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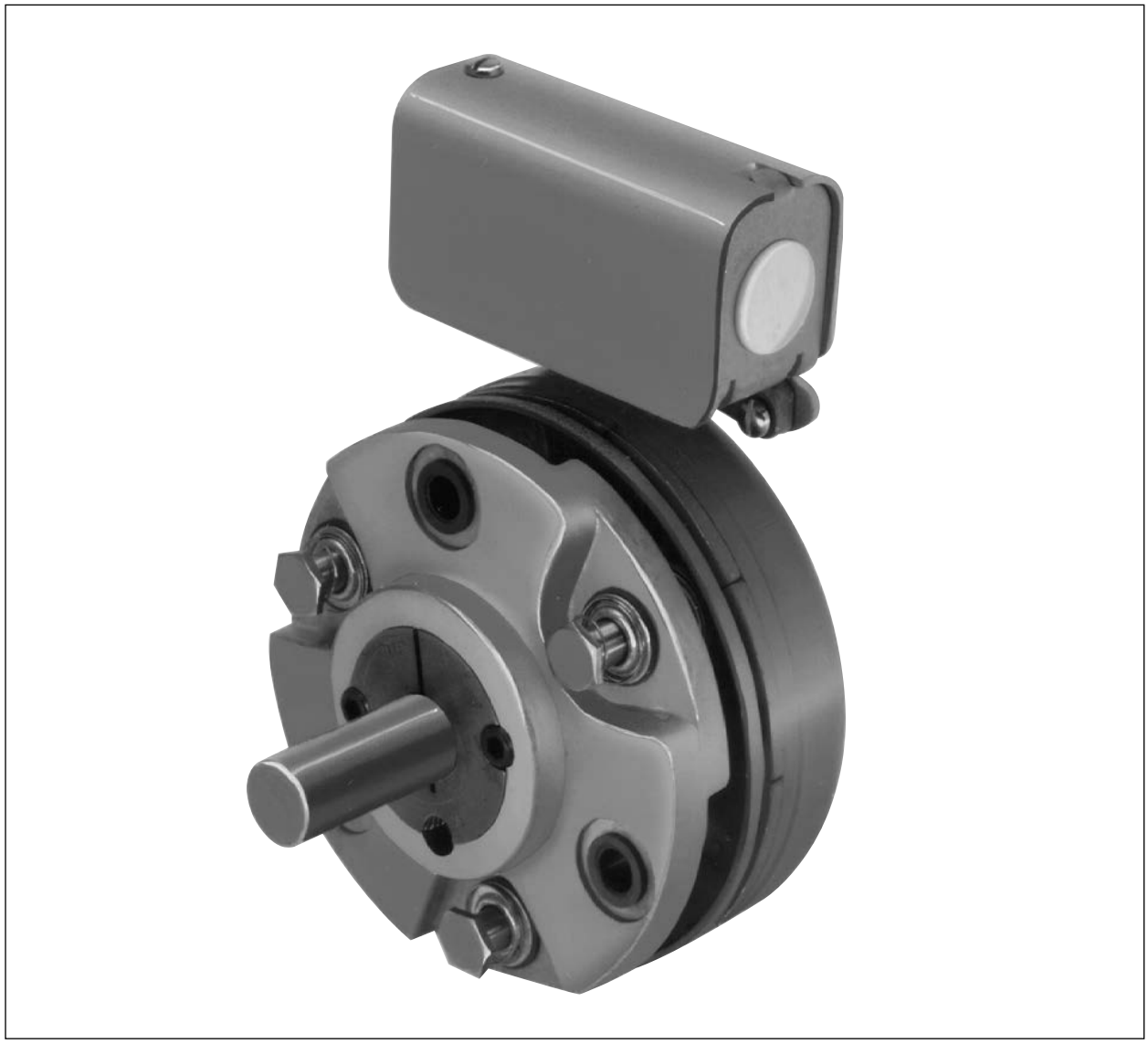
PB-500 Pin Drive, PB-500 Spline Drive
PB-650 Pin Drive

Installation Instructions

P-0204-WE
819-0485



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

Follow the installation instructions in this manual carefully to ensure safe, reliable operation. All stated or implied manufacturer warranties are voided if this product is not installed in accordance with these instructions.

PB-500
Pin Drive

PB-500
Spline Drive

PB-650
Pin Drive

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PB-500 Primary Brake Normal Duty Pin Drive Armature

Installation Instructions

A. Installing the Conduit Box

Please follow instructions supplied with conduit box.

B. Mounting the Magnet

The brake magnet is mounted to a stationary machine member by a flange. Extreme care must be taken in selecting the location for the mounting of the magnet. Proper positioning is very important for the unit to function correctly.

1. A pilot diameter on the mounting surface is essential to hold the magnet within the required tolerances. (Figure 1)

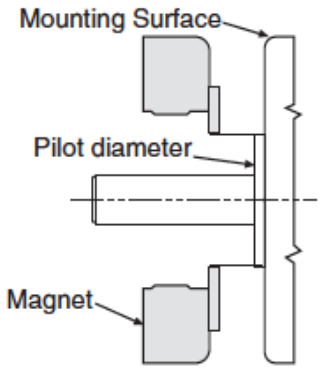

Figure 1

2. A machined pilot diameter is provided on the magnet mounting flange (refer to illustrations) to aid in the proper positioning of the magnet.
3. Once the mounting surface has been prepared, the magnet is bolted in place with capscrews and lock-washers. (Figure 2)

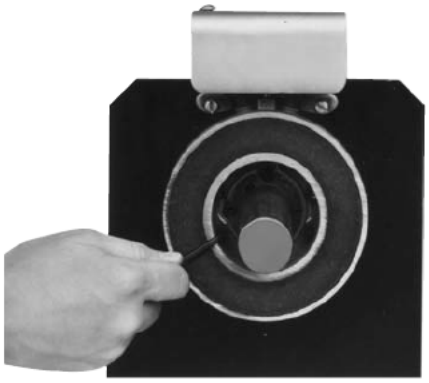

Figure 2

4. Use a dial indicator to check the unit for concentricity and squareness to the shaft. The unit should be concentric within .010 T.I.R. and square within .006 T.I.R. (Figure 3)

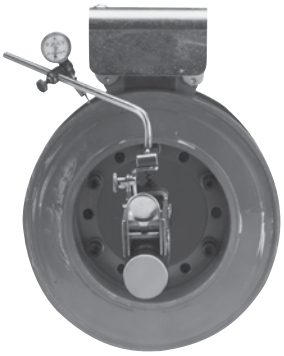

Figure 3

C. Assembling the Armature Hub

Assemble the armature to the armature hub with the autogap mounting accessory. Refer to Figure 4. The hub is reversible. The side on which the armature is mounted will depend on the direction in which the taperlock bushing must enter.

The autogap assembly is a double spring device which allows for automatic armature clearance and adjustment for wear. The smaller or conical spring pushes the armature from the rotor face, leaving the gap of about 1/32 inch, while the straight spring automatically follows up for wear. This combination maintains maximum performance efficiency throughout the life of the unit.

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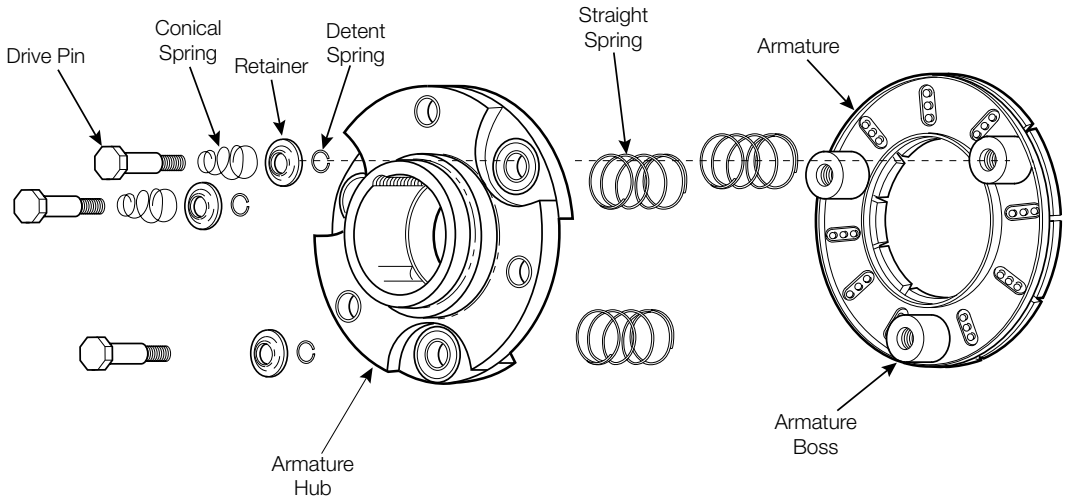

Figure 4

The assembly procedure for the autogap accessory is as follows:

Step 1

Place straight springs over armature bosses on back side of armature. (Figure 5)

Figure 5

Step 2

Place armature hub over straight springs.

