ENERPAC
POWERFUL SOLUTIONS. GLOBAL FORCE.

Instruction Sheet

WU Series
Workholding Economy Electric Pumps

L2934 Rev. A 12/11

Index:

Repair Parts Sheets for this product are available from the Enerpac web site at www.enerpac.com, or from your nearest Authorized Enerpac Service Center or Enerpac Sales office.

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.

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 350 bar [5,000 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.

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 with 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.

WARNING: **ELECTRIC SHOCK HAZARD:** Line voltage is present inside the pump even when the pump shroud switch is in the "OFF" position. To prevent electric shock, always unplug power cord from outlet before removing pump shroud or performing any other maintenance or repairs. All servicing must be done by qualified personnel.

3.0 SPECIFICATIONS

	Pump models ending in "B"	Pump models ending in "E"
Operating Pressure	0-5,000 psi [350 bar] {35 mPa}	
Electric Power Source	15 Amps, 120 Volts, grounded, 1 Phase, 50/60 Hz	10 Amps, 220 Volts, grounded, 1 Phase, 50/60 Hz
Motor Type and Rating	1/2 HP Universal, 9 Amps at 5,000 psi [350 bar] {35 mPa} and 12,000 RPM. Operates at 60-125 Volts, 85-89 dBA	0.37 kW Universal, 4.5 Amps at 5,000 psi [350 bar] {35 mPa} and 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} 25 $in.^3$ /min. [0,4 l/min] at 5,000 psi [350 bar] {35 mPa}	
Max. Operating Temperature	150°F [65°C]	

Pump Model	Used With	Valve Type	Usable Oil Capacity	Weight
WUD-1100B/E	Single-Acting Cylinders	Dump	0.5 Gal. [1,9 l]	31 lbs. [14,0 Kg]
WUD-1101B/E			1.0 Gal. [3,8 l]	43 lbs. [19,5 Kg]
WUD-1300B/E	Single-Acting Cylinders	Dump/Hold	0.5 Gal. [1,9 l]	31 lbs. [14,0 Kg]
WUD-1301B/E			1.0 Gal. [3,8 l]	43 lbs. [19,5 Kg]

