

Operation



EP Hose Pumps

3A1938E
EN

Electric-powered hose pump for use in fluid transfer and metering applications. For professional use only.

Not approved for use in explosive atmospheres or hazardous locations.



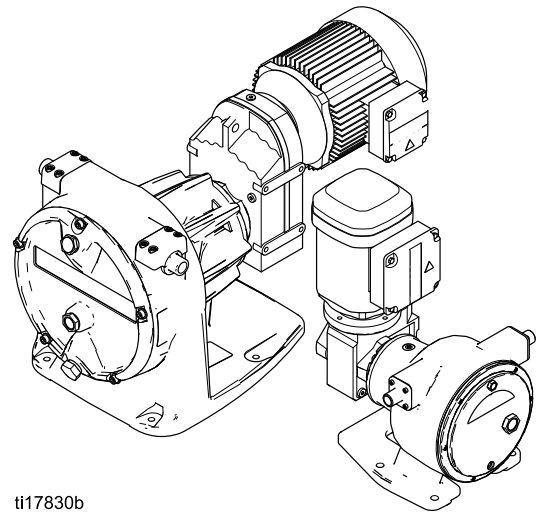
Important Safety Instructions

Read all warnings and instructions in this manual.

Save these instructions.

125 psi (0.9 MPa, 9 bar) Maximum Fluid Working Pressure

See page 3 for model part numbers and information.



ti17830b



Contents


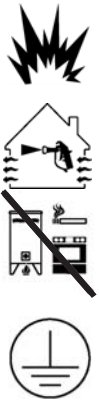


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Models

Pump Model	Hose ID Size (mm)	Reference
EP2006	6	See EP2 Repair-Parts Manual for a complete list of pump part numbers and descriptive information.
EP2013	13	See EP2 Repair-Parts Manual for a complete list of pump part numbers and descriptive information.
EP3019	19	See EP3 Repair-Parts Manual for a complete list of pump part numbers and descriptive information.
EP4029	29	See EP4 Repair-Parts Manual for a complete list of pump part numbers and descriptive information.

Warnings

The following warnings are for the setup, use, grounding, maintenance and repair of this equipment. The exclamation point symbol alerts you to a general warning and the hazard symbol refers to procedure-specific risks. When these symbols appear in the body of this manual or on warning labels, refer back to these Warnings. Product-specific hazard symbols and warnings not covered in this section may appear throughout the body of this manual where applicable.

 WARNING	
	<p>FIRE AND EXPLOSION HAZARD</p> <p>Flammable fumes, such as solvent and paint fumes, in work area can ignite or explode. To help prevent fire and explosion:</p> <ul style="list-style-type: none"> • Use equipment only in well ventilated area. • Eliminate all ignition sources; such as pilot lights, cigarettes, portable electric lamps, and plastic drop cloths (potential static arc). • Keep work area free of debris, including solvent, rags and gasoline. • Do not plug or unplug power cords, or turn power or light switches on or off when flammable fumes are present. • Ground all equipment in the work area. See Grounding instructions. • Use only grounded hoses. • Hold gun firmly to side of grounded pail when triggering into pail. • If there is static sparking or you feel a shock, stop operation immediately. Do not use equipment until you identify and correct the problem. • Keep a working fire extinguisher in the work area.
	<p>ELECTRIC SHOCK HAZARD</p> <p>This equipment must be grounded. Improper grounding, setup, or usage of the system can cause electric shock.</p> <ul style="list-style-type: none"> • Turn off and disconnect power at main switch before disconnecting any cables and before servicing or installing equipment. • Connect only to grounded power source. • All electrical wiring must be done by a qualified electrician and comply with all local codes and regulations.
	<p>MOVING PARTS HAZARD</p> <p>Moving parts can pinch, cut or amputate fingers and other body parts.</p> <ul style="list-style-type: none"> • Keep clear of moving parts. • Do not operate equipment with protective guards or covers removed. • Pressurized equipment can start without warning. Before checking, moving, or servicing equipment, follow the Pressure Relief Procedure and disconnect all power sources.

 <h1 style="margin: 0;">WARNING</h1>	
 	<p>ENTANGLEMENT HAZARD Rotating parts can cause serious injury.</p> <ul style="list-style-type: none"> • Keep clear of moving parts. • Do not operate equipment with protective guards or covers removed. • Do not wear loose clothing, jewelry or long hair while operating equipment. • Equipment can start without warning. Before checking, moving or servicing equipment, follow the Pressure Relief Procedure and disconnect all power sources.
	<p>TOXIC FLUID OR FUMES Toxic fluids or fumes can cause serious injury or death if splashed in the eyes or on skin, inhaled, or swallowed.</p> <ul style="list-style-type: none"> • Read MSDSs to know the specific hazards of the fluids you are using. • Store hazardous fluid in approved containers, and dispose of it according to applicable guidelines.
	<p>PERSONAL PROTECTIVE EQUIPMENT You must wear appropriate protective equipment when operating, servicing, or when in the operating area of the equipment to help protect you from serious injury, including eye injury, hearing loss, inhalation of toxic fumes, and burns. This equipment includes but is not limited to:</p> <ul style="list-style-type: none"> • Protective eyewear, and hearing protection. • Respirators, protective clothing, and gloves as recommended by the fluid and solvent manufacturer.
 	<p>PRESSURIZED EQUIPMENT HAZARD Fluid from the equipment, leaks, or ruptured components can splash in the eyes or on skin and cause serious injury.</p> <ul style="list-style-type: none"> • Follow the Pressure Relief Procedure when you stop spraying/dispensing and before cleaning, checking, or servicing equipment. • Tighten all fluid connections before operating the equipment. • Check hoses, tubes, and couplings daily. Replace worn or damaged parts immediately.



WARNING







EQUIPMENT MISUSE HAZARD

Misuse can cause death or serious injury.

- Do not operate the unit when fatigued or under the influence of drugs or alcohol.
- Do not exceed the maximum working pressure or temperature rating of the lowest rated system component. See **Technical Data** in all equipment manuals.
- Use fluids and solvents that are compatible with equipment wetted parts. See **Technical Data** in all equipment manuals. Read fluid and solvent manufacturer's warnings. For complete information about your material, request MSDS from distributor or retailer.
- Do not leave the work area while equipment is energized or under pressure.
- Turn off all equipment and follow the **Pressure Relief Procedure** when equipment is not in use.
- Check equipment daily. Repair or replace worn or damaged parts immediately with genuine manufacturer's replacement parts only.
- Do not alter or modify equipment.
- Use equipment only for its intended purpose. Call your distributor for information.
- Route hoses and cables away from traffic areas, sharp edges, moving parts, and hot surfaces.
- Do not kink or over bend hoses or use hoses to pull equipment.
- Keep children and animals away from work area.
- Comply with all applicable safety regulations.

