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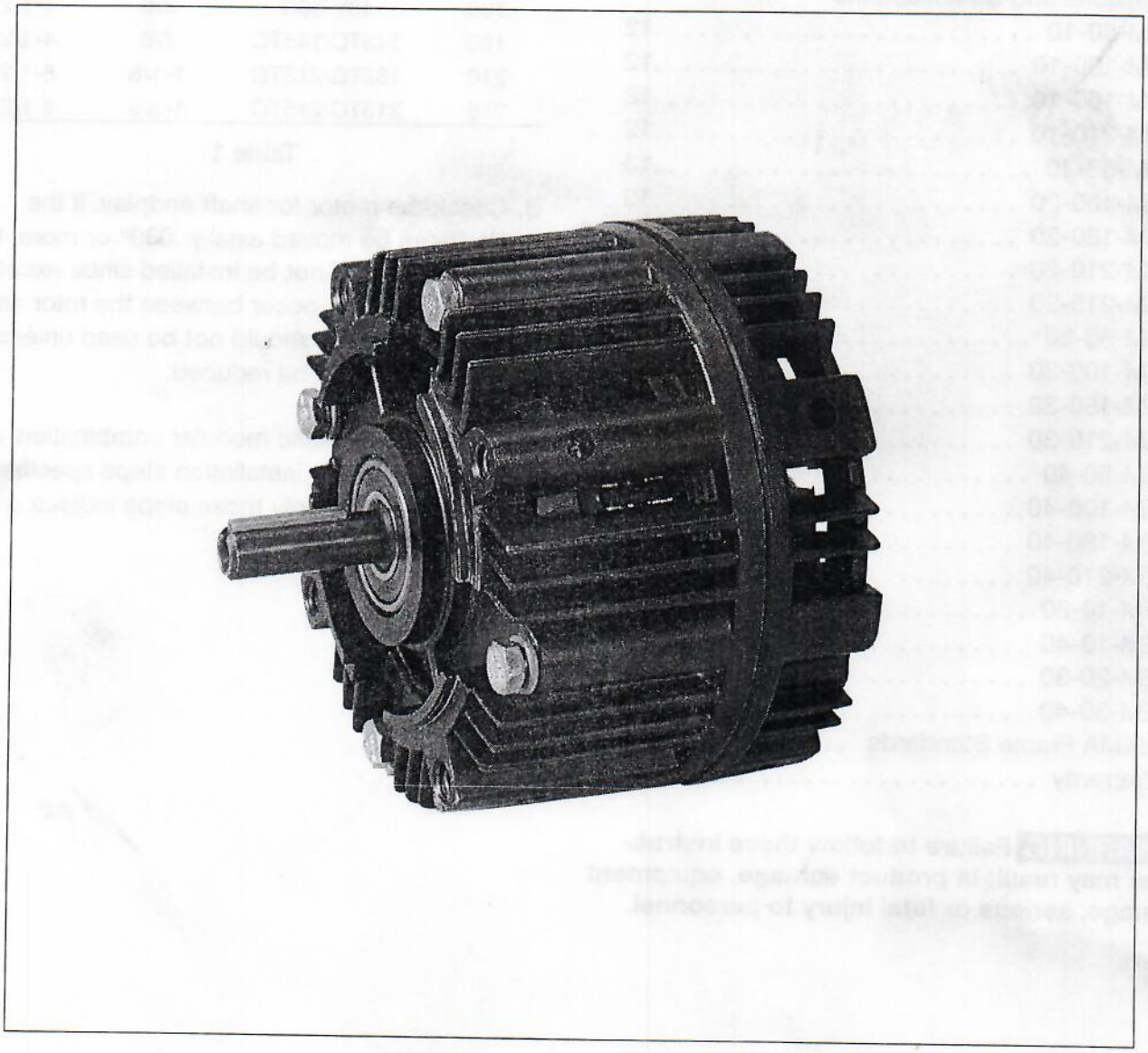
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Find the *Warner Electric EM-210-20* at our website: *Click HERE*

Electro-Module EM-50, EM-100, EM-180, EM-210, EM-215

P-213
819-0303

Installation Instructions



Warner Electric

An Altra Industrial Motion Company

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

Pre-Installation Instructions

A. Before installing the Electro-Module to a motor or reducer, make certain that the EM size and NEMA frame dimensions match according to Table 1.

EM Size	Corresponding NEMA Frame Sizes	Shaft Dia.	C-Face Pilot Dia.
50	48Y/56C	5/8	4-1/2
100	48Y/56C	5/8	4-1/2
180	143TC/145TC	7/8	4-1/2
210	182TC/213TC	1-1/8	8-1/2
215	213TC/215TC	1-3/8	8 1/2

Table 1

B. Check the motor for shaft endplay. If the shaft can be moved axially .030" or more, the module should not be installed since excessive thrust may occur between the rotor and field. The motor should not be used unless the endplay can be reduced.

C. Install your specific modular combination according to the installation steps specified in Table 2. Use only those steps indicated for each combination.

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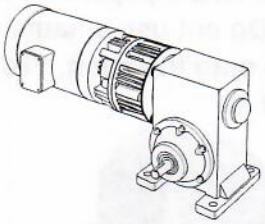
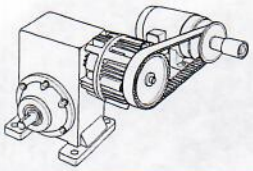
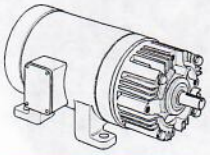
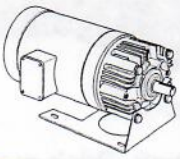
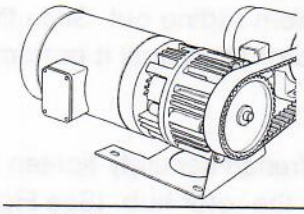
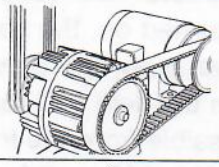
For these EM combinations:		Use sections:
	Electro Module Clutch-Brake Between C-Face Motor and Reducer – 10-20	A, B, C, G, H, I
	Electro Module Clutch Between Motor and Reducer – 10-40	A, B, C, G, H, I
	Electro Module Clutch Brake – 20-30	B, C, G, H, I
	Electro Module Clutch – 30-40	B, C, G, H, I
	Electro Module Brake on C-Face Motor – 20	D, C, G, H, I
	Motor Mount Electro Module Clutch-Brake on C-Face Motor – 20-M	C, E, H, I
	Motor Mount Electro Module Clutch-Brake on C-Face Motor – 10-20-M	A, B, C, E, H, I
	Motor Mount Electro Module Clutch on C-Face Motor – 10-40-M	A, B, C, E, H, I
	Base-Mounted Electro Module Clutch-Brake – 20-30-B	B, C, F, H, I
	Base-Mounted Electro Module Clutch – 30-40-B	B, C, F, H, I

Table 2

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Installation Instructions

Section A: Mounting the Motor Clutch Module (10 Module)

1. Examine the clutch adapter. Note that there are gaps between the housing fins on roughly half of the circumference of the unit. Mount the clutch adapter with the open gaps down. This will keep contaminants from falling into the unit. There are four screws and washers. These will be bolted through the adapter onto the four holes in the face of the motor (See Figure 1).

