



POWERFUL SOLUTIONS. GLOBAL FORCE.

Instruction Sheet

1/2 HP Portable Electric Pumps

L2062 Rev. F 02/12

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1.0 IMPORTANT RECEIVING INSTRUCTIONS

Visually inspect all components for shipping damage. Shipping damage is **not** covered by warranty. If shipping damage is found, notify carrier at once. The carrier is responsible for all repair and replacement costs resulting from damage in shipment.

SAFETY FIRST

2.0 SAFETY ISSUES



Read all instructions, warnings and cautions carefully. Follow all safety precautions to avoid personal injury or property damage during system operation.

Enerpac cannot be responsible for damage or injury resulting from unsafe product use, lack of maintenance or incorrect product and/or system operation. Contact Enerpac when in doubt as to the safety precautions and operations. If you have never been trained on high-pressure hydraulic safety, consult your distribution or service center for a free Enerpac Hydraulic safety course.

Failure to comply with the following cautions and warnings could cause equipment damage and personal injury.

A **CAUTION** is used to indicate correct operating or maintenance procedures and practices to prevent damage to, or destruction of equipment or other property.

A **WARNING** indicates a potential danger that requires correct procedures or practices to avoid personal injury.

A **DANGER** is only used when your action or lack of action may cause serious injury or even death.



WARNING: Wear proper personal protective gear when operating hydraulic equipment.



WARNING: Stay clear of loads supported by hydraulics.

A cylinder, when used as a load lifting device, should never be used as a load holding device. After the load has been raised or lowered, it must always be blocked mechanically.



WARNING: USE ONLY RIGID PIECES TO HOLD LOADS. Carefully select steel or wood blocks that are capable of supporting the load. Never use a hydraulic cylinder as a shim or spacer in any lifting or pressing application.



DANGER: To avoid personal injury keep hands and feet away from cylinder and workpiece during operation.



WARNING: Do not exceed equipment ratings. Never attempt to lift a load weighing more than the capacity of the cylinder. Overloading causes equipment failure and possible personal injury. The cylinders are designed for a max. pressure of 700 bar [10,000 psi]. Do not connect a jack or cylinder to a pump with a higher pressure rating.



Never set the relief valve to a higher pressure than the maximum rated pressure of the pump. Higher settings may result in equipment damage and/or personal injury.



WARNING: The system operating pressure must not exceed the pressure rating of the lowest rated component in the system. Install pressure gauges in the system to monitor operating pressure. It is your window to what is happening in the system.



CAUTION: Avoid damaging hydraulic hose. Avoid sharp bends and kinks when routing hydraulic hoses. Using a bent or kinked hose will cause severe back-pressure. Sharp bends and kinks will internally damage the hose leading to premature hose failure.



Do not drop heavy objects on hose. A sharp impact may cause internal damage to hose wire strands. Applying pressure to a damaged hose may cause it to rupture.



IMPORTANT: Do not lift hydraulic equipment by the hoses or swivel couplers. Use the carrying handle or other means of safe transport.



CAUTION: Keep hydraulic equipment away from flames and heat. Excessive heat will soften packings and seals, resulting in fluid leaks. Heat also weakens hose materials and packings. For optimum performance do not expose equipment to temperatures of 65°C [150°F] or higher. Protect hoses and cylinders from weld spatter.



DANGER: Do not handle pressurized hoses. Escaping oil under pressure can penetrate the skin, causing serious injury. If oil is injected under the skin, see a doctor immediately.



WARNING: Only use hydraulic cylinders in a coupled system. Never use a cylinder with unconnected couplers. If the cylinder becomes extremely overloaded, components can fail catastrophically causing severe personal injury.



WARNING: BE SURE SETUP IS STABLE BEFORE LIFTING LOAD. Cylinders should be placed on a flat surface that can support the load. Where applicable, use a cylinder base for added stability. Do not weld or otherwise modify the cylinder to attach a base or other support.



