

L-880 Rev. O 01/99

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. 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.



WARNING: Have only qualified personnel check motor nameplate against power availability to prevent motor burnout or dangerous electrical overloading.



WARNING: Keep electric extension cord length to a minimum and sizes to electric code. Do not use standard electrical equipment in an explosive atmosphere. Use grounded receptacle.



WARNING: Adhere to all applicable local and national electrical codes.



WARNING: Check hydraulic oil level in reservoir to prevent pump failure.



WARNING: Start pump with directional valve in neutral position to prevent accidental lifting or moving of load.



WARNING: Do not exceed capacity of equipment attached to pump. Use a gauge in line and do not exceed pressure rating of lowest capacity pressurized component in the system.

3.0 UPON RECEIPT OF PUMP...

1. Remove oil fill plug.
2. Reservoir oil level should be checked (with all cylinders retracted).
3. If necessary, add ENERPAC hydraulic oil.



CAUTION: The use of other fluids may cause extensive damage to the pump. Such damage is not covered by the ENERPAC warranty.

4. Replace oil fill plug.



WARNING: Pump overload protection is factory set. Adjustment by other than qualified personnel may cause malfunction and/or damage to component parts of the system.

NOTE: Maximum Hydraulic Pressure generated by this unit is 10,000 psi.

4.0 ELECTRICAL HOOKUP

A. Hushh-Pups (PEM/PER 20 Series Models)

Plug in unit, use 115 volt AC grounded power source. (Unit comes wired for 115 volt operation.) See pump nameplate for pertinent electrical requirements. (Motor rotation must be counterclockwise looking down at shroud.) Motor is wired this way at the factory.



Figure 1, Pump Nameplate

B. Hushh-Pumps (PER/PEM/PED 30 Series, 40 Series and 50 Series Models)

1. Check motor voltage on motor nameplate (located on side of motor housing). When shipped from factory, single phase, 110/220 volt, 60 cycle motors are wired for 110 volts. Three phase, 208/220/440 volt, 60 cycle motors have accessible motor leads under shroud. Motor rotation must be clockwise.
2. Plug cord into proper electrical outlet or provide wiring as required. To rewire single phase motors for 200 volts or three phase motors for 440 volts, see diagram on motor nameplate, or under motor cover. Have only qualified electrical personnel complete the necessary wiring.

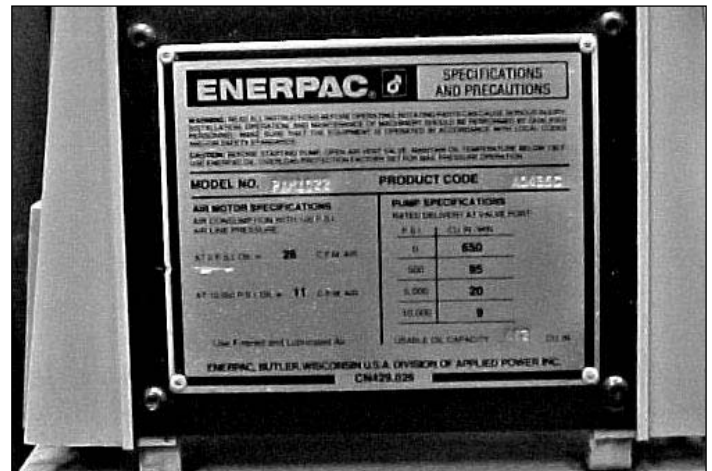


Figure 2, Pump Nameplate

4.0 INSTALLING GAUGE

1. Screw the gauge adapter into the valve port (3/8" NPT). (See Figure 3.)

Note: A shut-off valve is recommended when installing a hydraulic gauge.

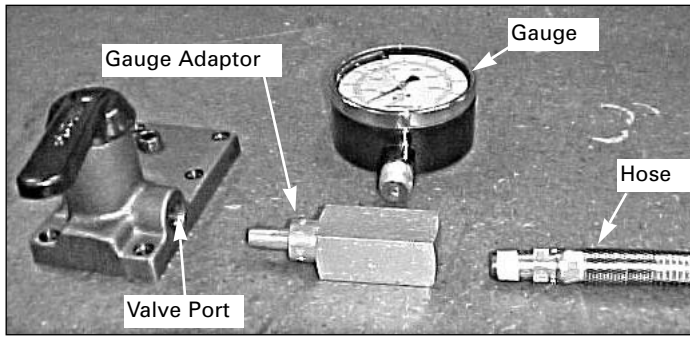


Figure 3

2. Screw gauge into gauge adapter.
3. Make sure connections are tight. If necessary, seal threaded connections with teflon tape or other sealant.

5.0 HOSE CONNECTION

1. Screw 3/8" NPT hose end into gauge adapter
2. Connect the hose half of the High-Flow Coupler to the cylinder half of coupler (furnished with all ENERPAC cylinders).
3. Tighten both connections.

NOTE: Make sure that the couplers are wiped clean when making or breaking a connection. High-Flow Coupler halves seal themselves against oil leakage when disconnected. Dust caps should be attached to prevent dirt from entering exposed ends of High-Flow Coupler when disconnected.

6.0 PUMP OPERATION

A. Hushh Pups only

Start the unit using the three-position toggle switch located in the grill.

Regular: *Switch up* is for continuous operation; *Switch down* is for jogging operation; *Off* is in the center position.

Remote Jog: (Using a remote control jog pendant station)
Switch up is for continuous operation;
Switch down is for remote jogging operation; *Off* is in the center position.