⚠CAUTION Straight springs must fit into the grooves in armature hub. (Figure 6)

Figure 6

Step 3

Compress conical spring against retainer ring by sliding detent spring towards head of pin. (All 3 pins) (Figure 7)

Figure 7

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Step 4

Insert assembled drive pins through armature hub and straight springs and into the threaded armature bosses. Apply grade “AA” Loctite Sealant on drive pin threads. (Figure 8)

Figure 8

Step 5

Tighten drive pins until shoulders of pins are against face of armature bosses. Since threads are class No. 3 fit, pins may seem to bind.

Step 6

Compress the retainers against the armature hub and check to see that the armature hub is held tightly to the armature bosses.

Note: This position must not be disturbed during completion of assembly. (Figure 9)

Figure 9

D. Mounting the Armature Assembly

The armature and armature hub are mounted on the shaft with a taperlock bushing. All parts must be clean and free from burrs and chips before assembling.

1. 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.
2. Insert the locking setscrews into the bushing and slide the assembly onto the shaft.
3. Place the face of the armature approximately 1/32” from the face of the magnet. Once this gap is set, it will be automatically maintained throughout the life of the unit. (Figure 10)

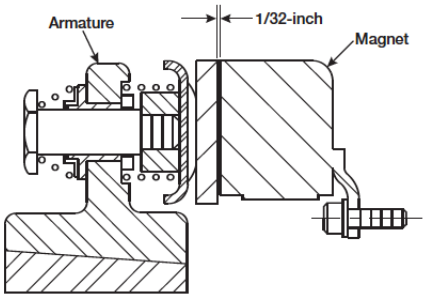

Figure 10

4. Securely fasten the armature assembly to the shaft by alternately tightening each setscrew. During the tightening process, the bushing should be tapped lightly to make certain it seats-in properly.

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PB-500 Primary Brake Heavy Duty Pin Drive Armature

Installation Instructions

A. Installing the Conduit Box

Please follow instructions supplied with conduit box.

B. Mounting the Magnet

The brake magnet is mounted to a stationary machine member by a flange. Extreme care must be taken in selecting the location for the mounting of the magnet. Proper positioning is very important for the unit to function correctly.

1. A pilot diameter on the mounting surface is essential to hold the magnet within the required tolerances. (Figure 1)

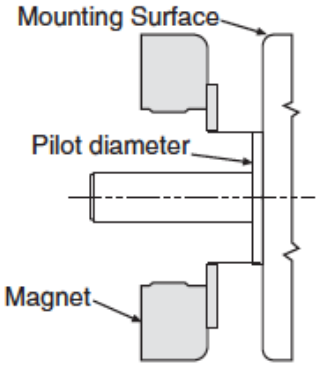

Figure 1

2. A machined pilot diameter is provided on the magnet mounting flange (refer to illustrations) to aid in the proper positioning of the magnet.
3. Once the mounting surface has been prepared, the magnet is bolted in place with capscrews and lock-washers. (Figure 2)

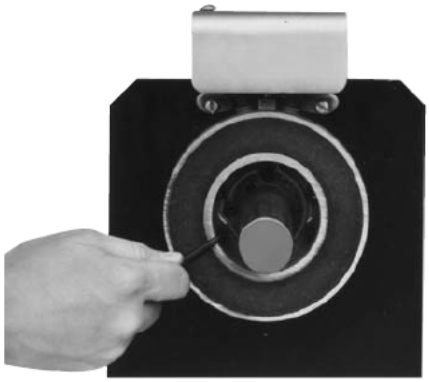

Figure 2

4. Use a dial indicator to check the unit for concentricity and squareness to the shaft. The unit should be concentric within .010 T.I.R. and square within .006 T.I.R. (Figure 3)

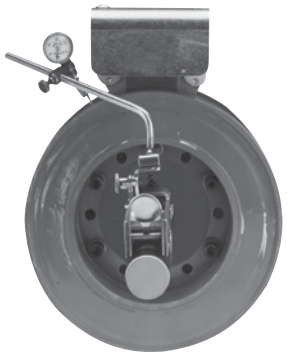

Figure 3

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C. Assembling the Armature and Hub

Scan to watch!
Setting the Autogap for a Heavy Duty Clutch Coupling or Brake in sizes 500 & 650
https://p.widencdn.net/mqwdke/V-0100-WE

The heavy duty units contain spline drive armatures and hubs. The armatures are shipped with a built-in autogap spring accessory. This device automatically maintains a gap of about 1/32" between the armature and magnet faces for the life of the unit.

Follow these instructions to assemble the armature and splined hub.

Step 1

Place the splined hub on a flat surface. The extended portion of the hub, where the set screw holes are located, should be down.

Step 2

Check the detent ring in the armature assembly to make sure it is centered evenly around the spline. This ring moves freely, but it should be centered for easier assembly of the hub.

Step 3

Holding the armature with the segmented side up, press the armature onto the splined hub. This is most easily done by applying firm back-and-forth pressure. (Figure 4)

Figure 4

Step 4

Push the assembly up against the retainer ring.

D. Mounting the Armature-Hub Assembly

1. Slide the armature-hub assembly onto the shaft until the armature face touches the magnet face.
2. Move the assembly back to allow a gap of about 1/16" between the two faces.
3. Secure the armature-hub assembly in this position by tightening the two setscrews in the hub.
4. Check the assembly by pressing the armature into contact with the magnet face and then releasing it. The armature should spring back about 1/32". This gap will be automatically maintained throughout the life of the unit. (Figure 5)

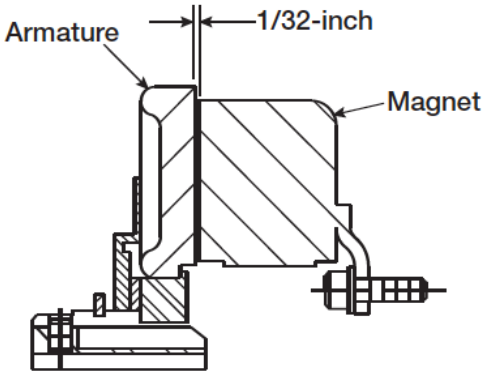

Figure 5

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PB-650 Primary Brake

Installation Instructions

A. Installing the Conduit Box

Please follow instructions supplied with conduit box.

B. Mounting the Magnet

The brake magnet is mounted to a stationary machine member by a flange. Extreme care must be taken in selecting the location for the mounting of the magnet. Proper positioning is very important for the unit to function correctly.

1. A pilot diameter on the mounting surface is essential to hold the magnet within the required tolerances. (Figure 1)

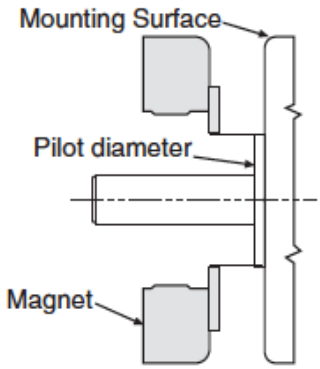

Figure 1

2. A machined pilot diameter is provided on the magnet mounting flange (refer to illustrations) to aid in the proper positioning of the magnet.
3. Once the mounting surface has been prepared, the magnet is bolted in place with capscrews and lock-washers. (Figure 2)

Figure 2

4. Use a dial indicator to check the unit for concentricity and squareness to the shaft. The unit should be concentric within .010 T.I.R. and square within .006 T.I.R. (Figure 3)

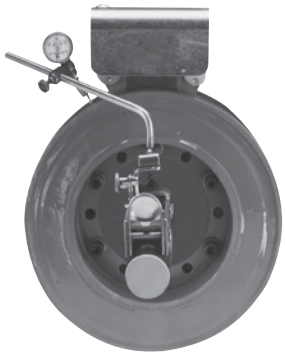

Figure 3

C. Assembling the Armature Hub

Assemble the armature to the armature hub with the autogap mounting accessory. Refer to Figure 4. The hub is reversible. The side on which the armature is mounted will depend on the direction in which the taperlock bushing must enter.

