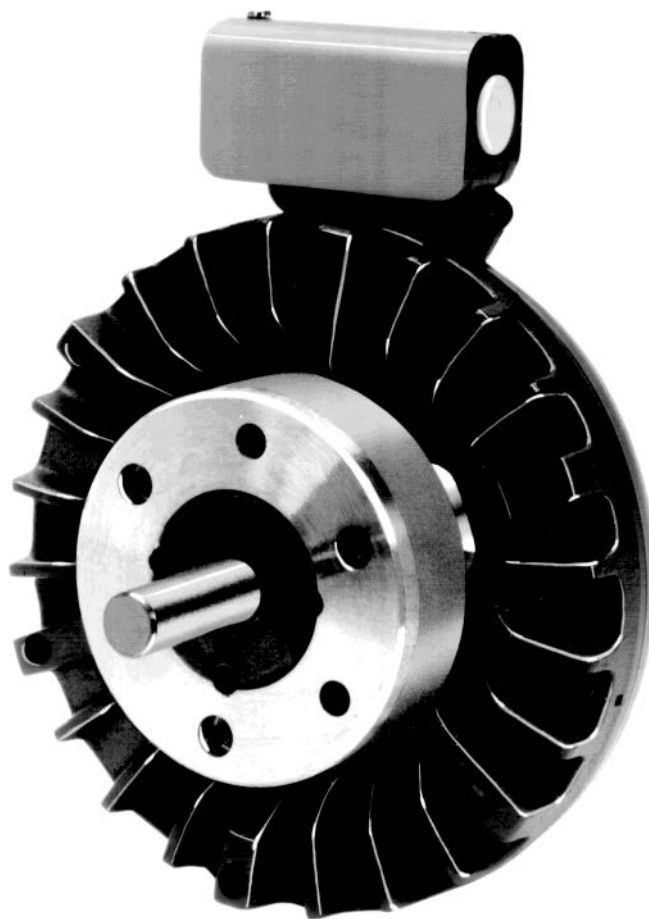


TB Series Brakes Tension Control System

Service & Installation Instructions

P-235-WE



An **Altra Industrial Motion** Company

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Installation Instructions

A. Mounting the Magnet

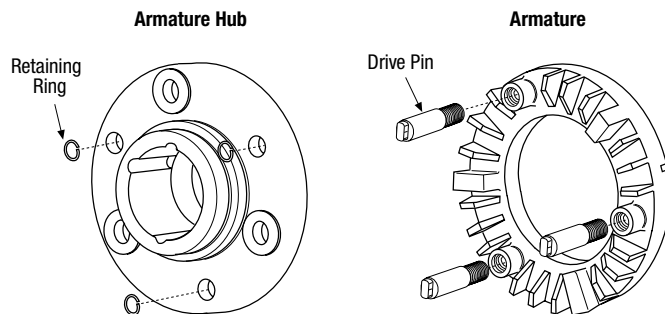
Care must be taken in selecting the location for mounting the magnet. After assembly, the magnet must be concentric within .010 T.I.R. and square with the shaft within .006 T.I.R. A pilot diameter on the mounting surface is essential to hold the magnet within the required tolerances. Referring to the illustration drawing on the Dimensions and Parts Lists pages, machined pilot diameters on the magnet mounting flange are provided to aid in holding the magnet in the correct position. Once the surface has been prepared, the magnet is bolted in place with capscrews and lockwashers.

B. Mounting the Armature on the Hub TB-170, 250, and 425

Assemble the splined armature to the hub. The finned side of the armature should be flush against the retaining ring.

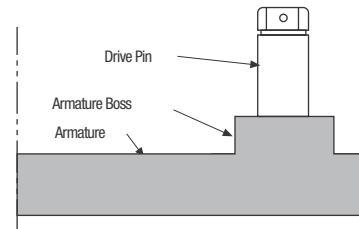
TB-500

Note: The hub is reversible. The side on which the armature is mounted will depend on the direction in which the taperlock bushing must enter.



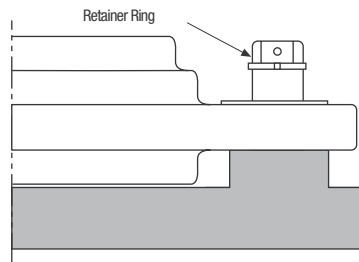
Step 1

Insert the drive pins into the holes of the armature and draw them up tightly against the armature bosses. (Since the threads are a class #3 fit, the pins may seem to bind.) Slide the hub over the drive pins.



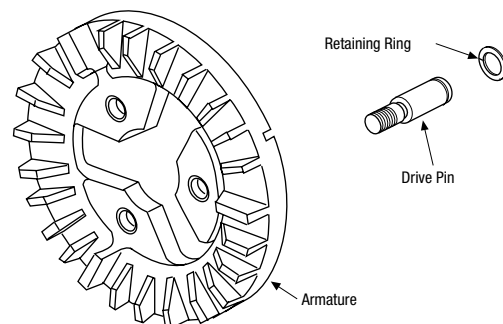
Step 2

Assemble the retainer rings to the drive pins by snapping the rings into the grooves at the head of the drive pins.



