** Bodies machined from forgings

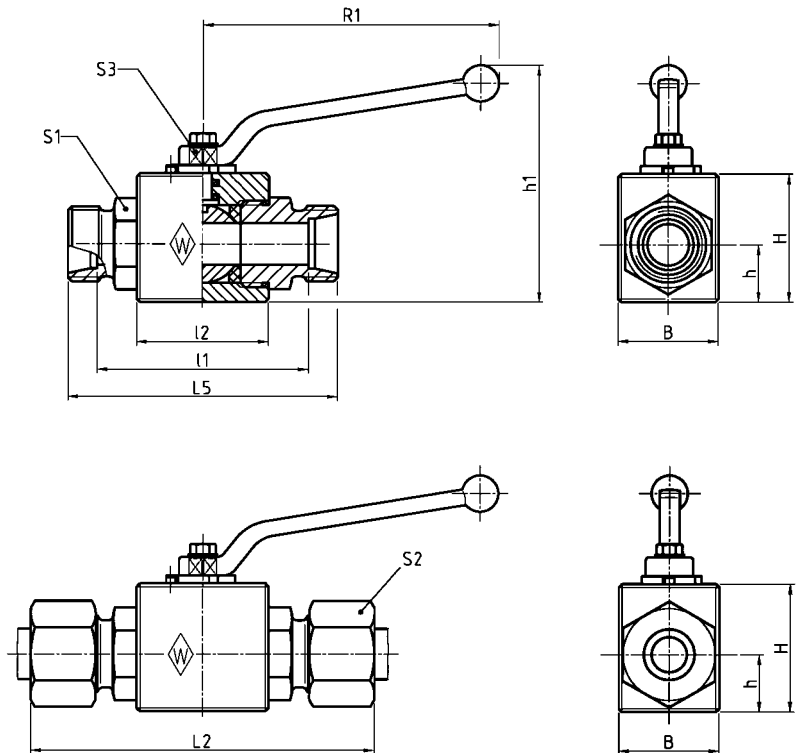
*** Corps forgés

Kugelhahn (Stutzen)
Ball valve (body only)
Robinet à boisseau sphérique (corps)



KHS

Beidseitiger Rohranschluß
Tube connection both ends
Raccord sur tube des deux côtés



Gewinde wahlweise mit Gewindeauslauf oder Freistich nach DIN 3853
Thread available with runout or alternatively with undercut according to DIN 3853
Filetage disponible en option avec filet incomplet ou dégagement par gorge selon DIN 3853

Reihe Series Série	PB* bar (psi)	Rohr-AD Tube OD Tube Ø ext.	Typ Type Désignation	Best.-Nr. Reference Réf.	B	H	h	h ₁ ± 5	l ₂	l ₁	L ₂	L ₅	S ₁	S ₂	S ₃	R ₁	DN
L	400 (5801)	6	KHS 6 L/NW 4	029274	28	32	13	72	36	53	83	67	22	14	9	108	4
		8	KHS 8 L/NW 6	029275	25	35	13	76	35	53	83	67	19	17	9	108	6
		10	KHS 10 L/NW 8	029276	32	40	17	91	42	60	90	74	27	19	9	108	8
		12	KHS 12 L/NW 10	029277	32	40	17	91	42	60	90	74	27	22	9	108	10
		15	KHS 15 L/NW 13	029278	35	40	17	91	47	68	98	82	30	27	9	108	13
	250 (3626)	18	KHS 18 L/NW 16	029279	38	45	19	110	47	67	100	82	32	32	12	169	16
		22	KHS 22 L/NW 20	029280	48	57	24,5	123	60	86	119	101	41	36	14	169	20
		28	KHS 28 L/NW 25	029281	57	64	28,5	130	65	93	126	108	50	41	14	169	25
		35	KHS 35 L/NW 25	029282	60	60	26,5	135	66	92	148	114	60	50	17	165	25
		210 (3046)	42	KHS 42 L/NW 40***	029283	83	92	42	168	85	111	157	133	70	60	17	210
S	630** (9137)	8	KHS 8 S/NW 4	029284	26	32	13	72	36	59	89	73	22	19	9	108	4
		10	KHS 10 S/NW 6	029285	26	32	13	72	36	58	91	73	22	22	9	108	6
		12	KHS 12 S/NW 8	029286	26	32	13	72	36	61	94	76	22	24	9	108	8
	500 (7252)	14	KHS 14 S/NW 10	029287	32	38	16,5	78	43	68	100	84	27	27	9	108	10
		16	KHS 16 S/NW 13	029288	35	40	17	91	47	69	106	86	30	30	9	108	13
		20	KHS 20 S/NW 16	029289	38	46	19	112	48	69	112	91	32	32	12	169	16
	400 (5801)	25	KHS 25 S/NW 20	029290	48	57	24,5	123	60	85	133	109	41	46	14	169	20
		315 (4569)	30	KHS 30 S/NW 25	029291	57	64	28,5	130	65	93	146	120	50	50	14	169
		38	KHS 38 S/NW 32***	061810	76	84	39,5	160	80	108	170	140	60	60	17	210	32

L₂ = Ungefährmaß bei angezogener Überwurfmutter
L₂ = approximate length with nut tightened
L₂ = longueur approximative, l'écrou étant bloqué

* bei 1,5- / ** 1,2facher Sicherheit
* at a safety factor of 1.5 / ** 1.2
* avec un coefficient de sécurité de 1,5 / ** 1,2

*** Gehäuse in Schmiedeausführung
*** Bodies machined from forgings
*** Corps forgés

Kompakt-Umschalthahn (Stutzen)
 Compact diverter valve (body only)
 Robinet compact de renversement (corps)



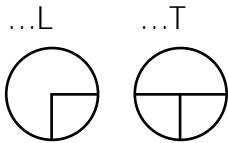
KH3KS

L- oder T-Bohrung
 L- or T-port
 alésage en L ou en T

Rohranschluß
 Tube connection
 Raccordement pour tubes

Mit Innengewinde M 5
 With female thread M 5
 Avec filetage intérieur M 5

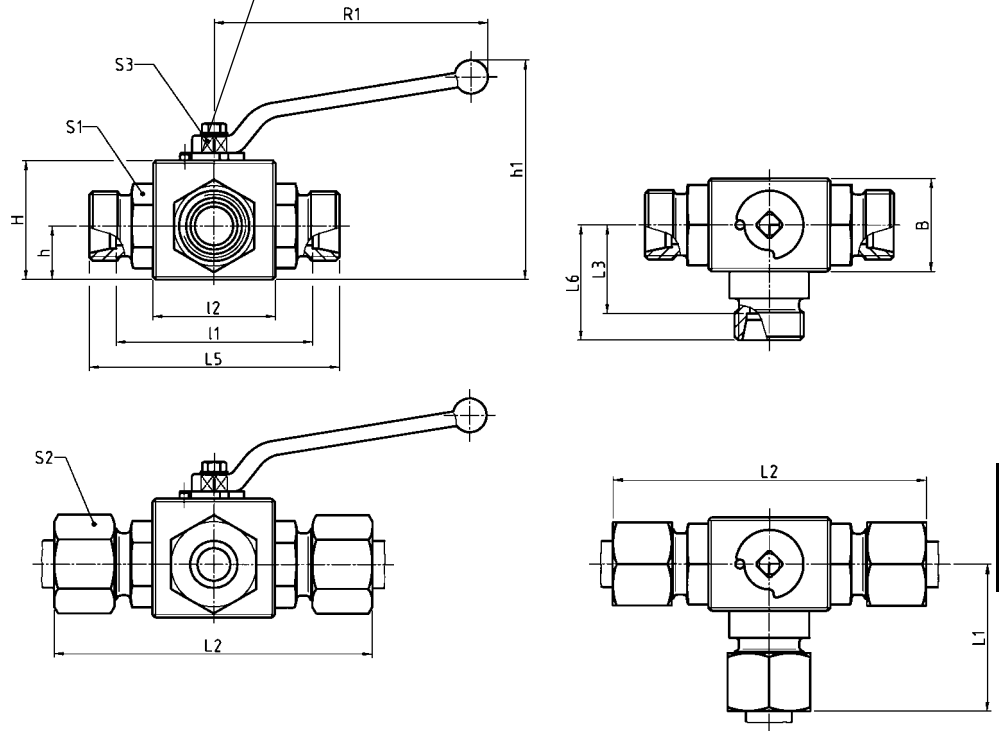
Bohrungsform
 Port form
 Formes de réalisation
 d'alésage



Die gewünschte Bohrungsform hinter der Typenbezeichnung angeben.

The port form should be stated following the valve type.

Indiquer la forme d'alésage demandée derrière la désignation du type.



Gewinde wahlweise mit Gewindeauslauf oder Freistich nach DIN 3853

Thread available with runout or alternatively with undercut according to DIN 3853

Filetage disponible en option avec filet incomplet ou dégagement par gorge selon DIN 3853

Dieser Anschluß muß bei jeder Schaltstellung geöffnet sein. Druckbeaufschlagung nur von dieser Seite zulässig. Eine Druckbeaufschlagung von den anderen Anschlüssen her ist nicht zulässig und führt zu Fehlfunktionen!

This port must always be in the open position. Pressure may only be applied from this side. Application of pressure through the other ports is not permissible and causes malfunction.

Cette ouverture doit être ouverte à toute position de connexion. N'appliquer la pression que de ce côté. L'application de la pression par d'autres connexions n'est pas permise et entraîne des défauts de fonctionnement.

Reihe Series Série	PB* bar (psi)	Rohr-AD Tube OD Tube Ø ext.	Typ Type Désignation	Best.-Nr. Reference Réf.	B	H	h	h ₁	I ₁	I ₂	L ₁	L ₂	L ₃	L ₅	L ₆	S ₁	S ₂	S ₃	R ₁	DN
L	400 (5801)	8	KH3KS 8 L/NW 6-L	062623	25	35	13	76	55,5	35	43,5	82	27,5	67	34,5	19	17	9	108	6
		8	KH3KS 8 L/NW 6-T	062635	25	35	13	76	55,5	35	43,5	82	27,5	67	34,5	19	17	9	108	6
	350 (5076)	10	KH3KS 10 L/NW 8-L	062624	32	40	17	81	62	42	49,5	89	30	74	37	27	19	9	108	8
		10	KH3KS 10 L/NW 8-T	062636	26	32	13	70	57	48	49,5	89	30	71	32	22	19	9	108	8
	15	12	KH3KS 12 L/NW 10-L	062625	32	40	17	76	62	42	49,5	89	30	74	37	27	22	9	108	10
		12	KH3KS 12 L/NW 10-T	062637	32	38	16,3	76	61	43	43	77	30	75	35	27	22	9	108	10
		15	KH3KS 15 L/NW 13-L	062626	35	40	17,3	79	63	48	49,5	100	33	67,5	40	30	27	9	107	13
		15	KH3KS 15 L/NW 13-T	062638	35	40	17,3	79	63	48	49,5	100	33	67,5	40	30	27	9	107	13

L₂ = Ungefährmaß bei angezogener Überwurfmutter
 L₂ = approximate length with nut tightened
 L₂ = longueur approximative, l'écrou étant bloqué

* bei 1,5facher Sicherheit
 * at a safety factor of 1.5
 * avec un coefficient de sécurité de 1,5

Kompakt-Umschalhahn (Stutzen)
 Compact diverter valve (body only)
 Robinet compact de renversement (corps)

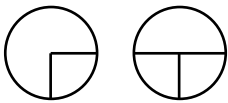


KH3KS-R

L- oder T-Bohrung Whitworth-Rohrgewinde
 L- or T-port BSP thread
 alésage en L ou en T Filetage Whitworth

Bohrungsform
 Port form
 Formes de réalisation
 d'alésage

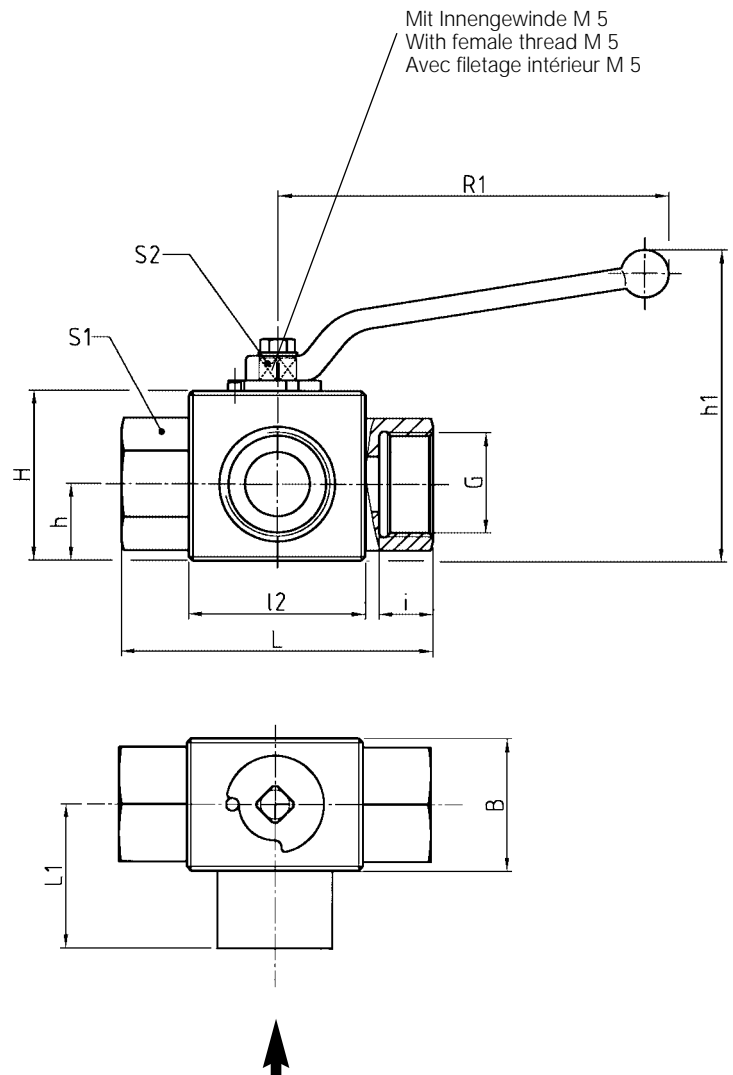
...L ...T



Die gewünschte Bohrungsform hinter der Typenbezeichnung angeben.

The port form should be stated following the valve type.

Indiquer la forme d'alésage demandée derrière la désignation du type.



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 Pressure may only be applied from this side. Application of pressure through the other ports is not permissible and causes malfunction.

Cette ouverture doit être ouverte à toute position de connexion.
 N'appliquer la pression que de ce côté. L'application de la pression par d'autres connexions n'est pas permise et entraîne des défauts de fonctionnement.

DIN-ISO 228 (R ..., DIN 259)

PB* bar (psi)	G	Typ	Best.-Nr. Reference Réf.	B	H	h	h ₁	L	L ₁	L ₂	i	S ₁	S ₂	R ₁	DN
		Type Désignation													
400 (5801)	G ¹ / ₄	KH3KS-R 1/4 /NW 6-L	062615	25	35	13	76	69	32	35	14	22	9	108	6
	G ¹ / ₄	KH3KS-R 1/4 /NW 6-T	062619	25	35	13	76	69	32	35	14	22	9	108	6
	G ³ / ₈	KH3KS-R 3/8 /NW 10-L	062616	32	40	17	78	72	35	42	14	27	9	108	10
	G ³ / ₈	KH3KS-R 3/8 /NW 10-T	062620	32	40	17	78	72	35	42	14	27	9	108	10
350 (5076)	G ¹ / ₂	KH3KS-R 1/2 /NW 13-L	062617	35	40	17,3	79	85	37	48	12	30	9	136	13
	G ¹ / ₂	KH3KS-R 1/2 /NW 13-T	062621	35	40	17,3	79	85	37	48	12	30	9	136	13

* bei 1,5 facher Sicherheit
 * at a safety factor of 1.5
 * avec un coefficient de sécurité de 1,5

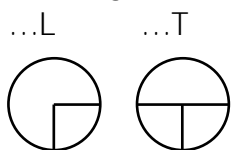
Dreiwege-Kugelhahn (Stutzen)
 Three-way ball valve (body only)
 Robinet à trois voies (corps)



KH3S-R

L- oder T-Bohrung Whitworth-Rohrgewinde
 L- or T-port BSP thread
 alésage en L ou en T Filetage Whitworth

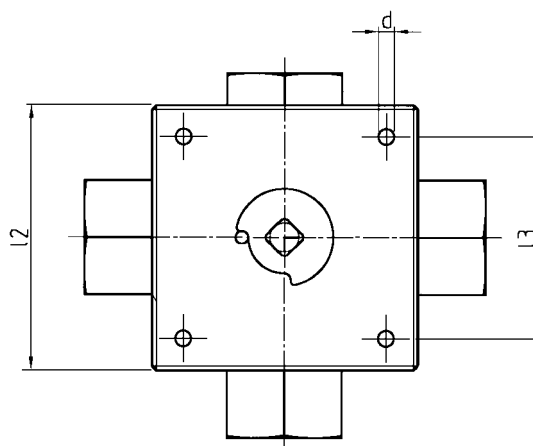
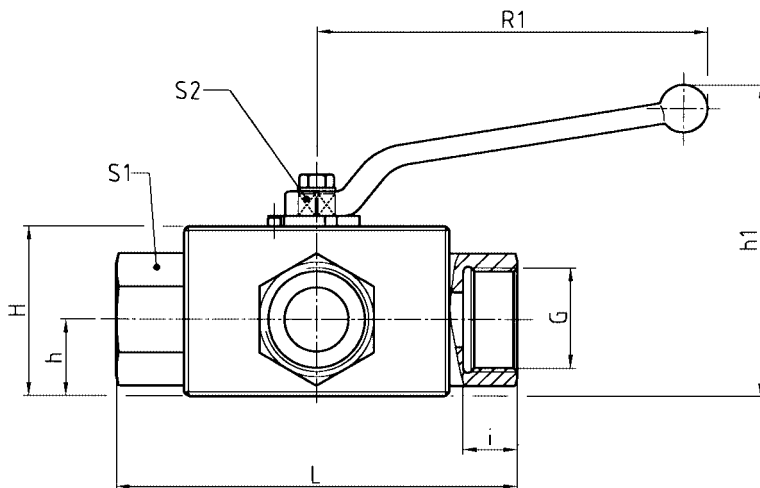
Bohrungsform
 Port form
 Formes de réalisation
 d'alésage



Die gewünschte Bohrungsform hinter der Typenbezeichnung angeben.

The port form should be stated following the valve type.

Indiquer la forme d'alésage demandée derrière la désignation du type.



DIN-ISO 228 (R ..., DIN 259)

PB* bar (psi)	G	Typ Type Désignation	Best.-Nr. Reference Réf.	l ₂	H	h	h ₁	L	l ₃	d	i	S ₁	S ₂	R ₁	DN
500 (7252)	G ¹ / ₄	KH3S-R 1/4/NW 6-L	062647	70	40	22	105	100	55	6,5	14	24	12	169	6
	G ¹ / ₄	KH3S-R 1/4/NW 6-T	062653	70	40	22	105	100	55	6,5	14	24	12	169	6
	G ³ / ₈	KH3S-R 3/8/NW 10-L	062648	80	50	27	115	115	65	6,5	14	30	14	169	10
	G ³ / ₈	KH3S-R 3/8/NW 10-T	062654	80	50	27	115	115	65	6,5	14	30	14	169	10
400 (5801)	G ¹ / ₂	KH3S-R 1/2/NW 13-L	062649	100	60	30	101	135	80	8,7	15	36	14	164	13
	G ¹ / ₂	KH3S-R 1/2/NW 13-T	062655	100	60	30	101	135	80	8,7	15	36	14	164	13
315 (4569)	G ³ / ₄	KH3S-R 3/4/NW 20-L	062650	100	73	36	160,5	144	85	9	18	46	17	210	20
	G ³ / ₄	KH3S-R 3/4/NW 20-T	062656	100	73	36	160,5	144	85	9	18	46	17	210	20
	G1	KH3S-R 1/NW 25-L	062651	127	78,7	42,5	158,5	172	105	11	19	50	17	200	25
	G1	KH3S-R 1/NW 25-T	062657	127	78,7	42,5	158,5	172	105	11	19	50	17	200	25

* bei 1,5facher Sicherheit

* at a safety factor of 1.5

* avec un coefficient de sécurité de 1,5

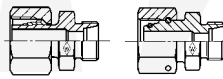

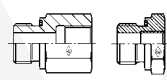



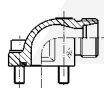



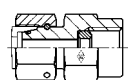





G

Reduzierstutzen
 Flanschstutzen
 Aufschraubstutzen
 Manometerstutzen

Reducing fittings (body only)
 Flange fittings (body only)
 Female fittings (body only)
 Gauge fittings (body only)

Raccords de réduction (corps)
 Raccords à brides (corps)
 Raccords femelles (corps)
 Raccords pour manomètres (corps)

	Abb. Fig. Fig.	Sinnbild Symbol Symbole	Typ Type Désignation	Seite Page Page
Reduzierstutzen Reducing fitting (body only) Raccord de réduction (corps)			P-REDS.....-SV REDSDN.../...	H2 H3-H6
Gewinde-Reduzierstutzen mit Weichdichtung Reducing adaptor with captive seal (body only) Réduction fileté avec joint mou (corps)			RED.....-WD/...	H7-H8
Gerade-Flanschstutzen Straight flange coupling (body only) Union simple à bride (corps)			GFS.....	H10-H11
Winkel-Flanschstutzen Elbow flange coupling (body only) Union simple à bride en équerre (corps)			WFS.....	H12-H13
Gerade-Aufschraubstutzen Parallel female stud coupling (body only) Union simple femelle (corps)			GAS.....R GAS.....M	H14 H15
Einstellbarer Manometer-Aufschraubstutzen Adjustable gauge coupling (body only) Raccord pour manomètre avec embout lisse (corps)			EMASD.....	H16
Manometer-Aufschraubstutzen Adjustable gauge coupling with sealing ring (body only) Union simple femelle pour manomètre (corps)			MAS.....R	H17



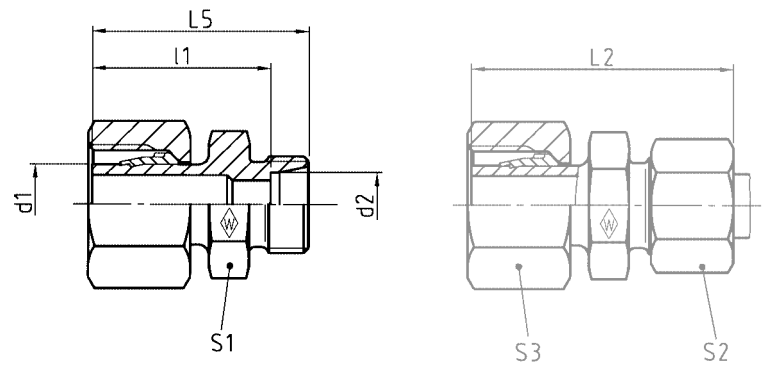


P-REDS-SV

Baureihe L
Schaft vormontiert

Series L
standpipe with pre-assembled nut and profile ring

Série L
embout lisse avec écrou et bague profilée pré-sertis



PN bar (psi)	d ₁	Rohr-AD Tube OD Tube Ø ext. d ₂	Typ Type Designation	Best.-Nr. Reference Réf.	kg per 100 St. kg per 100 pcs. kg par 100 p.	L ₂	L ₅	l ₁	S ₁	S ₂	S ₃
500 (7252)	8	6	P-REDS 8/6 L-SV	604589	3,0	43	34,5	27,5	12	14	17
		10	P-REDS 10/6 L-SV	602458	4,0	43	35,5	28,5	12	14	19
		8	P-REDS 10/8 L-SV	602753	4,0	43	35,5	28,5	14	17	19
400 (5801)	12	6	P-REDS 12/6 L-SV	602691	5,5	42,5	35	28	14	14	22
		8	P-REDS 12/8 L-SV	602585	5,5	43,5	36	29	14	17	22
		10	P-REDS 12/10 L-SV	602433	5,5	44,5	37	30	17	19	22
	15	6	P-REDS 15/6 L-SV	602992	7,5	43	35	28	17	14	27
		8	P-REDS 15/8 L-SV	602930	8,5	44	36	29	17	17	27
		10	P-REDS 15/10 L-SV	602586	8,5	45	37	30	17	19	27
	12	P-REDS 15/12 L-SV	602539	8,5	46	38	31	19	22	27	
250 (3626)	22	6	P-REDS 18/6 L-SV	602993	10,5	45	37	30	19	14	32
		8	P-REDS 18/8 L-SV	602434	11,0	46	38	31	19	17	32
		10	P-REDS 18/10 L-SV	602461	12,5	47	39	32	19	19	32
		12	P-REDS 18/12 L-SV	602462	12,0	48	40	33	19	22	32
		15	P-REDS 18/15 L-SV	602931	13,0	49	41	34	24	27	32
	6	P-REDS 22/6 L-SV	612581	13,0	47	39	32	24	14	36	
	8	P-REDS 22/8 L-SV	604260	14,5	48	40	33	24	17	36	
	10	P-REDS 22/10 L-SV	604256	15,5	49	41	34	24	19	36	
	12	P-REDS 22/12 L-SV	602932	15,0	50	42	35	24	22	36	
	15	P-REDS 22/15 L-SV	602435	17,5	51	43	36	24	27	36	
	18	P-REDS 22/18 L-SV	602463	18,0	53	44	36,5	27	32	36	

L₂ = Ungefährmaß bei angezogener Überwurfmutter
L₂ = approximate length with nut tightened
L₂ = longueur approximative, l'écrou étant bloqué

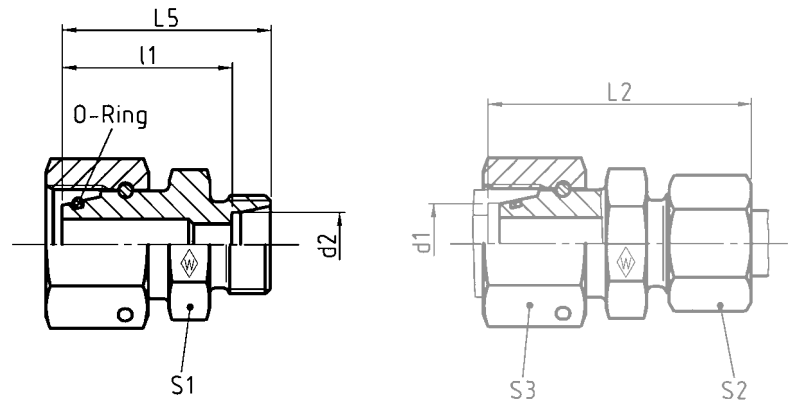


RESDSN .../...

Baureihe L
 mit Dichtkegel und O-Ring NBR* (z. B. Perbunan)

Series L
 with taper and O-ring NBR* (e. g. Perbunan)

Série L
 avec cône d'étanchéité et joint torique
 NBR* (p. ex. Perbunan)



PN bar (psi)	d ₁	Rohr-AD Tube OD Tube Ø ext. d ₂	Typ Type Désignation	Best.-Nr. Reference Réf.	kg per 100 St. kg per 100 pcs. kg par 100 p.	L ₂	L ₅	l ₁	S ₁	S ₂	S ₃	*O-Ring *O-ring *Joint torique
500 (7252)	8	6	RESDSN 8/6 L	619030	3,2	37,5	30	23	12	14	17	6 x 1,5
	10	6	RESDSN 10/6 L	619031	4,0	39	31,5	24,5	14	14	19	8,5 x 1,5
		8	RESDSN 10/8 L	619032	4,0	39,5	31,5	24,5	14	17	19	
400 (5801)	12	6	RESDSN 12/6 L	619033	6,0	39,5	32	25		14		
		8	RESDSN 12/8 L	619034	5,5	40	32	25	17	17	22	10 x 1,5
		10	RESDSN 12/10 L	619035	5,5	41	33	26		19		
	15	6	RESDSN 15/6 L	619036	8,5	41	33,5	26,5		14		
		8	RESDSN 15/8 L	619037	9,5	41,5	33,5	26,5		17		
		10	RESDSN 15/10 L	619038	9,0	42,5	34,5	27,5	22	19	27	12 x 2
250 (3626)	22	12	RESDSN 15/12 L	619039	9,0	42	34,5	27,5		22		
		6	RESDSN 18/6 L	619040	11,5	43	35,5	28,5		14		
		8	RESDSN 18/8 L	619041	11,5	43,5	35,5	28,5		17		
		10	RESDSN 18/10 L	619042	13,0	44,5	36,5	29,5	24	19	32	15 x 2
		12	RESDSN 18/12 L	619043	12,5	44	36,5	29,5		22		
250 (3626)	22	15	RESDSN 18/15 L	619044	13,0	46	37,5	30,5		27		
		6	RESDSN 22/6 L	619045	16,0	45,5	38	31		14		
		8	RESDSN 22/8 L	619046	16,0	46	38	31		17		
		10	RESDSN 22/10 L	619047	16,0	47	39	32		19		
		12	RESDSN 22/12 L	619048	16,0	46,5	39	32	27	22	36	20 x 2
		15	RESDSN 22/15 L	619049	18,5	48,5	40	33		27		
		18	RESDSN 22/18 L	619050	18,0	49	40	32,5		32		

L₂ = Ungefährmaß bei angezogener Überwurfmutter
 L₂ = approximate length with nut tightened
 L₂ = longueur approximative, l'écrou étant bloqué

* FPM (z. B. Viton) auf Anfrage
 * FPM (e. g. Viton) on request
 * FPM (p. ex. Viton) sur demande



Reduzierstutzen
Reducing fitting (body only)
Raccord de réduction (corps)

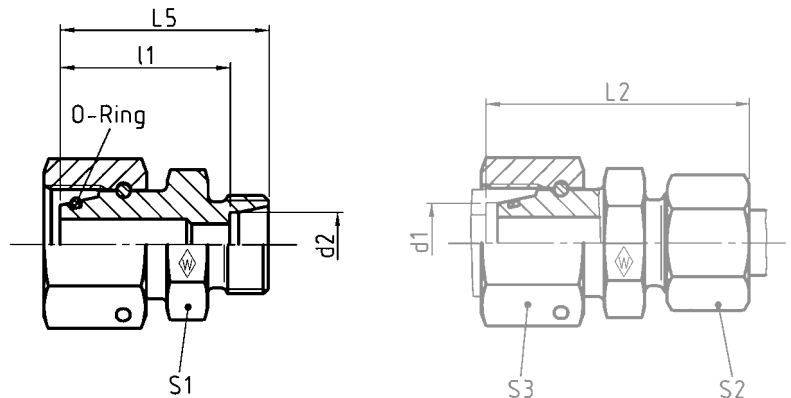


RESDN .../...

Baureihe L
mit Dichtkegel und O-Ring NBR* (z. B. Perbunan)

Series L
with taper and O-ring NBR* (e. g. Perbunan)

Série L
avec cône d'étanchéité et joint torique
NBR* (p. ex. Perbunan)



PN bar (psi)	d ₁	Rohr-AD Tube OD Tube Ø ext. d ₂	Typ Type Désignation	Best.-Nr. Reference Réf.	kg per 100 St. kg per 100 pcs. kg par 100 p.	L ₂	L ₅	l ₁	S ₁	S ₂	S ₃	*O-Ring *O-ring *Joint torique
28		6	RESDN 28/6 L	619051	29,0	45,5	38	31		14		
		8	RESDN 28/8 L	619052	29,0	47	39	32		17		
		10	RESDN 28/10 L	619053	27,5	48	40	33		19		
		12	RESDN 28/12 L	619054	28,0	47,5	40	33	36	22	46	26 x 2
		15	RESDN 28/15 L	619055	28,0	49,5	41	34		27		
		18	RESDN 28/18 L	619056	28,5	50	41	33,5		32		
		22	RESDN 28/22 L	619057	31,0	52	43	35,5		36		
250 (3626)		6	RESDN 35/6 L	619058	35,0	50,5	43	36		14		
		8	RESDN 35/8 L	619059	32,4	51	43	36		17		
		10	RESDN 35/10 L	619060	36,0	52	44	37		19		
		12	RESDN 35/12 L	619061	33,5	51,5	44	37	46	22	50	32 x 2,5
		15	RESDN 35/15 L	619062	34,0	53,5	45	38		27		
		18	RESDN 35/18 L	619063	34,5	54	45	37,5		32		
		22	RESDN 35/22 L	619064	35,0	56	47	39,5		36		
42		6	RESDN 42/6 L	619066	49,5	52,5	45	38		14		
		8	RESDN 42/8 L	619067	51,8	53	45	38		17		
		10	RESDN 42/10 L	619068	50,0	54	46	39		19		
		12	RESDN 42/12 L	619069	50,0	53,5	46	39		22		
		15	RESDN 42/15 L	619070	46,0	55,5	47	40	50	27	60	38 x 2,5
		18	RESDN 42/18 L	619071	46,5	56	47	39,5		32		
		22	RESDN 42/22 L	619072	48,5	58	49	41,5		36		
35		28	RESDN 42/28 L	619073	49,0	58	49	41,5		41		
		35	RESDN 42/35 L	619074	55,0	61,5	50,5	40		50		

L₂ = Ungefährmaß bei angezogener Überwurfmutter
L₂ = approximate length with nut tightened
L₂ = longueur approximative, l'écrou étant bloqué

* FPM (z. B. Viton) auf Anfrage
* FPM (e. g. Viton) on request
* FPM (p. ex. Viton) sur demande

Reduzierstutzen
Reducing fitting (body only)
Raccord de réduction (corps)

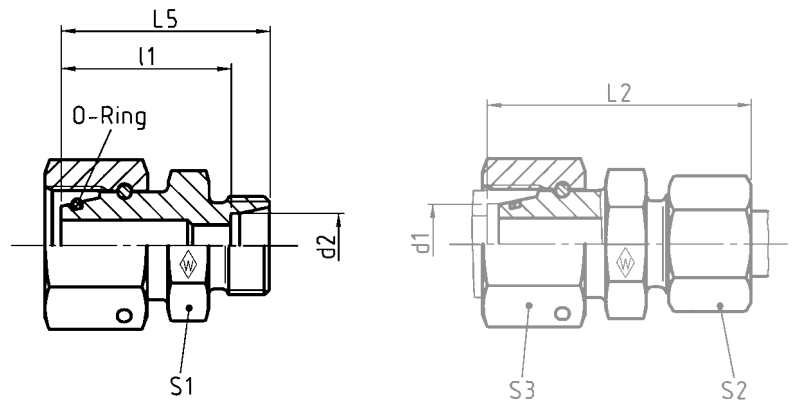


RESDSN .../...

Baureihe S
mit Dichtkegel und O-Ring NBR* (z. B. Perbunan)

Series S
with taper and O-ring NBR* (e. g. Perbunan)

Série S
avec cône d'étanchéité et joint torique
NBR* (p. ex. Perbunan)



PN bar (psi)	d ₁	Rohr-AD Tube OD Tube Ø ext. d ₂	Typ Type Désignation	Best.-Nr. Reference Réf.	kg per 100 St. kg per 100 pcs. kg par 100 p.	L ₂	L ₅	l ₁	S ₁	S ₂	S ₃	*O-Ring *O-ring *Joint torique
800 (11603)	8	6	RESDSN 8/6 S	619075	4,5	43	35	28	14	17	19	6 x 1,5
	10	6	RESDSN 10/6 S	619076	6,5	45,5	37,5	30,5	17	17	22	8,5 x 1,5
		8	RESDSN 10/8 S	619077	6,5	45,5	37,5	30,5	17	19	22	8,5 x 1,5
630 (9137)	12	6	RESDSN 12/6 S	619078	8,5	46	38	31		17		
		8	RESDSN 12/8 S	619079	8,5	46	38	31	19	19	24	10 x 1,5
		10	RESDSN 12/10 S	619080	8,5	46,5	38	30,5		22		
	14	6	RESDSN 14/6 S	619081	11,1	48,5	40,5	33,5		17		
		8	RESDSN 14/8 S	619082	11,5	48,5	40,5	33,5	22	19	27	12 x 2
		10	RESDSN 14/10 S	619083	10,2	49	40,5	33	22	22	27	12 x 2
420 (6091)	20	12	RESDSN 14/12 S	619084	10,8	49	40,5	33		24		
		6	RESDSN 16/6 S	619085	11,5	49	41	34		17		
		8	RESDSN 16/8 S	619086	12,0	49	41	34	22	19	30	14 x 2
		10	RESDSN 16/10 S	619087	13,0	49,5	41	33,5	22	22	30	14 x 2
		12	RESDSN 16/12 S	619088	13,0	49,5	41	33,5	24	24	30	14 x 2
420 (6091)	20	14	RESDSN 16/14 S	619089	13,0	53	43	35	24	27	30	14 x 2
		6	RESDSN 20/6 S	619090	16,2	53,5	45,5	38,5		17		
		8	RESDSN 20/8 S	619091	18,5	53,5	45,5	38,5		19		
		10	RESDSN 20/10 S	619092	18,5	54	45,5	38	27	22	36	17,3 x 2,4
		12	RESDSN 20/12 S	619093	19,0	54	45,5	38	27	24	36	17,3 x 2,4
420 (6091)	20	14	RESDSN 20/14 S	619094	24,0	57,5	47,5	39,5		27		
		16	RESDSN 20/16 S	619095	20,5	57,5	47,5	39		30		

L₂ = Ungefährmaß bei angezogener Überwurfmutter
L₂ = approximate length with nut tightened
L₂ = longueur approximative, l'écrou étant bloqué

* FPM (z. B. Viton) auf Anfrage
* FPM (e. g. Viton) on request
* FPM (p. ex. Viton) sur demande



Reduzierstutzen
Reducing fitting (body only)
Raccord de réduction (corps)

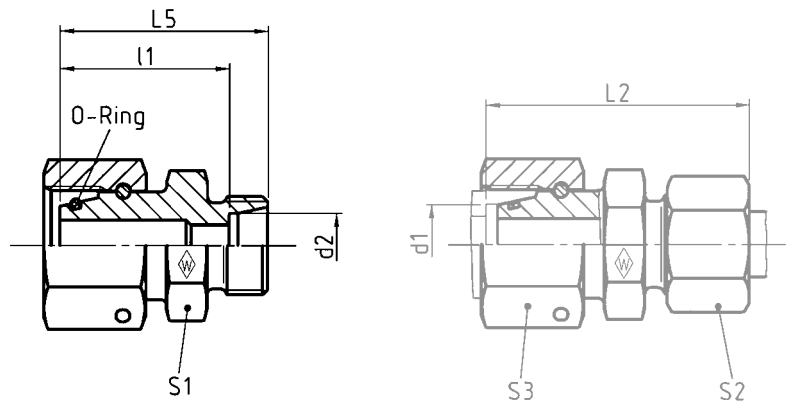


RESDSN .../...

Baureihe S
mit Dichtkegel und O-Ring NBR* (z. B. Perbunan)

Series S
with taper and O-ring NBR* (e. g. Perbunan)

Série S
avec cône d'étanchéité et joint torique
NBR* (p. ex. Perbunan)



PN bar (psi)	d ₁	Rohr-AD Tube OD Tube Ø ext. d ₂	Typ Type Désignation	Best.-Nr. Reference Réf.	kg per 100 St. kg per 100 pcs. kg par 100 p.	L ₂	L ₅	l	S ₁	S ₂	S ₃	*O-Ring *O-ring *Joint torique
420 (6091)	25	6	RESDSN 25/6 S	619096	33,0	57	49	42				17
		8	RESDSN 25/8 S	619097	33,0	57	49	42				19
		10	RESDSN 25/10 S	619098	33,0	57,5	49	41,5				22
		12	RESDSN 25/12 S	619099	33,5	57,5	49	41,5	36	24	46	22,3 x 2,4
		14	RESDSN 25/14 S	619100	34,0	61	51	43				27
		16	RESDSN 25/16 S	619101	34,0	61	51	42,5				30
		20	RESDSN 25/20 S	619102	35,0	64	53	42,5			36	
	30	6	RESDSN 30/6 S	619103	40,5	61	53	46				17
		8	RESDSN 30/8 S	619104	41,0	61	53	46				19
		10	RESDSN 30/10 S	619105	41,5	61,5	53	45,5				22
		12	RESDSN 30/12 S	619106	41,5	61,5	53	45,5	41	24	50	27,3 x 2,4
		14	RESDSN 30/14 S	619107	47,0	65	55	47				27
		16	RESDSN 30/16 S	619108	41,5	65	55	46,5				30
		20	RESDSN 30/20 S	619109	43,0	68	57	46,5			36	
400 (5801)		25	RESDSN 30/25 S	619110	46,0	71	59	47			46	
	38	6	RESDSN 38/6 S	619111	57,0	64,5	56,5	49,5				17
		8	RESDSN 38/8 S	619112	57,5	64,5	56,5	49,5				19
		10	RESDSN 38/10 S	619113	58,0	65	56,5	49				22
		12	RESDSN 38/12 S	619114	57,5	65	56,5	49				24
		14	RESDSN 38/14 S	619115	67,2	68,5	58,5	50,5	50	27	60	35 x 2,5
		16	RESDSN 38/16 S	619116	58,5	68,5	58,5	50				30
		20	RESDSN 38/20 S	619117	59,0	71,5	60,5	50				36
		25	RESDSN 38/25 S	619118	61,0	74,5	62,5	50,5				46
		30	RESDSN 38/30 S	619119	67,5	77,5	64,5	51				50

L₂ = Ungefährmaß bei angezogener Überwurfmutter
L₂ = approximate length with nut tightened
L₂ = longueur approximative, l'écrou étant bloqué

* FPM (z. B. Viton) auf Anfrage
* FPM (e. g. Viton) on request
* FPM (p. ex. Viton) sur demande

Gewinde-Reduzierstutzen mit Weichdichtung
 Reducing adaptor with captive seal (body only)
 Réduction fileté avec joint mou (corps)

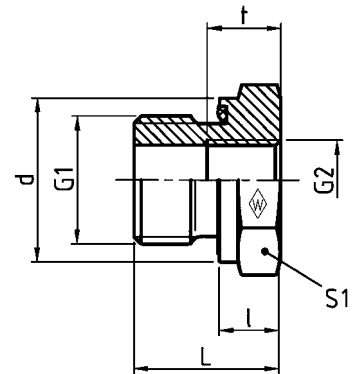


RED-WD/...

mit Weichdichtung: NBR* (z. B. Perbunan)
 Whitworth-Rohrgewinde (zylindrisch)

with captive seal: NBR* (e. g. Perbunan)
 BSP thread (parallel)

avec joint mou: NBR* (p. ex. Perbunan)
 Filetage Whitworth (cylindrique)



DIN-ISO 228 (R ..., DIN 259)

PN bar (psi)	G ₁	G ₂	Typ Type Désignation	Best.-Nr. Reference Réf.	kg per 100 St. kg per 100 pcs. kg par 100 p.	L	l	d	t	S ₁
630 (9137)	G 3/8 A	G 1/8	RED-R 3/8-WD/R 1/8	606600	4,0	22,5	10,5	21,9	8	22
		G 1/8	RED-R 1/2-WD/R 1/8	606601	6,6	24	10	26,9	8	27
	G 1/2 A	G 1/4	RED-R 1/2-WD/R 1/4	606602	6,0	24	10	26,9	12	27
400 (5801)	G 3/4 A	G 1/4	RED-R 3/4-WD/R 1/4	606603	9,5	26	10	31,9	12	32
		G 3/8	RED-R 3/4-WD/R 3/8	606604	9,0	26	10	31,9	12	32
	G 1 A	G 1/4	RED-R 1 -WD/R 1/4	606605	20,0	29	11	39,9	12	41
		G 3/8	RED-R 1 -WD/R 3/8	606606	18,0	29	11	39,9	12	41
		G 1/2	RED-R 1 -WD/R 1/2	606607	16,0	29	11	39,9	14	41
	G 1 1/4 A	G 1/2	RED-R 1 1/4-WD/R 1/2	606608	31,0	32	12	49,9	14	50
		G 3/4	RED-R 1 1/4-WD/R 3/4	606609	27,0	32	12	49,9	16	50
	G 1 1/2 A	G 1/2	RED-R 1 1/2-WD/R 1/2	606610	47,0	36	14	54,9	14	55
		G 3/4	RED-R 1 1/2-WD/R 3/4	606611	43,0	36	14	54,9	16	55
G 1		RED-R 1 1/2-WD/R 1	606612	34,5	36	14	54,9	18	55	

* FPM (z. B. Viton) auf Anfrage
 * FPM (e. g. Viton) on request
 * FPM (p. ex. Viton) sur demande



Gewinde-Reduzierstutzen mit Weichdichtung
 Reducing adaptor with captive seal (body only)
 Réduction fileté avec joint mou (corps)

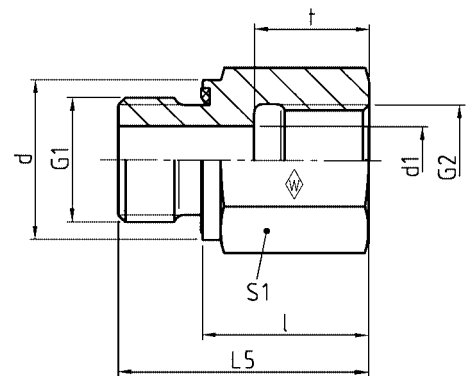


RED-WD/...

mit Weichdichtung: NBR* (z. B. Perbunan)
 Whitworth-Rohrgewinde (zylindrisch)

with captive seal: NBR* (e. g. Perbunan)
 BSP thread (parallel)

avec joint mou: NBR* (p. ex. Perbunan)
 Filetage Whitworth (cylindrique)



DIN-ISO 228 (R ..., DIN 259)

PN bar (psi)	G ₁	G ₂	Typ Type Designation	Best.-Nr. Reference Réf.	kg per 100 St. kg per 100 pcs. kg par 100 p.	L	l	d	d ₁	t	S ₁
400 (5801)	G 1/8 A	G 1/4	RED-R 1/8-WD/R 1/4	606613	3,6	31	23	13,9	4	17	19
		G 3/8	RED-R 1/8-WD/R 3/8	606614	4,5	32	24	13,9	4	17	24
	G 1/4 A	G 1/8	RED-R 1/4-WD/R 1/8	606615	3,6	29	17	18,9	5	12	19
		G 3/8	RED-R 1/4-WD/R 3/8	606616	6,6	36	24	18,9	5	17	24
		G 1/2	RED-R 1/4-WD/R 1/2	606617	8,5	40	28	18,9	5	20	30
	G 3/8 A	G 3/4	RED-R 1/4-WD/R 3/4	606618	17,3	43	31	18,9	5	22	36
		G 1/4	RED-R 3/8-WD/R 1/4	606619	3,0	36	24	21,9	8	17	22
		G 1/2	RED-R 3/8-WD/R 1/2	606620	9,0	41	29	21,9	8	20	30
	G 1/2 A	G 3/4	RED-R 3/8-WD/R 3/4	606621	17,5	44	32	21,9	8	22	36
		G 3/8	RED-R 1/2-WD/R 3/8	606622	9,5	37	23	26,9	12	17	27
		G 3/4	RED-R 1/2-WD/R 3/4	606623	18,0	46	32	26,9	12	22	36
	250 (3626)	G 1/2 A	G1	RED-R 1/2-WD/R 1	606624	22,5	49	35	26,9	12	24,5
G 1 1/4			RED-R 1/2-WD/R 1 1/4	606625	47,0	53	39	26,9	12	26,5	55
400 (5801)	G 3/4 A	G 1/2	RED-R 3/4-WD/R 1/2	606626	15,0	43	27	31,9	16	20	32
		G1	RED-R 3/4-WD/R 1	606627	23,5	51	35	31,9	16	24,5	41
250 (3626)	G 3/4 A	G 1 1/4	RED-R 3/4-WD/R 1 1/4	606628	48,3	55	39	31,9	16	26,5	55
		G 1 1/2	RED-R 3/4-WD/R 1 1/2	606629	54,5	57	41	31,9	16	28,5	60
400 (5801)	G 1 A	G 3/4	RED-R 1 -WD/R 3/4	606630	28,0	49	31	39,9	20	22	41
250 (3626)	G 1 A	G 1 1/4	RED-R 1 -WD/R 1 1/4	606631	51,0	57	39	39,9	20	26,5	55
		G 1 1/2	RED-R 1 -WD/R 1 1/2	606632	56,5	59	41	39,9	20	28,5	60
400 (5801)	G 1 1/4 A	G1	RED-R 1 1/4-WD/R 1	606633	45,5	53	33	49,9	25	24,5	50
250 (3626)	G 1 1/4 A	G 1 1/2	RED-R 1 1/4-WD/R 1 1/2	606634	58,0	60	40	49,9	25	28,5	60
		G 1 1/4	RED-R 1 1/2-WD/R 1 1/4	606635	53,0	58	36	54,9	32	26,5	55

* FPM (z. B. Viton) auf Anfrage
 * FPM (e. g. Viton) on request
 * FPM (p. ex. Viton) sur demande

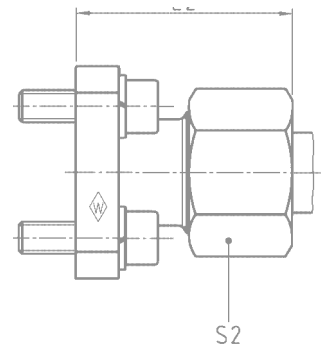
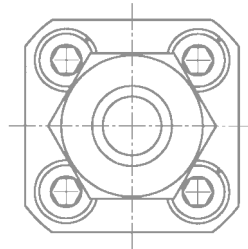
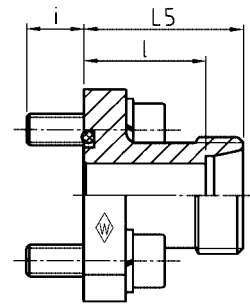
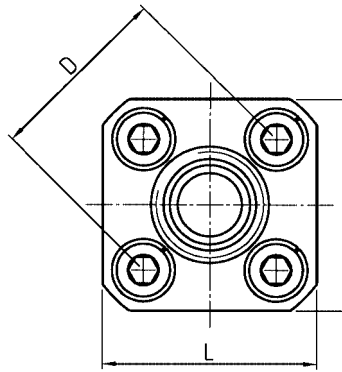
H

Gerade-Flanschstutzen
 Straight flange coupling (body only)
 Union simple à bride (corps)



GFS

Vierlochbefestigung
 Four-hole attachment
 Fixation à quatre trous



D	Reihe Series Série	PN bar (psi)	Rohr-AD Tube OD Tube Ø ext.	Typ Type Désignation	Best.-Nr. Reference Réf.	kg per 100 St. kg per 100 pcs. kg par 100 p.	L	L ₂	L ₅	l	i	S ₂
35	L	315 (4569)	10	GFS 10 L-35	064121	10,9	39	37,5	30	23	12,5	19
			12	GFS 12 L-35	064122	11,5	39	37,5	30	23	12,5	22
		250 (3626)	15	GFS 15 L-35	064123	11,7	39	38	30	23	12,5	27
40	L	100 (1450)	16	GFS 16 S-35	064125	13,3	39	39,5	30	21,5	12,5	30
			15	GFS 15 L-40	064124	12,0	42	43	35	28	12,5	27
			18	GFS 18 L-40	064126	16,4	42	43,5	35	27,5	12,5	32
			22	GFS 22 L-40	064128	14,9	42	43,5	35	27,5	12,5	36
			28	GFS 28 L-40	064129	18,5	41	51	42	34,5	12,5	41
55	S	250 (3626)	20	GFS 20 S-55	064127	41,9	55	51	40	29,5	12,5	36

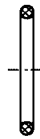
L₂ = Ungefährmaß bei angezogener Überwurfmutter
 L₂ = approximate length with nut tightened
 L₂ = longueur approximative, l'écrou étant bloqué

Zubehörteile wie Innensechskantschrauben, Federringe und O-Ring werden lose mitgeliefert.
 Accessories, such as hexagon socket screws, spring washers and O-ring are supplied as separate items.
 Les accessoires tels que vis à six pans creux, rondelles élastiques et joint torique font partie de la livraison sans être montés.

Gerade-Flanschstutzen
 Straight flange coupling (body only)
 Union simple à bride (corps)



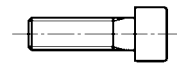
Zubehörteile
 Accessories
 Accessoires



O-Ring NBR* (z. B. Perbunan)
 1 Stück
 O-ring NBR* (e. g. Perbunan)
 1 piece
 Joint torique NBR* (p. ex. Perbunan)
 1 pièce



Federring DIN 128
 4 Stück
 Spring washer DIN 128
 4 pieces
 Rondelle élastique DIN 128
 4 pièces



Innensechskantschraube DIN 912
 4 Stück
 Hexagon socket screw DIN 912
 4 pieces
 Vis à six pans creux DIN 912
 4 pièces



D	Rohr-AD Tube OD Tube Ø ext.	Type Type Désignation	O-Ring O-ring Joint torique		Federring Spring washer Rondelle élastique		Innensechskantschraube Hexagon socket screw Vis à six pans creux	
			Abmessung Dimension Dimension	Best.-Nr. Reference Réf.	Abmessung Dimension Dimension	Best.-Nr. Reference Réf.	Abmessung Dimension Dimension	Best.-Nr. Reference Réf.
35	10	GFS 10 L-35						
	12	GFS 12 L-35						
	15	GFS 15 L-35	20 x 2,5	610519	B 6	020102	M 6 x 22	020309
	16	GFS 16 S-35						
40	15	GFS 15 L-40						
	18	GFS 18 L-40						
	22	GFS 22 L-40	26 x 2,5	610499	B 6	020102	M 6 x 22	020309
	28	GFS 28 L-40						
55	20	GFS 20 S-55	33 x 2,5	610500	B 8	020104	M 8 x 25	020324

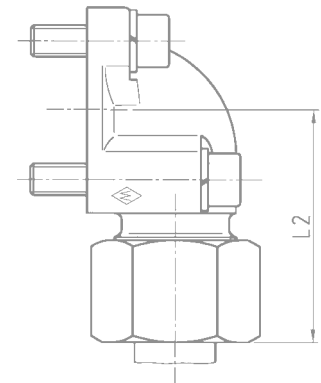
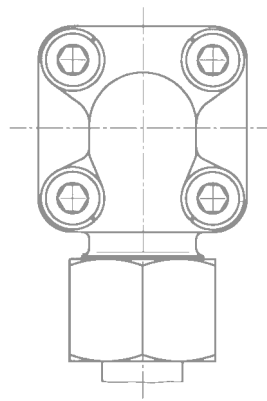
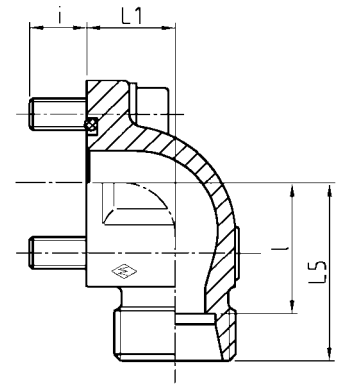
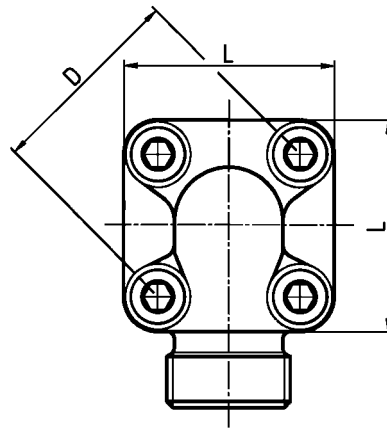
* FPM (z. B. Viton) auf Anfrage
 * FPM (e. g. Viton) on request
 * FPM (p. ex. Viton) sur demande

Winkel-Flanschstutzen
 Elbow flange coupling (body only)
 Union simple à bride en équerre (corps)



WFS

Vierlochbefestigung
 Four-hole attachment
 Fixation à quatre trous



D	Reihe Séries Série	PN bar (psi)	Rohr-AD Tube OD Tube Ø ext.	Typ Type Désignation	Best.-Nr. Reference Réf.	kg per 100 St. kg per 100 pcs. kg par 100 p.	L	L ₁	L ₂	L ₅	l	i	S ₂
35	L	315 (4569)	10	WFS 10 L-35	064131	21,0	39	16,5	44,5	37,5	30,5	12,5	19
			12	WFS 12 L-35	064132	17,3	39	16,5	44,5	37,5	30,5	12,5	22
	S	250 (3626)	15	WFS 15 L-35	064135	17,3	39	16,5	45	37	30	12,5	27
			16	WFS 16 S-35	064137	20,0	39	20	47,5	38	29,5	12,5	30
			20	WFS 20 S-35	064139	28,8	39	25	56	45	34,5	12,5	36
40	L	100 (1450)	15	WFS 15 L-40	064136	18,0	42	22,5	45	37	30	12,5	27
			18	WFS 18 L-40	064138	18,6	42	22,5	46,5	38	30,5	12,5	32
			22	WFS 22 L-40	064142	21,5	42	22,5	46,5	38	30,5	12,5	36
			28	WFS 28 L-40	064145	27,9	42	28	49	40	32,5	12,5	41
			35	WFS 35 L-40	064147	36,3	42	34	52	41	30,5	12,5	50
55	S	250 (3626)	20	WFS 20 S-40	064140	25,5	42	22,5	51	40	29,5	12,5	36
			22	WFS 22 L-55	064143	57,0	58	24	52	43	35,5	12,5	36
			35	WFS 35 L-55	064148	45,5	58	32	60	49	38,5	12,5	50
			42	WFS 42 L-55	064149	84,0	58	40	60,5	49	38	12,5	60
			20	WFS 20 S-55	064141	56,0	58	24	56	45	34,5	12,5	36
S	250 (3626)	25	WFS 25 S-55	064144	48,5	58	30	61	49	37	12,5	46	
		30	WFS 30 S-55	064146	54,9	58	32	62	49	35,5	12,5	50	

L₂ = Ungefährmaß bei angezogener Überwurfmutter
 L₂ = approximate length with nut tightened
 L₂ = longueur approximative, l'écrou étant bloqué

Zubehörteile wie Innensechskantschrauben, Federringe und O-Ring werden lose mitgeliefert.
 Accessories, such as hexagon socket screws, spring washers and O-ring are supplied as separate items.
 Les accessoires tels que vis à six pans creux, rondelles élastiques et joint torique font partie de la livraison sans être montés.

Winkel-Flanschstutzen
 Elbow flange coupling (body only)
 Union simple à bride en équerre (corps)



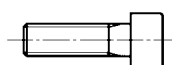
Zubehörteile
 Accessories
 Accessoires



O-Ring NBR* (z. B. Perbunan)
 1 Stück
 O-ring NBR* (e. g. Perbunan)
 1 piece
 Joint torique NBR* (p. ex. Perbunan)
 1 pièce



Federring DIN 128
 4 Stück oder 3
 Spring washer DIN 128
 4 pieces or 3
 Rondelle élastique DIN 128
 4 pièces ou 3



Innensechskantschraube DIN 912
 4 Stück oder 3
 Hexagon socket screw DIN 912
 4 pieces or 3
 Vis à six pans creux DIN 912
 4 pièces ou 3



für Vierlochbefestigung
 for four-hole attachment
 pour fixation à quatre trous

D	Rohr-AD Tube OD Tube Ø ext.	Typ Type Désignation	O-Ring O-ring Joint torique		Federring Spring washer Rondelle élastique		Innensechskantschraube Hexagon socket screw Vis à six pans creux						
			Abm. Dim. Dim.	Best.-Nr. Reference Réf.	Abm. Dim. Dim.	Best.-Nr. Reference Réf.	Stck. pcs. pce.	Abm. Dim. Dim.	Best.-Nr. Reference Réf.	Stck. pcs. pce.	Abm. Dim. Dim.	Best.-Nr. Reference Réf.	
35	10	WFS 10 L-35					2	M 6 x 35	020313				
	12	WFS 12 L-35					2	M 6 x 35	020313				
	15	WFS 15 L-35	20 x 2,5	610519	B 6	020102	2	M 6 x 35	020313	2	M 6 x 22	020309	
	16	WFS 16 S-35					2	M 6 x 40	021785				
	20	WFS 20 S-35					2	M 6 x 45	021956				
40	15	WFS 15 L-40					4	M 6 x 22	020309				
	18	WFS 18 L-40					4	M 6 x 22	020309				
	22	WFS 22 L-40	26 x 2,5	610499	B 6	020102	4	M 6 x 22	020309				
	28	WFS 28 L-40					2	M 6 x 50	021786				
	35	WFS 35 L-40					2	M 6 x 60	021787	2	M 6 x 22	020309	
	20	WFS 20 S-40					2	M 6 x 45	021956				
55	22	WFS 22 L-55					2	M 8 x 50	020331				
	35	WFS 35 L-55					2	M 8 x 60	021793				
	42	WFS 42 L-55	33 x 2,5	610500	B 8	020104	2	M 8 x 70	021794	2	M 8 x 25	020324	
	20	WFS 20 S-55					2	M 8 x 50	020331				
	25	WFS 25 S-55					2	M 8 x 55	023977				
	30	WFS 30 S-55					2	M 8 x 50	020331				

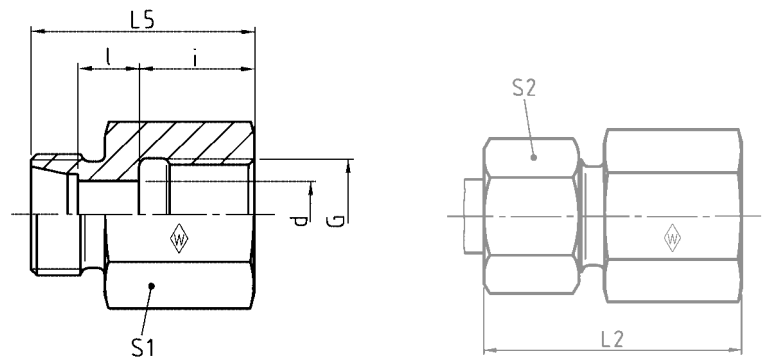
* FPM (z. B. Viton) auf Anfrage
 * FPM (e. g. Viton) on request
 * FPM (p. ex. Viton) sur demande

Gerade-Aufschraubstutzen
 Parallel female stud coupling (body only)
 Union simple femelle (corps)



GAS R

Whitworth-Rohrgewinde
 BSP thread
 Filetage Whitworth



DIN-ISO 228 (R ..., DIN 259)

Reihe Series Série	PN bar (psi)	Rohr-AD Tube OD Tube Ø ext.	G	Typ Type Désignation	Best.-Nr. Reference Réf.	kg per 100 St. kg per 100 pcs. kg par 100 p.	L ₂	L ₅	l	i	d	S ₁	S ₂
L	250 (3626)	6	G 1/8	GAS 6 LR	038084	1,9	34	26	7	12	4	14	14
		8	G 1/4	GAS 8 LR	038085	3,8	39	31	7	17	6	19	17
		10	G 1/4	GAS 10 LR	038086	3,9	40	32	8	17	8	19	19
		12	G 1/4	GAS 12 L/R 1/4	038087	4,4	40	32	8	17	8	19	22
		12	G 3/8	GAS 12 LR	038088	6,2	41	33	9	17	10	24	22
	15	G 1/2	GAS 15 LR	038089	8,6	46	38	11	20	12	30	27	
	160 (2321)	18	G 1/2	GAS 18 LR	038090	8,9	47	38	10,5	20	15	27	32
	22	G 3/4	GAS 22 LR	038091	8,9	52	43	13,5	22	19	36	36	
	100 (1450)	28	G 1	GAS 28 LR	038092	20,9	55	45,5	13,5	24,5	24	41	41
	35	G 1 1/4	GAS 35 LR	038093	46,3	63	51,5	14,5	26,5	30	55	50	
42	G 1 1/2	GAS 42 LR	038094	52,8	65	53,5	14	28,5	36	60	60		
S	630 (9137)	6	G 1/4	GAS 6 SR	038095	4,2	41	33	9	17	4	19	17
		8	G 1/4	GAS 8 SR	038096	4,4	41	33	9	17	5	19	19
		10	G 3/8	GAS 10 SR	038097	6,9	43	34	9,5	17	7	24	22
		12	G 3/8	GAS 12 SR	038098	7,2	43	34	9,5	17	8	24	24
	14	G 1/2	GAS 14 SR	038099	9,7	50	40	12	20	10	27	27	
	400 (5801)	16	G 1/2	GAS 16 SR	038100	9,4	50	40	11,5	20	12	30	30
	20	G 3/4	GAS 20 SR	038101	19,3	56	45	12,5	22	16	36	36	
	25	G 1	GAS 25 SR	038102	24,2	62	49,5	13	24,5	20	41	46	
250 (3626)	30	G 1 1/4	GAS 30 SR	038103	50,1	69	55,5	15,5	26,5	25	55	50	
38	G 1 1/2	GAS 38 SR	038104	58,4	74	59,5	15	28,5	32	60	60		

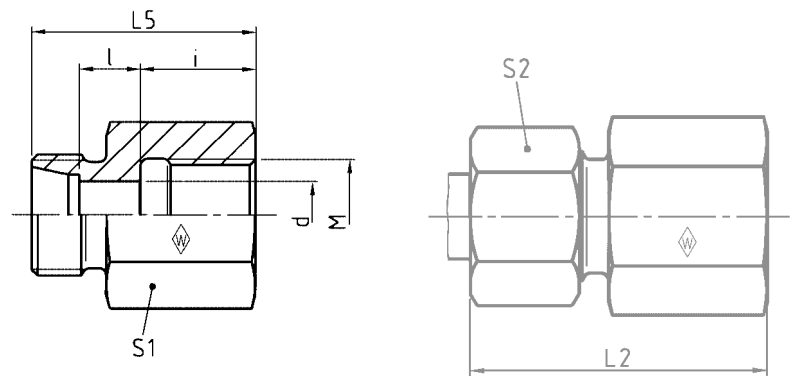
L₂ = Ungefährmaß bei angezogener Überwurfmutter
 L₂ = approximate length with nut tightened
 L₂ = longueur approximative, l'écrou étant bloqué

Gerade-Aufschraubstutzen
 Parallel female stud coupling (body only)
 Union simple femelle (corps)



GAS M

Metrisches Gewinde
 Metric thread
 Filetage métrique



Reihe Series Série	PN bar (psi)	Rohr-AD Tube OD Tube Ø ext.	M	Typ Type Désignation	Best.-Nr. Reference Réf.	kg per 100 St. kg per 100 pcs. kg par 100 p.	L ₂	L ₅	l	i	d	S ₁	S ₂
L	250 (3626)	6	M 10 x 1	GAS 6 LM	060046	1,9	34	26,5	7	12,5	4	14	14
		8	M 12 x 1,5	GAS 8 LM	061084	3,1	39	31	7	17	6	17	17
		10	M 14 x 1,5	GAS 10 LM	060213	3,8	40	32	8	17	8	19	19
		12	M 16 x 1,5	GAS 12 LM	025317	5,2	41	33	9	17	10	22	22
		15	M 18 x 1,5	GAS 15 LM	024357	6,7	43	35	11	17	12	24	27
	160 (2321)	18	M 22 x 1,5	GAS 18 LM	062966	10,9	46	37	10,5	19	15	30	32
		22	M 26 x 1,5	GAS 22 LM	061612	12,1	51	42	13,5	21	19	32	36
S	630 (9137)	6	M 12 x 1,5	GAS 6 SM	066876	3,6	41	33	9	17	4	17	17
		8	M 14 x 1,5	GAS 8 SM	061634	4,2	41	33	9	17	5	19	19
		10	M 16 x 1,5	GAS 10 SM	060704	5,7	43	34	9,5	17	7	22	22
		12	M 18 x 1,5	GAS 12 SM	060069	6,9	44	35	10,5	17	8	24	24
		14	M 20 x 1,5	GAS 14 SM	066855	9,3	49	39	12	19	10	27	27
	400 (5801)	16	M 22 x 1,5	GAS 16 SM	067979	11,4	49	39	11,5	19	12	30	30
		20	M 27 x 2	GAS 20 SM	065147	15,2	56	45	12,5	22	16	36	36

L₂ = ist Ungefährmaß bei angezogener Überwurfmutter
 L₂ = approximate length with nut tightened
 L₂ = longueur approximative, l'écrou étant bloqué



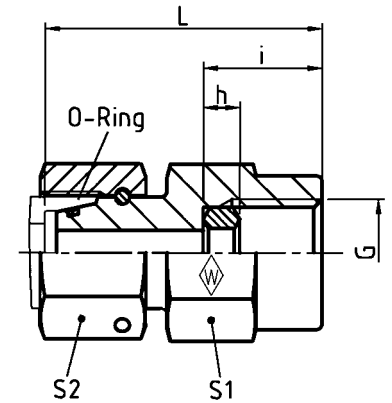


EMASD

mit Dichtkegel und O-Ring NBR* (z. B. Perbunan)

with taper and O-ring NBR* (e. g. Perbunan)

avec cône d'étanchéité et joint torique
 NBR* (p. ex. Perbunan)



DIN-ISO 228 (R ..., DIN 259)

Reihe Series Série	PN bar (psi)	Rohr-AD Tube OD Tube Ø ext.	G	Typ Type Désignation	Best.-Nr. Reference Réf.	kg per 100 St. kg per 100 pcs. kg par 100 p.	L	i	h	S ₁	S ₂	O-Ring O-ring Joint torique
L	500 (7252)	6	G 1/4	EMASD 6 LR	605748	5,7	38	14,5	4,5	19	14	4,5 x 1,5
		8	G 1/4	EMASD 8 LR	066353	7,0	38	14,5	4,5	19	17	6 x 1,5
		10	G 1/4	EMASD 10 LR	605749	7,2	39,5	14,5	4,5	19	19	8,5 x 1,5
	400 (5801)	12	G 1/4	EMASD 12 LR	605750	8,0	40,5	14,5	4,5	19	22	10 x 1,5
S	630 (9137)	6	G 1/2	EMASD 6 SR	605751	11,5	45	20	5	27	17	4,5 x 1,5
		8	G 1/2	EMASD 8 SR	605752	11,4	45	20	5	27	19	6 x 1,5
		10	G 1/2	EMASD 10 SR	605753	13,4	47	20	5	27	22	8,5 x 1,5
		12	G 1/2	EMASD 12 SR	066313	12,9	47,5	20	5	27	24	10 x 1,5

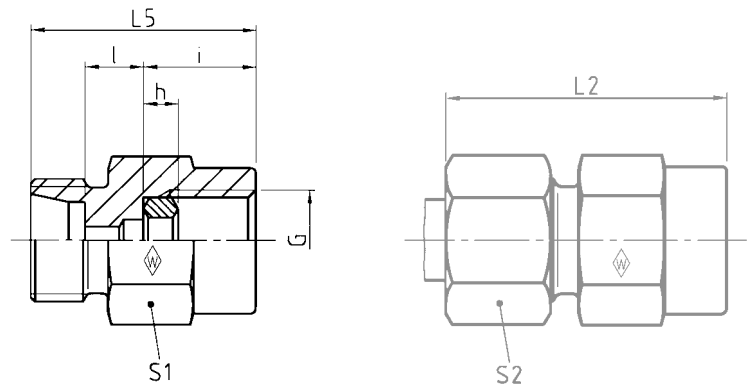
* FPM (z. B. Viton) auf Anfrage
 * FPM (e. g. Viton) on request
 * FPM (p. ex. Viton) sur demande

Manometer-Aufschraubstutzen
Adjustable gauge coupling with sealing ring (body only)
Union simple femelle pour manomètre (corps)



MAS R

Whitworth-Rohrgewinde
BSP thread
Filetage Whitworth



DIN-ISO 228 (R ..., DIN 259)

Reihe Series Série	PN bar (psi)	Rohr-AD Tube OD Tube Ø ext.	G	Typ Type Désignation	Best.-Nr. Reference Réf.	kg per 100 St. kg per 100 pcs. kg par 100 p.	L ₂	L ₅	l	i	h	S ₁	S ₂
L	500 (7252)	6	G 1/4	MAS 6 LR	066939	3,8	37	14,5	7,5	14,5	4,5	19	14
		8	G 1/4	MAS 8 LR	066940	3,6	37	14,5	7,5	14,5	4,5	19	17
		10	G 1/4	MAS 10 LR	067370	4,0	38	15,5	8,5	14,5	4,5	19	19
	400 (5801)	12	G 1/4	MAS 12 LR	066941	6,3	38	15,5	8,5	14,5	4,5	19	22
S	800 (11603)	6	G 1/2	MAS 6 SR	066942	9,4	46	18x	11	20	5	27	17
		8	G 1/2	MAS 8 SR	066943	9,0	46	18	11	20	5	27	19
	630 (9137)	10	G 1/2	MAS 10 SR	066944	9,0	47	18	10,5	20	5	27	22
		12	G 1/2	MAS 12 SR	066945	9,5	47	18	10,5	20	5	27	24

























L₂ = Ungefährmaß bei angezogener Überwurfmutter
L₂ = approximate length with nut tightened
L₂ = longueur approximative, l'écrou étant bloqué



Einschraubverschraubungen
Verbindungsverschraubungen
Schottverschraubungen
Schweißverschraubungen

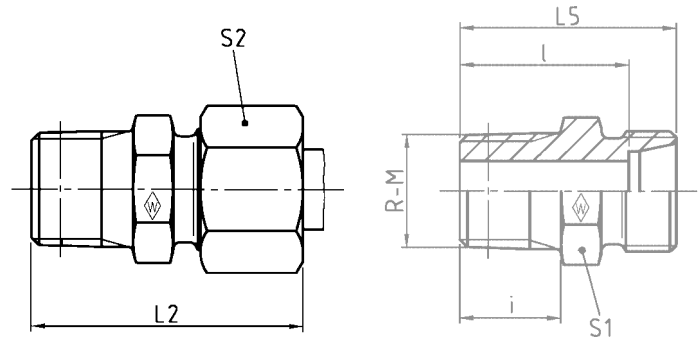
Male stud fittings
Tube connectors
Bulkhead fittings
Weld fittings

Raccords mâles
Raccords pour tubes
Raccords de cloison
Raccords à souder

	Abb. Fig. Fig.	Sinnbild Symbol Symbole	Typ Type Désignation	Seite Page Page
Gerade-Einschraubverschraubung Male stud coupling Union simple mâle			P-GEV.....RK	12
			P-GEV.....MK	12
			P-GEV.....NPT	13
Winkel-Einschraubverschraubung Male stud elbow Equerre mâle			P-GEV.....R	14
			P-GEV.....M	15
			P-GEV.....R-WD	16
			P-GEV.....M-WD	17
			P-GEV.....UNF/UN	18
Gerade-Verschraubung Straight coupling Union double			P-GV.....	112
Gerade-Reduzierschraubung Straight reducing coupling Union double de réduction			P-GV.../...	113
Winkel-Verschraubung Equal elbow Union équerre			P-WV.....	114
T-Verschraubung Equal Tee Union té			P-TV.....	115
T-Reduzierschraubung Reducing Tee Union té de réduction			P-TV.../.../...	116
Kreuz-Verschraubung Equal cross Union croix			P-KV.....	117
Gerade-Schottverschraubung Bulkhead coupling Union double de cloison			P-GSV.....	118
Winkel-Schottverschraubung Bulkhead elbow Equerre de cloison			P-WSV.....	119
Anschweiß-Verschraubung Weldable stud Union simple à souder			P-ASV.....	120
Einschweiß-Schottverschraubung Weldable bulkhead coupling Union double de cloison à souder			P-ESV.....	121

P-GEV RK
P-GEV MK

Einschraubgewinde: Whitworth-Rohrgewinde (kegelig)
Metrisches Gewinde (kegelig)
Stud thread: BSP thread (taper)
metric (taper)
Filetage mâle: Whitworth (conique)
métrique (conique)

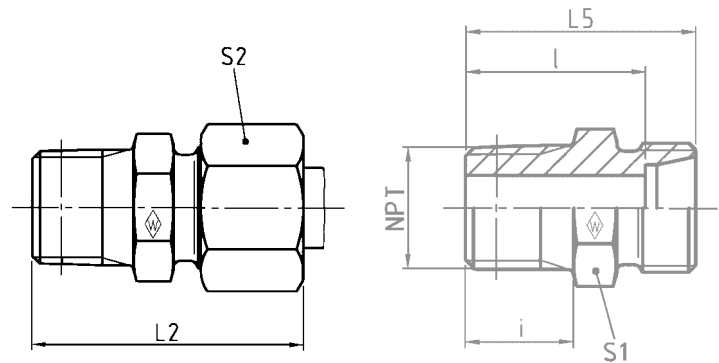


Reihe Series Série	PN bar (psi)	Rohr-AD Tube OD Tube Ø ext.	R-M	Typ Type Désignation	Best.-Nr. Reference Réf.	kg per 100 St. kg per 100 pcs. kg par 100 p.	L ₂	L ₅	l	i	S ₁	S ₂
LL	100 (1450)	4	R 1/8 keg	S-GEV 4 LLRK	038218	1,4	25,5	20	16	8	10	10
		6	R 1/8 keg	S-GEV 6 LLRK	038220	1,6	26	20	14,5	8	11	12
		8	R 1/8 keg	S-GEV 8 LLRK	038221	1,8	28	22	16,5	8	12	14
L	250 (3626)	6	R 1/4 keg	P-GEV 6 L/R 1/4 K	373003	3,4	34,5	27	20	12	14	14
		8	R 1/4 keg	P-GEV 8 LRK	373004	3,7	34,5	27	20	12	14	17
		8	R 3/8 keg	P-GEV 8 L/R 3/8 K	373005	4,9	34,5	27	20	12	17	17
		10	R 1/4 keg	P-GEV 10 LRK	373006	4,8	35,5	28	21	12	17	19
		10	R 3/8 keg	P-GEV 10 L/R 3/8 K	373007	5,4	35,5	28	21	12	17	19
		12	R 1/4 keg	P-GEV 12 L/R 1/4 K	373008	5,7	36,5	29	22	12	19	22
		12	R 3/8 keg	P-GEV 12 LRK	373009	6,1	36,5	29	22	12	19	22
		12	R 1/2 keg	P-GEV 12 L/R 1/2 K	373010	7,8	38,5	31	24	14	22	22
		15	R 1/2 keg	P-GEV 15 LRK	373011	10,2	40	32	25	14	24	27
LL	100 (1450)	4	M 8 x 1 keg	S-GEV 4 LLMK	038230	1,4	25,5	20	16	8	10	10
		6	M 10 x 1 keg	S-GEV 6 LLMK	038232	1,6	26	20	14,5	8	11	12
		8	M 10 x 1 keg	S-GEV 8 LLMK	038233	1,8	28	22	16,5	8	12	14
L	250 (3626)	6	M 12 x 1,5 keg	P-GEV 6 L/M 12 x 1,5 K	373015	3,0	34,5	27	20	12	14	14
		8	M 12 x 1,5 keg	P-GEV 8 LMK	373016	3,5	34,5	27	20	12	14	17
		8	M 14 x 1,5 keg	P-GEV 8 L/M 14 x 1,5 K	373017	3,8	34,5	27	20	12	17	17
		10	M 14 x 1,5 keg	P-GEV 10 LMK	373018	4,7	35,5	28	21	12	17	19
		10	M 16 x 1,5 keg	P-GEV 10 L/M 16 x 1,5 K	373019	5,1	35,5	28	21	12	17	19
		12	M 16 x 1,5 keg	P-GEV 12 LMK	373020	5,9	36,5	29	22	12	19	22
		12	M 18 x 1,5 keg	P-GEV 12 L/M 18 x 1,5 K	373021	6,5	36,5	29	22	12	19	22

L₂ = Ungefährmaß bei angezogener Überwurfmutter
L₂ = approximate length with nut tightened
L₂ = longueur approximative, l'écrou étant bloqué

P-GEV NPT

Einschraub-
gewinde: NPT (ANSI/ASME B1.20.1-1983)
Stud thread: NPT (ANSI/ASME B1.20.1-1983)
Filetage mâle: NPT (ANSI/ASME B1.20.1-1983)



Reihe Series Série	PN bar (psi)	Rohr-AD Tube OD Tube Ø ext.	NPT	Typ Type Désignation	Best.-Nr. Reference Réf.	kg per 100 St. kg per 100 pcs. kg par 100 p.	L ₂	L ₅	l	i	S ₁	S ₂
LL	100 (1450)	4	1/8 NPT	S-GEV 4 LL/1/8 NPT	038241	1,5	28	22	18	10	11	10
		6	1/8 NPT	S-GEV 6 LL/1/8 NPT	038243	1,5	28	22	16,5	10	11	12
		8	1/8 NPT	S-GEV 8 LL/1/8 NPT	038244	2,0	30	24	18,5	10	12	14
L	315 (4569)	6	1/8 NPT	P-GEV 6 L/1/8 NPT	373026	2,6	32	24	17	10	12	14
		6	1/4 NPT	P-GEV 6 L/1/4 NPT	373027	3,9	38	30	23	15	17	14
		8	1/4 NPT	P-GEV 8 L/1/4 NPT	373028	4,0	38	30	23	15	17	17
		10	1/4 NPT	P-GEV 10 L/1/4 NPT	373029	4,8	39	31	24	15	17	19
		10	3/8 NPT	P-GEV 10 L/3/8 NPT	373030	6,0	40	32	25	15	19	19
		12	1/4 NPT	P-GEV 12 L/1/4 NPT	373031	6,0	40	32	25	15	19	22
		12	3/8 NPT	P-GEV 12 L/3/8 NPT	373032	6,5	40	32	25	15	19	22
		12	1/2 NPT	P-GEV 12 L/1/2 NPT	373033	8,5	45	37	30	20	24	22
		15	1/2 NPT	P-GEV 15 L/1/2 NPT	373034	11,0	46	38	31	20	24	27
		18	1/2 NPT	P-GEV 18 L/1/2 NPT	373035	13,5	48	39	31,5	20	27	32
	160 (2321)	22	3/4 NPT	P-GEV 22 L/3/4 NPT	373036	19,0	50	41	33,5	20	32	36
		28	1 NPT	P-GEV 28 L/1 NPT	373037	27,5	56	47	39,5	25	41	41
		35	1 1/4 NPT	P-GEV 35 L/1 1/4 NPT	373038	40,5	62	51	40,5	26	46	50
		42	1 1/2 NPT	P-GEV 42 L/1 1/2 NPT	373039	57,0	65	53	42	26	55	60
S	630 (9137)	6	1/4 NPT	P-GEV 6 S/1/4 NPT	373040	5,0	43	35	28	15	17	17
		8	1/4 NPT	P-GEV 8 S/1/4 NPT	373041	5,5	43	35	28	15	17	19
		10	1/4 NPT	P-GEV 10 S/1/4 NPT	373042	8,5	44	35	27,5	15	19	22
		10	3/8 NPT	P-GEV 10 S/3/8 NPT	373043	8,0	44	35	27,5	15	19	22
		12	1/4 NPT	P-GEV 12 S/1/4 NPT	373044	9,5	46	37	29,5	15	22	24
		12	3/8 NPT	P-GEV 12 S/3/8 NPT	373045	10,0	46	37	29,5	15	22	24
		12	1/2 NPT	P-GEV 12 S/1/2 NPT	373046	12,5	51	42	34,5	20	22	24
		14	1/2 NPT	P-GEV 14 S/1/2 NPT	373047	15,5	54	44	36	20	24	27
		16	1/2 NPT	P-GEV 16 S/1/2 NPT	373048	16,0	54	44	35,5	20	27	30
		20	3/4 NPT	P-GEV 20 S/3/4 NPT	373049	25,0	59	48	37,5	20	32	36
400 (5801)	25	1 NPT	P-GEV 25 S/1 NPT	373050	47,5	69	57	45	25	41	46	
	30	1 1/4 NPT	P-GEV 30 S/1 1/4 NPT	373051	62,0	73	60	46,5	26	46	50	
	38	1 1/2 NPT	P-GEV 38 S/1 1/2 NPT	373052	89,0	80	65	49	26	55	60	

L₂ = Ungefährmaß bei angezogener Überwurfmutter
L₂ = approximate length with nut tightened
L₂ = longueur approximative, l'écrou étant bloqué

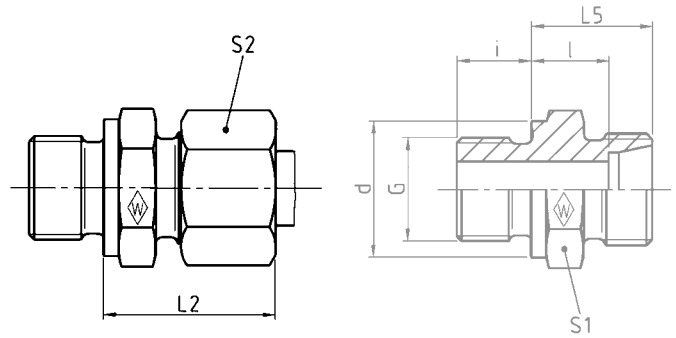
Kegelige Einschraublöcher NPT (ANSI/ASME B1.20.1-1983)
Taper port form NPT (ANSI/ASME B1.20.1-1983)
Trous taraudés coniques NPT (ANSI/ASME B1.20.1-1983)

P-GEV R

Einschraub-
gewinde: Whitworth-Rohrgewinde (zylindrisch),
Dichtkante Form B

Stud thread: BSP thread (parallel),
stud face form B

Filetage mâle: Whitworth (cylindrique),
arête d'étanchéité forme B



DIN-ISO 228 (R ..., DIN 259)

Reihe Series Série	PN bar (psi)	Rohr-AD Tube OD Tube Ø ext.	G	Typ Type Designation	Best.-Nr. Reference Réf.	kg per 100 St. kg per 100 pcs. kg par 100 p.	L ₅	L ₂	l	i	d	S ₁	S ₂			
LL	100 (1450)	4	G	1/8 A	S-GEV 4 LLR	038272	1,8	13,5	19	9,5	8	14	14	10		
		6	G	1/8 A	S-GEV 6 LLR	038274	1,9	13,5	19,5	8	8	14	14	12		
		8	G	1/8 A	S-GEV 8 LLR	038275	2,3	14,5	20,5	9	8	14	14	14		
	L	400 (5801)	6	G	1/8 A	P-GEV 6 LR	373056	2,5	15,5	23	8,5	14	14	14	14	
			6	G	1/4 A	P-GEV 6 L/R 1/4	373057	4,1	17	24,5	10	12	18	19	14	
			6	G	3/8 A	P-GEV 6 L/R 3/8	602638	6,0	18,5	26	11,5	12	22	22	14	
			8	G	1/4 A	P-GEV 8 LR	373058	4,5	17	25	10	12	18	19	17	
			8	G	1/8 A	P-GEV 8 L/R 1/8	604871	3,3	16,5	24	9,5	8	14	14	17	
			8	G	3/8 A	P-GEV 8 L/R 3/8	373059	6,0	18,5	26	11,5	12	22	22	17	
			8	G	1/2 A	P-GEV 8 L/R 1/2	374844	7,1	19	16,5	12	14	26	27	17	
			10	G	1/4 A	P-GEV 10 L/R	373060	4,7	18	26	11	12	18	19	19	
			10	G	3/8 A	P-GEV 10 L/R 3/8	373061	6,0	19,5	27	12,5	12	22	22	19	
			10	G	1/2 A	P-GEV 10 L/R 1/2	373062	7,6	20	27,5	13	14	26	27	19	
			12	G	1/4 A	P-GEV 12 L/R 1/4	373064	6,3	19	27	12	12	18	19	22	
			12	G	3/8 A	P-GEV 12 LR	373065	9,5	19,5	27	12,5	12	22	22	22	
			12	G	1/2 A	P-GEV 12 L/R 1/2	373063	6,0	20	28	13	14	26	27	22	
			15	G	3/8 A	P-GEV 15 L/R 3/8	373067	11,5	20,5	28,5	13,5	12	22	24	27	
			15	G	1/2 A	P-GEV 15 LR	602629	16,5	21	29	14	14	26	27	27	
15			G	3/4 A	P-GEV 15 L/R 3/4	373066	9,3	22	30	15	16	32	32	27		
18			G	1/2 A	P-GEV 18 LR	373068	12,9	22	31	14,5	14	26	27	32		
18			G	3/4 A	P-GEV 18 L/R 3/4	374919	18,0	22	31	14,5	16	32	32	32		
L	250 (3626)	22	G	3/4 A	P-GEV 22 LR	373069	17,6	24	33	16,5	16	32	32	36		
		22	G	1/2 A	P-GEV 22 L/R 1/2	374845	17,5	24	33	16,5	14	26	32	36		
		28	G	1 A	P-GEV 28 LR	373070	24,7	25	34	17,5	18	39	41	41		
		28	G	3/4 A	P-GEV 28 L/R 3/4	374846	25,0	25	34	17,5	16	32	41	41		
		35	G	1 1/4 A	P-GEV 35 LR	373071	40,7	28	39	17,5	20	49	50	50		
		42	G	1 1/2 A	P-GEV 42 LR	373072	45,6	30	42	19	22	55	55	60		
S	630 (9137)	6	G	1/4 A	P-GEV 6 SR	373073	5,0	20	28	13	12	18	19	17		
		8	G	1/4 A	P-GEV 8 SR	373074	5,5	22	30	15	12	18	19	19		
		8	G	3/8 A	P-GEV 8 S/R 3/8	374849	8,0	22,5	30,5	15,5	12	22	22	19		
		10	G	3/8 A	P-GEV 10 SR	373075	8,2	22,5	31	15	12	22	22	22		
		10	G	1/4 A	P-GEV 10 S/R 1/4	602938	7,5	22	30,5	14,5	12	18	19	22		
		10	G	1/2 A	P-GEV 10 S/R 1/2	374850	13,0	25	33,5	17,5	14	26	27	22		
		12	G	3/8 A	P-GEV 12 SR	373076	9,5	24	33	17	12	22	22	24		
		12	G	1/4 A	P-GEV 12 S/R 1/4	602939	9,5	24	32,5	16,5	12	18	22	24		
		12	G	1/2 A	P-GEV 12 S/R 1/2	373077	13,5	25	34	17,5	14	26	27	24		
		14	G	1/2 A	P-GEV 14 SR	373078	14,8	27	37	19	14	26	27	27		
		16	G	1/2 A	P-GEV 16 SR	373079	15,4	27	37	18,5	14	26	27	30		
		16	G	3/8 A	P-GEV 16 S/R 3/8	374852	16,0	26,5	36,5	18	12	22	27	30		
		16	G	3/4 A	P-GEV 16 S/R 3/4	604264	23,0	29	40	21,5	16	32	32	30		
		L	400 (5801)	20	G	3/4 A	P-GEV 20 SR	373080	25,3	31	42	20,5	16	32	32	36
				20	G	1/2 A	P-GEV 20 S/R 1/2	602651	24,5	31	40	18,5	14	26	32	36
				25	G	1 A	P-GEV 25 SR	373081	46,5	35	47	23	18	39	41	46
				25	G	3/4 A	P-GEV 25 S/R 3/4	374854	45,5	35	47	23	16	32	41	46
		L	250 (3626)	30	G	1 1/4 A	P-GEV 30 SR	373082	64,4	37	50	23,5	20	49	50	50
38	G			1 1/2 A	P-GEV 38 SR	373083	88,9	42	57	26	22	55	55	60		
38	G			1 1/4 A	P-GEV 38 S/R 1/4	603977	89,6	42	57	26	20	49	55	60		

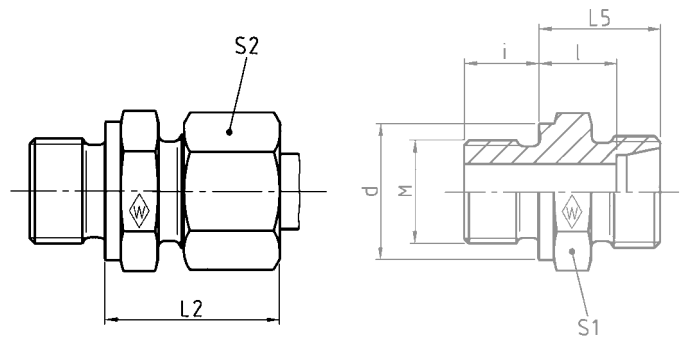
L₂ = Ungefährmaß bei angezogener Überwurfmutter
L₂ = approximate length with nut tightened
L₂ = longueur approximative, l'écrou étant bloqué

P-GEV M

Einschraub-
gewinde: Metrisches Gewinde (zylindrisch),
Dichtkante Form B

Stud thread: metric (parallel),
stud face form B

Filetage mâle: métrique (cylindrique),
arête d'étanchéité forme B



Reihe Series Série	PN bar (psi)	Rohr-AD Tube OD Tube Ø ext.		Typ Type Désignation	Best.-Nr. Reference Réf.	kg per 100 St. kg per 100 pcs. kg par 100 p.	L ₅	L ₂	l	i	d	S ₁	S ₂
		M											
LL	100 (1450)	4	M 8 x 1	S-GEV 4 LLM	038302	1,8	13,5	19	9,5	8	12	12	10
		6	M 10 x 1	S-GEV 6 LLM	038304	1,9	13,5	19,5	8	8	14	14	12
		8	M 10 x 1	S-GEV 8 LLM	038305	2,3	14,5	20,5	9	8	14	14	14
L	400 (5801)	6	M 10 x 1	P-GEV 6 LM	373087	2,5	15,5	23	8,5	8	14	14	14
		6	M 12 x 1,5	P-GEV 6 L/M 12 x 1,5	373088	4,0	17	24,5	10	12	17	17	14
		8	M 12 x 1,5	P-GEV 8 LM	373089	4,0	17	25	10	12	17	17	17
		8	M 18 x 1,5	P-GEV 8 L/M 18 x 1,5	373090	6,8	18,5	26	11,5	12	23	24	17
		10	M 14 x 1,5	P-GEV 10 LM	373091	4,7	18	26	11	12	19	19	19
		10	M 18 x 1,5	P-GEV 10 L/M 18 x 1,5	373092	7,6	19,5	27	12,5	12	23	24	19
		10	M 22 x 1,5	P-GEV 10 L/M 22 x 1,5	373093	8,3	20	27,5	13	14	27	27	19
		12	M 16 x 1,5	P-GEV 12 LM	373094	6,3	19,5	27	12,5	12	21	22	22
		12	M 18 x 1,5	P-GEV 12 L/M 18 x 1,5	373095	7,8	19,5	27	12,5	12	23	24	22
		12	M 22 x 1,5	P-GEV 12 L/M 22 x 1,5	373096	9,5	20	27,5	13	14	27	27	22
		15	M 18 x 1,5	P-GEV 15 LM	373097	9,5	20,5	29	13,5	12	23	24	27
		15	M 22 x 1,5	P-GEV 15 L/M 22 x 1,5	373098	11,5	21	29	14	14	27	27	27
		18	M 18 x 1,5	P-GEV 18 L/M 18 x 1,5	373099	12,2	21,5	30	14	12	23	27	32
		18	M 22 x 1,5	P-GEV 18 LM	373100	12,9	22	31	14,5	14	27	27	32
			250 (3626)	22	M 26 x 1,5	P-GEV 22 LM	373101	17,6	24	33	16,5	16	31
28	M 33 x 2			P-GEV 28 LM	373102	24,7	25	34	17,5	18	39	41	41
35	M 42 x 2			P-GEV 35 LM	373103	40,7	28	39	17,5	20	49	50	50
42	M 48 x 2			P-GEV 42 LM	373104	45,6	30	42	19	22	55	55	60
S	630 (9137)	6	M 12 x 1,5	P-GEV 6 SM	373105	4,5	20	28	13	12	17	17	17
		8	M 14 x 1,5	P-GEV 8 SM	373106	5,5	22	30	15	12	19	19	19
		10	M 16 x 1,5	P-GEV 10 SM	373107	8,2	22,5	31	15	12	21	22	22
		12	M 18 x 1,5	P-GEV 12 SM	373108	10,5	24,5	33	17	12	23	24	24
		14	M 20 x 1,5	P-GEV 14 SM	373109	14,8	27	37	19	14	25	27	27
		16	M 22 x 1,5	P-GEV 16 SM	373110	15,4	27	37	18,5	14	27	27	30
		20	M 27 x 2	P-GEV 20 SM	373111	25,3	31	42	20,5	16	32	32	36
	400 (5801)	25	M 33 x 2	P-GEV 25 SM	373112	46,5	35	47	23	18	39	41	46
		30	M 42 x 2	P-GEV 30 SM	373113	64,4	37	50	23,5	20	49	50	50
	250 (3626)	38	M 48 x 2	P-GEV 38 SM	373114	88,9	42	57	26	22	55	55	60

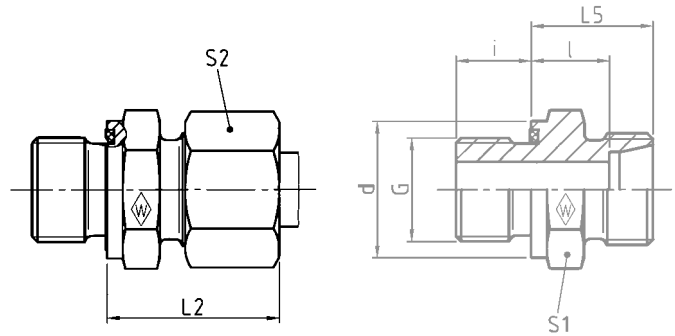
L₂ = Ungefährmaß bei angezogener Überwurfmutter
L₂ = approximate length with nut tightened
L₂ = longueur approximative, l'écrou étant bloqué

P-GEV R-WD

mit Weichdichtung NBR* (z. B. Perbunan)
Einschraubgewinde: Whitworth-Rohrgewinde (zylindrisch)

with captive seal: NBR* (e. g. Perbunan)
Stud thread: BSP thread (parallel)

avec joint mou: NBR* (p. ex. Perbunan)
Filetage mâle: Whitworth (cylindrique)



DIN-ISO 228 (R ..., DIN 259)

Reihe Series Série	PN bar (psi)	Rohr-AD Tube OD Tube Ø ext.	G	Typ Type Désignation	Best.-Nr. Reference Réf.	kg per 100 St. kg per 100 pcs. kg par 100 p.	L ₅	L ₂	l	i	d	S ₁	S ₂
500 (7252)		6	G 1/8 A	P-GEV 6 LR-WD	373115	2,5	15,5	23	8,5	8	13,9	14	14
		6	G 1/4 A	P-GEV 6 L/R 1/4-WD	605925	4,1	17	24,5	10	12	18,9	19	14
		8	G 1/4 A	P-GEV 8 LR-WD	373116	4,5	17	25	10	12	18,9	19	17
		8	G 1/8 A	P-GEV 8 L/R 1/8-WD	605926	3,8	16,5	24	9,5	8	13,9	14	17
400 (5801)		8	G 3/8 A	P-GEV 8 L/R 3/8-WD	605927	6,0	18,5	26	11,5	12	21,9	22	17
500 (7252)		10	G 1/4 A	P-GEV 10 LR-WD	373117	4,7	18	26	11	12	18,9	19	19
		10	G 3/8 A	P-GEV 10 L/R 3/8-WD	602560	6,5	19,5	27	12,5	12	21,9	22	19
		10	G 1/2 A	P-GEV 10 L/R 1/2-WD	605928	7,6	21	27,5	13	14	26,9	27	19
400 (5801)		12	G 1/4 A	P-GEV 12 L/R 1/4-WD	373119	6,3	19	27	12	12	18,9	19	22
		12	G 3/8 A	P-GEV 12 LR-WD	373118	6,0	19,5	27	12,5	12	21,9	22	22
		12	G 1/2 A	P-GEV 12 L/R 1/2-WD	602513	10,0	20	28	13	14	26,9	27	22
		15	G 1/2 A	P-GEV 15 LR-WD	373120	11,5	21	28,5	13,5	14	26,9	24	27
		15	G 3/8 A	P-GEV 15 L/R 3/8-WD	605443	9,3	20,5	29	14	12	21,9	27	27
		18	G 1/2 A	P-GEV 18 LR-WD	373121	12,9	22	31	14,5	14	26,9	27	32
250 (3626)		18	G 3/4 A	P-GEV 18 L/R 3/4-WD	605215	18,0	22	31	14,5	16	31,9	32	32
		22	G 3/4 A	P-GEV 22 LR-WD	373122	17,6	24	33	16,5	14	26,9	32	36
		28	G 1 A	P-GEV 28 LR-WD	373123	24,7	25	34	17,5	18	39,9	41	41
		35	G 1 1/4 A	P-GEV 35 LR-WD	373124	40,7	28	39	17,5	20	49,9	50	50
		42	G 1 1/2 A	P-GEV 42 LR-WD	373125	45,6	30	42	19	22	54,9	55	60
800 (11603)		6	G 1/4 A	P-GEV 6 SR-WD	373126	5,0	20	28	13	12	18,9	19	17
		8	G 1/4 A	P-GEV 8 SR-WD	373127	5,5	22	30	15	12	18,9	19	19
		8	G 3/8 A	P-GEV 8 S/R 3/8-WD	604229	5,3	22,5	30,5	15,5	12	21,9	22	19
		10	G 3/8 A	P-GEV 10 SR-WD	373128	8,2	22,5	31	15	12	21,9	22	22
		10	G 1/4 A	P-GEV 10 S/R 1/4-WD	605114	7,5	22	30,5	14,5	12	18,9	19	22
		10	G 1/2 A	P-GEV 10 S/R 1/2-WD	605932	8,9	25	33,5	17,5	14	26,9	27	22
630 (9137)		12	G 3/8 A	P-GEV 12 SR-WD	373129	9,5	24,5	33	17	12	21,9	22	24
		12	G 1/4 A	P-GEV 12 S/R 1/4-WD	605933	9,5	24	32,5	16,5	12	18,9	22	24
		12	G 1/2 A	P-GEV 12 S/R 1/2-WD	604466	13,5	25	34	17,5	14	26,9	27	24
		14	G 1/2 A	P-GEV 14 SR-WD	373130	14,8	27	37	19	14	26,9	27	27
		16	G 1/2 A	P-GEV 16 SR-WD	373131	15,4	27	37	18,5	14	26,9	27	30
		16	G 3/8 A	P-GEV 16 S/R 3/8-WD	605222	15,2	26	36,5	18	12	21,9	27	30
		16	G 3/4 A	P-GEV 16 S/R 3/4-WD	604561	23,0	29	39	20,5	16	31,9	32	30
420 (6091)		20	G 3/4 A	P-GEV 20 SR-WD	373132	25,3	31	42	20,5	16	31,9	32	36
		25	G 1 A	P-GEV 25 SR-WD	373133	46,5	35	47	23	18	39,9	41	46
		25	G 3/4 A	P-GEV 25 S/R 3/4-WD	604562	45,5	35	47	23	16	31,9	41	46
		30	G 1 1/4 A	P-GEV 30 SR-WD	373134	64,4	37	50	23,5	20	49,9	50	50
		38	G 1 1/2 A	P-GEV 38 SR-WD	373135	88,9	42	57	26	22	54,9	55	60

L₂ = Ungefährmaß bei angezogener Überwurfmutter
L₂ = approximate length with nut tightened
L₂ = longueur approximative, l'écrou étant bloqué

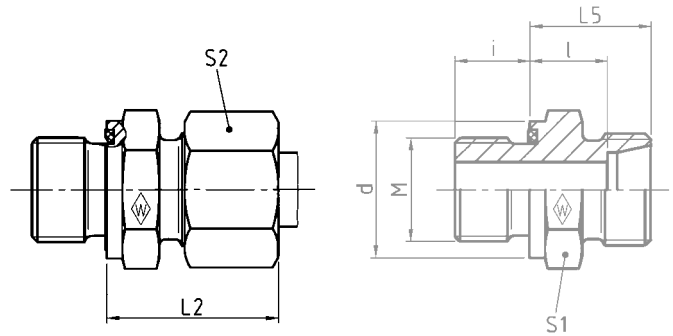
* FPM (z. B. Viton) auf Anfrage
* FPM (e. g. Viton) on request
* FPM (p. ex. Viton) sur demande

P-GEV M-WD

mit Weichdichtung NBR* (z. B. Perbunan)
Einschraubgewinde: Metrisches Gewinde (zylindrisch)

with captive seal: NBR* (e. g. Perbunan)
Stud thread: metric (parallel)

avec joint mou: NBR* (p. ex. Perbunan)
Filetage mâle: métrique (cylindrique)



Reihe Series Série	PN bar (psi)	Rohr-AD Tube OD Tube Ø ext.	M	Typ Type Désignation	Best.-Nr. Reference Réf.	kg per 100 St. kg per 100 pcs. kg par 100 p.	L ₅	L ₂	l	i	d	S ₁	S ₂
L	500 (7252)	6	M 10 x 1	P-GEV 6 LM-WD	373136	2,5	15,5	23	8,5	8	13,9	14	14
		8	M 12 x 1,5	P-GEV 8 LM-WD	373137	4,0	17	25	10	12	16,9	17	17
		10	M 14 x 1,5	P-GEV 10 LM-WD	373138	4,7	18	26	11	12	18,9	19	19
		10	M 18 x 1,5	P-GEV 10 L/M 18 x 1,5-WD	605930	7,6	19,5	27	12,5	12	23,9	24	19
		10	M 22 x 1,5	P-GEV 10 L/M 22 x 1,5-WD	605931	8,3	20	27,5	13	14	26,9	27	19
	400 (5801)	12	M 16 x 1,5	P-GEV 12 LM-WD	373139	6,3	19,5	27	12,5	12	21,9	22	22
		12	M 18 x 1,5	P-GEV 12 L/M 18 x 1,5-WD	602562	7,8	17	27	12,5	12	23,9	24	22
		12	M 22 x 1,5	P-GEV 12 L/M 22 x 1,5-WD	602563	9,5	20	27,5	13	14	26,9	27	22
		15	M 18 x 1,5	P-GEV 15 LM-WD	373140	9,5	20,5	29	13,5	12	23,9	24	27
		15	M 22 x 1,5	P-GEV 15 L/M 22 x 1,5-WD	602564	11,5	21	29	14	14	26,9	27	27
18		M 22 x 1,5	P-GEV 18 LM-WD	373141	12,2	22	30	14	14	26,9	27	32	
18		M 18 x 1,5	P-GEV 18 L/M 18 x 1,5-WD	605934	12,9	21,5	31	14,5	12	23,9	27	32	
250 (3626)		22	M 26 x 1,5	P-GEV 22 LM-WD	373142	17,6	24	33	16,5	16	31,9	32	36
	28	M 33 x 2	P-GEV 28 LM-WD	373143	24,7	25	34	17,5	18	39,9	41	41	
	35	M 42 x 2	P-GEV 35 LM-WD	373144	40,7	28	39	17,5	20	49,9	50	50	
	42	M 48 x 2	P-GEV 42 LM-WD	373145	45,6	30	42	19	22	54,9	55	60	
S	800 (11603)	6	M 12 x 1,5	P-GEV 6 SM-WD	373146	4,5	20	28	13	12	16,9	17	17
		8	M 14 x 1,5	P-GEV 8 SM-WD	373147	5,5	22	30	15	12	18,9	19	19
		10	M 16 x 1,5	P-GEV 10 SM-WD	373148	8,2	22,5	31	15	12	21,9	22	22
	630 (9137)	12	M 18 x 1,5	P-GEV 12 SM-WD	373149	10,5	24,5	33	17	12	23,9	24	24
		14	M 20 x 1,5	P-GEV 14 SM-WD	373150	14,8	27	37	19	14	25,9	27	27
		16	M 22 x 1,5	P-GEV 16 SM-WD	373151	15,4	27	37	18,5	14	26,9	27	30
	420 (6091)	20	M 27 x 2	P-GEV 20 SM-WD	373152	25,3	31	42	20,5	16	31,9	32	36
		25	M 33 x 2	P-GEV 25 SM-WD	373153	46,5	35	47	23	18	39,9	41	46
		30	M 42 x 2	P-GEV 30 SM-WD	373154	64,4	37	50	23,5	20	49,9	50	50
		38	M 48 x 2	P-GEV 38 SM-WD	373155	88,9	42	57	26	22	54,9	55	60

L₂ = Ungefährmaß bei angezogener Überwurfmutter
L₂ = approximate length with nut tightened
L₂ = longueur approximative, l'écrou étant bloqué

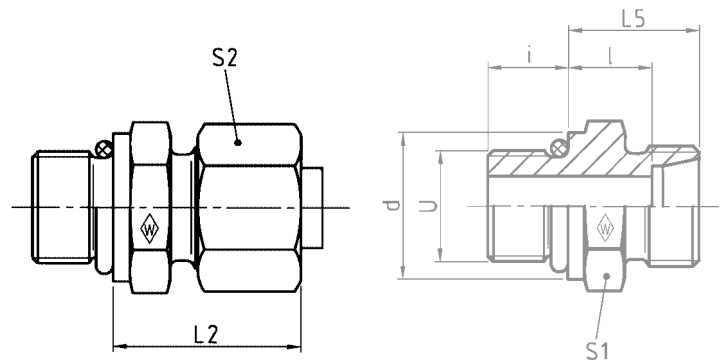
* FPM (z. B. Viton) auf Anfrage
* FPM (e. g. Viton) on request
* FPM (p. ex. Viton) sur demande

P-GEV UNF/UN

mit O-Ring NBR* (z. B. Perbunan)
Einschraubgewinde: UST (SAE J 514)

with O-ring NBR* (e. g. Perbunan)
Stud thread: UST (SAE J 514)

avec joint torique NBR* (p. ex. Perbunan)
Filetage mâle: UST (SAE J 514)



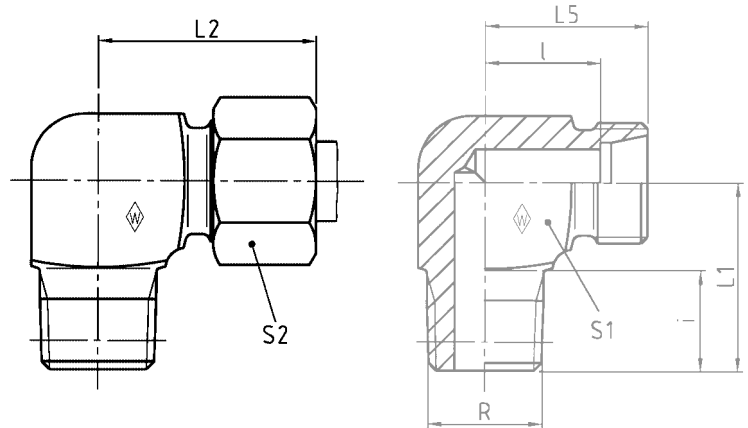
Reihe Series Série	PN bar (psi)	Rohr-AD Tube OD Tube Ø ext.	Typ Type Désignation U	Best.-Nr. Reference Réf.	kg per 100 St. kg per 100 pcs.		L ₂	L ₅	l	i	d	S ₁	S ₂	*O-Ring *O-ring *Joint torique
					kg per 100 p.									
L	400 (5801)	6	P-GEV 6 L / 9/16-18 UNF	373157	3,7		25	17	10	10	17,6	19	14	11,9 x 1,98
		8	P-GEV 8 L / 7/16-20 UNF	373158	3,2		25	17	10	9	14,4	17	17	8,92 x 1,83
		8	P-GEV 8 L / 9/16-18 UNF	373159	3,7		25	17	10	10	17,6	19	17	11,9 x 1,98
		10	P-GEV 10 L / 7/16-20 UNF	373160	4,0		26	18	11	9	14,4	17	19	8,92 x 1,83
		10	P-GEV 10 L / 9/16-18 UNF	373161	4,6		26	18	11	10	17,6	19	19	11,9 x 1,98
		10	P-GEV 10 L / 3/4-16 UNF	373162	7,6		28	20	13	11	22,3	24	19	16,36 x 2,20
		12	P-GEV 12 L / 9/16-18 UNF	373164	6,1		26	18	11	10	17,6	19	22	11,9 x 1,98
		12	P-GEV 12 L / 3/4-16 UNF	373165	7,6		28	20	13	11	22,3	24	22	16,36 x 2,20
		12	P-GEV 12 L / 7/8-14 UNF	373166	8,8		29	21	14	12,7	25,5	27	22	19,18 x 2,46
	15	P-GEV 15 L / 3/4-16 UNF	373168	9,5		29	21	14	11	22,3	24	27	16,36 x 2,20	
	15	P-GEV 15 L / 7/8-14 UNF	373169	11,0		30	22	15	12,7	25,5	27	27	19,18 x 2,46	
	18	P-GEV 18 L / 3/4-16 UNF	373170	12,5		31	22	14,5	11	22,3	27	32	16,36 x 2,20	
	18	P-GEV 18 L / 7/8-14 UNF	373171	13,2		31	22	14,5	12,7	25,5	27	32	19,18 x 2,46	
	22	P-GEV 22 L / 7/8-14 UNF	373172	17,2		33	24	16,5	12,7	25,5	32	36	19,18 x 2,46	
	22	P-GEV 22 L / 1 1/16-12 UN	373173	18,5		33	24	16,5	15	31,9	32	36	23,47 x 2,95	
	28	P-GEV 28 L / 7/8-14 UNF	373174	22,0		34	25	17,5	12,7	25,5	41	41	19,18 x 2,46	
	28	P-GEV 28 L / 1 5/16-12 UN	373175	25,0		34	25	17,5	15	38,2	41	41	29,74 x 2,95	
	35	P-GEV 35 L / 1 5/8-12 UN	373177	40,0		39	28	17,5	15	47,7	50	50	37,46 x 3	
42	P-GEV 42 L / 1 5/8-12 UN	374346	46,2		42	30	19	15	47,7	55	55	37,46 x 3		
S	630 (9137)	12	P-GEV 12 S / 3/4-16 UNF	373180	10,0		34	25	17,5	11	22,3	24	24	16,36 x 2,20
		16	P-GEV 16 S / 3/4-16 UNF	373182	13,0		34	24	15,5	11	22,3	24	30	16,36 x 2,20
		16	P-GEV 16 S / 7/8-14 UNF	373183	15,0		37	27	18,5	12,7	25,5	27	30	19,18 x 2,46
	400 (5801)	20	P-GEV 20 S / 3/4-16 UNF	373184	22,0		42	31	20,5	11	22,3	32	36	16,36 x 2,20
		20	P-GEV 20 S / 7/8-14 UNF	373185	23,0		42	31	20,5	12,7	25,5	32	36	19,18 x 2,46
		20	P-GEV 20 S / 1 1/16-12 UN	373186	25,0		42	31	20,5	15	31,9	32	36	23,47 x 2,95
		25	P-GEV 25 S / 1 5/16-12 UN	373189	46,0		47	35	23	15	38,2	41	46	29,74 x 2,95
315 (4569)	30	P-GEV 30 S / 1 5/8-12 UN	373191	62,0		50	37	23,5	15	47,7	50	50	37,46 x 3	

L₂ = Ungefährmaß bei angezogener Überwurfmutter
L₂ = approximate length with nut tightened
L₂ = longueur approximative, l'écrou étant bloqué

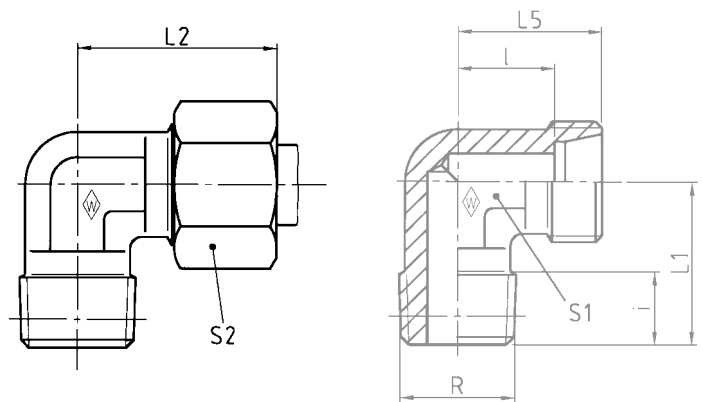
* FPM (z. B. Viton) auf Anfrage
* FPM (e. g. Viton) on request
* FPM (p. ex. Viton) sur demande

P-WEV RK

Einschraub-
gewinde: Whitworth-Rohrgewinde (kegelig)
Stud thread: BSP thread (taper)
Filetage mâle: Whitworth (conique)



Rohr-AD 4 bis 12 mm = Profilmaterial
Tube OD 4 to 12 mm = profile material
Tube Ø ext. 4 à 12 mm = matériau profilé



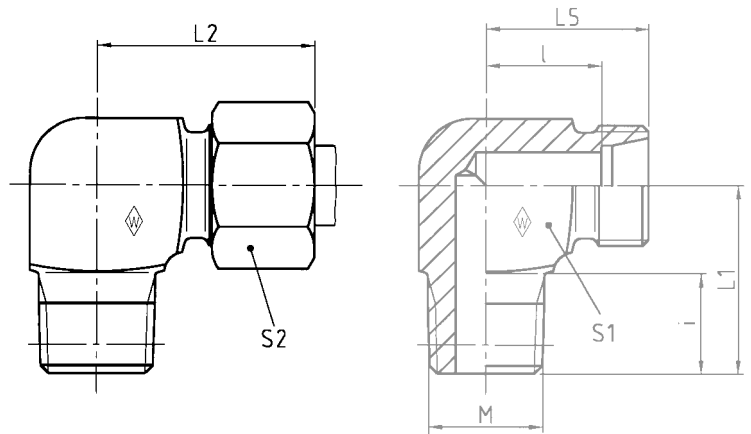
Reihe Séries Série	PN bar (psi)	Rohr-AD Tube OD Tube Ø ext.	R	Typ Type Désignation	Best.-Nr. Reference Réf.	kg per 100 St. kg per 100 pcs. kg par 100 p.	L ₁	L ₂	L ₅	l	i	S ₁	S ₂
LL	100 (1450)	4	R 1/8 keg	S-WEV 4 LLRK	038408	2,1	17	21	15	11	8	11	10
		6	R 1/8 keg	S-WEV 6 LLRK	038410	2,4	17	21	15	9,5	8	11	12
		8	R 1/8 keg	S-WEV 8 LLRK	038411	3,4	20	23	17	11,5	8	12	14
L	250 (3626)	6	R 1/8 keg	P-WEV 6 LRK	373195	4,0	20	27	19	12	8	12	14
		6	R 1/4 keg	P-WEV 6 L/R 1/4 K	373196	6,0	26	29	21	14	12	14	14
		8	R 1/4 keg	P-WEV 8 LRK	373197	6,6	26	29	21	14	12	14	17
		10	R 1/4 keg	P-WEV 10 LRK	373198	8,3	27	30	22	15	12	17	19
		10	R 3/8 keg	P-WEV 10 L/R 3/8 K	373199	9,0	27	30	22	15	12	17	19
		12	R 1/4 keg	P-WEV 12 L/R 1/4 K	373200	11,4	28	32	24	17	12	19	22
		12	R 3/8 keg	P-WEV 12 LRK	373201	11,8	28	32	24	17	12	19	22
	15	R 1/2 keg	P-WEV 15 LRK	373202	13,0	34	36	28	21	14	19	27	
S	630* (9137)	160 (2321)	R 1/2 keg	P-WEV 18 LRK	373203	16,6	36	40	31	23,5	14	24	32
		6	R 1/4 keg	P-WEV 6 SRK	373204	7,2	26	31	23	16	12	14	17
		8	R 1/4 keg	P-WEV 8 SRK	373205	8,8	27	32	24	17	12	17	19
		10	R 3/8 keg	P-WEV 10 SRK	373206	13,4	28	34	25	17,5	12	19	22
		12	R 3/8 keg	P-WEV 12 SRK	373207	16,5	28	38	29	21,5	12	22	24
		14	R 1/2 keg	P-WEV 14 SRK	373208	15,3	32	40	30	22	14	19	27
	400 (5801)	16	R 1/2 keg	P-WEV 16 SRK	373209	17,9	32	43	33	24,5	14	24	30

L₂ = Ungefährmaß bei angezogener Überwurfmutter
L₂ = approximate length with nut tightened
L₂ = longueur approximative, l'écrou étant bloqué

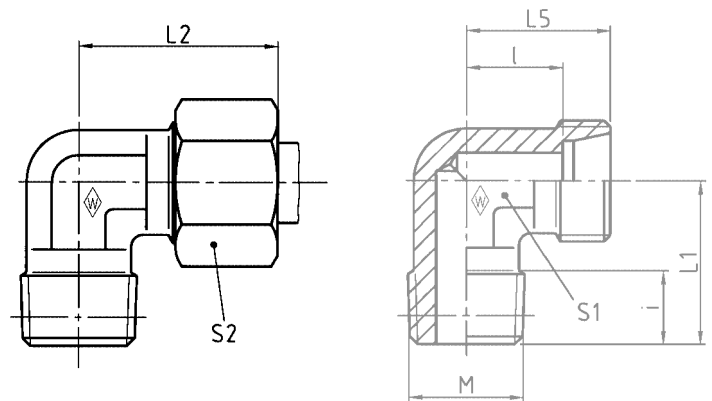
* PN 630 nur bei kegeligen Einschraubblöchern, sonst PN 400
* PN 630 only applies to taper port forms;
PN 400 is applicable to parallel port forms
* PN 630 seulement avec taraudage conique, sinon PN 400

P-WEV MK

Einschraub-
gewinde: Metrisches Gewinde (kegelig)
Stud thread: metric (taper)
Filetage mâle: métrique (conique)



Rohr-AD 4 bis 12 mm = Profilmaterial
Tube OD 4 to 12 mm = profile material
Tube Ø ext. 4 à 12 mm = matériau profilé



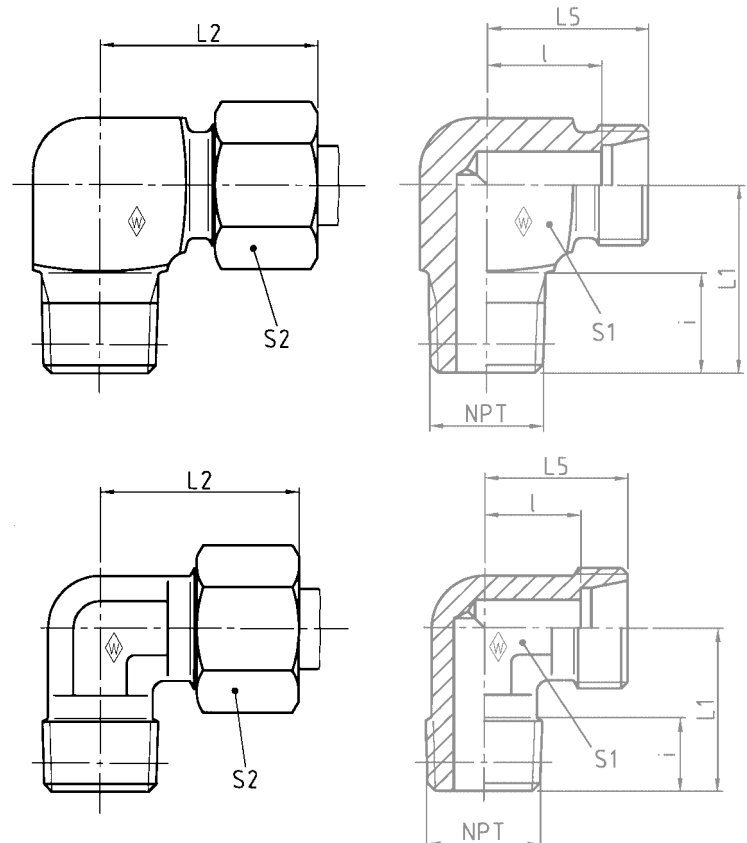
Reihe Series Série	PN bar (psi)	Rohr-AD Tube OD Tube Ø ext.		Typ Type Désignation	Best.-Nr. Reference Réf.	kg per 100 St. kg per 100 pcs. kg par 100 p.	L ₁	L ₂	L ₅	l	i	S ₁	S ₂	
		M												
LL	100 (1450)	4	M 8 x 1	keg	S-WEV 4 LLMK	038427	2,1	17	21	15	11	8	11	10
		6	M 10 x 1	keg	S-WEV 6 LLMK	038429	2,4	17	21	15	9,5	8	11	12
		8	M 10 x 1	keg	S-WEV 8 LLMK	038430	3,4	20	23	17	11,5	8	12	14
L	250 (3626)	6	M 10 x 1	keg	P-WEV 6 LMK	373213	4,0	20	27	19	12	8	12	14
		8	M 12 x 1,5	keg	P-WEV 8 LMK	373214	6,6	26	29	21	14	12	14	17
		10	M 14 x 1,5	keg	P-WEV 10 LMK	373215	8,3	27	30	22	15	12	17	19
		12	M 16 x 1,5	keg	P-WEV 12 LMK	373216	11,8	28	32	24	17	12	19	22
		15	M 18 x 1,5	keg	P-WEV 15 LMK	373217	12,0	32	36	28	21	12	19	27
	160 (2321)	18	M 22 x 1,5	keg	P-WEV 18 LMK	373218	16,6	36	40	31	23,5	14	24	32
S	630* (9137)	6	M 12 x 1,5	keg	P-WEV 6 SMK	373219	7,2	26	31	23	16	12	14	17
		8	M 14 x 1,5	keg	P-WEV 8 SMK	373220	8,8	27	32	24	17	12	17	19
		10	M 16 x 1,5	keg	P-WEV 10 SMK	373221	13,4	28	34	25	17,5	12	19	22
		12	M 18 x 1,5	keg	P-WEV 12 SMK	373222	16,5	28	38	29	21,5	12	22	24
		14	M 20 x 1,5	keg	P-WEV 14 SMK	373223	15,3	32	40	30	22	14	19	27
	400 (5801)	16	M 22 x 1,5	keg	P-WEV 16 SMK	373224	17,9	32	43	33	24,5	14	24	30

L₂ = Ungefährmaß bei angezogener Überwurfmutter
L₂ = approximate length with nut tightened
L₂ = longueur approximative, l'écrou étant bloqué

* PN 630 nur bei kegeligen Einschraubblöchern, sonst PN 400
* PN 630 only applies to taper port forms;
PN 400 is applicable to parallel port forms
* PN 630 seulement avec taraudage conique, sinon PN 400

P-WEV NPT

Einschraub-
gewinde: NPT (ANSI/ASME B1.20.1-1983)
Stud thread: NPT (ANSI/ASME B1.20.1-1983)
Filetage mâle: NPT (ANSI/ASME B1.20.1-1983)

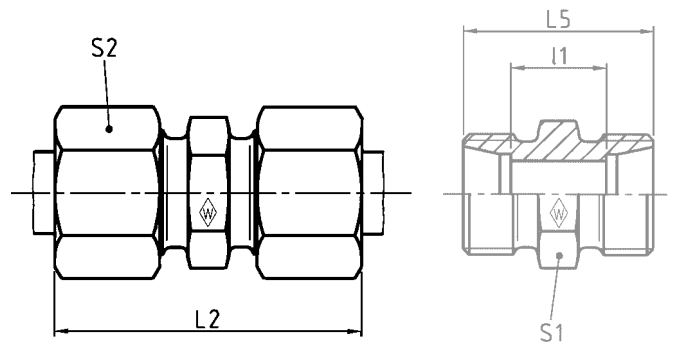


Rohr-AD 4 bis 12 mm = Profilmaterial
Tube OD 4 to 12 mm = profile material
Tube Ø ext. 4 à 12 mm = matériau profilé

Reihe Series Série	PN bar (psi)	Rohr-AD Tube OD Tube Ø ext.	NPT	Typ Type Désignation	Best.-Nr. Reference Réf.	kg per 100 St. kg per 100 pcs. kg par 100 p.	L ₁	L ₂	L ₅	l	i	S ₁	S ₂
LL	100 (1450)	4	1/8 NPT	S-WEV 4 LL/ 1/8 NPT	038383	2,0	17	21	15	11	10	10	10
		6	1/8 NPT	S-WEV 6 LL/ 1/8 NPT	038385	2,3	17	21	15	9,5	10	10	12
		8	1/8 NPT	S-WEV 8 LL/ 1/8 NPT	038386	3,3	20	23	17	11,5	10	12	14
L	250 (3626)	6	1/8 NPT	P-WEV 6 L/ 1/8 NPT	373228	4,0	20	27	19	12	10	12	14
		8	1/4 NPT	P-WEV 8 L/ 1/4 NPT	373229	6,3	26	29	21	14	15	14	17
	160 (2321)	10	1/4 NPT	P-WEV 10 L/ 1/4 NPT	373230	8,2	27	30	22	15	15	17	19
		12	1/4 NPT	P-WEV 12 L/ 1/4 NPT	373231	11,4	28	32	24	17	15	19	22
		12	3/8 NPT	P-WEV 12 L/ 3/8 NPT	373232	11,6	28	32	24	17	15	19	22
	100 (1450)	15	1/2 NPT	P-WEV 15 L/ 1/2 NPT	373233	14,0	34	36	28	21	14	19	27
		18	1/2 NPT	P-WEV 18 L/ 1/2 NPT	373234	16,5	36	40	31	23,5	20	24	32
S	630 (9137)	22	3/4 NPT	P-WEV 22 L/ 3/4 NPT	373235	23,5	42	44	35	27,5	20	27	36
		28	1 NPT	P-WEV 28 L/1 NPT	373236	37,5	48	47	38	30,5	23	36	41
		6	1/4 NPT	P-WEV 6 S/ 1/4 NPT	373239	6,9	26	31	23	16	15	14	17
	400 (5801)	8	1/4 NPT	P-WEV 8 S/ 1/4 NPT	373240	9,5	27	32	24	17	15	17	19
		10	3/8 NPT	P-WEV 10 S/ 3/8 NPT	373241	13,3	28	34	25	17,5	15	19	22
		12	3/8 NPT	P-WEV 12 S/ 3/8 NPT	373242	16,8	28	38	29	21,5	15	22	24
	1	14	1/2 NPT	P-WEV 14 S/ 1/2 NPT	373243	16,6	33	40	30	22	15	19	27
		16	1/2 NPT	P-WEV 16 S/ 1/2 NPT	373244	18,4	33	43	33	24,5	17	24	30
		20	3/4 NPT	P-WEV 20 S/ 3/4 NPT	373245	30,0	42	48	37	26,5	20	27	36
	25	1 NPT	P-WEV 25 S/1 NPT	373246	56,6	48	54	42	30	23	36	46	

L₂ = Ungefährmaß bei angezogener Überwurfmutter
L₂ = approximate length with nut tightened
L₂ = longueur approximative, l'écrou étant bloqué

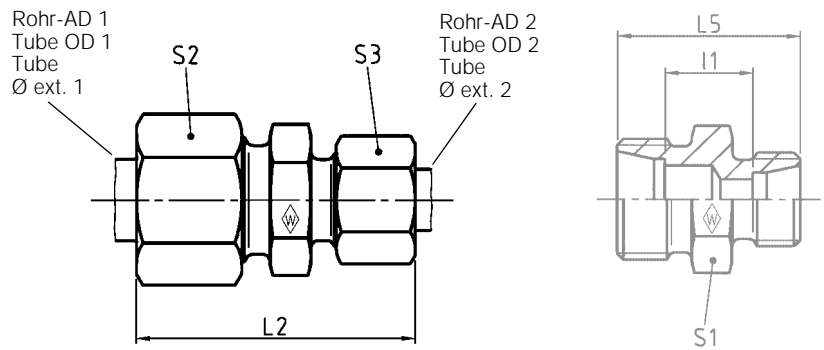
P-GV



Reihe Series Série	PN bar (psi)	Rohr-AD Tube OD Tube Ø ext.	Typ Type Désignation	Best.-Nr. Reference Réf.	kg per 100 St. kg per 100 pcs. kg par 100 p.	L ₂	L ₅	l ₁	S ₁	S ₂
LL	100 (1450)	4	S-GV 4 LL	038557	1,4	31	20	12	9	10
		6	S-GV 6 LL	038559	2,1	32	20	9	11	12
		8	S-GV 8 LL	038560	2,6	35	23	12	12	14
	500 (7252)	6	P-GV 6 L	373362	3,5	39	24	10	12	14
		8	P-GV 8 L	373363	4,9	40	25	11	14	17
		10	P-GV 10 L	373364	6,9	42	27	13	17	19
L	400 (5801)	12	P-GV 12 L	373365	8,5	43	28	14	19	22
		15	P-GV 15 L	373366	13,8	46	30	16	24	27
		18	P-GV 18 L	373367	19,5	48	31	16	27	32
	250 (3626)	22	P-GV 22 L	373368	26,2	52	35	20	32	36
		28	P-GV 28 L	373369	31,5	54	36	21	41	41
		35	P-GV 35 L	373370	49,4	63	41	20	46	50
		42	P-GV 42 L	373371	72,8	66	43	21	55	60
	800 (11603)	6	P-GV 6 S	373372	5,9	45	30	16	14	17
		8	P-GV 8 S	373373	7,8	47	32	18	17	19
		10	P-GV 10 S	373374	11,0	49	32	17	19	22
S	630 (9137)	12	P-GV 12 S	373375	13,6	51	34	19	22	24
		14	P-GV 14 S	373376	18,2	57	38	22	24	27
		16	P-GV 16 S	373377	22,3	57	38	21	27	30
	420 (6091)	20	P-GV 20 S	373378	34,7	66	44	23	32	36
		25	P-GV 25 S	373379	66,9	74	50	26	41	46
		30	P-GV 30 S	373380	80,9	80	54	27	46	50
		38	P-GV 38 S	373381	119,4	90	61	29	55	60

L₂ = Ungefährmaß bei angezogener Überwurfmutter
L₂ = approximate length with nut tightened
L₂ = longueur approximative, l'écrou étant bloqué

P-GV .../...

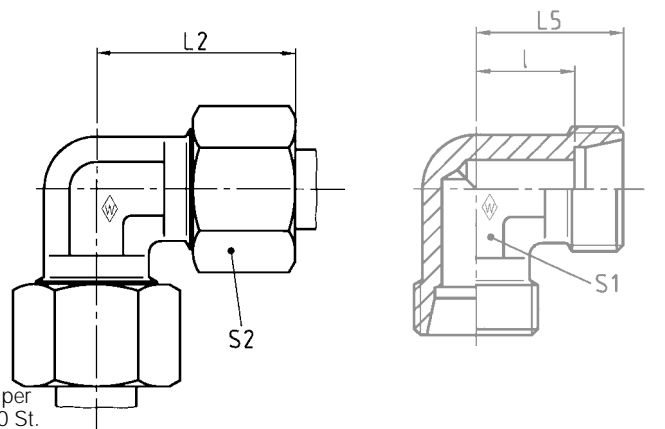
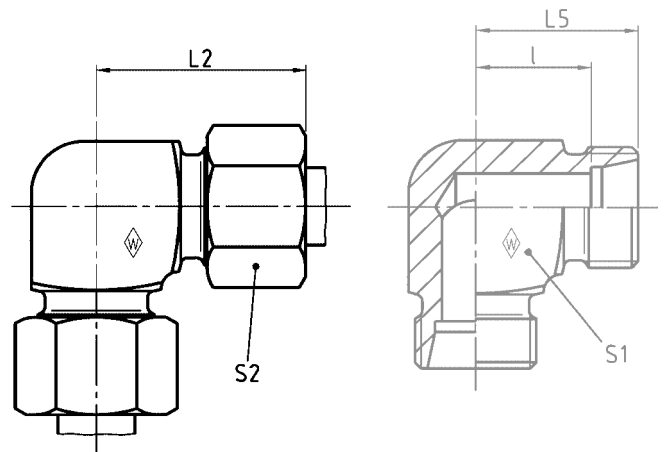


Reihe Series Série	PN bar (psi)	Rohr-AD 1 Tube OD 1 Tube Ø ext. 1	Rohr-AD 2 Tube OD 2 Tube Ø ext. 2	Typ Type Désignation	Best.-Nr. Reference Réf.	kg per							
						100 St. kg per 100 pcs. kg par 100 p.	L ₂	L ₅	I ₁	S ₁	S ₂	S ₃	
LL	100 (1450)	6	4	S-GV 6/ 4 LL	060065	1,8	32,5	20	10,5	11	12	10	
		8	4	S-GV 8/ 4 LL	024214	2,1	34	22	12,5	12	14	10	
	500 (7252)	8	6	P-GV 8/ 6 L	374530	4,4	40	25	11	14	17	14	
		10	6	P-GV 10/ 6 L	374531	5,4	41	26	12	17	19	14	
		10	8	P-GV 10/ 8 L	602920	5,6	41	26	12	17	19	17	
		12	6	P-GV 12/ 6 L	602654	6,4	42	27	13	19	22	14	
L	400 (5801)	12	8	P-GV 12/ 8 L	374532	7,2	42	27	13	19	22	17	
		12	10	P-GV 12/10 L	374533	8	43	28	14	19	22	19	
		15	10	P-GV 15/10 L	374534	11,4	44,5	29	15	24	27	19	
		15	12	P-GV 15/12 L	374535	11,8	44,5	29	15	24	27	22	
		18	10	P-GV 18/10 L	602655	14,1	46	30	15,5	27	32	19	
		18	12	P-GV 18/12 L	374536	15,7	46	30	15,5	27	32	22	
	250 (3626)	18	15	P-GV 18/15 L	374537	17,5	47,5	31	16,5	27	32	27	
		22	15	P-GV 22/15 L	374538	21,4	49,5	33	18,5	32	36	27	
		22	18	P-GV 22/18 L	374762	23,8	50	33	18	32	36	32	
		28	22	P-GV 28/22 L	604368	32,6	54	36	21	41	41	36	
630 (9137)	16	12	P-GV 16/12 S	374539	22,3	54	36	20	27	30	24		
S	420 (6091)	20	16	P-GV 20/16 S	374540	30	62,5	42	23	32	36	30	
		25	16	P-GV 25/16 S	604471	52,6	68	46	25,5	41	46	30	
		25	20	P-GV 25/20 S	374541	55,2	71	48	25,5	41	46	36	

L₂ = Ungefährmaß bei angezogener Überwurfmutter
 L₂ = approximate length with nut tightened
 L₂ = longueur approximative, l'écrou étant bloqué

P-WV

Rohr-AD 4 bis 12 mm = Profilmaterial
Tube OD 4 to 12 mm = profile material
Tube Ø ext. 4 à 12 mm = matériau profilé

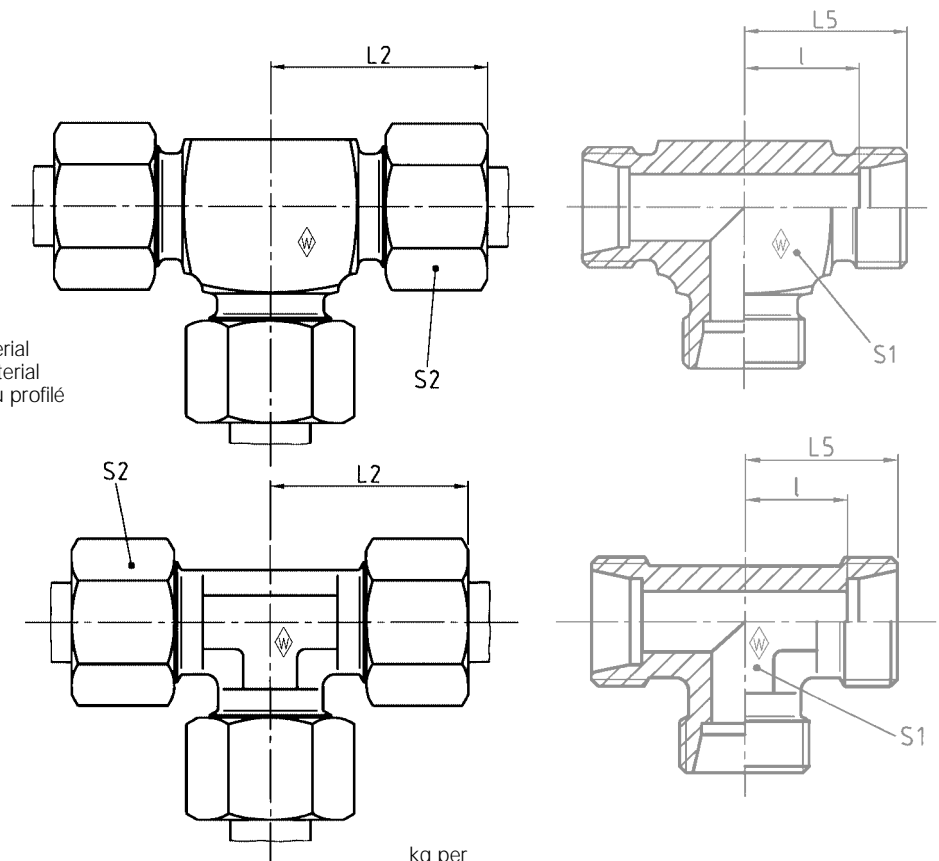


Reihe Series Série	PN bar (psi)	Rohr-AD Tube OD Tube Ø ext.	Typ Type Type Désignation	Best.-Nr. Reference Réf.	kg per 100 St. kg per 100 pcs. kg par 100 p.	L ₂	L ₅	l	S ₁	S ₂
LL	100 (1450)	4	S-WV 4 LL	038576	2,5	21	15	11	8	10
		6	S-WV 6 LL	038578	2,7	21	15	9,5	11	12
		8	S-WV 8 LL	038579	3,8	23	17	11,5	12	14
L	500 (7252)	6	P-WV 6 L	373385	4,9	27	19	12	12	14
		8	P-WV 8 L	373386	7,6	29	21	14	14	17
		10	P-WV 10 L	373387	9,6	30	22	15	17	19
	400 (5801)	12	P-WV 12 L	373388	13,5	32	24	17	19	22
		15	P-WV 15 L	373389	15,8	36	28	21	19	27
		18	P-WV 18 L	373390	23,9	40	31	23,5	24	32
S	250 (3626)	22	P-WV 22 L	373391	31,7	44	35	27,5	27	36
		28	P-WV 28 L	373392	42,0	47	38	30,5	36	41
		35	P-WV 35 L	373393	75,9	56	45	34,5	41	50
	800 (11603)	42	P-WV 42 L	373394	107,8	63	51	40	50	60
		6	P-WV 6 S	373395	8,5	31	23	16	14	17
S	630 (9137)	8	P-WV 8 S	373396	11,7	32	24	17	17	19
		10	P-WV 10 S	373397	16,1	34	25	17,5	19	22
		12	P-WV 12 S	373398	20,5	38	29	21,5	22	24
	420 (6091)	14	P-WV 14 S	373399	20,7	40	30	22	19	27
		16	P-WV 16 S	373400	25,0	43	33	24,5	24	30
	20	P-WV 20 S	373401	40,7	48	37	26,5	27	36	
	25	P-WV 25 S	373402	77,6	54	42	30	36	46	
30	P-WV 30 S	373403	97,4	62	49	35,5	41	50		
38	P-WV 38 S	373404	131,8	72	57	41	50	60		

L₂ = Ungefährmaß bei angezogener Überwurfmutter
L₂ = approximate length with nut tightened
L₂ = longueur approximative, l'écrou étant bloqué

P-TV

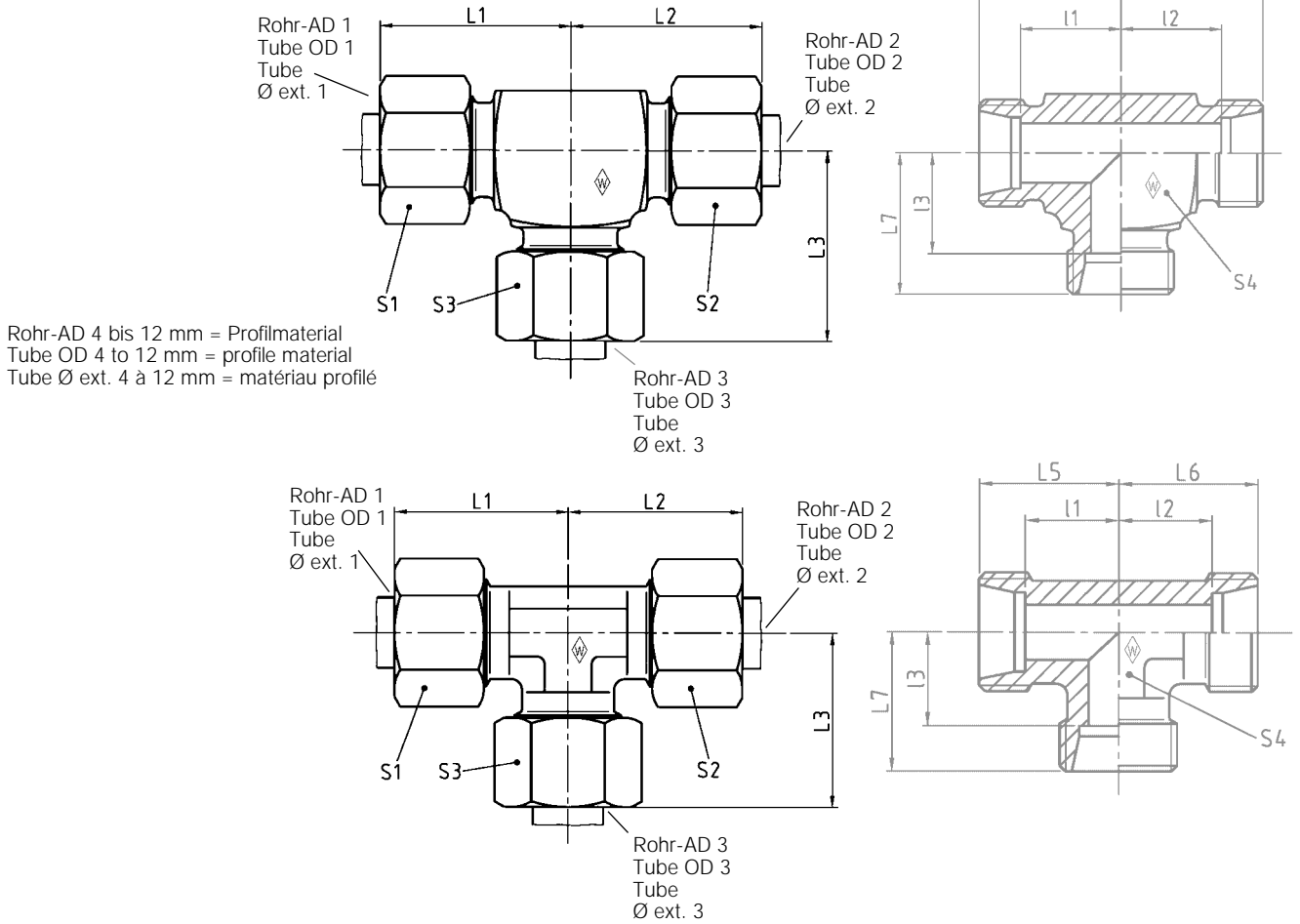
Rohr-AD 4 bis 12 mm = Profilmaterial
Tube OD 4 to 12 mm = profile material
Tube Ø ext. 4 à 12 mm = matériau profilé



Reihe Series Série	PN bar (psi)	Rohr-AD Tube OD Tube Ø ext.	Typ Type Désignation	Best.-Nr. Reference Réf.	kg per 100 St. kg per 100 pcs. kg par 100 p.	L ₂	L ₅	l ₁	S ₁	S ₂
LL	100 (1450)	4	S-TV 4 LL	038600	2,8	21	15	11	8	10
		6	S-TV 6 LL	038602	3,7	21	15	9,5	10	12
		8	S-TV 8 LL	038603	5,1	23	17	11,5	12	14
L	500 (7252)	6	P-TV 6 L	373408	7,1	27	19	12	12	14
		8	P-TV 8 L	373409	10,1	29	21	14	14	17
		10	P-TV 10 L	373410	13,0	30	22	15	17	19
	400 (5801)	12	P-TV 12 L	373411	17,7	32	24	17	19	22
		15	P-TV 15 L	373412	23,2	36	28	21	19	27
		18	P-TV 18 L	373413	35,4	40	31	23,5	24	32
		22	P-TV 22 L	373414	44,3	44	35	27,5	27	36
250 (3626)	28	P-TV 28 L	373415	61,1	47	38	30,5	36	41	
	35	P-TV 35 L	373416	90,1	56	45	34,5	41	50	
	42	P-TV 42 L	373417	136,8	63	51	40	50	60	
S	800 (11603)	6	P-TV 6 S	373418	12,0	31	23	16	14	17
		8	P-TV 8 S	373419	15,7	32	24	17	17	19
		10	P-TV 10 S	373420	21,2	34	25	17,5	19	22
	630 (9137)	12	P-TV 12 S	373421	28,5	38	29	21,5	22	24
		14	P-TV 14 S	373422	28,5	40	30	22	19	27
		16	P-TV 16 S	373423	35,7	43	33	24,5	24	30
	420 (6091)	20	P-TV 20 S	373424	55,8	48	37	26,5	27	36
		25	P-TV 25 S	373425	106,7	54	42	30	36	46
		30	P-TV 30 S	373426	134,9	62	49	35,5	41	50
		38	P-TV 38 S	373427	202,2	72	57	41	50	60

L₂ = Ungefährmaß bei angezogener Überwurfmutter
L₂ = approximate length with nut tightened
L₂ = longueur approximative, l'écrou étant bloqué

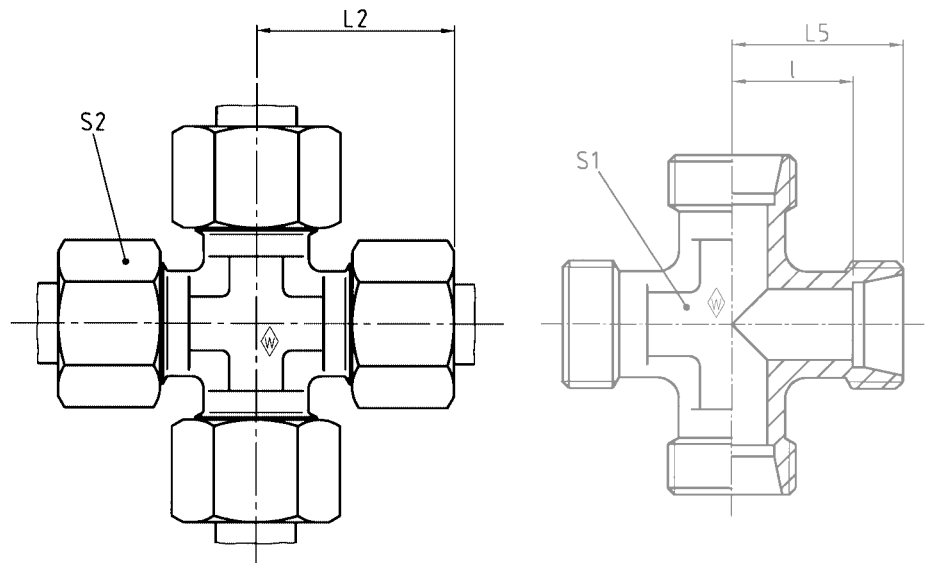
P-TV.../.../...



Reihe Série	PN bar (psi)	Rohr-AD Tube OD Tube Ø ext.			Typ Type Designation	Best.-Nr. Reference Réf.	kg per 100 St. kg per 100 pcs. kg par 100 p.			L ₁	L ₂	L ₃	L ₅	L ₆	L ₇	S ₁	S ₂	S ₃	S ₄	
		1	2	3			l ₁	l ₂	l ₃											
L	500 (7252)	10	10	6	P-TV 10/10/ 6 L	374542	12,5	15	15	15	30	30	30	22	22	22	17	19	14	17
		10	10	8	P-TV 10/10/ 8 L	374543	12,8	15	15	15	30	30	30	22	22	22	17	19	17	17
		12	12	6	P-TV 12/12/ 6 L	602635	16,4	17	17	17	32	32	32	24	24	24	22	22	14	19
		12	12	8	P-TV 12/12/ 8 L	374544	16,8	17	17	17	32	32	32	24	24	24	22	22	17	19
		12	12	10	P-TV 12/12/10 L	374545	16,8	17	17	17	32	32	32	24	24	24	22	22	19	19
		12	12	15	P-TV 12/12/15 L	374546	19,5	21	21	21	36	36	36	28	28	28	22	22	27	19
	400 (5801)	15	12	12	P-TV 15/12/12 L	374547	20,5	21	21	21	36	36	36	28	28	28	27	22	22	19
		15	12	15	P-TV 15/12/15 L	605187	21,2	21	21	21	36	36	36	28	28	28	27	22	27	19
		15	15	8	P-TV 15/15/ 8 L	374549	19,2	21	21	21	36	36	36	28	28	28	27	27	17	19
		15	15	10	P-TV 15/15/10 L	374548	21,7	21	21	21	36	36	36	28	28	28	27	27	19	19
		15	15	12	P-TV 15/15/12 L	606957	21,2	21	21	21	36	36	36	28	28	28	27	27	22	19
		18	12	12	P-TV 18/12/12 L	374552	28,5	23,5	24	24	40	39	39	31	31	31	32	22	22	24
		18	18	10	P-TV 18/18/10 L	374550	30,4	23,5	23,5	24	40	40	39	31	31	31	32	32	19	24
		18	18	12	P-TV 18/18/12 L	374551	30,4	23,5	23,5	24	40	40	39	31	31	31	32	32	22	24
		18	18	15	P-TV 18/18/15 L	605018	31,8	23,5	23,5	24	40	40	39	31	31	31	32	32	27	24
		22	22	10	P-TV 22/22/10 L	374553	39,4	27,5	27,5	28	44	44	43	35	35	35	36	36	19	27
250 (3626)	22	22	15	P-TV 22/22/15 L	374554	41,6	27,5	27,5	28	44	44	43	35	35	35	36	36	27	27	
	28	22	22	P-TV 28/22/22 L	606590	60,6	30,5	30,5	30,5	47	47	47	38	38	38	41	36	36	36	
	28	28	22	P-TV 28/28/22 L	605916	60,8	30,5	30,5	30,5	47	47	47	38	38	38	41	41	36	36	

L₁, L₂ und L₃ = Ungefährmaße bei angezogenen Überwurfmuttern
 L₁, L₂ and L₃ = approximate lengths with nuts tightened
 L₁, L₂ et L₃ = longueurs approximatives, les écrous étant bloqués

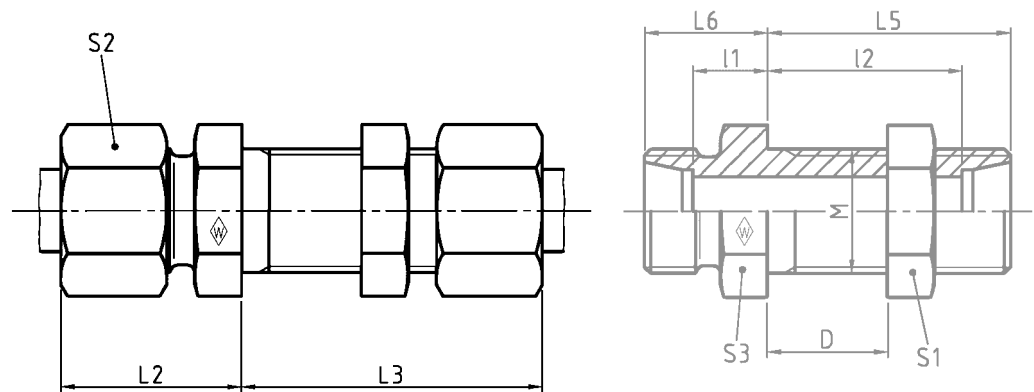
P-KV



Reihe Series Série	PN bar (psi)	Rohr-AD Tube OD Tube Ø ext.	Typ Type Désignation	Best.-Nr. Reference Réf.	kg per 100 St. kg per 100 pcs. kg par 100 p.	L ₂	L ₅	l	S ₁	S ₂
LL	100 (1450)	4	S-KV 4 LL	038624	3,0	21	15	11	9	10
		6	S-KV 6 LL	038626	4,0	21	15	9,5	9	12
		8	S-KV 8 LL	038627	6,0	23	17	11,5	12	14
L	500 (7252)	6	P-KV 6 L	373431	7,7	27	19	12	12	14
		8	P-KV 8 L	373432	10,9	29	21	14	12	17
		10	P-KV 10 L	373433	15,5	30	22	15	14	19
	400 (5801)	12	P-KV 12 L	373434	19,2	32	24	17	17	22
		15	P-KV 15 L	373435	31,1	36	28	21	19	27
		18	P-KV 18 L	373436	48,3	40	31	23,5	24	32
		22	P-KV 22 L	373437	72,4	44	35	27,5	27	36
250 (3626)	28	P-KV 28 L	373438	101,0	47	38	30,5	36	41	
	35	P-KV 35 L	373439	122,8	56	45	34,5	41	50	
	42	P-KV 42 L	373440	175,6	63	51	40	50	60	
S	800 (11603)	6	P-KV 6 S	373441	12,3	31	23	16	12	17
		8	P-KV 8 S	373442	14,8	32	24	17	14	19
		10	P-KV 10 S	373443	23,0	34	25	17,5	17	22
	630 (9137)	12	P-KV 12 S	373444	28,2	38	29	21,5	17	24
		14	P-KV 14 S	373445	35,4	40	30	22	19	27
		16	P-KV 16 S	373446	45,1	43	33	24,5	24	30
420 (6091)	20	P-KV 20 S	373447	70,4	48	37	26,5	27	36	
	25	P-KV 25 S	373448	125,7	54	42	30	36	46	
	30	P-KV 30 S	373449	150,3	62	49	35,5	41	50	
400 (5801)	38	P-KV 38 S	373450	205,1	72	57	41	50	60	

L₂ = Ungefährmaß bei angezogener Überwurfmutter
L₂ = approximate length with nut tightened
L₂ = longueur approximative, l'écrou étant bloqué

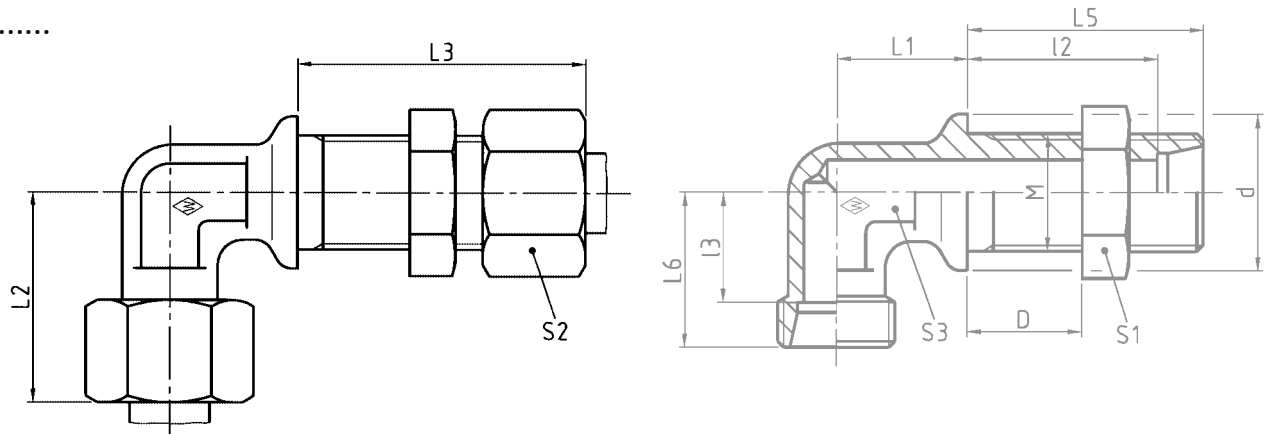
P-GSV



Reihe Series Série	PN bar (psi)	Rohr-AD Tube OD Ø ext.	M	D min.	D max.	Typ Type Désignation	Best.-Nr. Reference Réf.	kg per 100 St. kg per 100 pcs. kg par 100 p.	L ₂	L ₃	L ₅	L ₆	l ₁	l ₂	S ₁	S ₂	S ₃
L	500 (7252)	6	M 12 x 1,5	4	16	P-GSV 6 L m. 6kt M	373451	6,7	22	42	34	14	7	27	17	14	17
		8	M 14 x 1,5	4	16	P-GSV 8 L m. 6kt M	373452	8,4	23	42	34	15	8	27	19	17	19
		10	M 16 x 1,5	4	16	P-GSV 10 L m. 6kt M	373453	11,0	25	43	35	17	10	28	22	19	22
	400 (5801)	12	M 18 x 1,5	4	16	P-GSV 12 L m. 6kt M	373454	13,3	25	44	36	17	10	29	24	22	24
		15	M 22 x 1,5	4	16	P-GSV 15 L m. 6kt M	373455	22,8	27	45	38	19	12	31	30	27	27
		18	M 26 x 1,5	4	16	P-GSV 18 L m. 6kt M	373456	33,2	30	49	40	21	13,5	32,5	36	32	32
		22	M 30 x 2	5	16	P-GSV 22 L m. 6kt M	373457	41,5	33	51	42	44	16,5	34,5	41	36	36
250 (3626)	28	M 36 x 2	5	16	P-GSV 28 L m. 6kt M	373458	52,5	35	52	43	26	18,5	35,5	46	41	41	
	35	M 45 x 2	5	16	P-GSV 35 L m. 6kt M	373459	80,0	40	58	47	29	18,5	36,5	55	50	50	
	42	M 52 x 2	5	16	P-GSV 42 L m. 6kt M	373460	119,3	42	59	47	30	19	36	65	60	60	
S	800 (11603)	6	M 14 x 1,5	4	16	P-GSV 6 S m. 6kt M	373461	9,6	27	44	36	19	12	29	19	17	19
		8	M 16 x 1,5	4	16	P-GSV 8 S m. 6kt M	373462	12,4	28	44	36	20	13	29	22	19	22
		10	M 18 x 1,5	4	16	P-GSV 10 S m. 6kt M	373463	18,1	31	46	37	22	14,5	29,5	24	22	24
	630 (9137)	12	M 20 x 1,5	4	16	P-GSV 12 S m. 6kt M	373464	21,0	31	47	38	22	14,5	30,5	27	24	27
		14	M 22 x 1,5	4	16	P-GSV 14 S m. 6kt M	373465	29,0	35	50	40	25	17	32	30	27	30
		16	M 24 x 1,5	4	16	P-GSV 16 S m. 6kt M	373466	31,0	35	50	40	25	16,5	31,5	32	30	32
		20	M 30 x 2	5	16	P-GSV 20 S m. 6kt M	373467	54,5	39	55	44	28	17,5	33,5	41	36	41
400 (5801)	25	M 36 x 2	5	16	P-GSV 25 S m. 6kt M	373468	89,0	44	59	47	32	20	35	46	46	46	
	30	M 42 x 2	5	16	P-GSV 30 S m. 6kt M	373469	107,7	48	64	51	35	21,5	37,5	50	50	50	
	38	M 52 x 2	5	16	P-GSV 38 S m. 6kt M	373470	173,0	53	68	53	38	22	37	65	60	65	

L₂ und L₃ = Ungefährmaße bei angezogenen Überwurfmuttern
L₂ and L₃ = approximate lengths with nuts tightened
L₂ et L₃ = longueurs approximatives, les écrous étant bloqués

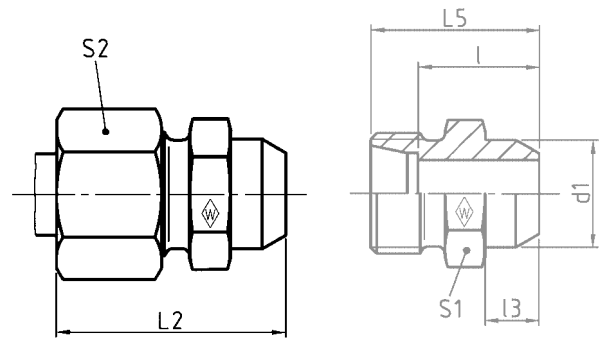
P-WSV



Reihe Series Série	PN bar (psi)	Rohr-AD Tube OD Tube Ø ext.		D min.	D max.	Typ Type Désignation	Best.-Nr. Reference Réf.	kg per 100 St. kg per 100 pcs. kg par 100 p.												
		M	M						L ₁	L ₂	L ₃	L ₄	L ₅	L ₆	l ₂	l ₃	d	S ₁ *	S ₂	S ₃
L	500 (7252)	6	M 12 x 1,5	4	16	P-WSV 6 L m. 6kt M	373471	7,5	14	27	42	34	19	27	12	17	17	14	12	
		8	M 14 x 1,5	4	16	P-WSV 8 L m. 6kt M	373472	9,9	17	29	42	34	21	27	14	19	19	17	12	
		10	M 16 x 1,5	4	16	P-WSV 10 L m. 6kt M	373473	12,0	18	30	43	35	22	28	15	22	22	19	14	
	400 (5801)	12	M 18 x 1,5	4	16	P-WSV 12 L m. 6kt M	373474	15,0	20	32	44	36	24	29	17	24	24	22	17	
		15	M 22 x 1,5	4	16	P-WSV 15 L m. 6kt M	373475	25,0	23	36	46	38	28	31	21	27	30	27	19	
		18	M 26 x 1,5	4	16	P-WSV 18 L m. 6kt M	373476	35,5	24	40	49	40	31	32,5	23,5	32	36	32	24	
		22	M 30 x 2	5	16	P-WSV 22 L m. 6kt M	373477	46,5	30	44	51	42	35	34,5	27,5	36	41	36	27	
	250 (3626)	28	M 36 x 2	5	16	P-WSV 28 L m. 6kt M	373478	64,0	34	47	52	43	38	35,5	30,5	42	46	41	36	
		35	M 45 x 2	5	16	P-WSV 35 L m. 6kt M	373479	99,4	39	56	58	47	45	36,5	34,5	50	55	50	41	
		42	M 52 x 2	5	16	P-WSV 42 L m. 6kt M	373480	149,0	43	63	59	47	51	36	40	60	65	60	50	
S	800 (11603)	6	M 14 x 1,5	4	16	P-WSV 6 S m. 6kt M	373481	10,5	17	31	44	36	23	29	16	19	19	17	12	
		8	M 16 x 1,5	4	16	P-WSV 8 S m. 6kt M	373482	14,0	18	32	44	36	24	29	17	22	22	19	14	
		10	M 18 x 1,5	4	16	P-WSV 10 S m. 6kt M	373483	19,0	20	34	46	37	25	29,5	17,5	24	24	22	17	
	630 (9137)	12	M 20 x 1,5	4	16	P-WSV 12 S m. 6kt M	373484	22,5	21	38	47	38	29	30,5	21,5	27	27	24	17	
		14	M 22 x 1,5	4	16	P-WSV 14 S m. 6kt M	373485	30,0	23	40	50	40	30	32	22	27	30	27	19	
		16	M 24 x 1,5	4	16	P-WSV 16 S m. 6kt M	373486	36,5	24	43	50	40	33	31,5	24,5	30	32	30	24	
		20	M 30 x 2	5	16	P-WSV 20 S m. 6kt M	373487	58,0	30	48	55	44	37	33,5	26,5	36	41	36	27	
	400 (5801)	25	M 36 x 2	5	16	P-WSV 25 S m. 6kt M	373488	100,0	34	54	59	47	42	35	30	42	46	46	36	
		30	M 42 x 2	5	16	P-WSV 30 S m. 6kt M	373489	130,0	39	62	64	51	49	37,5	35,5	50	50	50	41	
		38	M 52 x 2	5	16	P-WSV 38 S m. 6kt M	373490	197,0	43	72	68	53	57	37	41	60	65	60	50	

L₂ und L₃ = Ungefährmaße bei angezogenen Überwurfmuttern
L₂ und L₃ = approximate lengths with nuts tightened
L₂ et L₃ = longueurs approximatives, les écrous étant bloqués

P-ASV

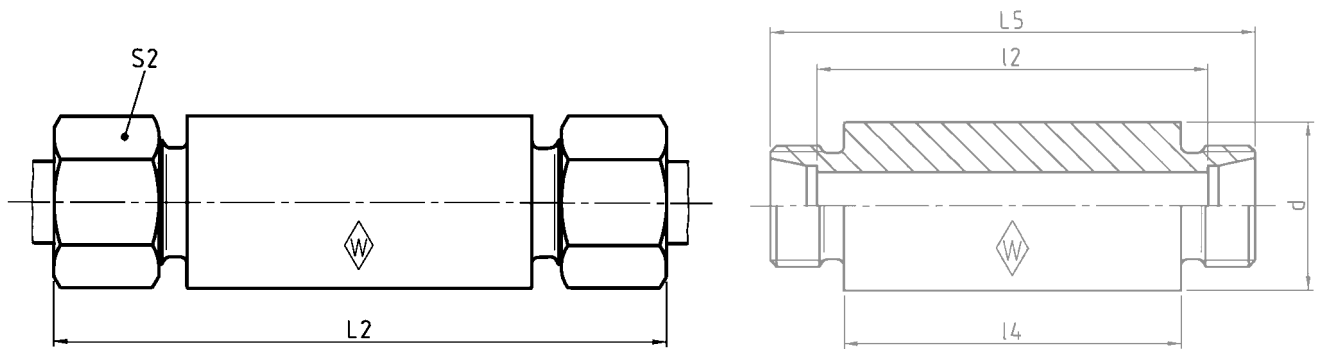


Reihe Series Série	PN bar (psi)	Rohr-AD Tube OD Tube Ø ext.	Typ Type Désignation	Best.-Nr. Reference Réf.	kg per 100 St. kg per 100 pcs. kg par 100 p.	L ₂	L ₅	l	l ₃	d ₁	S ₁	S ₂
L	500 (7252)	6	P-ASV 6 L	373491	2,5	29	21	14	7	10	12	14
		8	P-ASV 8 L	373492	3,6	31	23	16	8	12	14	17
		10	P-ASV 10 L	373493	4,7	33	25	18	8	14	17	19
	400 (5801)	12	P-ASV 12 L	373494	6,3	33	25	18	8	16	19	22
		15	P-ASV 15 L	373495	8,4	37	29	22	10	19	22	27
		18	P-ASV 18 L	373496	13,9	40	31	23,5	10	22	27	32
	250 (3626)	22	P-ASV 22 L	373497	18,1	45	36	28,5	12	27	32	36
		28	P-ASV 28 L	373498	30,2	47	38	30,5	12	32	41	41
		35	P-ASV 35 L	373499	37,7	54	43	32,5	14	40	46	50
		42	P-ASV 42 L	373500	64,1	58	46	35	16	46	55	60
S	800 (11603)	6	P-ASV 6 S	373501	3,2	34	26	19	7	11	14	17
		8	P-ASV 8 S	373502	4,9	36	28	21	8	13	17	19
		10	P-ASV 10 S	373503	7,2	39	30	22,5	8	15	19	22
	630 (9137)	12	P-ASV 12 S	373504	8,3	41	32	24,5	10	17	22	24
		14	P-ASV 14 S	373505	10,8	45	35	27	10	19	24	27
		16	P-ASV 16 S	373506	14,4	45	35	26,5	10	21	27	30
	420 (6091)	20	P-ASV 20 S	373507	21,8	51	40	29,5	12	26	32	36
		25	P-ASV 25 S	373508	37,7	56	44	32	12	31	41	46
		30	P-ASV 30 S	373509	44,9	62	49	35,5	14	36	46	50
		38	P-ASV 38 S	373510	68,4	69	54	38	16	44	55	60

L₂ = Ungefährmaß bei angezogener Überwurfmutter
L₂ = approximate length with nut tightened
L₂ = longueur approximative, l'écrou étant bloqué

Werkstoff der Verschraubungsstutzen ist schmelzscheidbarer Stahl
Body manufactured in weldable quality steel
Le corps est en acier soudable

P-ESV



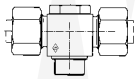

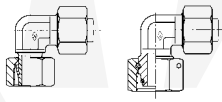

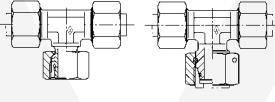

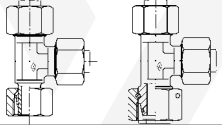
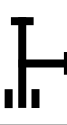
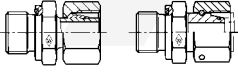

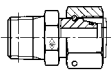

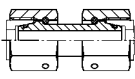





Reihe Series Série	PN bar (psi)	Rohr-AD Tube OD Tube Ø ext.	Typ Type Désignation	Best.-Nr. Reference Réf.	kg per 100 St. kg per 100 pcs. kg par 100 p.	L ₂	L ₅	l ₂	l ₄	d	S ₂
L	500 (7252)	6	P-ESV 6 L	373511	13,1	85	70	56	50	18	14
		8	P-ESV 8 L	373512	16,2	85	70	56	50	20	17
		10	P-ESV 10 L	373513	19,5	87	72	58	50	22	19
	400 (5801)	12	P-ESV 12 L	373514	24,1	87	72	58	50	25	22
		15	P-ESV 15 L	373515	35,3	100	84	70	60	28	27
		18	P-ESV S 18 L	373516	46,9	101	84	69	60	32	32
	250 (3626)	22	P-ESV 22 L	373517	58,2	105	88	73	60	36	36
		28	P-ESV 28 L	373518	66,0	106	88	73	60	40	41
		35	P-ESV 35 L	373519	102,9	114	92	71	60	50	50
		42	P-ESV 42 L	373520	148,8	115	92	70	60	60	60
S	800 (11603)	6	P-ESV 6 S	373521	16,9	89	74	60	50	20	17
		8	P-ESV 8 S	373522	20,4	89	74	60	50	22	19
		10	P-ESV 10 S	373523	27,0	91	74	59	50	25	22
	630 (9137)	12	P-ESV 12 S	373524	33,1	91	74	59	50	28	24
		14	P-ESV 14 S	373525	44,7	107	88	72	60	30	27
		16	P-ESV 16 S	373526	57,8	107	88	71	60	35	30
	420 (6091)	20	P-ESV 20 S	373527	73,2	114	92	71	60	38	36
		25	P-ESV 25 S	373528	114,6	120	96	72	60	45	46
		30	P-ESV 30 S	373529	134,4	126	100	73	60	50	50
		38	P-ESV 38 S	373530	191,3	133	104	72	60	60	60

L₂ = Ungefährmaß bei angezogener Überwurfmutter
 L₂ = approximate length with nut tightened
 L₂ = longueur approximative, l'écrou étant bloqué

Werkstoff der Verschraubungsstutzen ist schmelzschweißbarer Stahl
 Body manufactured in weldable quality steel
 Le corps est en acier soudable



	Abb. Fig. Fig.	Sinnbild Symbol Symbole	Typ Type Désignation	Seite Page Page
Winkel-Schwenkverschraubung Banjo coupling with one-piece bolt Raccord orientable			P-RSWV.....R P-RSWV.....M	K2 K4
T-Schwenkverschraubung Double banjo coupling with one-piece bolt Raccord orientable exécution en Té			P-RSTV.....R P-RSTV.....M	K6 K8
Einstellbare Winkel-Verschraubung Adjustable male stud elbow Equerre orientable			P-EWV.....-SV P-EWVD.....	K10 K11
Einstellbare T-Verschraubung Adjustable equal Tee Té orientable			P-ETV.....-SV P-ETVD.....	K12 K13
Einstellbare L-Verschraubung Adjustable male stud Tee-stud barrel Té renversé orientable			P-ELV.....-SV P-ELVD.....	K14 K15
Gerade-Einschraubstutzen Stud standpipe adaptor (body only) Raccord d'orientation (corps)			P-EGES.....R-WD-SV EGESD.....R-WD P-EGES.....M-WD-SV EGESD.....M-WD	K16 K17 K18 K19
			EGESD.....NPT	K20
Gerade-Verbindung Straight coupling Union double			SNV.....	K21
Gerade-Verbindung Straight coupling Union double			SNV.....L	K22
Reduzierschraubung Reducing fitting			SNV.....S	K23
Raccord de réduction			SNV.....L/S-S/L	K24

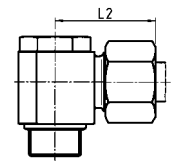
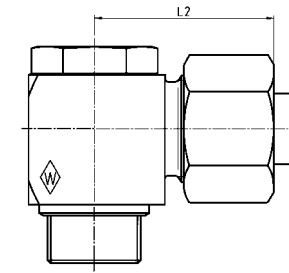
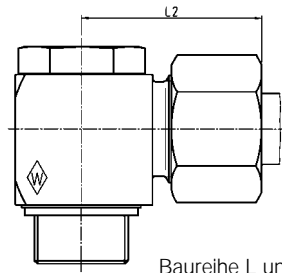
K

P-RSWV R

Einschraub-
gewinde: Whitworth-Rohrgewinde (zylindrisch)
Stud thread: BSP thread (parallel)
Filetage m le: Whitworth (cylindrique)

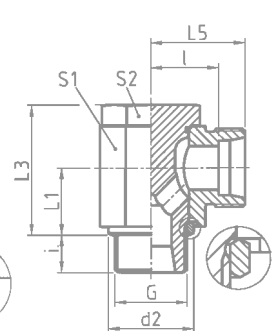
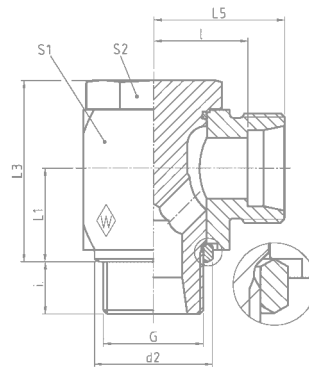
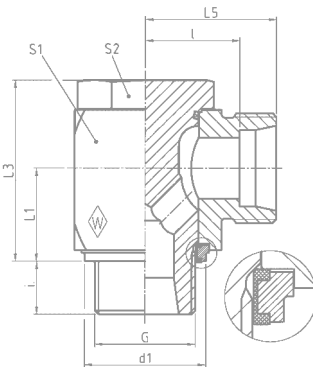
mit Elastomer-Abdichtung
with elastomer seal
avec  tanch it  elastom re

mit metallischer Abdichtung
with metallic seal
avec  tanch it  par ar te m tal



Baureihe L und S
Series L and S
S rie L et S

Baureihe LL
Series LL
S rie LL



DIN-ISO 228 (R...DIN 259)

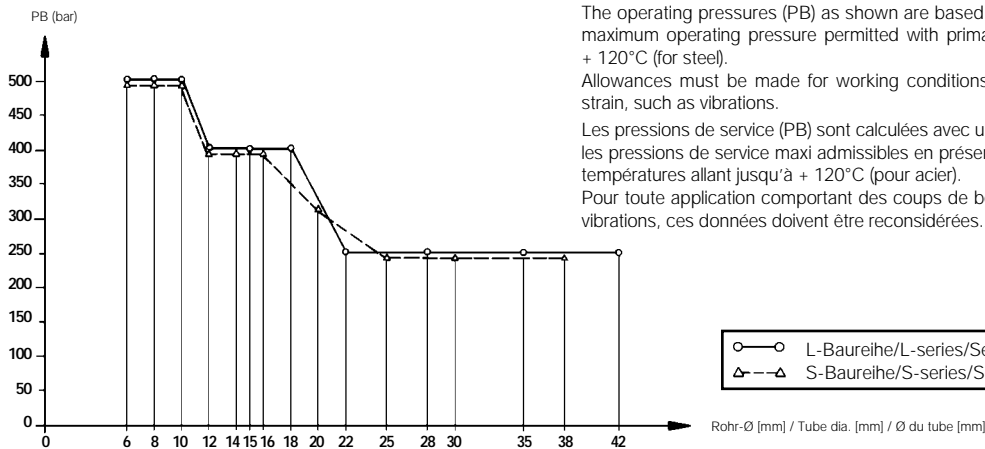
Reihe Series S�rie	PB bar (psi)	Rohr-AD Tube OD Tube � ext.	G	kg per 100 St. kg per 100 pcs. kg par 100 p.	L ₁	L ₂	L ₃	L ₅	l	i	d ₁ max.	d ₂	S ₁	S ₂
LL	100 (1450)	4	G 1/8 A	4,0	10	25,5	21	20	16	8		14,5	14	14
		6	G 1/8 A	4,2	10	26	21	20	14,5	8		14,5	14	14
		8	G 1/8 A	5,2	10	26	21	20	16	8		14,5	14	14
L	500 (7252)	6	G 1/8 A	5,9	10	27,5	21	20	13	8	14,9	13	14	14
		6	G 1/4 A	5,9	13,5	29,5	27	22	15	10	18,9	17,8	19	19
		8	G 1/4 A	9,3	13,5	28,5	27	21	14	10	18,9	17,8	19	19
	400 (5801)	10	G 1/4 A	10,2	13,5	29,5	27	22	15	10	18,9	17,8	19	19
		12	G 1/4 A	15,8	15,5	29,5	30	22	15	10	18,9	17,8	22	19
		12	G 3/8 A	15,9	16	32	32,5	24,5	17,5	10	21,9	22	24	22
250 (3626)	15	G 1/2 A	28,4	19,5	36	43	28	21	14	26,9	26	30	27	
	18	G 1/2 A	32,0	21,5	36,5	43	28	20,5	12	26,9	26	30	27	
	22	G 3/4 A	48,5	24	43	48	34,5	27	16	32,9	32	36	32	
	28	G 1 A	88,2	30,5	48	59	39	31,5	18	39,9	39	46	41	
S	500 (7252)	35	G 1 1/4 A	150,8	35,5	57	70	46	35,5	20	49,9	49	55	50
		42	G 1 1/2 A	234,1	40,5	62,5	80	51	40	22	55,9	55	65	55
		6	G 1/4 A	8,7	13,5	30,5	27	23	16	10	18,9	17,8	19	19
	400 (5801)	8	G 1/4 A	10,3	13,5	30,5	27	23	16	10	18,9	17,8	19	19
		10	G 3/8 A	17,0	16	34	32,5	25,5	18	10	21,9	22	24	22
		12	G 3/8 A	17,9	16	34	32,5	25,5	18	10	21,9	22	24	22
	315 (4569)	14	G 1/2 A	30,3	19,5	39,5	41	30	22	12	26,9	26	30	27
		16	G 1/2 A	31,6	21,5	39,5	43	30	21,5	12	26,9	26	30	27
		20	G 3/4 A	51,8	24	47,5	48	36,5	26	16	32,9	32	36	32
250 (3626)	25	G 1 A	103,0	30,5	55	59	43	31	18	39,9	39	46	41	
	30	G 1 1/4 A	163,7	35,5	63	70	50	36,5	20	49,9	49	55	50	
	38	G 1 1/2 A	262,7	40,5	71,5	80	57	41	22	55,9	55	65	55	

L₂ = Ungef hrma  bei angezogener  berwurfmutter
L₂ = approximate length with nut tightened
L₂ = longueur approximative, l' crou  tant bloqu 

Winkel-Schwenkverschraubungen Banjo coupling with one-piece bolt Raccord orientable



Betriebsdruck Operating pressure Pression de service



Die angegebenen Betriebsdrücke (PB) sind unter Berücksichtigung der mind. 2,5-fachen Sicherheit ausgelegt und stellen die maximal zulässigen Betriebsdrücke bei vorwiegend ruhender Belastung und Temperaturen bis + 120°C (für Stahl) dar.
Starke Druckstöße und mechanische Beanspruchungen, wie etwa Schwingungen, verlangen besondere Berücksichtigung.

The operating pressures (PB) as shown are based on a safety factor of at least 2.5 and represent the maximum operating pressure permitted with primarily uniform load conditions at temperatures up to + 120°C (for steel).

Allowances must be made for working conditions involving heavy impact pressure and mechanical strain, such as vibrations.

Les pressions de service (PB) sont calculées avec un coefficient mini de sécurité de 2,5 et représentent les pressions de service maxi admissibles en présence de sollicitations essentiellement statiques et des températures allant jusqu'à + 120°C (pour acier).

Pour toute application comportant des coups de bélier et des sollicitations mécaniques, telles que des vibrations, ces données doivent être reconsidérées.

Bei besonderen Anwendungsfällen (z. B. höheren Temperaturen oder aggressiven Medien) ist, bei der Ausführung mit metallischer Dichtkante, der O-Ring zu entfernen!

With special application conditions (e. g. higher temperatures or aggressive fluids) remove O-ring for the version with metallic sealing edge!

Pour des conditions particulières d'utilisation (p. ex. températures élevées ou fluides agressifs) enlever le joint torique pour la version avec étanchéité par arête métal!

**RSWS mit
Elastomer-Abdichtung
RSWS with
elastomer seal
RSWS avec
étanchéité élastomère**

**RSWS mit
metallischer Abdichtung
RSWS with
metallic seal
RSWS avec
étanchéité par arête métal**

Einzelteile/Individual components/Pièces composantes

Typ Type Désignation	Best.-Nr. Reference Réf.	Typ Type Désignation	Best.-Nr. Reference Réf.	Gehäuse Body Corps	Hohlschraube mit O-Ring (NBR)* Bolt with O-ring (NBR)* Goujon creux avec joint torique (NBR)*	O-Ring (NBR)* O-ring (NBR)* Joint torique (NBR)*	Abmessung Dimension Dimension	Best.-Nr. Reference Réf.	Halterung mit Weichdichtung (NBR)* Retaining ring with captive seal (NBR)* Bague de support avec joint mou (NBR)*	Dicht- kantening Sealing edge ring Rondelle à arête d'étanchéité	Best.-Nr. Reference Réf.
		S-RSWV 4 LLR	607000	608333	606516	8,5 x 1,5	304288			605824	
		S-RSWV 6 LLR	607001	608334	606516	8,5 x 1,5	304288			605824	
		S-RSWV 8 LLR	607002	608335	606516	8,5 x 1,5	304288			605824	
P-RSWV 6 LR-WD	607051	P-RSWV 6 LR	607003	605763	606516	8,5 x 1,5	304288	606481		605824	
P-RSWV 6 L/R 1/4-WD	606501	P-RSWV 6 L/R 1/4	606502	605764	606519	11 x 2	023492	606482		606740	
P-RSWV 8 LR-WD	607052	P-RSWV 8 LR	607004	605766	606519	11 x 2	023492	606482		606740	
P-RSWV 10 LR-WD	607053	P-RSWV 10 LR	607005	605768	606519	11 x 2	023492	606482		606740	
P-SWV 12 L/R 1/4-WD	607054	P-RSWV 12 L/R 1/4	607006	606076	606522	11 x 2	023492	606482		606740	
P-RSWV 12 LR-WD	607055	P-RSWV 12 LR	607007	605770	606523	14,5 x 2	605949	606485		605827	
P-RSWV 15 LR-WD	607056	P-RSWV 15 LR	607008	605775	606527	19,5 x 2	605951	606488		605831	
P-RSWV 18 LR-WD	607057	P-RSWV 18 LR	607009	605777	606527	19,5 x 2	605951	606489		606454	
P-RSWV 22 LR-WD	607058	P-RSWV 22 LR	607010	605779	607401	26 x 1,5	605952	606492		605833	
P-RSWV 28 LR-WD	607059	P-RSWV 28 LR	607011	605781	607403	31 x 2	250258	606495		605834	
P-RSWV 35 LR-WD	607060	P-RSWV 35 LR	607012	605783	607405	40 x 2	261157	606496		605835	
P-RSWV 42 LR-WD	607061	P-RSWV 42 LR	607013	605785	607407	46 x 2	605953	606498		605836	
P-RSWV 6 SR-WD	607062	P-RSWV 6 SR	607014	605765	606519	11 x 2	023492	606482		606740	
P-RSWV 8 SR-WD	607063	P-RSWV 8 SR	607015	605767	606519	11 x 2	023492	606482		606740	
P-RSWV 10 SR-WD	607064	P-RSWV 10 SR	607016	605769	606523	14,5 x 2	605949	606485		605827	
P-RSWV 12 SR-WD	607065	P-RSWV 12 SR	607017	605771	606523	14,5 x 2	605949	606485		605827	
P-RSWV 14 SR-WD	607066	P-RSWV 14 SR	607018	605774	606527	19,5 x 2	605951	606488		605831	
P-RSWV 16 SR-WD	607067	P-RSWV 16 SR	607019	605776	606527	19,5 x 2	605951	606489		606454	
P-RSWV 20 SR-WD	607068	P-RSWV 20 SR	607020	605778	607401	26 x 1,5	605952	606492		605833	
P-RSWV 25 SR-WD	607069	P-RSWV 25 SR	607021	605780	607403	31 x 2	250258	606495		605834	
P-RSWV 30 SR-WD	607070	P-RSWV 30 SR	607022	605782	607405	40 x 2	261157	606496		605835	
P-RSWV 38 SR-WD	607071	P-RSWV 38 SR	607023	605784	607407	46 x 2	605953	606498		605836	

* FPM (z. B. Viton) auf Anfrage
* FPM (e. g. Viton) on request
* FPM (p. ex. Viton) sur demande



Winkel-Schwenkverschraubung
Banjo coupling with one-piece bolt
Raccord orientable

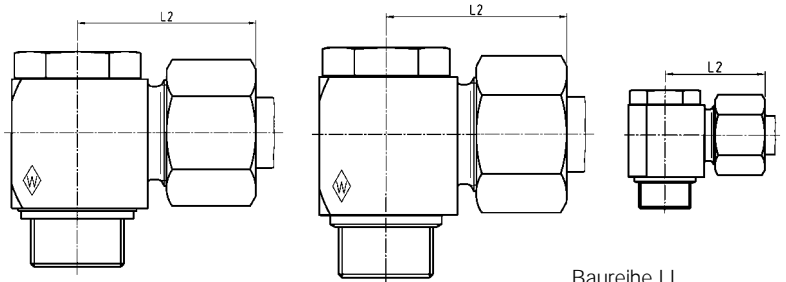


P-RSW M

Einschraub-
gewinde: Metrisches Gewinde (zylindrisch)
Stud thread: metric (parallel)
Filetage mâle: métrique (cylindrique)

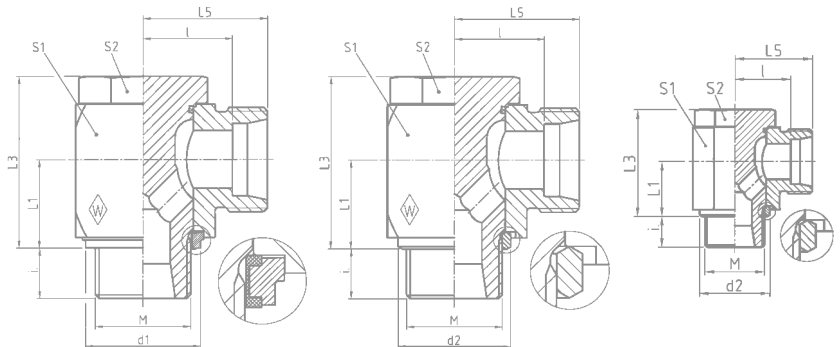
mit Elastomer-Abdichtung
with elastomer seal
avec étanchéité élastomère

mit metallischer Abdichtung
with metallic seal
avec étanchéité par arête métal



Baureihe L und S
Series L and S
Séries L et S

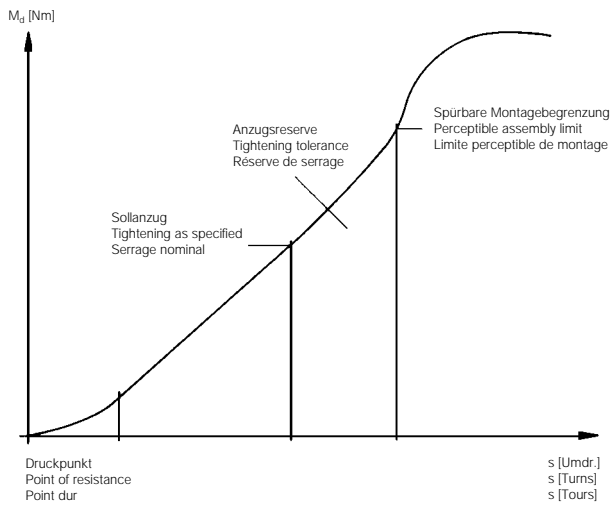
Baureihe LL
Series LL
Série LL



Reihe Series Série	PB bar (psi)	Rohr-AD Tube OD Tube Ø ext.	M	kg per 100 St. kg per 100 pcs. kg par 100 p.	L ₁	L ₂	L ₃	L ₅	l	i	d ₁ max.	d ₂	S ₁	S ₂
LL	100 (1450)	4	M 8 x 1	3,4	8	22,5	17	17	13	6		12,5	12	12
		6	M 10 x 1	4,2	10	26	21	20	14,5	8		14,5	14	14
		8	M 10 x 1	4,5	10	26	21	20	14,5	8		14,5	14	14
L	500 (7252)	6	M 10 x 1	5,9	10	27,5	21	20	13	8	14,9	13	14	14
		8	M 12 x 1,5	9,0	13,5	28,5	27	21	14	10	17,9	17,8	19	19
		10	M 14 x 1,5	10,3	13,5	29,5	27	22	15	10	19,9	17,8	19	19
	400 (5801)	12	M 16 x 1,5	15,8	16	32	32,5	24,5	17,5	10	21,9	21	24	22
	315 (4569)	12	M 18 x 1,5	16,9	18,5	34,5	36	27	20	10	23,9	23	24	22
	400 (5801)	15	M 18 x 1,5	20,9	18,5	35	37	27	20	10	23,9	23	27	24
S	250 (3626)	18	M 22 x 1,5	31,9	21,5	36,5	43	28	20,5	12	27,9	27	30	27
		22	M 26 x 1,5	48,6	24	43	48	34,5	27	16	31,9	31	36	32
		28	M 33 x 2	88,5	30,5	48	59	39	31,5	18	39,9	39	46	41
	500 (7252)	35	M 42 x 2	151,0	35,5	57	70	46	35,5	20	49,9	49	55	50
		42	M 48 x 2	234,0	40,5	62,5	80	51	40	22	55,9	55	65	55
		6	M 12 x 1,5	8,5	13,5	30,5	27	23	16	10	17,9	17,8	19	19
400 (5801)	8	M 14 x 1,5	10,4	13,5	30,5	27	23	16	10	19,9	17,8	19	19	
	10	M 16 x 1,5	16,9	16	34	32,5	25,5	18	10	21,9	21	24	22	
	12	M 18 x 1,5	22,2	18,5	35,5	37	27	19,5	10	23,9	23	27	24	
315 (4569)	14	M 20 x 1,5	28,0	19,5	39,5	41	30	22	12		25	30	27	
	16	M 22 x 1,5	32,3	21,5	39,5	43	30	21,5	12	27,9	27	30	27	
	20	M 27 x 2	51,9	24	47,5	48	36,5	26	16	32,9	32	36	32	
250 (3626)	25	M 33 x 2	103,3	30,5	55	59	43	31	18	39,9	39	46	41	
	30	M 42 x 2	163,9	35,5	63	70	50	36,5	20	49,9	49	55	50	
	38	M 48 x 2	252,7	40,5	71,5	80	57	41	22	55,9	55	65	55	

L₂ = Ungefährmaß bei angezogener Überwurfmutter
L₂ = approximate length with nut tightened
L₂ = longueur approximative, l'écrou étant bloqué

Hohe Montagesicherheit
Very safe assembly
Haute sécurité de montage



- easy assembly
- re-tightening under pressure is possible
- radial dismantling possible
- only three components
- one-piece bolt
- secure interconnection of elastomer seal and retaining ring
- high safety against excessive tightening

- einfache Montage
- unter Druck nachziehbar
- radiale Demontage möglich
- nur drei Bauteile
- einteilige Hohlverschraubung
- Elastomerdichtung mit dem Haltering unverlierbar verbunden
- große Sicherheit gegen Überanzug

- montage aisé
- serrage ultérieure sous pression
- démontage radial possible
- trois composants seulement
- goujon creux monobloc
- intégration de sécurité de l'étanchéité élastomère et de la bague de support
- haut degré de sécurité contre le serrage excessif

Bei besonderen Anwendungsfällen (z. B. höheren Temperaturen oder aggressiven Medien) ist, bei der Ausführung mit metallischer Dichtkante, der O-Ring zu entfernen!
With special application conditions (e. g. higher temperatures or aggressive fluids) remove O-ring for the version with metallic sealing edge!
Pour des conditions particulières d'utilisation (p. ex. températures élevées ou fluides agressifs) enlever le joint torique pour la version avec étanchéité par arête métal!

RSWS mit Elastomer-Abdichtung
RSWS with elastomer seal
RSWS avec étanchéité élastomère

RSWS mit metallischer Abdichtung
RSWS with metallic seal
RSWS avec étanchéité par arête métal

Einzelteile/Individual components/Pièces composantes

Typ Type Désignation	Best.-Nr. Reference Réf.	Typ Type Désignation	Best.-Nr. Reference Réf.	Gehäuse Body Corps	Hohlverschraubung mit O-Ring (NBR)* Bolt with O-ring (NBR)* Goujon creux avec joint torique (NBR)*	O-Ring (NBR)* O-ring (NBR)* Joint torique (NBR)*	Abmessung Dimension Dimension	Best.-Nr. Reference Réf.	Haltering mit Weichdichtung (NBR)* Retaining ring with captive seal (NBR)* Bague de support avec joint mou (NBR)*	Dichtkantenring Sealing edge ring Rondelle à arête d'étanchéité	Best.-Nr. Reference Réf.
		S-RSWV 4 LLM	607024	608332	606514	6,5 x 1,5	605948			608323	
		S-RSWV 6 LLM	607025	608334	606515	8,5 x 1,5	304288			605824	
		S-RSWV 8 LLM	607026	608335	606515	8,5 x 1,5	304288			605824	
P-RSWV 6 LM-WD	607075	P-RSWV 6 LM	607027	605763	606515	8,5 x 1,5	304288	606481		605824	
P-RSWV 8 LM-WD	607076	P-RSWV 8 LM	607028	605766	606517	11 x 2	023492	606483		606739	
P-RSWV 10 LM-WD	607077	P-RSWV 10 LM	607029	605768	606518	11 x 2	023492	606484		605825	
P-RSWV 12 LM-WD	607078	P-RSWV 12 LM	607030	605770	606520	14,5 x 2	605949	606485		605826	
P-RSWV 12 LM/M18x1,5-WD	607079	P-RSWV 12 LM/M18x1,5	607031	607124	606521	14,5 x 2	605949	606500		605830	
P-RSWV 15 LM-WD	607080	P-RSWV 15 LM	607032	605773	606524	16,5 x 2	605950	606486		605830	
P-RSWV 18 LM-WD	607081	P-RSWV 18 LM	607033	605777	606526	19,5 x 2	605951	606490		605832	
P-RSWV 22 LM-WD	607082	P-RSWV 22 LM	607034	605779	607399	26 x 1,5	605952	606491		606455	
P-RSWV 28 LM-WD	607083	P-RSWV 28 LM	607035	605781	607402	31 x 2	250258	606495		605834	
P-RSWV 35 LM-WD	607084	P-RSWV 35 LM	607036	605783	607404	40 x 2	261157	606496		605835	
P-RSWV 42 LM-WD	607085	P-RSWV 42 LM	607037	605785	607406	46 x 2	605953	606498		605836	
P-RSWV 6 SM-WD	607086	P-RSWV 6 SM	607038	605765	606517	11 x 2	023492	606483		606739	
P-RSWV 8 SM-WD	607087	P-RSWV 8 SM	607039	605767	606518	11 x 2	023492	606484		605825	
P-RSWV 10 SM-WD	607088	P-RSWV 10 SM	607040	605769	606520	14,5 x 2	605949	606485		605826	
P-RSWV 12 SM-WD	607089	P-RSWV 12 SM	607041	605772	606524	16,5 x 2	605950	606486		605830	
		P-RSWV 14 SM	607042	605774	606525	19,5 x 2	605951			605831	
P-RSWV 16 SM-WD	607091	P-RSWV 16 SM	607043	605776	606526	19,5 x 2	605951	606490		605832	
P-RSWV 20 SM-WD	607092	P-RSWV 20 SM	607044	605778	607400	26 x 1,5	605952	606492		605833	
P-RSWV 25 SM-WD	607093	P-RSWV 25 SM	607045	605780	607402	31 x 2	250258	606495		605834	
P-RSWV 30 SM-WD	607094	P-RSWV 30 SM	607046	605782	607404	40 x 2	261157	606496		605835	
P-RSWV 38 SM-WD	607095	P-RSWV 38 SM	607047	605784	607406	46 x 2	605953	606498		605836	

* FPM (z. B. Viton) auf Anfrage
* FPM (e. g. Viton) on request
* FPM (p. ex. Viton) sur demande



T-Schwenkverschraubung
 Double banjo coupling with one-piece bolt
 Raccord orientable exécution en Té

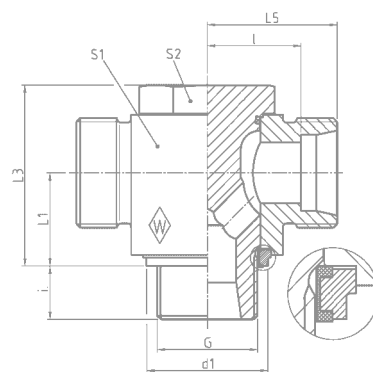
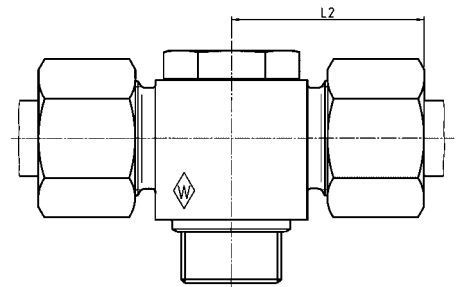
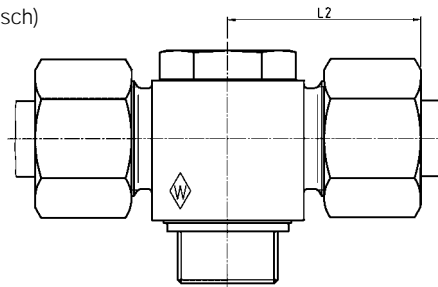


P-RSTV R

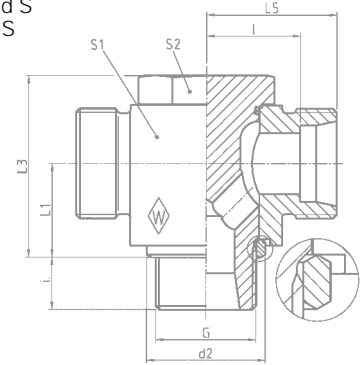
Einschraub-
 gewinde: Whitworth-Rohrgewinde (zylindrisch)
 Stud thread: BSP thread (parallel)
 Filetage mâle: Whitworth (cylindrique)

mit Elastomer-Abdichtung
 with elastomer seal
 avec étanchéité élastomère

mit metallischer Abdichtung
 with metallic seal
 avec étanchéité par arête métal



Baureihe L und S
 Series L and S
 Séries L et S



DIN-ISO 228 (R...DIN 259)

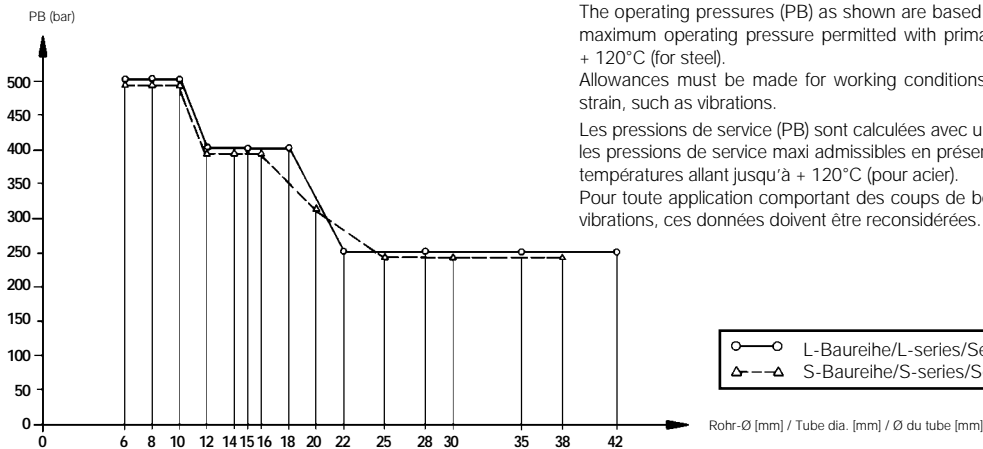
Reihe Series Série	PB bar (psi)	Rohr-AD Tube OD Tube Ø ext.	G	kg per 100 St. kg per 100 pcs. kg par 100 p.	L ₁	L ₂	L ₃	L ₅	l	i	d ₁ max.	d ₂	S ₁	S ₂
L	500 (7252)	6	G 1/8 A	6,5	10	27,5	21	20	13	8	14,9	13	14	14
		6	G 1/4 A	6,5	13,5	29,5	27	22	15	10	18,9	17,8	19	19
		8	G 1/4 A	10,0	13,5	28,5	27	21	14	10	18,9	17,8	19	19
		10	G 1/4 A	11,0	13,5	29,5	27	22	15	10	18,9	17,8	19	19
	400 (5801)	12	G 1/4 A	16,7	15,5	29,5	30	22	15	10	18,9	17,8	22	19
		12	G 3/8 A	16,8	16	32	32,5	24,5	17,5	10	21,9	22	24	22
		15	G 1/2 A	28,8	19,5	36	43	28	21	14	26,9	26	30	27
		18	G 1/2 A	33,7	21,5	36,5	43	28	20,5	12	26,9	26	30	27
		22	G 3/4 A	50,0	24	43	48	34,5	27	16	32,9	32	36	32
		250 (3626)	28	G 1 A	89,5	30,5	48	59	39	31,5	18	39,9	39	46
S	500 (7252)	6	G 1/4 A	10,0	13,5	30,5	27	23	16	10	18,9	17,8	19	19
		8	G 1/4 A	11,6	13,5	30,5	27	23	16	10	18,9	17,8	19	19
		10	G 3/8 A	18,7	16	34	32,5	25,5	18	10	21,9	22	24	22
	400 (5801)	12	G 3/8 A	19,3	16	34	32,5	25,5	18	10	21,9	22	24	22
		14	G 1/2 A	32,1	19,5	39,5	41	30	22	12	26,9	26	30	27
		16	G 1/2 A	34,0	21,5	39,5	43	30	21,5	12	26,9	26	30	27
	315 (4569)	20	G 3/4 A	56,0	24	47,5	48	36,5	26	16	32,9	32	36	32
	250 (3626)	25	G 1 A	107,6	30,5	55	59	43	31	18	39,9	39	46	41
		30	G 1 1/4 A	175,3	35,5	63	70	50	36,5	20	49,9	49	55	50
		38	G 1 1/2 A	274,5	40,5	71,5	80	57	41	22	55,9	55	65	55

L₂ = Ungefährmaß bei angezogener Überwurfmutter
 L₂ = approximate length with nut tightened
 L₂ = longueur approximative, l'écrou étant bloqué

T-Schwenkverschraubung
Double banjo coupling with one-piece bolt
Raccord orientable exécution en Té



Betriebsdruck
Operating pressure
Pression de service



Die angegebenen Betriebsdrücke (PB) sind unter Berücksichtigung der mind. 2,5-fachen Sicherheit ausgelegt und stellen die maximal zulässigen Betriebsdrücke bei vorwiegend ruhender Belastung und Temperaturen bis + 120°C (für Stahl) dar.
Starke Druckstöße und mechanische Beanspruchungen, wie etwa Schwingungen, verlangen besondere Berücksichtigung.

The operating pressures (PB) as shown are based on a safety factor of at least 2.5 and represent the maximum operating pressure permitted with primarily uniform load conditions at temperatures up to + 120°C (for steel).

Allowances must be made for working conditions involving heavy impact pressure and mechanical strain, such as vibrations.

Les pressions de service (PB) sont calculées avec un coefficient mini de sécurité de 2,5 et représentent les pressions de service maxi admissibles en présence de sollicitations essentiellement statiques et des températures allant jusqu'à + 120°C (pour acier).

Pour toute application comportant des coups de bélier et des sollicitations mécaniques, telles que des vibrations, ces données doivent être reconsidérées.

Bei besonderen Anwendungsfällen (z. B. höheren Temperaturen oder aggressiven Medien) ist, bei der Ausführung mit metallischer Dichtkante, der O-Ring zu entfernen!

With special application conditions (e. g. higher temperatures or aggressive fluids) remove O-ring for the version with metallic sealing edge!

Pour des conditions particulières d'utilisation (p. ex. températures élevées ou fluides agressifs) enlever le joint torique pour la version avec étanchéité par arête métal!

RSTS mit Elastomer-Abdichtung
RSTS with elastomer seal
RSTS avec étanchéité élastomère

RSTS mit metallischer Abdichtung
RSTS with metallic seal
RSTS avec étanchéité par arête métal

Einzelteile/Individual components/Pièces composantes

Typ Type Désignation	Best.-Nr. Reference Réf.	Typ Type Désignation	Best.-Nr. Reference Réf.	Gehäuse Body Corps		Hohlschraube mit O-Ring (NBR)* Bolt with O-ring (NBR)* Goujon creux avec joint torique (NBR)*		O-Ring (NBR)* O-ring (NBR)* Joint torique (NBR)*		Haltering mit Weichdichtung (NBR)* Retaining ring with captive seal (NBR)* Bague de support avec joint mou (NBR)*		Dichtkantenring Sealing edge ring Rondelle à arête d'étanchéité	
				Best.-Nr. Reference Réf.	Best.-Nr. Reference Réf.	Abmessung Dimension Dimension	Best.-Nr. Reference Réf.	Best.-Nr. Reference Réf.	Best.-Nr. Reference Réf.				
P-RSTV 6LR-WD	612523	P-RSTV 6LR	606717	607341	606516	8,5 x 1,5	304288	606481	605824				
P-RSTV 8LR-WD		P-RSTV 8LR	606773	607344	606519	11 x 2	023492	606482	606740				
P-RSTV 10LR-WD	601151	P-RSTV 10LR	601090	607346	606519	11 x 2	023492	606482	606740				
P-RSTV 12LR-WD	611623	P-RSTV 12LR	607978	607349	606523	14,5 x 2	605949	606485	605827				
P-RSTV 15LR-WD	611985	P-RSTV 15LR	610395	607354	606527	19,5 x 2	605951	606488	605831				
P-RSTV 18LR-WD		P-RSTV 18LR	606360	607356	606527	19,5 x 2	605951	606489	606454				
P-RSTV 22LR-WD		P-RSTV 22LR	607436	607358	607401	26 x 1,5	605952	606492	605833				
P-RSTV 28LR-WD	608605	P-RSTV 28LR	607317	607360	607403	31 x 2	250258	606495	605834				
P-RSTV 35LR-WD	611641	P-RSTV 35LR	611642	607362	607405	40 x 2	261157	606496	605835				
P-RSTV 42LR-WD		P-RSTV 42LR	608595	607364	607407	46 x 2	605953	606498	605836				
P-RSTV 6SR-WD	608693	P-RSTV 6SR	608601	607343	606519	11 x 2	023492	606482	606740				
P-RSTV 8SR-WD	601148	P-RSTV 8SR	607784	607345	606519	11 x 2	023492	606482	606740				
P-RSTV 10SR-WD	608682	P-RSTV 10SR	608223	607347	606523	14,5 x 2	605949	606485	605827				
P-RSTV 12SR-WD	608683	P-RSTV 12SR	607759	607350	606523	14,5 x 2	605949	606485	605827				
P-RSTV 16SR-WD	611986	P-RSTV 16SR	607760	607355	606527	19,5 x 2	605951	606489	606454				
P-RSTV 20SR-WD	608433	P-RSTV 20SR	607754	607357	607401	26 x 1,5	605952	606492	605833				
P-RSTV 25SR-WD	608979	P-RSTV 25SR	607905	607359	607403	31 x 2	250258	606495	605834				
P-RSTV 30SR-WD	610045	P-RSTV 30SR	607763	607361	607405	40 x 2	261157	606496	605835				
P-RSTV 38SR-WD	607954	P-RSTV 38SR		607363	607407	46 x 2	605953	606498	605836				

* FPM (z. B. Viton) auf Anfrage
* FPM (e. g. Viton) on request
* FPM (p. ex. Viton) sur demande



T-Schwenkverschraubung
 Double banjo coupling with one-piece bolt
 Raccord orientable exécution en Té

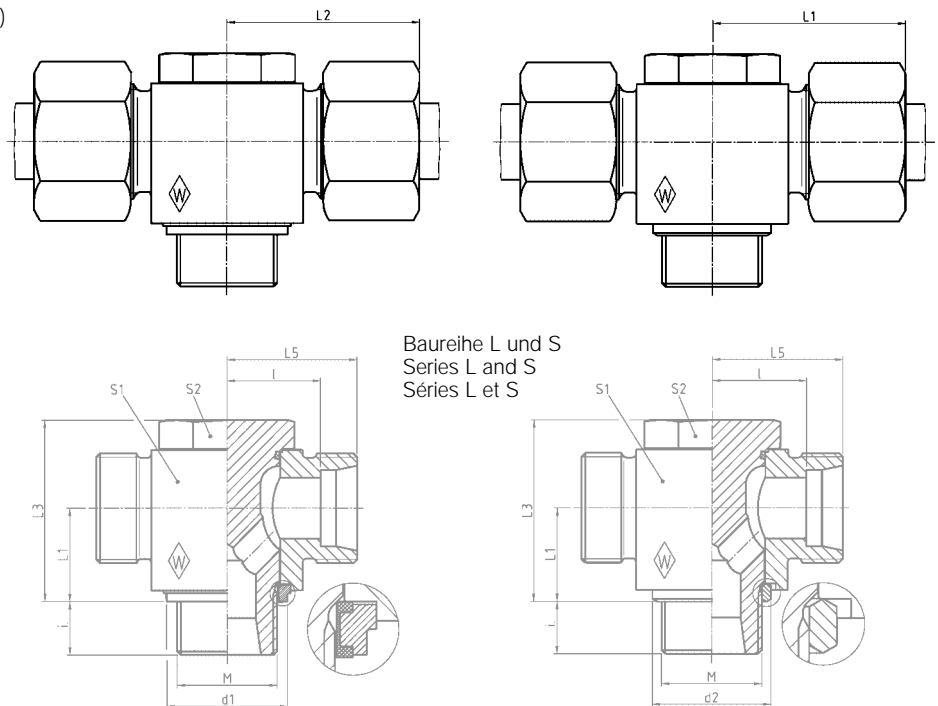


P-RSTV M

Einschraub-
 gewinde: Metrisches Gewinde (zylindrisch)
 Stud thread: metric (parallel)
 Filetage mâle: métrique (cylindrique)

mit Elastomer-Abdichtung
 with elastomer seal
 avec étanchéité élastomère

mit metallischer Abdichtung
 with metallic seal
 avec étanchéité par arête métal



Baureihe L und S
 Series L and S
 Séries L et S

Reihe Series Série	PB bar (psi)	Rohr-AD Tube OD Tube Ø ext.	M	kg per 100 St. kg per 100 pcs. kg par 100 p.	L ₁	L ₂	L ₃	L ₅	l	i	d ₁ max.	d ₂	S ₁	S ₂	
L	500 (7252)	6	M 10 x 1	6,5	10	27,5	21	20	13	8	14,9	13	14	14	
		8	M 12 x 1,5	9,6	13,5	28,5	27	21	14	10	17,9	17,8	19	19	
		10	M 14 x 1,5	11,1	13,5	29,5	27	22	15	10	19,9	17,8	19	19	
	400 (5801)	12	M 16 x 1,5	16,7	16	32	32,5	24,5	17,5	10	21,9	21	24	22	
	315 (4569)	12	M 18 x 1,5	17,3	18,5	34,5	36	27	20	10	23,9	23	24	22	
	400 (5801)	15	M 18 x 1,5	21,3	18,5	35	37	27	20	10	23,9	23	27	24	
	400 (5801)	18	M 22 x 1,5	33,6	21,5	36,5	43	28	20,5	12	27,9	27	30	27	
S	250 (3626)	22	M 26 x 1,5	50,2	24	43	48	34,5	27	16	31,9	31	36	32	
		28	M 33 x 2	89,9	30,5	48	59	39	31,5	18	39,9	39	46	41	
		35	M 42 x 2	156,0	35,5	57	70	46	35,5	20	49,9	49	55	50	
	500 (7252)	42	M 48 x 2	248,1	40,5	62,5	80	51	40	22	55,9	55	65	55	
		6	M 12 x 1,5	9,8	13,5	30,5	27	23	16	10	17,9	17,8	19	19	
		8	M 14 x 1,5	11,7	13,5	30,5	27	23	16	10	19,9	17,8	19	19	
		10	M 16 x 1,5	18,7	16	34	32,5	25,5	18	10	21,9	21	24	22	
		400 (5801)	12	M 18 x 1,5	22,7	18,5	35,5	37	27	19,5	10	23,9	23	27	24
		14	M 20 x 1,5	29,8	19,5	39,5	41	30	22	12		25	30	27	
		16	M 22 x 1,5	34,7	21,5	39,5	43	30	21,5	12	27,9	27	30	27	
315 (4569)	20	M 27 x 2	54,3	24	47,5	48	36,5	26	16	32,9	32	36	32		
250 (3626)	25	M 33 x 2	108,0	30,5	55	59	43	31	18	39,9	39	46	41		
	30	M 42 x 2	175,5	35,5	63	70	50	36,5	20	49,9	49	55	50		
	38	M 48 x 2	264,5	40,5	71,5	80	57	41	22	55,9	55	65	55		

L₂ = Ungefährmaß bei angezogener Überwurfmutter
 L₂ = approximate length with nut tightened
 L₂ = longueur approximative, l'écrou étant bloqué

T-Schwenkverschraubung

Double banjo coupling with one-piece bolt

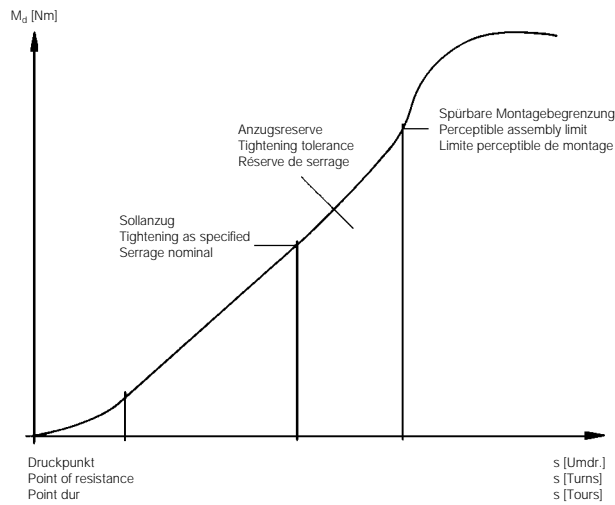
Raccord orientable exécution en Té



Hohe Montagesicherheit

Very safe assembly

Haute sécurité de montage



- easy assembly
- re-tightening under pressure is possible
- radial dismantling possible
- only three components
- one-piece bolt
- secure interconnection of elastomer seal and retaining ring
- high safety against excessive tightening

- einfache Montage
- unter Druck nachziehbar
- radiale Demontage möglich
- nur drei Bauteile
- einteilige Hohlverschraubung
- Elastomerdichtung mit dem Haltering unverlierbar verbunden
- große Sicherheit gegen Überanzug

- montage aisé
- serrage ultérieure sous pression
- démontage radial possible
- trois composants seulement
- goujon creux monobloc
- intégration de sécurité de l'étanchéité élastomère et de la bague de support
- haut degré de sécurité contre le serrage excessif

Bei besonderen Anwendungsfällen (z. B. höheren Temperaturen oder aggressiven Medien) ist, bei der Ausführung mit metallischer Dichtkante, der O-Ring zu entfernen!

With special application conditions (e. g. higher temperatures or aggressive fluids) remove O-ring for the version with metallic sealing edge!

Pour des conditions particulières d'utilisation (p. ex. températures élevées ou fluides agressifs) enlever le joint torique pour la version avec étanchéité par arête métal!