The autogap assembly is a double spring device which allows for automatic armature clearance and adjustment for wear. The smaller or conical spring pushes the armature from the rotor face, leaving the gap of about 1/32 inch, while the straight spring automatically follows up for wear. This combination maintains maximum performance efficiency throughout the life of the unit.

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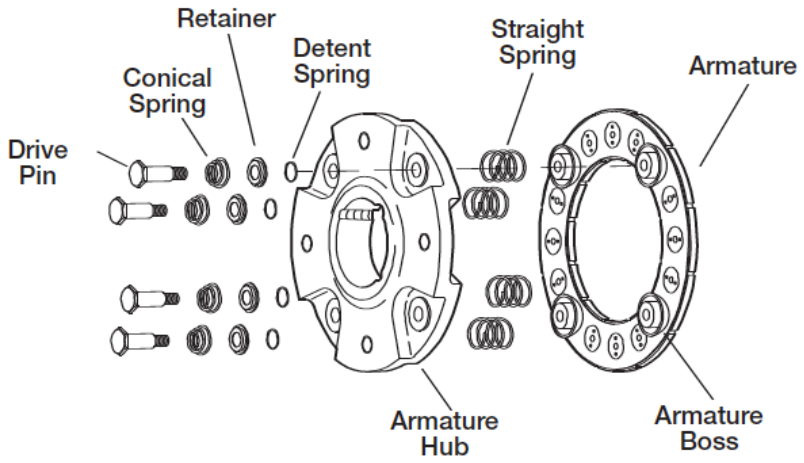

Figure 4

The assembly procedure for the autogap accessory is as follows:

Step 1

Place straight springs over armature bosses on back side of armature. (Figure 5)

Figure 5

Step 2

Place armature hub over straight springs.

⚠CAUTION Straight springs must fit into the grooves in armature hub. (Figure 6)

Figure 6

Step 3

Compress conical spring against retainer ring by sliding detent spring towards head of pin. (All 4 pins) (Figure 7)

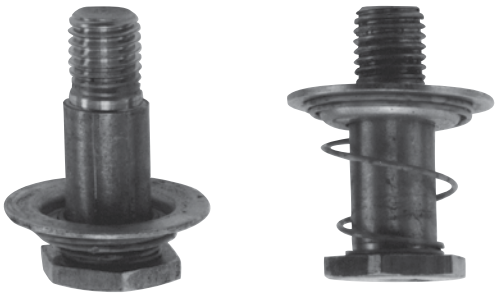

Figure 7

Step 4

Insert assembled drive pins through armature hub, through the straight springs, and into the threaded armature bosses. Apply grade “AA” Loctite Sealant on drive pin threads. (Figure 8)

Figure 8

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Step 5

Tighten drive pins until shoulders of pins are against face of armature bosses. Since threads are class No. 3 fit, pins may seem to bind.

Step 6

Compress the retainer rings against the armature hub, and check to see that the part is held tightly to the armature bosses.

Note: This position must not be disturbed during completion of assembly. (Figure 9)

Figure 9

D. Mounting the Armature Assembly

The armature and armature hub are mounted on the shaft with a taperlock bushing. All parts must be clean and free from burrs and chips before assembling.

1. 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.

2. Insert the locking setscrews into the bushing and slide the assembly onto the shaft.

3. Place the face of the armature approximately 1/32" from the face of the magnet. Once this gap is set, it will be automatically maintained throughout the life of the unit. (Figure 10)

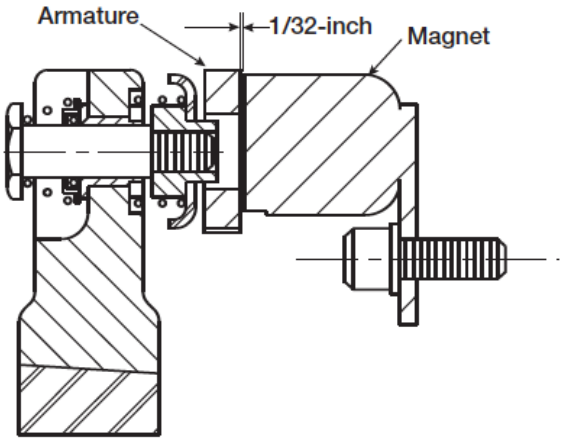

Figure 10

4. Securely fasten the armature assembly to the shaft by alternately tightening each setscrew. During the tightening process the bushing should be tapped lightly to make certain it seats-in properly.

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Electrical Specifications

	Unit Size					
	PB-500			PB-650		
Voltage - DC	**6**	**24**	**90**	**6**	**24**	**90**
Resistance @ 20ºC - Ohms	1.36	23.8	251.1	1.24	18.3	257.2
Current - Amperes	4.4	1.01	.36	4.84	1.31	.35
Watts	26	24	32	29	31	32
Coil Build-up - Milleseconds	84	87	93	100	105	110
Coil Decay- Milliseconds	38	35	30	50	50	50

Notes: Build-up time equals current to approximately* 90% of steady state value and flux to 90%.
Decay time equals current to approximately* 10% of steady state value and flux to 10%.
*Approximately because current leads or lags flux by a small amount.

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Conduit Box

Installation Instructions

Conduit Box Kit No. 5200-101-010 contains all components needed to assemble a conduit box for PB500 and PB650 brake.

When properly installed, this conduit box is designed to provide a proper means for field wiring terminations. It conforms to the requirements of Underwriters Laboratories.

⚠CAUTION Do not connect rigid conduit directly to the conduit box. A minimum of 12" of flexible liquid tight conduit or other suitable flexible wiring with appropriate fittings is required. Flexible wiring is required to prevent side loading of bearing on bearing mounted clutches and possible deformation or breakage of the conduit box or clutch/ brake components during assembly.

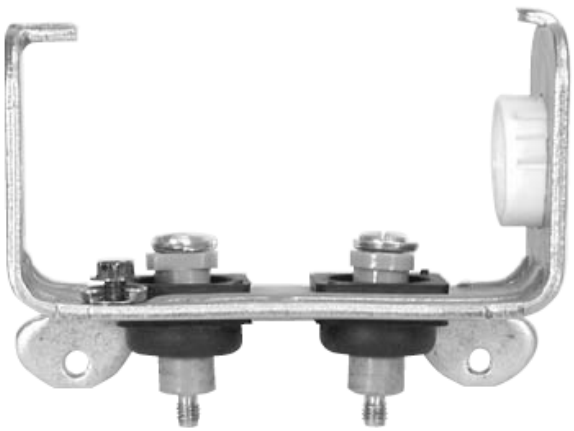
Step 1

Assemble a customer supplied flexible wiring connector into desired end of conduit box (3). Press protective plug (5) into unused conduit hole.

