

**MODEL D**  
**TANDEM, TWO-STAGE, WITH CONTROL VALVE OR MANIFOLD**  
**AIR HYDRAULIC PUMP**  
Rated Capacity: 10,000 PSI at 100 PSI Air

- Carefully inspect the pump upon arrival. The carrier, not the manufacturer, is responsible for any damage resulting from shipment.
- These instructions should be read and carefully followed. Most problems with new equipment are caused by improper operation or installation.
- This instruction sheet is a condensed version intended for end-user application needs. A detailed parts list for service repair can be obtained (if not already supplied) by calling our Technical Services Department at 1-800-477-8326.



## SAFETY PRECAUTIONS

- All **WARNING** statements must be carefully observed to help prevent personal injury.

### Hydraulic Hose

- Before operating the pump, Tighten all hose connections using the proper tools. Do not overtighten the connections. Connections need only be tightened securely and leak-free. Overtightening may cause premature thread failure or high pressure fittings to split at pressures lower than their rated capacities.
- Should a hydraulic hose ever burst, rupture, or need to be disconnected, immediately shut off the pump. Never attempt to grasp a leaking hose under pressure with your hands. The force of the escaping hydraulic fluid could cause serious injury.
- Do not subject the hose to potential hazard such as fire, extreme heat or cold, sharp surfaces, or heavy impact. Do not allow the hose to kink, twist, curl or bend so tightly that the fluid flow within the hose is blocked or reduced. Periodically inspect the hose for signs of wear because any of these conditions can damage the hose and may result in personal injury.
- Do not use the hose to move attached equipment. Stress may damage the hose and cause personal injury.
- Hose material and coupler seals must be compatible with the hydraulic fluid used. Hoses also must not come in contact with corrosive materials such as creosote-impregnated objects and some paints. Consult the manufacturer before painting a hose. Never paint the couplers. Hose deterioration due to corrosive materials may result in personal injury.

### Pump

- Do not exceed the PSI hydraulic pressure rating noted on the pump nameplate or tamper with the internal high relief valve. Creating pressure beyond rated capacities may result in personal injury.
- Before replenishing the fluid level, retract all cylinders to prevent overfilling the pump reservoir. An overfill may cause personal injury due to excess reservoir pressure created when cylinders are retracted.

### Cylinder

- Do not exceed rated capacities of the cylinders. Excess pressure may result in personal injury.
- Do not set poorly-balanced or off-center loads on a cylinder. The load may tip and cause personal injury.

### Air Supply

- Shut off and disconnect the air supply when the pump is not in use or before breaking any connection in the system.

## PREPARATION & SET-UP

### Air Supply Connections

Remove the thread protector from the air inlet of the pump. Select and install the thread fittings that are compatible with your air supply fittings. The pumps air inlet has 1/4 NPT female threads. The air supply should be capable of providing 20 CFM at 100 PSI to obtain the rated hydraulic output. Shop air line pressure should never fall below 40 PSI and should be regulated to a maximum of 125 PSI. Secure your pump fitting to the air supply.

**WARNING** : To help prevent personal injury,

- Ensure that all hydraulic connections are secure and tight before building pressure in the system.
- After disconnecting the air supply, release all system pressure by shifting the two position, 3-way/4-way valve twice before loosening any hydraulic connection in the system.

### Hydraulic Connections

Clean areas around all fluid ports of the pump and cylinders. Inspect all threads and fittings for signs of wear or damage and replace as needed. Clean all hose ends, couplers or union ends. Remove the thread protectors from the hydraulic fluid outlets. Manually fill the clamps (if so equipped) and hoses with fluid. Connect the hose assembly to the hydraulic fluid outlet and couple the hose to the cylinder (if so equipped). See illustrations below.

**IMPORTANT: Seal all external pipe connections with Power Team HTS6 thread sealant.** PTFE tape can also be used to seal hydraulic connections if only one layer of tape is used. Apply the tape carefully, two threads back, to prevent it from being pinched by the coupler and broken off inside the system. Any loose pieces of tape could travel through the system and obstruct the flow of fluid or cause jamming of precision-fit parts.