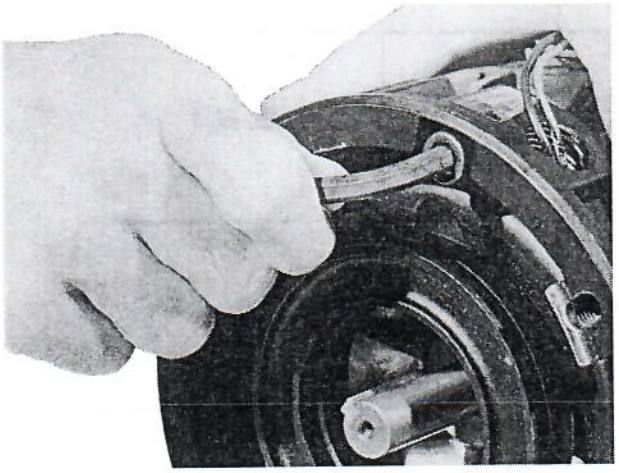


Figure 1

2. Look at the back side of the rotor and note there are cardboard spacer buttons as depicted in figure 2.

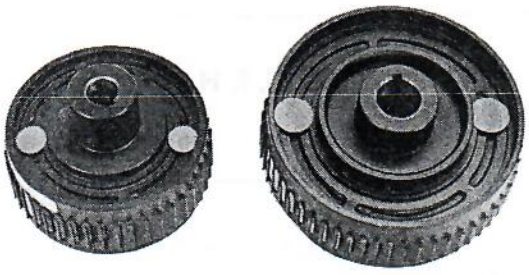


Figure 2

3. Slide the rotor onto the motor shaft. (See Figure 3) Make sure the rotor hub slides easily onto the shaft. If the fit is too tight, polish the shaft with emery paper so the hub will slide on easily. **Do not use a hammer or force the rotor hub onto the shaft.** Slide the rotor back off the shaft.

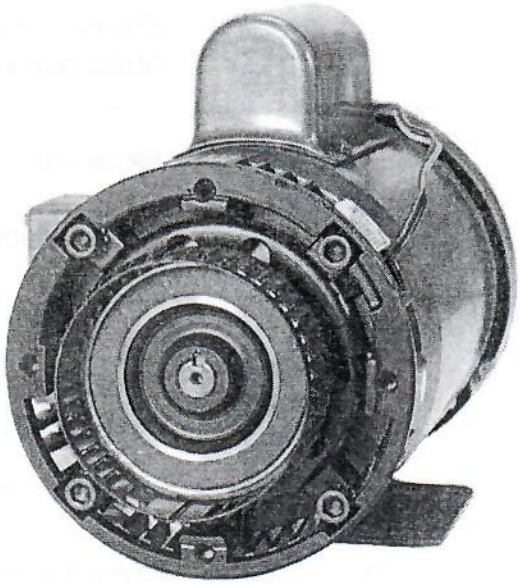


Figure 3

4. Insert key onto the shaft. Prick punch the motor shaft keyway at the end of the key to prevent the key from sliding out. Slide the rotor onto the motor shaft until it bottoms against the field.

5. Using an Allen Wrench securely tighten the two setscrews in the rotor hub. (See Figure 4) When the motor is turned on, the spacer buttons will quickly wear away and provide the proper gap between the field and rotor. The setscrews are accessible from the front of the rotor on sizes 100, 180, 210, and from behind the rotor on size 50 units.

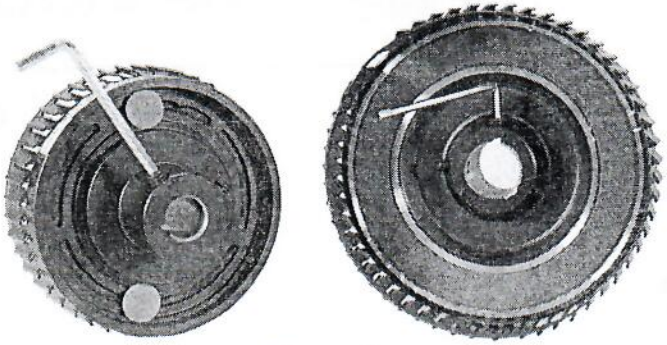


Figure 4

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Section B: Bolting Two Modules Together

The brake module (20) and/or output clutch module (40) may be assembled to the mounted motor clutch module (10) or the input clutch (30).

1. Position the modules so that, in the usual horizontal position, the ventilation holes are down to prevent foreign matter from falling into the units.

2. Bolt the modules together with the long hex head bolts that are provided, see figure 5. Mating pilot diameters assure proper alignment between module assemblies.

3. Proceed to Section C

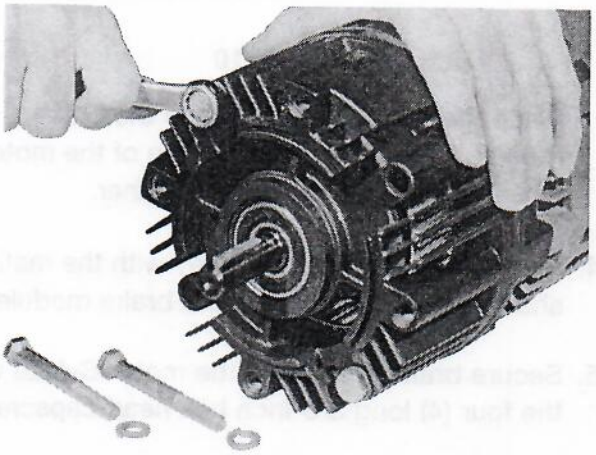


Figure 5

Section C: Adjusting Airgap

For new installations it is necessary to adjust the airgap between the friction faces of the clutch and/or brake.

To set the airgap for an Electro-Module (EM) you will need to access the armatures. On an EM there are gaps between the fins on the housing on 1/2 of the unit circumference. When looking through this gap, you will see the fan on the clutch rotor. In that fan there is a 1/2 x 1 inch window. It is possible to look inside the unit and see the armatures by looking through this window. When looking through this window you will be looking between the two armatures of a clutch/brake unit as shown in figures 6 and 7.

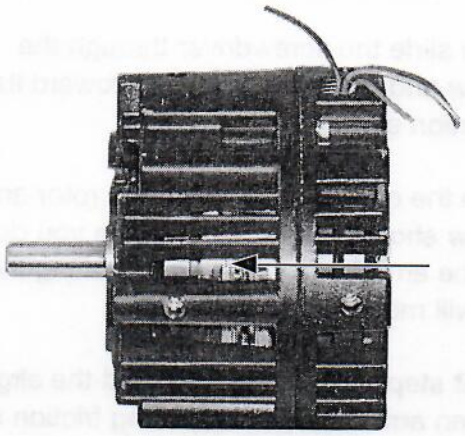


Figure 6

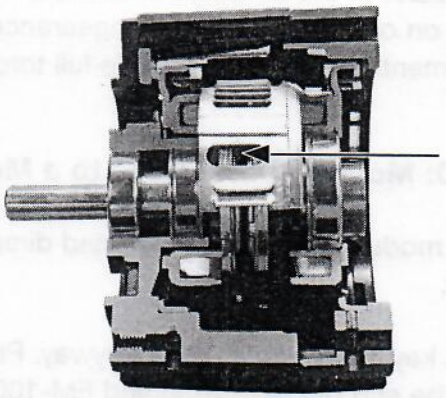


Figure 7

If the armature for either the clutch or the brake is too far away from its mating friction surface, it is possible to move this back into adjustment using a flat blade screwdriver between the two armatures. See figure 8.

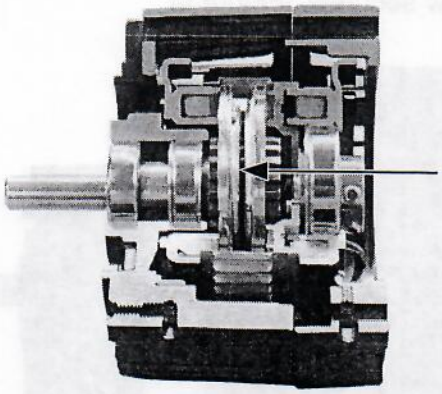


Figure 8

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This is a three step process.

1. Simply slide the screwdriver through the window and press the armature toward its mating friction surface.

2. Rotate the output of the unit. The rotor and the window should stay in place when you do this. Only the armatures will move. Rotating the rotor will move the window.

