Translation of the original operating manual

Manual for Installation, Operation and Maintenance

Markoprint X2JET plus Touch

Part number of documentation 72800145

Software Version 2.016

As at: May 07, 2015
Version 10

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Contents

1. General information

General Survey

Congratulations! You have purchased a high-quality print system. Our concern is to make sure that you profit from this system to your entire satisfaction over many years. In order to ensure this, we strongly recommend you to let our experienced specialists perform the installation.

Limitation of Liability

All pieces of information and notes of this manual have been arranged in consideration of applicable standards and regulations, state-of-the-art technology as well as our cognition and experiences over many years.

The manufacturer assumes no liability for damages caused by:

- Non-observance of this manual
- Non-observance of the intended use
- Use of unqualified personnel
- Manipulations at the system
- Technical changes
- Use of spare parts that are not approved by the manufacturer

The actual scope of delivery may differ from the explanations and illustrations provided herein in the case of special designs, additional order options or after recent technical changes.
The obligations of the supply contract the General Trading Conditions as well as the Terms of Delivery of the manufacturer and the valid legal regulations at the moment of conclusion of a contract generally apply.

Technical changes within the scope of improvement and development are subject to change without notice.

Warranty Clause

The warranty conditions are conform to the valid General Trading Conditions of the manufacturer at the moment of purchase.

Copyright Protection

Purpose and Scope of this service manual

This manual enables safe and effective use of the Markoprint X2JET plus Touch.
The Operating manual is a component of the device and must be stored close to the device to be accessible to the staff at all times. The staff must have read this manual thoroughly and understand the content before starting any work. Compliance with all safety notes and instructions given in this manual is a basic prerequisite to safe operation.
Furthermore, the local accident prevention regulations and general safety provisions for the area of application of the device are applicable.
Images in this manual serve to provide a basic understanding and may differ from the actual device version.

In addition to this manual, the instructions in the annexure on the components included are also applicable.

Hints for Use of this Manual

Please find in the following a detailed explanation of the notations and representations as used in this manual.

Keys and buttons which you must push appear in squared brackets.

Example: Push [Start] - button to save changes...

Procedures which should be followed in a specific order are listed in numbered paragraphs.

Step	Procedure
1	Disconnect power plug

Important messages are written in bold text and/or highlighted in grey.

This is an example for an important message!

Special notes:

→	… *refers to a chapter or document*.

Figures and drawings are numbered serially in the particular chapter. For example **„Fig. 2-1“** is the first figure in chapter 2.

Images in this manual serve to provide a basic understanding and may differ from the actual system version. Figures may be stated without protection device for clarification.

Explanation of Technical Terms

Technical Term	Explanation
CartClip	HP cartridge holder for storage of already opened cartridges to protect them against leaking or drying out of nozzle plate
Cartridge	See ink cartridge
Conveyor	The conveyor transports the products, which should be printed and pass them by the print head
DPI	**D**ots **P**er **I**nch 1 Inch = 25,4mm
Encoder	See shaft encoder
HP	Hewlett Packard - Manufacturer for ink cartridges
HP print head **HP 2.5 print head**	Print head with HP cartridge from the CompactLine family, which can be connected to the Markoprint X2JET plus Touch.
Ink cartridge	Original HP cartridge TIJ 2.5 , model type 45 Original Lexmark cartridge
Ink system	System for the ink bottle and ink supply of the MX print heads
LED	Light emitting diode
LX	Lexmark – Manufacturer for ink cartridges
LX cartridge	Ink cartridge of Lexmark
Maintenance station	Includes power supply, vacuum pump and catch tank for the MX print head
MX	Print system with MX print heads 50 and 100mm
MX print head	Print head with Trident print head module Multiline MX family, which can be connected to the Markoprint X2JET plus Touch.
MX 50	Print head with Trident print head module Multiline MX family with 50mm print height
MX 100	Print head with Trident print head module Multiline MX family with 100mm print height
Nozzle plate	On the nozzle plate are a double-row arrangement of 300 nozzles each row, from which ink is ejected.
Piezo	A piezo crystal changes its length with voltage.
Piezo-print head	A print head, which ejects ink by a piezo crystal.
ppi	Pulse per inch
Print direction	Print direction indicates the direction of movement of the product on the conveyor belt viewed from the controller in the print direction

Print head	Exist of one or more print head modules, combined to one unit
Print head module	Consist of holding fixture for the ink cartridge, electronics and connection socket and the connection to the controller
Print intensity	Contrast of the print image. If necessary this parameter must be changed to optimize the print image. A higher intensity gives greater blackening and longer ink drying time
Print speed	Print speed = Speed of the conveyor. The speed of the conveyor must be keep constant
Print start delay	Offset print, i.e. by how much is printing delayed in millimeters after the product is detected by the light barrier.
Print width	The number of pixel can be increased or decreased using this parameter. The print image becomes narrower or wider
Product sensor	A sensor for the detection of the product. Mostly used are optical sensors (photo sensor, light barrier, reflex sensor)
Sensor	See product sensor
Shaft encoder	A shaft encoder is used for the automatic detection of the conveyor speed and defines the print speed
TIJ	Thermal Ink Jet - print function of the HP and LX cartridges
Trident	Manufacturer of the MX Piezo print heads
Zoom	The number of pixel can be increased or decreased using this parameter. The print image becomes narrower or wider
ZTV	Bulk Ink Supply System

Customer Service

Please contact your local distributor for technical information.

If failures at the print system occur, you should be prepared with the following information:

- Detailed error description.
- All information on the name plate of the print system.
- Version number of the system software and of the iDesign Software
- Configuration (Print, Basic, Advanced, Pro)
- Special functions of the software or hardware
- When did the error occur for the first time?

Prior to call our hotline service, please have a look at the manual (→ *Chapter* Faults*, page* **172**) for potential references to eliminate the error.

Furthermore, our staffs are always interested in new information and experiences with the use of the product and which may be valuable for improvements to our products.

2. Safety Regulations

Behavior in Case of an Emergency

The operating personnel have to be familiar with the operation and the location of safety, accident notification-, first aid- and rescue devices.

What to do in Case of an Emergency?

- Initiate immediately all required emergency measures for injured persons. Observe valid safety regulations in any case in order to avoid further damages to persons.
- Call medical attendance for injured persons.
- Eliminate all accident causes.

General Safety Regulations

Safety regulations provide information in written and symbol form in order to warn you against dangers and to instruct you to avoid any damage to persons or to properties.
Safety regulations are started by signal words indicating the level of danger.
Safety regulations may be placed directly at the print system or in documents about this print system.

Explanation of Danger Degrees

DANGER	This symbol indicates a hazardous situation which, if not avoided, will result in death or serious injury. All safety regulations have to be observed to avoid any damage to persons.
WARNING	This symbol indicates a hazardous situation which, if not avoided, could result in death or serious injury. All safety regulations have to be observed to avoid any damage to persons.
CAUTION	This symbol indicates a hazardous situation which, if not avoided, may result in minor or moderate injury. All safety regulations have to be observed to avoid any damage to persons.
NOTICE	This symbol indicates a hazardous situation which, if not avoided, may result in damage to properties. All safety regulations have to be observed to avoid any damage to properties.

Intended Use

The working reliability of the print system is ensured only with intended use.
The Markoprint X2JET plus Touch has been designed, built and must be used exclusively for the intended purpose described.
The Markoprint X2JET plus Touch serves to create print images and print them from the top or side to smooth and absorbent product surfaces. The product must pass the print head, i.e. by a conveyor belt.

All working conditions and instructions, prescribed in this manual, will be observed.
Any use beyond the intended use or any alternative use of the equipment is regarded as misuse and may lead to hazardous situations.

Misuse of the device may lead to hazardous situations. Refrain, in particular, from subjecting the apparatus to the following:
Modification, retrofitting or alteration of the apparatus or individual sub-assemblies.

Any claims arising from damages due to undesignated use are rejected.

Reasonably Foreseeable Misuse

Another use as fixed in the „Intended Use“ or even more applies as not intended!

For damages caused by not intended use

- The operator bears the complete responsibility,
- The manufacturer assumes no liability.

If you do not use the system according to the regulations, risks may occur!

Not intended uses are e.g.:

- operation in explosive atmosphere
- the print system comes in contact with food …

Retrofitting and Changes at the Print System

Unauthorized retrofitting and changes at the system lead to an immediate expiration of liability and warranty covered so far by the manufacturer! This is also valid for interventions and program changes at programmable control systems as well as program changes at control units as far as they are not described in this Manual.
The electromagnetic performance of the system can be affected by amendments or changes of any kind.
Do not arrange any changes or amendments at the systems without consultation and written approval of the manufacturer.

Warning Notices at Print System

Particular sources of danger at the print system are marked by yellow labels. The used pictograms point out to following dangers:

Danger to Life

Special hazards

The following section identifies the remaining risks, determined following a risk analysis.

Observe the safety notes listed here and the warnings in other chapters of the manual to minimize health hazards and avert hazardous situations.

WARNING

Danger to life through electric shock!

DANGER TO LIFE!

Contact with live parts poses imminent danger to life. Damaged insulation or individual components can be lethal.

Therefore:

- Immediately switch off the power supply and initiate repairs if the insulation is damaged.
- Work on the electrical system may only be performed by electricians.
- Before working on the electrical system, disconnect from the mains (remove mains plug) and check that power is off.
- Always disconnect mains before performing cleaning and repair tasks.
- Keep moisture from live parts. Moisture may cause a short-circuit.

CAUTION

Risk of injury through incorrect handling of batteries!

RISK OF INJURY!

Rechargeable and primary batteries contain toxic heavy metals. They must be treated as special refuse and deposited at municipal collection points or be disposed of by a specialized company. Batteries must be handled with particular care.

Therefore:

- Never throw batteries into a fire or subject batteries to high temperatures. Explosion hazard.
- Do not charge batteries. Explosion hazard.
- Fluid escaping through incorrect use may cause skin irritations. Avoid contact with the fluid. In case of contact with the fluid, rinse with ample water. If the fluid comes into contact with the eyes, rinse immediately with water for 10 minutes and consult a doctor without delay.

⚠CAUTION **Edges and corners pose risk of injury!**

 RISK OF INJURY!

Sharp edges and pointed corners may cause abrasions and cuts to the skin.

Therefore:

– Be cautious when working near sharp edges and pointed corners.
– If in doubt, wear protective gloves.

⚠CAUTION **Risk of stumbling posed by dirt, objects lying about and connecting lines!**

 RISK OF INJURY!

Dirt, objects lying about and connecting lines for power, data- and signal lines may cause slipping and stumbling resulting in severe injuries.

Therefore:

– Always keep working area clean.
– Remove objects no longer required.
– Mark stumbling areas with yellow-black marking tape.
– Non tension connecting lines to system and pass it that no places of danger do arise.

Remaining Risks

The print system is constructed for a safe operation. Hazards that are not preventable due to construction purposes are limited as far as possible by protection devices. A certain amount of risk is always existent! The knowledge about the remaining risks assists you to arrange your work safer and to avoid incidents. In order to avoid the dangers, please observe additionally the particular security advice in the single chapters.

Disposal

This print system complies with the RoHS EU-Regulation 2002/95/EG with observance of the fixed using prohibitions and avoiding pollutants.

Authorized persons

Work at the print system should only be performed by reliable personnel. Please comply with the legal age!

Only trained personnel are allowed to operate the print system. Trainees, apprentices etc. must be supervised by an experienced person while working at the print system.

Prior to start running the labeler the operator has to ensure that the manual of the labeler is available to all users of the machine and that the users have read and understood the manual. Only then the system may be put in operation.

The responsibility for the different tasks at the print system must be clearly specified and kept. There must be no ambiguous authorities for this may put the safety of the users at risk. Arrange a detailed work schedule if several persons work on the machine.

All work on the electrical equipment must be carried out by skilled electricians only.
Failures may be eliminated by authorized personnel only.
All work associated with the assembly, adjustment and maintenance at the machine may be carried out only by trained or instructed personnel.
The operator of the machine must ensure that the personnel are trained in dealing with the integrated control system prior to fix machine errors or maintain the system.

Personal Protective Equipment

Wear following protective equipment when performing work at the system:

SAFETY SHOES

Wear for protection against falling off parts and slipping.

PROTECTIVE CLOTHING

Are tight-fitting clothes with low tensile strength, with tight sleeve and without distant parts
Wear a hairnet if applicable
Do not wear jewelry or wrist watches

PROTECTIVE GOGGLES

For protection against splashes of detergents and flying parts

SAFETY GLOVES

For protection against sharp-edged items

Personal Protective Equipment for the following tasks	Protective Clothing	Safety Shoes	Safety Gloves	Protective Goggles
				
Transport	x	x	x	
Setting up and connecting of the system	x	x	x	x
Maintenance Work	x		x	x
	The documentation of the manufacturer of the single system components has to be observed!			

Working Places Operator Personnel

The print system is an automatic working system and does not require any operation for the printing procedure.

3. Technical Specifications

General

Dimensions (H x W x D in mm)	108 x 219 x 231 (excl. bracket and connections)
Weight	2850 g
Environmental Temperature:	5 - 40 ° C
Environmental Conditions:	10-90 % relative humidity (non-condensing)
Protection Rating	IP 40
Maximum operating time	The system is designed for continuous operating

Electrical

Voltage Power Supply:	90 - 240 V AC / 50-60Hz (1~)
Current consumption:	max. 0,5 A
Power consumption:	max. 60 W
Power consumption Standby:	< 5 W

Data interfaces

Ethernet	RJ45
USB A	USB-A socket
USB-B	USB-B socket

Connections

Input voltage	24V +- 10% max. 500mA
Sensor	M8 4-pole
Encoder	M8 4-pole
External	Sub-D 25-pole
Alarm	M12 8-pole

Supply voltage 24V +- 10%

The switching threshold of the inputs is 12V ± 2V.
The sensors / encoders must be designed for 24V operating voltage. E.g. 24V ±10% or 10V – 30V
The inputs are NPN as standard, but can be rejumpered to PNP with the iDesign software.

Performance data

Cable length in m	
Power supply	2
Print head cable	3
Max. length print head cable:	Up to 13 for HP heads, Up to 50 for LX or MX heads
Max. length LAN-cable:	Up to 50
Text layout	Software iDesign
Parameter input	Keyboard on the device / Software iDesign
Screen	TFT display QVGA 5,7“ 320x240 pixel with background lighting
Fonts	all available Windows fonts
(optional)	customer-specific fonts
Print height in mm	
HP / LX print heads:	1 to 25
MX print heads:	3 to 200
Maximum print resolution[1)] in dpi	
HP / LX print heads:	900
MX print heads:	600
User language Control system / Software:	German, English, French, further on request
Barcodes[1)]	EAN 8, EAN 13, EAN 128, 2/5 ITF, 2/5 with check 128, UPC A, UPC E DUN14
2D-Codes[1)]	Datamatrix, GS1-Datamatrix, QR-Code, PPN-Code
Automatic functions[1)]	Date, Time, Counter, Variables, Action fields, customer-specific links
Graphic	**Monochrome** bitmap-graphics can be created i.e. with Paint or other software.
Text memory in GB	Max. 1
Font- und Logo memory in GB	Max. 1

Memory; optional expandable in GB	32
User memory in MB	64
Maximum print speed in m/min (depending on resolution) **HP 2.5 at 300dpi** **HP 2.5 at 300dpi HiSpeed Version** **Recommended for barcodes**	 90 180 Max. 60
Maximum print speed in m/min (depending on the resolution) **LX at 300dpi** **LX at 300dpi HiSpeed Version** **Recommended for barcodes**	 90 240 Max. 90
Maximum print speed in m/min (depending on the resolution) **MX**	 200
Print direction	L/R or R/L, from top or side. Print from bottom is **not** possible.

[1)] Not available in all Markoprint X2JET plus Touch versions

Inks

HP-inks

Specification	Type
Black	HP-Set 4 STABL HP-Set 14 MIBL 2 Cartridge HP Ultra Black Cartridge HP 2580 Cartridge HP SDBLK3 Cartridge HP WDBLK1 Cartridge HP WDBLK2
Color	HP-Set 26 RCBLU HP-Set 27 RCRD Cartridge HP WDGN1
Optional	Special inks HP-Set 12 UVINV
Other	On request

LX-inks

Specification	Type
Black	LX GP+ LX GP1 LX SD1 LX RD1 LX NP1

Trident-inks

Specification	Type
MX 100	ScanTrue II™ black,red Versa™ V300 black, blue, green, red
MX 50	ScanTrue II™ black, red

4. Transport, Packaging and Storage

Transport

Check the delivery for completeness and transport damages immediately upon receipt. Proceed as follows in case of externally visible transport damage:

- Decline delivery or accept with reservation only.
- Record extent of damage in the transport documentation or on the delivery note of the carrier.
- Initiate complaint.

Scope of delivery

The scope of delivery of the Markoprint X2JET plus Touch depends on the ordered options and the customer's application. Please control the scope of delivery when receiving the systems on the basis of the delivery note.

Scope of Delivery - Basic:

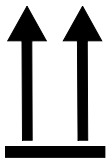
- 1x *Markoprint X2JET plus* Touch control system
- 1x Power supply
- 1x CD, content: → *Chapter* USB-Stick files*, page 201*
- 1x Operation manual (CD)
- 1x iDesign-Software (CD)
- 1x USB-cable A-B
- 1x Grounding cable

Optional:

- Print head: HP-print head, LX-print head or MX-print head
- Print head cable
- Mounting bracket
- Photo sensor
- Shaft encoder
- Traffic light

Symbols on Packaging

As part of the installation and further use it may happen that the operator put user or maintenance personnel in charge of handling of packages. Therefore note the following important notes.



This way up

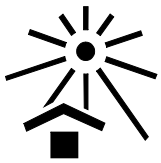
The arrowheads indicate the top of the package. They must always face upward to avoid damage to the content.

Fragile

Identifies packages with fragile or sensitive contents.
Handle the package with care, do not drop or subject to impacts.

Keep dry

Keep packages away from moisture and keep dry.



Protect from heat

Protect packages from heat and direct sunlight.

Transport und Unpacking

Safety Instructions

NOTICE

Material damage due to incorrect transport!

Remove the packaging material and the transportation safety devices on installation site and transport the print system in its original packaging to the place of installation.

⚠CAUTION

Danger due falling parts!

– Wear safety shoes!

Packaging

On Packaging

The individual packages are packed in accordance with the expected transport conditions. Only environmentally-friendly materials were used for packaging.
Packaging serves to protect the individual components against transport damage, corrosion and other damage, up to the assembly stage. Do not, therefore, damage the packaging - remove shortly before assembly only.

Original packaging is available from the manufacturer to ensure optimal dispatch of the system.
Please contact your local distributor.

Handling of packaging materials

Dispose of packaging material in accordance with the applicable statutory provisions and local regulations.

NOTICE

Environmental damage!

Packaging materials are valuable raw materials and can, in many cases, be re-used or profitably recycled and re-used.

Therefore:

– Dispose of packaging materials in an environmentally-responsible manner.
– Observe the locally applicable disposal regulations. If necessary, commission a specialized company for disposal.

Storage

Controller

Store the controller under the following conditions:

- Do not store outdoors.
- Keep dry and free of dust.
- Do not expose to aggressive media.
- Keep away from direct sunlight.
- Avoid mechanical shock.
- Storage temperature: 5°C to 45°C.
- Relative humidity: maximum 60%.

Storage HP print heads

Before storage of the HP print heads please remove the ink cartridges and store them like you can see under the point Storage notes of ink cartridges.
Store the print heads under following conditions:

- Do not store outdoors.
- Keep dry and free of dust.
- Do not expose to aggressive media.
- Keep away from direct sunlight.
- Avoid mechanical shock.
- Storage temperature: 5°C to 45°C.
- Relative humidity: maximum 60 %.

Storage LX print heads

Before storage of the LX print heads please remove the ink cartridges and store them like you can see under the point Storage notes of ink cartridges.
Store the print heads under following conditions:

- Do not store outdoors.
- Keep dry and free of dust.
- Do not expose to aggressive media.
- Keep away from direct sunlight.
- Avoid mechanical shock.
- Storage temperature: 5°C to 45°C.
- Relative humidity: maximum 60 %.

Storage Trident print heads

Store the Trident print heads under following conditions:
When a print head with ink type ScanTrue II is stored or not used for more than six months, ink deposits may form, which can result in the clogging of different nozzles.
In this case, fill the print head with fresh ink before using.
Procedure:

- Leave the nozzle plate closed with the nozzle locking clamp!
- Remove the feeder tube on the head and pump the old ink out of the ink supply system
- Then remove the return flow from the ink system and pump the old ink out of the print head
- Finally, rinse out the head and resume operation.

Customers having replacement heads in storage should rotate them every three months. In this way, the customer has a regular control over the functional integrity of his print heads.

All print heads must be tested once before installation.

Before storage of the Trident print heads the ink bottle must be taken out and stored according the storage instructions given below ink bottles.
The print head must be closed with the nozzle clip and the air inlet of the ink system must be closed with the plastic plug. Close the ink filler opening (bottle) with the screw cap. See also Disassembly of the print head.

Store the print heads under following conditions:

- Do not store outdoors.
- Keep dry and free of dust.
- Do not expose to aggressive media.
- Keep away from direct sunlight.
- Avoid mechanical shock.
- Storage temperature: 5°C to 45°C.
- Relative humidity: maximum 60 %.

Storage HP ink cartridge

New original sealed ink cartridges have a shelf life of up to 1 year. Observe the printed expiry date! The shelf life of different cartridge types differs.

Storage < 2 days:
Leave the ink cartridges in the print head holder and wipe off or rinse, if necessary, before restart.
→ *Chapter* Cleaning the HP ink cartridge*, page* **177**

Storage > 3 days:
Please store the ink cartridge in a cartridge clip (CartClip).
→ *Chapter* Store HP ink cartridge*, page* **31**

Store HP ink cartridge

NOTICE

Material damage on the ink cartridges

The time, how long a cartridge can be stored without CartClip is different from the ink type. Especially solvent ink must be closed after use immediately.

Therefore:

– Insert the ink cartridges after use in a CartClip.

If ink cartridges are not used for an extended period of time, they must be stored in a cartridge clip (CartClip) to prevent the ink in the nozzles from drying out.
To do this, the ink cartridges must be removed from the controller.
→ *Chapter* Removing the HP ink cartridge*, page* **79**

Instruction

To insert the ink cartridge in the CartClip:

Step	Procedure
1	Close the CartClip over the ink cartridge and press until the top flap of the CartClip snaps into the holder. (see Fig. 4-1)

Fig. 4-1: Inserting the HP cartridge in a CartClip

Instruction

To remove the ink cartridge from the CartClip:

Step	Procedure
1	Lift the top flap of the CartClip until the ink cartridge is released.
2	Pull the ink cartridge upward out of the CartClip. (see Fig. 4-2)

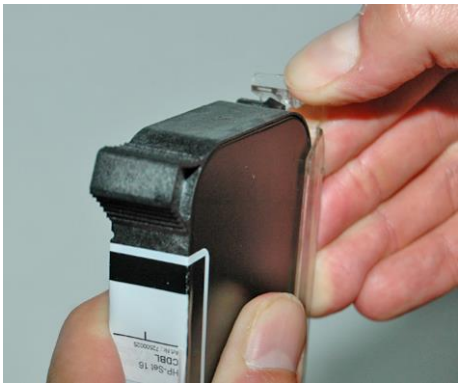


Fig. 4-2: Removing the HP cartridge from the CartClip

Storage LX ink cartridge

New original sealed ink cartridges have a shelf life of up to 1 year. Observe the printed expiry date! The shelf life of different cartridge types differs.

Storage < 2 days:
Leave the ink cartridges in the print head holder and wipe off or rinse, if necessary, before restart.
→ *Chapter* Cleaning the HP ink cartridge*, page* **177**

Storage > 3 days:
If ink cartridges are not used for an extended period of time, they must be stored in a cartridge clip (CartClip).
→ *Chapter* LX - Tintenkartusche aufbewahren*, page* **33**

LX - Tintenkartusche aufbewahren

NOTICE

Material damage on the ink cartridges

The time, how long a cartridge can be stored without CartClip is different from the ink type. Especially solvent ink must be closed after use immediately.

Therefore:

– Insert the ink cartridges after use in a CartClip.

If ink cartridges are not used for an extended period of time, they must be stored in a cartridge clip (CartClip) to prevent the ink in the nozzles from drying out.
To do this, the ink cartridges must be removed from the controller.
→ *Chapter* Removing the HP ink cartridge*, page* **79**

Instruction
To insert the ink cartridge in the CartClip:

Step	Procedure
1	Insert the ink cartridge in the CartClip. The nose of the CartClip to the back slightly until the cartridge click into place.

Fig. 4-3: Insert the LX cartridge in the CartClip

Instruction
To remove the LX-ink cartridge from the CartClip:

Step	Procedure
1	Pull the nose of the CartClip to the back slightly and remove the cartridge.

Fig. 4-4: Removing the HP cartridge from the CartClip

Storage Trident ink bottles

New original ink bottles can be stored up to one year. Please have a look at the printed best before date! The shelf life can be varying with the different ink types.
Store the ink bottles under following conditions:

- Do not store outdoors.
- Keep dry and free of dust.
- Do not expose to aggressive media.
- Keep away from direct sunlight.
- Avoid mechanical shock.
- Storage temperature: 5°C to 45°C.
- Relative humidity: maximum 60 %.

5. Construction and function

Brief description

The Markoprint X2JET plus Touch is a thermal Inkjet Coder of Weber Marking Systems GmbH, for printing images quickly and cleanly onto smooth and absorbent product surfaces.
A print image, for instance, contains product descriptions, graphics, quantities, shelf life data, barcodes and product serial numbers.
Print layouts can be created with the included iDesign software and can send via network connection, USB interface or serial EIA 232 connection or by USB-stick to the Markoprint X2JET plus Touch.

Controller

The Markoprint X2JET plus Touch controller consists of:

- The electronics inside the housing
- A keyboard for input of parameter and settings and a navigation- / OK-button and the INFO-button.
- Five menu selection-buttons for the direct selection of the shown display menu points
- A color display
- The connectors on the system back for power supply, input for encoder, input for sensor and other in-/outputs

The Markoprint X2JET plus Touch can be used as table system or can be installed on the production line directly with special optional mounting brackets or as wall-mounted system.

System versions

The Markoprint X2JET plus Touch is available as standard version ***Advanced*** and as ***Pro***-version with extended functions.

Functions Markoprint X2JET plus Touch ***Advanced***:
Print speed up to 90m/min with HP at 300dpi, counter, date with best before, variable input, 2D barcodes, 1m print length (up to 2m at 300 dpi without zoom optimization), data backup with USB-Stick, interface functions, data base connection.

Functions Markoprint X2JET plus Touch ***Pro***:
Like Markoprint X2JET plus Touch ***Advanced*** extra: Hi-Speed adjustable with print speed up to 240 m/min with LX at 300 dpi, up to 3m text length (up to 2m at 300 dpi without zoom optimization), password protection.

The Markoprint X2JET plus Touch control systems will be delivered as Advanced version standard. If the requirements exceed the scope of services of the Advanced version, an upgrade with costs to the Pro version is available. See also → *Chapter* Software-Upgrade*, page* **197.**

Overview Markoprint X2JET plus Touch controller

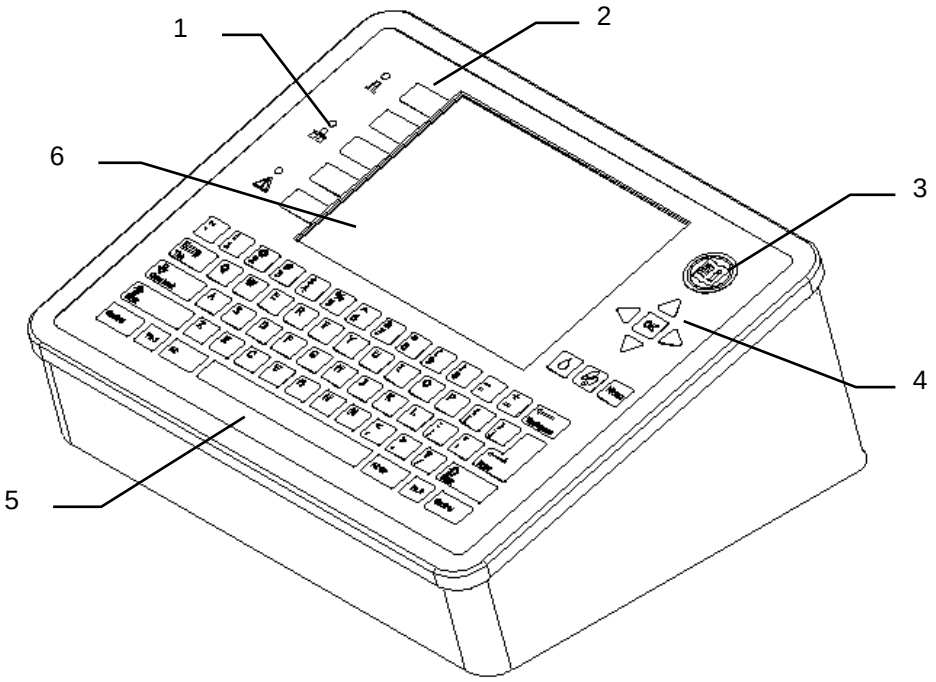


Fig. 5-1: X2JET plus controller

No.	Description
1	STATUS LIGHTS
2	FUNCTION BUTTONS
3	INFO-BUTTON
4	NAVIGATION- / OK-BUTTON
5	KEYBOARD
6	DISPLAY / TOUCHSCREEN

Overview print heads

Overview HP print heads

The print heads will be installed with mounting brackets at the production line directly.
The HP print heads consist of:

- Cartridge bracket
- Ink cartridge
- Controller connector
- Integrated electronics

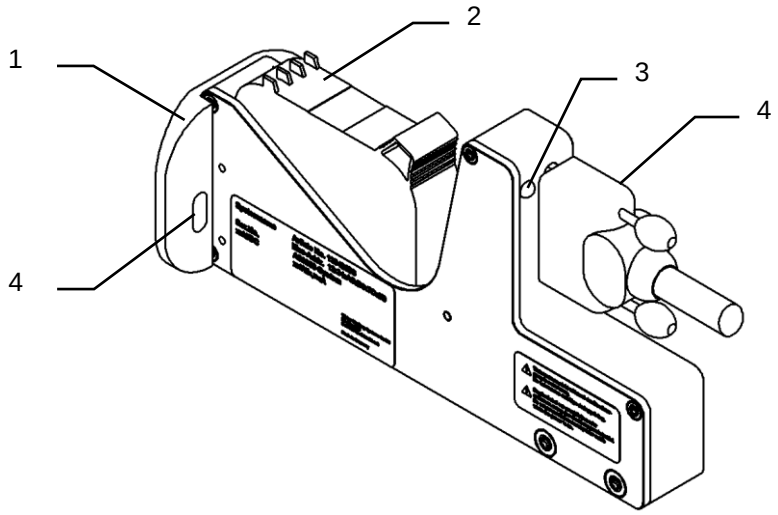


Fig. 5-2: Print head HP MK2 Version 1 Single model

No.	Description
1	DEFLECTOR
2	INK CARTRIDGE
3	STATUS LED
4	CONTROLLER CONNECTION
5	OPENING EXTERNAL SENSOR

The HP print heads are available in three different versions:

- HP MK2 Version 1 – flat version (196,5mm) with connector at the back
- HP MK2 Version 2 – short version (187mm) with connector at the bottom

Detailed dimensional drawing see appendix.

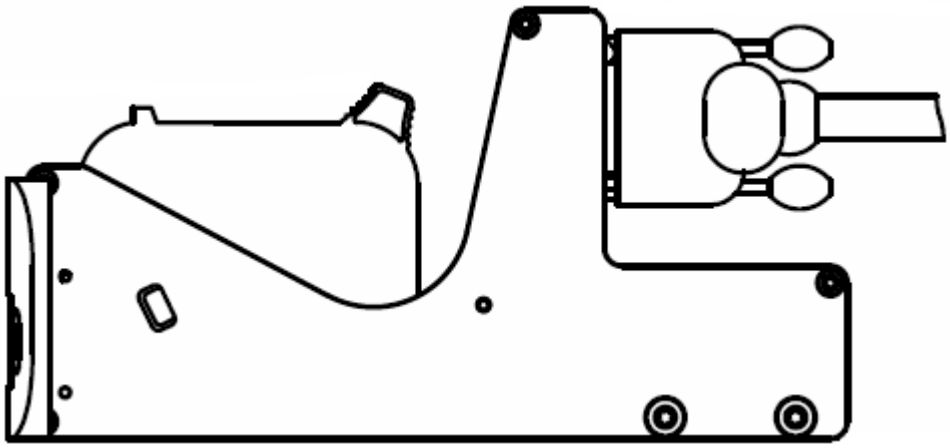


Fig. 5-3: Print head HP MK2 Version 1

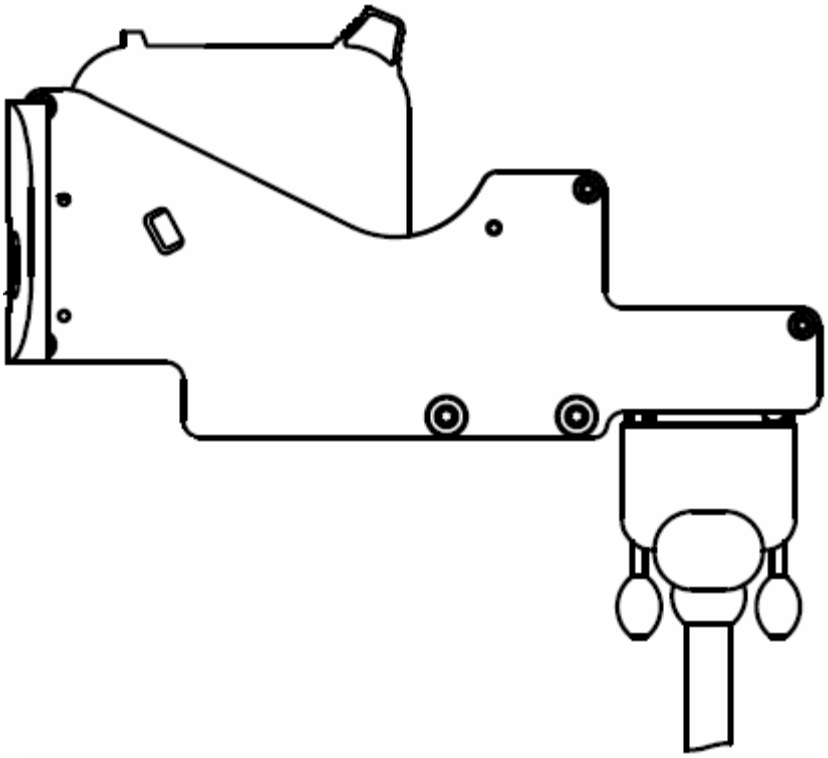


Fig. 5-4: Print head HP MK2 Version 1

The HP print head works with original Hewlett-Packard ink cartridges. The HP print heads are available as single model or as cascaded version up to two print heads. A single print head has a maximum print height of 12.5 mm and increase 12.5 mm with each further print head as cascaded version (two print heads = 25 mm)..

Functional principle:
The ink is located in the ink channels of the printer cartridge, while its viscosity prevents any leakage.
A heating element, which generates a steam bubble when current is briefly applied (1.9 µs), is fitted behind each jet opening.
This steam bubble gives ink between the heating element and the jet opening an impulse and therefore “shoots” a defined quantity of ink out of the opening.
When the steam bubble reforms, a corresponding quantity is drawn from the storage container and the process can begin again. This process of ejecting an ink drop can be repeated 18,000 times a second.
There are different special inks, which allow a coding on many surfaces. Specially qualified are inks for absorbent and semi absorbent surfaces. For non-absorbent surfaces are solvent inks available. The drying time can be realized with a blower or heater.

SmartCard Functionality

The Markoprint X2JET plus / plus Touch print system is equipped in the MK2 version with SmartCard identification of the cartrigdes.

The HP MK2 printhead has an additional contact block which connects the SmartCard chip with the analysis electronics by insertion of the SmartCard cartridge.

View of the SmartCard contacting cartridge

View of the SmartCard

The chip is detected by inserting the cartridge. The printhead LED show this:

The head LED blinks green for 3 seconds if the SmartCard is detected.

The LED blinks green/red if a cartridge without SmartCard is inserted. The system works without the advantages of the SmartCard data.

If the print system isn't activating for the use of cartridges without SmartCard, the LED will be blink red and the print system doesn't print.

The LED blinks yellow/red if there is a read error on the SmartCard chip and the cartridge prints without consideration of the SmartCard data.

SmartCard Functions

The SmartCard functions are supported by software version 2.016 and higher.

Automatic storage of the ink filling level in 1% steps. The correct ink level of a cartridge is always detected, even by changing the cartridges. No more missing prints by interchanged cartridges.

Automatic detection of the ink type and automatic setting of the optimal ink paramaters. Ink volume, drop size, nozzle voltage and firing time are stored on the SmartCard chip.

The current ink type is displayed for control and prevention of wrong cartridges.

Exact ink consumption calculation. The usable number of drops is calculated by the ink weight (g), specific weight (g/ml) and drop size (in pl). The values are read out of the chip, depending on the ink type.

Warning message with expired shelf life - date of filling and shelf life are stored on the SmartCard chip

Warning message if cartridge is open for too long (installed life) - date of first insertion and maximum operating time are stored on the SmartCard chip.

iDesign displays the ink part number for easy reordering.

Following data are stored on the SmartCard chip for checking claims:

Date of the first cartrigde insertion, serial number of the controller, firmware version of the controller

Date of the last cartridge insertion, serial number of the controller, firmware version of the controller

Number how many times the cartridge was used.

The ink type can not set manually by using SmartCard cartridges.

The ink level is set automatically and can not be reset.

Overview LX print heads

The print heads will be installed with mounting brackets at the production line directly.
The LX print heads consist of:

- Cartridge bracket
- Ink cartridge
- Controller connector
- Integrated electronics

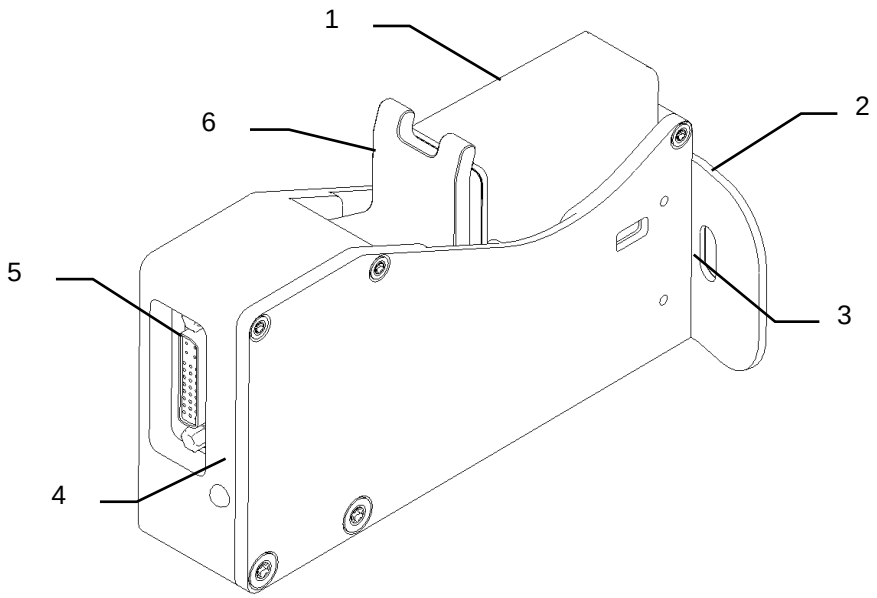


Fig. 5-5: Print head LX MK2 Version 1 Single model

No.	Description
1	INK CARTRIDGE
2	DEFLECTOR
3	OPENING EXTERNAL SENSOR
4	STATUS-LED
5	CONTROLLER CONNECTOR
6	CLAMP LEVER CARTRIDGE

The LX print heads are available in two different versions:

- LX MK2 Version 1 – flat version, with connector at the back
- LX MK2 Version 2 – version with connector at the bottom

Detailed dimensional drawing see appendix.

