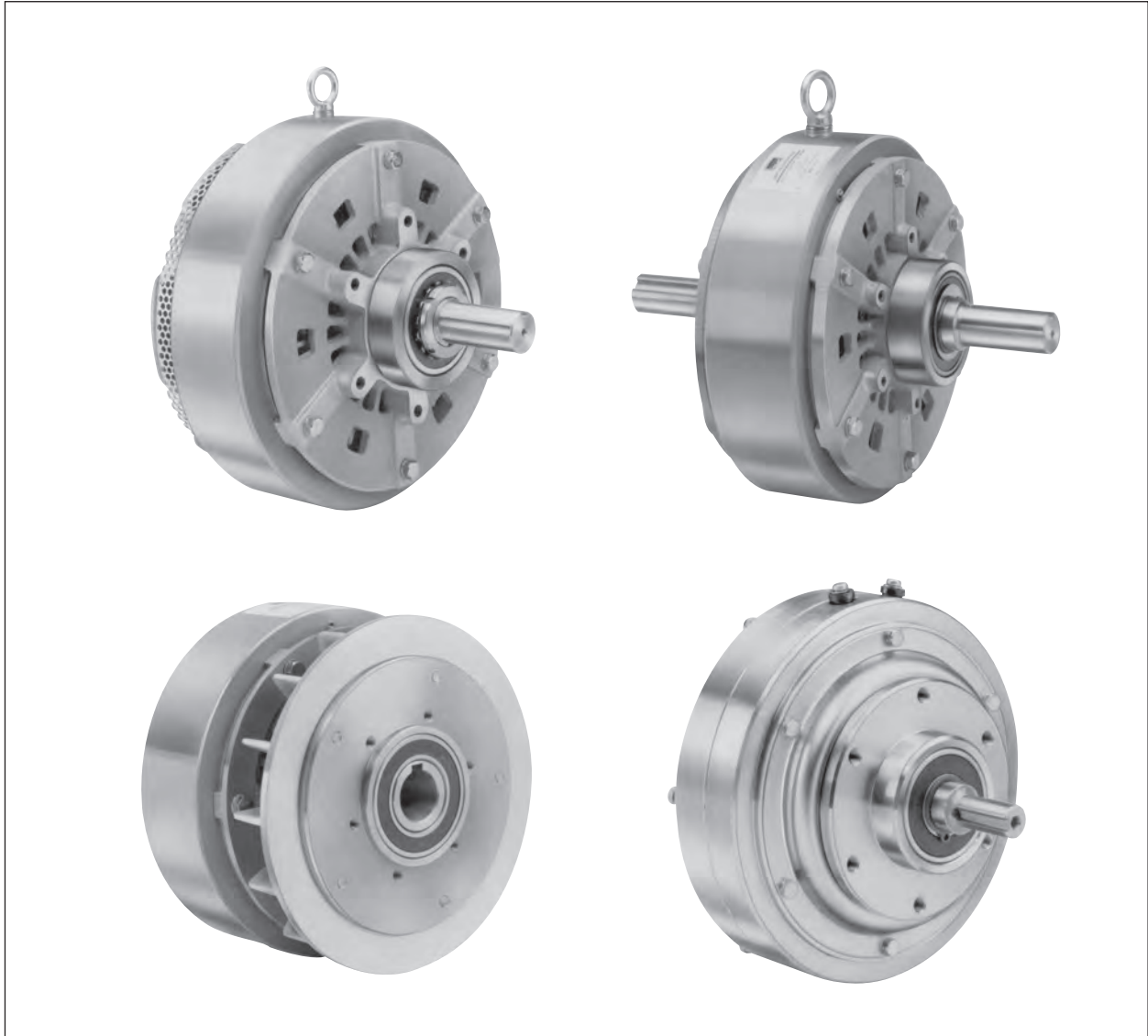


# Electromagnetic Particle Clutches and Brakes

## Models: POC, PHC-R, POB and PTB-BL3

P-223-1  
819-0368

### Installation Instructions



*An Altra Industrial Motion Company*

Contents

Introduction ..... 2

Installation Instructions ..... 3-6

Electrical Data ..... 7

Overhung Load Data ..... 8

Start Up ..... 9

Maintenance ..... 9

Mechanical Data ..... 10

Dimensions..... 11-16

Warranty ..... Back Page

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

**⚠ WARNING** Make sure all power is turned off to this equipment when installing, as injury (or even death) may result from contact with live wires or rotating shafts.

Introduction

This service manual provides information required for installing, wiring, and maintaining Warner Electric Magnetic Particle clutches and brakes. Dimensions and specifications are also included. The models covered in this service manual include POC and PHC-R clutches and POB and PTB brakes. For selection information, please refer to your Warner Electric Tension Control Sytems Catalog.

Warner Electric Magnetic Particle clutches and brakes provide smooth and controllable torque for a variety of torque and tension control applications. They also provide excellent performance for cycling and positioning applications. Quick response is achieved by applying full rated voltage. Lower voltage can be applied for softer engagements. Extremely accurate tension control can be achieved with an appropriate Warner Electric tension control for electric brakes and clutches.

## Installation Instructions

### Introduction

Verify the model of your clutch or brake by checking the label before proceeding with these instructions. POC and PHC-R designate clutch models and POB and PTB are brakes. All models of POC clutches are face mounted (except size 80, which is foot mounted) and have male input and output shafts. See Figures 1 and 2. The PHC-R clutch is designed to be shaft mounted and is ideal for "parallel shaft" applications. It has a hollow bore and slides on the output shaft. An input hub with flange is provided for mounting a pulley or sprocket. An integral fan rotates with the input for additional cooling. See Figure 3.

POB and PTB-BL3 brakes are face mounted with male input shafts. Like the POC's, only the size 80 is foot mounted. The major difference between PTB-BL3 and POB brakes is that PTB-BL3's utilize a patented heat pipe cooling method that provides heat dissipation several times greater than conventional cooling. See Figures 4, 5, and 6 for mounting information on POB's and PTB-BL3's.

### Pre-Mounting

**Note:** Unit performance can be affected by prolonged exposure to humid environments. Please store in a dry location.

**Note:** The equipment covered by this service manual must be installed in accordance with these instructions. Failure to do so may damage the equipment and void the warranty.

1. Remove the Magnetic Particle unit from its shipping carton and inspect it thoroughly to ensure that it has arrived in good condition. When handling, please take care not to damage the unit's lead wires or terminal block.
2. Check the input shaft/hub to make sure it can be rotated by hand. On clutch assemblies, hold the output stationary while turning the input. The powder inside the unit may settle due to shock and vibration incurred

during shipping, making rotation difficult. This is easily remedied by turning the unit upside down and gently tapping the housing to loosen the powder. Do not hit shaft. See page 10 for nominal drag torque values.

3. Make sure the location chosen for mounting will not expose the unit to water or oil. If water or oil enters the powder cavity, performance may be affected. If the unit is mounted next to a gearbox, special care should be taken to prevent oil from working its way into the unit.
4. If couplings are to be used in the drive system, the mounting surface must properly locate the housing to ensure alignment is within coupling tolerances.
5. When connections are made with pulleys or sprockets, the overhung load must be verified to be within rating. See page 8 for allowable overhung load information.

### Mounting

**Note:** Do not use excessive force when mounting couplings, pulleys, or sprockets on shafts.

**Note:** For proper function, magnetic particle units must be mounted so the shaft is horizontal.

Use the proper mounting method described for the model being installed.

## POC Clutches

For mounting dimensions, see pages 12-13 of this service manual.