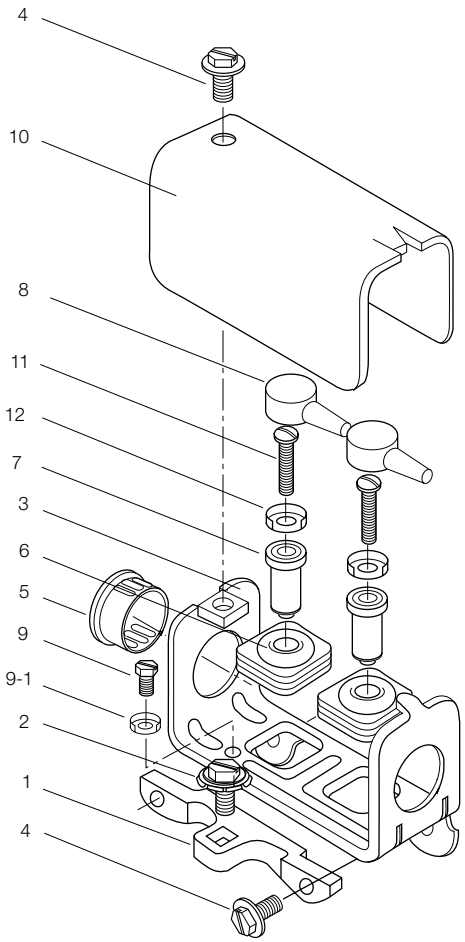
Thread green washer head hex screw (9) into round hole in base of conduit box. Place terminal ring (9-1) over screw before inserting.

Snap two wire grommets (6) into square holes in conduit box base. The grommet crowns should be toward the outside of the box and the rubber flanges should be on both sides of the conduit box.

Push two terminal spacers (7) through rubber grommets using the correct terminal spacers. (See Figure 10)



Components



Parts List for Kit 5200-101-010

Item	Quan.	Part Name
1	1	Bracket
2	1	Screw, Hex, Washer Hd. and Sems Conical Washer
3	1	Box, Conduit
4	3	Screw, Hex, Washer Head
5	1	Plug, Protective
6	2	Grommet, Wire
*7	2	Spacer No. 8 Thd.
	2	Spacer No. 6 Thd.
8	2	Cap Terminal
9	1	Screw, Hex, Washer Head, Green
9-1	3	Terminal, Ring
10	1	Cover
11	2	Screw, No.8 Brass
12	1	Plug, Protective

*The No. 6 spacers are required on Sizes 375, 400, and 475. All others use No. 8.

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Step 2

Fasten bracket (1) to clutch field/brake magnet with one No. 10-32 hex washer head screw (2). The screw is self-tapping, threads are not provided in the magnet bracket adapter. The square projection on the magnet fits into the square hole in the bracket. The curved side of the bracket mounts toward the magnet. The bracket flange is toward the flange side of the magnet. (See Figure 11)

Figure 11

Step 3

Mount conduit box to bracket. The conduit box flange must be toward flange side or the magnet (rear of bracket). Thread terminal spacers into field/magnet before fastening conduit box to bracket. Do not over tighten, excessive torque will pull thread insert out of magnet/field. Secure conduit box to bracket with two No. 10-32 hex washer head screws (4). (See Figure 12)

Figure 12

Step 4

Connect electric supply cable to the fitting installed on the conduit box. If an external power supply is furnishing DC current to the clutch or brake, proceed to Step 5 and skip Step 6. If a Warner Electric CBC-100 power supply is being installed in the conduit box, skip Step 5 and proceed to Step 6.

Step 5 - DC Connection

Slide one terminal cap (8) onto each of the two supply conductors, small end first. Connect the two supply conductors (with rubber caps) to the magnet or field terminals using two No. 8 brass screws (11) and ring terminals (9-1). The stripped wires can wrap around the screw between the terminal ring and the screw head or other ring type terminals may be used. Electrical supply connections must conform to local electrical codes. Install plug (12) into cover hole.

Step 6 - AC Connection

When a CBC-100 power supply is used, refer to installation sheet P-266-WE provided with the CBC-100, following instructions carefully. To mount the CBC-100 to the conduit box, place the control into the cover so the curved surfaces conform, line up the cover hole with the control mounting hole and fasten with screw provided in the mounting kit. Connections to the magnet or field terminals are as outlined in Step 5.

Step 7

A ground wire is recommended for grounding of the conduit box and brake magnet or clutch field. Connect this wire with the green ground screw (8) to the hole in the bottom of the box. Consult electrical local codes regarding grounding requirements.

Step 8

Install cover (10) by sliding the slot in the cover over the tab on one end of the conduit box and secure the cover on the opposite end with one No. 10-32 hex washer head screw (11).

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Burnishing and Maintenance

Burnishing

Intimate metal to metal contact is essential between the armature and the metal rings (poles) of the magnet or rotor. Warner Electric clutches and brakes leave the factory with the friction material slightly undercut to assure good initial contact.

Normally, the desired wearing-in process occurs naturally as the surfaces slip upon engagement. The time for wear-in, which is necessary to obtain the ultimate torque of the unit, will vary depending on speed, load, or cycle duty.

If maximum torque is required immediately after installation, the unit should be burnished by slipping the friction surfaces together at reduced voltage. It is recommended that the burnishings be done right on the application, if at all possible.

Burnishing at high speed will result in a smoother wear-in pattern and reduce the time for burnishing. The voltage should be set at approximately 30% or 40% of the rated value.

The unit should be cycled on and off to allow sufficient time between slip cycles to prevent overheating.

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

Maintenance

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. Normally, the magnet and armature, as a mating pair, will wear at the same rate. It is the usual recommendation that both components be replaced at the same time.

Remachining the face of a worn armature is not recommended. If a replacement armature is to be used with a used magnet, it is necessary to remachine the worn magnet face. In refacing a magnet: (1) machine only enough material to clean up the complete face of the magnet; (2) hold the face within .005" of parallel with the mounting plate; and (3) undercut the molded facing material .001" - .003" below the metal poles.

Heat: Excessive heat and high operating temperatures are causes of rapid wear. Units, therefore, should be ventilated as efficiently as possible, especially if the application requires fast, repetitive cycle operation.

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 accidently 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 materials have 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 boil to the surface, resulting in further torque loss.

Torque Loss: If a brake or clutch slips or loses torque completely, the initial check should be the input voltage to the magnet or field as follows:

90-Volt Series: Connect a DC voltmeter with a range of 0-100 or more directly across the magnet or field terminals. With the power on and the potentiometer turned up, a normal reading is 90 volts, although 85 to 95 is satisfactory. The reading should drop as the potentiometer control is adjusted counterclockwise.

24-Volt Series: Use a DC voltmeter with a range of 0-30 volts or more. A normal reading is approximately 22-26 volts.

6-Volt Series: Use a DC voltmeter of approximately 0-15 volt range. A normal reading is from 5.5 to 6.5 volts.

The above checks normally are sufficient. Further checks may be made as follows: a low range ammeter, when connected in series with one magnet lead, will normally indicate approximately .40 amperes for the 90 volt units, 1.0 ampere for the 24 volt, and 3.5 amperes for the 6 volt series. These readings are with the power on and the potentiometer control in the maximum position.

Ohmmeter checks should be made with the power off and the circuit open (to be certain, disconnect one lead to the magnet). Average resistance for the 90 volt series is 220 ohms; for the 24 volt, 20 ohms; and for the 6 volt series, 1.5 ohms. A very high or infinite resistance reading would indicate an open coil.

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

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Notes

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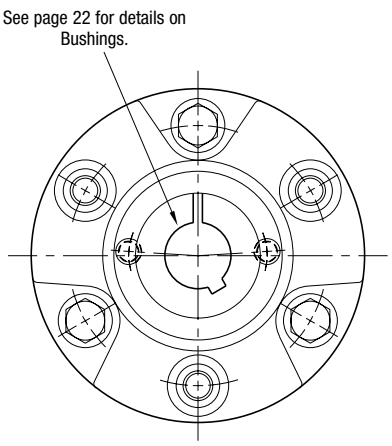
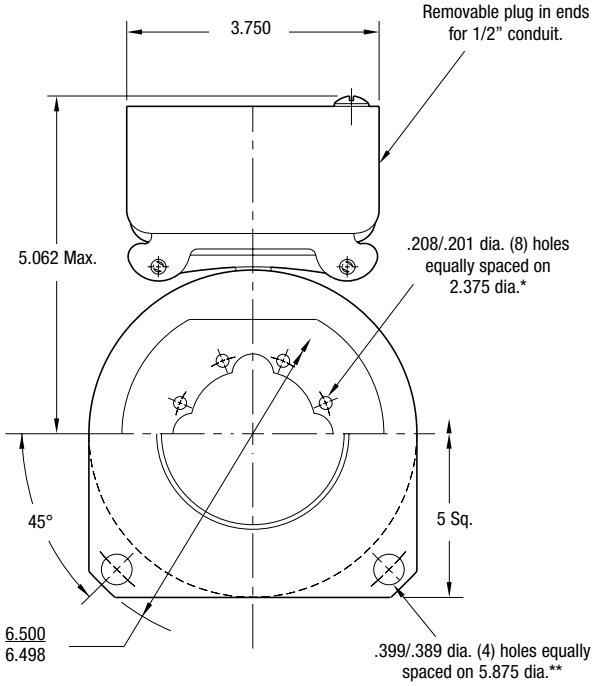
PB - 500 Brake Normal Duty



