

BALDOR MN425 Short Series Brake Motors Manual

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When failure of brake or connecting equipment (gearbox, coupling, etc.) may allow unexpected machine movement, an additional holding device is required at the load. Failure to observe this precaution could result in bodily injury.

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Short Series Brake Motors

These instructions must be read thoroughly before installing or operating this product.

Pre-Installation Instructions:

DODGE short series brake motors (SSB) operate as a spring-set, electrically released power-off brake to provide a holding or parking action. DODGE motor brakes are factory assembled and adjusted allowing for immediate operation.

WARNING:

When failure of brake or connecting equipment (gearbox, coupling, etc.) may allow unexpected machine movement, an additional holding device is required at the load. Failure to observe this precaution could result in bodily injury.

All parts should be examined for any damage during the shipping and handling process. All parts must be clean and free of any foreign material. Care should be taken to ensure that contaminants (such as grease from the motor) do not contact the friction faces as this will cause the brake to operate improperly.

WARNING:

This equipment is at line voltage when AC power is connected. Disconnect and lock out all ungrounded conductors of the AC power line. Failure to observe these precautions could result in severe bodily injury or loss of life.

Manual Release Operation

WARNING:

Do not manually release brake before blocking overhauling loads to prevent unexpected machine movement. Failure to observe this precaution could result in bodily injury.

The manual release lever is located at the top of the unit. The direction of release is noted on the handle. To release the unit, rotate the handle clockwise 90° to the stop position. DO NOT over-rotate the handle as component damage could result.

Note: The manual release may slightly drag when the unit is new. DO NOT adjust if the motor shaft can be turned by hand when released. If the manual release can not be turned by hand, follow the steps below to reset the air gap.

Maintenance Guide

TASK: Wear Adjustment

PROCEDURE:

Note: A new brake DOES NOT require wear adjustment. Adjustment of the air gap is necessary if either or both of these conditions are observed:

WARNING: Because of the possible danger to person(s) or property from accidents which may result from the improper use of products, it is important that correct procedures be followed. Products must be used in accordance with the engineering information specified in the catalog. Proper installation, maintenance and operation procedures must be observed. The instructions in the instruction manuals must be followed. Inspections should be made as necessary to assure safe operation under prevailing conditions. Proper guards and other suitable safety devices or procedures as may be desirable or as may be specified in safety codes should be provided, and are neither provided by Baldor Electric Company nor are the responsibility of Baldor Electric Company. This unit and its associated equipment must be installed, adjusted and maintained by qualified personnel who are familiar with the construction and operation of all equipment in the system and the potential hazards involved. When risk to persons or property may be involved, a holding device must be an integral part of the driven equipment beyond the speed reducer output shaft.

1. A decrease in braking torque. Adjustment is recommended when braking torque drops to approximately 80% of its static rating.
2. Complete lack of disengagement (dragging), or motor is stalled.

Wear Adjustment using feeler gauge (preferred)

1. Before attempting any adjustment to the brake, be sure the power is turned off and there is no possibility of motor start-up. The brake must be de-energized before attempting wear adjustment.
2. Unscrew the 4 fan shroud cover bolts and remove the fan shroud. (See Figure 1)
3. Unscrew the three adjustment bolt set screws located radially around the field cup.
4. Place a .018" (for 3, 6 and 10 lb-ft units, 0.021" for 15, 20 and 25) thick feeler gauge between the clapper plate and field cup (see Figure 1).
5. Turn the three slotted bolts counterclockwise (CCW) alternately and evenly until the feeler gauge is snug between the clapper plate and the field cup in at least three locations around the clapper plate. The clapper plate gap should measure as specified above in at least three locations.
6. Tighten the three radial set screws. These set screws fix the slotted adjustment screws and prevent them from vibrating loose.
7. Install Fan shroud.

