

Specifications

Model	Bore Size	Voltage DC	Static Torque lb. ft.	Max. RPM	Drive	Inertia lb.ft. ²		Weight lbs.		Total Weight lbs.
						Arm. & Carrier	Hub	Arm. & Carrier	Hub	
ER-375	.500" & .625"	90V	10.5	5000	-	.010	.001	.60	.49	4.5
ER-475	.500" to 1.000" Dodge #1008	90V	21	4500	-	.072	.006	1.13		6.3
ER-650	.500" to 1.375" Dodge #1310	90V	56	3600	-	.106	.020	2.3	1.6	13.2
ER-825 ND	.500" to 1.625" Dodge #1615	90V	125	3600	Pin Spline	.323 .326	.043 .006	4.783 5.263	1.857 .834	15.6
ER-825 HD	.500" to 1.500" Browning #H-1	90V	125	3600	Pin Spline	.323 .326	.043 .006	4.783 5.263	1.857 .834	15.6
ER-1225 ND	.937" to 3.00" Dodge #3030	35-75V	400	3000	Pin Spline	1.667 1.737	.380 .077	10.227 13.317	6.716 3.582	60.3
ER-1225 HD	.75" to 2.687" Browning #Q-1	35-75V	400	3000	Pin Spline	1.667 1.737	.380 .077	10.227 13.317	6.716 3.582	60.3

Bushing Part Numbers

Shaft Size	Keyway Size	Bushing Number		Shaft Size	Keyway Size	Bushing Number		Shaft Size	Keyway Size	Bushing Number	
		Warner Electric	Browning			Warner Electric	Browning			Warner Electric	Browning
1/2	1/8 x 1/16	180-0002		2-5/16	5/8 x 5/16	180-0051		1-15/16	1/2 x 1/4	180-0278	
9/16	1/8 x 1/16	180-0003		2-3/8	5/8 x 5/16	180-0052		2	1/2 x 1/4	180-0279	
5/8	3/16 x 3/32	180-0004		2-7/16	5/8 x 5/16	180-0053		2-1/16	1/2 x 1/4	180-0280	
11/16	3/16 x 3/32	180-0005		2-1/2	5/8 x 5/16	180-0054	QI-2	2-1/8	1/2 x 1/4	180-0281	
3/4	3/16 x 3/32	180-0006		2-9/16	5/8 x 5/16	180-0055		2-3/16	1/2 x 1/4	180-0282	
13/16	3/16 x 3/32	180-0007		2-5/8	5/8 x 5/16	180-0056		2-1/4	1/2 x 1/4	180-0283	
7/8	3/16 x 3/32	180-0008		2-11/16	5/8 x 5/16	180-0057		2-5/16	5/8 x 5/16	180-0284	
15/16	1/4 x 1/8	180-0009	H-1	1/2	1/8 x 1/16	180-0131		2-3/8	5/8 x 5/16	180-0285	
1	1/4 x 1/8	180-0010		9/16	1/8 x 1/16	180-0132		2-7/16	5/8 x 5/16	180-0286	3030
1-1/16	1/4 x 1/8	180-0011		5/8	3/16 x 3/32	180-0133		2-1/2	5/8 x 5/16	180-0287	
1-1/8	1/4 x 1/8	180-0012		11/16	3/16 x 3/32	180-0134		2-9/16	5/8 x 5/16	180-0288	
1-3/16	1/4 x 1/8	180-0013		3/4	3/16 x 3/32	180-0135		2-5/8	5/8 x 5/16	180-0289	
1-1/4	1/4 x 1/8	180-0014		13/16	3/16 x 3/32	180-0136		2-11/16	5/8 x 5/16	180-0290	
1-5/16	5/16 x 5/32	180-0015		7/8	3/16 x 3/32	180-0137		2-3/4	5/8 x 5/16	180-0291	
1-3/8	5/16 x 5/32	180-0016		15/16	1/4 x 1/8	180-0138		2-13/16	3/4 x 3/8	180-0292	
1-7/16	3/8 x 3/16	180-0017	H-2	1	1/4 x 1/8	180-0139		2-7/8	3/4 x 3/8	180-0293	
1-1/2	3/8 x 3/16	180-0018		1-1/16	1/4 x 1/8	180-0140	1615	2-15/16	3/4 x 3/8	180-0294	
3/4	3/16 x 3/32	180-0026		1-1/8	1/4 x 1/8	180-0141		3	3/4 x 3/8	180-0295	
13/16	3/16 x 3/32	180-0027		1-3/16	1/4 x 1/8	180-0142		1/2	1/8 x 1/16	180-0410	
7/8	3/16 x 3/32	180-0028		1-1/4	1/4 x 1/8	180-0143		9/16	1/8 x 1/16	180-0411	
15/16	1/4 x 1/8	180-0029		1-5/16	5/16 x 5/32	180-0144		5/8	3/16 x 3/32	180-0412	
1	1/4 x 1/8	180-0030		1-3/8	5/16 x 5/32	180-0145		11/16	3/16 x 3/32	180-0413	
1-1/16	1/4 x 1/8	180-0031		1-7/16	3/8 x 3/16	180-0146		3/4	3/16 x 3/32	180-0414	1008
1-1/8	1/4 x 1/8	180-0032		1-1/2	3/8 x 3/16	180-0147		13/16	3/16 x 3/32	180-0415	
1-3/16	1/4 x 1/8	180-0033		1-9/16	3/8 x 3/16	180-0148		7/8	3/16 x 3/32	180-0416	
1-1/4	1/4 x 1/8	180-0034		1-5/8	3/8 x 3/16	180-0149		15/16	1/4 x 1/16	180-0417	
1-5/16	5/16 x 5/32	180-0035	QI-1	15/16	1/4 x 1/8	180-0262		1	1/4 x 1/16	180-0418	
1-3/8	5/16 x 5/32	180-0036		1	1/4 x 1/8	180-0263		1/2	1/8 x 1/16	180-0421	
1-7/16	3/8 x 3/16	180-0037		1-1/16	1/4 x 1/8	180-0264		9/16	1/8 x 1/16	180-0422	
1-1/2	3/8 x 3/16	180-0038		1-1/8	1/4 x 1/8	180-0265		5/8	3/16 x 3/32	180-0423	
1-9/16	3/8 x 3/16	180-0039		1-3/16	1/4 x 1/8	180-0266		11/16	3/16 x 3/32	180-0424	
1-5/8	3/8 x 3/16	180-0040		1-1/4	1/4 x 1/8	180-0267		3/4	3/16 x 3/32	180-0425	
1-11/16	3/8 x 3/16	180-0041		1-5/16	5/16 x 5/32	180-0268		13/16	3/16 x 3/32	180-0426	
1-3/4	3/8 x 3/16	180-0042		1-3/8	5/16 x 5/32	180-0269	3030	7/8	3/16 x 3/32	180-0427	
1-13/16	1/2 x 1/4	180-0043		1-7/16	3/8 x 3/16	180-0270		15/16	1/4 x 1/16	180-0428	1310
1-7/8	1/2 x 1/4	180-0044		1-1/2	3/8 x 3/16	180-0271		1	1/4 x 1/8	180-0429	
1-15/16	1/2 x 1/4	180-0045		1-9/16	3/8 x 3/16	180-0272		1-1/16	1/4 x 1/8	180-0430	
2	1/2 x 1/4	180-0046		1-5/8	3/8 x 3/16	180-0273		1-1/8	1/4 x 1/8	180-0431	
2-1/16	1/2 x 1/4	180-0047		1-11/16	3/8 x 3/16	180-0274		1-3/16	1/4 x 1/8	180-0432	
2-1/8	1/2 x 1/4	180-0048	QI-2	1-3/4	3/8 x 3/16	180-0275		1-1/4	1/4 x 1/8	180-0433	
2-3/16	1/2 x 1/4	180-0049		1-13/16	1/2 x 1/4	180-0276		1-5/16	15/16 x 5/32	180-0434	
2-1/4	1/2 x 1/4	180-0050		1-7/8	1/2 x 1/4	180-0277		1-3/8	15/16 x 5/32	180-0435	

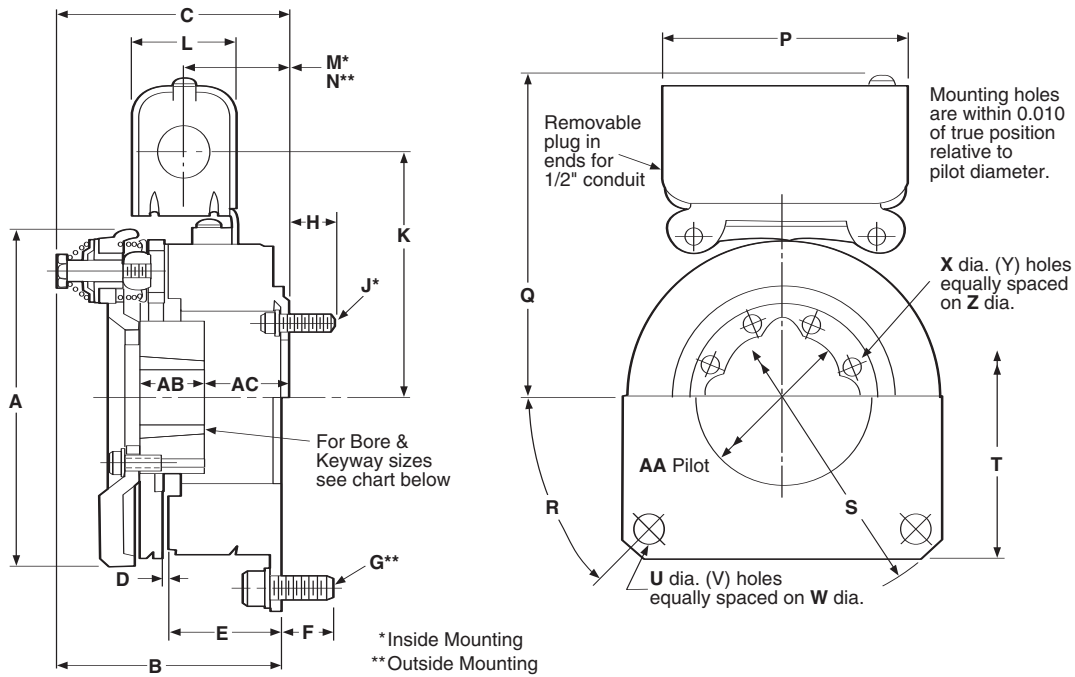
Browning® is registered to Emerson Electric Co. Dodge and Browning bushings are also available in metric bores.



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ER-375, ER-475, ER-650



Mounting Requirements

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.

3. If magnet mounting surface is a magnetic material, the magnet is to be insulated approximately 1/2" from that surface with a plate or spacers of non-magnetic material.

ER-375 available outside mounted only.

Bore and Keyway Dimensions

Size	Bore Dia.	Keyway
375	.501/.500	1/8 x 1/16
	.626/.625	3/16 x 3/32
475	.500 - .562	1/8 x 1/16
	.625 - .875	3/16 x 3/32
	.937 - 1.000	1/4 x 1/8
650	.500 - .562	1/8 x 1/16
	.625 - .875	3/16 x 3/32
	1.000 - 1.250	1/4 x 1/8
	1.312 - 1.375	5/16 x 5/32

All dimensions are nominal, unless otherwise noted.

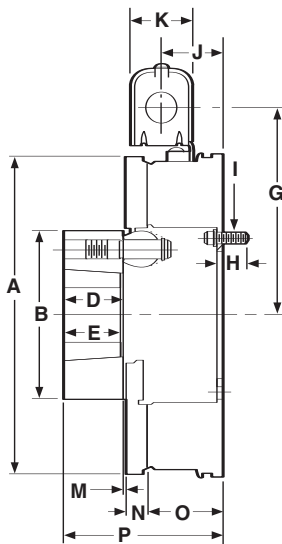
Size	A Max.	B Max.	C Max.	D	E	F Max.	G	H Max.	J	K	L	M	N	P
375	4.078	2.583	2.583	.032	1.410	.600	5/16-18 UNC-3A	—	—	3.325	1.547	—	—	3.750
475	5.172	3.195	3.274	.031	1.630	.431	3/8-16 UNC-3A	.390	8-32	3.875	1.547	1.354	1.236	3.750
650	6.578	3.525	3.525	.032	1.880	.542	5/16-18 UNC-3A	.542	5/16-18 UNC-3A	4.800	1.547	—	—	3.750

Size	Q Max.	R	S	T Sq.	U	V	W Dia.	X	Y	Z Dia.	AA Dia.	AB	AC
375	4.505	—	5.625 5.623	—	.350 .341	3	5.000	—	—	—	—	23/32	1-3/4
475	5.000	45°	6.500 6.498	5.000	.419 .403	4	5.875	.208 .201	8	2.375	2.065 2.062	29/32	1-3/16 I.M. 1-1/16 O.M.
650	5.844	45°	8.000 7.998	6.500	.358 .338	4	7.250	.358 .338	4	3.688	2.822 2.820	1-1/32	1-3/8

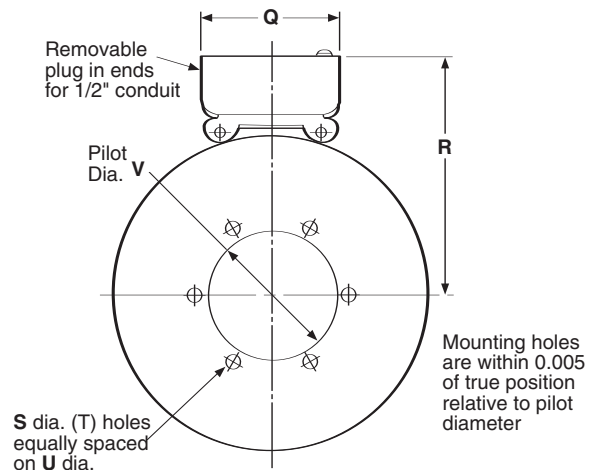
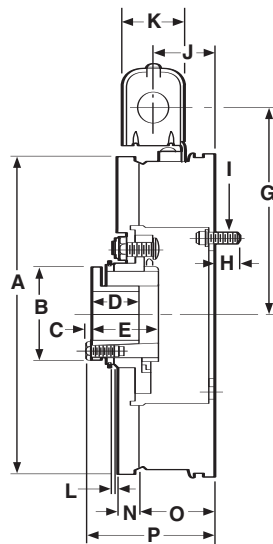


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ER-825 and ER-1225
Normal Duty (N.D.)



ER-825 and ER-1225
Heavy Duty (H.D.)



ER-825 & ER-1225 Magnet View
(Same for Pin Drive and Spline Drive)

Mounting Requirements

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" from that surface with a plate or spacers of non-magnetic material.

Bore and Keyway Dimensions

	ER-825	Bore Dia.	Keyway
Pin Drive	.500 - .562	1/8 x 1/16	
	.625 - .875	3/16 x 3/32	
	.937 - 1.250	1/4 x 1/8	
	1.312 - 1.375	5/16 x 5/32	
	1.437 - 1.500	3/8 x 3/16	
	1.562 - 1.625*	3/8 x 3/16	
Spline Drive	.500 - .562	1/8 x 1/16	
	.375 - .625	3/16 x 3/32	
	.937 - 1.187	1/4 x 1/8	
	1.250*	1/4 x 1/8	
	1.312 - 1.375*	5/16 x 5/32	
	1.437 - 1.500*	3/8 x 3/16	
ER-1225			
Pin Drive	.937 - 1.250	1/4 x 1/8	
	1.312 - 1.375	5/16 x 5/32	
	1.437 - 1.750	3/8 x 3/16	
	1.812 - 2.250	1/2 x 1/4	
	2.312 - 2.750	5/8 x 5/16	
	2.187 - 3.000*	3/4 x 3/8	
Spline Drive	.750 - .875	3/16 x 3/32	
	.937 - 1.250	1/4 x 1/8	
	1.312 - 1.375	5/16 x 5/32	
	1.437 - 1.750	3/8 x 3/16	
	1.812 - 2.062	1/2 x 1/4	
	2.125 - 2.250*	1/2 x 1/4	
	2.312 - 2.687	5/8 x 5/16	

*Key furnished

Size	A Max.	B Dia.	C	D	E	G	H Max.	I	J	K Min.	L Min.
825 N.D.	8.656	4.625	—	1.593	1.500	5.625	.531	5/16-18 UNC-3A	1.687	1.546	—
825 H.D.	8.656	2.500	.156	1.250	1.765	5.625	.531	5/16-18 UNC-3A	1.687	1.546	.062
1225 N.D.	12.671	6.875	—	3.000	3.000	7.671	.546	5/16-18 UNC-3A	1.718	1.546	—
1225 H.D.	12.671	4.093	.234	2.500	2.171	7.671	.546	5/16-18 UNC-3A	1.718	1.546	.062

Size	M When New	N	O	P Max.	Q	R Max.	S	T	U	V
825 N.D.	.093	.562	2.080 .338	4.359	3.750	6.750 3.501	.358	6	4.250	3.503
825 H.D.	—	.531	2.080 .338	3.546	3.750	6.750 3.501	.358	6	4.250	3.503
1225 N.D.	.156	.593	2.500 .338	6.218	3.750	8.796 6.376	.358	6	7.250	6.378
1225 H.D.	—	.562	2.500 .338	5.031	3.750	8.796 6.376	.358	6	7.250	6.378



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For Dynamic Stopping and Cycling Applications

Warner Electric's modular design brakes and clutch/brake units offer material handling system users a high performance alternative to spring-set brakes. These modular units provide long life, maintenance free operation, and consistent performance with minimal downtime.

These brakes are offered in power-off types for double shaft motors and for installation between C-face motor and reducer or other drive device. Powerful permanent magnets generate braking torque. The brakes release when voltage is applied to the coil, countering the force of the permanent magnets. No power is required to stop or hold a load. An optional integral conduit box provides simple wiring direct from the motor power leads.

- Designed for dynamic stopping operations
- Brake automatically engages when power is turned off
- High cycle rate capability
- Never needs adjustment – automatically compensates for wear
- Powerful permanent magnets provide braking force
- Choice of open or enclosed brakes
- Prepackaged, preburnished UM version

Three C-face Compatible Designs

The UM Series (UniModule Clutch/Brakes) are preassembled clutch/electrically released brake modules.

- The UM-1020-FBC brake/motor clutch combination is used for clutch/power-off brake applications. It mounts directly to C-face compatible components.
- The UM-2030-FBC brake/input clutch combination is used for clutch/power-off brake applications. It has shafts on both the input and output sides for base mounting.

The EUM Series (Enclosed Motor Brakes) are totally enclosed non-vented units that keep wear particles in and contaminants out.

- The EUM-FBB brake unit can be mounted between two C-face compatible components.
- The EUM-MBFB motor brake is mounted directly to the rear of a double-shafted motor.

The EM Series (Electro Module Brakes and Clutch/Brakes) are comprised of individual units that may bolt together to form various combinations:

- The EM-FBB brake module mounts between a C-face motor and a gear box or reducer.
- The EM-MBFB motor brake module is mounted to the rear of a double-shafted motor.
- The EM-FBC brake module is used in combination with a motor clutch or input clutch unit to make a clutch/electrically released brake or can be used alone as a brake only.

Brake Modules (FBB) – For mounting between a C-face motor and a gearbox or reducer

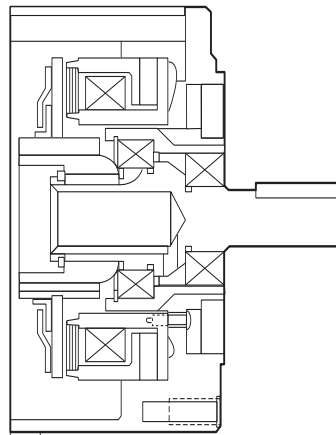


EM Series
Shaft mounted,
vented housing



EUM Series
Shaft mounted,
totally enclosed
non-vented housing

Use for brake alone applications.



Features

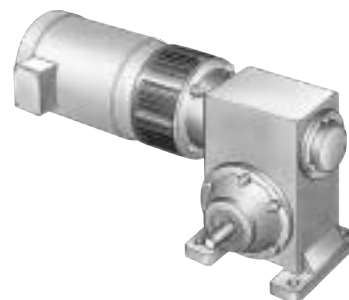
- Single armature for brake alone applications
- Output shaft
- Permanent magnets
- UL listed and CSA certified

EM-FBB

Available in 4 sizes

EUM-FBB

Available in 4 sizes



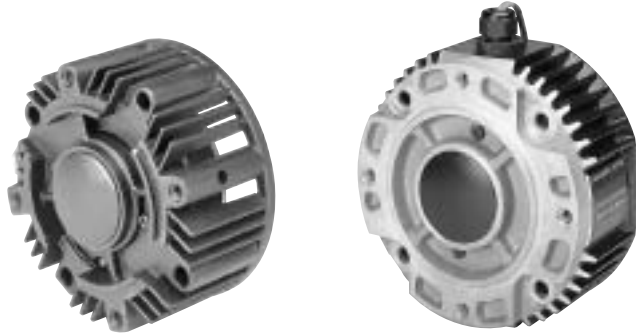
EM-FBB Electro Module
brake unit between a
motor and a reducer.

Permanent Magnet Modules

Electrically Released Brakes

C-face Compatible Brakes and Clutch/Brakes

Motor Brake Modules (MBFB) – For mounting directly to the rear of a double-shafted motor

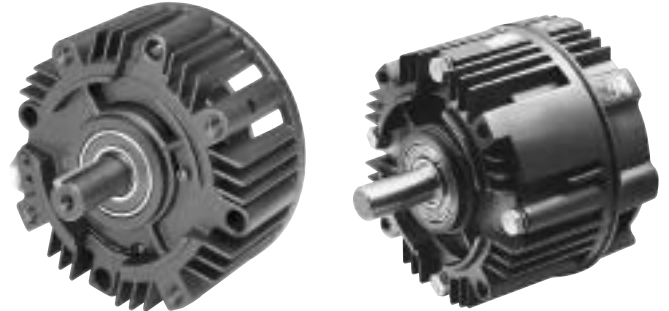


EM Series
vented housing

EUM Series
totally enclosed
non-vented
housing

Use as a motor brake on C-face type motors.

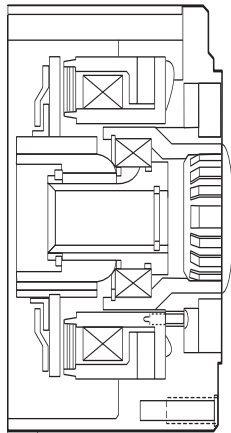
Clutch/Brake Modules (FBC) – Clutch/Fail-safe brake for mounting between a C-face motor and a gearbox or reducer



EM Series
Modular unit with
C/B capability

UM Series
Fully assembled C/B
combination package

Combine with a motor or input clutch for clutch/brake applications or use alone as a brake only.

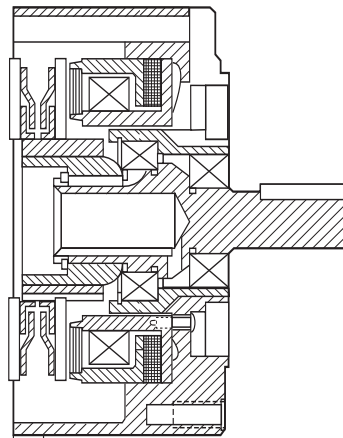


Features

- Single armature design
- Complete torque control
- Precision cast housing
- Ceramic type permanent magnets

EM-MBFB
Available in 4 sizes

EUM-MBFB
Available in 5 sizes

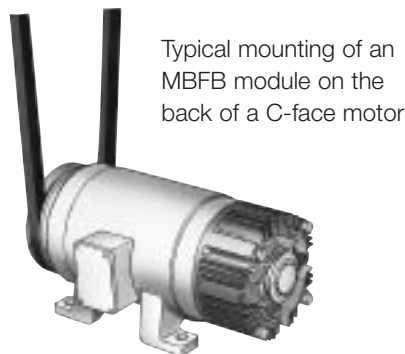


Features

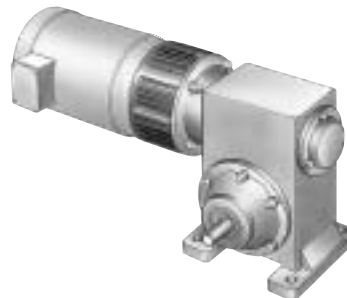
- Dual armature for clutch/brake combination
- Output shaft
- Can be base mounted for use as a separate drive unit.

EM-FBC
Available in 3 sizes

UM-FBC
Available in 4 size combinations

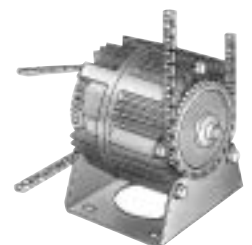


Typical mounting of an MBFB module on the back of a C-face motor



EM-FBC Electro Module brake unit combined with a motor clutch module

UM-FBC UniModule clutch/brake mounted on a base



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UniModule Clutch/Electrically Released Brake Combination

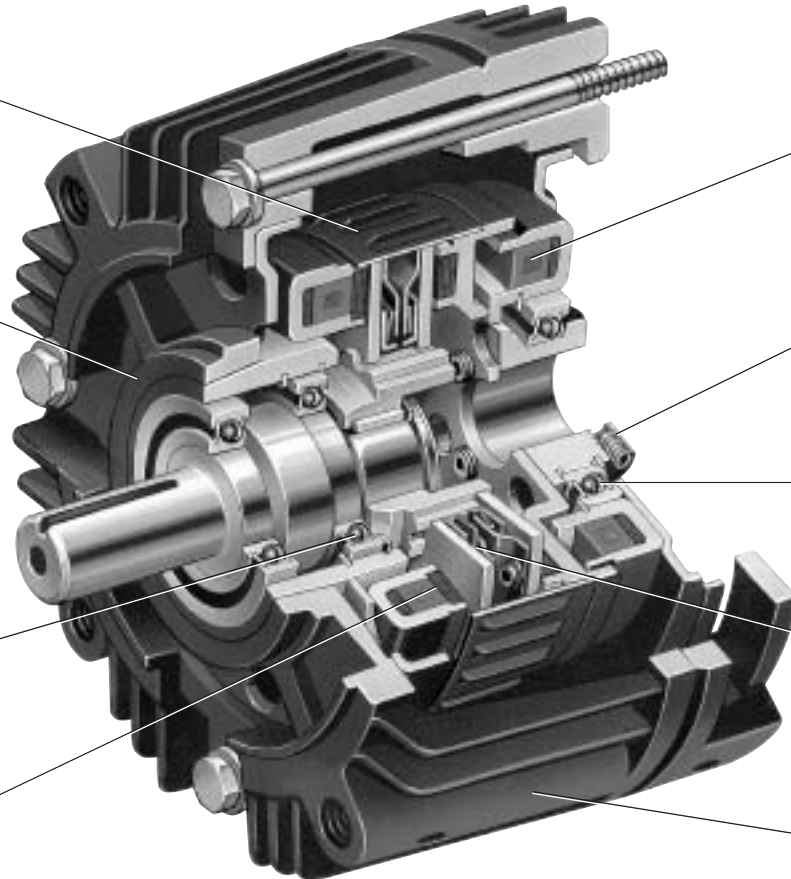
Fan cooled for long life and consistent performance.

NEMA C-face compatible design

Single conduit entrance

Heavy duty bearings maintain tight concentricity and running efficiency.

High torque, long life, asbestos-free friction material



Completely sealed coils

Easy set screw access

Bearing mounted rotor.

Autogaps® automatically adjust for wear.

Finned design for maximum heat dissipation.

Warner Electric offers the convenience of pre-assembled UniModule clutch/electrically released brake packages. Assembly, alignment, and pre-burnishing have been done at the factory. Bolt it on, wire it up, and your clutch/electrically released brake is ready to go. Available in both C-face and base mounted versions.

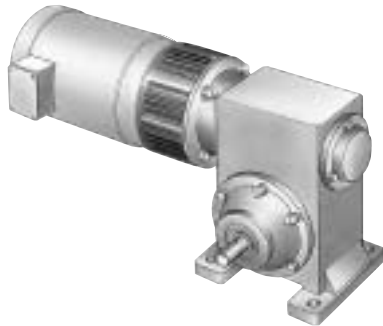
Warner Electric's unique design employs powerful permanent magnets for maximum torque when power is removed from the brake coil. A small amount of electrical power applied to the brake coil nullifies the permanent magnets and the brake releases. No springs to limit cycle rates. Never any adjustments. No

lubrication. These brakes are recommended for dynamic cycling operations only.

UniModule clutch/electrically released brake units may be mounted directly to NEMA C-face motors and reducers, or can be base mounted.

1. Select Configuration

a. NEMA C-face Mounting (1020 Configuration)



Verify the unit will be cycled frequently.

To select the correct UniModule package, determine the NEMA frame size of your motor and/or reducer, and choose the corresponding size UniModule from the Frame Size Selection chart. Verify torque ratings.

b. Base Mounting (2030 Configuration)



Verify the unit will be cycled frequently.

Select the correct size module from the Horsepower vs. Shaft Speed chart by determining the motor horsepower and RPM at the module location. The correct size UniModule is shown at the intersection of the HP and operating speed. For additional sizing information, refer to the technical sizing procedure (step 2).

2. Determine Technical Requirements

Technical considerations for sizing and selection are torque and heat dissipation. Each merits careful consideration, especially heat dissipation as over time, use in excessive temperature environments will have an adverse effect on bearing life and coil wire insulation integrity.

Compare the calculated torque requirement with the average dynamic torque ratings. Select a unit with adequate torque. If the unit selected on torque is different than the unit selected based on heat, select the larger size unit.

Horsepower vs. Shaft Speed

HP	SHAFT SPEED AT CLUTCH (IN RPM)																		
	100	200	300	400	500	600	700	800	900	1000	1100	1200	1500	1800	2000	2400	3000	3600	
1/4																			
1/2																			
3/4																			
1																			
1-1/2																			
2																			
3																			
5																			
7-1/2																			

Frame Size Selection and Technical Ratings Chart

NEMA Frame Size	UniModule Size	Static Torque Brake lb.ft.	Static Torque Clutch lb.	Max. RPM	Voltage DC
56C/48Y	UM-50* UM-100**	10.5 21	16 30	3600	24 or 90
182C/143TC 184C/145TC	UM-180	21	30	3600	24 or 90
213C/182TC 215C/184TC	UM-210	56	95	3600	24 or 90
213TC/215TC	UM-215	56	95	3600	24 or 90

*For 56C/48Y C-frame motors 3/4 HP and smaller, the UM-100 size may be used where extended life is desirable.

**The UM-100 size is recommended for motors 1 HP and larger.

a. Heat Dissipation Sizing

Friction surfaces slip during the initial period of engagement and, as a result, heat is generated. The clutch/brake selected must have a heat dissipation rating greater than the heat generated by the application. Therefore, in high inertia or high cycle rate applications, it is necessary to check the heat dissipation carefully. Inertia, speed and cycle rate are the required parameters.

Heat dissipation requirement is calculated as follows:

$$E = 1.7 \times WR^2 \times (N/100)^2 \times F$$

where:

E = Heat (lb. ft./min.)

WR² = Total reflected inertia at the clutch/brake shaft. Include the clutch/brake output inertia. (lb.ft.²)

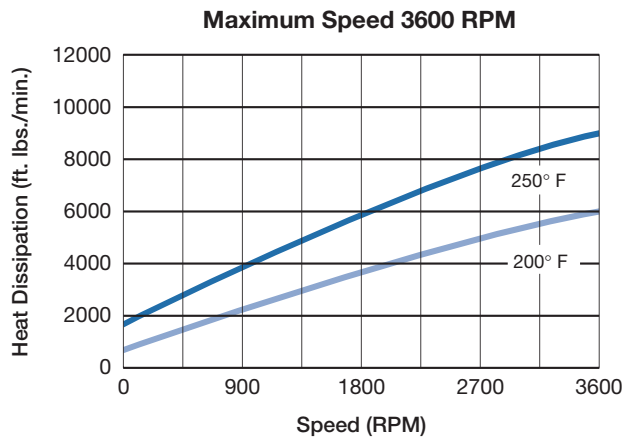
N = Speed in revolutions per minute. (RPM)

F = Cycle rate in cycles per minute (CPM)

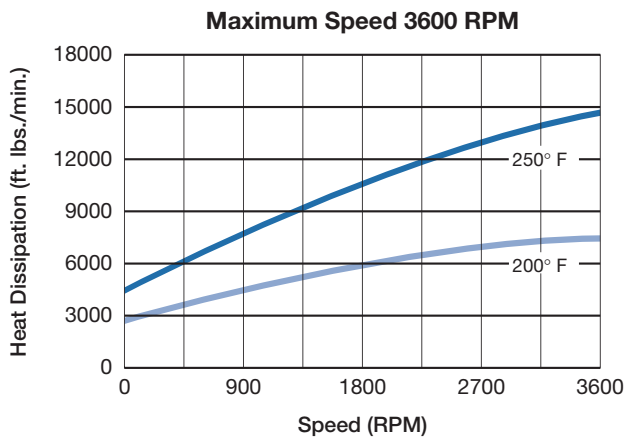
Compare the calculated heat generated in the application to the unit ratings using the heat dissipation curves. Select the appropriate unit that has adequate heat dissipation ability.

Heat Dissipation Curves

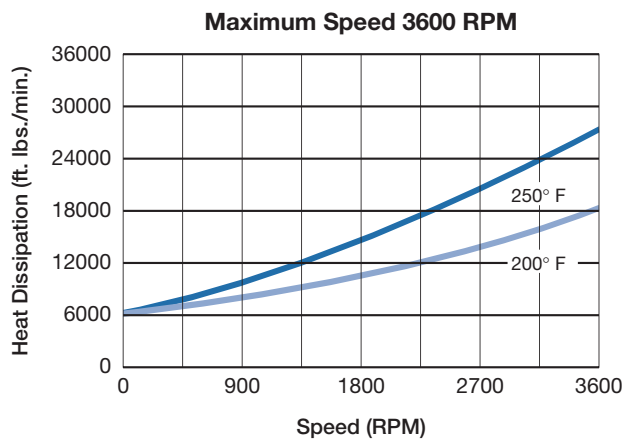
Size 50



Size 100/180



Size 210/215



b. Torque Sizing

For most applications, the correct size clutch/brake can be selected from the Horsepower vs. Shaft Speed chart on page 117. Determine the motor horsepower and the RPM at the clutch/brake. The correct size unit is shown at the intersection of horsepower and shaft speed.

If the static torque requirements are known, refer to the technical ratings chart to select a unit.

For some applications, the torque requirement is determined by the time allowed to accelerate and decelerate the load. (This time is generally specified in milliseconds.) For these applications, it is necessary to determine the torque requirement based on load inertia and the time allowed for engagement.

The torque requirements are calculated as follows:

$$T = (WR^2 \times N) / (308 \times t)$$

where:

T = Average Dynamic Torque (lb. ft.)

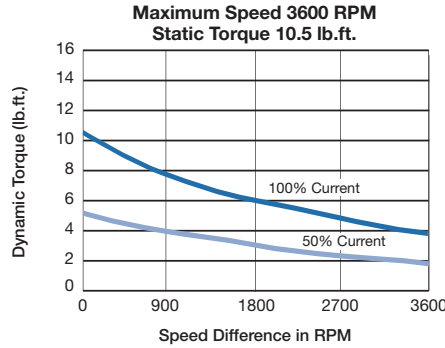
WR^2 = Total reflected inertia at the clutch/brake shaft. Include the clutch/brake output inertia. (lb. ft.²)

N = Speed in revolutions per minute. (RPM)

t = Time allowed for the engagement (sec)

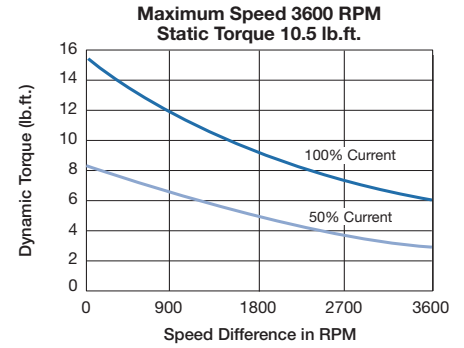
C-face Electrically Released Brake Dynamic Torque Curves

Size 50

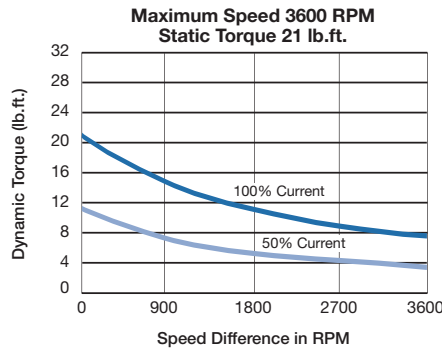


C-face Clutch Dynamic Torque Curves

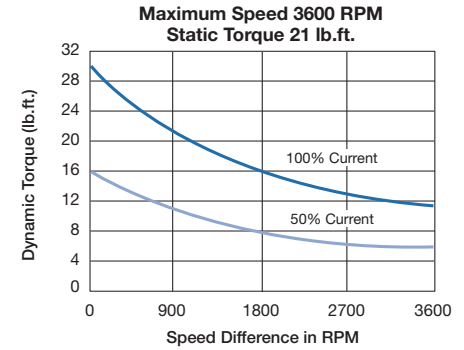
Size 50



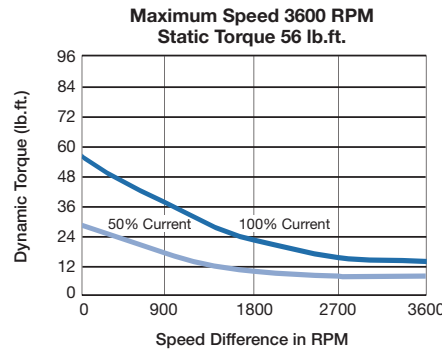
Size 100/180



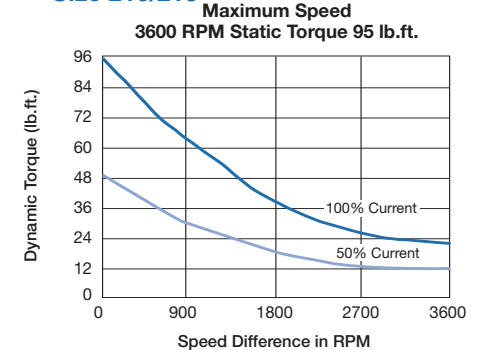
Size 100/180



Size 210/215



Size 210/215



Specifications (Max. Speed 3600 RPM)

Size	Voltage DC	Nominal Weight (lbs.)		Armature		Component Inertia-WR ² (lb. ft. ²)					NEMA Frame Size
		1020	2030	(both)	Hub	1020		2030			
						Shaft	Rotor w/Fan and Hub	Output Shaft	Input Shaft	Rotor w/Fan and Hub	
50	24 90	12	15	.018	.001	.001	.020	.001	.001	.020	56C/48Y
100	24 90	16	19	.046	.002	.002	.046	.002	.002	.046	56C/48Y
180	24 90	16	19	.046	.002	.002	.046	.002	.002	.046	182C/143TC 184C/145TC
210	24 90	36	47	.162	.016	.014	.190	.016	.015	.183	213C/182TC 215C/184TC
215	24 90	37	48	.162	.016	.016	.190	.017	.016	.183	213TC/215TC

3. Select Options

Warner Electric Enclosed UniModules can be fitted with several accessories to extend their capacity and ease of mounting.

4. Select Control

All electrically released modules require a control with a potentiometer that will vary brake channel output. UM-FBC units require either a CBC-300 or a CBC 500/550 control.

UM Combination	UM Model No.	Voltage DC	Part No.
Motor Clutch/ ER Brake	UM-50-1020FBC	24	5370-273-037
	UM-50-1020FBC	90	5370-273-036
	UM-100-1020FBC	24	5370-273-153
	UM-100-1020FBC	90	5370-273-125
	UM-180-1020FBC	24	5370-273-047
	UM-180-1020FBC	90	5370-273-046
	UM-210-1020FBC	24	5371-273-013
	UM-210-1020FBC	90	5371-273-012
	UM-215-1020FBC	24	5371-273-099
	UM-215-1020FBC	90	5371-273-079
Input Clutch/ ER Brake	UM-50-2030FBC	24	5370-273-042
	UM-50-2030FBC	90	5370-273-041
	UM-100-2030FBC	24	5370-273-154
	UM-100-2030FBC	90	5370-273-155
	UM-180-2030FBC	24	5370-273-052
	UM-180-2030FBC	90	5370-273-051
	UM-210-2030FBC	24	5371-273-018
	UM-210-2030FBC	90	5371-273-017
	UM-215-2030FBC	24	5371-273-100
	UM-215-2030FBC	90	5371-273-101

Accessories

Description	UM Size	Part No.
Conduit Box	UM series All sizes	5370-101-042
Base Mount Kit for 2030 FBC	50/100	5370-101-036
	180	5370-101-037
	210/215	5371-101-039
Motor Mount Kit for 1020 FBC	50/100	5370-101-010
	180	5370-101-012
	210/215	5371-101-012

How to Order

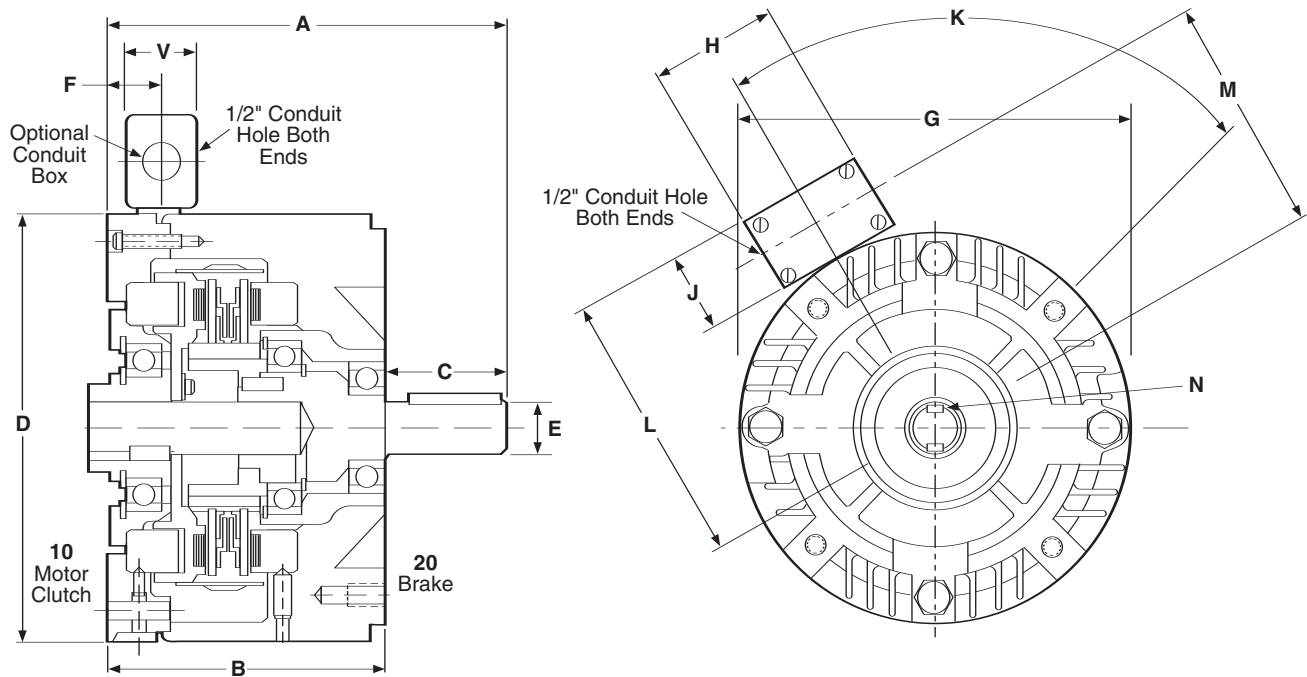
1. Specify model number and voltage or the corresponding part number.
2. Specify conduit box, if desired. See the Controls Section.
3. Specify required control unit. See the Controls Section.

Ordering Example

UM-50-1020FBC, 90V or 5370-273-036; 5370-101-042 conduit box; CBC-300 control.



Tel: (011) 4222-5040 Fax: (011) 4201-2478.
info@tekmatic.com.ar - www.tekmatic.com.ar

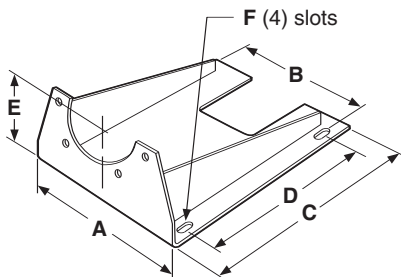


Note: Conduit box is optional and is ordered separately.

All dimensions are nominal, unless otherwise noted.

Size	A	B	C	D	E	F	G	H	J	K	L	M	N (Key)
50	7.281	5.375	1.813	6.750	.625	.938	6.688	3.250	2.188	75°	5.531	4.438	3/16 x 3/16 x 1-1/4
100	7.281	5.375	1.813	6.750	.625	.938	6.688	3.250	2.188	75°	5.531	4.438	3/16 x 3/16 x 1-1/4
180	7.359	5.375	1.891	6.750	.875	.938	6.688	3.250	2.188	75°	5.531	4.438	3/16 x 3/16 x 1-1/4
210	9.688	7.031	2.500	9.250	1.125	.625	9.688	3.250	2.188	70°	6.869	5.766	1/4 x 1/4 x 2
215	10.568	7.44	3.125	9.25	1.375	1.2	9.688	3.250	2.188	70°	6.869	5.766	5/16 x 5/16 x 2

Motor Mount (M)

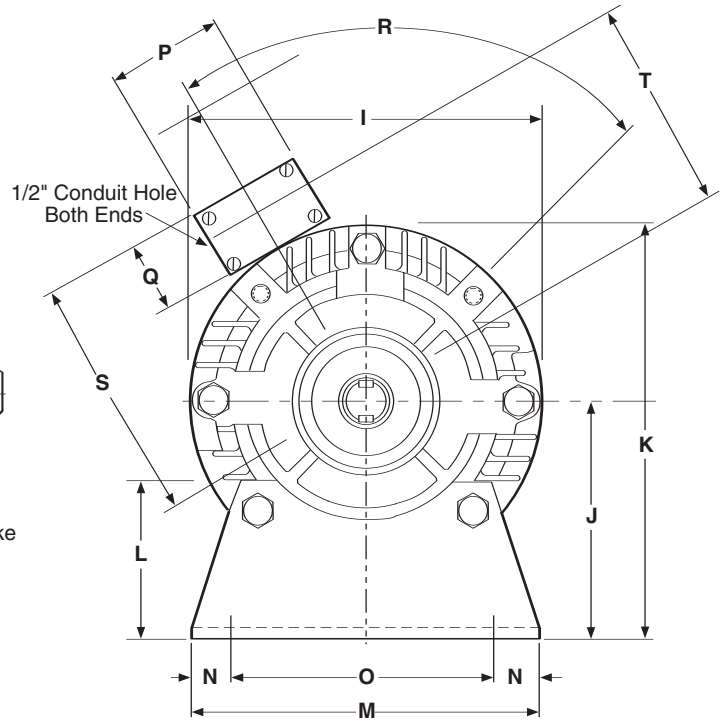
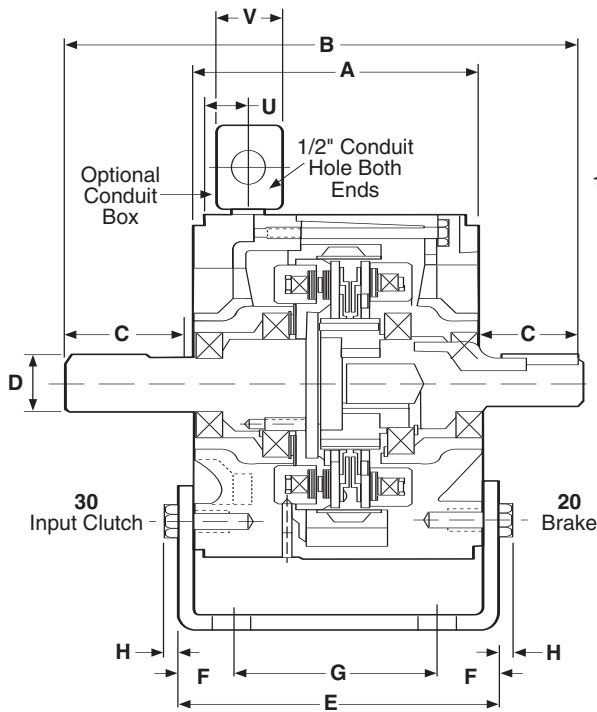


For use with 1020, 1040, 20, 20 FBB and 1020 FBC Combinations.

Size	A	B	C	D	E	F	Part No.
50/100	9.25	8.25	11.00	8.000	3.50	.797 x .406	5370-101-010
180	9.25	8.25	11.00	8.000	4.50	.797 x .406	5370-101-012
210/215	11.50	10.50	12.00	9.000	5.25	.750 x .406	5371-101-012

UM-2030 FBC Input Clutch/Electrically Released Brake

UM-2030 FBC-Input Clutch/Electrically Released Brake – Base Mounted



Note: Mounting base and conduit box are optional and are ordered separately.

All dimensions are nominal, unless otherwise noted.

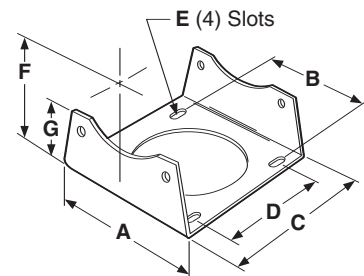
Size	A	B	C Min.	D	E	F	G	H	I	J	K
50	6.250	10.047	1.813	.625	6.219	1.109	4.000	.344	6.688	3.500	6.844
180	6.250	10.188	1.891	.875	6.219	1.109	4.000	.344	6.688	4.500	7.844
210	8.516	13.766	2.500	1.125	8.938	1.469	6.000	.438	9.688	5.250	9.906

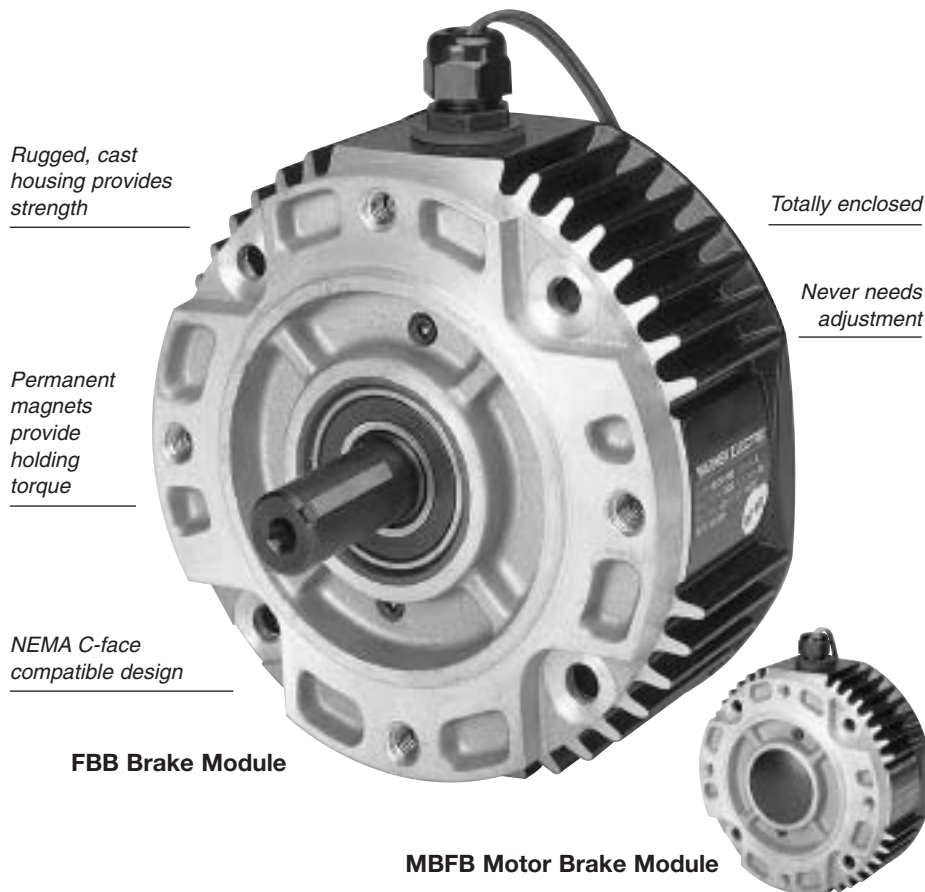
Size	L	M	N	O	P	Q	R	S	T	U	V
50	2.000	6.000	.500	5.000	3.250	2.188	75°	5.531	4.438	1.125	2.203
180	3.000	6.625	.813	5.000	3.250	2.188	75°	5.531	4.438	1.125	2.203
210	3.375	9.000	.625	7.750	3.250	2.188	70°	6.859	5.766	1.625	2.203

Base (B)

For use with 2030 FBC units.

Size	A	B	C	D	E	F	G	Part No.
50/100	6.000	5.000	6.219	4.000	.750 X .406	3.500	2.000	5370-101-036
180	6.625	5.000	6.219	4.000	.750 X .406	4.500	3.000	5370-101-037
210	9.000	7.750	8.938	6.000	.750 X .531	5.250	3.375	5371-101-019





Available in Two Design Styles

EUM-FBB Brake Module

Use for brake alone applications. Mounts between a motor and gear box or reducer. Available in four sizes.

EUM-MBFB Motor Brake Module

Mounts to a double shafted C-face motor. Available in five sizes.

Warner Electric offers the convenience of pre-assembly in UniModule electrically released brake packages. Assembly, alignment, and preburnishing have been done at the factory. Bolt it on, wire it up, and your electrically released brake is ready to go. (Control and conduit box optional)

Care must be exercised to assure proper sizing and selection of electrically released brakes. Motor brakes are used for dynamic stopping and holding of loads when power is removed from the motor. Typical applications include conveyors, process equipment, and lifting devices.

Warner Electric brakes are designed for NEMA C-face motors which match the motor frame size and shaft diameter to the brake. To select a brake, determine the motor frame size and pick an MBFB for double shafted motors or an FBB for mounting between a motor and a gear reducer. Select the torque required for the

application. Higher torque brakes stop loads faster. Lower torque models provide softer stopping to prevent boxes on conveyors from tipping or skidding.