### Pump with a Manifold and Remote Valve

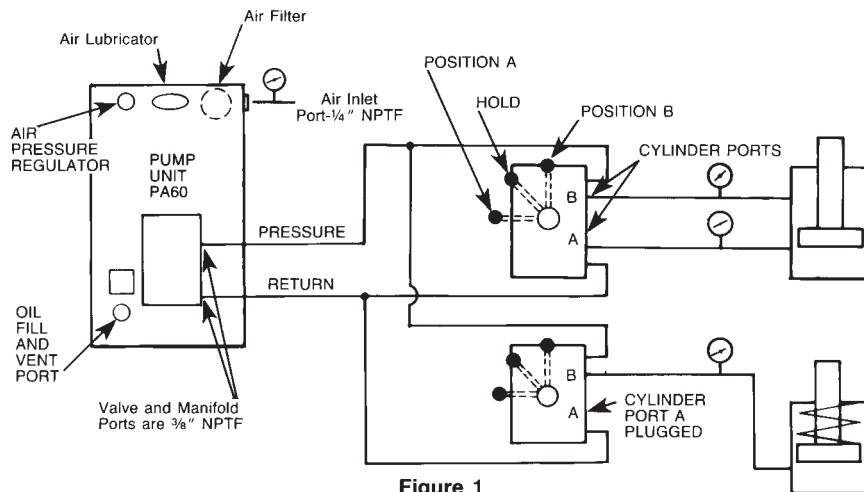


Figure 1

1. Connect the pump to a remote 3-way/4-way valve.
2. Connect the fluid line from the fluid pressure port on the manifold to the pump pressure port on the valve.
3. Connect the fluid line from the fluid return port on the manifold to the pump return port on the valve.
4. Connect the clamp(s) or cylinder(s) to the valve.

**IMPORTANT: On all single pressure line applications, plug one cylinder port on the valve.**

### Pump with Valve

- POSITION A - Pressure to cylinder port A, cylinder port B to tank
- HOLD - Neutral, all ports blocked
- POSITION B - Pressure to cylinder Port B, cylinder port A to tank

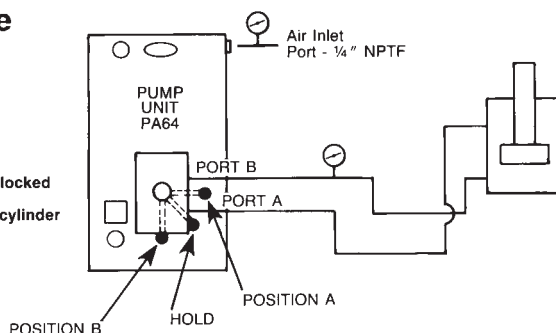


Figure 2

1. Connect the cylinder ports of the pump valve to clamp(s) or cylinder(s). When cylinder port "A" is pressurized, cylinder port "B" becomes the return. When cylinder port "B" is pressurized, cylinder port "A" becomes the return.
2. Place the valve into the "A" or "B" position in order to pressurize the cylinder(s) or start the pump.