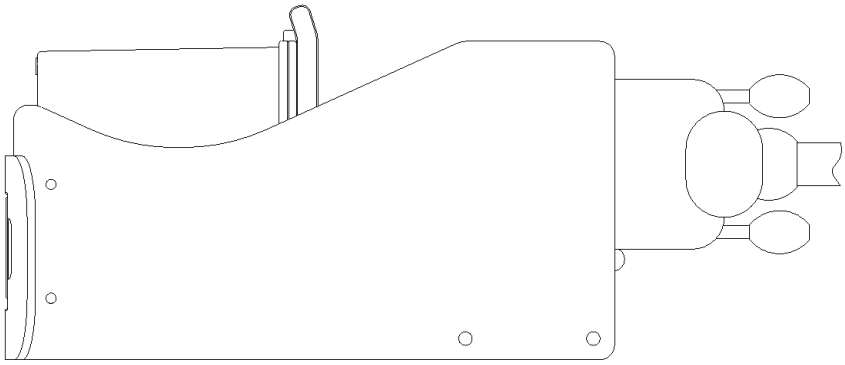


Fig. 5-6: Print head LX MK2 Version 1

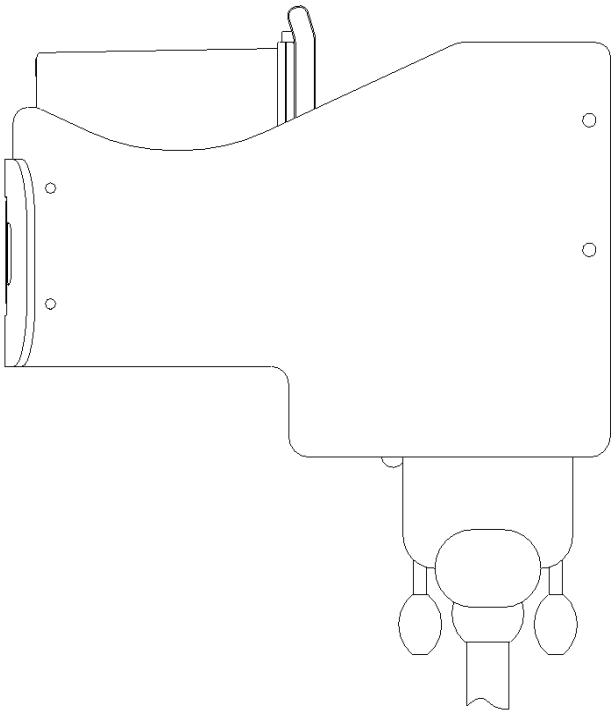


Fig. 5-7: Print head LX MK2 Version 1

The LX print head works with original Lexmark ink cartridges. The LX print heads are available as single model or as cascaded version up to two print heads. A single print head has a maximum print height of 12.5 mm and increase 12.5 mm with each further print head as cascaded version (four print heads = 25 mm).

Functional principle:
The ink is located in the ink channels of the printer cartridge, while its viscosity prevents any leakage.
A heating element, which generates a steam bubble when current is briefly applied, is fitted behind each jet opening.
This steam bubble gives ink between the heating element and the jet opening an impulse and therefore “shoots” a defined quantity of ink out of the opening.
When the steam bubble reforms, a corresponding quantity is drawn from the storage container and the process can begin again. This process of ejecting an ink drop can be repeated 12,000 times a second.
There are different special inks, which allow a coding on man surfaces. Specially qualified are inks for absorbent and semi absorbent surfaces. For non-absorbent surfaces are solvent inks available. The drying time can be realized with a blower or heater.

The system is optimized for Weber cartridges.
The ink settings (Fire pulse, spitting, warming) will set optimal by using Weber cartridges.
These values cannot determine and set by using other cartridges. Then the ink level is 1% (warning level).

MX print heads

The print heads will be installed with mounting brackets at the production line directly. With suspicion of arise shocks or vibrations of the conveyor belt install the print head on a separate floor stand.

The MX print heads consist of:

- The Trident print head module with 50mm or 100mm print height
- The adapter of the ink bottle
- The integrated electronics
- The flange plate on the bottom side of the housing (optional on the side) with connector for the controller, power supply, alarm light, maintenance station, purge button and status LED

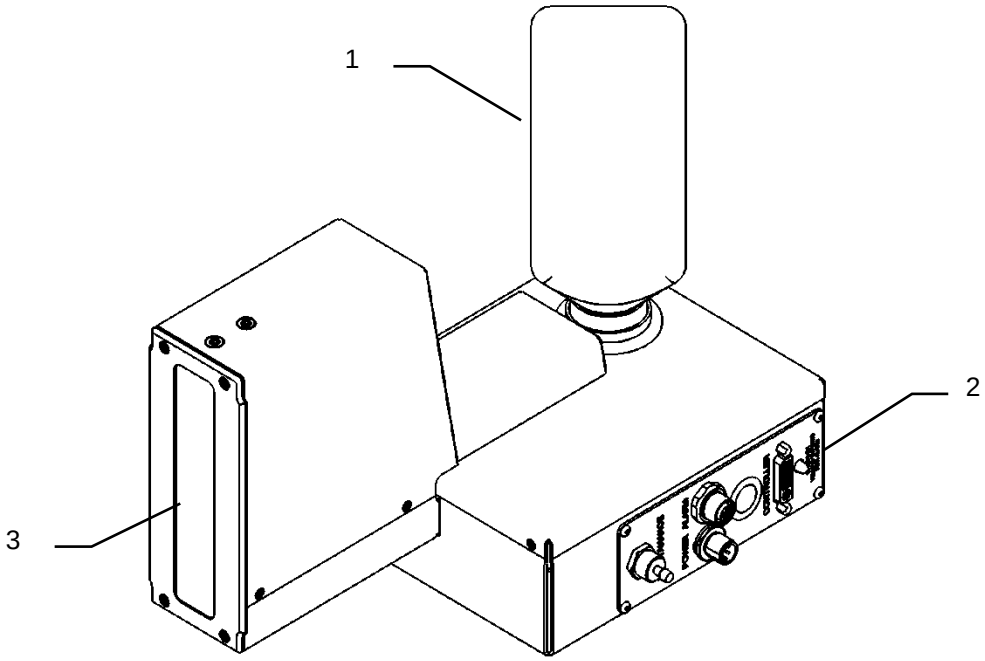


Fig. 5-8: Trident print head, MX 100 Single model

No.	Description
1	INK BOTTLE
2	FLANGE PLATE
3	PRINT HEAD MODULE

The MX print heads are available in following versions:

- **MX 100:** max. print height 100mm ; available in the „Compact“ version, „Top“ and „Vario“
- **MX 50:** max. print height 50mm ; available in the „Compact“ version, „Top“ and „Vario“

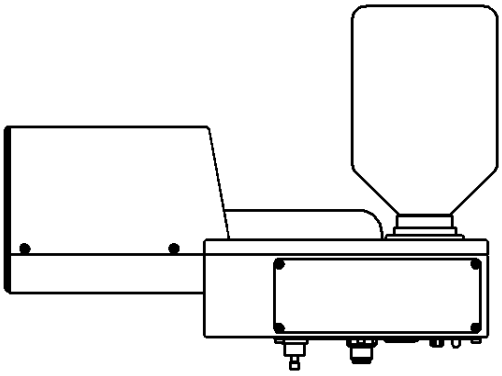


Fig. 5-9: Trident print head, MX 50 Compact model

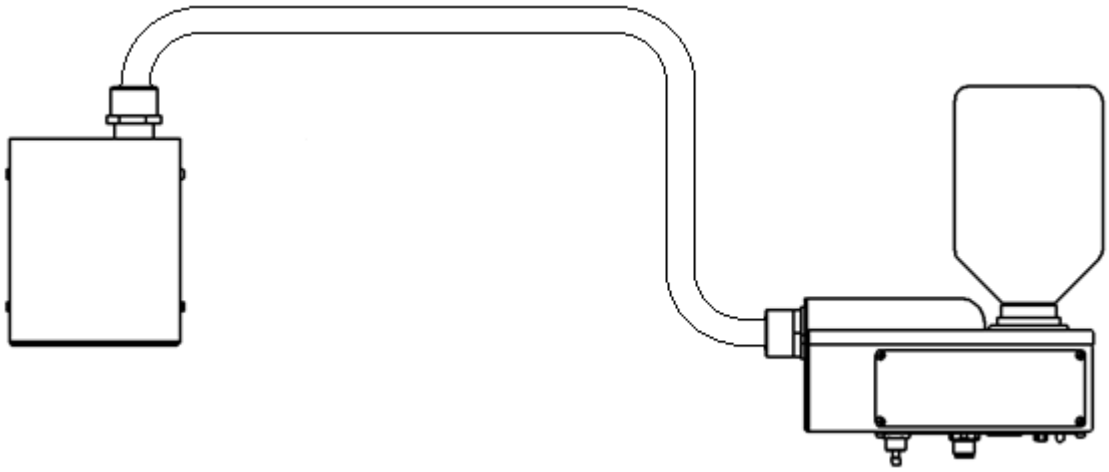


Fig. 5-10: Trident print head, MX 50 Top model

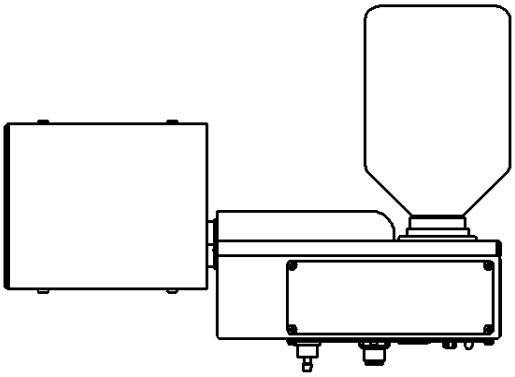


Fig. 5-11: Trident print head, MX 50 Vario model

Print head distance:
The distance from nozzle to nozzle is 150 mm if two or more print heads will be installed to print 150 mm or higher.
The distance can be set from 50 to 200 in iDesign.
The 50mm print head (if needed) must the top print head.

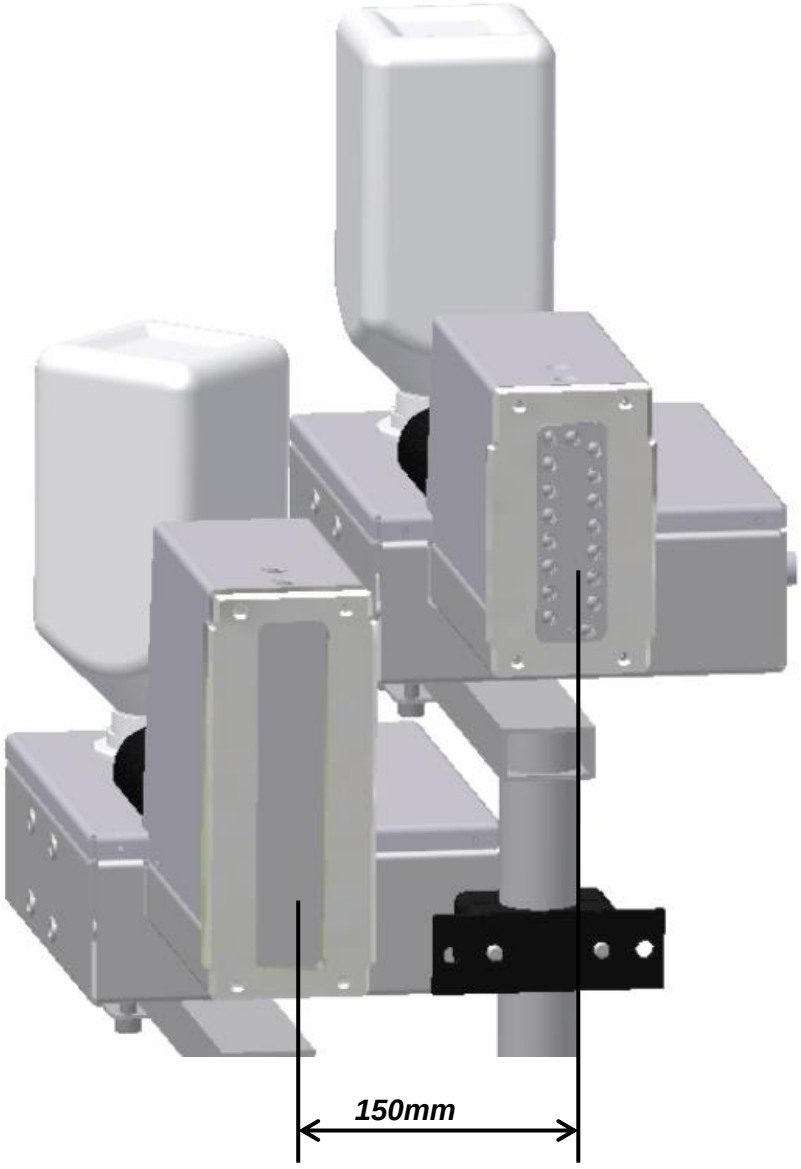


Fig. 5-12: MX print heads, type 100 and 50

Trident – print head module MX 100 / 50

NOTICE

Material damage

The nozzle plate can be damaged by incorrect disassembly.

Therefore:

Never remove the nozzle plate - this would invalidate the warranty.

The print head MX 100 has 256 selectable channels, each with 3 nozzle openings.
The print head MX 50 has 128 selectable channels, each with 3 nozzle openings.
The nozzle plate is permanently screwed to the metal body.

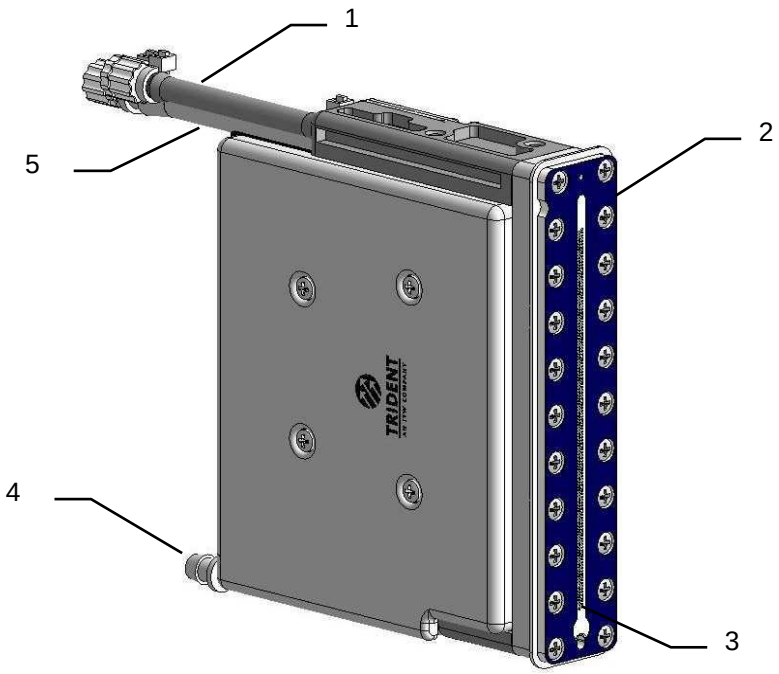


Fig. 5-13: Trident print head module MX 100

No.	Description
1	INK RETURN
2	NOZZLE PLATE
3	NOZZLE OPENINGS
4	MAINTENANCE STATION CONNECTOR
5	INK SUPPLY

The Trident print heads are available as single version. Up to two print heads can be cascaded.
The single print head as 50 version has a maximum print height of 50 mm, the 100 version a print height of 100 mm. The print height will be higher with a cascading of every additional print head (two 100er print heads = 200 mm). The 50er and 100er print heads can be mixed together.

In the MX **Compact / Compact/Vario** model, the print head and the ink system form a single unit. A constant difference in level between the print head and the ink system is thus ensured. For design reasons, the print head of the **Compact / Compact/Vario** model can only print from the side.

In the event of installation on an inclined conveyor or material movement from top to bottom the ink system must be installed horizontally. The head can be rotated in the direction of travel. MX 100 Compact system is not suitable here because the head cannot be rotated independently of the ink system.

In the **Top** model, the print head is connected with its own ink system via a special flexible hose containing the ink line and the control cable. The ink system comprises a reservoir to which the ink cartridge is attached. A pump is also installed. This pump is used exclusively for purging air and any contamination from the head. The ink is supplied to the print head solely through the suction effect of the ink being used. Reliable ink supply can only be ensured if the system is fully vented. It is important that the ink system is installed at the same height as the print head.
Note: The lower edge of the nozzle plate (by an installation from the side: lower edge of the print image/bottom nozzle) must be set 55 mm higher than the lower edge of the ink reservoir (+-5mm space). If the ink system is higher than the print head, the ink will leak from the head; if the print head is installed too high, the surface tension of the ink at the nozzle plate will be disturbed, causing air to enter.

Example for assembly from the side:

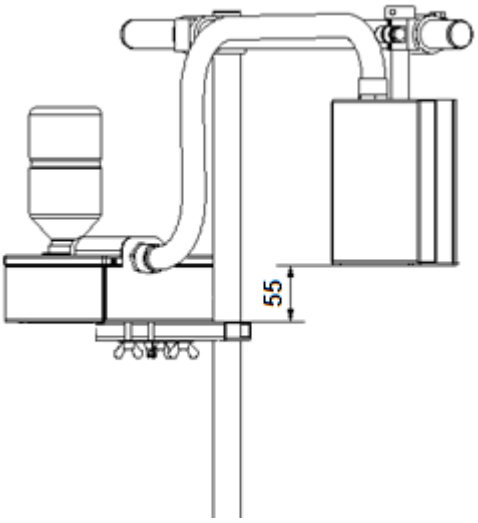


Fig. 5-14: Level system unit – print head module with top application

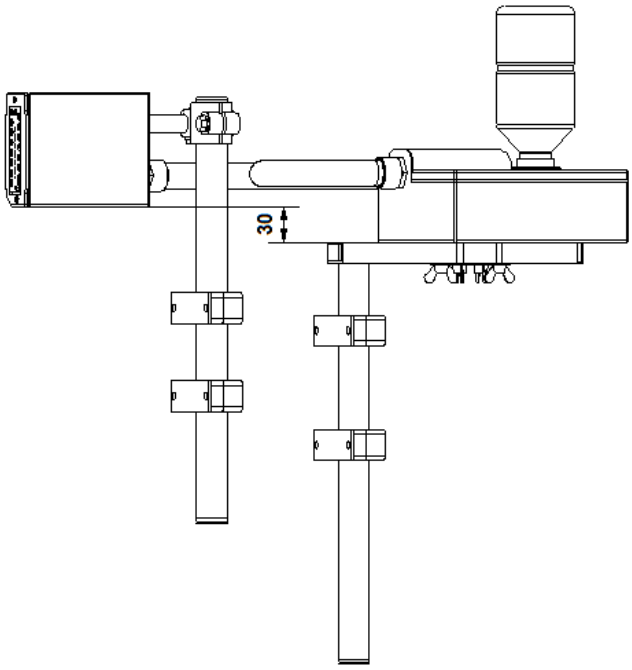


Fig. 5-15: Level system unit – print head module with top system and printing from side

Functional principle:
The ink is distributed in the ink channels through capillary action. In order to optimize the viscosity of the ink, the head is heated to approximately 35°C (with ScanTrue II ink). Or 65°C (with Versa ink). This takes about 5 minutes from the time the device is switched on.

Each ink channel contains a piezo tappet that contracts when an electrical pulse is applied. At the end of the pulse, the tappet expands suddenly and pushes the ink against the nozzle plate. The nozzle plate forms the ink into individual drops that are ejected onto the printing surface. When the drops exit the print head, a suction pressure is generated that pulls more ink from the tube.

The surface tension of the ink present directly at the nozzles prevents ingress of air into the ink channels. Please note that the print head must be protected from strong vibrations. Strong impacts may lead to disruption of the surface tension and ingress of air into the head.

Only those inks listed on the gummed label of the unit may be used in the system. The use of other inks will cause a total breakdown of the printer system!

The system must not be run dry / without ink.
The system is supplied filled with ink. Ink could escape if the device is not closed and not stored properly.
If ink has escaped, air must be removed from the system before using.

The ink tank has a ventilation cap that must remain open at all times after installation!

Maintenance station

The maintenance station includes the power supply for the voltage of the print head.
If the power supply is switched on, the green LED lights.
Furthermore the maintenance station includes a vacuum pump and a bottle to detect the polluted ink. If the bottle is full, a red LED shows this on the front.
The maintenance station is used for removing excess ink from the nozzle plate after a purging process. An opening is located at the lower end of the nozzle plate, which is responsible for removing the excess / dirt ink.
The maintenance station can only be used when the head is in the vertical position. For TOP installation or tilted head the maintenance station will be used only as power supply.

If the red LED shows a full collection container, the purging process can't carry out.

Fig. 5-16: Maintenance station

Nameplates

Nameplate controller

The nameplate is attached to the bottom of the device and displays the following:

- System type
- Serial number
- MAC address
- Article number
- Supply voltage
- Power consumption
- Address of manufacturer

Nameplate print head

The nameplate is attached to the side of the print head and displays the following:

- System type
- Serial number
- Supply voltage
- Power consumption
- Address of manufacturer

6. Installation and Initial Operation

Safety notes

WARNING

Danger to life through electric shock!

DANGER TO LIFE!

Contact with live parts poses imminent danger to life. Damaged insulation or individual components can be lethal.

Therefore:

- Immediately switch off the power supply and initiate repairs if the insulation is damaged.
- Work on the electrical system may only be performed by electricians.
- Before working on the electrical system, disconnect from the mains (remove mains plug) and check that power is off.
- Always disconnect mains before performing cleaning and repair tasks.
- Keep moisture from live parts. Moisture may cause a short-circuit.

CAUTION

Risk of stumbling posed by dirt, objects lying about and connecting lines!

RISK OF INJURY!

Dirt, objects lying about and connecting lines for power, data- and signal lines may cause slipping and stumbling resulting in severe injuries.

Therefore:

- Always keep working area clean.
- Remove objects no longer required.
- Mark stumbling areas with yellow-black marking tape.
- Non tension connecting lines to system and pass it that no places of danger do arise.

⚠CAUTION **Edges and corners pose risk of injury!**

 RISK OF INJURY!

Sharp edges and pointed corners may cause abrasions and cuts to the skin.

Therefore:

– Be cautious when working near sharp edges and pointed corners.
– If in doubt, wear protective gloves.

Installation

Only an optimally aligned installation of the system can ensure a continuous operation with a low rate of failures and a minimum wear. For an optimized installation of the system, fine tunings adapted to environmental conditions are essential. For the fine tunings, a complex expert knowledge is required basing on experience with print technique.
The complexity of a wear-optimized installation requires a high measure of specialized knowledge and experience, which cannot be obtained completely by reading this manual. Therefore the installation of the print system must be made by a technician from your local distributor or examined by a final inspection. Damage or damages based on an incorrect installation, represent no case of warranty.

Requirements to the Site of Installation

When choosing the installation location the following conditions apply:

- Consider the generally accepted ergonomic criteria in accordance with workplace ordinances as well as country-specific legislation.
- The installation location must be a dry and dust-free room, ideally with an ambient temperature of approx. 18…25 °C.
- The installation location may not be subject to fast temperature fluctuations (condensation!).
- Do not set up the controller directly next to or above hot surfaces, since this will affect cooling of the controller.
- If the controller is operated on a tripod (accessory), the stability of the tripod on an even foundation must be ensured.
- The controller may not be exposed to flammable, explosive, corrosive gases or chemical vapors.
- The controller may not be installed in the vicinity of high voltage equipment or power supplies.
- The controller may not be subjected to direct vibrations or shocks.
- Keep controller away from oil or water.
- The controller may not be exposed to strong magnetic or electric fields.

Placing the Control System

- The installation position has to provide sufficient access for user and service technician. The power plugs must be easy to access to cut the voltage anytime.
- Observe that all mounting parts are fixed sufficiently.
- Consider all points of the "Intended Use" in the chapter safety regulations.

To achieve a clean, sharp print result the distance from the product to be printed to the cartridge nozzle plate is important. The optimum distance is 0 to 4 mm between the deflector and the product. A greater distance will adversely affect the print result, particularly at high conveyor belt speeds.
The higher the print speed the shorter must be the distance. At speeds of less than 20 m/min a distance of up to 4 mm between the nozzle plate and the product may still be acceptable.

Positioning the Control System

NOTICE

Material damage due to improper print system installation!

With the print system switched on, a defect may occur in the system electronics.

Therefore:

– Only install the system when it is switched off.
– Network cables only connect or disconnect if the power supply is dead voltage.

NOTICE

Material damage due to induced currents!

If the connection cables of the controller run close to high voltage or heavy current cables in the cable duct, induction may cause malfunctioning or damage.

Therefore:

– Lay all connection cables of the controller spatially separate from high voltage and heavy current cables.

NOTICE

Material damage due to an incorrect control system installation!

Faults on the control system can happen by potential differences between control system and conveyor belt.

Therefore:

– An electro-conductive connection between control system and conveyor belt must be established.

NOTICE

Material damage due to not properly installed connecting cables!

Improper installation of the connecting cables can cause damages to these.

Therefore:

– When laying the cables, ensure that cables are not tripping hazards and do not lay them around corners and sharp edges. Avoid abrasive surfaces.

Required Resources

Setscrew wrench (Allen key®) SW5

Instruction
Please install the control system as follows:

Step	Procedure
1	Set up the controller … • on an even and adequately load-bearing surface • mount on a tripod • Install it on a production line with the optional available mounting brackets. • Install it on a wall with the optional available mounting brackets.
2	Connect the control system with the conveyor belt electro-conductive.

Installation of the print heads

Installation of the HP print head

To achieve a clean and sharp printing result, the distance between the product to be printed and the nozzle plate of the print head is important. The optimal distance is 0 to 4 mm. A higher distance impairs the print result, especially if the conveyor belt runs at high speeds.
The distance from the print head to the product must be as short as possible, with high print speed mainly. The distance between print head and product can be 5 mm if the print speed is less than 20 m/min.

Required Resources

- Setscrew wrench (Allen key®) SW5
- Crosstip screwdriver

Instruction
Please install the HP print head as follows:

Step	Procedure
1	Attach mounting brackets to the production line.
2	Attach the mounting rail of the print head to the clamp of the mounting bracket.
3	Set the distance between the print head and the product surface. A distance of 0 to 4 mm is optimal.

Step	Procedure

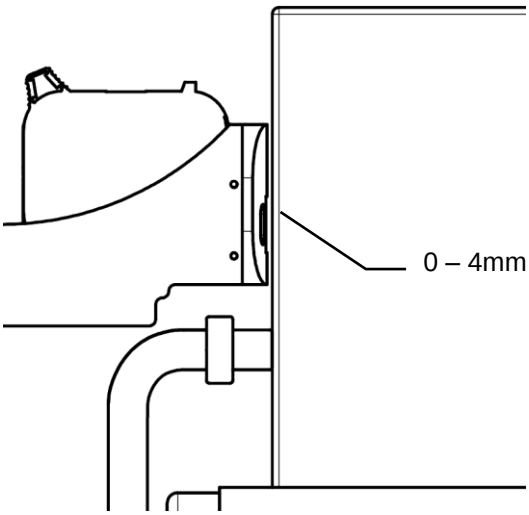


Fig. 6-1: HP print head installation at the production line

4	Connect the print head cable to the connector of the print head and screw tight.
5	Connect the light barrier cable to the connector of the photo sensor and tighten.
6	Using the two screws supplied, mount the light barrier to the print head in such a way that the product to be printed passes the light barrier before passing the print head. The photo cell should have an unlimited view to the product (send- and reception diode). Tighten the screws only to the extent that the plastic enclosure will not be damaged. Alternatively, another sensor may be used. Observe the direction of movement of the conveyor belt!
7	Mount optional rotary encoder on production line.
8	Connect the rotary encoder cable to the rotary encoder connector and fasten.
9	Remove the protective foil from the nozzle plate and insert the ink cartridge in the holder → *Chapter* Inserting the HP ink cartridge*, page 77*

Installation of the LX print head

To achieve a clean and sharp printing result, the distance between the product to be printed and the nozzle plate of the print head is important. The optimal distance is 0 to 8 mm. A higher distance impairs the print result, especially if the conveyor belt runs at high speeds.
The distance from the print head to the product must be as short as possible, with high print speed mainly. The distance between print head and product can be 8 mm if the print speed is less than 20 m/min.

Required Resources

- Setscrew wrench (Allen key®) SW5
- Crosstip screwdriver

Instruction

Please install the LX print head as follows:

Step	Procedure
1	Attach mounting brackets to the production line.
2	Attach the mounting rail of the print head to the clamp of the mounting bracket.
3	Set the distance between the print head and the product surface. A distance of 0 to 8 mm is optimal.

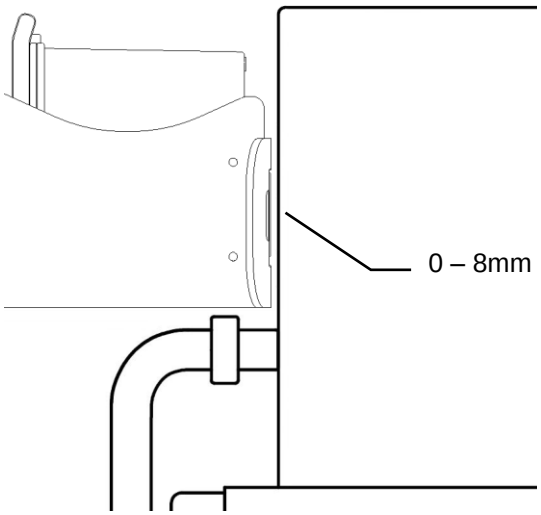


Fig. 6-2: LX print head installation at the production line

4	Connect the print head cable to the connector of the print head and screw tight.
5	Connect the light barrier cable to the connector of the photo sensor and tighten.
6	Using the two screws supplied, mount the light barrier to the print head in such a way that the product to be printed passes the light barrier before passing the print head. The photo cell should have an unlimited view to the product (send- and reception diode). Tighten the screws only to the extent that the plastic enclosure will not be damaged. Alternatively, another sensor may be used. Observe the direction of movement of the conveyor belt!

Step	Procedure

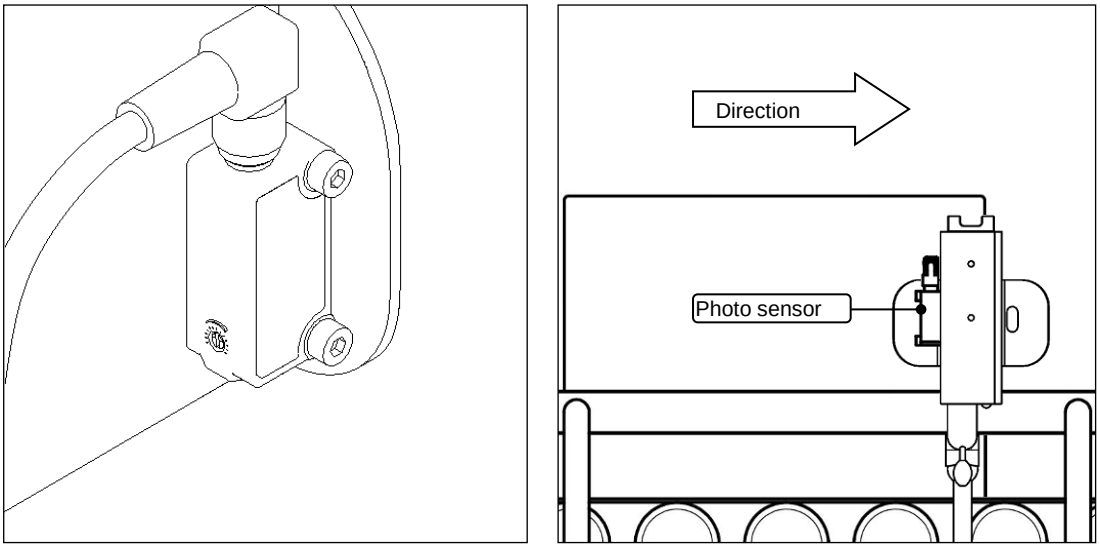


Fig. 6-3: Installation of the product sensor at the LX print head

7	Mount optional rotary encoder on production line.
8	Connect the rotary encoder cable to the rotary encoder connector and fasten.
9	Remove the protective foil from the nozzle plate and insert the ink cartridge in the holder → *Chapter* Inserting the HP ink cartridge*, page 77*

Installation of the MX print head

NOTICE

Possible material damages!

Prepared product-side guidance protects the control system against vibrations and damages while the product passes the control system.

The distance from the product, which should be print, to the nozzle plate of the print head is important to get a clean and sharp print image. The optimal distance is 1 to 4 mm between deflector and product. An upper distance corrupts the print result, especially with high print speed.
The higher print speed, the smaller must be the distance. With a print speed lower than 20 m/min, a distance of 5 mm between nozzle plate and product can be acceptable.

Required Resources

Setscrew wrench (Allen key®) SW5

Instruction

Please install the MX print head as follows:

Step	Procedure
1	Install print head, ink system and maintenance station / power supply! The system must build up stable before opening the ink system and nozzle plate!
2	Set level (only Top version systems!). It is important to install the ink system at the same height as the print head. **There is necessary:** Set a height of 55mm (± 5mm) from the lower edge of the ink system housing to the lowermost write channel of the nozzle plate. If the ink system is higher than the print head, ink runs out at the head. If the print head is installed too high, the surface tension of the ink at the nozzle plate breaks and air enters.
3	Switch system on Wait till operating temperature is reach.
4	Open ink system! Remove the plastic ink system cover. The ink system reservoir features a vent cap that has to be opened prior to commissioning. This cap then remains permanently open and is only closed again if the print head and ink system must be dismantled and, for example, relocated.

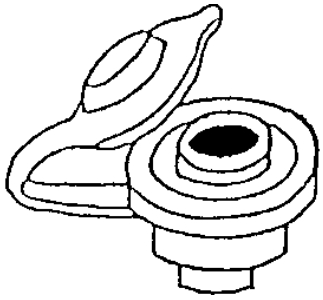


Fig. 6-4: Venting Trident ink tank

5	Remove the protective cap, wipe the ink away and place it in the ink system.

Step	Procedure
	Check whether the red sealing ring (o-ring) is present. Place the red sealing ring into the opening of the ink container and insert the ink cartridge.
6	Open print head! The front panel is protected during transport by means of a spring steel cap with a silicone rubber strip inlay. The vent opening at the ink system reservoir is closed. This prevents ink from leaking and air from entering during transport. Remove the protective cap from the nozzle plate once you have opened the vent cap in the ink system.
7	Test print! A test print can be run after standby is displayed. Rinse the head if some lines are missing → Chapter Rinsing and bleeding the MX print head, page 181

Compact mounting bracket

The MX Compact mounting bracket is used to install the print head in the Compact model. The print head and ink system are consolidated into a single unit.

Fig. 6-5: Compact mounting bracket

The service unit is mounted on the lower leg of the mounting bracket.

Optionally, it can be mounted directly at the transport belt or on a separate floor support. Ensure that the service unit is lower than the print head so that no ink can run back to the head.

Top – mounting bracket

NOTICE

Possible material damages!

Faults on the control system can happen by potential differences between control system and conveyor belt. An electro-conductive connection between control system and conveyor belt must be established.

In preparation

Note the following if the MX Top mounting bracket cannot be used and you have to use your own bracket:

– The level between the print head and the ink system has to be set accurately at all times. Any height adjustments of the print head must always be carried out together with the ink system.
– The lower edge of the nozzle plate 55 mm should be set (+-5mm) higher as the upper edge of the reservoir in the ink system.
– If the ink system is higher than the print head, the ink will leak from the head; if the print head is installed too high, the surface tension of the ink at the nozzle plate will be disturbed, causing air to enter.

Please note: (General)

– As explained in the functional description, the print head should not be subjected to impacts or vibrations. To ensure faultless operation, the print head should therefore be protected against:
– Impact and vibrations near the point of installation. It may be preferable to install the print head and the ink system on a MX floor support (see appendix) on the floor of the hall.
– The product itself! Lateral guides must reliably prevent the material to be printed (e.g. the front edge of a cartons) to come into contact with the print head, which could result in impacts (causing air bubbles in the system) or even damage to the nozzle plate.

Connecting the control system

The Print system needs electricity for its functions. Please find more details in the chapter “Technical Data“.

Overview of the control system connections

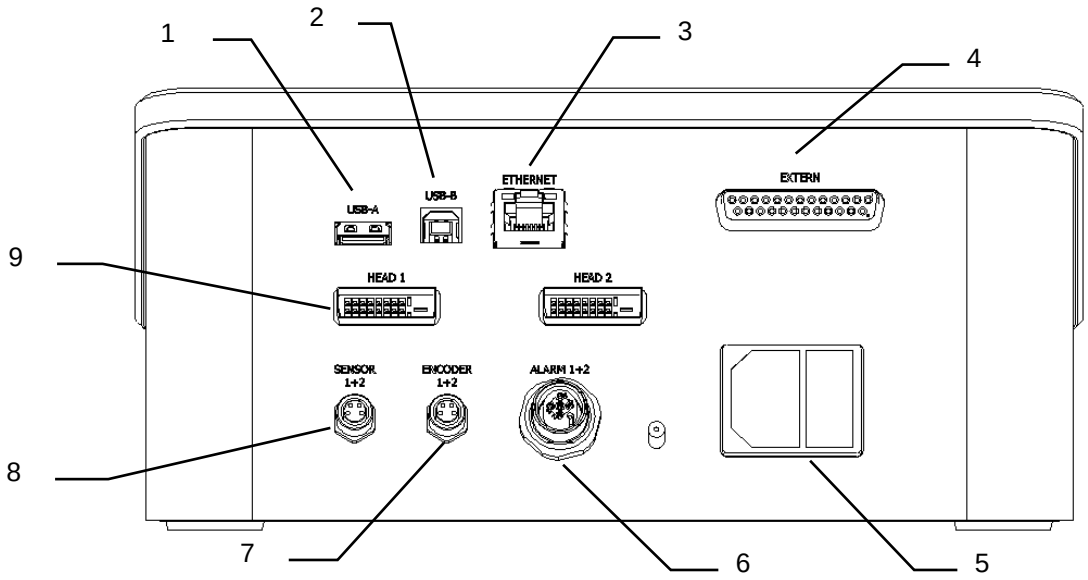


Fig. 6-6: X2JETplus control system back- / connection side

No.	Description
1	USB-A
2	USB-B
3	NETWORK CONNECTION
4	OPTIONAL IN-/OUTPUTS
5	POWER CONNECTION
6	ALARM - M12
7	ENCODER - M8
8	SENSOR - M8
9	PRINT HEAD CONNECTIONS

Connecting to Supply Voltage

Requirements

- Power supply according to "Technical Data" is installed close (max. 1,5 m away)
- to the control system.

Instruction

Please connect the control system with supply voltage as follows:

Step	Procedure
1	Compare the mains data with the technical data of the control system. → Chapter Technical Specifications, page 21 Elektrischen Anschluss nur bei Übereinstimmung vornehmen!
2	Connect the power plug to the power socket on the control system.

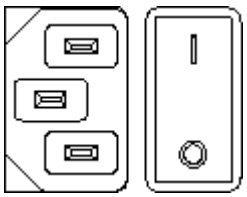


Fig. 6-7: Power socket control system

3	Connect the power plug with an isolated ground receptacle.

Connecting of the Print heads

Requirements

The print head is mounted on a production line.

Instruction

Please connect the print head with the control system as follows:

Step	Procedure
1	Connect the print head cable of the first head (top head in a cascaded installation) to the **HEAD 1** socket and tighten.

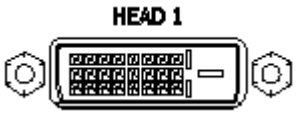


Fig. 6-8: Print head connection socket at the back of the control system

2	Connect the print head cable of the second head to the **HEAD 2** socket and tighten.

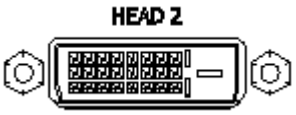


Fig. 6-9: Print head connection socket at the back of the control system

Connecting the optional Shaft Encoder

Requirements

- The optional shaft encoder is mounted at the production line.
- Ideally runs the measuring wheel of the shaft encoder on the conveyor belt, near the print system.
- The encoder is activated in the system menu.