### Step 1: Bolt Clutch in Place

Mount the clutch to a vertical surface, using customer supplied fasteners. For models larger than size 5, the housing must be secured on both input and output sides. See Figure 1. A flat horizontal mounting surface is required for foot mounted size 80 clutches. See Figure 2.

### Step 2: Make Mechanical Connections

Mount couplings, pulleys, or sprockets to the male shafts per the manufacturers' recommendations. The pulleys, sprockets, and couplings are customer supplied.

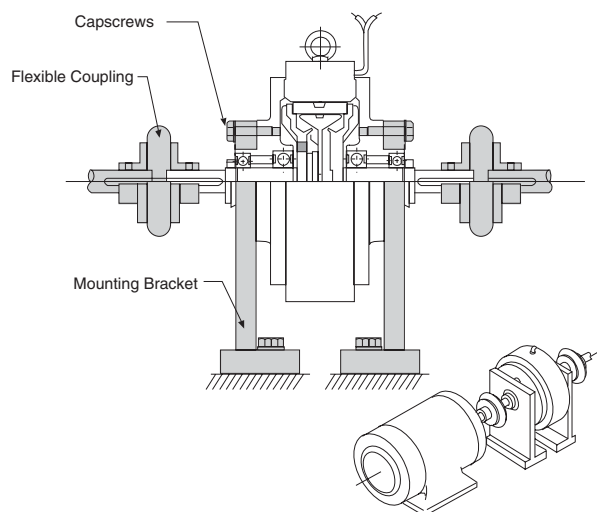


Figure 1\*  
POC Clutches (Except POC-80)

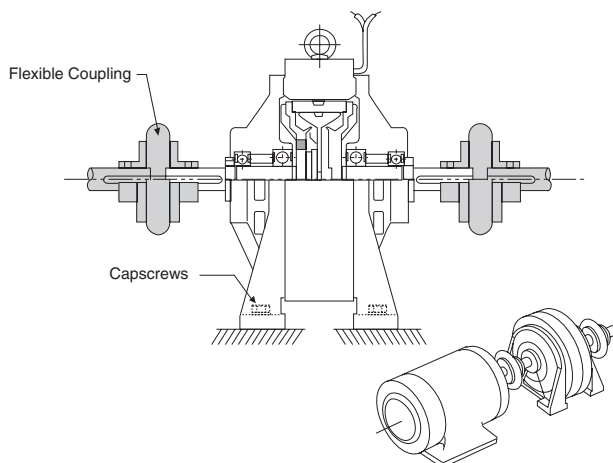


Figure 2\*  
POC-80 (Foot Mount)

\*Note: Shaded items are customer supplied.

## PHC-R Clutches

For mounting dimensions, please refer to page 11 of this service manual.

### Step 1: Secure Clutch to Shaft

Slide the clutch on the shaft that is being driven by the clutch. Secure the clutch with customer supplied locking collars or other suitable means. (Mounting the clutch on the shaft that is driving the clutch is acceptable, but doing so increases total load inertia.)

### Step 2: Attach Antirotation Restraint

Since this is a shaft mounted unit with a stationary field supported by bearings, the field must be restrained to prevent bearing drag from pulling on the lead wires. Restraining device must not preload the bearing.

The field can be restrained with a holding arm attached to the tapped holes in the field housing or with capscrews through a mounting bracket as shown in Figure 3. If bolts are used, first hand tighten the bolt just enough to take out the clearance under the head of the capscrew. Then tighten the locking nut while preventing the bolt from turning.

### Step 3: Mount Pulley, Sprocket, or Coupling

**Note:** If a pulley or sprocket is to be attached directly to the input hub, bearings should be installed to support the pulley or sprocket as shown in Figure 3.

Bolt the pulley, sprocket, or coupling to the input hub of the clutch. The pulley, sprocket, and bolts are customer supplied. Do not block ventilation openings.

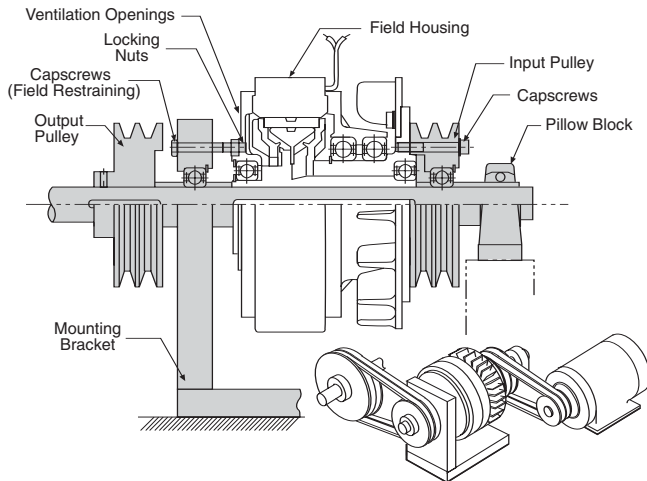


Figure 3\*  
PHC-R Clutches

### POB and PTB-BL3 Brakes

For mounting dimensions, please refer to pages 14-16 of this service manual.

#### Step 1: Bolt Brake in Place

Mount the brake to a vertical surface using customer supplied fasteners. See Figures 4 and 5. A flat horizontal mounting surface is required for foot mounted POB size 80 brakes. See Figure 6.

#### Step 2: Make Mechanical Connections

Mount couplings, pulleys, or sprockets to the male shafts per the manufacturers' recommendations. The pulleys, sprockets, and couplings are customer supplied.

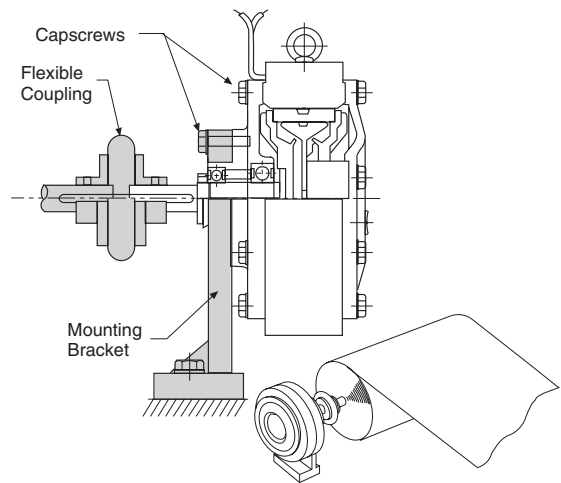


Figure 4\*  
POB Brakes (Except POB-80)

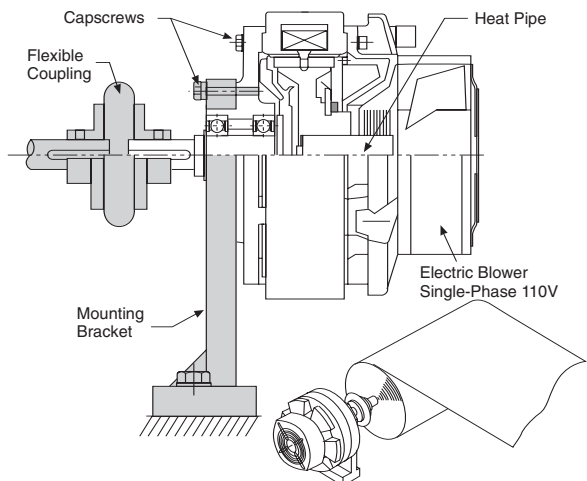


Figure 5\*  
PTB - BL3 Brakes

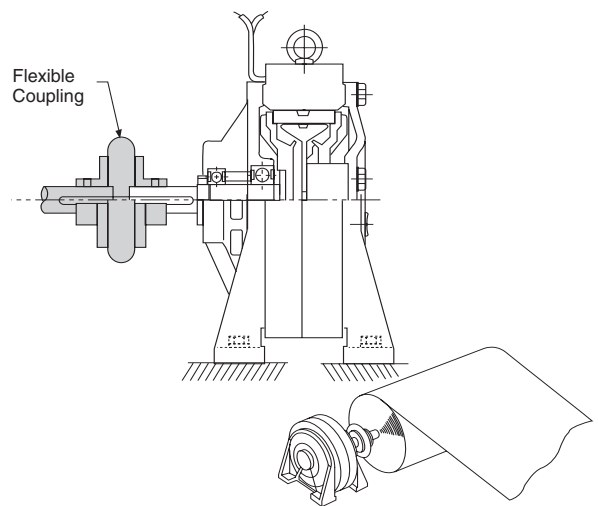


Figure 6\*  
POB-80 (Foot Mount)

\*Note: Shaded items are customer supplied.