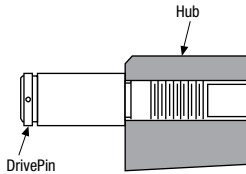
TB 825-1525

Note: The hub is reversible. The side on which the armature is mounted will depend on the direction in which the taperlock bushing must enter.



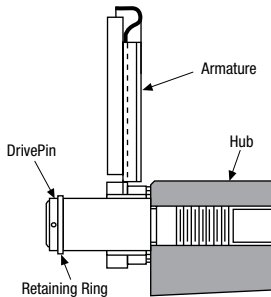
Step 1

Insert the drive pins into the holes of the hub and draw them up tightly until the shoulder of the pin is against the face of the hub. (Since the threads are a class #3 fit, the pins may seem to bind.)



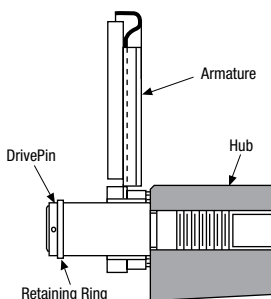
Step 2

Slide the armature over the pins.



Step 3

Assemble the retainer rings to the drive pins by snapping them into the grooves at the head of the pins.



C. Mounting the Armature and Hub Assembly

TB-170, 250, and 425

1. For size 250 and 425, insert a key into the keyway of the shaft.
2. Slide the armature assembly onto the shaft.
3. Position the assembly in accordance with the overall axial dimensions given on the dimension drawings.
4. Secure the assembly in this position by alternately tightening the two setscrews in the hub.

TB-500, 1525

The armature and armature hub are mounted on the shaft by a taperlock bushing. All parts must be clean and free from burrs or chips before assembly. Place the bushing into the hub and insert the key. The key is a side to side fit and should not contact the top of the keyway. Lubricate the locking setscrews, insert them into the bushing and slide the assembly onto the shaft. Tighten by drawing up on each screw alternately with a torque wrench. During the tightening process, the bushing should be tapped lightly from time to time to make certain that it seats-in properly.

Coil Data

Unit Size	Current Draw (Amp) at Rated Voltage		Resistance at 20°C-Ohms	
	6 V Coil	24 V Coil	6 V Coil	24 V Coil
170	.861	.215	6.96	111
250	1.59	.400	3.78	60
425	1.26	.317	4.75	76
500	4.40	1.00	1.36	24
825	4.74	1.18	1.27	20
1000	4.87	1.22	1.23	20
1225	4.50	1.08	1.33	22
1525	4.13	1.21	1.45	20

Maintenance

When a Warner Electric Brake is properly assembled and installed, no further servicing, lubrication or maintenance should be required throughout the life of the unit.

Wear Pattern: Wear grooves appear on the armature and magnet surfaces. This is a normal wear condition, and does not impair functioning of the unit. Never machine either the armature or magnet contact surfaces to remove grooves or score marks resulting from wear.

Heat: Excessive heat and high operating temperatures are causes of rapid wear. Units, therefore, should be ventilated as efficiently as possible.

Foreign Materials: If units are used on machinery where fine, abrasive dust, chips or grit are dispelled into the atmosphere, shielding of the brake may be necessary if maximum life is to be obtained. Where units are used near gear boxes or transmissions requiring frequent lubrication, means should be provided to protect the friction surfaces from oil and grease to prevent serious loss of torque. Oil and grease accidentally reaching the friction surfaces may be removed by wiping with a rag dampened with a suitable cleaner, which leaves no residue. In performing this operation, do not drench the friction material. If the friction material has been saturated with oil or grease, no amount of cleaning will be completely effective. Once such a unit has been placed back in service, heat will cause the oil to be boiled to the surface resulting in further torque loss.

Torque Loss: If the brake loses torque, the initial check should be for input voltage to the magnet. Apply full power to the magnet and verify that the voltage applied is approximately equal to the unit's voltage rating.

Next, check the resistance of the coil. Make sure that power to the control is off and the leads are disconnected. The coil resistance will increase with temperature, but should be approximately equal to the nominal resistance value provided in the Coil Data Chart. A very high or infinite reading indicates an open coil and a very low reading indicates a short circuit.

If the above checks indicate that the proper voltage and current are being supplied to the magnet, mechanical parts should be checked to assure that they are in good operating condition and properly installed.

Control Connections

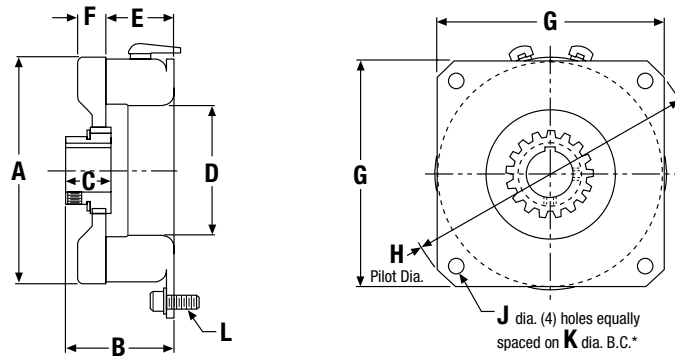
When making electrical connections, refer to instructions supplied with your control. Warner Electric offers a wide variety of controls for tensioning systems. Choose between manual controls, closed loop dancer controls, and load cell controls. For more information, ask for catalog number P-771-WE.