3. Repeat steps 1 & 2 to ensure that the airgap between armature and its mating friction surface is about 1/32" and that the armature is kept square. (If the armature is cocked, it may engage on one rim, giving the appearance of engagement but failing to provide full torque.)

Section D: Mounting the Brake to a Motor

The brake module (20) can be mounted directly to a motor.

1. Insert a key in the motor shaft keyway. Prick punch the end of the (EM-50 and EM-100) motor shaft keyway to prevent the key from sliding out.

2. A set collar is provided in the EM-180 and EM-210 mounting accessory to prevent the key from sliding out. Slide the set collar up against the motor bearing and tighten the setscrew securely. (Figure 9)

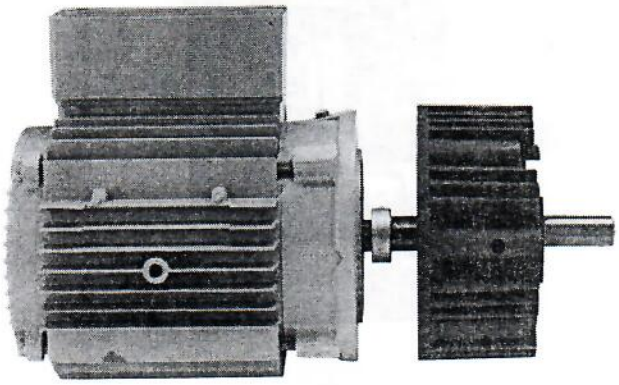


Figure 9

3. When using the EM-180-20 a possible interference may exist between the splined armature hub and some motors. (See Figure 10) A spacer ring is provided with the EM-180 mounting accessory to provide the necessary running clearance.

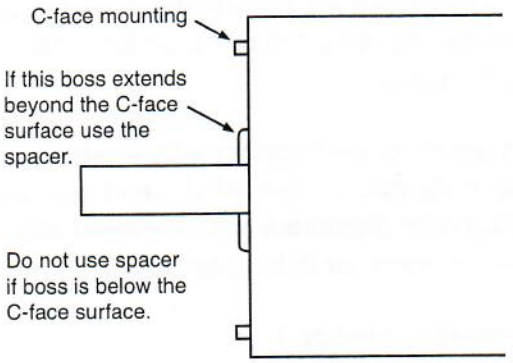


Figure 10

Place the spacer ring between the brake module housing and the C-face of the motor when bolting the two units together.

4. Align the motor shaft and key with the mating shaft hole and key slot in the brake module.

5. Secure brake module to the motor C-face with the four (4) long 3/8-inch hex head capscrews.

Section E: Installing the Motor Mount (M)

A Motor Mount (M) can be installed to the brake or output clutch module to provide a foot mounting for the complete assembly of module and motor.

1. Remove the two (2) long hex head bolts from the side of the module toward the ventilation holes.

2. Mount the module on the Motor Mount so that the base of the Motor Mount is underneath the modules and motor. (See Figure 11) A pilot diameter on the module mates with a pilot diameter on the Motor Mount.

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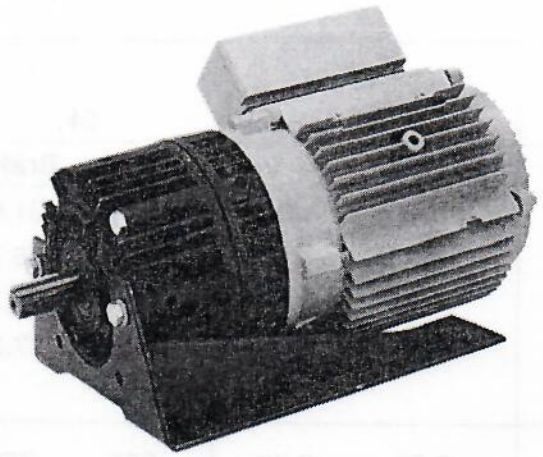


Figure 11

3. Secure the Motor Mount in place with two (2) longer mounting bolts and the two shorter bolts all provided in the kit.

Section F: Installing the Base Mount

Modules 20-30 and 30-40 can be base-mounted.

1. Mount the modules so that the base is located below the ventilation holes. A pilot diameter on the end of each module mates with pilot diameters on the base.

2. Secure the base to the modules with the four (4) bolts provided. (Figure 12)

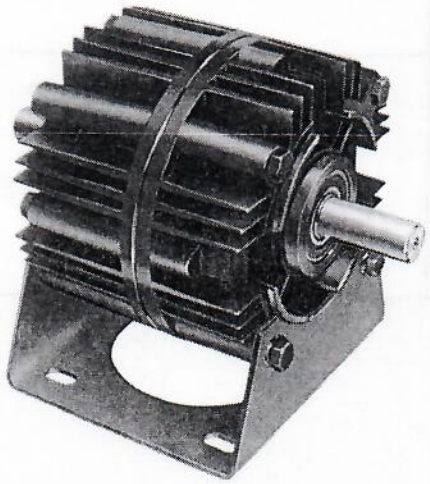


Figure 12

Section G: Mounting to a Reducer

The output side of a brake (20) or output clutch (40) module may be mounted directly to a reducer.

1. Align the output shaft and key of the modules with the corresponding shaft hole and keyway of the reducer. Slide the assembly together, matching the pilot diameter on the module with a pilot diameter on the reducer. (Figure 13)

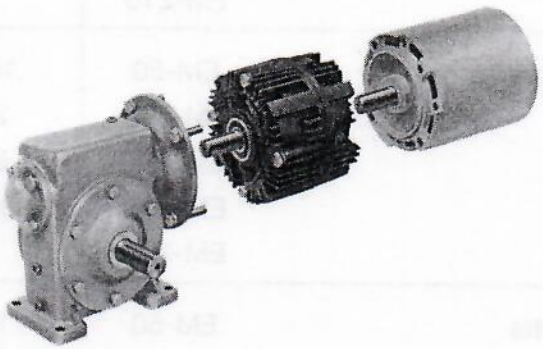


Figure 13

2. Bolt the module to the reducer flange. The four (4) bolts required (3/8 - 16 UNC-2A) are normally furnished with the reducer.

Section H: Electrical Connections

The conduit connection hole in the motor clutch module (10), brake (20), and input clutch (30) are threaded for standard conduit connectors. The wiring diagram, included with each Warner Electric control shows the proper electrical connections that must be made. (Control Service Manual P-239 includes complete information on all standard control power supplies.)

For clutch/brake combinations, connect the red wire from one module and the black wire from the other module to the same terminal of the DC supply. With most basic Warner Electric controls, one terminal is normally used for two connections – one from the brake and one from the clutch.

For wiring of clutches, brakes, and clutch/brake combinations consult manual P-239 for the wiring diagram of the control being used. These clutch/brakes are not polarity sensitive.

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Electrical Coil Data

EM - 50 - 100 - 180 - 210 - 215

Voltage – D.C.		90		6		24	
		Clutch	Brake	Clutch	Brake	Clutch	Brake
Resistance @ 20° C - 0hms	EM-50	452	452	1.86	1.86	31.8	31.8
	EM-100	392	392	1.8	1.8	26.7	26.7
	EM-180	392	392	1.8	1.8	26.7	26.7
	EM-210	248	248	1.22	1.22	17.9	17.9
	EM-215		248				
Amperes	EM-50	.199	.199	3.23	3.23	.755	.755
	EM-100	.23	.23	3.31	3.31	.896	.896
	EM-180	.23	.23	3.31	3.31	.896	.896
	EM-210	.363	.363	4.9	4.9	1.34	1.34
	EM-215		.363				
Watts	EM-50	18	18	19	19	18	18
	EM-100	21	21	20	20	21.5	21.5
	EM-180	21	21	20	20	21.5	21.5
	EM-210	33	33	30	30	32	32
	EM-215		33				
Build-up – milliseconds	EM-50	52	53	52	53	52	53
	EM-100	72	75	72	70	72	75
	EM-180	72	75	72	70	72	75
	EM-210	120	100	110	100	120	100
	EM-215		100				
Decay – milliseconds	EM-50	6.2	5.0	6.5	5.0	6.2	5.0
	EM-100	12	10	12	10	12	10
	EM-180	12	10	12	10	12	10
	EM-210	20	10	20	10	20	10
	EM-215		10				

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Section I: Burnishing

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

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

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

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

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

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

Troubleshooting

If an Electro-Module fails to engage, there are several possible causes. These can be broken down into two sub-headings: Electrical and Mechanical.

