

Electrically Released Brakes ER 825 and 1225 Normal Duty

P-250
819-0122

Installation Instructions



Contents

Introduction	2
Installation Instructions	3
Section I - Assembly	3
Section II - Controls for ER-825 Brakes	5
Section III - Controls for ER-1225 Brakes	5
Section IV - Disassembling	8
Section V - Ohmmeter Procedure	9
Section VI - Operating Instructions	10
Dimensions & Specifications	12
Bushing Part Numbers	13
Component Parts List & Exploded View	14
Warranty	back cover



ER-1225

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

Introduction

Warner Electric Electrically Released Brakes function on the same principle of "response to magnetic attraction" that operates other Warner Electric brakes and clutches. Braking torque in the Electrically Released Brake depends on permanent magnets rather than electromagnets.

With the power off, the unit produces full braking torque. The brake is released by reversing the direction of flux flow in an electromagnetic coil, thus opposing the field produced by the permanent magnets.

The opposition to and cancellation of electromagnetic force which releases the brake occurs nominally at one value of ampere turns. This ampere turn value can vary among brakes because of allowable manufacturing tolerances. Release voltage varies mainly because of coil tolerance and autogap spring variations.

Properly adjusting the power supply voltage is important so the autogap springs will separate the magnet and armature, causing full release of the brake.

Ceramic permanent magnets, which are the heart of Electrically Released Brakes, are not subject to fatigue losses, therefore, Warner Electric Electrically Released Brakes are self-adjusting.

Warner Electric Electrically Released Brakes are "burnished" at the factory to assure rated torque shortly after initial application. Very little additional wear-in is required.

Sizes ER-825 and ER-1225 with Pin Drive Armatures Installation Instructions

Basic Mechanical Considerations

Electrically released brakes require special mounting considerations. Please review the items listed below prior to starting installation contained in steps 1-12.

A. If the brake magnet is to be mounted to a surface of magnetic material, isolate the brake approximately 1/2 inch from the surface with a plate or spacer of non-magnetic material.

B. If a choice of armature shaft material exists, this should also be non-magnetic. Materials such as type 302-304 stainless have been used very successfully.

C. In order to minimize stray flux, the unit should be exposed as much as possible or, if enclosed, it should be placed in a housing of non-magnetic material such as stainless steel or aluminum.

D. **CAUTION** must be exercised when the armature is moved close to the magnet assembly since the permanent magnets create a very strong attractive force. Injury may result if fingers are in between the armature and magnet when the gap is 1/2" or less.

E. **Foreign Materials:** If units are used on machinery where fine, abrasive dust, chips, oil or grit are dispelled into the atmosphere, a protective screen over the unit may be necessary. **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.**

WARNING Applications requiring a vertical shaft mounting must be reviewed and approved by Warner Electric Applications Engineering.

Note: Failure to set control voltage using the step by step procedures in this manual may cause overheating and premature failure.

Section I

Assembly

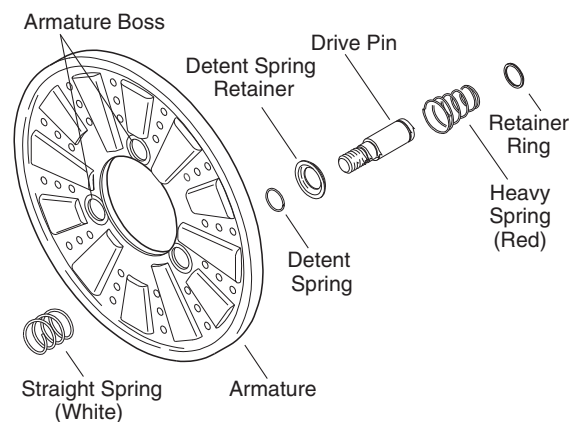
Step 1: Check to insure that the magnet and its mounting surface are clean and free from burrs.

Step 2: Bolt the magnet in place with cap-screws and lockwashers.

Note: The magnet pilot diameter must be concentric to the shaft within .010 inch T.I.R. The magnet mounting surface must be square with the shaft within .006 inch T.I.R. measured at the bolt circle.

Step 3: Assemble the armature to the armature hub with the autogap mounting accessory as follows:

CAUTION New armatures shipped from the factory are flat to within .005 inch and this flatness must be retained to maintain full torque. Any attempt to pry the armature loose from the magnet will distort the armature. When adjusting the armature position, apply any required force only to the hub, not to the outer edge of the armature. Also, use care when handling the armature as dropping may also cause distortion.



Step 3A: Place straight springs (white) over each armature boss on the back side of the armature.



Figure 1

Step 3B: Compress each heavy spring (red) by sliding each detent spring and retainer toward the pin heads.



Figure 2

Step 3C: Insert the assembled drive pins with springs compressed through the armature, through the white springs and into threaded holes in the armature hub. Keep the armature segments oriented away from the hub and the armature hub tapered bore oriented to open away from the armature.



Figure 3

Step 3D: Draw the drive pins up tightly until the pin shoulder is against the hub face (threads are class 3 and may seem to bind).