Instruction

Please connect the optional shaft encoder with the control system as follows:

Step	Procedure
1	If necessary install the optional shaft encoder on the production line and connect it to the **Encoder** socket.

Fig. 6-10: Encoder socket (M8 4-pole) at the back side of the control system

Connecting the optional Product Sensor

Requirements

- The optional shaft encoder is mounted at the production line.
- Between the sensor and the nozzle plate is maximum a product, because another print activation is otherwise ignored.

Instruction

Please connect the optional product sensor with the control system as follows:

Step	Procedure
1	If necessary install the optional shaft encoder on the production line and connect it to the **Sensor** socket.

Fig. 6-11: Sensor socket (M8 4-pole) at the back side of the control system

Connecting the optional Alarm Light

Requirements

The optional alarm light is mounted at the production line.

Instruction

Please connect the optional alarm light with the control system as follows:

Step	Procedure
1	If an alarm light (accessory) is installed, connect the alarm light cable to the **Alarm** socket and tighten.

Fig. 6-12: Alarm socket (M12) at the back side of the control system

Connection for optional Inputs / Outputs

Requirements

The cabling of the socket is connected according the requirements.

Instruction

Please connect the optional inputs with the control system as follows:

Step	Procedure
1	Connect and tighten the input cable to the **Extern** socket, if external inputs are installed.

Fig. 6-13: Extern socket (Sub-D 25-pole) at the back side of the control system

Connection to a network

A RJ-45-connection allows a connection of the print system to the customer LAN (Local Aera Network).
The LED on the top of the system lights green if a network is available. The LED flashes yellow with data communication.

Instruction

Please connect the control system with the network as follows:

Step	Procedure
1	If required connect the print system to the network by a RJ45 socket.

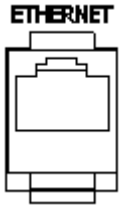


Fig. 6-14: Ethernet socket (RJ 45) at the back of the control system

Each IP address can place in a network once only. Otherwise there is an address conflict and the system can't address. Please contact your system administrator.

Connection of the print heads

Overview of the connectors on the MX print head

NOTICE

Material damages due to rest of ink!

It remains a rest of ink at the connectors all times, which can cause pollutions.

Therefore:

– Wipe the ink connectors always clean.

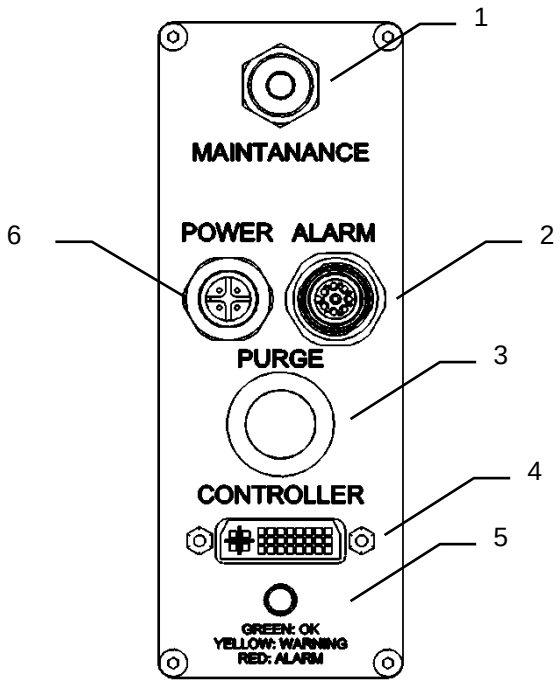


Fig. 6-15: MX connectors

No.	Description
1	CONNECTOR FOR SUCK-UP THE MAINTENANCE STATION
2	CONNECTOR FOR AN OPTIONAL WARNING SIGNAL (ALARM LIGHT)
3	PURGE BUTTON
4	PRINT HEAD CONNECTOR
5	STATUS-LED
6	CONNECTOR POWER SUPLLY MAINTENANCE STATION / MAIN ADAPTER

Status-LED	Description
GREEN: OK	OK
YELLOW:Warning	Empty ink cartridge, head isn't heated up.
RED: Failure	Ink tank is empty completely, head heating.
BLUE flashing:	Data transfer

Name	Description
MAINTANANCE	Snap closure connector for a connection of the maintenance station suck-up. If the connection is interrupted, both snap closures will be closed, so that no ink can run out.
POWER	Connector for the power supply (24V DC / 25W) with 4pin M12 connector. Pin1: + 24V Pin2: Rest tank full Pin3: 0V (GND) Pin4: Vacuum pump
ALARM	Alarm light connector with 8 pin M12 connector
PURGE	With a short push on the button it happen a flush run: The vacuum pump runs 3 seconds, after it the slush pump runs 0,3 seconds and the vacuum pump another 10 seconds. With a long push the pump runs permanent.

The vacuum pump runs for 10 seconds all 2 minutes to suck off the rests from the nozzle plate.
When the Compact system is switched on, the flush run happens one time to clean up the nozzle plate.
This doesn't happen by the Top version.
If the button will be pressed more than 20 seconds, the slush pump runs continuously until the button will be lose. This is only necessary by service for venting.

Inserting the Trident ink bottle

NOTICE

Material damages due to misuse!

A over fitting of the ink bottle can damage the Trident ink reservoir.

Therefore:

– Tighten the ink cartridge only lightly (like you would a light bulb, for example).

Use the ink bottle as soon as possible after having removed the protective foil.

Instruction

Please insert the Trident ink bottle in the print head as follows:

Step	Procedure
1	Unscrew the large protecting cover of the ink system, wipe it clean and store it inside the ink system housing.
2	Then remove the protective foil from the screw thread of the ink cartridge.
3	Screw the cartridge into the reservoir opening. Avoid tilting the thread.

Bleeding the MX print head

NOTICE

Material damage due to ink leavings!

It can come to undesirable contamination of the environment by squirting ink during the purging of the MX print head.

Bleed the system before the initial operation.

If the PURGE button will be pressed more than 20 seconds, the vacuum pump runs continuously to bleed the print head. Therefore the nozzle plate should be closed with the head clamp to rinse the ink in a circulation.
The pump stops pumping after 30 sec. automatically.

Instruction
Please bleed the MX print head as follows:

Step	Procedure
1	Switch the system on.

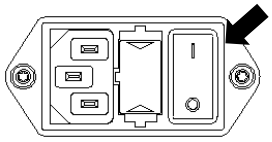


Fig. 6-16: Switch the system on

2	Put the locking clamp on the nozzle plate. Look for the right position (nose)

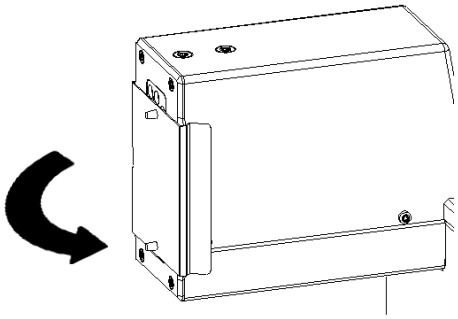


Fig. 6-17: Put the locking clamp on

3	Press the [PURGE]-button and hold them pressed for ca. 30 seconds. ATTENTION, ink may leak out of the nozzle plate of the print head.

Step	Procedure

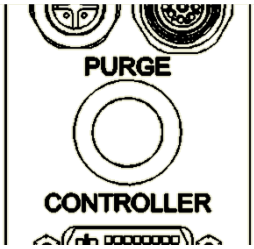


Fig. 6-18: Purge the nozzles

3	Remove the locking clamp from the nozzle plate and store it in a convenient place.

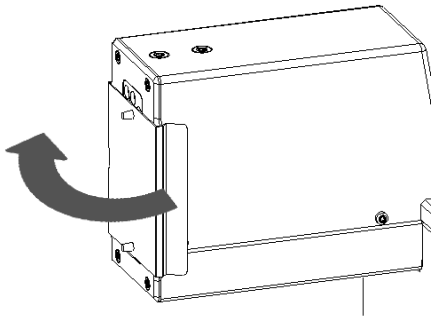


Fig. 6-19: Remove the locking clamp

Rinsing the MX print head

NOTICE

Material damage due to ink leavings!

Rinsing of the MX-Top print head results increased ink consumption and can lead to undesirable contamination of the environment.

Therefore:

- Secure the environment against leaking ink.
- Afterwards wipe the nozzle plate once with a lint-free cloth

Rinse the system before the initial operation.

With a short push on the button it happen a flush run, the vacuum pump of the maintenance station runs to suck off the ink rests. The vacuum pump runs after ca. 1 sec. shortly to rinse ink, air and dust from the nozzles, afterwards the vacuum pump runs ca. 10 sec. to suck off the ink rests completely.

Instruction
Please rinse the MX print head as follows:

Step	Procedure
1	Press the [PURGE] button on the system flange plate.

After rinsing, a test print should be done. If the print result is not satisfactory, repeat steps bleeding and rinsing.

Inserting the HP ink cartridge

If a new ink cartridge is inserted, the cartridge counters must be reset.
→ Chapter Reset ink counter, page 159

Use the ink cartridge as soon as possible after having removed the protective foil or the CartClip.

Instruction
Please insert the HP ink cartridge in the print head as follows:

Step	Procedure
1	Remove the protective foil from the nozzle plate and insert the ink cartridge in the cartridge holder.
2	Before replacement of the cartridge, wipe the nozzle plate once with a lint-free cloth.
3	Insert the ink cartridge diagonal in the cartridge holder (see Fig. 6-20).

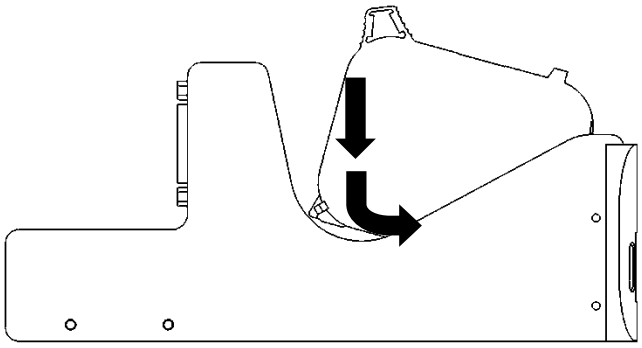


Fig. 6-20: Inserting the ink cartridge

4	Click the ink cartridge by lightly pressure at the end.

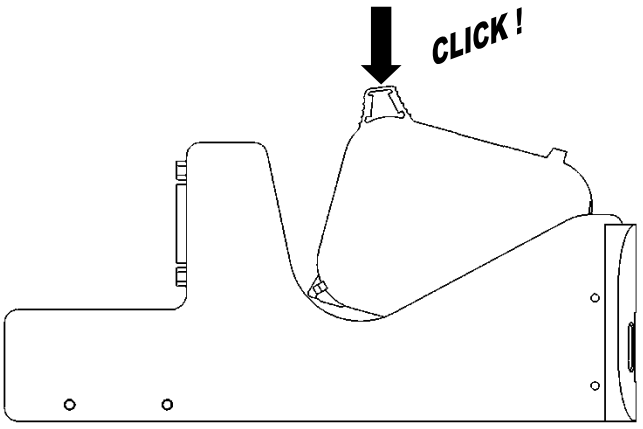


Fig. 6-21: Fixing of the ink cartridge

The correct position of the ink cartridge is displayed in the main menu. The LED lights green after resetting the cartridge counter and after inserting a new ink cartridge.

Fig. 6-22: Display change with correct inserted cartridge

Removing the HP ink cartridge

NOTICE

Material damages by misuse!

An electronic fault can't waive with a going print process and simultaneous removing of the cartridge.

Therefore:

– Only change the cartridge when the print process is stopped.

Instruction

Please remove the HP ink cartridge from the print head as follows:

Step	Procedure
1	Press diagonal upwards at the end of cartridge.
2	Tip the cartridge from behind upwards (see Fig. 6-23)

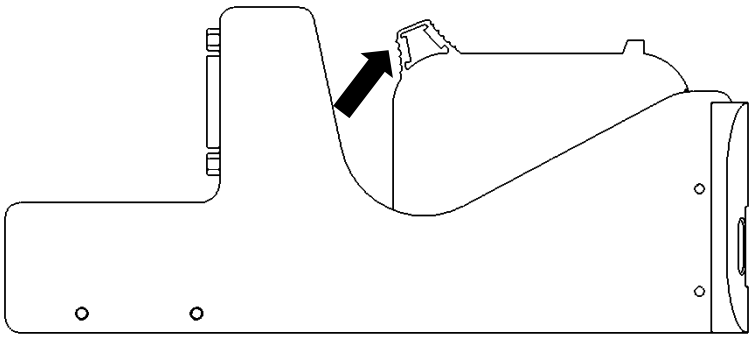


Fig. 6-23: Remove the HP ink cartridge

Inserting the LX ink cartridge

The actual ink level of each ink cartridge is percental shown in the **main menu**.
The ink level of Lexmark ink cartridges will be saved in the ink cartridge and must not reset when a new ink cartridge is inserted. Thereby the control system identifies the actual ink level of the partially empty ink cartridge.
The ink level of the ink cartridge will be saved in 7% steps. The exactly value of the actual used cartridge will be saved in the control system related to the print head module. This can result an inaccuracy by an inserting in different print head modules.

Use the ink cartridge as soon as possible after having removed the protective foil.

Instruction
Please insert the LX ink cartridge in the print head as follows:

Step	Procedure
1	Remove the protective foil from the nozzle plate and insert the ink cartridge in the cartridge holder.
2	Before replacement of the cartridge, wipe the nozzle plate once with a lint-free cloth.
3	Bring the stop lever for the ink cartridge in the unlocked position.
4	Insert the ink cartridge in the cartridge holder (see Fig. 6-24).

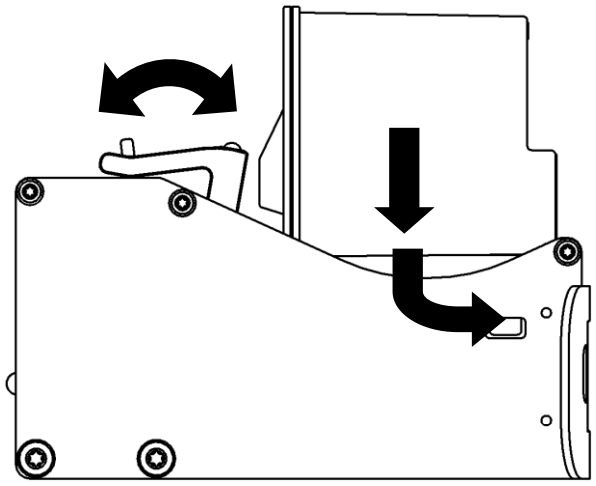


Fig. 6-24: Insert the LX ink cartridge

5	Bring the stop lever for ink cartridges in the locked position.

The correct position of the ink cartridge is displayed in the main menu. The LED lights green after a correct insertion.
If a used ink cartridge is inserted, the ink level will be shown automatically.

Fig. 6-25: Display change with correct inserted cartridge

Removing the LX ink cartridge

NOTICE

Material damages by misuse!

An electronic fault can't waive with a going print process and simultaneous removing of the cartridge.

Therefore:

– Only change the cartridge when the print process is stopped.

Instruction

Please remove the LX ink cartridge from the print head as follows:

Step	Procedure
1	Unlock the stop lever for the ink cartridge.
2	Pull the ink cartridge in the direction of the clamp lever and remove it upwards. (see Fig. 6-26)

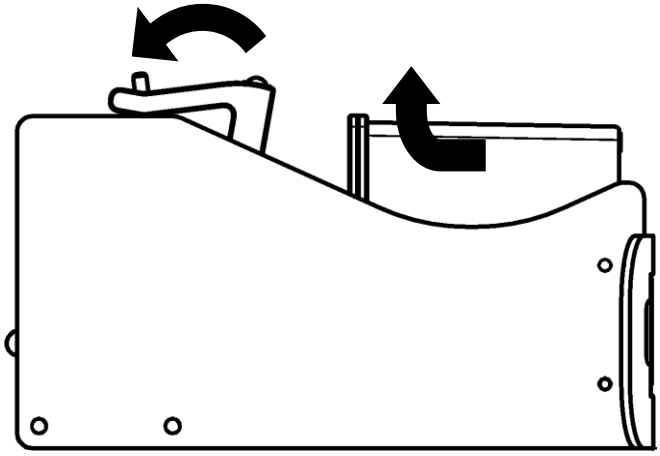


Fig. 6-26: Remove the LX ink cartridge

Configuration of the print technology

The Markoprint X2JET plus Touch can control the print technologies HP, LX and MX. The Markoprint X2JET plus Touch has two channels, which provide a combination of the different print technologies.
After the system has been installed, the configuration of the print technologies is shown and can set up with the first switch on (→ ***Chapter* Switch** on, ***page*** 85**).**
The configuration of the selectable print technologies is possible like shown in the following list.

Configuration of channels 1 – 2	Description
HP – HP	The system controls HP print head modules exclusively. Up to two print head modules are selectable.
HP – MX	The system controls one HP print head module and one MX print head module.
MX – MX	The system controls MX print head modules exclusively. Up to two print head modules are selectable.
MX – LX	The system controls one MX print head module and one LX print head module.
LX – LX	The system controls LX print head modules exclusively. Up to two print head modules are selectable.
LX - HP	The system controls one LX print head module and one HP print head module.

The Markoprint X2JET plus Touch control system is configured to HP – HP standard by the delivery and can customize to the desired configuration if needed.

Requirements

- The print system is correct installed.
- The print system is connected to the power supply.

Instruction

Please adjust the configuration of the print technology as follows:

Step	Procedure
1	Switch the system on. → ***Chapter*** Switch on, ***page*** 85
2	The display shows the company logo and changes to the configuration menu.

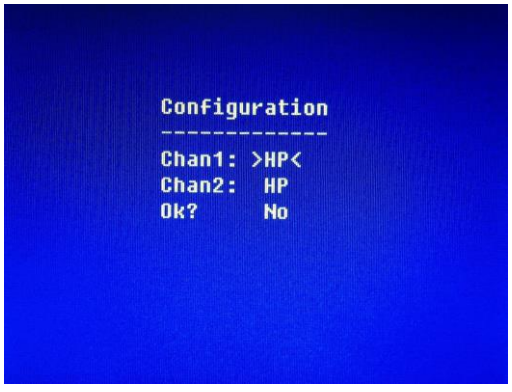


Fig. 6-27: Configuration menu print technology

3	Set the desired print technology for channel 1 (Chan1) by the navigation keys  .
4	Change to channel 2 (Chan2) by the navigation key  and set it like described in step three.
5	After the desired configuration, change to Ok by the navigation key  and set the value to Yes by the navigation key  .
6	Press the OK-button  to confirm and finish the procedure.
7	The system restarts and reboot in the adjusted configuration.

If a system is false configured or should be reconfigured, the start display can be reactivated for the configuration of the print technology.

Instruction

Please call up the print technology configuration as follows:

Step	Procedure
1	Press the function key [F4] in the main menu to call up the service menu.
2	After call up the service menu, press the [CTRL] - and [=] –keys at the same time. The display shows short a waiting picture and returns to the service menu automatically.
3	Switch the system off. → ***Chapter* Switch** off***, page*** 86
4	**Switch the system on. → *Chapter* Switch** on***, page*** 85
5	Configurate the system like described above.

The user has in the sub menu Print head configuration (→ Chapter Print head configuration, page 156) the option to adapt the settings in the control system with the configuration of the print heads. I.e. it will set which type of print head is connected to the system, e.g. two separate print heads (Single) or a dual print head (Twin).

7. Operation

Switch on

Requirements

- The print system is connected with power.

Instruction

Please switch the print system on as follows:

Step	Procedure
1	Set the switch from 0 to I on the back of the control system.

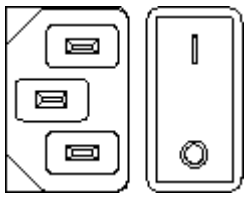


Fig. 7-1: ON-/OFF-Switch on the top of the control system

2	The controller must conduct a self-test and briefly indicates the unit version number after the company logo has passed through the display. After approx. 20 seconds the status menu-1 appears on the display.

When starting the system unit the progress of the starting process can be monitored on the LED's. If errors occur during booting, an error code is transmitted via the LED's and can be analysed in more detail.
→ Chapter Boot-LED messages, page 203

The configuration of the print technology must be set with the initial operation. Here the system doesn't boot up completely for now, first the configuration of the print technology must performed.
→ Chapter Print technology configuration, page 83

Switch off

Requirements

- The print system is connected with power and switched on

Instruction

Please switch the print system off as follows:

Step	Procedure
1	Set the switch from I to 0 on the back of the control system.

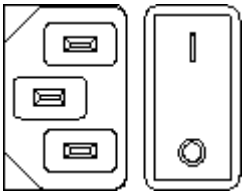


Fig. 7-2: ON-/OFF-switch on the back of the control system

Menu navigation

On the right side of the display are the buttons for menu navigation, which allow the user to navigate within the menus and enable to make settings.

About the up / down arrow key movements are performed within the menu and changed after selecting with the right / left arrow keys to set values. In some menus it's also possible to insert values by the keypad directly. Press the OK-button after menu selection, enter the desired value by the keypad and confirm with the OK-button .

The Menu button is placed below the arrow buttons. Pressing the menu button takes you back to the main menu with the status displays.

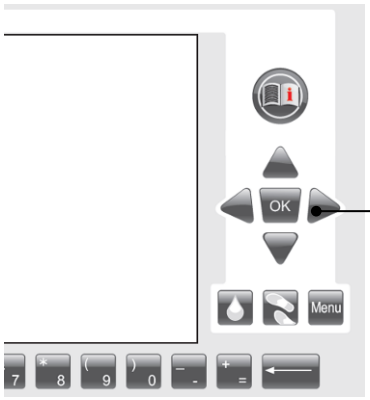


Fig. 7-3: Menu navigation keys

On the left side of the display are five function keys, which enable the operator to enter the sub-menus. In the sub-menus the function keys are used for print head selection for that settings should be made. Furthermore, in the main menu a print start or print stop can be set by pressing the first function key on the top. By pressing the last function button in submenu you make a move one level back.

The respective assignment of function keys is displayed directly next to the display and the menu changes depending on the level.

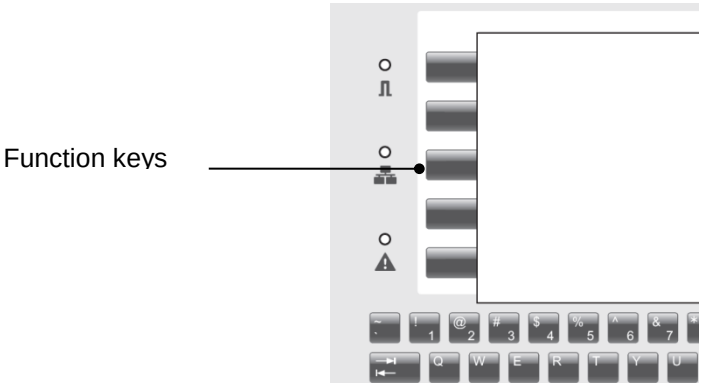


Fig. 7-4: Function keys

Menu navigation Markoprint X2JET plus Touch

The operation of the Markoprint X2JET plus Touch happened by a 5,7” resistive touch with a high-resolution display.
The touch responds to pressure, so that it can operate with gloves or a stylus.
The Markoprint X2JET plus Touch can operate via the touch-optimized full keyboard and also via the function keys. The operation structure corresponds 1:1 the X2JET plus.
Press on the top (scroll up) or the bottom (scroll down) picture to move within the menu. If the top or bottom picture is pressed longer, you scroll through the whole menu automatically.

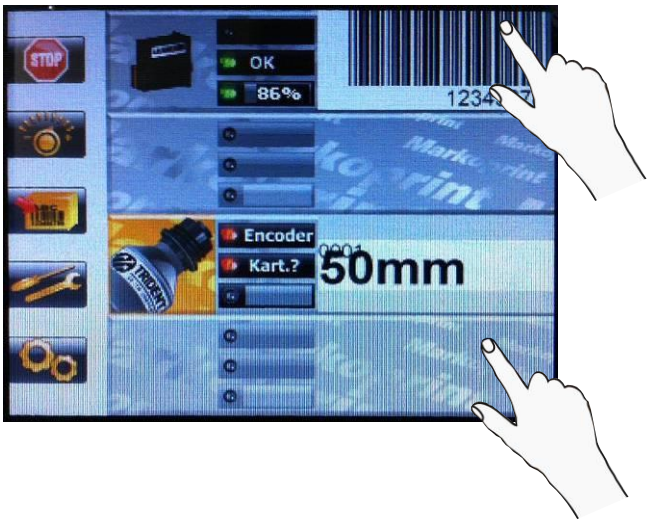


Fig. 7-5: X2JET Touch Menu navigation

The operator can see the status of the separate print heads in the main menu. By pressing the print head symbol once, the print heads can select separately. The actual load print images will be shown in a preview. If the print image is longer than in the preview displayed, the operator can view the loaded print image by pressing on the left or right half of the print image.

Fig. 7-6: X2JET Touch print image preview

If the operator pressed the print head symbol twice, a dialog with the current print image name, the number of the previously print image and the number of prints of the selected print image, which can be print with a full cartridge, appears. The dialog disappears after ca. 5 seconds.
A blue circle signalizes the operator by pressing the touch surface that the pressure point is detected correct.
After unhand the touch surface the blue circle shrinks to a point, which shows the center point of the pressure range.

Indicator lights

Indicator lights on the control system

LED's, which light up in different colours according to the operating mode, are located on the left side of the display. The LED's for status sensor, network and Warning are characterized with symbols.
The meaning of the different coloured messages is explained in the table below.

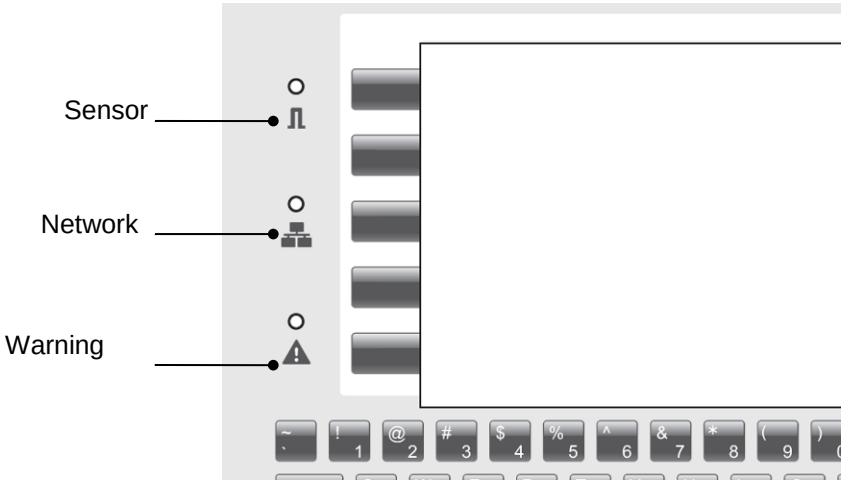


Fig. 7-7: Indicator lights

Symbol	Function	Description	Reason
	Sensor-LED	GREEN: Active YELLOW:Start signal present RED: Failure	Lights from start to print end No print text No encoder signal
	Network-LED	GREEN: O.K. YELLOW: Active RED: Failure	Connected Data transfer
	System-Status	GREEN: O.K. YELLOW:Warning RED: Failure	All heads OK One or more Print heads warning One or more Print heads failure

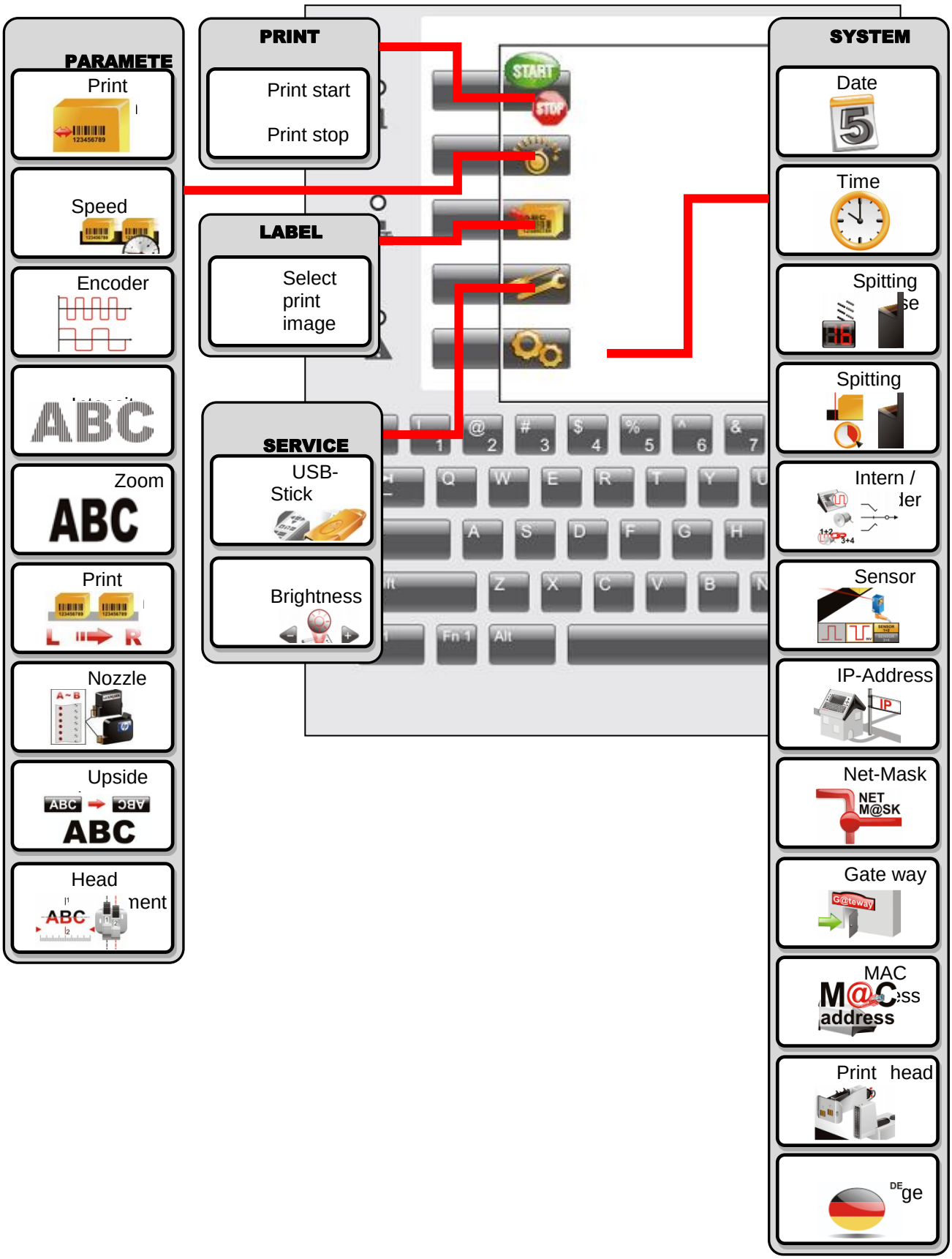
Status lights in the main menu

In the main menu are three status lights for each print head modules mapped, which inform about the status of print start, the print head module and ink level of cartridge.

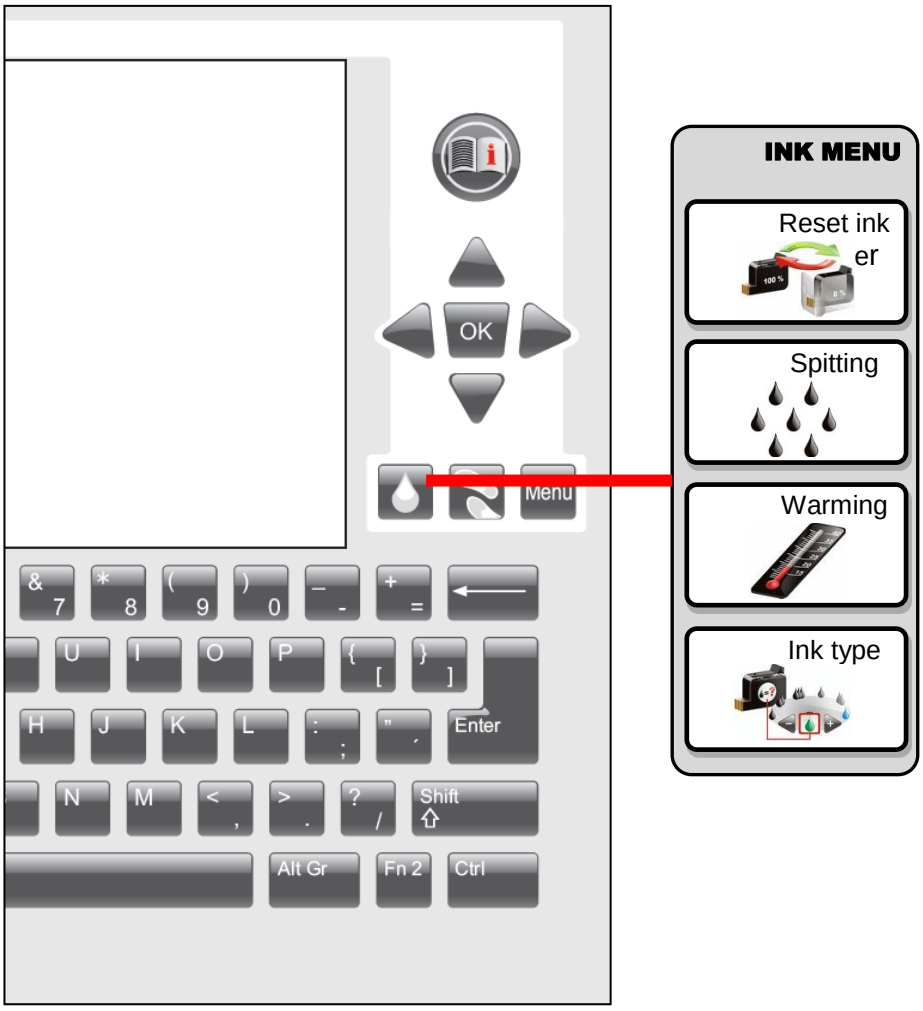
Fig. 7-8: Indicator lights in the main menu

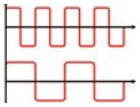
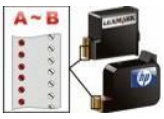
Status panel	Display / Description	Reason
Upper status panel **Sensor / Encoder**	No display Busy Signal Failure Encoder	Displayed when OK, print is not active. Active print With print stop and piled sensor. No shaft encoder connected, but activated in the system.
Middle status panel **Print head module**	OK Pause Warning Failure cartridge	Ready for print Print stop / pause Not text assigned No cartridge, cartridge empty, cartridge defect
lower status panel **Cartridge**	OK Warning Alarm	Ink level 100% to 6% Ink level below 5% Cartridge empty

Menu structure

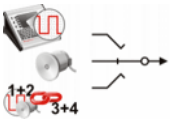
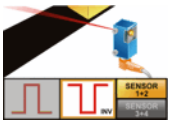


Depending on the print head type, certain menus look different or are unavailable.


OK
Menu
INK MENU
Reset ink
er
Spitting
Warming
Ink type

Display	Menu	Description
	**Print**	In the main menu a print start or print stop can be set by pressing the first function key. Print images can select before print start and added with variable data.
	**Parameter**	Print start delay, print speed, divider encoder, intensity, zoom, print direction, selection of nozzle row, upside down and Head adjustment can be set in this menu.
	Print delay	The print start delay can be set in this menu, i.e. by how much is printing delayed in millimetres after the product is detected by the light barrier. → *Chapter* ***Print*** start delay*, page* **103**
	Speed	If the product speed is extremely uniform, the use of the rotary encoder may be dispensed with. For this purpose, the speed can be set in the **Speed** submenu by setting Encoder Intern in the system menu. **NOTE:** This menu is only available if **Encoder Intern** is set in the menu. → *Chapter* To set constant print speed*, page* **105**
	Encoder	When the rotary encoder is connected the pulse per inch can be set to synchronise the printing speed. **NOTE:** This menu is only available if **Encoder Intern** is set in the menu. → *Chapter* To set the encoder resolution*, page* **107**
	Intensity	The contrast of the print image can be set in the print intensity menu. A higher intensity gives greater blackening and longer ink drying time.
	Zoom	In the print width menu point, the number of pixels is increased or reduced. The print image is therefore made wider or narrower. → *Chapter* To set the Zoom*, page* **109**
	Direction	The parameter **print direction** indicates the direction of movement of the product on the conveyor belt viewed from the controller in the print direction. → *Chapter* Print direction*, page 110*
	Nozzle	Each ink cartridge has two rows of nozzles (A and B), for which different settings can be made in the **Nozzle** Menu. **NOTE:** Only available for HP and Lexmark print heads → *Chapter* Nozzle row*, page* **110**
	Upside down	The setting Upside Down causes the print image to be printed upside down. → *Chapter* Upside down*, page* **112**

Display	Menu	Description
	Head adjustment	The setting head adjustment compensated mechanical imprecisions by multi head applications. → *Chapter* ***Head*** adjustment*, page* **113**
	**Label**	Print images can be create, change, delete and select for print. → *Chapter* Print image*, page* **114** **Display/Setting for selected print head module**
	**Service**	The settings save data, load data into the memory of the X2JET plus and adjust the display brightness can be made in the service menu.
	USB-Stick	Load data from the USB stick to the memory of the X2JETplus or save data from the X2JETplus to the USB stick in the USB-stick menu. **NOTE:** This menu is only busy with an connected USB stick.
	Brightness	The display brightness can be set in this menu. → *Chapter* **Displayhelligkeit***, page* **146**
	**System**	System settings can be made in this menu.
	Date	The date is displayed in this menu and can be set here. → *Chapter* Date*, page* **147**
	Time	The time is displayed in this menu and can be set here. → *Chapter* Time*, page* **147**
	Spitting Impulse	In the menu **Spitting impulses** the setting whether and how many spit impulses should been done when the device is switched on, or will be performed before applying the print. → *Chapter* Spitting Impulse*, page* **148**
	Spitting time	**In this sub-menu can be set in which time between two prints, a spitting is performed** → *Chapter* Spitting time*, page* **149**

Display	Menu	Description
	Internal Pulse / Encoder	The print speed must correspond to the conveyor belt speed. To ensure this it can be set in the **Internal Pulse print head** submenu how this is predetermined. Intern means that the predetermined speed of the conveyor belt is kept constant, and Extern means that the exact transport speed is transmitted to the controller by the optionally available encoder. → *Chapter* ***Internal Pulse*** print head*, page* **150**
	Sensor	In this sub menu can be set which sensor input is used. → *Chapter* Select sensor*, page* **152**
	IP-Address	The IP address is indicated in this menu. → *Chapter* IP address*, page* **153**
	Net-Mask	Indication of net mask. → *Chapter* Net-Mask*, page* **154**
	Gate-Way	Indication of Gateway address. → *Chapter* Gate-Way*, page* **155**
	MAC Adresse	Indication of MAC address. → *Chapter* MAC-address*, page* **155**
	Print head configuration	In sub-menu **head configuration**, the operator can control the settings in the device which has to adapt the structural configuration of the print heads. → *Chapter* Print head configuration*, page* **156**
	Language	In this menu the language can be set as desired.
	**Ink menu**	Reset ink counter, purge, warming and the ink type can be set in this menu Depending on the print head type there are different submenus.
	Reset ink counter	This function causes the ink level to be reset after inserting a new cartridge. (Print head specific). **NOTE:** Only available for HP print heads. → *Chapter* Reset ink counter*, page* **159**

Display	Menu	Description
	Purge	During the purging process ink is ejected from all the nozzle ducts. **WARNING: Protect the environment from pollution!** → *Chapter* **To** rinse the nozzles manually*, page* **160**
	Warming	Indication of the temperatures and calibration of the warming setting. **NOTE:** The calibration isn't possible for LX print heads, the correction will be done by the system automatically. This menu point displays in this case the temperature only. This menu point isn't available for MX print heads. → *Chapter* Warming*, page* **161**
	Ink type	In this menu can be set up the used ink type. This effects an automatically set up of all relevant parameters. Depending on the application it's necessary to fit the parameters. The parameter is variable adjustable for print head 1+2 and 3+4 by pairs. This setting isn't possible for LX print heads, the ink type will be automatically detected by the system. → *Chapter* Set ink type*, page* **163**

Main menu

In the main menu, the operator can check the status of print heads. The main menu is shown in figure 7-9. The print heads can selected separately by the navigation keys  . The current print head selection is shown with a changing colored background (see figure below).
The current loaded print image is shown as preview in the right part of the main menu. If the print image is longer as the shown preview, the operator can see the whole print image by scrolling with the navigation keys  . The height of the print image is shown in relation of the possible print height of the print head. I.e. if a print image with 100 mm height is load in the memory of a MX 50 print head (max. print height 50 mm), only the upper half of the print image will be print and shown in the preview accordingly.
A part of the print image preview is shown grey with the use of MX-50, MX-150, MX-250 and MX-350 print heads (see figure 7-9).