Basic Tension Brake Dimensions and Parts List

TB-170

TB-260

TB-425



() denotes millimeters

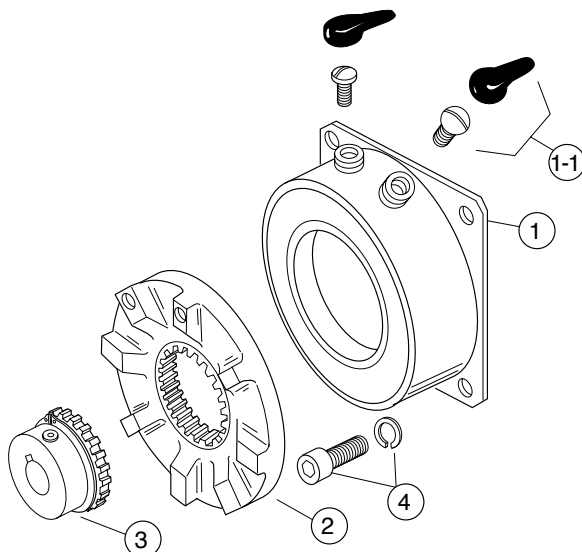
All dimensions nominal unless specified.

*Mounting holes are within .010" (.254) of true position relative to pilot diameter.

	A	B	C	D	E	F	G	H	J	K	L
Model	Max.	Max.					Max.				
TB-170	1.813 (46.05)	1.203 (30.55)	.404 (10.26)	.750 (19.05)	.812 (20.64)	.281 (7.14)	1.828 (46.43)	2.437/2.435 (61.90/61.85)	.204/.187 (5.18/4.75)	2.125 (53.98)	#8-32 UNC-3A
TB-260	2.719 (69.06)	1.906 (48.42)	.6875 (17.46)	1.375 (34.93)	1.250 (31.75)	.4688 (11.91)	2.641 (67.08)	3.500/3.498 (88.90/88.85)	.204/.187 (5.18/4.75)	3.125 (79.38)	#8-32 UNC-3A
TB-425	4.375 (111.13)	2.047 (51.99)	.875 (22.23)	2.437 (61.91)	1.250 (31.75)	.5625 (14.29)	4.266 (108.36)	5.625/5.623 (142.88/142.82)	.296/.280 (7.52/7.11)	5.000 (12.70)	#1/4-20 UNC-3A

Bore Sizes/Part Numbers

	1/4"	5/16"	3/8"	7/16"	1/2"	5/8"	3/4"	7/8"
	.251/.250 (6.38/6.35)	.313/.312 (7.96/7.93)	.376/.375 (9.55/9.52)	.436/.437 (11.14/11.11)	.501/.500 (12.73/12.70)	.626/.625 (15.89/15.86)	.751/.750 (19.08/19.05)	.876/.875 (22.25/22.22)
Model								
TB-170	5375-4	5375-5	5375-6	—	—	—	—	—
TB-260	—	—	5375-8	5375-9	5367-10	5365-11	5365-12	—
TB-425	—	—	—	—	5367-9	5367-10	5367-11	5367-12

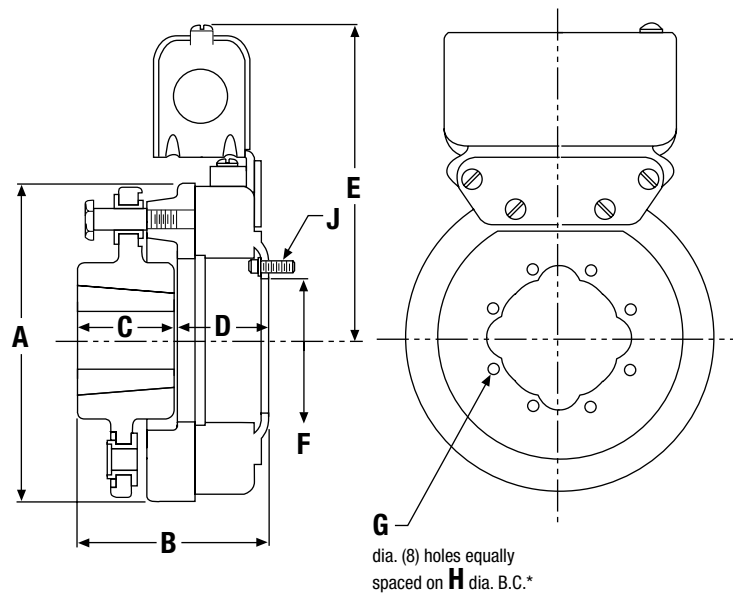


Parts

Item No.	Description	TB-170	Part Number TB-260	TB-425
1	Magnet O.M.			
	6 Volt	5375-631-010	5365-631-013	5367-631-007
	24 Volt	5375-631-012	5365-631-016	5367-631-008
2	Armature	110-0096	110-0097	110-0098
3	Hub Assembly			
	1/4" Bore	5102-541-002	—	—
	5/16" Bore	5102-541-003	—	—
	3/8" Bore	5102-541-004	5103-541-002	—
	7/16" Bore	—	5103-541-003	—
	1/2" Bore	—	5103-541-004	5104-541-002
	5/8" Bore	—	5103-541-006	5104-541-004
	3/4" Bore	—	5103-541-008	5104-541-006
	7/8" Bore	—	—	5104-541-007
4	Mounting Acc.	5102-101-001	5102-101-001	5104-101-002
5	Terminal Acc.	—	5103-101-002	5103-101-003