HUB VIEW



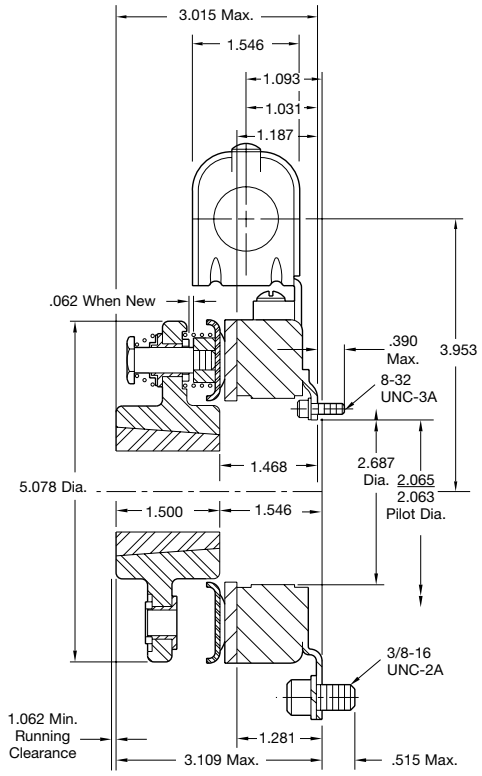
MAGNET VIEW
(Inside & Outside Mounted)

* Mounting holes are within .010 of true position relative to pilot diameter.

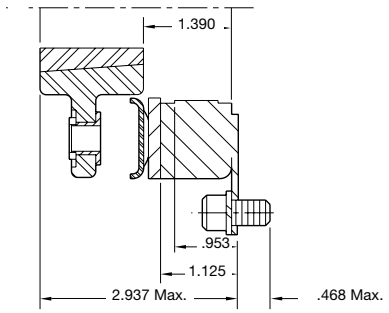
** Mounting holes are within .008 of true position relative to pilot diameter.

Customer Shall Maintain:

1. Squareness of brake mounting face with armature hub shaft within .006 T.I.R.
2. Concentricity of brake mounting pilot diameter with armature hub shaft within .010 T.I.R



Outside Mounted Offset Backing Plate



Outside Mounted Flush Backing Plate

Static Torque	40 lb.ft.
Maximum Speed	5,400 rpm
Standard Voltage	D.C. 6, 24, 90

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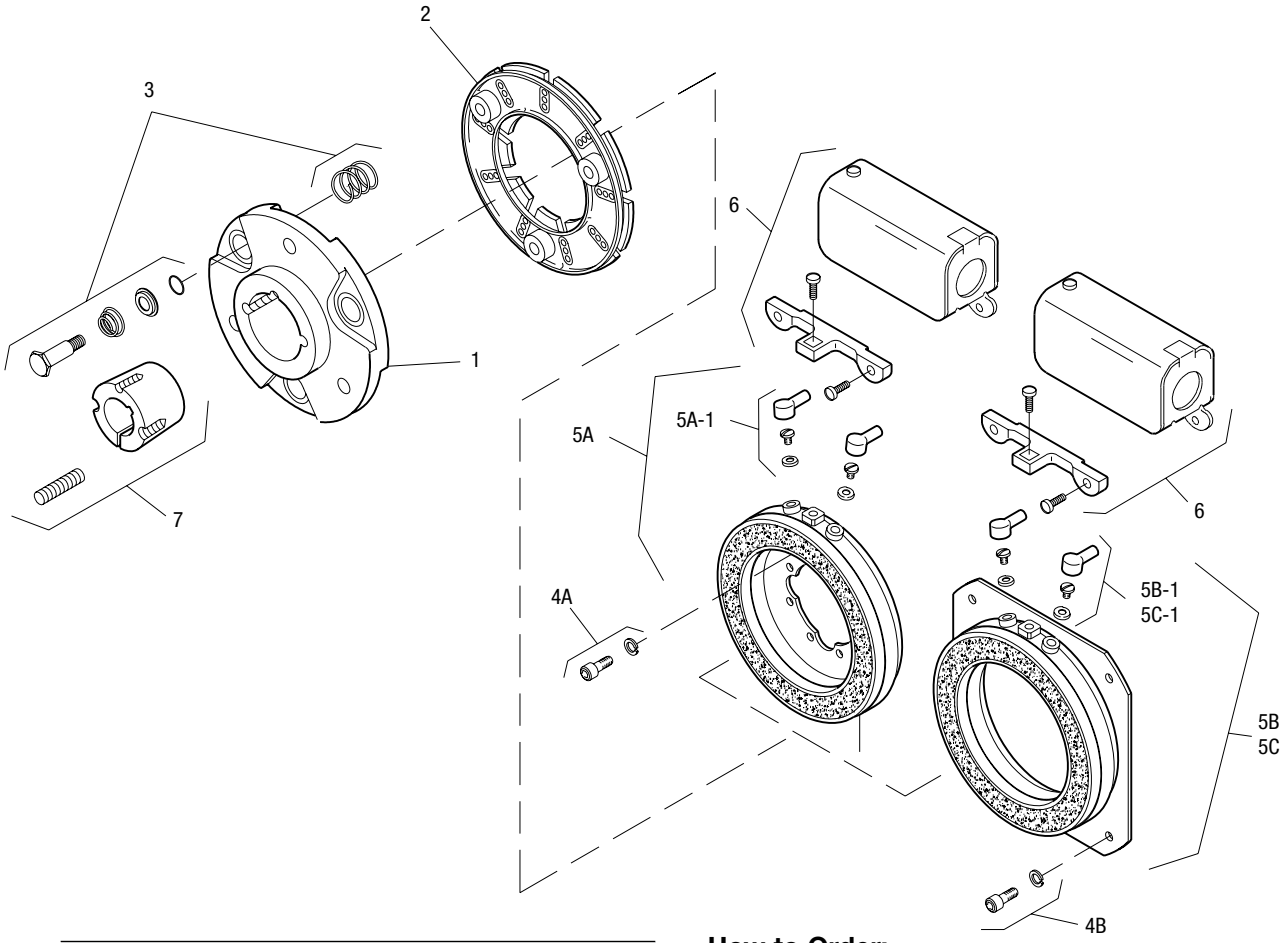
PB - 500 Brake Normal Duty

Drawing I-25544



Item	Description	Part Number	Qty.
1	Armature Hub	5300-541-004	1
2	Armature	5300-111-002	1
3	Autogap Accessory	5200-101-009	3
4A	Mounting Accessory - I.M.	5102-101-001	2
4B	Mounting Accessory - O.M.	5300-101-008	1
5A	Magnet - I.M.		1
	6 Volt	5300-631-002	
	24 Volt	5300-631-003	
	90 Volt	5300-631-005	
5A-1	Terminal Accessory	5311-101-001	1
5B	Magnet - O.M. - Offset		1
	90 Volt	5300-631-014	
5B-1	Terminal Accessory	5311-101-001	1
5C	Magnet - O.M. - Flush		1
	6 Volt	5300-631-009	
	24 Volt	5300-631-010	
	90 Volt	5300-631-011	
5C-1	Terminal Accessory	5311-101-001	1
6	Conduit Box	5200-101-010	1
7	Bushing*		1
	1/2" to 1-1/4" Bore	180-0116 to 180-0128	1

*See page 22 for specific part numbers

How to Order:

1. Specify Bore Size for Item 7.
2. Specify Voltage for Item 5A, 5B, or 5C.
3. Specify Inside Mounted for Item 5A and Outside Mounted (Offset) for Item 5B or Outside Mounted (Flush) for Item 5C.