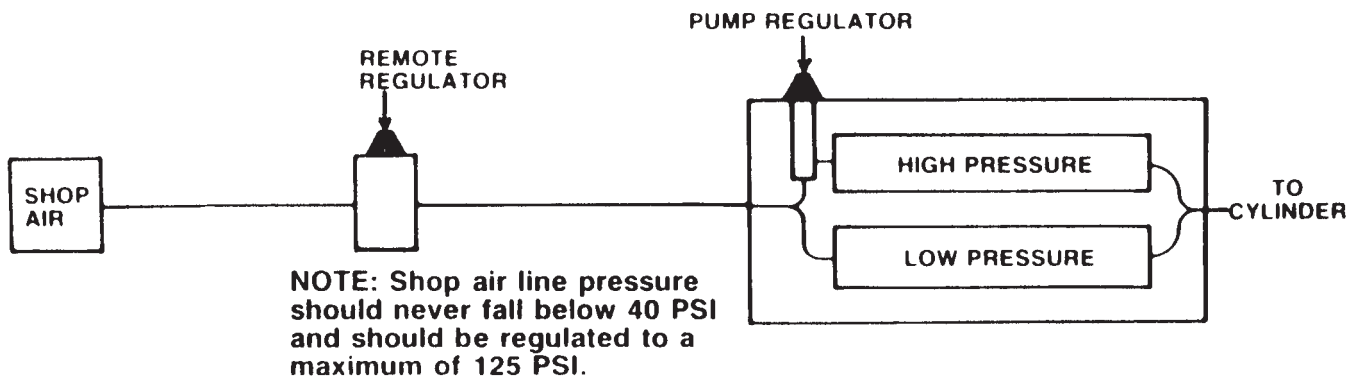
## OPERATION

### Pump Operation and Adjustment

1. Open the air shut-off valve (if so equipped) or connect the air quick coupler (if so equipped).  
**NOTE: under certain circumstances the pump may need to be primed before operation. Refer to the method described in the section entitled "Priming the Pump Unit."**
2. Slowly turn the air regulator control on unit clockwise to increase pressure, counterclockwise to decrease pressure. As air is admitted to the pump unit, it will begin to deliver oil to the system. Continue to slowly turn the air regulator control clockwise until gauge reads approximately 10,000 PSI. A reading of approximately 10,000 PSI should be obtained if shop pressure is approximately 100 PSI.  
**NOTE: If shop air pressure is adequate but the 10,000 PSI hydraulic pressure cannot be reached, follow the procedures outlined in the Trouble-shooting Guide.**
3. Cycle the system several times by manually shifting the 3-way/4-way valve (if so equipped) or the remote valve (if so equipped). Set the air regulator to the desired clamping pressure. When decreasing pressure, shift the valve after each adjustment to measure actual system pressure.

**NOTE:**

- **The minimum operating pressure at 100 PSI shop air line pressure is approximately 1,200 PSI**
- The air pressure regulator that is mounted on the pump controls only the output from the high pressure stage of this two stage pump. The output of the low pressure stage of the pump is determined by the shop air line pressure coming from the remote regulator. A remote regulator is required to control the air pressure from the shop air line. The independent functioning of the low and high pressure stages of this pump can best be described as follows. At the minimum shop air line pressure of 40 PSI, the low pressure stage of the pump will deliver 480 PSI oil pressure (with the pump regulator turned counterclockwise to prevent air pressure from activating the high pressure stage of the pump.) At the minimum shop air line pressure of 40 PSI the high pressure stage of the pump will deliver 4,000 PSI oil pressure (with the pump regulator turned clockwise to allow air pressure to reach the high pressure stage.) Always remember that the pump regulator must be turned counterclockwise when the pump is used to produce 1,200 PSI or less.



4. Shut off and disconnect air supply to the unit and shift pump valve (if so equipped) or external valve (if so equipped) two times to release all system pressure. Recheck fluid level with cylinder(s) and clamp(s) retracted. The unit is now ready for operation.

## PREVENTIVE MAINTENANCE

**NOTE: Any repairs or servicing that requires dismantling the pump must be performed in a dirt-free environment by a qualified service technician.**

### Lubrication

Set the air line oiler to feed 1 drop of oil per minute to the system. Use SAE No. 10 oil. For servicing the air regulator, lubricator and filter system, see the operating and service instructions provided.



Note: Shaded areas reflect last revision(s) made to this form.

### **Bleeding Air from the System**

Upon initial startup or after prolonged use, a significant amount of air may accumulate within the hydraulic system. This entrapped air can cause the cylinder to respond slowly or behave in an unstable manner. To remove the air, run the system through several cycles (extending and retracting cylinders) free of any load. **NOTE: The cylinder must be at a lower level than the pump to allow air to be released through the pump reservoir.**

### **Inspecting the Hydraulic Fluid Level**

Check the fluid level in the reservoir periodically. With all cylinder(s) retracted, the fluid level should be 1-3/4" from the filler hole. Drain, clean and replenish the reservoir with high-grade, approved Power Team hydraulic fluid yearly or more often if necessary. The frequency of fluid change will depend upon the general working conditions, severity of use and overall cleanliness and care given the pump.