Basic Tension Brake Dimensions and Parts List

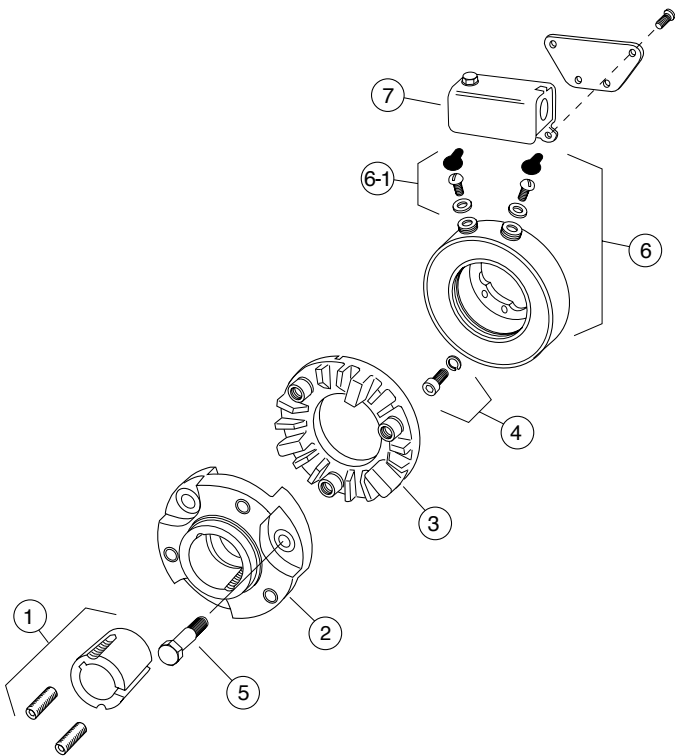
TB-500



() denotes millimeters
All dimensions nominal unless specified.

*Mounting holes are within .010" (.254) of true position relative to pilot diameter.

Model	A Max.	B Max.	C	D	E Max.	F	G	H	J
TB-500	5.125 (130.18)	3.140 (79.77)	1.500 (38.10)	1.594 (40.48)	5.062 (128.59)	2.062 (52.39)	.208/.201 (5.28/5.11)	2.375 (60.33)	#8-32 UNC-3A



Bore, Bushing, Keyway Data

Model	Bushing	Bore Dia.	Keyway
TB-500	Dodge #1215	1/2-9/16 (12.70/14.28)	1/8 x 1/16 (3.18 x 1.59)
		5/8-7/8 (15.88-22.22)	3/16 x 3/32 (4.76 x 2.38)
		15/16-1-1/4 (23.81-31.75)	1/4 x 1/8 (6.35 x 3.18)

Parts

Item No.	Description	Part Number
1	Bushing Taperlock*	180-0116 to 180-0128
2	Hub, Armature	5300-541-004
3	Armature	110-0047
4	Magnet Mounting Acc.	
	Inside Mounted	5102-101-001
	Outside Mounted	5300-101-008
5	Drive Pin (3)	5300-101-003
6	Magnet	
	6 Volt I.M.	5300-631-019
	6 Volt O.M.	5300-631-024
	24 Volt I.M.	5300-631-040
6-1	Terminal Accessory	5311-101-001
7	Conduit Box	5200-101-010

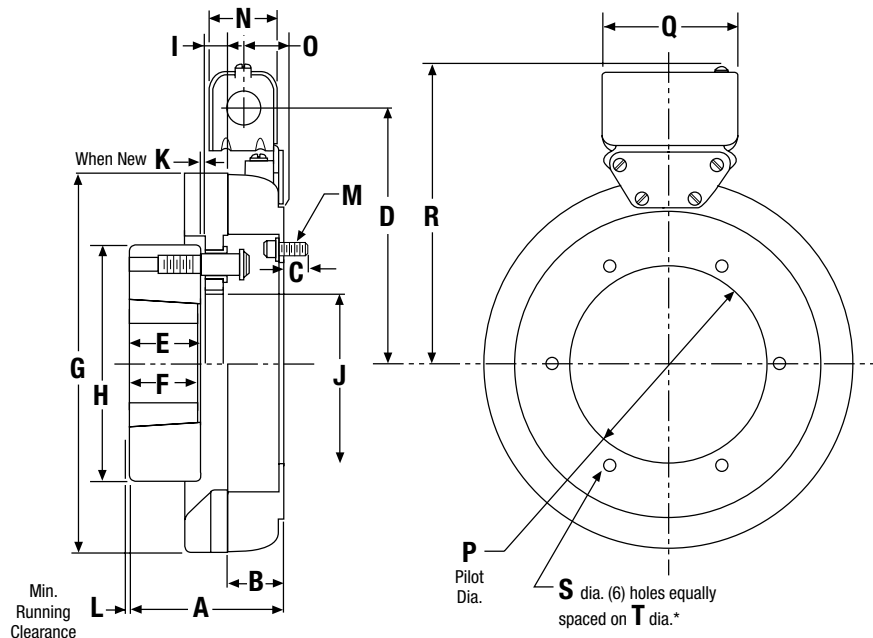
*Each one digit increase in part number signifies a 1/16" (1.588) bushing bore size increase.