Installation

				
<p>Installation of your pump involves potentially hazardous procedures. Only trained and qualified personnel who have read and who understand the information in this manual should install this equipment.</p>				

Receiving and Handling

Upon receipt of your pump:

- **Carefully inspect the pump to verify that no damage occurred during transit.** Check the packing list to ensure that all parts and accessories are present.

NOTE: If you find any damage or shortage, immediately notify your Graco distributor.

- Refer to the pump identification plate (ID) for the pump part number and series level.
- Leave the pump assembly crated, horizontal, and stored in a warm, dry location until you are ready to install it. To store the pump more than 30 days, see [Storage, page 19](#).

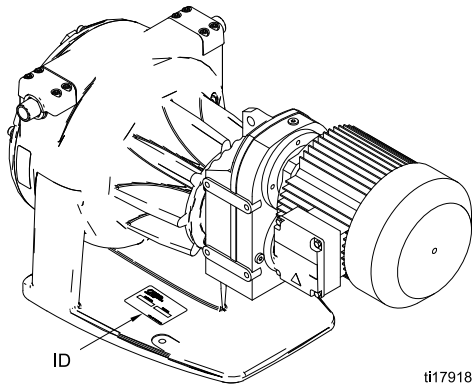



Figure 1 Pump Identification Plate

Moving the Pump

	
<p>The pump is heavy. Handle it carefully. Careless handling can result in equipment damage and injury to personnel.</p>	

After you receive and inspect your pump, transfer it to the assembly location or storage area.

NOTE: To prevent hose damage if storing the pump more than 30 days, see [Storage, page 19](#).

Use the proper forklift truck for lifting equipment on pallets or in crates. The lift forks should extend under the equipment and completely support the unit. When necessary to lift by crane, use the vertical points of the equipment or the crating for pickup so the equipment remains level. Use long lift cables, chains, or straps, as required, to evenly support the equipment. In addition, use a spreader bar, if necessary, to ensure a vertical pull at all lift points. Short cables or chains can create a cross shear that can damage the equipment.

NOTICE
<p>If your pump is supplied with a gear motor, lift only with straps located under the gear motor and under the front of the pump.</p>

Location

Allow sufficient space to permit easy access for maintenance and service, especially in front of the pump. The pump area should have adequate headroom and sufficient ventilation.

Before installing your pump, see [Dimensions, page 21](#), to ensure that the available space is sufficient for the pump, taking into account the following provisions:

- Dimension and weight of the pump package.
- Required moving and hoisting equipment.
- Possible piping layout, including space for removal and maintenance.
- Freedom of movement to operate the unit, read speed and pressure gauges, and provide adjustment and maintenance.
- Space required for lubrication.
- Space for removal of the hose from the unit.
- Location of the nearest drain or catch basin to collect used lubricant and fluid.

NOTE: The hose is serviced through the front cover. Therefore, provide sufficient work space in front of the pump when installing the unit.

Mount the Pump

See [Mounting Hole Layouts, page 22](#).

Mount the pump on a flat concrete foundation 4 inches (100 mm) wider and longer than the pump base. When installing the pump, make sure that the surface of the foundation is smooth and free of debris. The foundation should be level and of sufficient depth and strength to adequately support the pump.

Anchor bolts should be set into the concrete foundation. For best results, use anchor bolts made of corrosion resistant material such as stainless steel. Anchor bolt nuts should be of a different grade stainless steel to prevent galling. Level the pump as required, using shims.

Initially tighten the anchor bolts one eighth of a turn with a wrench. Do not fully tighten until after all piping has been connected.

Mounting a Non-Graco Motor

To mount a non-Graco motor and gearbox to a bare EP Hose Pump, see the following table and Fig. 2 (EP2 Pumps) or Fig. 3 (EP3 or EP4 Pumps).

EP Pump Size	Hollow Bore Shaft Diameter (A)	Bolt Circle Diameter (B)	Flange Pilot Diameter (C)	Mounting Hole Thread Size (D)
EP2	20 mm	100 mm	80 mm	M6
EP3	30 mm	130 mm	110 mm	M8
EP4	35 mm	165 mm	130 mm	M10

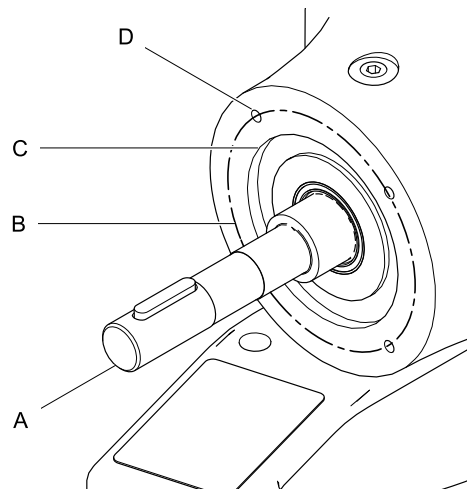


Figure 2 Motor Mounting Dimensions for EP2 Pumps

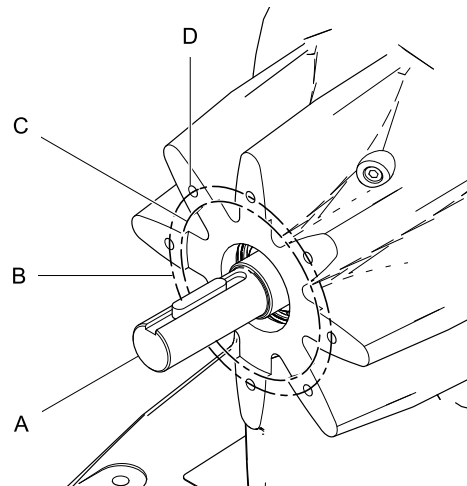





Figure 3 Motor Mounting Dimensions for EP3 or EP4 Pumps

Fluid Connections

				
<p>Undue stress on the pump inlet or outlet connections can cause serious injury or equipment failure. The fluid inlet and outlet lines must be independently supported. The pipe supports should be located as close to the pump as possible.</p>				

NOTE: The hose connections require the use of a hose clamp. Part No. 24L497 Clamping Tool is available from Graco.

The pump roller moves either clockwise or counter-clockwise, depending on the direction of motor rotation and the number of gears. The direction of roller movement determines the orientation of the fluid inlet and outlet. See the table below.

Roller Direction (as viewed through sightglass)	Fluid Inlet	Fluid Outlet
Clockwise	Left	Right
Counter-clockwise	Right	Left

NOTE: If your installation requires the fluid inlet and outlet positions to be reversed, this can be done by reversing the motor rotation. See [Reverse Motor Direction, page 17](#).

