Electro-Clutch EC-375, EC-475, EC-650, EC-825, EC-1000, EC-1225

Installation Instructions

P-210
819-0041

Warner® Electric

An **Altra Industrial Motion** Company

Contents

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

Installation Instructions

Electro-Clutch

A. Mounting the Electro-Clutch

1. Ideally, the Electro-Clutch should be mounted on a through-shaft for firm support. In the case of a stub shaft, the stub should be as long as the clutch assembly, although for moderate duty applications a shaft which is 2/3 or more the length of the assembly normally provides adequate support.

2. Insert the key in the shaft. If the keyseat is opened at one end of the shaft, prick punch the shaft to prevent the key from working out.

3. Slide the assembled Electro-Clutch on the shaft. (When the Electro-Clutch is mounted on a stub shaft, the set collar end of the clutch should be toward the support bearings.) Tighten the setscrews in the set collar. (Figure 1)

Figure 1

4. Secure the torque arm to the tab on the field and rotor assembly. Secure the other end of the torque arm to a solid base. Under no circumstances should the torque arm be pinned down so tight that it preloads the bearing. For more information on torque tabs, see page 4.

B. Assembling the Sheave, Pulley, or Sprocket and Clutch

1. Install the key in the outer diameter of the Electro-Clutch hub. (A special key is furnished.)

2. Mount a standard sheave, pulley, or sprocket to the Electro-Clutch with a standard tapered bushing. **Note: Only standard tapered bushings are recommended for this purpose. A straight bore drive component mounted with set screws will damage the Electro-Clutch bearings.**

3. Install the belt on the sheave, pulley, or sprocket. Keep the belt tensions within the recommendation of the sheave or pulley manufacturer.

C. Electrical Installation

Each Warner Electric control is furnished with a wiring diagram showing the correct electrical connections between the control and the clutch. Two straps are provided on the clutch torque arm to hold the clutch lead wires in place. (Service Manual P-239 contains complete information on all standard power supplies.)

D. Replacing Worn Parts

The two main wearing parts, the armature and the rotor, may be easily replaced. For stub shaft mounted applications, these parts can be replaced without removing the Electro-Clutch from the shaft. The rotor and the armature usually wear at the same rate and should be replaced together.

1. Remove the mounting screws and lockwashers that hold the armature carrier assembly to the sleeve. (Figure 2)

Figure 2

2. Remove the rotor mounting screws.

3. Insert two of the rotor screws in the removal holes of the rotor to back the rotor off the bearing. (Figure 3)

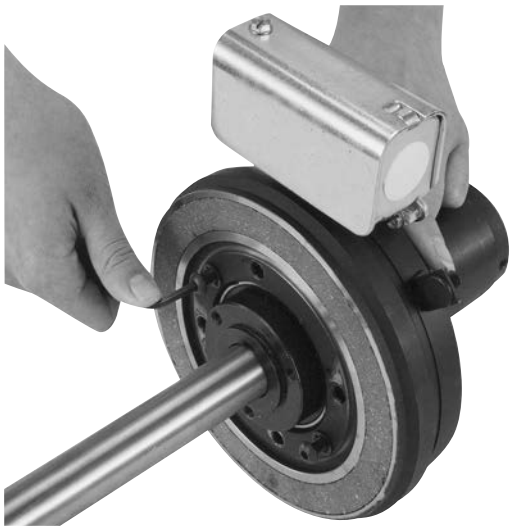


Figure 3

4. Install the new rotor on the clutch assembly. Dip the mounting screws in Loctite® before reinserting them.

5. Install the new armature assembly. Dip the mounting screws in Loctite before reinserting them.

Torque Tabs

Many Warner Electric clutch assemblies have a bearing mounted stationary field. By design the bearing maintains its proper position between the field and rotor making it easy for the customer to mount the field-rotor assembly. However, the bearing has a slight drag which tends to make the field rotate with the rotor if not restrained. Since the field has lead wires attached, it must be restrained to prevent rotation and pulling of these wires. To counteract this rotation force, the field has a “torque tab” to which the customer must attach an appropriate anti-rotational restraint.

A few hints regarding proper torque tab restraints are in order. First and foremost, it is important to recognize that the force to be overcome is very small and the tab should not be restrained in any manner which will preload the bearing. For example, if the clutch is mounted with the back of the field adjacent to a rigid machine member the customer should not attach a capscrew tightly between the tab and the machine member. This may pull the tab back against the rigid member as shown in Figure 4 and preload the bearing. The recommended methods are illustrated in Figures 5, 6, and 7. The method selected is primarily a matter of customer preference or convenience.

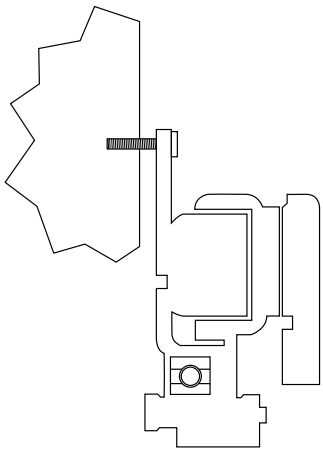


Figure 4
Rigid Member

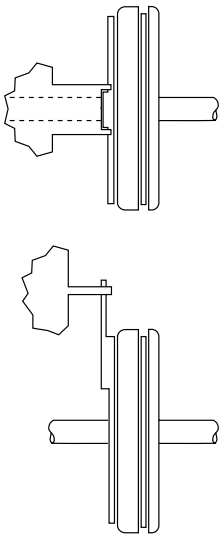


Figure 5
Rigid Member
with Slot Straddling Tab

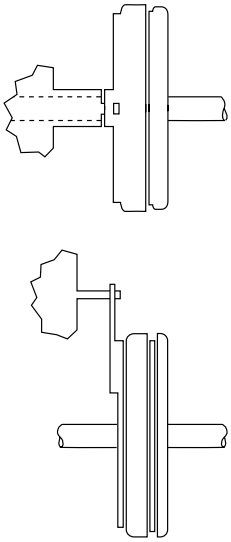


Figure 6
Pin In Hole Loosely

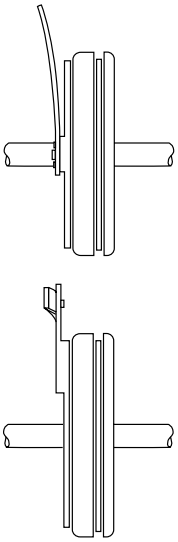


Figure 7
Flexible Strap

Electrical Coil Data

EC/EB-375	EC			EB		
Voltage – DC	90	24	6	90	24	6
Resistance @ 20° C – Ohms	453.5	29.3	2.10	446.8	29.3	1.96
Current – Amperes	.198	.82	2.85	.201	.82	3.07
Watts	17	20	17	18	20	18
Coil Build-up – milliseconds	62	60	59	50	60	52
Coil Decay – milliseconds	13	14	15	8	14	10