Wear Adjustment with no feeler gauge

1. Before attempting any adjustment to the brake, be sure the power is turned off and there is no possibility of motor start-up. The brake must be de-energized before attempting wear adjustment.
2. Unscrew the 4 fan shroud cover bolts and remove the fan shroud. (See Figure 1)
3. Unscrew the three adjustment bolt set screws located radially around the field cup.
4. Tighten the three slotted bolts alternately and evenly counterclockwise until there is no gap between the clapper plate and field cup.
5. Back off the all three slotted bolts 1/2 turn.
6. Tighten the three radial set screws. These set screws fix the slotted adjustment screws and prevent them from vibrating loose.
7. Install Fan shroud.

Note: This method will give an approximate air gap of 0.018". This method should be used only when feeler gauges are not available.

Warning:

Do not run motor without fan shroud installed. Motor overheating and Personal injury may occur.



Task: Rectifier Checks

To determine if a rectifier has been damaged use a multimeter to check resistance. Refer to internal wiring diagram, Figure 2 on page 3. Check the following lead combinations by placing the positive clip on one lead and the negative clip on the other. See Table 1.

Table 1

(+)	(-)	Resistance
B1	B4	Low
B4	B1	High
B1	B3	High
B3	B1	Low
B2	B4	Low
B4	B2	High
B2	B3	High
B3	B2	Low

If any resistance is measured low where it should be high or vice versa, the rectifier has been damaged and replacement rectifier kit (p/n 024018) should be purchased.

Table 2 Brake Coil Data: Current/Resistance Ratings
(see Table 2 notes)

Coil Voltage Low/High	Brake Static Torque Rating			
	3 & 6 lb-ft		10 -50 lb-ft	
	Current Draw (A)	Resistance (Ω) Ohms	Current Draw (A)	Resistance (Ω) Ohms
115/230 VAC (1)	0.19	562	0.28	387
230/460 VAC (2)	0.10	2078	0.14	1550
287/575 VAC (3)	0.09	2987	0.12	2245
104/208 VAC (4)	0.24	384	0.31	290
190/380 VAC (5)	0.13	1341	0.19	923
250/500 VAC (6)	0.10	2336	0.13	1793
48VDC	0.48	100	0.58	82
24 VDC	0.97	24.7	1.14	21.7
12 VDC	1.95	6.2	2.24	5.4

Table 2 Notes: Other nameplate voltage capabilities:

- 1) 115/208-230 VAC 50 or 60 Hz, 133/265 VAC 60 Hz, 110-125 VDC
- 2) 208-230/460 VAC 50 or 60 Hz, 240/480 VAC 60 Hz, 220/440 VAC 50 Hz, 230 VDC
- 3) 237/575 VAC 60 Hz, 275/550 VAC 60 Hz, 300/600 VAC 60 Hz
- 4) 104/208 VAC 50 or 60 Hz, 100/200 VAC 60 Hz, 90-95 VDC
- 5) 190/380 VAC 50 or 60 Hz, 200/400 VAC 60 Hz, 208/416 VAC 50 Hz
- 6) 250/500 VAC 50 or 60 Hz
- 7) Values for other nameplate voltages will vary. Consult DODGE Engineering for actual values.
- 8) Coil resistance is measured between leads B4 and B5. Measured resistance may vary -7.5% from nominal values.

ELECTRICAL CONNECTIONS:

Warning:

The user is responsible for conforming with the National Electrical Code and all other application local codes. Wiring practices, grounding, disconnects and overcurrent protection are of particular importance. Failure to observe these precautions could result in severe bodily injury or loss of life.

Caution:

Since the brake is internally wired to the motor, be sure that the lead wires are not frayed. Failure to observe this precaution could result in damage to or destruction of the equipment.

Caution:

If electrical soft-start or inverter is used in the system care must be taken to ensure that the brake is supplied with full voltage. Brake must have the full input voltage to ensure proper release and operation.

Caution:

Replacement/Retrofit Applications: To ensure proper wiring connections when placing this brake in place of another, be sure to trace motor leads back to the motor conduit box. Brake lead markings may differ among brake manufacturers. If in doubt, voltages should be measured.

Refer to Table 3 for standard brake connections for separately connected Short Series brakes.

