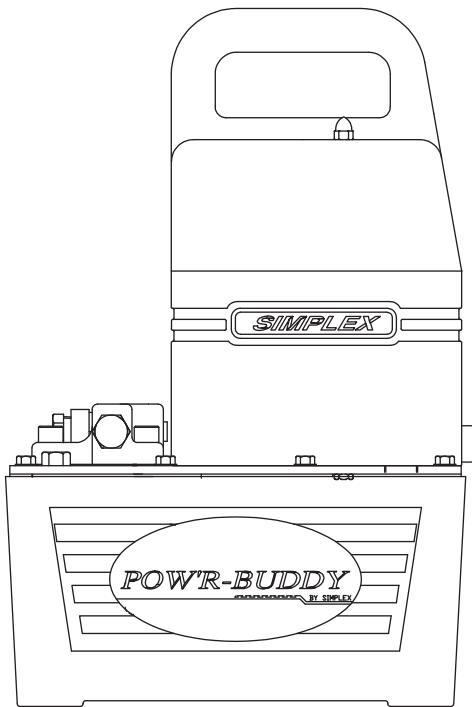


# **SIMPLEX**®

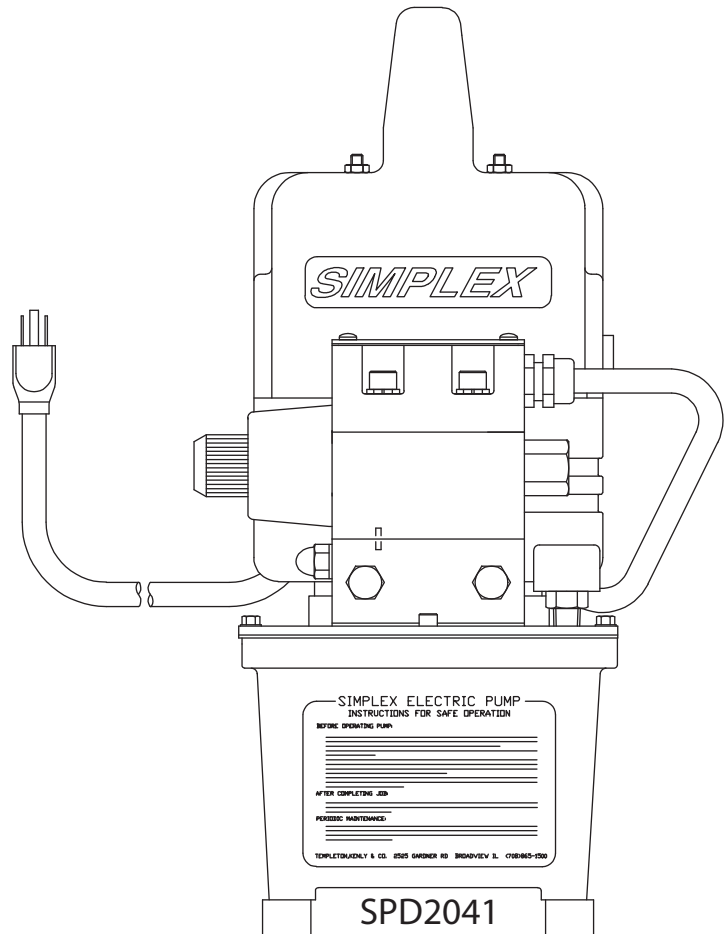
A Division Of Templeton, Kenly & Co., Inc.