EC/EB-475	EC			EB		
Voltage – DC	90	24	6	90	24	6
Resistance @ 20° C – Ohms	368.9	37.8	2.32	443.1	28.8	2.05
Current – Amperes	.244	.64	2.58	.203	.88	2.93
Watts	22	15	16	18	21	18
Coil Build-up – milliseconds	92	91	90	80	75	70
Coil Decay – milliseconds	18	17	16	8	9	9

EC/EB-650	EC			EB		
Voltage – DC	90	24	6	90	24	6
Resistance @ 20° C – Ohms	225	17.7	1.16	257.2	18.3	1.24
Current – Amperes	.4	1.36	5.19	.35	1.3	4.84
Watts	36	33	31	32	31	29
Coil Build-up – milliseconds	120	115	110	112	108	105
Coil Decay – milliseconds	20	20	20	12	13	14

FB/ER-375, 475, 650	FB-375		FB-475		FB-650	
Voltage – DC	90	24	90	24	90	24
Resistance @ 20° C – Ohms	446	29	310	22	235	16
Current – Amperes	.201	.822	.300	1.09	.380	1.426
Watts	18	19	27	26	34	34
Coil Build-up – milliseconds	40	40	80	80	90	90
Coil Decay – milliseconds	5	10	8	10	10	10

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

EC/EB-825	EC			EB		
Voltage – DC	90	24	6	90	24	6
Resistance @ 20° C – Ohms	221	20.9	1.098	223.3	20.4	1.27
Current – Amperes	.407	1.15	5.464	.4	1.18	4.74
Watts	37	28	33	36	28	28
Coil Build-up – milliseconds	225	200	180	170	170	170
Coil Decay – milliseconds	130	122	115	80	75	70

EC/EB-1000	EC			EB		
Voltage – DC	90	24	6	90	24	6
Resistance @ 20° C – Ohms	248.7	19.7	1.23	248.7	19.7	1.23
Current – Amperes	.36	1.22	4.87	.36	1.22	4.87
Watts	33	29	29	33	29	29
Coil Build-up – milliseconds	250	235	220	235	220	205
Coil Decay – milliseconds	70	75	80	70	75	80

EC/EB-1225	EC			EB		
Voltage – DC	90	24	6	90	24	6
Resistance @ 20° C – Ohms	207.3	15.1	1.04	261.7	22.3	1.33
Current – Amperes	.43	1.59	5.79	.34	1.08	4.5
Watts	39	38	35	31	26	27
Coil Build-up – milliseconds	500	490	480	460	445	435
Coil Decay – milliseconds	220	230	240	190	160	140

ATC, ATTC, ATB, ATTB-25	ATC			ATB		
Voltage – DC	6	24	90	6	24	90
Resistance @ 20° C – Ohms	1.37	20.2	290	1.37	20.2	290
Current – Amperes	4.38	1.19	.31	4.38	1.19	.31
Watts	26.3	28.6	27.9	26.3	28.6	27.9
Coil Build-up – milliseconds	145	145	145	145	145	145
Coil Decay – milliseconds	8	8	8	9	9	9

ATC, ATTC, ATB, ATTB-55	ATC			ATB		
Voltage – DC	6	24	90	6	24	90
Resistance @ 20° C – Ohms	1.21	19.6	230	1.21	19.6	230
Current – Amperes	4.96	1.22	.39	4.96	1.22	.39
Watts	29.8	29.3	35.2	29.8	29.3	35.2
Coil Build-up – milliseconds	200	200	200	210	210	210
Coil Decay – milliseconds	20	20	20	35	35	35

ATC, ATTC, ATB, ATTB-115	ATC			ATB		
Voltage – DC	6	24	90	6	24	90
Resistance @ 20° C – Ohms	1.02	16.5	182	1.02	16.5	182
Current – Amperes	5.91	1.46	.50	5.91	1.46	.50
Watts	35.4	35	44.6	35.4	35	44.6
Coil Build-up – milliseconds	145	145	145	150	150	150
Coil Decay – milliseconds	40	40	40	45	45	45

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 burnishing 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 50% 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 Material: 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 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 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.