### **Maintenance Cleaning**

1. Keep the outer surface of the pump as free from dirt as possible.
2. Protect all unused couplers.
3. Keep all hose connections free of dirt and grime.
4. Keep the filler/breather cap clean and unobstructed at all times.
5. Equipment connected to the pump must be kept clean.
6. Use only high-grade, approved Power Team hydraulic fluids in this pump. Change as recommended.

### **Draining and Cleaning the Reservoir**

**IMPORTANT: Clean the pump exterior before the pump interior is removed from the reservoir.**

1. Remove the screws that fasten the pump assembly to the reservoir. Remove the pump assembly from the reservoir. Do not damage the gasket, filter or safety valve.
2. Drain the reservoir of all fluid. Refill half full with clean Power Team hydraulic fluid.
3. Place the pump assembly back onto the reservoir and secure with two machine screws assembled on opposite corners of the housing.
4. Run the pump for several minutes. Remove the two cover screws and lift off the pump assembly again. Drain and wipe out the reservoir with a clean, lint-free cloth.
5. Fill the reservoir with high-grade, approved Power Team hydraulic fluid to 1-3/4" from the fill hole. Place the pump assembly (with gasket) on the reservoir and install the screws. Tighten securely and evenly.

### **Adding Fluid to the Reservoir**

1. Cylinder(s) must be fully retracted and the air supply disconnected when adding fluid to the reservoir.
2. Clean the entire area around the filler/breather cap before removing the filler/breather cap.
3. Use a clean funnel with filter when adding fluid.
4. Use only approved Power Team hydraulic fluids.
5. Fill to 1-3/4" of the filler hole.

### **Priming the Pump Unit**

1. Connect the fluid line to the pressure port and keep the return port plugged. Place the other end of the fluid line in the pump filler hole.  
**NOTE: If the fluid lines are connected to a remote valve, shift the valve into the center position and plug both cylinder ports on the valve. This lets fluid circulate through the valve and back to the pump reservoir; thereby allowing the pump to prime.**
2. Attach air line with shut-off valve to the pump.
3. Open the air valve. Pump will begin to reciprocate, and fluid will advance through the hose or fluid line and return to the pump reservoir. Allow the pump to cycle approximately 15 seconds.
4. Plug the manifold pressure port, or shift the valve to pressurize the circuit. If the pump builds pressure, it has been successfully primed.

### **Periodic Cleaning**

**IMPORTANT: The greatest single cause of failure in hydraulic pumps is dirt. Keep the pump and attached equipment clean to prevent foreign matter from entering the system.**

All unused couplers must be sealed with thread protectors. All hose connections must be free of grit and grime. Use only high-grade, approved Power Team hydraulic fluid in this unit and change at least once a year.

Gauges



**WARNING** : To help prevent personal injury, use a gauge of the proper rating for the pressure used.

**Installing an In-line Air Pressure Gauge**

1. Remove the male fitting from the air filter and install a tee adapter, with gauge, between the hose and air filter. Refer to Figures 1 and 2.
2. Install male fitting into the tee adapter and securely tighten the hose to the male fitting.

**Installing an In-line Hydraulic Pressure Gauge**

1. Install a tee adapter, with gauge, between the valve and the cylinder. Refer to Figures 1 and 2.
2. Tighten all connections securely but do not overtighten.

**Fire-Resistant Hydraulic Fluid**

Flame Out 220™\* fire-resistant hydraulic fluid is compatible with all Power Team Equipment. The use of this fluid does not require the changing of seals in any Power Team pump or cylinder and is available through your local Power Team distributor.

\* Flame Out 220™ is approved by Factory Mutual Research.