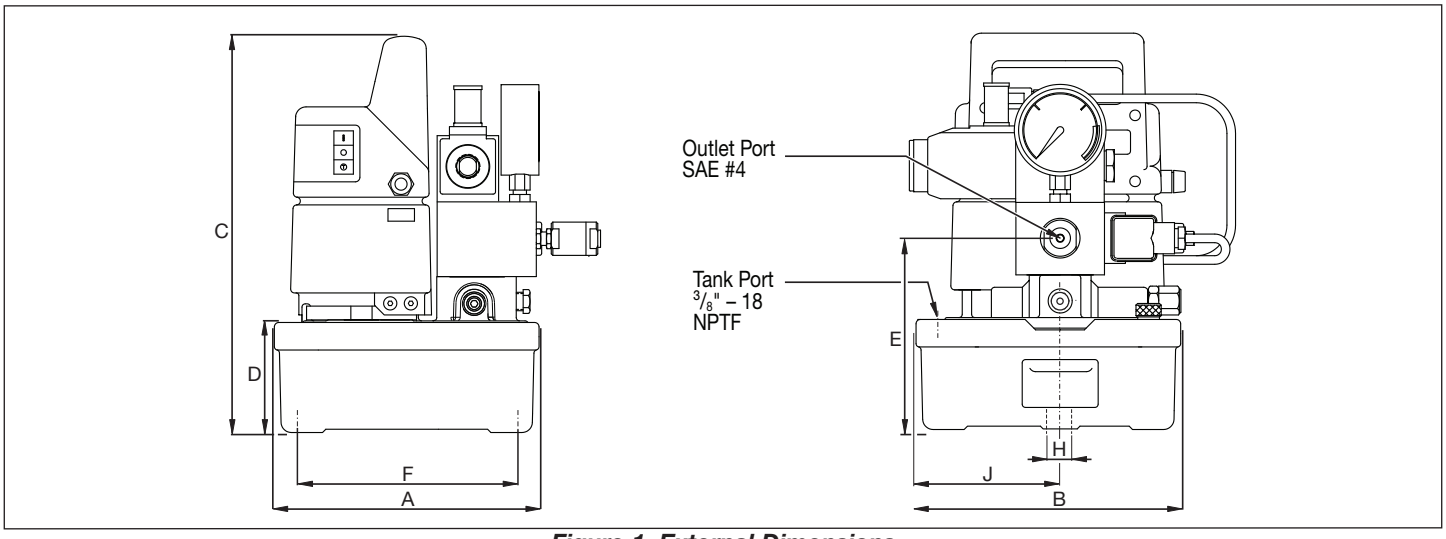

Figure 1, External Dimensions

Pump Model	Dimensions in inches [mm] (Refer to Figure 1)							
	A	B	C	D	E	F	H	J
WUD-1100B/E, WUD-1300B/E	9.8 [249]	9.62 [244]	14.25 [362]	4.00 [101]	6.75 [172]	8.00 [203]	0.40 [10,1]	5.25 [133]
WUD-1101B/E, WUD-1301B/E	14.50 [368]	12.18 [309]	14.72 [373]	4.15 [105]	7.20 [183]	12.74 [323]	0.40 [10,1]	6.56 [167]

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 (see Figure 2). Trim loose ends.

IMPORTANT: Use care to prevent pieces of tape from entering the hydraulic system.

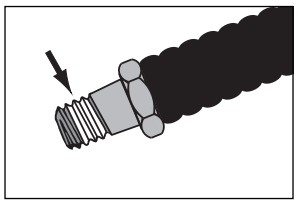

Figure 2, Thread Sealant

The pump-to-cylinder hose attaches directly to the outlet port of the control valve (see Figure 3).

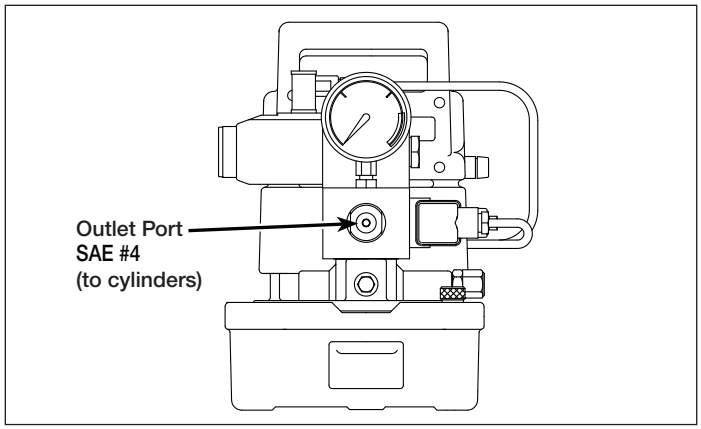

Figure 3, Control Valve Outlet Port

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.

4.2 Adding Oil

Check the oil level by unscrewing and removing the vent/fill cap (see Figure 4). Add Enerpac hydraulic oil until the oil level is 1/2 inch [1 cm] below the vent/fill cap opening.

IMPORTANT: Add oil only when all system components are fully retracted, (fully extended for pull type cylinders and devices) or the system will contain more oil than the reservoir can hold.

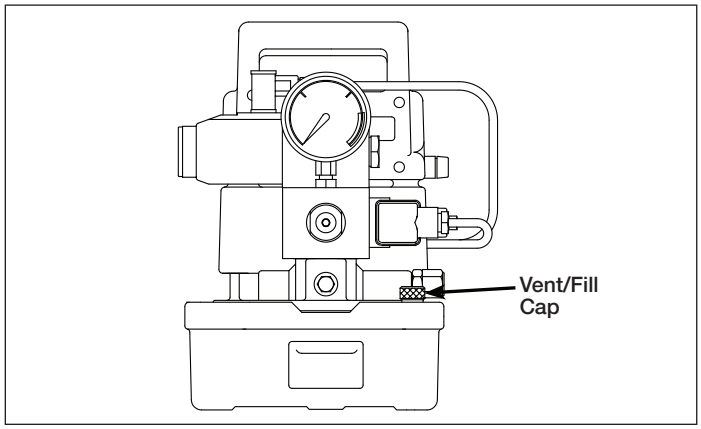

Figure 4, Vent/Fill Cap

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.