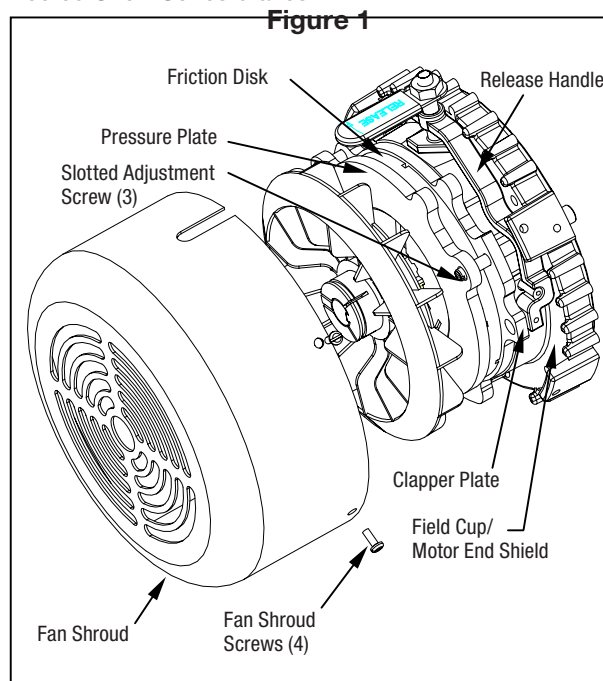


Table 3 Standard Brake Connections

Motor	Volts	Connect
Separately Connected Brake	Low	B1 -L1 B2-L2 B3 & B5 -Insulate B4 -Insulate
	High	B1 & B5 -L1 B3 -Insulate B4 -Insulate B2-L2

Notes:

- 1) Check compatibility of motor and brake voltages with power supply.
- 2) Insulate means: tie together (or alone) and cap off and insulate.
- 3) B1 to B5 are Brake lead connections. L1 & L2 are AC Power connections.

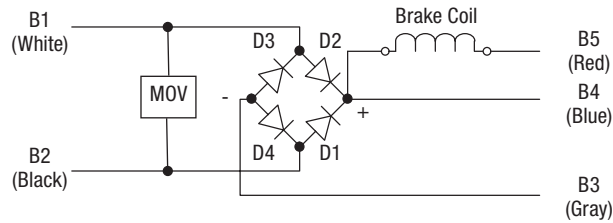
TROUBLESHOOTING GUIDE

Warning: Subsequent steps require rotating parts and/or electrical circuits to be exposed. Stay clear if unit must be running or disconnect and lock out or tag power source if contact must be made. Failure to observe these precautions could result in severe bodily injury or loss of life.

Table 4 Troubleshooting

Symptom	Possible Cause	Solution
1) Loss of Torque (Coasting)	Improper Switching Method Brake Disc Worn Brake Too Small Excessive Cycle Rate (Disc Too Hot/Torque Fade) Friction Surfaces Contaminated Brake Worn Out (Frequent Adjustment)	If new brake appears to coast farther than desired, an alternate switching method may be required, such as fast response circuit. Consult DODGE. See Wear Adjustment Procedure-Maintenance Guide Check Application Reduce Cycle Rate & Check Application Replace Friction Disc Replace Friction Disc
2) Brake Not Releasing	Incorrect wiring Improper input voltage Open Circuit - Brake Wires damaged or Open Coil Rectifier damaged Requires Wear Adjustment	Verify wiring, see Table 3. AC input voltage must be within $\pm 10\%$ of rated coil voltage Check Brake Leads (B4 & B5) for Continuity. If open circuit, replace coil. See Rectifier Checks - Maintenance guide (Page 2). See Wear Adjustment procedure- Maintenance Guide (Page 1)
3) Motor Stalled	Brake Not Releasing	(See Symptom 2)
4) Excessive Housing Temperature 80°C (176°F) Maximum	Excessive Cycle Rate High Ambient Temperature Excessive Load Inertia Brake Not Releasing Excessively High Voltage	Reduce Cycle Rate Reduce Cycle Rate and/or Load Inertia (Add External Cooling Fan) Reduced Load Inertia See symptom 2 Reduce voltage input to coil specifications

Figure 2 Internal Wiring Diagram





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