

DATA SHEET

BD MOTORIZED PUMP UNITS

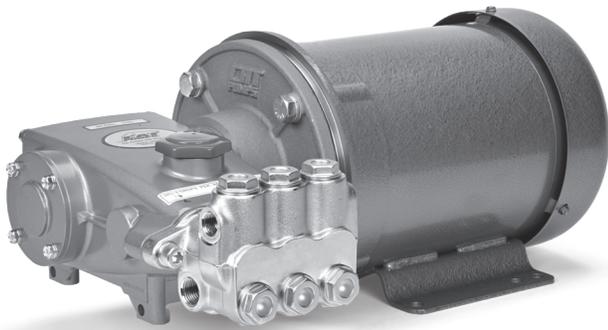


**Motors: 8023ES, 8024ES,
8025ES**

**Used on
Pump Models: 230, 231, 237, 240, 241,
247, 270, 271, 277**

**Motors: 8026ES, 8027ES,
8028ES, 8029ES**

**Used on
Pump Models: 340, 341, 347, 350,
351, 357**



Model 340BD33 Shown

MOTORIZED UNIT FEATURES

- Motorized unit design eliminates belt selection, sizing and adjustments.
- Compact direct mounting design reduces the space required compared to belt or gearbox drive assemblies.
- Ease of assembly reduces fabrication costs.
- Motors:  CSA Energy Verified Master Contract (MC) 183051

 UL Recognized Components

CAUTION

Some Motor Models Do Not Contain A Thermal Protector

Install a separate over-current protection device to prevent motor burnout and possible fire damage due to an overloaded or stalled motor. The motor must be adequately grounded.

MOTOR WARRANTY

The motor manufacturer warrants all electric motors to be free from defects of material and workmanship for one year from the date of shipment. For warranty consideration, ship the defective motor PREPAID directly to Baldor.

INSTALLATION INSTRUCTIONS

Before installing the motorized pump unit, check the incoming voltage to ensure it does not exceed the motor rating, as this will result in motor damage. Instructions for electrical connections are on a decal on the motor housing.

Qualified or trained personnel should install equipment following the National Electrical Code, local codes and with NEMA MG2.

Review your application flow and pressure requirements. Exceeding the rated pressure of the motorized unit may cause overheating of the motor and a high amp draw, resulting in shortened motor life. Before operation, see the Pump and Motor Lubrication section.

CONNECTING PUMP TO ELECTRIC MOTOR

1. Remove the four (4) hex head combination screws from the bearing cover and set aside.
2. Rotate the pump shaft so the keyway is toward the back of the pump.
3. Insert the key into the pump shaft. The beveled end should be toward the pump, and the flat surface should be horizontal with the shaft keyway to ensure the key is completely seated. If the key is installed improperly, the shaft may not fit into the motor.
4. Slip the lock washer and washer onto the hex head shaft retaining screw. Apply Loctite® 242® onto the screw threads and thread the screw into the pump shaft. Torque to 110 in-lbs (12 Nm) (Models 340 and 350 Only).
5. Install the mounting flange onto the pump with the extended collar toward the pump and side vents to the right and left. Line up the four (4) unthreaded holes with the holes on the bearing cover.
6. Apply a small amount of Loctite® 242® to the four (4) flat-head hex screws and secure the mounting flange assembly to the pump. Torque to 60–70 in-lbs (6.6–7.7 Nm).
7. Apply Loctite® 242® to the two (2) set screws and thread them into the motor shaft, only partially into the keyway.
8. Apply anti-seize lubricant (PN 6106) to the pump shaft and inside diameter of the motor shaft.
9. Carefully insert the pump into the hollow motor shaft until the flange is flush with the motor. Ensure the key in the pump shaft lines up with the keyway of the motor shaft.
10. Secure the pump with the mounting flange to the motor with four (4) lock washers and four (4) hex head screws. Torque to 50–60 ft-lbs (5.5–6.6 Nm).
11. Use a 5/32" hex wrench to secure the set screws through the side vent in the mounting flange. Torque to 60–75 in-lbs (6.6–8.3 Nm).