Electrical - If a clutch or brake or clutch/brake will not engage, review the wiring, switching and connections.

A. Visually inspect to ensure that the lead wires are not split or cut.

B. Using a voltmeter confirms that DC voltage is reaching the lead wires when it should be and that the coil resistance is correct.

Mechanical - A likely mechanical cause for a clutch or brake not engaging when DC power is applied is that the airgap between the friction faces is too large. When power is applied to an Electro-magnetic clutch/brake, the unit magnetically clamps the friction faces together. An airgap that is too large can keep the unit from clamping together. If the airgap is too small the faces will rub all of the time.

To adjust the airgap, see Section C on page 5.

Maintenance

As with any friction-type device, some initial concern should be given to wear rate, as minor adjustments in actuation time can sometimes extend the life of the unit.

For clutch modules, the control potentiometer should be set high to reduce the actuation time. For brakes, the setting can be reduced to extend the braking time and thereby extend the life. Once the best actuation time has been established, precautions should be taken to prevent machine operators, or other personnel not familiar with wear characteristics, from changing the potentiometer setting arbitrarily for affecting minor operating changes.

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Wear Pattern

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

Heat

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

Foreign Materials

If units are used on machinery where fine, abrasive dust, chips or grit are dispelled into the atmosphere, a screen over the ventilation holes may be necessary.

Where units are used near gear boxes or transmissions requiring frequent lubrication, means should be provided to protect the friction surfaces from oil and grease to prevent serious loss of torque.

Oil and grease accidentally reaching the friction surfaces may be removed by wiping with a rag dampened with a suitable cleaner, which leaves no residue. In performing this operation, do not drench the friction material. If the friction materials have been saturated with oil or grease, no amount of cleaning will be completely effective. Once such a unit has been placed back in service, heat will cause the oil to boil to the surface, resulting in further torque loss.

Torque Loss

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

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

24 Volt Series: Use a DC voltmeter of approximately 0-40 volt range. A normal reading is from 23 to 25 volts.

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

The above checks normally are sufficient. Further checks may be made as follows: a low range ammeter, when connected in series with one magnet lead, will indicate amperes as shown in chart on page 8. These readings are with the power on and the potentiometer control in the maximum position.

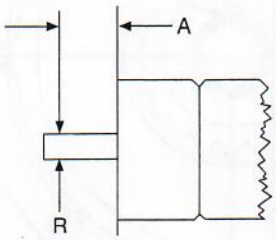
Ohmmeter checks should be made with the power off and the circuit open (to be certain, disconnect one lead to the magnet). A very high or infinite resistance reading would indicate an open coil.

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

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Overhung Load Data (Shaft Side Load)

Overhung load data is provided in this manual for the design engineer concerned with a specific problem in this area. The maximum allowable overhung load which can be applied to the shaft of an Electro-Module may be determined by the use of the accompanying chart.



Electro-Module	Distance Load Applied from Housing Face "A" Inches	Maximum Load Rating "R" Lbs.
EM-50	1" - Center of Shaft	177
	2" - End of Shaft	123
	3"	95
EM-100	1" - Center of Shaft	192
	2" - End of Shaft	134
	3"	104
EM-180	1" - Center of Shaft	192
	2" - End of Shaft	134
	3"	104
EM-210	1-3/8" - Center of Shaft	386
	2-3/4" - End of Shaft	271
	4-1/8"	208
EM-215	1-3/8" - Center of Shaft	386
	2-3/4" - End of Shaft	271
	4-1/8"	208

Based on B10 Life at 3600 RPM

The minimum pitch diameter pulley or sprocket that can be used, for satisfactory bearing life, is determined from the formula:

$$\text{Min. P. D.} = \frac{2\,T\,K}{R}$$

T - Torque, (lbs. in.). This is the torque actually being transmitted, not necessarily the maximum torque capacity of the Electro-Module.

$$\text{Torque} = \frac{63025 \times HP}{RPM}$$

K - the safety factor for the tension in the type of drive.

Use: 1 for chain and sprocket
1 for timing belt
2 for V-belt
3 for flat belt

R - Radial load allowable (values at various distances from the housing face are given in the chart).

Example: What is the minimum V-belt pulley that can be applied to the center of the shaft of an EM-50 module?

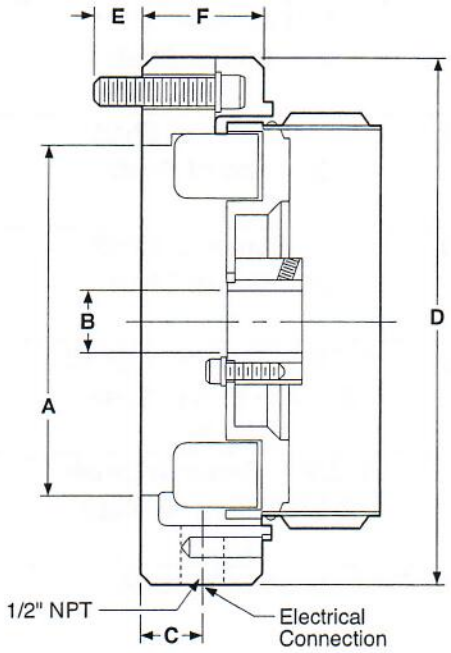
The torque requirement is 112 in. lbs.

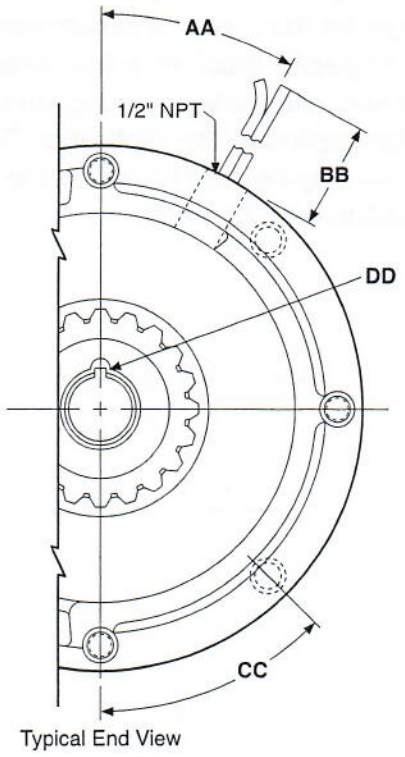
$$\text{Min. P. D. pulley} = \frac{2 \times 112 \times 2}{224} = 2\text{" minimum P. D.}$$

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10 Motor Clutch Module

50-10
100-10
180-10
210-10





Typical End View

All dimensions are nominal, unless otherwise noted.