## Electrical Connections

**⚠ WARNING** To avoid injury (or even death), always make certain all power is off before attempting to install or service the control or any electrical equipment.

The clutch and brakes operate on DC voltage. Warner Electric offers a full line of AC powered controls to meet the needs of almost every application. The service and installation instructions included with each Warner Electric control show the proper electrical connections for the units. Do not use the varistor supplied with the unit if you are using a Warner Electric control. Warner Electric controls have built in suppression.

Each PTB-BL3 brake has a cooling fan and a thermal switch. Connect these items according to Figure 7.

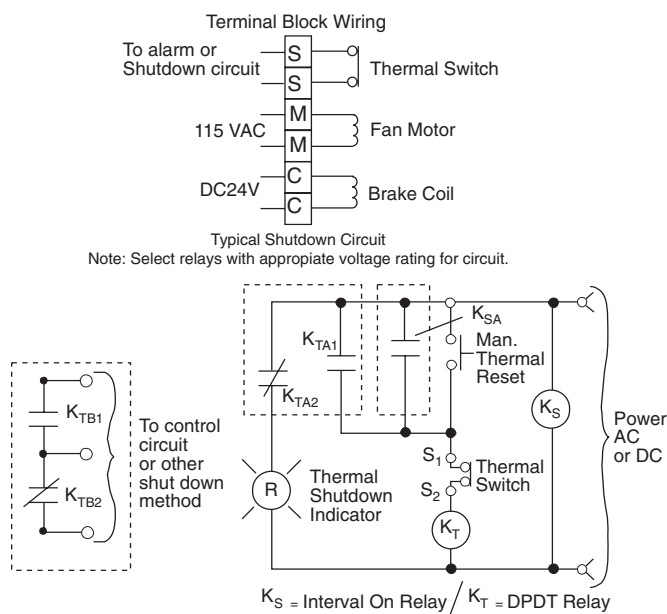
Use appropriate terminal connectors when wiring to the terminal block. After connecting the terminal, cover it with the attached rubber cap so that no bare wire is exposed.

After wiring your Magnetic Particle clutch or brake, confirm that the control circuit is functioning. Without rotating the input shaft, check for voltage at the unit when the control output is turned on. If appropriate, set the current for the proper output. Your magnetic particle unit is now ready for operation. For additional information on start up and maintenance, see page 9 of this manual.

## PTB-BL3 Wiring

The PTB-BL3 units are offered with a normally closed thermal switch. This switch can be used to protect the unit from overheating. It is not recommended that this switch be connected in series with the unit, because the opening of the thermal switch on the output side of the control may damage the control.

Figure 7 shows one possible way of using the switch in a shutdown circuit. Under normal operation, when power is applied to the circuit, voltage is applied to the interval-on-relay,  $K_S$ . This momentarily closes contacts  $K_{SA}$ . This in turn applies voltage to relay  $K_T$ . This double pole double throw relay closes contacts  $K_{TA1}$ , and  $K_{TB1}$  and opens contacts  $K_{TA2}$  and  $K_{TB2}$ . These contacts will remain in this state unless power is removed or the thermal switch opens. If the switch opens, the thermal shutdown indicator will be activated and the state of  $K_{TB1}$  and /or  $K_{TB2}$  will shut down the system. After correcting the cause of the thermal shutdown, the thermal reset button will reset the shutdown circuit and power up the system.



**Figure 7**  
**Wiring (PTB-BL3 Brake Only)**

## Electrical Data

Unit Size	Voltage	Resistance [ohms @ 75° F (25°C)]	Amperes [@ 75° F (25°C)]	Watts [@ 75° F (25°C)]	Torque Build Up (msec)	Torque Decay (msec)
0.3	24	35.6	.674	16.2	78	6
0.6	24	21.1	1.14	27.4	84	9
1.2	24	20.6	1.16	28.0	147	16
2.5	24	15.8	1.52	36.5	175	21
5	24	8.80	2.74	65.7	271	28
10	24	9.00	2.68	64.2	448	43
20	24	7.20	3.34	80.3	536	66
40	24	5.10	4.66	112	680	100
80	24	4.30	5.57	134	1310	300

**Note:** Build up time equals time for torque to build to approximately 63.2% of steady state value after a step change in voltage. Decay time equals time for current to drop to approximately 36.8% of steady state value after a voltage change.

### Fan Motor Data (PTB-BL3 Brake only)

Size	Voltage (single phase 60 hertz)	Wattage
2.5	115 VAC	20
5	115 VAC	38
10	115 VAC	38
20	115 VAC	38

### Thermal Switch Data (PTB-BL3 Brake only)

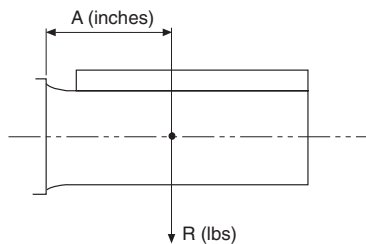
<b>Type:</b>	Normally Closed	
<b>Current Rating:</b>	24 VAC	18 A
	115 VAC	18 A
	230 VAC	13 A



## Overhung Load Data

**Note:** Shaft extensions are not recommended.

When an overhung load (side load) is applied to the shaft, verify that this load does not exceed the maximum allowable. You will need to know your operating speed and where your load is applied to the shaft (See dimension 'A', Figure 8). For your speed, determine the speed coefficient from the coefficient table. Also, determine the allowable overhung load from the chart based on dimension 'A'. Multiply the load from the chart times the speed coefficient to determine the allowable load for your application.



**Figure 8**  
**Overhung Load**

### Allowable Overhung Load

Type	A (In.)	R (Lbs.)	A (In.)	R (Lbs.)	A (In.)	R (Lbs.)
POC/POB-0.3	.40	30	.50	28	.90	22
POC/POB-0.6	.40	45	.50	42	1.0	29
POC/POB-1.2	.40	52	.70	43	1.4	31
POC/POB-2.5	.40	88	.90	67	1.7	48
PTB2.5-BL3						
POC/POB-5	.40	204	1.1	136	2.2	93
PTB-5BL3						
POC/POB-10	.40	313	1.3	235	2.6	159
PTB-10BL3						
POC/POB-20	.40	379	1.4	265	2.8	198
PTB-20BL3						
POC/POB-40	.40	581	1.8	432	3.6	324
POC/POB-80	.40	860	2.2	648	4.3	498

**Note:** This table is based on 1000 rpm and 6000 hours bearing life. Also, this table assumes that no thrust load is applied.

For most applications, the overhung load is caused by pulleys or sprockets. The smaller the pitch diameter (P.D.) of the pulley or sprocket, the higher the belt tension, and therefore the higher the overhung load. To determine the minimum pulley diameter for your application, use the following equation:

$$\text{Min. P.D. (in.)} = \frac{24 T K}{C R}$$

T - Torque (lb. ft.) This is the torque actually being transmitted, not necessarily the maximum torque capacity of the unit.