CAUTION: Be sure the straight white springs do not get caught under the drive pin shoulder.



Figure 4

Step 3E: Compress the armature against the hub face and slide each detent spring retainer against the armature face.

NOTE: Do not disturb this position during completion of assembly.

CAUTION .062 inch thick steel shims are recommended for shim stock selection . Do not use shims thicker than .125 inch or you will shorten brake life by reducing available armature travel.

WARNING Shim stock must be clean and free of any contamination (oil, grease). Keep fingers clear of the area between the magnet and the armature as the armature will be pulled sharply toward the magnet after the gap is closed to approximately 1/2 inch.

Step 4: Place three steel shims 120 degrees apart on the magnet as shown in Figure 3. Insert the taper-lock bushing (Figure 3, item 5) into the hub (Figure 3, item 2).

Slip the armature hub assembly onto the brake shaft until armature makes contact with shims.

Step 5: Using an allen wrench, tighten the hub bushing screws alternately and evenly until tight.

The airgap between armature and magnet must be .062 to .125 inch. If the airgap is outside of that range, reposition the armature hub assembly by repeating steps 1 and 2 of the disassembly procedure and steps 4 and 5 of the assembly procedure.

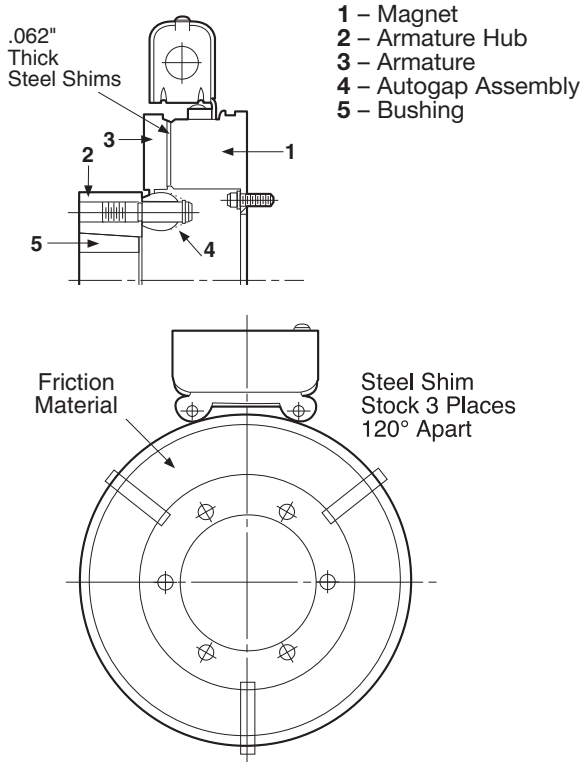


Figure 5

Step 6: Electrical Connections. Several different types of controls can be used on the ER-825. However, only one control can be used on the ER-1225 electrically released brakes. If you are installing an ER-825 brake, follow the procedures in Section II below. When completed with Section II, proceed to Step 7. If you are installing an ER-1225, follow the procedures in Section III below. When completed with Section III, proceed to Step 7.

Controls

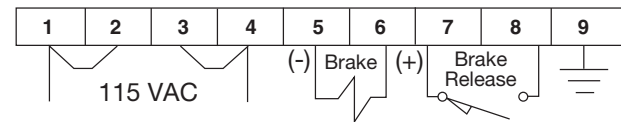
Section II For ER-825 Brakes

ER-825 brakes require a variable voltage or variable current control to release the brake by offsetting the magnetic force generated by permanent magnets. Warner Electric controls, such as the CBC-200 (single channel) or CBC-300 (dual channel), offer variable output and are suitable for use with ER-825 brakes. Connection should be made in accordance with instructions provided with the chosen control.

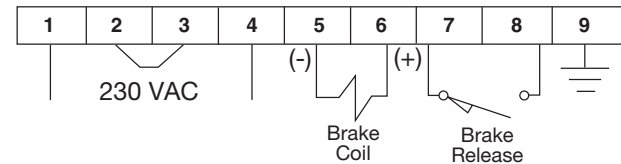
Section III For ER-1225 Brakes

Connect the MCS-805-1 or MCS-805-2 Power Supply per the following diagram and instructions:

MCS 805-1



MCS 805-2



⚠ CAUTION ER brakes are polarity sensitive. Connect the (+) terminal of the brake to the (+) terminal of the control and the (-) terminal of the brake to the (-) terminal of the control. Plus to plus and minus to minus connections are imperative.

⚠ WARNING Put machine in safe condition so that when voltage is applied to the control and switch closures are made the brake does not rotate and machine does not run.

- A. 115 VAC supply to terminals 1 and 4.
Jumpers to connect terminal 1 with terminal 2 and terminal 3 with terminal 4.
Recommended fuse is 3/4A slow blow.

or:

230 VAC supply to terminals 1 and 4.
Jumper to connect terminal 2 with terminal 3.
Recommended fuse is 3/4A slow blow.
- B. A chassis ground should be provided as a non-current conducting ground wire (color coded green).
- C. Switching. Follow instructions per control models listed.