**TROUBLE-SHOOTING GUIDE**

PROBLEM	CAUSE	SOLUTION
<b>Pump reciprocates but no fluid delivery. (cylinder will not extend)</b>	<ol style="list-style-type: none"> <li>1. Low fluid level.</li> <li>2. Pump not primed.</li> <li>3. Oil filter contamination.</li> </ol>	<ol style="list-style-type: none"> <li>1. Add fluid as instructed in Preventive Maintenance section.</li> <li>2. Prime pump as instructed in Preventive Maintenance section.</li> <li>3. Clean filter.</li> </ol>
<b>Cylinder(s) advance to desired stroke but pump does not build desired hydraulic pressure (air motor running)</b>	<ol style="list-style-type: none"> <li>1. Faulty gauge.</li> <li>2. Reservoir not vented.</li> <li>3. Fluid level too low.</li> <li>4. Leaky connection or hose.</li> <li>5. Excess air in fluid.</li> <li>6. Defective 3-way/4-way valve</li> <li>7. Leaking clamps.</li> </ol>	<ol style="list-style-type: none"> <li>1. Replace gauge.</li> <li>2. Vent reservoir by removing shipping plug and installing filler/vent cap.</li> <li>3. Fill reservoir to 1-3/4" from the filler hole.</li> <li>4. Tighten connections or replace hose.</li> <li>5. Bleed unit as instructed in Preventive Maintenance section.</li> <li>6. Replace valve.</li> <li>7. Replace clamps.</li> </ol>
<b>Pump will not build to maximum pressure (air motor stopped running)</b>	<ol style="list-style-type: none"> <li>1. Inadequate air supply.</li> <li>2. Air regulator not set properly.</li> <li>3. Leaking air line or connections.</li> </ol>	<ol style="list-style-type: none"> <li>1. Check air supply. Minimum of 100 PSI air pressure is needed to obtain 10,000 PSI hydraulic pressure.</li> <li>2. Increase or decrease hydraulic pressure by turning regulator clockwise or counterclockwise to achieve desired pressure.</li> <li>3. Repair or replace.</li> </ol>

Trouble-shooting Guide Cont'd

PROBLEM	CAUSE	SOLUTION
Low fluid delivery (cylinder extends slowly)	<ol style="list-style-type: none"> <li>Inadequate air supply.</li> <li>Clogged fluid filter.</li> <li>Air trapped in hydraulic system.</li> </ol>	<ol style="list-style-type: none"> <li>Check air supply -- 20 CFM minimum at 100 PSI is required to achieve full speed.</li> <li>Clean the filter.</li> <li>Bleed system of air as instructed in Preventive Maintenance sec.</li> </ol>
Pump builds pressure but will not hold pressure.	<ol style="list-style-type: none"> <li>Loose or cross-threaded connections.</li> <li>Defective 3-way/4-way valve.</li> <li>Defective clamps.</li> </ol>	<ol style="list-style-type: none"> <li>Check for leakage and re-fit if necessary.</li> <li>Replace valve.</li> <li>Replace clamps.</li> </ol>
Pump will continue to run slowly even after desired pressure is reached.	<ol style="list-style-type: none"> <li>Defective 3-way/4-way valve.</li> <li>Defective clamps.</li> </ol>	<ol style="list-style-type: none"> <li>Replace valve.</li> <li>Replace clamps.</li> </ol>
Excess oil spray from muffler.	<ol style="list-style-type: none"> <li>Air lubricator is set too rich.</li> </ol>	<ol style="list-style-type: none"> <li>Turn adjuster clockwise until closed and then open 1/8 turn.</li> </ol>

REPLACEMENT PARTS

Item No.	Part No.	No. Req'd	Description
1	60338WH2	1	Top Cover
2	24132S	1	Fill Plug
3	209799	10	Screw (Torque to 35/40 in. lbs.)
4	47409	1	Gasket
5	61165	1	Reservoir
6	42382OR9	1	Front Panel
7	43481OR9	1	Back Panel
8	16492	1	Mini Air Filter
9	15009	1	Air Lubricator (Replacement bowl only - #206264; for Wilkerson model #251076; For Norgren model)
10	15010	1	Air Filter (Replacement bowl only - #206265; For Wilkerson model #251082; For Norgren model)
11	29992	2	Foam Tube