Fluid Inlet Line

Locate the pump as close to the fluid source as possible. The inlet piping should be at least the same diameter as the pump inlet connection and should have a straight run of pipe that is a minimum of 8 to 10 pipe diameters long. Inlet piping must be airtight and suitable for both pressure and vacuum. If possible, provide a larger diameter pipe than the pump inlet connection.

Pump Model	Fluid Inlet and Outlet Size
EP2006 and EP2013 Pumps	1/2 npt(m)
EP3019 Pumps	3/4 npt(m)
EP4029 Pumps	1-1/4 npt(m)

Install a shutoff valve near the pump inlet to isolate the unit for service and repair. Never install a check valve on the inlet side of the pump. A compound vacuum/pressure gauge can be installed to monitor pump performance.

Fluid Outlet Line

The pump outlet piping should be a similar diameter as the outlet connection. Avoid sudden changes in pipe diameter by using concentric taper increasers. As much as possible, provide a straight run of pipe downstream of the pump outlet.

<i>NOTICE</i>
<p>Install a pressure relief valve upstream of a shutoff valve at the pump outlet, to prevent over-pressurization that can damage the pump or the hose.</p>

Install the pressure relief valve near the pump outlet. Downstream of the pressure relief valve, install a shutoff valve to isolate the unit for service and repair. Install a pressure gauge to monitor pump performance. A check valve is not recommended on the outlet of the pump since the pump acts as its own check valve.

Flush Connections

Line flushing connections are recommended when pumping slurries or liquids with a high concentration of solids that tend to settle when the pump is turned off.

NOTE: Accumulation of solids in the hose after shutdown can reduce hose life because the hose will experience high stress when restarting the pump.

Pulsation Dampeners

Hose pumps sometimes require the use of pulsation dampeners on either the inlet or outlet to increase the hose life during operation. A pulsation dampener acts to absorb the energy of the pulsations that the pump produces so that these forces do not act upon the hose. Your Graco distributor will assist you in selecting the proper size and application of these devices in your system.

If your operation does require pulsation dampeners, mount them as close to the inlet and/or outlet of the pump as possible. Do not support the weight of the dampeners on the pump connections. These devices must be independently supported.

Outlet pulsation dampeners work best when there is some back pressure in the outlet line. Pulsation dampeners do not work efficiently at low outlet pressures or when the pump discharges directly to the atmosphere.

Drain and Vent Plugs

The pump is equipped with a low point drain (17) and a vent (15). The drain is typically plugged with a stainless steel plug, and the vent prevents a buildup of excess pressure in the pump housing.

Lubricate the Pump

Before operating the pump, add hose lube to the pump housing as explained below. Failure to do so will result in reduced hose life. The hose lube acts as a lubricant between the hose and the roller and between the roller and the eccentric shaft. It also dissipates heat from the hose. Check the compatibility of the hose lube with your pumped fluid.

1. Disconnect the pump from the power source.
2. Remove the screws holding the motor fan cover. Turn the fan by hand until the roller stops at the bottom of the pump housing in the 6 o'clock position.
3. Unscrew the vent plug (15) near the top of the cover.
4. Using a funnel, add hose lube through the vent port. For EP3 and EP4 Models, the oil will be visible through the sightglass (16). The oil level must not rise above the halfway point on the roller.

NOTE: The roller must be in the 6 o'clock position to prevent overfilling the pump with hose lube.

NOTE: Do not overfill. Overfilling the pump housing with hose lube will increase pressure in the pump housing, causing hose lube to leak from the cover or the clamp area. See the table below for the correct amount of hose lube for your pump. Pre-measuring the correct amount will help prevent overfilling.

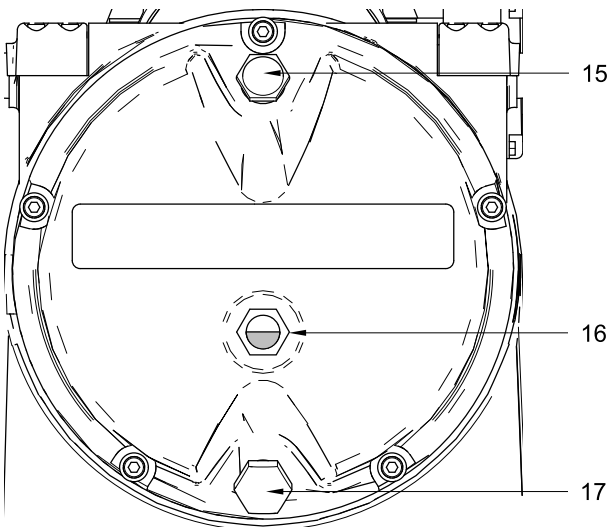
Pump Model	Amount of Hose Lube (approximate)
EP2006, EP2013	8 oz (250 ml)
EP3019	0.25 gal. (1 liter)
EP4029	0.5 gal. (2 liters)

NOTE: Higher operating speeds provide more vigorous lubrication, which may cause splashing of oil. When operating at a speed of 85 RPM or greater, reduce the amount of hose lube as shown in the table below.

Operating Speed (RPM)	Amount of Hose Lube
0-84	As recommended in the table above.
85-104	70% of recommended quantity
105-114	60% of recommended quantity
115 and above	50% of recommended quantity

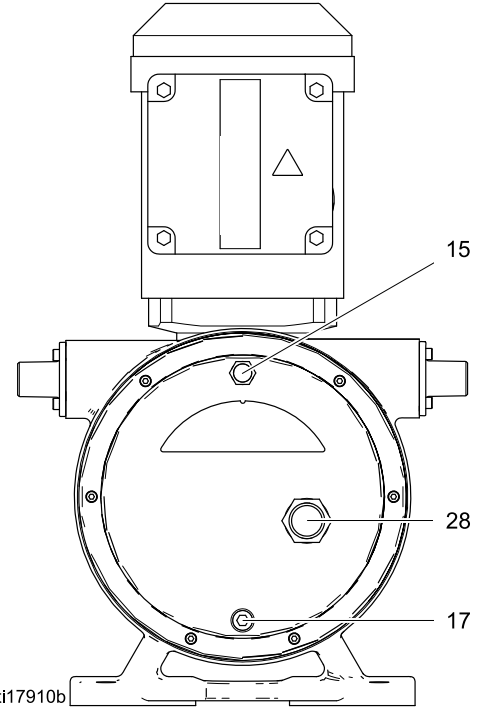


Figure 4 Fill Pump With Hose Lube



ti17917a

Figure 5 Hose Lube Level on EP3 and EP4 Pumps







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Figure 6 Hose Lube Level on EP2 Pumps

5. Wrap the vent plug (15) threads with PTFE tape and screw it into the vent port carefully.


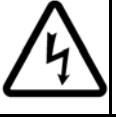

NOTICE
 The vent port threads are aluminum. To help prevent galling, blow out the threads with compressed air before installing the steel vent plug (15).