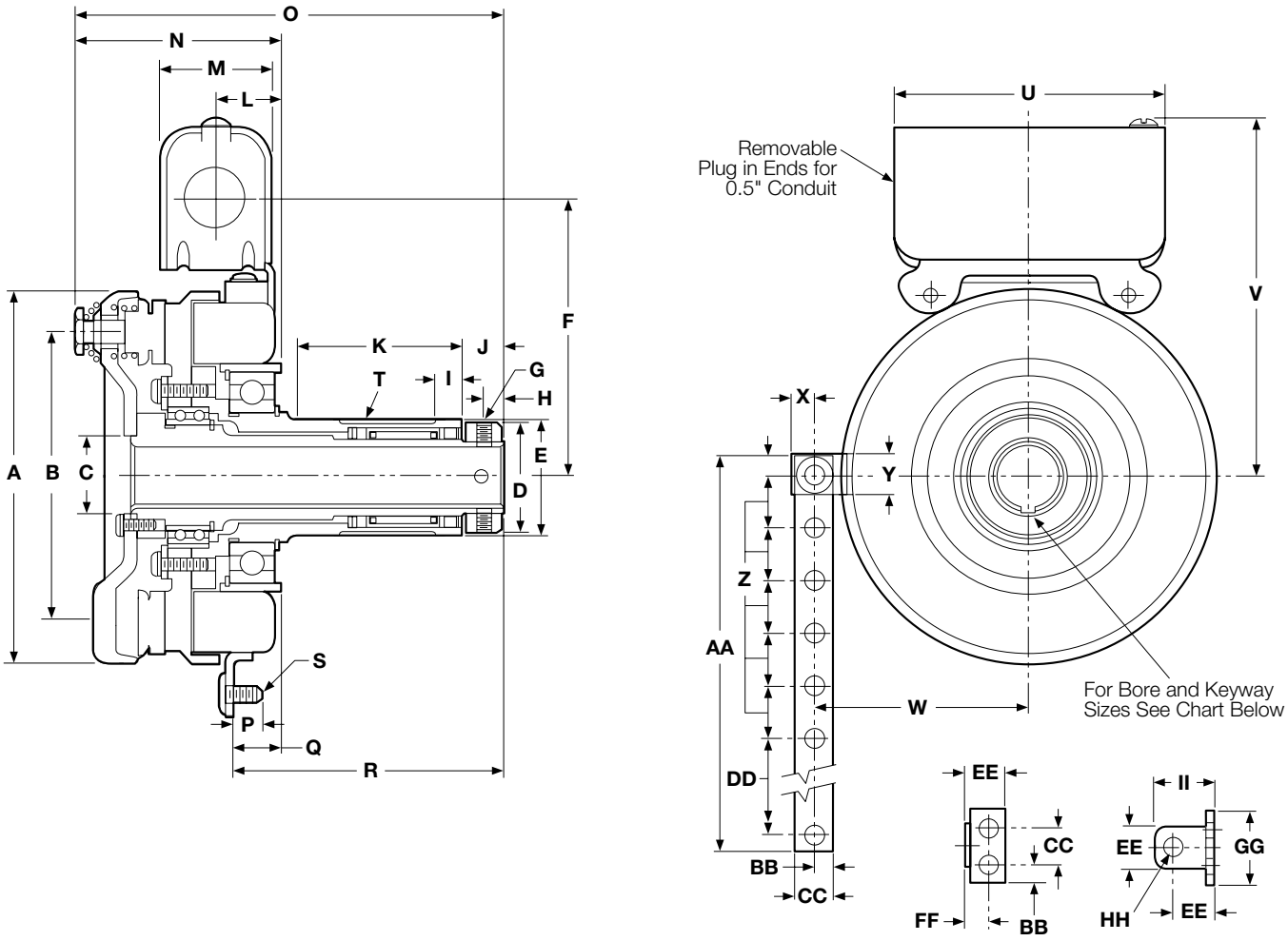
6-Volt Series: Use a DC voltmeter of approximately 0-15 volt range. A normal reading is from 5.5 to 6.5 volts.

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, correct amperage reading for each coil voltage and unit size are found on page 5 under Electrical Coil Data. 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 readings are also listed on page 5 under Electrical Coil Data for each voltage and unit size. 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.

EC-375, EC-475, EC-650



All dimensions are nominal, unless otherwise noted.

Size	A Max.	B Dia.	C Min.	D Dia.	E Dia.	F	G	H	I	J	K Max.	L	M
375	4.078	3.125	.7505	1.313	1.375 1.374	3.344	10-24 UNC -3A x 5/15	.188	.375	.344	2.047	.781	1.547
475	5.172	4.000	1.0625	1.563	1.625 1.624	3.922	1/4-20 UNC -3A x 7/16	.281	.375	.578	2.359	.875	1.547
650	6.578	5.125	1.625	2.375	2.5000 2.4985	4.625	1/4-20 UNC -3A x 1/2	.281	.188	.563	3.047	.953	1.547

Size	N Max.	O Max.	P	Q Max.	R Min.	S	T	U	V Max.	W	X
375	2.484	4.984	.438	.609	3.000	1/4-20 UNC-2A	5/16 x 3/32	3.750	4.438	2.438	.313
475	3.219	6.266	.422	.658	3.641	1/4-20 UNC-2A	3/8 x 3/32	3.750	4.984	2.984	.313
650	3.547	7.141	.422	.722	4.359	1/4-20 UNC-2A	5/8 x 3/32	3.750	5.750	3.750	.313

Size	Y	Z	AA	BB	CC	DD	EE Dia.	FF	GG	HH Dia.	II
375	.563	.750	5.000	.250	.500	.750	.563	.313	1.000	.270 .260	.828
475	.578	.750	5.000	.250	.500	.750	.563	.313	1.000	.270 .260	.828
650	.563	.750	10.000	.250	.500	5.750	.563	.313	1.000	.270 .260	.828