Before operating the pump:

1. Check all system fittings and connections to be sure they are tight and leak free.
2. Check the oil level and add oil, if necessary. Refer to Section 4.2.
3. Open the pump vent/fill cap located on the front right corner of the reservoir by turning it 1 or 2 complete turns (see Figure 4).

CAUTION: The vent/fill cap must be open whenever the pump is running.

4. Before connecting electrical power to the pump, be sure that the power supply is correct. Refer to Section 3.0 for power requirements. Also refer to pump data plate.
5. Set the pump relief valve and pressure switch to the desired pressures. Refer to sections 7.0 and 8.0 for instructions.

5.1 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.

5.2 Pump Shroud Switch

The pump shroud switch is located on the side of the pump shroud. Models WUD-1100B/E and WUD-1101B/E have a three-position switch. Models WUD-1300B/E and WUD-1301B/E have a two-position switch (see Figure 5).

Switch Positions:

ON - Pump motor controlled by pendant button(s).

OFF - Pendant button(s) deactivated. Pump motor off.

MOMENTARY MOTOR ON (MOM) - Pump motor *on* when switch is depressed. Pump motor *off* when switch is released (WUD-1100B/E and WUD-1101B/E only).

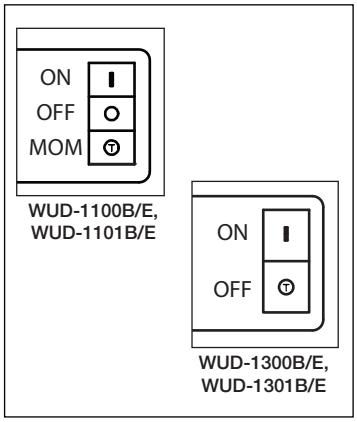

Figure 5, Pump Shroud Switch

For all WUD pump models, pressing the top “ON” portion of the switch activates the pump’s electrical control circuit, but does not start the pump motor. When the switch is in this position, the pump can be operated using the pendant button(s). Refer to Section 5.3 for pendant details.

Pressing the “OFF” portion of the switch deactivates the pendant button(s).

On Models WUD-1100B/E and WUD-1101B/E only, pressing and holding the bottom “MOM” portion of the switch starts the pump motor. Releasing the switch stops the motor and releases clamping pressure. If desired, the “MOM” portion of the switch can be used as an alternative to the pendant *clamp* button.

5.3 Pendant Operation

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

These pumps operate single-acting cylinders in workholding applications where a pressure holding function is not required.

Pressing the pendant *clamp* button starts the motor and shifts the control valve.

If the pendant *clamp* button is held down, the motor will stop automatically when clamping pressure reaches the pressure switch setting (refer to Section 8.0).

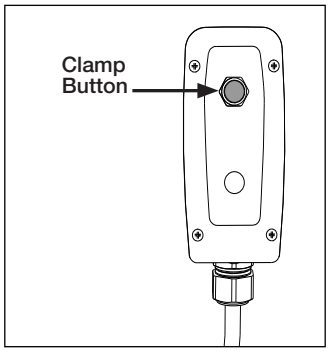

Figure 6, Pendant, WUD-1100B/E and WUD-1101B/E Models

If the pendant *clamp* button is released before the pressure switch setting is reached, the motor will stop and clamping pressure will be released.

IMPORTANT: Models WUD-1100B/E and WUD-1101B/E do **not** provide a pressure holding feature. Clamping pressure is released whenever the motor stops.

Models WUD-1300B/E and WUD-1301B/E

These pumps operate single-acting cylinders in workholding applications where a pressure holding function is required.

Pressing the pendant *clamp* button starts the motor.

If the pendant *clamp* button is held down, the motor will stop automatically when clamping pressure reaches the pressure switch setting (refer to Section 8.0). Clamping pressure will be maintained after motor stops.