MCS-805-1 Standard Control Operation

- 1. For switching DC side: Switch connected to terminals 7 and 8. Switch open will allow brake to be engaged. Switch closed will enable the release of the brake.
- 2. For switching AC side: Line power off will allow brake to be engaged. Line power on will release brake. A jumper connection must be made between 7 and 8.
- 3. Slower brake actuation will result when switching the AC side.

MCS-805-2 Two Step Control Operation

- 1. With switch connected to terminals 7 and 8 and switch is open with AC power applied, brake will be partial engaged.
 - 2. With switch connected to terminals 7 and 8 and switch is closed with AC power applied, brake will be fully released.
 - 3. With switch connected to terminals 7 and 8 and switch closed with AC power removed, brake will be fully engaged.
- D. ER brakes are polarity sensitive. Connect the plus terminal of the brake to terminal 6 on the control and the minus terminal of the brake to terminal 5 on the control.

Step 7: Apply power to the brake and remove shims. Note: It may be required at this point to adjust voltage to brake, to release the armature and remove shims. Set the airgap by pressing the armature into contact with the magnet and then releasing. The armature should spring back approximately 1/32-3/64 (.031-.045) inch. If the airgap is outside of that range, reposition the armature hub assembly by procedure Section IV and steps 4 and 5 of the assembly procedure Section I.

Note: If armature does not spring back proceed to voltage adjust procedure.

Step 8: Brake Release Voltage Adjustment. When setting the brake power supply, the objective is to achieve armature release by adjusting the coil voltage so it counteracts the permanent magnet to the maximum extent possible.

Two different release procedures are used, depending on whether an ER-825 or ER-1225 is involved. For ER-825 brakes, follow the procedures outlined in Step 9 below. For ER-1225 brakes, follow the procedures outlined in Step 10.

Step 9: For ER-825 Brakes

⚠ WARNING Put machine in a safe condition so that when voltage is applied to control and switch closures are made the brake does not rotate and machine does not run.

Step 9A: Attach multimeter to brake to monitor DC voltage observing proper procedure for hookup of multimeter per manufacturing instruction.

Step 9B: Apply power to control and close switch connections that allow DC voltage from control to be applied to brake.

Step 9C: Depending on variable control used and output channel that brake is hooked up to, turn voltage adjust knob or screw, counter-clockwise to 0VDC, at this point slowly increase voltage control clockwise until brake armature disengages. (Releases) Record this voltage, continue to increase voltage until brake armature engages.

Note: If armature does not engage it may be necessary to manually engage the armature by pressing on the back side of the armature keeping fingers from between armature and magnet.

Step 9D: After armature is engaged, slowly decrease (counter-clockwise) the voltage adjust to the brake until the brake armature releases. Record this voltage.

Step 9E: The final voltage setting for the brake should be the mid point between the voltages recorded in Step 9C and 9D.

Note: If the autogap is not used, an external release force of approximately 5-10 pounds should be applied by hand, to detect the point of armature release.

Note: If the above Voltage Adjustment procedure can not be observed visually the alternate ohmmeter procedure should be used. Section V.

Step 10: For the ER-1225, the procedure is the same as Step 9 with the exception of the control used.

The only two controls to be used are the MCS 805-1 or MCS 805-2, the voltage adjust is performed by adjustment screw only, located on inside of control.

Step 10A: Follow Step 9 for adjustment of brake control for ER-1225.

Step 10B: (For MCS-805-2 only): Set partial engagement torque using adjusting pot at top of control. Switch connected to terminals 7 and 8 must be open to make this adjustment. A setting of 10 gives maximum torque.

After completion of installation procedure and brake control adjustment it may be necessary to burnish (wear in) the brake in the application.

Note: The brake is pre-burnished at the factory but during the installation and handling of the brake, static torque may have been affected. Therefore, burnishing on site is recommended.

Step 11: Burnish the brake as follows: This step requires you to run the machine that brake is used in. Observe all safety rules and regulations for your facility. Using the brake as the primary stop device, start and stop the brake 30 times. Allow 5-10 seconds delay between Start and Stop.

⚠ WARNING During torque measurements machine power should be turned off and properly locked out.

Step 12: With the brake fully engaged, attach torque wrench to the end of the brake shaft. Hold the wrench at the handle, and pull it in the direction of motor rotation in one continuous motion (without any jerky motion) until shaft movement is detected. The highest reading on the dial is the static torque of the brake. This torque without any system drag must be at least 400 lb. ft. for ER-1225 and 125 lb. ft. for ER-825. If less, burnish the brake again, repeating Step 11. If the brake does not meet the torque requirement after two burnishing procedures, replace the brake.

The brake installation procedure is now complete.

Section IV

Disassembling the Armature/Hub Assembly (Figure 3)

⚠ CAUTION Do not pry the armature away from the magnet. If armature is distorted the entire brake must be replaced.

Note: Steps (1) and (2) are to be performed at the brake.

Note: Make sure power to the brake is turned off. See Figure 3 for the following two steps.

⚠ WARNING Put machine in a safe condition so that when voltage is applied to control and switch closures are made the brake does not rotate and machine does not run.