Specifications

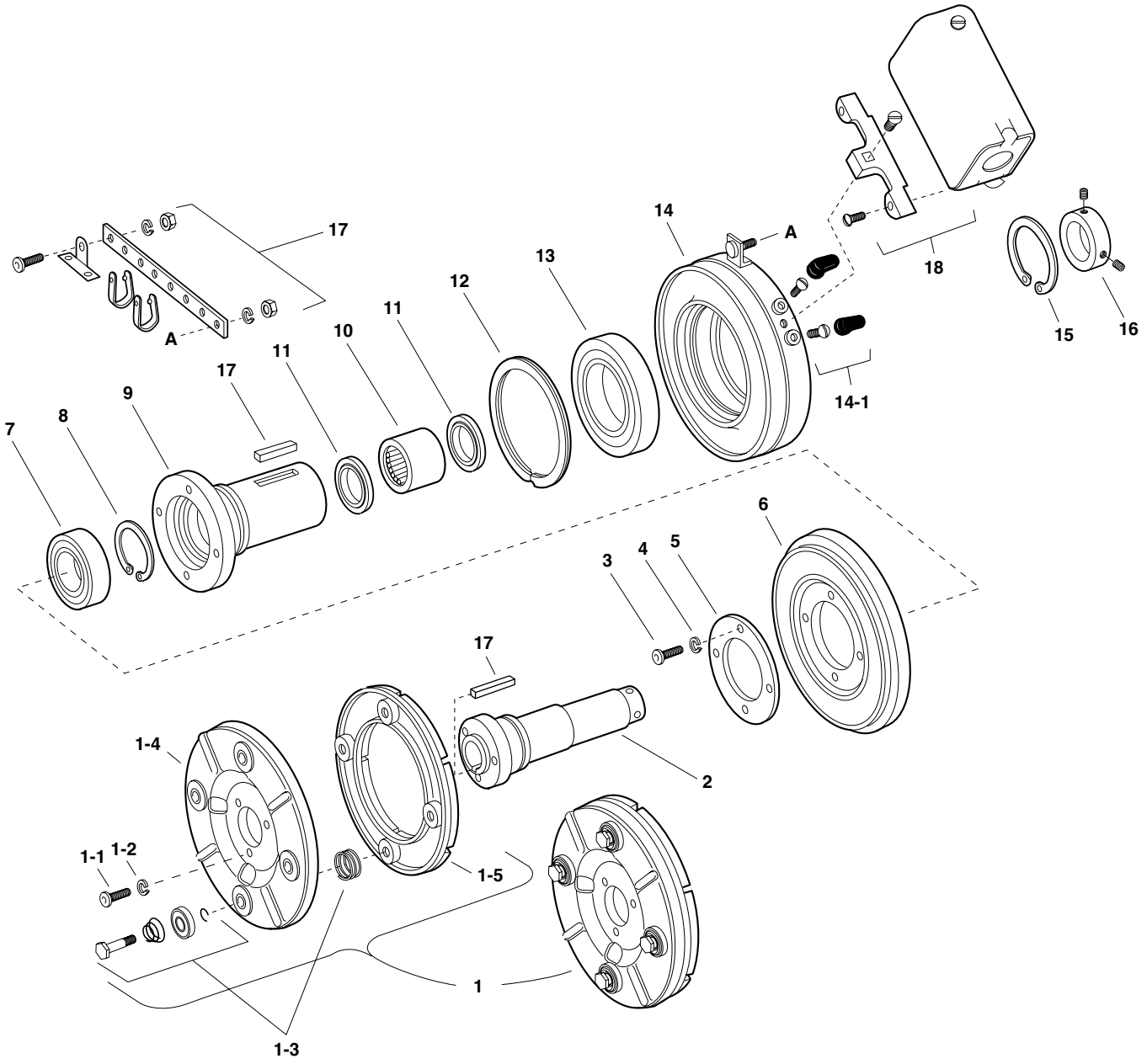
	Average Wt.–lbs.				Inertia–WR2 (lb.ft.2)			
Size	**Arm. & Carrier.**	**Rotor**	**Outer Sleeve**	**Inner Sleeve**	**Arm. & Carrier**	**Rotor**	**Outer Sleeve**	**Inner Sleeve**
EC-375	.60	.55	.49	.60	.010	.018	.001	.001
EC-475	1.13	1.12	.78	1.22	.072	.033	.006	.002
EC-650	2.3	2.5	1.6	2.37	.106	.202	.010	.013

Bore Sizes and Keyways

Size	Bore Dia.	Keyway
375	.625	*3/16 x 1/16
	.500	1/8 x 1/16
475	.750	3/16 x 3/32
	.875	*3/16 x 1/16
	.625	3/16 x 3/32
650	1.125	*1/4 x 1/8
	1.375	*5/16 x 3/32
	1.000	1/4 x 1/8
	1.250	1/4 x 1/8

*Key Furnished

EC-375, EC-475, EC-650



Electrical and Mechanical Data

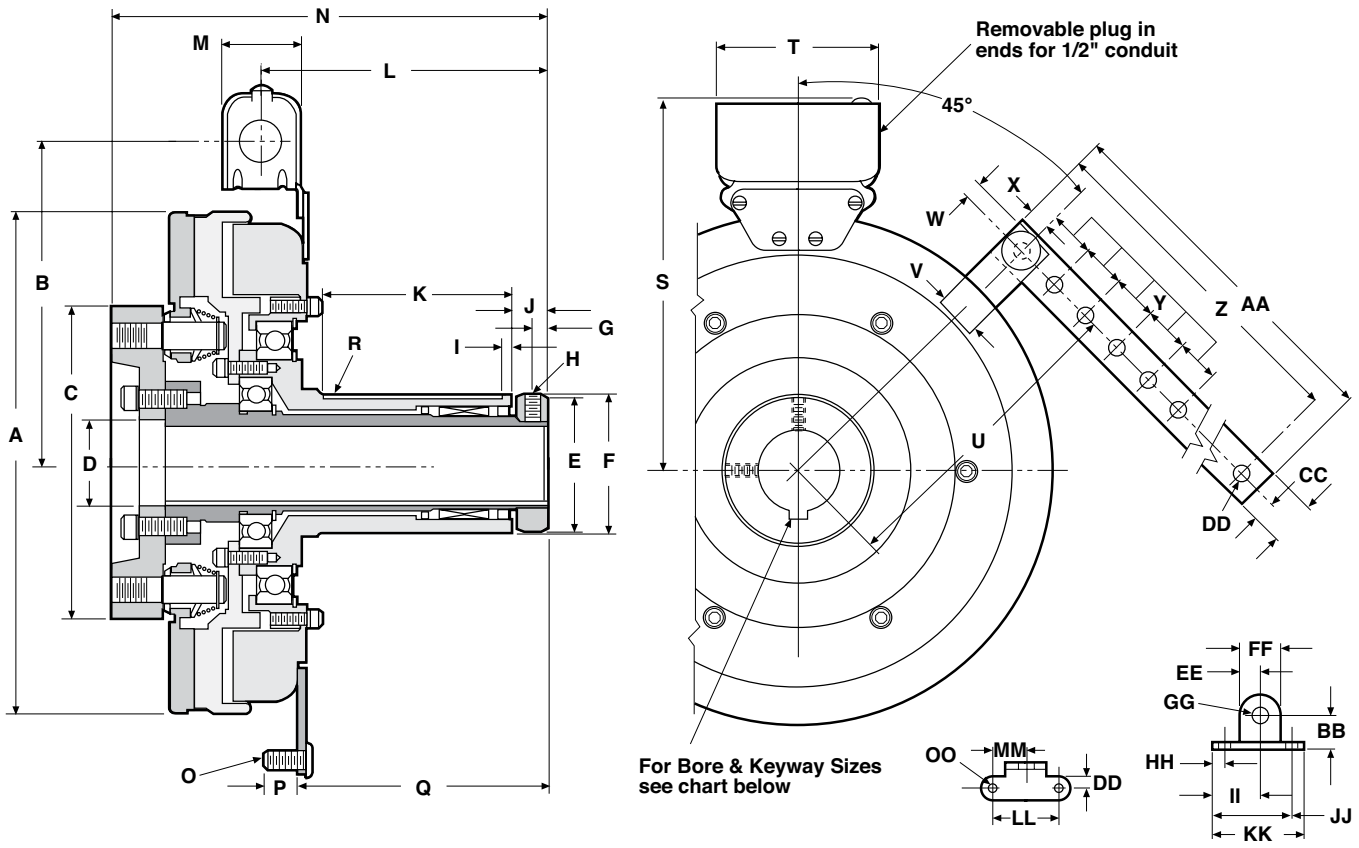
Model Size	Voltage DC	Static Torque (lb. ft.)	Max Speed RPM	Inertia-WR² (lb.ft²) Armature & Carrier	Rotor	Outer Sleeve	Total Inner Sleeve	Weight lbs.
EC-375	6	16 lb. ft.	5000	.010	.018	.001	.001	4
	24	16 lb. ft.	5000	.010	.018	.001	.001	4
	90	16 lb. ft.	5000	.010	.018	.001	.001	4
EC-475	6	30 lb. ft.	4500	.072	.033	.006	.002	8
	24	30 lb. ft.	4500	.072	.033	.006	.002	8
	90	30 lb. ft.	4500	.072	.033	.006	.002	8
EC-650	6	95 lb. ft.	3600	.106	.202	.010	.013	18
	24	95 lb. ft.	3600	.106	.202	.010	.013	18
	90	95 lb. ft.	3600	.106	.202	.010	.013	18