Example:

PB-500 Brake per I-25544 - 90 Volt, Inside Mounted, 3/4" Bore

These units, when used in conjunction with the correct Warner Electric conduit box, meet the standards of UL508 and are listed under guide card #NMTR, file #59164. These units are CSA certified under file #LR11543.

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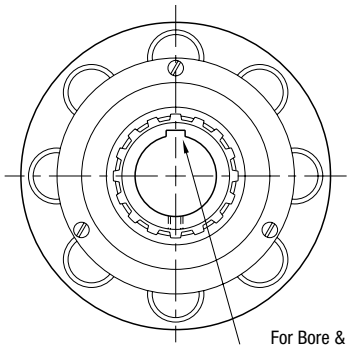
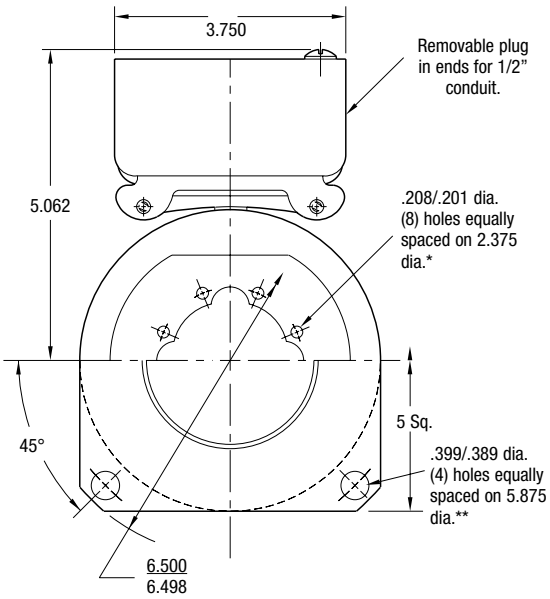
PB - 500 Brake Heavy Duty



ARMATURE VIEW



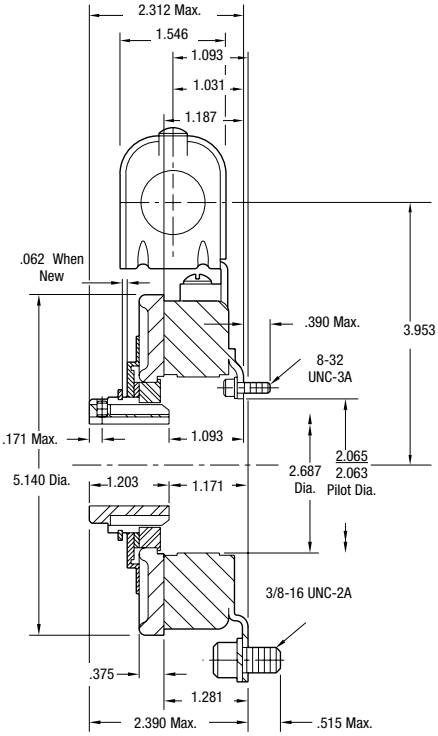
MAGNET VIEW
(Inside & Outside Mounted)

* Mounting holes are within .010 of true position relative to pilot diameter.

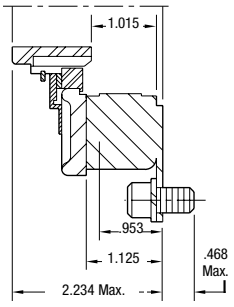
** Mounting holes are within .008 of true position relative to pilot diameter.

Customer Shall Maintain:

1. Squareness of brake mounting face with armature hub shaft within .006 T.I.R.
2. Concentricity of brake mounting pilot diameter with armature hub shaft within .010 T.I.R.



Outside Mounted Offset Backing Plate



Outside Mounted Flush Backing Plate

Bore and Keyway Dimensions

Armature Bore Dia.	Keyway
.751/.750 .876/.875	.187 x .093
.9385/.9375 1.001/1.000 1.126/1.125 1.251/1.250	.250 x .125

Shaft Sizes	.750 - 1.250
Static Torque	40 lb.ft.
Maximum Speed	5,400 rpm
Standard Voltage	D.C. 6, 24, 90

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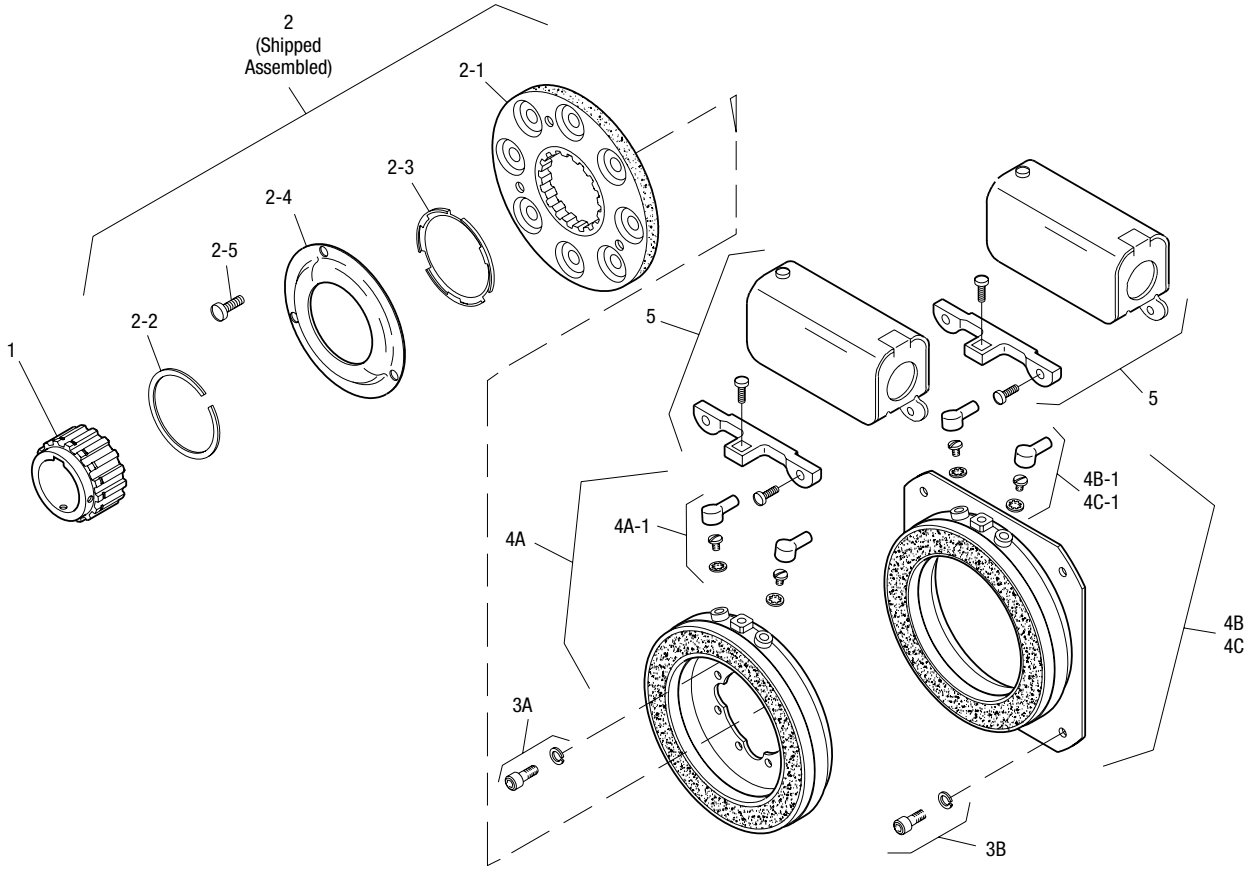
PB - 500 Brake Heavy Duty