Size	A Pilot Dia.	B Dia.	C	D Dia.	E Max.	F Max.	AA	BB Min.	CC	DD Key
50	4.500	.625	.813	6.750	.599	1.563	30°	36	45°	3/16 x 3/16
100	4.500	.625	.813	6.750	.599	1.563	30°	36	45°	3/16 x 3/16
180	4.500	.875	.813	6.750	.599	1.563	30°	36	45°	3/16 x 3/16
210	8.500	1.125	.703	9.250	.625	1.313	25°	36	45°	1/4 x 1/4

Specifications

Model Size	Voltage DC	Static Torque (lb. ft.)	Max. RPM	Inertia–WR² (lb.ft.²)	Weight (lbs)	NEMA Frame Size
50	6, 24, 90	16	3600	.020	3.4	56C/48Y*
100	6, 24, 90	30	3600	.046	5.1	56C/48Y**
180	6, 24, 90	30	3600	.046	5.1	182C/143TC 184C/145TC
210	6, 24, 90	95	3600	.188	9.1	213C/182TC 215C/184TC

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

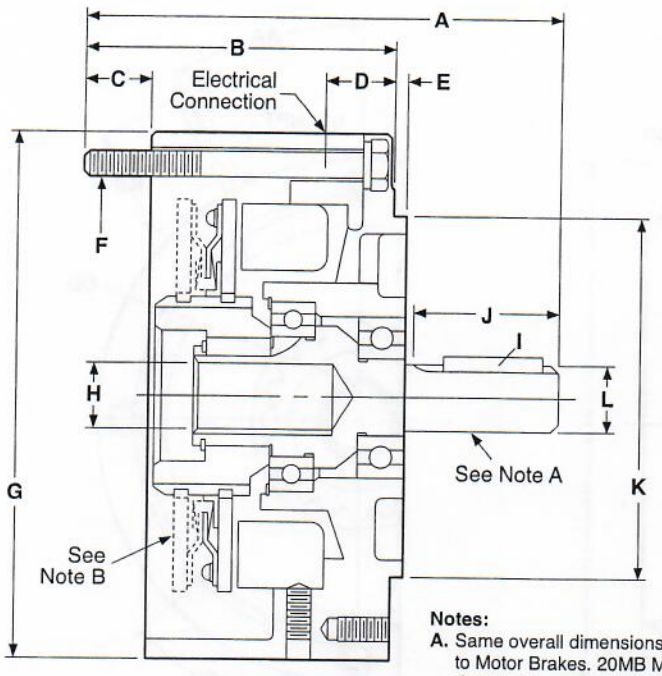
** EM-100 size is recommended for motors 1 HP and larger.

For NEMA Standard frame sizes, see page 20.

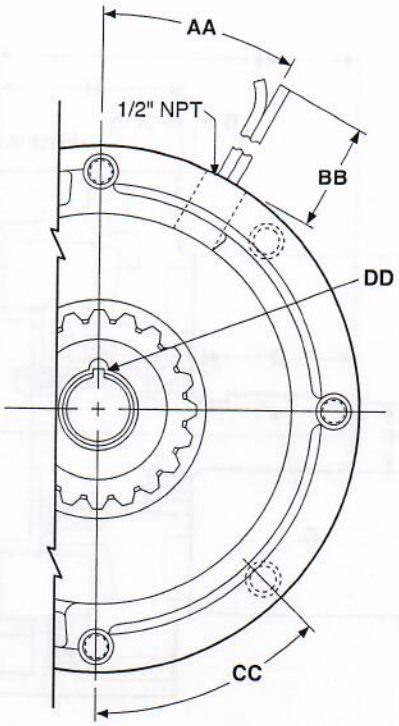
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20 Brake Module

50-20
100-20
180-20
210-20
215-20



Notes:
A. Same overall dimensions apply to Motor Brakes. 20MB Module does not have an output shaft.
B. Clutch armature only applies to EM-20.



Typical End View

All dimensions are nominal, unless otherwise noted.

Size	A Max.	B	C Max.	D	E Max.	F	G Dia.	H Dia.	I Keyway	J Min.	K Pilot Dia.	L Dia.	AA	BB Min.	CC	DD Key
50	5.188	3.125	.500	1.000	.156	3/8-16 UNC-2A Equally Spaced (4) on 5.875 D.	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
100	5.188	3.125	.500	1.000	.156	3/8-16 UNC-2A Equally Spaced (4) on 5.875 D.	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 Equally Spaced (4) on 5.875 D.	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	1/2-16 UNC-2A Equally Spaced (4) on 7.250 D.	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	8.078	4.609	.594	1.500	.313	1/2-16 UNC-2A Equally Spaced (4) on 7.250 D.	9.344	1.375	1/4 X 1/4 x 2	3.000	8.500	1.375	25°	36	45°	5/16 x 5/16

Specifications

Model Size	Voltage DC	Static Torque (lb. ft.)	Max. RPM	Inertia–WR² (lb.ft.²) Armatures	Arm. Hub	Shaft	Weight (lbs)	NEMA Frame Size
50	6, 24, 90	16	3600	.014	.002	.001	6.6	56C/48Y*
100	6, 24, 90	30	3600	.036	.003	.002	8.1	56C/48Y**
180	6, 24, 90	30	3600	.036	.003	.002	8.1	182C/143TC 184C/145TC
210	6, 24, 90	95	3600	.162	.021	.017	21.5	213C/182TC 215C/184TC
215	90	95	3600	.162	.021	.019	22	213TC/215TC***

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

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

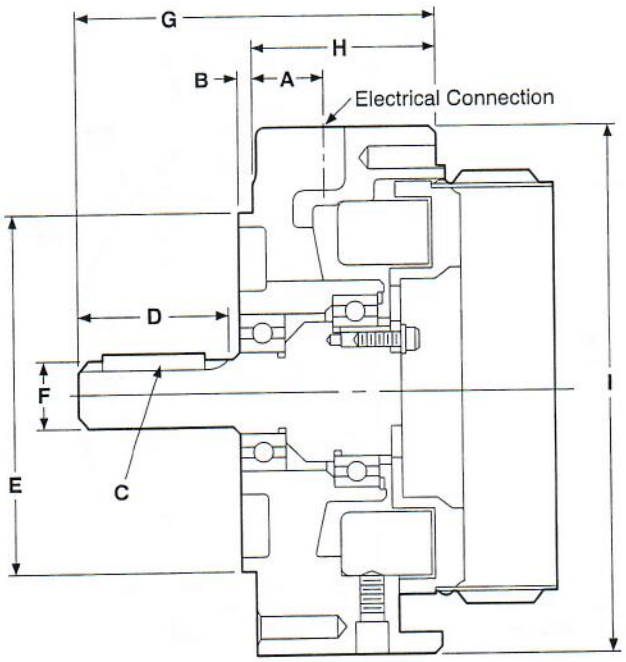
*** For 7-1/2 HP max.

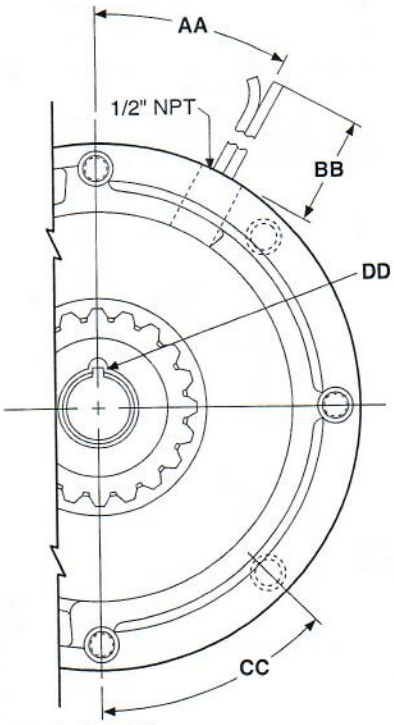
For NEMA standard frame sizes, see page 20.

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30 Input Clutch Module

50-30
100-30
180-30
210-30





Typical End View

All dimensions are nominal, unless otherwise noted.