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

Use: 1.2 to 1.5 for sprockets  
2 to 4 for belts

C - Speed coefficient from table.

R - Allowable Overhung Load from table.

Example: Determine the minimum sprocket diameter that can be used on a POB-5.

Dimension A is 1.11 inches, required torque is 20 lb. ft. and the speed is 600 RPM.

$$\begin{aligned} \text{Min. P.D. (in.)} &= \frac{24 \times 20 \times 1.5}{1.2 \times 136} \\ &= 4.4 \text{ inch minimum P.D.} \end{aligned}$$

### Speed Coefficient

Speed (rpm)	Speed coefficient	Speed (rpm)	Speed coefficient
50	2.74	1000	1.00
100	2.18	1200	0.95
200	1.72	1400	0.89
400	1.37	1600	0.86
600	1.20	1800	0.82
800	1.09	2000	0.80



## Start Up

The powder in magnetic particle units sometimes settles during shipping and will need to be redistributed. A simple run in procedure should be performed to ensure proper performance.

## Run in Procedure

- Notes:**
1. Before running in the unit, make sure it does not bind. See step 2 (Page 3) of the Premounting instructions.
  2. For clutches, the output must be secured properly to prevent turning if full torque is accidentally applied.

Set the control output voltage for 5 to 6 volts. Turn off the control and run the input for one minute. Then run the input at a speed close to, but not exceeding, 1000 RPM. Cycle the unit at 5 or 6 volts for five seconds on and ten seconds off. Repeat for 20 cycles.

When the powder is redistributed properly, the torque will be consistent and proportional to current.

## Maintenance

### Heat

Overheating occurs when the heat generated exceeds the heat dissipation of the unit. Please refer to the following table for maximum allowable surface temperatures.

### Slip Applications

The heat generated is proportional to torque and slip rpm. Care must be taken when adjusting torque on the control to make sure that unit heat dissipation capacity is not exceeded. Refer to the sizing procedure in the catalog to make sure the unit has adequate heat dissipation capability. Do not increase slip speed or torque without verifying that the unit can dissipate the heat generated.

## Cycling Applications

In cycling applications, the speed and inertia of the load and the frequency of starting and stopping determines the heat generated. Refer to the selection procedure in the catalog to verify that the unit can handle the thermal energy generated in your application. Do not increase the input speed, cycle rate, or inertia without checking the units ability to dissipate the heat generated.

## Maximum Allowable Surface Temperatures

Type	Cooling System	Maximum Allowable Temperature
POC/POB	Natural	176° F
PHC-R	Self-ventilated	176° F
PTB-BL3	Heat Pipe with Blower	194° F

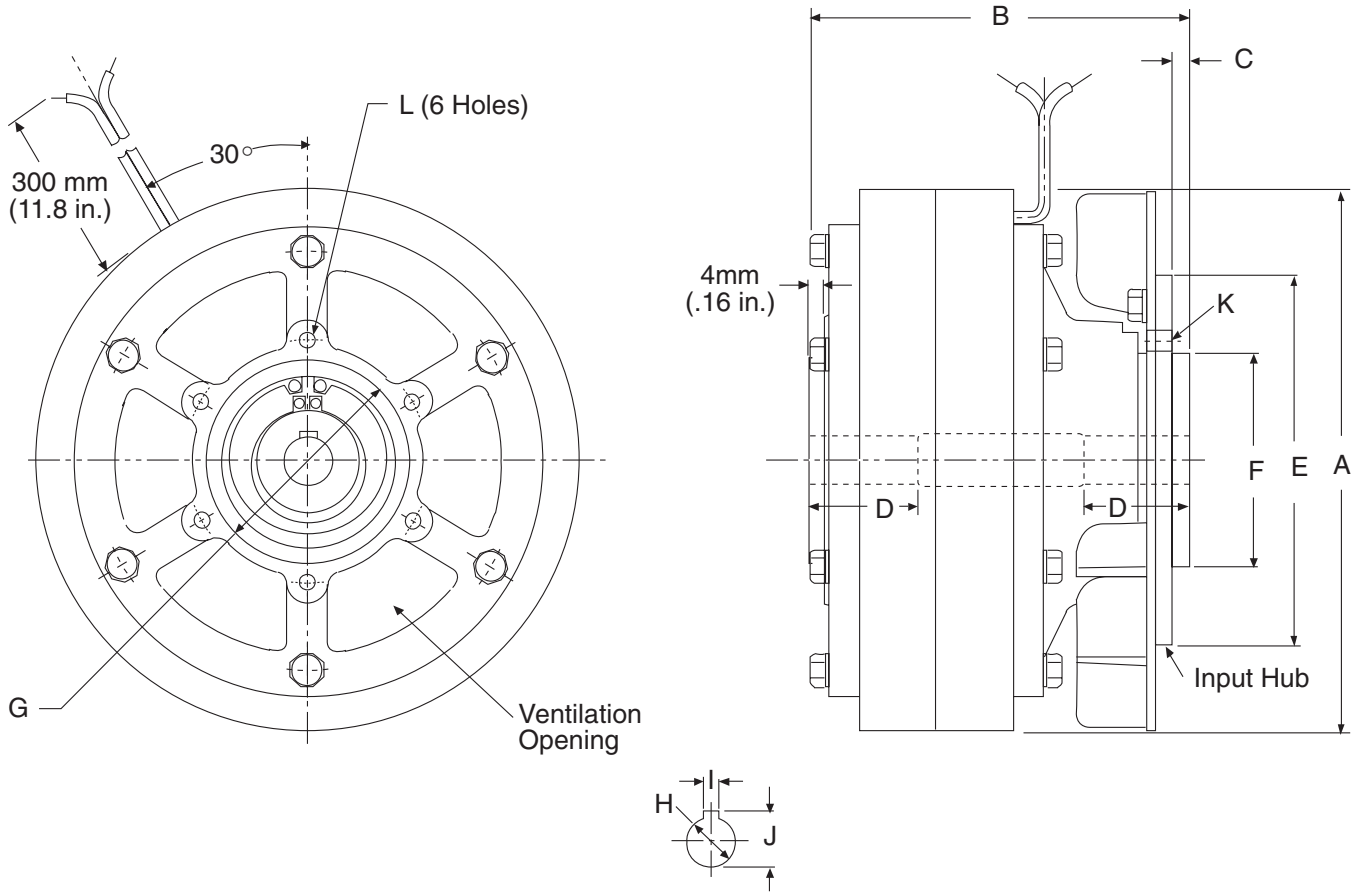
## Contamination

Do not expose the unit to water or oil. If water or oil enters the powder cavity, the performance of the unit may be affected. If the unit is mounted next to a gearbox, special care must be taken to prevent oil from working its way into the unit.

