

014-00088	100188	D-01021-AA	PA6-CELETTE
4020	201641	HA6	PA6-FACOM
4021-ABT	201642-GRC	P131-10	PA6-HLIFT
4022	203398	PA4	PA6-LUAM
4023	203637-IMT	PA6	T0-9
4025	203641-HKP	PA6M	Y12
50621	203641-LOT	PA6-2	Y13
99110	203641-OTC	PA6-AUTOROBOT	Y14

MODELS C, D, E, & F AIR/HYDRAULIC PUMP HAND/FOOT OPERATED

These instructions should be read and carefully followed. Most problems with new equipment are caused by improper operation or installation.

NOTE: These instructions are intended for air/hydraulic pump units of various pressure capacities. Due to the numerous models available, it may be necessary to deviate slightly from these instructions. All illustrations and instructions refer only to the standard foot operated units.

SAFETY PRECAUTIONS



WARNING

General Operation

- All WARNING statements must be carefully observed to help prevent personal injury.
- Before operating the pump, make sure all hose connections are tightened with proper tools. Do not overtighten. Connections need only be tightened securely and leak-free. Overtightening may cause premature thread failure or may cause high pressure fittings to split at pressures lower than their rated capacities.
- Should a hydraulic hose ever rupture, burst, or need to be disconnected, immediately shut off the pump and shift the control valve twice to release all pressure. Never attempt to grasp a leaking hose under pressure with your hands. The force of 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 wear because any of these conditions can damage the hose and possibly result in personal injury.
- Do not use the hose to move attached equipment. Stress may damage hose and possibly cause personal injury.
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- 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 possible personal injury.

Pump

- Do not exceed the PSI hydraulic pressure rating noted on the pump name plate or tamper with the internal high pressure relief valve. Creating pressure beyond rated capacities may result in personal injury.
- Before replenishing the oil level, retract the system 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 Hook-Up

Remove the thread protector from the air inlet of the pump. Select and install the thread fittings which are compatible with your air supply fittings. The air supply should be 20 CFM and 100 PSI to obtain the rated hydraulic output. Air pressure should be regulated to a maximum of 125 PSI. Secure your pump fitting to the air supply. See Figure 1.

WARNING

Before operating the pump, make sure all hose connections are tight - this should be done by using the proper tools.

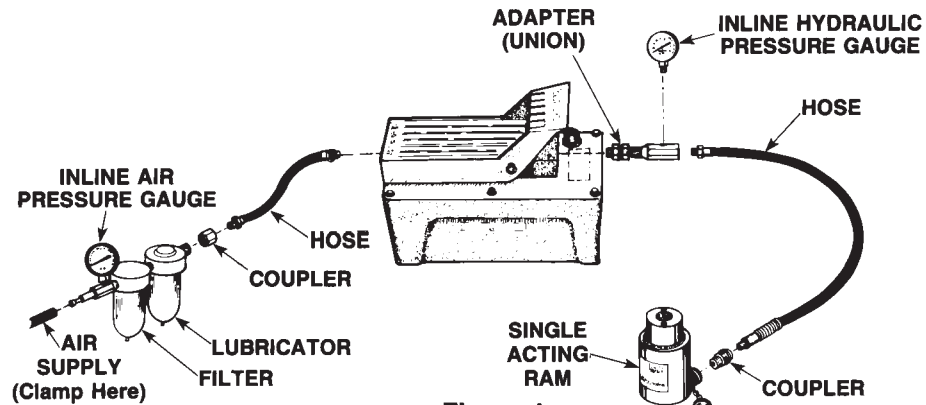


Figure 1

Hydraulic Connections

Clean all the areas around the oil ports of the pump and cylinder. Inspect all threads and fittings for signs of wear or damage and replace as needed. Clean all hose ends, couplers and union ends. Remove the thread protectors from the hydraulic oil outlets. Connect the hose assembly to the hydraulic oil outlet and couple the hose to the cylinder. See Figure 1.