## **DUMP PUMPS FOR SINGLE AND DOUBLE ACTING PUNCHES**

Operating Instructions Manual  
For 1/2 hp, 115 Volt and 230 Volt  
SPH1001 and SPD2041 Models  
Revision A  
09/2007



SPH1001



SPD2041

**-INDEX-**  
**Electric Dump Pumps for Single and Double Acting Punches**

	Page(s)
1.0 RECEIVING INSTRUCTIONS.....	3
2.0 SAFETY.....	3
3.0 SPECIFICATIONS.....	4
4.0 INITIAL INSTALLATION BEFORE OPERATING PUMP.....	4,5
4.1 Working Pressure	
4.2 Install Vent Plug	
4.3 Adding Oil	
4.4 Install Hydraulic Connections	
4.5 Pendant Control Assembly	
4.6 Electrical	
4.7 Connecting Hydraulic Tools or Cylinders	
4.8 Starting The Pump For the First Time	
	5,6
5.0 OPERATION.....	
5.1 Control Valves	
5.2 Before Starting Pump	
5.3 Adjusting the External Relief Valve	
5.4 Jacking Safely	
5.5 After Completing the Job	
	7
6.0 MAINTENANCE.....	
6.1 Periodic Maintenance	
6.2 Maintain Oil Level	
6.3 Clean Oil Filter Screen Once a Year	
6.4 Flush the Pump	
	8
7.0 TROUBLESHOOTING.....	

**TO RETRIEVE TECHNICAL PART SHEET DOCUMENTATION**  
**GO TO WWW.TKSIMPLEX.COM**

**WARRANTY STATEMENT**

**SIMPLEX** products are warranted to be free of defects in materials and workmanship under normal use for as long as the original purchaser owns them, subject to the guidelines and limitations listed. This warranty does not cover: normal wear & tear, cosmetic items, abuse, overloading, alterations, improper fluid, or use in a manner for which they are not intended. If the customer believes a product is defective, the product must be delivered, or shipped freight prepaid, to the nearest SIMPLEX Authorized Service Center for evaluation and repair.

## OPERATING INSTRUCTIONS AT A GLANCE

### 1.0 RECEIVING INSTRUCTIONS

Important! Make sure to inspect all of the components for shipping damage. If damage is found, notify carrier at once. Shipping damage will not be covered by warranty. The carrier is responsible for all loss associated to shipping damage.

### 2.0 SAFETY



Make sure to read the instructions, warning and precautions carefully. Follow any recommended safety precautions to avoid personal injury or damage to the unit. Simplex cannot be responsible for any damage or injury from unsafe use, lack of maintenance or incorrect operation. In the event any questions or concerns arise, contact SIMPLEX or a local Distributor for clarification.

The pump's maximum working pressure is 10,000 PSI (700kg/cm<sup>2</sup>). Make sure that all hydraulic equipment such as rams, hoses, etc. used with this pump are rated at 10,000 PSI (700kg/cm<sup>2</sup>) operating pressure.

If you have never been trained on high-pressure hydraulic safety, consult your distributor or service center for a free Simplex Hydraulic Safety Course.

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

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

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

**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 work-piece 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 10,000 PSI (700kg/cm<sup>2</sup>). 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 hose 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 packing and seals, resulting in fluid leaks. Heat also weakens hose materials and packing. For optimum performance do not expose equipment to temperatures of 65° C (170° 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.

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

### 3.0 SPECIFICATIONS

#### 10 SERIES POWER PUMP

Component	115 Volt	220 Volt
Operating Pressure	10,000 PSI (700kg/cm <sup>2</sup> )	
Electrical Power Source	15 Amps 115 Volt Grounded 50/60 HZ.	10 Amps 220 Volt Grounded 50/60 HZ.
Motor Rating	½ HP Permanent Magnet 9 AMPS @ 10,000 PSI (700kg/cm <sup>2</sup> )	½ HP Permanent Magnet 6 AMPS @ 10,000 PSI (700kg/cm <sup>2</sup> )
Flow Rate	250 cu.in @ 200 PSI, 19 cu.in. @ 10,000 PSI (700kg/cm <sup>2</sup> )	
Maximum Operating Temperature	170° F	