Step 1: Loosen the taper-lock bushing (item 5) on the brake shaft.

To loosen, remove both allen screws from the taper lock bushing (item 5, figure 5) using an allen wrench. Insert the allen screw into the previously vacant taped holes in the taper lock bushing and tighten this screw until the bushing is loosened in the hub (item 2). If the bushing does not loosen, tap on the hub with a small hammer.

Step 2: Apply power to the brake. The armature will then spring away from the magnet. If it does not, check electrical connections and release voltage. Remove taper lock bushing (item 5) and armature assembly (items 2 & 3) from the brake shaft. Set the bushing aside. Do not discard the bushing.

Note: If reinstalling armature assembly, follow steps 1 thru 7 in the assembly procedure.

Section V Ohmmeter Procedure to Detect Armature Release

When the brake armature cannot be visually observed during brake voltage adjustment, an ohmmeter can be used to determine when the armature disengages. One ohmmeter lead should be attached to the armature itself, in a manor not to obstruct the movement of the armature. The release point can be determined as follows:

⚠ WARNING Put machine in a safe condition so that when voltage is applied to control and switch closures are made the brake does not rotate and machine does not run.

1. The brake is engaged when the armature contacts the magnet, causing very low resistance (less than one Ohm).

2. The brake is disengaged (released) when the Ohmmeter indicates higher resistance (usually greater than one Ohm—may be as high as 10,000 Ohms).

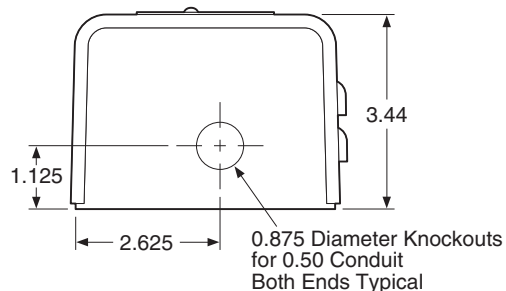
The difference between ohmmeter readings 1 and 2 must be large enough to reliably indicate armature engagement or disengagement. Reliable readings can usually be obtained from a brake mounted on a shaft running on anti-friction bearings.

Coil Data

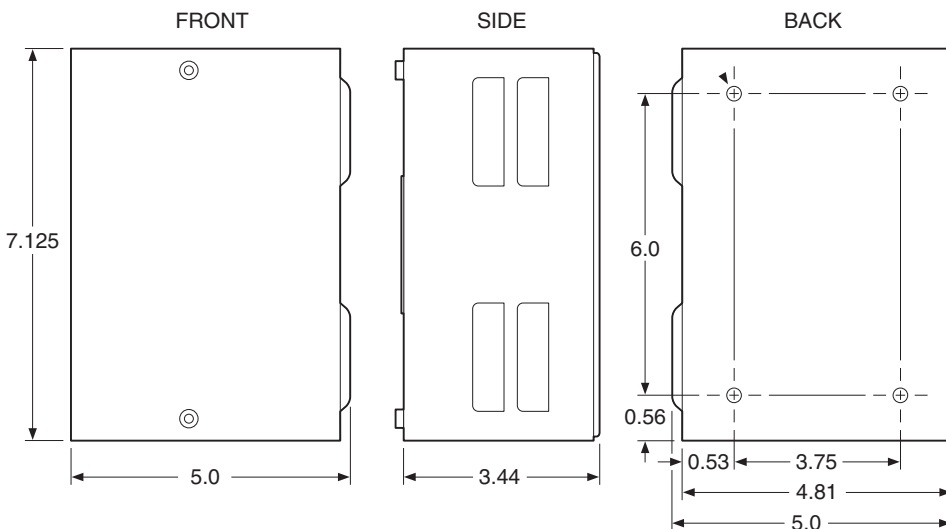
Unit Size	Current Draw (amp) at 60 Volts D.C.	Resistance (ohms) at 20°C (±10%)
ER-825	.308	195
ER-1225	.256	235

MCS-805-1 and MCS-805-2 Power Supply Dimensional Drawings and Mounting Provisions

TOP AND BOTTOM



0.28 Diameter
(4) Mtg Holes
Clearance for
.25" Screw



Section VI Operating Instructions

When an Electrically Released Brake is properly installed, no further servicing, lubrication, or maintenance should be required throughout the life of the unit.

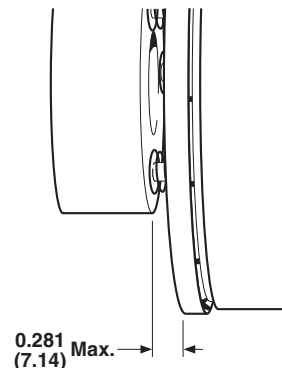
A worn out Electrically Released Brake can lose its ability to produce adequate torque. Consequently, it is imperative that the brake be inspected frequently for wear and to insure that it engages and disengages properly. The frequency of inspections is dictated by usage; a brake used in a high cycle rate and/or heavy load application must be inspected more often than one used less severely. Sound maintenance practices will determine proper inspection intervals.