RSTS mit Elastomer-Abdichtung

RSTS with elastomer seal

RSTS avec étanchéité élastomère

RSTS mit metallischer Abdichtung

RSTS with metallic seal

RSTS avec étanchéité par arête métal

Einzelteile/Individual components/Pièces composantes

Typ Type Designation	Best.-Nr. Reference Réf.	Typ Type Designation	Best.-Nr. Reference Réf.	Gehäuse Body Corps	Hohlverschraubung mit O-Ring (NBR)* Bolt with O-ring (NBR)* Goujon creux avec joint torique (NBR)*	O-Ring (NBR)* O-ring (NBR)* Joint torique (NBR)*	Abmessung Dimension Dimension	Best.-Nr. Reference Réf.	Haltering mit Weichdichtung (NBR)* Retaining ring with captive seal (NBR)* Bague de support avec joint mou (NBR)*	Dichtkantenring Sealing edge ring Rondelle à arête d'étanchéité	Best.-Nr. Reference Réf.
P-RSTV 6LM-WD	608490	P-RSTV 6LM	607620	607341	606515	8,5 x 1,5	304288	606481	605824		
P-RSTV 8LM-WD	609972	P-RSTV 8LM	608277	607344	606517	11 x 2	023492	606483	606739		
P-RSTV 10LM-WD	608318	P-RSTV 10LM	608278	607346	606518	11 x 2	023492	606484	605825		
P-RSTV 12LM-WD	609948	P-RSTV 12LM	607430	607349	606520	14,5 x 2	605949	606485	605826		
P-RSTV 15LM-WD	612019	P-RSTV 15LM	607938	607352	606524	14,5 x 2	605949	606486	605830		
P-RSTV 18LM-WD	613149	P-RSTV 18LM	606831	607356	606526	19,5 x 2	605951	606490	605832		
P-RSTV 22LM-WD		P-RSTV 22LM	610416	607358	607399	26 x 1,5	605952	606491	606455		
P-RSTV 28LM-WD		P-RSTV 28LM		607360	607402	31 x 2	250258	606495	605834		
P-RSTV 35LM-WD		P-RSTV 35LM		607362	607404	40 x 2	261157	606496	605835		
P-RSTV 42LM-WD		P-RSTV 42LM	608236	607364	607406	46 x 2	605953	606498	605836		
P-RSTV 6SM-WD		P-RSTV 6SM	608225	607343	606517	11 x 2	023492	606483	606739		
P-RSTV 8SM-WD		P-RSTV 8SM	601091	607345	606518	11 x 2	023492	606484	605825		
P-RSTV 10SM-WD		P-RSTV 10SM		607347	606520	14,5 x 2	605949	606485	605826		
P-RSTV 12SM-WD	607449	P-RSTV 12SM	607907	607351	606524	14,5 x 2	605949	606486	605830		
P-RSTV 16SM-WD		P-RSTV 16SM		607355	606526	19,5 x 2	605951	606490	605832		
P-RSTV 20SM-WD		P-RSTV 20SM	607952	607357	607400	26 x 1,5	605952	606492	605833		
P-RSTV 25SM-WD		P-RSTV 25SM		607359	607402	31 x 2	250258	606495	605834		
P-RSTV 30SM-WD		P-RSTV 30SM		607361	607404	40 x 2	261157	606496	605835		
P-RSTV 38SM-WD		P-RSTV 38SM		607363	607406	46 x 2	605953	606498	605836		

* FPM (z. B. Viton) auf Anfrage
 * FPM (e. g. Viton) on request
 * FPM (p. ex. Viton) sur demande

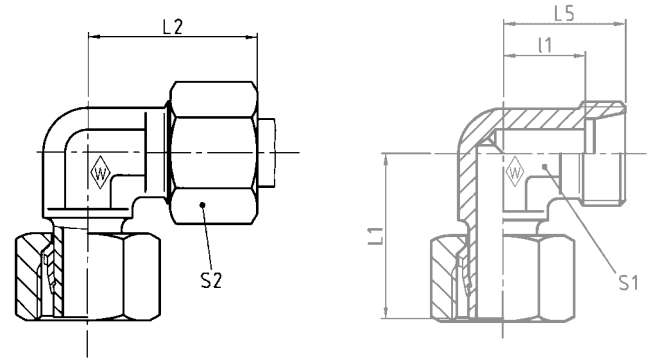


P-EWV-SV

mit Schaft vormontiert

standpipe with pre-assembled nut and profile ring

embout lisse avec écrou et bague profilée pré-sertis



K

Reihe Series Série	PN bar (psi)	Rohr-AD Tube OD Tube Ø ext.	Typ Type Désignation	Best.-Nr. Reference Réf.	kg per 100 St. kg per 100 pcs. kg par 100 p.	L ₁	L ₂	L ₅	l ₁	S ₁	S ₂
L	500 (7252)	6	P-EWV 6 L-SV	373636	3,6	26	27	19	12	12	14
		8	P-EWV 8 L-SV	373637	5,0	27,5	29	21	14	12	17
		10	P-EWV 10 L-SV	373638	6,9	29	30	22	15	14	19
	400 (5801)	12	P-EWV 12 L-SV	373639	9,2	29,5	32	24	17	17	22
		15	P-EWV 15 L-SV	373640	15,4	32,5	36	28	21	19	27
		18	P-EWV 18 L-SV	373641	22,5	35,5	40	31	23,5	24	32
250 (3626)	22	P-EWV 22 L-SV	373642	30,4	38,5	44	35	27,5	27	36	
	28	P-EWV 28 L-SV	373643	42,6	41,5	47	38	30,5	36	41	
S	800 (11603)	6	P-EWV 6 S-SV	373646	5,8	27	31	23	16	12	17
		8	P-EWV 8 S-SV	373647	7,0	27,5	32	24	17	14	19
		10	P-EWV 10 S-SV	373648	11,2	30	34	25	17,5	17	22
	630 (9137)	12	P-EWV 12 S-SV	373649	13,8	31	38	29	21,5	27	24
		14	P-EWV 14 S-SV	373650	19,0	35	40	30	22	19	27
		16	P-EWV 16 S-SV	373651	23,8	36,5	43	33	24,5	24	30

L₂ = Ungefährmaß bei angezogener Überwurfmutter

L₂ = approximate length with nut tightened

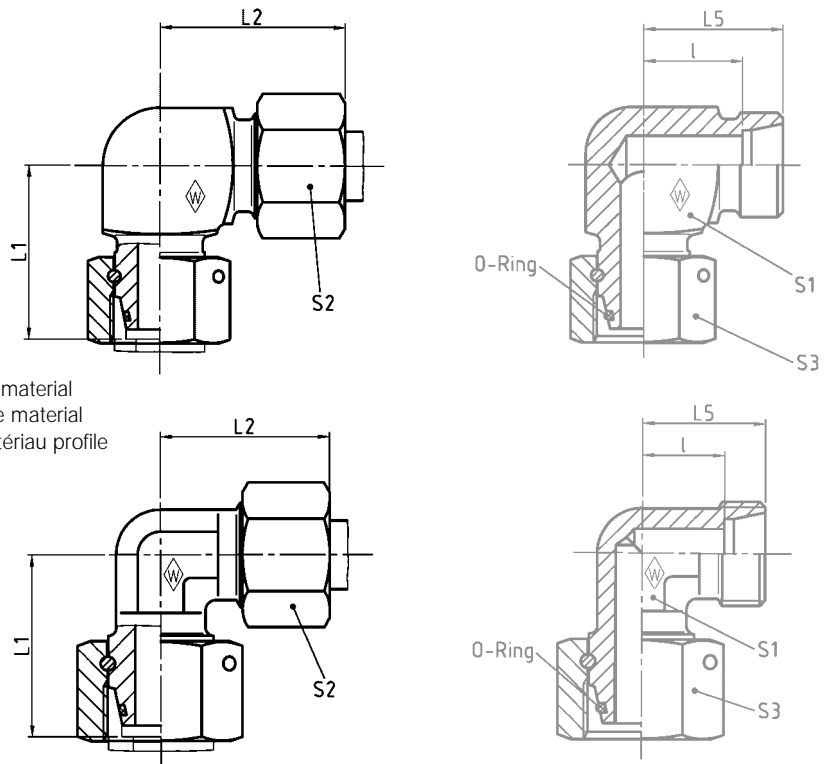
L₂ = longueur approximative, l'écrou étant bloqué

P-EWVD

mit Dichtkegel und O-Ring NBR* (z. B. Perbunan)

with taper and O-ring NBR* (e. g. Perbunan)

avec cône d'étanchéité et joint torique
NBR* (p. ex. Perbunan)



Rohr-AD 6 bis 12 mm = Profilmaterial
Tube OD 6 to 12 mm = profile material
Tube Ø ext. 6 à 12 mm = matériau profile

Reihe Series Série	PN bar (psi)	Rohr-AD Tube OD Tube Ø ext.	Typ Type Désignation	Best.-Nr. Reference Réf.	kg per 100 St. kg per 100 pcs. kg par 100 p.									*O-Ring *O-ring *Joint torique
						L ₁	L ₂	L ₅	I	S ₁	S ₂	S ₃		
L	500 (7252)	6	P-EWVD 6 L	374555	3,7	26	29	21	14	14	14	17	4,5 x 1,5	
		8	P-EWVD 8 L	374556	5,1	27,5	29	21	14	14	17	17	6 x 1,5	
		10	P-EWVD 10 L	374557	7,1	29	30	22	15	17	19	19	8,5 x 1,5	
	400 (5801)	12	P-EWVD 12 L	372992	9,4	29,5	32	24	17	19	22	22	10 x 1,5	
		15	P-EWVD 15 L	374558	15,6	32,5	36	28	21	19	27	27	12 x 2	
		18	P-EWVD 18 L	374559	22,9	35,5	40	31	23,5	24	32	32	15 x 2	
		22	P-EWVD 22 L	374560	30,7	38,5	44	35	27,5	27	36	36	20 x 2	
	250 (3626)	28	P-EWVD 28 L	374561	43,1	41,5	47	38	30,5	36	41	46	26 x 2	
		35	P-EWVD 35 L	374562	65,4	51	56	45	34,5	41	50	50	32 x 2,5	
			42	P-EWVD 42 L	374563	100,5	56	63	51	40	50	60	60	38 x 2,5
S	800 (11603)	6	P-EWVD 6 S	374564	5,9	27	31	23	16	14	17	17	4,5 x 1,5	
		8	P-EWVD 8 S	374565	7,1	27,5	32	24	17	17	19	19	6 x 1,5	
		10	P-EWVD 10 S	374566	11,4	30	34	25	17,5	19	22	22	8,5 x 1,5	
	630 (9137)	12	P-EWVD 12 S	374567	14,0	31	38	29	21,5	22	24	24	10 x 1,5	
		14	P-EWVD 14 S	374568	19,3	35	40	30	22	19	27	27	12 x 2	
		16	P-EWVD 16 S	374569	24,2	36,5	43	33	24,5	24	30	30	14 x 2	
	420 (6091)	20	P-EWVD 20 S	374570	36,6	44,5	48	37	26,5	27	36	36	17,3 x 2,4	
		25	P-EWVD 25 S	374571	72,7	50	54	42	30	36	46	46	22,3 x 2,4	
	400 (5801)	30	P-EWVD 30 S	374572	97,3	55	62	49	35,5	41	50	50	27,3 x 2,4	
		38	P-EWVD 38 S	374573	139,1	63	72	57	41	50	60	60	35 x 2,5	

L₂ = Ungefährmaß bei angezogener Überwurfmutter
L₂ = approximate length with nut tightened
L₂ = longueur approximative, l'écrou étant bloqué

*FPM (z. B. Viton) auf Anfrage
*FPM (e. g. Viton) on request
*FPM (p. ex. Viton) sur demande

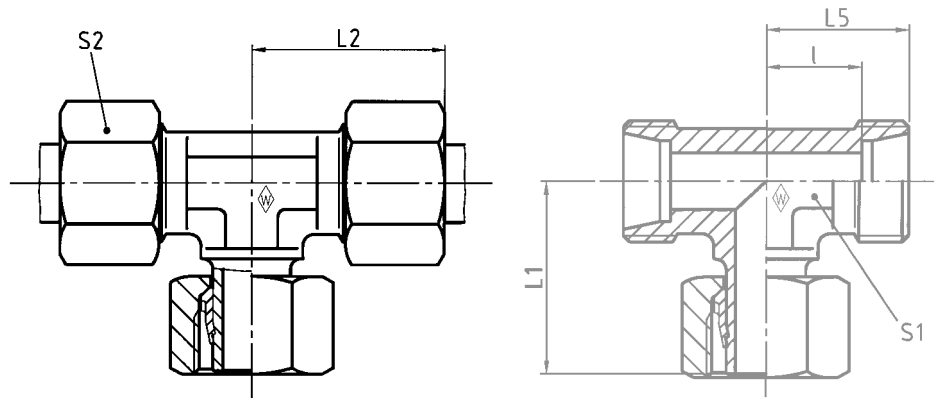
K

P-ETV.....-SV

mit Schaft vormontiert

standpipe with pre-assembled nut
and profile ring

embout lisse avec écrou et bague profilée
pré-sertis



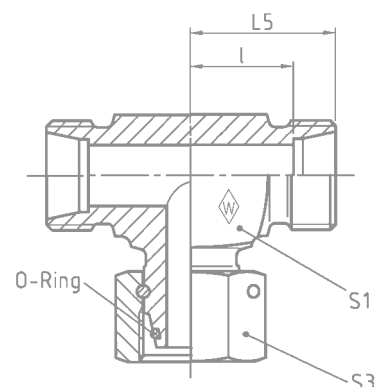
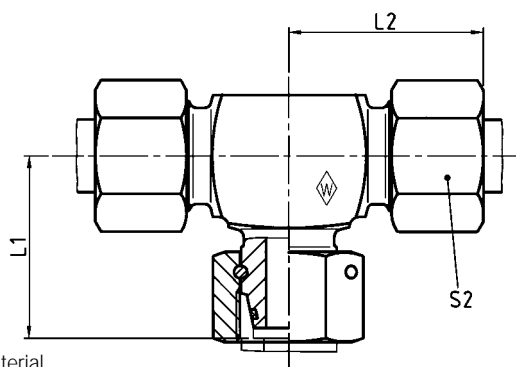
K

Reihe Series Série	PN bar (psi)	Rohr-AD Tube OD Tube Ø ext.	Typ Type Désignation	Best.-Nr. Reference Réf.	kg per 100 St. kg per 100 pcs. kg par 100 p.	L ₁	L ₂	L ₅	l	S ₁	S ₂
L	500 (7252)	6	P-ETV 6 L-SV	373676	5,3	26	27	19	12	12	14
		8	P-ETV 8 L-SV	373677	7,4	27,5	29	21	14	12	17
		10	P-ETV 10 L-SV	373678	10,4	29	30	22	15	14	19
	400 (5801)	12	P-ETV 12 L-SV	373679	13,1	29,5	32	24	17	17	22
		15	P-ETV 15 L-SV	373680	21,9	32,5	36	28	21	19	27
		18	P-ETV 18 L-SV	373681	32,5	35,5	40	31	23,5	24	32
250 (3626)	22	P-ETV 22 L-SV	373682	43,3	38,5	44	35	27,5	27	36	
	28	P-ETV 28 L-SV	373683	57,4	41,5	47	38	30,5	36	41	
S	800 (11603)	6	P-ETV 6 S-SV	373686	8,6	27	31	23	16	12	17
		8	P-ETV 8 S-SV	373687	10,7	27,5	32	24	17	14	19
		10	P-ETV 10 S-SV	373688	16,6	30	34	25	17,5	17	22
	630 (9137)	12	P-ETV 12 S-SV	373689	20,4	31	38	29	21,5	17	24
		14	P-ETV 14 S-SV	373690	27,6	35	40	30	22	19	27
		16	P-ETV 16 S-SV	373691	35,6	36,5	43	33	24,5	24	30

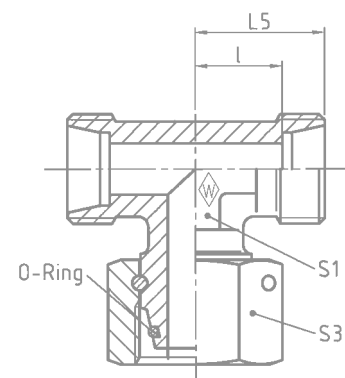
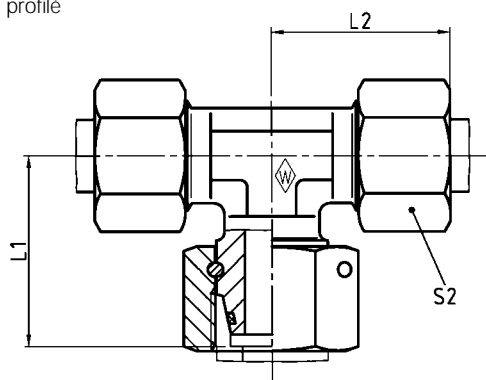
L₂ = Ungefährmaß bei angezogener Überwurfmutter
L₂ = approximate length with nut tightened
L₂ = longueur approximative, l'écrou étant bloqué

P-ETVD

mit Dichtkegel und O-Ring NBR* (z. B. Perbunan)
with taper and O-ring NBR* (e. g. Perbunan)
avec cône d'étanchéité et joint torique
NBR* (p. ex. Perbunan)



Rohr-AD 6 bis 12 mm = Profilmaterial
Tube OD 6 to 12 mm = profile material
Tube Ø ext. 6 à 12 mm = matériau profilé



Reihe Series Série	PN bar (psi)	Rohr-AD Tube OD Tube Ø ext.	Typ Type Désignation	Best.-Nr. Reference Réf.	kg per 100 St. kg per 100 pcs. kg par 100 p.	L ₁	L ₂	L ₅	l	S ₁	S ₂	S ₃	*O-Ring *O-ring *Joint torique
L	500 (7252)	6	P-ETVD 6 L	374574	5,4	26	29	21	14	14	14	17	4,5 x 1,5
		8	P-ETVD 8 L	374575	7,6	27,5	29	21	14	14	17	17	6 x 1,5
		10	P-ETVD 10 L	374576	10,7	29	30	22	15	17	19	19	8,5 x 1,5
	400 (5801)	12	P-ETVD 12 L	374577	13,5	29,5	32	24	17	19	22	22	10 x 1,5
		15	P-ETVD 15 L	374578	22,3	32,5	36	28	21	19	27	27	12 x 2
		18	P-ETVD 18 L	374579	33,2	35,5	40	31	23,5	24	32	32	15 x 2
	250 (3626)	22	P-ETVD 22 L	374580	43,9	38,5	44	35	27,5	27	36	36	20 x 2
		28	P-ETVD 28 L	374581	58,3	41,5	47	38	30,5	36	41	46	26 x 2
		35	P-ETVD 35 L	374582	91,5	51	56	45	34,5	41	50	50	32 x 2,5
		42	P-ETVD 42 L	374583	136,9	56	63	51	40	50	60	60	38 x 2,5
S	800 (11603)	6	P-ETVD 6 S	374584	8,7	27	31	23	16	14	17	17	4,5 x 1,5
		8	P-ETVD 8 S	374585	10,9	27,5	32	24	17	17	19	19	6 x 1,5
		10	P-ETVD 10 S	374586	16,9	30	34	25	17,5	19	22	22	8,5 x 1,5
	630 (9137)	12	P-ETVD 12 S	374587	21,2	31	38	29	21,5	22	24	24	10 x 1,5
		14	P-ETVD 14 S	374588	28,1	35	40	30	22	19	27	27	12 x 2
		16	P-ETVD 16 S	374589	36,4	36,5	43	33	24,5	24	30	30	14 x 2
	420 (6091)	20	P-ETVD 20 S	374590	54,2	44,5	48	37	26,5	27	36	36	17,3 x 2,4
		25	P-ETVD 25 S	374591	105,0	50	54	42	30	36	46	46	22,3 x 2,4
400 (5801)	30	P-ETVD 30 S	374592	134,9	55	62	49	35,5	41	50	50	27,3 x 2,4	
	38	P-ETVD 38 S	374593	206,1	63	72	57	41	50	60	60	35 x 2,5	

L₂ ist Ungefährmaß bei angezogener Überwurfmutter
L₂ = approximate length with nut tightened
L₂ = longueur approximative, l'écrou étant bloqué

*FPM (z. B. Viton) auf Anfrage
*FPM (e. g. Viton) on request
*FPM (p. ex. Viton) sur demande

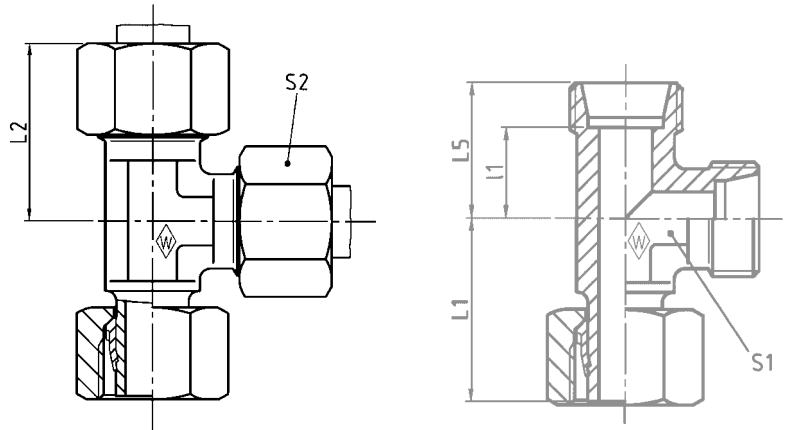


P-ELV-SV

mit Schaft vormontiert

standpipe with pre-assembled nut and profile ring

embout lisse avec écrou et bague profilée pré-sertis



K

Reihe Series Série	PN bar (psi)	Rohr-AD Tube OD Ø ext.	Typ Type Désignation	Best.-Nr. Reference Réf.	kg per 100 St. kg per 100 pcs. kg par 100 p.	L ₁	L ₂	L ₅	l ₁	S ₁	S ₂
L	500 (7252)	6	P-ELV 6 L-SV	373716	5,2	26	27	19	12	12	14
		8	P-ELV 8 L-SV	373717	7,8	27,5	29	21	14	12	17
		10	P-ELV 10 L-SV	373718	10,6	29	30	22	15	14	19
	400 (5801)	12	P-ELV 12 L-SV	373719	12,8	29,5	32	24	17	17	22
		15	P-ELV 15 L-SV	373720	21,9	32,5	36	28	21	19	27
		18	P-ELV 18 L-SV	373721	33,0	35,5	40	31	23,5	24	32
250 (3626)	22	P-ELV 22 L-SV	373722	43,3	38,5	44	35	27,5	27	36	
	28	P-ELV 28 L-SV	373723	55,9	41,5	47	38	30,5	36	41	
S	800 (11603)	6	P-ELV 6 S-SV	373726	8,8	27	31	23	16	12	17
		8	P-ELV 8 S-SV	373727	10,7	27,5	32	24	17	14	19
		10	P-ELV 10 S-SV	373728	16,7	30	34	25	17,5	17	22
	630 (9137)	12	P-ELV 12 S-SV	373729	20,4	31	38	29	21,5	17	24
		14	P-ELV 14 S-SV	373730	27,2	35	40	30	22	19	27
		16	P-ELV 16 S-SV	373731	33,7	36,5	43	33	24,5	24	30

L₂ = Ungefährmaß bei angezogener Überwurfmutter

L₂ = approximate length with nut tightened

L₂ = longueur approximative, l'écrou étant bloqué

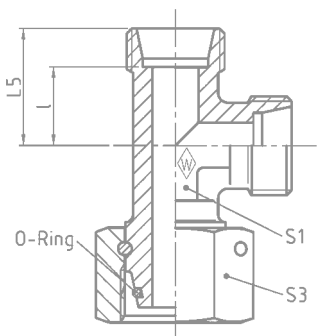
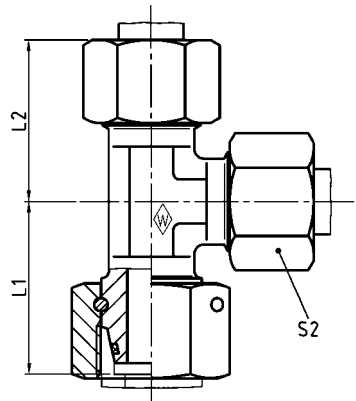
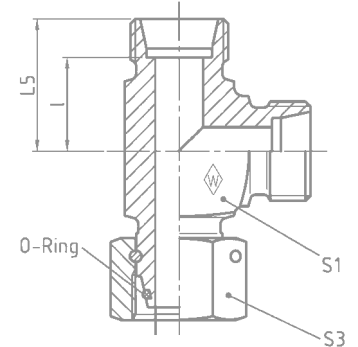
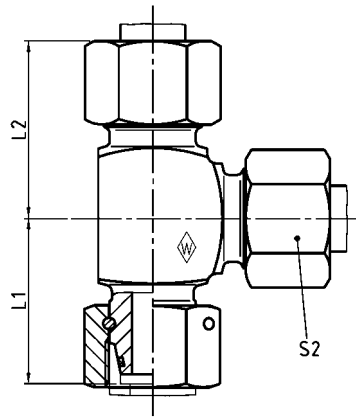
P-ELVD

mit Dichtkegel und O-Ring NBR* (z. B. Perbunan)

with taper and O-ring NBR* (e. g. Perbunan)

avec cône d'étanchéité et joint torique NBR* (p. ex. Perbunan)

Rohr-AD 6 bis 12 mm = Profilmaterial
Tube OD 6 to 12 mm = profile material
Tube Ø ext. 6 à 12 mm = matériau profilé



Reihe Series Série	PN bar (psi)	Rohr-AD Tube OD Tube Ø ext.	Typ Type Désignation	Best.-Nr. Reference Réf.	kg per 100 St. kg per 100 pcs. kg par 100 p.	L ₁	L ₂	L ₅	l	S ₁	S ₂	S ₃	*O-Ring *O-ring *Joint torique
L	500 (7252)	6	P-ELVD 6 L	374594	5,3	26	29	21	14	14	14	17	4,5 x 1,5
		8	P-ELVD 8 L	374595	8,0	27,5	29	21	14	14	17	17	6 x 1,5
		10	P-ELVD 10 L	374596	10,9	29	30	22	15	17	19	19	8,5 x 1,5
	400 (5801)	12	P-ELVD 12 L	372991	13,2	29,5	32	24	17	19	22	22	10 x 1,5
		15	P-ELVD 15 L	374597	22,3	32,5	36	28	21	19	27	27	12 x 2
		18	P-ELVD 18 L	374598	33,7	35,5	40	31	23,5	24	32	32	15 x 2
	250 (3626)	22	P-ELVD 22 L	374599	43,9	38,5	44	35	27,5	27	36	36	20 x 2
28		P-ELVD 28 L	374600	56,8	41,5	47	38	30,5	36	41	46	26 x 2	
35		P-ELVD 35 L	374601	90,5	51	56	45	34,5	41	50	50	32 x 2,5	
42		P-ELVD 42 L	374602	134,4	56	63	51	40	50	60	60	38 x 2,5	
S	800 (11603)	6	P-ELVD 6 S	374603	8,9	27	31	23	16	14	17	17	4,5 x 1,5
		8	P-ELVD 8 S	374604	10,9	27,5	32	24	17	17	19	19	6 x 1,5
		10	P-ELVD 10 S	374605	17,0	30	34	25	17,5	19	22	22	8,5 x 1,5
	630 (9137)	12	P-ELVD 12 S	374606	21,2	31	38	29	21,5	22	24	24	10 x 1,5
		14	P-ELVD 14 S	374607	27,7	35	40	30	22	19	27	27	12 x 2
		16	P-ELVD 16 S	374608	34,5	36,5	43	33	24,5	24	30	30	14 x 2
	420 (6091)	20	P-ELVD 20 S	374609	54,8	44,5	48	37	26,5	27	36	36	17,3 x 2,4
		25	P-ELVD 25 S	374610	103,6	50	54	42	30	36	46	46	22,3 x 2,4
400 (5801)	30	P-ELVD 30 S	374611	134,1	55	62	49	35,5	41	50	50	27,3 x 2,4	
	38	P-ELVD 38 S	374612	196,4	63	72	57	41	50	60	60	35 x 2,5	

L₂ = Ungefährmaß bei angezogener Überwurfmutter
L₂ = approximate length with nut tightened
L₂ = longueur approximative, l'écrou étant bloqué

*FPM (z. B. Viton) auf Anfrage
*FPM (e. g. Viton) on request
*FPM (p. ex. Viton) sur demande

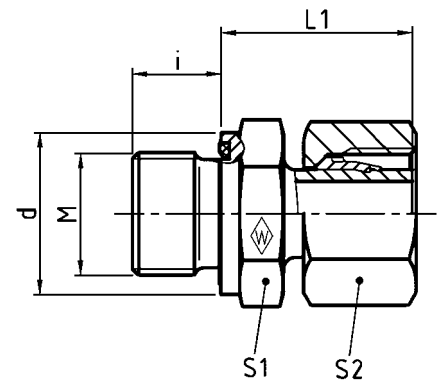
K

P-EGES R-WD-SV

mit Schaft vormontiert
 und Weichdichtung: NBR* (z. B. Perbunan)
 Einschraubgewinde: Whitworth-Rohrgewinde (zylindrisch)

standpipe with pre-assembled nut and profile ring
 and captive seal: NBR* (e. g. Perbunan)
 Stud thread: BSP thread (parallel)

embout lisse avec écrou et bague profilée pré-sertis
 et joint mou: NBR* (p. ex. Perbunan)
 Filetage mâle: Whitworth (cylindrique)



DIN-ISO 228 (R ..., DIN 259)

Reihe Series Série	PN bar (psi)	Rohr-AD Tube OD Tube Ø ext.	G	Typ Type Désignation	Best.-Nr. Reference Réf.	kg per 100 St. kg per 100 pcs. kg par 100 p.	i	d	L ₁	S ₁	S ₂
L	500 (7252)	6	G 1/8	A P-EGES 6 LR-WD-SV	373856	2,5	8	13,9	24,5	14	14
		8	G 1/4	A P-EGES 8 LR-WD-SV	373857	4,5	12	18,9	29,5	19	17
		10	G 1/4	A P-EGES 10 LR-WD-SV	373858	5,8	12	18,9	27,5	19	19
	400 (5801)	12	G 1/4	A P-EGES 12 L/R 1/4-WD-SV	373859	6,5	12	18,9	27,5	19	22
		12	G 3/8	A P-EGES 12 LR-WD-SV	373860	6,5	12	21,9	34	22	22
		15	G 3/8	A P-EGES 15 L/R 3/8-WD-SV	374482	11,0	12	21,9	34	27	27
		15	G 1/2	A P-EGES 15 LR-WD-SV	373861	11,6	14	26,9	32	27	27
		18	G 1/2	A P-EGES 18 LR-WD-SV	373862	13,0	14	26,9	31,5	27	27
	250 (3626)	22	G 3/4	A P-EGES 22 LR-WD-SV	373863	17,6	16	31,9	32,5	32	36
S	800 (11603)	6	G 1/4	A P-EGES 6 SR-WD-SV	373867	5,1	12	18,9	27	19	17
		8	G 1/4	A P-EGES 8 SR-WD-SV	373868	4,8	12	18,9	29,5	19	19
		10	G 3/8	A P-EGES 10 SR-WD-SV	373869	8,3	12	21,9	32	22	22
	630 (9137)	12	G 3/8	A P-EGES 12 SR-WD-SV	373870	7,3	12	21,9	34	22	24
		12	G 1/2	A P-EGES 12 S/R 1/2-WD-SV	373871	9,2	14	26,9	34,5	27	25
		14	G 1/2	A P-EGES 14 SR-WD-SV	373872	14,9	14	26,9	36,5	27	27
		16	G 1/2	A P-EGES 16 SR-WD-SV	373873	15,4	14	26,9	37	27	30
16	G 3/4	A P-EGES 16 S/R 3/4-WD-SV	373874	20,0	16	31,9	39	32	30		

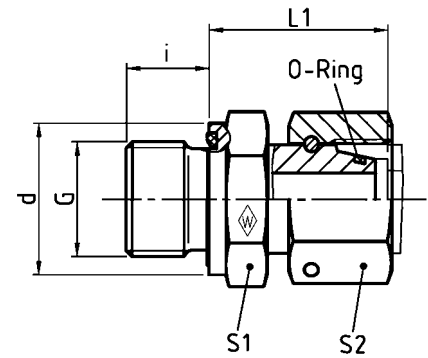
* FPM (z. B. Viton) auf Anfrage
 * FPM (e. g. Viton) on request
 * FPM (p. ex. Viton) sur demande

EGESD R-WD

mit Dichtkegel, O-Ring
 und Weichdichtung NBR* (z. B. Perbunan)
 Einschraubgewinde: Whitworth-Rohrgewinde (zylindrisch)

with taper, O-ring
 and captive seal NBR* (e. g. Perbunan)
 Stud thread: BSP thread (parallel)

avec cône d'étanchéité, joint torique
 et joint mou NBR* (p. ex. Perbunan)
 Filetage mâle: Whitworth (cylindrique)



DIN-ISO 228 (R ..., DIN 259)

Reihe Series Série	PN bar (psi)	Rohr-AD Tube OD Tube Ø ext.	G	Typ Type Désignation	Best.-Nr. Reference Réf.	kg per 100 St. kg per 100 pcs. kg par 100 p.	L ₁	i	d	S ₁	S ₂	*O-Ring *O-ring *Joint torique
L	500 (7252)	6	G 1/8 A	EGESD 6 LR-WD	063661	3,6	24,5	8	13,9	14	17	4,5 x 1,5
		8	G 1/4 A	EGESD 8 LR-WD	063662	5,7	29,5	12	18,9	19	17	6 x 1,5
		10	G 1/4 A	EGESD 10 LR-WD	063663	5,8	27,5	12	18,9	19	19	8,5 x 1,5
	400 (5801)	12	G 1/4 A	EGESD 12 L/R 1/4-WD	063664	6,8	27,5	12	18,9	19	22	10 x 1,5
		12	G 3/8 A	EGESD 12 LR-WD	063665	7,5	34	12	21,9	22	22	10 x 1,5
		15	G 1/2 A	EGESD 15 LR-WD	063666	14,4	32	14	26,9	27	27	12 x 2
		18	G 1/2 A	EGESD 18 LR-WD	063667	15,2	31,5	14	26,9	27	32	15 x 2
250 (3626)	22	G 3/4 A	EGESD 22 LR-WD	063668	20,2	32,5	16	31,9	32	36	20 x 2	
	28	G 1 A	EGESD 28 LR-WD	063669	35,6	35	18	39,9	41	46	26 x 2	
	35	G 1 1/4 A	EGESD 35 LR-WD	063670	50,7	42,5	20	49,9	50	50	32 x 2,5	
	42	G 1 1/2 A	EGESD 42 LR-WD	063671	66,4	46,5	22	54,9	55	60	38 x 2,5	
	S	800 (11603)	6	G 1/4 A	EGESD 6 SR-WD	063672	5,6	27	12	18,9	19	17
8			G 1/4 A	EGESD 8 SR-WD	063673	6,2	29,5	12	18,9	19	19	6 x 1,5
10			G 3/8 A	EGESD 10 SR-WD	063674	9,2	32	12	21,9	22	22	8,5 x 1,5
630 (9137)		12	G 3/8 A	EGESD 12 SR-WD	063675	11,0	34	12	21,9	22	24	10 x 1,5
		12	G 1/2 A	EGESD 12 S/R 1/2-WD	063676	15,3	34,5	14	26,9	27	24	10 x 1,5
420 (6091)	14	G 1/2 A	EGESD 14 SR-WD	063677	17,0	36,5	14	26,9	27	27	12 x 2	
	16	G 1/2 A	EGESD 16 SR-WD	063678	23,0	37	14	26,9	27	30	14 x 2	
	20	G 3/4 A	EGESD 20 SR-WD	063679	28,6	43	16	31,9	32	36	17,3 x 2,4	
	25	G 1 A	EGESD 25 SR-WD	063680	49,4	48	18	39,9	41	46	22,3 x 2,4	
	30	G 1 1/4 A	EGESD 30 SR-WD	063681	67,4	51	20	49,9	50	50	27,3 x 2,4	
400 (5801)	38	G 1 1/2 A	EGESD 38 SR-WD	063682	93,1	60	22	54,9	55	60	35 x 2,5	

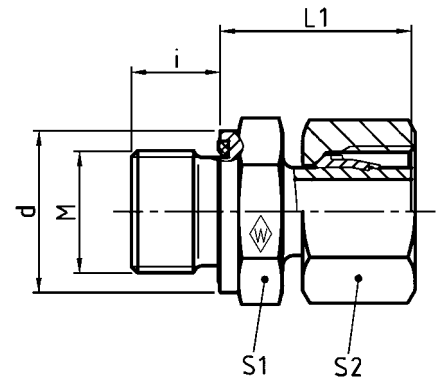
* FPM (z. B. Viton) auf Anfrage
 * FPM (e. g. Viton) on request
 * FPM (p. ex. Viton) sur demande

P-EGES M-WD-SV

mit Schaft vormontiert
 Weichdichtung NBR* (z. B. Perbunan)
 Einschraubgewinde: Metrisches Gewinde (zylindrisch)

standpipe with pre-assembled nut and profile ring
 captive seal NBR* (e. g. Perbunan)
 Stud thread: metric (parallel)

embout lisse avec écrou et bague profilée pré-sertis
 joint mou NBR* (p. ex. Perbunan)
 Filetage mâle: métrique (cylindrique)



K

Reihe Series Série	PN bar (psi)	Rohr-AD Tube OD Tube Ø ext.	M	Typ Type Désignation	Best.-Nr. Reference Réf.	kg per 100 St. kg per 100 pcs. kg par 100 p.	i	d	L ₁	S ₁	S ₂
L	500 (7252)	6	M 10 x 1	P-EGES 6 LM-WD-SV	373879	2,5	8	13,9	24,5	14	14
		8	M 12 x 1,5	P-EGES 8 LM-WD-SV	373880	4,0	12	16,9	26,5	17	17
		10	M 14 x 1,5	P-EGES 10 LM-WD-SV	373881	4,8	12	18,9	27,5	19	19
	400 (5801)	12	M 16 x 1,5	P-EGES 12 LM-WD-SV	373882	6,5	12	21,9	30,5	22	22
		15	M 18 x 1,5	P-EGES 15 LM-WD-SV	373883	9,6	12	23,9	31,5	24	27
		18	M 22 x 1,5	P-EGES 18 LM-WD-SV	373884	13,0	14	26,9	31,5	27	32
250 (3626)	22	M 26 x 1,5	P-EGES 22 LM-WD-SV	373885	17,6	16	31,9	32,5	32	36	
S	800 (11603)	6	M 12 x 1,5	P-EGES 6 SM-WD-SV	373889	4,6	12	16,9	27	17	17
		8	M 14 x 1,5	P-EGES 8 SM-WD-SV	373890	5,5	12	18,9	29,5	19	19
		10	M 16 x 1,5	P-EGES 10 SM-WD-SV	373891	8,3	12	21,9	32	22	22
	630 (9137)	12	M 18 x 1,5	P-EGES 12 SM-WD-SV	373892	11,5	12	23,9	34	24	24
		14	M 20 x 1,5	P-EGES 14 SM-WD-SV	373893	14,9	14	25,9	36,5	27	27
		16	M 22 x 1,5	P-EGES 16 SM-WD-SV	373894	15,4	14	26,9	37	27	30

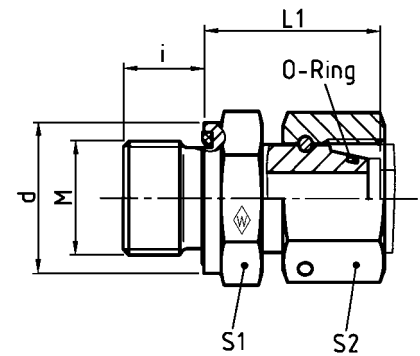
* FPM (z. B. Viton) auf Anfrage
 * FPM (e. g. Viton) on request
 * FPM (p. ex. Viton) sur demande

EGESD M-WD

mit Dichtkegel, O-Ring
 und Weichdichtung NBR* (z. B. Perbunan)
 Einschraubgewinde: Metrisches Gewinde (zylindrisch)

with taper, O-ring
 and captive seal NBR* (e. g. Perbunan)
 Stud thread: metric (parallel)

avec cône d'étanchéité, joint torique
 et joint mou NBR* (p. ex. Perbunan)
 Filetage mâle: métrique (cylindrique)



Reihe Series Série	PN bar (psi)	Rohr-AD Tube OD Tube Ø ext.	M	Typ Type Désignation	Best.-Nr. Reference Réf.	kg per 100 St. kg per 100 pcs. kg par 100 p.	L ₁	i	d	S ₁	S ₂	*O-Ring *O-ring *Joint torique
L	500 (7252)	6	M 10 x 1	EGESD 6 LM-WD	063641	3,6	24,5	8	13,9	14	17	4,5 x 1,5
		8	M 12 x 1,5	EGESD 8 LM-WD	063642	5,7	26,5	12	16,9	17	17	6 x 1,5
		10	M 14 x 1,5	EGESD 10 LM-WD	063643	5,8	27,5	12	18,9	19	19	8,5 x 1,5
	400 (5801)	12	M 16 x 1,5	EGESD 12 LM-WD	063644	7,5	30,5	12	21,9	22	22	10 x 1,5
		15	M 18 x 1,5	EGESD 15 LM-WD	063645	14,4	31,5	12	23,9	24	27	12 x 2
		18	M 22 x 1,5	EGESD 18 LM-WD	063646	15,2	31,5	14	26,9	27	32	15 x 2
	250 (3626)	22	M 26 x 1,5	EGESD 22 LM-WD	063647	20,2	32,5	16	31,9	32	36	20 x 2
		28	M 33 x 2	EGESD 28 LM-WD	063648	35,6	35	18	39,9	41	41	26 x 2
		35	M 42 x 2	EGESD 35 LM-WD	063649	50,7	42,5	20	49,9	50	50	32 x 2,5
	S	800 (11603)	42	M 48 x 2	EGESD 42 LM-WD	063650	66,4	46,5	22	54,9	55	60
6			M 12 x 1,5	EGESD 6 SM-WD	063651	5,6	27	12	16,9	17	17	4,5 x 1,5
8			M 14 x 1,5	EGESD 8 SM-WD	063652	6,2	29,5	12	18,9	19	19	6 x 1,5
630 (9137)		10	M 16 x 1,5	EGESD 10 SM-WD	063653	9,2	32	12	21,9	22	22	8,5 x 1,5
		12	M 18 x 1,5	EGESD 12 SM-WD	063654	11,0	34	12	23,9	24	24	10 x 1,5
		14	M 20 x 1,5	EGESD 14 SM-WD	063655	17,0	36,5	14	25,9	27	27	12 x 2
420 (6091)		16	M 22 x 1,5	EGESD 16 SM-WD	063656	23,0	37	14	26,9	27	30	14 x 2
		20	M 27 x 2	EGESD 20 SM-WD	063657	28,6	43	16	31,9	32	36	17,3 x 2,4
		25	M 33 x 2	EGESD 25 SM-WD	063658	49,4	48	18	39,9	41	46	22,3 x 2,4
400 (5801)		30	M 42 x 2	EGESD 30 SM-WD	063659	67,4	51	20	49,9	50	50	27,3 x 2,4
	38	M 48 x 2	EGESD 38 SM-WD	063660	93,1	60	22	54,9	55	60	35 x 2,5	

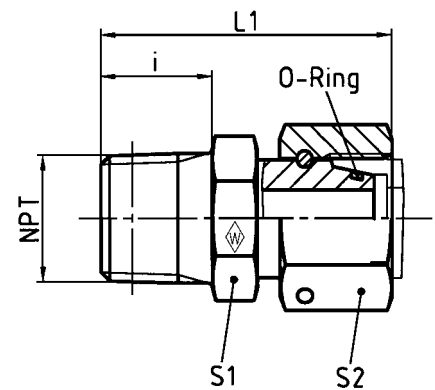
* FPM (z. B. Viton) auf Anfrage
 * FPM (e. g. Viton) on request
 * FPM (p. ex. Viton) sur demande

EGESD NPT

mit Dichtkegel und O-Ring NBR* (z. B. Perbunan)
 Einschraubgewinde: NPT (ANSI/ASME B1.20.1-1983)

with taper and O-ring NBR* (e. g. Perbunan)
 Stud thread: NPT (ANSI/ASME B1.20.1-1983)

avec cône d'étanchéité et joint torique NBR* (p. ex. Perbunan)
 Filetage mâle: NPT (ANSI/ASME B1.20.1-1983)



Reihe Series Série	PN bar (psi)	Rohr-AD Tube OD Tube Ø ext.	NPT	Typ Type Désignation	Best.-Nr. Reference Réf.	kg per 100 St. kg per 100 pcs. kg par 100 p.	i	L ₁	S ₁	S ₂	*O-Ring *O-ring *Joint torique
K	250 (3626)	6	1/8 NPT	EGESD 6 L/ 1/8 NPT	605721	3,7	10	36,5	11	14	4,5 x 1,5
		8	1/4 NPT	EGESD 8 L/ 1/4 NPT	605722	6,9	15	41,5	14	17	6 x 1,5
		10	1/4 NPT	EGESD 10 L/ 1/4 NPT	605723	5,9	15	40,5	17	19	8,5 x 1,5
		12	3/8 NPT	EGESD 12 L/ 3/8 NPT	605724	10,2	15	45,5	19	22	10 x 1,5
		15	1/2 NPT	EGESD 15 L/ 1/2 NPT	605725	15,9	20	48	22	27	12 x 2
		L	160 (2321)	18	1/2 NPT	EGESD 18 L/ 1/2 NPT	605726	15,8	20	47,5	27
22	3/4 NPT			EGESD 22 L/ 3/4 NPT	605727	21,6	20	49	30	36	20 x 2
100 (1450)	28		1 NPT	EGESD 28 L/ 1 NPT	605728	43,9	25	57,5	36	41	26 x 2
	35		1 1/4 NPT	EGESD 35 L/ 1 1/4 NPT	605729	50,5	26	65	46	50	32 x 2,5
		42	1 1/2 NPT	EGESD 42 L/ 1 1/2 NPT	605730	77	26	65	50	60	38 x 2,5
S	630 (9137)	6	1/4 NPT	EGESD 6 S/ 1/4 NPT	605731	6,1	15	41,5	17	17	4,5 x 1,5
		8	1/4 NPT	EGESD 8 S/ 1/4 NPT	605732	6,2	15	41,5	17	19	6 x 1,5
		10	3/8 NPT	EGESD 10 S/ 3/8 NPT	605733	9	15	44,5	19	22	8,5 x 1,5
		12	3/8 NPT	EGESD 12 S/ 3/8 NPT	605734	9,5	15	45,5	19	24	10 x 1,5
	400 (5801)	14	1/2 NPT	EGESD 14 S/ 1/2 NPT	605735	17,7	20	53,5	22	27	12 x 2
		16	1/2 NPT	EGESD 16 S/ 1/2 NPT	605736	23,6	20	53,5	24	30	14 x 2
		20	3/4 NPT	EGESD 20 S/ 3/4 NPT	605737	28,3	20	58	30	36	17,3 x 2,4
		25	1 NPT	EGESD 25 S/ 1 NPT	605738	50,4	25	68	36	46	22,3 x 2,4
250 (3626)	30	1 1/4 NPT	EGESD 30 S/ 1 1/4 NPT	605739	65	26	73,5	46	50	27,3 x 2,4	
	38	1 1/2 NPT	EGESD 38 S/ 1 1/2 NPT	605740	93,2	26	78	50	60	35 x 2,5	

* FPM (z. B. Viton) auf Anfrage
 * FPM (e. g. Viton) on request
 * FPM (p. ex. Viton) sur demande

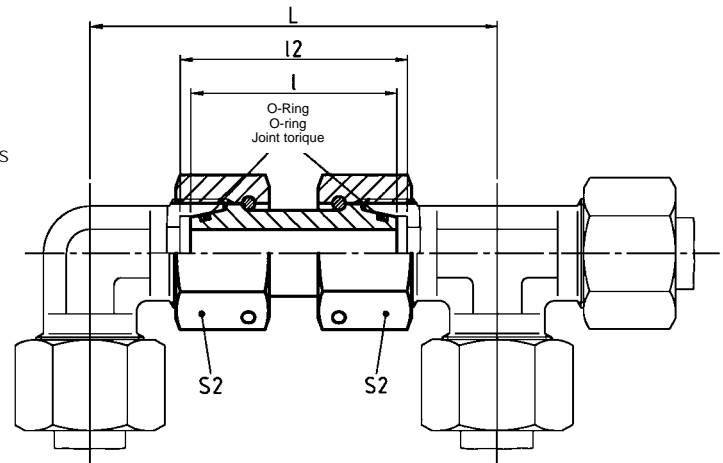
SNV

beidseitig Dichtkegel und O-Ring NBR* (z. B. Perbunan)
taper and O-ring NBR* (e. g. Perbunan) on both sides
cône d'étanchéité et joint torique NBR* (p. ex. Perbunan) des deux côtés

jeweils eine Mutter bis Hinterkante O-Ring Nut
zurückschiebbar

nuts on either side are retractable to back of
O-ring groove, but only one at a time

les écrous de chaque côté sont rétractables, l'un
par l'autre, jusqu'au bord arrière de la rainure du joint
torique



Reihe Series Série	PN bar (psi)	Rohr-AD Tube OD Tube Ø ext.	Typ Type Désignation	Best.-Nr. Reference Réf.	L	l	l ₂	S ₂	*O-Ring *O-ring *Joint torique
L	500 (7252)	6	SNV 6 L	372938	60	34	36	17	4,5 x 1,5
		8	SNV 8 L	372939	64	34	36	17	6 x 1,5
		10	SNV 10 L	372940	67	36	37	19	8,5 x 1,5
	400 (5801)	12	SNV 12 L	372941	71	36	37	22	10 x 1,5
		15	SNV 15 L	372942	82	39	40	27	12 x 2
		18	SNV 18 L	372943	89,5	40,5	42,5	32	15 x 2
		22	SNV 22 L	372944	101,5	45	46,5	36	20 x 2
	250 (3626)	28	SNV 28 L	372945	109,5	47	48,5	46	26 x 2
		35	SNV 35 L	372946	126,5	53	57,5	50	32 x 2,5
		42	SNV 42 L	372947	138,5	53	58,5	60	38 x 2,5
S	800 (11603)	6	SNV 6 S	372948	71	37	39	17	4,5 x 1,5
		8	SNV 8 S	069234	73	37	39	19	6 x 1,5
		10	SNV 10 S	068948	78	41	43	22	8,5 x 1,5
	630 (9137)	12	SNV 12 S	068950	87	42	44	24	10 x 1,5
		14	SNV 14 S	372949	92	45	48	27	12 x 2
		16	SNV 16 S	068088	99	46	50	30	14 x 2
	420 (6091)	20	SNV 20 S	068090	112,5	55	59,5	36	17,3 x 2,4
		25	SNV 25 S	061763	125,5	58	65,5	46	22,3 x 2,4
	400 (5801)	30	SNV 30 S	068099	143,5	62	72,5	50	27,3 x 2,4
		38	SNV 38 S	061765	164,5	67	82,5	60	35 x 2,5

* FPM (z. B. Viton) auf Anfrage
* FPM (e. g. Viton) on request
* FPM (p. ex. Viton) sur demande

SNV L

Reduzierschraubung
beidseitig Dichtkegel und O-Ring NBR* (z. B. Perbunan)

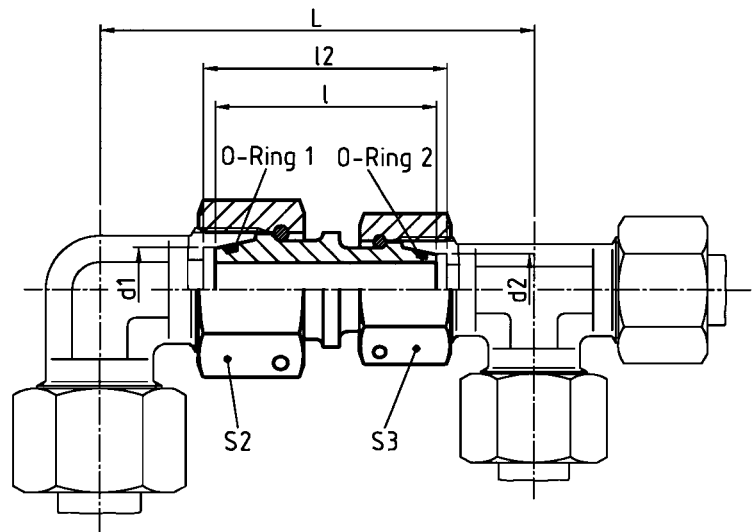
Reducing fitting
taper and O-ring NBR* (e. g. Perbunan) on both ends

Raccord de réduction
cône d'étanchéité et joint torique NBR* (p. ex. Perbunan)
des deux côtés

jeweils eine Mutter bis Hinterkante O-Ring Nut
zurückschiebbar

nuts at either end are retractable to back of
O-ring groove

les écrous de chaque côté sont rétractables jusqu'au
bord arrière de la rainure du joint torique



PN bar (psi)	Rohr-AD Tube OD		Typ Type Désignation	Best.-Nr. Reference Réf.	L	l	l ₂	S ₁	S ₂	*O-Ring 1	*O-Ring 2
	Δ ext. d ₁	d ₂								*O-ring 1 *Joint torique 1	*O-ring 2 *Joint torique 2
500 (7252)	8	6	SNV 8/ 6 L	612675	64	34	36	17	17	6 x 1,5	4,5 x 1,5
	10	6	SNV 10/ 6 L	612676	65,5	35	36,5	19	17	8,5 x 1,5	4,5 x 1,5
	10	8	SNV 10/ 8 L	612677	65,5	35	36,5	19	17	8,5 x 1,5	6 x 1,5
400 (5801)	12	6	SNV 12/ 6 L	612678	67,5	35	36,5	22	17	10 x 1,5	4,5 x 1,5
	12	8	SNV 12/ 8 L	374258	68,5	36	37,5	22	17	10 x 1,5	6 x 1,5
	12	10	SNV 12/10 L	612679	69,5	36,5	37,5	22	19	10 x 1,5	8,5 x 1,5
	15	8	SNV 15/ 8 L	612680	73	36,5	38	27	17	12 x 2	6 x 1,5
	15	10	SNV 15/10 L	612681	74,5	37,5	38,5	27	19	12 x 2	8,5 x 1,5
	15	12	SNV 15/12 L	612682	83	44	45	27	22	12 x 2	10 x 1,5
	18	10	SNV 18/10 L	612683	78	38	39,5	32	19	15 x 2	8,5 x 1,5
	18	12	SNV 18/12 L	612684	80	38	39,5	32	22	15 x 2	10 x 1,5
	18	15	SNV 18/15 L	612685	91	45	46,5	32	27	15 x 2	12 x 2
250 (3626)	22	12	SNV 22/12 L	612686	86,5	40,5	42	36	22	20 x 2	10 x 1,5
	22	15	SNV 22/15 L	612687	92	42	43,5	36	27	20 x 2	12 x 2
	22	18	SNV 22/18 L	612688	98	45	47	36	32	20 x 2	15 x 2
	28	15	SNV 28/15 L	612689	96	43	44,5	41	27	26 x 2	12 x 2
	28	18	SNV 28/18 L	612690	100	44	46	41	32	26 x 2	15 x 2
	28	22	SNV 28/22 L	612691	106	46	48	41	36	26 x 2	20 x 2
	35	18	SNV 35/18 L	612692	109,5	48	51,5	50	32	32 x 2,5	15 x 2
	35	22	SNV 35/22 L	612693	115	49,5	53	50	36	32 x 2,5	20 x 2
	35	28	SNV 35/28 L	612694	118,5	50	53,5	50	46	32 x 2,5	26 x 2
	42	22	SNV 42/22 L	612695	121	49,5	53,5	60	36	38 x 2,5	20 x 2
42	28	SNV 42/28 L	612696	124,5	50	54	60	46	38 x 2,5	26 x 2	
42	35	SNV 42/35 L	612697	133	53	58,5	60	50	38 x 2,5	32 x 2,5	

* FPM (z. B. Viton) auf Anfrage
* FPM (e. g. Viton) on request
* FPM (p. ex. Viton) sur demande

SNV S

Reduzierschraubung
beidseitig Dichtkegel und O-Ring NBR* (z. B. Perbunan)

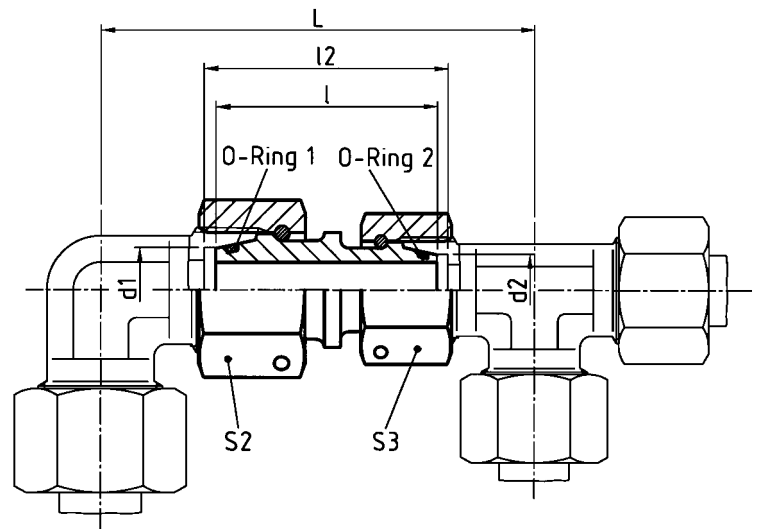
Reducing fitting
taper and O-ring NBR* (e. g. Perbunan) on both ends

Raccord de réduction
cône d'étanchéité et joint torique NBR* (p. ex. Perbunan)
des deux côtés

jeweils eine Mutter bis Hinterkante O-Ring Nut
zurückschiebbar

nuts at either end are retractable to back of
O-ring groove

les écrous de chaque côté sont rétractables jusqu'au
bord arrière de la rainure du joint torique



PN bar (psi)	Rohr-AD Tube OD Tube Δ ext. d ₁ d ₂		Typ Type Désignation	Best.-Nr. Reference Réf.	L	l	l ₂	S ₁	S ₂	*O-Ring 1 *O-ring 1 *Joint torique 1	*O-Ring 2 *O-ring 2 *Joint torique 2
800 (11603)	8	6	SNV 8/ 6 S	612698	72	37	39	19	17	6 x 1,5	4,5 x 1,5
	10	6	SNV 10/ 6 S	612699	76	40,5	42,5	22	17	8,5 x 1,5	4,5 x 1,5
	10	8	SNV 10/ 8 S	612700	75,5	39	41	22	19	8,5 x 1,5	6 x 1,5
630 (9137)	12	6	SNV 12/ 6 S	612701	80,5	39	43	24	17	10 x 1,5	4,5 x 1,5
	12	8	SNV 12/ 8 S	612702	84,5	44	46	24	19	10 x 1,5	6 x 1,5
	12	10	SNV 12/10 S	612703	82,5	41,5	43,5	24	22	10 x 1,5	8,5 x 1,5
	16	10	SNV 16/10 S	612704	88,5	43,5	46,5	30	22	14 x 2,0	8,5 x 1,5
	16	12	SNV 16/12 S	612705	96,5	47,5	50,5	30	24	14 x 2,0	10 x 1,5
420 (6091)	20	12	SNV 20/12 S	612706	100	48,5	52	36	24	17,3 x 2,4	10 x 1,5
	20	16	SNV 20/16 S	612707	108	52,5	57	36	30	17,3 x 2,4	14 x 2
	25	16	SNV 25/16 S	612708	112,5	52	58	46	30	22,3 x 2,4	14 x 2
	25	20	SNV 25/20 S	612709	121	58	64,5	46	36	22,3 x 2,4	17,3 x 2,4
400 (5801)	30	16	SNV 30/16 S	612710	121,5	54	61,5	50	30	27,3 x 2,4	14 x 2
	30	20	SNV 30/20 S	612711	128,5	58,5	66,5	50	36	27,3 x 2,4	17,3 x 2,4
	30	25	SNV 30/25 S	612712	135	60	69,5	50	46	27,3 x 2,4	22,3 x 2,4
	38	20	SNV 38/20 S	612713	139	61	71,5	60	36	35 x 2,5	17,3 x 2,4
	38	25	SNV 38/25 S	612714	145,5	62,5	74,5	60	46	35 x 2,5	22,3 x 2,4
	38	30	SNV 38/30 S	612715	154,5	64,5	78	60	50	35 x 2,5	27,3 x 2,4

* FPM (z. B. Viton) auf Anfrage
* FPM (e. g. Viton) on request
* FPM (p. ex. Viton) sur demande



SNVL/S-S/L

Reduzierschraubung
beidseitig Dichtkegel und O-Ring NBR* (z. B. Perbunan)

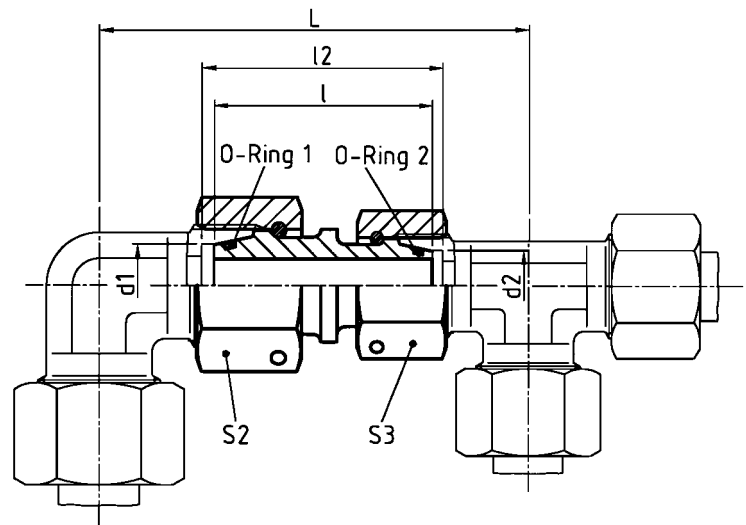
Reducing fitting
taper and O-ring NBR* (e. g. Perbunan) on both ends

Raccord de réduction
cône d'étanchéité et joint torique NBR* (p. ex. Perbunan)
des deux côtés

jeweils eine Mutter bis Hinterkante O-Ring Nut
zurückschiebbar

nuts at either end are retractable to back of
O-ring groove

les écrous de chaque côté sont rétractables jusqu'au
bord arrière de la rainure du joint torique



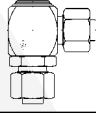
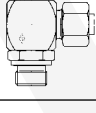
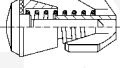
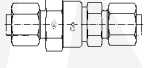





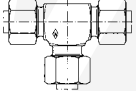

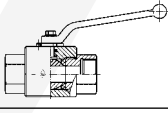

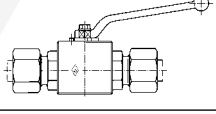
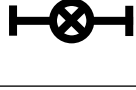
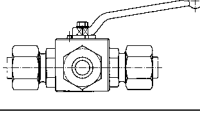
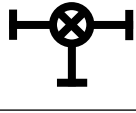
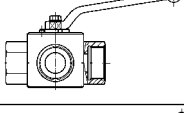
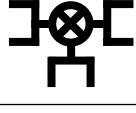
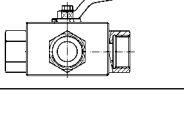
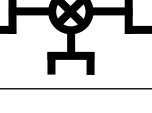
K

PN bar (psi)	Rohr-AD Tube OD Tube Δ ext.		Typ Type Designation	Best.-Nr. Reference Réf.	L	l	l ₂	S ₁	S ₂	*O-Ring 1	*O-Ring 2
	d ₁	d ₂								*O-ring 1	*O-ring 2
										*Joint torique 1	*Joint torique 2
400 (5801)	6	6	SNV 6L/ 6 S	612716	67,5	35,5	37,5	17	17	4,5 x 1,5	4,5 x 1,5
	8	8	SNV 8L/ 8 S	612717	68,5	35,5	37,5	17	19	6 x 1,5	6 x 1,5
	10	10	SNV 10L/10 S	612718	72,5	38,5	40	19	22	8,5 x 1,5	8,5 x 1,5
	12	12	SNV 12L/12 S	612719	79	39	40,5	22	24	10 x 1,5	10 x 1,5
	18	16	SNV 18L/16 S	612720	94,5	43,5	46,5	32	30	15 x 2	14 x 2
250 (3626)	22	20	SNV 22L/20 S	612721	107,5	50	53,5	36	36	20 x 2	17,3 x 2,4
	28	25	SNV 28L/25 S	612722	118	52,5	57,5	46	46	26 x 2	22,3 x 2,4
	35	30	SNV 35L/30 S	612723	139	61	69	50	50	32 x 2,5	27,3 x 2,4
	42	38	SNV 42L/38 S	612724	147	55	66	60	60	38 x 2,5	35 x 2,5
400 (5801)	16	15	SNV 16S/15 L	612725	90,5	42,5	45	30	27	14 x 2	12 x 2
	20	18	SNV 20S/18 L	612726	101	47,5	51	36	32	17,3 x 2,4	15 x 2
250 (3626)	25	22	SNV 25S/22 L	612727	119,5	57	62	46	36	22,3 x 2,4	20 x 2
	30	28	SNV 30S/28 L	612728	131,5	59	65,5	50	46	27,3 x 2,4	26 x 2
	38	35	SNV 38S/35 L	612729	148	62	72,5	60	50	35 x 2,5	32 x 2,5

* FPM (z. B. Viton) auf Anfrage

* FPM (e. g. Viton) on request

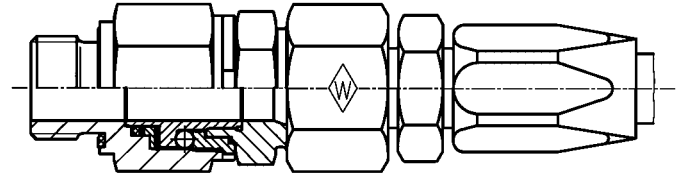
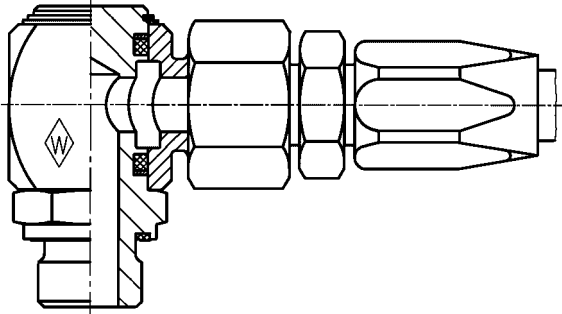
* FPM (p. ex. Viton) sur demande

Drehverschraubungen Rückschlagventile Wechselventile Kugelhähne	Swivel banjos Non-return valves Shuttle valves Ball valves	Abb. Fig. Fig.	Sinnbild Symbol Symbole	Typ Type Désignation	Seite Page Page
Drehverschraubung Swivel banjo Raccord tournant	Technische Hinweise Technical details Détails techniques				L2
	Drehzahlen und Anlaufdrehmomente Speeds and starting torques Vitesses et couples départ				L3
Winkel-Einschraub-Drehverschraubung Swivel banjo coupling Raccord tournant équerre mâle				P-DGWEV.....R-WD P-DGWEV.....M-WD	L4 L5
Winkel-Drehverschraubung Swivel elbow coupling (body only) Raccord tournant union équerre (corps)				P-DGWW.....	L6
Rückschlagventil Non-return valve Clapet anti-retour	Technische Hinweise Technical details Détails techniques				L7
Ventileinsatz Valve insert Insert clapet					L8
Rückschlagventil Non-return valve Clapet anti-retour mâle				P-RV.....	L9
Einschraub-Rückschlagventil Non-return valve with male stud Clapet anti-retour mâle				P-RVV.....R-WD P-RVV.....M-WD	L10 L11
Einschraub-Rückschlagventil Non-return valve with male stud Clapet anti-retour mâle				P-RVZ.....R-WD P-RVZ.....M-WD	L12 L13
Wechselventil Shuttle vale Soupape à deux voies	Technische Hinweise Technical details Détails techniques				L14
Wechselventil Shuttle vales Soupapes à deux voies				P-TWW	L15
Hochdruck-Kugelhahn High-pressure ball valve Robinet à boisseau sphérique pour hautes pressions	Technische Hinweise Technical details Détails techniques				L16
Kugelhahn Ball valve Robinet à boisseau sphérique				KH-R.....	L17
Kugelhahn Ball valve Robinet à boisseau sphérique				P-KHV.....	L18
Kompakt-Umschalhahn Compact diverter valve Robinet compact de renversement				P-KH3KV.....	L19
Kompakt-Umschalhahn Compact diverter valve Robinet compact de renversement				KH3KS-R.....	L20
Dreiweg-Kugelhahn Three way ball valve Robinet à trois voies				KH3S-R.....	L21

Technische Hinweise

Technical details

Détails technique



Sonderformen sind auf Anfrage lieferbar
Special designs are available on request
Types spéciaux disponibles sur demande

Anwendung

Walterscheid-Drehverschraubungen sind Verbindungselemente für die Übertragung von Schwenk- und Drehbewegungen mit geringer Winkelgeschwindigkeit zwischen Aggregaten und Leitungen.

Die Verbindungen sind wartungsfrei, ohne Leckverluste und haben niedrige Anlaufdrehmomente.

Hinweis: Zum Ausgleich jeder Fluchtungsungenauigkeit wird die Verwendung eines flexiblen Anschlusses empfohlen.

Sicherheit

Die Nenndrücke der Drehverschraubungen sind unter Berücksichtigung einer 2,5-fachen Sicherheit ausgelegt. Bei Anwendung in niedrigen Druckbereichen ergeben sich entsprechend höhere Sicherheiten.

Werkstoffe

Serienmäßig aus Stahl. Sonderwerkstoff nichtrostender Stahl (1.4571) ist auf Anfrage lieferbar.

Oberflächenschutz

Galvanisch verzinkt und gelb chromatiert (DIN ISO 4042)

Dichtungen

Sind standardmäßig aus NBR (z. B. Perbunan) und leicht auswechselbar. Bei speziellen Hydraulikflüssigkeiten oder höheren Betriebstemperaturen sind auf Anfrage spezielle Dichtungswerkstoffe lieferbar.

Die Lebensdauer der Dichtelemente ist abhängig vom Betriebsdruck und der Gleitgeschwindigkeit.

Dichtungssätze sind auf Anfrage lieferbar.

Betriebstemperatur

Temperaturbereich von - 30 °C bis + 100 °C

Application

Walterscheid swivel banjos are connecting components between pipework and equipment to allow swivel movement and slow speed rotation.

These connections have a low starting torque, are leak-free and require no maintenance.

Note: To compensate for any misalignment, the use of a flexible connection is recommended.

Safety

The nominal pressures of the swivel banjos are based on a safety factor of 2.5. The use at lower pressure ranges consequently results in higher safety.

Materials

Production type made of steel. Special material stainless steel (1.4571) is available on request.

Surface protection

Cold-galvanized and yellow passivated (DIN ISO 4042)

Seals

Standard seals are made of NBR (e. g. Perbunan) and are easily exchangeable. For special hydraulic fluids or higher operating temperatures, special seal materials are available on request.

Life of the sealing elements is dependent upon operating pressure and running speed.

Seal kits are available on request.

Working temperature

Temperature range from - 30 °C to + 100 °C

Utilisation

Les raccords tournants Walterscheid sont des éléments de liaison entre machines et conduites installés pour assurer la transmission de mouvements tournants ou rotatifs à basse vitesse angulaire.

Ces liaisons sont sans entretien, sans fuite et ont un faible couple départ.

Remarque: Afin de compenser tout déport éventuel, l'utilisation d'un raccordement flexible est préconisée.

Sécurité

Les pressions des raccords tournants sont calculées avec un coefficient de sécurité de 2,5. Par conséquent, l'utilisation dans des plages de pression plus basses donne lieu à des sécurités plus élevées.

Matériaux

Acier en série. Matériau spécial, c.-à-d. acier inox (1.4571), sur demande.

Protection de surface

Zingué et passivé en coloration jaune (DIN ISO 4042)

Joints

Joints standard en NBR (p. ex. Perbunan) faciles à changer. En cas de fluides hydrauliques spéciaux ou de températures de service plus élevées, des matériaux spéciaux d'étanchéité sont disponibles sur demande.

La durée de vie des éléments d'étanchéité dépend de la pression de service et de la vitesse de glissement.

Jeux de joints disponibles sur demande.

Température de service

Plage de température de - 30 °C à + 100 °C

Drehzahlen und Anlaufdrehmomente
 Speeds and starting torques
 Vitesses et couples départ



Drehzahlen und Anlaufmomente
 Speeds and starting torques
 Vitesses et couples départ

DN [mm]	Typ Type Désignation		Zulässige Drehzahl [min ⁻¹] bei Betriebsdruck Permissible speed [min ⁻¹] at an operating temperature of Vitesse admissible [min ⁻¹] pour une pression de service de		Anlaufdrehmoment (Richtwert) Starting torque (Standard value) Couple départ (Valeur de référence) [Nm]
	DGWES	DGWS	200 bar	400 bar	
5	6 LR 6 L/R 1/4 6 SR 8 SR 6 LM 6 L/M 12 x 1,5 8 LM 6 SM 8 SM	6 L 6 S 8 S	50	25	0,5 bei 400 bar 0,5 at 400 bar 0,5 à 400 bar
	8 LR 10 LR 10 SR 12 L/R 1/4 8 L/M 14 x 1,5 10 LM 10 SM	8 L 10 S			
8	10 L/R 3/8 12 LR 12 SR 10 L/M 16 x 1,5 12 LM 12 SM	10 L 12 S	40	20	2,8 bei 400 bar 2,8 at 400 bar 2,8 à 400 bar
	12 L/R 1/2 14 SR 12 L/M 18 x 1,5 15 LM 14 SM	12 L 14 S			
13	15 LR 18 LR 16 SR 18 LM 16 SM	15 L 16 S	15	-	3,0 bei 200 bar 3,0 at 200 bar 3,0 à 200 bar
	22 LR 20 SR 22 LM 20 SM	18 L 20 S			
20	28 LR 25 SR 28 LM 25 SM	22 L 25 S	8	-	7,0 bei 200 bar 7,0 at 200 bar 7,0 à 200 bar
	35 LR 30 SR 35 LM 30 SM	28 L 30 S			
32	42 LR 38 SR 42 LM 38 SM	35 L 38 S	4	-	7 bei/at/à 200 bar
	40	42 L			

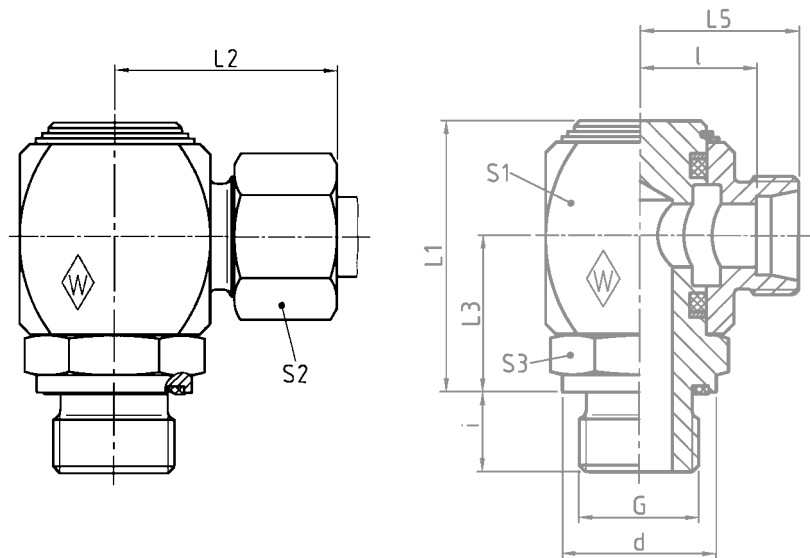
Die angegebenen Daten sind Richtwerte. Temperatur, Verschmutzung und spannungsfreier Einbau beeinflussen diese Werte.
 The above-mentioned data represent recommended values subject to temperature, contamination and stress-free installation.
 Les données ci-dessus représentent des valeurs de référence étant sous l'influence des conditions de température, de pollution et de l'installation sans effort de serrage.

P-DGWEV R-WD

mit Weichdichtung: NBR* (z. B. Perbunan)
Einschraubgewinde: Whitworth-Rohrgewinde (zylindrisch)

with captive seal: NBR* (e. g. Perbunan)
Stud thread: BSP thread (parallel)

avec joint mou: NBR* (p. ex. Perbunan)
Filetage mâle: Whitworth (cylindrique)



DIN-ISO 228 (R ..., DIN 259)

Reihe Series Série	PB bar (psi)	Rohr-AD Tube OD Tube Ø ext.	G	Typ Type Désignation	Best.-Nr. Reference Réf.	L ₁	L ₂	L ₃	L ₅	l	i	d	S ₁	S ₂	S ₃
L	250 (3626)	6	G 1/8 A	P-DGWEV 6 LR-WD	607570	39	31	21,5	23,5	16,5	8	13,9	27	14	17
			G 1/4 A	P-DGWEV 6 L/R 1/4-WD	607571	40	31	22,5	23,5	16,5	12	18,9	27	14	19
			G 1/4 A	P-DGWEV 8 LR-WD	607572	45,5	32,5	25	25	18	12	18,9	30	17	22
			G 1/4 A	P-DGWEV 10 LR-WD	607573	45,5	33,5	25	26	19	12	18,9	30	19	22
			G 3/8 A	P-DGWEV 10 L/R 3/8-WD	607574	47,5	34,5	27	27	20	12	21,9	32	19	24
			G 3/8 A	P-DGWEV 12 LR-WD	607575	47,5	34,5	27	27	20	12	21,9	32	22	24
			G 1/2 A	P-DGWEV 12 L/R 1/2-WD	607576	54	36,5	30	29	22	14	26,9	36	22	27
L	160 (2321)	15	G 1/2 A	P-DGWEV 15 LR-WD	607577	59	40	33	32	25	14	26,9	40	27	32
			G 1/2 A	P-DGWEV 18 LR-WD	607578	59	40,5	33	32	24,5	14	26,9	40	32	32
			G 3/4 A	P-DGWEV 22 LR-WD	607579	64	45	35,5	36,5	29	16	32,9	45	36	36
			G 1 A	P-DGWEV 28 LR-WD	607580	76	50,5	41,5	45,5	38	18	39,9	55	41	41
L	100 (1450)	35	G 1 1/4 A	P-DGWEV 35 LR-WD	607581	92	59,5	51,5	48,5	38	20	49,9	65	50	50
			G 1 1/2 A	P-DGWEV 42 LR-WD	607582	102	65	56,5	53,5	42,5	22	54,9	75	60	55
			G 1/4 A	P-DGWEV 6 SR-WD	607583	40	33	22,5	25,5	18,5	12	18,9	27	17	19
S	400 (5801)	8	G 1/4 A	P-DGWEV 8 SR-WD	607584	40	33	22,5	25,5	18,5	12	18,9	27	19	19
			G 3/8 A	P-DGWEV 10 SR-WD	607585	45,5	35,5	25	27	19,5	12	21,9	30	22	22
			G 3/8 A	P-DGWEV 12 SR-WD	607586	47,5	36,5	27	28	20,5	12	21,9	32	24	24
			G 1/2 A	P-DGWEV 14 SR-WD	607587	54	41,5	30	32	24	14	26,9	36	27	27
			G 1/2 A	P-DGWEV 16 SR-WD	607588	59	43,5	33	34	25,5	14	26,9	40	30	32
			G 3/4 A	P-DGWEV 20 SR-WD	607589	64	49,5	35,5	38,5	28	16	31,9	45	36	36
			G 1 A	P-DGWEV 25 SR-WD	607590	76	57,5	41,5	45,5	33,5	18	39,9	55	46	41
S	250 (3626)	30	G 1 1/4 A	P-DGWEV 30 SR-WD	607591	92	65,5	51,5	52,5	39	20	49,9	65	50	50
			G 1 1/2 A	P-DGWEV 38 SR-WD	607592	102	74	56,5	59,5	43,5	22	54,9	75	60	55

L₂ = Ungefährmaß bei angezogener Überwurfmutter
L₂ = approximate length with nut tightened
L₂ = longueur approximative, l'écrou étant bloqué

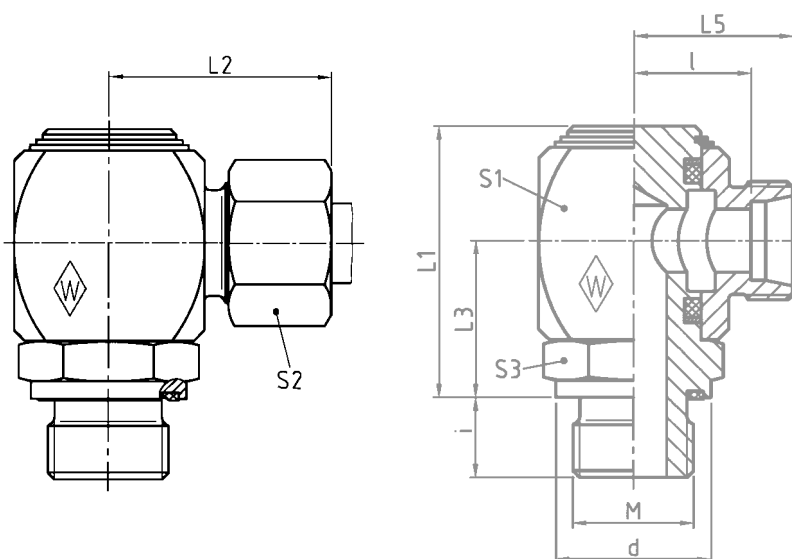
* FPM (z. B. Viton) auf Anfrage
* FPM (e. g. Viton) on request
* FPM (p. ex. Viton) sur demande

P-DGWEV M-WD

mit Weichdichtung: NBR* (z. B. Perbunan)
Einschraubgewinde: Metrisches Gewinde (zylindrisch)

with captive seal: NBR* (e. g. Perbunan)
Stud thread: metric (parallel)

avec joint mou: NBR* (p. ex. Perbunan)
Filetage mâle: métrique (cylindrique)

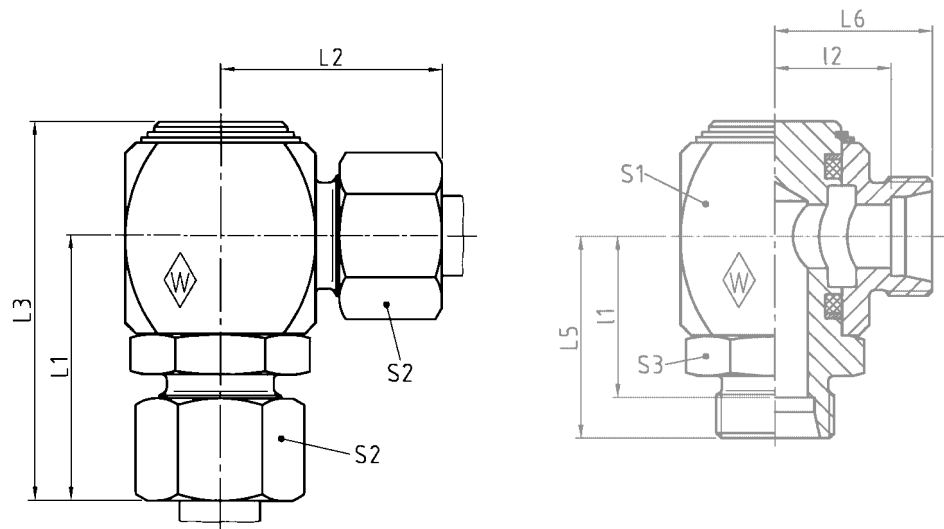


Reihe Series Série	PB bar (psi)	Rohr-AD Tube OD Tube Ø ext. M		Typ Type Désignation	Best.-Nr. Reference Réf.	L ₁	L ₂	L ₃	L ₅	l	i	d	S ₁	S ₂	S ₃
L	250 (3626)	6	M 10 x 1	P-DGWEV 6 LM-WD	607593	39	31	21,5	23	16,5	8	13,9	27	14	17
		6	M 12 x 1,5	P-DGWEV 6 L/M 12 x 1,5-WD	607594	40	31	22,5	23	16,5	12	16,9	27	14	19
		8	M 12 x 1,5	P-DGWEV 8 LM-WD	607595	40	31	22,5	23	16,5	12	16,9	27	17	19
		8	M 14 x 1,5	P-DGWEV 8 L/M 14 x 1,5-WD	607596	45,5	32,5	25	25	18	12	18,9	30	17	22
		10	M 14 x 1,5	P-DGWEV 10 LM-WD	607597	45,5	33,5	25	26	19	12	18,9	30	19	22
		10	M 16 x 1,5	P-DGWEV 10 L/M 16 x 1,5-WD	607598	47,5	34,5	27	27	20	12	21,9	32	19	24
		12	M 16 x 1,5	P-DGWEV 12 LM-WD	607599	47,5	34,5	27	27	20	12	21,9	32	22	24
		12	M 18 x 1,5	P-DGWEV 12 L/M 18 x 1,5-WD	607600	54	36,5	30	29	22	12	23,9	36	22	27
		15	M 18 x 1,5	P-DGWEV 15 LM-WD	607601	54	38	30	30	23	12	23,9	36	27	27
		160 (2321)	18	M 22 x 1,5	P-DGWEV 18 LM-WD	607602	59	40,5	33	32	24,5	14	26,9	40	32
	22	M 26 x 1,5	P-DGWEV 22 LM-WD	607603	64	45	35,5	36	29	16	31,9	45	36	36	
100 (1450)	28	M 33 x 2	P-DGWEV 28 LM-WD	607604	76	50,5	41,5	41	34	18	39,9	55	41	41	
	35	M 42 x 2	P-DGWEV 35 LM-WD	607605	92	59,5	51,5	48	38	20	49,9	65	50	50	
	42	M 48 x 2	P-DGWEV 42 LM-WD	607606	102	65	56,5	53	42,5	22	54,9	75	60	55	
	6	M 12 x 1,5	P-DGWEV 6 SM-WD	607607	40	33	22,5	25	18,5	12	16,9	27	17	19	
400 (5801)	8	M 14 x 1,5	P-DGWEV 8 SM-WD	607608	40	33	22,5	25	18,5	12	18,9	27	19	19	
	10	M 16 x 1,5	P-DGWEV 10 SM-WD	607609	45,5	35,5	25	27	19,5	12	21,9	30	22	22	
	12	M 18 x 1,5	P-DGWEV 12 SM-WD	607610	47,5	36,5	27	28	20,5	12	23,9	32	24	24	
	14	M 20 x 1,5	P-DGWEV 14 SM-WD	607611	54	41,5	30	32	24	14	25,9	36	27	27	
	16	M 22 x 1,5	P-DGWEV 16 SM-WD	607612	59	43,5	33	34	25,5	14	26,9	40	30	32	
	20	M 27 x 2	P-DGWEV 20 SM-WD	607613	64	49,5	35,5	38	28	16	31,9	45	36	36	
250 (3626)	25	M 33 x 2	P-DGWEV 25 SM-WD	607614	76	57,5	41,5	45	33,5	18	39,9	55	46	41	
	30	M 42 x 2	P-DGWEV 30 SM-WD	607615	92	65,5	51,5	52	39	20	49,9	65	50	50	
	38	M 48 x 2	P-DGWEV 38 SM-WD	607616	102	74	56,5	59	43,5	22	54,9	75	60	55	

L₂ = Ungefährmaß bei angezogener Überwurfmutter
L₂ = approximate length with nut tightened
L₂ = longueur approximative, l'écrou étant bloqué

* FPM (z. B. Viton) auf Anfrage
* FPM (e. g. Viton) on request
* FPM (p. ex. Viton) sur demande

P-DGWV



Reihe Series Série	PB bar (psi)	Rohr-AD Tube OD Tube Ø ext.	Typ Type Désignation	Best.-Nr. Reference Réf.											
					L ₁	L ₂	L ₃	L ₅	L ₆	I ₁	I ₂	S ₁	S ₂	S ₃	
L	250 (3626)	6	P-DGWV 6 L	373966	39	31	56,5	31,5	23,5	24,5	16,5	27	14	19	
		8	P-DGWV 8 L	373967	40,5	32,5	61	33	25	26	18	30	17	22	
		10	P-DGWV 10 L	373968	43,5	34,5	64	36	27	29	20	32	19	24	
		12	P-DGWV 12 L	373969	46,5	36,5	70,5	39	29	32	22	36	22	27	
		15	P-DGWV 15 L	373970	50	40	76	42	32	35	25	40	27	32	
	160 (2321)	18	P-DGWV 18 L	373971	55	43	83,5	46,5	34,5	39	27	45	32	36	
		22	P-DGWV 22 L	373972	63	50	97,5	54,5	41,5	47	34	55	36	41	
	100 (1450)	28	P-DGWV 28 L	373973	71,5	55,5	112	62,5	46,5	55	39	65	41	50	
		35	P-DGWV 35 L	373974	80,5	64,5	126	69,5	53,5	59	43	75	50	55	
		42	P-DGWV 42 L	373975	92,5	72,5	146,5	81	61	70	50	90	60	70	
S	400 (5801)	6	P-DGWV 6 S	373976	41	33	58,5	33,5	25,5	26,5	18,5	27	17	19	
		8	P-DGWV 8 S	373977	41	33	58,5	33,5	25,5	26,5	18,5	27	19	19	
		10	P-DGWV 10 S	373978	43,5	35,5	64	35	27	27,5	19,5	30	22	22	
		12	P-DGWV 12 S	373979	45,5	36,5	66	37	28	29,5	20,5	32	24	24	
		14	P-DGWV 14 S	373980	51,5	41,5	75,5	42	32	34	24	36	27	27	
	250 (3626)	16	P-DGWV 16 S	373981	63,5	43,5	79,5	44	34	35,5	25,5	40	30	32	
		20	P-DGWV 20 S	373982	61,5	49,5	90	50,5	38,5	40	28	45	36	36	
		25	P-DGWV 25 S	373983	70,5	57,5	105	58,5	45,5	46,5	33,5	55	46	41	
		30	P-DGWV 30 S	373984	81,5	65,5	122	68,5	52,5	55	39	65	50	50	
		38	P-DGWV 38 S	373985	90	74	135,5	75,5	59,5	59,5	43,5	75	60	55	

L₁, L₂ und L₃ = Ungefährmaße bei angezogenen Überwurfmuttern
L₁, L₂ and L₃ = approximate lengths with nuts tightened
L₁, L₂ et L₃ = longueurs approximatives, les écrous étant bloqués

Rückschlagventil Non-return valve Clapet anti-retour

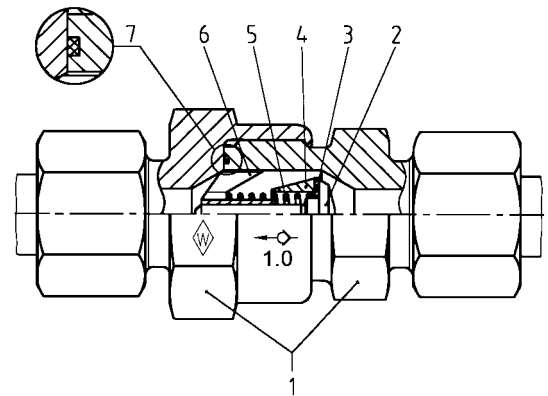


Technische Hinweise

Technical details

Détails techniques

1 Stutzen	1 Body	1 Corps
2 Bolzen	2 Cone	2 Clapet
3 Dichtungsscheibe	3 Sealing washer	3 Rondelle d'étanchéité
4 Hülse	4 Sleeve	4 Cuvette
5 Druckfeder	5 Pressure spring	5 Ressort de compression
6 Bolzenführung	6 Valve guide	6 Guide du clapet
7 O-Ring	7 O-ring	7 Joint torique



Verwendung

für Hydraulikflüssigkeiten und Druckluft.
Um die Eignung der Ventile für Ihre Einsatzfälle gewährleisten zu können, bitten wir um Angabe des Mediums, evtl. auch Konzentration, max. Betriebsdruck einschl. Druckspitzen, Temperatur und Häufigkeit der Ventilbetätigung.

Konstruktion

Walterscheid-Rückschlagventile sind ausgestattet mit 90°-Kegel und einer Dichtscheibe aus FPM (z. B. Viton). Die Formgebung der Innenteile ermöglicht einen strömungsgünstigen Durchfluß der Medien.

Betriebstemperatur

Temperaturbereich von - 20 °C bis + 100 °C.

Werkstoffe

1. Stutzen:	Stahl verzinkt
2. Bolzen:	Stahl verzinkt
3. Dichtungsscheibe:	FPM
4. Hülse:	Stahl verzinkt
5. Druckfeder:	Stahl
6. Bolzenführung:	
6-28 mm Rohr-AD: Messing	
30-42 mm Rohr-AD: Stahl verzinkt	
7. O-Ring:	FPM

Öffnungsdrücke

Serienmäßig sind die Rückschlagventile auf einen Öffnungsdruck von 1,0 bar eingestellt.
Abweichende Öffnungsdrücke von 0,5 bis 3,0 bar auf Anfrage.

Ausführung

Die Abdichtung am Einschraubgewinde der Rückschlagventile erfolgt mit Weichdichtung.
Die Ventile sind mit Öffnungsdruck und Strömungsrichtung gekennzeichnet.

Montage

Ventilgehäuse werden fertig montiert mit dem gewünschten Öffnungsdruck geliefert. Bei der Rohrmontage bzw. -demontage ist darauf zu achten, daß der, der Überwurfmutter nächstliegende Stutzen sechskant gegengehalten wird, um ein Lösen der Dichtkante am Ventilstutzen (innen) zu vermeiden.

Application

for hydraulic fluids and compressed air. In order to guarantee the suitability of the valves for your particular application, we request a description of the medium, possibly also the concentration, maximum working pressure including peak pressure, temperature and frequency of the valve operation.

Design

Walterscheid non-return valves are fitted with a 90° taper and a sealing washer made of FPM (e. g. Viton). The design of the internal components provides favourable flow conditions for the fluids.

Working temperature

Temperature range from - 20 °C to + 100 °C (- 4 °F to + 212 °F)

Materials

1. Body:	Steel, cold-galvanized
2. Cone:	Steel, cold-galvanized
3. Sealing washer:	FPM
4. Sleeve:	Steel, cold-galvanized
5. Pressure spring:	Steel
6. Valve guide:	
Tube OD 6-28 mm: Brass	
Tube OD 30-42 mm: Steel, cold-galvanized	
7. O-ring:	FPM

Opening pressures

The non-return valves are adjusted at the factory to an opening pressure of 1.0 bar. Additional pressure ratings from 0.5 to 3.0 bar available on request.

Design

Sealing at the stud thread of the non-return valve is achieved by a captive seal. Symbols indicating opening pressure and direction of flow are marked on the valve.

Assembly

The valve bodies are supplied ready-assembled and pre-set to the desired opening pressure. When connecting or dismantling tubes, the hexagon nearest to the nut must be held firmly to avoid the risk that the sealing edge at the inside of the valve body will work loose.

Utilisation

pour les fluides hydrauliques et l'air comprimé. Pour assurer l'aptitude des soupapes à leur domaine d'utilisation, nous vous prions de bien vouloir nous indiquer le fluide utilisé et, si possible, la concentration, la pression maximale de service, y compris les pressions de pointe, la température et la fréquence d'actionnement des soupapes.

Construction

Les clapets anti-retour sont munis d'un cône de 90° et d'une rondelle d'étanchéité en FPM (p. ex. Viton). La forme des pièces intérieures permet un bon écoulement des fluides.

Température de service

Plage de températures de - 20 °C à + 100 °C.

Matériaux

1. Corps:	Acier galvanisé
2. Clapet:	Acier galvanisé
3. Rondelle d'étanchéité:	FPM
4. Cuvette:	Acier galvanisé
5. Ressort de compression:	Acier
6. Guide du clapet:	
Ø ext. du tube 6-28 mm: Laiton	
Ø ext. du tube 30-42 mm: Acier galvanisé	
7. Joint torique:	FPM

Pressions d'ouverture

Les clapets anti-retour sont tarés en série, avec pression d'ouverture de 1,0 bar. Sur demande, ils sont livrables avec des tarages différents soit de 0,5 à 3,0 bar.

Exécution

L'étanchéité sur le filetage mâle du clapet anti-retour se fait par un joint mou. La pression de tarage et le sens de passage sont marqués sur les clapets.

Montage

Les corps de clapets sont livrés complètement assemblés, avec tarage pour la pression d'ouverture voulue. Lors du montage ou du démontage du tube, maintenir le six-pans du corps qui se trouve le plus proche de l'écrou, afin que l'arête d'étanchéité à l'intérieur du corps ne se détache pas.

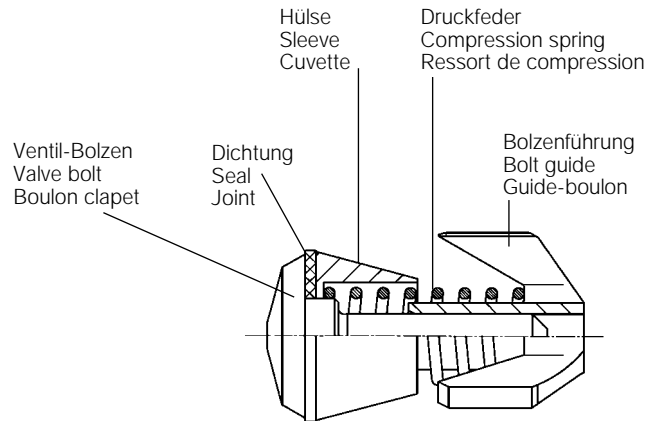
Ventileinsatz
Valve insert
Insert clapet



für Öffnungsdruck 1 bar
for 1 bar opening pressure
pour une pression d'ouverture de 1 bar

Einbaumaße auf Anfrage
Fitting dimensions on request
Cotes de montage sur demande

Nennweite Nominal width Largeur nomin.	Rohr-AD Tube OD Tube Ø ext.	Best.-Nr. Reference Réf.
6	6-12	032431
10	14-18	032438
16	20-28	032445
25	30	032451
32	35-42	032457



Der Ventileinsatz der Nennweite 16 kann beim Einbau nicht umgekehrt eingesetzt werden.

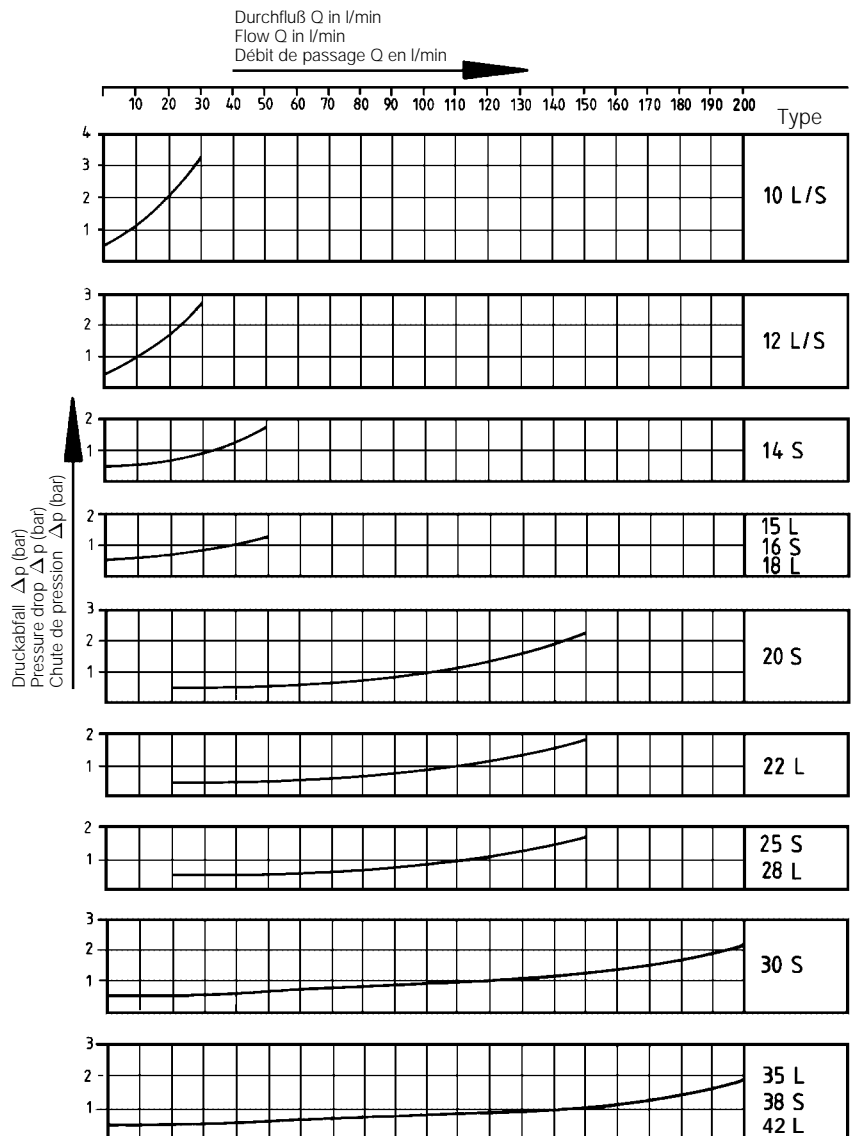
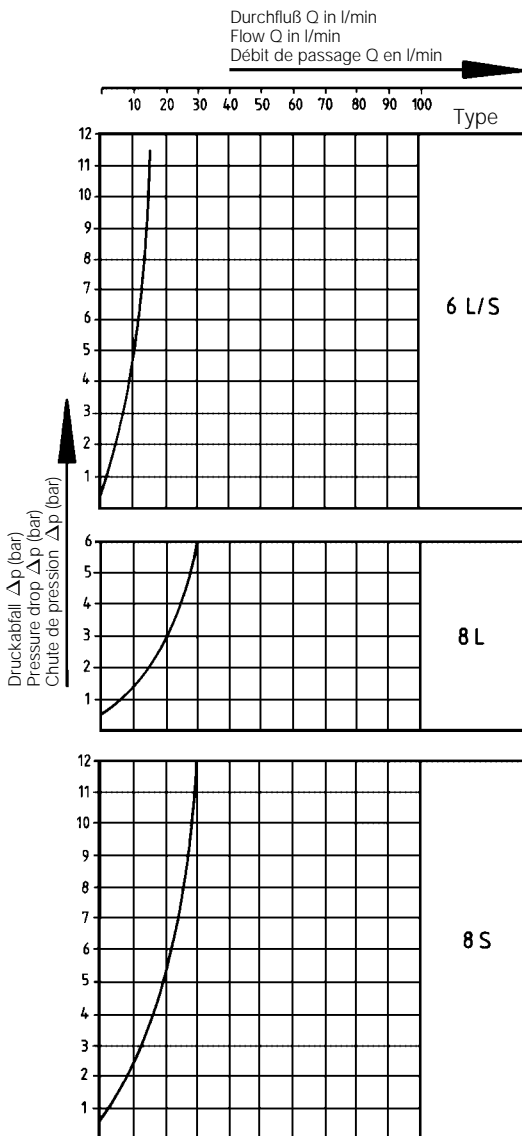
The valve insert for nominal width 16 can be fitted in this position only.

L'insert clapet de largeur 16 ne peut être installé que dans cette position.

Druckverlust bei Rückschlagventilen
gemessen mit Hydrauliköl 35 mm²/s
Öffnungsdruck 0,5 bar

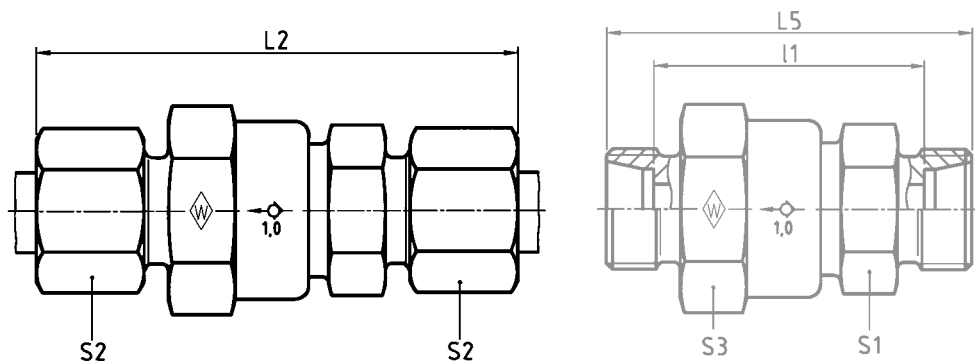
Pressure loss – Non-return valve –
measured with hydraulic oil 35 mm²/s
Opening pressure 0.5 bar

Perte de pression – Clapet anti-retour –
mesurée avec de l'huile hydraulique 35 mm²/s
Pression d'ouverture 0,5 bar



P-RV

Beidseitiger Rohranschluß
Tube connection both ends
Raccord sur tube des deux côtés



Reihe Series Série	PN bar (psi)	Rohr-AD Tube OD Tube Ø ext.	Typ Type Désignation	Best.-Nr. Reference Réf.	kg per 100 St. kg per 100 pcs. kg par 100 p.	L ₂	L ₅	l ₁	S ₁	S ₂	S ₃	Ø entspr. Durchlaß Ø outlet Ø de pas- sage corres- pondant
L	400 (5801)	6	P-RV 6 L	374062	12,7	67	52	38	22	14	27	4,0
		8	P-RV 8 L	374063	14,7	67	52	38	22	17	27	6,0
		10	P-RV 10 L	374064	14,8	67	52	38	22	19	27	7,5
		12	P-RV 12 L	374065	19,1	68	53	39	22	22	27	7,5
		15	P-RV 15 L	374066	27,3	74	58	44	27	27	32	11,0
		18	P-RV 18 L	374067	35,5	80	63	48	27	32	32	11,0
	250 (3626)	22	P-RV 22 L	374068	61,8	92	75	60	41	36	46	18,5
		28	P-RV 28 L	374069	76,5	99	81	66	41	41	46	18,5
		35	P-RV 35 L	374070	168,0	114	92	71	60	50	70	29,0
		42	P-RV 42 L	374483	223,5	101	87	65	60	60	70	29,0
S	400 (5801)	6	P-RV 6 S	374071	14,1	71	56	42	22	17	27	4,0
		8	P-RV 8 S	374072	15,3	67	52	38	22	19	27	5,0
		10	P-RV 10 S	374073	17,2	71	54	39	22	22	27	7,0
		12	P-RV 12 S	374074	20,7	72	55	40	22	24	27	7,5
		14	P-RV 14 S	374075	30,0	81	62	46	27	27	32	10,0
		16	P-RV 16 S	374076	34,9	84	65	48	27	30	32	11,0
	250 (3626)	20	P-RV 20 S	374077	68,2	100	78	57	41	36	46	16,0
		25	P-RV 25 S	374078	94,5	105	81	57	41	46	46	18,5
		30	P-RV 30 S	374079	128,5	117	91	64	50	50	55	24,0
		38	P-RV 38 S	374080	234,7	128	99	67	60	60	70	29,0

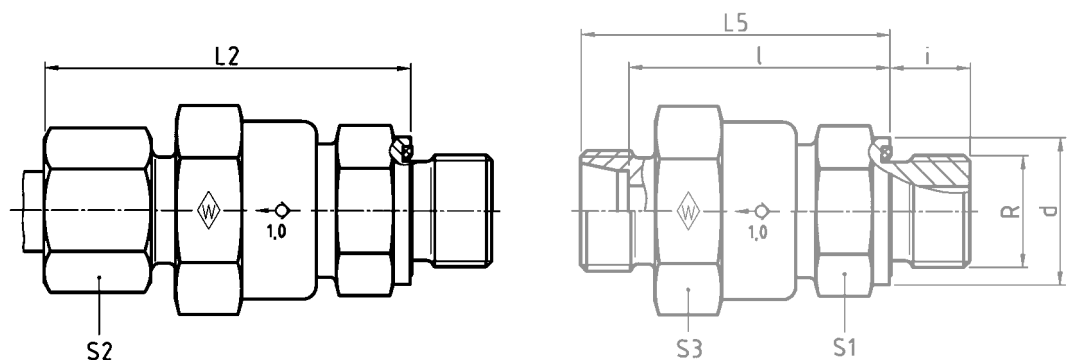
L = Ungefährmaß bei angezogenen Überwurfmuttern
L = approximate length with nuts tightened
L = longueur approximative, les écrous étant bloqués

P-RVV R-WD

Strömung vom Einschraubzapfen
 mit Weichdichtung: NBR* (z. B. Perbunan)
 Einschraubgewinde: Whitworth-Rohrgewinde (zylindrisch)

Flow from male stud end
 with captive seal: NBR* (e. g. Perbunan)
 Stud thread: BSP thread (parallel)

Sortie par l'embout mâle
 avec joint mou: NBR* (p. ex. Perbunan)
 Filetage mâle: Whitworth (cylindrique)



Reihe Series Série	PN bar (psi)	Rohr-AD Tube OD Tube Ø ext.	G	Typ Type Désignation	Best.-Nr. Reference Réf.	kg per 100 St. kg per 100 pcs. kg par 100 p.	d	L ₂	L ₅	l	i	S ₁	S ₂	S ₃	Ø entspr. Durchlaß Ø outlet Ø de pas- sage corres- pondant
		↓													
L	400 (5801)	6	G 1/8	A P-RVV 6 LR-WD	373986	11,5	13,9	50,5	43	36	8	22	14	27	4,0
		8	G 1/4	A P-RVV 8 LR-WD	373987	13,5	18,9	50,5	43	36	12	22	17	27	6,0
		10	G 1/4	A P-RVV 10 LR-WD	373988	12,8	18,9	48,5	41	34	12	22	19	27	6,0
		12	G 3/8	A P-RVV 12 LR-WD	373989	16,9	21,9	53,5	46	39	12	22	22	27	7,5
		15	G 1/2	A P-RVV 15 LR-WD	373990	23,7	26,9	56	48	41	14	27	27	32	11,0
		18	G 1/2	A P-RVV 18 LR-WD	373991	28,9	26,9	61,5	53	45,5	14	27	32	32	11,0
	250 (3626)	22	G 3/4	A P-RVV 22 LR-WD	373992	52,3	31,9	69,5	61	53,5	16	41	36	46	18,0
		28	G 1	A P-RVV 28 LR-WD	373993	68,3	39,9	77	68	60,5	18	41	41	46	20,0
		35	G 1 1/4	A P-RVV 35 LR-WD	373994	155,5	49,9	88,5	77,5	67	20	60	50	70	29,0
		42	G 1 1/2	A P-RVV 42 LR-WD	602441	161,2	54,9	87,5	75,5	64,5	22	60	60	70	29,0
S	400 (5801)	6	G 1/4	A P-RVV 6 SR-WD	373995	13,3	18,9	52,5	45	38	12	22	17	27	4,0
		8	G 1/4	A P-RVV 8 SR-WD	373996	13,8	18,9	50,5	43	36	12	22	19	27	5,0
		10	G 3/8	A P-RVV 10 SR-WD	373997	15,5	21,9	53,5	45	37,5	12	22	22	27	7,5
		12	G 3/8	A P-RVV 12 SR-WD	373998	18,1	21,9	55,5	47	39,5	12	22	24	27	7,5
		14	G 1/2	A P-RVV 14 SR-WD	373999	24,7	26,9	59,5	50	42	14	27	27	32	10,0
		16	G 1/2	A P-RVV 16 SR-WD	374000	28,3	26,9	62,5	53	44,5	14	27	30	32	11,0
	250 (3626)	20	G 3/4	A P-RVV 20 SR-WD	374001	55,3	31,9	74	63	52,5	16	41	36	46	16,0
		25	G 1	A P-RVV 25 SR-WD	374002	73,6	39,9	77	65	53	18	41	46	46	20,0
	30	G 1 1/4	A P-RVV 30 SR-WD	374003	105,3	49,9	87	74	60,5	20	50	50	55	24,0	
	38	G 1 1/2	A P-RVV 38 SR-WD	374004	200,4	54,9	96	81,5	65,5	22	60	60	70	29,0	

L₂ = Ungefährmaß bei angezogener Überwurfmutter
 L₂ = approximate length with nut tightened
 L₂ = longueur approximative, l'écrou étant bloqué

* FPM (z. B. Viton) auf Anfrage
 * FPM (e. g. Viton) on request
 * FPM (p. ex. Viton) sur demande

Einschraub-Rückschlagventil
 Non-return valve with male stud
 Clapet anti-retour mâle

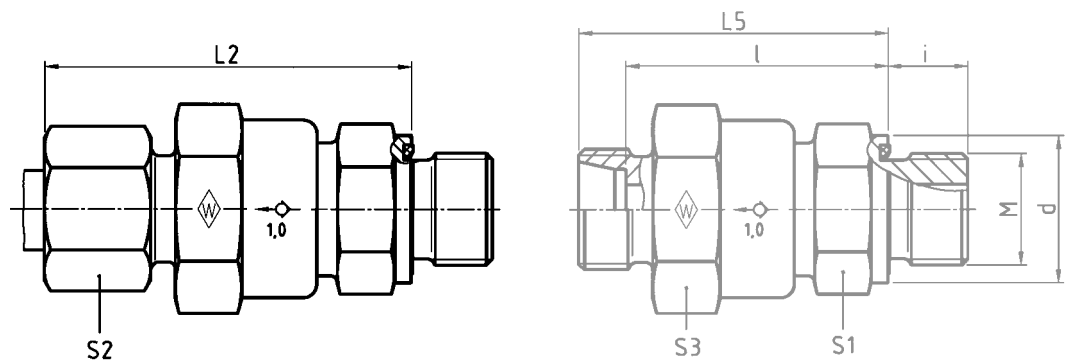


P-RVV M-WD

Strömung vom Einschraubzapfen
 mit Weichdichtung: NBR* (z. B. Perbunan)
 Einschraubgewinde: Metrisches Gewinde (zylindrisch)

Flow from male stud end
 with captive seal: NBR* (e. g. Perbunan)
 Stud thread: metric (parallel)

Sortie par l'embout mâle
 avec joint mou: NBR* (p. ex. Perbunan)
 Filetage mâle: métrique (cylindrique)



Reihe Séries Série	PN bar (psi)	Rohr-AD Tube OD Tube Ø ext.	M	Typ Type Désignation	Best.-Nr. Reference Réf.	kg per 100 St. kg per 100 pcs. kg par 100 p.	d	L ₂	L ₅	l	i	S ₁	S ₂	S ₃	Ø entspr. Durchlaß Ø outlet Ø de pas- sage corres- pondant
L	400 (5801)	6	M 10 x 1	P-RVV 6 LM-WD	374005	11,5	13,9	50,5	43	36	8	22	14	27	4,0
		8	M 12 x 1,5	P-RVV 8 LM-WD	374006	13,0	16,9	50,5	43	36	12	22	17	27	6,0
		10	M 14 x 1,5	P-RVV 10 LM-WD	374007	12,6	18,9	48,5	41	34	12	22	19	27	7,0
		12	M 16 x 1,5	P-RVV 12 LM-WD	374008	16,5	21,9	53,5	46	39	12	22	22	27	7,5
		15	M 18 x 1,5	P-RVV 15 LM-WD	374009	21,2	23,9	56	48	41	12	27	27	32	11,0
	250 (3626)	18	M 22 x 1,5	P-RVV 18 LM-WD	374010	29,7	29,9	61,5	53	45,5	14	27	32	32	11,0
		22	M 26 x 1,5	P-RVV 22 LM-WD	374011	51,6	31,9	69,5	61	53,5	16	41	36	46	18,0
		28	M 33 x 2	P-RVV 28 LM-WD	374012	68,2	39,9	77	68	60,5	18	41	41	46	18,5
		35	M 42 x 2	P-RVV 35 LM-WD	374013	155,5	49,9	88,5	77,5	67	20	60	50	70	29,0
		42	M 48 x 2	P-RVV 42 LM-WD	609988	161,2	54,9	87,5	75,5	64,5	22	60	60	70	29,0
S	400 (5801)	6	M 12 x 1,5	P-RVV 6 SM-WD	374014	12,8	16,9	52,5	45	38	12	22	17	27	4,0
		8	M 14 x 1,5	P-RVV 8 SM-WD	374015	13,6	18,9	50,5	43	36	12	22	19	27	5,0
		10	M 16 x 1,5	P-RVV 10 SM-WD	374016	15,1	21,9	53,5	45	37,5	12	22	22	27	7,0
		12	M 18 x 1,5	P-RVV 12 SM-WD	374017	18,7	23,9	55,5	47	39,5	12	24	24	27	7,5
	250 (3626)	14	M 20 x 1,5	P-RVV 14 SM-WD	374018	24,5	25,9	59,5	50	42	14	27	27	32	10,0
		16	M 22 x 1,5	P-RVV 16 SM-WD	374019	29,1	26,9	62,5	53	44,5	14	27	30	32	11,0
		20	M 27 x 2	P-RVV 20 SM-WD	374020	55,3	31,9	74	63	52,5	16	41	36	46	16,0
		25	M 33 x 2	P-RVV 25 SM-WD	374021	73,5	39,9	77	65	53	18	41	46	46	18,5
250 (3626)	30	M 42 x 2	P-RVV 30 SM-WD	374022	105,3	49,9	87	74	60,5	20	50	50	55	24,0	
	38	M 48 x 2	P-RVV 38 SM-WD	374023	200,4	54,9	96	81,5	65,5	22	60	60	70	29,0	

L₂ = Ungefährmaß bei angezogener Überwurfmutter
 L₂ = approximate length with nut tightened
 L₂ = longueur approximative, l'écrou étant bloqué

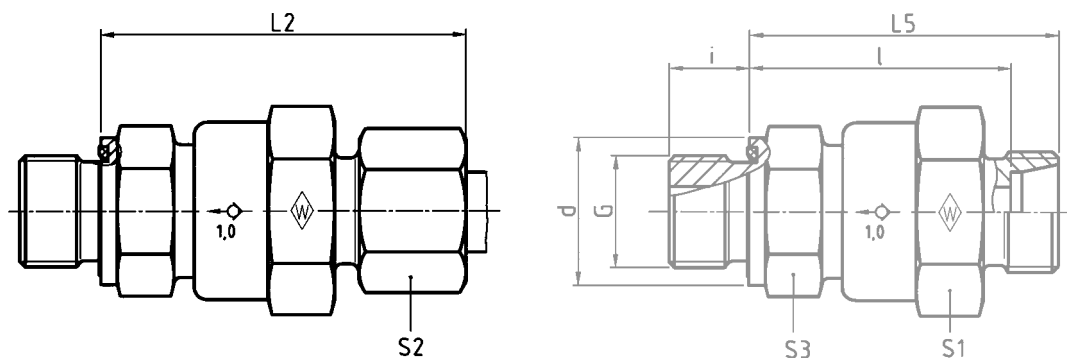
* FPM (z. B. Viton) auf Anfrage
 * FPM (e. g. Viton) on request
 * FPM (p. ex. Viton) sur demande

P-RVZ R-WD

Strömung zum Einschraubzapfen
 mit Weichdichtung: NBR* (z. B. Perbunan)
 Einschraubgewinde: Whitworth-Rohrgewinde (zylindrisch)

Flow towards male stud end
 with captive seal: NBR* (e. g. Perbunan)
 Stud thread: BSP thread (parallel)

Ecoulement vers l'embout mâle
 avec joint mou: NBR* (p. ex. Perbunan)
 Filetage mâle: Whitworth (cylindrique)



Reihe Series Série	PN bar (psi)	Rohr-AD Tube OD Tube Ø ext.	G	Typ Type Désignation	Best.-Nr. Reference Réf.	kg per 100 St. kg per 100 pcs. kg par 100 p.	d	L ₂	L ₅	l	i	S ₁	S ₂	S ₃	Ø entspr. Durchlaß Ø outlet Ø de pas- sage corres- pondant
L	400 (5801)	6	G 1/8 A	P-RVZ 6 LR-WD	374024	11,5	13,9	50,5	43	36	8	22	14	27	4,0
		8	G 1/4 A	P-RVZ 8 LR-WD	374025	13,5	18,9	50,5	43	36	12	22	17	27	6,0
		10	G 1/4 A	P-RVZ 10 LR-WD	374026	12,8	18,9	48,5	41	34	12	22	19	27	6,0
		12	G 3/8 A	P-RVZ 12 LR-WD	374027	16,9	21,9	53,5	46	39	12	22	22	27	7,5
		15	G 1/2 A	P-RVZ 15 LR-WD	374028	23,7	26,9	56	48	41	14	27	27	32	11,0
		18	G 1/2 A	P-RVZ 18 LR-WD	374029	28,9	26,9	61,5	53	45,5	14	27	32	32	11,0
	250 (3626)	22	G 3/4 A	P-RVZ 22 LR-WD	374030	54,4	31,9	69,5	61	53,5	16	46**	36	41**	18,0
		28	G 1 A	P-RVZ 28 LR-WD	374031	64,4	39,9	71	62	54,5	18	46**	41	41**	20,0
		35	G 1 1/4 A	P-RVZ 35 LR-WD	374032	155,5	49,9	88,5	77,5	67	20	60	50	70	29,0
		42	G 1 1/2 A	P-RVZ 42 LR-WD	604475	161,2	54,9	87,5	75,5	64,5	22	60	60	70	29,0
S	400 (5801)	6	G 1/4 A	P-RVZ 6 SR-WD	374033	13,3	18,9	52,5	45	38	12	22	17	27	4,0
		8	G 1/4 A	P-RVZ 8 SR-WD	374034	13,8	18,9	50,5	43	36	12	22	19	27	5,0
		10	G 3/8 A	P-RVZ 10 SR-WD	374035	15,5	21,9	53,5	45	37,5	12	22	22	27	7,0
		12	G 3/8 A	P-RVZ 12 SR-WD	374036	18,1	21,9	55,5	47	39,5	12	22	24	27	7,5
		14	G 1/2 A	P-RVZ 14 SR-WD	374037	27,7	26,9	59,5	50	42	14	27	27	32	10,0
		16	G 1/2 A	P-RVZ 16 SR-WD	374038	28,3	26,9	62,5	53	44,5	14	27	30	32	11,0
	250 (3626)	20	G 3/4 A	P-RVZ 20 SR-WD	374039	56,8	31,9	73	62	51,5	16	46**	36	41**	16,0
		25	G 1 A	P-RVZ 25 SR-WD	374040	74,8	39,9	77	65	53	18	46**	46	41**	20,0
		30	G 1 1/4 A	P-RVZ 30 SR-WD	374041	105,3	49,9	87	74	60,5	20	50	50	55	24,0
		38	G 1 1/2 A	P-RVZ 38 SR-WD	374042	200,4	54,9	96	81,5	65,5	22	60	60	70	29,0

L₂ = Ungefährmaß bei angezogener Überwurfmutter
 L₂ = approximate length with nut tightened
 L₂ = longueur approximative, l'écrou étant bloqué

* FPM (z. B. Viton) auf Anfrage
 * FPM (e. g. Viton) on request
 * FPM (p. ex. Viton) sur demande

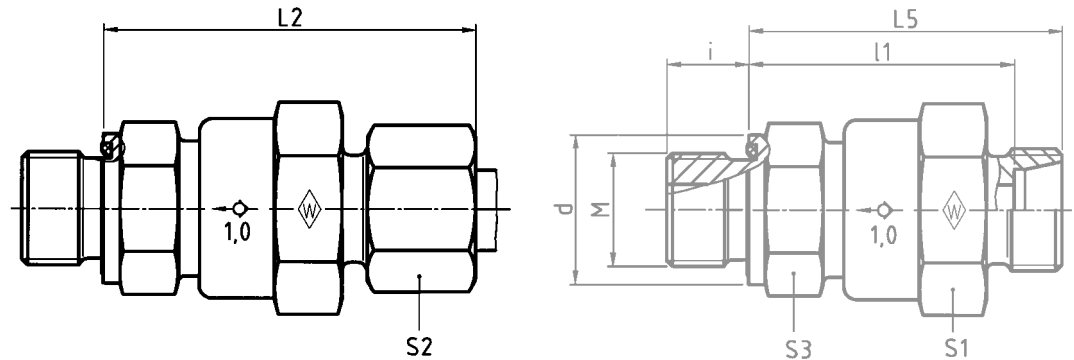
** S₁ und S₃ entsprechen nicht der Darstellung
 ** S₁ and S₃ differ from the illustration
 ** S₁ et S₃ ne sont pas à l'échelle

P-RVZ M-WD

Strömung zum Einschraubzapfen
 mit Weichdichtung: NBR* (z. B. Perbunan)
 Einschraubgewinde: Metrisches Gewinde (zylindrisch)

Flow towards male stud end
 with captive seal: NBR* (e. g. Perbunan)
 Stud thread: metric (parallel)

Ecoulement vers l'embout mâle
 avec joint mou: NBR* (p. ex. Perbunan)
 Filetage mâle: métrique (cylindrique)



Reihe Series Série	PN bar (psi)	Rohr-AD Tube OD Tube Ø ext.	M	Typ Type Désignation	Best.-Nr. Reference Réf.	kg per 100 St. kg per 100 pcs. kg par 100 p.	d	L ₂	L ₅	l	i	S ₁	S ₂	S ₃	Ø entspr. Durchlaß Ø outlet Ø de pas- sage corres- pondant
L	400 (5801)	6	M 10 x 1	P-RVZ 6 LM-WD	374043	11,5	13,9	50,5	43	36	8	22	14	27	4,0
		8	M 12 x 1,5	P-RVZ 8 LM-WD	374044	13,0	16,9	50,5	43	36	12	22	17	27	6,0
		10	M 14 x 1,5	P-RVZ 10 LM-WD	374045	12,6	18,9	48,5	41	34	12	22	19	27	7,0
		12	M 16 x 1,5	P-RVZ 12 LM-WD	374046	16,5	21,9	53,5	46	39	12	22	22	27	7,5
		15	M 18 x 1,5	P-RVZ 15 LM-WD	374047	21,2	21,9	56	48	41	12	27	27	32	11,0
		18	M 22 x 1,5	P-RVZ 18 LM-WD	374048	29,7	26,9	61,5	53	45,5	14	27	32	32	11,0
	250 (3626)	22	M 26 x 1,5	P-RVZ 22 LM-WD	374049	57,6	31,9	70,5	62	54,5	16	46**	36	41**	18,0
		28	M 33 x 2	P-RVZ 28 LM-WD	374050	64,4	39,9	71	62	54,5	18	46**	41	41**	18,5
		35	M 42 x 2	P-RVZ 35 LM-WD	374051	155,5	49,9	88,5	77,5	67	20	60	50	70	29,0
		42	M 48 x 2	P-RVZ 42 LM-WD	609989	161,2	54,9	87,5	75,5	64,5	22	60	60	70	29,0
S	400 (5801)	6	M 12 x 1,5	P-RVZ 6 SM-WD	374052	12,8	16,9	52,5	45	38	12	22	17	27	4,0
		8	M 14 x 1,5	P-RVZ 8 SM-WD	374053	13,6	18,9	50,5	43	36	12	22	19	27	5,0
		10	M 16 x 1,5	P-RVZ 10 SM-WD	374054	15,1	21,9	53,5	45	37,5	12	22	22	27	7,0
		12	M 18 x 1,5	P-RVZ 12 SM-WD	374055	18,7	23,9	55,5	47	39,5	12	24	24	27	7,5
		14	M 20 x 1,5	P-RVZ 14 SM-WD	374056	24,5	25,9	59,5	50	42	14	27	27	32	10,0
		16	M 22 x 1,5	P-RVZ 16 SM-WD	374057	29,1	26,9	62,5	53	44,5	14	27	30	32	11,0
	250 (3626)	20	M 27 x 2	P-RVZ 20 SM-WD	374058	55,3	31,9	73	62	51,5	16	46**	36	41**	16,0
		25	M 33 x 2	P-RVZ 25 SM-WD	374059	80,5	39,9	77	65	53	18	46**	46	41**	18,5
		30	M 42 x 2	P-RVZ 30 SM-WD	374060	105,3	49,9	87	74	60,5	20	50	50	55	24,0
		38	M 48 x 2	P-RVZ 38 SM-WD	374061	200,4	54,9	96	81,5	65,5	22	60	60	70	29,0

L₂ = Ungefährmaß bei angezogener Überwurfmutter
 L₂ = approximate length with nut tightened
 L₂ = longueur approximative, l'écrou étant bloqué

* FPM (z. B. Viton) auf Anfrage
 * FPM (e. g. Viton) on request
 * FPM (p. ex. Viton) sur demande

** S₁ und S₃ entsprechen nicht der Darstellung
 ** S₁ and S₃ differ from the illustration
 ** S₁ et S₃ ne sont pas à l'échelle

Wechselventil
Shuttle valve
Soupape à deux voies

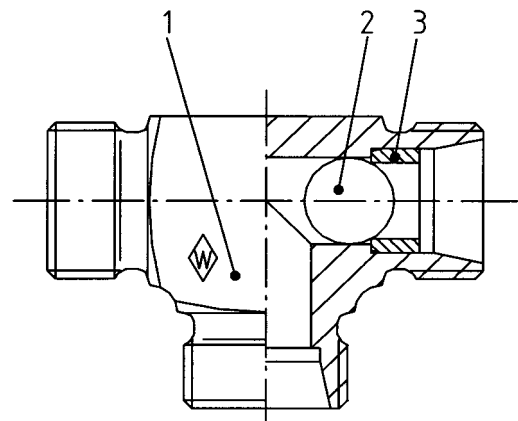


Technische Hinweise

Technical details

Détails techniques

- | | | |
|--------------------|------------------|------------------------|
| 1 Stutzen | 1 Body | 1 Corps |
| 2 Kugel | 2 Ball | 2 Bille |
| 3 Verschlussbuchse | 3 Sealing sleeve | 3 Douille de fermeture |



empfohlene Einbaulage
Recommended installation position
Position de montage recommandée

Werkstoff

Stahl

Material

Steel

Matériau

Acier

Oberflächenschutz

verzinkt, gelb chromatiert (A3L)

Surface protection

cold-galvanized, yellow chromated (A3L)

Protection de surface

galvanisée, à chromatisation jaune (A3L)

Verwendung

Als selbsttätige Weiche für Hydraulikflüssigkeiten innerhalb eines geschlossenen Hydraulikkreislaufes.

Zur Gewährleistung der Funktionalität im Einzelfall bitten wir um Angabe des Mediums, evtl. auch Konzentration, max. Betriebsdruck einschl. Druckspitzen, Temperatur und Häufigkeit der Ventilbetätigungen.

Nur für Verbindungen mit Anlage am Rohranschlag des Stutzens geeignet.

Application

The shuttle valve is used as an automatic switching device for hydraulic fluids within an enclosed hydraulic circuit.

To guarantee the functionality in a particular situation we request that you provide us with details of the medium, if possible also the concentration, the max. operating pressure including pressure peaks, the temperature and the frequency of valve actuations.

Only suitable for connections which fit closely against the tube end stop of the body.

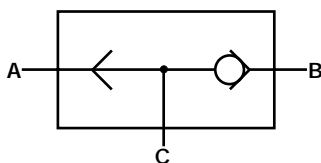
Utilisation

Comme distributeur automatique pour des liquides hydrauliques au sein d'un circuit hydraulique fermé.

Pour assurer la fonctionnalité au cas par cas, nous vous prions de bien vouloir nous indiquer le fluide utilisé, éventuellement la concentration, la pression maximale de service y compris les pics de pression, la température et la fréquence des actionnements des soupapes.

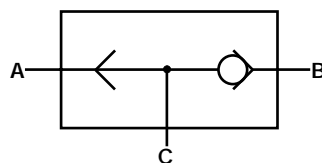
Convient uniquement à des raccordements avec appui sur la butée du tube du corps.

Wirkprinzip



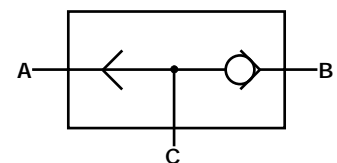
Entsprechend der anstehenden Druckölauführung über den Anschluss A bzw. B, wird dieser mit dem Anschluss C verbunden. Der jeweils nicht beaufschlagte Anschluss wird durch eine bewegliche Kugel metallisch dichtend verschlossen.

Operating principle



According to whether the pressurized oil feed is applied via connection A or B, the respective tube is linked to connection C. The non-pressurized connection is closed off and sealed mechanically by a moving ball.

Principe d'action



En fonction de l'alimentation d'huile sous pression par le raccord A ou B, ce dernier est relié au raccord C. Le raccord non sollicité est fermé avec une étanchéité métallique à l'aide d'une bille mobile.

Betriebstemperatur

Temperaturbereich von -40° C bis 120° C

Working temperature

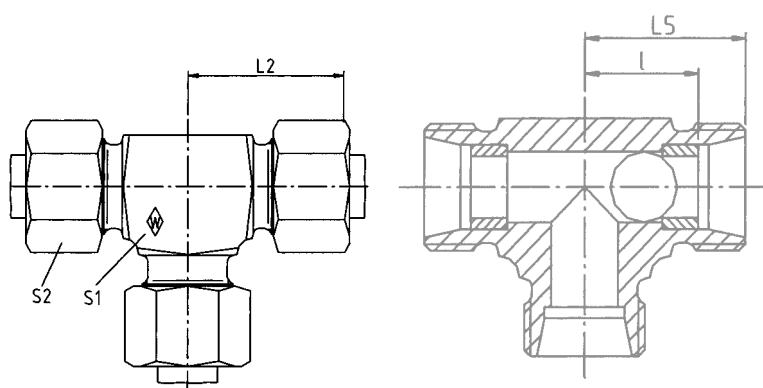
Temperature range from -40° C to 120° C

Température de service

Plage de températures de -40° C à 120° C

P-TWV

Wechselventil
Shuttle valve
Soupape à deux voies



Reihe Series Série	PB* bar (psi)	Rohr-AD Tube OD Tube Ø ext.	Typ Type Désignation	Best.-Nr. Reference Réf.	L ₅	L ₂	l	S ₁	S ₂
		8	P-TWV 8L	613224	21	29	14	14	17
L	250 (3626)	10	P-TWV 10L	613225	22	30	15	17	19
		12	P-TWV 12L	613226	24	32	17	19	22

L₂ = ist Ungefährmaß bei angezogener Überwurfmutter
L₂ = approximate length with nut tightened
L₂ = longueur approximative, l'écrou étant bloqué

* bei 1,5 facher Sicherheit
* at a safety factor of 1,5
* avec un coefficient de sécurité de 1,5

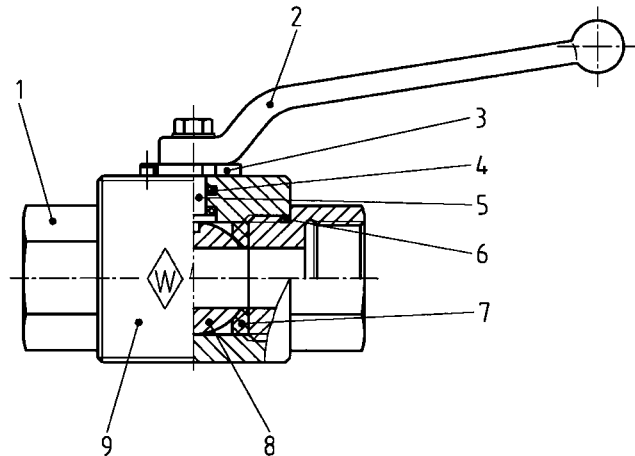


Technische Hinweise

Technical details

Détails techniques

- | | | |
|--------------------|-------------------|--------------------------|
| 1 Stutzen | 1 Body | 1 Corps |
| 2 Bolzen | 2 Cone | 2 Clapet |
| 3 Dichtungsscheibe | 3 Sealing washer | 3 Rondelle d'étanchéité |
| 4 Hülse | 4 Sleeve | 4 Cuvette |
| 5 Druckfeder | 5 Pressure spring | 5 Ressort de compression |
| 6 Bolzenführung | 6 Valve guide | 6 Guide du clapet |
| 7 O-Ring | 7 O-ring | 7 Joint torique |



Verwendung

für Hydraulikflüssigkeiten und Druckluft.
 Bei Anwendungen für Druckluft über 200 bar,
 Kugelhähne auf Anfrage

Application

for hydraulic fluids and compressed air.
 Ball valves for applications involving compressed
 air of more than 200 bar available on request.

Utilisation

pour les fluides hydrauliques et l'air comprimé.
 Robinets à boisseau sphérique pour des cas
 d'utilisation à air comprimé de plus de 200 bar
 disponibles sur demande.

Konstruktion

Die Kugeldichtung gewährleistet durch die
 Vorspannung auch bei geringeren Drücken
 Dichtheit.

Durch die schwimmend eingebaute Kugel
 ergibt sich bei steigendem Druck eine
 höhere Anpressung der Kugel zur Dichtung.

Die Schalthebel lassen sich in beliebiger
 Stellung, jeweils 45° versetzt, montieren.

Design

The ball seal being pre-loaded, sealing is
 ensured even at low pressure.

Owing to the ball's floating position, any rise
 of the system's pressure has the effect that the
 ball is increasingly pressed towards the seal.

Handles may be fitted in any position,
 at 45° stages.

Construction

La tension initiale appliquée aux joints
 assure l'étanchéité de l'ensemble, même
 pour des pressions faibles.

L'étanchéité du boisseau sphérique contre
 le joint s'accroît quand la pression
 augmente, ce phénomène étant dû au
 montage flottant du boisseau.

Les leviers peuvent être montés en toute
 position, décalés toutefois de 45°.

Sicherheit

Die Nenndrücke der Kugelhähne sind unter
 Berücksichtigung einer 1,2/1,5-fachen
 Sicherheit ausgelegt. Bei Anwendung in
 niedrigen Druckbereichen ergeben sich
 entsprechend höhere Sicherheiten.

Safety

The nominal pressures of the ball valves are
 based on a safety factor of 1.2 /1.5. The use
 at lower pressure ranges consequently results
 in higher safety.

Sécurité

Les pressions des robinets à boisseau
 sphérique sont calculées avec un coefficient de
 sécurité de 1,2/1,5. Par conséquent,
 l'utilisation dans des plages de pression plus
 basses donne lieu à des sécurités plus élevées.

Werkstoffe

Standardmäßig aus:
 Gehäusewerkstoff – Stahl verzinkt
 Kugel und Schaltwelle – Stahl
 Kugeldichtung – bis DN 25 Polyamid
 – ab DN 32 POM
 (z. B. Delrin)
 O-Ringe – NBR (z. B. Perbunan)
 Sonderwerkstoffe für Gehäuse und
 Abdichtung auf Anfrage

Materials

Standard:
 Body – steel, cold-galvanized
 Ball and stem – steel
 Ball seal – up to DN 25 Polyamid
 – from DN 32 POM
 (e. g. Delrin)
 O-rings – NBR (e. g. Perbunan)
 Special body and seal materials
 on request

Matériaux

Matériaux standard:
 Corps – acier, galvanisé
 Boisseau sphérique – acier
 et dispositif d'entraînement – jusqu'à DN 25
 Polyamid
 Joint boisseau sphérique – à partir de DN 32
 POM (p. ex. Delrin)
 Joints toriques – NBR (p. ex.
 Perbunan)

Matériaux spéciaux pour corps et
 étanchéité sur demande.

Betriebstemperatur

Temperaturbereich von – 20 °C bis + 100 °C

Working temperature

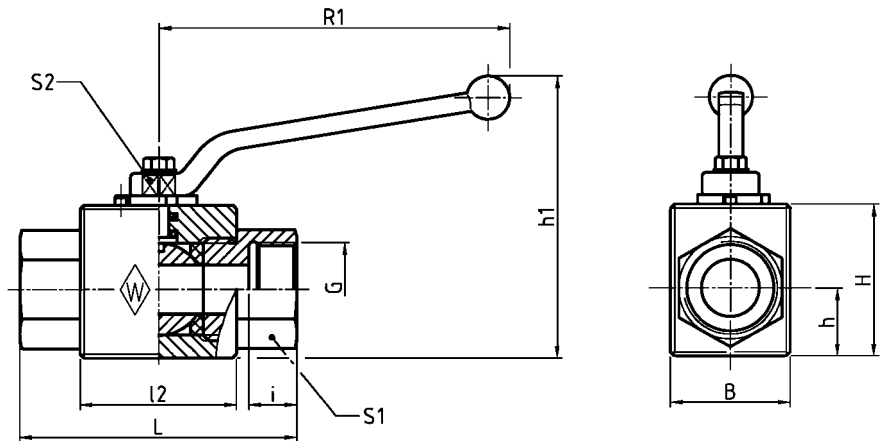
Temperature range from – 20 °C to + 100 °C

Température de service

Plage de température de – 20 °C à + 100 °C

KH-R

Whitworth-Rohrgewinde
 BSP thread
 Filetage Whitworth



DIN-ISO 228 (R ..., DIN 259)

PB* bar (psi)	G	Typ Type Désignation	Best.-Nr. Reference Réf.	B	H	h	h ₁ ±5	L	l ₂	i	S ₁	S ₂	R ₁	DN
630** (9137)	G 1/8	KH-R 1/8 /NW 4	029293	26	32	13	72	69	36	9	22	9	108	4
	G 1/4	KH-R 1/4 /NW 6	029294	25	35	13	72	69	35	14	22	9	108	6
500 (7252)	G 3/8	KH-R 3/8 /NW 10	029295	32	40	17	81	72	42	14	27	9	108	10
	G 1/2	KH-R 1/2 /NW 13	029296	35	40	17	80	85	48	14	30	9	108	13
400 (5801)	G 3/4	KH-R 3/4 /NW 20	029298	49	57	24,5	123	96	62	17	41	14	165	20
	G1	KH-R 1 /NW 25	029299	60	60	26,5	130	113,5	66	20,5	46	14	165	25
350 (5076)	G 1 1/4	KH-R 1 1/4 /NW 25	029300	60	60	26,5	135	121,5	66	20	50	14	165	25
	G 1 1/4	KH-R 1 1/4 /NW 32***	061806	75	85	37,5	160	110	84	21	60	17	210	32
	G 1 1/2	KH-R 1 1/2 /NW 40***	029301	84	92	42,0	168	120	85	23	65	17	210	40

* bei 1,5- / ** 1,2facher Sicherheit

* at a safety factor of 1.5 / ** 1.2

* avec un coefficient de sécurité de 1,5 / ** 1,2

*** Gehäuse in Schmiedeausführung

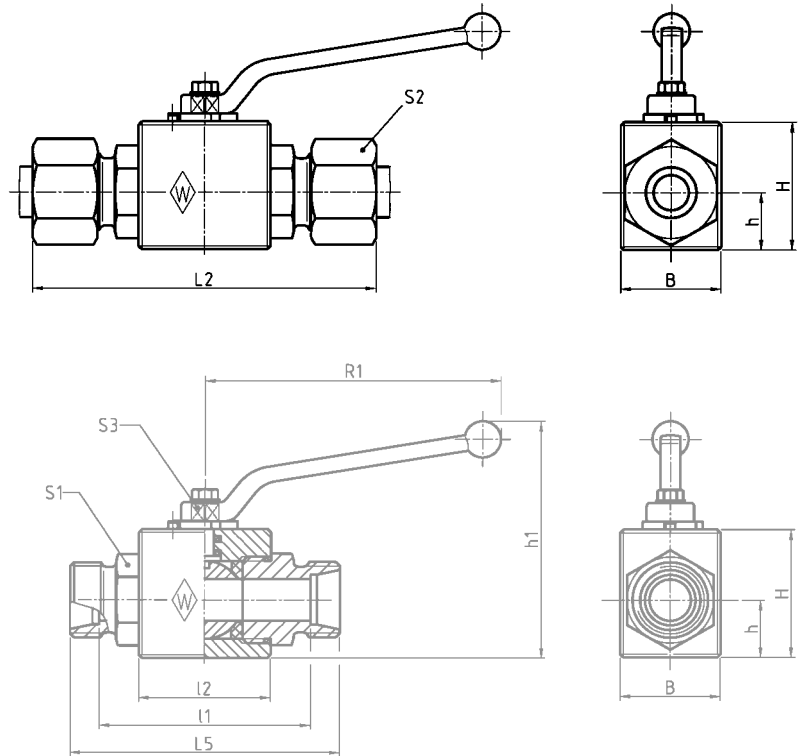
*** Bodies machined from forgings

*** Corps forgés



P-KHV

Beidseitiger Rohranschluß
Tube connection both ends
Raccord sur tube des deux côtés



Gewinde wahlweise mit Gewindeauslauf oder Freistich nach DIN 3853
Thread available with runout or alternatively with undercut according to DIN 3853
Filetage disponible en option avec filet incomplet ou dégagement par gorge selon DIN 3853

Reihe Series Série	PB* bar (psi)	Rohr-AD Tube OD Tube Ø ext.	Typ Type Désignation	Best.-Nr. Reference Réf.	B	H	h	$h_1 \pm 5$	l_2	l_1	L_2	L_5	S_1	S_2	S_3	R_1	DN
L	400 (5801)	6	P-KHV 6 L/NW 4	029274	28	32	13	72	36	53	83	67	22	14	9	108	4
		8	P-KHV 8 L/NW 6	029275	25	35	13	76	35	53	83	67	19	17	9	108	6
		10	P-KHV 10 L/NW 8	029276	32	40	17	91	42	60	90	74	27	19	9	108	8
		12	P-KHV 12 L/NW 10	029277	32	40	17	91	42	60	90	74	27	22	9	108	10
		15	P-KHV 15 L/NW 13	029278	35	40	17	91	47	68	98	82	30	27	9	108	13
		18	P-KHV 18 L/NW 16	029279	38	45	19	110	47	67	100	82	32	32	12	169	16
L	250 (3626)	22	P-KHV 22 L/NW 20	029280	48	57	24,5	123	60	86	119	101	41	36	14	169	20
		28	P-KHV 28 L/NW 25	029281	57	64	28,5	130	65	93	126	108	50	41	14	169	25
		35	P-KHV 35 L/NW 25	029282	60	60	26,5	135	66	92	148	114	60	50	17	165	25
L	210 (3046)	42	P-KHV 42 L/NW 40***	029283	83	92	42	168	85	111	157	133	70	60	17	210	40
S	630** (9137)	8	P-KHV 8 S/NW 4	029284	26	32	13	72	36	59	89	73	22	19	9	108	4
		10	P-KHV 10 S/NW 6	029285	26	32	13	72	36	58	91	73	22	22	9	108	6
		12	P-KHV 12 S/NW 8	029286	26	32	13	72	36	61	94	76	22	24	9	108	8
	500 (7252)	14	P-KHV 14 S/NW 10	029287	32	38	16,5	78	43	68	100	84	27	27	9	108	10
		16	P-KHV 16 S/NW 13	029288	35	40	17	91	47	69	106	86	30	30	9	108	13
	400 (5801)	25	P-KHV 25 S/NW 20	029290	48	57	24,5	123	60	85	133	109	41	46	14	169	20
	315 (4569)	30	P-KHV 30 S/NW 25	029291	57	64	28,5	130	65	93	146	120	50	50	14	169	25
		38	P-KHV 38 S/NW 32***	061810	76	84	39,5	160	80	108	170	140	60	60	17	210	32

L_2 = Ungefährmaß bei angezogener Überwurfmutter
 L_2 = approximate length with nut tightened
 L_2 = longueur approximative, l'écrou étant bloqué

* bei 1,5- / ** 1,2facher Sicherheit
* at a safety factor of 1.5 / ** 1.2
* avec un coefficient de sécurité de 1,5 / ** 1,2

*** Gehäuse in Schmiedeausführung
*** Bodies machined from forgings
*** Corps forgés

P-KH3KV

L- oder T-Bohrung

L- or T-port

alésage en L ou en T

Rohranschluß

Tube connection

Raccordement pour tubes

Bohrungsform

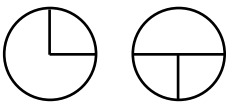
Port form

Formes de réalisation

d'alésage

...L

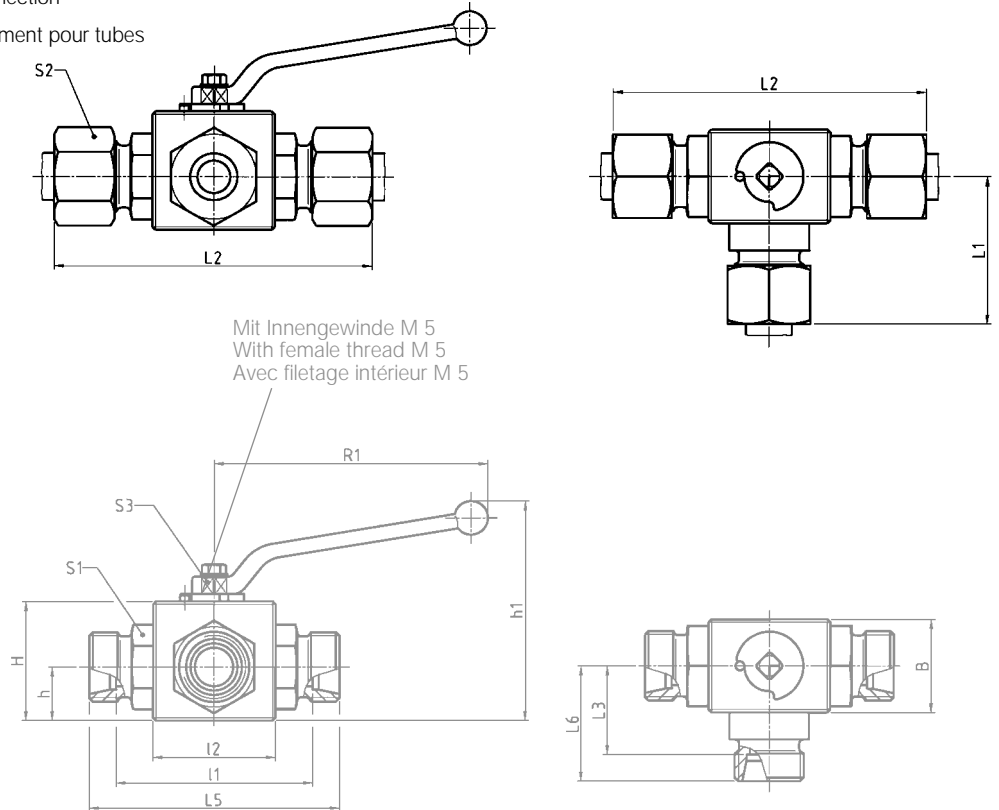
...T



Die gewünschte Bohrungsform hinter der Typenbezeichnung angeben.

The port form should be stated following the valve type.

Indiquer la forme d'alésage demandée derrière la désignation du type.



Mit Innengewinde M 5
With female thread M 5
Avec filetage intérieur M 5

Gewinde wahlweise mit Gewindeauslauf oder Freistich nach DIN 3853

Thread available with runout or alternatively with undercut according to DIN 3853

Filetage disponible en option avec filet incomplet ou dégagement par gorge selon DIN 3853

Dieser Anschluß muß bei jeder Schaltstellung geöffnet sein. Druckbeaufschlagung nur von dieser Seite zulässig. Eine Druckbeaufschlagung von den anderen Anschlüssen her ist nicht zulässig und führt zu Fehlfunktionen!

This port must always be in the open position. Pressure may only be applied from this side. Application of pressure through the other ports is not permissible and causes malfunction.

Cette ouverture doit être ouverte à toute position de connexion. N'appliquer la pression que de ce côté. L'application de la pression par d'autres connexions n'est pas permise et entraîne des défauts de fonctionnement.

Reihe Série Série	PB* bar (psi)	Rohr-AD Tube OD Tube Ø ext.	Typ Type Désignation	Best.-Nr. Reference Réf.	B	H	h	h ₁	I ₁	I ₂	L ₁	L ₂	L ₃	L ₅	L ₆	S ₁	S ₂	S ₃	R ₁	DN
L	400 (5801)	8	P-KH3KV 8 L/NW 6-L	062623	25	35	13	76	55,5	35	43,5	82	27,5	67	34,5	19	17	9	108	6
			P-KH3KV 8 L/NW 6-T	062635	25	35	13	76	55,5	35	43,5	82	27,5	67	34,5	19	17	9	108	6
		10	P-KH3KV 10 L/NW 8-L	062624	32	40	17	81	62	42	49,5	89	30	74	37	27	19	9	108	8
			P-KH3KV 10 L/NW 8-T	062636	26	32	13	70	57	48	49,5	89	30	71	32	22	19	9	108	8
	350 (5076)	12	P-KH3KV 12 L/NW 10-L	062625	32	40	17	76	62	42	49,5	89	30	74	37	27	22	9	108	10
			P-KH3KV 12 L/NW 10-T	062637	32	38	16,3	76	61	43	43	77	30	75	35	27	22	9	108	10
		15	P-KH3KV 15 L/NW 13-L	062626	35	40	17,3	79	63	48	49,5	100	33	67,5	40	30	27	9	107	13
			P-KH3KV 15 L/NW 13-T	062638	35	40	17,3	79	63	48	49,5	100	33	67,5	40	30	27	9	107	13

L₂ = Ungefährmaß bei angezogener Überwurfmutter
L₂ = approximate length with nut tightened
L₂ = longueur approximative, l'écrou étant bloqué

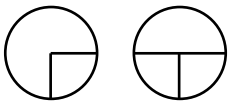
* bei 1,5facher Sicherheit
* at a safety factor of 1.5
* avec un coefficient de sécurité de 1,5

KH3KS-R

L- oder T-Bohrung Whitworth-Rohrgewinde
 L- or T-port BSP thread
 alésage en L ou en T Filetage Whitworth

Bohrungsform
 Port form
 Formes de réalisation
 d'alésage

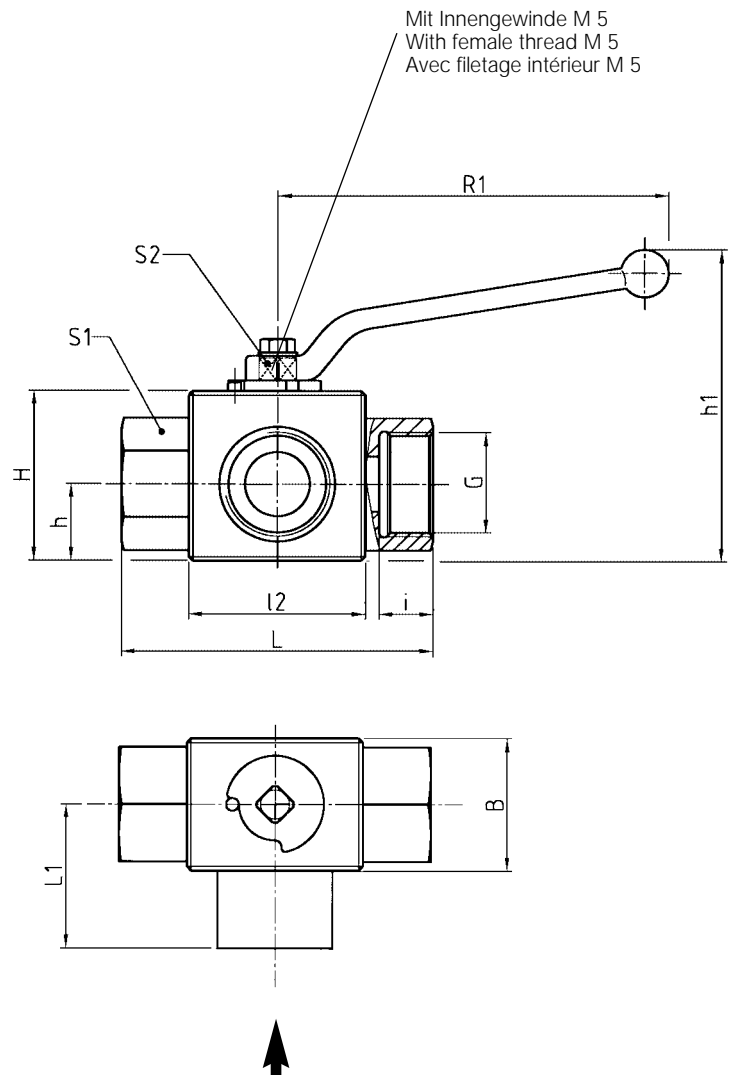
...L ...T



Die gewünschte Bohrungsform hinter der Typenbezeichnung angeben.

The port form should be stated following the valve type.

Indiquer la forme d'alésage demandée derrière la désignation du type.



Dieser Anschluß muß bei jeder Schaltstellung geöffnet sein.
 Druckbeaufschlagung nur von dieser Seite zulässig. Eine Druckbeaufschlagung von den anderen Anschlüssen her ist nicht zulässig und führt zu Fehlfunktionen!

This port must always be in the open position.
 Pressure may only be applied from this side. Application of pressure through the other ports is not permissible and causes malfunction.

Cette ouverture doit être ouverte à toute position de connexion.
 N'appliquer la pression que de ce côté. L'application de la pression par d'autres connexions n'est pas permise et entraîne des défauts de fonctionnement.

DIN-ISO 228 (R ..., DIN 259)

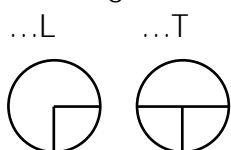
PB* bar (psi)	G	Typ Type Désignation	Best.-Nr. Reference Réf.	B	H	h	h ₁	L	L ₁	l ₂	i	S ₁	S ₂	R ₁	DN
400 (5801)	G ¹ / ₄	KH3KS-R¹/₄ /NW 6-L	062615	25	35	13	76	69	32	35	14	22	9	108	6
	G ¹ / ₄	KH3KS-R¹/₄ /NW 6-T	062619	25	35	13	76	69	32	35	14	22	9	108	6
	G ³ / ₈	KH3KS-R³/₈ /NW 10-L	062616	32	40	17	78	72	35	42	14	27	9	108	10
	G ³ / ₈	KH3KS-R³/₈ /NW 10-T	062620	32	40	17	78	72	35	42	14	27	9	108	10
350 (5076)	G ¹ / ₂	KH3KS-R¹/₂ /NW 13-L	062617	35	40	17,3	79	85	37	48	12	30	9	136	13
	G ¹ / ₂	KH3KS-R¹/₂ /NW 13-T	062621	35	40	17,3	79	85	37	48	12	30	9	136	13

* bei 1,5 facher Sicherheit
 * at a safety factor of 1.5
 * avec un coefficient de sécurité de 1,5

KH3S-R

L- oder T-Bohrung Whitworth-Rohrgewinde
 L- or T-port BSP thread
 alésage en L ou en T Filetage Whitworth

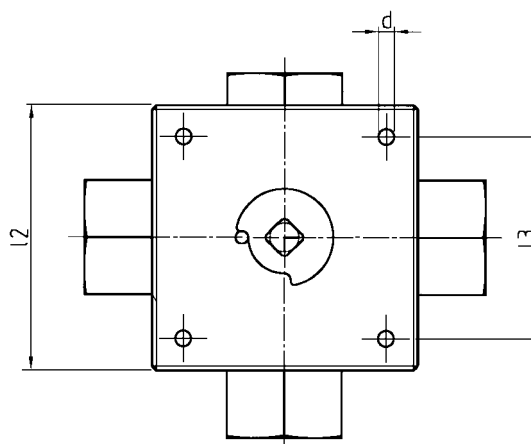
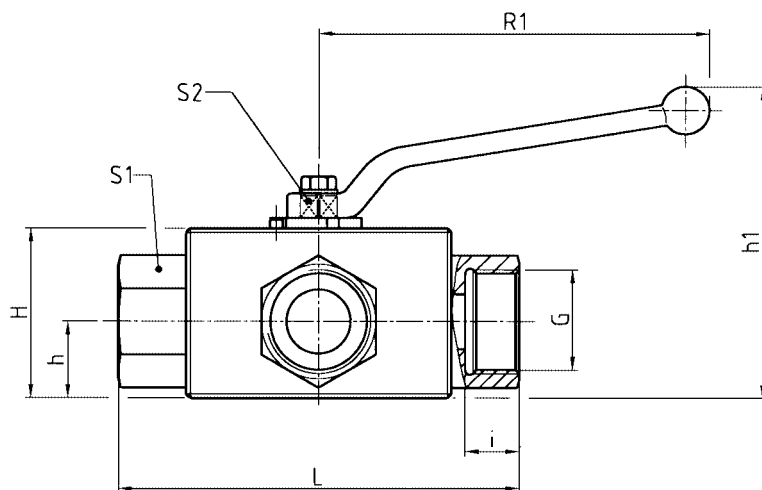
Bohrungsform
 Port form
 Formes de réalisation
 d'alésage



Die gewünschte Bohrungsform hinter der Typenbezeichnung angeben.

The port form should be stated following the valve type.

Indiquer la forme d'alésage demandée derrière la désignation du type.



DIN-ISO 228 (R ..., DIN 259)

PB* bar (psi)	G	Typ Type Désignation	Best.-Nr. Reference Réf.	l ₂	H	h	h ₁	L	l ₃	d	i	S ₁	S ₂	R ₁	DN
500 (7252)	G ¹ / ₄	KH3S-R 1/4/NW 6-L	062647	70	40	22	105	100	55	6,5	14	24	12	169	6
	G ¹ / ₄	KH3S-R 1/4/NW 6-T	062653	70	40	22	105	100	55	6,5	14	24	12	169	6
	G ³ / ₈	KH3S-R 3/8/NW 10-L	062648	80	50	27	115	115	65	6,5	14	30	14	169	10
	G ³ / ₈	KH3S-R 3/8/NW 10-T	062654	80	50	27	115	115	65	6,5	14	30	14	169	10
400 (5801)	G ¹ / ₂	KH3S-R 1/2/NW 13-L	062649	100	60	30	101	135	80	8,7	15	36	14	164	13
	G ¹ / ₂	KH3S-R 1/2/NW 13-T	062655	100	60	30	101	135	80	8,7	15	36	14	164	13
315 (4569)	G ³ / ₄	KH3S-R 3/4/NW 20-L	062650	100	73	36	160,5	144	85	9	18	46	17	210	20
	G ³ / ₄	KH3S-R 3/4/NW 20-T	062656	100	73	36	160,5	144	85	9	18	46	17	210	20
	G1	KH3S-R 1/NW 25-L	062651	127	78,7	42,5	158,5	172	105	11	19	50	17	200	25
	G1	KH3S-R 1/NW 25-T	062657	127	78,7	42,5	158,5	172	105	11	19	50	17	200	25

* bei 1,5facher Sicherheit

* at a safety factor of 1.5

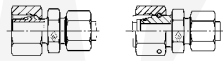

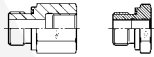



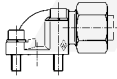







* avec un coefficient de sécurité de 1,5

L

Reduzierschraubungen
 Flanschschraubungen
 Aufsraubschraubungen
 Manometerschraubungen

Reducing fittings
 Flange fittings
 Female fittings
 Manometer fittings

Raccords de réduction
 Raccords à brides
 Raccords femelles
 Raccords pour manomètres

	Abb. Fig. Fig.	Sinnbild Symbol Symbole	Typ Type Désignation	Seite Page Page
Reduzierschraubung Reducing fitting Raccord de réduction			P-REDV.....-SV P-REDVDN.../...	M2 M3-M6
Gewinde-Reduzierstutzen mit Weichdichtung Reducing adaptor with captive seal (body only) Réduction fileté avec joint mou (corps)			RED.....-WD/...	M7-M8
Gerade-Flanschschraubung Straight flange coupling Union simple à bride			P-GFV.....	M10-M11
Winkel-Flanschschraubung Elbow flange coupling Union simple à bride en équerre			P-WFV.....	M12-M13
Gerade-Aufsraubschraubung Parallel female stud coupling Union simple femelle			P-GAV.....R P-GAV.....M	M14 M15
Einstellbarer Manometer-Aufsraubstutzen Adjustable manometer coupling (body only) Raccord pour manomètre avec embout lisse (corps)			EMASD.....	M16
Manometer-Aufsraubschraubung Manometer coupling with sealing ring Union simple femelle pour manomètre			P-MAV.....R	M17

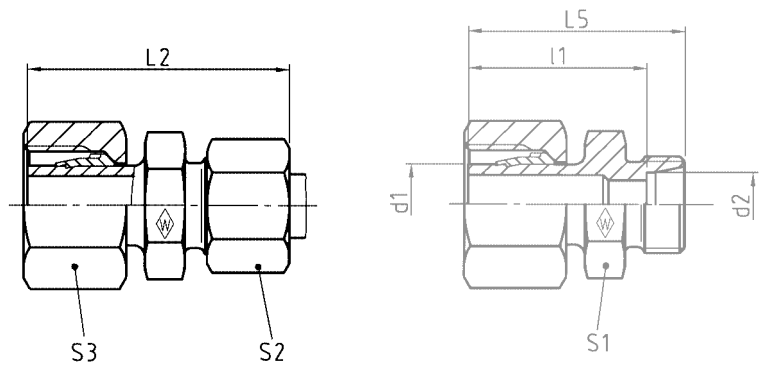


P-REDV-SV

Baureihe L
Schaft vormontiert

Series L
standpipe with pre-assembled nut and profile ring

Série L
embout lisse avec écrou et bague profilée pré-sertis



PN bar (psi)	d ₁	Rohr-AD Tube OD Tube Ø ext. d ₂	Typ Type Designation	Best.-Nr. Reference Réf.	kg per 100 St. kg per 100 pcs. kg par 100 p.	L ₂	L ₅	l ₁	S ₁	S ₂	S ₃	
500 (7252)	8	6	P-REDV 8/6 L-SV	374192	3,9	43	34,5	27,5	12	14	17	
		10	P-REDV 10/6 L-SV	374193	5,1	43	35,5	28,5	12	14	19	
	12	8	P-REDV 10/8 L-SV	374194	5,8	43	35,5	28,5	14	17	19	
		6	P-REDV 12/6 L-SV	374195	6,1	42,5	35	28	14	14	22	
		8	P-REDV 12/8 L-SV	374196	7,0	43,5	36	29	14	17	22	
400 (5801)	15	10	P-REDV 12/10 L-SV	374197	8,1	44,5	37	30	17	19	22	
		6	P-REDV 15/6 L-SV	374198	8,9	43	35	28	17	14	27	
		8	P-REDV 15/8 L-SV	374199	8,7	44	36	29	17	17	27	
	18	10	P-REDV 15/10 L-SV	374200	9,4	45	37	30	17	19	27	
		12	P-REDV 15/12 L-SV	374201	12,1	46	38	31	19	22	27	
		6	P-REDV 18/6 L-SV	374202	11,8	45	37	30	19	14	32	
		8	P-REDV 18/8 L-SV	374203	12,3	46	38	31	19	17	32	
		10	P-REDV 18/10 L-SV	374204	12,9	47	39	32	19	19	32	
	250 (3626)	22	12	P-REDV 18/12 L-SV	374205	14,1	48	40	33	19	22	32
			15	P-REDV 18/15 L-SV	374206	16,6	49	41	34	24	27	32
15		6	P-REDV 22/6 L-SV	374207	16,1	47	39	32	24	14	36	
		8	P-REDV 22/8 L-SV	374208	17,0	48	40	33	24	17	36	
		10	P-REDV 22/10 L-SV	374209	17,5	49	41	34	24	19	36	
		12	P-REDV 22/12 L-SV	374210	18,6	50	42	35	24	22	36	
		15	P-REDV 22/15 L-SV	374211	20,6	51	43	36	24	27	36	
		18	P-REDV 22/18 L-SV	374212	24,1	53	44	36,5	27	32	36	

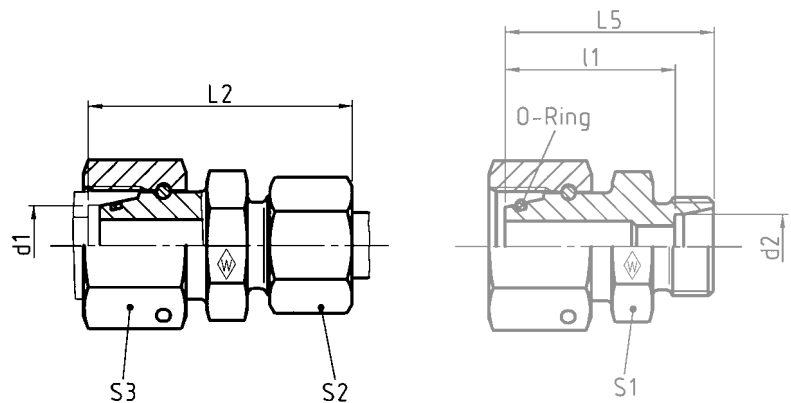
L₂ = Ungefährmaß bei angezogener Überwurfmutter
L₂ = approximate length with nut tightened
L₂ = longueur approximative, l'écrou étant bloqué

P-REDVDN .../...

Baureihe L
mit Dichtkegel und O-Ring NBR* (z. B. Perbunan)

Series L
with taper and O-ring NBR* (e. g. Perbunan)

Série L
avec cône d'étanchéité et joint torique
NBR* (p. ex. Perbunan)



PN bar (psi)	d ₁	Rohr-AD Tube OD Tube Ø ext. d ₂	Typ Type Designation	Best.-Nr. Reference Réf.	kg per 100 St. kg per 100 pcs. kg par 100 p.	L ₂	L ₅	l ₁	S ₁	S ₂	S ₃	*O-Ring *O-ring *Joint torique
500 (7252)	8	6	P-REDVDN 8/6 L	619570	4,1	37,5	30	23	12	14	17	6 x 1,5
	10	6	P-REDVDN 10/6 L	619120	4,9	39	31,5	24,5	14	14	19	8,5 x 1,5
		8	P-REDVDN 10/8 L	619121	5,7	39,5	31,5	24,5				
400 (5801)	12	6	P-REDVDN 12/6 L	619122	6,9	39,5	32	25	17	17	22	10 x 1,5
		8	P-REDVDN 12/8 L	619123	7,3	40	32	25				
		10	P-REDVDN 12/10 L	619124	7,9	41	33	26				
	15	6	P-REDVDN 15/6 L	619125	9,5	41	33,5	26,5	22	17	27	12 x 2
		8	P-REDVDN 15/8 L	619126	11,2	41,5	33,5	26,5				
		10	P-REDVDN 15/10 L	619127	11,0	42,5	34,5	27,5				
250 (3626)	22	12	P-REDVDN 15/12 L	619128	11,6	42	34,5	27,5	27	19	36	20 x 2
		6	P-REDVDN 18/6 L	619129	13,1	43	35,5	28,5				
		8	P-REDVDN 18/8 L	619130	13,3	43,5	35,5	28,5				
		10	P-REDVDN 18/10 L	619131	13,5	44,5	36,5	29,5				
		12	P-REDVDN 18/12 L	619132	14,7	44	36,5	29,5				
250 (3626)	22	15	P-REDVDN 18/15 L	619133	16,9	46	37,5	30,5	27	19	36	20 x 2
		6	P-REDVDN 22/6 L	619134	17,5	45,5	38	31				
		8	P-REDVDN 22/8 L	619135	17,8	46	38	31				
		10	P-REDVDN 22/10 L	619136	18,6	47	39	32				
		12	P-REDVDN 22/12 L	619137	19,2	46,5	39	32				
		15	P-REDVDN 22/15 L	619138	21,4	48,5	40	33				
		18	P-REDVDN 22/18 L	619139	23,5	49	40	32,5				

L₂ = Ungefährmaß bei angezogener Überwurfmutter
L₂ = approximate length with nut tightened
L₂ = longueur approximative, l'écrou étant bloqué

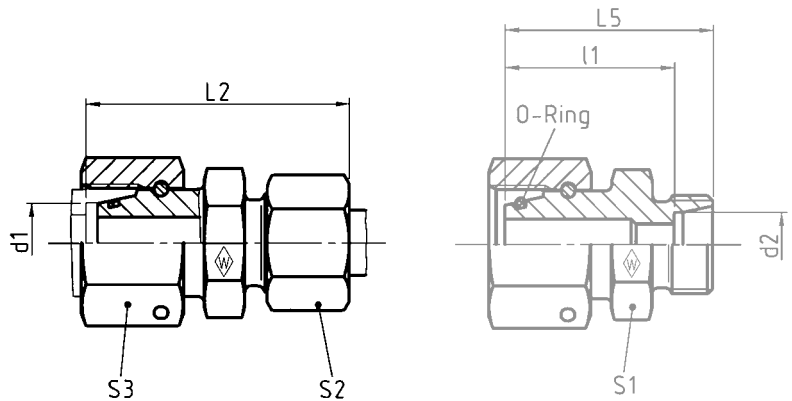
* FPM (z. B. Viton) auf Anfrage
* FPM (e. g. Viton) on request
* FPM (p. ex. Viton) sur demande

P-REDVDN .../...

Baureihe L
mit Dichtkegel und O-Ring NBR* (z. B. Perbunan)

Series L
with taper and O-ring NBR* (e. g. Perbunan)

Série L
avec cône d'étanchéité et joint torique
NBR* (p. ex. Perbunan)



PN bar (psi)	d ₁	Rohr-AD Tube OD Tube Ø ext. d ₂	Typ Type Désignation	Best.-Nr. Reference Réf.	kg per 100 St. kg per 100 pcs. kg par 100 p.	L ₂	L ₅	l ₁	S ₁	S ₂	S ₃	*O-Ring *O-ring *Joint torique
28		6	P-REDVDN 28/6 L	619140	30,5	45,5	38	31		14		
		8	P-REDVDN 28/8 L	619141	31,1	47	39	32		17		
		10	P-REDVDN 28/10 L	619142	30,8	48	40	33		19		
		12	P-REDVDN 28/12 L	619143	31,3	47,5	40	33	36	22	46	26 x 2
		15	P-REDVDN 28/15 L	619144	33,4	49,5	41	34		27		
		18	P-REDVDN 28/18 L	619145	35,8	50	41	33,5		32		
		22	P-REDVDN 28/22 L	619146	38,2	52	43	35,5		36		
35 250 (3626)		6	P-REDVDN 35/6 L	619147	37,9	50,5	43	36		14		
		8	P-REDVDN 35/8 L	619148	38,5	51	43	36		17		
		10	P-REDVDN 35/10 L	619149	39,2	52	44	37		19		
		12	P-REDVDN 35/12 L	619150	38,0	51,5	44	37	46	22	50	32 x 2,5
		15	P-REDVDN 35/15 L	619151	40,2	53,5	45	38		27		
		18	P-REDVDN 35/18 L	619152	42,6	54	45	37,5		32		
		22	P-REDVDN 35/22 L	619153	45,0	56	47	39,5		36		
42		6	P-REDVDN 42/6 L	619155	53,6	52,5	45	38		14		
		8	P-REDVDN 42/8 L	619156	54,2	53	45	38		17		
		10	P-REDVDN 42/10 L	619157	54,9	54	46	39		19		
		12	P-REDVDN 42/12 L	619158	55,3	53,5	46	39		22		
		15	P-REDVDN 42/15 L	619159	52,9	55,5	47	40	50	27	60	38 x 2,5
		18	P-REDVDN 42/18 L	619160	55,3	56	47	39,5		32		
		22	P-REDVDN 42/22 L	619161	59,1	58	49	41,5		36		
35		28	P-REDVDN 42/28 L	619162	59,8	58	49	41,5		41		
		35	P-REDVDN 42/35 L	619163	66,8	61,5	50,5	40		50		

L₂ = Ungefährmaß bei angezogener Überwurfmutter
L₂ = approximate length with nut tightened
L₂ = longueur approximative, l'écrou étant bloqué

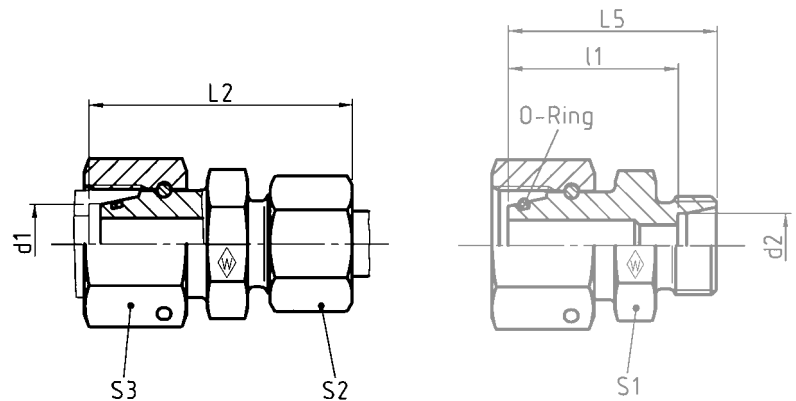
* FPM (z. B. Viton) auf Anfrage
* FPM (e. g. Viton) on request
* FPM (p. ex. Viton) sur demande

P-REDVDN .../...

Baureihe S
mit Dichtkegel und O-Ring NBR* (z. B. Perbunan)

Series S
with taper and O-ring NBR* (e. g. Perbunan)

Série S
avec cône d'étanchéité et joint torique
NBR* (p. ex. Perbunan)



PN bar (psi)	d ₁	Rohr-AD Tube OD Tube Ø ext. d ₂	Typ Type Désignation	Best.-Nr. Reference Réf.	kg per 100 St. kg per 100 pcs. kg par 100 p.	L ₂	L ₅	l ₁	S ₁	S ₂	S ₃	*O-Ring *O-ring *Joint torique
800 (11603)	8	6	P-REDVDN 8/6 S	619164	6,4	43	35	28	14	17	19	6 x 1,5
	10	6	P-REDVDN 10/6 S	619165	8,1	45,5	37,5	30,5	17	17	22	8,5 x 1,5
		8	P-REDVDN 10/8 S	619166	8,6	45,5	37,5	30,5		19		
630 (9137)	12	6	P-REDVDN 12/6 S	619167	9,4	46	38	31		17		
		8	P-REDVDN 12/8 S	619168	9,9	46	38	31	19	19	24	10 x 1,5
		10	P-REDVDN 12/10 S	619169	11,5	46,5	38	30,5		22		
	14	6	P-REDVDN 14/6 S	619170	12,1	48,5	40,5	33,5		17		
		8	P-REDVDN 14/8 S	619171	12,6	48,5	40,5	33,5	22	19	27	12 x 2
		10	P-REDVDN 14/10 S	619172	14,1	49	40,5	33		22		
16	12	P-REDVDN 14/12 S	619173	14,9	49	40,5	33		24			
	6	P-REDVDN 16/6 S	619174	13,5	49	41	34		17			
	8	P-REDVDN 16/8 S	619175	14,0	49	41	34	22	19	30	14 x 2	
	10	P-REDVDN 16/10 S	619176	16,3	49,5	41	33,5		22			
420 (6091)	20	12	P-REDVDN 16/12 S	619177	16,2	49,5	41	33,5		24		
		14	P-REDVDN 16/14 S	619178	19,2	53	43	35	24	27	30	14 x 2
		6	P-REDVDN 20/6 S	619179	20,4	53,5	45,5	38,5		17		
	8	P-REDVDN 20/8 S	619180	20,9	53,5	45,5	38,5		19			
	10	P-REDVDN 20/10 S	619181	22,4	54	45,5	38	27	22	36	17,3 x 2,4	
	12	P-REDVDN 20/12 S	619182	23,2	54	45,5	38		24			
	14	P-REDVDN 20/14 S	619183	25,3	57,5	47,5	39,5		27			
	16	P-REDVDN 20/16 S	619184	26,5	57,5	47,5	39		30			

L₂ = Ungefährmaß bei angezogener Überwurfmutter
L₂ = approximate length with nut tightened
L₂ = longueur approximative, l'écrou étant bloqué

* FPM (z. B. Viton) auf Anfrage
* FPM (e. g. Viton) on request
* FPM (p. ex. Viton) sur demande

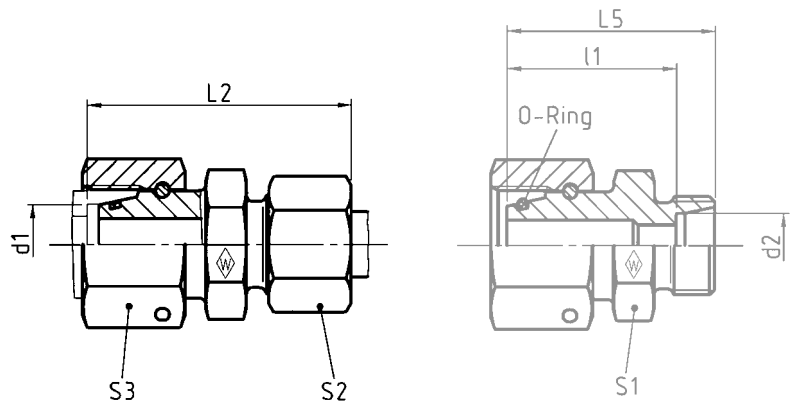
M

P-REDVDN .../...

Baureihe S
mit Dichtkegel und O-Ring NBR* (z. B. Perbunan)

Series S
with taper and O-ring NBR* (e. g. Perbunan)

Série S
avec cône d'étanchéité et joint torique
NBR* (p. ex. Perbunan)



PN bar (psi)	d ₁	Rohr-AD Tube OD Tube Ø ext. d ₂	Typ Type Désignation	Best.-Nr. Reference Réf.	kg per 100 St. kg per 100 pcs. kg par 100 p.	L ₂	L ₅	l	S ₁	S ₂	S ₃	*O-Ring *O-ring *Joint torique
420 (6091)	25	6	P-REDVDN 25/6 S	619185	35,0	57	49	42				17
		8	P-REDVDN 25/8 S	619186	35,5	57	49	42				19
		10	P-REDVDN 25/10 S	619187	37,0	57,5	49	41,5				22
		12	P-REDVDN 25/12 S	619188	37,8	57,5	49	41,5	36	24	46	22,3 x 2,4
		14	P-REDVDN 25/14 S	619189	39,7	61	51	43				27
		16	P-REDVDN 25/16 S	619190	41,1	61	51	42,5				30
		20	P-REDVDN 25/20 S	619191	46,2	64	53	42,5				36
400 (5801)	30	6	P-REDVDN 30/6 S	619192	42,4	61	53	46				17
		8	P-REDVDN 30/8 S	619193	43,6	61	53	46				19
		10	P-REDVDN 30/10 S	619194	45,1	61,5	53	45,5				22
		12	P-REDVDN 30/12 S	619195	45,8	61,5	53	45,5	41	24	50	27,3 x 2,4
		14	P-REDVDN 30/14 S	619196	47,9	65	55	47				27
		16	P-REDVDN 30/16 S	619197	49,0	65	55	46,5				30
		20	P-REDVDN 30/20 S	619198	53,9	68	57	46,5				36
400 (5801)	38	25	P-REDVDN 30/25 S	619199	65,9	71	59	47				46
		6	P-REDVDN 38/6 S	619200	61,4	64,5	56,5	49,5				17
		8	P-REDVDN 38/8 S	619201	61,9	64,5	56,5	49,5				19
		10	P-REDVDN 38/10 S	619202	63,3	65	56,5	49				22
		12	P-REDVDN 38/12 S	619203	64,0	65	56,5	49				24
		14	P-REDVDN 38/14 S	619204	66,1	68,5	58,5	50,5	50	27	60	35 x 2,5
		16	P-REDVDN 38/16 S	619205	67,2	68,5	58,5	50				30
		20	P-REDVDN 38/20 S	619206	72,0	71,5	60,5	50				36
		25	P-REDVDN 38/25 S	619207	83,9	74,5	62,5	50,5				46
		30	P-REDVDN 38/30 S	619208	88,1	77,5	64,5	51				50

L₂ = Ungefährmaß bei angezogener Überwurfmutter
L₂ = approximate length with nut tightened
L₂ = longueur approximative, l'écrou étant bloqué

* FPM (z. B. Viton) auf Anfrage
* FPM (e. g. Viton) on request
* FPM (p. ex. Viton) sur demande

Gewinde-Reduzierstutzen mit Weichdichtung
 Reducing adaptor with captive seal (body only)
 Réduction fileté avec joint mou (corps)

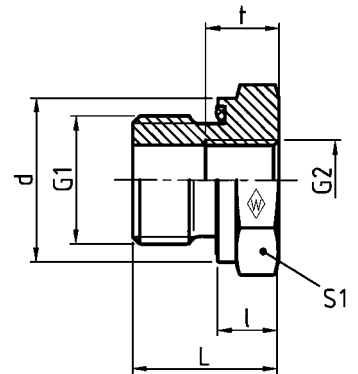


RED-WD/...

mit Weichdichtung: NBR* (z. B. Perbunan)
 Whitworth-Rohrgewinde (zylindrisch)

with captive seal: NBR* (e. g. Perbunan)
 BSP thread (parallel)

avec joint mou: NBR* (p. ex. Perbunan)
 Filetage Whitworth (cylindrique)



PN bar (psi)	DIN-ISO 228 (R ..., DIN 259)		Typ Type Désignation	Best.-Nr. Reference Réf.	kg per 100 St. kg per 100 pcs. kg par 100 p.	L	l	d	t	S ₁
	G ₁	G ₂								
630 (9137)	G 3/8 A	G 1/8	RED-R 3/8-WD/R 1/8	606600	4,0	22,5	10,5	21,9	8	22
		G 1/8	RED-R 1/2-WD/R 1/8	606601	6,6	24	10	26,9	8	27
	G 1/2 A	G 1/4	RED-R 1/2-WD/R 1/4	606602	6,0	24	10	26,9	12	27
400 (5801)	G 3/4 A	G 1/4	RED-R 3/4-WD/R 1/4	606603	9,5	26	10	31,9	12	32
		G 3/8	RED-R 3/4-WD/R 3/8	606604	9,0	26	10	31,9	12	32
	G 1 A	G 1/4	RED-R 1 -WD/R 1/4	606605	20,0	29	11	39,9	12	41
		G 3/8	RED-R 1 -WD/R 3/8	606606	18,0	29	11	39,9	12	41
		G 1/2	RED-R 1 -WD/R 1/2	606607	16,0	29	11	39,9	14	41
	G 1 1/4 A	G 1/2	RED-R 1 1/4-WD/R 1/2	606608	31,0	32	12	49,9	14	50
		G 3/4	RED-R 1 1/4-WD/R 3/4	606609	27,0	32	12	49,9	16	50
	G 1 1/2 A	G 1/2	RED-R 1 1/2-WD/R 1/2	606610	47,0	36	12	54,9	14	55
		G 3/4	RED-R 1 1/2-WD/R 3/4	606611	43,0	36	14	54,9	16	55
		G 1	RED-R 1 1/2-WD/R 1	606612	34,5	36	14	54,9	18	55

* FPM (z. B. Viton) auf Anfrage
 * FPM (e. g. Viton) on request
 * FPM (p. ex. Viton) sur demande



Gewinde-Reduzierstutzen mit Weichdichtung
 Reducing adaptor with captive seal (body only)
 Réduction fileté avec joint mou (corps)

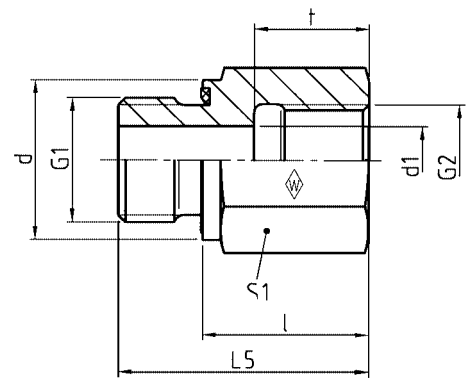


RED-WD/...

mit Weichdichtung: NBR* (z. B. Perbunan)
 Whitworth-Rohrgewinde (zylindrisch)

with captive seal: NBR* (e. g. Perbunan)
 BSP thread (parallel)

avec joint mou: NBR* (p. ex. Perbunan)
 Filetage Whitworth (cylindrique)

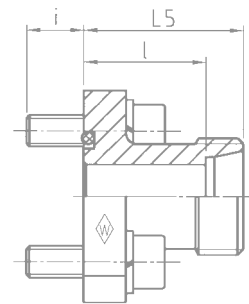
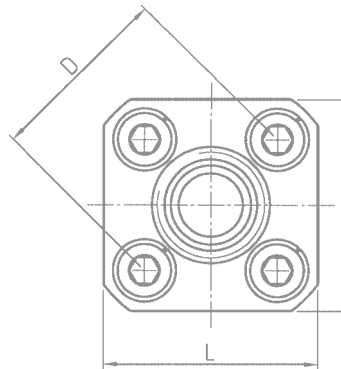
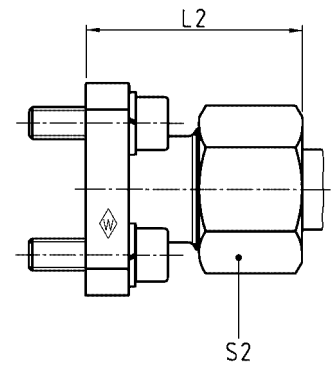
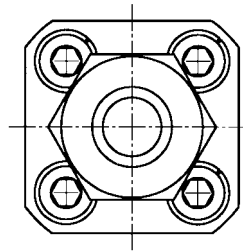


PN bar (psi)	DIN-ISO 228 (R ..., DIN 259)		Typ Type Designation	Best.-Nr. Reference Réf.	kg per 100 St. kg per 100 pcs. kg par 100 p.	L	l	d	d ₁	t	S ₁
	G ₁	G ₂									
400 (5801)	G 1/8 A	G 1/4	RED-R 1/8-WD/R 1/4	606613	3,6	31	23	13,9	4	17	19
		G 3/8	RED-R 1/8-WD/R 3/8	606614	4,5	32	24	13,9	4	17	24
	G 1/4 A	G 1/8	RED-R 1/4-WD/R 1/8	606615	3,6	29	17	18,9	5	12	19
		G 3/8	RED-R 1/4-WD/R 3/8	606616	6,6	36	24	18,9	5	17	24
		G 1/2	RED-R 1/4-WD/R 1/2	606617	8,5	40	28	18,9	5	20	30
	G 3/8 A	G 3/4	RED-R 1/4-WD/R 3/4	606618	17,3	43	31	18,9	5	22	36
		G 1/4	RED-R 3/8-WD/R 1/4	606619	3,0	36	24	21,9	8	17	22
		G 1/2	RED-R 3/8-WD/R 1/2	606620	9,0	41	29	21,9	8	20	30
	G 1/2 A	G 3/4	RED-R 3/8-WD/R 3/4	606621	17,5	44	32	21,9	8	22	36
		G 3/8	RED-R 1/2-WD/R 3/8	606622	9,5	37	23	26,9	12	17	27
		G 3/4	RED-R 1/2-WD/R 3/4	606623	18,0	46	32	26,9	12	22	36
	250 (3626)	G 1/2 A	G1	RED-R 1/2-WD/R 1	606624	22,5	49	35	26,9	12	24,5
G1 1/4			RED-R 1/2-WD/R 1 1/4	606625	47,0	53	39	26,9	12	26,5	55
400 (5801)	G 3/4 A	G 1/2	RED-R 3/4-WD/R 1/2	606626	15,0	43	27	31,9	16	20	32
		G1	RED-R 3/4-WD/R 1	606627	23,5	51	35	31,9	16	24,5	41
250 (3626)	G 3/4 A	G1 1/4	RED-R 3/4-WD/R 1 1/4	606628	48,3	55	39	31,9	16	26,5	55
		G1 1/2	RED-R 3/4-WD/R 1 1/2	606629	54,5	57	41	31,9	16	28,5	60
400 (5801)	G 1 A	G 3/4	RED-R 1 -WD/R 3/4	606630	28,0	49	31	39,9	20	22	41
250 (3626)	G 1 A	G1 1/4	RED-R 1 -WD/R 1 1/4	606631	51,0	57	39	39,9	20	26,5	55
		G1 1/2	RED-R 1 -WD/R 1 1/2	606632	56,5	59	41	39,9	20	28,5	60
400 (5801)	G 1 1/4 A	G1	RED-R 1 1/4-WD/R 1	606633	45,5	53	33	49,9	25	24,5	50
250 (3626)	G 1 1/4 A	G1 1/2	RED-R 1 1/4-WD/R 1 1/2	606634	58,0	60	40	49,9	25	28,5	60
		G1 1/4	RED-R 1 1/2-WD/R 1 1/4	606635	53,0	58	36	54,9	32	26,5	55

* FPM (z. B. Viton) auf Anfrage
 * FPM (e. g. Viton) on request
 * FPM (p. ex. Viton) sur demande

P-GFV.....

Vierlochbefestigung
 Four-hole attachment
 Fixation à quatre trous



D	Reihe Series Série	PN bar (psi)	Rohr-AD Tube OD Tube Ø ext.	Typ Type Désignation	Best.-Nr. Reference Réf.	kg per 100 St. kg per 100 pcs. kg par 100 p.	L	L ₂	L ₅	l	i	S ₂
35	L	315 (4569)	10	P-GFV 10 L-35	374282	13,5	39	37,5	30	23	12,5	19
			12	P-GFV 12 L-35	374283	14,4	39	37,5	30	23	12,5	22
		250 (3626)	15	P-GFV 15 L-35	374284	16,3	39	38	30	23	12,5	27
40	L	100 (1450)	16	P-GFV 16 S-35	374285	20,0	39	39,5	30	21,5	12,5	30
			15	P-GFV 15 L-40	374286	18,6	42	43	35	28	12,5	27
			18	P-GFV 18 L-40	374287	23,1	42	43,5	35	27,5	12,5	32
			22	P-GFV 22 L-40	374288	23,8	42	43,5	35	27,5	12,5	36
			28	P-GFV 28 L-40	374717	25,2	41	51	42	34,5	12,5	41
55	S	250 (3626)	20	P-GFV 20 S-55	374718	52,5	55	51	40	29,5	12,5	36

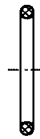
L₂ = Ungefährmaß bei angezogener Überwurfmutter
 L₂ = approximate length with nut tightened
 L₂ = longueur approximative, l'écrou étant bloqué

Zubehörteile wie Innensechskantschrauben, Federringe und O-Ring werden lose mitgeliefert.
 Accessories, such as hexagon socket screws, spring washers and O-ring are supplied as separate items.
 Les accessoires tels que vis à six pans creux, rondelles élastiques et joint torique font partie de la livraison sans être montés.

Gerade-Flanschstutzen
 Straight flange coupling (body only)
 Union simple à bride (corps)



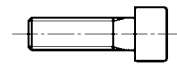
Zubehörteile
 Accessories
 Accessoires



O-Ring NBR* (z. B. Perbunan)
 1 Stück
 O-ring NBR* (e. g. Perbunan)
 1 piece
 Joint torique NBR* (p. ex. Perbunan)
 1 pièce



Federring DIN 128
 4 Stück
 Spring washer DIN 128
 4 pieces
 Rondelle élastique DIN 128
 4 pièces



Innensechskantschraube DIN 912
 4 Stück
 Hexagon socket screw DIN 912
 4 pieces
 Vis à six pans creux DIN 912
 4 pièces

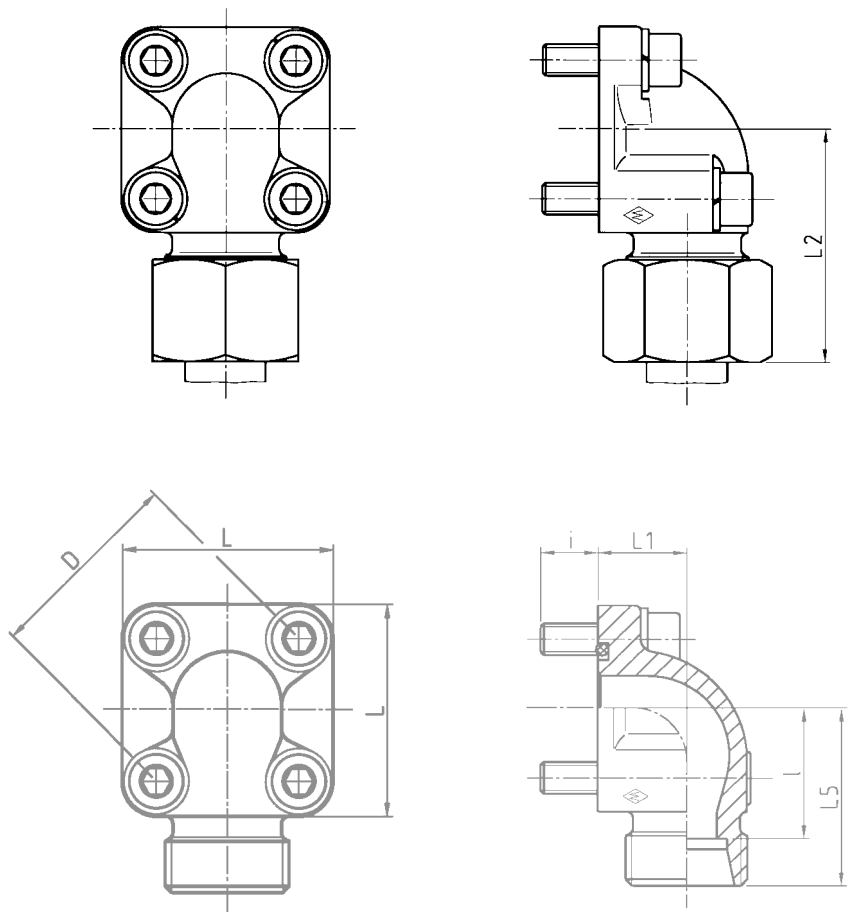
D	Rohr-AD Tube OD Tube Ø ext.	Type Type Désignation	O-Ring O-ring Joint torique		Federring Spring washer Rondelle élastique		Innensechskantschraube Hexagon socket screw Vis à six pans creux	
			Abmessung Dimension Dimension	Best.-Nr. Reference Réf.	Abmessung Dimension Dimension	Best.-Nr. Reference Réf.	Abmessung Dimension Dimension	Best.-Nr. Reference Réf.
35	10	GFS 10 L-35						
	12	GFS 12 L-35						
	15	GFS 15 L-35	20 x 2,5	610519	B 6	020102	M 6 x 22	020309
	16	GFS 16 S-35						
40	15	GFS 15 L-40						
	18	GFS 18 L-40						
	22	GFS 22 L-40	26 x 2,5	610499	B 6	020102	M 6 x 22	020309
	28	GFS 28 L-40						
55	20	GFS 20 S-55	33 x 2,5	610500	B 8	020104	M 8 x 25	020324

* FPM (z. B. Viton) auf Anfrage
 * FPM (e. g. Viton) on request
 * FPM (p. ex. Viton) sur demande



P-WFV

Vierlochbefestigung
 Four-hole attachment
 Fixation à quatre trous



D	Reihe Series Série	PN bar (psi)	Rohr-AD Tube OD Tube Ø ext.	Typ Type Désignation	Best.-Nr. Reference Réf.	kg per 100 St. kg per 100 pcs. kg par 100 p.	L	L ₁	L ₂	L ₅	l	i	S ₂
35	L	315 (4569)	10	P-WFV 10 L-35	374289	19,8	39	16,5	44,5	37,5	30,5	12,5	19
			12	P-WFV 12 L-35	374290	20,2	39	16,5	44,5	37,5	30,5	12,5	22
	S	250 (3626)	15	P-WFV 15 L-35	374291	21,9	39	16,5	45	37	30	12,5	27
			16	P-WFV 16 S-35	374292	26,2	39	20	47,5	38	29,5	12,5	30
			20	P-WFV 20 S-35	374293	39,4	39	25	56	45	34,5	12,5	36
40	L	100 (1450)	15	P-WFV 15 L-40	374294	23,3	42	22,5	45	37	30	12,5	27
			18	P-WFV 18 L-40	374295	25,3	42	22,5	46,5	38	30,5	12,5	32
			22	P-WFV 22 L-40	374296	27,5	42	22,5	46,5	38	30,5	12,5	36
			28	P-WFV 28 L-40	374297	37,1	42	28	49	40	32,5	12,5	41
			35	P-WFV 35 L-40	374298	51,6	42	34	52	41	30,5	12,5	50
55	L	100 (1450)	20	P-WFV 20 S-40	374299	34,4	42	22,5	51	40	29,5	12,5	36
			22	P-WFV 22 L-55	374719	60,5	58	24	52	43	35,5	12,5	36
	S	250 (3626)	35	P-WFV 35 L-55	374300	68,8	32	60	49	38,5	12,5	50	
			42	P-WFV 42 L-55	374301	90,9	58	40	60,5	49	38	12,5	60
			20	P-WFV 20 S-55	374302	58,5	58	24	56	45	34,5	12,5	36
S	250 (3626)	25	P-WFV 25 S-55	374303	78,4	58	30	61	49	37	12,5	46	
		30	P-WFV 30 S-55	374304	77,1	58	32	62	49	35,5	12,5	50	

L₂ = Ungefährmaß bei angezogener Überwurfmutter
 L₂ = approximate length with nut tightened
 L₂ = longueur approximative, l'écrou étant bloqué

Zubehörteile wie Innensechskantschrauben, Federringe und O-Ring werden lose mitgeliefert.
 Accessories, such as hexagon socket screws, spring washers and O-ring are supplied as separate items.
 Les accessoires tels que vis à six pans creux, rondelles élastiques et joint torique font partie de la livraison sans être montés.

Winkel-Flanschstutzen
 Elbow flange coupling (body only)
 Union simple à bride en équerre (corps)



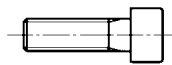
Zubehörteile
 Accessories
 Accessoires



O-Ring NBR* (z. B. Perbunan)
 1 Stück
 O-ring NBR* (e. g. Perbunan)
 1 piece
 Joint torique NBR* (p. ex. Perbunan)
 1 pièce



Federring DIN 128
 4 Stück oder 3
 Spring washer DIN 128
 4 pieces or 3
 Rondelle élastique DIN 128
 4 pièces ou 3



Innensechskantschraube DIN 912
 4 Stück oder 3
 Hexagon socket screw DIN 912
 4 pieces or 3
 Vis à six pans creux DIN 912
 4 pièces ou 3

für Vierlochbefestigung
 for four-hole attachment
 pour fixation à quatre trous

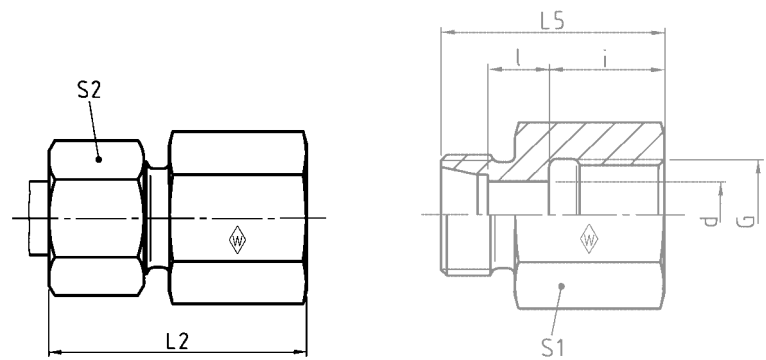
D	Rohr-AD Tube OD Tube Ø ext.	Typ Type Désignation	O-Ring O-ring Joint torique		Federring Spring washer Rondelle élastique		Innensechskantschraube Hexagon socket screw Vis à six pans creux					
			Abm. Dim. Dim.	Best.-Nr. Reference Réf.	Abm. Dim. Dim.	Best.-Nr. Reference Réf.	Stck. pcs. pce.	Abm. Dim. Dim.	Best.-Nr. Reference Réf.	Stck. pcs. pce.	Abm. Dim. Dim.	Best.-Nr. Reference Réf.
35	10	WFS 10 L-35					2	M 6 x 35	020313			
	12	WFS 12 L-35					2	M 6 x 35	020313			
	15	WFS 15 L-35	20 x 2,5	610519	B 6	020102	2	M 6 x 35	020313	2	M 6 x 22	020309
	16	WFS 16 S-35					2	M 6 x 40	021785			
	20	WFS 20 S-35					2	M 6 x 45	021956			
40	15	WFS 15 L-40					4	M 6 x 22	020309			
	18	WFS 18 L-40					4	M 6 x 22	020309			
	22	WFS 22 L-40	26 x 2,5	610499	B 6	020102	4	M 6 x 22	020309			
	28	WFS 28 L-40					2	M 6 x 50	021786			
	35	WFS 35 L-40					2	M 6 x 60	021787	2	M 6 x 22	020309
	20	WFS 20 S-40					2	M 6 x 45	021956			
55	22	WFS 22 L-55					2	M 8 x 50	020331			
	35	WFS 35 L-55					2	M 8 x 60	021793			
	42	WFS 42 L-55	33 x 2,5	610500	B 8	020104	2	M 8 x 70	021794	2	M 8 x 25	020324
	20	WFS 20 S-55					2	M 8 x 50	020331			
	25	WFS 25 S-55					2	M 8 x 55	023977			
	30	WFS 30 S-55					2	M 8 x 50	020331			

* FPM (z. B. Viton) auf Anfrage
 * FPM (e. g. Viton) on request
 * FPM (p. ex. Viton) sur demande



P-GAV R

Whitworth-Rohrgewinde
 BSP thread
 Filetage Whitworth



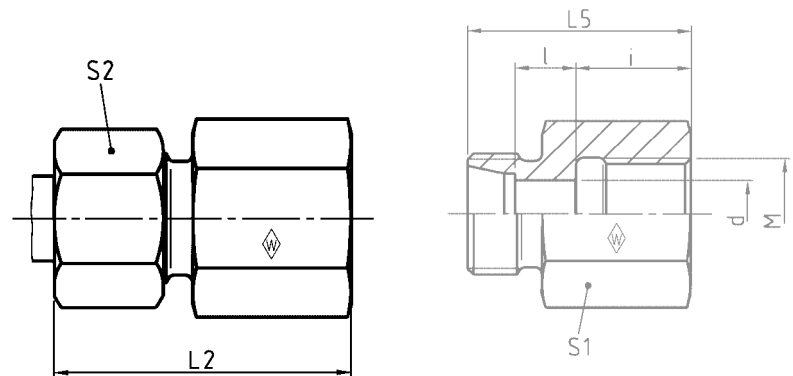
DIN-ISO 228 (R ..., DIN 259)

Reihe Series Série	PN bar (psi)	Rohr-AD Tube OD Tube Ø ext.	G	Typ Type Désignation	Best.-Nr. Reference Réf.	kg per 100 St. kg per 100 pcs. kg par 100 p.	L ₂	L ₅	l	i	d	S ₁	S ₂
L	250 (3626)	6	G 1/8	P-GAV 6 LR	374305	2,0	34	26	7	12	4	14	14
		8	G 1/4	P-GAV 8 LR	374306	4,0	39	31	7	17	6	19	17
		10	G 1/4	P-GAV 10 LR	374307	4,5	40	32	8	17	8	19	19
		12	G 1/4	P-GAV 12 L/R 1/4	374308	5,3	40	32	8	17	8	19	22
		12	G 3/8	P-GAV 12 LR	374309	6,0	41	33	9	17	10	24	22
	15	G 1/2	P-GAV 15 LR	374310	10,5	46	38	11	20	12	30	27	
	160 (2321)	18	G 1/2	P-GAV 18 LR	374311	12,5	47	38	10,5	20	15	27	32
	22	G 3/4	P-GAV 22 LR	374312	17,5	52	43	13,5	22	19	36	36	
	100 (1450)	28	G 1	P-GAV 28 LR	374313	25,5	55	45,5	13,5	24,5	24	41	41
	35	G 1 1/4	P-GAV 35 LR	374314	42,0	63	51,5	14,5	26,5	30	55	50	
42	G 1 1/2	P-GAV 42 LR	374315	43,5	65	53,5	14	28,5	36	60	60		
S	630 (9137)	6	G 1/4	P-GAV 6 SR	374316	4,0	41	33	9	17	4	19	17
		8	G 1/4	P-GAV 8 SR	374317	5,0	41	33	9	17	5	19	19
		10	G 3/8	P-GAV 10 SR	374318	8,5	43	34	9,5	17	7	24	22
		12	G 3/8	P-GAV 12 SR	374319	9,0	43	34	9,5	17	8	24	24
		14	G 1/2	P-GAV 14 SR	374320	12,5	50	40	12	20	10	27	27
	400 (5801)	16	G 1/2	P-GAV 16 SR	374321	14,0	50	40	11,5	20	12	30	30
	20	G 3/4	P-GAV 20 SR	374322	24,0	56	45	12,5	22	16	36	36	
	25	G 1	P-GAV 25 SR	374323	41,0	62	49,5	13	24,5	20	41	46	
	250 (3626)	30	G 1 1/4	P-GAV 30 SR	374324	54,5	69	55,5	15,5	26,5	25	55	50
	38	G 1 1/2	P-GAV 38 SR	374325	86,0	74	59,5	15	28,5	32	60	60	

L₂ = Ungefährmaß bei angezogener Überwurfmutter
 L₂ = approximate length with nut tightened
 L₂ = longueur approximative, l'écrou étant bloqué

P-GAV M

Metrisches Gewinde
 Metric thread
 Filetage métrique



Reihe Series Série	PN bar (psi)	Rohr-AD Tube OD Tube Ø ext.	M	Typ Type Désignation	Best.-Nr. Reference Réf.	kg per 100 St. kg per 100 pcs. kg par 100 p.	L ₂	L ₅	l	i	d	S ₁	S ₂
L	250 (3626)	6	M 10 x 1	P-GAV 6 LM	602627	2,5	34	26,5	7	12,5	4	14	14
		8	M 12 x 1,5	P-GAV 8 LM	604351	4,0	39	31	7	17	6	17	17
		10	M 14 x 1,5	P-GAV 10 LM	604132	5,0	40	32	8	17	8	19	19
		12	M 16 x 1,5	P-GAV 12 LM	602936	8,0	41	33	9	17	10	22	22
		15	M 18 x 1,5	P-GAV 15 LM	602628	10,0	43	35	11	17	12	24	27
	160 (2321)	18	M 22 x 1,5	P-GAV 18 LM	602706	17,0	46	37	10,5	19	15	30	32
		22	M 26 x 1,5	P-GAV 22 LM	604366	18,0	51	42	13,5	21	19	32	36
S	630 (9137)	6	M 12 x 1,5	P-GAV 6 SM	603940	4,5	41	33	9	17	4	17	17
		8	M 14 x 1,5	P-GAV 8 SM	604572	6,2	41	33	9	17	5	19	19
		10	M 16 x 1,5	P-GAV 10 SM	604328	8,0	43	34	9,5	17	7	22	22
		12	M 18 x 1,5	P-GAV 12 SM	602664	10,5	44	35	10,5	17	8	24	24
		14	M 20 x 1,5	P-GAV 14 SM	604665	13,5	49	39	12	19	10	27	27
	400 (5801)	16	M 22 x 1,5	P-GAV 16 SM	604596	18,5	49	39	11,5	19	12	30	30
		20	M 27 x 2	P-GAV 20 SM	604441	25,5	56	45	12,5	22	16	36	36

L₂ = ist Ungefährmaß bei angezogener Überwurfmutter
 L₂ = approximate length with nut tightened
 L₂ = longueur approximative, l'écrou étant bloqué

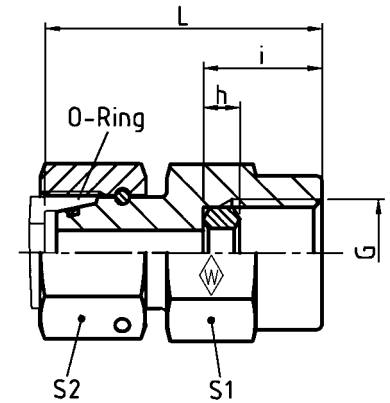
M

EMASD

mit Dichtkegel und O-Ring NBR* (z. B. Perbunan)

with taper and O-ring NBR* (e. g. Perbunan)

avec cône d'étanchéité et joint torique
NBR* (p. ex. Perbunan)



DIN-ISO 228 (R ..., DIN 259)

Reihe Series Série	PN bar (psi)	Rohr-AD Tube OD Tube Ø ext.	G	Typ Type Désignation	Best.-Nr. Reference Réf.	kg per 100 St. kg per 100 pcs. kg par 100 p.	L	i	h	S ₁	S ₂	O-Ring O-ring Joint torique
L	500 (7252)	6	G 1/4	EMASD 6 LR	605748	5,7	38	14,5	4,5	19	14	4,5 x 1,5
		8	G 1/4	EMASD 8 LR	066353	7,0	38	14,5	4,5	19	17	6 x 1,5
		10	G 1/4	EMASD 10 LR	605749	7,2	39,5	14,5	4,5	19	19	8,5 x 1,5
	400 (5801)	12	G 1/4	EMASD 12 LR	605750	8,0	40,5	14,5	4,5	19	22	10 x 1,5
S	630 (9137)	6	G 1/2	EMASD 6 SR	605751	11,5	45	20	5	27	17	4,5 x 1,5
		8	G 1/2	EMASD 8 SR	605752	11,4	45	20	5	27	19	6 x 1,5
		10	G 1/2	EMASD 10 SR	605753	13,4	47	20	5	27	22	8,5 x 1,5
		12	G 1/2	EMASD 12 SR	066313	12,9	47,5	20	5	27	24	10 x 1,5

* FPM (z. B. Viton) auf Anfrage

* FPM (e. g. Viton) on request

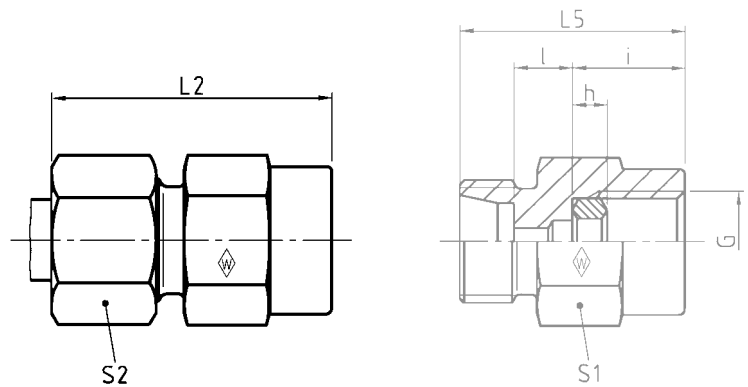
* FPM (p. ex. Viton) sur demande

P-MAV..... R

Whitworth-Rohrgewinde

BSP thread

Filetage Whitworth

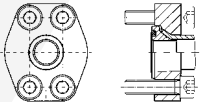
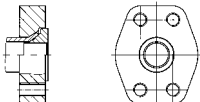
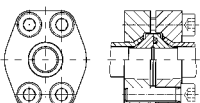

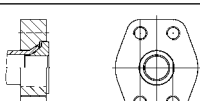
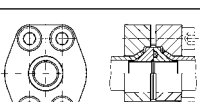


DIN-ISO 228 (R ..., DIN 259)

Reihe Series Série	PN bar (psi)	Rohr-AD Tube OD Tube Ø ext.	G	Typ Type Désignation	Best.-Nr. Reference Réf.	kg per 100 St. kg per 100 pcs. kg par 100 p.	L ₂	L ₅	l	i	h	S ₁	S ₂
L	500 (7252)	6	G 1/4	P-MAV 6 LR	374334	4,6	37	14,5	7,5	14,5	4,5	19	14
		8	G 1/4	P-MAV 8 LR	374335	5,3	37	14,5	7,5	14,5	4,5	19	17
		10	G 1/4	P-MAV 10 LR	374336	6,2	38	15,5	8,5	14,5	4,5	19	19
	400 (5801)	12	G 1/4	P-MAV 12 LR	374337	7,0	38	15,5	8,5	14,5	4,5	19	22
S	800 (11603)	6	G 1/2	P-MAV 6 SR	374338	10,5	46	18x	11	20	5	27	17
		8	G 1/2	P-MAV 8 SR	374339	10,7	46	18	11	20	5	27	19
		10	G 1/2	P-MAV 10 SR	374340	12,5	47	18	10,5	20	5	27	22
	630 (9137)	12	G 1/2	P-MAV 12 SR	374341	13,4	47	18	10,5	20	5	27	24

L₂ = Ungefährmaß bei angezogener Überwurfmutter
 L₂ = approximate length with nut tightened
 L₂ = longueur approximative, l'écrou étant bloqué



			Abb. Fig. Fig.	Typ Type Désignation	Seite Page Page
<p>Bördelflansch 37° nach SAE J518/ISO 6162 37° flared flange according to SAE J518/ISO 6162 Bride d'évasement 37° suivant SAE J518/ISO 6162</p>	<p>Flansch kpl. Flange cpl. Bride cpl.</p>	3000 psi		BO-FK 3000...	N2-N3
	<p>Flansch Gegenstück kpl. Flange counterpart cpl. Pendant de la bride cpl.</p>	3000 psi		BO-FGK 3000...	N4-N5
	<p>Flansch Verbinder kpl. Flange connector cpl. Raccord de bride cpl.</p>	3000 psi		BO-FVK 3000...	N6
	<p>Flansch kpl. Flange cpl. Bride cpl.</p>	6000 psi		BO-FK 6000...	N8-N9
	<p>Flansch Gegenstück kpl. Flange counterpart cpl. Pendant de la bride cpl.</p>	6000 psi		BO-FGK 6000...	N10-N11
	<p>Flansch Verbinder kpl. Flange connector cpl. Raccord de bride cpl.</p>	6000 psi		BO-FVK 6000...	N12



Bördelflansch 37° nach SAE J518/ISO 6162
 37° flared flange according to SAE J518/ISO 6162
 Bride d'évasement 37° suivant SAE J518/ISO 6162

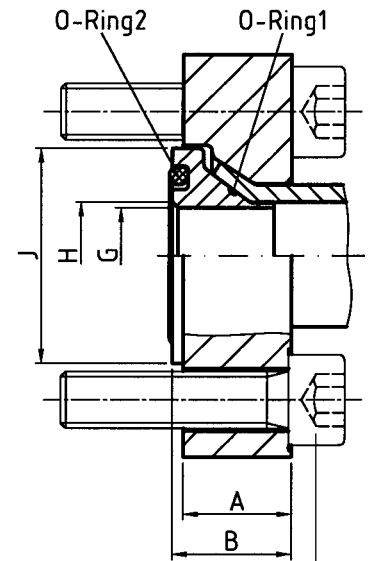
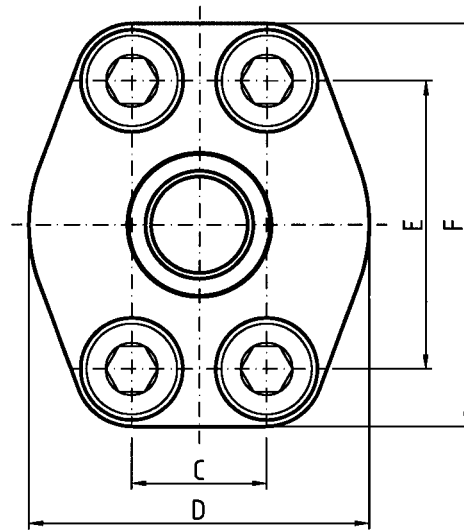


BO-FK 3000...

Flansch kpl.

Flange cpl.

Bride cpl.



Innensechskantschraube
 Hexagon socket screw
 Vis à six pans creux

SAE-Flansch SAE flange Bride SAE	PB** [bar] (psi)	Typ Type Désignation	Best-Nr. Reference Réf.	A	B*	C	D	E	F	G	H	J
1/2	350 (5076)	BO-FK 3000-1/2-16 x 2,0	613637	16	17	17,48	48	38,1	56	10	13	30
		BO-FK 3000-1/2-16 x 2,5	613638	16	17	17,48	48	38,1	56	9	13	30
		BO-FK 3000-1/2-20 x 2,0	613639	16	17	17,48	48	38,1	56	14		30
		BO-FK 3000-1/2-20 x 2,5	613640	16	17	17,48	48	38,1	56	13		30
		BO-FK 3000-1/2-20 x 3,0	613641	16	17	17,48	48	38,1	56	12	13	30
		BO-FK 3000-1/2-22 x 2,0	613642	16	17	17,48	48	38,1	56	16		30
3/4	350 (5076)	BO-FK 3000-3/4-20 x 2,0	613643	17	18	22,23	50	47,63	65	14	19	38
		BO-FK 3000-3/4-20 x 2,5	613644	17	18	22,23	50	47,63	65	13	19	38
		BO-FK 3000-3/4-20 x 3,0	613645	17	18	22,23	50	47,63	65	12	19	38
		BO-FK 3000-3/4-25 x 2,5	613646	17	18	22,23	50	47,63	65	18	19	38
		BO-FK 3000-3/4-25 x 3,0	613647	17	18	22,23	50	47,63	65	17	19	38
		BO-FK 3000-3/4-25 x 4,0	613648	17	18	22,23	50	47,63	65	15	19	38
		BO-FK 3000-3/4-28 x 3,0	613649	17	18	22,23	50	47,63	65	20		38
1	350 (5076)	BO-FK 3000-1-25 x 2,5	613650	19	20	26,19	60	52,37	71	18	25	44,5
		BO-FK 3000-1-25 x 3,0	613651	19	20	26,19	60	52,37	71	17	25	44,5
		BO-FK 3000-1-25 x 4,0	613652	19	20	26,19	60	52,37	71	15	25	44,5
		BO-FK 3000-1-30 x 4,0	613653	19	20	26,19	60	52,37	71	20	25	44,5
		BO-FK 3000-1-35 x 3,0	613654	19	20	26,19	60	52,37	71	27		44,5
1 1/4	250 (3626)	BO-FK 3000-1 1/4-38 x 4,0	613655	20	21	30,18	68	58,72	79	28	32	50,8
		BO-FK 3000-1 1/4-38 x 5,0	613656	20	21	30,18	68	58,72	79	26	32	50,8
		BO-FK 3000-1 1/4-42 x 3,0	613657	20	21	30,18	68	58,72	79	34		50,8
		BO-FK 3000-1 1/4-42 x 4,0	613658	20	21	30,18	68	58,72	79	32		50,8
1 1/2	210 (3046)	BO-FK 3000-1 1/2-38 x 4,0	613659	22	23	35,71	78	69,85	93	28	38	60
		BO-FK 3000-1 1/2-38 x 5,0	613660	22	23	35,71	78	69,85	93	26	38	60
		BO-FK 3000-1 1/2-42 x 3,0	613661	22	23	35,71	78	69,85	93	34	38	60
		BO-FK 3000-1 1/2-42 x 4,0	613662	22	23	35,71	78	69,85	93	32	38	60
		BO-FK 3000-1 1/2-48,3 x 3,2	613663	22	23	35,71	78	69,85	93	38		60
		BO-FK 3000-1 1/2-50 x 2,5	613664	22	23	35,71	78	69,85	93	42,4		60
		BO-FK 3000-1 1/2-50 x 3,0	613665	22	23	35,71	78	69,85	93	41,4		60
		BO-FK 3000-1 1/2-50 x 5,0	613666	22	23	35,71	78	69,85	93	37,4		60
2	210 (3046)	BO-FK 3000-2-60 x 3,0	613667	24	25	42,88	90	77,77	102	51,4		71,3
		BO-FK 3000-2-60,3 x 3,6	613668	24	25	42,88	90	77,77	102	50,5		71,3
		BO-FK 3000-2-60,3 x 5,6	613669	24	25	42,88	90	77,77	102	46,5	51	71,3
		BO-FK 3000-2-60/60,3 x 8,0	613670	24	25	42,88	90	77,77	102	41,4	51	71,3

*B = Ungefährmaß bei angezogenen Innensechskantschrauben

*B = approximate length with hexagon socket screws

*B = longueur approximative les vis à six pans creux

**bei 2,5facher Sicherheit

**at a safety factor of 2,5

**avec un coefficient de sécurité de 2,5

Bördelflansch 37° nach SAE J518/ISO 6162
 37° flared flange according to SAE J518/ISO 6162
 Bride d'évasement 37° suivant SAE J518/ISO 6162



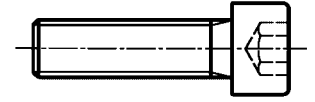
Zubehörteile
 Accessories
 Accessoires



O-Ring 1
 1 Stück
 O-ring 1
 1 piece
 Joint torique 1
 1 pièce



O-Ring 2
 1 Stück
 O-ring 2
 1 piece
 Joint torique 2
 1 pièce



Innensechskantschrauben DIN 912
 4 Stück
 Hexagon socket screw DIN 912
 4 pièces
 Vis à six pans creux DIN 912
 4 pièces

Typ Type Désignation	O-Ring 1 O-ring 1 Joint torique 1		O-Ring 2 O-ring 2 Joint torique 2		Innensechskantschraube Hexagon socket screw Vis à six pans creux	
	Abm. Dim. Dim.	Best.-Nr. Reference Réf.	Abm. Dim. Dim.	Best.-Nr. Reference Réf.	Abm. Dim. Dim.	Best.-Nr. Reference Réf.
BO-FK 3000-1/2-16 x 2,0	12,5 x 1	374756	18,64 x 3,53	613769	M8 x 30	021790
BO-FK 3000-1/2-16 x 2,5	12,5 x 1	374756	18,64 x 3,53	613769	M8 x 30	021790
BO-FK 3000-1/2-20 x 2,0	16 x 1	261058	18,64 x 3,53	613769	M8 x 30	021790
BO-FK 3000-1/2-20 x 2,5	16 x 1	261058	18,64 x 3,53	613769	M8 x 30	021790
BO-FK 3000-1/2-20 x 3,0	15 x 1	304305	18,64 x 3,53	613769	M8 x 30	021790
BO-FK 3000-1/2-22 x 2,0	15 x 1	304305	18,64 x 3,53	613769	M8 x 30	021790
BO-FK 3000-3/4-22 x 2,0	16 x 1	261058	25 x 3,53	611016	M10 x 35	021801
BO-FK 3000-3/4-20 x 2,5	16 x 1	261058	25 x 3,53	611016	M10 x 35	021801
BO-FK 3000-3/4-20 x 3,0	15 x 1	304305	25 x 3,53	611016	M10 x 35	021801
BO-FK 3000-3/4-25 x 2,5	20 x 1	304307	25 x 3,53	611016	M10 x 35	021801
BO-FK 3000-3/4-25 x 3,0	20 x 1	304307	25 x 3,53	611016	M10 x 35	021801
BO-FK 3000-3/4-25 x 4,0	18 x 1	304306	25 x 3,53	611016	M10 x 35	021801
BO-FK 3000-3/4-28 x 3,0	23 x 1	304310	25 x 3,53	611016	M10 x 35	021801
BO-FK 3000-1-25 x 2,5	20 x 1	304307	32,92 x 3,53	610404	M10 x 35	021801
BO-FK 3000-1-25 x 3,0	20 x 1	304307	32,92 x 3,53	610404	M10 x 35	021801
BO-FK 3000-1-25 x 4,0	18 x 1	304306	32,92 x 3,53	610404	M10 x 35	021801
BO-FK 3000-1-30 x 4,0	23 x 1	304310	32,92 x 3,53	610404	M10 x 35	021801
BO-FK 3000-1-35 x 3,0	28 x 1	304273	32,92 x 3,53	610404	M10 x 35	021801
BO-FK 3000-1 1/4-38 x 4,0	32 x 1,78	261131	37,69 x 3,53	610405	M10 x 40	615362
BO-FK 3000-1 1/4-38 x 5,0	32 x 1,78	261131	37,69 x 3,53	610405	M10 x 40	615362
BO-FK 3000-1 1/4-42 x 3,0	37 x 1	374749	37,69 x 3,53	610405	M10 x 40	615362
BO-FK 3000-1 1/4-42 x 4,0	37 x 1	374749	37,69 x 3,53	610405	M10 x 40	615362
BO-FK 3000-1 1/2-38 x 4,0	32 x 1,78	261131	47,22 x 3,53	611425	M12 x 40	613632
BO-FK 3000-1 1/2-38 x 5,0	32 x 1,78	261131	47,22 x 3,53	611425	M12 x 40	613632
BO-FK 3000-1 1/2-42 x 3,0	37 x 1	374749	47,22 x 3,53	611425	M12 x 40	613632
BO-FK 3000-1 1/2-42 x 4,0	37 x 1	374749	47,22 x 3,53	611425	M12 x 40	613632
BO-FK 3000-1 1/2-48,3 x 3,2	44,17 x 1,78	611929	47,22 x 3,53	611425	M12 x 40	613632
BO-FK 3000-1 1/2-50 x 2,5	44,17 x 1,78	611929	47,22 x 3,53	611425	M12 x 40	613632
BO-FK 3000-1 1/2-50 x 3,0	44,17 x 1,78	611929	47,22 x 3,53	611425	M12 x 40	613632
BO-FK 3000-1 1/2-50 x 5,0	44,17 x 1,78	611929	47,22 x 3,53	611425	M12 x 40	613632
BO-FK 3000-2-60 x 3,0	53,7 x 1,78	612146	56,74 x 3,53	612145	M12 x 45	613633
BO-FK 3000-2-60,3 x 3,6	53,7 x 1,78	612146	56,74 x 3,53	612145	M12 x 45	613633
BO-FK 3000-2-60,3 x 5,6	50,52 x 1,78	612147	56,74 x 3,53	612145	M12 x 45	613633
BO-FK 3000-2-60/60,3 x 8,0	44,17 x 1,78	611929	56,74 x 3,53	612145	M12 x 45	613633

N

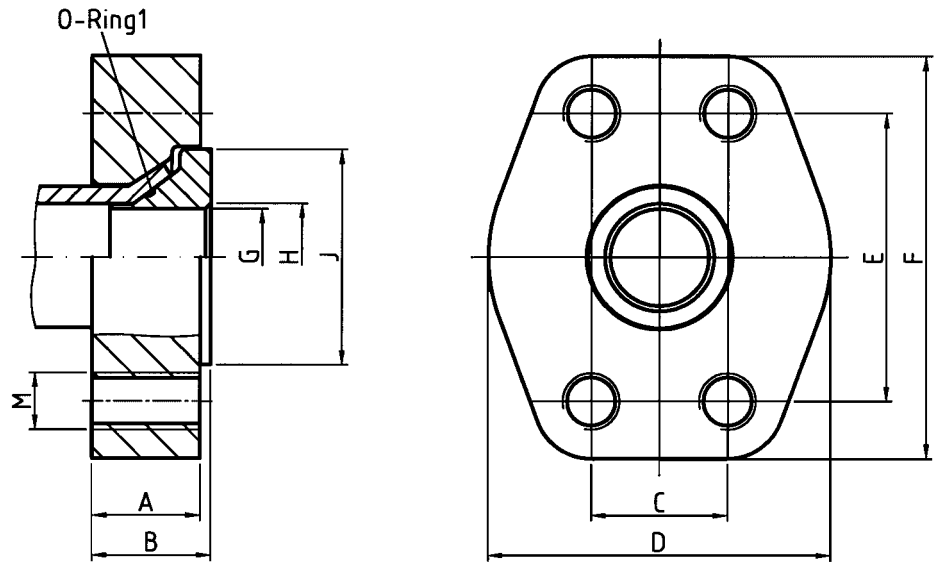


BO-FGK 3000...

Flansch Gegenstück kpl.

Flange counterpart cpl.

Pendant de la bride cpl.



SAE-Flansch SAE flange Bride SAE	PB** [bar] (psi)	Typ Type Désignation	Best-Nr. Reference Réf.	A	B*	C	D	E	F	G	H	J	M
1/2	350 (5076)	BO-FGK 3000-1/2-16 x 2,0	614860	16	17	17,48	48	38,1	56	10	13	30	M8
		BO-FGK 3000-1/2-16 x 2,5	614861	16	17	17,48	48	38,1	56	9	13	30	M8
		BO-FGK 3000-1/2-20 x 2,0	614862	16	17	17,48	48	38,1	56	14		30	M8
		BO-FGK 3000-1/2-20 x 2,5	614863	16	17	17,48	48	38,1	56	13		30	M8
		BO-FGK 3000-1/2-20 x 3,0	614864	16	17	17,48	48	38,1	56	12	13	30	M8
		BO-FGK 3000-1/2-22 x 2,0	614865	16	17	17,48	48	38,1	56	16		30	M8
3/4	350 (5076)	BO-FGK 3000-3/4-20 x 2,0	614866	17	18	22,23	50	47,63	65	14	19	38	M10
		BO-FGK 3000-3/4-20 x 2,5	614867	17	18	22,23	50	47,63	65	13	19	38	M10
		BO-FGK 3000-3/4-20 x 3,0	614868	17	18	22,23	50	47,63	65	12	19	38	M10
		BO-FGK 3000-3/4-25 x 2,5	614869	17	18	22,23	50	47,63	65	18	19	38	M10
		BO-FGK 3000-3/4-25 x 3,0	614870	17	18	22,23	50	47,63	65	17	19	38	M10
		BO-FGK 3000-3/4-25 x 4,0	614871	17	18	22,23	50	47,63	65	15	19	38	M10
		BO-FGK 3000-3/4-28 x 3,0	614872	17	18	22,23	50	47,63	65	20		38	M10
1	350 (5076)	BO-FGK 3000-1-25 x 2,5	614873	19	20	26,19	60	52,37	71	18	25	44,5	M10
		BO-FGK 3000-1-25 x 3,0	614874	19	20	26,19	60	52,37	71	17	25	44,5	M10
		BO-FGK 3000-1-25 x 4,0	614875	19	20	26,19	60	52,37	71	15	25	44,5	M10
		BO-FGK 3000-1-30 x 4,0	614876	19	20	26,19	60	52,37	71	20	25	44,5	M10
		BO-FGK 3000-1-35 x 3,0	614877	19	20	26,19	60	52,37	71	27		44,5	M10
1 1/4	250 (3626)	BO-FGK 3000-1 1/4-38 x 4,0	614878	20	21	30,18	68	58,72	79	28	32	50,8	M10
		BO-FGK 3000-1 1/4-38 x 5,0	614879	20	21	30,18	68	58,72	79	26	32	50,8	M10
		BO-FGK 3000-1 1/4-42 x 3,0	614880	20	21	30,18	68	58,72	79	34		50,8	M10
		BO-FGK 3000-1 1/4-42 x 4,0	614881	20	21	30,18	68	58,72	79	32		50,8	M10
1 1/2	210 (3046)	BO-FGK 3000-1 1/2-38 x 4,0	614882	22	23	35,71	78	69,85	93	28	38	60	M12
		BO-FGK 3000-1 1/2-38 x 5,0	614883	22	23	35,71	78	69,85	93	26	38	60	M12
		BO-FGK 3000-1 1/2-42 x 3,0	614884	22	23	35,71	78	69,85	93	34	38	60	M12
		BO-FGK 3000-1 1/2-42 x 4,0	614885	22	23	35,71	78	69,85	93	32	38	60	M12
		BO-FGK 3000-1 1/2-48,3 x 3,2	614886	22	23	35,71	78	69,85	93	38		60	M12
		BO-FGK 3000-1 1/2-50 x 2,5	614887	22	23	35,71	78	69,85	93	42,4		60	M12
		BO-FGK 3000-1 1/2-50 x 3,0	614888	22	23	35,71	78	69,85	93	41,4		60	M12
		BO-FGK 3000-1 1/2-50 x 5,0	614889	22	23	35,71	78	69,85	93	37,4		60	M12
2	210 (3046)	BO-FGK 3000-2-60 x 3,0	614890	22	23	42,88	90	77,77	102	51,4		71,3	M12
		BO-FGK 3000-2-60,3 x 3,6	614891	22	23	42,88	90	77,77	102	50,5		71,3	M12
		BO-FGK 3000-2-60,3 x 5,6	614892	22	23	42,88	90	77,77	102	46,5	51	71,3	M12
		BO-FGK 3000-2-60/60,3 x 8,0	614893	22	23	42,88	90	77,77	102	41,4	51	71,3	M12

*B = Ungefährmaß bei angezogenen Innensechskantschrauben

*B = approximate length with hexagon socket screws

*B = longueur approximative les vis à six pans creux

**bei 2,5facher Sicherheit

**at a safety factor of 2,5

**avec un coefficient de sécurité de 2,5

Bördelflansch 37° nach SAE J518/ISO 6162
 37° flared flange according to SAE J518/ISO 6162
 Bride d'évasement 37° suivant SAE J518/ISO 6162



Zubehörteile
 Accessories
 Accessoires



O-Ring 1
 1 Stück
 O-ring 1
 1 piece
 Joint torique 1
 1 pièce

Typ Type Désignation	Abm. Dim. Dim.	Best.-Nr. Reference Réf.
	O-Ring 1 O-ring 1 Joint torique 1	
BO-FGK 3000-1/2-16 x 2,0	12,5 x 1	374756
BO-FGK 3000-1/2-16 x 2,5	12,5 x 1	374756
BO-FGK 3000-1/2-20 x 2,0	16 x 1	261058
BO-FGK 3000-1/2-20 x 2,5	16 x 1	261058
BO-FGK 3000-1/2-20 x 3,0	15 x 1	304305
BO-FGK 3000-1/2-22 x 2,0	15 x 1	304305
BO-FGK 3000-3/4-20 x 2,0	16 x 1	261058
BO-FGK 3000-3/4-20 x 2,5	16 x 1	261058
BO-FGK 3000-3/4-20 x 3,0	15 x 1	304305
BO-FGK 3000-3/4-25 x 2,5	20 x 1	304307
BO-FGK 3000-3/4-25 x 3,0	20 x 1	304307
BO-FGK 3000-3/4-25 x 4,0	18 x 1	304306
BO-FGK 3000-3/4-28 x 3,0	23 x 1	304310
BO-FGK 3000-1-25 x 2,5	20 x 1	304307
BO-FGK 3000-1-25 x 3,0	20 x 1	304307
BO-FGK 3000-1-25 x 4,0	18 x 1	304306
BO-FGK 3000-1-30 x 4,0	23 x 1	304310
BO-FGK 3000-1-35 x 3,0	28 x 1	304273
BO-FGK 3000-1 1/4-38 x 4,0	32 x 1,78	261131
BO-FGK 3000-1 1/4-38 x 5,0	32 x 1,78	261131
BO-FGK 3000-1 1/4-42 x 3,0	37 x 1	374749
BO-FGK 3000-1 1/4-42 x 4,0	37 x 1	374749
BO-FGK 3000-1 1/2-38 x 4,0	32 x 1,78	261131
BO-FGK 3000-1 1/2-38 x 5,0	32 x 1,78	261131
BO-FGK 3000-1 1/2-42 x 3,0	37 x 1	374749
BO-FGK 3000-1 1/2-42 x 4,0	37 x 1	374749
BO-FGK 3000-1 1/2-48,3 x 3,2	44,17 x 1,78	611929
BO-FGK 3000-1 1/2-50 x 2,5	44,17 x 1,78	611929
BO-FGK 3000-1 1/2-50 x 3,0	44,17 x 1,78	611929
BO-FGK 3000-1 1/2-50 x 5,0	44,17 x 1,78	611929
BO-FGK 3000-2-60 x 3,0	53,7 x 1,78	612146
BO-FGK 3000-2-60,3 x 3,6	53,7 x 1,78	612146
BO-FGK 3000-2-60,3 x 5,6	50,52 x 1,78	612147
BO-FGK 3000-2-60/60,3 x 8,0	44,17 x 1,78	611929

N

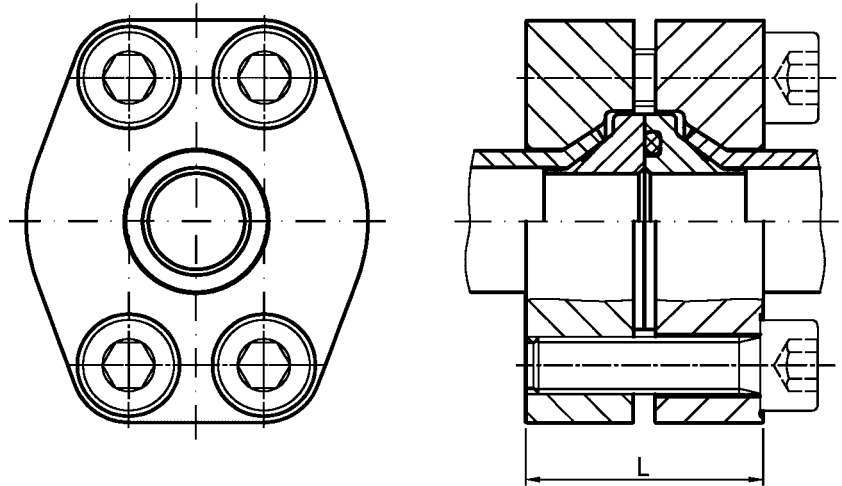


BO-FVK 3000...