#### 20 SERIES POWER PUMP

Component	115 Volt	220 Volt
Operating Pressure	10,000 PSI (700kg/cm <sup>2</sup> )	
Electrical Power Source	15 Amps 115 Volt Grounded 50/60 HZ.	10 Amps 220 Volt Grounded 50/60 HZ.
Motor Rating	½ HP Permanent Magnet 10 AMPS @ 10,000 PSI (700kg/cm <sup>2</sup> )	½ HP Permanent Magnet 6 AMPS @ 10,000 PSI (700kg/cm <sup>2</sup> )
Flow Rate	400 cu.in @ 600 PSI, 20 cu.in. @ 10,000 PSI (700kg/cm <sup>2</sup> )	
Maximum Operating Temperature	170° F	

### 4.0 INITIAL INSTALLATION BEFORE OPERATING PUMP

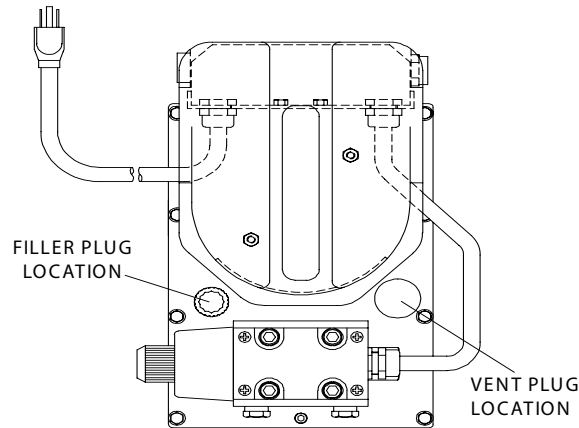
#### 4.1 Working Pressure

The pump's maximum working pressure is 10,000 PSI (700kg/cm<sup>2</sup>). Make sure that all hydraulic equipment such as tools, hoses, etc. used with this pump are rated at 10,000 PSI (700kg/cm<sup>2</sup>) operating pressure.

#### 4.2 Install Vent Plug

Remove SHIPPING PLUG and install VENT PLUG into cover plate. Use 1.5 wraps of Teflon tape (or suitable thread sealant) on all threads, leaving the first complete thread free of tape to ensure no foreign matter enters the hydraulic circuit.

**NOTE:** 10 SERIES MODELS PRE-INSTALLED AT FACTORY, 20 SERIES IS AS SHOWN.



#### 4.3 Adding Oil

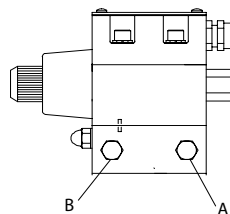
Remove OIL FILLER CAP and add SIMPLEX Hydraulic Oil into reservoir. Oil level should not exceed 1" from the reservoir cover. (10 Series Models, Oil Filler Cap located on top of shroud).

#### 4.4 Install Hydraulic Connections

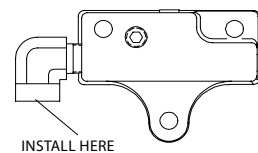
Use only tools, hoses and accessories rated at 10,000 PSI (700kg/cm<sup>2</sup>). Remove the shipping plugs from the ports to connect your coupling(s) or hose(s) to manifold. Use 1.5 wraps of Teflon tape (or suitable thread sealant) on all threads, leaving the first complete thread free of tape to ensure no foreign matter enters the hydraulic circuit. When making connections with quick disconnect couplings, make sure the couplings are fully engaged. Threaded connections such as fittings, gauges, etc. must be securely tightened and leak free.

**WARNING:** Loose or improperly threaded fittings can be potentially dangerous if pressurized, however, severe over tightening can cause premature thread failure. Fittings need to be tightened secure & leak free. Never hold or stand directly in line with any hydraulic connections while pressurizing. Never grab, touch or in any way come in contact with a hydraulic pressure leak. Escaping oil can penetrate the skin and a serious injury can result.