Basic Tension Brake Dimensions and Parts List

TB-825

TB-1000

TB-1225



() denotes millimeters

All dimensions nominal unless specified.

*Mounting holes are within .010" (.254) of true position relative to pilot diameter.

Model	A Max.	B	C Max.	D	E	F	G Max.	H Dia.	I	J Dia.
TB-825	3.671 (93.24)	1.312 (33.32)	.562 (14.27)	5.656 (143.66)	1.593 (40.46)	1.500 (38.10)	8.468 (215.09)	4.625 (117.48)	.609 (15.47)	2.187 (55.55)
TB-1000	4.109 (104.37)	1.453 (36.91)	.562 (14.27)	6.531 (165.89)	1.906 (48.41)	1.750 (44.45)	10.187 (258.75)	6.250 (158.75)	.609 (15.47)	3.875 (98.43)
TB-1225	5.390 (136.91)	1.640 (41.66)	.562 (14.27)	7.531 (191.29)	3.000 (76.20)	3.000 (76.20)	12.437 (315.90)	6.875 (174.63)	.609 (15.47)	4.500 (114.30)

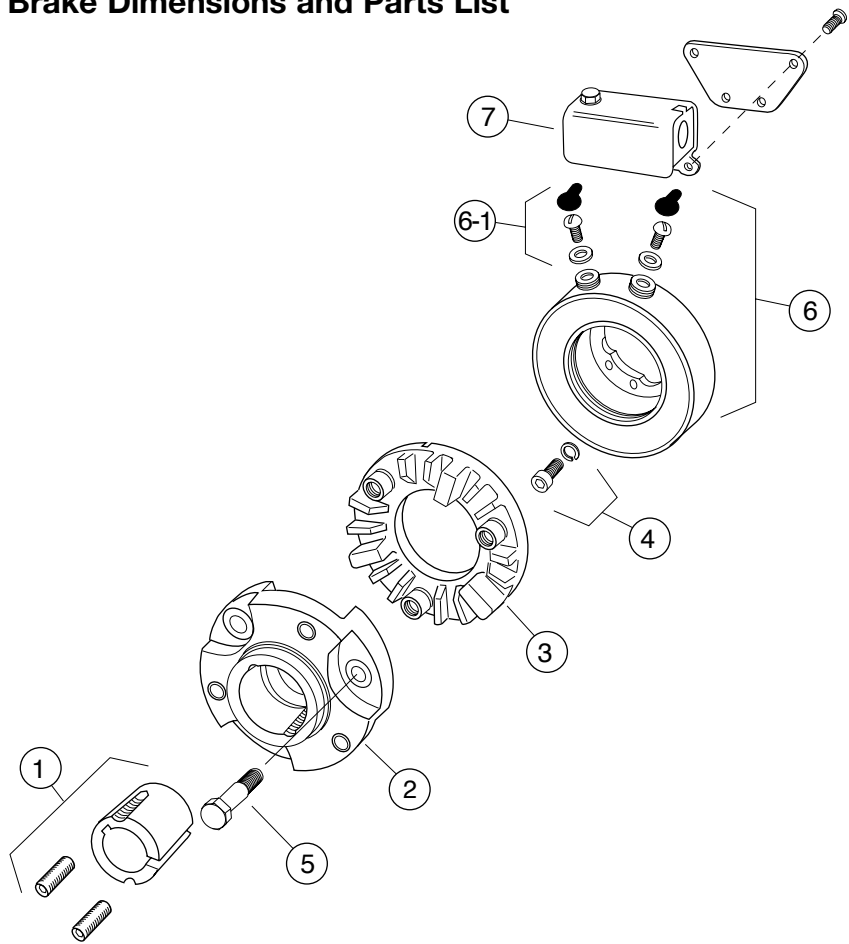
Model	K Min.	L	M	N	O	P Max.	Q	R	S	T
TB-825	.093 (2.36)	.062 (1.57)	5/16-18 UNC-3A	1.546 (39.27)	.921 (23.39)	3.503/3.501 (88.98/88.93)	3.750 (95.25)	6.406 (162.71)	.358/.338 (9.09/8.59)	4.250 (107.95)
TB-1000	.093 (2.36)	.062 (1.57)	5/16-18 UNC-3A	1.546 (39.27)	.921 (23.39)	5.378/5.376 (136.60/165.55)	3.750 (95.25)	7.687 (195.25)	.358/.338 (9.09/8.59)	6.125 (155.58)
TB-1225	.093 (2.36)	.062 (1.57)	5/16-18 UNC-3A	1.546 (39.27)	.921 (23.39)	6.378/6.376 (162.00/161.95)	3.750 (95.25)	8.687 (220.65)	.358/.338 (9.09/8.59)	7.250 (184.15)