Size	A	B Max.	C	D Min.	E Pilot Dia.	F Dia.	G Max.	H	I Dia.	AA	BB Min.	CC	DD` Key
50	1.000	1.56	3/16 x 3/16 x 1-3/8	1.813	4.500	.625	4.328	2.266	6.688	30°	36	45°	3/16 x 3/16
100	1.000	1.56	3/16 x 3/16 x 1-3/8	1.813	4.500	.625	4.328	2.266	6.688	30°	36	45°	3/16 x 3/16
180	1.000	1.56	3/16 x 3/16 x 1-3/8	1.891	4.500	.875	4.391	2.266	6.688	30°	36	45°	3/16 x 3/16
210	1.500	.312	1/4 x 1/4	2.500	8.500	1.125	5.391	2.438	9.219	25°	36	45°	1/4 x 1/4

Specifications

Model Size	Voltage DC	Static Torque (lb. ft.)	Max. RPM	Inertia–WR² (lb. ft.) Rotor	Inertia–WR² (lb. ft.) Shaft	Weight (lbs)	NEMA Frame Size
50	6, 24, 90	16	3600	.020	.001	6.4	56C/48Y*
100	6, 24, 90	30	3600	.046	.002	8.4	56C/48Y**
180	6, 24, 90	30	3600	.046	.002	8.4	182C/143TC 184C/145TC
210	6, 24, 90	95	3600	.188	.017	19.8	213C/182TC 215C/184TC

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

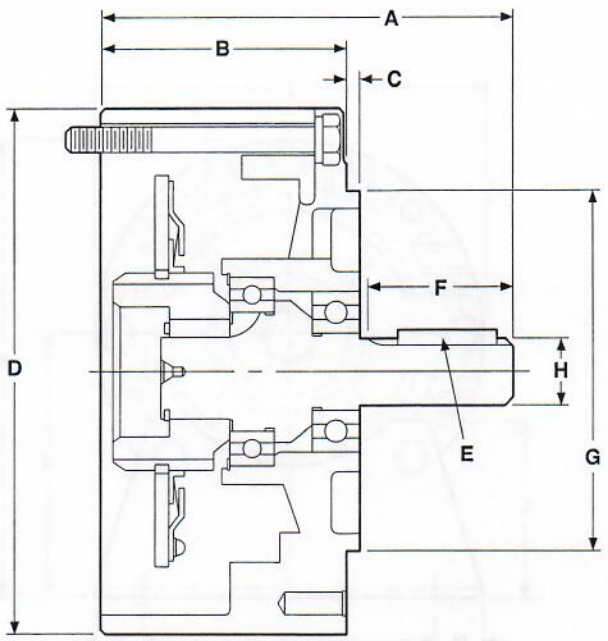
** EM-100 size is recommended for motors 1 HP and larger.

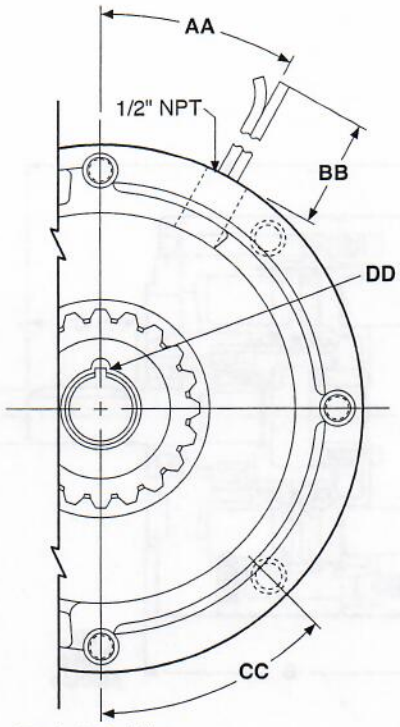
For NEMA standard frame sizes, see page 20.

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40 Output Clutch Module

50-40
100-40
180-40
210-40





Typical End View

All dimensions are nominal, unless otherwise noted.

Size	A Max.	B	C Max.	D Dia.	E	F Min.	G Pilot Dia.	H Dia.	AA	BB Min.	CC	DD Key
50	5.188	3.125	.156	6.687	3/16 x 3/16 x 1-3/8	1.813	4.500	.625	30°	36	45°	3/16 x 3/16
100	5.188	3.125	.156	6.687	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	.313	6.687	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	.313	9.344	1/4 x 1/4 x 2	2.500	8.500	1.125	25°	36	45°	1/4 x 1/4

Specifications

Model Size	Voltage DC	Static Torque lb. ft.	Max. RPM	Inertia–WR² (lb. ft.) Armatures	Arm. Hub	Shaft	Weight (lbs)	NEMA Frame Size
50	6, 24, 90	16	3600	.007	.002	.001	4.9	56C/48Y*
100	6, 24, 90	30	3600	.018	.003	.002	5.2	56C/48Y**
180	6, 24, 90	30	3600	.018	.003	.002	5.2	182C/143TC 184C/145TC
210	6, 24, 90	95	3600	.181	.021	.017	15.2	213C/182TC 215C/184TC

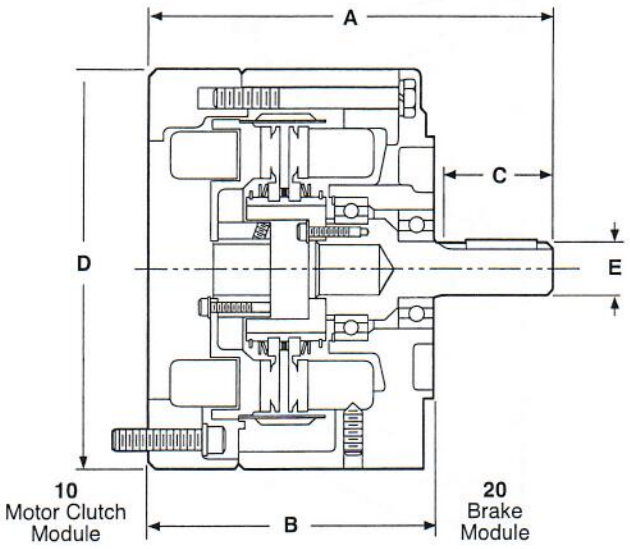
* For 56C/48Y Frame motors 3/4 HP and smaller the EM-100 size may be used where extended life is desirable.

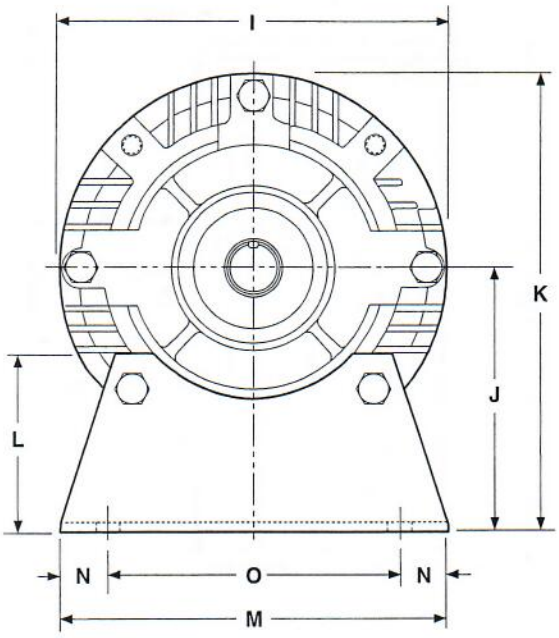
** EM-100 size is recommended for motors 1 HP and larger.

For NEMA standard frame sizes, see page 20.

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EM-10/20 Clutch/Brake Combination





Note: Mounting base is optional and is ordered separately.
Motor Clutch (10) and Output Clutch (20) are ordered separately.

All dimensions are nominal, unless otherwise noted.