## Mechanical Data

Model	Part Number	Nominal Torque (lb. ft.)	Nominal Drag Torque (lb. ft.)	Maximum Speed (rpm)	Inertia Input (lb. ft. <sup>2</sup> )	Output (lb. ft. <sup>2</sup> )	Weight (lbs.)
POC 0.3	5401-270-211	2.1	.065	1800	.0128	.00477	5.5
POC 0.6	5401-270-221	4.3	.13	1800	.0173	.00570	7.9
POC 1.2	5401-270-231	8.6	.26	1800	.0304	.0104	12
POC 2.5	5401-270-241	18	.54	1800	.0973	.0387	22
POC 5	5401-270-251	36	1.1	1800	.0249	.114	38
POC 10	5401-270-261	72	2.2	1800	1.04	.437	77
POC 20	5401-270-271	144	4.3	1800	2.23	1.19	128
POC 40	5401-270-281	289	8.7	1800	5.93	3.08	220
POC 80	5401-270-291	578	17	1500	23.5	15.2	551
PHC-0.6R	5401-270-321	4.3	.13	1800	.0223	.00712	9.3
PHC-1.2R	5401-270-331	8.6	.26	1800	.0392	.0171	13
PHC-2.5R	5401-270-341	18	.54	1800	.126	.0494	22
PHC-5R	5401-270-351	36	1.1	1800	.323	.0138	38
PHC-10R	5401-270-361	72	2.2	1500	1.42	.617	95
PHC-20R	5401-270-371	144	4.3	1500	3.01	1.30	154
POB 0.3	5401-169-211	2.1	.065	1800	.0128		5.3
POB 0.6	5401-169-221	4.3	.13	1800	.0173		7.5
POB 1.2	5401-169-231	8.6	.26	1800	.0304		11.5
POB 2.5	5401-169-241	18	.54	1800	.0973		24.3
POB 5.0	5401-169-251	36	1.1	1800	.0249		35.3
POB 10	5401-169-261	72	2.2	1800	1.04		72.8
POB 20	5401-169-271	144	4.3	1800	2.23		106
POB 40	5401-169-281	289	8.7	1800	5.93		176
POB 80	5401-169-291	578	17	1500	23.5		573
PTB-2.5BL3	5401-169-141	18	.54	1800	.0973		24
PTB-5BL3	5401-169-151	36	1.1	1800	.249		38
PTB-10BL3	5401-169-161	72	2.2	1800	1.04		76
PTB-20BL3	5401-169-171	144	4.3	1500	2.23		114

PHC-R Dimensions



PHC-R Dimensional Data

Note: All dimensions are nominal unless otherwise noted.

Model						Bore Dimensions															
	A mm (in.)	B mm (in.)	C mm (in.)	D mm (in.)	E mm (in.)	F		G		H		I		J		K			L		
						mm	(in.)	mm	(in.)	mm	(in.)	mm	(in.)	mm	(in.)	Thrd. Size	Depth mm (in.)	Bolt Circle mm (in.)	Thrd. Size	Depth mm (in.)	Bolt Circle mm (in.)
PHC-0.6R	134 (5.28)	92 (3.62)	4 (0.16)	25.5 (1.00)	89 (3.50)	<u>50.000</u> 49.975	<u>1.9685</u> 1.9675	<u>50.000</u> 49.975	<u>1.9685</u> 1.9675	<u>12.018</u> 12.000	<u>0.4731</u> 0.4724	<u>4.028</u> 4.010	<u>0.1586</u> 0.1579	<u>13.75</u> 13.50	<u>0.5413</u> 0.5315	M4	6 (0.24)	60 (2.362)	M4	6 (0.24)	60 (2.362)
PHC-1.2R	152 (5.98)	96 (3.78)	4 (0.16)	25 (0.98)	89 (3.50)	<u>45.000</u> 44.975	<u>1.7717</u> 1.7707	<u>70.000</u> 69.970	<u>2.7559</u> 2.7547	<u>15.018</u> 15.000	<u>0.5913</u> 0.5906	<u>5.028</u> 5.010	<u>0.1980</u> 0.1972	<u>17.25</u> 17.00	<u>0.6791</u> 0.6693	M5	6 (0.24)	55 (2.165)	M4	8 (0.31)	80 (3.150)
PHC-2.5R	182 (7.17)	132 (5.20)	5 (0.20)	45 (1.77)	140 (5.51)	<u>70.000</u> 69.970	<u>2.7559</u> 2.7547	<u>70.000</u> 69.670	<u>2.7559</u> 2.7429	<u>25.021</u> 25.000	<u>0.9851</u> 0.9843	<u>7.035</u> 7.013	<u>0.2770</u> 0.2761	<u>28.25</u> 28.00	<u>1.1122</u> 1.1024	M6	10 (0.39)	80 (3.150)	M6	9 (0.35)	80 (3.150)
PHC-5R	219 (8.62)	148 (5.83)	4 (0.16)	40 (1.57)	165 (6.50)	<u>87.000</u> 86.965	<u>3.4252</u> 3.4238	<u>87.000</u> 86.965	<u>3.4252</u> 3.4238	<u>35.025</u> 35.000	<u>1.3789</u> 1.3780	<u>10.035</u> 10.013	<u>0.3951</u> 0.3942	<u>38.75</u> 38.50	<u>1.5256</u> 1.5157	M8	10 (0.39)	102 (4.016)	M8	10 (0.39)	102 (4.016)
PHC-10R	290 (11.42)	183.5 (7.22)	6 (0.24)	60 (2.36)	190 (7.48)	<u>105.000</u> 104.965	<u>4.1339</u> 4.1325	<u>110.000</u> 109.965	<u>4.3307</u> 4.3293	<u>45.025</u> 45.000	<u>1.7726</u> 1.7717	<u>12.043</u> 12.016	<u>0.4741</u> 0.4731	<u>48.75</u> 48.50	<u>1.9193</u> 1.9094	M10	13 (0.51)	120 (4.724)	M8	10 (0.39)	120 (4.724)
PHC-20R	335 (13.19)	222 (8.74)	9 (0.35)	75 (2.95)	220 (8.66)	<u>130.000</u> 129.960	<u>5.1181</u> 5.1165	<u>130.000</u> 129.960	<u>5.1181</u> 5.1165	<u>55.030</u> 55.000	<u>2.1665</u> 2.1654	<u>15.043</u> 15.016	<u>0.5922</u> 0.5912	<u>60.25</u> 60.00	<u>2.3720</u> 2.3622	M10	15 (0.59)	150 (5.906)	M10	13.5 (0.53)	150 (5.906)

Note: This is a stationary field clutch. The tapped holes "L" in the field are for securing the housing to prevent it from rotating. See instalation instructions.

Do not block ventilation openings when mounting.