Flansch Verbinder kpl.

Flange connector cpl.

Raccord de bride cpl.



SAE-Flansch SAE flange Bride SAE	PB** [bar] (psi)	Typ Type Désignation	Best-Nr. Reference Réf.	L*
1/2	350 (5076)	BO-FVK 3000-1/2-16 x 2,0	613701	34
		BO-FVK 3000-1/2-16 x 2,5	613702	34
		BO-FVK 3000-1/2-20 x 2,0	613703	34
		BO-FVK 3000-1/2-20 x 2,5	613704	34
		BO-FVK 3000-1/2-20 x 3,0	613705	34
		BO-FVK 3000-1/2-22 x 2,0	613706	34
3/4	350 (5076)	BO-FVK 3000-3/4-20 x 2,0	613707	36
		BO-FVK 3000-3/4-20 x 2,5	613708	36
		BO-FVK 3000-3/4-20 x 3,0	613709	36
		BO-FVK 3000-3/4-25 x 2,5	613710	36
		BO-FVK 3000-3/4-25 x 3,0	613711	36
		BO-FVK 3000-3/4-25 x 4,0	613712	36
		BO-FVK 3000-3/4-28 x 3,0	613713	36
1	350 (5076)	BO-FVK 3000-1-25 x 2,5	613714	40
		BO-FVK 3000-1-25 x 3,0	613715	40
		BO-FVK 3000-1-25 x 4,0	613716	40
		BO-FVK 3000-1-30 x 4,0	613717	40
		BO-FVK 3000-1-35 x 3,0	613718	40
1 1/4	250 (3626)	BO-FVK 3000-1 1/4-38 x 4,0	613719	42
		BO-FVK 3000-1 1/4-38 x 5,0	613720	42
		BO-FVK 3000-1 1/4-42 x 3,0	613721	42
		BO-FVK 3000-1 1/4-42 x 4,0	613722	42
1 1/2	210 (3046)	BO-FVK 3000-1 1/2-38 x 4,0	613723	46
		BO-FVK 3000-1 1/2-38 x 5,0	613724	46
		BO-FVK 3000-1 1/2-42 x 3,0	613725	46
		BO-FVK 3000-1 1/2-42 x 4,0	613726	46
		BO-FVK 3000-1 1/2-48,3 x 3,2	613727	46
		BO-FVK 3000-1 1/2-50 x 2,5	613728	46
		BO-FVK 3000-1 1/2-50 x 3,0	613729	46
		BO-FVK 3000-1 1/2-50 x 5,0	613730	46
2	210 (3046)	BO-FVK 3000-2-60 x 3,0	613731	50
		BO-FVK 3000-2-60,3 x 3,6	613732	50
		BO-FVK 3000-2-60,3 x 5,6	613733	50
		BO-FVK 3000-2-60/60,3 x 8,0	613734	50

*L = Ungefährmaß bei angezogenen Innensechskantschrauben

*L = approximate length with hexagon socket screws

*L = longueur approximative les vis à six pans creux

**bei 2,5facher Sicherheit

**at a safety factor of 2,5

**avec un coefficient de sécurité de 2,5



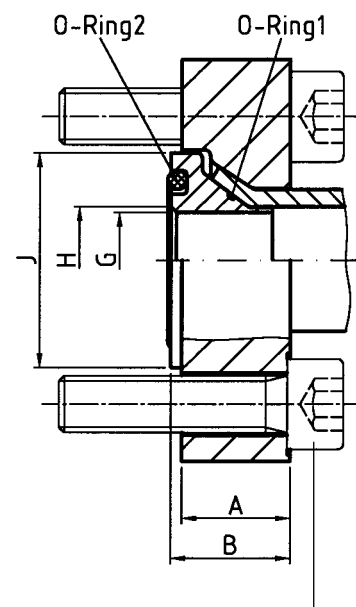
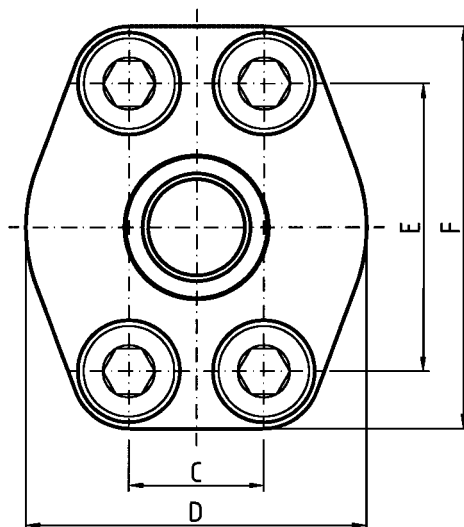


BO-FK 6000...

Flansch kpl.

Flange cpl.

Bride cpl.



Innensechskantschraube
 Hexagon socket screw
 Vis à six pans creux

SAE-Flansch SAE flange Bride SAE	PB** [bar] (psi)	Typ Type Désignation	Best-Nr. Reference Réf.	A	B*	C	D	E	F	G	H	J
1/2	420 (6091)	BO-FK 6000-1/2-16 x 2,5	613671	16	17	18,24	48	40,49	56	9	13	30
		BO-FK 6000-1/2-16 x 3,0	613672	16	17	18,24	48	40,49	56	8	13	30
		BO-FK 6000-1/2-20 x 2,5	613673	16	17	18,24	48	40,49	56	13		30
		BO-FK 6000-1/2-20 x 3,0	613674	16	17	18,24	48	40,49	56	12	13	30
		BO-FK 6000-1/2-20 x 3,5	613675	16	17	18,24	48	40,49	56	11	13	30
3/4	420 (6091)	BO-FK 6000-3/4-20 x 2,5	613676	19	20	23,8	60	50,8	71	13	19	38
		BO-FK 6000-3/4-20 x 3,0	613677	19	20	23,8	60	50,8	71	12	19	38
		BO-FK 6000-3/4-20 x 3,5	613678	19	20	23,8	60	50,8	71	11	19	38
		BO-FK 6000-3/4-20 x 4,0	613679	19	20	23,8	60	50,8	71	10	19	38
		BO-FK 6000-3/4-25 x 3,0	613680	19	20	23,8	60	50,8	71	17	19	38
		BO-FK 6000-3/4-25 x 4,0	613681	19	20	23,8	60	50,8	71	15	19	38
1	420 (6091)	BO-FK 6000-1-25 x 2,5	613682	24,5	25,5	27,76	70	57,15	81	18	25	44,5
		BO-FK 6000-1-25 x 3,0	613683	24,5	25,5	27,76	70	57,15	81	17	25	44,5
		BO-FK 6000-1-25 x 4,0	613684	24,5	25,5	27,76	70	57,15	81	15	25	44,5
		BO-FK 6000-1-30 x 4,0	613685	24,5	25,5	27,76	70	57,15	81	20	25	44,5
		BO-FK 6000-1-30 x 5,0	613686	24,5	25,5	27,76	70	57,15	81	18	25	44,5
		BO-FK 6000-1-34 x 4,5	613687	24,5	25,5	27,76	70	57,15	81	23	25	44,5
		BO-FK 6000-1-38 x 5,0	613688	24,5	25,5	27,76	70	57,15	81	26		44,5
1 1/4	420 (6091)	BO-FK 6000-1 1/4-30 x 5,0	614776	30	31	31,75	78	66,68	95	18	32	50,8
		BO-FK 6000-1 1/4-38 x 4,0	613689	30	31	31,75	78	66,68	95	28	32	50,8
		BO-FK 6000-1 1/4-38 x 5,0	613690	30	31	31,75	78	66,68	95	26	32	50,8
		BO-FK 6000-1 1/4-38 x 6,0	613691	30	31	31,75	78	66,68	95	24	32	50,8
		BO-FK 6000-1 1/4-43 x 5,5	613692	30	31	31,75	78	66,68	95	30	32	50,8
1 1/2	420 (6091)	BO-FK 6000-1 1/2-38 x 5,0	613693	32	33	36,5	96	79,38	113	26	38	60
		BO-FK 6000-1 1/2-38 x 6,0	613694	32	33	36,5	96	79,38	113	24	38	60
		BO-FK 6000-1 1/2-50 x 5,0	613695	32	33	36,5	96	79,38	113	37,4		60
		BO-FK 6000-1 1/2-50 x 6,0	613696	32	33	36,5	96	79,38	113	35,4	38	60
		BO-FK 6000-1 1/2-50 x 8,0	613697	32	33	36,5	96	79,38	113	31,4	38	60
2	420 (6091)	BO-FK 6000-2-60 x 6,0	613698	32	33	44,45	114	96,82	134	45,4	51	71,3
		BO-FK 6000-2-60/60,3 x 8,0	613765	32	33	44,45	114	96,82	134	41,4	51	71,3
		BO-FK 6000-2-60/60,3 x 10,0	613766	32	33	44,45	114	96,82	134	37,4	51	71,3

*B = Ungefährmaß bei angezogenen Innensechskantschrauben

*B = approximate length with hexagon socket screws

*B = longueur approximative les vis à six pans creux

**bei 2,5facher Sicherheit

**at a safety factor of 2,5

**avec un coefficient de sécurité de 2,5

Bördelflansch 37° nach SAE J518/ISO 6162
 37° flared flange according to SAE J518/ISO 6162
 Bride d'évasement 37° suivant SAE J518/ISO 6162



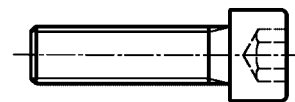
Zubehörteile
 Accessories
 Accessoires



O-Ring 1
 1 Stück
 O-ring 1
 1 pièce
 Joint torique 1
 1 pièce



O-Ring 2
 1 Stück
 O-ring 2
 1 pièce
 Joint torique 2
 1 pièce



Innensechskantschrauben DIN 912
 4 Stück
 Hexagon socket screw DIN 912
 4 pièces
 Vis à six pans creux DIN 912
 4 pièces

Typ Type Désignation	O-Ring 1 O-ring 1 Joint torique 1		O-Ring 2 O-ring 2 Joint torique 2		Innensechskantschraube Hexagon socket screw Vis à six pans creux	
	Abm. Dim. Dim.	Best.-Nr. Reference Réf.	Abm. Dim. Dim.	Best.-Nr. Reference Réf.	Abm. Dim. Dim.	Best.-Nr. Reference Réf.
BO-FK 6000-1/2-16 x 2,5	12,5 x 1	374756	18,64 x 3,53	613769	M8 x 30	021790
BO-FK 6000-1/2-16 x 3,0	11 x 1	374750	18,64 x 3,53	613769	M8 x 30	021790
BO-FK 6000-1/2-20 x 2,5	16 x 1	261058	18,64 x 3,53	613769	M8 x 30	021790
BO-FK 6000-1/2-20 x 3,0	15 x 1	304305	18,64 x 3,53	613769	M8 x 30	021790
BO-FK 6000-1/2-20 x 3,5	15 x 1	304305	18,64 x 3,53	613769	M8 x 30	021790
BO-FK 6000-3/4-20 x 2,5	16 x 1	261058	25 x 3,53	611016	M10 x 35	021801
BO-FK 6000-3/4-20 x 3,0	15 x 1	304305	25 x 3,53	611016	M10 x 35	021801
BO-FK 6000-3/4-20 x 3,5	15 x 1	304305	25 x 3,53	611016	M10 x 35	021801
BO-FK 6000-3/4-20 x 4,0	15 x 1	304305	25 x 3,53	611016	M10 x 35	021801
BO-FK 6000-3/4-25 x 3,0	20 x 1	304307	25 x 3,53	611016	M10 x 35	021801
BO-FK 6000-3/4-25 x 4,0	18 x 1	304306	25 x 3,53	611016	M10 x 35	021801
BO-FK 6000-1-25 x 2,5	20 x 1	304307	32,92 x 3,53	610404	M12 x 45	613633
BO-FK 6000-1-25 x 3,0	20 x 1	304307	32,92 x 3,53	610404	M12 x 45	613633
BO-FK 6000-1-25 x 4,0	18 x 1	304306	32,92 x 3,53	610404	M12 x 45	613633
BO-FK 6000-1-30 x 4,0	23 x 1	304310	32,92 x 3,53	610404	M12 x 45	613633
BO-FK 6000-1-30 x 5,0	23 x 1	304310	32,92 x 3,53	610404	M12 x 45	613633
BO-FK 6000-1-34 x 4,5	28 x 1	304273	32,92 x 3,53	610404	M12 x 45	613633
BO-FK 6000-1-38 x 5,0	32 x 1,78	261131	32,92 x 3,53	610404	M12 x 45	613633
BO-FK 6000-1 1/4-30 x 5,0	23 x 1	304310	37,69 x 3,53	610405	M14 x 55	613634
BO-FK 6000-1 1/4-38 x 4,0	32 x 1,78	261131	37,69 x 3,53	610405	M14 x 55	613634
BO-FK 6000-1 1/4-38 x 5,0	32 x 1,78	261131	37,69 x 3,53	610405	M14 x 55	613634
BO-FK 6000-1 1/4-38 x 6,0	32 x 1,78	261131	37,69 x 3,53	610405	M14 x 55	613634
BO-FK 6000-1 1/4-43 x 5,5	32 x 1,78	261131	37,69 x 3,53	610405	M14 x 55	613634
BO-FK 6000-1 1/2-38 x 5,0	32 x 1,78	261131	47,22 x 3,53	611425	M16 x 60	614454
BO-FK 6000-1 1/2-38 x 6,0	32 x 1,78	261131	47,22 x 3,53	611425	M16 x 60	614454
BO-FK 6000-1 1/2-50 x 5,0	44,17 x 1,78	611929	47,22 x 3,53	611425	M16 x 60	614454
BO-FK 6000-1 1/2-50 x 6,0	37,82 x 1,78	612739	47,22 x 3,53	611425	M16 x 60	614454
BO-FK 6000-1 1/2-50 x 8,0	37,82 x 1,78	612739	47,22 x 3,53	611425	M16 x 60	614454
BO-FK 6000-2-60 x 6,0	50,52 x 1,78	612147	56,74 x 3,53	612145	M20 x 60	613636
BO-FK 6000-2-60/60,3 x 8,0	44,17 x 1,78	611929	56,74 x 3,53	612145	M20 x 60	613636
BO-FK 6000-2-60/60,3 x 10,0	44,17 x 1,78	611929	56,74 x 3,53	612145	M20 x 60	613636



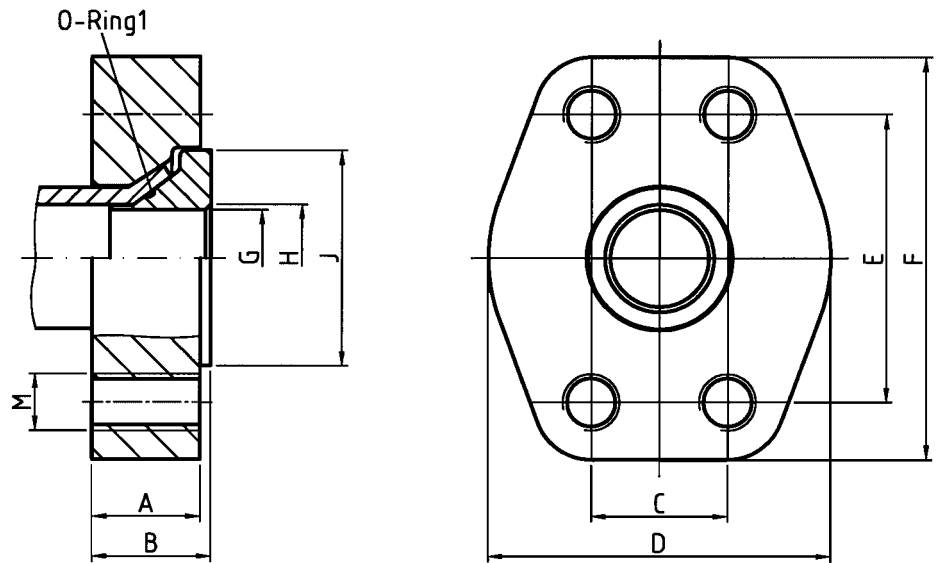


BO-FGK 6000...

Flansch Gegenstück kpl.

Flange counterpart cpl.

Pendant de la bride cpl.



SAE-Flansch SAE flange Bride SAE	PB** [bar] (psi)	Typ Type Désignation	Best-Nr. Reference Réf.	A	B*	C	D	E	F	G	H	J	M
1/2	420 (6091)	BO-FGK 6000-1/2-16 x 2,5	614913	16	17	18,24	48	40,49	56	9	13	30	M8
		BO-FGK 6000-1/2-16 x 3,0	614914	16	17	18,24	48	40,49	56	8	13	30	M8
		BO-FGK 6000-1/2-20 x 2,5	614915	16	17	18,24	48	40,49	56	13		30	M8
		BO-FGK 6000-1/2-20 x 3,0	614916	16	17	18,24	48	40,49	56	12	13	30	M8
		BO-FGK 6000-1/2-20 x 3,5	614917	16	17	18,24	48	40,49	56	11	13	30	M8
3/4	420 (6091)	BO-FGK 6000-3/4-20 x 2,5	614918	19	20	23,8	60	50,8	71	13	19	38	M10
		BO-FGK 6000-3/4-20 x 3,0	614919	19	20	23,8	60	50,8	71	12	19	38	M10
		BO-FGK 6000-3/4-20 x 3,5	614920	19	20	23,8	60	50,8	71	11	19	38	M10
		BO-FGK 6000-3/4-20 x 4,0	614921	19	20	23,8	60	50,8	71	10	19	38	M10
		BO-FGK 6000-3/4-25 x 3,0	614922	19	20	23,8	60	50,8	71	17	19	38	M10
		BO-FGK 6000-3/4-25 x 4,0	614923	19	20	23,8	60	50,8	71	15	19	38	M10
1	420 (6091)	BO-FGK 6000-1-25 x 2,5	614924	24,5	25,5	27,76	70	57,15	81	18	25	44,5	M12
		BO-FGK 6000-1-25 x 3,0	614925	24,5	25,5	27,76	70	57,15	81	17	25	44,5	M12
		BO-FGK 6000-1-25 x 4,0	614926	24,5	25,5	27,76	70	57,15	81	15	25	44,5	M12
		BO-FGK 6000-1-30 x 4,0	614927	24,5	25,5	27,76	70	57,15	81	20	25	44,5	M12
		BO-FGK 6000-1-30 x 5,0	614928	24,5	25,5	27,76	70	57,15	81	18	25	44,5	M12
		BO-FGK 6000-1-34 x 4,5	614929	24,5	25,5	27,76	70	57,15	81	23	25	44,5	M12
		BO-FGK 6000-1-38 x 5,0	614930	24,5	25,5	27,76	70	57,15	81	26		44,5	M12
1 1/4	420 (6091)	BO-FGK 6000-1 1/4-30 x 5,0	614931	30	31	31,75	78	66,68	95	18	32	50,8	M14
		BO-FGK 6000-1 1/4-38 x 4,0	614932	30	31	31,75	78	66,68	95	28	32	50,8	M14
		BO-FGK 6000-1 1/4-38 x 5,0	614933	30	31	31,75	78	66,68	95	26	32	50,8	M14
		BO-FGK 6000-1 1/4-38 x 6,0	614934	30	31	31,75	78	66,68	95	24	32	50,8	M14
		BO-FGK 6000-1 1/4-43 x 5,5	614935	30	31	31,75	78	66,68	95	30	32	50,8	M14
1 1/2	420 (6091)	BO-FGK 6000-1 1/2-38 x 5,0	614936	32	33	36,5	96	79,38	113	26	38	60	M16
		BO-FGK 6000-1 1/2-38 x 6,0	614937	32	33	36,5	96	79,38	113	24	38	60	M16
		BO-FGK 6000-1 1/2-50 x 5,0	614938	32	33	36,5	96	79,38	113	37,4		60	M16
		BO-FGK 6000-1 1/2-50 x 6,0	614939	32	33	36,5	96	79,38	113	35,4	38	60	M16
		BO-FGK 6000-1 1/2-50 x 8,0	614940	32	33	36,5	96	79,38	113	31,4	38	60	M16
2	420 (6091)	BO-FGK 6000-2-60 x 6,0	614941	32	33	44,45	114	96,82	134	45,4	51	71,3	M20
		BO-FGK 6000-2-60/60,3 x 8,0	614942	32	33	44,45	114	96,82	134	41,4	51	71,3	M20
		BO-FGK 6000-2-60/60,3 x 10,0	614943	32	33	44,45	114	96,82	134	37,4	51	71,3	M20

*B = Ungefährmaß bei angezogenen Innensechskantschrauben

*B = approximate length with hexagon socket screws

*B = longueur approximative les vis à six pans creux

**bei 2,5facher Sicherheit

**at a safety factor of 2,5

**avec un coefficient de sécurité de 2,5

Bördelflansch 37° nach SAE J518/ISO 6162
 37° flared flange according to SAE J518/ISO 6162
 Bride d'évasement 37° suivant SAE J518/ISO 6162



Zubehörteile
 Accessories
 Accessoires



O-Ring 1
 1 Stück
 O-ring 1
 1 piece
 Joint torique 1
 1 pièce

O-Ring 1
 O-ring 1
 Joint torique 1

Typ Type Désignation	Abm. Dim. Dim.	Best.-Nr. Reference Réf.
BO-FGK 6000-1/2-16 x 2,5	12,5 x 1	374756
BO-FGK 6000-1/2-16 x 3,0	11 x 1	374750
BO-FGK 6000-1/2-20 x 2,5	16 x 1	261058
BO-FGK 6000-1/2-20 x 3,0	15 x 1	304305
BO-FGK 6000-1/2-20 x 3,5	15 x 1	304305
BO-FGK 6000-3/4-20 x 2,5	16 x 1	261058
BO-FGK 6000-3/4-20 x 3,0	15 x 1	304305
BO-FGK 6000-3/4-20 x 3,5	15 x 1	304305
BO-FGK 6000-3/4-20 x 4,0	15 x 1	304305
BO-FGK 6000-3/4-25 x 3,0	20 x 1	304307
BO-FGK 6000-3/4-25 x 4,0	18 x 1	304306
BO-FGK 6000-1-25 x 2,5	20 x 1	304307
BO-FGK 6000-1-25 x 3,0	20 x 1	304307
BO-FGK 6000-1-25 x 4,0	18 x 1	304306
BO-FGK 6000-1-30 x 4,0	23 x 1	304310
BO-FGK 6000-1-30 x 5,0	23 x 1	304310
BO-FGK 6000-1-34 x 4,5	28 x 1	304273
BO-FGK 6000-1-38 x 5,0	32 x 1,78	261131
BO-FGK 6000-1 1/4-30 x 5,0	23 x 1	304310
BO-FGK 6000-1 1/4-38 x 4,0	32 x 1,78	261131
BO-FGK 6000-1 1/4-38 x 5,0	32 x 1,78	261131
BO-FGK 6000-1 1/4-38 x 6,0	32 x 1,78	261131
BO-FGK 6000-1 1/4-43 x 5,5	32 x 1,78	261131
BO-FGK 6000-1 1/2-38 x 5,0	32 x 1,78	261131
BO-FGK 6000-1 1/2-38 x 6,0	32 x 1,78	261131
BO-FGK 6000-1 1/2-50 x 5,0	44,17 x 1,78	611929
BO-FGK 6000-1 1/2-50 x 6,0	37,82 x 1,78	612739
BO-FGK 6000-1 1/2-50 x 8,0	37,82 x 1,78	612739
BO-FGK 6000-2-60 x 6,0	50,52 x 1,78	612147
BO-FGK 6000-2-60/60,3 x 8,0	44,17 x 1,78	611929
BO-FGK 6000-2-60/60,3 x 10,0	50,52 x 1,78	612147

N

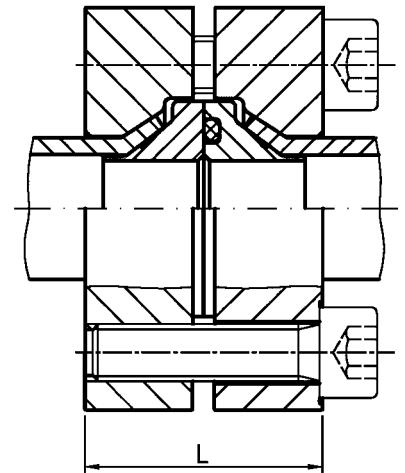
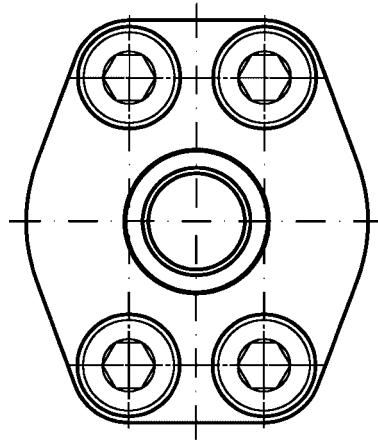


BO-FVK 6000...

Flansch Verbinder kpl.

Flange connector cpl.

Raccord de bride cpl.



SAE-Flansch SAE flange Bride SAE	PB** [bar] (psi)	Type Type Désignation	Best-Nr. Reference Réf.	L*
1/2	420 (6091)	BO-FVK 6000-1/2-16 x 2,5	613735	34
		BO-FVK 6000-1/2-16 x 3,0	613736	34
		BO-FVK 6000-1/2-20 x 2,5	613737	34
		BO-FVK 6000-1/2-20 x 3,0	613738	34
		BO-FVK 6000-1/2-20 x 3,5	613739	34
3/4	420 (6091)	BO-FVK 6000-3/4-20 x 2,5	613740	40
		BO-FVK 6000-3/4-20 x 3,0	613741	40
		BO-FVK 6000-3/4-20 x 3,5	613742	40
		BO-FVK 6000-3/4-20 x 4,0	613743	40
		BO-FVK 6000-3/4-25 x 3,0	613744	40
		BO-FVK 6000-3/4-25 x 4,0	613745	40
1	420 (6091)	BO-FVK 6000-1-25 x 2,5	613746	51
		BO-FVK 6000-1-25 x 3,0	613747	51
		BO-FVK 6000-1-25 x 4,0	613748	51
		BO-FVK 6000-1-30 x 4,0	613749	51
		BO-FVK 6000-1-30 x 5,0	613750	51
		BO-FVK 6000-1-34 x 4,5	613751	51
		BO-FVK 6000-1-38 x 5,0	613752	51
1 1/4	420 (6091)	BO-FVK 6000-1 1/4-30 x 5,0	614777	62
		BO-FVK 6000-1 1/4-38 x 4,0	613753	62
		BO-FVK 6000-1 1/4-38 x 5,0	613754	62
		BO-FVK 6000-1 1/4-38 x 6,0	613755	62
		BO-FVK 6000-1 1/4-43 x 5,5	613756	62
1 1/2	420 (6091)	BO-FVK 6000-1 1/2-38 x 5,0	613757	66
		BO-FVK 6000-1 1/2-38 x 6,0	613758	66
		BO-FVK 6000-1 1/2-50 x 5,0	613759	66
		BO-FVK 6000-1 1/2-50 x 6,0	613760	66
		BO-FVK 6000-1 1/2-50 x 8,0	613761	66
2	420 (6091)	BO-FVK 6000-2-60 x 6,0	613762	66
		BO-FVK 6000-2-60/60,3 x 8,0	613767	66
		BO-FVK 6000-2-60/60,3 x 10,0	613768	66

*L = Ungefährmaß bei angezogenen Innensechskantschrauben

*L = approximate length with hexagon socket screws

*L = longueur approximative les vis à six pans creux

**bei 2,5facher Sicherheit





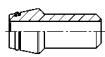

**at a safety factor of 2,5

**avec un coefficient de sécurité de 2,5

Verschlussstopfen
 Verschlusschrauben
 Einsteckhülsen
 Schweißnippel
 Hand-Vormontagegestutzen
 O-Ringe

Blanking plugs
 Blanking ends
 Tube inserts
 Welding nipples
 Adapter for manual pre-assembly
 O-rings

Bouchons obturateurs
 Vis d'obturation
 Fourrures
 Embouts à souder
 Bloc de pré-sertissage manuel
 Joints toriques

	Abb. Fig. Fig.	Typ Type Désignation	Seite Page Page
Verschlussstopfen mit Montagebegrenzung Blanking plug with limit stop for assembly Bouchon obturateur avec butée pour le montage		VSD.....	02
Verschlusschraube Blanking end Vis d'obturation		VS-R.....-WD VS-M.....-WD	03 03
Verschlusschraube für Rohrenden und Dichtkegelanschluß Blanking end for tube ends and sealing taper connection Vis d'obturation pour fin de tube et raccord avec cône d'étanchéité		VSK.....	04
Einsteckhülse Tube insert Fourrure		EH.....	05
Schweißnippel Welding nipple Embout à souder		SN.....	06
Hand-Vormontagegestutzen Adapter for manual pre-assembly Bloc de pré-sertissage manuel		S-VK..... P-VK.....	07 07
O-Ringe O-rings Joints toriques			08-010



Verschlußstopfen mit Montagebegrenzung
Blanking plug with limit stop for assembly
Bouchon obturateur avec butée pour le montage

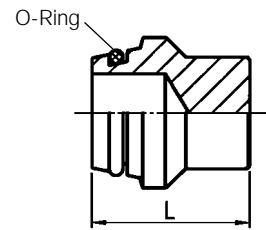


VSD ...

mit O-Ring NBR* (z. B. Perbunan)

with O-ring NBR* (e. g. Perbunan)

avec joint torique NBR* (p. ex. Perbunan)



Reihe Series Série	PN bar (psi)	Rohr-AD Tube OD Tube Δ ext.	Typ Type Désignation	Best.-Nr. mit O-Ring Reference with O-ring Réf avec joint torique	Best.-Nr. ohne O-Ring Reference without O-ring Réf sans joint torique	kg per 100 St. kg per 100 pcs. kg par 100 p.	L	O-Ring O-ring Joint torique
LL	100 (1450)	4	VSD 4 LL M. MB.	612327	612308	0,2	13,5	3 x 1
		6	VSD 6 LL M. MB.	612328	612309	0,4	15	5 x 1
		8	VSD 8 LL M. MB.	612329	612310	0,6	15	7 x 1
L	800 (11603)	6	VSD 6 L/S M. MB.	612330	612311	1,0	17	4,5 x 1,5
		8	VSD 8 L/S M. MB.	612331	612312	1,3	17	6 x 1,5
		10	VSD 10 L/S M. MB.	612332	612313	1,6	20	8,5 x 1,5
	630 (9137)	12	VSD 12 L/S M. MB.	612333	612314	2,0	21	10 x 1,5
	400 (5801)	15	VSD 15 L M. MB.	612334	612315	2,3	20	12 x 2
		18	VSD 18 L M. MB.	612335	612316	3,0	21	15 x 2
S	250 (3626)	22	VSD 22 L M. MB.	612336	612317	4,8	23	20 x 2
		28	VSD 28 L M. MB.	612337	612318	9,1	23	26 x 2
		35	VSD 35 L M. MB.	612338	612319	17,0	29	32 x 2
	800 (11603)	42	VSD 42 L M. MB.	612339	612320	22,6	30	38 x 2,5
		6	VSD 6 L/S M. MB.	612330	612311	1,0	17	4,5 x 1,5
		8	VSD 8 L/S M. MB.	612331	612312	1,3	17	6 x 1,5
	630 (9137)	10	VSD 10 L/S M. MB.	612332	612313	1,6	20	8,5 x 1,5
		12	VSD 12 L/S M. MB.	612333	612314	2,0	21	10 x 1,5
	420 (6091)	14	VSD 14 S M. MB.	612340	612321	2,3	23	12 x 2
		16	VSD 16 S M. MB.	612341	612322	3,2	24	14 x 2
20		VSD 20 S M. MB.	612342	612323	5,0	28	17,3 x 2,4	
25		VSD 25 S M. MB.	612343	612324	10,2	31	22,3 x 2,4	
30		VSD 30 S M. MB.	612344	612325	14,2	34	27,3 x 2,4	
	38	VSD 38 S M. MB.	612345	612326	20,5	38	35 x 2,5	

* FPM (z. B. Viton) auf Anfrage
* FPM (e. g. Viton) on request
* FPM (p. ex. Viton) sur demande

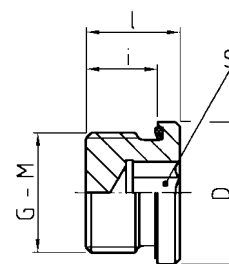


VS-R-WD
VS-M-WD

mit Innensechskant
und Weichdichtung: NBR* (z. B. Perbunan)
Whitworth-Rohrgewinde (zylindrisch)
Metrisches Gewinde (zylindrisch)

with internal hexagon
and captive seal: NBR* (e. g. Perbunan)
Stud thread: BSP thread (parallel)
metric (parallel)

avec six pans creux
et joint mou: NBR* (p. ex. Perbunan)
Filetage: Whitworth (cylindrique)
métrique (cylindrique)



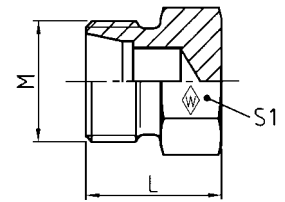
DIN-ISO 228 (R ..., DIN 259)

PN bar (psi)	G-M	Typ Type Designation	Best.-Nr. Reference Réf.	kg per 100 St. kg per 100 pcs. kg par 100 p.	D	l	i	S
400 (5801)	G 1/8 A	VS-R 1/8-WD	036856	0,6	14	12	8	5
	G 1/4 A	VS-R 1/4-WD	036858	1,4	19	17	12	6
	G 3/8 A	VS-R 3/8-WD	036860	2,1	22	17	12	8
	G 1/2 A	VS-R 1/2-WD	036862	4,0	27	19	14	10
	G 3/4 A	VS-R 3/4-WD	036864	7,5	32	21	16	12
	G 1 A	VS-R 1 -WD	036866	11,8	40	22,5	16	17
250 (3626)	G 1 1/4 A	VS-R 1 1/4-WD	036868	18,6	50	22,5	16	22
	G 1 1/2 A	VS-R 1 1/2-WD	036870	24,7	55	22,5	16	24
400 (5801)	G 1 1/4 A	VS-R 1 1/4-WD/PN 400	372905	28,3	50	28	20	22
	G 1 1/2 A	VS-R 1 1/2-WD/PN 400	372989	39,2	55	30	22	24
400 (5801)	M 10 x 1	VS-M 10 x 1 -WD	028302	0,6	14	12	8	5
	M 12 x 1,5	VS-M 12 x 1,5-WD	028303	1,1	17	17	12	6
	M 14 x 1,5	VS-M 14 x 1,5-WD	028304	1,5	19	17	12	6
	M 16 x 1,5	VS-M 16 x 1,5-WD	028305	1,8	22	17	12	8
	M 18 x 1,5	VS-M 18 x 1,5-WD	029844	2,8	24	17	12	8
	M 20 x 1,5	VS-M 20 x 1,5-WD	028306	3,6	26	19	14	10
	M 22 x 1,5	VS-M 22 x 1,5-WD	028307	4,6	27	19	14	10
	M 26 x 1,5	VS-M 26 x 1,5-WD	028308	7,2	32	21	16	12
	M 27 x 2	VS-M 27 x 2 -WD	028309	7,5	32	21	16	12
	M 33 x 2	VS-M 33 x 2 -WD	028310	11,8	40	22,5	16	17
250 (3626)	M 42 x 2	VS-M 42 x 2 -WD	028311	18,6	50	22,5	16	22
	M 48 x 2	VS-M 48 x 2 -WD	028312	24,7	55	22,5	16	24
400 (5801)	M 42 x 2	VS-M 42 x 2 -WD/PN 400	608445	28,3	50	28	20	22
	M 48 x 2	VS-M 48 x 2 -WD/PN 400	608446	39,2	55	30	22	24

* FPM (z. B. Viton) auf Anfrage
* FPM (e. g. Viton) on request
* FPM (p. ex. Viton) sur demande



VSK



Reihe Series Série	PN bar (psi)	Rohr-AD Tube OD Tube Δ ext.	M	Typ Type Désignation	Best.-Nr. Reference Réf.	kg per 100 St. kg per 100 pcs. kg par 100 p.	L	S ₁
L	500 (7252)	6	M 12 x 1,5	VSK 6 L	609765	1,4	17	14
		8	M 14 x 1,5	VSK 8 L	609766	2,4	17	17
		10	M 16 x 1,5	VSK 10 L	372285	2,7	20	17
	400 (5801)	12	M 18 x 1,5	VSK 12 L	063311	3,4	21	19
		15	M 22 x 1,5	VSK 15 L	609767	5,9	20	24
		18	M 26 x 1,5	VSK 18 L	061866	8,1	21	27
	250 (3626)	22	M 30 x 2	VSK 22 L	609768	11,5	23	32
		28	M 36 x 2	VSK 28 L	609769	20,5	23	41
		35	M 45 x 2	VSK 35 L	609770	29,2	29	46
		42	M 52 x 2	VSK 42 L	609771	44,9	30	55
S	800 (11603)	6	M 14 x 1,5	VSK 6 S	609772	1,9	17	17
		8	M 16 x 1,5	VSK 8 S	609773	2,5	17	17
		10	M 18 x 1,5	VSK 10 S	371395	3,5	20	19
	630 (9137)	12	M 20 x 1,5	VSK 12 S	024051	5,3	21	22
		14	M 22 x 1,5	VSK 14 S	609774	6,2	23	24
		16	M 24 x 1,5	VSK 16 S	063859	7,8	24	27
	420 (6091)	20	M 30 x 2	VSK 20 S	063400	13,1	28	32
		25	M 36 x 2	VSK 25 S	063312	22,9	31	41
		30	M 42 x 2	VSK 30 S	602420	30,2	34	46
		38	M 52 x 2	VSK 38 S	609775	50,2	38	55

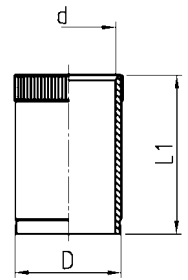


EH

Werkstoff: Messing Cu Zn 39 Pb (Ms 58)

Material: Brass Cu Zn 39 Pb (Ms 58)

Matériau: Laiton Cu Zn 39 Pb (Ms 58)



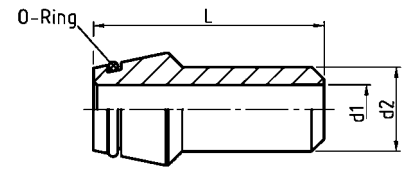
Rohr-Innen Δ Tube inside Δ Tube Δ int.	Typ Type Désignation	Best.-Nr. Reference Réf.	kg per 100 St. kg per 100 pcs. kg par 100 p.	D	d	L ₁
4	EH 4 Ms	061879	0,08	3,8	2,5	17
5	EH 5 Ms	061881	0,11	4,8	3,5	17
6	EH 6 Ms	033406	0,13	5,8	4,5	17
6,5	EH 6,5 Ms	033407	0,14	6,3	5,0	17
7	EH 7 Ms	033408	0,17	6,8	5,5	17
8	EH 8 Ms	033409	0,22	7,8	6,5	17
8,5	EH 8,5 Ms	029008	0,23	8,3	7,0	17
9	EH 9 Ms	033410	0,24	8,8	7,5	17
10	EH 10 Ms	033411	0,26	9,8	8,5	17
12	EH 12 Ms	033412	0,36	11,8	10,5	17
13	EH 13 Ms	033413	0,40	12,8	11,5	18
15	EH 15 Ms	033415	0,50	14,8	13,0	18
16	EH 16 Ms	033416	0,60	15,8	14,0	18
18	EH 18 Ms	033417	0,85	17,8	16,0	22
19	EH 19 Ms	033418	0,85	18,8	17,0	20
20	EH 20 Ms	033419	0,90	19,8	18,0	20
24	EH 24 Ms	033420	1,10	23,8	22,0	20
25	EH 25 Ms	033800	1,15	24,8	23,0	20
31	EH 31 Ms	029011	1,85	30,8	28,0	23
38	EH 38 Ms	029013	2,60	37,8	35,0	24





SN

mit O-Ring NBR* (z. B. Perbunan)
with O-ring NBR* (e. g. Perbunan)
avec joint torique NBR* (p. ex. Perbunan)



Rohr-AD Tube OD Ø ext. d ₂	PN bar (psi)	Typ Type Désignation	Best.-Nr. Reference Réf.	kg per 100 St. kg per 100 pcs. kg par 100 p.	d ₁	L	*O-Ring *O-ring *Joint torique
8	400 (5801)	SN 8 x 2	028783	1,1	4	31	6 x 1,5
10	315 (4569)	SN 10 x 2	028784	1,5	6	32,5	7,5 x 1,5
12	400 (5801)	SN 12 x 2,5	028785	2,2	7	32,5	9 x 1,5
16	400 (5801)	SN 16 x 3	028788	3,9	10	38,5	12 x 2
20	250 (3626)	SN 20 x 3	028790	6,0	14	44,5	16,3 x 2,4
	400 (5801)	SN 20 x 4	068737	7,4	12		
25	250 (3626)	SN 25 x 3	028792	8,7	19	49,5	20,3 x 2,4
	315 (4569)	SN 25 x 4	028793	10,7	17		
30	250 (3626)	SN 30 x 4	028795	14,0	22	52	25,3 x 2,4
	315 (4569)	SN 30 x 5	028796	16,5	20		
	400 (5801)	SN 30 x 6	604551	18,6	18		
38	160 (2321)	SN 38 x 4	028797	20,4	30	56,5	33,3 x 2,4
	250 (3626)	SN 38 x 5	028798	23,5	28		
	315 (4569)	SN 38 x 6	028799	27,2	26		
	400 (5801)	SN 38 x 7	604552	30,1	24		

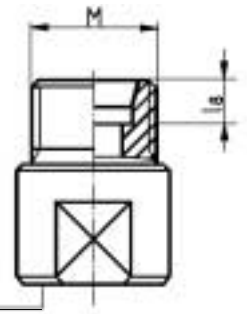
* FPM (z. B. Viton) auf Anfrage
* FPM (e. g. Viton) on request
* FPM (p. ex. Viton) sur demande

O-Ring, erst nach dem Schweißvorgang montieren.
O-ring to be fitted after welding.
Monter le joint torique après le soudage.



S-VK
P-VK

Typ gestempelt
 Type stamped
 Désignation imprimée



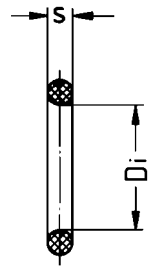
Reihe Series Série	Rohr-AD Tube OD Tube Δ ext.	M	Typ Type Désignation	Best.-Nr. Reference Réf.	kg per 100 St. kg per 100 pcs. kg par 100 p.	l ₈
LL	4	M 8 x 1	S-VK 4 LL	029250	2,7	4
	6	M 10 x 1	S-VK 6 LL	029252	2,8	5,5
	8	M 12 x 1	S-VK 8 LL	029253	3,9	5,5
L	6	M 12 x 1,5	P-VK 6 L	029254	4,4	7
	8	M 14 x 1,5	P-VK 8 L	029255	6,4	7
	10	M 16 x 1,5	P-VK 10 L	029256	6,6	7
	12	M 18 x 1,5	P-VK 12 L	029257	8,1	7
	15	M 22 x 1,5	P-VK 15 L	029258	18,0	7
	18	M 26 x 1,5	P-VK 18 L	029259	21,0	7,5
	22	M 30 x 2	P-VK 22 L	029260	30,0	7,5
	28	M 36 x 2	P-VK 28 L	029261	44,3	7,5
	35	M 45 x 2	P-VK 35 L	029262	63,5	10,5
	42	M 52 x 2	P-VK 42 L	029263	91,5	11
S	6	M 14 x 1,5	P-VK 6 S	029264	6,5	7
	8	M 16 x 1,5	P-VK 8 S	029265	6,7	7
	10	M 18 x 1,5	P-VK 10 S	029266	8,2	7,5
	12	M 20 x 1,5	P-VK 12 S	029267	18,0	7,5
	14	M 22 x 1,5	P-VK 14 S	029268	18,2	8
	16	M 24 x 1,5	P-VK 16 S	029269	18,7	8,5
	20	M 30 x 2	P-VK 20 S	029270	29,0	10,5
	25	M 36 x 2	P-VK 25 S	029271	43,0	12
	30	M 42 x 2	P-VK 30 S	029272	62,3	13,5
38	M 52 x 2	P-VK 38 S	029273	94,0	16	

O-Ringe
O-rings
Joints toriques



BO-ZR	= Bördel-Zwischenring Centre unit for flare fitting Cône intermédiaire pour raccord pour tube évasé	A
SN	= Schweißnippel Welding nipple Embout à souder	B
DK	= Dichtkegel Sealing taper Cône d'étanchéité	C
VSD	= Verschlussstopfen mit Dichtkegel Blanking plug with sealing taper Bouchon obturateur avec cône d'étanchéité	D
GFV	= Gerade-Flanschverschraubung Straight flange coupling Union simple à bride	E
WfV	= Winkel-Flanschverschraubung Elbow flange coupling Union simple à bride en équerre	F

RSWV	= Hohlschraube Bolt Goujon creux	G
UNF; UN	= Gewinde Thread Filetage	H
BO-FK	= Bördelflansch kpl. Flared flange cpl. Bride d'évasement cpl.	I
BO-FGK	= Bördelflansch Gegenstück kpl. Flared flange counterpart cpl. Pendant de la bride d'évasement cpl.	K
SNV	= Gerade-Verbindung Straight coupling Union double	L



Abmessungen Dimensions Dimensions	Best.-Nr. Reference Réf.	Verwendung/Intended use/Emploi prévu			
		Werkstoff: NBR (Perbunan®) Material: NBR (Perbunan®) Matériau: NBR (Perbunan®)		Werkstoff: FPM (Viton®) Material: FPM (Viton®) Matériau: FPM (Viton®)	
Di x S		70 NBR	90 NBR	75 FPM	85 FPM
3 x 1	612346	D			
3 x 1	613311				D
4 x 1,5	023488	B			B/C
4 x 1,5	023497				
4,4 x 0,8	374746	A			A
4,4 x 0,8	374747				
4,5 x 1,5	304287	A/C/D/L			A/C/D/L
4,5 x 1,5	304265				
5 x 1	612347	D			D
5 x 1	613312				
6 x 0,8	374737	A			A
6 x 0,8	374741				
6 x 1,5	023489	A/B/C/D/L			A/B/C/D/L
6 x 1,5	023498				
6,5 x 1,5	605948	G			
6,5 x 1,5	606088			G	
7 x 1	612348	D			D
7 x 1	613313				
7,5 x 0,8	374738	A			A
7,5 x 0,8	374742				
7,5 x 1,5	099808	B			B
7,5 x 1,5	099803				
7,65 x 1,63	099668		H		
8,5 x 1,5	304288	A/C/D/G/L			A/C/D/G/L
8,5 x 1,5	304266				
8,92 x 1,83	304315				H
8,92 x 1,83	099669		H		
9 x 1,5	099807	B			B
9 x 1,5	099802				
9,4 x 2,1	606541		H		
9,5 x 0,8	374739	A			A
9,5 x 0,8	374743				
10 x 1,5	023491	A/C/D/L			A/C/D/L
10 x 1,5	023500				
10 x 2	020765	B			B
10 x 2	099801				
10,52 x 1,83	613166				H
10,52 x 1,83	099670		H		
11 x 1	374750	A/I/K			A
11 x 1	374754				
11 x 2	023492	G			
11 x 2	606090			G	
11,3 x 2,2	609916		H		
11,4 x 2,1	615165				H
11,4 x 2,1	606542		H		
11,9 x 1,98	609705				H
11,9 x 1,98	099671		H		
12 x 2	020766	A/B/C/D			A/B/C/D
12 x 2	099800				
12,5 x 0,8	374740	A			



Abmessungen Dimensions Dimensions	Best.-Nr. Reference Réf.	Verwendung/Intended use/Emploi prévu			
		Werkstoff: NBR (Perbunan®) Material: NBR (Perbunan®) Matériau: NBR (Perbunan®)		Werkstoff: FPM (Viton®) Material: FPM (Viton®) Matériau: FPM (Viton®)	
Di x S		70 NBR	90 NBR	75 FPM	85 FPM
12,5 x 0,8	374744				A
12,5 x 1	374756	A/I/K			A/I
12,5 x 1	374757				A
13 x 1,5	304289	A			
13 x 1,5	304267				A
13,4 x 2,1	606543		H		
14 x 1,78	023589	F			
14 x 2	021629	A/C/D/L			A/C/D/L
14 x 2	099795				
14,5 x 2	605949	G		G	
14,5 x 2	606091				
15 x 1	304305	A/I/K			A/I
15 x 1	374434				
15 x 2	612804	C/D/L			C/D
15 x 2	609682				
15,3 x 2,2	611603		H		
15,4 x 2,1	606544		H		
16 x 1	261058	A/I/K			A/I
16 x 1	374435				
16 x 1,5	304290	A			A
16 x 1,5	304268				
16 x 2,5	020767	F			A
16,3 x 2,4	023605	B			
16,3 x 2,4	099799				B/I
16,36 x 2,2	304318				H
16,36 x 2,2	099672		H		
16,5 x 2	605950	G			
16,5 x 2	606092			G	
17 x 1	608804	A			
17,3 x 2,4	261067	A/C/L			
17,3 x 2,4	304269				A/C/D/L
17,4 x 2,1	606597		H		
18 x 1	304306	A/I/K			
18 x 1	304407				A/I
18 x 2,5	099794				E/F
18,64 x 3,53	613769	I			
18,64 x 3,53	614080				I
19,18 x 2,46	304319				H
19,18 x 2,46	099636		H		
19,4 x 2,1	606545		H		
19,5 x 2	605951	G			
19,5 x 2	606093			G	
20 x 1	304307	A/I/K			
20 x 1	304402				A/I
20 x 2	261082	A/C/D/L			
20 x 2	304166				A/C/D/L
20 x 2,5	610519	E/F			
20 x 2,5	612474				F
20,3 x 2,4	023626	B			B
20,3 x 2,4	099798				
22,3 x 2,4	261093	A/C/D/L			
22,3 x 2,4	304270				A/C/D/L
22,7 x 2,8	607383		H		
23 x 1	304310	A/I/K			
23 x 1	304409				A/I
23,47 x 2,95	304320				H
23,47 x 2,95	099637		H		
23,7 x 2,8	612489		H		
24 x 2,5	099793				F



Abmessungen Dimensions Dimensions	Best.-Nr. Reference Réf.	Verwendung/Intended use/Emploi prévu			
		Werkstoff: NBR (Perbunan®) Material: NBR (Perbunan®) Matériau: NBR (Perbunan®)		Werkstoff: FPM (Viton®) Material: FPM (Viton®) Matériau: FPM (Viton®)	
Di x S		70 NBR	90 NBR	75 FPM	85 FPM
25 x 1	374751	A			
25 x 1	374755				A
25 x 3,5	614081				I
25 x 3,53	611016	I			
25,3 x 2,4	099806	B/F			B/I
25,3 x 2,4	099797				
26 x 1,5	605952	G		G	
26 x 1,5	606094				
26 x 2	261108	A/B/C/D/L			A/C/D/L
26 x 2	304167				
26 x 2,5	610499	E/F			F
26 x 2,5	612930				
27 x 1	608805	A			
27,3 x 2,4	304293	A/C/D/L			C/D/L
27,3 x 2,4	304271				
28 x 1	304273	I/K			I
28 x 1	612832				H
29,74 x 2,95	304322		H		I
29,74 x 2,95	099639				A
29,828 x 2,62	614724	A			
30 x 1	374748				
30 x 1	374752	G		G	
31 x 2	250258				A/I
31 x 2	606095	A/I/K			A/C/D/L
32 x 1,78	261131				
32 x 1,78	374745	A/C/D/L			I
32 x 2,5	020775				
32 x 2,5	304168	I			
32,92 x 3,53	610404				
32,92 x 3,53	614082	E/F			
33 x 2,5	610500	B			B
33,3 x 2,4	023683				I
33,3 x 2,4	099796				
34,5 x 2,65	614725	A/C/D/L			C/D/L
35 x 2,5	261138				
35 x 2,5	304272	A/I/K			A/I
37 x 1	374749				H
37 x 1	374753				
37,46 x 3	304323				
37,46 x 3	099640		H		
37,69 x 3,53	610405	E/F/I			
37,69 x 3,53	614083				
37,82 x 1,78	612739	I/K			I
37,82 x 1,78	614076				
38 x 2,5	099804	A/C/D/L			I
38 x 2,5	099791				C/D/L
40 x 2	261157	G			
40 x 2	606096			G	
43,69 x 3	099641		H		
44,17 x 1,78	611929	I/K			
44,17 x 1,78	614077				I/K
46 x 2	605953	G			
46 x 2	606097			G	
47,22 x 3,53	611425	I			
47,22 x 3,53	614084				I
50,52 x 1,78	612147	I/K			
50,52 x 1,78	614078				I
53,67 x 1,78	614079				I/K
53,7 x 1,78	612146	I/K			
56,52 x 5,33	614138				I
56,74 x 3,53	612145	I			
56,74 x 3,53	614085				I
56,82 x 2,62	614386	I/K			
64,77 x 2,62	614385	I/K			
64,77 x 2,62	614424				I
69,22 x 5,33	614139				I
69,44 x 3,53	614389	I			
69,44 x 3,53	614419				I
69,52 x 2,62	614384	I/K			
69,52 x 2,62	614423				I/K
82,22 x 2,62	614387	I/K			
82,22 x 2,62	614426				I/K
85,32 x 3,53	614390	I			
85,32 x 3,53	614420				I
88,27 x 5,33	614140				I
98,02 x 3,53	614391	I			
98,02 x 3,53	614421				I
110,49 x 5,33	614141				I
110,72 x 3,53	614392	I			
110,72 x 3,53	614422				I

		Typ Type Désignation	Seite Page Page
Vormontagemaschine Pre-assembly machine Machine de pré-sertissage	Profiling Profile ring Bague profilée	MEG-R4	P2
Werkzeuge für Vormontagemaschine Tools for pre-assembly machine Outils pour machine de pré-sertissage	Profiling Profile ring Bague profilée	MEG-R4	P3
Werkzeuge für Hand-Vormontage Tools for manual pre-assembly Outils pour pré-sertissage manuel	Profiling Profile ring Bague profilée		P3
Umformmaschinen Reshaping machines Machines de formage	WALFORM-Rohrverschraubungen WALFORM tube fittings Raccords de tubes WALFORM	MEG-WF1/BO2 MEG-WF2 MEG-WF2/BO MEG-WF3/BO	P4 P5 P5 P6
Werkzeuge für Umformmaschine Tools for reshaping machine Outils pour machine de formage	WALFORM-M WALFORM-M WALFORM-M	MEG-WF1/BO2	P7
	WALFORM <i>plus</i> WALFORM <i>plus</i> WALFORM <i>plus</i>	MEG-WF2 MEG-WF2/BO MEG-WF3/BO	P8
	WALFORM <i>plus</i> nicht rostender Stahl 1.4571 WALFORM <i>plus</i> stainless steel 1.4571 WALFORM <i>plus</i> acier inox 1.4571	MEG-WF2 MEG-WF2/BO MEG-WF3/BO	P9
	WALFORM-M WALFORM-M WALFORM-M	MEG-WF2 MEG-WF2/BO MEG-WF3/BO	P10
Umformmaschinen Reshaping machines Machines de formage	Bördel-Rohrverschraubungen 37° / Bördelflansche 37° Flare tube fittings 37° / 37° flared flanges Raccords pour tubes évasés 37° / Brides d'évasement 37°		P12
Werkzeuge für Umformmaschine Tools for reshaping machine Outils pour machine de formage	Bördel-Rohrverschraubungen 37° Flare tube fittings 37° Raccords pour tubes évasés 37°	MHH-BO (MEH-BO-2)	P13
	Bördel-Rohrverschraubungen 37° Flare tube fittings 37° Raccords pour tubes évasés 37°	MEG-BO2 MEG-WF1/BO2	P14
	Bördelflansche 37° 37° flared flanges Brides d'évasement 37°	MEG-WF2/BO	P15
	Bördelflansche 37° 37° flared flanges Brides d'évasement 37°	MEG-WF3/BO	P16
Werkzeuge für Schraubstock Vice tools Outils pour étai	Bördel-Rohrverschraubungen 37° Flare tube fittings 37° Raccords pour tubes évasés 37°		P17
Rohrbiegewerkzeuge Tube bending tools Cintreuses pour tubes			P18

MEG-R4



Best.-Nr. / Reference / Réf.: 613 805

Die WALTERSCHEID-Maschine MEG-R4 können Sie sowohl zur **Vormontage** mit **herkömmlichen Ein- oder Zweikanal-schneidringen** einsetzen, als auch zur **gesteuerten Endmontage** von **WALTERSCHEID-Profilingen** verwenden.

The MEG-R4 machine from WALTERSCHEID can be used both for **pre-assembly** with **conventional one or two-edge cutting rings** and for **controlled final assembly** of **WALTERSCHEID profile rings**.

La machine de WALTERSCHEID MEG-R4 peut être utilisée aussi bien pour le pré-sertissage au moyen de **bagues coupantes traditionnelles à un ou deux tranchants** que pour le **montage final contrôlé** des bagues profilées de WALTERSCHEID.

Technische Daten	Technical data	Données techniques	
Gewicht (kg)	Weight (kg)	Poids (kg)	80
Maße B x H x T (mm)	Dimensions W x H x D (mm)	Dimensions L x H x P (mm)	700 x 220 x 650
Spannung (V)	Voltage (V)	Tension (V)	230
Frequenz (Hz)	Frequency (Hz)	Fréquence (Hz)	50
Leistungsaufnahme (kW)	Power consumption (kW)	Consommation de puissance (kW)	1,5
Absicherung (A)	Fuse (A)	Protection (A)	16

Vorteile:

- 100% Montagesicherheit durch die Wegsteuerung
- Sensorabfrage der Stützscheibe
- Kurze Arbeitszeiten ca. 1 sec

Advantages:

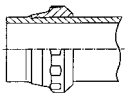
- 100% safe assembly owing to displacement control
- Sensor inquiry of backing plate
- Short operating periods approx. 1 s

Avantages:

- 100% de sécurité de montage grâce au contrôle de déplacement
- Interrogation de la bague d'appui par palpeur
- Temps de travail réduits env. 1 s

Minimale Rohrwandstärken für gesteuerte Endmontage

Min. tube wall thicknesses for controlled final assembly



Epaisseurs mini de paroi du tube pour le montage final contrôlé

Rohr-AD Tube OD Tube Ø ext. [mm]	Reihe Series Série	Min. Wandstärke [mm] Min. wall thickness [mm] Epaisseur mini de paroi [mm]
6	L	1
8		1
10		1
12		1,5
15		1,5
18		1,5
22		2
28		2
35		3
42		3
6	S	2
8		1,5
10		1,5
12		1,5
14		2
16		1,5
20		2
25		2,5
30		3
38		4

Handelsübliche Hydraulikrohre, Werkstoff St 374/52.4 gemäß DIN 1630, NBK-3.1B, Nicht rostender Stahl Werkstoff 1.4571 (X6CrNiMoTi 17122) Ausführungsart „m“ nach DIN 17458, Maße und Toleranzen nach DIN 2391, Teil 1-C. Weitere Werkstoffe auf Anfrage.

Commercial hydraulic tube, material St 374/52.4 according to DIN 1630, NBK-3.1B, Stainless steel material 1.4571 (X6CrNiMoTi 17122) type 'm' according to DIN 17458, Dimensions and tolerances according to DIN 2391, sheet 1-C. Further materials on request.

Tube hydraulique courant, matériau St 374/52.4 suivant DIN 1630, NBK-3.1B, Acier inox 1.4571 (X6CrNiMoTi 17122), type 'm' selon la norme DIN 17458, Dimensions et tolérances suivant DIN 2391, folio 1-C. D'autres matériaux sur demande.

Vormontagesutzen
Pre-assembly adaptor
Bloc de pré-sertissage



GE-Stutzen
Assembly adaptor GE
Bloc de sertissage GE



Stützscheibe
Backing plate
Bague d'appui



Reihe Series Série	Rohr-AD Tube OD Tube Ø ext.	Vormontagesutzen Pre-assembly adaptor Bloc de pré-sertissage	GE-Stutzen Assembly adaptor GE Bloc de sertissage GE	Stützscheibe Backing plate Bague d'appui
Best.-Nr. / Reference / Réf.				
L	6	028 382	615 319	608 363
	8	028 383	615 320	608 364
	10	028 384	615 321	608 365
	12	028 385	615 322	608 366
	15	028 386	615 323	608 367
	18	028 387	615 324	608 368
	22	028 388	615 325	608 369
	28	028 389	615 326	608 370
	35	028 390	615 327	608 371
	42	028 391	615 328	608 372
S	6	028 392	615 329	608 363
	8	028 393	615 330	608 364
	10	028 394	615 331	608 365
	12	028 395	615 332	608 366
	14	028 396	615 333	608 373
	16	028 397	615 334	608 374
	20	028 398	615 335	608 375
	25	028 399	610 657	608 376
	30	028 400	610 658	608 377
	38	028 401	610 659	608 378

Hand-Vormontagesutzen
Adaptor for manual pre-assembly
Bloc de pré-sertissage manuel



Reihe Series Série	Rohr-AD Tube OD Tube Ø ext.	Best.-Nr. Reference Réf.
LL	4	029 250
	6	029 252
	8	029 253
L	6	029 254
	8	029 255
	10	029 256
	12	029 257
	15	029 258
	18	029 259
	22	029 260
	28	029 261
	35	029 262
	42	029 263
S	6	029 264
	8	029 265
	10	029 266
	12	029 267
	14	029 268
	16	029 269
	20	029 270
	25	029 271
	30	029 272
	38	029 273

MEG-WF1/BO2



Best.-Nr. / Reference / Réf.: 610 720

Zur Umformung von Stahlrohren mit Rohr-AD 10 bis 22 mm. Durch einfachen Werkzeugwechsel kann diese Maschine auch als Bördelmaschine für alle Rohr-AD 6 bis 42 mm verwendet werden.

For reshaping steel tubes with outside diameters from 10 to 22 mm. Simply by changing tools, this machine can also be used as a flaring machine for all outside diameters from 6 to 42 mm.

Machine pour le formage de tubes acier de 10 à 22 mm de diamètre extérieur. Un simple changement d'outil permet également d'en faire une machine à évaser pour tous les tubes de 6 à 42 mm de diamètre extérieur.

Technische Daten	Technical data	Données techniques	
Gewicht (kg)	Weight (kg)	Poids (kg)	107
Maße B x H x T (mm)	Dimensions W x H x D (mm)	Dimensions L x H x P (mm)	760 x 235 x 715
Spannung (V)	Voltage (V)	Tension (V)	230
Frequenz (Hz)	Frequency (Hz)	Fréquence (Hz)	50
Leistungsaufnahme (kW)	Power consumption (kW)	Consommation de puissance (kW)	2
Absicherung (A)	Fuse (A)	Protection (A)	16

Optionen
Fußschalter, Zählwerk

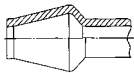
Options
Foot switch, Counter

Options
Commande à pédale, Compteur

St 37.4/52.4

Verwendbare Rohrwandstärken

- Stahl
- Suitable tube wall thicknesses
- Steel
- Epaisseurs de paroi du tube utilisables
- Acier



WALFORM-M										
metallisch dichtend / with metallic seal avec d'étanchéité par arête métal										
Rohr-AD Tube OD Tube Ø ext. [mm]	Wandstärke [mm] - Wall thickness [mm] Epaisseur de paroi [mm]									
	1	1,5	2	2,5	3	3,5	4	5	6	
6										
8										
10										
12										
15										
16										
18										
20										
22										
25										
28										
30										
35										
38										
42										

Handelsübliche Hydraulikrohre, Werkstoff St 37.4/52.4 gemäß DIN 1630, NBK-3.1B. Maße und Toleranzen nach DIN 2391, Teil 1-C. Commercial hydraulic tube, material St 37.4/52.4 according to DIN 1630, NBK-3.1B. Dimensions and tolerances according to DIN 2391, sheet 1-C. Tube hydraulique courant, matériau St 37.4/52.4 suivant DIN 1630, NBK-3.1B. Dimensions et tolérances suivant DIN 2391, folio 1-C.

Umformung ohne Innenabstützung / Reshaping without internal support / Formage sans support intérieur

MEG-WF2



Best.-Nr. / Reference / Réf.: 610 750

MEG-WF2/BO (ohne Umformkopf / without reshaping head / sans tête de formage)



Best.-Nr. / Reference / Réf.: 613 286

Zur Umformung von Stahlrohren mit Rohr-AD 6 bis 42 mm und Röhren aus nicht rostendem Stahl mit Rohr-AD 6 bis 30 x 3 mm. Durch Werkzeugwechsel kann die Maschine MEG-WF2/BO auch als Bördelmaschine für Walterscheid-37°-SAE-Bördelflansche bis 60,3 mm verwendet werden.

For reshaping steel tubes with outside diameters from 6 to 42 mm and stainless steel tubes with outside diameters from 6 to 30 x 3 mm. By changing tools, the MEG-WF2/BO machine can also be used as a flaring machine for Walterscheid-37° SAE flared flanges up to 60.3 mm.

Machine pour le formage de tubes en acier de 6 à 42 mm et acier inox de 6 à 30 x 3 mm de diamètre extérieur. Un changement d'outil permet également de faire de la machine MEG-WF2/BO une machine à évaser pour les brides d'évasement 37° SAE de Walterscheid jusqu'à 60,3 mm.

Technische Daten	Technical data	Données techniques	
Gewicht (kg)	Weight (kg)	Poids (kg)	220
Maße B x H x T (mm)	Dimensions W x H x D (mm)	Dimensions L x H x P (mm)	850 x 275 x 990
Spannung (V)	Voltage (V)	Tension (V)	400
Frequenz (Hz)	Frequency (Hz)	Fréquence (Hz)	50
Leistungsaufnahme (kW)	Power consumption (kW)	Consommation de puissance (kW)	2,8
Absicherung (A)	Fuse (A)	Protection (A)	16

Optionen
Fußschalter, Zählwerk

Options
Foot switch, Counter

Options
Commande à pédale, Compteur

Achtung!

Umformköpfe für MEG-WF2/BO zusätzlich bestellen.



Attention!

Reshaping heads for MEG-WF2/BO should be ordered in addition.

Attention!

Pour les têtes de formage pour la MEG-WF2/BO, il convient de passer une commande supplémentaire.

WALFORM-Kopf Head for WALFORM fitting Tête pour raccord WALFORM



Best.-Nr. / Reference / Réf.: 612 351

Bördel-Kopf Head for flare tube fitting Tête pour raccord pour tube évasé



Best.-Nr. / Reference / Réf.: 612 350

St 37.4/52.4 Verwendbare Rohrwandstärken
- Stahl
Suitable tube wall thicknesses
- Steel
Epaisseurs de paroi du tube utilisables
- Acier

1.4571 Verwendbare Rohrwandstärken
- Nicht rostender Stahl
Suitable tube wall thicknesses
- Stainless steel
Epaisseurs de paroi du tube utilisables
- Acier spécial inoxydable

St 37.4/52.4 Verwendbare Rohrwandstärken
- Stahl
Suitable tube wall thicknesses
- Steel
Epaisseurs de paroi du tube utilisables
- Acier

WALFORMplus									
mit Weichdichtung / with captive seal / avec joint mou									
Rohr-AD Tube OD Tube Ø ext. [mm]	Wandstärke [mm] · Wall thickness [mm] Epaisseur de paroi [mm]								
	1	1,5	2	2,5	3	3,5	4	5	6
6	+								
8	+								
10	+								
12	+	●							
15		●	●	●					
16		●	●	●	●				
18		●	●	●	●	●			
20		●	●	●	●	●	●		
22		●	●	●	●	●	●	●	
25		●	●	●	●	●	●	●	●
28		●	●	●	●	●	●	●	●
30			●	●	●	●	●	●	●
35				●	●	●	●	●	●
38					●	●	●	●	●
42					●	●	●	●	●

Handelsübliche Hydraulikrohre, Werkstoff St 37.4/52.4 gemäß DIN 1630, NBK-3.1B. Maße und Toleranzen nach DIN 2391, Teil 1-C. Commercial hydraulic tube, material St 37.4/52.4 according to DIN 1630, NBK-3.1B. Dimensions and tolerances according to DIN 2391, sheet 1-C. Tube hydraulique courrant, matériau St 37.4/52.4 suivant DIN 1630, NBK-3.1B. Dimensions et tolérances suivant DIN 2391, folio 1-C.

WALFORMplus									
mit Weichdichtung / with captive seal / avec joint mou									
Rohr-AD Tube OD Tube Ø ext. [mm]	Wandstärke [mm] · Wall thickness [mm] Epaisseur de paroi [mm]								
	1	1,5	2	2,5	3	3,5	4	5	6
6	+								
8	+								
10	+								
12	+								
15		●	●						
16		●	●	●					
18		●	●	●	●				
20		●	●	●	●	●			
22		●	●	●	●	●	●		
25		●	●	●	●	●	●	●	
28		●	●	●	●	●	●	●	
30			●	●	●	●	●	●	
35				●	●	●	●	●	
38					●	●	●	●	
42					●	●	●	●	

Hydraulikrohre aus nicht rostendem Stahl, Werkstoff 1.4571 (X6CrNiMoTi 17122), Ausführungsart „m“ nach DIN 17458. Maße und Toleranzen nach DIN 2391, Teil 1-C. - Stainless steel hydraulic tube, material 1.4571 (X6CrNiMoTi 17122) type 'm' according to DIN 17458. Dimensions and tolerances according to DIN 2391, sheet 1-C. - Tube hydraulique, en acier inox 1.4571 (X6CrNiMoTi 17122), type 'm' selon la norme DIN 17458. Dimensions et tolérances suivant DIN 2391, folio 1-C.

WALFORM-M									
metallisch dichtend / with metallic seal avec d'étanchéité par arête métal									
Rohr-AD Tube OD Tube Ø ext. [mm]	Wandstärke [mm] · Wall thickness [mm] Epaisseur de paroi [mm]								
	1	1,5	2	2,5	3	3,5	4	5	6
6									
8									
10									
12									
15									
16									
18									
20									
22									
25									
28									
30									
35									
38									
42									

Handelsübliche Hydraulikrohre, Werkstoff St 37.4/52.4 gemäß DIN 1630, NBK-3.1B. Maße und Toleranzen nach DIN 2391, Teil 1-C. Commercial hydraulic tube, material St 37.4/52.4 according to DIN 1630, NBK-3.1B. Dimensions and tolerances according to DIN 2391, sheet 1-C. Tube hydraulique courrant, matériau St 37.4/52.4 suivant DIN 1630, NBK-3.1B. Dimensions et tolérances suivant DIN 2391, folio 1-C.

- Umformung ohne Innenabstützung / Reshaping without internal support / Formage sans support intérieur
- Umformung mit Innenabstützung / Reshaping with internal support / Formage avec support intérieur
- Mit Stützring / With adapter ring / Avec bague de support



MEG-WF3/BO



Best.-Nr. / Reference / Réf.: 613 287

Zur Umformung von Stahl- und Edelstahl-Rohren mit Rohr-AD 6 bis 42 mm. Durch Werkzeugwechsel kann diese Maschine auch als Bördelmaschine für Walterscheid-37° SAE-Bördelflansche bis 101,6 mm verwendet werden.

For reshaping steel tubes and stainless steel tubes with outside diameters from 6 to 42 mm. By changing tools, this machine can also be used as a flaring machine for Walterscheid-37° SAE flaring flanges for all diameters to 101,6 mm.

Machine pour le formage de tube hydraulique en acier et acier inox 1.4571 de 6 à 42 mm de diamètre extérieur. Un changement d'outil permet également d'en faire une machine à évaser pour les Walterscheid-37° SAE brides d'évasement à 101,6 mm diamètres.

Technische Daten	Technical data	Données techniques	
Gewicht (kg)	Weight (kg)	Poids (kg)	850
Maße B x H x T (mm)	Dimensions W x H x D (mm)	Dimensions L x H x P (mm)	860 x 1170 x 1530
Spannung (V)	Voltage (V)	Tension (V)	400
Frequenz (Hz)	Frequency (Hz)	Fréquence (Hz)	50
Leistungsaufnahme (kW)	Power consumption (kW)	Consommation de puissance (kW)	4
Absicherung (A)	Fuse (A)	Protection (A)	16

Optionen

Fußschalter, Zählwerk

Options

Foot switch, Counter

Options

Commande à pédale, Compteur

Achtung!

Umformköpfe für MEG-WF3/BO zusätzlich bestellen.



Attention!

Reshaping heads for MEG-WF3/BO should be ordered in addition.

Attention!

Pour les têtes de formage pour la MEG-WF3/BO, il convient de passer une commande supplémentaire.

WALFORM-Kopf

Head for WALFORM fitting
Tête pour raccord WALFORM



Best.-Nr. / Reference / Réf.: 613 289

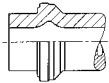
Bördel-Kopf

Head for flare tube fitting
Tête pour raccord pour tube évasé



Best.-Nr. / Reference / Réf.: 613 288

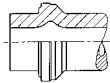
St 37.4/52.4



Verwendbare Rohrwandstärken

- Stahl
- Suitable tube wall thicknesses
- Steel
- Epaisseurs de paroi du tube utilisables
- Acier

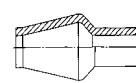
1.4571



Verwendbare Rohrwandstärken

- Nicht rostender Stahl
- Suitable tube wall thicknesses
- Stainless steel
- Epaisseurs de paroi du tube utilisables
- Acier spécial inoxydable

St 37.4/52.4



Verwendbare Rohrwandstärken

- Stahl
- Suitable tube wall thicknesses
- Steel
- Epaisseurs de paroi du tube utilisables
- Acier

WALFORMplus									
mit Weichdichtung / with captive seal / avec joint mou									
Rohr-AD Tube OD Tube Ø ext. [mm]	Wandstärke [mm] · Wall thickness [mm] Epaisseur de paroi [mm]								
	1	1,5	2	2,5	3	3,5	4	5	6
6	+								
8	+								
10	+								
12	+	●							
15		●	●	●					
16			●	●	●				
18			●	●	●				
20			●	●	●				
22			●	●	●				
25			●	●	●				
28			●	●	●				
30				●	●				
35					●				
38						●			
42					●	●	●		

Handelsübliche Hydraulikrohre, Werkstoff St 37.4/52.4 gemäß DIN 1630, NBK-3.1B. Maße und Toleranzen nach DIN 2391, Teil 1-C. Commercial hydraulic tube, material St 37.4/52.4 according to DIN 1630, NBK-3.1B. Dimensions and tolerances according to DIN 2391, sheet 1-C. Tube hydraulique courant, matériau St 37.4/52.4 suivant DIN 1630, NBK-3.1B. Dimensions et tolérances suivant DIN 2391, folio 1-C.

WALFORMplus									
mit Weichdichtung / with captive seal / avec joint mou									
Rohr-AD Tube OD Tube Ø ext. [mm]	Wandstärke [mm] · Wall thickness [mm] Epaisseur de paroi [mm]								
	1	1,5	2	2,5	3	3,5	4	5	6
6	+								
8	+								
10	+								
12	+								
15		●	●	●					
16			●	●	●				
18			●	●	●				
20			●	●	●				
22			●	●	●				
25			●	●	●				
28			●	●	●				
30				●	●				
35					●				
38						●			
42					●	●	●		

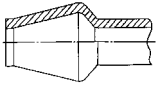
Hydraulikrohre aus nicht rostendem Stahl, Werkstoff 1.4571 (X6CrNiMoTi 17122), Ausführungsart „m“ nach DIN 17458. Maße und Toleranzen nach DIN 2391, Teil 1-C. - Stainless steel hydraulic tube, material 1.4571 (X6CrNiMoTi 17122) type 'm' according to DIN 17458. Dimensions and tolerances according to DIN 2391, sheet 1-C. - Tube hydraulique, en acier inox 1.4571 (X6CrNiMoTi 17122), type 'm' selon la norme DIN 17458. Dimensions et tolérances suivant DIN 2391, folio 1-C.

WALFORM-M									
metallisch dichtend / with metallic seal avec d'étanchéité par arête métal									
Rohr-AD Tube OD Tube Ø ext. [mm]	Wandstärke [mm] · Wall thickness [mm] Epaisseur de paroi [mm]								
	1	1,5	2	2,5	3	3,5	4	5	6
6									
8									
10									
12									
15									
16									
18									
20									
22									
25									
28									
30									
35									
38									
42									

Handelsübliche Hydraulikrohre, Werkstoff St 37.4/52.4 gemäß DIN 1630, NBK-3.1B. Maße und Toleranzen nach DIN 2391, Teil 1-C. Commercial hydraulic tube, material St 37.4/52.4 according to DIN 1630, NBK-3.1B. Dimensions and tolerances according to DIN 2391, sheet 1-C. Tube hydraulique courant, matériau St 37.4/52.4 suivant DIN 1630, NBK-3.1B. Dimensions et tolérances suivant DIN 2391, folio 1-C.

- Umformung ohne Innenabstützung / Reshaping without internal support / Formage sans support intérieur
- Umformung mit Innenabstützung / Reshaping with internal support / Formage avec support intérieur
- ⊕ Mit Stützring / With adapter ring / Avec bague de support





MEG-WF1/BO2



Spannbacken für
 WALFORM-M Stahl St 37.4/52.4
 Clamping jaws for
 WALFORM-M steel St 37.4/52.4
 Mâchoires de serrage pour
 WALFORM-M acier St 37.4/52.4



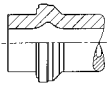
Rohr-AD Tube OD Tube Ø ext. [mm]	Wandstärke [mm] / Wall thickness [mm] / Epaisseur de paroi [mm]		
	2	2,5	3
	Best.-Nr. / Reference / Réf.		
10 L	610 892		
10 S	610 734		
12 L	610 893		
12 S	610 735		
15 L	610 736		
16 S	610 737		
18 L	610 738		
20 S		610 739	
22 L	610 740		

Formstützen für
 WALFORM-M Stahl St 37.4/52.4
 Reshaper for
 WALFORM-M steel St 37.4/52.4
 Outil de formage pour
 WALFORM-M acier St 37.4/52.4



Rohr-AD Tube OD Tube Ø ext. [mm]	Wandstärke [mm] / Wall thickness [mm] / Epaisseur de paroi [mm]		
	2	2,5	3
	Best.-Nr. / Reference / Réf.		
10 L	610 886		
10 S	610 743		
12 L	610 887		
12 S	610 744		
15 L	610 745		
16 S	610 746		
18 L	610 747		
20 S		610 748	
22 L	610 749		

Umformung ohne Innenabstützung
 Reshaping without internal support
 Formage sans support intérieur



MEG-WF2

MEG-WF2/BO

MEG-WF3/BO



Spannbacken für
 WALFORMplus Stahl St 37.4/52.4
 Clamping jaws for
 WALFORMplus steel St 37.4/52.4
 Mâchoires de serrage pour
 WALFORMplus acier St 37.4/52.4



Rohr-AD Tube OD Tube Ø ext. [mm]	Wandstärke [mm] / Wall thickness [mm] / Epaisseur de paroi [mm]								
	1	1,5	2	2,5	3	3,5	4	5	6
	Best.-Nr. / Reference / Réf.								
6	610 897	615 765							
8	612 561	615 766							
10	612 562	615 767							
12	612 563	615 768							
15		615 769							
16			615 770				615 770		
18			615 771						
20			615 772				615 772		
22			615 773						
25			615 774						
28			615 775						
30				615 776			615 776		
35					615 777		615 777		
38					615 778		615 778		
42					615 779				

Formstutzen für
 WALFORMplus Stahl St 37.4/52.4
 Reshaper for
 WALFORMplus steel St 37.4/52.4
 Outil de formage pour
 WALFORMplus acier St 37.4/52.4



ohne Innenabstützung
 without internal support
 sans support intérieur

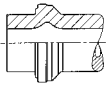


mit Innenabstützung
 with internal support
 avec support intérieur

Rohr-AD Tube OD Tube Ø ext. [mm]	Wandstärke [mm] / Wall thickness [mm] / Epaisseur de paroi [mm]								
	1	1,5	2	2,5	3	3,5	4	5	6
	Best.-Nr. / Reference / Réf.								
6	612 284	615 820							
8	612 555	615 821	615 822						
10	612 557	615 823	615 824	615 825	615 826				
12	612 559	615 827	615 830	615 831	615 832				
15		615 833	615 836	615 839					
16			615 842	615 845	615 848		615 849		
18			615 850	615 853	615 856				
20			615 857	615 860	615 863		615 864		
22			615 865	615 995	615 868	615 869			
25			615 870	615 873	615 876	615 877	615 878	615 994	
28			615 879	615 882	615 885	615 888			
30				615 889	615 892		615 895		615 896
35					615 897		615 900	615 901	
38					615 902		615 905	615 906	615 907
42					615 908	615 911	615 914		

Umformung ohne Innenabstützung
 Reshaping without internal support
 Formage sans support intérieur

Umformung mit Innenabstützung
 Reshaping with internal support
 Formage avec support intérieur



MEG-WF2

MEG-WF2/BO

MEG-WF3/BO



Spannbacken für
 WALFORM_{plus} nicht rostender Stahl 1.4571
 Clamping jaws for
 WALFORM_{plus} stainless steel 1.4571
 Mâchoires de serrage pour
 WALFORM_{plus} acier inox 1.4571



Rohr-AD Tube OD Tube Ø ext. [mm]	Wandstärke [mm] / Wall thickness [mm] / Epaisseur de paroi [mm]								
	1	1,5	2	2,5	3	3,5	4	5	6
	Best.-Nr. / Reference / Réf.								
6	610 897	615 765							
8	612 561	615 766							
10	612 562	615 767							
12	612 563	615 768							
15		615 769							
16			615 770						
18			615 771						
20			615 772						
22			615 773						
25				615 774		615 774			
28			615 775						
30				615 776		615 776			
35*					615 777		615 777		
38*					615 778		615 778		
42*					615 779				

Formstützen für
 WALFORM_{plus} nicht rostender Stahl 1.4571
 Reshaper for
 WALFORM_{plus} stainless steel 1.4571
 Outil de formage pour
 WALFORM_{plus} acier inox 1.4571



ohne Innenabstützung
 without internal support
 sans support intérieur



mit Innenabstützung
 with internal support
 avec support intérieur

Rohr-AD Tube OD Tube Ø ext. [mm]	Wandstärke [mm] / Wall thickness [mm] / Epaisseur de paroi [mm]								
	1	1,5	2	2,5	3	3,5	4	5	6
	Best.-Nr. / Reference / Réf.								
6	612 284	615 917							
8	612 903	615 918							
10	612 904	615 919							
12	612 560	615 920	615 921						
15		615 922	615 925						
16			615 928	615 931	615 934				
18			615 935	615 938	615 941				
20			615 942	615 945	615 948				
22			615 949	615 952	615 955				
25				615 956	615 959		615 960		
28			615 961	615 964	615 967				
30				615 970	615 973		615 976	615 977	
35*					615 978		615 981	615 982	
38*					615 983		615 986	615 989	615 990
42*					615 991				

Umformung ohne Innenabstützung
 Reshaping without internal support
 Formage sans support intérieur

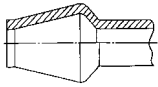
Umformung mit Innenabstützung
 Reshaping with internal support
 Formage avec support intérieur

* ab Rohr-AD 35 Umformung von Rohrwerkstoff nicht rostender Stahl 1.4571 nur mit MEG-WF3/BO möglich.

* from tube OD 35, reshaping of tube material stainless steel 1.4571 is only possible with MEG-WF3/BO.

* à partir du dia. ext. 35 du tube, le matériau de tube acier inox 1.4571 ne peut être formé qu'avec la machine MEG-WF3/BO.





Spannbacken für
 WALFORM-M Stahl St 37.4/52.4
 Clamping jaws for
 WALFORM-M steel St 37.4/52.4
 Mâchoires de serrage pour
 WALFORM-M acier St 37.4/52.4



Formstützen für
 WALFORM-M Stahl St 37.4/52.4
 Reshaper for
 WALFORM-M steel St 37.4/52.4
 Outil de formage pour
 WALFORM-M acier St 37.4/52.4



MEG-WF2



MEG-WF2/BO



MEG-WF3/BO







Rohr-AD Tube OD Tube Ø ext. [mm]	Wandstärke [mm] / Wall thickness [mm] / Epaisseur de paroi [mm]								
	1	1,5	2	2,5	3	3,5	4	5	6
	Best.-Nr. / Reference / Réf.								
10 L/S			610 769						
12 L/S			610 770						
15 L			610 771						
16 S			610 772						
18 L			610 773						
20 S				610 774					
22 L			610 775						
25 S				610 776					
28 L				610 777					
30 S				610 778					
35 L					610 779				
38 S					610 780				
42 L					610 781				

Rohr-AD Tube OD Tube Ø ext. [mm]	Wandstärke [mm] / Wall thickness [mm] / Epaisseur de paroi [mm]								
	1	1,5	2	2,5	3	3,5	4	5	6
	Best.-Nr. / Reference / Réf.								
10 L			610 888						
10 S			610 784						
12 L			610 889						
12 S			610 785						
15 L			610 786						
16 S			610 787						
18 L			610 788						
20 S				610 789					
22 L			610 790						
25 S				610 791					
28 L				610 792					
30 S				610 793					
35 L					610 794				
38 S					610 795				
42 L					610 796				

Umformung ohne Innenabstützung
 Reshaping without internal support
 Formage sans support intérieur



**Zum Bördeln von Rohren Stahl/nicht rostender Stahl mit Rohr-AD 6 bis 101,6 mm.
For flaring tubes with outside diameters from 6 to 101,6 mm.
Machine pour le formage de tubes de 6 à 101,6 mm.**

Technische Daten Technical Data Données techniques					
	MHH-BO	MEG- B02	WF1/B02*	MEG-WF2/BO* (Ohne Umformkopf / without reshaping head / sans tête de formage)	MEG-WF3/BO* (Ohne Umformkopf/ without reshaping head/ sans tête de formage)
Best.-Nr. Reference / Réf.	608 250	609 708	610 720	613 351	613 287
Rohr-AD Tube OD mm	6 - 42	6 - 42		bis / to jusqu'à 60,3	bis / to jusqu'à 101,6
Tube Ø ext. Stahl Steel Acier nicht rostender Stahl stainless steel acier inox	6 - 42	6 - 42		auf Anfrage on request / sur demande	auf Anfrage on request / sur demande
Gewicht Weight / Poids kg	45	107		220	850
Maße B x H x T Dimensions W x H x O mm Dimensions L x H x P	500 x 220 x 750	760 x 235 x 715		850 x 275 x 990	860 x 117 x 1530
Spannung Voltage / Tension V	-	230		400	400
Frequenz Frequency / Fréquence Hz	-	50		50	50
Leistungsaufnahme Power consumption kW Consommation de puissance	-	2		2,8	4
Absicherung Fuse / Protection A	-	16		16	16
Optionen Options / Options	Fußschalter, Zählwerk / Foot switch, Counter / Commande à pedale, Compteur				

**Verwendbare Rohrwerkstoffe
Suitable tube materials
Materiaux du tube utilisables**

Handelsübliche Hydraulikrohre, Werkstoff St 37.4/52.4 gemäß DIN 1630, NBK-3.1B. Nicht rostender Stahl Werkstoff 1.4571 (X6CrNiMoTi 17122) Ausführungsart „m“ nach DIN 17458. Maße und Toleranzen nach DIN 2391, Teil 1-C.

Commercial hydraulic tube, material St 37.4/52.4 according to DIN 1630, NBK-3.1B. Stainless steel material 1.4571 (X6CrNiMoTi 17122) type 'm' according to DIN 17458. Dimensions and tolerances according to DIN 2391, sheet 1-C.

Tube hydraulique courant, matériau St 37.4/52.4 suivant DIN 1630, NBK-3.1B. Acier inox 1.4571 (X6CrNiMoTi 17122) type 'm' selon la norme DIN 17458. Dimensions et tolérances suivant DIN 2391, folio 1-C.

- * Durch Werkzeugwechsel können diese Maschinen auch als WALFORM-Maschinen verwendet werden.
- * By changing the tools, this machines can also be used as WALFORM machines
- * Par un changement d'outil, le machines peut aussi être utilisée comme machines WALFORM.

**Bördel-Kopf
Head for flare tube fitting
Tête pour raccord pour
tube évasé**



Best.-Nr./Reference/Réf.:
612 350

**Bördel-Kopf
Head for flare tube fitting
Tête pour raccord pour
tube évasé**



Best.-Nr./Reference/Réf.:
613 288

**WALFORM-Kopf
Head for WALFORM fitting
Tête pour raccord
WALFORM**



Best.-Nr./Reference/Réf.:
612 351

**WALFORM-Kopf
Head for WALFORM fitting
Tête pour raccord
WALFORM**



Best.-Nr./Reference/Réf.:
613 289

Achtung! Umformköpfe für MEG-WF2/BO und MEG-WF3/BO zusätzlich bestellen.

Attention! Reshaping heads for MEG-WF2/BO and MEG-WF3/BO should be ordered in addition.

Attention! Pour les têtes de formage pour la MEG-WF2/BO et MEG-WF3/BO, il convient de passer une commande supplémentaire.





MHH-BO (MEH-B-2)

Spannbacken für
Bördel-Rohrverschraubungen 37°
Stahl St37.4/52.4 - nicht rostender Stahl 1.4571
Clamping jaws for flare tube fittings 37°
steel St37.4/52.4 - stainless steel 1.4571
Mâchoires de serrage pour raccords pour
tubes évasés 37°
acier St37.4/52.4 - acier inox 1.4571



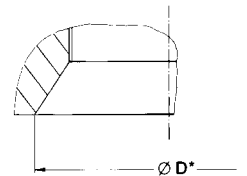
Rohr-AD Tube OD Tube Ø ext. [mm]	Wandstärke [mm] / Wall thickness [mm] / Epaisseur de paroi [mm]								
	1	1,5	2	2,5	3	3,5	4	5	6
	Best.-Nr. / Reference / Réf.								
6	608 500								
8	608 501								
10	608 502								
12	608 503								
14	608 504								
15	608 505								
16	608 506								
18	608 507								
20	608 508								
22	608 509								
25	608 510								
28	608 511								
30	608 512								
35	608 513								
38	608 514								608 407
42	608 515								

Spannbacken für
Bördel-Rohrverschraubungen 37°
nach SAE J 514
Stahl St37.4/52.4 - nicht rostender Stahl 1.4571
Clamping jaws for flare tube fittings 37°
according to SAE J 514
steel St37.4/52.4 - stainless steel 1.4571
Mâchoires de serrage pour raccords
pour tubes évasés 37° suivant SAE J 514
acier St37.4/52.4 - acier inox 1.4571



Rohr-AD Tube OD Tube Ø ext. [mm]	Best.-Nr. Reference Réf.	Ø D* [mm]
6	608 516	10,7
8	608 517	11,6
10	608 518	13,7
12	608 519	17,4
14	608 408	21,0
15	608 409	21,0
16	608 520	22,0
18	608 410	26,0
20	608 521	26,6
25	608 522	32,7
30	608 411	41,5
32	608 523	40,8
38	608 524	48,6

Bördelverschraubung
nach SAE J 514
Flare fitting according
to SAE J 514
Raccord pour tube
évasé selon SAE J 514



Bördeldorn
Flaring mandrel
Mandrin à évaser



Standarddorn zur Bördelung von Stahlrohren
Standard mandrel for steel tube flaring
Mandrin standard pour l'évasement de tubes
en acier

Best.-Nr. / Reference / Réf.: 604 854



Hartstoffbeschichteter Dorn zum Bördeln von
Rohren aus Stahl und nicht rostendem Stahl
Mandrel with mechanically resistant coating for
the flaring of steel and stainless steel tubes
Mandrin avec revêtement à résistance mécanique
élevée pour l'évasement de tubes en acier et
acier inox

Best.-Nr. / Reference / Réf.: 605 100





MEG-BO2
MEG-WF1/BO2

Spannbacken für
Bördel-Rohrverschraubungen 37°
Stahl St 37.4/52.4 - nicht rostender Stahl 1.4571
Clamping jaws for flare tube fittings 37°
steel St 37.4/52.4 - stainless steel 1.4571
Mâchoires de serrage pour raccords pour
tubes évasés 37°
acier St 37.4/52.4 - acier inox 1.4571



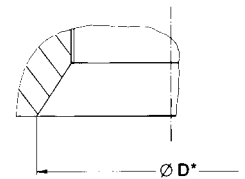
Rohr-AD Tube OD Tube Ø ext. [mm]	Wandstärke [mm] / Wall thickness [mm] / Epaisseur de paroi [mm]								
	1	1,5	2	2,5	3	3,5	4	5	6
	Best.-Nr. / Reference / Réf.								
6	608 379								
8	608 380								
10	608 381								
12	608 382								
14	608 383								
15	608 384								
16	608 385								
18	608 386								
20	608 387								
22	608 388								
25	608 389								
28	608 390								
30	608 391								
35	608 392								
38			608 393						608 412
42	608 394								

Spannbacken für
Bördel-Rohrverschraubungen 37°
nach SAE J 514
Stahl St 37.4/52.4 - nicht rostender Stahl 1.4571
Clamping jaws for flare tube fittings 37°
according to SAE J 514
steel St 37.4/52.4 - stainless steel 1.4571
Mâchoires de serrage pour raccords
pour tubes évasés 37° suivant SAE J 514
acier St 37.4/52.4 - acier inox 1.4571



Rohr-AD Tube OD Tube Ø ext. [mm]	Best.-Nr. Reference Réf.	Ø D* [mm]
6	608 395	10,7
8	608 396	11,6
10	608 397	13,7
12	608 398	17,4
14	608 413	21,0
15	608 416	21,0
16	608 399	22,0
18	608 415	26,0
20	608 400	26,6
25	608 401	32,7
30	608 416	41,5
32	608 402	40,8
38	608 403	48,6

Bördelverschraubung
nach SAE J 514
Flare fitting according to
SAE J 514
Raccord pour tube
évasé selon SAE J 514



Bördeldorn
Flaring mandrel
Mandrin à évaser



Standarddorn zur Bördelung von Stahlrohren
Standard mandrel for steel tube flaring
Mandrin standard pour l'évasement de tubes
en acier

Best.-Nr. / Reference / Réf.: 604 854



Hartstoffbeschichteter Dorn zum Bördeln von
Rohren aus Stahl und nicht rostendem Stahl
Mandrel with mechanically resistant coating for
the flaring of steel and stainless steel tubes
Mandrin avec revêtement à résistance mécanique
élevée pour l'évasement de tubes en acier et
acier inox

Best.-Nr. / Reference / Réf.: 605 100



MEG-WF2/BO

Spannbacken für Bördelflansche 37°
Stahl St 37.4/52.4
Clamping jaws for 37° flared flanges
steel St 37.4/52.4
Mâchoires de serrage pour
brides d'évasement 37°
acier St 37.4/52.4



Bördeldorn-Adapter
Flaring mandrel adapter
Adapteur de mandrin à évaser



Nicht rostender Stahl 1.4571 auf Anfrage
Stainless steel 1.4571 on request
Acier inox 1.4571 sur demande

Bördeldorn
Flaring mandrel
Mandrin à évaser



Hartstoffbeschichteter Dorn zum Bördeln von Rohren aus Stahl und nicht rostendem Stahl
Mandrel with mechanically resistant coating for the flaring of steel and stainless steel tubes
Mandrin avec revêtement à résistance mécanique élevée pour l'évasement de tubes en acier et acier inox

Rohr-AD Tube OD Tube Ø ext. [mm]	Spannbacken Clamping jaws Mâchoires de serrage	Bördeldorn-Adapter Flaring mandrel adapter Adapteur de mandrin à évaser
16 x 2	611 740	611 748
16 x 2,5		611 749
16 x 3		611 750
20 x 2	611 741	611 751
20 x 2,5		611 752
20 x 3		611 753
20 x 3,5		611 754
20 x 4		614 086
22 x 2	613 773	614 087
25 x 2,5	611 382	611 755
25 x 3		611 399
25 x 4		611 757
28 x 3	613 775	614 088
30 x 4	611 743	611 758
30 x 5		611 759
34 x 4,5	611 383	611 400
35 x 3	613 777	614 089
35 x 5		614 090
38 x 4	611 384	611 401
38 x 5		611 762
38 x 6		611 763
42 x 3	612 148	612 150
42 x 4		614 091
48,3 x 3,2	613 771	614 092
50 x 2,5	611 386	611 765
50 x 3		612 151
50 x 5		611 766
50 x 6		611 403
50 x 8		611 768
60 x 3	612 149	612 152
60,3 x 3,6		614 095
60 x 5		614 802
60,3 x 5,6		614 096
60 x 6		612 153
60 x 8		614 093
60,3 x 8		614 097



Spannbacken für Bördelflansche 37°
Stahl St 37.4/52.4

Clamping jaws for 37° flared flanges
steel St 37.4/52.4

Mâchoires de serrage pour
brides d'évasement 37°
acier St 37.4/52.4



Bördeldorn-Adapter
Flaring mandrel adapter
Adapteur de mandrin à évaser



Nicht rostender Stahl 1.4571 auf Anfrage
Stainless steel 1.4571 on request
Acier inox 1.4571 sur demande



MEG-WF3/BO

Rohr-AD Tube OD Tube Ø ext. [mm]	Spannbacken Clamping jaws Mâchoires de serrage	Bördeldorn-Adapter Flaring mandrel adapter Adapteur de mandrin à évaser
Best.-Nr. / Reference / Réf.		
48,3 x 3,2	614 110	614 481
50 x 2,5	614 111	614 482
50 x 3		614 483
50 x 5		614 484
50 x 6		614 485
50 x 8		614 486
60 x 3	614 112	614 487
60,3 x 3,6		614 491
60 x 5		
60,3 x 5,6		614 492
60 x 6		614 488
60 x 8		614 489
60,3 x 8		614 493
60 x 10		614 490
60,3 x 10	614 494	
76,1 x 2,9	614 113	614 495
76,1 x 7,1		614 497
88,9 x 3,6	614 114	614 500
101,6 x 8,8	614 115	614 504

Weitere Größen auf Anfrage
Further sizes on request
D'autres dimensions sur demande

Bördeldorn
Flaring mandrel
Mandrin à évaser



Hartstoffbeschichteter Dorn zum Bördeln von Rohren aus Stahl und nicht rostendem Stahl
Mandrel with mechanically resistant coating for the flaring of steel and stainless steel tubes
Mandrin avec revêtement à résistance mécanique élevée pour l'évasement de tubes en acier et acier inox

Best.-Nr. / Reference / Réf.: 614 118



Bördel-Spannbacken
Clamping jaws
Mâchoires de serrage
pour l'évasement

Achtung!

Schraubstock-Bördelwerkzeug nur bei Einzelmontagen und Reparaturen verwenden.

Caution!

The vice flaring tool should only be used for individual assembly operations and repair work.

Attention!

N'utiliser l'outillage à évaser avec étau que pour des montages individuels et des réparations.

Bördel-Dorne
Flaring mandrels
Mandrins à évaser

Rohr-AD Tûbe OD Tube Ø ext. [mm]	Best.-Nr. Reference Réf.
6	602 823
8	602 824
10	602 825
12	602 826
14	602 833
15	602 827
16	602 834
18	602 828
20	602 835
22	602 829
25	602 836
28	602 830
30	602 837
35	602 831
38	602 838
42	602 832

	Typ Type Désignation	Best.-Nr. Reference Réf.
	B-Dorn 6-18 Mandrel 6-18 Mandrin 6-18	063 156
	B-Vordorn 20-42 Pre-mandrel 20-42 Mandrin préparatoire 20-42	063 155
	B-Dorn 18-25 Mandrel 18-25 Mandrin 18-25	063 157
	B-Dorn 28-30 Mandrel 28-30 Mandrin 28-30	063 158
	B-Dorn 35-42 Mandrel 35-42 Mandrin 35-42	063 159



Spannbacke auf Rohr schieben. Rohrende muß bündig mit Vorderseite der Spannbacke abschließen. Spannbacke mit Rohr in Schraubstock fest einspannen.

Slide clamping jaw onto tube. Tube end must be flush with front end of clamping jaw. Firmly clamp both jaw and tube in vice.

Mettre la mâchoire de serrage sur le tube. Le bout du tube doit affleurer la face de la mâchoire de serrage. Serrer à fond la mâchoire de serrage avec le tube dans l'étau.

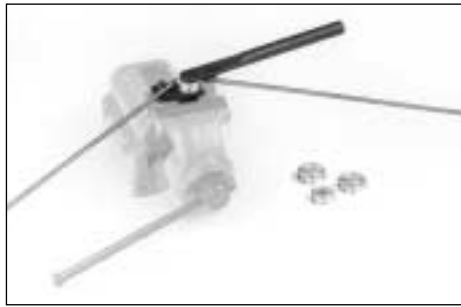


Rohrende bördeln. Richtige Form des Bördelkragens ist bei Anliegen im Kegel der Spannbacken erreicht. (Ab Rohr-AD 20 mm Vordorn verwenden.) Gebördeltes Rohr kontrollieren.

Flare tube end. Tube is correctly flared if it conforms to the taper in the clamping jaws. (From 20 mm tube OD use pre-mandrel.) Check the flared tube.

Evaser le tube. La forme correcte du collet est obtenue dès qu'il adhère au cône des mâchoires de serrage (à partir du dia. ext. 20 mm du tube, utiliser le mandrin préparatoire.) Contrôler le tube évasé.

Für Rohre von 6-18 mm Rohr-AD
For tubes from 6-18 mm tube OD
Pour tubes Ø ext. 6 à 18 mm

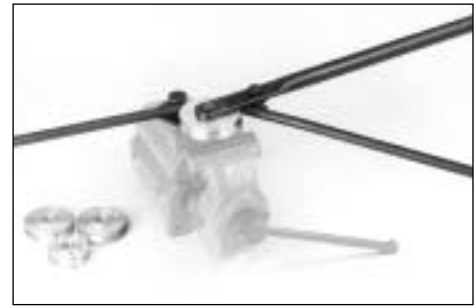


Rohrbiegewerkzeug
 6-12 mm Rohr-AD mit 4 auswechselbaren
 Biegerollen

Tube bending tool
 6-12 mm tube OD with 4 replaceable
 bending rollers

Cintreuse pour tubes
 Ø ext. 6 à 12 mm avec 4 rouleaux différents

Best.-Nr. / Reference / Réf.: 033 012



Rohrbiegewerkzeug
 10-18 mm Rohr-AD mit 4 auswechselbaren
 Biegerollen

Tube bending tool
 10-18 mm tube OD with 4 replaceable
 bending rollers

Cintreuse pour tubes
 Ø ext. 10 à 18 mm avec 4 rouleaux différents

Best.-Nr. / Reference / Réf.: 033 020

Für Rohre von 6-22 mm Rohr-AD
For tubes from 6-22 mm tube OD
Pour tubes Ø ext. 6 à 22 mm

Die Rohrbiegewerkzeuge ermöglichen das Biegen von Rohren direkt (SA1) oder 24 mm (SA2) hinter der bereits aufgezogenen Überwurfmutter.

When using the tube bending tools, tubes can be bent immediatly (SA1) or 24 mm (SA2) behind the previously mounted nut.

Avec les cintreuses pour tubes, il est possible de cintrer les tubes juste derrière l'écrou déjà monté (SA1) ou 24 mm (SA2).



Rohrbiegewerkzeug SA1
 10-18 mm Rohr-AD mit 4 auswechselbaren
 Biegerollen und 7 Prismenbacken,
 10L/S, 12L/S, 15L, 16S, 18L

Tube bending tool SA1
 10-18 mm tube OD with 4 replaceable bending
 rollers and 7 holding attachments,
 10L/S, 12L/S, 15L, 16S, 18L

Cintreuse pour tubes SA1
 Ø ext. 10 à 18 mm avec 4 rouleaux différents
 et avec 7 encoches d'appui,
 10L/S, 12L/S, 15L, 16S, 18L

Best.-Nr. / Reference / Réf.: 063 805



Rohrbiegewerkzeug SA2
 6-22 mm Rohr-AD mit 8 auswechselbaren
 Biegerollen, inkl. Transportkoffer

Tube bending tool SA2
 6-22 mm tube OD with 8 replaceable bending
 rollers, incl. transport case

Cintreuse pour tubes SA2
 Ø ext. 6 à 22 mm avec 8 rouleaux différents,
 mallette de transport incluse

Best.-Nr. / Reference / Réf.: 615 706



●	01139 Dresden	Hyflexar Schlauch u. Armaturen GmbH Grimmstraße 79 (im Frühgemüse-Zentrum)	Tel. (0351) 8 30 49 65	Telefax (0351) 8 30 49 66
●	09128 Chemnitz	Knoll Hydraulik GmbH & Co. KG Am Erlenwald 18	Tel. (0371) 77 50 58-0 E-mail KnollHY@t-online.de	Telefax (0371) 77 50 58-9
○	08525 Plauen	TIB Technischer Industriebedarf Handels GmbH August-Bebel-Straße 60	Tel. (03741) 52 27 88	Telefax (03741) 52 27 88
●	16225 Eberswalde	Hyflexar Hydrauliktechnik GmbH Boldtstraße 22	Tel. (03334) 2 91 45 u. 27 05-0 E-mail Hyflexar-Eberswalde@t-online.de	Telefax (03334) 2 91 46
○	16303 Schwedt	Hyflexar Hydrauliktechnik GmbH Helbigstraße 18	Tel. (03332) 51 09 90	Telefax (03332) 51 09 80
●	19357 Karstädt	Hyflexar Hydrauliktechnik GmbH Semlinerstraße 10	Tel. (038797) 5 20 53	Telefax (038797) 5 12 03
○	16909 Heiligengrabe	Hyflexar Hydrauliktechnik GmbH Wittstocker Str. 2	Tel. (033962) 8 09 93	Telefax (033962) 8 09 95
○	39576 Stendal	Hydrauliktechnik Altmark Osterburger Str. 212	Tel. (03931) 25 89 91 E-mail htasld@t-online.de	Telefax (03931) 25 89 93
●	25474 Ellerbek ☒ 25471 Ellerbek	Rander & Co. GmbH, Hydraulik + Fluidtechnik Waldhofstraße 9 Postfach 12 25	Tel. (04101) 3 40 75+76 E-mail info@rander-gmbh.de Internet www.rander-gmbh.de	Telefax (04101) 3 50 30
●	28759 Bremen (und Hannover)	Kroning Industrietechnik GmbH Friedrich-Humbert-Straße 169-173	Tel. (0421) 6 26 06-32 E-mail fluidtechnik@Kroning.de Internet www.Kroning.de	Telefax (0421) 6 26 06 15
○	33335 Gütersloh	HDI-Bolte GmbH Osnabrücker Landstraße 270	Tel. (05241) 61 43 E-mail HDI-Bolte@t-online.de	Telefax (05241) 68 74 68
☒	33275 Gütersloh	Postfach 41 12		
○	33378 Rheda-Wiedenbrück	Josef Strohmeier GmbH, Technischer Großhandel Pilgerpatt 10	Tel. (05242) 92 63-0 E-mail StrohmeierGmbH@t-online.de Internet www.StrohmeierGmbH.de	Telefax (05242) 92 63-22
○	59063 Hamm	Beilke GmbH & Co. KG Oestingstraße 45	Tel. (02381) 9 91 99-0 E-mail info@beilke.de	Telefax (02381) 40 56 40 Internet www.beilke.de
○	59557 Lippstadt	Josef Strohmeier GmbH, Technischer Großhandel Hansastraße 31	Tel. (02941) 28 68 80-0 E-mail LippstadtStrohmeierGmbH@t-online.de Internet www.StrohmeierGmbH.de	Telefax ((02941) 27 40 93
○	59557 Lippstadt	Beilke GmbH & Co. KG Erwitter Straße 151	Tel. (02941) 1 70 24 E-mail info@beilke.de	Telefax (02941) 2 37 42 Internet www.beilke.de
○	59494 Soest	Beilke GmbH & Co. KG Am Silberberg 2-4	Tel. (02921) 7 07-0 E-mail info@beilke.de	Telefax (02921) 7 07-77 Internet www.beilke.de
○	59457 Werl	Beilke GmbH & Co. KG Hammer Straße 122	Tel. (02922) 57 79 E-mail info@beilke.de	Telefax (02922) 8 39 99 Internet www.beilke.de
○	59755 Arnsberg	Beilke GmbH & Co. KG Möhnstraße 11-17	Tel. (02932) 47 58 40 E-mail info@beilke.de	Telefax (02932) 4 75 84 44 Internet www.beilke.de
●	34123 Kassel ☒ 34080 Kassel	Luwaka GmbH, Technik und Service Falderbaumstraße 25 Postfach 20 01 31	Tel. (0561) 95 87-0 E-mail info@luwaka.de Internet www.luwaka.de	Telefax (0561)95 87-503
●	35683 Dillenburg ☒ 35662 Dillenburg	Ingenieurbüro Eisenberger GmbH Dietzhölzstraße 7 Postfach 12 54	Tel. (02771) 3 07-0 E-mail box@eisenberger.de Internet www.eisenberger.de	Telefax (02771) 3 07 25
○	35463 Fernwald	Seiferth & Angrabeit, Armaturen - Schläuche Hellenweg 22-24	Tel. (06404) 70 59	Telefax (06404) 6 32 95
●	39307 Brettin	J. Schulze Hydraulik Am Bahnhof 6	Tel. (03933) 9 13 48	Telefax (03933) 48 85
○	39126 Magdeburg	J. Schulze Hydraulik Saalestraße 36	Tel. (0391) 5 05 19 92	Telefax (0391) 5 05 04 05
●	40599 Düsseldorf	Hyflexar Holding GmbH Spanger Straße 34	Tel. (0211) 74 50 08	Telefax (0211) 7 48 73 73
○	41063 Mönchengladbach	Hyflexar Schlauch & Armaturen GmbH Künkelstraße 125	Tel. (02161) 17 78 01	Telefax (02161) 17 78 02
●	45326 Essen 45361 Essen	Eduard Hengstenberg GmbH Hydraulik- und Industrieteile Laubenhof 6 Postfach 45 01 61	Tel. (0201) 36 06-0 E-mail Hengstenberg-Gruppe.Hydraulik@T-Online.de Internet www.hengstenberg-gruppe.de	Telefax (0201) 36 06-278
●	56626 Andernach 56604 Andernach	Thielen Industrie-Hydraulik GmbH Rasselsteinstraße 12 Postfach 14 61	Tel. (02632) 96 62-0 E-mail INFO@Thielen.de Internet www.Thielen.de	Telefax (02632) 96 62-90
●	58840 Plettenberg	K.-H. Griebel Hydraulik und Pneumatik Köbbinghauser Hammer 23	Tel. (02391) 91 29-0 E-mail info@griebel-plettenberg.de Internet www.griebel-plettenberg.de	Telefax (02391) 91 29-18
●	☒ 65760 Eschborn 65733 Eschborn	Gummi-Roller GmbH Rudolf-Diesel-Straße 17 Postfach 58 20	Tel. (06173) 60 04-0 E-mail info@roller-reiff.de Internet www.roller-reiff.de	Telefax (06173) 69 71
○	65203 Wiesbaden	Mühlberger GmbH Otto-Wallach-Straße 16	Tel. (0611) 2 78 07-0 E-mail info@MIA.de Internet www.muehlberger.de	Telefax (0611) 2 78 07-40
☒	65083 Wiesbaden	Postfach 12 05 52		
●	73730 Esslingen-Zell ☒ 73716 Esslingen	Fierthbauer - Inh. Rolf Mader Alleenstraße 35 Postfach 50 08	Tel. (0711) 93 08 07-0 E-mail Kundenservice@fierthbauer.de Internet www.fierthbauer.de	Telefax (0711) 36 65 31
○	68794 Oberhausen-Rheinhausen	Horn-Hydraulik-Technik GmbH Weiherweg 25	Tel. (07254) 83 67 und 95 00 86 E-mail Info@horngmbh.de	Telefax (07254) 95 00 88 Internet www.horngmbh.de

○	71732 Tamm	H.P. Barth, Fluid-Verbindungstechnik Amselweg 5	Tel. (07141) 60 52 82	Telefax (07141) 20 07 43
○	75404 Mühlacker	Gummi-Scheufele GmbH Industriestraße 129	Tel. (07041) 9 57 60	Telefax (07041) 45 40 1
○	78224 Singen/Hohentwiel	Haas & Kellhofer Industriebedarf Grubenwaldstraße 7	Tel. (07731) 92 46-0	Telefax (07731) 92 46 46
○	88046 Friedrichshafen	Kröll Hydrotechnik KG Eckenerstraße 65	Tel. (07541) 38 00-0	Telefax (07541) 2 10 20
○	88263 Horgenzell-Furth	Finsterle GmbH	Tel. (07504) 97 08-0	Telefax (07504) 97 08 24
○	88239 Wangen	BF-Hydraulik, Baumann & Fischer KG Wiesen	Tel. (07522) 8 00 45	Telefax (07522) 8 00 46
●	79312 Emmendingen	Lotz Hydraulik + Pneumatik GmbH	Tel. (07641) 92 91-0	Telefax (07641) 92 91 20
☒	79301 Emmendingen	Denzlinger Straße 32 Postfach 11 62		
●	82178 Puchheim	Schötz Industrietechnik GmbH	Tel. (089) 80 93-0	Telefax (089) 80 93-2 88
☒	82167 Puchheim	Benzstraße 36 Postfach 11 42	E-mail info@schoetz-industrie.de Internet www.schoetz.de	
○	83022 Rosenheim	Rottmoser Hydraulik, Industrie, KFZ-Teile Simseestraße 6	Tel. (08031) 30 87-0	Telefax (08031) 30 87-23
○	83413 Fridolfing	Johann Schild, Herstellungs+Handels GmbH Nilling 6	Tel. (08684) 98 80-0	Telefax (08684) 98 80-20
○	84478 Waldkraiburg	Eugen Trost GmbH & Co. KG Traunreuter Str. 3	Tel. (08638) 20 84	Telefax (08638) 20 86
○	84524 Neuötting	Eugen Trost GmbH & Co. KG Simbacher Str. 34	Tel. (08671) 30 31	Telefax (08671) 35 84
○	86368 Gersthofen	Josef Hohn GmbH, Fahrzeug + Industrieteile Werner-von-Braun-Straße 8	Tel. (0821) 2 97 91-0	Telefax (0821) 2 97 91-11
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○	94036 Passau	Eugen Trost GmbH & Co. KG Neuburger Straße 129	Tel. (0851) 9 55 49-0	Telefax (0851) 9 55 49-10
○	94315 Straubing	Andorfer Hydraulik GmbH Hebbelstraße 22	Tel. (09421) 99 56-0	Telefax (09421) 99 56-10
☒	94306 Straubing	Postfach 06 31		
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○	94469 Deggendorf	Hans Pregler KG Graflinger Straße 224	Tel. (0991) 25 05-0	Telefax (0991) 25 05-29
●	90530 Wendelstein	Schötz Industrietechnik GmbH	Tel. (09129) 9 09 97-0	Telefax (09129) 9 09 97-49
		Johann-Höllfritsch-Straße 43	E-mail info@schoetz-industrie.de Internet www.schoetz.de	
○	86720 Nördlingen	Eugen Trost GmbH & Co. Anton-Jaumann-Industriepark 3a	Tel. (09081) 29 58-0	Telefax (09081) 23 34 1
○	90451 Nürnberg	Eugen Trost GmbH & Co. Donaustraße 107	Tel. (0911) 6 43 10-0	Telefax (0911) 6 43 10 40
○	91052 Erlangen	Eugen Trost GmbH & Co. Am Anger 40	Tel. (09131) 1 20 41-0	Telefax (09131) 30 29 03
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○	91522 Ansbach	Eugen Trost GmbH & Co. Jägerndorferstraße 25	Tel. (0981) 4 88 38-0	Telefax (0981) 8 21 12
○	91781 Weißenburg	Eugen Trost GmbH & Co. Industriestraße 51	Tel. (09141) 86 62-0	Telefax (09141) 86 62-22
○	92224 Amberg	Eugen Trost GmbH & Co. Dieselstraße 3	Tel. (09621) 76 75-0	Telefax (09621) 76 75 40
○	92237 Sulzbach-Rosenberg	Meier Siegfried, Hydraulikdienst Industriestraße 40	Tel. (09661) 98 68	Telefax (09661) 99 68
○	92655 Grafenwöhr	Günther Plößner, Hydraulikdienst Bahnhofstraße 56	Tel. (09641) 92 29-0	Telefax (09641) 92 29-49
○	93083 Obertraubling	Schötz Industrietechnik GmbH Hartinger Weg 2A	Tel. (09401) 96 31 13	Telefax (09401) 96 31 10
○	95032 Hof	Eugen Trost GmbH & Co. Wunsiedler Straße 7	Tel. (09281) 78 75-0	Telefax (09281) 9 68 18
○	95448 Bayreuth	Eugen Trost GmbH & Co. Christian-Ritter-von-Langheinrich-Straße 22	Tel. (0921) 7 92 04-0	Telefax (0921) 9 88 72
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●	97424 Schweinfurt	Wütschner Fahrzeugteile GmbH + Co. KG	Tel. (09721) 65 86-0	Telefax (09721) 6 83 85
☒	97405 Schweinfurt	Rudolf-Diesel-Straße 15 Postfach 15 57	E-mail info@wuetschner.com Internet www.wuetschner.com	
●	99427 Weimar	Hyflexar Schlauch & Armaturen GmbH	Tel. (03643) 42 16 88	Telefax (03643) 42 16 89
		Nordstraße 5		
○	07745 Jena	JEN Pneumatik & Schlauchtechnik GmbH Göschwitzer Straße 22	Tel. (03641) 35 63 00 E-mail mail@jenpneumatik.de	Telefax (03641) 35 63 20 Internet www.jenpneumatik.de
○	99887 Georgenthal/Thür.	Fluidtechnik GmbH Friedensstraße 14	Tel. (036253) 30 70	Telefax (036253) 30 725



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● Belgien/Belgium	Interpieces S.A. N.V. Industrie Havendoklaan 14 (Cargovil) 1804 Vilvoorde	Tel. +32 (2) 2 55 78 81 E-mail industry@interpieces.be	Telefax +32 (2) 2 55 79 80
● Belgien/Belgium	nv. Glaeazer-Seurre Stippelstraat 53 3800 Sint-Truiden	Tel. (011) 59 02 60 E-mail Glzsemail@euronet.be	Telefax (011) 31 65 58
● Dänemark/Denmark	Dansk Uni-Cardan A/S Jernet 39 6000 Kolding	Tel. 44 86 68 44 E-mail info@uni-cardan.dk Internet www.uni-cardan.dk	Telefax 44 68 88 22
● Finnland/Finland	GS-Hydro Oy Lautatarhankatu 4 13110 Hämeenlinna	Tel. (0) 3 65 641	Telefax (0) 3 6532 998
● Finnland/Finland	Muko Oy Hankasuontie 12, P.O. Box 55 00390 Helsinki 39	Tel. (09) 34 87 08 47 E-Mail muko@muko.fi Internet www.muko.fi	Telefax (09) 34 87 08 48
● Frankreich/France	DEFA Dep. Hydraulique 11 Rue Guy Moquet, Zone Industrielle du Val d' Argent 95100 Argenteuil	Tel. (01) 30 25 94 20 E-mail defa@wanadoo.fr Internet www.defa.fr	Telefax (01) 30 25 94 59
○ Frankreich/France	Société Syldos 2, Rue Pierre Timbaud - Z.I., B.P. 572 69637 Venissieux Cedex	Tel. (04) 72 21 41 03	Telefax (04) 72 50 85 05
● Griechenland/Greece	Antonios John Gioxas Industrial and Shipbuilding Supplies 19, Gravias Str. 185 45 Piraeus	Tel. (1) 4 17 66 12 (1) 4 17 72 25 (1) 4 17 54 43	Telefax (1) 4 17 92 04
● Großbritannien/Great Britain	Stauff UK 332 Coleford Road Darnall, Sheffield S9 5PH	Tel. (01142) 518 518 E-mail sales@stauff.co.uk	Telefax (01142) 518 519
● Island/Iceland	Landvélar HF Smiðjuvegur 66, P.O. Box 20 200 Kópavogur	Tel. 557-6600	Telefax 557-8500
● Italien/Italy	Uni-Cardan Italia S.p.A. Via G. Ferraris 125 20021 Ospiate di Bollate	Tel. (02) 3 83 38-1	Telefax (02) 333.01.030 / 38302122
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○ Kroatien/Croatia	UN-TRA d.o.o. Zapstovstvo: Rexroth 1. Ravnice 2a 10000 Zagreb	Tel. (1) 2 32 92 66	Telefax (1) 2 32 92 67
● Niederlande/Netherlands	EPE-Goldman BV Technisch Handelsbureau Postbus 82 3100 AB Schiedam Adm. Trompstraat 4 3115 HH Schiedam	Tel. +31 (10) 4 26 99 99 E-mail info@epe-goldman.nl Internet www.epe-goldman.nl	Telefax +31 (10) 4 26 90 80
● Norwegen/Norway	GKN UniCardan Norge A.S Verpetvn. 34 1540 Vestby	Tel. (64) 98 11 00 E-mail office@gkn-unicardan.no	Telefax (64) 98 11 98
● Norwegen/Norway	GS-Hydro Norge AS Måltrostveien 3, P.O. Box 93 2044 Frogner	Tel. (47) 63 86 66 20	Telefax (47) 63 86 66 66
● Österreich/Austria	GKN Service Austria GmbH Slamastraße 32, Postfach 53 1232 Wien	Tel. (01) 6 16 38 80 E-mail office.fittings@mail.gkngsa.co.at Internet www.gkngsa.co.at	Telefax (01) 6 16 38 80-23
● Polen/Poland	Mannesmann Rexroth Sp. z o.o. ul. Staszica 1 05-800 Pruszków	Tel. (22) 75 86 400 E-mail rexinfo@rexroth.com.pl Internet www.rexroth.com.pl	Telefax (22) 75 88 735
● Portugal/Portugal	Gustavo Cudell, Lda Rua Eng. Ferreira Dias, 954 4149-008 Porto	Tel. +351 (22) 6 15 80 00 E-mail aoh@gustavocudell.com Internet www.gustavocudell.pt	Telefax +351 (22) 6 15 80 70
● Schweden/Sweden	GS-Hydro AB Haukadalsgatan 12 164 40 Kista	Tel. (08) 7 50 58 35	Telefax (08) 7 50 61 05
● Schweiz/Switzerland	Hydrel AG, Maschinenfabrik Badstraße 14, Postfach 180 8590 Romanshorn	Tel. (071) 4 66 66 66 E-mail hydraulik@Hydrel.ch Internet www.hydrel.ch	Telefax (071) 4 66 66 80
○ Slowenien/Slovenia	LA & CO d.o.o. Zapstovstvo: Rexroth Limbuška 42 62000 Maribor	Tel. (2) 4 29 26 60	Telefax (2) 4 20 55 50
● Spanien/Espania	Bultz Estanqueidad S.L. Paseo de Arriola 17, Bajo 20009 San Sebastian	Tel. (943) 21 70 00 E-mail bultz@bultz.es	Telefax (943) 21 72 07
○ Tschechien/Czech.	GKN Service Austria GmbH Organizační složka, Pekárenská 77 37004 České Budějovice	Tel. (03) 87 31 41 25	Telefax (03) 87 31 41 26
● Türkei/Turkey	Demirer Hidrolik sanayi ve ticaret ltd. sti. 100, Yil Bulvarı No. 44 Ostim, Ankara	Tel. (312) 3 85 25 55+56 3 85 05 70+71 E-mail demirerhidrolik@superonline.com	Telefax (312) 3 85 25 57
○ Ungarn/Hungary	Mannesmann Rexroth/ Rexroth Mecman KFT Hajtástechnikai KFT 1440 Budapest · Pf. 505	Tel. +36 (1) 1 83 19 77 + 1 64 00 02	Telefax +36 (1) 1 83 19 80
○ Ungarn/Hungary	INNOFLUID Ltd. Várna u. 12-14 1149 Budapest	Tel. +36 (1) 2 21 39 90+91 E-mail hidraulika@innofluid.hu Internet www.innofluid.hu	Telefax +36 (1) 3 83 51 03



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Représentants en Outre-mer Base en Outre-mer

● Ägypten/Egypt	Yasser Fahmy Hydraulic Eng. Agency of Mannesmann Rexroth Group 66 Saudi Building, Kobba P.O. Box 6550 SAWAH 11813	Tel. (02) 4 52 01 92 E-mail yfhe@menanet.net yftho@menanet.net	Telefax (02) 4 53 06 38
● Argentinien/Argentina	Bosch Rexroth S.A.I.C. Acassusso 4841/7 1605 BFQ Munro, Pcia. Buenos Aires	Tel. (11) 47 56 0-1 40 E-mail mannesmann@elsitio.net	Telefax (11) 4 75 60-136
● Australien/Australia	Stauff Corporation PTY LTD 24-26 Doyle Avenue, Unanderra, NSW 2526 PO Box 227, Unanderra	Tel. (02) 42 71 18 77 Internet www.stauff.com	Telefax (02) 42 71 84 32
● Brasilien/Brazil	Bosch Rexroth Ltda. „The Drive & Control Company“ Av. Tégula 888 - Units 13 and 14 - Ponte Alta Atibaia - Sao Paulo - Zip Code: 12952-440	Tel. +55 (11) 44 14 56 50 E-mail boschrexroth@boschrexroth.com.br Internet www.boschrexroth.com.br	Telefax +55 (11) 44 14 56 55
● Chile/Chile	Mauricio Hochschild S.A.I.C. Departamento Maquinaria Industrial Av. Senador Jaime Guzmán Errázuriz 3535 - Renca Casilla 153-D.Santiago	Tel. (2) 64 11 195 E-mail mHSAIC@netup.ci	Telefax (2) 64 11 323
● China/China	Stauff International Trading (Shanghai) Co., Ltd. Shangdian Mansion, 331 Binzhou Rd. 200126 - Pudong, Shanghai	Tel. (21) 58 45 65 60 + 68 18 E-mail stauffsh@public.sta.net.cn	Telefax (21) 58 45 66 80
● Indien/India	Stauff India Pvt. Ltd., PuneK Gat No. 2340, Pune-Nagar Road, Wagholi, Pune 412 207	Tel. (0) 2 06 61 19 91 E-mail stauff_india@satyam.net.in	Telefax (0) 2 06 61 19 89
○ Indonesien/Indonesia	PT. Cipta Hydropower Abadi JLTB Angke Kompleks THI Block FF 1B/3 Jakarta Barat	Tel. (021) 5 66 79 68 / 79 88 / 67 35 E-mail htides55@cbn.net.id	Telefax (021) 5 66 79 81
○ Iran/Iran	Iran Hydraulics Systems Co. Ltd. 310 Mirdamad Ave, P.O. Box 19395-3636 Teheran	Tel. (21) 8 88 35 18	Telefax (21) 8 88 90 89
● Japan/Japan	Mannesmann Rexroth Uchida Hydraulics Co. Ltd. 5-1 Higashi-nakanuki Tsuchiura-shi Ibaraki-ken 300-8588	Tel. (298) 31-32 21 Internet www.ucd.co.jp/	Telefax (298) 31-32 27
● Kanada/Canada	Stauff Canada Ltd. 866 Milner avenue Scarborough, Ontario M1B 5N7	Tel. (416) 2 82-46 08 E-mail Stauff.Canada@sympatico.ca	Telefax (416) 2 82-30 39
● Kolumbien/Columbia	Reflutec de Colombia LTDA. Sistemas Oleo Hydraulicos Transversal 42B No. 20-36 Santafe de Bogota	Tel. (12) 68 24 54 E-mail reflutec@inter.net.co	Telefax (12) 69 97 37
● Korea/Korea	GS-HYDRO KOREA LTD. 1504-1, Dadae-Dong, Saha-ku, Pusan 604-050	Tel. (51) 2 66 82 21 / 5 E-mail mskhim@gshydro.co.kr	Telefax (51) 2 66 82 20
○ Malaysia/Malaysia	Tejari SDN BHD 44 Jalan Bawai Taman Kimsar 13700 Prai PW.	Tel. (03) 3 97 38 28	Telefax (03) 3 97 97 97
● Mexico/Mexico	Bosch Rexroth, S.A. de C.V. Calle Neptuno 72, Unidad Industrial Vallejo 07700 Mexico D.F.	Tel. (05) 7 54 17 11 E-mail rexroth@rexroth-mexico.com Internet www.rexroth-mexico.com	Telefax (05) 7 54 50 73
● Peru/Peru	Powermatic S.A. Avenida Los Ingenieros 333 Urb. Industrial La Merced, Ate, Lima 3 P.O.Box 41-0117, Lima 41	Tel. (511) 3 49-4011 / -01 84 / -21 17 E-mail powerma@mail.cosapidata.com.pe	Telefax (511) 4 37-00 73 / 3 49-01 84
● Philippinen/Philippines	German Hydraulic & Plant Service 95-B.Do los Santos Avenue Guadalupe, Makati City RP Metro Manila	Tel. (2) 7 50 67 98	Telefax (2) 8 43 25 55
● Singapur/Singapore	Chuan Kok Trading Company No. 38, Hamilton Road #01-01 Singapore 209208	Tel. 2 94 63 05 / ..63 06/.65 90	Telefax 2 98 17 64
● Südafrika/South Africa	Hytec of Southern Africa (PTY) Ltd. 12 Richard Road Industria North, Johannesburg	Tel. (011) 6 73 12 10 E-mail Haralds@hytec.co.za Internet www.hytec.co.za	Telefax (011) 6 73 02 12 / 4 77 42 24
○ Südafrika/South Africa	Hydroweld Hydraulics CAPE 33, Auckland Street PE 7405, P.O. Box 493 Paarden Eiland 7420	Tel. (021) 5 11-22 78 / 9 E-mail hydrowel@iafrica.com.za	Telefax (021) 5 11-58 31
● Taiwan/Taiwan	Tiger Flowtech Corp. 5F-1, No. 390, Sec. 1, Fu-Hsing South Road Taipei, Taiwan, R.O.C.	Tel. (02) 27 07-21 13	Telefax (02) 27 00-74 18
● Taiwan/Taiwan	Bosch Rexroth Co., Ltd. No. 1, Tsu Chiang ST, Tu Cheng, Industry Estate, Taipei Hsien, 236 Taiwan, R.O.C.	Tel. (02) 22 68 13 47	Telefax (02) 22 68 53 88
● Thailand/Thailand	Thai Agency Eng. Co. Ltd. 2nd - 3rd Floor, Vorasin Bldg., 9 Soi Yasoop 2, Vipavadirangsit Rd., Ladyao, Chatujak, Bangkok 10900	Tel. (662) 6 91-59 00 (Auto-Lines) E-mail taec@bkk.loxinfo.co.th	Telefax (662) 6 91-58 21
● Uruguay/Uruguay	MSS Marine Service Spareparts + Maintenance S.A. Franc. Acuna de Figueroa 1991 11800 Montevideo	Tel. (2) 9 29 02 05 E-mail MSS@Adinet.com.u	Telefax (2) 9 29 00 06



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- Agents - Overseas Base - Overseas
- Représentants en Outre-mer Base en Outre-mer

● U S A	Motion Industries Inc. Hose & Coupling Division 3825 South Normal Avenue Chicago, Illinois 60609-1706	Tel. (708) 7 80-62 00 E-mail Motionindi/3@MindSpring.com	Telefax (708) 7 80-67 53
● U S A	GS-Hydro U.S. Inc. 1395 Blue Hills Avenue Bloomfield, CT 06002	Tel. (860) 7 69-66 86 Internet www.gs-hydro-us.com	Telefax (860) 7 69-66 87
● Venezuela	Bosch Rexroth S.A. Calle Rep. Dominicana, Edificio Alpha PB.-Locales 1 y 2, Boleita Sur - Apartado: 75.703 Caracas 1070	Tel. (212) 2 38 35 64 / 2 38 31 94 / 2 35 30 16 / 2 35 10 67 / 2 35 37 90	Telefax (212) 2 39 33 30 / 2 35 87 82
● Vereinigte Arabische Emirate/ United Arab Emirates	Fleximak Ltd. P.O. Box 61046 Jebel Ali	Tel. (4) 8 81 39 00 E-mail fleximak@emirates.net.ae Internet www.fleximak.com	Telefax (4) 8 81 39 02

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Seamless Tubing

Stauff Corporation Pty Ltd supplies a range of precision hydraulic tubing in both Metric and Imperial sizes. The materials available are standard cold drawn, normalised, seamless (CDS) carbon steel, zinc plated CDS carbon steel, and seamless, annealed 316L stainless steel.

The carbon steel tubing is cleaned, normalised, free of scale, phosphated, oiled and capped. The zinc plated carbon steel tube is the same material but with a yellow passivated zinc plated exterior with an oiled interior and capped ends. The stainless steel tubing is cold drawn seamless, heat treated to anneal, and supplied with capped ends. Tubing is sold as 6 metre lengths.

Pressures are calculated for straight tube according to DIN 2413 Part III for dynamic stress for the carbon steel tube and to DIN 2413 Part 1 for static stress for the stainless steel tube and are given as a guide only. Bends may introduce wall thinning with consequent reduction in the allowable pressure. All critical applications should be subject to proving tests. No allowance has been made for corrosion in the calculations. Thin walled tubing will need support sleeves for secure "bite" type and "compression" type fitting assembly.

metric, carbon steel, phosphated tubing and zinc plated tubing

Specifications

Material St 37.4 steel

Tech. Stds. DIN 2391 / 94 / C
DIN 1630 / 84
DIN 2445 / 2 / 74
EN 10204 / 3.1B

Condition cold drawn seamless,
normalised NBK,
phosphated, oiled & capped

Properties tensile 340N/mm² min.
yield 235N/mm² min.
elong. 25% min.
tensile 400N/mm² typical
yield 300N/mm² typical
elong. 38% typical

Pressures are calculated for temperatures up to 120°C. Above that, pressure reductions are necessary

Weldability easy to weld.
Carbon content 0.17% max.
Sulphur content 0.04% max.

Zinc plating Fe / Zn 8c chromate
converted, 8 to 12 micron.
DIN 50961
AS 1789 - 1984



PART NO. metric CDS phosphated	PART NO. metric CDS zinc plated	SIZE	DESIGN WORKING PRESSURE	BURST PRESSURE	WEIGHT kg / m
10004X075	-	4 x 0.75	500	2040	0.060
10006X100	10006X100ZP	6 x 1	440	1700	0.123
10008X100	10008X100ZP	8 x 1	330	1130	0.173
10008X150	10008X150ZP	8 x 1.5	500	2040	0.240
10010X100	10010X100ZP	10 x 1	280	900	0.222
10010X150	10010X150ZP	10 x 1.5	420	1540	0.314
10012X100	-	12 x 1	235	720	0.271
10012X150	10012X150ZP	12 x 1.5	350	1200	0.389
10012X200	10012X200ZP	12 x 2	470	1800	0.493
10014X200	-	14 x 2	400	1440	0.592
10015X150	10015X150ZP	15 x 1.5	280	900	0.500
10016X150	1016X150ZP	16 x 1.5	260	830	0.540
10016X200	10016X200ZP	16 x 2	350	1200	0.691
10016X250	-	16 x 2.5	440	1630	0.832
10018X150	10018X150ZP	18 x 1.5	240	720	0.610
10018X200	-	18 x 2	310	1030	0.788
10020X200	10020X200ZP	20 x 2	280	900	0.960
10020X250	10020X250ZP	20 x 2.5	350	1200	1.080
10022X200	10022X200ZP	22 x 2	260	800	0.986
10022X300	-	22 x 3	380	1350	1.406
10025X200	10025X200ZP	25 x 2	230	680	1.135
10025X250	-	25 x 2.5	280	900	1.423
10025X300	10025X300ZP	25 x 3	340	1130	1.630
10025X400	-	25 x 4	450	1690	2.070
10028X150	-	28 x 1.5	150	430	0.995
10028X200	-	28 x 2	200	610	1.280
10030X300	10030X300ZP	30 x 3	280	900	2.000
10030X400	10030X400ZP	30 x 4	380	1300	2.570
10035X250	-	35 x 2.5	200	600	2.018
-	10035X300ZP	35 x 3	240	745	2.400
10035X350	-	35 x 3.5	280	900	2.776
10038X400	-	38 x 4	300	960	3.350
10038X500	10038X500ZP	38 x 5	370	1270	4.070
10042X300	10042X300ZP	42 x 3	200	600	2.890
10042X400	-	42 x 4	270	845	3.750

Specifications

Material	316/316L stainless steel 1.4435	
Tech. Stds.	ASTM A269 D4/T3 ASTM A213 AW DIN 17458 TC 1 ISO 1127	
Condition	cold drawn seamless heat treated in accordance with DIN 17458 Table 6 plugged or capped	
Properties	tensile	500N/mm ² min.
	yield	220N/mm ² min.
	elong.	45% min.
	tensile	590N/mm ² typical
	yield	300N/mm ² typical
	elong.	47% typical
	hardness	RB 80 max before working
Weldability	easy to weld carbon content 0.03% max.	

Pressures are calculated at 50°C. For higher temperatures, the values should be reduced by the following: at 100°C 11%
at 200°C 21%



“Stauff Clean” Tube Cleaning System



Stauff Clamps for Tube Support



Stauff Tube Manipulation Service

metric stainless steel tubing

PART NUMBER	SIZE	DESIGN WORKING PRESSURE	BURST PRESSURE	WEIGHT kg / m
E10006X100	6 X 1	375	2120	0.125
E10006X150	6 X 1.5	560	4200	0.173
E10008X100	8 X 1	280	1415	0.175
E10008X150	8 X 1.5	420	2550	0.244
E10008X200	8 X 2	595	4500	0.300
E10010X100	10 X 1	240	1120	0.225
E10010X150	10 X 1.5	360	1930	0.319
E10012X100	12 X 1	200	900	0.275
E10012X150	12 X 1.5	300	1500	0.394
E10012X200	12 X 2	400	2250	0.501
E10014X200	14 X 2	340	1800	0.601
E10015X150	15 X 1.5	240	1120	0.507
E10016X150	16 X 1.5	220	1040	0.546
E10016X200	16 X 2	300	1500	0.701
E10016X250	16 X 2.5	370	2040	0.845
E10018X100	18 X 1	130	560	0.428
E10018X150	18 X 1.5	200	900	0.620
E10018X200	18 X 2	265	1280	0.801
E10020X200	20 X 2	240	1120	0.901
E10020X250	20 X 2.5	300	1500	1.095
E10022X200	22 X 2	220	1000	1.002
E10025X100	25 X 1	95	390	0.642
E10025X250	25 X 2.5	240	1120	1.408
E10025X300	25 X 3	285	1420	1.653
E10028X200	28 X 2	170	750	1.302
E10030X300	30 X 3	240	1120	2.028
E10030X400	30 X 4	320	1640	2.605
E10035X200	35 X 2	135	580	1.653
E10038X300	38 X 3	190	840	2.982
E10038X500	38 X 5	310	1610	4.131
E10042X300	42 X 3	170	750	2.930

imperial stainless steel tubing

PART NUMBER	SIZE	DESIGN WORKING PRESSURE	BURST PRESSURE	WEIGHT kg / m
E1000635X089	1/4" (6.35) x 0.89 (20G)	330	1750	0.122
E100635X124	1/4" (6.35) X 1.24 (18G)	460	2880	0.169
E100635X165	1/4" (6.35) X 1.65 (16G)	620	4870	0.181
E1000795X089	5/16" (7.95) X 0.89 (20G)	260	1290	0.165
E1000953X089	3/8" (9.53) X 0.89 (20G)	220	1030	0.193
E1000953X124	3/8" (9.53) X 1.24 (18G)	310	1580	0.257
E1000953X165	3/8" (9.53) X 1.65 (16G)	410	2370	0.326
E100127X089	1/2" (12.7) X 0.89 (20G)	170	730	0.268
E100127X124	1/2" (12.7) X 1.24 (18G)	230	1070	0.356
E100127X165	1/2" (12.7) X 1.65 (16G)	310	1570	0.456
E1001905X124	3/4" (19.05) X 1.24 (18G)	150	660	0.553
E100254X165	1" (25.4) X 1.65 (16G)	155	670	0.982

Seamless Tubing

imperial, carbon steel, phosphated tubing and zinc plated tubing

PART NO. Imperial CDS phosphated	PART NO. Imperial CDS zinc plated	SIZE	DESIGN WORKING PRESSURE	BURST PRESSURE	WEIGHT
1000635X089	-	1/4" (6.35) X 0.89 (20G)	400	1400	0.122
1000953X122	1000953X122ZP	3/8"(9.53) X 1.22 (18G)	360	1240	0.254
1000953X163	-	3/8"(9.53) X 1.63 (16G)	480	1870	0.322
100127X122	-	1/2"(12.7) X 1.22 (18G)	270	850	0.350
100127X163	100127X163ZP	1/2"(12.7) X 1.63 (16G)	360	1240	0.452
1001588X122	-	5/8"(15.88) X 1.22 (18G)	215	650	0.448
1001588X163	1001588X163ZP	5/8"(15.88) X 1.63 (16G)	290	930	0.582
1001905X163	1001905X163ZP	3/4"(19.05) X 1.63 (16G)	240	740	0.711
1001905X203	-	3/4" (19.05) X 2.03 (14G)	300	985	0.858
100254X203	100254X203ZP	1" (25.4) X 2.03 (14G)	230	700	1.230
100318X264	-	1 1/4" (31.8) X 2.64 (12G)	230	720	1.980
-	100318X325ZP	1 1/4" (31.8) X 3.25 (10G)	290	920	2.312
100381X264	-	1 1/2" (38.1) X 2.64 (12G)	195	580	2.383

The specifications for the tubing are the same as that for the metric, carbon steel tubing.

Related products and services

Tube manipulation.

A complete tube manipulation service is available through Stauff. Precision bending using a computer controlled mandrel bender is complemented by the "Walform" tube reshaping process or by flaring as required. Finish plating can also be offered where required. The bending data is stored on disk so that repeat jobs in the future will be exactly the same as the original. Enquire through your local Stauff Branch.



Tube fittings and tube cleaning.

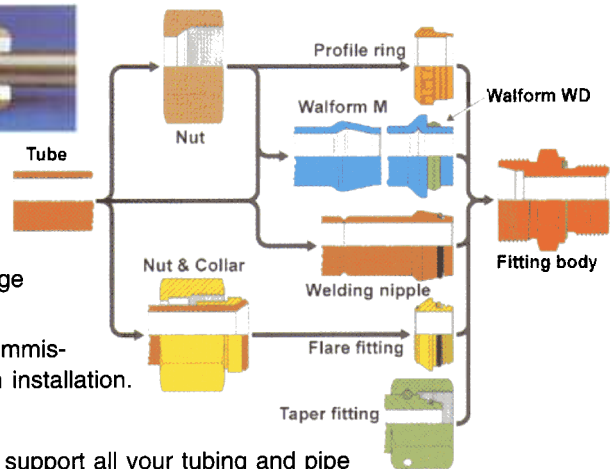
A complete range of tube fittings to suit metric tubing is available for both carbon steel tubing and stainless steel tubing. The range goes from 4mm OD tube through to 42mm OD tube and extends from the popular profile ring type through to the ultra-secure Walform type.

For instrumentation tube sizes, the Let-Lok twin ferrule range of fittings in stainless steel or brass in both Imperial and metric tube sizes give guaranteed security of connection. A complementary range of instrumentation valving supports the fittings and tubing.

The Stauff Clean tube cleaning system cleans the tubing before commissioning and gives the machine designer total confidence in a clean installation.

Tube and Pipe Supports

The well-known Stauff tube and pipe support system is available to support all your tubing and pipe installations to minimise or eliminate vibration, noise and fatigue. A wide variety of mounting methods and a full range of sizes guarantees a trouble-free installation.



For fitting availability, for design assistance, or for system recommendations, talk to your local Stauff representative or Branch. They are able to give you the products and advice that will satisfy your needs completely.



STAUFF CORPORATION PTY LTD

STAUFF CORPORATION (NZ) LTD

HEAD OFFICE

24 - 26 Doyle Avenue
UNANDERRA NSW 2526
P.O. Box 227
UNANDERRA NSW 2526
Tel. (02) 4271 1877
Fax.(02) 4271 8432
E-mail: sales@stauff.com.au
http://www.stauff.com

ADELAIDE

1/3 Endeavour Drive
PORT ADELAIDE SA 5015
P.O. Box 208
PORT ADELAIDE SA 5015
Tel. (08) 8341 2260
Fax.(08) 8341 1604

BRISBANE

463 Boundary Road
RICHLANDS QLD 4077
P.O. Box 20
RICHLANDS QLD 4077
Tel. (07) 3217 0444
Fax.(07) 3217 0300

MELBOURNE

3B 14 - 16 White Street
OAKLEIGH EAST VIC 3166
P.O. Box 453
MULGRAVE VIC 3170
Tel. (03) 9543 5411
Fax.(03) 9543 5422

SYDNEY

27B Davis Road
WETHERILL PARK
NSW 2164
P.O. Box 7180
WETHERILL PARK DC
NSW 2164
Tel. (02) 9725 2733
Fax.(02) 9725 2744

AUCKLAND

Unit J 150 Harris Road
EAST TAMAKI
P.O. Box 58517
GREENMOUNT
Tel. (09) 271 4812
Fax. (09) 271 4832
E-mail: sales@stauff.co.nz



WALTERSCHEID
Rohrverbindungstechnik GmbH

WALTERSCHEID

QUALITÄTS- UND UMWELT-
MANAGEMENTSYSTEM



DQS-zertifiziert nach
DIN EN ISO 9001 DIN EN ISO 14001
Reg.-Nr. 3930-02

WALFORM^{plus}

Rohrverschraubungen

Tube fittings

Raccords de tubes

 **WAL⁺
FORM**

NEU

NEW

NOUVEAU



Die innovative Lösung

WALFORMplus ist ein formschlüssiges Verschraubungssystem und besteht aus lediglich drei Bauelementen: Das maschinell umgeformte Rohrende wird durch einen herkömmlichen DIN-Stutzen und einer DIN-Überwurfmutter formschlüssig verschraubt und der einzig mögliche Leckageweg wird durch einen Elastomerring abgedichtet.

Charakteristisch für die neue Baureihe ist die Stufe an der Planfläche des umgeformten Rohres, die in den 24°-Konus des Stutzens eintaucht. Dies führt zu einer deutlichen Verbesserung des Montageverhaltens und hoher Übermontagesicherheit.

The innovative solution

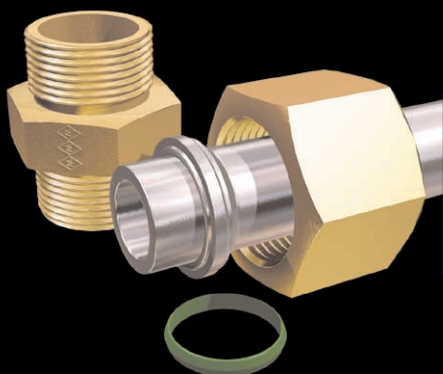
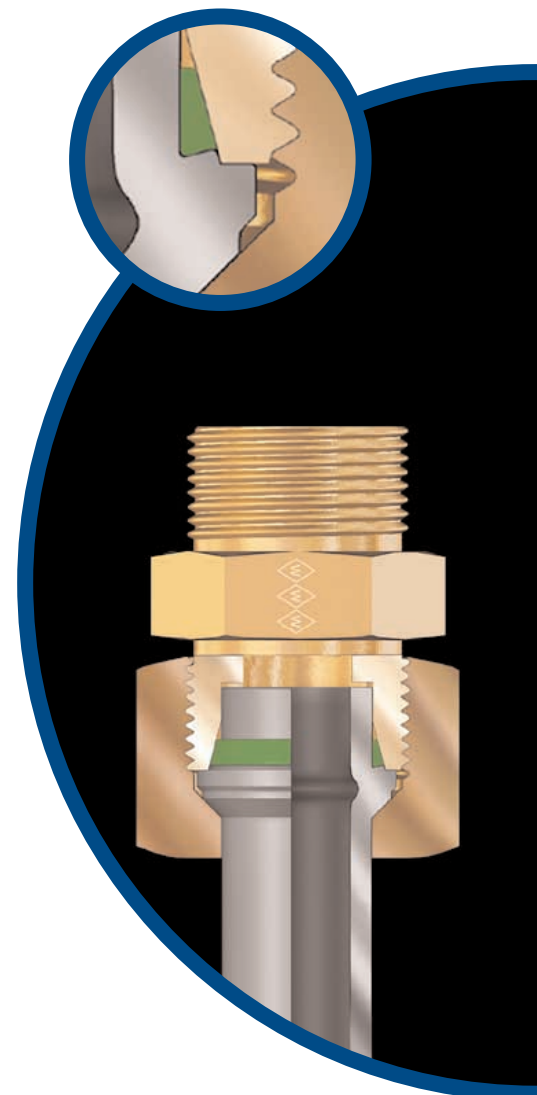
WALFORMplus is a positive tube fitting system that consists of just three components. The mechanically reshaped tube end is positively connected by a conventional DIN fitting body and a DIN nut, the only possible leakage path being sealed off by an elastomer ring.

One characteristic feature of the new series is the shoulder on the end face of the reshaped tube, which is inserted into the 24° cone of the body. This results in a marked improvement in assembly behaviour and good protection against excessive tightening.

La solution innovante

WALFORMplus est un système innovant de raccords sécants se composant uniquement de trois éléments: L'extrémité de tube formée à la machine est vissée par blocage mécanique d'un corps de raccord DIN traditionnel et d'un écrou DIN. La seule voie de fuite possible est étanchéifiée par un joint élastomère.

La particularité de cette nouvelle série est le gradin de la surface plane du tube formé qui s'engage dans le cône de 24° du corps de raccord. Cet avantage assure une nette amélioration du montage et une haute sécurité contre tout serrage excessif.



WALFORMplus besteht aus
lediglich drei Bauelementen:

Verschraubungsstutzen
Überwurfmutter
Weichdichtung

WALFORMplus consists of
just three components:

Fitting body
Nut
Captive seal



Sicheres formschlüssiges Halten der Rohre
Reliable, form-fitting tube retention
Ancrage sûr du tube par blocage mécanique



Absolute Dichtheit der Verschraubung
Absolutely leak-proof connecting points
Étanchéité absolue des points de jonction



Geringe Kosten
Low costs
Frais limités



Hohe dynamische Festigkeit
High pressure surge resistance
Haute résistance aux impulsions des pression



Einfache praxisingerechte Montage
Simple, practical assembly
Montage simple et éprouvé dans la pratique



Sicherheit und Wirtschaftlichkeit

WALFORMplus garantiert aufgrund der Formschlüssigkeit sicheren Halt selbst bei hohen dynamischen Belastungen. Die einfache, praxisingerechte Montage, die von jedermann durchführbar ist, ermöglicht eine deutliche Kostensenkung. Weitere Sparpotenziale entstehen, da Vormontage und andere Zusatzoperationen entfallen. Zusätzlich verringern sich Material- und Logistikkosten aufgrund der wenigen Bauteile.

Safety and economy

As a result of the positive fit, WALFORMplus guarantees reliable tube retention, even under high dynamic loads. The assembly process is simple and practical, can be carried out by anyone and substantially reduces costs. Additional savings can be derived from the fact that pre-assembly and other auxiliary operations are unnecessary. Moreover, the small number of components reduces material and logistics costs.

Sécurité et rentabilité

WALFORMplus garantit, grâce à son blocage mécanique, un ancrage sûr et supporte même des charges dynamiques élevées. Le montage simple et éprouvé dans la pratique, pouvant être effectué par tout un chacun, permet une nette réduction des coûts. D'autres possibilités d'économies sont réalisables grâce à la suppression du pré-sertissage et d'autres opérations supplémentaires. De plus, la diminution du nombre de pièces permet de réduire les frais de matériaux et de logistique.

WALFORMplus se compose
uniquement de trois éléments:

Corps du raccord
Ecrou
Joint mou



Rationelle Umformung Einfache praxisgerechte Montage

Verwendbare Rohrwandstärken

• Stahl (St 37.4/52.4)

Suitable tube wall thicknesses

• Steel (St 37.4/52.4)

Epaisseurs de paroi du tube utilisables

• Acier (St 37.4/52.4)

WALFORMplus mit Weichdichtung with captive seal / avec joint mou

Größe Size Taille	Wandstärke · Wall thickness Epaisseur de paroi · [mm]								
	1	1,5	2	2,5	3	3,5	4	5	6
6									
8									
10									
12			●						
15		●	●	●					
16			●	●					
18			●	●					
20			●	●					
22			●	●					
25			●	●					
28			●	●	●				
30				●	●				
35					●				
38					●		●		
42					●	●	●		

Handelsübliche Hydraulikrohre, Werkstoff

St 37.4 gemäß DIN 1630, NBK-3. Maße und Toleranzen nach DIN 2391-C.

Commercial hydraulic tube, material St 37.4 according to DIN 1630, NBK-3. Dimensions and tolerances according to DIN 2391-C.

Tube hydraulique courant, matériau St 37.4 suivant DIN 1630, NBK-3. Dimensions et tolérance suivant DIN 2391-C.

Verwendbare Rohrwandstärken –

Nichtrostender Stahl (1.4571)

Suitable tube wall thicknesses –

Stainless steel (1.4571)

Epaisseurs de paroi du tube utilisables –

Acier spécial inoxydable (1.4571)

WALFORMplus mit Weichdichtung with captive seal / avec joint mou

Größe Size Taille	Wandstärke · Wall thickness Epaisseur de paroi · [mm]								
	1	1,5	2	2,5	3	3,5	4	5	6
6									
8									
10									
12									
15		●	●						
16			●	●					
18			●	●					
20			●	●					
22			●	●					
25				●	●				
28			●	●	●				
30				●	●				
35					●				
38					●		●		
42					●	●	●		

Hydraulikrohre aus nichtrostendem Stahl, Werkstoff 1.4571

(X6CrNiMoTi 17122), Ausführungsart m nach DIN 17458.

Maße und Toleranz nach DIN 2391-C.

Stainless steel hydraulic tube, material 1.4571 (X6CrNiMoTi 17122).

Type 'm' according to DIN 17458.

Dimensions and tolerances according to DIN 2391-C.

Tube hydraulique, en acier inox 1.4571 (X6CrNiMoTi 17122).

Type 'm' selon la norme DIN 17458.

Dimensions et tolérances suivant DIN 2391-C.

Umformung ohne Innenabstützung / Reshaping without internal support / Formage sans support intérieur

Umformung mit Innenabstützung / Reshaping with internal support / Formage avec support intérieur

Elektronisch gesteuerte Umformmaschinen sichern die rationelle Produktion bei hoher und gleichbleibender Qualität – sowohl stationär als auch vor Ort

Electronically controlled reshaping machines – both stationary and mobile – guarantee efficient production with consistently high quality.

Formage rationnel: Des machines de formage à commande électronique assurent une production économique ainsi qu'une qualité élevée et constante – non seulement lors de l'application fixe mais aussi mobile.



MEG-WF3/BO

Zur Umformung von Stahlrohren und Rohren aus nicht rostendem Stahl mit Rohr-AD 6 bis 42 mm. Durch einfachen Werkzeugwechsel kann diese Maschine auch als Bördelmaschine für Walterscheid-37°-SAE-Bördelflanschen bis 101,6 mm verwendet werden.

For reshaping steel tubes and stainless steel tubes with a tube OD of 6 to 42 mm. Simply by changing the tools, this machine can also be used as a flaring machine for Walterscheid 37° SAE flared flanges up to 101.6 mm.

Machine pour le formage de tubes en acier et de tubes en acier inox de 6 à 42 mm de diamètre extérieur. Un simple changement d'outil permet également d'en faire une machine à évaser pour les brides d'évasement Walterscheid-37°-SAE jusqu'à 101,6 mm.



MEG-WF2/BO

Zur Umformung von Stahlrohren mit Rohr-AD 6 bis 42 mm und Rohren aus nicht rostendem Stahl mit Rohr-AD 6 bis 30 x 3 mm. Durch einfachen Werkzeugwechsel kann die Maschine MEG-WF2/BO auch als Bördelmaschine für Walterscheid-37°-SAE-Bördelflansche in den Größen bis 60,3 mm verwendet werden.

For reshaping steel tubes with a tube OD of 6 to 42 mm and stainless steel tubes with a tube OD of 6 to 30 x 3 mm. Simply by changing the tools, the MEG-WF2/BO machine can also be used as a flaring machine for Walterscheid 37° SAE flared flanges with sizes of up to 60.3 mm.

Machine pour le formage de tubes en acier de 6 à 42 mm de diamètre extérieur et de tubes en acier inox de 6 à 30 x 3 mm de diamètre extérieur. Un simple changement d'outil permet également de faire de la machine MEG-WF2/BO une machine à évaser pour brides d'évasement Walterscheid-37°-SAE pour les tailles allant jusqu'à 60,3 mm.

Efficient reshaping Simple, practical assembly

Formage rationnel – Montage simple et éprouvé dans la pratique

Ein Plus für Montagefreundlichkeit: Stark reduzierter Montageaufwand und garantiert reproduzierbare Montageergebnisse

Die einzigartige WALFORMplus-Geometrie ermöglicht eine praxismgerechte Montage, wobei das Montageende durch einen deutlich spürbaren Kraftanstieg angezeigt wird. Die zu leistende Montagearbeit beträgt, bedingt durch den geringen Montageweg sowie das niedrige Montagedrehmoment, nur einen Bruchteil herkömmlicher Rohrverschraubungssysteme. Das Suchen anderer Anhaltspunkte und das Einhalten bestimmter Montagewinkel entfällt. Optional kann die Montage auch drehmomentbezogen erfolgen.

A gain for ease of assembly: greatly reduced assembly effort and assembly results that are guaranteed to be reproducible

The unique **WALFORMplus** geometry permits practical assembly, where the end of assembly is indicated by a noticeable increase in force. As a result of the short travel and low torque, the required assembly work is only a fraction of that for conventional tube fitting systems. There is no need to look for other indications or comply with specific angles. Optionally, the assembly process can also be based on the torque.

Un atout facilitant le montage: une forte réduction des frais de montage et des résultats de montage reproductibles garantis

La géométrie du raccord **WALFORMplus**, unique en son genre, permet un montage éprouvé dans la pratique. La fin de montage est indiquée par un effort nettement plus élevé. En fonction de la course de montage courte et du faible couple de montage, l'opération de montage ne représente qu'une fraction par rapport aux systèmes de raccordement de tubes traditionnels. La recherche d'autres points de repère et le respect d'un angle de montage déterminé sont devenus inutiles. En option, le montage peut également s'effectuer en fonction du couple.

Montagevorteile

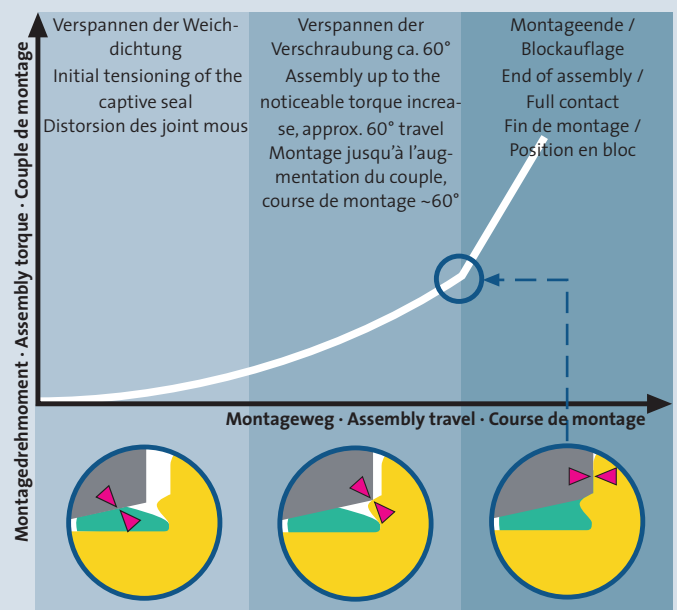
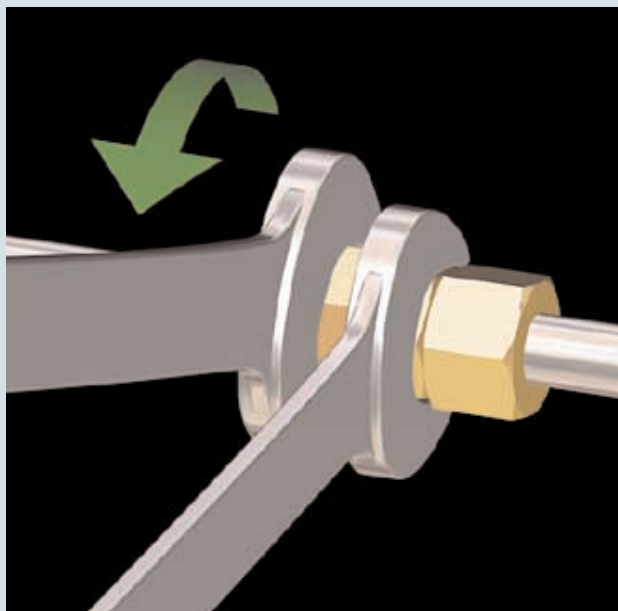
- Deutlich geringere Anzugsdrehmomente
- Kurzer Montageweg
- Deutlich spürbarer Drehmomentanstieg
- Hohe Sicherheit gegen Übermontage
- Beliebige Wiederholmontage

Assembly advantages

- Considerably lower tightening torques
- Short assembly travel
- Noticeable torque increase
- Reliable protection against excessive tightening
- Repeat assembly any number of times

Les avantages de montage

- Couples de serrage nettement plus faibles
- Courses de montage courtes
- Augmentation du couple nettement sensible
- Haute sécurité contre tout serrage excessif
- Remontage facultatif





Sichere Rohrhalterung

Das System gewährleistet durch den Formschluss absolute Sicherheit auch bei extremsten Belastungen. Selbst bei Unter- oder Übermontage ist eine sichere Rohrhalterung gewährleistet, ein Herausrutschen des Rohres ist ausgeschlossen.

Reliable tube retention

As a result of the positive connection, the system guarantees absolute reliability, even under extreme loads. Reliable tube retention is ensured even in the event of insufficient or excessive tightening – the tube cannot slip out.

Ancrage sûr du tube

Grâce au blocage mécanique, ce système est à même de supporter des charges extrêmes en toute sécurité. Un ancrage sûr du tube est également assuré en cas de serrage insuffisant ou excessif, une sortie du tube est également exclue.

Hohe dynamische Belastbarkeit

Durch die computeroptimierte Geometrie des umgeformten Rohres erreichen wir Spitzenwerte im Bereich der dynamischen Belastungen wie Biegewechsel- und Druckimpulsfestigkeit. Das WALFORM-System hat sich bereits in der Praxis und in umfangreichen Versuchen millionenfach bewährt.

High dynamic load-bearing capacity

Due to the computer-optimised geometry of the reshaped tube, outstanding values are achieved as regards dynamic stresses, e.g. for fatigue strength under reversed bending stresses and for pressure surge resistance. The WALFORM system has already proven its worth millions of times, both in the field and in exhaustive tests.

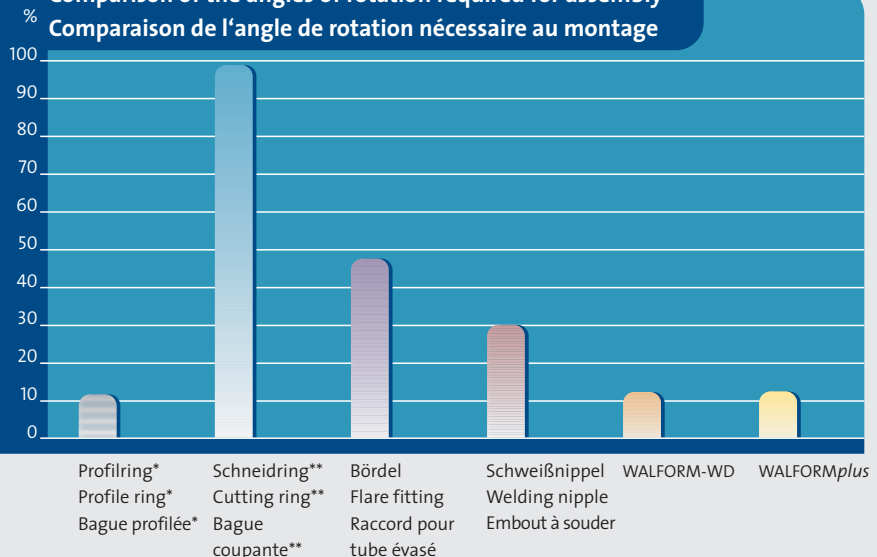
Haute résistance à la sollicitation dynamique

Grâce à une géométrie optimisée par ordinateur du tube formé, les valeurs obtenues en sollicitations dynamiques, telles que la résistance à la flexion alternée et la résistance aux impulsions de pression sont optimales. Le système WALFORM a déjà fait des millions de fois ses preuves dans la pratique courante et au cours d'essais de grande envergure.

Vergleich der erforderlichen Montagedrehwinkel

Comparison of the angles of rotation required for assembly

Comparaison de l'angle de rotation nécessaire au montage





Absolute Dichtheit

Die Abdichtung des einzig möglichen Leckagepfades erfolgt primär über die bewährte **WALFORMplus**-Weichdichtung und sekundär über die metallische Abdichtung zwischen patentierter **WALFORMplus**-Stufe und Verschraubungsstutzen.

Absolutely leak-proof

The only possible leakage path is primarily sealed off by the tried-and-tested **WALFORMplus** captive seal and secondarily by the metallic seal between the patented **WALFORMplus** shoulder and the fitting body.

Étanchéité absolue

L'étanchéité de la seule voie de fuite possible s'effectue dans un premier temps au moyen du joint mou éprouvé **WALFORMplus** et, dans un deuxième temps, au moyen du joint métallique situé entre le gradin breveté **WALFORMplus** et le corps du raccord.

Hohe Nenndruckstufen

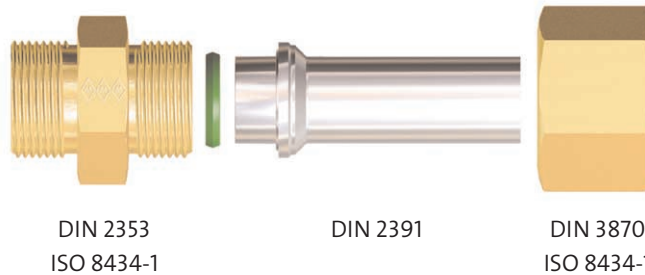
Wir garantieren Nenndruckstufen bis 800 bar für **WALFORMplus**-Verschraubungsteile bei 4facher Sicherheit und hundertprozentige Ausreißfestigkeit aufgrund der einzigartigen Ausformung.

High nominal pressure classes

We guarantee nominal pressure classes up to 800 bar for **WALFORMplus** tube fitting components, a safety factor of up to 4 and 100% stripping resistance as a result of the unique shape.

Paliers de pressions nominales élevées

Nous garantissons pour les composants du raccord **WALFORMplus** des paliers de pressions nominales élevées jusqu'à 800 bar, une sécurité quadruplée et une résistance à l'arrachement de cent-pourcent grâce à leur formage unique.



Bei Anwendungen mit aggressiven Medien oder hohen Temperaturen bietet Walterscheid die **WALFORM**-Verschraubung auch metallisch dichtend an.

Walterscheid also offers the **WALFORM** tube fitting with a metallic seal for use with aggressive media or at high temperatures.

En cas d'utilisation de fluides corrosifs ou à hautes températures, Walterscheid propose également le raccord **WALFORM** à étanchéité par arête métal.

Ein weltweit führender Hydraulik-Anbieter nutzt die Neuentwicklung bereits als Rohrverbindungssystem in einem Bereich, der besonders hohe Anforderungen an die Sicherheitsreserven stellt.

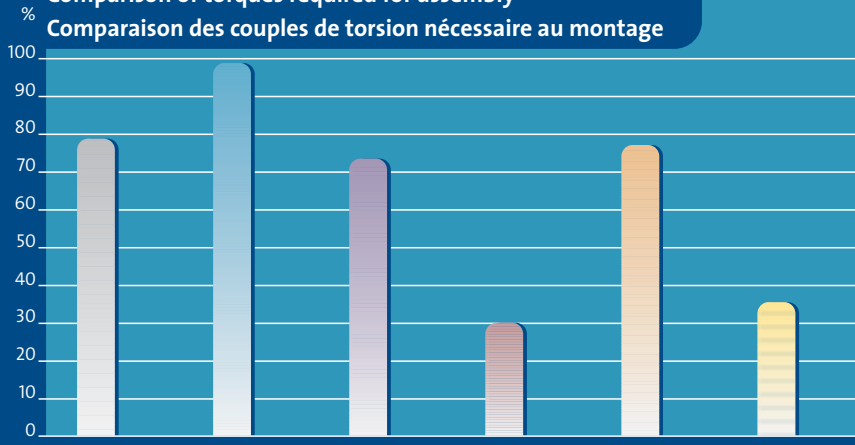
One of the world's leading suppliers of hydraulic equipment already uses the new development as the tube connection system in a field that imposes particularly stringent demands on safety reserves.

Un des leaders mondiaux d'installations hydrauliques utilise déjà ce produit comme système de raccordement de tubes dans un secteur devant répondre à des exigences particulièrement élevées en matière de réserves de sécurité.

Vergleich der erforderlichen Montagedrehmomente

Comparison of torques required for assembly

Comparaison des couples de torsion nécessaire au montage



Profilring*
Profile ring*
Bague profilée*

Schneidring**
Cutting ring**
Bague coupante**

Bördel
Flare fitting
Raccord pour tube évasé

Schweißnippel
Welding nipple
Embout à souder

WALFORM-WD

WALFORMplus

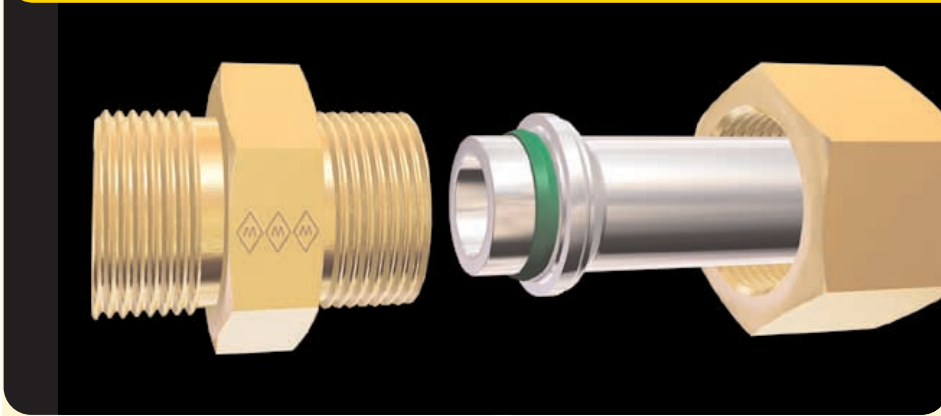
*nach gesteuerter Endmontage
*after controlled final assembly
*après montage final contrôlé

**mit und ohne Weichdichtung
** with and without captive seal
**avec ou sans joint mou

WALFORMplus Rohrverschraubungen

WALFORMplus Tube fittings

WALFORMplus Raccords de tubes



Ein Plus an Wirtschaftlichkeit

- wenige Teile (reduziert Material- und Logistikkosten)
- preiswert
- Montage ohne Fachkräfte
- keine Vor- und Nacharbeiten nötig

A gain in economy

- Few parts (reduced material and logistics costs)
- Inexpensive
- No skilled staff needed for assembly
- No preliminary or follow-up work required

Un atout pour la rentabilité

- nombre réduit de pièces (réduction des frais de matériaux et de logistique)
- prix avantageux
- montage n'exigeant pas de spécialistes
- pas de travail préparatoire ni postérieur

Ein Plus an Sicherheit durch Formschluss

- fest/druckfest
- absolut dicht
- verzeiht Montagefehler

A gain in safety due to positive connection

- Secure / Pressure-resistant
- Absolutely leak-proof
- Tolerates assembly errors

Un atout pour la sécurité grâce au blocage mécanique

- fixe/résistant à la pression
- absolument étanche
- pardonne les erreurs de montage



Ein Plus an Montagefreundlichkeit

- wenige Trenn-/Dichtstellen
- einfache Montage/eindeutiges Montageende
- kurze Montagezeiten, geringes Drehmoment
- leicht und narrensicher montierbar
- deutlich geringeres Anzugsdrehmoment gegenüber allen Schneidring-Verschraubungssystemen

A gain in easy of assembly

- Few separating/sealing points
- Reliable assembly / Clear end of assembly
- Short assembly times, low torque
- Simple, fool-proof assembly
- Far lower tightening torque compared to all cutting-ring tube fitting systems

Un atout pour la facilité de montage

- nombre réduit de points de séparation/d'étanchéité
- montage simple/fin de montage
- clair et net
- courtes durées de montage, couple réduit
- facile à monter, excluant toute fausse manoeuvre
- couple de serrage nettement plus faible par rapport à tous les systèmes raccords à bague coupante

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Walterscheid
Rohrverbindungstechnik GmbH
Hauptstraße 150 · 53797 Lohmar/Germany
Tel. (0 22 46) 12-0 · Fax (0 22 46) 12-33 00
www.gknwrv.com
wrv.vertrieb@gknagriwal.de

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With the compliments of:
Distribué par:



Hydraulic Accessories

Local solutions for
individual customers
worldwide

STAUFF

Australia:

Stauff Corporation (Pty.) Ltd.
P.O. Box 227
24-26 Doyle Avenue, Unanderra
Wollongong, N.S.W.
AUS-2526 Unanderra
Tel.: + 61 2 42 71 18 77
Fax: + 61 2 42 71 84 32

Brazil:

Stauff Brasil Ltda.
Avenida Gupe 10.767
Galpão 2, Bloco A
WT – Empresarial Parque
Castello Branco
BRA-Barueri – SP
CEP: 06422-120
Tel: +55 11 47 89 90 20
Fax: +55 11 47 89 90 21

Canada:

Stauff Canada Ltd.
866 Milner Avenue
CAN-Scarborough, Ontario M1B 5N7
Tel.: + 1 416 282 46 08
Fax: + 1 416 282 30 39

China:

Stauff International Trading
(Shanghai) Co., Ltd.
Shangdian Mansion, Pudong
331, Binzhou Road
CHN-200126 Shanghai
Tel.: + 86 21 58 45 65 60
Fax: + 86 21 58 45 66 80

France:

Stauff s.a.
230, Avenue du Grain d'Or
Z.I. de Vineuil-Blois Sud
F-41354 Vineuil-cedex
Tel.: + 33 2 54 50 55 50
Fax: + 33 2 54 42 29 19

India:

Stauff India Pvt. Ltd.
Gat. No. 2340
Pune-Nagar Road, Wagholi
IND-Pune - 412207
Tel.: + 91 20 705 19 90
Fax: + 91 20 705 19 89

Italy:

Stauff Italia s.r.l.
Via Pola 21/23
I-20034 Birone di Giussano
Tel.: + 39 0362 31 21 13
Fax: + 39 0362 33 55 36

New Zealand:

Stauff Corporation (NZ) Ltd.
Unit J. 150 Harris Road
P.O. Box 58517
Greenmount Auckland
Tel.: + 64 9 271 4812
Fax: + 64 9 271 4832

United Kingdom:

Stauff UK
332, Coleford Road
Darnall
GBR-Sheffield, S9 5PH
Tel.: + 44 1142 518 518
Fax: + 44 1142 518 519

USA:

Stauff Corporation
7 Wm. Demarest Place
USA-Waldwick, N.J. - 07463
Tel.: + 1 201 444 78 00
Fax: + 1 201 444 78 52

Walter Stauffenberg GmbH & Co. KG

P.O.Box 17 45 · D-58777 Werdohl
Im Ehrenfeld 4 · D-58791 Werdohl
Tel.: + 49 (0) 2392 916-0
Fax: + 49 (0) 2392 2505
e-mail: sales@stauff.com
Internet: <http://www.stauff.com>

- **Comprehensive choice**
- **Immediate delivery**
- **High quality standard**

The STAUFF hydraulic accessories programme has been carefully designed to offer a range of components suited to the demands of building hydraulic systems in most industrial and mobile applications.

Whether you require simple filler breathers or precise electrical level switches, flow control valves or complete filter units; the STAUFF accessories range should provide you with the choice you need.

At Stauff we are aware of the ongoing development and innovation within the hydraulic industry. We strive to keep up with and further develop the latest technology and to bring the benefit of any such improvements directly to the customer.

Additionally we are always prepared to consider custom built products, if you have a special need.

We ensure that your most urgent requirements are met by keeping a large and comprehensive stockholding both in Germany and in our overseas locations.

These products are subject at all times to our DIN ISO 9001 Quality Management Systems.

Distributors and warehouses in all industrial countries.

STAUFF-Hydraulikzubehör	Seite
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Level Gauges SNK	5
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Level-Temperature Switches SLTS	7
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Throttle and Flow Control Valves DVP/DRVP (Manifold mounting)	9
Throttle Valves DVE (Cartridge assembly)	10
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inclusive accessories: adaptor plates (AP), contamination indicator (FM), drying agent refilling material (RD), replacement air filter inserts (SGB)	
Giant Air Breathers SGB	24
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Spin-on Filters	33

In the past you found information about our Spin-on-filters product range here.
 This information now has been summarized in our new catalogue "Spin-on-filters", please contact STAUFF or
 your local distributor for your personal copy.
 On page 33 in this brochure you will find a short overview.



Area of Application:

Visual fluid level indication in hydraulic reservoirs

Characteristics:

- suitable for hydraulic oil HL and HLP
- option available with dial thermometer with probe or thermo switch (Page 6)
- UV-resistant

Please consult our office before you use SNA with fluids such as biological oils, diesel fluids or gasoline. Special requirements on request.

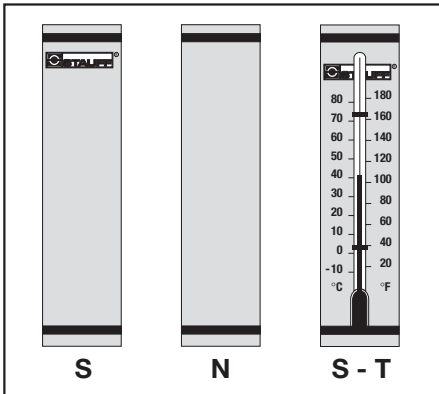
Technical Data:

Temperature range: -20°C ... +80°C
 Calibration of capillary tube thermometer:
 SNA 076 +20°C ... +80°C
 SNA 127/176/254 -10°C ... +80°C
 Calibration of dial thermometer with probe:
 0°C ... +100°C
 Tank pressure: 1 bar max
 Recommended tightening torque: 8 Nm

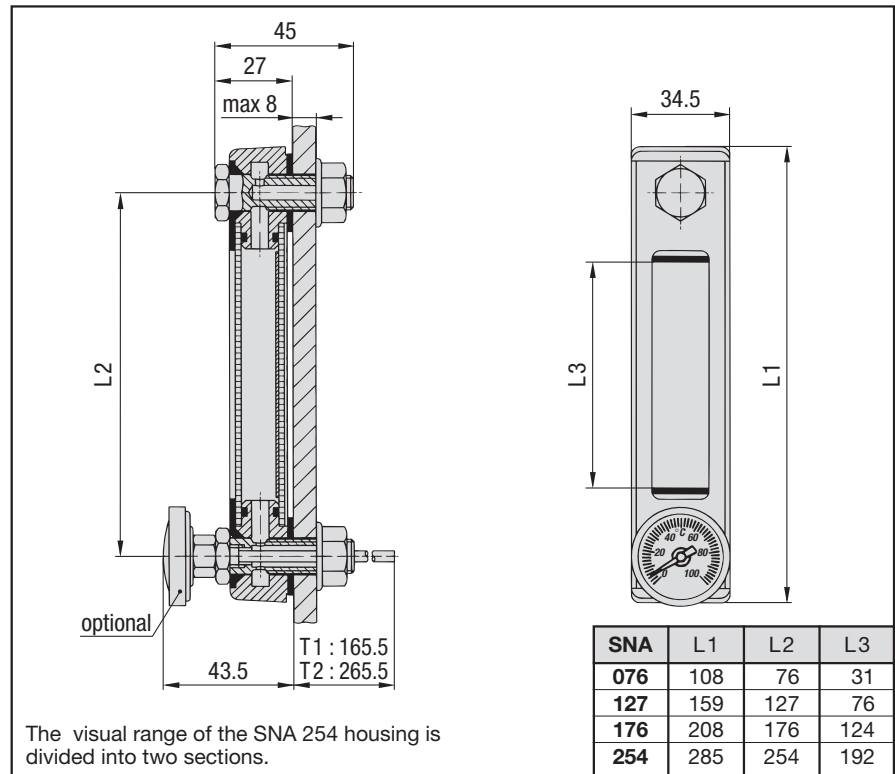
Materials:

Housing: St 12 (black epoxy)
 Plugs, Sight tube: PA
 Scale Plates: PVC

Design of scale plates



Dimensions



Ordering Code

SNA 127 B - S - T1 - 12 - O60

Type SNA						
Series	076	SNA 076				
	127	SNA 127				
	176	SNA 176				
	254	SNA 254				
Seal material	B	NBR (standard)				
	V	FPM				
Design of scale plate	S	with STAUFF-Logo				
	N	neutral				
	X	Special executions				
					Thermo Switch for size M12 only not in conjunction with thermometer T1 and T2	
					(none) without thermo switch	
					O60 TS-SNA/SNK-O-60	
					O70 TS-SNA/SNK-O-70	
					O80 TS-SNA/SNK-O-80	
					Banjo bolts	
					12 M12 (standard)	
					10 M10	
					Thermometer Dial thermometer with probe T1/T2 for size M12 only	
					O without thermometer	
					T Capillary tube thermometer on scale plate	
					T1 Dial thermometer with 200 mm probe	
					T2 Dial thermometer with 300 mm probe	



Area of Application:

Visual / electrical fluid level indication in hydraulic reservoirs

Characteristics:

- suitable for hydraulic oil HL and HLP
- option available with dial thermometer with probe or thermo switch (Page 6)
- UV-resistant
- available either as a break contact (Type O) or make contact (Type C)
- with plug according to DIN EN 175301-803-B/ISO6952 (industry standard) or with plug according to desina standard (type CD and OD)

Please consult our office before you use SNK with fluids such as biological oils, diesel fluids or gasoline. Special requirements on request.

Technical Data:

Temperature range: $-20^{\circ}\text{C} \dots +80^{\circ}\text{C}$
 Calibration of dial thermometer with probe:
 $0^{\circ}\text{C} \dots +100^{\circ}\text{C}$
 Tank pressure: 1 bar max
 Recommended tightening torque: 8 Nm
 Please allow a minimum spacing of 10 mm between other components.

Materials:

Housing: AL (plastic coated)
 Plugs, Sight tube: PA
 Float: PA

Electrical Connections and Functions

Contact load:
 max 10 W (Type C)
 max 5 W (Type O)

Bias-reducing Potential:
 50 V AC/DC

Current contact:
 max 0.25 A (both types)

Protection IP 65
 (IP67 on request)

Connection 3 (type C and O) / connection 4 (type CD and OD) are not engaged

Type C

Type O

Dimensions

standard plug type C or O according to DIN EN 175301-803-B/ISO6952 (industry standard)

plug according to desina standard, type CD or OD

SNK	Typ C+O	L1 Typ CD+OD	L2
127	205	197	127
176	254	246	176
254	332	324	254

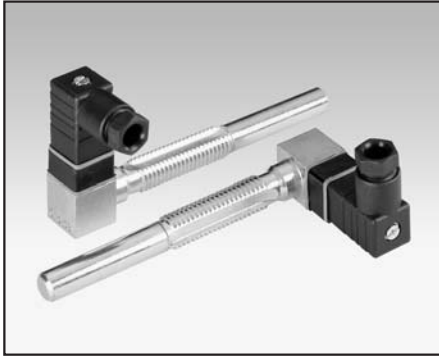
The visual range of the SNK 254 housing is divided into two sections.

Ordering Code

When assembling the electrical contacts the orientation of the electrical switch (right or left hand side) for type C and O can be chosen according to the requirements. For type CD and OD the orientation is set to right hand side. Other requirements on request.

SNK 127 V - C - T1 - 12 - O60

Type		Thermo Switch	
SNK		for size M12 only not in conjunction with thermometer T1 and T2	
Series		(ohne) ohne Thermoschalter	
127	SNK 127	O60	TS-SNA/SNK-O-60
176	SNK 176	O70	TS-SNA/SNK-O-70
254	SNK 254	O80	TS-SNA/SNK-O-80
Seal material		Banjo bolts	
V	FPM (standard)	12	M 12 (standard)
Electrical function		10	M 10
C	Make contact, closes at minimum level (n/o), standard plug	Thermometer	
O	Break contact, opens at minimum level (c/o), standard plug	Dial thermometer with probe T1/T2 for size M12 only	
CD	Make contact, closes at minimum level (n/o), desina plug	O	without thermometer
OD	Break contact, opens at minimum level (c/o), desina plug	T1	Dial thermometer with 200 mm probe
		T2	Dial thermometer with 300 mm probe



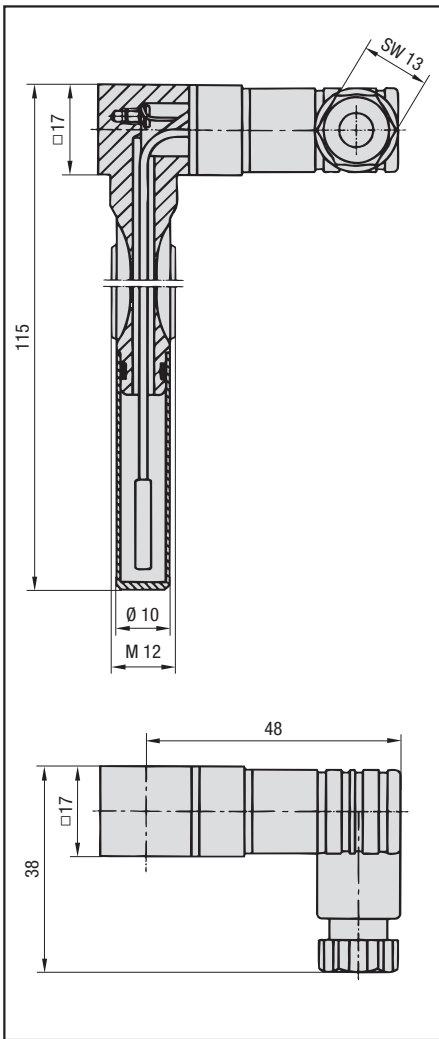
Area of Application: Oil temperature indication in conjunction with STAUFF level gauges SNA and SNK

Characteristics/Materials:

- available with 60°C, 70°C or 80°C switching temperature
- Activation takes place when the respective switching temperature is exceeded.
- Electrical function: break contact
- With plug according to DIN EN 175301-803-B/ISO6952 (industry standard) or with plug according to desina standard (type OD)
- Steel parts made out of steel (1.0718)
- Plastic parts made out of glass fibre reinforced polyamide

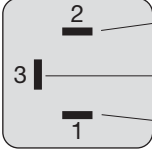
Thermo switches are available for the standard mounting size M 12 only.

Dimensions



Technical Data (Break contact):

Switching temperature:	see ordering code
Hysteresis:	20° C
Switching temperature tolerance:	± 5°C.



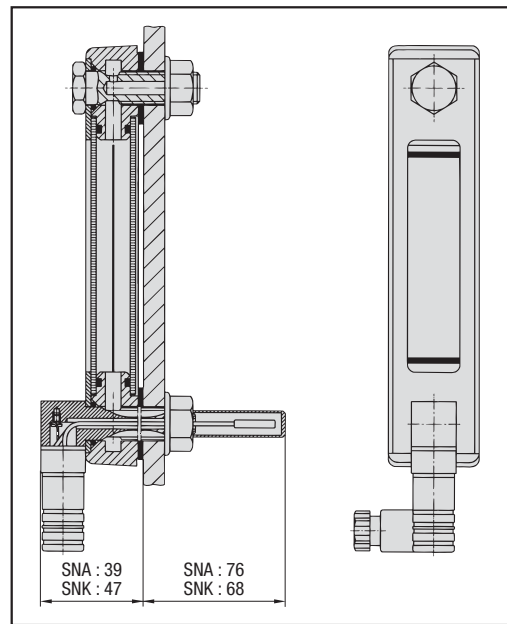
thermostat cable 2

ground cable

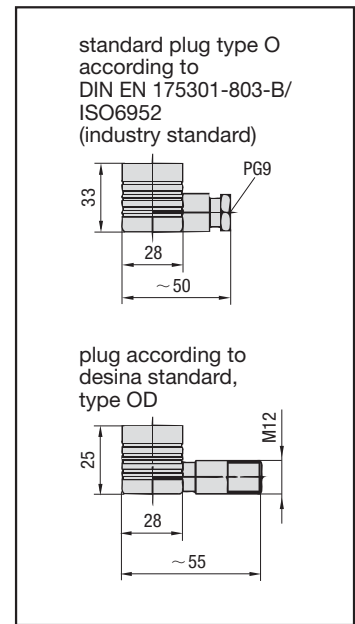
thermostat cable 1

Alternating current	
• max voltage	250 V
• max current at 10.000 operations	2.5 A at cos φ = 1.0 1.6 A at cos φ = 0.6
• max current at 100.000 operations	0.5 A at cos φ = 1.0 0.25 A at cos φ = 0.6
• min voltage	50 mA
Direct current	
• max voltage	42 V
• max current at 10.000 circuits	1 A

Example of application



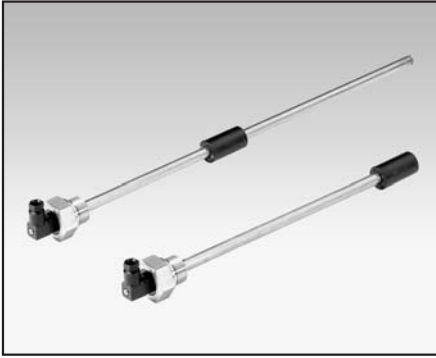
Option plug



Ordering Code and Switching temperatures

TS - SNA / SNK - O - 60																							
<table border="1" style="width: 100%;"> <tr> <td colspan="2">Type</td> </tr> <tr> <td style="width: 20px;">TS</td> <td>Thermo Switch</td> </tr> </table> <table border="1" style="width: 100%;"> <tr> <td colspan="2">Series</td> </tr> <tr> <td style="width: 20px;">SNA / SNK</td> <td></td> </tr> </table>	Type		TS	Thermo Switch	Series		SNA / SNK		<table border="1" style="width: 100%;"> <tr> <td colspan="2">Switching temperature</td> </tr> <tr> <td style="width: 20px;">60</td> <td>60°C / 140°F</td> </tr> <tr> <td>70</td> <td>70°C / 158°F</td> </tr> <tr> <td>80</td> <td>80°C / 176°F</td> </tr> </table> <table border="1" style="width: 100%;"> <tr> <td colspan="2">Electrical function</td> </tr> <tr> <td style="width: 20px;">O</td> <td>Break Contact (n/c), standard plug</td> </tr> <tr> <td>OD</td> <td>Break Contact (n/c), desina plug</td> </tr> </table>	Switching temperature		60	60°C / 140°F	70	70°C / 158°F	80	80°C / 176°F	Electrical function		O	Break Contact (n/c), standard plug	OD	Break Contact (n/c), desina plug
Type																							
TS	Thermo Switch																						
Series																							
SNA / SNK																							
Switching temperature																							
60	60°C / 140°F																						
70	70°C / 158°F																						
80	80°C / 176°F																						
Electrical function																							
O	Break Contact (n/c), standard plug																						
OD	Break Contact (n/c), desina plug																						

Thermo switches can be ordered both as a single component and in combination with STAUFF level gauges SNA and SNK. See pages 4 and 5.



Area of Application:

Electrical level and temperature indication

Characteristics:

- suitable for mineral oil and HFC fluids, other fluids on request
- either 1 or 2 level contacts available
- 1 integrated temperature sensor
- standard electrical function:
 Level contacts: normally closed, opens with falling level
 Temperature contact: normally closed, opens with rising temperature

STAUFF Level-Temperature switches SLTS are available with other electrical functions on request.

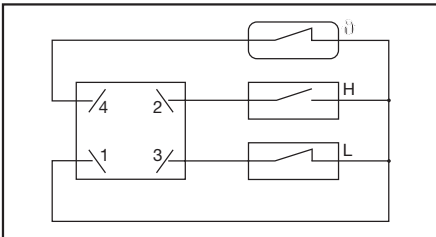
Technical Data

Stem:	Brass
Float:	NBR
max operating temperature:	80°C
max operating voltage:	see ordering code
max current (level contact):	0.5 A
max current (temperature contact):	2.0 A
contact load level contact:	10 VA
system of protection:	IP65
Hysteresis:	12°C

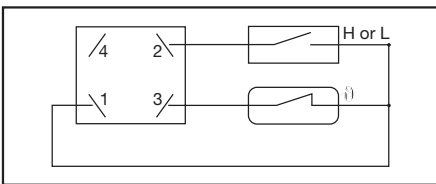
Level contact positions (L, H) are set as given in the chart. They can be adjusted individually later on.

Please consider a minimum distance of 40 mm between the switching points.

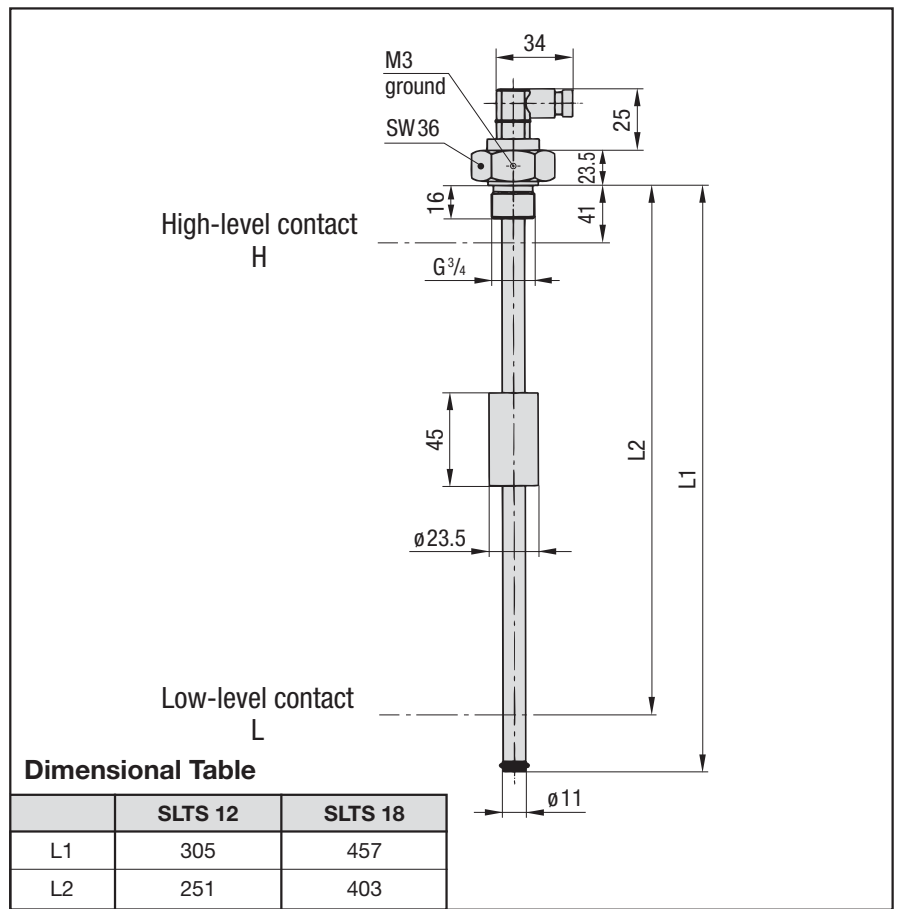
Wiring Scheme for type 2LH



Wiring Scheme for type 1L or 1H



Dimensions



Dimensional Table

	SLTS 12	SLTS 18
L1	305	457
L2	251	403

Ordering Code

SLTS 12 - 140 - 2LH - B12 - G048

<p>Type</p> <table border="1"> <tr> <td>SLTS</td> <td>Level-temperature switch</td> </tr> </table>	SLTS	Level-temperature switch	<p>Voltage (Volt AC/DC)</p> <table border="1"> <tr> <td>G048</td> <td>48 Volt max (standard)</td> </tr> <tr> <td>G115</td> <td>115 Volt max (for thread N16 only)</td> </tr> </table>	G048	48 Volt max (standard)	G115	115 Volt max (for thread N16 only)				
SLTS	Level-temperature switch										
G048	48 Volt max (standard)										
G115	115 Volt max (for thread N16 only)										
<p>Stem Length</p> <table border="1"> <tr> <td>12</td> <td>305 mm</td> </tr> <tr> <td>18</td> <td>457 mm</td> </tr> </table>	12	305 mm	18	457 mm	<p>Thread</p> <table border="1"> <tr> <td>B12</td> <td>G³/₄ (standard)</td> </tr> <tr> <td>N16</td> <td>1 NPT (only on request)</td> </tr> </table>	B12	G ³ / ₄ (standard)	N16	1 NPT (only on request)		
12	305 mm										
18	457 mm										
B12	G ³ / ₄ (standard)										
N16	1 NPT (only on request)										
<p>Switching temperature</p> <table border="1"> <tr> <td>140</td> <td>60°C / 140°F</td> </tr> <tr> <td>158</td> <td>70°C / 158°F</td> </tr> <tr> <td>O</td> <td>without temperature switch</td> </tr> </table>	140	60°C / 140°F	158	70°C / 158°F	O	without temperature switch	<p>Number of level switches</p> <table border="1"> <tr> <td>1</td> <td>1 level switch (L, H)*</td> </tr> <tr> <td>2</td> <td>2 level switch (LH)</td> </tr> </table> <p><small>* please indicate level position(s): L = low, H = high</small></p>	1	1 level switch (L, H)*	2	2 level switch (LH)
140	60°C / 140°F										
158	70°C / 158°F										
O	without temperature switch										
1	1 level switch (L, H)*										
2	2 level switch (LH)										



Area of Application: Fluid control and flow shut off

- DV: in both directions
- DRV: in direction A-B (free flow in reverse direction)

Characteristics / Materials:

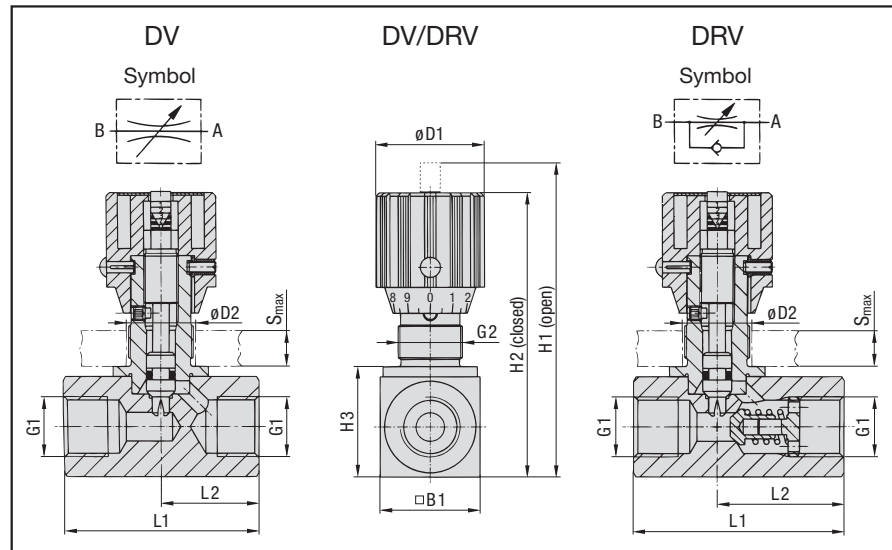
- designed for in-line mounting
- suitable for mineral oil
- Nuts for panel-mounting are available on request
- Housing: Steel (1.0715), zinc-plated (Fe/Zn 8 C)
- Turning knob: Polyamide

Please consult our office before using with other fluids, or for special stainless steel material.

Technical Data:

max Working Pressure p_N : 350 bar
 Temperature t_{max} : 100°C
 Opening Pressure DRV:
 0.5 bar (4.5 bar on request)

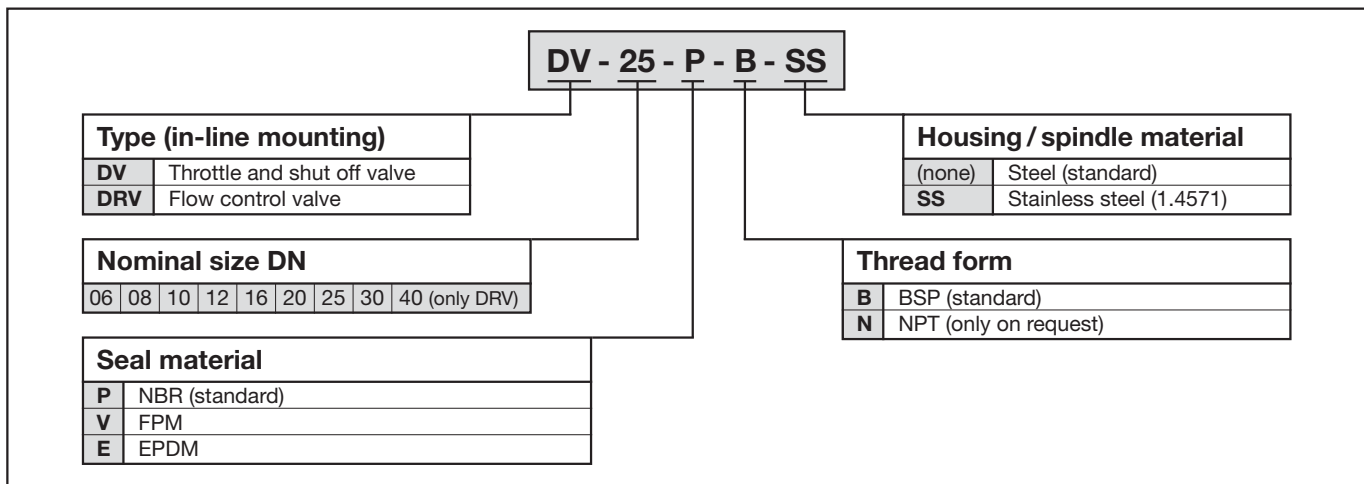
Dimensions



Dimensional Table

Nominal Size DN	G1		DV/DRV								DV			DRV		
	BSP	NPT	G2	H1	H2	H3	B1	D1	D2	S _{max}	L1	L2	wt. (kg)	L1	L2	wt. (kg)
06	G 1/8	1/8 NPT	PG 7	68	63	18	16	24	13	3	38	19	0.12	45	26	0.13
08	G 1/4	1/4 NPT	PG 11	83.5	77.5	27	25	29	19	7	48	24	0.25	55	33.5	0.3
10	G 3/8	3/8 NPT	PG 11	90	83	32	30	29	19	7	58	29	0.4	65	41	0.45
12	G 1/2	1/2 NPT	PG 16	109.5	99.5	38.5	35	38	23	7	68	34	0.7	73	44	0.8
16	G 3/4	3/4 NPT	PG 16	128.5	118.5	48.5	45	38	23	7	78	39	1.2	88	57	1.3
20	G 1	1 NPT	PG 29	174	157	55	50	55	38	11	108	54	2.1	127	77	2.4
25	G 1 1/4	1 1/4 NPT	PG 29	184	167	65	60	55	38	11	108	54	2.8	143	93	3.5
30	G 1 1/2	1 1/2 NPT	PG 29	194	177	75	70	55	38	11	108	54	3.5	143	91	4.6
40	G 2	2 NPT	PG 29	214	197	95	90	55	38	11	-	-	-	165	111	7.7

Ordering Code





Area of Application: Fluid control and flow shut off

- DVP: in both directions
- DRVP: in direction A-B (free flow in reverse direction)

Characteristics / Materials:

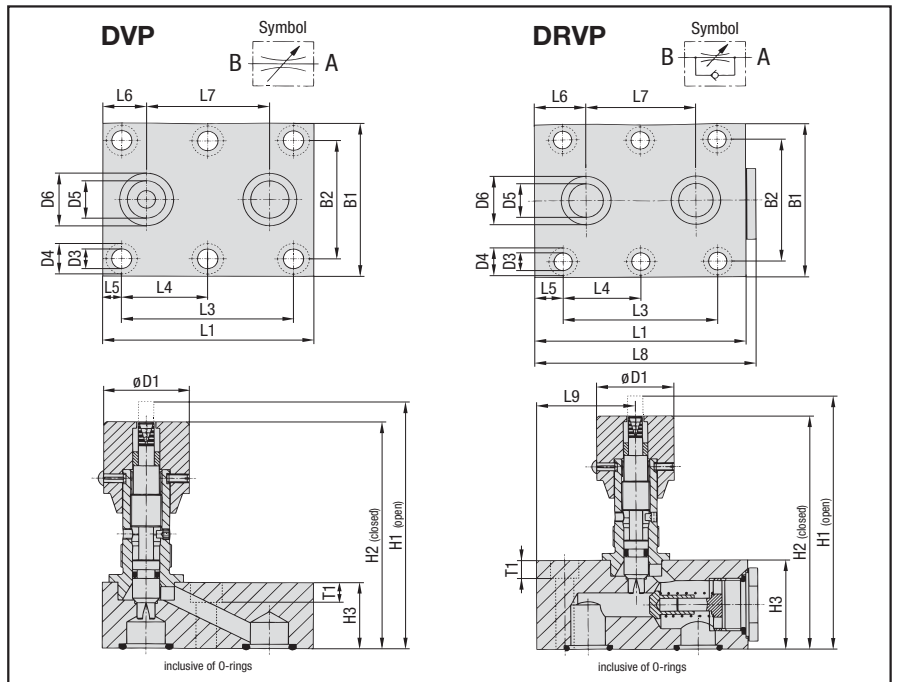
- designed for manifold mounting
- suitable for mineral oils
- Housing: Steel (1.0715), zinc-plated (Fe/Zn 8 C)
- Turning knob: Polyamide

Please consult our office before using with other fluids, or for special stainless steel material.

Technical Data:

max Working Pressure p_N : 350 bar
Temperature t_{max} : 100°C
Opening Pressure DRVP:
0.5 bar (4.5 bar on request)

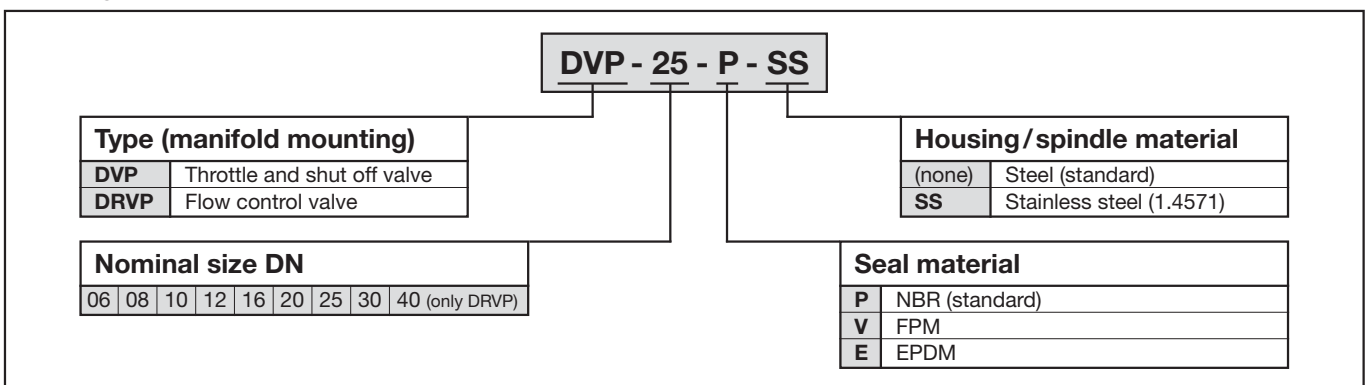
Dimensions



Dimensional Table

Nom. Size DN	DVP and DRVP													DVP							DRVP							
	D1	D3	D4	D5	D6	L3	L4	L7	B1	B2	T1	O-Ring	L1	L5	L6	H1	H2	H3	wt. (kg)	L1	L5	L6	L8	L9	H1	H2	H3	wt. (kg)
06	24	6.6	11	5	9.8	19	-	16	41.5	28.5	7	6.75x1.78	35	8	9.5	68	63	16	0.2	41.5	6.4	8	43	13.5	68	63	16	0.26
08	29	6.6	11	7	12.4	35	-	25.5	46	33.5	7	8.5x2	47.5	6.5	11	79	72	20	0.4	63.5	14.2	16.7	65	31	79	72	20	0.5
10	29	6.6	11	10	15.7	33.5	-	25.5	51	38	7	12x2	51	8.5	12.7	84	78	25	0.6	70	18	22	73	29.5	84	78	25	0.8
12	38	6.6	11	13	18.7	38	-	30	57.5	44.5	7	15x2	75	18.5	22.5	100	89	25	1.0	80	21	25	84	36.5	107	96	32	1.2
16	38	8.5	13.5	17	23.9	76	38	54	70	54	9	19x2.5	93.5	8.5	19.5	113	103	30	1.5	104	14	25.4	108	49	128	118	45	2.5
20	55	8.5	13.5	22	30.5	95	47.5	57	76.5	60	9	25x3	111	8	27	169	152	45	3.4	127	16	35	131	49	174	157	50	3.9
25	55	11	18	28.5	37.5	120	60	79.5	100	76	11	32x3	143	11	32	169	152	45	5.15	165	15	35.6	169	77	179	162	55	6.7
30	55	14	20	35	43.5	143	71.5	95	115	92	13	38x3	171	15	39	174	157	50	7.5	186	15	38.8	190	85	199	182	75	11.0
40	55	14	20	47.5	57.5	133.5	67	89	140	111	13	52x3	-	-	-	-	-	-	-	192	15	40.5	196	64	224	207	100	18.8

Ordering Code





Area of Application:

Fluid control and flow shut off

Characteristics / Materials:

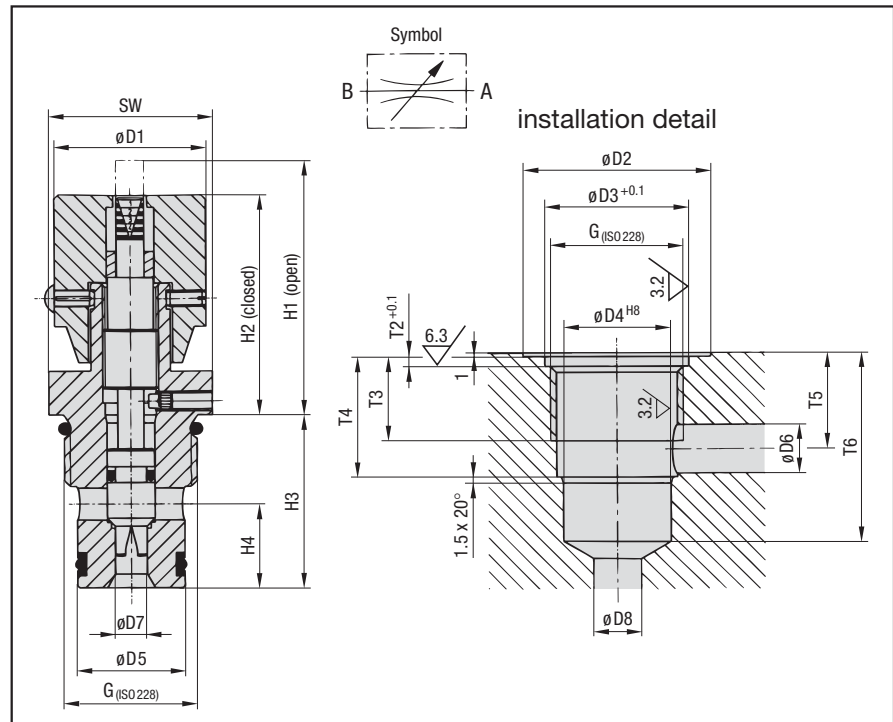
- designed for direct installation into hydraulic control blocks
- suitable for mineral oils
- Housing: Steel (1.0715), zinc-plated (Fe/Zn 8 C)
- Standard thread form: BSP; NPT on request
- Turning Knob: Polyamide

Please consult our office before using with other fluids, or for special stainless steel material and other thread forms.

Technical Data:

max Working Pressure p_N : 350 bar
Temperature t_{max} : 100°C

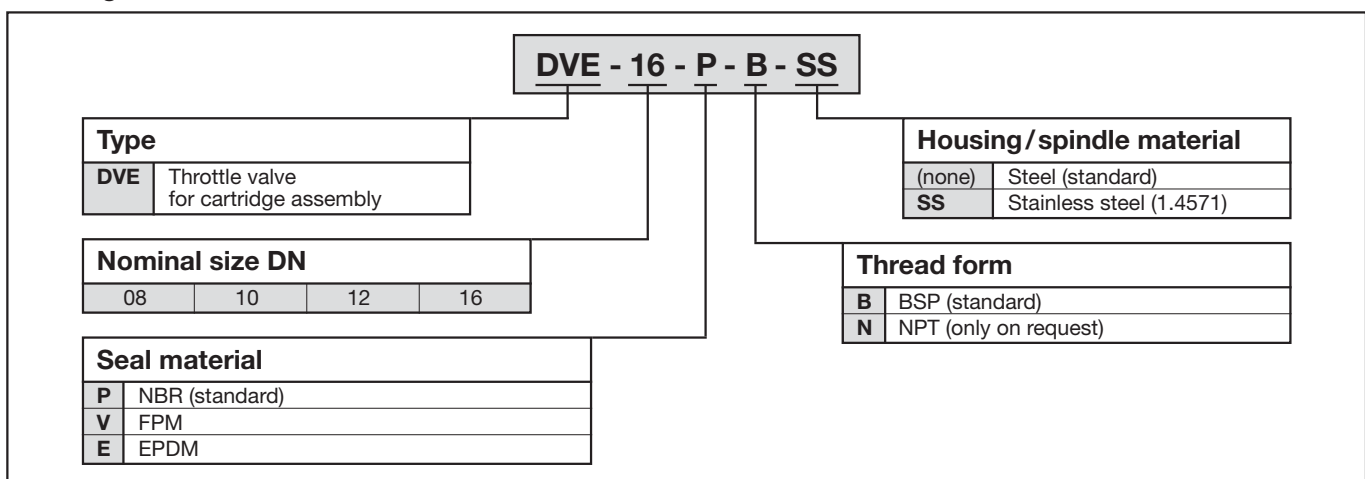
Dimensions

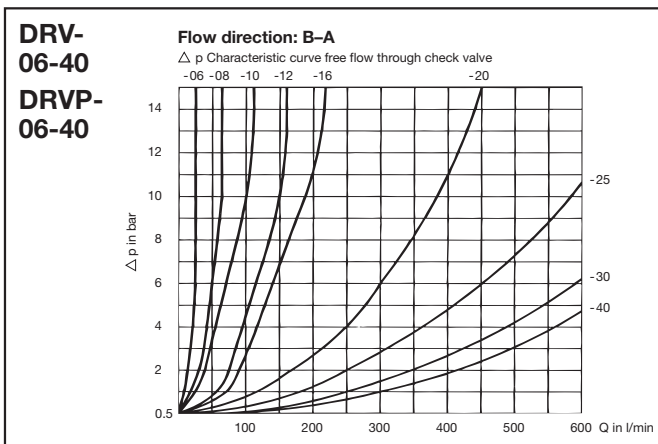
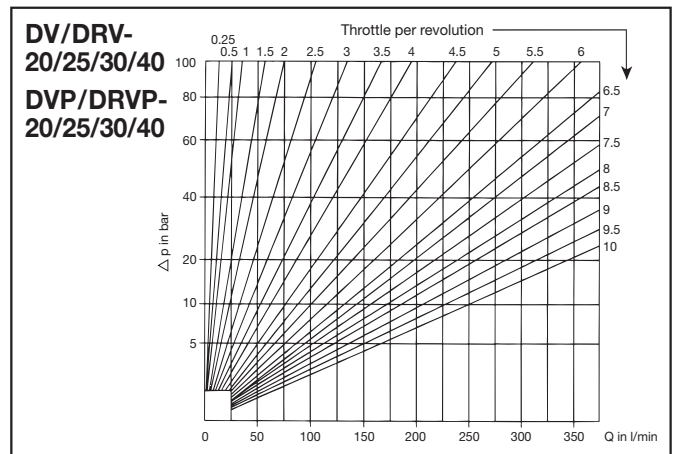
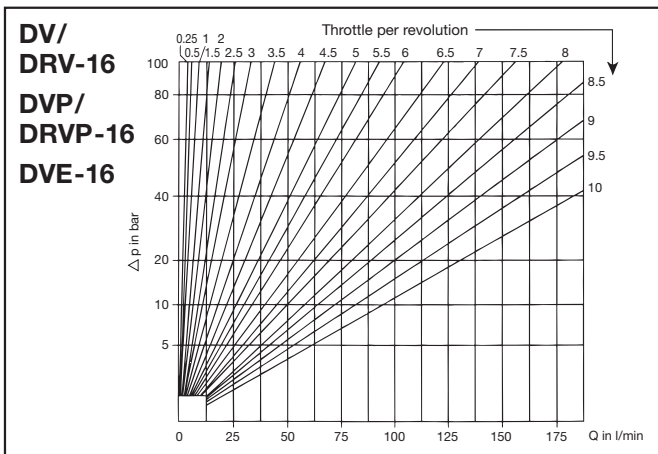
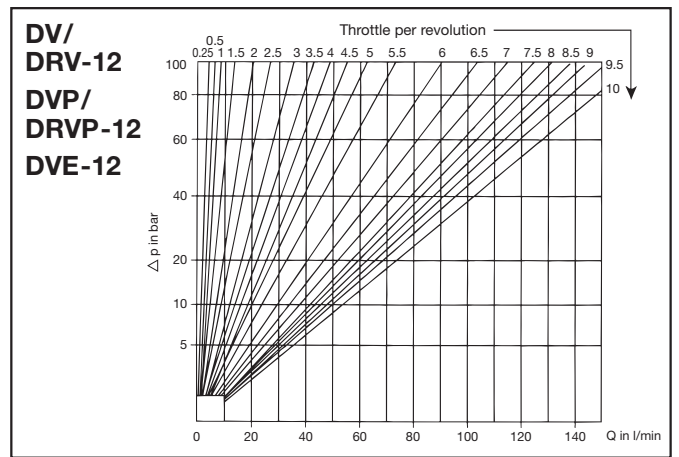
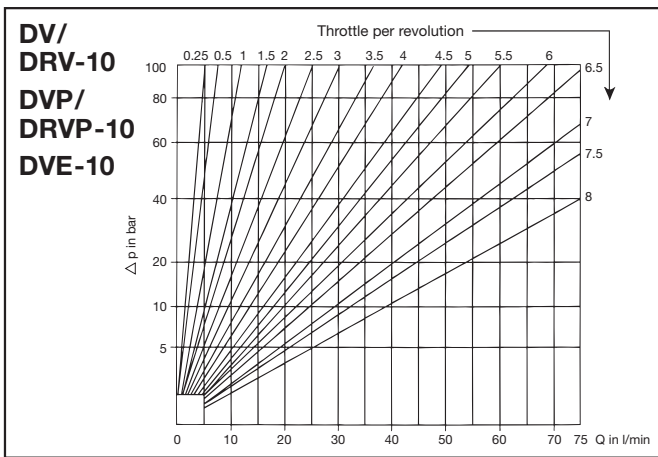
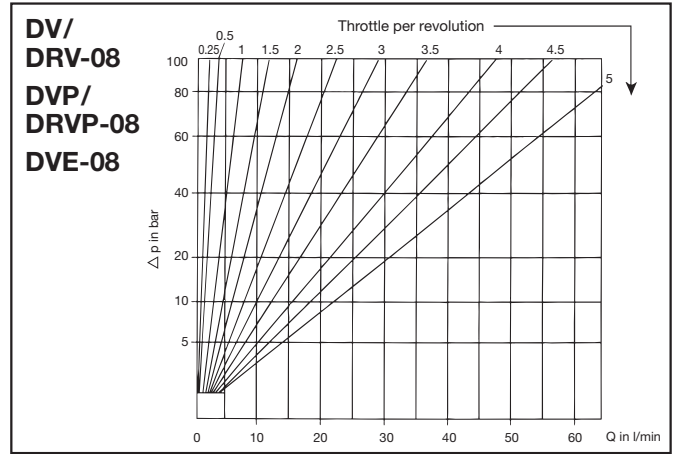
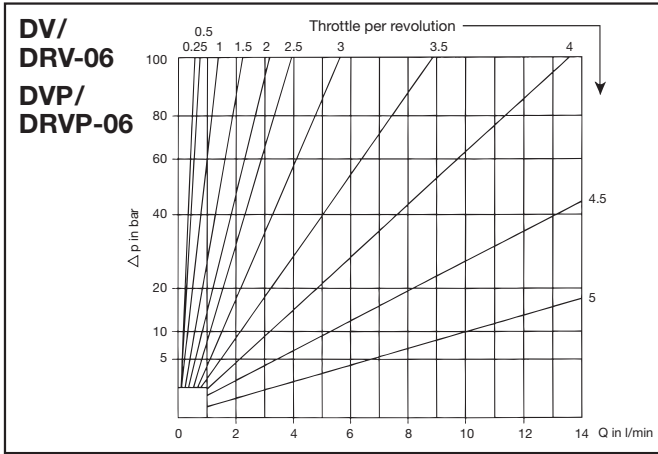


Dimensional Table

Nominal Size wt.	G		H1	H2	H3	H4	D1	D2	D3	D4	D5	D6	D7	D8	SW	T2	T3	T4	T5	T6	Gew (kg)
	BSP	NPT																			
08	G 1/2	1/2 NPT	47	41	27.5	12	29	32	24	14	14	5	5	5	27	1.9	14	17.5	15	29	0.15
10	G 1/2	1/2 NPT	64	54	30.7	14.5	38	32	24	16	16	8	6	8	27	1.9	14	20.5	17	33	0.25
12	G 3/4	3/4 NPT	65	55	40	17.5	38	37	30	19	19	10	8	10	32	1.9	21	29	24	43	0.5
16	G 1	1 NPT	65	55	43.5	21.1	38	47	36	27	27	12	8	12	41	2.4	21	30	24	47	0.7

Ordering Code

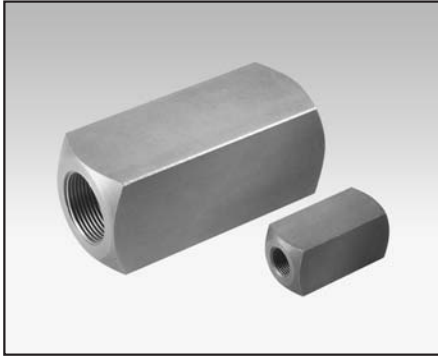




STAUFF throttle and flow control valves are designed to shut off and control the flow of liquid media. The flow rate is regulated on a direct reading device by turning the handle from completely closed to fully open and is set by screws.