Avoid situations where loads are not directly centered on the cylinder plunger. Off-center loads produce considerable strain on cylinders and plungers. In addition, the load may slip or fall, causing potentially dangerous results.



Distribute the load evenly across the entire saddle surface. Always use a saddle to protect the plunger.



IMPORTANT: Hydraulic equipment must only be serviced by a qualified hydraulic technician. For repair service, contact the Authorized ENERPAC Service Center in your area. To protect your warranty, use only ENERPAC oil.



WARNING: Immediately replace worn or damaged parts by genuine ENERPAC parts. Standard grade parts will break causing personal injury and property damage. ENERPAC parts are designed to fit properly and withstand high loads.



CAUTION: Check specifications and motor plate data. Use of an incorrect power source will damage the motor.

3.0 Specifications

	“B” Models	“E” Models
Operating Pressure	0-10,000 psi [700 bar] {70 mPa}	
Electric Power Source	15 Amp 120 V. grounded 1Ph. 50/60 Hz	10 Amp 220 V. 1Ph. 50/60 Hz
Motor Rating	Motor Rating 1/2 HP Universal, 9 Amps at 10,000 psi [700 bar] & 12,000 RPM operates at 60-125 Volts 85-89 dBA	.37 kW Universal, 4 Amps at 10,000 psi [700 bar] {70 mPa} & 12,000 RPM 85-89 dBA
Flow Rate	200 in. ³ /min. [3,3 l/min] at 0-200 psi [0-14 bar] {0-1,4 mPa} 20 in. ³ /min. [0,33 l/min] at 10,000 psi [700 bar] {70 mPa}	
Max. Operating Temperature	150°F [65°C]	

Model No.	Used with Cylinder	Valve Type	Usable Oil Capacity	Weight
PUD-1100B/E	Single-Acting	Dump Valve	122 in. ³	31 lbs.
PUD-1101B/E			231 in. ³	43 lbs.
PUD-1300B/E	Single-Acting	Dump/Hold	122 in. ³	31 lbs.
PUD-1301B/E			122 in. ³	43 lbs.
PUJ-1200B/E	Single-Acting	3-Way, 2-Position	122 in. ³	27 lbs.
PUJ-1201B/E			231 in. ³	39 lbs.
PUJ-1400B/E	Double-Acting	4-Way, 3-Position	122 in. ³	32 lbs.
PUJ-1401B/E			231 in. ³	44 lbs.

