

MTB-I Modular Tension Brakes

P-259
816-0306

Installation Instructions



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This manual contains the required information to properly install and service your Warner Electric Modular Tension Brake. Please read it before installation and follow its instructions to ensure safe, reliable operation. In addition to installation and maintenance instructions, this manual contains technical specifications and component parts lists. All replacement parts must be of original Warner Electric manufacture.

⚠ WARNING Failure to follow these instructions may result in product damage, equipment damage, and serious or fatal injury to personnel.

Warner Electric also offers complete control systems for use with Modular Tension Brakes in dancer roll applications, including the following:

TCS-210	Automatic Tension Control
TCS-220	Manual Tension Control
TCS-167	Power Supply
MCS-605-1	Pivot Point Sensor

For more information, please contact:

Warner Electric
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South Beloit, IL 61080
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Modular Tension Brake Model 15-0-2 has single armature and two magnet assemblies.



Modular Tension Brake Model 15-15-8 has dual armatures and eight magnet assemblies.

Modular Tension Brake Installation Instructions

The illustration drawings, parts lists, and exploded views for these units can be found starting on page 8.

Note: These brakes are modular in concept and may incorporate single or dual armatures, and 2 or more magnets. It is important to refer to the data which applies to the particular unit being installed.

The bracket which supports the magnets must be mounted to a stationary member independent of the armature which rotates with the shaft. When installation is completed, the armature and support bracket must be positioned in accordance with the dimensions shown on the illustration drawing.

A. Installing the Armature

1. Using the longer of the 3/8" bolts furnished in the accessory packet, mount the armatures to the armature hub. If the assembly has a single armature, mount the armature on the same side of the hub flange as the tapered bushing enters as shown in Figure 1. With dual armatures, mount them back to back on opposite sides of the hub flange as shown in Figure 2. Tighten all nuts securely.



Figure 1



(Figure 2)

2. Install the key in the shaft keyway, and insert the tapered bushing and screws loosely into the armature hub.
3. Slide the assembly onto the shaft to the approximate position required for operation. Do not tighten the bushing, since final positioning will be required later. See Figure 3.



Figure 3

B. Mounting the Bracket

Mount the mounting bracket to a rigid member by inserting bolts through the 3 holes provided as shown in Figure 4. Note that the bracket has a cover on one end, and the electrical connections will be made in the cavity provided.

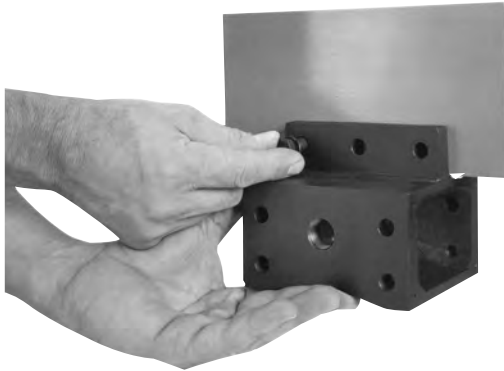


Figure 4

C. Magnets and Carrier

1. Place the carrier on a horizontal surface with the magnet pins facing upward.
2. Slide one of the conical shaped follow-up springs over each of the pins, with the small end of the spring against the carrier.
3. Place the magnet on the pins with the lead-wires outboard. See Figure 5.



Figure 5

4. If the assembly has a single armature, mount the carrier directly to the bracket with the remaining 3/8" bolts in the accessory packet as shown in Figure 6.



Figure 6

If dual armatures are used, mount the carriers with spacers between the carriers and the bracket. Tighten all mounting bolts securely. See Figure 7.

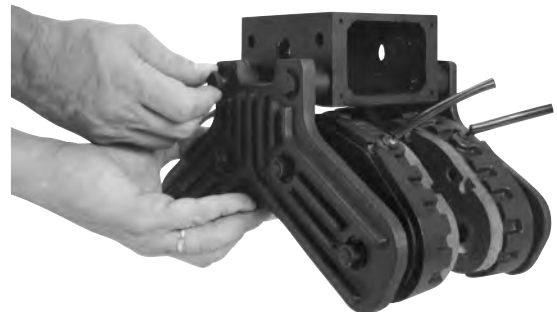


Figure 7

D. Adjusting the Armature

The armature hub, which was loosely positioned on the shaft per instruction A, part 3, must now be adjusted to its final position and secured. For an assembly with a single armature, position the hub so the space between the back of the magnet and the carrier is approximately 1/4". See Figure 8.