Drawing I-25550



Item	Description	Part Number	Qty.
1	Armature Hub		1
	3/4" Bore	5200-541-002	
	7/8" Bore	5200-541-003	
	15/16" Bore	5200-541-004	
	1" Bore	5200-541-005	
	1-1/8" Bore	5200-541-006	
	1-1/4" Bore	5200-541-007	
2	Armature Assembly	5230-111-002	1
2-1	Armature		1
	Segmented	5230-111-001	
	Solid	110-0076	
2-2	Retainer Ring	748-0355	1
2-3	Autogap Spring	808-0412	1
2-4	Retainer Plate	748-0364	1
2-5	Screw	797-0028	3
3A	Mounting Accessory - I.M.	5102-101-001	2
3B	Mounting Accessory - O.M.	5300-101-008	1
4A	Magnet - I.M.		1
	6 Volt	5300-631-002	
	24 Volt	5300-631-003	
	90 Volt	5300-631-005	
4A-1	Terminal Accessory	5311-101-001	1

Item	Description	Part Number	Qty.
4B	Magnet - O.M. - Offset		1
	90 Volt	5300-631-014	
4B-1	Terminal Accessory	5311-101-001	1
4C	Magnet - O.M. - Flush		1
	6 Volt	5300-631-009	
	24 Volt	5300-631-010	
	90 Volt	5300-631-011	
4C-1	Terminal Accessory	5311-101-001	1
5	Conduit Box	5200-101-010	1

How to Order:

1. Specify Bore Size for Item 7.
2. Specify Voltage for Item 4A, 4B, or 4C.
3. Specify Inside Mounted for Item 4A and Outside Mounted (Offset) for Item 4B or Outside Mounted (Flush) for Item 4C.

Example:

PB-500 Brake per I-25550 - 90 Volt, Inside Mounted, 1" Bore

These units, when used in conjunction with the correct Warner Electric conduit box, meet the standards of UL508 and are listed under guide card #NMTR, file #59164. These units are CSA certified under file #LR11543.

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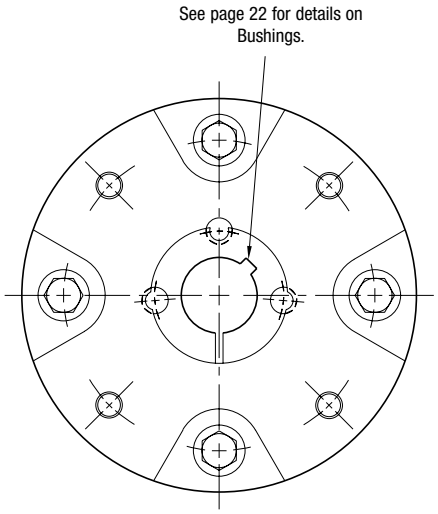
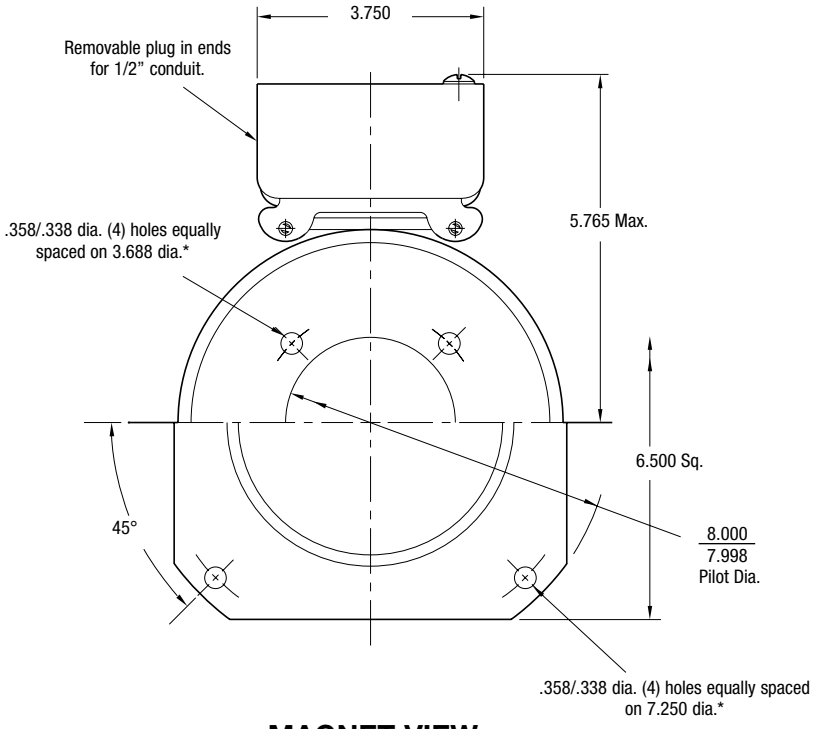
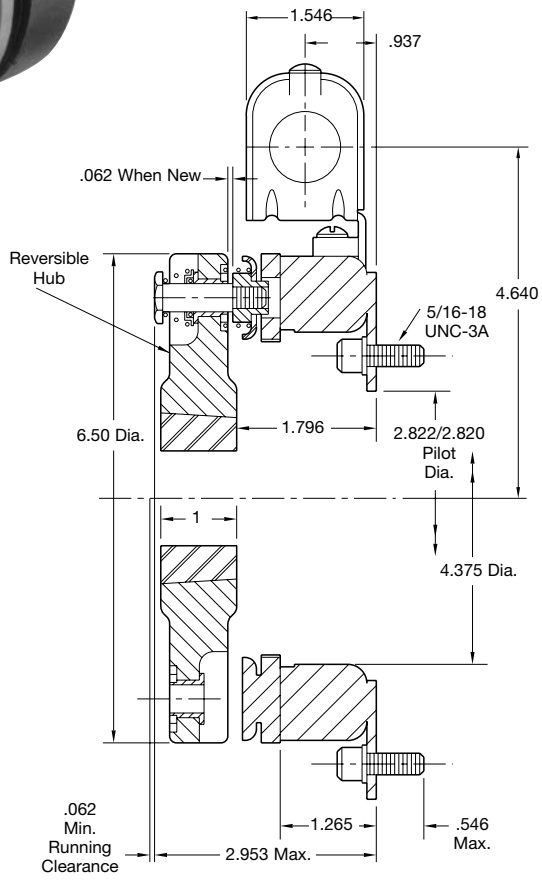
PB - 650 Brake



HUB VIEW



MAGNET VIEW
(Inside & Outside Mounted)



* Mounting holes are within .010 of true position relative to pilot diameter.

Shaft Sizes	.500 – 1.625
Static Torque	95 lb.ft.
Maximum Speed	3,600 rpm
Standard Voltage	D.C. 6, 24, 90

Customer Shall Maintain:

1. Squareness of brake mounting face with armature hub shaft within .006 T.I.R.
2. Concentricity of brake mounting pilot diameter with armature hub shaft within .010 T.I.R.