Fig. 7-9: Main menu with print image preview MX-50

By pressing the OK button  the text info is shown instead of the print image preview, which contains following information: name of the print head, number of prints of the current loaded print image and number of possible prints of the current loaded print image by a completely filled cartridge. The display will blanked after five seconds automatically or the operator has the opportunity to pre-change in the standard view by pressing the OK button again.
In the figure (7-10) below the upper print head module is selected. If the operator made changes in the submenus, the changes will only take place to the selected print heads.

Fig. 7-10: Main menu with status display

The Markoprint X2JET plus Touch technology enables a combination of different print technologies, which must configured from the user with the initial operation. (→ *Chapter* **Configuration** of the print technology **of the print technology**, *page* **83**). Furthermore the user has, like described in → *Chapter* **Print head configuration**, *page* **156** the option to configure the connected print head modules. The figure (7-10) above shows the configuration of a Markoprint X2JET plus as LX system, that is set as two Single print heads in the print head configuration.
The figure 7-11 shows also the configuration of a Markoprint X2JET plus Touch as LX system, that is set as Twin print head in the print head configuration.

Abb. 7-11: Main menu with status display

The selection of the configuration should match the architectural design of the print heads, otherwise it may lead to an incorrect representation of the printed images. If a change relating to the desired product labelling occurs and an adjustment of the print heads or print technology is necessary, so please contact your local distributor.

Password protection:

If menues should be protected via password this is possible to activate via iDesign software. See iDesign manual.

The user name of the user which is working with password protection will be shown at the bottom left corner.

To deactivate a user press the info button or after 2 minutes of inactivity the user will be deactivated.

Print start

In the main menu a print start can be set by pressing the top function key.
For a print start activation can be differ between following alternatives:

- You will start a print image without counter or variable data.
- You will continue the print of the last print image with a counter or variable data without input of new data.
- You will start to print a new selected print image with a counter and variable data with input of new data.

Instruction

Please activate a print start for a print image without variable fields etc. as follows:

Step	Procedure
1	Press once shortly the function key [START] left of the display.
	 Fig. 7-12: Function key left of the display
2	Select the desired print image by pressing the navigation keys  , or by entering the print image name by keypad.
3	Confirm the selected print image by pressing the OK-button  .

Instruction

Please activate a print start for the last print image without the input of new data as follows:

Step	Procedure
1	Press once shortly the function key [START] left of the display.
	 Fig. 7-13: Function key left of the display
2	The assignment of keys changes between the individual steps. Please follow the display! Press the function key [START] shortly again left of the display.

Instruction

Please activate a print start for print image with the input of new data as follows:

Step	Procedure
1	Press once shortly the function key [START] left of the display.
	 Fig. 7-14: : Function key left of the display
2	Select the desired print image by pressing the navigation keys  , or by entering the print image name by keypad.
3	Confirm the selected print image by pressing the OK-button  .
4	Enter the desired start value by the keypad and confirm it with the OK-button  . If there are several print fields in the print image, the start values must be entered in the same procedure.

Print stop

In the main menu a print stop can be set by pressing the top function key.

Instruction

Please activate a print stop / print pause as follows:

Step	Procedure
1	Press once shortly the function key left of the display.
	 Fig. 7-15: Function key left of the display

Print start delay

The print start delay can be set in this menu, i.e. by how much is printing delayed in millimeters after the product is detected by the light barrier.
The delay can be selected between 0 and 999 millimetres**.**

About iDesign the operator can adjust the left or right edge of the print image as a reference point for print position. . The parameter can be set **under button** "System Settings" → **tab** "Advanced Settings" **submenu** → "Extra configuration" **menu** → "Delay reverse print". By default, the right edge is taken as reference.
By this setting, potential problems are solved in reverse print. The left edge of a short print image would be, under the mentioned conditions in Example 2, at another location on the product, than the left edge of a longer print image, if no adjustment of the printing position would be made. Example 3 shows, that no adjustment of the print position is necessary, to print different long print images at the same position.

Example 1:
Product direction from right to the left and the left edge of print image as reference point.

← Delay →**Text12345**

← Delay →**Text12**

Example 2:
Product direction from left to the right and the right edge of print image as reference point.

Text12345← Delay →

Text12← Delay →

Example 3:
Product direction from left sight to right sight and the left edge of print image as reference point (with calculation of the print start).

← Delay →
Text12345
← Delay →
Text12

Please note that the print start delay must be set up bigger than the text length. If the print start delay is set up to small the print layout would be print complete. For example: by a text length of 25 mm the setup of the delay between 0 and 25 mm has no effect.

Instruction

Please set up the print start delay in the control system as follows:

Step	Procedure
1	Press setting key  in main menu.
2	The sub menu **Print position** appears.
3	**Set the desired value by pressing the n**avigation keys  , or press the OK-button  , enter the determined value by the keypad and confirm with the OK-button  .

To set constant print speed

The print speed of the print heads must match the conveyor belt speed; otherwise print images may be distorted.
There are 2 ways to match the print speed to the conveyor belt speed:

- Internal constant print speed
- External variable print speed via rotary encoder

The setting of internal / external speed can be set as described under → *Chapter* Internal Pulse print head*, page* **150**.
If no rotary encoder is connected to the controller, the conveyor belt speed must be measured or estimated and the determined value entered as a parameter. A test image can then be used for fine-tuning the print speed.

The following parameters must be entered:

- Print speed
  Print speed = Conveyor belt speed. The conveyor belt speed must remain constant!
- Print intensity
  Print image contrast. If necessary, this parameter may have to be changed to optimise the print image to the product surface. Higher intensity means increased density and slower drying of the ink. Default value for HP and LX is 300dpi, 192dpi for MX.
- **Zoom**
  This parameter enables an increase or decrease of the number of pixels. This renders the print image wider or narrower.
  The printed image is widened or narrowed even if the DPI setting is changed. This can be prevented when the zoom is in the advanced settings set to "fixed zoom = yes". Then it is printing always 1:1,if setting on the image is 100%, regardless of the DPI setting. This setting should not be used with bar codes, because it can cause distortion. The default is "fixed zoom = No".
  About the iDesign software the operator can adjust to the fixed zoom. The setting is the iDesign software under the button "System Settings" → tab **"Advanced Settings"** submenu →**"periphery"** menu item → **"fixed zoom"**.

The maximum speed depends on the intensity:
At 600 dpi the print speed may be up to 30 m/min.
At 300 dpi the print speed may be up to 60 m/min.
At 200 dpi the print speed may be up to 90 m/min.
At 150 dpi the print speed may be up to 120 m/min.

A print speed 50% higher can be obtained with a rotary transducer.
This setting lies outside the specification and must be carefully tested!
A double speed can be reached with the High Speed function by the Markoprint X2JET plus Touch ***Pro*** version. At a resolution up to 300x300dpi the print speed may up to 180 m/min.

Parameter	Min.	Max.	Unit
Print speed	1	400	m/min
Print intensity	50	900	dpi
Zoom	10	900	%

Instruction

Please set the print speed on the control system as follows:

Step	Procedure
1	Press setting key  in main menu.
2	The sub menu **Print position** appears.
3	Call up the submenu **Speed** by pressing navigation key  .
4	The sub menu **Speed** appears.
5	**Set the desired conveyor speed value by pressing the n**avigation keys  or press the OK-button  , enter the determined value by the keypad and confirm with the OK-button  .
6	Call up the submenu **Zoom** by pressing navigation key  .
7	The sub menu **Zoom** appears.
8	**Set the desired value by pressing the n**avigation keys  .

To set the encoder resolution

If a rotary encoder is connected to the controller, the print speed is automatically matched to the conveyor belt speed through the impulses of the rotary encoder.
The following parameters must be entered:

- **Rotary encoder resolution**
  the resolution is the number of pulses per inch (ppi).
- **Intensity**
  the intensity in dpi (dots per inch).
- **Printing width**
  The number of pixel can be increased or decreased using this parameter. The print image becomes narrower or wider.

Calculation example of rotary encoder resolution:
The standard rotary encoder has a friction wheel circumference of 200 mm and generates 5 000 impulses per revolution. If the friction wheel of the rotary encoder runs directly on the belt, the calculation is as follows:

1. Conversion to inches: 200 mm / 25.4 mm = 7.874 inches
2. Resolution of the rotary encoder: 5000 impulses / 7.874 inches = 635 impulses/inch = **635 dpi**
3. **To get even finer settings, the pulse will be doubled internal.**
4. If you set a divider of 4, you will get a resolution of 318 dpi **(635x2/4)**. This value must be entered for the intensity.
   If a standard rotary encoder is mounted directly onto a shaft, the distance to be measured is the distance covered by a product on the conveyor belt during a single rotary encoder revolution (e.g. 300 mm).
5. Conversion to inches: 300 mm / 25.4 mm = 11.81 inches
6. Resolution of the rotary encoder: 5000 impulses / 11.81 inches = 423 impulses/inch x2 = **846 dpi**

The result of divider 2 is **426 dpi.**

The calculated value must be then fine-tuned, using the test image. (Speedtest.00I)

Parameter	Min.	Max.	Uniit
Rotary encoder	50	5000	ppi
Print intensity	50	900	dpi
Zoom	10	900	%

Instruction

Please set up the variable print speed as follows:

Step	Procedure
1	Press system key  in main menu.
2	The sub menu **Date** appears.
3	Call up the submenu **Int. Pulse/Encoder** by pressing navigation key  .
4	The sub menu **Int. Pulse/Encoder** appears.
5	**Set the value on** Encoder by pressing Navigation keys  .
6	**Change by pressing the menu button**  **or the Back button**  **in the main menu**.
7	The main menu appears.
8	Press settings key  in main menu.
9	The sub menu **Print position** appears.
10	Call up the submenu **Divider Encoder** by pressing the navigation key  .
11	The sub menu **Divider Encoder** appears.
12	**Set the** desired value by pressing the navigation key  .
13	This setting is made automatically by using the rotary encoder of Weber Marking Systems GmbH. If another rotary encoder is used or the encoder runs directly on the spindle, the dpi value must be calculated and entered**.**
14	Call up the sub menu **Intensity** by pressing the navigation key  .
15	The sub menu **I**ntensity appears.
16	**Set the desired value by pressing the n**avigation keys  , or press the OK-button  , enter the determined value by the keypad and confirm with the OK-button  .

To set the Zoom

The zoom of the print image can be varied with the zoom value. At a zoom of 100%, the print image is printed 1:1 as displayed in the iDesign.

With this parameter a change in the size of the print image is achieved. If the parameter is reduced the print image becomes narrower by delaying individual pixel gaps. This compresses the pint image and enables the ink consumption to be reduced.

By printing of barcodes you must look out for print optimal with 300 dpi and 100%. Other dpi values or an enlarging or narrowing can cause deformations.

By default, the image will be printed in different widths dependent on the adjusted intensity (dpi). The print width can be adjusted by the zoom.
The print image is in the width 1:1 with a resolution of 600 dpi.
With a resolution of 300 dpi, the print image is more than twice the width 1:2, caused of the halved intensity.
Change the zoom to 10% - 900% in the menu. The value can be changed in 1% steps.

Pay attention, that a widening or narrowing of barcode prints have the right measure**. Follow the chart!**

Barcode width	Allowed Zoom factors with fixed zoom.										
1					100	200	300	400	500	600	…
2				50	100	150	200	250	300	350	…
3			33	66	100	133	166	200	233	266	…
4		25	50	75	100	125	150	175	200	225	…
5		40	60	80	100	120	140	160	180	200	…
6	33	50	66	83	100	116	133	150	166	183	…

Instruction

Please call up the print image as follows:

Step	Procedure
1	Press system key  in main menu.
2	Call up the submenu **Zoom** by pressing navigation key.
3	The sub menu **Zoom** appears.
4	**Set the desired value by pressing the n**avigation keys  , or press the OK-button  , enter the determined value by the keypad and confirm with the OK-button  .

Print direction

The parameter print direction indicates the direction of movement of the product on the conveyor belt viewed from the controller in the print direction. The setting options are from left to right or from right to left.

Instruction

Please call up the print image as follows:

Step	Procedure
1	Press setting key  in main menu.
2	Call up the submenu **Print direction** by pressing the navigation keys  .
3	The sub menu **Print direction** appears.
4	**Set the** desired value by pressing the navigation keys  .

Nozzle row

The setting of the nozzle rows is only possible for using HP or Lexmark print heads.

Each HP- or LX- ink cartridge has two nozzle rows (A and B). One nozzle row has 150 nozzles.
The nozzles in row A print the uneven numbers 1, 3, 5, 7.
The nozzles in nozzle row B print the even numbers 2, 4, 6, 8.
When printing with one nozzle row, A or B, alternately with each second vertical nozzle is printed at 300dpi. In this mode, the nozzles are uniformly stressed and the speed setting is not as critical as with A + B.
If, for instance, using A ~ B, every second print image is of poor quality, nozzle row A; or nozzle row B can be activated. To print with the good nozzle row only.

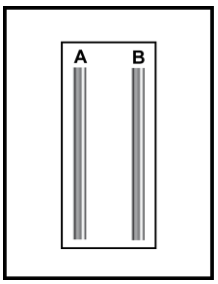


Fig. 7-16: Nozzle plate ink cartridge

If A + B is set, the print simultaneously with all nozzles in both nozzle rows is printed. The speed must be synchronized exactly, so that the ink drops lay exactly one upon the other. Otherwise a shadow is on the print image.

Nozzle row	Description
A ~ B	Printing with both nozzle rows, alternating. The first print image is printed with nozzle row A and the second text with nozzle row B. Vertical resolution: 300 dpi
A + B	Printing with both nozzle rows together. Vertical resolution: 600 dpi
A	Printing only with nozzle row A. Vertical resolution: 300 dpi
B	Printing only with nozzle row B. Vertical resolution: 300 dpi

With setting A + B, the print speed must be accurately set, to produce a good print result. Otherwise the print image is blurred.

Instruction

Please select a nozzle row as follows:

Step	Procedure
1	Press setting key  in main menu.
2	The sub menu **Print position** appears.
3	Call up the submenu **Nozzle row** by pressing navigation key  .
4	The sub menu **Nozzle row** appears.
5	**Set the** desired value by pressing the navigation keys  .

In the Hi-Speed mode (only Markoprint X4JET plus Pro version) the setting of the nozzle rows A~B cannot vary!

Upside down

Instruction
Please set up the upside down print as follows:

Step	Procedure
1	Press setting key  in main menu.
2	The sub menu **Print position** appears.
3	Call up the submenu **Upside down** by pressing navigation key  .
4	The sub menu **Upside down** appears.
5	**Set the** desired value by pressing the navigation keys  .

Head adjustment

A mechanical imprecision between the print head modules / cartridges by multi-head systems can be compensated in this menu.
It is maximal +-1 – 2mm, which must be compensated.
A value from -50 to +50 can be entered to adjust the respective print head rightward or leftward.
The respective print head goes rightward with a + value and leftward with a - value.

Requirements:
The print head must be installed horizontally. There may not be an overlap or gap between the cartridges. It's the best to check this with a layout, which goes over all print heads.
The print speed must set up optimal. The nozzles A+B must be correct in one row by prints with two nozzle rows. This can be checked with a loupe. There may not be a "shadow print".
Divider and intensity must be set up optimal by printing. The nozzles A+B must be correct in one row by prints with two nozzle rows. This can be checked with a loupe. There may not be a "shadow print.

Procedure

Please proceed as follows to set up a head correction:

Step	Procedure
1	Set all values for the head adjustment to „0".
2	I.e. by a quad head all values for head 1 will set to „0". Than a test print will made, which goes over all print heads.
3	If there is a horizontally stowing between the first and the second print head module, it can be compensated with the head adjustment of print head 2.
4	Proceed the same way with print head 3 and 4.
5	If there is a stowing after changing the cartridge, correct only the stowing of this cartridge.

Instruction

Please set the head adjustment as follows:

Step	Procedure
1	Press setting key  in main menu.
2	The sub menu **Print position** appears.
3	Call up the submenu **Head adjustment** by pressing navigation key  .
4	The sub menu **Head adjustment** appears.
5	**Set the desired value by pressing the n**avigation keys  , or press the OK-button  , enter the determined value by the keypad and confirm with the OK-button  .

Print image

Print images can be created, changed, deleted or call up to print in the menu print image creation.
Print images are combination of texts, graphics, barcodes and function elements (i.e. counter and variable).

Quick guide print image creation

Here you find the quick guide description of an easy print image creation and to call this to print.

A print image with the text „Example“ will be created and called for print.

Instruction
So you create a print image with the text „Example“ and call this to print:

Step	Procedure
1	Press the [Print image]-key  in the main menu.
2	The menu **Print image** appears.

Fig. 7-17: Menu print image

3	Press the [New print image]-key  .
4	The menu **Print image creation** appears.

Step	Procedure

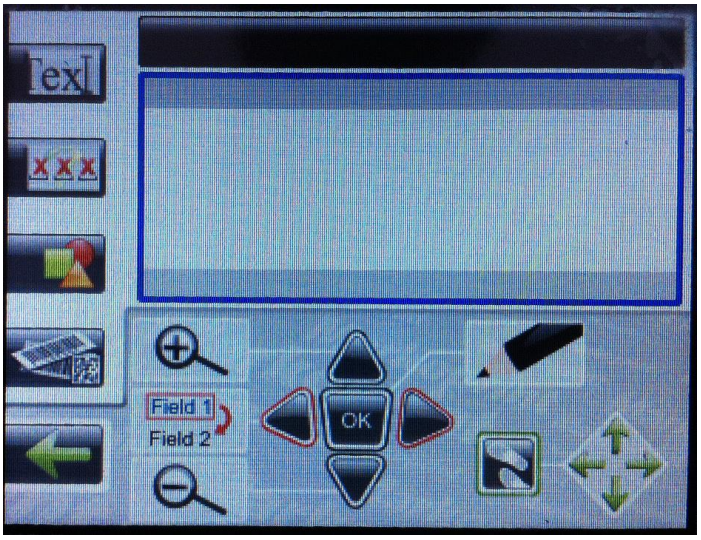


Fig. 7-18: Menu Print image creation

5	Press the [Add text]-key 

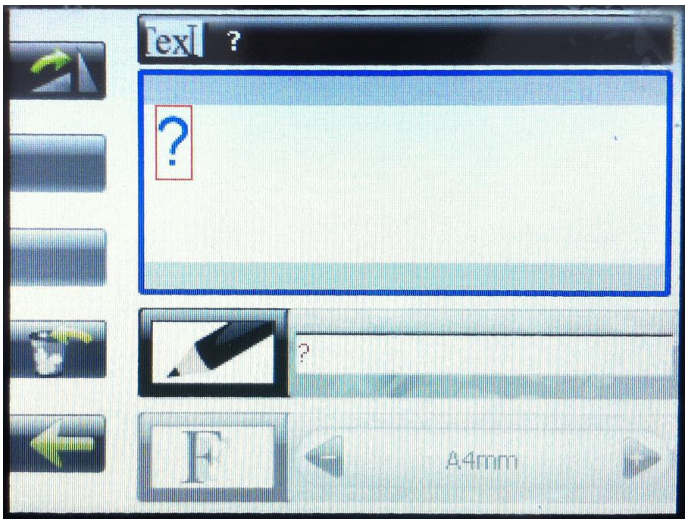


Fig. 7-19: New text field

6	Enter the text „Example“, or any text via the keyboard. The keyboard works like a standard PC-keyboard.

Step	Procedure
	 Fig. 7-20: Text field „Example“
7	Press once the navigation-key to change the font size.
8	Press the navigation-keys to set up the desired font size. In the example Fig. 7-21 was „A8mmB“ selected. This means font Arial with a height of 8mm in Bold design.
	 Fig. 7-21: Print image creation font size
9	Press twice the [Back]-key to call up the memory name.
10	Insert a memory name via keyboard. In the example in Fig.7-20 the print image was saved under the name „Example“.

Step	Procedure

Fig. 7-22: Print image creation memory name

11	Press the [Save]-key  for saving.
12	Press the [Start]-key to call up for print.
13	The print image is shown in the print image preview in the main menu.

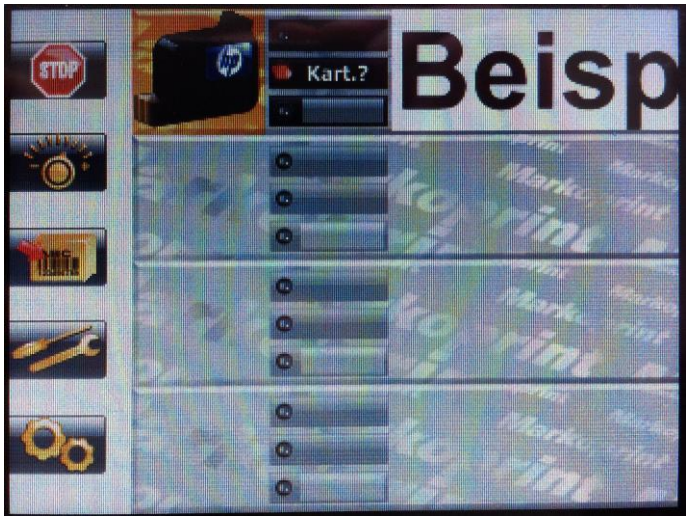


Fig. 7-23: Print image preview in the main menu

14	If the print image is bigger than the representation of the standard-preview, press the navigation-keys  to view the whole print image.

Loading print image

Instruction
Please load a print image for print as follows:

Step	Procedure
1	Press Print image key  in the main menu.
2	The sub menu **Print image** appears.
3	Select the print image by pressing the navigation keys  , or enter the name of the desired print image by the keypad.
4	If the print image is longer as the display preview, it is possible to the whole print image by pressing the navigation keys  .
5	Confirm the selected print image by pressing the [START]-button.
6	The display changes to the main menu and the selected print image is shown in the preview of the main menu and is print by activation of the sensor.

Change print image

Instruction
Please change an available print image as follows:

Step	Procedure
1	Press the Print image-key  in the main menu.
2	The submenu **Print image** appears.
3	Make a print image selection by pressing the navigation-keys  or insert the name of the desired print image via keyboard.
4	If the print image is bigger than the representation of the standard-preview, press the navigation-keys  to view the whole print image.
5	Press the key  to change the selected print image .

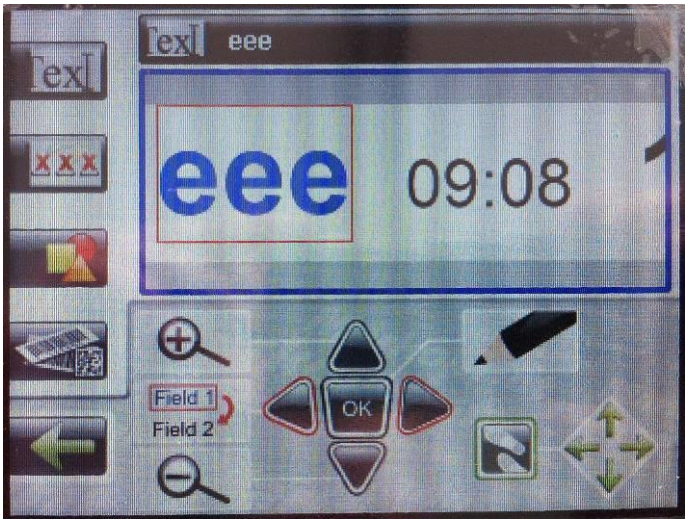


Fig. 7-24: Menu Change print image

6	Select the print field, which should be changed by pressing the navigation-keys  . The selected print field is marked with a red frame and a blue display of the field content.
7	Press the [OK]-key  to confirm.
8	There are different settings depending on the selected print field. The setting possibilities are shown below the print image and can leaf through the navigation-keys  .

Step	Procedure
	 Abb. 7-25: Menu Change print image
9	Switch to the input field and make changes by pressing the navigation keys  . The prompt is signalized by the appearance of the cursor and the blue display of the text in the input field.
	 Fig. 7-26: Menu Change print image
10	Select the relevant input position in the text by pressing the navigation-keys  and insert the desired change by keyboard.
11	Press the [OK]-key  to confirm.
12	Press the [Back]-key  to leave the input field.
13	Now you can edit, like described in step 9, further fields in the print image.
14	Positioning the inserted print fields in the print image, like described in → *Chapter* Position the print field in the print image*, page* **124.**
15	Afterward the changes are completed save the print image, like described in

Step	Procedure
	→ *Chapter* Save print image*, page* **126.**

Create a new print image

A print image comprises of different elements and fields:

- Text
- Logo
- Barcode
- Date
- Time
- Variable
- Counter
- Action fields

Instruction

Please create a new print image as follows:

Step	Procedure
1	Press the [Print image]-key  in the main menu.
2	The menu **Print image** appears.
	
	Fig. 7-27: Menu Print image
3	Press the [New print image]-key  .
4	The menu **Print image creation** appears.

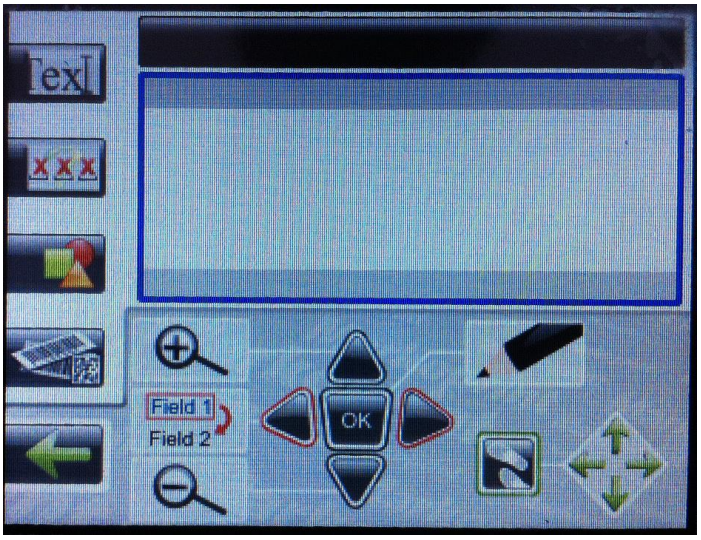
Step	Procedure
	

Fig. 7-28: Menu Print image creation

5	Add a new field or several new fields and make the field specific settings as desired. Following fields can insert in the print image: • Text • Logo • Barcode • Date • Time • Variable • Counter Please note the following chapter.
6	Positioning the inserted print fields in the print image, like described in → *Chapter* Position the print field in the print image*, page* **124.**
7	Afterward the print image creation is completed save the print image, like described in → *Chapter* Save print image*, page* **126.**

Position the print field in the print image

A print field can positioned as follows:

- Free positioning of a print field in the print image, i.e. move pixel by pixel.
- Positioning the print field by align with the boundary area of the print image and the boundary area of other print fields.

Instruction

Positioning the print field in the print image pixel by pixel as follows:

Step	Procedure
1	Select first the print field, which should positioned, by the navigation-keys  .
2	Press the [Step]-key  .
3	Now the print field can free positioned by the navigation-keys   .
4	Press the [OK]-key  , or the [Back]-key to close the process.
5	After the creation process is closed, save the print image, like described in → *Chapter* Save print image*, page* **126.**

Instruction

Please position a print field with the help of the boundary area of the print image or other print fields:

Step	Procedure
1	Select first the print field, which should positioned, by the navigation-keys  .
2	Press the [Step]-key  twice.
3	The print field can now align with the navigation-keys  on the boundary areas of the print image and the boundary areas of other print fields in the print image.
4	Press the [OK]-key  , or the [Back]-key to close the process.
5	After the creation process is closed, save the print image, like described in → *Chapter* Save print image*, page* **126.**

Turn a print field in the print image

Not all fields can turned, i.e. 2D-codes can’t turned.

Instruction

Please turn a print field in the print image as follows:

Step	Procedure
1	Select first the print field, which should positioned, by the navigation-keys  .
2	Press the [Turn]-key  .
3	The print field will be turned through 90° clockwise with each keypress.
4	Press the [OK]-key  , or the [Back]-key to close the process.
5	After the creation process is closed, save the print image, like described in → *Chapter* Save print image*, page* **126.**

Save print image

Instruction

Please save a new or changed print image as follows:

Step	Procedure
1	After you have created/changed the print image as desired, press the [Back]-key  to leave the menu.
2	It appears a prompt for input of a memory name.
	
3	You have following possibilities: • Save the print image under the same name (if a print image was changed or a new created should replace the existing one) • Save the print image under a new name. • Abolish the changes. • Return to the print image change. To save the print image under a new name, insert a new name by the keyboard and press the [Save]-key. To save the print image under the same name, press the [Save]-key. The print image data of the changed print image will be overwrote! To abolish the changes, press the [Delete]-key and confirm it by pressing the [Delete]-key again. The assignment of keys change during the delete process – Follow the display. To return to the print image change, press the [Back]-key.

Insert a text field in the print image

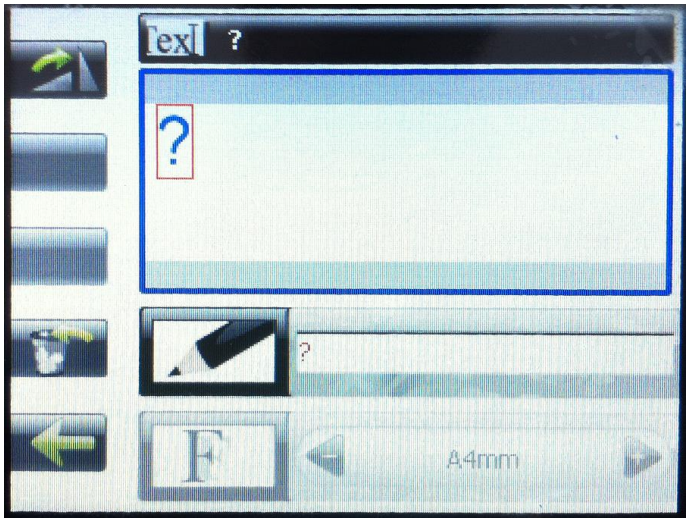
Static texts will be inserting in the print image as text fields.

Requirements

- You are in the menu print image creation. See → *Chapter* **Create new print image,** *page* **122**

Instruction

Please insert a new text field in the print image as follows:

Step	Procedure
1	Press the key [Add text] 
	
	Fig. 7-29: New text field
2	Insert the desired text via the keyboard. The keyboard works like a standard PC-keyboard. If a text field should be changed, note Chapter **Change print** image**, page 119**
3	Insert the text „Example“, or any text via the keyboard and confirm it by pressing the [OK]-key .
	
	Fig. 7-30: Text field „Example“

Step	Procedure
4	Press once the navigation-key  to change the font size.
5	Press the navigation-keys  to set up the desired font size. In the example Fig. 7-21 was „A8mm“ selected. This means font Arial with a height of 8mm in Bold design.
6	Position the inserted print field in the print image, like described in → *Chapter* Position the print field in the print image*, page* **124.**
7	After the creation process is closed, save the print image, like described in → *Chapter* Save print image*, page* **126.**

Ask your local distributor for further fonts.

Insert a date field in the print image

A date is embedded in the print image as a date field.
Date fields are not static, but dynamic fields; their display format is defined by variables.
The current date is retrieved from the system clock. By printing the current date will be also obtained from the system clock.

Any combination of variables can be used to configure the display format. Punctuation marks (e.g. full stop, colon, hyphen, space etc.) can be inserted between the individual codings.

ab.cd.gh are preset.

Variable	Description	Display
ab-cd-gh	Date	22-05-11
efgh	Year	2011
ij:kl:mn	Time	11:20:35
ooo	Month as string	Jan
ppp	Day of the year	135
q	Weekday	4
rr	Calendar week	28
s	Hour as string	k

You can find the whole list of all date/time formats in the appendix. → *Chapter* Date variables, ***page*** 200
Date and time formats can be combined.

Forward dating, for instance to print a best before date (BBD), can be defined by the offset parameters year, month and day.

Requirements

- You are in the menu print image creation. See → *Chapter* Create a new print image**,** *page* **122**

Instruction

Please insert a new date field in the print image as follows:

Step	Procedure
1	Press the [Add variable field]-key  .
2	Press the [Add date field]-key  .
3	The date field appears in the print image.

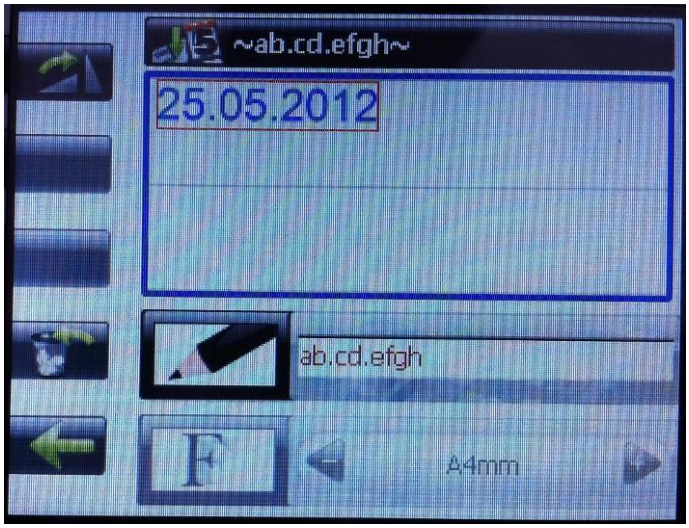
Step	Procedure
	

Fig. 7-31: Menu print image creation date field

4	Change the input mask of the date field by pressing once the right navigation-key .
5	Adapt the image of the date as desired. The introduction of the chapter will help.
6	Press the [OK]-key to confirm.
7	Press the navigation-key once to change to the selection field for the font size.
8	Press the navigation-keys to set the desired font size.
9	Change to the selection field for date offset by the day by pressing the navigation-key once.
10	Set the date offset by day as desired by pressing the navigation-keys or by direct input via the keyboard. The date offset by day can set between 0 and +9999 days.
11	If the date offset was inserting by keyboard, press the [OK]-key to confirm.
12	Change to the date offset by month by pressing the navigation-key .
13	Set the date offset by month as desired by pressing the navigation-keys or by direct input via the keyboard. The date offset by month can set between 0 and +99 months.
14	If the date offset was inserting by keyboard, press the [OK]-key to confirm.
15	Change to the date offset by year by pressing the navigation-key .

Step	Procedure
16	Set the date offset by year as desired by pressing the navigation-keys  or by direct input via the keyboard. The date offset by year can set between 0 and +99 years.
17	If the date offset was inserting by keyboard, press the [OK]-key  to confirm.
18	Change to the display field of the field number by pressing the navigation-key  once. This is needed for action field links. The field number will be generate automatically and can't change with the creation of date fields.
19	Position the inserted print field in the print image, like described in → *Chapter* Position the print field in the print image*, page* **124.**
20	After the creation process is closed, save the print image, like described in → *Chapter* Save print image*, page* **126.**

Insert a time field in the print image

The time is embedded in the print image as a time field.
Time fields are not static, but dynamic fields; their display format is defined by variables.
The current time is retrieved from the system clock. By printing the current time will be also obtained from the system clock.

Any combination of variables can be used to configure the display format. Punctuation marks (e.g. full stop, colon, hyphen, space etc.) can be inserted between the individual codings.

ij:kl:mn are preset.

Variable	Description	Display
ij:kl:mn	Time	11:20:35

Variable	Description
i	Hour, tens
j	Hour, ones
k	Minute, tens
l	Minute, ones
m	Second, tens
n	Second, ones

You can find the whole list of all date/time formats in the appendix. → Chapter Date variables, page 200
Date and time formats can be combined.

Requirements

- You are in the menu print image creation. See → *Chapter* Create a new print image**,** *page* **122**

Instruction
Please insert a new time field in the print image as follows:

Step	Procedure
1	Press the [Add variable field]-key  .
2	Press the [Add time field]-key  .
3	The time field appears in the print image.

Step	Procedure
	

Fig. 7-32: Menu Print image creation time field

4	Change the input mask of the time field by pressing once the right navigation-key .
5	Adapt the image of the time as desired. The introduction of the chapter will help.
6	Press the [OK]-key to confirm.
7	Press the navigation-key once to change to the selection field for the font size.
8	Press the navigation-keys to set the desired font size.
9	By pressing the navigation-key , the menu runs through some settings, which are necessary by a combination of date- and time field. See → *Chapter* Insert a date field in the print image*, page* **129**
10	Press the navigation-key several times to see a field number at the end of the input-menu. This is needed for action field links. The field number will be generate automatically and can't change with the creation of time fields.
11	Position the inserted print field in the print image, like described in → *Chapter* Position the print field in the print image*, page* **124.**
12	After the creation process is closed, save the print image, like described in → *Chapter* Save print image*, page* **126.**

Insert a variable field in the print image

Variables are inserted in the print image by means of variable fields.
Variable fields are used if a print image contains data (e.g. batch numbers) that change frequently. This can be automated, shortly before the print image is released for printing.
The operator can insert a new variable value in the variable field before a print image is called or the old text retained.
It is possible to enter several variable fields in a text.

Requirements

- You are in the menu print image creation. See → *Chapter* Create a new print image**,** *page* **122**

Instruction

Please insert a variable field in the print image as follows:

Step	Procedure
1	Press the [Add variable field]-key  .
2	Press the [Add variable field]-key  .
3	The variable field appears in the print image.

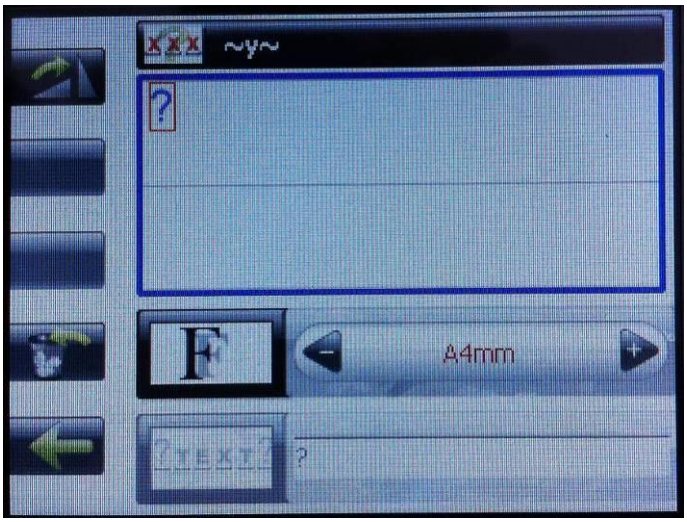


Fig. 7-33: Menu Print image creation variable field

4	Press the navigation-keys  to set the desired font size.
5	Change to the input field for the variable specification by pressing the navigation-key  once.
6	Insert the variable specification as desired in the input field. Please note the description, which follow this instruction!
7	Change to the input field for the nomination of the variable field by pressing the navigation-key  . The nomination of the variable field appears in the prompt by print start of the print image. The nomination makes sense if several variable fields are contained in the print

Step	Procedure
	image. This can be better vary from the prompt after print start.
8	Name the variable field as desired, i.e. with batch number.
9	Change to the display field of the field numbers by pressing the navigation-key  once. This is needed for action field links. The field number will be generate automatically and can't change with the creation of date fields.
10	Position the inserted print field in the print image, like described in → *Chapter* Position the print field in the print image*, page* **124.**
11	After the creation process is closed, save the print image, like described in → *Chapter* Save print image*, page* **126.**

There are some alternatives for an input available, which have different effects:

- The standard registered „?“ in the input field will be deleted and the variable is insert with a certain number of characters:
  With every print start of the print image appears a prompt of the variable data. You can see the inserted text of the variable field in the input field. This can be adapt or overwrite. Any characters can be inserted when overwriting, but it will only accept so many characters like make in the variable specification.