2 Position / 4 Way Solenoid Valve



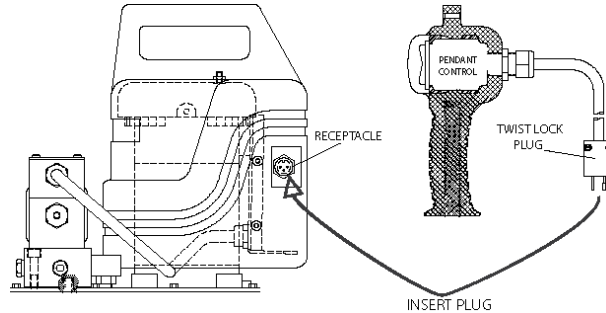
DUMP VALVE



**CAUTION:** Do not subject the hose to potential hazards such as sharp surfaces, extreme heat or heavy impact. Do not allow the hose to kink or twist. Inspect each hose for wear before it is used.

#### 4.5 Pendant Control Assembly

1. User must first locate twist lock plug on the pendant control and the receptacle which is located in the user position right hand side of the shroud.
2. Connect twist lock plug to the receptacle and fasten plug securely with the lock nut collar.



#### 4.6 Electrical

Check for proper electrical supply before connecting. Be sure the electrical connection is grounded. Check that your power supply agrees with the motor nameplate and/or Simplex model decal.

**NOTE:** THIS MOTOR MAY SPARK. DO NOT OPERATE IN AN EXPLOSIVE ATMOSPHERE OR IN THE PRESENCE OF CONDUCTIVE LIQUIDS.

- a. Do not use a power or extension cord that is damaged or has exposed wiring.
- b. All single phase motors come equipped with a three prong grounding type plug to fit the proper grounded type electrical outlet. Do not use a two prong ungrounded extension cord as the pump's motor must be grounded.

#### 4.7 Connecting Hydraulic Tools

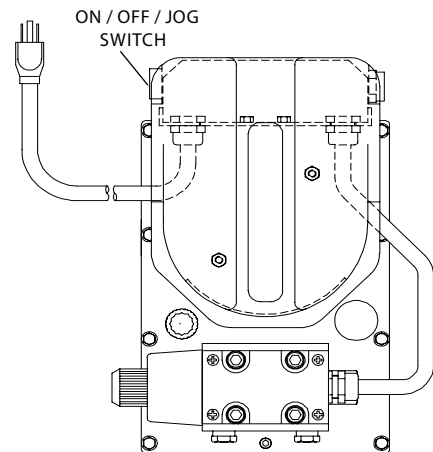
Use only tools, hoses and accessories rated at 10,000 PSI (700kg/cm<sup>2</sup>). When making connections with quick disconnect couplings, make sure the couplings are fully engaged. Threaded connections such as fittings, gauges, etc. must be securely tightened and leak free. Use 1.5 wraps of Teflon tape (or suitable thread sealant) on all threads, leaving the first complete thread free of tape to ensure no foreign matter enters the hydraulic circuit.

#### 4.8 Starting The Pump For the First Time

Depress the pendant to advance the tool and look for movement. Check for any leaks, repair as needed.

**CAUTION:** Never operate the pump with the directional control valve in advance or retract at 10,000 PSI (700kg/cm<sup>2</sup>) without ram movement for more than 1 minute. Leaving the valve in the advance or retract position without the tool moving will overheat the oil.

**CAUTION:** Never disconnect or connect any hydraulic hoses or fittings without first unloading the ram, then unplug the electrical cord of the pump and shift, or open all hydraulic controls several times to assure that the system has been depressurized. If the system includes a gauge, double check the gauge to assure pressure has been released.