Bore, Bushing, Keyway Data

Bore Dia.	TB-825 Keyway Dodge #1615†	TB-1000 Keyway Dodge #2517	TB-1225 Keyway Dodge #3030
.500-.562 (12.70-14.27)	1/8 x 1/16	1/8 x 1/16	—
.625-.875 (15.88-22.23)	3/16 x 3/32	3/16 x 3/32	—
.312-1.250 (7.92-31.75)	1/4 x 1/8	1/4 x 1/8	1/4 x 1/8
1.312-1.375 (33.32-34.93)	5/16 x 5/32	5/16 x 5/32	5/16 x 5/32
1.437-1.500 (36.50-38.10)	2 3/8 x 3/16	—	—
1.437-1.750 (36.50-44.45)	—	3/8 x 3/16	3/8 x 3/16
1.562-1.625 (39.67-41.28)*	3/8 x 3/16	—	—
1.812-2.250 (46.02-57.15)	—	1/2 x 1/4	1/2 x 1/4
2.312-2.500 (58.72-63.50)*	—	5/8 x 5/16	—
2.312-2.750 (58.72-69.85)	—	—	5/8 x 5/16
2.182-3.000 (71.42-76.2)*	—	—	3/4 x 3/8

*Key furnished by Warner Electric. †See page 12 for specific part numbers. Dodge is a registered trademark of Reliance Electric Company.

Basic Tension Brake Dimensions and Parts List



Parts

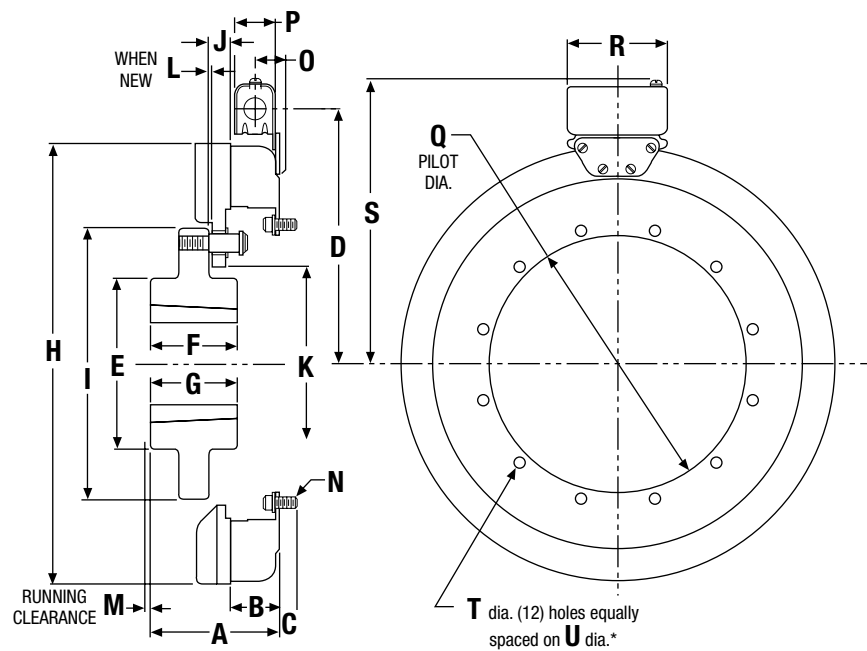
Item No.	Description	Part Number			Qty.
		TB-170	TB-260	TB-425	
1	Bushing Taperlock*	180-0131 to 180-0149	180-0185 to 180-0217	180-0262 to 180-0295	1
2	Hub, Armature	540-0394	540-0313	540-0015	1
3	Armature	5301-111-019	5302-111-021	5303-111-011	1
4	Magnet Mounting Acc. Inside Mounting	5321-101-001	5321-101-001	5321-101-001	1
5	Drive Pin & Retainer	5301-101-001	5301-101-001	5301-101-001	4
6	Magnet				
	6 Volt I.M.	5311-631-024	5312-631-018	5313-631-017	
	24 Volt I.M.	5311-631-040	5312-631-034	5313-631-031	
6-1	Terminal Accessory	5311-101-001	5311-101-001	5311-101-001	1
7	Conduit Box	5200-101-011	5200-101-011	5200-101-011	1

*See page 12 for specific Shaft Sizes and Bushing Numbers.

These units, when used with the correct Warner Electric conduit box, meets the standards of UL-508 and are listed under guide card #NMTR, file #59164 and are CSA Certified under file #LR11543.