- The variable specification in the input field will not change and the standard registered „?“ is insert in the input field:
  It appears a prompt of the variable data with every print start of the print image. You can insert any text with any length.

- The standard registered „?“ is registered in the input field and the variable specification will be added with a number of characters:
  It appears a prompt of the variable data with every print start of the print image. The inserted text of the variable field can be seen in the input field. This can be adapt or overwrite. Any characters can be inserted when overwriting.

Via the delivered iDesign software the setting can make, with a connection between PC and software, whether the variable specification of the print image creation appears static with the print start in the prompt or whether the entry of the last print start appears. The setting can be made in the iDesign software like shown in Fig. 7-34.
Therefore please note the delivered manual of the software!

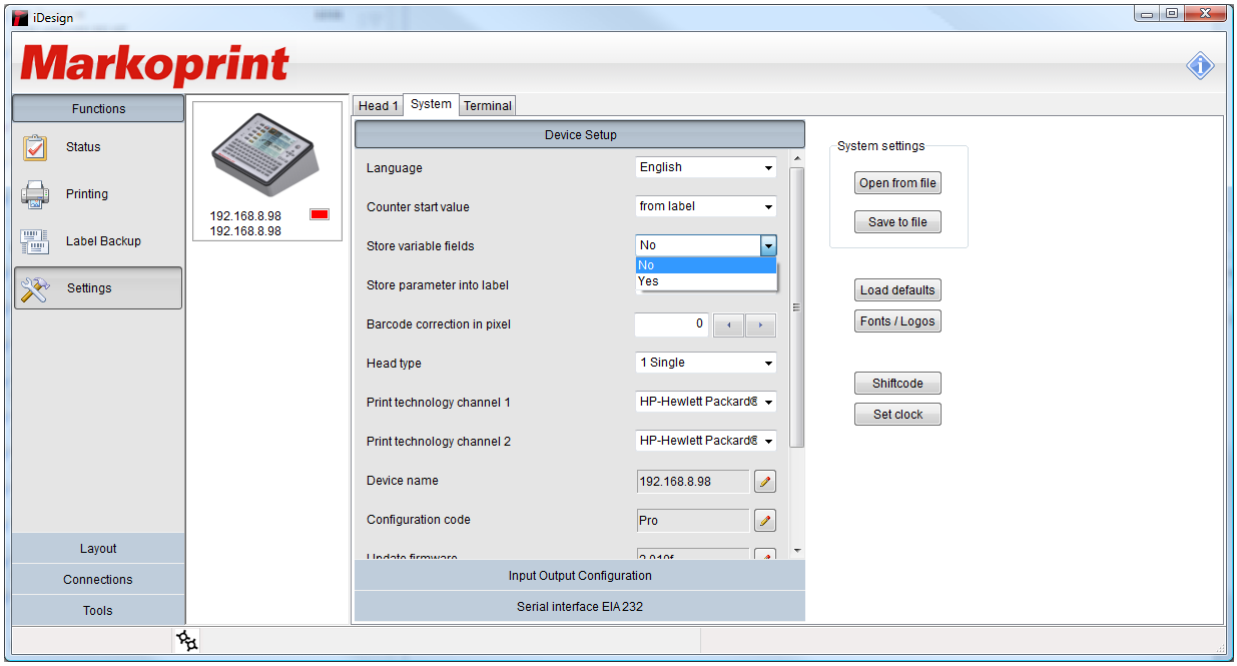


Fig. 7-34: iDesign Save variable fields

Insert a counter field in the print image

The counters are inserted in the print image through counter fields.
Counter fields are inserted to print consecutive numbers on labels i.e.: labels must be print.
When starting to print, the counter starting value appears in the first print. When reaching the end count, the counter re-starts at the starting value.
If the end value is smaller than the starting value, counting is downward.

Example 1:
Starting value: 01, end value: 10, step size: 2, repeats: 3
Print: 01, 01, 01, 03, 03, 03, 05, 05, 05....

Example 2:
Starting value: 10, end value: 1, step size 1, repeats: 0
Print: 10, 9, 8, 7....1, 10, 9, 8, 7....

Requirements

- You are in the menu print image creation. See → *Chapter* Create a new print image**,** *page* **122**

Instruction

Please insert a new counter field in the print image as follows:

Step	Procedure
1	Press the [Add variable field]-key  .
2	Press the [Add counter field]-key  .
3	The counter field appears in the print image.

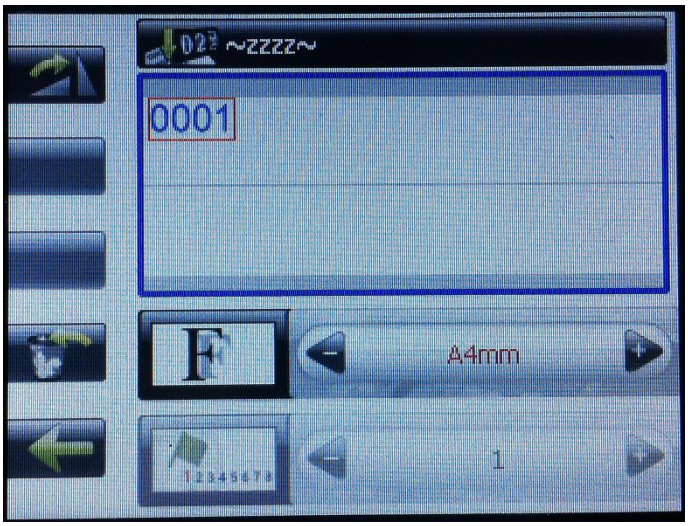


Fig. 7-35: Menu Print image creation counter field

4	Press the navigation-keys  to set the desired font size.
5	Change to the input field for the counter start value by pressing the navigation-key  once.
6	Enter the desired counter start value via the keyboard and confirm with the [OK]-

Step	Procedure
	key OK, or set the counter start value by pressing the navigation-keys . The counter start value can set between 0 and 99999999. Please note the description, which follow this instruction!
7	Change to the input field for the counter end value by pressing the navigation-key .
	Enter the desired counter end value via keyboard and confirm with the [OK]-key OK, or set the counter end value by pressing the navigation-keys . The counter end value can set between 0 and 99999999.
	Change to the input field for the counter step size by pressing the navigation-key .
	Insert the desired counter step size via keyboard and confirm with the [OK]-key OK, or set the counter step size by pressing the navigation-keys . The counter step size can set between 0 and 99999999.
	Change to the input field for the print repeat of the counter by pressing the navigation-key .
	Insert the desired number of print repeat of counter via keyboard and confirm with the [OK]-key OK, or set the print repeat by pressing the navigation-keys . The print repeat can set between 0 and 9999.
	The field number is shown at the end of the input-menu by pressing the navigation-key . This is needed for action field links. The field number will be generate automatically and can't change with the creation of counter fields.
	Position the inserted print field in the print image, like described in → *Chapter* Position the print field in the print image*, page* **124.**
	After the creation process is closed, save the print image, like described in → *Chapter* Save print image*, page* **126.**

There are some alternatives for an input available, which have different effects:

Via the delivered iDesign software the setting can make, with a connection between PC and software how the counter start value will be specified by print start.

Following options are available:

- Specification of the start value from the print image.
- Specification of the start value by user input.
- Specification of the start value by the last start value.
- Specification of the start value by the last start value or by user input.

The setting can take in the iDesign software, like shown in Fig. 7-36.
Therefore please note the delivered manual of the software!

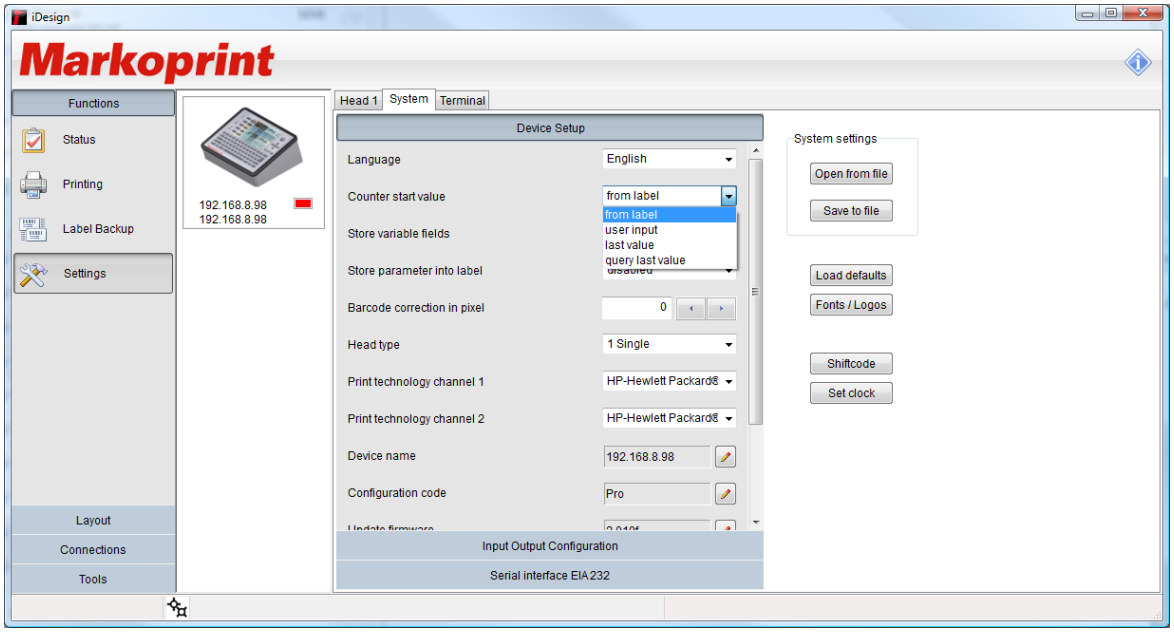


Fig. 7-36: iDesign counter start value

Insert a logo in the print image

Graphics (logos) can be inserted in a print image as logo or bitmap files.

The created bitmap files must be monochrome BMP!

The table below shows the file type and the available pixel height for the different print head types.
The numbers of pixels refer to the full print height of the print head.
For example: 256 with the Maxiline 100 for 100mm height. A logo with 64 pixels would be 25 mm high.

Print head type	File type	Max. pixel height
MX 50	Bitmap	128/print head
MX 100	Bitmap	256/ print head
HP	Bitmap	300/ink cartridge
LX	Bitmap	300/ ink cartridge

Via the delivered iDesign software the logos can send to the control system, with a connection between PC and software. See Fig. 7-37.
Therefore please note the delivered manual of the software!

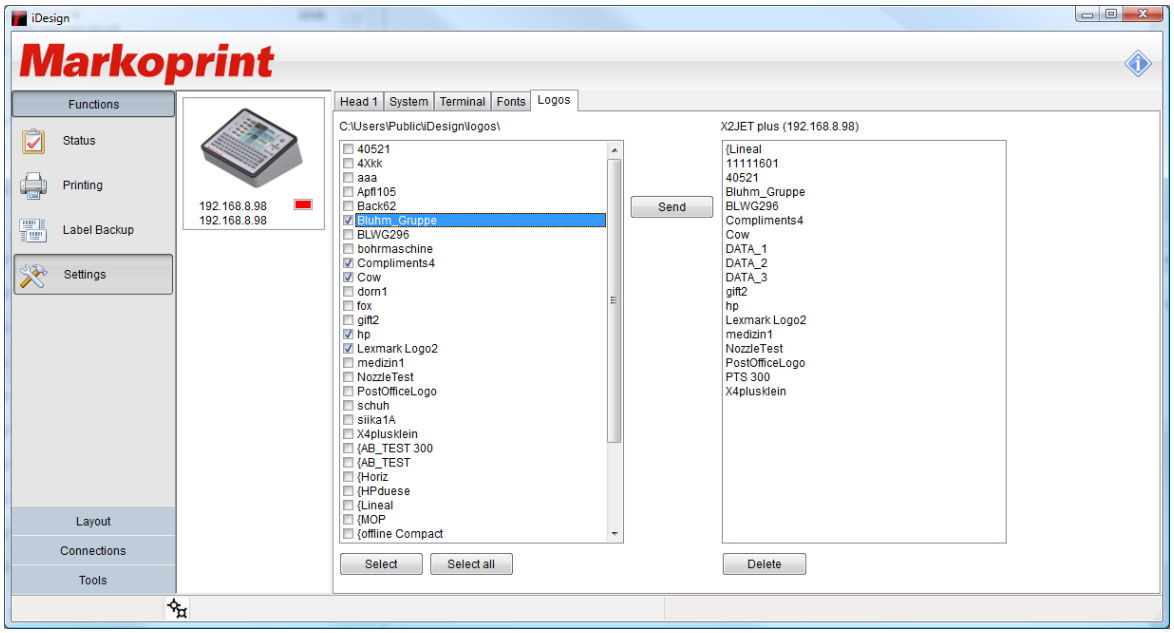


Fig. 7-37: iDesign Send logos

Requirements

- You are in the menu print image creation. See → *Chapter* Create a new print image**,** *page* **122**

Instruction

Please insert a new logo in the print image as follows:

Step	Procedure
1	Press the [Add logo]-key  .
2	Press the navigation-keys  to select the desired logo and confirm with the [OK]-key  .
3	Position the inserted print field in the print image, like described in → *Chapter* Position the print field in the print image*, page* **124.**
4	After the creation process is closed, save the print image, like described in → *Chapter* Save print image*, page* **126.**

Insert a barcode in the print image

A barcode is machine-readable writing comprising of parallel lines and gaps of various widths.
The data in the barcode can also be displayed in plain text, legible to humans, in a line of plain text directly below the barcode. If the barcode cannot be read, the data can be evaluated manually.
iDesign offers a range of barcode and 2D Code types, depending on the selected printer:

Barcode type	Description	Stellen
EAN 8	Numerical commercial barcode; used worldwide.	8
EAN 13	Numerical commercial barcode; used worldwide.	13
EAN 128	Numerical commercial logistics code. Variable fields for date, counter and scale as options.	max. 70
Code 128	Full ASCII barcode; medical-pharmaceutical technology.	max. 70-
Code 2 of 5	Numerical industrial (materials-handling) barcode, always with even number of digits. Also designated 2/5 interleaved, ITF 2/5)	min. 2 max.40
DUN 14 *	Numerical industrial barcode (materials-handling)	14
UPC A UPC E	**Same as EAN 13,** but special 1st digit code. Is normally set to 0 followed by 11 digit code. The 13th digit is an automatically generated test digit. Used in USA/Canada.	13
Code 39	Alphanumeric barcode for industry, electronics, pharmaceutical.	max.40
UCC	**Same as Code 2 of 5.** For trading in the USA.	14
Data Matrix	A 2D code for the electronics industry and pharmaceutical sector.	max.256
EAN Data Matrix	A 2D code for the electronics industry and pharmaceutical sector.	max.256
QR Code	A 2D-code for Japan and Marketing purposes specially	max.256
PPN-Code	Pharmacode	max.256
GS1 Databar	Omnidirectional	16
GS1 Databar	Expanded	max. 70

Requirements

- You are in the menu print image creation. See → *Chapter* Create a new print image**,** *page* **122**

Instruction

Please insert a new barcode in the print image as follows:

Step	Procedure
1	Press the [Add Barcode/Datamatrix-Code]-key  .

Step	Procedure
2	Press the [Barcode]-key  .
3	Select the desired barcode-type by pressing the navigation-keys  .
4	Change to the input field for the barcode by pressing the navigation-key  .
5	Geben Sie den gewünschten Dateninhalt des Barcodes über die Tastatur ein.
6	Change to the selection field for the plain text font size of the barcode by pressing the navigation-key  .
7	Press the navigation-keys  to set the desired font size for the plain text.
8	Change to the selection field for the barcode height by pressing the navigation-key  .
9	Insert the desired barcode height via keyboard and confirm with the [OK]-key, or set the barcode height by pressing the navigation-keys  .
10	Change to the selection field for the line width of the barcode by pressing the navigation-key  .
11	Insert the desired barcode line width via keyboard and confirm with the [OK]-key, or set the barcode line width by pressing the navigation-keys  .
12	Position the inserted print field in the print image, like described in → *Chapter* Position the print field in the print image*, page* **124**
13	After the creation process is closed, save the print image, like described in → *Chapter* Save print image*, page* **126.**

Insert a 2D-code in the print image

Requirements

You are in the menu print image creation. See → *Chapter* Create a new print image**,** *page* **122**

Instruction

Please insert a new 2D-code in the print image as follows:

Step	Procedure
1	Press the [Add Barcode/Datamatrix-Code]-key  .
2	Press the [Datamatrix]-key  .
	Select the desired 2D-code type by pressing the navigation-keys  .
	Change to the input field for the 2D-code by pressing the navigation-key  .
	Insert the desired data content of the 2D-code via keyboard.
	Change to the selection field of the 2D-code size by pressing the navigation-key  .
	Insert the 2D-code size via keyboard and confirm with the [OK]-key or set the desired 2D-code size by pressing the navigation-keys  .
	Change to the selection field for the dot-size of the 2D-code by pressing the navigation-key  .
	Insert the desired 2D-code dot size via keyboard and confirm with the [OK]-key, or set the 2D-code dot size by pressing the navigation-keys  .
	Position the inserted print field in the print image, like described in → *Chapter* Position the print field in the print image*, page* **124.** **2D-Codes can't be turned!**
	After the creation process is closed, save the print image, like described in → *Chapter* Save print image*, page* **126.**

USB-Stick

Load data from the USB stick to the memory of the X4 JET plus or save data from the X4 JET plus to the USB stick in the USB-stick menu.

This menu is only busy with an connected USB stick.

Instruction
Please change data between USB-stick and control system as follows:

Step	Procedure
1	Press the Service key  in the main menu.
2	The submenu **USB-Stick** appears.
3	Insert the USB stick.
4	The submenu **USB-Stick** is shown.
5	Select the desired memory method by pressing the navigation keys  and confirm with  .

Following memory methods are available:
Data backup from Markoprint X2JET plus Touch to USB-Stick:

Display	Description
Texts	Save the texts, which are stored in the Markoprint X2JET plus Touch, to an USB-Stick.
Backup	Backup of all data on an USB-stick
Parameter	Backup of the adjusted parameter value.

Data transfer from USB-stick to the memory of the Markoprint X2JET plus Touch:

Display	Description
Texts	Transfer the stored texts from the USB stick to the memory of the Markoprint X2JET plus Touch.
Restore	Transfer the data backup from the USB-stick to the memory of the Markoprint X2JET plus Touch.
Parameter	Transfer the parameter values, which are stored on the USB-stick, to the memory of the Markoprint X2JET plus Touch.
Fonts	Transfer the fonts, which are stored on the USB-stick, to the memory of the Markoprint X2JET plus Touch.

Brightness

The display brightness can be set in this menu.

Instruction

Please set the display brightness as follows:

Step	Procedure
1	Press the service key  in the **main menu**.
2	The submenu **USB-Stick** appears.
3	Call up the submenu **Brightness** by pressing the navigation key  .
4	**Set the** Brightness **by pressing the n**avigation keys  , or press the OK-button  , enter the desired value by the keypad and confirm with the OK-button  .

Date

In this menu the date is been shown and can be adjusted.

Instruction
Please set the date as follows:

Step	Procedure
1	Press the System key  in the main menu.
2	The sub menu **Date** appears.
3	Set the date by pressing the navigation keys  and confirm with the OK key  , or press the OK-button  , enter the determined value by the keypad and confirm with the OK-button  .

Time

In this menu the time is been shown and can be adjusted.

Instruction
Please set the time as follows:

Step	Procedure
1	Press the System key  in the main menu.
2	The sub menu **Date** appears.
3	Call up the submenu **Time** by pressing navigation key  .
4	The sub menu **Time** appears.
5	Set the time by pressing the navigation keys  and confirm with the OK key  , or press the OK-button  , enter the determined value by the keypad and confirm with the OK-button  .

Spitting Impulse

NOTICE

Property damage caused by squirting ink!

The spitting can result in unwanted contamination of the environment.

The spitting leads to an increased ink consumption.

In the menu **spitting impulse** the operator can set, whether and how many spit impulses will be performed when the device is switched on, or before applying the print. Depending on the settings, the Spit impulse effects an ejection of ink drops between 1 - 100, with a clock rate of 2 kHz from each nozzle. This may be necessary for ink types with lower drying time, to avoid drying out the nozzles and ensure a good print start.
In the following chapter **"Spitting time"** the operator can adjust, whether a pulse-Spitting is executed or not, depending on the elapsed time between the prints.

For example: It could be advisable to adjust the value to 20 spit impulses and 30 seconds spit time. This means that the printing of all products 1-29 seconds nothing happens. Only 30 seconds after no product is passing, the spitting is performed once before the next printing with 20 pulses.

Instruction

Please set the spit impulse as follows:

Step	Procedure
1	Press the System key  in the main menu.
2	The sub menu **Date** appears.
3	Call up the submenu **Spit pulse** by pressing navigation key  .
4	The sub menu **Spit pulse** appears.
5	**Set the** desired value by pressing the navigation keys  .

Spitting time

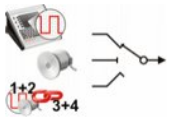
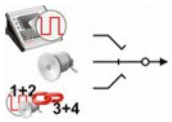
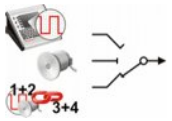
In this sub menu is set, after which time a spitting operation is run between two prints. The setting Spitting impulse would be necessary for reasons mentioned in Chapter Spitting impulses. The values range from 1 - to set 999 seconds.
Instruction
Please set the spitting time as follows:

Step	Procedure
1	Press the System key  in the main menu.
2	The sub menu **Date** appears.
3	Call up the submenu **Spitting time** by pressing navigation key  .
4	The sub menu **Spit pulse** appears.
5	**Set the** desired value by pressing the navigation keys  .

Internal Pulse print head

The print speed must relate to the conveyor speed. If the conveyor speed is constant, the print speed can adjust fix, otherwise a shaft encoder should be used, which measure the conveyor speed and adapt the print speed continuous.
The Markoprint X2JET plus Touch has two channels, which enable the connecting two encoders to the control unit. I.e. there are two independently operating signals available to align the print speed. One channel is for the print head modules 1 are available and the other channel for the print head modules 2.
By this procedure it is possible to print with head modules 1 and 2 on a production line and with print modules 3 and 4 on another production line with a different speed.
If both channels should work with the same encoder, the signal from head 1 +2 can be coupled to the signal head 3 +4.

The following settings are possible:

Display	Channel	Description
	1	In this setting, the print speed for print head modules 1 is determined with an internal pulse.
	1	In this setting, the print speed for print head modules 1 is determined with an encoder.
	2	In this setting, the print speed for print head modules 2 (independently of the print head modules 1) set with an internal pulse.
	2	In this setting, the print speed for print head modules 2 (independently of the print head modules 1) set with an encoder.
	2	In this setting, the print speed for print head modules 2 is coupled to the input of the print head modules 1.

If internal pulse setting is chosen, the speed of conveyor belt must be determined and entered into the controller.
Enter the determined conveyor belt speed as described under → *Chapter* To set the encoder resolution*, page 107*.

Instruction

Please set the parameter of the print speed as follows:

Step	Procedure
1	Select the desired print head module by pressing the navigation keys   and press the System key  in the main menu
2	The sub menu **Date** appears.
3	Call up the submenu **Pulse print head** by pressing navigation key  .
4	The sub menu **Pulse print head** appears.
5	**Set the** desired value by pressing the navigation keys  .

Select sensor

In this menu the used sensor can be adjusted. Following settings are possible:

- Sensor 1+2
- Sensor 1+2 inverse
- Sensor 3+4
- Sensor 3+4 inverse

There are 2 sensor inputs „Sensor 1+2“ and „Sensor 3+4“. Standard is Pin 4 for the output of the sensor. Some sensors send the inverse signal on Pin 2. This can be used with the parameter “Sensor 1+2 inverse.
It is also possible two heads on one channel, to assign to two different sensor inputs.
So head 1 can get the start signal from Pin4 (Sensor 1+2) and head 2 the start signal from Pin2 (Sensor 1+2 inverse). So all four heads can be triggered independently.
→ *Chapter* Sensor*, page* **204**

Instruction

Please select the sensor as follows:

Step	Procedure
1	Press the System key  in the main menu.
2	The sub menu **Date** appears.
3	Call up the submenu **Select Sensor** by pressing navigation key  .
4	The sub menu **Select Sensor** appears.
5	**Set the** desired value by pressing the navigation keys  .

IP address

In this sub menu the IP-address is displayed, or can set here.

Instruction

Please show / adjust the IP address in the menu as follows:

Step	Procedure
1	Press the System key  in the main menu to select the desired heads.
2	The sub menu **Date** appears.
3	Call up the submenu **IP-address** by pressing navigation key  .
4	The sub menu **IP-address** is displayed.
5	Activate the input by press  .
6	Set the IP address by the keypad. **If not all characters are needed in the justify, it can be changed to the next justify with the navigation keys.**
7	Confirm with  .

Net-Mask

In this sub menu the Net-Mask is displayed, or can set here.

Instruction

Please set / show the Net-Mask in the menu:

Step	Procedure
1	Select the desired print head module by pressing the navigation keys   and press the System key  in the main menu
2	The sub menu **Date** appears.
3	Call up the submenu **Net-Mask** by pressing navigation key  .
4	The sub menu **Net-Mask** is displayed.
5	Activate the input by press  .
6	Set the **Net-Mask** by the keypad. **If not all characters are needed in the justify, it can be changed to the next justify with the navigation keys.**
7	Confirm with  .

Gate-Way

In this sub menu the Gate-Way-address is displayed, or can set here.

Instruction

Please show / set the Gate-Way-address in the menu as follows:

Step	Procedure
1	Select the desired print head module by pressing the navigation keys   and press the System key  in the main menu
2	The sub menu **Date** appears.
3	Call up the submenu **Gate way address** by pressing navigation key  .
4	The sub menu **Gate-Way-Address** appears.
5	Activate the input by press  .
6	Set the **Gate-Way address** by the keypad. **If not all characters are needed in the justify, it can be changed to the next justify with the navigation keys.**
7	Confirm with  .

MAC-address

In this sub menu the MAC-address is displayed.

Instruction

Please show the MAC-address on the system as follows:

Step	Procedure
1	Select the desired print head module by pressing the navigation keys   and press the System key  in the main menu
2	The sub menu **Date** appears.
3	Call up the submenu **MAC-address** by pressing navigation key  .
4	The sub menu **MAC-address** appears.

Print head configuration

The Markoprint X2JET plus Touch has on the input side two channels, which provide the controller unit with signals for sensor, encoder, and outputs an alarm signal on the output side (e.g. for connecting an alarm lamp). I.e. there are two independently operating signals for triggering print, alignment of the print speed and to issue alerts available. One channel is for the print head modules 1 available and the other channel for the print head modules 2. Furthermore, the connections to the print head modules are also split into two channels. About this procedure, the simultaneous control of different printing technologies is realized. The configuration of the selectable print technologies will be delivered as HP – HP standard. The configuration of the print technologies is shown and can set up with the first switch on of the system. → *Chapter* Configuration of the print technology*, page* **83**.
The configuration of the selectable print technologies is possible like mentioned in the table below.

Configuration of channels 1 - 2	Description
HP – HP	The device controls at only HP print head modules. Up to two print head modules can be controlled.
HP – MX	The device controls one HP print head modules and one MX print head modules.
MX – MX	The device controls at only MX print head modules. Up to two print head modules can be controlled.
MX – LX	The device controls one MX print head modules and one LX print head modules.
LX – LX	The device controls at only LX print head modules. Up to two print head modules can be controlled.
LX - HP	The device controls one LX print head modules and one HP print head modules.

In sub menu **head configuration**, the operator can adjust the configuration in the device, which has to be in accordance with the structural configuration of the print heads. The possible combinations are at this point, even for a HP - HP device configuration exemplified:

Configuration HP – HP:

Configuration	Description
2x Single	Two single print heads with one input or output port for the print head modules 1 and 2 the print head modules.
1x Twin	One twin print head with one input/output port for the print head modules 1 +2.

Instruction

Please configure the print heads as follows:

Step	Procedure
1	Press the System key  in the main menu.
2	The sub menu **Date** appears.
3	Call up the submenu **Head Configuration** by pressing navigation key  .
4	The sub menu **Head Configuration** appears.
5	Select the desired channel by pressing the corresponding function keys.
6	Set the head configuration as desired by pressing the navigation keys   .

The selection of the configuration should match the architectural design of the print heads, otherwise it may lead to an incorrect representation of the printed images. If a change relating to the desired product labelling occurs and an adjustment of the print heads or print technology is necessary, so please contact your local distributor.

User language

It is possible to switch the user language of the Markoprint X2JET plus Touch to English, German, or other languages.

Instruction

Please set the user language as follows:

Step	Procedure
1	Press the System key  in the main menu.
2	The sub menu **Date** appears.
3	Call up the submenu **Select language** by pressing navigation key  .
4	The sub menu **Select user language** appears.
5	Select the desired language by pressing the navigation key  and confirm with  .

Reset ink counter

The reset of the ink counter is only possible for using HP print heads. In HP MK2 and LX cartridges the ink level is detected automatically. This menu isn't available by using MX print heads.
Reset the ink counter after inserting a new ink cartridge.

Each ink cartridge is displayed in **main menu** with its current ink level as a percentage.

Instruction

Please reset the ink counter as follows:

Step	Procedure
1	Call up the ink menu by pressing the ink key  ..
2	Call up the submenu **Ink reset** by pressing the navigation key  .
3	Set the value to „YES“ by pressing the navigation keys  and confirm with  .

In LX cartridges, the ink level is stored in an internal memory of the cartridge and does not need a reset if new cartridge is used.
The controller knows the current ink level of the cartridge. The ink is stored in 7% increments. The exactly value of the actual used cartridge will be saved in the control system related to the print head module. This can result an inaccuracy by an inserting in different print head modules.

In HP MK2 cartridges, the ink level is stored in the SmartCard Chip of the cartridge and does not need a reset if new cartridge is used.
The controller knows the current ink level of the cartridge. The ink is stored in 1% increments.

The automatic storage of ink level only works with distributed Ink cartridges by Weber Marking Systems.
Only ink cartridges by Weber Marking Systems are supported by the print heads.

Calculate ink content HP cartridge

A HP ink cartridge contains 42 ml of ink, equivalent to 1.26 billion ink droplets of approx. 33 pl each. The system counts the ink droplets printed and uses this to calculate the ink consumption.
This function is only correct if the ink meter is reset when a new HP ink cartridge is inserted.
The ink content can also be determined by weighing:
A full HP cartridge weighs approx. 110 g ± 3 g. An empty cartridge weighs approx. 70 g ± 5 g. The residual ink in an empty cartridge is 3 ml max.

Calculate ink content LX cartridge

A LX ink cartridge contains ca. 1,083 bn ink droplets of approx. 24 pl each. The system counts the ink droplets printed and uses this to calculate the ink consumption.
The number of prints, which can be done with one cartridge, can be read in the menu.
The ink content can also determine by weighing:
A full LX cartridge weighs ca. 66 g ± 3 g. An empty cartridge weighs ca. 40 g ± 3 g. The rest of an empty cartridge is max. 3 ml.

To rinse the nozzles manually

NOTICE

Material damage due to squirting ink!

The spitting can result in unwanted contamination of the environment.

Therefore:

– Hold a moist cloth in front of the ink cartridge nozzle plate.

After extended periods of no printing, it may be necessary to rinse the ink cartridges to open up clogged nozzle ducts again.
During rinsing (purging), all ink cartridge nozzle ducts are addressed to eject some ink. The rinse process takes max. 2 seconds or rather so long as the button will be pressed and hold.

Requirements

- Absorbent cloth
- Or paper / cardboard

Instruction

Please rinse the nozzle channels as follows:

Step	Procedure
1	Call up the ink menu by pressing the ink key  .
2	Call up the menu item **Spitting** by pressing the navigation key 
3	Set the value “YES” (OK) by pressing the navigation keys  .

Step	Procedure
4	Hold a moist cloth or a sheet of paper in front of the ink cartridge nozzle plate!
5	The spit impulse is activate by pressing the OK-button  and proceed as long as the key will be pressed.

Warming

NOTICE

Material damages due to false settings of the warming function!

It is important to ensure that the warming is not turned on accidentally, as this can cause damage to the cartridge or a defective printed image.

Therefore:

– Do not set the warming accidentally.

Warming can be used to increase the print quality and enhance the restart printing.

The Warming can be activated by the iDESIGN software. The adjustment is in the iDesign software under button „System settings“ → **tab** „Advanced settings“ → sub menu **„Warming“** → menu **„Warming“**.

If the warming is activated, the cartridges must be calibrated. The calibration of the cartridge (temperature sensor in the cartridge) is necessary because the sensors in the cartridge have large tolerances. The calibration is only necessary when the cartridges are changed.

The calibration of the warming is only necessary when HP print heads are used. When the warming function for LX- print heads is switched on, the correction is made automatically. The Warming menu serves only to display the temperature. This menu isn't available by using MX print heads.

The calibration is performed by **Markoprint X2JET plus** Touch in the System menu  where also the ink level can reset.

Configuration	Description
	Ambient temperature – Temperature of the HP-Board in the head housing. Head temperature – Temperature of the nozzle plate. Head-ID – Identification number is used for service.

In the line head temperature (Hd. Temp) the current temperature in the cartridge is displayed.
If a value over 100 (149 or similar) is displayed there is no cartridge or a defective cartridge is inserted.
After the calibration, the head temperature (Hd. Temp) shows the same value as the ambient temperature (Ab. Temp) which reference sensor is located on the HP board in

the print head module. The temperature of the HP board is about 5 ° C higher than the actual ambient temperature because the board warms up in the print head housing.
While the Warming menu is open, the warming is turned off. When the menu is left, the warming will be reactivated.

Only calibrate cartridges with ambient temperature. Very cold or warm cartridges falsify the result. It is the best to observe the temperature for a while (about a minute) if the temperature is stable.

By every cartridge replacement (using a new cartridge), you have to reset the ink level, so that the ink calculation / ink warning is working properly and calibration must be performed.

Instruction

Please calibrate the head temperature as follows:

Step	Procedure
1	Call up the ink menu by pressing the ink key  .
2	Call up the submenu **Warming** by pressing navigation key  .
3	The Head temperature is calibrated by pressing the OK key  .

Set ink type

Depending on the application is the use of a specific ink type necessary. The different characteristics of the inks need an individual setting of the Markoprint X2JET plus Touch.

If HP MK2 or LX print heads are used, the ink type will be detected by the control system automatically and takes the ink specific settings.

The automatic setting of the ink type works only with ink cartridges sold by Weber Marking Systems!
Ink cartridges, which are not distributed by Weber Marking Systems will not supported by the print heads.

If HP print heads are used, the setting must be done from the user directly on the Markoprint X2JET plus Touch- control system. Therefore the Markoprint X2JET plus Touch have under the menu item **select ink type** the possibility to choose basic settings. Certainly it's necessary to adapt special settings, dependent on the application.

The setting of the ink type must accord with the ink type of the used cartridge. Otherwise there are incorrect presentations of print images.

Instruction
Please set the ink type as follows:

Step	Procedure
1	Call up the ink menu by pressing the ink key  .
2	Call up the submenu **Ink type** by pressing navigation key  .
3	Set the desired ink type by pressing the navigation keys  .

Web-Interface

There is the option to make settings on the Markoprint X2JET plus Touch by the Web browser via a PC, which is connected with the Markoprint X2JET plus Touch.
On this the IP of the respective system has to be entered in the address bar of the Web browser.

Possibly other settings had to make on the PC to have access to the IP address. (system administrator)
The system IP can be read or rather set up on the system directly.
→ *Chapter* IP address*, page* **153**

The Web interface don't support all function at the moment**!**

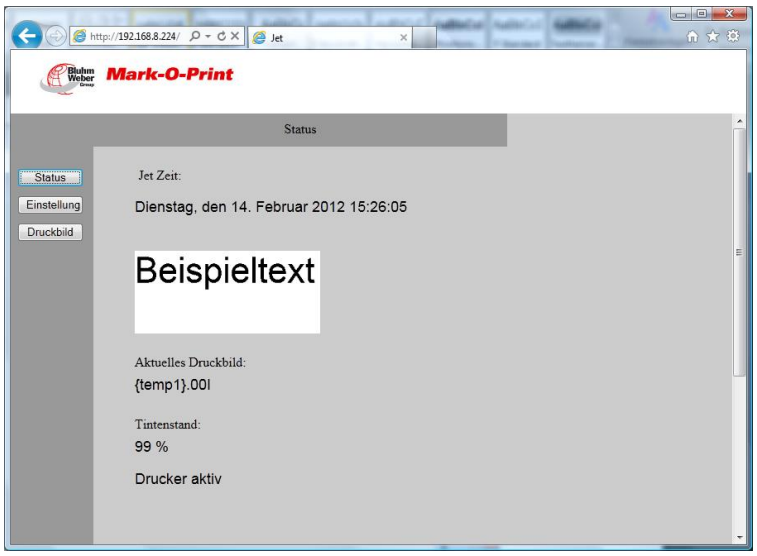


Fig. 7-38: User interface Web-Interface

To set up the parameters, please enter the username.

Username: user
Password: 1234

If you cannot change the parameters, the functions are not unlock, i.e. HiSpeed in the Advanced version.
Layouts can't be created with the WEB interface.

Configurable inputs and Outputs

The Markoprint X2JET plus Touch- controller offers the possibility of the M12 (ALARM) and the 15-pin SUB-D connector (EXTERNAL) to use as additional inputs / outputs. The used pins of the pin assignment → *Chapter* Plug connection*, page* **204.**
A variety of configurations are possible and so the connectors for output of status messages (OK, Warning, Error), cartridge level messages (5% low / empty), print ready and print pulse are possible to use. On the input side signals for heating, spitting, print direction, upside print, stop and text selection are possible.

The settings can be done by the iDesign software below *Functions → System settings → Advanced settings* or by the Web-Browser below *Settings → Advanced settings*.

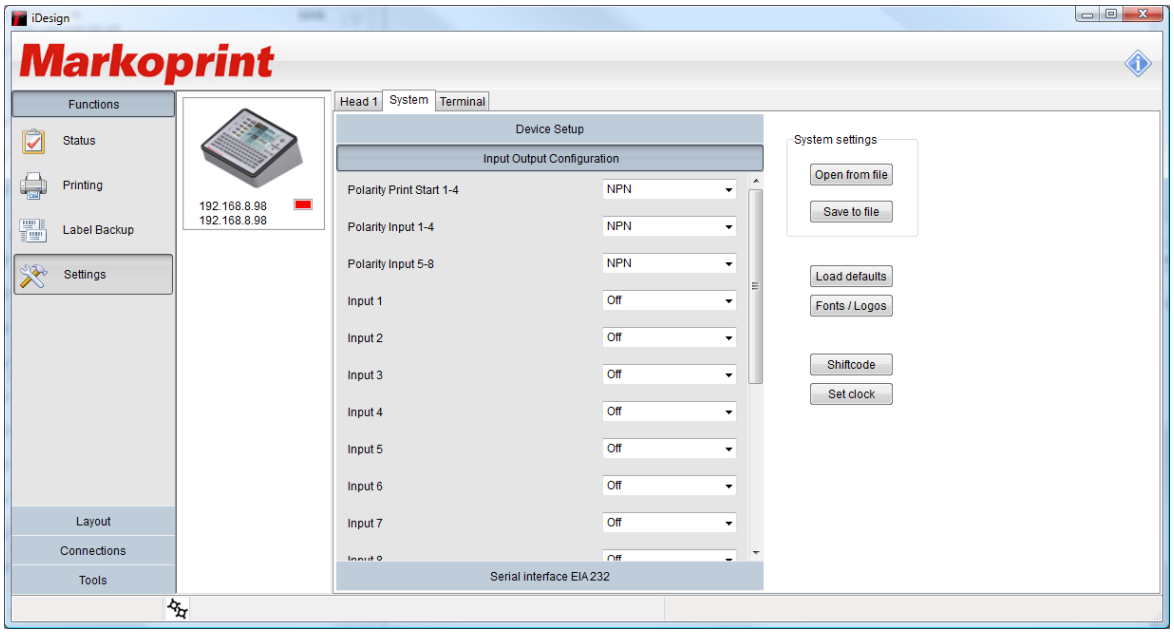


Fig. 7-39: User interface Software iDesign

NonStopPrinting

With the use of a NonStopPrinting print head (NSP head) it's possible to print without interruptions.
The NSP head consists of 2 cartridges, each of them print on the same position. If one cartridge is empty or is to be cleaned, the other cartridge prints continuously.