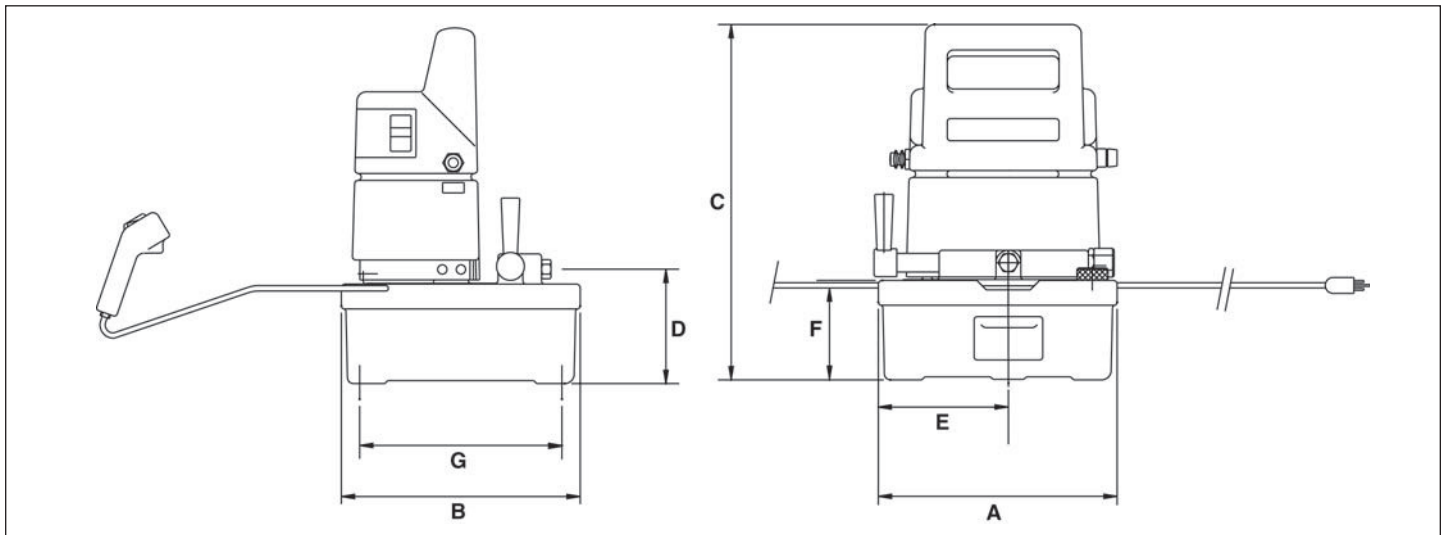


Figure 1

Dimensions in. [cm]								
Models	A	B	C	D	E	F	G	H
PUD-1100B/E, PUD-1300B/E, PUJ-1200B/E, PUJ-1400B/E	9.62 [24,43]	9.62 [24,43]	14.25 [36,20]	4.72 [11,99]	5.25 [13,34]	4.00 [10,16]	8.12 [20,62]	.75 [1,90]
PUD-1101B/E, PUD-1301B/E, PUJ-1201B/E, PUJ-1401B/E	12.18 [30,94]	14.50 [36,83]	14.72 [36,83]	5.12 [13,00]	5.62 [14,27]	4.15 [10,54]	12.77 [32,43]	0.62 [1,57]

The "D" dimension on the PUJ-1400B/E is 6.18 in. [15,7 cm]; on the PUJ-1401B/E, it is 6.58 in. [16,7 cm].

4.0 INSTALLATION

4.1 Hydraulic Connections

Use 1-1/2 wraps of teflon tape (or suitable thread sealant) on all threads, leaving the first complete thread free of tape to ensure that the tape does not shed into the hydraulic system, causing damage. Trim loose ends.



WARNING: To ensure proper operation, avoid kinking or tightly bending hoses. If a hose becomes kinked or otherwise damaged, it must be replaced. Damaged hoses may rupture at high pressure, causing personal injury.

PUJ-1200B/E, PUJ-1201B/E Models (Figure 2)

1. Remove the shipping plug from the 1/4"-18 NPTF gauge port (A) on top of the control valve.
2. Install a 0-15,000 psi (1035 bar) pressure gauge into the gauge port (A).
3. If required, thread hydraulic hose in the 3/8"-18 NPTF valve outlet port (B).
4. Connect a return line by threading a hose into the return to tank port (C).

PUJ-1400B/E, PUJ-1401B/E Models (Figure 3)

1. Remove the shipping plug from the valve advance port (D). Install a gauge adaptor into the 3/8"-18 NPTF advance port (D).
2. Install a 15,000 psi (1035 bar) pressure gauge in the gauge adaptor top port.
3. Install a hydraulic hose into the gauge output adaptor end port (3/8"-18 NPTF). Connect the hose half coupler to the cylinder advance half coupler. Firmly hand tighten the coupler collar. DO NOT use tools to tighten the coupler halves.

4. If using double-acting circuit install hose into the retract port (E) on the control valve. Connect the hose half coupler to the cylinder retract half coupler.