Torque loss can result if the armature and magnet wear extensively enough to cause the detent to move off the end of the hub spline, resulting in a loss of the autogap function. The end of normal service will occur when the armature wears through the friction material and into the coil, causing an open circuit and failure to release when voltage is applied.

Brake wear is determined by two checks. The first determines whether the brake is about to lose torque; the second assures that the armature has not worn through the friction material, endangering the coil. If either of these checks indicates excessive wear, the unit should be replaced.

Check No. 1

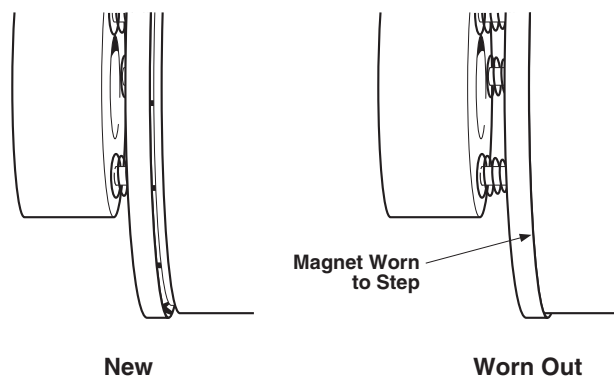
Measure the distance from the armature hub to the back of the drive bushing in the armature. If this dimension equals or exceeds .281 inch (7.14mm), the armature must be readjusted. Disassemble per Section III Steps 1 & 2 and relocate brake armature as indicated starting with step 1-7.



Check No. 1

Check No. 2

The remaining wear life of the friction surfaces can be estimated by checking the step machined on the O.D. of the brake magnet where the armature and magnet meet. This step is approximately equal to the friction material thickness. When this step is completely covered by the armature (worn down) with the brake engaged, the brake is worn out and should be replaced.



Check No. 2

Note: New Autogap Assemblies should also be installed when the armature and magnet are replaced. Reusing the old Autogap Assemblies may prevent the armature from fully engaging the magnet, resulting in torque loss.

Foreign Materials: If units are used on machinery where fine, abrasive dust, chips, oil or grit are dispelled into the atmosphere, a protective screen around the unit is necessary. **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 contamination (contact) to prevent serious loss of torque by reducing the coefficient of friction and swelling the friction material.** Small amounts of oil and grease accidentally reaching the friction surfaces may be removed by wiping with a rag dampened with a non petroleum, non residue cleaning solution. 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. This unit should then be replaced!

Fails to Release: If an Electrically Released Brake does not release, the initial check should be to verify the electrical connections (polarity) between the brake coil and power supply. If the lead wires are connected properly power supply positive (+) terminal and brake coil (+) terminal, and power supply negative (-) terminal and brake coil (-) terminal, the next check is to see that the brake release voltage adjustment is properly set in accordance with installation instructions (see Table of Contents).

If readjustment of the control output does not release the brake and an AC input to the control is present, a further check should be made to determine if the control is faulty as follows:

⚠ WARNING Put machine in a safe condition so that when voltage is applied to control and switch closures are made the brake does not rotate and machine does not run.

Connect a DC voltmeter across the brake magnet terminals (do not disconnect the leads to the terminals). Turn the torque adjustment on the control fully counterclockwise, then slowly turn the adjustment screw clockwise—the voltmeter should indicate a voltage range from approximately 30 to 75 volts for the MCS-805 series and 0 to 90 volts using other variable supplies.

To determine if there is current flow through the magnet coil. Further checks may be made as follows: a low-range (.1 to 1 amp) amp meter should be connected in series with one wire to the magnet. The Coil Data chart (page 9) lists the correct ratings for the various sizes. These readings are with the power on and the brake release adjustment turned clockwise, until a voltmeter attached to the brake magnet terminals reads 60 VDC. If no amperes are read, an Ohm reading of the magnet coil should be taken. Ohmmeter checks should be made with the power off and circuit open (to be certain, disconnect one lead wire to the coil). Refer to the Coil Data chart (page 9) for the specifications of the appropriate unit. A very high or infinite resistance reading would indicate an open coil.

Wear Pattern: (Figure 4) As the brake is used wear grooves will appear on the friction surfaces. This is a normal condition, and does not impair functioning of the unit. **Never machine the friction surfaces to remove grooves or score marks resulting from normal wear.**

There are two main wear parts, magnet and armature. When either is worn out, the complete brake must be replaced.

Wear Pattern

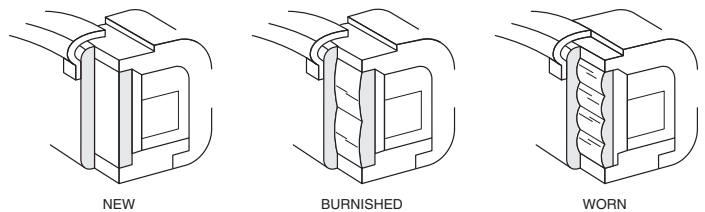


Figure 4

Heat: Excessive heat and high-operating temperatures are causes of rapid wear. Air should be allowed to circulate around the unit as efficiently as possible, especially if the application requires fast, repetitive cycle operation.