Component Parts

		EC-375		EC-475		EC-650	
Item	**Description**	**Part No.**	**Qty.**	**Part No.**	**Qty.**	**Part No.**	**Qty**
1	Armature & Carrier Assembly	5380-101-006	1	5181-101-003	1	5281-101-003	1
	1-1 Capscrew	797-1214	3	797-1214	3	797-0086	3
	1-2 Lockwasher	950-0102	3	950-0102	3	950-0102	3
	1-3 Autogap Accessory	5180-101-011	3	5181-101-010	4	5181-101-010	4
	1-4 Carrier	5380-295-002	1	5181-295-002	1	5281-295-002	1
	1-5 Armature	5180-111-002	1	5181-111-002	1	5281-111-002	1
2	Inner Sleeve		1		1		1
	1/2" Bore	803-0054					
	5/8" Bore	803-0055		803-1007			
	3/4" Bore			803-1005			
	7/8" Bore			803-1006			
	1" Bore					803-0047	
	1-1/8" Bore					803-0049	
	1-1/4" Bore					803-0048	
	1-3/8" Bore					803-0050	
3	Screw	797-1050	6	797-1039	4	797-0083	4
4	Lockwasher	950-0105	6	950-0102	4	950-0103	4
5	Retainer Plate	748-0391	1	748-0393	1	748-0389	1
6	Rotor	5180-751-001	1	5181-751-001	1	5281-751-001	1
7	Ball Bearing	166-0149	1	166-2016	2	166-0110	1
8	Retainer ring	748-0017	1	748-0023	1	748-0002	1
9	Outer Sleeve	5180-104-001	1	803-1003	1	5281-104-001	1
10	Sleeve Bearing	166-0177	1	166-0179	1	166-0178	1
11	Oil Seal	795-0027	2	795-0028	2	795-0026	2
12	Retainer Ring	748-0101	1	748-0102	1	748-0104	1
13	Ball Bearing	166-0150	1	166-0110	1	166-0104	1
14	Field		1		1		1
	6 volt	5180-451-002		5181-451-002		5281-451-002	
	24 volt	5180-451-004		5181-451-004		5281-451-004	
	90 volt	5180-451-005		5181-451-005		5281-451-005	
	14-1 Terminal Accessory	5103-101-002	1	5103-101-002	1	5311-101-001	1
15	Retainer Ring	748-0018	1	748-0002	1	748-0004	1
16	Set Collar	266-0011	1	266-0012	1	266-0010	1
17	Accessory, W/Keys		1		1		1
	1/2" Bore	5180-101-001					
	5/8" Bore	5180-101-001		5181-101-001			
	3/4" Bore			5181-101-001			
	7/8" Bore			5181-101-002			
	1" Bore					5281-101-001	
	1-1/8" Bore					5281-101-001	
	1-1/4" Bore					5281-101-001	
	1-3/8" Bore					5281-101-002	
18	Conduit Box	5200-101-010	1	5200-101-010	1	5200-101-010	1

These units when used with the correct Warner Electric conduit box, meets the standards of UL508 and are listed under guide care #NMTR, file #59164. These units are CSA Certified under file #LR11543.

EC-825



Specifications

Model Size	Voltage DC	Inertia-WR² (lb. ft²) Armature, Hub & Inner Sleeve	Inertia-WR² (lb. ft²) Rotor & Outer Sleeve	Total Weight lbs.	Average Weight-lbs. Armature, Hub & Inner Sleeve	Average Weight-lbs. Rotor & Outer Sleeve
EC-825	6	.35	.87	28	6.0	18.5
	24	.35	.87	28	6.0	18.5
	90	.35	.87	28	6.0	18.5

EC-825

Bore Sizes and Keyways

Size	Bore Dia.	Keyway
825	1.125	1/4 x 1/8
	1.250	1/4 x 1/8
	1.375	5/16 x 3/32

All dimensions are nominal, unless otherwise noted.