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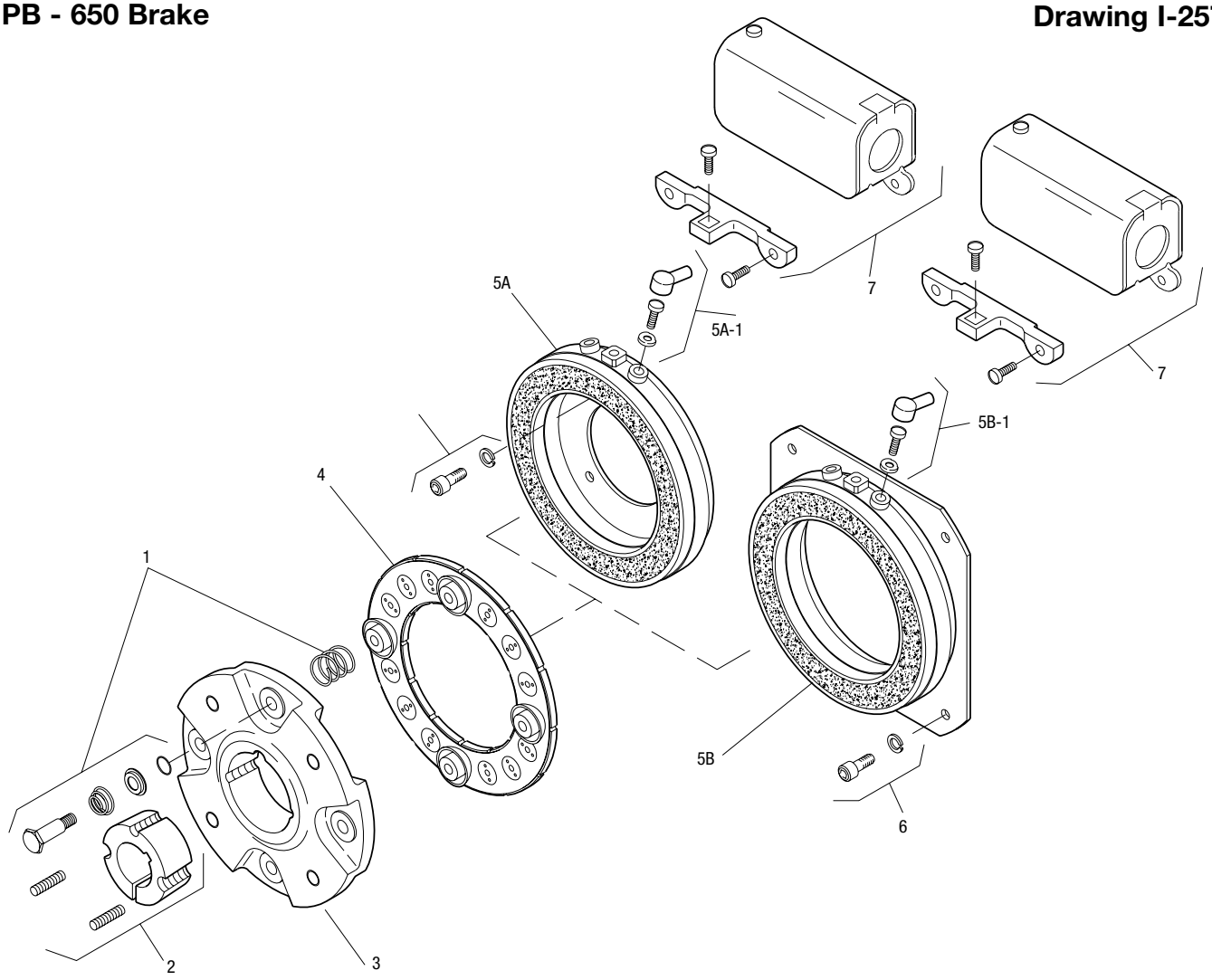
PB - 650 Brake

Drawing I-25730



Item	Description	Part Number	Qty.
1	Autogap Accessory	5181-101-010	4
2	Bushing*		1
	1/2" to 1-5/8" Bore	180-0326 to 180-0344	
3	Armature Hub	5207-541-002	1
4	Armature	5281-111-002	1
5A	Magnet - Inside Mounted		1
	6 Volt	5369-631-003	
	24 Volt	5369-631-006	
	90 Volt	5369-631-005	
5A-1	Terminal Accessory	5311-101-001	1
5B	Magnet - Outside Mounted		1
	6 Volt	5369-631-009	
	24 Volt	5369-631-012	
	90 Volt	5369-631-011	
5B-1	Terminal Accessory	5311-101-001	1
6	Mounting Accessory	5321-101-002	1
7	Conduit Box	5200-101-010	1

*See page 22 for specific part numbers

How to Order:

1. Specify Bore Size for Item 2.
2. Specify Voltage for Item 5A.
3. Specify Inside or Outside Mounted for Item 5A.

Example:

PB-650 Brake per I-25730 - 90 Volt, 1" Bore

These units, when used in conjunction with the correct Warner Electric conduit box, meet the standards of UL508 and are listed under guide card #NMTR, file #59164. These units are CSA certified under file #LR11543.

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Bushing Part Numbers

Dodge Bushing

Shaft Size	Keyway Size	Bushing Number	
		Warner Electric	Dodge
1/2	1/8 x 1/16	180-0101	1210
9/16	1/8 x 1/16	180-0102	
5/8	3/16 x 3/32	180-0103	
11/16	3/16 x 3/32	180-0104	
3/4	3/16 x 3/32	180-0105	
13/16	3/16 x 3/32	180-0106	
7/8	3/16 x 3/32	180-0107	
5/16	1/4 x 1/8	180-0108	
1	1/4 x 1/8	180-0109	
1-1/16	1/4 x 1/8	180-0110	
1-1/8	1/4 x 1/8	180-0111	
1-3/16	1/4 x 1/8	180-0112	
1-1/4	1/4 x 1/8	180-0113	
1/2	1/8 x 1/16	180-0116	1215
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	
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	
1/2	1/8 x 1/16	180-0155	2012
9/16	1/8 x 1/16	180-0156	
5/8	3/16 x 3/32	180-0157	
11/16	3/16 x 3/32	180-0158	
3/4	3/16 x 3/32	180-0159	
13/16	3/16 x 3/32	180-0160	
7/8	3/16 x 3/32	180-0161	
15/16	1/4 x 1/8	180-0162	
1	1/4 x 1/8	180-0163	
1-1/16	1/4 x 1/8	180-0164	
1-1/8	1/4 x 1/8	180-0165	
1-3/16	1/4 x 1/8	180-0166	
1-1/4	1/4 x 1/8	180-0167	

Dodge Bushing

Shaft Size	Keyway Size	Bushing Number	
		Warner Electric	Dodge
1/2	1/8 x 1/16	180-0326	1610
9/16	1/8 x 1/16	180-0327	
5/8	3/16 x 3/32	180-0328	
11/16	3/16 x 3/32	180-0329	
3/4	3/16 x 3/32	180-0330	
13/16	3/16 x 3/32	180-0331	
7/8	3/16 x 3/32	180-0332	
15/16	1/4 x 1/8	180-0333	
1	1/4 x 1/8	180-0334	
1-1/16	1/4 x 1/8	180-0335	
1-1/8	1/4 x 1/8	180-0336	
1-3/16	1/4 x 1/8	180-0337	
1-1/4	1/4 x 1/8	180-0338	
1-5/16	5/16 x 5/32	180-0339	
1-3/8	5/16 x 5/32	180-0340	
1-7/16	3/8 x 3/16	180-0341	
1-1/2	3/8 x 3/16	180-0342	
1-9/16	3/8 x 3/16	180-0343	
1-5/8	3/8 x 3/16	180-0344	
1/2	1/8 x 1/16	180-0410	1008
9/16	1/8 x 1/16	180-0411	
5/8	3/16 x 3/32	180-0412	
11/16	3/16 x 3/32	180-0413	
3/4	3/16 x 3/32	180-0414	
13/16	3/16 x 3/32	180-0415	
7/8	3/16 x 3/32	180-0416	
15/16	1/4 x 1/16	180-0417	
1	1/4 x 1/16	180-0418	
1/2	1/4 x 1/16	180-0421	
9/16	1/4 x 1/16	180-0422	
5/8	3/16 x 3/32	180-0423	1310
11/16	3/16 x 3/32	180-0424	
3/4	3/16 x 3/32	180-0425	
13/16	3/16 x 3/32	180-0426	
7/8	3/16 x 3/32	180-0427	
15/16	1/4 x 1/16	180-0428	
1	1/4 x 1/16	180-0429	
1-1/16	1/4 x 1/8	180-0430	
1-1/8	1/4 x 1/8	180-0431	
1-3/16	1/4 x 1/8	180-0432	
1-1/4	1/4 x 1/8	180-0433	
1-5/16	15/16 x 5/32	180-0434	
1-3/8	15/16 x 5/32	180-0435	

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This warranty extends only to the original purchaser and is not transferable or assignable without Warner Electric LLC's prior consent.

Warranty service can be obtained in the U.S.A. by returning any defective product, transportation charges prepaid, to the appropriate Warner Electric LLC factory. Additional warranty information may be obtained by writing the Customer Satisfaction Department, Warner Electric LLC, 449 Gardner Street, South Beloit, Illinois 61080, or by calling 815-389-3771.

A purchase receipt or other proof of original purchase will be required before warranty service is rendered. If found defective under the terms of this warranty, repair or replacement will be made, without charge, together with a refund for transportation costs. If found not to be defective, you will be notified and, with your consent, the item will be repaired or replaced and returned to you at your expense.

This warranty covers normal use and does not cover damage or defect which results from alteration, accident, neglect, or improper installation, operation, or maintenance.

Some states do not allow limitation on how long an implied warranty lasts, so the above limitation may not apply to you.

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