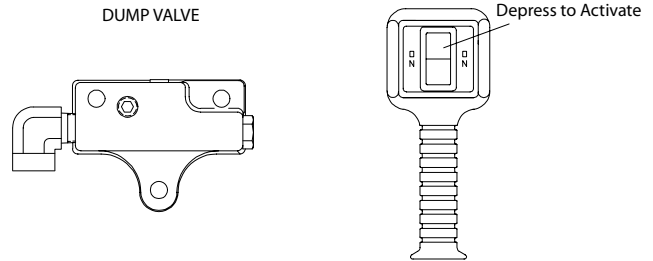


## 5.0 OPERATION

### 5.1 Control Valves:

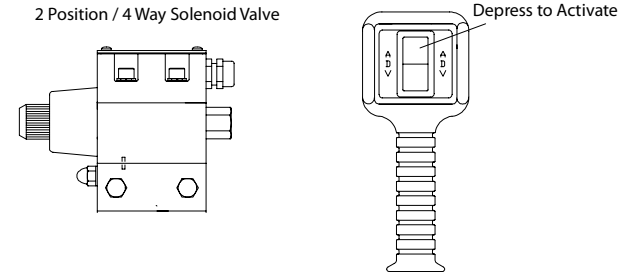
#### Dump Valve for Single Acting Tools

- To Advance.....depress switch to "ON" position
- To Retract.....release "ON" switch to retract tool.



#### 2 Position-4 Way Solenoid Valve for Double Acting Tools

- To Advance.....depress switch to the ADV position.
- To Retract.....release switch to retract tool.



### 5.2 Before Starting Pump

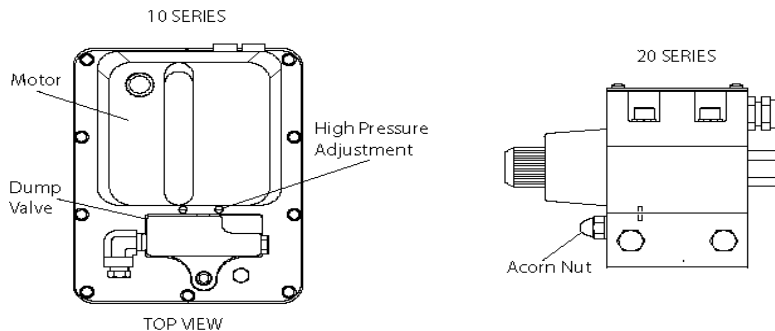
Bleeding the Hydraulic System - air can be removed from the system by fully advancing and retracting the hydraulic cylinder several times with the pump elevated so its reservoir is higher than the cylinder. Single-acting cylinders should be inverted and double-acting on their side with the coupling fitting up. When the trapped air is removed from the hydraulic circuit, the cylinder will advance and retract smoothly. Sluggish cylinder action is usually the first sign of air in the system.

**CAUTION:** Never operate the pump at 10,000 PSI (700kg/cm<sup>2</sup>) without ram movement for more than 1 minute without shifting the control valve to neutral. Leaving the valve in the advance or retract position without the piston rod moving will overheat the oil.

### 5.3 Adjusting the External Relief Valve

Pumps are preset at 10,000 PSI (700kg/cm<sup>2</sup>). To re-adjust or lower the maximum operating pressure, follow these steps below.

1. Install gauge and gauge adapter between pump and cylinder.
2. Remove Acorn Nut to expose adjusting screw. (20 Series Only).
3. Start motor to direct pump output to pressure port (Advance).
4. Insert Allen wrench into adjusting screw in the hole on the lower left side of valve.
5. Turn adjusting screw clockwise to increase, or counter clockwise to decrease pressure.
6. Do not exceed 10,000 PSI (700kg/cm<sup>2</sup>).
7. Check valve setting by shifting the valve to advance and retract tool several times.
8. Maximum gauge reading should remain constant.



#### 5.4 Jacking Safely

You must know the weight of what you intend to lift and choose a ram with at least 10% more capacity.

The ram should be placed on a solid foundation so that the base of the ram is fully supported. The load must be centered on the ram, or equally distributed on multiple rams. Off center loading can result in the ram slipping out and loss of the load.

Never crawl or place any part of your body under any load at any time. Insert blocking or cribbing under the load as you lift. Hydraulic rams are meant for lifting only and should not be used to support the load for any period of time.

You should obtain and be familiar with the American National Standards Institute rules that apply to hydraulic rams and jacks (ASME ANSI B30.1).

#### 5.5 After Completing the Job

Before disconnecting hoses, fittings, etc., first be sure the ram is unloaded and retracted, then unplug the power cord and shift the hydraulic controls several times to release system pressure. Store the pump in a clean, dry area.