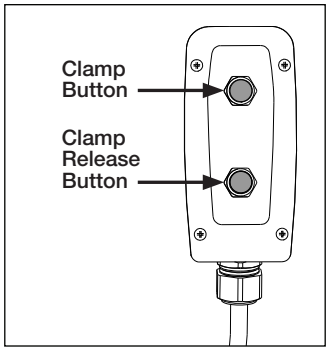

Figure 7, Pendant, WUD-1300B/E and WUD-1301B/E Models

If the pendant *clamp* button is released before the pressure switch setting is reached, the motor will stop. Partial clamping pressure will be maintained after motor stops.

Pressing the pendant *clamp release* button shifts the control valve and releases clamping pressure.

Note: All WUD pump models: If the pendant *clamp* button is released before full clamping pressure is reached, a small amount of additional cylinder movement may occur while the motor is stopping. Such movement is normal.

6.0 PROTECTIVE DEVICES

6.1 Thermal Switch

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

6.2 Circuit Breaker

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 (see Figure 8).

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

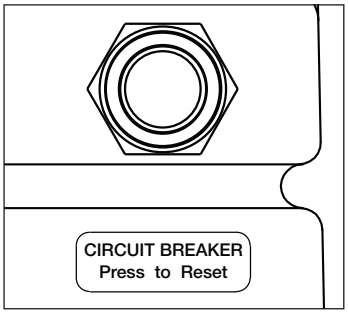

Figure 8, Circuit Breaker

7.0 RELIEF VALVE ADJUSTMENT

A user-adjustable external relief valve is located under a hex cap on the right side of the pump (see Figure 9). It is adjustable from approximately 5,000 psi [350 bar] down to approximately 1450 psi [100 bar].

Adjust the relief valve as described in the following steps:

1. Install a plug in the control valve outlet port.
2. Remove the hex cap covering the relief valve adjustment screw.
3. Using an Allen wrench, turn the adjustment screw counterclockwise one full turn.
4. Run the pump motor, watching the gauge reading for the desired maximum pressure. Stop the pump.
5. If necessary, adjust the setting as required, until the desired maximum pressure is attained.

Note: To obtain the most accurate setting, start at a lower pressure and adjust ***up*** to the desired setting.

6. Check the relief valve setting by running the pump several times. If the gauge reading is the same each time, the setting is stable.
7. Reinstall the hex cap to cover the adjustment screw.

8. Check the pressure switch setting and readjust if necessary. Refer to instructions in Section 8.0.

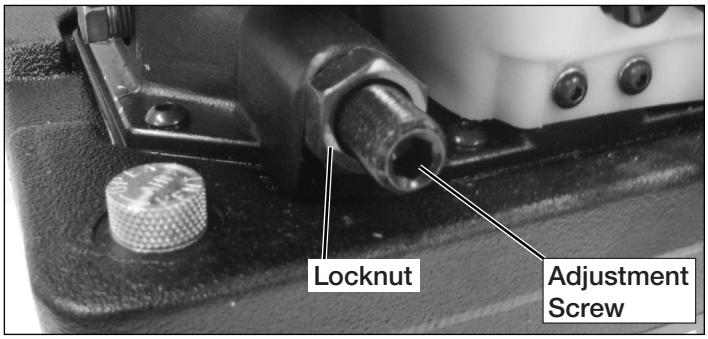

Figure 9, External Relief Valve (hex cap removed)

Note: A separate safety relief valve (located inside the pump) is factory set to approximately 5,500 psi [380 bar] maximum operating pressure. The safety relief valve is NOT user adjustable.

WARNING: To avoid equipment damage and personal injury, do not exceed 5,000 psi [350 bar] maximum working pressure. Never attempt to adjust or disable the pump safety relief valve.

8.0 PRESSURE SWITCH ADJUSTMENT

All Enerpac WUD pumps are equipped with a user-adjustable pressure switch. The switch is designed to stop the pump when the desired clamping pressure is reached. Make adjustments as described in the following steps:

1. Loosen switch jam nut counter-clockwise.
2. Using a 10 mm wrench, turn switch adjustment screw clockwise to increase or counter-clockwise to decrease pressure (see Figure 10).
3. Tighten switch jam nut to 3 ft-lbs [4 Nm] clockwise while holding pressure setting with wrench.
4. Use the pump pressure gauge to verify that the desired pump shut-off setting has been obtained.