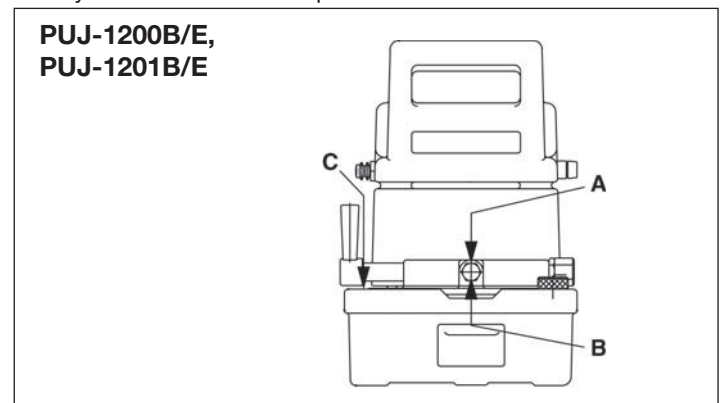


Figure 2

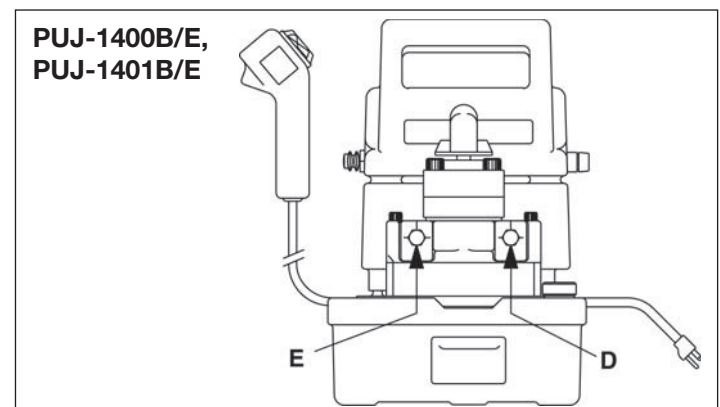


Figure 3

PUD1100B/E, PUD-1101B/E, PUD1300B/E and PUD1301B/E Models

1. The pump-to-cylinder hose attaches directly to the output port (A) of the control valve (see Figure 4).
2. If a gauge is desired to monitor system pressure, a gauge adaptor must be installed into the valve outlet port (A). Install a 0-10,000 psi (700 Bar) pressure gauge into the gauge port of the gauge adaptor.

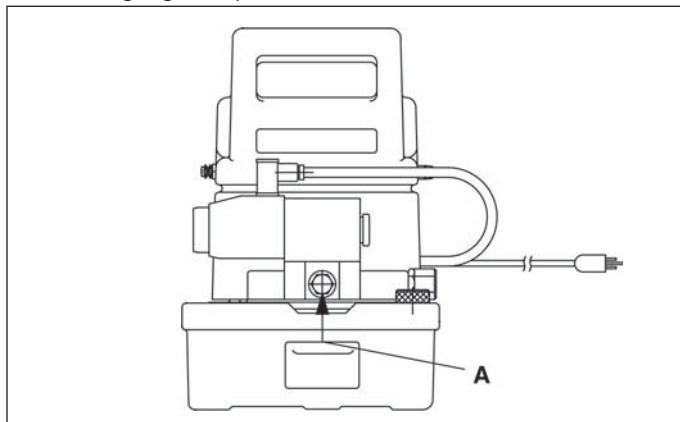


Figure 4

4.2 Valve Mounting (Figure 5)

1. Remove the plate (No. 1, D43918098).
2. Verify that the connector (2) is installed in the pump. If it is not, install the connector, taking care to avoid shearing the seals.