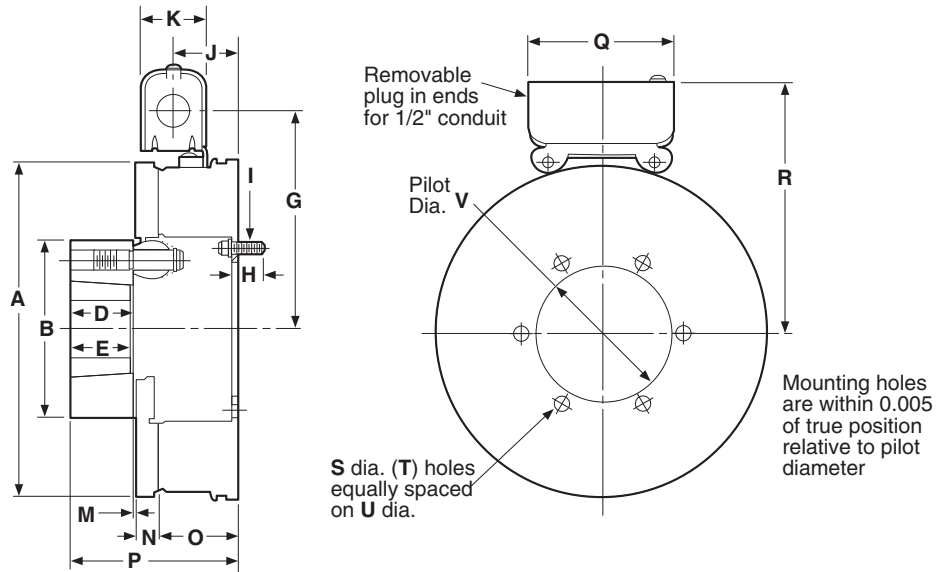
If the above checks indicate that the proper voltage and current is being supplied to the coil, mechanical parts should be checked to assure that they are in good operating condition and properly installed. (See operating instruction under Check No. 1).

Dimensions and Specifications

ER-825 & ER-1225 Magnet View

ER-825 Normal Duty
 Drawing I-25577

ER-1225 Normal Duty
 Drawing I-25619



ER Size	A Max.	B Dia.	D	E	G	H Max.	I	J	K Min.
825 N.D.	8.656	4.625	1.593	1.5	5.625	.531	5/16-18 UNC-3A	1.687	1.546
1225 N.D.	12.671	6.875	3.0	3.0	7.671	.546	5/16-18 UNC-3A	1.718	1.546

	M	N	O	P Max.	Q	R Max.	S	T	U	V
ER-825 N.D.	.093	.562	2.078	4.359	3.750	6.75	.358 .338	6	4.250	3.503 3.501
ER-1225 N.D.	.156	.593	2.50	6.218	3.750	8.79	.358 .338	6	7.250	6.378 6.376

Technical Ratings

Size	Static Torque	Max. RPM	D.C. Voltage	Total Weight
ER-825	125 lb. ft.	3600	90	15.6 lbs.
ER-1225	400 lb. ft.	3000	35 to 75	60.3 lbs.

	ER-825	ER-1225
ER-825, 1225		
Voltage-DC	90	35-75
Resistance @ 20°C-Ohms	304	235
Current-Amperes	.29	.383
Watts	26	35
Coil Built-up-milliseconds	400	700
Coil Decay-milliseconds	20	20

Bore Size

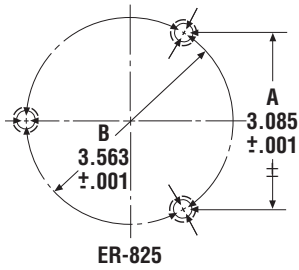
ER-825 N.D. Drive Pin Drive		ER-1225 N.D. Drive Pin Drive	
Bore Dia.	Keyway	Bore Dia.	Keyway
.500-.562	1/8 x 1/16	.937-1.250	1/4 x 1/8
.625-.875	3/16 x 3/32	1.312-1.375	5/16 x 5/32
.937-1.250	1/4 x 1/8	1.437-1.750	3/8 x 3/16
1.312-1.375	5/16 x 5/32	1.812-2.250	1/2 x 1/4
1.437-1.500	3/8 x 3/16	2.312-2.750	5/8 x 5/16
1.562-1.625*	3/8 x 3/16	2.187-3.000	3/4 x 3/8

* Furnished with key.

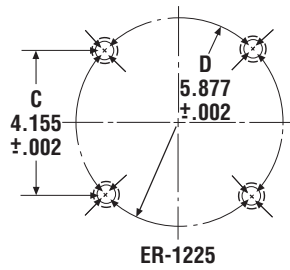
Customer Shall Maintain:

1. Squareness of magnet mounting face with armature shaft within .006 T.I.R.
2. Concentricity of magnet mounting pilot diameter with armature shaft within .010 T.I.R.
3. If magnet mounting surface is a magnetic material, the magnet is to be insulated approximately 1/2 inch from that surface with a plate or spacer of non-magnetic material.