They are sized to provide nominal stopping of a motor in the event of power loss. If your application requires true "Fail safe" braking, the brake must be sized to meet or exceed peak motor torque and placed as close to the load shaft as possible. Peak motor torque can be determined by the formula:

$$\text{Peak Torque} = \frac{(\text{HP} \times 5250)}{\text{Motor Speed}}$$

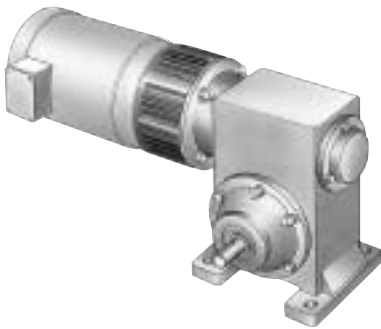
EUM-FBB, EUM-MBFB Selection

Warner Electric Electrically Released Enclosed UniModules are available in two styles. The EUM-FBB Brake Module is used in brake only applications and mounts between a C-face motor and a gear box or reducer. The EUM-MBFB Motor Brake Module mounts to the back of a double shafted motor.

Note: Care must be exercised when selecting a brake to ensure it is sized properly for your application.

1. Select Configuration

a. FBB for NEMA C-face Mounting Between a Motor and Reducer



Verify that the brake will be cycled frequently.

Determine the NEMA C-face frame size of your motor and/or reducer, and choose the corresponding size Enclosed UniModule from the Frame Size Selection chart.

Size EUM-100 modules utilize a 5/8" diameter shaft to fit 56C/48Y motor frames with components of EUM-180 units for higher torque and heat dissipation capacity than the EUM-50.

EUM-FBB Frame Size Selection

NEMA Frame Size	EUM Size
56C/48Y	EUM-50* EUM-100**
182C/143TC 184C/145TC	EUM-180
213C/182TC 215C/184TC	EUM-210
213TC/215TC	EUM-215

*For 56C/48Y C-frame motors 3/4 HP and smaller, the EUM-100 size may be used where extended life is desirable.

**The EUM-100 size is recommended for motors 1 HP and larger.

b. MBFB for NEMA C-face Mounting on the Back of a Double Shafted Motor

Verify that the brake will be cycled frequently.

Determine the NEMA C-face frame size of your motor and/or reducer, and choose the corresponding size Enclosed UniModule MBFB from the Frame Size Selection chart, and verify that the motor shaft diameter and mounting bolt circle are the same for the brake and the motor.

Size EUM-100 modules utilize a 5/8" diameter shaft to fit 56C/48Y motor frames with components of EUM-180 units for higher torque and heat dissipation capacity than the EUM-50.

EUM-MBFB Frame Size Selection

NEMA Frame Size	EUM Brake Size	Bolt Hole Mounting Circle	Motor Shaft Dia.
56C/48Y	EUM-50* EUM-100**	5.875	0.625
182C/143TC 184C/145TC	EUM-180	5.875	0.875
213C/182TC 215C/184TC	EUM-210-7/8 EUM-210	7.25 7.25	0.875 1.125

*For 56C/48Y C-frame motors 3/4 HP and smaller, the EUM-100 size may be used where extended life is desirable.

**The EUM-100 size is recommended for motors 1 HP and larger.

2. Determine Technical Requirements

Technical considerations for sizing and selection are torque and heat dissipation. Each merits careful consideration, especially heat dissipation as over time, use in excessive temperature environments will have an adverse effect on bearing life and coil wire insulation integrity.

Compare the calculated torque requirement with the average dynamic torque ratings. Select a unit with adequate torque. If the unit selected on torque is different than the unit selected based on heat, select the larger size unit.

Horsepower vs. Shaft Speed

HP	SHAFT SPEED AT CLUTCH (IN RPM)																	
	100	200	300	400	500	600	700	800	900	1000	1100	1200	1500	1800	2000	2400	3000	3600
1/4	Blue	Blue	Blue	Blue	Blue	Blue	Blue	Blue	Blue	Blue	Blue	Blue	Blue	Blue	Blue	Blue	Blue	Blue
1/2	Blue	Blue	Blue	Blue	Blue	Blue	Blue	Blue	Blue	Blue	Blue	Blue	Blue	Blue	Blue	Blue	Blue	Blue
3/4	Blue	Blue	Blue	Blue	Blue	Blue	Blue	Blue	Blue	Blue	Blue	Blue	Blue	Blue	Blue	Blue	Blue	Blue
1	Blue	Blue	Blue	Blue	Blue	Blue	Blue	Blue	Blue	Blue	Blue	Blue	Blue	Blue	Blue	Blue	Blue	Blue
1-1/2	Blue	Blue	Blue	Blue	Blue	Blue	Blue	Blue	Blue	Blue	Blue	Blue	Blue	Blue	Blue	Blue	Blue	Blue
2	Blue	Blue	Blue	Blue	Blue	Blue	Blue	Blue	Blue	Blue	Blue	Blue	Blue	Blue	Blue	Blue	Blue	Blue
3	Blue	Blue	Blue	Blue	Blue	Blue	Blue	Blue	Blue	Blue	Blue	Blue	Blue	Blue	Blue	Blue	Blue	Blue
5	Blue	Blue	Blue	Blue	Blue	Blue	Blue	Blue	Blue	Blue	Blue	Blue	Blue	Blue	Blue	Blue	Blue	Blue
7-1/2	Blue	Blue	Blue	Blue	Blue	Blue	Blue	Blue	Blue	Blue	Blue	Blue	Blue	Blue	Blue	Blue	Blue	Blue
10	Blue	Blue	Blue	Blue	Blue	Blue	Blue	Blue	Blue	Blue	Blue	Blue	Blue	Blue	Blue	Blue	Blue	Blue

a. Heat Dissipation Sizing

Friction surfaces slip during the initial period of engagement and, as a result, heat is generated. The clutch/brake selected must have a heat dissipation rating greater than the heat generated by the application. Therefore, in high inertia or high cycle rate applications, it is necessary to check the heat dissipation carefully. Inertia, speed and cycle rate are the required parameters.

Heat dissipation requirement is calculated as follows:

$$E = 1.7 \times WR^2 \times (N/100)^2 \times F$$

where:

$$E = \text{Heat (lb. ft./min.)}$$

WR^2 = Total reflected inertia at the clutch/brake shaft. Include the clutch/brake output inertia. (lb.ft.²)

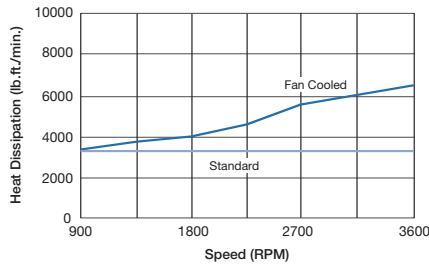
N = Speed in revolutions per minute. (RPM)

F = Cycle rate in cycles per minute (CPM)

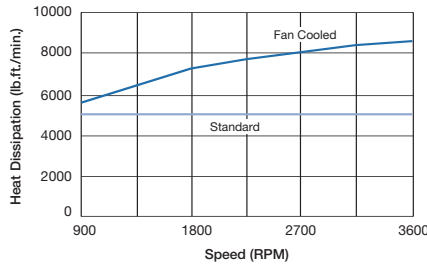
Compare the calculated heat generated in the application to the unit ratings using the heat dissipation curves. Select the appropriate unit that has adequate heat dissipation ability.

Heat Dissipation Curves

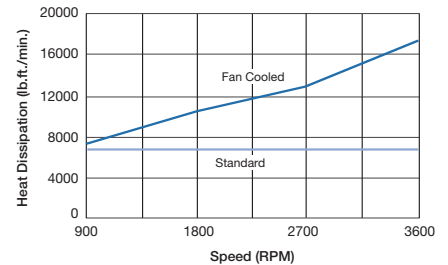
EUM 50



EUM 100/180



EUM 210/215 (fan not available for 215)



b. Torque Sizing

For most applications, the correct size clutch/brake can be selected from the Horsepower vs. Shaft Speed chart. Determine the motor horsepower and the RPM at the clutch/brake. The correct size unit is shown at the intersection of horsepower and shaft speed.

If the static torque requirements are known, refer to the technical ratings chart to select a unit.

For some applications, the torque requirement is determined by the time allowed to accelerate and decelerate the load. (This time is generally specified in milliseconds.) For these applications, it is necessary to determine the torque requirement based on load inertia and the time allowed for engagement.

The torque requirements are calculated as follows:

$$T = (WR^2 \times N) / (308 \times t)$$

where:

T = Average Dynamic Torque (lb. ft.)

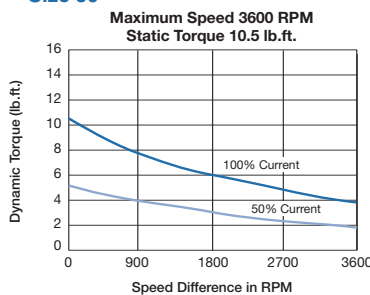
WR^2 = Total reflected inertia at the clutch/brake shaft. Include the clutch/brake output inertia. (lb. ft.²)

N = Speed in revolutions per minute. (RPM)

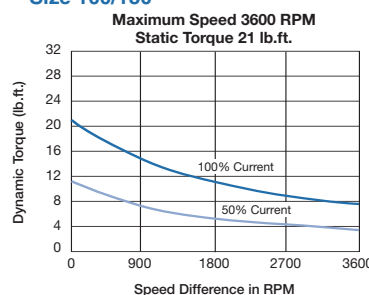
t = Time allowed for the engagement (sec)

C-face Electrically Released Brakes Dynamic Torque Curves

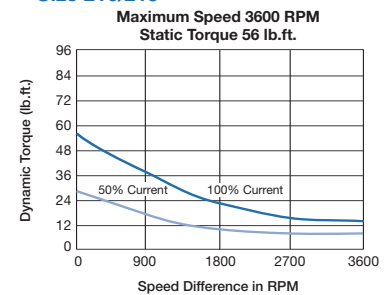
Size 50



Size 100/180



Size 210/215



Tel: (011) 4222-5040 Fax: (011) 4201-2478.
info@tekmatic.com.ar - www.tekmatic.com.ar

Preassembled, Totally Enclosed, Electrically Released Brake Units

Specifications

Size	Voltage DC	Static Torque (lb.ft.)	Max. Speed (RPM)	Total Weight (lbs.)	Armature (lb.ft. ²)	Component Inertia –WR ² (lb.ft. ²)				
						FBB		MBFB		NEMA Frame Size
						Hub	Shaft	Hub Spliced	Shaft Input	
50	90	6	3600	8.6	.009	.001	.0005	.001	.0003	56C/48Y
100	90	12	3600	10.5	.023	.002	.002	.002	.002	56C/48Y
180	90	12	3600	10.5	.023	.002	.002	.002	.002	182C/143TC 184C/145TC
210	90	32	3600	27	.081	.016	.016	.016	.007	213C/182TC 215C/184TC

3. Select Options

Warner Electric Enclosed UniModules can be fitted with several accessories to extend their capacity and ease of mounting.

4. Select Control

All electrically released modules require a control with a potentiometer that will vary brake channel output. For FBB and MBFB brake modules, the CBC-160, CBC-200, CBC-300, or CBC-500/550 is recommended. The FBC units require either a CBC-300 or a CBC 500/550 control.

Selection Procedure

Note: Care must be exercised when selecting the proper brake size for your application.

The selection charts list NEMA motor frame sizes, motor shaft diameters, and the matching FBB or MBFB brakes.

To select a brake:

1. Determine the motor NEMA C-face frame size.
2. Select brake configuration
 - a. FBB to mount between a NEMA C-face motor and a gear reducer.
 - b. MBFB to mount on double shafted NEMA C-face motors.
3. Select the brake model from the charts by the torque required – higher torque for faster stopping, lower torque for longer, “soft” stopping.

Note: Size 100 brakes are typically used on motors with a rating of 1 HP or greater.

4. **Important:** Verify that the motor shaft diameter and mounting bolt circle dimensions are the same for the brake selected and the motor.

Control Selection

An optional conduit box enclosure is available. All electrically released units require a control with a potentiometer to vary brake channel output. For FBB and MBFB brake modules, control models CBC-160, CBC-200, CBC-300, or CBC-500/550 are recommended. (See Controls Section.)

Frame Size

EUM Size	NEMA Frame Size	Bolt Hole Mounting Circle	FBB Motor to Reducer Shaft Dia.	MBFB Motor Brake Shaft Dia.
EUM-50	56C	5 7/8	5/8	5/8
EUM-100	56C	5 7/8	5/8	5/8
EUM-180	143TC 145TC	5 7/8	7/8	7/8
EUM-210-7/8	213TC 215TC	7 1/4	N/A	7/8
EUM-210	182TC 184TC	7 1/4	1 1/8	1 1/8
EUM-215	213TC 215TC	7 1/4	1 3/8	N/A

How to Order

1. Specify model number and voltage or the corresponding part number.
2. Specify conduit box, if desired. See the Controls Section.
3. Specify required control unit. See the Controls Section.

Ordering Example

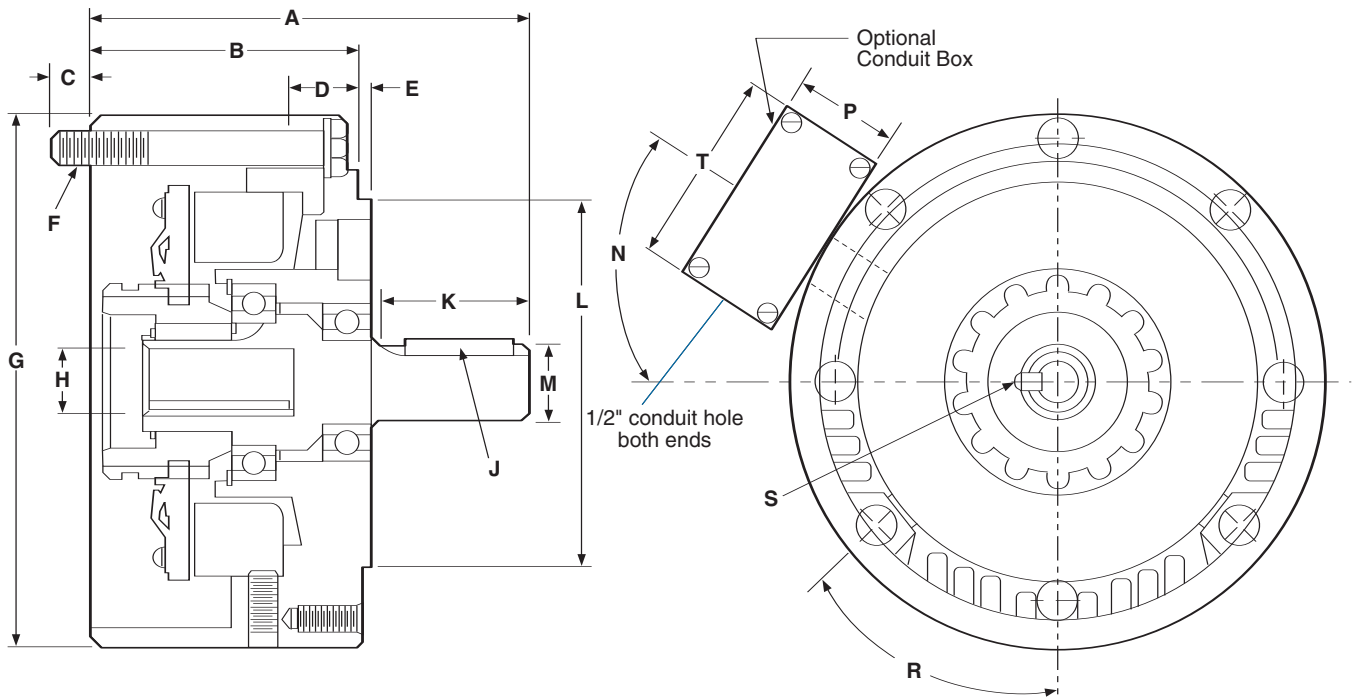
EUM-50-20FBB-6, 90V or 5370-169-983; 5370-101-042 conduit box; CBC-160-2 control.

EUM Description	EUM Model No.	Static Torque (lb.ft.)	Part No.	
FBB Brake Module (90VDC)	EUM-50-20FBB-6	6	5370-169-983	
	EUM-50-20FBB-10	10.5	5370-169-986	
	EUM-100-20FBB-12	12	5370-169-989	
	EUM-100-20FBB-21	21	5370-169-992	
	EUM-180-20FBB-12	12	5370-169-995	
	EUM-180-20FBB-21	21	5370-169-998	
	EUM-210-20FBB-32	32	5371-169-078	
	EUM-210-20FBB-56	56	5371-169-082	
	EUM-215-20FBB-32	32	5371-169-086	
	EUM-215-20FBB-56	56	5371-169-090	
	MBFB Motor Brake Module (90VDC)	EUM-50-20MBFB-6	6	5370-169-965
		EUM-50-20MBFB-10	10.5	5370-169-968
		EUM-100-20MBFB-12	12	5370-169-971
		EUM-100-20MBFB-21	21	5370-169-974
		EUM-180-20MBFB-12	12	5370-169-977
		EUM-180-20MBFB-21	21	5370-169-980
EUM-210-7/8-20MBFB-32		32	5371-169-064	
EUM-210-7/8-20MBFB-56		56	5371-169-068	
EUM-210-20MBFB-32		32	5371-169-056	
EUM-210-20MBFB-56		56	5371-169-060	

Accessories

Description	FBB Size	Part No.
Conduit Box	FBB series All sizes	5370-101-042
Motor Mount Kit for 20 FBB	50/100/180 210/215	5370-101-012 5371-101-012

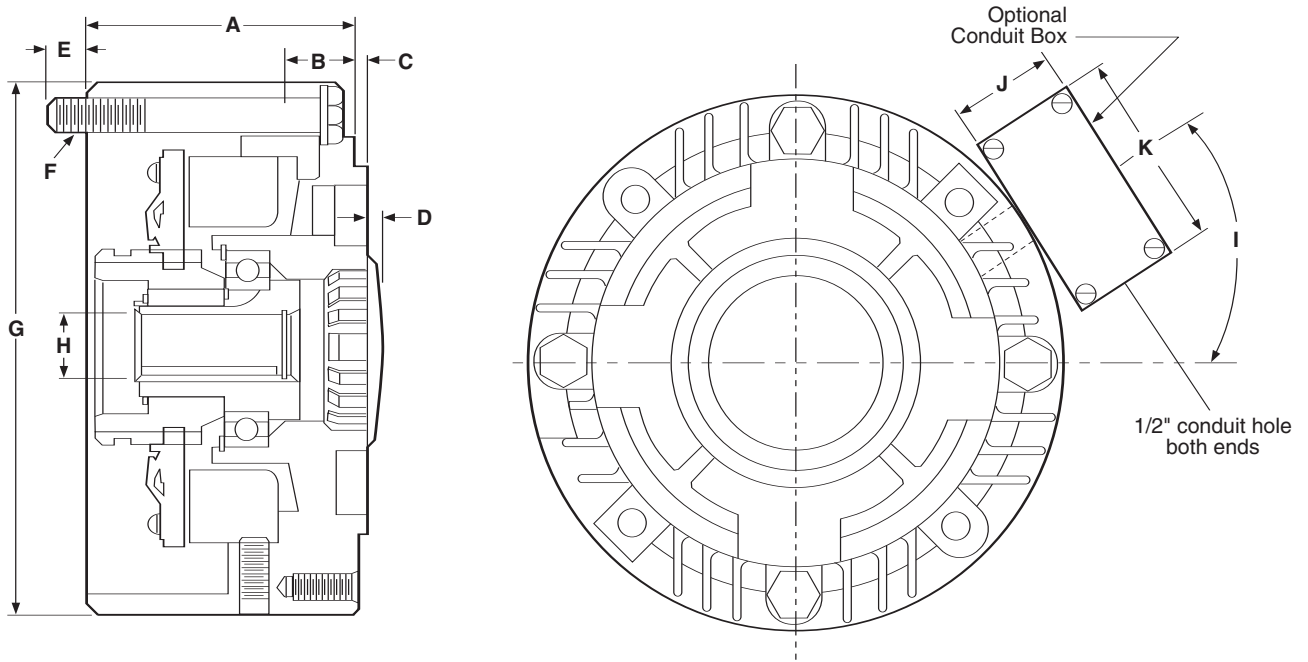
EUM-FBB Brake Module



All dimensions are nominal, unless otherwise noted.

Size	A Max.	B	C Max.	D	E Max.	F	G Dia.	H Dia.
50	5.188	3.125	.500	1.000	.156	3/8-16 UNC-2A (4) Equally Spaced on 5.875 Dia.	6.688	.625
100	5.266	3.125	.500	1.000	.156	3/8-16 UNC-2A (4) Equally Spaced on 5.875 Dia.	6.688	.625
180	5.266	3.125	.500	1.000	.156	3/8-16 UNC-2A (4) Equally Spaced on 5.875 Dia.	6.688	.875
210	7.578	4.609	.594	1.500	.313	1/2-13 UNC-2A (4) Equally Spaced on 7.250 Dia.	9.344	1.125
215	7.578	4.609	.594	1.500	.313	1/2-13 UNC-2A (4) Equally Spaced on 7.250 Dia.	9.344	1.375

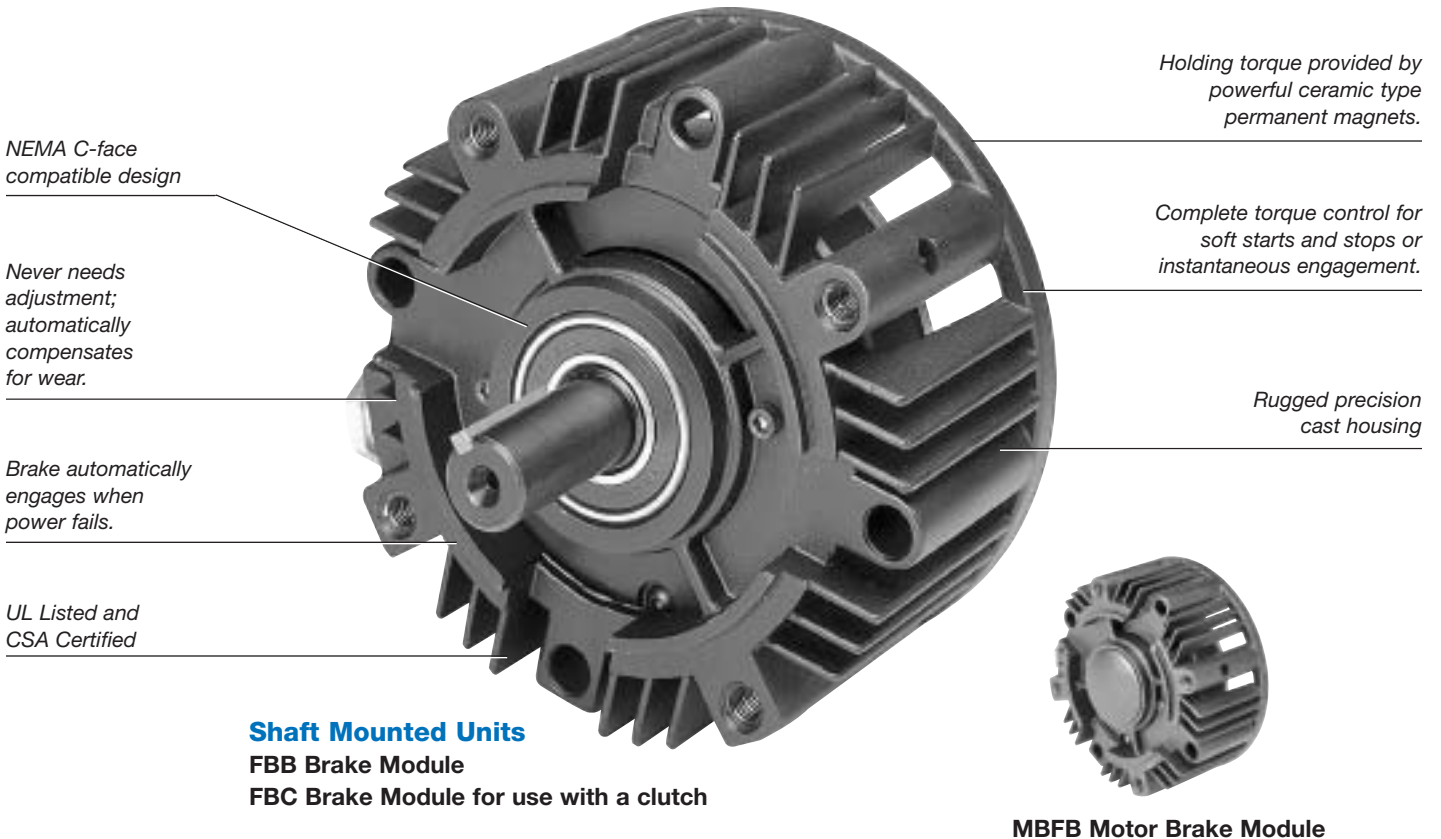
Size	J Key	K Min.	L Pilot Dia.	M Dia.	N	P	R	S Integral Key	T
50	3/16 x 3/16 x 1-1/4	1.813	4.500	.625	30°	2.188	45°	3/16 x 3/16	3.125
100	3/16 x 3/16 x 1-1/4	1.891	4.500	.625	30°	2.188	45°	3/16 x 3/16	3.125
180	3/16 x 3/16 x 1-1/4	1.891	4.500	.875	30°	2.188	45°	3/16 x 3/16	3.125
210	1/4 x 1/4 x 2	2.500	8.500	1.125	25°	2.188	45°	1/4 x 1/4	3.125
215	5/16 x 5/16 x 2	2.500	8.500	1.375	25°	2.188	45°	5/16 x 5/16	3.125



All dimensions are nominal, unless otherwise noted.

Size	A	B	C Max.	D	E Max.	F	G Dia.	Dia.	H Max. Length	Integral Key	I	J	K
50	3.125	1.000	.156	.219	.300	3/8-16 UNC-2A	6.688	.625	2.094	3/16 x 3/16	30°	2.188	3.125
100	3.125	1.000	.156	.219	.300	3/8-16 UNC-2A	6.688	.625	2.094	3/16 x 3/16	30°	2.188	3.125
180	3.125	1.000	.156	.219	.500	3/8-16 UNC-2A	6.688	.875	2.063	3/16 x 3/16	30°	2.188	3.125
210-7/8"	4.609	1.500	.313	.250	.594	1/2-13 UNC-2A	9.344	.875	2.766	3/16 x 3/16	30°	2.188	3.125
210	4.609	1.500	.313	.250	.594	1/2-13 UNC-2A	9.344	1.125	2.766	1/4 x 1/4	30°	2.188	3.125

Electro Module, Electrically Released Brakes and Clutch/Brake Units for Dynamic Stopping and Cycling Applications



Warner Electric's unique design employs powerful permanent magnets for maximum torque when power is removed from the brake coil. A small amount of electrical power applied to the brake coil nullifies the permanent magnets' force and the brake releases. No springs to limit cycle rates. Never nay adjustment. No lubrication. These brakes are recommended for dynamic cycling operations only.

Available in Three Design Styles

EM-FBB Brake Module

Use for brake alone applications. Mounts between a C-face motor and a gear box or reducer. Available in five sizes.

EM-MBFB Motor Brake Module

Mounts to the back of a double shafted motor. Available in four sizes.

EM-FBC Brake Module for use with a Clutch

Combine with a motor or input clutch for clutch/brake applications. Three sizes are available.

Specifications

Size	Voltage DC	Static Torque (lb.ft.)		Max. Speed (RPM)	Total Weight (lbs.)	Component Inertia -WR ² (lb.ft. ²)			NEMA Frame Size	
		Brake	Clutch			Armature		Hub		Shaft
EM-50	24 90	10.5	16	3600	8.6	FBB/MBFB .0071	FBC .014	.003	.001	56C/48Y
EM-100	90	21	—	3600	10.5	.018	—	.004	.002	56C/48Y
EM-180	24 90	21	30	3600	10.5	.018	.036	.004	.002	182C/143TC 184C/145TC
EM-210	24 90	56	95	3600	27	.081	.162	.027	.017	213C/182TC 215C/184TC



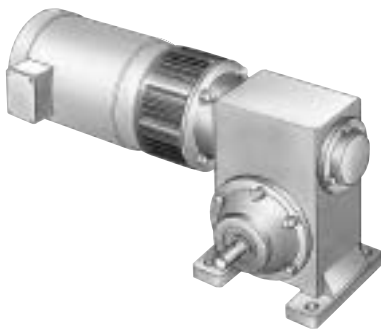
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Warner Electric Electrically Released Electro Modules are available in three styles. The EM-FBB Brake Module is used in brake only applications and mounts between a C-face motor and a gear box or reducer. The EM-MBFB Motor Brake Module mounts to the back of a double shafted motor. The EM-FBC Brake Module is combined with a motor clutch (EM-10) or an input clutch (EM-30) for clutch/electrically released brake applications.

Note: Care must be exercised when selecting a brake to ensure it is sized properly for your application.

1. Select Configuration

a. For FBB and MBFB Modules NEMA C-face Mounting



Verify that the brake will be cycled frequently.

Determine the NEMA C-face frame size of your motor and/or reducer, and choose the corresponding size Electro Module from the Frame Size Selection chart.

Size EM-100 modules utilize a 5/8" diameter shaft to fit 56C/48Y motor frames with components of EM-180 units for higher torque and heat dissipation capacity than the EM-50

Select Brake Configuration: use an EM-FBB for mounting between a motor and a reducer; or an EM-MBFB for mounting on the rear of a double shafted motor. NOTE: When selecting an MBFB, ensure the shaft dimensions on the rear of the motor are compatible with the EM-MBFB unit selected.

b. For FBC Modular Units, NEMA C-face Mounting

Verify that brake will be cycled frequently, and will be used with a motor mounted clutch (EM-10) for C-face mounting.

Determine the NEMA C-face frame size of your motor and/or reducer, and choose the corresponding size Electro Module from the Frame Size Selection chart.

FBC Frame Size Selection

NEMA Frame Size	EM Size
56C/48Y	EM-50* EM-100**
182C/143TC 184C/145TC	EM-180
213C/182TC 215C/184TC	EM-210

For torque ratings, refer to the "Specifications" chart. Note that separate torque ratings are listed for the clutch and brake segments of the module.

* For 56C/48Y C-frame motors 3/4 HP and smaller, the EM-100 size may be used where extended life is desirable.

** The EM-100 size is recommended for motors 1 HP and larger.

c. For FBC Modular Units, Base Mounting



Verify that brake will be cycled frequently, and will be used with an input clutch (EM-30) for base mounting.

Select the correct size module from the Horsepower vs. Shaft Speed chart (at the bottom of this page) by determining the motor horsepower and RPM at the module location. The correct size EM is shown at the intersection of the HP and operating speed. For additional sizing information, refer to the technical sizing procedure (step 2).

FBB AND MBFB Frame Size Selection

NEMA Frame Size	EM Size
56C/48Y	EM-50* EM-100**
182C/143TC 184C/145TC	EM-180
213C/182TC 215C/184TC	EM-210
213TC/215TC	EM-215

*For 56C/48Y C-frame motors 3/4 HP and smaller, the EM-100 size may be used where extended life is desirable.

**The EM-100 size is recommended for motors 1 HP and larger.

Horsepower vs. Shaft Speed

HP	SHAFT SPEED AT CLUTCH (IN RPM)																		
	100	200	300	400	500	600	700	800	900	1000	1100	1200	1500	1800	2000	2400	3000	3600	
1/4																			
1/2														EM-50					
3/4																			
1																			
1-1/2																			
2																			
3																			
5																			
7-1/2																			



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2. Determine Technical Requirements

Technical considerations for sizing and selection are torque and heat dissipation. Each merits careful consideration, especially heat dissipation as over time, use in excessive temperature environments will have an adverse effect on bearing life and coil wire insulation integrity.

Compare the calculated torque requirement with the average dynamic torque ratings. Select a unit with adequate torque. If the unit selected on torque is different than the unit selected based on heat, select the larger size unit.

a. Heat Dissipation Sizing

Friction surfaces slip during the initial period of engagement and, as a result, heat is generated. The clutch/brake selected must have a heat dissipation rating greater than the heat generated by the application. Therefore, in high inertia or high cycle rate applications, it is necessary to check the heat dissipation carefully. Inertia, speed and cycle rate are the required parameters.

Heat dissipation requirement is calculated as follows:

$$E = 1.7 \times WR^2 \times (N/100)^2 \times F$$

where:

$$E = \text{Heat (lb. ft./min.)}$$

WR^2 = Total reflected inertia at the clutch/brake shaft. Include the clutch/brake output inertia. (lb.ft.²)

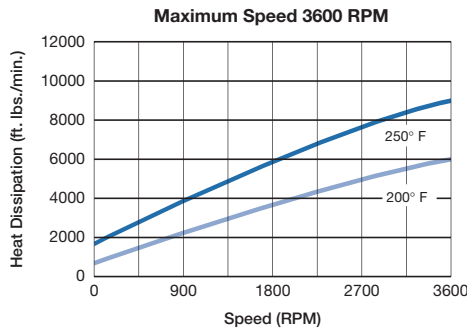
N = Speed in revolutions per minute. (RPM)

F = Cycle rate in cycles per minute (CPM)

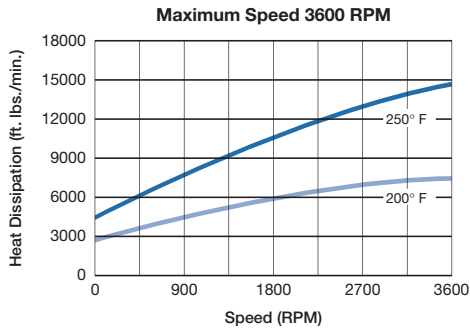
Compare the calculated heat generated in the application to the unit ratings using the heat dissipation curves. Select the appropriate unit that has adequate heat dissipation ability.

Heat Dissipation Curves

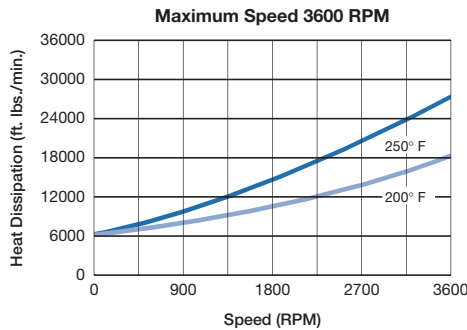
Size 50



Size 100/180



Size 210/215



b. Torque Sizing

For most applications, the correct size clutch/brake can be selected from the Horsepower vs. Shaft Speed chart on page 131. Determine the motor horsepower and the RPM at the clutch/brake. The correct size unit is shown at the intersection of horsepower and shaft speed.

If the static torque requirements are known, refer to the technical ratings chart to select a unit.

For some applications, the torque requirement is determined by the time allowed to accelerate and decelerate the load. (This time is generally specified in milliseconds.) For these applications, it is necessary to determine the torque requirement based on load inertia and the time allowed for engagement.

The torque requirements are calculated as follows:

$$T = (WR^2 \times N) / (308 \times t)$$

where:

T = Average Dynamic Torque (lb. ft.)

WR^2 = Total reflected inertia at the clutch/brake shaft. Include the clutch/brake output inertia. (lb. ft.²)

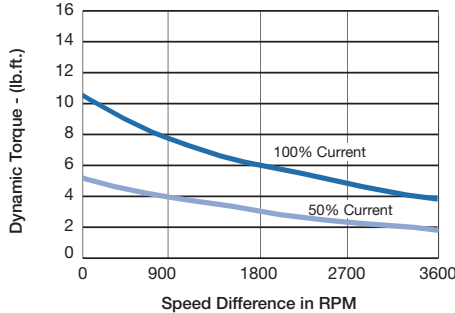
N = Speed in revolutions per minute. (RPM)

t = Time allowed for the engagement (sec)

C-face Electrically Released Brakes Dynamic Torque Curves

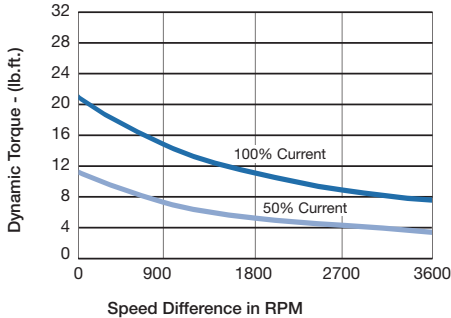
Size 50

Maximum Speed
3600 RPM Static Torque 10.5 lb.ft.



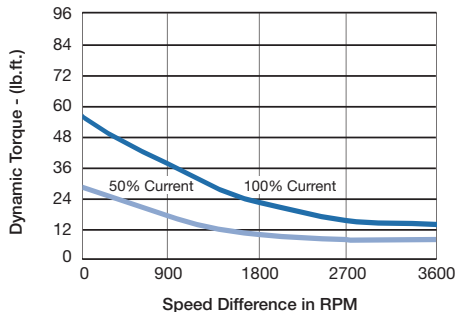
Size 100/180

Maximum Speed
3600 RPM Static Torque 21 lb.ft.



Size 210/215

Maximum Speed
3600 RPM Static Torque 56 lb.ft.



3. Select Accessories

Warner Electric Electro Modules can be fitted with several accessories to extend their capacity and ease of mounting.

4. Select Control

All electrically released modules require a control with a potentiometer that will vary brake channel output. For FBB and MBFB brake modules, the CBC-160, CBC-200, CBC-300, or CBC-500/550 is recommended. The FBC units require either a CBC-300 or a CBC 500/550 control.

How to Order

1. Specify model number and voltage or the corresponding part number.
2. Specify conduit box, if desired. See the Controls Section.
3. Specify required control. See the Controls Section.

Ordering Example

EM-50-20FBB, 90V or 5370-169-058;
5370-101-042 conduit box; CBC-160-2 control.

EM Description	EM Model No.	Voltage DC	Part No.
FBB Brake Module for use as brake only	EM-50-20FBB	24	5370-169-066
	EM-50-20FBB	90	5370-169-058
	EM-100-20FBB	24	5370-169-020
	EM-100-20FBB	90	5370-169-084
	EM-180-20FBB	24	5370-169-068
	EM-180-20FBB	90	5370-169-059
	EM-210-20FBB	24	5371-169-032
	EM-210-20FBB	90	5371-169-029
	EM-215-20FBB	24	5371-169-100
	EM-215-20FBB	90	5371-169-054
FBC Brake Module for use with EM clutch	EM-50-20FBC	24	5370-169-065
	EM-50-20FBC	90	5370-169-056
	EM-100-20FBC	24	5370-169-109
	EM-100-20FBC	90	5370-169-108
	EM-180-20FBC	24	5370-169-067
	EM-180-20FBC	90	5370-169-057
	EM-210-20FBC	24	5371-169-031
	EM-210-20FBC	90	5371-169-028
MBFB Motor Brake Module	EM-50-20MBFB	24	5370-169-063
	EM-50-20MBFB	90	5370-169-060
	EM-100-20MBFB	24	5370-169-007
	EM-100-20MBFB	90	5370-169-085
	EM-180-20MBFB	24	5370-169-069
	EM-180-20MBFB	90	5370-169-061
	EM-210-7/8-20MBFB	24	5371-169-101
	EM-210-7/8-20MBFB	90	5371-169-072
	EM-210-20MBFB	24	5371-169-033
	EM-210-20MBFB	90	5371-169-030

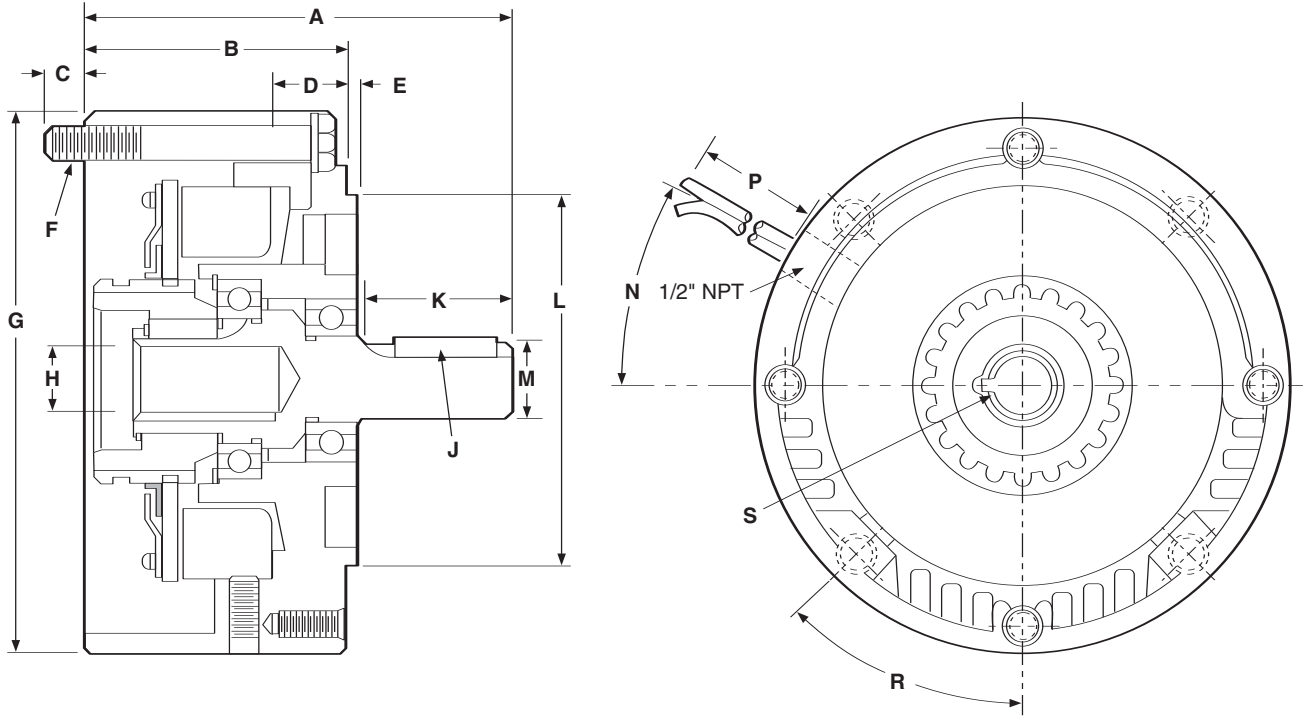
Accessories

Description	EM Size	Part No.
Conduit Box	EM series	5370-101-042
	All sizes	
Base Mount Kit for 2030 FBC	50/100	5370-101-036
	180	5370-101-037
	210/215	5371-101-019
Motor Mount Kit for 20 FBB, 1020 FBC	50/100	5370-101-010
	180	5370-101-012
	210/215	5371-101-012



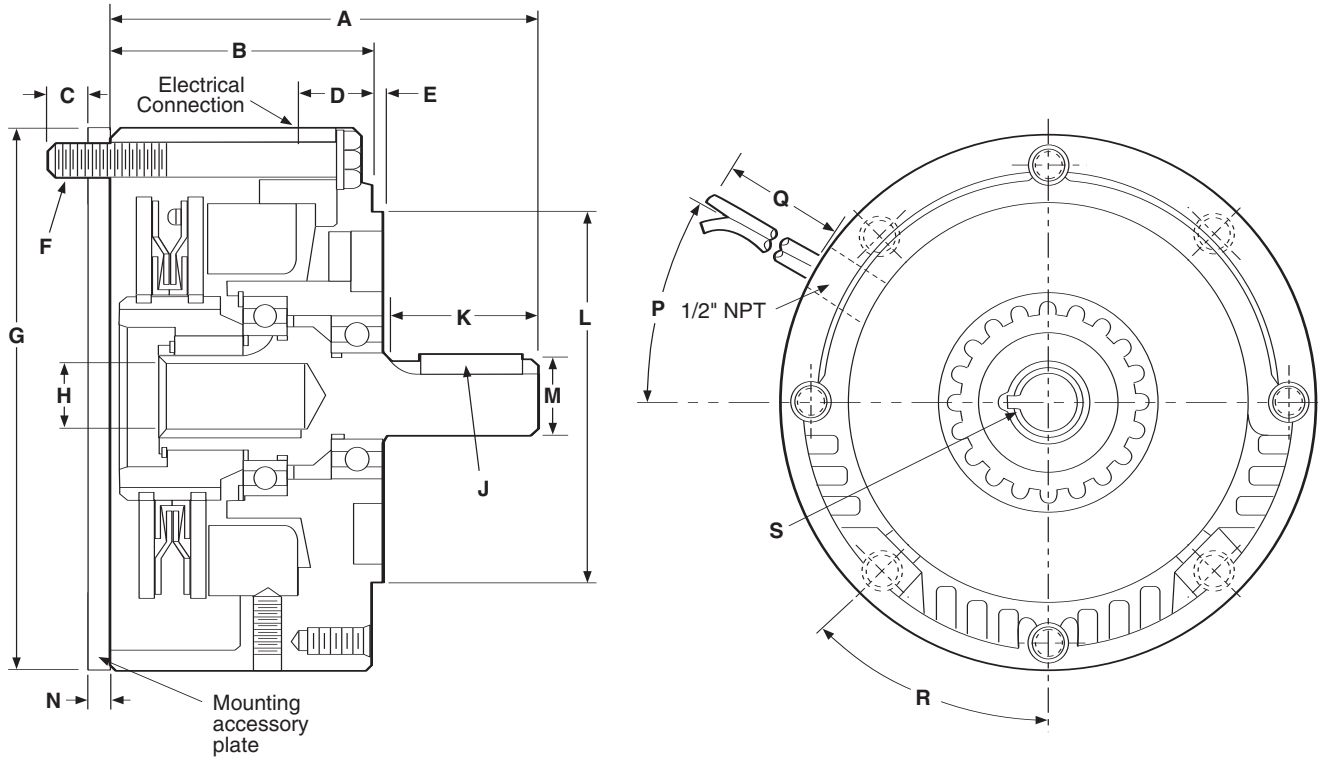
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EM-20 FBB Brake Module



All dimensions are nominal, unless otherwise noted.

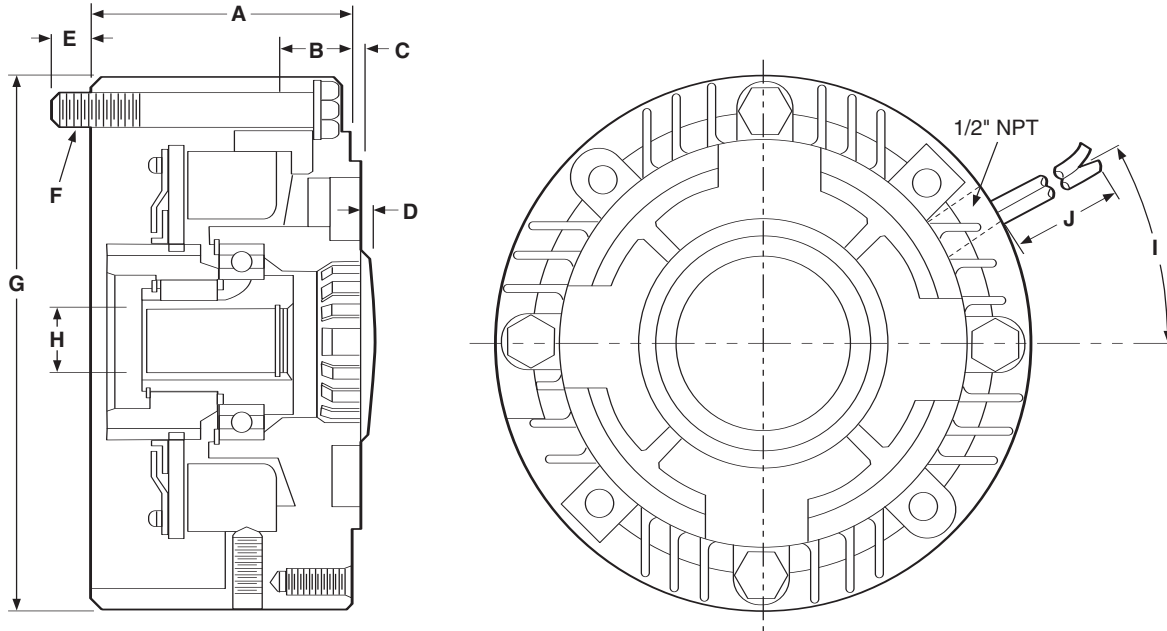
Size	A Max.	B	C Max.	D	E Max.	F	G Dia.	H Dia.	J	K Min.	L Pilot Dia.	M Dia.	N	P Min.	R	S Key
50/100	5.188	3.125	.500	1.000	.156	3/8-16 UNC-2A (4) Equally Spaced on 5.875 Dia.	6.688	.625	3/16 x 3/16 x 1-3/8	1.813	4.500	.625	30°	36	45°	3/16 x 3/16
180	5.266	3.125	.500	1.000	.156	3/8-16 UNC-2A (4) Equally Spaced on 5.875 Dia.	6.688	.875	3/16 x 3/16 x 1-3/8	1.891	4.500	.875	30°	36	45°	3/16 x 3/16
210	7.578	4.609	.594	1.500	.313	1/2-13 UNC-2A (4) Equally Spaced on 7.250 Dia.	9.344	1.125	1/4 x 1/4 x 2	2.500	8.500	1.125	25°	36	45°	1/4 x 1/4
215	7.578	4.609	.594	1.500	.313	1/2-13 UNC-2A (4) Equally Spaced on 7.250 Dia.	9.344	1.375	5/16 x 5/16 x 2	2.500	8.500	1.375	25°	36	45°	5/16 x 5/16



All dimensions are nominal, unless otherwise noted.

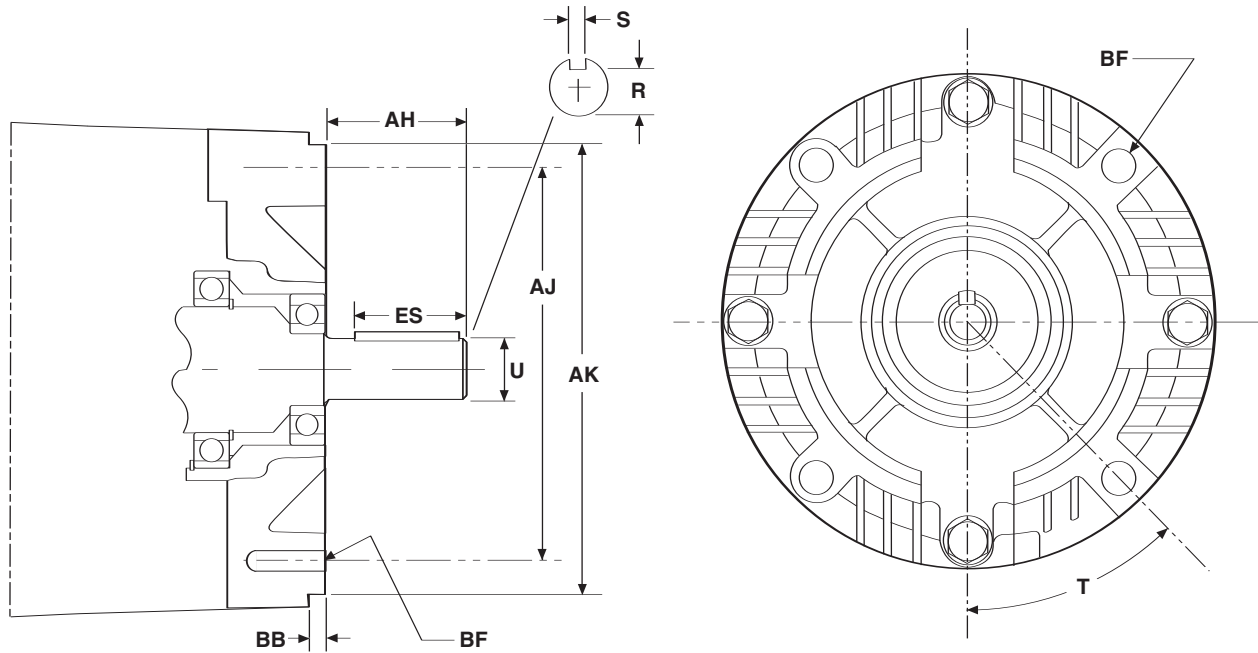
Size	A Max.	B	C Max.	D	E Max.	F	G Dia.	H Dia.	J	K Min.	L Pilot Dia.	M Dia.	N Max.	P	Q Min.	R	S Key
50/100	5.188	3.125	.500	1.000	.156	3/8-16 UNC-2A (4) Equally Spaced on 5.875 Dia.	6.688	.625	3/16 x 3/16 x 1-3/8	1.813	4.500	.625	.531	30°	36	45°	3/16 x 3/16
180	5.266	3.125	.500	1.000	.156	3/8-16 UNC-2A (4) Equally Spaced on 5.875 Dia.	6.688	.875	3/16 x 3/16 x 1-3/8	1.891	4.500	.875	.531	30°	36	45°	3/16 x 3/16
210	7.578	4.609	.594	1.500	.313	1/2-13 UNC-2A (4) Equally Spaced on 7.250 Dia.	9.344	1.125	1/4 x 1/4 x 2	2.500	8.500	1.125	.797	25°	36	45°	1/4 x 1/4

EM-20 MBFB Motor Brake Module



All dimensions are nominal, unless otherwise noted.

Size	A	B	C Max.	D	E Max.	F	G Dia.	H				
								Diameter	Max. Length	Required Key Size	I	J Min.
50/100	3.125	1.000	.156	.219	.300	3/8-16 UNC-2A	6.688	.625	2.094	3/16 x 3/16	30°	36
180	3.125	1.000	.156	.219	.500	3/8-16 UNC-2A	6.688	.875	2.063	3/16 x 3/16	30°	36
210-7/8"	4.609	1.500	.313	.250	.594	1/2-13 UNC-2A	9.344	.875	2.766	3/16 x 3/16	30°	36
210	4.609	1.500	.313	.250	.594	1/2-13 UNC-2A	9.344	1.125	2.766	1/4 x 1/4	30°	36



Specifications

Module Size	AH Shaft Length	AJ Mtg. Bolt Center Dia.	AK Mtg. Flange Pilot Dia.	BB Pilot Depth	BF Mtg. Bolt Size, Qty.	ES Keyway Length	R Depth Over Keyway	S Keyway Width	T Mtg. Bolt Ref.	U Shaft Dia.
50	2.06	5.875	4.500	5/32	3/8-16 UNC 4 @ 90°	1-1/4	.517	3/16	45°	.625
100	2.06	5.875	4.500	5/32	3/8-16 UNC 4 @ 90°	1-1/4	.517	3/16	45°	.625
180	2.04	5.875	4.500	5/32	3/8-16 UNC 4 @ 90°	1-1/4	.771	3/16	45°	.87 ⁵
210	2.56	7.250	8.500	5/16	1/2-13 UNC 4 @ 90°	2	.986	1/4	45°	1.125
215	3.12	7.250	8.500	5/16	1/2-13 UNC 4 @ 90°	2	1.201	5/16	45°	1.375

Note: Warner Electric Modules are designed to comply with the NEMA frame standards for mounting. Reference to each particular frame size is given in the individual selection tables for each type of Warner Electric module.