Basic Tension Brake Dimensions and Parts List

TB-1525



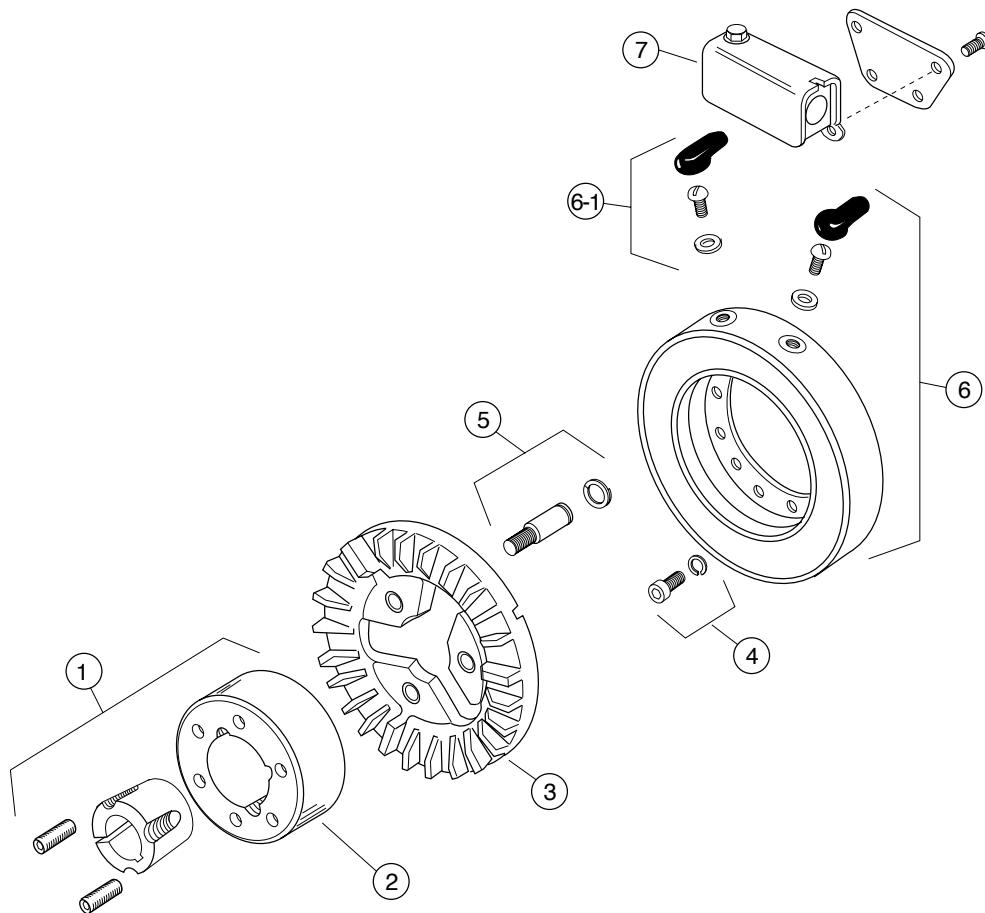
*Mounting holes are within .010" (.254) of true position relative to pilot diameter.

() denotes millimeters
All dimensions nominal unless specified.

	A	B	C	D	E	F	G	H	I	J	K
Model	Max.		Max.		Dia.			Dia.	Dia.		Dia.
TB-1525	4.531 (115.09)	1.750 (44.45)	.562 (14.27)	9.187 (233.35)	6.000 (152.40)	3.000 (76.2)	3.000 (76.2)	15.562 (395.27)	9.500 (241.30)	.609 (15.47)	7.125 (180.98)

	L	M	N	O	P	Q	R	S	T	U
Model		Min.				Max.				
TB-1525	.093 (2.36)	.062 (1.57)	5/16-18	.921 (23.39)	1.546 (39.27)	9.002/9.000 (228.65/228.60)	3.750 (95.25)	10.343 (262.71)	.358/.338 (9.09/8.59)	9.750 (247.65)

TB-1525



Dodge is a registered trademark of Reliance Electric Company.

Parts

Item No.	Description	Part Number
1	Bushing Taperlock*	180-0262 to 180-0295
2	Hub, Armature	540-0314
3	Armature	5304-111-005
4	Magnet Mounting Acc.	
	Inside Mounted	5321-101-001
5	Drive Pin & Retainer	5301-101-001
6	Magnet	
	6 Volt I.M.	5314-631-002
	24 Volt I.M.	5314-631-022
6-1	Terminal Accessory	5311-101-001
7	Conduit Box	5200-101-011

*See page 12 for specific Shaft Sizes and Bushing Numbers.

Bore, Bushing, Keyway Data

Model	Bushing	Bore Dia.	Keyway
TB-1525	Dodge	.937-1.250 (23.80-31.75)	1/4 x 1/8
	#3030†	1.312-1.375 (33.32-34.93)	5/16 x 5/32
		1.437-1.750 (36.50-44.45)	3/8 x 3/16
		1.812-2.250 (46.02-57.15)	1/2 x 1/4
		2.312-2.750 (58.72-69.85)	5/8 x 5/16
		2.812-3.000 (71.42-76.20)	3/4 x 3/8

*Key furnished by Warner Electric †See page10 for specific part numbers.