Grounding

				
<p>This equipment must be grounded to reduce the risk of static sparking and electric shock. Electric or static sparking can cause fumes to ignite or explode. Improper grounding can cause electric shock. Grounding provides an escape wire for the electric current.</p>				

1. **Pump:** The pump is grounded through a proper electrical connection. See [Main Power Connections at the VFD, page 14](#).
2. **Fluid hoses:** Use only electrically conductive hoses with a maximum of 500 ft. (150 m) combined hose length to ensure grounding continuity. Check the electrical resistance of hoses. If total resistance to ground exceeds 25 megohms, replace hose immediately.
3. **Fluid supply container:** Follow your local code.
4. **All solvent pails used when flushing:** Follow local code. Use only metal pails, which are conductive. Do not place the pail on a non-conductive surface, such as paper or cardboard, which interrupts the grounding continuity.
5. **To maintain grounding continuity when flushing or relieving pressure:** Always hold the metal nozzle firmly to the side of a grounded metal pail.

Electrical Connections

				
<p>All electrical wiring must be completed by a qualified electrician and comply with all local codes and regulations.</p>				

Wire Connections at the Motor

NOTE: Follow the instructions in the motor manufacturer's manual. Use a motor starter with overload protection. Wire size, fuse size, and other electrical devices must comply with all local codes and regulations.

The motor must be wired to the VFD. Install the wiring at the motor as follows:

1. Open the motor's electrical box.
2. Install a strain relief in one of the ports at the bottom of the motor box.
3. Connect the green ground wire to the ground screw.
4. See Fig. 7 for 230 V motors and Fig. 8 for 460 V motors. Connect the wires to the bottom three terminals (U, V, and W) in the motor box.
5. Close the motor electrical box.

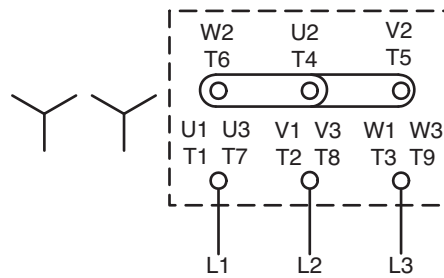
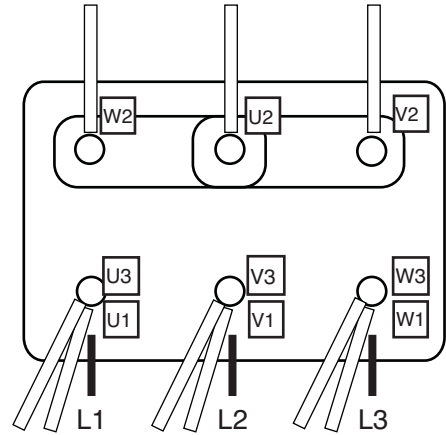


Figure 7 Wire Connections for a 230 V Motor

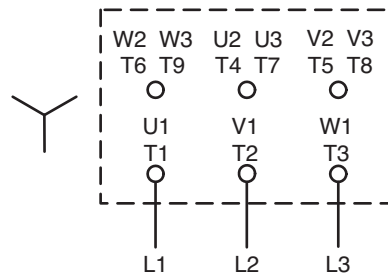
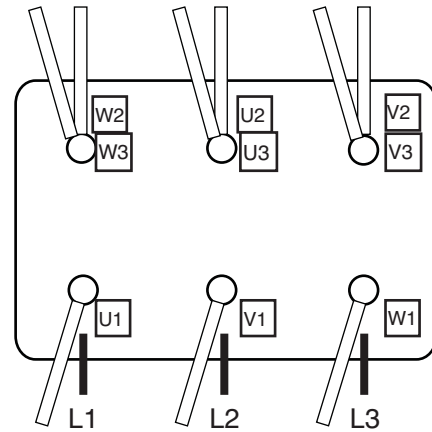


Figure 8 Wire Connections for a 460 V Motor

Wire Connections at the Variable Frequency Drive (VFD)

NOTE: Follow the instructions in the VFD manufacturer's manual.

Install the wiring at the VFD as follows:

1. Connect the wires to the motor. See [Wire Connections at the Motor, page 13](#).
2. Open the VFD's electrical box.
3. Install strain reliefs in both ports at the bottom of the VFD box.
4. Connect the green ground wire to the ground screw.
5. Connect the wires from the motor terminals to the matching terminals in the VFD box, as shown in Fig. 9.

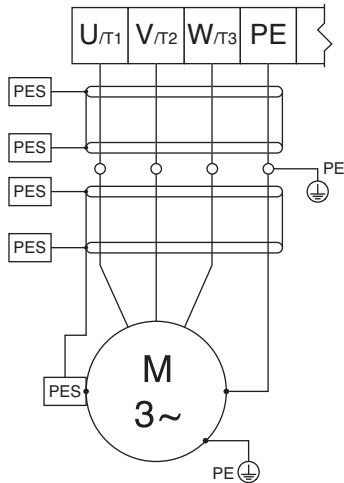


Figure 9 Wire Connections from the Motor to the VFD

Main Power Connections at the VFD

All electrical wiring must be completed by a qualified electrician and comply with all local codes and regulations.				

Connect the power supply wires to the VFD, as follows:

1. Connect the wiring between the motor and VFD, as detailed above.
2. Connect the green ground wire of the power supply to the ground screw. The ground wire from the motor is also connected to this screw.
3. Connect the power supply wires to the power terminals in the VFD box, following all local codes and regulations. See Table 1 and Figs. 10–14, as applicable for your system.
4. Close the VFD electrical box.

Table 1 Main Power Connections at the VFD

VFD Part No.	Used With Pump	Input Voltage	Output Voltage	See Figure No.
16K905	EP2006	120 Vac, 1 phase	240 Vac, 3 phase	Fig. 10
16K905	EP2006	240 Vac, 1 phase	240 Vac, 3 phase	Fig. 11
16K906	EP2006	208–240 Vac, 1 phase	208–240 Vac, 3 phase	Fig. 12
16K906	EP2006	208–240 Vac, 3 phase	208–240 Vac, 3 phase	Fig. 13
16K907	EP2013	120 Vac, 1 phase	240 Vac, 3 phase	Fig. 10
16K907	EP2013	240 Vac, 1 phase	240 Vac, 3 phase	Fig. 11
16K908	EP2013	208–240 Vac, 1 phase	208–240 Vac, 3 phase	Fig. 12
16K908	EP2013	208–240 Vac, 3 phase	208–240 Vac, 3 phase	Fig. 13
16K909	EP3019	120 Vac, 1 phase	240 Vac, 3 phase	Fig. 10
16K909	EP3019	240 Vac, 1 phase	240 Vac, 3 phase	Fig. 11
16K910	EP3019	208–240 Vac, 1 phase	208–240 Vac, 3 phase	Fig. 12
16K910	EP3019	208–240 Vac, 3 phase	208–240 Vac, 3 phase	Fig. 13
16K911	EP4029	208–240 Vac, 1 phase	208–240 Vac, 3 phase	Fig. 12
16K911	EP4029	208–240 Vac, 3 phase	208–240 Vac, 3 phase	Fig. 13
16K912	EP4029	400–480 Vac 3 phase	400–480 Vac 3 phase	Fig. 14