Size	A	B	C	D	E	I	J	K	L	M	N	O	NEMA Frame Size
50	6.750	4.844	1.813	6.750	.625	6.688	3.500	6.844	2.000	6.000	.500	5.000	56C/48Y*
100	6.750	4.844	1.813	6.750	.625	6.688	3.500	6.844	2.000	6.000	.500	5.000	56C/48Y**
180	6.828	4.844	1.891	6.750	.875	6.688	4.500	7.844	3.000	6.625	.813	5.000	182C/143TC 184C/145TC
210	8.891	5.922	2.500	9.250	1.125	9.688	5.250	9.906	3.375	9.000	.625	7.750	213C/182TC 215C/184TC

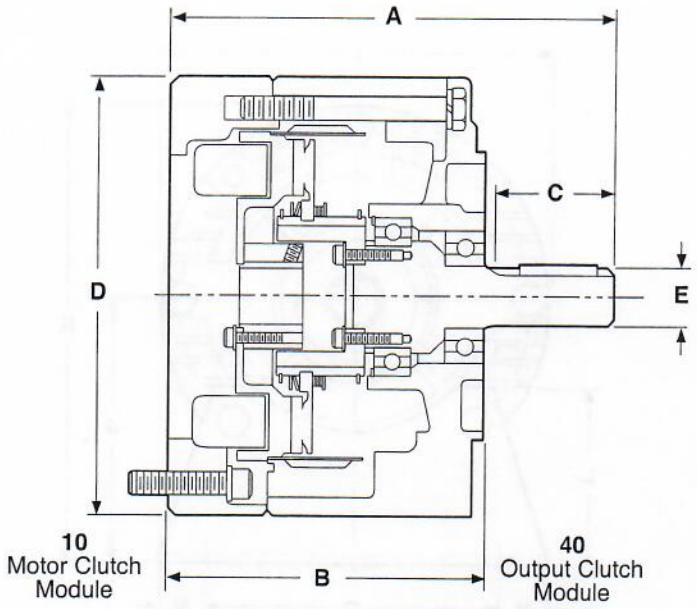
* For 56C/48Y Frame motors 3/4 HP and smaller the EM-100 size may be used where extended life is desirable.

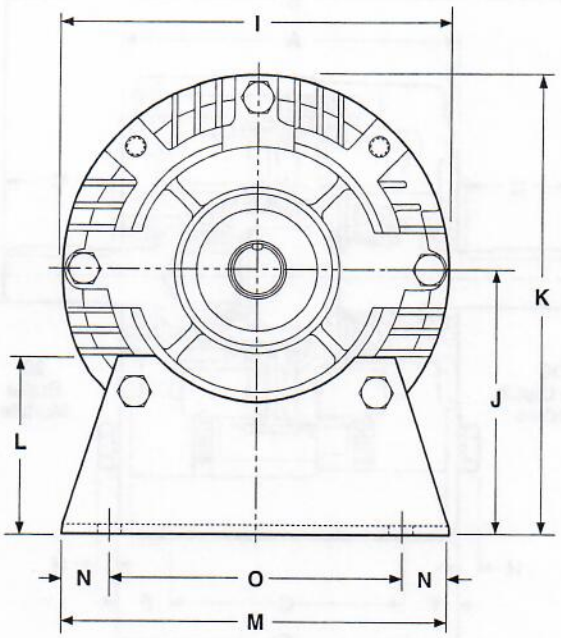
** EM-100 size is recommended for motors 1 HP and larger.

For NEMA standard frame sizes, see page 20.

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EM-10/40 Motor Clutch/Output Clutch Combination





Note: Mounting base is optional and is ordered separately. Motor Clutch (10) and Output Clutch (40) are ordered separately.

All dimensions are nominal, unless otherwise noted.

Size	A	B	C	D	E	I	J	K	L	M	N	O	NEMA Frame Size
50	6.750	4.844	1.813	6.750	.625	6.688	3.500	6.844	2.000	6.000	.500	5.000	56C/48Y*
100	6.750	4.844	1.813	6.750	.625	6.688	3.500	6.844	2.000	6.000	.500	5.000	56C/48Y**
180	6.828	4.844	1.891	6.750	.875	6.688	4.500	7.844	3.000	6.625	.813	5.000	182C/143TC 184C/145TC
210	8.891	5.922	2.500	9.250	1.125	9.688	5.250	9.906	3.375	9.000	.625	7.750	213C/182TC 215C/184TC

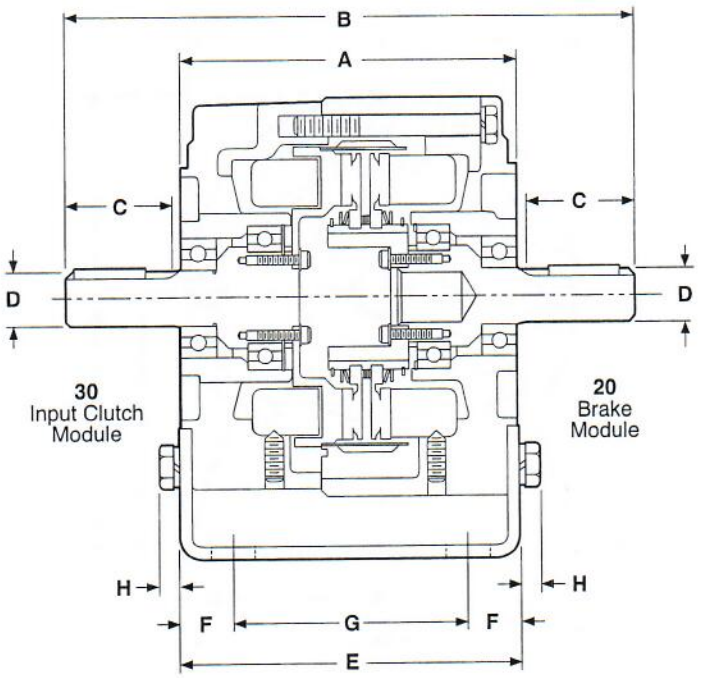
* For 56C/48Y Frame motors 3/4 HP and smaller the EM-100 size may be used where extended life is desirable.

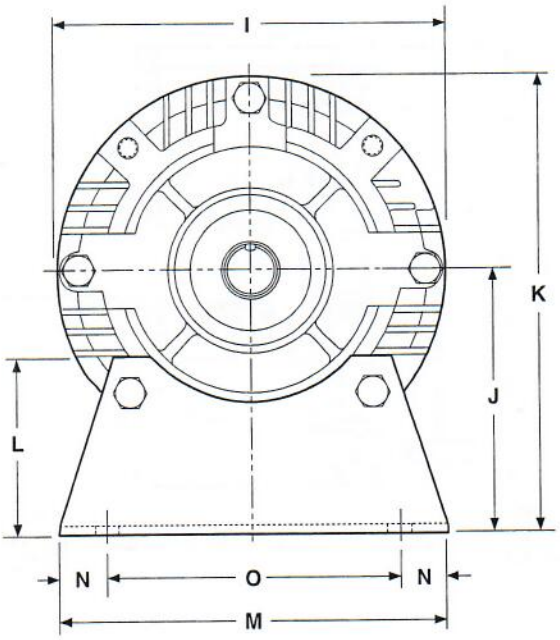
** EM-100 size is recommended for motors 1 HP and larger.

For NEMA standard frame sizes, see page 20.

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EM-20/30 Brake/Input Clutch Combination
EM-20/30-B Brake/Input Clutch Combination – Base Mounted





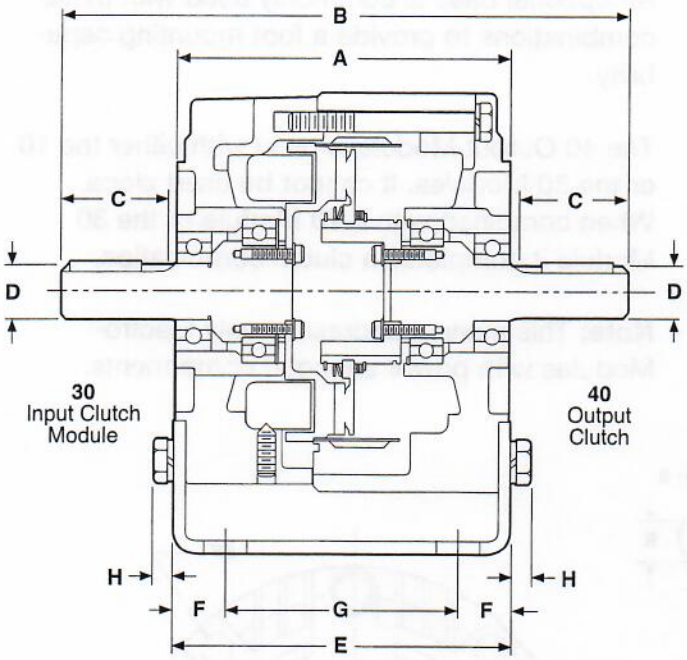
Note: Mounting base is optional and is ordered separately. Input Clutch (30) module and Brake Module (20) are ordered separately.