Size	A Max.	B Dia.	C	D Min.	E Dia.	F Dia.	G	H	I	J
825	8.656	5.656	4.625	1.437	2.375	2.5000 2.4985	.281	1/4-20 UNC -3A x 3/8	.188	.563

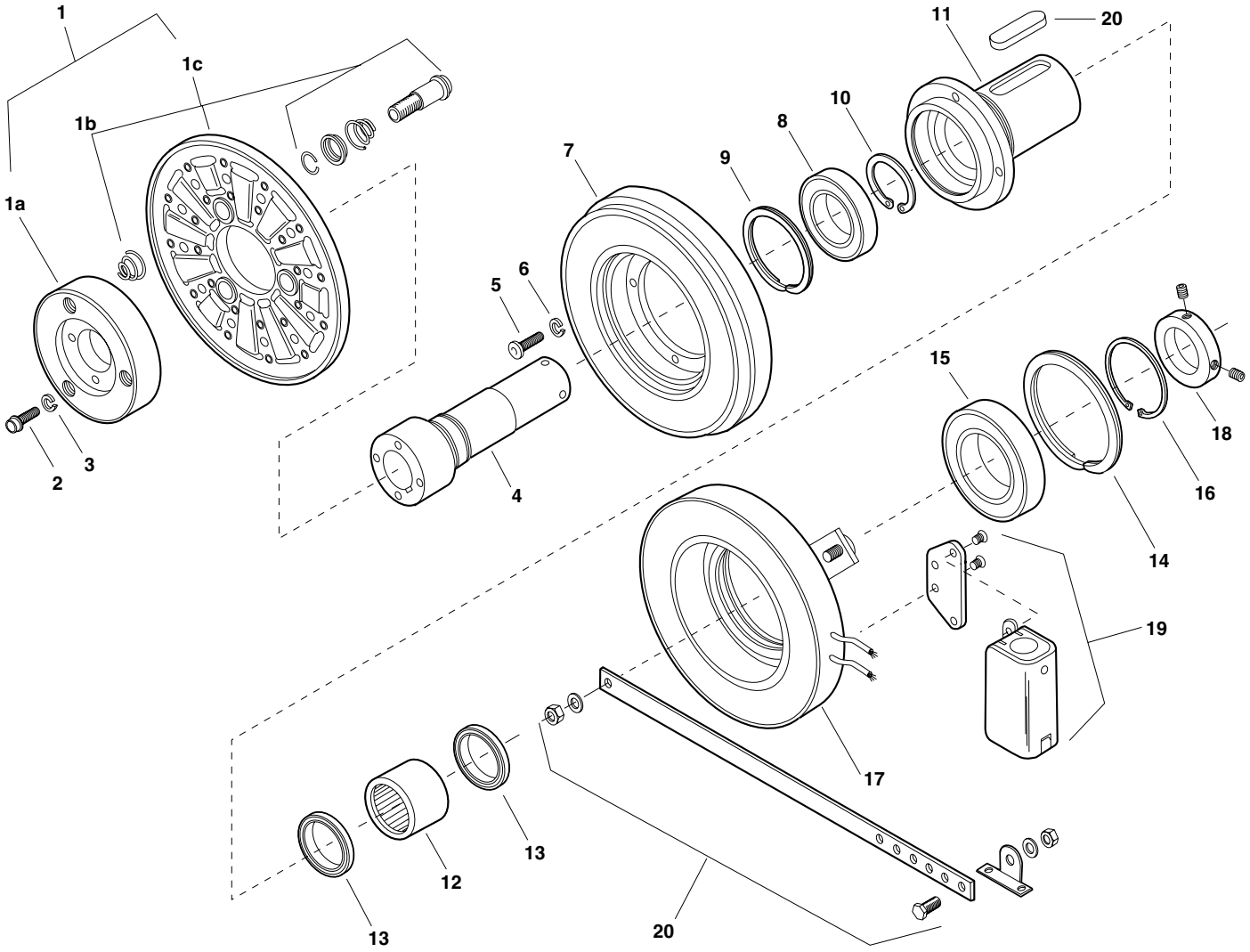
Size	K Max.	L	M	N Max.	O	P	Q Max.	R*	S	T
825	3.047	5.219	1.547	8.000	5/16-18 UNC-2A	1.547	4.468	5/8 x 3/32	6.813	3.750

Size	U	V	W	X	Y	Z	AA	BB	CC	DD Dia.
825	5.063	.875	—	.375	.750	16.625	17	.750	.375	.330 .321