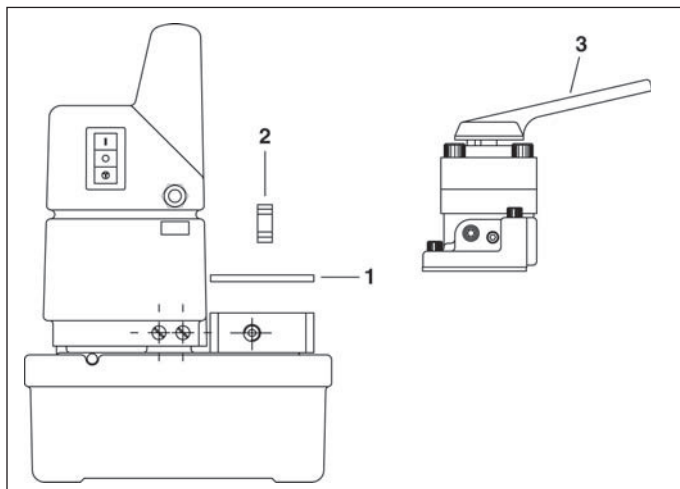


Figure 5

3. Mount the valve (3), taking care to avoid shearing the seals.

4.3 Adding Oil (Figure 6)

Check the oil level by unscrewing and removing the vent/fill plug (F). Add Enerpac hydraulic oil until the oil level is 1/2 inch (1 cm) below the vent/fill opening.

IMPORTANT: Add oil only when all system components are fully retracted, or the system will contain more oil than the reservoir can hold.

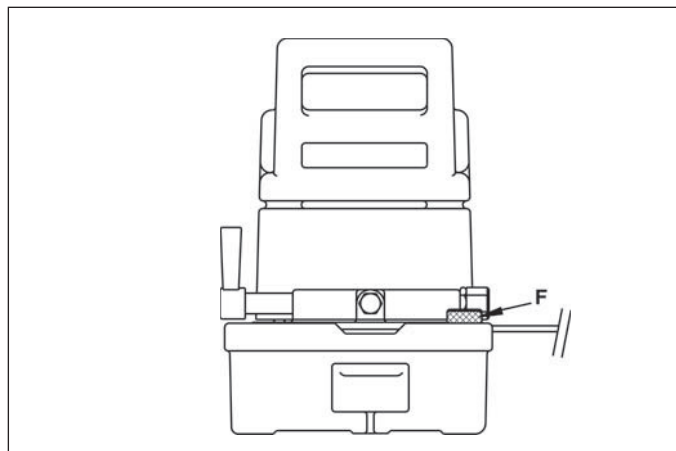


Figure 6

5.0 OPERATION

NOTE: To avoid power losses between the electrical outlet and pump motor, use the shortest possible extension cord. The pump motor will function at low voltage, but motor speed and oil flow will be reduced.

1. Check all system fittings and connections to be sure they are tight and leak free.
2. Check the fluid level and add fluid, if necessary.
3. Open the pump vent plug (F) located on the front right corner of the reservoir by turning it 1 or 2 complete turns.



CAUTION: The vent plug must be open whenever the pump is running.

5.1 Switch Operation (Figure 7)

The “B” version requires a 15 amp, 120 V. grounded 1 Ph. circuit. The “E” version requires 220 V. 1 Ph. The pump power cord is 5 ft. (1 1/2 meters) long.

1. The pump switch is located on the side of the shroud. It is a three position switch, top detent is “ON”, middle is “OFF”, bottom is momentary on “MOM”. Pressing the top “ON” position activates the electrical circuit, but does not turn the pump motor on. The pump motor is activated by the pendant switch (G).
2. Pressing the lower portion of the switch will activate the pump motor as long as the switch is held down. Releasing the switch stops the pump. This momentary position is used as an alternate to the pendant control.