Electrical Data/Coil Ratings

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



Tel: (011) 4222-5040 Fax: (011) 4201-2478.
 info@tekmatic.com.ar - www.tekmatic.com.ar

UM/EM/UMFB/EMFB		UM/EM		UMFB/EMFB	
		Clutch	Brake	Clutch	Brake
		90	90	24	24
Voltage – DC	EM-50	452	452	31.8	31.8
Resistance	EM-100	392	392	26.7	26.7
(ohms)	EM-180	392	392	26.7	26.7
	EM-210/215	248	248	17.9	17.9
	EM-50	.199	.199	.755	.755
Amperes	EM-100	.230	.230	.896	.896
	EM-180	.230	.230	.896	.896
	EM-210/215	.363	.363	1.34	1.34
	EM-50	18	18	18	18
Watts	EM-100	21	21	21.5	21.5
	EM-180	21	21	21.5	21.5
	EM-210/215	33	33	32	32
	EM-50	52	53	52	53
Build-up	EM-100	72	75	72	75
(millisecond)	EM-180	72	75	72	75
	EM-210/215	120	100	120	100
	EM-50	6.2	5.0	6.2	5.0
Decay	EM-100	12	10	12	10
(millisecond)	EM-180	12	10	12	10
	EM-210/215	20	10	20	10

Mail or FAX to:

Warner Electric

Brake and Clutch Application Engineering
449 Gardner Street, South Beloit, Illinois 61080
Phone number: 800-825-9050 • FAX number: 815-389-2582

Date
Company
Address
City State Zip
Name
Title Phone

Application: [] New [] Existing

Torque required: oz. in. lb. in. lb. ft.
[] Static [] Dynamic

Desired life: Cycles Months Years

Prime mover: Frame size
H.P.

Environmental ambient temp: °F

Speed of: Clutch/Brake
Reducer ratio
Belt/Chain ratio
Linear velocity

Additional comments about application or sketch:

Grid for additional comments

Load inertia to be accelerated and/or decelerated (WR²):
State units

How is clutch/brake to be controlled?
On/off Torque adjust OEX

Switching method?
PLC Relay Sensor

System friction: lb. in. oz. in.

Distant moved per cycle: degrees

Total single cycle time:

Maximum cycle rate:
Per min. Per hour Per day

Warner Electric's electronic controls are designed to provide simple setup and maximum performance when used with electric clutches and brakes. Our controls offer a range of functions from on-off to torque control to over-excitation.

Selection

Many parameters beyond function can impact control selection. Warner Electric produces a variety of control options to suit numerous application requirements. Control selection parameters include:

- Mounting Location – Panel or conduit box mounting
- Switching – Relay switching of A.C. or D.C. lines or solid state switching
- Output Voltage – Controls are available for 6, 24 and 90 VDC clutch/brake coils
- Input Voltage – Controls with input power transformers are available for connection to high voltage mains.

If your application requires something special, please call us. We will be happy to provide solutions.

Clutch and Brake Controls 142

On-Off Controls

CBC-100 144
 CBC-150 144
 CBC-160 145
 CBC-801 146
 CBC-802 147
 CBC-400 148
 CBC-450 149

Adjustable Torque Controls

MCS-103-1 150
 MCS-805-1 151
 MCS-805-2 151
 CBC-200 152
 CBC-300 152
 CBC-500 153
 CBC-550 154
 CBC-1825R 156

Overexcitation Controls

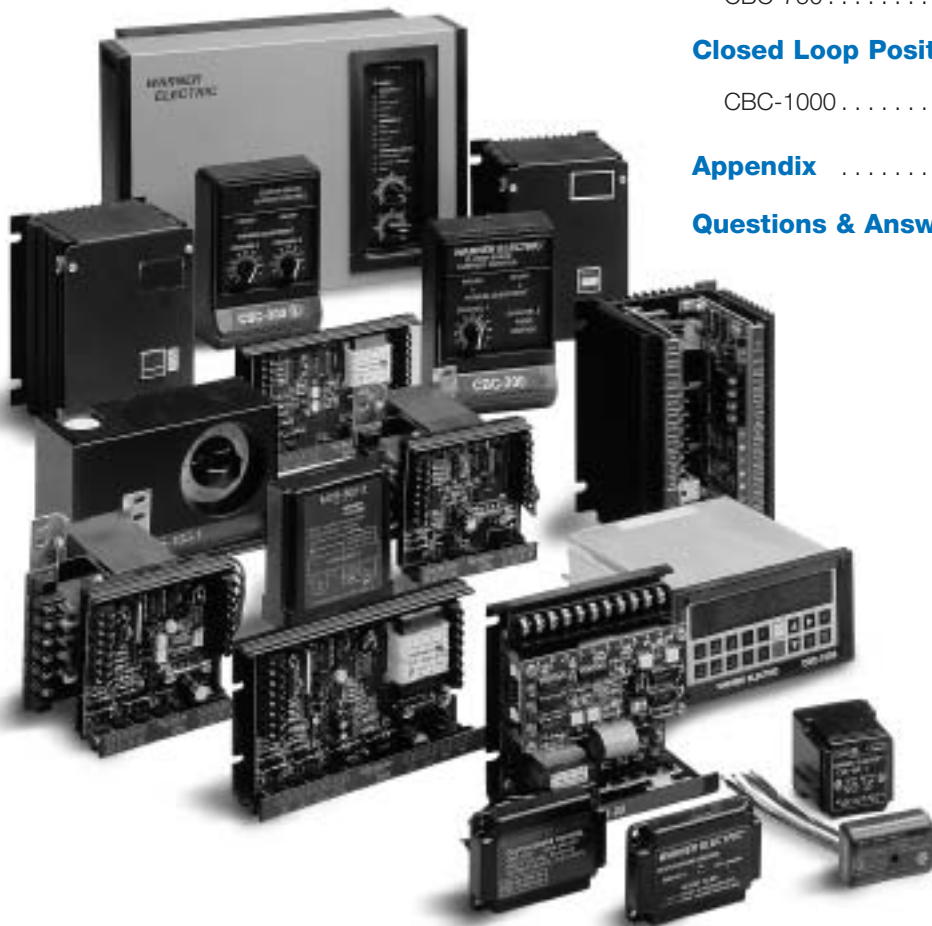
CBC-700 158
 CBC-750 160

Closed Loop Position Control

CBC-1000 162

Appendix 164

Questions & Answers 165



Clutch and Brake Controls

Functions

On-Off (Basic start-stop)

Many applications are controlled by energizing the clutches and brakes with their rated D.C. voltages. Warner Electric controls are available with various mounting, input voltage and switching options.

Adjustable Torque

(Soft start-stop)

The torque transmitted by a clutch or brake is proportional to the coil current. Warner Electric offers several products that provide torque control for smooth and repeatable starts and stops.

Adjustable Accel-Decel

(Soft start-stop with full torque)

Warner Electric offers a control that allows for adjustment of the acceleration and deceleration time ramps to achieve a repeatable soft start or stop while still allowing for full torque.

Overexcitation

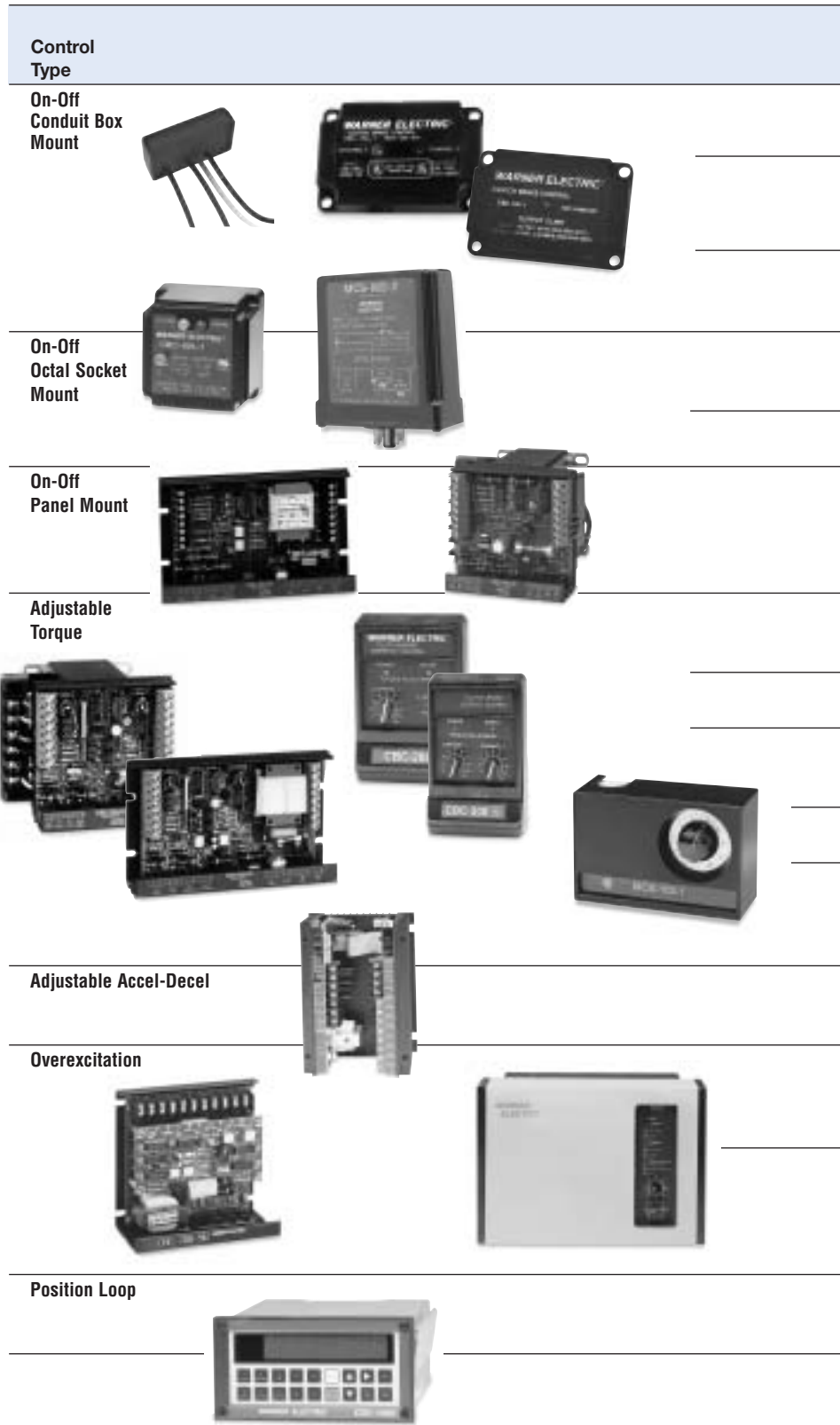
(Rapid cycling)

The clutch/brake speed of response can be increased for improved accuracy and performance through overexcitation, which is the application of a short high voltage pulse to provide nearly instantaneous torque.

Position Loop

(Programmable cycling)

Warner Electric's CBC-1000 position loop control system offers servo system performance with electric clutch/brake economy in high accuracy indexing applications. The unique error correction capability of the CBC-1000 to achieve repeatability and accuracy makes this an ideal control for many applications.



Model Number	No. of Channels	Torque Control Channels	A.C. Input Voltages	D.C. Output Voltages	Over-Excitation	Customer Supplied Switching Options	Description	Page Number
CBC-100-1 CBC-100-2	1 1	No No	120 220/240	90	No	Relay A.C.	Single channel control to mount inside standard conduit box	144
CBC-150-1 CBC-150-2	2 2	No No	120 220/240	90	No	Relay A.C.	Dual channel control for clutch/brake to mount inside module conduit box	144
CBC-160-1 CBC-160-2	1 1	1	120 220/240	90	No	Relay A.C.	Single channel control with torque adjust for module electrically released brakes	145
CBC-801-1 CBC-801-2	2 2	No	120 220/240	90	No	Relay D.C.	Dual channel control for 2 clutches and/or brakes	146
CBC-802	2	No	120	90	No	Transistor or Relay D.C.	Dual channel control with transistor switching	147
CBC-400-90 CBC-400-24 CBC-450-90 CBC-450-24	2 2 2 2	No No No No	120 24-30 120/220/240/380/480 120/220/240/380/480	90 24 90 24	No No No No	Transistor or Relay D.C.	Dual channel control for use with 2 clutches and/or brakes; Emergency stop input and AUX power supply	148- 149
MCS-103-1	2	1	120	90	No	Relay D.C.	Dual channel control with torque adjust for one channel	150
MCS-805-1 MCS-805-2	1	1	120/240	35-75	No	Relay D.C.	Single adjustable channel control for use with ER-1225 brake.	151
CBC-200	2	1	120	90	No	Transistor or Relay D.C.	Dual channel control with one adjustable current and one fixed voltage	152
CBC-300	2	2	120	90	No	Transistor or Relay D.C.	Dual channel adjustable current control	152
CBC-500-90 CBC-500-24 CBC-550-90 CBC-550-24	2 2 2 2	2 2 2 2	120 24-30 120/220/240/380/480 120/220/240/380/480	90 24 90 24	No No No No	Transistor or Relay D.C.	Dual channel control for two clutches and/or brakes with two torque adjust channels; Emergency stop input	153- 155
CBC-1825-R	2	2	120	90	No	Transistor or Relay D.C.	Dual channel adjustable time ramp with short circuit protection	156
CBC-700-90 CBC-700-24	2 2	No	120 24-28	90 24	Yes	Transistor or Relay D.C.	Dual channel compact overexcitation control for 24 or 90 volt clutches and brakes	158
CBC-750-6-24-90	2	2	120/220/240	6,24,90	Yes	Transistor, Relay D.C. or Triac A.C.	Dual channel full function overexcitation control; provides input/output logic, torque adjustable current and remote inputs	160
CBC-1000	2	N.A.	120/230	N.A.	N.A.	N.A.	Error correction control to be used with one of the above	162

CBC-100, CBC-150

Integral/Conduit Box Mounted Controls

The CBC-100 and CBC-150 series are UL listed, conduit box mounted controls for 90 volt clutches and brakes. Models are available for either 120 VAC or 220/240 VAC input.



**CBC-100 series
Single unit capacity**

The CBC-100 mounts inside a standard Warner Electric conduit box and includes rectification and suppression circuits.

- CE
- UL and UL
- SF
- Compact
- Single channel
- Mounts inside conduit box



**CBC-150 series
Dual channel capacity**

The CBC-150 replaces the cover on the standard module conduit box (part no. 5370-101-042). Provides rectification and suppression for two devices. Green LED indicates power to clutch. Red LED indicates power to brake.

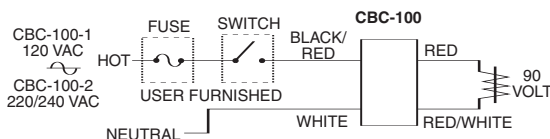
- CE
- UL and UL
- Dual channel
- Replaces the cover on the module conduit box

Specifications

	CBC-100-1	CBC-100-2	CBC-150-1	CBC-150-2
Part No.	6003-448-101	6003-448-103	6004-448-001	6004-448-002
Input	120 VAC 50/60 Hz	220/240 VAC 50/60 Hz	120 VAC 50/60 Hz	220/240 VAC 50/60 Hz
Output	90 VDC full wave rectified .8 Amp max.	90 VDC half wave .8 Amp	90 VDC full wave rectified Dual .8 Amp	90 VDC half wave rectified Dual .8 Amp
Ambient Temperatures	-20° to 113°F (-29° to 45°C)			
Switching	External to control, accomplished on A.C. line using relay or triac.			
	SPST	SPST	SPDT	SPDT
Solid State (maximum leakage current <2 mA)	140 VAC, 1 Amp min.	280 VAC, 1 Amp min.	140 VAC, 2 Amp min.	280 VAC, 2 Amp min.
Electro- mechanical	120 VAC, 1 Amp min.	240 VAC, 1 Amp min.	120 VAC, 1 Amp min.	240 VAC, 1 Amp min.

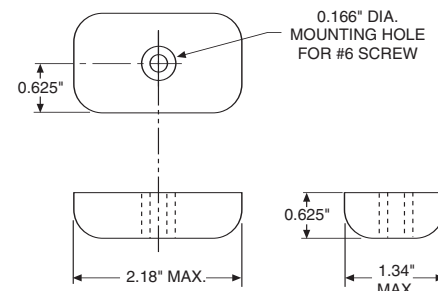
Connection diagrams

CBC-100-1, -2

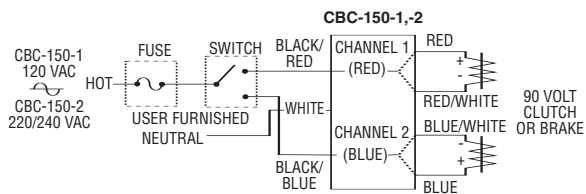


Dimensions

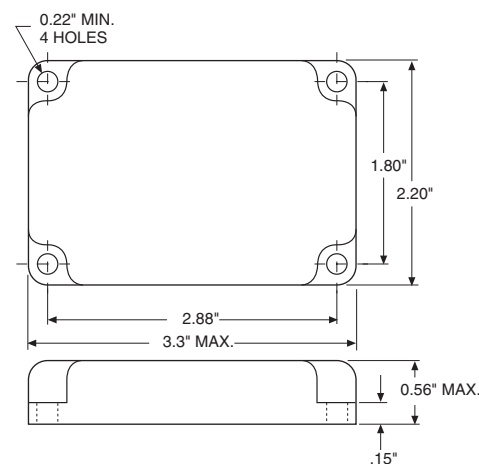
CBC-100-1, -2



CBC-150-1, -2



CBC-150-1, -2



All dimensions nominal unless otherwise specified.

Integral/Electrically Released Motor Brake Controls

CBC-160

The CBC-160 series clutch/brake controls provide a single 90 VDC adjustable output for use with any clutch/brake unit. The adjustable output will provide consistent and repeatable release for Warner Electric's 90 VDC permanent magnet electrically released brakes. The CBC-160 mounts as the cover on the standard module conduit box (part number: 5370-101-042).



The 160-1 accommodates 120 volts A.C. motors.



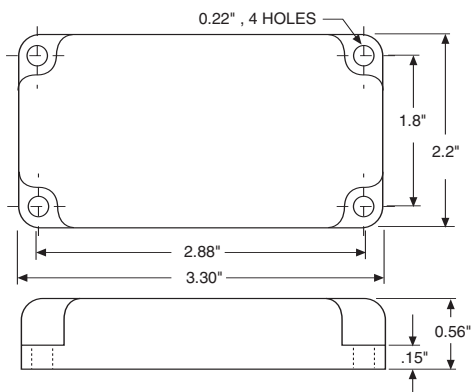
- Adjustable 30-100 VDC
- LED indicator
- 120 volt A.C. input

The power to the 160-2 control can come from either a 230 volt or 460 volt A.C. motor. Customer-provided switching is accomplished through the motor starter on the A.C. input. This allows convenient retrofit of spring-set style motor brakes and inexpensive installation of new applications.



- Adjustable 30-100 VDC
- Power from motor
- Easy retrofit
- 230/460 motors

Dimensions

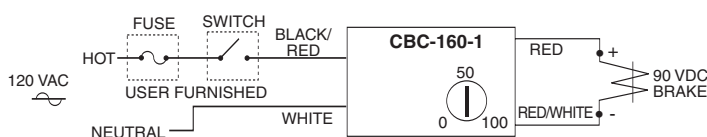


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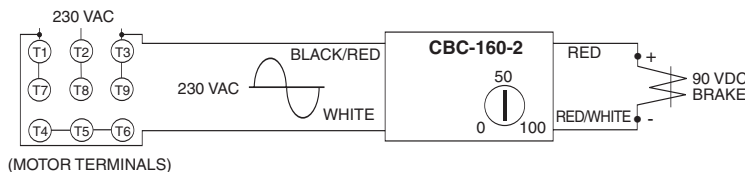
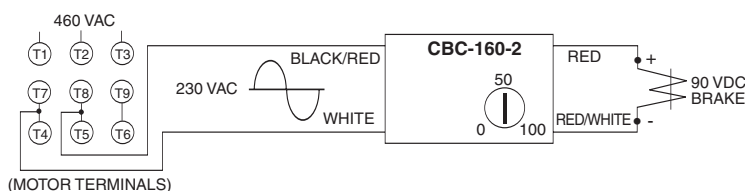
Specifications

	CBC-160-1	CBC-160-2
Part No.	6013-448-001	6013-448-002
Input	120 VAC, 50/60 Hz	220/240 VAC, 60 Hz, 1 Phase, 100 VA max.
Status Indicator	Red LED indicates power to the brake	—
Output	Single Channel, 30-100 VDC half-wave rectified nominal, 0.8 Amps maximum	
Ambient Temperatures	0° to 122°F (-18° to 50°C)	
Switching	Accomplished through motor starter or on A.C. line using relay or triac	

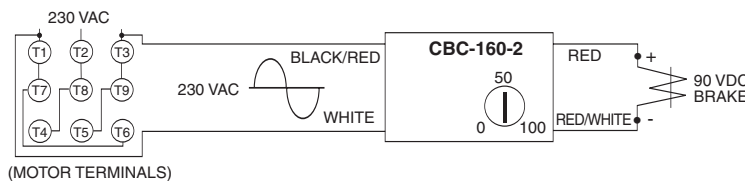
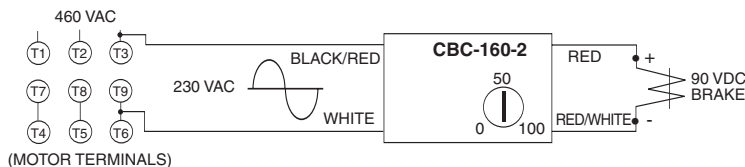
Connection Diagram



WYE Connected Motor



DELTA Connected Motor



CBC-801

Plug-in Octal Socket Power Supplies

The CBC-801 is a basic on-off power supply that provides full voltage to a 90 volt clutch or brake and is activated by an external switch. This type of power supply is sufficient for many clutch/brake applications.

CBC-801 series Multi-unit capacity

The CBC-801 is a plug-in power supply which is used with an octal socket. The wiring connections are made at the socket. The CBC-801 will operate two units separately—or simultaneously. Octal socket is purchased separately.



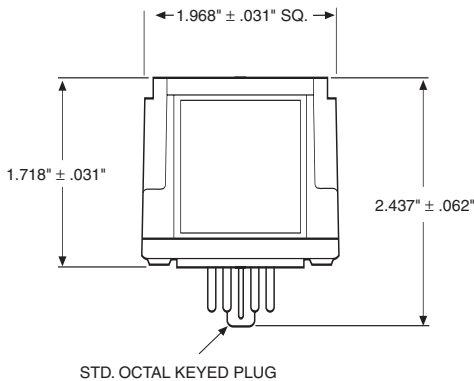
- For basic on-off operation
- Wiring connections made at octal socket
- Arc suppression circuitry extends switch life
- Fused for overload protection
- LED output indicators
- DIN rail mountable



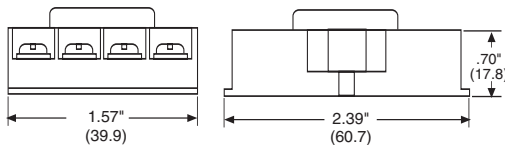
Specifications

	CBC-801-1	CBC-801-2
Part No.	6001-448-004	6001-448-006
Input Voltage	120 VAC, 50/60 Hz	220/240 VAC, 50/60 Hz
Output	90 VDC, 1.25 A max.	
Circuit Protection	Fused 1.6 Amp, 250 V fast-blo	
Ambient Temperature	-23° to 116°F (-31° to 47°C)	
Max. Cycle Rate	Limited by the clutch or brake, variable with application	
Switching	Single pole, double throw Minimum contact rating: 10 Amp, 28 VDC resistive or 10 Amp, 120 VAC inductive	
Status Indicator	Red LED indicates brake is energized, Green LED indicates clutch is energized	
Mounting	Two versions of octal socket are available: 6001-101-001 foot mount 6001-101-002 DIN rail mount	

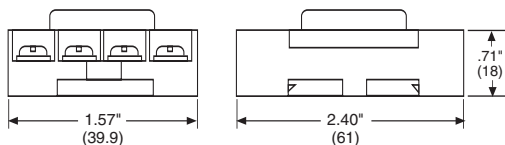
Dimensions



OCTAL SOCKET



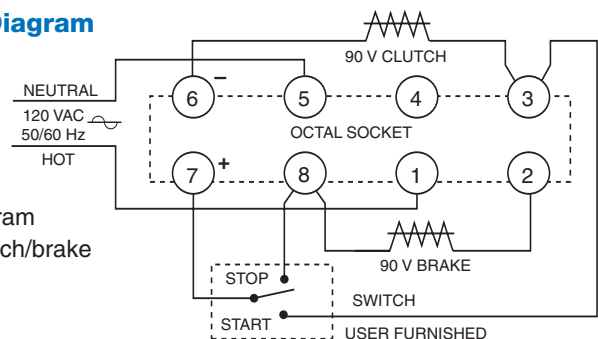
DIN RAIL MOUNT SOCKET



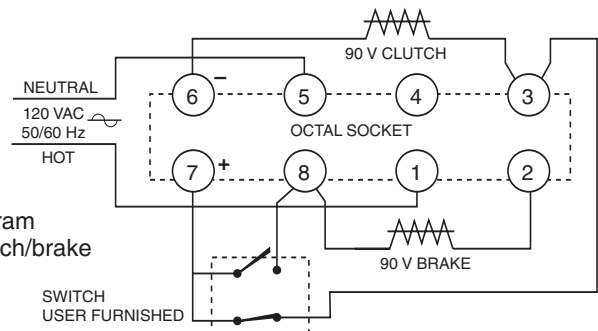
All dimensions nominal unless otherwise specified.

Connection Diagram

Connection diagram for operating clutch/brake separately.




Connection diagram for operating clutch/brake simultaneously.



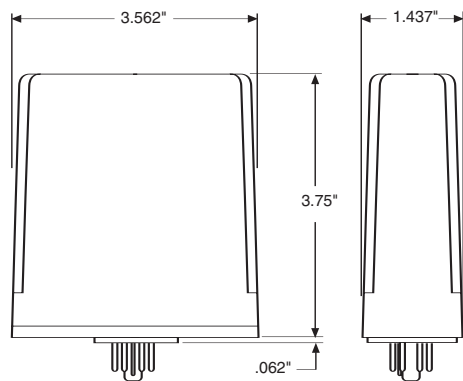


**CBC-802
PLC compatible**

The CBC-802 is a power supply with solid state circuits for load switching. A brake and clutch may be operated separately—or, two brakes or two clutches, one unit on at a time. The CBC-802 mounts on an octal socket (purchased separately), and the wiring connections are made at the socket terminals. Octal socket sold separately, refer to mounting specifications for part number.

-  Plug-in power supply with solid state switching circuits—increases switch service life
- Adjustable time delay for controlling clutch/brake overlap
- Internally fused for overload protection
- DIN rail mountable
- LED output indicators

Dimensions

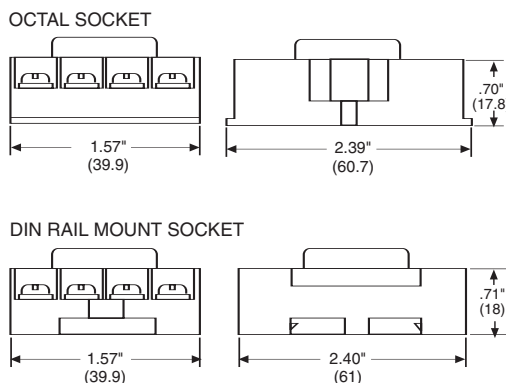
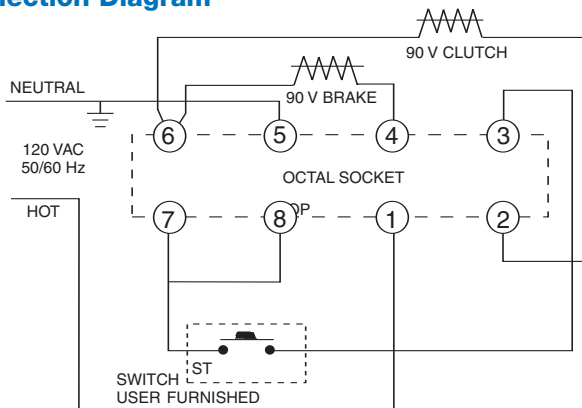


All dimensions nominal unless otherwise specified.

Specifications

CBC-802	
Part No.	6002-448-001
Input	120 VAC, 50/60 Hz
Output	90 VDC, 0.5 A max.
Status Indicator	Red LED indicates brake energized. Green LED indicates clutch energized.
Circuit Protection	Fused 0.5 Amps, 250 V
Ambient Temperature	-20° to 113°F (-29° to 45°C)
Leakage Current	500 uA max. for solid state switches
Max. Cycle Rate	Limited by the clutch or brake, variable with application
Switching	Momentary contact, maintained contact, or solid state open collector logic Minimum contact rating 20 VDC resistive, 0.01 Amps Minimum input pulse—1 millisecond
Adjustments	Externally adjusted potentiometer sets overlap between clutch and brake from 0 to 130 MS.
Mounting:	Two versions of octal socket are available: 6001-101-001 foot mount 6001-101-002 DIN rail mount

Connection Diagram



CBC-400

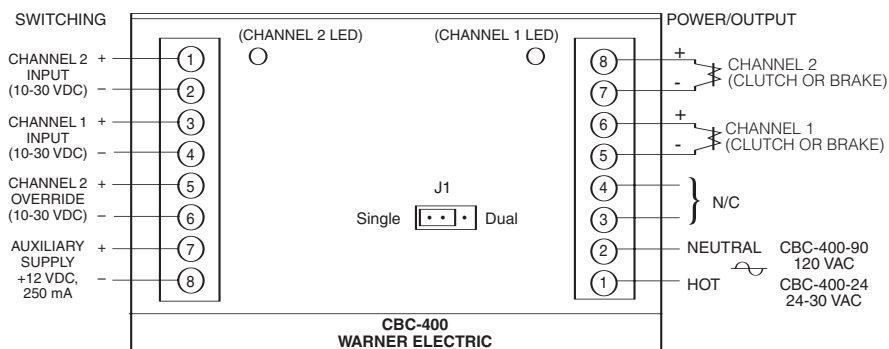
Panel Mounted Control



Specifications

	CBC-400-90	CBC-400-24
Part No.	6006-448-003	6006-448-002
Input Voltage	120 VAC	24-30 VAC
Output Voltage	90 VDC	24 VDC
Output Current	1 Amp/Channel 2 Amps Total	5 Amps/Channel 5 Amps Total
Auxiliary Supply	12 VDC 250 mA	
Circuit Protection	Fused 2.5 Amp, 250 V fast-blo	Fused 6.3 Amp, 250 V fast-blo
Ambient Temperature	+32° to 122°F (0° to 50°C)	
Status Indicators	Red LED indicates channel is energized.	
Adjustments	Jumper for single or dual operation. See appendix for explanation.	
Inputs	3 Optically isolated, 10-30 VDC, 3-9 mA for Channel 1, Channel 2 and Channel 2 override (applies full voltage to channel 1 output).	

Connection Diagram



All dimensions nominal unless otherwise specified.

**CBC-400 series
Dual channel controls**

The CBC-400 series is a basic on-off control which supplies 24 or 90 VDC for electric clutch/brake operation. They offer optically isolated switching inputs for start, stop, and emergency stop (E-stop). These controls can be set up to operate the two outputs alternately (single) or simultaneously (dual). Refer to the Appendix for additional setup and switching information.



- 24 or 90 Volt DC output
- Auxiliary 12V supply
- Fast coil suppression
- Single or dual channel operation
- Optically isolated input switching

Enclosure (Optional)

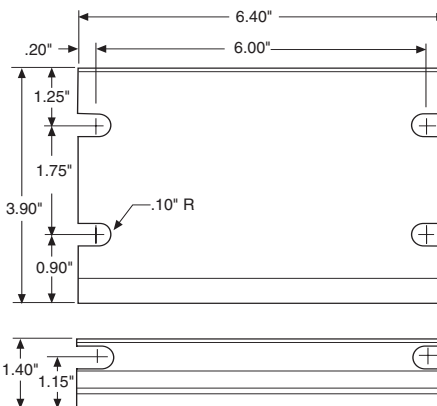


- Lift off hinge
- Quick-release latches
- Conforms to NEMA Type 13
- European Standard IEC 529, IP65

Part No. 6042-101-004

Size 8"H x 6"W x 4"D
(203.2 x 152.4 x 101.6 mm)

Dimensions



CBC-450 series
Dual channel control
with transformer for
variable input voltage

The CBC-450 series is a basic on-off control which supplies 24 or 90 VDC for electric clutch/brake operation. They offer optically isolated switching inputs for start, stop, and emergency stop (E-stop). These controls can be set up to operate the two outputs, alternately (single) or simultaneously (dual). Refer to the Appendix for additional setup and switching information. The CBC-450 series has a power transformer which will operate with a 120, 220, 240, 380 or 480 VAC input.



Enclosure (Optional)



- Lift off hinge
- Quick-release latches
- Conforms to NEMA Type 13
- European Standard IEC 529, IP65



- 24 or 90 Volt DC output
- Auxiliary 12V supply

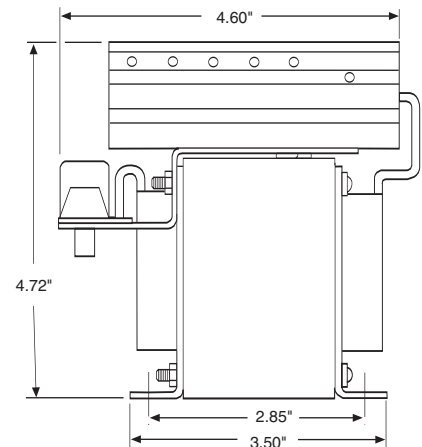
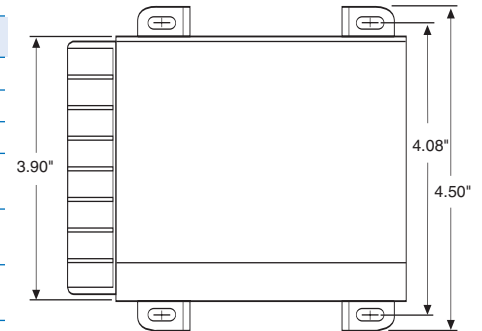
- Fast coil suppression
- Single or dual channel operation
- Optically isolated switching

Part No.	6006-101-007
Size	6"H x 6"W x 6"D (152.4 x 152.4 x 152.4 mm)

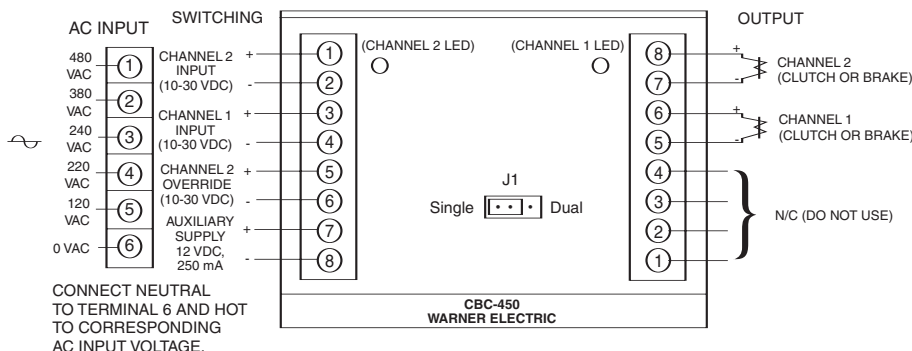
Specifications

	CBC-450-90	CBC-450-24
Part No.	6006-448-006	6006-448-005
Input Voltage	120/220/240/380/480 VAC	
Output Voltage	90 VDC	24 VDC
Output Current	1 Amp/Channel 1.2 Amps Total	4 Amps/Channel 4 Amps Total
Auxiliary Supply	12 VDC 250 mA	
Circuit Protection	Fused 1.5 Amp	Fused 5 Amp
Ambient Temperature	+32° to 122°F (0° to 50°C)	
Status Indicators	Red LED indicates channel is energized.	
Adjustments	Jumper for single or dual operation. See appendix for explanation.	
Inputs	3 Optically isolated, 10-30 VDC, 3-9 mA for Channel 1, Channel 2 and Channel 2 override (E-stop).	

Dimensions



Connection Diagram





All dimensions nominal unless otherwise specified.

MCS-103-1

Adjustable Torque Control

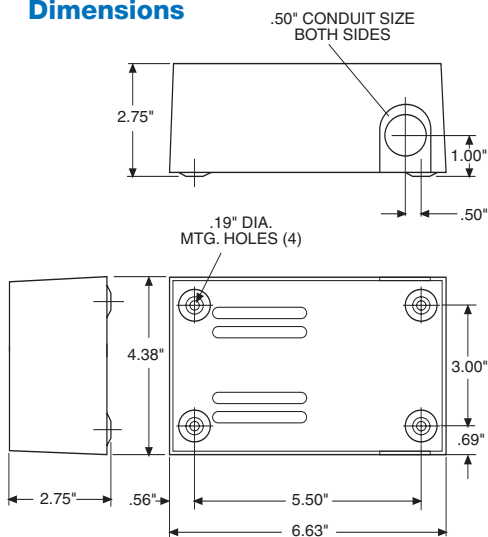
The MCS-103-1 is an enclosed control complete with a cover and mounting provisions. A brake and clutch may be operated separately with this control – or up to four units, two at a time. The external wiring is connected to the terminal strip located behind the cover.

- 
- 
- Can be used with electrically released brakes

- Torque control for one 90 VDC clutch or brake
- Operates up to four units, two on at a time
- Easy-to-install. Compact. 120 VAC input
- Convenient terminal strip behind an easy-to-remove cover



Dimensions

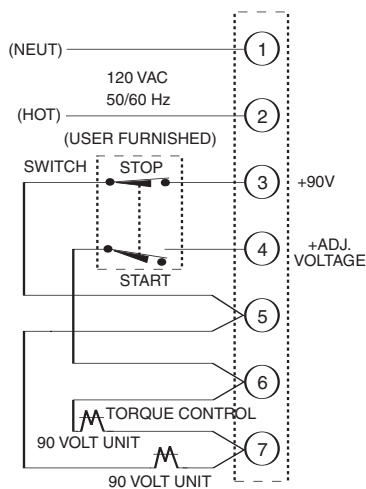


Specifications

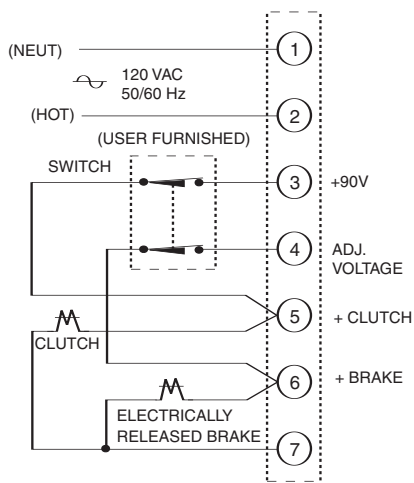
MCS-103-1	
Part No.	6010-448-002
Input	120 VAC, 50/60 Hz
Output	1.25 Amp 90 V full wave rectified for one unit and adjustable from 0-90 volts full wave rectified for second unit
Circuit Protection	Fused 1.5 Amp, 250 V
Ambient Temperature	-20° to 113°F (-29° to 45°C)
Maximum Cycle Rate	Limited by the clutch or brake and will vary with application.
Mounting	Mounting centers 5-1/2" wide, 3" high. Knockouts for 1/2" conduit
External Switches (User furnished)	Double pole, double throw maintained contact. Minimum contact rating: 10 Amp, 28 VDC resistive or 10 Amp, 120 VAC inductive. Contact ratings given will operate all Warner Electric brake and clutch units. However, switches with ratings less than those given may be used with fractional horsepower units provided the rating is equal to or greater than the coil current.

All dimensions nominal unless otherwise specified.

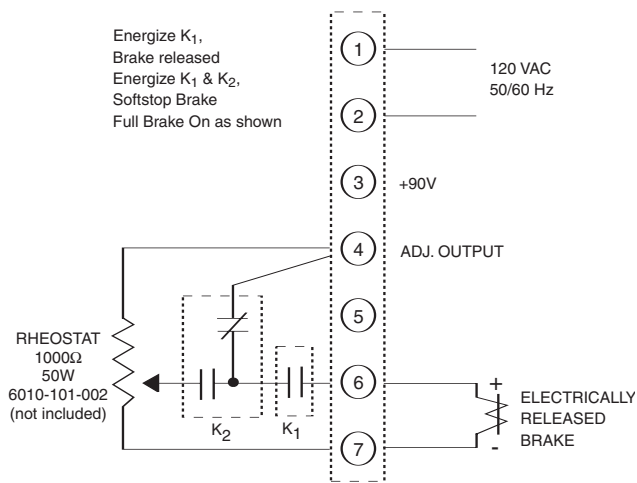
Connection Diagrams



Normal Clutch/Brake Operation
(One unit on at a time)



Clutch/Electrically Released Brake Operation
(Both units on at a time)



Soft Stop for Electrically Released Brake

Power Supply

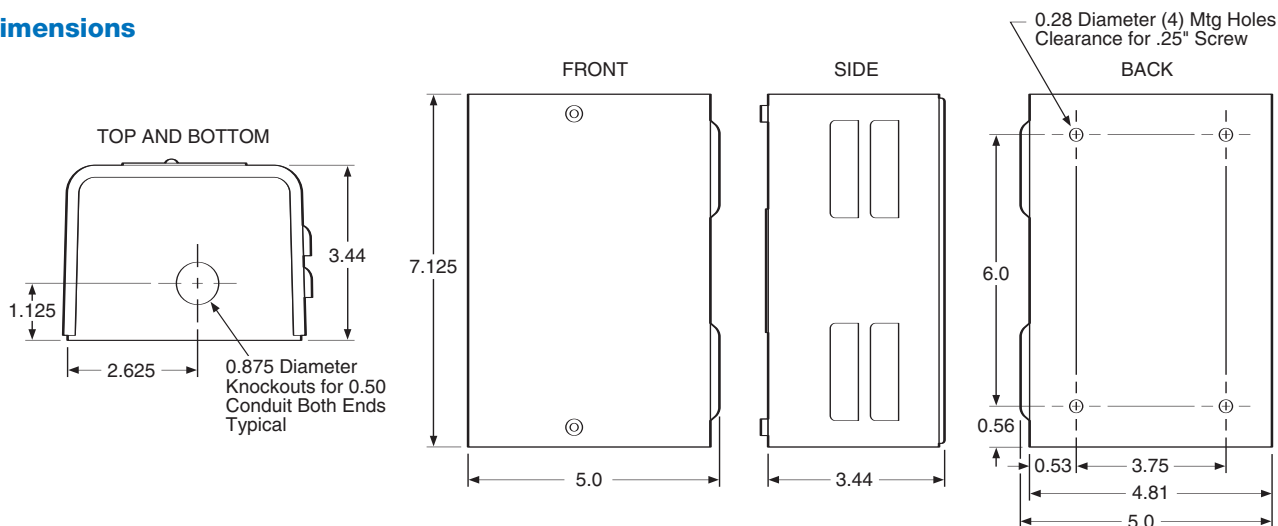
The DC voltage required to release the Warner Electric ER-1225 Brake is supplied by the MCS-805-1 or MCS-805-2 Power Supply. The correct brake release voltage—approximately 35-75 volts DC—is set by adjusting the power supply at the time of brake installation. Temperature compensating circuits provide proper operation over the entire operating range of 0°F to 150°F. Switching may be provided on either the AC or DC side of the power supply. The MCS-805-1 may be mounted on its back panel or on 1/2" conduit. The MCS-805-2 has a torque adjustment capability for soft stop applications. The MCS-805-2 requires two switching circuits when used for those applications requiring soft engagement.



Specifications

	MCS-805-1	MCS-805-2
Part No.	6090-448-006	6090-448-007
Input	115/230 VAC, 50/60 Hz ±10%	115/230 VAC, 50/60 Hz ±10%
Output	0.4 Amp, 35/75 VDC	0.4 Amp, 35/75 VDC
Ambient Temperature	-20° to 150°F (-29° to 65°C)	-20° to 150°F (-29° to 65°C)
Maximum Cycle Rate	Limited by the clutch or brake and will vary with application. Consult factory for specifics.	
External Switches (User furnished)	For DC switching: single pole, single throw. Minimum contact rating 1 amp, 120 volts DC resistive. For AC switching: single pole, single throw. Minimum contact rating 1 amp, 120 volts AC.	
Circuit Protection	.75 Amp 250V Slow Blow 3 AG	

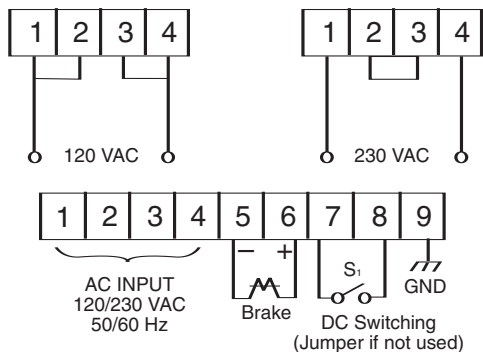
Dimensions



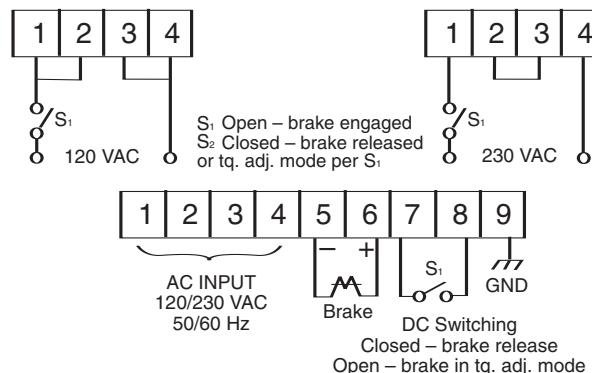
Connection Diagram

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

MCS 805-1



MCS 805-2





For AC switching, switch may be in series with input supply.
For DC switching, use terminals 7 and 8 as shown.
DO NOT put switch in series with load on terminals 5 and 6.

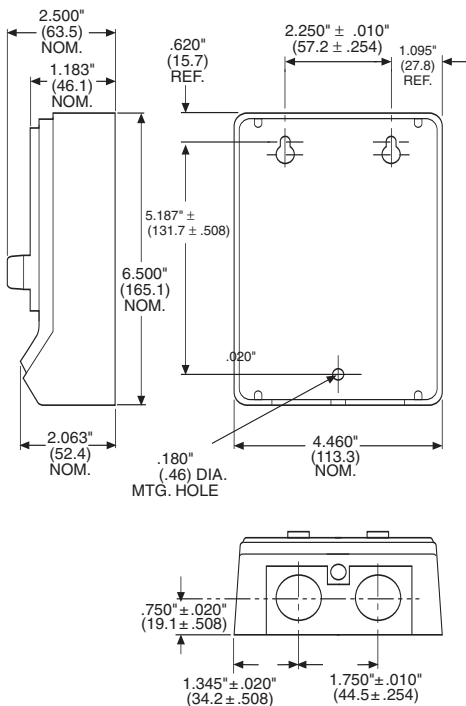
Single or Dual Channel Adjustable Torque Control

The CBC-200 and CBC-300 Controls provide single/dual torque control when connected to any of Warner Electric's 90 volt clutches and brakes.

Common features

-  and 
- Current monitored output maintains consistent torque regardless of variation in coil temperature.
- Switch selection tunes control to exactly match power requirements and operating characteristics of each clutch or brake.
- Individual torque adjust allows preset maximum torque tailored to application requirements.
- Short circuit protection, line to line.
- Torque limiting protects machine components from damage.
- Can be used with electrically released brakes.

Dimensions



CBC-200 Dual channel/Single channel torque adjust

The CBC-200 is a dual channel control with one adjustable current and one fixed voltage.

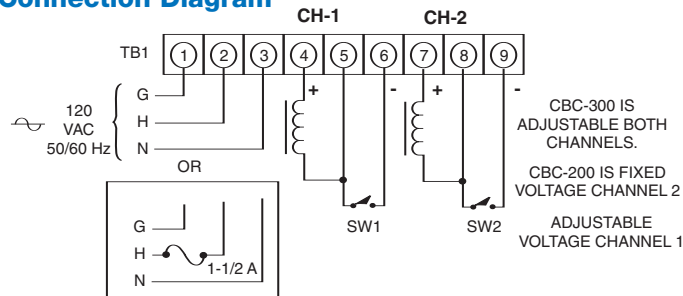
CBC-300 Dual channel/Dual channel torque adjust

The CBC-300 has two adjustable current channels.

Specifications

	CBC-200	CBC-300			
Part No.	6011-448-001	6021-448-001			
Input Power	120 VAC +10% -15%, 50/60 Hz, single phase, 215 VA max.				
Output	Pulse-width modulated full wave rectified D.C. Constant current, switch selectable ranges, 0-90 volt				
Ambient Temperature	+32°F to +113°F (0°C to 45°C) with plastic cover installed +32°F to +150°F (0°C to 66°C) with plastic cover removed				
Circuit Protection	Internal line to line short circuit protection Optional customer supplied fusing on A.C. line, 1.5 Amps, 250 VAC. Fast-acting fuse recommended				
Current Adjust (via front panel potentiometers)	Single adjustable channel	Dual adjustable channels			
Status indicators	"POWER"—green LED indicates A.C. power is applied to the control. "SHORT"—red LED indicates a short circuit condition exists on one or both outputs.				
Internal Adjustments	Set DIP switches SW1 and SW2 to suit the current draw of the connected clutch/brake coil: Switch Range Max Current Draw (mA)				
	1	2	3	4	5
	60	175	245	305	533
External Switching	Mechanical or electromechanical—customer supplied: 1 Amp, 125 V minimum rating Solid-state, NPN isolated transistor—customer supplied: 2 Amp, J250 V minimum rating. Maximum off state leakage current <1 mA				

Connection Diagram





CBC-500 series Dual torque adjustable power supplies

The CBC-500 series is a dual channel adjustable voltage control with optically isolated input switching for 24 and 90 volt electric clutches and brakes. These controls can be set up to energize the two outputs alternately (single) or simultaneously (dual). Refer to the Appendix for additional setup and switching information.



- Dual adjustable channels
- Optically isolated input switching
- Single or dual channel operation
- Auxiliary 12V supply
- Can be used with electrically released brakes

Specifications

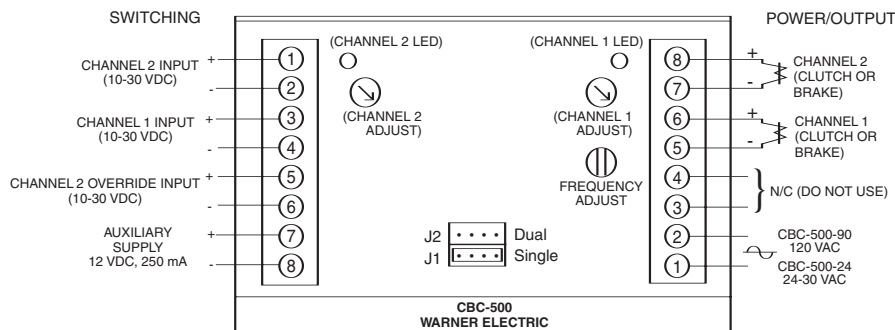
	CBC-500-90	CBC-500-24
Part No.	6024-448-003	6024-448-002
Input Voltage	120 VAC	24-30 VAC
Output Voltage	0-90 VDC	0-24 VDC
Output Current	1 Amp/Channel 2 Amps Total	5 Amps/Channel 5 Amps Total
Auxiliary Supply	12 VDC 250 mA	12 VDC 250 mA
Circuit Protection	Fused 2.5 Amp, 250 V Fast-blo	Fused 6.3 Amp, 250 V Fast-blo
Ambient Temperature	+32° to 122°F (0° to 50°C)	
Status Indicators	Red LED indicates channel is energized.	
Adjustments	Two potentiometers for voltage adjustment of channel 1 and channel 2 output from 0 to full rated voltage. Frequency adjustment from 60 to 400 Hz to reduce clutch/brake "Hum" associated with machine frequencies. Jumper for single or dual operation. See appendix for explanation.	
Inputs:	3 Optically coupled, 10-30 VDC, 3-9 mA for Channel 1, Channel 2 and Channel 2 override (applies full voltage to channel 1 output)	

Enclosure (Optional)



- Lift off hinge
- Quick-release latches
- Conforms to NEMA Type 13
- European Standard IEC 529, IP65

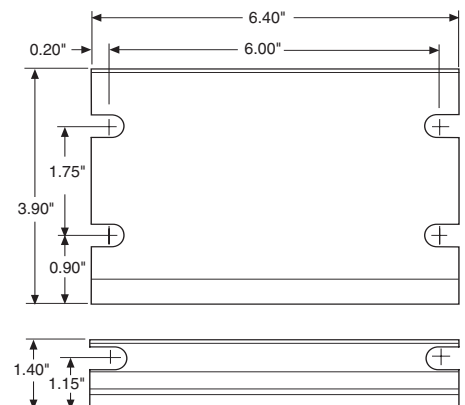
Connection Diagram



All dimensions nominal unless otherwise specified.

Part No.	6042-101-004
Size	8"H x 6"W x 4"D (203.2 x 152.4 x 101.6 mm)

Dimensions



Tel: (011) 4222-5040 Fax: (011) 4201-2478.
info@tekmatic.com.ar - www.tekmatic.com.ar

Panel Mounted

CBC-550 series Dual adjustable with power transformer

The CBC-550 series is a dual channel adjustable voltage control with optically coupled switching for 24 and 90 volt electric clutches and brakes. These controls can be set up to energize the two outputs alternately (single) or simultaneously (dual). Refer to the Appendix for additional setup and switching information.

The CBC-550 series has a power transformer which will operate with a 120, 220, 240, 380, or 480 VAC input.