Loctite and 242 are registered trademarks of the Henkel Corporation.

3 FRAME — MOTORIZED PUMP UNITS

MOTORIZED UNITS	230BD151	230BD31	230BD33
	231BD151	231BD31	231BD33
	237BD151	237BD31	237BD33
Shipping Unit Weight	76 lbs	110 lbs	90 lbs
Shipping Unit Dimensions	26.5" x 16.5" x 16.0"	26.5" x 16.5" x 16.0"	26.5" x 16.5" x 16.0"
PUMPS	230, 231, 237	230, 231, 237	230, 231, 237
Flow	2.3 gpm	2.3 gpm	2.3 gpm
Pressure Range	100–900 psi	100–1900 psi	100–1900 psi
MOTORS	8023ES	8024ES	8025ES
Assembly Mount — REQUIRED	8020	8021	8021
Horsepower	1.5 hp	3.0 hp	3.0 hp
Phase	Single	Single	Three
RPM	1725 rpm	1725 rpm	1750 rpm
Frame Size	56CYZ, TEFC	184TCZ, TEFC	182TCZ, TEFC
Hertz	60 Hz	60 Hz	60 Hz
Volts	115/208/230V	230V	208–230/460V
Maximum Amps	12.8/6.7/6.4 Amps	13.2 Amps	8.6–8.2/4.1 Amps
Service Factor	1.15	1.0	1.15
Maximum Ambient Temperature	104° F	104° F	104° F
Shaft Diameter (Hollow)	16.5 mm	16.5 mm	16.5 mm
Thermal Overload	No	Yes	No
Capacitor Start	Yes	Yes	No
Insulation	Class B	Class F	Class F

MOTORIZED UNITS	240BD31	240BD33	270BD31	270BD33
	241BD31	241BD33	271BD31	271BD33
	247BD31	247BD33	277BD31	277BD33
Shipping Unit Weight	110 lbs	90 lbs	110 lbs	90 lbs
Shipping Unit Dimensions	26.5" x 16.5" x 16.0"			
PUMPS	240, 241, 247	240, 241, 247	270, 271, 277	270, 271, 277
Flow	3.6 gpm	3.6 gpm	4.2 gpm	4.2 gpm
Pressure Range	100–1200 psi	100–1200 psi	100–1000 psi	100–1000 psi
MOTORS	8024ES	8025ES	8024ES	8025ES
Assembly Mount — REQUIRED	8021	8021	8021	8021
Horsepower	3.0 hp	3.0 hp	3.0 hp	3.0 hp
Phase	Single	Three	Single	Three
RPM	1725 rpm	1750 rpm	1725 rpm	1750 rpm
Frame Size	184TCZ, TEFC	182TCZ, TEFC	184TCZ, TEFC	182TCZ, TEFC
Hertz	60 Hz	60 Hz	60 Hz	60 Hz
Volts	230V	208–230/460V	230V	208–230/460V
Maximum Amps	13.2 Amps	8.6–8.2/4.1 Amps	13.2 Amps	8.6–8.2/4.1 Amps
Service Factor	1.0	1.15	1.0	1.15
Maximum Ambient Temperature	104° F	104° F	104° F	104° F
Shaft Diameter (Hollow)	16.5 mm	16.5 mm	16.5 mm	16.5 mm
Thermal Overload	Yes	No	Yes	No
Capacitor Start	Yes	No	Yes	No
Insulation	Class F	Class F	Class F	Class F

Refer to individual Pump Data Sheet and Service Manual for maintenance parts, service procedures and additional specifications.