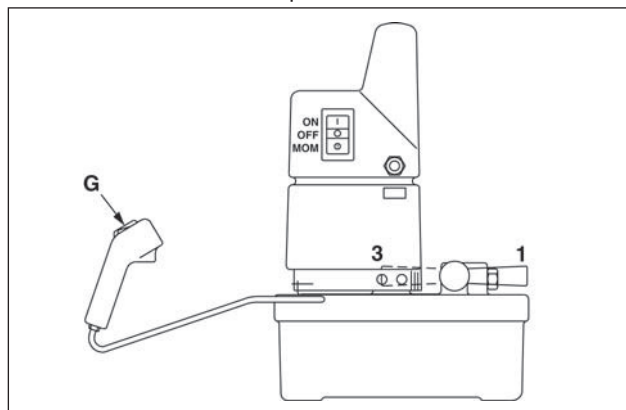


Figure 7

5.2 Pump Control Valve PUJ-1200B/E and PUJ-1201B/E models

The pump control valve directs hydraulic fluid output or return from the hydraulic system components. These models have 3 way, 2 position valves. Valve positions are shown in Figure 8: (1)-Advance; (3)-Retract. To advance the cylinder, shift the valve to the advance position (1) and press the pendant switch.

The cylinder will advance until the pendant switch is released.

To retract the cylinder, shift the valve to the retract position (3).

The cylinder will retract with or without the pump running.

PUJ 1400B/E and PUJ-1401B/E Models (Figure 8)

Control valves on PUJ-1400B/E and PUJ-1401B/E pumps are 4-way, 3-position, for use with double acting cylinders where advance and retract are hydraulically actuated. Valve positions are shown in Figure 8: 1-Advance; 2- Retract; 3- Neutral. In each position the cylinder movement is controlled by the pendant switch.

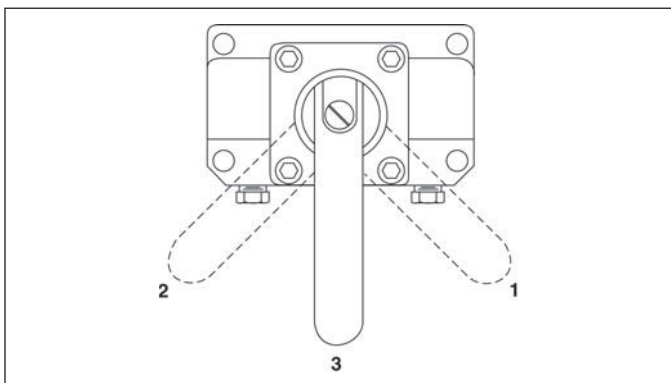


Figure 8

PUD-1100B/E and PUD-1101B/E Models

The PUD-1100B/E and PUD-1101B/E operate single-acting cylinders where the hold function is not necessary. Pressing the pendant switch starts the motor and advances the cylinder. When the switch is released, the cylinder will retract.

PUD1300B/E and PUD1301B/E models

The PUD1300B/E and PUD1301B/E operate single-acting cylinders where the hold function is required. Press the advance button to start the pump and advance the cylinder.

Releasing the advance button will stop the pump and the cylinder will hold the load with the valve. Pressing the retract button will shift the valve, allowing the load to retract.

NOTE: Because the time for the motor to stop can vary, depending on load conditions, the load may not stop advancing at the exact time the advance button is released. There may be a small movement of the cylinder while the motor is stopping.

5.3 Thermal Switch (All models)

To protect the pump from damage, an internal thermal switch shuts off the motor when the oil temperature reaches 150°F (65°C). When the temperature drops to 130°F (54°C) the switch will automatically reset.

5.4 Air Removal

When the hydraulic system is connected for the first time, air will be trapped in the components. To ensure smooth, safe operation, remove the air by running the system through several complete cycles without a load on the cylinders. When cylinders advance and retract without hesitation, the air is vented from the system.



WARNING: To avoid injury and equipment damage, do not continue pressurizing cylinders after they reach maximum travel or maximum operating pressure.

6.0 RELIEF VALVE ADJUSTMENT (Figure 9)

The main pump relief valve is internal and non-adjustable, factory set for 10,000 psi (700 bar) maximum operating pressure. An additional external relief valve is located under a hex cap on the right side of the pump. The external relief valve is adjustable from 10,000 psi (700 bar) down to 2000 psi (140 bar). Operating pressure limits can be reduced below 10,000 psi (700 bar), but not above 10,000 psi (700 bar). (PUJ-1400B/E and PUJ-1401B/E models are not equipped with external adjustable relief valves.)