Machining Instructions for Gear, Sprocket or Sheave

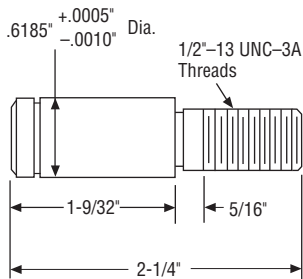


ER-825



ER-1225

Size 825-1525 Drive Pin



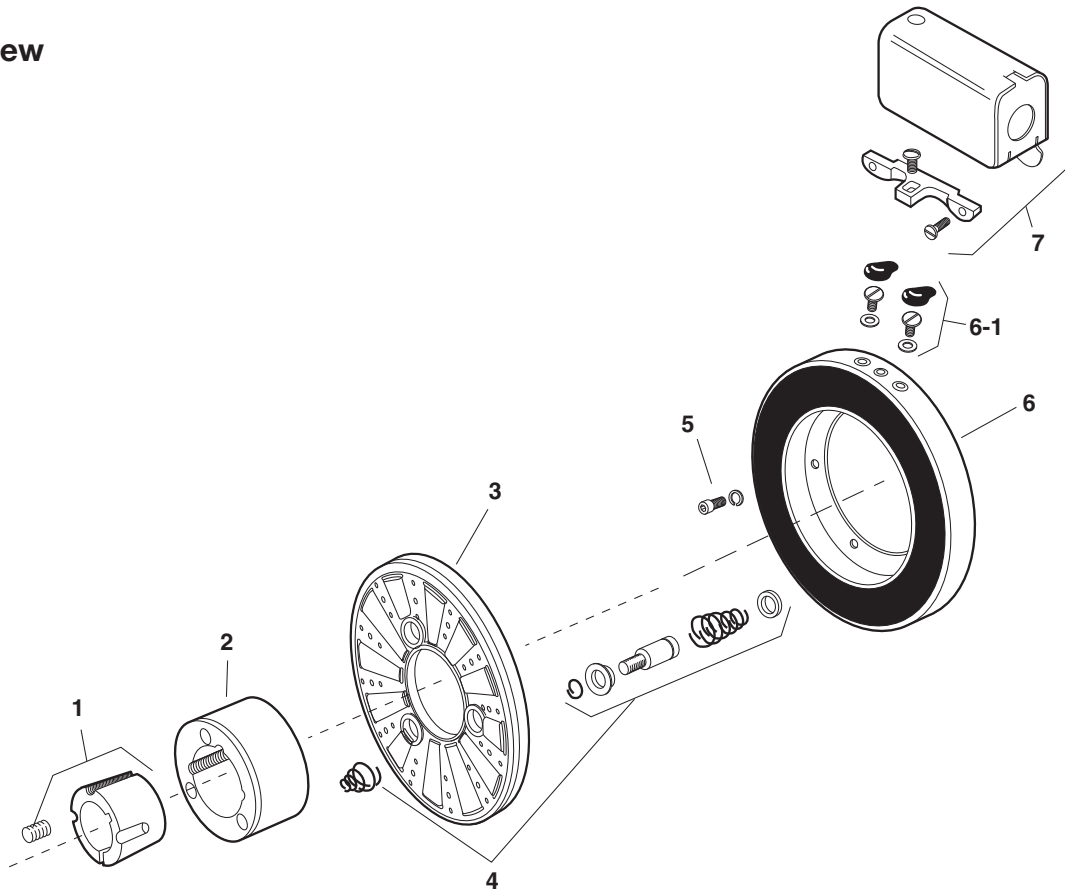
1. Chordal dimensions "A" or "C" must be held for all chords between pin holes.
2. Drill 27/64 inch holes to a sufficient depth and tap for 1/2-13 NC-3 ONE inch minimum full threads. Pin holes must be square and concentric to the shaft to keep the armature concentric $\pm .010$ inch and square to the shaft $\pm .006$ inch measured at the outer pole.
3. Ream .500/.501 to a 3/8 inch depth and to be concentric with tapped holes.