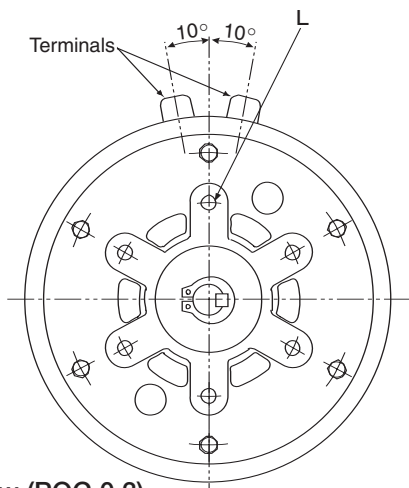
## POC Dimensional Data

**Note:** All dimensions are nominal unless otherwise noted.

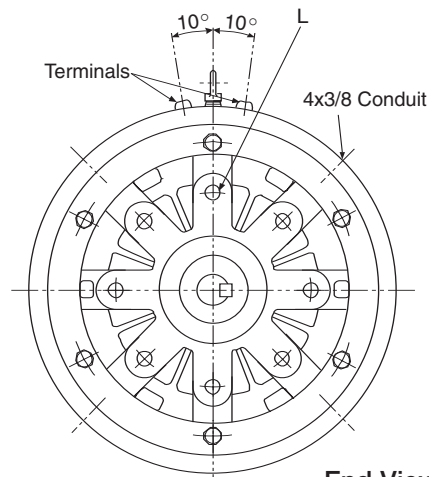
Model	A mm (in.)	B mm (in.)	C mm (in.)	D mm (in.)	E mm (in.)	F mm (in.)	Shaft Dimensions								L			
							G		H		I		J mm (in.)	K mm (in.)	Thread Size	Depth mm (in.)	No. of Holes	Bolt Circle mm (in.)
							mm	inches	mm	inches	mm	inches						
POC-0.3	120 (4.72)	147 (5.79)	23 (0.91)	87 (3.43)	11 (0.43)	65 (2.56)	<u>42.000</u> 41.975	<u>1.6535</u> 1.6526	<u>10.000</u> 9.985	<u>0.3937</u> 0.3931	<u>4.024</u> 4.012	<u>0.1584</u> 0.1580	4 (0.16)	2.5 (0.10)	M5	10 (0.39)	6 x 2	64 (2.520)
POC-0.6	134 (5.28)	155 (6.10)	26 (1.02)	90 (3.54)	10 (0.39)	70 (2.76)	<u>42.000</u> 41.975	<u>1.6535</u> 1.6526	<u>12.000</u> 11.982	<u>0.4724</u> 0.4717	<u>4.024</u> 4.012	<u>0.1584</u> 0.1580	4 (0.16)	2.5 (0.10)	M5	11 (0.43)	6 x 2	64 (2.520)
POC-1.2	152 (5.98)	188 (7.40)	34.5 (1.36)	106 (4.17)	13 (0.51)	80 (3.15)	<u>42.000</u> 41.975	<u>1.6535</u> 1.6526	<u>15.000</u> 14.982	<u>0.5906</u> 0.5898	<u>5.024</u> 5.012	<u>0.1978</u> 0.1973	5 (0.20)	3 (0.12)	M6	13 (0.51)	6 x 2	64 (2.520)
POC-2.5	182 (7.17)	227.5 (8.96)	43 (1.69)	123.5 (4.86)	15 (0.59)	93.5 (3.68)	<u>55.000</u> 54.970	<u>2.1654</u> 2.1642	<u>20.000</u> 19.979	<u>0.7874</u> 0.7866	<u>5.024</u> 5.012	<u>0.1978</u> 0.1973	5 (0.20)	3 (0.12)	M6	13 (0.51)	6 x 2	78 (3.071)
POC-5	219 (8.62)	284 (11.18)	57 (2.24)	151 (5.94)	23 (0.91)	105 (4.13)	<u>74.000</u> 73.970	<u>2.9134</u> 2.9122	<u>25.000</u> 24.979	<u>0.9843</u> 0.9834	<u>7.030</u> 7.015	<u>0.2768</u> 0.2762	7 (0.28)	4 (0.16)	M6	13 (0.51)	6 x 2	100 (3.937)
POC-10	290 (11.42)	348 (13.70)	67 (2.64)	192 (7.56)	25 (0.98)	142 (5.59)	<u>100.000</u> 99.965	<u>3.9370</u> 3.9356	<u>30.000</u> 29.979	<u>1.1811</u> 1.1803	<u>7.030</u> 7.015	<u>0.2768</u> 0.2762	7 (0.28)	4 (0.16)	M10	18 (0.71)	6 x 2	140 (5.512)
POC-20	335 (13.19)	382 (15.04)	71 (2.80)	216 (8.50)	25 (0.98)	166 (6.54)	<u>110.000</u> 109.965	<u>4.3307</u> 4.3293	<u>35.000</u> 34.975	<u>1.3780</u> 1.3770	<u>10.030</u> 10.015	<u>0.3949</u> 0.3943	8 (0.31)	4.5 (0.18)	M10	18 (0.71)	6 x 2	150 (5.906)
POC-40	395 (15.55)	490 (19.29)	92 (3.62)	278 (10.94)	33 (1.30)	212 (8.35)	<u>130.000</u> 129.960	<u>5.1181</u> 5.1165	<u>45.000</u> 44.975	<u>1.7717</u> 1.7707	<u>12.036</u> 12.018	<u>0.4739</u> 0.4731	8 (0.31)	4.5 (0.18)	M12	20 (0.79)	8 x 2	200 (7.874)

\* Air inlet for optional forced air cooling. Consult factory.

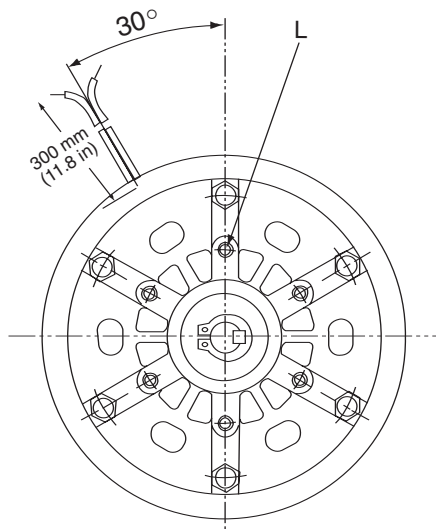
## POC Dimensions



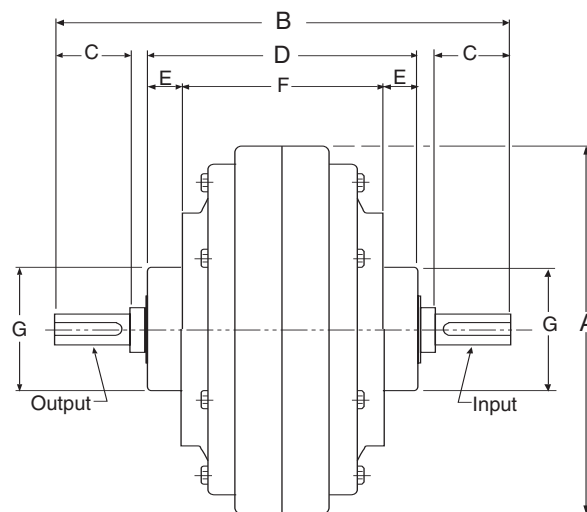
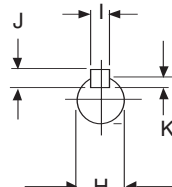
End View (POC 0.3)



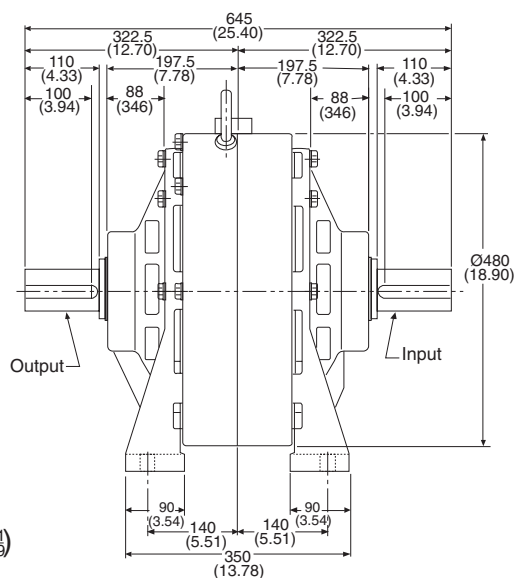
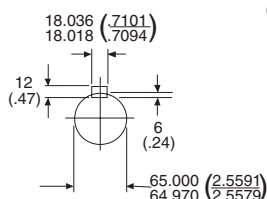
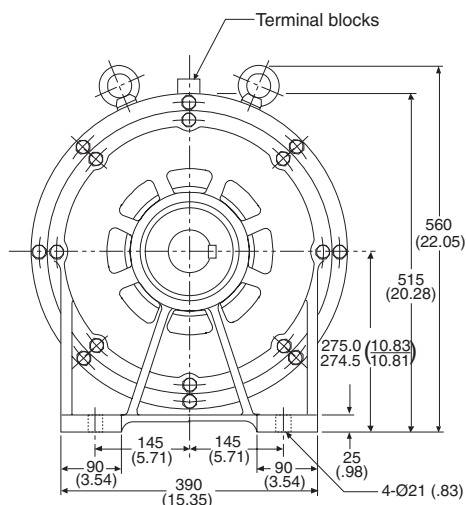
End View (POC-40)