1. Install a gauge as directed in the installation instructions on page 3.
2. Install a plug in the valve outlet port.
3. Remove the hex cap (H) covering the relief valve adjustment screw.
4. Using an allen wrench, turn the adjustment screw counterclockwise one full turn.
5. Turn the pump "ON" and run the pump motor, watching the gauge reading for the maximum pressure. Stop the pump.
6. Continue to adjust the setting until the desired pressure is attained.
7. Check the setting by running the pump several times. If the gauge reading is the same each time, the valve setting is stable.
8. Replace the hex cap to cover the adjusting screw.

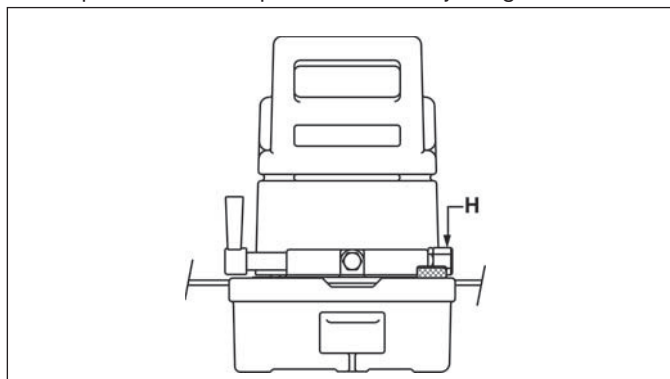


Figure 9

NOTE: To get the most accurate relief valve setting, start at a lower pressure and adjust up to the desired relief valve setting.



WARNING To avoid equipment damage and personal injury, do not attempt to exceed 10,000 psi (700 bar) maximum operating pressure.

7.0 MAINTENANCE

7.1 Checking the Oil Level

Check reservoir hydraulic oil level every 40 hours of operation. Add oil when necessary to bring the level to 1/2" (1 cm) below the fill opening. Use only Enerpac hydraulic oil. The use of other oils or fluids may damage your system, and will void your Enerpac warranty.

7.2 Changing the Oil (Figure 10)

Completely drain the reservoir after every 100 hours of operation. Refill with new hydraulic oil. If pump is operated in very dusty areas or at high temperatures, drain and refill more frequently.

1. To drain the reservoir, remove the vent/fill plug (F) from the top right hand corner of the reservoir.

2. Tip the pump until all old oil is drained.
3. Refill with new oil through the same opening. Reservoir capacity is .75 gal. (2,8 l) or 1.5 gal. (5,7 l) depending on model.
4. Replace fill plug **(F)**.

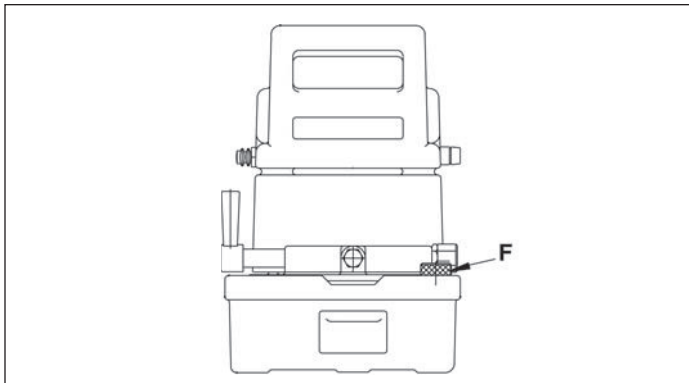


Figure 10

7.3 Cleaning the Reservoir

The pump reservoir can be removed for cleaning. If the pump is constantly used in an extremely dusty environment, the reservoir should be cleaned once a year.