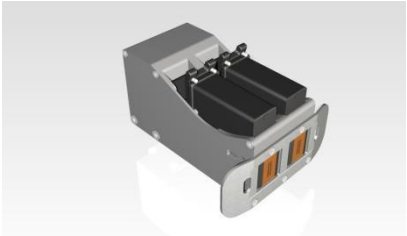


Fig. 7-40: Example for a NSP Single print head LX

Description:

Each print head consists of two cartridge holders, which are controlled alternately. Both cartridges are so driven that they print on the same position of the product.
The cartridges have 100% ink capacity at the installation. The first cartridge prints two times successive, the second cartridge prints once alternately, so that both cartridges aren't empty simultaneously. The alternately printing at the rate of 1:2 prevents a drying up of the cartridges. If the cartridge with the higher print volume is empty, a warning will be displayed and the other cartridge prints continuously from now until a new cartridge is replaced. The new cartridge prints now in a less volume than the other cartridge, so this needs to be replaced next.
The print head is wider by the double cartridge holder (ca. 68 mm with LX print head) as a normal print head (ca. 34 mm).
In addition to a NSP Single print head with a print height of 12,5 mm there is also a NSP Twin print head with a print height of 25 mm. I.e. at a X4JET / X4JET plus can connect one or two NSP Single print heads or one NSP Twin print head.
HP and LX NSP print heads are available.
Print systems of customer can be operated efficiently and economically with the use of the NonStopPrinting function by an elimination of production downtimes. Services and repairs of defect print heads can be done during the running production.

System setting:

The system must set up to the NSP function. That can be done by the iDesign software below *Settings → System → NonStopPrinting*.
If the function isn't need, the seeting must be set to „Off".
A Single head (12,5mm) could be connected at channel 1
A shaft encoder is recommended for a correct synchronisation.

Setup:

Example: A Single head at channel 1
Please set first the encoder resolution or speed exactly.
The test print image „Speedtest" can be used as an assistance.

For testing switch NSP off and set the system to 2x Single.
Assign both heads the same print image.
Both cartridges might be print on the same position.
For a fine-tuning adjust shaft encoder resolution or speed.

Then switch on the NSP and assign one of the cartridges the print image.

Start and assign print image:

To assign a print image one of the both cartridges must select firstly.
Move in the print image selection with the function key „F3".
Select the desired print image and start printing with „F1" (START) . Don't press „OK", otherwise return again with 2x „F5".

Print Stop:

One cartridge can be stopped to clean or change these.
The second cartridge takes the task of the first cartridge and prints on every product from now on.

A print stop of both cartridges isn't possible for security reasons.
Otherwise, it can easily result misprints by misuse.

If the system should not be print for a time, although it is running, a print image without data can be assigned.

Or the print can stopped via iDesign.

Ink warning:

If a cartridge displayed a „Ink warning", these stops printing and the other cartridge take the print function over.
The output displayed „Warning".
After changing of the cartridge and reset of the ink level (only with HP) the print can start again.
The ink level of LX and HP MK2 print heads is reset automatically and the print can start directly.

The ink warning level can set up in % in iDesign.

If both cartridges are empty the output shows „Alarm"

Change cartridge:

A cartridge, which displays a warning, stops printing and goes into pause status.
The main menu shows the cartridge grey in the preview.
Now the cartridge can take out and will be replaced by a new one.
The ink level must be reset by a HP print head. Therefore select the corresponding head and press the ink button.
Set the ink reset to "YES" and confirm with "OK". The ink level is by 100% now and the print can be started again.

Output status:

OK: All cartridges are inserted and filled. The print image is assigned.

Warning: One cartridge is empty, no print image is assigned

Alarm: Both cartridges are empty or not inserted.

Camera input:

Not realized yet.

8. iDesign

Please note the delivered iDesign manual!

Installation iDesign

Double click the setup.exe file on the DVD.
The software will be installed to the folder C:\User\Official\iDesign.
To start iDesign click on the iDesign desktop button.

Connection to the control system

- USB
- Ethernet
- EIA232

Parameter, Preparation

Click on *Connections → Add system* in iDesign and set the *IP-address*, confirm with *OK*, or click on *Search on Com Ports* with EIA232. A system which is connected with the USB slot will be identified automatically.

Text creation iDesign

With iDesign it's possible to create print images below *Editor*.
Fields can be inserted and free positioned in the print image with the buttons *Text, Date, Counter, Barcode, Variable, Logo*. The finished print layout can be saved by a name with max. 8 digits – standard the print images will be saved below *Official\iDesign\label,* the storage location can also free selected. The text gets the extension .00I automatically

Load texts

Send print images to the system or save print images below *Functions → Save label*.

Create print image with iDesign

Print images can be created and processed with the iDesign software stored on the USB stick. For this purpose, this must be installed on a commercially available PC

Please note the delivered iDesign manual!

The diagram below shows the operating surface of the iDesign software

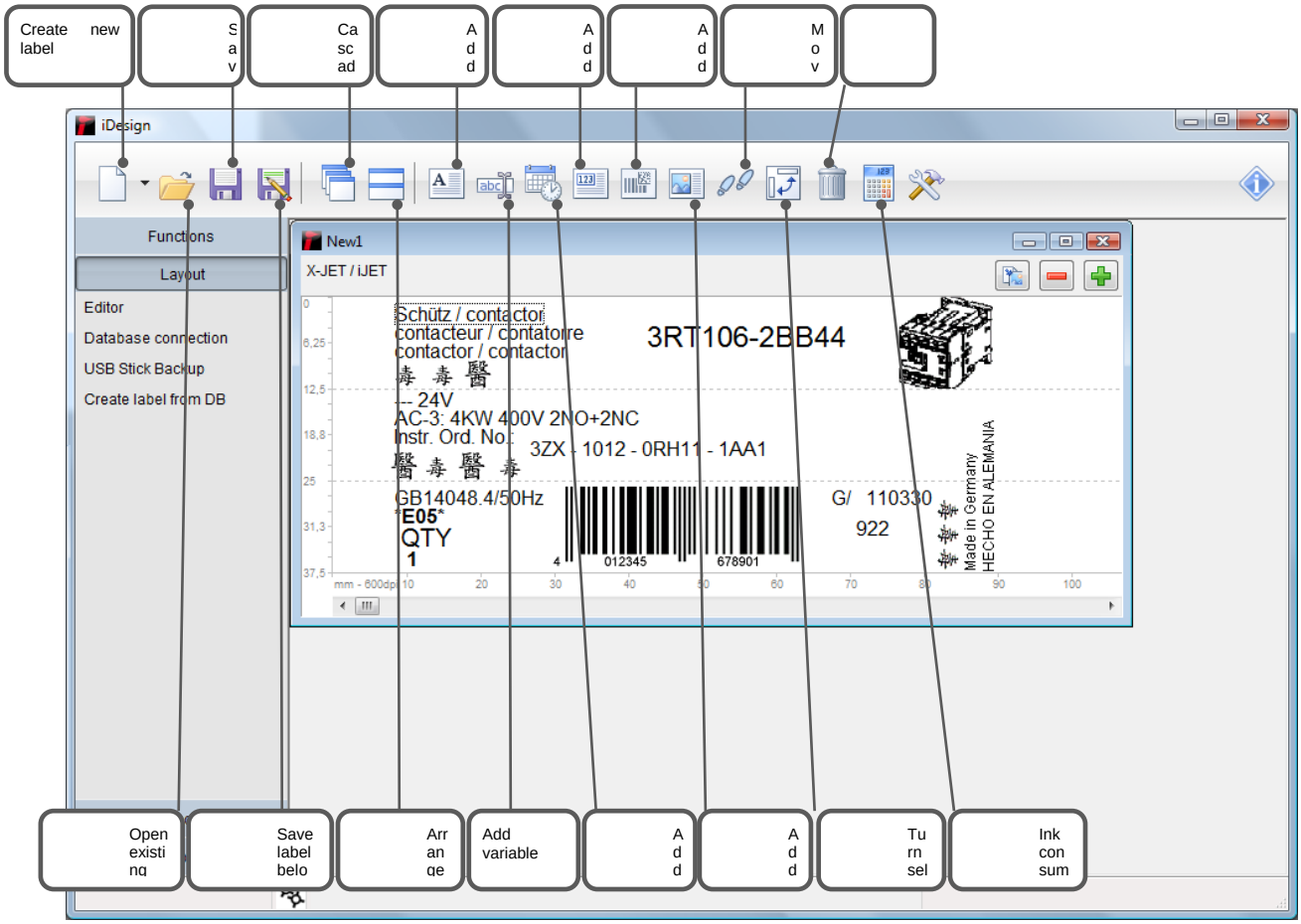


Fig. 8-1: User interface Editor iDesign Software

Load print image

A print image can be loaded into the memory of the Markoprint X2JET plus Touch print system via:

- USB-Stick
- iDesign software with a network connection via Ethernet or
- USB or serial interface EIA 232

9. Faults

The following chapter describes possible causes of malfunctions and how to remedy these.
In case of frequent faults, reduce the service intervals depending on the actual work load.

Please contact your local distributor with regard to faults that cannot be remedied with the information provided below.

Safety

Staff

- The fault remediation work described here, unless specified otherwise, can be performed by the operator.
- Some tasks may only be performed by specially trained specialised staff or exclusively by the manufacturer; this is specifically pointed out in the description of the individual faults.
- Work on the electrical system may only be performed by electricians.

Danger to life through electric shock!


DANGER TO LIFE!

Contact with live parts poses imminent danger to life. Damaged insulation or individual components can be lethal.

Therefore:

– Immediately switch off the power supply and initiate repairs if the insulation is damaged.
– Work on the electrical system may only be performed by electricians.
– Before working on the electrical system, disconnect from the mains (remove mains plug) and check that power is off.
– Always disconnect mains before performing cleaning and repair tasks.
– Keep moisture from live parts. Moisture may cause a short-circuit.

CAUTION

Risk of injury caused by improper disassembly!

 WARNING!

Improper fault remediation may cause severe injury to persons, or material damage.

Therefore:

– Ensure adequate working space before starting any work.
– Keep the working area clean and tidy! Loosely stacked or scattered components and tools are potential causes of accidents.

Table of faults

Controller

Disorder	Possible cause	Troubleshooting	Recovered by
Controller does not start	No power supply	Check power supply	Electrician
No screen display	No signal from the system	Start system	Instructed person
Print system does not produce a print image	No start pulse	Check photocell and connection cable	Electrician
	Print parameter incorrect	Check print parameter, adjust if necessary	Instructed person
	Fault in the electronics of the print system	Send print system in for repairs	Manufacturer
	Faulty rotary encoder or incorrect rotary encoder settings	Check rotary encoder and encoder settings	Instructed person

HP print head

Disorder	Possible cause	Troubleshooting	Recovered by
No print image	No start pulse	Check photo sensor connection	Electrician
	Print parameter incorrect	Check print parameter, adjust if necessary	Instructed person
	Fault in the electronics of the print head	Send print head in for repair	Manufacturer
	Faulty rotary encoder or incorrect rotary encoder settings	Check rotary encoder and encoder settings	Instructed person
Bad and fuzzy print image	The distance between print head and product is too big	Reduce distance to 0 - 4…5 mm	Qualified person
	Low intensity	Increase intensity	Instructed person
	Empty ink cartridge	Change ink cartridge	Instructed person
	Blocked nozzles	Spitting and wipe the nozzle plate if necessary	Instructed person

LX print head

Disorder	Possible cause	Troubleshooting	Recovered by
No print image	No start pulse	Check photo sensor connection	Electrician
	Print parameter incorrect	Check print parameter, adjust if necessary	Instructed person
	Fault in the electronics of the print head	Send print head in for repair	Manufacturer
	Faulty rotary encoder or incorrect rotary encoder settings	Check rotary encoder and encoder settings	Instructed person
Bad and fuzzy print image	The distance between print head and product is too big	Reduce distance to 0 - 8…10mm	Qualified person
	Low intensity	Increase intensity	Instructed person
	Empty ink cartridge	Change ink cartridge	Instructed person
	Blocked nozzles	Spitting and wipe the nozzle plate if necessary	Instructed person

MX print head

Disorder	Possible cause	Troubleshooting	Recovered by
Fine gaps in the print image followed by satellite drops	Paper dust in the nozzle orifices	Run a purging cycle and carefully wipe the print head clean. If this is unsuccessful, send the print head in for cleaning	Electrician
Weak and blurred print	Distance between print head and object too large - reduce distance to 3-5 mm	Control unit configured incorrectly in menu Settings - System configuration - Head driver	Qualified person
Thick white stripes within the printed text	Air behind nozzle plate	Carry out purging process and wipe carefully	Instructed person
The print head does not print at all	Head voltage failure / the print head is not being heated	Check cable and electronic board connections	Electrician
	When printing is initiated, the head generates the typical, slightly chirping noise, but no print appears	Air has entered all ink channels. Carry out a purging process	Instructed person
	No start pulse	Check photo sensor connection (LED pulse)	Electrician
	Start signal too early or late, relative to the print object	Adjust delay in the print parameter menu	Instructed person
	Failure in the electronics of the print head or on the printed circuit board in the control box	Send print head in for repair	Manufacturer
Ink escaping from head	Incorrect level setting when using a TOP head	No horizontal installation Air in system - remove air from tubes/head	Instructed person
Print is too small / too large	Check used and loaded fonts.	All fonts used in the text must be loaded in the system – IDESIGN Font Manager	Instructed person
Jagged type face	Incorrect print speed setting	Check speed setting (intensity setting on rotary encoder)	Instructed person

Trouble shooting tasks

Cleaning the HP ink cartridge

NOTICE

Material damage due to incorrect cleaning**!**

Incorrect cleaning may scratch the nozzles of the ink cartridges, causing blurred print images since the scratches around the nozzles divert the ink.

Therefore:

– Use only lint-free and absorbent cloths to clean the cartridges.
– Moisten cleaning cloths with water.
– Wipe slowly without pressure.

- Applied by instructed person
- Apply if, even after wiping the nozzle plate, the print quality does not improve.

During printing the print quality may deteriorate due to dust and ink vapour. In this case, wipe the nozzle plate of the ink cartridge with a moist, lint-free cloth. The water in the moist cloth dissolves the ink residues and cleans the nozzles and the ink channels.

Requirements

Absorbent cloths

Instruction

Please clean the nozzle plate as follows:

Step	Procedure
1	Remove the ink cartridge from the holder. → *Chapter* Removing the HP ink cartridge*, page* **79**
2	Hold the ink cartridge with the nozzle plate facing downward.
3	Slowly wipe across the nozzle plate in the direction of the arrow, using a moistened and lint-**free** cloth. Do not shake the ink cartridge!

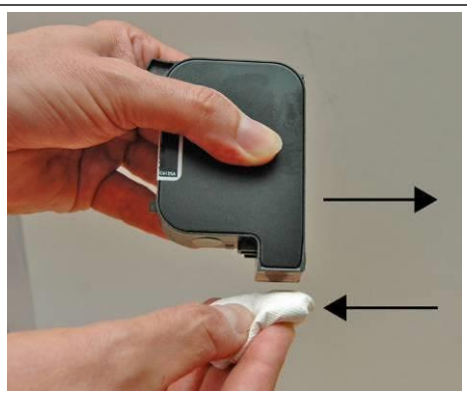


Fig. 9-1: Cleaning the ink cartridge

Step	Procedure
4	Re-insert the ink cartridge in the holder. → *Chapter* Inserting the HP ink cartridge*, page* **77**

A small amount of water may mix with the ink in the channels, rendering the first print a bit grey.

Rinsing and de-aerate the HP ink cartridge with the ink activator

NOTICE

Material damage due to ink leavings!

Please secure the environment against ink leavings by removing the cartridge or take off the injection.

Therefore:

– Absorb the excess ink with an absorbent cloth.

- Applied by instructed person.
- Apply if, even after wiping the nozzle plate, the print quality does not improve.

Ink cartridges exposed for an extended period may dry up to such an extent that simple cleaning by wiping is inadequate.
Open ink cartridges subjected to severe shock or shaking may result in air entering the nozzles. These results in increased nozzle failures during printing or the ink cartridges stop printing altogether.
In this case, the cartridge nozzles can be rinsed with the ink activator. The ink activator consists of a holder and an injection.

Requirements

- Ink-Activator
- Injection

Instruction

Please de-aerate the ink cartridge as follows:

Step	Procedure
1	Insert the ink cartridge in the ink activator holder as shown in the figure.
2	Press the ink cartridge in the direction of the arrow until the cartridge is firmly seated in the holder.

Fig. 9-2: Inserting ink cartridge in den Ink-Activator

4	Insert the injection in the opening of the holder.

Step	Procedure

Fig. 9-3: Extracting ink

5	Slowly and steadily extract approx. 1 to 2 ml of ink from the cartridge. In case of foam formation in the injection, continue extraction until the ink appears in the injection.
6	Remove the syringe from the holder.
7	Remove the ink cartridge from the holder.
8	Wipe the nozzle plate of the ink cartridge. → *Chapter* Cleaning the HP ink cartridge*, page* **177**
9	Check if ink is flowing out of the nozzles.
10	If no ink is flowing, re-use the cartridge.

Air in the cartridge

Air in the cartridge makes noticeable loss nozzles. This covers an ever wider area. Air into the nozzle can occur if the cartridges be left open for long, especially when MIBL2, as these contain alcohol. Or when a cartridge is dropped, severely shaken, or is exposed to strong vibrations. To remove the air from the nozzles, the ink activator can be used as described in the manual. A typical failure screen looks like this:

Fig. 9-4: Example of a print image with loss of nozzles

Cleaning the LX ink cartridge

For cleaning the LX ink cartridges please have a look to chapte „Cleaning the HP-ink cartridge“ and do it in the same way.
→ *Chapter* Cleaning the HP ink cartridge*, page* **177**

Rinsing and bleeding the MX print head

NOTICE

Material damage due to ink leavings!

Rinsing of the MX-Top print head results increased ink consumption and can lead to undesirable contamination of the environment.

Therefore:

– Secure the environment against leaking ink.
– Afterwards wipe the nozzle plate once with a lint-free cloth

Rinsing:
There are no moving parts in the print head requiring regular maintenance.
However, for printing onto outer packaging (e.g. cartons, trays, sacks, etc.) it must be expected that dust and fibre particles carried along are freed and adhere to the nozzle plate of the print head. Over a period of time, this can lead to a worsening of the print quality.

Instruction

Please rinse the MX print head as follows:

Step	Procedure
1	Press the [PURGE] button on the system flange plate.

With a short push on the button it happen a flush run, the vacuum pump of the maintenance station runs to suck off the ink rests. The vacuum pump runs after ca. 1 sec. shortly to rinse ink, air and dust from the nozzles, afterwards the vacuum pump runs ca. 10 sec. to suck off the ink rests completely.

Bleeding:

Instruction

Please bleed the MX print head as follows:

Step	Procedure
1	Switch the system on.

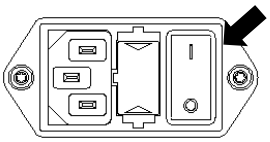


Fig. 9-5: Switch the system on

2	Put the locking clamp on the nozzle plate.

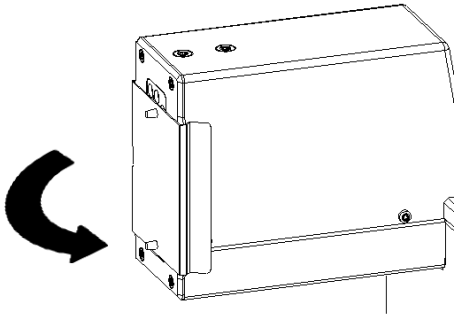


Fig. 9-6: Put the locking clamp on

4	Press the [PURGE]-button and hold them pressed for ca. 30 seconds. ATTENTION, ink may leak out of the nozzle plate of the print head.

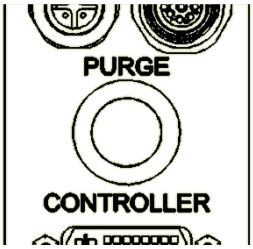


Fig. 9-7: Purge the nozzles

5	Remove the locking clamp from the nozzle plate and store it in a convenient place.

Step	Procedure

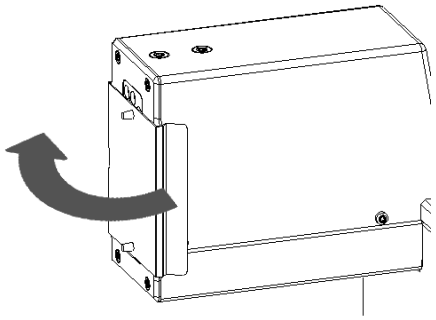


Fig. 9-8: Remove the locking clamp

If the button will be pressed more than 20 seconds, the vacuum pump runs continuously to de-aerate the print head. Therefore the nozzle plate should be closed with the head clamp to rinse the ink in a circulation.
The pump stops pumping after 30 sec. automatically.

If the contamination is too stubborn and cannot be removed by the rinsing procedure, return the unit to our factory for expert cleaning. Please note that this constitutes a service which entails costs, even during the warranty period.
If the normal unit environment is constantly subject to large dust accumulation, we recommend having the unit cleaned at the factory in regular intervals of once or twice per year.

10. Disassembly

When end of the useful life expires, the system must be disassembled and disposed in an environmentally-friendly manner.

Safety

Staff

WARNING

Danger to life through electric shock!

DANGER TO LIFE!

Contact with live parts poses imminent danger to life. Damaged insulation or individual components can be lethal.

Therefore:

- Immediately switch off the power supply and initiate repairs if the insulation is damaged.
- Work on the electrical system may only be performed by electricians.
- Before working on the electrical system, disconnect from the mains (remove mains plug) and check that power is off.
- Always disconnect mains before performing cleaning and repair tasks.
- Keep moisture from live parts. Moisture may cause a short-circuit.

CAUTION

Risk of injury caused by improper disassembly!

WARNING!

Stored residual energy, sharp-edged components, points and corners on and inside the apparatus or on the required tools may cause injuries.

Therefore:

- Ensure adequate space before starting any work.
- Handle exposed sharp-edged components with care.
- Keep the work area clean and tidy! Loosely stacked or scattered components and tools are potential causes of accidents.
- Secure components to prevent falling down or falling over.
- Consult the manufacturer if uncertain.

- Disassembly may only be performed by specially trained specialized staff.
- Work on the electrical system may only be performed by electricians.

Disassembly of a MX print head

NOTICE

Material damage due to incorrect disposal!

Electronic components are destroyed if allowed to come into contact with escaping ink.

Therefore:

– Close the ink systems before disposal carefully.

Instruction

Please disassemble the MX print head as follows:

Step	Procedure
1	Switch off the control system.
2	Isolate maintenance station or main adaptor from the print head.
3	Close the print head with the cleaned locking clamp.
4	Remove the ink bottle.
5	Check whether the red sealing ring (o-ring) is present.
6	Place the red sealing ring into the opening of the ink container and close it with the screw cap.
7	Close ventilation opening with the plastic cap.
8	Disassemble the system and pack it carefully.

To prevent damage during transportation, choose a box with adequate padding. Leave a gap of at least 5cm between unit and box for filling with absorbent and impact-absorbing filling.
Please do not pack unit in plastic bag.
Because any escaped ink cannot be soaked up, it spreads over the whole unit causing damage.

The resulting damage and cleaning overhead unnecessarily increase repair costs.

For best possible transportation, original packaging is available from Weber Marking Systems for this system.

Disposal

NOTICE

Environmental damage due to incorrect disposal!

Electrical scrap, electronic components, lubricants and other auxiliary materials are subject to hazardous waste treatment regulations and may only be disposed of by approved specialized companies!

Unless return or disposal agreements were made, submit disassembled components for recycling:

- Scrap metals.
- Submit plastic components for recycling.
- Dispose of other components according to material composition.

The local municipal authorities or specialized disposal companies provide information on environmentally compatible disposal.

11. List of Accessories and Spare parts

NOTICE

Safety hazard due to incorrect spare parts!

Incorrect or faulty spare parts may affect safety and cause damage, malfunctions or failure.

Therefore:

– Only use original spare parts from the manufacturer.

Procure spare parts via contracted dealers or directly from the manufacturer.

HP ink cartridges

NOTICE

Material damage can be caused by spraying ink!

Spitting results in increased ink consumption and can lead to undesirable contamination of the environment.

Therefore:

– Hold an absorbent cloth in front of the nozzle plate of the ink cartridge.

The specified drying times can be reduced by additional heat treatment (hot-air blower, IR heater). The open time can be extended by spit pulse programming.

Please note the ink specific settings for head voltage, fire time, spitting and warming.
There is the possibility to set up the ideally standard values for the respective ink type on the iDesign software or Web interface.
It makes sense to change the values carefully depending on the application.

After the insertion of a new cartridge the ink counter must be reset and the temperature measurement must be calibrated.
Ink level: → Chapter Reset ink counter, page 159
Temperature: → Chapter Warming, page 161

The settings can be made with the iDesign software below **Functions / System settings / Advanced settings**.

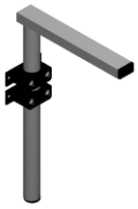
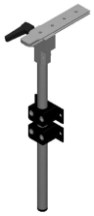
Pos.	Name	Description	Art.no
1	HP-Set 4 STABL	2 x ink cartridges, color black, volume per cartridge 42 ml. Specially developed, highly pigmented HP ink. Well suited for sharp edged print on absorbent materials. **Drying:** Good on absorbent surfaces; ink does not dry on poorly absorbent surfaces since the pigments remain on the surface. **Open time without loss of quality:** Approx. 15 minutes (depending on print resolution and print image).	72500013
2	HP Set 12 UVINV	2x print cartridges, colour transparent, volume each 42 ml. Specially developed HP ink, readable under UV light. Well suited for sharp edged print on poorly absorbent materials.	72500021
3	HP Set 14 MIBL 2	2x print cartridges, colour black, volume each 42 ml. Specially developed, solvent-containing, pigmented HP ink. Well suited for sharp edged print on lacquered materials.	72500023
4	HP Set 26 RCBLU	2x print cartridges, colour blue, content per 42 ml. Specially developed, solvent-containing HP ink. Well suited for printing on poorly absorbent material. **Drying:** On poorly absorbent surfaces within a few seconds, on absorbent surfaces immediately. Good marginal sharpness on poorly absorbent surfaces. **Open time without loss of quality:** Up to 2 hours (depending on intensity and print image).	72500036
5	HP Set 27 RCRD	2x print cartridges, colour red, content per 42 ml. Specially developed, solvent-containing HP ink. Well suited for printing on poorly absorbent material.	72500037
6	Cartridge HP WDGN1	1x print cartridge, colour green, content per 42 ml. Specially developed, solvent-containing HP ink. Well suited for printing on poorly absorbent material.	40013323
7	Cartridge HP Ultra Black	1x print cartridge, colour black, content per 42 ml. Specially developed, non-pigmented dye-based ink. Well suited for pin sharp prints on absorbent and semi-absorbent materials. Delivered as SmartCard cartridge.	40018776
8	Cartridge HP 2580	1x print cartridge, colour black, content per 35 ml. Specially developed, dye-based ink (solvent based). Good adhesion qualities on different non-absorbent surfaces. Long open time (approx. 900 minutes) Delivered as SmartCard cartridge.	40012279
9	Cartridge HP SDBLK3	1x print cartridge, colour black, content per 35 ml. Specially developed, dye-based ink (solvent based). High blackness, abrasion-resistant on some non-absorbent surfaces. Delivered as SmartCard cartridge.	40017072
10	Cartridge HP WDBLK1	1x print cartridge, colour black, content per 42 ml. Specially developed, non-pigmented dye-based ink. Well suited for printing on absorbent and semi-absorbent surfaces. Delivered as SmartCard cartridge.	40010705
11	Cartridge HP WDBLK2	1x print cartridge, colour black, content per 42 ml. Specially developed, non-pigmented dye-based ink. Well suited for printing on absorbent and semi-absorbent surfaces. Open time: up to 4 hours without loss of quality. Delivered as SmartCard cartridge.	40016702

Pos.	Name	Description	Art.no
12	HP Pack STABL	10x print cartridges, colour black, content per 42 ml. Specially developed, solvent-containing HP ink. Well suited for printing on poorly absorbent material. Delivered as SmartCard cartridge.	72500139

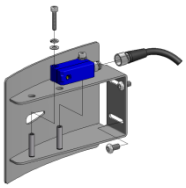
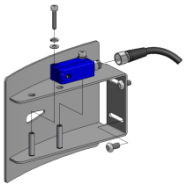
LX ink cartridges

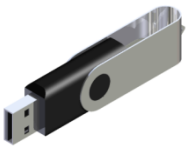
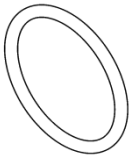
No.	Name	Description	Art.no
1	LX GP+	Ink cartridge, modified, color black, 33 ml capacity each. Specially developed, high pigmented, water-based Funai ink. Well suited for sharp edged print on poorly absorbent materials. **Drying:** Immediate drying on absorbent surfaces, no drying on poorly absorbent surfaces, because the pigments remain on the surface. **Open time without loss of quality:** Approx. 15 minutes (depending on intensity and print image).	72500301
2	LX GP1	Ink cartridge, modified, color black, 33 ml capacity each. Specially developed, high pigmented, water-based Funai ink. Well suited for sharp edged print on poorly absorbent materials. **Drying:** Immediate drying on absorbent surfaces, no drying on poorly absorbent surfaces, because the pigments remain on the surface. **Open time without loss of quality:** Approx. 30 minutes (depending on intensity and print image).	40006208
3	LX SD1	Ink cartridge, modified, color black, 33 ml capacity each. Specially developed, high pigmented, water-based Funai ink.	72500306
4	LX RD1	Ink cartridge, modified, color black, 33 ml capacity each. Specially developed dye-, water-based Funai ink.	72500317
5	LX NP1	Ink cartridge, modified, color black, 33 ml capacity each. Specially developed solvent-based ink of Funai. Well suited for prints on semi-absorbent and non-absorbent materials, depending on the intensity. **Open time without loss of quality:** Up to 8 hours.	40009494

Mounting brackets

No.	Figure	Article	Description	Order no.
1		Mounting bracket controller MX print head	For a fixing on a conveyor from the side.	71800027
2		Mounting bracket HP print head	For a fixing on a conveyor from the side, with quick fastener to take the head out of the mounting bracket without technical tools. Model „Dovetail“	72801010
3		Mounting bracket HP print head TOP	For a fixing on a conveyor from the top, with quick fastener to take the head out of the mounting bracket without technical tools. Model „Dovetail“	72801011
4		Mounting bracket MX print head TOP	For a fixing on a conveyor from the top.	71800029
5		Floor stand for 1 or 2 print heads	For a fixing on a conveyor from the top.	71800034

Other

No.	Figure	Subassembly	Description	Order no.
1		PE sensor NPN, 10…30V DC Standard M18	including 5.0 m connecting and adapter cable (M12 to M8) and universal holder	72801012
2		PE sensor NPN, 10…30V DC M8	including 0.6 m connecting cable and VA holder, for direct mounting of the print head from the side	72801013
3		PE sensor NPN, 10…30V DC, external 32x15mm	for mounting behind the front panel, including 0.6 m connecting cable	72801014
4		PE sensor (NPN), 10-30V DC, X2JET/X4JET MX	Inkl. 5,0m Anschlusskabel (M8 auf M8) zur direkten, seitlichen Montage am MX Druckkopf	72801074
5		PE sensor (NPN), 10-30V DC, X2JET/X4JET mit MX 50 Abweiser	Inkl. 5,0m Anschlusskabel (M8 auf M8) zur seitlichen Montage am MX 50 Druckkopf	72801077
6		PE sensor (NPN), 10-30V DC, X2JET/X4JET mit MX 100 Abweiser	Inkl. 5,0m Anschlusskabel (M8 auf M8) zur seitlichen Montage am MX 100 Druckkopf	72801079
7		Rotary encoder (600dpi) Spring arm holder	Rotary encoder with spring arm and aluminium friction wheel (600dpi), including connecting and adapter cable (M12 to M8)	72801018
8		Rotary encoder Spring arm holder	Rotary encoder with spring arm and plastic friction wheel, including connecting and adapter cable (M12 to M8)	72801015

No.	Figure	Subassembly	Description	Order no.
9		Rotary encoder (600dpi) Angle holder	Rotary encoder with angle holder and aluminium friction wheel (600dpi), including connecting and adapter cable (M12 to M8)	72801019
10		Rotary encoder Angle holder	Rotary encoder with angle holder and plastic friction wheel, including connecting and adapter cable (M12 to M8)	72801016
11		USB-data-stick	Version 1	72901202
12		CartClip	for retaining ink cartridges type 15/45	72900074
13		Ink-Aktivator	for de-aerating and cleaning the ink cartridges	72900108
14		CartClip	for retaining LX ink cartridges	72902026
15		Measuring wheel	Measuring wheel for encoder, optimized for 600 dpi	72900454
16		O-Ring	O-ring for encoder measuring wheel (600 dpi) Dimensions: 55x5; NBR	72900455
17		Alarm light	„Alarm light“ (red/yellow/green) for an optical display of the operation	22702287
18		Cable	Connecting cable 1m	72900225
19		Cable	Connecting cable 3m Standard accessories with every print head	72900053
20		Cable	Connecting cable 5m	72900085
21		Cable	Connecting cable 10m	72900226
22		Cable	Connecting cable 25m	72900228
23		Cable	Extension cable 5m	72900086

No.	Figure	Subassembly	Description	Order no.
24		Cable	Extension cable 10m	72900227
25		Cable	Adapter M8 connector to M12 socket 0,6m	72901035
26		Cleaning stick	Cleaning stick to clean the nozzle plate	40007189

12. Appendix

Ink chart

The Markoprint X2JET plus Touch contains ink tables for the different print systems. The optimal value of an ink will be automatically adopted by the ink selection.
If the parameters were changed in the iDesign software, the changed parameters stay active till a new ink type will be select on the Markoprint X2JET plus Touch.
The ink tables are stored as excel tables in the HMI account: „InkPar.csv“.
The chart can be adapted customized with a Software-Update →*Chapter* Software-Update*, page* **197** and can transferred to the Markoprint X2JET plus Touch memory.

Changes of the ink parameter can cause bad print images and should change from qualified persons only.

„InkPar.csv“ (for HP systems):

SET Nr.	Bezeichnung	S-Nr	Inhalt	Spannung	Fire Time	Spitting	Spit Rows	Spit Delay	Warming	Warm Temp	Warm time	Sub Fire	Spit Interval	Auto Off	Order No	Correction
1	STABL	4	100	110	190	Off	0	0	No	20	0	190	0	0	B3F57A	
2	DIBL	5	100	110	190	Off	0	0	No	20	0	190	0	0		
3	MIBL2	14	129	105	190	Off	0	0	No	20	0	190	0	0		
4	SCRD	8	100	110	190	Off	0	0	No	20	0	190	0	0		
5	SCGN	9	100	110	190	Off	0	0	No	20	0	190	0	0		
6	SCBLU	10	100	110	190	Off	0	0	No	20	0	190	0	0		
7	WEBL	11	100	110	190	Off	0	0	No	20	0	190	0	0		
8	UVC1	28	100	110	190	Off	0	0	No	20	0	190	0	0		
9	BEABL	30	100	80	240	before	25	5	Yes	45	1	190	0	0		
10	UVINV	12	100	110	190	Off	0	0	No	20	0	190	0	0		
11	IRINV	13	100	110	190	Off	0	0	No	20	0	190	0	0		
12	G1BL	15	100	110	190	Off	0	0	No	20	0	190	0	0		
13	CMBLK	25	100	110	190	Off	0	0	No	20	0	190	0	0		
14	RCBLU	26	100	110	190	Off	0	0	No	20	0	190	0	0		
15	RCRD	27	100	110	190	Off	0	0	No	20	0	190	0	0		
16	UltraBlack	31	100	110	190	Off	0	0	No	20	0	190	0	0		
17	FastSolid	33	100	80	240	before	25	60	Yes	45	1	190	0	0		
18	CMBLK2	34	100	110	190	Off	0	0	No	20	0	190	0	0		
19	NPBLK	35	100	80	240	before	25	60	Yes	45	1	190	0	0		
20	Bulk400	99	952	110	190	Off	0	0	No	20	0	190	0	0		
21	FSBLK	36	100	80	240	before	25	60	Yes	45	1	190	0	0		
22	PTBLK	37	75	87	180	Off	0	0	No	20	0	190	0	0		
23	HP 2580	38	75	87	180	Off	0	0	No	20	0	190	0	0	B3F58A	
24	WDBLK1	39	100	110	190	Off	0	0	No	20	0	190	0	0		
25	WDBLK2	40	100	110	190	Off	0	0	No	20	0	190	0	0	40016702	
26	SDBLK1	41	75	110	230	Off	0	0	No	20	0	190	0	0		
27	SDBLK2	42	75	86	180	Off	0	0	No	20	0	190	0	0	REORDER PN	
28	SDBLK3	43	75	86	230	Off	0	0	No	20	0	190	0	0	40017072	

„InkParLX.csv“ (for LX-Systems):

SET Nr.	Bezeichnung	S-Nr	Inhalt	Spannung	Fire Time	Spitting	Spit Rows	Spit Delay	Warming	Warm Temp	Warm time	Sub Fire	Spit Interval	Auto Off	Voltage
1	???	1	80	110	70	Off	0	0	Yes	47	1	25	0	0	
2	GP+	2	80	110	72	Off	0	0	Yes	47	1	25	0	0	
3	CS1	3	70	110	70	Off	0	0	Yes	42	1	25	0	0	
4	SD1	4	80	110	70	Off	0	0	Yes	42	1	25	0	0	
5	RD1	5	60	110	70	Off	0	0	No	42	1	25	0	0	
6	NP1	6	100	108	55	Off	0	0	No	20	0	23	0	0	1
6	NP1	6	100	95	72	Off	0	0	No	20	0	25	0	0	2

„InkParMX.csv“ (for MX-Systems):

SET Nr.	Bezeichnung	S-Nr	Inhalt	Spannung	Fire Time	Spitting	Spit Rows	Spit Delay	Warming	Warm Temp	Warm time	Sub Fire	Spit Interval	Auto Off
1	SC II	1	100	110	190	Off	0	0	No	20	0	190	0	0
2	Versa	2	100	110	190	Off	0	0	No	20	0	190	0	0
3	A 5000	3	100	110	190	Off	0	0	No	20	0	190	0	0

Software-Update

Software update with USB-Stick

Requirements

- Following folder must be copied to an empty USB-Stick: HMI, HMI+, HTML and System.
- The **Markoprint X2JET plus** Touch is off.

Instruction

Please proceed a software update with USB-stick as follows:

Step	Procedure
1	Make sure that the **Markoprint X2JET plus** Touch control system is off.
2	Insert the USB stick with the new version in the lateral USB socket.
3	Switch on system and when the start logo appears (Bluhm/Weber, Markoprint X2JET plus Touch) keep the INFO button pushed.
4	The following then appears on the display: Prg: 0 PV1.0xx → new Program Version GA.: 0GV0.032 → new Gate Array Version Copy to SD?
5	By briefly pressing the OK button the new version is copied to the internal SD card and the system restarts.
6	Now remove the USB-Stick.

Software-Upgrade

A software upgrade with costs is comfortably possible via the Weber Marking Partner Portal.
Please contact your consultant or local distributor to get an software-upgrade.
You can find a detailed instruction of the software upgrade below the search key „Configuration upgrade“ in the Wiki of the Weber Marking Partner Portal.