- Dual adjustable channels
- Optically isolated input switching
- Single or dual channel operation
- Can be used with electrically released brakes



Specifications

	CBC-550-90	CBC-550-24
Part No.	6024-448-006	6024-448-005
Input Voltage	120/220/240/380/480 VAC	
Output Voltage	0-90 VDC	0-24 VDC
Output Current	1 Amp/Channel 1.2 Amps Total	4 Amps/Channel 4 Amps Total
Auxiliary Supply	12 VDC 250 mA	
Circuit Protection	Fused 1.5 Amp, 250 V fast-blo	Fused 5 Amp, 250 V fast-blo
Ambient Temperature	+32° to 122°F (0° to 50°C)	
Status Indicators	Red LED indicates channel is energized.	
Adjustments	Two potentiometers for voltage adjustment of channel 1 and channel 2 output from 0 to full rated voltage. Frequency adjustment from 60 to 400 Hz to reduce clutch/brake "Hum" associated with machine frequencies. Jumper for single or dual operation. See appendix for explanation.	
Inputs	3 Optically coupled, 10-30 VDC, 3-9 mA for Channel 1, Channel 2 and Channel 2 override (applies full voltage to channel 1 output)	

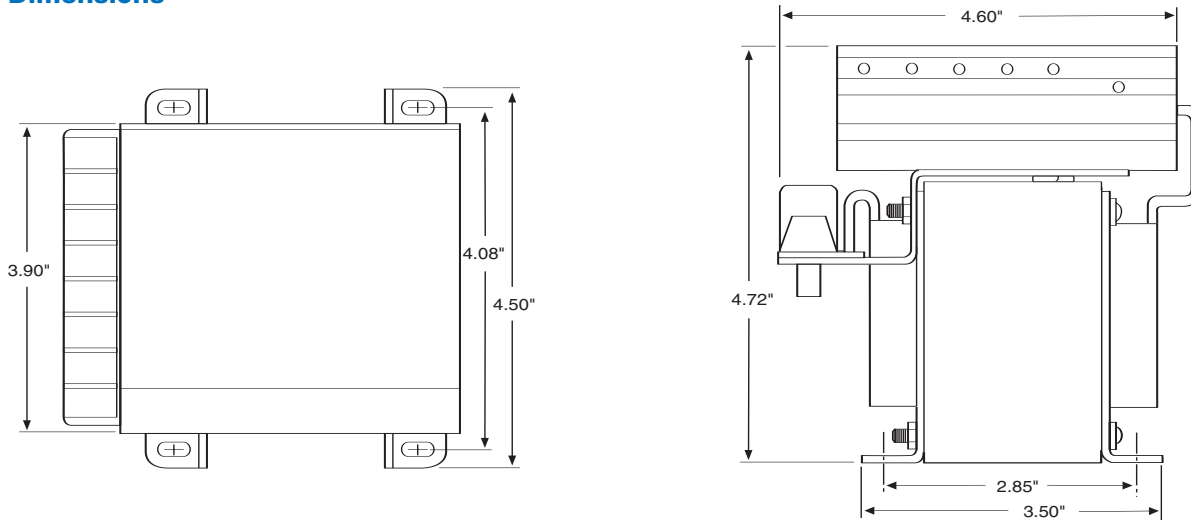
Enclosure (Optional)



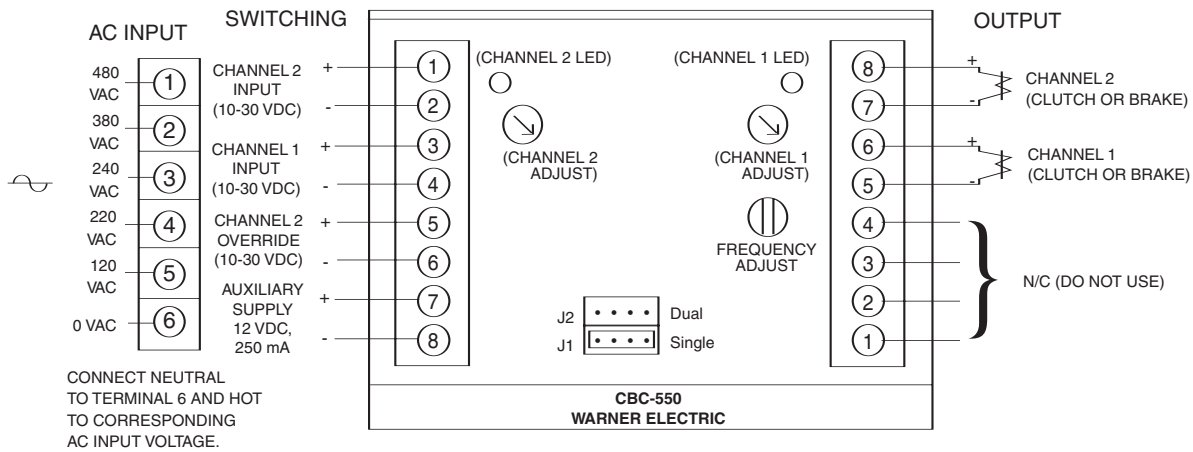
- Lift off hinge
- Quick-release latches
- Conforms to NEMA Type 13
- European Standard IEC 529, IP65

Part No.	6006-101-007
Size	6"H x 6"W x 6"D (152.4 x 152.4 x 152.4 mm)

Dimensions



Connection Diagram



All dimensions nominal unless otherwise specified.

Panel Mounted

CBC-1825R series

The CBC-1825R is designed to provide consistent and repeatable acceleration and deceleration when used with Warner Electric 90 VDC clutches and brakes. Current to each channel is introduced along an adjustable time ramp and monitored continuously. Adjustments include initial pull-in pulse, hold level, maximum torque, and ramp time. LEDs are provided on the circuit board to indicate power is applied to the clutch or brake unit.

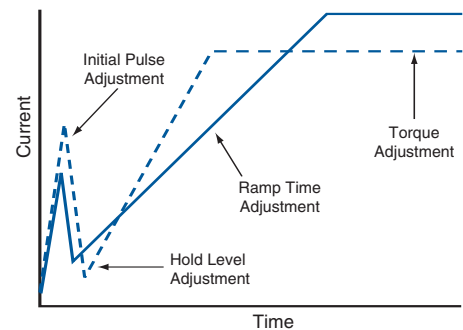
Note: It is recommended that the auto-gap springs be removed from the clutch and brake for successful accel-decel application.



Specifications

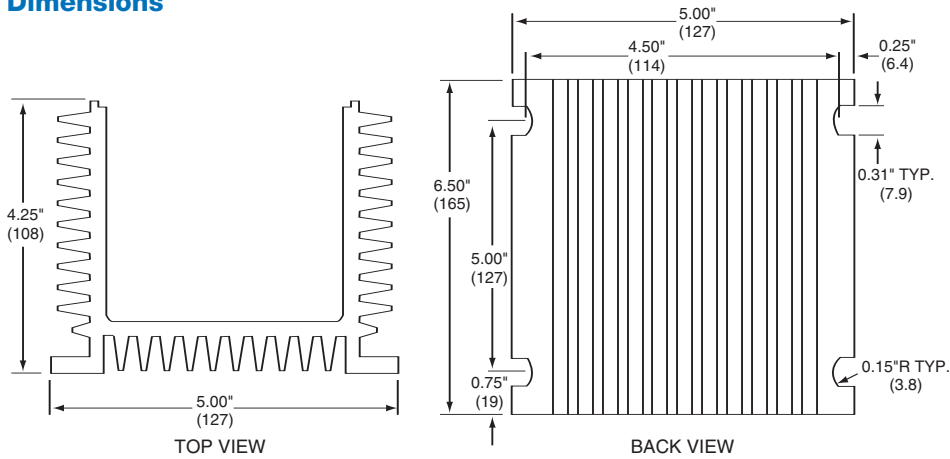
CBC-1825R	
Part No.	1825-448-001
Input Voltage	120 VAC, 50/60 Hz, 100 VA maximum
Output Current	Current driven PWM, compatible with 90 VDC clutch/brake (switch selectable current output)
Auxiliary Supply	12 VDC 250 mA
Circuit Protection	Input Fused 1.5 Amp, 250 V fast-blo clutch and brake outputs are short circuit protected
Status Indicators	Clutch and brake LEDs indicate output is energized Short circuit LED indicates a fault
Ambient Temperature	0° to 122°F (-18° to 50°C)
Switching	Contact rating: 15 mA @ 15 V, open collector NPN 2mA maximum allowable leakage current and 2 V maximum saturation voltage

Set-up

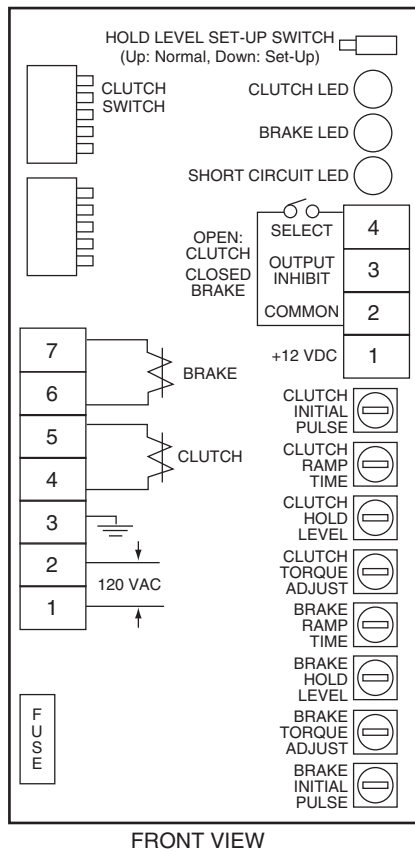


All dimensions nominal unless otherwise specified.

Dimensions



Connection Diagram



General Purpose OEX Control

CBC-700 series

Simple, compact, high performance OEX control for either 90 or 24 VDC clutches and brakes. OEX spike duration and anti-overlap times delay are adjustable. Two optically isolated inputs.



- High performance
- Switch selectable OEX duration
- Force decay suppression with adjustable anti-overlap time delay
- Compact, flexible mounting
- Models for 24 or 90 volt clutches and brakes
- Cycle rate limited by clutch/brake



Specifications

	CBC-700-90	CBC-700-24
Part No.	6042-448-003	6042-448-002
Input	120 VAC, 50/60 Hz	24-28 VAC, 50/60 Hz
Output Voltages		
Steady State	90 VDC	24 VDC
Overexcitation	340 VDC	105 VDC
Output Current (Per channel alternately)	.5 Amps	3.5 Amps
OEX Pulse Duration	Adjustable through logic board dip switches (see service manual)	
Inputs	Two-optically isolated (10-30 VDC)	
Ambient Temperature Range	0°F to 140°F (-18°C to +60°C)	
Maximum Off State Leakage	<2 mA (inputs)	
Circuit Protection	2.5A Slo-Blo (5 x 20 mm)	5A Slo-Blo (5 x 20 mm)
Auxiliary Supply	12 VDC, 250 mA maximum	

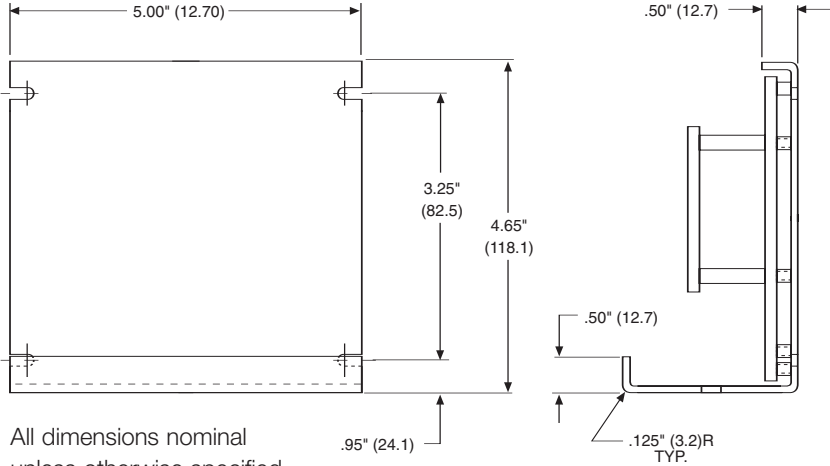
Enclosure (Optional)



- Lift off hinge
- Quick-release latches
- Conforms to NEMA Type 13
- European Standard IEC 529, IP65

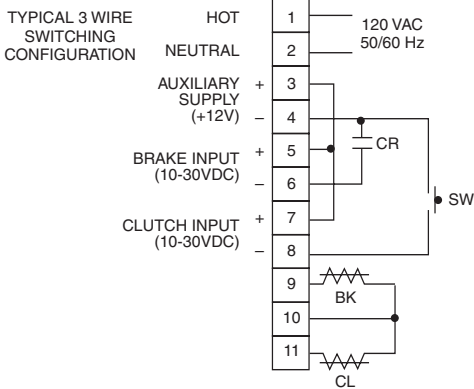
Part No.	6042-101-004
Size	8"H x 6"W x 4"D (203.2 x 152.4 x 101.6 mm)

Dimensions



All dimensions nominal unless otherwise specified.

Connection Diagram



NOTE: CR, SW user furnished switch options for use with control.
CR normally open relay contact
SW normally open push button switch

Rapid Acceleration/Deceleration

**CBC-750 series
Dual channel, current based
OEX with switching logic**

Warner Electric's CBC-750 series of Constant Current Overexcitation Clutch/Brake Controls are solid-state electronic controls designed to increase the cycle rate capabilities and accuracies of electromagnetic clutches and brakes. The controls accomplish this by sending a momentary high voltage overexcitation spike to the clutch and/or brake magnetic coil to build a high density magnetic flux field almost instantaneously. By using overexcitation, the response time is reduced as dramatically as performance is increased. For example, the current build up time of a 5 inch, 6 volt magnet is reduced from 84 milliseconds to 2 milliseconds.

The CBC-750 user selects either 120, 220 or 240 VAC operation at the time of installation. Models for 6 volt, 24 volt, or 90 volt clutches and brakes are available.



- High performance OEX control
- Constant current output capability
- Models for 6, 24, and 90 V clutches and brakes
- Outputs short circuit protected.
- AC/DC optically isolated inputs
- Transformer isolation
Remote torque potentiometer capability
- Input/Output inhibit functions
- Switch selectable OEX function
- Automatic CH1/CH2 anit-overlap feature
- Heavy duty suppression circuits
- Selectable output current ranges
- Remote status indicators inputs and outputs



Shown with optional cover, part number 6041-101-004

LED indicators on the faceplate of each control tell the user the status of input signals, output activation and any auxiliary inputs. A reset switch resets the output should a short be detected. Remote torque adjust potentiometer inputs are also provided. Appropriate current range for each size clutch or brake is selected by a dip switch. Constant current for each level is assured by the control's design.

- Maintains torque at preset levels regardless of temperature variations
- Automatically controls OEX pulse duration for optimum response without overheating coils
- Automatically prevents clutch and brake "overlap"
- Configurable as an analog follower control through remote top input
- Integral switching logic through auxiliary, inhibit and override inputs

Specifications

	CBC-750-6	CBC-750-24	CBC-750-90
Part No.	6041-448-001	6041-448-002	6041-448-003
Input Power	120/220/240 VAC, ±10%, 50/60 Hz, 350 VA (switch selectable)		
Control Inputs	Opto-isolated 10-30 VDC @ 10-35 mA nominal sinking or sourcing, or 24 VAC (50/60Hz) @ 22 mA nominal, or 120 VAC (50/60 Hz) @ 20 mA nominal		
Clutch/brake Output			
Steady State Output			
Current controlled	.910 to 4.34 A max.	.227 to 1.175 A max.	.060-.310 A max.
Current Rise Time	Dependent on clutch/brake size		
Current Fall Time	Depending on clutch/brake size		
Overexcitation Voltage	75 VDC nom.	240 VDC nom.	450 VDC nom.
Overexcitation Time	Automatic adjustment by control feedback		
Anti-overlap Time	Automatic adjustment by control feedback		
Power Supply Output	12 VDC, ±0.6 VDC, 250 mA max.		
Auxiliary Indicator	Opto-isolated NPN transistors		
Outputs	24 VDC maximum, 20 mA max., reverse polarity protected		
Circuit Protection	Internal short circuit protection on each output channel.		
Fusing			
AC Input Line	2 Amp, 250 V Slo-Blo		
OEX Supply	10 Amp, 32 V Slo-Blo	5 Amp, 250 V Slo-Blo	1 Amp, 250 V Slo-Blo

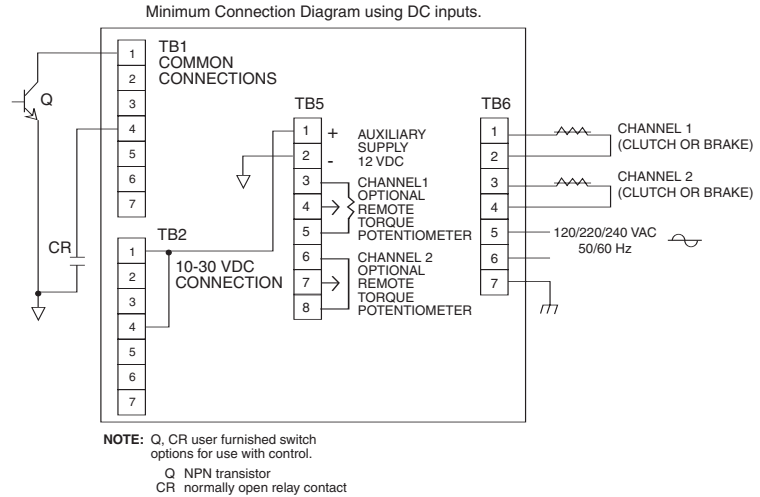


Tel: (011) 4222-5040 Fax: (011) 4201-2478.
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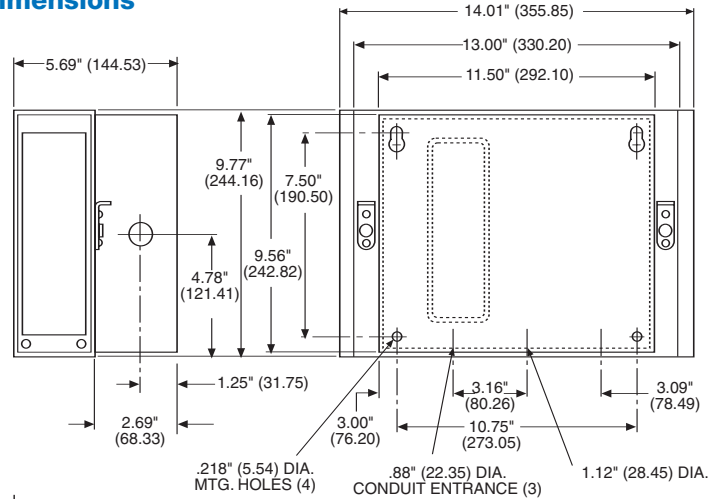
Seven optically isolated inputs accept 10-30V A.C./D.C. (TB2) or 120 VAC (TB3), configured through set-up switches

1. Channel 2 Input
2. Channel 2 Input Inhibit (disregards channel 2 input signal)
3. Auxiliary Input
4. Channel 1 Input
5. Channel 1 Input Inhibit (disregards channel 1 input signal)
6. Output Inhibit (deactivates both output channels)
7. Channel 2 Override (applies full voltage to channel 1 output)

Connection Diagram



Dimensions



All dimensions nominal unless otherwise specified.

Setup Switches

SW1: AC Voltage selection switch on terminal board inside control unit

Max. Current Output

(SW7 & SW8 settings)

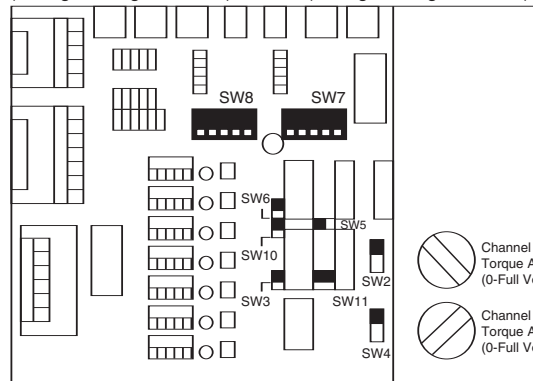
Nominal Voltage	1	2	3	4	5
6	0.910	2.35	3.183	3.760	4.340
24	0.227	0.641	0.881	0.940	1.175
90	0.060	0.176	0.256	0.282	0.310

SW8

Channel 2 current range selector (settings in diagram below)

SW7

Channel 1 current range selector (settings in diagram below)



All switches are in the down (r) position from factory

SW6

Channel 2 OEX enable (r) / disable (d)

SW5

Channel 1 OEX enable (r) / disable (d)

SW10

Channel 1 input invert (r) / normal (d)

SW2

Channel 1 local (d) or remote (r) torque adjust

SW3

Level/pulse selector level (d) / pulse (r)

SW4

Channel 2 local (d) or remote (r) torque adjust

SW11

Auxiliary input selector Channel 1 (d) / Channel 2 (r)

System Accuracy

CBC-1000

Position-loop control with error correction compensation

Warner Electric's CBC-1000 is a closed-loop positioning control with error compensation designed for industrial clutch/brake applications. The position loop is closed through encoder feedback which generates pulses proportional to load motion. The CBC-1000 uses this feedback to determine the optimum brake actuation point. The control can be programmed to operate in one of two distinct modes: absolute or incremental. The CBC-1000 includes eight solid state control outputs, a batch counter and a serial communications interface.

The CBC-1000 system consists of four key elements: the CBC-1000, a clutch/brake, a clutch/brake control, and an encoder. Nearly any electric clutch/brake size and configuration can be used. The clutch/brake control should have solid-state compatibility. Simple on-off, soft start/stop, and overexcitation controls may all be utilized based on the desired velocity profile.

Accessories

Description	Part Number
Encoder Cable (Accessory)	6060-101-001
100 PPR Encoder w/10' cable	6060-101-010
250 PPR Encoder w/10' cable	6060-101-025
600 PPR Encoder w/10' cable	6060-101-060
1200 PPR Encoder w/10' cable	6060-101-120
2500 PPR Encoder w/10' cable	6060-101-250
5000 PPR Encoder w/10' cable	6060-101-500

(PPR-Pulse Per Revolution)

Serial Interface Module



Performs the necessary voltage level conversions to interface the RS-422A/485 output of the CBC-1000 to RS-232C equipment.

Part Number: 6060-101-232



Specifications

Part No.	6060-448-001
Input Power	100 to 130 VAC, 50/60 Hz, 20VA (200 to 260 VAC selectable)
Auxiliary Supply	12 VDC @ 175 mA Used for powering encoder, etc.
Main Counter	
Range	6 Decades
Reset Input	External and front panel
Count Rate	(20 kHz external input frequency)
Batch Counter	
Range	6 Decades
Reset	Through front panel only
Signal A and B Inputs	
Input Frequency	D.C., 20 kHz quadrature max.
Input High Level	3.25 VDC min.
Input Low Level	1.75 VDC max.
Control Inputs	
Input Frequency	D.C. to 20 Hz max. each input
Input Type	Single ended, current sinking
Input Logic	Both Edge and Level sensitive as defined by input use
Input High Level	10 VDC min. to 20 VDC max.
Input Low Level	0 VDC min. to 2 VDC max.
Input Current	2.5 mA steady state
Display	
Decades	7 Decade, 0.6" red LED
Decimal Point	User programmable
	Range: xxx.xxx to xxxxxx
Program Security	Program LOCK of lines 1 - 33
Control Outputs	
Type	8 Solid State 100 mA sink max., 24 VDC max.
Serial Interface	
Type	RS-422A/485 compatible
Baud Rate	Selectable: 300, 600, 1200, 2400
Parity	Selectable: None, Odd, Even
Data	ASCII
Diagnostics	Nine Self-Test Diagnostics
Mechanical	
Enclosure	Aluminum extrusion with molded VALOX bezel.
Weight	2.5 lbs.
Environmental	
Operating Temp.	0° to +50°C (32° to 122°F)
Storage Temp.	-18° to 85°C (0° to 186°F)
Ambient Humidity	90% and noncondensing

1. Select the proper clutch/brake

- Determine torque and inertia requirements
- Calculate heat dissipation for required cycle rate
- For best accuracy, mount clutch/brake directly on nip or drive shaft; avoid backlash

2. Select quadrature encoder

- Select encoder PPR for desired system resolution (i.e. inches/pulse, degrees/pulse, etc.)
- Determine input frequency; do not exceed 20,000 pulses/sec.
- Mount encoder directly to nip or drive shaft for best accuracy

3. Select clutch/brake power supply

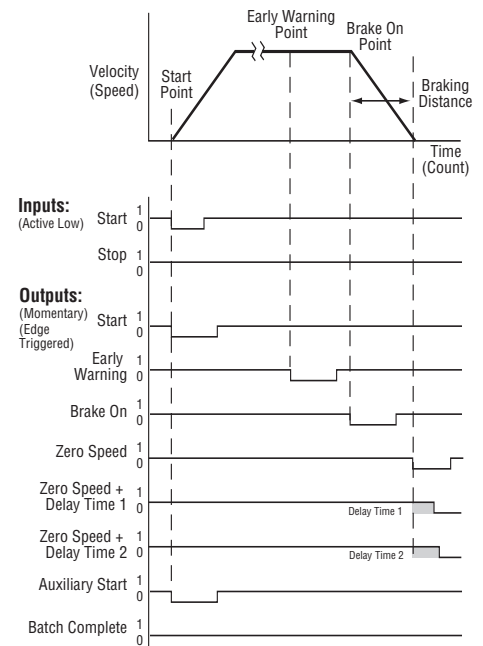
- Use CBC-700 overexcitation control for best accuracy
- Use CBC-500/550 for soft starting and/or stopping
- Brake autogap may have to be removed for best accuracy

4. Plan system logic (switching requirements)

- Use absolute mode for indexing applications such as conveyors and turntables or cutoff applications where close registration is required
- Use incremental mode for cutoff applications
- Determine switching and relays required for machine operation

5. Select serial interface module if applicable.

Timing Diagram



Operation

Successful operation will require knowledge of the following definitions and their relationships to the timing diagram.

Function Key Definitions

Count	1 COUNT	The actual move distance, in pulses or scaled into engineering units (inches, feet, rotations, degrees, etc.) displayed dynamically.
Move Present	2 MOV PST	The desired move distance in pulses or scaled into engineering units. This is the value the operator enters to select a new move distance.
Early Warning	3 E.W.	A distance prior to Move Preset at which the early warning output is activated. Expressed as pulses or engineering units, this output can be used to accomplish a soft brake (slow down), energize valves, etc.
Batch	6 BATCH	A cumulative batch counter that can be dynamically displayed to show the number of operations, cycles, etc. When this counter reaches the value programmed by the Batch Preset (key 7) the Batch Complete Output is activated. The batch counter can be manually or automatically reset.
Batch Preset	7 BCH PST	A programmable batch counteractivates the batch complete output when the value programmed has been reached by the batch (key 6)
Braking Distance	8 BRK DIS	The actual distance required to stop. This value is dynamically updated to determine the brake actuation point. Factory default is 25 pulses or engineering units which is only used for the first cycle after power-up. After the first cycle the CBC-1000 will tune to the particular brake being utilized. The amount of cycles needed for tuning depends on how far the true braking distance value is from the default of 25.

Appendix

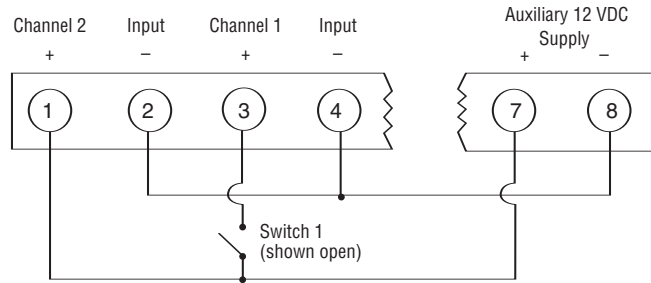
CBC-400/450/500/550 Single vs Dual Operation

The CBC 400 and 500 series controls allow operation in either a single or dual mode. The mode of operation is determined via the position of a jumper on the main control board.

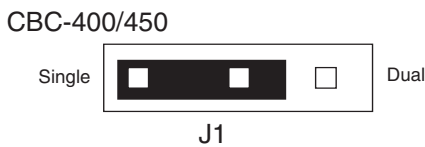
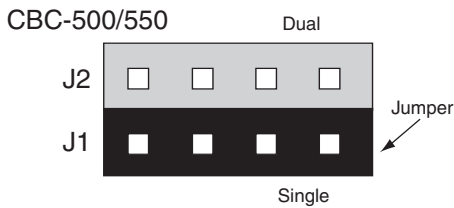
The controls are shipped with the jumper in the J1 or single mode position. A variety of output logic can be accomplished via the single/dual jumper position and whether the control is wired to one input switching device (2-wire mode) or two input switching devices (3-wire mode). The following diagrams show how each channel (output) of the control can be either alternately or simultaneously energized.

2-wire Switching Option

Control's switching terminal block

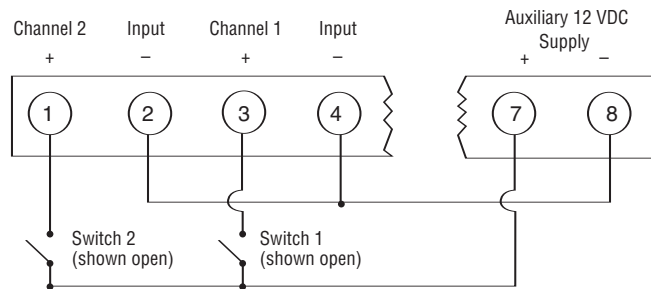


Jumper Mode	Switch 1	Channel 1	Channel 2
J1-Single	Open	Off	Powered
	Closed	Powered	Off
J2-Dual	Open	Powered	Powered
	Closed	Off	Off



3-wire Switching Option

Control's switching terminal block

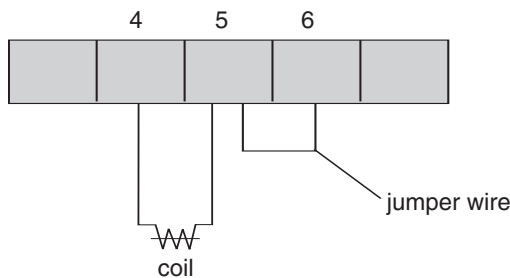


Jumper Mode	Switch 1	Switch 2	Channel 1	Channel 2
J1-Single	Closed	Open	Latched On	Off
	Open	Closed	Off	Latched On
J2-Dual	Closed	Open	Off	Off
	Open	Closed	Latched On	Latched On

1. What transformers can be used with controls requiring 24-30 VAC input?

Manufacturer	Part Number	Primary	Secondary
Abbott	6B 12-160	115 VAC	24V @ 6 amps
Quality	6-K-119VBR	115/230 VAC	24V @ 8 amps
Signal	24-6	115 VAC	24V @ 6 amps
Signal	DP24-6	115/230 VAC	24V @ 6 amps
Triad	F-260-U	115 VAC	24V @ 6 amps

2. When a single clutch or brake is used with a CBC-200 and no switch is used, a jumper wire is required across terminals 5 & 6 to get output at terminals 4 & 5.



3. What is the difference between a MCS-801 and a CBC-801-1 or between a MCS-103 and a MCS-103-1?

There is no performance difference between the MCS-103 and MCS-103-1. There is no performance difference between the MCS-801 and CBC-801-1. The CBC-801-1 is roughly 1/4" shorter than the MCS-801. The units wire and work exactly the same.

4. Which power supplies can be used with the SF 1525HT and SFC 1525HT coil?

The SF and SFC 1525 High Torque clutch coils require .794 amps of current to provide full rated torque. The following power supplies and controls will provide the needed power.

CBC-100	.8 amps	CBC-450	1 amp
CBC-150	.8 amps	MCS-103-1	1.25 amps
CBC-801	1.25 amps	CBC-500	1 amp
CBC-400	1 amp	CBC-550	1 amp

5. Can I use a CBC-160 with a variable frequency drive and AC motor?

No. As the voltage to the drive is varied, the output to the electrically released brake would also vary. This would cause the brake to re-engage when it should be released.

6. Which power supplies offer a 12 VDC power source that could be used to power auxiliary switch inputs such as inductive or photoelectric sensors?

CBC-400, CBC-450, CBC-500,
CBC-550, CBC-700, CBC-750

7. Is the CBC-1000 a stand-alone control?

No. The CBC-1000 provides closed loop feedback for a clutch/brake system. A common system will consist of four components:

- a Warner Electric brake and clutch
- a Warner Electric power supply
- an Encoder
- a CBC-1000 position control

The application criteria will determine which clutch/brake and which control will be appropriate selections.

8. Which of the controls would allow for the independent operation of two clutches or two brakes?

Four controls allow for completely independent operation of two clutches or brakes. That is, that a clutch and brake can both be on at once, both off at once, or one on and one off. These controls are:

CBC-801-1 and CBC-801-2, MCS-103-1, CBC-200, CBC-300

The CBC-400/450 and CBC-500/550 allow for operation of both channels on at once, both channels off at once or cycling between channel one and two. However, in the both-on/both-off mode, you cannot also do independent single channel operation.

9. Are there any controls that can be used to control the torque of a 90 volt clutch or brake via an analog signal input?

Not currently. However, the TCS-200 and TCS-200-1 both provide signal following capabilities for use with units with 24 volt coils. These units can follow a 0-10 volt or 4-24 ma input signal.

10. Which controls can be used with electrically released brakes?

The CBC-160-1 and CBC-160-2 are designed specifically to use with the conduit box of EM and EUM electrically released brake designs. The CBC-160-1 and CBC-160-2 can also be used with ER and FB brake designs.

The MCS-103-1, CBC-200, CBC-300 and CBC-500/550 can all be used with ER, FB as well as UM-FBC, EM and EUM-FBB and EM and EUM-MBFB designs.

The MCS 805-1 and MCS 805-2 are for use only with the ER 1225 brakes. The ERS series brakes can be used with the CBC-100 or CBC-801 power supplies.

Ordering Information

Model	Part Number	Page
CBC-100-1	6003-448-101	144
CBC-100-2	6003-448-103	144
MCS-103-1	6010-448-002	150
CBC-150-1	6004-448-001	144
CBC-150-2	6004-448-002	144
CBC-160-1	6013-448-001	145
CBC-160-2	6013-448-002	145
CBC-200	6011-448-001	152
CBC-300	6021-448-001	152
CBC-400-24	6006-448-002	148
CBC-400-90	6006-448-003	148
CBC-450-24	6006-448-005	149
CBC-450-90	6006-448-006	149
CBC-500-24	6024-448-002	153
CBC-500-90	6024-448-003	153
CBC-550-24	6024-448-005	154
CBC-550-90	6024-448-006	154
CBC-1825R	1825-448-001	156
CBC-700-24	6042-448-002	158
CBC-700-90	6042-448-003	158
CBC-750-6	6041-448-001	160
CBC-750-24	6041-448-002	160
CBC-750-90	6041-448-003	160
CBC-801-1	6001-448-004	146
CBC-801-2	6001-448-006	146
Octal Socket, Foot Mount	6001-101-001	146,147
Octal Socket, DIN Rail Mount.....	6001-101-002	146,147
CBC-802	6002-448-001	147
CBC-1000	6060-448-001	162
Serial Interface Module.....	6060-101-232	162
Encoders: Cable (Accessory)	6090-101-001	162
100 PPR	6060-101-010	162
250 PPR	6060-101-025	162
600 PPR	6060-101-060	162
1200 PPR	6060-101-120	162
2500PPR	6060-101-250	162
5000PPR	6060-101-500	162
Optional Enclosure: CBC-400, CBC-500, CBC-700 ...	6042-101-004.....	148, 153,158
Optional Enclosure CBC-450, CBC-550	6006-101-007	149, 154
MCS-805-1	6090-448-006	151
MCS-805-2	6090-448-007	151



C-face Compatible Units

Electro Modules

EM Series Modular Clutches, Brakes and Motor Brakes 169

UniModules

UM Series Clutch and Clutch/Brake Combinations 176

UM-C Series Ceramic Faced Clutch/Brakes N/A

Enclosed UniModules

EUM Series Clutch and Clutch/Brake Combinations 184

EUM-W Series Washdown Clutch/Brakes 184

Shaft and Base Mounted Units

Electro Clutches and Brakes

EC Series Shaft Mounted Clutches 190

EB Series Shaft Mounted Brakes 196

Advanced Technology Clutches and Brakes

ATC Series Clutches 202

ATB Series Brakes 204

Packaged Stationary Field Clutches

SFP Clutches N/A

Electro Pack

EP Series Base Mounted Clutch/Brakes 206

EP-C Series Ceramic Faced Base Mounted Clutch/Brakes N/A

Electrically Released Brakes

Spring-Set Brakes

ERS Series Static Engaged Brakes N/A

ERD Series Dual Purpose Engagement Brakes N/A

Permanent Magnet Brakes

FB Series Shaft Mounted Brakes 214

ER Series Flange Mounted Brakes 216

EM

UM-FBC Series Clutch/Electrically Released Brakes 218

EM-FBB, EM-FBC, EM-MBFB Series Brake Modules 222

Bushing Part Numbers 235

Replacement Service Parts

When replacing components in clutches and brakes several guidelines are appropriate. In all cases, when replacing worn friction surfaces both the components need to be replaced. In many cases, the splined hubs should be inspected and replaced if worn.

Common Replacement practices:

EM/UM/EUM clutches

- Replace rotor and armature
- Inspect splined hub

EM/UM/EUM clutch/brakes

- Replace clutch rotor and armature
- Replace brake magnet and armature
- Inspect splined hub

EC clutches

- Replace clutch rotor and armature

EB brakes

- Replace magnet and armature

ATC clutches

- Replace clutch rotor facing and armature facing
- Inspect splined hub

ATB brakes

- Replace magnet facing and armature facing
- Inspect splined hub

Electro-Pack clutch/brake

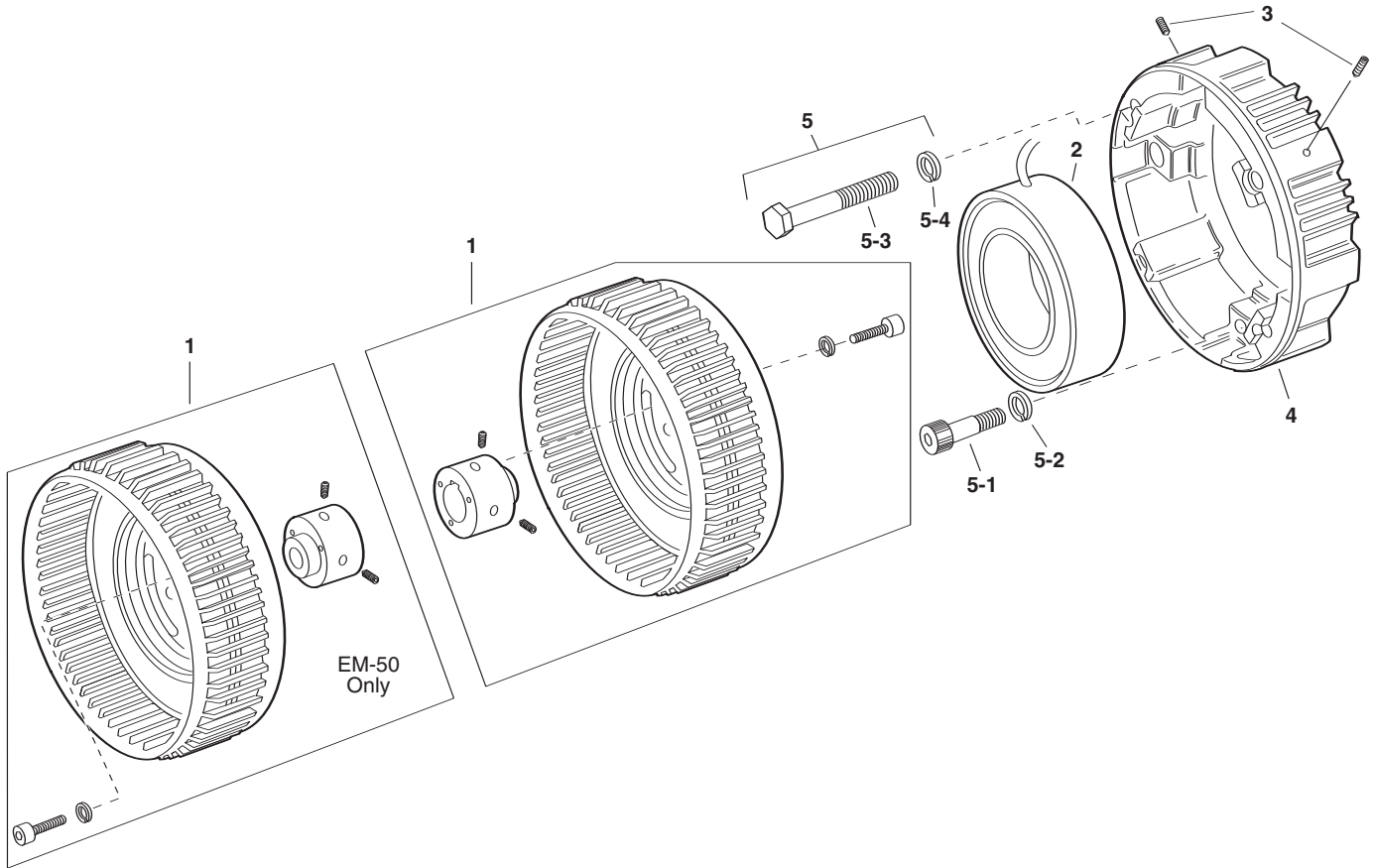
- Replace clutch rotor and armature
- Replace brake magnet and armature
- Inspect splined hub

Electrically released brakes

- On all Electrically released brakes the magnet and armature are only sold as a matched set and must be replaced as a set.

A note on burnishing:

When new friction surfaces are installed it will be necessary to burnish the unit prior to returning to full production rates. Burnishing is the act of wearing in the friction faces to ensure full engagement and therefore full torque. Burnishing is achieved by simply cycling the unit under less than full load (machine empty, if possible). Most units will achieve full torque in less than 100 cycles. Refer to the service manual for more details.



Note: As of June, 2000 all rotors are manufactured as a single piece design. The rotor assembly part number remains the same and now includes the hub and set screws.

Component Parts

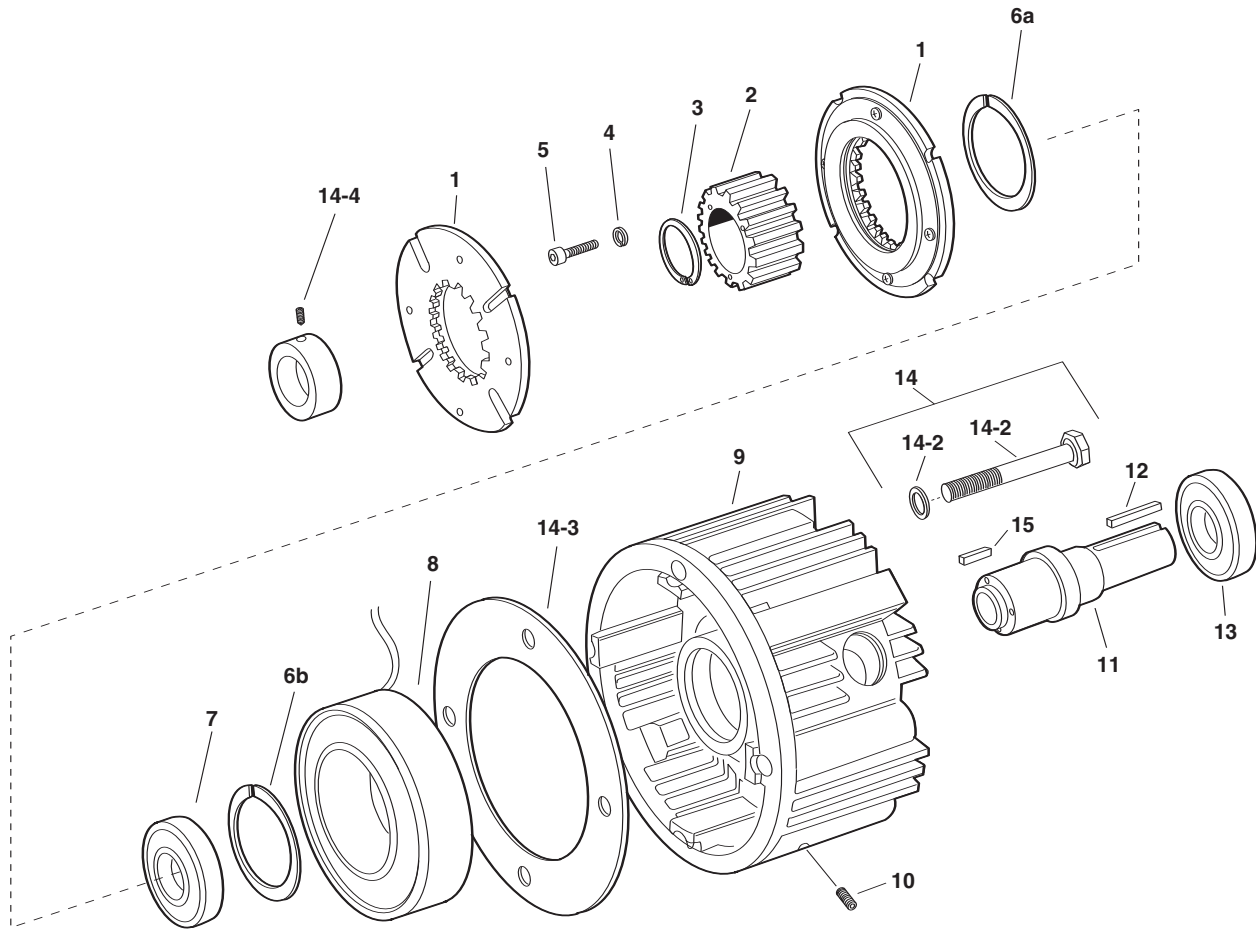
Item	Description	EM-50		EM-100		EM-180		EM-210	
		Part No.	Qty.	Part No.	Qty.	Part No.	Qty.	Part No.	Qty.
1*	Rotor Assembly w/fan & hub	5370-751-010	1	5370-751-013	1	5370-751-007	1	5371-751-005	1
	Field		1		1		1		1
2	6 volt	5370-451-011		5370-451-021		5370-451-021		5371-451-010	
	24 volt	5370-451-014		5370-451-024		5370-451-024		5371-451-013	
	90 volt	5370-451-012		5370-451-022		5370-451-022		5371-451-011	
3	Setscrew							797-0471	4
4	Adapter							104-0096	1
	Mounting Accessory	5370-101-028	1	5370-101-013	1	5370-101-013	1	5371-101-008	1
5	5-1 Capscrew	797-0293	4	797-0293	4	797-0293	4	797-1078	4
	5-2 Lockwasher	950-0128	4	950-0128	4	950-0128	4	950-0101	4
	5-3 Capscrew							797-1075	4
	5-4 Lockwasher							950-0032	4

*Shipped Assembled

Refer to Service Manual P-213.

These units meet the standards of UL 508 and are listed under guide card #NMTR2, file #59164. These units are CSA certified under file #LR11543.

20 Brake Module

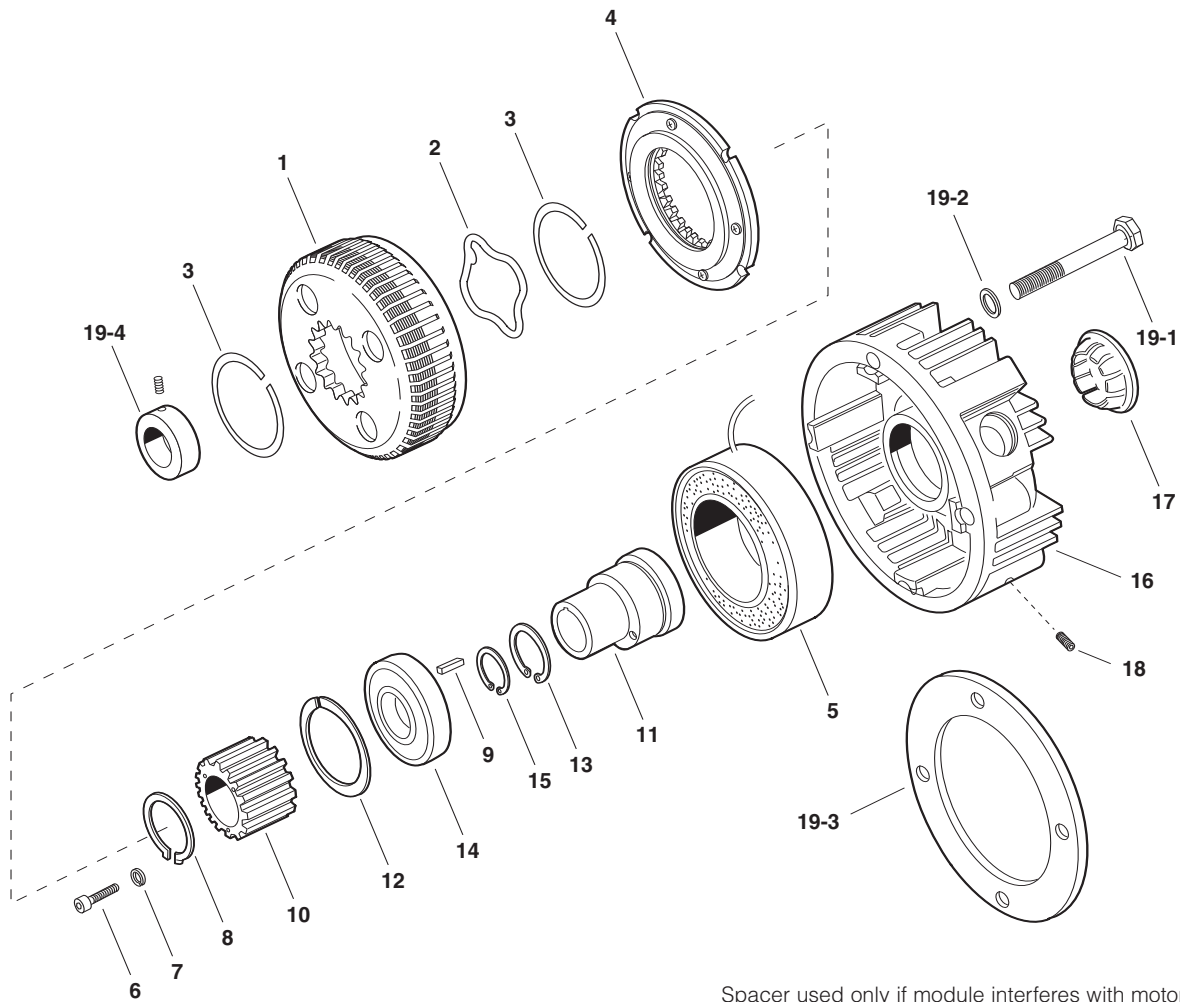


Component Parts

Item	Description	EM-50		EM-100		EM-180		EM-210		EM-215	
		Part No.	Qty.	Part No.	Qty.	Part No.	Qty.	Part No.	Qty.	Part No.	Qty.
1	Armature	5370-111-011	2	5370-111-013	2	5370-111-013	2	5371-111-005	2	5371-111-005	1
2	Armature Hub	540-1638	1	540-1684	1	540-1642	1	540-0741	1	540-2039	1
3	Retaining Ring	748-0445	1	748-0676	1	748-0676	1				
4	Lockwasher							950-0372	6	950-0372	6
5	Capscrew							797-0081	6	797-008	6
6a	Retaining Ring	748-0113	1	748-0101	1	748-0101	1	748-0112	1	748-0112	1
6b	Retaining Ring	748-0113	1							748-2002	1
7	Ball Bearing	166-0149	1	166-0101	1	166-0101	1	166-0142	1	166-0142	1
8	Magnet		1		1		1		1		
	6 Volt	5370-631-008		5370-631-002		5370-631-002		5371-631-002			
	24 Volt	5370-631-010		5370-631-005		5370-631-005		5371-631-005			
	90 Volt	5370-631-007		5370-631-003		5370-631-003		5371-631-003		5371-631-003	1
9	Housing	535-0130	1	535-0132	1	535-0132	1	535-0033	1	535-0033	1
10	Setscrew	797-0471	4	797-0471	4	797-0471	4	797-0471	4	797-0471	4
11	Shaft	798-0045	1	798-0127	1	798-0086	1	798-0050	1	798-0268	1
12	Key - Output	590-0029	1	590-0029	1	590-0029	1	590-0019	1	590-0124	1
13	Ball Bearing	166-0155	1	166-0143	1	166-0143	1	166-0144	1	166-0144	1
14	Mounting Accessory	5370-101-017	1	5370-101-017	1	5370-101-023	1	5371-101-007	1	5371-101-007	1
	14-1 Capscrew	797-0353	4	797-0353	4	797-0353	4	797-1081	4	797-1081	4
	14-2 Washer	950-0354	4	950-0354	4	950-0354	4	950-0033	4	950-0033	4
	14-3 Spacer					807-0218	1				
	14-4 Collar					266-0002	1	266-0003	1	266-0003	1
15	Key	590-0043	1	590-0084	1	590-0084	1				
	Key Accessory - Input	5370-101-072	1	5370-101-072	1	5370-101-072	1	5371-101-043	1	5371-101-044	1

Refer to Service Manual P-213.

These units meet the standards of UL 508 and are listed under guide card #NMTR2, file #59164. These units are CSA certified under file #LR11543.



Spacer used only if module interferes with motor housing.