MOUNTING FLANGE COMPONENTS

8020 Assembly Mount (8023ES)

1	34110	Flange, Mount
2	34162	Screw, HHC (10–32 x 1/2")
4	34379	Screw, Flat Head (M6 x 20)
4	34160	Screw, HH (3/8" x 1 1/4")
4	126745	Lockwasher (M6)
1	32145	Screw, Assembly HH (M8 x 20)
4	30921	Lockwasher (3/8")
1	30047	Key (M5 x 5 x 24)
1	6106	Anti-seize

8021 Assembly Mount (8024ES, 8025ES)

1	34111	Flange, Mount
2	34162	Screw, HHC (10–32 x 1/2")
4	34379	Screw, Flat Head (M6 x 20)
4	32143	Screw, HH (1/2" x 1 1/4")
4	126745	Lockwasher (M6)
1	32145	Screw, Assembly HH (M8 x 20)
4	126570	Lockwasher (1/2")
1	30047	Key (M5 x 5 x 24)
1	6106	Anti-seize

8022 Assembly Mount (8026ES, 8027ES, 8028ES, 8029ES)

1	34112	Flange, Mount
2	34162	Screw, HHC (10–32 x 1/2")
4	34379	Screw, Flat Head (M6 x 20)
4	32143	Screw, HH (1/2" x 1 1/4")
4	126745	Lockwasher (M6)
1	32145	Screw, Assy HH (M8 x 20)
4	30908	Lockwasher (1/2")
1	30057	Key (M6 x 6 x 25)
1	6106	Anti-seize

5 FRAME — MOTORIZED PUMP UNITS

MOTORIZED UNITS	340BD31	340BD33	340BD51	340BD53
	341BD31	341BD33	341BD51	341BD53
	347BD31	347BD33	347BD51	347BD53
Shipping Unit Weight	122 lbs	98 lbs	128 lbs	112 lbs
Shipping Unit Dimensions	26.5" x 16.5" x 16.0"			
PUMPS	340, 341, 347	340, 341, 347	340, 341, 347	340, 341, 347
Flow	4.0 gpm	4.0 gpm	4.0 gpm	4.0 gpm
Pressure Range	100–1100 psi	100–1100 psi	100–1800 psi	100–1800 psi
MOTORS	8026ES	8027ES	8028ES	8029ES
Assembly Mount — REQUIRED	8022	8022	8022	8022
Horsepower	3.0 hp	3.0 hp	5.0 hp	5.0 hp
Phase	Single	Three	Single	Three
RPM	1725 rpm	1750 rpm	1725 rpm	1750 rpm
Frame Size	184TC, TEFC	182TCZ, TEFC	184TC, TEFC	184TC, TEFC
Hertz	60 Hz	60 Hz	60 Hz	60 Hz
Volts	230V	208–230/460V	208–230V	208–230/460V
Maximum Amps	13.2 Amps	8.6–8.2/4.1 Amps	22.5/23.5 Amps	13.9–13.4/6.7 Amps
Service Factor	1.0	1.15	1.0	1.0
Maximum Ambient Temperature	104°F	104°F	104°F	104°F
Shaft Diameter (Hollow)	20 mm	20 mm	20 mm	20 mm
Thermal Overload	Yes	No	No	No
Capacitor Start	Yes	No	Yes	No
Insulation	Class F	Class F	Class F	Class F

MOTORIZED UNITS	350BD31	350BD33	350BD51	350BD53
	351BD31	351BD33	351BD51	351BD53
	357BD31	357BD33	357BD51	357BD53
Shipping Unit Weight	122 lbs	98 lbs	128 lbs	112 lbs
Shipping Unit Dimensions	26.5" x 16.5" x 16.0"			
PUMPS	350, 351, 357	350, 351, 357	350, 351, 357	350, 351, 357
Flow	5.0 gpm	5.0 gpm	5.0 gpm	5.0 gpm
Pressure Range	100–900 psi	100–900 psi	100–1450 psi	100–1450 psi
MOTORS	8026ES	8027ES	8028ES	8029ES
Assembly Mount — REQUIRED	8022	8022	8022	8022
Horsepower	3.0 hp	3.0 hp	5.0 hp	5.0 hp
Phase	Single	Three	Single	Three
RPM	1725 rpm	1750 rpm	1725 rpm	1750 rpm
Frame Size	184TC, TEFC	182TCZ, TEFC	184TC, TEFC	184TC, TEFC
Hertz	60 HZ	60 HZ	60 HZ	60 HZ
Volts	230V	208–230/460V	208–230V	208–230/460V
Maximum Amps	13.2 Amps	8.6–8.2/4.1 Amps	22.5/23.5 Amps	13.9–13.4/6.7 Amps
Service Factor	1.0	1.15	1.0	1.0
Maximum Ambient Temperature	104°F	104°F	104°F	104°F
Shaft Diameter (Hollow)	20 mm	20 mm	20 mm	20 mm
Thermal Overload	Yes	No	No	No
Capacitor Start	Yes	No	Yes	No
Insulation	Class F	Class F	Class F	Class F