B. Hushh Pumps only

1. Make sure all hose connections are tight and that the power cord is connected properly.
2. Turn air vent screw counterclockwise two or three turns. (See Figure 4)
3. Push motor switch to "ON" position.
4. Let pump idle for a few minutes.
5. To advance plunger, press the "ADVANCE" button on the push-button station. For manual valves, place valve in "ADVANCE" position.
6. To retract plunger, press the "RETRACT" button on the push-button station. For manual valves, place valve in "RETRACT" position.

NOTE: For operation and control of three and four-way valves, refer to the valve instruction sheet.

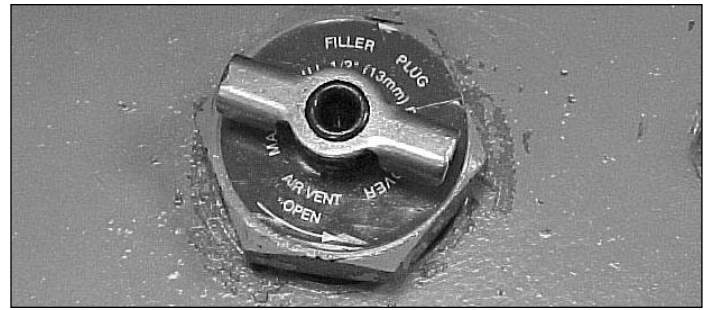


Figure 4

6.1 Removal of Air

The hydraulic system, when connected for the first time, will have air in the system. The air must be removed to ensure safe and proper operation. Air can generally be removed from the system by fully advancing and retracting the hydraulic cylinder several times. When the trapped air is removed from the hydraulic circuit, the cylinders will advance and retract smoothly. Sluggish cylinder movement is usually the first sign of air in the system.



WARNING: Do not exceed cylinder capacity or stroke.

6.2 Adjusting Relief Valve —

A. Hushh Pups (13, 15, & 20 Series with 1 & 2 gal. reservoirs)

1. Gauge, adapter, and shut-off valve must be installed in the system between pump and cylinder. Remove the air vent.
2. Start the pump and purge the air from the system.
3. Press the "ADVANCE" button or place the manual valve in "ADVANCE" position.
4. Insert a 7/32" Allen wrench through hole and into adjusting screw.
5. Turn adjusting screw to obtain desired pressure (or load) reading on gauge. Turn the screw clockwise to increase pressure or counterclockwise to decrease pressure.



WARNING: Do not exceed the pump operating pressure.

6. Check valve setting by operating the valve several times in the advance and retract positions. Maximum gauge reading should remain constant.

B. Hushh Pumps (30, 40, & 50 Series with 5 gal. reservoirs)

1. Remove flush pipe plug from side of reservoir.
2. Insert 5/16" Allen wrench into adjusting screw.
3. Turn adjusting screw to obtain desired pressure (or load) reading on gauge.

7.0 PERIODIC MAINTENANCE

1. Check hydraulic oil level every 40 hours of operation. Add ENERPAC hydraulic oil when necessary to maintain proper level.



WARNING: Do not overfill or add oil with hydraulic cylinders advanced.

2. Completely change hydraulic oil every 300 hours of operation. In extremely dusty or dirty areas, the oil will need to be changed more frequently.

8.0 CLEANING OIL FILTER SCREEN

1. Remove cap screws.
2. Lift pump unit and cover off the reservoir. Be careful not to damage gasket.
3. Remove screen retainer screw on bottom of pump unit. (See Figure 4.)
4. Flush screen with clean kerosene or similar cleaning agent.

9.0 POWER UNIT SERVICING (ELECTRIC MOTOR)

1. **Out-of-Service Protection** (30 days or more)
 - a. Wipe entire unit to remove all dirt, etc.
 - b. Provide a suitable cover over the entire unit.
 - c. Make sure all electrical connections are disconnected to prevent accidental starting.
 - d. Priming if needed:

Tilt unit and jog motor unit (switch down) several times – allow motor to idle to a complete stop between "jogs." Return unit to an upright position. Switch to the "run" position (switch up) and allow unit to operate for about five (5) minutes. The foregoing steps are essential to prime the high pressure pistons.

2. Temperature Protection
 - a. See that nothing obstructs air flow around the motor and pump.
 - b. Keep motor clean (internal and external) for maximum cooling.
 - c. In areas of high temperature, it may be necessary to provide additional cooling. Install an air cooled heat exchanger available from your ENERPAC Distributor.

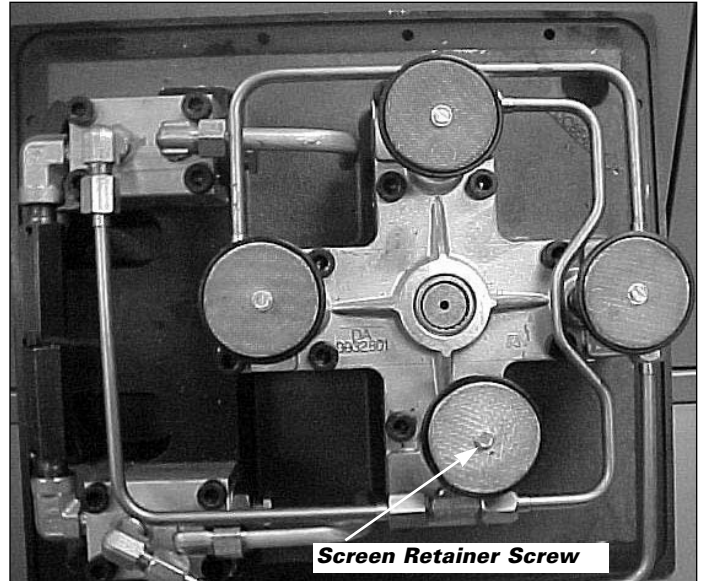


Figure 4

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