Size	EE	FF	GG Dia.	HH	II	JJ	KK	LL	MM	NN	OO
825	.438	.875	.313	.250	1.000	1.750	2.000	1.500	.750	.250	.270 .260

* Key supplied

EC-825



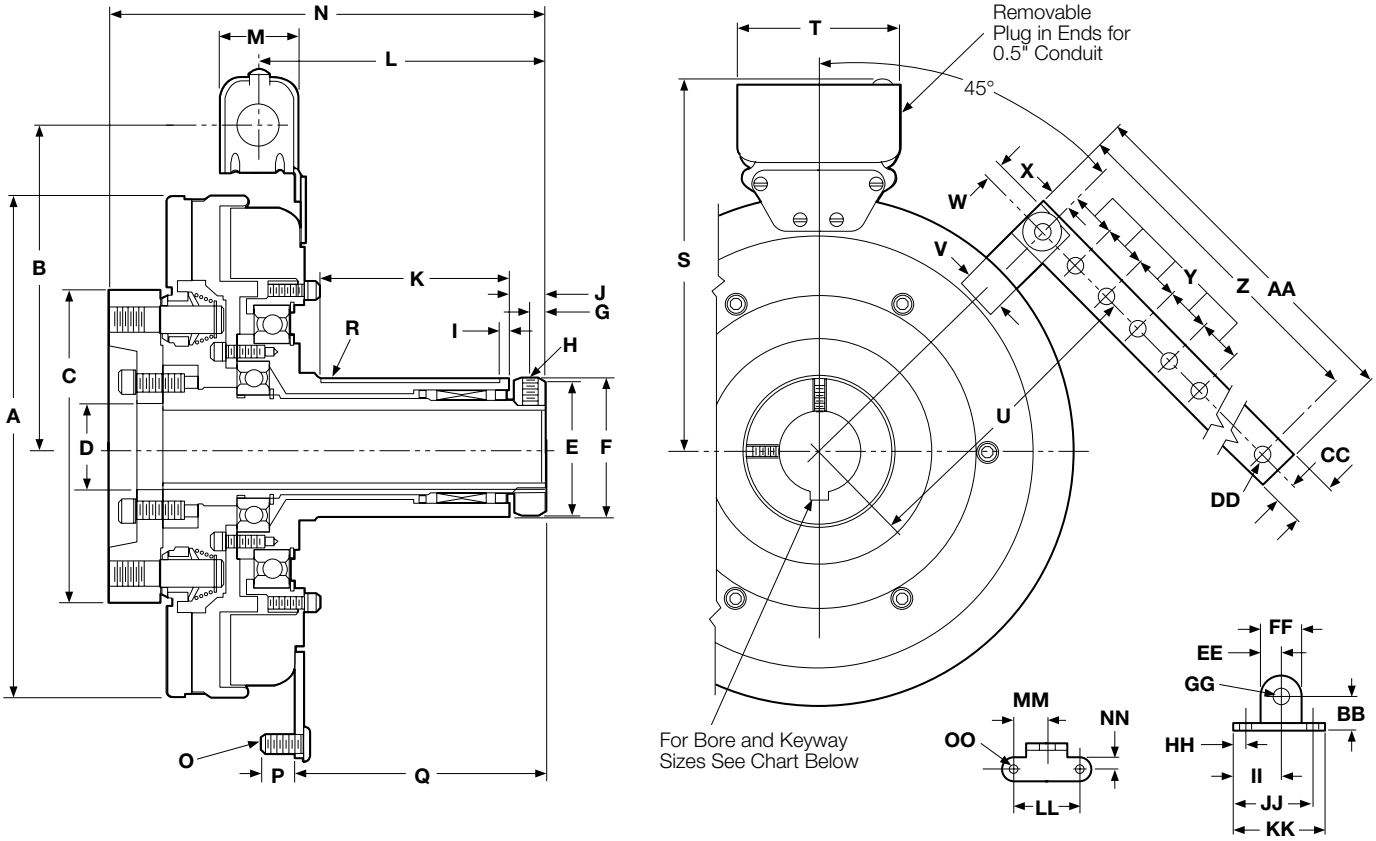
Component Parts

		EC-825	
Item	**Description**	**Part No.**	**Qty**
1	Armature Assembly	5282-111-002	1
	1a Hub	540-1298	1
	1b Autogap Accessory	5201-101-068	3
	1c Armature	5282-111-001	1
2	Capscrew	797-0081	4
3	Lockwasher	950-0103	4
4	Inner Sleeve		1
	1-1/8” Bore	803-0069	
	1-1/4” Bore	803-0070	
	1-3/8” Bore	803-0071	
5	Capscrew	797-0086	4
6	Lockwasher	950-0103	4
7	Rotor Assembly	5282-751-001	1
8	Ball Bearing	166-0110	1
9	Retainer Ring	748-0102	1
10	Retainer Ring	748-0002	1
11	Rotor Adapter	5282-105-002	1

		EC-825	
Item	**Description**	**Part No.**	**Qty**
12	Roller Bearing	166-0178	1
13	Oil Seal	795-0026	2
14	Retainer Ring	748-0104	1
15	Ball Bearing	166-0104	1
16	Retainer Ring	748-0004	1
17	Field		
	6 volt	5282-451-002	
	24 volt	5282-451-004	
	90 volt	5282-451-005	
18	Set Collar	266-0010	1
19	Conduit Box	5200-101-012	1
20	Mounting Accessory with Keys	5282-101-001	1

These units when used with the correct Warner Electric conduit box, meets the standards of UL508 and are listed under guide care #NMTR, file #59164. These units are CSA Certified under file #LR11543.

EC-1000, EC-1225



Specifications

		Static		Inertia–WR² (lb. ft²)				Total
Model Size	**Voltage DC**	**Torque (lb. ft.)**	**Max. Speed RPM**	**Arm. & Hub**	**Rotor**	**Outer Sleeve**	**Inner Sleeve**	**Weight lbs.**
EC-1000	6	240 lb. ft.	2000	.720	.894	.129	.036	41
	24	240 lb. ft.	2000	.720	.894	.129	.036	41
	90	240 lb. ft.	2000	.720	.894	.129	.036	41
EC-1225	6	465 lb. ft.	2000	1.8	2.4	.129	.061	85
	24	465 lb. ft.	2000	1.8	2.4	.129	.061	85
	90	465 lb. ft.	2000	1.8	2.4	.129	.061	85

EC-1000, EC-1225

Bore Sizes and Keyways

Size	Bore Dia.	Keyway
1000	1.375	*5/15 x 5/32
	1.625	*3/8 x 1/8
1225	1.625	*3/8 x 5/32
	1.875	*1/2 x 1/4
	2.125	*1/2 x 3/16

*Key Furnished

All dimensions are nominal, unless otherwise noted.