Refer to individual Pump Data Sheet and Service Manual for maintenance parts, service procedures and additional specifications.

PUMP LUBRICATION

Before starting the pump, fill the crankcase per specifications with Cat Pumps High-Pressure Pump Oil PN 6107. For best results, perform an initial oil change after the first 50 hours of operation and every 500 hours thereafter.

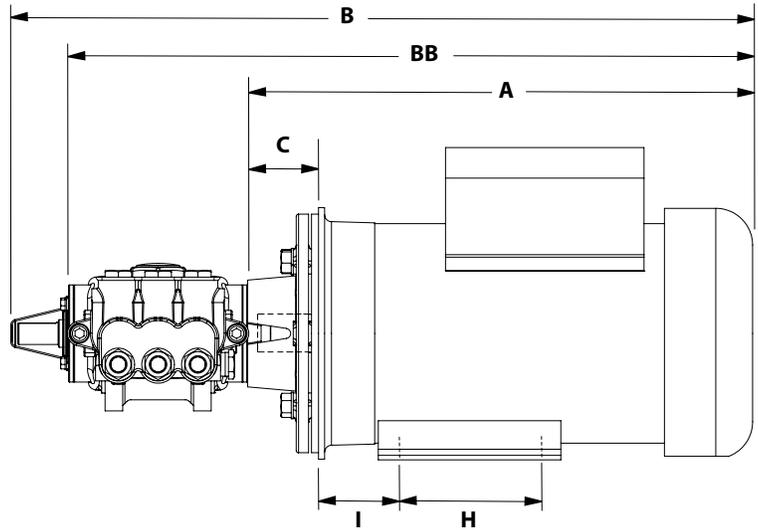
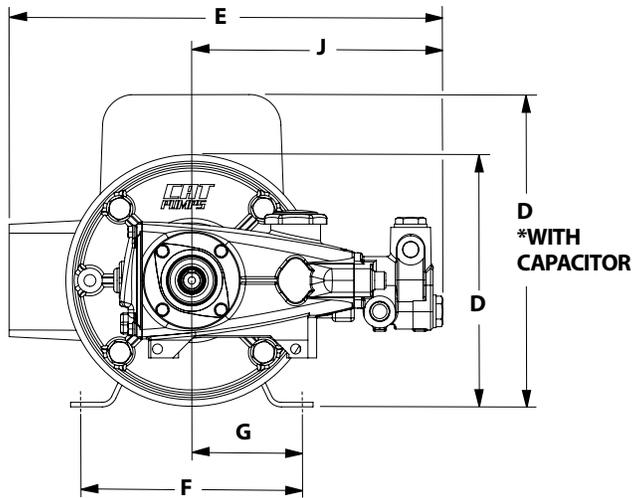
MOTOR LUBRICATION

This is a ball bearing motor. The bearings have been lubricated at the factory. No lubricant needs to be added unless motor has been stored for over a year. Baldor motors are typically pre-greased with Mobil Polyrex™ EM.

Overgreasing bearings can cause premature failure. The motor is equipped with an Alemite fitting. Clean the tip of the fitting and apply grease with a gun. Use 1 to 2 strokes. Any excess may drip out the bottom drain during the first 20 minutes of operation.

Note: Keep grease clean. Lubricate the motor when it is not turning. Remove and replace drain plugs when not turning. Do not mix petroleum grease and silicone grease in motor bearings.

