

MODEL D, F, & G
AIR HYDRAULIC PUMP
with Air Toggle Valve

- 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.

SAFETY PRECAUTIONS



WARNING

- 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 oil 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 oil 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.

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

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Rev. 2 Date: 21 Oct. 1998

PREPARATION & SET-UP

Air Supply

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.

Hydraulic Connections

Note: This pump is recommended for single-acting systems only!

Clean areas around all oil 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 oil outlets. Manually fill the clamps (if so equipped) and hoses with oil. Connect the hose assembly to the hydraulic oil outlet and couple the hose to the cylinder (if so equipped).

IMPORTANT: Seal all external pipe connections with a high quality, nonhardening sealant. Teflon 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 oil or cause jamming of precision-fit parts.



WARNING: To help prevent personal injury,

- **Ensure that all hydraulic connections are secure and tight before building pressure in the system.**

OPERATION

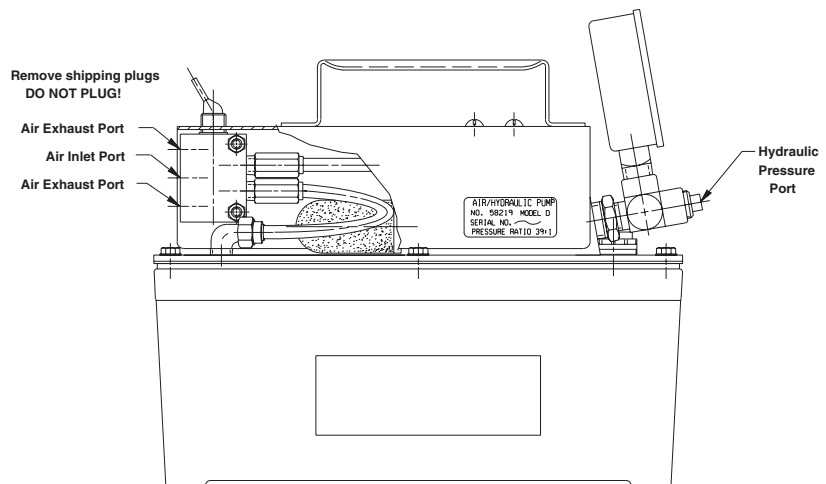
1. Connect air supply to valve inlet on pump.

NOTE: Under certain circumstances the pump may need to be primed before operation. Refer to the method described in the Preventive Maintenance section entitled "Priming the Pump Unit."

2. Place toggle switch (on air valve) in pump position. The pump will start and continue to run until system pressure causes the pump to stall. The pump will maintain pressure and stall until the toggle is moved to the release position. (Adjusting the inlet air pressure will change the hydraulic outlet pressure.)

3. Move the toggle to the release position.

System hydraulic pressure will be released, and system oil will be directed back to the pumps' reservoir.



PREVENTIVE MAINTENANCE

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

Lubrication

It is recommended that an in-line filter/regulator/lubricator be installed as close to the pump as possible. Set the unit to feed approximately 1 drop of SAE grade oil (5W to 30W) per minute. If no lubricator is used, or when the unit will be idle for a long time, add a few drops of SAE grade oil (5W to 30W) directly to the air intake weekly.

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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 oil level in the reservoir periodically. For Model D pumps, with all actuator(s) retracted, the oil level should come to within 1/2" of the filler/breather cap. For Model F & G pumps, with all actuator(s) retracted, the oil level should be as indicated by the mark on the dipstick. Drain, clean and replenish the reservoir with high-grade, approved Power Team hydraulic fluid yearly or more often if necessary. The frequency of oil 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 the level as instructed in "Inspecting the Hydraulic Fluid Level". Place the pump assembly (with gasket) on the reservoir and install the screws. Tighten securely and evenly.

Adding Oil to the Reservoir

1. Cylinder(s) must be fully retracted and the air supply disconnected when adding oil 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 oil.
4. Use only approved Power Team hydraulic fluids.
5. For Model D pumps, with all actuator(s) retracted, the oil level should come to within 1/2" of the filler/breather cap. For Model F & G pumps, with all actuator(s) retracted, the oil level should be as indicated by the mark on the dipstick.

Priming the Pump Unit

1. Connect the oil line to the pressure port. Place the other end of the oil line in the pump filler hole.
2. Attach air line with shut-off valve to the pump.
3. Open the air valve. Place the toggle switch (on air valve) in pump position. Pump will begin to reciprocate, and oil will advance through the hose or oil line and return to the pump reservoir. Allow the pump to cycle approximately 15 seconds.
4. Attach oil line from pump to cylinder. If the pump extends cylinder, 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.

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
Pump reciprocates but no oil delivery. (cylinder will not extend)	1. Low oil level. 2. Pump not primed. 3. Oil filter contamination.	1. Add oil as instructed in Preventive Maintenance section. 2. Prime pump as instructed in Preventive Maintenance section. 3. Clean filter.
Cylinder(s) advance to desired stroke but pump does not build desired hydraulic pressure (air motor running)	1. Faulty gauge. 2. Reservoir not vented. 3. Oil level too low. 4. Leaky connection or hose. 5. Excess air in oil.	1. Replace gauge. 2. Vent reservoir by removing shipping plug and installing filler/vent cap. 3. Fill reservoir to level as instructed in "Inspecting the Hydraulic Fluid Level" in the Preventive Maintenance section. 4. Tighten connections or replace hose. 5. Bleed unit as instructed in Preventive Maintenance section.
Pump will not build to maximum pressure (air motor stopped running)	1. Inadequate air supply. 2. Air regulator not set properly. 3. Leaking air line or connections.	1. Check air supply. Minimum of 100 PSI air pressure is needed to obtain 4500 PSI hydraulic pressure. 2. Increase or decrease hydraulic pressure by turning regulator clockwise or counterclockwise to achieve desired pressure. 3. Repair or replace.
Low oil delivery (cylinder extends slowly)	1. Inadequate air supply. 2. Clogged oil filter. 3. Air trapped in hydraulic system.	1. Check air supply -- 20 CFM minimum at 100 PSI is required to achieve full speed. 2. Clean the filter. 3. Bleed system of air as instructed in Preventive Maintenance sec.
Pump builds pressure but will not hold pressure.	1. Loose or cross-threaded connections.	1. Check for leakage and re-fit if necessary.
Excess oil spray from muffler.	1. Air lubricator is set too rich.	1. Turn adjuster clockwise until closed and then open 1/8 turn.