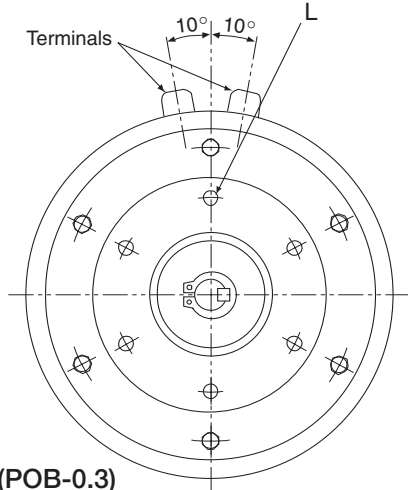
End View (POC 0.6, 1.2, 2.5, 5.0, 10, 20)



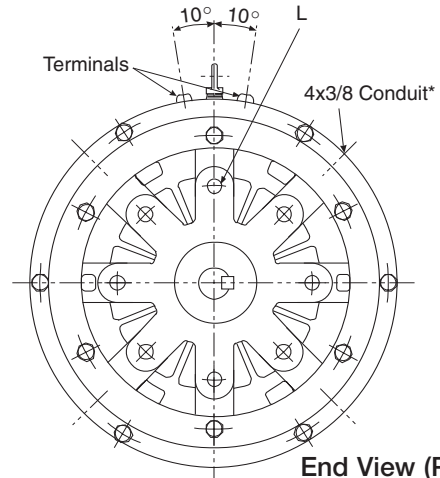
## POC – 80



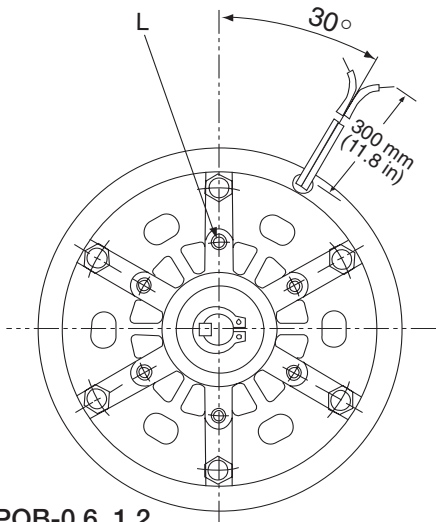
## POB Dimensions



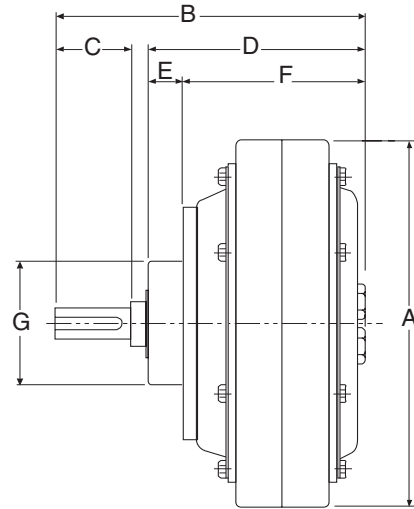
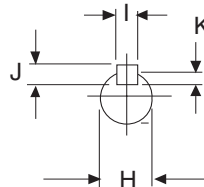
End View (POB-0.3)



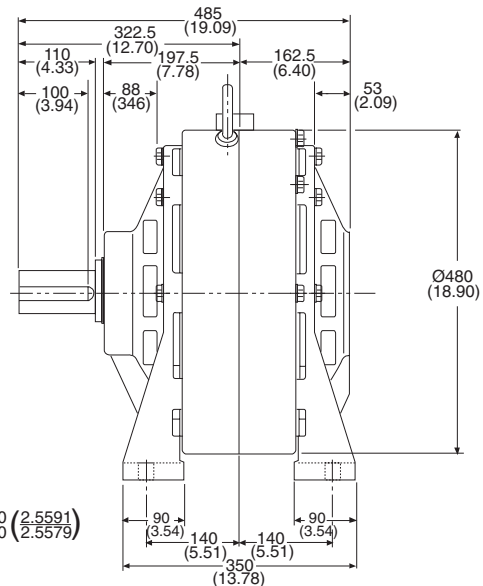
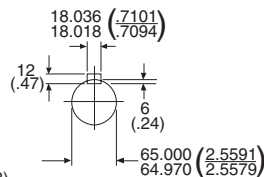
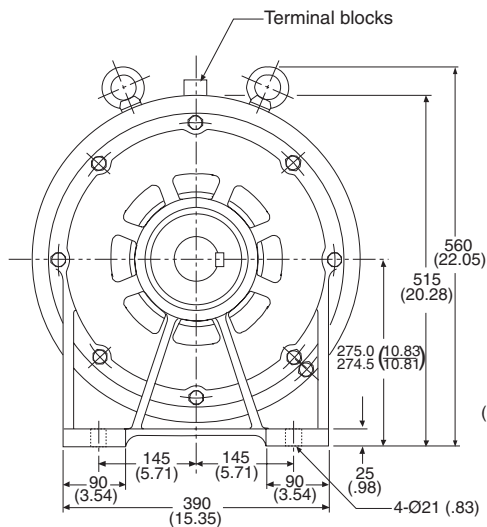
End View (POB-40)



End View (POB-0.6, 1.2,  
2.5, 5.0, 10, 20)