1. Drain the reservoir as described in steps 1 and 2 in “Changing the Oil”.
2. Remove the six screws securing the shroud to the reservoir. Lift the shroud off the reservoir. A foam cushion wraps around the motor to keep electrical wires away from the motor. Use caution to avoid damaging or pulling wire connections off the terminals.
3. Remove the eight screws holding the pump to the reservoir. Lift the pump off the reservoir and remove the gasket.
4. Thoroughly clean the reservoir with a suitable solvent.
5. Re-assemble the pump and reservoir, installing a new gasket. Position the shroud over the motor with the shroud handle facing the valve side of the pump. Install the six mounting screws and internal/external lock washers.

If the pump requires repair work, contact a local Authorized Enerpac Service Center.

7.4 Motor Brushes

Check the electric motor brushes at least once every two years. For pumps in heavy usage applications, check the brushes at least once every six months.



DANGER: To avoid possible electrocution, pump must be completely disconnected from electrical power before brush servicing is attempted.

8.0 TROUBLESHOOTING (See Chart)

The Troubleshooting Chart is intended as a guide to help you diagnose and correct various possible pump problems.

Only qualified hydraulic technicians should troubleshoot and service the pump. For repair service, contact the Enerpac Authorized Service Center in your area.

8.1 Circuit Breaker (Pumps with Date Code “F” and Later)

In the event of an electrical overload, the pump circuit breaker will trip. After investigating and correcting the source of the overload, push the circuit breaker button to reset.

8.2 Fuses (Pumps With Date Code “F” and Later)

Internal fuses protect the primary and secondary circuits of the control transformer. If a fuse blows, investigate and correct the source of the failure. Then, replace the blown fuse with a new fuse of the correct rating. For fuse ratings, refer to the Repair Parts Sheet for your pump model.



WARNING: Always disconnect electrical power before replacing fuses.

Note: Fuses are **not** used on the following pumps:

- Pumps manufactured before Date Code “F”.
- Models not equipped with pendant (all date codes).

9.0 TEST STANDARDS

9.1 Canadian Standards Association (CSA)

Where specified, pump assemblies meet the design assembly and test requirements of CSA, the Canadian Standards Association (Refer to CAN/CSA — C22.2 No. 68-92, Motor operated appliances).

9.2 Conformité Européene (CE)

Where specified, an EC Declaration of Conformity and CE marking of product is provided. These products conform to European Standards EN982:1996, EN1050:1998 and EN-ISO-12100-1&2:2003, and to EC Directives 2006/42/EC, 97/23/EC, 2004/108/EC, 2006/95/EC and 97/23/EC.

TROUBLESHOOTING CHART

Problem	Possible Cause	Solution
Pump will not start.	No power. Wrong voltage.	Check electrical power source. Check voltage specifications on page 2.
Cylinder will not advance or retract.	Fluid level low. Intake screen clogged. Valve in wrong position. Valve failure.	Fill reservoir to proper level. Clean or replace intake screen. Shift valve to the pressure position. Have pump repaired by a qualified hydraulic technician.
Cylinder advances and retracts erratically.	Air in the system. External leak in system. Internal hydraulic leak.	Remove air from the system by opening and closing the tool until operation is smooth. Tighten leaky connections. Replace any damaged hoses and fittings. Have pump repaired by a qualified hydraulic technician.
Pump fails to maintain pressure.	External hydraulic leak. Internal hydraulic leak.	Tighten leaky connections. Replace any damaged hoses or fittings. Have pump repaired by a qualified hydraulic technician.
Low fluid output.	Fluid level low. Pump component parts are leaking. By-pass valve malfunction. Fluid intake screens on piston blocks may be clogged with debris.	Fill reservoir to the proper level. Test to isolate leaks. Have pump repaired by a qualified hydraulic technician. Inspect intake screens. Flush all components of contamination. Replace any damaged components.