WARNING: Ensure that the user-adjustable relief valve setting is set slightly ***above*** the pressure switch setting. Failure to observe this precaution could result in personal injury and/or equipment damage in the event of switch failure.

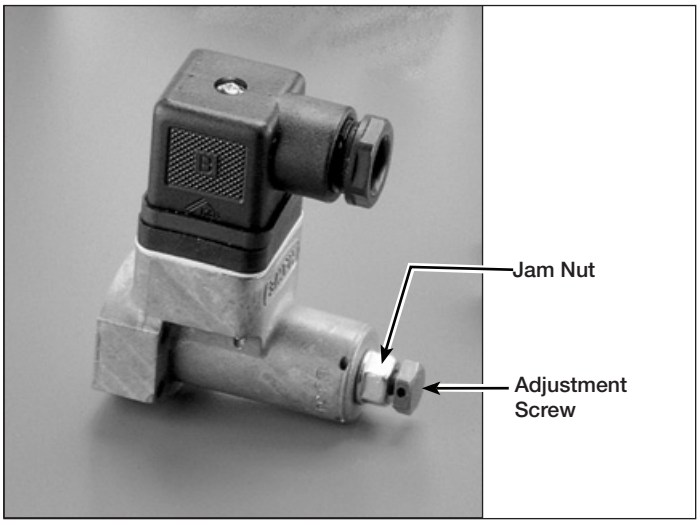

Figure 10, Pressure Switch

9.0 MAINTENANCE

9.1 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.

9.2 Changing the Oil

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

To drain and refill the reservoir:

1. Remove the vent/fill cap from the top right hand corner of the reservoir (see Figure 4).
2. Tip the pump until all old oil is drained.

IMPORTANT: Dispose of used oil in accordance with all applicable laws and regulations.

3. Refill with new oil through the vent/fill cap opening. Refer to Section 3.0 for the usable oil capacity for your pump model.
4. Reinstall vent/fill cap.

9.3 Cleaning the Reservoir

The pump reservoir can be removed for cleaning. If the pump is frequently operated in a dusty environment, the reservoir should be cleaned at least once a year.

To clean the reservoir:

1. Drain the reservoir as described in steps 1 and 2 of Section 9.2.
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.
6. Add oil to pump as described in steps 3 and 4 of Section 9.2.

Note: If the pump requires repairs, contact an Enerpac Authorized Service Center.

9.4 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.

10.0 TEST STANDARDS

10.1 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).

10.2 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.

11.0 TROUBLESHOOTING
(Refer to Troubleshooting Chart on the following page)

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.

TROUBLESHOOTING CHART		
Problem	**Possible Cause**	**Solution**
Pump will not start.	No power.	Check electrical power source.
	Wrong voltage.	Check voltage specifications. See pump data plate. Also refer to Section 3.0.
Cylinder will not advance or retract.	Fluid level low.	Fill reservoir to proper level.
	Intake screen clogged.	Clean or replace intake screen.
	Valve in wrong position.	Shift valve to the pressure position.
	Valve failure.	Have pump repaired by a qualified hydraulic technician.
Cylinder advances and retracts erratically.	Air in the system.	Remove air from the system by opening and closing the tool until operation is smooth.
	External leak in system.	Tighten leaky connections. Replace any damaged hoses and fittings.
	Internal hydraulic leak.	Have pump repaired by a qualified hydraulic technician.
Pump fails to maintain pressure.	External hydraulic leak.	Tighten leaky connections. Replace any damaged hoses or fittings.
	Internal hydraulic leak.	Have pump repaired by a qualified hydraulic technician.
Low fluid output.	Fluid level low.	Fill reservoir to the proper level.
	Pump component parts are leaking.	Test to isolate leaks.
	By-pass valve malfunction.	Have pump repaired by a qualified hydraulic technician.
	Fluid intake screens on piston blocks may be clogged with debris.	Inspect intake screens. Flush all components of contamination. Replace any damaged components.