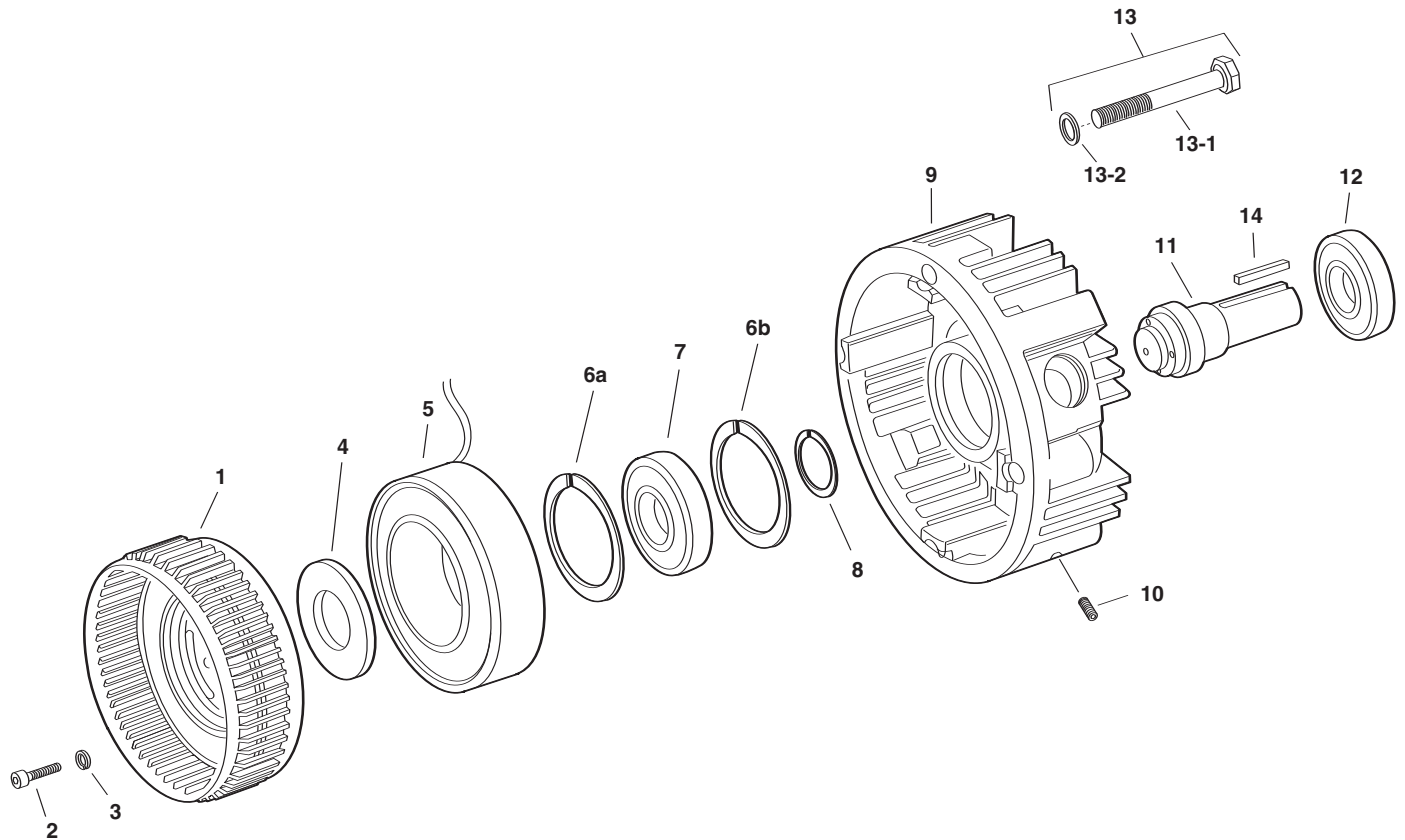
Component Parts

Item	Description	EM-50		EM-180		EM-210	
		Part No.	Qty.	Part No.	Qty.	Part No.	Qty.
1	Fan Assembly	5370-104-002	1	5370-104-001	1	748-1052	1
2	Follow-up Spring	808-0104	1	808-0107	1	808-0109	1
3	Retaining Ring	748-0440	2	748-0450	2	748-0455	2
4	Armature	5370-111-011	1	5370-111-013	1	5371-111-005	1
5	Magnet						
	6 Volt	5370-631-008	11	5370-631-002	1	5371-631-002	1
	24 Volt	5370-631-010	1	5370-631-005	1	5371-631-005	1
	90 Volt	5370-631-007	1	5370-631-003	1	5371-631-003	1
6	Capscrew					797-0081	6
7	Lockwasher					950-0372	6
8	Retaining Ring	748-0445	1				
9	Key	590-0043	1	590-0084	1		
10	Splined Hub	540-1646	1	540-1647	1	540-2041	1
11	Hub	540-1018	1	540-0726	1	540-1020	1
12	Retaining Ring	748-0113	2	748-0101	1	748-0112	1
13	Retaining Ring			748-0676	1		
14	Bearing	166-0149	1	166-0101	1	166-0142	1
15	Retaining Ring	748-0556	1	748-0555	1	748-0554	1
16	Housing	535-0136	1	535-0134	1	535-0050	1
17	Plug	680-0028	1	680-0028	1	680-0027	1
18	Setscrew	797-0471	4	797-0471	4	797-0471	4
19	Mounting Accessory	5370-101-017	1	5370-101-023	1	5371-101-007	1
	19-1 Capscrew	797-0353	4	797-0353	4	797-1081	4
	19-2 Lockwasher	950-0354	4	950-0354	4	950-0033	4
	19-3 Spacer			807-0218	1		
	19-4 Collar			266-0002	1	266-0003	1
	Key Accessory - Input	5370-101-073	1	5370-101-073	1	5371-101-043	1

Refer to Service Manual P-213.

These units meet the standards of UL 508 and are listed under guide card #NMTR2, file #59164. These units are CSA certified under file #LR11543.

30 Input Clutch Module



Component Parts

Item	Description	EM-50		EM-100		EM-180		EM-210	
		Part No.	Qty.	Part No.	Qty.	Part No.	Qty.	Part No.	Qty.
1	Rotor Assembly w/fan	5370-751-006	1	5370-751-009	1	5370-751-009	1	5371-751-007	1
2	Cap screw	797-1039	4	797-1214	5	797-1214	5	797-0083	6
3	Lockwasher	950-0436	4	950-0436	5	950-0436	5	950-0372	6
4	Spacer			807-0062	1	807-0062	1	807-0061	1
5	Field (with housing EM-50-30 only)		1		1		1		1
	6 volt	5370-451-072		5370-451-007		5370-451-007		5371-451-002	
	24 volt	5370-451-074		5370-451-005		5370-451-005		5371-451-005	
	90 volt	5370-451-073		5370-451-008		5370-451-008		5371-451-003	
6a	Retaining Ring	748-0113	1	748-0101	1	748-0101	1	748-0112	1
6b	Retaining Ring	748-0113	1						
7	Ball Bearing	166-0149	1	166-0101	1	166-0101	1	166-0142	1
8	Retaining Ring	748-0017	1						
9	Housing			535-0164	1	535-0164	1	535-0129	1
10	Setscrew	797-0471	4	797-0471	4	797-0471	4	797-0471	4
11	Shaft	798-0047	1	798-0129	1	798-0124	1	798-0123	1
12	Ball Bearing	166-0155	1	166-0143	1	166-0143	1	166-0144	1
13	Mounting Accessory							5371-101-010	1
	13-1 Cap screw							797-1075	4
	13-2 Lockwasher							950-0032	4
14	Key	590-0029	1	590-0029	1	590-0029	1	590-0019	1

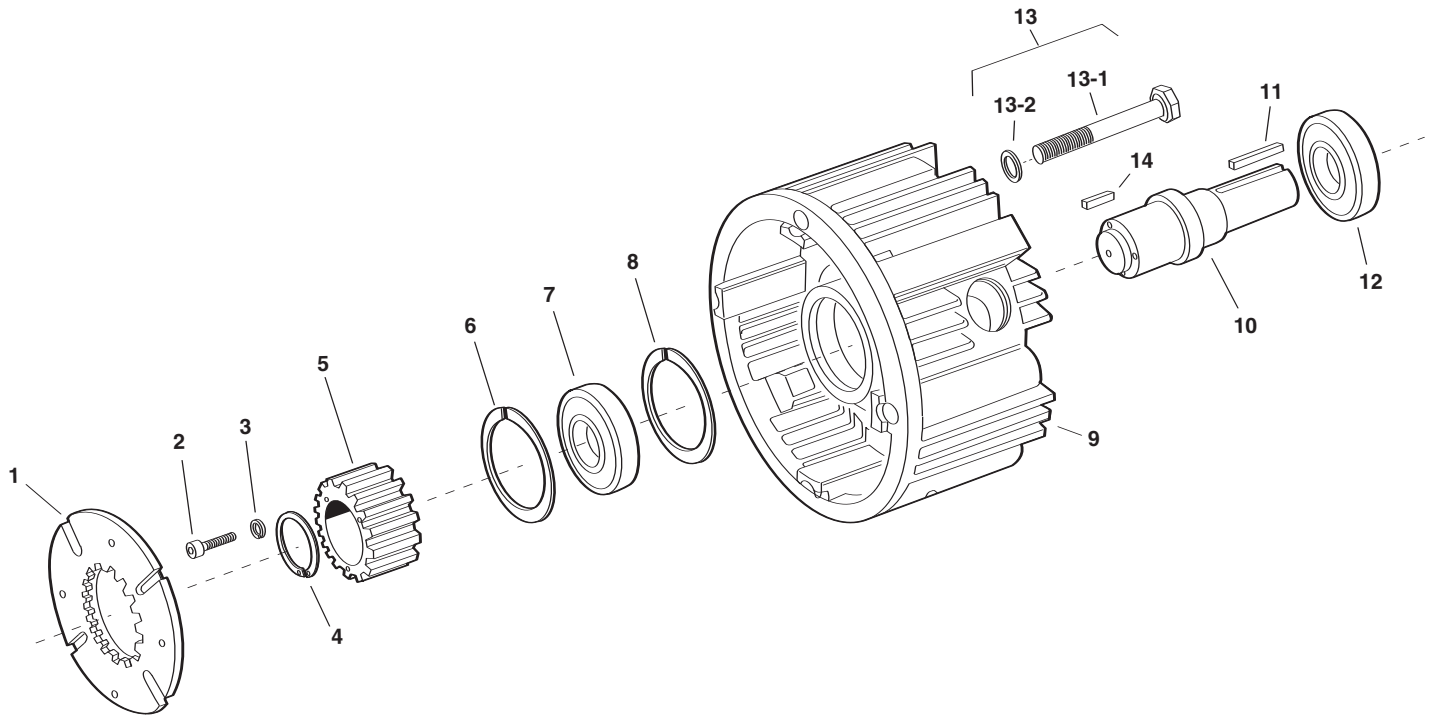
Refer to Service Manual P-213.

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Service Parts



Tel: (011) 4222-5040 Fax: (011) 4201-2478.
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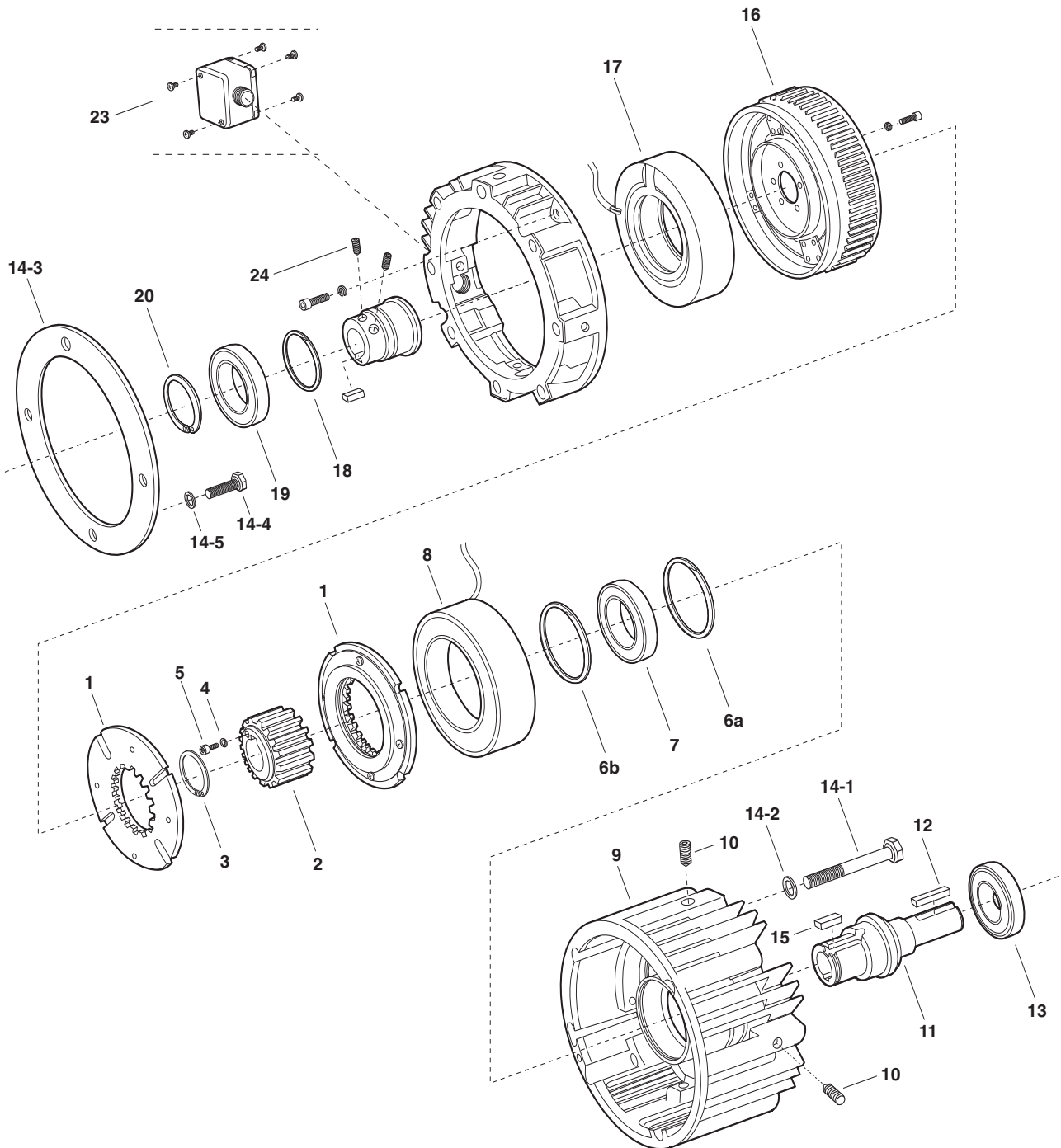
Component Parts

Item	Description	EM-50		EM-100		EM-180		EM-210	
		Part No.	Qty.	Part No.	Qty.	Part No.	Qty.	Part No.	Qty.
1	Armature	5370-111-011	1	5370-111-013	1	5370-111-013	1	5371-111-005	1
2	Capscrew							797-0081	1
3	Lockwasher							950-0372	6
4	Retaining Ring	748-0445	1	748-0676	1	748-0676	1		
5	Hub	540-1638	1	540-1642	1	540-1642	1	540-0741	1
6	Retaining Ring	748-0113	1	748-0101	1	748-0101	1	748-0112	1
7	Ball Bearing	166-0149	1	166-0101	1	166-0101	1	166-0142	1
8	Retaining Ring	748-0113	2						
9	Housing	535-0131	1	535-0133	1	535-0133	1	535-0034	1
10	Shaft	798-0046	1	798-0128	1	798-0085	1	798-0051	1
11	Key	590-0029	1	590-0029	1	590-0029	1	590-0019	1
12	Ball Bearing	166-0155	1	166-0143	1	166-0143	1	166-0144	1
13	Mounting Accessory	5370-101-017	1	5370-101-017	1	5370-101-017	1		
	13-1 Capscrew	797-0353	4	797-0353	4	797-0353	4		
	13-2 Lockwasher	950-0354	4	950-0354	4	950-0354	4		
14	Key	590-0043	1	590-0084	1	590-0084	1		
	Key Accessory - Input	5370-101-072	1	5370-101-072	1	5370-101-072	1	5371-101-043	1

Refer to Service Manual P-213.

These units meet the standards of UL 508 and are listed under guide card #NMTR2, file #59164. These units are CSA certified under file #LR11543.

UM-1020 Clutch/Brake Combination



UM-1020 Clutch/Brake Combination

Component Parts

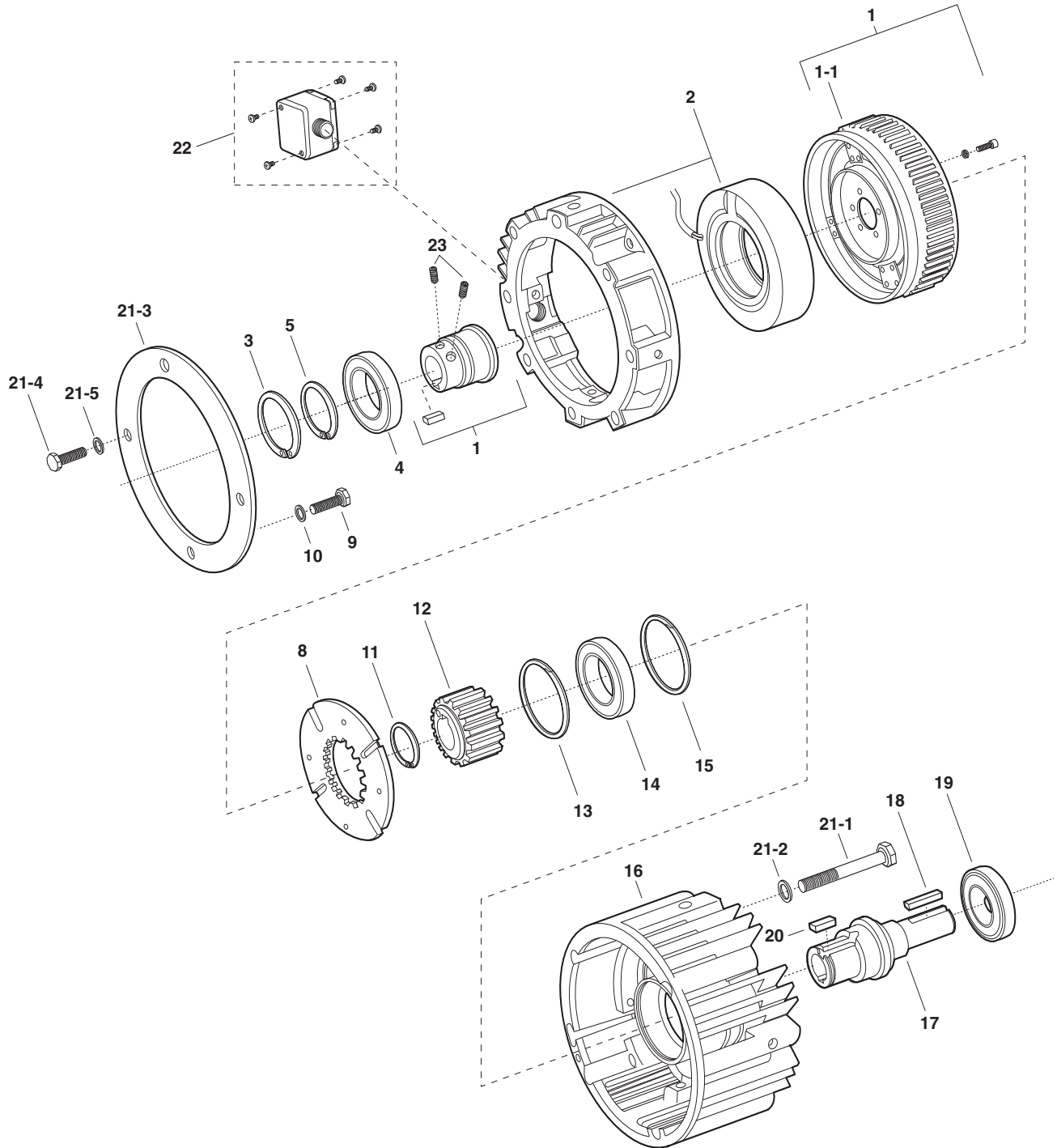
Item	Description	UM-50		UM-100		UM-180		UM-210		UM-215	
		Part No.	Qty.	Part No.	Qty.	Part No.	Qty.	Part No.	Qty.	Part No.	Qty.
1	Armature Assembly	5370-111-011	2	5370-111-013	2	5370-111-013	2	5371-111-005	2	5371-111-005	2
2	Armature Hub	540-1638	1	540-1642	1	540-1642	1	540-0741	1	540-0741	1
3	Retaining Ring	748-0445	1	748-0676	1	748-0676	1				
4	Lockwasher							950-0372	6	950-0372	6
5	Capscrew							797-0081	6	797-0081	6
6a	Retaining Ring	748-0113	1	748-0101	1	748-0101	1	748-0112	1	748-0112	1
6b	Retaining Ring	748-0113	1								
7	Ball Bearing	166-0149	1	166-0101	1	166-0101	1	166-0142	1	166-0142	1
8	Magnet		1		1		1		1		1
	6 volt	5370-631-008		5370-631-002		5370-631-002		5371-631-002		5371-631-002	
	24 volt	5370-631-010		5370-631-005		5370-631-005		5371-631-005		5371-631-005	
	90 volt	5370-631-007		5370-631-003		5370-631-003		5371-631-003		5371-631-003	
9	Housing	535-0165	1	535-0162	1	535-0162	1	535-0163	1	535-0163	1
10	Setscrew	797-0471	4	797-0471	4	797-0471	4	797-0471	4	797-0471	4
11	Shaft	798-0046	1	798-0128	1	798-0085	1	798-0051	1	798-0254	1
12	Key	590-0029	1	590-0029	1	590-0029	1	590-0019	1	590-0124	1
13	Ball Bearing	166-0155	1	166-0143	1	166-0143	1	166-0144	1	166-0144	1
14	Mounting Accessory	5370-101-040	1	5370-101-040	1	5370-101-040	1	5371-101-020	1	5371-101-020	1
	14-1 Capscrew	797-1378	4	797-1378	4	797-1378	4	797-1440	4	797-1440	4
	14-2 Washer	950-0354	4	950-0354	4	950-0354	4	950-0111	4	950-0111	4
	14-3 Adapter			807-0218	1			104-0321	1	104-0321	1
	14-4 Capscrew							797-1442	4	797-1442	4
	14-5 Washer							950-0101	4	950-0101	4
15	Key	590-0043	1	590-0084	1	590-0084	1				
16	Rotor Assembly (with fan and hub)	5370-751-019	1	5370-751-022	1	5370-751-017	1	5371-751-012	1	5371-751-031	1
17	Field (with housing)		1		1		1		1		1
	6 volt	5370-451-062		5370-451-057		5370-451-057		5371-451-027		5371-451-027	
	24 volt	5370-451-064		5370-451-059		5370-451-059		5371-451-029		5371-451-029	
	90 volt	5370-451-063		5370-451-058		5370-451-058		5371-451-028		5371-451-028	
18	Retaining Ring	748-0101	1	748-0101	1	748-0101	1	748-0558	1	748-0558	1
19	Bearing	166-0150	1	166-0101	1	166-0101	1	166-0168	1	166-0168	1
20	Retaining Ring	748-0018	1	748-0001	1	748-0001	1	748-0067	1	748-0067	1
23	Conduit Box (Optional)	5370-101-042	1	5370-101-042	1	5370-101-042	1	5370-101-042	1	5370-101-042	1
24	Set Screw	797-1098	2	797-0069	2	797-0069	2	797-1098	2	797-1098	2
	Key	5370-101-072	1	5370-101-072	1	5370-101-072	1	5371-101-043	1	5371-101-044	1

Refer to Service Manual P-213.

These units meet the standards of UL 508 and are listed under guide card #NMTR 2, file #59164. These units are CSA certified under file #LR11543.

Note: As of June, 2000 all rotors are manufactured as a single piece design. The rotor assembly part number remains the same and now includes the hub and set screws.

UM-1040 Clutch Combination



UM-1040 Clutch Combination

Component Parts

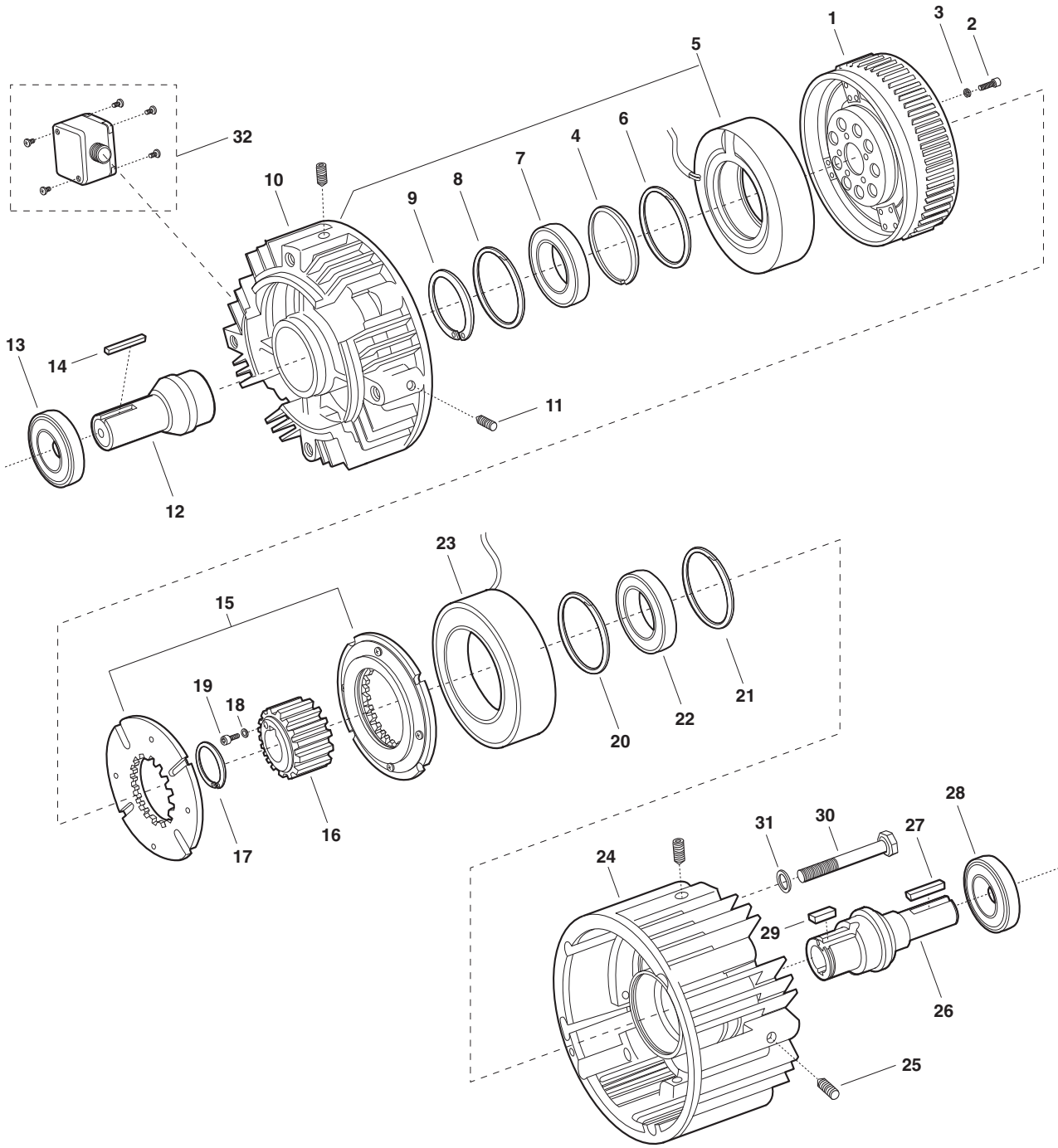
Item	Description	UM-50		UM-100		UM-180		UM-210		UM-215	
		Part No.	Qty.	Part No.	Qty.	Part No.	Qty.	Part No.	Qty.	Part No.	Qty.
1	Rotor Assembly (with fan and hub)	5370-751-019	1	5370-751-022	1	5370-751-017	1	5371-751-012	1	5371-751-031	1
2	Field (with housing)		1		1		1		1		1
	6 volt	5370-451-062		5370-451-057		5370-451-057		5371-451-027		5371-451-027	
	24 volt	5370-451-064		5370-451-059		5370-451-059		5371-451-029		5371-451-029	
	90 volt	5370-451-063		5370-451-058		5370-451-058		5371-451-028		5371-451-028	
3	Retaining Ring	748-0101	1	748-0101	1	748-0101	1	748-0558	1	748-0558	1
4	Bearing	166-0150	1	166-0101	1	166-0101	1	166-0168	1	166-0168	1
5	Retaining Ring	748-0018	1	748-0001	1	748-0001	1	748-0067	1	748-0067	1
8	Armature Assembly	5370-111-011	1	5370-111-013	1	5370-111-013	1	5371-111-005	1	5371-111-005	1
9	Capscrew							797-0081	6	797-0081	6
10	Lockwasher							950-0372	6	950-0372	6
11	Retaining Ring	748-0445	1	748-0676	1	748-0676	1				
12	Hub	540-1638	1	540-1642	1	540-1642	1	540-0741	1	540-0741	1
13	Retaining Ring	748-0113	1	748-0101	1	748-0101	1	748-0112	1	748-0112	1
14	Ball Bearing	166-0149	1	166-0101	1	166-0101	1	166-0142	1	166-0142	1
15	Retaining Ring	748-0113	1								
16	Housing	535-0167	1	535-0168	1	535-0168	1	535-0169	1	535-0169	1
17	Shaft	798-0046	1	798-0128	1	798-0085	1	798-0051	1	798-0254	1
18	Key	590-0029	1	590-0029	1	590-0029	1	590-0019	1	590-0124	1
19	Ball Bearing	166-0155	1	166-0143	1	166-0143	1	166-0144	1	166-0144	1
20	Key	590-0043	1	590-0084	1	590-0084	1				
21	Mounting Accessory	5370-101-040	1	5370-101-040	1	5370-101-040	1	5371-101-020	1	5371-101-020	1
	21-1 Capscrew	797-1378	4	797-1378	4	797-1378	4	797-1440	4	797-1440	4
	21-2 Lockwasher	950-0354	4	950-0354	4	950-0354	4	950-0111	4	950-0111	4
	21-3 Adapter			807-0218	1			104-0321	1	104-0321	1
	21-4 Capscrew							797-1442	4	797-1442	4
	21-5 Lockwasher							950-0101	4	950-0101	4
22	Conduit Box (Optional)	5370-101-042	1	5370-101-042	1	5370-101-042	1	5370-101-042	1	5370-101-042	1
23	Set Screw	797-1098	2	797-0069	2	797-0069	2	797-1098	2	797-1098	2
	Key	5370-101-072	1	5370-101-072	1	5370-101-072	1	5371-101-043	1	5371-101-044	1

Refer to Service Manual P-213.

These units meet the standards of UL 508 and are listed under guide card #NMTR 2, file #59164. These units are CSA certified under file #LR11543.

Note: As of June, 2000 all rotors are manufactured as a single piece design. The rotor assembly part number remains the same and now includes the hub and set screws.

UM-2030 Clutch/Brake Combination



UM-2030 Clutch/Brake Combination

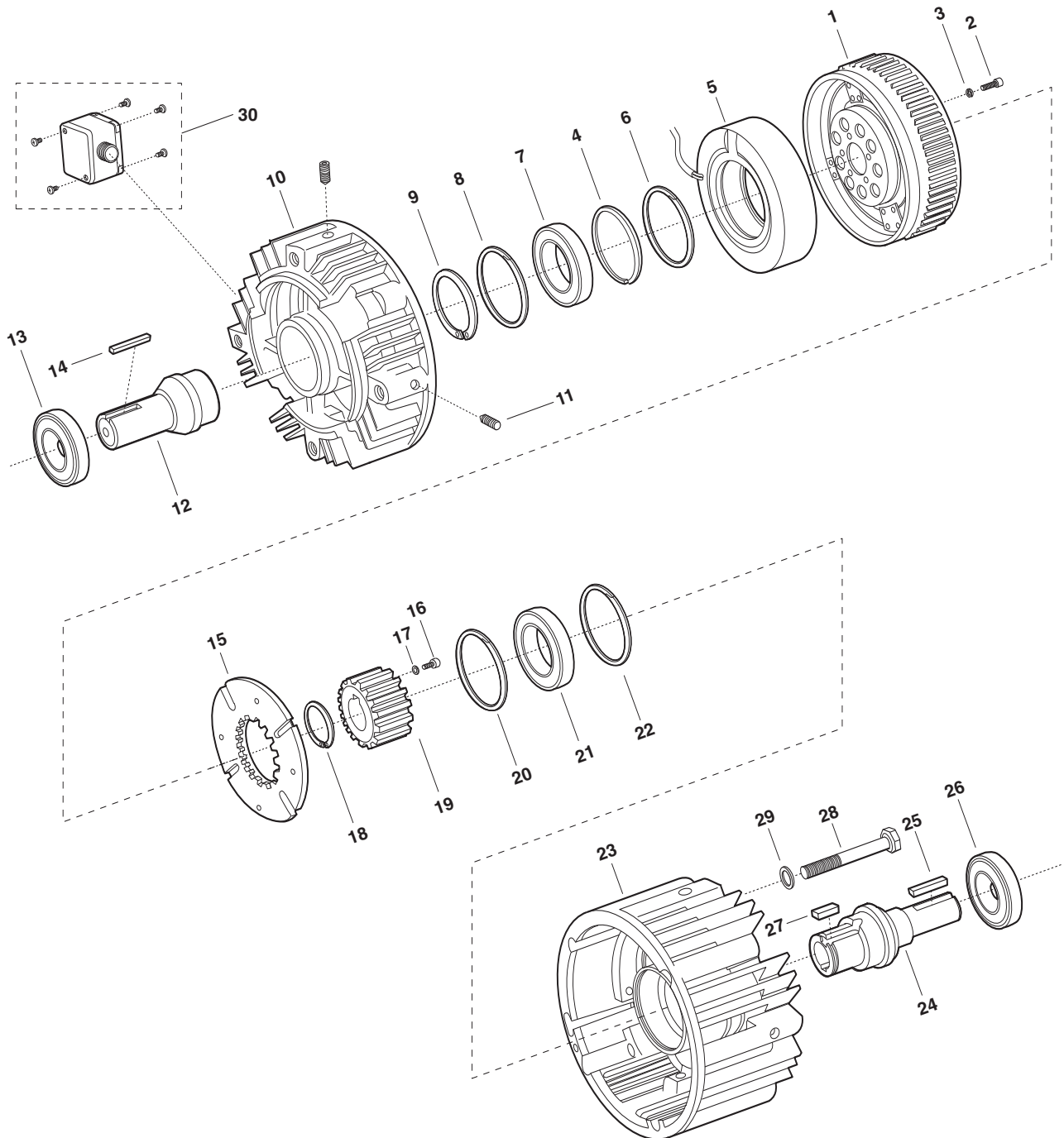
Component Parts

Item	Description	UM-50		UM-100		UM-180		UM-210		UM-215	
		Part No.	Qty.	Part No.	Qty.	Part No.	Qty.	Part No.	Qty.	Part No.	Qty.
1	Rotor Assembly w/fan	5370-751-006	1	5370-751-009	1	5370-751-009	1	5371-751-007	1	5371-751-007	1
2	Capscrew	797-1294	4	797-1214	5	797-1214	5	797-0083	6	797-0083	6
3	Lockwasher	950-0436	4	950-0436	5	950-0436	5	950-0372	6	950-0372	6
4	Spacer			807-0062	1	807-0062	1	807-0061	1	807-0061	1
5	Field (with housing UM-50-2030 only)		1		1		1		1		1
	6 volt	5370-451-072		5370-451-007		5370-451-007		5371-451-002		5371-451-002	
	24 volt	5370-451-074		5370-451-005		5370-451-005		5371-451-005		5371-451-005	
	90 volt	5370-451-073		5370-451-008		5370-451-008		5371-451-003		5371-451-003	
6	Retaining Ring	748-0113	1	748-0101	1	748-0101	1	748-0112	1	748-0112	1
7	Ball Bearing	166-0149	1	166-0101	1	166-0101	1	166-0142	1	166-0142	1
8	Retaining Ring	748-0113	1								
9	Retaining Ring	748-0017	1								
10	Housing			535-0164	1	535-0164	1	535-0129	1	535-0129	1
11	Setscrew			797-0471	4	797-0471	4	797-0471	4	797-0471	4
12	Shaft	798-0047	1	798-0129	1	798-0124	1	798-0123	1	798-0255	1
13	Bearing	166-0155	1	166-0143	1	166-0143	1	166-0144	1	166-0144	1
14	Key	590-0029	1	590-0029	1	590-0029	1	590-0019	1	590-0124	1
15	Armature Assembly	5370-111-011	2	5370-111-013	2	5370-111-013	2	5371-111-005	2	5371-111-005	2
16	Armature Hub	540-1638	1	540-1642	1	540-1642	1	540-0741	1	540-0741	1
17	Retaining Ring	748-0445	1	748-0676	1	748-0676	1				
18	Lockwasher							950-0372	6	950-0372	6
19	Capscrew							797-0081	6	797-0081	6
20	Retaining Ring	748-0113	1	748-0101	1	748-0101	1	748-0112	1	748-0112	1
21	Retaining Ring	748-0113	1								
22	Ball Bearing	166-0149	1	166-0101	1	166-0101	1	166-0142	1	166-0142	1
23	Magnet		1		1		1		1		1
	6 volt	5370-631-008		5370-631-002		5370-631-002		5371-631-002		5371-631-002	
	24 volt	5370-631-010		5370-631-005		5370-631-005		5371-631-005		5371-631-005	
	90 volt	5370-631-007		5370-631-003		5370-631-003		5371-631-003		5371-631-003	
24	Housing	535-0165	1	535-0162	1	535-0162	1	535-0163	1	535-0163	1
25	Setscrew	797-0471	4	797-0471	4	797-0471	4	797-0471	4	797-0471	4
26	Shaft	798-0046	1	798-0128	1	798-0085	1	798-0051	1	798-0251	1
27	Key	590-0029	1	590-0029	1	590-0029	1	590-0019	1	590-0124	1
28	Ball Bearing	166-0155	1	166-0143	1	166-0143	1	166-0144	1	166-0144	1
29	Key	590-0043	1	590-0084	1	590-0084	1				
30	Capscrew	797-0353	4	797-0353	4	797-0353	4	797-1075	4	797-1075	4
31	Lockwasher	950-0354	4	950-0354	4	950-0354	4	950-0032	4	950-0032	4
32	Conduit Box (Optional)	5370-101-042	1	5370-101-042	1	5370-101-042	1	5370-101-042	1	5370-101-042	1

Refer to Service Manual P-213.

These units meet the standards of UL 508 and are listed under guide card #NMTR2, file #59164. These units are CSA certified under file #LR11543.

UM-3040 Clutch Combination-Base Mounted



UM-3040 Clutch Combination–Base Mounted

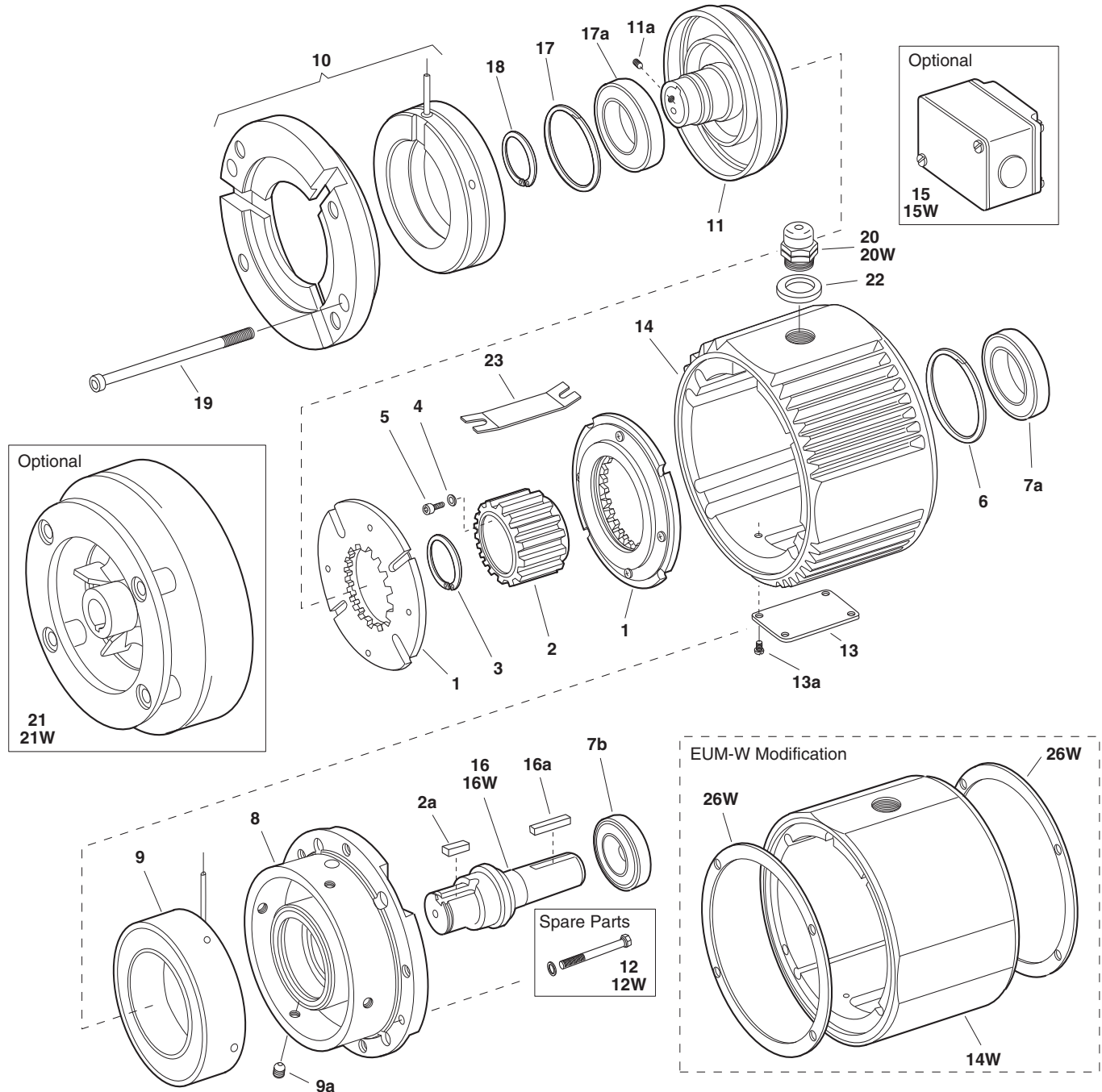
Component Parts

Item	Description	UM-50		UM-100		UM-180		UM-210		UM-215	
		Part No.	Qty.	Part No.	Qty.	Part No.	Qty.	Part No.	Qty.	Part No.	Qty.
1	Rotor Assembly w/fan	5370-751-006	1	5370-751-009	1	5370-751-009	1	5371-751-007	1	5371-751-007	1
2	Capscrew	797-1294	4	797-1214	5	797-1214	5	797-0083	6	797-0083	6
3	Lockwasher	950-0436	4	950-0436	5	950-0436	5	950-0372	6	950-0372	6
4	Spacer			807-0062	1	807-0062	1	807-0061	1	807-0061	1
5	Field (with housing UM-50-3040 only)		1		1		1		1		1
	6 volt	5370-451-072		5370-451-007		5370-451-007		5371-451-002		5371-451-002	
	24 volt	5370-451-074		5370-451-005		5370-451-005		5371-451-005		5371-451-005	
	90 volt	5370-451-073		5370-451-008		5370-451-008		5371-451-003		5371-451-003	
6	Retaining Ring	748-0113	1	748-0101	1	748-0101	1	748-0112	1	748-0112	1
7	Ball Bearing	166-0149	1	166-0101	1	166-0101	1	166-0142	1	166-0142	1
8	Retaining Ring	748-0113	1								
9	Retaining Ring	748-0017	1								
10	Housing			535-0164	1	535-0164	4	535-0129	1	535-0129	1
11	Setscrew			797-0471	4	797-0471	4	797-0471	4	797-0471	4
12	Shaft	798-0047	1	798-0129	1	798-0124	1	798-0123	1	798-0255	1
13	Bearing	166-0155	1	166-0143	1	166-0143	1	166-0144	1	166-0144	1
14	Key	590-0029	1	590-0029	1	590-0029	1	590-0019	1	590-0124	1
15	Armature Assembly	5370-111-011	1	5370-111-013	1	5370-111-013	1	5371-111-005	1	5371-111-005	1
16	Capscrew							797-0081	6	797-0081	6
17	Lockwasher							950-0372	6	950-0372	6
18	Retaining Ring	748-0445	1	748-0676	1	748-0676	1				
19	Hub	540-1638	1	540-1642	1	540-1642	1	540-0741	1	540-0741	1
20	Retaining Ring	748-0113	1	748-0101	1	748-0101	1	748-0112	1	748-0112	1
21	Ball Bearing	166-0149	1	166-0101	1	166-0101	1	166-0142	1	166-0142	1
22	Retaining Ring	748-0113	1								
23	Housing	535-0167	1	535-0168	1	535-0168	1	535-0169	1	535-0169	1
24	Shaft	798-0046	1	798-0128	1	798-0085	1	798-0051	1	798-0251	1
25	Key	590-0029	1	590-0029	1	590-0029	1	590-0019	1	590-0124	1
26	Ball Bearing	166-0155	1	166-0143	1	166-0143	1	166-0144	1	166-0144	1
27	Key	590-0043	1	590-0084	1	590-0084	1				
28	Capscrew	797-0353	4	797-0353	4	797-0353	4	797-1075	4	797-1075	4
29	Lockwasher	950-0354	4	950-0354	4	950-0354	4	950-0032	4	950-0032	4
30	Conduit Box (Optional)	5370-101-042	1	5370-101-042	1	5370-101-042	1	5370-101-042	1	5370-101-042	1

Refer to Service Manual P-213.

These units meet the standards of UL 508 and are listed under guide card #NMTR2, file #59164. These units are CSA certified under file #LR11543.

EUM-1020 Clutch/Brake Combination EUM-W-1020 Clutch/Brake Combination



EUM-1020 Clutch/Brake Combination EUM-W-1020 Clutch/Brake Combination

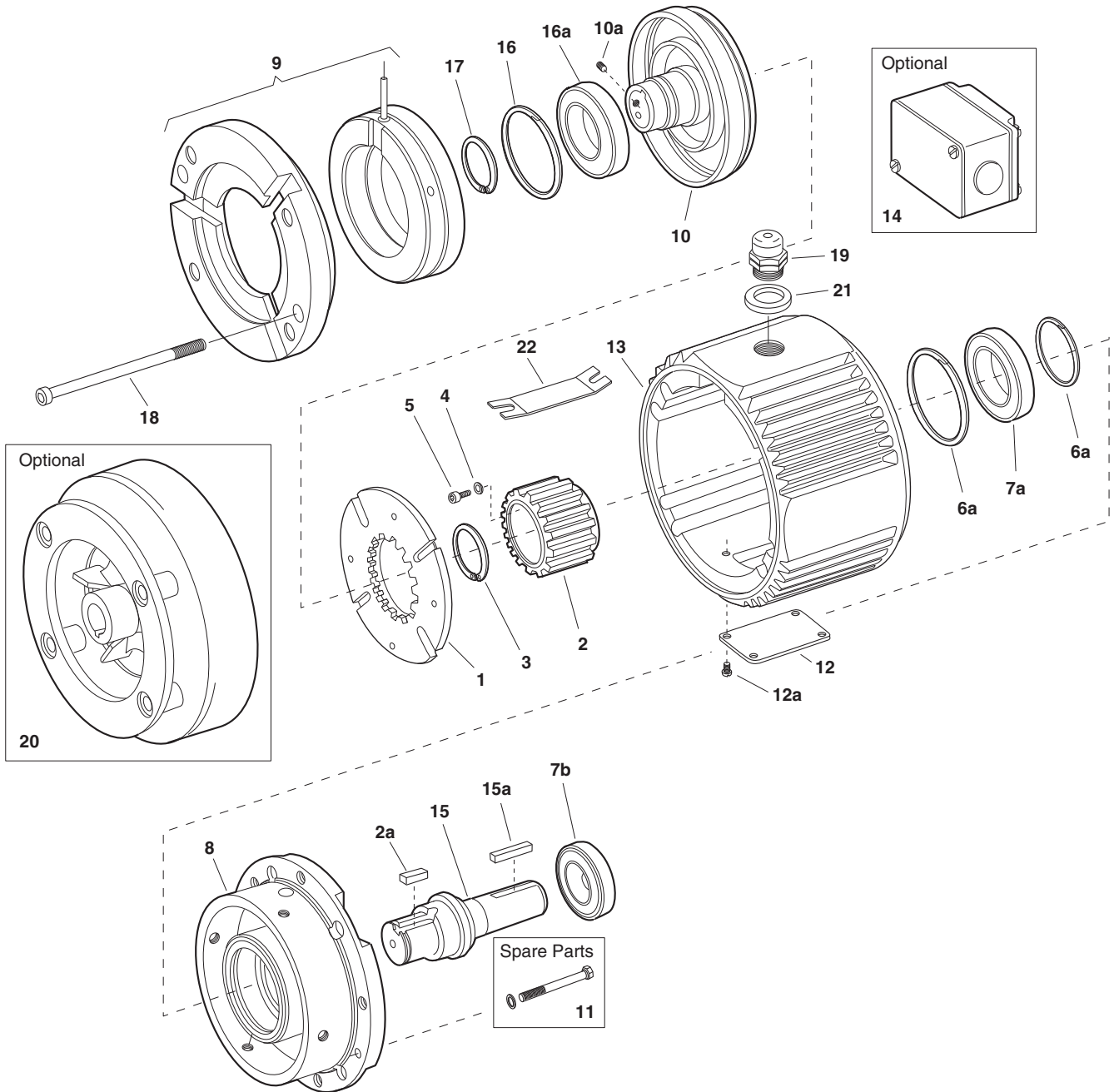
Component Parts

Item	Description	EUM-50		EUM-100		EUM-180		EUM-210		EUM-215	
		Part No.	Qty.	Part No.	Qty.	Part No.	Qty.	Part No.	Qty.	Part No.	Qty.
1	Armature Assembly	5370-111-011	2	5370-111-013	2	5370-111-013	2	5371-111-005	2	5371-111-005	2
2	Armature Hub	540-1638	1	540-1642	1	540-1642	1	540-0741	1	540-0741	1
2a	Key	590-0043	1	590-0084	1	590-0084	1				
3	Retaining Ring	748-0445	1	748-0676	1	748-0676	1				
4	Lockwasher							950-0121	6	950-0121	6
5	Capscrew							797-0081	6	797-0081	6
6	Retaining Ring	748-0113	2	748-0101	1	748-0101	1	748-0112	1	748-0112	1
7a	Ball Bearing	166-0149	1	166-0101	1	166-0101	1	166-0142	1	166-0142	1
7b	Ball Bearing	166-0155	1	166-0143	1	166-0143	1	166-0144	1	166-0144	1
8	Endbell/Brake	456-1014	1	456-1019	1	456-1019	1	456-1017	1	456-1017	1
9	Brake Magnet										
	6 volt	5370-631-037		5370-631-002		5370-631-002		5371-631-002		5371-631-002	
	24 volt	5370-631-038		5370-631-005		5370-631-005		5371-631-005		5371-631-005	
	90 volt	5370-631-036		5370-631-003		5370-631-003		5371-631-003		5371-631-003	
9a	Set Screws	797-0471	4	797-0471	4	797-0471	4	797-0471	4	797-0471	4
10	Clutch Field/Endbell Assembly										
	6 volt	5370-451-077	1	5370-451-086	1	5370-451-086	1	5371-451-033	1	5371-451-033	1
	24 volt	5370-451-078	1	5370-451-087	1	5370-451-087	1	5371-451-034	1	5371-451-034	1
	90 volt	5370-451-076	1	5370-451-085	1	5370-451-085	1	5371-451-032	1	5371-451-032	1
11	Rotor/Hub Assembly	5370-751-023	1	5370-751-035	1	5370-751-024	1	5371-751-014	1	5371-751-033	1
11a	Set Screws	797-1098	2	797-0069	2	797-0069	2	797-1098	2	797-1098	2
12	Mounting Accessory Kit	5370-101-040	1	5370-101-040	1	5370-101-040	1	5371-101-024	1	5371-101-024	1
13	Cover Plate	686-1055	1	686-1055	1	686-1055	1	686-1055	1	686-1055	1
13a	Cover Plate Screws	797-0575	4	797-0575	4	797-0575	4	797-0575	4	797-0575	4
14	Center Housing	535-0176	1	535-0176	1	535-0176	1	535-0177	1	535-0177	1
15	Conduit Box (optional)	5370-101-042	1	5370-101-042	1	5370-101-042	1	5370-101-042	1	5370-101-042	1
16	Shaft	798-0046	1	798-0128	1	798-0085	1	798-0051	1	798-0254	1
16a	Key	590-0029	1	590-0029	1	590-0029	1	590-0019	1	590-0124	1
17	Retaining Ring	748-0101	2	748-0101	1	748-0101	1	748-0558	1	748-0558	1
17a	Ball Bearing	166-0150	1	166-0300	1	166-0300	1	166-0168	1	166-0168	1
18	Retaining Ring	748-0018	1	748-0018	1	748-0018	1	748-0067	1	748-0067	1
19	Assembly Bolts	797-1433	2	797-1433	2	797-1433	2	797-1438	2	797-1438	2
20	Connector	280-0038	1	280-0038	1	280-0038	1	280-0038	1	280-0038	1
21	Accessory Fan (optional)	5370-101-055	1	5370-101-055	1	5370-101-054	1	5371-101-029	1	N/A	
22	Washer	950-0441	1	950-0441	1	950-0441	1	950-0441	1	950-0441	1
23	Insulator	572-0327	1	572-0327	1	572-0327	1	572-0327	1	572-0327	1
EUM-W Unique Parts											
12W	Washdown Mounting Kit	5370-101-052	1	5370-101-052	1	5370-101-052	1	5371-101-028	1	5371-101-028	1
14W	Center Housing for Washdown	535-0181	1	535-0181	1	535-0181	1	535-0182	1	535-0182	1
15W	Conduit Box Kit	5370-101-045	1	5370-101-045	1	5370-101-045	1	5370-101-045	1	5370-101-045	1
16W	Shaft	798-0263	1	798-0265	1	798-0262	1	798-0259	1	798-0267	1
20W	Conduit Connector	280-0058	1	280-0058	1	280-0058	1	280-0058	1	280-0058	1
21W	Fan Kit (optional)	5370-101-060	1	5370-101-060	1	5370-101-061	1	5371-101-033	1	N/A	
26W	Gasket/Seal Repair Kit	5370-101-058	1	5370-101-058	1	5370-101-058	1	5371-101-032	1	5371-101-032	1
	Key	5370-101-072	1	5370-101-072	1	5370-101-072	1	5371-101-043	1	5371-101-044	1

Refer to Service Manual P-213.

These units meet the standards of UL 508 and are listed under guide card #NMTR 2, file #59164. These units are CSA certified under file #LR11543.