HMI-Update

A HMI-Update of the system unit will be realized with a new software version automatically and must be confirmed by the OK button.

A HMI-Update without software update is realized as follows:

Requirements

- A USB-stick with the new HMI-data is available.
- The Markoprint X2JET plus Touch is off.

Instruction

Please proceed a HMI-Update without a software update as follows:

Step	Procedure
1	Make sure that the Markoprint X2JET plus Touch control system is off.
	Insert the USB stick with the new version in the lateral USB socket.
2	Switch the system on and keep the OK button pressed by appearance of the program version.
3	On the display is shown: Copy HMI-Data from Stick?
4	Confirm by touching the OK button.
5	Wait till “ready“
6	Start the system with a short pressure at the OK button.
7	Now remove the USB-Stick.

Bootloader-Update

The system may under no circumstances be switched off during the boot loader update.
If the update cannot be completed, do not restart the system.
To replace the boot loader the system must then be send to the manufacturer.

Requirements

- A USB-stick with the new Bootloader version is needed. The USB-stick includes the program folder „SYSTEM““.
- The Markoprint X2JET plus Touch is off.

Instruction

Please proceed a Bootloader-Update as follows:

Step	Procedure
1	Make sure that the Markoprint X2JET plus Touch control system is off.
2	Switch on system and when the start logo appears (Bluhm/Weber, Markoprint X2JET plus Touch) keep the INFO button pushed.

Step	Procedure
3	The following then appears on the screen: Prg: 0 PV1.0xx → actual program version GA.: 0GV0.032 → actual Gate Array version Stick?
4	Insert the USB stick with the new version in the lateral USB socket.
5	The following then appears on the screen: Prg: 0 PV1.0xx → new Program version GA.: 0GV0.032 → new Gate Array version Start?
6	By briefly pressing the OK button the new boot loader version is copied to the internal memory.
7	The green power LED lights up during the copying process.
8	Wait until the end of the copying process, with the power LED lit up and the sensor LED displayed in green!
9	Restart the system by switching off the voltage and switching on again.

The system may under no circumstances be switched off during the boot loader update.
If the update cannot be completed, do not restart the system.
To replace the boot loader the system must then be send to the manufacturer.

Date variables

Acceptation of the specific variable letters:

Variable	Meaning
a	Day, tens
b	Day, units
c	Month, tens
d	Month, ones
e	Year, thousands
f	Year, hundreds
g	Year, tens
h	Year, ones
i	Hour, tens
j	Hour, ones
k	Minute, tens
l	Minute, ones
m	Second, tens
n	Second, ones
ooo	Month, as string
ppp	Day of the year
Q	Weekday
rr	Calendar week
s	Hour as character (0=A, 1=B, …, 23=Z)
t	Shift code (max. 4 digits)
u	Day of the year, hundreds
v	Day of the year, tens
w	Day of the year, ones
A	Day, ones (zero suppression)
B	Day as character (1-9=A, 10-19=B, 20-29=C, ...)
C	Month, tens (zero suppression)
D	Month as character (1=A, 2=B, …, 12=M)
G	Year, tens (zero suppression)
H	Year, units as character (0=C, 1=M, 2=E, 3=A, 4=D, 5=J, 6=O, 7=H, 8=N, 9=S)

I	Hour, tens (zero suppression)
K	Minute, tens (zero suppression)
L	Minutes, tens as character (0=A, 1=B, …, 5=F)
M	Second, tens (zero suppression)
Q	Weekday as character (1=A, 2=B, …, 7=G)

USB-Stick files

Following files are saved on the USB-stick:

- iDesign-Software
- Manual Markoprint X2JET plus Touch
- Manual iDesign Software
- Leaflet

The required files for software updates:

- HMI-directory
- HMI+ -directory
- HTML-directory
- System-directory

Boot-error messages

If an error number is displayed during booting of the system, this can be limited by means of the following list.

Boot-Error	Description
01	General hardware error
02	Memory error
03	Timer error
04	SPI / Bluetooth error
05	Gate Array error
06	Display error
07	SD Card error
08	USB-A error
09	Real time clock error
10	Multitasking-error

MInit-Error	Description
01	File device error
02	File system error
03	Parameter error
04	User Call error
05	TCP-IP error
06	Print control error

Init-Error	Description
01	File device error
02	File system error
03	User call error

Main Error	Description
01	General hardware error
02	Memory error
03	Timer error
04	SPI / Bluetooth error
05	Gate Array error
06	Display error
07	SD Card error
08	USB-A error
09	Real time clock error
10	Multitasking error
11	Ethernet error
12	USB-B error
13	HP head error
14	Control error
15	NV-RAM error

SW-configuration error	Description
-1	Invalid data
-2	Wrong check sum
-3	Wrong Header-ID
-4	Unknown HW-Revision
-5	Unknown MOP-serial number
-6	Wrong MAC-address

Boot-LED messages

During booting of the system progress can be determined by means of the LED.
If the system stops during booting the cause can be determined by means of the LED.
FC means flashing. An error can be determined on the basis of the number of flashes.

Status-LED ⚠	Sensor-LED ⎍	Description
ye	ye	Write 64MB memory
rd	—	Read/ invert 64MB memory
—	rd	Read/ test 64MB memory
ye	—	Test ok / Load BootMain from SPI
—	ye	Programming and start of BootMain
ye	rd	BootMain initialization
—	—	Fatal error
rd	rd	Boot error 4x = SPI; 5x = GA; 6x = Displ; 7x = SD-Card; 8x = USB; 9x = RTC; 10x = Task
rd	FC: rd	Init error 1x = Dev; 2x = FS; 3x= UsrCl
rd	FC: gn	SD card read
ye	gn	Wait for stick
ye	rd / gn	No boot data
ye	rd / —	Write 64MB memory
ye	ye / gn	Booting from stick?
ye	ye / rd	Copy from stick?
ye	gn / —	Copy Ok
gn	—	Main program loaded and started

Plug connection

Sensor

Sensor input: 24V
Standard: NPN (switching to GND)
Can be changed to PNP via software.

Photocell with 4-pole M8 round plug

PIN	Description	Value	Unit
1	Power	+ 24	V
2 – Sen2	Start pulse (inverted signal)	Input standard NPN	-
3	GND	0	V
4 – Sen1	Start pulse	Input standard NPN	-

The PIN2 can optionally be used as an additional input. This must be programmed customer-specifically.
Standard is the inverse output by many sensors. The input can selected as sensor 1+2 inverted in the menu.
Signal threshold 12V +- 2V

Encoder

Encoder input: 24V
Standard: NPN or push-pull max. 100kHz

Rotary encoder with 4-pole M8 round plug

PIN	Description	Value	Uniit
1	Power, max. 10mA	+ 24	V
2			
3	GND	0	V
4	Encoder signal	Standard: NPN or push-pull	-

View on plug back side

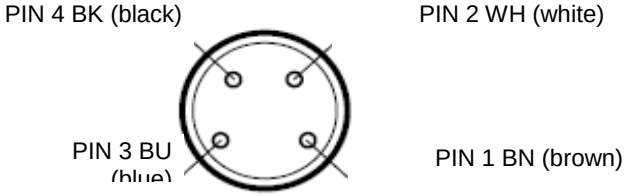


Fig. 12-1: Socket 4-pole M8 plug

PIN	Cable colour
1	Brown 24V
2	White input
3	Blue 0V (ground)
6	Black input

When using the splitter cable are both inputs / outputs clearly separated.
The input Pin2 is on a connection on Pin4 (see Fig.12-1).

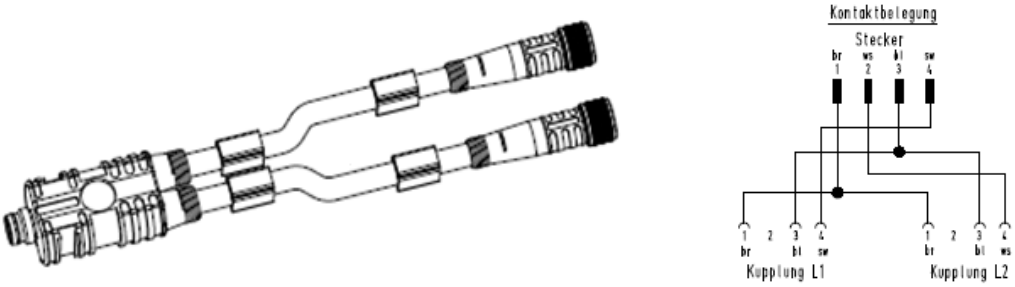


Fig. 12-2: Splitter cable and whose pin assignment

Alarm light

The alarm light (24V) will be connected to the 8-pole M12-socket.
24V voltage will be switched on the outputs.

PIN	Color	Function
1 – Out1	White	Alarm red lamp
2 – Out2	Brown	Warning orange lamp
3 – Out3	Green	OK green lamp
4 – Out4	Yellow	Reserve
5 – In 7		Reserve
6 – In 8		Reserve
7 - +24V		Power max. 100mA
8 - GND	Red	common contact

External Output

The outputs are potential-free. The relay is designed for 24V. Relay output: max 24 V and max. 100 mA. Standard: Closing contact.

- **Connection**
  15-pole Sub-D-socket.
- **Input**
  NPN input, can be changed to PNP via software.
- **Standard**
  NPN (to GND switching)
- **Input voltage for PNP**
  10 V…24 V

PIN	Name	Description	Potential
1	GND	Power	0V
2	RS232	RXD	
3	RS232	TXD	
4	In	User 4	Standard: NPN
5	In	User 5	Standard: NPN
6	In	User 6	Standard: NPN
7	RS232	GND	
8	Encoder channel 2	In	Standard: push pull
9	In	User 3	Standard: NPN
10	Encoder channel 1	In	Standard: push pull
11	Start Channel 1	Input 1	Standard: NPN
12	In	User 2	Standard: NPN
13	In	User 1	Standard: NPN
14	Out 6	Warning	Relais max. 24V / 100mA
15	Out 5	OK	Relais max. 24V / 100mA
16	Out 7	ALARM	Relais max. 24V / 100mA
17	Common	Relais	
18	Out 8	User	Relais max. 24V / 100mA
19	Start channel 2 / inv.	Input 4	Standard: NPN
20	Start channel 2	Input 3	Standard: NPN
21	Out 1	User	24V / max.100mA
22	Out 2	User	24V / max.100mA
23	Out 3	User	24V / max.100mA
24	Out 4	User	24V / max.100mA
25	Vpp	Power	+24V

Splitter cable for 2channel head Art. no.: 72900451

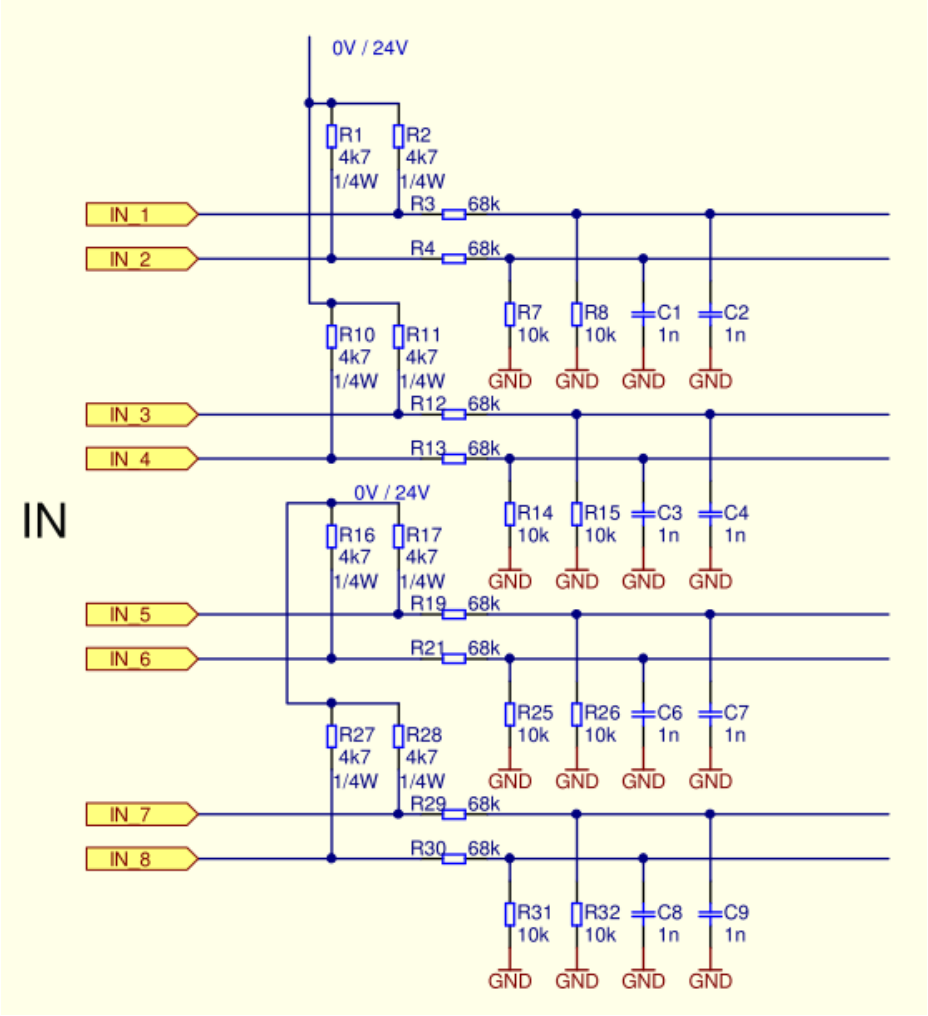
25 pin Sub-D-plug 9pin Sub-D-plug (RS232)
PIN 2 ----------PIN 2
PIN 3 ----------PIN 3
PIN 7 ----------PIN 5

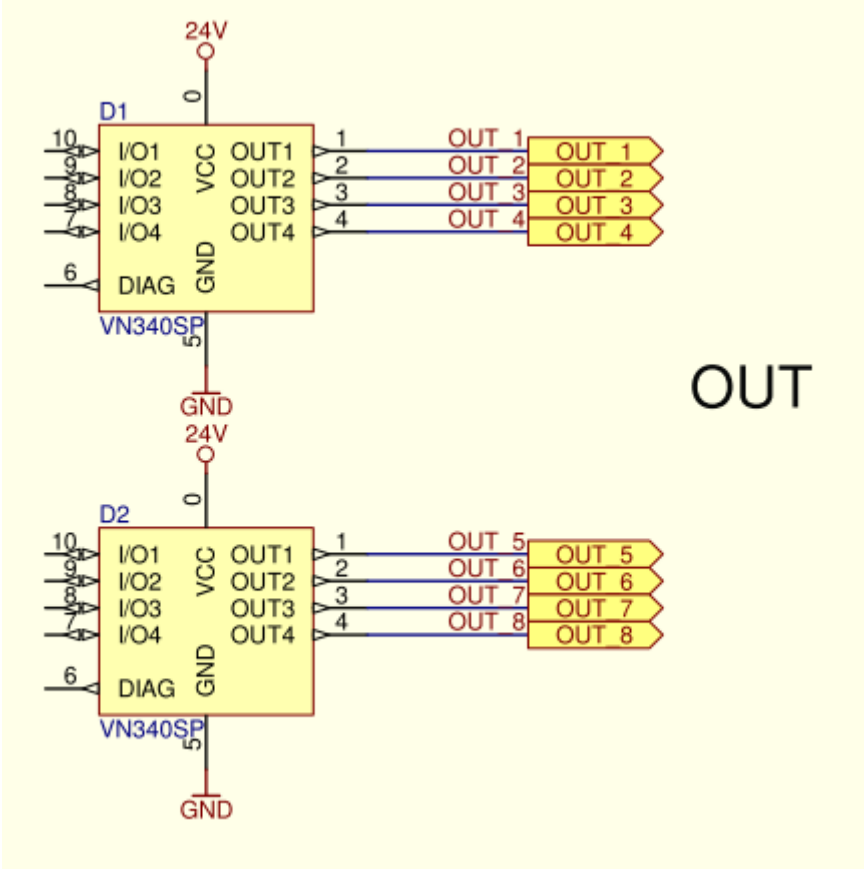
25 pin Sub-D-plug 3pin M12 socket (Encoder)
PIN 1 ----------PIN 3
PIN 8 ----------PIN 4
PIN 25 ----------PIN 1

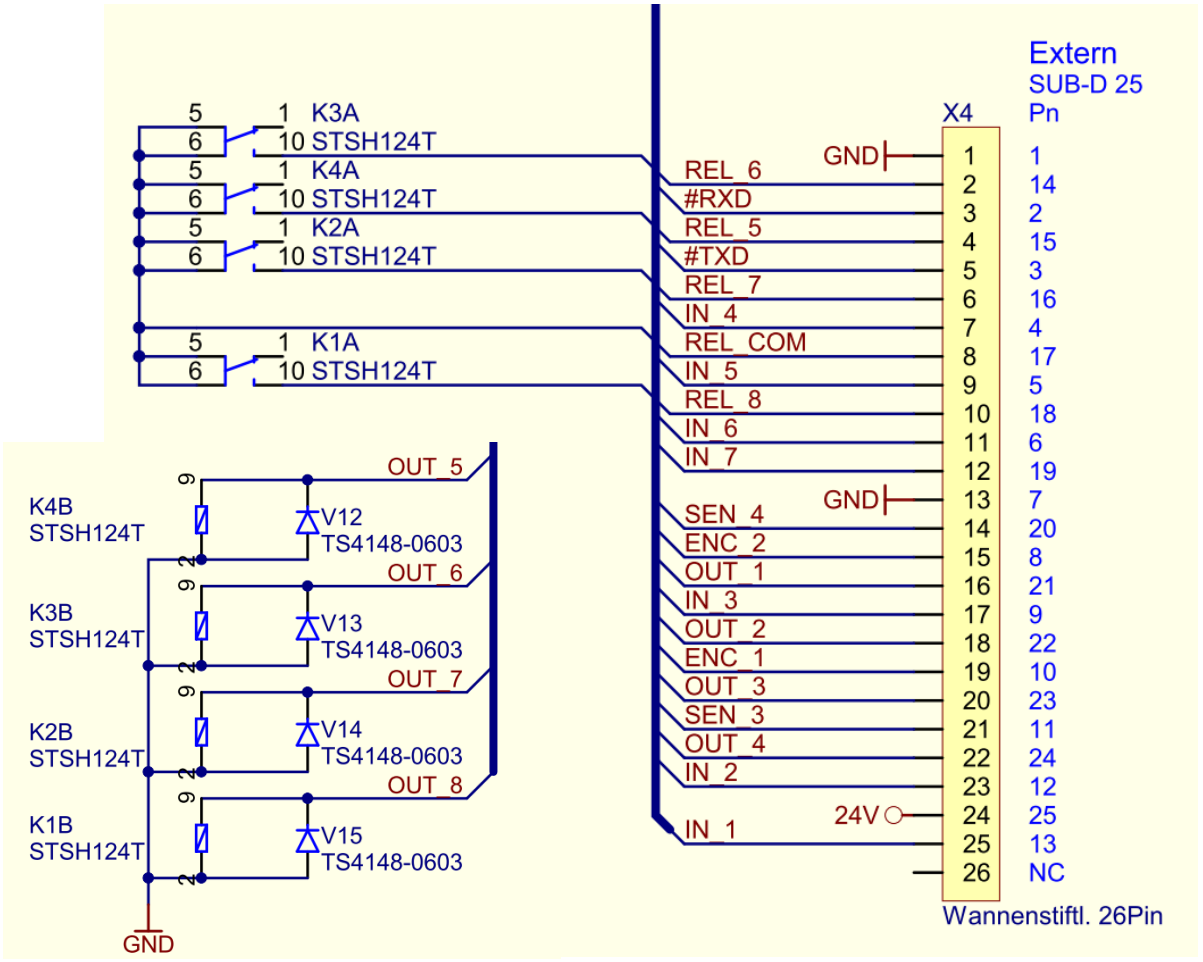
25 pin Sub-D-plug 3pin DIN socket (Sensor)
PIN 1 ----------PIN 3
PIN 19 ----------PIN 2
PIN 20 ----------PIN 4
PIN 25 ----------PIN 1

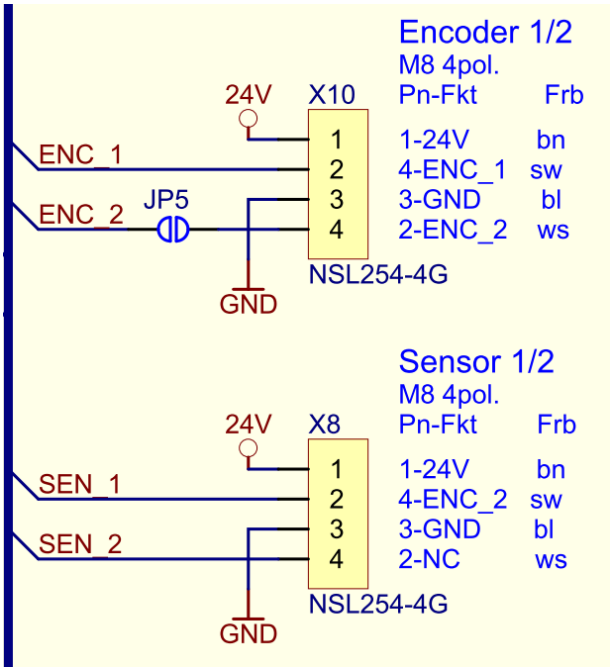
25 pin Sub-D-plug 8pin M12 socket (alarm light)
PIN 1 ----------PIN 8
PIN 14 ----------PIN 2
PIN 15 ----------PIN 3
PIN 16 ----------PIN 1
PIN 17 --- connect to PIN 25
PIN 25 --- connect to PIN 17

In- and Output




OUT
24V
D1
I/O1
I/O2
I/O3
I/O4
VCC
OUT1
OUT2
OUT3
OUT4
GND
DIAG
VN340SP
OUT_1
OUT_2
OUT_3
OUT_4
GND
24V
D2
OUT_5
OUT_6
OUT_7
OUT_8
GND


Extern
SUB-D 25
Pn
X4
K3A
K4A
K2A
K1A
STSH124T
REL_6
#RXD
REL_5
#TXD
REL_7
IN_4
REL_COM
IN_5
REL_8
IN_6
IN_7
SEN_4
ENC_2
OUT_1
IN_3
OUT_2
ENC_1
OUT_3
SEN_3
OUT_4
IN_2
IN_1
24V
GND
NC
Wannenstiftl. 26Pin
K4B
K3B
K2B
K1B
V12
V13
V14
V15
TS4148-0603
OUT_5
OUT_6
OUT_7
OUT_8
GND


Encoder 1/2
M8 4pol.
24V
X10
Pn-Fkt
Frb
ENC_1
ENC_2
JP5
1
2
3
4
1-24V bn
4-ENC_1 sw
3-GND bl
2-ENC_2 ws
GND
NSL254-4G
Sensor 1/2
M8 4pol.
24V
X8
Pn-Fkt
Frb
SEN_1
SEN_2
1
2
3
4
1-24V bn
4-ENC_2 sw
3-GND bl
2-NC ws
GND
NSL254-4G

Print head cable

Configuration of the 24+4+1 HP print head cable

PIN	Name	Description	Level
1	DOUT-	out	Lvds
2	DOUT+	out	Lvds
3	AGND	power	0 V
4	DIN_1-	in	Lvds
5	DIN_1+	in	Lvds
6	PWHFIRE-	in	Lvds
7	PWHFIRE+	in	Lvds
8	IR_Signal	out	0 V
9	DIN_2-	in	Lvds
10	DIN_2+	in	Lvds
11	AGND	power	0 V
12	DCLK-	in	Lvds
13	DCLK+	in	Lvds
14	VCC	power	5 V
15	GND	power	0 V
16	res	power	0 V
17	DLOAD-	in	Lvds
18	DLOAD+	in	Lvds
19	AGND	power	0 V
20	HCLK-	in	Lvds
21	HCLK+	in	Lvds
22	AGND	power	0 V
23	HFIRE-	in	Lvds
24	HFIRE+	in	Lvds
C1	VPP	power	24 V
C2	VPP	power	24 V
C3	VPF	power	30 V
C4	VPF	power	30 V
C5	GND	power	0 V

USB A / B

The USB sockets are standard sockets, as used in commercial PCs and USB devices. Insert the USB plug vertically into the USB socket without using force.

PIN	Name	Color	Description
1	VCC	Red	+5 V
2	D-	White	Data -
3	D+	Green	Data +
4	GND	Black	Mass

Ethernet

Network input RJ 45 on the system back.

PIN	Description
1	Transmit+
2	Transmit-
3	Receive+
6	Receive-

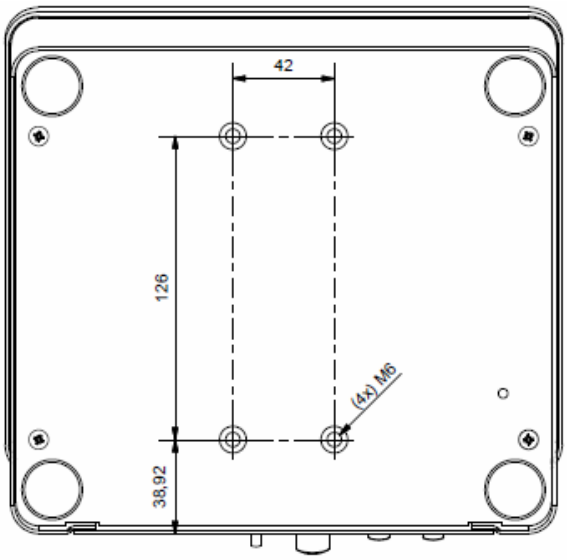
MAC addresses

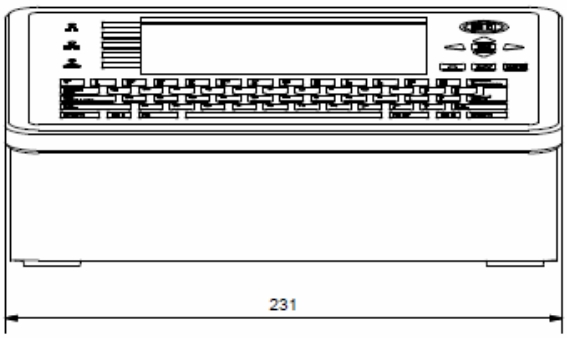
The MAC address of the respective Markoprint X2JET plus Touch can be seen on the system directly.

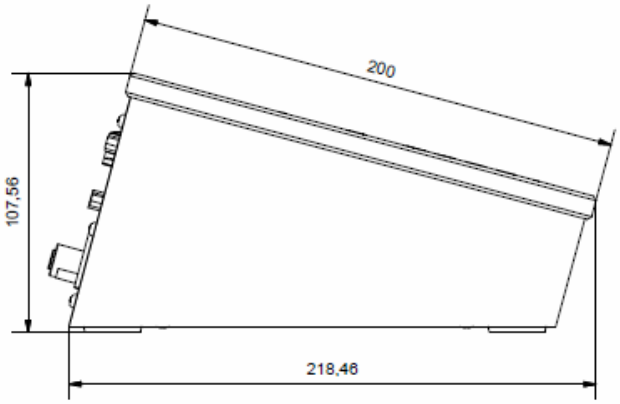
Range from:	To:
00-50-C2-A6-50-00	00-50-C2-A6-5F-FF