The increase in flow is also indicated by a colour and number scale. This is revealed on a central spindle emerging from the turning during operation.

The values given refer to a viscosity of 35 cSt.



Area of Application:

Check valves allow a single-directional flow only.

Characteristics / Materials:

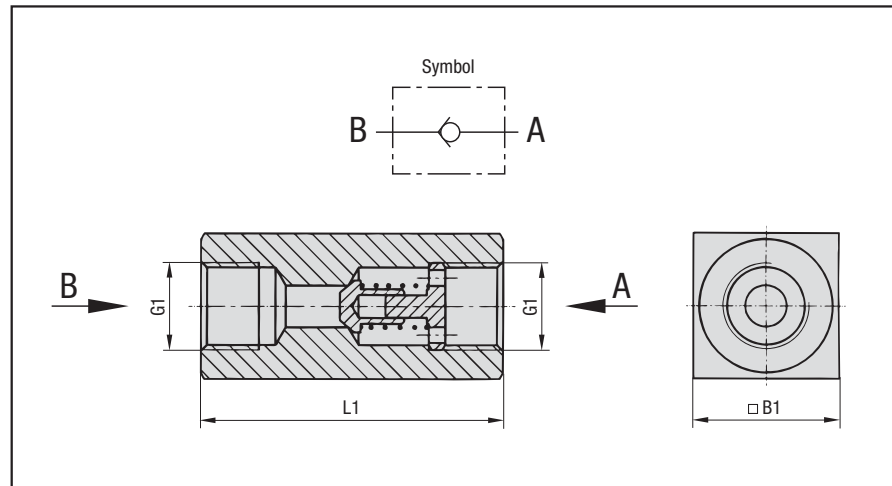
- designed for in-line mounting
- suitable for mineral oil
- Housing: Steel (1.0715), zinc-plated (Fe/Zn 8 C)
- Standard thread form: BSP; NPT on request
- metal-to-metal seals

Please consult our office before using with other fluids, or for special material and thread sizes.

Technical Data:

Temperature t_{max} : 100°C
 Opening Pressure RV:
 0.5 bar (4.5 bar on request)

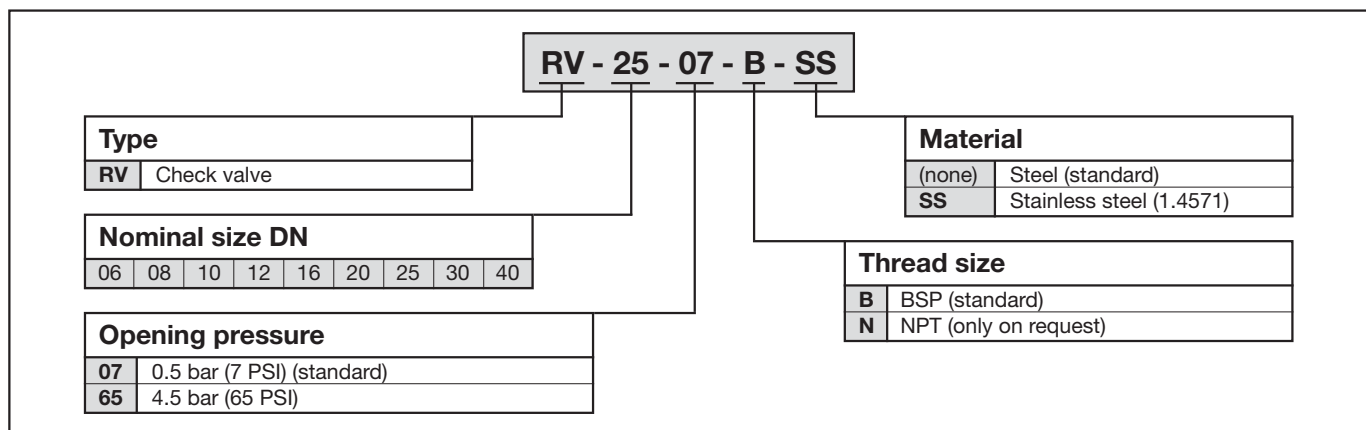
Dimensions



Dimensional Table

Nominal Size DN	p_N (bar)	G1		L1	B1	Weight (kg)
		BSP	NPT			
06	500	G 1/8	1/8 NPT	45	16	0.1
08	500	G 1/4	1/4 NPT	55	25	0.2
10	500	G 3/8	3/8 NPT	65	30	0.4
12	500	G 1/2	1/2 NPT	73	35	0.7
16	500	G 3/4	3/4 NPT	88	45	1.2
20	500	G 1	1 NPT	127	50	2.0
25	400	G 1 1/4	1 1/4 NPT	143	60	3.3
30	315	G 1 1/2	1 1/2 NPT	143	70	4.2
40	315	G 2	2 NPT	165	90	7.2

Ordering Code





Area of Application:

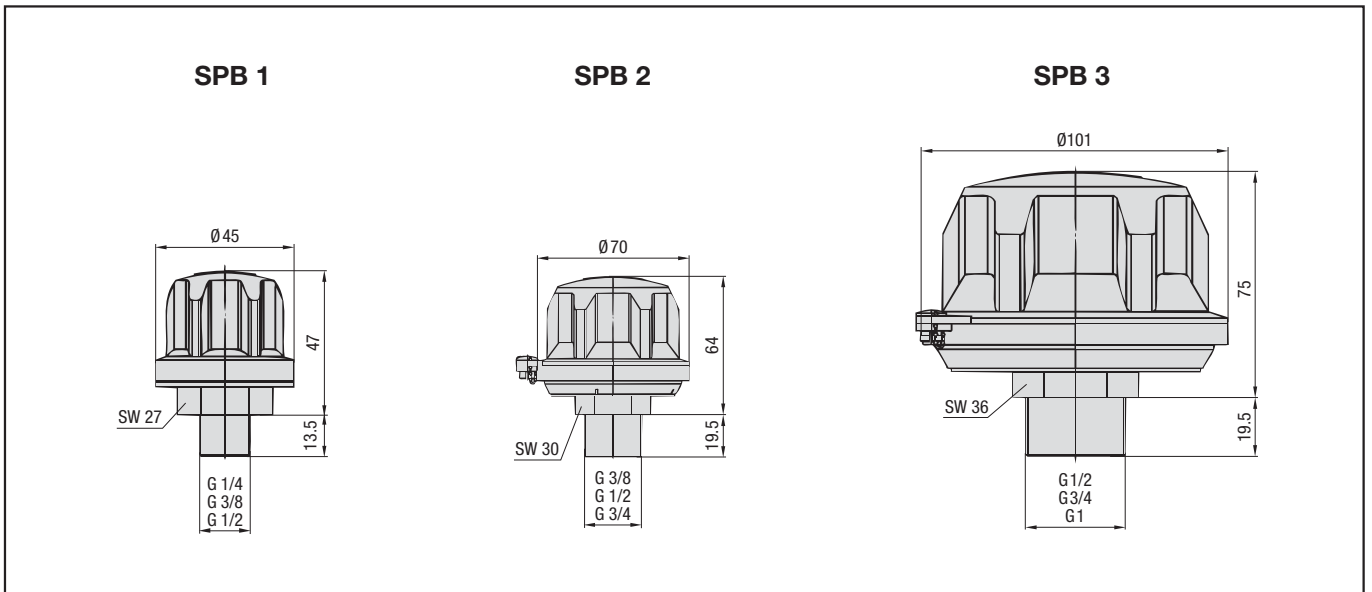
Ventilation and tank filling

Characteristics / Materials:

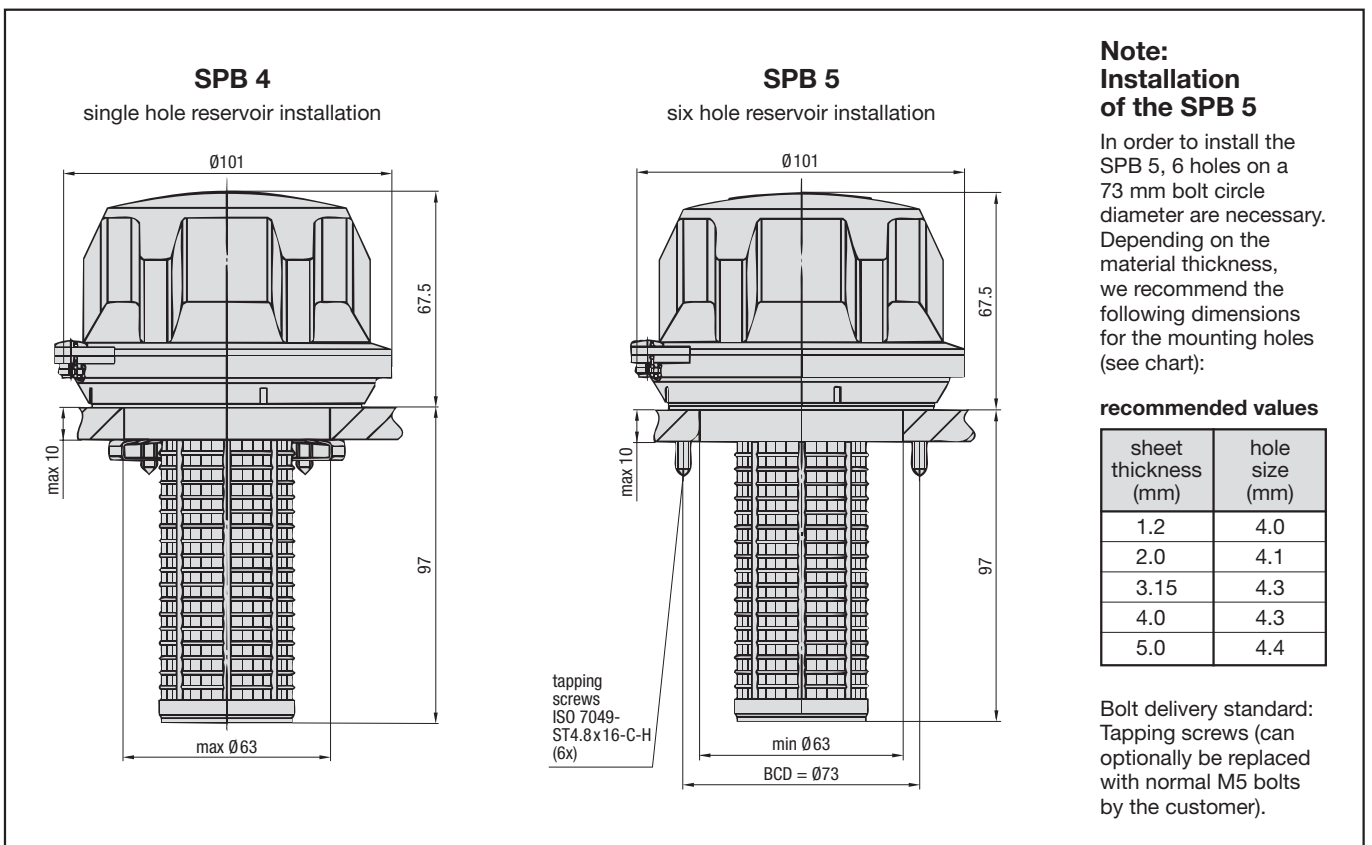
- available as screw-in or bayonet version
- non-corrosive
- Temperature range: - 40°C ... + 120°C
- Materials: glassfibre reinforced PA, basket PP
- Seals: NBR, others on request
- Air filter insert: 10 µm foam (PUR), others on request

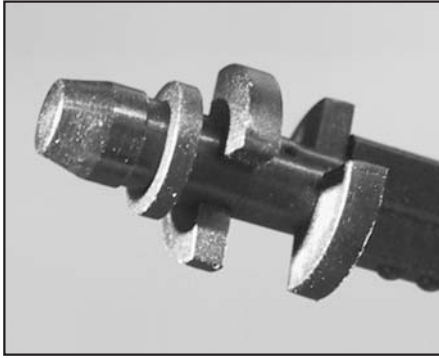
Custom built combinations and special requirements available on request.

Dimensions and Styles – Screw-in versions (Breathers)



Dimensions and Styles – Bayonet version (Filler Breathers)





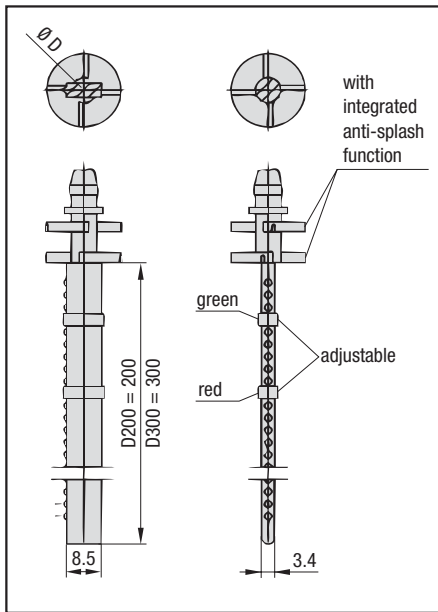
Breather options:

- Dipsticks (material PA)
- Pressurised versions (for SPB 2 up to SPB 5)
- Baskets (for SPB 4 and SPB 5)
- Thread form NPT (for SPB 1 up to SPB 3)

Special executions available on request.

Photo: integrated anti-splash feature

Dipsticks and Anti-splash feature



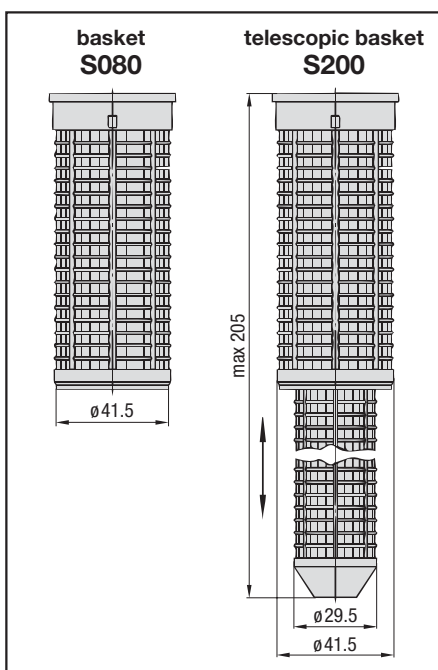
Adaptation form	for type	suitable dipstick	Dimension ØD
B04	SPB 1	n/a	–
B06	SPB 1 + 2	DS-1	10
B08	SPB 1 – 3	DS-2	14
B12	SPB 2 + 3	DS-3	18
B16	SPB 3	DS-3	18
S080	SPB 4 + 5	DS-3	18
S200	SPB 4 + 5	DS-3	18
X	SPB 4 + 5	DS-3	18

For all filler breathers SPB 1 up to SPB 5, dipsticks (material polyamide) are available as an option. All these dipsticks have an integrated anti-splash function. This anti-splash feature protects the SPB from backspilling fluid and avoids an early air filter breakdown. For filler breathers without dipstick the anti-splash function is achieved by an integrated concave baffle. Because of its small size the anti-splash function for the SPB 1 can only be achieved in conjunction with a dipstick. Depending on the chosen filler breather (see table above), dipsticks are available in two standard lengths (200 mm and 300 mm). Smaller dipstick sizes can be achieved by simply cutting down its length on site, according to individual requirements.

Pressurised versions:

Optionally all filler breathers, except SPB 1, are available as pressurised breathers. In order to achieve an air flow, the tank pressure has to exceed the chosen pressure setting. This feature minimizes foaming and cavitation. Available pressure settings: 0.2 bar, 0.35 bar and 0.7 bar.

Baskets for SPB 4 and 5



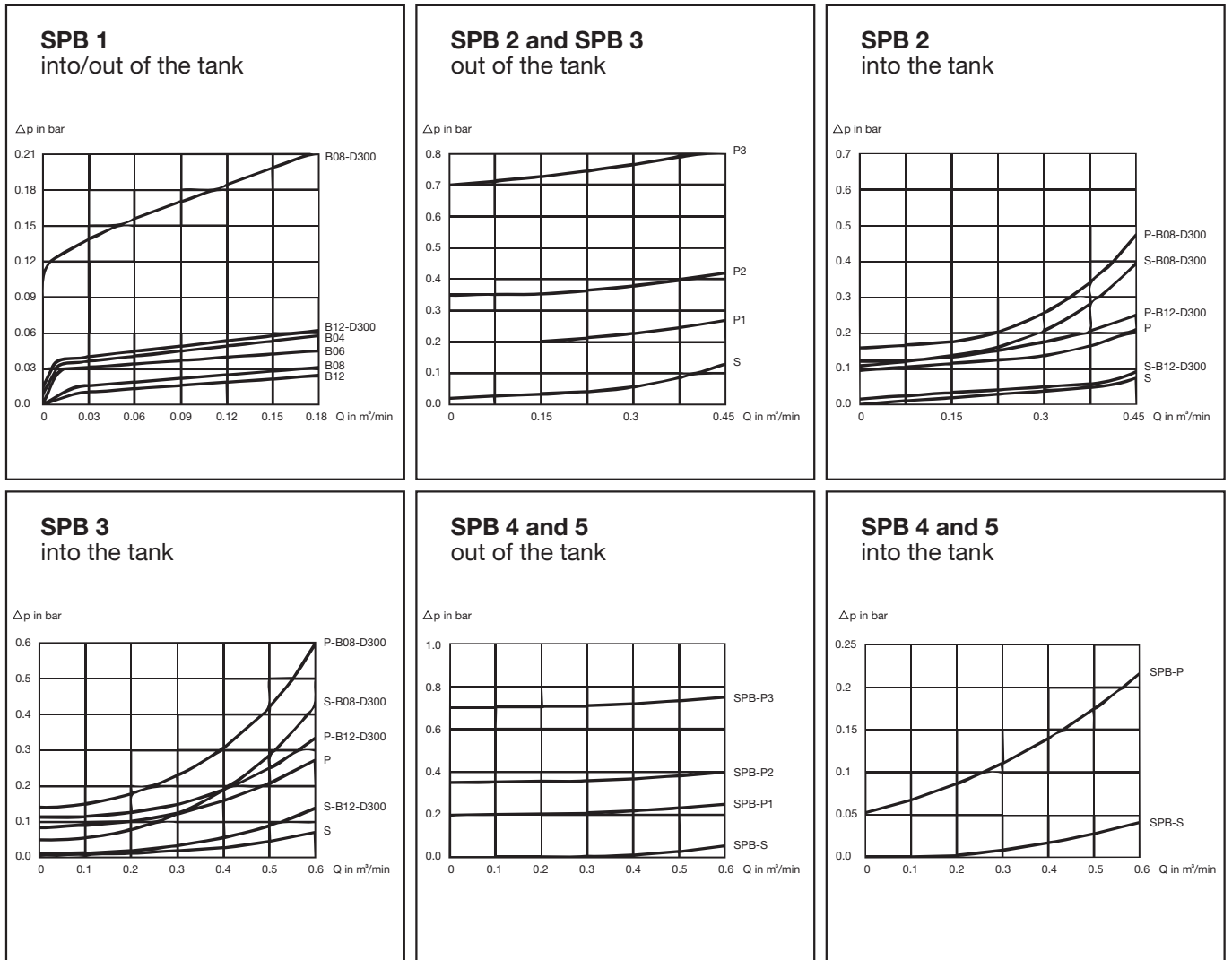
For the filler breathers SPB 4 and SPB 5, 80 mm and 200 mm baskets (material polypropylene) are available as an option. All baskets have a reinforced 0.8 x 3.5 mm mesh. With the basket S080 and the telescopic basket S200, rough dirt particles are filtered out of the medium and a smooth flow into the tank is being ensured.

Ordering Code

SPB - S - 2 - 10 - B12 - A - D300

Type		Dipstick option	
SPB	Plastic filler breather	(none)	without dipstick
Version (Pressurisation not available for SPB 1)		D200	dipstick 200 mm
S	without pressurisation (standard)	D300	dipstick 300 mm
P1	pressurised at 0.20 bar	Anti-splash option	
P2	pressurised at 0.35 bar	A with anti-splash option	
P3	pressurised at 0.70 bar	Connection	
Group size		B04 G $\frac{1}{4}$ (for SPB 1)	
size	version	cap diameter	max rate of air flow (m ³ /min)
1	screw-in version	45	0.15
2	screw-in version	70	0.4
3	screw-in version	101	1.0
4	single hole reservoir installation	101	1.0
5	six hole reservoir installation	101	1.0
		B06 G $\frac{3}{8}$ (for SPB 1 + 2)	
		B08 G $\frac{1}{2}$ (for SPB 1 - 3)	
		B12 G $\frac{3}{4}$ (for SPB 2 + 3)	
		B16 G1 (for SPB 3)	
		S080 basket (for SPB 4 + 5)	
		S200 telescopic basket (for SPB 4 + 5)	
		X without basket (for SPB 4 + 5)	
		Micron rating	
		10 10 μ m foam (PUR/standard)	

Airflow plastic filler breathers SPB 1 – 5





Area of Application:

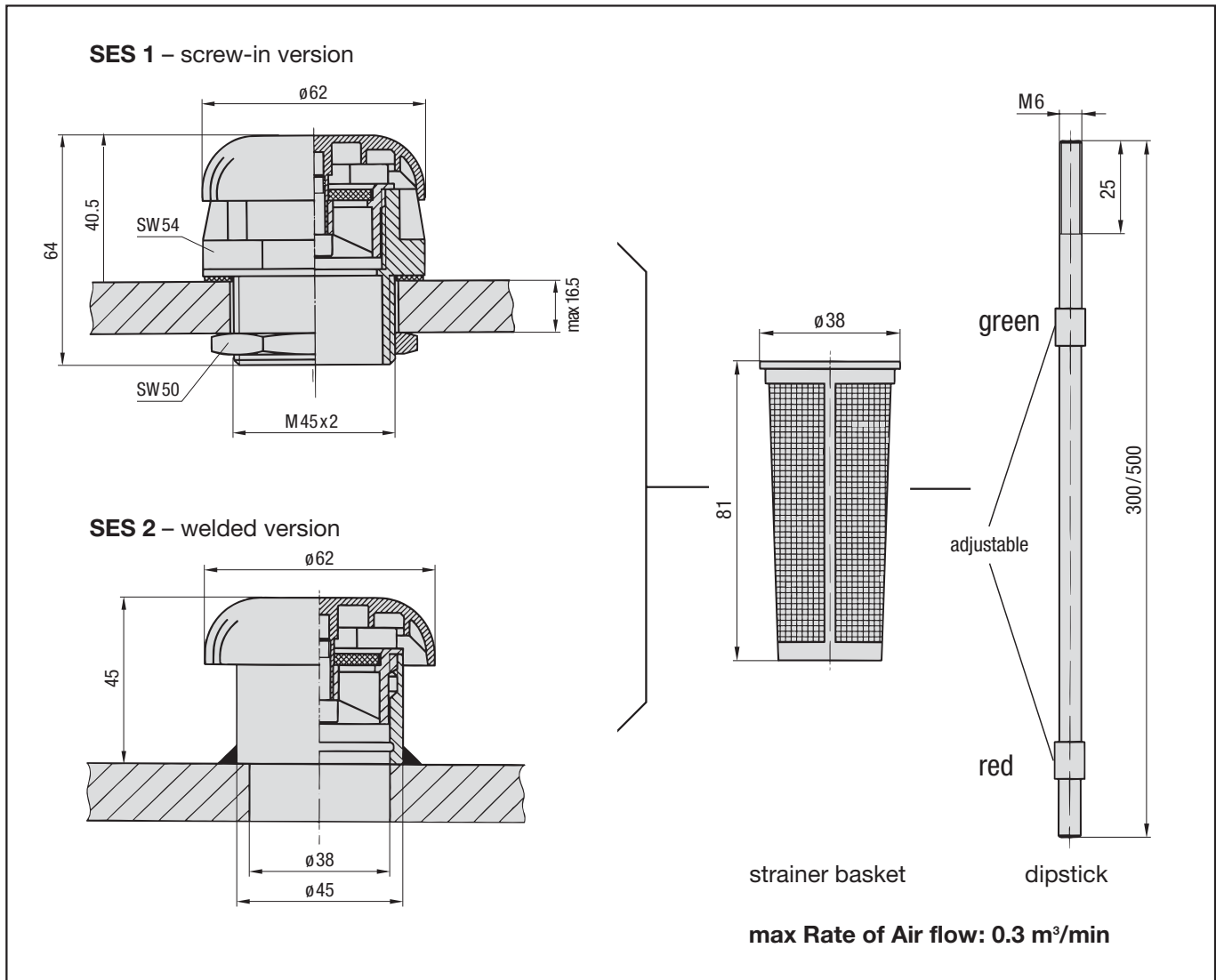
Ventilation and tank filling

Materials:

- Breather cap: PA
- Plastic stud: PA
- Socket: Steel (1.0718)
- Nut: Steel (1.0718); PA available on request
- Air filter insert: Sintered bronze; Rating 45 µm
- Basket: PA; micron rating 300 µm
- Dipstick: Steel (9SMnPb28)
- Seals: NBR

Combinations with basket or dipstick.

Dimensions



Ordering Code

SES 1 - M300	
Type	Accessories
SES Filler Breather	(none) no accessory
Execution	S Basket, 81 mm
1 screw-in version	M300 Dipstick, 300 mm
2 welded version	M500 Dipstick, 500 mm



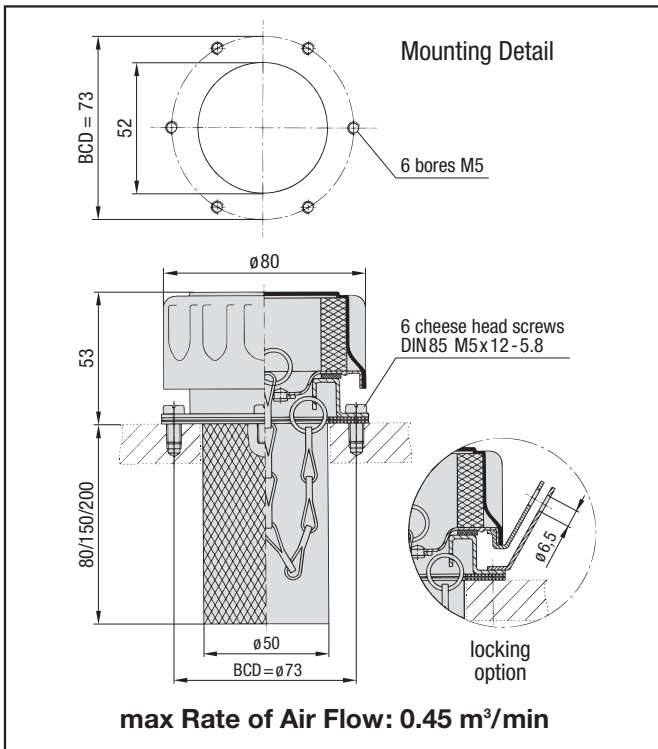
Area of Application:
Ventilation and tank filling

Standard Versions:

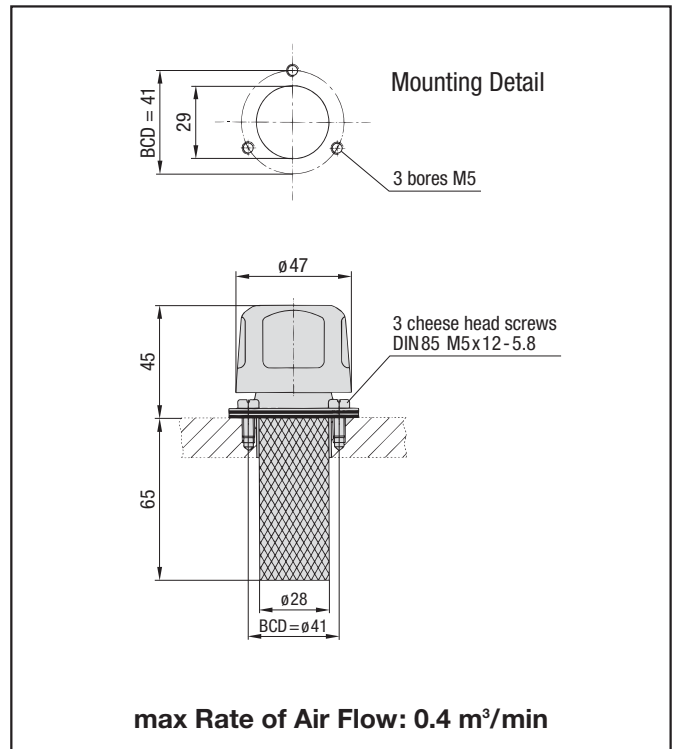
- Breather cap: Steel, chrome-plated
- Socket: Steel, chrome-plated
- Air filter insert: 10 µm foam (PUR)
- Basket: Steel, zinc-plated
- Basket Micron Rating: 300 µm
- Gaskets: Cork, Rubber

Custom built combinations and specials are available on request.

Dimensions SES 3



Dimensions SES 6



Ordering Code

SES 3 - 10 - S080 - O - L - W

Type		Metal cap design	
SES	Filler breather	O	chrome-plated (standard)
		W	black epoxy
Cap size		Accessories	
3	80 mm	O	none
6	47 mm	L	locking option (for SES 3 only)
Micron rating		Dipstick	
03	3 µm paper (for SES 3 only)	O	none (standard)
10	10 µm foam (PUR) (standard)	Dxxx	Dipstick (on request, only for SES 3)
40	40 µm foam (PUR)		
Basket			
S080	80 mm (for SES 3 only)		
S150	150 mm (for SES 3 only)		
S200	200 mm (for SES 3 only)		
S065	65 mm (for SES 6 only)		
X	no basket		

Note:
Screws are supplied with the SES as standard.



Area of Application:

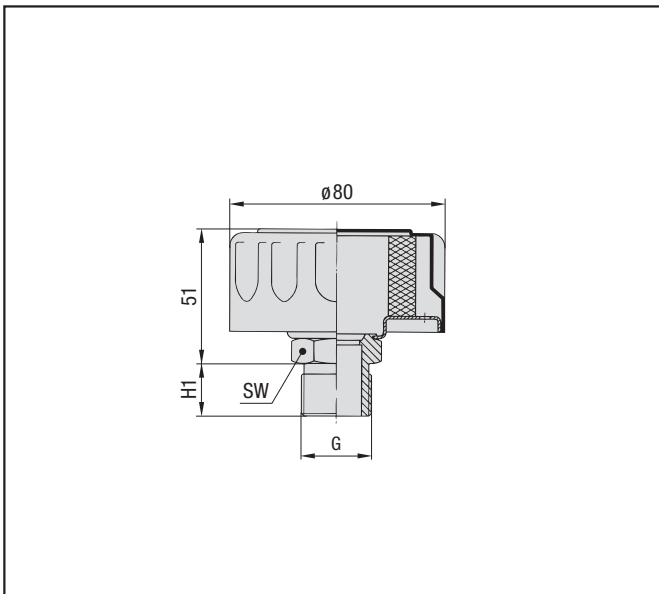
Tank ventilation

Standard Versions:

- Breather cap: Steel, chrome-plated
- Socket: Steel, chrome-plated
- Air filter insert: 10 µm foam (PUR)
- Thread form: BSP

Custom built combinations and specials are available on request.

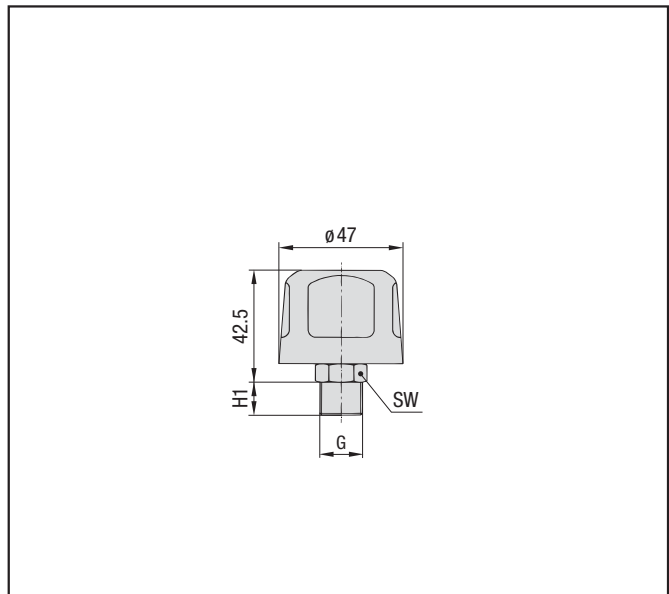
Dimensions SES 5



max Rate of Air Flow:
0.45 m³/min

Type SES 5...	B08	B12	B16
G	G 1/2	G 3/4	G 1
H1	14	19.5	19
SW	22	32	34

Dimensions SES 9



max Rate of Air Flow:
0.4 m³/min

Type SES 9...	B04	B06	B08
G	G 1/4	G 3/8	G 1/2
H1	10.5	12.5	13.5
SW	17	19	22

Ordering Code

SES 5 - 10 - B12 - O - W

<table border="1" style="width: 100%;"> <tr><td colspan="2">Type</td></tr> <tr><td>SES</td><td>Breather</td></tr> </table> <table border="1" style="width: 100%; margin-top: 10px;"> <tr><td colspan="2">Cap size</td></tr> <tr><td>5</td><td>80 mm</td></tr> <tr><td>9</td><td>47 mm</td></tr> </table> <table border="1" style="width: 100%; margin-top: 10px;"> <tr><td colspan="2">Micron rating</td></tr> <tr><td>03</td><td>3 µm paper (for SES 5 only)</td></tr> <tr><td>10</td><td>10 µm foam (PUR) (standard)</td></tr> <tr><td>40</td><td>40 µm foam (PUR)</td></tr> </table> <table border="1" style="width: 100%; margin-top: 10px;"> <tr><td colspan="2">Thread</td></tr> <tr><td>B04</td><td>G 1/4 (SES 9 only)</td></tr> <tr><td>B06</td><td>G 3/8 (SES 9 only)</td></tr> <tr><td>B08</td><td>G 1/2</td></tr> <tr><td>B12</td><td>G 3/4</td></tr> <tr><td>B16</td><td>G 1</td></tr> </table>	Type		SES	Breather	Cap size		5	80 mm	9	47 mm	Micron rating		03	3 µm paper (for SES 5 only)	10	10 µm foam (PUR) (standard)	40	40 µm foam (PUR)	Thread		B04	G 1/4 (SES 9 only)	B06	G 3/8 (SES 9 only)	B08	G 1/2	B12	G 3/4	B16	G 1	<table border="1" style="width: 100%; margin-top: 10px;"> <tr><td colspan="2">Metal cap design</td></tr> <tr><td>O</td><td>chrome-plated (standard)</td></tr> <tr><td>W</td><td>black epoxy</td></tr> </table> <table border="1" style="width: 100%; margin-top: 10px;"> <tr><td colspan="2">Dipstick</td></tr> <tr><td>O</td><td>none (standard)</td></tr> <tr><td>Dxxx</td><td>Dipstick (on request, only for SES 5)</td></tr> </table>	Metal cap design		O	chrome-plated (standard)	W	black epoxy	Dipstick		O	none (standard)	Dxxx	Dipstick (on request, only for SES 5)
Type																																											
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Dxxx	Dipstick (on request, only for SES 5)																																										



Area of Application:

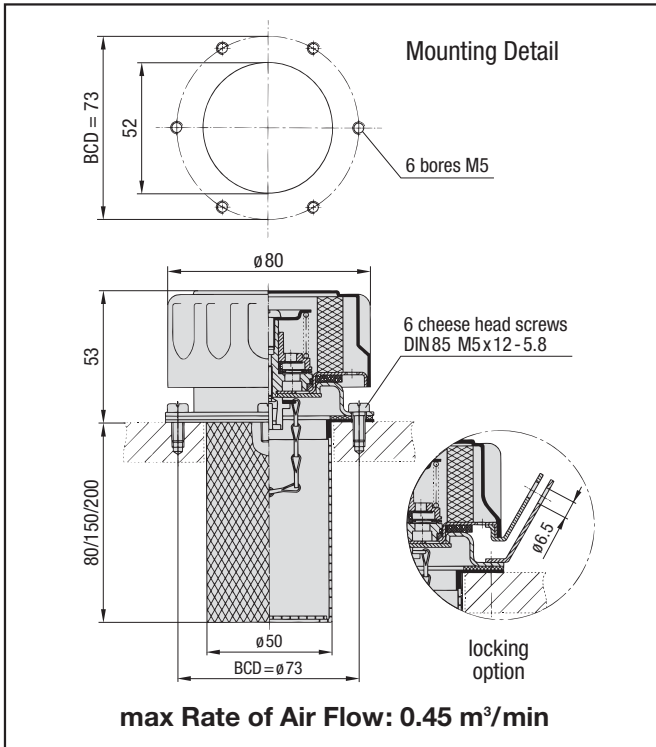
Ventilation and tank filling with tank stress

Standard Versions:

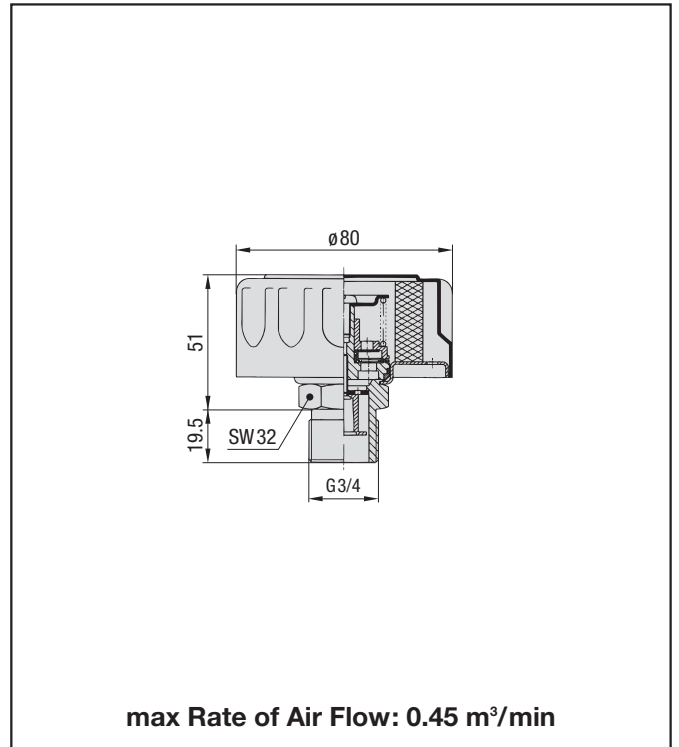
- Breather cap: Steel, chrome-plated
- Socket: Steel, chrome-plated
- Air filter insert: 10 µm foam (PUR)
- SES 7 Basket: Steel, zinc-plated
Basket Micron rating: 300 µm
- SES 8 Gaskets: NBR
- SES 8 Thread form: BSP

2 pressure versions (0.35 bar and 0.7 bar) available

Dimensions SES 7



Dimensions SES 8



Ordering Code

SES 7 - 10 - 05 - S080 - O - L - W

Type	SES Filler breather	Metal cap design	O chrome-plated (standard) W black epoxy
Designation	7 pressurised filler breather, bayonet style 8 pressurised breather, screw-in style	Accessories	O none L locking option (for SES 7 only)
Micron rating	03 3 µm paper (for SES 7 only) 10 10 µm foam (PUR) (standard) 40 40 µm foam (PUR)	Dipstick	O none (standard) Dxxx Dipstick (on request)
Opening pressure	05 0.35 bar (5 PSI) 10 0.70 bar (10 PSI)	Adaption	S080 Basket 80 mm (standard) (SES 7) S150 Basket 150 mm (SES 7) S200 Basket 200 mm (SES 7) B12 Thread G ³ / ₄ (SES 8) X no basket (SES 7)

Note: Screws are supplied with the SES 7 as standard.



Area of Application:

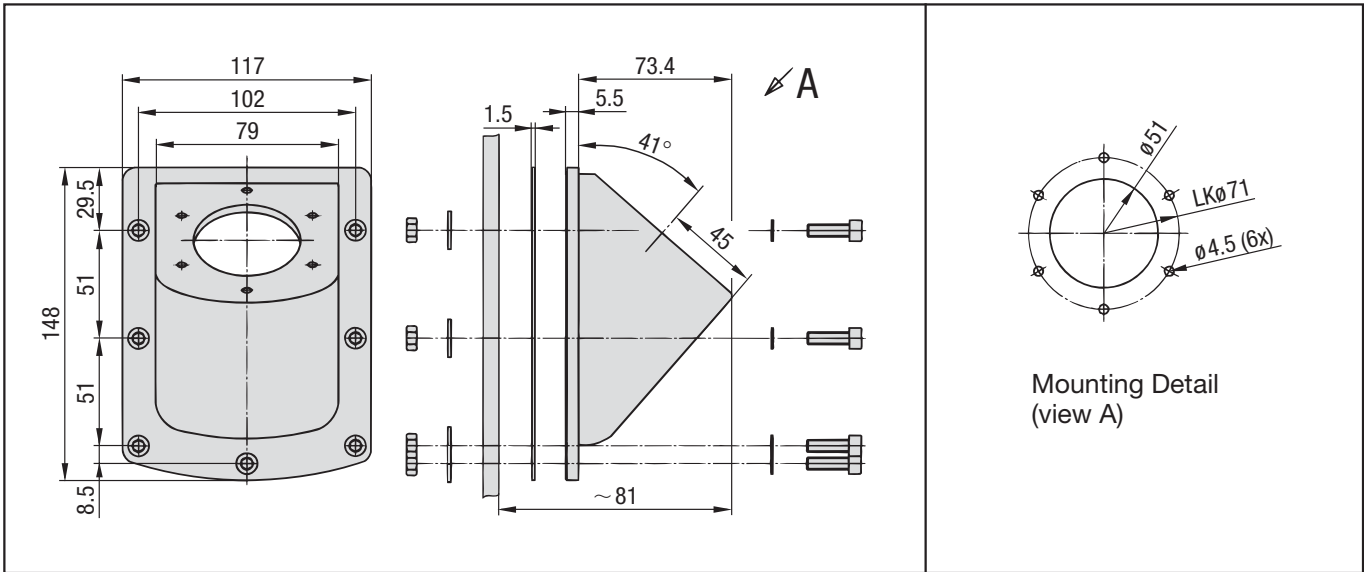
Lateral fastening of filler breathers with flange connection (suitable for SES 3, SES 7 and SPB 5)

Materials:

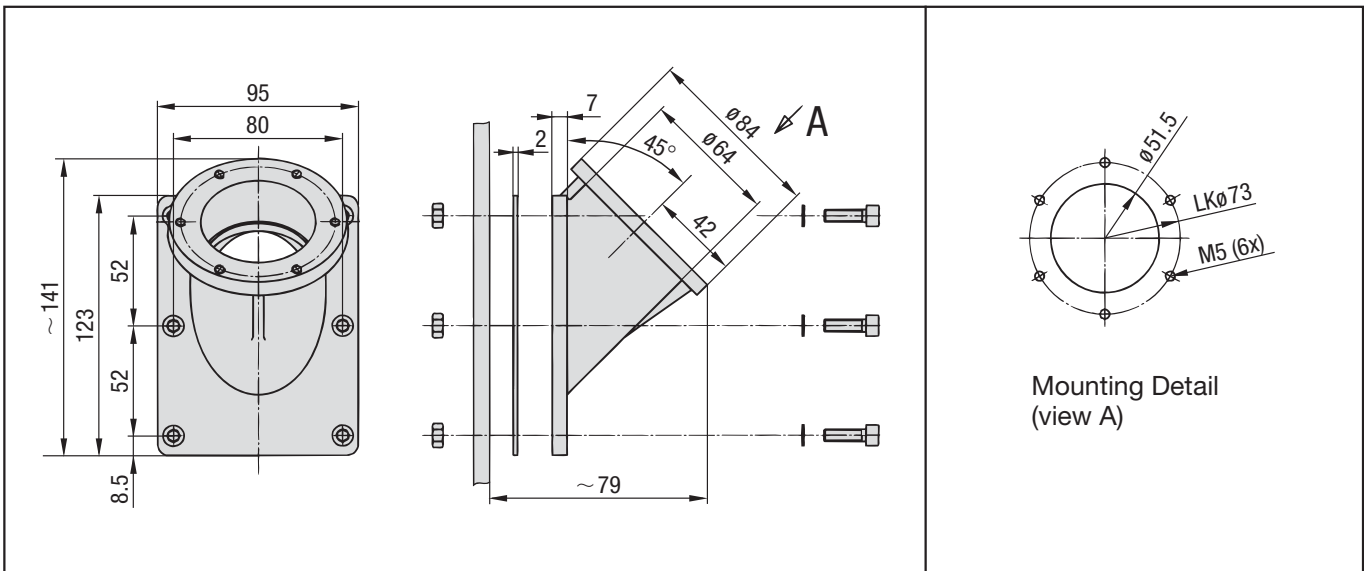
	SES-ASMB-1	SES-ASMB-2
• Housing:	Polyamide	Aluminium
• Seals:	Klingerit	Klingerit
• Screws:	Steel, zinc-plated M6 x 25 DIN 912	Steel, zinc-plated M6 x 25 DIN 912
• Nuts:	Steel, zinc-plated M6 DIN 934	Steel, zinc-plated M6 DIN 934
• Washers:	Steel, zinc-plated	Steel, zinc-plated
• Mounting screws:	Steel, zinc-plated 4.8x13 DIN 7981	

Seals, screws, washers and nuts are supplied with the SES-ASMB as standard

Dimensions SES-ASMB-1

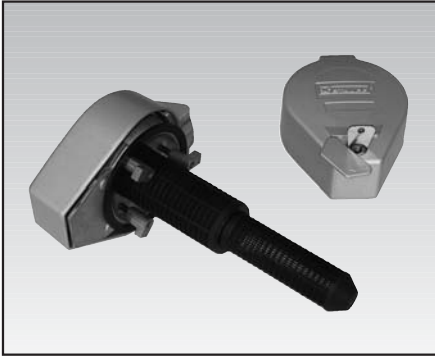


Dimensions SES-ASMB-2



Ordering Code

SES-ASMB-1			
Type		Version	
SES-ASMB	Angled side Mounting Bracket for SES 3, SES 7 and SPB 5	1	Housing polyamide
		2	Housing aluminium



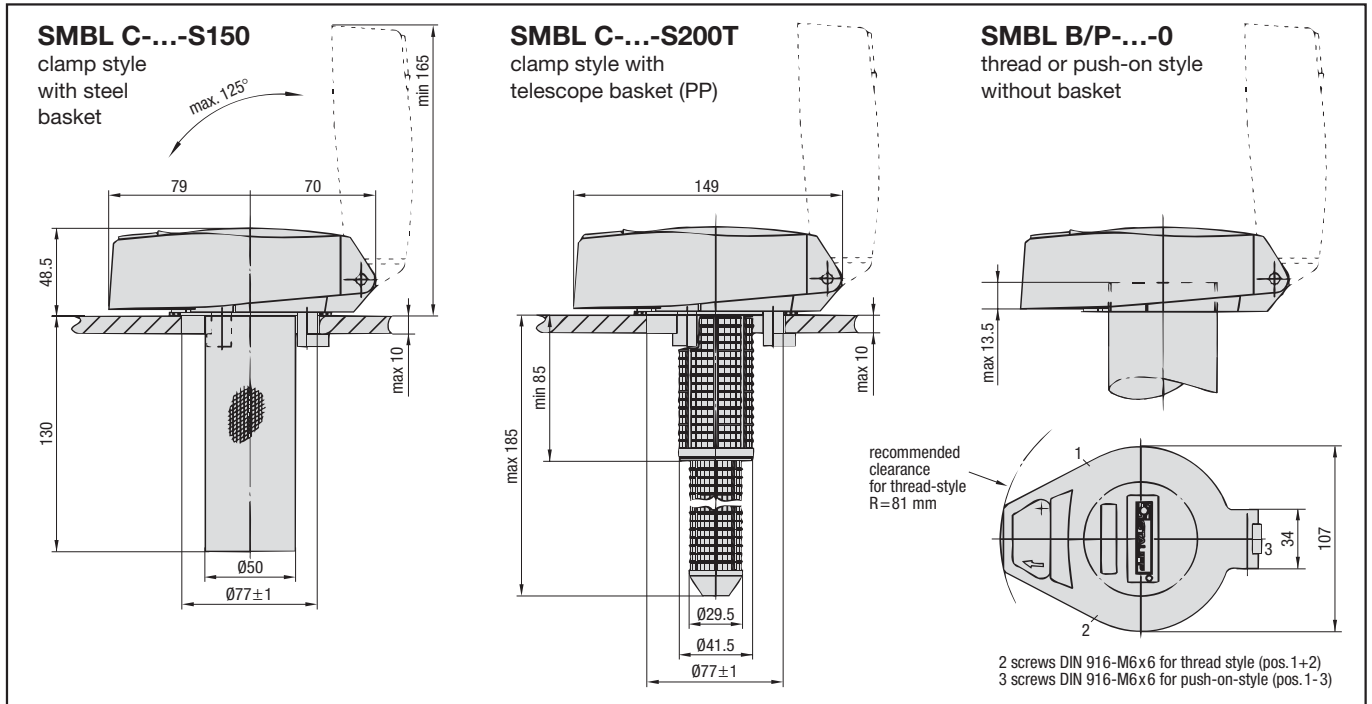
Area of Application:

Ventilation and tank filling

Characteristics/Materials:

- available as thread-style, clamping style and push-on-style
- key-lockable
- Temperature range: - 30°C ... + 100°C
- Materials:
 - Body: die cast (zinc-plated / blue chromated)
 - Baskets: zinc-plated steel or polypropylene (see ordering code)
 - Seals: NBR, others on request
 - Air filter insert: 10 µm foam (PUR), others on request
- Including two keys

Dimension



Ordering Code

SMBL C - 10 - 1 - S150 - B - O																			
<table border="1"> <tr><th colspan="2">Type</th></tr> <tr><td>SMBL</td><td>Filler Breather (lockable)</td></tr> </table>	Type		SMBL	Filler Breather (lockable)	<table border="1"> <tr><th colspan="2">Metal cap design</th></tr> <tr><td>O</td><td>stoved enamel finish RAL 9022 (standard)</td></tr> </table>	Metal cap design		O	stoved enamel finish RAL 9022 (standard)										
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2	no air flow																		
3	air flow only into the tank																		



Area of Application:

Ventilation of the tank with moisture absorption and air filtration.

Characteristics:

- available in 6 executions
- Temperature range: 70°C max
- refillable with drying agent (available separately)
- can be delivered complete with adaptor plates and contamination indicator
- replacement air filter insert SGB separately available (see page 24)

Easy hygroscopic indication is possible with the drying agent's capability to change colours with increasing moisture.

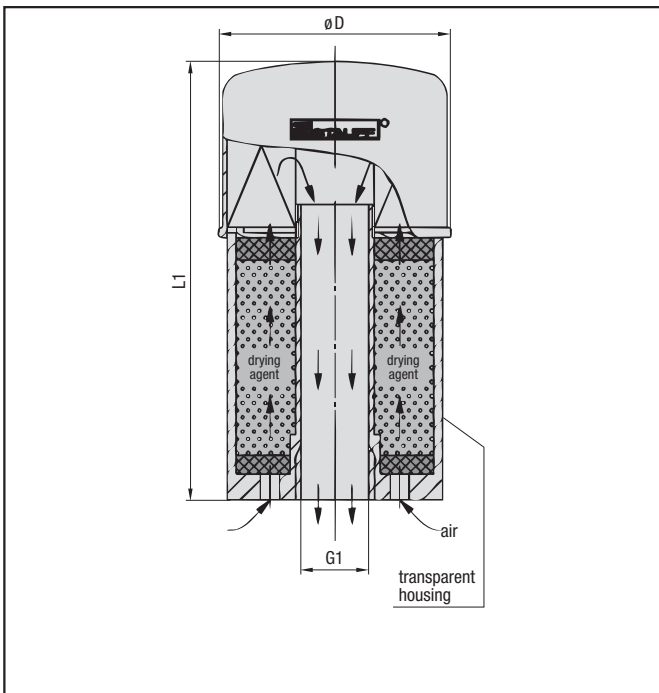
Function: First, the moisture of the incoming air will be absorbed when passing through the drying agent, and afterwards the dirt particles will be caught in the air filterelement. With the moisture absorption the oxidation processes in the hydraulic system will be decreased and the lifetime of the oil and the machines will be extended.

Hygroscopic indication: As moisture is absorbed, the drying agent granules will gradually change colour from red to orange. An optional indicator also shows the remaining capacity of the air filter element. When the granules have become orange, replace them.

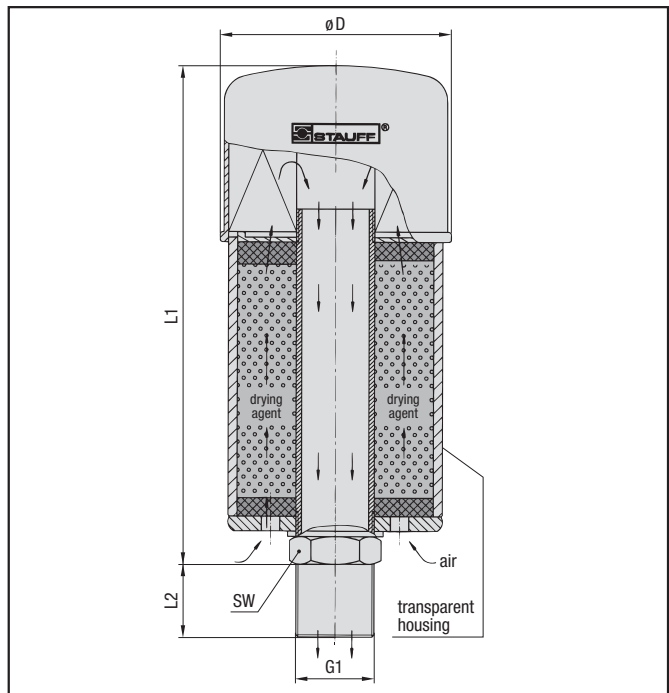
Note: At the bottom, desiccant air breathers are sealed with a folio or plastic plugs. These have to be removed before installation!

Desiccant air breathers SDB/SDBL do not contain any dangerous substances according to EC Council directive 88/379/EEC.

SDBL (light series)



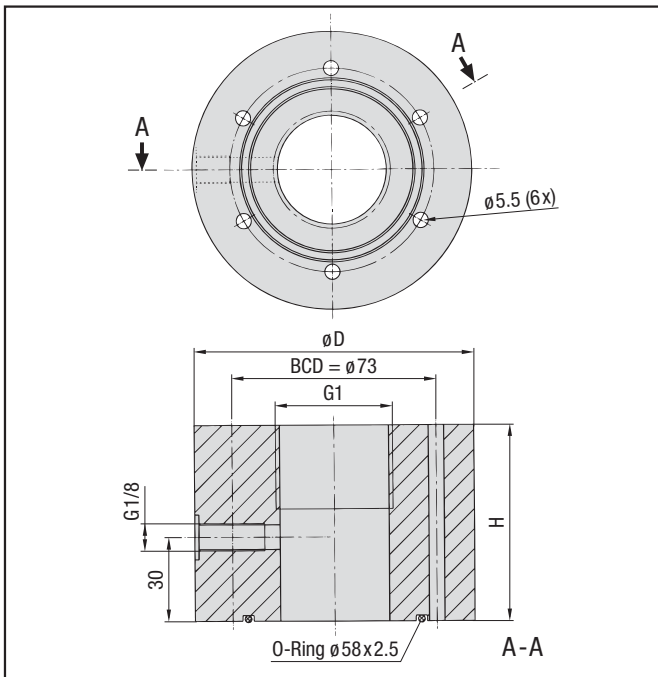
SDB (series)



Technical Data

	SDB-093	SDBL-093	SDB-096	SDBL-096	SDB-121	SDB-122
D	100	100	100	100	123.5	123.5
L1	160	150	220	210	256	366
L2	20	-	20	-	min 25	min 25
G1	G ³ / ₄	G ³ / ₄	G ³ / ₄	G ³ / ₄	G ¹ / ₄	G ¹ / ₄
SW	32	-	32	-	50	50
max Rate of air flow (m ³ /min)	0.7	0.7	0.7	0.7	1.5	1.5
Air filter micron rating (µm)	3	3	3	3	3	3
Weight of complete breather (g)	1200	900	1500	1100	2700	4000
Volume drying agent (cc)	300	300	600	600	1000	2000
Drying agent filling weight (g)	225	215	450	440	750	1500
max hygroscopicity (g)	86	86	172	172	288	576

Adaptor Plates AP



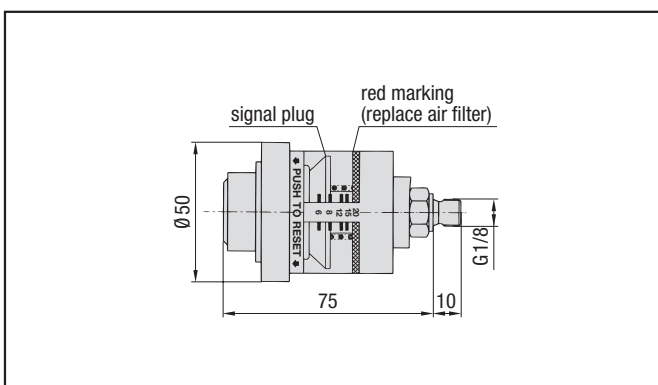
With AP plastic adaptor plates desiccant air breathers type SDB can directly be mounted to existing connections.

Plug, O-ring and socket cap screws (DIN 912) are supplied with AP as a standard.

Dimensions

	AP-1	AP-2
D	88	100
H	50	70
G1	G ^{3/4}	G ^{1 1/4}

Contamination Indicator FM



Adaptor plates AP are provided with a thread connection for the optical contamination indicator FM. The FM indicates the contamination level of the air breather SGB. You can restore the indicator by pressing the RESET knob for re-use.

Ordering Code

SDB - 122 - AP - FM																																															
<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <th colspan="2">Type</th> </tr> <tr> <td style="width: 15%;">SDB</td> <td>Desiccant air breather</td> </tr> <tr> <td>SDBL</td> <td>Desiccant air breather (light series)</td> </tr> <tr> <th colspan="2">Size</th> </tr> <tr> <td>093</td> <td rowspan="2">executions see page 23</td> </tr> <tr> <td>096</td> </tr> <tr> <td>121</td> <td rowspan="2">executions see page 23 (not for type SDBL)</td> </tr> <tr> <td>122</td> </tr> <tr> <th colspan="2">Adaptor plate (for SDB only)</th> </tr> <tr> <td>(none)</td> <td>without adaptor plate</td> </tr> <tr> <td>AP</td> <td>with adaptor plate</td> </tr> <tr> <th colspan="2">Contamination indicator (in conjunction with AP only)</th> </tr> <tr> <td>(none)</td> <td>without contamination indicator</td> </tr> <tr> <td>FM</td> <td>optical contamination indicator</td> </tr> </table>	Type		SDB	Desiccant air breather	SDBL	Desiccant air breather (light series)	Size		093	executions see page 23	096	121	executions see page 23 (not for type SDBL)	122	Adaptor plate (for SDB only)		(none)	without adaptor plate	AP	with adaptor plate	Contamination indicator (in conjunction with AP only)		(none)	without contamination indicator	FM	optical contamination indicator	<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th colspan="2">Spare parts</th> </tr> </thead> <tbody> <tr> <td>AP-1</td> <td>adaptor plate for SDB-093/096</td> </tr> <tr> <td>AP-2</td> <td>adaptor plate for SDB-121/122</td> </tr> <tr> <td>FM</td> <td>contamination indicator for all sizes</td> </tr> <tr> <td>RD-093</td> <td>Drying agent refilling material for SDB/SDBL-093</td> </tr> <tr> <td>RD-096</td> <td>Drying agent refilling material for SDB/SDBL-096</td> </tr> <tr> <td>RD-121</td> <td>Drying agent refilling material for SDB-121</td> </tr> <tr> <td>RD-122</td> <td>Drying agent refilling material for SDB-122</td> </tr> <tr> <td>SGB-090-03-B</td> <td>Replacement air filter insert for SDB/SDBL-093/096</td> </tr> <tr> <td>SGB-120-03-B</td> <td>Replacement air filter insert for SDB-121/122</td> </tr> </tbody> </table>	Spare parts		AP-1	adaptor plate for SDB-093/096	AP-2	adaptor plate for SDB-121/122	FM	contamination indicator for all sizes	RD-093	Drying agent refilling material for SDB/SDBL-093	RD-096	Drying agent refilling material for SDB/SDBL-096	RD-121	Drying agent refilling material for SDB-121	RD-122	Drying agent refilling material for SDB-122	SGB-090-03-B	Replacement air filter insert for SDB/SDBL-093/096	SGB-120-03-B	Replacement air filter insert for SDB-121/122
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Area of Application:

Tank ventilation

Characteristics:

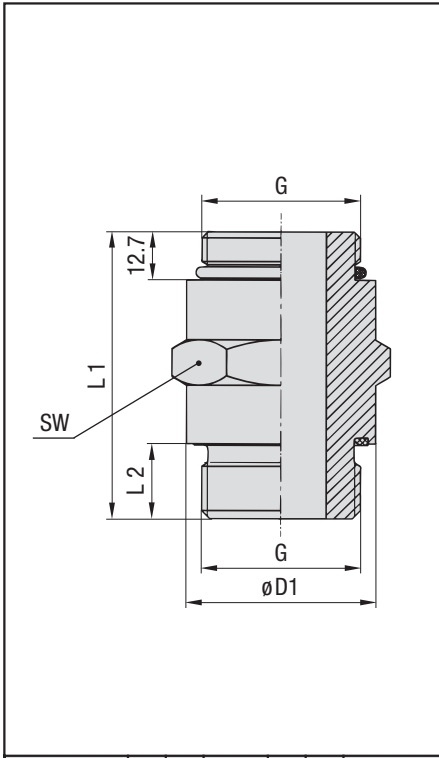
- Standard micron rating: 3 µm glass fibre
- Rate of air flow
 SGB-090: 0.5 m³/min.
 SGB-120: 1.5 m³/min.
- Adaptors*
 TBA-075-B for SGB-090
 TBA-125-B for SGB-120

Also, SGB are designed to be used as air filters for STAUFF desiccant breathers (see pages 22 and 23).

* Adaptors

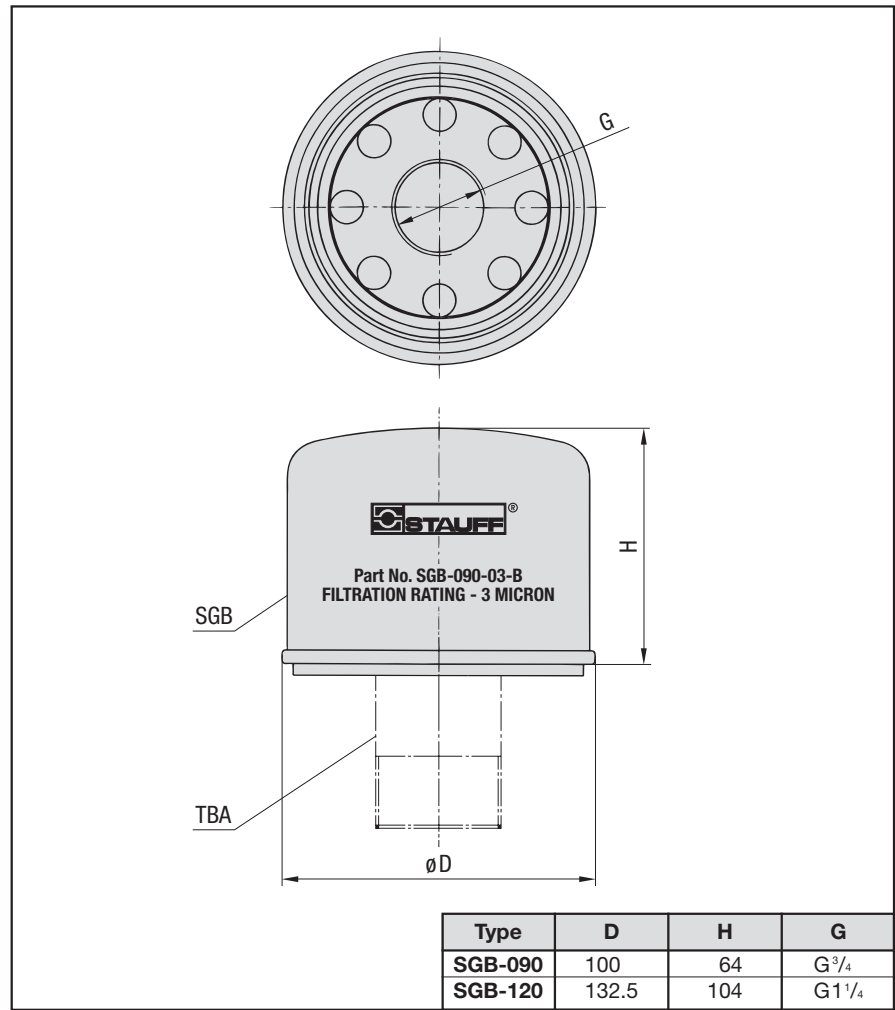
On request, screw-in adaptors for giant breathers SGB-090 and SGB-120 are available in combination with giant air breathers.

Dimensions TBA



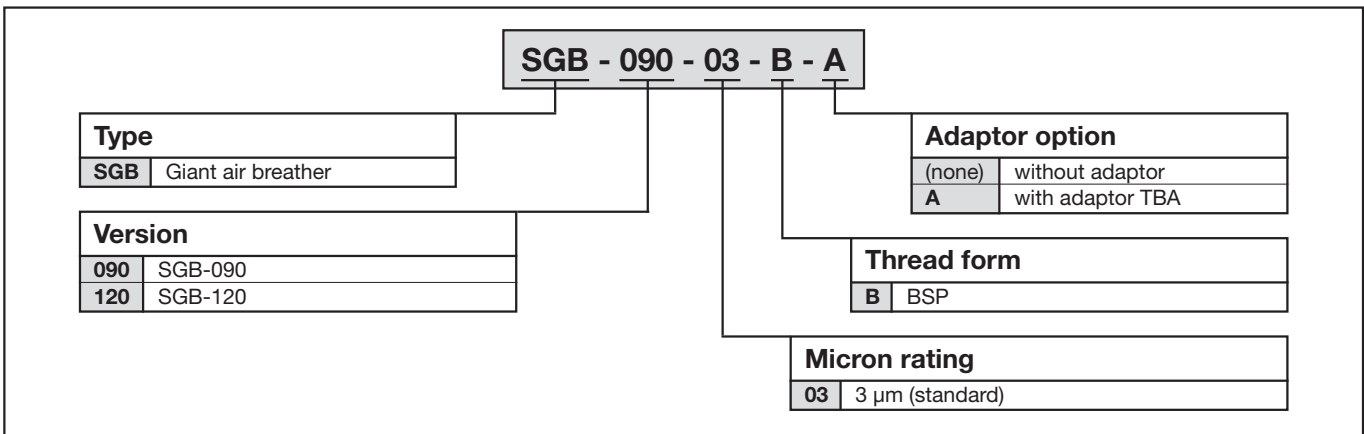
Type	L1	L2	G	D1	SW	O-Ring
TBA-075-B	57	16	G ³ / ₄	32	32	ø23.5x3
TBA-125-B	76	20	G1 ¹ / ₄	50	50	ø38.5x3

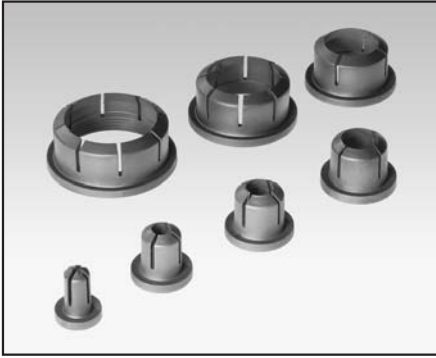
Dimensions SGB



Type	D	H	G
SGB-090	100	64	G ³ / ₄
SGB-120	132.5	104	G1 ¹ / ₄

Ordering Code





Area of Application:

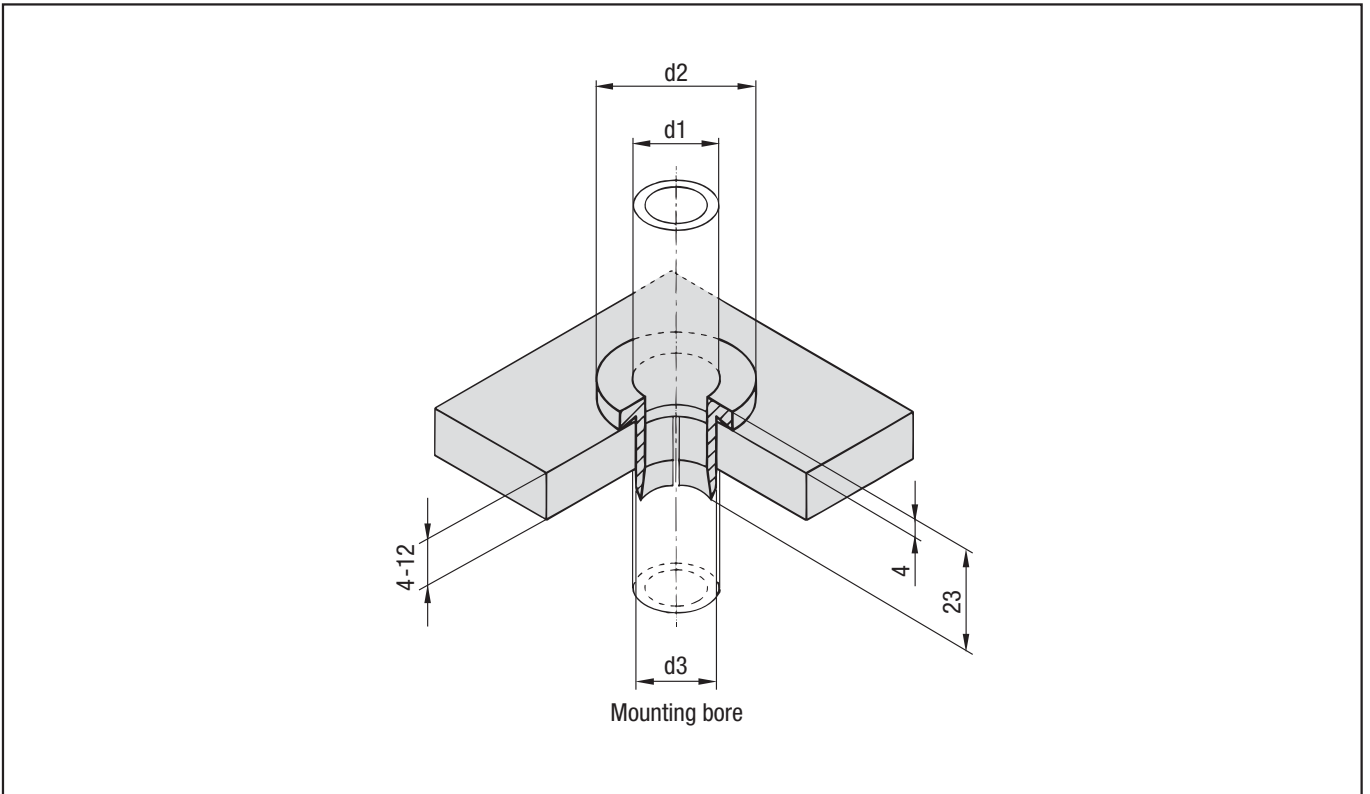
Tubular support and seal for tank entry return lines
(ODs from 6 mm up to 42 mm)

Characteristics:

- vibration damping and sound absorbing
- resistant against oil and solvents
- available in santoprene or polypropylene
- A positive bulkhead installation is ensured by a special lip seal.

A remarkable feature of return line bushes is easy installation and they offer assembly costs compared to fittings.

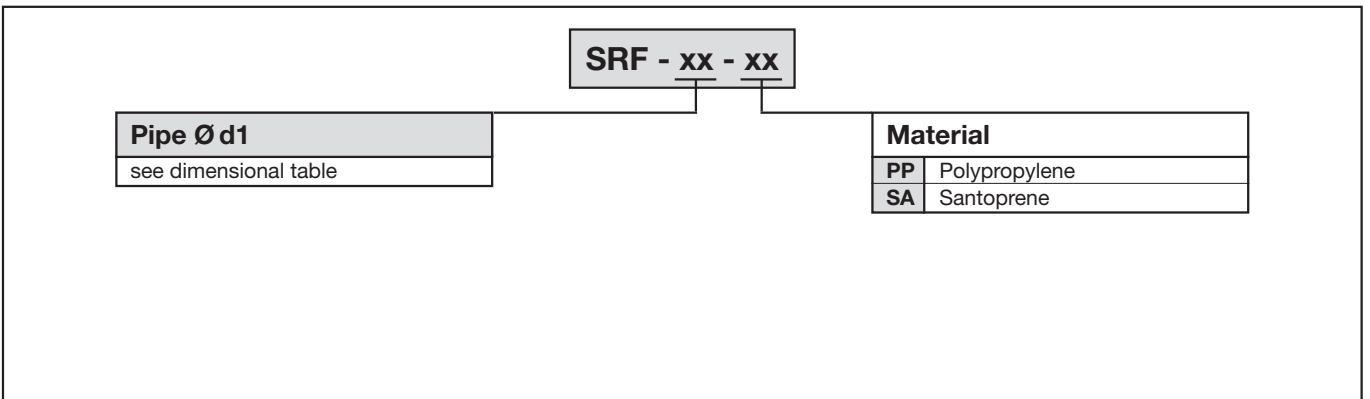
Dimensions



Dimensional Table

Pipe Ø d1	06	08	10	12	14	15	16	18	20	22	25	28	30	35	38	42
d2	18	20	22	24	26	28	28	30	32	34	38	41	43	48	51	55
d3	10	12	14	16	18	20	20	22	24	26	30	33	35	40	43	47

Ordering Code





Area of Application:

Reservoir installation for direct suction line connection

Characteristics:

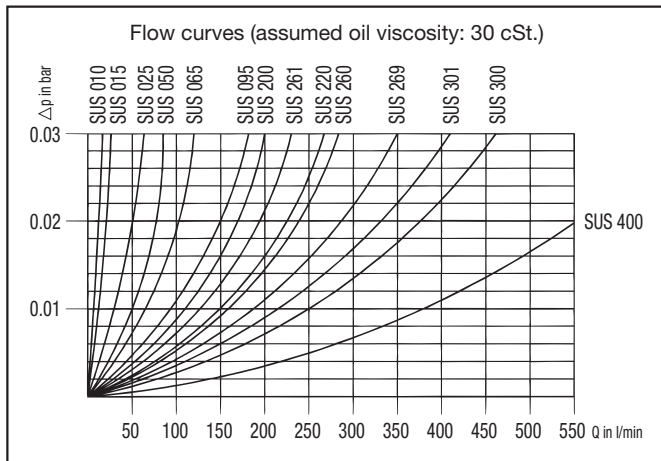
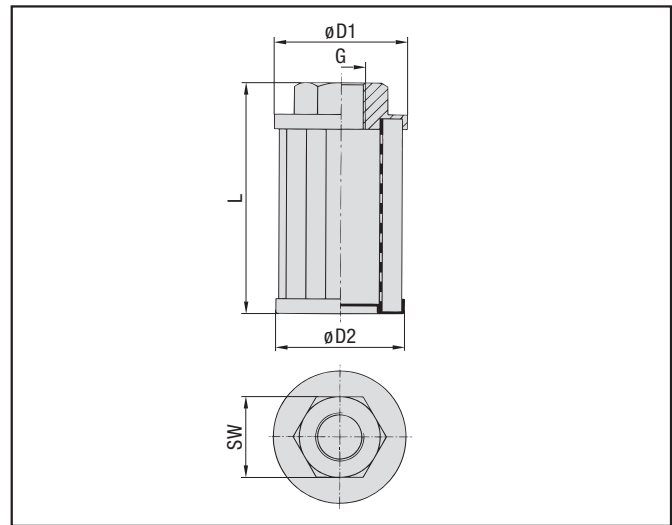
- suitable for mineral oil
- thread form: BSP
- threaded end caps made out of glass fibre reinforced polyamide or aluminium (see Technical Data)

STAUFF suction strainers SUS are available with NPT threads and/or with an integrated bypass on request.

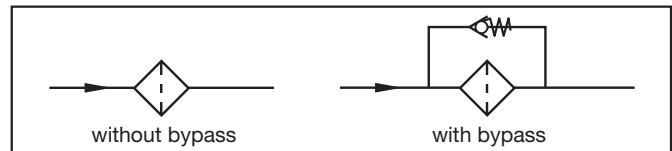
Technical Data

Temperature range:	-20°C ... +100°C
Flow range:	400 l/min max
Connection thread sizes:	G ^{3/8} - G3
Filtermaterial:	Stainless steel wire mesh
Support tube material:	Steel, zinc-plated
Threaded end cap material:	glass fiber reinforced polyamide; SUS 220-B32-A ... : Aluminium
Bypass opening pressure:	0.20 bar (bypass option on request)

Dimensions



Symbols



Ordering Code and Dimensional Table

SUS 025 - B12 - P - O - 125

Type								Micron Rating						
SUS Suction Strainer								<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td>060</td> <td>60 µm (on request)</td> </tr> <tr> <td>125</td> <td>125 µm (standard)</td> </tr> <tr> <td>250</td> <td>250 µm (on request)</td> </tr> </table>	060	60 µm (on request)	125	125 µm (standard)	250	250 µm (on request)
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								<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td>0</td> <td>no bypass (standard)</td> </tr> <tr> <td>3</td> <td>integrated bypass (0.2 bar / 3 PSI)</td> </tr> </table>	0	no bypass (standard)	3	integrated bypass (0.2 bar / 3 PSI)		
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3	integrated bypass (0.2 bar / 3 PSI)													
Size	Threaded end cap material	Q max	G	L	D1	D2	SW							
010-B06-P	Plastic	10 l/min	G ^{3/8}	67	50	49	26							
015-B08-P	Plastic	15 l/min	G ^{1/2}	102	50	49	26							
025-B12-P	Plastic	25 l/min	G ^{3/4}	105	68	66	34							
050-B16-P	Plastic	50 l/min	G1	140	68	66	42							
065-B20-P	Plastic	65 l/min	G1 ^{1/4}	140	88	85	50							
095-B24-P	Plastic	95 l/min	G1 ^{1/2}	140	88	85	60							
200-B24-P	Plastic	200 l/min	G1 ^{1/2}	200	102	100	72							
220-B32-A	Aluminium	220 l/min	G2	151	150	145	70							
260-B32-P	Plastic	260 l/min	G2	260	102	100	72							
261-B32-P	Plastic	210 l/min	G2	210	102	100	72							
269-B32-P	Plastic	300 l/min	G2	300	102	100	72							
300-B40-P	Plastic	300 l/min	G2 ^{1/2}	212	131	128	86							
301-B40-P	Plastic	290 l/min	G2 ^{1/2}	191	131	128	86							
400-B48-P	Plastic	400 l/min	G3	272	131	128	96							



Area of Application:

Foaming and noise reduction in tanks

Characteristics:

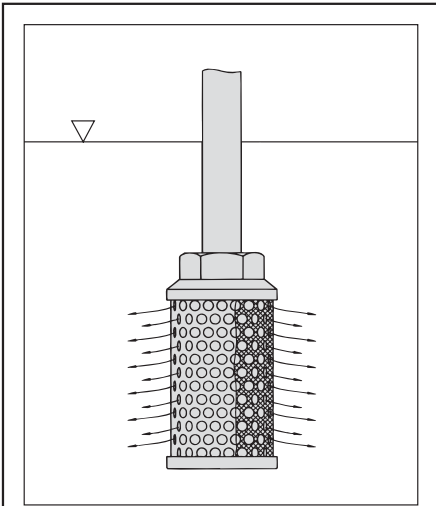
- suitable for mineral oil
- reduce fluid aeration
- silencing
- standard thread form: BSP
- consist of two concentric tubes with discharge holes

STAUFF-Diffusers SRV are available with NPT threads on request.

Technical Data

Temperature range: -20°C ... +100°C
 Flow range: 950 l/min max
 Connection thread sizes: G^{3/4} – G3
 End cap material: Aluminium
 Body material: Steel, zinc-plated

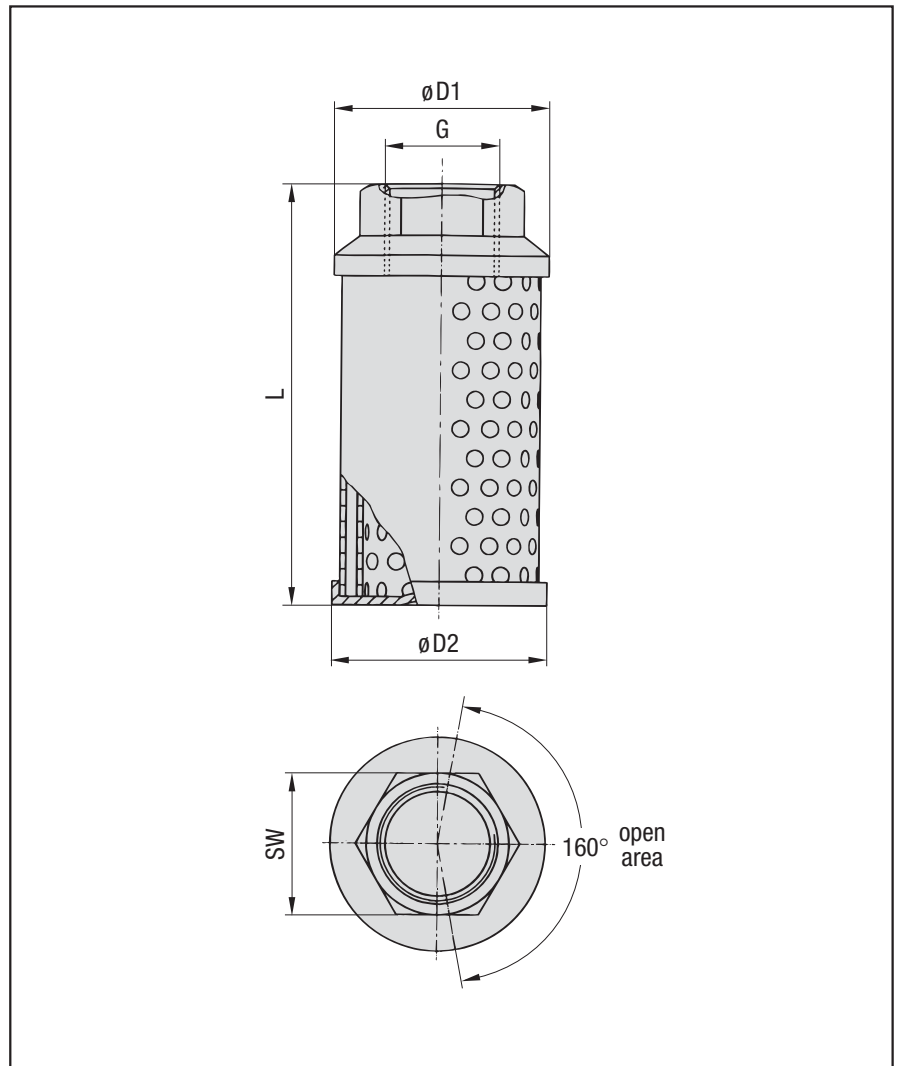
Example of Application SRV



Note

SRV must be completely installed below the liquid level. Its plain area on the outside must be facing the pump inlet.

Dimensions



Ordering Code and Dimensional Table

Type	Q max	G	L	D1	D2	SW
SRV-050-B12	50 l/min	G ^{3/4}	109	64	60	36
SRV-114-B16	114 l/min	G1	139	64	60	46
SRV-200-B20	200 l/min	G1 ^{1/4}	139	86	82	60
SRV-227-B24	227 l/min	G1 ^{1/2}	200	86	82	60
SRV-454-B32	454 l/min	G2	260	86	82	70
SRV-650-B40	650 l/min	G2 ^{1/2}	211	150	145	90
SRV-950-B48	950 l/min	G3	272	150	145	100



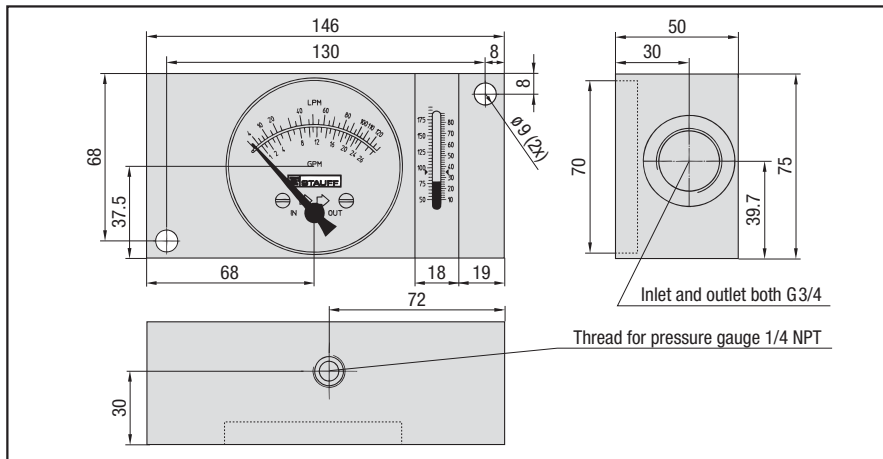
Area of Application:

Flow, pressure and temperature measuring of fluids (mobile and industrial hydraulics), also controlling of system pressure (only SDM)

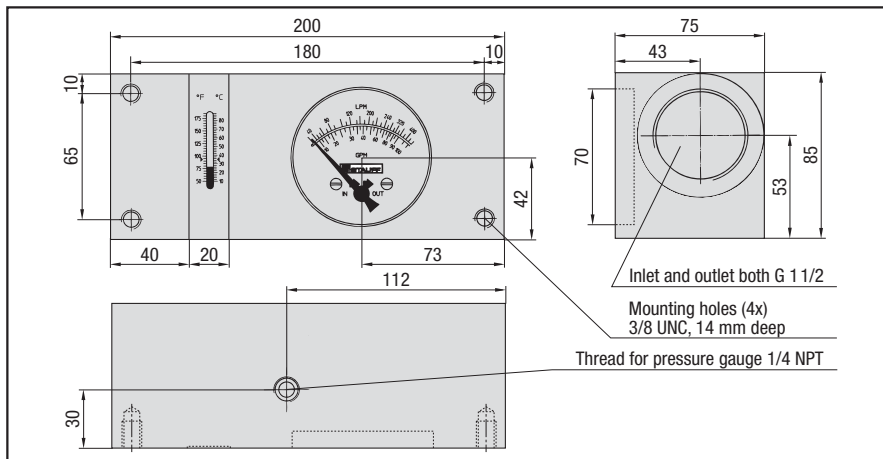
Characteristics:

- suitable for mineral oil (aluminium), HFC fluids and water (bronze)
- designed for in-line installation
- mechanical process (off the line)
- controlling system pressure with a pressure control valve (only SDM)
- flow indication in l/min and GPM

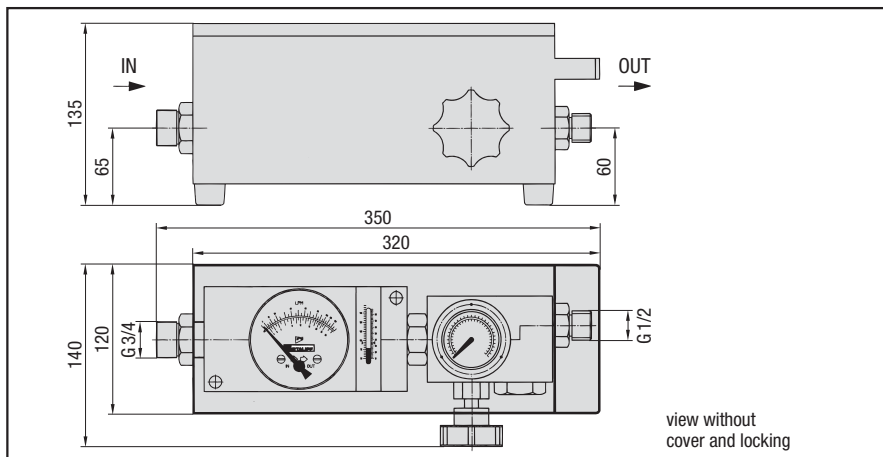
Dimensions SDM-750



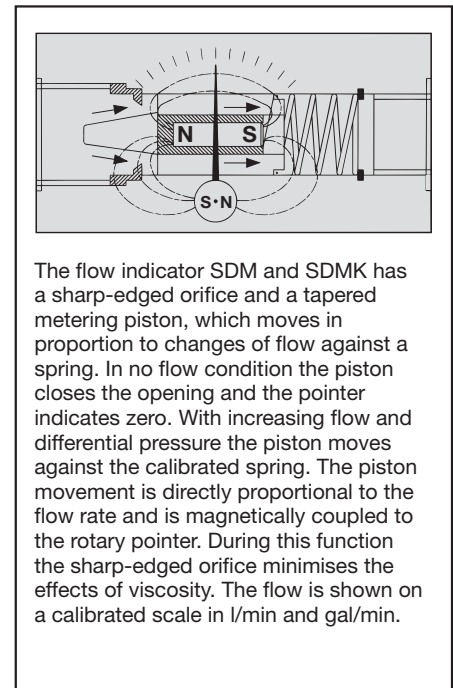
Dimensions SDM-1500



Dimensions SDM-750



Functional principal flow measuring



The flow indicator SDM and SDMK has a sharp-edged orifice and a tapered metering piston, which moves in proportion to changes of flow against a spring. In no flow condition the piston closes the opening and the pointer indicates zero. With increasing flow and differential pressure the piston moves against the calibrated spring. The piston movement is directly proportional to the flow rate and is magnetically coupled to the rotary pointer. During this function the sharp-edged orifice minimises the effects of viscosity. The flow is shown on a calibrated scale in l/min and gal/min.

Controlling system pressure with SDM

The pressure control valve of the SDM is directly connected to a flow-block and together with the integrated pressure gauge it allows an exact control of the system pressure in the maximum range. For protection the SDM has two rupture disks. At a pressure of 440 bar the disks burst and the fluid is by-passed around the valve. The rupture disks (other pressure ranges on request) can be replaced easily.

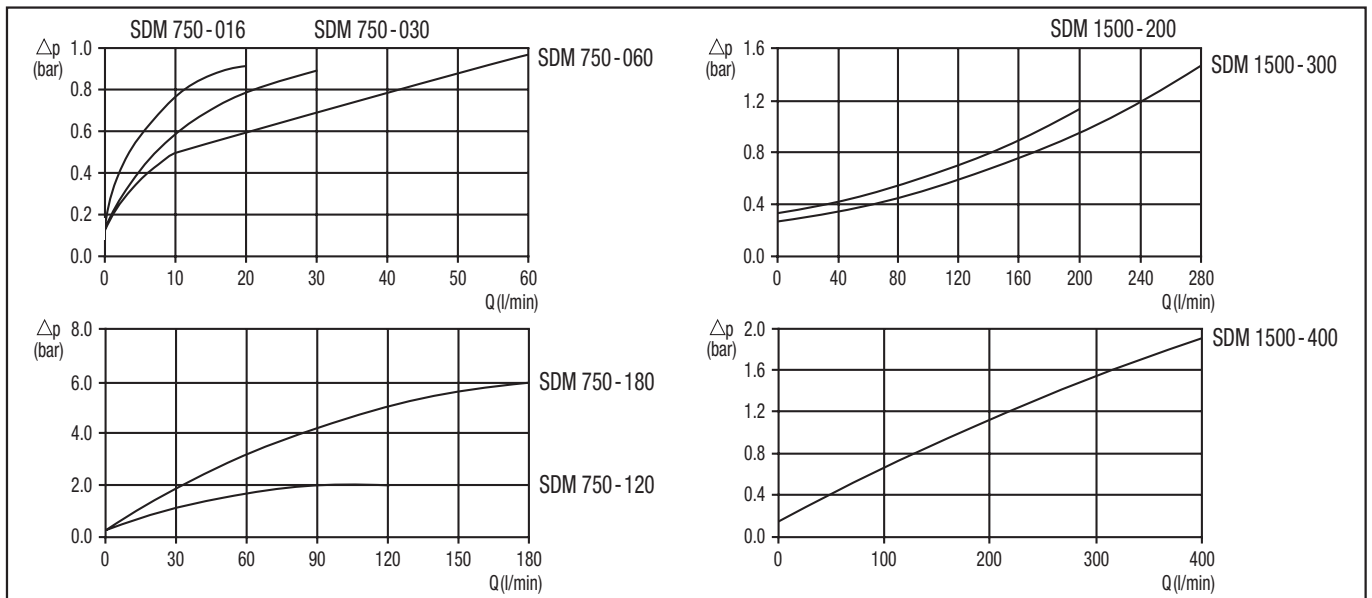
Technical Data

Accuracy:	
Flow:	± 4 % FSD
Temperature:	± 2 °C
Pressure (only SDM):	± 1.6 % of max pressure
Temperature measuring range:	10 °C ... 80 °C

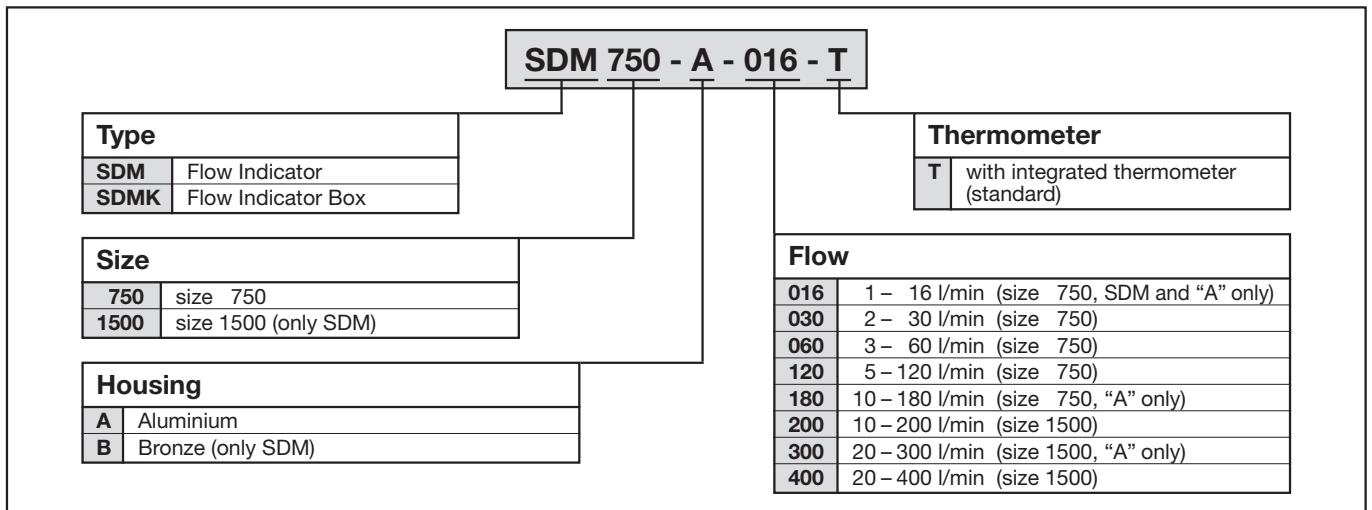
Technical Data

Part Number	max Working press.	Flow range	Weight	Connection	Dimensions (mm)
SDM-750-A-016-T	420 bar	1 – 16 l/min	1.360 kg	G ³ / ₄	146 x 75 x 50
SDM-750-A-030-T	420 bar	2 – 30 l/min	1.360 kg	G ³ / ₄	146 x 75 x 50
SDM-750-A-060-T	420 bar	3 – 60 l/min	1.360 kg	G ³ / ₄	146 x 75 x 50
SDM-750-A-120-T	420 bar	5 – 120 l/min	1.360 kg	G ³ / ₄	146 x 75 x 50
SDM-750-A-180-T	420 bar	10 – 180 l/min	1.360 kg	G ³ / ₄	146 x 75 x 50
SDM-750-B-030-T	420 bar	2 – 35 l/min	4.250 kg	G ³ / ₄	146 x 75 x 50
SDM-750-B-060-T	420 bar	3 – 70 l/min	4.250 kg	G ³ / ₄	146 x 75 x 50
SDM-750-B-120-T	420 bar	5 – 140 l/min	4.250 kg	G ³ / ₄	146 x 75 x 50
SDM-1500-A-200-T	280 bar	10 – 200 l/min	3.000 kg	G1 ¹ / ₂	200 x 85 x 75
SDM-1500-A-300-T	280 bar	20 – 300 l/min	3.000 kg	G1 ¹ / ₂	200 x 85 x 75
SDM-1500-A-400-T	280 bar	30 – 400 l/min	3.000 kg	G1 ¹ / ₂	200 x 85 x 75
SDM-1500-B-200-T	280 bar	10 – 200 l/min	8.000 kg	G1 ¹ / ₂	200 x 85 x 75
SDM-1500-B-400-T	280 bar	30 – 400 l/min	8.000 kg	G1 ¹ / ₂	200 x 85 x 75
SDMK-750-A-030-T	420 bar	2 – 30 l/min	4.500 kg	G ³ / ₄ + G ¹ / ₂	350 x 135 x 140
SDMK-750-A-060-T	420 bar	3 – 60 l/min	4.500 kg	G ³ / ₄ + G ¹ / ₂	350 x 135 x 140
SDMK-750-A-120-T	420 bar	5 – 120 l/min	4.500 kg	G ³ / ₄ + G ¹ / ₂	350 x 135 x 140
SDMK-750-A-180-T	420 bar	10 – 180 l/min	4.500 kg	G ³ / ₄ + G ¹ / ₂	350 x 135 x 140

Flow Curves



Ordering Code





Area of Application: mechanical pressure measurement

Characteristics:

- suitable for hydraulic oil and gaseous media that do not attack any copper base alloy
- available in nominal sizes 63 and 100
- standard thread form: BSP
- housing made out of stainless steel (1.4301)
- sight glass made out of acrylic
- glycerine filled
- standard dual scales with pressure indication in bar and PSI
- U-bolt or flange mounting kit on request

Please consult our office before you use SPG with other media.

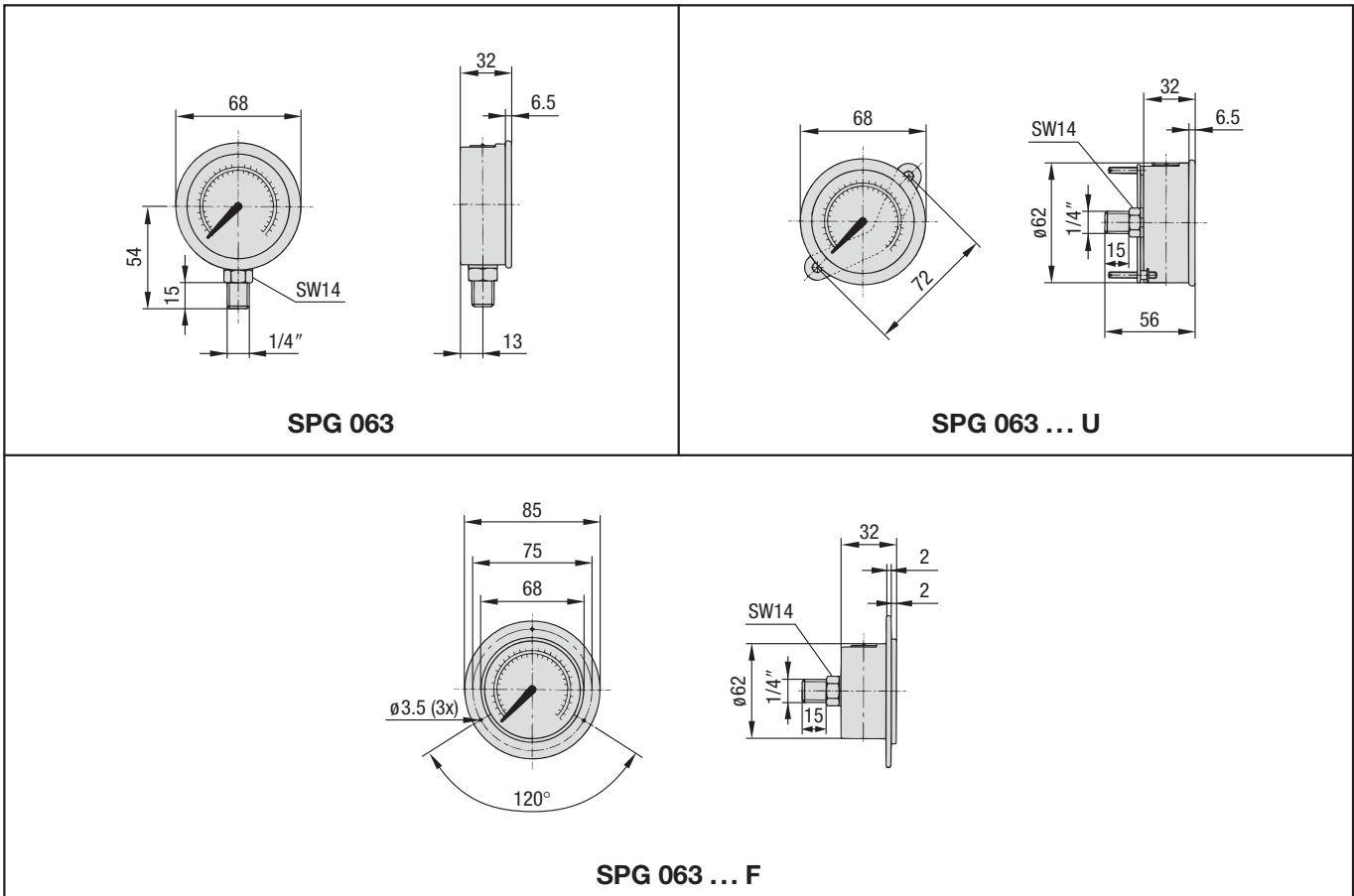
Technical Data:

System of protection: IP 65 (EN 60 529 / IEC 529)
 Accuracy class SPG-063: 1.6 (± 1.6 % FS as per EN 837-1)
 Accuracy class SPG-100: 1.0 (± 1.0 % FS as per EN 837-1)
 environmental temp. range: -20°C ... +60°C
 temperature range medium: max +60°C

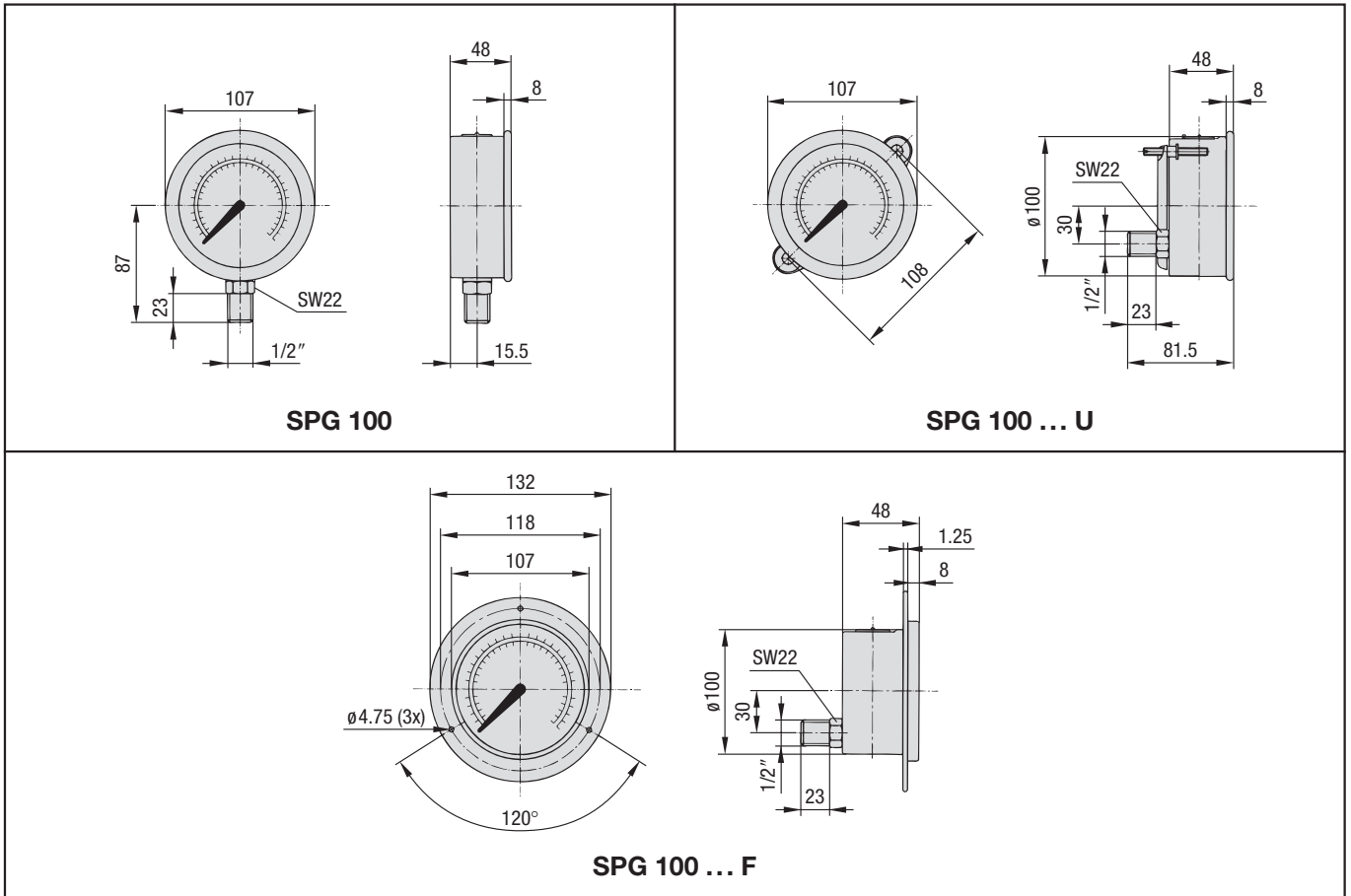
Options (on request):

- additional scale readings including personalisation
- thread form NPT
- U-bolt and flange mounting kits are available separately as spare parts
- additional pressure ranges up to 1000 bar max

Dimensions SPG 063



Dimensions SPG 100



Ordering Code

SPG 063 - 0-160 - 1 - R - B - U

Type	SPG Stainless steel pressure gauge																														
Size	063 63 mm with G ¹ / ₄ or 1/4 NPT connection 100 100 mm with G ¹ / ₂ or 1/2 NPT connection																														
Pressure range	<table border="1"> <tr><td>-1 - 1.5</td><td>(-1) - 1.5 bar / 21 PSI</td></tr> <tr><td>-1 - 3</td><td>(-1) - 3 bar / 42 PSI</td></tr> <tr><td>0 - 10</td><td>0 - 10 bar / 145 PSI</td></tr> <tr><td>0 - 16</td><td>0 - 16 bar / 230 PSI</td></tr> <tr><td>0 - 25</td><td>0 - 25 bar / 360 PSI</td></tr> <tr><td>0 - 40</td><td>0 - 40 bar / 580 PSI</td></tr> <tr><td>0 - 60</td><td>0 - 60 bar / 850 PSI</td></tr> <tr><td>0 - 100</td><td>0 - 100 bar / 1450 PSI</td></tr> <tr><td>0 - 160</td><td>0 - 160 bar / 2300 PSI</td></tr> <tr><td>0 - 250</td><td>0 - 250 bar / 3600 PSI</td></tr> <tr><td>0 - 400</td><td>0 - 400 bar / 5800 PSI</td></tr> <tr><td>0 - 600</td><td>0 - 600 bar / 8500 PSI</td></tr> <tr><td>0 - 680</td><td>0 - 680 bar / 10000 PSI</td></tr> <tr><td>0 - 700</td><td>0 - 700 bar / 10000 PSI</td></tr> <tr><td>0 - 1000</td><td>0 - 1000 bar / 14500 PSI</td></tr> </table>	-1 - 1.5	(-1) - 1.5 bar / 21 PSI	-1 - 3	(-1) - 3 bar / 42 PSI	0 - 10	0 - 10 bar / 145 PSI	0 - 16	0 - 16 bar / 230 PSI	0 - 25	0 - 25 bar / 360 PSI	0 - 40	0 - 40 bar / 580 PSI	0 - 60	0 - 60 bar / 850 PSI	0 - 100	0 - 100 bar / 1450 PSI	0 - 160	0 - 160 bar / 2300 PSI	0 - 250	0 - 250 bar / 3600 PSI	0 - 400	0 - 400 bar / 5800 PSI	0 - 600	0 - 600 bar / 8500 PSI	0 - 680	0 - 680 bar / 10000 PSI	0 - 700	0 - 700 bar / 10000 PSI	0 - 1000	0 - 1000 bar / 14500 PSI
-1 - 1.5	(-1) - 1.5 bar / 21 PSI																														
-1 - 3	(-1) - 3 bar / 42 PSI																														
0 - 10	0 - 10 bar / 145 PSI																														
0 - 16	0 - 16 bar / 230 PSI																														
0 - 25	0 - 25 bar / 360 PSI																														
0 - 40	0 - 40 bar / 580 PSI																														
0 - 60	0 - 60 bar / 850 PSI																														
0 - 100	0 - 100 bar / 1450 PSI																														
0 - 160	0 - 160 bar / 2300 PSI																														
0 - 250	0 - 250 bar / 3600 PSI																														
0 - 400	0 - 400 bar / 5800 PSI																														
0 - 600	0 - 600 bar / 8500 PSI																														
0 - 680	0 - 680 bar / 10000 PSI																														
0 - 700	0 - 700 bar / 10000 PSI																														
0 - 1000	0 - 1000 bar / 14500 PSI																														
Accessories (for rear entry only)	<table border="1"> <tr><td>(none)</td><td>no accessory</td></tr> <tr><td>U</td><td>U-bolt assembly</td></tr> <tr><td>F</td><td>Front flange assembly</td></tr> </table>	(none)	no accessory	U	U-bolt assembly	F	Front flange assembly																								
(none)	no accessory																														
U	U-bolt assembly																														
F	Front flange assembly																														
Thread size	<table border="1"> <tr><td>B</td><td>BSP (G¹/₄ or G¹/₂) (standard)</td></tr> <tr><td>N</td><td>NPT (1/4 NPT or 1/2 NPT) (only on request)</td></tr> </table>	B	BSP (G ¹ / ₄ or G ¹ / ₂) (standard)	N	NPT (1/4 NPT or 1/2 NPT) (only on request)																										
B	BSP (G ¹ / ₄ or G ¹ / ₂) (standard)																														
N	NPT (1/4 NPT or 1/2 NPT) (only on request)																														
Adaption	<table border="1"> <tr><td>S</td><td>Stem mounting</td></tr> <tr><td>R</td><td>Rear mounting</td></tr> </table>	S	Stem mounting	R	Rear mounting																										
S	Stem mounting																														
R	Rear mounting																														
Style of scales	<table border="1"> <tr><td>1</td><td>BAR/PSI (bar outside / PSI inside)</td></tr> </table>	1	BAR/PSI (bar outside / PSI inside)																												
1	BAR/PSI (bar outside / PSI inside)																														



Area of Application:

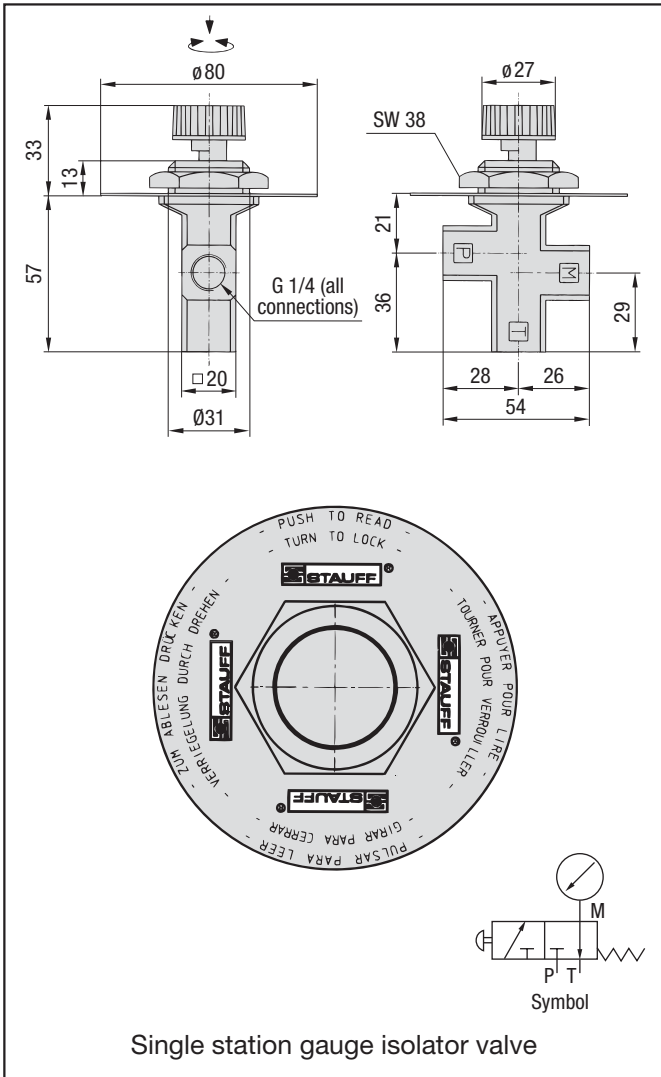
protection against pressure gauge overload (single station) or 6 position pressure measurement (multi-station)

Characteristics:

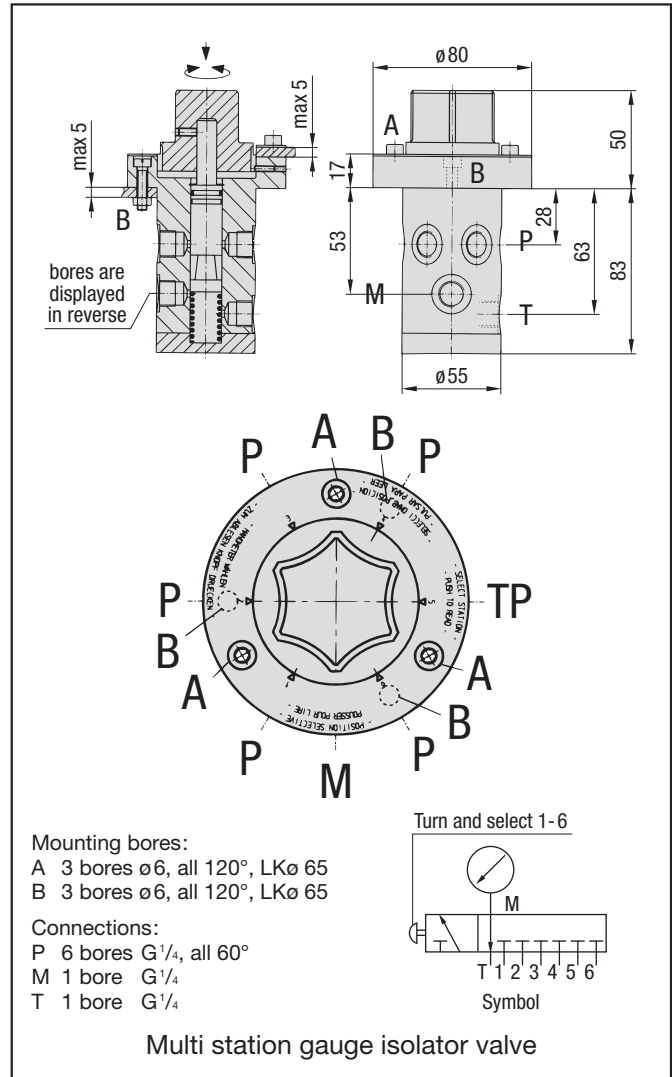
- suitable for hydraulic fluids
- max operating pressure: 350 bar
- connection thread size: G 1/4; 1/4 NPT for single station valves on request
- temperature range: 100°C max
- complete with operation manual (plate mounted to the product)

Please consult our office before you use SWS with other fluids.

Dimensions SWS-B04-S1



Dimensions SWS-B04-M



Ordering Code

SWS - B04 - S1	
Type	Style
SWS Gauge isolator valve	S1 Single station gauge isolator valve
	M multi station gauge isolator valve
	Adaption thread
	B04 G 1/4 (standard)
	N04 1/4 NPT (for style "S1" only)

Information regarding our complete range of Spin-on Filters is available in our separate catalogue:

STAUFF FILTRATION TECHNOLOGY – Spin-on Filters

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Bell Housings & Couplings

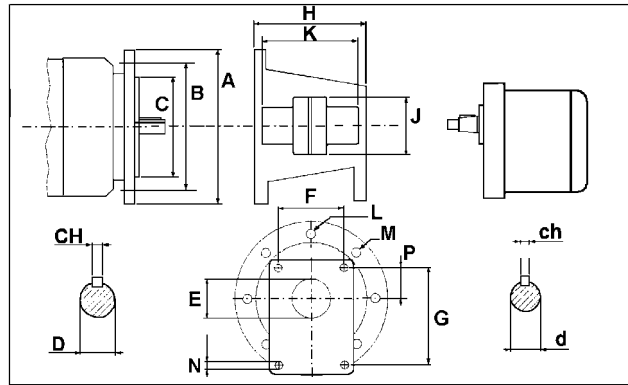
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STAUFF

DIMENSIONAL DATA for 4 - BOLT METRIC PUMPS

Stauff Bell Housings and Couplings are designed to connect pumps to electric motors, B5 standard. There are two series available, the first to suit metric, 4-bolt mount, pumps from Group 0.5 to Group 3 and the second to suit SAE, 2-bolt mount, pumps from Group AA to Group C. The coupling halves are pre-bored and keyed to suit standard motor and pump shafts. The complete coupling comprises the pump hub, the motor hub and the rubber spider.

Bell housing selection is related to the "frame size" of the drive motor and the pump group designation. Selection of the bell housing and the coupling set can be simply read from the tables on page 4.



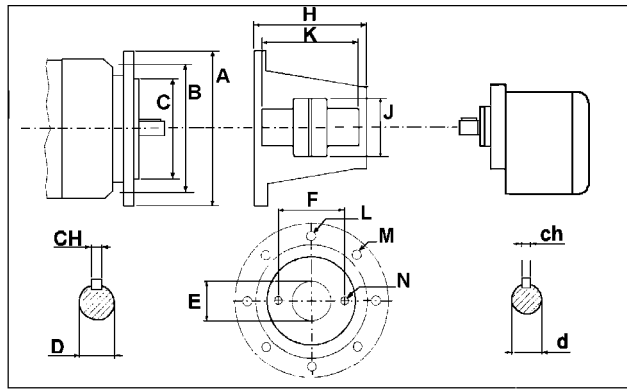
METRIC 4 - BOLT PUMP MOUNT BELL HOUSING

PART No.	A	B	C	E	F	G	H	L	M	N	P
SBH63-05	140	115	95	22	-	66	60	10	M8	M6	25.5
SBH71-05	160	130	110	22	-	66	70	10	M8	M6	25.5
SBH71-1	160	130	110	25.4	52	72	70	10	M8	M6	26.2
SBH80-1	200	165	130	25.4	52	72	95	12	M10	M6	26.2
SBH80-2	200	165	130	36.5	71.5	96	95	12	M10	M8	32.5
SBH100-1	250	215	180	25.4	52	72	105	14	M12	M6	26.2
SBH100-2	250	215	180	36.5	71.5	96	105	14	M12	M8	32.5
SBH100-2L	250	215	180	36.5	71.5	96	115	14	M12	M8	32.5
SBH100-3	250	215	180	50.8	98.5	128	115	14	M12	M10	42
SBH132-2	300	265	230	36.5	71.5	96	143	14	M12	M8	32.5
SBH132-3	300	265	230	50.8	98.5	128	143	14	M12	M10	42
SBH160-2	350	300	250	36.5	71.5	96	178	18	M16	M8	32.5
SBH160-3	350	300	250	50.8	98.5	128	178	18	M16	M10	42
SBH200-3	400	350	300	50.8	98.5	128	188	18	M16	M10	42

DRIVE COUPLING SETS – 1 : 8 TAPERED SHAFT PUMPS

Frame Size	Motor Hub	Pump Hub	Spider	K	J	D	CH	d	ch
D63	SMH48-11	SPH486-05	SS-48	54	48	11	4	6	2.0
D71	SMH48-14	SPH486-05	SS-48	64	48	14	5	6	2.0
D71	SMH48-14	SPH48-T1	SS-48	62	48	14	5	9.7	2.4
D80	SMH48-19	SPH48-T1	SS-48	87	48	19	6	9.7	2.4
D80	SMH65-19	SPH65-T2	SS-65	87	65	19	6	17.2	3.2/4.0
D90	SMH65-24	SPH65-T1	SS-65	87	65	24	8	9.7	2.4
D90	SMH65-24	SPH65-T2	SS-65	87	65	24	8	17.2	3.2/4.0
D100/112	SMH65-28	SPH65-T1	SS-65	97	65	28	8	9.7	2.4
D100/112	SMH65-28	SPH65-T2	SS-65	97	65	28	8	17.2	3.2/4.0
D100/112	SMH86-28	SPH86-T2	SS-86	107	86	28	8	17.2	3.2/4.0
D100/112	SMH86-28	SPH86-T3	SS-86	107	86	28	8	22.2	4.0
D132	SMH86-38	SPH86-T2	SS-86	135	86	38	10	17.2	3.2/4.0
D132	SMH86-38	SPH86-T3	SS-86	135	86	38	10	22.2	4.0
D160	SMH108-42	SPH108-T2	SS-108	168	108	42	12	17.2	3.2/4.0
D160	SMH108-42	SPH108-T3	SS-108	168	108	42	12	22.2	4.0
D180	SMH108-48	SPH108-T2	SS-108	168	108	48	14	17.2	3.2/4.0
D180	SMH108-48	SPH108-T3	SS-108	168	108	48	14	22.2	4.0
D200	SMH108-55	SPH108-T3L	SS-108	176	108	55	16	22.2	4.0

DIMENSIONAL DATA for 2 - BOLT SAE FLANGED PUMPS



Material Specifications

Bell Housing Diecast aluminium alloy
 Coupling Diecast aluminium alloy
 Spider Acryl-nitrile-buna 75 Shore A
 Temperature - 30° to + 80°C

Drive Coupling Max. kW load at 1440 rpm

(with electric motor at constant load)

Series 48 coupling 1.5 kW

Series 65 coupling 4.5 kW

Series 86 coupling 12.0 kW

Series 108 coupling 33.0 kW

Max. angular mis-alignment 2°

SAE 2 - BOLT PUMP MOUNT BELL HOUSINGS

Part No.	A	B	C	E	F	H	L	M	N
SBH80-AA	200	165	130	50.8	82.5	95	12	M10	M8
SBH100-AA	250	215	180	50.8	82.5	112	14	M12	M8
SBH80-A	200	165	130	82.5	106	126	12	M10	M10
SBH80-B	200	165	130	101.6	146	130	12	M10	M12
SBH100-A	250	215	180	82.5	106	136	14	M12	M10
SBH100-B	250	215	180	101.6	146	136	14	M12	M12
SBH132-A	300	265	230	82.5	106	170	14	M12	M10
SBH132-B	300	265	230	101.6	146	170	14	M12	M12
SBH132-C	300	265	230	127	181	170	14	M12	M16
SBH160-A	350	300	250	82.5	106	195	18	M16	M10
SBH160-B	350	300	250	101.6	146	195	18	M16	M12
SBH160-C	350	300	250	127	181	195	18	M16	M16
SBH200-B	400	350	300	101.6	146	206	18	M16	M12
SBH200-C	400	350	300	127	181	206	18	M16	M16

DRIVE COUPLING SETS – PARALLEL SHAFT PUMPS

Frame Size	Motor Hub	Pump Hub	Spider	K	J	D	CH	d	ch
D80	SMH48-19	SPH48-12AA	SS-48	90	48	19	6	12.7	3.18
D90	SMH48-24	SPH48-12AA	SS-48	90	48	24	8	12.7	3.18
D100/112	SMH65-28	SPH65-12AA	SS-65	97	65	28	8	12.7	3.18
D80	SMH65-19	SPH65-34A	SS-65	115.5	65	19	6	19.05	4.76
D80	SMH65-19	SPH65-78B	SS-65	115.5	65	19	6	22.22	4.76
D90	SMH65-24	SPH65-34A	SS-65	115.5	65	24	8	19.05	4.76
D90	SMH65-24	SPH65-78B	SS-65	115.5	65	24	8	22.22	4.76
D100/112	SMH86-28	SPH86-34A	SS-86	128	86	28	8	19.05	4.76
D110/112	SMH86-28	SPH86-78B	SS-86	128	86	28	8	22.22	4.76
D132	SMH86-38	SPH86-34A	SS-86	156	86	38	10	19.05	4.76
D132	SMH86-38	SPH86-78B	SS-86	156	86	38	10	22.22	4.76
D132	SMH86-38	SPH86-114C	SS-86	156	86	38	10	31.75	6.35
D160	SMH108-42	SPH108-34A	SS-108	182	108	42	12	19.05	4.76
D160	SMH108-42	SPH108-78B	SS-108	182	108	42	12	22.22	4.76
D160	SMH108-42	SPH108-114C	SS-108	182	108	42	12	31.75	6.35
D180	SMH108-48	SPH108-78B	SS-108	182	108	48	14	22.22	4.76
D180	SMH108-48	SPH108-114C	SS-108	182	108	48	14	31.75	6.35
D200	SMH108-55	SPH108-78B	SS-108	182	108	55	16	22.22	4.76
D200	SMH108-55	SPH108-114C	SS-108	182	108	55	16	31.75	6.35

COMPONENT SELECTION TABLES

METRIC RECTANGULAR – 4 BOLT PUMP MOUNT

Frame Size	kW / Hp	Pump Grp.	Bell Housing	Motor Hub	Pump Hub	Spider
D63	0.18/0.25	0.5	SBH63-05	SMH48-11	SPH486-05	SS-48
D71	0.37/0.5	0.5	SBH71-05	SMH48-14	SPH486-05	SS-48
D71	0.37/0.5	1	SBH71-1	SMH48-14	SPH48-T1	SS-48
D80	0.75/1.0	1	SBH80-1	SMH48-19	SPH48-T1	SS-48
D80	0.75/1.0	2	SPH80-2	SMH65-19	SPH65-T2	SS-65
D90	1.5/2.0	1	# SBH80-1	SMH65-24	SPH65-T1	SS-65
D90	1.5/2.0	2	# SBH80-2	SMH65-24	SPH65-T2	SS-65
D100/112	4.0/5.5	1	SBH100-1	SMH65-28	SPH65-T1	SS-65
D100/112	4.0/5.5	2	SBH100-2	SMH65-28	SPH65-T2	SS-65
D100/112	4.0/5.5	2	### SBH100-2L	SMH86-28	SPH86-T2	SS-86
D100/112	4.0/5.5	3	SBH100-3	SMH86-28	SPH86-T3	SS-86
D132	9.0/12.5	2	SBH132-2	SMH86-38	SPH86-T2	SS-86
D132	9.0/12.5	3	SBH132-3	SMH86-38	SPH86-T3	SS-86
D160	15.0/20.0	2	SBH160-2	SMH108-42	SPH108-T2	SS-108
D160	15.0/20.0	3	SBH160-3	SMH108-42	SPH108-T3	SS-108
D180	22.0/30.0	2	++ SBH160-2	SMH108-48	SPH108-T2	SS-108
D180	22.0/30.0	3	++ SBH160-3	SMH108-48	SPH108-T3	SS-108
D200	30.0/40.0	3	SBH200-3	SMH108-55	SPH108-T3L	SS-108



SBH80-1 & -2 housings are common to D90 frame motors.
 ## Optional selection for D100 / 112 Group 2 pumps with larger 86 series coupling set and longer housing.
 ++ SBH160-2 & -3 housings common to D180 frame motors.

SAE SERIES FLANGE – 2 BOLT PUMP MOUNT

Frame Size	kW / Hp	Pump Grp.	Bell Housing	Motor Hub	Pump Hub	Spider
D80	0.75/1.0	AA	SBH80-AA	SMH48-19	SPH48-12AA	SS-48
D90	1.5/2.0	AA	SBH80-AA	SMH48-24	SPH48-12AA	SS-48
D100/112	4.0/5.5	AA	SBH100-AA	SMH65-28	SPH65-12AA	SS-65
D80	0.75/1.0	A	SBH80-A	SMH65-19	SPH65-34A	SS-65
D80	0.75/1.0	B	SBH80-B	SMH65-19	SPH65-78B	SS-65
D90	1.5/2.0	A	# SBH80-A	SMH65-24	SPH65-34A	SS-65
D90	1.5/2.0	B	# SBH80-B	SMH65-24	SPH65-78B	SS-65
D100/112	4.0/5.5	A	SBH100-A	SMH86-28	SPH86-34A	SS-86
D100/112	4.0/5.5	B	SBH100-B	SMH86-28	SPH86-78B	SS-86
D132	9.0/12.5	A	SBH132-A	SMH86-38	SPH86-34A	SS-86
D132	9.0/12.5	B	SBH132-B	SMH86-38	SPH86-78B	SS-86
D132	9.0/12.5	C	SBH132-C	SMH86-38	SPH86-114C	SS-86
D160	15.0/20.0	A	SBH160-A	SMH108-42	SPH108-34A	SS-108
D160	15.0/20.0	B	SBH160-B	SMH108-42	SPH108-78B	SS-108
D160	15.0/20.0	C	SBH160-C	SMH108-42	SPH108-114C	SS-108
D180	22.0/30.0	B	## SBH160-B	SMH108-48	SPH108-78B	SS-108
D180	22.0/30.0	C	## SBH160-C	SMH108-48	SPH108-114C	SS-108
D200	30.0/40.0	B	SBH200-B	SMH108-55	SPH108-78B	SS-108
D200	30.0/40.0	C	SBH200-C	SMH108-55	SPH108-114C	SS-108



SBH80-A & -B housings common to D90 frame motors.
 ## SBH160-B & -C housings common to D180 frame motors.

STAUFF CORPORATION PTY LTD

Web site: www.stauff.com

E-mail: sales@stauff.com.au

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 QLD 4077
 Tel. (07) 3217 0444
 Fax.(07) 3217 0300

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 OAKLEIGH EAST
 VIC 3166
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 Fax.(03) 9543 5422

SYDNEY

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 WETHERILL PARK
 NSW 2164
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 Fax.(02) 9725 2744

Fluid Level Sight Glasses

The SG and SGA Series of fluid level sight glasses are utilised as oil level indicators in oil tanks, gearboxes and general machinery. The transparent component, the high density polyamide, is impervious to oil, gasoline, lubricants, and most petroleum solvents. technical tables of chemical resistance are available on request. Avoid contact with alcohol, ethanol, methanol, and fluids with a high concentration of glycol.

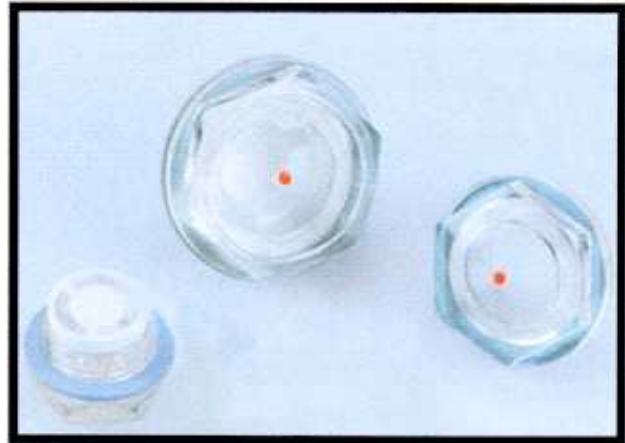
SG Series - High Density Polyamide

Materials of construction	Polyamide
Seal	Asbestos free gasket
Max. Temperature	100°C
Max. Pressure	3 bar (43 psi)

The units are fitted with a contrast screen which gives clearer oil level indication.

Models

SG-08	1/2" BSPP
SG-12	3/4" BSPP
SG-16	1" BSPP



SGA Series - Aluminium body with Polyamide window

Materials of construction	Aluminium 11S body Polyamide window
Seal	Asbestos free gasket
Max. Temperature	100°C
Max. Pressure	10 bar (145 psi)

The units have a contrast screen which gives a clearer indication of the oil level.

Models

SGA-08	1/2" BSPP
SGA-12	3/4" BSPP
SGA-16	1" BSPP



✱ Brass bodied units available on request

STAUFF CORPORATION PTY LTD STAUFF CORPORATION (NZ) LTD

HEAD OFFICE

24 - 26 Doyle Avenue
UNANDERRA NSW 2526
P.O. Box 227
UNANDERRA NSW 2526
Tel. (02) 4271 1877
Fax. (02) 4271 8432
E-mail: sales@stauff.com.au
http://www.stauff.com

ADELAIDE

1/3 Endeavour Drive
PORT ADELAIDE SA 5015
P.O. Box 208
PORT ADELAIDE SA 5015
Tel. (08) 8341 2260
Fax. (08) 8341 1604

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463 Boundary Road
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P.O. Box 20
RICHLANDS QLD 4077
Tel. (07) 3217 0444
Fax. (07) 3217 0300

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3166
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MULGRAVE VIC 3170
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Fax. (03) 9543 5422

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NSW 2164
P.O. Box 7180
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NSW 2164
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Fax. (02) 9725 2744

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EAST TAMAKI
P.O. Box 58517
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E-mail: sales@stauff.co.nz



FILTRATION TECHNOLOGY

2003

STAUFF



Pressure Filters SF

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Australia
 Stauff Corporation (Pty.) Ltd.
 P.O.Box 227 , 24-26 Doyle Avenue,
 Unanderra Wollongong , N.S.W
 2526 AUSTRALIA
 Tel: +61 2 42 71 18 77
 Fax: +61 2 42 71 84 32

Brazil
 Stauff Brasil Ltda.
 Av. Gupê 10767
 Galpão 2 – Bloco A
 Barueri – São Paulo – CEP 06422-120, BRAZIL
 Tel: +55 (0)11-4789-9020
 Fax: +55 (0)11-4789-9021

Canada
 Stauff Canada Ltd.
 866 Milner Avenue
 Scarborough , Ontário M1B 5N7 , CANADA
 Tel: +1 416 282 46 08
 Fax: +1 416 282 30 39

China
 Stauff International Trading (Shanghai) Co., Ltd.
 Shangdian Mansion, Pudong
 331 , Binzhou Road
 200126 Shanghai, CHINA
 Tel: +86 21 58 45 65 60
 Fax: +86 21 58 45 66 80

France
 Stauff S.A.
 Z.I. de Vineuil-Blois Sud
 230, Avenue du Grain d'Or
 41354 Vineuil-cedex, FRANCE
 Tel: +33 2 54 50 55 50
 Fax: +33 2 54 42 29 19

India
 Stauff India Pvt. Ltd.
 Gat. No. 2340,
 Pune-Nagar Road, Wagholi, INDIA
 IND-Pune - 412027
 Tel: +91 20 705 19 90
 Fax: +91 20 705 19 89

Italy
 Stauff Italia S.R.L.
 Via Pola 21/23, I-20034
 Birone di Giussano, ITALY
 Tel: +39 0362 31 21 13
 Fax: +39 0362 33 55 36

New Zealand
 Stauff Corporation (NZ) Ltd.
 Unit J. 150 Harris Road, P.O. Box 58517
 Greenmount Auckland-NEW ZEALAND
 Tel: +64 9 271 4812
 Fax: +64 9 271 4832

United Kingdom
 Stauff UK Ltd.
 332, Coleford Road Darnall
 Sheffield, S 9 5 P H, ENGLAND
 Tel: +44 1142 518 518
 Fax: +44 1142 518 519

USA
 Stauff Corporation
 7 Wm. Demarest Place
 Waldwick, NJ – 07463, USA
 Tel: +1 201 444 78 00
 Fax: +1 201 444 78 52

**Distributors and warehouses
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Walter Stauffenberg GmbH & Co. KG

P. O. Box 1745 · D-58777 Werdohl
 Im Ehrenfeld 4 · D-58791 Werdohl
 Tel.: +49 (0) 23 92 9 16-0
 Fax: +49 (0) 23 92 25 05
 E-mail: sales@stauff.com
 Internet: http://www.stauff.com

Stauff Filtration Technology

Stauff Filtration Technology offers a complete range of filtration products and services that will provide the system designer or user with the highest level of contamination control demanded by today's most sophisticated applications. Products include pressure filters, return line filters, elements, spin on filters suction strainers, and filler breathers for various hydraulic, lubrication and fuel oils.

Stauff has the technical expertise to provide superior filter element designs for the Stauff original filter housings and also for the interchange element market. Stauff manufactures more than 10,000 different elements. Many of these are designed to fit into filter housings produced by other companies while maintaining or surpassing the original performance.

The "Stauff Contamination Control Program" includes the diagnostic services including fluid sampling and laser particle counting products needed to monitor the system contamination level.

Stauff, through its global network of wholly owned companies and technically qualified distributors, is ideally placed to assist its customers in the total contamination process providing a well balanced filtration solution.

Pressure Filter SF	Page
Technical Data	3
Dimensions	4,5
Valves	6
Clogging Indicators	7
Ordering Code	8
Filter Elements SE	9
Flow characteristics	10,11

Technical Data

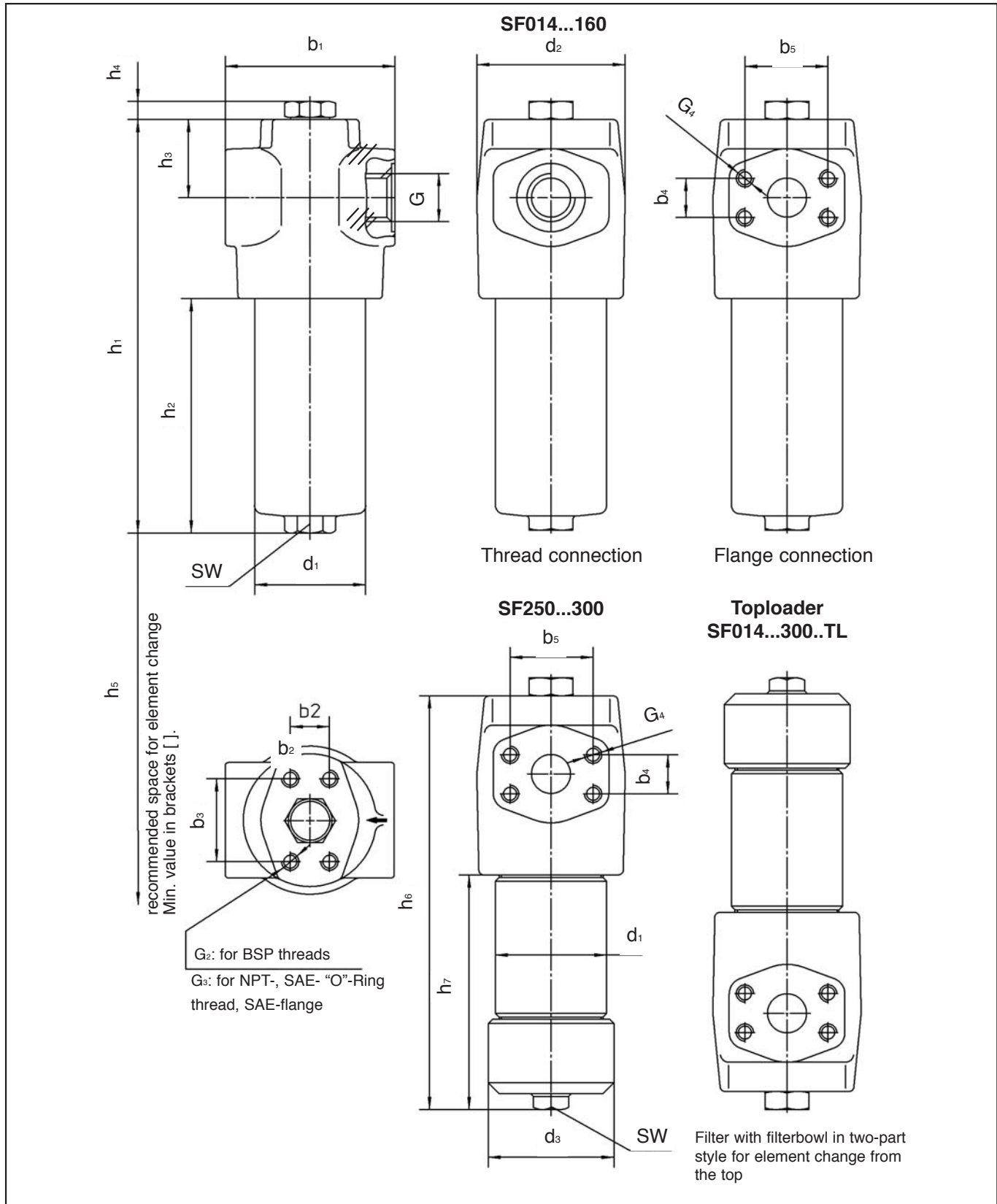
STAUFF high pressure filters are designed for in-line hydraulic applications, with a maximum operating pressure of 420 bar (6000 PSI). Used together with STAUFF filter elements, a high efficiency of contaminant removal is assured. The high dirt holding capacity of the elements ensures long service life and, as a result, reduced maintenance costs.



Technical Specification

Construction	In-line assembly, with threaded mounting holes on top of head	Reverse flow valve	Allows reverse flow through the filter head without backflushing the element
Filter head	Spheroidal graphite cast iron	Non-return valve	Prevents draining of the delivery line during element change
Filter bowl	Cold drawn steel	Multi-function valve	Forward by-pass, reverse flow capability, and non return valve opening pressure 6 ^{+0,5} bar (87 ^{+7,25} PSI) Δp all in one valve
Seals	O-Rings NBR (Buna-N®) FPM (Viton®) EPDM (Ethylene-propylene), support ring PTFE	Clogging indicators	standard actuating pressure 5 ^{-0,5} bar (72 ^{-7,25} PSI)Δp execution indicators: visual, electrical and visual-electrical (24 V, 110 V, 220 V versions) other actuating pressures on request
Port connections	BSP, NPT, SAE "O"-Ring thread or SAE Code 62 flange	Filter elements	Specifications see page 9
Operating pressure	max 420 bar (6000 PSI)	Media	Mineral oils, other fluids on request
Proof pressure	630 bar (9100 PSI)		
Burst pressure	>1260 bar (18250 PSI)		
Temperature range	-10°C up to +100°C (14°F up to 212°F)		
By-pass valve	Allows unfiltered oil to by-pass the contaminated element once the opening pressure has been reached		

Dimensions



Dimensions in mm (inch)

Dimensions

Filter Size	Thread connection G				Weight including elements			
	BSP	NPT	SAE- "O"-Ring thread	SAE - flange 6000 PSI	with bowl in one-part style		with bowl in two-part style	
					kg	lbs	kg	lbs
SF014	G 3/4	3/4"	1 1/16-12 UN	3/4"	5,3	11,7	5,9	13
SF030					6,2	13,7	6,9	15,2
SF045	G 1 1/4	1 1/4"	1 5/8-12 UN	1 1/4"	10,3	22,7	12,2	26,9
SF070					12	26,5	13,7	30,2
SF125					16,3	35,9	20	44,1
SF090	G 1 1/2	1 1/2"	1 7/8-12 UN	1 1/2"	27	59,9	32	70,5
SF160					35,5	78,3	39,3	86,5
SF250					-	-	49	108
SF300					-	-	57,3	126,3

Filter Size	Dimensions														
	with filterbowl in one-part style Type SF									with filterbowl in two-part style Type SF...-TL					
	b ₁	d ₂	h ₃	h ₄	d ₁	h ₁	h ₂	h ₅	SW	d ₁	d ₃	h ₆	h ₇	h ₅	SW
SF014	104	83	48	12,5 (0,492)	68 (2,677)	188 (7,402)	78 (3,071)	100 [85] (3,937 [3,347])	27 (1,063)	70 (2,756)	84 (3,307)	190 (7,48)	80 (3,15)	65 (2,559)	27 (1,063)
SF030	(4,095)	(3,268)	(1,89)			254 (10)	144 (5,670)	170 [85] (6,693 [3,347])				256 (10,079)	146 (5,748)	130 (5,118)	
SF045	140 (5,512)	116 (4,567)	49,5 (1,949)	12,5 (0,492)	95 (3,740)	239 (9,409)	103 (4,055)	140 [120] (5,512 [4,724])	32 (1,26)	101,6 (4)	115 (4,528)	241 (9,488)	103 (4,055)	100 (3,937)	32 (1,26)
SF070						298 (11,732)	161 (6,339)	200 [120] (7,874 [4,724])				300 (11,811)	163 (6,417)	160 (6,299)	
SF125						483 (19,106)	343 (13,504)	380 [120] (14,961 [4,724])				485 (19,095)	344 (13,543)	340 (13,386)	
SF090	178 (7,008)	159 (6,260)	72 (2,835)	12,5 (0,492)	130 (5,118)	323 (12,717)	148 (5,827)	190 [150] (7,48 [5,906])	36 (1,417)	133 (5,236)	155 (6,102)	329,5 (12,972)	154,5 (6,083)	120 (4,724)	36 (1,417)
SF160						494 (19,449)	319 (12,559)	360 [150] (14,173 [5,906])				500,5 (19,705)	325,5 (12,815)	290 (11,417)	
SF250						not available						656,5 (25,847)	481,5 (18,957)	425 (16,732)	
SF300						not available						821,5 (32,343)	646,5 (25,453)	590 (23,228)	

Filter Size	Dimensions Mounting Flange								Dimensions SAE-Flange 6000 PSI		
	New Standard Style (for new engineering/constructions) TH				Old Style (running out, not for new engineering/constructions) T						
	b ₂	b ₃	G ₂	G ₃	b ₂	b ₃	G ₂	G ₃	b ₄	b ₅	G ₄
SF014	32 (1,26)	56 (2,205)	M6x9	1/4 - 28 UNF x 0.354	23,8 (0,937)	50,8 (2)	M10x15	3/8 -16 UNC x 0.591	23,8 (0,937)	50,8 (2)	3/8-16 UNC
SF030											
SF045	35 (1,244)	85 (2,626)	M10x15	3/8 - 24 UNF x 0.591	31,6 (1,378)	66,7 (3,347)	M14x20	1/2-13 UNC x 0.787	31,6 (1,244)	66,7 (2,626)	1/2-13 UNC
SF070											
SF125											
SF090	60 (1,445)	115 (3,126)	M12x20	1/2 - 20 UNF x 0.787	36,7 (2,362)	79,4 (4,528)	M16x20	5/8-11 UNC x 0.787	36,7 (1,445)	79,4 (3,126)	5/8-11 UNC
SF160											
SF250											
SF300											

Dimensions in mm (inch)

Valves

The optional valves are fitted as an insert in the filter head and incorporate the spigot on which the element seals. The valve is selected to suit the filter application.

HV-O **Non-by-pass standard insert** without any valve function. Element collapse rating should be higher than system pressure

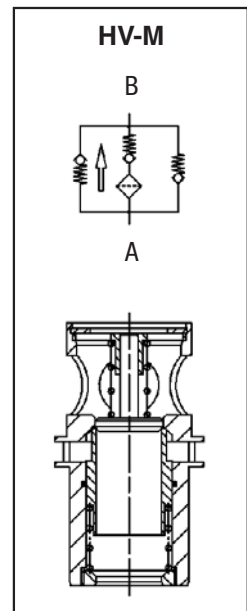
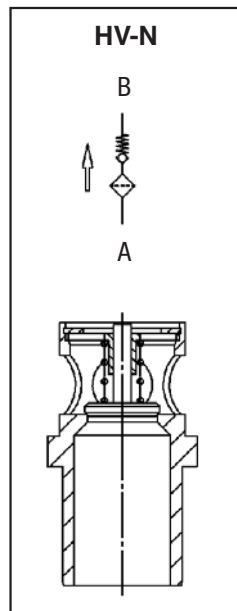
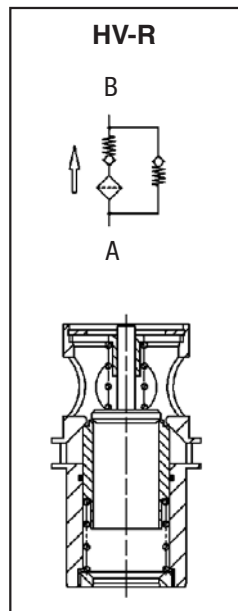
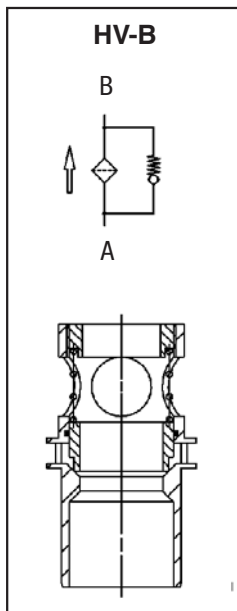
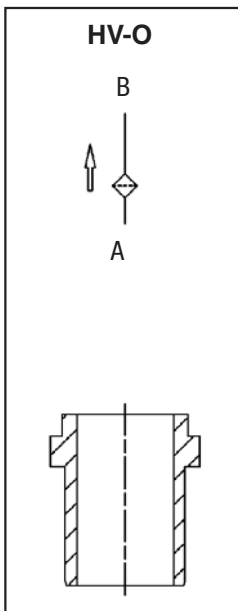
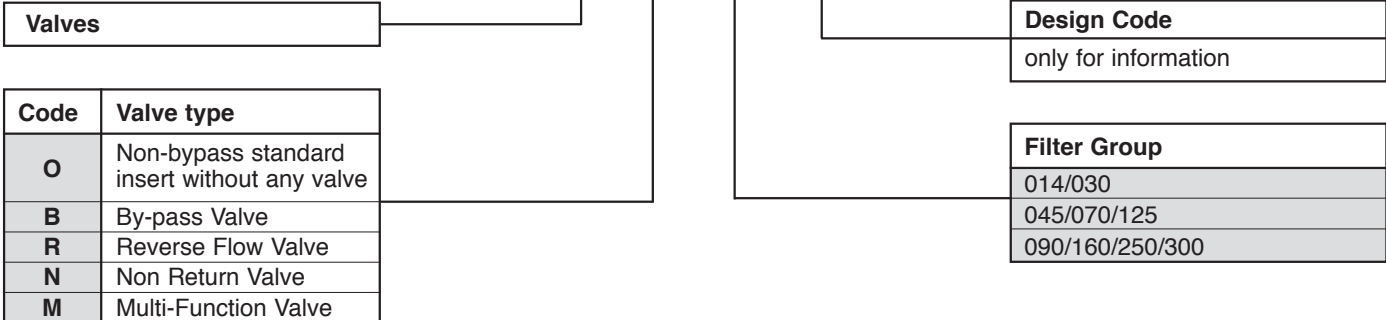
HV-B **By-pass valve** which allows oil to bypass the element when the differential pressure across the element reaches $6^{+0,5}$ bar ($87^{+7,25}$ PSI). (Other pressure settings available on request). The opening pressure should be higher than the Δp setting of an optional clogging indicator. Low collapse (30 bar / 435 PSI Δp) elements are normally used with this valve.

HV-R **Reverse flow valve** is used in systems where there is flow in reverse through the filter. It allows reverse flow without back-flushing the element but does not filter in the reverse direction. High collapse elements (210 bar / 3045 PSI Δp) are normally used with this valve.

HV-N **Non-return valve**
This valve prevents the oil in the delivery line from draining out while the filter is being serviced. Because there is no by-pass, the element collapse rating should be higher than system pressure.

HV-M **Multi-function valve**
This valve combines the by-pass, the reverse flow and the non-return functions in one unit. The by-pass opening pressure is $6^{+0,5}$ bar / $87^{+7,25}$ PSI Δp with other opening pressures available on request. The opening pressure should be higher than the Δp setting of an optional clogging indicator.

HV - M 014/030 /X



Flow characteristics of the valves see page 10

Clogging Indicators

STAUFF pressure filters have a range of clogging indicators available. If no indicator is specified, the port is sealed by a plug (HI-O). The clogging indicators are actuated by the differential pressure (Δp) across the element. The special piston design minimizes the effects of peak pressures in the system. An optional thermostatic lockout (thermo-stop) is available to prevent false indication under cold start conditions. Fluid temperature must be at least 20°C (68°F) for the indicator to function.

Technical Specification

Body	Stainless steel
Seals	NBR (Buna-N®), FPM (Viton®), EPDM Seal 18,5x23,9x2 (0,728x 0,941x 0,079) O-Ring 15,5x1,5 (0,61x0,059)
Thread	1/2" BSP
Differential pressure setting	5,0,5 bar (72,725 PSI) (other settings on request)
Electrical	Standard DIN appliance plug, Screwed cable gland PG11, protection rating (DIN40050) IP65, both NO and NC contacts are available in the switch, rated capacity: see chart

The visual clogging indicators are available in the following configurations :

Manual reset	The indicator continues to display the clogged signal even through the Δp may have fallen. Pressing the plastic cover down will reset the indicator.
Automatic reset	The clogged signal will disappear when the Δp drops below the setting for the indicator.

Electrical and visual-electrical clogging indicators are only available with automatic reset.

HI - P T 220 B - 5,0B /X

Clogging Indicator			Design Code											
Code	Execution		only for information											
O	plug		Differential pressure setting <table border="1" style="width: 100%;"> <tr> <td>25P</td> <td>25 PSI (1,72 bar)</td> </tr> <tr> <td>2,0B</td> <td>2,0 bar (29 PSI)</td> </tr> <tr> <td>3,0B</td> <td>3,0 bar (43,5 PSI)</td> </tr> <tr> <td>5,0B</td> <td>5,0 bar (72,5 PSI) (Standard)</td> </tr> <tr> <td>7,0B</td> <td>7,0 bar (101,5 PSI)</td> </tr> </table> others on request		25P	25 PSI (1,72 bar)	2,0B	2,0 bar (29 PSI)	3,0B	3,0 bar (43,5 PSI)	5,0B	5,0 bar (72,5 PSI) (Standard)	7,0B	7,0 bar (101,5 PSI)
25P	25 PSI (1,72 bar)													
2,0B	2,0 bar (29 PSI)													
3,0B	3,0 bar (43,5 PSI)													
5,0B	5,0 bar (72,5 PSI) (Standard)													
7,0B	7,0 bar (101,5 PSI)													
A	visual, automatic reset													
V	visual, manual reset													
E	electrical													
P	visual-electrical													
Thermostop		Sealing Material												
	without Thermostop	B	NBR (Buna®)											
T	with Thermostop	V	FPM (Viton®)											
Voltage (only for Code P)		E	EPDM											
24	24 V													
110	110 V													
220	220 V													

HI-O 	HI-A HI-A 	HI-E 	HI-P 	<table border="1" style="width: 100%;"> <tr> <td colspan="3">Rated Capacity HI-E and HI-P</td> </tr> <tr> <td colspan="3">Alternating current 250V AC 5 Amps</td> </tr> <tr> <td colspan="3">Direct current: see table below</td> </tr> <tr> <td>Voltage V</td> <td>Resistive Load Amps</td> <td>Inductive Load Amps</td> </tr> <tr> <td>24</td> <td>8,00</td> <td>7,00</td> </tr> <tr> <td>110</td> <td>0,50</td> <td>0,20</td> </tr> <tr> <td>220</td> <td>0,25</td> <td>0,10</td> </tr> </table> <p>N.B. High voltage peaks occur when inductive loads are switched off. Protective circuitry should be employed to reduce contact burnout.</p>	Rated Capacity HI-E and HI-P			Alternating current 250V AC 5 Amps			Direct current: see table below			Voltage V	Resistive Load Amps	Inductive Load Amps	24	8,00	7,00	110	0,50	0,20	220	0,25	0,10
Rated Capacity HI-E and HI-P																									
Alternating current 250V AC 5 Amps																									
Direct current: see table below																									
Voltage V	Resistive Load Amps	Inductive Load Amps																							
24	8,00	7,00																							
110	0,50	0,20																							
220	0,25	0,10																							

Ordering Code Filter Housings

SF 014 ... V - TH B / B / PT 220 / TL / 2

Filter type	SF
-------------	----

Group		
Size	Flow *	
	l/min	GPM
014	60	14
030	110	30
045	160	45
070	240	70
090	330	90
125	440	125
160	660	160
250	990	250
300	1320	300

Note: Exact flow will depend on filter element selected. Consult Technical data on page 10 & 11

for complete filters:
 identification filter material
 + micron rating code
 (see ordering code filter elements below)

Seal material	
B	NBR (Buna®)
V	FPM (Viton®)
E	EPDM

other seal materials on request

Connecting Flange	
TH	Type T (new standard)
(T)	Type T

see table page 5
 dimensions connecting flange
 Type T is running out, please use only type TH for new engineering/constructions

Design Code
only for information

Style filterbowl	
	with bowl in one-part style
TL	Toploader. with bowl in two-part style

Voltage (only for code P)	
24	24 V
110	110 V
220	220 V

Thermostop	
	without Thermostop
T	with Thermostop

Clogging indicator	
	without clogging indicator
A	visual, with autom. reset
V	visual, with manual reset
E	electrical
P	visual-electrical

Valve	
O	without valve
B	By-pass valve
R	Reverse flow valve
N	Non return valve
M	Multi-function valve

Code	Connection style	Group							
		014	030	045	070	125	090	160	250
B	BSP	G ^{3/4}		G1 ^{1/4}		G1 ^{1/2}			
B1	BSP	G1		G1 ^{1/2}		-			
N	NPT	3/4"		1 1/4"		1 1/2"			
U	SAE-"O"-Ring thread	1 1/16 - 12		1 3/8 - 12		1 7/8 - 12			
F	SAE-flange (3000 PSI)	3/4"		1 1/4"		1 1/2"			
F1	SAE-flange (3000 PSI)	1"		-		2"			
G	SAE-flange (6000 PSI)	3/4"		1 1/4"		1 1/2"			

Other port connections on request. Flanges do not belong to the scope of supply!

Ordering Code Filter Elements

SE-014 G 10 V / X

Series	SE
--------	----

Group
 according to filter housing

Filter material			Micron ratings available
Code	Material	max Δp _{collapse}	
A	Stainless fiber	210 bar (3045 PSI)	03, 05, 10, 20
C	Polyester fiber	210 bar (3045 PSI)	
N	Filterpaper	30 bar (435 PSI)	
G	Inorganic glass fiber	30 bar (435 PSI)	
H	Inorganic glass fiber	210 bar (3045 PSI)	
B, S	Stainless mesh	30 bar (435 PSI)	10, 25, 40, 60, 100
T, W	Stainless mesh	210 bar (3045 PSI)	

*collapse / burst resistance as per ISO 2941

Bold type identifies preferred material

Design Code
only for information

Seal material	
B	NBR (Buna®)
V	FPM (Viton®)
E	EPDM

other seal materials on request

Micron rating	
03	3 μm
05	5 μm
10	10 μm
20	20 μm
25	25 μm
40	40 μm
60	60 μm
100	100 μm
200	200 μm
500	500 μm

other micron ratings on request

Replacement Filter Elements for SF Series

STAUFF replacement filter elements for SF series filters are manufactured in the common filter materials such as stainless fiber, stainless mesh, paper and inorganic glass fiber. As standard all replacement elements series SF have tin plated steel parts for use with aggressive media such as water glycol, other materials available on request. All STAUFF replacement elements comply with quality specifications in accordance with international standards.



SE-014 G 10 V /X

Series SE

Group
according to filter housing

Filter material			Micron ratings available
Code	Material	max Δp collapse	
A	Stainless fiber	210 bar (3045 PSI)	03, 05, 10, 20
C	Polyester fiber	210 bar (3045 PSI)	
N	Filterpaper	30 bar (435 PSI)	
G	Inorganic glass fiber	30 bar (435 PSI)	
H	Inorganic glass fiber	210 bar (3045 PSI)	
B, S	Stainless mesh	30 bar (435 PSI)	10, 25, 40, 60, 100
T, W	Stainless mesh	210 bar (3045 PSI)	

*collapse / burst resistance as per ISO 2941

Bold type identifies preferred material

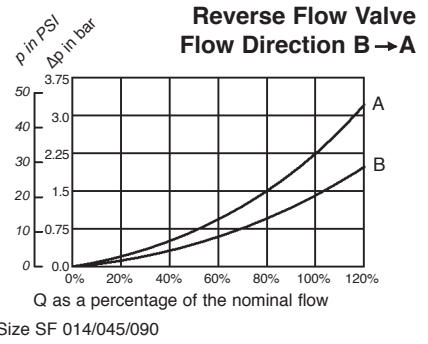
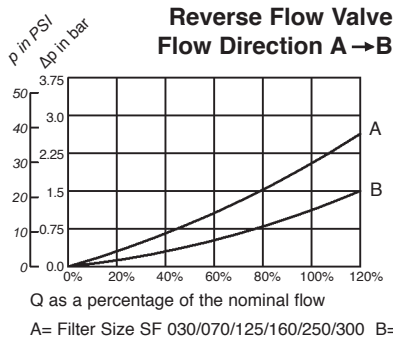
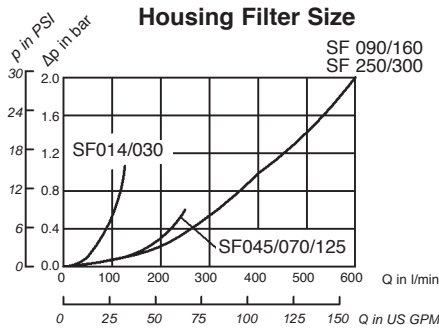
Design Code
only for information

Seal material	
B	NBR (Buna®)
V	FPM (Viton®)
E	EPDM
other seal materials on request	

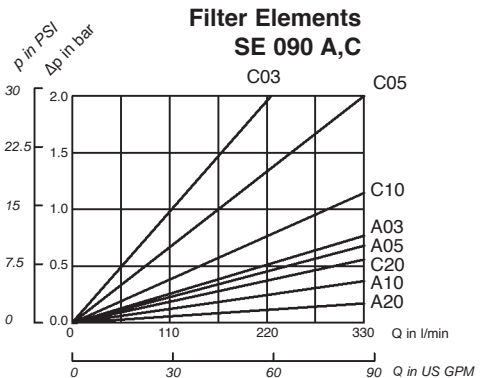
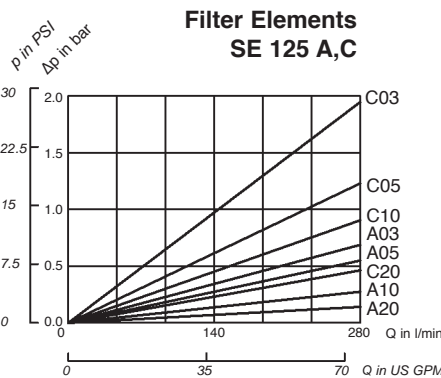
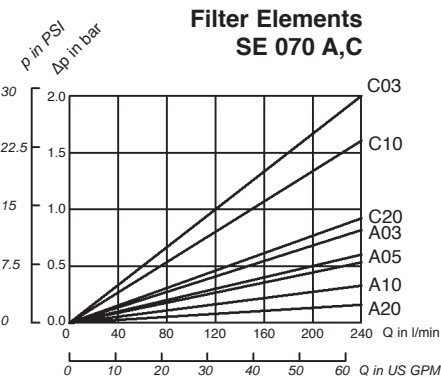
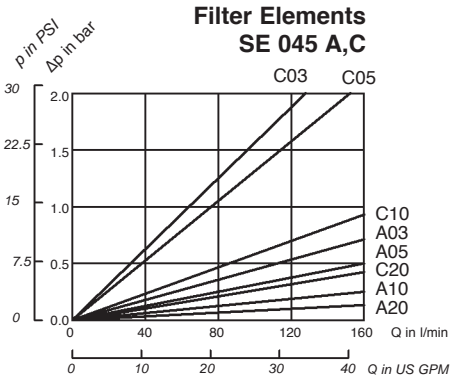
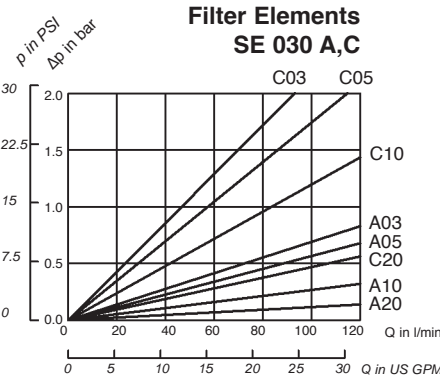
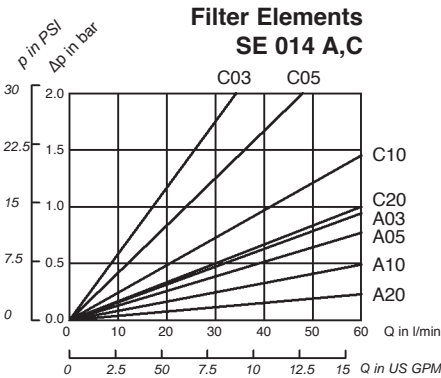
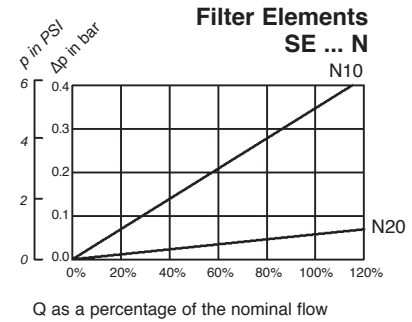
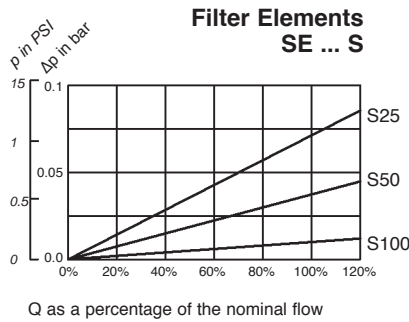
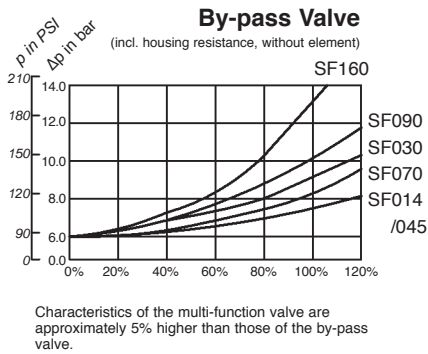
Micron rating	
03	3 μm
05	5 μm
10	10 μm
20	20 μm
25	25 μm
40	40 μm
60	60 μm
100	100 μm
200	200 μm
500	500 μm
other micron ratings on request	

Flow Characteristics of Pressure Filters

The following characteristics are valid for mineral oils with a density of 0,85 kg/dm³ and the kinematic viscosity of 30 mm²/s. The characteristics have been determined in accordance to ISO 3968.

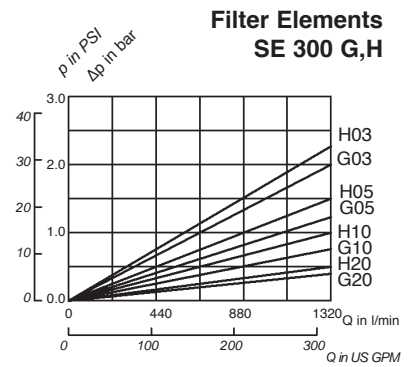
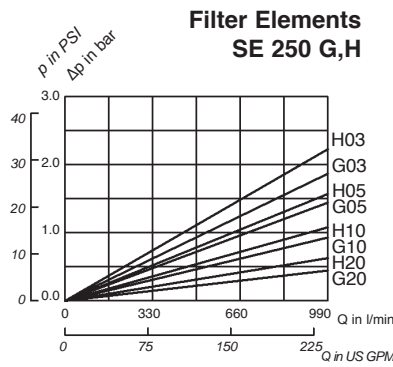
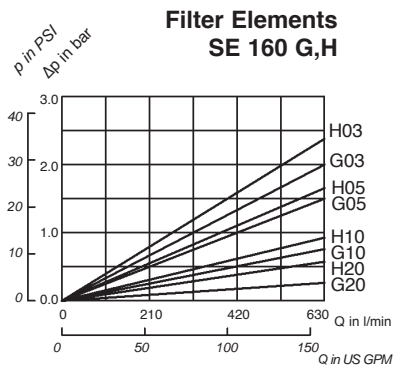
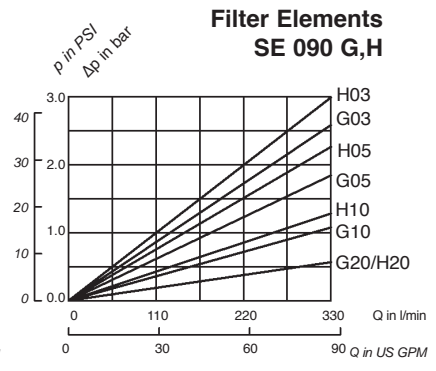
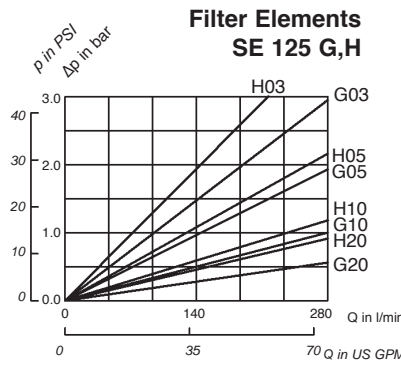
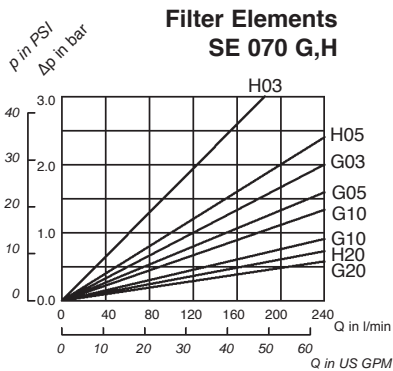
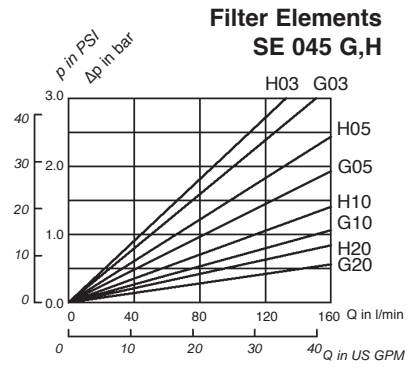
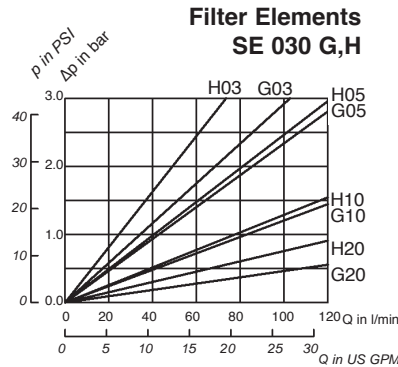
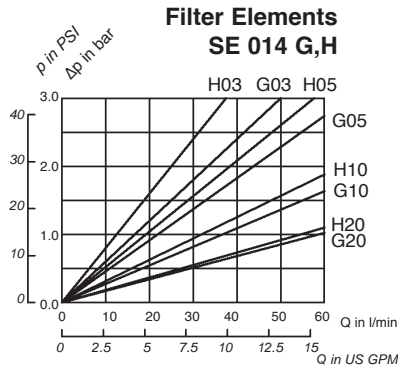
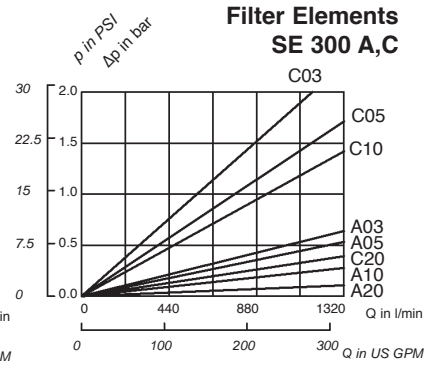
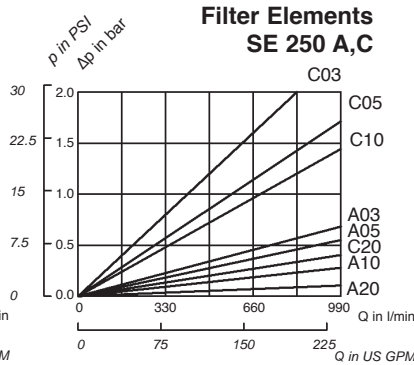
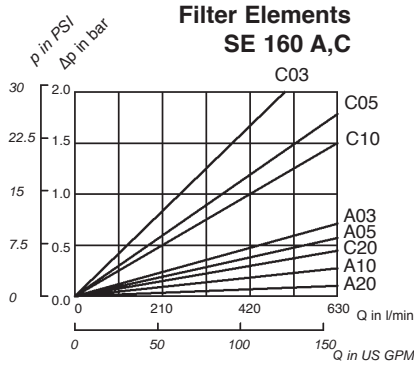


Characteristics of the multi-function valve are approximately 15% higher than those of the reverse flow valve



Flow Characteristics of Pressure Filters

The following characteristics are valid for mineral oils with a density of 0,85 kg/dm³ and the kinematic viscosity of 30 mm²/s. The characteristics have been determined in accordance to ISO 3968.



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P.O.Box 227 , 24-26 Doyle Avenue,
Unanderra Wollongong , N.S.W
2526 AUSTRALIA
Tel: +61 2 42 71 18 77
Fax: +61 2 42 71 84 32



Brazil
Stauff Brasil Ltda.
Av. Gupê 10767
Galpão 2 – Bloco A
Barueri – São Paulo – CEP 06422-120, BRAZIL
Tel: +55 (0)11-4789-9020
Fax: +55 (0)11-4789-9021



Canada
Stauff Canada Ltd.
866 Milner Avenue
Scarborough , Ontario M1B 5N7 , CANADA
Tel: +1 416 282 46 08
Fax: +1 416 282 30 39



China
Stauff International Trading (Shanghai) Co., Ltd.
Shangdian Mansion, Pudong
331 , Binzhou Road
200126 Shanghai, CHINA
Tel: +86 21 58 45 65 60
Fax: +86 21 58 45 66 80



France
Stauff S.A.
Z.I. de Vineuil-Blais Sud
230, Avenue du Grain d'Or
41354 Vineuil-cedex, FRANCE
Tel: +33 2 54 50 55 50
Fax: +33 2 54 42 29 19



Germany
Walter Stauffenberg GmbH & Co. KG
P.O. Box 1745,
D-58777 Werdohl, GERMANY
Tel: +49 (0) 23 92/916-0
Fax: +49 (0) 23 92 25 05



India
Stauff India Pvt. Ltd.
Gat. No. 2340
Pune-Nagar Road, Wagholi
IND-Pune - 412027
Tel: +91 20 705 19 90
Fax: +91 20 705 19 89



Italy
Stauff Italia S.R.L.
Via Pola 21/23
I-20034 Birone di Giussano
Tel: +39 0362 31 21 13
Fax: +39 0362 33 55 36



New Zealand
Stauff Corporation (NZ) Ltd.
Unit J, 150 Harris Road, P.O. Box 58517
Greenmount Auckland-NEW ZEALAND
Tel: +64 9 271 4812
Fax: +64 9 271 4832



United Kingdom
Stauff UK Ltd.
332, Coleford Road Darnall
Sheffield, S 9 5 P H, ENGLAND
Tel: +44 1142 518 518
Fax: +44 1142 518 519



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Stauff Corporation
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P.O.Box 227 , 24-26 Doyle Avenue,
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Tel: +61 2 42 71 18 77
Fax: +61 2 42 71 84 32

Brazil

Stauff Brasil Ltda.
Av. Gupê 10767
Galpão 2 – Bloco A
Barueri – São Paulo – CEP 06422-120, BRAZIL
Tel: +55 (0)11-4789-9020
Fax: +55 (0)11-4789-9021

Canada

Stauff Canada Ltd.
866 Milner Avenue
Scarborough , Ontário M1B 5N7 , CANADA
Tel: +1 416 282 46 08
Fax: +1 416 282 30 39

China

Stauff International Trading (Shanghai) Co., Ltd.
Shangdian Mansion, Pudong
331 , Binzhou Road
200126 Shanghai, CHINA
Tel: +86 21 58 45 65 60
Fax: +86 21 58 45 66 80

France

Stauff S.A.
Z.I. de Vineuil-Blois Sud
230, Avenue du Grain d'Or
41354 Vineuil-cedex, FRANCE
Tel: +33 2 54 50 55 50
Fax: +33 2 54 42 29 19

India

Stauff India Pvt. Ltd.
Gat. No. 2340,
Pune-Nagar Road, Wagholi, INDIA
IND-Pune - 412027
Tel: +91 20 705 19 90
Fax: +91 20 705 19 89

Italy

Stauff Italia S.R.L.
Via Pola 21/23, I-20034
Birone di Giussano, ITALY
Tel: +39 0362 31 21 13
Fax: +39 0362 33 55 36

New Zealand

Stauff Corporation (NZ) Ltd.
Unit J. 150 Harris Road, P.O. Box 58517
Greenmount Auckland-NEW ZEALAND
Tel: +64 9 271 4812
Fax: +64 9 271 4832

United Kingdom

Stauff UK Ltd.
332, Coleford Road Darnall
Sheffield, S 9 5 P H, ENGLAND
Tel: +44 1142 518 518
Fax: +44 1142 518 519

USA

Stauff Corporation
7 Wm. Demarest Place
Waldwick, NJ – 07463, USA
Tel: +1 201 444 78 00
Fax: +1 201 444 78 52

Walter Stauffenberg GmbH & Co. KG

P. O. Box 1745 · D-58777 Werdohl
Im Ehrenfeld 4 · D-58791 Werdohl
Tel.: +49 (0) 23 92 9 16-0
Fax: +49 (0) 23 92 25 05
E-mail: sales@stauff.com
Internet: http://www.stauff.com

Stauff Filtration Technology

Stauff Filtration Technology offers a complete range of filtration products and services that will provide the system designer or user with the highest level of contamination control demanded by today's most sophisticated applications. Products include pressure filters, return line filters, elements, spin on filters suction strainers, and filler breathers for various hydraulic, lubrication and fuel oils.

Stauff has the technical expertise to provide superior filter element designs for the Stauff original filter housings and also for the interchange element market. Stauff manufactures more than 10,000 different elements. Many of these are designed to fit into filter housings produced by other companies while maintaining or surpassing the original performance.

The "Stauff Contamination Control Program" includes the diagnostic services including fluid sampling and laser particle counting products needed to monitor the system contamination level.

Stauff, through its global network of wholly owned companies and technically qualified distributors, is ideally placed to assist its customers in the total contamination process providing a well balanced filtration solution.

Medium Pressure Filter SMPF

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Dimensions	4
Clogging Indicators	5
Ordering Code	6
Flow characteristics	7

**Distributors and warehouses
in all industrial countries.**

Technical Data

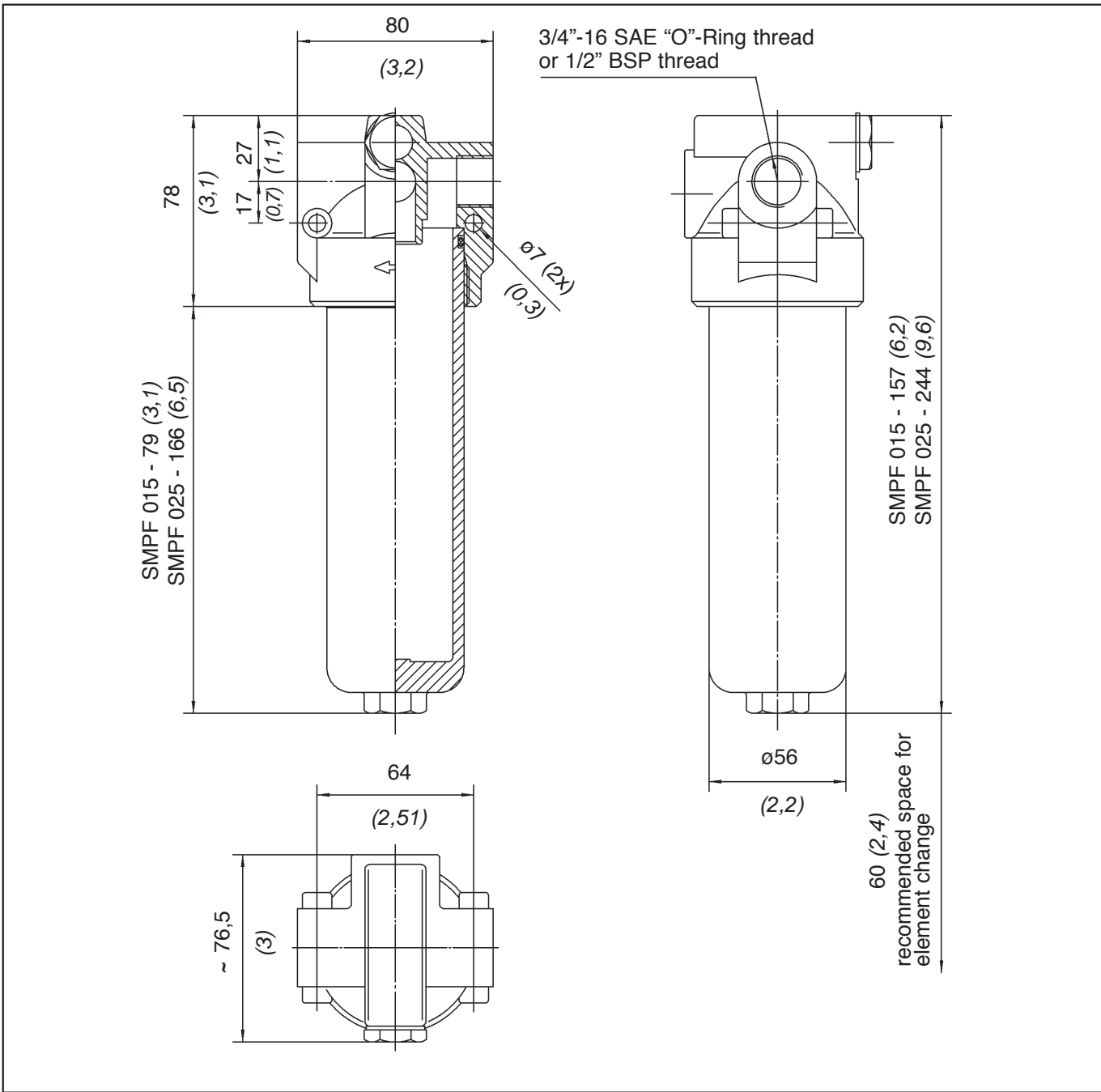
STAUFF SMPF series medium pressure filters are designed for in-line hydraulic applications with a maximum operating pressure of 110 bar (1600 PSI). Used together with STAUFF filter elements, a high efficiency of contaminant removal is assured.



Technical Specification

Construction	In-line assembly	By-pass valve	Allows unfiltered oil to by-pass the contaminated element once the opening pressure has been reached
Filter base and cap	Aluminium alloy	By-pass setting	6 bar (87 PSI)
Element case	Aluminium alloy	Clogging indicators	Visual, 5 bar (72 PSI) actuating pressure Electrical, 5 bar (72 PSI) actuating pressure
Seals	O-Rings NBR (Buna-N®)	Filter elements	Flow characteristics see page 7
Port connections	BSP, SAE "O"-Ring thread	Media	Mineral oils, other fluids on request
Flow rating	up to 90 l/min (25 US GPM) for 32 cSt (150 SUS) fluids		
Operating pressure	max 110 bar (1600 PSI)		
Test pressure	200 bar (2900 PSI)		
Temperature range	-25°C to +110°C (-13°F to +230°F)		

Dimensions

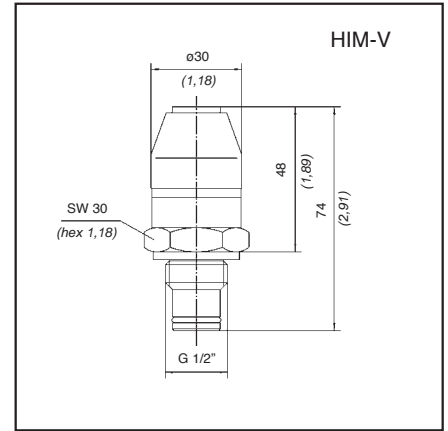


Dimensions in mm (inch)

Filter Size	Nominal Flow	A	B	C	D	E	F	H	I	M	Thread connection G		Weight
											SAE	BSP	
SMPF015	60 LPM (15 GPM)	80 (3.2)	64 (2.52)	78 (3.1)	27 (1.1)	17 (0.7)	7 (0.3)	79 (3.1)	157 (6.2)	60 (2.4)	3/4-16 UN	G 1/2	0.95 kg (2.1 lb)
SMPF025	90 LPM (25 GPM)	80 (3.2)	64 (2.52)	78 (3.1)	27 (1.1)	17 (0.7)	7 (0.3)	166 (6.5)	244 (9.61)	60 (2.4)	3/4-16 UN	G 1/2	1.25 kg (2.8 lb)

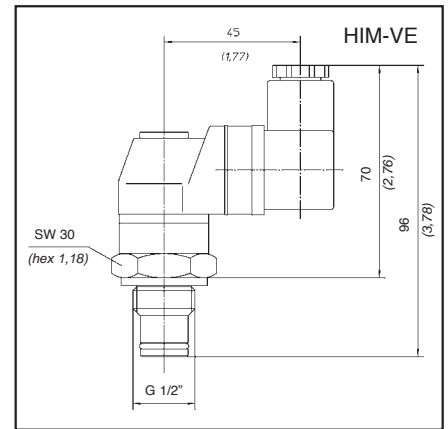
1. Visual clogging indicator

Part number HIM-V is a clogging indicator actuated by the differential pressure across the filter element. The actuating pressure of 5 bar (72 PSI) allows the dirty element to be changed before the by-pass setting of 6 bar (87 PSI) is reached.



2. Visual-Electrical clogging indicator

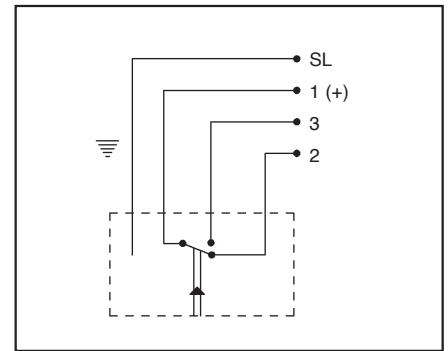
Part number HIM-VE is used when an electrical signal is needed to indicate when the element needs changing. It is actuated by the differential pressure across the filter element. The actuating pressure of 5 bar (72 PSI) allows the dirty element to be changed before the by-pass setting of 6 bar (87 PSI) is reached.



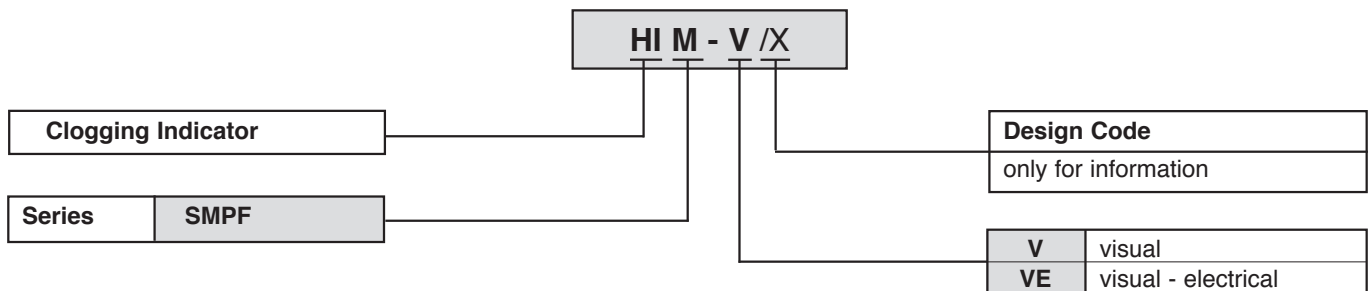
HIM-VE Rated capacity

Voltage V	Resistive Load Amps	Inductive Load Amps
125 VAC	5	5
250 VAC	5	5
15 VAC	10	10
30 VDC	5	5
50 VDC	1	1
125 VDC	0.5	0.06

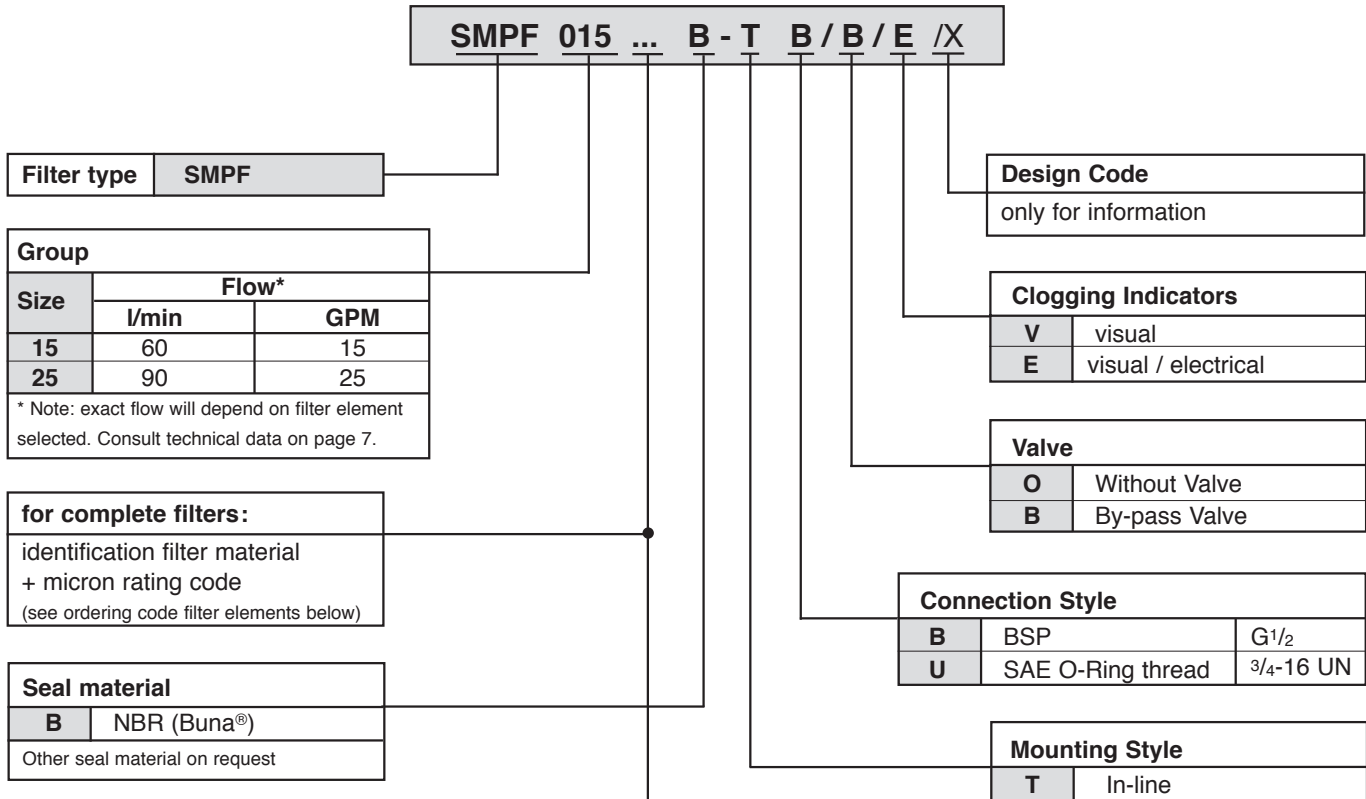
HIM-VE Wiring diagram



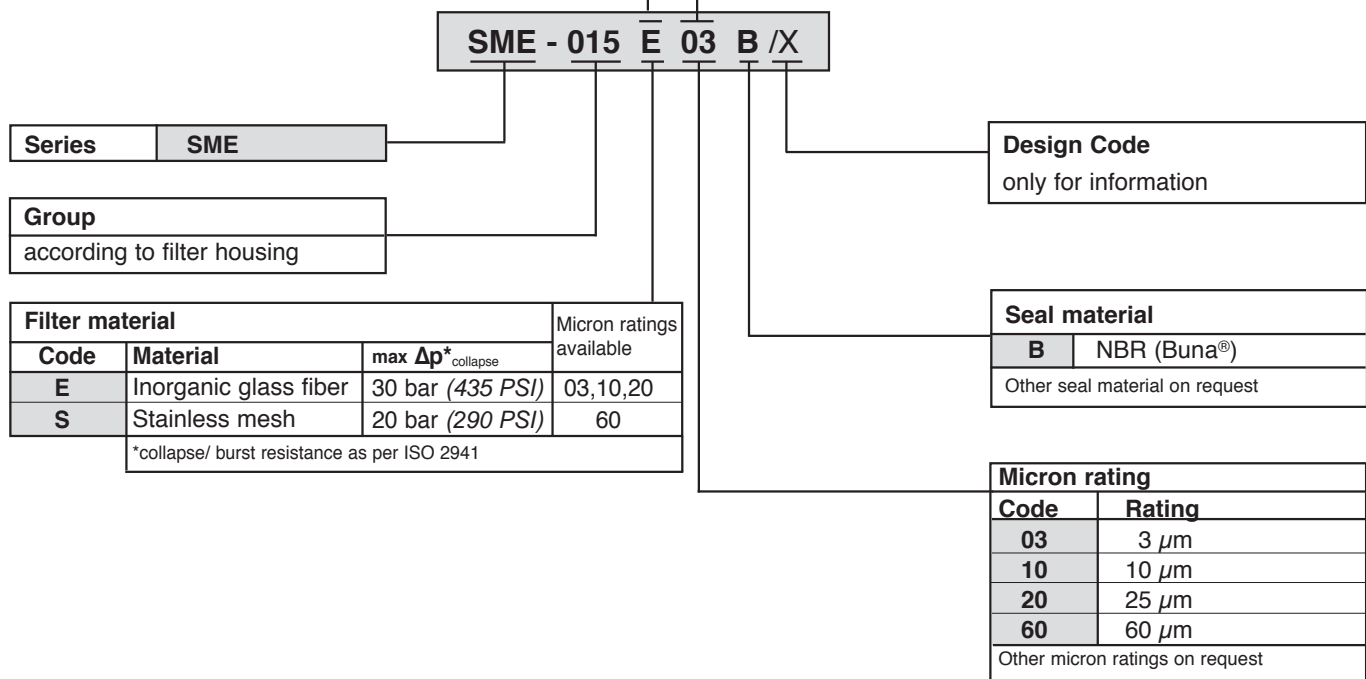
Ordering Code



Ordering Code Filter Housings

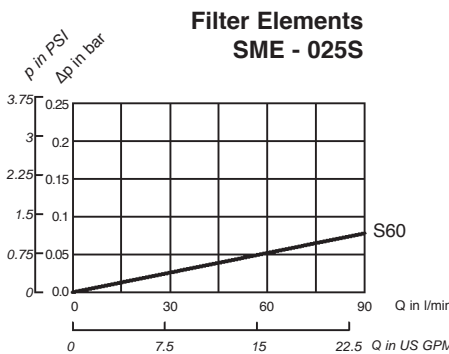
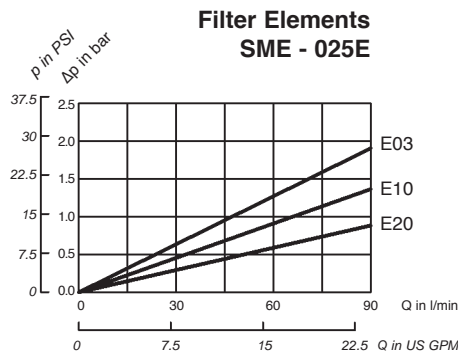
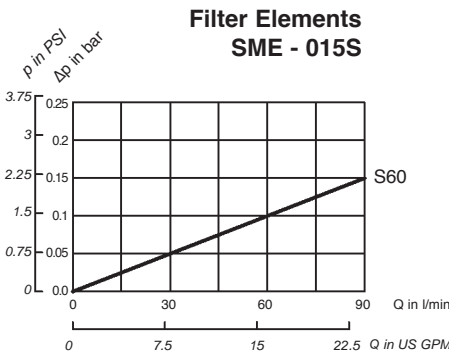
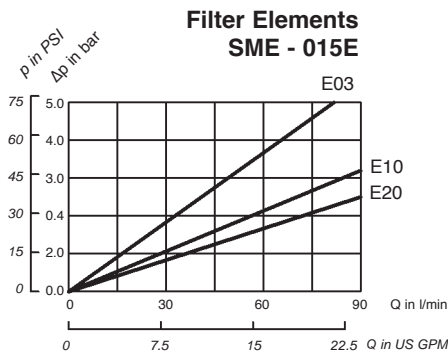
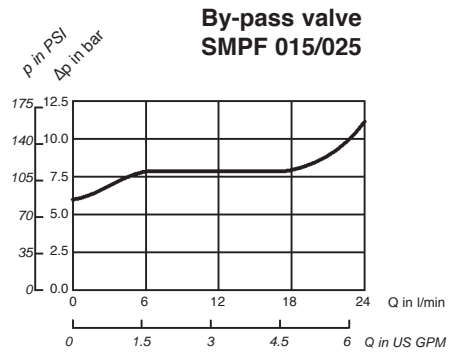
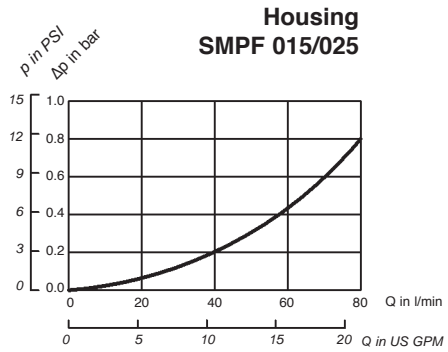


Ordering Code Filter Elements



Flow Characteristics of Medium Pressure Filters

The following characteristics are valid for mineral oils with a density of 0,85 kg/dm³ and the kinematic viscosity of 30 mm²/s. The characteristics have been determined in accordance to ISO 3968.



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2526 AUSTRALIA
Tel: +61 2 42 71 18 77
Fax: +61 2 42 71 84 32



Brazil
Stauff Brasil Ltda.
Av. Gupê 10767
Galpão 2 – Bloco A
Barueri – São Paulo – CEP 06422-120, BRAZIL
Tel: +55 (0)11-4789-9020
Fax: +55 (0)11-4789-9021



Canada
Stauff Canada Ltd.
866 Milner Avenue
Scarborough , Ontario M1B 5N7 , CANADA
Tel: +1 416 282 46 08
Fax: +1 416 282 30 39



China
Stauff International Trading (Shanghai) Co., Ltd.
Shangdian Mansion, Pudong
331 , Binzhou Road
200126 Shanghai, CHINA
Tel: +86 21 58 45 65 60
Fax: +86 21 58 45 66 80



France
Stauff S.A.
Z.I. de Vineuil-Blais Sud
230, Avenue du Grain d'Or
41354 Vineuil-cedex, FRANCE
Tel: +33 2 54 50 55 50
Fax: +33 2 54 42 29 19



Germany
Walter Stauffenberg GmbH & Co. KG
P.O. Box 1745,
D-58777 Werdohl, GERMANY
Tel: +49 (0) 23 92/916-0
Fax: +49 (0) 23 92 25 05



India
Stauff India Pvt. Ltd.
Gat. No. 2340
Pune-Nagar Road, Wagholi
IND-Pune - 412027
Tel: +91 20 705 19 90
Fax: +91 20 705 19 89



Italy
Stauff Italia S.R.L.
Via Pola 21/23
I-20034 Birone di Giussano
Tel: +39 0362 31 21 13
Fax: +39 0362 33 55 36



New Zealand
Stauff Corporation (NZ) Ltd.
Unit J, 150 Harris Road, P.O. Box 58517
Greenmount Auckland-NEW ZEALAND
Tel: +64 9 271 4812
Fax: +64 9 271 4832



United Kingdom
Stauff UK Ltd.
332, Coleford Road Darnall
Sheffield, S 9 5 P H, ENGLAND
Tel: +44 1142 518 518
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Stauff Corporation
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Unanderra Wollongong , N.S.W
2526 AUSTRALIA
Tel: +61 2 42 71 18 77
Fax: +61 2 42 71 84 32

Brazil

Stauff Brasil Ltda.
Av. Gupê 10767
Galpão 2 – Bloco A
Barueri – São Paulo – CEP 06422-120, BRAZIL
Tel: +55 (0)11-4789-9020
Fax: +55 (0)11-4789-9021

Canada

Stauff Canada Ltd.
866 Milner Avenue
Scarborough , Ontário M1B 5N7 , CANADA
Tel: +1 416 282 46 08
Fax: +1 416 282 30 39

China

Stauff International Trading (Shanghai) Co., Ltd.
Shangdian Mansion, Pudong
331 , Binzhou Road
200126 Shanghai, CHINA
Tel: +86 21 58 45 65 60
Fax: +86 21 58 45 66 80

France

Stauff S.A.
Z.I. de Vineuil-Blois Sud
230, Avenue du Grain d'Or
41354 Vineuil-cedex, FRANCE
Tel: +33 2 54 50 55 50
Fax: +33 2 54 42 29 19

India

Stauff India Pvt. Ltd.
Gat. No. 2340,
Pune-Nagar Road, Wagholi, INDIA
IND-Pune - 412027
Tel: +91 20 705 19 90
Fax: +91 20 705 19 89

Italy

Stauff Italia S.R.L.
Via Pola 21/23, I-20034
Birone di Giussano, ITALY
Tel: +39 0362 31 21 13
Fax: +39 0362 33 55 36

New Zealand

Stauff Corporation (NZ) Ltd.
Unit J. 150 Harris Road, P.O. Box 58517
Greenmount Auckland-NEW ZEALAND
Tel: +64 9 271 4812
Fax: +64 9 271 4832

United Kingdom

Stauff UK Ltd.
332, Coleford Road Darnall
Sheffield, S 9 5 P H, ENGLAND
Tel: +44 1142 518 518
Fax: +44 1142 518 519

USA

Stauff Corporation
7 Wm. Demarest Place
Waldwick, NJ – 07463, USA
Tel: +1 201 444 78 00
Fax: +1 201 444 78 52

**Distributors and warehouses
in all industrial countries.**

Walter Stauffenberg GmbH & Co. KG

P. O. Box 1745 · D-58777 Werdohl · Germany
Im Ehrenfeld 4 · D-58791 Werdohl · Germany
Tel.: +49 (0) 23 92 9 16-0
Fax: +49 (0) 23 92 25 05
E-mail: sales@stauff.com
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Technical Data

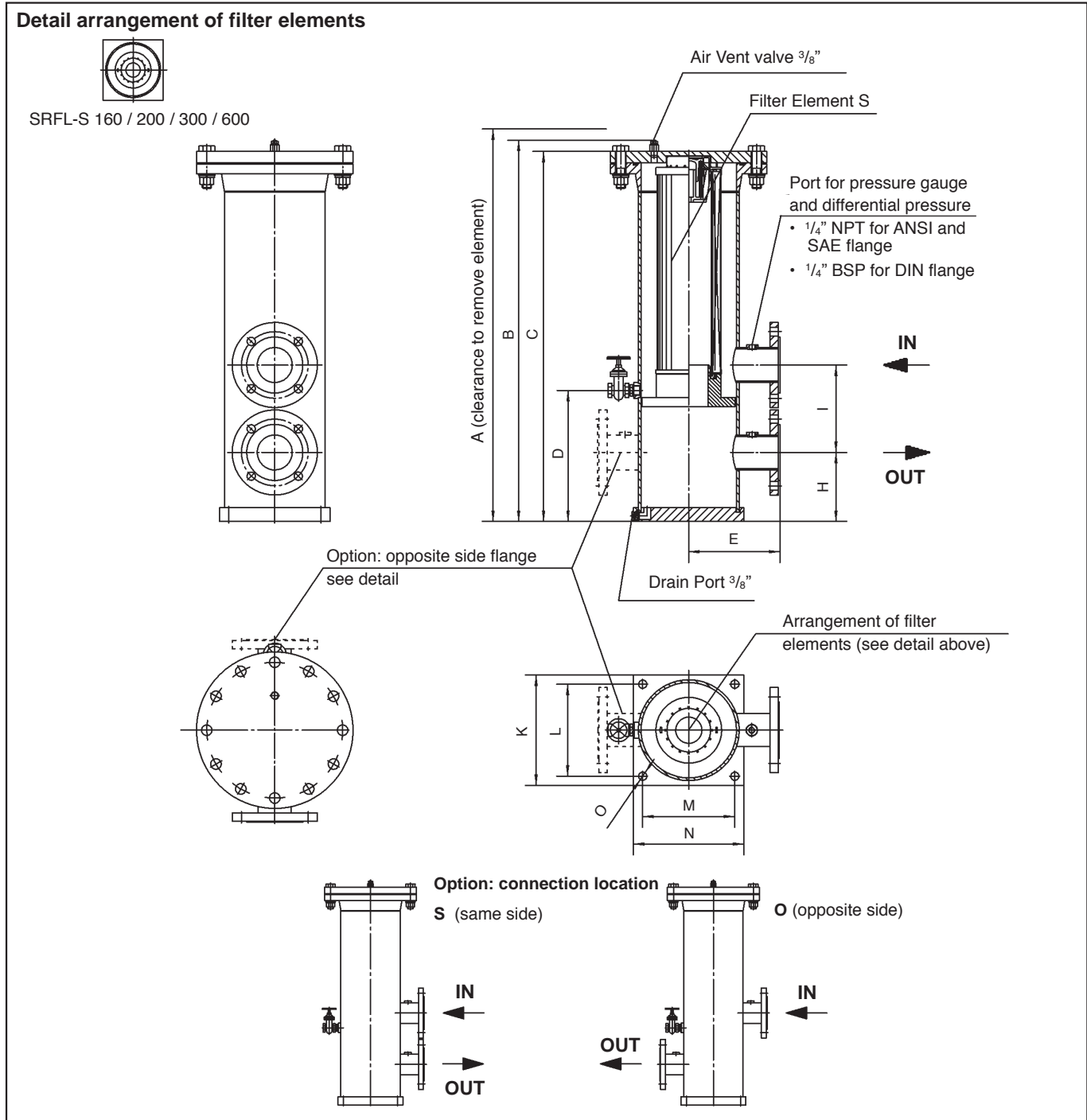
STAUFF return line simplex filter SRFL-S and duplex filter SRFL-D are designed for in-line hydraulic applications. With its compact construction and the easy to maintain assembly the filter SRFL-S and SRFL-D are suitable for flow rates up to 6600 l/min (1750 US GPM). The two housings of the duplex filter, SRFL-D are connected with a special gate valve that is operated with a lever or hand wheel. Therefore the filter may be serviced without shutting down the hydraulic system. A high efficiency of contaminant removal is assured by using STAUFF replacement filter elements RE series. The high dirt holding capacity of STAUFF elements ensures a long service life and, as a result, reduced maintenance costs.



Technical Specification

Construction	In-line assembly, base mounted	By-pass valve (integrated in the filter element)	Opening pressure 3 bar ± 0,3 bar (43,5 PSI ± 4,35 PSI) other pressures on request
Housings	Carbon steel Stainless steel (on request)	Clogging indicator	Differential pressure switch, setting 1,6 bar (23 PSI) scale 0...1,6 bar (0...23 PSI)
Seals	NBR (Buna-N®), FPM (Viton®)	Filter elements	Specification see page 10
Port connection	ANSI, SAE and DIN flanges	Media	Mineral oils, lubrication oils other fluids on request
Operating pressure	max 14 bar (232 PSI)		
Flow rating	up to 6600 l/min (1750 US GPM)		
Temperature Range	-10°C up to +100°C (14°F up to 212°F)		

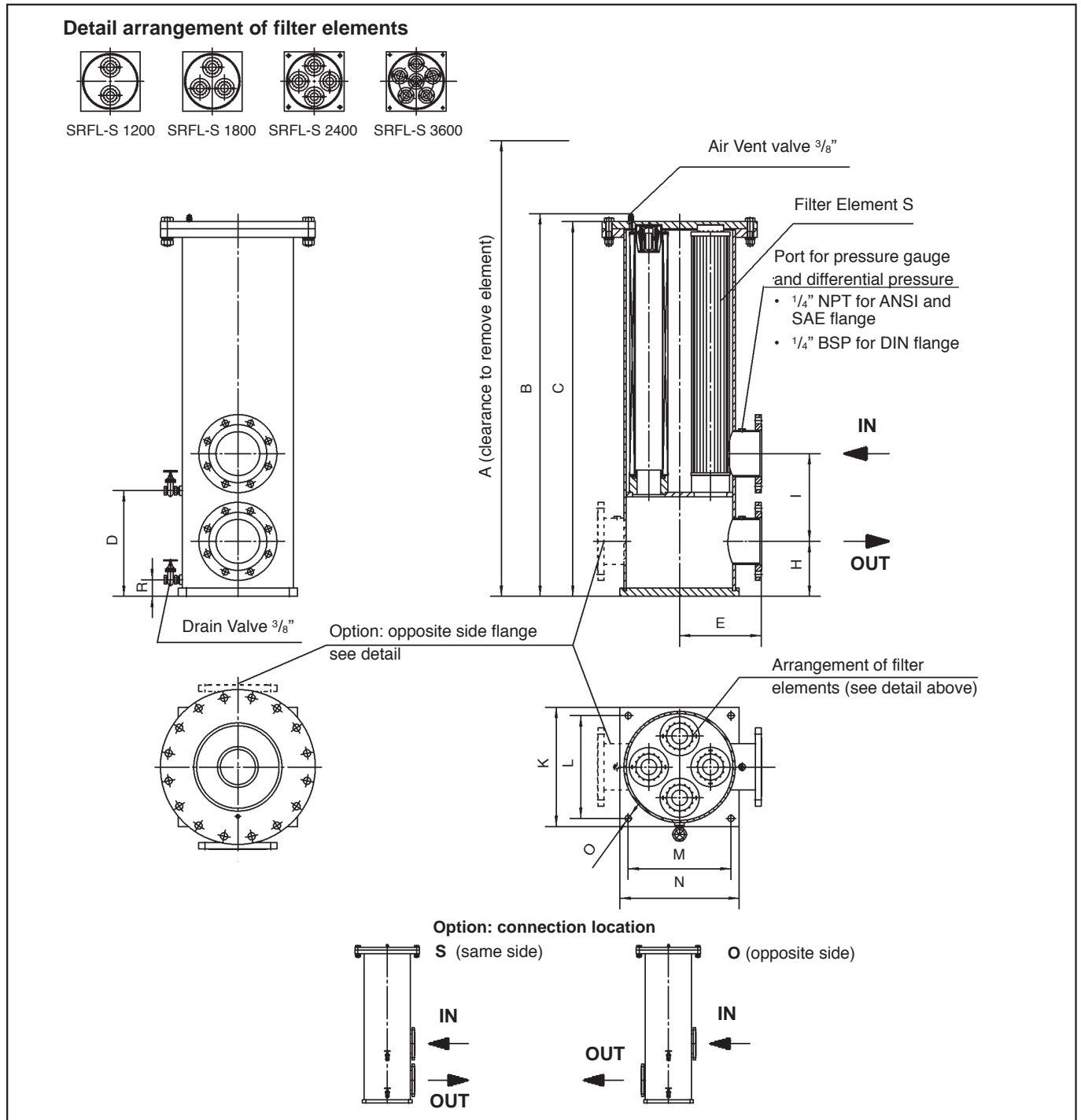
Dimensions SRFL-S 160 / 200 / 300 / 600



All dimensions in mm (inch)

Filter Size	Flange Connection			Dimensions													Total oil Capacity		Weight (without element)		Filter Element S	
	DIN	ANSI	SAE	A	B	C	D	E	H	I	K	L	M	N	O	l	gal	kg	lbs	Designation	Qty	
SRFL-S-160	DN40	1-1/2"	1-1/2"	885,8 (34,87)	607,6 (23,92)	584 (22,99)	214 (8,43)	148 (5,83)	130 (5,12)	155 (6,1)	150 (5,91)	125 (4,92)	125 (4,92)	150 (5,91)	11 (0,43)	6,0	1,59	14,5	32	RE-160...	1 x 1	
SRFL-S-200	DN50	2"	2"	1045,8 (41,17)	688,7 (27,12)	664 (26,14)	214 (8,43)	148 (5,83)	140 (5,51)	190 (7,48)	150 (5,91)	125 (4,92)	125 (4,92)	150 (5,91)	11 (0,43)	7,1	1,86	15,9	35	RE-200...	1 x 1	
SRFL-S-300	DN65	2-1/2"	2-1/2"	1248,7 (49,16)	828,6 (32,63)	803,9 (31,65)	285 (11,22)	198 (7,8)	150 (5,91)	190 (7,48)	240 (9,45)	200 (7,87)	200 (7,87)	240 (9,45)	18 (0,71)	22,2	5,87	29	64	RE-300...	1 x 1	
SRFL-S-600	DN80	3"	3"	2126,7 (83,73)	1267,6 (49,91)	1242,9 (48,93)	285 (11,22)	198 (7,8)	160 (6,3)	220 (8,66)	240 (9,45)	200 (7,87)	200 (7,87)	240 (9,45)	18 (0,71)	37,1	9,80	34,5	76	RE-600...	1 x 1	

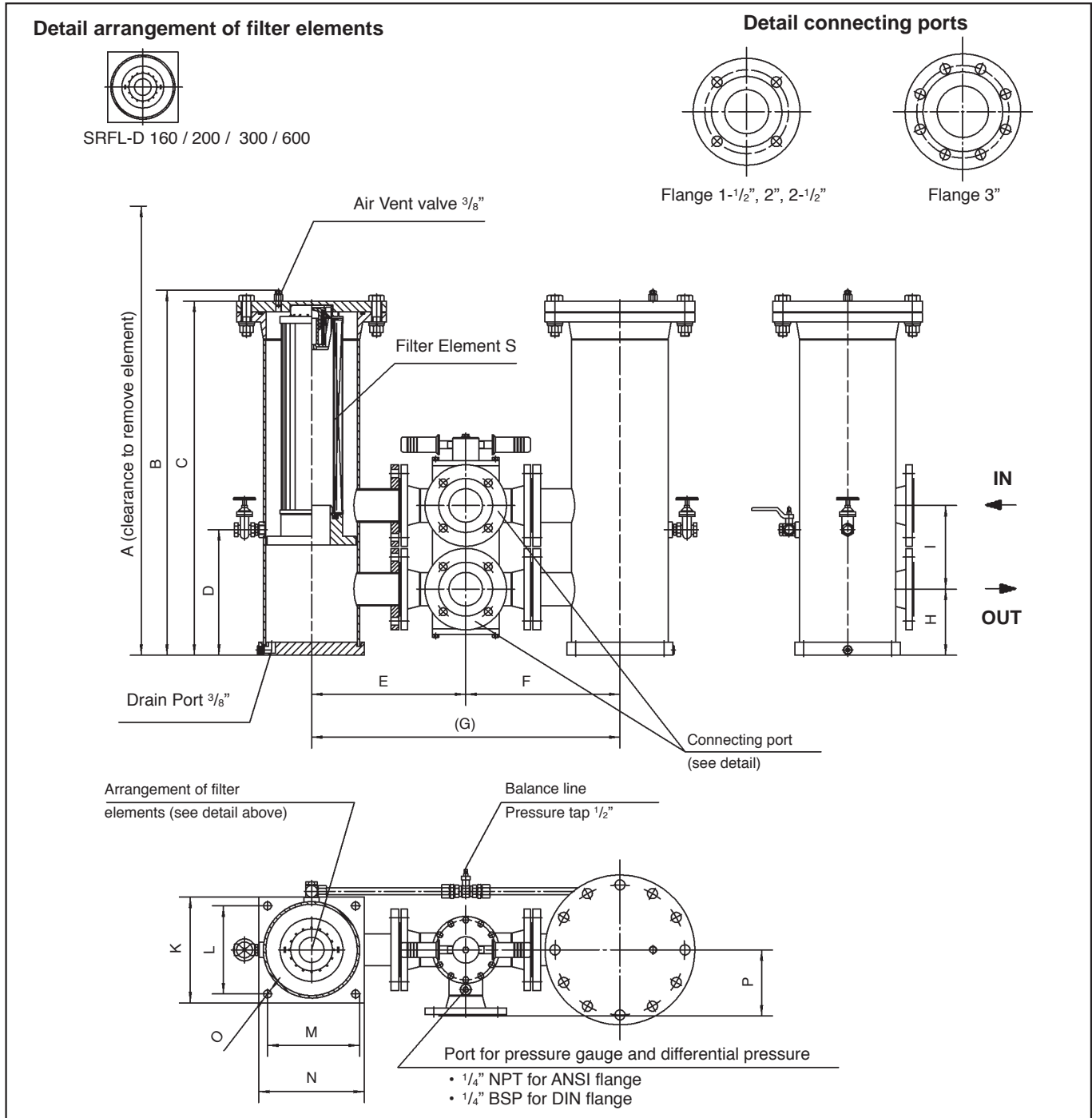
Dimensions SRFL-S 1200 / 1800 / 2400 / 3600



All dimensions in mm (inch)

Filter Size	Flange Connection			Dimensions													Total oil Capacity		Weight (without element)		Filter Element S	
	DIN	ANSI	SAE	A	B	C	D	E	H	I	K	L	M	N	O	R	l	gal	kg	lbs	Designation	Qty
SRFL-S-1200	DN100	4"	4"	2176,7 (85,7)	1319,6 (51,96)	1294,9 (50,98)	275 (10,83)	273 (10,75)	190 (7,48)	250 (9,84)	385 (15,16)	325 (12,8)	325 (12,8)	385 (15,16)	23 (0,91)	60 (2,36)	103	27,2	86,2	190	RE-600...	1 x 2
SRFL-S-1800	DN125	5"	5"	2176,7 (85,7)	1323,6 (52,11)	1294,9 (50,98)	275 (10,83)	273 (10,75)	190 (7,48)	280 (11,02)	385 (15,16)	325 (12,8)	325 (12,8)	385 (15,16)	23 (0,91)	60 (2,36)	103	27,2	90,7	200	RE-600...	1 x 3
SRFL-S-2400	DN150	6"	6"	2249,1 (88,55)	1394,8 (54,92)	1366,1 (53,78)	325 (12,8)	298 (11,73)	200 (7,87)	320 (12,6)	435 (17,13)	375 (14,76)	375 (14,76)	435 (17,13)	23 (0,91)	60 (2,36)	149	39,3	105,2	232	RE-600...	1 x 4
SRFL-S-3600	DN200	8"	8"	2249,1 (88,55)	1392,8 (54,84)	1368,1 (53,68)	325 (12,8)	398 (15,67)	252 (9,92)	425 (16,73)	540 (21,26)	480 (18,9)	480 (18,9)	540 (21,26)	23 (0,91)	60 (2,36)	232	61,3	154,2	340	RE-600...	1 x 6

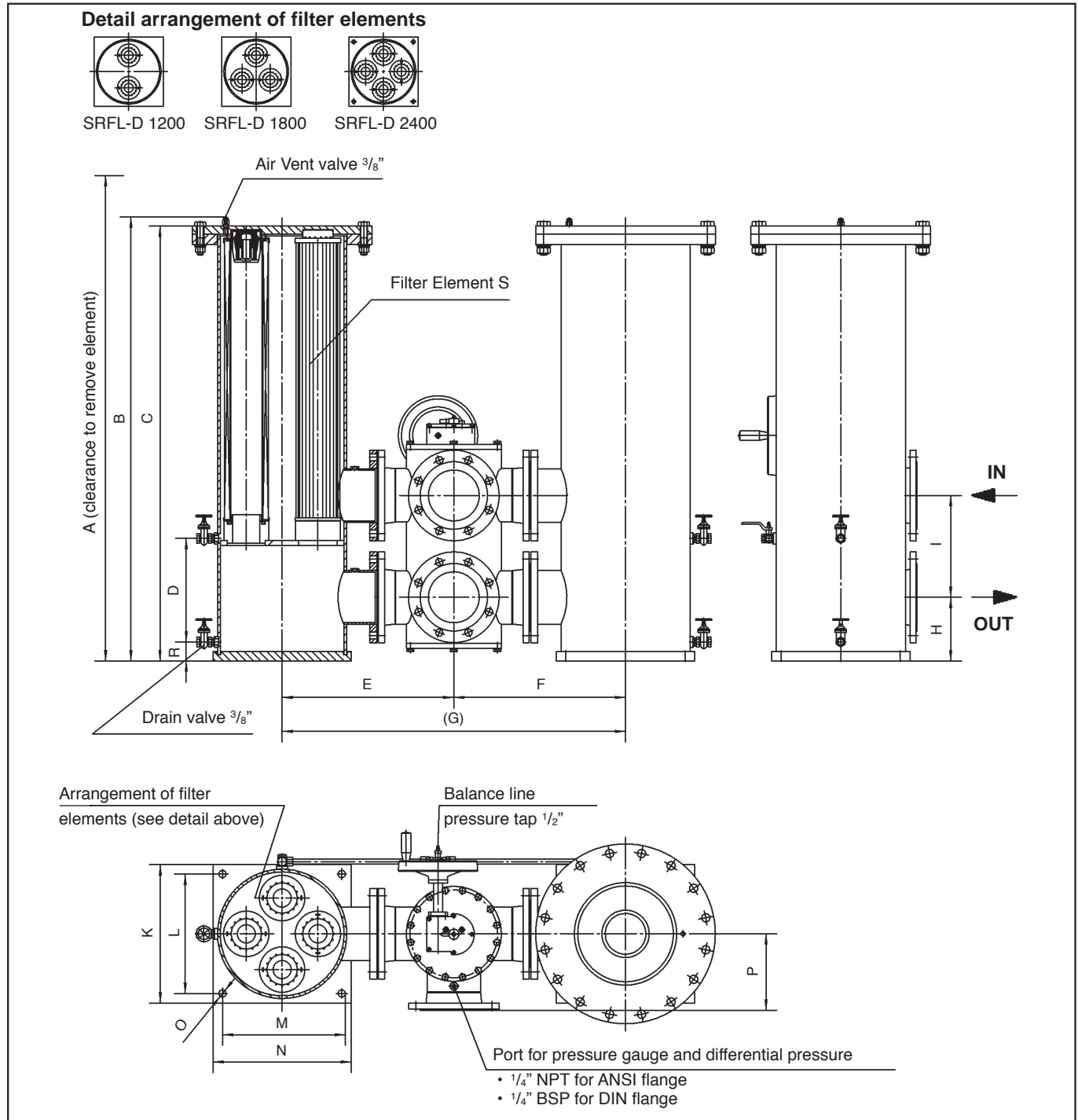
Dimensions SRFL-D 160 / 200 / 300 / 600



All dimensions in mm (inch)

Filter Size	Flange Connection		Dimensions														Total oil Capacity		Weight (without element)		Filter Element S		
	DIN	ANSI	A	B	C	D	E	F	G	H	I	K	L	M	N	O	P	l	gal	kg	lbs	Designation	Qty
SRFL-D-160	DN 40	1-1/2"	885,8 (34,87)	607,6 (23,92)	584 (22,99)	214 (8,43)	260 (10,24)	260 (10,24)	520 (20,47)	130 (5,12)	155 (6,1)	150 (5,91)	125 (4,92)	125 (4,92)	150 (5,91)	11 (0,43)	110 (4,33)	6,02	1,59	43	95	RE-160...	2 x 1
SRFL-D-200	DN 50	2"	1045,8 (41,17)	688,7 (27,12)	642 (25,28)	214 (8,43)	300 (11,81)	300 (11,81)	600 (23,62)	140 (5,51)	190 (7,48)	150 (5,91)	125 (4,92)	125 (4,92)	150 (5,91)	11 (0,43)	150 (5,91)	7,11	1,86	56,7	125	RE-200...	2 x 1
SRFL-D-300	DN 65	2-1/2"	1248,7 (49,16)	828,6 (32,63)	803,9 (31,65)	285 (11,22)	350 (13,78)	350 (13,78)	700 (27,56)	150 (5,91)	190 (7,48)	240 (9,45)	200 (7,87)	200 (7,87)	240 (9,45)	18 (0,71)	150 (5,91)	22,24	5,87	84	185	RE-300...	2 x 1
SRFL-D-600	DN 80	3"	2126,7 (83,73)	1267,6 (49,91)	1242,9 (48,93)	285 (11,22)	375 (14,76)	375 (14,76)	750 (29,53)	160 (6,3)	220 (8,66)	240 (9,45)	200 (7,87)	200 (7,87)	240 (9,45)	18 (0,71)	175 (6,89)	37,1	9,8	104	230	RE-600...	2 x 1

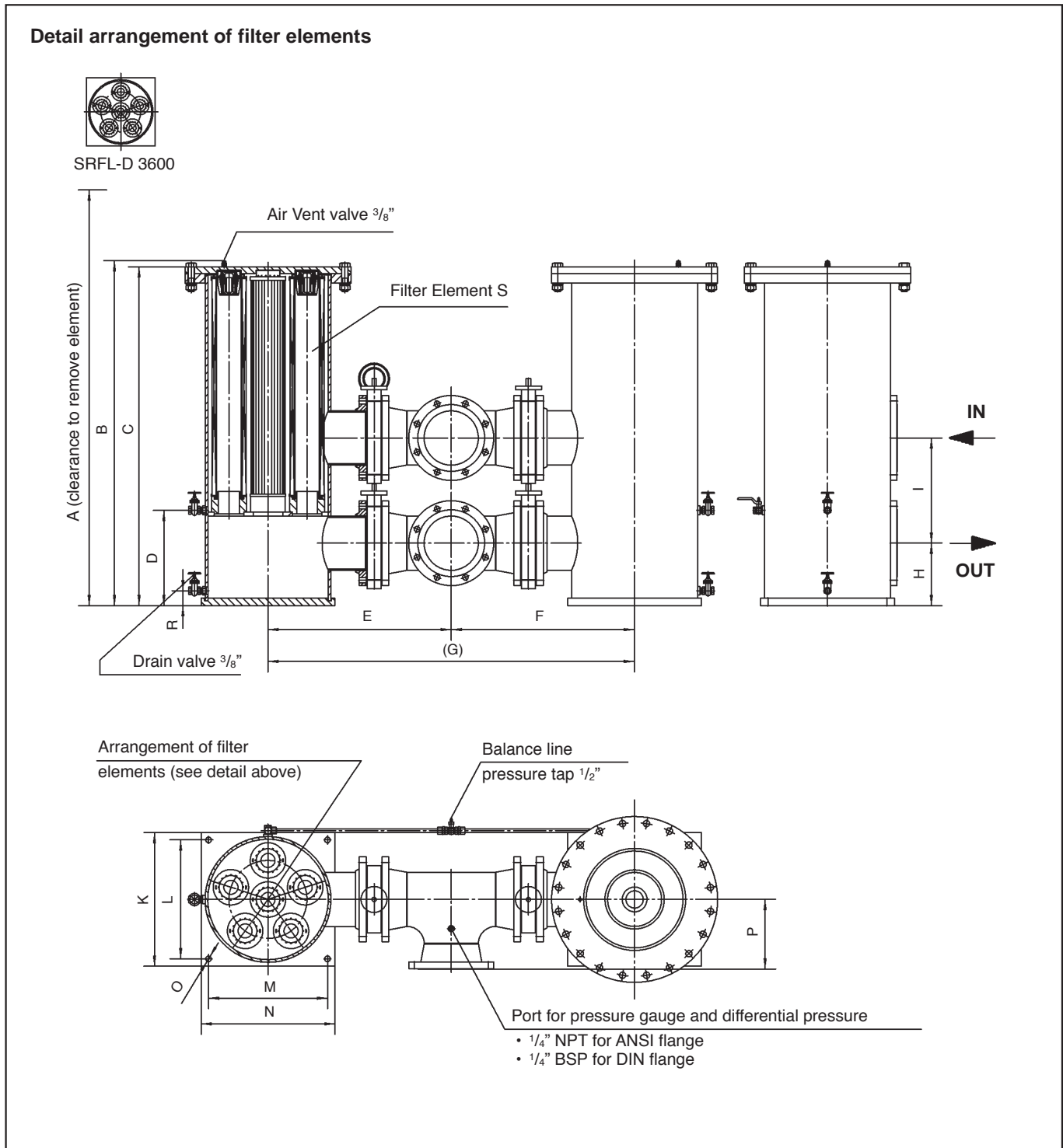
Dimensions SRFL-D 1200 / 1800 / 2400



All dimensions in mm (inch)

Filter Size	Flange Connection		Dimensions															Total oil Capacity		Weight (without element)		Filter Element S		
	DIN	ANSI	A	B	C	D	E	F	G	H	I	K	L	M	N	O	P	R	I	gal	kg	lbs	Designation	Qty
SRFL-D-1200	DN 100	4"	2176,7 (85,7)	1319,6 (51,96)	1294,9 (50,98)	275 (10,83)	475 (18,7)	475 (18,7)	950 (37,4)	190 (7,48)	250 (9,84)	385 (15,16)	325 (12,8)	325 (12,8)	385 (15,16)	23 (0,91)	200 (7,87)	60 (2,36)	103	27,2	215	475	RE-600...	2 x 2
SRFL-D-1800	DN 125	5"	2176,7 (85,7)	1323,6 (52,11)	1294,9 (50,98)	275 (10,83)	500 (19,69)	500 (19,69)	1000 (39,37)	190 (7,48)	280 (11,02)	385 (15,16)	325 (12,8)	325 (12,8)	385 (15,16)	23 (0,91)	225 (8,86)	60 (2,36)	103	27,2	233	515	RE-600...	2 x 3
SRFL-D-2400	DN 150	6"	2249,1 (88,55)	1394,8 (54,92)	1366,1 (53,78)	325 (12,8)	540 (21,26)	1080 (42,52)	200 (7,87)	320 (12,6)	435 (17,13)	375 (14,76)	375 (14,76)	435 (17,13)	23 (0,91)	240 (9,45)	60 (2,36)	149	39,3	263	580	RE-600...	2 x 4	

Dimensions SRFL- D 3600



All dimensions in mm (inch)

Filter Size	Flange Connection		Dimensions																Total oil Capacity		Weight (without element)		Filter Element S	
	DIN	ANSI	A	B	C	D	E	F	G	H	I	K	L	M	N	O	P	R	l	gal	kg	lbs	Designation	Qty
SRFL-D-3600	DN 200	8"	2249,1 (88,55)	1392,8 (54,84)	1368,1 (53,86)	325 (12,8)	739 (29,11)	739 (29,11)	1479 (58,22)	252 (9,92)	425 (16,73)	540 (21,26)	480 (18,9)	480 (18,9)	540 (21,26)	23 (0,91)	281,4 (11,08)	60 (2,36)	233	61,3	390	860	RE-600...	2 x 6

Ordering Code Filter Housings

SRFL-D-160 ... B / A / O / CS / D / X

Filter type	
SRFL-S	Return Line Simplex Housing
SRFL-D	Return Line Duplex Housing

Group		
Size	Flow	
	l/min	US GPM
160	900	240
200	900	240
300	1400	370
1200	1400	370
1800	4000	1050
2400	4000	1050
3600	7000	1850

For complete filters:
 Identification filter material
 + micron rating code
 (See ordering code filter elements below)

Seal material	
B	NBR (Buna®)
V	FPM (Viton®)
Other seal material on request	

Design code	
Only for information	

Clogging indicator	
O	Without clogging indicator
D	Differential pressure switch
Other indicators on request	

Material Housing	
CS	Carbon steel
SS	Stainless steel

Connection location	
O	Oposite side
S	Same side
Omit for SRFL-D series	

Connection style		Group							
Code	Connection style	160	200	300	600	1200	1800	2400	3600
A	ANSI flange	1-1/2"	2"	2-1/2"	3"	4"	5"	6"	8"
S	SAE flange (omit for SRFL-D)	1-1/2"	2"	2-1/2"	3"	4"	5"	6"	8"
D	DIN flange	DN 40	DN 50	DN 65	DN 80	DN 100	DN 125	DN 150	DN 200

Ordering Code Filter Elements

RE-160 G 10 V / X

Series	RE
--------	-----------

Group			
Size	Filter Element		
	Designation	Quantity	
		SRFL-S	SRFL-D
160	RE-160	1 x 1	2 x 1
200	RE-200	1 x 1	2 x 1
300	RE-300	1 x 1	2 x 1
600	RE-600	1 x 1	2 x 1
1200	RE-600	1 x 2	2 x 2
1800	RE-600	1 x 3	2 x 3
2400	RE-600	1 x 4	2 x 4
3600	RE-600	1 x 6	2 x 6

Filter material			Micron ratings available
Code	Material	max Δp* collapse	
A	Stainless fiber	30 bar (435 PSI)	03, 05, 10, 20
N	Filter paper	16 bar (232 PSI)	
G	Inorganic glass fiber	30 bar (435 PSI)	
S	Stainless mesh	30 bar (435 PSI)	10, 25, 50, 100, 200, 500

*Collapse / burst resistance as per ISO 2941

Design code	
Only for information	

Seal material	
B	NBR (Buna®)
V	FPM (Viton®)
Other seal materials on request	

Micron rating	
03	3 μm
05	5 μm
10	10 μm
20	20 μm
10	10 μm
25	25 μm
50	50 μm
100	100 μm
200	200 μm
500	500 μm
Other micron ratings on request	

1. Replacement Filter Elements RE

STAUFF replacement filter elements for SRFL-S and SRFL-D series filters are manufactured in the common filter materials such as stainless fiber, stainless mesh, paper and inorganic glass fiber. As standard all replacement elements series RE have tin plated steel parts for use with aggressive media such as water glycol, on request you also can get other materials. All replacement elements made by STAUFF comply with quality specifications in accordance with international standards.