Installation

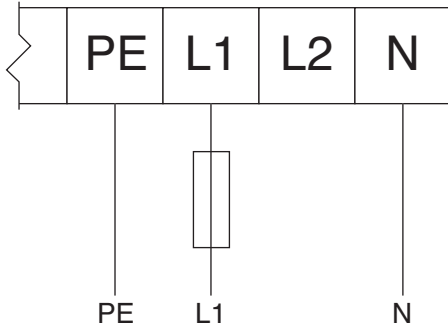


Figure 10 120 Vac 1 Phase Input/240 Vac 3 Phase Output

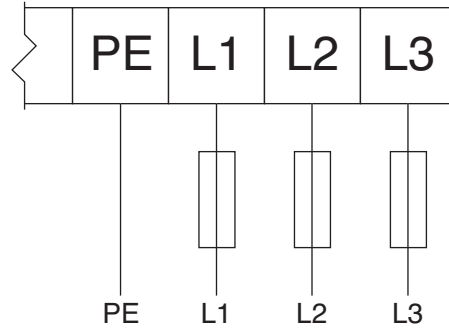


Figure 13 208-240 Vac 3 Phase Input/208-240 Vac 3 Phase Output

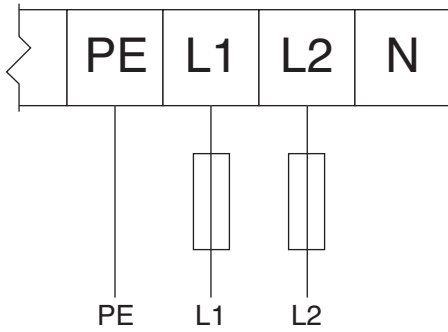


Figure 11 240 Vac 1 Phase Input/240 Vac 3 Phase Output

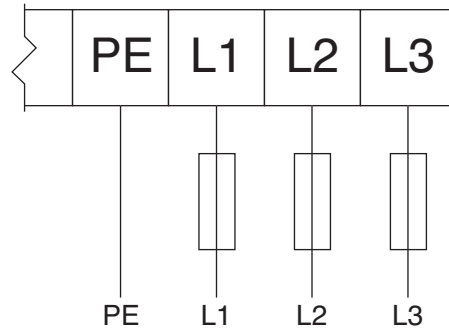


Figure 14 400-480 Vac 3 Phase Input/400-480 Vac 3 Phase Output

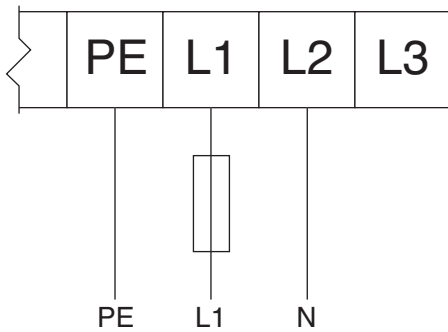


Figure 12 208-240 Vac 1 Phase Input/208-240 Vac 3 Phase Output

Setup the VFD

VFD Control Panel

NOTE: For complete information about the VFD, see the manufacturer's instructions supplied with the VFD.

- The control panel display shows the status of the motor. It also shows the direction of motor rotation: FWD (forward) or REV (reverse).
- The green RUN key starts the motor.
- The red STOP key stops the motor.
- Use the arrow keys to speed up or slow down the motor.
- The blue R/F key changes the motor rotation (see [Reverse Motor Direction, page 17](#)).
- The blue M key accesses the VFD menu. See the manufacturer's instructions for menu descriptions and information.

NOTE: If the M key is pressed, use the arrow keys to scroll through the VFD menu.



Figure 15 VFD Control Panel

Factory Settings

VFD settings are preset at the factory for most applications. Two settings may need to be changed when setting up your EP Hose Pump system:

- If the pump is running in the wrong direction for your installation, see [Reverse Motor Direction, page 17](#).
- To change the speed of the pump, see [Adjust the Speed, page 17](#).

Reverse Motor Direction

NOTE: VFD Parameter P112 controls the direction of motor rotation. The VFD is shipped with the rotation set to forward as a default.

1. Verify which way the roller is moving. See [Fluid Connections, page 9](#).
2. Press the M key to access the VFD menu.
3. Enter the default password **225**, using the up or down arrow keys.

NOTE: If you have already entered the password, the screen will display the previously viewed parameter.
4. Press the M key again. **P100** will display on the screen.
5. Scroll to P112, using the arrow keys.
6. Press the M key again.
7. **00** will display on the screen. Use the arrow keys to set the display to **01**. This allows both forward and reverse rotation.
8. Press the M key to enter the setting. The screen will display STOP or the last frequency setting.

NOTE: To use this feature when operating the pump, press the R/F key, then the M key. The drive will slow and the motor will reverse direction. Press the RUN key and check that the roller is moving in the opposite direction.

Adjust the Speed

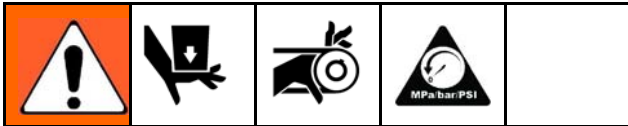
Use the arrow keys on the VFD control panel to increase or decrease the motor speed.

Operation

Flush Pump Before Using

Pumps are tested with lightweight oil which is left in to protect the pump parts. To prevent contamination of the fluid, flush the pump with a compatible solvent before using it. See [Flushing, page 20](#).

Pressure Relief Procedure



1. Shut off the electricity to the pump. Lock out power at the electrical box.
2. Shut off the fluid inlet valve to the pump.
3. Let the fluid in the system drain from the fluid outlet line.

Pre-Start Checklist

Verify each of the following items before starting the pump.

- **DEBRIS:** Ensure that the fluid inlet line and fluid supply are free of dirt, debris, and any contaminants.
- **HOSE MATERIAL:** Check that the hose material is compatible with the fluid being pumped. Consult your Graco distributor for available hose materials.
- **FASTENERS:** Check that all fasteners are properly tightened.
- **LEAKS:** Check the connections on the fluid inlet and outlet and make sure there are no leaks. Check the front cover for signs of leaks from the front cover gasket. Do not over-tighten the front cover.
- **COVERS:** Verify that the front cover and motor fan cover are in place before starting the pump.