Figure 8

For dual armature assemblies, position the hubs for approximately equal space behind the magnets on each side as shown in Figure 9.

Tighten the bushing mounting screws evenly to achieve armature squareness during rotation.

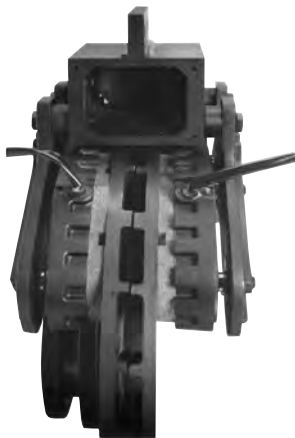


Figure 9

E. Electrical Connections

All electrical connections are to be made inside of the mounting bracket connection box. The box has holes for a standard 1/2" conduit connector on one side and also on the end opposite the cover. The magnet lead wires enter through grommets in the accessory. The grommets are to be inserted into the smaller holes on either side of the bracket. See Figure 10.



Figure 10

1. Connect the conduit, which has the power supply leads, to the more convenient of the two access holes.
2. Feed the lead wires for each magnet through the sleeve and grommet found in the accessory kit. Snap the grommet into the preferred access hole in the bracket. Provide sufficient slack in the wires to permit the magnets to move freely on their support pins. See Figure 11.



Figure 11

3. The magnets have black and red lead wires. All the magnets on a given brake are to be connected in parallel, with all wires of the same color connected together. Either color may be connected to the positive or negative terminal of the supply.

Cover all wire junctions with good quality insulated connectors, preferably the crimp-on type.

Install the bracket cover provided in the accessory kit.

Servicing the Modular Tension Brake

The magnet friction pads and armature are the wearing parts of the MTB. While the wear life is normally many months, the magnets and/or armature(s) may eventually require replacement.

A. Replacing the Magnet Friction Pad

The magnet consists of the basic coil housing and a replaceable friction pad. To replace the pad, proceed as follows:

1. Shut off power at the control system.
2. Remove the carrier assembly from its bracket and slide the magnet off the pins.
3. Remove the flat head screw which secures the pad to the housing, and remove the pad as shown in Figure 12.

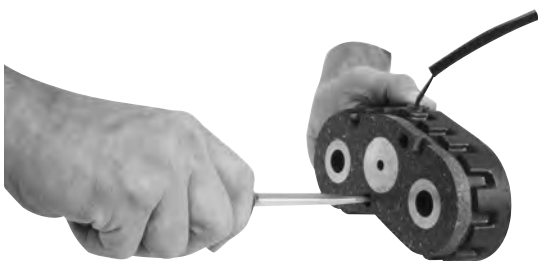


Figure 12

4. Install the new pad with the new screw provided.
5. Before reattaching the carrier, check the armature for wear. If the armature is worn to a thickness of 5/16" or less at the thinnest section, it must be replaced. If it is more than 5/16" it may be used as is with the new magnet. See Figure 13. A used armature should not be resurfaced even though it may have a wear pattern from previous use.



Figure 13

To replace the armature, first remove other components as required to allow removal of the armature from the hub and shaft. Install the new armature and other components, including the magnets and carrier, in reverse order.

6. Adjust the armature(s) on the shaft for proper magnet-to-carrier clearance. See Figures 8 and 9 for single or dual armature units.



Wear Characteristics

Normal Wear Patterns

The Modular Tension Brake exhibits the grooving normally associated with any electromagnetic friction device. In the first state of wear, the smooth finish of the armature will give way to a series of concentric grooves, as the poles of the magnets establish a strong magnetic contact. This grooving will intensify, then be worn to a shallow, wide trough, measuring approximately 1.25" wide by 1/16" deep. The brake may be considered fully "worn-in." After this occurs, this wear pattern will not change substantially with use.