RE-300 G 10 V /X

Series	RE
---------------	----

Group	According to filter housing (See ordering code page 9)
--------------	---

Filter material			Micron ratings available
Code	Material	max Δp^* collapse	
A	Stainless fiber	30 bar (435 PSI)	03, 05, 10, 20
N	Filter paper	16 bar (232 PSI)	
G	Inorganic glass fiber	30 bar (435 PSI)	
S	Stainless mesh	30 bar (435 PSI)	10, 25, 50, 100, 200, 500

*Collapse / burst resistance as per ISO 2941

Design code	Only for information
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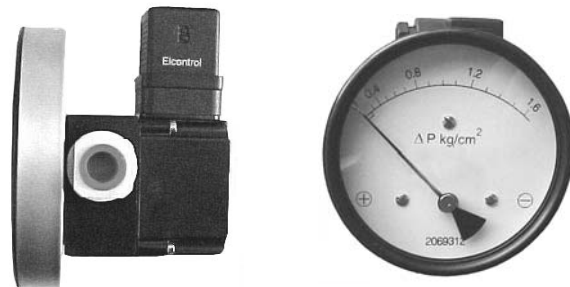
Seal material	
B	NBR (Buna®)
V	FPM (Viton®)
other seal materials on request	

Micron rating	
03	3 μm
05	5 μm
10	10 μm
20	20 μm
10	10 μm
25	25 μm
50	50 μm
100	100 μm
200	200 μm
500	500 μm
Other micron ratings on request	

2. Differential Pressure Switch with visual gauge indicator

The switch is used to indicate when the elements need changing. The switch can turn on a light, shut down the machine or any further function controlled by an electrical signal. The gauge visually indicates the differential pressure across the filter elements.

Diameter	100 mm (6,9")
Scale	0 ... 1,6 bar (0 ... 23 PSI)
Connection thread	1/4 "
Working pressure	Max 200 bar (2900 PSI)
Temperature range	-20 °C up to +80 °C (-4 °F up to +176 °F)
Body	Aluminium
Lens	Glass
Seal	NBR (Buna-N ®) FPM (Viton ®)

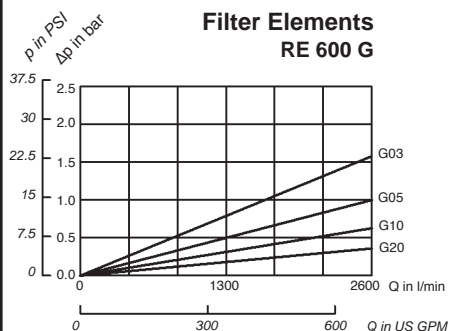
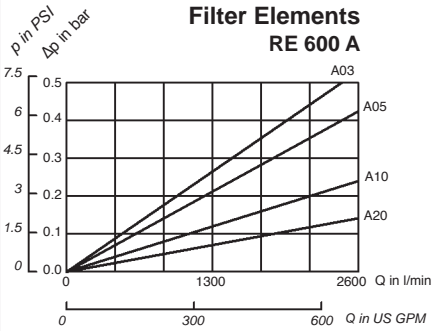
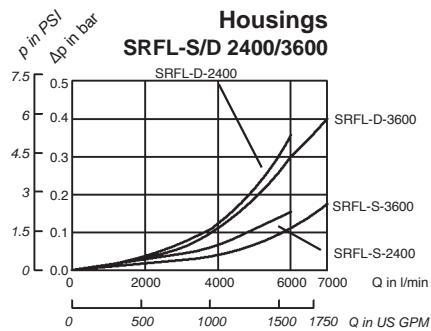
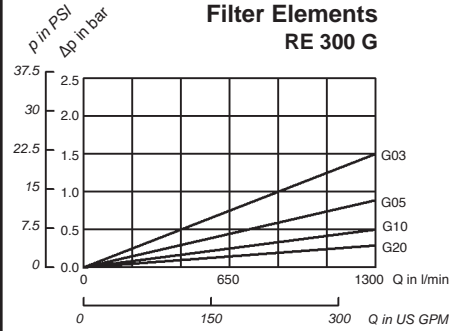
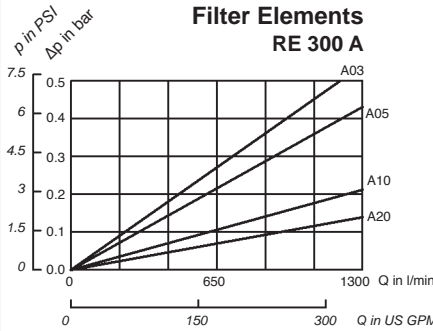
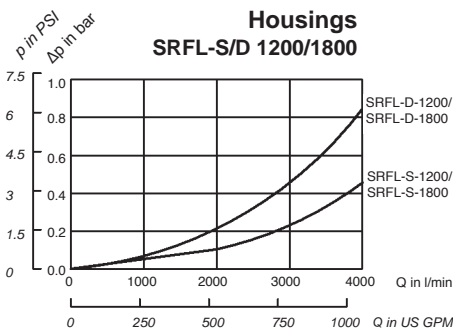
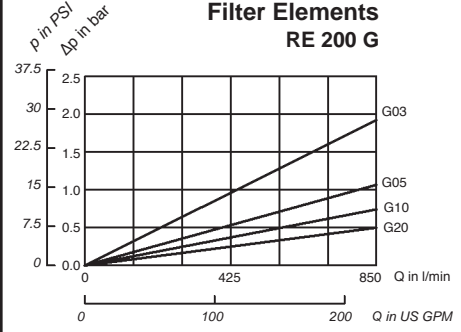
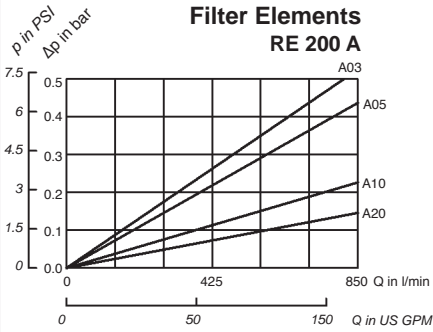
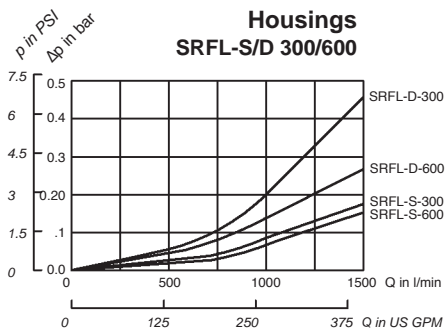
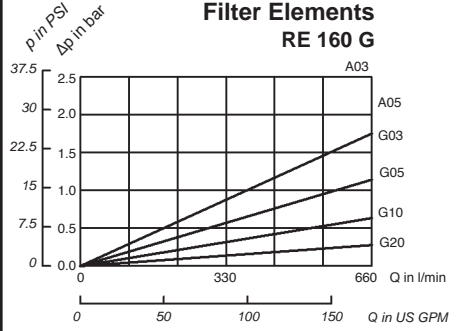
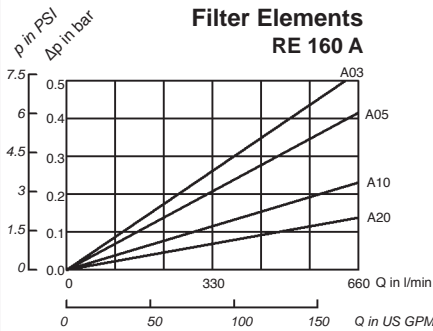
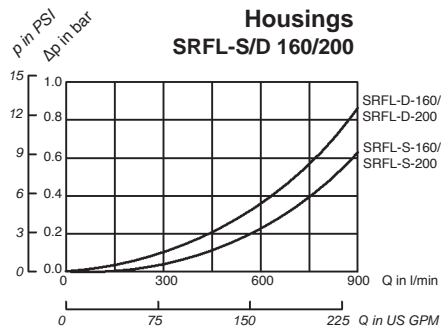


Protection system	IP 65
Switch Voltage	max 28 V AC/DC
Current on Contact	max 0,25 A AC/DC
Contact Rating	5 VA AC/DC

Other data on request

Flow Characteristics of Return-line Filters SRFL-S and SRFL-D

The following characteristics are valid for mineral oils with a density of 0,85 kg/dm³ and the kinematic viscosity of 30 mm²/s. The characteristics have been determined in accordance to ISO 3968. The housing pressure drop is directly proportional to the oil density.

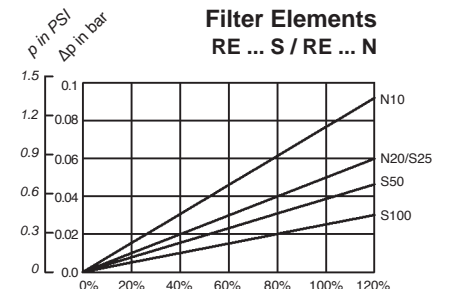


Pressure drop of housing including filter elements

General: $\Delta p_{total} = \Delta p_{housing} + \Delta p_{Elem} \times (\text{operating viscosity [mm}^2\text{/s]} / 30\text{mm}^2\text{/s})$
 with $\Delta p_{housing}$ see diagrams above
 Δp_{Elem} pressure drop of element at a flow Q/n (at a viscosity of 30 mm²/s) and n= numbers of elements as listed in ordering code filter elements see page 9) see diagrams above.

Example

Data given $Q_{max} = 6000 \text{ l/min (1585 US GPM)}$, RFL-D-2400 with filter elements RE-600S25B;
 operating viscosity = 100 mm²/s
 $Q_{max} = 6000 \text{ l/min}; n=4 \text{ elements (SRFL-D-2400)}$ $Q/n=1500 \text{ l/min (396 gal)}$
 $\Delta p_{housing} = 0,35 \text{ bar (5,07 PSI)}$, $\Delta p_{Elem} = 0,043 \text{ bar (0,62 PSI)}$
 Pressure drop: $\Delta p_{total} = 0,35 \text{ bar} + 0,043 \text{ bar} \times (100 \text{ mm}^2\text{/s} / 30\text{mm}^2\text{/s})$
 $= 0,49 \text{ bar (7,16 PSI)}$



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Unanderra Wollongong , N.S.W
2526 AUSTRALIA
Tel: +61 2 42 71 18 77
Fax: +61 2 42 71 84 32



Brazil
Stauff Brasil Ltda.
Av. Guapé 10767
Galpão 2 – Bloco A
Barueri – São Paulo – CEP 06422-120, BRAZIL
Tel: +55 (0)11-4789-9020
Fax: +55 (0)11-4789-9021



Canada
Stauff Canada Ltd.
866 Milner Avenue
Scarborough , Ontario M1B 5N7 , CANADA
Tel: +1 416 282 46 08
Fax: +1 416 282 30 39



China
Stauff International Trading (Shanghai) Co., Ltd.
Shangdian Mansion, Pudong
331 , Binzhou Road
200126 Shanghai, CHINA
Tel: +86 21 58 45 65 60
Fax: +86 21 58 45 66 80



France
Stauff S.A.
Z.I. de Vineuil-Blais Sud
230, Avenue du Grain d'Or
41354 Vineuil-cedex, FRANCE
Tel: +33 2 54 50 55 50
Fax: +33 2 54 42 29 19



Germany
Walter Stauffenberg GmbH & Co. KG
P.O. Box 1745,
D-58777 Werdohl, GERMANY
Tel: +49 (0) 23 92/916-0
Fax: +49 (0) 23 92 25 05



India
Stauff India Pvt. Ltd.
Gat. No. 2340
Pune-Nagar Road, Wagholi
IND-Pune - 412027
Tel: +91 20 705 19 90
Fax: +91 20 705 19 89



Italy
Stauff Italia S.R.L.
Via Pola 21/23
I-20034 Birone di Giussano
Tel: +39 0362 31 21 13
Fax: +39 0362 33 55 36



New Zealand
Stauff Corporation (NZ) Ltd.
Unit J. 150 Harris Road, P.O. Box 58517
Greenmount Auckland-NEW ZEALAND
Tel: +64 9 271 4812
Fax: +64 9 271 4832

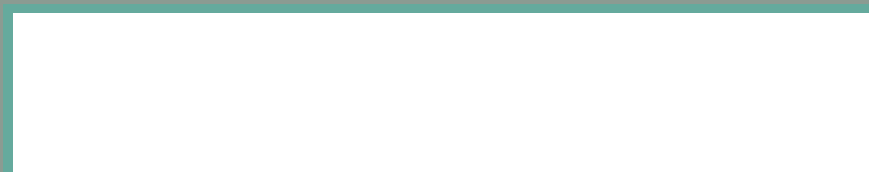


United Kingdom
Stauff UK Ltd.
332, Coleford Road Darnall
Sheffield, S 9 5 P H, ENGLAND
Tel: +44 1142 518 518
Fax: +44 1142 518 519



USA
Stauff Corporation
7 Wm. Demarest Place
Waldwick, NJ – 07463, USA
Tel: +1 201 444 78 00
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 Unanderra Wollongong , N.S.W
 2526 AUSTRALIA
 Tel: +61 2 42 71 18 77
 Fax: +61 2 42 71 84 32

Brazil
 Stauff Brasil Ltda.
 Av. Gupê 10767
 Galpão 2 – Bloco A
 Barueri – São Paulo – CEP 06422-120, BRAZIL
 Tel: +55 (0)11-4789-9020
 Fax: +55 (0)11-4789-9021

Canada
 Stauff Canada Ltd.
 866 Milner Avenue
 Scarborough , Ontário M1B 5N7 , CANADA
 Tel: +1 416 282 46 08
 Fax: +1 416 282 30 39

China
 Stauff International Trading (Shanghai) Co., Ltd.
 Shangdian Mansion, Pudong
 331 , Binzhou Road
 200126 Shanghai, CHINA
 Tel: +86 21 58 45 65 60
 Fax: +86 21 58 45 66 80

France
 Stauff S.A.
 Z.I. de Vineuil-Blois Sud
 230, Avenue du Grain d'Or
 41354 Vineuil-cedex, FRANCE
 Tel: +33 2 54 50 55 50
 Fax: +33 2 54 42 29 19

India
 Stauff India Pvt. Ltd.
 Gat. No. 2340,
 Pune-Nagar Road, Wagholi, INDIA
 IND-Pune - 412027
 Tel: +91 20 705 19 90
 Fax: +91 20 705 19 89

Italy
 Stauff Italia S.R.L.
 Via Pola 21/23, I-20034
 Birone di Giussano, ITALY
 Tel: +39 0362 31 21 13
 Fax: +39 0362 33 55 36

New Zealand
 Stauff Corporation (NZ) Ltd.
 Unit J. 150 Harris Road, P.O. Box 58517
 Greenmount Auckland-NEW ZEALAND
 Tel: +64 9 271 4812
 Fax: +64 9 271 4832

United Kingdom
 Stauff UK Ltd.
 332, Coleford Road Darnall
 Sheffield, S 9 5 P H, ENGLAND
 Tel: +44 1142 518 518
 Fax: +44 1142 518 519

USA
 Stauff Corporation
 7 Wm. Demarest Place
 Waldwick, NJ – 07463, USA
 Tel: +1 201 444 78 00
 Fax: +1 201 444 78 52

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 Im Ehrenfeld 4 · D-58791 Werdohl
 Tel.: +49 (0) 23 92 9 16-0
 Fax: +49 (0) 23 92 25 05
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Stauff has the technical expertise to provide superior filter element designs for the Stauff original filter housings and also for the interchange element market. Stauff manufactures more than 10,000 different elements. Many of these are designed to fit into filter housings produced by other companies while maintaining or surpassing the original performance.

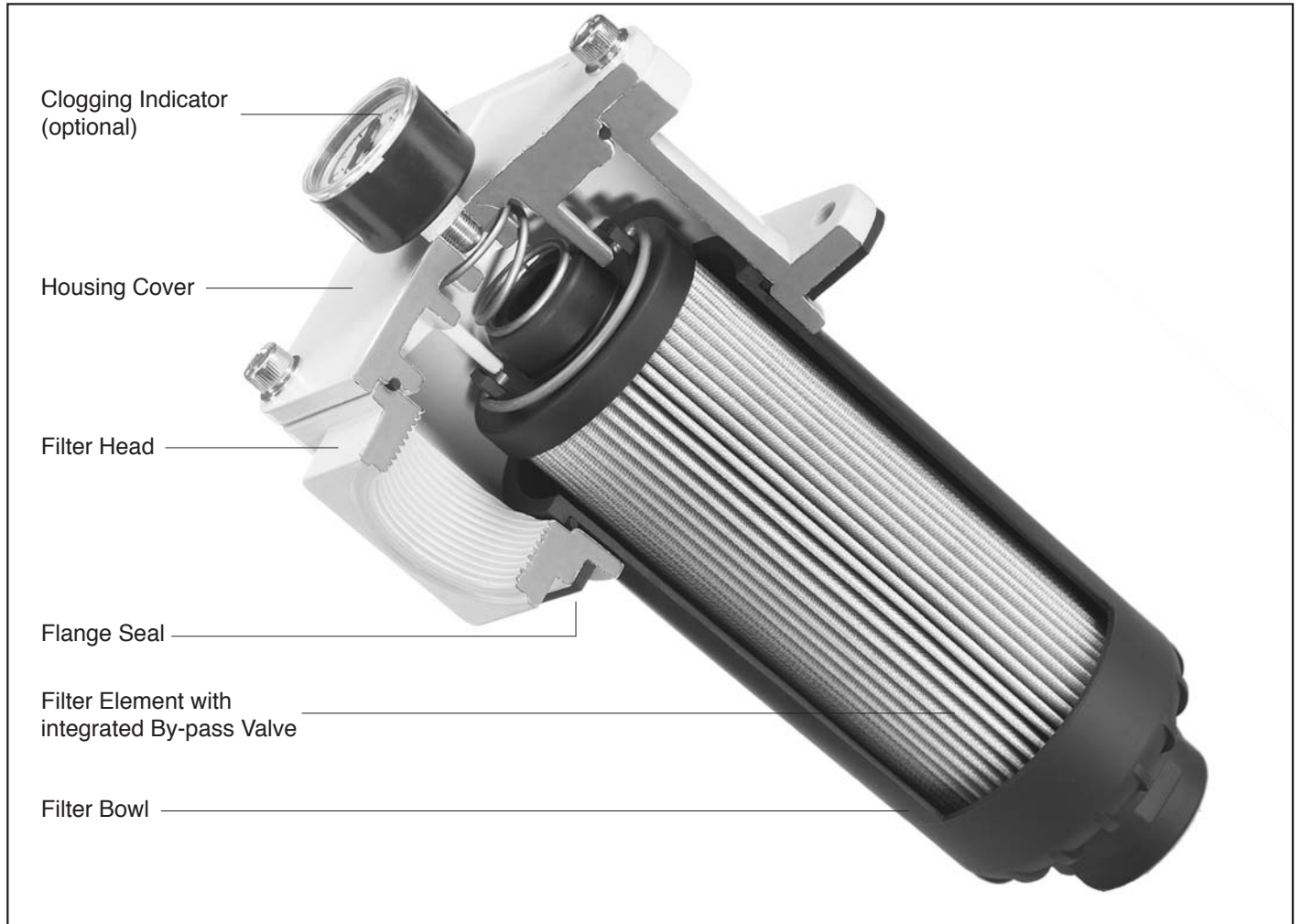
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Return Line Filter RF 014-130	Page
Technical Data	3
Dimensions	4
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Return Line Filter RFB 022-052	
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Ordering Code	12
Flow Characteristics	13
Return Line Filter RF & RFB Filter Elements RE	14

Technical Data

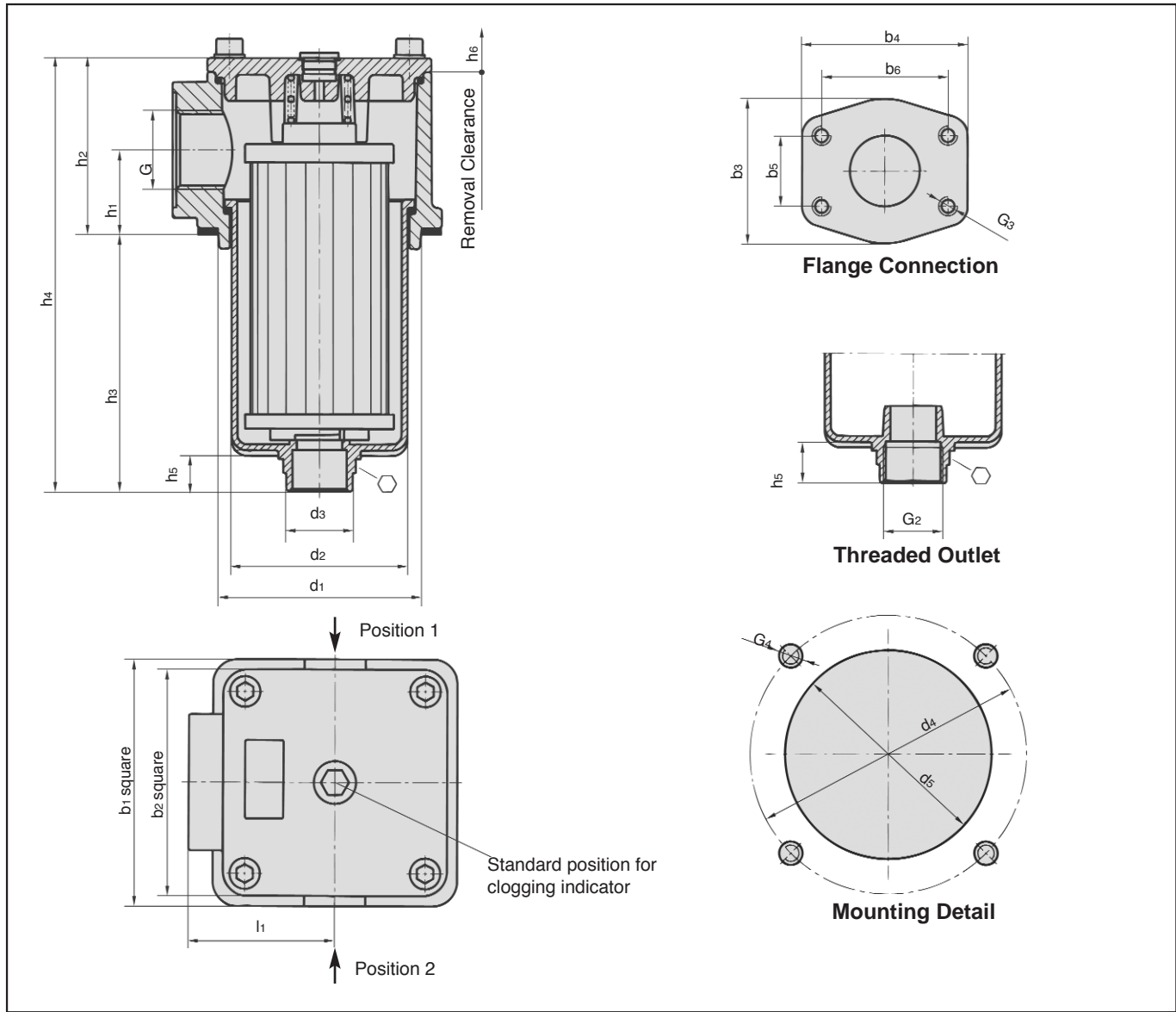
STAUFF RF 014-130 return line filters are designed as tank top filters. They are mounted directly on the tank top and if 100% of the system oil is filtered, they provide the optimum removal of contaminant from the system. This provides the pump with clean oil thus reducing contaminant generated wear. The filter bowl or funnel is designed to return the oil beneath the surface thus preventing the entrainment of air by the returning oil.



Technical Specification

Construction	Tank Top flange mounting	By-pass valve (integrated in the filter element)	Opening pressure 3 bar \pm 0,3 bar (43,5 PSI \pm 4,35 PSI) other pressures on request
Filter head	Aluminium	Clogging indicator	Gauge type indicator 0...4 bar (0...58 PSI) coloured segments; Electrical switch, setting 2,5 bar (36,25 PSI)
Filter bowl	Glass fiber reinforced polyamide	Filter elements	Specification see page 14
Seals	NBR (Buna-N®), FPM (Viton®) or EPDM (Ethylene-Propylene)	Media	Mineral oils, other fluids on request
Threaded connection	BSP, NPT- and SAE-“O”-Ring thread as well as SAE-flange (3000 PSI)		
Operating pressure	max 16 bar (232 PSI)		
Proof pressure	24 bar (350 PSI)		
Temperature Range	-10 to +100°C (14° to 212°F)		

Dimensions RF 014-130



Dimensions Return Line Filters

All dimensions in mm (inch)

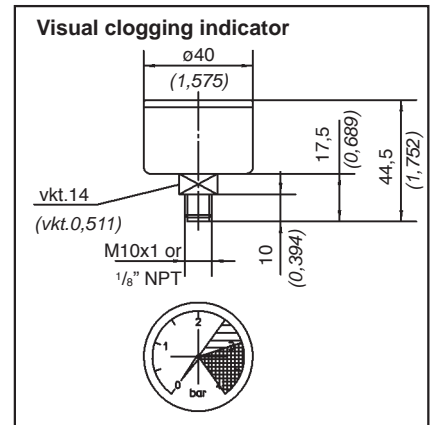
Filter Size	Thread connection G				Dimensions																				
	BSP	NPT	SAE-°O° Ring Thread	SAE-Flange 3000 PSI	b ₁	b ₂	b ₃	b ₄	b ₅	b ₆	d ₁	d ₂	d ₃	d ₄	d ₅	h ₁	h ₂	h ₃	h ₄	h ₅	h ₆	l ₁	G ₂	G ₃	G ₄
RF 014	G 3/4	3/4"	1 1/16-12 UN	-	89	80					73	57,5	36	100	78	33	66	91,5 (3,602)	157,5 (6,201)	23,5 (0,925)	140 (5,512)	48 (1,89)	G1 or 1" NPT		M6 or 3/16" UNC
RF 030	G 1	1"	1 5/16-12 UN	-	89 (3,504)	80 (3,15)					73 (2,874)	57,5 (2,264)	36 (1,417)	100 (3,937)	78 (3,071)	33 (1,3)	66 (2,598)	159,5 (6,295)	225,5 (8,878)	23,5 (0,925)	210 (8,268)				
RF 045	G 1 1/4	1 1/4"	1 5/8-12 UN	-	120 (4,724)	110 (4,331)					100 (3,937)	84 (3,307)	48 (1,89)	135 (5,135)	105 (4,134)	41 (1,614)	86 (3,386)	119 (4,685)	206 (8,11)	24 (0,945)	180 (7,087)	66 (2,598)	G1 1/4 or 1 1/2" NPT		M8 or 3/16" UNC
RF 070	G 1 1/2	1 1/2"	1 7/8-12 UN	-	120 (4,724)	110 (4,331)					100 (3,937)	84 (3,307)	48 (1,89)	135 (5,135)	105 (4,134)	41 (1,614)	86 (3,386)	180 (7,087)	267 (10,512)	240 (9,449)					
RF 090	G 2	2"	1 7/8-12 UN	2"	150 (5,906)	135 (5,135)	88 (3,465)	102 (4,016)	42,9 (1,689)	77,8 (3,063)	126 (4,961)	112,5 (4,429)	54,5 (2,146)	170 (6,693)	131 (5,158)	47 (1,85)	98 (3,858)	172,5 (6,791)	273,5 (10,768)	27 (1,063)	235 (9,252)	85 (3,347)	G1 1/2 or 1 1/2" NPT	1/2 UNC x15 (x0,591)	M10 or 3/8" UNC
RF 130	G 2	2"	1 7/8-12 UN	2"	150 (5,906)	135 (5,135)	88 (3,465)	102 (4,016)	42,9 (1,689)	77,8 (3,063)	126 (4,961)	112,5 (4,429)	54,5 (2,146)	170 (6,693)	131 (5,158)	47 (1,85)	98 (3,858)	252,5 (9,917)	353,5 (13,917)	27 (1,063)	315 (12,402)	85 (3,347)	G1 1/2 or 1 1/2" NPT	1/2 UNC x15 (x0,591)	M10 or 3/8" UNC

Options RF 014-130

1. Visual clogging indicator

The gauge visually displays the degree of contamination of the element. The coloured segments allow quick visual checking.

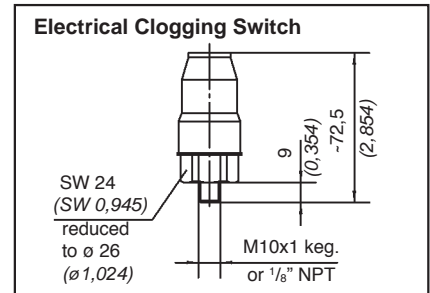
green	0...2,5 bar (0...36,25 PSI)	Element has service life left
yellow	2,5...3,0 bar (36,25 ...43,5 PSI)	Element is contaminated and should be changed
red	>3,0 bar (>43,5 PSI)	By-pass valve open, unfiltered oil passing to tank



2. Electrical clogging switch

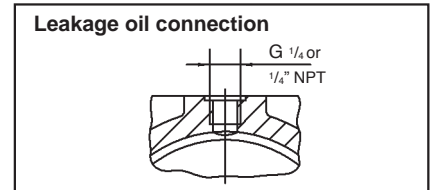
The switch is used where an electrical signal is needed to indicate when the element needs changing. The switch can turn on a light, or shut the machine down, or any further function controlled by an electric signal. The switching pressure is 2,5 bar (36,25 PSI) and this allows the element to be changed before the by-pass setting of 3 bar (43,5 PSI) is reached.

Maximum Voltage	Switch Type
42 V	G 42
110 V	G 110
220 V	G 220



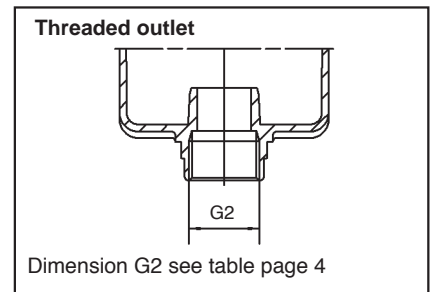
3. Leakage oil connection

Seal or case drain lines can be connected to the filter through either of the clogging indicator ports providing that the leakage oil can accept a pressure of 3 bar (43,5 PSI). It ensures that no un-filtered oil can return to the reservoir. It may save the cost of a manifold.



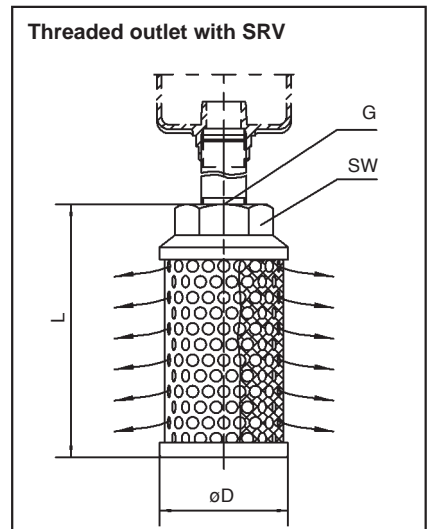
4. Filter bowl with threaded connection

Under some circumstances such as a tall reservoir or one with oil levels which vary greatly during operation, it is necessary to extend the filter bowl so that the returning oil returns beneath the surface and does not entrain air in the process. The optional bowl with a female thread allows an extension to be fitted quite simply.



5. Filter bowl with threaded connection and diffusor

Diffusers mounted to the filter bowl minimize foaming and reduce noise of backstreaming fluids. For further details on STAUFF diffusers please refer to our catalogue "Hydraulic Accessories".



All dimensions in mm (inch)

Size SRV	for Return Line Filter Size	Dimensions			
		ϕD	L	Thread G	SW
SRV-114-B16	RF 014/030	60 (2,362)	139 (5,472)	G1 or 1" NPT	46 (1,811)
SRV-200-B20	RF 045/070	82 (3,228)	139 (5,472)	G1 1/4 or 1 1/4" NPT	60 (2,362)
SRV-227-B24	RF 090/130	82 (3,228)	200 (7,874)	G1 1/2 or 1 1/2" NPT	60 (2,362)

Ordering Code Filter Housings

RF 070 ... B / B / M / G / L1 / X

Filter type	RF	
Group	Size	
	Flow	
	l/min	GPM
014	60	14
030	110	30
045	160	45
070	240	70
090	330	90
130	500	130

* Note Exact flow will depend on filter element selected. Consult technical data on page 7 & 8

For complete filters:	
identification filter material + micron rating code (see ordering code filter elements below)	
Seal material	
B	NBR (Buna®)
V	FPM (Viton®)
E	EPDM
other seal material on request	

Design Code	
only for information	
Additional Features	
L	Leakage oil connection
<small>*) position of leakage oil connection see page 4 without any code: assembly in the middle of the filter cover</small>	
Outlet Style	
O	Standard outlet (without thread)
G	Filter bowl with threaded outlet
Clogging indicator (see page 5)	
M	Pressure gauge
G 42	Electrical switch 42 V
G 110	Electrical switch 110 V
G 220	Electrical switch 220 V
<small>*) position of clogging indicator see page 4 without any code: assembly in the middle of the filter cover</small>	

Connection style		Group					
Code	Connection style	014	030	045	070	090	130
B	BSP	G ^{3/4}	G1	G1 ^{1/4}	G1 ^{1/2}	G2	G2
B 1	BSP	G ^{1/2}	G ^{1/2}	G1 ^{1/2}	G1 ^{1/4}	G1 ^{1/4}	G1 ^{1/4}
B 2	BSP	G1	G ^{3/4}	—	—	G1 ^{1/2}	G1 ^{1/2}
N	NPT	^{3/4} "	1"	1 ^{1/4} "	1 ^{1/2} "	2"	2"
N 1	NPT	1"	^{3/4} "	1 ^{1/2} "	1 ^{1/4} "	1 ^{1/2} "	1 ^{1/2} "
U	SAE-"O"-Ring thread	1 ^{1/16}	1 ^{5/16}	1 ^{5/8}	1 ^{7/8}	1 ^{7/8}	1 ^{7/8}
U 1	SAE-"O"-Ring thread	1 ^{5/16}	1 ^{1/16}	1 ^{7/8}	1 ^{5/8}	1 ^{5/8}	1 ^{5/8}
F	SAE-flange (3000 PSI)	—	—	—	—	2"	2"

Flanges are not supplied.

Ordering Code Filter Elements

RE-014 G 10 V / X

Series	RE	
Group	according to filter housing	

Design code	
only for information	
Seal material	
B	NBR (Buna®)
V	FPM (Viton®)
E	EPDM
other seal materials on request	

Filter material			Micron ratings available
Code	Material	max Δp* _{collapse}	
A	Stainless fiber	30 bar (435 PSI)	03, 05, 10, 20
N	Filter paper	16 bar (232 PSI)	
G	Inorganic glass fiber	30 bar (435 PSI)	
B, S	Stainless mesh	30 bar (435 PSI)	10, 25, 50, 100, 200, 500

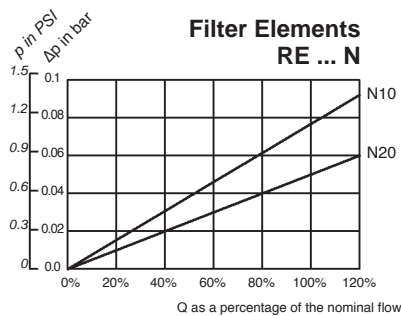
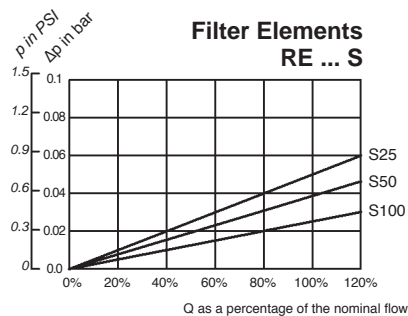
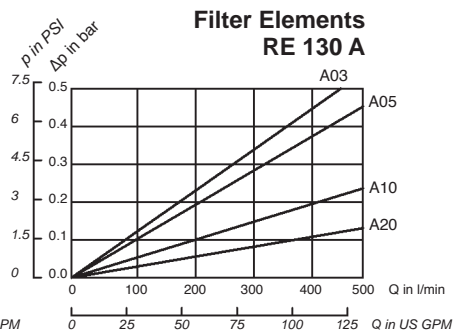
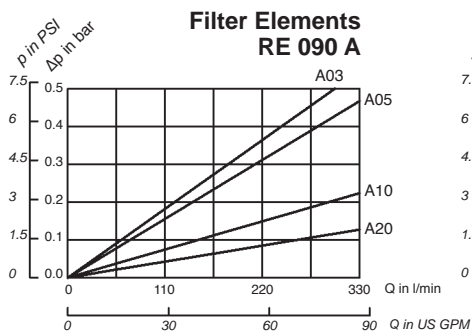
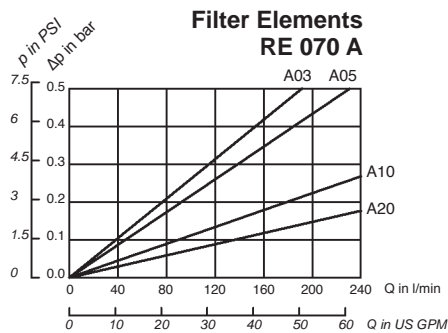
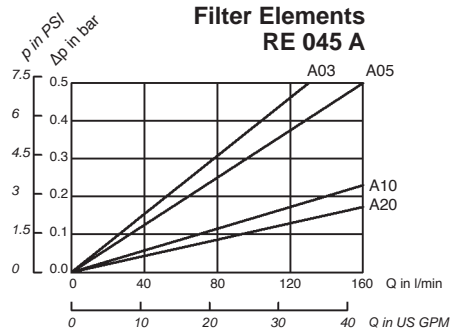
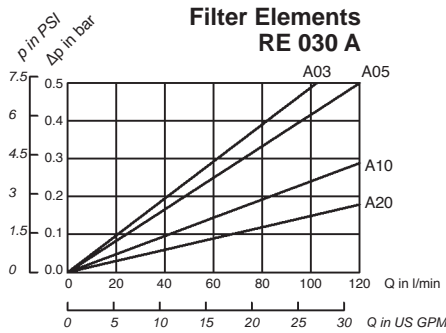
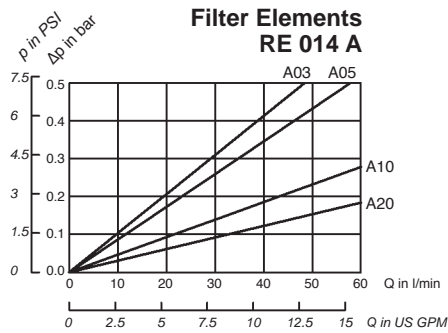
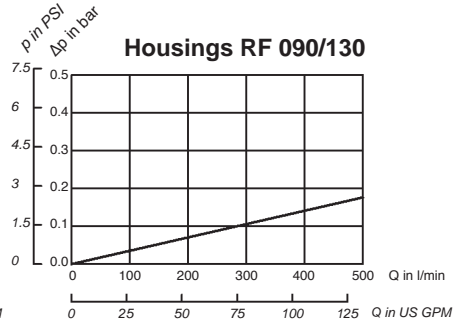
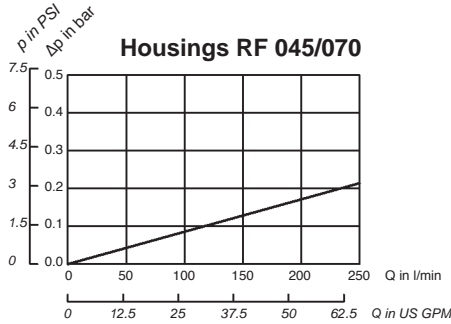
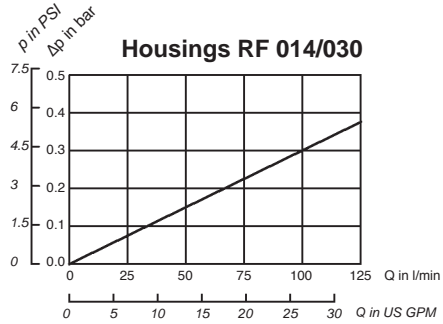
*collapse / burst resistance as per ISO 2941

Bold type identifies preferred material

Micron rating	
03	3 μm
05	5 μm
10	10 μm
20	20 μm
10	10 μm
25	25 μm
50	50 μm
100	100 μm
200	200 μm
500	500 μm
other micron ratings on request	

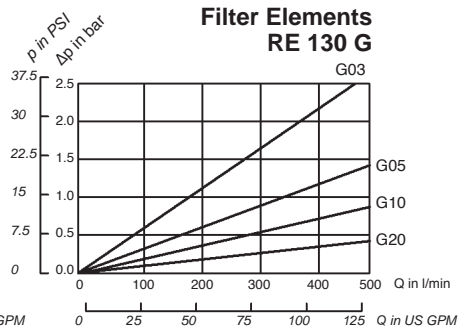
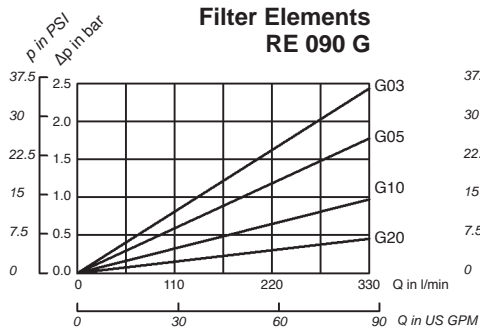
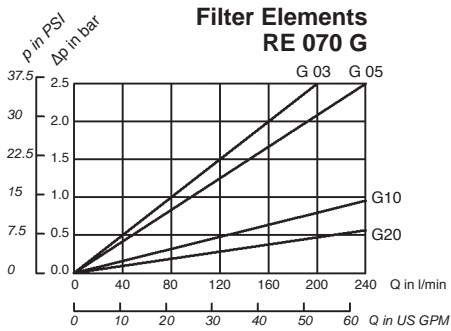
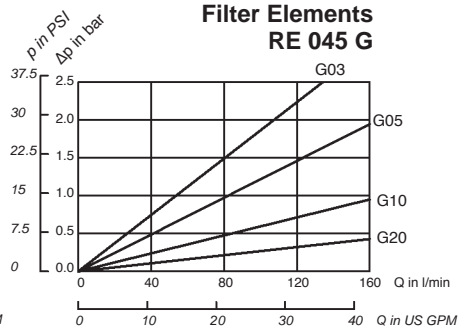
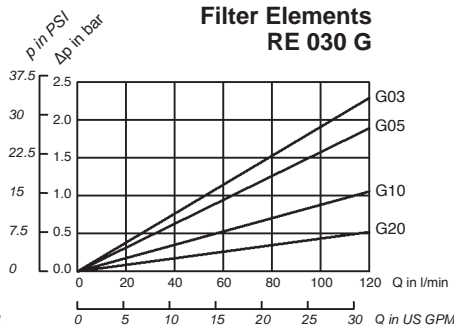
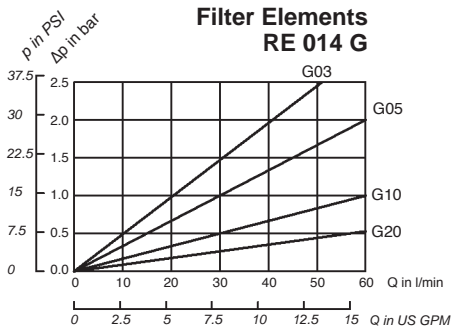
Flow Characteristics of Return Line Filters RF 014-130

The following characteristics are valid for mineral oils with a density of 0,85 kg/dm³ and the kinematic viscosity of 30 mm²/s. The characteristics have been determined in accordance to ISO 3968.



Flow Characteristics of Return Line Filters RF 014-130

The following characteristics are valid for mineral oils with a density of 0,85 kg/dm³ and the kinematic viscosity of 30mm²/s . The characteristics have been determined in accordance to ISO 3968.



Technical Data

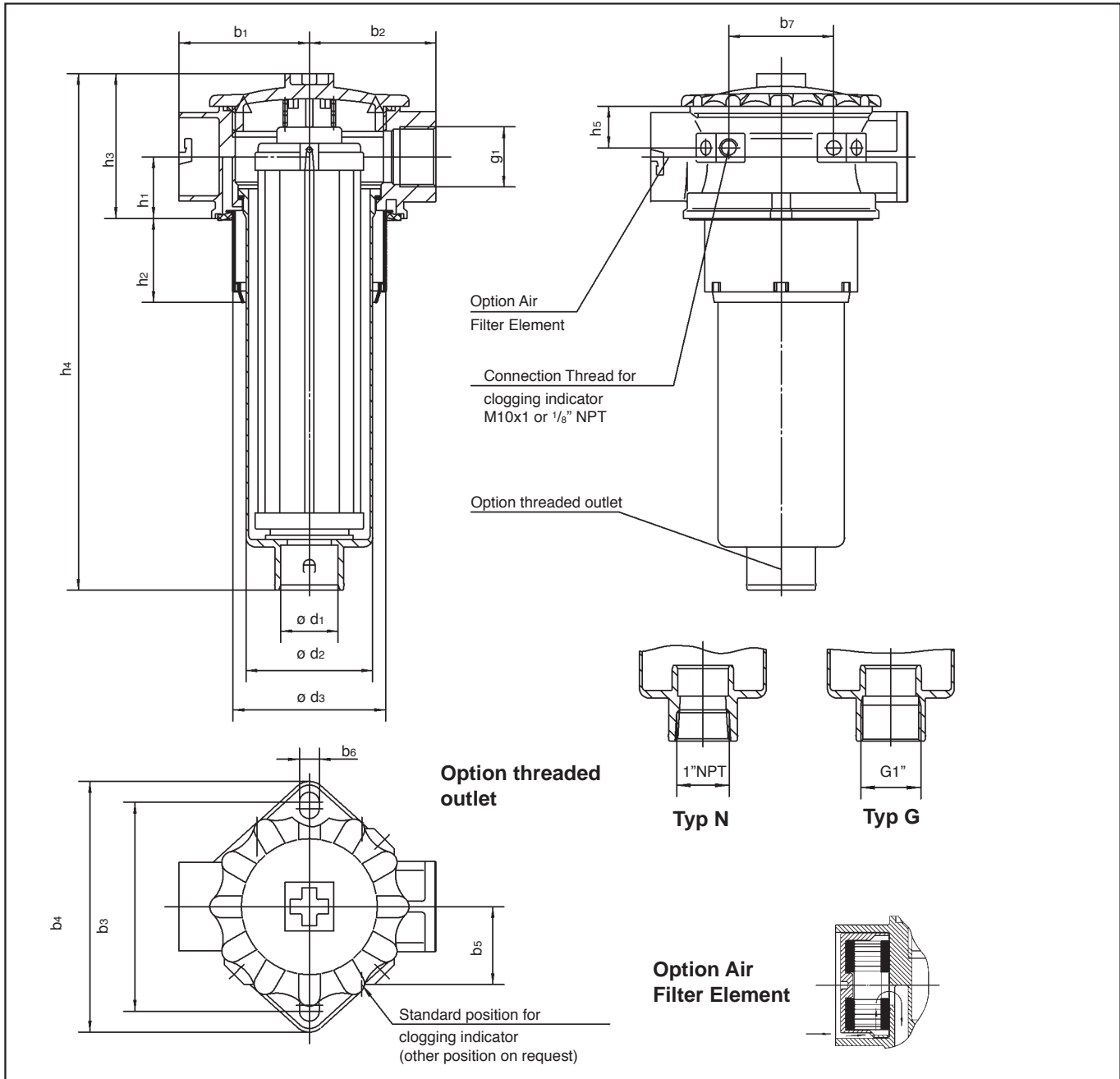
STAUFF RFB return line filters are designed as tank top filters. They are mounted directly on the tank top and if 100% of the system oil is filtered they provide the optimum removal of contaminant from the system. This provides the pump with clean oil thus reducing contaminant generated wear. Because of its low weight and compact design the STAUFF filters RFB are optimally suitable in mobile hydraulic applications.



Technical Specification

Construction	Tank Top flange mounting	By-pass valve (integrated in the filter element)	Opening pressure 3 bar \pm 0,3 bar (43,5 PSI \pm 4,35 PSI) other pressures on request
Filter head	Aluminium	Clogging indicator	Gauge type indicator 0...4 bar (0...58 PSI) coloured segments; Electrical switch, setting 2,5 bar (36,25 PSI)
Filter bowl	Glass fiber reinforced polyamide	Filter elements	Specification see page 14
Seals	NBR (Buna-N®), FPM (Viton®) or EPDM (Ethylene-Propylene)	Media	Mineral oils, other fluids on request
Threaded connection	BSP, NPT- and SAE-“O”-Ring thread		
Operating pressure	max 10 bar (145 PSI)		
Proof pressure	24 bar (350 PSI)		
Temperature range	-10° up to +100°C (14° up to 212°F)		

Dimensions RFB 022-052



Dimensions Return Line Filter RFB 022/046/052

All dimensions in mm (inch)

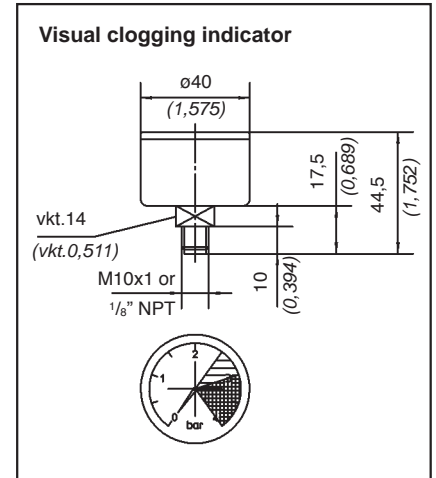
Filter Size	Thread connection G			h ₁	h ₂	h ₃	h ₄	h ₅	d ₁	d ₂	d ₃	b ₁	b ₂	b ₃	b ₄	b ₅	b ₆	b ₇
	BSP	NPT	SAE-“O”-Ring thread															
RFB 022	G 3/4	3/4"	1-5/16-12 UN	34 (1,339)	46,5 (1,831)	80 (3,15)	205,5 (7,933)	23 (0,906)	32 (1,26)	70 (2,756)	84,5 (3,327)	72 (2,835)	70 (2,756)	115,5 (4,547)	138,5 (5,453)	43 (1,693)	11 (0,433)	58 (2,284)
	G1	1"																
RFB 046	G 3/4	3/4"					285,5 (11,24)											
	G1	1"																
RFB 052	G 3/4	3/4"					351,5 (13,839)											
	G1	1"																

Options

1. Visual clogging indicator

The gauge visually displays the degree of contamination of the element. The coloured segments allow quick visual checking.

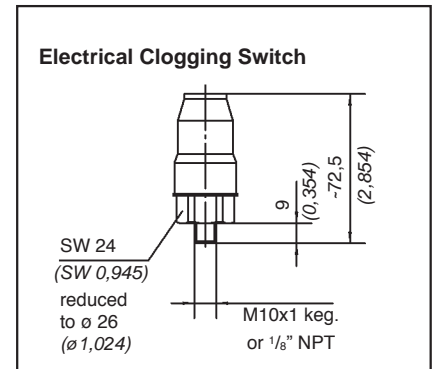
green	0...2,5	bar (0...36,25 PSI)	Element has service life left
yellow	2,5...3,0	bar (36,25 ...43,5 PSI)	Element is contaminated and should be changed
red	>3,0	bar (43,5 PSI)	By-pass valve open, unfiltered oil passing to tank



2. Electrical clogging switch

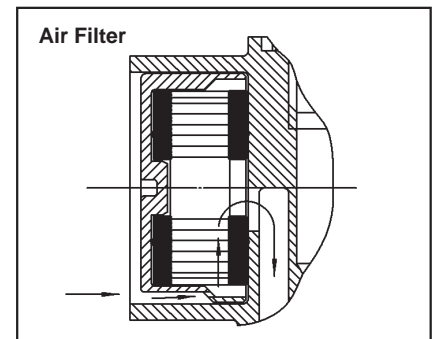
The switch is used where an electrical signal is needed to indicate when the element needs changing. The switch can turn on a light, or shut the machine down, or any further function controlled by an electric signal. The switching pressure is 2,5 bar (36,25 PSI) and this allows the element to be changed before the by-pass setting of 3 bar (43,5 PSI) is reached.

Maximum Voltage	Switch Type
42 V	G 42
110 V	G 110
220 V	G 220



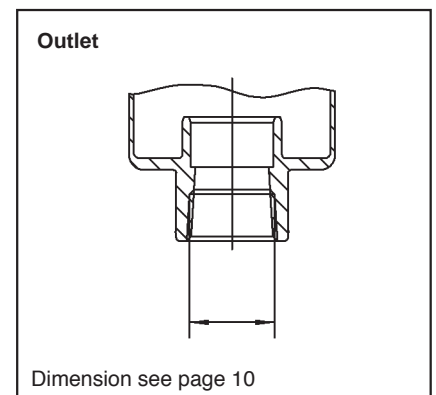
3. Air Filter Element

Allows an effective filtration of the incoming air which avoids the infiltration of dirt particles into the hydraulic system. The standard air filter element is micron filter paper, other materials and micron ratings on request.



4. Filter bowl with threaded connection

Under some circumstances such as a tall reservoir or one with oil levels which vary greatly during operation, it is necessary to extend the filter bowl so that the returning oil returns beneath the surface and does not entrain air in the process. The optional bowl with a female thread allows an extension to be fitted quite simply.



Ordering Code Filter Housings

RFB 022 ... B / B / M / G / L10 / X

Filter type	RFB									
Group										
Size	Flow									
	l/min	GPM								
022	75	22								
046	165	46								
052	185	52								
Exact flow will depend on filter element selected, consult technical data on page 13										
For complete filters:	identification filter material + micron rating code (see ordering code filter elements below)									
Seal material	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td>B</td> <td>NBR (Buna®)</td> </tr> <tr> <td>V</td> <td>FPM (Viton®)</td> </tr> <tr> <td>E</td> <td>EPDM</td> </tr> <tr> <td colspan="2">other seal material on request</td> </tr> </table>		B	NBR (Buna®)	V	FPM (Viton®)	E	EPDM	other seal material on request	
B	NBR (Buna®)									
V	FPM (Viton®)									
E	EPDM									
other seal material on request										
Design Code	only for information									
Air filter element	without air filter element									
L 10	10 micron filter paper									
other materials and micron ratings on request										
Outlet	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td>O</td> <td>without thread (standard)</td> </tr> <tr> <td>N</td> <td>with thread 1" NPT</td> </tr> <tr> <td>G</td> <td>with thread 1" BSP</td> </tr> </table>		O	without thread (standard)	N	with thread 1" NPT	G	with thread 1" BSP		
O	without thread (standard)									
N	with thread 1" NPT									
G	with thread 1" BSP									
Clogging indicator	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td>M</td> <td>Pressure gauge</td> </tr> <tr> <td>G 42</td> <td>Electrical switch 42 V</td> </tr> <tr> <td>G 110</td> <td>Electrical switch 110 V</td> </tr> <tr> <td>G 220</td> <td>Electrical switch 220 V</td> </tr> </table>		M	Pressure gauge	G 42	Electrical switch 42 V	G 110	Electrical switch 110 V	G 220	Electrical switch 220 V
M	Pressure gauge									
G 42	Electrical switch 42 V									
G 110	Electrical switch 110 V									
G 220	Electrical switch 220 V									
Connection style	Group									
Code	Connection Style	022 046 052								
B	BSP	G 1								
B1	BSP	G 3/4								
N	NPT	1"								
N1	NPT	3/4"								
U	SAE - "O"-Ring Thread	1-5/16-12 UN								

Ordering Code Filter Elements

RE-046 G 10 V / X

Series	RE																							
Group	according to filter housing																							
Filter material	Micron ratings available																							
Code	Material	max Δp* collapse																						
A	Stainless fiber	30 bar (435 PSI)																						
N	Filter paper	16 bar (232 PSI)																						
G	Inorganic glass fiber	30 bar (435 PSI)																						
S	Stainless mesh	30 bar (435 PSI)																						
		03, 05, 10, 20																						
		10, 25, 50, 100, 200, 500																						
*collapse / burst resistance as per ISO 2941																								
Seal material	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td>B</td> <td>NBR (Buna®)</td> </tr> <tr> <td>V</td> <td>FPM (Viton®)</td> </tr> <tr> <td>E</td> <td>EPDM</td> </tr> <tr> <td colspan="2">other seal materials on request</td> </tr> </table>		B	NBR (Buna®)	V	FPM (Viton®)	E	EPDM	other seal materials on request															
B	NBR (Buna®)																							
V	FPM (Viton®)																							
E	EPDM																							
other seal materials on request																								
Design Code	only for information																							
Micron rating	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td>03</td> <td>3 μm</td> </tr> <tr> <td>05</td> <td>5 μm</td> </tr> <tr> <td>10</td> <td>10 μm</td> </tr> <tr> <td>20</td> <td>20 μm</td> </tr> <tr> <td>10</td> <td>10 μm</td> </tr> <tr> <td>25</td> <td>25 μm</td> </tr> <tr> <td>50</td> <td>50 μm</td> </tr> <tr> <td>100</td> <td>100 μm</td> </tr> <tr> <td>200</td> <td>200 μm</td> </tr> <tr> <td>500</td> <td>500 μm</td> </tr> <tr> <td colspan="2">other micron ratings on request</td> </tr> </table>		03	3 μm	05	5 μm	10	10 μm	20	20 μm	10	10 μm	25	25 μm	50	50 μm	100	100 μm	200	200 μm	500	500 μm	other micron ratings on request	
03	3 μm																							
05	5 μm																							
10	10 μm																							
20	20 μm																							
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200	200 μm																							
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other micron ratings on request																								

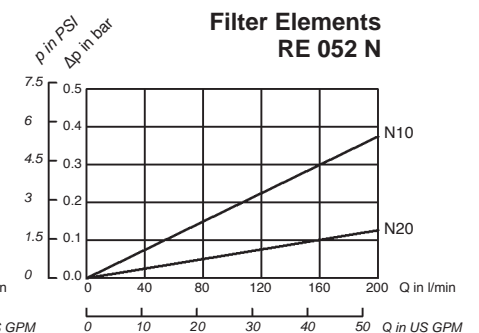
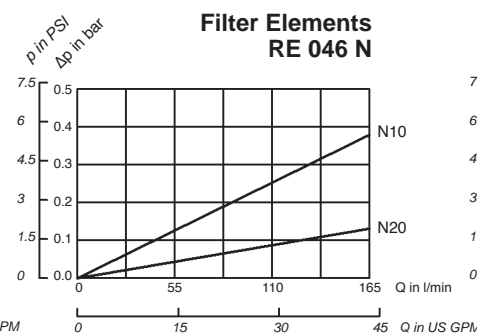
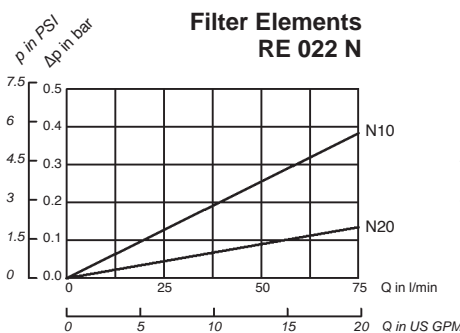
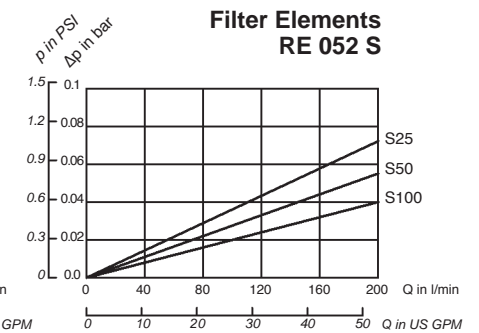
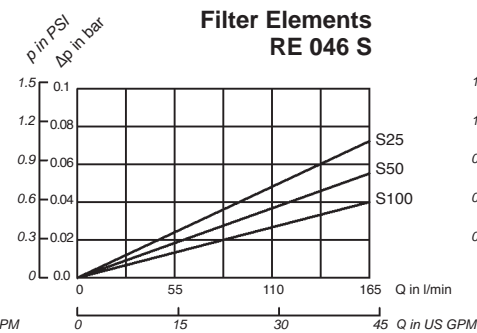
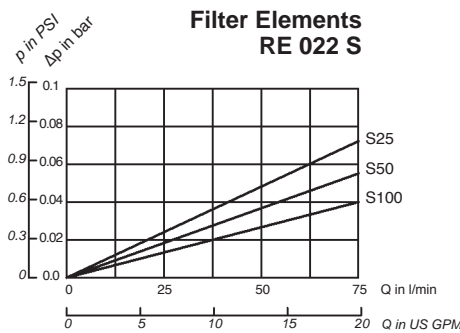
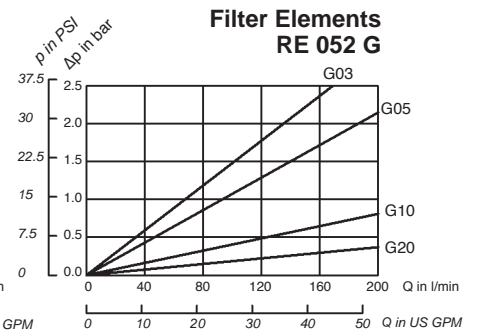
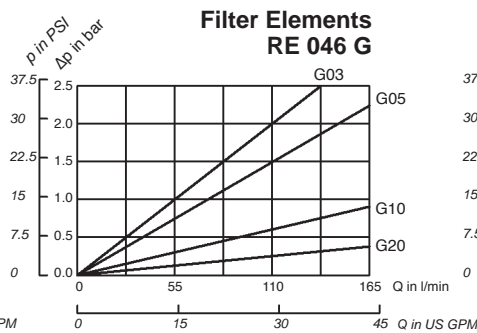
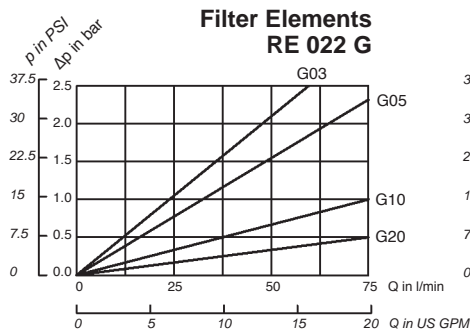
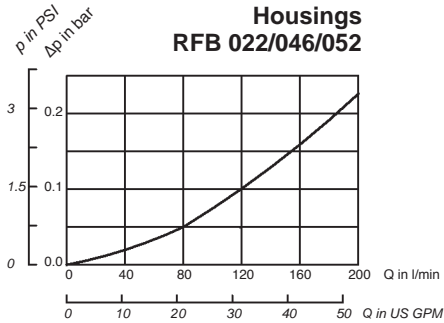
Ordering Code Air Filter Element

REA-046 L 10 B / X

Series	RE					
Group	air filter for RFB 022/046/052					
Filter material	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td>L</td> <td>Filter paper</td> </tr> <tr> <td colspan="2">other micron ratings on request</td> </tr> </table>		L	Filter paper	other micron ratings on request	
L	Filter paper					
other micron ratings on request						
Design Code	only for information					
Micron rating	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td>10</td> <td>10 μm</td> </tr> <tr> <td colspan="2">other micron ratings on request</td> </tr> </table>		10	10 μm	other micron ratings on request	
10	10 μm					
other micron ratings on request						

Flow Characteristics of Return Line Filters RFB 022-052

The following characteristics are valid for mineral oils with a density of 0,85 kg/dm³ and the kinematic viscosity of 30 mm²/s. The characteristics have been determined in accordance to ISO 3968.



Replacement Filter Elements for RF and RFB series

STAUFF replacement filter elements for RF and RFB series filters are manufactured in the common filter materials such as stainless fiber, stainless mesh, paper and inorganic glass fiber. As standard all replacement elements series RF and RFB have tin plated steel parts for use with aggressive media such as water glycol, other materials available upon request. All STAUFF replacement elements comply with quality specifications in accordance with international standards.



RE-014 G 10 V /X

Series RE

Group
according to filter housing

Filter material			Micron ratings available
Code	Material	max Δp^* collapse	
A	Stainless fiber	30 bar (435 PSI)	03, 05, 10, 20
N	Filter paper	30 bar (435 PSI)	
G	Inorganic glass fiber	30 bar (435 PSI)	
B, S	Stainless mesh (type B not for RE-022/046/065)	30 bar (435 PSI)	10, 25, 50, 100, 200, 500

*collapse / burst resistance as per ISO 2941

Bold type identifies preferred material

Design Code
only for information

Seal material	
B	NBR (Buna®)
V	FPM (Viton®)
E	EPDM
other seal materials on request	

Micron rating	
03	3 μm
05	5 μm
10	10 μm
20	20 μm
10	10 μm
25	25 μm
50	50 μm
100	100 μm
200	200 μm
500	500 μm
other micron ratings on request	

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Unanderra Wollongong , N.S.W
2526 AUSTRALIA
Tel: +61 2 42 71 18 77
Fax: +61 2 42 71 84 32



Brazil
Stauff Brasil Ltda.
Av. Gupê 10767
Galpão 2 – Bloco A
Barueri – São Paulo – CEP 06422-120, BRAZIL
Tel: +55 (0)11-4789-9020
Fax: +55 (0)11-4789-9021



Canada
Stauff Canada Ltd.
866 Milner Avenue
Scarborough , Ontario M1B 5N7 , CANADA
Tel: +1 416 282 46 08
Fax: +1 416 282 30 39



China
Stauff International Trading (Shanghai) Co., Ltd.
Shangdian Mansion, Pudong
331 , Binzhou Road
200126 Shanghai, CHINA
Tel: +86 21 58 45 65 60
Fax: +86 21 58 45 66 80



France
Stauff S.A.
Z.I. de Vineuil-Blais Sud
230, Avenue du Grain d'Or
41354 Vineuil-cedex, FRANCE
Tel: +33 2 54 50 55 50
Fax: +33 2 54 42 29 19



Germany
Walter Stauffenberg GmbH & Co. KG
P.O. Box 1745,
D-58777 Werdohl, GERMANY
Tel: +49 (0) 23 92/916-0
Fax: +49 (0) 23 92 25 05



India
Stauff India Pvt. Ltd.
Gat. No. 2340
Pune-Nagar Road, Wagholi
IND-Pune - 412027
Tel: +91 20 705 19 90
Fax: +91 20 705 19 89



Italy
Stauff Italia S.R.L.
Via Pola 21/23
I-20034 Birone di Giussano
Tel: +39 0362 31 21 13
Fax: +39 0362 33 55 36



New Zealand
Stauff Corporation (NZ) Ltd.
Unit J, 150 Harris Road, P.O. Box 58517
Greenmount Auckland-NEW ZEALAND
Tel: +64 9 271 4812
Fax: +64 9 271 4832



United Kingdom
Stauff UK Ltd.
332, Coleford Road Darnall
Sheffield, S 9 5 P H, ENGLAND
Tel: +44 1142 518 518
Fax: +44 1142 518 519



USA
Stauff Corporation
7 Wm. Demarest Place
Waldwick, NJ – 07463, USA
Tel: +1 201 444 78 00
Fax: +1 201 444 78 52

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2003

STAUFF



FILTRATION TECHNOLOGY

2003

STAUFF



Return Line Filters RTF

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Stauff Corporation (Pty.) Ltd.
P.O.Box 227 , 24-26 Doyle Avenue,
Unanderra Wollongong , N.S.W
2526 AUSTRALIA
Tel: +61 2 42 71 18 77
Fax: +61 2 42 71 84 32

Brazil

Stauff Brasil Ltda.
Av. Gupê 10767
Galpão 2 – Bloco A
Barueri – São Paulo – CEP 06422-120, BRAZIL
Tel: +55 (0)11-4789-9020
Fax: +55 (0)11-4789-9021

Canada

Stauff Canada Ltd.
866 Milner Avenue
Scarborough , Ontario M1B 5N7 , CANADA
Tel: +1 416 282 46 08
Fax: +1 416 282 30 39

China

Stauff International Trading (Shanghai) Co., Ltd.
Shangdian Mansion, Pudong
331 , Binzhou Road
200126 Shanghai, CHINA
Tel: +86 21 58 45 65 60
Fax: +86 21 58 45 66 80

France

Stauff S.A.
Z.I. de Vineuil-Blois Sud
230, Avenue du Grain d'Or
41354 Vineuil-cedex, FRANCE
Tel: +33 2 54 50 55 50
Fax: +33 2 54 42 29 19

India

Stauff India Pvt. Ltd.
Gat. No. 2340,
Pune-Nagar Road, Wagholi, INDIA
IND-Pune - 412027
Tel: +91 20 705 19 90
Fax: +91 20 705 19 89

Italy

Stauff Italia S.R.L.
Via Pola 21/23, I-20034
Birone di Giussano, ITALY
Tel: +39 0362 31 21 13
Fax: +39 0362 33 55 36

New Zealand

Stauff Corporation (NZ) Ltd.
Unit J. 150 Harris Road, P.O. Box 58517
Greenmount Auckland-NEW ZEALAND
Tel: +64 9 271 4812
Fax: +64 9 271 4832

United Kingdom

Stauff UK Ltd.
332, Coleford Road Darnall
Sheffield, S 9 5 P H, ENGLAND
Tel: +44 1142 518 518
Fax: +44 1142 518 519

USA

Stauff Corporation
7 Wm. Demarest Place
Waldwick, NJ – 07463, USA
Tel: +1 201 444 78 00
Fax: +1 201 444 78 52

**Distributors and warehouses
in all industrial countries.**

Walter Stauffenberg GmbH & Co. KG

P. O. Box 1745 · D-58777 Werdohl
Im Ehrenfeld 4 · D-58791 Werdohl
Tel.: +49 (0) 23 92 9 16-0
Fax: +49 (0) 23 92 25 05
E-mail: sales@stauff.com
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Stauff Filtration Technology

Stauff Filtration Technology offers a complete range of filtration products and services that will provide the system designer or user with the highest level of contamination control demanded by today's most sophisticated applications. Products include pressure filters, return line filters, elements, spin on filters suction strainers, and filler breathers for various hydraulic, lubrication and fuel oils.

Stauff has the technical expertise to provide superior filter element designs for the Stauff original filter housings and also for the interchange element market. Stauff manufactures more than 10,000 different elements. Many of these are designed to fit into filter housings produced by other companies while maintaining or surpassing the original performance.

The "Stauff Contamination Control Program" includes the diagnostic services including fluid sampling and laser particle counting products needed to monitor the system contamination level.

Stauff, through its global network of wholly owned companies and technically qualified distributors, is ideally placed to assist its customers in the total contamination process providing a well balanced filtration solution.

Return Line Filter RTF 10-25	Page
Technical Data	3
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Ordering Code & Flow Characteristics	5
Return Line Filter RTF 40 Series	
Technical Data	6
Dimensions	7
Ordering Code	8
Flow Characteristics	9
Return Line Filter RTF 20 Series	
Technical Data	10
Dimensions	11
Ordering Code	12
Flow Characteristics	13
Return Line Filter RTF 30 Series	
Technical Data	14
Dimensions	15
Ordering Code	16
Flow Characteristics	17
Filter Indicators	18

Technical Data

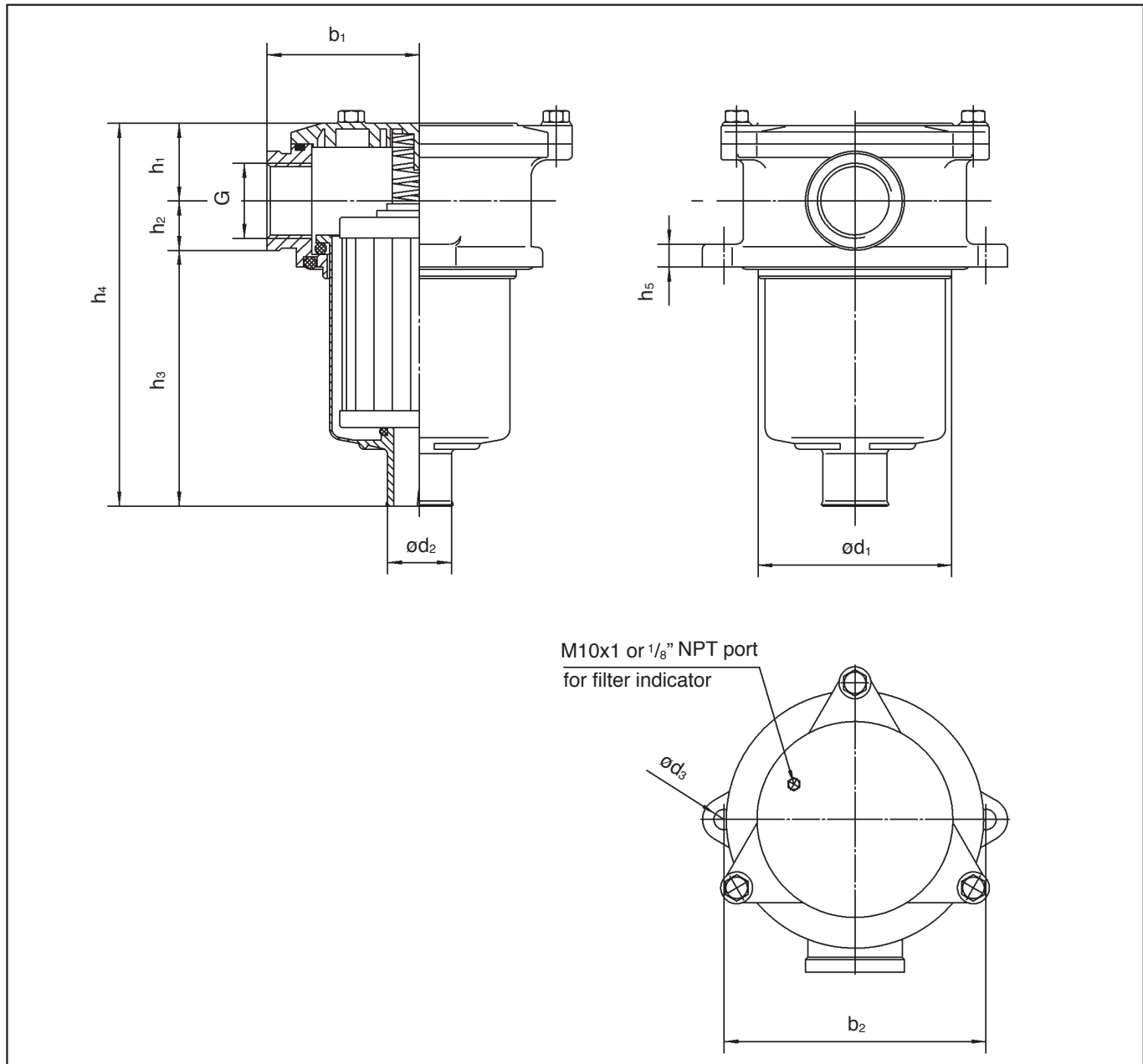
STAUFF RTF 10/25 series return filters are designed for in-tank hydraulic applications with a maximum operating pressure of 3.4 bar (50 PSI).



Technical Specification

Construction	In-line assembly	By-pass valve (integrated in the filter element)	Allows unfiltered oil to by-pass the contaminated element once the opening pressure has been reached
Filter head	Die cast aluminum		Opening pressure 1.7 bar (25 PSI)
Element bowl	Polyamide	Clogging indicators	Gage indicator 0-6.9 bar (0-100 PSI) with coloured segments; Electrical, 0,35-2,5 bar (5-35 PSI) adjustable
Seals	"O"-Rings NBR (Buna-N®), FPM (Viton®)	Elements	Flow characteristics see page 5
Port connections	BSP, NPT, SAE-"O"-Ring thread	Media	Mineral oils, other fluids on request
Flow rating	up to 95 l/min (25 US GPM) for 32 cSt (150 SUS) fluids		
Operating Pressure	max 3,4 bar (50 PSI)		
Test pressure	min 6,8 bar (100 PSI)		
Temperature range	-25°C to +100°C (-13°F to 212°F)		

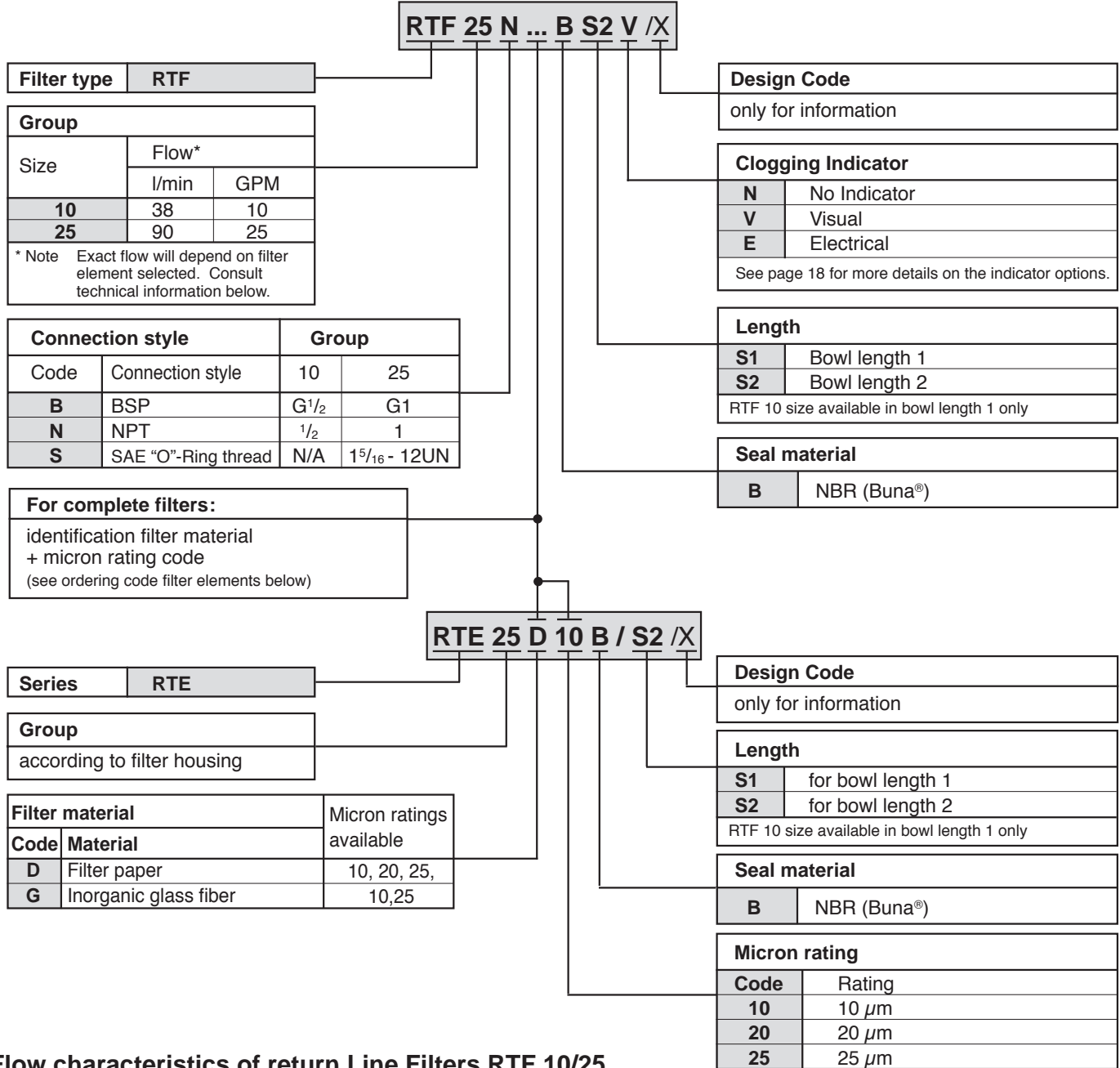
Dimensions



Dimensions RTF 10/25 Filters

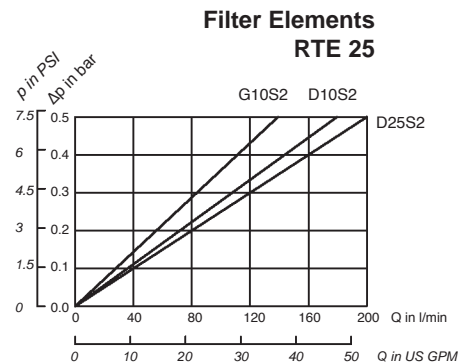
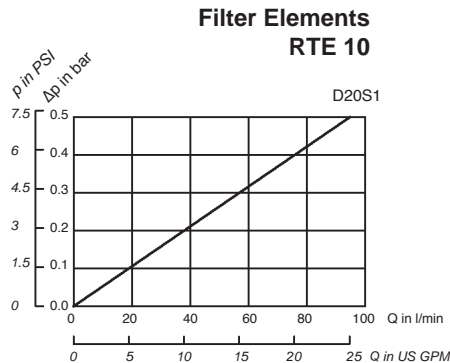
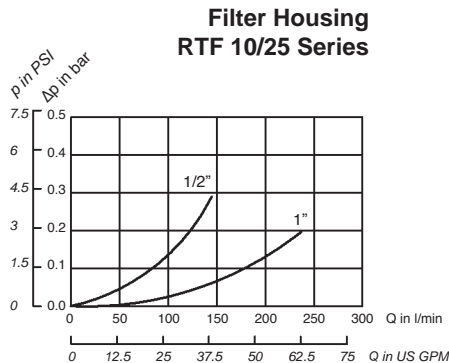
All dimensions in mm (inch)

Filter Size	Thread connection G				Bowl length	h ₁	h ₂	h ₃	h ₄	h ₅	b ₁	b ₂	d ₁	d ₂	d ₃	Weight	
	BSP	NPT	SAE-"O" Ring	k _g												lbs	
RTF 10	G 1/2	1/2	N/A	S1	26 (1,02)	21 (0,83)	87 (3,43)	133 (5,24)	8 (0,32)	50 (1,97)	90 (3,54)	66 (2,60)	24 (0,94)	7 (0,28)	0,45	1	
RTF 25	G 1	1	1 ⁵ / ₁₆ -12 UNF	S1	34 (1,34)	29 (1,14)	105 (4,13)	170 (6,69)	10 (0,39)	67 (2,64)	115 (4,65)	86 (3,39)	28 (1,10)	9 (0,35)	0,9	2	
RTF 25	G 1	1	1 ⁵ / ₁₆ -12 UNF	S2	34 (1,34)	29 (1,14)	150 (5,91)	215 (8,46)	10 (0,39)	67 (2,64)	115 (4,65)	86 (3,39)	28 (1,10)	9 (0,35)	1	2,2	



Flow characteristics of return Line Filters RTF 10/25

The following characteristics are valid for mineral oils with a density of 0,85 kg/dm³ and the kinematic viscosity of 30 mm²/s. The characteristics have been determined in accordance to ISO 3968.



Technical Data

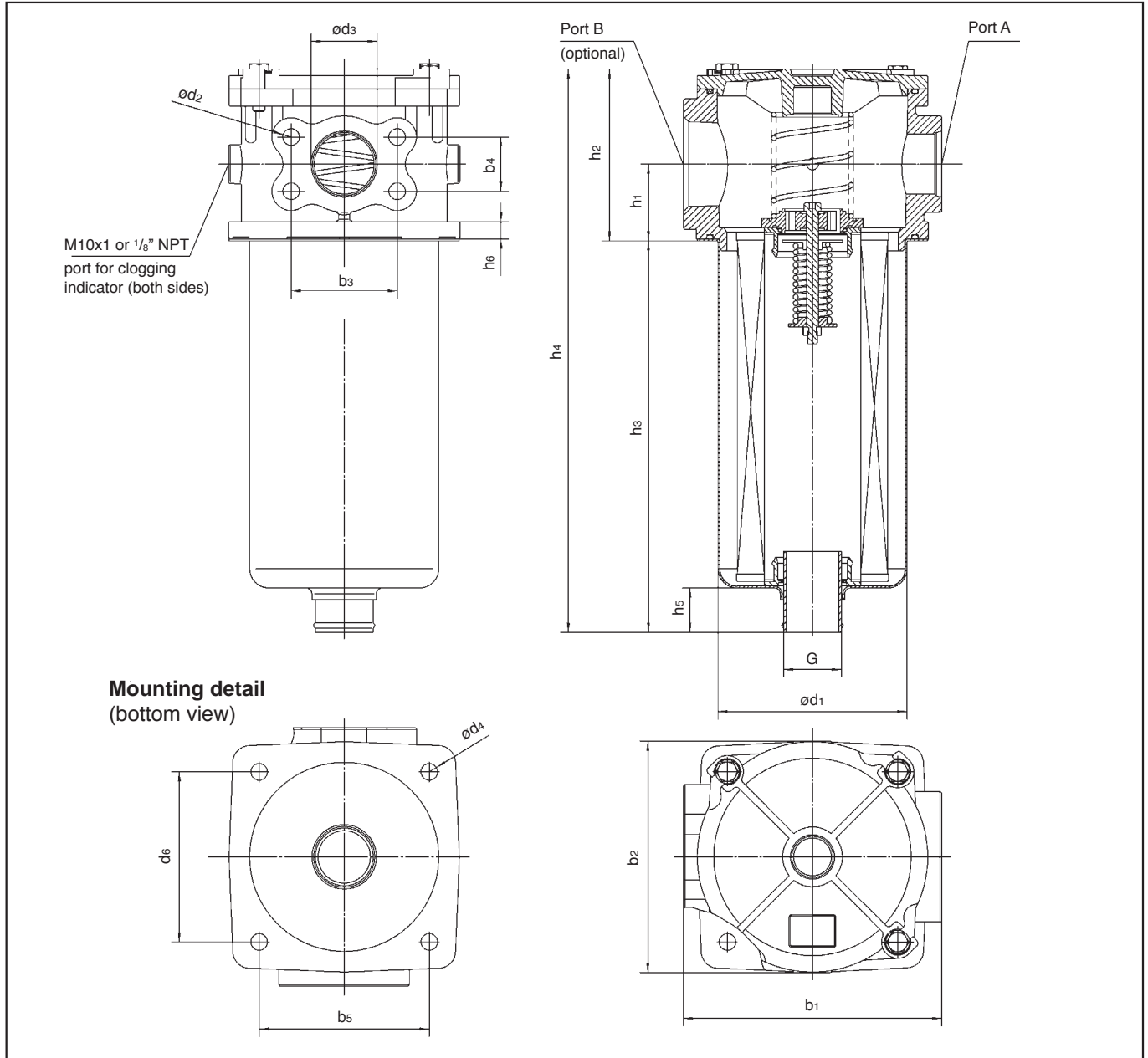
STAUFF RTF 40 series return filters are designed for in-tank hydraulic applications with a maximum operating pressure of 6.9 bar (100 PSI). The filter bowl is designed to return the oil beneath the surface thus preventing entrainment of air. The RTF48 elements interchange with the popular “K” series and the RTF49 elements interchange with the “RTE-409” series elements.



Technical Specification

Construction	Tank top flange mounting	By-pass valve	Allows unfiltered oil to by-pass the contaminated element once the opening pressure has been reached
Filter head	Die cast aluminum	By-pass setting	1.7 bar (25 PSI) (by-pass in element for RTF47, by-pass in head for RTF48 and RTF49)
Element bowl	Bowl length 1, Polyamide Bowl length 2, Steel	Clogging indicators	Gage indicator 0-6.9 bar (0-100 PSI) with coloured segments; electrical, 0,35-2,5 bar (5-35 PSI) adjustable
Seals	“O”-Rings NBR (Buna-N®),	Elements	Flow characteristics see page 9
Port connections	BSP, NPT, SAE-“O”-Ring thread, SAE flange	Media	Mineral oils, other fluids on request
Flow rating	up to 379 l/min (100 US GPM) for 32cSt (150 SUS) fluids		
Operating Pressure	max 6,9 bar (100 PSI)		
Temperature range	-25°C to +95°C (-13°F to 212°F)		

Dimensions



All dimensions in mm (inch)

Dimensions RTF 40 Filters

Bowl Length	h ₁	h ₂	h ₃	h ₄	h ₅	h ₆	b ₁	b ₂	b ₃	b ₄	b ₅	b ₆	d ₁	d ₂		d ₃	d ₄	G
														BSP	NPT & SAE			
S1	53 (2,09)	122 (4,80)	263 (10,35)	385 (15,16)	21 (0,83)	11 (0,43)	152 (5,98)	152 (5,98)	69,85 (2,75)	35,56 (1,40)	112 (4,41)	112 (4,41)	122 (4,80)	M12	1/2-13 UN 2B	38,1 (1,50)	11 (0,43)	G1-1/2" or 1-1/2 NPT
S2			475 (18,70)	597 (23,50)	38 (1,50)													

RTF 48 N 25 ... B / S2 / V / X

Filter type	RTF47 RTF48 RTF49
--------------------	-----------------------

Connection style		Group	
Code	Connection style	Port A	Port B
B	BSP	G1-1/4 & 1-1/2 SAE flange	None
BB	BSP	G1-1/4 & 1-1/2 SAE flange	G1-1/4
N	NPT	1-1/4 NPT & 1-1/2 SAE flange	None
NN	NPT	1-1/4 NPT & 1-1/2 SAE flange	1-1/4 NPT
M	NPT	1-1/2 NPT	None
MN	NPT	1-1/2 NPT	1-1/2 NPT
MM	NPT	1-1/2 NPT	1-1/2 NPT
S	SAE	1-5/8 -12 UN	None
SS	SAE	1-5/8 -12 UN	1-5/8 -12 UN
ST	SAE	1-5/8 -12 UN	1-7/8 -12 UN
SU	SAE	1-5/8 -12 UN	2-1/2 -12 UN
SO	Combination	1-5/8 -12 UN	2 NPT

Design Code
only for information

Clogging indicator	
N	None
V	Visual
E	Electrical
See page 18 for more details on the indicator options.	

Length	
S1	for bowl length 1 (1 element)
S2	for bowl length 2 (2 elements)
Note: RTF 47 available in S1 bowl only	

Seal material	
B	NBR (Buna®)
other seal material on request	

For complete filters:
identification filter material
+ micron rating code
(see ordering code filter elements below)

By-pass valve	
Code	NBR (Buna®)
00	No by-pass
15	1 bar (15 PSI)
25	1,7 bar (24,6 PSI)

RTF 48 D 10 B / X

Group
according to filter housing

Filter material		Micron ratings available
Code	Material	
D	Filter paper	03, 10, 20, 25
G	Inorganic glass fiber	03,10, 25

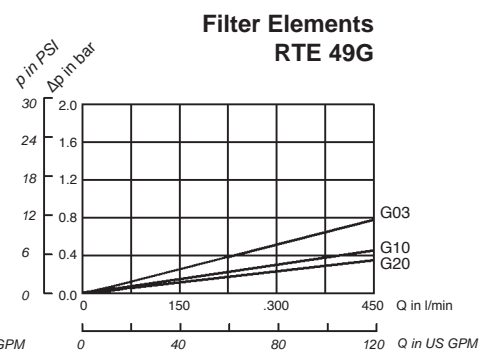
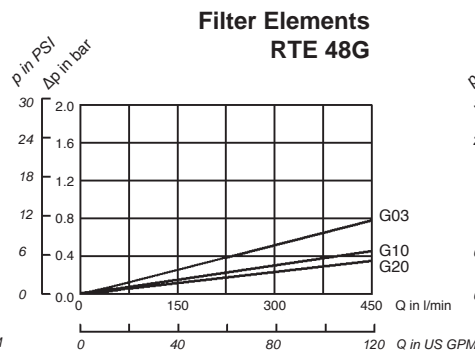
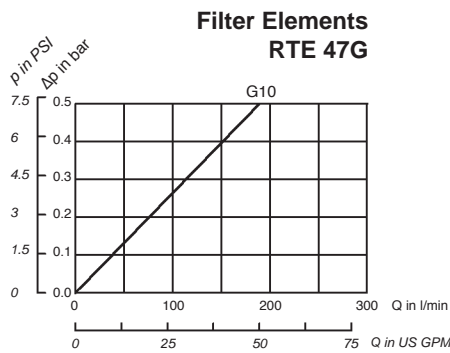
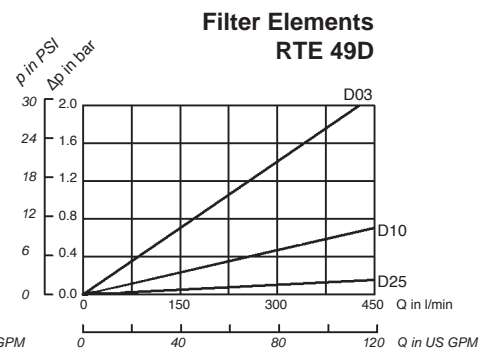
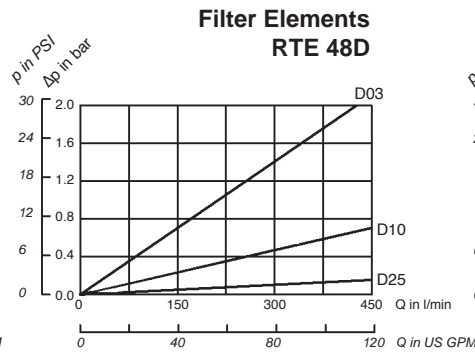
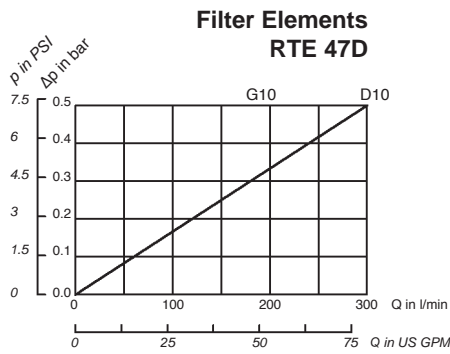
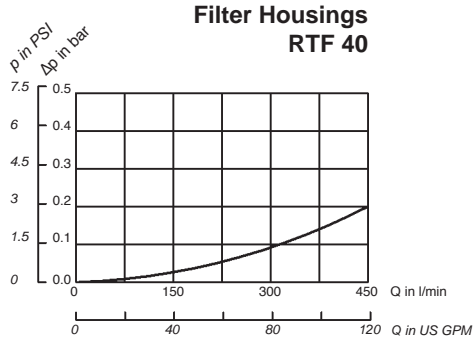
Design Code
only for information

Seal material	
B	NBR (Buna®)
other seal material on request	

Micron rating	
Code	Rating
03	03 μm
10	10 μm
20	20 μm
25	25 μm

Flow Characteristics of Return Line Filters RTF 40

The following characteristics are valid for mineral oils with a density of 0,85 kg/dm³ and the kinematic viscosity of 30 mm²/s. The characteristics have been determined in accordance to ISO 3968.



Technical Data

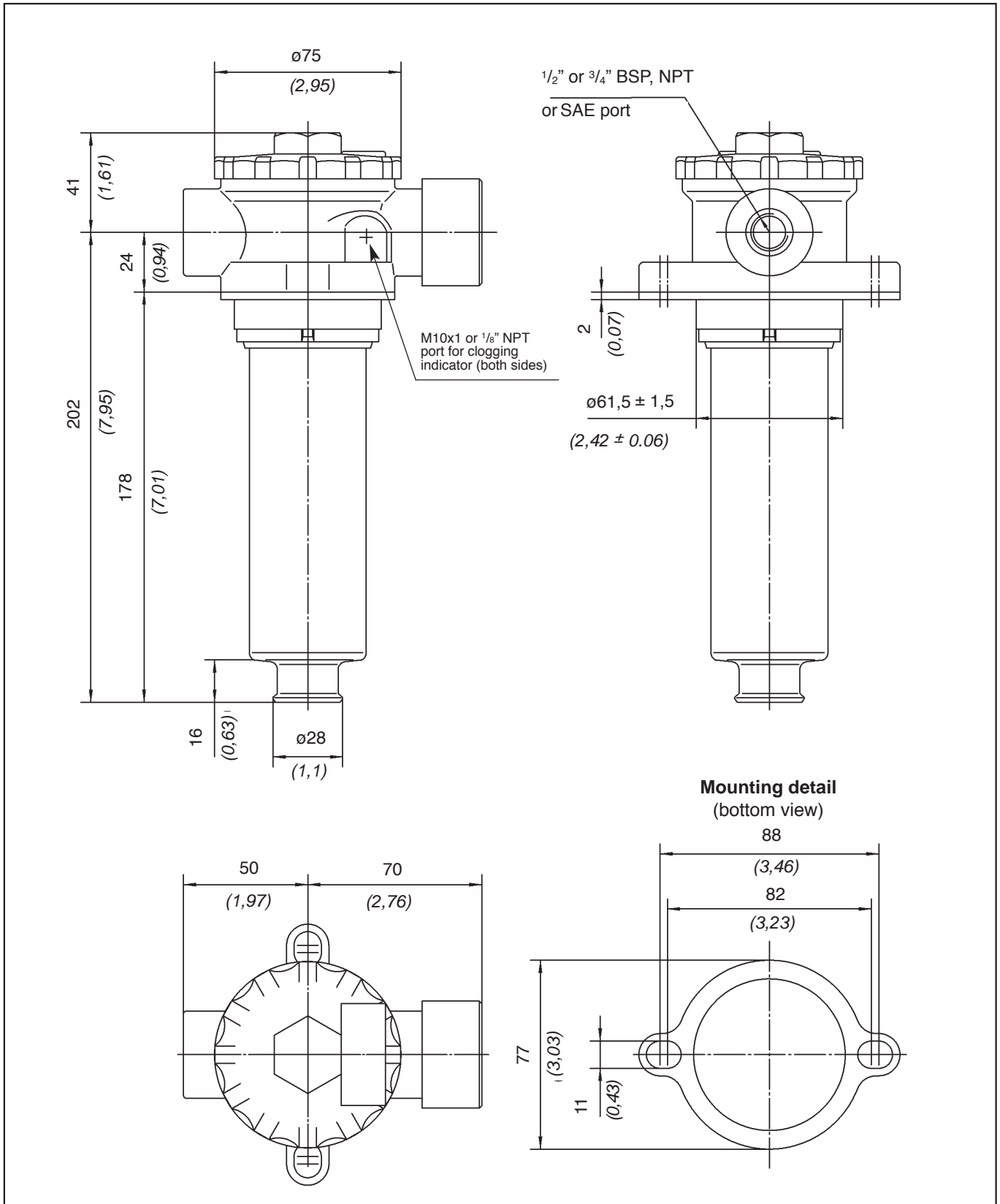
STAUFF RTF20 series return filters are designed for in-tank hydraulic applications with a maximum operating pressure of 10 bar (145 PSI) and flows up to 110 l/min (30 US GPM). The filter bowl is designed to return the oil beneath the surface thus preventing entrainment of air. RTF20 series compact design and integral breather make them ideal for mobile hydraulic applications.



Technical Specification

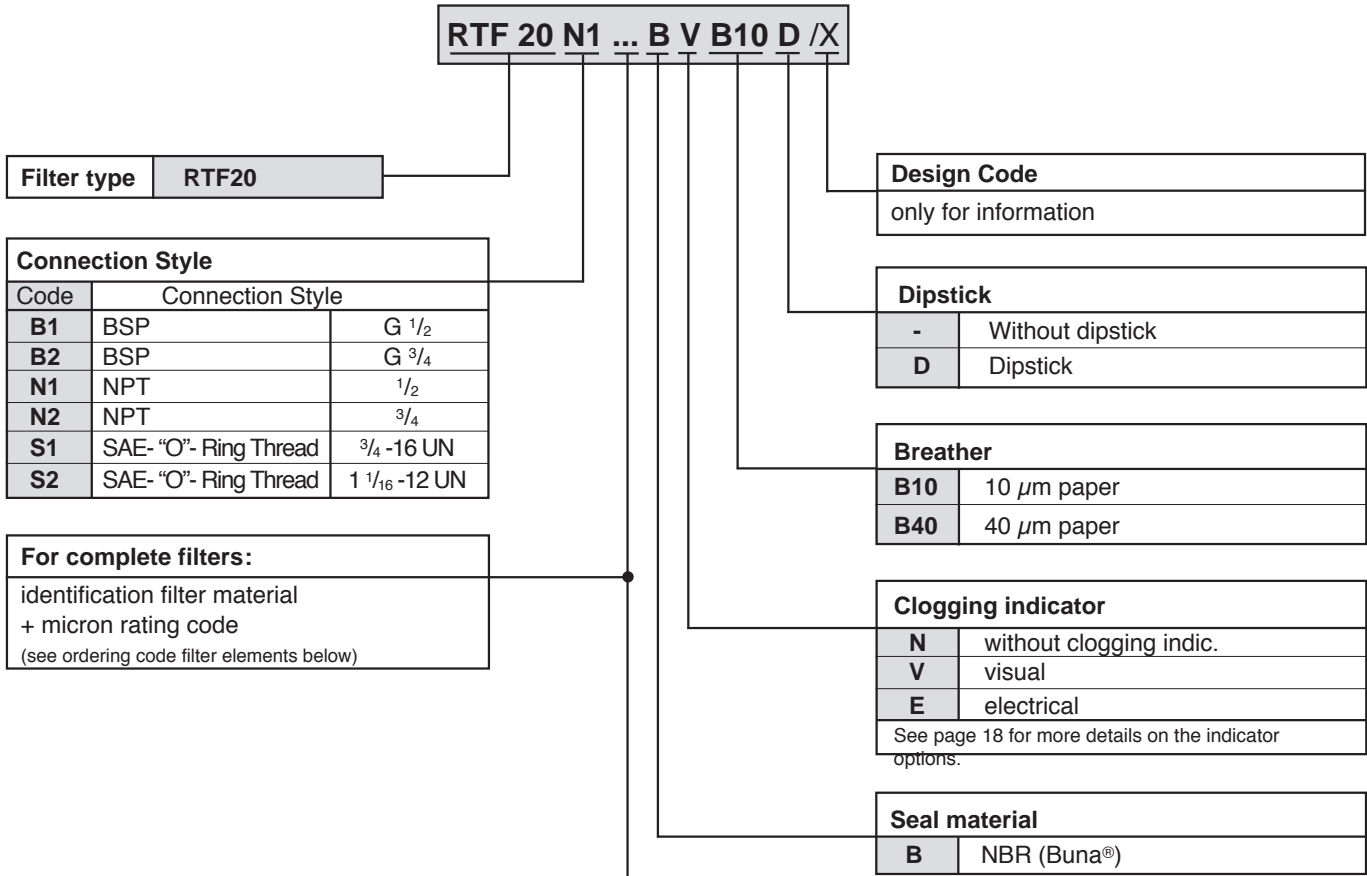
Construction	Tank top flange mounting	Integrated Breather	10 or 40 μm paper media
Filter head	Die cast aluminium	By-pass valve (integrated in the filter element)	Allows unfiltered oil to by-pass the contaminated element once the opening pressure has been reached Opening pressure 1.7 bar (25 PSI)
Element bowl and screw cap	Polyamide	Clogging indicators	Gage indicator 0-6.9 bar (0-100 PSI) with coloured segments Electrical, 0.35 - 2.5 bar (5-35 PSI) adjustable
Seals	"O"-Rings NBR (Buna-N®) FPM (Viton®)	Filter elements	Flow characteristics see page 13
Port connections	BSP, NPT, SAE "O"-Ring thread	Media	Mineral oils, other fluids on request
Flow rating	up to 115 l/min (30 US GPM) for 32 cSt (150 SUS) fluids		
Operating pressure	max 10 bar (145 PSI)		
Test pressure	min 24 bar (350 PSI)		
Temperature range	-25°C to +100°C (-13°F to 212°F)		

Dimensions

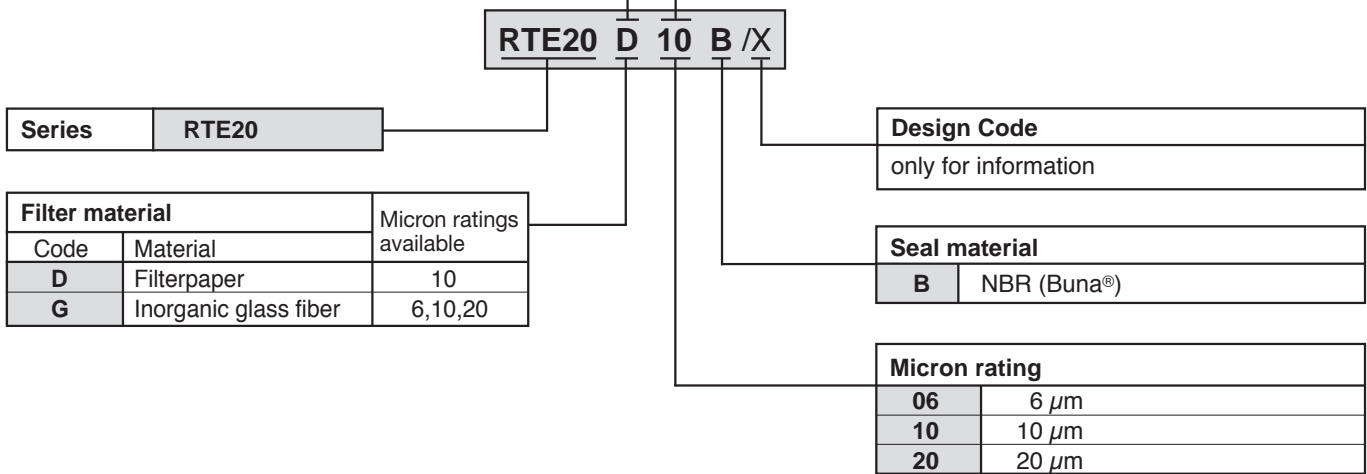


Dimensions in mm (inch)

Ordering Code Filter Housings

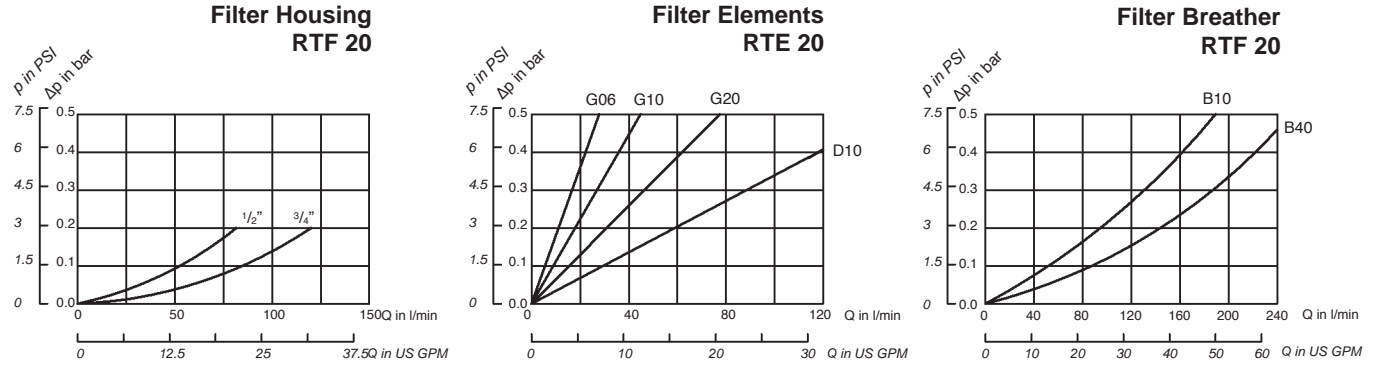


Ordering Code Filter Elements



Flow Characteristics

The following characteristics are valid for mineral based fluids with a density of 0,85 kg/dm³ and the kinematic viscosity of 30 mm²/s. The characteristics have been determined in accordance to ISO 3968.



Technical Data

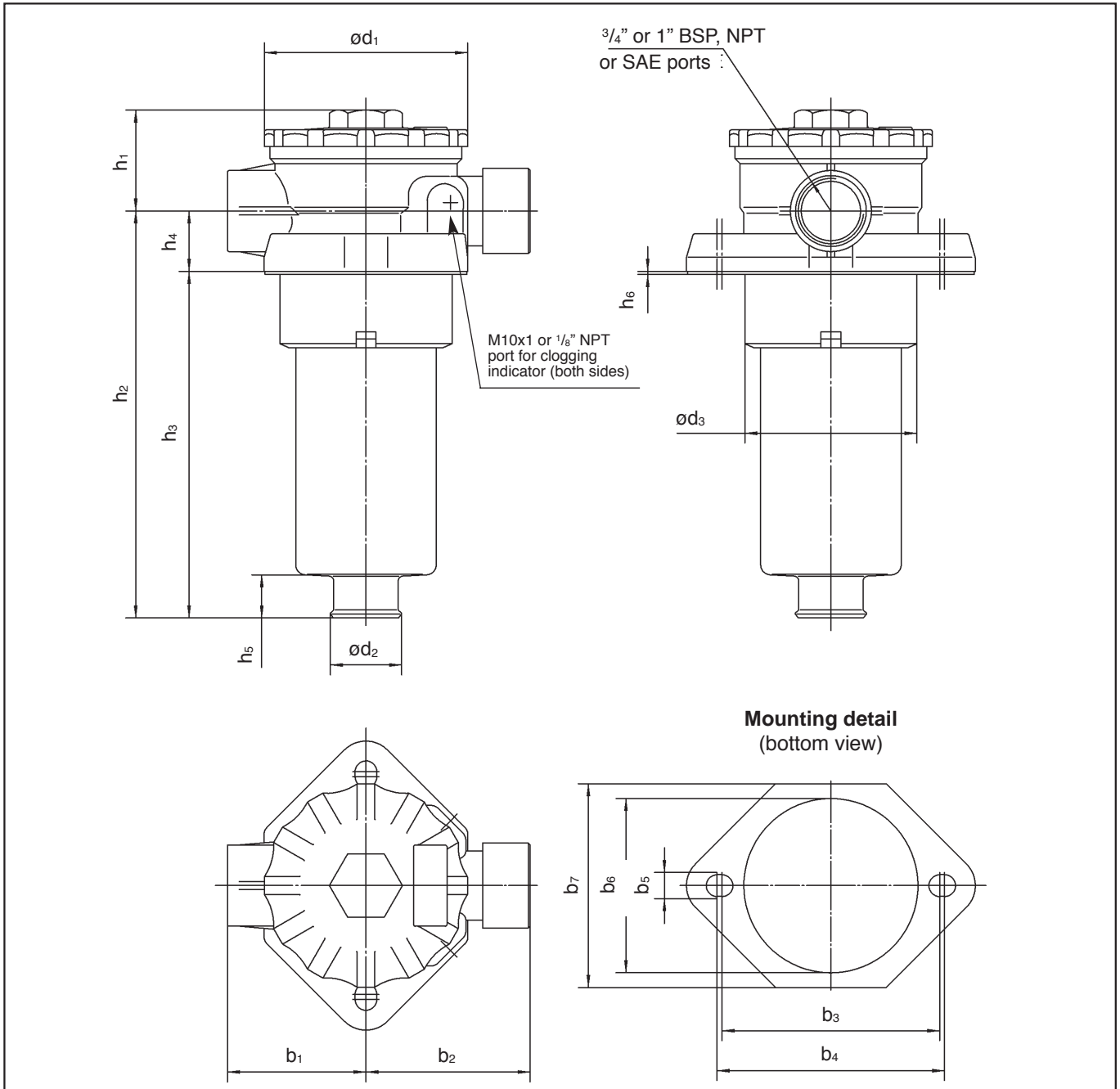
STAUFF RTF30 series return filters are designed for in-tank hydraulic applications with a maximum operating pressure of 10 bar (145 PSI) and flows up to 152 l/min (40 US GPM). The filter bowl is designed to return the oil beneath the surface thus preventing entrainment of air. RTF30 series compact design and integral breather makes them ideal for mobile hydraulic applications.



Technical Specification

Construction	Tank top flange mounting	Integrated Breather	10 or 40 μ m paper media
Filter head	Die cast aluminium	By-pass valve (integrated in the filter element)	Allows unfiltered oil to by-pass the contaminated element once the opening pressure has been reached Opening pressure 1.7 bar (25 PSI)
Element bowl and screw cap	Polyamide	Clogging indicators	Gage indicator 0-6.9 bar (0-100 PSI) with coloured segments; Electrical, 0.35 - 2.5 bar (5-35 PSI) adjustable
Seals	"O"-Rings NBR (Buna-N®) FPM (Viton®)	Filter elements	Flow characteristics see page 17
Port connections	BSP, NPT, SAE "O"-Ring thread	Media	Mineral oils, other fluids on request
Flow rating	up to 152 l/min (40 US GPM) for 32 cSt (150 SUS) fluids		
Operating pressure	max 10 bar (145 PSI)		
Test pressure	min 24 bar (350 PSI)		
Temperature range	-25°C to +100°C (-13°F to 212°F)		

Dimensions



Dimensions in mm (inch)

Filter Size	Dimensions															
	h_1	h_2	h_3	h_4	h_5	h_6	d_1	d_2	d_3	b_1	b_2	b_3	b_4	b_5	b_6	b_7
RTF30		140 (5,51)	110 (4,33)													
RTF31	60 (2,36)	205 (8,07)	175 (6,89)	30 (1,18)	22 (0,87)	1,5 (0,06)	104 (4,09)	36 (1,42)	min 87 max 91 (min 3,43) (max 3,58)	70 (2,76)	83 (3,27)	110 (4,33)	115 (4,53)	11 (0,43)	min 87 max 91 (min 3,43) (max 3,58)	103 (4,06)
RTF32		305 (12,01)	275 (10,83)													

Ordering Code Filter Housings

RTF 31 N1 ... B V B10 D /X

Filter Type	
RTF30	110mm (4,33 in) bowl length
RTF31	175mm (6,89 in) bowl length
RTF32	275mm (10,83 in) bowl length

Connection Style		
Code	Connection Style	
B1	BSP	3/4"
B2	BSP	1"
N1	NPT	3/4"
N2	NPT	1"
S1	SAE O-Ring Thread	1-1/16 -12 UN
S2	SAE O-Ring Thread	1-5/16 -12 UN

For complete filters:
 identification filter material
 + micron rating code
 (see ordering code filter elements below)

Design Code	
only for information	

Dipstick	
-	Without dipstick
D	Dipstick

Breather	
B10	10 µm paper
B40	40 µm paper

Clogging indicator	
N	without clogging indic.
V	visual
E	electrical

See page 18 for more details on the indicator options.

Seal material	
B	NBR (Buna®)

Ordering Code Filter Elements

RTE31 D 10 B /X

Series	RTE
--------	-----

Group	according to filter housing
-------	-----------------------------

Filter material		Micron ratings available
Code	Material	
D	Filterpaper	10
G	Inorganic glass fiber	6,10,20

Design Code	
only for information	

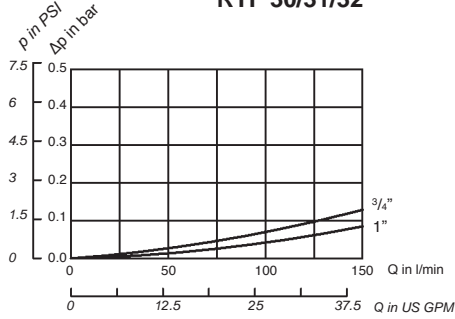
Seal material	
B	NBR (Buna®)

Micron rating	
06	6 µm
10	10 µm
20	20 µm

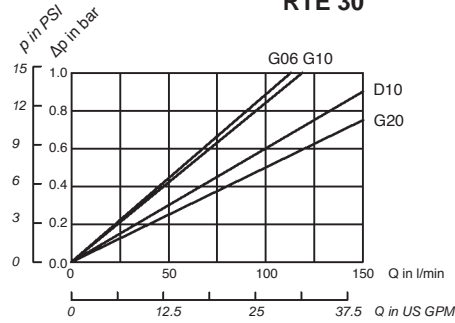
Flow Characteristics

The following characteristics are valid for mineral based fluids with a density of 0,85 kg/dm³ and the kinematic viscosity of 30 mm²/s. The characteristics have been determined in accordance to ISO 3968.

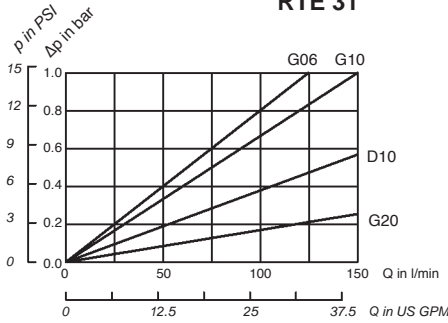
**Filter Housings
RTF 30/31/32**



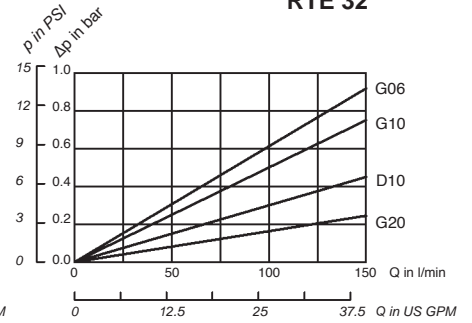
**Filter Elements
RTE 30**



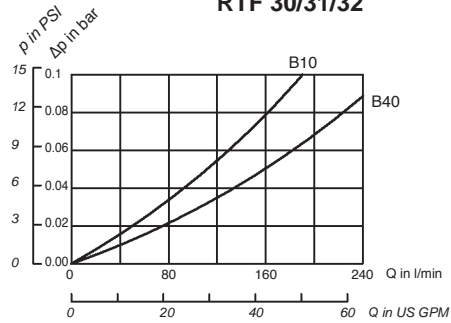
**Filter Elements
RTE 31**



**Filter Elements
RTE 32**



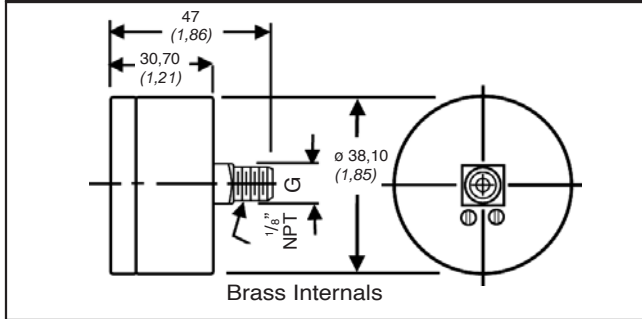
**Filter Breather
RTF 30/31/32**



Visual Indicators



Type	Thread Type G
GV-5B / GV-10B / G-12B / CI-20B	G 1/8
GV-5 / GV-10 / G-12 / CI-20	1/8 NPTF



Vacuum Gauges, Suction Line Applications

GV-5

For use with 3PSI filter by-pass valve
0,2 bar (3 PSI)

GV-10

For use with 5PSI filter by-pass valve
0,35 bar (5 PSI)

Pressure Gauges, Return Line Applications

CI-12

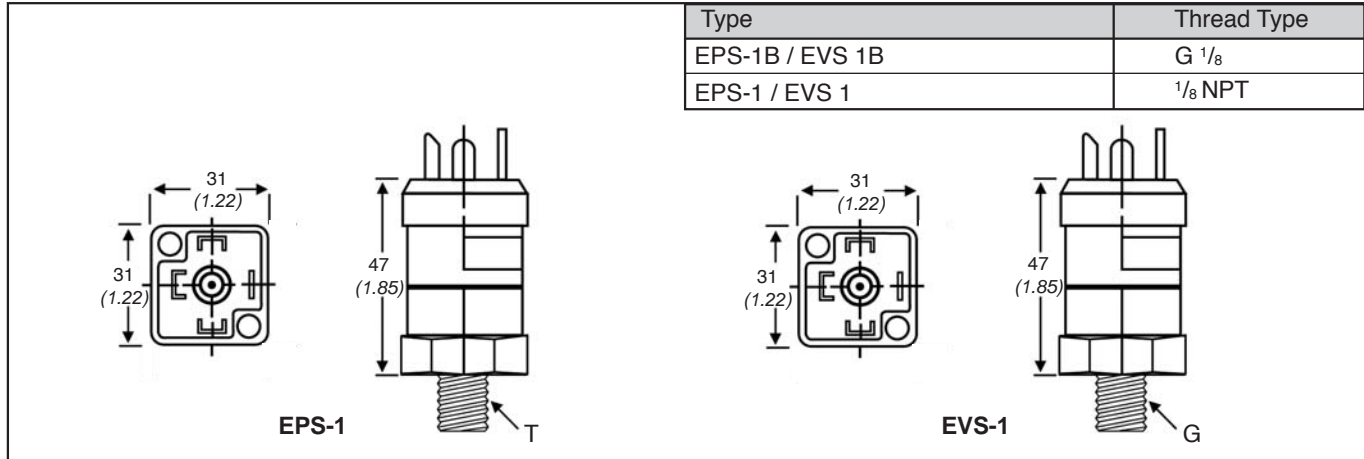
For use with 15PSI filter by-pass valve
1,0 bar (15 PSI)

CI-20

For use with 25PSI filter by-pass valve
1,7 bar (25 PSI)

Electrical Indicator

Type	Thread Type
EPS-1B / EVS 1B	G 1/8
EPS-1 / EVS 1	1/8 NPT



Can Be Field Installed

All dimensions in mm (inch)

	EPS-1 (Pressure)	EVS-1 (Vacuum)
Electrical	7Amp 125/250 VAC	7Amp 125/250 VAC
Protection	DIN 43650 IP65	DIN 43650 PIP65
Temperature Range	-40°C to +80°C (-40°F to 180°F) Ambient & Medium	-40°C to +80°C (-40°F to +180°F) Ambient & Medium
Diaphragm Material	Epichlorohydrin Standard	Epichlorohydrin Standard
Housing Material	Zinc Plated Steel Standard	Aluminum AL2024
MAXIMUM OVER Pressure	25 Bar (350 PSI) 6:1 Safety Factor	25 Bar (350 PSI)
ADJUSTMENT RANGES	0.35/2.5 Bar (5/35 PSI)	150/1000 mBar (5/30 in Hg)
Dead Band	20%	25%
Maximum Pressure	25 Bar (350 PSI)	25 Bar (350 PSI)
Wetted Area Material	Elastomer & Zinc Plated Steel Brass	Elastomer & Anodized Aluminum 316SS Optional
Weight	Steel Housing 0.11 Kg (0.23 lb)	0.25 Kg (0.50 lbs.)
Repeatability	±2% at 20°C (70°F) Ambient Temperature	±2% at 20°C (70°F) Ambient Temperature
Hirschmann Connector With Strain Relief		

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Australia
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Unanderra Wollongong , N.S.W
2526 AUSTRALIA
Tel: +61 2 42 71 18 77
Fax: +61 2 42 71 84 32



Brazil
Stauff Brasil Ltda.
Av. Gupê 10767
Galpão 2 – Bloco A
Barueri – São Paulo – CEP 06422-120, BRAZIL
Tel: +55 (0)11-4789-9020
Fax: +55 (0)11-4789-9021



Canada
Stauff Canada Ltd.
866 Milner Avenue
Scarborough , Ontario M1B 5N7 , CANADA
Tel: +1 416 282 46 08
Fax: +1 416 282 30 39



China
Stauff International Trading (Shanghai) Co., Ltd.
Shangdian Mansion, Pudong
331 , Binzhou Road
200126 Shanghai, CHINA
Tel: +86 21 58 45 65 60
Fax: +86 21 58 45 66 80



France
Stauff S.A.
Z.I. de Vineuil-Blais Sud
230, Avenue du Grain d'Or
41354 Vineuil-cedex, FRANCE
Tel: +33 2 54 50 55 50
Fax: +33 2 54 42 29 19



Germany
Walter Stauffenberg GmbH & Co. KG
P.O. Box 1745,
D-58777 Werdohl, GERMANY
Tel: +49 (0) 23 92/916-0
Fax: +49 (0) 23 92 25 05



India
Stauff India Pvt. Ltd.
Gat. No. 2340
Pune-Nagar Road, Wagholi
IND-Pune - 412027
Tel: +91 20 705 19 90
Fax: +91 20 705 19 89



Italy
Stauff Italia S.R.L.
Via Pola 21/23
I-20034 Birone di Giussano
Tel: +39 0362 31 21 13
Fax: +39 0362 33 55 36



New Zealand
Stauff Corporation (NZ) Ltd.
Unit J, 150 Harris Road, P.O. Box 58517
Greenmount Auckland-NEW ZEALAND
Tel: +64 9 271 4812
Fax: +64 9 271 4832



United Kingdom
Stauff UK Ltd.
332, Coleford Road Darnall
Sheffield, S 9 5 P H, ENGLAND
Tel: +44 1142 518 518
Fax: +44 1142 518 519



USA
Stauff Corporation
7 Wm. Demarest Place
Waldwick, NJ – 07463, USA
Tel: +1 201 444 78 00
Fax: +1 201 444 78 52

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STAUFF



FILTRATION TECHNOLOGY

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Australia
 Stauff Corporation (Pty.) Ltd.
 P.O.Box 227 , 24-26 Doyle Avenue,
 Unanderra Wollongong , N.S.W
 2526 AUSTRALIA
 Tel: +61 2 42 71 18 77
 Fax: +61 2 42 71 84 32

Brazil
 Stauff Brasil Ltda.
 Av. Gupê 10767
 Galpão 2 – Bloco A
 Barueri – São Paulo – CEP 06422-120, BRAZIL
 Tel: +55 (0)11-4789-9020
 Fax: +55 (0)11-4789-9021

Canada
 Stauff Canada Ltd.
 866 Milner Avenue
 Scarborough , Ontário M1B 5N7 , CANADA
 Tel: +1 416 282 46 08
 Fax: +1 416 282 30 39

China
 Stauff International Trading (Shanghai) Co., Ltd.
 Shangdian Mansion, Pudong
 331 , Binzhou Road
 200126 Shanghai, CHINA
 Tel: +86 21 58 45 65 60
 Fax: +86 21 58 45 66 80

France
 Stauff S.A.
 Z.I. de Vineuil-Blois Sud
 230, Avenue du Grain d'Or
 41354 Vineuil-cedex, FRANCE
 Tel: +33 2 54 50 55 50
 Fax: +33 2 54 42 29 19

India
 Stauff India Pvt. Ltd.
 Gat. No. 2340,
 Pune-Nagar Road, Wagholi, INDIA
 IND-Pune - 412027
 Tel: +91 20 705 19 90
 Fax: +91 20 705 19 89

Italy
 Stauff Italia S.R.L.
 Via Pola 21/23, I-20034
 Birone di Giussano, ITALY
 Tel: +39 0362 31 21 13
 Fax: +39 0362 33 55 36

New Zealand
 Stauff Corporation (NZ) Ltd.
 Unit J. 150 Harris Road, P.O. Box 58517
 Greenmount Auckland-NEW ZEALAND
 Tel: +64 9 271 4812
 Fax: +64 9 271 4832

United Kingdom
 Stauff UK Ltd.
 332, Coleford Road Darnall
 Sheffield, S 9 5 P H, ENGLAND
 Tel: +44 1142 518 518
 Fax: +44 1142 518 519

USA
 Stauff Corporation
 7 Wm. Demarest Place
 Waldwick, NJ – 07463, USA
 Tel: +1 201 444 78 00
 Fax: +1 201 444 78 52

**Distributors and warehouses
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Walter Stauffenberg GmbH & Co. KG

P. O. Box 1745 · D-58777 Werdohl · Germany
 Im Ehrenfeld 4 · D-58791 Werdohl · Germany
 Tel.: +49 (0) 23 92 9 16-0
 Fax: +49 (0) 23 92 25 05
 E-mail: sales@stauff.com
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Stauff Filtration Technology

Stauff Filtration Technology offers a complete range of filtration products and services that will provide the system designer or user with the highest level of contamination control demanded by today's most sophisticated applications. Products include pressure filters, return line filters, elements, spin on filters suction strainers, and filler breathers for various hydraulic, lubrication and fuel oils.

Stauff has the technical expertise to provide superior filter element designs for the Stauff original filter housings and also for the interchange element market. Stauff manufactures more than 10,000 different elements. Many of these are designed to fit into filter housings produced by other companies while maintaining or surpassing the original performance.

The "Stauff Contamination Control Program" includes the diagnostic services including fluid sampling and laser particle counting products needed to monitor the system contamination level.

Stauff, through its global network of wholly owned companies and technically qualified distributors, is ideally placed to assist its customers in the total contamination process providing a well balanced filtration solution.

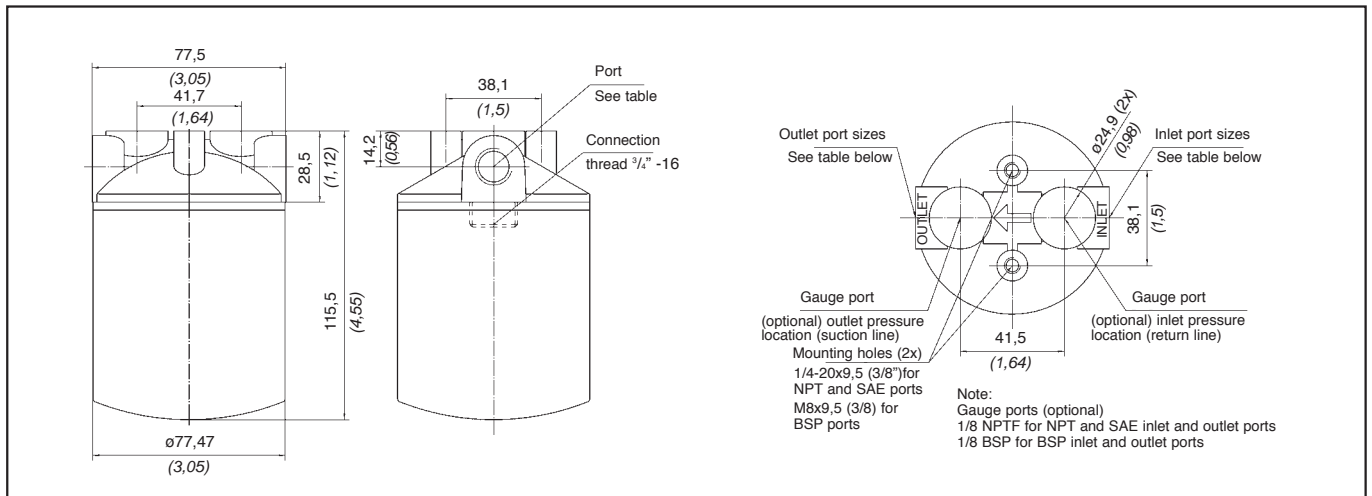
Spin-On Filters	Page
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Filter Indicators	
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Quick Reference Guide	23



Technical Specification

Construction	Die cast aluminium head
Seals	NBR (Buna-N®)
Port connections	BSP, NPT, or SAE "O"-Ring thread
Flow rate	26 l/min (7 US GPM) for return line, 7 l/min (2 US GPM) for suction line applications
Working pressure	14 bar (200 PSI) working pressure, maximum pressure differential of 5,5 bar (80 PSI) for any application with no by-pass valve
Operating temperature	-32°C to +100°C (-25°F to 212°F)
By-pass valve	Built into the element
Clogging indicators	Gauge indicator with colored segments Electrical 0.35...2.5 bar (5...35 PSI) adjustable see page 22
Elements	For use with SF6300 series elements For element types and flow characteristics see page 12
Media	Mineral oils, other fluids on request

Dimensions



Dimensions in mm (inch)

Ordering Code

SLF 02 0

Filter type	SLF	
Port options		
Code	Connection Style	
02B	BSP	G ¹ / ₄
02	NPT	1/4 NPT
03B	BSP	G ³ / ₈
03	NPT	3/8 NPT
04	SAE	9/16 -18 UN

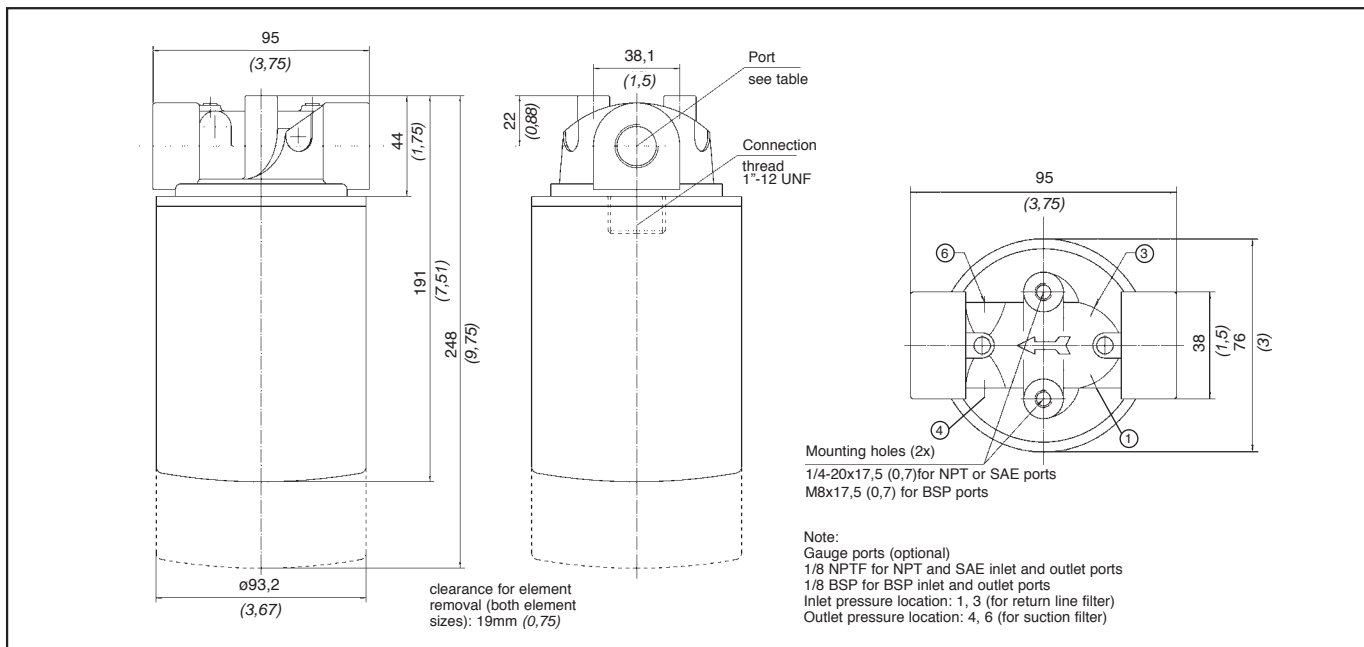
Indicator port options	
Code	Description
0	No indicator port
1	Gauge port drilled-return
2	Gauge port drilled-suction
4	All gauge ports drilled
9	Special
Note: Standard gauge port for BSP connection port is G 1/8. Standard gauge port for NPT and SAE connection port is 1/8 NPTF	

Technical Specification



Construction	Die cast aluminium head
Seals	NBR (Buna-N®)
Port connections	BSP, NPT, or SAE "O"-Ring thread
Flow rate	90 l/min (25 US GPM) for return line, 23 l/min (6 US GPM) for suction line applications
Working pressure	14 bar (200 PSI) working pressure, maximum pressure differential of 5,5 bar (80 PSI) for any application with no by-pass valve
Operating temperature	-32°C to +100°C (-25°F to 212°F)
By-pass valve	Built into the head
Clogging indicators	Gauge indicator with colored segments Electrical 0.35...2.5 bar (5...35 PSI) adjustable see page 22
Elements	For use with SF6500 series elements For element types and flow characteristics see pages 13...14
Media	Mineral oils, other fluids on request

Dimensions



Ordering Code

SAF 07 25 0

Filter type	SAF	
Port options		
Code	Connection Style	
05B	BSP	G ¹ / ₂
05	NPT	¹ / ₂ NPT
06	SAE	³ / ₄ -16 UN
07B	BSP	G ³ / ₄
07	NPT	³ / ₄ NPT
11	SAE	1 ¹ / ₁₆ -12 UN

By-pass options	
Code	Description
00	No by-pass
03	0,2 bar (3 PSI)
05	0,33 bar (5 PSI)
15	1 bar (15 PSI)
25	1,7 bar (25 PSI)

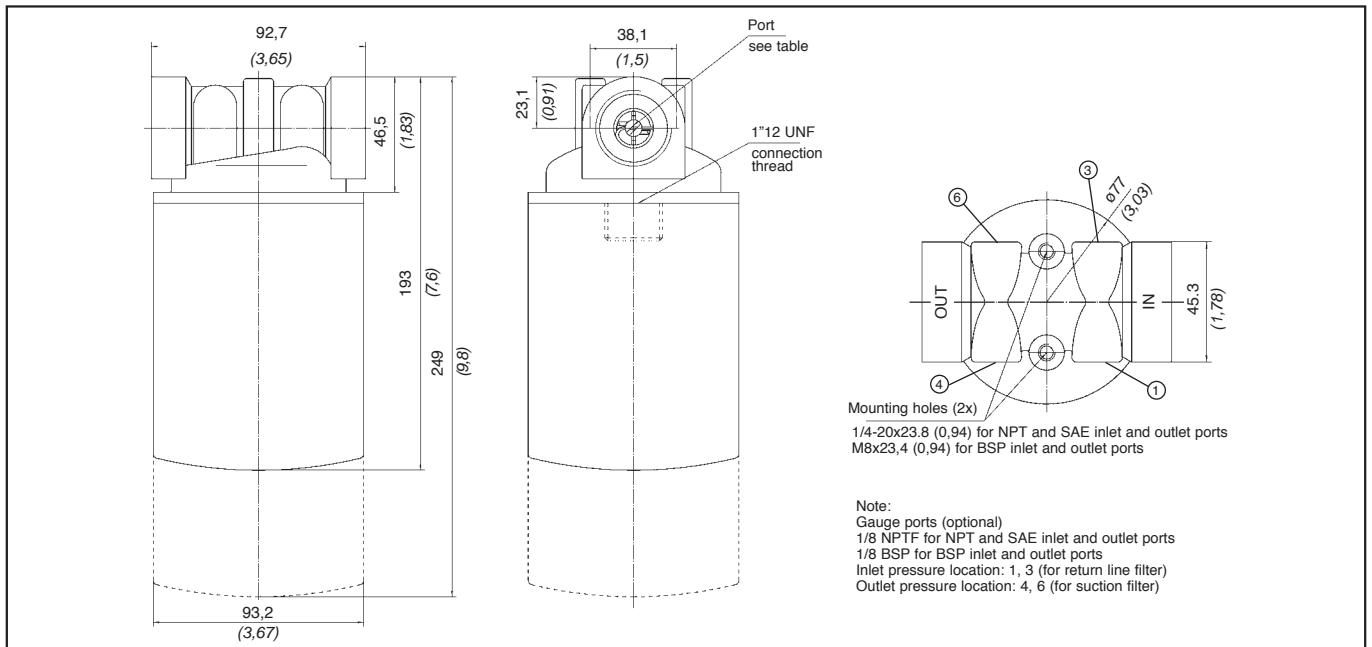
Indicator port options	
Code	Description
0	No indicator port
1	Gauge pot drilled-return
2	Gauge port drilled-suction
4	All gauge ports drilled
9	Special
Note: Standard gauge port for BSP connection port is G1/8. Standard gauge port for NPT and SAE connection port is 1/8 NPTF	

Technical Specification



Construction	Die cast aluminium head
Seals	NBR (Buna-N®)
Port connections	BSP, NPT, or SAE "O"-Ring thread
Flow rate	128 l/min (34 US GPM) for return line, 30 l/min (8 US GPM) for suction line applications
Working pressure	14 bar (200 PSI) working pressure, maximum pressure differential of 5,5 bar (80 PSI) for any application with no by-pass valve
Operating temperature	-32°C to +100°C (-25°F to 212°F)
By-pass valve	Built into the head
Clogging indicators	Gauge indicator with colored segments Electrical 0.35...2.5 bar (5...35 PSI) adjustable see page 22
Elements	For use with SF6500 series elements For element types and flow characteristics see pages 13...14
Media	Mineral oils, other fluids on request

Dimensions



Ordering Code

SAF 10 25 0

Filter type	SAF
-------------	-----

Port options		
Code	Connection Style	
10B	BSP	G1
10	NPT	1 NPT
13	SAE	1 ⁵ / ₁₆ -12 UN

By-pass options	
Code	Description
00	No by-pass
03	0,2 bar (3 PSI)
05	0,33 bar (5 PSI)
15	1 bar (15 PSI)
25	1,7 bar (25 PSI)

Indicator port options	
Code	Description
0	No indicator port
1	Gauge port drilled-return
2	Gauge port drilled-suction
4	All gauge ports drilled
9	Special

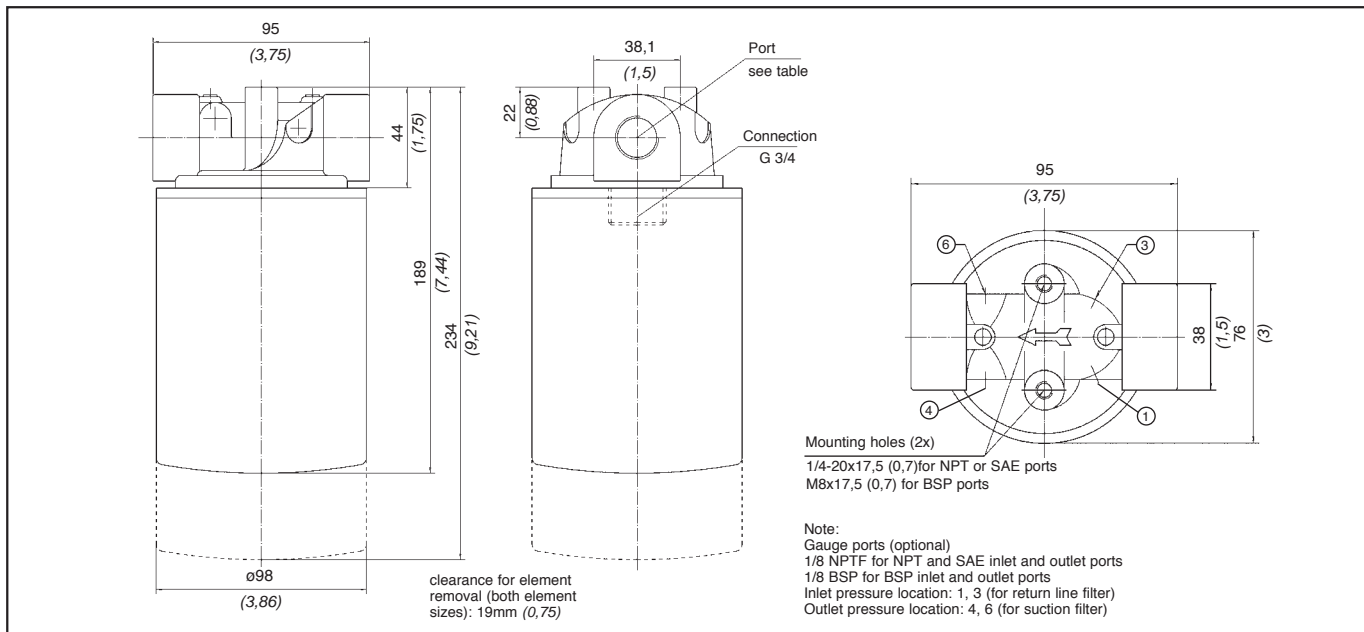
Note: Standard gauge port for BSP connection port is G1/8. Standard gauge port for NPT and SAE connection port is 1/8 NPTF

Technical Specification



Construction	Die cast aluminium head
Seals	NBR (Buna-N®) seals
Port connections	BSP, NPT, or SAE "O"-Ring threaded
Flow rate	90 l/min (25 US GPM) for return line, 23 l/min (6 US GPM) for suction line applications
Working pressure	12 bar (174 PSI) working pressure, maximum pressure differential of 5,5 bar (80 PSI) for any application with no by-pass valve
Operating temperature	-32°C to +100°C (-25°F to 212°F)
By-pass valve	Built into the head
Clogging indicators	Gauge indicator with colored segments Electrical 0.35...2.5 bar (5...35 PSI) adjustable see page 22
Elements	For use with SFC35/36 series elements For element types and flow characteristics see pages 19...21
Media	Mineral oils, other fluids on request

Dimensions



Dimensions in mm (inch)

Ordering Code

SSF 12 25 0

Filter type	SSF
-------------	-----

Port options		
Code	Connection Style	
12	BSP	G ³ / ₄
12N	NPT	³ / ₄ NPT

By-pass options	
Code	Description
00	No by-pass
03	0,2 bar (3 PSI)
05	0,33 bar (5 PSI)
15	1 bar (15 PSI)
25	1,7 bar (25 PSI)

Indicator port options	
Code	Description
0	No indicator port
1	Gauge port drilled-return
2	Gauge port drilled-suction
4	All gauge ports drilled
9	Special

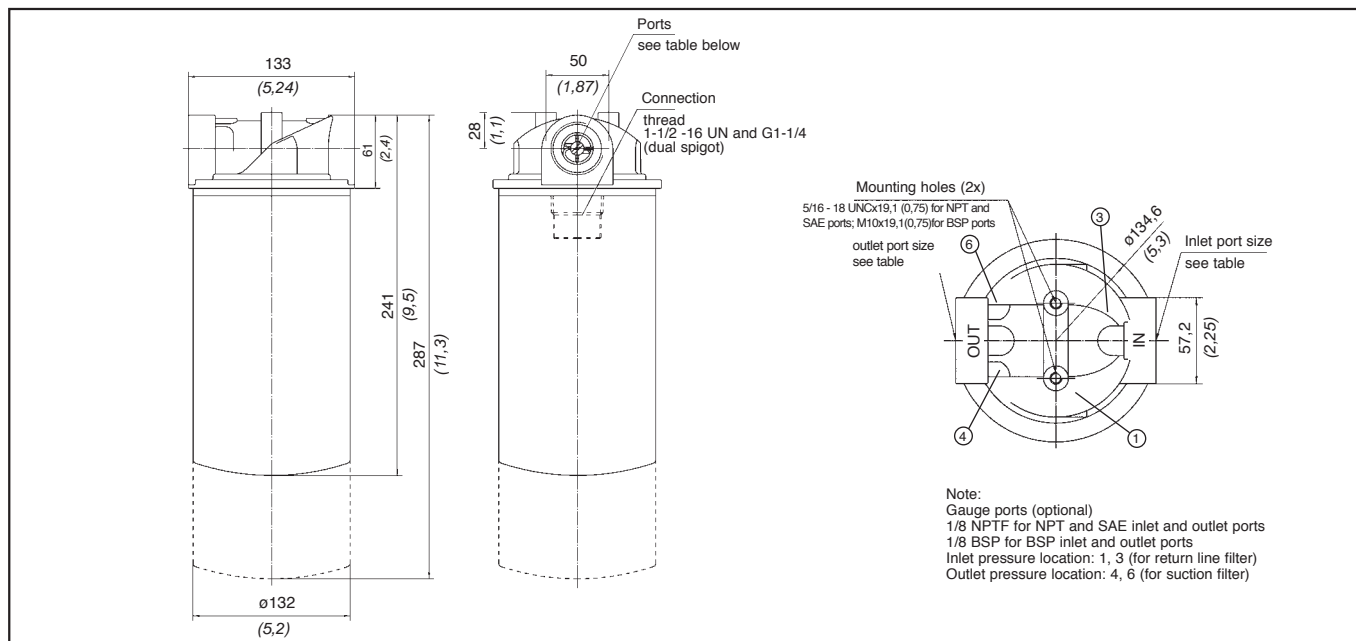
Note: Standard gauge port for BSP connection port is G1/8. Standard gauge port for NPT and SAE connection port is 1/8 NPTF

Technical Specification



Construction	Die cast aluminium head
Seals	NBR (Buna-N®)
Port connections	BSP, NPT, or SAE "O"-Ring thread
Flow rate	225 l/min (60 US GPM) for return line, 46 l/min (12 US GPM) for suction line applications
Working pressure	14 bar (200 PSI) working pressure, maximum pressure differential of 5,5 bar (80 PSI) for any application with no by-pass valve
Operating temperature	-32°C to +100°C (-25°F to 212°F)
By-pass valve	Built into the head
Clogging indicators	Gauge indicator with colored segments Electrical 0.35...2.5 bar (5...35 PSI) adjustable see page 22
Elements	For use with SF6700 and SFC57/58 series elements For element types and flow characteristics see pages 15...18 for SF6700 see pages 20...21 for SFC57/58
Media	Mineral oils, other fluids on request

Dimensions



Dimensions in mm (inch)

Ordering Code

SSF 120 25 0

Filter type	SSF	
Port options		
Code	Connection Style	
100	NPT	1 NPT
100B	BSP	G 1
20L	BSP	G1 1/4
120L	NPT	1 1/4 NPT
120	NPT	1 1/4 NPT
130	SAE	1 5/16 -12 UN
160	SAE	1 5/8 -12 UN
Note: SSF-20L and SSF-120L filters use a wide cut or "L" shaped element seal. All others use a thin cut element seal		

By-pass options	
Code	Description
00	No by-pass
03	0,2 bar (3 PSI)
05	0,33 bar (5 PSI)
15	1 bar (15 PSI)
25	1,7 bar (25 PSI)

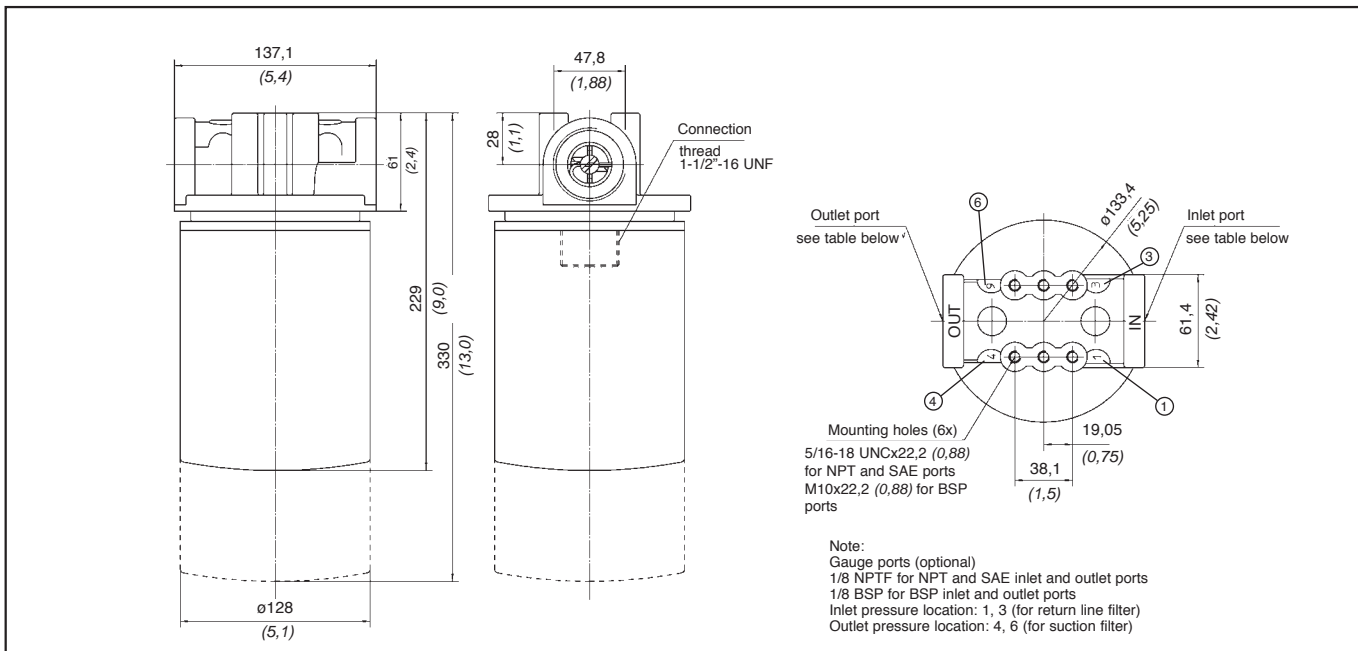
Indicator port options	
Code	Description
0	No indicator port
1	Gauge port drilled-return
2	Gauge port drilled-suction
4	All gauge ports drilled
9	Special
Note: Standard gauge port for BSP connection port is G1/8. Standard gauge port for NPT and SAE connection port is 1/8 NPTF	

Technical Specification



Construction	Die cast aluminium head
Seals	NBR (Buna-N®)
Port connections	BSP, NPT, or SAE "O"-Ring thread
Flow rate	300 l/min (80 US GPM) for return line, 113 l/min (30 US GPM) for suction line applications
Working pressure	14 bar (200 PSI) working pressure, maximum pressure differential of 5,5 bar (80 PSI) for any application with no by-pass valve
Operating temperature	-32°C to +100°C (-25°F to 212°F)
By-pass valve	Built into the head
Clogging indicators	Gauge indicator with colored segments Electrical 0.35...2.5 bar (5...35 PSI) adjustable see page 22
Elements	For use with SF6700 series elements For element types and flow characteristics see pages 15...18
Media	Mineral oils, other fluids on request

Dimensions



Dimensions in mm (inch)

Ordering Code

SSF 150 25 0

Filter type	SSF
-------------	-----

Port options		
Code	Connection Style	
150	NPT	1 1/2 NPT
150B	BSP	G1 1/2
180	SAE	1 7/8-12 UN

Note: SSF 150, 150B and 180 filters use a wide cut or "L" shaped element seal.

By-pass options	
Code	Description
00	No by-pass
03	0,2 bar (3 PSI)
05	0,33 bar (5 PSI)
15	1 bar (15 PSI)
25	1,7 bar (25 PSI)

Indicator port options	
Code	Description
0	No indicator port
1	Gauge port drilled-return
2	Gauge port drilled-suction
4	All gauge ports drilled
9	Special

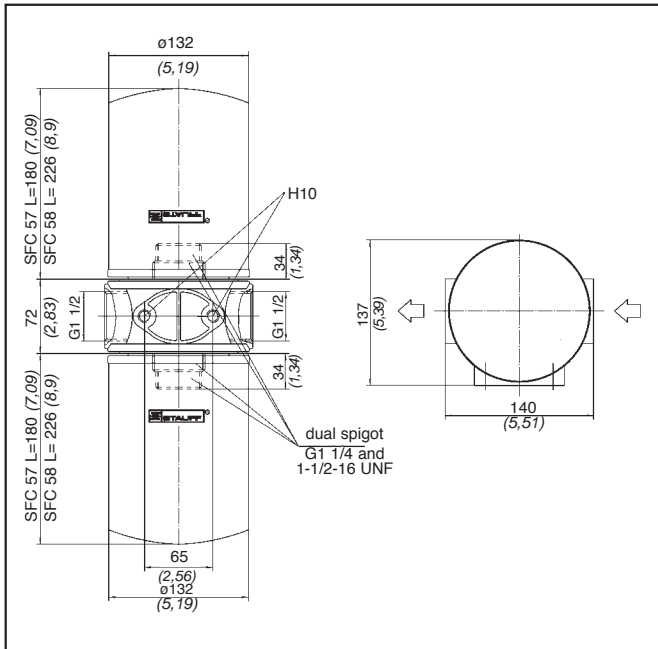
Note: Standard gauge port for BSP connection port is G1/8. Standard gauge port for NPT and SAE connection port is 1/8 NPTF



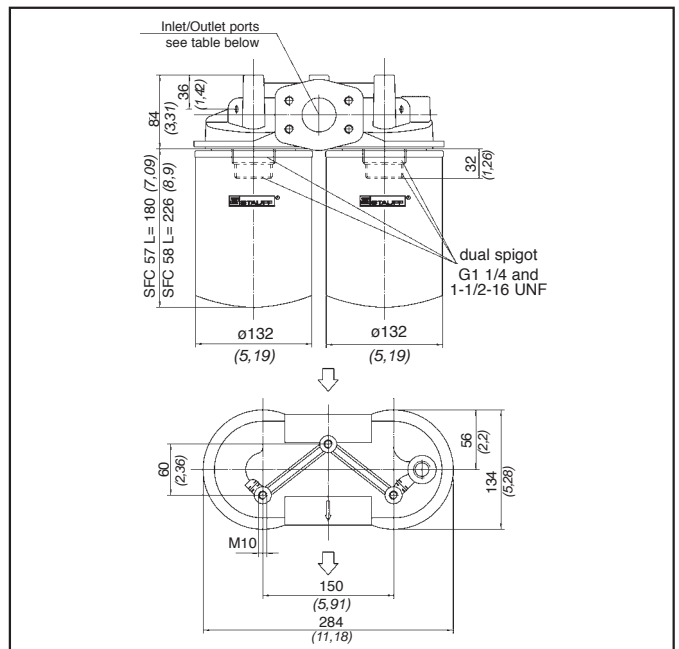
Technical Specification

Construction	Die cast aluminium head
Seals	NBR (Buna-N®)
Port connections	BSP, NPT, or SAE flange
Flow rate	454 l/min (120 US GPM) for return line, 132 l/min (35 US GPM) for suction line applications
Working pressure	12 bar (174 PSI) working pressure, maximum pressure differential of 5,5 bar (80 PSI) for any application with no by-pass valve
Operating temperature	-30°C to +100°C (-22°F to 212°F)
By-pass valve	Built into the head
Clogging indicators	Gauge indicator with colored segments Electrical 0.35...2.5 bar (5...35 PSI) adjustable See page 22
Elements	For use with SF6700 and SFC57/58 series elements For element types and flow characteristics see pages 15..18 for SF6700 see pages 20...21 for SFC57/58
Media	Mineral oils, other fluids on request

Dimensions SSF 24



Dimensions SSF 25



Dimensions in mm (inch)

Ordering Code

Filter type	SSF
-------------	-----

SSF 24N 25 0

Port options		
Code	Connection Style	
24B	BSP	G1 1/2
24N	NPT	1 1/2 NPT
24S	SAE	1 7/8-12 UN
25	NPT&SAE Flange	1 1/2 NPT & 2" SAE Code 61 Flange
25B	BSP&SAE Flange	G1 1/4 & 1 1/2" SAE Code 61 Flange

Note: SSF-24 and SSF-25 filters use a wide cut or "L" shaped element seal.

By-pass options	
Code	Description
00	No by-pass
03	0,2 bar (3 PSI)
05	0,33 bar (5 PSI)
15	1 bar (15 PSI)
25	1,7 bar (25 PSI)

Indicator port options	
Code	Description
0	No indicator port
1	Gauge port drilled-return
2	Gauge port drilled-suction
4	All gauge ports drilled
9	Special

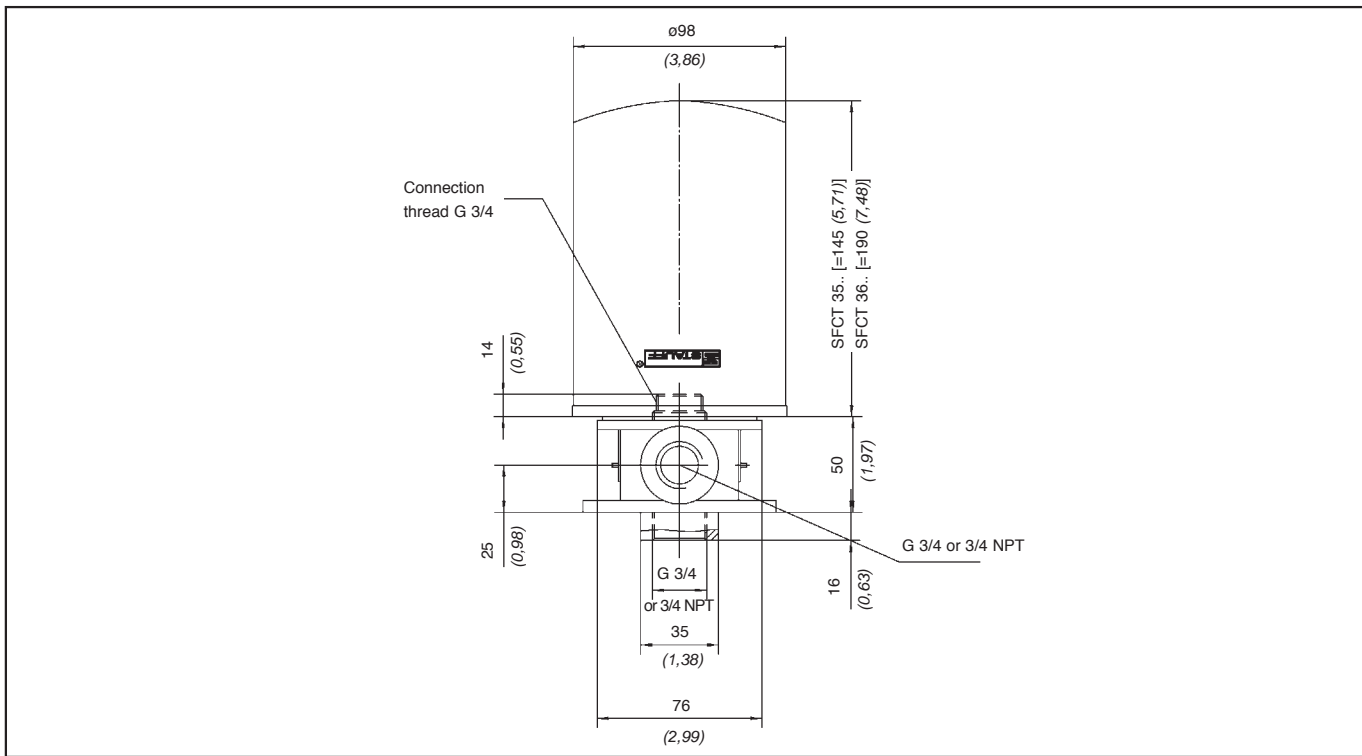
Note: Standard gauge port for BSP connection port is G1/8. Standard gauge port for NPT and SAE connection port is 1/8 NPTF



Technical Specification

Construction	Die cast aluminium head
Seals	NBR (Buna-N®)
Port connections	BSP and NPT
Flow rate	75 l/min (20 US GPM)
Working pressure	7 bar (100 PSI) working pressure
Operating temperature	-30°C to +100°C (-22°F to 212°F)
By-pass valve	1 bar (15 PSI) by-pass in filter element
Clogging indicators	Gauge indicator with colored segments Electrical 0.35...2.5 bar (5...35 PSI) adjustable see page 22
Elements	For use with SFT35/36 series elements For element types and flow characteristics see pages 19...21
Media	Mineral oils, other fluids on request

Dimensions



Dimensions in mm (inch)

Ordering Code

SSFT 12 1

Filter type	SSFT	
Port options		
Code	Connection Style	
12B	BSP	G 3/4
12	NPT	3/4 NPT

Indicator port options	
Code	Description
0	No indicator port
1	Gauge port drilled-return
9	Special

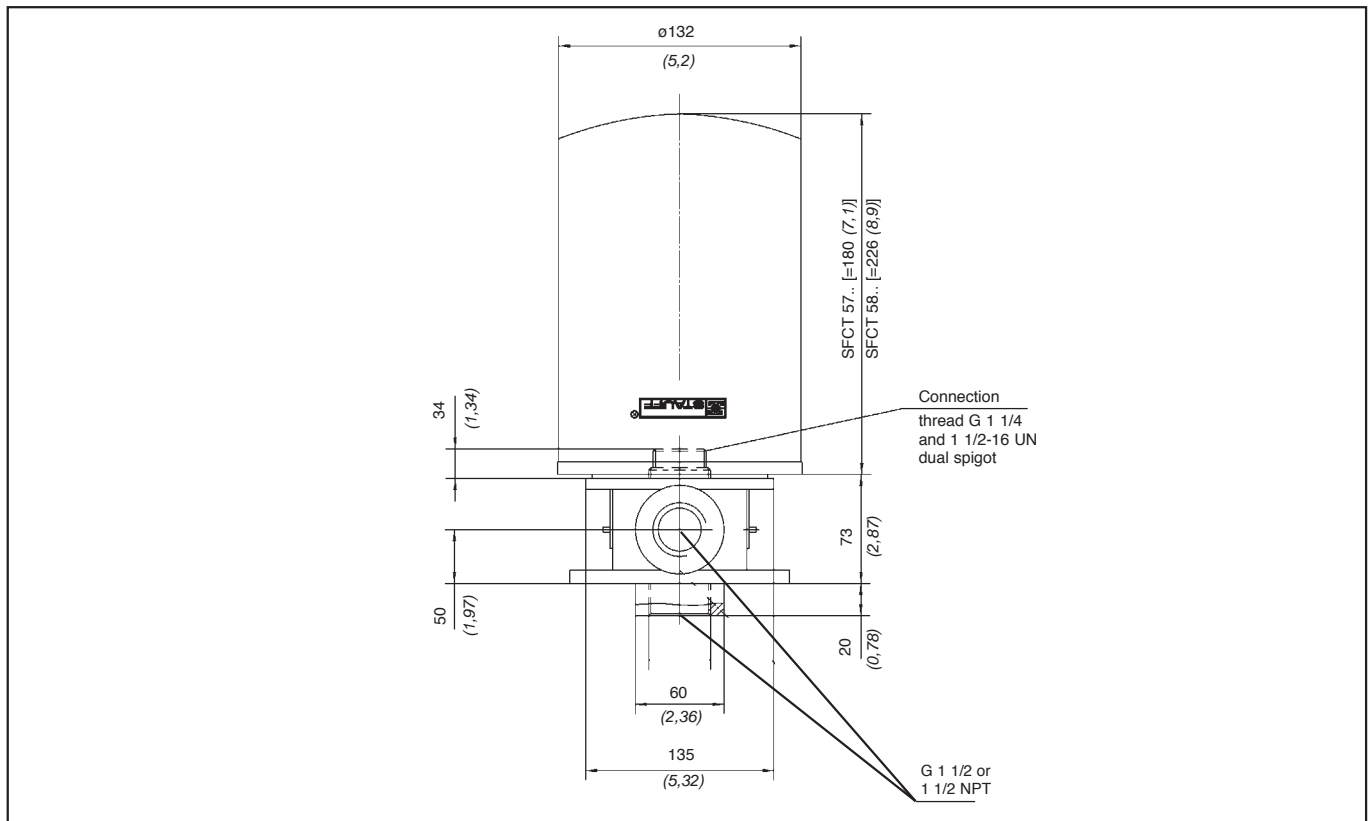
Note: Standard gauge port for BSP connection port is G1/8. Standard gauge port for NPT and SAE connection port is 1/8 NPTF

Technical Specification



Construction	Die cast aluminium head
Seals	NBR (Buna-N®)
Port connections	BSP and NPT
Flow rate	200 l/min (53 US GPM)
Working pressure	7 bar (100 PSI) working pressure
Operating temperature	-30°C to +100°C (-22°F to 212°F)
By-pass valve	1 bar (15 PSI) by-pass in filter element
Clogging indicators	Gauge indicator with colored segments Electrical 0.35...2.5 bar (5...35 PSI) adjustable see page 22
Elements	For use with SFT57/58 series elements For element types and flow characteristics see pages 20...21
Media	Mineral oils, other fluids on request

Dimensions



Dimensions in mm (inch)

Ordering Code

SSFT 20 1

Filter type	SSFT	
Port options		
Code	Connection Style	
20B	BSP	G 1 1/2
20	NPT	1 1/2 NPT

Indicator port options	
Code	Description
0	No indicator port
1	Gauge port drilled-return
9	Special
Note: Standard gauge port for BSP connection port is G1/8. Standard gauge port for NPT and SAE connection port is 1/8 NPTF	





Technical Specification

Stauff SF6300 series spin-on elements are used with the Stauff SLF spin on filters.

Seals	NBR (Buna-N®)
Working pressure	14 bar (200 PSI) working pressure, maximum pressure differential of 5,5 bar (80 PSI) for any application with no by-pass valve
Operating temperature	-32°C to +100°C (-25°F to 212°F)
By-pass valve	Built into the element
Media	Mineral oils, other fluids on request

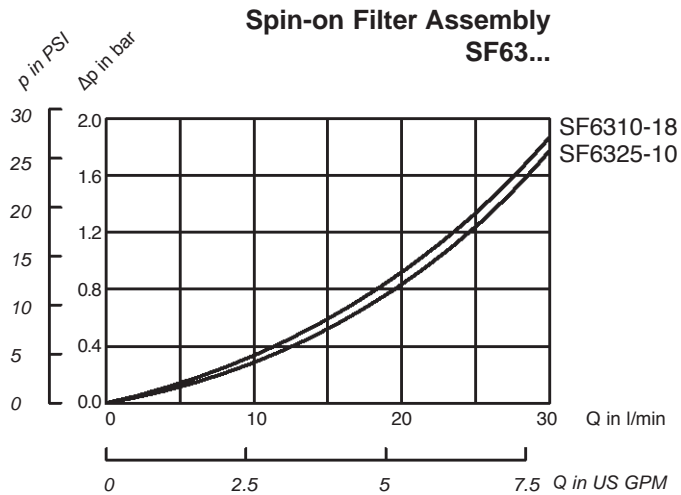
Dimensions and Ordering Code

	Paper	
	SF 6310-18	SF 6325-10
		
Diameter	77,47 (3,05)	77,47 (3,05)
Length	88,65 (3,49)	88,65 (3,49)
Element Thread	3/4-16 UNF	3/4-16 UNF
Beta Ratio	β10 ≥ 2	β25 ≥ 2
Dirt Holding ACFTD (g)	6	6
Filtration Area	825,2 cm ² (127,9 in ²)	825,2 cm ² (127,9 in ²)
By-pass setting	1,24 bar (18 PSI)	0,7 bar (10 PSI)
Maximum Working Pressure	14 bar (200 PSI)	14 bar (200 PSI)
Carton Quantity	12	12
Carton Weight	3,6 kg (8 lb)	3,6 kg (8 lb)

Flow Characteristics

The following characteristics are valid for mineral oils with a density of 0,85 kg/dm³ and the kinematic viscosity of 30 mm²/s. The characteristics have been determined in accordance to ISO 3968.

Average pressure drop through a clean filter assembly.









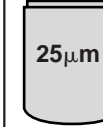



Stauff SF6500 series spin-on elements are used with the Stauff SAF series spin on filters.

Technical Specification

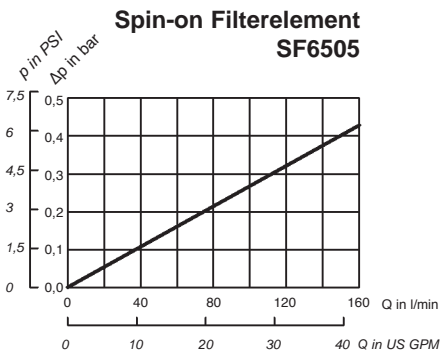
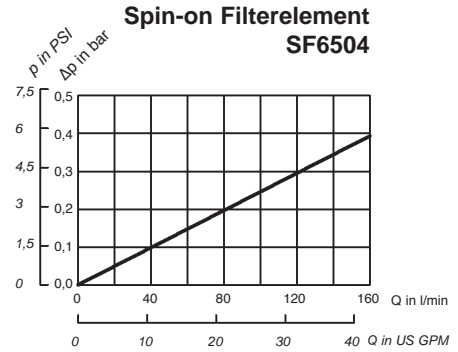
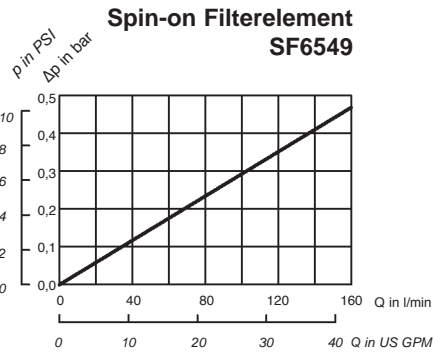
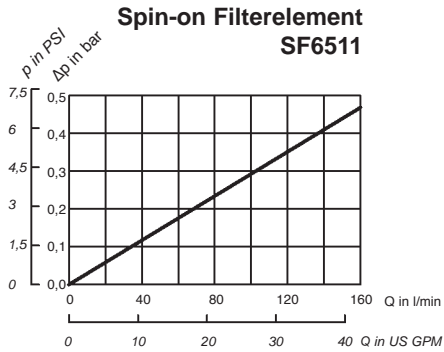
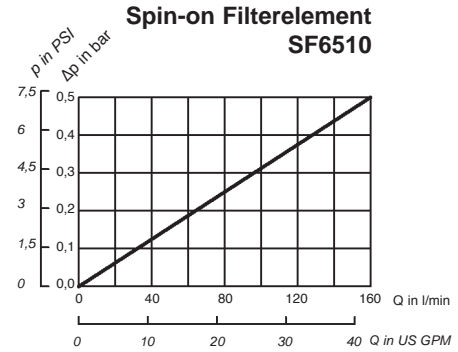
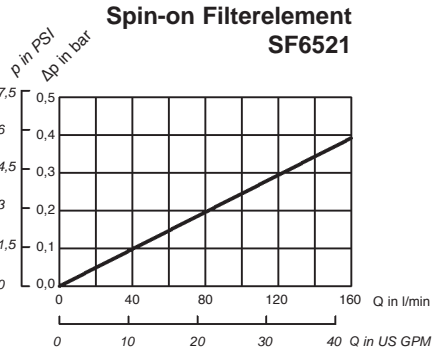
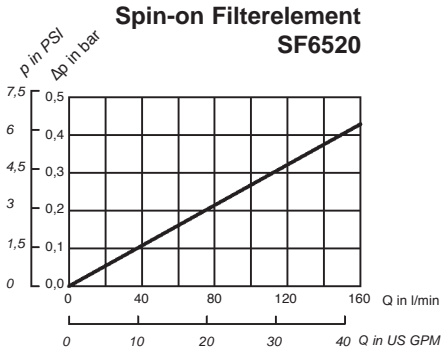
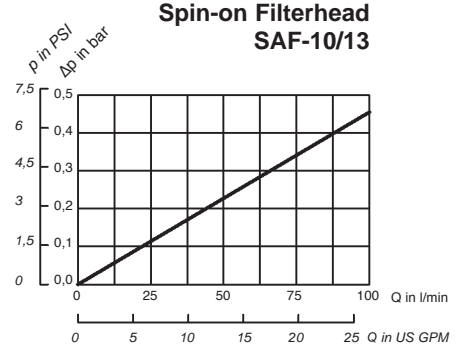
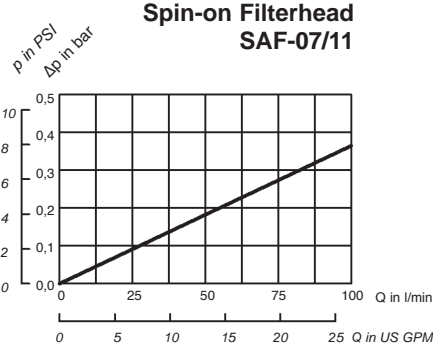
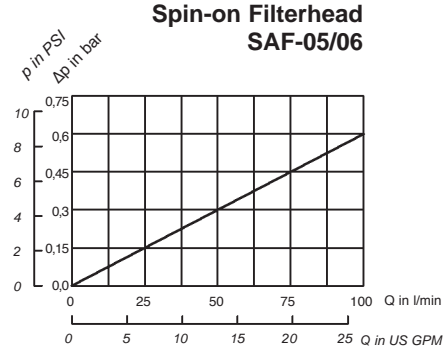
Seals	NBR (Buna-N®) seals
Working pressure	14 bar (200 PSI) working pressure, maximum pressure differential of 5.5 bar (80 PSI) for any application with no bypass valve
Operating temperature	-32°C to 100°C (-25°F to 212°F)
Media	Mineral oils, other fluids on request

Dimensions and Ordering Code

	Paper				Microglass			Water Absorbing
	SF 6520	SF 6521	SF 6510	SF 6511	SF 6549	SF 6505	SF 6504	SF 6520-W
								
Diameter	93.2 (3.67)	93.2 (3.67)	93.2 (3.67)	93.2 (3.67)	93.2 (3.67)	93.2 (3.67)	93.2 (3.67)	93.2 (36.7)
Length	146.3 (5.76)	203.2 (8.00)	146.3 (5.76)	203.2 (8.00)	146.3 (5.76)	146.3 (5.76)	146.3 (5.76)	133 (5.25)
Element Thread	1-12 UNF	1-12 UNF	1-12 UNF	1-12 UNF	1-12 UNF	1-12 UNF	1-12 UNF	1-12 UNF
Beta Ratio	β10 ≥ 2	β10 ≥ 2	β25 ≥ 2	β25 ≥ 2	β3 ≥ 75	β12 ≥ 75	β25 ≥ 75	β10 ≥ 2
Dirt Holding Capacity ACFTD (g)	14.4	22	20.4	31.2	19	11	26	Water holding capacity 162 ml (5.5 oz)
Filtration Area	2303 cm ² (357.5 in ²)	3881 cm ² (601.7 in ²)	2212 cm ² (342.9 in ²)	3388 cm ² (525.1 in ²)	2519 cm ² (390.4 in ²)	2405 cm ² (372.7 in ²)	2405 cm ² (372.7 in ²)	1225 cm ² (190 in ²)
Maximum Working Pressure	14 bar (200 PSI)	14 bar (200 PSI)	14 bar (200 PSI)	14 bar (200 PSI)	14 bar (200 PSI)	14 bar (200 PSI)	14 bar (200 PSI)	6.9 bar (100 PSI)
Carton Quantity	12	12	12	12	12	12	12	12
Carton Weight	6.3 kg (13.9 lb)	8.4 kg (18.5 lb)	6.4 kg (14.2 lb)	8.8 kg (19.4 lb)	8.6 kg (19 lb)	8.6 kg (19 lb)	8.6 kg (19 lb)	8.6 kg (19 lb)

Flow Characteristics

The following characteristics are valid for mineral oils with a density of 0,85 kg/dm³ and the kinematic viscosity of 30 mm²/s. The characteristics have been determined in accordance to ISO 3968.










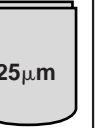



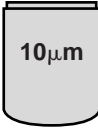

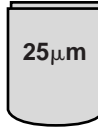

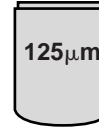


Technical Specification

Stauff SF6700 series spin-on elements are used with the Stauff SSF 20, 24, 25, 100, 120, 130, 160, 150, and 180, series spin on filters.

Seals	NBR (Buna-N®)
Working pressure	14 bar (200 PSI) working pressure, maximum pressure differential of 5,5 bar (80 PSI) for any application with no by-pass valve
Operating temperature	-32°C to +100°C (-25°F to 212°F)
Media	Mineral oils, other fluids on request

Dimensions and Ordering Code

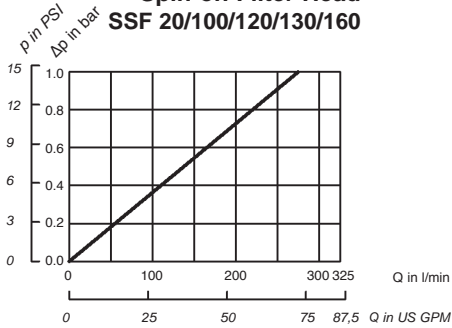
	Microglass								
	SF 6702-MG	SF 6703-MG	SF 6704-MG	SF 6706-MG	SF 66707-MG	SF 6730-MG	SF 6731-MG	SF 6728-MG	SF 6726-MG
									
Diameter	128 (5,06)	128 (5,06)	128 (5,06)	128 (5,06)	128 (5,06)	128 (5,06)	128 (5,06)	128 (5,06)	128 (5,06)
Length	270 (10,63)	168 (6,63)	270 (10,63)	168 (6,63)	270 (10,63)	168 (6,63)	270 (10,63)	168 (6,63)	270 (10,63)
Element Thread	1½-16 UNF	1½-16 UNF	1½-16 UNF	1½-16 UNF	1½-16 UNF	1½-16 UNF	1½-16 UNF	1½-16 UNF	1½-16 UNF
Beta Ratio	β1 ≥ 200	β3 ≥ 200	β3 ≥ 200	β6 ≥ 200	β6 ≥ 200	β12 ≥ 200	β12 ≥ 200	β25 ≥ 200	β25 ≥ 200
Dirt Holding Capacity ACFTD (g)	30	31	47	35	54	38	59	50	76
Filtration Area	8167 cm ² (1266 in ²)	4051 cm ² (628 in ²)	8167 cm ² (1266 in ²)	4051 cm ² (628 in ²)	7200 cm ² (1116 in ²)	4051 cm ² (628 in ²)	7522 cm ² (1166 in ²)	4051 cm ² (628 in ²)	8167 cm ² (1266 in ²)
Maximum Working Pressure	14 bar (200 PSI)	14 bar (200 PSI)	14 bar (200 PSI)	14 bar (200 PSI)	14 bar (200 PSI)	14 bar (200 PSI)	14 bar (200 PSI)	14 bar (200 PSI)	14 bar (200 PSI)
Carton Quantity	6	6	6	6	6	6	6	6	6
Carton Weight	11,8 kg (26,1 lb)	8,2 kg (18 lb)	11,8 kg (26,1 lb)	8,2 kg (18 lb)	11,8 kg (26,1 lb)	8,2 kg (18 lb)	11,8 kg (26,1 lb)	8,2 kg (18 lb)	11,8 kg (26,1 lb)

	Paper				Stainless Wire Mesh		Water Absorbing
	SF 6720	SF 6721	SF 6710	SF 6711	SF 6790	SF 6791	SF 6721-W
							
Diameter	128 (5,06)	128 (5,06)	128 (5,06)	128 (5,06)	128 (5,06)	128 (5,06)	128 (5,06)
Length	168 (6,63)	270 (10,63)	168 (6,63)	270 (10,63)	168 (6,63)	270 (10,63)	270 (10,63)
Element Thread	1½ -16 UNF	1½ -16 UNF	1½ -16 UNF	1½ -16 UNF	1½ -16 UNF	1½ -16 UNF	1½ -16 UNF
Beta Ratio	β10 ≥ 2	β10 ≥ 2	β25 ≥ 2	β25 ≥ 2	n/a	n/a	β10 ≥ 2
Dirt Holding Capacity ACFTD (g)	34	62	34	62	n/a	n/a	Water holding capacity 444 ml (15 oz)
Filtration Area	3677 cm ² (570 in ²)	6813 cm ² (1056 in ²)	3677 cm ² (570 in ²)	6813 cm ² (1056 in ²)	1290 cm ² (200 in ²)	2032 cm ² (315 in ²)	4440 cm ² (688 in ²)
Maximum Working Pressure	14 bar (200 PSI)	14 bar (200 PSI)	14 bar (200 PSI)	14 bar (200 PSI)	14 bar (200 PSI)	14 bar (200 PSI)	14 bar (200 PSI)
Carton Quantity	6	6	6	6	6	6	6
Carton Weight	6,6 kg (14,6 lb)	7,9 kg (17,5 lb)	6,7 kg (14,9 lb)	9,3 kg (20,6 lb)	8,2 kg (18 lb)	11,8 kg (26,1 lb)	11,8 kg (26,1 lb)

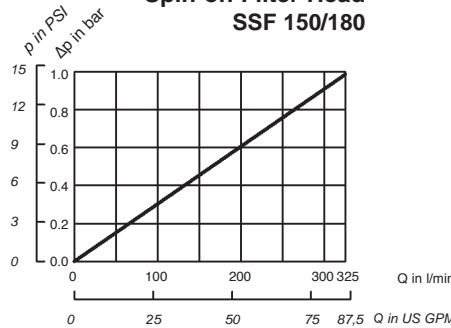
Flow Characteristics

The following characteristics are valid for mineral oils with a density of 0,85 kg/dm³ and the kinematic viscosity of 30 mm²/s. The characteristics have been determined in accordance to ISO 3968.

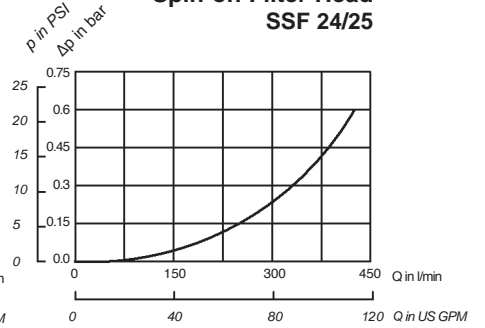
**Spin-on Filter Head
SSF 20/100/120/130/160**



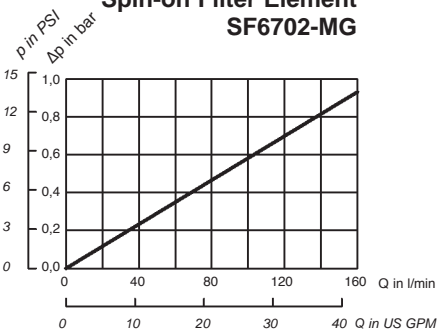
**Spin-on Filter Head
SSF 150/180**



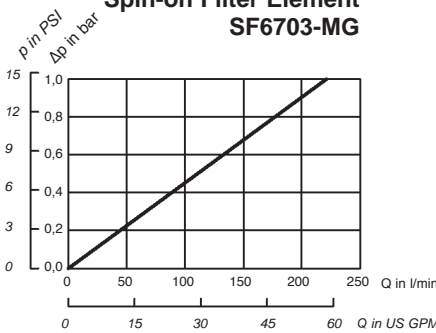
**Spin-on Filter Head
SSF 24/25**



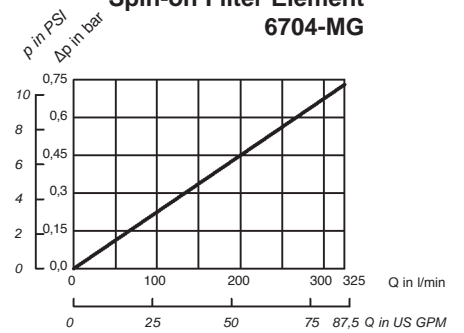
**Spin-on Filter Element
SF6702-MG**



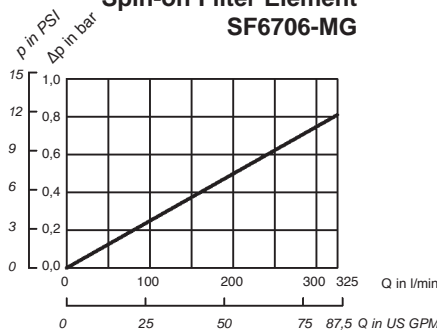
**Spin-on Filter Element
SF6703-MG**



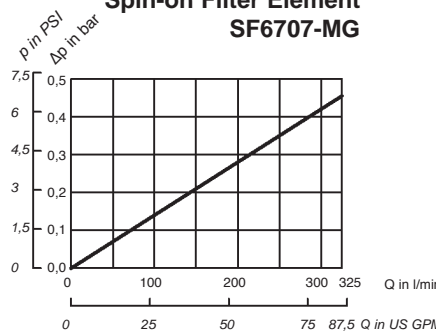
**Spin-on Filter Element
6704-MG**



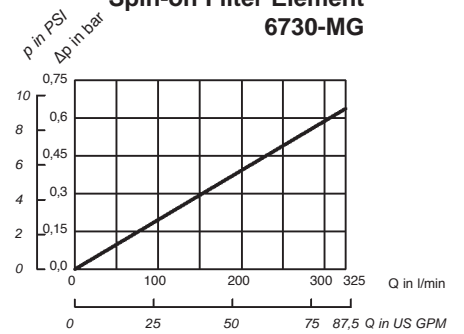
**Spin-on Filter Element
SF6706-MG**



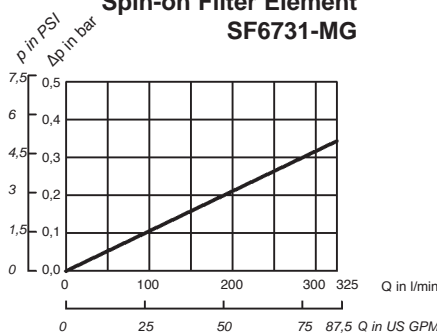
**Spin-on Filter Element
SF6707-MG**



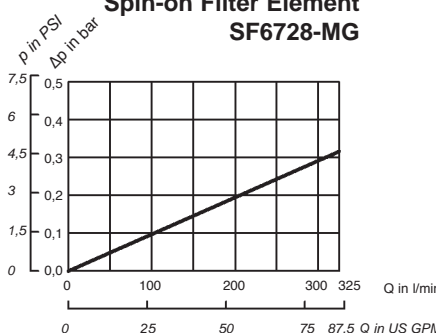
**Spin-on Filter Element
6730-MG**



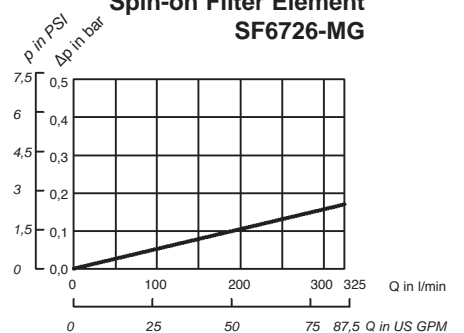
**Spin-on Filter Element
SF6731-MG**



**Spin-on Filter Element
SF6728-MG**



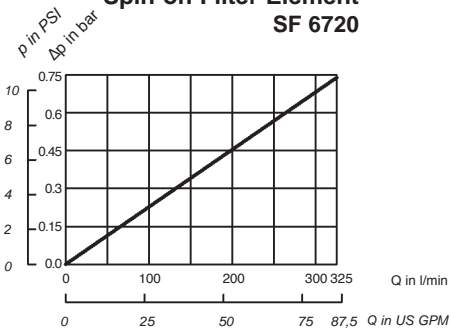
**Spin-on Filter Element
SF6726-MG**



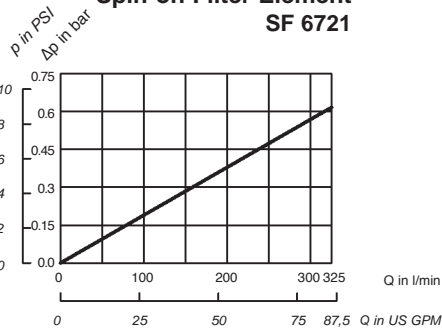
Flow Characteristics

The following characteristics are valid for mineral oils with a density of 0,85 kg/dm³ and the kinematic viscosity of 30 mm²/s. The characteristics have been determined in accordance to ISO 3968.

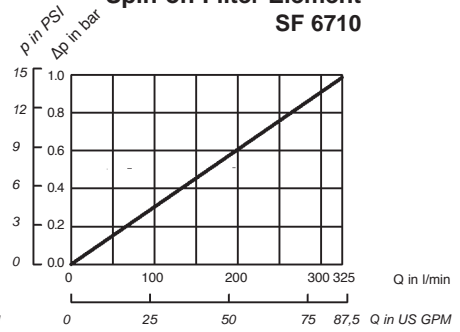
Spin-on Filter Element SF 6720



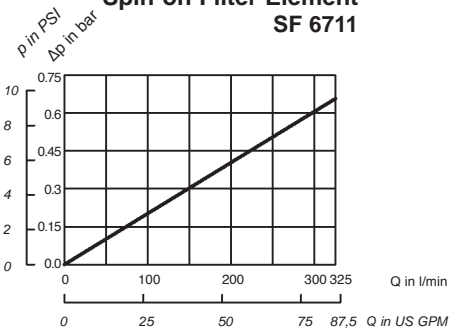
Spin-on Filter Element SF 6721



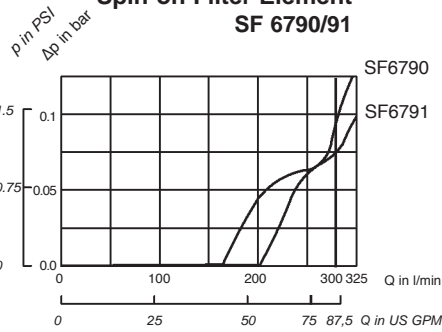
Spin-on Filter Element SF 6710



Spin-on Filter Element SF 6711



Spin-on Filter Element SF 6790/91








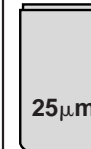



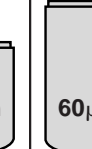


Stauff SF35 and SFC36 series spin-on elements are used with the Stauff SSF12 series spin on filters with G 3/4 threaded posts.

Stauff SFCT 35 and SFCT 36 series spin-on elements have an internal 1 bar (15 PSI) by-pass and anti-drain back diaphragm for use with Stauff SSFT 12 tank top spin-on filters.

Technical Specification

Seals	NBR (Buna-N®) seals
Working pressure	12 bar (174 PSI) working pressure, maximum pressure differential of 5,5 bar (80 PSI) for any application with no by-pass valve
Operating temperature	-32°C to +100°C (-25°F to 212°F)
Media	Mineral oils, other fluids on request

Dimensions and Ordering Code

	Paper				Microglass		Wire Mesh		Brass Mesh	
	SFC 3510E SFCT 3510E	SFC 3610E SFCT 3610E	SFC 3525E SFCT 3525E	SFC 3625E SFCT 3625E	SFC 3510AE SFCT 3510AE	SFC 3610AE SFCT 3610AE	SFC 3560E SFCT 3560E	SFC 3660E SFCT 3660E	SFC 35125E SFCT 3512E	SFC 36125E SFCT 3612E
										
Diameter	98 (3,86)	98 (3,86)	98 (3,86)	98 (3,86)	98 (3,86)	98 (3,86)	98 (3,86)	98 (3,86)	98 (3,86)	98 (3,86)
Length	145 (5,7)	190 (7,5)	145 (5,7)	190 (7,5)	145 (5,7)	190 (7,5)	145 (5,7)	190 (7,5)	145 (5,7)	190 (7,5)
Element Thread	G ³ / ₄	G ³ / ₄	G ³ / ₄	G ³ / ₄	G ³ / ₄	G ³ / ₄	G ³ / ₄	G ³ / ₄	G ³ / ₄	G ³ / ₄
Beta Ratio	β10 ≥ 2	β10 ≥ 2	β25 ≥ 2	β25 ≥ 2	β10 ≥ 75	β10 ≥ 75	n/a	n/a	n/a	n/a
By-pass Setting (SFCT Series only)	1 bar (15 PSI)	1 bar (15 PSI)	1 bar (15 PSI)	1 bar (15 PSI)	1 bar (15 PSI)	1 bar (15 PSI)	1 bar (15 PSI)	1 bar (15 PSI)	1 bar (15 PSI)	1 bar (15 PSI)
Maximum Working Pressure	12 bar (174 PSI)	12 bar (174 PSI)	12 bar (174 PSI)	12 bar (174 PSI)	12 bar (174 PSI)	12 bar (174 PSI)	12 bar (174 PSI)	12 bar (174 PSI)	12 bar (174 PSI)	12 bar (174 PSI)
Carton Quantity	1	1	1	1	1	1	1	1	1	1
Carton Weight	0,9 kg (2 lb)	1,3 kg (2,6 lb)	0,9 kg (2 lb)	1,3 kg (2,6 lb)	0,9 kg (2 lb)	1,3 kg (2,6 lb)	0,9 kg (2 lb)	1,3 kg (2,6 lb)	0,9 kg (2 lb)	1,3 kg (2,6 lb)

Stauff SFC 57 and SFC 58 series spin-on elements are used with the Stauff SSF20, 24, 25, 100, 120, 130, 160, 150 and 180 series spin on filters with G 1 1/4 threaded posts.

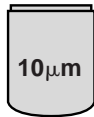
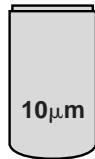



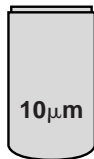



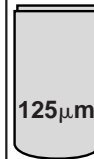
Stauff SFCT 57 and SFCT 58 series spin-on elements have an internal 1 bar (15 PSI) by-pass and anti-drain back diaphragm for use with Stauff SSFT 20 tank top spin-on filters.



Technical Specification

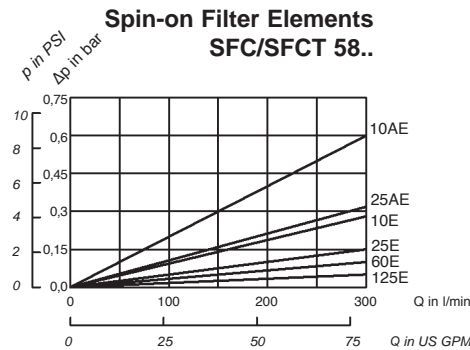
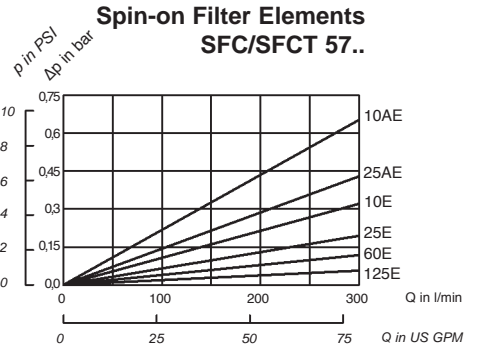
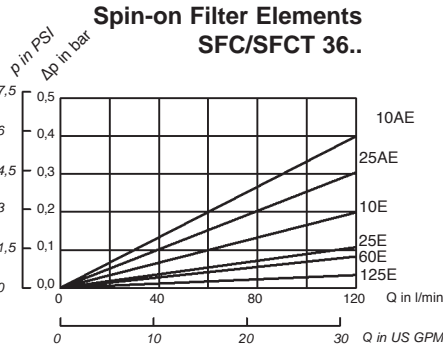
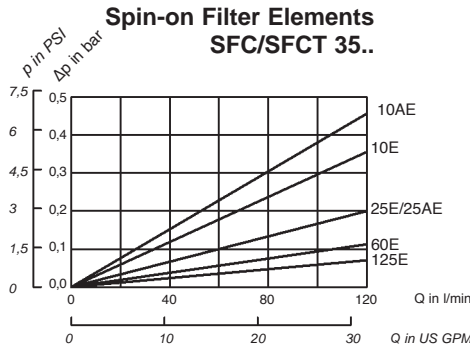
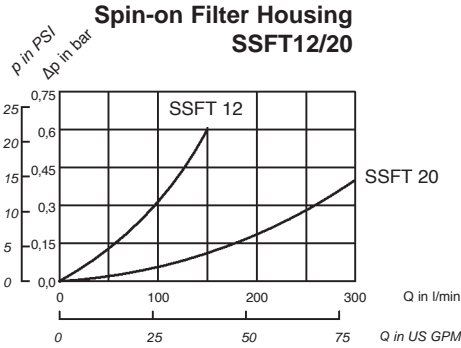
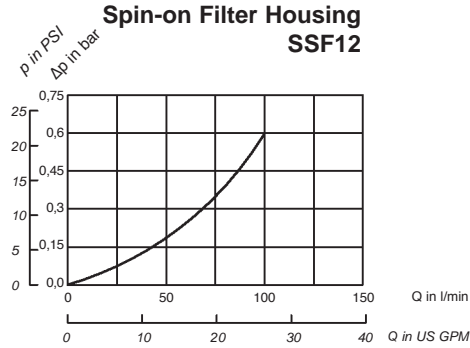
Seals	NBR (Buna-N®) seals
Working pressure	12 bar (174 PSI) working pressure, maximum pressure differential of 5,5 bar (80 PSI) for any application with no by-pass valve
Operating temperature	-32°C to +100°C (-25°F to 212°F)
Media	Mineral oils, other fluids on request

Dimensions and Ordering Code

	Paper				Microglass		Wire Mesh		Brass Mesh	
	SFC 5710E SFCT 5710E	SFC 5810E SFCT 5810E	SFC 5725E SFCT 5725E	SFC 5825E SFCT 5825E	SFC 5710AE SFCT 5710AE	SFC 5810AE SFCT 5810AE	SFC 5760E SFCT 5760E	SFC 5860E SFCT 5860E	SFC 57125E SFCT 57125E	SFC 58125E SFCT 58125E
										
Diameter	132 (5,2)	132 (5,2)	132 (5,2)	132 (5,2)	132 (5,2)	132 (5,2)	132 (5,2)	132 (5,2)	132 (5,2)	132 (5,2)
Length	180 (7,1)	226 (8,9)	180 (7,1)	226 (8,9)	180 (7,1)	226 (8,9)	180 (7,1)	226 (8,9)	180 (7,1)	226 (8,9)
Element Thread	G 1 1/4	G 1 1/4	G 1 1/4	G 1 1/4	G 1 1/4	G 1 1/4	G 1 1/4	G 1 1/4	G 1 1/4	G 1 1/4
Beta Ratio	β10 ≥ 2	β10 ≥ 2	β25 ≥ 2	β25 ≥ 2	β10 ≥ 75	β10 ≥ 75	n/a	n/a	n/a	n/a
By-pass Setting (SFCT Series only)	1 bar (15 PSI)	1 bar (15 PSI)	1 bar (15 PSI)	1 bar (15 PSI)	1 bar (15 PSI)	1 bar (15 PSI)	1 bar (15 PSI)	1 bar (15 PSI)	1 bar (15 PSI)	1 bar (15 PSI)
Maximum Working Pressure	12 bar (174 PSI)	12 bar (174 PSI)	12 bar (174 PSI)	12 bar (174 PSI)	12 bar (174 PSI)	12 bar (174 PSI)	12 bar (174 PSI)	12 bar (174 PSI)	12 bar (174 PSI)	12 bar (174 PSI)
Carton Quantity	1	1	1	1	1	1	1	1	1	1
Carton Weight	1,4 kg (3 lb)	1,85 kg (4 lb)	1,4 kg (3 lb)	1,85 kg (4 lb)	1,4 kg (3 lb)	1,85 kg (4 lb)	0,9 kg (2 lb)	1,3 kg (2,6 lb)	0,9 kg (2 lb)	1,3 kg (2,6 lb)

Flow Characteristics

The following characteristics are valid for mineral oils with a density of 0,85 kg/dm³ and the kinematic viscosity of 30 mm²/s. The characteristics have been determined in accordance to ISO 3968.



Visual Indicators



Type	Thread Type G
GV-5B / GV-10B / G-12B / CI-20B	G 1/8
GV-5 / GV-10 / G-12 / CI-20	1/8 NPTF

Vacuum Gauges, Suction Line Applications

GV-5

For use with 3PSI filter by-pass valve
0,2 bar (3 PSI)

GV-10

For use with 5PSI filter by-pass valve
0,35 bar (5 PSI)

Pressure Gauges, Return Line Applications

CI-12

For use with 15PSI filter by-pass valve
1,0 bar (15 PSI)

CI-20

For use with 25PSI filter by-pass valve
1,7 bar (25 PSI)

Electrical Indicator

Type	Thread Type
EPS-1B / EVS 1B	G 1/8
EPS-1 / EVS 1	1/8 NPT

EPS-1

T

EVS-1

G

Can Be Field Installed

All dimensions in mm (inch)

	EPS-1 (Pressure)	EVS-1 (Vacuum)
Electrical	7Amp 125/250 VAC	7Amp 125/250 VAC
Protection	DIN 43650 IP65	DIN 43650 PIP65
Temperature Range	-40°C to +80°C (-40°F to 180°F) Ambient & Medium	-40°C to +80°C (-40°F to +180°F) Ambient & Medium
Diaphragm Material	Epichlorohydrin Standard	Epichlorohydrin Standard
Housing Material	Zinc Plated Steel Standard	Aluminum AL2024
MAXIMUM OVER Pressure	25 Bar (350 PSI) 6:1 Safety Factor	25 Bar (350 PSI)
ADJUSTMENT RANGES	0.35/2.5 Bar (5/35 PSI)	150/1000 mBar (5/30 in Hg)
Dead Band	20%	25%
Maximum Pressure	25 Bar (350 PSI)	25 Bar (350 PSI)
Wetted Area Material	Elastomer & Zinc Plated Steel Brass	Elastomer & Anodized Aluminum 316SS Optional
Weight	Steel Housing 0.11 Kg (0.23 lb)	0.25 Kg (0.50 lbs.)
Repeatability	±2% at 20°C (70°F) Ambient Temperature	±2% at 20°C (70°F) Ambient Temperature
Hirschmann Connector With Strain Relief		

Spin-On Filters Quick Reference Guide

Spin-On Filter Heads										Spin-On Filter Element							
Type	Size	Port	Post	Max. Flow Rate* l/min	US GPM	Catalog Page	Seal		SF 63XX	SF 65XX	SF 67XX	SFC 36XX	SFC 57XX	SFCT 35XX	SFC 58XX	SFCT 57XX	SFCT 58XX
							Thin	Wide									
SLF	02B	G1/4	3/4 -16 UNF	19	5	3			12								
SLF	02	1/4 NPT	3/4 -16 UNF	19	5	3			12								
SLF	03B	G 3/8	3/4 -16 UNF	19	7	3			12								
SLF	03	3/8 NPT	3/4 -16 UNF	26	7	3			12								
SLF	04	9/16-18UNF , #6 SAE	3/4 -16 UNF	26	7	3			12								
SAF	05B	G1/2	1 - 12 UNF		15	4											
SAF	05	1/2 NPT	1 - 12 UNF	60	15	4				13-14							
SAF	06	3/4 -16 UN , #8 SAE	1 - 12 UNF	60	15	4				13-14							
SAF	07B	G 3/4	1 - 12 UNF	90	25	4				13-14							
SAF	07	3/4 NPT	1 - 12 UNF	90	25	4				13-14							
SAF	11	1 1/16 -12 UN , #12 SAE	1 - 12 UNF	90	25	4				13-14							
SAF	10B	G1	1 - 12 UNF	128	34	5				13-14							
SAF	10	1 NPT	1 - 12 UNF	128	34	5				13-14							
SAF	13	1 5/16 -12 UN , #16 SAE	1 - 12 UNF	128	34	5				13-14							
SSF	12	G 3/4	G 3/4	90	25	6						19-21					
SSF	12N	3/4 NPT	G 3/4	90	25	6						19-21					
SSF	100B	G1	G 1 1/4 + 1 1/2 - 16 UNF	170	45	7		X					20-21				
SSF	100	1 NPT	G 1 1/4 + 1 1/2 - 16 UNF	170	45	7		X					20-21				
SSF	20L	G 1 1/4	G 1 1/4 + 1 1/2 - 16 UNF	225	60	7			X			15-18					
SSF	120	1 1/4 NPT	G 1 1/4 + 1 1/2 - 16 UNF	225	60	7		X				15-18					
SSF	120L	1 1/4 NPT	G 1 1/4 + 1 1/2 - 16 UNF	225	60	7			X			15-18					
SSF	130	1 5/16 -12 SAE , #16 SAE	G 1 1/4 + 1 1/2 - 16 UNF	225	60	7		X				15-18					
SSF	160	1 5/8 -12 SAE , #20 SAE	G 1 1/4 + 1 1/2 - 16 UNF	225	60	7		X				15-18					
SSF	150B	G1-1/2	1 1/2 - 16 UNF	300	80	8			X			15-18					
SSF	150	1 1/2 - NPT	1 1/2 - 16 UNF	300	80	8			X			15-18					
SSF	180	1 7/8 - 12 SAE , #24 SAE	1 1/2 - 16 UNF	300	80	8			X			15-18					
SSF	24B	G1-1/2	G 1 1/4 + 1 1/2 - 16 UNF	454	120	9			X			15-18			20-21		
SSF	24N	1 1/2 NPT	G 1 1/4 + 1 1/2 - 16 UNF	454	120	9			X			15-18			20-21		
SSF	24S	1 7/8 - 12 UN , SAE # 24	G 1 1/4 + 1 1/2 - 16 UNF	454	120	9			X			15-18			20-21		
SSF	25B	G1-1/4 and 1-1/2 SAE Flange	G 1 1/4 + 1 1/2 - 16 UNF	454	120	9			X			15-18			20-21		
SSF	25	1 1/2 - NPT and 2 SAE Flange	G 1 1/4 + 1 1/2 - 16 UNF	454	120	9			X			15-18			20-21		
SSFT	12B	G3/4	G3/4	75	20	10									19-21		
SSFT	12	3/4 NPT	G 3/4	75	20	10									19-21		
SSFT	20	G 1 1/2	G 1 1/4 + 1 1/2 - 16 UNF	200	53	11			X							20-21	
SSFT	20	1 1/2 NPT	G 1 1/4 + 1 1/2 - 16 UNF	200	53	11			X							20-21	

* Note : Reflects nominal flow rate for return line application. Actual flow rate will depend on element selected. The numbers above reference the page in the catalog

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Australia
Stauff Corporation (Pty.) Ltd.
P.O.Box 227 , 24-26 Doyle Avenue,
Unanderra Wollongong , N.S.W
2526 AUSTRALIA
Tel: +61 2 42 71 18 77
Fax: +61 2 42 71 84 32



Brazil
Stauff Brasil Ltda.
Av. Guapé 10767
Galpão 2 – Bloco A
Barueri – São Paulo – CEP 06422-120, BRAZIL
Tel: +55 (0)11-4789-9020
Fax: +55 (0)11-4789-9021



Canada
Stauff Canada Ltd.
866 Milner Avenue
Scarborough , Ontario M1B 5N7 , CANADA
Tel: +1 416 282 46 08
Fax: +1 416 282 30 39



China
Stauff International Trading (Shanghai) Co., Ltd.
Shangdian Mansion, Pudong
331 , Binzhou Road
200126 Shanghai, CHINA
Tel: +86 21 58 45 65 60
Fax: +86 21 58 45 66 80



France
Stauff S.A.
Z.I. de Vineuil-Blais Sud
230, Avenue du Grain d'Or
41354 Vineuil-cedex, FRANCE
Tel: +33 2 54 50 55 50
Fax: +33 2 54 42 29 19



Germany
Walter Stauffenberg GmbH & Co. KG
P.O. Box 1745,
D-58777 Werdohl, GERMANY
Tel: +49 (0) 23 92/916-0
Fax: +49 (0) 23 92 25 05



India
Stauff India Pvt. Ltd.
Gat. No. 2340
Pune-Nagar Road, Wagholi
IND-Pune - 412027
Tel: +91 20 705 19 90
Fax: +91 20 705 19 89



Italy
Stauff Italia S.R.L.
Via Pola 21/23
I-20034 Birone di Giussano
Tel: +39 0362 31 21 13
Fax: +39 0362 33 55 36



New Zealand
Stauff Corporation (NZ) Ltd.
Unit J. 150 Harris Road, P.O. Box 58517
Greenmount Auckland-NEW ZEALAND
Tel: +64 9 271 4812
Fax: +64 9 271 4832

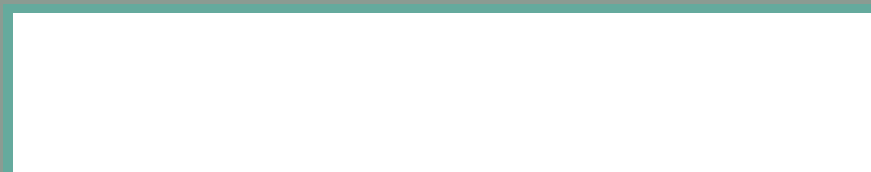


United Kingdom
Stauff UK Ltd.
332, Coleford Road Darnall
Sheffield, S 9 5 P H, ENGLAND
Tel: +44 1142 518 518
Fax: +44 1142 518 519



USA
Stauff Corporation
7 Wm. Demarest Place
Waldwick, NJ – 07463, USA
Tel: +1 201 444 78 00
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P.O.Box 227 , 24-26 Doyle Avenue,
Unanderra Wollongong , N.S.W
2526 AUSTRALIA
Tel: +61 2 42 71 18 77
Fax: +61 2 42 71 84 32

Brazil

Stauff Brasil Ltda.
Av. Gupê 10767
Galpão 2 – Bloco A
Barueri – São Paulo – CEP 06422-120, BRAZIL
Tel: +55 (0)11-4789-9020
Fax: +55 (0)11-4789-9021

Canada

Stauff Canada Ltd.
866 Milner Avenue
Scarborough , Ontário M1B 5N7 , CANADA
Tel: +1 416 282 46 08
Fax: +1 416 282 30 39

China

Stauff International Trading (Shanghai) Co., Ltd.
Shangdian Mansion, Pudong
331 , Binzhou Road
200126 Shanghai, CHINA
Tel: +86 21 58 45 65 60
Fax: +86 21 58 45 66 80

France

Stauff S.A.
Z.I. de Vineuil-Blois Sud
230, Avenue du Grain d'Or
41354 Vineuil-cedex, FRANCE
Tel: +33 2 54 50 55 50
Fax: +33 2 54 42 29 19

India

Stauff India Pvt. Ltd.
Gat. No. 2340,
Pune-Nagar Road, Wagholi, INDIA
IND-Pune - 412027
Tel: +91 20 705 19 90
Fax: +91 20 705 19 89

Italy

Stauff Italia S.R.L.
Via Pola 21/23, I-20034
Birone di Giussano, ITALY
Tel: +39 0362 31 21 13
Fax: +39 0362 33 55 36

New Zealand

Stauff Corporation (NZ) Ltd.
Unit J. 150 Harris Road, P.O. Box 58517
Greenmount Auckland-NEW ZEALAND
Tel: +64 9 271 4812
Fax: +64 9 271 4832

United Kingdom

Stauff UK Ltd.
332, Coleford Road Darnall
Sheffield, S 9 5 P H, ENGLAND
Tel: +44 1142 518 518
Fax: +44 1142 518 519

USA

Stauff Corporation
7 Wm. Demarest Place
Waldwick, NJ – 07463, USA
Tel: +1 201 444 78 00
Fax: +1 201 444 78 52

**Distributors and warehouses
in all industrial countries.**

Walter Stauffenberg GmbH & Co. KG

P. O. Box 1745 · D-58777 Werdohl
Im Ehrenfeld 4 · D-58791 Werdohl
Tel.: +49 (0) 23 92 9 16-0
Fax: +49 (0) 23 92 25 05
E-mail: sales@stauff.com
Internet: <http://www.stauff.com>

Stauff Filtration Technology

Stauff Filtration Technology offers a complete range of filtration products and services that will provide the system designer or user with the highest level of contamination control demanded by today's most sophisticated applications. Products include pressure filters, return line filters, elements, spin on filters suction strainers, and filler breathers for various hydraulic, lubrication and fuel oils.

Stauff has the technical expertise to provide superior filter element designs for the Stauff original filter housings and also for the interchange element market. Stauff manufactures more than 10,000 different elements. Many of these are designed to fit into filter housings produced by other companies while maintaining or surpassing the original performance.

The "Stauff Contamination Control Program" includes the diagnostic services including fluid sampling and laser particle counting products needed to monitor the system contamination level.

Stauff, through its global network of wholly owned companies and technically qualified distributors, is ideally placed to assist its customers in the total contamination process providing a well balanced filtration solution.

Stauff Portable Filter Cart (SPFC)

Page

Product description & Technical Data	3
Dimensions & Ordering Code	4

Stauff Compact Filter Cart (SCFC)

Page

Product description & Technical Data	5
Dimensions & Ordering Code	6

Technical Data

The Stauff Portable Filter Cart (SPFC) is a very complete and practical unit capable of off-line filtration, filling or emptying reservoirs (if needed via 125µm suction filter) or any application requiring the transfer or filtration of hydraulic oils. Multi stage filtration can be applied to extend element lifetime. The SPFC is available with a variety of Spin-on elements for quick and easy element replacement as well with various pump/motor options. All components are mounted together on a sturdy frame guaranteeing a long lifetime.



Note: For special applications (fluids, temperature or other aspects) please contact your local Stauff contact.

Technical Specification

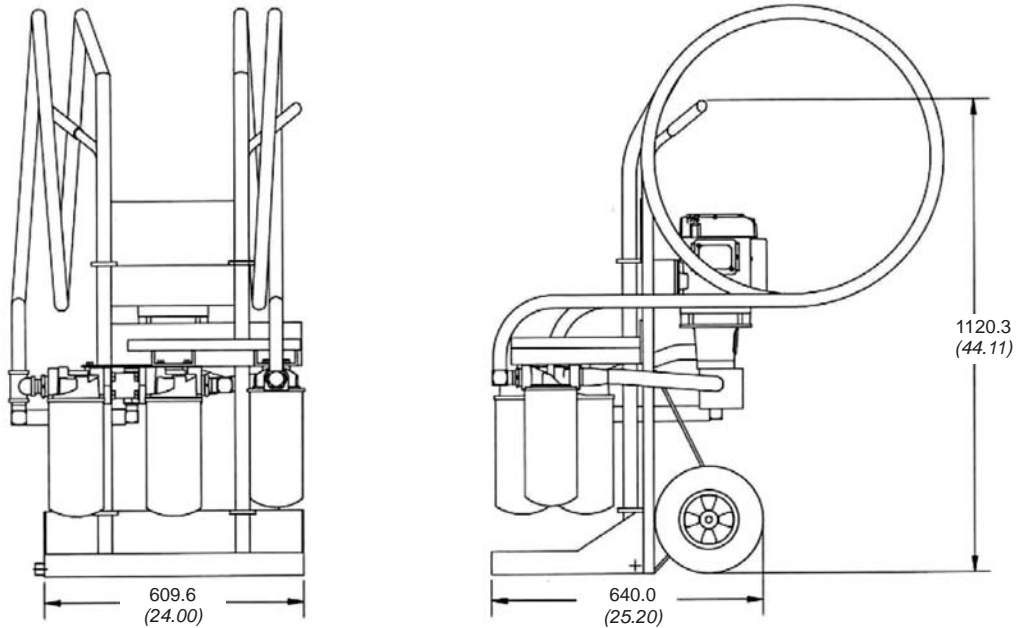
- 38 l/min (10 US GPM) Gear Pump
- Electric Motor single phase or three phase 3/4 HP
- On/Off Button with 3m (10ft) Power cord
- Heavy Duty Welded Frame with Drip Pan and Tool Tray
- Suction Strainer - 100 Mesh Spin on
- 3m (10ft) Spiral Reinforced PVC Hoses with Wands
- 3-Way Ball Valve to By-pass Filters

- Weight: 86 Kg (190 lbs.)

Options

- Single or Dual Stage Filtration
- 3, 6, 12 or 25µm βx= 200 Elements
- Water Absorption Elements

Dimensions



Ordering Code

Dimensions in mm (inch)

SPFC 10 2 B V B XX

SPFC STAUFF
Portable Filter Cart

Pump Type
10 38 l/min (10 US GPM) Gear Pump

Stages
1 1 Stage
2 2 Stages

Stage 1 Filter Element	
0000	Without Filter Element
6704	Synthetic 3 µm β200
6707	Synthetic 6 µm β200
6731	Synthetic 12 µm β200
6726	Synthetic 25 µm β200
6721	Paper 10 µm
6711	Paper 25 µm
6721-W	Water absorbing 10 µm
6791	Stainless steel wire mesh 125 µm

Special Configurations

Electric Motor Voltage	
A	220 VAC@60Hz - Three Phases
B	110 VAC@50Hz - Single Phase
C	110 VAC@60Hz - Single Phase
D	230 VAC@50Hz - Single Phase
E	230 VAC@60Hz - Single Phase
F	400 VAC@50Hz - Three Phases
G	400 VAC@60Hz - Three Phases
H	440 VAC@50Hz - Three Phases
I	440 VAC@60Hz - Three Phases
X	Special Voltages on request

Contamination Indicator	
O	without indicator
V	visual indicator

Seal material	
B	NBR (Buna®)
V	FPM (Viton®)

Stage 2 Filter Element	
0000	Without Filter Element
6704	Synthetic 3 µm β200
6707	Synthetic 6 µm β200
6731	Synthetic 12 µm β200
6726	Synthetic 25 µm β200
6721	Paper 10 µm
6711	Paper 25 µm
6721-W	Water absorbing 10 µm
6791	Stainless steel wire mesh 125 µm

Technical Data

The Stauff Compact Filter Cart (SCFC) is a very compact, light and handy filter cart, offering excellent service for maintenance departments. The carts assembled with a single or double Spin-on head allowing the use of various elements from 3µm absolute to 125µm wire mesh. The SCFC can be used for off line filtration or as a transfer unit. The SCFC comes standard with upstream and downstream sample points that can either be used for on-line particle monitoring or fluid sampling.



Note: For special applications (fluids, temperature or other aspects) please contact your local Stauff contact.

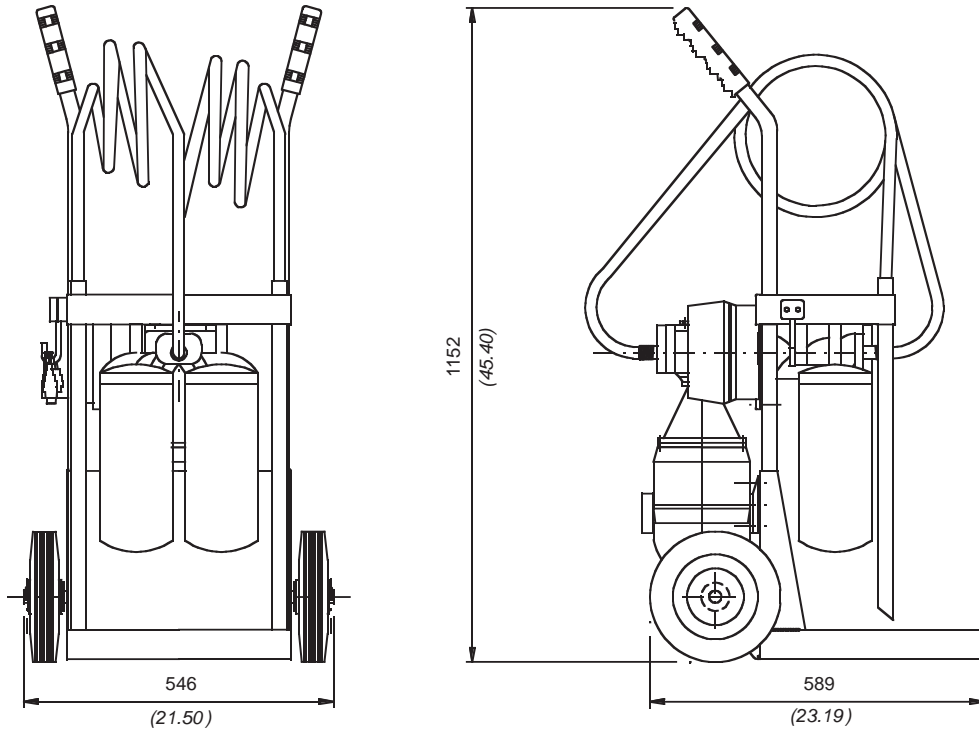
Technical Specification

- Flow 19 l/min (5 GPM) up to 38 l/min (10 US GPM)
- Electric Motor single phase or three phase 3/4 HP
- Thermal Overload Relays
- Welded frame with tool tray epoxy coated
- Compact Suction Strainer
- Special flexible hoses reinforced with internal spiral, length 3m (10 ft)
- Filter head with by-pass valve integrated
- Visual clogging indicator
- Weight: 53 Kg (117 lbs.)