Start the Pump

1. Verify that all items in the [Pre-Start Checklist, page 18](#), are completed.
2. Fully open all valves on the fluid inlet and outlet lines. This is a positive displacement pump and will continue to build pressure, even against a closed valve.
3. Disengage the motor lockout at the power supply.
4. Start the motor.
5. Run the pump slowly, gradually increasing pressure until the desired outlet pressure is achieved and the pump and hoses are fully primed.

Running the Pump



Ensure that the hose material and the lubricant are compatible with the pumped fluid. Failure to do so may cause injury or premature hose failure.

NOTICE

Never throttle the pump, whether on the fluid inlet or outlet side. This will cause damage. Do not operate the pump against a closed inlet or outlet valve.

- Run the pump as slowly as possible to achieve the desired results. Measure the fluid inlet and outlet pressure to verify that the pump is operating at the designed pressure point.
- **Do not** operate the pump motor above the full load amperage stamped on the motor nameplate. The pump can be operated at low motor amperage.
- Keep the pump fluid inlet and outlet open and free of obstructions.

Dry Running

The pump can run dry without damaging the pump. However, pumped fluid normally provides a cooling effect to both the hose and the hose lube. Continuous dry running may reduce hose life.

Operating in Low Temperatures

NOTICE

Never operate the pump if the fluid inside the hose is frozen. This will cause serious damage to the pump.

If operating the pump at low temperatures, ensure that the fluid being pumped does not freeze inside the hose, especially during long periods of idleness. Do not start the pump if the fluid inside the hose is frozen. Ensure that the inlet line, the outlet line, and the pump housing are heat-taped and insulated so freezing does not occur.

Shutdown

Use the following procedure to stop the pump.





1. Flush the fluid lines and pump to remove solids that may accumulate in the line or hose. See [Flushing, page 20](#).
2. Shut off the motor.
3. Isolate any flushing fluid connections.
4. Close the fluid inlet valve.
5. If the pump will be out of service for more than 30 days, see [Storage, page 19](#).

Storage

Follow this procedure to store the pump for more than 30 days.

1. Remove the front cover drain plug to drain all lubricant from the pump. Once the pump is drained of lubricant, add a desiccant pack to prevent moisture accumulation. Leave the drain plug out until restoring the pump to service, to prevent water from accumulating in the pump.
2. Remove the hose from the pump. See the Pump Repair-Parts Manual.
3. Grease the bearings as needed.
4. Inspect the pump and re-crate it. Store the pump in a clean, dry area that is free from extremes in temperature.

Maintenance

				
<p>Maintenance and repair of the pump involves potentially hazardous procedures. Only trained and qualified personnel who have read and who understand the instructions in this manual should maintain or repair this equipment.</p>				

Preventive Maintenance Schedule

Check the following items at the intervals listed below, following all of the safety warnings in this manual.

Every Three Months

Check gauges on pump inlet and outlet and pump operating speed to confirm operating point.

Every Six Months

- Check bearing temperature and compare with earlier readings.
- Run an amperage reading to verify that the motor is running normally.
- Inspect the fan guard and remove any accumulated debris from under it and around the motor.
- Tighten any fasteners that may be loose.
- Lubricate the motor. See the motor manufacturer's instructions.
- Lubricate the pump. See [Pump Bearing Lubrication, page 20](#), and [Hose Lubrication, page 20](#).

Flushing

- Flush before changing fluids, before fluid can dry in the equipment, at the end of the day, before storing, and before repairing equipment.
- Flush at the lowest pressure possible. Check connectors for leaks and tighten as necessary.
- Flush with a fluid that is compatible with the fluid being dispensed and the equipment wetted parts.

Pump Bearing Lubrication

Grease-lubricated pump bearings require an **NLGI Number 2 grease such as Shell Dolium R or equivalent**. Grease the bearings every 24 months, depending on duty cycle and ambient conditions.

1. Remove the plug (18) from the pump housing and replace it with a zerk fitting.
2. Use a low pressure grease gun to pump grease into the zerk fitting. Add grease until it passes through the outer bearing of the shaft.
3. Remove the zerk fitting and reinstall the plug (18).

Inspect the pump and re-grease the bearings if you suspect that the original grease was contaminated by a grease seal failure.

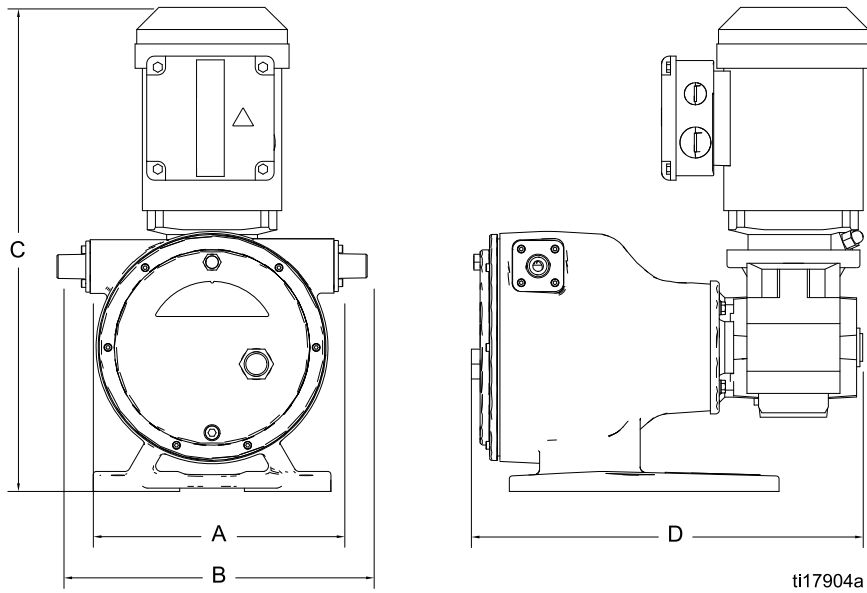
Hose Lubrication

The pump requires lubrication of the hose. The lubrication provides longer hose life by increasing cooling and reducing friction between the roller and the hose. The use of non-standard lubricant can impact your hose life; always use genuine Graco hose lube.

Fill your pump to the level indicated in [Lubricate the Pump, page 10](#).