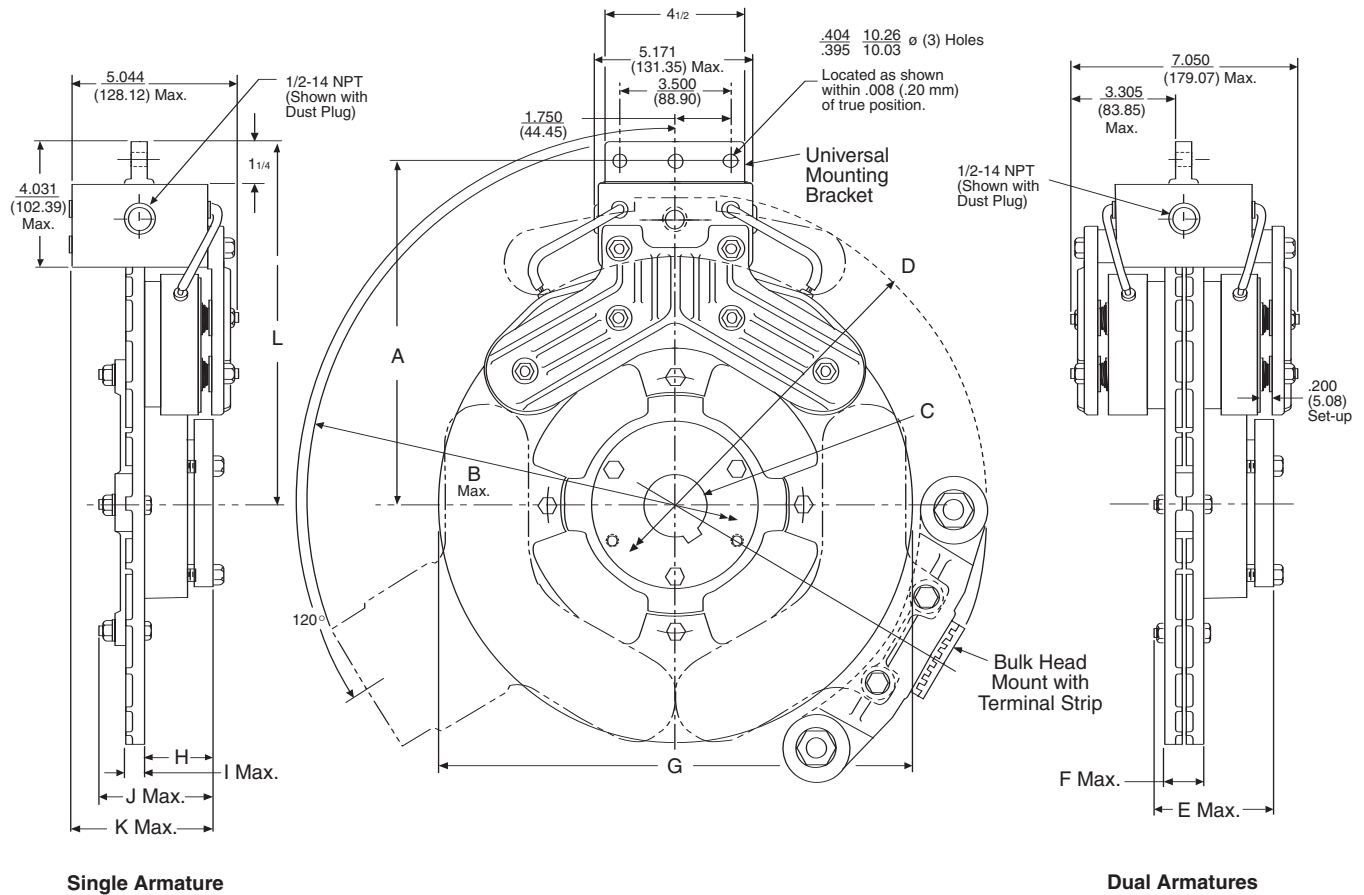
Replacement of Friction Pads

Replacement of the friction pads on magnets, as detailed in the preceding section, will result in a new wear-in period, as the pads seat themselves on the armature. No facing of the armature is needed - the magnet facing will conform to the armature tracks with use.