Bushing Part Numbers Browning Bushing

Shaft Size	Keyway Size	Bushing Number	
		Warner Electric	Browning
1/2	1/8 x 1/16	180-0002	H-1
9/16	1/8 x 1/16	180-0003	
5/8	3/16 x 3/32	180-0004	
11/16	3/16 x 3/32	180-0005	
3/4	3/16 x 3/32	180-0006	
13/16	3/16 x 3/32	180-0007	
7/8	3/16 x 3/32	180-0008	
15/16	1/4 x 1/8	180-0009	
1	1/4 x 1/8	180-0010	
1-1/6	1/4 x 1/8	180-0011	H-2
1-1/8	1/4 x 1/8	180-0012	
1-3/16	1/4 x 1/8	180-0013	
1-1/4	1/4 x 3/16	180-0014	
1-5/16	5/16 x 7/32	180-0015	
1-3/8	5/16 x 7/32	180-0016	
1-7/16	3/8 x 1/4	180-0017	
1-1/2	3/8 x 7/32	180-0018	
3/4	1/2 x 3/8	180-0026	
13/16	1/2 x 3/8	180-0027	
7/8	1/2 x 3/8	180-0028	
15/16	1/2 x 3/8	180-0029	
1	1/2 x 3/8	180-0030	
1-1/16	1/2 x 3/8	180-0031	
1-1/8	1/2 x 3/8	180-0032	
1-3/16	1/2 x 3/8	180-0033	
1-1/4	1/2 x 3/8	180-0034	
1-5/16	1/2 x 3/8	180-0035	QI-2
1-3/8	1/2 x 3/8	180-0036	
1-7/16	1/2 x 3/8	180-0037	
1-1/2	1/2 x 3/8	180-0038	
1-9/16	1/2 x 3/8	180-0039	
1-5/8	1/2 x 3/8	180-0040	
1-11/16	1/2 x 3/8	180-0041	
1-3/4	1/2 x 3/8	180-0042	
1-13/16	1/2 x 3/8	180-0043	
1-7/8	1/2 x 3/8	180-0044	
1-15/16	1/2 x 3/8	180-0045	
2	1/2 x 3/8	180-0046	
2-1/16	1/2 x 3/8	180-0047	
2-1/8	1/2 x 3/4	180-0048	
2-3/16	1/2 x 23/32	180-0049	
2-1/4	1/2 x 11/16	180-0050	
2-5/16	5/8 x 5/16	180-0051	
2-3/8	5/8 x 5/16	180-0052	
2-7/16	5/8 x 5/16	180-0053	
2-1/2	5/8 x 5/16	180-0054	
2-9/16	5/8 x 5/16	180-0055	
2-5/8	5/8 x 5/16	180-0056	
2-11/16	5/8 x 5/16	180-0057	

Exploded View

I-25577
 I-25619



ER-825 Normal Duty
 ER-1225 Normal Duty

Electrically Released Brake
 Electrically Released Brake

Per I-25577
 Per I-25619

Component Parts

Item	Description	ER-825 Normal Duty		ER-1225 Normal Duty	
		Part Number	Qty.	Part Number	Qty.
1	Bushing	180-0137-180-0149 7/8" to 1-5/8" Bore	1	180-0262-180-0295 15/16" to 3" Bore	1
2	Armature Hub	540-0394	1	540-0015	1
3 & 6	Magnet (I.M., 90 volt) and Armature sold only in matched pairs*	5250-30	1	5252-9	1
4	Autogap Accessory	5201-101-008	3	5201-101-008	4
5	Mounting Accessory, I.M.	5321-101-001	1	5321-101-001	1
6-1	Terminal Accessory	5311-101-001	1	5311-101-001	1
7	Conduit Box	5200-101-010	1	5200-101-010	1

* Magnets and armatures sold only in pre-burnished sets to assure rated torque available upon installation.

These units, when used with the correct Warner Electric conduit box, meet the standards of UL508 and are listed under guide card #NMTR2, file #59164 and are CSA certified under file #LR11543.

How to order:

1. Specify bore size.

2. Specify Normal Duty.

Example: ER-825 Electrically
 Released Brake per I-25577.
 Normal Duty, 7/8" bore.

Warranty

Warner Electric LLC warrants that it will repair or replace (whichever it deems advisable) any product manufactured and sold by it which proves to be defective in material or workmanship within a period of one (1) year from the date of original purchase for consumer, commercial or industrial use.

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.

Warner Electric LLC's obligation under this warranty is limited to the repair or replacement of the defective product and in no event shall Warner Electric LLC be liable for consequential, indirect, or incidental damages of any kind incurred by reason of the manufacture, sale or use of any defective product. Warner Electric LLC neither assumes nor authorizes any other person to give any other warranty or to assume any other obligation or liability on its behalf.

WITH RESPECT TO CONSUMER USE OF THE PRODUCT, ANY IMPLIED WARRANTIES WHICH THE CONSUMER MAY HAVE ARE LIMITED IN DURATION TO ONE YEAR FROM THE DATE OF ORIGINAL CONSUMER PURCHASE. WITH RESPECT TO COMMERCIAL AND INDUSTRIAL USES OF THE PRODUCT, THE FOREGOING WARRANTY IS IN LIEU OF AND EXCLUDES ALL OTHER WARRANTIES, WHETHER EXPRESSED OR IMPLIED BY OPERATION OF LAW OR OTHERWISE, INCLUDING, BUT NOT LIMITED TO, ANY IMPLIED WARRANTIES OF MERCHANTABILITY OR FITNESS.

Some states do not allow the exclusion or limitation of incidental or consequential damages, so the above limitation or exclusion may not apply to you. This warranty gives you specific legal rights and you may also have other rights which vary from state to state.

Changes in Dimensions and Specifications

All dimensions and specifications shown in Warner Electric catalogs are subject to change without notice. Weights do not include weight of boxing for shipment. Certified prints will be furnished without charge on request to Warner Electric.



Warner Electric LLC
449 Gardner Street • South Beloit, IL 61080
815-389-3771 • Fax: 815-389-2582
www.warnerelectric.com
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