Dimensions

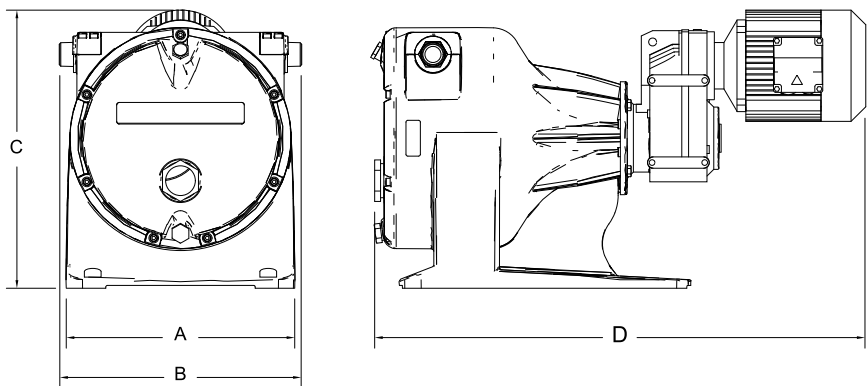
EP2 Hose Pumps



ti17904a

Model	A, mm (in.)	B, mm (in.)	C, mm (in.)	D, mm (in.)
EP2	228 (8.98)	280 (11.02)	437 (17.20)	339 (13.35)

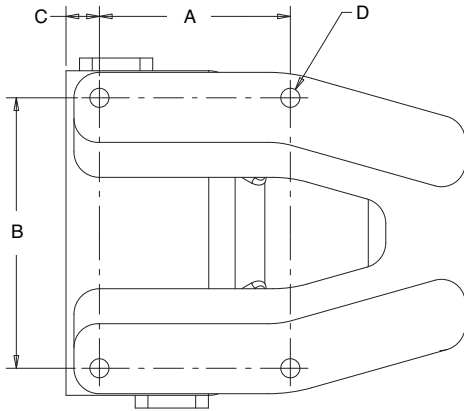
EP3 and EP4 Hose Pumps



Pump Model	A, mm (in.)	B, mm (in.)	C, mm (in.)	D, mm (in.)
EP3	300 (11.81)	344 (13.52)	423 (16.65)	696 (27.39)
EP4	404 (15.91)	428 (16.86)	492 (19.35)	868 (34.15)

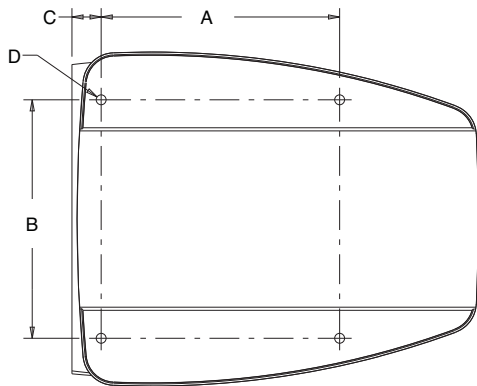
Mounting Hole Layouts

EP2 Hose Pumps



Pump Model	A	B	C	D
EP2	120 mm (4.7 in.)	170 mm (6.7 in.)	21 mm (0.83 in.)	Four 12 mm (0.47 in.) diameter mounting holes

EP3 and EP4 Hose Pumps



Pump Model	A	B	C	D
EP3	229 mm (9 in.)	229 mm (9 in.)	28 mm (1.1 in.)	Four 9.5 mm (0.37 in.) diameter mounting holes
EP4	310 mm (12.2 in.)	310 mm (12.2 in.)	42 mm (1.65 in.)	Four 9.5 mm (0.37 in.) diameter mounting holes

Technical Data

EP2 Pumps		
	U.S.	Metric
Maximum Fluid Working Pressure	125 psi	0.9 MPa, 9 bar
Motor Horsepower/Gear Ratio	See the EP2 Pump Repair-Parts manual for the motor/gear ratio used on your pump: 0.5/51.30 0.75/35.10 0.33/157.43	
Maximum Pump Speed	6 mm: 35 RPM; 13 mm: 50 RPM	
Maximum Environmental Temperature	122°F	50°C
Minimum Environmental Temperature	14°F	-10°C
Maximum Flow		
EP2006 Pump	0.14 gpm	0.5 lpm
EP2013 Pump	0.80 gpm	3.0 lpm
Fluid Capacity per Revolution		
EP2006 Pump	0.004 gal.	0.015 liters
EP2013 Pump	0.016 gal.	0.06 liters
Hose Inner Diameter		
EP2006 Pump	6 mm	
EP2013 Pump	13 mm	
Noise		
Sound Pressure	Less than 80 dB(A)	
Dimensions		
Height	17.20 in.	437 mm
Width with hose installed	11.02 in.	280 mm
Width without hose installed	8.98 in.	228 mm
Length	13.35 in.	339 mm
Weight	51.7 lb	23.5 kg
Fluid Inlet and Outlet Size	1/2 npt(m)	
Wetted Parts		
Pump	Powder coated aluminum.	
Hose	See the Parts Matrix in the EP2 Pump Repair-Parts manual.	
Barbed Fitting	Stainless steel or Hastelloy. See the Parts Matrix in the EP2 Pump Repair-Parts manual.	

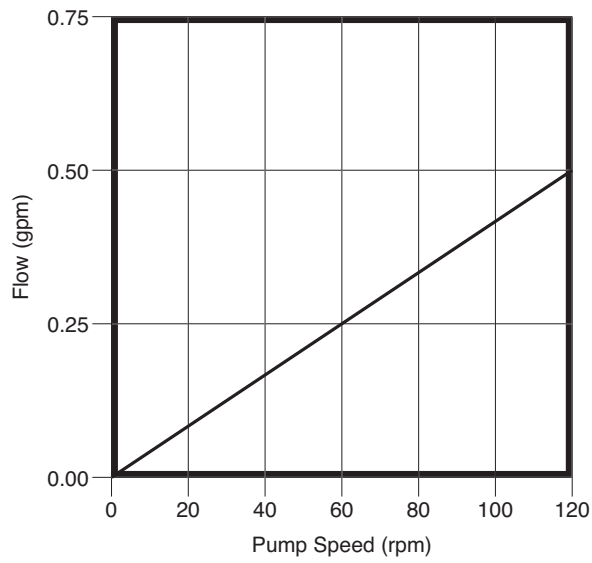
Technical Data

EP3 Pumps		
	U.S.	Metric
Maximum Fluid Working Pressure	125 psi	0.9 MPa, 9 bar
Motor Horsepower/Gear Ratio	See the EP3 Pump Repair-Parts manual for the motor/gear ratio used on your pump: 1.5/35.91 1.0/100.36	
Maximum Pump Speed	50 RPM	
Maximum Environmental Temperature	122°F	50°C
Minimum Environmental Temperature	14°F	-10°C
Maximum Flow		
EP3019 Pump	2.4 gpm	9.1 lpm
Fluid Capacity per Revolution		
EP3019 Pump	0.048 gal.	0.18 liters
Hose Inner Diameter		
EP3019 Pump	19 mm	
Noise		
Sound Pressure	Less than 80 dB(A)	
Dimensions		
Height	16.65 in.	423 mm
Width with hose installed	13.52 in.	344 mm
Width without hose installed	11.81 in.	300 mm
Length	27.39 in.	696 mm
Weight	142.7 lb	64.9 kg
Fluid Inlet and Outlet Size	3/4 npt(m)	
Wetted Parts		
Pump	Powder coated aluminum.	
Hose	See the Parts Matrix in the EP3 Pump Repair-Parts manual.	
Barbed Fitting	Stainless steel or Hastelloy. See the Parts Matrix in the EP3 Pump Repair-Parts manual.	