Options

- Gear pump or Vane pump
- Electric Motor Standard: IEC or CSA/NEMA
- Filter Elements: 10 or 25µm (in paper), 3,6, 12 or 25µm β200 (Inorganic Glass Fiber) or 125µm (Stainless wire mesh)
- Water Absorbing filter elements

Dimensions



Dimensions in mm (inch)

Ordering Code

SCFC 10 G D 6731 B V C X X

SCFC STAUFF
Compact Filter Cart

Special Configurations

Flow

10	38 l/min (10 US GPM)
05	19 l/min (05 US GPM)

Electric Motor Voltage

A	220 VAC@60Hz - Three Phases
B	110 VAC@50Hz - Single Phase
C	110 VAC@60Hz - Single Phase
D	230 VAC@50Hz - Single Phase
E	230 VAC@60Hz - Single Phase
F	400 VAC@50Hz - Three Phases
G	400 VAC@60Hz - Three Phases
H	440 VAC@50Hz - Three Phases
I	440 VAC@60Hz - Three Phases
X	Special Voltages on request

Pump Type

G	Gear Pump
V	Vane Pump

Filter Head

D	Double Head
S	Single Head

Contamination Indicator

O	without indicator
V	visual indicator

Filter Element

0000	Without Filter Element
6704	Synthetic 3 µm β200
6707	Synthetic 6 µm β200
6731	Synthetic 12 µm β200
6726	Synthetic 25 µm β200
6721	Paper 10 µm
6711	Paper 25 µm
6721-W	Water absorbing 10 µm
6791	Stainless steel wire mesh 125 µm

Seal material

B	NBR (Buna®)
V	FPM (Viton®)
E	EPDM

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Australia
Stauff Corporation (Pty.) Ltd.
P.O.Box 227, 24-26 Doyle Avenue,
Unanderra Wollongong, N.S.W
2526 AUSTRALIA
Tel: +61 2 42 71 18 77
Fax: +61 2 42 71 84 32



Brazil
Stauff Brasil Ltda.
Av. Gupé 10767
Galpão 2 – Bloco A
Barueri – São Paulo – CEP 06422-120, BRAZIL
Tel: +55 (0)11-4789-9020
Fax: +55 (0)11-4789-9021



Canada
Stauff Canada Ltd.
866 Milner Avenue
Scarborough, Ontario M1B 5N7, CANADA
Tel: +1 416 282 46 08
Fax: +1 416 282 30 39



China
Stauff International Trading (Shanghai) Co., Ltd.
Shangdian Mansion, Pudong
331, Binzhou Road
200126 Shanghai, CHINA
Tel: +86 21 58 45 65 60
Fax: +86 21 58 45 66 80



France
Stauff S.A.
Z.I. de Vineuil-Blois Sud
230, Avenue du Grain d'Or
41354 Vineuil-cesdex, FRANCE
Tel: +33 2 54 50 55 50
Fax: +33 2 54 42 29 19



Germany
Walter Stauffenberg GmbH & Co. KG
P.O. Box 1745,
D-58777 Werdohl, GERMANY
Tel: +49 (0) 23 92/916-0
Fax: +49 (0) 23 92 25 05



India
Stauff India Pvt. Ltd.
Gat. No. 2340
Pune-Nagar Road, Wagholi
IND-Pune - 412027
Tel: +91 20 705 19 90
Fax: +91 20 705 19 89



Italy
Stauff Italia S.R.L.
Via Pola 21/23
I-20034 Birone di Giussano
Tel: +39 0362 31 21 13
Fax: +39 0362 33 55 36



New Zealand
Stauff Corporation (NZ) Ltd.
Unit J, 150 Harris Road, P.O. Box 58517
Greenmount Auckland-NEW ZEALAND
Tel: +64 9 271 4812
Fax: +64 9 271 4832



United Kingdom
Stauff UK Ltd.
332, Coleford Road Darnall
Sheffield, S 9 5 P H, ENGLAND
Tel: +44 1142 518 518
Fax: +44 1142 518 519



USA
Stauff Corporation
7 Wm. Demarest Place
Waldwick, NJ – 07463, USA
Tel: +1 201 444 78 00
Fax: +1 201 444 78 52

Globally available through distributors in all industrial countries



2003

STAUFF



FILTRATION TECHNOLOGY

2003

STAUFF



STAUFF Check Oil Analysis & Oil Sampling Kit



Quality and Service
Worldwide

Australia

Stauff Corporation (Pty.) Ltd.
 P.O.Box 227 , 24-26 Doyle Avenue,
 Unanderra Wollongong , N.S.W
 2526 AUSTRALIA
 Tel: +61 2 42 71 18 77
 Fax: +61 2 42 71 84 32

Brazil

Stauff Brasil Ltda.
 Av. Gupê 10767
 Galpão 2 – Bloco A
 Barueri – São Paulo – CEP 06422-120, BRAZIL
 Tel: +55 (0)11-4789-9020
 Fax: +55 (0)11-4789-9021

Canada

Stauff Canada Ltd.
 866 Milner Avenue
 Scarborough , Ontario M1B 5N7 , CANADA
 Tel: +1 416 282 46 08
 Fax: +1 416 282 30 39

China

Stauff International Trading (Shanghai) Co., Ltd.
 Shangdian Mansion, Pudong
 331 , Binzhou Road
 200126 Shanghai, CHINA
 Tel: +86 21 58 45 65 60
 Fax: +86 21 58 45 66 80

France

Stauff S.A.
 Z.I. de Vineuil-Blois Sud
 230, Avenue du Grain d'Or
 41354 Vineuil-cedex, FRANCE
 Tel: +33 2 54 50 55 50
 Fax: +33 2 54 42 29 19

India

Stauff India Pvt. Ltd.
 Gat. No. 2340,
 Pune-Nagar Road, Wagholi, INDIA
 IND-Pune - 412027
 Tel: +91 20 705 19 90
 Fax: +91 20 705 19 89

Italy

Stauff Italia S.R.L.
 Via Pola 21/23, I-20034
 Birone di Giussano, ITALY
 Tel: +39 0362 31 21 13
 Fax: +39 0362 33 55 36

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 7 Wm. Demarest Place
 Waldwick, NJ – 07463, USA
 Tel: +1 201 444 78 00
 Fax: +1 201 444 78 52

Walter Stauffenberg GmbH & Co. KG

P. O. Box 1745 · D-58777 Werdohl
 Im Ehrenfeld 4 · D-58791 Werdohl
 Tel.: +49 (0) 23 92 9 16-0
 Fax: +49 (0) 23 92 25 05
 E-mail: sales@stauff.com
 Internet: http://www.stauff.com

Stauff Filtration Technology

Stauff Filtration Technology offers a complete range of filtration products and services that will provide the system designer or user with the highest level of contamination control demanded by today's most sophisticated applications. Products include pressure filters, return line filters, elements, spin on filters suction strainers, and filler breathers for various hydraulic, lubrication and fuel oils.

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The "Stauff Contamination Control Program" includes the diagnostic services including fluid sampling and laser particle counting products needed to monitor the system contamination level.

Stauff, through its global network of wholly owned companies and technically qualified distributors, is ideally placed to assist its customers in the total contamination process providing a well balanced filtration solution.

STAUFF Check Oil Analysis & Oil Sampling Kits

Stauff Chek Oil Analysis STFC-01

Technical Data & Ordering Information
 Reports

Oil Sampling Kit SFSK-01

Page

3

3

4

5

**Distributors and warehouses
 in all industrial countries.**

Fluid analysis is a crucial component of any oil management program. Early detection of potential problems can prevent costly repairs and downtime. Stauff Check Oil Analysis Kits provide a complete laboratory report for your sample.



Ordering Information

Part Number	Description
STFC-10	Carton of 10 bottles
STFC-01	Single test bottle

The Stauff Check Fluid Analysis Kit includes complete laboratory analysis of your oil sample as part of the initial purchase price of the kit. Each kit includes an ultra-clean bottle with pre-addressed mailer and sample information sheet.

Test carried out include:

- Spectrographic Analysis – 19 elements for wear metals, contaminants and additives
- Viscosity – the kinematic viscosity reported in centistokes (cSt).
- Visible Debris Analysis – microscopic examination of any visible debris in the sample
- Total Acid Number (TAN)
- Particle Count – to determine the cleanliness of the system
- Karl Fisher (KF) – to determine the exact concentration of water present in the oil



STAUFF Check Oil Analysis STFC

Oil Analysis Reports

In addition to a printed report, the Stauff Check Fluid Analysis service includes access to your test reports on the Internet.

Your reports are hosted on a secure server that you can access with your user ID and password. All that is required is a connection to the Internet and a compatible browser. You can view all your current and previous test results for all of the machines you are monitoring. Track the effectiveness of your oil management program and generate detailed management summary reports.

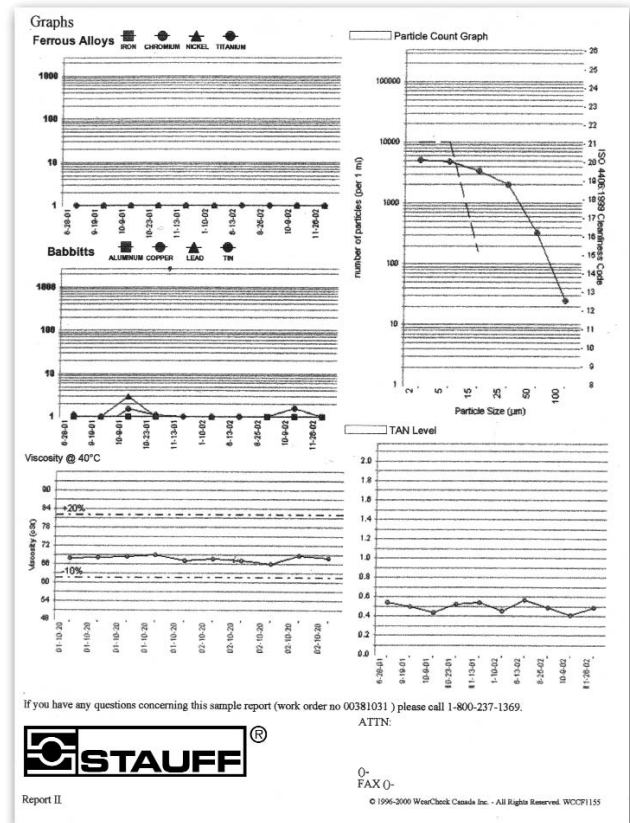
Review Oil Analysis Results

View oil analysis sample reports, test results, trending graphs and recommendations. Access data that was traditionally accessible only to the laboratory, including, IR spectra, TAN and TBN titration plots, as well as, GC chromatograms.

Enjoy the best possible turn-around of your oil analysis samples by viewing data on-line and in real-time with your oil analysis laboratory.

Improve time management by receiving e-mail alerts notifying you when recently completed samples indicate an equipment problem where corrective action is required.

INDUSTRIAL OIL ANALYSIS REPORT		CONTAMINATION OIL CONDITION WEAR		ABNORMAL ABNORMAL NORMAL		
CENTRAL 10 BAR - DIRTY - Hydraulic System						
Unit Maked	: 10 BAR SECTION	Date Rec'd	: Nov 27, 2002	Sample Date	: Nov 26, 2002	
Unit Model	: {n/a}	Serial No.	: {n/a}	Time on Unit	: 0 hrs	
Comp Maked	: {n/a}	Cust. Ref No.	: {n/a}	Time on Oil	: 0 hrs	
Comp Model	: {n/a}	Stub No.	: ST-001731	Time on Filter	: 0 hrs	
RECOMMENDATION Diagnostician: Doug Bogart						
We recommend you service the filters on this component. Resample at the next service interval to monitor.						
CONTAMINATION						
The system cleanliness is above the acceptable limit for your target ISO 4406 cleanliness code. There is a high amount of particulates (5 to >100 microns in size) present in the oil. Light concentration of visible dirt/debris present in the oil.						
	Sample Date	06/13/02	08/25/02	10/09/02	Current	Abn
Silicon	1.0	1.2	1.7	0.0	---	---
Potassium	5.2	0.0	6.0	6.1	---	---
Water (%)	0.008	0.008	0.007	0.036	---	---
>5µm	5305	8280	6785	4740	1300	---
>15µm	415	671	371	3341	160	---
>25µm	69	98	41	2015	20	---
>50µm	5	7	3	324	3	---
>100µm	0	0	0	25	0	---
ISO 4406	21/20/16	21/20/17	21/20/16	20/19/19	20/17/14	---
OIL CONDITION						
Oil Type: 2000 LTR of CASTROL HYPIN AWS HYDRAULIC 68						
The condition of the oil is acceptable for the time in service. Sample is hazy in appearance.						
	Sample Date	06/13/02	08/25/02	10/09/02	Current	Base
Boron	3.6	3.7	3.1	3.4	---	---
Barium	0.0	0.0	0.0	0.0	---	---
Calcium	41	50	45	37	---	---
Magnesium	0.7	0.9	0.0	0.0	---	---
Molybdenum	0.0	0.1	0.8	0.0	---	---
Sodium	1.7	1.4	0.0	0.4	---	---
Phosphorus	304	384	332	353	---	---
Sulfur	6261	8930	7538	8708	---	---
Zinc	398	468	415	437	---	---
Visc@40°C	66.65	65.81	68.44	67.61	68	---
Visc@100°C	---	---	---	---	7.6	---
Oxidation	---	---	---	---	---	---
TAN	0.565	0.487	0.413	0.488	---	---
TBN	---	---	---	---	---	---
WEAR						
All component wear rates are normal.						
	Sample Date	06/13/02	08/25/02	10/09/02	Current	Abn
Iron	0.5	0.7	0.5	0.3	---	---
Nickel	0.2	0.6	0.0	0.0	---	---
Chromium	0.0	0.0	0.0	0.0	---	---
Titanium	0.0	0.0	0.0	0.0	---	---
Copper	0.7	1.0	0.7	0.2	---	---
Aluminum	0.1	0.0	0.0	0.0	---	---
Tin	0.0	0.0	1.6	0.0	---	---
Lead	0.1	0.0	0.0	0.0	---	---
Silver	0.0	0.0	0.0	0.0	---	---
Report ID	© 1996-2000 WearCheck Canada Inc. - All Rights Reserved. WCCF1155					



Oil Sampling Kits

- Contains vacuum pump for drawing samples of oil from equipment
- 1 m (3.28 ft.) hose for insertion into tank
- Two Sample Bottles
- Stauff Test Points and Adaptor allows oil sample to be taken from any Stauff Test Points

Oil Sampling Kit SFSK-1



Contains

- 1 x Fluid Sample Pump FSP-38
- 1 x Hose adaptor SHA 20-5,5mm
- 1m (3.28 ft) Push on 1/4" hose
- 1 x SMK 20-1/4" NPT-VD
- 1 x SMK 20-7/16" UNF-VE
- 2 x Sample Bottles STFC - 01

THIS IS STAUFF

RESPONSE AND FLEXIBILITY • COMPETENT SERVICE • PROMPT DELIVERY •
ENSURED QUALITY • FRIENDLY SERVICE • PROVEN IN PRACTICE



Australia
Stauff Corporation (Pty.) Ltd.
P.O.Box 227 , 24-26 Doyle Avenue,
Unanderra Wollongong , N.S.W
2526 AUSTRALIA
Tel: +61 2 42 71 18 77
Fax: +61 2 42 71 84 32



Brazil
Stauff Brasil Ltda.
Av. Guapé 10767
Galpão 2 – Bloco A
Barueri – São Paulo – CEP 06422-120, BRAZIL
Tel: +55 (0)11-4789-9020
Fax: +55 (0)11-4789-9021



Canada
Stauff Canada Ltd.
866 Milner Avenue
Scarborough , Ontario M1B 5N7 , CANADA
Tel: +1 416 282 46 08
Fax: +1 416 282 30 39



China
Stauff International Trading (Shanghai) Co., Ltd.
Shangdian Mansion, Pudong
331 , Binzhou Road
200126 Shanghai, CHINA
Tel: +86 21 58 45 65 60
Fax: +86 21 58 45 66 80



France
Stauff S.A.
Z.I. de Vineuil-Blais Sud
230, Avenue du Grain d'Or
41354 Vineuil-cedex, FRANCE
Tel: +33 2 54 50 55 50
Fax: +33 2 54 42 29 19



Germany
Walter Stauffenberg GmbH & Co. KG
P.O. Box 1745,
D-58777 Werdohl, GERMANY
Tel: +49 (0) 23 92/916-0
Fax: +49 (0) 23 92 25 05



India
Stauff India Pvt. Ltd.
Gat. No. 2340
Pune-Nagar Road, Wagholi
IND-Pune - 412027
Tel: +91 20 705 19 90
Fax: +91 20 705 19 89



Italy
Stauff Italia S.R.L.
Via Pola 21/23
I-20034 Birone di Giussano
Tel: +39 0362 31 21 13
Fax: +39 0362 33 55 36



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Greenmount Auckland-NEW ZEALAND
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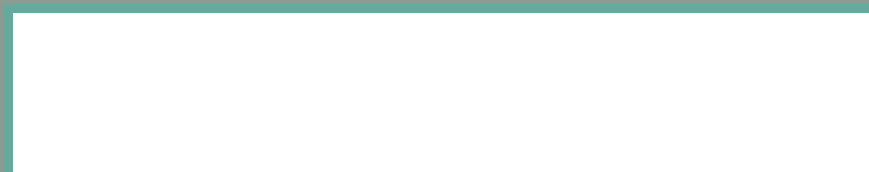


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 P.O.Box 227 , 24-26 Doyle Avenue,
 Unanderra Wollongong , N.S.W
 2526 AUSTRALIA
 Tel: +61 2 42 71 18 77
 Fax: +61 2 42 71 84 32

Brazil
 Stauff Brasil Ltda.
 Av. Gupê 10767
 Galpão 2 – Bloco A
 Barueri – São Paulo – CEP 06422-120, BRAZIL
 Tel: +55 (0)11-4789-9020
 Fax: +55 (0)11-4789-9021

Canada
 Stauff Canada Ltd.
 866 Milner Avenue
 Scarborough , Ontario M1B 5N7 , CANADA
 Tel: +1 416 282 46 08
 Fax: +1 416 282 30 39

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 Stauff International Trading (Shanghai) Co., Ltd.
 Shangdian Mansion, Pudong
 331 , Binzhou Road
 200126 Shanghai, CHINA
 Tel: +86 21 58 45 65 60
 Fax: +86 21 58 45 66 80

France
 Stauff S.A.
 Z.I. de Vineuil-Blois Sud
 230, Avenue du Grain d'Or
 41354 Vineuil-cedex, FRANCE
 Tel: +33 2 54 50 55 50
 Fax: +33 2 54 42 29 19

India
 Stauff India Pvt. Ltd.
 Gat. No. 2340,
 Pune-Nagar Road, Wagholi, INDIA
 IND-Pune - 412027
 Tel: +91 20 705 19 90
 Fax: +91 20 705 19 89

Italy
 Stauff Italia S.R.L.
 Via Pola 21/23, I-20034
 Birone di Giussano, ITALY
 Tel: +39 0362 31 21 13
 Fax: +39 0362 33 55 36

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 Fax: +64 9 271 4832

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Walter Stauffenberg GmbH & Co. KG

P. O. Box 1745 · D-58777 Werdohl
 Im Ehrenfeld 4 · D-58791 Werdohl
 Tel.: +49 (0) 23 92 9 16-0
 Fax: +49 (0) 23 92 25 05
 E-mail: sales@stauff.com
 Internet: http://www.stauff.com

Stauff Filtration Technology

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STAUFF Pressure Transmitters	
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Minitester PPC04	
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Pressure Transducer PTD & Temperature Sensor TS 04	10
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The SPG 063-DIGI digital pressure gauge measures and displays pressure and minimum/maximum pressure readings. Typical accuracy is 0,5% of the full scale. The unit can be supplied individually or as part of a Pressure Test Kit.



Specifications

- Measures Pressure and Min./Max. Pressure
- Connects to Stauff Test Point
- ± 0,5% Accuracy (Full Scale)
- Response time < 500 ms
- Max. Operating Temperature: 85°C (185°F)
- Max. Ambient Temperature: 50°C (122°F)
- 5000 Hours Battery Life
- Simple Operation

Technical Data

	Part Number	Measuring Range (Full Scale FS)	Overload  P _{max}	Tolerance Accuracy	Resolution
PSI	SPG063-DIGI-400-P	-14.5..435 PSI	478.5 PSI	± 2.18 PSI	0.15 PSI
	SPG063-DIGI-4000-P	0..4350 PSI	4785 PSI	± 21.75 PSI	1.5 PSI
	SPG063-DIGI-9000-P	0..8700 PSI	9570 PSI	± 43.5 PSI	1.5 PSI
bar	SPG063-DIGI-30-B	-1..30 bar	33 bar	± 0.15 bar	0.01 bar
	SPG063-DIGI-300-B	0..300 bar	330 bar	± 1.5 bar	0.1 bar
	SPG063-DIGI-600-B	0..600 bar	660 bar	± 3.0 bar	0.1 bar

STAUFF pressure transmitters are designed to meet price and performance requirements of Original Equipment Manufacturers. The SPT pressure transmitters use a thin film sensor for pressure ranges 20 bar (300 PSI) to 1020 bar (15000 PSI).

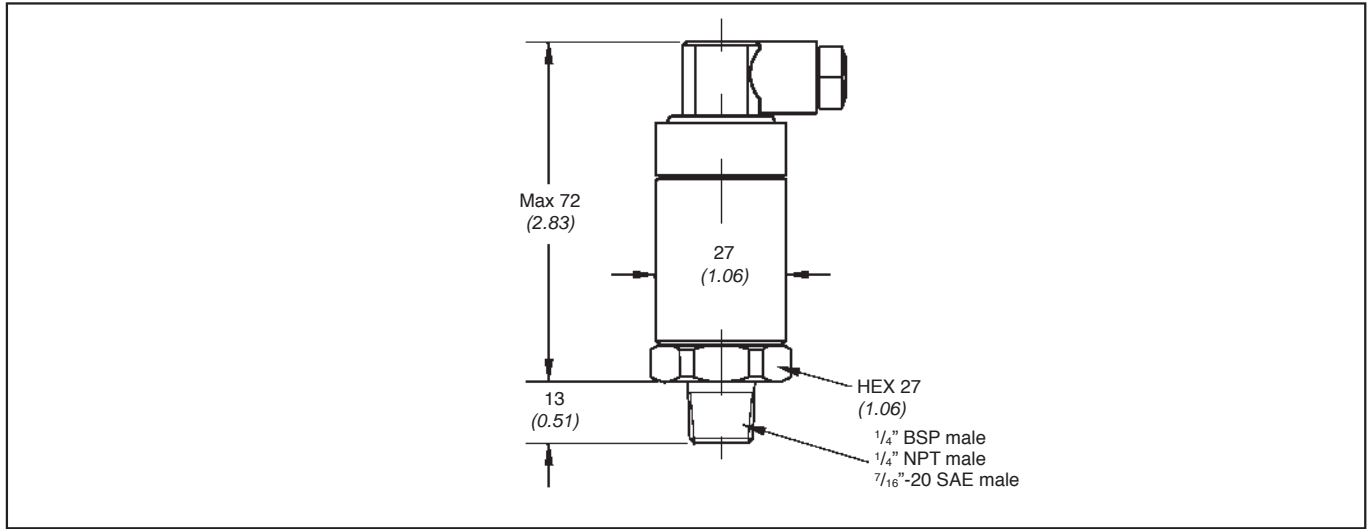


With a stainless steel case and compact design, STAUFF SPT pressure transmitters provide a high performance sensor package featuring excellent vibration resistance and long service life. OEM applications include hydraulics, pneumatics HVAC compressor control, machine tools, robotics and off road equipment.

Features:

- Thin film sensor
- Rugged stainless steel body
- Compact size
- Work pressure up to 1020 bar (15000 PSI)
- Highly stable
- Temperature compensated
- Protected against reverse polarity , short circuit output and suppressor diode for high voltage protection
- Connections available BSP , NPT and SAE (male)
- Protection class (IP 65 / NEMA 5)
- Input 10-30 VDC
- Output 4...20mA

DIN 43 650 miniature L-plug



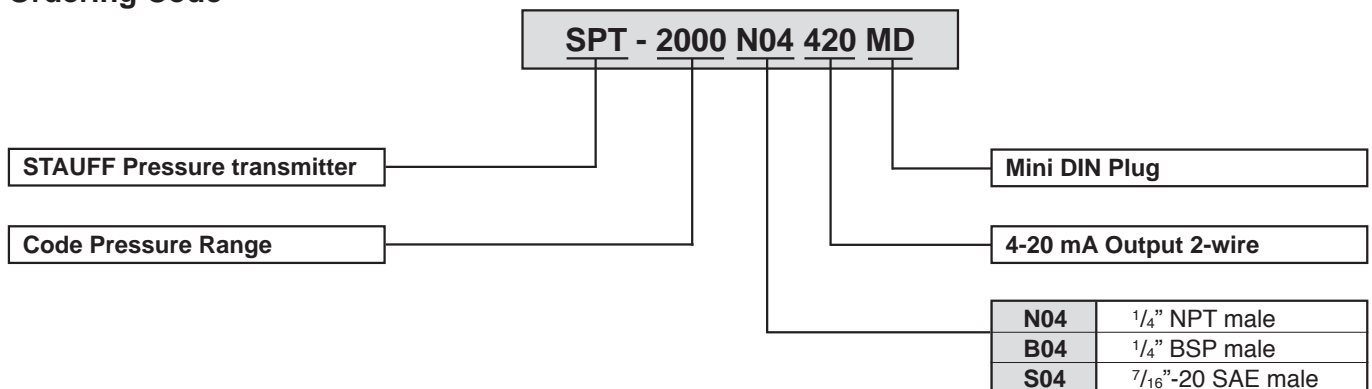
All dimensions in mm (inch)

Ordering Code - Standard Ranges - SPT* Series

Code	Range	Maximum Pressure**	Burst Pressure ***
0300	0-20 bar (0-300 PSIG)	49 bar (725 PSI)	247 bar (3625 PSI)
0400	0-27 bar (0-400 PSIG)	49 bar (725 PSI)	247 bar (3625 PSI)
0500	0-34 bar (0-500 PSIG)	79 bar (1160 PSI)	395 bar (5800 PSI)
0600	0-41 bar (0-600 PSIG)	79 bar (1160 PSI)	395 bar (5800 PSI)
1000	0-68 bar (0-1000 PSIG)	118 bar (1740 PSI)	543 bar (7975 PSI)
1500	0-102 bar (0-1500 PSIG)	197 bar (2900 PSI)	789 bar (11,600 PSI)
2000	0-136 bar (0-2000 PSIG)	197 bar (2900 PSI)	789 bar (11,600 PSI)
3000	0-204 bar (0-3000 PSIG)	493 bar (7250 PSI)	1184 bar (17,400 PSI)
5000	0-340 bar (0-5000 PSIG)	789 bar (11,600 PSI)	1677 bar (24,650 PSI)
7500	0-510 bar (0-7500 PSIG)	1184 bar (17,400 PSI)	2367 bar (34,800 PSI)
10000	0-680 bar (0-10,000 PSIG)	1184 bar (17,400 PSI)	2367 bar (34,800 PSI)
15000	0-1020 bar (0-15,000 PSIG)	1480 bar (21,750 PSI)	2959 bar (43,500 PSI)

Note: * Shaded ranges are stocking program
 ** Maximum pressure, causing no permanent changes in specifications but may lead to zero and span shifts.
 *** Burst pressure, leading to permanent changes in specifications (i.e. zero offsets) or destruction of the transmitter.

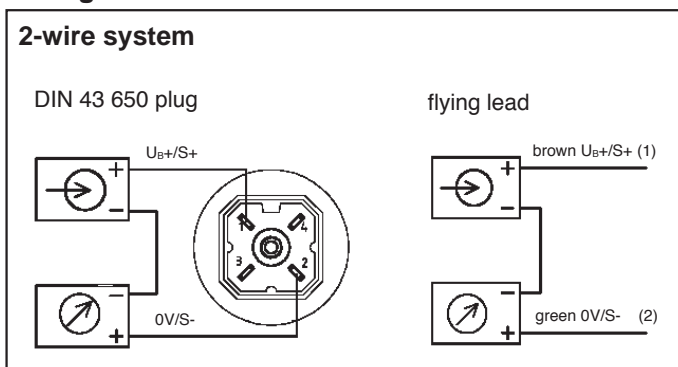
Ordering Code



Specifications	
Sensing principle Pressure reference	thin film, relative pressure {absolute reference to 250 PSIA}
Pressure connection Material: - wetted parts - case - internal transmitting liquid	1/4 NPT male 1/4 BSP male 7/16 - 20 SAE male 1.4571 and 1.4542 stainless steel (316 SS and PH17-4 SS) 1.4301 stainless steel (304 SS) silicone oil piezoresistive sensors to 20 bar (300 PSI), {halocarbon oil or oxygen service}, no liquid fill used for thin film sensors > 20 bar (300 PSI)
Supply voltage U_B Output and load limitations: Output signal and maximum load Upper cutoff frequency Response time (10...90%)	10-30 DC Volts 4-20 mA 2-wire system $RA [Ohm] < (U [V] - 10V) / 0.02 A$ 150Hz < 1 milliseconds
<i>Accuracy</i> (linearity, including hysteresis and repeatability) Repeatability Hysteresis 1 year stability	< 0.50% of span (B.F.S.L.) < 0.05% of span < 0.1% of span < 0.2% of span (under reference conditions)
Temperature Media Ambient Storage Compensated range Temperature error (reference 21°C (70°F)) on zero point on span	-30°C to +100°C (-22°F to +212°F) -20°C to +80°C (-4°F to +176°F) -40°C to +100°C (-40°F to +212°F) 0°C to +80°C (+32°F to +176°F) < 0.3% of span per 10°C (18°F) change < 0.2% of span per 10°C (18°F) change
CE conformity	Interference emission per EN 50 081-1 (March 1993) and EN 50 081-2 (March 94), Interference immunity per EN 50 082-2 (March 1995)
Shock resistance Vibration resistance	1000g per IEC 770 for mechanical shock 50g per IEC 770 for vibration under resonance conditions
Electrical connection Weight Dimensions Electrical protection Environmental protection	4-pin miniature L-plug per DIN 43 650 approximately 0.1 kg (0.2lb) see drawing protected against reverse polarity, short circuit, and overvoltage IP 65 (NEMA 5) with 4 pin L-plug, MIL plugs

Electrical connections

Wiring



2-wire system

Wire	Coding	DIN Plug	Wire Color
Supply +	UB+ / S+	pin1	Brown
Signal -	0V / S-	pin2	Green

Hand-held measuring unit ideal for maintenance, service and commissioning of hydraulic systems

Today's hydraulic systems require a precise, quick and uncomplicated way of measuring important hydraulic parameters. For this purpose STAUFF offers the ideal solution: The PPC 04.



EMC Compatibility acc. to:
 Interference emission
 DIN/EN 50081-1 (VDE 0839 part 81-1)
 Resistance to jamming DIN/EN 50082-2 (VDE 0839 82-2)

The mobile measuring device PPC 04 is controlled by 8 buttons enabling the user to easily obtain data on working pressure, peak pressure, differential pressure, temperature, flow and rotational speed. This results in a wide range of applications in the areas of:

- Industrial Hydraulics
- Mobile and Agricultural Hydraulics
- Marine and Offshore Hydraulics
- Chemical and Petrochemical Industry
- Energy and Aircondition Industry
- Sanitary Industry

The PPC 04 provides two separate sensor inputs which automatically recognize the sensors connected to it and displays the unit and scale for the corresponding sensor. The unit and scale can be changed during use.

The PPC04 is insensitive to dirt and is designed to be used wherever hydraulic control and components are in use. The heavy duty rubber cover protects the unit from damage during use in extreme conditions. The PPC04 is powered either by a standard 9V battery (PPC04 B), or by an integrated rechargeable battery (PPC04 AP). Operation for an extended period of time is supported with the use of an AC power adaptor.

Note! Not all output features are supported by the non-rechargeable unit (PPC04 B).

The PPC 04-AP can also be used with an external thermal printer for documenting important test data or directly interfaced to an Excel spreadsheet via the auxiliary computer adapter and PPC 04 software. The PPC 04 software is compatible with all Windows 3.1, Windows 95, Windows 98, Windows NT and Windows Xp operating systems.

PPC04 Kits are supplied complete with adaptors to connect the unit to Stauff Test 20/15/12 and Stauff Test 10 test points, even under pressure. Temperature and Flow measurement is possible using Temperature Sensor TS04 or SFM flow turbines mounted in the hydraulic line. Rotational speed can be measured using the Stauff SDS-04 rotational speed sensor.

In order to measure differential pressure two transducers of the same pressure range must be used.

Note! This unit does not have internal data collection and logging capability.

Hand-held unit PPC 04 - B and PPC 04 - AP

Measures:

- Pressure in bar and *PSI*
- Temperature in °C and °F
- Flow in l/min and *GPM (US)*
- Rotational speed U/min and *RPM*

PPC 04 - B hand-held unit with block battery
PPC 04 - AP hand-held unit with rechargeable battery and data output

- 4-digit LCD-display, character height: 13 mm (0,51")
- Automatic recognition of sensors connected
- Optical data transmission to transfer data measured to thermoprinter or PC (PPC - 04-AP only)
- Plastic ABS housing with protective rubber cover integrated with stand and carrying straps.
- Auto power off after 15 minutes (except autoprnt function)

Power supply:

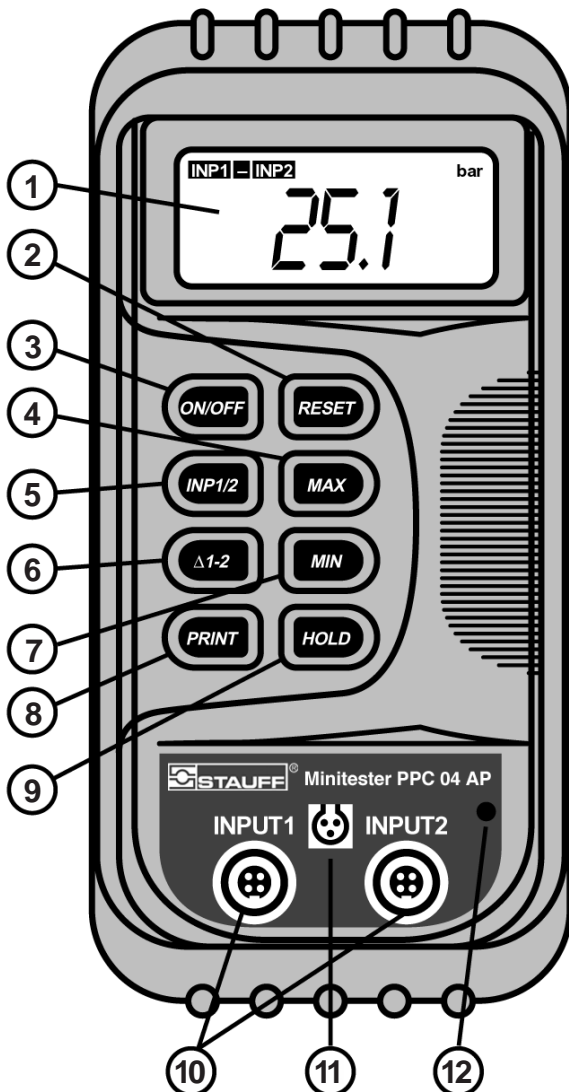
9 V block battery IEC 6F 22 (PPC 04 - B)
 Rechargeable battery - or by external power supply
 Supply voltage 9 V (PPC 04 - AP)
 12-bit-A/D-converter
 Scanning rate ≤ 2 ms
 Accuracy < 0,3% F.S. ± 2 Digit
 Two 4-pin round 0,1...3,3 V, R_E = 470 kΩ
 plug inputs

Temperature range 0...+50°C (32°F... 122°F)
 Storage Temperature -20...+60°C (-4°F... 140°F)
 Rel. Humidity < 85%

Dimensions l/w/h 145 mm x 70 mm x 40 mm
 (5.7" x 2.75" x 1.57")

Weight approx. 340 g (0.75 lbs.)

Protection level DIN EN 60529 / IP54



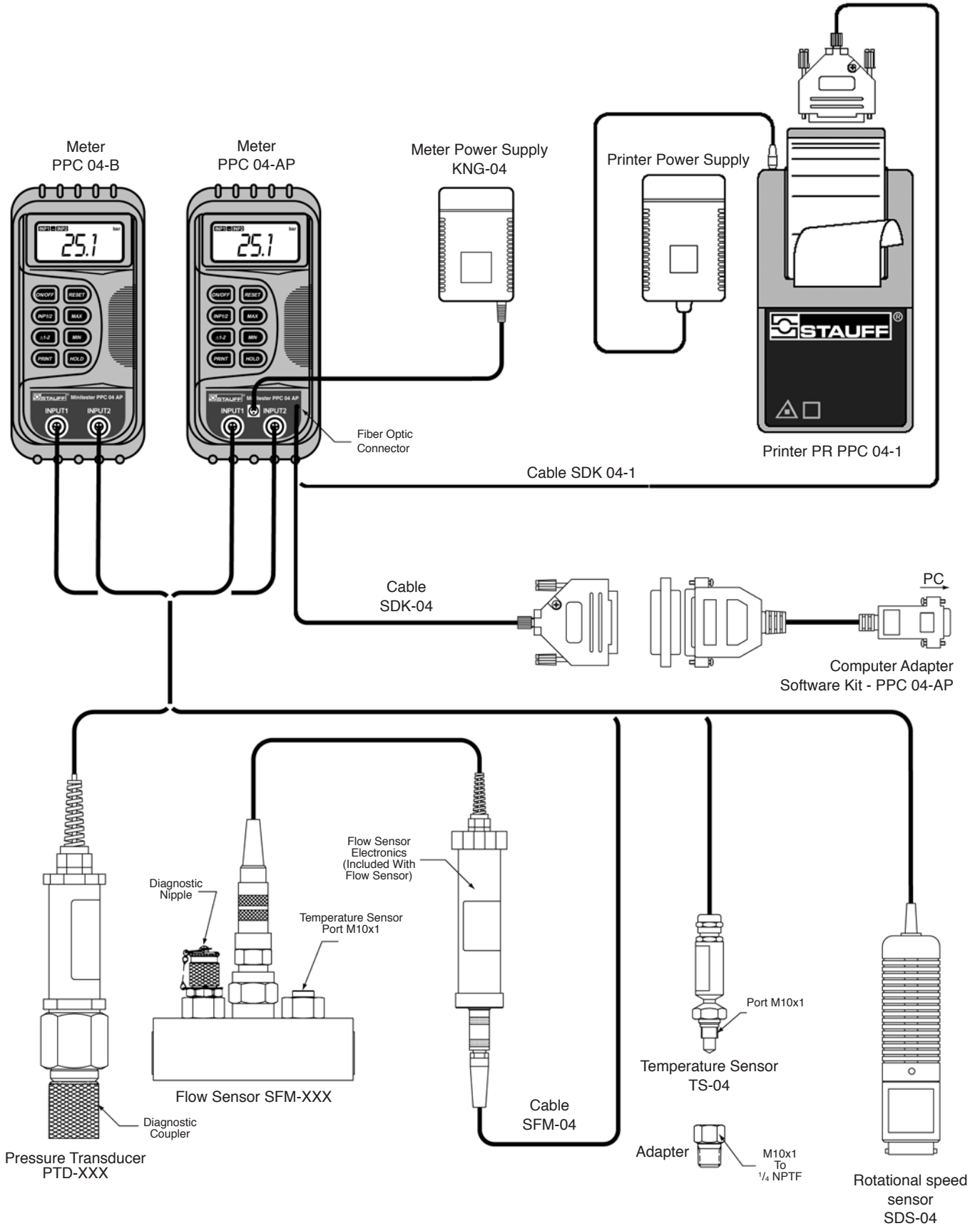
Functional description PPC 04

Functions

- 1 Measurement Display** (4-digit).
- 2 RESET** resets minimum and maximum values to zero.
- 3 ON/OFF Switch.**
- 4 MAX** displays the maximum value since meter was last reset or turned on.
- 5 INP1/2** selects whether meter will display measurement from Input 1 or Input 2.
- 6 1-2** displays the differential value of Input 1 minus Input 2.
- 7 MIN** displays the minimum value since the unit was last reset or turned on.
- 8 PRINT*** sends displayed measurements to PC or printer.
- 9 HOLD** freezes displayed measurement.
- 10 Analog Inputs** (4 pin).
- 11 External Power Supply Socket*.**
- 12 Data Output*** infrared interface to transmit measured values to printer or PC.

* PPC 04-AP only

Measure and Document Flow, Pressure, Temperature and Rotational Speed

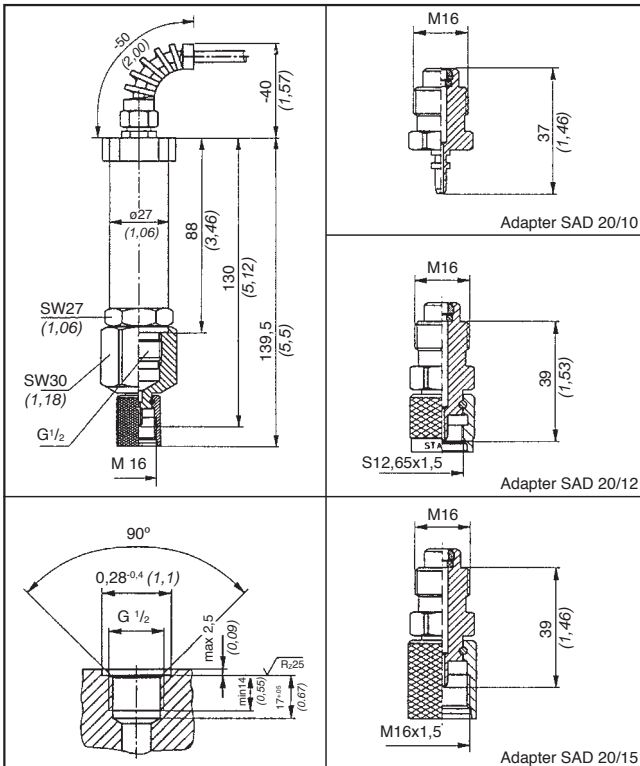


Pressure Transducer PTD

Type	PTD 015	PTD 063	PTD 630
Pressure range	-1...15 bar (-15...210 PSI)	0...63 bar (0...900 PSI)	0...630 bar (0...9000 PSI)
Overload capacity	20 bar (290 PSI)	150 bar (2175 PSI)	1000 bar (14,500 PSI)
Burst pressure	45 bar (650 PSI)	500 bar (7250 PSI)	1800 bar (26,000 PSI)
Output signal	+0,1...+3,3 V	+0,3...+3,3 V	+0,3...+3,3 V
Reproducibility	<±0, 15% FS*	<±0, 18% FS*	<±0, 15% FS*

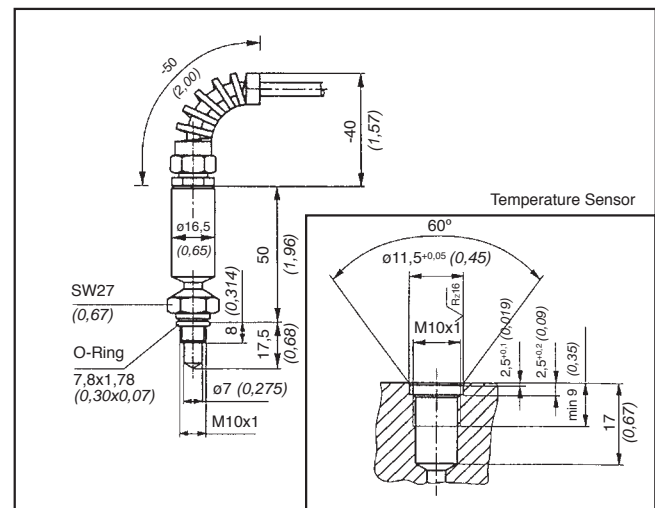
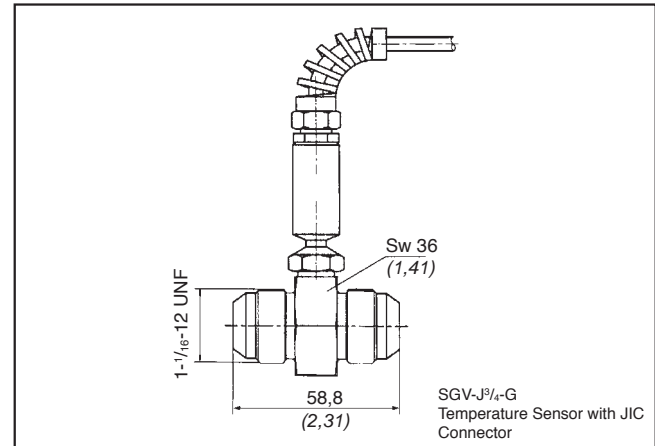
Test system piezoresistive
Temperature deviation <±0,03 % FS* / °C
Characteristic curve deviation <±0,5 % FS*
Long-time stability <0,5 % FS*/a
Response time < 1 ms
Vibration resistance IEC 68-2-6 at 10...500 Hz
Max. shock-load to IEC 68 part 2 to 29
Media-temperature range -25...+105°C (-13...221°F)
Ambient temperature range -20...+85°C (-4...185°F)
Compensated temperature range 0...+85°C (32...185°F)
Storage temperature range -40...+125°C (-40...257°F)
Endurance 10 Million cycles
Media application gas, fluids (for use with aggressive media please consult STAUFF)
Transducer connection with adapter STAUFF Test 20 (M16 x 2) (without adapter G 1/2 A)
Material of housing stainless steel 1.4301
Sealing material FPM
Weight approx. 200g (0.44 lbs.)
Protection level EM 60529 - IP 65
 2m (65ft) - cable connected with transducer, round plug series 712

* FS = Full Scale



Temperature Sensor TS 04

Probe system Silicon Chip
Measuring range -25...+125°C (-13...257°F)
Accuracy ± 1.5 % FS*
Response time T 0,9 approx. 13,5 s
Max. working pressure 630 bar (9000 PSI)
Ambient temperature range 0...+70°C (32...158°F)
Media-temperature range -25...+125°C (-13...257°F)
Storage temperature range -25...+80°C (-13...176°F)
Cable length 2 m (6,5 ft), round plug
Sensor connection a) STAUFF-Test JIC fitting SGV-J³/₄-G for in-line installation
 b) Port Connection M10 x 1
Material Steel C15K
Surface treatment zinc plated, yellow chromated
Sealing FPM
Protection level EM 60529 - IP 65



All dimensions in mm (inch)

Flow-Turbines SFM

Type		SFM-015	SFM-060	SFM-300	SFM-600
Measuring range	l/min	1-15	7.5-60	15-300	25-600
	(GPM)	(0.26-3.9)	(1.95-15.6)	(3.9-78)	(7.8-156)
Pressure range	Bar	400	400	400	350
	(PSI)	(5800)	(5800)	(5800)	(5000)
Characteristic curve deviation (\leq %FS*)		1	1	1	1
Pressure drop	Bar	0.14	0.28	2.0	1.7
	(PSI)	(2.03)	(4.06)	(29,4)	(25)
Port Connection (BSP)	G	1/2"	3/4"	1"	1 1/4"
Port Connection (SAE)	G	3/4"-16	1 1/16"-12	1 5/16"-12	1 5/8"-12
Weight	Kg	0,63	0,72	1,17	1,81
	(lbs)	(1.4)	(1.6)	(2.6)	(4)

Media-temperature range -20...+150°C (-4...302°F)
Response time approx. 400 ms
Reproducibility \pm 0.2 % FS
Calibration viscosity 30 mm²/s (=30 cSt)
Material of housing Aluminum
Surface treatment black anodized
Test point SMK 20 (M16 x 2)
Additional connection M10x1 (standard screw-plug)

*FS: Full Scale

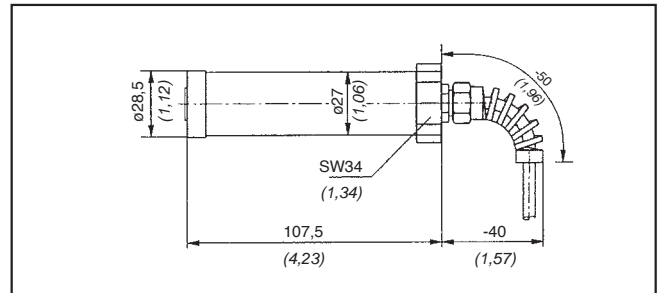
DIM	SIZE	SFM-015	SFM-060	SFM-300	SFM-600
	A	mm (in)	22.5 (0.88)	26.5 (1.04)	31 (1.20)
B	mm (in)	32 (1.24)	38 (1.50)	51 (1.97)	64 (2.46)
D	mm (in)	58.5 (2.3)	57.5 (2.26)	57.5 (2.26)	57.5 (2.26)
L	mm (in)	120 (4.72)	129 (5.08)	149 (5.86)	173 (6.81)
H	mm (in)	38 (1.47)	46 (1.81)	56 (2.20)	63 (2.5)

Signal Converter

To be used when using flow-turbines in conjunction with PPC 04. (Signal converter is supplied with the flow turbine)

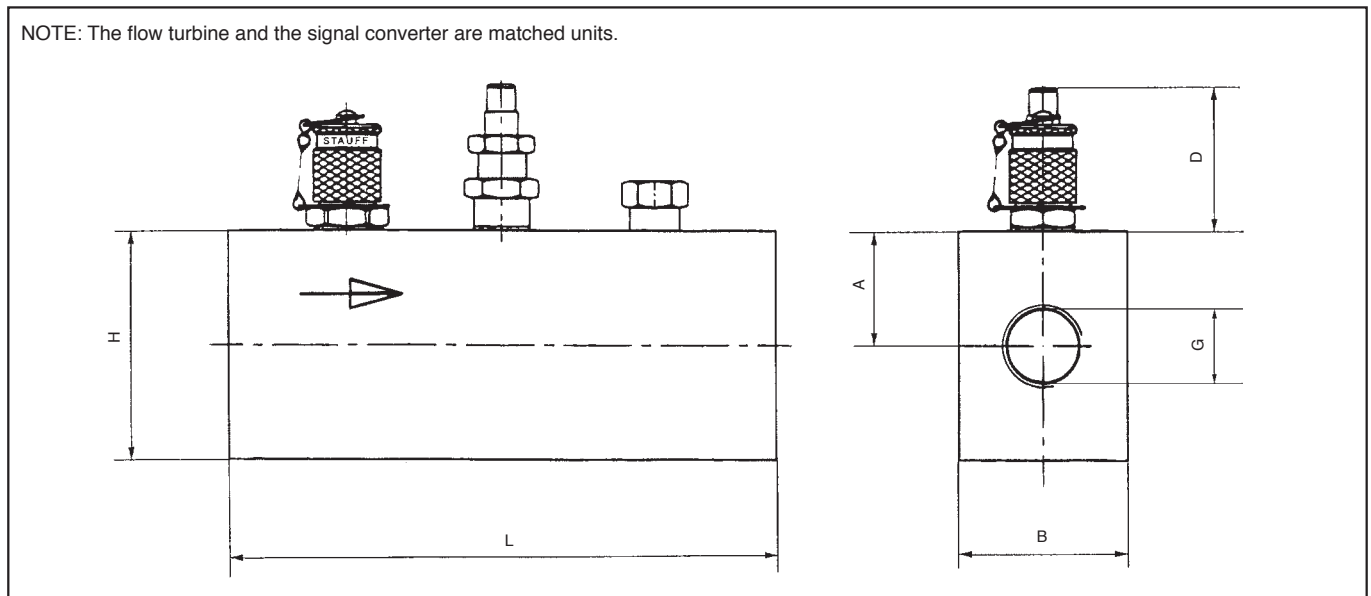
Input 10...2000 Hz, 10...100 mVss
Output 0...3 V and sensor recognition \leq 0.3 % FS*
Accuracy
Response time approx. 200 ms
Working temperature 0...+60°C (32...140°F)
Storage Temperature -20...+80°C (-4...176°F)
Supply voltage +7...+15 V DC
Current consumption approx. 8 mA
Electrical connection Turbine end:
 cable 0.4 m (1,31 ft)
 connected to signal converter with 5 pin plug
 connection to hand-held unit: cable SFM-04 2 m
 (6,5ft.)
Material of housing stainless steel 1.4301
Weight approx. 200 g (0.44 lbs.)

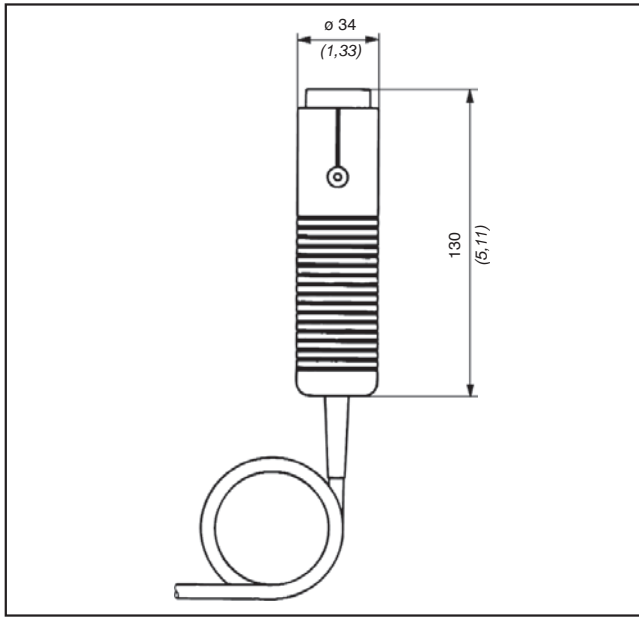
Signal Converter



All dimensions in mm (inch)

NOTE: The flow turbine and the signal converter are matched units.





All dimensions in mm (inch)

Rotational Speed Sensor SDS-04

Rotational speed measurement (RPM) is made possible with the use of the SDS 04 non-contact sensor. Speed is measured using a photoelectric cell which counts revolutions via a reflecting strip or marking on the rotating surface resulting in a high level of accuracy. Additionally a contact sensor is available. A mechanical contact adaptor is connected to the speed sensor, which is held onto the rotating surface during measurement.

When used with particularly small surfaces, accuracy may be improved by using a special focusing adaptor.

Lengthening of the SVK 04 cable could result in inaccurate speed measurement and should be avoided. The standard cable length of 3 m (10 ft), fixed to the sensor should not be altered for best results.

Technical Data

Input

Measuring range 20...10.000 RPM
 Measuring distance 25...500 mm (1"-20")
 Measuring angle $\pm 45^\circ$
 Measurement optical, red LED

Output

Accuracy <0.5% FS*
 Resolution ± 5 RPM

Electrical connection

Cable connected to the sensor length 3 m (10 ft), round plug (extension cable not recommended)

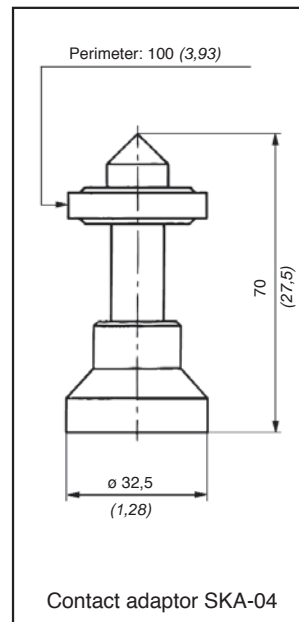
General

Material ABS
 Dimension D= \varnothing 34 (1.34), L=130 (5.1) (without adaptor)

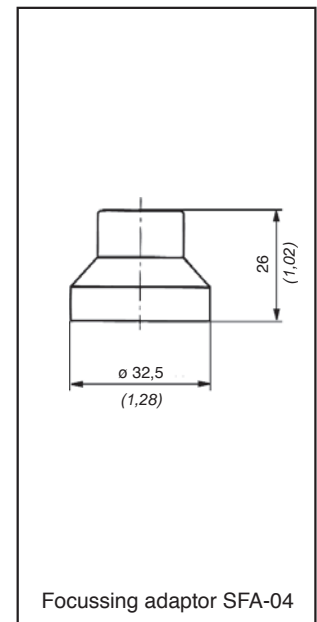
Weight approx. 230 g (0.5 lb.)
 Ambient temperature Range 0...70°C (32...158°F)

*FS: Full Scale

Accessories



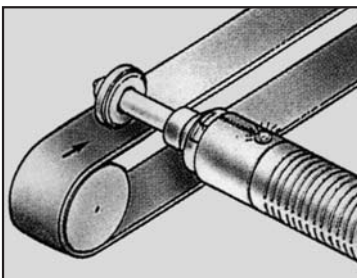
Contact adaptor SKA-04



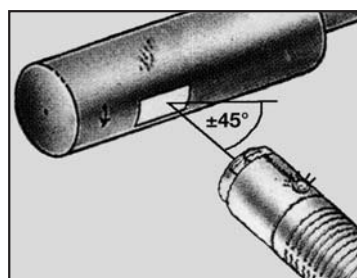
Focussing adaptor SFA-04

All dimensions in mm (inch)

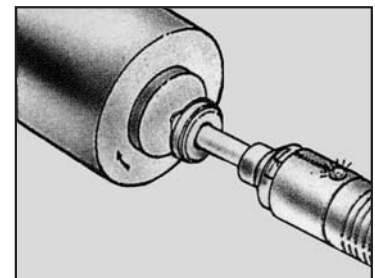
Applications



App. 1
RPM with contact adaptor using perimeter



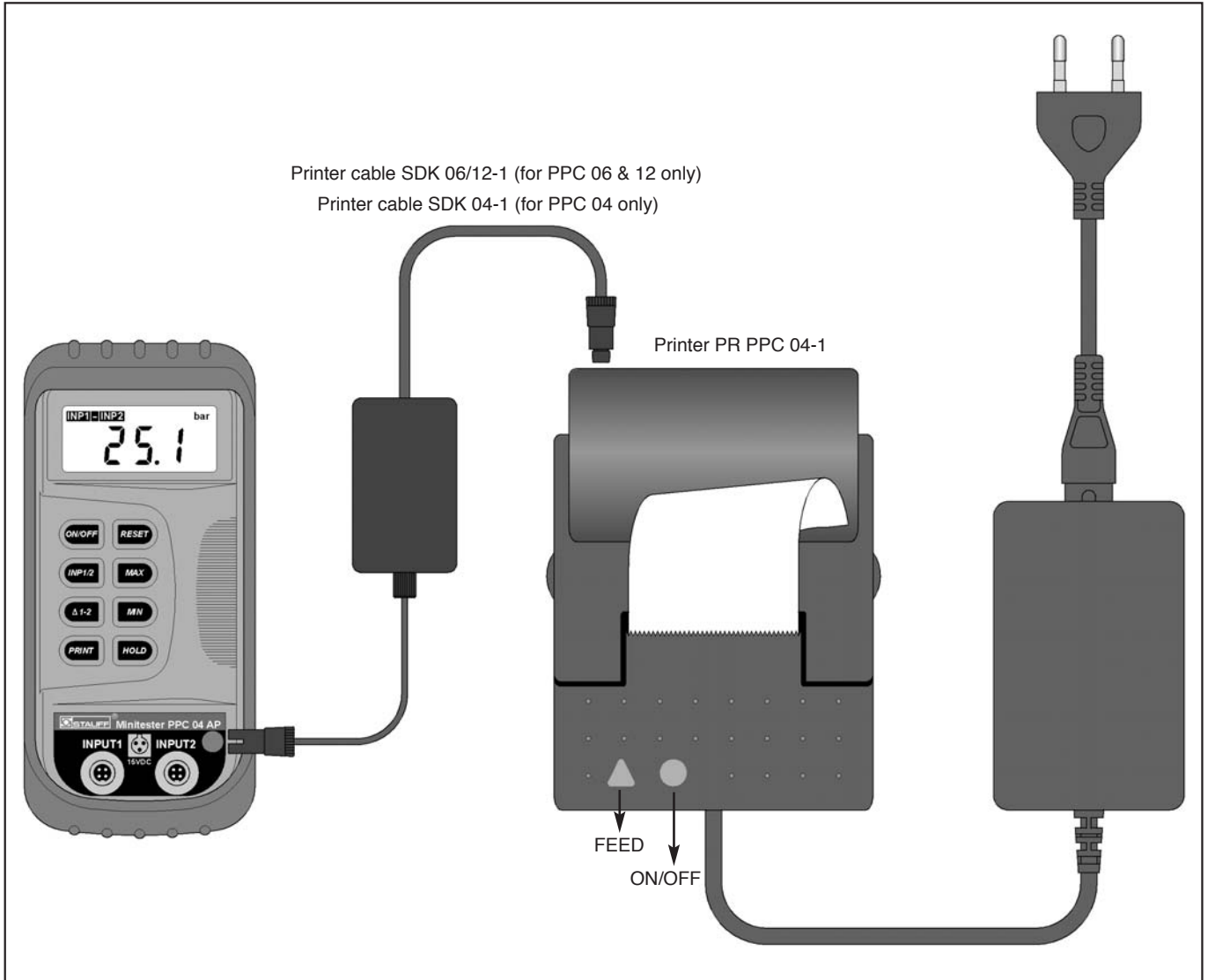
App. 2
Rotating shaft non-contact RPM



App. 3
RPM with contact adaptor using point

Printer PPC 04-1

The PR PPC04-1 printer comes complete with a rechargeable battery, power supply, and printer cable SDK 04-1 to link with the Minitester PPC 04. For use with PPC 06 or PPC 12 use printer cable SDK 06/12-1.



The printer is compatible with the Minitester PPC 04-AP and the Hydraulic Testers PPC 06 and PPC 12.

Please note that the battery in a new printer is not charged. To run the printer immediately upon receipt, connect the printer to the Minitester, and connect the power supply as shown in the diagram.

PR PPC 04-1 is powered by an internal rechargeable battery or by using the external power supply. To run the

printer immediately, just link the printer to the Minitester according to the shown diagram.

Charging the Battery

1. Link the power supply to the printer PR PPC 04-1
2. Switch on the printer via < ON/OFF > key.
3. The <FEED> key will flash while the battery is charging.
4. The <FEED> key will illuminate permanently when the battery is fully charged.

Important! The previous versions of the printer PR PPC 04 and the printer cable SDK are not compatible to the new version.

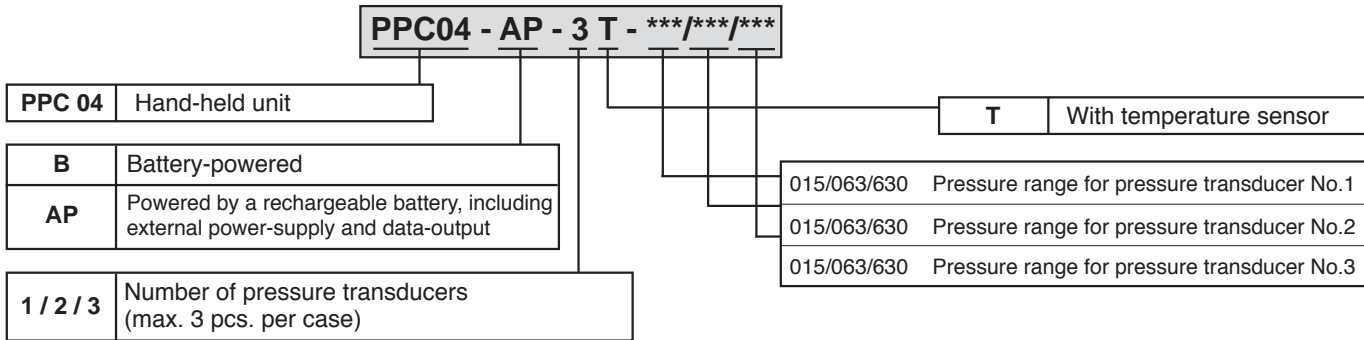
PPC 04 Complete Kits

A variety of standard and custom PPC 04 Kits can be supplied to customer requirements. All PPC 04 kits are supplied with a plastic case including foam inserts which provides room for the following components:

- 1 hand-held unit
- 1 external power supply
- 3 pressure transducers c/w STAUFF Test 20 adapters
- 1 temperature sensor with straight fitting SGV-J³/₄-G (not shown)
- 3 adapters for STAUFF Test 15 / 12 / 10 are supplied with each PPC 04 kit



Ordering Code for PPC 04 kits



In order to measure differential pressure two transducers of the same pressure must be used.

Components

Description	Order Code
Hand-held unit with battery	HAG PPC 04 - B
Hand-held unit with rechargeable battery and data output	HAG PPC 04 - AP
External power supply ... input voltage 220 V or 110 V	KNG 04 - *** V
Rechargeable battery for PPC 04 - AP	Akku - 9V
Pressure transducer connection G 1/2 A	PTD ***
*** = pressure range 015,063 or 630 (bar)	
Pressure transducer c/w STAUFF Test 20 adapter	PTD *** -SDA
*** = pressure range 015, 063 or 630 (bar)	
STAUFF Test 20 adapter for pressure transducer	SDA 20 - G 1/2
STAUFF Test 20 / STAUFF Test 15 adapter	SAD 20/15 - P
STAUFF Test 20 / STAUFF Test 12 adapter	SAD 20/12 - P
STAUFF Test 20 / STAUFF Test 10 adapter	SAD 20/10 - P
Temperature sensor (w/o straight fitting)	TS 04
Straight fitting with M 10 x 1 port connection for temp. sensor (Other connectors on request)	SGV-J ³ / ₄ -G
Plastic case c/w foam inserts	case PPC 04
Flow-turbine c/w signal converter	SFM - ***
*** = flow rate 015, 060, 300 or 600 (l/min)	
Connecting cable PPC 04 - signal converter	cable SFM -04

Because of technical advances, data given is subject to change without notification



Specifications

- Measure Pressure, Temperature, Flow Rate Frequency or Rotational Speed
- Integrated Data Storage
- Multiple Sensor Input
- Permanent Recording of Min/Max Values
- Menu-Driven Interface
- Windows Compatible Software Standard
- Easy Operation
- Rugged Design
- Analog Output
- Large Display

The new PPC 06 and PPC 12 Hydraulic Testers are state-of-the-art instruments designed to provide the latest in diagnostic evaluation of hydraulic and pneumatic systems. These units are available in either three or six channel models. The ergonomically designed case and large automatic scaling LCD display make it easy to use in even the most demanding environments.

These hand held meters provide measurement and display of pressure, temperature, flow, differential pressures, as well as rotational speed. They are the perfect tools to capture diagnostic measurements at remote locations. Also new to these meters are the functions for calculating power and flow run-out.

The newly designed meters offer a dramatic increase in data storage capability. The PPC 06 offers 125,000 data

points and the top-of-the-line PPC 12 now offers 250,000 data points of storage. These measurements can be transferred to the graphic printer to obtain a permanent record, or to a PC via an RS232 interface and the new PPC Soft. This software is compatible with all Windows95, Windows98, WindowsNT and WindowsXp operating systems. The PPC 06 and PPC 12 units offer the latest in sensor recognition technology, eliminating the time consuming task of programming each individual sensor. This technology allows you to just plug in the sensor and you are ready to take measurements. The PPC 06/12 will also allow you to program the individual inputs to accept other data collection formats, such as 4-20 mA, 1-10 Volt, or frequency.

Consult Stauff for further details about the new PPC 06/12 test units and kits.

Technical Data

Meter

- Digital LCD Text Display
 - 128x64 pixels
- Automatic Character Height Scaling
- Display of Pressure, Temperature, Flow and Rotational Speed
 - Pressure in PSI and bar
 - Temperature in °F and °C
 - Flow in GPM and l/min
 - Rotational Speed in RPM

Inputs

- 3 or 6 5-pin Lemosa connectors
- Automatic Sensor Recognition
- 0-3 Volts (R=470 kW)
- 12 Bit A/D Converter
- <1 ms Scanning Rate
- Frequency input via input socket 13
 - frequency range 0.5 Hz to 30 Hz

Functions

- Differential Value Measurement
- Min/Max Memory
- Online data transfer
- Battery level indicator
- Power calculation (display only)
- Flow run-out (display only)
- Auto power off

Output

- RS232 4-pin interface (push/pull)
- Adjustable baud rate
 - 1200 to 38400 PBS
- 8 data bits, 1 stop bit
- Interface connection for thermal printer or an Epson FX80 or IBM-Proprinter

Power Requirements

- Internal 7.2-volt rechargeable Ni-Cad battery
- Recharge circuit for use with external power supply
- Operating time (approx. 5 hours)
- Excitation voltage (12-30 VDC)

Memory Functions

- Memory capacity
 - 125,000 data points (PPC 06)
 - 250,000 data points (PPC 12)
- Variable storage rate
- Variable measuring period
 - 2 seconds to 100 hours
- Manual and automatic triggering

Ambient Conditions

- Operating Temperatures
 - 0°C to 50°C (32°F to 122°F)

- Storage Temperatures
 - 20°C to 60°C (-4°F to 140°F)
- Relative Humidity (<80%)
- Protection class (DIN 40050:IP 54)

Housing

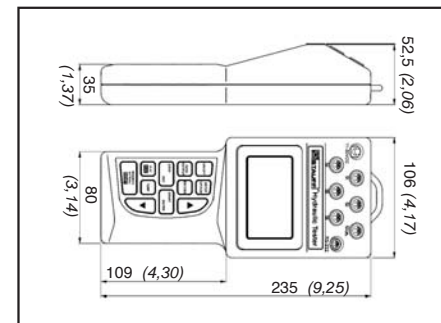
- Reinforced polyamide glass material
- 11-Key tactile touch membrane
- EMC Protection
 - Electromagnetic interference (DIN/EN 50081, Part 1)
 - Immunity to emitted interference (DIN/EN 50082, Part 2)

General Information

Weight

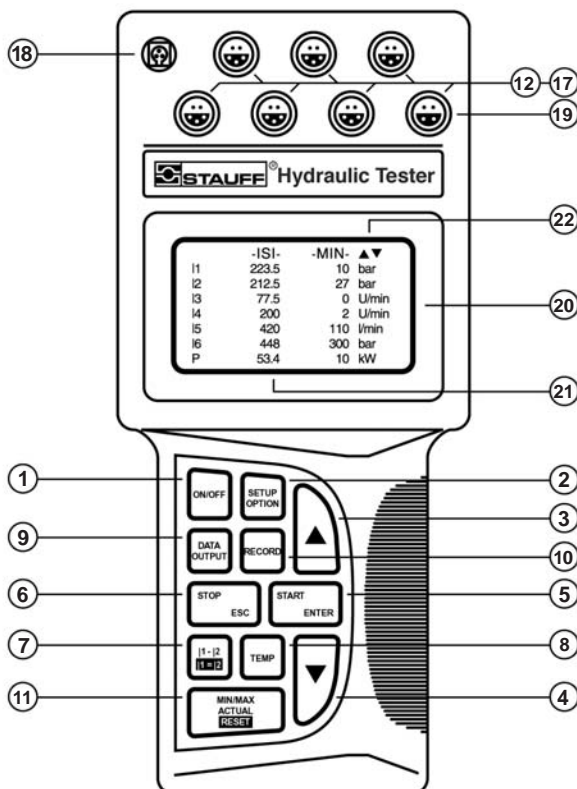
- 700g (1.2 lbs)

Dimensions



All dimensions in mm (inch)

Functional description PPC 06 & PPC 12



Functions

- 1 ON/OFF** Turns meter on or off.
- 2 SETUP/OPTION** Change system settings.
- 3/4 ARROWS** Select line and function values.
- 5 START/ENTER** Change function values and start measurements.
- 6 STOP/ESC** Stop or terminate functions.
- 7 I1-I2** Differential value between input 1 and input 2.
- 8 TEMP** Displays the measured temperature values for all channels.
- 9 DATA-OUTPUT** Displays output to PC, printer or graphic display.
- 10 RECORD** To record and store measurements.
- 11 MIN/MAX/ACTUAL** Displays the minimum, maximum and actual values. Reset deletes values.
- 12-17 INPUTS** Inputs for up to (6) sensors.
- 18 12-30 VDC** Input for external power supply and charging of internal battery.
- 19 DATA OUTPUT** RS232 port for connecting to the PC, printer, or external trigger module.
- 20 GRAPHIC LCD** Displays measured values, adjustment menus and graphics.
- 21 ADDITIONAL LINE** Displays the power or flow runout values.
- 22 STATUS LINE** Shows the designation of the measured value or the menu name.



Transducer Technical Data

Type (Piezoresistive)	PPC06/12-015-PT	PPC06/12-100-PT	PPC06/12-400-PT	PPC06/12-600-PT
Pressure range	-1...15 bar (-15...210 PSI) (Relative)	0...100 bar (0...1450 PSI) (Absolute)	0...400 bar (0...5800 PSI) (Absolute)	0...600 bar (0...8700 PSI) (Absolute)
Overload pressure	20 bar (290 PSI)	150 bar (2175 PSI)	800 bar (11600 PSI)	1000 bar (14700 PSI)
Burst pressure	45 bar (650 PSI)	500 bar (7250 PSI)	1200 bar (17400 PSI)	1800 bar (26100 PSI)
Hysteresis (±%FS* Typical)	0,10	0,10	0,08	0,05
Hysteresis (±%FS* Typical)	0,08	0,08	0,08	0,08
Hysteresis (±%FS* Typical)	0,25	0,25	0,25	0,25

Ambient Conditions

Media temperature range	-25...105°C (-13...221°F)
Ambient temperature range	-20...85°C (-4...185°F)
Storage temperature range	-40...125°C (-40...257°F)
Compensated range	0...85°C (32...285°F)

Voltage Requirement

Excitation voltage	7...12 VDC
Current consumption	≤ 5 mA
Permissible ripple	± 2% ss

Output

Temperature deviation	<± 0,03% FS*/°C
Response time	< 1 ms
Long-term stability	< 0,2% FS*/a
Vibration resistance	IEC 68-2-6 at 10...500 Hz
Service life	10 Million Cycles
Max shock load	IEC 68 2-29
Charateristic curve deviation	<± 0,5% FS*

Connection

Media application	gases , fluids (for use with aggressive media , please consult STAUFF)
Transducer connection	Stauff adapter Test 20 (M16x2) without adapter G 1/2A

Material

Transducer	Stainless steel 1.4301
Diaphragm	Stainless steel
Coupler	Carbon steel zinc plated yellow chromated
Seal	FPM (Viton®)
Male Stud	G 1/2 (BSPP)
Weight	Approx. 200g (0,44 lbs)

* FS = Full Scale

Cable End (Pin Out)

Pin	Mark	Wire Colors
1	P	yellow
2	T	white
3	+	brown
4	-	green
5	SK	grey

Shielding on plug housing

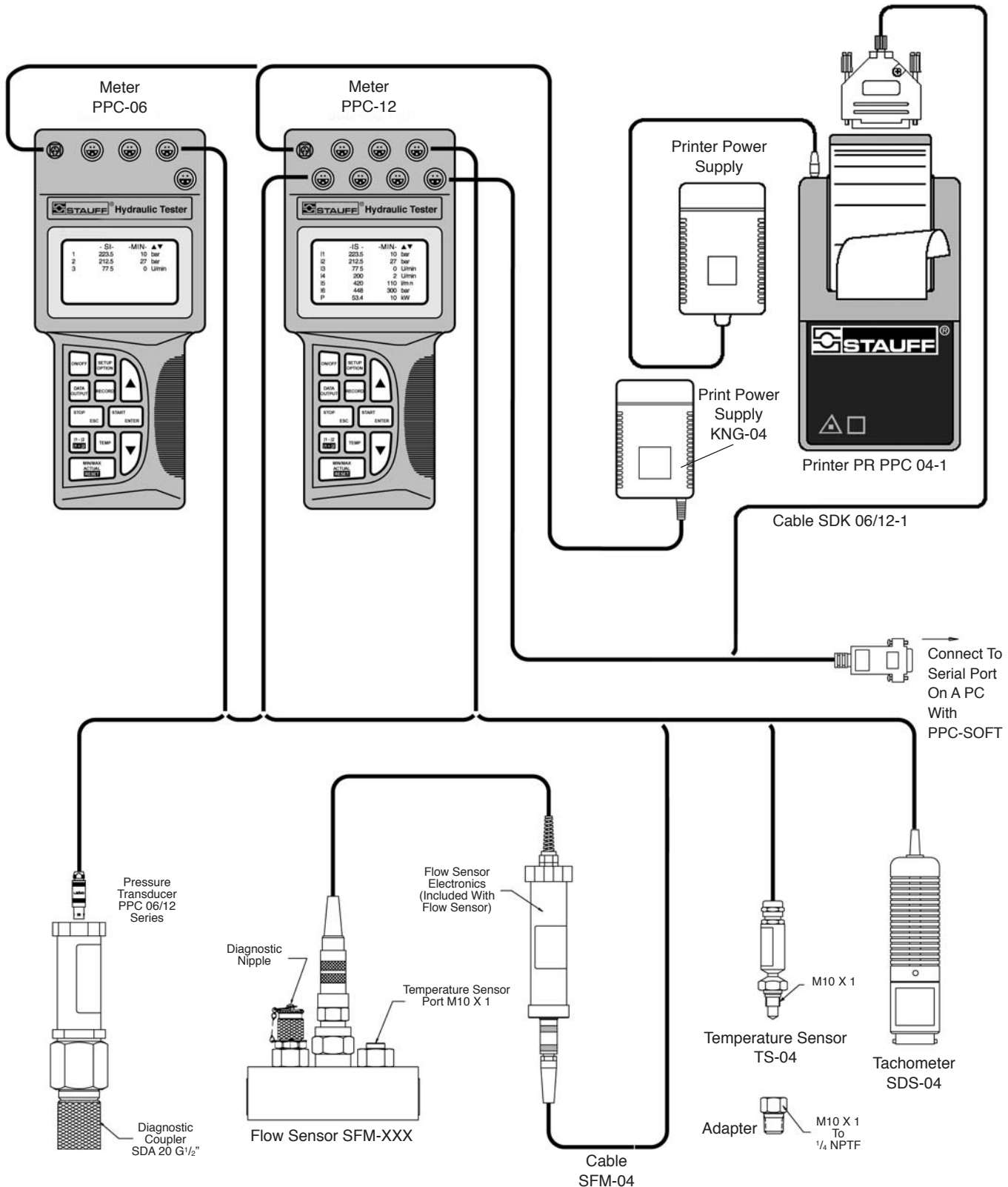
Dimensions

Dimensions in mm (inch):

- Top diameter: $\varnothing 31$ (1,22)
- Inner diameter: $\varnothing 14$ (0,55)
- Thread length: 7 (0,27)
- Main body diameter: $\varnothing 27$ (1,06)
- Total height: 71,5 (2,81)
- Bottom diameter: $\varnothing 26,8$ (1,05)
- Bottom thread: G 1/2 A
- Bottom thread length: 16,5 (0,64)
- Bottom thread inner diameter: 13 (0,51)
- SW27 hex.27 (1,06)
- ED seal

All dimensions in mm (inch)

Measure and Document Flow, Pressure, Voltage, Current Temperature and Rotational Speed

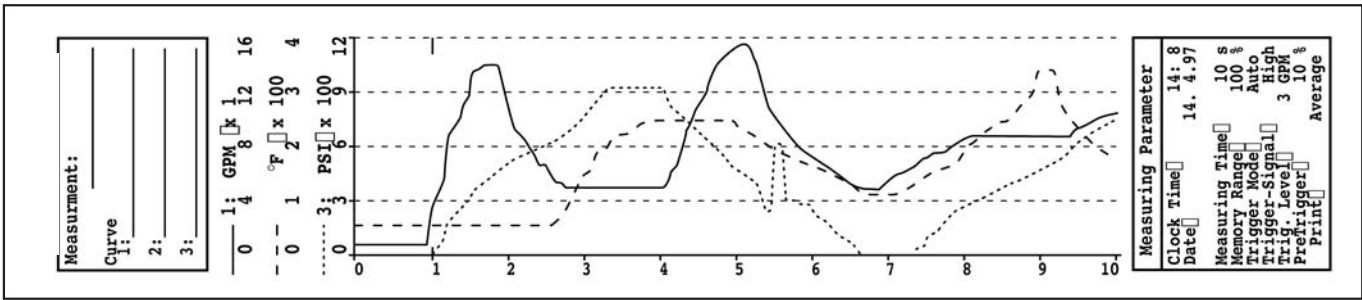




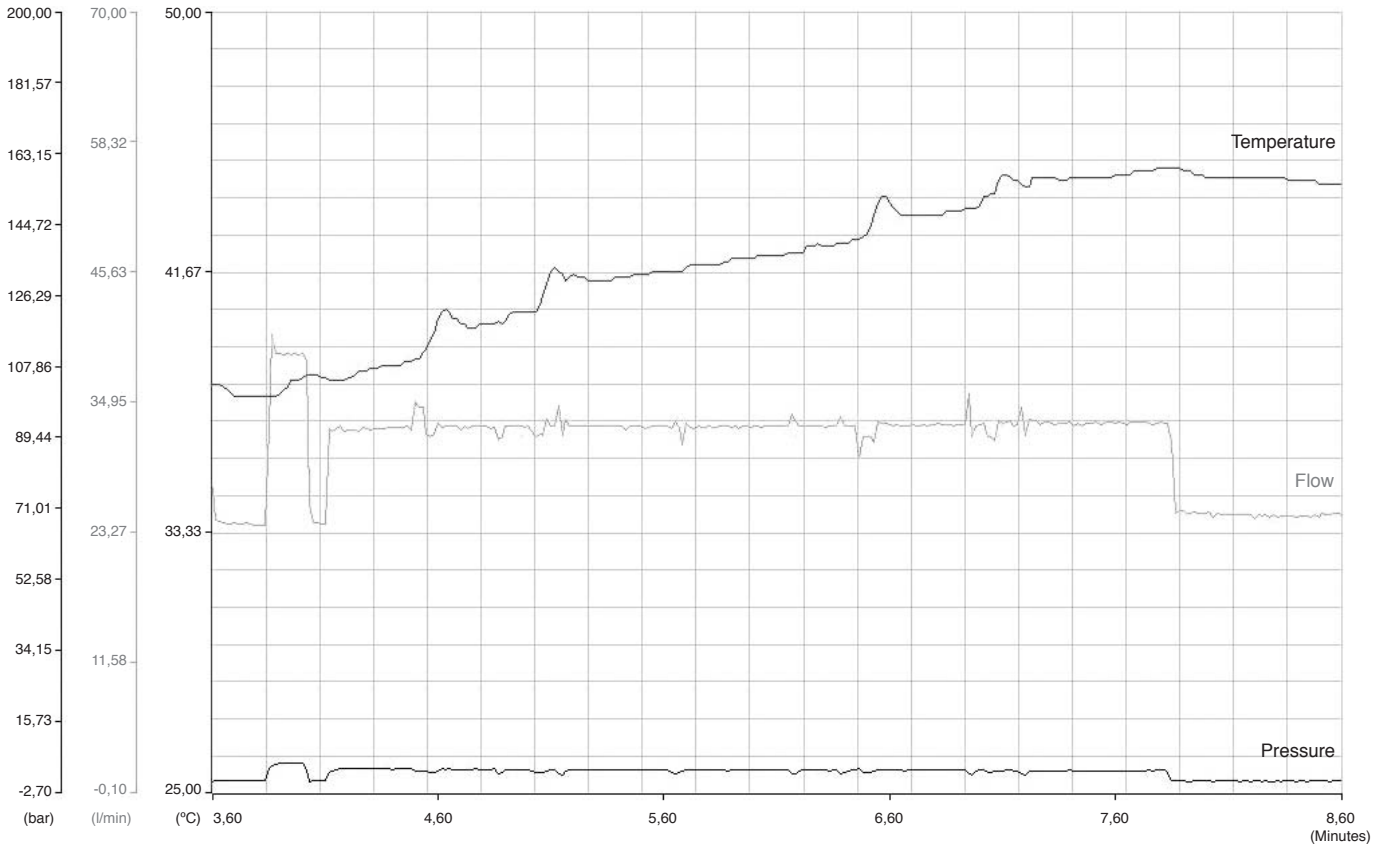
Components

Description	Ordering Code
Hand-held meter unit with software , rechargeable battery and 3 inputs	PPC-06
Hand-held meter unit with software , rechargeable battery and 6 inputs	PPC-12
External power supply (Input Voltage 110/230 VAC)	KNG-04
External power supply (Input Voltage 48 VDC - 1,5 A)	PPC06/12-VC-A
Rechargeable battery (9V)	Akku - 9V
Pressure Transducer connection G 1/2 (for pressure range , see page 17)	PPC06/12-015-PT PPC06/12-100-PT PPC06/12-400-PT PPC06/12-600-PT
Connecting Cable for PPC 06 and PPC12 (2m)	PPC06/12-CAB2
Connecting Cable for PPC 06 and PPC12 (3m)	PPC06/12-CAB3
Connecting Cable for PPC 06 and PPC12 (5m)	PPC06/12-CAB5
Pressure Transducer with Test 20 adapter (for adapter , see page 10)	PPC06/12-015-PT-SDA PPC06/12-100-PT-SDA PPC06/12-400-PT-SDA PPC06/12-600-PT-SDA
STAUFF Test 20 adapter for pressure transducer	SDA 20 - G 1/2
STAUFF Test 20 / STAUFF Test 15 adapter	SAD 20/15 - P
STAUFF Test 20 / STAUFF Test 12 adapter	SAD 20/12 - P
STAUFF Test 20 / STAUFF Test 10 adapter	SAD 20/10 - P
Temperature Sensor	TS - 04
Straight fittings with M10 x 1 port connection for temperature sensor (Other connectors on request)	SGV-J 3/4 - G
Flow Turbines with signal converter (for flow range , see page 11)	SFM - 015 SFM - 060 SFM - 300 SFM - 600
Connecting cable PPC 06 and PPC 12 - signal converter	SFM - 04
Rotacional Speed Sensor (for details , see page 12)	SDS - 04
Contact adaptor	SKA - 04
Focussing adaptor	SFA - 04
Printer Converter	PPC06/12-S/P
Printer (for details. see page 13)	PR PPC 04 - 1
Connecting Cable PPC 06 and PPC 12 - Printer	SDK 06/12-1
External Trigger Adapter	PPC06/12-TR-A
Adapter for External Sensors (0...20 mA / 0...10 VDC)	PPC06/12-AUX-A
Extension cable (3m)	PPC06/12-CAB-EX
Aluminum Case	PPC06/12-CASE

Note: Special application or configuration, please contact STAUFF.



Note: The above graph was generated by a Thermal Printer, and the graph below is a printed file from our PPC-SOFT program. Both graphs contain curves of pressure, temperature, and flow.



PPC Family



THIS IS STAUFF

RESPONSE AND FLEXIBILITY • COMPETENT SERVICE • PROMPT DELIVERY •
ENSURED QUALITY • FRIENDLY SERVICE • PROVEN IN PRACTICE



Australia
Stauff Corporation (Pty.) Ltd.
P.O.Box 227 , 24-26 Doyle Avenue,
Unanderra Wollongong , N.S.W
2526 AUSTRALIA
Tel: +61 2 42 71 18 77
Fax: +61 2 42 71 84 32



Brazil
Stauff Brasil Ltda.
Av. Guapé 10767
Galpão 2 – Bloco A
Barueri – São Paulo – CEP 06422-120, BRAZIL
Tel: +55 (0)11-4789-9020
Fax: +55 (0)11-4789-9021



Canada
Stauff Canada Ltd.
866 Milner Avenue
Scarborough , Ontario M1B 5N7 , CANADA
Tel: +1 416 282 46 08
Fax: +1 416 282 30 39



China
Stauff International Trading (Shanghai) Co., Ltd.
Shangdian Mansion, Pudong
331 , Binzhou Road
200126 Shanghai, CHINA
Tel: +86 21 58 45 65 60
Fax: +86 21 58 45 66 80



France
Stauff S.A.
Z.I. de Vineuil-Blais Sud
230, Avenue du Grain d'Or
41354 Vineuil-cedex, FRANCE
Tel: +33 2 54 50 55 50
Fax: +33 2 54 42 29 19



Germany
Walter Stauffenberg GmbH & Co. KG
P.O. Box 1745,
D-58777 Werdohl, GERMANY
Tel: +49 (0) 23 92/916-0
Fax: +49 (0) 23 92 25 05



India
Stauff India Pvt. Ltd.
Gat. No. 2340
Pune-Nagar Road, Wagholi
IND-Pune - 412027
Tel: +91 20 705 19 90
Fax: +91 20 705 19 89



Italy
Stauff Italia S.R.L.
Via Pola 21/23
I-20034 Birone di Giussano
Tel: +39 0362 31 21 13
Fax: +39 0362 33 55 36



New Zealand
Stauff Corporation (NZ) Ltd.
Unit J. 150 Harris Road, P.O. Box 58517
Greenmount Auckland-NEW ZEALAND
Tel: +64 9 271 4812
Fax: +64 9 271 4832

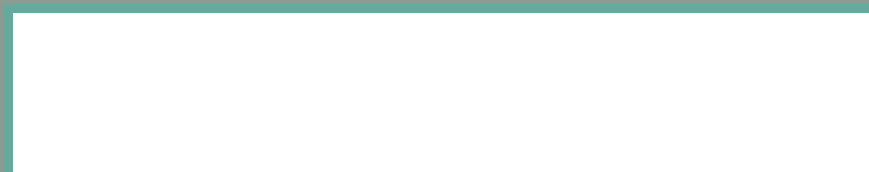


United Kingdom
Stauff UK Ltd.
332, Coleford Road Darnall
Sheffield, S 9 5 P H, ENGLAND
Tel: +44 1142 518 518
Fax: +44 1142 518 519



USA
Stauff Corporation
7 Wm. Demarest Place
Waldwick, NJ – 07463, USA
Tel: +1 201 444 78 00
Fax: +1 201 444 78 52

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2003

STAUFF



FILTRATION TECHNOLOGY

2003

STAUFF



Laser Particle Counter - LasPac 1

Quality and Service
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Australia
 Stauff Corporation (Pty.) Ltd.
 P.O.Box 227 , 24-26 Doyle Avenue,
 Unanderra Wollongong , N.S.W
 2526 AUSTRALIA
 Tel: +61 2 42 71 18 77
 Fax: +61 2 42 71 84 32

Brazil
 Stauff Brasil Ltda.
 Av. Gupê 10767
 Galpão 2 – Bloco A
 Barueri – São Paulo – CEP 06422-120, BRAZIL
 Tel: +55 (0)11-4789-9020
 Fax: +55 (0)11-4789-9021

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 Stauff Canada Ltd.
 866 Milner Avenue
 Scarborough , Ontário M1B 5N7 , CANADA
 Tel: +1 416 282 46 08
 Fax: +1 416 282 30 39

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 331 , Binzhou Road
 200126 Shanghai, CHINA
 Tel: +86 21 58 45 65 60
 Fax: +86 21 58 45 66 80

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 Z.I. de Vineuil-Blois Sud
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 41354 Vineuil-cedex, FRANCE
 Tel: +33 2 54 50 55 50
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 IND-Pune - 412027
 Tel: +91 20 705 19 90
 Fax: +91 20 705 19 89

Italy
 Stauff Italia S.R.L.
 Via Pola 21/23, I-20034
 Birone di Giussano, ITALY
 Tel: +39 0362 31 21 13
 Fax: +39 0362 33 55 36

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 Stauff Corporation (NZ) Ltd.
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 Greenmount Auckland-NEW ZEALAND
 Tel: +64 9 271 4812
 Fax: +64 9 271 4832

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 Stauff UK Ltd.
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 Sheffield, S 9 5 P H, ENGLAND
 Tel: +44 1142 518 518
 Fax: +44 1142 518 519

USA
 Stauff Corporation
 7 Wm. Demarest Place
 Waldwick, NJ – 07463, USA
 Tel: +1 201 444 78 00
 Fax: +1 201 444 78 52

Walter Stauffenberg GmbH & Co. KG

P. O. Box 17 45 · D-58777 Werdohl
 Im Ehrenfeld 4 · D-58791 Werdohl
 Tel.: +49 (0) 23 92 9 16-0
 Fax: +49 (0) 23 92 25 05
 E-mail: sales@stauff.com
 Internet: http://www.stauff.com

Stauff Filtration Technology

Stauff Filtration Technology offers a complete range of filtration products and services that will provide the system designer or user with the highest level of contamination control demanded by today's most sophisticated applications. Products include pressure filters, return line filters, elements, spin on filters suction strainers, and filler breathers for various hydraulic, lubrication and fuel oils.

Stauff has the technical expertise to provide superior filter element designs for the Stauff original filter housings and also for the interchange element market. Stauff manufactures more than 10,000 different elements. Many of these are designed to fit into filter housings produced by other companies while maintaining or surpassing the original performance.

The "Stauff Contamination Control Program" includes the diagnostic services including fluid sampling and laser particle counting products needed to monitor the system contamination level.

Stauff, through its global network of wholly owned companies and technically qualified distributors, is ideally placed to assist its customers in the total contamination process providing a well balanced filtration solution.

Laser Particle Counter	Page
Product Description	3,4
Technical Data and Ordering Code	5

**Distributors and warehouses
 in all industrial countries.**

The **new STAUFF Laser Particle Counter I** is a microprocessor-controlled 8-channel particle counter designed for monitoring the degree of contamination of mineral based hydraulic fluids. In contrast to other commercially available particle counters, the **LasPaC I** is characterized by a few special features.

The readings from the **LasPaC I** will immediately indicate the condition of the hydraulic system, the data will be documented, and you will be able to intervene at an early stage in order to prevent wear and damage to the components in the hydraulic system. This does not only minimize repair costs, but also reduces overall equipment downtime.

1. Mobile ► Light weight and handy

With its comparatively low weight of 8.5 kg (18.7 lbs) – only 18 kg (40 lbs) with its rugged aluminum case – the device is well suited for use in the field, even in areas that are difficult to access.

2. Quick results ► ease of operation

Operator input is conducted via touch-screen and function keys. The control features of the particle counter have been designed so that measurements can be done quickly and easily. User defined measuring programs can be entered and stored with password protection.

3. Flexible ► multi-range calibration (optional) to ISO 11 171 and ISO 4402 (for NAS 1638)

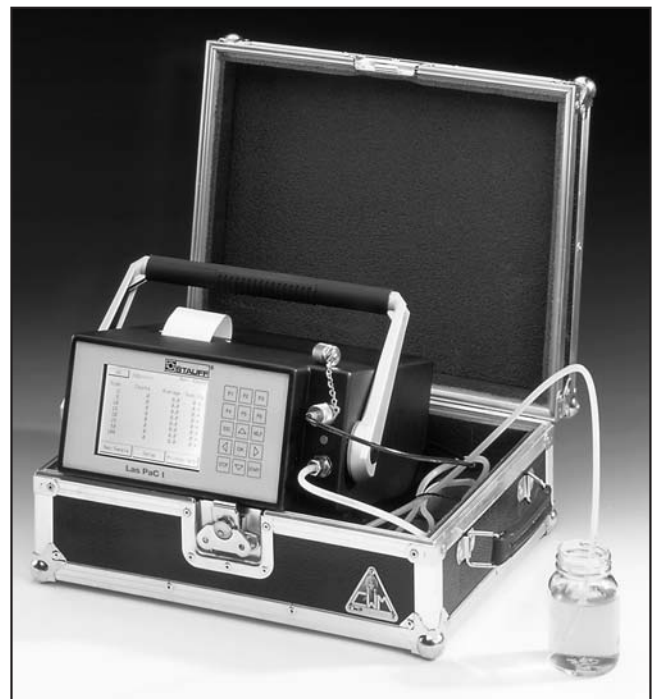
The LasPaC offers several optional calibrations (see Ordering Code): “N” for New calibration ISO 11171, Cleanliness Levels according to ISO 4406 (1999) and SAE AS4059 (2001) “O” for Old calibration ISO 4402, Cleanliness levels according to ISO 4406 (1991) and NAS 1638 (1991) “B” for New and Old Calibration. In this case, the LasPaC is set to the latest calibration per ISO 11 171 by default. However, if users wish, they can switch to the older ISO 4402 calibration for comparison. The device also evaluates readings based upon NAS 1638 classes.

4. For any type of application ► various pressure stages

The LasPaC I features two integrated pressure ranges for 0 to 6 bar (0 to 87 PSI) low pressure and 5 to 420 bar (73 to 6000 PSI) high pressure. This allows oil samples to be taken from pressureless systems or reservoirs without any other equipment. Many other products available today require special add-ons or pressure cartridges which need to be recharged. The STAUFF TEST hose which are provided with the device, allow easy connection to common test couplings (16 x 2).

5. Global use ► variable voltage supply

The integrated power supply unit provides a voltage range of 110 V ... 240 V.



6. Independent use ► storage-type battery

The integrated rechargeable battery makes it possible to perform on-the-spot measurements, even in cases where a direct connection to an external power supply is not possible. The measured data are stored and can be transferred to a computer later on if necessary.

7. "In black and white" ► built-in printer

The integrated printer supports printouts in the field, thus providing immediate documentation.

8. Making the connection ► downloading via a serial interface

The measured data can be downloaded onto any PC or notebook via the device's serial interface, supported by a convenient downloading software. Further processing and storage of the data is done in Microsoft Excel® with the use of specially designed macros. The prepared forms provide for easy transfer of the data. The integrated diagrams represent the data graphically for more clarity. Likewise the data can be assembled to a trend analysis. With Microsoft Excel®, it is possible to edit the data as required, e.g. with the customer's logo.

9. Always up-to-date ► an integrated clock

An integrated and rechargeable battery-operated clock provides the exact date and time which are shown on every printout. In addition, every download of measured data is marked with date and time. The precise time of measurement is thus documented on all printouts and for all the data stored.

10. Adaptable ► software updates

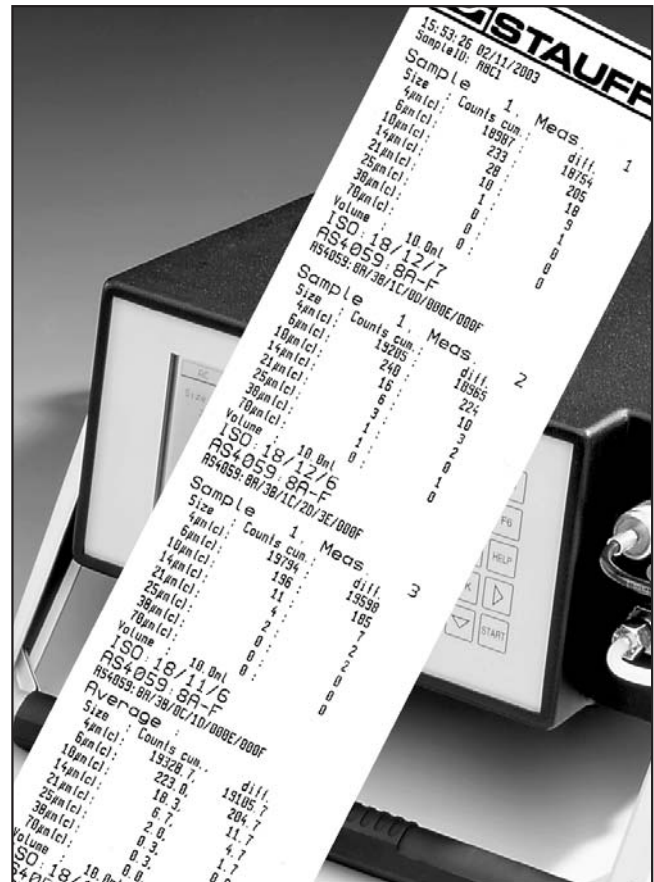
The serial interface ensures flexibility for future developments in terms of calibration, evaluation and output. Moreover, software updates can be installed on the particle counter, without any problems.


11. 100% Coverage

The fluid passes a vitreous measuring cell and is rayed by a laser beam. This laser beam is evaluated at the backside of the cell. Dimensions and the number of particles are calculated from electronic impulses transformed by the shadows. With many other particle counters only a part of the measuring cell is lighted by the laser beam, the particles are only partially registered and the result is projected. In contrast the cell of the LASPAC is completely examined and all particles are registered. Inaccuracies as a result of the projections are avoided.

12. Robust ► Ceramic Piston Pump

The integrated piston pump works in both directions: it outputs the fluid in "low pressure" mode and controls the flow in "high pressure" mode. Ceramic pump components are compatible with various fluids, and are resistant to wear caused by abrasive solid contaminants.





LasPac I Report

according to ISO 11171

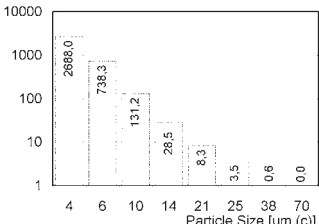
Sample ID / No. : ABC-1
 Service Hour : 23.581 h
 Oil Temperature : 41°C
 Notes : Control
 Test Date : 18. Nov 2002 13:40
 Report Date : 20. Nov 2002
 Profile Name : Std. High Press.

Meas. Volume : 10 ml
 Analysis Volume : 1 ml

ISO 4406 : 19 / 17 / 12 (Calibr. ISO 11 171: 1999)
 AS 4059 : 9 A-F (9A/8B/6C/7D/6E/6F) (Calibr. ISO 11 171: 1999)
 ISO 4406 : 19 / 17 / 13 (Calibr. ISO 4402: 1991)
 NAS 1638 : 9 (9/8/7/6) (Calibr. ISO 4402: 1991)

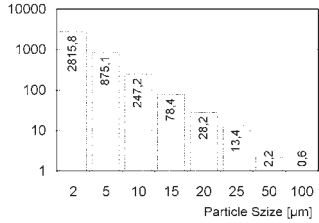
Analysis ISO 11 171

Particle Size	Particle / ml
> 4.0 µm (c)	2688.0
> 6.0 µm (c)	738.3
> 10.0 µm (c)	131.2
> 14.0 µm (c)	28.5
> 21.0 µm (c)	8.3
> 25.0 µm (c)	3.5
> 38.0 µm (c)	0.6
> 70.0 µm (c)	0.0



Analysis ISO 4402

Particle Size	Particle / ml
> 2.0 µm	2815.8
> 5.0 µm	875.1
> 10.0 µm	247.2
> 15.0 µm	78.4
> 20.0 µm	28.2
> 25.0 µm	13.4
> 50.0 µm	2.2
> 100.0 µm	0.6



11. Technical Data

Microprocessor-controlled 8-channel particle counter for contamination monitoring of mineral based hydraulic fluids. The particle counter is equipped with a laser sensor. The orifice of the sensor has a cross-section of 500 x 500 µm. The maximum concentration is 24,000 p/ml at a flow rate of 25 ml/min (ISO 4406 Code 23). The sensor can be calibrated in accordance with the following standards:

Calibration according to ISO 11 171 (1999):

4 ... 70 µm(c) relating to ISO 4406: 1999
and SAE AS4059: 2001

Calibration according to ISO 4402 (1991):

1 ... 100 µm relating to ISO 4406: 1987
and NAS 1638

Channels	1	2	3	4	5	6	7	8
ISO 11171 in µm (c)	4	6	10	14	21	25	38	70
ISO 4402 in µm	2	5	10	15	20	25	50	100

Fluid compatibility

Mineral oils and phosphate esters
(other fluids please call, e.g. Skydrol)

Pressure and viscosity

High pressure 5 bar ... 420 bar (73 ... 6000 PSI)
Viscosity up to 300 mm²/s
Low pressure 0 ... 6 bar (0 ... 87 PSI)
Viscosity up to 160 mm²/s
(Through the integrated pump)

Power supply

Voltage range: 110 V ... 240 V AC
10 V ... 36 V DC
Rechargeable battery operation: 2,5 h
(battery charger is integrated in the counter)

Working conditions

Fluid temperature: 0 ... 90°C (32 ... 194°F)
Ambient temperature: 0 ... 40°C (32 ... 104°F)
Humidity 20% ... 85%, non-condensing, 95% by storage

Data output:

Cumulative particle counts, as well as cleanliness classes to ISO 4406 / SAE AS4059 and ISO 4406 / NAS 1638 depending on calibration (see ordering code).

Integrated printer

Integrated memory: 500 standard measurements (consisting of 3 single measurements)

Download software

Downloading and storage of the data in ASCII format, as well as the evaluation and the further processing in Microsoft Excel® 2000.

Dimensions (w x h x d) in mm

Particle counter 310mm x 310mm x 145mm
(12.2 in x 12.2 in x 5.7 in)
Case 410mm x 720mm x 200mm
(14.3 in x 18.5 in x 7.1 in)

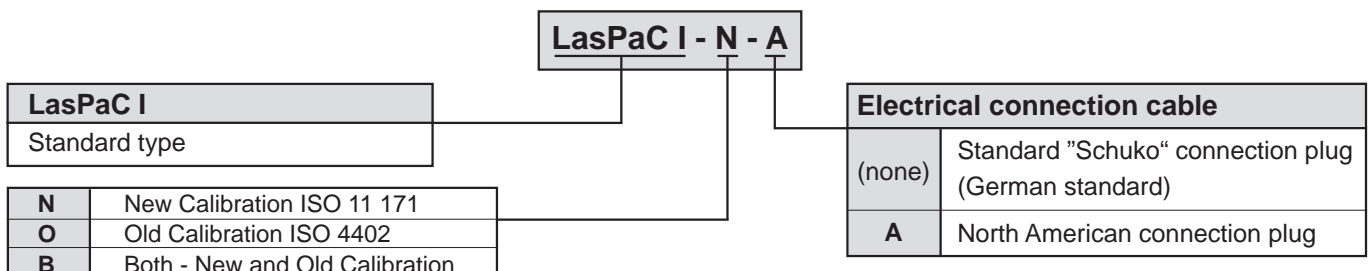
Weight

Particle counter 8.5 kg (18.7 lbs)
Particle counter with case and accessories 18 kg (40 lbs)

12. LasPaC I Kit includes:

- 1 x LasPaC I particle counter
- 1 x Aluminum trolley (case with wheels)
- 1 x Power supply connection cable
- 1 x Serial connection cable for connection to PC or notebook
- 1 x Software Download and Report
- 2 x STAUFF TEST hose (l = 1,5 m) for input/output
- 1 x Suction hose transparent (l = 1,5 m)
- 1 x Adapter low pressure hose to test coupling
- 1 x Control pen with plastic pin for the touchscreen
- 5 x Spare paper roll for built-in printer (order code SPR LasPaC)
- 1 x Operating instructions, in German and in English

13. Order number code



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Australia
Stauff Corporation (Pty.) Ltd.
P.O.Box 227 , 24-26 Doyle Avenue,
Unanderra Wollongong , N.S.W
2526 AUSTRALIA
Tel: +61 2 42 71 18 77
Fax: +61 2 42 71 84 32



Brazil
Stauff Brasil Ltda.
Av. Gupê 10767
Galpão 2 – Bloco A
Barueri – São Paulo – CEP 06422-120, BRAZIL
Tel: +55 (0)11-4789-9020
Fax: +55 (0)11-4789-9021



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Via Pola 21/23
I-20034 Birone di Giussano
Tel: +39 0362 31 21 13
Fax: +39 0362 33 55 36



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Im Ehrenfeld 4 · D-58791 Werdohl
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code code bezeichnung código	brand marque hersteller marca		code code bezeichnung código	brand marque hersteller marca		code code bezeichnung código	brand marque hersteller marca	
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00301357	HYDAC	SE160A10B	00303871	HYDAC	SE070A03B	0030D003PV	HYDAC	SE008D03V
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00301360	HYDAC	SE160A03B	00303873	HYDAC	SE070A10B	0030D003VV	HYDAC	SE008A03V
00301361	HYDAC	SE014A10V	00303874	HYDAC	SE070A20B	0030D003VV	HYDAC	SE008A03B
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00301363	HYDAC	SE014A05V	00303969	HYDAC	SE008A20B	0030D003YV	HYDAC	SE008C03V
00301364	HYDAC	SE014A03V	00303970	HYDAC	SE008A10B	0030D005BH3HC	HYDAC	SE008F05B
00301365	HYDAC	SE045A10V	00303971	HYDAC	SE008A05B	0030D005BH3HC	HYDAC	SE008F05V
00301366	HYDAC	SE045A20V	00303972	HYDAC	SE008A03B	0030D005BHHC	HYDAC	SE008F05B
00301367	HYDAC	SE045A05V	00303973	HYDAC	SE008B25B	0030D005BHHC	HYDAC	SE008F05V
00301368	HYDAC	SE045A03V	00303997	HYDAC	SE030A20B	0030D005BHHC	HYDAC	SE008F05B
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00301371	HYDAC	RE045S25B	00304000	HYDAC	SE030A03B	0030D005BNHC	HYDAC	SE008E05B
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00301373	HYDAC	SE160A10V	00304053	HYDAC	RE008A20B	0030D005BNHC	HYDAC	SE008E05B
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00301376	HYDAC	SE160A03V	00304057	HYDAC	RE008D10B	0030D005VV	HYDAC	SE008A05B
00301403	HYDAC	RE070B25B	00304058	HYDAC	RE130S25B	0030D005VW	HYDAC	SE008A05V
00301404	HYDAC	RE070S25B	00304081	HYDAC	RE030A20B	0030D005YV	HYDAC	SE008C05B
00301405	HYDAC	RE070A03B	00304082	HYDAC	RE030A10B	0030D005YV	HYDAC	SE008C05V
00301409	HYDAC	SE014B25B	00304083	HYDAC	RE030B25B	0030D010BH3HC	HYDAC	SE008F10V
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00301460	HYDAC	RE090D10V	00304533	HYDAC	SE045B50B	0030D020BNHC	HYDAC	SE008E20B
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00301465	HYDAC	RE160D20V	00304683	HYDAC	RE600S25B	0030D020BNHC	HYDAC	SE008E20V
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00301477	HYDAC	RE045B25V	00304774	HYDAC	RE070N20B	0030D020PV	HYDAC	SE008D20V
00301479	HYDAC	RE090B25V	00304800	HYDAC	SP030E20B	0030D020V	HYDAC	SE008A20B
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00301567	HYDAC	SE045A05B	00305944	HYDAC	SE160B25B	0030		




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0030R005BNHCV	HYDAC	RE008E05V	00313399	HYDAC	RE070A10B	00319472	HYDAC	NR250E10B
0030R005P	HYDAC	RE008D05B	00313403	HYDAC	SE070H20B	00319473	HYDAC	NR250E25B
0030R005PV	HYDAC	RE008D05V	00313408	HYDAC	SE014B100V	00319474	HYDAC	NR630E03B
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0030R010BN3HC	HYDAC	RE008E10B	00313468	HYDAC	RE600B25B	00319478	HYDAC	NL063E03B
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0030R010P	HYDAC	RE008D10B	00313487	HYDAC	SE008F10B	00319482	HYDAC	NL100E03B
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0030R010V	HYDAC	RE008A10B	00313501	HYDAC	RE600G05V	00319484	HYDAC	NL100E10B
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00310203	HYDAC	RE130A10B	00314341	HYDAC	SE130A05B	00319535	HYDAC	NR250E03B
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00310205	HYDAC	RE200D20B	00314343	HYDAC	SE125A03B	00319568	HYDAC	SE030S100B
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00310728	HYDAC	SP070E05B	00314974	HYDAC	SE160H20B	0040DN006BNHC	HYDAC	NL040E06B
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00311137	HYDAC	SP070F03B	00315343	HYDAC	SE160B25V	0040RN003BNHC	HYDAC	NR040E03B
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00311301	HYDAC	RE030S25B	00315641	HYDAC	RE300A20B1613	0040RN025BNHC	HYDAC	NR040E25B
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00311337	HYDAC	RE014A10B	00315676	HYDAC	RE014B25B	0060D003BH3HC	HYDAC	SE014H03B
00311432	HYDAC	RE200B100B	00315736	HYDAC	RE045B25B	0060D003BH3HCV	HYDAC	SE014H03V
00311500	HYDAC	RE130S100B	00315739	HYDAC	SE008B25V	0060D003BHHC	HYDAC	SE014H03B
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00311749	HYDAC	SE035B25B	00316066	HYDAC	RE600S100B	0060D003BN	HYDAC	SE014E03B
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00311809	HYDAC	SE045H03B	00316145	HYDAC	SE014B50B	0060D003BN3HCV	HYDAC	SE014G03V
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00311918	HYDAC	SE070H03B	00316416	HYDAC	SE070S25B	0060D003BNHC	HYDAC	SE014G03B
00311919	HYDAC	RE070S100B	00316553	HYDAC	RE030B25B	0060D003BNV	HYDAC	SE014E03V
00311965	HYDAC	SP020F03B	00316574	HYDAC	RE130N20B	0060D003BNW	HYDAC	SE014E03B
00312022	HYDAC	SE125H10B	00316608	HYDAC	RE070S25V	0060D003P	HYDAC	SE014D03B
00312028	HYDAC	SE160H10B	00316621	HYDAC	SP090E10B	0060D003PV	HYDAC	SE014D03V
00312065	HYDAC	SE090B100V	00316627	HYDAC	RE008A10B	0060D003V	HYDAC	SE014A03B
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00312175	HYDAC	RE300N20B	00316757	HYDAC	RE045S50B	0060D003W	HYDAC	SE014A03B
00312191	HYDAC	SE070H10B	00316827	HYDAC	SE014S25B	0060D003Y	HYDAC	SE014C03B
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00312218	HYDAC	SE030A10V	00316974	HYDAC	RE070B25V	0060D005BH	HYDAC	SE014F05B
00312219	HYDAC	SE030A20V	00317250	HYDAC	SP300E10B	0060D005BH3HC	HYDAC	SE014H05B
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00312565	HYDAC	RE030S100B	00317670	HYDAC	SE160B50V	0060D005BNHC	HYDAC	SE014G05B
00312619	HYDAC	RE300A10V	00317788	HYDAC	SE160B50B	0060D005BNHCV	HYDAC	SE014G05V
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00312727	HYDAC	SE008F03V	00317980	HYDAC	RE008A20B	0060D005BNV	HYDAC	SE014E05B
00312836	HYDAC	SE008A20V	00317999	HYDAC	RE600S50B1613	0060D005BNW	HYDAC	SE014E05B
00312858	HYDAC	SE130A03B	00318537	HYDAC	SE090H03B	0060D005P	HYDAC	SE014D05B
00312859	HYDAC	RE200S25B	00318621	HYDAC	RE070N10B	0060D005PV	HYDAC	SE014D05V
00312876	HYDAC	SE090B50V	00318779	HYDAC	RE600S50B	0060D005V	HYDAC	SE014A05B
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00312995	HYDAC	SE045B100V	00318929	HYDAC	SE045H20B	0060D005Y	HYDAC	SE014C05B
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00313039	HYDAC	SP070E03B	00318944	HYDAC	RE014B50B	0060D010BH3HC	HYDAC	SE014H10B
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00313136	HYDAC	RE014B50V	00319071	HYDAC	RE600A10B	0060D010BHHC	HYDAC	SE014H10V
00313137	HYDAC	RE014B100V	00319100	HYDAC	RE300S25V	0060D010BHHC	HYDAC	SE014H10B
00313185	HYDAC	SE035A10B	00319162	HYDAC	SE045S50B	0060D010BHV	HYDAC	SE014F10V
00313186	HYDAC	SE035A10B	00319175	HYDAC	RE070B50B	0060D010BHW	HYDAC	SE014F10B
00313187								




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0060D010V	HYDAC	SE014A10B	0080MA025P	HYDAC	SF6549	0110D025WHCW	HYDAC	SE030S25B
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0060D020BHV	HYDAC	SE014F20V	0095MA010BN	HYDAC	SF6631	0110D100WV	HYDAC	SE030B100V
0060D020BHV	HYDAC	SE014F20B	0095MA010P	HYDAC	SF6621	0110D100WVW	HYDAC	SE030B100B
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0060D020BN3HC	HYDAC	SE014G20B	0095MA025P	HYDAC	SF6611	0110R003BN3HC	HYDAC	RE030G03B
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0060D020PV	HYDAC	SE014D20V	0100DN025BNHC	HYDAC	NL100E25B	0110R003VV	HYDAC	RE030A03V
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0060D025WV	HYDAC	SE014B25V	0110D003BHHCV	HYDAC	SE030H03V	0110R005PV	HYDAC	RE030D05V
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0060R025WHC	HYDAC	RE014S25B	0110D010Y	HYDAC	SE030C10B	01250507	HYDAC	RE300S50V
0060R025WHCW	HYDAC	RE014B25B	0110D010YV	HYDAC	SE030C10B	01250516	HYDAC	SE125S100B
0060R025WV	HYDAC	RE014B25V	0110D010YV	HYDAC	SE030F20B	01250531	HYDAC	NL400E10B
0060R025WVW	HYDAC	RE014B25B	0110D020BH	HYDAC	SE030H20B	01250532	HYDAC	NL400E03B
0060R050W	HYDAC	RE014B50B	0110D020BH3HC	HYDAC	SE030H20V	01250554	HYDAC	SE045G20B
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0063DN010BHHC	HYDAC							




code code bezeichnung código	brand marque hersteller marca	 STAUFF®	code code bezeichnung código	brand marque hersteller marca	 STAUFF®	code code bezeichnung código	brand marque hersteller marca	 STAUFF®
01251428	HYDAC	SE014G05V	01253068	HYDAC	SE045H20B	01262247	HYDAC	RE250D20V
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01251461	HYDAC	SE090G03V	01253087	HYDAC	SE090H03V	01262272	HYDAC	SE130A10V
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01252338	HYDAC	SE008B50V	01260886	HYDAC	SE125G20B	01262921	HYDAC	RE008E10B
01252522	HYDAC	SE035S25B	01260887	HYDAC	SE090G20B	01262922	HYDAC	RE008E20B
01252525	HYDAC	SE070S25B	01260888	HYDAC	SE130G20B	01262923	HYDAC	RE008E03V
01252527	HYDAC	SE130S25B	01260889	HYDAC	SE160G20B	01262924	HYDAC	RE008E05V
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01252539	HYDAC	RE600B25V	01260891	HYDAC	SE014G05B	01262926	HYDAC	RE008E20V
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01252894	HYDAC	SE250G03B	01260893	HYDAC	SE035G05B	01262932	HYDAC	RE014G05B
01252896	HYDAC	SE250G05B	01260894	HYDAC	SE045G05B	01262933	HYDAC	RE014G10B
01252898	HYDAC	SE250G10B	01260895	HYDAC	SE070G05B	01262934	HYDAC	RE014G20B
01252900	HYDAC	SE250G20B	01260896	HYDAC	SE125G05B	01262935	HYDAC	RE014G03V
01252902	HYDAC	SE300G03B	01260897	HYDAC	SE090G05B	01262936	HYDAC	RE014G05V
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01252906	HYDAC	SE300G10B	01260899	HYDAC	SE160G05B	01262938	HYDAC	RE014G20V
01252908	HYDAC	SE300G20B	01260900	HYDAC	SE008E03B	01262943	HYDAC	RE030G03B
01253038	HYDAC	SE014H03B	01260901	HYDAC	SE014G03B	01262944	HYDAC	RE030G05B
01253039	HYDAC	SE014H03V	01260902	HYDAC	SE030G03B	01262945	HYDAC	RE030G10B
01253040	HYDAC	SE014H05B	01260903	HYDAC	SE035G03B	01262946	HYDAC	RE030G20B
01253041	HYDAC	SE014H05V	01260904	HYDAC	SE045G03B	01262947	HYDAC	RE030G03V
01253042	HYDAC	SE014H10B	01260905	HYDAC	SE070G03B	01262948	HYDAC	RE030G05V
01253043	HYDAC	SE014H10V	01260906	HYDAC	SE125G03B	01262949	HYDAC	RE030G10V
01253044	HYDAC	SE014H20B	01260907	HYDAC	SE090G03B	01262950	HYDAC	RE030G20V
01253045	HYDAC	SE014H20V	01260908	HYDAC	SE130G03B	01262955	HYDAC	RE045G03B
01253046	HYDAC	SE030H03B	01260909	HYDAC	SE160G03B	01262956	HYDAC	RE045G05B
01253047	HYDAC	SE030H03V	01260909	HYDAC	RE090S100V	01262957	HYDAC	RE045G10B
01253048	HYDAC	SE030H05B	01261215	HYDAC	SE125B50V	01262958	HYDAC	RE045G20B
01253049	HYDAC	SE030H05V	01261313	HYDAC	SE090B50B	01262959	HYDAC	RE045G03V
01253050	HYDAC	SE030H10B	01261328	HYDAC	SE008A20B	01262960	HYDAC	RE045G05V
01253051	HYDAC	SE030H10V	01261398	HYDAC	SE125S25B	01262961	HYDAC	RE045G10V
01253052	HYDAC	SE030H20B	01261412	HYDAC	RE070S50V	01262962	HYDAC	RE045G20V
01253053	HYDAC	SE030H20V	01261427	HYDAC	RE600S50V	01262967	HYDAC	RE065G03B
01253054	HYDAC	SE035H03B	01261818	HYDAC	RE300N20B1650	01262968	HYDAC	RE065G05B
01253055	HYDAC	SE035H03V	01261838	HYDAC	SE125H20B	01262969	HYDAC	RE065G10B
01253056	HYDAC	SE035H05B	01261840	HYDAC	SE008B50B	01262970	HYDAC	RE065G20B
01253057	HYDAC	SE035H05V	01261937	HYDAC	SE030S100B	01262979	HYDAC	RE070G03B
01253058	HYDAC	SE035H10B	01261944	HYDAC	RE300S25B1650	01262980	HYDAC	RE070G05B
01253059	HYDAC	SE045H20V	01262227	HYDAC	RE070D10V	01262981	HYDAC	RE070G10B
01253060	HYDAC	SE035H20B	01262239	HYDAC	RE600A03B	01262982	HYDAC	RE070G20B
01253061	HYDAC	SE035H20V	01262240	HYDAC	RE600A10V	01262983	HYDAC	RE070G03V
01253062	HYDAC	SE045H03B	01262241	HYDAC	RE600A03V	01262984	HYDAC	RE070G05V
01253063	HYDAC	SE045H03V						




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01262996	HYDAC	RE090G05V	01265886	HYDAC	RE240S25B	0140D050WW	HYDAC	SE035B50B
01262997	HYDAC	RE090G10V	01265887	HYDAC	RE240S50B	0140D100W	HYDAC	SE035B100B
01262998	HYDAC	RE090G20V	01265888	HYDAC	RE240S100B	0140D100WHC	HYDAC	SE035S100B
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01263004	HYDAC	RE130G05B	01266389	HYDAC	NR1000E10B	0140D100WVH	HYDAC	SE035B100B
01263005	HYDAC	RE130G10B	01266390	HYDAC	NR1000B40B	0160D003BH	HYDAC	SE045F03B
01263006	HYDAC	RE130G20B	01267794	HYDAC	NR1000E03B	0160D003BH3HC	HYDAC	SE045H03B
01263007	HYDAC	RE130G03V	01267806	HYDAC	NR1000E06B	0160D003BH3HCV	HYDAC	SE045H03V
01263008	HYDAC	RE130G05V	01268126	HYDAC	RE600B100B1613	0160D003BHHC	HYDAC	SE045H03B
01263009	HYDAC	RE130G10V	01268136	HYDAC	RE130S50V	0160D003BHHCV	HYDAC	SE045H03V
01263010	HYDAC	RE130G20V	01268174	HYDAC	NL160B100B	0160D003BHHCW	HYDAC	SE045H03B
01263015	HYDAC	RE160G03B	01268850	HYDAC	NR040E03B	0160D003BHV	HYDAC	SE045F03V
01263016	HYDAC	RE160G05B	01268851	HYDAC	NR040E06B	0160D003BHW	HYDAC	SE045F03B
01263017	HYDAC	RE160G10B	01268852	HYDAC	NR040E10B	0160D003BHV	HYDAC	SE045E03B
01263018	HYDAC	RE160G20B	01268853	HYDAC	NR040E25B	0160D003BN3HC	HYDAC	SE045G03B
01263019	HYDAC	RE160G03V	01268854	HYDAC	NR063E03B	0160D003BN3HCV	HYDAC	SE045G03V
01263020	HYDAC	RE160G05V	01268855	HYDAC	NR063E06B	0160D003BNHC	HYDAC	SE045G03B
01263021	HYDAC	RE160G10V	01268856	HYDAC	NR063E10B	0160D003BNHCV	HYDAC	SE045G03V
01263022	HYDAC	RE160G20V	01268857	HYDAC	NR063E25B	0160D003BNHCW	HYDAC	SE045G03B
01263027	HYDAC	RE200G03B	01268858	HYDAC	NR160E03B	0160D003BNV	HYDAC	SE045E03V
01263028	HYDAC	RE200G05B	01268859	HYDAC	NR160E06B	0160D003BNW	HYDAC	SE045E03B
01263029	HYDAC	RE200G10B	01268860	HYDAC	NR160E10B	0160D003BHV	HYDAC	SE045D03B
01263030	HYDAC	RE200G20B	01268861	HYDAC	NR160E25B	0160D003PV	HYDAC	SE045D03V
01263031	HYDAC	RE200G03V	01268862	HYDAC	NR400E03B	0160D003V	HYDAC	SE045A03B
01263032	HYDAC	RE200G05V	01268863	HYDAC	NR400E06B	0160D003VV	HYDAC	SE045A03V
01263033	HYDAC	RE200G10V	01268864	HYDAC	NR400E10B	0160D003Y	HYDAC	SE045A03B
01263034	HYDAC	RE200G20V	01268865	HYDAC	NR400E25B	0160D003YY	HYDAC	SE045C03B
01263039	HYDAC	RE250G03B	01268866	HYDAC	NR1000E25B	0160D003YV	HYDAC	SE045C03V
01263040	HYDAC	RE250G05B	01268867	HYDAC	NL160E03B	0160D005BH	HYDAC	SE045F05B
01263041	HYDAC	RE250G10B	01268868	HYDAC	NL160E06B	0160D005BH3HC	HYDAC	SE045H05B
01263042	HYDAC	RE250G20B	01268869	HYDAC	NL160E10B	0160D005BH3HCV	HYDAC	SE045H05V
01263043	HYDAC	RE250G03V	01268870	HYDAC	NL160E25B	0160D005BHHC	HYDAC	SE045H05B
01263044	HYDAC	RE250G05V	01268871	HYDAC	NL160F03B	0160D005BHHCV	HYDAC	SE045H05V
01263045	HYDAC	RE250G10V	01268872	HYDAC	NL160F06B	0160D005BHHCW	HYDAC	SE045H05B
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01263051	HYDAC	RE300G03B	01268874	HYDAC	NL160F25B	0160D005BHV	HYDAC	SE045F05B
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01263058	HYDAC	RE300G20V	01271559	HYDAC	NL160B200V	0160D005BNV	HYDAC	SE045E05V
01263059	HYDAC	RE300G03B1613	01271560	HYDAC	NL250B25B	0160D005BNW	HYDAC	SE045E05B
01263060	HYDAC	RE300G05B1613	01271561	HYDAC	NL250B40B	0160D005PV	HYDAC	SE045D05B
01263061	HYDAC	RE300G10B1613	01271562	HYDAC	NL250B100B	0160D005V	HYDAC	SE045A05B
01263062	HYDAC	RE300G20B1613	01271563	HYDAC	NL250B200B	0160D005VV	HYDAC	SE045A05V
01263063	HYDAC	RE600G03B	01271564	HYDAC	NL250B25V	0160D005VW	HYDAC	SE045A05B
01263064	HYDAC	RE600G05B	01271565	HYDAC	NL250B40V	0160D005Y	HYDAC	SE045C05B
01263065	HYDAC	RE600G10B	01271566	HYDAC	NL250B100V	0160D005YV	HYDAC	SE045C05V
01263066	HYDAC	RE600G20B	01271567	HYDAC	NL250B200V	0160D010BH	HYDAC	SE045F10B
01263067	HYDAC	RE600G03V	01271568	HYDAC	NL400B25B	0160D101BH3HC	HYDAC	SE045H10B
01263068	HYDAC	RE600G05V	01271569	HYDAC	NL400B40B	0160D101BH3HCV	HYDAC	SE045H10V
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01263070	HYDAC	RE600G20V	01271571	HYDAC	NL400B200B	0160D101BHHCV	HYDAC	SE045H10V
01263073	HYDAC	RE600G10B1613	01271572	HYDAC	NL400B25V	0160D101BHHCW	HYDAC	SE045H10B
01263074	HYDAC	RE600G20B1613	01271573	HYDAC	NL400B40V	0160D101BHHCW	HYDAC	SE045H10V
01263387	HYDAC	SE070S50B	01271574	HYDAC	NL400B100V	0160D101BHV	HYDAC	SE045F10V
01263404	HYDAC	SE008E03V	01271575	HYDAC	NL400B200V	0160D101BHV	HYDAC	SE045F10B
01263405	HYDAC	SE008E05V	01280891	HYDAC	SE014G05B	0160D101BN	HYDAC	SE045E10B
01263406	HYDAC	SE008E10V	01282950	HYDAC	RE030G20V	0160D101BN3HC	HYDAC	SE045G10B
01263407	HYDAC	SE008E20V	0140D003BH3HC	HYDAC	SE035H03B	0160D101BN3HCV	HYDAC	SE045G10V
01263452	HYDAC	SE008F03B	0140D003BH3HCV	HYDAC	SE035H03V	0160D101BNHC	HYDAC	SE045G10B
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01263458	HYDAC	SE008F10V	0140D003BNHC	HYDAC	SE035G03B	0160D101V	HYDAC	SE045A10V
01263459	HYDAC	SE008F20V	0140D003BNHCV	HYDAC	SE035G03V	0160D101VW	HYDAC	SE045A10B
01263632	HYDAC	SE070B50V	0140D003BNHCW	HYDAC	SE035G03B	0160D101Y	HYDAC	SE045C10B
01263636	HYDAC	NL040E03B	0140D003VV	HYDAC	SE035A03B	0160D101YV	HYDAC	SE045C10V
01263637	HYDAC	NL040E10B	0140D003VW	HYDAC	SE035A03V	0160D202BH	HYDAC	SE045F20B
01263752	HYDAC	RE300G03B1650	0140D005BH3HC	HYDAC	SE035H05B	0160D202BH3HC	HYDAC	SE045H20B
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01263754	HYDAC	RE300G10B1650	0140D005BHHC	HYDAC	SE035H05B	0160D202BHHC	HYDAC	SE045H20B
01263755	HYDAC	RE300G20B1650	0140D005BHHCV	HYDAC	SE035H05V	0160D202BHHCV	HYDAC	SE045H20V
01263760	HYDAC	RE300G03V1613	0140D005BHHCW	HYDAC	SE035H05B	0160D202BHHCW	HYDAC	SE045H20B
01263761	HYDAC	RE300G05V1613	0140D005BHHCW	HYDAC	SE035H05B	0160D202BHV	HYDAC	SE045F20V
01263762	HYDAC	RE300G10V1613	0140D005BN3HC	HYDAC	SE035G05B	0160D202BHV	HYDAC	SE045F20B
01263763	HYDAC	RE300G20V1613	0140D005BN3HCV	HYDAC	SE035G05V	0160D202BHV	HYDAC	SE045F20B
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01263766	HYDAC	RE300G10V1650	0140D005BNHCW	HYDAC	SE035G05B	0160D202BN3HC	HYDAC	SE045G20B
01263767	HYDAC	RE300G20V1650	0140D005V	HYDAC	SE035A05B	0160D202BN3HCV	HYDAC	SE045G20V
01263778	HYDAC	RE600G10B1650	0140D005VV	HYDAC	SE035A05V	0160D202BNHC	HYDAC	SE045G20V
01263779	HYDAC	RE600G20B1650	0140D005VW	HYDAC	SE035A05B	0160D202BNHCV	HYDAC	SE045G20V
01263785	HYDAC	RE600G05V1613	0140D010BH3HC	HYDAC	SE035H10B	0160D202BNHCW	HYDAC	SE045G20B
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01263787	HYDAC	RE600G20V1613	0140D010BHHC	HYDAC	SE035H10V	0160D202BNW	HYDAC	SE045E20B
01263789	HYDAC	RE600G05V1650	0140D010BHHCV	HYDAC	SE035H10V	0160D202PV	HYDAC	SE045D20V
01263790	HYDAC	RE600G10V1650	0140D010BHHCW	HYDAC	SE035H10V	0160D202V	HYDAC	SE045A20V
01263791	HYDAC	RE600G20V1650	0140D010BN3HC	HYDAC	SE035G10B	0160D202V	HYDAC	SE045A20V
01264050	HYDAC	SE070B100V	0140D010BN3HCV	HYDAC	SE035G10V	0160D202VW	HYDAC	SE045A20V
01264196	HYDAC	SE130S50B	0140D010BNHC	HYDAC	SE035G10V	0160D202VY	HYDAC	SE045C20B
01264198	HYDAC	SE125S100B	0140D010BNHCV	HYDAC	SE035G10V	0160D202Y	HYDAC	SE045C20B
01264393	HYDAC	SE045S50B	0140D010BNHCW	HYDAC	SE035G10B	0160D202YV	HYDAC	SE045C20V
01264929	HYDAC	NL400E06B	0140D010V	HYDAC	SE035A10B	0160D202YV	HYDAC	SE045B25B
01265242	HYDAC	RE240G10B	0140D010VV	HYDAC	SE035A10V	0160D202YWHC	HYDAC	SE045S25B
01265316	HYDAC	NL040E06B	0140D010VW	HYDAC	SE035A10B	0160D202YWHC	HYDAC	SE045S25B
01265317	HYDAC	NL040E25B	0140D020BH3HC	HYDAC	SE035H20B	0160D202YWHC	HYDAC	SE045S25B
01265318	HYDAC	NL040F03B	0140D020BH3HCV	HYDAC	SE035H20V	0160D202YV	HYDAC	SE045B25V
01265319	HYDAC	NL040F06B	0140D020BHHC	HYDAC	SE035H20V	0160D202YV	HYDAC	SE045B25V
01265320	HYDAC	NL040F10B	0140D020BHHCV	HYDAC	SE035H20V	0160D202YV	HYDAC	SE045B25V
01265321	HYDAC	NL040F25B	0140D020BHHCW	HYDAC	SE035H20V	0160D202YV	HYDAC	SE045B25V
01265322	HYDAC	NL400E25B	0140D020BN3HC	HYDAC	SE035G20B	0160D202YV	HYDAC	SE045B25V
01265323	HYDAC	NL400F03B	0140D020BN3HCV	HYDAC	SE035G20V	0160D202YV	HYDAC	SE045B25V
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01265325	HYDAC	NL400F10B	0140D020BNHCV	HYDAC	SE035G20V	0160D202YV	HYDAC	SE045B25V
01265326	HYDAC	NL400F25B	0140D020BNHCW	HYDAC	SE035G20V	0160D202YV	HYDAC	SE045B25V
01265431	HYDAC	SE030						




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0160DN025WHCH	HYDAC	NL160B25B	01E17025G30EP	INTERNORMEN	SN045B25B	01NL1006VG30EP	INTERNORMEN	NL100E06B
0160DN025WHCV	HYDAC	NL160B25V	01E17025GHREP	INTERNORMEN	SN045W25B	01NL25010VG30EP	INTERNORMEN	NL250E10B
0160DN050WHCH	HYDAC	NL160B40B	01E17025VG30EP	INTERNORMEN	SN045E20B	01NL25016VG30EP	INTERNORMEN	NL250E16B
0160DN050WHCV	HYDAC	NL160B40V	01E17025VGHREP	INTERNORMEN	SN045F20B	01NL25025VG30EP	INTERNORMEN	NL250E25B
0160DN1100WHCH	HYDAC	NL160B100B	01E17030VGHREP	INTERNORMEN	SN045F03B	01NL25030VG30EP	INTERNORMEN	NL250E30B
0160DN1100WHCV	HYDAC	NL160B100V	01E1706VGHREP	INTERNORMEN	SN045F05B	01NL2506VG30EP	INTERNORMEN	NL250E06B
0160DN200WHCH	HYDAC	NL160B200B	01E21010V16EP	INTERNORMEN	RN050K10B1614	01NL40010VG30EP	INTERNORMEN	NL400E10B
0160DN200WHCV	HYDAC	NL160B200V	01E21010P16SP	INTERNORMEN	RN050K10B	01NL40016VG30EP	INTERNORMEN	NL400E16B
0160MA003BN	HYDAC	SF6703MG	01E21010VG16EP	INTERNORMEN	RN050E10B1614	01NL40025VG30EP	INTERNORMEN	NL400E25B
0160MA005BN	HYDAC	SF6706MG	01E21010VG16SP	INTERNORMEN	RN050E10B	01NL40030VG30EP	INTERNORMEN	NL400E30B
0160MA010BN	HYDAC	SF6730MG	01E21025G16EP	INTERNORMEN	RN050B25B1614	01NL4006VG30EP	INTERNORMEN	NL400E06B
0160MA010P	HYDAC	SF6720	01E21025V16SP	INTERNORMEN	RN050B25B	01NL4010VG30EP	INTERNORMEN	NL040E10B
0160MA020BN	HYDAC	SF6728MG	01E21025P16EP	INTERNORMEN	RN050K20B1614	01NL4016VG30EP	INTERNORMEN	NL040E16B
0160MA025P	HYDAC	SF6710	01E21025V16SP	INTERNORMEN	RN050K20B	01NL4025VG30EP	INTERNORMEN	NL040E25B
0160R003BN	HYDAC	RE045E03B	01E21025VG16EP	INTERNORMEN	RN050E20B1614	01NL4030VG30EP	INTERNORMEN	NL040E30B
0160R003BN3HC	HYDAC	RE045G03B	01E21025VG16SP	INTERNORMEN	RN050E20B	01NL4060VG30EP	INTERNORMEN	NL040E06B
0160R003BN3HCV	HYDAC	RE045G03V	01E21030V16EP	INTERNORMEN	RN050E03B1614	01NL6310VG30EP	INTERNORMEN	NL063E10B
0160R003BNHC	HYDAC	RE045G03B	01E21040G16EP	INTERNORMEN	RN050B40B1614	01NL6316VG30EP	INTERNORMEN	NL063E16B
0160R003BNHCV	HYDAC	RE045G03V	01E21040G16SP	INTERNORMEN	RN050B40B	01NL6325VG30EP	INTERNORMEN	NL063E25B
0160R003BNV	HYDAC	RE045E03V	01E2106VG16EP	INTERNORMEN	RN050E05B1614	01NL6330VG30EP	INTERNORMEN	NL063E03B
0160R003P	HYDAC	RE045D03B	01E21080G16EP	INTERNORMEN	RN050B80B1614	01NL6360VG30EP	INTERNORMEN	NL063E06B
0160R003PV	HYDAC	RE045D03V	01E21080G16SP	INTERNORMEN	RN050B80B	01NR63010VG10BP	INTERNORMEN	NR630E10B
0160R003V	HYDAC	RE045A03B	01E24010VG30EP	INTERNORMEN	SN070E10B	01NR63016VG10BP	INTERNORMEN	NR630E16B
0160R003VV	HYDAC	RE045A03V	01E24010VGHREP	INTERNORMEN	SN070F10B	01NR63025G10BP	INTERNORMEN	NR630E25B
0160R003VV	HYDAC	RE045A03B	01E24025G30EP	INTERNORMEN	SN070B25B	01NR63025VG10BP	INTERNORMEN	NR630E25B
0160R005BN	HYDAC	RE045E05B	01E24025GHREP	INTERNORMEN	SN070W25B	01NR63030VG10BP	INTERNORMEN	NR630E30B
0160R005BN3HC	HYDAC	RE045G05B	01E24025VG30EP	INTERNORMEN	SN070E20B	01NR63040G10BP	INTERNORMEN	NR630E40B
0160R005BN3HCV	HYDAC	RE045G05V	01E24025VGHREP	INTERNORMEN	SN070F20B	01NR63060VG10BP	INTERNORMEN	NR630E06B
0160R005BNHC	HYDAC	RE045G05B	01E24030VGHREP	INTERNORMEN	SN070F03B	020060D10VG30HCEP	INTERNORMEN	SE014G10B
0160R005BNHCV	HYDAC	RE045G05V	01E2406VGHREP	INTERNORMEN	SN070F05B	020060D10VGHRRHCEP	INTERNORMEN	SE014H10B
0160R005BNV	HYDAC	RE045E05V	01E3010VG30EP	INTERNORMEN	SE008E10B	020060D20VG30HCEP	INTERNORMEN	SE014G20B
0160R005P	HYDAC	RE045D05B	01E3010VGHREP	INTERNORMEN	SE008F10B	020060D20VGHRRHCEP	INTERNORMEN	SE014H20B
0160R005PV	HYDAC	RE045D05V	01E3010VG30EP	INTERNORMEN	SE008E20B	020060D25G30HCEP	INTERNORMEN	SE014B25B
0160R005V	HYDAC	RE045A05B	01E3025G30EP	INTERNORMEN	SE008B25B	020060D30VG30HCEP	INTERNORMEN	SE014G03B
0160R005VV	HYDAC	RE045A05V	01E3025VGHREP	INTERNORMEN	SE008F20B	020060D30VGHRRHCEP	INTERNORMEN	SE014H03B
0160R005VV	HYDAC	RE045A05B	01E3030VGHREP	INTERNORMEN	SE008F03B	020060D60VG30HCEP	INTERNORMEN	SE014G05B
0160R010BN	HYDAC	RE045E10B	01E306VGHREP	INTERNORMEN	SE008F05B	020060D60VGHRRHCEP	INTERNORMEN	SE014H05B
0160R010BN3HC	HYDAC	RE045G10B	01E32010P16EP	INTERNORMEN	RN075K10B1614	020110D10VG30HCEP	INTERNORMEN	SE030G10B
0160R010BN3HCV	HYDAC	RE045G10V	01E32010P16SP	INTERNORMEN	RN075K10B	020110D10VGHRRHCEP	INTERNORMEN	SE030H10B
0160R010BNHC	HYDAC	RE045G10B	01E32010VG16EP	INTERNORMEN	RN075E10B1614	020110D20VG30HCEP	INTERNORMEN	SE030G20B
0160R010BNHCV	HYDAC	RE045G10V	01E32010VG16SP	INTERNORMEN	RN075E10B	020110D20VGHRRHCEP	INTERNORMEN	SE030H20B
0160R010BNV	HYDAC	RE045E10V	01E32025G16EP	INTERNORMEN	RN075B25B1614	020110D25G30HCEP	INTERNORMEN	SE030B25B
0160R010P	HYDAC	RE045D10B	01E32025V16SP	INTERNORMEN	RN075B25B	020110D30VG30HCEP	INTERNORMEN	SE030G30B
0160R010PHC	HYDAC	RE045N10B	01E32025P16EP	INTERNORMEN	RN075K20B1614	020110D30VGHRRHCEP	INTERNORMEN	SE030H30B
0160R010PHCV	HYDAC	RE045N10V	01E32025V16SP	INTERNORMEN	RN075K20B	020110D60VG30HCEP	INTERNORMEN	SE030G50B
0160R010PV	HYDAC	RE045D10V	01E32025VG16EP	INTERNORMEN	RN075E20B1614	020110D60VGHRRHCEP	INTERNORMEN	SE030H50B
0160R010V	HYDAC	RE045A10B	01E32025VG16SP	INTERNORMEN	RN075E20B	020140D10VG30HCEP	INTERNORMEN	SE035G10B
0160R010VV	HYDAC	RE045A10V	01E32030V16EP	INTERNORMEN	RN075E03B1614	020140D20VG30HCEP	INTERNORMEN	SE035G20B
0160R010VV	HYDAC	RE045A10B	01E32040G16EP	INTERNORMEN	RN075B40B1614	020140D20VGHRRHCEP	INTERNORMEN	SE035H20B
0160R020BN	HYDAC	RE045E20B	01E32040G16SP	INTERNORMEN	RN075B40B	020140D25G30HCEP	INTERNORMEN	SE035B25B
0160R020BN3HC	HYDAC	RE045G20B	01E3206VG16EP	INTERNORMEN	RN075E05B1614	020140D30VG30HCEP	INTERNORMEN	SE035G03B
0160R020BN3HCV	HYDAC	RE045G20V	01E32080G16EP	INTERNORMEN	RN075B80B1614	020140D30VGHRRHCEP	INTERNORMEN	SE035H03B
0160R020BNHC	HYDAC	RE045G20B	01E32080G16SP	INTERNORMEN	RN075B80B	020140D60VG30HCEP	INTERNORMEN	SE035G05B
0160R020BNHCV	HYDAC	RE045G20V	01E36010VG30EP	INTERNORMEN	SN095E10B	020140D60VGHRRHCEP	INTERNORMEN	SE035H05B
0160R020BNV	HYDAC	RE045E20V	01E36010VGHREP	INTERNORMEN	SN095F10B	020160D10VG30HCEP	INTERNORMEN	SE045H10B
0160R020P	HYDAC	RE045D20B	01E36025G30EP	INTERNORMEN	SN095B25B	020160D10VGHRRHCEP	INTERNORMEN	SE045G10B
0160R020PHC	HYDAC	RE045N20B	01E36025GHREP	INTERNORMEN	SN095W25B	020160D10VG30HCEP	INTERNORMEN	SE045H10B
0160R020PHCV	HYDAC	RE045N20V	01E36025VG30EP	INTERNORMEN	SN095E20B	020160D20VG30HCEP	INTERNORMEN	SE045G20B
0160R020PV	HYDAC	RE045D20V	01E36025VGHREP	INTERNORMEN	SN095F20B	020160D20VGHRRHCEP	INTERNORMEN	SE045H20B
0160R020V	HYDAC	RE045A20B	01E3603VGHREP	INTERNORMEN	SN095F03B	020160D25G30HCEP	INTERNORMEN	SE045B25B
0160R020VV	HYDAC	RE045A20V	01E3606VGHREP	INTERNORMEN	SN095F05B	020160D30VG30HCEP	INTERNORMEN	SE045G03B
0160R020VV	HYDAC	RE045A20B	01E42510P16EP	INTERNORMEN	RN100K10B1614	020160D30VGHRRHCEP	INTERNORMEN	SE045H03B
0160R025W	HYDAC	RE045B25B	01E42510P16SP	INTERNORMEN	RN100K10B	020160D60VG30HCEP	INTERNORMEN	SE045G05B
0160R025WHC	HYDAC	RE045S25B	01E42510VG16EP	INTERNORMEN	RN100E10B1614	020160D60VGHRRHCEP	INTERNORMEN	SE045H05B
0160R025WHCV	HYDAC	RE045S25V	01E42510VG16SP	INTERNORMEN	RN100E10B	020160R10VG30HCEP	INTERNORMEN	SE045G10B
0160R025WHCW	HYDAC	RE045S25B	01E42525G16EP	INTERNORMEN	RN100B25B1614	020160R20VG30HCEP	INTERNORMEN	SE045G20B
0160R025WV	HYDAC	RE045B25V	01E42525V16SP	INTERNORMEN	RN100B25B	020160R25G30HCEP	INTERNORMEN	SE045S25B
0160R025WV	HYDAC	RE045B25B	01E42525P16EP	INTERNORMEN	RN100K20B1614	020160R30VG30HCEP	INTERNORMEN	SE045G03B
0160R050W	HYDAC	RE045B50B	01E42525P16SP	INTERNORMEN	RN100K20B	020160R60VG30HCEP	INTERNORMEN	SE045G05B
0160R050WHC	HYDAC	RE045S50B	01E42525VG16EP	INTERNORMEN	RN100E20B1614	020240D10VG30HCEP	INTERNORMEN	SE070G10B
0160R050WHCV	HYDAC	RE045S50V	01E42525VG16SP	INTERNORMEN	RN100E20B	020240D10VGHRRHCEP	INTERNORMEN	SE070H10B
0160R050WHCW	HYDAC	RE045S50B	01E42530V16EP	INTERNORMEN	RN100E03B1614	020240D20VG30HCEP	INTERNORMEN	SE070G20B
0160R050WV	HYDAC	RE045B50V	01E42540G16EP	INTERNORMEN	RN100B40B1614	020240D25G30HCEP	INTERNORMEN	SE070H20B
0160R100W	HYDAC	RE045B100B	01E42540G16SP	INTERNORMEN	RN100B40B	020240D25G30HCEP	INTERNORMEN	SE070B25B
0160R100WHC	HYDAC	RE045S100B	01E42560V16EP	INTERNORMEN	RN100E05B1614	020240D30VGHRRHCEP	INTERNORMEN	SE070G30B
0160R100WHCV	HYDAC	RE045S100V	01E42580G16EP	INTERNORMEN	RN100B80B1614	020240D30VGHRRHCEP	INTERNORMEN	SE070H30B
0160R100WV	HYDAC	RE045B100V	01E42580G16SP	INTERNORMEN	RN100B80B	020240D60VG30HCEP	INTERNORMEN	SE070G05B
0160R003BNHC	HYDAC	NR160E03B	01E45010VG30EP	INTERNORMEN	SN120E10B	020240D60VGHRRHCEP	INTERNORMEN	SE070H05B
0160R006BNHC	HYDAC	NR160E06B	01E45010VGHREP	INTERNORMEN	SN120F10B	020240R10VG30HCEP	INTERNORMEN	SE070H10B
0160R010BNHC	HYDAC	NR160E10B	01E45025G30EP	INTERNORMEN	SN120B25B	020240R20VG30HCEP	INTERNORMEN	SE070G20B
0160R025BNHC	HYDAC	NR160E25B	01E45025GHREP	INTERNORMEN	SN120W25B	020240R25G30HCEP	INTERNORMEN	SE070G25B
0165R003BN3HC	HYDAC	RE065G03B	01E45025VG30EP	INTERNORMEN	SN120E20B	020240R30VG30HCEP	INTERNORMEN	SE070G30B
0165R003BNHC	HYDAC	RE065G03B	01E45025VGHREP	INTERNORMEN	SN120F20B	020240R60VG30HCEP	INTERNORMEN	SE070G05B
0165R005BN3HC	HYDAC	RE065G05B	01E4503VGHREP	INTERNORMEN	SN120F03B	020330D10VG30HCEP	INTERNORMEN	SE090G10B
0165R005BNHC	HYDAC	RE065G05B	01E4506VGHREP	INTERNORMEN	SN120F05B	020330D10VGHRRHCEP	INTERNORMEN	SE090H10B
0165R010BN3HC	HYDAC	RE065G10B	01E6010VG30EP	INTERNORMEN	SN014E10B	020330D20VG30HCEP	INTERNORMEN	SE090G20B
0165R010BNHC	HYDAC	RE065G10B	01E6010VGHREP	INTERNORMEN	SN014F10B	020330D20VGHRRHCEP	INTERNORMEN	SE090H20B
0165R020BN3HC	HYDAC	RE065G20B	01E6025G30EP	INTERNORMEN	SN014B25B	020330D25G30HCEP	INTERNORMEN	SE090B25B
0165R020BNHC	HYDAC	RE065G20B	01E6025GHREP	INTERNORMEN	SN014W25B	020330D30VG30HCEP	INTERNORMEN	SE090G30B
0180MA003BN	HYDAC	SF6704MG	01E6025VG30EP	INTERNORMEN	SN014E20B	020330D30VGHRRHCEP	INTERNORMEN	SE090H30B
0180MA005BN	HYDAC	SF6707MG	01E6025VGHREP	INTERNORMEN	SN014F20B	020330D60VGHRRHCEP	INTERNORMEN	SE090H05B
0180MA010BN	HYDAC	SF6731MG	01E603VGHREP	INTERNORMEN	SN014F03B	020330R10VG30HCEP	INTERNORMEN	SE090G10B
0180MA010P	HYDAC	SF6721	01E606VGHREP	INTERNORMEN	SN014F05B	020330R20VG30HCEP	INTERNORMEN	SE090G20B
0180MA020BN	HYDAC	SF6726MG	01E7010P16EP	INTERNORMEN	RN016K10B1614	020330R25G30HCEP	INTERNORMEN	SE090S25B
0180MA025P	HYDAC	SF6711	01E7010P16SP	INTERNORMEN	RN016K10B	020330R30VG30HCEP	INTERNORMEN	SE090G30B
01E12010P16EP	INTERNORMEN	RN030K10B1614	01E7010VG16EP	INTERNORMEN	RN016E10B1614	020330R60VG30HCEP	INTERNORMEN	SE090G05B
01E12010P16SP	INTERNORMEN	RN030K10B	01E7010V16SP	INTERNORMEN	RN016E10B	020500D10VG30HCEP	INTERNORMEN	SE130G10B
01E12010VG16EP	INTERNORMEN	RN030E10B1614	01E7025G16EP	INTERNORMEN	RN016B25B1614	020500D10VGHRRHCEP	INTERNORMEN	SE130H10B
01E12010VG16SP	INTERNORMEN	RN030E10B	01E7025G16SP	INTERNORMEN	RN016B25B	020500D20VG30HCEP	INTERNORMEN	SE130G20B
01E12025G16EP	INTERNORMEN	RN030B25B1614	01E7025P16EP	INTERNORMEN	RN016K20B1614	020500D20VGHRRHCEP	INTERNORMEN	SE130H20B
01E12025G16SP	INTERNORMEN	RN030B25B	01E7025P16SP	INTERNORMEN	RN016K20B	020500D25G30HCEP	INTERNORMEN	SE130B25B
01E12025P16EP	INTERNORMEN	RN030K20B1614	01E7025V					




code code bezeichnung código	brand marque hersteller marca		code code bezeichnung código	brand marque hersteller marca		code code bezeichnung código	brand marque hersteller marca	
020660R10VG30HCSP	INTERNORMEN	RE160G10B	0240D050WW	HYDAC	SE070B50B	0280D010BN3HC	HYDAC	SE125G10B
020660R20VG30HCSP	INTERNORMEN	RE160G20B	0240D100W	HYDAC	SE070B100B	0280D010BN3HCV	HYDAC	SE125G10V
020660R25G30HCSP	INTERNORMEN	RE160S25B	0240D100WHC	HYDAC	SE070S100B	0280D010BNHC	HYDAC	SE125G10C
020660R3VG30HCSP	INTERNORMEN	RE160G03B	0240D100WHCV	HYDAC	SE070S100B	0280D010BNHCV	HYDAC	SE125G10V
020660R6VG30HCSP	INTERNORMEN	RE160G05B	0240D100VV	HYDAC	SE070B100V	0280D010BNHCW	HYDAC	SE125G10W
020850R10VG30HCSP	INTERNORMEN	RE200G10B	0240D100WWW	HYDAC	SE070B100WB	0280D010V	HYDAC	SE125A10B
020850R20VG30HCSP	INTERNORMEN	RE200G20B	0240R003BN	HYDAC	RE070E03B	0280D010VV	HYDAC	SE125A10V
020850R25G30HCSP	INTERNORMEN	RE200S25B	0240R003BN3HC	HYDAC	RE070G03B	0280D010VW	HYDAC	SE125A10W
020850R3VG30HCSP	INTERNORMEN	RE200G03B	0240R003BN3HCV	HYDAC	RE070G03V	0280D020BH3HC	HYDAC	SE125H20B
020850R6VG30HCSP	INTERNORMEN	RE200G05B	0240R003BNHC	HYDAC	RE070G03B	0280D020BH3HCV	HYDAC	SE125H20V
020950R10VG30HCSP	INTERNORMEN	RE250G10B	0240R003BNHCV	HYDAC	RE070G03V	0280D020BHHC	HYDAC	SE125H20C
020950R20VG30HCSP	INTERNORMEN	RE250G20B	0240R003BNHV	HYDAC	RE070E03V	0280D020BHHCV	HYDAC	SE125H20V
020950R25G30HCSP	INTERNORMEN	RE250S25B	0240R003P	HYDAC	RE070D03B	0280D020BHHCW	HYDAC	SE125H20W
020950R3VG30HCSP	INTERNORMEN	RE250G03B	0240R003PV	HYDAC	RE070D03V	0280D020BN3HC	HYDAC	SE125G20B
020950R6VG30HCSP	INTERNORMEN	RE250G05B	0240R003V	HYDAC	RE070A03B	0280D020BN3HCV	HYDAC	SE125G20V
021300R10VG30HCSP	INTERNORMEN	RE300G10B	0240R003VV	HYDAC	RE070A03V	0280D020BNHC	HYDAC	SE125G10C
021300R20VG30HCSP	INTERNORMEN	RE300G20B	0240R003VVV	HYDAC	RE070A03B	0280D020BNHCV	HYDAC	SE125G20V
021300R25G30HCSP	INTERNORMEN	RE300S25B	0240R003VW	HYDAC	RE070A03B	0280D020BNHCW	HYDAC	SE125G20W
021300R3VG30HCSP	INTERNORMEN	RE300G03B	0240R005BN	HYDAC	RE070E05B	0280D020BNHCV	HYDAC	SE125G20V
021300R6VG30HCSP	INTERNORMEN	RE300G05B	0240R005BN3HC	HYDAC	RE070G05B	0280D020V	HYDAC	SE125A20B
0240D003BH	HYDAC	SE070F03B	0240R005BN3HCV	HYDAC	RE070G05V	0280D020VV	HYDAC	SE125A20V
0240D003BH3HC	HYDAC	SE070H03B	0240R005BNHC	HYDAC	RE070G05V	0280D020VW	HYDAC	SE125A20W
0240D003BH3HCV	HYDAC	SE070H03V	0240R005BNHC	HYDAC	RE070G05V	0280D025W	HYDAC	SE125B25B
0240D003BHHC	HYDAC	SE070H03B	0240R005BNV	HYDAC	RE070E05V	0280D025WHC	HYDAC	SE125S25B
0240D003BHHCV	HYDAC	SE070H03V	0240R005PV	HYDAC	RE070D05B	0280D025WHCV	HYDAC	SE125S25V
0240D003BHHCW	HYDAC	SE070H03V	0240R005PVV	HYDAC	RE070D05V	0280D025WWW	HYDAC	SE125B25W
0240D003BHV	HYDAC	SE070F03V	0240R005V	HYDAC	RE070A05B	0280D050W	HYDAC	SE125B50B
0240D003BHW	HYDAC	SE070F03B	0240R010BN	HYDAC	RE070E10B	0280D050WHC	HYDAC	SE125S50B
0240D003BN	HYDAC	SE070E03B	0240R010BN3HC	HYDAC	RE070G10B	0280D050VW	HYDAC	SE125B50V
0240D003BN3HC	HYDAC	SE070G03B	0240R010BN3HCV	HYDAC	RE070G10V	0280D050WWW	HYDAC	SE125B50W
0240D003BN3HCV	HYDAC	SE070G03V	0240R010BNHC	HYDAC	RE070G10V	0280D100W	HYDAC	SE125B100B
0240D003BN3HCW	HYDAC	SE070G03B	0240R010BNHCV	HYDAC	RE070G10V	0280D100WHC	HYDAC	SE125S100B
0240D003BNHC	HYDAC	SE070G03V	0240R010BNV	HYDAC	RE070E10V	0280D100WHCV	HYDAC	SE125S100V
0240D003BNHCV	HYDAC	SE070G03B	0240R010P	HYDAC	RE070D10B	0280D100VW	HYDAC	SE125B100V
0240D003BNV	HYDAC	SE070E03V	0240R010PHC	HYDAC	RE070N10B	0280D100VWV	HYDAC	SE125B100W
0240D003BNW	HYDAC	SE070E03B	0240R010PHCV	HYDAC	RE070N10V	0311400100G16BO	INTERNORMEN	RS370B100B
0240D003P	HYDAC	SE070D03B	0240R010PV	HYDAC	RE070D10V	031140010VG16BO	INTERNORMEN	RS370E10B
0240D003PV	HYDAC	SE070D03V	0240R010VV	HYDAC	RE070A10B	031140025G16BO	INTERNORMEN	RS370B25B
0240D003VV	HYDAC	SE070A03B	0240R010VVV	HYDAC	RE070A10V	031140025VG16BO	INTERNORMEN	RS370E20B
0240D003VW	HYDAC	SE070A03B	0240R020BN	HYDAC	RE070E20B	031140030G16BO	INTERNORMEN	RS370B40B
0240D003Y	HYDAC	SE070C03B	0240R020BN3HC	HYDAC	RE070G20B	031140060G16BO	INTERNORMEN	RS370B60B
0240D003YV	HYDAC	SE070C03V	0240R020BN3HCV	HYDAC	RE070G20V	03114006VG16BO	INTERNORMEN	RS370E05B
0240D005BH	HYDAC	SE070F05B	0240R020BNHC	HYDAC	RE070F05B	031140100G16BO	INTERNORMEN	RS305B100B
0240D005BH3HC	HYDAC	SE070H05B	0240R020BNHCV	HYDAC	RE070G20V	03114010VG16BO	INTERNORMEN	RS035E10B
0240D005BH3HCV	HYDAC	SE070H05V	0240R020BNV	HYDAC	RE070E20V	031140255G16BO	INTERNORMEN	RS035B25B
0240D005BHHC	HYDAC	SE070H05B	0240R020P	HYDAC	RE070D20B	031140255VG16BO	INTERNORMEN	RS035E20B
0240D005BHHCV	HYDAC	SE070H05V	0240R020PHC	HYDAC	RE070N20B	0311403VG16BO	INTERNORMEN	RS035E03B
0240D005BHHCW	HYDAC	SE070H05B	0240R020PHCV	HYDAC	RE070N20V	03114040G16BO	INTERNORMEN	RS035B40B
0240D005BHV	HYDAC	SE070F05V	0240R020PV	HYDAC	RE070D20V	03114060G16BO	INTERNORMEN	RS035B60B
0240D005BHW	HYDAC	SE070F05B	0240R020V	HYDAC	RE070A20B	0311406VG16BO	INTERNORMEN	RS035E05B
0240D005BN	HYDAC	SE070E05B	0240R020VV	HYDAC	RE070A20V	031225100G16BO	INTERNORMEN	RS060B100B
0240D005BN3HC	HYDAC	SE070G05B	0240R025W	HYDAC	RE070B25B	03122510VG16BO	INTERNORMEN	RS060E10B
0240D005BN3HCV	HYDAC	SE070G05B	0240R025WHC	HYDAC	RE070S25B	03122525G16BO	INTERNORMEN	RS060B25B
0240D005BNHC	HYDAC	SE070G05B	0240R025WHCV	HYDAC	RE070S25V	03122525VG16BO	INTERNORMEN	RS060E20B
0240D005BNHCV	HYDAC	SE070G05B	0240R025WCHW	HYDAC	RE070S25V	0312253VG16BO	INTERNORMEN	RS060E03B
0240D005BNHCW	HYDAC	SE070G05B	0240R025VW	HYDAC	RE070B25V	03122540G16BO	INTERNORMEN	RS060B40B
0240D005BNV	HYDAC	SE070E05V	0240R025WWW	HYDAC	RE070B25W	03122560G16BO	INTERNORMEN	RS060B60B
0240D005BNW	HYDAC	SE070E05B	0240R050W	HYDAC	RE070B50B	0312256VG16BO	INTERNORMEN	RS060E05B
0240D005P	HYDAC	SE070D05B	0240R050WHC	HYDAC	RE070B50B	031360100G16BO	INTERNORMEN	RS095B100B
0240D005PV	HYDAC	SE070D05V	0240R050WHCV	HYDAC	RE070S50V	03136010VG16BO	INTERNORMEN	RS095E10B
0240D005V	HYDAC	SE070A05B	0240R050WHC	HYDAC	RE070S50V	03136025G16BO	INTERNORMEN	RS095B25B
0240D005VV	HYDAC	SE070A05V	0240R050VW	HYDAC	RE070B50V	03136025VG16BO	INTERNORMEN	RS095E20B
0240D005VW	HYDAC	SE070A05B	0240R050WWW	HYDAC	RE070B50B	0313603VG16BO	INTERNORMEN	RS095E03B
0240D005Y	HYDAC	SE070C05B	0240R100W	HYDAC	RE070B100B	03136040G16BO	INTERNORMEN	RS095B40B
0240D005YV	HYDAC	SE070C05V	0240R100WHC	HYDAC	RE070S100B	03136060G16BO	INTERNORMEN	RS095B60B
0240D010BH	HYDAC	SE070F10B	0240R100WHCV	HYDAC	RE070S100V	0313606VG16BO	INTERNORMEN	RS095E05B
0240D010BH3HC	HYDAC	SE070H10B	0240R100WHCV	HYDAC	RE070S100V	03136060VG16BO	INTERNORMEN	RS150B100B
0240D010BH3HCV	HYDAC	SE070H10V	0240R100VW	HYDAC	RE070B100V	03136060V16BO	INTERNORMEN	RS150E10B
0240D010BHHC	HYDAC	SE070H10B	0250DN003BHHC	HYDAC	NL250F03B	03156025G16BO	INTERNORMEN	RS150B25B
0240D010BHHCV	HYDAC	SE070H10V	0250DN003BNHC	HYDAC	NL250E03B	03156025VG16BO	INTERNORMEN	RS150E20B
0240D010BHHCW	HYDAC	SE070H10B	0250DN006BHHC	HYDAC	NL250F06B	0315603VG16BO	INTERNORMEN	RS150E03B
0240D010BHV	HYDAC	SE070F10V	0250DN006BNHC	HYDAC	NL250E06B	03156040G16BO	INTERNORMEN	RS150B40B
0240D010BHW	HYDAC	SE070F10B	0250DN010BHHC	HYDAC	NL250F10B	03156040VG16BO	INTERNORMEN	RS150B60B
0240D010BN	HYDAC	SE070E10B	0250DN010BNHC	HYDAC	NL250E10B	0315606VG16BO	INTERNORMEN	RS150E05B
0240D010BN3HC	HYDAC	SE070G10B	0250DN025BHHC	HYDAC	NL250F25B	03156100G16BO	INTERNORMEN	RS014B100B
0240D010BN3HCV	HYDAC	SE070G10V	0250DN025BNHC	HYDAC	NL250E25B	0315610VG16BO	INTERNORMEN	RS014E10B
0240D010BNHC	HYDAC	SE070G10B	0250DN025WHC	HYDAC	NL250B25B	0315625G16BO	INTERNORMEN	RS014B25B
0240D010BNHCV	HYDAC	SE070G10V	0250DN025WHCV	HYDAC	NL250B25V	0315625VG16BO	INTERNORMEN	RS014E20B
0240D010BNHCW	HYDAC	SE070G10B	0250DN050WHC	HYDAC	NL250B40B	031563VG16BO	INTERNORMEN	RS014E03B
0240D010BNV	HYDAC	SE070E10V	0250DN050WHCV	HYDAC	NL250B40V	0315640G16BO	INTERNORMEN	RS014B40B
0240D010BNW	HYDAC	SE070E10B	0250DN100WHC	HYDAC	NL250B100B	0315640VG16BO	INTERNORMEN	RS014B60B
0240D010P	HYDAC	SE070D10B	0250DN100WHCV	HYDAC	NL250B100V	031566VG16BO	INTERNORMEN	RS014E05B
0240D010PV	HYDAC	SE070D10V	0250DN200WHC	HYDAC	NL250B200B	031900100G16BO	INTERNORMEN	RS250B100B
0240D010V	HYDAC	SE070A10B	0250DN200WHCV	HYDAC	NL250B200V	03190010G16BO	INTERNORMEN	RS250B10B
0240D010VV	HYDAC	SE070A10V	0250RN003BNHC	HYDAC	NR250E03B	03190010VG16BO	INTERNORMEN	RS250E10B
0240D010VW	HYDAC	SE070A10B	0250RN006BNHC	HYDAC	NR250E06B	03190025G16BO	INTERNORMEN	RS250B25B
0240D010Y	HYDAC	SE070C10B	0250RN010BNHC	HYDAC	NR250E10B	03190025VG16BO	INTERNORMEN	RS250E20B
0240D010YV	HYDAC	SE070C10V	0250RN025BNHC	HYDAC	NR250E25B	0319003VG16BO	INTERNORMEN	RS250E03B
0240D020BH	HYDAC	SE070F20B	0280D003BH3HC	HYDAC	SE125H03B	03190040G16BO	INTERNORMEN	RS250B40B
0240D020BH3HC	HYDAC	SE070H20B	0280D003BH3HCV	HYDAC	SE125H03V	03190060G16BO	INTERNORMEN	RS250B60B
0240D020BH3HCV	HYDAC	SE070H20V	0280D003BHHC	HYDAC	SE125H03B	0319006VG16BO	INTERNORMEN	RS250E05B
0240D020BHHC	HYDAC	SE070H20B	0280D003BHHCV	HYDAC	SE125H03V	03190100G16BO	INTERNORMEN	RS024B100B
0240D020BHHCV	HYDAC	SE070H20V	0280D003BHHCW	HYDAC	SE125H03B	0319010VG16BO	INTERNORMEN	RS024E10B
0240D020BHHCW	HYDAC	SE070H20B	0280D003BN3HC	HYDAC	SE125G03B	03190100VG16BO	INTERNORMEN	RS024B25B
0240D020BHV	HYDAC	SE070F20V	0280D003BN3HCV	HYDAC	SE125G03B	0319025VG16BO	INTERNORMEN	RS024E20B
0240D020BHW	HYDAC	SE070F20B	0280D003BNHC	HYDAC	SE125G03B	0319025VG16BO	INTERNORMEN	RS024B50B
0240D020BN	HYDAC	SE070E20B	0280D003BNHCV	HYDAC	SE125G03V	0319030G16BO	INTERNORMEN	RS024B00B
0240D020BN3HC	HYDAC	SE070G20B	0280D003BNHCV	HYDAC	SE125G03B	0319030VG16BO	INTERNORMEN	RS024B00B
0240D020BN3HCV	HYDAC	SE070G20V	0280D003V	HYDAC	SE125A03B	031906VG16BO	INTERNORMEN	RS024E05B
0240D020BNHC	HYDAC	SE070G20B	0280D003VV	HYDAC	SE125A03V	032140100G16PEP	INTERNORMEN	SS035E100B
0240D020BNHCV	HYDAC	SE070G20V	0280D003VW	HYDAC	SE125A03B	03214010VG16PEP	INTERNORMEN	SS035E10B
0240D020BNHCW	HYDAC	SE070G20V	0280D005BH3HC	HYDAC	SE125H05B	032140255G16PEP	INTERNORMEN	SS035B25B
0240D020BNV	HYDAC	SE070E20V	0280D005BH3HCV	HYDAC	SE125H05B	032140255VG16PEP	INTERNORMEN	SS035E20B
0240D020BNW	HYDAC	SE070E20B	0280D005BHHC	HYDAC	SE125H05B	0321403VG16PEP	INTERNORMEN	SS035E03B
0240D020P	HYDAC	SE070D20B	0280D005BHHCV	HYDAC	SE125H05B	03214040G16PEP	INTERNORMEN	SS035B40B
0240D020PV	HYDAC	SE070D20V	0280D005BHHCW	HYDAC	SE125H05B	03214060G16PEP	INTERNORMEN	SS035B60B
0240D020V	HYDAC	SE070A20B	0280D005BN3HC	HYDAC	SE125G05B	0321406VG16PEP	INTERNORMEN	SS035E05B

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03236040G16EP	INTERNORMEN	SS085B40B	0330D020BN3HC	HYDAC	SE090G20V	0485203425GHREP	INTERNORMEN	SL035W25B
03236060G16EP	INTERNORMEN	SS085B60B	0330D020BN3HCV	HYDAC	SE090G20V	0485203425G16EP	INTERNORMEN	SL035E20B
0323606VG16EP	INTERNORMEN	SS085E05B	0330D020BNHC	HYDAC	SE090G20V	0485203425VGHREP	INTERNORMEN	SL035F20B
032460100G16EP	INTERNORMEN	SS125B100B	0330D020BNHCV	HYDAC	SE090G20V	048520343VG16EP	INTERNORMEN	SL035E03B
03246010V16EP	INTERNORMEN	SS125E10B	0330D020BNHCW	HYDAC	SE090G20V	048520343VGHREP	INTERNORMEN	SL035F03B
03246025G16EP	INTERNORMEN	SS125B25B	0330D020BNV	HYDAC	SE090E20B	0485203460G16EP	INTERNORMEN	SL035W60B
03246025V16EP	INTERNORMEN	SS125E20B	0330D020BNW	HYDAC	SE090E20B	0485203460GHREP	INTERNORMEN	SL035W60B
0324603VG16EP	INTERNORMEN	SS125E03B	0330D020PV	HYDAC	SE090D20V	04852059100G16B0	INTERNORMEN	LL045B100B
03246040G16EP	INTERNORMEN	SS125B40B	0330D020V	HYDAC	SE090A20B	0485205910G16B0	INTERNORMEN	LL045B10B
03246060G16EP	INTERNORMEN	SS125B60B	0330D020VV	HYDAC	SE090A20B	0485205925G16B0	INTERNORMEN	LL045E10B
0324606VG16EP	INTERNORMEN	SS125E05B	0330D020VW	HYDAC	SE090A20B	0485205925V16B0	INTERNORMEN	LL045B25B
032560100G16EP	INTERNORMEN	SS160B100B	0330D020Y	HYDAC	SE090C20V	0485205960G16B0	INTERNORMEN	LL045B60B
03256010V16EP	INTERNORMEN	SS160E10B	0330D020YV	HYDAC	SE090C20V	04852070100G16BP	INTERNORMEN	LL050B100B
03256025G16EP	INTERNORMEN	SS160B25B	0330D025V	HYDAC	SE090S25B	0485207010G16B0	INTERNORMEN	LL050G10B
03256025V16EP	INTERNORMEN	SS160E20B	0330D025WHC	HYDAC	SE090S25B	0485207010V16BP	INTERNORMEN	LL050E10B
0325603VG16EP	INTERNORMEN	SS160E03B	0330D025WHCW	HYDAC	SE090S25B	0485207025G16BP	INTERNORMEN	LL050B25B
03256040G16EP	INTERNORMEN	SS160B40B	0330D025VWHC	HYDAC	SE090S25B	0485207025V16BP	INTERNORMEN	LL050E25B
03256060G16EP	INTERNORMEN	SS160B60B	0330D025VWHCW	HYDAC	SE090B25V	0485207060G16BP	INTERNORMEN	LL050B60B
0325606VG16EP	INTERNORMEN	SS160E05B	0330D025VWV	HYDAC	SE090B25V	0485207060V16BP	INTERNORMEN	LL050B60B
03256100G16EP	INTERNORMEN	SS014B100B	0330D050V	HYDAC	SE090S50B	04852087100G16B0	INTERNORMEN	LL100B100B
0325610V16EP	INTERNORMEN	SS014E10B	0330D050VHC	HYDAC	SE090S50B	0485208710G16B0	INTERNORMEN	LL100B10B
0325625G16EP	INTERNORMEN	SS014B25B	0330D050VHCW	HYDAC	SE090S50B	0485208710V16B0	INTERNORMEN	LL100E10B
0325625V16EP	INTERNORMEN	SS014E20B	0330D050VWV	HYDAC	SE090S50V	0485208725G16B0	INTERNORMEN	LL100B25B
032563VG16EP	INTERNORMEN	SS014E03B	0330D050VWV	HYDAC	SE090B50V	0485208725V16B0	INTERNORMEN	LL100E20B
0325640G16EP	INTERNORMEN	SS014B40B	0330D100V	HYDAC	SE090B100B	0485208760G16B0	INTERNORMEN	LL100B60B
0325660G16EP	INTERNORMEN	SS014B60B	0330D100VHC	HYDAC	SE090B100V	04852125100G16EP	INTERNORMEN	SL005B100B
032566VG16EP	INTERNORMEN	SS014E05B	0330D100VW	HYDAC	SE090B100V	04852125100GHREP	INTERNORMEN	SL005W100B
032900100G16EP	INTERNORMEN	SS250B100B	0330D100VWV	HYDAC	SE090B100V	0485212510G16EP	INTERNORMEN	SL005B10B
03290010V16EP	INTERNORMEN	SS250E10B	0330R003BN	HYDAC	RE090E03B	0485212510GHREP	INTERNORMEN	SL005W10B
03290025G16EP	INTERNORMEN	SS250B25B	0330R003BN3HC	HYDAC	RE090G03B	0485212510V16EP	INTERNORMEN	SL005E10B
03290025V16EP	INTERNORMEN	SS250E20B	0330R003BN3HCV	HYDAC	RE090G03V	0485212510VGHREP	INTERNORMEN	SL005F10B
0329003VG16EP	INTERNORMEN	SS250E03B	0330R003BNHC	HYDAC	RE090G03B	0485212525G16EP	INTERNORMEN	SL005B25B
03290040G16EP	INTERNORMEN	SS250B40B	0330R003BNHCV	HYDAC	RE090G03V	0485212525GHREP	INTERNORMEN	SL005W25B
03290060G16EP	INTERNORMEN	SS250B60B	0330R003BNV	HYDAC	RE090E03V	0485212525G16BP	INTERNORMEN	SL005E20B
0329006VG16EP	INTERNORMEN	SS250E05B	0330R003PV	HYDAC	RE090D03B	0485212525V16BP	INTERNORMEN	SL005F20B
03290100G16EP	INTERNORMEN	SS024B100B	0330R003PV	HYDAC	RE090D03V	048521253VG16EP	INTERNORMEN	SL005E03B
0329010V16EP	INTERNORMEN	SS024E10B	0330R003V	HYDAC	RE090A03B	048521253VGHREP	INTERNORMEN	SL005F03B
0329025G16EP	INTERNORMEN	SS024B25B	0330R003VV	HYDAC	RE090A03V	0485212540G16EP	INTERNORMEN	SL005B40B
0329025V16EP	INTERNORMEN	SS024E20B	0330R003VW	HYDAC	RE090A03B	0485212540GHREP	INTERNORMEN	SL005W40B
032903VG16EP	INTERNORMEN	SS024E03B	0330R005BN	HYDAC	RE090E05B	0485212560G16EP	INTERNORMEN	SL005B60B
0329040G16EP	INTERNORMEN	SS024B40B	0330R005BN3HC	HYDAC	RE090G05B	0485212560GHREP	INTERNORMEN	SL005W60B
0329060G16EP	INTERNORMEN	SS024B60B	0330R005BN3HCV	HYDAC	RE090G05V	04852126100G16EP	INTERNORMEN	SL010B100B
032906VG16EP	INTERNORMEN	SS024E05B	0330R005BNHC	HYDAC	RE090G05B	04852126100GHREP	INTERNORMEN	SL010W100B
0330D003BH	HYDAC	SE090F03B	0330R005BNHCV	HYDAC	RE090G05B	0485212610G16EP	INTERNORMEN	SL010B10B
0330D003BH3HC	HYDAC	SE090H03B	0330R005BNV	HYDAC	RE090E05V	0485212610GHREP	INTERNORMEN	SL010W10B
0330D003BH3HCV	HYDAC	SE090H03V	0330R005PV	HYDAC	RE090D05B	0485212610V16EP	INTERNORMEN	SL010E10B
0330D003BHHC	HYDAC	SE090H03B	0330R005PV	HYDAC	RE090D05V	0485212610VGHREP	INTERNORMEN	SL010F10B
0330D003BHHCV	HYDAC	SE090H03V	0330R005V	HYDAC	RE090A05V	0485212625G16EP	INTERNORMEN	SL010B25B
0330D003BHHCW	HYDAC	SE090H03B	0330R005VW	HYDAC	RE090A05V	0485212625GHREP	INTERNORMEN	SL010W25B
0330D003BHV	HYDAC	SE090F03V	0330R005VW	HYDAC	RE090A05B	0485212625V16EP	INTERNORMEN	SL010E20B
0330D003BHW	HYDAC	SE090F03B	0330R010BN	HYDAC	RE090E10B	0485212625VGHREP	INTERNORMEN	SL010F20B
0330D003BN	HYDAC	SE090E03B	0330R010BN3HC	HYDAC	RE090G10B	048521263VG16EP	INTERNORMEN	SL010E03B
0330D003BN3HC	HYDAC	SE090G03B	0330R010BN3HCV	HYDAC	RE090G10V	048521263VGHREP	INTERNORMEN	SL010F03B
0330D003BN3HCV	HYDAC	SE090G03V	0330R010BNHC	HYDAC	RE090G10B	0485212640G16EP	INTERNORMEN	SL010B40B
0330D003BNHC	HYDAC	SE090G03B	0330R010BNHCV	HYDAC	RE090G10V	0485212640GHREP	INTERNORMEN	SL010W40B
0330D003BNHCV	HYDAC	SE090G03V	0330R010BNV	HYDAC	RE090E10V	0485212660G16EP	INTERNORMEN	SL010B60B
0330D003BNHCW	HYDAC	SE090G03B	0330R010PV	HYDAC	RE090D10B	0485212660GHREP	INTERNORMEN	SL010W60B
0330D003BNV	HYDAC	SE090E03V	0330R010PHC	HYDAC	RE090N10B	04852127100G16EP	INTERNORMEN	SL022B100B
0330D003BNW	HYDAC	SE090E03B	0330R010PHCV	HYDAC	RE090N10V	04852127100GHREP	INTERNORMEN	SL022W100B
0330D003P	HYDAC	SE090D03B	0330R010PV	HYDAC	RE090D10V	0485212710G16EP	INTERNORMEN	SL022B10B
0330D003PV	HYDAC	SE090D03V	0330R010V	HYDAC	RE090A10B	0485212710GHREP	INTERNORMEN	SL022W10B
0330D003V	HYDAC	SE090A03B	0330R010VV	HYDAC	RE090A10V	0485212710V16EP	INTERNORMEN	SL022E10B
0330D003VV	HYDAC	SE090A03V	0330R010VW	HYDAC	RE090A10B	0485212710VGHREP	INTERNORMEN	SL022F10B
0330D003VW	HYDAC	SE090A03B	0330R020BN	HYDAC	RE090E20B	0485212725G16EP	INTERNORMEN	SL022B25B
0330D003Y	HYDAC	SE090C03B	0330R020BN3HC	HYDAC	RE090G20B	0485212725GHREP	INTERNORMEN	SL022W25B
0330D003YV	HYDAC	SE090C03V	0330R020BN3HCV	HYDAC	RE090G20V	0485212725V16EP	INTERNORMEN	SL022E20B
0330D005BH	HYDAC	SE090F05B	0330R020BNHC	HYDAC	RE090G20B	0485212725VGHREP	INTERNORMEN	SL022F20B
0330D005BH3HC	HYDAC	SE090H05B	0330R020BNHCV	HYDAC	RE090G20V	048521273VG16EP	INTERNORMEN	SL022E03B
0330D005BH3HCV	HYDAC	SE090H05V	0330R020BNV	HYDAC	RE090E20V	048521273VGHREP	INTERNORMEN	SL022F03B
0330D005BHHC	HYDAC	SE090H05B	0330R020PV	HYDAC	RE090D20B	0485212740G16EP	INTERNORMEN	SL022B40B
0330D005BHHCV	HYDAC	SE090H05V	0330R020PHC	HYDAC	RE090N20B	0485212740GHREP	INTERNORMEN	SL022W40B
0330D005BHHCW	HYDAC	SE090H05B	0330R020PHCV	HYDAC	RE090N20V	0485212760G16EP	INTERNORMEN	SL022B60B
0330D005BHV	HYDAC	SE090F05V	0330R020PV	HYDAC	RE090D20V	0485212760GHREP	INTERNORMEN	SL022W60B
0330D005BHW	HYDAC	SE090F05B	0330R020V	HYDAC	RE090A20B	04852264100G16B0	INTERNORMEN	LL080B100B
0330D005BN	HYDAC	SE090E05B	0330R020VW	HYDAC	RE090A20V	0485226410G16B0	INTERNORMEN	LL080B10B
0330D005BN3HC	HYDAC	SE090G05B	0330R025V	HYDAC	RE090B25B	0485226425G16B0	INTERNORMEN	LL080B25B
0330D005BN3HCV	HYDAC	SE090G05V	0330R025VHC	HYDAC	RE090S25B	0485226425V16B0	INTERNORMEN	LL080E20B
0330D005BNHC	HYDAC	SE090G05B	0330R025VHCW	HYDAC	RE090S25V	0485226460G16B0	INTERNORMEN	LL080B60B
0330D005BNHCV	HYDAC	SE090G05V	0330R025VW	HYDAC	RE090S25B	04852362100G16EP	INTERNORMEN	ML070B100B
0330D005BNHCW	HYDAC	SE090G05B	0330R025VWV	HYDAC	RE090B25V	04852362100GHREP	INTERNORMEN	ML070W100B
0330D005BNV	HYDAC	SE090E05V	0330R025VWV	HYDAC	RE090B25V	0485236210G16EP	INTERNORMEN	ML070B10B
0330D005BNW	HYDAC	SE090E05B	0330R050V	HYDAC	RE090B50B	0485236210GHREP	INTERNORMEN	ML070W10B
0330D005P	HYDAC	SE090D05B	0330R050VHC	HYDAC	RE090S50B	0485236210V16EP	INTERNORMEN	ML070E10B
0330D005PV	HYDAC	SE090D05V	0330R050VHCW	HYDAC	RE090S50V	0485236210VGHREP	INTERNORMEN	ML070F10B
0330D005V	HYDAC	SE090A05B	0330R050VW	HYDAC	RE090S50B	0485236225G16EP	INTERNORMEN	ML070B25B
0330D005VV	HYDAC	SE090A05V	0330R050VWV	HYDAC	RE090B50V	0485236225V16EP	INTERNORMEN	ML070W25B
0330D005VW	HYDAC	SE090A05B	0330R050VWV	HYDAC	RE090B50B	0485236225VGHREP	INTERNORMEN	ML070E20B
0330D005Y	HYDAC	SE090C05B	0330R100V	HYDAC	RE090B100B	0485236225VGHREP	INTERNORMEN	ML070F20B
0330D005YV	HYDAC	SE090C05V	0330R100VHC	HYDAC	RE090S100V	048523623VG16EP	INTERNORMEN	ML070E03B
0330D010BH	HYDAC	SE090F10B	0330R100VHCW	HYDAC	RE090S100V	048523623VGHREP	INTERNORMEN	ML070F03B
0330D010BH3HC	HYDAC	SE090H10B	0330R100VW	HYDAC	RE090B100V	0485236260G16EP	INTERNORMEN	ML070B60B
0330D010BH3HCV	HYDAC	SE090H10V	0330R100VWV	HYDAC	RE090B100V	0485244410V16BP	INTERNORMEN	RL020E10B
0330D010BHHC	HYDAC	SE090H10B	0400DN003BHHC	HYDAC	NL400F03B	0485244425G16BP	INTERNORMEN	RL020B25B
0330D010BHHCV	HYDAC	SE090H10V	0400DN003BNHC	HYDAC	NL400E03B	0485244425V16BP	INTERNORMEN	RL020E20B
0330D010BHHCW	HYDAC	SE090H10B	0400DN006BHHC	HYDAC	NL400F06B	0485244440G16BP	INTERNORMEN	RL020B40B
0330D010BHV	HYDAC	SE090F10V	0400DN006BNHC	HYDAC	NL400E06B	0485269010V16BP	INTERNORMEN	RL130E10B
0330D010BHW	HYDAC	SE090F10B	0400DN010BHHC	HYDAC	NL400F10B	0485269025G16BP	INTERNORMEN	RL130B25B
0330D010BN	HYDAC	SE090E10B	0400DN010BNHC	HYDAC	NL400E10B	0485269025V16BP	INTERNORMEN	RL130E20B
0330D010BN3HC	HYDAC	SE090G10B	0400DN025BHHC	HYDAC	NL400F25B	0485269040G16BP	INTERNORMEN	RL130B40B
0330D010BN3HCV	HYDAC	SE090G10V	0400DN025BNHC	HYDAC	NL400E25B	04P121053VG16EO	INTERNORMEN	SL014E03B
0330D010BNHC	HYDAC	SE090G10B	0400DN025VHC	HYDAC	NL400B25B	04P121083VG16EO	INTERNORMEN	SL020E03B
0330D010BNHCV	HYDAC	SE090G10V	0400DN025VHCW	HYDAC	NL400B25V	04P121113VG16EO	INTERNORMEN	SL030E03B
0330D010BNHCW	HYDAC	SE090G10B	0400DN050VHC	HYDAC	NL400B40B	04P121153VG16EO	INTERNORMEN	SL045E03B
0330D010BNV	HYDAC	SE090E10V	0400DN050VHCW	HYDAC	NL400B40V	04P121303VG16EO	INTERNORMEN	SL090E03B
0330D010BNW	HYDAC	SE090E10B	0400DN100VHC	HY				

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04PI321110VGHREO	INTERNORMEN	SL030F10B	0500D020BN3HC	HYDAC	SE130G20V	05890010VG10EP13	INTERNORMEN	SP140E10B
04PI321510VGHREO	INTERNORMEN	SL045F10B	0500D020BNHC	HYDAC	SE130G20B	05890010VG10EP16	INTERNORMEN	SP160E10B
04PI323010VGHREO	INTERNORMEN	SL090F10B	0500D020BNHC	HYDAC	SE130G20V	05890010VG10EP8	INTERNORMEN	SP120E10B
04PI324510VGHREO	INTERNORMEN	SL075F10B	0500D020BNHC	HYDAC	SE130G20B	05890025VG10EP13	INTERNORMEN	SP140E20B
04PI410525VG16EO	INTERNORMEN	SL014E20B	0500D020V	HYDAC	SE130A20B	05890025VG10EP16	INTERNORMEN	SP160E20B
04PI410825VG16EO	INTERNORMEN	SL020E20B	0500D020VV	HYDAC	SE130A20V	05890025VG10EP8	INTERNORMEN	SP120E20B
04PI411125VG16EO	INTERNORMEN	SL030E20B	0500D020VV	HYDAC	SE130A20B	0589003VG10EP13	INTERNORMEN	SP140E03B
04PI411525VG16EO	INTERNORMEN	SL045E20B	0500D020VV	HYDAC	SE130B25B	0589003VG10EP16	INTERNORMEN	SP160E03B
04PI413025VG16EO	INTERNORMEN	SL090E20B	0500D025WHC	HYDAC	SE130S25B	0589003VG10EP8	INTERNORMEN	SP120E03B
04PI414525VG16EO	INTERNORMEN	SL125E20B	0500D025WHCW	HYDAC	SE130S25B	0589006VG10EP13	INTERNORMEN	SP140E05B
04PI420525VGHREO	INTERNORMEN	SL014F20B	0500D025VV	HYDAC	SE130B25V	0589006VG10EP16	INTERNORMEN	SP160E05B
04PI420825VGHREO	INTERNORMEN	SL020F20B	0500D025VV	HYDAC	SE130B25B	0589006VG10EP8	INTERNORMEN	SP120E05B
04PI421125VGHREO	INTERNORMEN	SL030F20B	0500D050W	HYDAC	SE130B50B	05902010VG10EP4	INTERNORMEN	SP020E10B
04PI421525VGHREO	INTERNORMEN	SL045F20B	0500D050WHC	HYDAC	SE130S50B	05902010VG10EP8	INTERNORMEN	SP020E10B
04PI423025VGHREO	INTERNORMEN	SL090F20B	0500D050VV	HYDAC	SE130B50V	05902025VG10EP4	INTERNORMEN	SP010E20B
04PI424525VGHREO	INTERNORMEN	SL125F20B	0500D050VV	HYDAC	SE130B50B	05902025VG10EP8	INTERNORMEN	SP020E20B
04PI810510G16EO	INTERNORMEN	SL014B10B	0500D100W	HYDAC	SE130B100B	0590203VG10EP4	INTERNORMEN	SP010E03B
04PI810810G16EO	INTERNORMEN	SL020B10B	0500D100WHC	HYDAC	SE130S100B	0590203VG10EP8	INTERNORMEN	SP020E03B
04PI811110G16EO	INTERNORMEN	SL030B10B	0500D100WHCW	HYDAC	SE130S50B	0590206VG10EP4	INTERNORMEN	SP010E05B
04PI811510G16EO	INTERNORMEN	SL045B10B	0500D100VV	HYDAC	SE130B100V	0590206VG10EP8	INTERNORMEN	SP020E05B
04PI813010G16EO	INTERNORMEN	SL090B10B	0500D100VV	HYDAC	SE130B100B	05902125VG210EP4	INTERNORMEN	SP010F20B
04PI814510G16EO	INTERNORMEN	SL125B10B	0500R003BN3HC	HYDAC	RE130G03B	05902125VG210EP8	INTERNORMEN	SP020F20B
04PI820525G16EO	INTERNORMEN	SL014B25B	0500R003BN3HC	HYDAC	RE130G03V	0590213VG210EP4	INTERNORMEN	SP010F03B
04PI820825G16EO	INTERNORMEN	SL020B25B	0500R003BNHC	HYDAC	RE130G03B	0590213VG210EP8	INTERNORMEN	SP020F03B
04PI821125G16EO	INTERNORMEN	SL030B25B	0500R003BNHC	HYDAC	RE130G03V	05960010VG10EP13	INTERNORMEN	SP090E10B
04PI821525G16EO	INTERNORMEN	SL045B25B	0500R003P	HYDAC	RE130D03B	05960010VG10EP16	INTERNORMEN	SP130E10B
04PI823025G16EO	INTERNORMEN	SL090B25B	0500R003PV	HYDAC	RE130D03V	05960010VG10EP4	INTERNORMEN	SP045E10B
04PI824525G16EO	INTERNORMEN	SL125B25B	0500R003P	HYDAC	RE130A03B	05960010VG10EP8	INTERNORMEN	SP070E10B
04PI830540G16EO	INTERNORMEN	SL014B40B	0500R003VV	HYDAC	RE130A03V	05960025VG10EP13	INTERNORMEN	SP090E20B
04PI830840G16EO	INTERNORMEN	SL020B40B	0500R003VV	HYDAC	RE125A03B	05960025VG10EP16	INTERNORMEN	SP130E20B
04PI831140G16EO	INTERNORMEN	SL030B40B	0500R005BN3HC	HYDAC	RE130G05B	05960025VG10EP4	INTERNORMEN	SP045E20B
04PI831540G16EO	INTERNORMEN	SL045B40B	0500R005BN3HC	HYDAC	RE130G05B	05960025VG10EP8	INTERNORMEN	SP070E20B
04PI833040G16EO	INTERNORMEN	SL090B40B	0500R005BNHC	HYDAC	RE130G05V	0596003VG10EP13	INTERNORMEN	SP090E03B
04PI834540G16EO	INTERNORMEN	SL125B40B	0500R005BNHC	HYDAC	RE130G05V	0596003VG10EP16	INTERNORMEN	SP130E03B
04PI840560G16EO	INTERNORMEN	SL014B60B	0500R005P	HYDAC	RE130D05B	0596003VG10EP4	INTERNORMEN	SP045E03B
04PI840860G16EO	INTERNORMEN	SL020B60B	0500R005PV	HYDAC	RE130D05V	0596003VG10EP8	INTERNORMEN	SP070E03B
04PI841160G16EO	INTERNORMEN	SL030B60B	0500R005V	HYDAC	RE130A05B	0596006VG10EP13	INTERNORMEN	SP090E05B
04PI841560G16EO	INTERNORMEN	SL045B60B	0500R005VV	HYDAC	RE130A05V	0596006VG10EP16	INTERNORMEN	SP130E05B
04PI843060G16EO	INTERNORMEN	SL090B60B	0500R005VV	HYDAC	SE125A05B	0596006VG10EP4	INTERNORMEN	SP045E05B
04PI844560G16EO	INTERNORMEN	SL125B60B	0500R010BN3HC	HYDAC	SE130G10B	0596006VG10EP8	INTERNORMEN	SP070E05B
04PI8505100G16EO	INTERNORMEN	SL014B100B	0500R010BN3HC	HYDAC	RE130G10V	05960125VG210EP13	INTERNORMEN	SP090F20B
04PI8508100G16EO	INTERNORMEN	SL020B100B	0500R010BNHC	HYDAC	RE130G10B	05960125VG210EP16	INTERNORMEN	SP130F20B
04PI8511100G16EO	INTERNORMEN	SL030B100B	0500R010BNHC	HYDAC	RE130G10V	05960125VG210EP4	INTERNORMEN	SP045F20B
04PI8515100G16EO	INTERNORMEN	SL045B100B	0500R010P	HYDAC	RE130D10B	05960125VG210EP8	INTERNORMEN	SP070F20B
04PI8530100G16EO	INTERNORMEN	SL090B100B	0500R010PHC	HYDAC	RE130N10B	0596013VG210EP13	INTERNORMEN	SP090F03B
04PI8545100G16EO	INTERNORMEN	SL125B100B	0500R010PHCV	HYDAC	RE130N10V	0596013VG210EP16	INTERNORMEN	SP130F03B
04PI910510GHREO	INTERNORMEN	SL014W10B	0500R010PV	HYDAC	RE130D10V	0596013VG210EP4	INTERNORMEN	SP045F03B
04PI910810GHREO	INTERNORMEN	SL020W10B	0500R010V	HYDAC	RE130A10B	0596013VG210EP8	INTERNORMEN	SP070F03B
04PI911110GHREO	INTERNORMEN	SL030W10B	0500R010VV	HYDAC	RE130A10V	05980010VG10EP4	INTERNORMEN	SP024E10B
04PI911510GHREO	INTERNORMEN	SL045W10B	0500R020BN3HC	HYDAC	RE130G20B	05980010VG10EP8	INTERNORMEN	SP030E10B
04PI913010GHREO	INTERNORMEN	SL090W10B	0500R020BN3HC	HYDAC	RE130G20V	05980025VG10EP4	INTERNORMEN	SP024E20B
04PI914510GHREO	INTERNORMEN	SL125W10B	0500R020BNHC	HYDAC	RE130G20B	05980025VG10EP8	INTERNORMEN	SP030E20B
04PI920525GHREO	INTERNORMEN	SL014W25B	0500R020BNHC	HYDAC	RE130G20V	0598003VG10EP4	INTERNORMEN	SP024E03B
04PI920825GHREO	INTERNORMEN	SL020W25B	0500R020P	HYDAC	RE130D20B	0598003VG10EP8	INTERNORMEN	SP030E03B
04PI921125GHREO	INTERNORMEN	SL030W25B	0500R020PHC	HYDAC	RE130N20B	0598006VG10EP4	INTERNORMEN	SP024E05B
04PI921525GHREO	INTERNORMEN	SL045W25B	0500R020PHCV	HYDAC	RE130N20V	0598006VG10EP8	INTERNORMEN	SP030E05B
04PI923025GHREO	INTERNORMEN	SL090W25B	0500R020PV	HYDAC	RE130D20V	05980125VG210EP13	INTERNORMEN	SP035F20B
04PI924525GHREO	INTERNORMEN	SL125W25B	0500R020V	HYDAC	RE130A20B	05980125VG210EP4	INTERNORMEN	SP024F20B
04PI930540GHREO	INTERNORMEN	SL014W40B	0500R020VV	HYDAC	RE130A20V	05980125VG210EP8	INTERNORMEN	SP030F20B
04PI930840GHREO	INTERNORMEN	SL020W40B	0500R025W	HYDAC	RE130B25B	0598013VG210EP13	INTERNORMEN	SP035F03B
04PI931140GHREO	INTERNORMEN	SL030W40B	0500R025WHC	HYDAC	RE130S25B	0598013VG210EP4	INTERNORMEN	SP024F03B
04PI931540GHREO	INTERNORMEN	SL045W40B	0500R025WHCV	HYDAC	RE130S25V	0598013VG210EP8	INTERNORMEN	SP030F03B
04PI933040GHREO	INTERNORMEN	SL090W40B	0500R025V	HYDAC	RE130B25V	05990125VG210EP13	INTERNORMEN	SP110F20B
04PI934540GHREO	INTERNORMEN	SL125W40B	0500R025WH	HYDAC	RE130B50V	05990125VG210EP16	INTERNORMEN	SP170F20B
04PI940560GHREO	INTERNORMEN	SL014W60B	0500R025WHC	HYDAC	RE130S50B	0599013VG210EP13	INTERNORMEN	SP110F03B
04PI940860GHREO	INTERNORMEN	SL020W60B	0500R025WHCV	HYDAC	RE130S50V	0599013VG210EP26	INTERNORMEN	SP170F03B
04PI941160GHREO	INTERNORMEN	SL030W60B	0500R050WHCV	HYDAC	SE125S50B	060D003H	TRIBOGUARD	SE014H03B
04PI941560GHREO	INTERNORMEN	SL045W60B	0500R050VV	HYDAC	RE130B50V	060D003N	TRIBOGUARD	SE014G03B
04PI943060GHREO	INTERNORMEN	SL090W60B	0500R100W	HYDAC	RE130B100B	060D005H	TRIBOGUARD	SE014H05B
04PI944560GHREO	INTERNORMEN	SL125W60B	0500R100WHC	HYDAC	RE130S100B	060D005N	TRIBOGUARD	SE014G05B
04PI9505100GHREO	INTERNORMEN	SL014W100B	0500R100WHCV	HYDAC	RE130S100V	060D010H	TRIBOGUARD	SE014H10B
04PI9508100GHREO	INTERNORMEN	SL020W100B	0500R100WHCV	HYDAC	SE125S100B	060D010N	TRIBOGUARD	SE014G10B
04PI9511100GHREO	INTERNORMEN	SL030W100B	0500R100VV	HYDAC	RE130B100V	060D020H	TRIBOGUARD	SE014H20B
04PI9515100GHREO	INTERNORMEN	SL045W100B	05830010VG10BP16	INTERNORMEN	SP200E10B	060D020N	TRIBOGUARD	SE014G20B
04PI9530100GHREO	INTERNORMEN	SL090W100B	05830010VG10BP39	INTERNORMEN	SP300E10B	0630R0003BNHC	HYDAC	NR630E03B
04PI9545100GHREO	INTERNORMEN	SL125W100B	05830010VG10BP8	INTERNORMEN	SP100E10B	0630R0006BNHC	HYDAC	NR630E06B
0500D003BH3HC	HYDAC	SE130H03B	05830025VG10BP16	INTERNORMEN	SP200E20B	0630R010BNHC	HYDAC	NR630E10B
0500D003BH3HC	HYDAC	SE130H03V	05830025VG10BP39	INTERNORMEN	SP300E20B	0630R025BNHC	HYDAC	NR630E25B
0500D003BHHC	HYDAC	SE130H03B	05830025VG10BP8	INTERNORMEN	SP100E20B	0660D003BH	HYDAC	SE160F03B
0500D003BHHC	HYDAC	SE130H03V	0583003VG10BP16	INTERNORMEN	SP200E03B	0660D003BH3HC	HYDAC	SE160H03B
0500D003BHHC	HYDAC	SE130H03B	0583003VG10BP39	INTERNORMEN	SP300E03B	0660D003BH3HC	HYDAC	SE160H30V
0500D003BN3HC	HYDAC	SE130G03B	0583003VG10BP8	INTERNORMEN	SP100E03B	0660D003BHC	HYDAC	SE160H03V
0500D003BN3HC	HYDAC	SE130G03V	0583006VG10BP16	INTERNORMEN	SP200E05B	0660D003BHC	HYDAC	SE160H03V
0500D003BNHC	HYDAC	SE130G03B	0583006VG10BP39	INTERNORMEN	SP300E05B	0660D003BHHC	HYDAC	SE160H30B
0500D003BNHC	HYDAC	SE130G03V	0583006VG10BP8	INTERNORMEN	SP100E05B	0660D003BHV	HYDAC	SE160F03B
0500D003BNHC	HYDAC	SE130G03B	05840010VG10BP16	INTERNORMEN	RP200E10B	0660D003BHV	HYDAC	SE160F03B
0500D003V	HYDAC	SE130A03B	05840010VG10BP26	INTERNORMEN	RP240E10B	0660D003BN	HYDAC	SE160E03B
0500D003VV	HYDAC	SE130A03V	05840010VG10BP39	INTERNORMEN	RP300E10B	0660D003BN3HC	HYDAC	SE160G03B
0500D003VV	HYDAC	SE130A03B	05840025VG10BP16	INTERNORMEN	RP100E10B	0660D003BNHC	HYDAC	SE160G30V
0500D005BH3HC	HYDAC	SE130H05B	05840025VG10BP26	INTERNORMEN	RP200E20B	0660D003BNHC	HYDAC	SE160G03V
0500D005BH3HC	HYDAC	SE130H05V	05840025VG10BP39	INTERNORMEN	RP300E20B	0660D003BNHC	HYDAC	SE160G30B
0500D005BHHC	HYDAC	SE130H05B	05840025VG10BP8	INTERNORMEN	RP100E20B	0660D003BNHC	HYDAC	SE160G03V
0500D005BHHC	HYDAC	SE130H05V	0584003VG10BP16	INTERNORMEN	RP200E03B	0660D003BNV	HYDAC	SE160E03B
0500D005BHHC	HYDAC	SE130H05B	0584003VG10BP26	INTERNORMEN	RP100E03B	0660D003BNV	HYDAC	SE160E03V
0500D005BHHC	HYDAC	SE130H05V	0584003VG10BP39	INTERNORMEN	RP300E03B	0660D003BNV	HYDAC	SE160E03B
0500D005BN3HC	HYDAC	SE130G05B	0584003VG10BP8	INTERNORMEN	RP240E03B	0660D003P	HYDAC	SE160D03B
0500D005BN3HC	HYDAC	SE130G05V	0584003VG10BP16	INTERNORMEN	RP300E03B	0660D003PV	HYDAC	SE160D03V
0500D005BNHC	HYDAC	SE130G05B	0584003VG10BP26	INTERNORMEN	RP100E03B	0660D003V	HYDAC	SE160A03B
0500D005BNHC	HYDAC	SE130G05V	0584006VG10BP16	INTERNORMEN	RP200E05B	0660D003VV	HYDAC	SE160A03V
0500D005BNHC	HYDAC	SE130G05B	0584006VG10BP26	INTERNORMEN	RP240E05B	0660D003VV	HYDAC	SE160A03B
0500D005V	HYDAC	SE130A05B	0584006VG10BP39	INTERNORMEN	RP300E05B	0660D003Y	HYDAC	SE160C03B
0500D005VV	HYDAC	SE130A05V	0584006VG10BP8	INTERNORMEN	RP100E05B	0660D003Y	HYDAC	SE160C03V
0500D010BH3HC	HYDAC	SE130H10B	05850010VG10BP13	INTERNORMEN	RP080E10B	0660D005BH	HYDAC	SE160F05B
0500D010BH3HC	HYDAC	SE130H10V	05850010VG10BP26	INTERNORMEN	RP090E10B	0660D005BH3HC	HYDAC	SE160H05B

code code bezeichnung código	brand marque hersteller marca		code code bezeichnung código	brand marque hersteller marca		code code bezeichnung código	brand marque hersteller marca	
0660D005VW	HYDAC	SE160A05B	0850R003P	HYDAC	RE200D03B	10113R06BN	HYDAC	RP085E05B
0660D005Y	HYDAC	SE160C05B	0850R003PV	HYDAC	RE200D03V	10113R12BN	HYDAC	RP085E10B
0660D005YV	HYDAC	SE160C05V	0850R003V	HYDAC	RE200A03B	10113R25BN	HYDAC	RP085E20B
0660D010BH	HYDAC	SE160F10B	0850R003VV	HYDAC	RE200A03V	10116R03BN	HYDAC	RP095E03B
0660D010BH3HC	HYDAC	SE160H10B	0850R005BN3HC	HYDAC	RE200G05B	10116R06BN	HYDAC	RP095E05B
0660D010BH3HCV	HYDAC	SE160H10V	0850R005BN3HCV	HYDAC	RE200G05V	10116R12BN	HYDAC	RP095E10B
0660D010BHHC	HYDAC	SE160H10B	0850R005BNHC	HYDAC	RE200G05B	10116R25BN	HYDAC	RP095E20B
0660D010BHHCV	HYDAC	SE160H10V	0850R005BNHCV	HYDAC	RE200G05V	10126R03BN	HYDAC	RP115E03B
0660D010BHHWCW	HYDAC	SE160H10B	0850R005P	HYDAC	RE200D05B	10126R06BN	HYDAC	RP115E05B
0660D010BHV	HYDAC	SE160F10V	0850R005PV	HYDAC	RE200D05V	10126R12BN	HYDAC	RP115E10B
0660D010BHW	HYDAC	SE160F10B	0850R005V	HYDAC	RE200A05B	10126R25BN	HYDAC	RP115E20B
0660D010BN	HYDAC	SE160E10B	0850R005VV	HYDAC	RE200A05V	10308R03BN	HYDAC	RP100E03B
0660D010BN3HC	HYDAC	SE160G10B	0850R010BN3HC	HYDAC	RE200G10B	10308R06BN	HYDAC	RP100E05B
0660D010BN3HCV	HYDAC	SE160G10V	0850R010BN3HCV	HYDAC	RE200G10V	10308R12BN	HYDAC	RP100E10B
0660D010BNHC	HYDAC	SE160G10B	0850R010BNHC	HYDAC	RE200G10B	10308R25BN	HYDAC	RP100E20B
0660D010BNHCV	HYDAC	SE160G10V	0850R010BNHCV	HYDAC	RE200G10V	10316R03BN	HYDAC	RP200E03B
0660D010BNHCW	HYDAC	SE160G10B	0850R010P	HYDAC	RE200D10B	10316R06BN	HYDAC	RP200E05B
0660D010BNV	HYDAC	SE160E10V	0850R010PHC	HYDAC	RE200N10B	10316R12BN	HYDAC	RP200E10B
0660D010BNW	HYDAC	SE160E10B	0850R010PHCV	HYDAC	RE200N10V	10316R25BN	HYDAC	RP200E20B
0660D010P	HYDAC	SE160D10B	0850R010PV	HYDAC	RE200D10V	10326R03BN	HYDAC	RP240E03B
0660D010PV	HYDAC	SE160D10V	0850R010V	HYDAC	RE200A10B	10326R06BN	HYDAC	RP240E05B
0660D010V	HYDAC	SE160A10B	0850R010VV	HYDAC	RE200A10V	10326R12BN	HYDAC	RP240E10B
0660D010VW	HYDAC	SE160A10V	0850R020BN3HC	HYDAC	RE200G20B	10326R25BN	HYDAC	RP240E20B
0660D010Y	HYDAC	SE160C10B	0850R020BN3HCV	HYDAC	RE200G20V	10339R03BN	HYDAC	RP300E03B
0660D010YV	HYDAC	SE160C10V	0850R020BNHC	HYDAC	RE200G20B	10339R06BN	HYDAC	RP300E05B
0660D020BH	HYDAC	SE160F20B	0850R020BNHCV	HYDAC	RE200G20V	10339R12BN	HYDAC	RP300E10B
0660D020BH3HC	HYDAC	SE160H20B	0850R020P	HYDAC	RE200D20B	10339R25BN	HYDAC	RP300E20B
0660D020BH3HCV	HYDAC	SE160H20V	0850R020PHC	HYDAC	RE200N20B	10408R03BN	HYDAC	RP050E03B
0660D020BHHC	HYDAC	SE160H20B	0850R020PHCV	HYDAC	RE200N20V	10408R06BN	HYDAC	RP050E05B
0660D020BHHCV	HYDAC	SE160H20V	0850R020PV	HYDAC	RE200D20V	10408R12BN	HYDAC	RP050E10B
0660D020BHHWCW	HYDAC	SE160H20B	0850R020V	HYDAC	RE200A20B	10408R25BN	HYDAC	RP050E20B
0660D020BHV	HYDAC	SE160F20V	0850R025V	HYDAC	RE200A20V	10413R03BN	HYDAC	RP080E03B
0660D020BHW	HYDAC	SE160F20B	0850R025VHC	HYDAC	RE200B25B	10413R06BN	HYDAC	RP080E05B
0660D020BN	HYDAC	SE160E20B	0850R025VHCV	HYDAC	RE200S25B	10413R12BN	HYDAC	RP080E10B
0660D020BN3HC	HYDAC	SE160G20B	0850R025WHC	HYDAC	RE200S25V	10413R25BN	HYDAC	RP080E20B
0660D020BN3HCV	HYDAC	SE160G20V	0850R025WHCV	HYDAC	RE200B25V	10426R03BN	HYDAC	RP090E03B
0660D020BNHC	HYDAC	SE160G20B	0850R025VV	HYDAC	RE200B25V	10426R06BN	HYDAC	RP090E05B
0660D020BNHCV	HYDAC	SE160G20V	0850R050V	HYDAC	RE200B50B	10426R12BN	HYDAC	RP090E10B
0660D020BNHCW	HYDAC	SE160G20B	0850R050W	HYDAC	RE200S50V	10426R25BN	HYDAC	RP090E20B
0660D020BNV	HYDAC	SE160E20V	0850R100V	HYDAC	RE200B100B	10608D03BN	HYDAC	SP100E03B
0660D020BNW	HYDAC	SE160E20B	0850R100VHC	HYDAC	RE200S100B	10608D12BN	HYDAC	SP100E10B
0660D020P	HYDAC	SE160D20B	0850R100VHCV	HYDAC	RE200S100V	10608D25BN	HYDAC	SP100E20B
0660D020PV	HYDAC	SE160D20V	0850R100VV	HYDAC	RE200B100V	10616D03BN	HYDAC	SP200E03B
0660D020V	HYDAC	SE160A20B	0950R003BN	HYDAC	RE250E03B	10616D12BN	HYDAC	SP200E10B
0660D020VV	HYDAC	SE160A20V	0950R003BN3HC	HYDAC	RE250G03B	10616D25BN	HYDAC	SP200E20B
0660D020VW	HYDAC	SE160A20B	0950R003BN3HCV	HYDAC	RE250G03V	10639D03BN	HYDAC	SP300E03B
0660D020Y	HYDAC	SE160C20B	0950R003BNHC	HYDAC	RE250G03B	10639D12BN	HYDAC	SP300E10B
0660D020YV	HYDAC	SE160C20V	0950R003BNHCV	HYDAC	RE250G03V	10639D25BN	HYDAC	SP300E20B
0660D025W	HYDAC	SE160B25B	0950R003BNV	HYDAC	RE250E03V	10704D03BH	HYDAC	SP101F03B
0660D025WHC	HYDAC	SE160S25B	0950R003P	HYDAC	RE250D03B	10704D03BN	HYDAC	SP010E03B
0660D025WV	HYDAC	SE160B25V	0950R003PV	HYDAC	RE250D03V	10704D06BH	HYDAC	SP010F05B
0660D025WVW	HYDAC	SE160B25V	0950R003V	HYDAC	RE250A03B	10704D06BN	HYDAC	SP010E05B
0660D050W	HYDAC	SE160B50B	0950R003VV	HYDAC	RE250A03V	10704D10BH	HYDAC	SP010F10B
0660D050WHC	HYDAC	SE160S50B	0950R005BN	HYDAC	RE250E05B	10704D12BN	HYDAC	SP010E10B
0660D050WV	HYDAC	SE160B50V	0950R005BN3HC	HYDAC	RE250G05B	10704D17BH	HYDAC	SP010F20B
0660D050WVW	HYDAC	SE160B50B	0950R005BN3HCV	HYDAC	RE250G05V	10704D25BN	HYDAC	SP010E20B
0660D100W	HYDAC	SE160B100B	0950R005BNHC	HYDAC	RE250G05B	10708D03BH	HYDAC	SP020F03B
0660D100WHC	HYDAC	SE160S100B	0950R005BNHC	HYDAC	RE250G05B	10708D03BN	HYDAC	SP020E03B
0660D100WV	HYDAC	RE160E100V	0950R005BNHCV	HYDAC	RE250G05V	10708D06BH	HYDAC	SP020F05B
0660D100WVW	HYDAC	RE160B100B	0950R005BNV	HYDAC	RE250E05V	10708D06BN	HYDAC	SP020E05B
0660R003BN	HYDAC	RE160E03B	0950R005P	HYDAC	RE250D05B	10708D10BH	HYDAC	SP020F10B
0660R003BN3HC	HYDAC	RE160G03B	0950R005PV	HYDAC	RE250D05V	10708D12BN	HYDAC	SP020E10B
0660R003BN3HCV	HYDAC	RE160G03V	0950R005V	HYDAC	RE250A05B	10708D17BH	HYDAC	SP020F20B
0660R003BNHC	HYDAC	RE160G03B	0950R005VV	HYDAC	RE250A05V	10708D25BN	HYDAC	SP020E20B
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0660R005BN3HCV	HYDAC	RE160G05V	0950R010PHCV	HYDAC	RE250N10V	10816D25BN	HYDAC	SP160E20B
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0660R010VV	HYDAC	RE160A10V	0950R025VV	HYDAC	RE250B25V	110D020H	TRIBO GUARD	SE030H20B
0660R020BN	HYDAC	RE160E20B	0950R050V	HYDAC	RE250B50B	110D020N	TRIBO GUARD	SE030G20B
0660R020BN3HC	HYDAC	RE160G20B	0950R050W	HYDAC	RE250S50B	110G100A0000	EPPENSTEINER	RS003B100B
0660R020BN3HCV	HYDAC	RE160G20V	0950R050W	HYDAC	RE250S50V	110G10A0000	EPPENSTEINER	RS003B100B
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0660R020BNHCV	HYDAC	RE160G20V	0950R100VHC	HYDAC	RE250B100B	110G40A0000	EPPENSTEINER	RS003B40B
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0660R020P	HYDAC	RE160D20B	0950R100VV	HYDAC	RE250S100V	110H10SLA0000	EPPENSTEINER	RS003E10B
0660R020PHC	HYDAC	RE160N20B	0990D003BH3HC	HYDAC	SE250H03B	110H20SLA0000	EPPENSTEINER	RS003E20B
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0660R020PV	HYDAC	RE160D20V	0990D005BH3HC	HYDAC	SE250H05B	110M10A0000	EPPENSTEINER	RS003A10B
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0660R025W	HYDAC	RE160B25B	0990D010BN3HC	HYDAC	SE250G10B	110P25A0000	EPPENSTEINER	RS003K20B
0660R025WHC	HYDAC	RE160S25B	0990D020BH3HC	HYDAC	SE250H20B	110P5A0000	EPPENSTEINER	RS003K05B
0660R025WHCV	HYDAC	RE160S25V	0990D020BN3HC	HYDAC	SE250G20B	11104D03BH	HYDAC	SP045F03B
0660R025WV	HYDAC	RE160B25V	0990D025WHC	HYDAC	SE250S25B	11104D03BN	HYDAC	SP045E03B
0660R050W	HYDAC	RE160B50B	0990D050W	HYDAC	SE250S50B	11104D06BH	HYDAC	SP045F05B
0660R050WHC	HYDAC	RE160S50B	0990D100W	HYDAC	SE250S100B	11104D06BN	HYDAC	SP045E05B
0660R050WV	HYDAC	RE160S50V	1000RNO03BNHC	HYDAC	NR			

code code bezeichnung código	brand marque hersteller marca		code code bezeichnung código	brand marque hersteller marca		code code bezeichnung código	brand marque hersteller marca	
11113D03BN	HYDAC	SP090E03B	1225P25A0000	EPPENSTEINER	RS060K20B	1360G60A000P	EPPENSTEINER	RS095B60B
11113D06BN	HYDAC	SP090E05B	1225P5A0000	EPPENSTEINER	RS060K05B	1360H10SLA000P	EPPENSTEINER	RS095E10B
11113D10BH	HYDAC	SP090F10B	12609003	HYDAC	SE035G03B	1360H20SLA000P	EPPENSTEINER	RS095E20B
11113D12BN	HYDAC	SP090E10B	1300R003BN	HYDAC	RE300E03B	1360H3SLA000P	EPPENSTEINER	RS095E30B
11113D25BN	HYDAC	SP090E20B	1300R003BN3HC	HYDAC	RE300G03B	1360H6SLA000P	EPPENSTEINER	RS095E05B
11116D03BH	HYDAC	SP130F03B	1300R003BN3HCB6	HYDAC	RE300G03B1650	1360M10A000P	EPPENSTEINER	RS095A10B
11116D03BN	HYDAC	SP130E03B	1300R003BN3HCKB	HYDAC	RE300G03B1613	1360M5A000P	EPPENSTEINER	RS095A05B
11116D10BH	HYDAC	SP130F10B	1300R003BN3HCV	HYDAC	RE300G03V	1360P10A000P	EPPENSTEINER	RS095K10B
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11116D17BH	HYDAC	SP130F20B	1300R003BN3HCVKB	HYDAC	RE300G03V1613	1360P5A000P	EPPENSTEINER	RS095K05B
11116D25BN	HYDAC	SP130E20B	1300R003BNHC	HYDAC	RE300G03B	1361G100A000P	EPPENSTEINER	RS096B100B
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11304D06BH	HYDAC	SP024F05B	1300R003P	HYDAC	RE300D03B	1361G40A000P	EPPENSTEINER	RS096B40B
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11308D17BH	HYDAC	SP030F20B	1300R005BN3HCVKB	HYDAC	RE300G05V1613	1560G10A000P	EPPENSTEINER	RS150B10B
11308D25BN	HYDAC	SP030E20B	1300R005BNHC	HYDAC	RE300G05B	1560G25A000P	EPPENSTEINER	RS150B25B
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1140P5A0000	EPPENSTEINER	RS035K05B	1300R020PHCB6	HYDAC	RE300N20B1650	160D005H	TRIBOGUARD	SE045H05B
11801G100A000P	EPPENSTEINER	RS471B100B	1300R020PHCKB	HYDAC	RE300N20B1613	160D005N	TRIBOGUARD	SE045G05B
11801G10A000P	EPPENSTEINER	RS471B10B	1300R020PHCV	HYDAC	RE300N20V	160D010H	TRIBOGUARD	SE045H10B
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11801G40A000P	EPPENSTEINER	RS471B40B	1300R020PKB	HYDAC	RE300D20B1613	160D020H	TRIBOGUARD	SE045H20B
11801G60A000P	EPPENSTEINER	RS471B60B	1300R020PV	HYDAC	RE300D20V	160D020N	TRIBOGUARD	SE045G20B
11801H10SLA000P	EPPENSTEINER	RS471E10B	1300R020PVV	HYDAC	RE300D20B	1700R003BN3HC	HYDAC	RE240G03B
11801H20SLA000P	EPPENSTEINER	RS471E20B	1300R020V	HYDAC	RE300A20B	1700R005BN3HC	HYDAC	RE240G05B
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11801P5A000P	EPPENSTEINER	RS471K05B	1300R025WHCV	HYDAC	RE300S25V	1700R100WHC	HYDAC	RE240S100B
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11808D03BN	HYDAC	SP070E03BOBE	1300R050V	HYDAC	RE300B50B	1900G100A000P	EPPENSTEINER	RS250B100B
11808D10BH	HYDAC	SP070F10BOBE	1300R050WHC	HYDAC	RE300S05B	1900G10A000P	EPPENSTEINER	RS250B10B
11808D12BN	HYDAC	SP070E10BOBE	1300R050WHCV	HYDAC	RE300S50V	1900G25A000P	EPPENSTEINER	RS250B25B
11808D17BH	HYDAC	SP070F20BOBE	1300R050VV	HYDAC	RE300B50V	1900G40A000P	EPPENSTEINER	RS250B40B
11808D25BN	HYDAC	SP070E20BOBE	1300R100W	HYDAC	RE300B100B	1900G60A000P	EPPENSTEINER	RS250B60B
11816D03BH	HYDAC	SP130F03BOBE	1300R100WHC	HYDAC	RE300S100B	1900H10SLA000P	EPPENSTEINER	RS250E10B
11816D03BN	HYDAC	SP130E03BOBE	1300R100WHCV	HYDAC	RE300S100V	1900H20SLA000P	EPPENSTEINER	RS250E20B
11816D10BH	HYDAC	SP130F10BOBE	1300R100WV	HYDAC	RE300B100V	1900H3SLA000P	EPPENSTEINER	RS250E03B
11816D12BN	HYDAC	SP130E10BOBE	1320D003BH3HC	HYDAC	SE300H03B	1900H6SLA000P	EPPENSTEINER	RS250E05B
11816D17BH	HYDAC	SP130F20BOBE	1320D003BN3HC	HYDAC	SE300G03B	1900M10A000P	EPPENSTEINER	RS250A10B
11816D25BN	HYDAC	SP130E20BOBE	1320D005BH3HC	HYDAC	SE300H05B	1900M5A000P	EPPENSTEINER	RS250A05B
118G100A0000	EPPENSTEINER	RS005B100B	1320D005BN3HC	HYDAC	SE300G05B	1900P10A000P	EPPENSTEINER	RS250K10B
118G10A0000	EPPENSTEINER	RS005B10B	1320D010BH3HC	HYDAC	SE300H10B	1900P25A000P	EPPENSTEINER	RS250K20B
118G25A0000	EPPENSTEINER	RS005B25B	1320D010BN3HC	HYDAC	SE300G10B	1900P5A000P	EPPENSTEINER	RS250K05B
118G40A0000	EPPENSTEINER	RS005B40B	1320D020BH3HC	HYDAC	SE300H20B	1901G100A000P	EPPENSTEINER	RS251B100B
118G60A0000	EPPENSTEINER	RS005B60B	1320D020BN3HC	HYDAC	SE300G20B	1901G10A000P	EPPENSTEINER	RS251B10B
118H10SLA0000	EPPENSTEINER	RS005E10B	1320D025WHC	HYDAC	SE300S25B	1901G25A000P	EPPENSTEINER	RS251B25B
118H20SLA0000	EPPENSTEINER	RS005E20B	1320D050WHC	HYDAC	SE300S05B	1901G40A000P	EPPEN	

code code bezeichnung código	brand marque hersteller marca		code code bezeichnung código	brand marque hersteller marca		code code bezeichnung código	brand marque hersteller marca	
190M10A0000	EPPENSTEINER	RS024A10B	20250G60	EPPENSTEINER	RS070B60B	2120P10	EPPENSTEINER	LS005K10B
190M5A0000	EPPENSTEINER	RS024A05B	20250H10SL	EPPENSTEINER	RS070E10B	2120P25	EPPENSTEINER	LS005K20B
190P10A0000	EPPENSTEINER	RS024K10B	20250H20SL	EPPENSTEINER	RS070E20B	2120P5	EPPENSTEINER	LS005K05B
190P25A0000	EPPENSTEINER	RS024K20B	20250H3SL	EPPENSTEINER	RS070E03B	2130G10	EPPENSTEINER	LS008B10B
190P5A0000	EPPENSTEINER	RS024K05B	20250H6SL	EPPENSTEINER	RS070E05B	2130G100	EPPENSTEINER	LS008B100B
1E10G100A0000	EPPENSTEINER	RS004B100B	20250M10	EPPENSTEINER	RS070A10B	2130G25	EPPENSTEINER	LS008B25B
1E10G10A0000	EPPENSTEINER	RS004B10B	20250M5	EPPENSTEINER	RS070A05B	2130G40	EPPENSTEINER	LS008B40B
1E10G25A0000	EPPENSTEINER	RS004B25B	20250P10	EPPENSTEINER	RS070K10B	2130G60	EPPENSTEINER	LS008B60B
1E10G40A0000	EPPENSTEINER	RS004B40B	20250P25	EPPENSTEINER	RS070K20B	2130H10SL	EPPENSTEINER	LS008E10B
1E10G60A0000	EPPENSTEINER	RS004B60B	20250P5	EPPENSTEINER	RS070K05B	2130H20SL	EPPENSTEINER	LS008E20B
1E10H10SLA0000	EPPENSTEINER	RS004E10B	20330G10	EPPENSTEINER	RS090B10B	2130H3SL	EPPENSTEINER	LS008E03B
1E10H20SLA0000	EPPENSTEINER	RS004E20B	20330G100	EPPENSTEINER	RS090B100B	2130H6SL	EPPENSTEINER	LS008E05B
1E10H3SLA0000	EPPENSTEINER	RS004E03B	20330G25	EPPENSTEINER	RS090B25B	2130M10	EPPENSTEINER	LS008A10B
1E10H6SLA0000	EPPENSTEINER	RS004E05B	20330G40	EPPENSTEINER	RS090B40B	2130M5	EPPENSTEINER	LS008A05B
1E10M10A0000	EPPENSTEINER	RS004A10B	20330G60	EPPENSTEINER	RS090B60B	2130P10	EPPENSTEINER	LS008K10B
1E10M5A0000	EPPENSTEINER	RS004A05B	20330H10SL	EPPENSTEINER	RS090E10B	2130P25	EPPENSTEINER	LS008K20B
1E10P10A0000	EPPENSTEINER	RS004K10B	20330H20SL	EPPENSTEINER	RS090E20B	2130P5	EPPENSTEINER	LS008K05B
1E10P25A0000	EPPENSTEINER	RS004K20B	20330H3SL	EPPENSTEINER	RS090E03B	2140G100A000P	EPPENSTEINER	SS035B100B
1E10P5A0000	EPPENSTEINER	RS004K05B	20330H6SL	EPPENSTEINER	RS090E05B	2140G10A0000P	EPPENSTEINER	SS035B10B
1E140G100A0000	EPPENSTEINER	RS036B100B	20330M10	EPPENSTEINER	RS090A10B	2140G25A0000P	EPPENSTEINER	SS035B25B
1E140G10A0000	EPPENSTEINER	RS036B10B	20330M5	EPPENSTEINER	RS090A05B	2140G40A0000P	EPPENSTEINER	SS035B40B
1E140G25A0000	EPPENSTEINER	RS036B25B	20330P10	EPPENSTEINER	RS090K10B	2140G60A0000P	EPPENSTEINER	SS035B60B
1E140G40A0000	EPPENSTEINER	RS036B40B	20330P25	EPPENSTEINER	RS090K20B	2140H10SLA0000P	EPPENSTEINER	SS035E10B
1E140G60A0000	EPPENSTEINER	RS036B60B	20330P5	EPPENSTEINER	RS090K05B	2140H10SLC0000P	EPPENSTEINER	SS035F10B
1E140H10SLA0000	EPPENSTEINER	RS036E10B	20500G10	EPPENSTEINER	RS130B10B	2140H20SLA0000P	EPPENSTEINER	SS035E20B
1E140H20SLA0000	EPPENSTEINER	RS036E20B	20500G100	EPPENSTEINER	RS130B100B	2140H20SLC0000P	EPPENSTEINER	SS035F20B
1E140H3SLA0000	EPPENSTEINER	RS036E03B	20500G25	EPPENSTEINER	RS130B25B	2140H3SLA0000P	EPPENSTEINER	SS035E03B
1E140H6SLA0000	EPPENSTEINER	RS036E05B	20500G40	EPPENSTEINER	RS130B40B	2140H3SLC0000P	EPPENSTEINER	SS035F03B
1E140M10A0000	EPPENSTEINER	RS036A10B	20500G60	EPPENSTEINER	RS130B60B	2140H6SLA0000P	EPPENSTEINER	SS035E05B
1E140M5A0000	EPPENSTEINER	RS036A05B	20500H10SL	EPPENSTEINER	RS130E10B	2140H6SLC0000P	EPPENSTEINER	SS035F05B
1E140P10A0000	EPPENSTEINER	RS036K10B	20500H20SL	EPPENSTEINER	RS130E20B	2140M10A0000P	EPPENSTEINER	SS035A10B
1E140P25A0000	EPPENSTEINER	RS036K20B	20500H3SL	EPPENSTEINER	RS130E03B	2140M5A0000P	EPPENSTEINER	SS035A05B
1E140P5A0000	EPPENSTEINER	RS036K05B	20500H6SL	EPPENSTEINER	RS130E05B	2140P10A0000P	EPPENSTEINER	SS035K10B
1E18G100A0000	EPPENSTEINER	RS006B100B	20500M10	EPPENSTEINER	RS130A10B	2140P25A0000P	EPPENSTEINER	SS035K20B
1E18G10A0000	EPPENSTEINER	RS006B10B	20500M5	EPPENSTEINER	RS130A05B	2140P5A0000P	EPPENSTEINER	SS035K05B
1E18G25A0000	EPPENSTEINER	RS006B25B	20500P10	EPPENSTEINER	RS130K10B	2165G10	EPPENSTEINER	LS014B10B
1E18G40A0000	EPPENSTEINER	RS006B40B	20500P25	EPPENSTEINER	RS130K20B	2165G100	EPPENSTEINER	LS014B100B
1E18G60A0000	EPPENSTEINER	RS006B60B	20500P5	EPPENSTEINER	RS130K05B	2165G25	EPPENSTEINER	LS014B25B
1E18H10SLA0000	EPPENSTEINER	RS006E10B	20660G10	EPPENSTEINER	RS160B10B	2165G40	EPPENSTEINER	LS014B40B
1E18H20SLA0000	EPPENSTEINER	RS006E20B	20660G100	EPPENSTEINER	RS160B100B	2165G60	EPPENSTEINER	LS014B60B
1E18H3SLA0000	EPPENSTEINER	RS006E03B	20660G25	EPPENSTEINER	RS160B25B	2165H10SL	EPPENSTEINER	LS014E10B
1E18H6SLA0000	EPPENSTEINER	RS006E05B	20660G40	EPPENSTEINER	RS160B40B	2165H20SL	EPPENSTEINER	LS014E20B
1E18M10A0000	EPPENSTEINER	RS006A10B	20660G60	EPPENSTEINER	RS160B60B	2165H3SL	EPPENSTEINER	LS014E03B
1E18M5A0000	EPPENSTEINER	RS006A05B	20660H10SL	EPPENSTEINER	RS160E10B	2165H6SL	EPPENSTEINER	LS014E05B
1E18P10A0000	EPPENSTEINER	RS006K10B	20660H20SL	EPPENSTEINER	RS160E20B	2165M10	EPPENSTEINER	LS014A10B
1E18P25A0000	EPPENSTEINER	RS006K20B	20660H3SL	EPPENSTEINER	RS160E03B	2165M5	EPPENSTEINER	LS014A05B
1E18P5A0000	EPPENSTEINER	RS006K05B	20660H6SL	EPPENSTEINER	RS160E05B	2165P10	EPPENSTEINER	LS014K10B
1E225G100A0000	EPPENSTEINER	RS061B100B	20660M10	EPPENSTEINER	RS160A10B	2165P25	EPPENSTEINER	LS014K20B
1E225G10A0000	EPPENSTEINER	RS061B10B	20660M5	EPPENSTEINER	RS160A05B	2165P5	EPPENSTEINER	LS014K05B
1E225G25A0000	EPPENSTEINER	RS061B25B	20660P10	EPPENSTEINER	RS160K10B	2185G10	EPPENSTEINER	LS020B10B
1E225G40A0000	EPPENSTEINER	RS061B40B	20660P25	EPPENSTEINER	RS160K20B	2185G100	EPPENSTEINER	LS020B100B
1E225G60A0000	EPPENSTEINER	RS061B60B	20660P5	EPPENSTEINER	RS160K05B	2185G25	EPPENSTEINER	LS020B25B
1E225H10SLA0000	EPPENSTEINER	RS061E10B	20750G10	EPPENSTEINER	RS200B10B	2185G40	EPPENSTEINER	LS020B40B
1E225H20SLA0000	EPPENSTEINER	RS061E20B	20750G100	EPPENSTEINER	RS200B100B	2185G60	EPPENSTEINER	LS020B60B
1E225H3SLA0000	EPPENSTEINER	RS061E03B	20750G25	EPPENSTEINER	RS200B25B	2185H10SL	EPPENSTEINER	LS020E10B
1E225H6SLA0000	EPPENSTEINER	RS061E05B	20750G40	EPPENSTEINER	RS200B40B	2185H20SL	EPPENSTEINER	LS020E20B
1E225M10A0000	EPPENSTEINER	RS061A10B	20750G60	EPPENSTEINER	RS200B60B	2185H3SL	EPPENSTEINER	LS020E03B
1E225M5A0000	EPPENSTEINER	RS061A05B	20750H10SL	EPPENSTEINER	RS200E10B	2185H6SL	EPPENSTEINER	LS020E05B
1E225P10A0000	EPPENSTEINER	RS061K10B	20750H20SL	EPPENSTEINER	RS200E20B	2185M10	EPPENSTEINER	LS020A10B
1E225P25A0000	EPPENSTEINER	RS061K20B	20750H3SL	EPPENSTEINER	RS200E03B	2185M5	EPPENSTEINER	LS020A05B
1E225P5A0000	EPPENSTEINER	RS061K05B	20750H6SL	EPPENSTEINER	RS200E05B	2185P10	EPPENSTEINER	LS020K10B
1E32G100A0000	EPPENSTEINER	RS009B100B	20750M10	EPPENSTEINER	RS200A10B	2185P25	EPPENSTEINER	LS020K20B
1E32G10A0000	EPPENSTEINER	RS009B10B	20750M5	EPPENSTEINER	RS200A05B	2185P5	EPPENSTEINER	LS020K05B
1E32G25A0000	EPPENSTEINER	RS009B25B	20750P10	EPPENSTEINER	RS200K10B	218G100A0000P	EPPENSTEINER	SS004B100B
1E32G40A0000	EPPENSTEINER	RS009B40B	20750P25	EPPENSTEINER	RS200K20B	218G10A0000P	EPPENSTEINER	SS004B10B
1E32G60A0000	EPPENSTEINER	RS009B60B	20750P5	EPPENSTEINER	RS200K05B	218G25A0000P	EPPENSTEINER	SS004B25B
1E32H10SLA0000	EPPENSTEINER	RS009E10B	210G100A0000P	EPPENSTEINER	SS002B100B	218G40A0000P	EPPENSTEINER	SS004B40B
1E32H20SLA0000	EPPENSTEINER	RS009E20B	210G10A0000P	EPPENSTEINER	SS002B10B	218G60A0000P	EPPENSTEINER	SS004B60B
1E32H3SLA0000	EPPENSTEINER	RS009E03B	210G25A0000P	EPPENSTEINER	SS002B25B	218H10SLA0000P	EPPENSTEINER	SS004F10B
1E32H6SLA0000	EPPENSTEINER	RS009E05B	210G40A0000P	EPPENSTEINER	SS002B40B	218H10SLC0000P	EPPENSTEINER	SS004F100B
1E32M10A0000	EPPENSTEINER	RS009A10B	210G60A0000P	EPPENSTEINER	SS002B60B	218H20SLA0000P	EPPENSTEINER	SS004E20B
1E32M5A0000	EPPENSTEINER	RS009A05B	210H10SLA0000P	EPPENSTEINER	SS002E10B	218H20SLC0000P	EPPENSTEINER	SS004F20B
1E32P10A0000	EPPENSTEINER	RS009K10B	210H10SLC0000P	EPPENSTEINER	SS002F10B	218H3SLA0000P	EPPENSTEINER	SS004E03B
1E32P25A0000	EPPENSTEINER	RS009K20B	210H20SLA0000P	EPPENSTEINER	SS002E20B	218H3SLC0000P	EPPENSTEINER	SS004F03B
1E32P5A0000	EPPENSTEINER	RS009K05B	210H20SLC0000P	EPPENSTEINER	SS002F20B	218H6SLA0000P	EPPENSTEINER	SS004E05B
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1E56G10A0000	EPPENSTEINER	RS015B10B	210H3SLC0000P	EPPENSTEINER	SS002F03B	218P10A0000P	EPPENSTEINER	SS004K10B
1E56G25A0000	EPPENSTEINER	RS015B25B	210H6SLA0000P	EPPENSTEINER	SS002E05B	218P25A0000P	EPPENSTEINER	SS004K20B
1E56G40A0000	EPPENSTEINER	RS015B40B	210H6SLC0000P	EPPENSTEINER	SS002F05B	218P5A0000P	EPPENSTEINER	SS004K05B
1E56G60A0000	EPPENSTEINER	RS015B60B	210P10A0000P	EPPENSTEINER	SS002K10B	2225G100A0000P	EPPENSTEINER	SS070B100B
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1E56H3SLA0000	EPPENSTEINER	RS015E03B	2110G10	EPPENSTEINER	LS003B10B	2225G40A0000P	EPPENSTEINER	SS070B40B
1E56H6SLA0000	EPPENSTEINER	RS015E05B	2110G100	EPPENSTEINER	LS003B100B	2225G60A0000P	EPPENSTEINER	SS070B60B
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1E56M5A0000	EPPENSTEINER	RS015A05B	2110G40	EPPENSTEINER	LS003B40B	2225H10SLC0000P	EPPENSTEINER	SS070F10B
1E56P10A0000	EPPENSTEINER	RS015K10B	2110G60	EPPENSTEINER	LS003B60B	2225H20SLA0000P	EPPENSTEINER	SS070E20B
1E56P25A0000	EPPENSTEINER	RS015K20B	2110H10SL	EPPENSTEINER	LS003E10B	2225H20SLC0000P	EPPENSTEINER	SS070F20B
1E56P5A0000	EPPENSTEINER	RS015K05B	2110H20SL	EPPENSTEINER	LS003E20B	2225H3SLA0000P	EPPENSTEINER	SS070E03B
1E90G100A0000	EPPENSTEINER	RS025B100B	2110H3SL	EPPENSTEINER	LS003E03B	2225H3SLC0000P	EPPENSTEINER	SS070F03B
1E90G10A0000	EPPENSTEINER	RS025B10B	2110H6SL	EPPENSTEINER	LS003E05B	2225H6SLA0000P	EPPENSTEINER	SS070E05B
1E90G25A0000	EPPENSTEINER	RS025B25B	2110M10	EPPENSTEINER	LS003A10B	2225H6SLC0000P	EPPENSTEINER	SS070F05B
1E90G40A0000	EPPENSTEINER	RS025B40B	2110M5	EPPENSTEINER	LS003A05B	2225M10A0000P	EPPENSTEINER	SS070A10B
1E90G60A0000	EPPENSTEINER	RS025B60B	2110P10	EPPENSTEINER	LS003K10B	2225M5A0000P	EPPENSTEINER	SS070A05B
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1E90H3SLA0000	EPPENSTEINER	RS025E03B	21125G10	EPPENSTEINER	LS035B10B	2225P5A0000P	EPPENSTEINER	SS070K05B
1E90H6SLA0000	EPPENSTEINER	RS025E05B	21125G100	EPPENSTEINER	LS035B100B	232G100A0000P	EPPENSTEINER	SS008B100B
1E90M10A0000	EPPENSTEINER	RS025A10B	21125G25	EPPENSTEINER	LS035B25B	232G10A0000P	EPPENSTEINER	SS008B10B
1E90M5A0000	EPPENSTEINER	RS025A05B	21125G40	EPPENSTEINER	LS035B40B	232G25A0000P	EPPENSTEINER	SS008B25B
1E90P10A0000	EPPENSTEINER	RS025K10B	21125G60	EPPENSTEINER	LS035B60B	232G40A0000P	EPPENSTE	