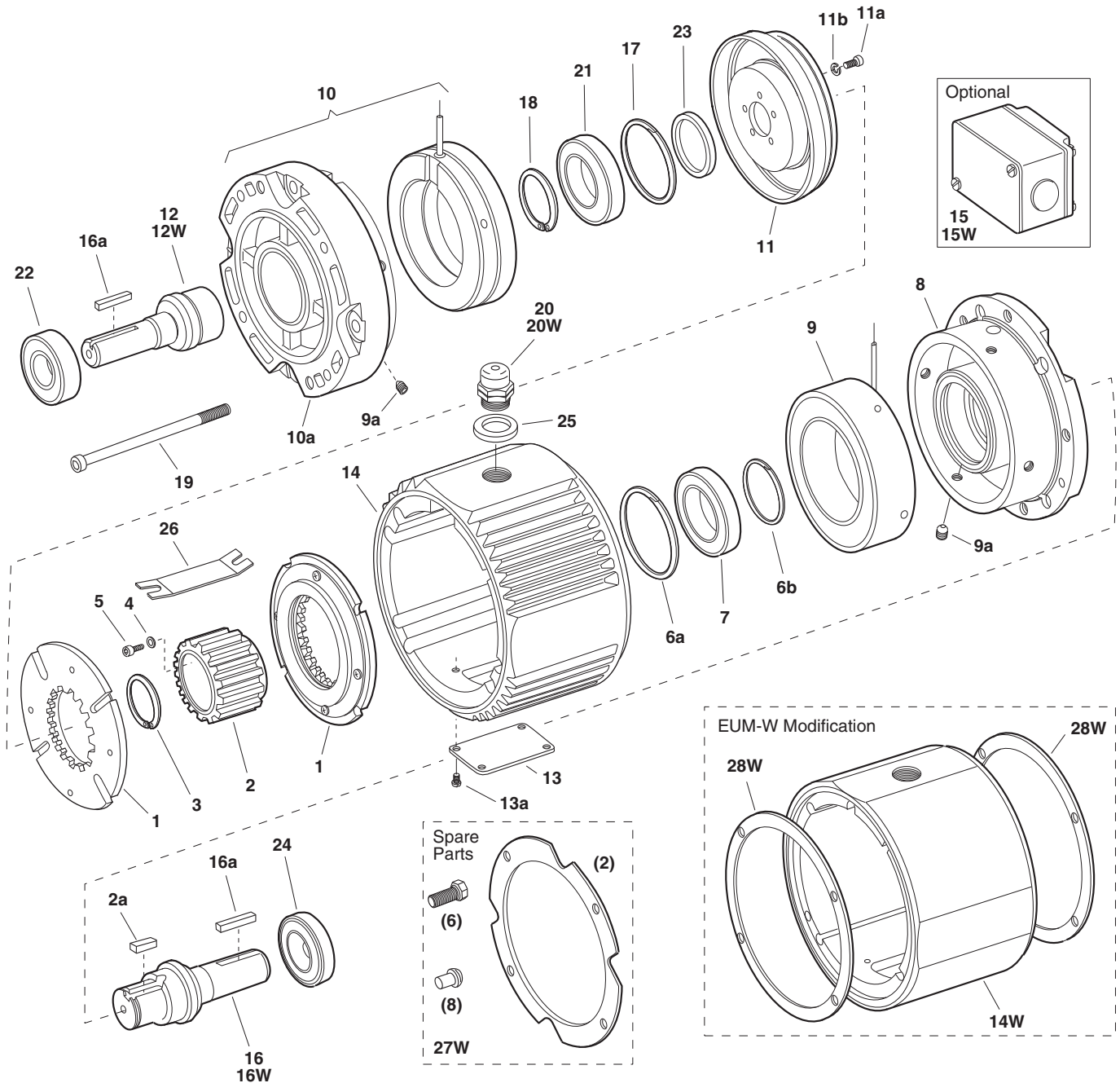
EUM-1040 Clutch Combination



Component Parts

Item	Description	EUM-50		EUM-180		EUM-210	
		Part No.	Qty.	Part No.	Qty.	Part No.	Qty.
1	Armature Assembly	5370-111-011	1	5370-111-013	1	5371-111-005	1
2	Armature Hub	540-1638	1	540-1642	1	540-0741	1
2a	Key	590-0043	1	590-0084	1		
3	Retaining Ring	748-0445	1	748-0676	1		
4	Lockwasher					950-0121	6
5	Capscrew					797-0081	6
6a	Retaining Ring	748-0113	1	748-0101	1	748-0112	1
6b	Retaining Ring	748-0113	1				
7a	Ball Bearing	166-0149	1	166-0101	1	166-0142	1
7b	Ball Bearing	166-0155	1	166-0143	1	166-0144	1
8	Endbell	456-1014	1	456-1019	1	456-1017	1
9	Clutch Field/Endbell Assembly 90 Volt	5370-451-076	1	5370-451-085	1	5371-451-032	1
10	Rotor/Hub Assembly	5370-751-023	1	5370-751-024	1	5371-751-014	1
10a	Set Screws	797-1098	2	797-0069	2	797-1098	2
11	Mounting Accessory Kit	5370-101-040	1	5370-101-040	1	5371-101-024	1
12	Cover Plate	686-1055	1	686-1055	1	686-1055	1
12a	Cover Plate Screws	797-0575	4	797-0575	4	797-0575	4
13	Center Housing	535-0176	1	535-0176	1	535-0177	1
14	Conduit Box (optional)	5370-101-042	1	5370-101-042	1	5370-101-042	1
15	Shaft	798-0046	1	798-0085	1	798-0051	1
15a	Key	590-0029	1	590-0029	1	590-0019	1
16	Retaining Ring	748-0101	2	748-0101	1	748-0558	1
16a	Ball Bearing	166-0150	1	166-0300	1	166-0168	1
17	Retaining Ring	748-0018	1	748-0018	1	748-0067	1
18	Assembly Bolts	797-1433	2	797-1433	2	797-1438	2
19	Connector	280-0038	1	280-0038	1	280-0038	1
20	Accessory Fan (optional)	5370-101-055	1	5370-101-054	1	5371-101-029	1
21	Washer	950-0441	1	950-0441	1	950-0441	1
22	Insulator	572-0327	1	572-0327	1	572-0327	1
	Key	5370-101-072	1	5370-101-072	1	5371-101-043	1

EUM-2030 Clutch/Brake Combination EUM-W-2030 Clutch/Brake Combination



EUM-2030 Clutch/Brake Combination EUM-W-2030 Clutch/Brake Combination

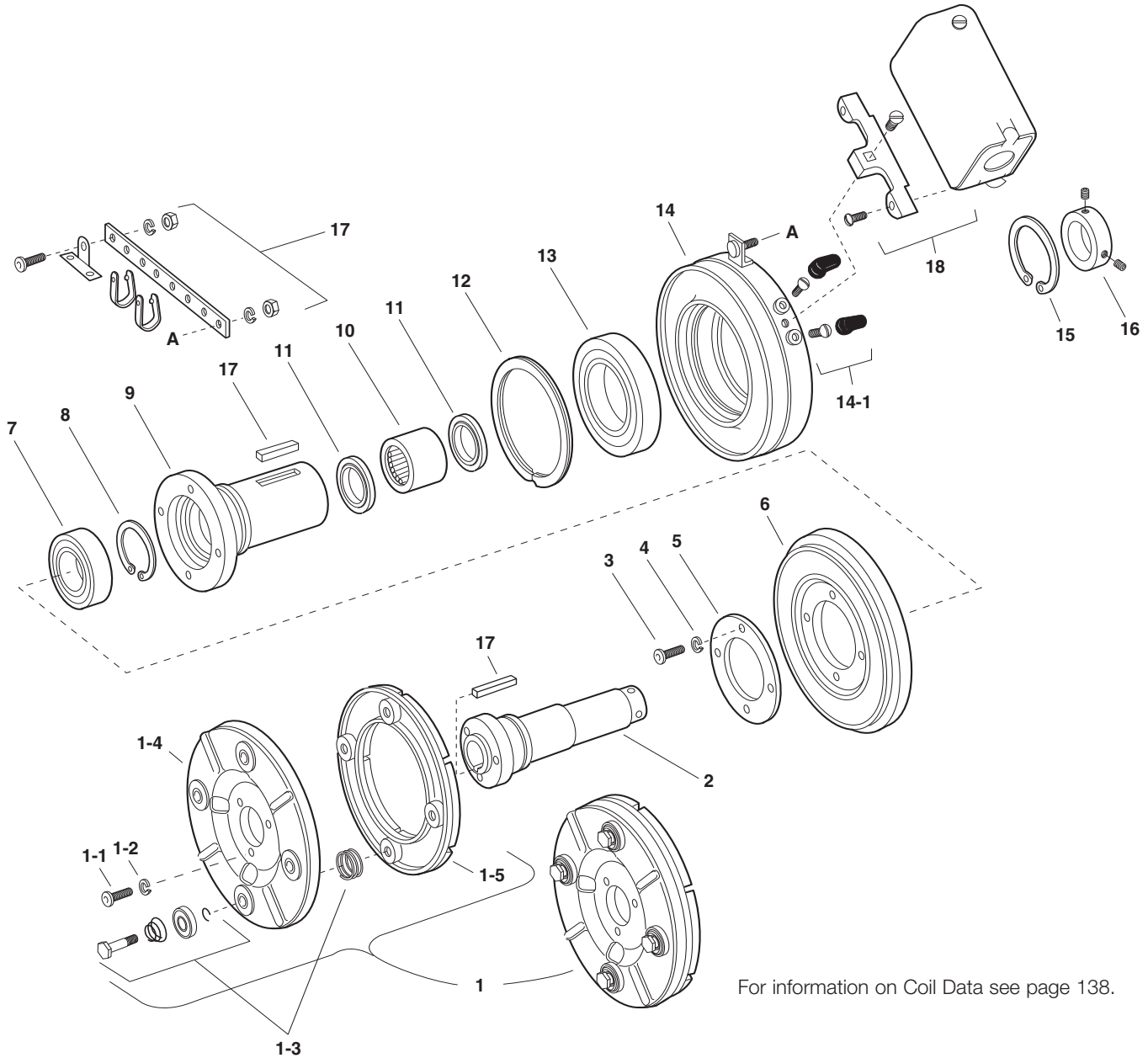
Component Parts

Item	Description	EUM-50		EUM-180		EUM-210	
		Part No.	Qty.	Part No.	Qty.	Part No.	Qty.
1	Armature Assembly	5370-111-011	2	5370-111-013	2	5371-111-005	2
2	Armature Hub	540-1638	1	540-1642	1	540-0741	1
2a	Key	590-0043	1	590-0084	1		
3	Retaining Ring	748-0445	1	748-0676	1		
4	Lockwasher					950-0121	6
5	Capscrew					797-0081	6
6a	Retaining Ring	748-0113	2	748-0101	1	748-0112	1
6b	Retaining Ring					748-2002	1
7	Ball Bearing	166-0149	1	166-0101	1	166-0142	1
8	Endbell/Brake	456-1014	1	456-1019	1	456-1017	1
9	Brake Magnet						
	6 volt	5370-631-037	1	5370-631-002	1	5371-631-002	1
	24 volt	5370-631-038	1	5370-631-005	1	5371-631-005	1
	90 volt	5370-631-036	1	5370-631-003	1	5371-631-003	1
9a	Set Screws	797-0471	4	797-0471	4	797-0471	8
10	Field (with Endbell EUM-50 and EUM-180)						
	6 volt	5370-451-082	1	5370-451-090	1	5371-451-002	1
	24 volt	5370-451-083	1	5370-451-091	1	5371-451-005	1
	90 volt	5370-451-081	1	5370-451-089	1	5371-451-003	1
10a	Endbell (EUM-210 only)					456-1018	1
11	Rotor	5370-751-033	1	5370-751-034	1	5371-751-006	1
11a	Screw	797-1294	4	797-1214	5	797-0081	6
11b	Washer	950-0102	4	950-0102	5	950-0121	6
12	Shaft/Clutch	798-0047	1	798-0124	1	798-0123	1
13	Cover Plate	686-1055	1	686-1055	1	686-1055	1
13a	Screws	797-0575	4	797-0575	4	797-0575	4
14	Center Housing	535-0176	1	535-0176	1	535-0177	1
15	Conduit Box (optional)	5370-101-042	1	5370-101-042	1	5370-101-042	1
16	Shaft/Brake	798-0046	1	798-0085	1	798-0051	1
16a	Key	590-0029	2	590-0029	2	590-0019	2
17	Retaining Ring	748-0113	2	748-0101	1	748-0112	1
18	Retaining Ring	748-0017	1			748-0202	1
19	Assembly Bolts	797-1477	2	797-1477	2	797-1476	2
20	Connector	280-0038	1	280-0038	1	280-0038	1
21	Bearing	166-0149	1	166-0101	1	166-0142	1
22	Bearing	166-0155	1	166-0143	1	166-0144	1
23	Spacer			807-0062	1	807-0061	1
24	Bearing	166-0155	1	166-0143	1	166-0144	1
25	Washer	950-0441	1	950-0441	1	950-0441	1
26	Insulator	572-0327	1	572-0327	1	572-0327	1
EUM-W Unique Parts							
12W	Shaft/Clutch	798-0264	1	798-0261	1	798-0260	1
14W	Center Housing for Washdown	535-0181	1	535-0181	1	535-0182	1
15W	Conduit Box Kit (optional)	5370-101-045	1	5370-101-045	1	5370-101-045	1
16W	Shaft/Brake	798-0263	1	798-0262	1	798-0259	1
20W	Conduit Connector	280-0058	1	280-0058	1	280-0058	1
27W	Washdown Mounting Kit	5370-101-051	1	5370-101-051	1	5371-101-027	1
28W	Gasket/Seal Repair Kit	5370-101-058	1	5370-101-058	1	5371-101-032	1

Refer to Service Manual P-213.

These units meet the standards of UL 508 and are listed under guide card #NMTR 2, file #59164. These units are CSA certified under file #LR11543.

EC-375, EC-475, EC-650



For information on Coil Data see page 138.

Electrical and Mechanical Data

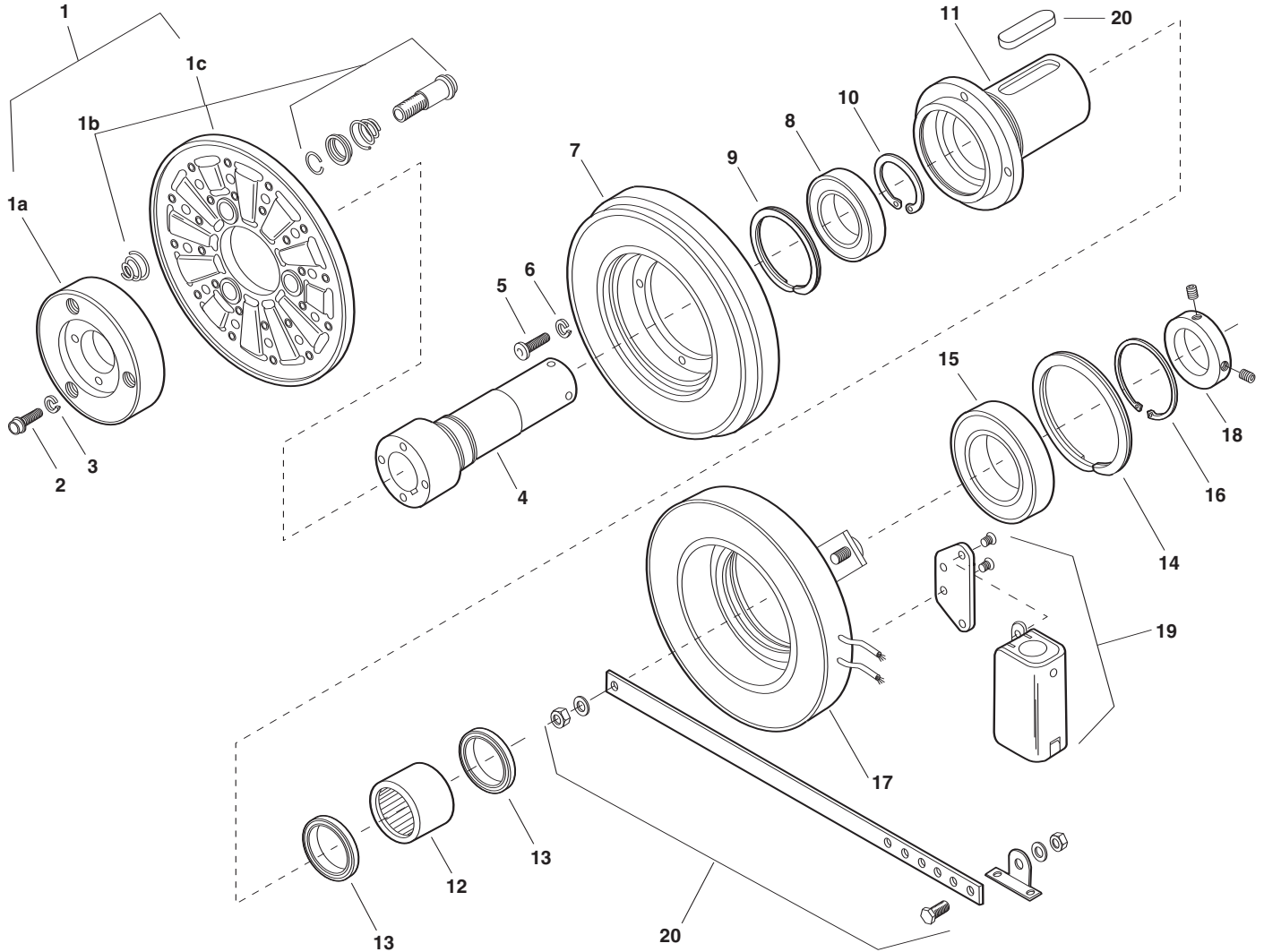
Model Size	Voltage DC	Static Torque (lb. ft.)	Max. Speed RPM	Inertia-WR ² (lb. ft ²)			Total Inner Sleeve	Weight lbs.
				Armature & Carrier	Rotor	Outer Sleeve		
EC-375	6	16 lb. ft.	5000	.010	.018	.001	.001	4
	24	16 lb. ft.	5000	.010	.018	.001	.001	4
	90	16 lb. ft.	5000	.010	.018	.001	.001	4
EC-475	6	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

Item	Description	EC-375		EC-475		EC-650	
		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		803-0044			
	3/4" Bore			803-0042			
	7/8" Bore			803-0043			
	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	166-0109	1	166-0110	1
8	Retainer ring	748-0017	1	748-0023	1	748-0002	1
9	Outer Sleeve	5180-104-001	1	5181-014-001	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.
Refer to Service Manual P-210.

EC-825



Component Parts

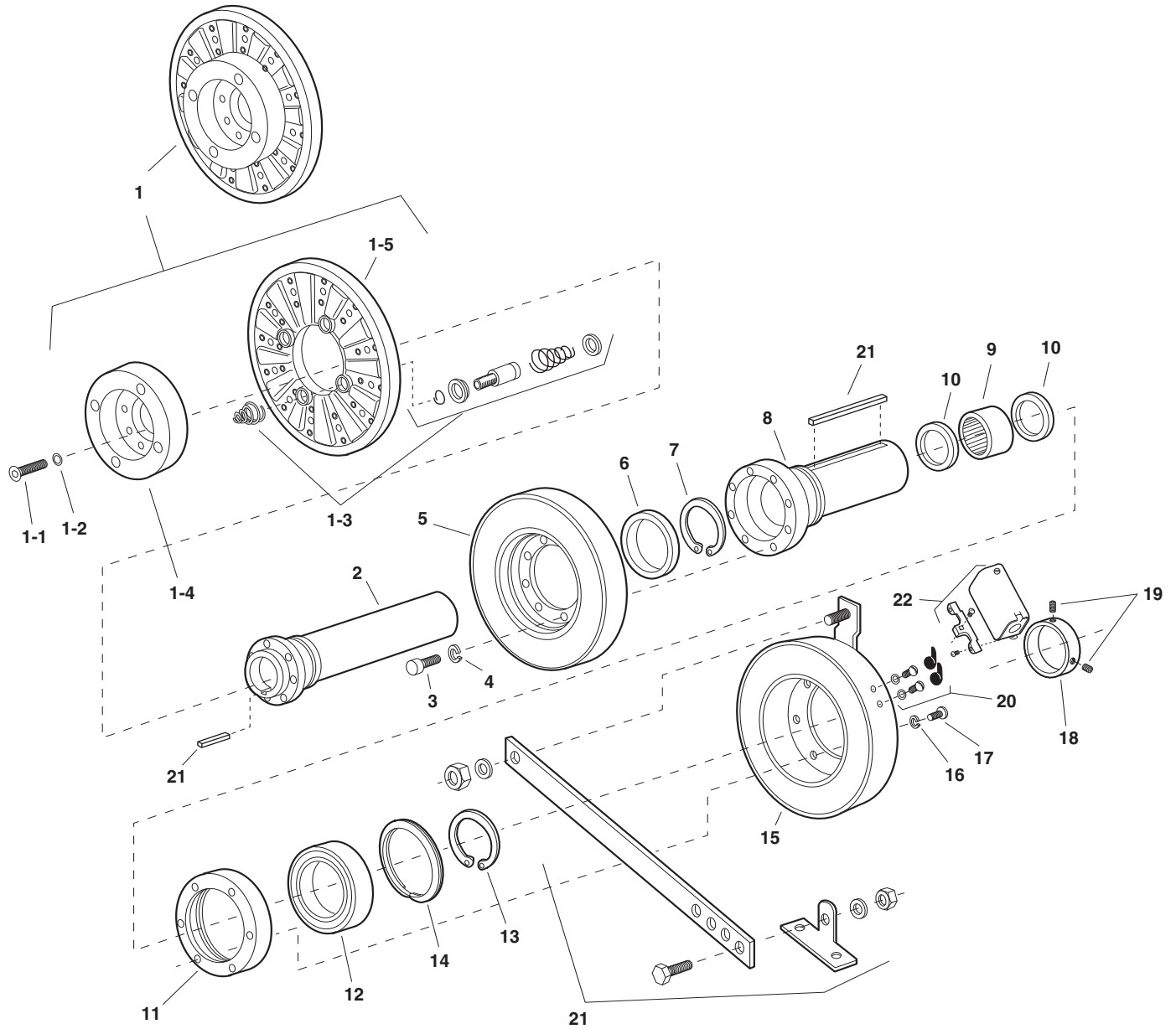
		EC-825	
Item	Description	Part No.	Qty.
1	Armature Assembly	5282-111-002	1
	1a Hub	540-1298	1
	1b Autogap Accessory	5201-101-068	3
	1c Armature	5282-111-001	1
2	Capscrew	797-0081	4
3	Lockwasher	950-0103	4
4	Inner Sleeve		1
	1-1/8" Bore	803-0069	
	1-1/4" Bore	803-0070	
	1-3/8" Bore	803-0071	
5	Capscrew	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

Refer to Service Manual P-210.

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

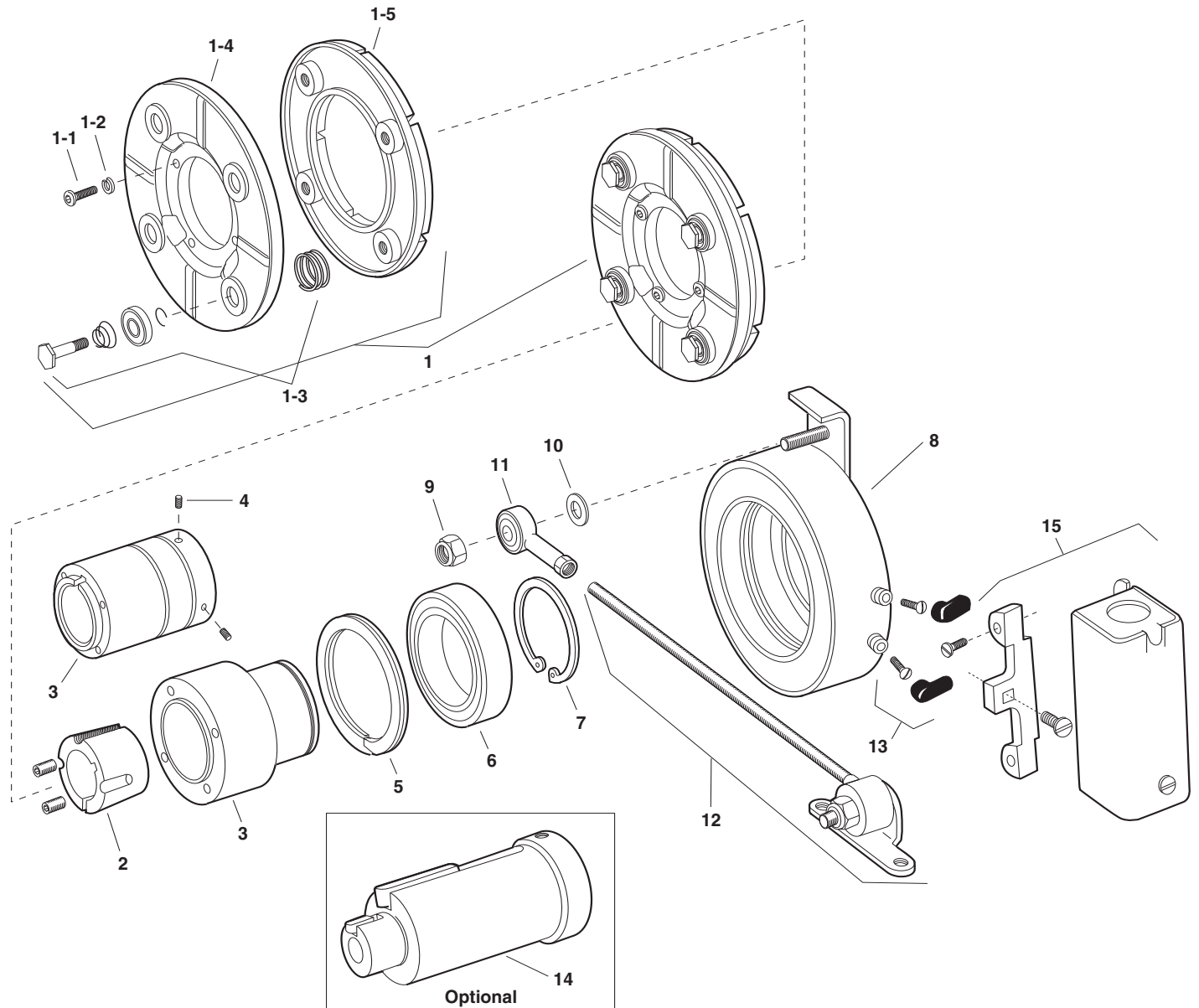


Component Parts

Item	Description	EC-1000		EC-1225	
		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

Refer to Service Manual P-210.

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.



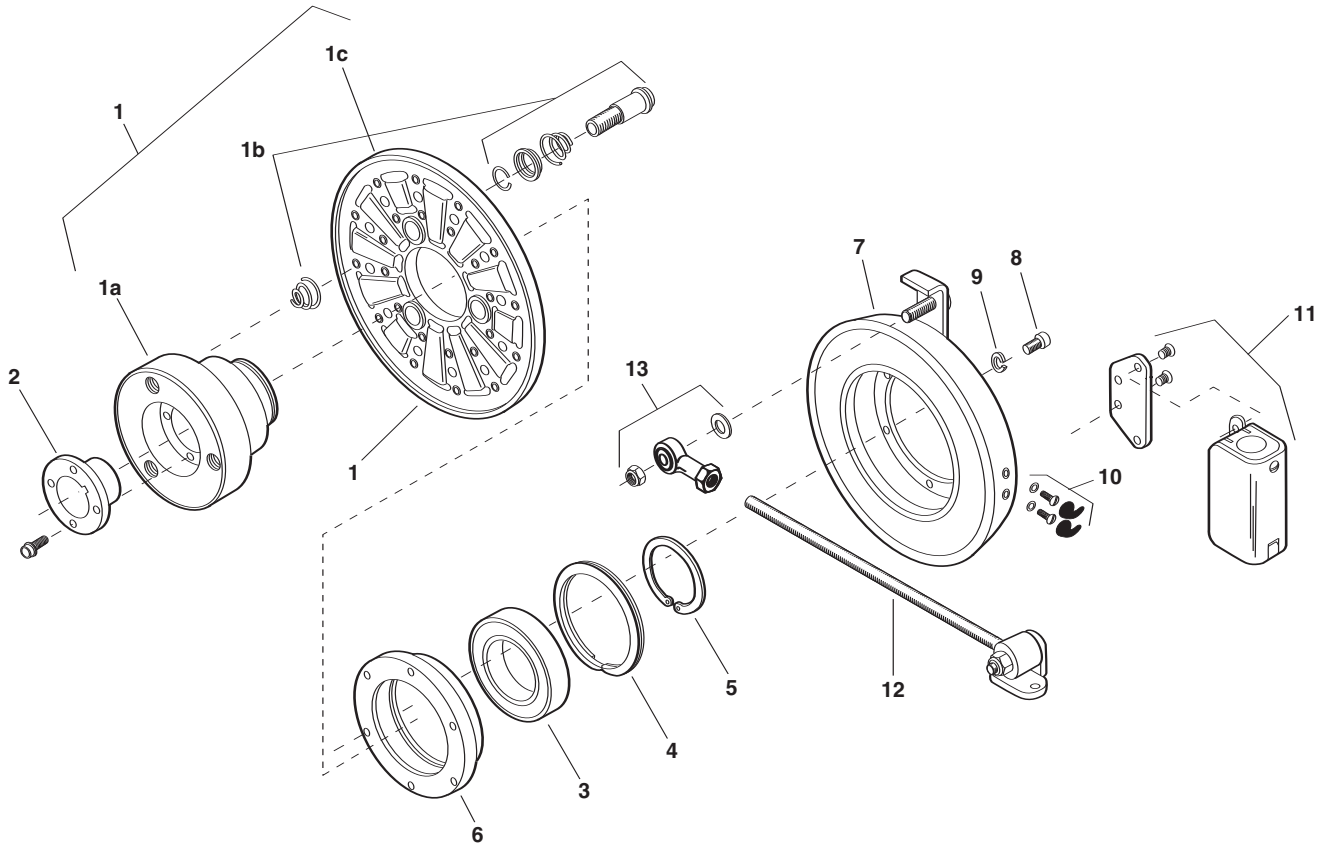
Component Parts

Item	Description	EB-375		EB-475		EB-650	
		Part No.	Qty.	Part No.	Qty.	Part No.	Qty.
1	Armature & Carrier Assembly	5380-101-006	1	5381-101-004	1	5382-101-005	1
	1-1 Capscrew	797-1214	3	797-1214	4	797-0086	4
	1-2 Lockwasher	950-0102	3	950-0102	4	950-0103	4
	1-3 Autogap Accessory	5180-101-011	3	5181-101-010	4	5181-101-010	4
	1-4 Carrier	5380-295-002	1	5381-295-003	1	5382-295-002	1
	1-5 Armature	5180-111-002	1	5181-111-002	1	5281-111-002	1
2	*Bushing			180-0410-180-0418 1/2" to 1" bore	1	180-0421-180-0435 1/2" to 1-3/8" bore	1
3	Hub		1	540-0524	1	540-0523	1
	1/2" Bore	540-0520					
	5/8" Bore	540-0519					
4	Set Screw		2				
	1/2" Bore	797-0368					
	5/8" Bore	797-0366					
5	Retainer Ring	748-0101	1	748-0102	1	748-0104	1
6	Ball Bearing	166-0150	1	166-0110	1	166-0104	1
7	Retainer Ring	748-0018	1	748-0002	1	748-0004	1
8	Magnet		1		1		1
	6 volt	5380-631-003		5381-631-003		5382-631-003	
	24 volt	5380-631-004		5381-631-004		5382-631-005	
	90 volt	5380-631-002		5381-631-002		5382-631-002	
9	Locknut	661-0050	1	661-0051	1	661-0004	1
10	Washer	950-0029	1	950-0026	1	950-0030	1
11	Rod End Bearing	166-0186	1	166-0187	1	166-0188	1
12	Torque Arm Rod Assembly	5380-112-001	1	5381-112-001	1	5382-112-001	1
13	Terminal Accessory	5311-101-001	1	5311-101-001	1	5311-101-001	1
14	Adapter (optional)		1		1		1
	5/8" Motor Shaft	5380-101-005					
	7/8" Motor Shaft	5380-101-004					
	1-1/8" Motor Shaft			5381-101-003			
	1-3/8" Motor Shaft					5382-101-003	
	1-5/8" Motor Shaft					5382-101-002	
15	Conduit Box	5200-101-010	1	5200-101-010	1	5200-101-010	1

*See page 235 for specific part numbers.

Refer to Service Manual P-211.

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.



Component Parts

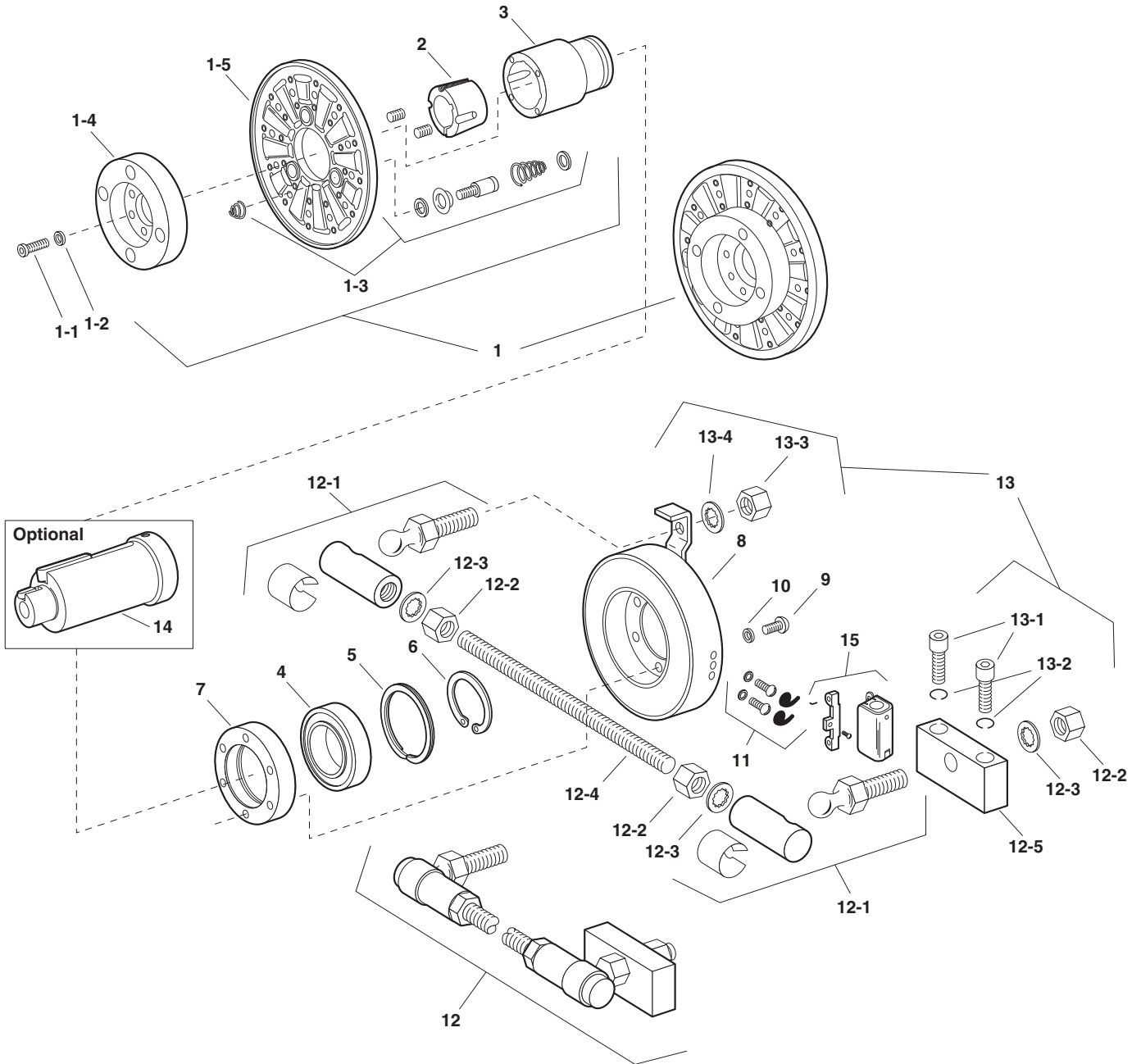
EB-825			
Item	Description	Part No.	Qty.
1	Armature Assembly	5383-111-001	1
	1a Hub	540-1299	1
	1b Autogap Assembly	5201-101-008	3
	1c Armature	5282-111-001	1
2	*Bushing	180-0002 to 180-0018 1/2" to 1-1/2" Bore	1
3	Ball Bearing	166-0168	1
4	Retainer Ring	748-0120	1
5	Retainer Ring	748-0584	1
6	Adapter Ring	748-0631	1

EB-825			
Item	Description	Part No.	Qty.
7	Magnet Assembly		1
	6 volt	5383-631-002	
	24 volt	5383-631-004	
	90 volt	5383-631-005	
8	Capscrew	797-0079	6
9	Lockwasher	950-0372	6
10	Terminal Accessory	5311-101-001	1
11	Conduit Box	5200-101-011	1
12	Torque Arm Rod Assembly	5382-112-001	1
13	Rod End Assembly	5382-101-007	1

*See page 235 for specific part numbers.
Refer to Service Manual P-211.

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.

EB-1000, EB-1225



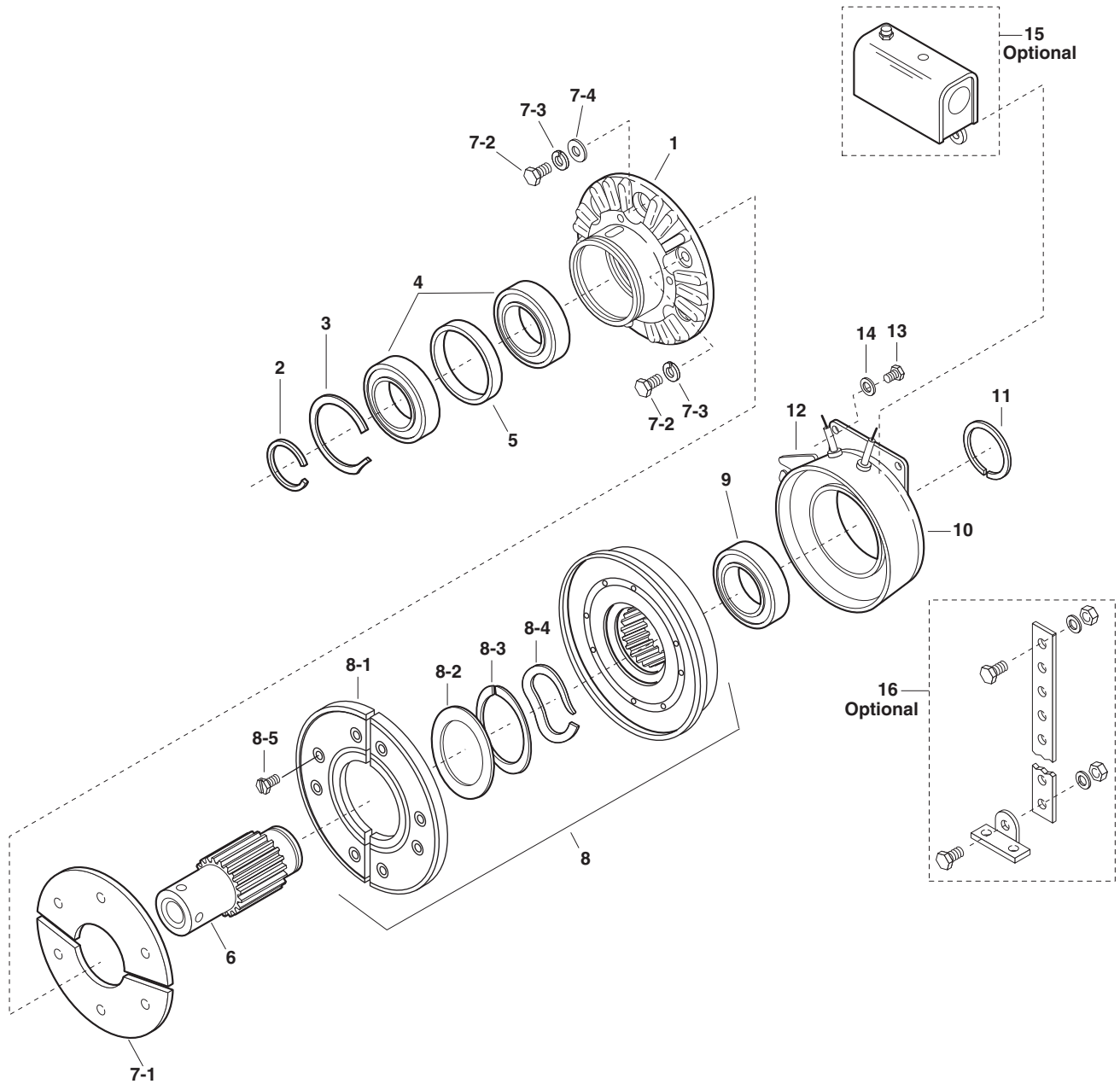
Component Parts

Item	Description	EB-1000		EB-1225	
		Part No.	Qty.	Part No.	Qty.
1	Armature & Carrier Assembly	5384-111-003	1	5385-111-004	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	540-1339	1	540-1341	1
	1-5 Armature	5302-111-013	1	5385-111-003	1
2	*Bushing	180-0131-180-0149 1/2" to 1-5/8" bore	1	180-0185-180-0217 1/2" to 2-1/2" bore	1
3	Hub	540-0579	1	540-0578	1
4	Ball Bearing	166-0164	1	166-0163	1
5	Retainer Ring	748-0116	1	748-0114	1
6	Retiner Ring	748-0501	1	748-0074	1
7	Adapter Ring	748-0467	1	748-0465	1
8	Magnet Assembly		1		1
	6 volt	5384-631-002		5385-631-002	
	24 volt	5384-631-009		5385-631-009	
	90 volt	5384-631-003		5385-631-003	
9	Capscrew	797-0416	6	797-0416	6
10	Lockwasher	950-0106	6	950-0106	6
11	Terminal Accessory	5311-101-001	1	5311-101-001	1
12	Torque Arm Rod Assembly	5385-757-001	1	5385-757-001	1
	12-1 Ball Joint	585-0001	2	585-0001	2
	12-2 Jam Nut	661-0012	3	661-0012	3
	12-3 Lockwasher	950-0114	3	950-0114	3
	12-4 Threaded Rod	756-0030	1	756-0030	1
	12-5 Bracket	174-0073	1	174-0073	1
13	Torque Arm Mounting Accessory	5385-101-001	1	5385-101-001	1
	13-1 Capscrew	797-0293	2	797-0293	2
	13-2 Lockwasher	950-0354	2	950-0354	2
	13-3 Jam Nut	661-0012	1	661-0012	1
	13-4 Lockwasher	950-0114	1	950-0114	1
14	Adapter (optional)		1		1
	1-5/8" Motor Shaft	5384-101-008			
	1-7/8" Motor Shaft	5384-101-007			
	2-1/8" Motor Shaft	5384-101-010		5385-101-008	
	2-3/8" Motor Shaft			5385-101-007	
15	Conduit Box	5200-101-011	1	5200-101-011	1

*See page 235 for specific part numbers.

Refer to Service Manual P-211.

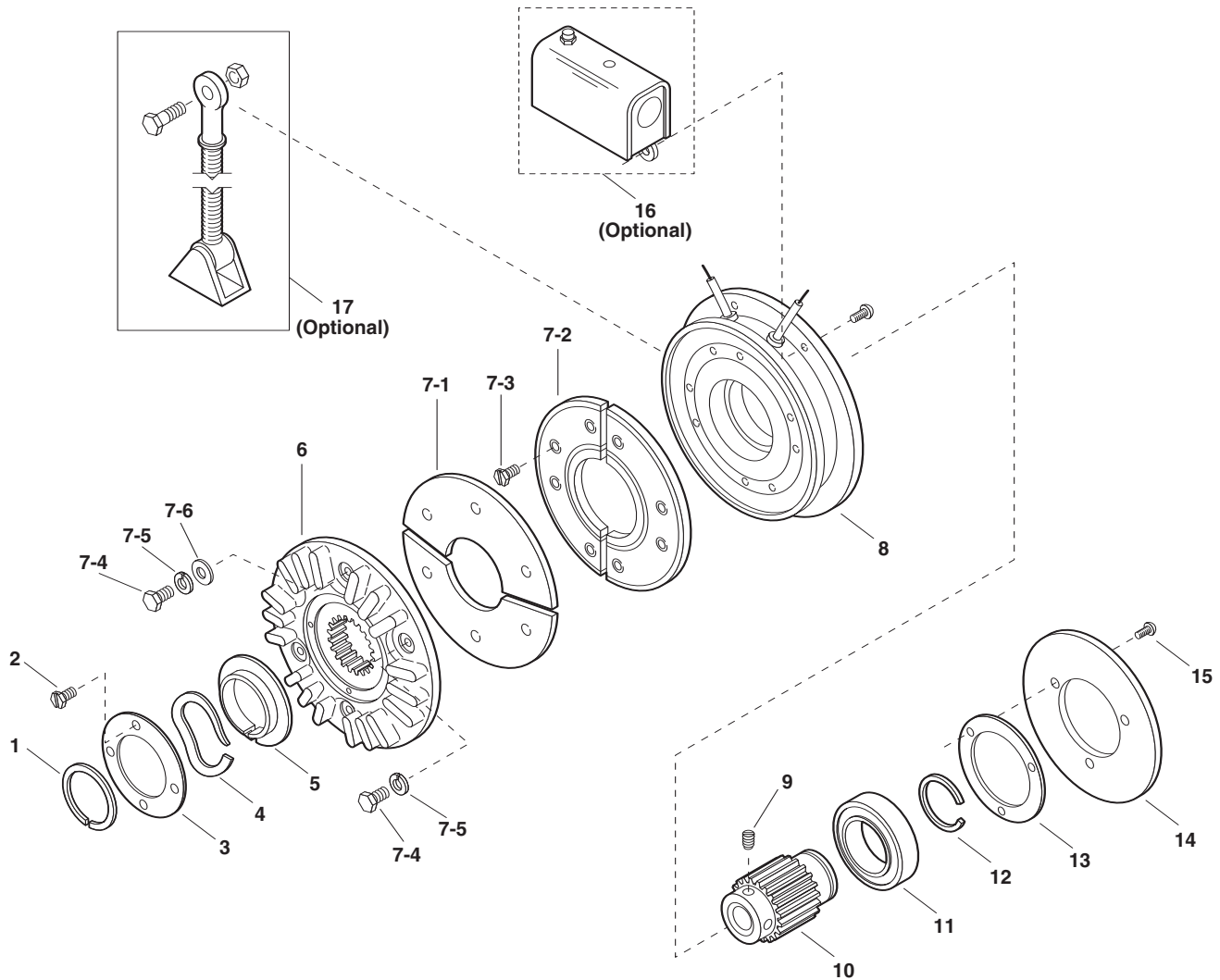
These units when used with the correct Warner Electric conduit box, meets the standards of UL508 and are listed under guide care #NMTR, file #59164. These units are CSA Certified under file #LR11543.



Component Parts

Item	Description	ATC-25		ATC-55		ATC-115	
		Part No.	Qty.	Part No.	Qty.	Part No.	Qty.
1	Armature Hub	540-0907	1	540-0852	1	540-0863	1
2	Retaining Ring	748-0732	1	748-0726	1	748-0737	1
3	Retaining Ring	748-0731	1	748-0728	1	748-0736	1
4	Bearing	166-0278	2	166-0277	2	166-0279	2
5	Spacer	807-0119	1	807-1061	1	807-1063	1
6	Splined Hub		1		1		1
	1/2" Bore	540-0910					
	5/8" Bore	540-0911					
	3/4" Bore	540-0912		540-1501			
	7/8" Bore	540-0913		540-1502			
	1" Bore			540-1503			
	1-1/8" Bore			540-1504		540-0857	
	1-1/4" Bore					540-0858	
1-3/8" Bore					540-0859		
1-1/2" Bore					540-0860		
*7-1	Armature	110-0220	1	110-0218	1	110-0223	1
*7-2	Screw	797-1519	4	797-1462	6	797-1463	6
*7-3	Lockwasher	950-0436	4	950-0355	6	950-0355	6
*7-4	Flatwasher			950-0023	2	950-0023	2
*8	Rotor	5161-751-001	1	5162-751-001	1	5163-751-001	1
8-1	Facing Assembly	5161-445-003	1	5162-445-003	1	5163-445-003	1
8-2	Retainer Plate					686-0108	1
8-3	Detent Ring	748-2031	1	748-2038	1	748-2020	1
8-4	Wave Spring	808-0404	1	808-0401	1	808-0384	2
8-5	Machine Screw	797-1389	8	797-1389	8	797-1389	8
*9	Bearing	166-0283	1	166-0284	1	166-0279	1
10	Field Assembly		1		1		1
	6 volts DC	5161-451-002		5162-451-002		5163-451-002	
	90 volts DC	5161-451-003		5162-451-003		5163-451-003	
	24 volts DC	5161-451-004		5162-451-004		5163-451-004	
*11	Retainer Ring	748-0018	1	748-0727	1	748-0737	1
12	Adapter					104-0300	2
13	Screw					797-1396	4
14	Lockwasher					950-0102	4
Optional Accessory Items							
15	Conduit box 100-1	5162-101-002	1	5162-101-002	1	5162-101-002	1
16	Restraining Arm Assembly	5162-101-004	1	5162-101-004	1	5163-101-004	1
Kit Items							
	* Clutch Rebuild Kit (includes items 7-1, 7-2, 7-3, 7-4, 8, 9, 11) Note: In some versions of this product, item 8 consists of a one (1) piece rotor.	5161-101-011	1	5162-101-011	1	5163-101-011	1
	Friction Face Replacement Kit For Clutches with Replaceable Friction Face Only	5161-101-007		5162-101-007		5163-101-007	
Mounting Accessory Kits (not shown)							
1	1/2" Bore - 3/4" Bore	5161-101-001					
1-1	Ring Retainer Ext.	748-0734	1				
1-2	Wire Retainer	742-0027	1				
1-3	Key	590-0104	1				
1-4	Setscrew	797-1393	2				
1	7/8" Bore	5161-101-002					
1-1	Ring Retainer Ext.	748-0734	1				
1-2	Wire Retainer	742-0027	1				
1-3	Key	590-0104	1				
1-4	Collar and Setscrew	266-0031	1				
1	3/4" Bore - 1" Bore			5162-101-001			
1-1	Ring Retainer Ext.			748-0725	1		
1-2	Wire Retainer			742-0026	1		
1-3	Key			590-0103	1		
1-4	Setscrew			797-1386	2		
1	1-1/8" Bore			5162-101-010			
1-1	Ring Retainer Ext.			748-0725	1		
1-2	Wire Retainer			742-0026	1		
1-3	Key			590-0103	1		
1-4	Setscrew			797-1077	2		
1-5	Collar			266-0032	1		
1	All bore sizes					5163-101-001	
1-1	Ring Retainer Ext.					748-0738	1
1-2	Wire Retainer					742-0026	1
1-3	Key					590-0105	1
1-4	Setscrew					797-1395	

ATB-25, ATB-55, ATB-115



Electrical and Mechanical Data

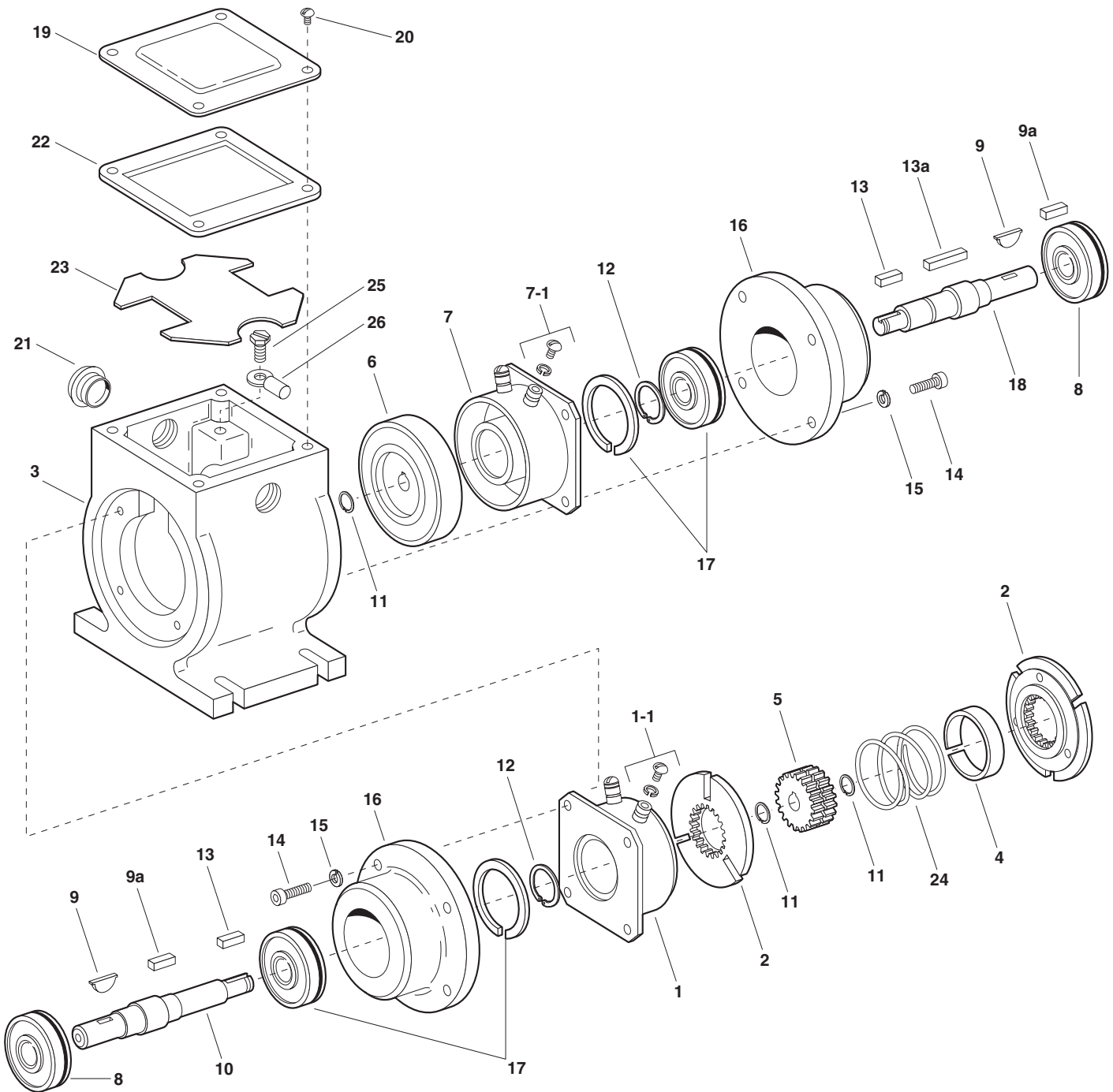
Model Size	Voltage DC	Unit	Resistance (Ohms)	Current (Amps)	Watts	Coil Build Up (MMS)	Coil Decay (MMS)	Inertia*–WR ² (lb.ft. ²)	Max. RPM	Weight lbs.
25	6	Brake	1.37	4.38	26.3	145	9	.048	3600	8
	24		20.2	1.19	28.6	145	9	.048	3600	8
	90		290	.31	27.9	145	9	.048	3600	8
55	6	Brake	1.21	4.96	29.8	210	35	.173	3600	18
	24		19.6	1.22	29.3	210	35	.173	3600	18
	90		230	.39	35.2	210	35	.173	3600	18
115	6	Brake	1.02	5.91	35.4	150	45	.483	3600	28
	24		16.5	1.46	35	150	45	.483	3600	28
	90		182	.50	44.6	150	45	.483	3600	28

Component Parts

Item	Description	ATB-25		ATB-55		ATB-115	
		Part No.	Qty.	Part No.	Qty.	Part No.	Qty.
†1	Retainer	748-0018	1	748-0727	1	748-0737	1
†2	Screw	797-0321	3	797-0321	4	797-0321	4
3	Plate	686-0166	1	686-0162	1	686-0171	1
†4	Wave Spring	808-0404	1	808-0401	1	808-0384	2
†5	Detent Ring	748-2031	1	748-2038	1	748-2020	1
6	Armature Hub	540-0908	1	540-0851	1	540-0864	1
*†7-1	Armature	110-0220	1	110-0218	1	110-0223	1
*†7-2	Facing Assembly	5161-445-003	1	5162-445-003	1	5163-445-003	1
*†7-3	Screw	797-1389	6	797-1389	8	797-1389	8
*†7-4	Screw	797-1519	4	797-1462	6	797-1463	6
*†7-5	Lockwasher	950-0436	4	950-0355	4	950-0355	6
*†7-6	Flatwasher			950-0023	2	950-0023	2
8	Magnet Assembly		1		1		1
	6 volts DC	5191-631-002		5192-631-002		5193-631-002	
	24 volts DC	5191-631-004		5192-631-004		5193-631-004	
	90 volts DC	5191-631-003		5192-631-003		5193-631-003	
†9	Setscrew	797-1393	2	797-1386	2	797-1395	2
10	Splined Hub		1		1		1
	1/2" Bore	540-0901					
	5/8" Bore	540-0902					
	3/4" Bore	540-0903		540-1512			
	7/8" Bore	540-0904		540-1513			
	1" Bore			540-1514			
	1-1/8" Bore			540-1515		540-0866	
	1-1/4" Bore					540-0867	
1-3/8" Bore					540-0868	1	
1-1/2" Bore					540-0869	1	
†11	Ball Bearing	166-0283	1	166-0277	1	166-0279	1
†12	Retainer Ring	748-0018	1	748-0276	1	748-0737	1
13	Shim	801-1035	1	801-1034	1	801-1036	1
14	Backplate	686-0167	1	686-0163	1	686-0172	1
†15	Screw	797-1392	4	797-0437	3	797-0447	3
Optional Accessory Items							
16	Conduit box	5162-101-002	1	5162-101-002	1	5162-101-002	1
17	Torque Arm	5191-101-001	1	5192-101-001	1	5193-101-001	1
Kit Items							
*†18	Friction Face Replacement Kit (includes items 7-1, 7-2, 7-3, 7-4, 7-5, 7-6)	5161-101-007	1	5162-101-007	1	5163-101-007	1
†19	Brake Rebuild Kit (includes items, 1, 2, 4, 5, 7-1, 7-2, 7-3, 7-4, 7-5, 7-6, 9, 11, 12, 15)	5191-101-006	1	5192-101-006	1	5193-101-006	1

Refer to Service Manual P-218.