Torque Effects During Wear-in

With a closed-loop system (such as dancer or load-cell control) no torque effects will be apparent during wear-in, since the control system will compensate for any variations. With a manually controlled system, however, out-of-box, or unburnished torque, can be expected to be approximately 75% of fully burnished torque. For applications requiring full torque upon start-up, we recommend a preburnish period to fully seat the magnets on the armature and establish a stable torque reading. If this is not possible, several adjustments of torque settings during the machine break-in period will be necessary.

MTB Dimensions



Electrical Data*

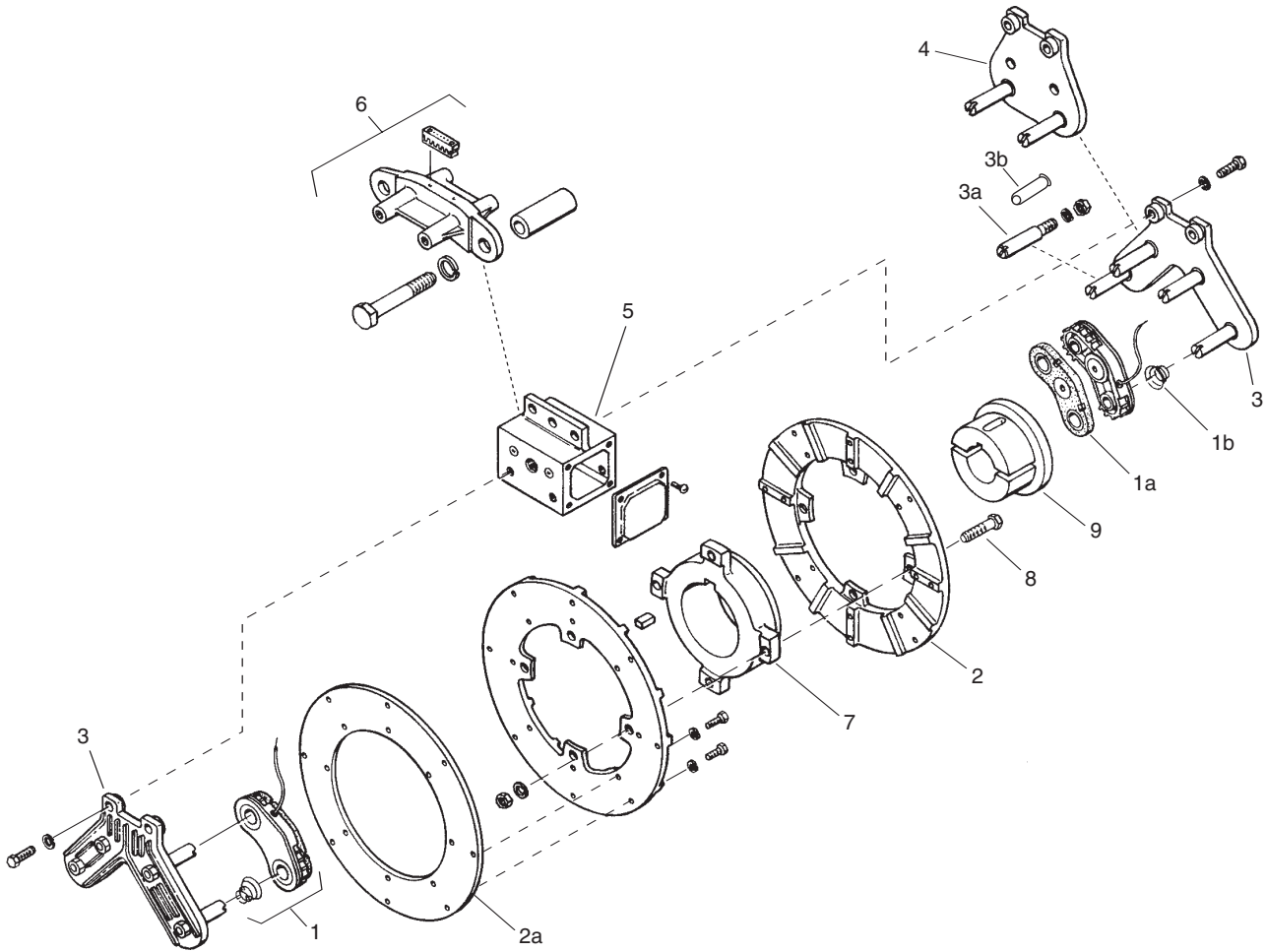
Number of Armatures	Number of Magnets	Rated Voltage DC ³	Resistance @20° C Ohms ³	Current Amps ³	Watts ³
1	2	24	33.11	7.24	17.3
1	4	24	16.55	1.45	34.7
1	6	24	11.11	2.17	52.0
2	4	24	16.55	1.45	39.7
2	8	24	8.27	2.89	69.5
2	12	24	5.50	4.34	104.2