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2360H20SLC000P	EPPENSTEINER	SS085F20B	2600R020VV	HYDAC	RE600A20V	2840L03B16	ST-FILTER	RP200E03B
2360H3SLA000P	EPPENSTEINER	SS085E03B	2600R025W	HYDAC	RE600B25B	2840L03B26	ST-FILTER	RP240E03B
2360H3SLC000P	EPPENSTEINER	SS085F03B	2600R025WHC	HYDAC	RE600S25B	2840L03B39	ST-FILTER	RP300E03B
2360H6SLA000P	EPPENSTEINER	SS085E05B	2600R025WHCKB	HYDAC	RE600S25B1613	2840L03V08	ST-FILTER	RP100E03V
2360H6SLC000P	EPPENSTEINER	SS085F05B	2600R025WHCV	HYDAC	RE600S25V	2840L03V16	ST-FILTER	RP200E03V
2360M10A000P	EPPENSTEINER	SS085A10B	2600R025WHCW	HYDAC	RE600S25B	2840L03V26	ST-FILTER	RP240E03V
2360M5A000P	EPPENSTEINER	SS085A05B	2600R025WKB	HYDAC	RE600S25B1613	2840L03V39	ST-FILTER	RP300E03V
2360P10A000P	EPPENSTEINER	SS085K10B	2600R025WV	HYDAC	RE600B25V	2840L06B08	ST-FILTER	RP100E05B
2360P25A000P	EPPENSTEINER	SS085K20B	2600R025WV	HYDAC	RE600S25B	2840L06B16	ST-FILTER	RP200E05B
2360P5A000P	EPPENSTEINER	SS085K05B	2600R050W	HYDAC	RE600B50B	2840L06B26	ST-FILTER	RP240E05B
240D003N	TRIBOGUARD	SE070G03B	2600R050WHC	HYDAC	RE600S50B	2840L06B39	ST-FILTER	RP300E05B
240D005N	TRIBOGUARD	SE070G05B	2600R050WHCKB6	HYDAC	RE600S50B1650	2840L06V08	ST-FILTER	RP100E05V
240D010N	TRIBOGUARD	SE070G10B	2600R050WHCKB	HYDAC	RE600S50B1613	2840L06V16	ST-FILTER	RP200E05V
240D020N	TRIBOGUARD	SE070G20B	2600R050WHCV	HYDAC	RE600S50V	2840L06V26	ST-FILTER	RP240E05V
2460G100A000P	EPPENSTEINER	SS125B100B	2600R050WV	HYDAC	RE600B50V	2840L06V39	ST-FILTER	RP300E05V
2460G10A000P	EPPENSTEINER	SS125B10B	2600R100W	HYDAC	RE600B100B	2840L12B08	ST-FILTER	RP100E10B
2460G25A000P	EPPENSTEINER	SS125B25B	2600R100WHC	HYDAC	RE600S100B	2840L12B16	ST-FILTER	RP200E10B
2460G40A000P	EPPENSTEINER	SS125B40B	2600R100WHCKB	HYDAC	RE600S100B1613	2840L12B26	ST-FILTER	RP240E10B
2460G60A000P	EPPENSTEINER	SS125B60B	2600R100WHCV	HYDAC	RE600S100V	2840L12B39	ST-FILTER	RP300E10B
2460H10SLA000P	EPPENSTEINER	SS125E10B	2600R100WKB	HYDAC	RE600B100B1613	2840L12V08	ST-FILTER	RP100E10V
2460H10SLC000P	EPPENSTEINER	SS125F10B	2600R100WV	HYDAC	RE600B100V	2840L12V16	ST-FILTER	RP200E10V
2460H20SLA000P	EPPENSTEINER	SS125E20B	2600R100WV	HYDAC	RE600B100B	2840L12V26	ST-FILTER	RP240E10V
2460H20SLC000P	EPPENSTEINER	SS125F20B	2600R100WWKB	HYDAC	RE600B100B1613	2840L12V39	ST-FILTER	RP300E10V
2460H3SLA000P	EPPENSTEINER	SS125E03B	2630L03B08	ST-FILTER	RP100E03B	2840L25B08	ST-FILTER	RP100E20B
2460H3SLC000P	EPPENSTEINER	SS125F03B	2630L03B13	ST-FILTER	RP020E03B	2840L25B16	ST-FILTER	RP200E20B
2460H6SLA000P	EPPENSTEINER	SS125E05B	2630L03B16	ST-FILTER	RP024E03B	2840L25B26	ST-FILTER	RP240E20B
2460H6SLC000P	EPPENSTEINER	SS125F05B	2630L03B26	ST-FILTER	RP030E03B	2840L25B39	ST-FILTER	RP300E20B
2460M10A000P	EPPENSTEINER	SS125A10B	2630L03V08	ST-FILTER	RP010E03V	2840L25V08	ST-FILTER	RP100E20V
2460M5A000P	EPPENSTEINER	SS125A05B	2630L03V13	ST-FILTER	RP020E03V	2840L25V16	ST-FILTER	RP200E20V
2460P10A000P	EPPENSTEINER	SS125K10B	2630L03V16	ST-FILTER	RP024E03V	2840L25V26	ST-FILTER	RP240E20V
2460P25A000P	EPPENSTEINER	SS125K20B	2630L03V26	ST-FILTER	RP030E03V	2840L25V39	ST-FILTER	RP300E20V
2460P5A000P	EPPENSTEINER	SS125K05B	2630L06B08	ST-FILTER	RP010E05B	2850L03B08	ST-FILTER	RP050E03B
2560G100A000P	EPPENSTEINER	SS160B100B	2630L06B13	ST-FILTER	RP020E05B	2850L03B13	ST-FILTER	RP080E03B
2560G10A000P	EPPENSTEINER	SS160B10B	2630L06B16	ST-FILTER	RP024E05B	2850L03B26	ST-FILTER	RP090E03B
2560G25A000P	EPPENSTEINER	SS160B25B	2630L06B26	ST-FILTER	RP030E05B	2850L03V08	ST-FILTER	RP050E03V
2560G40A000P	EPPENSTEINER	SS160B40B	2630L06V08	ST-FILTER	RP010E05V	2850L03V13	ST-FILTER	RP080E03V
2560G60A000P	EPPENSTEINER	SS160B60B	2630L06V13	ST-FILTER	RP020E05V	2850L03V26	ST-FILTER	RP090E03V
2560H10SLA000P	EPPENSTEINER	SS160E10B	2630L06V16	ST-FILTER	RP024E05V	2850L06B08	ST-FILTER	RP050E05B
2560H10SLC000P	EPPENSTEINER	SS160F10B	2630L06V26	ST-FILTER	RP030E05V	2850L06B13	ST-FILTER	RP080E05B
2560H20SLA000P	EPPENSTEINER	SS160E20B	2630L12B08	ST-FILTER	RP010E10B	2850L06B26	ST-FILTER	RP090E05B
2560H20SLC000P	EPPENSTEINER	SS160F20B	2630L12B13	ST-FILTER	RP020E10B	2850L06V08	ST-FILTER	RP050E05V
2560H3SLA000P	EPPENSTEINER	SS160E03B	2630L12B16	ST-FILTER	RP024E10B	2850L06V13	ST-FILTER	RP080E05V
2560H3SLC000P	EPPENSTEINER	SS160F03B	2630L12B26	ST-FILTER	RP030E10B	2850L06V26	ST-FILTER	RP090E05V
2560H6SLA000P	EPPENSTEINER	SS160E05B	2630L12V08	ST-FILTER	RP010E10V	2850L12B08	ST-FILTER	RP050E05V
2560H6SLC000P	EPPENSTEINER	SS160F05B	2630L12V13	ST-FILTER	RP020E10V	2850L12B13	ST-FILTER	RP080E05V
2560M10A000P	EPPENSTEINER	SS160A10B	2630L12V16	ST-FILTER	RP024E10V	2850L12B26	ST-FILTER	RP090E05V
2560M5A000P	EPPENSTEINER	SS160A05B	2630L12V26	ST-FILTER	RP030E10V	2850L12B39	ST-FILTER	RP050E10B
2560P10A000P	EPPENSTEINER	SS160K10B	2630L25B08	ST-FILTER	RP010E20B	2850L12V08	ST-FILTER	RP050E10V
2560P25A000P	EPPENSTEINER	SS160K20B	2630L25B13	ST-FILTER	RP020E20B	2850L12V13	ST-FILTER	RP080E10V
2560P5A000P	EPPENSTEINER	SS160K05B	2630L25B16	ST-FILTER	RP024E20B	2850L12V26	ST-FILTER	RP090E10V
256G100A000P	EPPENSTEINER	SS014B100B	2630L25B26	ST-FILTER	RP030E20B	2850L25B08	ST-FILTER	RP050E20B
256G10A000P	EPPENSTEINER	SS014B10B	2630L25V08	ST-FILTER	RP010E20B	2850L25B13	ST-FILTER	RP080E20B
256G25A000P	EPPENSTEINER	SS014B25B	2630L25V13	ST-FILTER	RP020E20V	2850L25B26	ST-FILTER	RP090E20B
256G40A000P	EPPENSTEINER	SS014B40B	2630L25V16	ST-FILTER	RP024E20V	2850L25V08	ST-FILTER	RP050E20B
256G60A000P	EPPENSTEINER	SS014B60B	2630L25V26	ST-FILTER	RP030E20V	2850L25V13	ST-FILTER	RP080E20V
256H10SLA000P	EPPENSTEINER	SS014E10B	2640L03B08	ST-FILTER	RP075E03B	2850L25V26	ST-FILTER	RP090E20V
256H10SLC000P	EPPENSTEINER	SS014F10B	2640L03B13	ST-FILTER	RP085E03B	2870L03B04	ST-FILTER	SP024E03BOBE
256H20SLA000P	EPPENSTEINER	SS014E20B	2640L03B16	ST-FILTER	RP095E03B	2870L03B08	ST-FILTER	SP030E03BOBE
256H20SLC000P	EPPENSTEINER	SS014F20B	2640L03B26	ST-FILTER	RP115E03B	2870L03V04	ST-FILTER	SP024E03VOBE
256H3SLA000P	EPPENSTEINER	SS014E03B	2640L03V08	ST-FILTER	RP075E03V	2870L03V08	ST-FILTER	SP030E03VOBE
256H3SLC000P	EPPENSTEINER	SS014F03B	2640L03V13	ST-FILTER	RP085E03V	2870L06B04	ST-FILTER	SP024E05BOBE
256H6SLA000P	EPPENSTEINER	SS014E05B	2640L03V16	ST-FILTER	RP095E03V	2870L06B08	ST-FILTER	SP030E05BOBE
256H6SLC000P	EPPENSTEINER	SS014F05B	2640L03V26	ST-FILTER	RP115E03V	2870L06V04	ST-FILTER	SP024E05VOBE
256M10A000P	EPPENSTEINER	SS014A10B	2640L06B08	ST-FILTER	RP075E05B	2870L06V08	ST-FILTER	SP030E05VOBE
256M5A000P	EPPENSTEINER	SS014A05B	2640L06B13	ST-FILTER	RP085E05B	2870L12B04	ST-FILTER	SP024E10BOBE
256P10A000P	EPPENSTEINER	SS014K10B	2640L06B16	ST-FILTER	RP095E05B	2870L12B08	ST-FILTER	SP030E10BOBE
256P25A000P	EPPENSTEINER	SS014K20B	2640L06B26	ST-FILTER	RP115E05B	2870L12V04	ST-FILTER	SP024E10VOBE
256P5A000P	EPPENSTEINER	SS014K05B	2640L06V08	ST-FILTER	RP075E05V	2870L12V08	ST-FILTER	SP030E10VOBE
2600R003BN3HC	HYDAC	RE600G03B	2640L06V13	ST-FILTER	RP085E05V	2870L25B04	ST-FILTER	SP024E20BOBE
2600R003BN3HCV	HYDAC	RE600G03V	2640L06V16	ST-FILTER	RP095E05V	2870L25B08	ST-FILTER	SP030E20BOBE
2600R003BN3HC	HYDAC	RE600G03B	2640L06V26	ST-FILTER	RP115E05V	2870L25V04	ST-FILTER	SP024E20VOBE
2600R003BNHCV	HYDAC	RE600G03V	2640L12B08	ST-FILTER	RP075E10B	2870L25V08	ST-FILTER	SP030E20VOBE
2600R003P	HYDAC	RE600D03B	2640L12B13	ST-FILTER	RP085E10B	2890L03B08	ST-FILTER	SP120E03B
2600R003PV	HYDAC	RE600D03V	2640L12B16	ST-FILTER	RP095E10B	2890L03B13	ST-FILTER	SP140E03B
2600R003V	HYDAC	RE600A03B	2640L12B26	ST-FILTER	RP115E10B	2890L03B16	ST-FILTER	SP160E03B
2600R003VV	HYDAC	RE600A03V	2640L12B26	ST-FILTER	RP075E10V	2890L03B26	ST-FILTER	SP180E03B
2600R005BN3HC	HYDAC	RE600G05B	2640L12V13	ST-FILTER	RP085E10V	2890L03V08	ST-FILTER	SP120E03V
2600R005BN3HCV	HYDAC	RE600G05V	2640L12V16	ST-FILTER	RP095E10V	2890L03V13	ST-FILTER	SP140E03V
2600R005BN3HCVB6	HYDAC	RE600G05V1650	2640L12V26	ST-FILTER	RP115E10V	2890L03V16	ST-FILTER	SP160E03V
2600R005BN3HCVKB	HYDAC	RE600G05V1613	2640L25B08	ST-FILTER	RP075E20B	2890L03V26	ST-FILTER	SP180E03V
2600R005BN3HC	HYDAC	RE600G05B	2640L25B13	ST-FILTER	RP085E20B	2890L06B08	ST-FILTER	SP120E05B
2600R005BN3HCV	HYDAC	RE600G05V	2640L25B16	ST-FILTER	RP095E20B	2890L06B13	ST-FILTER	SP140E05B
2600R005P	HYDAC	RE600D05B	2640L25B26	ST-FILTER	RP115E20B	2890L06B16	ST-FILTER	SP160E05B
2600R005PV	HYDAC	RE600D05V	2640L25V08	ST-FILTER	RP075E20V	2890L06B26	ST-FILTER	SP180E05B
2600R005V	HYDAC	RE600A05B	2640L25V13	ST-FILTER	RP085E20V	2890L06V08	ST-FILTER	SP120E05V
2600R005VV	HYDAC	RE600A05V	2640L25V16	ST-FILTER	RP095E20V	2890L06V13	ST-FILTER	SP140E05V
2600R010BN3HC	HYDAC	RE600G10B	2640L25V26	ST-FILTER	RP115E20V	2890L06V16	ST-FILTER	SP160E05V
2600R010BN3HCV	HYDAC	RE600G10B1650	270L110A	FAIREY ARLON	SA040E10B	2890L06V26	ST-FILTER	SP180E05V
2600R010BN3HCKB	HYDAC	RE600G10B1613	270L205A	FAIREY ARLON	SA060E05B	2890L12B08	ST-FILTER	SP120E10B
2600R010BN3HCV	HYDAC	RE600G10V	270L210A	FAIREY ARLON	SA060E10B	2890L12B13	ST-FILTER	SP140E10B
2600R010BN3HCVB6	HYDAC	RE600G10V1650	270Z110A	FAIREY ARLON	SA045E10B	2890L12B16	ST-FILTER	SP160E10B
2600R010BN3HCVKB	HYDAC	RE600G10V1613	27KZ1	SCHROEDER	RTE48G01B/S3	2890L12B26	ST-FILTER	SP180E10B
2600R010BN3HC	HYDAC	RE600G10V	27KZ10	SCHROEDER	RTE48G10B/S3	2890L12V08	ST-FILTER	SP120E10V
2600R010BN3HCVB6	HYDAC	RE600G10V1650	27KZ25	SCHROEDER	RTE48G25B/S3	2890L12V13	ST-FILTER	SP140E10V
2600R010BN3HCV	HYDAC	RE600G10V	27KZ25	SCHROEDER	RTE48G03B/S3	2890L12V16	ST-FILTER	SP160E10V
2600R010P	HYDAC	RE600D10B	27KZ5	SCHROEDER	RTE48G05B/S3	2890L12V26	ST-FILTER	SP180E10V
2600R010PHC	HYDAC	RE600N10B	2830L03B08	ST-FILTER	SP100E03B	2890L25B08	ST-FILTER	SP120E20B
2600R010PHCKB	HYDAC	RE600N10B1613	2830L03B13	ST-FILTER	SP200E03B	2890L25B13	ST-FILTER	SP140E20B
2600R010PHCV	HYDAC	RE600N10V	2830L03B39	ST-FILTER	SP300E03B	2890L25B16	ST-FILTER	SP160E20B
2600R010PHCV	HYDAC	RE600N10V	2830L03V08	ST-FILTER	SP100E03V	2890L25B26	ST-FILTER	SP180E20B
2600R010PHCV	HYDAC	RE600N10V	2830L03V13	ST-FILTER	SP200E03V	2890L25V08	ST-FILTER	SP120E20V
2600R010PV	HYDAC	RE600D10V	2830L03V39	ST-FILTER	SP300E03V	2890L25V13	ST-FILTER	SP140E20V
2600R010PV	HYDAC	RE600D10V	2830L06B08	ST-FILTER	SP100E05B	2890L25V16	ST-FILTER	SP160E20V
2600R010PV	HYDAC	RE600A10B	2830L06B16	ST-FILTER	SP200E05B	2890L25V26	ST-FILTER	SP180E20V
2600R010PVKB	HYDAC	RE600A1						




code code bezeichnung código	brand marque hersteller marca		code code bezeichnung código	brand marque hersteller marca		code code bezeichnung código	brand marque hersteller marca	
2900P5A000P	EPPENSTEINER	SS250K05B	2980L12B13	ST-FILTER	SP035E10B	300404	INTERNORMEN	SE030G20B
2902L03B04	ST-FILTER	SP010E03B	2980L12V04	ST-FILTER	SP024E10V	300405	INTERNORMEN	SE030H05B
2902L03B08	ST-FILTER	SP020E03B	2980L12V08	ST-FILTER	SP030E10V	300411	INTERNORMEN	SE045B25B
2902L03V04	ST-FILTER	SP010E03V	2980L12V13	ST-FILTER	SP035E10V	300412	INTERNORMEN	SE045H10B
2902L03V08	ST-FILTER	SP020E03V	2980L25B04	ST-FILTER	SP024E20B	300413	INTERNORMEN	SE045G20B
2902L06B04	ST-FILTER	SP010E05B	2980L25B08	ST-FILTER	SP030E20B	300414	INTERNORMEN	SE045H20B
2902L06B08	ST-FILTER	SP020E05B	2980L25B13	ST-FILTER	SP035E20B	300416	INTERNORMEN	SE045G05B
2902L06V04	ST-FILTER	SP010E05V	2980L25V04	ST-FILTER	SP024E20V	300417	INTERNORMEN	SE045H05B
2902L06V08	ST-FILTER	SP020E05V	2980L25V08	ST-FILTER	SP030E20V	300423	INTERNORMEN	SE070G10B
2902L12B04	ST-FILTER	SP010E10B	2980L25V13	ST-FILTER	SP035E20V	300425	INTERNORMEN	SE070G20B
2902L12B08	ST-FILTER	SP020E10B	300063	INTERNORMEN	RS250E20B	300426	INTERNORMEN	SE070G05B
2902L12V04	ST-FILTER	SP010E10V	300064	INTERNORMEN	SE008E10B	300431	INTERNORMEN	SE090G03B
2902L12V08	ST-FILTER	SP020E10V	300065	INTERNORMEN	SE008F10B	300432	INTERNORMEN	SE090H10B
2902L25B04	ST-FILTER	SP010E20B	300067	INTERNORMEN	SE008E20B	300433	INTERNORMEN	SE090H20B
2902L25B08	ST-FILTER	SP020E20B	300068	INTERNORMEN	SE008F20B	300437	INTERNORMEN	SE160B25B
2902L25V04	ST-FILTER	SP010E20V	300070	INTERNORMEN	SE008F05B	300438	INTERNORMEN	SE160G10B
2902L25V08	ST-FILTER	SP020E20V	300072	INTERNORMEN	SN014F03B	300439	INTERNORMEN	SE160G20B
290G100A000P	EPPENSTEINER	SS024B100B	300073	INTERNORMEN	SN014E10B	300440	INTERNORMEN	SE160H20B
290G10A000P	EPPENSTEINER	SS024B10B	300074	INTERNORMEN	SN014F10B	300441	INTERNORMEN	SE160H05B
290G25A000P	EPPENSTEINER	SS024B25B	300077	INTERNORMEN	SN014E20B	300448	INTERNORMEN	RS014E20B
290G40A000P	EPPENSTEINER	SS024B40B	300078	INTERNORMEN	SN014F20B	300449	INTERNORMEN	RS014B25B
290G60A000P	EPPENSTEINER	SS024B60B	300080	INTERNORMEN	SN014W25B	300450	INTERNORMEN	RS014B100B
290H10SLA000P	EPPENSTEINER	SS024410B	300084	INTERNORMEN	SN014F05B	300451	INTERNORMEN	RS024B40B
290H10SLC000P	EPPENSTEINER	SS024F10B	300086	INTERNORMEN	RN016K10B1614	300452	INTERNORMEN	RS035B40B
290H20SLA000P	EPPENSTEINER	SS024E20B	300087	INTERNORMEN	RN016K10B	300453	INTERNORMEN	RS035B100B
290H20SLC000P	EPPENSTEINER	SS024F20B	300088	INTERNORMEN	RN016E10B1614	300454	INTERNORMEN	RS060E10B
290H3SLA000P	EPPENSTEINER	SS024E03B	300089	INTERNORMEN	RN016E10B	300455	INTERNORMEN	RS060B25B
290H3SLC000P	EPPENSTEINER	SS024F03B	300091	INTERNORMEN	RN016K20B1614	300456	INTERNORMEN	RS070E03B
290H6SLA000P	EPPENSTEINER	SS024E05B	300092	INTERNORMEN	RN016K20B	300457	INTERNORMEN	RS370E10B
290H6SLC000P	EPPENSTEINER	SS024F05B	300093	INTERNORMEN	RN016E20B1614	300458	INTERNORMEN	RS370B25B
290M10A000P	EPPENSTEINER	SS024A10B	300094	INTERNORMEN	RN016E20B	300459	INTERNORMEN	RS370B100B
290M5A000P	EPPENSTEINER	SS024A05B	300095	INTERNORMEN	RN016B25B1614	300460	INTERNORMEN	RS095E03B
290P10A000P	EPPENSTEINER	SS024K10B	300096	INTERNORMEN	RN016B25B	300461	INTERNORMEN	RS095E10B
290P25A000P	EPPENSTEINER	SS024K20B	300097	INTERNORMEN	RN016B40B1614	300462	INTERNORMEN	RS095B25B
290P5A000P	EPPENSTEINER	SS024K05B	300098	INTERNORMEN	RN016B40B	300463	INTERNORMEN	RS095B40B
2940L03B13	ST-FILTER	SP110E03B	300103	INTERNORMEN	SN024F03B	300464	INTERNORMEN	RS095B100B
2940L03B26	ST-FILTER	SP170E03B	300104	INTERNORMEN	SN024E10B	300466	INTERNORMEN	RS150E20B
2940L03B39	ST-FILTER	SP250E03B	300106	INTERNORMEN	SN024F10B	300468	INTERNORMEN	RS150B60B
2940L03V13	ST-FILTER	SP110E03V	300108	INTERNORMEN	SN024E20B	300469	INTERNORMEN	RS150B100B
2940L03V26	ST-FILTER	SP170E03V	300110	INTERNORMEN	SN024F20B	300472	INTERNORMEN	RS250B25B
2940L03V39	ST-FILTER	SP250E03V	300111	INTERNORMEN	SN024W25B	300473	INTERNORMEN	RS250B40B
2940L06B13	ST-FILTER	SP110E05B	300117	INTERNORMEN	SN024F05B	300474	INTERNORMEN	RS250B100B
2940L06B26	ST-FILTER	SP170E05B	300120	INTERNORMEN	RN030K10B1614	300476	INTERNORMEN	SS014E10B
2940L06B39	ST-FILTER	SP250E05B	300121	INTERNORMEN	RN030K10B	300477	INTERNORMEN	SS014B25B
2940L06V13	ST-FILTER	SP110E05V	300122	INTERNORMEN	RN030E10B1614	300478	INTERNORMEN	SS014B40B
2940L06V26	ST-FILTER	SP170E05V	300123	INTERNORMEN	RN030E10B	300479	INTERNORMEN	SS014B100B
2940L06V39	ST-FILTER	SP250E05V	300125	INTERNORMEN	RN030K20B1614	300480	INTERNORMEN	SS024E10B
2940L12B13	ST-FILTER	SP110E10B	300126	INTERNORMEN	RN030K20B	300482	INTERNORMEN	SS024E20B
2940L12B26	ST-FILTER	SP170E10B	300127	INTERNORMEN	RN030E20B1614	300483	INTERNORMEN	SS024B25B
2940L12B39	ST-FILTER	SP250E10B	300128	INTERNORMEN	RN030E20B	300484	INTERNORMEN	SS024B40B
2940L12V13	ST-FILTER	SP110E10V	300129	INTERNORMEN	RN030B25B1614	300485	INTERNORMEN	SS024B60B
2940L12V26	ST-FILTER	SP170E10V	300130	INTERNORMEN	RN030B25B	300486	INTERNORMEN	SS024B100B
2940L12V39	ST-FILTER	SP250E10V	300131	INTERNORMEN	RN030B40B1614	300487	INTERNORMEN	SS035E10B
2940L25B13	ST-FILTER	SP110E20B	300132	INTERNORMEN	RN030E05B1614	300488	INTERNORMEN	SS035B25B
2940L25B26	ST-FILTER	SP170E20B	300135	INTERNORMEN	SN040F03B	300491	INTERNORMEN	SS035B60B
2940L25B39	ST-FILTER	SP250E20B	300136	INTERNORMEN	SN040E10B	300492	INTERNORMEN	SS035B100B
2940L25V13	ST-FILTER	SP110E20V	300138	INTERNORMEN	SN040F10B	300493	INTERNORMEN	SS070E03B
2940L25V26	ST-FILTER	SP170E20V	300141	INTERNORMEN	SN040E20B	300495	INTERNORMEN	SS070B25B
2940L25V39	ST-FILTER	SP250E20V	300142	INTERNORMEN	SN040F20B	300497	INTERNORMEN	SS070B40B
2960L03B04	ST-FILTER	SP045E03B	300143	INTERNORMEN	SN040W25B	300498	INTERNORMEN	SS070B60B
2960L03B08	ST-FILTER	SP070E03B	300145	INTERNORMEN	SN040F05B	300499	INTERNORMEN	SS070B100B
2960L03B13	ST-FILTER	SP090E03B	300146	INTERNORMEN	SN045F03B	300500	INTERNORMEN	SS085E10B
2960L03B16	ST-FILTER	SP130E03B	300147	INTERNORMEN	SN045E10B	300502	INTERNORMEN	SS085B25B
2960L03V04	ST-FILTER	SP045E03V	300148	INTERNORMEN	SN045F10B	300503	INTERNORMEN	SS160E10B
2960L03V08	ST-FILTER	SP070E03V	300150	INTERNORMEN	SN045E20B	300504	INTERNORMEN	SS250B25B
2960L03V13	ST-FILTER	SP090E03V	300151	INTERNORMEN	SN045F20B	300613	INTERNORMEN	RN016B80B1614
2960L03V16	ST-FILTER	SP130E03V	300153	INTERNORMEN	SN045F05B	300615	INTERNORMEN	RN016E05B1614
2960L06B04	ST-FILTER	SP045E05B	300173	INTERNORMEN	RN050K10B1614	300632	INTERNORMEN	RN030E03B1614
2960L06B08	ST-FILTER	SP070E05B	300174	INTERNORMEN	RN050K10B	300637	INTERNORMEN	RN030B40B
2960L06B13	ST-FILTER	SP090E05B	300175	INTERNORMEN	RN050E10B1614	300638	INTERNORMEN	RN030B80B1614
2960L06B16	ST-FILTER	SP130E05B	300176	INTERNORMEN	RN050E10B	300639	INTERNORMEN	RN030B80B
2960L06V04	ST-FILTER	SP045E05V	300178	INTERNORMEN	RN050K20B1614	300660	INTERNORMEN	SN045W25B
2960L06V08	ST-FILTER	SP070E05V	300179	INTERNORMEN	RN050K20B	300673	INTERNORMEN	RN050B25B1614
2960L06V13	ST-FILTER	SP090E05V	300180	INTERNORMEN	RN050E20B1614	300674	INTERNORMEN	RN050B40B
2960L06V16	ST-FILTER	SP130E05V	300181	INTERNORMEN	RN050E20B	300675	INTERNORMEN	RN050B80B1614
2960L12B04	ST-FILTER	SP045E10B	300182	INTERNORMEN	RN050B25B	300688	INTERNORMEN	RN075B40B1614
2960L12B08	ST-FILTER	SP070E10B	300183	INTERNORMEN	RN050B40B1614	300702	INTERNORMEN	SN095E20B
2960L12B13	ST-FILTER	SP090E10B	300186	INTERNORMEN	SN070F03B	300707	INTERNORMEN	RN100B25B1614
2960L12B16	ST-FILTER	SP130E10B	300187	INTERNORMEN	SN070E10B	300708	INTERNORMEN	RN100B25B
2960L12V04	ST-FILTER	SP045E10V	300188	INTERNORMEN	SN070F10B	300709	INTERNORMEN	RN100B40B
2960L12V08	ST-FILTER	SP070E10V	300190	INTERNORMEN	SN070E20B	300710	INTERNORMEN	SN120E20B
2960L12V13	ST-FILTER	SP090E10V	300191	INTERNORMEN	SN070F20B	300715	INTERNORMEN	SN120B25B
2960L12V16	ST-FILTER	SP130E10V	300192	INTERNORMEN	SN070W25B	300717	INTERNORMEN	SN120W25B
2960L25B04	ST-FILTER	SP045E20B	300196	INTERNORMEN	SN070F05B	300784	INTERNORMEN	NL250E03B
2960L25B08	ST-FILTER	SP070E20B	300198	INTERNORMEN	RN075K10B1614	300790	INTERNORMEN	NL250E06B
2960L25B13	ST-FILTER	SP090E20B	300199	INTERNORMEN	RN075K10B	300801	INTERNORMEN	SL035F10B
2960L25B16	ST-FILTER	SP130E20B	300200	INTERNORMEN	RN075E10B1614	300803	INTERNORMEN	LL050E10B
2960L25V04	ST-FILTER	SP045E20V	300201	INTERNORMEN	RN075E10B	300804	INTERNORMEN	LL005F20B
2960L25V08	ST-FILTER	SP070E20V	300202	INTERNORMEN	RN075K20B1614	300805	INTERNORMEN	SL010E10B
2960L25V13	ST-FILTER	SP090E20V	300203	INTERNORMEN	RN075K20B	300806	INTERNORMEN	SL010F10B
2960L25V16	ST-FILTER	SP130E20V	300204	INTERNORMEN	RN075E20B1614	300807	INTERNORMEN	SL010E20B
2965L03B08	ST-FILTER	SP070E03BOBE	300205	INTERNORMEN	RN075E20B	300808	INTERNORMEN	SL010W100B
2965L03B16	ST-FILTER	SP130E03BOBE	300206	INTERNORMEN	RN075B25B1614	300810	INTERNORMEN	ML070F20B
2965L03V08	ST-FILTER	SP070E03VOBE	300207	INTERNORMEN	RN075B25B	300811	INTERNORMEN	ML070W25B
2965L03V16	ST-FILTER	SP130E03VOBE	300208	INTERNORMEN	RN075B40B	300814	INTERNORMEN	SL045E03B
2965L06B08	ST-FILTER	SP070E05BOBE	300209	INTERNORMEN	RN075E05B1614	300815	INTERNORMEN	SL090E03B
2965L06B16	ST-FILTER	SP130E05BOBE	300229	INTERNORMEN	SN095F03B	300816	INTERNORMEN	SL090F03B
2965L06V08	ST-FILTER	SP070E05VOBE	300231	INTERNORMEN	SN095E10B	300817	INTERNORMEN	SL014E10B
2965L06V16	ST-FILTER	SP130E05VOBE	300232	INTERNORMEN	SN095F10B	300818	INTERNORMEN	SL030E10B
2965L12B08	ST-FILTER	SP070E10BOBE	300235	INTERNORMEN	SN095F20B	300819	INTERNORMEN	SL090E10B
2965L12B16	ST-FILTER	SP130E10BOBE	300237	INTERNORMEN	SN095B25B	300820	INTERNORMEN	SL030F10B
2965L12V08	ST-FILTER	SP070E10VOBE	300238	INTERNORMEN	SN095W25B	300821	INTERNORMEN	SL045F10B
2965L12V16	ST-FILTER	SP130E10VOBE	300243	INTERNORMEN	SN095F05B	300822	INTERNORMEN	SL090E20B
2965L25B08	ST-FILTER	SP070E20BOBE	300244	INTERNORMEN	RN100K10B1614	300823	INTERNORMEN	SL090F20B
2965L25B16	ST-FILTER	SP130E20BOBE	300245	INTERNORMEN	RN100K10B	300824	INTERNORMEN	SL014B100B
2965L25V08	ST-FILTER	SP070E20VOBE	300246	INTERNORMEN	RN100E10B1614	300825	INTERNORMEN	SL090B100B
2965L25V16	ST-FILTER	SP130E20VOBE	300247	INTERNORMEN	RN100E10B	300832	INTERNORMEN	SE014G20B
2980L03B04	ST-FILTER	SP024E03B	300248	INTERNORMEN	RN100K20B1614	300833	INTERNORMEN	SE014H05B
2980L03B08	ST-FILTER	SP030E03B	300249	INTERNORMEN	RN100K20B	300837	INTERNORMEN	SE030B25B
2980L03B13	ST-FILTER	SP035E03B	300250	INTERNORMEN	RN100E20B1614	300839	INTERNORMEN	SE030H03B
2980L03V04	ST-FILTER	SP024E03V	300251	INTERNORMEN	RN100E20B	300840	INTERNORMEN	SE030H10B
2980L03V08	ST-FILTER	SP030E03V	300255	INTERNORMEN	SN120E10B	300841	INTERNORMEN	SE030H20B
2980L03V13	ST-FILTER	SP035E03V	300256	INTERNORMEN	SN120F10B	300847	INTERNORMEN	SE045H03B</




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300865	INTERNORMEN	SE090H05B	302044	INTERNORMEN	RL020B40B	306338	INTERNORMEN	SS014E03B
300884	INTERNORMEN	RS014B40B	302093	INTERNORMEN	SN120F03B	306339	INTERNORMEN	SS014E05B
300885	INTERNORMEN	RS024B25B	302098	INTERNORMEN	RS035E10B	306340	INTERNORMEN	SS024E03B
300886	INTERNORMEN	RS024B60B	302192	INTERNORMEN	SE014H20B	306341	INTERNORMEN	SS070E05B
300887	INTERNORMEN	RS024B100B	302214	INTERNORMEN	SN070B25B	306342	INTERNORMEN	SS085E03B
300888	INTERNORMEN	RS035B25B	302229	INTERNORMEN	RS060B40B	306343	INTERNORMEN	SS085E05B
300889	INTERNORMEN	RS060B100B	302240	INTERNORMEN	SL014E03B	306344	INTERNORMEN	SS125B100B
300890	INTERNORMEN	RS095E20B	302841	INTERNORMEN	SE070H10B	306345	INTERNORMEN	SS125B60B
300891	INTERNORMEN	RS095B60B	303023	INTERNORMEN	SL005F03B	306346	INTERNORMEN	SS125B40B
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300893	INTERNORMEN	RS370E05B	303025	INTERNORMEN	SL125E03B	306349	INTERNORMEN	SS125E03B
300894	INTERNORMEN	RS150E10B	303026	INTERNORMEN	SL022F10B	306350	INTERNORMEN	SS125E05B
300896	INTERNORMEN	RS150B25B	303027	INTERNORMEN	SL022F03B	306351	INTERNORMEN	SS125E20B
300897	INTERNORMEN	RS150B40B	303049	INTERNORMEN	SL022E03B	306352	INTERNORMEN	SS160B100B
300898	INTERNORMEN	RS150E05B	303050	INTERNORMEN	SL005F10B	306353	INTERNORMEN	SS160B60B
300899	INTERNORMEN	RS250E10B	303064	INTERNORMEN	SE008F03B	306356	INTERNORMEN	SS160E03B
300900	INTERNORMEN	RS250B10B	303068	INTERNORMEN	SN045B25B	306357	INTERNORMEN	SS160E05B
300901	INTERNORMEN	RS250B60B	303112	INTERNORMEN	SN040B25B	306358	INTERNORMEN	SS250B100B
300906	INTERNORMEN	SS014B60B	303119	INTERNORMEN	RN050E05B1614	306359	INTERNORMEN	SS250B60B
300907	INTERNORMEN	SS024E05B	303120	INTERNORMEN	RN050B80B	306360	INTERNORMEN	SS250B40B
300908	INTERNORMEN	SS035E03B	303121	INTERNORMEN	RN075B80B1614	306362	INTERNORMEN	SS250E05B
300910	INTERNORMEN	SS035E20B	303122	INTERNORMEN	RN100B40B1614	306363	INTERNORMEN	SS250E20B
300911	INTERNORMEN	SS035B40B	303167	INTERNORMEN	SP010F20B	306377	INTERNORMEN	RS014B60B
300912	INTERNORMEN	SS035E05B	303274	INTERNORMEN	SS160E20B	306379	INTERNORMEN	RS014E03B
300913	INTERNORMEN	SS070E10B	303275	INTERNORMEN	RS060E20B	306380	INTERNORMEN	RS014E05B
300914	INTERNORMEN	SS070E20B	303276	INTERNORMEN	SS160B25B	306381	INTERNORMEN	RS024E03B
300919	INTERNORMEN	SS085E20B	303305	INTERNORMEN	SE160H10B	306382	INTERNORMEN	RS024E05B
300920	INTERNORMEN	SS085B40B	303306	INTERNORMEN	SE035G10B	306383	INTERNORMEN	RS035B60B
300921	INTERNORMEN	SS085B60B	303308	INTERNORMEN	SL014B60B	306385	INTERNORMEN	RS035E03B
300922	INTERNORMEN	SS085B100B	303309	INTERNORMEN	SL014B40B	306386	INTERNORMEN	RS035E05B
300923	INTERNORMEN	SS250E03B	303310	INTERNORMEN	SL014W25B	306387	INTERNORMEN	RS035E20B
301034	INTERNORMEN	SL014F03B	303313	INTERNORMEN	SL020E10B	306388	INTERNORMEN	RS060B60B
301035	INTERNORMEN	SL020F03B	303316	INTERNORMEN	SL045B40B	306390	INTERNORMEN	RS060E03B
301036	INTERNORMEN	SL045F03B	303317	INTERNORMEN	SL045B60B	306391	INTERNORMEN	RS060E05B
301039	INTERNORMEN	SL045E10B	303318	INTERNORMEN	SL045E20B	306393	INTERNORMEN	RS150E03B
301040	INTERNORMEN	SL125E10B	303321	INTERNORMEN	SL035E10B	306394	INTERNORMEN	RS250E03B
301042	INTERNORMEN	SL014F10B	303322	INTERNORMEN	SL035B10B	306395	INTERNORMEN	RS250E05B
301043	INTERNORMEN	SL020F10B	303323	INTERNORMEN	SL035B25B	306396	INTERNORMEN	RS370B60B
301044	INTERNORMEN	SL090F10B	303324	INTERNORMEN	SL035B60B	306465	INTERNORMEN	SL014B10B
301045	INTERNORMEN	SL125F10B	303326	INTERNORMEN	LL045B25B	306466	INTERNORMEN	SL014W10B
301046	INTERNORMEN	SL014E20B	303327	INTERNORMEN	LL050E20B	306467	INTERNORMEN	SL014W40B
301047	INTERNORMEN	SL020E20B	303330	INTERNORMEN	SP070F20B	306468	INTERNORMEN	SL014W60B
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301050	INTERNORMEN	SL030F20B	303333	INTERNORMEN	SL005E10B	306470	INTERNORMEN	SL020E03B
301051	INTERNORMEN	SL125F20B	303335	INTERNORMEN	SL005B10B	306471	INTERNORMEN	SL020B10B
301052	INTERNORMEN	SL014B25B	303336	INTERNORMEN	SL010B10B	306472	INTERNORMEN	SL020B25B
301053	INTERNORMEN	SL090B25B	303337	INTERNORMEN	SL010W25B	306473	INTERNORMEN	SL020B40B
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301056	INTERNORMEN	SP300E10B	303339	INTERNORMEN	SL010B60B	306475	INTERNORMEN	SL020B100B
301057	INTERNORMEN	SP200E20B	303340	INTERNORMEN	SL010B100B	306476	INTERNORMEN	SL020W10B
301058	INTERNORMEN	SP300E20B	303341	INTERNORMEN	SL022E20B	306477	INTERNORMEN	SL020W25B
301059	INTERNORMEN	SP300E05B	303342	INTERNORMEN	SL022E10B	306478	INTERNORMEN	SL020W40B
301060	INTERNORMEN	RP080E05B	303343	INTERNORMEN	SL022W25B	306479	INTERNORMEN	SL020W100B
301061	INTERNORMEN	SP010E03B	303344	INTERNORMEN	SL022B40B	306482	INTERNORMEN	SL030E03B
301062	INTERNORMEN	SP070E03B	303345	INTERNORMEN	SL022B60B	306483	INTERNORMEN	SL030E20B
301063	INTERNORMEN	SP090E03B	303347	INTERNORMEN	ML070E20B	306484	INTERNORMEN	SL030B10B
301064	INTERNORMEN	SP130E03B	303348	INTERNORMEN	SP024E03B	306485	INTERNORMEN	SL030B25B
301065	INTERNORMEN	SP070E10B	303530	INTERNORMEN	SE030G05B	306486	INTERNORMEN	SL030B40B
301066	INTERNORMEN	SP090E10B	303531	INTERNORMEN	RL010E20B	306487	INTERNORMEN	SL030B60B
301067	INTERNORMEN	SP045E20B	303580	INTERNORMEN	SL090B40B	306489	INTERNORMEN	SL030B100B
301068	INTERNORMEN	SP070E20B	303652	INTERNORMEN	RS370B40B	306491	INTERNORMEN	SL030W10B
301069	INTERNORMEN	SP090E20B	303658	INTERNORMEN	SE160H03B	306492	INTERNORMEN	SL030W25B
301070	INTERNORMEN	SP070E05B	303721	INTERNORMEN	RS014E10B	306493	INTERNORMEN	SL030W40B
301071	INTERNORMEN	SP090E05B	303724	INTERNORMEN	SL020W60B	306494	INTERNORMEN	SL030W60B
301072	INTERNORMEN	SP130E05B	303736	INTERNORMEN	RS024E20B	306495	INTERNORMEN	SL030W100B
301073	INTERNORMEN	SP045F03B	304431	INTERNORMEN	SE070H20B	306496	INTERNORMEN	SL045B10B
301074	INTERNORMEN	SP130F03B	304485	INTERNORMEN	SL035E20B	306497	INTERNORMEN	SL045B100B
301076	INTERNORMEN	SP024E20B	304488	INTERNORMEN	SN024B25B	306499	INTERNORMEN	SL045W10B
301077	INTERNORMEN	SP030E20B	304504	INTERNORMEN	RN100E05B1614	306500	INTERNORMEN	SL045W25B
301080	INTERNORMEN	SP200E10B	304533	INTERNORMEN	NR630E03B	306501	INTERNORMEN	SL045W40B
301081	INTERNORMEN	SP200E05B	304534	INTERNORMEN	NR630E06B	306502	INTERNORMEN	SL045W60B
301082	INTERNORMEN	RP200E20B	304535	INTERNORMEN	NR630E10B	306503	INTERNORMEN	SL045W100B
301084	INTERNORMEN	RP240E05B	304548	INTERNORMEN	RS024E10B	306511	INTERNORMEN	SL090B10B
301085	INTERNORMEN	RP090E03B	304590	INTERNORMEN	SL045B25B	306512	INTERNORMEN	SL090W10B
301086	INTERNORMEN	RP090E10B	304655	INTERNORMEN	SP100E05B	306513	INTERNORMEN	SL090W25B
301087	INTERNORMEN	RP050E20B	304872	INTERNORMEN	SE045G03B	306514	INTERNORMEN	SL090W40B
301088	INTERNORMEN	RP080E20B	304916	INTERNORMEN	NR630B25B	306515	INTERNORMEN	SL090W60B
301089	INTERNORMEN	RP090E20B	304929	INTERNORMEN	ML070F03B	306516	INTERNORMEN	SL090W100B
301090	INTERNORMEN	RP090E05B	304957	INTERNORMEN	SS014E20B	306517	INTERNORMEN	SL125E20B
301091	INTERNORMEN	SP030E03BOBE	304958	INTERNORMEN	SS125E10B	306518	INTERNORMEN	SL125B10B
301092	INTERNORMEN	SP030E10BOBE	305036	INTERNORMEN	NR630E25B	306519	INTERNORMEN	SL125B60B
301093	INTERNORMEN	SP030E20BOBE	305060	INTERNORMEN	RS370E20B	306520	INTERNORMEN	SL125B100B
301094	INTERNORMEN	SP030E05BOBE	305209	INTERNORMEN	SP200E03B	306521	INTERNORMEN	SL125F03B
301095	INTERNORMEN	SP160E03B	305275	INTERNORMEN	SS160B40B	306522	INTERNORMEN	SL125W10B
301096	INTERNORMEN	SP160E05B	305276	INTERNORMEN	SE014G03B	306523	INTERNORMEN	SL125W25B
301097	INTERNORMEN	SP020E03B	305375	INTERNORMEN	SP030E05B	306524	INTERNORMEN	SL125W40B
301098	INTERNORMEN	SP010E10B	305443	INTERNORMEN	RP080E10B	306525	INTERNORMEN	SL125W60B
301099	INTERNORMEN	SP020E10B	305627	INTERNORMEN	RN016E03B1614	306526	INTERNORMEN	SL125W100B
301100	INTERNORMEN	SP010E20B	305630	INTERNORMEN	RN016B80B	306531	INTERNORMEN	SP100E03B
301101	INTERNORMEN	SP020E20B	305635	INTERNORMEN	RN050E03B1614	306532	INTERNORMEN	SP100E10B
301102	INTERNORMEN	SP010E05B	305639	INTERNORMEN	RN075E03B1614	306533	INTERNORMEN	RP100E03B
301104	INTERNORMEN	SP010F03B	305642	INTERNORMEN	RN075B80B	306534	INTERNORMEN	RP100E05B
301105	INTERNORMEN	SP020F03B	305645	INTERNORMEN	RN100E03B1614	306535	INTERNORMEN	RP100E10B
301110	INTERNORMEN	SP045E03B	305646	INTERNORMEN	RN100B80B1614	306536	INTERNORMEN	RP100E20B
301111	INTERNORMEN	SP045E10B	305647	INTERNORMEN	RN100B80B	306538	INTERNORMEN	RP200E05B
301112	INTERNORMEN	SP130E10B	305769	INTERNORMEN	SP024E10BOBE	306539	INTERNORMEN	RP200E10B
301114	INTERNORMEN	SP130E20B	305860	INTERNORMEN	SS250E10B	306540	INTERNORMEN	RP240E03B
301115	INTERNORMEN	SP045E05B	306002	INTERNORMEN	SE014H03B	306541	INTERNORMEN	RP240E10B
301117	INTERNORMEN	SP070F03B	306072	INTERNORMEN	SL022F20B	306542	INTERNORMEN	RP240E20B
301118	INTERNORMEN	SP090F03B	306149	INTERNORMEN	SL030F03B	306543	INTERNORMEN	RP300E03B
301125	INTERNORMEN	SP045F20B	306194	INTERNORMEN	SE030G03B	306544	INTERNORMEN	RP300E05B
301127	INTERNORMEN	SP090F20B	306198	INTERNORMEN	SE035B25B	306545	INTERNORMEN	RP300E10B
301128	INTERNORMEN	SP130F20B	306199	INTERNORMEN	SE035G03B	306546	INTERNORMEN	RP300E20B
301134	INTERNORMEN	SP024E10B	306200	INTERNORMEN	SE035G05B	306547	INTERNORMEN	RP050E03B
301135	INTERNORMEN	SP030E10B	306202	INTERNORMEN	SE035G20B	306548	INTERNORMEN	RP050E05B
301137	INTERNORMEN	SP024E05B	306203	INTERNORMEN	SE035H03B	306549	INTERNORMEN	RP050E10B
301138	INTERNORMEN	SP024F03B	306204	INTERNORMEN	SE035H05B	306550	INTERNORMEN	RP080E03B
301139	INTERNORMEN	SP030F03B	306205	INTERNORMEN	SE035H20B	306551	INTERNORMEN	SP024E03BOBE
301143	INTERNORMEN	SP024F20B	306211	INTERNORMEN	SE070G03B	306552	INTERNORMEN	SP024E05BOBE
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301800	INTERNORMEN	SE160G03B	306229	INTERNORMEN	SE130B25B	306554	INTERNORMEN	SP120E03B
301823	INTERNORMEN	SN014B25B	306230	INTERNORMEN	SE130G03B	306555	INTERNORMEN	SP120E05B
301825	INTERNORMEN	SL090B60B	306231	INTERNORMEN	SE130G05B	306559	INTERNORMEN	SP120E10B
301826	INTERNORMEN	SP100E20B	306232	INTERNORMEN	SE130G10B	306560	INTERNORMEN	SP120E20B
301851	INTERNORMEN	SL014F20B	306233	INTERNORMEN	SE130G20B	306561	INTERNORMEN	SP140E03B
301900	INTERNORMEN	NL250E25B	306234	INTERNORMEN	SE130H03B	306562	INTERNORMEN	SP140E05B
301916	INTERNORMEN	SP300E03B	306235	INTERNORMEN	SE130H05B	306563	INTERNORMEN	SP140E10B
301963	INTERNORMEN	ML070F10B	306236	INTERNORMEN	SE130H10B	306564	INTERNORMEN	SP140E20B
301976	INTERNORMEN	SL045F20B	306237	INTERNORMEN	SE130H20B	306565	INTERNORMEN	SP160E10B
301981	INTERNORMEN	SP170F03B	306239	INTERNORMEN				




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306568	INTERNORMEN	SP020F20B	311053	INTERNORMEN	RE300S25B	3840DGCBC39	ST-FILTER	RP300E03B
306570	INTERNORMEN	SP030E03B	311365	INTERNORMEN	NL063E10B	3840DGCVC08	ST-FILTER	RP100E03V
306571	INTERNORMEN	SP035F03B	311433	INTERNORMEN	NL040E10B	3840DGCVC16	ST-FILTER	RP200E03V
306573	INTERNORMEN	SP035F20B	311571	INTERNORMEN	NL063E25B	3840DGCVC26	ST-FILTER	RP240E03V
306578	INTERNORMEN	SP110F03B	311574	INTERNORMEN	NL100E10B	3840DGCVC39	ST-FILTER	RP300E03V
306581	INTERNORMEN	SP110F20B	312211	INTERNORMEN	NL040E16B	3840DGEBC08	ST-FILTER	RP100E05B
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306601	INTERNORMEN	NR630B40B	312542	INTERNORMEN	NL040E25B	3840DGEBC26	ST-FILTER	RP240E05B
306650	INTERNORMEN	NR630E16B	312621	INTERNORMEN	NL040E03B	3840DGEBC39	ST-FILTER	RP300E05B
306681	INTERNORMEN	SL035E03B	312623	INTERNORMEN	NL040E06B	3840DGEV08	ST-FILTER	RP100E05V
306682	INTERNORMEN	SL035F03B	312636	INTERNORMEN	NL063E03B	3840DGEV16	ST-FILTER	RP200E05V
306683	INTERNORMEN	SL035F20B	312637	INTERNORMEN	NL063E06B	3840DGEV26	ST-FILTER	RP240E05V
306684	INTERNORMEN	SL035B100B	312649	INTERNORMEN	NL100E03B	3840DGEV39	ST-FILTER	RP300E05V
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306686	INTERNORMEN	SL035W25B	312652	INTERNORMEN	NL100E16B	3840DGHBC16	ST-FILTER	RP200E10B
306687	INTERNORMEN	SL035W60B	312654	INTERNORMEN	NL100E25B	3840DGHBC26	ST-FILTER	RP240E10B
306688	INTERNORMEN	SL035W100B	330D003H	TRIBOGUARD	SE090H03B	3840DGHBC39	ST-FILTER	RP300E10B
306707	INTERNORMEN	LL045E10B	330D003N	TRIBOGUARD	SE090G03B	3840DGHV08	ST-FILTER	RP100E10V
306708	INTERNORMEN	LL045E20B	330D005H	TRIBOGUARD	SE090H05B	3840DGHV16	ST-FILTER	RP200E10V
306709	INTERNORMEN	LL045B10B	330D005N	TRIBOGUARD	SE090G05B	3840DGHV26	ST-FILTER	RP240E10V
306710	INTERNORMEN	LL045B60B	330D010H	TRIBOGUARD	SE090H10B	3840DGHV39	ST-FILTER	RP300E10V
306711	INTERNORMEN	LL045B100B	330D010N	TRIBOGUARD	SE090G10B	3840DGMBC08	ST-FILTER	RP100E20B
306726	INTERNORMEN	LL050E03B	330D020H	TRIBOGUARD	SE090H20B	3840DGMBC16	ST-FILTER	RP200E20B
306728	INTERNORMEN	LL050B25B	330D020N	TRIBOGUARD	SE090G20B	3840DGMBC26	ST-FILTER	RP240E20B
306729	INTERNORMEN	LL050B60B	360537	INTERNORMEN	RP200E03B	3840DGMBC39	ST-FILTER	RP300E20B
306730	INTERNORMEN	LL050B100B	3630DGCBC08	ST-FILTER	RP100E03B	3840DGMV08	ST-FILTER	RP100E20V
306731	INTERNORMEN	LL100E10B	3630DGCBC13	ST-FILTER	RP020E03B	3840DGMV16	ST-FILTER	RP200E20V
306732	INTERNORMEN	LL100E20B	3630DGCBC16	ST-FILTER	RP024E03B	3840DGMV26	ST-FILTER	RP240E20V
306733	INTERNORMEN	LL100B10B	3630DGCBC26	ST-FILTER	RP030E03B	3840DGMV39	ST-FILTER	RP300E20V
306734	INTERNORMEN	LL100B25B	3630DGCVC08	ST-FILTER	RP010E03V	3850DGCBC08	ST-FILTER	RP050E03B
306735	INTERNORMEN	LL100B100B	3630DGCVC13	ST-FILTER	RP020E03V	3850DGCBC13	ST-FILTER	RP080E03B
306736	INTERNORMEN	SL005E20B	3630DGCVC16	ST-FILTER	RP024E03V	3850DGCBC26	ST-FILTER	RP090E03B
306737	INTERNORMEN	SL005B25B	3630DGCVC26	ST-FILTER	RP030E03V	3850DGCVC08	ST-FILTER	RP050E03V
306738	INTERNORMEN	SL005B40B	3630DGCVC26	ST-FILTER	RP010E05B	3850DGCVC13	ST-FILTER	RP080E03V
306739	INTERNORMEN	SL005B60B	3630DGEBC13	ST-FILTER	RP020E05B	3850DGCVC26	ST-FILTER	RP090E03V
306740	INTERNORMEN	SL005B100B	3630DGEBC16	ST-FILTER	RP024E05B	3850DGEBC08	ST-FILTER	RP050E05B
306741	INTERNORMEN	SL005W10B	3630DGEBC26	ST-FILTER	RP030E05B	3850DGEBC13	ST-FILTER	RP080E05B
306742	INTERNORMEN	SL005W25B	3630DGEBC26	ST-FILTER	RP010E05V	3850DGEBC26	ST-FILTER	RP090E05B
306743	INTERNORMEN	SL005W40B	3630DGEV13	ST-FILTER	RP020E05V	3850DGEV08	ST-FILTER	RP050E05V
306744	INTERNORMEN	SL005W60B	3630DGEV16	ST-FILTER	RP024E05V	3850DGEV13	ST-FILTER	RP080E05V
306745	INTERNORMEN	SL005W100B	3630DGEV26	ST-FILTER	RP030E05V	3850DGEV26	ST-FILTER	RP090E05V
306746	INTERNORMEN	SL010E03B	3630DGHBC08	ST-FILTER	RP010E10B	3850DGHBC08	ST-FILTER	RP050E10B
306747	INTERNORMEN	SL010F03B	3630DGHBC13	ST-FILTER	RP020E10B	3850DGHBC13	ST-FILTER	RP080E10B
306749	INTERNORMEN	SL010F20B	3630DGHBC16	ST-FILTER	RP024E10B	3850DGHBC26	ST-FILTER	RP090E10B
306750	INTERNORMEN	SL010B25B	3630DGHBC26	ST-FILTER	RP030E10B	3850DGHV08	ST-FILTER	RP050E10V
306751	INTERNORMEN	SL010B40B	3630DGHV08	ST-FILTER	RP010E10V	3850DGHV13	ST-FILTER	RP080E10V
306752	INTERNORMEN	SL010W10B	3630DGHV13	ST-FILTER	RP020E10V	3850DGHV26	ST-FILTER	RP090E10V
306753	INTERNORMEN	SL010W40B	3630DGHV16	ST-FILTER	RP024E10V	3850DGMBC08	ST-FILTER	RP050E20B
306754	INTERNORMEN	SL022B10B	3630DGHV26	ST-FILTER	RP030E10V	3850DGMBC13	ST-FILTER	RP080E20B
306755	INTERNORMEN	SL022B25B	3630DGMBC08	ST-FILTER	RP010E20B	3850DGMBC26	ST-FILTER	RP090E20B
306756	INTERNORMEN	SL022B100B	3630DGMBC13	ST-FILTER	RP020E20B	3850DGMV08	ST-FILTER	RP050E20V
306757	INTERNORMEN	SL022W10B	3630DGMBC16	ST-FILTER	RP024E20B	3850DGMV13	ST-FILTER	RP080E20V
306758	INTERNORMEN	SL022W40B	3630DGMBC26	ST-FILTER	RP030E20B	3850DGMV26	ST-FILTER	RP090E20V
306759	INTERNORMEN	SL022W60B	3630DGMV08	ST-FILTER	RP010E20V	3890DGCBC08	ST-FILTER	SP120E03B
306760	INTERNORMEN	SL022W100B	3630DGMV13	ST-FILTER	RP020E20V	3890DGCBC13	ST-FILTER	SP140E03B
306761	INTERNORMEN	LL080E10B	3630DGMV16	ST-FILTER	RP024E20V	3890DGCBC16	ST-FILTER	SP160E03B
306762	INTERNORMEN	LL080E20B	3630DGMV26	ST-FILTER	RP030E20V	3890DGCBC26	ST-FILTER	SP180E03B
306763	INTERNORMEN	LL080B10B	3640DGCBC08	ST-FILTER	RP075E03B	3890DGCVC08	ST-FILTER	SP120E03V
306764	INTERNORMEN	LL080B25B	3640DGCBC13	ST-FILTER	RP085E03B	3890DGCVC13	ST-FILTER	SP140E03V
306765	INTERNORMEN	LL080B60B	3640DGCBC16	ST-FILTER	RP095E03B	3890DGCVC16	ST-FILTER	SP160E03V
306766	INTERNORMEN	LL080B100B	3640DGCBC26	ST-FILTER	RP115E03B	3890DGCVC26	ST-FILTER	SP180E03V
306767	INTERNORMEN	ML070E03B	3640DGCVC08	ST-FILTER	RP075E03V	3890DGEBC08	ST-FILTER	SP120E05B
306768	INTERNORMEN	ML070E10B	3640DGCVC13	ST-FILTER	RP085E03V	3890DGEBC13	ST-FILTER	SP140E05B
306769	INTERNORMEN	ML070B10B	3640DGCVC16	ST-FILTER	RP095E03V	3890DGEBC16	ST-FILTER	SP160E05B
306770	INTERNORMEN	ML070B25B	3640DGCVC26	ST-FILTER	RP115E03V	3890DGEBC26	ST-FILTER	SP180E05B
306771	INTERNORMEN	ML070B60B	3640DGEBC08	ST-FILTER	RP075E05B	3890DGEV08	ST-FILTER	SP120E05V
306772	INTERNORMEN	ML070B100B	3640DGEBC13	ST-FILTER	RP085E05B	3890DGEV13	ST-FILTER	SP140E05V
306773	INTERNORMEN	ML070W10B	3640DGEBC16	ST-FILTER	RP095E05B	3890DGEV16	ST-FILTER	SP160E05V
306774	INTERNORMEN	ML070W60B	3640DGEBC26	ST-FILTER	RP115E05B	3890DGEV26	ST-FILTER	SP180E05V
306775	INTERNORMEN	ML070W100B	3640DGEV08	ST-FILTER	RP075E05V	3890DGHBC08	ST-FILTER	SP120E10B
306777	INTERNORMEN	RL020E10B	3640DGEV13	ST-FILTER	RP085E05V	3890DGHBC13	ST-FILTER	SP140E10B
306778	INTERNORMEN	RL020B25B	3640DGEV16	ST-FILTER	RP095E05V	3890DGHBC16	ST-FILTER	SP160E10B
306780	INTERNORMEN	RL130E10B	3640DGEV26	ST-FILTER	RP115E05V	3890DGHBC26	ST-FILTER	SP180E10B
306781	INTERNORMEN	RL130E20B	3640DGHBC08	ST-FILTER	RP075E10B	3890DGHV08	ST-FILTER	SP120E10V
306782	INTERNORMEN	RL130E25B	3640DGHBC13	ST-FILTER	RP085E10B	3890DGHV13	ST-FILTER	SP140E10V
306783	INTERNORMEN	RL130B40B	3640DGHBC16	ST-FILTER	RP095E10B	3890DGHV16	ST-FILTER	SP160E10V
306809	INTERNORMEN	NL250E16B	3640DGHBC26	ST-FILTER	RP115E10B	3890DGHV26	ST-FILTER	SP180E10V
307215	INTERNORMEN	RE130G10B	3640DGHV08	ST-FILTER	RP075E10V	3890DGMBC08	ST-FILTER	SP120E20B
307250	INTERNORMEN	NL400E03B	3640DGHV13	ST-FILTER	RP085E10V	3890DGMBC13	ST-FILTER	SP140E20B
307251	INTERNORMEN	NL400E06B	3640DGHV16	ST-FILTER	RP095E10V	3890DGMBC16	ST-FILTER	SP160E20B
307252	INTERNORMEN	NL400E10B	3640DGHV26	ST-FILTER	RP115E10V	3890DGMBC26	ST-FILTER	SP180E20B
307253	INTERNORMEN	NL400E16B	3640DGMBC08	ST-FILTER	RP075E20B	3890DGMV08	ST-FILTER	SP120E20V
307255	INTERNORMEN	NL400E25B	3640DGMBC13	ST-FILTER	RP085E20B	3890DGMV13	ST-FILTER	SP140E20V
307302	INTERNORMEN	RE090G10B	3640DGMBC16	ST-FILTER	RP095E20B	3890DGMV16	ST-FILTER	SP160E20V
307308	INTERNORMEN	RE090G03B	3640DGMBC26	ST-FILTER	RP115E20B	3890DGMV26	ST-FILTER	SP180E20V
307309	INTERNORMEN	RE090G05B	3640DGMV08	ST-FILTER	RP075E20V	3902DGCBC04	ST-FILTER	SP010E03B
307310	INTERNORMEN	RE090G20B	3640DGMV13	ST-FILTER	RP085E20V	3902DGCBC08	ST-FILTER	SP020E03B
307311	INTERNORMEN	RE130G03B	3640DGMV16	ST-FILTER	RP095E20V	3902DGCVC04	ST-FILTER	SP010E03V
307312	INTERNORMEN	RE130G05B	3640DGMV26	ST-FILTER	RP115E20V	3902DGCVC08	ST-FILTER	SP020E03V
307313	INTERNORMEN	RE130G20B	370L110A	FAIREY ARLON	SA070E10B	3902DGEBC04	ST-FILTER	SP010E05B
307617	INTERNORMEN	RE160G03B	370L205A	FAIREY ARLON	SA085E05B	3902DGEBC08	ST-FILTER	SP020E05B
307618	INTERNORMEN	RE160G05B	370L210A	FAIREY ARLON	SA080E10B	3902DGEV04	ST-FILTER	SP010E05V
307620	INTERNORMEN	RE160G10B	370L310A	FAIREY ARLON	SA100E10B	3902DGEV08	ST-FILTER	SP020E05V
307621	INTERNORMEN	RE160G20B	370Z210A	FAIREY ARLON	SA085E10B	3902DGHBC04	ST-FILTER	SP010E10B
307622	INTERNORMEN	RE200G03B	3830DGCBC08	ST-FILTER	SP100E03B	3902DGHBC08	ST-FILTER	SP020E10B
307623	INTERNORMEN	RE200G05B	3830DGCBC16	ST-FILTER	SP200E03B	3902DGHV04	ST-FILTER	SP010E10V
307624	INTERNORMEN	RE200G10B	3830DGCBC39	ST-FILTER	SP300E03B	3902DGHV08	ST-FILTER	SP020E10V
307625	INTERNORMEN	RE200G20B	3830DGCVC08	ST-FILTER	SP100E03V	3902DGMBC04	ST-FILTER	SP010E20B
310557	INTERNORMEN	RE300G03B	3830DGCVC16	ST-FILTER	SP200E03V	3902DGMBC08	ST-FILTER	SP020E20B
310558	INTERNORMEN	RE300G05B	3830DGCVC39	ST-FILTER	SP300E03V	3902DGMV04	ST-FILTER	SP010E20V
310559	INTERNORMEN	RE300G10B	3830DGEBC08	ST-FILTER	SP100E05B	3902DGMV08	ST-FILTER	SP020E20V
310560	INTERNORMEN	RE300G20B	3830DGEBC16	ST-FILTER	SP200E05B	3902SGCBC04	ST-FILTER	SP010F03B
310573	INTERNORMEN	RE250G03B	3830DGEBC39	ST-FILTER	SP300E05B	3902SGCBC08	ST-FILTER	SP020F03B
310574	INTERNORMEN	RE250G05B	3830DGEV08	ST-FILTER	SP100E05V	3902SGCV04	ST-FILTER	SP010F03V
310575	INTERNORMEN	RE250G10B	3830DGEV16	ST-FILTER	SP200E05V	3902SGCV08	ST-FILTER	SP020F03V
310576	INTERNORMEN	RE250G20B	3830DGEV39	ST-FILTER	SP300E05V	3902SGHB04	ST-FILTER	SP010F20B
310581	INTERNORMEN	RE045G03B	3830DGHBC08	ST-FILTER	SP100E10B	3902SGHB08	ST-FILTER	SP020F20B
310584	INTERNORMEN	RE045G05B	3830DGHBC16	ST-FILTER	SP200E10B	3902SGHV04	ST-FILTER	SP010F20V
310585	INTERNORMEN	RE045G10B	3830DGHBC39	ST-FILTER	SP300E10B	3902SGHV08	ST-FILTER	SP020F20V
310586	INTERNORMEN	RE045G20B	3830DGHV08	ST-FILTER	SP100E10V	3940GVCB13	ST-FILTER	SP110E03B
310591	INTERNORMEN	RE070G03B	3830DGHV16	ST-FILTER	SP200E10V	3940GVCB26	ST-FILTER	SP170E03B
310592	INTERNORMEN	RE070G05B	3830DGHV39	ST-FILTER	SP300E10V	3940GVCB39	ST-FILTER	SP250E03B
310593	INTERNORMEN	RE070G10B	3830DGMBC08	ST-FILTER	SP100E20B	3940GVCV13	ST-FILTER	SP110E03V
310594	INTERNORMEN	RE070G20B	3830DGMBC16	ST-FILTER	SP200E20B	3940GVCV26		




code code bezeichnung código	brand marque hersteller marca		code code bezeichnung código	brand marque hersteller marca		code code bezeichnung código	brand marque hersteller marca	
3940GGHB13	ST-FILTER	SP110E10B	3990SGCB26	ST-FILTER	SP170F03B	7681042	MAHLE	SL090B60B
3940GGHB26	ST-FILTER	SP170E10B	3990SGCB39	ST-FILTER	SP250F03B	7681059	MAHLE	SL125B60B
3940GGHB39	ST-FILTER	SP250E10B	3990SGCV13	ST-FILTER	SP110F03V	7681067	MAHLE	SL014B100B
3940GGHV13	ST-FILTER	SP110E10V	3990SGCV26	ST-FILTER	SP170F03V	7681075	MAHLE	SL020B100B
3940GGHV26	ST-FILTER	SP170E10V	3990SGCV39	ST-FILTER	SP250F03V	7681083	MAHLE	SL045B100B
3940GGHV39	ST-FILTER	SP250E10V	3990SGHB13	ST-FILTER	SP110F20B	7681190	MAHLE	SL020F10B
3940GGMB13	ST-FILTER	SP110E20B	3990SGHB26	ST-FILTER	SP170F20B	7681232	MAHLE	SL035B10B
3940GGMB26	ST-FILTER	SP170E20B	3990SGHB39	ST-FILTER	SP250F20B	7681240	MAHLE	SL035B25B
3940GGMB39	ST-FILTER	SP250E20B	3990SGHV13	ST-FILTER	SP110F20V	7681263	MAHLE	SL035B60B
3940GGMV13	ST-FILTER	SP110E20V	3990SGHV26	ST-FILTER	SP170F20V	7681281	MAHLE	SL035B100B
3940GGMV26	ST-FILTER	SP170E20V	3990SGHV39	ST-FILTER	SP250F20V	7681299	MAHLE	SL035W10B
3940GGMV39	ST-FILTER	SP250E20V	660D003H	TRIBO GUARD	SE160H03B	7681323	MAHLE	SL035W25B
3960GGCB04	ST-FILTER	SP045E03B	660D003N	TRIBO GUARD	SE160G03B	7681356	MAHLE	SL035W60B
3960GGCB13	ST-FILTER	SP090E03B	660D005H	TRIBO GUARD	SE160H05B	7681380	MAHLE	SL035W100B
3960GGCB16	ST-FILTER	SP130E03B	660D005N	TRIBO GUARD	SE160G05B	7681406	MAHLE	SL035K20B
3960GGCV04	ST-FILTER	SP045E03V	660D010H	TRIBO GUARD	SE160H10B	7681422	MAHLE	SL035D10B
3960GGCV08	ST-FILTER	SP070E03B	660D010N	TRIBO GUARD	SE160G10B	7681430	MAHLE	SL035D20B
3960GGCV08	ST-FILTER	SP070E03V	660D020H	TRIBO GUARD	SE160H20B	7681471	MAHLE	SL035E03B
3960GGCV13	ST-FILTER	SP090E03V	660D020N	TRIBO GUARD	SE160G20B	7681489	MAHLE	SL035E10B
3960GGCV16	ST-FILTER	SP130E03V	701164	CIMTEK	SF6703MG	7681497	MAHLE	SL035E20B
3960GGEB04	ST-FILTER	SP045E05B	701179	CIMTEK	SF6704MG	7681513	MAHLE	SL035F03B
3960GGEB08	ST-FILTER	SP070E05B	70134	CIMTEK	SF6520	7681521	MAHLE	SL035F10B
3960GGEB13	ST-FILTER	SP090E05B	70135	CIMTEK	SF6510	7681539	MAHLE	SL035F20B
3960GGEB16	ST-FILTER	SP130E05B	70146	CIMTEK	SF6521	7681604	MAHLE	LL045B10B
3960GGEV04	ST-FILTER	SP045E05V	70147	CIMTEK	SF6511	7681612	MAHLE	LL045B25B
3960GGEV08	ST-FILTER	SP070E05V	70157	CIMTEK	SF6720	7681638	MAHLE	LL045B60B
3960GGEV13	ST-FILTER	SP090E05V	70158	CIMTEK	SF6710	7681653	MAHLE	LL045B100B
3960GGEV16	ST-FILTER	SP130E05V	70163	CIMTEK	SF6706MG	7681679	MAHLE	LL045L10B
3960GGHB04	ST-FILTER	SP045E10B	70172	CIMTEK	SF6711	7681687	MAHLE	LL045L20B
3960GGHB08	ST-FILTER	SP070E10B	70174	CIMTEK	SF6721	7681703	MAHLE	LL045E10B
3960GGHB13	ST-FILTER	SP090E10B	70178	CIMTEK	SF6707MG	7681729	MAHLE	LL045E20B
3960GGHB16	ST-FILTER	SP130E10B	70195	CIMTEK	SF6620	7681737	MAHLE	LL050B10B
3960GGHV04	ST-FILTER	SP045E10V	70196	CIMTEK	SF6610	7681745	MAHLE	LL050B25B
3960GGHV08	ST-FILTER	SP070E10V	70201	CIMTEK	SF6606	7681778	MAHLE	LL050B60B
3960GGHV13	ST-FILTER	SP090E10V	70202	CIMTEK	SF6603	7681802	MAHLE	LL050B100B
3960GGHV16	ST-FILTER	SP130E10V	70206	CIMTEK	SF6621	7681851	MAHLE	LL050L10B
3960GGMB04	ST-FILTER	SP045E20B	70207	CIMTEK	SF6611	7681885	MAHLE	LL050L20B
3960GGMB08	ST-FILTER	SP070E20B	70212	CIMTEK	SF6607	7681943	MAHLE	LL050E03B
3960GGMB13	ST-FILTER	SP090E20B	70213	CIMTEK	SF6604	7681968	MAHLE	LL050E10B
3960GGMB16	ST-FILTER	SP130E20B	7160176	MOOG	SP020F10B	7681984	MAHLE	LL050E20B
3960GGMV04	ST-FILTER	SP045E20V	7160177	MOOG	SP045F10B	7682115	MAHLE	LL100B25B
3960GGMV08	ST-FILTER	SP070E20V	7160260	MOOG	SP070F10B	7682131	MAHLE	LL100B60B
3960GGMV13	ST-FILTER	SP090E20V	7160299	MOOG	SP010F10B	7682156	MAHLE	LL100B100B
3960GGMV16	ST-FILTER	SP130E20V	7160300	MOOG	SP010F03B	7682172	MAHLE	LL100L10B
3960SGCB04	ST-FILTER	SP045F03B	7160313	MOOG	SP010E03B	7682180	MAHLE	LL100L20B
3960SGCB08	ST-FILTER	SP070F03B	7160314	MOOG	SP020E03B	7682214	MAHLE	LL100E10B
3960SGCB13	ST-FILTER	SP090F03B	7160331	MOOG	SP010E10B	7682230	MAHLE	LL100E20B
3960SGCB16	ST-FILTER	SP130F03B	7160645	MOOG	SP020F03B	7682396	MAHLE	SL005B10B
3960SGCV04	ST-FILTER	SP045F03V	7160707	MOOG	SP070F03B	7682412	MAHLE	SL005B25B
3960SGCV08	ST-FILTER	SP070F03V	7160711	MOOG	SP045E03B	7682438	MAHLE	SL005B40B
3960SGCV13	ST-FILTER	SP090F03V	7160712	MOOG	SP045E10B	7682461	MAHLE	SL005B60B
3960SGCV16	ST-FILTER	SP130F03V	7160714	MOOG	SP070E03B	7682503	MAHLE	SL005B100B
3960SGHB04	ST-FILTER	SP045F20B	7167056	MOOG	SP045F03B	7682537	MAHLE	SL005W10B
3960SGHB08	ST-FILTER	SP070F20B	7168896	MOOG	SP070E10B	7682545	MAHLE	SL005W25B
3960SGHB13	ST-FILTER	SP090F20B	7500412UM	TRIBO GUARD	SF6730MG	7682552	MAHLE	SL005W40B
3960SGHB16	ST-FILTER	SP130F20B	7500425UM	TRIBO GUARD	SF6728MG	7682560	MAHLE	SL005W60B
3960SGHV04	ST-FILTER	SP045F20V	750046UM	TRIBO GUARD	SF6703MG	7682586	MAHLE	SL005W100B
3960SGHV08	ST-FILTER	SP070F20V	7500812UM	TRIBO GUARD	SF6731MG	7682636	MAHLE	SL005K10B
3960SGHV13	ST-FILTER	SP090F20V	7500825UM	TRIBO GUARD	SF6726MG	7682644	MAHLE	SL005K20B
3960SGHV16	ST-FILTER	SP130F20V	750086UM	TRIBO GUARD	SF6704MG	7682651	MAHLE	SL005D10B
3965GGCB16	ST-FILTER	SP130E03BOBE	7576630	MAHLE	SL014D10B	7682677	MAHLE	SL005D20B
3965GGCD08	ST-FILTER	SP070E03BOBE	7576648	MAHLE	SL014B60B	7682735	MAHLE	SL005E03B
3965GGCV08	ST-FILTER	SP070E03VOBE	7657174	MAHLE	SL020D20B	7682750	MAHLE	SL005E10B
3965GGCV16	ST-FILTER	SP130E03VOBE	7657182	MAHLE	SL030D20B	7682776	MAHLE	SL005E20B
3965GGEB08	ST-FILTER	SP070E05BOBE	7657190	MAHLE	SL045D20B	7682784	MAHLE	SL005F03B
3965GGEB16	ST-FILTER	SP130E05BOBE	7657208	MAHLE	SL090D20B	7682800	MAHLE	SL005F10B
3965GGEV08	ST-FILTER	SP070E05VOBE	7680085	MAHLE	SL020D10B	7682818	MAHLE	SL005F20B
3965GGEV16	ST-FILTER	SP130E05VOBE	7680093	MAHLE	SL030D10B	7682826	MAHLE	SL010B10B
3965GGHB08	ST-FILTER	SP070E10BOBE	7680101	MAHLE	SL045D10B	7682842	MAHLE	SL010B25B
3965GGHB16	ST-FILTER	SP130E10BOBE	7680119	MAHLE	SL090D10B	7682875	MAHLE	SL010B40B
3965GGHV08	ST-FILTER	SP070E10VOBE	7680127	MAHLE	SL125D10B	7682891	MAHLE	SL010B60B
3965GGHV16	ST-FILTER	SP130E10VOBE	7680135	MAHLE	SL014E03B	7682925	MAHLE	SL010B100B
3965GGMB08	ST-FILTER	SP070E20BOBE	7680143	MAHLE	SL020E03B	7682941	MAHLE	SL010W10B
3965GGMB16	ST-FILTER	SP130E20BOBE	7680150	MAHLE	SL030E03B	7682958	MAHLE	SL010W25B
3965GGMV08	ST-FILTER	SP070E20VOBE	7680168	MAHLE	SL045E03B	7682966	MAHLE	SL010W40B
3965GGMV16	ST-FILTER	SP130E20VOBE	7680175	MAHLE	SL090E03B	7682974	MAHLE	SL010W60B
3965SGCB08	ST-FILTER	SP070F03BOBE	7680184	MAHLE	SL125E03B	7682982	MAHLE	SL010W100B
3965SGCB16	ST-FILTER	SP130F03BOBE	7680192	MAHLE	SL014F03B	7683022	MAHLE	SL010K10B
3965SGCV08	ST-FILTER	SP070F03VOBE	7680200	MAHLE	SL020F03B	7683030	MAHLE	SL010K20B
3965SGCV16	ST-FILTER	SP130F03VOBE	7680218	MAHLE	SL030F03B	7683063	MAHLE	SL010D10B
3965SGHB08	ST-FILTER	SP070F20BOBE	7680226	MAHLE	SL045F03B	7683071	MAHLE	SL010D20B
3965SGHB16	ST-FILTER	SP130F20BOBE	7680234	MAHLE	SL090F03B	7683147	MAHLE	SL010E03B
3965SGHV08	ST-FILTER	SP070F20VOBE	7680242	MAHLE	SL125F03B	7683162	MAHLE	SL010E10B
3965SGHV16	ST-FILTER	SP130F20VOBE	7680325	MAHLE	SL014E10B	7683188	MAHLE	SL010E20B
3980GGCB04	ST-FILTER	SP024E03B	7680333	MAHLE	SL030E10B	7683196	MAHLE	SL010F03B
3980GGCB08	ST-FILTER	SP030E03B	7680341	MAHLE	SL020E10B	7683212	MAHLE	SL010F10B
3980GGCB13	ST-FILTER	SP035E03B	7680358	MAHLE	SL045E10B	7683246	MAHLE	SL010F20B
3980GGCV04	ST-FILTER	SP024E03V	7680366	MAHLE	SL090E10B	7683261	MAHLE	SL022B10B
3980GGCV08	ST-FILTER	SP030E03V	7680374	MAHLE	SL125E10B	7683287	MAHLE	SL022B25B
3980GGCV13	ST-FILTER	SP035E03V	7680382	MAHLE	SL014F10B	7683329	MAHLE	SL022B40B
3980GGEB04	ST-FILTER	SP024E05B	7680390	MAHLE	SL030F10B	7683345	MAHLE	SL022B60B
3980GGEB08	ST-FILTER	SP030E05B	7680408	MAHLE	SL045F10B	7683360	MAHLE	SL022B100B
3980GGEB13	ST-FILTER	SP035E05B	7680415	MAHLE	SL090F10B	7683378	MAHLE	SL022W10B
3980GGEV04	ST-FILTER	SP024E05V	7680424	MAHLE	SL125F10B	7683386	MAHLE	SL022W25B
3980GGEV08	ST-FILTER	SP030E05V	7680440	MAHLE	SL014E20B	7683394	MAHLE	SL022W40B
3980GGEV13	ST-FILTER	SP035E05V	7680457	MAHLE	SL020E20B	7683410	MAHLE	SL022W60B
3980GGHB04	ST-FILTER	SP024E10B	7680465	MAHLE	SL030E20B	7683428	MAHLE	SL022W100B
3980GGHB08	ST-FILTER	SP030E10B	7680473	MAHLE	SL045E20B	7683451	MAHLE	SL022K10B
3980GGHB13	ST-FILTER	SP035E10B	7680481	MAHLE	SL090E20B	7683469	MAHLE	SL022K20B
3980GGHV04	ST-FILTER	SP024E10V	7680499	MAHLE	SL125E20B	7683477	MAHLE	SL022D10B
3980GGHV08	ST-FILTER	SP030E10V	7680507	MAHLE	SL014F20B	7683485	MAHLE	SL022D20B
3980GGHV13	ST-FILTER	SP035E10V	7680515	MAHLE	SL020F20B	7683600	MAHLE	SL022E03B
3980GGMB04	ST-FILTER	SP024E20B	7680523	MAHLE	SL030F20B	7683618	MAHLE	SL022E10B
3980GGMB08	ST-FILTER	SP030E20B	7680531	MAHLE	SL045F20B	7683642	MAHLE	SL022E20B
3980GGMB13	ST-FILTER	SP035E20B	7680549	MAHLE	SL090F20B	7683659	MAHLE	SL022F03B
3980GGMV04	ST-FILTER	SP024E20V	7680556	MAHLE	SL125F20B	7683675	MAHLE	SL022F10B
3980GGMV08	ST-FILTER	SP030E20V	7680895	MAHLE	SL014B10B	7683691	MAHLE	SL022F20B
3980GGMV13	ST-FILTER	SP035E20V	7680903	MAHLE	SL030B10B	7684178	MAHLE	LL155B25B
3980SGCB04	ST-FILTER	SP024F03B	7680911	MAHLE	SL014B25B	7684194	MAHLE	LL155B60B
3980SGCB08	ST-FILTER	SP030F03B	7680929	MAHLE	SL020B25B	7684210	MAHLE	LL155B100B
3980SGCB13	ST-FILTER	SP035F03B	7680937	MAHLE	SL030B25B	7684236	MAHLE	LL155L10B
3980SGCV04	ST-FILTER	SP024F03V	7680945	MAHLE	SL045B25B	7684244	MAHLE	LL155L20B
3980SGCV08	ST-FILTER	SP030F03V	7680952	MAHLE	SL090B25B	7684269	MAHLE	LL155E10B
3980SGCV13	ST-FILTER	SP035F03V	7680960	MAHLE	SL014B40B	7684277	MAHLE	LL155E20B
3980SGHB04	ST-FILTER	SP024F20B	7680978	MAHLE	SL020B40B	7685456	MAHLE	LL080B25B
3980SGHB08	ST-FILTER	SP030F20B	7680986	MAHLE	SL030B40B	7685472	MAHLE	




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7686066	MAHLE	ML070B25B	7783426	MAHLE	SP045E03B	7888662	MAHLE	SE030D10B
7686090	MAHLE	ML070B60B	7783434	MAHLE	SP045E10B	7888670	MAHLE	SE030D20B
7686108	MAHLE	ML070B100B	7783442	MAHLE	SP045E20B	7888688	MAHLE	SE030E03B
7686116	MAHLE	ML070W10B	7783459	MAHLE	SP070E03B	7888696	MAHLE	SE030E05B
7686132	MAHLE	ML070W25B	7783467	MAHLE	SP070E10B	7888704	MAHLE	SE030E10B
7686157	MAHLE	ML070W60B	7783475	MAHLE	SP070E20B	7888712	MAHLE	SE030E20B
7686173	MAHLE	ML070W100B	7783483	MAHLE	SP090E03B	7888720	MAHLE	SE030F03B
7686181	MAHLE	ML070K10B	7783491	MAHLE	SP090E10B	7888738	MAHLE	SE030F05B
7686199	MAHLE	ML070K20B	7783509	MAHLE	SP090E20B	7888746	MAHLE	SE030F10B
7686207	MAHLE	ML070D10B	7783517	MAHLE	SP130E03B	7888754	MAHLE	SE030F20B
7686223	MAHLE	ML070D20B	7783525	MAHLE	SP130E10B	7888761	MAHLE	SE045D03B
7686256	MAHLE	ML070E03B	7783533	MAHLE	SP130E20B	7888779	MAHLE	SE045D05B
7686272	MAHLE	ML070E10B	7783541	MAHLE	SP045F03B	7888787	MAHLE	SE045D10B
7686298	MAHLE	ML070E20B	7783558	MAHLE	SP045F20B	7888795	MAHLE	SE045D20B
7686314	MAHLE	ML070F03B	7783566	MAHLE	SP070F03B	7888803	MAHLE	SE045E03B
7686330	MAHLE	ML070F10B	7783574	MAHLE	SP070F20B	7888811	MAHLE	SE045E05B
7686363	MAHLE	ML070F20B	7783582	MAHLE	SP090F03B	7888829	MAHLE	SE045E10B
7686736	MAHLE	RL070B25B	7783590	MAHLE	SP090F20B	7888837	MAHLE	SE045E20B
7686744	MAHLE	RL070B40B	7788409	MAHLE	SP130F03B	7888845	MAHLE	SE045F03B
7686751	MAHLE	RL070L10B	7788417	MAHLE	SP130F20B	7888852	MAHLE	SE045F05B
7686769	MAHLE	RL070L20B	7788433	MAHLE	SP024E03B	7888860	MAHLE	SE045F10B
7686777	MAHLE	RL070E10B	7788441	MAHLE	SP024E10B	7888878	MAHLE	SE045F20B
7686785	MAHLE	RL070E20B	7788458	MAHLE	SP024E20B	7888886	MAHLE	SE070D03B
7686793	MAHLE	RL100B25B	7788466	MAHLE	SP030E03B	7888894	MAHLE	SE070D05B
7686801	MAHLE	RL100B40B	7788474	MAHLE	SP030E10B	7888902	MAHLE	SE070D10B
7686835	MAHLE	RL100L10B	7788482	MAHLE	SP030E20B	7888910	MAHLE	SE070D20B
7686843	MAHLE	RL100L20B	7788490	MAHLE	SP035E03B	7888928	MAHLE	SE070E03B
7686850	MAHLE	RL100E10B	7788508	MAHLE	SP035E10B	7888936	MAHLE	SE070E05B
7686868	MAHLE	RL100E20B	7788516	MAHLE	SP035E20B	7888944	MAHLE	SE070E10B
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7686926	MAHLE	RL035E10B	7788565	MAHLE	SP035F03B	7888993	MAHLE	SE070F20B
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7687064	MAHLE	RL010L10B	7817729	MAHLE	SP010E30V	7889090	MAHLE	SE090F05B
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7687106	MAHLE	RL010E10B	7817745	MAHLE	SP010E20V	7889116	MAHLE	SE090F20B
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7687148	MAHLE	RL020B40B	7817802	MAHLE	SP010F03V	7889140	MAHLE	SE160D10B
7687155	MAHLE	RL020L10B	7817810	MAHLE	SP010F20V	7889157	MAHLE	SE160D20B
7687163	MAHLE	RL020L20B	7817844	MAHLE	SP020F03V	7889165	MAHLE	SE160E03B
7687197	MAHLE	RL020E10B	7817851	MAHLE	SP020F20V	7889173	MAHLE	SE160E05B
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7687569	MAHLE	RL005B25B	7817935	MAHLE	SP020E10B	7889199	MAHLE	SE160E20B
7687585	MAHLE	RL005B40B	7817943	MAHLE	SP020E20B	7889207	MAHLE	SE160F03B
7687593	MAHLE	RL005L10B	7817950	MAHLE	SP020E30V	7889215	MAHLE	SE160F05B
7687601	MAHLE	RL005L20B	7817968	MAHLE	SP020E10V	7889223	MAHLE	SE160F10B
7687619	MAHLE	RL005E10B	7817976	MAHLE	SP020E20V	7889231	MAHLE	SE160F20B
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7688908	MAHLE	SL090B100B	7834393	MAHLE	SP045E10V	7889264	MAHLE	SE014G10B
7689094	MAHLE	SL125B100B	7834419	MAHLE	SP045F03V	7889272	MAHLE	SE014G20B
7689102	MAHLE	SL014W10B	7834427	MAHLE	SP045F20V	7889280	MAHLE	SE014H03B
7689110	MAHLE	SL020W10B	7834468	MAHLE	SP070E03V	7889298	MAHLE	SE014H05B
7689128	MAHLE	SL014W25B	7834476	MAHLE	SP070E10V	7889306	MAHLE	SE014H10B
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7689219	MAHLE	SL014W60B	7835531	MAHLE	SP130E10V	7889397	MAHLE	SE030H20B
7689227	MAHLE	SL020W60B	7835549	MAHLE	SP130E20V	7889405	MAHLE	SE045G03B
7689235	MAHLE	SL030W60B	7835556	MAHLE	SP130E30V	7889413	MAHLE	SE045G05B
7689243	MAHLE	SL045W60B	7835564	MAHLE	SP130F20V	7889421	MAHLE	SE045G10B
7689250	MAHLE	SL090W60B	7835572	MAHLE	SP024E03V	7889439	MAHLE	SE045G20B
7689268	MAHLE	SL125W60B	7835580	MAHLE	SP024E10V	7889447	MAHLE	SE045H03B
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7689292	MAHLE	SL045W100B	7835614	MAHLE	SP024F20V	7889470	MAHLE	SE045H20B
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7694680	MAHLE	RL130B25B	7835689	MAHLE	SP035E10V	7889546	MAHLE	SE070H10B
7694698	MAHLE	RL130B40B	7835697	MAHLE	SP035E20V	7889553	MAHLE	SE070H20B
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7711161	MAHLE	SL125D20B	7835713	MAHLE	SP035F20V	7889579	MAHLE	SE090G05B
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7711187	MAHLE	SL125B25B	7839061	MAHLE	RE160D10B	7889595	MAHLE	SE090G20B
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7893605	MAHLE	RE030E10B	7960867	MAHLE	NL063E06B	8300396UMV	TRIBO GUARD	SP300E05V
7893613	MAHLE	RE030E20B	7960875	MAHLE	NL100E06B	8300812UMV	TRIBO GUARD	SP100E10B
7893621	MAHLE	RE045D10B	7961017	MAHLE	NL400F06B	8300812UMV	TRIBO GUARD	SP100E10V
7893639	MAHLE	RE045D20B	7961501	MAHLE	NL630K25B	8300825UMV	TRIBO GUARD	SP100E20B
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7893654	MAHLE	RE045E20B	7961527	MAHLE	NL630E16B	830083UMV	TRIBO GUARD	SP100E03B
7893662	MAHLE	RE070D10B	7961535	MAHLE	NL630E25B	830083UMV	TRIBO GUARD	SP100E03V
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7893696	MAHLE	RE070E20B	7961568	MAHLE	NL630F25B	8301814	MAHLE	SP300E05B
7893704	MAHLE	RE090D10B	7961600	MAHLE	NL100K25B	8301822	MAHLE	SP300E05V
7893712	MAHLE	RE090D20B	7961618	MAHLE	NL1000E03B	8301830	MAHLE	SP300E10B
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7893753	MAHLE	RE160D20B	7961642	MAHLE	NL1000F03B	8301863	MAHLE	SP300E20V
7893779	MAHLE	RE160E20B	7961659	MAHLE	NL1000F16B	8309387	MAHLE	RL008L10B
7893787	MAHLE	RE250D10B	7961667	MAHLE	NL1000F25B	8309395	MAHLE	RL009L10B
7893795	MAHLE	RE250D20B	7962210	MAHLE	NR040K25B	8375248	MAHLE	SP300E03B
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7895691	MAHLE	RP200E10B	7962244	MAHLE	NR040E16B	8378382	MAHLE	RE300G05B
7895709	MAHLE	RP200E20B	7962251	MAHLE	NR063E16B	8382004	MAHLE	SP200E03B
7922398	MAHLE	NR040E03B	7962269	MAHLE	NR100E16B	8382012	MAHLE	SP200E03V
7924004	MAHLE	NR040E10B	7962277	MAHLE	NR040B25B	8382020	MAHLE	SP200E05B
7924012	MAHLE	NR063E03B	7962285	MAHLE	NR063B25B	8382038	MAHLE	SP200E05V
7924020	MAHLE	NR063E10B	7962293	MAHLE	NR100B25B	8382046	MAHLE	SP200E10B
7924038	MAHLE	NR100E03B	7962301	MAHLE	NR040B40B	8382053	MAHLE	SP200E10V
7924046	MAHLE	NR100E10B	7962319	MAHLE	NR063B40B	8382061	MAHLE	SP200E20B
7924137	MAHLE	NR160E03B	7962327	MAHLE	NR100B40B	8382079	MAHLE	SP200E20V
7924145	MAHLE	NR160E10B	7963408	MAHLE	NL630B100B	84001612UMV	TRIBO GUARD	RP200E10B
7924152	MAHLE	NR250E03B	7963598	MAHLE	NR160K25B	84001625UMV	TRIBO GUARD	RP200E20B
7924160	MAHLE	NR250E10B	7963606	MAHLE	NR250K25B	8400163UMV	TRIBO GUARD	RP200E03B
7924178	MAHLE	NR400E03B	7963614	MAHLE	NR400K25B	8400166UMV	TRIBO GUARD	RP200E05B
7924186	MAHLE	NR400E10B	7963622	MAHLE	NR630K25B	84002612UMV	TRIBO GUARD	RP240E10B
7924194	MAHLE	NR630E03B	7963630	MAHLE	NR100K25B	84002625UMV	TRIBO GUARD	RP240E20B
7924202	MAHLE	NR630E10B	7963648	MAHLE	NR160E16B	8400263UMV	TRIBO GUARD	RP240E03B
7924210	MAHLE	NR1000E03B	7963655	MAHLE	NR250E16B	8400266UMV	TRIBO GUARD	RP240E05B
7924228	MAHLE	NR1000E10B	7963663	MAHLE	NR400E16B	84003912UMV	TRIBO GUARD	RP300E10B
7925001	MAHLE	NR040K10B	7963671	MAHLE	NR630E16B	84003925UMV	TRIBO GUARD	RP300E20B
7925019	MAHLE	NR063K10B	7963689	MAHLE	NR1000E16B	8400393UMV	TRIBO GUARD	RP300E03B
7925027	MAHLE	NR100K10B	7963697	MAHLE	NR160B25B	8400396UMV	TRIBO GUARD	RP300E05B
7925035	MAHLE	NR160K10B	7963705	MAHLE	NR250B25B	8400812UMV	TRIBO GUARD	RP050E10B
7925043	MAHLE	NR250K10B	7963713	MAHLE	NR400B25B	840083UMV	TRIBO GUARD	RP050E03B
7925050	MAHLE	NR400K10B	7963721	MAHLE	NR630B25B	840086UMV	TRIBO GUARD	RP050E05B
7925068	MAHLE	NR630K10B	7963739	MAHLE	NR1000B25B	85001312UMV	TRIBO GUARD	RP080E10B
7925076	MAHLE	NR1000K10B	7964034	MAHLE	NR040E06B	85001325UMV	TRIBO GUARD	RP080E20B
7925571	MAHLE	NL040E10B	7964042	MAHLE	NR063E06B	8500133UMV	TRIBO GUARD	RP080E03B
7925589	MAHLE	NL063E10B	7964067	MAHLE	NR160E06B	8500136UMV	TRIBO GUARD	RP080E05B
7925597	MAHLE	NL100E10B	7964075	MAHLE	NR250E100B	85002612UMV	TRIBO GUARD	RP090E10B
7925605	MAHLE	NL160E10B	7964083	MAHLE	NR400E06B	85002625UMV	TRIBO GUARD	RP090E20B
7925613	MAHLE	NL250E10B	7964091	MAHLE	NR630E06B	8500263UMV	TRIBO GUARD	RP090E03B
7925621	MAHLE	NL400E10B	7964109	MAHLE	NR1000E06B	8500266UMV	TRIBO GUARD	RP090E05B
7925639	MAHLE	NL630E10B	7974465	MAHLE	NL1000B100B	8500825UMV	TRIBO GUARD	RP050E20B
7925647	MAHLE	NL1000E10B	7999154	MAHLE	NL630B40B	852034DRG10	MAHLE	SL035B10B
7925654	MAHLE	NL040F10B	7999428	MAHLE	NR160B40B	852034DRG100	MAHLE	SL035B100B
7925662	MAHLE	NL063F10B	7999436	MAHLE	NR250B40B	852034DRG25	MAHLE	SL035B25B
7925670	MAHLE	NL100F10B	7999444	MAHLE	NR400B40B	852034DRG60	MAHLE	SL035B60B
7925688	MAHLE	NL160F10B	7999451	MAHLE	NR630B40B	852034DRGVST10	MAHLE	SL035W100B
7925696	MAHLE	NL250F10B	7999469	MAHLE	NR1000B40B	852034DRGVST100	MAHLE	SL035W100B
7925712	MAHLE	NL630F10B	7999907	MAHLE	SP045E05B	852034DRGVST25	MAHLE	SL035W25B
7925720	MAHLE	NL1000F10B	7999915	MAHLE	SP070E05B	852034DRGVST60	MAHLE	SL035W60B
7929698	MAHLE	NL040K10B	7999923	MAHLE	SP090E05B	852034MIC10	MAHLE	SL035K10B
7929706	MAHLE	NL063K10B	7999931	MAHLE	SP130E05B	852034MIC25	MAHLE	SL035K20B
7929714	MAHLE	NL100K10B	8216079	MAHLE	NL040F03B	852034MICVST10	MAHLE	SL035D10B
7929722	MAHLE	NL160K10B	8216087	MAHLE	NL040F16B	852034MICVST25	MAHLE	SL035D20B
7929730	MAHLE	NL250K10B	8216095	MAHLE	NL040F25B	852034SMX10	MAHLE	SL035E10B
7929748	MAHLE	NL400K10B	8216137	MAHLE	NL063F03B	852034SMX25	MAHLE	SL035E20B
7929756	MAHLE	NL630K10B	8216145	MAHLE	NL063F16B	852034SMX3	MAHLE	SL035E03B
7929763	MAHLE	NL1000K10B	8216152	MAHLE	NL063F25B	852034SMXVST10	MAHLE	SL035F10B
7930829	MAHLE	NL400F10B	8216160	MAHLE	NL100F25B	852034SMXVST25	MAHLE	SL035F20B
7940638	MAHLE	NL160F03B	8216178	MAHLE	NL160F25B	852034SMXVST100	MAHLE	SL035F03B
7940646	MAHLE	NL250F03B	8216186	MAHLE	NL250F25B	852059DRG10	MAHLE	LL045B10B
7940653	MAHLE	NL400F03B	8224719	MAHLE	SP030E05B	852059DRG100	MAHLE	LL045B100B
7940844	MAHLE	NR100E06B	8225898	MAHLE	LL160E05B	852059DRG25	MAHLE	LL045B25B
7943509	MAHLE	SL014E05B	8227472	MAHLE	NL100E03B	852059DRG60	MAHLE	LL045B60B
7943517	MAHLE	SL020E05B	8227480	MAHLE	NL100F03B	852059MIC10	MAHLE	LL045L10B
7943525	MAHLE	SL030E05B	8227514	MAHLE	NL250E03B	852059MIC25	MAHLE	LL045L20B
7943533	MAHLE	SL014F05B	8227522	MAHLE	NL400E03B	852059SMX10	MAHLE	LL045E10B
7943541	MAHLE	SL020F05B	8229569	MAHLE	NL1000B40B	852059SMX25	MAHLE	LL045E20B
7943558	MAHLE	SL030F05B	8260903	MAHLE	NL400F25B	852070DRG10	MAHLE	LL050B10B
7943699	MAHLE	NL630E06B	8260911	MAHLE	NL040K25B	852070DRG100	MAHLE	LL050B100B
7943707	MAHLE	NL630B25B	8260929	MAHLE	NL040E03B	852070DRG25	MAHLE	LL050B25B
7943715	MAHLE	NL630B60B	8260937	MAHLE	NL040E16B	852070DRG60	MAHLE	LL050B60B
7943723	MAHLE	NL1000E06B	8260945	MAHLE	NL040E25B	852070MIC10	MAHLE	LL050L10B
7943731	MAHLE	NL1000B25B	8260952	MAHLE	NL063K25B	852070MIC25	MAHLE	LL050L20B
7943749	MAHLE	NL1000B60B	8260960	MAHLE	NL063E03B	852070SMX10	MAHLE	LL050E10B
7944457	MAHLE	RL005E05B	8260978	MAHLE	NL063E16B	852070SMX25	MAHLE	LL050E20B
7944481	MAHLE	RL010E05B	8260986	MAHLE	NL063E25B	852070SMX3	MAHLE	LL050E03B
7944515	MAHLE	RL020E05B	8260994	MAHLE	NL100K25B	852087DRG10	MAHLE	LL100B10B
7944549	MAHLE	RL070E05B	8261000	MAHLE	NL100E16B	852087DRG100	MAHLE	LL100B100B
7944572	MAHLE	RL100E05B	8261018	MAHLE	NL100E25B	852087DRG25	MAHLE	LL100B25B
7944614	MAHLE	RL035E05B	8261026	MAHLE	NL160K25B	852087DRG60	MAHLE	LL100B60B
7944648	MAHLE	RL045E05B	8261034	MAHLE	NL160E03B	852087MIC10	MAHLE	LL100L10B
7944689	MAHLE	RL130E05B	8261042	MAHLE	NL160E16B	852087MIC25	MAHLE	LL100L20B
7955099	MAHLE	SL045E05B	8261059	MAHLE	NL160E25B	852087SMX10	MAHLE	LL100E10B
7955107	MAHLE	SL090E05B	8261067	MAHLE	NL250K25B	852087SMX25	MAHLE	LL100E20B
7955115	MAHLE	SL125E05B	8261075	MAHLE	NL250E16B	852125DRG10	MAHLE	SL005B10B
7955123	MAHLE	SL045F05B	8261083	MAHLE	NL250E25B	852125DRG100	MAHLE	SL005B100B
7955131	MAHLE	SL090F05B	8261091	MAHLE	NL400K25B	852125DRG25	MAHLE	SL005B25B
7955149	MAHLE	SL125F05B	8261109	MAHLE	NL400E16B	852125DRG40	MAHLE	SL005B40B
7956220	MAHLE	ST13E03B	8261117	MAHLE	NL400E25B	852125DRG60	MAHLE	SL005B60B
7957087	MAHLE	SP024E05B	8261281	MAHLE	NL100F16B	852125DRGVST10	MAHLE	SL005W100B
7960081	MAHLE	NL1000F06B	8269797	MAHLE	NL160F16B	852125DRGVST100	MAHLE	SL005W100B
7960099	MAHLE	NL630F06B	8269813	MAHLE	NL250F16B	852125DRGVST25	MAHLE	SL005W25B
7960115	MAHLE	NL250F06B	8269821	MAHLE	NL400F16B	852125DRGVST40	MAHLE	SL005W40B
7960123	MAHLE	NL160F06B	8299042	MAHLE	LL090E05B	852125DRGVST60	MAHLE	SL005W60B
7960131	MAHLE	NL100F06B	83001612UMV	TRIBO GUARD	SP200E10B	852125MIC10	MAHLE	SL005K10B
7960149	MAHLE	NL063F06B	83001612UMV	TRIBO GUARD	SP200E10V	852125MIC25	MAHLE	SL005K20B
7960156	MAHLE	NL040F06B	83001625UMV	TRIBO GUARD	SP200E20B	852125MICVST10	MAHLE	SL005D10B
7960206	MAHLE	NR040E25B	83001625UMV	TRIBO GUARD	SP200E20V	852125MICVST25	MAHLE	SL005D20B
7960214	MAHLE	NR063E25B	8300163UMV	TRIBO GUARD	SP200E03B	852125SMX10	MAHLE	SL005E10B
7960222	MAHLE	NR100E25B	8300163UMV	TRIBO GUARD	SP200E03V	852125SMX25	MAHLE	SL005E20B
7960230	MAHLE	NR160E						




code code bezeichnung código	brand marque hersteller marca		code code bezeichnung código	brand marque hersteller marca		code code bezeichnung código	brand marque hersteller marca	
852126DRG60	MAHLE	SL010B60B	852493SMX25	MAHLE	RL005E20B	8890L06B16	ST-FILTER	SP160E05B
852126DRGVST10	MAHLE	SL010W10B	852493SMX6	MAHLE	RL005E05B	8890L06B26	ST-FILTER	SP180E05B
852126DRGVST100	MAHLE	SL010W100B	852588SMX10	MAHLE	RL008E10B	8890L06V08	ST-FILTER	SP120E05V
852126DRGVST25	MAHLE	SL010W25B	852588SMX25	MAHLE	RL008E20B	8890L06V13	ST-FILTER	SP140E05V
852126DRGVST40	MAHLE	SL010W40B	852588SMX3	MAHLE	RL008E03B	8890L06V16	ST-FILTER	SP160E05V
852126DRGVST60	MAHLE	SL010W60B	852699DRG25	MAHLE	RL130B25B	8890L06V26	ST-FILTER	SP180E05V
852126MIC10	MAHLE	SL010K10B	852699DRG40	MAHLE	RL130B40B	8890L12B08	ST-FILTER	SP120E10B
852126MIC25	MAHLE	SL010K20B	852699MIC10	MAHLE	RL130E10B	8890L12B13	ST-FILTER	SP140E10B
852126MICVST10	MAHLE	SL010D10B	852699MIC25	MAHLE	RL130L20B	8890L12B16	ST-FILTER	SP160E10B
852126MICVST25	MAHLE	SL010D20B	852699SMX10	MAHLE	RL130E20B	8890L12B26	ST-FILTER	SP180E10B
852126SMX10	MAHLE	SL010E10B	852699SMX25	MAHLE	RL130E20B	8890L12V08	ST-FILTER	SP120E10V
852126SMX25	MAHLE	SL010E20B	852699SMX6	MAHLE	RL130E05B	8890L12V13	ST-FILTER	SP140E10V
852126SMX3	MAHLE	SL010E03B	852760MIC10	MAHLE	LL090L10B	8890L12V16	ST-FILTER	SP160E10V
852126SMXVST10	MAHLE	SL010F10B	852760MIC25	MAHLE	LL090L20B	8890L12V26	ST-FILTER	SP180E10V
852126SMXVST25	MAHLE	SL010F20B	852760MIC5	MAHLE	LL090L05B	8890L25B08	ST-FILTER	SP120E20B
852126SMXVST3	MAHLE	SL010F03B	852760SMX10	MAHLE	LL090E10B	8890L25B13	ST-FILTER	SP140E20B
852127DRG10	MAHLE	SL022B10B	852760SMX25	MAHLE	LL090E20B	8890L25B16	ST-FILTER	SP160E20B
852127DRG100	MAHLE	SL022B100B	852760SMX6	MAHLE	LL090E03B	8890L25B26	ST-FILTER	SP180E20B
852127DRG25	MAHLE	SL022B25B	852761MIC10	MAHLE	LL090E05B	8890L25V08	ST-FILTER	SP120E20V
852127DRG40	MAHLE	SL022B40B	852761MIC25	MAHLE	LL160L10B	8890L25V13	ST-FILTER	SP140E20V
852127DRG60	MAHLE	SL022B60B	852761MIC5	MAHLE	LL160L20B	8890L25V16	ST-FILTER	SP160E20V
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852127DRGVST25	MAHLE	SL022W25B	852761SMX25	MAHLE	LL160E20B	890001MIC16	MAHLE	SE008D20B
852127DRGVST40	MAHLE	SL022W40B	852761SMX3	MAHLE	LL160E03B	890001MIC3	MAHLE	SE008D03B
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852127MIC10	MAHLE	SL022K10B	852939MIC10	MAHLE	RL008L10B	890001SMX10	MAHLE	SE008E10B
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852127MICVST10	MAHLE	SL022D10B	852945SMX10	MAHLE	RL009E10B	890001SMX3	MAHLE	SE008E03B
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852127SMX3	MAHLE	SL022E03B	8830L03B16	ST-FILTER	SP200E03B	890001SMXVST3	MAHLE	SE008F03B
852127SMXVST10	MAHLE	SL022F10B	8830L03B39	ST-FILTER	SP300E03B	890001SMXVST6	MAHLE	SE008F05B
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852146DRG10	MAHLE	LL155B10B	8830L03V39	ST-FILTER	SP300E03V	890002MIC3	MAHLE	SE014D03B
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852146SMX10	MAHLE	LL155E10B	8830L06V39	ST-FILTER	SP300E05V	890002SMXVST10	MAHLE	SE014F10B
852146SMX25	MAHLE	LL155E20B	8830L12B08	ST-FILTER	SP100E10B	890002SMXVST16	MAHLE	SE014F20B
852264DRG10	MAHLE	LL080B10B	8830L12B16	ST-FILTER	SP200E10B	890002SMXVST3	MAHLE	SE014F03B
852264DRG100	MAHLE	LL080B100B	8830L12B39	ST-FILTER	SP300E10B	890002SMXVST6	MAHLE	SE014F05B
852264DRG25	MAHLE	LL080B25B	8830L12V08	ST-FILTER	SP100E10V	890003MIC10	MAHLE	SE030D10B
852264DRG60	MAHLE	LL080B60B	8830L12V16	ST-FILTER	SP200E10V	890003MIC16	MAHLE	SE030D20B
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852264SMX25	MAHLE	LL080E20B	8830L25B39	ST-FILTER	SP300E20B	890003SMX16	MAHLE	SE030E20B
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852275SMX3	MAHLE	ST103E03B	8830L25V39	ST-FILTER	SP300E20V	890003SMXVST10	MAHLE	SE030F10B
852275SMX5	MAHLE	ST103E05B	8840L03B08	ST-FILTER	RP100E03B	890003SMXVST16	MAHLE	SE030F20B
852362DRG10	MAHLE	ML070B10B	8840L03B16	ST-FILTER	RP200E03B	890003SMXVST3	MAHLE	SE030F03B
852362DRG100	MAHLE	ML070B100B	8840L03B26	ST-FILTER	RP240E03B	890003SMXVST6	MAHLE	SE030F05B
852362DRG25	MAHLE	ML070B25B	8840L03B39	ST-FILTER	RP300E03B	890004MIC10	MAHLE	SE045D10B
852362DRG60	MAHLE	ML070B60B	8840L03V08	ST-FILTER	RP100E03V	890004MIC16	MAHLE	SE045D20B
852362DRGVST10	MAHLE	ML070W10B	8840L03V16	ST-FILTER	RP200E03V	890004MIC3	MAHLE	SE045D03B
852362DRGVST100	MAHLE	ML070W100B	8840L03V26	ST-FILTER	RP240E03V	890004MIC6	MAHLE	SE045D05B
852362DRGVST25	MAHLE	ML070W25B	8840L03V39	ST-FILTER	RP300E03V	890004SMX10	MAHLE	SE045E10B
852362DRGVST60	MAHLE	ML070W60B	8840L06B08	ST-FILTER	RP100E05B	890004SMX16	MAHLE	SE045E20B
852362MIC10	MAHLE	ML070K10B	8840L06B16	ST-FILTER	RP200E05B	890004SMX3	MAHLE	SE045E03B
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852362MICVST10	MAHLE	ML070D10B	8840L06B39	ST-FILTER	RP300E05B	890004SMXVST10	MAHLE	SE045F10B
852362MICVST25	MAHLE	ML070D20B	8840L06V08	ST-FILTER	RP100E05V	890004SMXVST16	MAHLE	SE045F20B
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852362SMX25	MAHLE	ML070E20B	8840L06V26	ST-FILTER	RP240E05V	890004SMXVST6	MAHLE	SE045F05B
852362SMX3	MAHLE	ML070E03B	8840L06V39	ST-FILTER	RP300E05V	890005MIC10	MAHLE	SE070D10B
852362SMXVST10	MAHLE	ML070F10B	8840L12B08	ST-FILTER	RP100E10B	890005MIC16	MAHLE	SE070D20B
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852362SMXVST3	MAHLE	ML070F03B	8840L12B26	ST-FILTER	RP240E10B	890005MIC6	MAHLE	SE070D05B
852435DRG25	MAHLE	RL070B25B	8840L12B39	ST-FILTER	RP300E10B	890005SMX10	MAHLE	SE070E10B
852435DRG40	MAHLE	RL070B40B	8840L12V08	ST-FILTER	RP100E10V	890005SMX16	MAHLE	SE070E20B
852435MIC10	MAHLE	RL070L10B	8840L12V16	ST-FILTER	RP200E10V	890005SMX3	MAHLE	SE070E03B
852435MIC25	MAHLE	RL070L20B	8840L12V26	ST-FILTER	RP240E10V	890005SMX6	MAHLE	SE070E05B
852435SMX10	MAHLE	RL070E10B	8840L12V39	ST-FILTER	RP300E10V	890005SMXVST10	MAHLE	SE070F10B
852435SMX25	MAHLE	RL070E20B	8840L25B08	ST-FILTER	RP100E20B	890005SMXVST16	MAHLE	SE070F20B
852435SMX6	MAHLE	RL070E05B	8840L25B16	ST-FILTER	RP200E20B	890005SMXVST3	MAHLE	SE070F03B
852436DRG25	MAHLE	RL100B25B	8840L25B26	ST-FILTER	RP240E20B	890005SMXVST6	MAHLE	SE070F05B
852436DRG40	MAHLE	RL100B40B	8840L25B39	ST-FILTER	RP300E20B	890006MIC10	MAHLE	SE090D10B
852436MIC10	MAHLE	RL100L10B	8840L25V08	ST-FILTER	RP100E20V	890006MIC16	MAHLE	SE090D20B
852436MIC25	MAHLE	RL100L20B	8840L25V16	ST-FILTER	RP200E20V	890006MIC3	MAHLE	SE090D03B
852436SMX10	MAHLE	RL100E10B	8840L25V26	ST-FILTER	RP240E20V	890006MIC6	MAHLE	SE090D05B
852436SMX25	MAHLE	RL100E20B	8840L25V39	ST-FILTER	RP300E20V	890006SMX10	MAHLE	SE090E10B
852436SMX6	MAHLE	RL100E05B	8850L03B13	ST-FILTER	RP080E03B	890006SMX16	MAHLE	SE090E20B
852438DRG25	MAHLE	RL035B25B	8850L03B26	ST-FILTER	RP090E03B	890006SMX3	MAHLE	SE090E03B
852438DRG40	MAHLE	RL035B40B	8850L03B8	ST-FILTER	RP090E03B	890006SMX6	MAHLE	SE090E05B
852438MIC10	MAHLE	RL035L10B	8850L03V13	ST-FILTER	RP080E03V	890006SMXVST10	MAHLE	SE090F10B
852438MIC25	MAHLE	RL035L20B	8850L03V26	ST-FILTER	RP090E03V	890006SMXVST16	MAHLE	SE090F20B
852438SMX10	MAHLE	RL035E10B	8850L06B13	ST-FILTER	RP050E03V	890006SMXVST3	MAHLE	SE090F03B
852438SMX25	MAHLE	RL035E20B	8850L06B16	ST-FILTER	RP080E05B	890006SMXVST6	MAHLE	SE090F05B
852438SMX6	MAHLE	RL035E05B	8850L06B26	ST-FILTER	RP090E05B	890007MIC10	MAHLE	SE160D10B
852439DRG25	MAHLE	RL045B25B	8850L06B8	ST-FILTER	RP050E05B	890007MIC16	MAHLE	SE160D20B
852439DRG40	MAHLE	RL045B40B	8850L06V13	ST-FILTER	RP080E05V	890007MIC3	MAHLE	SE160D03B
852439MIC10	MAHLE	RL045L10B	8850L06V26	ST-FILTER	RP090E05V	890007MIC6	MAHLE	SE160D05B
852439MIC25	MAHLE	RL045L20B	8850L06V8	ST-FILTER	RP050E05V	890007SMX10	MAHLE	SE160E10B
852439SMX10	MAHLE	RL045E10B	8850L12B13	ST-FILTER	RP080E10B	890007SMX16	MAHLE	SE160E20B
852439SMX25	MAHLE	RL045E20B	8850L12B26	ST-FILTER	RP090E10B	890007SMX3	MAHLE	SE160E03B
852439SMX6	MAHLE	RL045E05B	8850L12B8	ST-FILTER	RP050E10B	890007SMX6	MAHLE	SE160E05B
852443DRG25	MAHLE	RL010B25B	8850L12V13	ST-FILTER	RP080E10V	890007SMXVST10	MAHLE	SE160F10B
852443DRG40	MAHLE	RL010B40B	8850L12V26	ST-FILTER	RP090E10V	890007SMXVST16	MAHLE	SE160F20B
852443MIC10	MAHLE	RL010L10B	8850L12V8	ST-FILTER	RP050E10V	890007SMXVST3	MAHLE	SE160F03B
852443MIC25	MAHLE	RL010L20B	8850L25B13	ST-FILTER	RP080E20B	890007SMXVST6	MAHLE	SE160F05B
852443SMX10	MAHLE	RL010E10B	8850L25B26	ST-FILTER	RP090E20B	890010MIC10	MAHLE	RE008D10B
852443SMX25	MAHLE	RL010E20B	8850L25B8	ST-FILTER	RP0			

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8900136UM	TRIBOGUARD	SP140E05B	891012SMX3FPM	MAHLE	SP020E03V	8940L25B26	ST-FILTER	SP170E20B
890013MIC10	MAHLE	RE045D10B	891012SMX3NBR	MAHLE	SP020E03B	8940L25B39	ST-FILTER	SP250E20B
890013MIC16	MAHLE	RE045D20B	891012SMXVST16FPM	MAHLE	SP020F20V	8940L25V13	ST-FILTER	SP110E20V
890013SMX10	MAHLE	RE045E10B	891012SMXVST16NBR	MAHLE	SP020F20B	8940L25V26	ST-FILTER	SP170E20V
890013SMX16	MAHLE	RE045E20B	891012SMXVST3FPM	MAHLE	SP020F03V	8940L25V39	ST-FILTER	SP250E20V
890014MIC10	MAHLE	RE070D10B	891012SMXVST3NBR	MAHLE	SP020F03B	8960H02B04	ST-FILTER	SP045F03B
890014MIC16	MAHLE	RE070D20B	891016SMX10FPM	MAHLE	SP045E10V	8960H02B08	ST-FILTER	SP070F03B
890014SMX10	MAHLE	RE070E10B	891016SMX10NBR	MAHLE	SP045E10B	8960H02B13	ST-FILTER	SP090F03B
890014SMX16	MAHLE	RE070E20B	891016SMX25FPM	MAHLE	SP045E20V	8960H02B16	ST-FILTER	SP130F03B
890015MIC10	MAHLE	RE090D10B	891016SMX25NBR	MAHLE	SP045E20B	8960H02V04	ST-FILTER	SP045F03V
890015MIC16	MAHLE	RE090D20B	891016SMX3FPM	MAHLE	SP045E03V	8960H02V08	ST-FILTER	SP070F03V
890015SMX10	MAHLE	RE090E10B	891016SMX3NBR	MAHLE	SP045E03B	8960H02V13	ST-FILTER	SP090F03V
890015SMX16	MAHLE	RE090E20B	891016SMX6NBR	MAHLE	SP045E05B	8960H02V16	ST-FILTER	SP130F03B
89001612UM	TRIBOGUARD	SP160E10B	891016SMXVST16FPM	MAHLE	SP045F20V	8960H15B04	ST-FILTER	SP045F20B
89001625UM	TRIBOGUARD	SP160E20B	891016SMXVST16NBR	MAHLE	SP045F20B	8960H15B08	ST-FILTER	SP070F20B
8900163UM	TRIBOGUARD	SP160E03B	891016SMXVST3FPM	MAHLE	SP045F03V	8960H15B13	ST-FILTER	SP090F20B
8900166UM	TRIBOGUARD	SP160E05B	891016SMXVST3NBR	MAHLE	SP045F03B	8960H15B16	ST-FILTER	SP130F20B
890016MIC10	MAHLE	RE160D10B	891017SMX10FPM	MAHLE	SP070E10V	8960H15V04	ST-FILTER	SP045F20V
890016MIC16	MAHLE	RE160D20B	891017SMX10NBR	MAHLE	SP070E10B	8960H15V08	ST-FILTER	SP070F20V
890016SMX10	MAHLE	RE160E10B	891017SMX25FPM	MAHLE	SP070E20V	8960H15V13	ST-FILTER	SP090F20V
890016SMX16	MAHLE	RE160E20B	891017SMX25NBR	MAHLE	SP070E20B	8960H15V16	ST-FILTER	SP130F20V
890017MIC10	MAHLE	RE250D10B	891017SMX3FPM	MAHLE	SP070E03V	8960L03B04	ST-FILTER	SP045E03B
890017MIC16	MAHLE	RE250D20B	891017SMX3NBR	MAHLE	SP070E03B	8960L03B08	ST-FILTER	SP070E03B
890017SMX10	MAHLE	RE250E10B	891017SMX6NBR	MAHLE	SP070E05B	8960L03B13	ST-FILTER	SP090E03B
890017SMX16	MAHLE	RE250E20B	891017SMXVST16FPM	MAHLE	SP070F20V	8960L03B16	ST-FILTER	SP130E03B
890018MIC10	MAHLE	RE300D10B	891017SMXVST16NBR	MAHLE	SP070F20B	8960L03V04	ST-FILTER	SP045E03V
890018MIC16	MAHLE	RE300D20B	891017SMXVST3FPM	MAHLE	SP070F03V	8960L03V08	ST-FILTER	SP070E03V
890018SMX10	MAHLE	RE300E10B	891017SMXVST3NBR	MAHLE	SP070F03B	8960L03V13	ST-FILTER	SP090E03V
890018SMX16	MAHLE	RE300E20B	891018SMX10FPM	MAHLE	SP090E10V	8960L03V16	ST-FILTER	SP130E03V
890019SMX10	MAHLE	SE014G10B	891018SMX10NBR	MAHLE	SP090E10B	8960L06B04	ST-FILTER	SP045E05B
890019SMX16	MAHLE	SE014G20B	891018SMX25FPM	MAHLE	SP090E20V	8960L06B08	ST-FILTER	SP070E05B
890019SMX3	MAHLE	SE014G03B	891018SMX25NBR	MAHLE	SP090E20B	8960L06B13	ST-FILTER	SP090E05B
890019SMX6	MAHLE	SE014G05B	891018SMX3FPM	MAHLE	SP090E03V	8960L06B16	ST-FILTER	SP130E05B
890019SMXVST10	MAHLE	SE014H10B	891018SMX3NBR	MAHLE	SP090E03B	8960L06V04	ST-FILTER	SP045E05V
890019SMXVST16	MAHLE	SE014H20B	891018SMX6NBR	MAHLE	SP090E05B	8960L06V08	ST-FILTER	SP070E05V
890019SMXVST3	MAHLE	SE014H03B	891018SMXVST16FPM	MAHLE	SP090F20V	8960L06V13	ST-FILTER	SP090E05V
890019SMXVST6	MAHLE	SE014H05B	891018SMXVST16NBR	MAHLE	SP090F20B	8960L06V16	ST-FILTER	SP130E05V
890020SMX10	MAHLE	SE030G10B	891018SMXVST3FPM	MAHLE	SP090F03V	8960L12B04	ST-FILTER	SP045E10B
890020SMX16	MAHLE	SE030G20B	891018SMXVST3NBR	MAHLE	SP090F03B	8960L12B08	ST-FILTER	SP070E10B
890020SMX3	MAHLE	SE030G03B	891019SMX10FPM	MAHLE	SP130E10V	8960L12B13	ST-FILTER	SP090E10B
890020SMX6	MAHLE	SE030G05B	891019SMX10NBR	MAHLE	SP130E10B	8960L12B16	ST-FILTER	SP130E10B
890020SMXVST10	MAHLE	SE030H10B	891019SMX25FPM	MAHLE	SP130E20V	8960L12V04	ST-FILTER	SP045E10V
890020SMXVST16	MAHLE	SE030H20B	891019SMX25NBR	MAHLE	SP130E20B	8960L12V08	ST-FILTER	SP070E10V
890020SMXVST3	MAHLE	SE030H03B	891019SMX3FPM	MAHLE	SP130E03V	8960L12V13	ST-FILTER	SP090E10V
890020SMXVST6	MAHLE	SE030H05B	891019SMX3NBR	MAHLE	SP130E03B	8960L12V16	ST-FILTER	SP130E10V
890021SMX10	MAHLE	SE045G10B	891019SMX6NBR	MAHLE	SP130E05B	8960L25B04	ST-FILTER	SP045E20B
890021SMX16	MAHLE	SE045G20B	891019SMXVST16FPM	MAHLE	SP130F20V	8960L25B08	ST-FILTER	SP070E20B
890021SMX3	MAHLE	SE045G03B	891019SMXVST16NBR	MAHLE	SP130F20B	8960L25B13	ST-FILTER	SP090E20B
890021SMX6	MAHLE	SE045G05B	891019SMXVST3FPM	MAHLE	SP130F03V	8960L25B16	ST-FILTER	SP130E20B
890021SMXVST10	MAHLE	SE045H10B	891019SMXVST3NBR	MAHLE	SP130F03B	8960L25V04	ST-FILTER	SP045E20V
890021SMXVST16	MAHLE	SE045H20B	891024SMX10FPM	MAHLE	SP024E10V	8960L25V08	ST-FILTER	SP070E20V
890021SMXVST3	MAHLE	SE045H03B	891024SMX10NBR	MAHLE	SP024E10B	8960L25V13	ST-FILTER	SP090E20V
890021SMXVST6	MAHLE	SE045H05B	891024SMX25FPM	MAHLE	SP024E20V	8960L25V16	ST-FILTER	SP130E20V
890022SMX10	MAHLE	SE070G10B	891024SMX25NBR	MAHLE	SP024E20B	8965H02B08	ST-FILTER	SP070F03BOBE
890022SMX16	MAHLE	SE070G20B	891024SMX3FPM	MAHLE	SP024E03V	8965H02B16	ST-FILTER	SP130F03BOBE
890022SMX3	MAHLE	SE070G03B	891024SMX3NBR	MAHLE	SP024E03B	8965H02V08	ST-FILTER	SP070F03VOBE
890022SMX6	MAHLE	SE070G05B	891024SMX6NBR	MAHLE	SP024E05B	8965H02V16	ST-FILTER	SP130F03VOBE
890022SMXVST10	MAHLE	SE070H10B	891024SMXVST16FPM	MAHLE	SP024F20V	8965H15B08	ST-FILTER	SP070F20BOBE
890022SMXVST16	MAHLE	SE070H20B	891024SMXVST16NBR	MAHLE	SP024F20B	8965H15B16	ST-FILTER	SP130F20BOBE
890022SMXVST3	MAHLE	SE070H03B	891024SMXVST3FPM	MAHLE	SP024F03V	8965H15V08	ST-FILTER	SP070F20VOBE
890022SMXVST6	MAHLE	SE070H05B	891024SMXVST3NBR	MAHLE	SP024F03B	8965H15V16	ST-FILTER	SP130F20VOBE
890023SMX10	MAHLE	SE090G10B	891025SMX10FPM	MAHLE	SP030E10V	8965L03B08	ST-FILTER	SP070E03BOBE
890023SMX16	MAHLE	SE090G20B	891025SMX10NBR	MAHLE	SP030E10B	8965L03B16	ST-FILTER	SP130E03BOBE
890023SMX3	MAHLE	SE090G03B	891025SMX25FPM	MAHLE	SP030E20V	8965L03V08	ST-FILTER	SP070E03VOBE
890023SMX6	MAHLE	SE090G05B	891025SMX25NBR	MAHLE	SP030E20B	8965L03V16	ST-FILTER	SP130E03VOBE
890023SMXVST10	MAHLE	SE090H10B	891025SMX3FPM	MAHLE	SP030E03V	8965L06B04	ST-FILTER	SP070E05BOBE
890023SMXVST16	MAHLE	SE090H20B	891025SMX3NBR	MAHLE	SP030E03B	8965L06B16	ST-FILTER	SP130E05BOBE
890023SMXVST3	MAHLE	SE090H03B	891025SMX6NBR	MAHLE	SP030E05B	8965L06V16	ST-FILTER	SP070E05VOBE
890023SMXVST6	MAHLE	SE090H05B	891025SMXVST16FPM	MAHLE	SP030F20V	8965L06V13	ST-FILTER	SP130E05VOBE
890024SMX10	MAHLE	SE160G10B	891025SMXVST16NBR	MAHLE	SP030F20B	8965L12B08	ST-FILTER	SP070E10BOBE
890024SMX16	MAHLE	SE160G20B	891025SMXVST3FPM	MAHLE	SP030F03V	8965L12B16	ST-FILTER	SP130E10BOBE
890024SMX3	MAHLE	SE160G03B	891025SMXVST3NBR	MAHLE	SP030F03B	8965L12V08	ST-FILTER	SP070E10VOBE
890024SMX6	MAHLE	SE160G05B	891026SMX10FPM	MAHLE	SP035E10V	8965L12V16	ST-FILTER	SP130E10VOBE
890024SMXVST10	MAHLE	SE160H10B	891026SMX10NBR	MAHLE	SP035E10B	8965L25B08	ST-FILTER	SP070E20BOBE
890024SMXVST16	MAHLE	SE160H20B	891026SMX25FPM	MAHLE	SP035E20V	8965L25B16	ST-FILTER	SP130E20BOBE
890024SMXVST3	MAHLE	SE160H03B	891026SMX25NBR	MAHLE	SP035E20B	8965L25V08	ST-FILTER	SP070E20VOBE
890024SMXVST6	MAHLE	SE160H05B	891026SMX3FPM	MAHLE	SP035E03V	8965L25V16	ST-FILTER	SP130E20VOBE
89002612UM	TRIBOGUARD	SP180E10B	891026SMX3NBR	MAHLE	SP035E03B	8980H02B04	ST-FILTER	SP024F03B
89002625UM	TRIBOGUARD	SP180E20B	891026SMXVST16FPM	MAHLE	SP035F20V	8980H02B08	ST-FILTER	SP030F03B
8900263UM	TRIBOGUARD	SP180E03B	891026SMXVST16NBR	MAHLE	SP035F20B	8980H02B13	ST-FILTER	SP035F03B
8900266UM	TRIBOGUARD	SP180E05B	891026SMXVST3FPM	MAHLE	SP035F03V	8980H02V04	ST-FILTER	SP024F03V
890033SMX10	MAHLE	RE300G05B	891026SMXVST3NBR	MAHLE	SP035F03B	8980H02V08	ST-FILTER	SP030F03V
890033SMX16	MAHLE	RE300G10B	891027SMX10NBR	MAHLE	SP110E10V	8980H02V13	ST-FILTER	SP035F03V
8902H02B04	ST-FILTER	SP010E20B	891027SMX25NBR	MAHLE	SP110E20B	8980H15B04	ST-FILTER	SP024F20B
8902H02B08	ST-FILTER	SP020F03B	891028SMX10NBR	MAHLE	RP200E10B	8980H15B08	ST-FILTER	SP030F20B
8902H02V04	ST-FILTER	SP010F03V	891028SMX25NBR	MAHLE	RP200E20B	8980H15B13	ST-FILTER	SP035F20B
8902H02V08	ST-FILTER	SP020F03V	891030SMX10FPM	MAHLE	SP300E10V	8980H15V04	ST-FILTER	SP024F20V
8902H15B04	ST-FILTER	SP010F20B	891030SMX10NBR	MAHLE	SP300E10B	8980H15V08	ST-FILTER	SP030F20V
8902H15B08	ST-FILTER	SP020F20B	891030SMX25FPM	MAHLE	SP300E20V	8980H15V13	ST-FILTER	SP035F20V
8902H15V04	ST-FILTER	SP010F20V	891030SMX25NBR	MAHLE	SP300E20B	8980L03B04	ST-FILTER	SP024E03B
8902H15V08	ST-FILTER	SP020F20V	891030SMX3FPM	MAHLE	SP300E03V	8980L03B08	ST-FILTER	SP030E03B
8902L03B04	ST-FILTER	SP010E03B	891030SMX3NBR	MAHLE	SP300E03B	8980L03B13	ST-FILTER	SP035E03B
8902L03B08	ST-FILTER	SP020E03B	891030SMX6FPM	MAHLE	SP300E05V	8980L03V04	ST-FILTER	SP024E03V
8902L03V04	ST-FILTER	SP010E03V	891030SMX6NBR	MAHLE	SP300E05B	8980L03V08	ST-FILTER	SP030E03V
8902L03V08	ST-FILTER	SP020E03V	891031SMX10FPM	MAHLE	SP200E10V	8980L03V13	ST-FILTER	SP035E03V
8902L06B04	ST-FILTER	SP010E05B	891031SMX10NBR	MAHLE	SP200E10B	8980L06B04	ST-FILTER	SP024E05B
8902L06B08	ST-FILTER	SP020E05B	891031SMX25FPM	MAHLE	SP200E20V	8980L06B08	ST-FILTER	SP030E05B
8902L06V04	ST-FILTER	SP010E05V	891031SMX25NBR	MAHLE	SP200E20B	8980L06B13	ST-FILTER	SP035E05B
8902L06V08	ST-FILTER	SP020E05V	891031SMX3FPM	MAHLE	SP200E03V	8980L06V04	ST-FILTER	SP024E05V
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8902L12B08	ST-FILTER	SP020E10B	891031SMX6FPM	MAHLE	SP200E05V	8980L06V13	ST-FILTER	SP035E05V
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8902L12V08	ST-FILTER	SP020E10V	8940L03B13	ST-FILTER	SP110E03B	8980L12B08	ST-FILTER	SP030E10B
8902L25B04	ST-FILTER	SP010E20B	8940L03B26	ST-FILTER	SP170E03B	8980L12B13	ST-FILTER	SP035E10B
8902L25B08	ST-FILTER	SP020E20B	8940L03B39	ST-FILTER	SP250E03B	8980L12V04	ST-FILTER	SP024E10V
8902L25V04								

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8990H15B39	ST-FILTER	SP250F20B	930118	PARKER	SP070E20B	9640012151	MAHLE	SL005E10B
8990H15V13	ST-FILTER	SP110F20V	930119	PARKER	SP070E20V	9640012152	MAHLE	SL005E20B
8990H15V26	ST-FILTER	SP170F20V	930162	PARKER	SP090E20B	9640012190	MAHLE	SL005B40B
8990H15V39	ST-FILTER	SP250F20V	930163	PARKER	SP090E20V	9640013103	MAHLE	SL010K10B
9020412UM	TRIBOGUARD	SP010E10B	930164	PARKER	SP130E20B	9640013105	MAHLE	SL010K20B
9020412UMV	TRIBOGUARD	SP010E10V	930165	PARKER	SP130E20V	9640013112	MAHLE	SL010K10B
9020425UM	TRIBOGUARD	SP010E20B	930367	PARKER	SP010E20B	9640013113	MAHLE	SL010B25B
9020425UMV	TRIBOGUARD	SP010E20V	930369	PARKER	SP010E20V	9640013114	MAHLE	SL010B60B
902043UM	TRIBOGUARD	SP010E03B	930370	PARKER	SP020E20B	9640013115	MAHLE	SL010B100B
902043UMV	TRIBOGUARD	SP010E03V	9312117	MAHLE	RL008E03B	9640013150	MAHLE	SL010E03B
902046UM	TRIBOGUARD	SP010E05B	9312125	MAHLE	RL008E10B	9640013151	MAHLE	SL010E10B
902046UMV	TRIBOGUARD	SP010E05V	9312133	MAHLE	RL008E20B	9640013152	MAHLE	SL010E20B
9020812UM	TRIBOGUARD	SP020E10B	9312158	MAHLE	RL009E03B	9640013190	MAHLE	SL010B40B
9020812UMV	TRIBOGUARD	SP020E10V	9312166	MAHLE	RL009E10B	9640014103	MAHLE	SL022K10B
9020825UM	TRIBOGUARD	SP020E20B	9312174	MAHLE	RL009E20B	9640014105	MAHLE	SL022K20B
9020825UMV	TRIBOGUARD	SP020E20V	932148	PARKER	SP300E10B	9640014112	MAHLE	SL022B10B
902083UM	TRIBOGUARD	SP020E03B	932159	PARKER	SP300E03B	9640014113	MAHLE	SL022B25B
902083UMV	TRIBOGUARD	SP020E03V	932188	PARKER	SP300E05B	9640014114	MAHLE	SL022B60B
902086UM	TRIBOGUARD	SP020E05B	94001312UM	TRIBOGUARD	SP110E10B	9640014115	MAHLE	SL022B100B
902086UMV	TRIBOGUARD	SP020E05V	94001312UMV	TRIBOGUARD	SP110E10V	9640014150	MAHLE	SL022E03B
9021415UM	TRIBOGUARD	SP010F10B	94001325UM	TRIBOGUARD	SP110E20B	9640014151	MAHLE	SL022E10B
9021415UMV	TRIBOGUARD	SP010F10V	94001325UMV	TRIBOGUARD	SP110E20V	9640014152	MAHLE	SL022E20B
902142UM	TRIBOGUARD	SP010F03B	9400133UM	TRIBOGUARD	SP110E03B	9640014190	MAHLE	SL022B40B
902142UMV	TRIBOGUARD	SP010F03V	9400133UMV	TRIBOGUARD	SP110E03V	9640046103	MAHLE	ML070K10B
9021815UM	TRIBOGUARD	SP020F10B	9400136UM	TRIBOGUARD	SP110E05B	9640046105	MAHLE	ML070K20B
9021815UMV	TRIBOGUARD	SP020F10V	9400136UMV	TRIBOGUARD	SP110E05V	9640046112	MAHLE	ML070B10B
902182UM	TRIBOGUARD	SP020F03B	94002612UM	TRIBOGUARD	SP170E10B	9640046113	MAHLE	ML070B25B
902182UMV	TRIBOGUARD	SP020F03V	94002612UMV	TRIBOGUARD	SP170E10V	9640046114	MAHLE	ML070B60B
925347	PARKER	SP020E20B	94002625UM	TRIBOGUARD	SP170E20B	9640046115	MAHLE	ML070B100B
925580	PARKER	SP010E10V	94002625UMV	TRIBOGUARD	SP170E20V	9640046150	MAHLE	ML070E03B
925582	PARKER	SP010E03V	9400263UM	TRIBOGUARD	SP170E03B	9640046151	MAHLE	ML070E10B
925598	PARKER	SP020E10B	9400263UMV	TRIBOGUARD	SP170E03V	9640046152	MAHLE	ML070E20B
925600	PARKER	SP020E05B	9400266UM	TRIBOGUARD	SP170E05B	9640509103	MAHLE	SL014D10B
925602	PARKER	SP020E03B	9400266UMV	TRIBOGUARD	SP170E05V	9640509105	MAHLE	SL014D20B
925664	PARKER	SP010F03V	94003912UM	TRIBOGUARD	SP250E10B	9640509112	MAHLE	SL014B10B
925666	PARKER	SP010F20B	94003912UMV	TRIBOGUARD	SP250E10V	9640509113	MAHLE	SL014B25B
925669	PARKER	SP020F03B	94003925UM	TRIBOGUARD	SP250E20B	9640509114	MAHLE	SL014B60B
925671	PARKER	SP020F20V	94003925UMV	TRIBOGUARD	SP250E20V	9640509115	MAHLE	SL014B100B
926696	PARKER	SP045E03B	9400393UM	TRIBOGUARD	SP250E03B	9640509150	MAHLE	SL014E03B
926697	PARKER	SP070E03B	9400393UMV	TRIBOGUARD	SP250E03V	9640509151	MAHLE	SL014E10B
926698	PARKER	SP090E03B	9400396UM	TRIBOGUARD	SP250E05B	9640509152	MAHLE	SL014E20B
926699	PARKER	SP130E03B	9400396UMV	TRIBOGUARD	SP250E05V	9640509190	MAHLE	SL014B40B
926716	PARKER	SP045E03V	9531710101	MAHLE	LL090L05B	9640510103	MAHLE	SL020D10B
926717	PARKER	SP070E03V	9531710103	MAHLE	LL090L10B	9640510105	MAHLE	SL020D20B
926718	PARKER	SP090E03V	9531710105	MAHLE	LL090L20B	9640510112	MAHLE	SL020B10B
926719	PARKER	SP130E03V	9531710150	MAHLE	LL090E03B	9640510113	MAHLE	SL020B25B
926835	PARKER	SP045E10B	9531710151	MAHLE	LL090E10B	9640510114	MAHLE	SL020B60B
926836	PARKER	SP045E10V	9531710152	MAHLE	LL090E20B	9640510115	MAHLE	SL020B100B
926837	PARKER	SP070E10B	9531711101	MAHLE	LL160L05B	9640510150	MAHLE	SL020E03B
926838	PARKER	SP070E10V	9531711103	MAHLE	LL160L10B	9640510151	MAHLE	SL020E10B
926839	PARKER	SP090E10B	9531711105	MAHLE	LL160L20B	9640510152	MAHLE	SL020E20B
926840	PARKER	SP090E10V	9531711150	MAHLE	LL160E03B	9640510190	MAHLE	SL020B40B
926841	PARKER	SP130E10B	9531711151	MAHLE	LL160E10B	9640511103	MAHLE	SL030D10B
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926889	PARKER	SP130E10V	96001312UM	TRIBOGUARD	SP090E10B	9640511112	MAHLE	SL030B10B
926990	PARKER	SP070E10BOBE	96001312UMV	TRIBOGUARD	SP090E10V	9640511113	MAHLE	SL030B25B
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926992	PARKER	SP070E03BOBE	96001325UMV	TRIBOGUARD	SP090E20V	9640511115	MAHLE	SL030B100B
926993	PARKER	SP070E03VOBE	9600133UM	TRIBOGUARD	SP090E03B	9640511150	MAHLE	SL030E03B
926996	PARKER	SP130E10BOBE	9600133UMV	TRIBOGUARD	SP090E03V	9640511151	MAHLE	SL030E10B
926997	PARKER	SP130E10VOBE	9600136UM	TRIBOGUARD	SP090E05B	9640511152	MAHLE	SL030E20B
926998	PARKER	SP130E03BOBE	9600136UMV	TRIBOGUARD	SP090E05V	9640511190	MAHLE	SL030B40B
926999	PARKER	SP130E03VOBE	96001612UM	TRIBOGUARD	SP130E10B	9640512103	MAHLE	SL045D10B
927169	PARKER	SP045F20B	96001612UMV	TRIBOGUARD	SP130E10V	9640512105	MAHLE	SL045D20B
927170	PARKER	SP045F03B	96001625UM	TRIBOGUARD	SP130E20B	9640512112	MAHLE	SL045B10B
927172	PARKER	SP045F20V	96001625UMV	TRIBOGUARD	SP130E20V	9640512113	MAHLE	SL045B25B
927173	PARKER	SP045F03V	9600163UM	TRIBOGUARD	SPL30E03B	9640512114	MAHLE	SL045B60B
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927176	PARKER	SP070F03B	9600166UM	TRIBOGUARD	SP130E05B	9640512150	MAHLE	SL045E03B
927178	PARKER	SP070F20V	9600166UMV	TRIBOGUARD	SP130E05V	9640512151	MAHLE	SL045E10B
927179	PARKER	SP070F03V	9600412UM	TRIBOGUARD	SP045E10B	9640512152	MAHLE	SL045E20B
927181	PARKER	SP090F20B	9600412UMV	TRIBOGUARD	SP045E10V	9640512190	MAHLE	SL045B40B
927182	PARKER	SP090F03B	9600425UM	TRIBOGUARD	SP045E20B	9640513103	MAHLE	SL090D10B
927184	PARKER	SP090F20V	9600425UMV	TRIBOGUARD	SP045E20V	9640513105	MAHLE	SL090D20B
927185	PARKER	SP090F03V	960043UM	TRIBOGUARD	SP045E03B	9640513112	MAHLE	SL090B10B
927661	PARKER	SP100E10B	960043UMV	TRIBOGUARD	SP045E03V	9640513113	MAHLE	SL090B25B
927662	PARKER	SP100E10V	960046UM	TRIBOGUARD	SP045E05B	9640513114	MAHLE	SL090B60B
927663	PARKER	SP100E05B	960046UMV	TRIBOGUARD	SP045E05V	9640513115	MAHLE	SL090B100B
927664	PARKER	SP100E05V	9600812UM	TRIBOGUARD	SP070E10B	9640513150	MAHLE	SL090E03B
927666	PARKER	SP200E10B	9600812UMV	TRIBOGUARD	SP070E10V	9640513151	MAHLE	SL090E10B
927667	PARKER	SP200E10V	9600825UM	TRIBOGUARD	SP070E20B	9640513152	MAHLE	SL090E20B
927668	PARKER	SP200E05B	9600825UMV	TRIBOGUARD	SP070E20V	9640513190	MAHLE	SL090B40B
927669	PARKER	SP200E05V	960083UM	TRIBOGUARD	SP070E03B	9640514103	MAHLE	SL125D10B
927694	PARKER	SP020F20B	960083UMV	TRIBOGUARD	SP070E03V	9640514105	MAHLE	SL125D20B
927696	PARKER	SP010F20B	960086UM	TRIBOGUARD	SP070E05B	9640514112	MAHLE	SL125B10B
927723	PARKER	SP020F03V	960086UMV	TRIBOGUARD	SP070E05V	9640514113	MAHLE	SL125B25B
927725	PARKER	SP010F03V	96011315UM	TRIBOGUARD	SP090F10B	9640514114	MAHLE	SL125B60B
927861	PARKER	SP100E03B	96011315UMV	TRIBOGUARD	SP090F10V	9640514115	MAHLE	SL125B100B
927862	PARKER	SP100E03V	9601132UM	TRIBOGUARD	SP090F03B	9640514150	MAHLE	SL125E03B
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927864	PARKER	SP200E03V	96011615UM	TRIBOGUARD	SP130F10B	9640514152	MAHLE	SL125E20B
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927946	PARKER	SP300E10B	9601162UM	TRIBOGUARD	SP130F03B	9650003109	MAHLE	SL035F10B
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928085	PARKER	SP300E05V	9601415UM	TRIBOGUARD	SP045F10B	9650003153	MAHLE	SL035D20B
928086	PARKER	SP300E03V	9601415UMV	TRIBOGUARD	SP045F10V	9650003154	MAHLE	SL035E03B
928087	PARKER	SP300E10V	960142UM	TRIBOGUARD	SP045F03B	9650003155	MAHLE	SL035E10B
928142	PARKER	SP130F20B	9601815UM	TRIBOGUARD	SP070F10B	9650012109	MAHLE	SL005D10B
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928144	PARKER	SP130F20V	960182UM	TRIBOGUARD	SP070F03B	9650012117	MAHLE	SL005W10B
928152	PARKER	SP070F03BOBE	960182UMV	TRIBOGUARD	SP070F03V	9650012118	MAHLE	SL005W25B
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928934	PARKER	SP010E10B	9640003112	MAHLE	SL035B10B	9650012145	MAHLE	SL005W40B
928935	PARKER	SP010E03B	9640003113	MAHLE	SL035B25B	9650012153	MAHLE	SL005F03B
929099	PARKER	SP100E20B	9640003114	MAHLE	SL035B60B	9650012154	MAHLE	SL005F10B
929100	PARKER	SP100E20V	9640003115	MAHLE	SL035B100B	9650012155	MAHLE	SL005F20B
929102	PARKER	SP100E20B	9640003117	MAHLE	SL035W10B	9650013109	MAHLE	SL010D10B
929105	PARKER	SP200E20B	9640003118	MAHLE	SL035W25B	9650013111	MAHLE	SL010D20B
929106	PARKER	SP200E20V	9640003119	MAHLE	SL035W60B	9650013117	MAHLE	SL010W10B
929108	PARKER	SP200E03B	9640003120	MAHLE	SL035W100B	9650013118	MAHLE	SL010W25B
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code code bezeichnung código	brand marque hersteller marca		code code bezeichnung código	brand marque hersteller marca		code code bezeichnung código	brand marque hersteller marca	
9650014119	MAHLE	SL022W60B	9700036105	MAHLE	LL080L20B	BE110P12AHR	BEHRINGER	SE030H10B
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96501612UM	TRIBOGUARD	SP130E10B0BE	9700066113	MAHLE	RL020B25B	BE1300R03AR43	BEHRINGER	RE300G03B
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9650825UM	TRIBOGUARD	SP070E20B0BE	980083UM	TRIBOGUARD	SP030E03B	BE160P25WR	BEHRINGER	SE045G20B
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965086UMV	TRIBOGUARD	SP070E05V0BE	9801132UM	TRIBOGUARD	SP035F03B	BE160R03MR43	BEHRINGER	RE045A03B
96511615UM	TRIBOGUARD	SP130F10B0BE	9801415UM	TRIBOGUARD	SP024F10B	BE160R06A43	BEHRINGER	RE045G05B
96511615UMV	TRIBOGUARD	SP130F10V0BE	9801415UMV	TRIBOGUARD	SP024F10V	BE160R06AR43	BEHRINGER	RE045G05B
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9651815UM	TRIBOGUARD	SP070F10B0BE	9801815UM	TRIBOGUARD	SP030F10B	BE160R12AR43	BEHRINGER	RE045G10B
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965182UM	TRIBOGUARD	SP070F03B0BE	980182UM	TRIBOGUARD	SP030F03B	BE160R149W43	BEHRINGER	RE045S100B
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BE330R12A43	BEHRINGER							

code code bezeichnung código	brand marque hersteller marca		code code bezeichnung código	brand marque hersteller marca		code code bezeichnung código	brand marque hersteller marca	
BE96001612A	BEHRINGER	SP130E10B	D120G25A	FILTREC	SP024E20B	DE3041B1C10	DENISON	SP010E010B
BE96001625A	BEHRINGER	SP130E20B	D120G25B	FILTREC	SP024F20B	DE3041B2C03	DENISON	SP020E003B
BE96001625AV	BEHRINGER	SP130E20V	D121G03A	FILTREC	SP030E03B	DE3041B2C05	DENISON	SP020E005B
BE9600403A	BEHRINGER	SP045E03B	D121G03B	FILTREC	SP030F03B	DE3041B2C10	DENISON	SP020E010B
BE9600403AV	BEHRINGER	SP045E03V	D121G06A	FILTREC	SP030E05B	DE3045B1H03	DENISON	SP010F003B
BE9600406A	BEHRINGER	SP045E05B	D121G10A	FILTREC	SP030E10B	DE3045B1H10	DENISON	SP010F010B
BE9600406AV	BEHRINGER	SP045E05V	D121G25A	FILTREC	SP030E20B	DE3045B2H03	DENISON	SP020F003B
BE9600412A	BEHRINGER	SP045E10B	D121G25B	FILTREC	SP030F20B	DE3045B2H10	DENISON	SP020F010B
BE9600412AV	BEHRINGER	SP045E10V	D122G03A	FILTREC	SP035E03B	DE6011B1C03	DENISON	SP024E003B
BE9600425A	BEHRINGER	SP045E20B	D122G03B	FILTREC	SP035F03B	DE6011B1C05	DENISON	SP024E005B
BE9600425AV	BEHRINGER	SP045E20V	D122G06A	FILTREC	SP035E05B	DE6011B1C10	DENISON	SP024E010B
BE9600803A	BEHRINGER	SP070E03B	D122G10A	FILTREC	SP035E10B	DE6011B1C20	DENISON	SP024E020B
BE9600803AV	BEHRINGER	SP070E03V	D122G25A	FILTREC	SP035E20B	DE6011B2C03	DENISON	SP030E003B
BE9600806A	BEHRINGER	SP070E05B	D122G25B	FILTREC	SP035F20B	DE6011B2C05	DENISON	SP030E005B
BE9600806AV	BEHRINGER	SP070E05V	D140G03A	FILTREC	SP045E03B	DE6011B2C10	DENISON	SP030E010B
BE9600812A	BEHRINGER	SP070E10B	D140G03B	FILTREC	SP045F03B	DE6014B1H03	DENISON	SP024F003B
BE9600812AV	BEHRINGER	SP070E10V	D140G06A	FILTREC	SP045E05B	DE6014B1H10	DENISON	SP024F010B
BE9600825A	BEHRINGER	SP070E20B	D140G10A	FILTREC	SP045E10B	DE6014B2H03	DENISON	SP030F003B
BE9600825AV	BEHRINGER	SP070E20V	D140G25A	FILTREC	SP045E20B	DE6014B2H10	DENISON	SP030F010B
BE96011303A	BEHRINGER	SP090F03B	D140G25B	FILTREC	SP045F20B	DE6021B1C03	DENISON	SP045E003B
BE96011303AV	BEHRINGER	SP090F03V	D141G03A	FILTREC	SP070E03B	DE6021B1C05	DENISON	SP045E005B
BE96011312A	BEHRINGER	SP090F10B	D141G03B	FILTREC	SP070F03B	DE6021B1C10	DENISON	SP045E010B
BE96011603A	BEHRINGER	SP130F03B	D141G06A	FILTREC	SP070E05B	DE6021B1C20	DENISON	SP045E020B
BE96011603AV	BEHRINGER	SP130F03V	D141G10A	FILTREC	SP070E10B	DE6021B2C03	DENISON	SP045E003B
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BE9601403A	BEHRINGER	SP045F03B	D141G25B	FILTREC	SP070F20B	DE6021B2C10	DENISON	SP070E010B
BE9601403AV	BEHRINGER	SP045F03V	D142G03A	FILTREC	SP090E03B	DE6021B2C20	DENISON	SP070E020B
BE9601412A	BEHRINGER	SP045F10B	D142G03B	FILTREC	SP090F03B	DE6021B4C03	DENISON	SP090E003B
BE9601803A	BEHRINGER	SP070F03B	D142G06A	FILTREC	SP090E05B	DE6021B4C05	DENISON	SP090E005B
BE9601803AV	BEHRINGER	SP070F03V	D142G10A	FILTREC	SP090E10B	DE6021B4C10	DENISON	SP090E010B
BE9601812A	BEHRINGER	SP070F10B	D142G25A	FILTREC	SP090E20B	DE6021B4C20	DENISON	SP090E020B
BE9601812AV	BEHRINGER	SP070F10V	D142G25B	FILTREC	SP090F20B	DE6021B5C03	DENISON	SP130E003B
BE96501603A	BEHRINGER	SP130E03BOBE	D143G03A	FILTREC	SP130E03B	DE6021B5C05	DENISON	SP130E005B
BE96501603AV	BEHRINGER	SP130E03V	D143G03B	FILTREC	SP130F03B	DE6021B5C10	DENISON	SP130E010B
BE96501606A	BEHRINGER	SP130E05BOBE	D143G06A	FILTREC	SP130E05B	DE6021B5C20	DENISON	SP130E020B
BE96501612A	BEHRINGER	SP130E10BOBE	D143G10A	FILTREC	SP130E10B	DE6024B1H03	DENISON	SP045F003B
BE96501625A	BEHRINGER	SP130E20BOBE	D143G25A	FILTREC	SP130E20B	DE6024B1H10	DENISON	SP045F010B
BE9650803A	BEHRINGER	SP070E03BOBE	D143G25B	FILTREC	SP130F20B	DE6024B2H03	DENISON	SP070F003B
BE9650806A	BEHRINGER	SP070E05BOBE	D610G03	FILTREC	SP120E03B	DE6024B2H10	DENISON	SP070F010B
BE9650812A	BEHRINGER	SP070E10BOBE	D610G06	FILTREC	SP120E05B	DE6024B4H03	DENISON	SP090F003B
BE9650825A	BEHRINGER	SP070E20BOBE	D610G10	FILTREC	SP120E10B	DE6024B4H10	DENISON	SP090F010B
BE965011603A	BEHRINGER	SP130F03BOBE	D610G25	FILTREC	SP120E20B	DE6024B5H03	DENISON	SP130F003B
BE965011612A	BEHRINGER	SP130F10BOBE	D612G03	FILTREC	SP140E03B	DE6024B5H10	DENISON	SP130F010B
BE9651803A	BEHRINGER	SP070F03BOBE	D612G06	FILTREC	SP140E05B	DHD110A005B	FILTREC	SE030A03B
BE9651803AV	BEHRINGER	SP070F03V	D612G10	FILTREC	SP140E10B	DHD110A05B	FILTREC	SE030A05B
BE9651812A	BEHRINGER	SP070F10BOBE	D612G25	FILTREC	SP140E20B	DHD110A10B	FILTREC	SE030A10B
BE9800403A	BEHRINGER	SP024E03B	D614G03	FILTREC	SP160E03B	DHD110A20B	FILTREC	SE030A20B
BE9800406A	BEHRINGER	SP024E05B	D614G06	FILTREC	SP160E05B	DHD110B100B	FILTREC	SE030B100B
BE9800406AV	BEHRINGER	SP024E05V	D614G10	FILTREC	SP160E10B	DHD110B25B	FILTREC	SE030B25B
BE9800412A	BEHRINGER	SP024E10B	D614G25	FILTREC	SP160E20B	DHD110B50B	FILTREC	SE030B40B
BE9800425A	BEHRINGER	SP024E20B	D615G03	FILTREC	SP180E03B	DHD110D03B	FILTREC	SE030D03B
BE9800803A	BEHRINGER	SP030E03B	D615G06	FILTREC	SP180E05B	DHD110D05B	FILTREC	SE030D05B
BE9800803AV	BEHRINGER	SP030E03V	D615G10	FILTREC	SP180E10B	DHD110D10B	FILTREC	SE030D10B
BE9800806A	BEHRINGER	SP030E05B	D615G25	FILTREC	SP180E20B	DHD110D20B	FILTREC	SE030D20B
BE9800806AV	BEHRINGER	SP030E05V	D620G03	FILTREC	SP110E03B	DHD110E03B	FILTREC	SE030E03B
BE9800812A	BEHRINGER	SP030E10B	D620G06	FILTREC	SP110E05B	DHD110E05B	FILTREC	SE030E05B
BE9800825A	BEHRINGER	SP030E20B	D620G10	FILTREC	SP110E10B	DHD110E10B	FILTREC	SE030E10B
BE98011303A	BEHRINGER	SP035F03B	D620G25	FILTREC	SP110E20B	DHD110E20B	FILTREC	SE030E20B
BE98011312A	BEHRINGER	SP035F10B	D622G03	FILTREC	SP170E03B	DHD110F03B	FILTREC	SE030F03B
BE9801403A	BEHRINGER	SP024F03B	D622G06	FILTREC	SP170E05B	DHD110F05B	FILTREC	SE030F05B
BE9801403AV	BEHRINGER	SP024F03V	D622G10	FILTREC	SP170E10B	DHD110F10B	FILTREC	SE030F10B
BE9801412A	BEHRINGER	SP024F10B	D622G25	FILTREC	SP170E20B	DHD110F20B	FILTREC	SE030F20B
BE9801803A	BEHRINGER	SP030F03B	D624G03	FILTREC	SP250E03B	DHD110G03B	FILTREC	SE030G03B
BE9801812A	BEHRINGER	SP030F10B	D624G06	FILTREC	SP250E05B	DHD110G05B	FILTREC	SE030G05B
BE9801812AV	BEHRINGER	SP030F10V	D624G10	FILTREC	SP250E10B	DHD110G10B	FILTREC	SE030G10B
BE99011303A	BEHRINGER	SP110F03B	D624G25	FILTREC	SP250E20B	DHD110G20B	FILTREC	SE030G20B
BE99011312A	BEHRINGER	SP110F10B	D640G03	FILTREC	SP110F03B	DHD110H03B	FILTREC	SE030H03B
BE99012603A	BEHRINGER	SP170F03B	D640G25	FILTREC	SP110F20B	DHD110H05B	FILTREC	SE030H05B
BE99012606A	BEHRINGER	SP170F05B	D642G03	FILTREC	SP170F03B	DHD110H10B	FILTREC	SE030H10B
BE99012612A	BEHRINGER	SP170F10B	D642G25	FILTREC	SP170F20B	DHD110H20B	FILTREC	SE030H20B
BE99012625A	BEHRINGER	SP170F20B	D644G03	FILTREC	SP250F03B	DHD140A03B	FILTREC	SE035A03B
BE99013903A	BEHRINGER	SP250F03B	D644G25	FILTREC	SP250F20B	DHD140A05B	FILTREC	SE035A05B
BE99013906A	BEHRINGER	SP250F05B	DE0112B2C03	DENISON	SE030G03B	DHD140A10B	FILTREC	SE035A10B
BE99013912A	BEHRINGER	SP250F10B	DE0112B2C10	DENISON	SE030G10B	DHD140A20B	FILTREC	SE035A20B
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BEK903A	BEHRINGER	RTE48G03B	DE0114B2H03	DENISON	SE030H03B	DHD140B25B	FILTREC	SE035B25B
BEK906A	BEHRINGER	RTE48G05B	DE0114B2H10	DENISON	SE030H10B	DHD140B50B	FILTREC	SE035B40B
BEK912A	BEHRINGER	RTE48G10B	DE0162B1C03	DENISON	SE045G03B	DHD140G03B	FILTREC	SE035G03B
BEK925A	BEHRINGER	RTE48G20B	DE0162B1C10	DENISON	SE045G10B	DHD140G05B	FILTREC	SE035G05B
BS0128E06A38	BEHRINGER	SF6704-MG	DE0162B1C20	DENISON	SE045G20B	DHD140G10B	FILTREC	SE035G10B
BS0128S06A38	BEHRINGER	SF6706-MG	DE0164B1H03	DENISON	SE045H03B	DHD140G20B	FILTREC	SE035G20B
BS0128E06A38	BEHRINGER	SF6707-MG	DE0164B1H10	DENISON	SE045H10B	DHD140H03B	FILTREC	SE035H03B
BS0128E12A38	BEHRINGER	SF6731-MG	DE0211B1P10	DENISON	SF6720	DHD140H05B	FILTREC	SE035H05B
BS0128E25A38	BEHRINGER	SF6726-MG	DE0211B1P20	DENISON	SF6710	DHD140H10B	FILTREC	SE035H10B
BS0128S12A38	BEHRINGER	SF6730-MG	DE0211B1R10	DENISON	SF6730MG	DHD140H20B	FILTREC	SE035H20B
BS0128S25A38	BEHRINGER	SF6728-MG	DE0211B2P10	DENISON	SF6721	DHD160A03B	FILTREC	SE045A03B
CSG100A03	MP FILTRI	SF6703-MG	DE0211B2P20	DENISON	SF6711	DHD160A05B	FILTREC	SE045A05B
CSG100A06	MP FILTRI	SF6706-MG	DE0211B2R05	DENISON	SF6707MG	DHD160A10B	FILTREC	SE045A10B
CSG100A10	MP FILTRI	SF6730-MG	DE0211B2R10	DENISON	SF6731MG	DHD160A20B	FILTREC	SE045A20B
CSG100P10A	MP FILTRI	SF6720	DE0242B2C03	DENISON	SE070G03B	DHD160B100B	FILTREC	SE045B100B
CSG100P25A	MP FILTRI	SF6710	DE0242B2C10	DENISON	SE070G10B	DHD160B25B	FILTREC	SE045B25B
CSG50A10A	MP FILTRI	SF6505	DE0242B2C20	DENISON	SE070G20B	DHD160B50B	FILTREC	SE045B40B
CSG50A25A	MP FILTRI	SF6504	DE0244B2H03	DENISON	SE070H03B	DHD160D03B	FILTREC	SE045D03B
CSG50P10A	MP FILTRI	SF6520	DE0244B2H10	DENISON	SE070H10B	DHD160D05B	FILTREC	SE045D05B
CSG50P25A	MP FILTRI	SF6510	DE0332B2C03	DENISON	SE090G03B	DHD160D10B	FILTREC	SE045D10B
CU100A10N	MP FILTRI	RUM-027-G10-B	DE0332B2C10	DENISON	SE090G10B	DHD160D20B	FILTREC	SE045D20B
CU100M60N	MP FILTRI	RUM-027-S60-B	DE0332B2C20	DENISON	SE090G20B	DHD160E03B	FILTREC	SE045E03B
CU200A10N	MP FILTRI	RUM-053-G10-B	DE0334B2H03	DENISON	SE090H03B	DHD160E05B	FILTREC	SE045E05B
CU250A06N	MP FILTRI	RUM-066-G06-B	DE0334B2H10	DENISON	SE090H10B	DHD160E10B	FILTREC	SE045E10B
CU250A10N	MP FILTRI	RUM-066-G10-B	DE0411B2C03	DENISON	SP100E003B	DHD160E20B	FILTREC	SE045E20B
CU250M60N	MP FILTRI	RUM-066-S60-B	DE0411B2C05	DENISON	SP100E005B	DHD160F03B	FILTREC	SE045F03B
CU630A06N	MP FILTRI	RUM-166-G06-B	DE0411B2C10	DENISON	SP100E010B	DHD160F05B	FILTREC	SE045F05B
CU630A10N	MP FILTRI	RUM-166-G10-B	DE0411B2C20	DENISON	SP100E020B	DHD160F10B	FILTREC	SE045F10B
CU630M60N	MP FILTRI	RUM-166-S60-B	DE0411B5C03	DENISON	SP200E003B	DHD160F20B	FILTREC	SE045F20B
CU850A10N	MP FILTRI	RUM-224-G10-B	DE0411B5C05	DENISON	SP200E005B	DHD160G03B	FILTREC	SE045G03B
D111G03A	FILTREC	SP010E03B	DE0411B5C10	DENISON	SP200E010B	DHD160G05B	FILTREC	SE045G05B
D111G03B	FILTREC	SP010F03B	DE0411B5C20	DENISON	SP200E020B	DHD160G10B	FILTREC	SE045G10B
D111G06A	FILTREC	SP010E05B	DE0411B8C03	DENISON	SP300E003B	DHD160G20B	FILTREC	SE045G20B
D111G10A	FILTREC	SP010E10B	DE0411B8C05	DENISON	SP300E005B	DHD160H03B	FILTREC	SE045H03B
D111G25A	FILTREC	SP010E20B	DE0411B8C10	DENISON	SP300E010B	DHD160H05B	FILTREC	SE045H05B
D111G25B	FILTREC	SP010F20B	DE0411B8C20	DENISON	SP300E020B	DHD160H10B	FILTREC	SE045H10B
D112G03A	FILTREC	SP020E03B	DE0602B1C03	DENISON	SE014G03B	DHD160H20B	FILTREC	SE045H20B
D112G03B	FILTREC	SP020F03B	DE0602B1C10	DENISON	SE014G10B	DHD240A03B	FILTREC	SE070A03B
D112G06A	FILTREC	SP020E05B	DE0604B1H03	DENISON	SE014H03B			

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DHD240D10B	FILTREC	SE070D1B	DHD660A20B	FILTREC	SE160A20B	DMD0030W25B	FILTREC	SL090W25B
DHD240D20B	FILTREC	SE070D20B	DHD660B100B	FILTREC	SE160B100B	DMD0030W40B	FILTREC	SL090W40B
DHD240E03B	FILTREC	SE070E03B	DHD660B25B	FILTREC	SE160B25B	DMD0030W60B	FILTREC	SL090W60B
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DHD240F03B	FILTREC	SE070F03B	DHD660D10B	FILTREC	SE160D10B	DMD0045B40B	FILTREC	SL125B40B
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DHD240G20B	FILTREC	SE070G20B	DHD660F05B	FILTREC	SE160F05B	DMD0045E20B	FILTREC	SL125E20B
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DHD30A03B	FILTREC	SE008A03B	DHD660G10B	FILTREC	SE160G10B	DMD0045W10B	FILTREC	SL125W10B
DHD30A05B	FILTREC	SE008A05B	DHD660G20B	FILTREC	SE160G20B	DMD0045W25B	FILTREC	SL125W25B
DHD30A10B	FILTREC	SE008A10B	DHD660H03B	FILTREC	SE160H03B	DMD0045W40B	FILTREC	SL125W40B
DHD30A20B	FILTREC	SE008A20B	DHD660H05B	FILTREC	SE160H05B	DMD0045W60B	FILTREC	SL125W60B
DHD30B25B	FILTREC	SE008B25B	DHD660H10B	FILTREC	SE160H10B	DMD034B100B	FILTREC	SL035B100B
DHD30B50B	FILTREC	SE008B40B	DHD660H20B	FILTREC	SE160H20B	DMD034B10B	FILTREC	SL035B10B
DHD30D03B	FILTREC	SE008D03B	DMD0005B100B	FILTREC	SL014B100B	DMD034B25B	FILTREC	SL035B25B
DHD30D05B	FILTREC	SE008D05B	DMD0005B10B	FILTREC	SL014B10B	DMD034B60B	FILTREC	SL035B60B
DHD30D20B	FILTREC	SE008D20B	DMD0005B25B	FILTREC	SL014B25B	DMD034D10B	FILTREC	SL035D10B
DHD30E03B	FILTREC	SE008E03B	DMD0005B40B	FILTREC	SL014B40B	DMD034D20B	FILTREC	SL035D20B
DHD30E05B	FILTREC	SE008E05B	DMD0005B60B	FILTREC	SL014B60B	DMD034E03B	FILTREC	SL035E03B
DHD30E10B	FILTREC	SE008E10B	DMD0005D10B	FILTREC	SL014D10B	DMD034E10B	FILTREC	SL035E10B
DHD30E20B	FILTREC	SE008E20B	DMD0005D20B	FILTREC	SL014D20B	DMD034E20B	FILTREC	SL035E20B
DHD30F03B	FILTREC	SE008F03B	DMD0005E03B	FILTREC	SL014E03B	DMD034F03B	FILTREC	SL035F03B
DHD30F05B	FILTREC	SE008F05B	DMD0005E05B	FILTREC	SL014E05B	DMD034F10B	FILTREC	SL035F10B
DHD30F10B	FILTREC	SE008F10B	DMD0005E10B	FILTREC	SL014E10B	DMD034F20B	FILTREC	SL035F20B
DHD30F20B	FILTREC	SE008F20B	DMD0005E20B	FILTREC	SL014E20B	DMD034K10B	FILTREC	SL035K10B
DHD330A03B	FILTREC	SE090A03B	DMD0005F03B	FILTREC	SL014F03B	DMD034K20B	FILTREC	SL035K20B
DHD330A05B	FILTREC	SE090A05B	DMD0005F05B	FILTREC	SL014F05B	DMD034W100B	FILTREC	SL035W100B
DHD330A10B	FILTREC	SE090A10B	DMD0005F10B	FILTREC	SL014F10B	DMD034W10B	FILTREC	SL035W10B
DHD330A20B	FILTREC	SE090A20B	DMD0005F20B	FILTREC	SL014F20B	DMD034W25B	FILTREC	SL035W25B
DHD330B100B	FILTREC	SE090B100B	DMD0005W100B	FILTREC	SL014W100B	DMD034W60B	FILTREC	SL035W60B
DHD330B25B	FILTREC	SE090B25B	DMD0005W10B	FILTREC	SL014W10B	DMD059B100B	FILTREC	LL045B100B
DHD330B50B	FILTREC	SE090B40B	DMD0005W25B	FILTREC	SL014W25B	DMD059B10B	FILTREC	LL045B10B
DHD330D03B	FILTREC	SE090D03B	DMD0005W40B	FILTREC	SL014W40B	DMD059B25B	FILTREC	LL045B25B
DHD330D05B	FILTREC	SE090D05B	DMD0005W60B	FILTREC	SL014W60B	DMD059B60B	FILTREC	LL045B60B
DHD330D20B	FILTREC	SE090D20B	DMD0008B100B	FILTREC	SL020B100B	DMD059E10B	FILTREC	LL045E10B
DHD330E03B	FILTREC	SE090E03B	DMD0008B10B	FILTREC	SL020B10B	DMD059E20B	FILTREC	LL045E20B
DHD330E05B	FILTREC	SE090E05B	DMD0008B25B	FILTREC	SL020B25B	DMD059L10B	FILTREC	LL045L10B
DHD330E10B	FILTREC	SE090E10B	DMD0008B40B	FILTREC	SL020B40B	DMD059L20B	FILTREC	LL045L20B
DHD330E20B	FILTREC	SE090E20B	DMD0008B60B	FILTREC	SL020B60B	DMD070B100B	FILTREC	LL050B100B
DHD330F03B	FILTREC	SE090F03B	DMD0008D10B	FILTREC	SL020D10B	DMD070B10B	FILTREC	LL050B10B
DHD330F05B	FILTREC	SE090F05B	DMD0008D20B	FILTREC	SL020D20B	DMD070B25B	FILTREC	LL050B25B
DHD330F10B	FILTREC	SE090F10B	DMD0008E03B	FILTREC	SL020E03B	DMD070B60B	FILTREC	LL050B60B
DHD330F20B	FILTREC	SE090F20B	DMD0008E05B	FILTREC	SL020E05B	DMD070E03B	FILTREC	LL050E03B
DHD330G03B	FILTREC	SE090G03B	DMD0008E10B	FILTREC	SL020E10B	DMD070E10B	FILTREC	LL050E10B
DHD330G05B	FILTREC	SE090G05B	DMD0008E20B	FILTREC	SL020E20B	DMD070E20B	FILTREC	LL050E20B
DHD330G10B	FILTREC	SE090G10B	DMD0008F03B	FILTREC	SL020F03B	DMD070L10B	FILTREC	LL050L10B
DHD330G20B	FILTREC	SE090G20B	DMD0008F05B	FILTREC	SL020F05B	DMD070L20B	FILTREC	LL050L20B
DHD330H03B	FILTREC	SE090H03B	DMD0008F10B	FILTREC	SL020F10B	DMD087B100B	FILTREC	LL100B100B
DHD330H05B	FILTREC	SE090H05B	DMD0008F20B	FILTREC	SL020F20B	DMD087B10B	FILTREC	LL100B10B
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DHD330H20B	FILTREC	SE090H20B	DMD0008W10B	FILTREC	SL020W10B	DMD087B60B	FILTREC	LL100B60B
DHD480A03B	FILTREC	SE125A03B	DMD0008W25B	FILTREC	SL020W25B	DMD087E10B	FILTREC	LL100E10B
DHD480A05B	FILTREC	SE125A05B	DMD0008W40B	FILTREC	SL020W40B	DMD087E20B	FILTREC	LL100E20B
DHD480A10B	FILTREC	SE125A10B	DMD0008W60B	FILTREC	SL020W60B	DMD087L10B	FILTREC	LL100L10B
DHD480A20B	FILTREC	SE125A20B	DMD0011B100B	FILTREC	SL030B100B	DMD087L20B	FILTREC	LL100L20B
DHD480B100B	FILTREC	SE125B100B	DMD0011B10B	FILTREC	SL030B10B	DMD125B100B	FILTREC	SL005B100B
DHD480B25B	FILTREC	SE125B25B	DMD0011B25B	FILTREC	SL030B25B	DMD125B10B	FILTREC	SL005B10B
DHD480B50B	FILTREC	SE125B40B	DMD0011B40B	FILTREC	SL030B40B	DMD125B25B	FILTREC	SL005B25B
DHD480G03B	FILTREC	SE125G03B	DMD0011B60B	FILTREC	SL030B60B	DMD125B40B	FILTREC	SL005B40B
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DHD500A03B	FILTREC	SE130A03B	DMD0011F05B	FILTREC	SL030F05B	DMD125F10B	FILTREC	SL005F10B
DHD500A05B	FILTREC	SE130A05B	DMD0011F10B	FILTREC	SL030F10B	DMD125F20B	FILTREC	SL005F20B
DHD500A10B	FILTREC	SE130A10B	DMD0011F20B	FILTREC	SL030F20B	DMD125K10B	FILTREC	SL005K10B
DHD500A20B	FILTREC	SE130A20B	DMD0011W100B	FILTREC	SL030W100B	DMD125K20B	FILTREC	SL005K20B
DHD500B100B	FILTREC	SE130B100B	DMD0011W10B	FILTREC	SL030W10B	DMD125W100B	FILTREC	SL005W100B
DHD500B25B	FILTREC	SE130B25B	DMD0011W25B	FILTREC	SL030W25B	DMD125W10B	FILTREC	SL005W10B
DHD500B50B	FILTREC	SE130B40B	DMD0011W40B	FILTREC	SL030W40B	DMD125W25B	FILTREC	SL005W25B
DHD500G03B	FILTREC	SE130G03B	DMD0011W60B	FILTREC	SL030W60B	DMD125W40B	FILTREC	SL005W40B
DHD500G05B	FILTREC	SE130G05B	DMD0015B100B	FILTREC	SL045B100B	DMD125W60B	FILTREC	SL005W60B
DHD500G10B	FILTREC	SE130G10B	DMD0015B10B	FILTREC	SL045B10B	DMD126B100B	FILTREC	SL010B100B
DHD500G20B	FILTREC	SE130G20B	DMD0015B25B	FILTREC	SL045B25B	DMD126B10B	FILTREC	SL010B10B
DHD500H03B	FILTREC	SE130H03B	DMD0015B40B	FILTREC	SL045B40B	DMD126B25B	FILTREC	SL010B25B
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DHD60A03B	FILTREC	SE014A03B	DMD0015E03B	FILTREC	SL045E03B	DMD126D20B	FILTREC	SL010D20B
DHD60A05B	FILTREC	SE014A05B	DMD0015E05B	FILTREC	SL045E05B	DMD126E03B	FILTREC	SL010E03B
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DHD60A20B	FILTREC	SE014A20B	DMD0015E20B	FILTREC	SL045E20B	DMD126E20B	FILTREC	SL010E20B
DHD60B100B	FILTREC	SE014B100B	DMD0015F03B	FILTREC	SL045F03B	DMD126F03B	FILTREC	SL010F03B
DHD60B25B	FILTREC	SE014B25B	DMD0015F05B	FILTREC	SL045F05B	DMD126F10B	FILTREC	SL010F10B
DHD60B50B	FILTREC	SE014B40B	DMD0015F10B	FILTREC	SL045F10B	DMD126F20B	FILTREC	SL010F20B
DHD60D03B	FILTREC	SE014D03B	DMD0015F20B	FILTREC	SL045F20B	DMD126K10B	FILTREC	SL010K10B
DHD60D05B	FILTREC	SE014D05B	DMD0015W100B	FILTREC	SL045W100B	DMD126K20B	FILTREC	SL010K20B
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DHD60E03B	FILTREC	SE014E03B	DMD0015W40B	FILTREC	SL045W40B	DMD126W25B	FILTREC	SL010W25B
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DHD60G03B	FILTREC	SE014G03B	DMD0030D20B	FILTREC	SL090D20B	DMD127D10B	FILTREC	SL022D10B
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DHD60G20B	FILTREC	SE014G20B	DMD0030E10B	FILTREC	SL090E10B	DMD127E10B	FILTREC	SL022E10B
DHD60H03B	FILTREC	SE014H03B	DMD0030E20B	FILTREC	SL090E20			




code code bezeichnung código	brand marque hersteller marca		code code bezeichnung código	brand marque hersteller marca		code code bezeichnung código	brand marque hersteller marca	
DMD127W10B	FILTREC	SL022W10B	DVD232B25B	FILTREC	SS008B25B	G0406L	ZINGA	SP010E05B
DMD127W25B	FILTREC	SL022W25B	DVD232B40B	FILTREC	SS008B40B	G0410H	ZINGA	SP010F10B
DMD127W40B	FILTREC	SL022W40B	DVD232B60B	FILTREC	SS008B60B	G0410L	ZINGA	SP010E10B
DMD127W60B	FILTREC	SL022W60B	DVD232E03B	FILTREC	SS008E03B	G0420L	ZINGA	SP010E20B
DMD146B100B	FILTREC	LL155B100B	DVD232E10B	FILTREC	SS008E10B	G0803H	ZINGA	SP020F03B
DMD146B10B	FILTREC	LL155B10B	DVD232E20B	FILTREC	SS008E20B	G0803L	ZINGA	SP020E03B
DMD146B25B	FILTREC	LL155B25B	DVD232F03B	FILTREC	SS008F03B	G0806L	ZINGA	SP020E05B
DMD146B40B	FILTREC	LL155B40B	DVD232F10B	FILTREC	SS008F10B	G0810H	ZINGA	SP020F10B
DMD146B60B	FILTREC	LL155B60B	DVD232F20B	FILTREC	SS008F20B	G0810L	ZINGA	SP020E10B
DMD146E10B	FILTREC	LL155E10B	DVD232K05B	FILTREC	SS008K05B	G0820L	ZINGA	SP020E20B
DMD146E20B	FILTREC	LL155E20B	DVD232K10B	FILTREC	SS008K10B	GCE10	ZINGA	SF6720
DMD146L10B	FILTREC	LL155L10B	DVD236K20B	FILTREC	SS008K20B	H030D03H	ST-FILTER	SE008F03B
DMD146L20B	FILTREC	LL155L20B	DVD236A05B	FILTREC	SS085A05B	H030D03N	ST-FILTER	SE008E03B
DMD264B100B	FILTREC	LL080B100B	DVD236A10B	FILTREC	SS085A10B	H030D03V	ST-FILTER	SE008A03B
DMD264B10B	FILTREC	LL080B10B	DVD236B100B	FILTREC	SS085B100B	H030D05H	ST-FILTER	SE008F05B
DMD264B25B	FILTREC	LL080B25B	DVD236B10B	FILTREC	SS085B10B	H030D05N	ST-FILTER	SE008E05B
DMD264B60B	FILTREC	LL080B60B	DVD236B25B	FILTREC	SS085B25B	H030D05V	ST-FILTER	SE008A05B
DMD264E10B	FILTREC	LL080E10B	DVD236B40B	FILTREC	SS085B40B	H030D100W	ST-FILTER	SE008B100B
DMD264E20B	FILTREC	LL080E20B	DVD236B60B	FILTREC	SS085B60B	H030D10H	ST-FILTER	SE008F10B
DMD264L10B	FILTREC	LL080L10B	DVD236E03B	FILTREC	SS085E03B	H030D10N	ST-FILTER	SE008E10B
DMD264L20B	FILTREC	LL080L20B	DVD236E10B	FILTREC	SS085E10B	H030D10V	ST-FILTER	SE008A10B
DMD362B100B	FILTREC	ML070B100B	DVD236E20B	FILTREC	SS085E20B	H030D20H	ST-FILTER	SE008F20B
DMD362B10B	FILTREC	ML070B10B	DVD236F03B	FILTREC	SS085F03B	H030D20N	ST-FILTER	SE008E20B
DMD362B25B	FILTREC	ML070B25B	DVD236F10B	FILTREC	SS085F10B	H030D20V	ST-FILTER	SE008A20B
DMD362B60B	FILTREC	ML070B60B	DVD236F20B	FILTREC	SS085F20B	H030D25W	ST-FILTER	SE008B25B
DMD362D10B	FILTREC	ML070D10B	DVD236K05B	FILTREC	SS085K05B	H030D40W	ST-FILTER	SE008B50B
DMD362D20B	FILTREC	ML070D20B	DVD236K10B	FILTREC	SS085K10B	H030R03N	ST-FILTER	RE008E03B
DMD362E03B	FILTREC	ML070E03B	DVD236K20B	FILTREC	SS085K20B	H030R03V	ST-FILTER	RE008A03B
DMD362E10B	FILTREC	ML070E10B	DVD246A05B	FILTREC	SS125A05B	H030R05N	ST-FILTER	RE008E05B
DMD362E20B	FILTREC	ML070E20B	DVD246A10B	FILTREC	SS125A10B	H030R05V	ST-FILTER	RE008A05B
DMD362F03B	FILTREC	ML070F03B	DVD246B100B	FILTREC	SS125B100B	H030R100W	ST-FILTER	RE008B100B
DMD362F10B	FILTREC	ML070F10B	DVD246B10B	FILTREC	SS125B10B	H030R10N	ST-FILTER	RE008E10B
DMD362F20B	FILTREC	ML070F20B	DVD246B25B	FILTREC	SS125B25B	H030R10V	ST-FILTER	RE008A10B
DMD362K10B	FILTREC	ML070K10B	DVD246B40B	FILTREC	SS125B40B	H030R20N	ST-FILTER	RE008E20B
DMD362K20B	FILTREC	ML070K20B	DVD246B60B	FILTREC	SS125B60B	H030R20V	ST-FILTER	RE008A20B
DMD362W100B	FILTREC	ML070W100B	DVD246E03B	FILTREC	SS125E03B	H030R25W	ST-FILTER	RE008B25B
DMD362W10B	FILTREC	ML070W10B	DVD246E10B	FILTREC	SS125E10B	H030R40W	ST-FILTER	RE008B50B
DMD362W25B	FILTREC	ML070W25B	DVD246E20B	FILTREC	SS125E20B	H060D03H	ST-FILTER	SE014H03B
DMD362W60B	FILTREC	ML070W60B	DVD246F03B	FILTREC	SS125F03B	H060D03N	ST-FILTER	SE014G03B
DMD760E03B	FILTREC	LL090E03B	DVD246F10B	FILTREC	SS125F10B	H060D03V	ST-FILTER	SE014A03B
DMD760E10B	FILTREC	LL090E10B	DVD246F20B	FILTREC	SS125F20B	H060D05H	ST-FILTER	SE014H05B
DMD760E20B	FILTREC	LL090E20B	DVD246K05B	FILTREC	SS125K05B	H060D05N	ST-FILTER	SE014G05B
DMD760L05B	FILTREC	LL090L05B	DVD246K10B	FILTREC	SS125K10B	H060D05V	ST-FILTER	SE014A05B
DMD760L10B	FILTREC	LL090L10B	DVD246K20B	FILTREC	SS125K20B	H060D100W	ST-FILTER	SE014B100B
DMD760L20B	FILTREC	LL090L20B	DVD256A05B	FILTREC	SS160A05B	H060D10H	ST-FILTER	SE014H10B
DMD761B10B	FILTREC	LL160B10B	DVD256A10B	FILTREC	SS160A10B	H060D10N	ST-FILTER	SE014G10B
DMD761B20B	FILTREC	LL160B20B	DVD256B100B	FILTREC	SS160B100B	H060D10V	ST-FILTER	SE014A10B
DMD761E03B	FILTREC	LL160E03B	DVD256B10B	FILTREC	SS160B10B	H060D20H	ST-FILTER	SE014H20B
DMD761E10B	FILTREC	LL160E10B	DVD256B25B	FILTREC	SS160B25B	H060D20N	ST-FILTER	SE014G20B
DMD761E20B	FILTREC	LL160E20B	DVD256B40B	FILTREC	SS160B40B	H060D20V	ST-FILTER	SE014A20B
DMD761L05B	FILTREC	LL160L05B	DVD256B60B	FILTREC	SS160B60B	H060D25W	ST-FILTER	SE014B25B
DMD761L10B	FILTREC	LL160L10B	DVD256E03B	FILTREC	SS160E03B	H060D40W	ST-FILTER	SE014B50B
DMD761L20B	FILTREC	LL160L20B	DVD256E10B	FILTREC	SS160E10B	H060R03N	ST-FILTER	RE014G03B
DVD210A05B	FILTREC	SS002A05B	DVD256E20B	FILTREC	SS160E20B	H060R03V	ST-FILTER	RE014A03B
DVD210A10B	FILTREC	SS002A10B	DVD256F03B	FILTREC	SS160F03B	H060R05N	ST-FILTER	RE014G05B
DVD210B100B	FILTREC	SS002B100B	DVD256F10B	FILTREC	SS160F10B	H060R05V	ST-FILTER	RE014A05B
DVD210B10B	FILTREC	SS002B10B	DVD256F20B	FILTREC	SS160F20B	H060R100W	ST-FILTER	RE014B100B
DVD210B25B	FILTREC	SS002B25B	DVD256K05B	FILTREC	SS160K05B	H060R100WHC	ST-FILTER	RE014S100B
DVD210B40B	FILTREC	SS002B40B	DVD256K10B	FILTREC	SS160K10B	H060R10N	ST-FILTER	RE014G10B
DVD210B60B	FILTREC	SS002B60B	DVD256K20B	FILTREC	SS160K20B	H060R10V	ST-FILTER	RE014A10B
DVD210E03B	FILTREC	SS002E03B	DVD256A05B	FILTREC	SS014A05B	H060R20N	ST-FILTER	RE014G20B
DVD210E10B	FILTREC	SS002E10B	DVD256A10B	FILTREC	SS014A10B	H060R20V	ST-FILTER	RE014A20B
DVD210E20B	FILTREC	SS002E20B	DVD256B100B	FILTREC	SS014B100B	H060R25W	ST-FILTER	RE014B25B
DVD210F03B	FILTREC	SS002F03B	DVD256B10B	FILTREC	SS014B10B	H060R25WHC	ST-FILTER	RE014S25B
DVD210F10B	FILTREC	SS002F10B	DVD256B25B	FILTREC	SS014B25B	H060R40W	ST-FILTER	RE014B50B
DVD210F20B	FILTREC	SS002F20B	DVD256B40B	FILTREC	SS014B40B	H060R40WHC	ST-FILTER	RE014S50B
DVD210K05B	FILTREC	SS002K05B	DVD256B60B	FILTREC	SS014B60B	H110D03H	ST-FILTER	SE030H03B
DVD210K10B	FILTREC	SS002K10B	DVD256E03B	FILTREC	SS014E03B	H110D03N	ST-FILTER	SE030G03B
DVD210K20B	FILTREC	SS002K20B	DVD256E10B	FILTREC	SS014E10B	H110D03V	ST-FILTER	SE030A03B
DVD2140A05B	FILTREC	SS035A05B	DVD256E20B	FILTREC	SS014E20B	H110D05H	ST-FILTER	SE030H05B
DVD2140A10B	FILTREC	SS035A10B	DVD256F03B	FILTREC	SS014F03B	H110D05N	ST-FILTER	SE030G05B
DVD2140B100B	FILTREC	SS035B100B	DVD256F10B	FILTREC	SS014F10B	H110D05V	ST-FILTER	SE030A05B
DVD2140B10B	FILTREC	SS035B10B	DVD256F20B	FILTREC	SS014F20B	H110D100W	ST-FILTER	SE030B100B
DVD2140B25B	FILTREC	SS035B25B	DVD256K05B	FILTREC	SS014K05B	H110D10H	ST-FILTER	SE030H10B
DVD2140B40B	FILTREC	SS035B40B	DVD256K10B	FILTREC	SS014K10B	H110D10N	ST-FILTER	SE030G10B
DVD2140B60B	FILTREC	SS035B60B	DVD256K20B	FILTREC	SS014K20B	H110D10V	ST-FILTER	SE030A10B
DVD2140E03B	FILTREC	SS035E03B	DVD290A05B	FILTREC	SS250A05B	H110D20H	ST-FILTER	SE030H20B
DVD2140E10B	FILTREC	SS035E10B	DVD290A10B	FILTREC	SS250A10B	H110D20N	ST-FILTER	SE030G20B
DVD2140E20B	FILTREC	SS035E20B	DVD290B100B	FILTREC	SS250B100B	H110D20V	ST-FILTER	SE030A20B
DVD2140F03B	FILTREC	SS035F03B	DVD290B10B	FILTREC	SS250B10B	H110D25W	ST-FILTER	SE030B25B
DVD2140F10B	FILTREC	SS035F10B	DVD290B25B	FILTREC	SS250B25B	H110D40W	ST-FILTER	SE030B50B
DVD2140F20B	FILTREC	SS035F20B	DVD290B40B	FILTREC	SS250B40B	H110R03N	ST-FILTER	RE030G03B
DVD2140K05B	FILTREC	SS035K05B	DVD290B60B	FILTREC	SS250B60B	H110R03V	ST-FILTER	RE030A03B
DVD2140K10B	FILTREC	SS035K10B	DVD290E03B	FILTREC	SS250E03B	H110R05N	ST-FILTER	RE030G05B
DVD2140K20B	FILTREC	SS035K20B	DVD290E10B	FILTREC	SS250E10B	H110R05V	ST-FILTER	RE030A05B
DVD218A05B	FILTREC	SS004A05B	DVD290E20B	FILTREC	SS250E20B	H110R100W	ST-FILTER	RE030B100B
DVD218A10B	FILTREC	SS004A10B	DVD290F03B	FILTREC	SS250F03B	H110R100WHC	ST-FILTER	RE030S100B
DVD218B100B	FILTREC	SS004B100B	DVD290F10B	FILTREC	SS250F10B	H110R10N	ST-FILTER	RE030G10B
DVD218B10B	FILTREC	SS004B10B	DVD290F20B	FILTREC	SS250F20B	H110R10V	ST-FILTER	RE030A10B
DVD218B25B	FILTREC	SS004B25B	DVD290K05B	FILTREC	SS250K05B	H110R20N	ST-FILTER	RE030G20B
DVD218B40B	FILTREC	SS004B40B	DVD290K10B	FILTREC	SS250K10B	H110R20V	ST-FILTER	RE030A20B
DVD218B60B	FILTREC	SS004B60B	DVD290K20B	FILTREC	SS250K20B	H110R25W	ST-FILTER	RE030B25B
DVD218E03B	FILTREC	SS004E03B	DVD290A05B	FILTREC	SS024A05B	H110R25WHC	ST-FILTER	RE030S25B
DVD218E10B	FILTREC	SS004E10B	DVD290A10B	FILTREC	SS024A10B	H110R40W	ST-FILTER	RE030B50B
DVD218E20B	FILTREC	SS004E20B	DVD290B100B	FILTREC	SS024B100B	H110R40WHC	ST-FILTER	RE030S50B
DVD218F03B	FILTREC	SS004F03B	DVD290B10B	FILTREC	SS024B10B	H110R60WHB6	ST-FILTER	RE030S0B-1650
DVD218F10B	FILTREC	SS004F10B	DVD290B25B	FILTREC	SS024B25B	H130R03N	ST-FILTER	RE300G03B
DVD218F20B	FILTREC	SS004F20B	DVD290B40B	FILTREC	SS024B40B	H130R03V	ST-FILTER	RE300A03B
DVD218K05B	FILTREC	SS004K05B	DVD290B60B	FILTREC	SS024B60B	H130R05N	ST-FILTER	RE300G05B
DVD218K10B	FILTREC	SS004K10B	DVD290E03B	FILTREC	SS024E03B	H130R05V	ST-FILTER	RE300A05B
DVD218K20B	FILTREC	SS004K20B	DVD290E10B	FILTREC	SS024E10B	H130R100W	ST-FILTER	RE300B100B
DVD2225A05B	FILTREC	SS070A05B	DVD290E20B	FILTREC	SS024E20B	H130R100WHC	ST-FILTER	RE300S100B
DVD2225A10B	FILTREC	SS070A10B	DVD290F03B	FILTREC	SS024F03B	H130R10N	ST-FILTER	RE300G10B
DVD2225B100B	FILTREC	SS070B100B	DVD290F10B	FILTREC	SS024F10B	H130R10V	ST-FILTER	RE300A10B
DVD2225B10B	FILTREC	SS070B10B	DVD290F20B	FILTREC	SS024F20B	H130R20N	ST-FILTER	RE300G20B
DVD2225B25B	FILTREC	SS070B25B	DVD290K05B	FILTREC	SS024K05B	H130R20V	ST-FILTER	RE300A20B
DVD2225B40B	FILTREC	SS070B40B	DVD290K10B	FILTREC	SS024K10B	H130R25W	ST-FILTER	RE300B25B
DVD2225B60B	FILTREC	SS070B60B	DVD290K20B	FILTREC	SS024K20B	H130R25WHC	ST-FILTER	RE300S25B
DVD2225E03B	FILTREC	SS070E03B	FA3510	FAIREY ARLON	SF6520	H130R40W	ST-FILTER	RE300B50B
DVD2225E10B	FILTREC	SS070E10B	FA3525	FAIREY ARLON	SF6510	H130R40WHC	ST-FILTER	RE300S50B
DVD2225E20B	FILTREC	SS070E20B	FA35CC10	FAIREY ARLON	SF6505	H140D03H	ST-FILTER	SE035H03B
DVD2225F03B	FILTREC	SS070F03B	FA35CC25	FAIREY ARLON	SF6504	H140D03N	ST-FILTER	SE035G03B
DVD2225F10B	FILTREC	SS070F10B	FA51110	FAIREY ARLON	SF6721	H140D03V	ST-FILTER	SE035A03B
DVD2225F20B	FILTREC	SS070F20B	FA51125	FAIREY ARLON	SF6711	H140D05H	ST-FILTER	SE035H05B
DVD2225K05B	FILTREC	SS070K05B	FA511CC10	FAIREY ARLON	SF6731-MG	H140D05N	ST-FILTER	SE035G05B
DVD2225K10B	FILTREC	SS070K10B	FA511CC25	FAIREY ARLON	SF6726-MG	H140D05V	ST-FILTER	SE035A05B
DVD2225K20B	FILTREC							




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H140D20N	ST-FILTER	SE035G20B	H500D100W	ST-FILTER	SE130B100B	H902004003BN	HYDAC	SP010E03B
H140D20V	ST-FILTER	SE035A20B	H500D10H	ST-FILTER	SE130H10B	H902004006BN	HYDAC	SP010E05B
H140D25W	ST-FILTER	SE035B25B	H500D10N	ST-FILTER	SE130G10B	H902004012BN	HYDAC	SP010E10B
H140D40W	ST-FILTER	SE035B50B	H500D10V	ST-FILTER	SE130A10B	H902004025BN	HYDAC	SP010E20B
H160D03H	ST-FILTER	SE045H03B	H500D20H	ST-FILTER	SE130H20B	H902008003BN	HYDAC	SP020E03B
H160D03N	ST-FILTER	SE045G03B	H500D20N	ST-FILTER	SE130G20B	H902008006BN	HYDAC	SP020E05B
H160D03V	ST-FILTER	SE045A03B	H500D20V	ST-FILTER	SE130A20B	H902008012BN	HYDAC	SP020E10B
H160D05H	ST-FILTER	SE045H05B	H500D25W	ST-FILTER	SE130B25B	H902008025BN	HYDAC	SP020E20B
H160D05N	ST-FILTER	SE045G05B	H500D40W	ST-FILTER	SE130B50B	H902104003BH	HYDAC	SP010F03B
H160D05V	ST-FILTER	SE045A05B	H500R03N	ST-FILTER	RE130G03B	H902104010BH	HYDAC	SP010F10B
H160D100W	ST-FILTER	SE045B100B	H500R03V	ST-FILTER	RE130A03B	H902104017BH	HYDAC	SP010F20B
H160D10H	ST-FILTER	SE045H10B	H500R05N	ST-FILTER	RE130G05B	H902108003BH	HYDAC	SP020F03B
H160D10N	ST-FILTER	SE045G10B	H500R05V	ST-FILTER	RE130A05B	H902108010BH	HYDAC	SP020F10B
H160D10V	ST-FILTER	SE045A10B	H500R100W	ST-FILTER	RE130B100B	H902108017BH	HYDAC	SP020F20B
H160D20H	ST-FILTER	SE045H20B	H500R100WHC	ST-FILTER	RE130S100B	H940013003BN	HYDAC	SP110E03B
H160D20N	ST-FILTER	SE045G20B	H500R10H	ST-FILTER	RE130G10B	H940013005BN	HYDAC	SP110E05B
H160D20V	ST-FILTER	SE045A20B	H500R10V	ST-FILTER	RE130A10B	H940013010BN	HYDAC	SP110E10B
H160D25W	ST-FILTER	SE045B25B	H500R20N	ST-FILTER	RE130G20B	H940013020BN	HYDAC	SP110E20B
H160D40W	ST-FILTER	SE045B50B	H500R20V	ST-FILTER	RE130A20B	H940026003BN	HYDAC	SP170E03B
H160R03N	ST-FILTER	RE045G03B	H500R25W	ST-FILTER	RE130B25B	H940026005BN	HYDAC	SP170E05B
H160R03V	ST-FILTER	RE045A03B	H500R25WHC	ST-FILTER	RE130S25B	H940026010BN	HYDAC	SP170E10B
H160R05N	ST-FILTER	RE045G05B	H500R40W	ST-FILTER	RE130B50B	H940026020BN	HYDAC	SP170E20B
H160R05V	ST-FILTER	RE045A05B	H500R40WHC	ST-FILTER	RE130S50B	H940039003BN	HYDAC	SP250E03B
H160R100W	ST-FILTER	RE045B100B	H660D03H	ST-FILTER	SE160H03B	H940039005BN	HYDAC	SP250E05B
H160R100WHC	ST-FILTER	RE045S100B	H660D03N	ST-FILTER	SE160G03B	H940039010BN	HYDAC	SP250E10B
H160R10H	ST-FILTER	RE045H10B	H660D03V	ST-FILTER	SE160A03B	H940039020BN	HYDAC	SP250E20B
H160R10N	ST-FILTER	RE045G10B	H660D05H	ST-FILTER	SE160H05B	H950R03N	ST-FILTER	RE250G03B
H160R10V	ST-FILTER	RE045A10B	H660D05N	ST-FILTER	SE160G05B	H950R03V	ST-FILTER	RE250A03B
H160R20N	ST-FILTER	RE045G20B	H660D05V	ST-FILTER	SE160A05B	H950R05N	ST-FILTER	RE250G05B
H160R20V	ST-FILTER	RE045A20B	H660D100W	ST-FILTER	SE160B100B	H950R05V	ST-FILTER	RE250A05B
H160R25W	ST-FILTER	RE045B25B	H660D10H	ST-FILTER	SE160H10B	H950R100W	ST-FILTER	RE250B100B
H160R25WHC	ST-FILTER	RE045S25B	H660D10N	ST-FILTER	SE160G10B	H950R100WHC	ST-FILTER	RE250S100B
H160R40W	ST-FILTER	RE045B50B	H660D10V	ST-FILTER	SE160A10B	H950R10N	ST-FILTER	RE250G10B
H160R40WHC	ST-FILTER	RE045S50B	H660D20H	ST-FILTER	SE160H20B	H950R10V	ST-FILTER	RE250A10B
H240D03H	ST-FILTER	SE070H03B	H660D20N	ST-FILTER	SE160G20B	H950R20N	ST-FILTER	RE250G20B
H240D03N	ST-FILTER	SE070G03B	H660D20V	ST-FILTER	SE160A20B	H950R20V	ST-FILTER	RE250A20B
H240D03V	ST-FILTER	SE070A03B	H660D25W	ST-FILTER	SE160B25B	H950R25W	ST-FILTER	RE250B25B
H240D05H	ST-FILTER	SE070H05B	H660D40W	ST-FILTER	SE160G40W	H950R25WHC	ST-FILTER	RE250S25B
H240D05N	ST-FILTER	SE070G05B	H660D50W	ST-FILTER	SE160B50B	H950R40W	ST-FILTER	RE250B50B
H240D05V	ST-FILTER	SE070A05B	H660R03N	ST-FILTER	RE160G03B	H950R40WHC	ST-FILTER	RE250S50B
H240D100W	ST-FILTER	SE070B100B	H660R03V	ST-FILTER	RE160A03B	H960004003BN	HYDAC	SP045E03B
H240D10H	ST-FILTER	SE070H10B	H660R05N	ST-FILTER	RE160G05B	H960004006BN	HYDAC	SP045E05B
H240D10N	ST-FILTER	SE070G10B	H660R05V	ST-FILTER	RE160A05B	H960004012BN	HYDAC	SP045E10B
H240D10V	ST-FILTER	SE070A10B	H660R100W	ST-FILTER	RE160B100B	H960004025BN	HYDAC	SP045E20B
H240D20H	ST-FILTER	SE070H20B	H660R100WHC	ST-FILTER	RE160S100B	H960008003BN	HYDAC	SP070E03B
H240D20N	ST-FILTER	SE070G20B	H660R10H	ST-FILTER	RE160G10B	H960008006BN	HYDAC	SP070E05B
H240D20V	ST-FILTER	SE070A20B	H660R10V	ST-FILTER	RE160A10B	H960008012BN	HYDAC	SP070E10B
H240D25W	ST-FILTER	SE070B25B	H660R20N	ST-FILTER	RE160G20B	H960008025BN	HYDAC	SP070E20B
H240D40W	ST-FILTER	SE070B50B	H660R20V	ST-FILTER	RE160A20B	H960013003BN	HYDAC	SP090E03B
H240D50W	ST-FILTER	SE070B50B	H660R25W	ST-FILTER	RE160B25B	H960013006BN	HYDAC	SP090E05B
H240R03N	ST-FILTER	RE070G03B	H660R25WHC	ST-FILTER	RE160S25B	H960013012BN	HYDAC	SP090E10B
H240R03V	ST-FILTER	RE070A03B	H660R40W	ST-FILTER	RE160B50B	H960013025BN	HYDAC	SP090E20B
H240R05N	ST-FILTER	RE070G05B	H660R40WHC	ST-FILTER	RE160S50B	H960016003BN	HYDAC	SP130E03B
H240R05V	ST-FILTER	RE070A05B	H830008003BN	HYDAC	SP100E03B	H960016006BN	HYDAC	SP130E05B
H240R100W	ST-FILTER	RE070B100B	H830008006BN	HYDAC	SP100E05B	H960016012BN	HYDAC	SP130E10B
H240R100WHC	ST-FILTER	RE070S100B	H830008010BN	HYDAC	SP100E10B	H960016025BN	HYDAC	SP130E20B
H240R10H	ST-FILTER	RE070G10B	H830008012BN	HYDAC	SP100E10B	H960104003BH	HYDAC	SP045F03B
H240R10N	ST-FILTER	RE070A10B	H830008025BN	HYDAC	SP100E20B	H961040010BH	HYDAC	SP045F10B
H240R20N	ST-FILTER	RE070G20B	H830016003BN	HYDAC	SP200E03B	H96104010BH	HYDAC	SP045F20B
H240R20V	ST-FILTER	RE070A20B	H830016006BN	HYDAC	SP200E05B	H96108003BH	HYDAC	SP070F03B
H240R25W	ST-FILTER	RE070B25B	H830016012BN	HYDAC	SP200E10B	H961080003BH	HYDAC	SP070F05B
H240R25WHC	ST-FILTER	RE070S25B	H830016025BN	HYDAC	SP200E20B	H96108010BH	HYDAC	SP070F10B
H240R40W	ST-FILTER	RE070B50B	H830039003BN	HYDAC	SP300E03B	H96108017BH	HYDAC	SP070F20B
H240R40WHC	ST-FILTER	RE070S50B	H830039006BN	HYDAC	SP300E05B	H96113003BH	HYDAC	SP090F03B
H240R50W	ST-FILTER	RE070B50B	H830039012BN	HYDAC	SP300E10B	H96113010BH	HYDAC	SP090F10B
H260R03N	ST-FILTER	RE600G03B	H830039025BN	HYDAC	SP300E20B	H96113017BH	HYDAC	SP090F20B
H260R03V	ST-FILTER	RE600A03B	H840008003BN	HYDAC	RP100E03B	H96116003BH	HYDAC	SP130F03B
H260R05N	ST-FILTER	RE600G05B	H840008005BN	HYDAC	RP100E05B	H96116010BH	HYDAC	SP130F10B
H260R05V	ST-FILTER	RE600A05B	H840008010BN	HYDAC	RP100E10B	H96116017BH	HYDAC	SP130F20B
H260R100W	ST-FILTER	RE600B100B	H840008020BN	HYDAC	RP100E20B	H965008003BN	HYDAC	SP070E03BOBE
H260R100WHC	ST-FILTER	RE600S100B	H840016003BN	HYDAC	RP200E03B	H965008005BN	HYDAC	SP070E05BOBE
H260R10H	ST-FILTER	RE600G10B	H840016005BN	HYDAC	RP200E05B	H965008010BN	HYDAC	SP070E10BOBE
H260R10N	ST-FILTER	RE600A10B	H840016010BN	HYDAC	RP200E10B	H965008020BN	HYDAC	SP070E20BOBE
H260R20N	ST-FILTER	RE600G20B	H840016020BN	HYDAC	RP200E20B	H965016003BN	HYDAC	SP130E03BOBE
H260R20NB6	ST-FILTER	RE600G20B1650	H840026003BN	HYDAC	RP240E03B	H965016005BN	HYDAC	SP130E05BOBE
H260R20V	ST-FILTER	RE600A20B	H840026005BN	HYDAC	RP240E05B	H965016010BN	HYDAC	SP130E10BOBE
H260R25W	ST-FILTER	RE600B25B	H840026010BN	HYDAC	RP240E10B	H965016020BN	HYDAC	SP130E20BOBE
H260R25WHC	ST-FILTER	RE600S25B	H840026020BN	HYDAC	RP240E20B	H965108003BH	HYDAC	SP070F03BOBE
H260R40W	ST-FILTER	RE600B50B	H840039003BN	HYDAC	RP300E03B	H965108020BH	HYDAC	SP070F20BOBE
H260R40WHC	ST-FILTER	RE600S50B	H840039005BN	HYDAC	RP300E05B	H965116003BH	HYDAC	SP130F03BOBE
H280D05V	ST-FILTER	SE125A03B	H840039010BN	HYDAC	RP300E10B	H965116020BH	HYDAC	SP130F20BOBE
H280D10V	ST-FILTER	SE125A10B	H840039020BN	HYDAC	RP300E20B	H980004003BN	HYDAC	SP024E03B
H280D20V	ST-FILTER	SE125A20B	H850008003BN	HYDAC	RP050E03B	H980004006BN	HYDAC	SP024E05B
H330D03H	ST-FILTER	SE090H03B	H850008005BN	HYDAC	RP050E05B	H980004012BN	HYDAC	SP024E10B
H330D03N	ST-FILTER	SE090G03B	H850008010BN	HYDAC	RP050E10B	H980004025BN	HYDAC	SP024E20B
H330D03V	ST-FILTER	SE090A03B	H850008020BN	HYDAC	RP050E20B	H980008003BN	HYDAC	SP030E03B
H330D05H	ST-FILTER	SE090H05B	H850013003BN	HYDAC	RP080E03B	H980008006BN	HYDAC	SP030E05B
H330D05N	ST-FILTER	SE090G05B	H850013005BN	HYDAC	RP080E05B	H980008012BN	HYDAC	SP030E10B
H330D05V	ST-FILTER	SE090A05B	H850013010BN	HYDAC	RP080E10B	H980008025BN	HYDAC	SP030E20B
H330D100W	ST-FILTER	SE090B100B	H850013020BN	HYDAC	RP080E20B	H980013003BN	HYDAC	SP035E03B
H330D10H	ST-FILTER	SE090H10B	H850026003BN	HYDAC	RP090E03B	H980013006BN	HYDAC	SP035E05B
H330D10N	ST-FILTER	SE090G10B	H850026005BN	HYDAC	RP090E05B	H980013012BN	HYDAC	SP035E10B
H330D10V	ST-FILTER	SE090A10B	H850026010BN	HYDAC	RP090E10B	H980013025BN	HYDAC	SP035E20B
H330D20H	ST-FILTER	SE090H20B	H850026020BN	HYDAC	RP090E20B	H980104003BH	HYDAC	SP024F03B
H330D20N	ST-FILTER	SE090G20B	H850R03N	ST-FILTER	RE200G03B	H980104010BH	HYDAC	SP024F10B
H330D20V	ST-FILTER	SE090A20B	H850R03V	ST-FILTER	RE200A03B	H980104017BH	HYDAC	SP024F20B
H330D25W	ST-FILTER	SE090B25B	H850R05N	ST-FILTER	RE200G05B	H980108003BH	HYDAC	SP030F03B
H330D40W	ST-FILTER	SE090B50B	H850R05V	ST-FILTER	RE200A05B	H980108010BH	HYDAC	SP030F10B
H330D50W	ST-FILTER	SE090B50B	H850R05V	ST-FILTER	RE200A05B	H980108017BH	HYDAC	SP030F20B
H330R03N	ST-FILTER	RE090G03B	H850R100W	ST-FILTER	RE200B100B	H980113003BH	HYDAC	SP035F03B
H330R03V	ST-FILTER	RE090A03B	H850R100WHC	ST-FILTER	RE200S100B	H980113010BH	HYDAC	SP035F20B
H330R05N	ST-FILTER	RE090G05B	H850R10H	ST-FILTER	RE200G10B	H980113017BH	HYDAC	SP110F03B
H330R05V	ST-FILTER	RE090A05B	H850R10V	ST-FILTER	RE200A10B	H990113003BH	HYDAC	SP110F05B
H330R100W	ST-FILTER	RE090B100B	H850R20N	ST-FILTER	RE200G20B	H990113010BH	HYDAC	SP110F10B
H330R100WHC	ST-FILTER	RE090S100B	H850R20NB6	ST-FILTER	RE200G20B1650	H990113020BH	HYDAC	SP110F20B
H330R10H	ST-FILTER	RE090G10B	H850R20V	ST-FILTER	RE200A20B	H990126003BH	HYDAC	SP170F03B
H330R10N	ST-FILTER	RE090A10B	H850R25W	ST-FILTER	RE200B25B	H990126010BH	HYDAC	SP170F10B
H330R10V	ST-FILTER	RE090G10B	H850R25WHC	ST-FILTER	RE200S25B	H990126020BH	HYDAC	SP170F20B
H330R20N	ST-FILTER	RE090G20B	H850R40W	ST-FILTER	RE200B50B	H990139003BH	HYDAC	SP250F03B
H330R20V	ST-FILTER	RE090A20B	H850R40WHC	ST-FILTER	RE200S50B	H990139010BH	HYDAC	SP250F10B
H330R25W	ST-FILTER	RE090B25B	H890008003BN	HYDAC	SP120E03B	H990139020BH	HYDAC	SP250F20B
H330R25WHC	ST-FILTER	RE090S25B	H890008005BN	HYDAC	SP120E05B	HC2206FKN3H	PALL	SE014G05B
H330R40W	ST-FILTER	RE090B50B	H890008010BN	HYDAC	SP120E10B	HC2206FKN6H	PALL	SE030G05B
H330R40WHC	ST-FILTER							