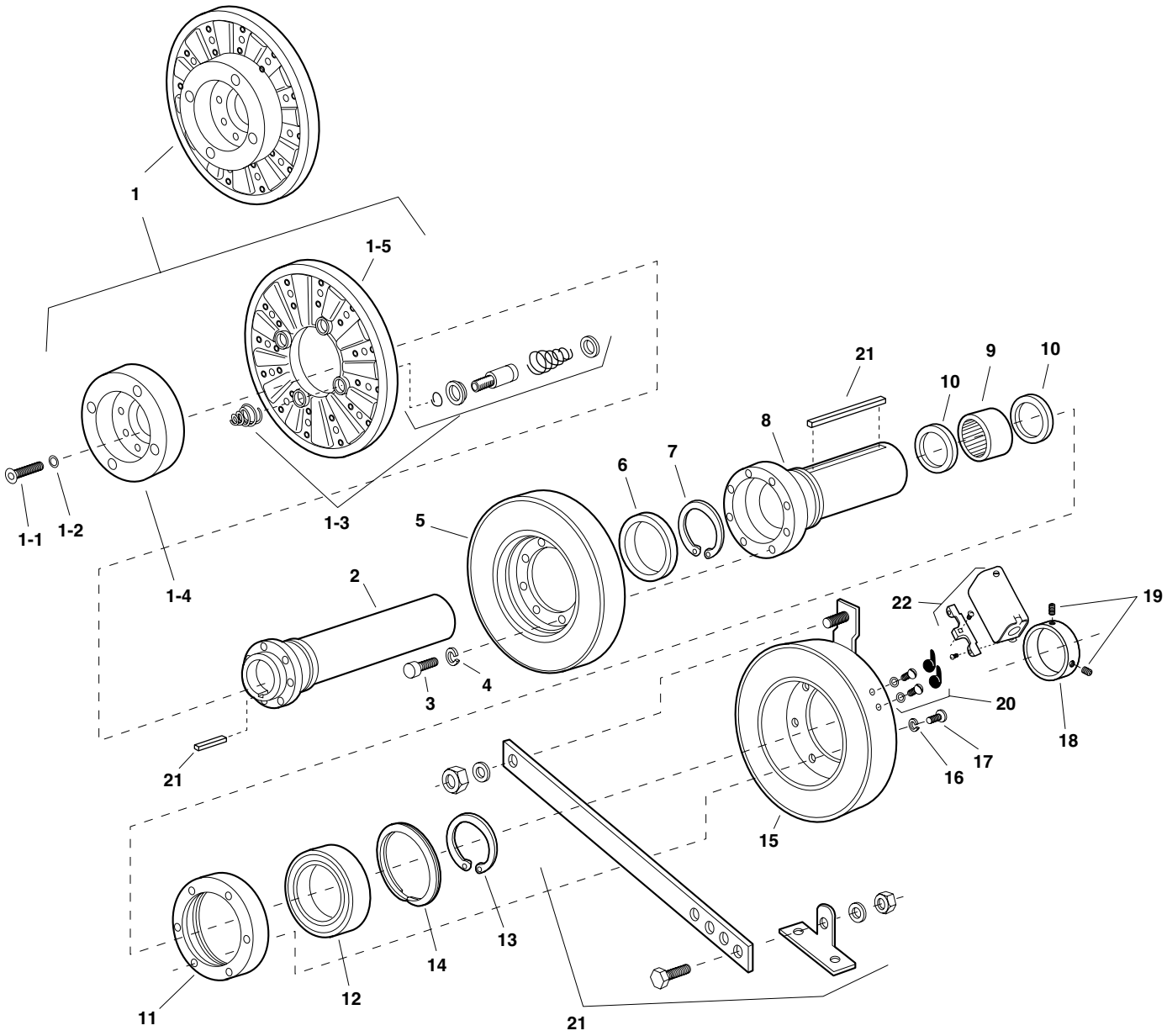
Size	A Max.	B Dia.	C	D Min.	E Dia.	F Dia.	G	H	I	J	K Max.	L	M
1000	10.328	6.531	6.344	1.750	2.875	2.9375 2.9365	.344	5/16-18 UNC -3A x 3/8	.188	.750	3.969	6.000	1.547
1225	12.672	7.531	6.969	2.234	3.625	3.750 3.749	.406	5/81-16 UNC -3A x 3/4	.375	.859	5.219	7.781	1.547

Size	N Max.	O	P	Q Max.	R*	S	T	U	V	W	X	Y
1000	9.031	5/16-18 UNC-2A	1.547	5.281	3/4 x 1/8	7.688	3.750	6.125	.875	.344	.375	.750
1225	11.016	5/16-18 UNC-2A	1.547	7.047	7/8 x /8	8.688	3.750	7.000	.875	.344	.375	.750

Size	Z	AA	BB	CC	DD Dia.	EE	FF	GG Dia.	HH	II	JJ	KK	LL	MM	NN	OO
1000	16.625	17	.750	.375	.330 .321	.438	.875	.313	.250	1.000	1.750	2.000	1.500	.750	.250	.270 .260
1225	16.625	17	.750	.375	.330 .321	.438	.875	.313	.250	1.000	1.750	2.000	1.500	.750	.250	.270 .260

* Key supplied

EC-1000, EC-1225



Component Parts

		EC-1000		EC-1225	
Item	**Description**	**Part No.**	**Qty.**	**Part No.**	**Qty.**
1	Armature & Carrier Assembly	5283-111-001	1	5284-111-001	1
	1-1 Capscrew	797-1163	6	797-1163	8
	1-2 Lockwasher	950-0111	6	950-0111	8
	1-3 Autogap Accessory	5201-101-008	3	5201-101-008	4
	1-4 Hub	540-1338	1	540-1340	1
	1-5 Armature	5302-111-013	1	5385-111-003	1
2	Inner Sleeve		1		1
	3/8" Bore	803-0027			
	1-1/2" Bore	803-0166			
	1-5/8" Bore	803-0028			
	1-5/8" Bore			803-0078	
	1-7/8" Bore			803-0030	
	2-1/8" Bore			803-0031	
3	Capscrew	797-0083	8	797-0416	8
4	Lockwasher	950-0103	8	950-0106	8
5	Rotor Assembly	5283-101-002	1	5284-101-006	1
6	Ball Bearing	166-0168	1	166-0170	1
7	Retainer Ring	748-0067	1	748-0503	1
8	Outer Sleeve	803-0025	1	803-0032	1
9	Roller Bearing	166-0180	1	166-0181	1
10	Oil Seal	795-0029	2	795-0033	2
11	Adapter Ring	748-0480	1	748-0466	1
12	Ball Bearing	166-0163	1	166-0163	1
13	Retainer Ring	748-0502	1	748-0502	1
14	Retainer Ring	748-0114	1	748-0114	1
15	Field		1		1
	6 volt	5283-451-002		5284-451-002	
	24 volt	5283-451-010		5284-451-010	
	90 volt	5283-451-003		5284-451-003	
16	Lockwasher	950-0355	6	950-0359	6
17	Capscrew	797-0083	6	797-0416	6
18	Set Collar	266-0015	1	266-0016	1
19	Set Screw	797-0468	2	797-0130	2
20	Terminal Accessory	5311-101-001	1	5311-101-001	1
21	Mounting Accessory with Keys		1		1
	1-3/8" Bore	5283-101-005			
	1-1/2" Bore	5283-101-009			
	1-5/8" Bore	5283-101-006		5284-101-007	
	1-7/8" Bore			5284-101-001	
	2-1/8" Bore			5284-101-002	
22	Conduit Box	5200-101-011	1	5200-101-011	1

These units when used with the correct Warner Electric conduit box, meets the standards of UL508 and are listed under guide care #NMTR, file #59164. These units are CSA Certified under file #LR11543.

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

An **Altra Industrial Motion** Company

www.warnerelectric.com

31 Industrial Park Road
New Hartford, CT 06057
815-389-3771
Fax: 815-389-2582

Altra® Industrial Motion
www.altramotion.com

P-210 • 819-0041 2/15 Printed in USA