### **6.0 MAINTENANCE**

#### 6.1 Periodic Maintenance

Completely change the hydraulic oil and clean the oil filter screen and magnet (located in the reservoir) twice a year. (Use Simplex oil only, Model # AO1, 1 gallon). Change the oil more frequently when used in extremely dusty areas or when the oil has been overheated. Using oil other than Simplex Brand may void the pumps warranty.

**WARNING:** THE ELECTRICAL POWER CORD MUST BE DISCONNECTED FROM ELECTRICAL OUTLETS BEFORE PERFORMING MAINTENANCE OR REPAIR PROCEDURES.

#### 6.2 Maintain Oil Level

Check hydraulic oil level every 30 hours of operation. Add Simplex oil (Model # AO1 – 1 gallon) when necessary. Oil level should be no more than 1" from top of reservoir plate – with cylinders retracted and motor off.

Change oil at least twice a year. The following conditions require more frequent oil changes.

- Rigorous duty, where oil temperature may reach 150° F.
- High humidity environment and extreme changes in temperature that can result in condensation inside the reservoir.
- Dirty or dusty environments that may contaminate the oil.
- Frequent connection and disconnection of hydraulic hoses and components.

#### 6.3 Clean Oil Filter Screen Once a Year

Loosen and remove reservoir plate bolts. Lift pump unit off the reservoir, being careful not to damage the gasket. Unscrew screen from bottom of pump unit and clean with nonflammable solvent. Blow dry and reassemble. Keep areas around pump unobstructed to provide good air flow around the motor and pump. Keep the motor and pump as clean as possible.

#### 6.4 Flush the Pump

If you suspect your pump has been contaminated or discover sludge or other deposits on internal components, you should thoroughly flush the pump. Remove the old oil from the reservoir, then thoroughly clean the reservoir and refill with a clean, nonflammable flushing oil. Reassemble the pump and motor to the reservoir.

Now run the pump in no load condition for 1 or 2 minutes maximum. Unplug the pump and remove the motor and pump assembly again. Now drain the flushing oil and re-clean the inside of the reservoir. (Make sure flushing fluid is also drained from pump assembly). Refill the reservoir with Simplex hydraulic oil and reassemble the pump.

## **7.0 TROUBLESHOOTING**

<b>PROBLEM</b>	<b>CAUSE-SOLUTION</b>
Sporadic Cylinder Action	<ul style="list-style-type: none"><li>• Air in the hydraulic system. See Section 5.2 for correct bleeding procedure.</li><li>• Check reservoir oil level.</li></ul>
Motor Will Not Start	<ul style="list-style-type: none"><li>• Be sure power cord is not damaged.</li><li>• Check for tripped circuit breaker; be sure breaker is of adequate size.</li><li>• Have motor checked for proper operation.</li><li>• Have qualified electrician inspect for loose or faulty wiring or switch.</li></ul>
Noisy Operation	<ul style="list-style-type: none"><li>• Air in system.</li><li>• Be sure the oil reservoir is filled to normal level.</li><li>• Check all points where air might leak into system.</li><li>• Clogged or blocked intake screen.</li></ul>
Pump Oil is Over Heating	<ul style="list-style-type: none"><li>• Oil viscosity too high. Replace with Simplex Oil.</li><li>• Check for high pressure leakage at the pump (leaking at plug or relief valve).</li><li>• Oil level is low. Fill reservoir to normal level, or retrofit the pump with larger reservoir or heat exchanger.</li></ul>
Pump Runs But Will Not Pump Oil	<ul style="list-style-type: none"><li>• Pump is not primed. Run pump a few minutes tipping from side to side.</li><li>• Check to make sure that external adjustable relief valve set properly.</li><li>• Damaged O-Rings. Take to nearest Simplex authorized service center for repair.</li><li>• Defective control valve.</li><li>• Incorrect motor rotation, take to nearest Simplex Authorized Service Center.</li></ul>