EP-170, EP-250, EP-400



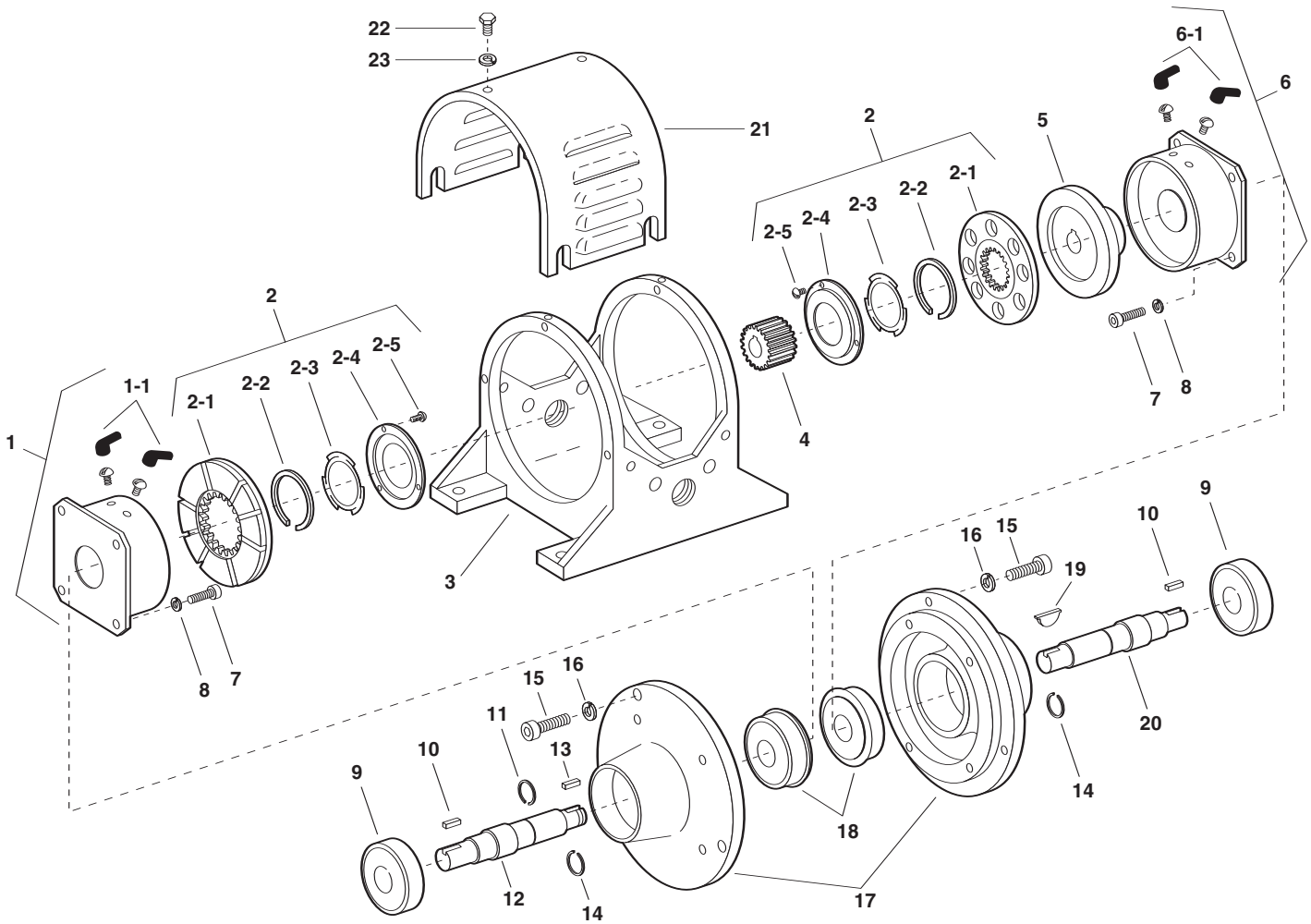
Component Parts

Item	Description	EP-170		EP-250		EP-400	
		Part No.	Qty.	Part No.	Qty.	Part No.	Qty.
1	Magnet Assembly		1		1		1
	6 volt	5375-631-003		5319-631-002		5115-631-002	
	24 volt	5375-631-005		5319-631-003		5115-631-003	
	90 volt	5375-631-007		5319-631-005		5115-631-004	
1-1	Terminal Accessory	†		5103-101-002	1	5103-101-002	1
2	Armature Assembly with Autogap	110-0111	2	5130-111-008	2	5131-111-001	2
3	Housing	535-0079	1	535-0082	1	535-0083	1
4	Armature Spacer	807-1021	1				
5	Splined Armature Hub	540-1250	1	540-1635	1	540-2034	1
6	Rotor Assembly	5603-751-029	1	5103-751-010	1	5104-751-034	1
7	Field Assembly		1		1		1
	6 volt	5603-451-047		5103-451-002		5104-451-032	
	24 volt	5603-451-049		5103-451-004		5104-451-033	
	90 volt	5603-451-051		5103-451-007		5104-451-034	
7-1	Terminal Accessory	†		5103-101-002	1	5103-101-002	1
8	Ball Bearing	166-0112	2	166-0114	2	166-0116	2
9	Key	590-0095	2	590-0014	2		
9a	Key					590-0016	2
10	Shaft, Brake	798-0136	1	798-0133	1	798-0131	1
11	Retainer Ring	748-0346	2	748-0347	2	748-0348	2
12	Retainer Ring	748-0042	2	748-0024	2	748-0022	2
13	Key	590-0089	2	590-0088	2	590-0087	1
13a	Key					590-0106	1
14	Capscrew	797-1219	8	797-1219	8	797-1220	8
15	Lockwasher	950-0351	8	950-0351	8	950-0355	8
16	Bearing Housing	535-0080	2	535-0081	2	535-0084	2
17	Ball Bearing, with Retainer	166-0111	2	166-0113	2	166-0115	2
18	Shaft, Clutch	798-0135	1	798-0134	1	798-0132	1
19	Cover Plate	686-1017	1	686-1018	1	686-1019	1
20	Screw	797-0015	4	797-0015	4	797-0015	4
21	Dust Plug	680-0037	2	680-0037	2	680-0037	2
22	Gasket	495-0003	1	495-0004	1	495-0005	1
23	Insulator	572-0573	1	572-0572	1	572-0574	1
24	Vertical Mfg. Spring Kit Optional	5603-101-001	1	5103-101-006	1	5104-101-005	1
25	Ground Screw		1	797-1245	1	797-1245	1
26	Terminal		1	900-0116	1	900-0016	1

†Lead wires used on EP-170.

These units meet the standards of UL508 and are listed under guide card #NMTR, file #59164. These units are CSA certified under file #LR11543.

EP-500



Component Parts

Item	Description	Part No.	Qty.
1	Magnet Assembly		1
	6 volt	5300-631-009	
	24 volt	5300-631-010	
	90 volt	5300-631-011	
1-1	Terminal Accessory	5311-101-001	1
2	Armature Assembly	5230-111-002	2
2-1	Armature	5230-111-001	2
2-2	Retainer Ring	748-0355	2
2-3	Spring	808-0412	2
2-4	Retainer Plate	748-0364	2
2-5	Screw	797-0028	12
3	Mounting Frame	174-0028	1
4	Splined Hub	540-2035	1
5	Rotor	5230-751-001	1
6	Field		1
	6 volt	5230-451-003	
	24 volt	5230-451-005	
	90 volt	5230-451-002	

Item	Description	Part No.	Qty.
6-1	Terminal Accessory	5311-101-001	1
7	Capscrew	797-0416	8
8	Lockwasher	950-0107	8
9	Ball Bearing	166-0125	2
10	Key	590-0020	2
11	Retainer Ring	748-0361	1
12	Shaft, Brake	798-0022	1
13	Key	590-0022	1
14	Retainer Ring	748-0335	2
15	Capscrew	797-0418	8
16	Lockwasher	950-0107	8
17	Endbell Housing	535-0010	2
18	Ball Bearing	166-0127	2
19	Key	590-0021	1
20	Shaft, Clutch	798-0028	1
21	Cover Drip Proof	287-0068	1
22	Capscrew	797-1214	6
23	Lockwasher	950-0102	6

Refer to Service Manual P-212.

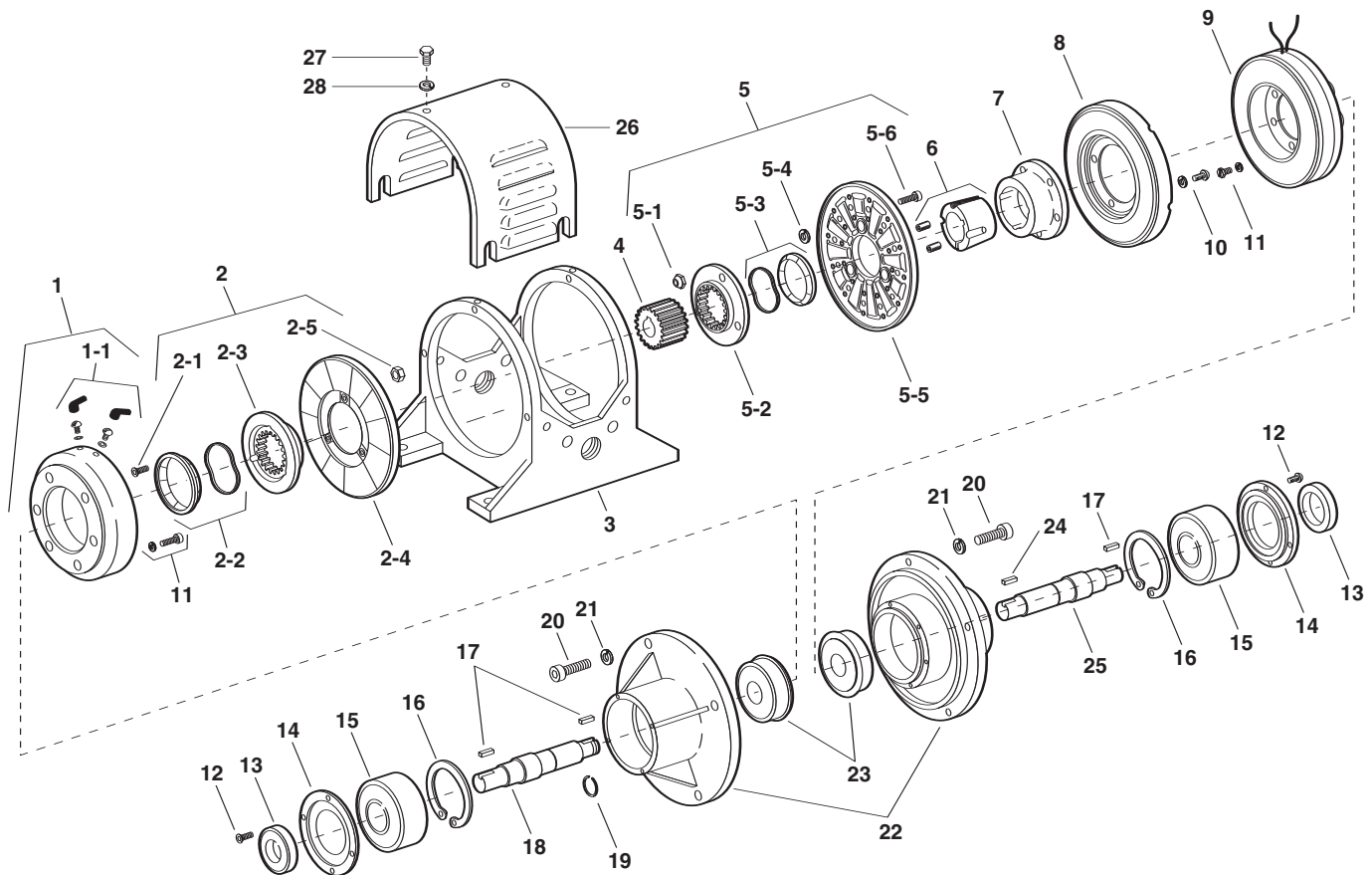
These units meet the standards of UL508 and are listed under guide card #NMTR, file #59164. These units are CSA certified under file #LR11543.

Service Parts



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Component Parts

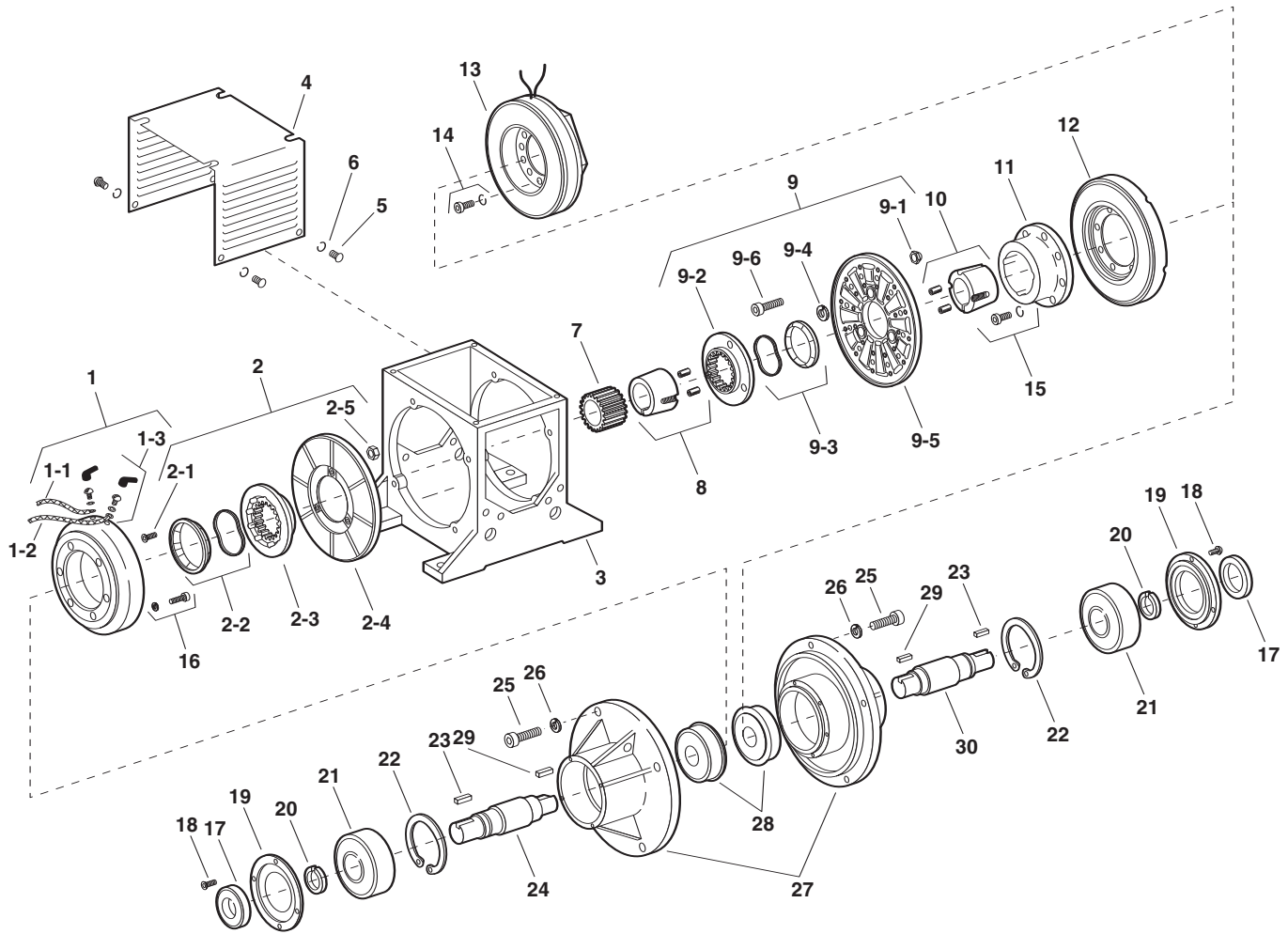
Item	Description	Part No.	Qty.
1	Magnet Assembly		1
	6 volt	5311-631-002	
	24 volt	5311-631-003	
	90 volt	5311-631-004	
2	Armature Assembly & Splined Adapter	5321-111-001	1
2-1	Screw	797-0272	3
2-2	Autogap Accessory	5321-101-006	1
2-3	Splined Adapter	104-0008	1
2-4	Armature	5321-111-022	1
2-5	Locknut	661-0004	3
3	Frame	174-0019	1
4	Splined Hub	540-0320	1
5	Armature & Splined Adapter	5201-111-001	1
5-1	Locknut	661-0004	3
5-2	Splined Adapter	104-0008	1
5-3	Autogap Accessory	5321-101-006	1
5-4	Spacer	748-0333	3
5-5	Armature	5321-111-022	1
5-6	Screw	797-0341	3
6	Bushing, 1-1/4" Bore	180-0113	1
7	Rotor Hub	540-0013	1
8	Rotor	5201-751-003	1
9	Field		1
	6 volt	5201-451-006	
	24 volt	5201-451-008	
	90 volt	5201-451-010	

Item	Description	Part No.	Qty.
10	Mounting Accessory	5201-101-007	1
11	Mounting Accessory	5321-101-001	2
12	Screw	797-1008	8
13	Oil Seal	795-0023	2
14	Retainer Plate	686-0031	2
15	Ball Bearing	166-0126	2
16	Retainer Ring	748-0336	2
17	Key	590-0019	3
18	Shaft, Brake	798-0019	1
19	Retainer Ring	748-0335	1
20	Capscrew	797-0351	8
21	Lockwasher	950-0354	8
22	Endbell Housing	535-0005	2
23	Ball Bearing	166-0125	2
24	Key	590-0018	1
25	Shaft, Clutch	798-0020	1
26	Cover, Drip Proof	287-0069	1
27	Capscrew	797-1214	6
28	Lockwasher	540-0102	6

Refer to Service Manual P-212.
 These units 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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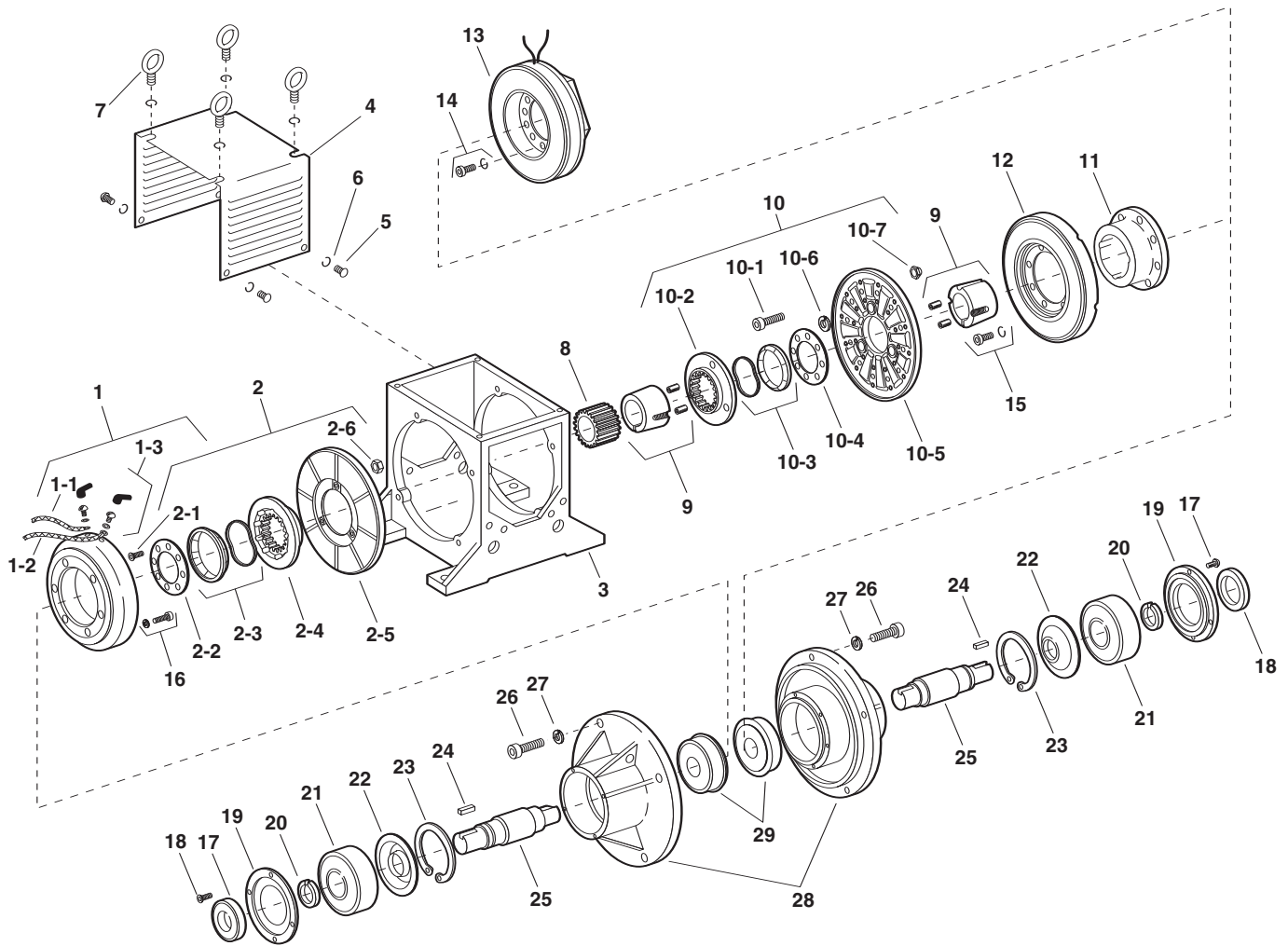
Component Parts

Item	Description	Part No.	Qty.
1	Magnet Assembly		1
	6 volt	5312-631-004	
	24 volt	5312-631-005	
	90 volt	5312-631-006	
1-1	Wire Assembly	5232-954-003	1
1-2	Wire Assembly	5232-954-004	1
1-3	Terminal Accessory	5311-101-001	1
2	Armature & Splined Adapter	5322-111-002	1
2-1	Button Head Screw	797-0272	1
2-2	Autocap Accessory	5322-101-004	1
2-3	Splined Arm, Adapter	104-0009	1
2-4	Armature	5322-111-036	1
2-5	Locknut	661-0004	3
3	Frame	174-0043	1
4	Dust Cover	287-0052	1
5	Button Head Screw	797-1175	8
6	Lockwasher	950-0103	8
7	Splined Armature Hub	540-0061	1
8	Bushing, 1-7/8" Bore	180-0177	1
9	Armature & Splined Adapter	5202-111-001	1
9-1	Locknut	661-0004	3
9-2	Splined Armature Adapter	104-0009	1
9-3	Autogap Accessory	5322-101-004	1
9-4	Spacer	748-0333	3
9-5	Armature	5322-111-036	1

Item	Description	Part No.	Qty.
9-6	Cap Screw	797-0341	3
10	Bushing, 2" Bore	180-0179	1
11	Rotor Hub	540-0315	1
12	Rotor	5202-751-003	1
13	Field Assembly		1
	6 volt	5202-451-004	
	24 volt	5202-451-006	
	90 volt	5202-451-007	
14	Mounting Accessory	5321-101-001	1
15	Mounting Accessory	5201-101-007	1
16	Mounting Accessory	5321-101-001	1
17	Oil Seal	795-0024	2
18	Button Head Screw	797-1008	8
19	Retainer Plate	686-0047	2
20	Retainer Ring – External	748-0504	2
21	Ball Bearing	166-0130	2
22	Retainer Ring – Internal	748-0375	2
23	Key	590-0024	2
24	Shaft, Brake	798-0026	1
25	Cap Screw	797-0361	8
26	Lockwasher	950-0362	8
27	Bearing Housing	535-0012	2
28	Ball Bearing	166-0131	2
29	Key	590-0025	2
30	Shaft, Clutch	798-0025	1

Refer to Service Manual P-212.

These units meet the standards of UL508 and are listed under guide card #NMTR, file #59164. These units are CSA certified under file #LR11543.



Component Parts

Item	Description	EP-1525		EP-1525HT	
		Part No.	Qty.	Part No.	Qty.
1	Magnet		1		1
	6 volt	5314-631-004			
	24 volt			5314-631-006	
	90 volt	5314-631-005		5314-631-005	
*1-1	Wire Assembly	5232-954-003	1	5232-954-003	1
*1-2	Wire Assembly	5232-954-004	1	5232-954-004	1
*1-3	Terminal Accessory	5311-101-001	1	5311-101-001	1
2	Armature & Splined Adapter	5324-111-001	1	5324-111-001	1
*2-1	Button Head Screw	797-0272	8	797-0272	8
*2-2	Armature Plate	686-0003	1	686-0003	1
*2-3	Autogap Accessory	5323-101-002	1	5323-101-002	1
*2-4	Splined Armature Adapter	104-0011	1	104-0011	1
*2-5	Armature	5324-111-034	1	5324-111-034	1
*2-6	Locknut	661-0004	8	661-0004	8
3	Frame	174-0044	1	174-0044	1
4	Dust Cover	287-0040	1	287-1002	1
5	Button Head Screw	797-1175	8	797-1175	8
6	Lock Washer	950-0103	8	950-0103	8
7	Eye Bolts	171-0006	4	171-0006	4
8	Splined Armature Hub	540-0063	1	540-0063	1
9	Bushing, 2-3/8" Bore	180-0215	2	180-0215	2
10	Armature & Splined Adatper	5204-111-004	1	5204-111-004	1
*10-1	Cap Screw	797-0342	8	797-0342	8
*10-2	Splined Armature Adapter	104-0011	1	104-0011	1
*10-3	Autogap Accessory	5323-101-002	1	5323-101-002	1
*10-4	Retainer Plate	686-0003	1	686-0003	1
*10-5	Armature	5324-111-034	1	5324-111-034	1
*10-6	Spacer	748-0333	8	748-0333	8
*10-7	Locknut	661-0004	8	661-0004	8
11	Rotor Hub	5234-541-001	1	5234-541-001	1
12	Rotor	5204-751-002	1	5204-751-001	1
13	Field Assembly		1		1
	6 volt	5204-451-013			
	24 volt			5204-451-066	
	90 volt	5204-451-016		5204-451-006	
14	Mounting Accessory	5321-101-002	2	5321-101-002	2
15	Mounting Accessory	5321-101-001	2	5321-101-001	2
16	Mounting Accessory	5321-101-001	2	5321-101-001	2
17	Screw	797-0294	8	797-0294	8
18	Oil Seal	795-0025	2	795-0025	2
19	Retainer Plate	686-0048	2	686-0048	2
20	Retaining Ring – External	748-0503	2	748-0503	2
21	Ball Bearing	166-0132	2	166-0132	2
22	Bearing Seal	795-0036	2	795-0036	2
23	Retainer Ring – Internal	748-0552	2	748-0052	2
24	Key	590-0028	2	590-0028	2
25	Shaft	798-0027	2	798-0027	2
26	Cap Screw	797-0362	12	797-0362	12
27	Lock Washer	950-0362	12	950-0362	12
28	Bearing Housing	535-0013	2	535-0013	2
29	Ball Bearing	166-0133	2	166-0133	2

* Shipped Assembled
Refer to Service Manual P-212.

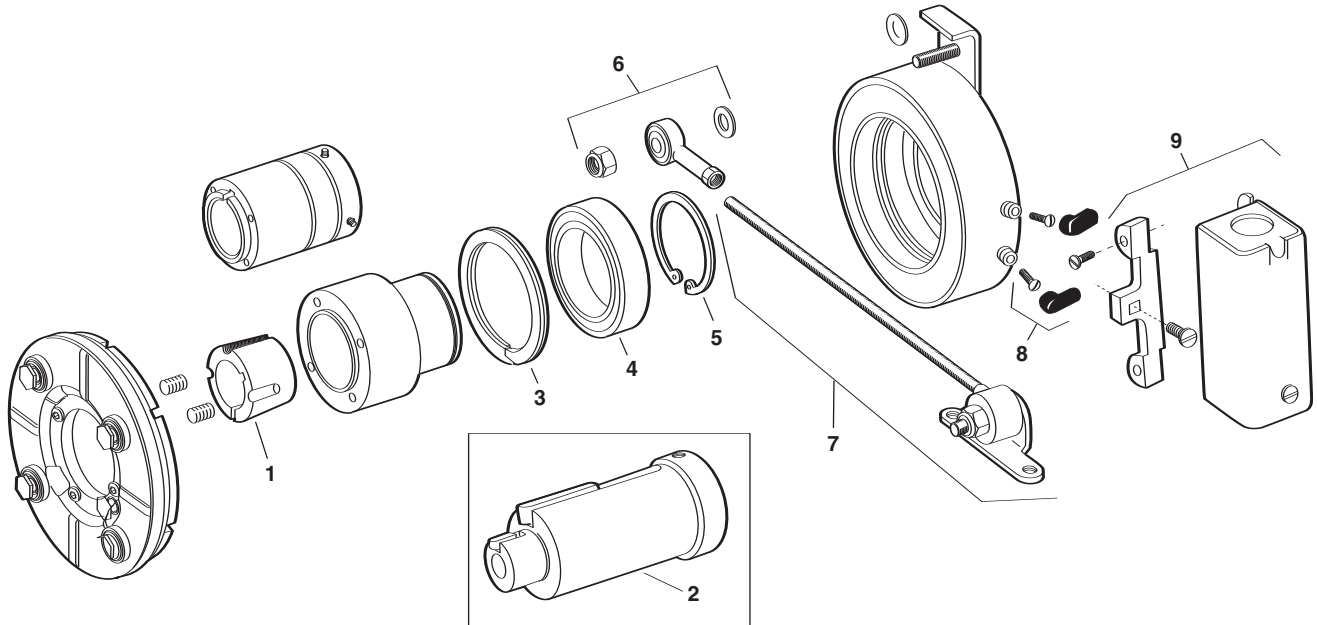
These units meet the standards of UL508 and are listed under guide card #NMTR, file #59164. These units are CSA certified under file #LR11543.

Service Parts



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FB-375, FB-475, FB-650



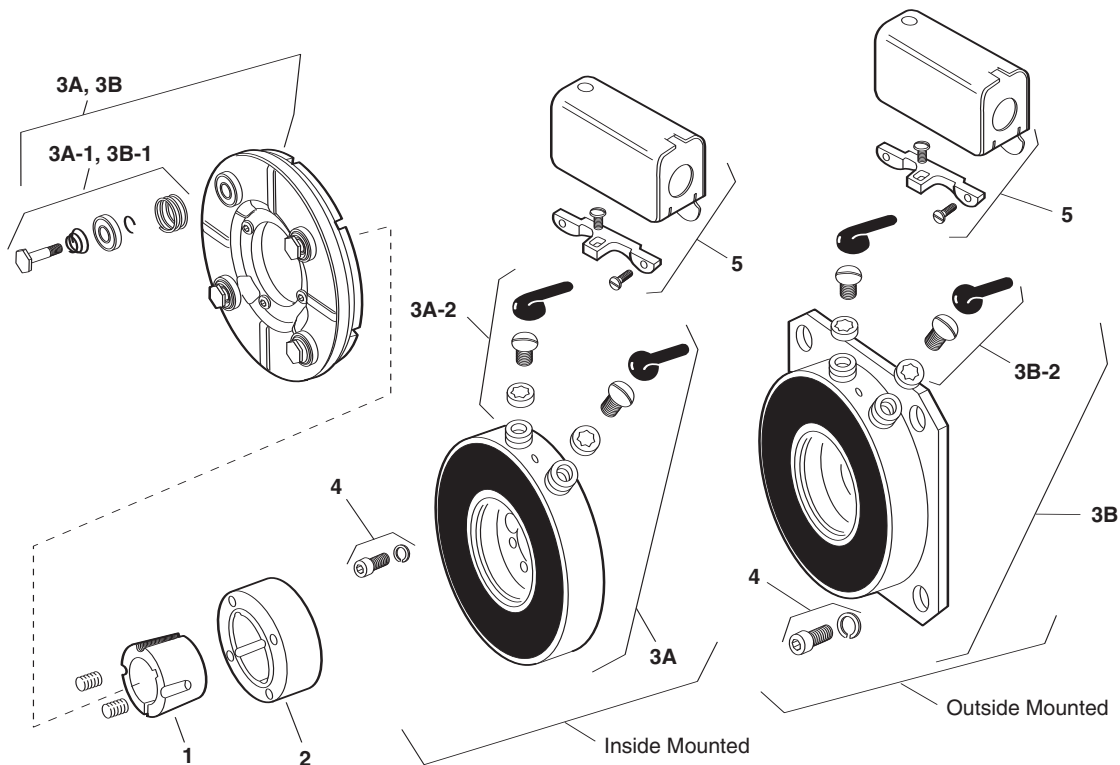
Item	Description	FB-375		FB-475		FB-650	
		Part Number	Qty	Part Number	Qty	Part Number	Qty
Optional Parts							
1	*Bushing	N/A		180-0410 1/2" bore to 180-0418 1" bore	1	180-0421 1/2" bore to 180-0435 1-3/8" bore	1
2	Adapter (optional)		1		1		1
	5/8" motor shaft	5380-101-005					
	7/8" motor shaft	5380-101-004					
	1-1/8" motor shaft			5381-101-003			
	1-3/8" motor shaft					5382-101-003	
	1-5/8" motor shaft					5382-101-002	
Service Parts							
3	Retainer ring	748-0101	1	748-0102	1	748-0104	1
4	Ball bearing	166-0150	1	166-0110	1	166-0104	1
5	Retainer ring	748-0018	1	748-0002	1	748-0004	1
6	Torque arm mount assembly	5380-101-007	1	5381-101-006	1	5382-101-007	1
7	Torque arm rod assembly	5380-112-001	1	5381-112-001	1	5382-112-001	1
8	Terminal accessory	5311-101-001	1	5311-101-001	1	5311-101-001	1
9	Conduit Box	5200-101-010	1	5200-101-010	1	5200-101-010	1

*See page 235 for specific part numbers.

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.

Magnet and armature are not field replaceable.

ER-375, ER-475, ER-650



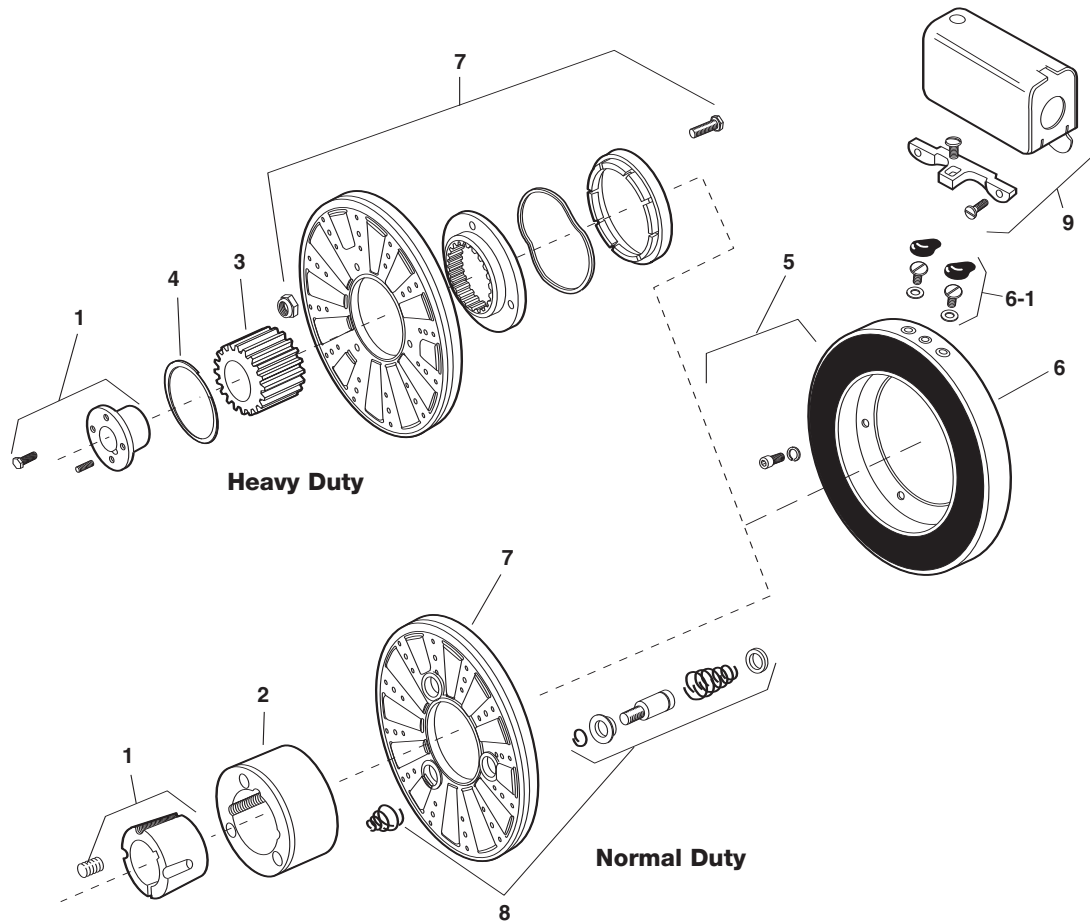
Component Parts

Item	Description	ER-375		ER-475		ER-650	
		Part Number	Qty	Part Number	Qty	Part Number	Qty
1	†Bushing			180-0410-0418 (1/2" to 1" Bore)	1	180-0421-0435 (1/2" to 1-3/8" Bore)	1
2	Hub 1/2" Bore 5/8" Bore	540-0846	1	540-0849	1	540-0848	1
		540-0847	1				
3A	Magnet and Armature (Inside Mounted, 90 Volt) Sold only in matched pairs*			5255-5	1	5256-6	1
3A-1	Autogap Accessory			5391-101-003	4	5392-101-003	4
3A-2	Terminal Accessory			5103-101-002	1	5103-101-002	1
3B	Magnet and Armature (Outside Mounted, 90 Volt) Sold only in matched pairs*	5254-1	1	5255-6	1	5256-7	1
3B-1	Autogap Accessory	5390-101-002	3	5391-101-003	4	5392-101-003	1
3B-2	Terminal Accessory	5103-101-002	1	5103-101-002	1	5103-101-002	1
4	Mounting Accessory Inside Mount Outside Mount			5255-101-001	1	5256-101-003	1
		5254-101-002	1	5255-101-002	1	5256-101-003	1
5	Conduit Box	5200-101-010	1	5200-101-010	1	5200-101-010	1

† See page 235 for specific part numbers.

* 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.



Component Parts

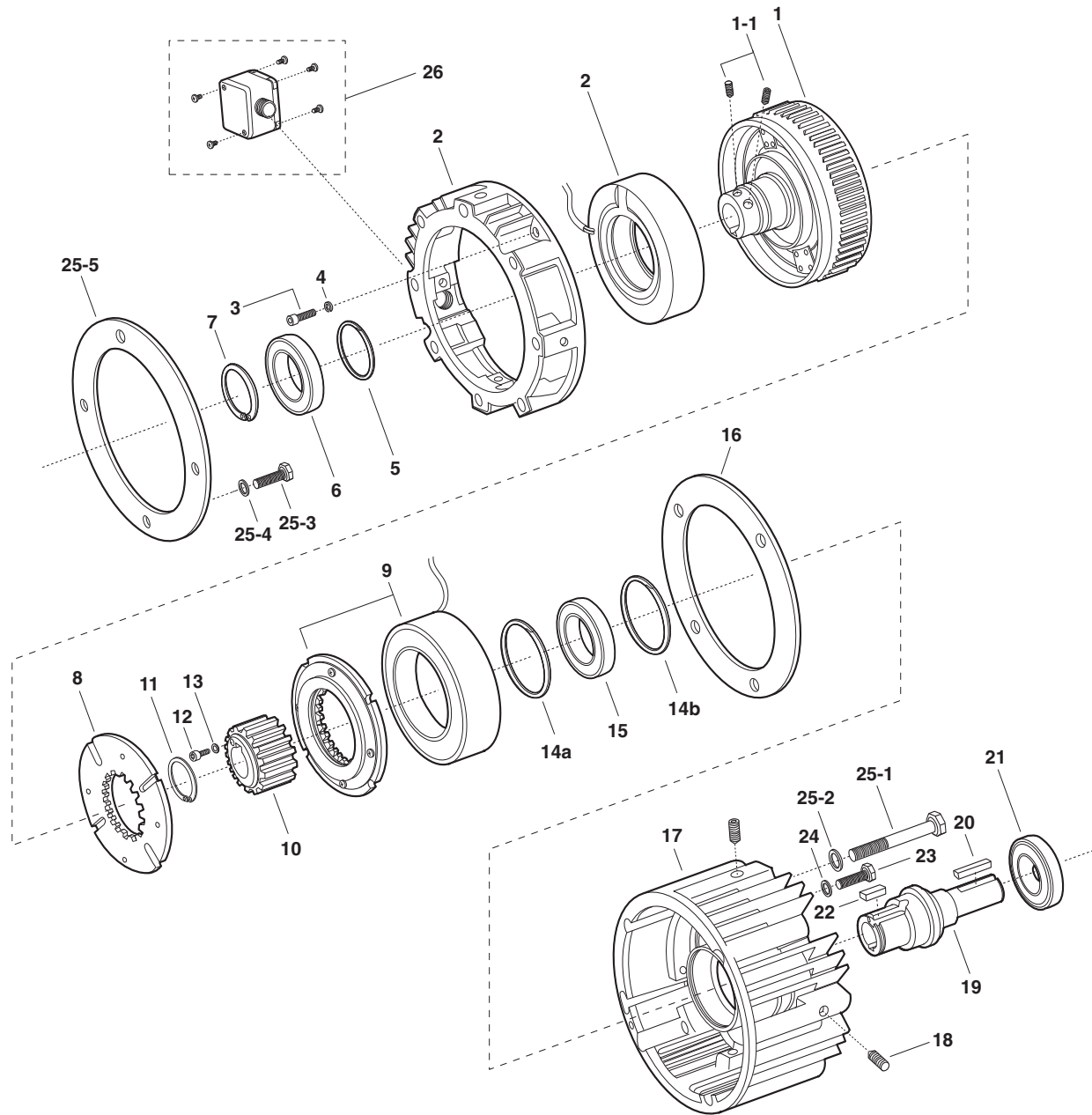
Item	Description	ER-825 Normal Duty		ER-825 Heavy Duty		ER-1225 Normal Duty		ER-1225 Heavy Duty	
		Part Number	Qty.	Part Number	Qty.	Part Number	Qty.	Part Number	Qty.
1	†Bushing	180-0137-180-0149 7/8" to 1-5/8" Bore	1	180-0008-180-0018 7/8" to 1-1/2" Bore	1	180-0262-180-0295 15/16" to 3" Bore	1	180-0026-180-0057 3/4" to 2-11/16" Bore	1
2	Armature Hub	540-0394	1			540-0015	1		
3	Splined Hub			540-0057	1			540-0064	1
4	Retainer Ring			748-0006	1			748-0005	1
5	Mounting Accessory, I.M.	5321-101-001	1	5321-101-001	1	5321-101-001	1	5321-101-001	1
6 & 7	Magnet (I.M., 90 volt) and Armature sold only in matched pairs*	5250-30	1	5250-25	1	5252-9	1	5252-4	1
6-1	Terminal Accessory	5311-101-001	1	5311-101-001	1	5311-101-001	1	5311-101-001	1
8	Autogap Accessory	5201-101-008	3			5201-101-008	4		
9	Conduit Box	5200-101-010	1	5200-101-010	1	5200-101-010	1	5200-101-010	1

† See page 235 for specific part numbers.

* 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.

UM-1020 FBC Motor Clutch/Electrically Released Brake



UM-1020 FBC Motor Clutch/Electrically Released Brake

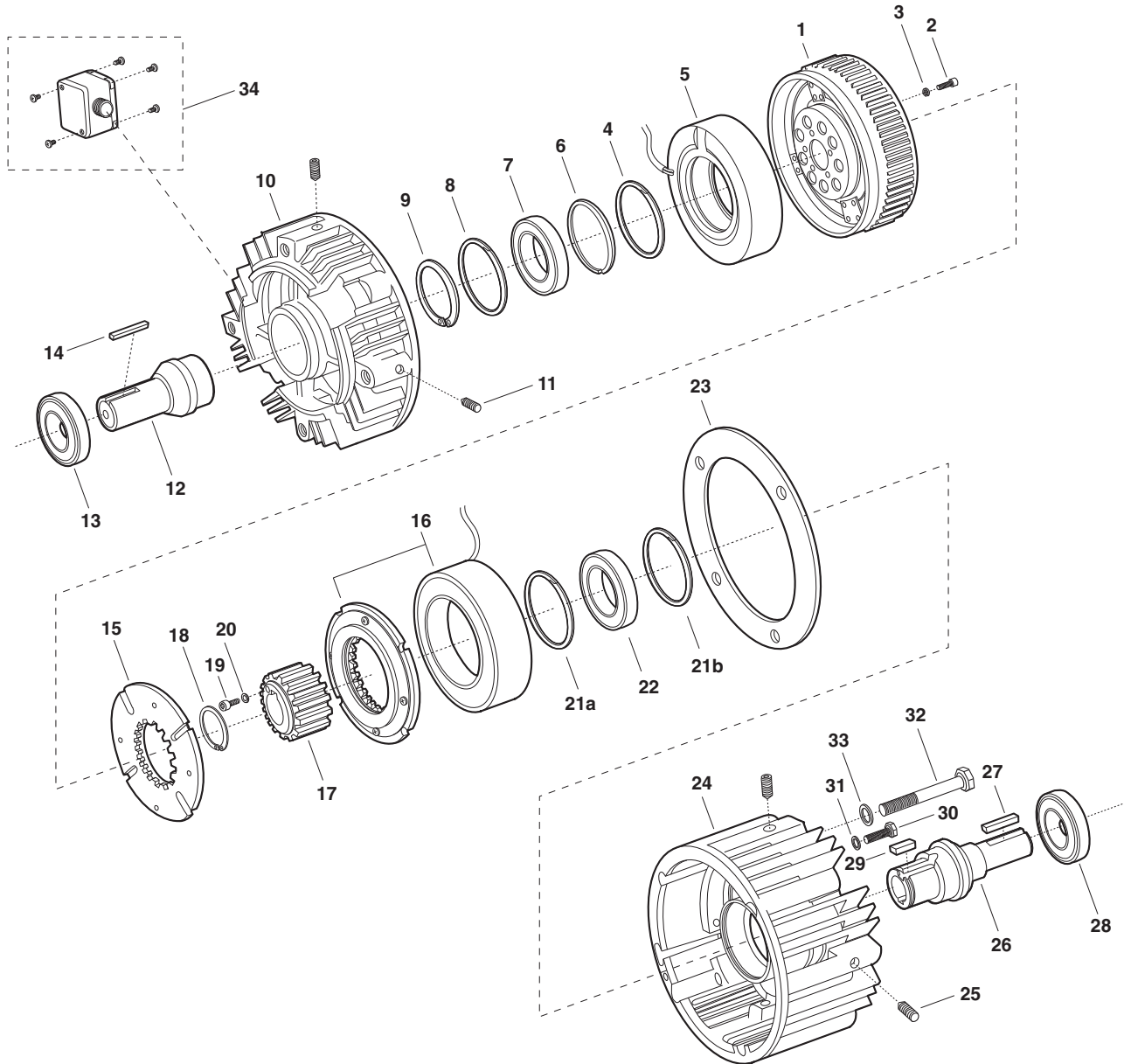
Component Parts

Item	Description	UM-50		UM-100		UM-180		UM-210		UM-215	
		Part No.	Qty.	Part No.	Qty.	Part No.	Qty.	Part No.	Qty.	Part No.	Qty.
1	Rotor Assembly										
	w/fan and hub	5370-751-019	1	5370-751-022	1	5370-751-017	1	5371-751-012	1	5371-751-031	1
	1-1 Setscrew	797-1098	2	797-0069	2	797-0069	2	797-1098	2	798-1098	2
2	Field w/housing		1		1		1		1		1
	24 volt	5370-451-064				5370-451-059		5371-451-029			
	90 volt	5370-451-063		5370-451-058		5370-451-058		5371-451-028		5371-451-028	
3	Capscrew	797-1451	2	797-1451	2	797-1451	1	797-1452	2	797-1452	2
4	Lockwasher	950-0436	4	950-0102	2	950-0436	5	950-0372	2	950-0102	2
5	Retaining Ring	748-0101	1	748-0101	1	748-0101	1	748-0558	1	748-0558	1
6	Ball Bearing	166-0150	1	166-0101	1	166-0101	1	166-0168	1	166-0168	1
7	Retaining Ring	748-0018	1	748-0101	1	748-0001	1	748-0067	1		
8	Armature	5370-111-011	1	5370-111-013	1	5370-111-013	1	5371-111-005	1	5371-111-005	1
9	Magnet and Armature (sold only in matched pairs)*		1		1		1		1		1
	24 volt	5370-6				5370-8		5371-3			
	90 volt	5370-1		5370-2		5370-2		5371-1		5371-1	
10	Armature Hub	540-1640	1	540-1644	1	540-1644	1	540-0835	1	540-2040	1
11	Retaining Ring	748-0445	1	748-0676	1	748-0676	1				
12	Capscrew							797-0081	6	797-0081	6
13	Lockwasher							950-0372	6	950-0372	6
14a	Retaining Ring	748-0113	1	748-0101	1	748-0101	1	748-0112	1	748-0112	1
14b	Retaining Ring	748-0113	1								
15	Ball Bearing	166-0149	1	166-0101	1	166-0101	1	166-0142	1	166-0142	1
16	Spacer	807-1085	1	807-1085	1	807-1085	1	807-1053	1	807-1053	1
17	Housing	535-0170	1	535-0171	1	535-0171	1	535-0172	1	535-0172	1
18	Setscrew	797-0471	4	797-0471	4	797-0471	4	797-0471	4	797-0471	1
19	Shaft	798-0046	1	798-0128	1	798-0085	1	798-0051	1	798-0254	1
20	Key	590-0029	1	590-0029	1	590-0029	1	590-0019	1	590-0124	1
21	Ball Bearing	166-0155	1	166-0143	1	166-0143	1	166-0144	1	166-0144	1
22	Key	590-0043	1	590-0084	1	590-0084	1				
23	Capscrew			797-1294	2	797-1294	2	797-0083	4	797-0083	4
24	Lockwasher							950-0372	4	950-0372	4
25	Mounting Accessory	5370-101-043	1	5370-101-043	1	5370-101-043	1	5371-101-039	1	5371-101-039	1
	25-1 capscrew	797-1440	4	797-1440	4	797-1440	4	797-1453	4		
	25-2 lockwasher	950-0354	4	950-0354	4	950-0354	4	950-0111	4		
	25-3 capscrew							797-1442	4		
	25-4 lockwasher							950-0101	4		
	25-5 adapter							104-0321	1		
26	Conduit Box (Optional)	5370-101-042	1	5370-101-042	1	5370-101-042	1	5370-101-042	1		
	Key for rotary assembly-not shown	5370-101-072	1	5370-101-072	1	5370-101-072	1	5371-101-043	1		

Refer to Service Manual P-213.