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HC2207FKP6H	PALL	SE030H03B	HC6300FKP13H	PALL	RP020E03B	HC8300FDT16Z	PALL	SP200E20V
HC2207FKS3H	PALL	SE014H10B	HC6300FKP13Z	PALL	RP020E03V	HC8300FDT39H	PALL	SP300E20B
HC2207FKS6H	PALL	SE030H10B	HC6300FKP16H	PALL	RP024E03B	HC8300FDT39Z	PALL	SP300E20V
HC2207FKT3H	PALL	SE014H20B	HC6300FKP16Z	PALL	RP024E03V	HC8300FDT8H	PALL	SP100E20B
HC2207FKT6H	PALL	SE030H20B	HC6300FKP26H	PALL	RP030E03B	HC8300FDT8Z	PALL	SP100E20V
HC2208FKN4H	PALL	RE014G05B	HC6300FKP26Z	PALL	RP030E03V	HC8300FKN16H	PALL	SP200E05B
HC2208FKN6H	PALL	RE030G05B	HC6300FKP8H	PALL	RP010E03B	HC8300FKN16Z	PALL	SP200E05V
HC2208FKP4H	PALL	RE014G03B	HC6300FKP8Z	PALL	RP010E03V	HC8300FKN39H	PALL	SP300E05B
HC2208FKP6H	PALL	RE030G03B	HC6300FKS13H	PALL	RP020E10B	HC8300FKN39Z	PALL	SP300E05V
HC2208FKS4H	PALL	RE014G10B	HC6300FKS13Z	PALL	RP020E10V	HC8300FKN8Z	PALL	SP100E05B
HC2208FKS6H	PALL	RE030G10B	HC6300FKS16H	PALL	RP024E10B	HC8300FKN8Z	PALL	SP100E05V
HC2208FKT4H	PALL	RE014G20B	HC6300FKS16Z	PALL	RP024E10V	HC8300FKP16H	PALL	SP200E03B
HC2208FKT6H	PALL	RE030G20B	HC6300FKS26H	PALL	RP030E10B	HC8300FKP16Z	PALL	SP200E03V
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HC2216FKN6H	PALL	SE070G05B	HC6300FKS8H	PALL	RP010E10B	HC8300FKP39Z	PALL	SP300E03V
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HC2216FKT6H	PALL	SE070G20B	HC6300FKT26H	PALL	RP030E20B	HC8300FKS39Z	PALL	SP300E10V
HC2217FKN4H	PALL	SE045H05B	HC6300FKT26Z	PALL	RP030E20V	HC8300FKS8Z	PALL	SP100E10B
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HC2295FKT36H	PALL	RE600G20B	HC6400FKT13H	PALL	RP085E20B	HC8400FDS8Z	PALL	RP100E10V
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HC6300FDN13Z	PALL	RP020E05V	HC6400FKT16H	PALL	RP095E20B	HC8400FDT16Z	PALL	RP200E20V
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HC6300FDN8Z	PALL	RP010E05V	HC7400SKJ4H	PALL	SF6610	HC8400FDT8Z	PALL	RP100E20V
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HC6300FKN13Z	PALL	RP020E05V	HC8300FDS16H	PALL	SP200E10B	HC8400FKT16Z	PALL	RP200E20V</




code code bezeichnung código	brand marque hersteller marca		code code bezeichnung código	brand marque hersteller marca		code code bezeichnung código	brand marque hersteller marca	
HC8400FUN16H	PALL	RP200E05B	HC8700FKN4Z	PALL	SP024E05VOBE	HC8900FUS39H	PALL	SP220E10B
HC8400FUN16Z	PALL	RP200E05V	HC8700FKN8H	PALL	SP030E05BOBE	HC8900FUS39Z	PALL	SP220E10V
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HC8500FDS26Z	PALL	RP090E10V	HC8900FDT16H	PALL	SP160E20B	HC9020FUN4Z	PALL	SP010E05V
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HC8500FDT13Z	PALL	RP080E20V	HC8900FDT39H	PALL	SP220E20B	HC9020FUP4Z	PALL	SP010E03V
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code code bezeichnung código	brand marque hersteller marca		code code bezeichnung código	brand marque hersteller marca		code code bezeichnung código	brand marque hersteller marca	
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HC9600FKN4H	PALL	SP045E05B	HC9650FKP16Z	PALL	SP130E03V0BE	HC9801FDP4H	PALL	SP024F03B
HC9600FKN4Z	PALL	SP045E05V	HC9650FKP8H	PALL	SP070E03B0BE	HC9801FDP4Z	PALL	SP024F03V
HC9600FKN8H	PALL	SP070E05B	HC9650FKP8Z	PALL	SP070E03V0BE	HC9801FDP8H	PALL	SP030F03B
HC9600FKN8Z	PALL	SP070E05V	HC9650FKS16H	PALL	SP130E10B0BE	HC9801FDP8Z	PALL	SP030F03V
HC9600FKP13H	PALL	SP090E03B	HC9650FKS16Z	PALL	SP130E10V0BE	HC9801FDS13H	PALL	SP035F10B
HC9600FKP13Z	PALL	SP090E03V	HC9650FKS8H	PALL	SP070E10B0BE	HC9801FDS13Z	PALL	SP035F10V
HC9600FKP16H	PALL	SP130E03B	HC9650FKS8Z	PALL	SP070E10V0BE	HC9801FDS4H	PALL	SP024F10B
HC9600FKP16Z	PALL	SP130E03V	HC9650FKT16H	PALL	SP130E20B0BE	HC9801FDS4Z	PALL	SP024F10V
HC9600FKP4H	PALL	SP045E03B	HC9650FKT16Z	PALL	SP130E20V0BE	HC9801FDS8H	PALL	SP030F10B
HC9600FKP4Z	PALL	SP045E03V	HC9650FKT8H	PALL	SP070E20B0BE	HC9801FDS8Z	PALL	SP030F10V
HC9600FKP8H	PALL	SP070E03B	HC9650FKT8Z	PALL	SP070E20V0BE	HC9801FDT13H	PALL	SP035F20B
HC9600FKP8Z	PALL	SP070E03V	HC9650FUN16H	PALL	SP130E05B0BE	HC9801FDT13Z	PALL	SP035F20V
HC9600FKS13H	PALL	SP090E10B	HC9650FUN16Z	PALL	SP130E05V0BE	HC9801FDT4H	PALL	SP024F20B
HC9600FKS13Z	PALL	SP090E10V	HC9650FUN8H	PALL	SP070E05B0BE	HC9801FDT4Z	PALL	SP024F20V
HC9600FKS16H	PALL	SP130E10B	HC9650FUN8Z	PALL	SP070E05V0BE	HC9801FDT8H	PALL	SP030F20B
HC9600FKS16Z	PALL	SP130E10V	HC9650FUP16H	PALL	SP130E03B0BE	HC9801FDT8Z	PALL	SP030F20V
HC9600FKS4H	PALL	SP045E10B	HC9650FUP16Z	PALL	SP130E03V0BE	HC9801FUP13H	PALL	SP035F03B
HC9600FKS4Z	PALL	SP045E10V	HC9650FUP8H	PALL	SP070E03B0BE	HC9801FUP13Z	PALL	SP035F03V
HC9600FKS8H	PALL	SP070E10B	HC9650FUP8Z	PALL	SP070E03V0BE	HC9801FUP4H	PALL	SP024F03B
HC9600FKS8Z	PALL	SP070E10V	HC9650FUS16H	PALL	SP130E10B0BE	HC9801FUP4Z	PALL	SP024F03V
HC9600FKT13H	PALL	SP090E20B	HC9650FUS16Z	PALL	SP130E10V0BE	HC9801FUP8H	PALL	SP030F03B
HC9600FKT13Z	PALL	SP090E20V	HC9650FUS8H	PALL	SP070E10B0BE	HC9801FUP8Z	PALL	SP030F03V
HC9600FKT16H	PALL	SP130E20B	HC9650FUS8Z	PALL	SP070E10V0BE	HC9801FUT13H	PALL	SP035F20B
HC9600FKT16Z	PALL	SP130E20V	HC9650FUT16H	PALL	SP130E20B0BE	HC9801FUT13Z	PALL	SP035F20V
HC9600FKT4H	PALL	SP045E20B	HC9650FUT16Z	PALL	SP130E20V0BE	HC9801FUT4H	PALL	SP024F20B
HC9600FKT4Z	PALL	SP045E20V	HC9650FUT8H	PALL	SP070E20B0BE	HC9801FUT4Z	PALL	SP024F20V
HC9600FKT8H	PALL	SP070E20B	HC9650FUT8Z	PALL	SP070E20V0BE	HC9801FUT8H	PALL	SP030




code code bezeichnung código	brand marque hersteller marca		code code bezeichnung código	brand marque hersteller marca		code code bezeichnung código	brand marque hersteller marca	
HC9901FDS13H	PALL	SP110F10B	HF30325	FLEETGUARD	RP115E10B	HF7013	FLEETGUARD	RP100E05B
HC9901FDS13Z	PALL	SP110F10V	HF30329	FLEETGUARD	RP090E10B	HF7014	FLEETGUARD	RP100E10B
HC9901FDS26H	PALL	SP170F10B	HF30330	FLEETGUARD	RP090E10V	HF7015	FLEETGUARD	RP100E20B
HC9901FDS26Z	PALL	SP170F10V	HF30331	FLEETGUARD	SP170E10B	HF7016	FLEETGUARD	RP200E03B
HC9901FDS39H	PALL	SP250F10B	HF30332	FLEETGUARD	SP170E10V	HF7017	FLEETGUARD	RP200E05B
HC9901FDS39Z	PALL	SP250F10V	HF30333	FLEETGUARD	SP180E10B	HF7018	FLEETGUARD	RP200E10B
HC9901FDT13H	PALL	SP110F20B	HF30334	FLEETGUARD	SP180E10V	HF7019	FLEETGUARD	RP200E20B
HC9901FDT13Z	PALL	SP110F20V	HF30340	FLEETGUARD	SP300E10B	HF7020	FLEETGUARD	RP240E03B
HC9901FDT26H	PALL	SP170F20B	HF30341	FLEETGUARD	SP300E10V	HF7021	FLEETGUARD	RP240E05B
HC9901FDT26Z	PALL	SP170F20V	HF30342	FLEETGUARD	RP300E10B	HF7022	FLEETGUARD	RP240E10B
HC9901FDT39H	PALL	SP250F20B	HF30343	FLEETGUARD	RP300E10V	HF7023	FLEETGUARD	RP240E20B
HC9901FDT39Z	PALL	SP250F20V	HF30346	FLEETGUARD	SP250E10B	HF7024	FLEETGUARD	RP300E03B
HC9901FUP13H	PALL	SP110F03B	HF30347	FLEETGUARD	SP250E10V	HF7025	FLEETGUARD	RP300E05B
HC9901FUP13Z	PALL	SP110F03V	HF30363	FLEETGUARD	RP200E10B	HF7026	FLEETGUARD	RP300E10B
HC9901FUP26H	PALL	SP170F03B	HF30364	FLEETGUARD	RP200E10V	HF7027	FLEETGUARD	RP300E20B
HC9901FUP26Z	PALL	SP170F03V	HF30369	FLEETGUARD	RP100E10B	HF7028	FLEETGUARD	RP050E03B
HC9901FUP39H	PALL	SP250F03B	HF30370	FLEETGUARD	RP100E10V	HF7029	FLEETGUARD	RP050E05B
HC9901FUP39Z	PALL	SP250F03V	HF30382	FLEETGUARD	SP010E03V	HF7030	FLEETGUARD	RP050E10B
HC9901FUT13H	PALL	SP110F20B	HF30383	FLEETGUARD	SP010E03B	HF7031	FLEETGUARD	RP050E20B
HC9901FUT13Z	PALL	SP110F20V	HF30389	FLEETGUARD	SP024E03B	HF7032	FLEETGUARD	RP080E03B
HC9901FUT26H	PALL	SP170F20B	HF30390	FLEETGUARD	SP024E03V	HF7033	FLEETGUARD	RP080E05B
HC9901FUT26Z	PALL	SP170F20V	HF30395	FLEETGUARD	SP045F20B	HF7034	FLEETGUARD	RP080E10B
HC9901FUT39H	PALL	SP250F20B	HF30396	FLEETGUARD	SP070F20V	HF7035	FLEETGUARD	RP080E20B
HC9901FUT39Z	PALL	SP250F20V	HF30401	FLEETGUARD	SP045E03V	HF7036	FLEETGUARD	RP090E03B
HE10	ZINGA	SF6620	HF30402	FLEETGUARD	SP045E03B	HF7037	FLEETGUARD	RP090E05B
HE10L	ZINGA	SF6621	HF30426	FLEETGUARD	SP010F03V	HF7038	FLEETGUARD	RP090E10B
HF30000	FLEETGUARD	SP045F03B	HF30430	FLEETGUARD	SP100E03B	HF7039	FLEETGUARD	RP090E20B
HF30001	FLEETGUARD	SP045F03V	HF30431	FLEETGUARD	SP100E03V	HF7040	FLEETGUARD	SP010E03B
HF30002	FLEETGUARD	SP070F03B	HF30436	FLEETGUARD	SP020E03B	HF7041	FLEETGUARD	SP010E05B
HF30003	FLEETGUARD	SP070F03V	HF30437	FLEETGUARD	SP020E03V	HF7042	FLEETGUARD	SP010E10B
HF30004	FLEETGUARD	SP090F03B	HF30440	FLEETGUARD	SP110F03V	HF7043	FLEETGUARD	SP010E20B
HF30006	FLEETGUARD	SP130F03B	HF30442	FLEETGUARD	SP030E03B	HF7044	FLEETGUARD	SP020E03B
HF30021	FLEETGUARD	SP024E05V	HF30443	FLEETGUARD	SP030E03V	HF7045	FLEETGUARD	SP020E05B
HF30022	FLEETGUARD	SP024E05B	HF30451	FLEETGUARD	RP050E03B	HF7046	FLEETGUARD	SP020E10B
HF30027	FLEETGUARD	SP010E05V	HF30452	FLEETGUARD	RP050E03V	HF7047	FLEETGUARD	SP020E20B
HF30028	FLEETGUARD	SP010E05B	HF30453	FLEETGUARD	SP070E03B	HF7052	FLEETGUARD	SP110E03B
HF30036	FLEETGUARD	SP045E05B	HF30454	FLEETGUARD	SP070E03V	HF7053	FLEETGUARD	SP110E05B
HF30037	FLEETGUARD	SP045E05V	HF30455	FLEETGUARD	SP070E03BOBE	HF7054	FLEETGUARD	SP110E10B
HF30060	FLEETGUARD	SP100E05B	HF30456	FLEETGUARD	SP070E03VOBE	HF7055	FLEETGUARD	SP110E20B
HF30062	FLEETGUARD	SP020E05B	HF30466	FLEETGUARD	SP120E03B	HF7056	FLEETGUARD	SP170E03B
HF30063	FLEETGUARD	SP020E05V	HF30467	FLEETGUARD	SP120E03V	HF7057	FLEETGUARD	SP170E05B
HF30070	FLEETGUARD	SP120E05B	HF30477	FLEETGUARD	SP130F20B	HF7058	FLEETGUARD	SP170E10B
HF30071	FLEETGUARD	SP030E05B	HF30479	FLEETGUARD	SP045F20B	HF7059	FLEETGUARD	SP170E20B
HF30073	FLEETGUARD	RP050E05B	HF30480	FLEETGUARD	SP070F20B	HF7060	FLEETGUARD	SP250E03B
HF30074	FLEETGUARD	RP050E05V	HF30508	FLEETGUARD	SP090F20B	HF7061	FLEETGUARD	SP250E05B
HF30083	FLEETGUARD	SP070E05V	HF30509	FLEETGUARD	SP130F20B	HF7062	FLEETGUARD	SP250E10B
HF30084	FLEETGUARD	SP070E05B	HF30514	FLEETGUARD	RP080E03V	HF7063	FLEETGUARD	SP250E20B
HF30085	FLEETGUARD	SP070E05BOBE	HF30515	FLEETGUARD	RP080E03B	HF7064	FLEETGUARD	SP045E03B
HF30086	FLEETGUARD	SP070E05VOBE	HF30516	FLEETGUARD	SP110E03V	HF7065	FLEETGUARD	SP045E05B
HF30107	FLEETGUARD	SP200E05V	HF30517	FLEETGUARD	SP110E03B	HF7066	FLEETGUARD	SP045E10B
HF30108	FLEETGUARD	SP200E05B	HF30518	FLEETGUARD	SP140E03B	HF7067	FLEETGUARD	SP045E20B
HF30114	FLEETGUARD	SP160E05V	HF30519	FLEETGUARD	SP140E03V	HF7068	FLEETGUARD	SP070E03B
HF30115	FLEETGUARD	SP160E05B	HF30524	FLEETGUARD	SP090E03B	HF7069	FLEETGUARD	SP070E05B
HF30116	FLEETGUARD	SP130E05B	HF30525	FLEETGUARD	SP090E03V	HF7070	FLEETGUARD	SP070E10B
HF30117	FLEETGUARD	SP130E05V	HF30529	FLEETGUARD	SP024F20B	HF7071	FLEETGUARD	SP070E20B
HF30118	FLEETGUARD	SP130E05BOBE	HF30542	FLEETGUARD	SP070F03BOBE	HF7072	FLEETGUARD	SP090E03B
HF30119	FLEETGUARD	SP130E05VOBE	HF30543	FLEETGUARD	SP130F03BOBE	HF7073	FLEETGUARD	SP090E05B
HF30123	FLEETGUARD	RP240E05B	HF30551	FLEETGUARD	SP110F20V	HF7074	FLEETGUARD	SP090E10B
HF30124	FLEETGUARD	RP240E05V	HF30566	FLEETGUARD	SP020F20V	HF7075	FLEETGUARD	SP090E20B
HF30131	FLEETGUARD	SP170E05B	HF30568	FLEETGUARD	SP200E03B	HF7076	FLEETGUARD	SP130E03B
HF30132	FLEETGUARD	SP170E05V	HF30569	FLEETGUARD	SP200E03V	HF7077	FLEETGUARD	SP130E05B
HF30133	FLEETGUARD	RP090E05V	HF30570	FLEETGUARD	SP160E03V	HF7078	FLEETGUARD	SP130E10B
HF30134	FLEETGUARD	RP090E05B	HF30571	FLEETGUARD	SP160E03B	HF7079	FLEETGUARD	SP130E20B
HF30135	FLEETGUARD	SP180E05B	HF30576	FLEETGUARD	SP030F20B	HF7080	FLEETGUARD	SP045F03B
HF30136	FLEETGUARD	SP180E05V	HF30582	FLEETGUARD	SP130E03BOBE	HF7081	FLEETGUARD	SP045F20B
HF30142	FLEETGUARD	SP300E05V	HF30583	FLEETGUARD	SP130E03BOBE	HF7082	FLEETGUARD	SP070F03B
HF30143	FLEETGUARD	SP300E05B	HF30584	FLEETGUARD	SP130E03B	HF7083	FLEETGUARD	SP070F20B
HF30146	FLEETGUARD	SP250E05B	HF30585	FLEETGUARD	SP130E03V	HF7084	FLEETGUARD	SP090F03B
HF30147	FLEETGUARD	SP250E05V	HF30598	FLEETGUARD	SP170F03V	HF7085	FLEETGUARD	SP090F20B
HF30148	FLEETGUARD	RP300E05V	HF30599	FLEETGUARD	SP250F03V	HF7086	FLEETGUARD	SP130F03B
HF30149	FLEETGUARD	RP300E05B	HF30600	FLEETGUARD	SP170E03B	HF7087	FLEETGUARD	SP130F20B
HF30152	FLEETGUARD	SP140E05V	HF30601	FLEETGUARD	SP170E03V	HF7088	FLEETGUARD	SP070E03BOBE
HF30153	FLEETGUARD	SP140E05B	HF30602	FLEETGUARD	RP090E03B	HF7089	FLEETGUARD	SP070E05BOBE
HF30154	FLEETGUARD	RP080E05B	HF30603	FLEETGUARD	RP090E03V	HF7090	FLEETGUARD	SP070E10BOBE
HF30155	FLEETGUARD	RP080E05V	HF30604	FLEETGUARD	SP180E03B	HF7091	FLEETGUARD	SP070E20BOBE
HF30156	FLEETGUARD	SP110E05B	HF30605	FLEETGUARD	SP180E03V	HF7092	FLEETGUARD	SP130E03BOBE
HF30157	FLEETGUARD	SP110E05V	HF30606	FLEETGUARD	RP240E03B	HF7093	FLEETGUARD	SP130E05BOBE
HF30158	FLEETGUARD	SP090E05B	HF30607	FLEETGUARD	RP240E03V	HF7094	FLEETGUARD	SP130E10BOBE
HF30159	FLEETGUARD	SP090E05V	HF30613	FLEETGUARD	SP024F03V	HF7095	FLEETGUARD	SP130E20BOBE
HF30181	FLEETGUARD	RP200E05B	HF30614	FLEETGUARD	SP030F03V	HF7096	FLEETGUARD	SP070F03BOBE
HF30182	FLEETGUARD	RP200E05V	HF30630	FLEETGUARD	SP170F20V	HF7097	FLEETGUARD	SP070F20BOBE
HF30184	FLEETGUARD	RP100E05B	HF30631	FLEETGUARD	SP250F20V	HF7098	FLEETGUARD	SP130F03BOBE
HF30185	FLEETGUARD	RP100E05V	HF30634	FLEETGUARD	SP300E03B	HF7099	FLEETGUARD	SP130F20BOBE
HF30196	FLEETGUARD	SP024E10B	HF30635	FLEETGUARD	SP300E03V	HF7100	FLEETGUARD	SP024E03B
HF30197	FLEETGUARD	SP024E10V	HF30638	FLEETGUARD	SP020F03V	HF7101	FLEETGUARD	SP024E05B
HF30199	FLEETGUARD	SP010E10B	HF30640	FLEETGUARD	SP250E03B	HF7102	FLEETGUARD	SP024E10B
HF30200	FLEETGUARD	SP010E10V	HF30641	FLEETGUARD	SP250E03V	HF7103	FLEETGUARD	SP024E20B
HF30204	FLEETGUARD	SP010F20V	HF30644	FLEETGUARD	RP300E03V	HF7104	FLEETGUARD	SP030E03B
HF30210	FLEETGUARD	SP045E10B	HF30645	FLEETGUARD	RP300E03B	HF7105	FLEETGUARD	SP030E05B
HF30211	FLEETGUARD	SP045E10V	HF30650	FLEETGUARD	SP070F20BOBE	HF7106	FLEETGUARD	SP030E10B
HF30234	FLEETGUARD	SP100E10V	HF30651	FLEETGUARD	SP130F20BOBE	HF7107	FLEETGUARD	SP030E20B
HF30235	FLEETGUARD	SP100E10B	HF30685	FLEETGUARD	RP200E03B	HF7294	FLEETGUARD	SE090G10B
HF30236	FLEETGUARD	SP020E10B	HF30686	FLEETGUARD	RP200E03B	HF7403	FLEETGUARD	SP100E20V
HF30240	FLEETGUARD	SP120E10V	HF30691	FLEETGUARD	RP100E03B	HF7404	FLEETGUARD	SP200E03V
HF30241	FLEETGUARD	SP120E10B	HF30692	FLEETGUARD	RP100E03V	HF7407	FLEETGUARD	SP200E20V
HF30244	FLEETGUARD	SP030E10B	HF30696	FLEETGUARD	SP045E20V	HF7408	FLEETGUARD	SP300E03V
HF30245	FLEETGUARD	SP030E10V	HF30697	FLEETGUARD	SP045E20B	HF7411	FLEETGUARD	SP300E20V
HF30248	FLEETGUARD	RP050E10B	HF30747	FLEETGUARD	RP010E20B	HF7448	FLEETGUARD	SP010F03V
HF30249	FLEETGUARD	RP050E10V	HF30748	FLEETGUARD	SP070E20V	HF7449	FLEETGUARD	SP010F20V
HF30262	FLEETGUARD	SP070E10B	HF30749	FLEETGUARD	SP070E20BOBE	HF7450	FLEETGUARD	SP020F03V
HF30263	FLEETGUARD	SP070E10V	HF30750	FLEETGUARD	SP070E20VOBE	HF7451	FLEETGUARD	SP020F20V
HF30264	FLEETGUARD	SP070E10BOBE	HF30771	FLEETGUARD	SP140E03B	HF7464	FLEETGUARD	SP045E03V
HF30265	FLEETGUARD	SP070E10VOBE	HF30779	FLEETGUARD	SP090E20B	HF7465	FLEETGUARD	SP045E05V
HF30282	FLEETGUARD	SP140E10B	HF30780	FLEETGUARD	SP090E20V	HF7466	FLEETGUARD	SP045E10V
HF30285	FLEETGUARD	SP140E10V	HF30797	FLEETGUARD	SP130E20B	HF7467	FLEETGUARD	SP045E20V
HF30286	FLEETGUARD	RP080E10V	HF30798	FLEETGUARD	SP130E20V	HF7468	FLEETGUARD	SP070E03V
HF30287	FLEETGUARD	RP080E10B	HF30799	FLEETGUARD	SP130E20BOBE	HF7470	FLEETGUARD	SP070E10V
HF30288	FLEETGUARD	SP110E10B	HF30800	FLEETGUARD	SP130E20VOBE	HF7471	FLEETGUARD	SP070E20V
HF30289	FLEETGUARD	SP110E10V	HF7000	FLEETGUARD	SP100E03B	HF7473	FLEETGUARD	SP090E05V
HF30294	FLEETGUARD	SP090E10B	HF7001	FLEETGUARD	SP100E05B	HF7475	FLEETGUARD	SP090E20V
HF30295	FLEETGUARD	SP090E10V	HF7002	FLEETGUARD	SP100E10B	HF7476	FLEETGUARD	SP130E03V
HF30308	FLEETGUARD	SP200E10V	HF7003	FLEETGUARD	SP100E20B	HF7477	FLEETGUARD	SP130E05V
HF30309	FLEETGUARD	SP200E10B	HF7004	FLEETGUARD	SP200E03B	HF7478	FLEETGUARD	SP130E10V
HF30312	FLEETGUARD	SP130E10B	HF7005	FLEETGUARD	SP200E05B	HF7479	FLEETGUARD	SP130E20V
HF30313	FLEETGUARD	SP130E10V	HF7006	FLEETGUARD	SP200E10B	HF7480	FLEETGUARD	SP045F03V
HF30314	FLEETGUARD	SP130E10BOBE	HF7007	FLEETGUARD	SP200E20B	HF7482	FLEETGUARD	SP070F03V
HF30315	FLEETGUARD	SP130E10VOBE	HF7008	FLEETGUARD	SP300E03B	HF7483	FLEETGUARD	SP070F20V
HF30316	FLEETGUARD	SP160E10B	HF7009	FLEETGUARD				




code code bezeichnung código	brand marque hersteller marca		code code bezeichnung código	brand marque hersteller marca		code code bezeichnung código	brand marque hersteller marca	
HF7491	FLEETGUARD	SP070E20VOBE	HP06SHL412SFSV	HY-PRO	SE014A10B	HP3201A06AN	MP FILTRI	SM-85-1-G06-B
HF7492	FLEETGUARD	SP130E03VOBE	HP06SHL425SFSV	HY-PRO	SE014A20B	HP3201A10AN	MP FILTRI	SM-85-1-G10-B
HF7493	FLEETGUARD	SP130E05VOBE	HP06SHL433SFSV	HY-PRO	SE014A03B	HP3202A06AN	MP FILTRI	SM-85-2-G06-B
HF7494	FLEETGUARD	SP130E10VOBE	HP06SHL465SFSV	HY-PRO	SE014A05B	HP3202A10AN	MP FILTRI	SM-85-2-G10-B
HF7495	FLEETGUARD	SP130E20VOBE	HP06SHL712SFSV	HY-PRO	SE030A10B	HP3203A06AN	MP FILTRI	SM-85-3-G06-B
HF7507	FLEETGUARD	SP030E20V	HP06SHL725SFSV	HY-PRO	SE030A20B	HP3203A10AN	MP FILTRI	SM-85-3-G10-B
HF7508	FLEETGUARD	SP024F03B	HP06SHL733SFSV	HY-PRO	SE030A03B	HP3204A06AN	MP FILTRI	SM-85-4-G06-B
HF7509	FLEETGUARD	SP024F20B	HP06SHL76SFSV	HY-PRO	SE030A05B	HP3204A10AN	MP FILTRI	SM-85-4-G10-B
HF7510	FLEETGUARD	SP030F03B	HP07DHL76MSB	HY-PRO	SE030H05B	HP33DHL1412MB	HY-PRO	SE160H10B
HF7511	FLEETGUARD	SP030F20B	HP1200L1510M	HY-PRO	SL125E10B	HP33DHL1412MSB	HY-PRO	SE160H10B
HF7512	FLEETGUARD	SP110F03V	HP1200L1525M	HY-PRO	SL125E20B	HP33DHL1425MB	HY-PRO	SE160H20B
HF7513	FLEETGUARD	SP110F20V	HP1200L153M	HY-PRO	SL125E03B	HP33DHL1425MSB	HY-PRO	SE160H20B
HF7514	FLEETGUARD	SP170F03V	HP1201L1510M	HY-PRO	SL125F10B	HP33DHL143MB	HY-PRO	SE160H03B
HF7515	FLEETGUARD	SP170F20V	HP1201L1525M	HY-PRO	SL125F20B	HP33DHL143MSB	HY-PRO	SE160H03B
HF7516	FLEETGUARD	SP250F03V	HP1201L153M	HY-PRO	SL125F03B	HP33DHL146MB	HY-PRO	SE160H05B
HF7517	FLEETGUARD	SP250F20V	HP1351A06AN	MP FILTRI	SM-36-1-G06-B	HP33DHL146MSB	HY-PRO	SE160H05B
HF7518	FLEETGUARD	SP160E03B	HP1351A10AN	MP FILTRI	SM-36-1-G10-B	HP33DHL712MB	HY-PRO	SE090H10B
HF7519	FLEETGUARD	SP160E10B	HP1352A06AN	MP FILTRI	SM-36-2-G06-B	HP33DHL712MSB	HY-PRO	SE090H10B
HF7520	FLEETGUARD	SP160E05B	HP1352A10AN	MP FILTRI	SM-36-2-G10-B	HP33DHL725MB	HY-PRO	SE090H20B
HF8021	FLEETGUARD	RP240E05B	HP150L410M	HY-PRO	SL014E10B	HP33DHL725MSB	HY-PRO	SE090H20B
HF8029	FLEETGUARD	RP050E05B	HP150L425M	HY-PRO	SL014E20B	HP33DHL73MB	HY-PRO	SE090H03B
HF8057	FLEETGUARD	SP170E05B	HP150L43M	HY-PRO	SL014E03B	HP33DHL73MSB	HY-PRO	SE090H03B
HF8064	FLEETGUARD	SP045E03B	HP151L410M	HY-PRO	SL014F10B	HP33DHL76MB	HY-PRO	SE090H05B
HF8065	FLEETGUARD	SP045E05B	HP151L425M	HY-PRO	SL014F20B	HP33DHL76MSB	HY-PRO	SE090H05B
HF8066	FLEETGUARD	SP045E10B	HP151L43M	HY-PRO	SL014F03B	HP33DNL1412MB	HY-PRO	SE160G10B
HF8067	FLEETGUARD	SP045E20B	HP16DHL512MB	HY-PRO	SE045H10B	HP33DNL1412MSB	HY-PRO	SE160G10B
HF8068	FLEETGUARD	SP070E03B	HP16DHL512MSB	HY-PRO	SE045H10B	HP33DNL1425MB	HY-PRO	SE160G20B
HF8069	FLEETGUARD	SP070E05B	HP16DHL525MSB	HY-PRO	SE045H20B	HP33DNL1425MSB	HY-PRO	SE160G20B
HF8070	FLEETGUARD	SP070E10B	HP16DHL525MSB	HY-PRO	SE045H20B	HP33DNL1425WSB	HY-PRO	SE160B25B
HF8071	FLEETGUARD	SP070E20B	HP16DHL53MB	HY-PRO	SE045H03B	HP33DNL143MB	HY-PRO	SE160G03B
HF8072	FLEETGUARD	SP090E03B	HP16DHL53MSB	HY-PRO	SE045H03B	HP33DNL143MSB	HY-PRO	SE160G03B
HF8073	FLEETGUARD	SP090E05B	HP16DHL56MB	HY-PRO	SE045H05B	HP33DNL146MB	HY-PRO	SE160G05B
HF8074	FLEETGUARD	SP090E10B	HP16DHL56MSB	HY-PRO	SE045H05B	HP33DNL146MSB	HY-PRO	SE160G05B
HF8075	FLEETGUARD	SP090E20B	HP16DHL812MB	HY-PRO	SE070H10B	HP33DNL1474WSB	HY-PRO	SE160B50B
HF8076	FLEETGUARD	SP130E03B	HP16DHL812MSB	HY-PRO	SE070H10B	HP33DNL712MB	HY-PRO	SE090G10B
HF8077	FLEETGUARD	SP130E05B	HP16DHL825MB	HY-PRO	SE070H20B	HP33DNL712MSB	HY-PRO	SE090G10B
HF8078	FLEETGUARD	SP130E10B	HP16DHL825MSB	HY-PRO	SE070H20B	HP33DNL725MB	HY-PRO	SE090G20B
HF8079	FLEETGUARD	SP130E20B	HP16DHL83MB	HY-PRO	SE070H03B	HP33DNL725MSB	HY-PRO	SE090G20B
HF8088	FLEETGUARD	SP070E03BOBE	HP16DHL83MSB	HY-PRO	SE070H03B	HP33DNL725WSB	HY-PRO	SE090B25B
HF8089	FLEETGUARD	SP070E05BOBE	HP16DHL86MB	HY-PRO	SE070H05B	HP33DNL73MB	HY-PRO	SE090G03B
HF8090	FLEETGUARD	SP070E10BOBE	HP16DHL86MSB	HY-PRO	SE070H05B	HP33DNL73MSB	HY-PRO	SE090G03B
HF8091	FLEETGUARD	SP070E20BOBE	HP16DNL512MB	HY-PRO	SE045G10B	HP33DNL76MB	HY-PRO	SE090G05B
HF8092	FLEETGUARD	SP130E03BOBE	HP16DNL512MSB	HY-PRO	SE045G10B	HP33DNL76MSB	HY-PRO	SE090G05B
HF8093	FLEETGUARD	SP130E05BOBE	HP16DNL525MB	HY-PRO	SE045G20B	HP33RNL812MB	HY-PRO	RE090G10B
HF8094	FLEETGUARD	SP130E10BOBE	HP16DNL525MSB	HY-PRO	SE045G20B	HP33RNL825MB	HY-PRO	RE090G20B
HF8095	FLEETGUARD	SP130E20BOBE	HP16DNL525WSB	HY-PRO	SE045B25B	HP33RNL83MB	HY-PRO	RE090G03B
HF8264	FLEETGUARD	SP045E03V	HP16DNL53MB	HY-PRO	SE045G03B	HP33RNL86MB	HY-PRO	RE090G05B
HF8265	FLEETGUARD	SP045E05V	HP16DNL53MSB	HY-PRO	SE045G03B	HP33SHL1412SFSV	HY-PRO	SE160A10B
HF8266	FLEETGUARD	SP045E10V	HP16DNL56MB	HY-PRO	SE045G05B	HP33SHL1425SFSV	HY-PRO	SE160A20B
HF8267	FLEETGUARD	SP045E20V	HP16DNL56MSB	HY-PRO	SE045G05B	HP33SHL143SFSV	HY-PRO	SE160A03B
HF8268	FLEETGUARD	SP070E03V	HP16DNL574WSB	HY-PRO	SE045B50B	HP33SHL146SFSV	HY-PRO	SE160A05B
HF8270	FLEETGUARD	SP070E10V	HP16DNL812MB	HY-PRO	SE070G10B	HP33SHL712SFSV	HY-PRO	SE090A10B
HF8271	FLEETGUARD	SP070E20V	HP16DNL812MSB	HY-PRO	SE070G10B	HP33SHL725SFSV	HY-PRO	SE090A20B
HF8272	FLEETGUARD	SP090E03V	HP16DNL825MSB	HY-PRO	SE070G20B	HP33SHL725SFSV	HY-PRO	SE090A03B
HF8273	FLEETGUARD	SP090E05V	HP16DNL825MSB	HY-PRO	SE070G20B	HP33SHL73SFSV	HY-PRO	SE090A05B
HF8274	FLEETGUARD	SP090E10V	HP16DNL825WSB	HY-PRO	SE070B25B	HP33SHL76SFSV	HY-PRO	SE090A05B
HF8275	FLEETGUARD	SP090E20V	HP16DNL83MB	HY-PRO	SE070G03B	HP33SNL774WSB	HY-PRO	SE090B50B
HF8276	FLEETGUARD	SP130E03V	HP16DNL83MSB	HY-PRO	SE070G03B	HP500L510M	HY-PRO	SL045E10B
HF8277	FLEETGUARD	SP130E05V	HP16DNL86MB	HY-PRO	SE070G05B	HP500L525M	HY-PRO	SL045E20B
HF8278	FLEETGUARD	SP130E10V	HP16DNL86MSB	HY-PRO	SE070G05B	HP501L510M	HY-PRO	SL045E03B
HF8279	FLEETGUARD	SP130E20V	HP16DNL874WSB	HY-PRO	SE070B50B	HP501L525M	HY-PRO	SL045F10B
HF8288	FLEETGUARD	SP070E03VOBE	HP16RNL510SFSB	HY-PRO	RE045A10B	HP501L53M	HY-PRO	SL045F03B
HF8289	FLEETGUARD	SP070E05VOBE	HP16RNL512MB	HY-PRO	RE045G10B	HP50L1612MB	HY-PRO	SP130E10BOBE
HF8290	FLEETGUARD	SP070E10VOBE	HP16RNL512MSB	HY-PRO	RE045G10B	HP50L1625MB	HY-PRO	SP130E20BOBE
HF8291	FLEETGUARD	SP070E20VOBE	HP16RNL525MB	HY-PRO	RE045G20B	HP50L163MB	HY-PRO	SP130E03BOBE
HF8292	FLEETGUARD	SP130E03VOBE	HP16RNL525MSB	HY-PRO	RE045G20B	HP50L166MB	HY-PRO	SP130E05BOBE
HF8293	FLEETGUARD	SP130E05VOBE	HP16RNL525SFSB	HY-PRO	RE045A20B	HP50L812MB	HY-PRO	SP070E10BOBE
HF8294	FLEETGUARD	SP130E10VOBE	HP16RNL525WSB	HY-PRO	RE045B25B	HP50L825MB	HY-PRO	SP070E20BOBE
HF8295	FLEETGUARD	SP130E20VOBE	HP16RNL53MB	HY-PRO	RE045G03B	HP50L83MB	HY-PRO	SP070E03BOBE
HP03DHL412MB	HY-PRO	SE008F10B	HP16RNL53MSB	HY-PRO	RE045G03B	HP50L86MB	HY-PRO	SP070E05BOBE
HP03DHL412SFB	HY-PRO	SE008A10B	HP16RNL53SFSB	HY-PRO	RE045A03B	HP51L1615MB	HY-PRO	SP130F10BOBE
HP03DHL425MB	HY-PRO	SE008F20B	HP16RNL56MB	HY-PRO	RE045G05B	HP51L162MB	HY-PRO	SP130F03BOBE
HP03DHL425SFB	HY-PRO	SE008A20B	HP16RNL56MSB	HY-PRO	RE045G05B	HP51L815MB	HY-PRO	SP070F10BOBE
HP03DHL425WVB	HY-PRO	SE008B25B	HP16RNL56SFSB	HY-PRO	RE045A05B	HP51L82MB	HY-PRO	SP070F03BOBE
HP03DHL43MB	HY-PRO	SE008F03B	HP16RNL574WSB	HY-PRO	RE045B100B	HP60L1312MB	HY-PRO	SP090E10B
HP03DHL43SFB	HY-PRO	SE008A03B	HP16RNL810SFSB	HY-PRO	RE070A10B	HP60L1325MB	HY-PRO	SP090E20B
HP03DHL46MB	HY-PRO	SE008F05B	HP16RNL812MB	HY-PRO	RE070G10B	HP60L133MB	HY-PRO	SP090E03B
HP03DHL46SFB	HY-PRO	SE008A05B	HP16RNL812MSB	HY-PRO	RE070G10B	HP60L136MB	HY-PRO	SP090E05B
HP03DHL474WB	HY-PRO	SE008B50B	HP16RNL825MB	HY-PRO	RE070G20B	HP60L1612MB	HY-PRO	SP130E10B
HP03DNL412MB	HY-PRO	SE008E10B	HP16RNL825MSB	HY-PRO	RE070G20B	HP60L1625MB	HY-PRO	SP130E20B
HP03DNL425MB	HY-PRO	SE008E20B	HP16RNL825SFSB	HY-PRO	RE070A20B	HP60L163MB	HY-PRO	SP130E03B
HP03DNL43MB	HY-PRO	SE008E03B	HP16RNL825WSB	HY-PRO	RE070B25B	HP60L166MB	HY-PRO	SP130E05B
HP03DNL46MB	HY-PRO	SE008E05B	HP16RNL83MB	HY-PRO	RE070G03B	HP60L166MB	HY-PRO	SP130E05B
HP0651A10AN	MP FILTRI	SM-18-1-G10-B	HP16RNL83MSB	HY-PRO	RE070G03B	HP60L12MB	HY-PRO	SP045E10B
HP0652A10AN	MP FILTRI	SM-18-2-G10-B	HP16RNL83SFSB	HY-PRO	RE070A03B	HP60L425MSB	HY-PRO	SP045E20B
HP0653A10AN	MP FILTRI	SM-18-3-G10-B	HP16RNL86MB	HY-PRO	RE070G05B	HP60L43MB	HY-PRO	SP045E03B
HP06DHL412MB	HY-PRO	SE014H10B	HP16RNL86MSB	HY-PRO	RE070G05B	HP60L46MB	HY-PRO	SP045E05B
HP06DHL412MSB	HY-PRO	SE014H10B	HP16RNL86SFSB	HY-PRO	RE070A05B	HP60L812MB	HY-PRO	SP070E10B
HP06DHL425MB	HY-PRO	SE014H20B	HP16RNL874WSB	HY-PRO	RE070B100B	HP60L825MB	HY-PRO	SP070E20B
HP06DHL425MSB	HY-PRO	SE014H20B	HP16SHL512SFSV	HY-PRO	SE045A10B	HP60L83MB	HY-PRO	SP070E03B
HP06DHL43MB	HY-PRO	SE014H03B	HP16SHL525SFSV	HY-PRO	SE045A10B	HP60L86MB	HY-PRO	SP070E05B
HP06DHL43MSB	HY-PRO	SE014H03B	HP16SHL53SFSV	HY-PRO	SE045A20B	HP61L1315MB	HY-PRO	SP090F10B
HP06DHL46MB	HY-PRO	SE014H05B	HP16SHL56SFSV	HY-PRO	SE045A03B	HP61L133MB	HY-PRO	SP090F03B
HP06DHL46MSB	HY-PRO	SE014H05B	HP16SHL812SFSV	HY-PRO	SE045A05B	HP61L1615MB	HY-PRO	SP130F10B
HP06DHL712MB	HY-PRO	SE030H10B	HP16SHL825SFSV	HY-PRO	SE070A10B	HP61L162MB	HY-PRO	SP130F03B
HP06DHL712MSB	HY-PRO	SE030H10B	HP16SHL83SFSV	HY-PRO	SE070A20B	HP61L415MB	HY-PRO	SP045F10B
HP06DHL725MB	HY-PRO	SE030H20B	HP16SHL86SFSV	HY-PRO	SE070A03B	HP61L42MB	HY-PRO	SP045F03B
HP06DHL725MSB	HY-PRO	SE030H20B	HP20L412MB	HY-PRO	SE070A05B	HP61L815MB	HY-PRO	SP070F10B
HP06DHL73MB	HY-PRO	SE030H03B	HP20L425MB	HY-PRO	SP010E10B	HP61L82MB	HY-PRO	SP070F03B
HP06DHL73MSB	HY-PRO	SE030H03B	HP20L43MB	HY-PRO	SP010E20B	HP66RNL1412MB	HY-PRO	RE160G10B
HP06DHL76MB	HY-PRO	SE030H05B	HP20L46MB	HY-PRO	SP010E03B	HP66RNL1425MB	HY-PRO	RE160G20B
HP06DNL412MB	HY-PRO	SE014G10B	HP20L812MB	HY-PRO	SP010E05B	HP66RNL143MB	HY-PRO	RE160G03B
HP06DNL412MSB	HY-PRO	SE014G10B	HP20L825MB	HY-PRO	SP020E10B	HP66RNL146MB	HY-PRO	RE160G05B
HP06DNL425MB	HY-PRO	SE014G20B	HP20L83MB	HY-PRO	SP020E20B	HP800L1010M	HY-PRO	SL090E10B
HP06DNL425MSB	HY-PRO	SE014G20B	HP20L86MB	HY-PRO	SP020E03B	HP800L1025M	HY-PRO	SL090E20B
HP06DNL425WSB	HY-PRO	SE014B25B	HP21L415MB	HY-PRO	SP020E05B	HP800L103M	HY-PRO	SL090E03B
HP06DNL43MB	HY-PRO	SE014G03B	HP21L42MB	HY-PRO	SP010F10B	HP801L1010M	HY-PRO	SL090F10B
HP06DNL43MSB	HY-PRO	SE014G03B	HP21L815MB	HY-PRO	SP020F10B	HP801L1025M	HY-PRO	SL090F20B
HP06DNL46MB	HY-PRO	SE014G05B	HP21L82MB	HY-PRO	SP020F03B	HP801L103M	HY-PRO	SL090F03B
HP06DNL46MSB	HY-PRO	SE014G05B	HP250L710M	HY-PRO	SP020F10B	HP80L412MB	HY-PRO	SP024E10B
HP06DNL474WSB	HY-PRO	SE014B50B	HP250L725M	HY-PRO	SL020E20B	HP80L425MB	HY-PRO	SP024E20B
HP06DNL712MB	HY-PRO</							




code code bezeichnung código	brand marque hersteller marca		code code bezeichnung código	brand marque hersteller marca		code code bezeichnung código	brand marque hersteller marca	
HP83L1625MB	HY-PRO	SP200E20B	HY11010	SCHUPP	RS003A10B	HY11115	SCHUPP	RS150B100B
HP83L163MB	HY-PRO	SP200E03B	HY11011	SCHUPP	RS003K05B	HY11115/1	SCHUPP	RS151B100
HP83L166MB	HY-PRO	SP200E05B	HY11012	SCHUPP	RS003K10B	HY11116	SCHUPP	RS150E03B
HP83L3912MB	HY-PRO	SP300E10B	HY11013	SCHUPP	RS003K20B	HY11116/1	SCHUPP	RS151E03B
HP83L3925MB	HY-PRO	SP300E20B	HY11014	SCHUPP	RS005B10B	HY11117	SCHUPP	RS150E05B
HP83L393MB	HY-PRO	SP300E03B	HY11015	SCHUPP	RS005B25B	HY11117/1	SCHUPP	RS151E05B
HP83L396MB	HY-PRO	SP300E05B	HY11016	SCHUPP	RS005B40B	HY11118	SCHUPP	RS151E10B
HP83L812MB	HY-PRO	SP100E10B	HY11017	SCHUPP	RS005B60B	HY11119	SCHUPP	RS150E20B
HP83L825MB	HY-PRO	SP100E20B	HY11018	SCHUPP	RS005B100B	HY11119/1	SCHUPP	RS151E20B
HP83L83MB	HY-PRO	SP100E03B	HY11019	SCHUPP	RS005E03B	HY11120	SCHUPP	RS150A05B
HP83L86MB	HY-PRO	SP100E05B	HY11020	SCHUPP	RS005E05B	HY11121	SCHUPP	RS150A10B
HP91L2615MB	HY-PRO	SP170F10B	HY11021	SCHUPP	RS005E10B	HY11122	SCHUPP	RS150K05B
HP91L2625MB	HY-PRO	SP170F20B	HY11022	SCHUPP	RS005E20B	HY11122/1	SCHUPP	RS151K05B
HP91L262MB	HY-PRO	SP170F03B	HY11023	SCHUPP	RS005A05B	HY11123	SCHUPP	RS150K10B
HP91L266MB	HY-PRO	SP170F05B	HY11024	SCHUPP	RS005A10B	HY11123/1	SCHUPP	RS151K10B
HP91L3915MB	HY-PRO	SP250F10B	HY11025	SCHUPP	RS005K05B	HY11124	SCHUPP	RS150K20B
HP91L392MB	HY-PRO	SP250F03B	HY11026	SCHUPP	RS005K10B	HY11124/1	SCHUPP	RS151K20B
HP91L396MB	HY-PRO	SP250F05B	HY11027	SCHUPP	RS005K20B	HY11125	SCHUPP	RS060B10B
HP94L1312MB	HY-PRO	SP110E10B	HY11028	SCHUPP	RS008B10B	HY11126	SCHUPP	RS250B10B
HP94L1325MB	HY-PRO	SP110E20B	HY11029	SCHUPP	RS008B25B	HY11126/1	SCHUPP	RS251B10B
HP94L133MB	HY-PRO	SP110E03B	HY11030	SCHUPP	RS008B40B	HY11127	SCHUPP	RS250B25B
HP94L136MB	HY-PRO	SP110E05B	HY11031	SCHUPP	RS008B60B	HY11127/1	SCHUPP	RS251B20B
HP94L2612MB	HY-PRO	SP170E10B	HY11032	SCHUPP	RS008B100B	HY11128	SCHUPP	RS250B40B
HP94L2625MB	HY-PRO	SP170E20B	HY11033	SCHUPP	RS008E03B	HY11128/1	SCHUPP	RS251B40B
HP94L263MB	HY-PRO	SP170E03B	HY11034	SCHUPP	RS008E05B	HY11129	SCHUPP	RS250B60B
HP94L266MB	HY-PRO	SP170E05B	HY11035	SCHUPP	RS008E10B	HY11129/1	SCHUPP	RS251B60B
HP94L3912MB	HY-PRO	SP250E10B	HY11036	SCHUPP	RS008E20B	HY11130	SCHUPP	RS250B100B
HP94L3925MB	HY-PRO	SP250E20B	HY11037	SCHUPP	RS008A05B	HY11130/1	SCHUPP	RS251B100B
HP94L393MB	HY-PRO	SP250E03B	HY11038	SCHUPP	RS008A10B	HY11131	SCHUPP	RS250E03B
HP94L396MB	HY-PRO	SP250E05B	HY11039	SCHUPP	RS008K05B	HY11131/1	SCHUPP	RS251E03B
HP95RNL1410SFSB	HY-PRO	RE250A10B	HY11040	SCHUPP	RS008K10B	HY11132	SCHUPP	RS250E05B
HP95RNL1412MB	HY-PRO	RE250G10B	HY11041	SCHUPP	RS008K20B	HY11132/1	SCHUPP	RS251E05B
HP95RNL1412MSB	HY-PRO	RE250G10B	HY11042	SCHUPP	RS014B10B	HY11133	SCHUPP	RS251E10B
HP95RNL1425MB	HY-PRO	RE250G20B	HY11043	SCHUPP	RS014B25B	HY11134	SCHUPP	RS250E20B
HP95RNL1425MSB	HY-PRO	RE250G20B	HY11044	SCHUPP	RS014B40B	HY11134/1	SCHUPP	RS251E20B
HP95RNL1425SFSB	HY-PRO	RE250A20B	HY11045	SCHUPP	RS014B60B	HY11135	SCHUPP	RS250A05B
HP95RNL1425WSB	HY-PRO	RE250B25B	HY11046	SCHUPP	RS014B100B	HY11136	SCHUPP	RS250A10B
HP95RNL143MB	HY-PRO	RE250G03B	HY11047	SCHUPP	RS014E03B	HY11137	SCHUPP	RS250K05B
HP95RNL143MSB	HY-PRO	RE250G03B	HY11048	SCHUPP	RS014E05B	HY11137/1	SCHUPP	RS251K05B
HP95RNL143SFSB	HY-PRO	RE250A03B	HY11049	SCHUPP	RS014E10B	HY11138	SCHUPP	RS250K10B
HP95RNL146MB	HY-PRO	RE250G05B	HY11050	SCHUPP	RS014E20B	HY11138/1	SCHUPP	RS251K10B
HP95RNL146MSB	HY-PRO	RE250G05B	HY11051	SCHUPP	RS014A05B	HY11139	SCHUPP	RS250K20B
HP95RNL146SFSB	HY-PRO	RE250A05B	HY11052	SCHUPP	RS014A10B	HY11139/1	SCHUPP	RS251K20B
HP95RNL1474WSB	HY-PRO	RE250B100B	HY11053	SCHUPP	RS014K05B	HY11140	SCHUPP	RS370B10B
HP95RNL1810SFSB	HY-PRO	RE300A10B	HY11054	SCHUPP	RS014K10B	HY11140/1	SCHUPP	RS371B10B
HP95RNL1812MB	HY-PRO	RE300G10B	HY11055	SCHUPP	RS014K20B	HY11141	SCHUPP	RS370B25B
HP95RNL1812MSB	HY-PRO	RE300G10B	HY11056	SCHUPP	RS024B10B	HY11141/1	SCHUPP	RS371B25B
HP95RNL1825MB	HY-PRO	RE300G20B	HY11057	SCHUPP	RS024B25B	HY11142	SCHUPP	RS370B40B
HP95RNL1825MSB	HY-PRO	RE300G20B	HY11058	SCHUPP	RS024B40B	HY11142/1	SCHUPP	RS371B40B
HP95RNL1825SFSB	HY-PRO	RE300A20B	HY11059	SCHUPP	RS024B60B	HY11143	SCHUPP	RS370B60B
HP95RNL1825WB	HY-PRO	RE300S25B	HY11060	SCHUPP	RS024B100B	HY11143/1	SCHUPP	RS371B60B
HP95RNL1825WSB	HY-PRO	RE300B25B	HY11061	SCHUPP	RS024E03B	HY11144	SCHUPP	RS370B100B
HP95RNL183MB	HY-PRO	RE300G03B	HY11062	SCHUPP	RS024E05B	HY11144/1	SCHUPP	RS371B100B
HP95RNL183MSB	HY-PRO	RE300G03B	HY11063	SCHUPP	RS024E10B	HY11145	SCHUPP	RS370E03B
HP95RNL183SFSB	HY-PRO	RE300A03B	HY11064	SCHUPP	RS024E20B	HY11145/1	SCHUPP	RS371E03B
HP95RNL186MB	HY-PRO	RE300G05B	HY11065	SCHUPP	RS024A05B	HY11146	SCHUPP	RS370E05B
HP95RNL186MSB	HY-PRO	RE300G05B	HY11066	SCHUPP	RS024A10B	HY11146/1	SCHUPP	RS371E05B
HP95RNL186SFSB	HY-PRO	RE300A05B	HY11067	SCHUPP	RS024K05B	HY11147	SCHUPP	RS370E10B
HP95RNL1874WB	HY-PRO	RE300S100B	HY11068	SCHUPP	RS024K10B	HY11147/1	SCHUPP	RS371E10B
HP95RNL1874WSB	HY-PRO	RE300B100B	HY11069	SCHUPP	RS024K20B	HY11148	SCHUPP	RS370E20B
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code code bezeichnung código	brand marque hersteller marca		code code bezeichnung código	brand marque hersteller marca		code code bezeichnung código	brand marque hersteller marca	
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HY15188	SCHUPP	NR160B40B	HY15443	SCHUPP	LL080E20B	HY20028	SCHUPP	RP115E03B
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HY15206	SCHUPP	SL035W100B	HY15458	SCHUPP	ML070K20B	HY20206	SCHUPP	SP100E10B
HY15207	SCHUPP	SL035B100B	HY15459	SCHUPP	ML070D10B	HY20207	SCHUPP	SP200E10B
HY15208	SCHUPP	SL035K10B	HY15460	SCHUPP	ML070D20B	HY20208	SCHUPP	SP300E10B
HY15209	SCHUPP	SL035K20B	HY15461	SCHUPP	ML070E03B	HY20209	SCHUPP	SP100E20B
HY15210	SCHUPP	SL035D10B	HY15462	SCHUPP	ML070E10B	HY20210	SCHUPP	SP200E20B
HY15211	SCHUPP	SL035D20B	HY15463	SCHUPP	ML070E20B	HY20211	SCHUPP	SP300E20B
HY15212	SCHUPP	SL035E03B	HY15464	SCHUPP	ML070F03B	HY20250	SCHUPP	RP100E05B
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HY15214	SCHUPP	SL035E20B	HY15466	SCHUPP	ML070F20B	HY20252	SCHUPP	RP240E05B
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HY15216	SCHUPP	SL035F10B	HY15468	SCHUPP	RL070B40B	HY20254	SCHUPP	RP100E03B
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HY20404	SCHUPP	SP024E10BOBE	KK25	SCHROEDER	RTE48D25B/S2	P170620	DONALDSON	RE300G10B
HY20405	SCHUPP	SP030E10BOBE	KK3	SCHROEDER	RTE48D03B/S2	P174290	DONALDSON	SL045D20B
HY20406	SCHUPP	SP024E20BOBE	KK21	SCHROEDER	RTE48G01B/S2	P174291	DONALDSON	SL045E03B
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HY20450	SCHUPP	SP120E03B	KK225F	SCHROEDER	RTE48G25B/S2	P174293	DONALDSON	SL045D10B
HY20451	SCHUPP	SP140E03B	KK23	SCHROEDER	RTE48G03B/S2	P174294	DONALDSON	SL090D20B
HY20452	SCHUPP	SP160E03B	KK25F	SCHROEDER	RTE48G05B/S2	P174295	DONALDSON	SL090E03B
HY20453	SCHUPP	SP120E05B	KW	SCHROEDER	RTE48R25B	P174296	DONALDSON	SL090E10B
HY20454	SCHUPP	SP140E05B	KZ1	SCHROEDER	RTE48G01B	P174297	DONALDSON	SL090E20B
HY20455	SCHUPP	SP160E05B	KZ10	SCHROEDER	RTE48G10B	P174298	DONALDSON	SL125D20B
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HY20457	SCHUPP	SP140E10B	KZ3	SCHROEDER	RTE48G03B	P174300	DONALDSON	SL125E10B
HY20458	SCHUPP	SP160E10B	KZ5	SCHROEDER	RTE48G05B	P174301	DONALDSON	SL125D10B
HY20459	SCHUPP	SP120E20B	KZX1	SCHROEDER	SCE48H01B	P2092011	ARGO	RD055K10B
HY20460	SCHUPP	SP140E20B	KZX10	SCHROEDER	SCE48H10B	P2092022	ARGO	RD055L20B
HY20461	SCHUPP	SP160E20B	KZX25	SCHROEDER	SCE48H25B	P2121712	ARGO	RD070K20B
HY20462	SCHUPP	SP180E05B	KZX3	SCHROEDER	SCE48H03B	P2121721	ARGO	RD070K10B
HY20463	SCHUPP	SP180E03B	KZX5	SCHROEDER	SCE48H05B	P3051000	ARGO	SD010L10B
HY20464	SCHUPP	SP180E10B	LE10	ZINGA	SF6721	P3051002	ARGO	SD010K20B
HY20465	SCHUPP	SP180E20B	LE25	ZINGA	SF6711	P3051005	ARGO	SD010L20B
HY20502	SCHUPP	SP010E03B	LHX93101	LUBER-FINER	SA020E10B	P3051011	ARGO	SD010K10B
HY20503	SCHUPP	SP020E03B	LHX93212	LUBER-FINER	SA060E05B	P3052000	ARGO	SD015L10B
HY20550	SCHUPP	SP010F03B	LHX93222	LUBER-FINER	SA060E10B	P3052001	ARGO	SD015K10B
HY20551	SCHUPP	SP020F03B	LHX93231	LUBER-FINER	SA040E10B	P3052002	ARGO	SD015K20B
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HY20600	SCHUPP	SP110E05B	LHX93322	LUBER-FINER	SA080E10B	P3062311	ARGO	SD024K10B
HY20601	SCHUPP	SP170E05B	LHX93342	LUBER-FINER	SA100E10B	P3072000	ARGO	MD025L20B
HY20602	SCHUPP	SP250E05B	LHX95023	LUBER-FINER	SP010F03B	P3072001	ARGO	MD025L10B
HY20603	SCHUPP	SP110E03B	LHX95024	LUBER-FINER	SP010F20B	P550387	DONALDSON	SF6720
HY20604	SCHUPP	SP170E03B	LHX95058	LUBER-FINER	SP024F03B	P779523	DONALDSON	SF6711
HY20605	SCHUPP	SP250E03B	LHX95076	LUBER-FINER	SP010E05B	P779584	DONALDSON	SF6610
HY20606	SCHUPP	SP110E10B	LHX95077	LUBER-FINER	SP010E10B	P779596	DONALDSON	SF6720
HY20607	SCHUPP	SP170E10B	LHX95078	LUBER-FINER	SP020E03B	P779660	DONALDSON	SF6720
HY20608	SCHUPP	SP250E10B	LHX95079	LUBER-FINER	SP020F03B	P11005MIC25	MAHLE	SL014D20B
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HY20610	SCHUPP	SP170E20B	LHX95098	LUBER-FINER	SP024E05B	P11011MIC25	MAHLE	SL030D20B
HY20611	SCHUPP	SP250E20B	LHX95106	LUBER-FINER	SP010E03B	P11015MIC25	MAHLE	SL045D20B
HY20650	SCHUPP	SP045E05B	LHX95107	LUBER-FINER	SP010E20B	P11030MIC25	MAHLE	SL090D20B
HY20651	SCHUPP	SP070E05B	LHX95108	LUBER-FINER	SP020E05B	P11045MIC25	MAHLE	SL125D20B
HY20652	SCHUPP	SP090E05B	LHX95109	LUBER-FINER	SP020E10B	P11105MIC10	MAHLE	SL014D10B
HY20653	SCHUPP	SP130E05B	LHX95111	LUBER-FINER	SP020E20B	P11108MIC10	MAHLE	SL020D10B
HY20654	SCHUPP	SP045E03B	LHX95113	LUBER-FINER	SP024E10B	P11111MIC10	MAHLE	SL030D10B
HY20655	SCHUPP	SP070E03B	LHX95114	LUBER-FINER	SP024E20B	P11115MIC10	MAHLE	SL045D10B
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HY20657	SCHUPP	SP130E03B	MF1002A25HB	MP FILTRI	RTM-027-2-G25-B	P11145MIC10	MAHLE	SL125D10B
HY20658	SCHUPP	SP045E10B	MF1002P10NB	MP FILTRI	RTM-027-2-N10-B	P113004DNMIC10	MAHLE	NL040K10B
HY20659	SCHUPP	SP070E10B	MF1801A10HB	MP FILTRI	RTM-048-1-G10-B	P113004RNNMIC10	MAHLE	NR040K10B
HY20660	SCHUPP	SP090E10B	MF1801A25HB	MP FILTRI	RTM-048-1-G25-B	P113006DNMIC10	MAHLE	NL063K10B
HY20661	SCHUPP	SP130E10B	MF1801P10NB	MP FILTRI	RTM-048-1-N10-B	P113006RNNMIC10	MAHLE	NR063K10B
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HY20664	SCHUPP	SP090E20B	MF4001P10NB	MP FILTRI	RTM-106-1-N10-B	P113016DNMIC10	MAHLE	NL160K10B
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HY20703	SCHUPP	SP130F03B	MF4003A25HB	MP FILTRI	RTM-106-3-G25-B	P113040RNNMIC10	MAHLE	NR400K10B
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HY20705	SCHUPP	SP070F20B	MFE08003BN2	HYDAC	SF6549	P113063RNNMIC10	MAHLE	NR630K10B
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HY20707	SCHUPP	SP130F20B	MFE08010BN2	HYDAC	SF6505	P113100RNNMIC10	MAHLE	NR1000K10B
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HY20713	SCHUPP	SP070F10B	MFE0801252	HYDAC	SF6511	P115004RNNMIC25	MAHLE	NR040K25B
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HY20763	SCHUPP	SP130E05BOBE	MFE080252	HYDAC	SF6510	P115006RNNMIC25	MAHLE	NR063K25B
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HY20766	SCHUPP	SP070E10BOBE	MFE090102	HYDAC	SF6620	P115016DNMIC25	MAHLE	NL160K25B
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HY20772	SCHUPP	SP070F20BOBE	MFE16003BN2	HYDAC	SF6703MG	P115063DNMIC25	MAHLE	NL630K25B
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HY20800	SCHUPP	SP024E05B	MFE160102	HYDAC	SF6720	P115100DNMIC25	MAHLE	NL1000K25B
HY20801	SCHUPP	SP030E05B	MFE160103BN2	HYDAC	SF6704MG	P115100RNNMIC25	MAHLE	NR1000K25B
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HY20803	SCHUPP	SP030E03B	MFE1601102	HYDAC	SF6721	P121004RNSMX3	MAHLE	NR040E03B
HY20804	SCHUPP	SP024E10B	MFE1601252	HYDAC	SF6711	P121006DNSMX3	MAHLE	NL063E03B
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HY20807	SCHUPP	SP030E20B	P165189	DONALDSON	SF6710	P121010RNSMX3	MAHLE	NR100E03B
HY20850	SCHUPP	SP024F03B	P165762	DONALDSON	SF6704-MG	P121016DNSMX3	MAHLE	NL160E03B
HY20851	SCHUPP	SP030F03B	P165875	DONALDSON	SF6706-MG	P121016RNSMX3	MAHLE	NR160E03B
HY20852	SCHUPP	SP024F20B	P165876	DONALDSON	SF6707-MG	P121025DNSMX3	MAHLE	NL250E03B
HY20853	SCHUPP	SP030F20B	P165878	DONALDSON	SF6726-MG	P121025RNSMX3	MAHLE	NR250E03B
HY20901	SCHUPP	SP110F03B	P165879	DONALDSON	SF6711	P121040DNSMX3	MAHLE	NL400E03B
HY20902	SCHUPP	SP170F03B	P170586	DONALDSON	SE014H03B	P121040RNSMX3	MAHLE	NR400E03B
HY20903	SCHUPP	SP110F20B	P170587	DONALDSON	SE014H10B	P12105SMX3	MAHLE	SL014E03B
HY20904	SCHUPP	SP170F20B	P170588	DONALDSON	SE030H03B	P121063DNSMX3	MAHLE	NL630E03B
HY20905	SCHUPP	SP250F03B	P170589	DONALDSON	SE030H10B	P121063RNSMX3	MAHLE	NR630E03B
HY20906	SCHUPP	SP250F20B	P170590	DONALDSON	SE045H03B	P12108SMX3	MAHLE	SL020E03B
HY20910	SCHUPP	SP030F05B	P170591	DONALDSON	SE045H10B	P121100DNSMX3	MAHLE	NL1000E03B
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HY20913	SCHUPP	SP024F10B	P170593	DONALDSON	SE070H10B	P12111SMX3	MAHLE	SL030E03B
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HY20955	SCHUPP	SP095E10B	P170602	DONALDSON	SE030G05B	P122010RNSMX6	MAHLE	NR100E06B
HY20957	SCHUPP	SP085E03B	P170604	DONALDSON	SE030G10B	P122016DNSMX6	MAHLE	NL160E06B
HY20960	SCHUPP	SP085F10B	P170605	DONALDSON	SE045G05B	P122016RNSMX6	MAHLE	NR160E06B
HY5993	SCHUPP	SL030E10B	P170606	DONALDSON	SE045G10B	P122025DNSMX6	MAHLE	NL250E06B
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HY9306	SCHUPP	NR100E10B	P170608	DONALDSON	SE070G10B	P122040DNSMX6	MAHLE	NL400E06B
HY9321	SCHUPP	NR100K20B	P170609	DONALDSON	SE090G05B	P122040RNSMX6	MAHLE	NR400E06B
HY9322	SCHUPP	NR250K10B	P170610	DONALDSON	SE090G10B	P12205SMXVST3	MAHLE	SL014F03B
HY9371	SCHUPP	SL005K10B	P170611	DONALDSON	SE160G05B	P122063DNSMX6	MAHLE	NL630E06B
HY9431	SCHUPP	RN050E10B	P170612	DONALDSON	SE160G10B	P122063RNSMX6	MAHLE	NR630E06B
HY9432	SCHUPP	RN075E10B	P170613	DONALDSON	RE014G10B	P12208SMXVST3	MAHLE	SL020F03B
HY9434	SCHUPP	RN100K10B	P1					




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P123004DNSMX10	MAHLE	NL040E10B	P172040DNSMXVST6	MAHLE	NL400F06B	PR2829	PARKER	SL014D20B
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P123025RNSMX10	MAHLE	NR250E10B	P173063DNSMXVST10	MAHLE	NL630F10B	PR2838	PARKER	SL020E03B
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P124006RNSMX16	MAHLE	NR063E16B	P175004DNSMXVST25	MAHLE	NL040F25B	PR2848	PARKER	SL030E20B
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P124040DNSMX16	MAHLE	NL400E16B	P175200DNSMXVST25	MAHLE	NL1000F25B	PR2855	PARKER	SL045E10B
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P13105SMX10	MAHLE	SL014E10B	P18415DRG60	MAHLE	SL045B60B	PR2877	PARKER	SL005K20B
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P13130SMX10	MAHLE	SL090E10B	P18508DRG100	MAHLE	SL020B100B	PR2881	PARKER	SL005E20B
P13145SMX10	MAHLE	SL125E10B	P18511DRG100	MAHLE	SL030B100B	PR2882	PARKER	SL005F03B
P13205SMXVST10	MAHLE	SL014F10B	P18515DRG100	MAHLE	SL045B100B	PR2883	PARKER	SL005F10B
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P13211SMXVST10	MAHLE	SL030F10B	P18545DRG100	MAHLE	SL125B100B	PR2885	PARKER	SL005W40B
P13215SMXVST10	MAHLE	SL045F10B	P19105DRGVST10	MAHLE	SL014W10B	PR2887	PARKER	SL010K20B
P13230SMXVST10	MAHLE	SL090F10B	P19108DRGVST10	MAHLE	SL020W10B	PR2888	PARKER	SL010D10B
P13245SMXVST10	MAHLE	SL125F10B	P19111DRGVST10	MAHLE	SL030W10B	PR2889	PARKER	SL010D20B
P135004RNSDRG25	MAHLE	NR040B25B	P19115DRGVST10	MAHLE	SL045W10B	PR2890	PARKER	SL010E03B
P135006RNSDRG25	MAHLE	NR063B25B	P19130DRGVST10	MAHLE	SL090W10B	PR2891	PARKER	SL010E10B
P135010RNSDRG25	MAHLE	NR100B25B	P19145DRGVST10	MAHLE	SL125W10B	PR2892	PARKER	SL010E20B
P135016RNSDRG25	MAHLE	NR160B25B	P19205DRGVST25	MAHLE	SL014W25B	PR2893	PARKER	SL010F03B
P135025RNSDRG25	MAHLE	NR250B25B	P19208DRGVST25	MAHLE	SL020W25B	PR2895	PARKER	SL010F20B
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P135063RNSDRG25	MAHLE	NL630B25B	P19215DRGVST25	MAHLE	SL045W25B	PR2897	PARKER	SL010B25B
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P136006RNSDRG40	MAHLE	NR063B40B	P19311DRGVST40	MAHLE	SL030W40B	PR2902	PARKER	SL022K10B
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P136025RNSDRG40	MAHLE	NR250B40B	P19345DRGVST40	MAHLE	SL125W40B	PR2905	PARKER	SL022E03B
P136040RNSDRG40	MAHLE	NR400B40B	P19405DRGVST60	MAHLE	SL014W60B	PR2906	PARKER	SL022E10B
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P14130SMX25	MAHLE	SL090E20B	PR2746	PARKER	SP020E05B	PR2922	PARKER	LL050L20B
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P14230SMXVST25	MAHLE	SL090F20B	PR2752	PARKER	SP030E05B	PR2930	PARKER	LL050B25B
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P15105SMX6	MAHLE	SL014E05B	PR2754	PARKER	SP030E20B	PR2932	PARKER	LL050B100B
P15108SMX6	MAHLE	SL020E05B	PR2755	PARKER	SP024F03B	PR2933	PARKER	LL080L10B
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P171006DNSMXVST3	MAHLE	NL063F03B	PR2779	PARKER	SP110E03B	PR2951	PARKER	LL100B10B
P171010DNSMXVST3	MAHLE	NL100F03B	PR2780	PARKER	SP110E05B	PR2952	PARKER	LL100B25B
P171016DNSMXVST3	MAHLE	NL160F03B	PR2781	PARKER	SP110E10B	PR2953	PARKER	LL100B60B
P171025DNSMXVST3	MAHLE	NL250F03B	PR2782	PARKER	SP1			




code code bezeichnung código	brand marque hersteller marca		code code bezeichnung código	brand marque hersteller marca		code code bezeichnung código	brand marque hersteller marca	
PR2965	PARKER	LL155B100B	PR3274	PARKER	RE045G05B	R432G25	FILTREC	SP200E20B
PR2966	PARKER	LL090L05B	PR3275	PARKER	RE045G10B	R434G03	FILTREC	SP300E03B
PR2967	PARKER	LL090L10B	PR3276	PARKER	RE045G20B	R434G06	FILTREC	SP300E05B
PR2968	PARKER	LL090L20B	PR3290	PARKER	RE070G03B	R434G10	FILTREC	SP300E10B
PR2969	PARKER	LL090E03B	PR3291	PARKER	RE070G05B	R434G25	FILTREC	SP300E20B
PR2970	PARKER	LL090E10B	PR3292	PARKER	RE070G10B	R440G03	FILTREC	RP100E03B
PR2971	PARKER	LL090E20B	PR3293	PARKER	RE070G20B	R440G06	FILTREC	RP100E05B
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PR2980	PARKER	RL005E10B	PR3323	PARKER	RE008E03V	R442G25	FILTREC	RP200E20B
PR2981	PARKER	RL005E20B	PR3324	PARKER	RE160G03B	R444G03	FILTREC	RP240E03B
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PR2985	PARKER	RL010L20B	PR3428	PARKER	SP010E10B	R446G03	FILTREC	RP300E03B
PR2986	PARKER	RL010E10B	PR3429	PARKER	SP020E10B	R446G06	FILTREC	RP300E05B
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PR2997	PARKER	RL035L20B	PR3444	PARKER	SP010E20B	R454G03	FILTREC	RP090E03B
PR2998	PARKER	RL035E10B	PR3445	PARKER	SP020E03B	R454G06	FILTREC	RP090E05B
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PR3000	PARKER	RL035B25B	PR3447	PARKER	SP010F03B	R454G25	FILTREC	RP090E20B
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PR3002	PARKER	RL045L10B	PR3449	PARKER	SP020F03B	R460G06	FILTREC	SP024E05BOBE
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PR3009	PARKER	RL070L20B	PR3456	PARKER	SP200E10B	R630H0803A	FAIREY ARLON	RP010E03B
PR3012	PARKER	RL070B25B	PR3457	PARKER	SP200E20B	R630H0806A	FAIREY ARLON	RP010E05B
PR3013	PARKER	RL070B40B	PR3458	PARKER	SP300E03B	R630H0812A	FAIREY ARLON	RP010E10B
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PR3015	PARKER	RL100L20B	PR3460	PARKER	SP300E20B	R630H1603A	FAIREY ARLON	RP024E03B
PR3018	PARKER	RL100B25B	PR3461	PARKER	SP045F03B	R630H1606A	FAIREY ARLON	RP024E05B
PR3019	PARKER	RL100B40B	PR3462	PARKER	SP045F20B	R630H1612A	FAIREY ARLON	RP024E10B
PR3020	PARKER	RL130L10B	PR3463	PARKER	SP070F03B	R630H1625A	FAIREY ARLON	RP024E20B
PR3021	PARKER	RL130L20B	PR3464	PARKER	SP070F20B	R640H0803A	FAIREY ARLON	RP075E03B
PR3022	PARKER	RL130E10B	PR3465	PARKER	SP090F03B	R640H0806A	FAIREY ARLON	RP075E05B
PR3023	PARKER	RL130E20B	PR3466	PARKER	SP090F20B	R640H0812A	FAIREY ARLON	RP075E10B
PR3024	PARKER	RL130B25B	PR3467	PARKER	SP130F03B	R640H0825A	FAIREY ARLON	RP075E20B
PR3025	PARKER	RL130B40B	PR3468	PARKER	SP130F20B	R640H1303A	FAIREY ARLON	RP085E03B
PR3031	PARKER	SE008E03B	PR3947	PARKER	SP070E03BOBE	R640H1306A	FAIREY ARLON	RP085E05B
PR3032	PARKER	SE008E05B	PR3948	PARKER	SP070E05BOBE	R640H1312A	FAIREY ARLON	RP085E10B
PR3033	PARKER	SE008E10B	PR3949	PARKER	SP070E10BOBE	R640H1325A	FAIREY ARLON	RP085E20B
PR3034	PARKER	SE008E20B	PR3950	PARKER	SP070E20BOBE	R640H1603A	FAIREY ARLON	RP095E03B
PR3035	PARKER	SE008F03B	PR3951	PARKER	SP130E03BOBE	R640H1606A	FAIREY ARLON	RP095E05B
PR3036	PARKER	SE008F05B	PR3952	PARKER	SP130E05BOBE	R640H1612A	FAIREY ARLON	RP095E10B
PR3037	PARKER	SE008F10B	PR3953	PARKER	SP130E10BOBE	R640H1625A	FAIREY ARLON	RP095E20B
PR3038	PARKER	SE008F20B	PR3954	PARKER	SP130E20BOBE	R640H2603A	FAIREY ARLON	RP115E03B
PR3056	PARKER	SE014G03B	PR3955	PARKER	SP070F03BOBE	R640H2606A	FAIREY ARLON	RP115E05B
PR3057	PARKER	SE014G05B	PR3956	PARKER	SP070F20BOBE	R640H2612A	FAIREY ARLON	RP115E10B
PR3058	PARKER	SE014G10B	PR3957	PARKER	SP130F03BOBE	R640H2625A	FAIREY ARLON	RP115E20B
PR3059	PARKER	SE014G20B	PR3958	PARKER	SP130F20BOBE	R740H0403A	FAIREY ARLON	SF6603
PR3064	PARKER	SE014H03B	PR4374	PARKER	RL070E20B	R740H0406A	FAIREY ARLON	SF6606
PR3065	PARKER	SE014H05B	PR4375	PARKER	RL070E10B	R750H0403A	FAIREY ARLON	SF6703-MG
PR3066	PARKER	SE014H10B	PR4376	PARKER	RL100E20B	R750H0406A	FAIREY ARLON	SF6706-MG
PR3067	PARKER	SE014H20B	PR4377	PARKER	RL100E10B	R750H0806A	FAIREY ARLON	SF6707-MG
PR3085	PARKER	SE030G03B	PR4378	PARKER	LL160L10B	R750H1208A	FAIREY ARLON	SF6704-MG
PR3086	PARKER	SE030G05B	PR4379	PARKER	LL160E20B	R830H0803A	FAIREY ARLON	SP100E03B
PR3087	PARKER	SE030G10B	PR4380	PARKER	LL160E10B	R830H0806A	FAIREY ARLON	SP100E05B
PR3088	PARKER	SE030G20B	PR4381	PARKER	SL010K10B	R830H0812A	FAIREY ARLON	SP100E10B
PR3093	PARKER	SE030H03B	PR4382	PARKER	SL010F10B	R830H0825A	FAIREY ARLON	SP100E20B
PR3094	PARKER	SE030H05B	PR4465	PARKER	RD070K20B	R830H1603A	FAIREY ARLON	SP200E03B
PR3095	PARKER	SE030H10B	PR4466	PARKER	RD070K10B	R830H1606A	FAIREY ARLON	SP200E05B
PR3096	PARKER	SE030H20B	PR4467	PARKER	RD070E20B	R830H1612A	FAIREY ARLON	SP200E10B
PR3114	PARKER	SE045G03B	PR4468	PARKER	RD070E10B	R830H1625A	FAIREY ARLON	SP200E20B
PR3115	PARKER	SE045G05B	PR4469	PARKER	SD010L10B	R830H3903A	FAIREY ARLON	SP300E03B
PR3116	PARKER	SE045G10B	PR4475	PARKER	SD010L20B	R830H3906A	FAIREY ARLON	SP300E05B
PR3117	PARKER	SE045G20B	PR4476	PARKER	SD015E20B	R830H3912A	FAIREY ARLON	SP300E10B
PR3122	PARKER	SE045H03B	R410G03	FILTREC	RP010E03B	R830H3925A	FAIREY ARLON	SP300E20B
PR3123	PARKER	SE045H05B	R410E00B	FILTREC	RP010E05B	R840H1603A	FAIREY ARLON	RP200E03B
PR3124	PARKER	SE045H10B	R410G10	FILTREC	RP010E10B	R840H1606A	FAIREY ARLON	RP200E05B
PR3125	PARKER	SE045H20B	R410G25	FILTREC	RP010E20B	R840H1612A	FAIREY ARLON	RP200E10B
PR3143	PARKER	SE070G03B	R411G03	FILTREC	RP020E03B	R840H1625A	FAIREY ARLON	RP200E20B
PR3144	PARKER	SE070G05B	R411G06	FILTREC	RP020E05B	R850H0803A	FAIREY ARLON	RP050E03B
PR3145	PARKER	SE070G10B	R411G10	FILTREC	RP020E10B	R850H0806A	FAIREY ARLON	RP050E05B
PR3146	PARKER	SE070G20B	R411G25	FILTREC	RP020E20B	R850H0812A	FAIREY ARLON	RP050E10B
PR3151	PARKER	SE070H03B	R412G03	FILTREC	RP024E03B	R850H0825A	FAIREY ARLON	RP050E20B
PR3152	PARKER	SE070H05B	R412G06	FILTREC	RP024E05B	R850H1303A	FAIREY ARLON	RP080E03B
PR3153	PARKER	SE070H10B	R412G10	FILTREC	RP024E10B	R850H1306A	FAIREY ARLON	RP080E05B
PR3154	PARKER	SE070H20B	R412G25	FILTREC	RP024E20B	R850H1312A	FAIREY ARLON	RP080E10B
PR3172	PARKER	SE090G03B	R413G03	FILTREC	RP030E03B	R850H1325A	FAIREY ARLON	RP080E20B
PR3173	PARKER	SE090G05B	R413G06	FILTREC	RP030E05B	R850H2603A	FAIREY ARLON	RP090E03B
PR3174	PARKER	SE090G10B	R413G10	FILTREC	RP030E10B	R850H2606A	FAIREY ARLON	RP090E05B
PR3175	PARKER	SE090G20B	R413G25	FILTREC	RP030E20B	R850H2612A	FAIREY ARLON	RP090E10B
PR3180	PARKER	SE090H03B	R420G03	FILTREC	RP075E03B	R850H2625A	FAIREY ARLON	RP090E20B
PR3181	PARKER	SE090H05B	R420G06	FILTREC	RP075E05B	R890H1303A	FAIREY ARLON	SP140E03B
PR3182	PARKER	SE090H10B	R420G10	FILTREC	RP075E10B	R890H1306A	FAIREY ARLON	SP140E05B
PR3183	PARKER	SE090H20B	R420G25	FILTREC	RP075E20B	R890H1312A	FAIREY ARLON	SP140E10B
PR3201	PARKER	SE160G03B	R422G03	FILTREC	RP085E03B	R890H1325A	FAIREY ARLON	SP140E20B
PR3202	PARKER	SE160G05B	R422G06	FILTREC	RP085E05B	R890H1603A	FAIREY ARLON	SP160E03B
PR3203	PARKER	SE160G10B	R422G10	FILTREC	RP085E10B	R890H1606A	FAIREY ARLON	SP160E05B
PR3204	PARKER	SE160G20B	R422G25	FILTREC	RP085E20B	R890H1612A	FAIREY ARLON	SP160E10B
PR3209	PARKER	SE160H03B	R424G03	FILTREC	RP095E03B	R890H1625A	FAIREY ARLON	SP160E20B
PR3210	PARKER	SE160H05B	R424G06	FILTREC	RP095E05B	R890H2603A	FAIREY ARLON	SP180E03B
PR3211	PARKER	SE160H10B	R424G10	FILTREC	RP095E10B	R890H2606A	FAIREY ARLON	SP180E05B
PR3212	PARKER	SE160H20B	R424G25	FILTREC	RP095E20B	R890H2612A	FAIREY ARLON	SP180E10B
PR3224	PARKER	RE008E10B	R426G03	FILTREC	RP115E03B	R890H2625A	FAIREY ARLON	SP180E20B
PR3225	PARKER	RE008E20B	R426G06	FILTREC	RP115E05B	R920H0403A	FAIREY ARLON	SP010E03B
PR3239	PARKER	RE014G03B	R426G10	FILTREC	RP115E10B	R920H0406A	FAIREY ARLON	SP010E05B
PR3240	PARKER	RE014G05B	R426G25	FILTREC	RP115E20B	R920H0412A	FAIREY ARLON	SP010E10B
PR3241	PARKER	RE014G10B	R430G03	FILTREC	SP100E03B	R920H0425A	FAIREY ARLON	SP010E20B
PR3242	PARKER	RE014G20B	R430G06	FILTREC	SP100E05B	R920H0803A	FAIREY ARLON	SP020E03B
PR3256	PARKER	RE030G03B	R430G10	FILTREC	SP100E10B	R920H0806A	FAIREY ARLON	SP020E05B
PR3257	PARKER	RE030G05B	R430G25	FILTREC	SP100E20B	R920H0812A	FAIREY ARLON	SP020E10B
PR3258	PARKER	RE030G10B	R432G03	FILTREC	SP200E03B	R920H0825A	FAIREY ARLON	SP020E20B
PR3259	PARKER	RE030G20B	R432G06	FILTREC	SP200E05B	R921H0403A	FAIREY ARLON	SP010F03B
PR3273								




code code bezeichnung código	brand marque hersteller marca		code code bezeichnung código	brand marque hersteller marca		code code bezeichnung código	brand marque hersteller marca	
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R940H1306A	FAIREY ARLON	SP110E05B	RHR160A10B	FILTREC	RE045A10B	RHR500D03B	FILTREC	RE130D03B
R940H1312A	FAIREY ARLON	SP110E10B	RHR160A20B	FILTREC	RE045A20B	RHR500D05B	FILTREC	RE130D05B
R940H1325A	FAIREY ARLON	SP110E20B	RHR160B100B	FILTREC	RE045B100B	RHR500D10B	FILTREC	RE130D10B
R940H2603A	FAIREY ARLON	SP170E03B	RHR160B25B	FILTREC	RE045B25B	RHR500D20B	FILTREC	RE130D20B
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R940H3903A	FAIREY ARLON	SP250E03B	RHR160D10B	FILTREC	RE045D10B	RHR500G20B	FILTREC	RE130G20B
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R940H3912A	FAIREY ARLON	SP250E10B	RHR160E03B	FILTREC	RE045E03B	RHR500N20B	FILTREC	RE130N20B
R940H3925A	FAIREY ARLON	SP250E20B	RHR160E05B	FILTREC	RE045E05B	RHR500S100B	FILTREC	RE130S100B
R950H0803A	FAIREY ARLON	SP070E03BOBE	RHR160E10B	FILTREC	RE045E10B	RHR500S25B	FILTREC	RE130S25B
R950H0806A	FAIREY ARLON	SP070E05BOBE	RHR160E20B	FILTREC	RE045E20B	RHR500S50B	FILTREC	RE130S50B
R950H0812A	FAIREY ARLON	SP070E10BOBE	RHR160G03B	FILTREC	RE045G03B	RHR60A03B	FILTREC	RE014A03B
R950H0825A	FAIREY ARLON	SP070E20BOBE	RHR160G05B	FILTREC	RE045G05B	RHR60A05B	FILTREC	RE014A05B
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R950H1606A	FAIREY ARLON	SP130E05BOBE	RHR160G20B	FILTREC	RE045G20B	RHR60A20B	FILTREC	RE014A20B
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R960H0403A	FAIREY ARLON	SP045E03B	RHR165D10B	FILTREC	RE065D10B	RHR60E05B	FILTREC	RE014E05B
R960H0406A	FAIREY ARLON	SP045E05B	RHR165D20B	FILTREC	RE065D20B	RHR60E10B	FILTREC	RE014E10B
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R960H1306A	FAIREY ARLON	SP090E05B	RHR240A20B	FILTREC	RE070A20B	RHR60S100B	FILTREC	RE014S100B
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R960H1325A	FAIREY ARLON	SP090E20B	RHR240B25B	FILTREC	RE070B25B	RHR60S50B	FILTREC	RE014S50B
R960H1603A	FAIREY ARLON	SP130E03B	RHR240B50B	FILTREC	RE070B40B	RHR660A03B	FILTREC	RE160A03B
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R960H1612A	FAIREY ARLON	SP130E10B	RHR240D05B	FILTREC	RE070D05B	RHR660A10B	FILTREC	RE160A10B
R960H1625A	FAIREY ARLON	SP130E20B	RHR240D10B	FILTREC	RE070D10B	RHR660A20B	FILTREC	RE160A20B
R961H0403A	FAIREY ARLON	SP045F03B	RHR240D20B	FILTREC	RE070D20B	RHR660B100B	FILTREC	RE160B100B
R961H0415A	FAIREY ARLON	SP045F20B	RHR240E03B	FILTREC	RE070E03B	RHR660B25B	FILTREC	RE160B25B
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R961H1615A	FAIREY ARLON	SP130F20B	RHR240G10B	FILTREC	RE070G10B	RHR660E03B	FILTREC	RE160E03B
R980H0403A	FAIREY ARLON	SP024E03B	RHR240G20B	FILTREC	RE070G20B	RHR660E05B	FILTREC	RE160E05B
R980H0406A	FAIREY ARLON	SP024E05B	RHR240N10B	FILTREC	RE070N10B	RHR660E10B	FILTREC	RE160E10B
R980H0412A	FAIREY ARLON	SP024E10B	RHR240N20B	FILTREC	RE070N20B	RHR660E20B	FILTREC	RE160E20B
R980H0425A	FAIREY ARLON	SP024E20B	RHR240S100B	FILTREC	RE070S100B	RHR660G03B	FILTREC	RE160G03B
R980H0803A	FAIREY ARLON	SP030E03B	RHR240S25B	FILTREC	RE070S25B	RHR660G05B	FILTREC	RE160G05B
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R981H0815A	FAIREY ARLON	SP030F20B	RHR2600B25B	FILTREC	RE600B25B	RHR660S50B	FILTREC	RE160S50B
R985H0403A	FAIREY ARLON	SP024E03BOBE	RHR2600B50B	FILTREC	RE600B40B	RHR850A03B	FILTREC	RE200A03B
R985H0406A	FAIREY ARLON	SP024E05BOBE	RHR2600D03B	FILTREC	RE600D03B	RHR850A05B	FILTREC	RE200A05B
R985H0412A	FAIREY ARLON	SP024E10BOBE	RHR2600D05B	FILTREC	RE600D05B	RHR850A10B	FILTREC	RE200A10B
R985H0425A	FAIREY ARLON	SP024E20BOBE	RHR2600D10B	FILTREC	RE600D10B	RHR850A20B	FILTREC	RE200A20B
R985H0803A	FAIREY ARLON	SP030E03BOBE	RHR2600D20B	FILTREC	RE600D20B	RHR850B100B	FILTREC	RE200B100B
R985H0806A	FAIREY ARLON	SP030E05BOBE	RHR2600G03B	FILTREC	RE600G03B	RHR850B25B	FILTREC	RE200B25B
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RE40930	ZINGA	RTE49D03B	RHR2600G20B	FILTREC	RE600G20B	RHR850D05B	FILTREC	RE200D05B
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RHR110A03B	FILTREC	RE030A03B	RHR2600N20B	FILTREC	RE600N20B	RHR850D20B	FILTREC	RE200D20B
RHR110A05B	FILTREC	RE030A05B	RHR2600S100B	FILTREC	RE600S100B	RHR850G03B	FILTREC	RE200G03B
RHR110A10B	FILTREC	RE030A10B	RHR2600S25B	FILTREC	RE600S25B	RHR850G05B	FILTREC	RE200G05B
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RHR110B100B	FILTREC	RE030B100B	RHR30A03B	FILTREC	RE008A03B	RHR850G20B	FILTREC	RE200G20B
RHR110B25B	FILTREC	RE030B25B	RHR30A05B	FILTREC	RE008A05B	RHR850N10B	FILTREC	RE200N10B
RHR110B50B	FILTREC	RE030B40B	RHR30A10B	FILTREC	RE008A10B	RHR850N20B	FILTREC	RE200N20B
RHR110D03B	FILTREC	RE030D03B	RHR30A20B	FILTREC	RE008A20B	RHR850S100B	FILTREC	RE200S100B
RHR110D05B	FILTREC	RE030D05B	RHR30B100B	FILTREC	RE008B100B	RHR850S25B	FILTREC	RE200S25B
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RHR110D20B	FILTREC	RE030D20B	RHR30E05B	FILTREC	RE008E05B	RHR950A03B	FILTREC	RE250A03B
RHR110E03B	FILTREC	RE030E03B	RHR30E10B	FILTREC	RE008E10B	RHR950A05B	FILTREC	RE250A05B
RHR110E05B	FILTREC	RE030E05B	RHR30D05B	FILTREC	RE008D05B	RHR950A10B	FILTREC	RE250A10B
RHR110E10B	FILTREC	RE030E10B	RHR30D10B	FILTREC	RE008D10B	RHR950A20B	FILTREC	RE250A20B
RHR110E20B	FILTREC	RE030E20B	RHR30D20B	FILTREC	RE008D20B	RHR950B100B	FILTREC	RE250B100B
RHR110G03B	FILTREC	RE030G03B	RHR30E03B	FILTREC	RE008E03B	RHR950B25B	FILTREC	RE250B25B
RHR110G05B	FILTREC	RE030G05B	RHR30E05B	FILTREC	RE008E05B	RHR950B50B	FILTREC	RE250B40B
RHR110G10B	FILTREC	RE030G10B	RHR30E10B	FILTREC	RE008E10B	RHR950D03B	FILTREC	RE250D03B
RHR110G20B	FILTREC	RE030G20B	RHR30E20B	FILTREC	RE008E20B	RHR950D05B	FILTREC	RE250D05B
RHR110N10B	FILTREC	RE030N10B	RHR330A03B	FILTREC	RE090A03B	RHR950D10B	FILTREC	RE250D10B
RHR110N20B	FILTREC	RE030N20B	RHR330A05B	FILTREC	RE090A05B	RHR950D20B	FILTREC	RE250D20B
RHR110S100B	FILTREC	RE030S100B	RHR330A10B	FILTREC	RE090A10B	RHR950E03B	FILTREC	RE250E03B
RHR110S25B	FILTREC	RE030S25B	RHR330A20B	FILTREC	RE090A20B	RHR950E05B	FILTREC	RE250E05B
RHR110S50B	FILTREC	RE030S40B	RHR330B100B	FILTREC	RE090B100B	RHR950E10B	FILTREC	RE250E10B
RHR1300A03B	FILTREC	RE300A03B	RHR330B25B	FILTREC	RE090B25B	RHR950E20B	FILTREC	RE250E20B
RHR1300A05B	FILTREC	RE300A05B	RHR330B50B	FILTREC	RE090B50B	RHR950G03B	FILTREC	RE250G03B
RHR1300A10B	FILTREC	RE300A10B	RHR330D03B	FILTREC	RE090D03B	RHR950G05B	FILTREC	RE250G05B
RHR1300A20B	FILTREC	RE300A20B	RHR330D05B	FILTREC	RE090D05B	RHR950G10B	FILTREC	RE250G10B
RHR1300B100B	FILTREC	RE300B100B	RHR330D10B	FILTREC	RE090D10B	RHR950G20B	FILTREC	RE250G20B
RHR1300B25B	FILTREC	RE300B25B	RHR330D20B	FILTREC	RE090D20B	RHR950N10B	FILTREC	RE250N10B
RHR1300B50B	FILTREC	RE300B40B	RHR330E03B	FILTREC	RE090E03B	RHR950N20B	FILTREC	RE250N20B
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RHR1300D20B	FILTREC	RE300D20B	RHR330G03B	FILTREC	RE090G03B	RMR435B25B	FILTREC	RL070B25B
RHR1300E03B	FILTREC	RE300E03B	RHR330G05B	FILTREC	RE090G05B	RMR435B40B	FILTREC	RL070B40B
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RHR1300E20B	FILTREC	RE300E20B	RHR330N10B	FILTREC	RE090N10B			




code code bezeichnung código	brand marque hersteller marca		code code bezeichnung código	brand marque hersteller marca		code code bezeichnung código	brand marque hersteller marca	
RMR438B40B	FILTREC	RL035B40B	RVR1225E10B	FILTREC	RS060E10B	RVR20K20B	FILTREC	LS005K20B
RMR438E10B	FILTREC	RL035E10B	RVR1225E20B	FILTREC	RS060E20B	RVR250A05B	FILTREC	RS070A05B
RMR438E20B	FILTREC	RL035E20B	RVR1225K05B	FILTREC	RS060K05B	RVR250A10B	FILTREC	RS070A10B
RMR438L10B	FILTREC	RL035L10B	RVR1225K10B	FILTREC	RS060K10B	RVR250B100B	FILTREC	RS070B100B
RMR438L20B	FILTREC	RL035L20B	RVR1225K20B	FILTREC	RS060K20B	RVR250B10B	FILTREC	RS070B10B
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RVR10A05B	FILTREC	LS003A05B	RVR1360B25B	FILTREC	RS095B25B	RVR330E10B	FILTREC	RS090E10B
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RVR110E03B	FILTREC	RS003E03B	RVR1560K10B	FILTREC	RS150K10B	RVR65B100B	FILTREC	LS014B100B
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code code bezeichnung código	brand marque hersteller marca		code code bezeichnung código	brand marque hersteller marca		code code bezeichnung código	brand marque hersteller marca	
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S2092300	ARGO	AD033B60B	SBF0160DZ5V	SCHROEDER	SE045G05V	SBF830016Z10B	SCHROEDER	SP200E10B
S2092305	ARGO	AD033B80B	SBF0161DS15B	SCHROEDER	SE045H20B	SBF830016Z10V	SCHROEDER	SP200E10V
S2121700	ARGO	RD070B60B	SBF0161DZ15V	SCHROEDER	SE045H20V	SBF830016Z25B	SCHROEDER	SP200E20B
S2121705	ARGO	RD070B40B	SBF0161DS1B	SCHROEDER	SE045H03B	SBF830016Z25V	SCHROEDER	SP200E20V
S3051000	ARGO	SD010B60B	SBF0161DS1V	SCHROEDER	SE045H03V	SBF830016Z3B	SCHROEDER	SP200E03B
S3051005	ARGO	SD010B40B	SBF0161DS3B	SCHROEDER	SE045H05B	SBF830016Z3V	SCHROEDER	SP200E03V
S3052000	ARGO	SD015B60B	SBF0161DS3V	SCHROEDER	SE045H05V	SBF830016Z5B	SCHROEDER	SP200E05B
S3052005	ARGO	SD015B40B	SBF0161DS7V	SCHROEDER	SE045H10B	SBF830016Z5V	SCHROEDER	SP200E05V
S3062300	ARGO	SD024B60B	SBF0161DS7V	SCHROEDER	SE045H10V	SBF830039S15B	SCHROEDER	SP200E20B
S3072005	ARGO	MD025B40B	SBF0161DZ10B	SCHROEDER	SE045H10B	SBF830039S15V	SCHROEDER	SP300E20V
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SBF0030DS3V	SCHROEDER	SE008E05V	SBF0161DZ5B	SCHROEDER	SE045H05B	SBF830039S7V	SCHROEDER	SP300E10V
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SBF0030DZ10V	SCHROEDER	SE008E10V	SBF0240DS1B	SCHROEDER	SE070G03B	SBF830039Z25V	SCHROEDER	SP300E20V
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code code bezeichnung código	brand marque hersteller marca		code code bezeichnung código	brand marque hersteller marca		code code bezeichnung código	brand marque hersteller marca	
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SBF890013S7V	SCHROEDER	SP140E10V	SBF940013S15B	SCHROEDER	SP110E20B	SBF960113Z25V	SCHROEDER	SP090F20V
SBF890013Z10B	SCHROEDER	SP140E10B	SBF940013S15V	SCHROEDER	SP110E20V	SBF960113Z3B	SCHROEDER	SP090F03B
SBF890013Z10V	SCHROEDER	SP140E10V	SBF940013S1B	SCHROEDER	SP110E03B	SBF960113Z3V	SCHROEDER	SP090F03V
SBF890013Z25B	SCHROEDER	SP140E20B	SBF940013S1V	SCHROEDER	SP110E03V	SBF960116S15B	SCHROEDER	SP130F20B
SBF890013Z25V	SCHROEDER	SP140E20V	SBF940013S3B	SCHROEDER	SP110E05B	SBF960116S15V	SCHROEDER	SP130F20V
SBF890013Z3B	SCHROEDER	SP140E03B	SBF940013S3V	SCHROEDER	SP110E05V	SBF960116S1B	SCHROEDER	SP130F03B
SBF890013Z3V	SCHROEDER	SP140E03V	SBF940013S7B	SCHROEDER	SP110E10B	SBF960116S1V	SCHROEDER	SP130F03V
SBF890013Z5B	SCHROEDER	SP140E05B	SBF940013S7V	SCHROEDER	SP110E10V	SBF960116S7B	SCHROEDER	SP130F10V
SBF890013Z5V	SCHROEDER	SP140E05V	SBF940013Z10B	SCHROEDER	SP110E10B	SBF960116Z10B	SCHROEDER	SP130F10B
SBF890016S15B	SCHROEDER	SP160E20V	SBF940013Z10V	SCHROEDER	SP110E10V	SBF960116Z10V	SCHROEDER	SP130F10V
SBF890016S15V	SCHROEDER	SP160E20V	SBF940013Z25B	SCHROEDER	SP110E20B	SBF960116Z25B	SCHROEDER	SP130F20B
SBF890016S1B	SCHROEDER	SP160E03B	SBF940013Z25V	SCHROEDER	SP110E20V	SBF960116Z25V	SCHROEDER	SP130F20V
SBF890016S1V	SCHROEDER	SP160E03V	SBF940013Z3B	SCHROEDER	SP110E03B	SBF960116Z3B	SCHROEDER	SP130F03B
SBF890016S3B	SCHROEDER	SP160E05B	SBF940013Z3V	SCHROEDER	SP110E03V	SBF960116Z3V	SCHROEDER	SP130F03V
SBF890016S3V	SCHROEDER	SP160E05V	SBF940013Z5B	SCHROEDER	SP110E05V	SBF960116Z5B	SCHROEDER	SP045F20B
SBF890016S7B	SCHROEDER	SP160E10B	SBF940013Z5V	SCHROEDER	SP110E05V	SBF96014S15B	SCHROEDER	SP045F20B
SBF890016S7V	SCHROEDER	SP160E10V	SBF940026S15B	SCHROEDER	SP170E20B	SBF96014S15V	SCHROEDER	SP045F20B
SBF890016Z10B	SCHROEDER	SP160E10B	SBF940026S15V	SCHROEDER	SP170E20V	SBF96014S1B	SCHROEDER	SP045F03V
SBF890016Z10V	SCHROEDER	SP160E10V	SBF940026S1B	SCHROEDER	SP170E03B	SBF96014S1V	SCHROEDER	SP045F10B
SBF890016Z25B	SCHROEDER	SP160E20V	SBF940026S3V	SCHROEDER	SP170E03V	SBF96014S7B	SCHROEDER	SP045F10V
SBF890016Z25V	SCHROEDER	SP160E20V	SBF940026S3V	SCHROEDER	SP170E05V	SBF96014Z10B	SCHROEDER	SP045F10V
SBF890016Z3B	SCHROEDER	SP160E03B	SBF940026S7B	SCHROEDER	SP170E10B	SBF96014Z10V	SCHROEDER	SP045F10V
SBF890016Z3V	SCHROEDER	SP160E03V	SBF940026S7V	SCHROEDER	SP170E10B	SBF96014Z25B	SCHROEDER	SP045F20B
SBF890016Z5B	SCHROEDER	SP160E05B	SBF940026S7V	SCHROEDER	SP170E10B	SBF96014Z25V	SCHROEDER	SP045F20V
SBF890016Z5V	SCHROEDER	SP160E05V	SBF940026Z10B	SCHROEDER	SP170E10B	SBF96014Z3B	SCHROEDER	SP045F03B
SBF890026S15B	SCHROEDER	SP180E20V	SBF940026Z10V	SCHROEDER	SP170E10V	SBF96014Z3V	SCHROEDER	SP045F03V
SBF890026S15V	SCHROEDER	SP180E20V	SBF940026Z10V	SCHROEDER	SP170E20B	SBF96018S15B	SCHROEDER	SP070F20B
SBF890026S1B	SCHROEDER	SP180E03B	SBF940026Z25B	SCHROEDER	SP170E20V	SBF96018S15V	SCHROEDER	SP070F20V
SBF890026S1V	SCHROEDER	SP180E03V	SBF940026Z25V	SCHROEDER	SP170E20V	SBF96018S1B	SCHROEDER	SP070E03B
SBF890026S3B	SCHROEDER	SP180E05B	SBF940026Z3B	SCHROEDER	SP170E03V	SBF96018S1V	SCHROEDER	SP070F03V
SBF890026S3V	SCHROEDER	SP180E05V	SBF940026Z5B	SCHROEDER	SP170E05B	SBF96018S7B	SCHROEDER	SP070E10B
SBF890026S7B	SCHROEDER	SP180E10B	SBF940026Z5V	SCHROEDER	SP170E05V	SBF96018S7V	SCHROEDER	SP070E10V
SBF890026S7V	SCHROEDER	SP180E10V	SBF940039S15B	SCHROEDER	SP250E20B	SBF96018Z10B	SCHROEDER	SP070F10B
SBF890026Z10B	SCHROEDER	SP180E10B	SBF940039S15V	SCHROEDER	SP250E20V	SBF96018Z10V	SCHROEDER	SP070F10V
SBF890026Z10V	SCHROEDER	SP180E10V	SBF940039S1B	SCHROEDER	SP250E03B	SBF96018Z25B	SCHROEDER	SP070F20B
SBF890026Z25B	SCHROEDER	SP180E20V	SBF940039S1V	SCHROEDER	SP250E03V	SBF96018Z25V	SCHROEDER	SP070F20V
SBF890026Z25V	SCHROEDER	SP180E20V	SBF940039S3B	SCHROEDER	SP250E05B	SBF96018Z3B	SCHROEDER	SP070F03B
SBF890026Z3B	SCHROEDER	SP180E03B	SBF940039S3V	SCHROEDER	SP250E05V	SBF96018Z3V	SCHROEDER	SP070F03V
SBF890026Z3V	SCHROEDER	SP180E03V	SBF940039S7B	SCHROEDER	SP250E10B	SBF965016S15B	SCHROEDER	SP130E20B-OBE
SBF890026Z5B	SCHROEDER	SP180E05B	SBF940039S7V	SCHROEDER	SP250E10V	SBF965016S15V	SCHROEDER	SP130E20V-OBE
SBF890026Z5V	SCHROEDER	SP180E05V	SBF940039Z10B	SCHROEDER	SP250E10B	SBF965016S1B	SCHROEDER	SP130E03B-OBE
SBF89008S15B	SCHROEDER	SP120E20B	SBF940039Z10V	SCHROEDER	SP250E10V	SBF965016S1V	SCHROEDER	SP130E03V-OBE
SBF89008S15V	SCHROEDER	SP120E20V	SBF940039Z25B	SCHROEDER	SP250E20B	SBF965016S3B	SCHROEDER	SP130E05B-OBE
SBF89008S1B	SCHROEDER	SP120E03B	SBF940039Z25V	SCHROEDER	SP250E20V	SBF965016S7B	SCHROEDER	SP130E05V-OBE
SBF89008S1V	SCHROEDER	SP120E03V	SBF940039Z3B	SCHROEDER	SP250E03B	SBF965016S7V	SCHROEDER	SP130E10B-OBE
SBF89008S3B	SCHROEDER	SP120E05B	SBF940039Z3V	SCHROEDER	SP250E03V	SBF965016S7V	SCHROEDER	SP130E10V-OBE
SBF89008S3V	SCHROEDER	SP120E05V	SBF940039Z5B	SCHROEDER	SP250E05B	SBF965016Z10B	SCHROEDER	SP130E10B-OBE
SBF89008S7B	SCHROEDER	SP120E10B	SBF940039Z5V	SCHROEDER	SP250E05V	SBF965016Z10V	SCHROEDER	SP130E10V-OBE
SBF89008S7V	SCHROEDER	SP120E10V	SBF960013S15B	SCHROEDER	SP090E20B	SBF965016Z25B	SCHROEDER	SP130E20B-OBE
SBF89008Z10B	SCHROEDER	SP120E10B	SBF960013S15V	SCHROEDER	SP090E20V	SBF965016Z25V	SCHROEDER	SP130E20V-OBE
SBF89008Z10V	SCHROEDER	SP120E10V	SBF960013S1B	SCHROEDER	SP090E03B	SBF965016Z3B	SCHROEDER	SP130E03B-OBE
SBF89008Z25B	SCHROEDER	SP120E20B	SBF960013S1V	SCHROEDER	SP090E03V	SBF965016Z3V	SCHROEDER	SP130E03V-OBE
SBF89008Z25V	SCHROEDER	SP120E20V	SBF960013S3B	SCHROEDER	SP090E05B	SBF965016Z5B	SCHROEDER	SP130E05B-OBE
SBF89008Z3B	SCHROEDER	SP120E03B	SBF960013S3V	SCHROEDER	SP090E05V	SBF965016Z5V	SCHROEDER	SP130E05V-OBE
SBF89008Z3V	SCHROEDER	SP120E03V	SBF960013S7B	SCHROEDER	SP090E10B	SBF96508S15B	SCHROEDER	SP070E20B-OBE
SBF89008Z5B	SCHROEDER	SP120E05B	SBF960013S7V	SCHROEDER	SP090E10V	SBF96508S15V	SCHROEDER	SP070E20V-OBE
SBF89008Z5V	SCHROEDER	SP120E05V	SBF960013Z10B	SCHROEDER	SP090E10V	SBF96508S1B	SCHROEDER	SP070E03B-OBE
SBF90204S15B	SCHROEDER	SP010E20B	SBF960013Z10V	SCHROEDER	SP090E10V	SBF96508S1V	SCHROEDER	SP070E03V-OBE
SBF90204S15V	SCHROEDER	SP010E20V	SBF960013Z25B	SCHROEDER	SP090E20B	SBF96508S3B	SCHROEDER	SP070E05B-OBE
SBF90204S1B	SCHROEDER	SP010E03B	SBF960013Z25V	SCHROEDER	SP090E20V	SBF96508S3V	SCHROEDER	SP070E05V-OBE
SBF90204S1V	SCHROEDER	SP010E03V	SBF960013Z3B	SCHROEDER	SP090E03B	SBF96508S7B	SCHROEDER	SP070E10B-OBE
SBF90204S3B	SCHROEDER	SP010E05B	SBF960013Z3V	SCHROEDER	SP090E05V	SBF96508S7V	SCHROEDER	SP070E10V-OBE
SBF90204S3V	SCHROEDER	SP010E05V	SBF960013Z5B	SCHROEDER	SP090E05B	SBF		

code code bezeichnung código	brand marque hersteller marca		code code bezeichnung código	brand marque hersteller marca		code code bezeichnung código	brand marque hersteller marca	
SBF96518S1V	SCHROEDER	SP070F03V-OBE	ST1045	ST-FILTER	SE045H20B	ST1219	ST-FILTER	SE014G03B
SBF96518S7B	SCHROEDER	SP070F10B-OBE	ST1046	ST-FILTER	SE070H03B	ST1220	ST-FILTER	SE014G05B
SBF96518S7V	SCHROEDER	SP070F10V-OBE	ST1047	ST-FILTER	SE070H05B	ST1221	ST-FILTER	SE014G10B
SBF96518Z10B	SCHROEDER	SP070F10B-OBE	ST1048	ST-FILTER	SE070H10B	ST1222	ST-FILTER	SE014G20B
SBF96518Z10V	SCHROEDER	SP070F10V-OBE	ST1049	ST-FILTER	SE070H20B	ST1223	ST-FILTER	SE030G03B
SBF96518Z25B	SCHROEDER	SP070F20B-OBE	ST1050	ST-FILTER	SE090H03B	ST1224	ST-FILTER	SE030G05B
SBF96518Z25V	SCHROEDER	SP070F20V-OBE	ST1051	ST-FILTER	SE090H05B	ST1225	ST-FILTER	SE030G10B
SBF96518Z3B	SCHROEDER	SP070F03B-OBE	ST1052	ST-FILTER	SE090H10B	ST1226	ST-FILTER	SE030G20B
SBF96518Z3V	SCHROEDER	SP070F03V-OBE	ST1053	ST-FILTER	SE090H20B	ST1227	ST-FILTER	SE045G03B
SBF980013S15B	SCHROEDER	SP035E20B	ST1054	ST-FILTER	SE160H03B	ST1231	ST-FILTER	SE070G03B
SBF980013S15V	SCHROEDER	SP035E20V	ST1055	ST-FILTER	SE160H05B	ST1232	ST-FILTER	SE070G05B
SBF980013S1B	SCHROEDER	SP035E03B	ST1056	ST-FILTER	SE160H10B	ST1237	ST-FILTER	SE090G10B
SBF980013S1V	SCHROEDER	SP035E03V	ST1057	ST-FILTER	SE160H20B	ST1240	ST-FILTER	SE130G05B
SBF980013S3B	SCHROEDER	SP035E05B	ST1058	ST-FILTER	SE008B25B	ST1241	ST-FILTER	SE130G10B
SBF980013S3V	SCHROEDER	SP035E05V	ST1059	ST-FILTER	SE014B25B	ST1242	ST-FILTER	SE130G20B
SBF980013S7B	SCHROEDER	SP035E10B	ST1060	ST-FILTER	SE030B25B	ST1248	ST-FILTER	RE014G05B
SBF980013S7V	SCHROEDER	SP035E10V	ST1061	ST-FILTER	SE045B25B	ST1249	ST-FILTER	RE014G10B
SBF980013Z10B	SCHROEDER	SP035E10B	ST1062	ST-FILTER	SE070B25B	ST1250	ST-FILTER	RE014G20B
SBF980013Z10V	SCHROEDER	SP035E10V	ST1063	ST-FILTER	SE090B25B	ST1251	ST-FILTER	RE030G03B
SBF980013Z25B	SCHROEDER	SP035E20B	ST1064	ST-FILTER	SE160B25B	ST1252	ST-FILTER	RE030G05B
SBF980013Z25V	SCHROEDER	SP035E20V	ST1065	ST-FILTER	SE008A20B	ST1253	ST-FILTER	RE030G10B
SBF980013Z3B	SCHROEDER	SP035E03B	ST1066	ST-FILTER	SE008A10B	ST1254	ST-FILTER	RE030G10B
SBF980013Z3V	SCHROEDER	SP035E03V	ST1067	ST-FILTER	SE008A05B	ST1255	ST-FILTER	RE045G03B
SBF980013Z5B	SCHROEDER	SP035E05B	ST1068	ST-FILTER	SE008A03B	ST1256	ST-FILTER	RE045G05B
SBF980013Z5V	SCHROEDER	SP035E05V	ST1069	ST-FILTER	SE014A20B	ST1257	ST-FILTER	RE045G10B
SBF98004S15B	SCHROEDER	SP024E20B	ST1070	ST-FILTER	SE014A10B	ST1258	ST-FILTER	RE045G20B
SBF98004S15V	SCHROEDER	SP024E20V	ST1071	ST-FILTER	SE014A05B	ST1259	ST-FILTER	RE070G03B
SBF98004S1B	SCHROEDER	SP024E03B	ST1072	ST-FILTER	SE014A03B	ST1260	ST-FILTER	RE070G05B
SBF98004S1V	SCHROEDER	SP024E03V	ST1073	ST-FILTER	SE030A20B	ST1261	ST-FILTER	RE070G10B
SBF98004S3B	SCHROEDER	SP024E05B	ST1074	ST-FILTER	SE030A10B	ST1262	ST-FILTER	RE070G20B
SBF98004S3V	SCHROEDER	SP024E05V	ST1075	ST-FILTER	SE030A05B	ST1263	ST-FILTER	RE090G03B
SBF98004S7B	SCHROEDER	SP024E10B	ST1076	ST-FILTER	SE030A03B	ST1264	ST-FILTER	RE090G05B
SBF98004S7V	SCHROEDER	SP024E10V	ST1077	ST-FILTER	SE045A20B	ST1265	ST-FILTER	RE090G10B
SBF98004Z10B	SCHROEDER	SP024E10B	ST1078	ST-FILTER	SE045A10B	ST1266	ST-FILTER	RE090G20B
SBF98004Z10V	SCHROEDER	SP024E10V	ST1079	ST-FILTER	SE045A05B	ST1267	ST-FILTER	RE130G03B
SBF98004Z25B	SCHROEDER	SP024E20B	ST1080	ST-FILTER	SE045A03B	ST1268	ST-FILTER	RE130G05B
SBF98004Z25V	SCHROEDER	SP024E20V	ST1081	ST-FILTER	SE070A20B	ST1269	ST-FILTER	RE130G10B
SBF98004Z3B	SCHROEDER	SP024E03B	ST1082	ST-FILTER	SE070A10B	ST1270	ST-FILTER	RE130G20B
SBF98004Z3V	SCHROEDER	SP024E03V	ST1083	ST-FILTER	SE070A05B	ST1271	ST-FILTER	RE160G03B
SBF98004Z5B	SCHROEDER	SP024E05B	ST1084	ST-FILTER	SE070A03B	ST1272	ST-FILTER	RE160G05B
SBF98004Z5V	SCHROEDER	SP024E05V	ST1085	ST-FILTER	SE090A20B	ST1273	ST-FILTER	RE160G10B
SBF98008S15B	SCHROEDER	SP030E20B	ST1086	ST-FILTER	SE090A10B	ST1274	ST-FILTER	RE160G20B
SBF98008S15V	SCHROEDER	SP030E20V	ST1087	ST-FILTER	SE090A05B	ST1276	ST-FILTER	RE600G05B
SBF98008S1B	SCHROEDER	SP030E03B	ST1088	ST-FILTER	SE090A03B	ST1277	ST-FILTER	RE600G10B
SBF98008S1V	SCHROEDER	SP030E03V	ST1089	ST-FILTER	SE160A20B	ST1279	ST-FILTER	SE070B50B
SBF98008S3B	SCHROEDER	SP030E05B	ST1090	ST-FILTER	SE160A10B	ST1280	ST-FILTER	SE070B100B
SBF98008S3V	SCHROEDER	SP030E05V	ST1091	ST-FILTER	SE160A05B	ST1281	ST-FILTER	SE090B50B
SBF98008S7B	SCHROEDER	SP030E10B	ST1092	ST-FILTER	SE160A03B	ST1282	ST-FILTER	SE090B100B
SBF98008S7V	SCHROEDER	SP030E10V	ST1093	ST-FILTER	RE008B25B	ST1283	ST-FILTER	SE160B50B
SBF98008Z10B	SCHROEDER	SP030E10B	ST1094	ST-FILTER	RE014B25B	ST1284	ST-FILTER	SE160B100B
SBF98008Z10V	SCHROEDER	SP030E10V	ST1095	ST-FILTER	RE030B25B	ST1285	ST-FILTER	SE035G10B
SBF98008Z25B	SCHROEDER	SP030E20B	ST1096	ST-FILTER	RE045B25B	ST1286	ST-FILTER	SE072G10B1301
SBF98008Z25V	SCHROEDER	SP030E20V	ST1097	ST-FILTER	RE070B25B	ST1287	ST-FILTER	SE035B25B
SBF98008Z3B	SCHROEDER	SP030E03B	ST1098	ST-FILTER	RE090B25B	ST1292	ST-FILTER	RE008E10B
SBF98008Z3V	SCHROEDER	SP030E03V	ST1099	ST-FILTER	RE130B25B	ST1293	ST-FILTER	RE008E20B
SBF98008Z5B	SCHROEDER	SP030E05B	ST1100	ST-FILTER	RE160B25B	ST1294	ST-FILTER	SE035H03B
SBF98008Z5V	SCHROEDER	SP030E05V	ST1101	ST-FILTER	RE200B25B	ST1295	ST-FILTER	SE035H05B
SBF980113S15B	SCHROEDER	SP035F20B	ST1102	ST-FILTER	RE250B25B	ST1296	ST-FILTER	SE035H10B
SBF980113S15V	SCHROEDER	SP035F20V	ST1103	ST-FILTER	RE300B25B	ST1298	ST-FILTER	SE035A03B
SBF980113S1B	SCHROEDER	SP035F03B	ST1105	ST-FILTER	RE008A20B	ST1299	ST-FILTER	SE035A05B
SBF980113S1V	SCHROEDER	SP035F03V	ST1106	ST-FILTER	RE008A10B	ST1300	ST-FILTER	SE035A10B
SBF980113S7B	SCHROEDER	SP035F10B	ST1107	ST-FILTER	RE008A05B	ST1301	ST-FILTER	SE035A20B
SBF980113S7V	SCHROEDER	SP035F10V	ST1108	ST-FILTER	RE008A03B	ST1302	ST-FILTER	SE125A03B
SBF980113Z10B	SCHROEDER	SP035F10B	ST1109	ST-FILTER	RE014A20B	ST1303	ST-FILTER	SE125A05B
SBF980113Z10V	SCHROEDER	SP035F10V	ST1110	ST-FILTER	RE014A10B	ST1304	ST-FILTER	SE125A10B
SBF980113Z25B	SCHROEDER	SP035F20B	ST1111	ST-FILTER	RE014A05B	ST1305	ST-FILTER	SE125A20B
SBF980113Z25V	SCHROEDER	SP035F20V	ST1112	ST-FILTER	RE014A03B	ST1306	ST-FILTER	SE130A03B
SBF980113Z3B	SCHROEDER	SP035F03B	ST1113	ST-FILTER	RE030A20B	ST1307	ST-FILTER	SE130A05B
SBF980113Z3V	SCHROEDER	SP035F03V	ST1114	ST-FILTER	RE030A10B	ST1308	ST-FILTER	SE130A10B
SBF98014S15B	SCHROEDER	SP024F20B	ST1115	ST-FILTER	RE030A05B	ST1309	ST-FILTER	SE130A20B
SBF98014S15V	SCHROEDER	SP024F20V	ST1116	ST-FILTER	RE030A03B	ST1310	ST-FILTER	SE130H10B
SBF98014S1B	SCHROEDER	SP024F03B	ST1117	ST-FILTER	RE045A20B	ST1311	ST-FILTER	SE035H20B
SBF98014S1V	SCHROEDER	SP024F03V	ST1118	ST-FILTER	RE045A10B	ST1316	ST-FILTER	RE600G20B1650
SBF98014S7B	SCHROEDER	SP024F10B	ST1119	ST-FILTER	RE045A05B	ST1317	ST-FILTER	RE200G20B1650
SBF98014S7V	SCHROEDER	SP024F10V	ST1120	ST-FILTER	RE045A03B	ST1318	ST-FILTER	MD025L20B
SBF98014Z10B	SCHROEDER	SP024F10B	ST1121	ST-FILTER	RE070A20B	ST1320	ST-FILTER	SS070K20B
SBF98014Z10V	SCHROEDER	SP024F10V	ST1122	ST-FILTER	RE070A10B	ST1323	ST-FILTER	RE600A20B
SBF98014Z25B	SCHROEDER	SP024F20B	ST1123	ST-FILTER	RE070A05B	ST1325	ST-FILTER	SE008F03B
SBF98014Z25V	SCHROEDER	SP024F20V	ST1124	ST-FILTER	RE070A03B	ST1326	ST-FILTER	SE008F05B
SBF98014Z3B	SCHROEDER	SP024F03B	ST1125	ST-FILTER	RE090A20B	ST1333	ST-FILTER	RE065G20B
SBF98014Z3V	SCHROEDER	SP024F03V	ST1126	ST-FILTER	RE090A10B	ST1337	ST-FILTER	SE014B100B
SBF98018S15B	SCHROEDER	SP030F20B	ST1127	ST-FILTER	RE090A05B	ST1342	ST-FILTER	SL010E20B
SBF98018S15V	SCHROEDER	SP030F20V	ST1128	ST-FILTER	RE090A03B	ST1343	ST-FILTER	SL022E20B
SBF98018S1B	SCHROEDER	RE130A03B	ST1129	ST-FILTER	RE130A20B	ST1354	ST-FILTER	RD070K20B
SBF98018S1V	SCHROEDER	RE130A10B	ST1130	ST-FILTER	RE130A10B	ST1356	ST-FILTER	RL005L10B
SBF98018S7B	SCHROEDER	RE130A05B	ST1131	ST-FILTER	RE130A05B	ST1361	ST-FILTER	RL035L10B
SBF98018S7V	SCHROEDER	RE130A03B	ST1132	ST-FILTER	RE130A03B	ST1365	ST-FILTER	RL070L20B
SBF98018Z10B	SCHROEDER	RE160A20B	ST1133	ST-FILTER	RE160A20B	ST1368	ST-FILTER	RL045B25B
SBF98018Z10V	SCHROEDER	RE160A10B	ST1134	ST-FILTER	RE160A10B	ST1369	ST-FILTER	RL020E20B
SBF98018Z25B	SCHROEDER	RE160A05B	ST1135	ST-FILTER	RE160A05B	ST1370	ST-FILTER	SL005B25B
SBF98018Z25V	SCHROEDER	RE160A03B	ST1136	ST-FILTER	RE160A03B	ST1371	ST-FILTER	SL010B60B
SBF98018Z3B	SCHROEDER	RE200A20B	ST1137	ST-FILTER	RE200A20B	ST1372	ST-FILTER	SL035B60B
SBF98018Z3V	SCHROEDER	SP030F03V	ST1138	ST-FILTER	RE200A10B	ST1373	ST-FILTER	SL005D10B
SE10	ZINGA	SF6720	ST1139	ST-FILTER	RE200A05B	ST1374	ST-FILTER	SL010D10B
SE25	ZINGA	SF6710	ST1140	ST-FILTER	RE200A03B	ST1375	ST-FILTER	SL010D20B
SPE1510	LHA	SF6520	ST1141	ST-FILTER	RE250A20B	ST1377	ST-FILTER	SL010W60B
SPE1525	LHA	SF6510	ST1142	ST-FILTER	RE250A10B	ST1400	ST-FILTER	RL100E10B
SPE2510	LHA	SF6521	ST1143	ST-FILTER	RE250A05B	ST1404	ST-FILTER	LL090E10B
SPE2525	LHA	SF6511	ST1144	ST-FILTER	RE250A03B	ST1405	ST-FILTER	SL014E10B
SPE5010	LHA	SF6720	ST1145	ST-FILTER	RE300A20B	ST1406	ST-FILTER	SL020E10B
SPE5025	LHA	SF6710	ST1146	ST-FILTER	RE300A10B	ST1407	ST-FILTER	SL030E10B
SPE5210	LHA	SFC5710E	ST1147	ST-FILTER	RE300A05B	ST1408	ST-FILTER	SL045E10B
SPE6010	LHA	SF6721	ST1148	ST-FILTER	RE300A03B	ST1409	ST-FILTER	SL090E10B
SPE6026	LHA	SF6711	ST1149	ST-FILTER	RE600G20B	ST1410	ST-FILTER	SL125E10B
SRE40903	ZINGA	RTE48D03B	ST1150	ST-FILTER	RE600A10B	ST1411	ST-FILTER	SL014F10B
SRE40910	ZINGA	RTE48D10B	ST1151	ST-FILTER	RE600A05B	ST1412	ST-FILTER	SL020F10B
ST1030	ST-FILTER	DD015L10B	ST1152	ST-FILTER	RE600A03B	ST1413	ST-FILTER	SL030F10B
ST1031	ST-FILTER	DD010L10B	ST1153	ST-FILTER	RE200G20B	ST1414	ST-FILTER	SL045F10B
ST1032	ST-FILTER	SE008F10B	ST1154	ST-FILTER	RE200G10B	ST1415	ST-FILTER	SL090F10B
ST1033	ST-FILTER	SE008F20B	ST1155	ST-FILTER	RE200G05B	ST1424	ST-FILTER	SL014E03B
ST1034	ST-FILTER	SE014H03B	ST1156	ST-FILTER	RE200G03B	ST1430	ST-FILTER	SL090F03B
ST1035	ST-FILTER	SE014H05B	ST1157	ST-FILTER	RE250G20B	ST1441	ST-FILTER	RE030S25B
ST1036	ST-FILTER	SE014H10B	ST1158	ST-FILTER	RE250G10B	ST1442	ST-FILTER	RE090S100B
ST1037	ST-FILTER	SE014H20B	ST1160	ST-FILTER	RE250G03B	ST1445	ST-FILTER	LL100E20B
ST1038	ST-FILTER	SE030H03B	ST1161	ST-FILTER	RE300G20B	ST1446	ST-FILTER	SL005F20B
ST1039	ST-FILTER	SE030H05B	ST1162	ST-FILTER	RE300G10B	ST1447	ST-FILTER	RL045E10B
ST1040	ST-FILTER	SE030H10B	ST1163	ST-FILTER	RE300G05B	ST1448	ST-FILTER	SL020D10B
ST1041	ST-FILTER	SE030H20B	ST1164	ST-FILTER	RE300G03B			

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ST1455	ST-FILTER	SL125F03B	ST1599	ST-FILTER	SL090W25B	ST1721	ST-FILTER	RL070E20B
ST1456	ST-FILTER	SL020E20B	ST1600	ST-FILTER	SL125W25B	ST1722	ST-FILTER	RL100B25B
ST1457	ST-FILTER	SL125E20B	ST1601	ST-FILTER	SL014W40B	ST1723	ST-FILTER	RL100B40B
ST1458	ST-FILTER	SL020W60B	ST1602	ST-FILTER	SL020W40B	ST1724	ST-FILTER	RL100E20B
ST1459	ST-FILTER	RE014S25B	ST1603	ST-FILTER	SL030W40B	ST1725	ST-FILTER	RL035B25B
ST1460	ST-FILTER	RE014S50B	ST1604	ST-FILTER	SL045W40B	ST1726	ST-FILTER	RL035B40B
ST1461	ST-FILTER	RE014S100B	ST1605	ST-FILTER	SL090W40B	ST1727	ST-FILTER	RL045B40B
ST1462	ST-FILTER	RE030S50B	ST1606	ST-FILTER	SL125W40B	ST1728	ST-FILTER	RL045E20B
ST1463	ST-FILTER	RE030S100B	ST1607	ST-FILTER	SL014W60B	ST1729	ST-FILTER	RL010B25B
ST1464	ST-FILTER	RE045S25B	ST1608	ST-FILTER	SL030W60B	ST1730	ST-FILTER	RL010B40B
ST1465	ST-FILTER	RE045S50B	ST1609	ST-FILTER	SL045W60B	ST1731	ST-FILTER	RL010E20B
ST1466	ST-FILTER	RE045S100B	ST1610	ST-FILTER	SL090W60B	ST1732	ST-FILTER	RL020B25B
ST1467	ST-FILTER	RE070S25B	ST1611	ST-FILTER	SL125W60B	ST1733	ST-FILTER	RL020B40B
ST1468	ST-FILTER	RE070S50B	ST1612	ST-FILTER	SL014W100B	ST1734	ST-FILTER	RL020E10B
ST1469	ST-FILTER	RE070S100B	ST1613	ST-FILTER	SL020W100B	ST1735	ST-FILTER	RL005B25B
ST1470	ST-FILTER	RE090S25B	ST1614	ST-FILTER	SL030W100B	ST1736	ST-FILTER	RL005B40B
ST1471	ST-FILTER	RE090S50B	ST1615	ST-FILTER	SL045W100B	ST1737	ST-FILTER	RL005E10B
ST1472	ST-FILTER	RE130S25B	ST1616	ST-FILTER	SL090W100B	ST1738	ST-FILTER	RL005E20B
ST1473	ST-FILTER	RE130S50B	ST1617	ST-FILTER	SL125W100B	ST1739	ST-FILTER	LL090E03B
ST1474	ST-FILTER	RE130S100B	ST1618	ST-FILTER	SL035E10B	ST1740	ST-FILTER	LL090E20B
ST1475	ST-FILTER	RE160S25B	ST1619	ST-FILTER	SL035B25B	ST1741	ST-FILTER	LL160E03B
ST1476	ST-FILTER	RE160S50B	ST1620	ST-FILTER	SL035B100B	ST1742	ST-FILTER	LL160E20B
ST1477	ST-FILTER	RE160S100B	ST1621	ST-FILTER	SL035W10B	ST1758	ST-FILTER	SS008E10B
ST1478	ST-FILTER	RE200S25B	ST1622	ST-FILTER	SL035W25B	ST1759	ST-FILTER	SS035E10B
ST1479	ST-FILTER	RE200S50B	ST1623	ST-FILTER	SL035W60B	ST1760	ST-FILTER	RS060K10B
ST1480	ST-FILTER	RE200S100B	ST1624	ST-FILTER	SL035W100B	ST1762	ST-FILTER	SS070W40V
ST1481	ST-FILTER	RE250S25B	ST1625	ST-FILTER	SL035E03B	ST1766	ST-FILTER	RS060E10B
ST1482	ST-FILTER	RE250S50B	ST1626	ST-FILTER	SL035E10B	ST1767	ST-FILTER	RS060E20B
ST1483	ST-FILTER	RE250S100B	ST1627	ST-FILTER	SL035E20B	ST1769	ST-FILTER	SS085E10B
ST1484	ST-FILTER	RE300S25B	ST1628	ST-FILTER	SL035F03B	ST1770	ST-FILTER	SS085E20B
ST1485	ST-FILTER	RE300S50B	ST1629	ST-FILTER	SL035F10B	ST1771	ST-FILTER	SS085F10B
ST1486	ST-FILTER	RE300S100B	ST1630	ST-FILTER	SL035F20B	ST1772	ST-FILTER	SS085F20B
ST1487	ST-FILTER	RE600S25B	ST1631	ST-FILTER	LL045B10B	ST1775	ST-FILTER	SS004B25B
ST1488	ST-FILTER	RE600S50B	ST1632	ST-FILTER	LL045B25B	ST1776	ST-FILTER	RS035B25B
ST1489	ST-FILTER	RE600S100B	ST1633	ST-FILTER	LL045B60B	ST1777	ST-FILTER	RS060B25B
ST1491	ST-FILTER	SL090B40B	ST1634	ST-FILTER	LL045B100B	ST1778	ST-FILTER	SS014E05B
ST1492	ST-FILTER	SL020B100B	ST1635	ST-FILTER	LL045E10B	ST1779	ST-FILTER	SS014E10B
ST1493	ST-FILTER	RS024B25B	ST1636	ST-FILTER	LL045E20B	ST1780	ST-FILTER	SS014E20B
ST1494	ST-FILTER	SS024B25B	ST1637	ST-FILTER	LL050B10B	ST1781	ST-FILTER	SS024E10B
ST1495	ST-FILTER	SS014B25B	ST1638	ST-FILTER	LL050B25B	ST1782	ST-FILTER	SS024E20B
ST1496	ST-FILTER	SS035B25B	ST1639	ST-FILTER	LL050B60B	ST1784	ST-FILTER	SS035B100B
ST1497	ST-FILTER	LL160E10B	ST1640	ST-FILTER	LL050B100B	ST1785	ST-FILTER	SS035E05B
ST1498	ST-FILTER	SL022E10B	ST1641	ST-FILTER	LL050E03B	ST1786	ST-FILTER	SS035E20B
ST1499	ST-FILTER	RD070K10B	ST1642	ST-FILTER	LL050E10B	ST1787	ST-FILTER	SS070B100B
ST1503	ST-FILTER	RL035E10B	ST1643	ST-FILTER	LL050E20B	ST1788	ST-FILTER	SS070E20B
ST1504	ST-FILTER	RL035E20B	ST1644	ST-FILTER	LL100B10B	ST1789	ST-FILTER	SS070E10B
ST1505	ST-FILTER	SL090E20B	ST1645	ST-FILTER	LL100B25B	ST1796	ST-FILTER	SS070F10B
ST1506	ST-FILTER	SS070B25B	ST1646	ST-FILTER	LL100B60B	ST1797	ST-FILTER	SS070F20B
ST1507	ST-FILTER	SS125E10B	ST1647	ST-FILTER	LL100B100B	ST1798	ST-FILTER	SN095E10B
ST1509	ST-FILTER	SS125F10B	ST1648	ST-FILTER	LL100E10B	ST1799	ST-FILTER	SN120E10B
ST1510	ST-FILTER	SS125F20B	ST1649	ST-FILTER	SL005B10B	ST1801	ST-FILTER	NR040E03B
ST1512	ST-FILTER	SL045E20B	ST1650	ST-FILTER	SL005B40B	ST1802	ST-FILTER	NR040E06B
ST1514	ST-FILTER	RL010E10B	ST1651	ST-FILTER	SL005B60B	ST1803	ST-FILTER	NR040E10B
ST1515	ST-FILTER	SL030E20B	ST1652	ST-FILTER	SL005B100B	ST1804	ST-FILTER	NR040E25B
ST1516	ST-FILTER	SL045E03B	ST1653	ST-FILTER	SL005W10B	ST1812	ST-FILTER	RE065G10B
ST1517	ST-FILTER	SL090E03B	ST1654	ST-FILTER	SL005W25B	ST1848	ST-FILTER	SN024F05B
ST1518	ST-FILTER	SL014F03B	ST1655	ST-FILTER	SL005W40B	ST1849	ST-FILTER	SN095F05B
ST1519	ST-FILTER	SL020F03B	ST1656	ST-FILTER	SL005W60B	ST1850	ST-FILTER	SN014F20B
ST1520	ST-FILTER	SL030F03B	ST1657	ST-FILTER	SL005W100B	ST1851	ST-FILTER	SN024F20B
ST1521	ST-FILTER	SL045F03B	ST1658	ST-FILTER	SL005E03B	ST1852	ST-FILTER	SN040F20B
ST1522	ST-FILTER	SL014E20B	ST1659	ST-FILTER	SL005E10B	ST1853	ST-FILTER	SN070F20B
ST1523	ST-FILTER	SL014F20B	ST1660	ST-FILTER	SL005E20B	ST1854	ST-FILTER	SN095F20B
ST1524	ST-FILTER	SL020F20B	ST1661	ST-FILTER	SL005F03B	ST1855	ST-FILTER	SN120F20B
ST1525	ST-FILTER	SL030F20B	ST1662	ST-FILTER	SL005F10B	ST1856	ST-FILTER	SS250F20B
ST1526	ST-FILTER	SL045F20B	ST1663	ST-FILTER	SL010B10B	ST1857	ST-FILTER	SS014B100B
ST1527	ST-FILTER	SL090F20B	ST1664	ST-FILTER	SL010B25B	ST1858	ST-FILTER	SS160E10B
ST1528	ST-FILTER	SL125F20B	ST1665	ST-FILTER	SL010B40B	ST1859	ST-FILTER	SS160E20B
ST1529	ST-FILTER	SL014E05B	ST1666	ST-FILTER	SL010B100B	ST1860	ST-FILTER	SS160F10B
ST1530	ST-FILTER	SL020E05B	ST1667	ST-FILTER	SL010W10B	ST1861	ST-FILTER	SS160F20B
ST1531	ST-FILTER	SL030E05B	ST1668	ST-FILTER	SL010W25B	ST1862	ST-FILTER	SS250E10B
ST1532	ST-FILTER	SL045E05B	ST1669	ST-FILTER	SL010W40B	ST1863	ST-FILTER	SS250E20B
ST1533	ST-FILTER	SL090E05B	ST1670	ST-FILTER	SL010W100B	STU1021	NORMAN	SE045H03B
ST1534	ST-FILTER	SL125E05B	ST1671	ST-FILTER	SL010E03B	STU1022	NORMAN	SE045G03B
ST1541	ST-FILTER	RL130B25B	ST1672	ST-FILTER	SL010E10B	STU1027	NORMAN	RE300B25B
ST1542	ST-FILTER	RL130B40B	ST1673	ST-FILTER	SL010F03B	STU1029	NORMAN	SE090A10B
ST1543	ST-FILTER	RL130E10B	ST1674	ST-FILTER	SL010F05B	STU170	NORMAN	SP090E03B
ST1544	ST-FILTER	RL130E20B	ST1675	ST-FILTER	SL010F10B	STU172	NORMAN	SP090E10B
ST1545	ST-FILTER	SL014F05B	ST1676	ST-FILTER	SL010F20B	STU173	NORMAN	SP090E20B
ST1546	ST-FILTER	SL020F05B	ST1677	ST-FILTER	SL022B10B	STU174	NORMAN	SP130E03B
ST1547	ST-FILTER	SL030F05B	ST1678	ST-FILTER	SL022B25B	STU176	NORMAN	SP130E10B
ST1548	ST-FILTER	SL045F05B	ST1679	ST-FILTER	SL022B40B	STU177	NORMAN	SP130E20B
ST1549	ST-FILTER	SL090F05B	ST1680	ST-FILTER	SL022B60B	STU178	NORMAN	SP045F03B
ST1560	ST-FILTER	SL125F05B	ST1681	ST-FILTER	SL022B100B	STU179	NORMAN	SP045F10B
ST1561	ST-FILTER	SL014B10B	ST1682	ST-FILTER	SL022W10B	STU180	NORMAN	SP070F03B
ST1562	ST-FILTER	SL020B10B	ST1683	ST-FILTER	SL022W25B	STU181	NORMAN	SP070F10B
ST1563	ST-FILTER	SL030B10B	ST1684	ST-FILTER	SL022W40B	STU182	NORMAN	SP090F03B
ST1564	ST-FILTER	SL045B10B	ST1685	ST-FILTER	SL022W60B	STU183	NORMAN	SP090F10B
ST1565	ST-FILTER	SL090B10B	ST1686	ST-FILTER	SL022W100B	STU184	NORMAN	SP130F03B
ST1566	ST-FILTER	SL125B10B	ST1687	ST-FILTER	SL022E03B	STU185	NORMAN	SP130F10B
ST1567	ST-FILTER	SL014B25B	ST1689	ST-FILTER	SL022F03B	STU186	NORMAN	SP024E03B
ST1568	ST-FILTER	SL020B25B	ST1690	ST-FILTER	SL022F10B	STU188	NORMAN	SP024E10B
ST1569	ST-FILTER	SL030B25B	ST1691	ST-FILTER	SL022F20B	STU189	NORMAN	SP024E20B
ST1570	ST-FILTER	SL045B25B	ST1692	ST-FILTER	LL155B10B	STU192	NORMAN	SP030E10B
ST1571	ST-FILTER	SL090B25B	ST1693	ST-FILTER	LL155B25B	STU193	NORMAN	SP030E20B
ST1572	ST-FILTER	SL125B25B	ST1694	ST-FILTER	LL155B60B	STU194	NORMAN	SP024F03B
ST1573	ST-FILTER	SL014B40B	ST1695	ST-FILTER	LL155B100B	STU195	NORMAN	SP024F10B
ST1574	ST-FILTER	SL020B40B	ST1696	ST-FILTER	LL155E10B	STU196	NORMAN	SP030F03B
ST1575	ST-FILTER	SL030B40B	ST1697	ST-FILTER	LL155E20B	STU197	NORMAN	SP030F10B
ST1576	ST-FILTER	SL045B40B	ST1698	ST-FILTER	LL080B10B	STU198	NORMAN	SP100E03B
ST1577	ST-FILTER	SL125B40B	ST1699	ST-FILTER	LL080B25B	STU201	NORMAN	SP100E20B
ST1578	ST-FILTER	SL014B60B	ST1700	ST-FILTER	LL080B60B	STU202	NORMAN	SP200E03B
ST1579	ST-FILTER	SL020B60B	ST1701	ST-FILTER	LL080B100B	STU204	NORMAN	SP200E10B
ST1580	ST-FILTER	SL030B60B	ST1702	ST-FILTER	LL080E10B	STU205	NORMAN	SP200E20B
ST1581	ST-FILTER	SL045B60B	ST1703	ST-FILTER	LL080E20B	STU206	NORMAN	SP300E03B
ST1582	ST-FILTER	SL090B60B	ST1704	ST-FILTER	ML070B10B	STU208	NORMAN	SP300E10B
ST1583	ST-FILTER	SL125B60B	ST1705	ST-FILTER	ML070B25B	STU209	NORMAN	SP300E20B
ST1584	ST-FILTER	SL014B100B	ST1706	ST-FILTER	ML070B60B	STU210	NORMAN	SP010E03B
ST1585	ST-FILTER	SL030B100B	ST1707	ST-FILTER	ML070B100B	STU212	NORMAN	SP010E10B
ST1586	ST-FILTER	SL045B100B	ST1708	ST-FILTER	ML070W10B	STU213	NORMAN	SP010E20B
ST1587	ST-FILTER	SL090B100B	ST1709	ST-FILTER	ML070W25B	STU216	NORMAN	SP020E03B
ST1588	ST-FILTER	SL125B100B	ST1710	ST-FILTER	ML070W60B	STU217	NORMAN	SP020E20B
ST1589	ST-FILTER	SL014W10B	ST1711	ST-FILTER	ML070W100B	STU218	NORMAN	SP010F03B
ST1590	ST-FILTER	SL020W10B	ST1712	ST-FILTER	ML070E03B	STU219	NORMAN	SP010F10B
ST1591	ST-FILTER	SL030W10B	ST1713	ST-FILTER	ML070E10B	STU220	NORMAN	SP020F03B
ST1592	ST-FILTER	SL045W10B	ST1714	ST-FILTER	ML070E20B	STU221	NORMAN	SP020F10B
ST1593	ST-FILTER	SL090W10B	ST1715	ST-FILTER	ML070F03B	STU222	NORMAN	SP045E03B
ST1594	ST-FILTER	SL125W10B	ST1716	ST-FILTER	ML070F10B	STU224	NORMAN	SP045E10B
ST1595	ST-FILTER	SL014W25B	ST1717	ST-FILTER	ML070F20B	STU225	NORMAN	SP045E20B
ST1596	ST-FILTER	SL020W25B	ST1718	ST-FILTER	RL070B25B	STU226	NORMAN	SP070E03B
ST1597	ST-FILTER	SL030W25B	ST1719	ST-FILTER	RL070B40B	STU228	NORMAN	SP070E10B
ST1598	ST-FILTER	SL045W25B	ST1720	ST-FILTER	RL070E10B	STU229	NORMAN	SP070E20B

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STU232	NORMAN	SP110E03B	TX210	FAIREY ARLON	RA060D10B	V3051016	ARGO	SD010F10B
STU272	NORMAN	SP130E10BOBE	TX310	FAIREY ARLON	RA090D10B	V3051018	ARGO	SD010F20B
STU277	NORMAN	SP170E03B	TX3D10	FAIREY ARLON	RA120D10B	V3052003	ARGO	SD015E03B
STU287	NORMAN	SP070E20BOBE	TXW5CC10	FAIREY ARLON	RA230E10B	V3052006	ARGO	SD015E10B
STU327200	NORMAN	SP160E20B	TXX510	FAIREY ARLON	RA230D10B	V3052008	ARGO	SD015E20B
STU347	NORMAN	SP070E10BOBE	TXX5A10	FAIREY ARLON	RA300D10B	V3052013	ARGO	SD015F03B
STU348	NORMAN	SP070E03BOBE	TXX8A10	FAIREY ARLON	RA390D10B	V3052016	ARGO	SD015F10B
STU349	NORMAN	SP130E03BOBE	TXX8C10	FAIREY ARLON	RA500D10B	V3052018	ARGO	SD015F20B
STU363	NORMAN	SP110E10B	V0112B2C03	VICKERS	SE030G03B	V3062303	ARGO	SD024E03B
STU364	NORMAN	SP170E10B	V0112B2C05	VICKERS	SE030G05B	V3062306	ARGO	SD024E10B
STU366	NORMAN	SP110E20B	V0112B2C10	VICKERS	SE030G10B	V3062308	ARGO	SD024E20B
STU367	NORMAN	SP170E20B	V0114B2H03	VICKERS	SE030H03B	V3062313	ARGO	SD024F03B
STU374	NORMAN	SP130E20BOBE	V0114B2H05	VICKERS	SE030H05B	V3062316	ARGO	SD024F10B
STU376	NORMAN	SP070F10BOBE	V0114B2H10	VICKERS	SE030H10B	V3062318	ARGO	SD024F20B
STU377	NORMAN	SP130F10BOBE	V0162B1C03	VICKERS	SE045G03B	V3072006	ARGO	MD025E10B
STU510	NORMAN	SP250E03B	V0162B1C05	VICKERS	SE045G05B	V3072016	ARGO	MD025F10B
STU518	NORMAN	SP250E10B	V0162B1C10	VICKERS	SE045G10B	V6011B1C03	VICKERS	SP024E03B
STU522	NORMAN	SP250E20B	V0164B1H03	VICKERS	SE045H03B	V6011B1C05	VICKERS	SP024E05B
STU536	NORMAN	SP110F03B	V0164B1H05	VICKERS	SE045H05B	V6011B1C10	VICKERS	SP024E10B
STU537	NORMAN	SP170F03B	V0164B1H10	VICKERS	SE045H10B	V6011B1C20	VICKERS	SP024E20B
STU539	NORMAN	SP110F10B	V0201B1R03	VICKERS	SF6603	V6011B2C03	VICKERS	SP030E03B
STU600	NORMAN	RE008D10B	V0201B1R05	VICKERS	SF6606	V6011B2C05	VICKERS	SP030E05B
STU601	NORMAN	SE008B25B	V0201B2R03	VICKERS	SF6604	V6011B2C10	VICKERS	SP030E10B
STU606	NORMAN	SE008F03B	V0201B2R05	VICKERS	SF6607	V6011B2C20	VICKERS	SP030E20B
STU607	NORMAN	SE008F10B	V0211B1R03	VICKERS	SF6703MG	V6014B1H03	VICKERS	SP024F03B
STU608	NORMAN	SE008F20B	V0211B1R05	VICKERS	SF6706MG	V6014B1H10	VICKERS	SP024F10B
STU609	NORMAN	SE014A10B	V0211B2R03	VICKERS	SF6704MG	V6014B1H20	VICKERS	SP024F20B
STU610	NORMAN	RE014B25B	V0211B2R05	VICKERS	SF6707MG	V6014B2H03	VICKERS	SP030F03B
STU611	NORMAN	RE014D10B	V0242B2C03	VICKERS	SE070G03B	V6014B2H10	VICKERS	SP030F10B
STU612	NORMAN	RE014G10B	V0242B2C05	VICKERS	SE070G05B	V6021B1C03	VICKERS	SP045E03B
STU613	NORMAN	SE014G03B	V0242B2C10	VICKERS	SE070G10B	V6021B1C05	VICKERS	SP045E05B
STU614	NORMAN	SE014G10B	V0244B2H03	VICKERS	SE070H03B	V6021B1C10	VICKERS	SP045E10B
STU615	NORMAN	SE014H03B	V0244B2H05	VICKERS	SE070H05B	V6021B1C20	VICKERS	SP045E20B
STU616	NORMAN	SE014H10B	V0244B2H10	VICKERS	SE070H10B	V6021B2C03	VICKERS	SP070E03B
STU617	NORMAN	SE030A10B	V0332B2C03	VICKERS	SE090G03B	V6021B2C05	VICKERS	SP070E05B
STU618	NORMAN	SE030B25B	V0332B2C05	VICKERS	SE090G05B	V6021B2C10	VICKERS	SP070E10B
STU619	NORMAN	RE030G10B	V0332B2C10	VICKERS	SE090G10B	V6021B2C20	VICKERS	SP070E20B
STU620	NORMAN	SE030G03B	V0334B2H03	VICKERS	SE090H03B	V6021B4C03	VICKERS	SP090E03B
STU622	NORMAN	SE030G10B	V0334B2H05	VICKERS	SE090H05B	V6021B4C05	VICKERS	SP090E05B
STU623	NORMAN	SE030G20B	V0334B2H10	VICKERS	SE090H10B	V6021B4C10	VICKERS	SP090E10B
STU624	NORMAN	SE030H03B	V0411B2C03	VICKERS	SP100E03B	V6021B4C20	VICKERS	SP090E20B
STU625	NORMAN	SE030H10B	V0411B2C05	VICKERS	SP100E05B	V6021B5C03	VICKERS	SP130E03B
STU626	NORMAN	SE045A10B	V0411B2C10	VICKERS	SP100E10B	V6021B5C05	VICKERS	SP130E05B
STU627	NORMAN	SE045B40B	V0411B2C20	VICKERS	SP100E20B	V6021B5C10	VICKERS	SP130E10B
STU628	NORMAN	RE045D10B	V0411B5C03	VICKERS	SP200E05B	V6021B5C20	VICKERS	SP130E20B
STU629	NORMAN	RE045G10B	V0411B5C05	VICKERS	SP200E10B	V6024B1H03	VICKERS	SP045F03B
STU631	NORMAN	SE045G10B	V0411B5C10	VICKERS	SP200E20B	V6024B1H10	VICKERS	SP045F10B
STU632	NORMAN	SE045G20B	V0411B5C20	VICKERS	SP250E03B	V6024B2H03	VICKERS	SP070F03B
STU634	NORMAN	SE045H10B	V0411B8C03	VICKERS	SP300E03B	V6024B2H10	VICKERS	SP070F10B
STU635	NORMAN	RE070D10B	V0411B8C05	VICKERS	SP300E05B	V6024B2H20	VICKERS	SP070F20B
STU636	NORMAN	RE070G03B	V0411B8C10	VICKERS	SP300E10B	V6024B4H03	VICKERS	SP090F03B
STU637	NORMAN	RE070G10B	V0411B8V20	VICKERS	SP300E20B	V6024B4H10	VICKERS	SP090F10B
STU638	NORMAN	RE070G20B	V0602B1C03	VICKERS	SE014G03B	V6024B5H03	VICKERS	SP130F03B
STU639	NORMAN	SE070G03B	V0602B1C05	VICKERS	SE014G05B	V6024B5H10	VICKERS	SP130F10B
STU641	NORMAN	SE070G10B	V0602B1C10	VICKERS	SE014G10B	W0403H	ZINGA	SP045F03B
STU642	NORMAN	SE070H03B	V0604B1H03	VICKERS	SE014H03B	W0403L	ZINGA	SP045E03B
STU644	NORMAN	SE070H10B	V0604B1H05	VICKERS	SE014H05B	W0406L	ZINGA	SP045E05B
STU645	NORMAN	RE090D10B	V0604B1H10	VICKERS	SE014H10B	W0410H	ZINGA	SP045F10B
STU646	NORMAN	RE090G03B	V0662B2C03	VICKERS	SE160G03B	W0410L	ZINGA	SP045E10B
STU647	NORMAN	RE090G10B	V0662B2C05	VICKERS	SE160G05B	W0420L	ZINGA	SP045E20B
STU648	NORMAN	SE090G03B	V0662B2C10	VICKERS	SE160G10B	W0803H	ZINGA	SP070F03B
STU650	NORMAN	SE090G10B	V0664B2H03	VICKERS	SE160H03B	W0803L	ZINGA	SP070E03B
STU651	NORMAN	SE090G20B	V0664B2H05	VICKERS	SE160H05B	W0806L	ZINGA	SP070E05B
STU652	NORMAN	SE090H03B	V0664B2H10	VICKERS	SE160H10B	W0810H	ZINGA	SP070F10B
STU653	NORMAN	SE090H10B	V2054B2H03	VICKERS	SP070F03B	W0810L	ZINGA	SP070E10B
STU654	NORMAN	RE160D10B	V2054B2H10	VICKERS	SP070F20B	W0820L	ZINGA	SP070E20B
STU655	NORMAN	RE160G03B	V2092003	ARGO	RD055E03B	W1303H	ZINGA	SP090F03B
STU656	NORMAN	RE160G03B	V2092006	ARGO	RD055E10B	W1303L	ZINGA	SP090E03B
STU657	NORMAN	RE160G10B	V2092008	ARGO	RD055E20B	W1306H	ZINGA	SP090F10B
STU658	NORMAN	SE160H03B	V2121703	ARGO	RD070E03B	W1306L	ZINGA	SP090E05B
STU659	NORMAN	SE160H10B	V2121706	ARGO	RD070E10B	W1310L	ZINGA	SP090E10B
STU660	NORMAN	SE160G03B	V2121708	ARGO	RD070E20B	W1320L	ZINGA	SP090E20B
STU661	NORMAN	SE160G10B	V3041B1C20	VICKERS	SP010E20B	W2227	FILTREC	RE135G10B
STU664	NORMAN	RE250B25B	V3041B2C20	VICKERS	SP020E20B	Y0803LN	ZINGA	SP100E03B
STU666	NORMAN	RE250G10B	V3042B1C03	VICKERS	SP010E03B	Y0806LN	ZINGA	SP100E05B
STU667	NORMAN	RE300D10B	V3042B1C05	VICKERS	SP010E05B	Y0810LN	ZINGA	SP100E10B
STU668	NORMAN	RE300G03B	V3042B1C10	VICKERS	SP010E10B	Y0820LN	ZINGA	SP100E20B
STU670	NORMAN	RE300G10B	V3042B2C03	VICKERS	SP020E03B	Y1603LN	ZINGA	SP200E03B
STU671	NORMAN	RE300G20B	V3042B2C05	VICKERS	SP020E05B	Y1606LN	ZINGA	SP200E05B
STU672	NORMAN	SE045H20B	V3042B2C10	VICKERS	SP020E10B	Y1610LN	ZINGA	SP200E10B
STU786200	NORMAN	SP140E03B	V3045B1H03	VICKERS	SP010F03B	Y1620LN	ZINGA	SP200E20B
STU789	NORMAN	SE014G20B	V3045B1H05	VICKERS	SP010F05B	Y3903LN	ZINGA	SP300E03B
STU791	NORMAN	SP160E03B	V3045B1H10	VICKERS	SP010F10B	Y3906LN	ZINGA	SP300E05B
STU792	NORMAN	SE045B25B	V3045B1H20	VICKERS	SP010F20B	Y3910LN	ZINGA	SP300E10B
STU793	NORMAN	RE045G20B	V3045B2H03	VICKERS	SP020F03B	Y3920LN	ZINGA	SP300E20B
STU800200	NORMAN	SP120E03B	V3045B2H05	VICKERS	SP020F05B	ZRE40903	ZINGA	RTE49G03B
STU804200	NORMAN	SP140E10B	V3045B2H10	VICKERS	SP020F10B	ZRE40910	ZINGA	RTE49G10B
STU805	NORMAN	SP160E10B	V3045B2H20	VICKERS	SP020F20B	ZSRE40903	ZINGA	RTE48G03B
STU807200	NORMAN	SP120E10B	V3051003	ARGO	SD010E03B	ZSRE40910	ZINGA	RTE48G10B
STU808200	NORMAN	SP140E20B	V3051006	ARGO	SD010E10B			
STU810200	NORMAN	SP120E20B	V3051008	ARGO	SD010E20B			
STU822	NORMAN	SP070F03BOBE	V3051013	ARGO	SD010F03B			

Directional Control Valves, Solenoid Operated, CETOP 3 mounting

CETOP 5 valves are available on request

Have solenoid operated directional control valves offer long, reliable life with optimum performance.

A range of spool variations allows the system designer to select a valve to suit the requirements of the application. The subplates for mounting the valve are also available in either a side ported or bottom ported single mount version or multiple station manifold versions.

The solenoid coils are all DC windings. The AC versions have rectifiers in the Hirschmann plugs to convert the AC to DC.

Basic type	Voltage and Current	Coding
SWPN 2	12VDC	G12
	24VDC	G24
	110VAC	WG110
	230VAC	WG230

Order Example

To the basic SWPN 2, add the spool required and the voltage and current type to get the valve part number.

SWPN 2-H-G24

CETOP3 valve with a "H" spool and with 24VDC input power.

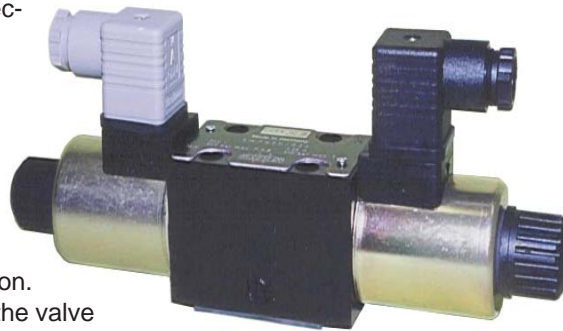
SWPN 2-L-WG230

CETOP3 valve with a "L" spool and with 230V AC input power.

Subplates & Manifolds

Subplates in aluminium and steel are available to mount the CETOP3 valves, with either side ports or a combination of side and bottom ports. A bolt kit incorporating 4 socket head cap screws is also available to suit the valve. In addition, blanking plates to seal a subplate or manifold when the valve is removed are also available. Manifold blocks in steel or aluminium are available on request in both series and parallel design. Sandwich plates with relief, throttle and check functions are available.

Part No.	Description
SSPC3B	Aluminium subplate, P & T ports on bottom, A & B ports on the side
SSPC3B-S	Steel subplate, P & T ports on bottom, A & B ports on the side
SSPC3S	Aluminium subplate, all ports side entry
SSPC3S-S	Steel subplate, all ports side entry
SBPC3S	Aluminium blanking plate
SBKC3	Bolt kit, cap screws, M5 x 30mm x 4 pieces



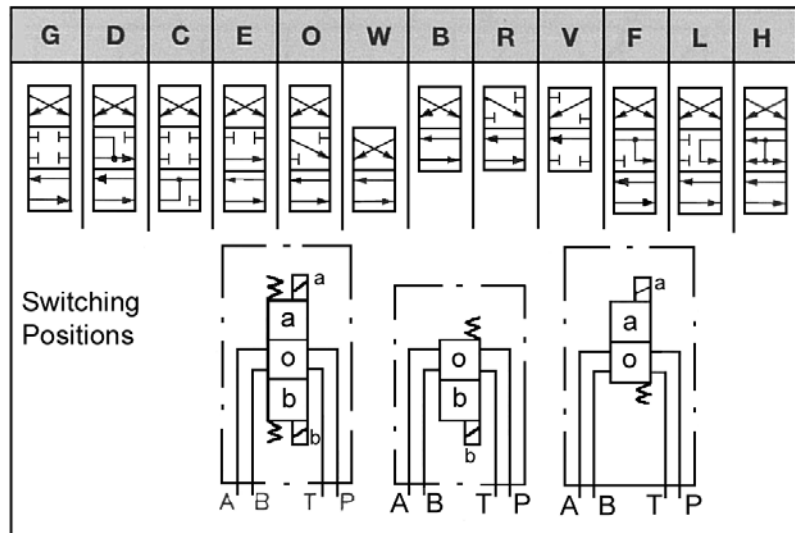
Q max: 60 l/min

P max: 350 bar P, A, B ports
210 bar T port

Design : wet armature design with easily replaceable coils

Current: AC & DC options

Voltage: 12, 24 V DC,
110, 230 V AC



STAUFF CORPORATION PTY LTD

STAUFF CORPORATION (NZ) LTD

HEAD OFFICE

24 - 26 Doyle Avenue
UNANDERRA NSW 2526
P.O. Box 227
UNANDERRA NSW 2526
Tel. (02) 4271 1877
Fax.(02) 4271 8432
E-mail: sales@stauff.com.au
http://www.stauff.com

ADELAIDE

1/3 Endeavour Drive
PORT ADELAIDE SA 5015
P.O. Box 208
PORT ADELAIDE SA 5015
Tel. (08) 8341 2260
Fax.(08) 8341 1604

BRISBANE

463 Boundary Road
RICHLANDS QLD 4077
P.O. Box 20
RICHLANDS QLD 4077
Tel. (07) 3217 0444
Fax.(07) 3217 0300

MELBOURNE

3B 14 - 16 White Street
OAKLEIGH EAST VIC 3166
P.O. Box 453
MULGRAVE VIC 3170
Tel. (03) 9543 5411
Fax.(03) 9543 5422

SYDNEY

27B Davis Road
WETHERILL PARK
NSW 2164
P.O. Box 7180
WETHERILL PARK DC
NSW 2164
Tel. (02) 9725 2733
Fax.(02) 9725 2744

AUCKLAND

Unit J 150 Harris Road
EAST TAMAKI
P.O. Box 58517
GREENMOUNT
Tel. (09) 271 4812
Fax. (09) 271 4832
E-mail:
mholland@stauff.co.nz





HAWE Rapid Range

**Local solutions for
individual customers
worldwide**

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For other products in the HAWE complete range consult your Stauff representative.

Radial Piston Pumps

Radial piston pumps comprise pumping elements radially mounted in a pump housing driven by an eccentric shaft. This permits the pump to be mounted “in-tank” as a power pack installation or as an externally mounted pump with the normal suction and delivery lines. Pumps can be supplied in a number of configurations with the numbers of pistons (pumping elements) ranging from 1 piston through to 42 pistons. Pumps may be delivered as a single outlet unit or in a variety of multiple outlet configurations depending on the specific requirements of the application. Dual stage pumps combine a radial piston pump with a directly-coupled low-pressure gear pump. This, combined with a dual-stage valve, is useful in press applications where quick approach but slow pressing is needed.

Single and Multiple Outlet Pumps



Available as: individual pump
pump complete with motor
hydraulic power pack

P max: 700 bar

Q max: 91.2 l/min
displ = 64.18cm³/rev

R series pumps have ball bearings and the RG series of pumps have bushed bearings to increase the service life of the pump in extreme operating conditions.

The numbers in the table indicate the flow in litres per minute at a pump speed of 1450 RPM for a single outlet pump.

Design	No. of cylinders	Pmax 700 bar	Pmax 550 bar	Pmax 450 bar	Pmax 250 bar	Pmax 160 bar
7631	2	R 0.18	R 0.28	R 0.43	R0.92	
7631	3	R 0.27	R 0.42	R0.64	R 1.35	
7631	5	R 0.46	R 0.7	R1.08	R 2.27	
6010	1	R(G) 0.3	R(G) 0.5	R(G) 0.8	R(G) 1.7	R(G) 2.2
6010	2	R(G) 0.6	R(G) 1.0	R(G) 1.6	R(G) 3.3	R(G) 4.4
6010	3	R(G) 0.9	R(G) 1.5	R(G) 2.5	R(G) 5.1	R(G) 6.5
6011	5	R(G) 1.4	R(G) 2.6	R(G) 4.2	R(G) 8.3	R(G) 10.9
6011	7	R(G) 2.1	R(G) 3.7	R(G) 5.8	R(G) 11.8	R(G) 15.3
6012	10	R(G) 2.7	R(G) 5.3	R(G) 8.2	R(G) 16.8	R(G) 21.7
6012	14	R(G) 4.0	R(G) 7.4	R(G) 11.6	R(G) 23.5	R(G) 30.4
6014	20	R(G) 6.1	R(G) 11.0	R(G) 17.4	R(G) 35.0	R(G) 43.4
6014	28	R(G) 8.0	R(G) 15.0	R(G) 23.0	R(G) 47.0	R(G) 60.8
6016	42	R(G) 12.7	R(G) 22.0	R(G) 34.5	R(G) 70.0	R(G) 91.2

Multiple outlet pumps provide great flexibility for system designers. The outputs from each piston may be directed as a separate flow or groups of pistons may be combined to give specific flows. There are a great number of possible combinations and when used to give specific individual flows, the high efficiency of the piston pump permits greater accuracy than other types of flow dividers. Complete information on the possibilities is available from the local Stauff branch.

Two stage pumps

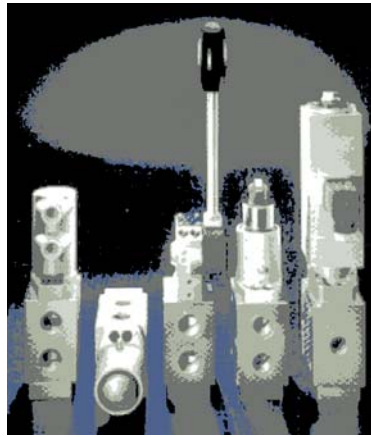


These consist of a high pressure R series pump directly coupled to a low pressure gear pump. The low pressure pump may be a Group 1, 2 or 3 metric pump in a range of displacements and the maximum flow possible from the largest Group 3 pump is 135 l/min. For the possible combinations of high pressure and low pressure flows, contact your Stauff branch. Two stage valve assemblies are also available to make high/low applications such as hydraulic presses a simple matter.

Directional Spool Valves type SG and SP, 2/2-, 4/2-, 3/2- and 4/3 way

The SG directional spool valves are for pipe mounting and the SP valves are for manifold mounting. They are widely used to control the direction of movement of hydraulic motors and cylinders. The wide range of spool configurations and the sturdy design make the valves suitable for applications in both mobile and fixed installations.

The SG type also has available an optional integrated pressure relief valve. Another option for the valves is enlarged ports and control grooves to minimise pressure surges.



Pmax: 200 ... 400 bar
Qmax: 12 ... 100 l/min

Actuation options

Solenoid -
 12V & 24V DC
 230V AC

Manual -
 with spring centering
 with detent

Roller head -

Pin head -

Pressure -

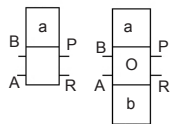
Hydraulic pilot, 12 - 20 bar
 Pneumatic pilot, 5 - 10 bar

Basic Type and Size

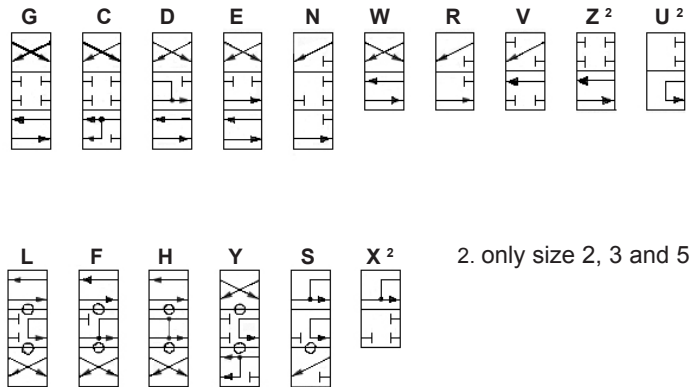
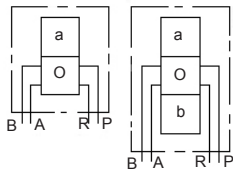
Individual valve for pipe connection	Manifold mount valve	Flow Q max (l/m)	Operating Pressure, Pmax (bar), for actuation			Port Sizes BSP	
			Solenoid	Manual	Mechanical		
SG 0		12	200	400	400	400	¼", 3/8"
SG 1	SP 1	20	200	400	400	400	3/8"
SG 2		30	315	400	400	400	3/8"
SG 3	SP 3	50	315	400	400	400	½"
SG 5		100	200	400	315	400	1"

Diagrammatic Symbols

SG
 individual valve for pipe connection

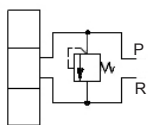


SP
 individual valve for manifold mounting

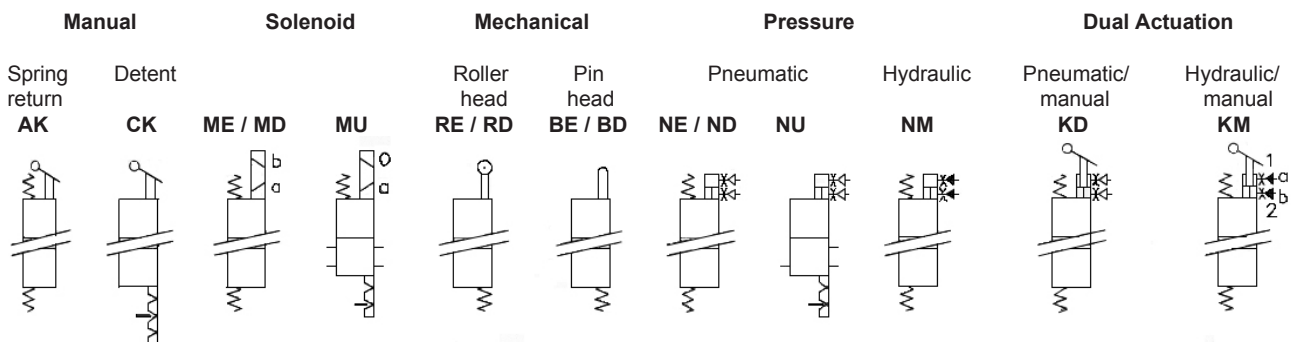


2. only size 2, 3 and 5

with pressure relief valve



Actuations



Order Example SG 1 G - AK

Manually operated, spring centered single spool valve, size 1 with screwed ports, flow path G.

Valves

The Hawe range of valves encompasses a wide variety of functions and sizes. Listed here are some of the more common valves. For full information, consult your local Stauff branch

Directional Seated Valves P_{max} : 320 ... 700 bar Q_{max} : 6 ... 120 l/min

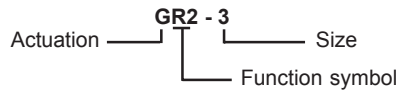
These zero leakage, directional seated valves use spring loaded balls as the valve elements. The units are subplate mounted and are available with a range of different actuations. This subplate may be fitted with screwed ports for pipe mounting. Some optional features such as restrictors or check valves are available in the subplates to improve the versatility of these valves. 2/2- and 3/2-way basic versions are available in a single body. 3/3-, 4/2- and 4/3 way valves are made by combining various functions on a common subplate.

The indicated flow path on the valve must be followed for correct functioning.



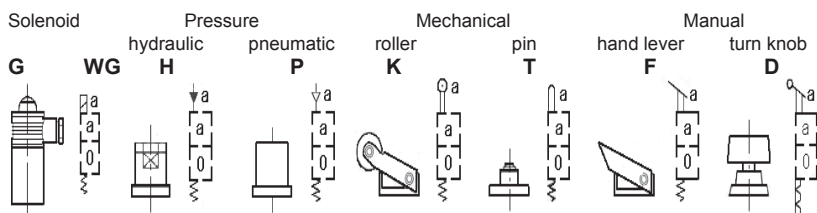
- Actuation Options**
- Solenoid** – 12V & 24V DC 230V AC
 - Pressure** – Hydraulic pilot Pneumatic pilot
 - Mechanical** – Roller Pin
 - Manual** – Hand lever Turn knob

Product Code



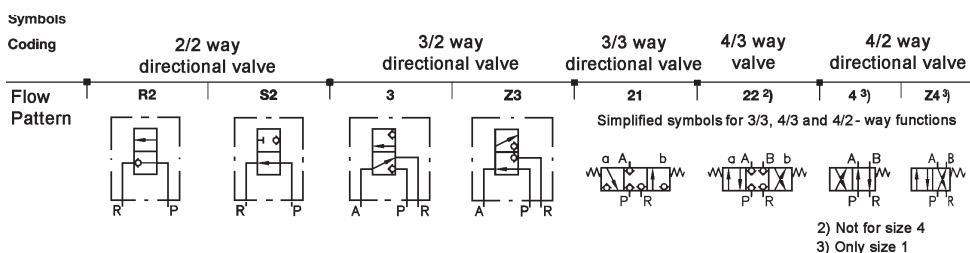
Valve Size	Flow Q_{max} (l/m)	Solenoid Actuated		Pressure Actuated		Mechanically Actuated		Manually Actuated		Port Threads BSPP
		24V DC	230V AC	H	P	K	T	F	D	
		G	WG							
0	6	300.....500		500	500	-	-	Pmax 500		1/4"
1	12	Pmax 700		Pmax 700		Pmax 700		Pmax 700		1/4" & 3/8"
2	25	Pmax 500		Pmax 700		Pmax 700		Pmax 700		3/8" & 1/2"
3	65	Pmax 400		Pmax 400	Pmax 400	Pmax 400		-	-	1/2" & 3/4"
4	120	Pmax 400	Pmax 400	-	-	-	-	-	-	3/4" & 1"

Actuation Methods



- Voltage & Current**
 12VDC
 24VDC
 110VAC
 230VAC
- Solenoid Coding**
 G12
 G24
 WG110
 WG230

Function Symbols



Subplate Options

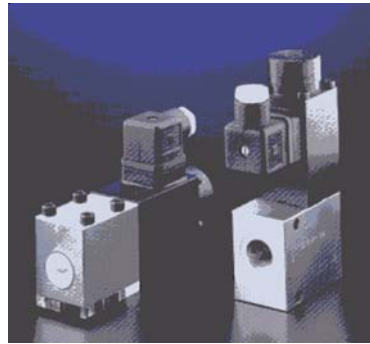
Coding and symbol	Additional element	
	for size	Type
	0	ER 01 Check valve insert acc. to D 7325
	1	ER 11
	2	ER 21
	0	EB 0-0,6 Office insert acc. to D 6405
	1	EB 1-0,8
	2	EB 2-1,2
	0	7332 000a Return pressure stop
	1	7332 000b

A combination with check valve or office in part P is possible e.g. G 3-1BS, GZ 3-1RS

Directional Seated Valves type BVG, BVE and BVP

The directional cone seated valves, types BVG, BVE and BVP are 2/2- and 3/2-way directional valves which are available in three sizes. The design permits flow in any direction at full system pressure.

The valves may be connected directly via pipes (type BVG) or mounted on customer supplied manifolds (type BVP and BVE). Type BVE is available only with solenoid operation but hydraulic, pneumatic or manual operation is available for the other models permitting a wide range of applications.



Pmax: 250 ... 400 bar
Qmax: 12 ... 50 l/min

Actuation Options

Solenoid -
 12V & 24V DC
 230V AC

Pressure -
 Hydraulic pilot, 24 - 320 bar
 Pneumatic pilot, 3.5 - 15 bar

Manual -
 BVG 1 valve only

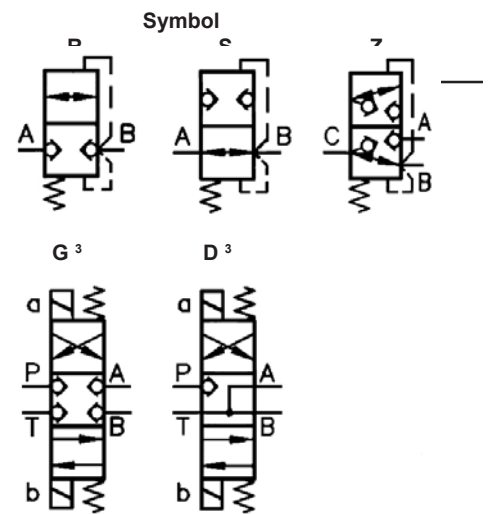
Basic Type and Size

Individual valve for pipe connection	Manifold mount valve	Flow Q max (l/m)	Oper. Press. P max (bar)	Port sizes (BSPP) A,B,C ²
BVG 1, BVG 2	BVP 1	12/20	400 / 250 ¹	1/4", 3/8"
BVG 3	BVP 3	50	320	1/2"
BVE 3 ⁴		70	400	1/2"

1. with electrical actuation GM.. and WGM
2. with type BVG
3. only size 1 and only with solenoid actuation
4. cartridge valve, also available with connection block for pipe connection

Other options

individual valve with orifice in one port
 2/2-way valve with bypass check valve
 twin valve version
 BVP 1 with ex-proof design
 additional elements to make 4/3 valve



Order Example BVG 1 - R - 3/8 - WG230

Size 1 BVG valve with 3/8" BSPP ports, flow path R (2/2-way function), 230V AC solenoid operation.

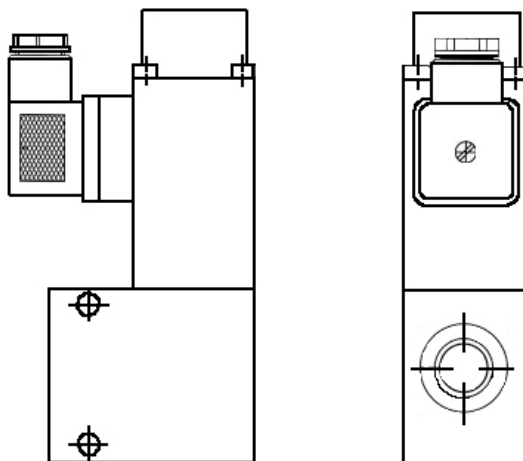
BVP 3 - Z - H

Size 3 BVP manifold mounted valve, flow path Z (3/2-way function), hydraulic pilot operation.

Examples

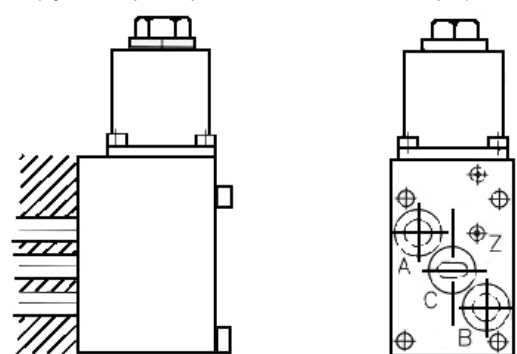
Type BVG for pipe connection

(solenoid operated - see order example)



Type BVP for manifold mounting

(hydraulic pilot operation - see order example)



Directional Seated Valves type WH

These zero leakage, directional seated valves use spring loaded balls as the valve elements. These compact valves are manifold or sub-plate mounted. Both 2/2 and 3/2 configurations are available and 3/3 and 4/3 functions are achieved by combining multiple valves on one manifold. The indicated flow path on the valve must be followed for correct functioning.



Pmax: 350 ... 450 bar
Qmax: 8 ... 30 l/min

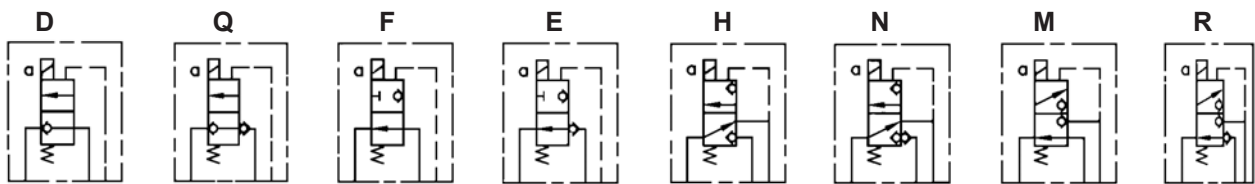
Actuation Options
Solenoid -
 12V & 24 V DC
 230V AC

Basic type and size	Flow Qmax (l/m)	Oper. Pressure Pmax (bar)	Port Size (of optional subplate)
WH1	8	450	1/4" BSPP

Subplate Options

Part No.	Size & Type	Port Size
WH1-1/4-2/2	Size 1, 2/2	1/4" BSPP
WH1-1/4-3/2	Size 1, 3/2	1/4" BSPP

Valve Symbols



Order Example WH1F-G24

Size 1 WH valve with "F" flow pattern and 24V DC solenoid operation, without sub-plate.

Pressure Switches type DG

Pressure switches are electro-hydraulic devices where a spring-loaded piston sensing hydraulic pressure operates an electrical switch. The pressure setting is a simple spring adjustment. The electrical signal can be used for switching on or off an ancillary component, for initiating another part of the operating cycle, and for many other applications.



Pmax: 4 ... 700 bar

Design Options

- Female screwed port
- Male threaded connection
- Manifold mount
- Dial faced type
- Electronic type
- Dual switches

The normal switches have a hysteresis of between 8 ... 20%. This means that the pressure will have to drop by that much below the set point before the switch resets to the original mode. The exception is the electronic type, DG 5 E which has provision to set two independent switch points.

Basic type and Size	Brief Description	Pressure Adj. Range (bar)	Max. Pressure (Pmax)	Connection Thread (BSPP)	Symbol
DG 1R	adjustment by turn-knob on the dial face	20 ... 600	600	1/4" F or 1/2" M	
DG 33		20 ... 700	700		
DG 34	Compact design for manifold mounting	100 ... 400	700		
DG 35	Adj. by set screw	20 ... 250	700	1/4" M or 1/4" F	
DG 365		12 ... 170	700		
DG 36		4 ... 12	700		
DG 5 E	Electronic pressure switch with two switch points	0 ... 250 0 ... 400	400 600	1/4" F	

Direct-acting Relief and Sequence Valves type MV, SV, etc.

Direct-acting relief valves limit the maximum pressure in a hydraulic system thus safeguarding against excessive pressure.

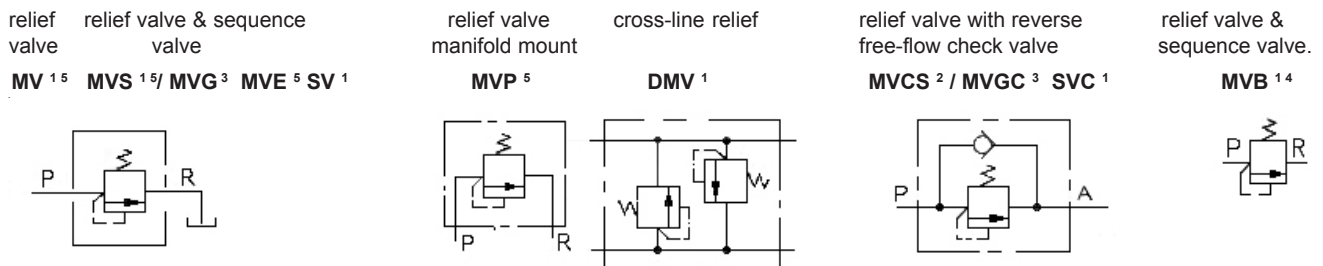
Sequence valves maintain a constant pressure differential between the inlet and outlet of the valve.

The valves are available with screwed ports for pipe mounting, as a manifold mount valve, or as a cartridge type valve. Various maximum pressure settings are available to allow the system designer maximum flexibility.



Pmax: 700 bar
Qmax: 5 ... 160 l/min
Adjustment Options
 Tool adjustable
 Manually adjustable
Type Approval
 TUV approved version is available for use as accumulator safety valves.

Basic Types and General Description



Notes

- only sizes 4, 5, 6 and 8
- only sizes 4, 5, and 6
- only size 13 and 14
- other type kits are available
- TUV approval available, sizes 4, 5 and 6

Maximum permissible pressure in "R" outlet port

MV	20 bar	MVS, MVG, MVE	500 bar
MVB	200 bar	MVCS, MVGC	500 bar
DMV	350 bar	SV, SVC	500 bar

Valve Style

MV, MVS, MVG - 90° configuration with screwed ports

MVE - Cartridge type valve **MVB** - Assembly kit for integral manifolds, etc.

SV, SVC - In-line valve for straight pipe installation

MVCS, MVGC - 90° configuration with screwed ports

DMV - Cross-line relief valves with screwed ports

All valves are adjustable but the "R" in the code indicates that there is a hand adjustable knob eliminating the need for tools to adjust the settings

Maximum Pressure and Flow Ratings

A letter is used to indicate the maximum pressure setting of the valve. In the table below, the maximum pressure setting and also the maximum flow are set out against the available valve sizes. The first figure is the maximum pressure in bar and the second is the maximum flow in l/min. The possible BSPP port sizes are shown for those valves with screwed ports. In the order code, a number denotes the screwed port size: 1 = 1/4", 2 = 3/8", 3 = 1/2", 4 = 3/4" and 5 = 1".

Size	13	14	4	5	6	8
	H: 700/5	N: 50/8 M: 200/8 H: 400/8	F: 80/20 E: 160/20 C: 315/20 B: 500/20 A: 700/12	F: 80/40 E: 160/40 C: 315/40 B: 500/40 A: 700/20	F: 80/75 E: 160/75 C: 315/75 B: 500/75 A: 700/40	E: 160/160 C: 315/160
	1/4"	1/4"	1/4" 3/8"	3/8" 1/2"	1/2" 3/4"	3/4" 1"

Order Example

MVS 52 BR

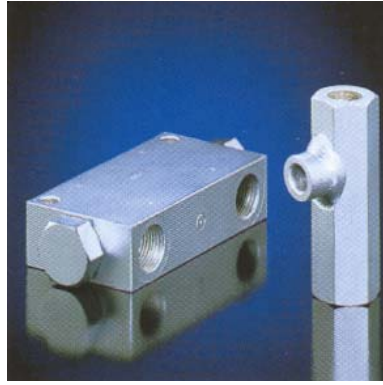
Relief or sequence valve with 90° configuration, screwed ports 3/8" BSPP (Code 2), pressure range up to 500 bar (Code B), with manually adjustable pressure setting (Code R).

MVP 13 HR

Manifold mount valve, size 13, pressure range manually adjustable (Code R) between 20 and 700 bar (Code H).

Pilot Operated Check Valves type RH and DRH

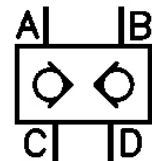
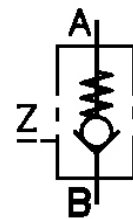
The pilot operated check valves type RH and DRH are used for blocking one or two pressure lines, as pilot operated drain valves, or as idle circulation valves to unload a pump or other part of a system. As an option, the valves may be equipped with a pre-release to prevent decompression surges in the event of high pressure and high flow. The type DRH has many variations and options such as in-line design, manifold mounting design, shock valves, relief valves to prevent slow pressure build-up, and a leakage port to prevent unintended opening of the valve due to pressure rises caused by leaking spool valves. All components are steel.



Pmax: 400 ... 700 bar
Qmax: 15 ... 160 l/min

Design Options
 with or without decompression function
 in-line design
 manifold mount design
 integral relief valve
 leakage oil port
 selectable pressure range

Basic Type & Size	Flow Qmax (l/min)	Pressure Pmax (bar)	Release Ratio P(A or B) / PZ	BSPP Ports	
				Service Ports	Pilot Port
RH 1	15	700	2.7	1/4"	1/4"
RH 2	35	700	3	3/8"	1/4"
RH 3V	55	500	5 - 8	1/2"	1/4"
RH 4V	100	500	6 - 11	3/4"	1/4"
RH 5V	160	500	7 - 13	1"	1/4"
DRH 1	16	500	2.5	1/4"	-
DRH 2	30	500	2.5	3/8"	-
DRH 3	60	500	2.5	1/2"	-
DRH 4	90	400	2.5	3/4"	-
DRH 5	140	400	2.5	1"	-

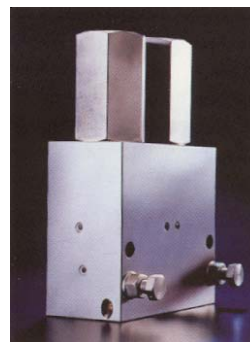


N.B. Models with the letter "V" indicate that there is a decompression function in the valve.

Counterbalance valves type LHK

Counterbalance or load-holding valves are pressure valves which act on the return flow side of double acting cylinders or motors. They stop the load running away allowing controlled lowering of a cylinder load or a motor driven load such as a winch.

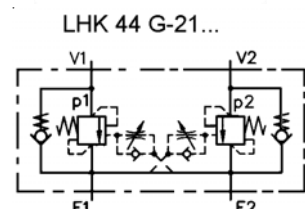
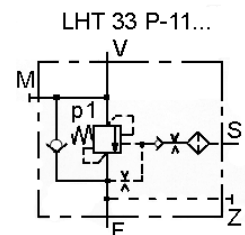
The valves are available as single valves (see LHT 33 P-11) or as double acting valves (see LHK 44 G-21). All components are steel.



Pmax: 360 ...450 bar
Qmax: 250 lpm

Design Options
 In-line mounted
 Flange mounted
 Cartridge valve
 Internal relief valves
 Shuttle valves for double acting valves

Basic type and size	Flow Qmax lpm	Oper. Press. Pmax bar	Pilot ratio	Ports (BSPP)
LHK 22	20	400	1 : 4.6	3/8"
LHK 33	60	360	1 : 4.4	1/2"
LHK 44	100	350	1 : 4.4	3/4"
LHDV 33	80	420	1 : 8	1/2"
LHT 2	20	400	1 : 8	1/4"
LHT 3	130	450	1 : 7	1/2"
LHT 5	250	450	1 : 6	1"



For further details, refer to Leaflets D7100, D7770 and D7918

Cartridge Pilot operated Check Valves type CRH and RHC

Pilot operated check valves are used in hydraulic circuits where the directional control valves exhibit normal spool leakage. They can also be used as hydraulically operated drain valves or as "idle circulation" valves.

The type CRH valves are pilot operated cartridge type valves and the type RHC valves are designed as screw-in valves. The RHC valves are available with a decompression (pre-release) function for high pressure and high flow applications. The mounting ports are of a simple, easily-machined design. Ask for machining details.

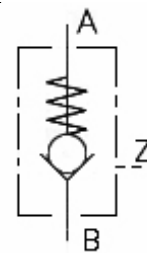


**Q max: 80 l/min (CRH)
200 l/min (RHC)**
P max: 500 bar

Optional Pilot Ratios available

Option: decompression (pre-release)

Basic type & size	Flow (Qmax) l/min	Op. Press. P max (bar)	Release Ratio $P_A : P_Z$	Mounting thread
CRH 1	30	500	2.6	M16 x 1.5
CRH 2	50	500	2.6	M20 x 1.5
CRH 3	80	500	2.5	M24 x 1.5
RHC 1	15	500	2.6	M16 x 1.5
RHC 2	25	500	2.6	M20 x 1.5
RHC 3	55	500	2.5	M24 x 1.5
RHC 4	100	500	2.5	M30 x 1.5
RHC 5	150	400	2.8	M36 x 1.5
RHC 6	200	400	2.5	M42 x 1.5
RHC43/3V	100	500	4.3	M36 x 1.5
RHC53/4V	150	400	4.3	M38 x 1.5



Cartridge & In-Line Check Valves, type RK

Check valves are used to block flow in one direction and permit free flow in the opposite direction. The RK check valve is a spring-loaded, ball seated type which, by design, is tolerant of contamination.

The mounting ports are easily machined for the screw-in RK type. Housings for in-line installation are available on request or easily manufactured. Installation tools are also available to ensure correct assembly of the insert.



Q max: 6 ... 120 l/min
P max: 400 ... 700 bar

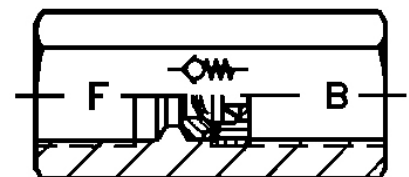
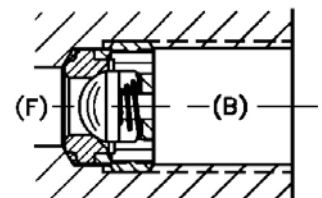
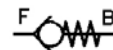
Design option: screw-in valve insert

valve insert in housing for in-line installation

Size	Thread BSPP	Flow Q max (l/m)	Pressure Pmax (bar)	Part No. insert	Part No. c/w housing
0	1/8"	10	700	RK0	RK0G
1	1/4"	20	700	RK1	RK1G
2	3/8"	50	700	RK2	RK2G
3	1/2"	80	500	RK3	RK3G
4	3/4"	120	500	RK4	RK4G

Type RK...

Installed in blocking direction



RK..G

Order Example

RK 1
screw-in check valve, type RK, size 1

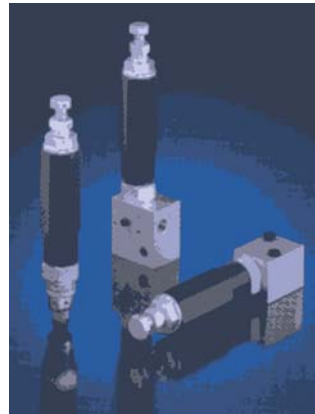
RK 2 G
RK check valve, size 2, in housing for in-line installation

N.B. Extraction tools for the inserts are available

Pressure Reducing Valves type CDK

Pressure reducing valves in a hydraulic circuit maintain a constant outlet pressure even though the input pressure is higher and variable. They are used to supply a secondary circuit with lower pressure fluid without affecting the higher pressure in the primary circuit.

The CDK valve is a directly controlled type and is a seated type which has no leakage when closed and therefore no need of a drain line. A reversal of flow is possible up to $2 \times Q_{max}$. The valve stocked is a pipe mounted version but cartridge types are also available.



Q max: 15 l/min
P max:
 inlet - 500 bar
 outlet - 400 bar
Adjustment Options
 Tool adjustable
 Manually adjustable

Basic Types and General Description

cartridge valve

pipe connection version
with optional pressure switch

manifold mounting version

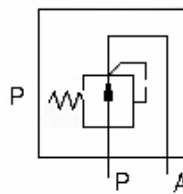
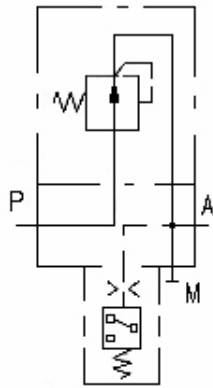
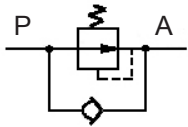
CDK 3 - ..

CDK 3 - .. - 1/4 - DGS.

CDK 3 - .. - P

**Pressure Range
Pmax A**

**Tapped Ports
(BSPP)**



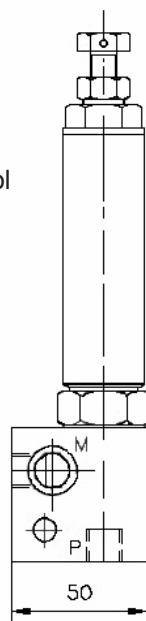
.. -08 400 bar
 .. - 1 300 bar
 .. - 2 200 bar
 .. - 5 130 bar

1/4" for the pipe
mounted version

Order Example

CDK 3 - 1 - 1/4 - 250

Pressure reducing valve, pipe connection (1/4" BSPP), pressure range 30 to 300 bar (Code 1), tool adjustable version, preset to 250 bar

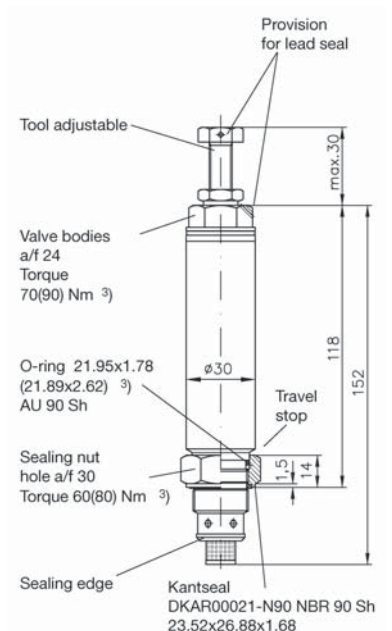


CDK 3 - 1 - 180

Pressure reducing valve, cartridge type, pressure range 30 - 300 bar (Code 1), tool adjustable version preset to 180 bar.

Unit dimensions

Basic type (cartridge valve)
 Type CDK 3, CDK 32, and CDK 35



Throttle type Flow Valves, Q, QR, QV and FG

Throttle valves are flow control valves and are used to limit the flow in accumulator and control circuits. They feature a slotted throttle section which is much less sensitive to contamination than annular type throttle valves.

The valves Q, QR and QV are available in five sizes covering flow rates up to 120 l/min. The fine throttles, type FG, are preferred for applications where the switching speeds of directional valves have to be adjusted, the prevention of pressure surges is required, or for the damping of oscillations, etc.

The throttle effect can be adjusted by the thread, altering the effective slot length and the valves are only available as "tool adjustable" versions.



Pmax: 300 ... 400 bar
Qmax: 0 ... 80 l/min

Design Options

- cartridge design
- individual valve for pipe mounting
- 90° housing
- banjo bolt
- swivel housing

Basic Type & Size	Flow Qmax (l/m)	Pressure Pmax (bar)	Schematic Drawings of the devices			Symbol
			Standard screw-in throttle	Banjo bolt	Swivel housing	FG, Q
FG, FG1, FG2	0.15	300				
Q20, QR20, QV20	12	400				FG1, QR
Q30, QR30, QV30	25	400				
Q40, QR40, QV40	50	400				FG2, QV
Q50, QR50, QV50	90	400				
Q60, QR60, QV60	120	400				

Hydraulic Accessories - In-line filters

Many devices such as pressure gauges, pressure switches, accumulators, etc., are installed in hydraulic systems by means of fittings. To protect the device from unwanted contamination, in-line filters can be employed.

Hawe has two types of filters for this purpose - a coarse screen for such material as drilling swarf, and a wire mesh filter with a finer micron rating which is only for low flow applications. The screen is available as a screw-in disc for fitting to either a machined port or a housing body.



Pmax: 350 ... 700 bar

Design Options

- In-line housing
- Screw-in version

StrainerDisc	Thread Size	Example of mounting in a housing	Screw-in in a threaded port	Symbol	Housing BSPP female / female
HFC1/4	1/4" BSP				SHF1/4 1/4" BSPP
HFC3/8	3/8" BSP				SHF3/8 3/8" BSPP
HFC1/2	1/2" BSP				SHF1/2 1/2" BSPP

N.B. Available on request are the fine wire mesh filters (100µm) and the part number is HFC...F with the BSP size inserted.

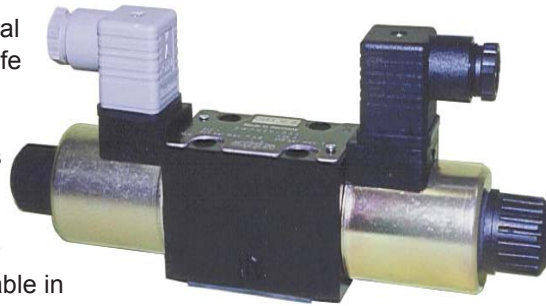
Directional Control Valves, Solenoid Operated, CETOP 3 mounting

CETOP 5 valves are available on request

Have solenoid operated directional control valves offer long, reliable life with optimum performance.

A range of spool variations allows the system designer to select a valve to suit the requirements of the application. The subplates for mounting the valve are also available in either a side ported or bottom ported single mount version or multiple station manifold versions.

The solenoid coils are all DC windings. The AC versions have rectifiers in the Hirschmann plugs to convert the AC to DC.



Q max: 60 l/min

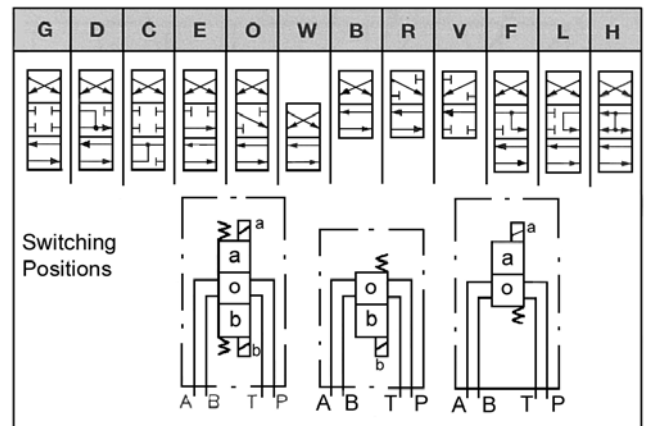
P max: 350 bar P, A, B ports
210 bar T port

Design: wet armature design with easily replaceable coils

Current: AC & DC options

Voltage: 12, 24 V DC,
110, 230 V AC

Basic type	Voltage and Current	Coding
SWPN 2	12VDC	G12
	24VDC	G24
	110VAC	WG110
	230VAC	WG230



Order Example

To the basic SWPN 2, add the spool required and the voltage and current type to get the valve part number.

SWPN 2-H-G24

CETOP3 valve with a "H" spool and with 24VDC input power.

SWPN 2-L-WG230

CETOP3 valve with a "L" spool and with 230V AC input power.

Subplates & Manifolds

Subplates in aluminium and steel are available to mount the CETOP3 valves, with either side ports or a combination of side and bottom ports. A bolt kit incorporating 4 socket head cap screws is also available to suit the valve. In addition, blanking plates to seal a subplate or manifold when the valve is removed are also available.

Manifold blocks in steel or aluminium are available on request in both series and parallel design. Sandwich plates with relief, throttle and check functions are available.

Part No.	Description
SSPC3B	Aluminium subplate, P & T ports on bottom, A & B ports on the side
SSPC3B-S	Steel subplate, P & T ports on bottom, A & B ports on the side
SSPC3S	Aluminium subplate, all ports side entry
SSPC3S-S	Steel subplate, all ports side entry
SBPC3S	Aluminium blanking plate
SBKC3	Bolt kit, cap screws, M5 x 30mm x 4 pieces

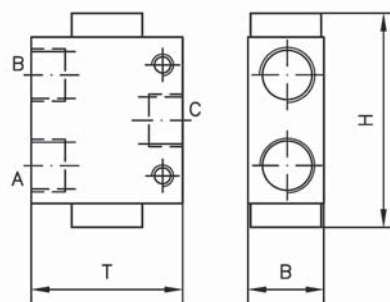
Flow Dividers type TQ and TV

The flow dividers type TQ divide (collect) total flow entering (exiting) port C. The distribution is independent of working pressure at ports A and B, and may be divided equally or unequally in predetermined portions. The flow divider type TV features priority division, i.e. variable flow entering port C is divided where partial flow QA, through port A, is kept constant and the residual flow, QB, exits port B. As soon as one actuators movement is stopped the flow to the other is either reduced to a minimal flow (type TQ) or completely reduced to leakage flow (type TV). It is possible to overcome this design feature by creating flow via a pressure limiting valve.

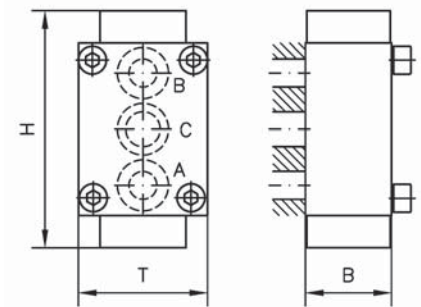
Nomenclature:	Flow dividers with or without priority division
Design:	Individual valve for pipe mounting or manifold mounting
Adjustability:	Non-adjustable
P_{max}*	300 ... 350 bar
Q_{max}*	7.5 ... 200 lpm (nom. total flow)



Dimensions
Type TQ...

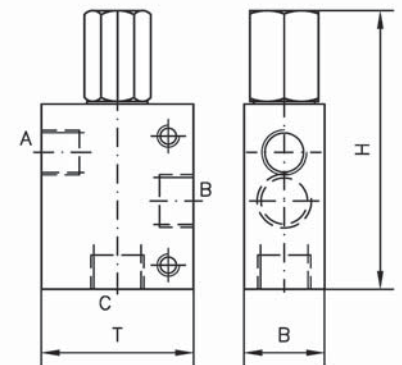


Type TQ.P



Basic type	H	B	T	m (kg)
TQ 2..	79	30	50	0.6
TQ 3..	85	30	60	0.6 ... 0.7
TQ 3P	79	30	50	0.7
TQ 4..	110	40	60	1.5
TQ 4P	110	40	60	1.6
TQ 5..	134	50	80	3
TQ 5P	134	50	80	3.1
TV 3	109	30	60	1.0
TV 3P	106	35	50	1.0

Type TV3..



Basic types and general parameters

Basic type and size	Flow Q _{max} (lpm)	Oper. pressure p _{max} (bar)	Tapped ports (BSPP) 1)			Symbol	
			A	B	C	Pipe mounting	Manifold mounting
TQ 2..	7.5 ... 70	350	G 1/4, G 3/8	G 1/4, G 3/8	G 3/8	TQ	TQ.P
TQ 3..	7.5 ... 70	350	G 3/8, G 1/2	G 3/8, G 1/2	G 1/2		
TQ 3P	7.5 ... 70	350	---	---	---		
TQ 4..	80 ... 120	350	G 1/2	G 1/2	G 3/4		
TQ 4P	80 ... 120	350	---	---	---		
TQ 5..	140 ... 200	350	G 3/4	G 3/4	G 1		
TQ 5P	140 ... 200	350	---	---	---		
TV 3..	60	300	G 3/8	G 1/2	G 1/2		
TV 3P	60	300	---	---	---		

1) For pipe mounting versions only

Further Information

- Flow divider (flow distributor) type TQ D 7381
- Flow divider type TV D 7394

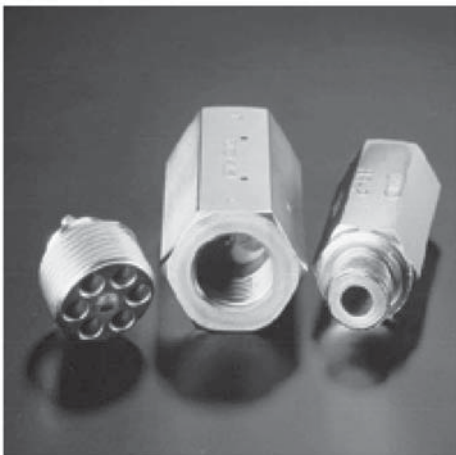
Line rupture safety valves type LB

The line rupture safety valves type LB are check valves. They are available as screw-in valves or with housing for in-line installation. The line rupture safety valves are best installed directly on the actuator (cylinder) which is to be safeguarded. This will prevent an uncontrollable, accelerated movement (drop) of a loaded cylinder when the hydraulic back-pressure is lost as a result of a rupture of the pressurized line or pipe connection.

When the flow through the valve increases above the pre-set limit, the flow forces will exceed the opposing spring force and the valve will block the flow immediately. The valve element in these valves is a shim.

There are two different versions available. One valve design completely blocks the flow when actuated, whereas the other one allows a minimum flow (via an orifice) to slowly drop the load.

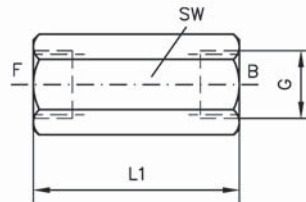
Nomenclature:	Line rupture safety valve
Design:	Screw-in valve with housing for in-line installation
Adjustability:	Tool adjustable
p_{max}:	500 bar
Q_{max}:	4 ... 160 lpm



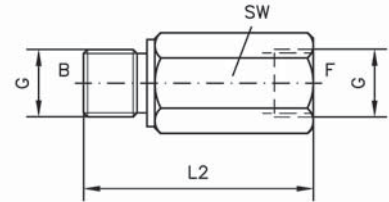
Dimensions
Screw-in valve type LB..C



Valve with housing type LB..G



Valve with housing type LB..F

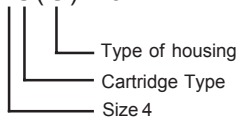


Further Information

Refer: D 6990

Order Examples

LB4C(G)-40



Set to 40 l/min

1) Version with housing

Basic type	L	L1	L2	G (BSPP)	SW	m (g) 1)
LB 1 (C, G, F)	17.5	48	50	G 1/4 (A)	a/f 19	6 / 70
LB 2 (C, G, F)	21	52	58	G 3/8 (A)	a/f 22	12 / 100
LB 3 (C, G, F)	25	60	65	G 1/2 (A)	a/f 27	21 / 170
LB 4 (C, G, F)	30.5	72	78	G 3/4 (A)	a/f 36	45 / 375

Basic types and general parameters

Basic type and size	Flow Q_{max} (lpm)	Pressure p_{max} (bar)	Connection thread (BSPP)	Symbol
LB 1	4 ... 25	500	G 1/4 (A)	Simplified
LB 2	6.3 ... 50		G 3/8 (A)	
LB 3	16 ... 80		G 1/2 (A)	Detailed
LB 4	25 ... 160		G 3/4 (A)	
Available orifice diameters 0.5 / 0.8 / 1.0 / 1.2 / 1.5 / 2.0				depending on type and size



Quality
Endorsed
Company
ISO 9002 Lic 3765
Standards Australia

HEAD OFFICE

24 - 26 Doyle Avenue
UNANDERRA NSW 2526
P.O. Box 227
UNANDERRA NSW 2526
Tel. (02) 4271 1877
Fax.(02) 4271 8432
E-mail: info@stauff.com.au
<http://www.stauff.com.au>

SYDNEY

27B Davis Road
WETHERILL PARK
NSW 2164
P.O. Box 7180
WETHERILL PARK DC
NSW 2164
Tel. (02) 9725 2733
Fax.(02) 9725 2744

MELBOURNE

3B 14 - 16 White Street
OAKLEIGH EAST VIC 3166
P.O. Box 453
MULGRAVE VIC 3170
Tel. (03) 9543 5411
Fax.(03) 9543 5422

BRISBANE

463 Boundary Road
RICHLANDS QLD 4077
P.O. Box 20
RICHLANDS QLD 4077
Tel. (07) 3217 0444
Fax.(07) 3217 0300

ADELAIDE

1/3 Endeavour Drive
PORT ADELAIDE SA 5015
P.O. Box 208
PORT ADELAIDE SA 5015
Tel. (08) 8341 2260
Fax.(08) 8341 1604

AUCKLAND

Unit J 150 Harris Road
EAST TAMAKI
P.O. Box 58517
GREENMOUNT
Tel. (09) 271 4812
Fax. (09) 271 4832
E-mail: sales@stauff.co.nz

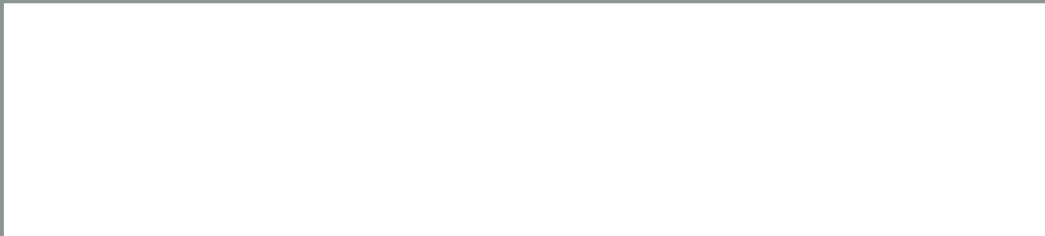
Australia

Stauff Corporation Pty Ltd is a quality endorsed Company ISO9001 2000 LIC 3765
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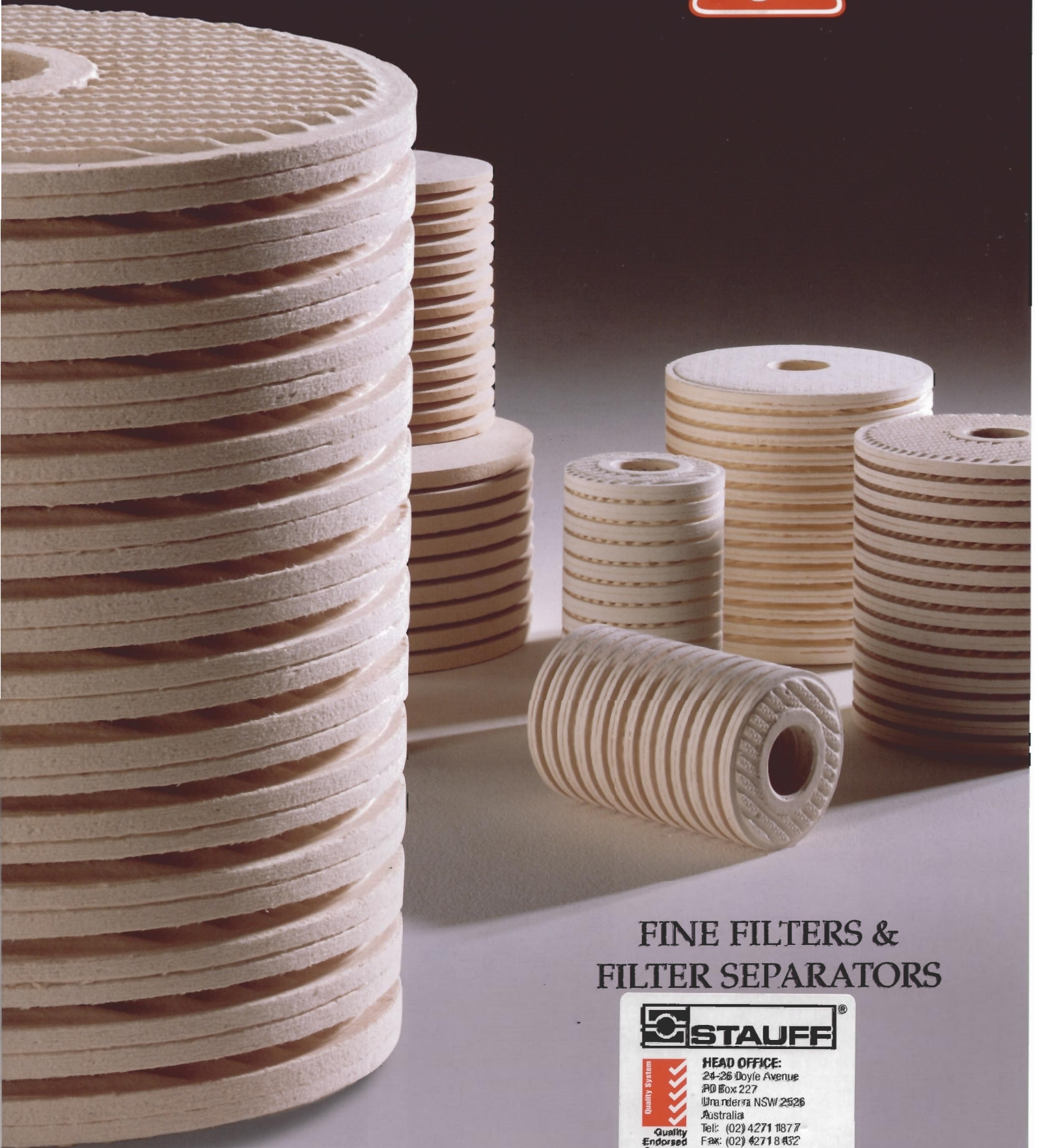
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Stauff Corporation (NZ) Ltd

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STAUFF



FINE FILTERS & FILTER SEPARATORS



Quality
Endorsed
Company

AS 9002 Lic: 3785
Standards Australia

HEAD OFFICE:
24-26 Doyle Avenue
PO Box 227
Warrandera NSW 2526
Australia
Tel: (02) 4271 1877
Fax: (02) 4271 8452
Email: admin@stauff.com.au
Website: www.stauff.com



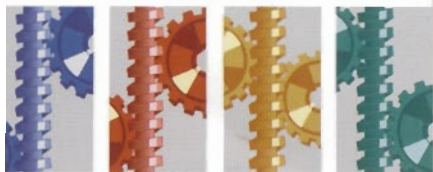
CJC™ Fine Filters

CJC™ Fine Filters are offline units with integral circulating pumps and they were developed as the world's first offline filters.

The CJC™ Filter Inserts are depth filters with a rating of 3 micron absolute ($\sim\beta_3 > 75$), offering a very high dirt holding capacity.

Today the CJC™ Fine Filters are recognized all over the world as efficient purification systems for oils used in lubrication, hydraulic power systems, fire proof emulsions and other applications.

INDUSTRY



MARINE



LG 15/25 HDU 15/25

Offline filter units with pump capacities from 0.75 to 5 litres/minute (0.2 to 1.3 gpm), ideal for small hydraulic power packs, gear boxes, and injection moulding machines.



HDU 15/25 PM

HDU 27/-

Offline filter units with pump capacities from 1.5 to 25 litres/minute (0.4 to 10.5 gpm) for medium to large fluid systems within land based and offshore industries: hydraulic systems, lubrication systems, marine diesel engines etc.

Supplied in a range of design configurations including mobile units, with or without a drain tank, and with electronic control and monitoring.



HDU 27/27 P

HDU X*27/-

Offline filter units with pump capacities from 10 to approximately 100 litres/minute (2.6 to 25 gpm) for large fluid volumes, e.g. central lubrication systems and power plant turbines. The unit consists of two or more fine filters installed in parallel on a single base - usually a drain tank.



HDU 27/54 GP-EPT



CJC™ Filter Separators

CJC™ Filter Separators combine offline fine filtration with a continuous water separation capability. They are designed for use in oil systems where water ingress is a constant or regular problem, i.e. marine diesel fuel systems for propulsion engines and generator sets, hydraulic and turbine lubrication systems.

The CJC™ Filter Separator design combines the filtration capability of the Fine Filter unit with a separate coalescer for the continuous removal of water from the oil.



PTU 15/25

Filter separator units with pump capacities from 0.75 to 2 litres/minute (0.2 to 0.5 gpm) for small fuel, hydraulic and lube oil industrial and marine systems i.e. on diesel engines, hydraulic power packs, gear systems etc. Available with manual water discharge only.

PTU 27/-

Filter separator units with pump capacities from 1.5 to some 20 litres/minute (0.4 to 5.3 gpm) for the cleaning of medium to large industrial, marine and offshore systems. Available in a variety of designs with manual or automatic water discharging.

PTU X*27/-

Filter separator units with pump capacities from 10 to some 80 litres/minute (2.6 to 21 gpm) for the cleaning of large oil volumes, i.e. central lubrication systems and power plant turbines. The unit consists of two or more filter separators installed in parallel on a single base - usually a drain tank.

PTU3 3x27/108 GP-EPTW



PTU2 27/27 PM-DEH1PW



PTU3 27/54 P-EPW



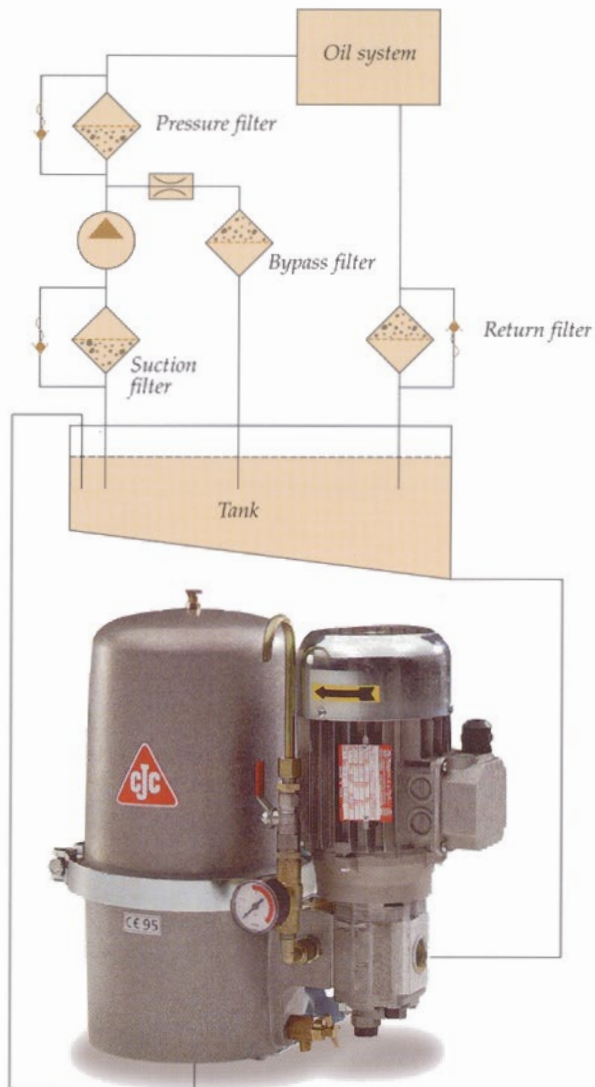
CJC™ filtration systems are available in a wide variety of designs including mobile units, multi units on a single drain tank and featuring electronic control and operation monitoring

CJC™ Offline Filter Systems: Constant maintenance of fluid tank cleanliness

CJC™ Offline Fine Filter unit correctly installed in a separate filtration circuit will continuously maintain the cleanliness of a fluid tank.

The CJC™ Filter unit takes its pump supply from the most contaminated part of the tank and returns clean, waterfree oil close to the suction pipe of the system supply pump, benefitting all system components and inline filters.

A CJC™ Filter working independently of the main fluid system in a continuous separate circuit will maintain the cleanliness of the main fluid, which is very important when restarting the main fluid system following a period of downtime.



The CJC™ range of products includes:

- CJC™ Desorbers (for separating large volumes of water from oil)
- CJC™ Cleaning Tables (with integrated fine filtration)
- CJC™ Auxilliary Units (for heavy fuel and lube oil conditioning on large two-stroke diesel engines)

- and complete filtration units in a variety of configurations both stationary and mobile.



Manufacturer

C.C.JENSEN A/S · Løvholmen 13 · DK-5700 Svendborg · Denmark · Tel.: +45 63 21 20 14 · Fax: +45 62 22 46 15
email: filter@cj.dk · www.cj.dk

Subsidiaries

U.K.: C.C.JENSEN, LTD. - Tel.: +44 1388 420 721 - email: filtration@cj.uk.co.uk - www.cjensen.co.uk
U.S.A.: C.C.JENSEN INC. - Tel.: +1 206 789 1710 - email: ccjensen@ccjensen.com - www.cjensen.com
Spain: C.C.JENSEN Ibérica, S.L. - Tel.: +34 93 590 63 31 - email: ccjensen.es@cj.dk
Poland: C.C.JENSEN Polska Sp. z o.o. - Tel.: +48 22 648 83 38 - email: ccjensen@ccjensen.com.pl
Chile: C.C.JENSEN S.L. Ltda. - Tel.: +56 2 696 9564 - email: mgl.ch@cj.dk
Greece: C.C.JENSEN Greece Ltd. - Tel. +30 210 42 81 260 - email: lba@cj.dk
Netherlands: C.C.JENSEN A/S (Nederland) - Tel.: +31 182 37 90 29 - email: ccjensen.nl@cj.dk
Ireland: C.C.JENSEN A/S (Ireland) - Tel.: +353 61 373 936 - email: mt.ir@cj.dk