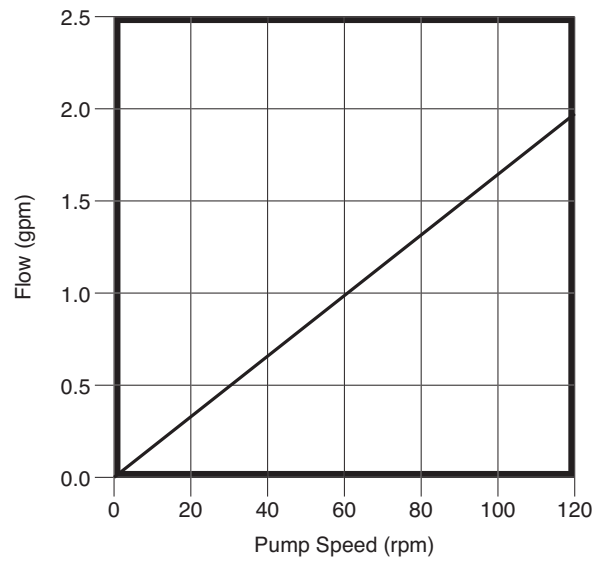
EP4 Pumps		
	U.S.	Metric
Maximum Fluid Working Pressure	125 psi	0.9 MPa, 9 bar
Motor Horsepower/Gear Ratio	See the EP4 Pump Repair-Parts manual for the motor/gear ratio used on your pump: 2.0/19.70 2.0/34.29 2.0/79.72	
Maximum Pump Speed	130 RPM	
Maximum Environmental Temperature	122°F	50°C
Minimum Environmental Temperature	14°F	-10°C
Maximum Flow		
EP4029 Pump	19.5 gpm	73.8 lpm
Fluid Capacity per Revolution		
EP4029 Pump	0.15 gal.	0.56 liters
Hose Inner Diameter		
EP4029 Pump	29 mm	
Noise		
Sound Pressure	Less than 80 dB(A)	
Dimensions		
Height	19.35 in.	492 mm
Width with hose installed	16.86 in.	428 mm
Width without hose installed	15.91 in.	404 mm
Length	34.15 in.	868 mm
Weight	252 lb	114.5 kg
Fluid Inlet and Outlet Size	1-1/4 npt(m)	
Wetted Parts		
Pump	Powder coated aluminum.	
Hose	See the Parts Matrix in the EP4 Pump Repair-Parts manual.	
Barbed Fitting	Stainless steel or Hastelloy. See the Parts Matrix in the EP4 Pump Repair-Parts manual.	

Performance Data

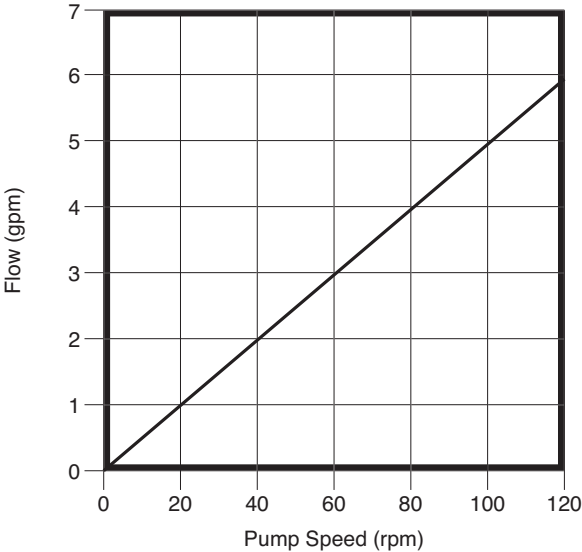
EP2006 Hose Pump



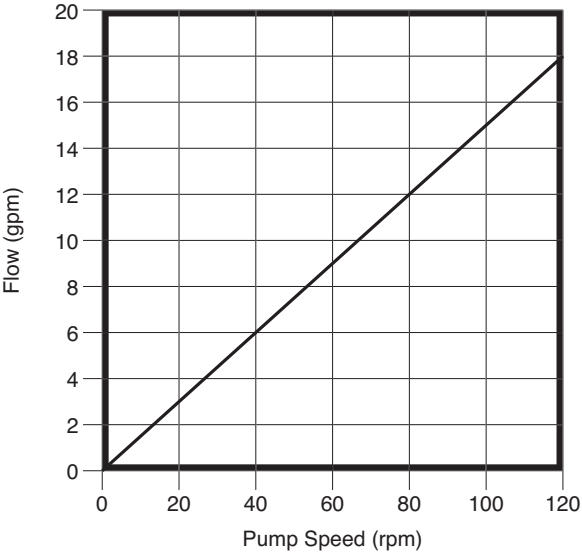
EP2013 Hose Pump



EP3019 Hose Pump



EP4029 Hose Pump



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Graco warrants all equipment referenced in this document which is manufactured by Graco and bearing its name to be free from defects in material and workmanship on the date of sale to the original purchaser for use. With the exception of any special, extended, or limited warranty published by Graco, Graco will, for a period of twelve months from the date of sale, repair or replace any part of the equipment determined by Graco to be defective. This warranty applies only when the equipment is installed, operated and maintained in accordance with Graco's written recommendations.

This warranty does not cover, and Graco shall not be liable for general wear and tear, or any malfunction, damage or wear caused by faulty installation, misapplication, abrasion, corrosion, inadequate or improper maintenance, negligence, accident, tampering, or substitution of non-Graco component parts. Nor shall Graco be liable for malfunction, damage or wear caused by the incompatibility of Graco equipment with structures, accessories, equipment or materials not supplied by Graco, or the improper design, manufacture, installation, operation or maintenance of structures, accessories, equipment or materials not supplied by Graco.

This warranty is conditioned upon the prepaid return of the equipment claimed to be defective to an authorized Graco distributor for verification of the claimed defect. If the claimed defect is verified, Graco will repair or replace free of charge any defective parts. The equipment will be returned to the original purchaser transportation prepaid. If inspection of the equipment does not disclose any defect in material or workmanship, repairs will be made at a reasonable charge, which charges may include the costs of parts, labor, and transportation.

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Phone: 612-623-6921 or **Toll Free:** 1-800-328-0211 **Fax:** 612-378-3505

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Graco Headquarters: Minneapolis
International Offices: Belgium, China, Japan, Korea

GRACO INC. AND SUBSIDIARIES • P.O. BOX 1441 • MINNEAPOLIS, MN 55440-1441 • USA

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