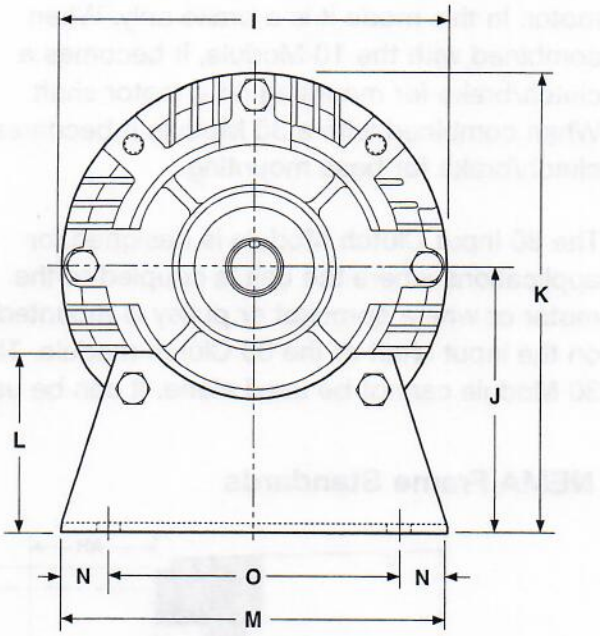
All dimensions are nominal, unless otherwise noted.

Size	A	B	C Min.	D	E	F	G	H	I	J	K	L	M	N	O
50	5.719	9.516	1.813	.625	5.672	.844	4.000	.344	6.688	3.500	6.844	2.000	6.000	.500	5.000
100	5.719	9.516	1.813	.625	5.672	.844	4.000	.344	6.688	3.500	6.844	2.000	6.000	.500	5.000
180	5.719	9.656	1.891	.875	5.672	.844	4.000	.344	6.688	4.500	7.844	3.000	6.625	.813	5.000
210	7.719	12.969	2.500	1.125	8.203	1.094	6.000	.438	9.688	5.250	9.906	3.375	9.000	.625	7.750

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EM-30/40 Input Clutch/Output Clutch Combination
EM-30/40 Input Clutch/Output Clutch Combination – Base Mounted





Note: Mounting base is optional and is ordered separately. Input Clutch (30) module and Output Clutch (40) are ordered separately.

All dimensions are nominal, unless otherwise noted.

Size	A	B	C Min.	D	E	F	G	H	I	J	K	L	M	N	O
50	5.719	9.516	1.813	.625	5.672	.844	4.000	.344	6.688	3.500	6.844	2.000	6.000	.500	5.000
100	5.719	9.516	1.813	.625	5.672	.844	4.000	.344	6.688	3.500	6.844	2.000	6.000	.500	5.000
180	5.719	9.656	1.891	.875	5.672	.844	4.000	.344	6.688	4.500	7.844	3.000	6.625	.813	5.000
210	7.719	12.969	2.500	1.125	8.203	1.094	6.000	.438	9.688	5.250	9.906	3.375	9.000	.625	7.750

Electro-Modules are individual clutch or brake units which are assembled together to comprise a clutch, a brake or a clutch/brake combination. Electro-Modules are designed for use with C-face motors and reducers. Some versions can be base mounted as well.

Prior to assembly ensure that the components you have will create the unit you need.

The 10 Motor Clutch Module is designed to mount on the face of the NEMA C-Face motor. The rotor assembly has a hollow bore and is mounted onto the shaft of the motor. The 10 Module cannot be used alone, it must be used with either the 40 Module to create a clutch combination or a 20 Module to create a clutch/brake combination.

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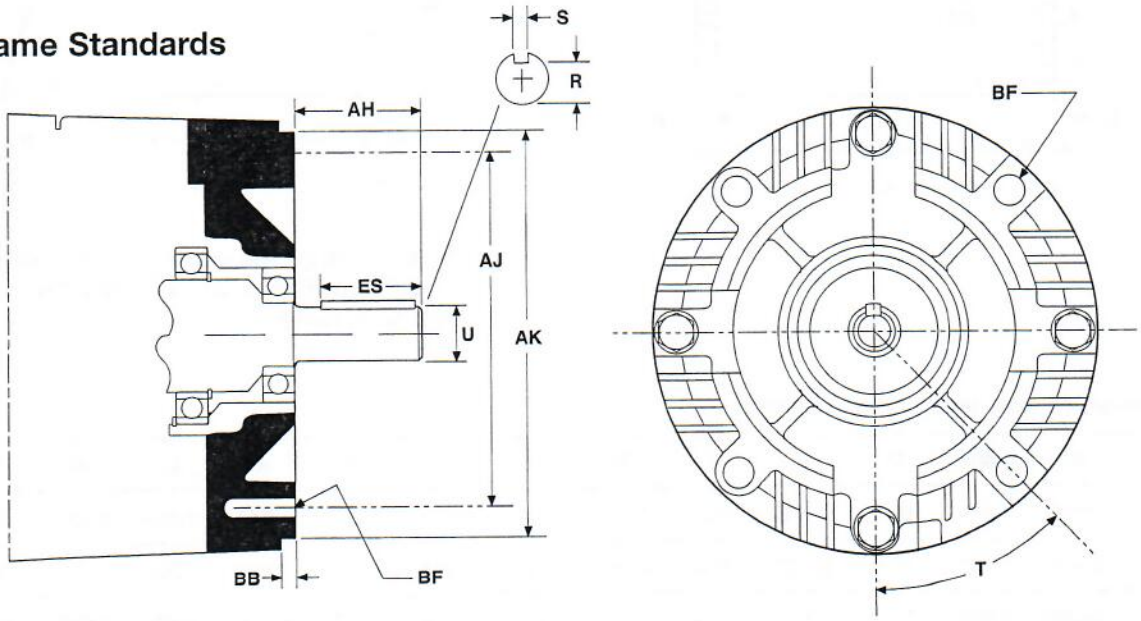
The 20 Brake Module is designed to mount on the face of the NEMA C-face motor or in combination with other modules. The 20 can be used alone when mounted on the output of a motor. In this mode it is a brake only. When combined with the 10 Module, it becomes a clutch/brake for mounting on a motor shaft. When combined with a 30 Module it becomes a clutch/brake for base mounting.

The 30 Input Clutch Module is designed for applications where the unit is coupled to the motor or where sprocket or pulley is mounted on the input shaft of the 30 Clutch module. The 30 Module cannot be used alone. It can be used with the 40 Module to create a clutch combination or it can be used with a 20 Brake Module to create a clutch/brake combination. An optional base is commonly used with these combinations to provide a foot mounting capability.

The 40 Output Module is used with either the 10 or the 30 Modules. It cannot be used alone. When combined with a 10 Module or the 30 Module it completes a clutch combination.

Note: This manual addresses only Electro-Modules with power engaged components.

NEMA Frame Standards



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°	.875
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 Modules are designed to comply with the NEMA frame standards of mounting. Reference for each particular frame size is given at individual selection tables for each type Warner module.

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Warranty

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

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

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

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

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

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

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

Warner Electric

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