## POB-80



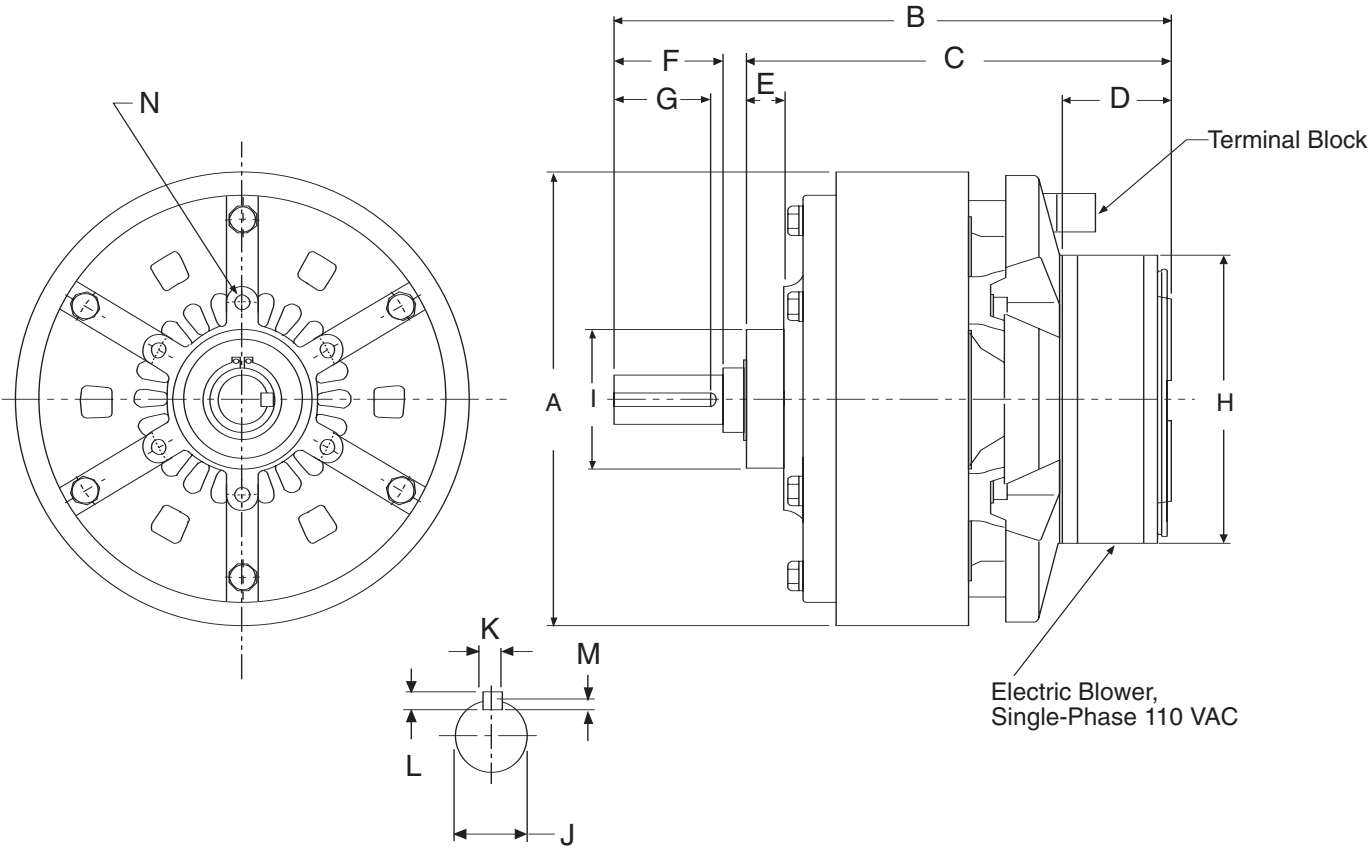
## POB Dimensional Data

**Note:** All dimensions are nominal unless otherwise noted.

Model	A mm (in.)	B mm (in.)	C mm (in.)	D mm (in.)	E mm (in.)	F mm (in.)	Shaft Dimensions								L			
							G		H		I		J mm (in.)	K mm (in.)	Thread Size	Depth mm (in.)	No. of Holes	Bolt Circle mm (in.)
							mm	(in.)	mm	(in.)	mm	(in.)						
POB-0.3	120 (4.72)	105 (4.13)	23 (0.91)	75 (2.95)	11 (0.43)	64 (2.52)	42.000 41.975	1.6535 1.6526	10.000 9.985	0.3937 0.3931	4.024 4.012	0.1584 0.1580	4 (0.16)	2.5 (0.10)	M5	10 (0.39)	6	64 (2.520)
POB-0.6	134 (5.28)	109 (4.29)	26 (1.02)	76.5 (3.01)	10 (0.39)	66.5 (2.62)	42.000 41.975	1.6535 1.6526	12.000 11.982	0.4724 0.4717	4.024 4.012	0.1584 0.1580	4 (0.16)	2.5 (0.10)	M5	11 (0.43)	6	64 (2.520)
POB 1.2	152 (5.98)	130.5 (5.14)	34.5 (1.36)	89.5 (3.52)	13 (0.51)	76.5 (3.01)	42.000 41.975	1.6535 1.6526	15.000 14.982	0.5906 0.5898	5.024 5.012	0.1978 0.1973	5 (0.20)	3.0 (0.12)	M6	13 (0.51)	6	64 (2.520)
POB 2.5	182 (7.17)	155 (6.10)	43 (1.69)	103 (4.06)	15 (0.59)	88 (3.46)	55.000 54.970	2.1654 2.1642	20.000 19.979	0.7874 0.7866	5.024 5.012	0.1978 0.1973	5 (0.20)	3.0 (0.12)	M6	13 (0.51)	6	78 (3.071)
POB 5.0	219 (8.62)	189 (7.44)	57 (2.24)	122.5 (4.82)	23 (0.91)	99.5 (3.92)	74.000 73.970	2.9134 2.9122	25.000 24.979	0.9843 0.9834	7.030 7.015	0.2768 0.2762	7 (0.28)	4.0 (0.16)	M6	13 (0.51)	6	100 (3.937)
POB 10	290 (11.42)	233.5 (9.19)	67 (2.64)	155.5 (6.12)	25 (0.98)	130.5 (5.14)	100.000 99.965	3.9370 3.9356	30.000 29.979	1.1811 1.1803	7.030 7.015	0.2768 0.2762	7 (0.28)	4.0 (0.16)	M10	18 (0.71)	6	140 (5.512)
POB 20	335 (13.19)	263.5 (10.37)	71 (2.80)	180.5 (7.11)	25 (0.98)	155.5 (6.12)	110.000 109.965	4.3307 4.3293	35.000 34.975	1.3780 1.3770	10.030 10.015	0.3949 0.3943	8 (0.31)	4.5 (0.18)	M10	18 (0.71)	6	150 (5.906)
POB-40	395 (15.55)	330 (12.99)	92 (3.62)	224 (8.82)	33 (1.30)	191 (7.52)	130.000 129.960	5.1181 5.1165	45.000 44.975	1.7717 1.7707	12.036 12.018	0.4739 0.4731	8 (0.31)	4.5 (1.18)	M12	20 (0.79)	8	200 (2.520)



PTB Dimensions



PTB Dimensional Data

Note: All dimensions are nominal unless otherwise noted.

Model									Shaft Dimensions								N			
	A mm (in.)	B mm (in.)	C mm (in.)	D mm (in.)	E mm (in.)	F mm (in.)	G mm (in.)	H* mm (in.)	I		J		K		L mm (in.)	M mm (in.)	Thread Size	Depth mm (in.)	Bolt Circle mm (in.)	
									mm	(in.)	mm	(in.)	mm	(in.)						
PTB-2.5BL3	182 (7.17)	221.5 (8.72)	169.5 (6.67)	43 (1.69)	15 (0.59)	43 (1.69)	38 (1.50)	□ 120 (4.72)	<u>55.000</u> 54.970	<u>2.1654</u> 2.1642	<u>20.000</u> 19.979	<u>0.7874</u> 0.7866	<u>5.024</u> 5.012	<u>0.1978</u> 0.1973	5 (0.20)	3 (0.12)	M6	13 (0.51)	78 (3.071)	
PTB-5BL3	219 (8.62)	274.5 (10.81)	208 (8.19)	61.5 (2.42)	23 (0.91)	57 (2.24)	47 (1.85)	○ 150 (5.91)	<u>74.000</u> 73.970	<u>2.9134</u> 2.9122	<u>25.000</u> 24.979	<u>0.9843</u> 0.9834	<u>7.030</u> 7.015	<u>0.2768</u> 0.2762	7 (0.28)	4 (0.16)	M6	13 (0.51)	100 (3.937)	
PTB-10BL3	290 (11.42)	335 (13.19)	257 (10.12)	61.5 (2.42)	25 (0.98)	67 (2.64)	56 (2.20)	○ 150 (5.91)	<u>100.000</u> 99.965	<u>3.9370</u> 3.9356	<u>30.000</u> 29.979	<u>1.1811</u> 1.1803	<u>7.030</u> 7.015	<u>0.2768</u> 0.2762	7 (0.28)	4 (0.16)	M10	18 (0.71)	140 (5.572)	
PTB-20BL3	335 (13.19)	352.5 (13.88)	269.5 (10.61)	61.5 (2.42)	25 (0.98)	71 (2.80)	60 (2.36)	○ 150 (5.91)	<u>110.000</u> 109.965	<u>4.3307</u> 4.3293	<u>35.000</u> 34.975	<u>1.3780</u> 1.3770	<u>10.030</u> 10.015	<u>0.3949</u> 0.3943	8 (0.31)	4.5 (0.18)	M10	18 (0.71)	150 (5.906)	

\* Adjacent symbol denotes shape of fan.



# Warranty

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

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

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

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

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

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

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

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

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

## Changes in Dimensions and Specifications

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



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