* Electrical data based on all magnets connected in parallel.

All Dimensions Nominal unless specified

Armature Size	A	B	C	D	E	F	G	H	I	J	K	L
10"	8.530 (216.66) 8.470 (215.14)	18.378 (466.7)	.500- (12.70-) 1.750 (44.45)	14.378 (366.1)	3.200 (81.28)	1.695 (41.91)	10.020 (254.51)	1.100 (27.94)	.834 (21.13)	2.823 (71.70)	3.400 (86.36)	9.187 (233.35)
15"	11.156 (283.34) 11.095 (181.81)	24.00 (609.60)	1.125- (28.575-) 3.750 (95.250)	20.000 (508.00)	3.997 (101.52)	1.695 (41.91)	15.322 (389.17)	2.031 (51.59)	.834 (20.68)	3.747 (95.17)	4.355 (110.11)	11.813 (300.05)
20"	13.494 (342.74) 13.434 (341.22)	26.44 (671.58)	2.375- (60.325-) 5.000 (127.00)	24.678 (626.82)	5.950 (151.13)	2.695 (43.05)	20.00 (508.00)	3.562 (90.47)	1.334 (20.57)	5.091 (129.31)	6.216 (157.88)	14.151 (359.43)

MTB1 Parts List



Item	Description	10" Armature	15" Armature	20" Armature
1	Magnet Assembly	5216-631-004	5216-631-004	5216-6310-004
1a	Friction Pad (Replacement Part Only)	5216-101-003	5216-101-003	5216-631-003
1b	Preload Spring ¹	808-0008	808-0008	808-0008
2	Armature (Replaceable Face & Carrier)	5216-111-001	5216-111-003	5216-111-004
2a	Steel Replacement Face	5216-101-012	5216-101-011	5216-101-013
3	Dual Magnet Carrier Assembly	5216-295-002	5216-295-001	5216-295-001
3a	Male Pin Only (Includes Nut & Lockwasher)	5216-101-010	5216-101-010	5216-101-010
3b	Female Pin ((Includes Nut & Lockwasher)	5216-101-008	5216-101-008	5216-101-008
4	Single Magnet Carrier Assembly	5216-295-003	5216-295-003	5216-295-003
5	Series 10-0, 15-0, & 20-0 Universal Mounting Bracket ³	5216-101-020	5216-101-020	5216-101-020
	Series 10-10, 15-15, & 20-20 Universal Mounting Bracket ³	5216-101-021	5216-101-021	5216-101-021
6	Bulk Head Mounting Bracket ⁴	5216-101-022	5216-101-022	5216-101-022
7	Hub	540-0842	540-1382	540-1399
8	Series 10-0, 15-0, & 20-0 Armature Mounting Accessory	5216-101-004	5216-101-004	5216-101-018
	Series 10-10, 15-15, & 20-20 Armature Mounting Accessory	5216-101-005	5216-101-005	5216-101-019
9	Bushing (Customer Supplies)	Browning Type P-1	Browning Type R-1	Browning Type U-0

(1) Two of each required for each brake magnet.

(3) Includes magnet carrier (3 & 4) mounting hardware.

(4) Includes magnet mounting hardware, bracket mounting bolts and spacers.

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