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

UM-2030FBC Input Clutch/Electrically Released Brake



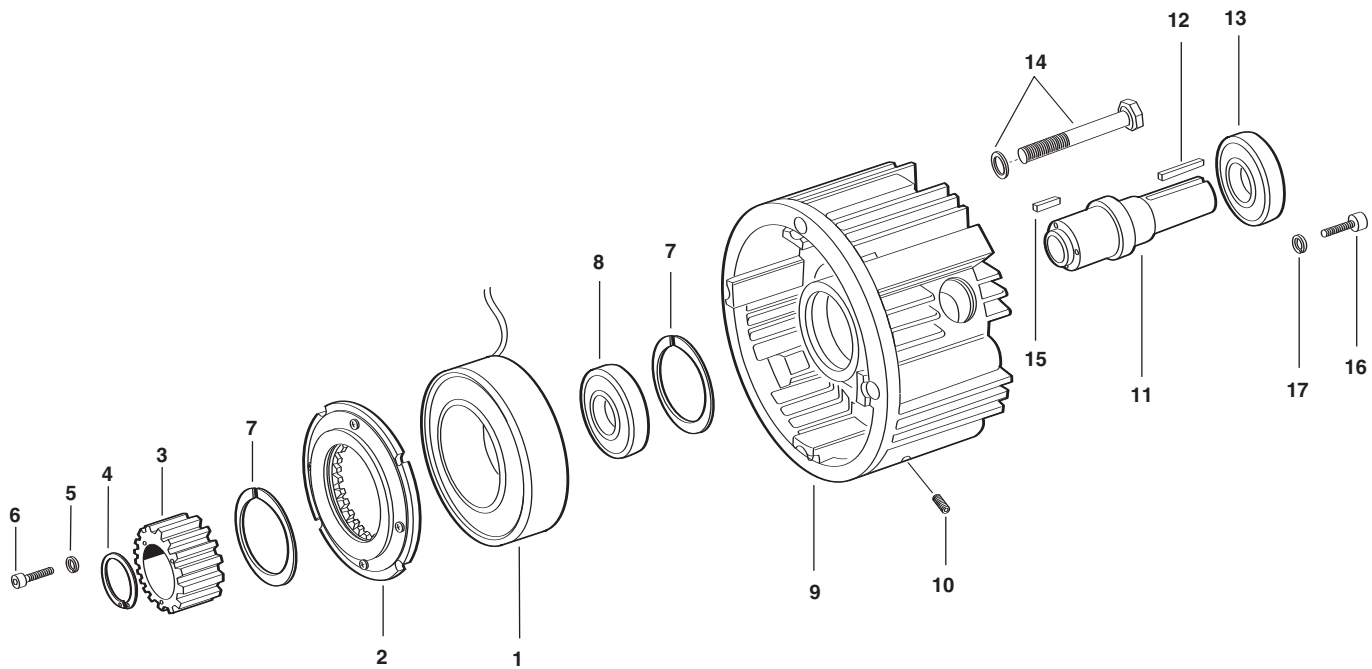
Component Parts

Item	Description	UM-50		UM-180		UM-210	
		Part No.	Qty.	Part No.	Qty.	Part No.	Qty.
1	Rotor Assembly w/fan	5370-751-006	1	5370-751-009	1	5371-751-007	1
2	Capscrew	797-1294	4	797-1214	5	797-0083	6
3	Lockwasher	950-0436	4	950-0436	5	950-0372	6
4	Spacer			807-0062	1	807-0061	1
5	Field (with housing UM-50-20FBC only)		1		1		1
	24 volt	5370-451-074		5370-451-005		5371-451-005	
	90 volt	5370-451-073		5370-451-008		5371-451-003	
6	Retaining Ring	748-0113	1	748-0101	1	748-0112	1
7	Ball Bearing	166-0149	1	166-0101	1	166-0142	1
8	Retaining Ring	748-0113	1				
9	Retaining Ring	748-0017	1				
10	Housing			535-0164	1	535-0129	1
11	Setscrew			797-0471	4	797-0471	4
12	Shaft	798-0047	1	798-0124	1	798-0123	1
13	Bearing	166-0155	1	166-0143	1	166-0144	1
14	Key	590-0029	1	590-0029	1	590-0019	1
15	Armature Assembly	5370-111-011	1	5370-111-013	1	5371-111-005	1
16	Magnet and Armature (sold only in pairs)*		1		1		1
	24 volt	5370-6		5370-8		5371-3	
	90 volt	5370-1		5370-2		5371-1	
17	Armature Hub	540-1640	1	540-1644	1	540-0835	1
18	Retaining Ring	748-0445	1	748-0676	1		
19	Capscrew					797-0081	6
20	Lockwasher					950-0372	6
21a	Retaining Ring	748-0113	1	748-0101	1	748-0112	1
21b	Retaining Ring	748-0113	1	—		—	
22	Ball Bearing	166-0149	1	166-0101	1	166-0142	1
23	Spacer	807-1085	1	807-1085	1	807-1053	1
24	Housing	535-0170	1	535-0171	1	535-0172	1
25	Setscrew	797-0471	4	797-0471	4	797-0471	4
26	Shaft	798-0046	1	798-0085	1	798-0051	1
27	Key	590-0029	1	590-0029	1	590-0019	1
28	Ball Bearing	166-0155	1	166-0143	1	166-0144	1
29	Key	590-0043	1	590-0084	1		
30	Capscrew			797-1294	2	797-0083	4
31	Lockwasher					950-0372	4
32	Capscrew	797-0346	4	797-0346	4	797-1357	4
33	Lockwasher	950-0354	4	950-0354	4	950-0033	4
34	Conduit Box (Optional)	5370-101-042	1	5370-101-042	1	5370-101-042	1

Refer to Service Manual P-213.

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

EM-20FBB Brake Module

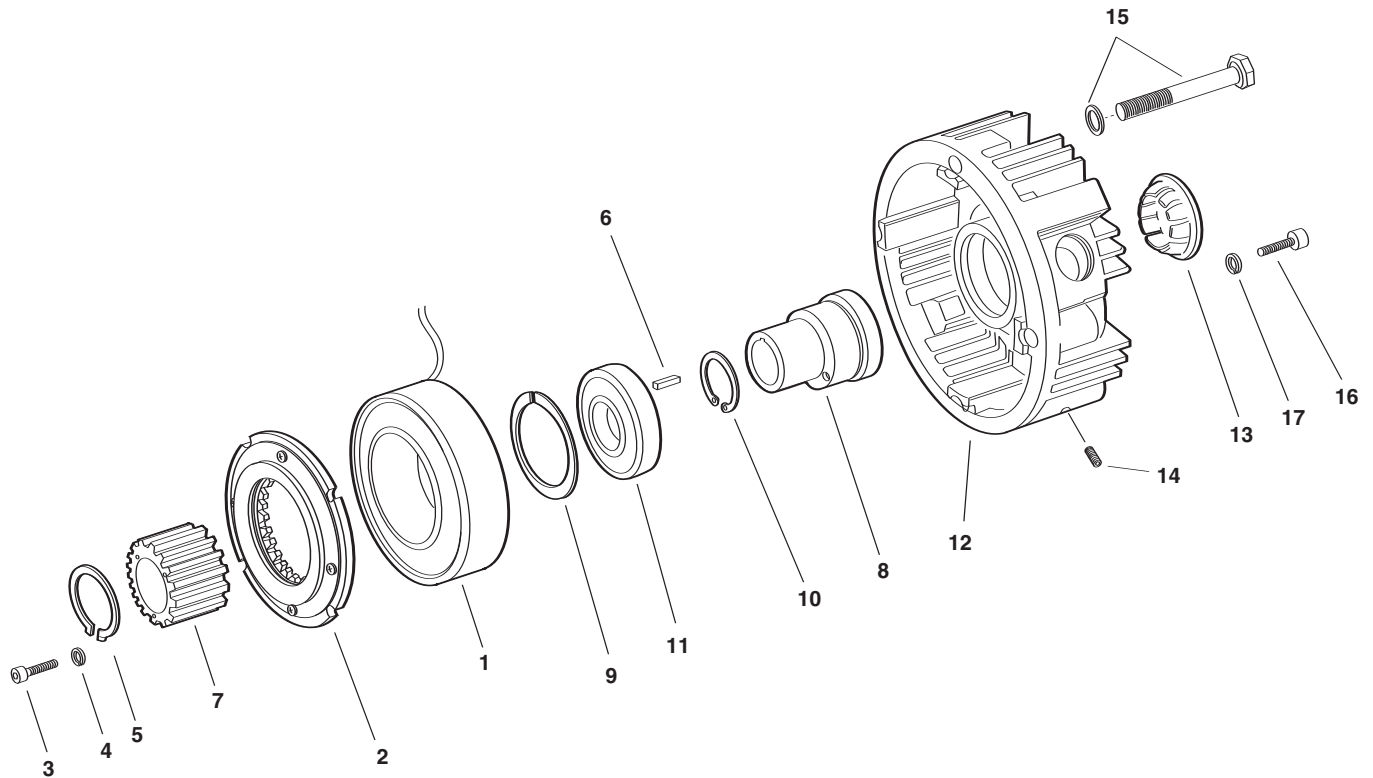


Component Parts

Item	Description	EM-50		EM-100		EM-180		EM-210	
		Part No.	Qty.	Part No.	Qty.	Part No.	Qty.	Part No.	Qty.
1 & 2	Magnet and Armature (sold only in matched pairs)* 24 volt 90 volt	5370-6 5370-1	1	5370-8 5370-2	1	5370-8 5370-2	1	5371-3 5371-1	1
3	Armature Hub	540-1638	1	540-1677	1	540-1642	1	540-0741	1
4	Retaining Ring	758-0445	1	748-0676	1	748-0676	1	748-0112	1
5	Lockwasher							950-0372	6
6	Capscrew							797-0081	6
7	Retaining Ring	748-0113	2	748-0101	1	748-0101	1		
8	Bearing	166-0149	1	166-0101	1	166-0101	1	166-0142	1
9	Housing	535-0130	1	535-0148	1	535-0148	1	535-0144	1
10	Setscrew	797-0471	4	797-0471	4	797-0471	4	797-0471	4
11	Shaft	5370-798-001	1	5370-798-005	1	5370-798-002	1	5371-798-001	1
12	Key	590-0029	1	590-0029	1	590-0029	1	590-0019	1
13	Bearing	166-0155	1	166-0143	1	166-0143	1	166-0144	1
14	Mounting Accessory	5370-101-017	1	5370-101-017	1	5370-101-017	1	5371-101-007	1
15	Key	590-0043	1	590-0084	1	590-0084	1		
16	Capscrew			797-1214	2	797-1214	2	797-0083	2
17	Lockwasher							950-0372	2

Refer to Service Manual P-213.

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



Component Parts

Item	Description	EM-50		EM-100		EM-180		EM-210	
		Part No.	Qty.	Part No.	Qty.	Part No.	Qty.	Part No.	Qty.
1 & 2	Magnet and Armature (sold only in matched pairs)* 24 volt 90 volt	5370-6 5370-1	1	5370-8 5370-2	1	5370-8 5370-2	1	5371-3 5371-1	1
3	Capscrew							797-0081	6
4	Lockwasher							950-0372	6
5	Retaining Ring	748-0445	1						
6	Key	590-0043	1	590-0084	1	590-0084	1		
7	Splined Hub	540-1638	1	540-1677	1	540-1642	1	540-0741	1
8	Hub	5370-541-002	1	5370-541-004	1	5370-541-003	1	5371-541-001	1
9	Retaining Ring	748-0013	2	748-0101	1	748-0101	1	748-0112	1
10	Retaining Ring			748-0676	1	748-0676	1		
11	Bearing	166-0149	1	166-0101	1	166-0101	1	166-142	1
12	Housing	535-0136	1	535-0150	1	535-0150	1	535-0149	1
13	Plug	680-0028	1	680-0028	1	680-0028	1	680-0027	1
14	Setscrew	797-0471	4	797-0471	4	797-0471	4	797-0471	4
15	Mounting Accessory	5370-101-017	1	5370-101-017	1	5370-101-023	1	5371-101-007	1
16	Magnet mounting Screw			797-1214	2	797-1214	2	797-0083	2
17	Lockwasher							950-0372	2

Refer to Service Manual P-213.

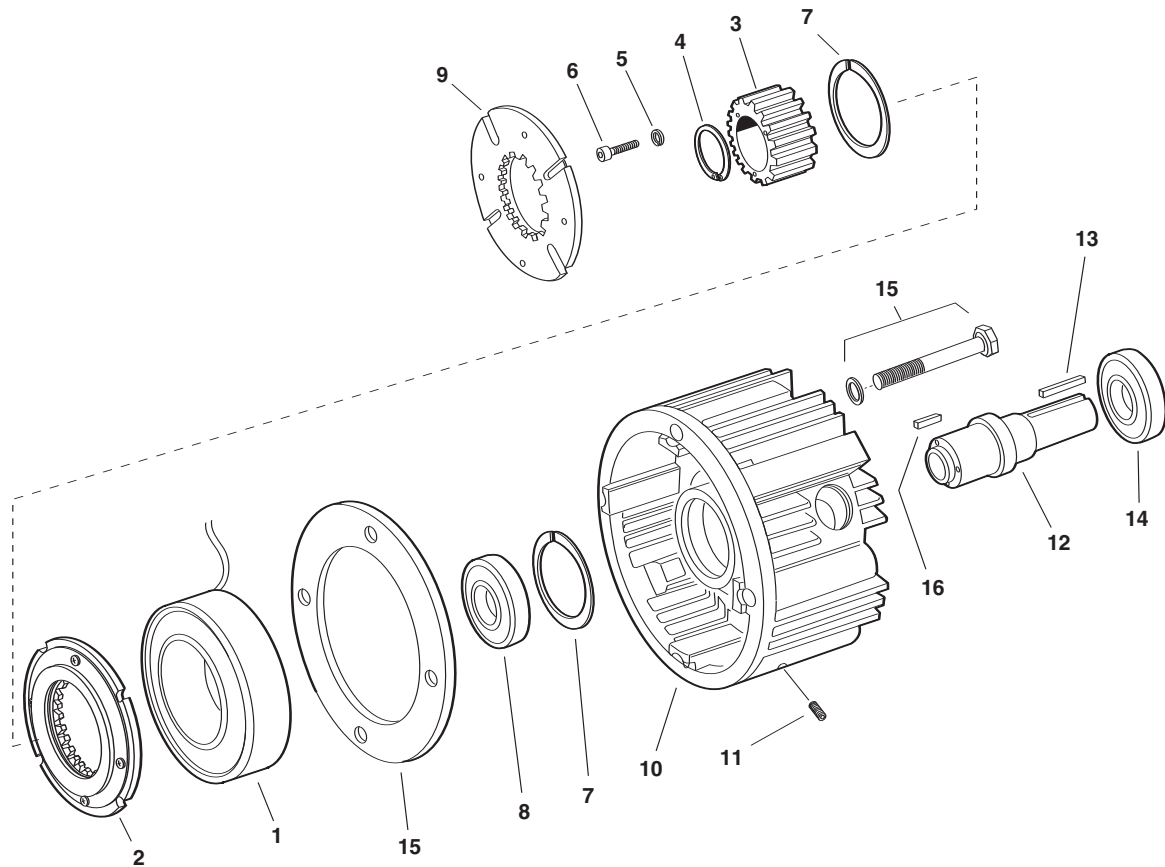
*Magnets and armatures sold only in pre-burnished sets to assure maximum torque is available upon installation.

Service Parts



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EM-20FBC Clutch/Brake Module



Component Parts

Item	Description	EM-50		EM-180		EM-210	
		Part No.	Qty.	Part No.	Qty.	Part No.	Qty.
1 & 2	Magnet and Armature (sold only in matched pairs)* 24 volt 90 volt	5370-6 5370-1	1	5370-8 5370-2	1	5371-3 5371-1	1
3	Armature Hub	540-1640	1	540-1644	1	540-0835	1
4	Retaining Ring	758-0445	1	748-0676	1	748-0112	1
5	Lockwasher					950-0372	6
6	Capscrew					797-0081	6
7	Retaining Ring	748-0113	2	748-0101	1		
8	Bearing	166-0149	1	166-0101	1	166-0142	1
9	Armature	5370-111-011	1	5370-111-013	1	5371-111-005	1
10	Housing	535-0130	1	535-0145	1	535-0144	1
11	Setscrew	797-0471	4	797-0471	4	797-0471	4
12	Shaft	798-0045	1	798-0086	1	798-0050	1
13	Key	590-0029	1	590-0029	1	590-0019	1
14	Bearing	166-0155	1	166-0143	1	166-0144	1
15	Mounting Accessory	5370-101-033	1	5370-101-034	1	5371-101-018	1
16	Key	590-0043	1	590-0084	1		
17	Capscrew			797-1214	2	797-0083	2
18	Lockwasher					950-0372	2

Refer to Service Manual P-213.

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

Service Parts



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C-face Compatible Units

Electro Modules - EM

Description	Model	Part No.	Voltage	Pg. No.
Motor Clutch Module	EM-50-10	5370-270-020	6	13
		5370-270-030	24	
		5370-270-015	90	
	EM-100-10	5370-270-045	6	13
		5370-270-056	24	
		5370-270-046	90	
	EM-180-10	5370-270-021	6	13
		5370-270-055	24	
		5370-270-017	90	
EM-210-10	5371-270-011	6	13	
	5371-270-027	24		
	5371-270-009	90		
Brake Module	EM-50-20	5370-169-043	6	13
		5370-169-045	24	
		5370-169-042	90	
	EM-100-20	5370-169-040	6	13
		5370-169-072	24	
		5370-169-041	90	
	EM-180-20	5370-169-050	6	13
		5370-169-071	24	
		5370-169-051	90	
	EM-210-20	5371-169-022	6	13
		5371-169-034	24	
		5371-169-023	90	
EM-215-20	5371-169-076	90	13	
Motor Brake	EM-50-20MB	5370-169-047	6	13
		5370-169-062	24	
		5370-169-048	90	
	EM-180-20MB	5370-169-053	6	13
		5370-169-073	24	
		5370-169-054	90	
EM-210-20MB	5371-169-025	6	13	
	5371-169-035	24		
	5371-169-026	90		
Input Clutch Module	EM-50-30	5370-270-019	6	13
		5370-270-052	24	
		5370-270-016	90	
	EM-100-30	5370-270-047	6	13
		5370-270-054	24	
		5370-270-048	90	
	EM-180-30	5370-270-049	6	13
		5370-270-053	24	
		5370-270-050	90	
	EM-210-30	5371-270-023	6	13
		5371-270-026	24	
		5371-270-024	90	
Output Clutch Module	EM-50-40	5370-536-008	-	13
	EM-100-40	5370-536-007		13
	EM-180-40	5370-536-009		13
	EM-210-40	5371-536-005		13

UniModules - UM

Description	Model	Part No.	Voltage	Pg. No.
Clutch/Brake UniModule Fully Assembled Brake/Clutch Unit	UM-50-1020	5370-273-016	6	27
		5370-273-018	24	
		5370-273-017	90	
	UM-50-2030	5370-273-021	6	27
		5370-237-023	24	
		5370-273-022	90	
	UM-100-1020	5370-273-026	6	27
		5370-273-028	24	
		5370-273-027	90	
	UM-100-2030	5370-273-031	6	27
		5370-273-033	24	
		5370-273-032	90	
UM-180-1020	5370-273-006	6	27	
	5370-273-008	24		
	5370-273-007	90		
UM-180-2030	5370-273-011	6	27	
	5370-273-013	24		
	5370-273-012	90		
UM-210-1020	5371-273-002	6	27	
	5371-273-004	24		
	5371-273-003	90		
UM-210-2030	5371-273-007	6	27	
	5371-273-009	24		
	5371-273-008	90		
UM-215-1020	5371-273-076	6	27	
	5371-273-077	24		
	5371-273-078	90		
UM-215-2030	5371-273-043	6	27	
	5371-273-044	24		
	5371-273-045	90		
Clutch UniModule Fully Assembled Clutch Unit	UM-50-1040	5370-271-004	6	27
		5370-271-006	24	
		5370-271-005	90	
	UM-50-3040	5370-271-009	6	27
		5370-271-011	24	
		5370-271-010	90	
	UM-100-1040	5370-271-024	6	27
		5370-271-026	24	
		5370-271-025	90	
	UM-100-3040	5370-271-029	6	27
		5370-271-031	24	
		5370-271-030	90	
UM-180-1040	5370-271-014	6	27	
	5370-271-016	24		
	5370-271-015	90		
UM-180-3040	5370-271-019	6	27	
	5370-271-021	24		
	5370-271-020	90		
UM-210-1040	5371-271-002	6	27	
	5371-271-004	24		
	5371-271-003	90		
UM-210-3040	5371-271-007	6	27	
	5371-271-009	24		
	5371-271-008	90		
UM-215-1040	5371-271-026	6	27	
	5371-271-027	24		
	5371-271-028	90		
UM-215-3040	5371-271-021	6	27	
	5371-271-022	24		
	5371-271-023	90		
UM 1020 with Pre-Installed Controls (CBC 150-1)	UM-50-1020	5370-9		27
	UM-100-1020	5370-10		
	UM-180-1020	5370-273-122		
	UM-210-1020	5371-4		
	UM-215-1020	5371-273-090		

C-face Compatible Units

UniModules – Ceramic Faced – UM-C

Description	Model	Part No.	Voltage	Pg. No.
C-face Mount	UM-50-1020-C	5370-273-077	6	37
		5370-273-078	24	
		5370-273-079	90	
	UM-180-1020-C	5370-273-073	6	37
		5370-273-074	24	
		5370-273-075	90	
	UM-210-1020-C	5371-273-035	6	37
		5371-273-036	24	
		5371-273-037	90	
Base/Foot Mount	UM-50-2030-C	5370-273-085	6	37
		5370-273-086	24	
		5370-273-087	90	
	UM-180-2030-C	5370-273-081	6	37
		5370-273-082	24	
		5370-273-083	90	
	UM-210-2030-C	5371-273-039	6	37
		5371-273-040	24	
		5371-273-041	90	

Enclosed UniModules – EUM

Description	Model	Part No.	Voltage	Pg. No.	
C-face Mount	EUM-50-1020	5370-273-058	6	46	
		5370-273-059	24		
		5370-273-057	90		
	EUM-50-1040	5370-271-050	90	46	
		5370-273-092	6	46	
	EUM-100-1020	5370-273-093	24		
		5370-273-091	90		
	EUM-180-1020	5370-273-066	6	46	
		5370-273-067	24		
		5370-273-065	90		
	EUM-180-1040	5370-271-051	90	46	
		5371-273-028	6	46	
	EUM-210-1020	5371-273-029	24		
		5371-273-027	90		
	EUM-210-1040	5371-271-024	90	46	
		5371-273-082	6	46	
		5371-273-083	24		
	5371-273-084	90			
	Base/Foot Mount	EUM-50-2030	5370-273-062	6	46
			5370-273-063	24	
			5370-273-061	90	
EUM-180-2030		5370-273-070	6	46	
		5370-273-071	24		
		5370-273-069	90		
EUM-210-2030		5371-273-032	6	46	
		5371-273-033	24		
		5371-273-031	90		

Accessories for EM, UM, UM-C and EUM

Description	Model	Part No.	Voltage	Pg. No.
Conduit Box	All Sizes	5370-101-042		13
Controls	CBC-150-1	6004-448-001	110 VAC	37, 128
	CBC-150-2	6004-448-002	220 VAC	37, 128
Base Mount Kits for 2030 and 3040	EM/UM-50/100	5370-101-004	—	27, 37
	EM/UM-180	5370-101-002		27, 37, 50
	EUM-50/100/180	5370-101-012		124
Motor Mount Kits for 20, 1020, 1040	EM/EUM/UM-210	5371-101-001		27, 37
	EM/EUM/UM-215			
	EM/UM-50/100	5370-101-010	—	27
Fan Kits for 1020	EM/UM-180	5370-101-012		27
	EUM-50/100/180			
	EM/EUM/UM-210 EM/EUM/UM-215	5371-101-012		27
Fan Kits for 1020	EUM-50/100	5370-101-055		37, 46
	UM-50-C			
	EUM-180 UM-180-C	5370-101-054		37, 46
	EUM-210 UM-210-C	5371-101-029		37, 46

Enclosed UniModules – Washdown Models – EUM-W

Description	Model	Part No.	Voltage	Pg. No.
C-face Mount	EUM-50-1020W	5370-273-100	6	46
		5370-273-101	24	
		5370-273-099	90	
	EUM-100-1020W	5370-273-108	6	46
		5370-273-109	24	
		5370-273-107	90	
	EUM-180-1020W	5370-273-116	6	46
		5370-273-117	24	
		5370-273-115	90	
	EUM-210-1020W	5371-273-056	6	46
		5371-273-057	24	
		5371-273-055	90	
EUM-215-1020W	5371-273-086	6	46	
	5371-273-087	24		
	5371-273-088	90		
Base/Foot Mount	EUM-50-2030W	5370-273-104	6	46
		5370-273-105	24	
		5370-273-103	90	
	EUM-180-2030W	5370-273-120	6	46
		5370-273-121	24	
		5370-273-119	90	
	EUM-210-2030W	5371-273-060	6	46
		5371-273-061	24	
		5371-273-059	90	

Accessories for EUM-W

Conduit Box	All Sizes	5370-101-047		46
Controls	CBC-150-1	6004-448-001	110 VAC	46
	All Sizes	CBC-150-2	6004-448-002	220 VAC 46
Base	EUM-50W/180W	5370-101-047		46
Mount	EUM-210W	5371-101-025		46
Motor Mount	EUM-50W	5370-101-049		46
	EUM-100W			
	EUM-180W			
Fan Kits	EUM-210W	5371-101-026		46
	EUM-215W			
Fan Kits	EUM-50W/100W	5370-101-060		46
	EUM-180W	5370-101-061		46
	EUM-210W	5371-101-033		46

Electro Clutches - EC

Description	Model	Part No.	Voltage	Pg. No.
EC-375	EC-375-1/2	5180-271-006	6	
		5180-271-004	24	53
		5180-271-009	90	
	EC-375-5/8	5180-271-002	6	
		5180-271-008	24	53
		5180-271-005	90	
EC-475	EC-475-5/8	5181-271-004	6	
		5181-271-008	24	53
		5181-271-007	90	
	EC-475-3/4	5181-271-003	6	
		5181-271-009	24	53
		5181-271-005	90	
	EC-475-7/8	5181-271-002	6	
		5181-271-010	24	53
		5181-271-006	90	
EC-650	EC-650-1	5281-271-004	6	
		5281-271-018	24	53
		5281-271-007	90	
	EC-650-1-1/8	5281-271-002	6	
		5281-271-019	24	53
		5281-271-005	90	
	EC-650-1-1/4	5281-271-009	6	
		5281-271-020	24	53
		5281-271-008	90	
	EC-650-1-3/8	5281-271-003	6	
		5281-271-016	24	53
		5281-271-006	90	
EC-825	EC-825-1-1/8	5282-271-002	6	
		5282-271-008	24	53
		5282-271-011	90	
	EC-825-1-1/4	5282-271-003	6	
		5282-271-009	24	53
		5282-271-012	90	
EC-825-1-3/8	5282-271-004	6		
	5282-271-010	24	53	
	5282-271-013	90		
EC-1000	EC-1000-1-3/8	5283-271-002	6	
		5283-271-010	24	53
		5283-271-003	90	
	EC-1000-1-1/2	5283-271-012	24	53
		5283-271-013	90	
	EC-1000-1-5/8	5283-271-004	6	
5283-271-011		24	53	
5283-271-005		90		
EC-1225	EC-1225-1-5/8	5284-271-008	6	
		5284-271-013	24	53
		5284-271-010	90	
	EC-1225-1-7/8	5284-271-002	6	
		5284-271-014	24	53
		5284-271-003	90	
	EC-1225-2-1/8	5284-271-004	6	
		5284-271-015	24	53
		5284-271-005	90	

Electro Brakes - EB

Description	Model	Part No.	Voltage	Pg. No.
EB-375	EB-375-1/2	5380-170-005	6	
		5380-170-006	24	59
		5380-170-004	90	
	EB-375-5/8	5380-170-003	6	
		5380-170-007	24	59
		5380-170-002	90	
EB-475	EB-475	5381-170-003	6	
		5381-170-004	24	59
		5381-170-002	90	
EB-650	EB-650	5382-170-003	6	
		5382-170-005	24	59
		5382-170-002	90	
EB-825	EB-825	5383-170-002	6	
		5383-170-004	24	59
		5383-170-005	90	
EB-1000	EB-1000	5384-170-003	6	
		5384-170-005	24	59
		5384-170-002	90	
EB-1225	EB-1225	5385-170-003	6	
		5385-170-005	24	59
		5385-170-002	90	

Adapters for Electro Brakes

Adapter No.	Part Number	Pg. No.
375-3/8	5380-101-005	108
375-7/8	5380-101-004	108
475-1-1/8	5381-101-003	108
650-1-3/8	5382-101-003	108
650-1-5/8	5382-101-002	108
1000-1-5/8	5384-101-008	60
1000-1-7/8	5384-101-007	60
1000-2-1/8	5384-101-010	60
1225-2-1/8	5385-101-008	60
1225-2-3/8	5383-101-007	60

Bushings for Electro Brakes

Bushing No.	Part Number	Pg. No.
1008	Specify Bore Size	111
	180-0410 to 180-0418	
1310	Specify Bore Size	111
	180-0421 to 180-0435	
H-1, H-2	Specify Bore Size	111
	180-0002 to 180-0018	
1615	Specify Bore Size	111
	180-0131 to 180-0149	
2517	Specify Bore Size	111
	180-0185 to 180-0217	

Shaft Mounted Units

AT Clutches - ATC

Description	Model	Part No.	Voltage	Pg. No.
ATC-25	ATC-25-1/2	5161-271-002	6	69
		5161-271-010	24	
		5161-271-003	90	
	ATC-25-5/8	5161-271-004	6	69
		5161-271-011	24	
		5161-271-005	90	
ATC-25-3/4	5161-271-006	6	69	
	5161-271-012	24		
	5161-271-007	90		
ATC-25-7/8	5161-271-008	6	69	
	5161-271-013	24		
	5161-271-009	90		
ATC-55	ATC-55-3/4	5162-271-002	6	69
		5162-271-010	24	
		5162-271-003	90	
	ATC-55-7/8	5162-271-004	6	69
		5162-271-011	24	
		5162-271-005	90	
ATC-55-1	5162-271-006	6	69	
	5162-271-012	24		
	5162-271-007	90		
ATC-55-1-1/8	5162-271-008	6	69	
	5162-271-013	24		
	5162-271-009	90		
ATC-115	ATC-115-1-1/8	5163-271-002	6	69
		5163-271-010	24	
		5163-271-003	90	
	ATC-115-1-1/4	5163-271-004	6	69
		5163-271-011	24	
		5163-271-005	90	
	ATC-115-1-3/8	5163-271-006	6	69
		5163-271-012	24	
		5163-271-007	90	
	ATC-115-1-1/2	5163-271-008	6	69
		5163-271-013	24	
		5163-271-009	90	

AT Brakes - ATB

Description	Model	Part No.	Voltage	Pg. No.
ATB-25	ATB-25-1/2	5191-170-002	6	72
		5191-170-010	24	
		5191-170-003	90	
	ATB-25-5/8	5191-170-004	6	72
		5191-170-011	24	
		5191-170-005	90	
ATB-25-3/4	5191-170-006	6	72	
	5191-170-012	24		
	5191-170-007	90		
ATB-25-7/8	5191-170-008	6	72	
	5191-170-013	24		
	5191-170-009	90		
ATB-55	ATB-55-3/4	5192-170-002	6	72
		5192-170-010	24	
		5192-170-003	90	
	ATB-55-7/8	5192-170-004	6	72
		5192-170-011	24	
		5192-170-005	90	
ATB-55-1	5192-170-006	6	72	
	5192-170-012	24		
	5192-170-007	90		
ATB-55-1-1/8	5192-170-008	6	72	
	5192-170-013	24		
	5192-170-009	90		
ATB-115	ATB-115-1-1/8	5193-170-002	6	72
		5193-170-010	24	
		5193-170-003	90	
	ATB-115-1-1/4	5193-170-004	6	72
		5193-170-011	24	
		5193-170-005	90	
	ATB-115-1-3/8	5193-170-006	6	72
		5193-170-012	24	
		5193-170-007	90	
	ATB-115-1-1/2	5193-170-008	6	72
		5193-170-013	24	
		5193-170-009	90	

Stationary Field Clutches - SFP

Description	Model	Part No.	Voltage	Pg. No.
SFP-250	SFP-250-3/8	5103-271-002	6	75
		5103-271-006	24	
		5103-271-010	90	
	SFP-250-7/16	5103-271-003	6	75
		5103-271-007	24	
		5103-271-011	90	
SFP-250-1/2	5103-271-004	6	75	
	5103-271-009	24		
	5103-271-012	90		
SFP-250-5/8	5103-271-005	6	75	
	5103-271-008	24		
	5103-271-013	90		

Description	Model	Part No.	Voltage	Pg. No.
SFP-400	SFP-400-1/2	5104-271-006	6	75
		5104-271-016	24	
		5104-271-021	90	
	SFP-400-5/8	5104-271-007	6	75
		5104-271-017	24	
		5104-271-022	90	
	SFP-400-3/4	5104-271-008	6	75
		5104-271-018	24	
		5104-271-023	90	
	SFP-400-7/8	5104-271-009	6	75
		5104-271-019	24	
		5104-271-024	90	
SFP-400-1	5104-271-010	6	75	
	5104-271-020	24		
	5104-271-025	90		

Base Mounted Units

Electro Pack - EP

Model	Part No.	Voltage	Pg. No.
EP-170	5633-273-002	6	77
	5633-273-003	24	
	5633-273-005	90	
EP-250	5130-273-031	6	77
	5130-273-032	24	
	5130-273-034	90	
EP-400	5131-273-009	6	77
	5131-273-010	24	
	5131-273-011	90	
EP-500	5230-273-003	6	77
	5230-273-011	24	
	5230-273-002	90	
EP-825	5231-273-003	6	77
	5231-273-004	24	
	5231-273-002	90	
EP-1000	5232-273-003	6	77
	5232-273-005	24	
	5232-273-002	90	
EP-1525	5234-273-003	6	77
	5234-273-002	90	
EP-1525HT	5234-273-017	24	77
	5234-273-012	90	

Electro Pack - Ceramic Faced - EP-C

Model	Part No.	Voltage	Pg. No.
EP-170-C	5633-273-018	24	84
	5633-273-019	90	
EP-250-C	5130-273-053	24	84
	5130-273-054	90	

Spring-Set Brakes (Static Holding) - ERS

Description	Model	Part No.	Voltage	Pg. No.
ERS	ERS-26	5158-170-016	24	93
		5158-170-015	90	
	ERS-42	5151-170-002	24	93
		5151-170-001	90	
	ERS-49	5155-170-002	24	93
		5155-170-001	90	
	ERS-57	5153-170-003	24	93
		5153-170-002	90	
	ERS-68	5154-170-002	24	93
		5154-170-001	90	

ERS Mounting Flanges (Optional)

Model	Part No.	Pg. No.
ERS-26	686-0182	93
ERS-42	686-0183	93
ERS-49	686-0184	93
ERS-57	686-0185	93
ERS-68	686-0186	93

Spring-Set Electrically Released Brakes

ERS Splined Hubs - ERS

Model	Bore Size	Part No.	Pg. No.
ERS-26	.250	5158-541-006	93
	.312	5158-541-007	93
	.375	5158-541-008	93
ERS-42	.375	5151-541-002	93
	.500	5151-541-003	93
	.625	5151-541-004	93
	.750	5151-541-005	93
ERS-49	.375	5155-541-002	93
	.500	5155-541-003	93
	.625	5155-541-004	93
	.750	5155-541-005	93
	.875	5155-541-006	93
	.500	5153-541-004	93
ERS-57	.625	5153-541-005	93
	.750	5153-541-006	93
	.875	5153-541-007	93
	1.000	5153-541-008	93
	1.000	5154-541-005	93
	1.125	5154-541-006	93
	1.250	5154-541-007	93
ERS-68	1.375	5154-541-008	93
	1.500	5154-541-009	93
	Conduit Box		5154-101-001

EM/ERS Spring-Set Brake Modules

Model	Part No.	Voltage	Pg. No.
EM-50/ERS-42	5370-170-122	24	96
	5370-170-123	90	
EM-50/ERS-49	5370-170-124	24	96
	5370-170-125	90	
EM-180/ERS-57	5370-170-126	24	96
	5370-170-127	90	
EM-210/ERS-68	5371-170-042	24	96
	5371-170-043	90	

Spring-Set Brakes - ERD

Model	Part No.	Pg. No.
ERD 5		100
ERD 10		100
ERD 20		100
ERD 35		100
ERD 60		100
ERD 100		100
ERD 170		100
ERD 300		100
ERD Rectifiers	ACG830A1P1	103
	ACG830A1P2	103

Electrically Released Brakes-Permanent Magnet

Permanent Magnet Brakes (Dynamic Cycling)

Description	Model	Part No.	Voltage	Pg. No.
FB	FB-375-1/2	5390-170-021	90	107
		5390-170-024	24	
	FB-375-5/8	5390-170-022	90	107
		5390-170-023	24	
	FB-475	5391-170-009	90	107
5391-170-012		24		
FB-650	5392-170-007	90	107	
	5392-170-010	24		
ER	ER-375	Drawing I-25766	90	111
	ER-475	Drawing I-25755	90	111
	ER-650	Drawing I-25767	90	111
	ER-825 (N.D.)	Drawing I-25577	90	111
	ER-825 (H.D.)	Drawing I-25578	90	111
	ER-1225 (N.D.)	Drawing I-25619	36-75	111
	ER-1225 (H.D.)	Drawing I-25620	35-75	111

UniModules - UM-FBC

Description	Model	Part No.	Voltage	Pg. No.
Clutch/Brake UniModules	UM-50-1020FBC	5370-273-037	24	120
		5370-273-036	90	
	UM-100-1020FBC	5370-273-153	24	120
		5370-273-125	90	
	UM-180-1020FBC	5370-273-047	24	120
		5370-273-046	90	
	UM-210-1020FBC	5371-273-013	24	120
		5371-273-012	90	
	UM-215-1020FBC	5370-273-099	24	120
		5371-273-079	90	
	UM-50-2030FBC	5370-273-042	24	120
		5370-273-041	90	
	UM-100-2030FBC	5370-273-154	24	120
		5370-273-155	90	
	UM-180-2030FBC	5370-273-052	24	120
		5370-273-051	90	
	UM-210-2030FBC	5371-273-018	24	120
		5371-273-017	90	
UM-215-2030FBC	5371-273-100	24	120	
	5371-273-101	90		

Accessories for UM-FBC, EUM-FBB/MBFB, and EM-FBB/FBC/MBFB

Description	Model	Part No.	Voltage	Pg. No.
Conduit Box	All Sizes	5370-101-042		109
Controls All Sizes	CBC-160-1	6013-448-001	110 VAC	129
	CBC-160-2	6013-448-002	220 VAC	129
Base Mount Kits 2030 (FB only)	UM-50/100	5370-101-036	—	122
	UM-180	5370-101-037		122
	UM-210	5371-101-019		122
Motor Mount Kits for 20FBB and 1020FBC	EM/UM-50/100	5370-101-010	—	37, 121
	EM/UM-180			37, 121
	EUM-50/100/180	5370-101-012		
	EM/EUM/UM-210 EM/EUM/UM-215	5371-101-012		37, 121

Shaft Mounted, Flange Mounted and C-face Compatible Units

Electro Modules

Description	Model	Part No.	Voltage	Pg. No.
Brake Module	EM-50-20FBB	5370-169-066	24	133
		5370-169-058	90	
	EM-100-20FBB	5370-169-020	24	133
		5370-169-084	90	
	EM-180-20FBB	5370-169-068	24	133
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		5371-169-082	90	127		
		5371-169-086	90	127		
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46	EUM210-1020	5371-273-028	184
46	EUM210-1020	5371-273-029	184
46	EUM210-2030	5371-273-031	188
46	EUM210-2030	5371-273-032	188
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46	EUM210-2030W	5371-273-060	188
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27	UM215-1020	5371-273-076	176
27	UM215-1020	5371-273-077	176
27	UM215-1020	5371-273-078	176
120	UM215-1020FBC	5371-273-079	
46	EUM215-1020	5371-273-082	184
46	EUM215-1020	5371-273-083	184
46	EUM215-1020	5371-273-084	184
46	EUM215-1020W	5371-273-086	184
46	EUM215-1020W	5371-273-087	184
46	EUM215-1020W	5371-273-088	184
27	UM215-1020/CBC150	5371-273-090	176
120	UM 215-2030FBC	5371-273-100	218
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27	UM210-1020/CBC150	5371-4	176
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59	EB650	5382-170-002	196
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59	EB825	5383-170-004	198
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Service Parts

Browning® Bushing

Shaft Size	Keyway Size	Bushing Number	
		Warner Electric	Browning
1/2	1/8 x 1/16	180-0002	H Type-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 1/16	1/4 x 1/8	180-0011	
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 1/8	180-0014	
1 5/16	5/16 x 5/32	180-0015	
1 3/8	5/16 x 5/32	180-0016	
1 7/16	3/8 x 3/16	180-0017	
1 1/2	3/8 x 3/16	180-0018	
3/4	3/16 x 3/32	180-0026	Q1 Type-1
13/16	3/16 x 3/32	180-0027	
7/8	3/16 x 3/32	180-0028	
15/16	1/4 x 1/8	180-0029	
1	1/4 x 1/8	180-0030	
1 1/16	1/4 x 1/8	180-0031	
1 1/8	1/4 x 1/8	180-0032	
1 3/16	1/4 x 1/8	180-0033	
1 1/4	1/4 x 1/8	180-0034	
1 5/16	5/16 x 5/32	180-0035	
1 3/8	5/16 x 5/32	180-0036	
1 7/16	3/8 x 3/16	180-0037	
1 1/2	3/8 x 3/16	180-0038	
1 9/16	3/8 x 3/16	180-0039	
1 5/8	3/8 x 3/16	180-0040	
1 11/16	3/8 x 3/16	180-0041	
1 3/4	3/8 x 3/16	180-0042	
1 13/16	1/2 x 1/4	180-0043	
1 7/8	1/2 x 1/4	180-0044	
1 15/16	1/2 x 1/4	180-0045	
2	1/2 x 1/4	180-0046	Q1 Type-2
2 1/16	1/2 x 1/4	180-0047	
2 1/8	1/2 x 1/4	180-0048	
2 3/16	1/2 x 1/4	180-0049	
2 1/4	1/2 x 1/4	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	

(Browning® is registered to Emerson Electric Co.)

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	
15/16	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	
15/16	5/16 x 5/32	180-0144	2012
13/8	5/16 x 5/32	180-0145	
17/16	3/8 x 3/16	180-0146	
1 1/2	3/8 x 3/16	180-0147	
19/16	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	
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	

Bushing Part Numbers

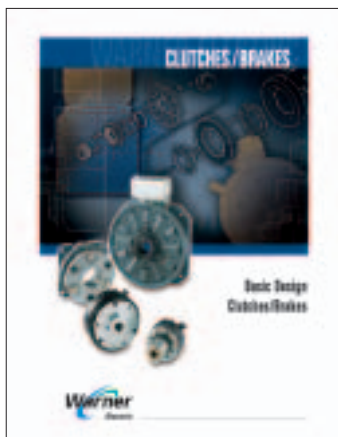
Shaft Size	Keyway Size	Bushing Number	
		Warner Electric	Dodge
15/16	5/16 x 5/32	180-0168	2012
13/8	5/16 x 5/32	180-0169	
17/16	3/8 x 3/16	180-0170	
11/2	3/8 x 3/16	180-0171	
19/16	3/8 x 3/16	180-0172	
15/8	3/8 x 3/16	180-0173	
111/16	3/8 x 3/16	180-0174	
13/4	3/8 x 3/16	180-0175	
113/16	1/2 x 1/4	180-0176	
17/8	1/2 x 1/4	180-0177	
115/16	1/2 x 1/4	180-0178	
2	1/2 x 1/4	180-0179	
1/2	1/8 x 1/16	180-0185	
9/16	1/8 x 1/16	180-0186	
5/8	3/16 x 3/32	180-0187	
11/16	3/16 x 3/32	180-0188	
3/4	3/16 x 3/32	180-0189	
13/16	3/16 x 3/32	180-0190	
7/8	3/16 x 3/32	180-0191	
15/16	1/4 x 1/8	180-0192	
1	1/4 x 1/8	180-0193	
11/16	1/4 x 1/8	180-0194	
11/8	1/4 x 1/8	180-0195	
13/16	1/4 x 1/8	180-0196	
11/4	1/4 x 1/8	180-0197	
15/16	5/16 x 5/32	180-0198	
13/8	5/16 x 5/32	180-0199	
17/16	3/8 x 3/16	180-0200	
11/2	3/8 x 3/16	180-0201	
19/16	3/8 x 3/16	180-0202	
15/8	3/8 x 3/16	180-0203	
111/16	3/8 x 3/16	180-0204	
13/4	3/8 x 3/16	180-0205	
113/16	1/2 x 1/4	180-0206	
17/8	1/2 x 1/4	180-0207	
115/16	1/2 x 1/4	180-0208	
2	1/2 x 1/4	180-0209	
21/16	1/2 x 1/4	180-0210	
21/8	1/2 x 1/4	180-0211	
23/16	1/2 x 1/4	180-0212	
21/4	1/2 x 1/4	180-0213	
25/16	5/8 x 5/16	180-0214	
23/8	5/8 x 5/16	180-0215	
27/16	5/8 x 5/16	180-0216	
21/2	5/8 x 5/16	180-0217	
15/16	1/4 x 1/8	180-0223	
1	1/4 x 1/8	180-0224	
11/16	1/4 x 1/8	180-0225	
11/8	1/4 x 1/8	180-0226	
13/16	1/4 x 1/8	180-0227	
11/4	1/4 x 1/8	180-0228	
15/16	5/16 x 5/32	180-0229	
13/8	5/16 x 5/32	180-0230	
17/16	3/8 x 3/16	180-0231	
11/2	3/8 x 3/16	180-0232	
19/16	3/8 x 3/16	180-0233	
15/8	3/8 x 3/16	180-0234	

Shaft Size	Keyway Size	Bushing Number		
		Warner Electric	Dodge	
111/16	3/8 x 3/16	180-0235	3020	
13/4	3/8 x 3/16	180-0236		
113/16	1/2 x 1/4	180-0237		
17/8	1/2 x 1/4	180-0238		
115/16	1/2 x 1/4	180-0239		
2	1/2 x 1/4	180-0240		
21/16	1/2 x 1/4	180-0241		
21/8	1/2 x 1/4	180-0242		
23/16	1/2 x 1/4	180-0243		
21/4	1/2 x 1/4	180-0244		
25/16	5/8 x 5/16	180-0245		
23/8	5/8 x 5/16	180-0246		
27/16	5/8 x 5/16	180-0247		
21/2	5/8 x 5/16	180-0248		
29/16	5/8 x 5/16	180-0249		
25/8	5/8 x 5/16	180-0250		
211/16	5/8 x 5/16	180-0251		
23/4	5/8 x 5/16	180-0252		
213/16	3/4 x 3/8	180-0253		
27/8	3/4 x 3/8	180-0254		
215/16	3/4 x 3/8	180-0255		
3	3/4 x 3/8	180-0256		
15/16	1/4 x 1/8	180-0262		3030
1	1/4 x 1/8	180-0263		
11/16	1/4 x 1/8	180-0264		
11/8	1/4 x 1/8	180-0265		
13/16	1/4 x 1/8	180-0266		
11/4	1/4 x 1/8	180-0267		
15/16	5/16 x 5/32	180-0268		
13/8	5/16 x 5/32	180-0269		
17/16	3/8 x 3/16	180-0270		
11/2	3/8 x 3/16	180-0271		
19/16	3/8 x 3/16	180-0272		
15/8	3/8 x 3/16	180-0273		
111/16	3/8 x 3/16	180-0274		
13/4	3/8 x 3/16	180-0275		
113/16	1/2 x 1/4	180-0276		
17/8	1/2 x 1/4	180-0277		
115/16	1/2 x 1/4	180-0278		
2	1/2 x 1/4	180-0279		
21/16	1/2 x 1/4	180-0280		
21/8	1/2 x 1/4	180-0281		
23/16	1/2 x 1/4	180-0282		
21/4	1/2 x 1/4	180-0283		
215/16	5/8 x 5/16	180-0284		
23/8	5/8 x 5/16	180-0285		
27/16	5/8 x 5/16	180-0286		
21/2	5/8 x 5/16	180-0287		
29/16	5/8 x 5/16	180-0288		
25/8	5/8 x 5/16	180-0289		
211/16	5/8 x 5/16	180-0290		
23/4	5/8 x 5/16	180-0291		
213/16	3/4 x 3/8	180-0292		
27/8	3/4 x 3/8	180-0293		
215/16	3/4 x 3/8	180-0294		
3	3/4 x 3/8	180-0295		

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	
11/16	1/4 x 1/8	180-0335	
11/8	1/4 x 1/8	180-0336	
13/16	1/4 x 1/8	180-0337	
11/4	1/4 x 1/8	180-0338	
15/16	5/16 x 5/32	180-0339	
13/8	5/16 x 5/32	180-0340	
17/16	3/8 x 3/16	180-0341	
11/2	3/8 x 3/16	180-0342	
19/16	3/8 x 3/16	180-0343	
15/8	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	
3/16	3/16 x 3/32	180-0415	
7/8	3/16 x 3/32	180-0416	
15/16	1/4 x 1/8	180-0417	
1	1/4 x 1/8	180-0418	
1/2	1/8 x 1/16	180-0421	
9/16	1/8 x 1/16	180-0422	
5/8	3/16 x 3/32	180-0423	
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 1/8	180-0429	
11/16	1/4 x 1/8	180-0430	
11/8	1/4 x 1/8	180-0431	
13/16	1/4 x 1/8	180-0432	
11/4	1/4 x 1/8	180-0433	
15/16	5/16 x 5/32	180-0434	
13/8	5/16 x 5/32	180-0435	

Other

Warner Electric Clutch/Brake Products



Warner Electric engineers, manufactures and markets, electromechanical components and systems for controlling motion. Designed to help increase productivity, our products are incorporated into new equipment designs and are used to upgrade performance on machines already in service. With an international organization of stocking distributors and sales centers, Warner Electric offers the most extensive network of its kind for locally available products and professional, on-the-spot customer service.

Basic Design Clutches/Brakes

- Electromagnetic clutches and brakes
- Custom design with off-the-shelf components
- Maximum mounting versatility
- Wide range of sizes, torque ratings and configurations
- Ideal for space restrictive applications

Catalog P-1264



Tension Control Systems

Up to 21,500 lb. ft. stopping torque

- Complete system for unwind applications
- Patented, new technology electric brakes
- Sophisticated control systems
- Load cell controls
- Accurate, smooth, long life

*Magnetic Particle Clutches & Brakes
 Torque range 2 in. lb. to 240 in. lb.*

- For controlled starts and stops, tension control, torque limiting and cycling applications
- High thermal ratings
- Smooth, quiet frictionless operation

Catalog P-771



Wrap Spring Clutches and Clutch/Brakes

- Accurate positioning with high torque-to-size ratio
- Long life, Maintenance free
- Fast, repeatable performance
- Pre-assembled, easy to install
- Torque range from 25 lb.in. to 2,500 lb.in.
- Over 25 sizes available

Catalog P-1310

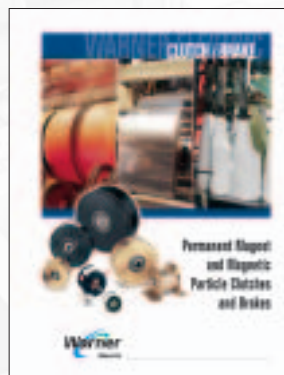


Overrunning Clutches

*Torque loads to 700,000 lb. ft.
 (949200 Nm)*

- Overrunning, indexing and backstopping applications
- Instantaneous action, no backlash
- More torque, less space
- Full sprag complement with infinitely changing wear parts

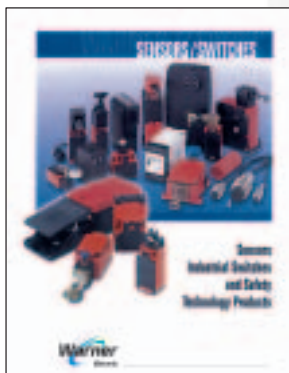
Catalog P-956



Precision Tork

- Fast, precise torque
- Smooth, consistent torque to speed
- No external control or power source required
- Long life, accurate
- Versatile mounting: Easy to retrofit
- Off-the-shelf availability

Catalog P-1316

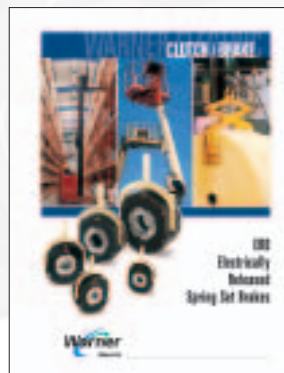


Sensors, Switches & Safety Technology Products

Full line of Sensing, Switching and Safety Technology Products

- Non Contact-Photoelectric, Ultrasonic, Inductive, Capacitive and Magnetic Sensors
- Contact-Limit Switches, Footswitches, Cable Pull Switches, and Conveyor Belt Alignment Switches
- Safety Switches-Safety Interlock Switches (key and hinge styles), Solenoid Lock, Spring Lock, Cable Pull, Footswitch and Coded Magnetic Safety Switches

Catalog P-1201A



ERD

- Designed to keep load in position in the event of power failure
- Sizes from 3.3 in. to 9.9 in., 4 to 221 ft.lbs. of torque
- Stops loads from speeds up to 3600 RPM
- Quiet operation
- Bi-directional stopping capability
- Metric and inch standard bore sizes

Catalog P-1083

COLFAX PT GROUP

Colfax Power Transmission Group

Quincy, MA 02171
617-328-3300

Warner Electric

Electromagnetic Clutches and Brakes - USA
South Beloit, IL 61080
815-389-3771

For application assistance:
1-800-825-9050

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Precision Electric Coils - USA
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*Enclosed and Open Gearing, Electrical
and Mechanical P.T. Components*
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For Customer Service:
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Formsprag Clutch-Stieber Clutch - USA

Overrunning Clutches and Holdbacks
Warren, MI 48089
586-758-5000

For application assistance:
1-800-927-3262

Stieber Clutch-Formsprag Clutch - Europe

Overrunning Clutches and Holdbacks
Heidelberg, Germany
+49 (0)6221 30 470

Marland Clutch

*Roller Ramp and Sprag Type
Overrunning Clutches and Backstops*
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630-455-1752

Nuttall Gear and Delroyd Worm Gear

Worm Gear and Helical Speed Reducers
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940-723-3400

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*Gear Couplings, Mill Spindles,
Universal Joints*
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