POWER TEAM
HYDRAULIC TECHNOLOGIES

Hydraulic Technologies
5885 11th Street
Rockford, IL 61109-3699 USA

Tech. Services: (800) 477-8326
Fax: (800) 765-8326
Order Entry: (800) 541-1418
Fax: (800) 288-7031

Internet Address:
http://www.powerteam.com

Form No. 102809

Operating Instructions for:

100191

MODELS D & F
AIR HYDRAULIC PUMP
13:1 Pressure Ratio

- **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 Lines

- **Before operating the pump, tighten all hydraulic 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 line ever burst, rupture, or need to be disconnected, immediately shut off the pump. Never attempt to grasp a leaking hose or tube line under pressure with your hands. The force of the escaping hydraulic fluid could cause serious injury.**
- **Do not subject hoses 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 hoses for signs of wear because any of these conditions can damage the hose and may result in personal injury.**
- **Do not use hydraulic lines to move or secure attached equipment. Stress may damage the line 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 couplers. Hose deterioration due to corrosive materials may result in personal injury.**

Pump

- **Do not exceed the hydraulic pressure rating noted on the pump nameplate. Creating pressure beyond rated capacities may result in personal injury.**
- **Before replenishing the oil level, retract all actuators to prevent overfilling the pump reservoir. An overfill may cause personal injury due to excess reservoir pressure created when cylinders are retracted.**

Actuators

- **Do not exceed rated capacities of any system components. Excess pressure may result in 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.**

Rev. 1 Date: 21 Oct. 1998

Litho in USA

PREPARATION & SET-UP

Air Supply

The air supply should be capable of providing 13 CFM at 100 PSI to obtain the rated hydraulic output. Shop air line pressure should be regulated to a maximum of 125 PSI. It is very important to supply the pump with clean, dry air.

Hydraulic Connections

Clean areas around all oil ports of the pump and system components. 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.

IMPORTANT: Seal all external pipe connections with a high quality, nonhardening thread 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 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

Pump Operation

1. Connect hoses from the remote valve to the pressure and return ports on the pump.
2. Apply air pressure to pump. Regulate the hydraulic pressure with the regulator on the pump.

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/Filtration

The lubricator is set to feed approximately 1 drop of SAE grade oil (5W to 30W) per minute. Periodically inspect the bowl of the lubricator and replenish supply as necessary. Periodically inspect the bowl and element of the filter. Clean and replace as necessary.

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 system 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. **OR** Loosen a fitting at the end of the system furthest from the pump. Apply air pressure to the pump. When clean, clear oil discharges from the fitting, disconnect the pump and retighten fitting.

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

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 1/2" from the top of the reservoir. For Model F 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 shroud and 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. Connect the pump's pressure port to the return port or route the output flow back to the pump reservoir.
5. 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.
6. 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. Actuator(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 1/2" from the top of the reservoir. For Model F 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 and keep the return port plugged. 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. 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. Plug the manifold pressure port, or install the pump and shift the control 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.
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, in the portion of the circuit to be monitored.
2. Tighten all connections securely but do not overtighten.

TROUBLE-SHOOTING GUIDE

PROBLEM	CAUSE	SOLUTION
Pump reciprocates but no oil delivery. (actuator will not extend)	1. Low oil level.	1. Add oil as instructed in Preventive Maintenance section.
	2. Pump not primed.	2. Prime pump as instructed in Preventive Maintenance section.
	3. Oilinlet filter contamination.	3. Clean filter.
Actuator(s) advance to desired stroke but pump does not build desired hydraulic pressure (air motor running)	1. Reservoir not vented.	1. Vent reservoir by removing shipping plug and installing filler/vent cap.
	2. Oil level too low.	2. Fill reservoir to level as instructed in "Inspecting the Hydraulic Fluid Level" in the Preventive Maintenance section.
	3. Leaky connection or hose.	3. Tighten connections or replace hose.
	4. Excess air in oil.	4. Bleed unit as instructed in Preventive Maintenance section.
Pump will not build to maximum pressure (air motor stopped running)	1. Faulty gauge.	1. Replace gauge.
	2. Inadequate air supply.	2. Check air supply. 90 PSI air pressure is needed to obtain correct hydraulic pressure.
	3. Air regulator not set properly.	3. Increase or decrease hydraulic pressure by turning regulator clockwise or counterclockwise to achieve desired pressure.
	4. Leaking air line or connections.	4. Repair or replace.
Low oil delivery (actuator extends slowly)	1. Inadequate air supply.	1. Check air supply.
	2. Clogged oil inlet filter.	2. Clean the filter.
	3. Air trapped in hydraulic system.	3. Bleed system of air as instructed in Preventive Maintenance sec.
Excess oil spray from muffler.	1. Air lubricator is set too rich.	1. Turn adjuster clockwise until closed and then open 1/8 turn.