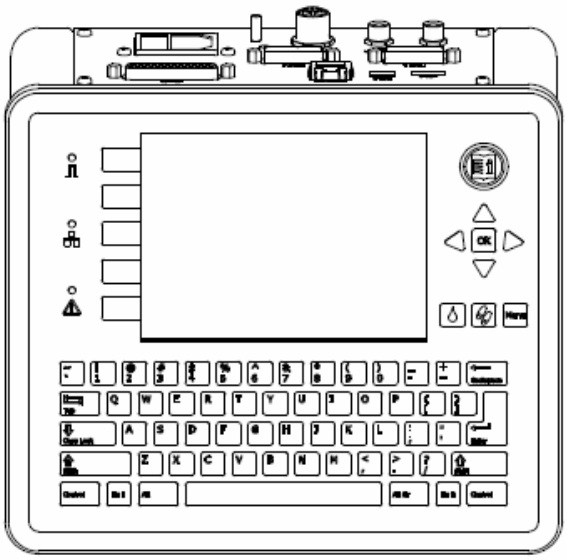
Technical drawings

Control system Markoprint X2JET plus **Touch**

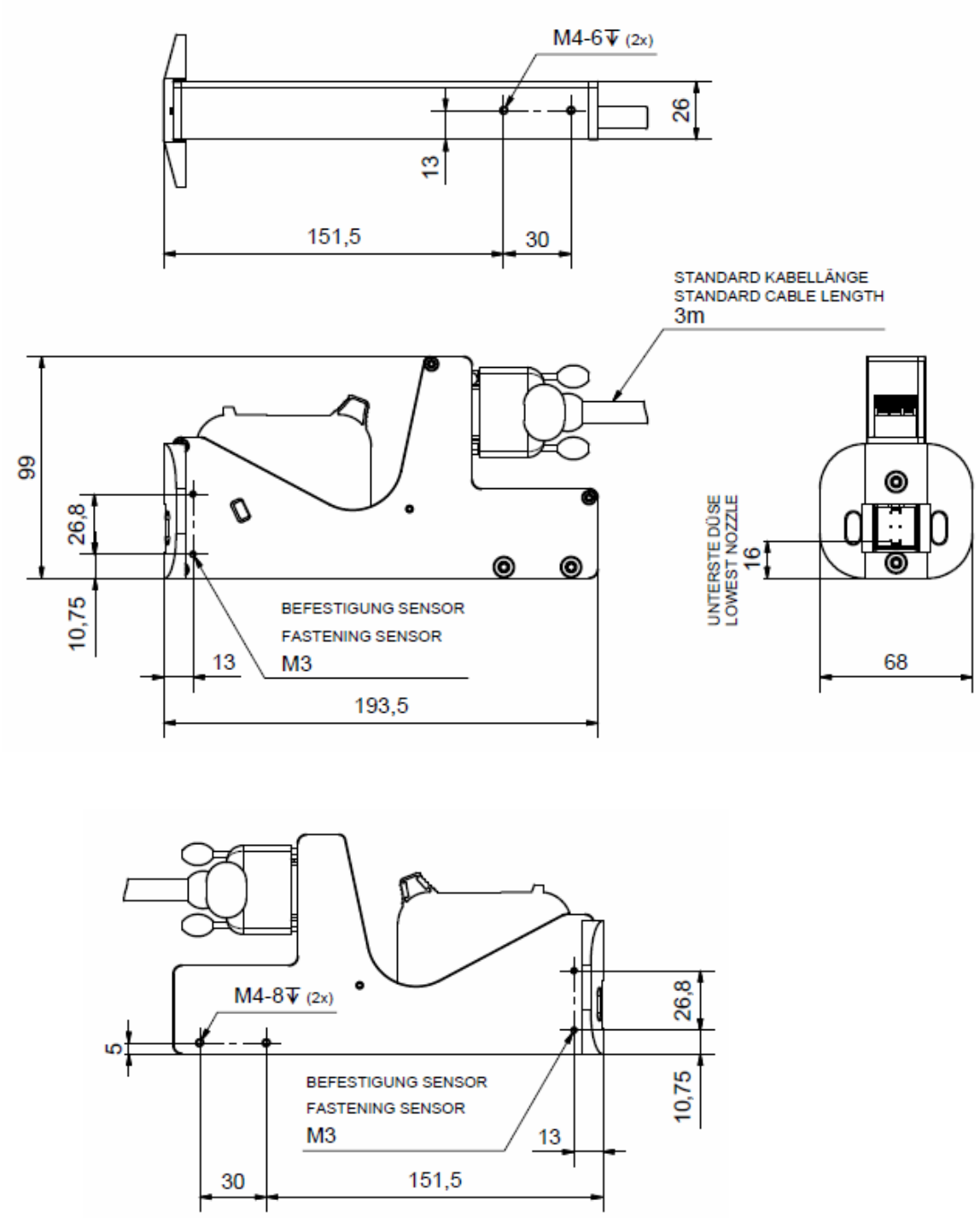




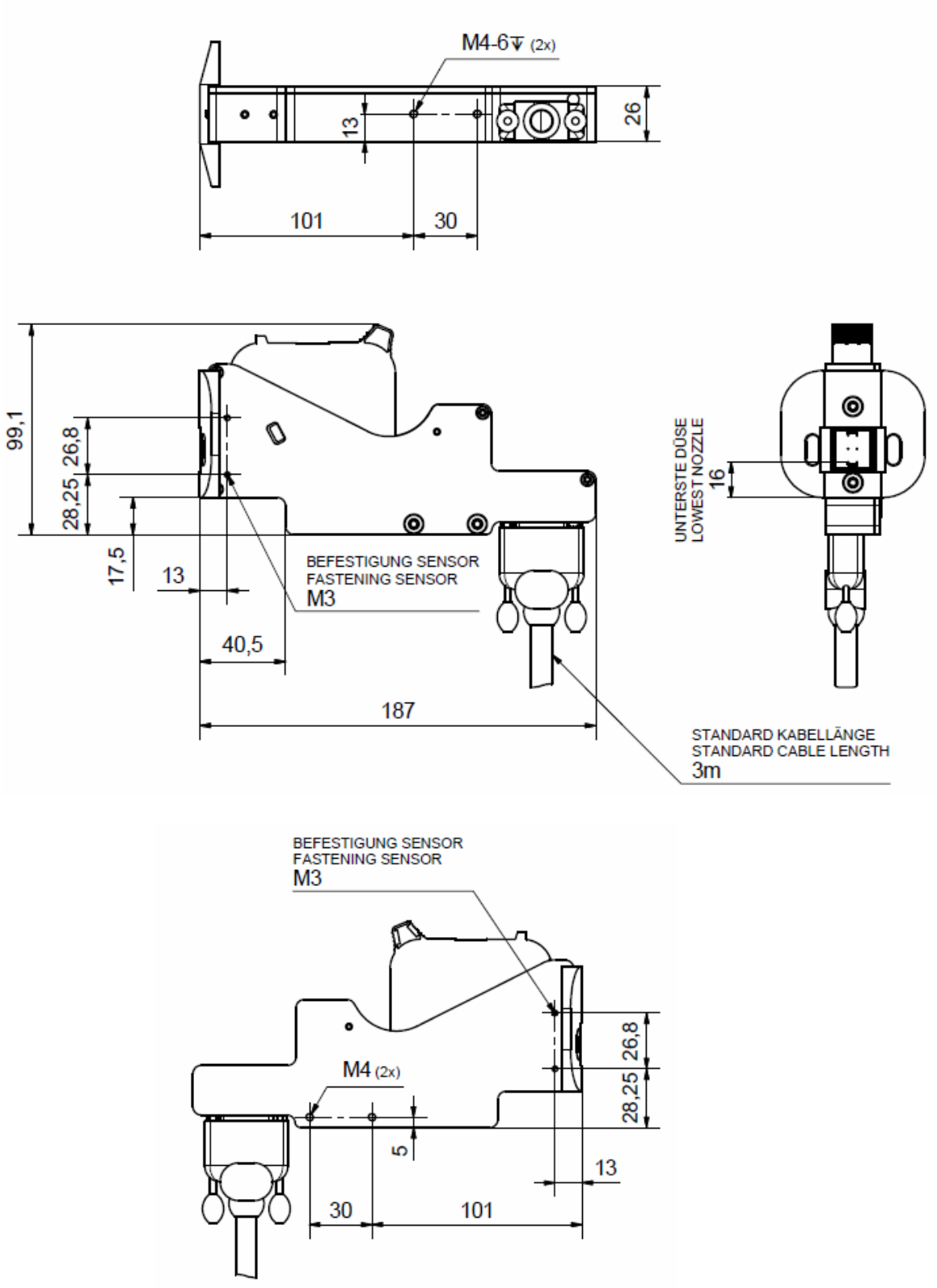




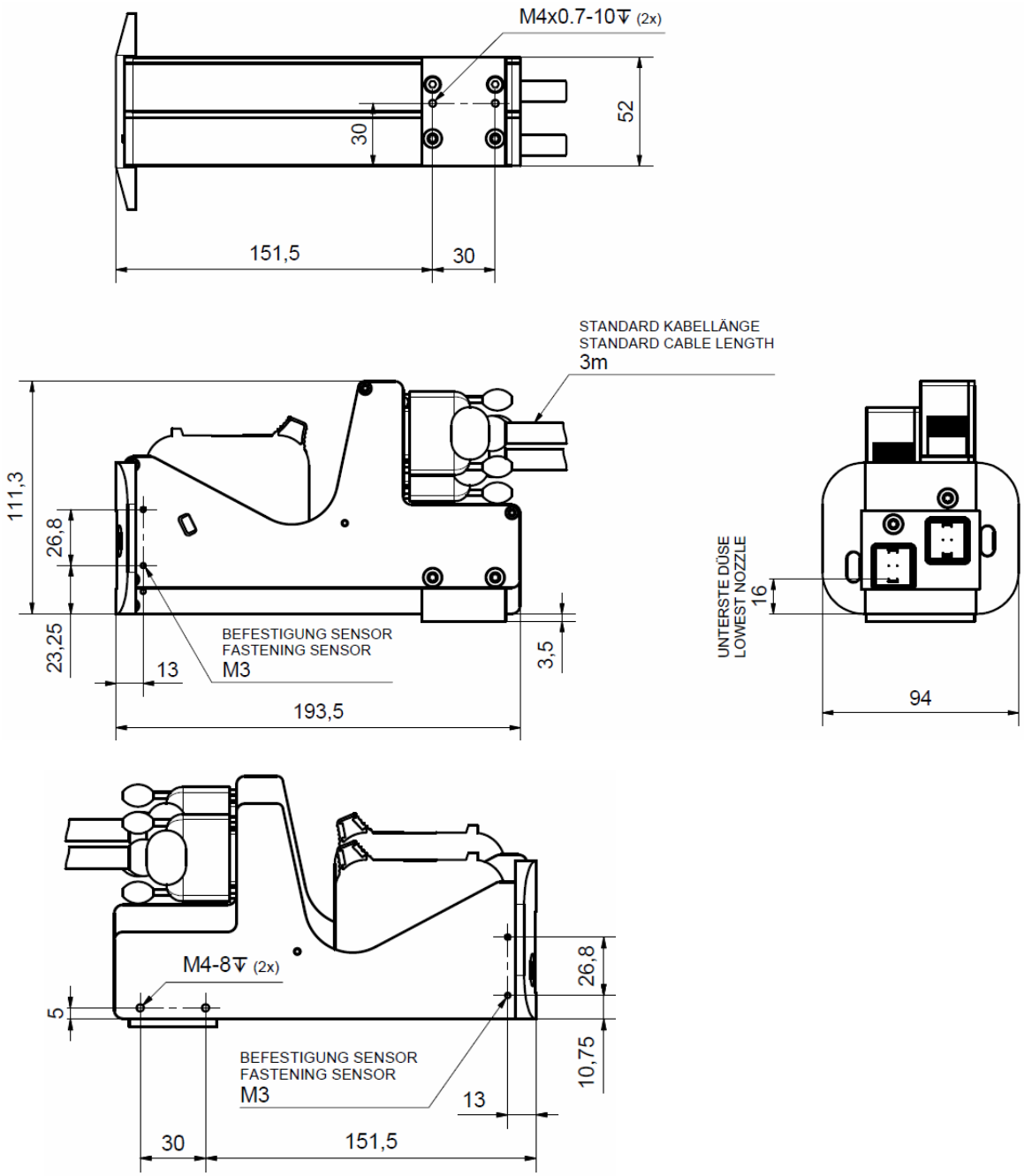
Print head HP MK2 Version 1 Single



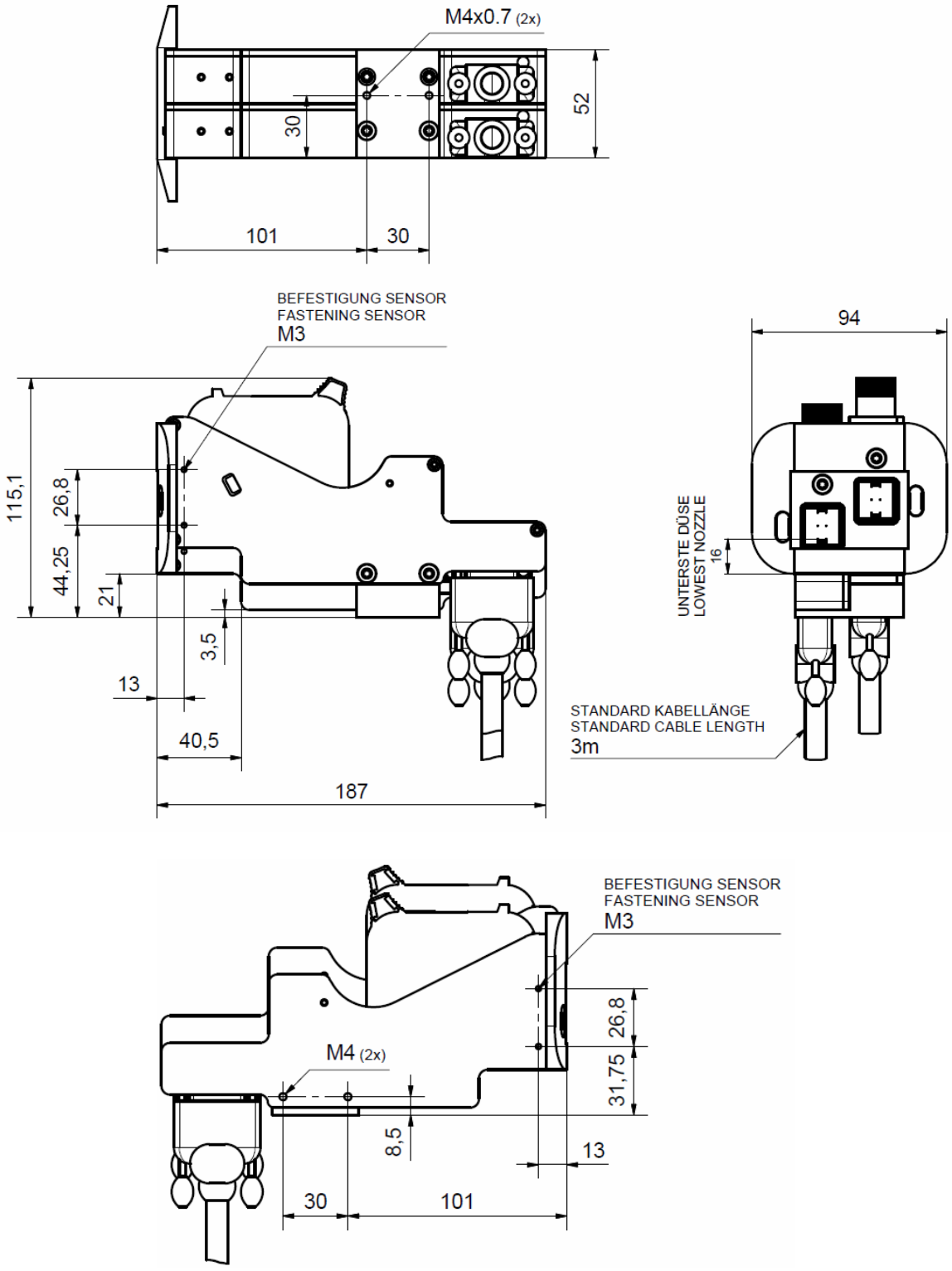
Print head HP MK2 Version 2 Single



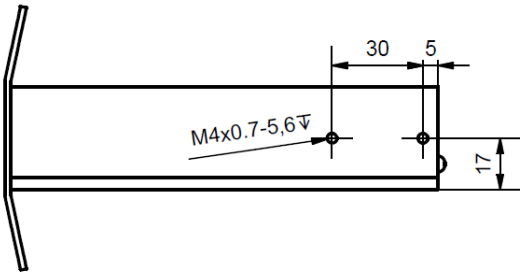
Print head HP MK2 Version 1 Twin

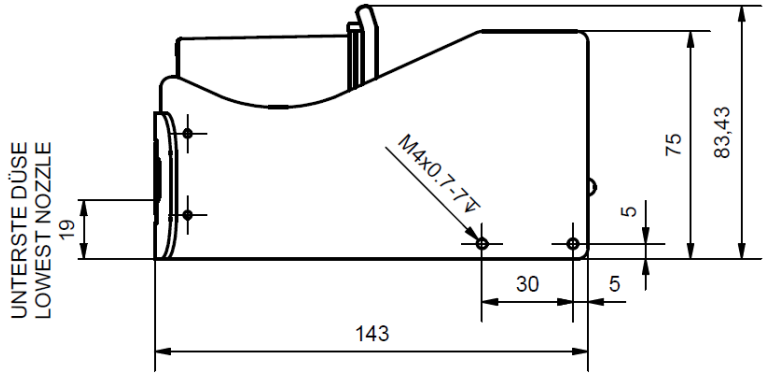


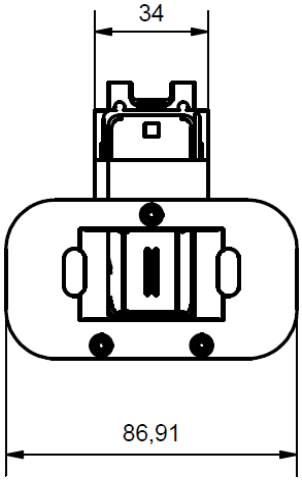
Print head HP MK2 Version 2 Twin

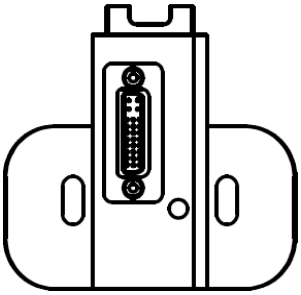


Print head LX MK2 Version 1

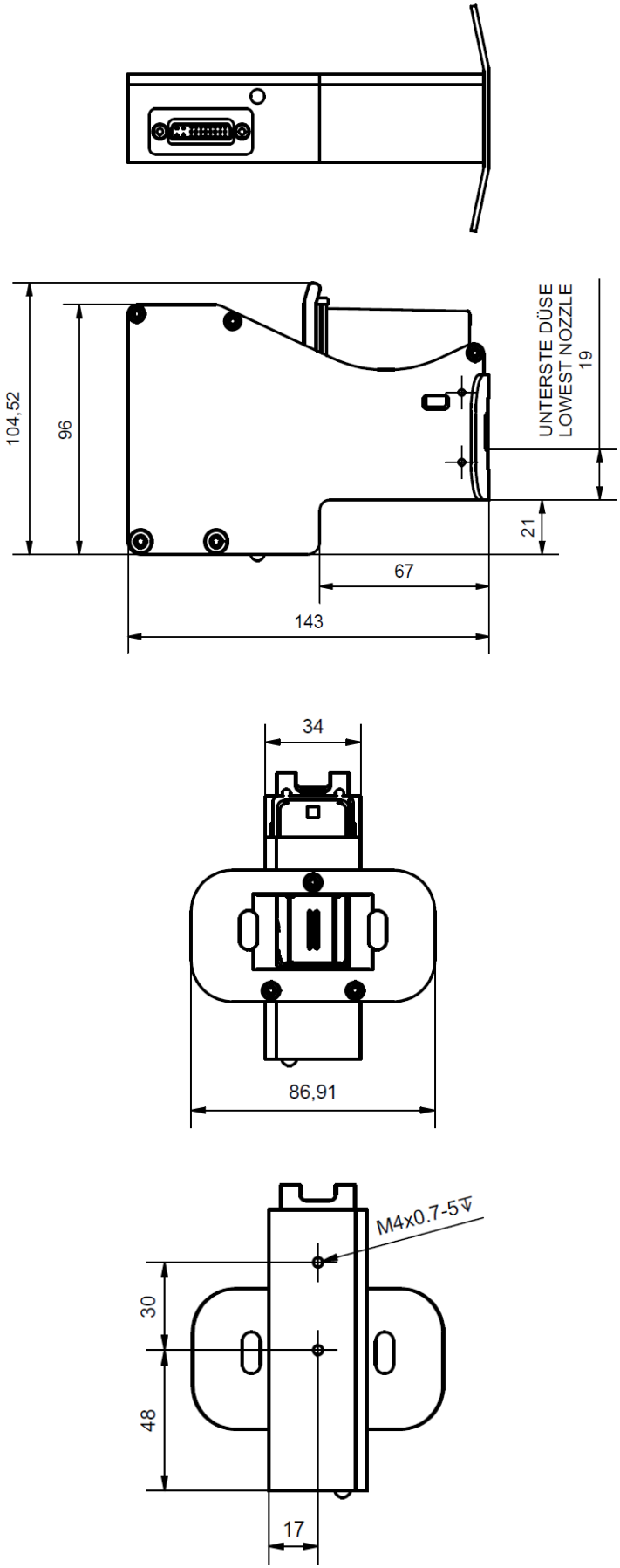




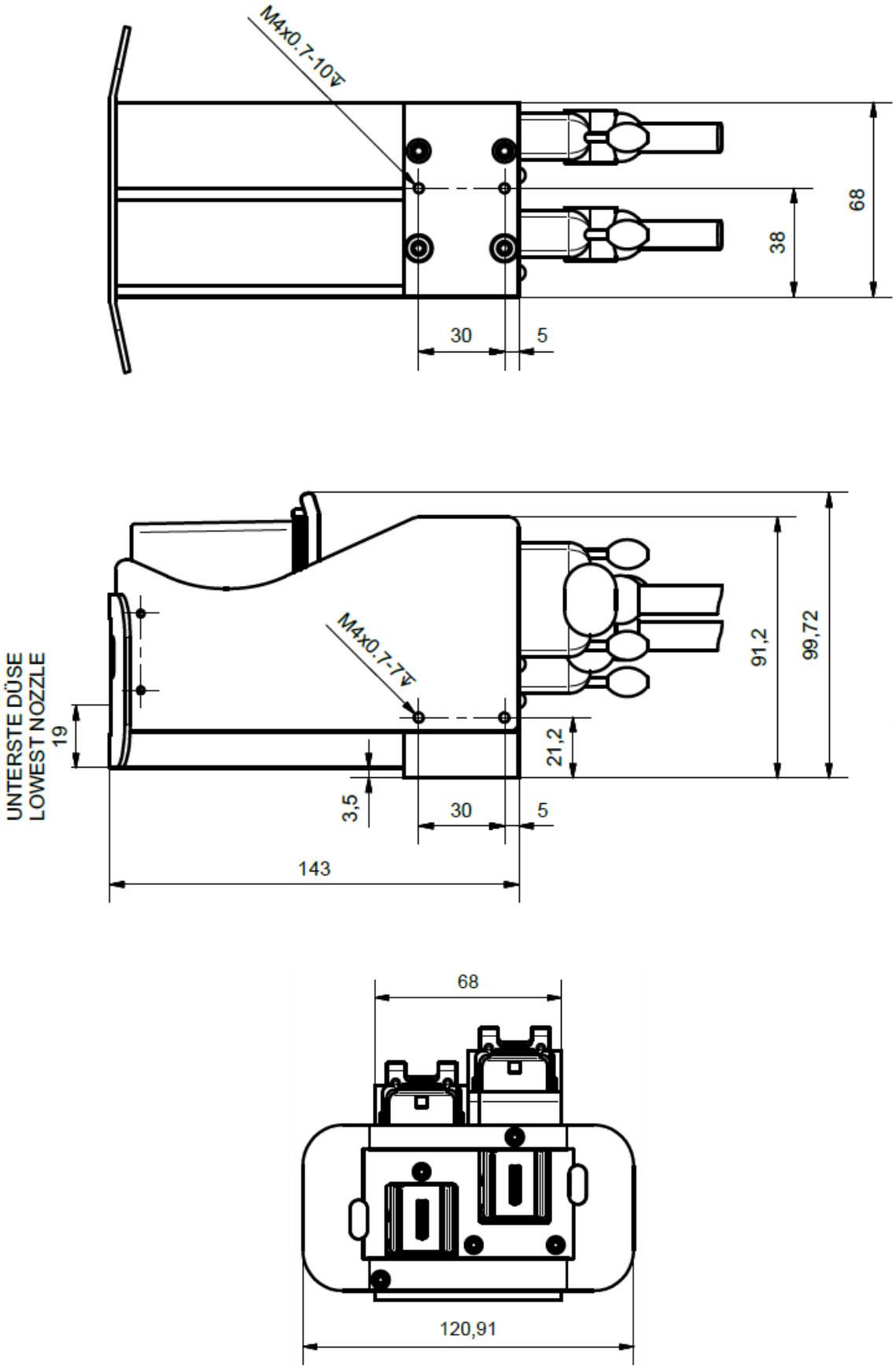




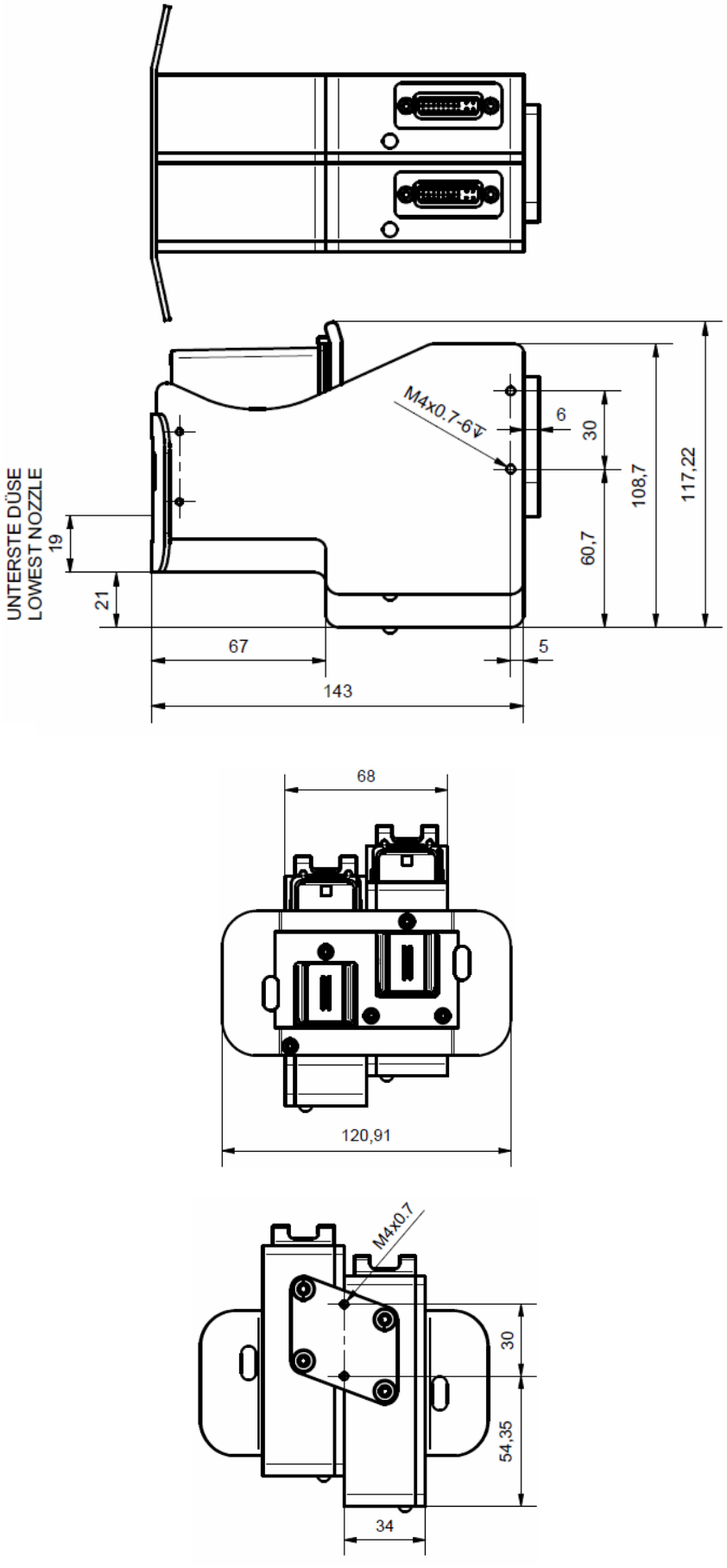
Print head LX MK2 Version 2



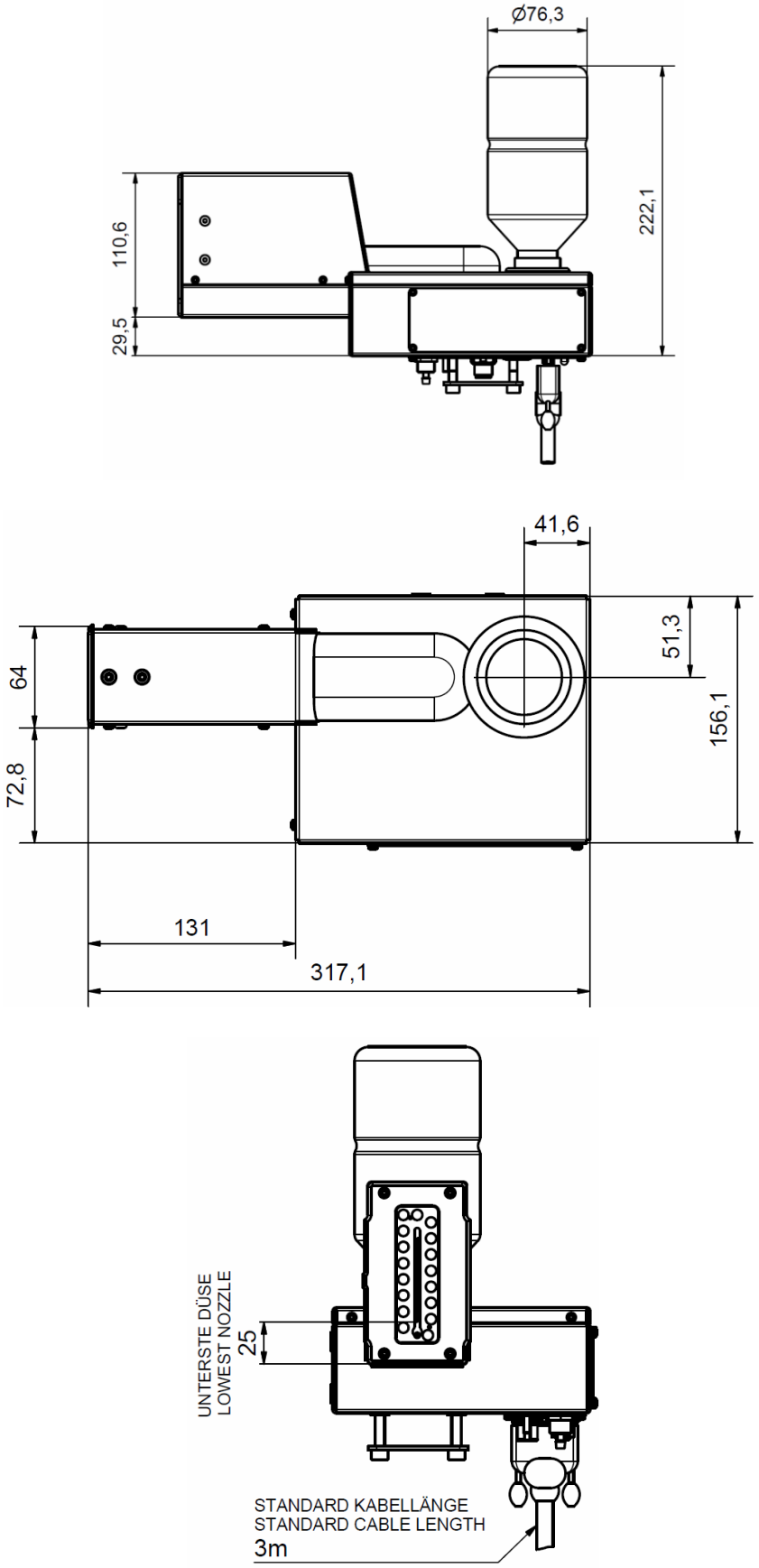
Druckkopf LX MK2 Version 1 Twin



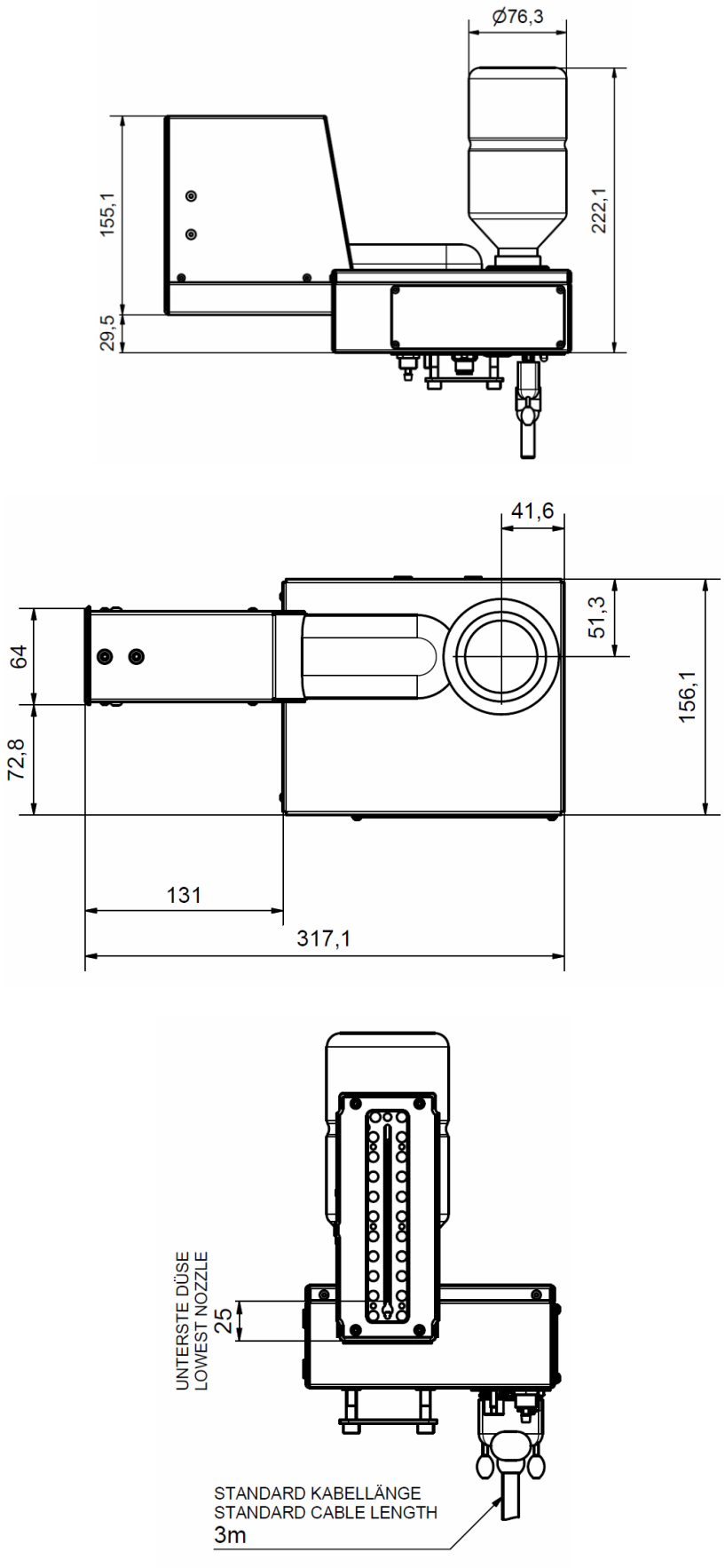
Druckkopf LX MK2 Version 2 Twin



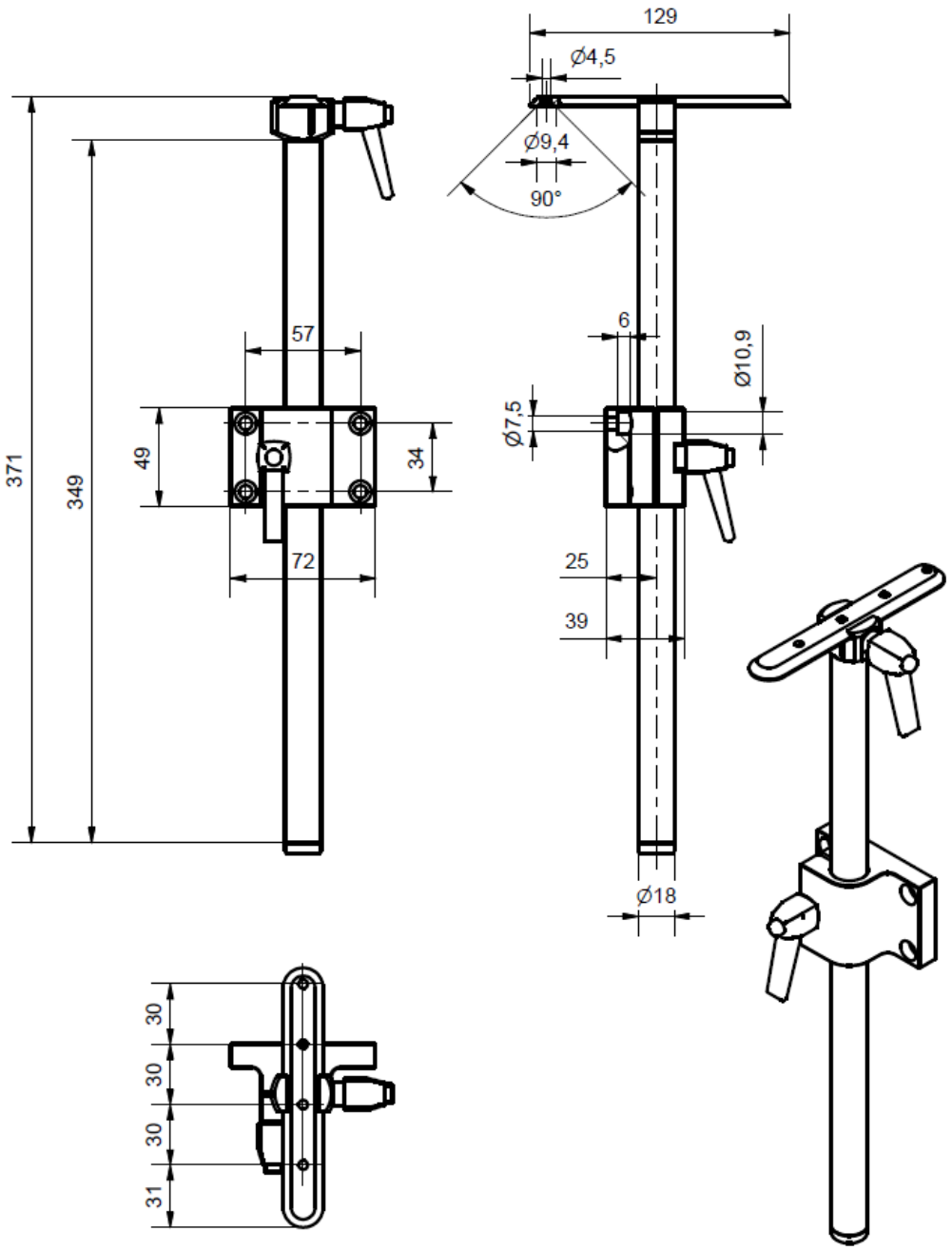
Print head MX 50



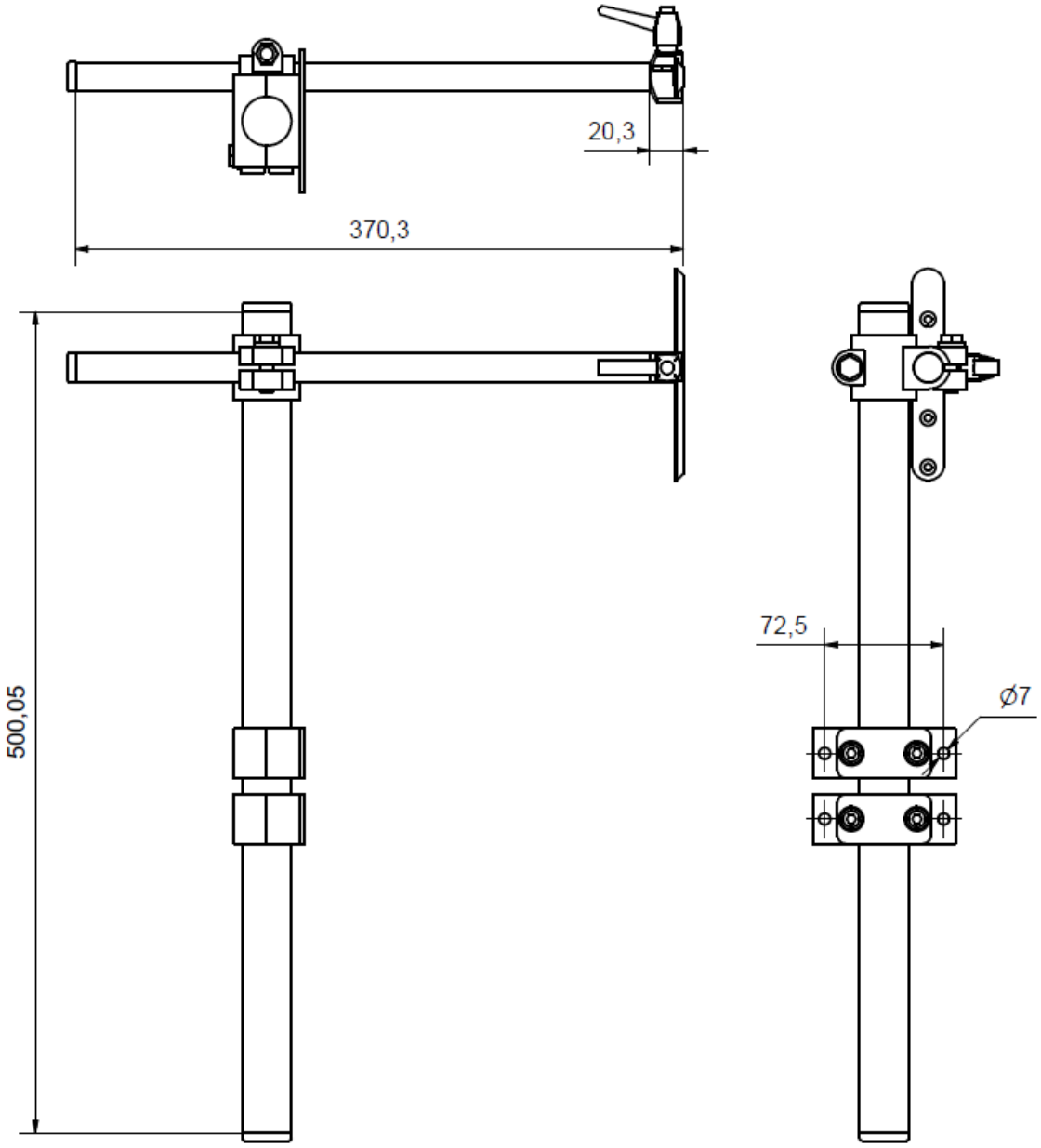
Print head MX 100



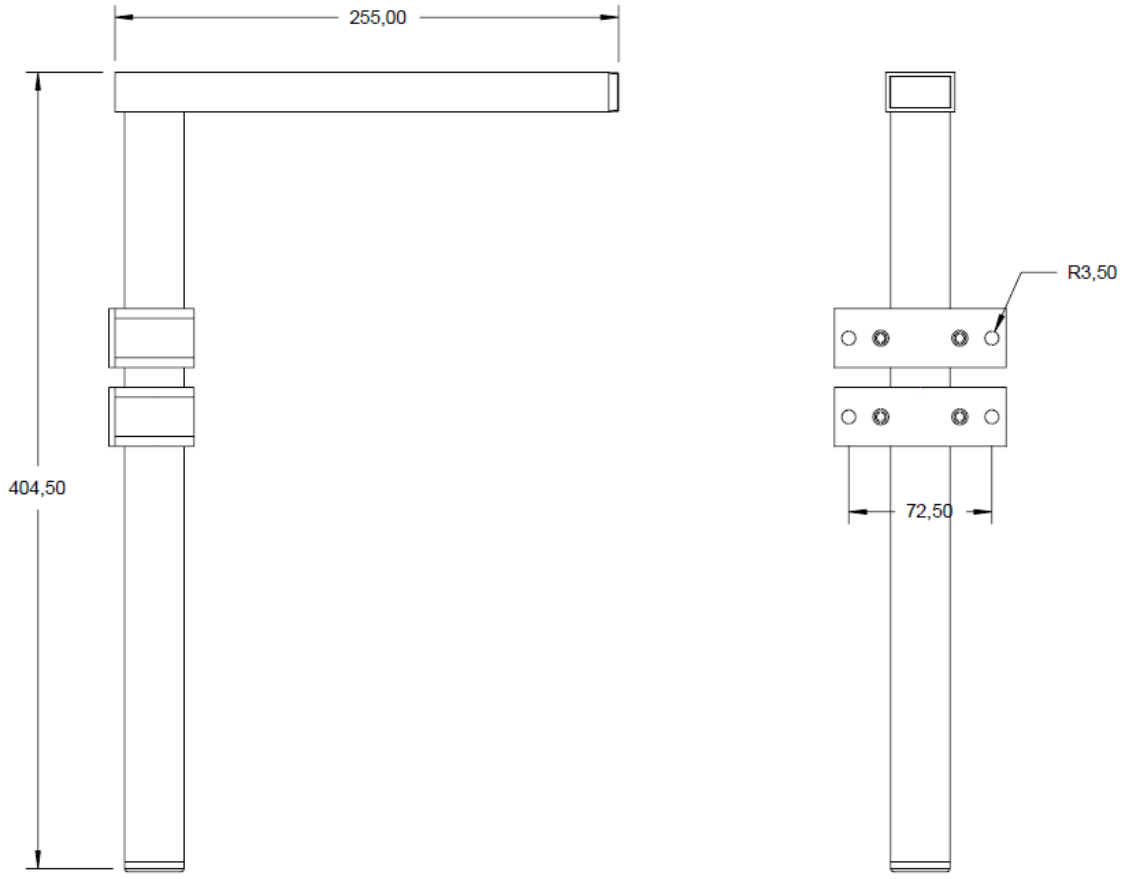
Mounting bracket Compact



Mounting bracket Top



Universal mounting bracket for control system and MX-print head



These pictured drawings show an extraction of the possible variations of the print heads. Further drawings or 3D-CAD data can be required by the manufacturer

Instruction sheet

Copy the instruction sheet before completing.

Date	Name	Type of instruction	Instruction by	Signature

Parameter list

Parameter	After Reset	Min.	Max.	Actual value	Unit
Pulse	Internal	Head2	from head 1		
Speed	15,0	1,0	400		m/min
Encoder	600	50	5000		ppi
Print direction	R→L	L→R	R→L		
Upside down	No	No	Yes		
Reflect	Not used				
Print delay	25	0	999		mm
Print repeat distance	0	0	9999		mm
Number of print repeats:	0	0	999		
Intensity	50	300	900		DPI
Print width	100	10	900		%
Nozzle rows	A~B	A,B	A+B		
Head voltage	110				V
Fire time	190				0,01µs
Fire pause	190				0,01µs
Barcode correction	0				Pixel
Ink warning	5	0	100		%
Spitting mode	OFF	BEFORE	INTERVALL		
Number of spit ripping	20	0	100		
Spit delay	10	0	999		s
Spit interval	600	0	999		s
Auto Off	60	0	999		min.
Head correction	0	-50	+50		Pixel
Offset bi directional	0	-20	+20		
Warming	OFF	OFF	ON		
Warming Temp.	45	20	80		°C

Parameter	After Reset	Min.	Max.	Actual value	Unit
Warming timer	0	0	999		s
Counter start value	Not used				
Language	German				-
Head type	1111	1000	4000		
Ink type	STABL				-
User 1	Not used				-
User 2	Not used				
User 3	Not used				
Print mode	Not used				
Save variable fields	Not used				
Sensor	1+2	1+2	3+4		
Turning display	Not used				
Sensor I/O	Not used				
Encoder I/O	Not used				
Trigger output delay	Not used				
Impulse length output	Not used				
HiSpeed	NO	YES	NO		
Fixed print width	YES	NO	YES		
EIA232	Not used				
Polarity input	0000				
Input 1,2	0000				
Input 3,4	0000				
Input 5,6	0000				
Input 7,8	0000				
Output 1,2	3020				
Output 3,4	1000				
Output 5,6	1020				
Output 7,8	3000				

The Markoprint X2JET plus Touch will be reset to the basic configuration after sending these commands.

<ESC>K1<CR>
<ESC>M*;0000;0150;0004;0000;0000;0000;0025;0000;0000;0300;0100;0000;0110;019
0;0190;0000;0005;0000;0020;0010;0600;0060;0000;0000;0000;0045;0000;0000;0000;1
111;0001;0000;0000;0000;0000;0000;0000;0000;0000;0000;0000;0000;0000;0000;0000
;0000;0000;0000;0000;0000;3020;1000;1020;3000<CR>
<ESC>K2<CR>
<ESC>M*;0000;0150;0004;0000;0000;0000;0025;0000;0000;0300;0100;0000;0110;019
0;0190;0000;0005;0000;0020;0010;0600;0060;0000;0000;0000;0045;0000;0000;0000;1
111;0001;0000;0000;0000;0000;0000;0000;0000;0000;0000;0000;0000;0000;0000;0000
;0000;0000;0000;0000;0000;3020;1000;1020;3000<CR>
<ESC>K3<CR>
<ESC>M*;0002;0150;0004;0000;0000;0000;0025;0000;0000;0300;0100;0000;0110;019
0;0190;0000;0005;0000;0020;0010;0600;0060;0000;0000;0000;0045;0000;0000;0000;1
111;0001;0000;0000;0000;0000;0000;0000;0000;0000;0000;0000;0000;0000;0000;0000
;0000;0000;0000;0000;0000;3020;1000;1020;3000<CR>
<ESC>K4<CR>
<ESC>M*;0002;0150;0004;0000;0000;0000;0025;0000;0000;0300;0100;0000;0110;019
0;0190;0000;0005;0000;0020;0010;0600;0060;0000;0000;0000;0045;0000;0000;0000;1
111;0001;0000;0000;0000;0000;0000;0000;0000;0000;0000;0000;0000;0000;0000;0000
;0000;0000;0000;0000;0000;3020;1000;1020;3000<CR>

Declaration of Conformity

The Markoprint X2JET plus Touch corresponds to the design and construction as well as the system version with the essential safety requirements of the Low-Voltage- and EMV-Directives including whose changes for this time period.

CE

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EU – DEKLARATION OF CONFORMITY
according to EU Directive 2006/95/EG // 2004/108/EG

We hereby declare that the below mentioned in their Design and construction and in the version marketed by us in the essential safety requirements of EU Directive low voltage and electromagnetic compatibility conforms.

Manufactured by:

Weber Marking Systems GmbH
Maarweg 33

D-53619 Rheinbreitbach

Product:

Type: Markoprint X2JET plus
Model: „Advanced“ , „Pro“
Function: Ink-Jet-Printer

is complying with the essential protection requirements of:

The Low Voltage Directive	2006/95/EG
The EMC Directive	2004/108/EG

In order to judge the products with respect to above mentioned directive, the following standards were taken as a basis:

Interference resistance:

EN 55022	Interfering voltage
EN 55022	Interference field strength
EN 61000-6-2:	Interference resistance against electromagnetic fields
EN 61000-6-2:	Interference resistance against high frequency on cables
EN 61000-6-2:	Interference resistance against ESD
EN 55024	Interference resistance against Burst
EN 61000-6-2:	Interference resistance against Surge
EN 55024:	Interference resistance against voltage changes and interrupts

Emitted interference:

- EN 61000-3-2: Limits of harmonic current emissions
- EN 61000-3-3 Limits of voltage changes, fluctuation and flicker

If the product is changed without our agreement, this declaration loses its validity.

Rheinbreitbach, 08.11.2013

Andreas Bluhm, Vice President Weber Marking Systems GmbH