Bushing Part Numbers

(Bushing for Armature Side)

Size 500

Shaft Size	Keyway Size	Bushing Number	
		Warner Electric	Dodge
1/2	1/8 x 1/16	180-0116	1215w
9/16	1/8 x 1/16	180-0117	
5/8	3/16 x 3/32	180-0118	
11/16	3/16 x 3/32	180-0119	
3/4	3/16 x 3/32	180-0120	
13/16	3/16 x 3/32	180-0121	
7/8	3/16 x 3/32	180-0122	
15/16	1/4 x 1/8	180-0123	
1	1/4 x 1/8	180-0124	
1-1/16	1/4 x 1/8	180-0125	
1-1/8	1/4 x 1/8	180-0126	
1-3/16	1/4 x 1/8	180-0127	
1-1/4	1/4 x 1/8	180-0128	
Size 825			
1/2	1/8 x 1/16	180-0131	1615
9/16	1/8 x 1/16	180-0132	
5/8	3/16 x 3/32	180-0133	
11/16	3/16 x 3/32	180-0134	
3/4	3/16 x 3/32	180-0135	
13/16	3/16 x 3/32	180-0136	
7/8	3/16 x 3/32	180-0137	
15/16	1/4 x 1/8	180-0138	
1	1/4 x 1/8	180-0139	
1-1/16	1/4 x 1/8	180-0140	
1-1/8	1/4 x 1/8	180-0141	
1-3/16	1/4 x 1/8	180-0142	
1-1/4	1/4 x 1/8	180-0143	
1-5/16	5/16 x 5/32	180-0144	
1-3/8	5/16 x 5/32	180-0145	
1-7/16	3/8 x 3/16	180-0146	
1-1/2	3/8 x 3/16	180-0147	
1-9/16	3/8 x 3/16	180-0148	
1-5/8	3/8 x 3/16	180-0149	

Size 1000

Shaft Size	Keyway Size	Bushing Number	
		Warner Electric	Dodge
1/2	1/8 x 1/16	180-0185	2517
9/16	1/8 x 1/16	180-0186	
5/8	3/16 x 3/32	180-0187	
11/16	3/16 x 3/32	180-0188	
3/4	3/16 x 3/32	180-0189	
13/16	3/16 x 3/32	180-0190	
7/8	3/16 x 3/32	180-0191	
15/16	1/4 x 1/8	180-0192	
1	1/4 x 1/8	180-0193	
1-1/16	1/4 x 1/8	180-0194	
1-1/8	1/4 x 1/8	180-0195	
1-3/16	1/4 x 1/8	180-0196	
1-1/4	1/4 x 1/8	180-0197	
1-5/16	5/16 x 5/32	180-0198	
1-3/8	5/16 x 5/32	180-0199	
1-7/16	3/8 x 3/16	180-0200	
1-1/2	3/8 x 3/16	180-0201	
1-9/16	3/8 x 3/16	180-0202	
1-5/8	3/8 x 3/16	180-0203	
1-11/16	3/8 x 3/16	180-0204	
1-3/4	3/8 x 3/16	180-0205	
1-13/16	1/2 x 1/4	180-0206	
1-7/8	1/2 x 1/4	180-0207	
1-15/16	1/2 x 1/4	180-0208	
2	1/2 x 1/4	180-0209	
2-1/16	1/2 x 1/4	180-0210	
2-1/8	1/2 x 1/4	180-0211	
2-3/16	1/2 x 1/4	180-0212	
2-1/4	1/2 x 1/4	180-0213	
2-5/16	5/8 x 5/16	180-0214	
2-3/8	5/8 x 5/16	180-0215	
2-7/16	5/8 x 5/16	180-0216	
2-1/2	5/8 x 5/16	180-0217	

Size 1225-1525

Shaft Size	Keyway Size	Bushing Number	
		Warner Electric	Dodge
15/16	1/4 x 1/8	180-0262	3030
1	1/4 x 1/8	180-0263	
1-1/16	1/4 x 1/8	180-0264	
1-1/8	1/4 x 1/8	180-0265	
1-3/16	1/4 x 1/8	180-0266	
1-1/4	1/4 x 1/8	180-0267	
1-5/16	5/16 x 5/32	180-0268	
1-3/8	5/16 x 5/32	180-0269	
1-7/16	3/8 x 3/16	180-0270	
1-1/2	3/8 x 3/16	180-0271	
1-9/16	3/8 x 3/16	180-0272	
1-5/8	3/8 x 3/16	180-0273	
1-11/16	3/8 x 3/16	180-0274	
1-3/4	3/8 x 3/16	180-0275	
1-13/16	1/2 x 1/4	180-0276	
1-7/8	1/2 x 1/4	180-0277	
1-15/16	1/2 x 1/4	180-0278	
2	1/2 x 1/4	180-0279	
2-1/16	1/2 x 1/4	180-0280	
2-1/8	1/2 x 1/4	180-0281	
2-3/16	1/2 x 1/4	180-0282	
2-1/4	1/2 x 1/4	180-0283	
2-15/16	5/8 x 5/16	180-0284	
2-3/8	5/8 x 5/16	180-0285	
2-7/16	5/8 x 5/16	180-0286	
2-1/2	5/8 x 5/16	180-0287	
2-9/16	5/8 x 5/16	180-0288	
2-5/8	5/8 x 5/16	180-0289	
2-11/16	5/8 x 5/16	180-0290	
2-3/4	5/8 x 5/16	180-0291	
2-13/16	3/4 x 3/8	180-0292	
2-7/8	3/4 x 3/8	180-0293	
2-15/16	3/4 x 3/8	180-0294	
3	3/4 x 3/8	180-0295	