Mobil Polyrex EM is a registered trademark of ExxonMobile Corporation.



MOTOR	PUMP/SHAFT	A		B		BB		C		D		E	
8023ES (1.5 HP 1 PH)	3PFR (16.5 mm)	14.62"	371 mm	22.12"	561 mm	—	—	2.00"	50 mm	*8.38"	213 mm	12.85"	326 mm
8024ES (3 HP 1 PH)	3PFR (16.5 mm)	15.82"	402 mm	23.32"	592 mm	—	—	1.88"	48 mm	*11.56"	294 mm	14.10"	358 mm
8025ES (3 HP 3 PH)	3PFR (16.5 mm)	17.32"	440 mm	24.71"	628 mm	—	—	1.88"	48 mm	8.9"	226 mm	13.48"	342 mm
8026ES (3 HP 1 PH)	5PFR (20 mm)	15.82"	402 mm	24.22"	615 mm	22.49"	571 mm	1.88"	48 mm	*11.56"	294 mm	15.43"	392 mm
8027ES (3 HP 3 PH)	5PFR (20 mm)	15.91"	404 mm	24.36"	618 mm	22.90"	581 mm	1.88"	48 mm	8.9"	226 mm	14.81"	376 mm
8028ES (5 HP 1 PH)	5PFR (20 mm)	17.32"	440 mm	25.72"	653 mm	23.99"	609 mm	1.88"	48 mm	*11.56"	294 mm	14.81"	376 mm
8029ES (5 HP 3 PH)	5PFR (20 mm)	17.29"	439 mm	25.69"	652 mm	23.96"	608 mm	1.88"	48 mm	9.00"	229 mm	14.81"	376 mm

MOTOR	PUMP/SHAFT	F		G		H		I		J	
8023ES (1.5 HP 1 PH)	3PFR (16.5 mm)	4.88"	124 mm	2.44"	62 mm	3.0"	76 mm	3.06"	78 mm	7.6"	193 mm
8024ES (3 HP 1 PH)	3PFR (16.5 mm)	7.50"	190 mm	3.75"	95 mm	5.5"	140 mm	3.62"	92 mm	7.6"	193 mm
8025ES (3 HP 3 PH)	3PFR (16.5 mm)	7.50"	190 mm	3.75"	95 mm	5.5"	140 mm	3.62"	92 mm	7.6"	193 mm
8026ES (3 HP 1 PH)	5PFR (20 mm)	7.50"	190 mm	3.75"	95 mm	5.5"	140 mm	3.62"	92 mm	8.93"	227 mm
8027ES (3 HP 3 PH)	5PFR (20 mm)	7.50"	190 mm	3.75"	95 mm	5.5"	140 mm	3.62"	92 mm	8.93"	227 mm
8028ES (5 HP 1 PH)	5PFR (20 mm)	7.50"	190 mm	3.75"	95 mm	5.5"	140 mm	3.62"	92 mm	8.93"	227 mm
8029ES (5 HP 3 PH)	5PFR (20 mm)	7.50"	190 mm	3.75"	95 mm	5.5"	140 mm	3.62"	92 mm	8.93"	227 mm

⚠ CAUTIONS AND WARNINGS

All high-pressure systems require a primary pressure regulating device (e.g. regulator, unloader) and a secondary pressure relief device (e.g. pop-off valve, relief valve). Failure to install such relief devices could result in personal injury or damage to pump or property. Cat Pumps does not assume any liability or responsibility for the operation of a customer's high-pressure system. Read all CAUTIONS and WARNINGS before commencing service or operation of any high-pressure system. The CAUTIONS and WARNINGS are included in each Service Manual and with each Accessory Data sheet. CAUTIONS and WARNINGS can also be viewed online at www.catpumps.com/dynamic-literature/cautions-and-warnings or can be requested directly from Cat Pumps.

WARRANTY

View the Limited Warranty online at www.catpumps.com/literature/cat-pumps-limited-warranty