IMPORTANT: Seal all external pipe connections with a high-grade, nonhardening pipe thread sealant, such as Power Team HTS6. PTFE tape may also be used to seal hydraulic connections, provided only one layer of tape is used. Apply the tape carefully 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.

Venting the Reservoir

Remove the shipping plug and replace with breather/filler cap.

Priming the Pump Unit

- Depress the release end of the pedal while holding down the air intake valve with a flathead screwdriver. Notice that the air intake valve is located directly under the pedal in the area marked Pump. This "button" is depressed simultaneously with the RELEASE area of the pedal during priming.
- Allow the pump to cycle approximately 15 seconds.
- Remove the screwdriver and depress the pump end of the pedal once more.
- If the cylinder extends or pressure builds, the pump has been successfully primed. If the pump does not respond, repeat the procedure, repeatedly jogging the air intake valve while holding the pedal in the RELEASE position.

PREVENTIVE MAINTENANCE

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

Lubrication

If the pump is operated on a continuous duty cycle for extended periods, the manufacturer recommends an automatic air line oiler be installed in the air inlet line as close to the pumping unit as possible. Set the unit to feed approximately 1 drop of oil per minute into the system. Use SAE grade oil (5W to 30W).

Bleeding Air from the System

During the initial moments of activation or after prolonged use, a significant amount of air may accumulate within the hydraulic system. This entrapped air may 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 the cylinder) free of any load. 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 after every 10 hours of use. The oil level should be 1/2" from the breather/filler cap with all cylinders retracted. Drain and replenish the reservoir with an approved, high-grade hydraulic oil after every 300 hours of use.

Draining and Flushing the Reservoir

IMPORTANT: Wipe the pump exterior completely clean before attempting this procedure!

1. Loosen and remove the six screws which fasten the pump assembly to the reservoir. Remove the pump assembly from the reservoir. Take special care to not damage the gasket, filter or safety valve.
2. Clean the inside of the reservoir and refill with a suitable, nonflammable flushing oil. Rinse the filter clean.
3. Place the pump assembly back onto the reservoir and secure with two of the six machine screws. For best results, assemble the screws in opposite corners of the housing.
4. Run the unit for several minutes. Use the same method described in the section entitled "Priming the Pump Unit."
5. Drain and clean the reservoir once more.
6. Refill the reservoir with an approved, clean hydraulic oil and replace the pump assembly (with gasket) on the reservoir and assemble the six machine screws. Torque to 25 to 30 in. lbs.

IMPORTANT: Drain and clean the other hydraulic system components (hoses, cylinders, etc.) before reconnecting them to the pump. This will prevent contaminated oil from re-entering the pump.

Refilling the Reservoir

If additional oil must be added to the reservoir, use only an approved high-grade hydraulic oil (215 SSU @ 100° F.). Clean the entire area around the breather/filler cap before adding oil to the reservoir. Then remove the breather/filler cap and insert a clean funnel with filter. The cylinder must be fully retracted and the air supply disconnected when adding the oil to the reservoir.

Periodic Cleaning

A routine should be established to keep the pump as free from dirt as possible. All unused couplers should be sealed with thread protectors. All hose connections must be free of grit and grime. Any equipment hooked up to the pump should also be kept clean. Use only an approved, clean hydraulic oil in this unit and change as recommended (every 300 hours).

ACCESSORIES

The gauges referred to in Figure 1 are accessories and are not included with the pump. However, a hydraulic gauge is strongly recommended whenever the pump is used!



WARNING: The gauge must be 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. See Figure 1.
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. Remove the thread protector from the hydraulic outlet port and inspect the threads and fittings for signs of wear.
2. Install a tee adapter, with gauge, between the hose coupling and the pump hydraulic outlet port. See Figure 1.
3. Tighten all connections securely! Do not overtighten hose connections.

TROUBLESHOOTING GUIDE

Refer to the appropriate parts list for your pump when attempting the following procedures.



WARNING

To prevent injuries, any repair work or troubleshooting should be done by qualified personnel familiar with this equipment. Be sure to use the proper gauges and equipment when troubleshooting!

PROBLEM	CAUSE	SOLUTION
<p>Pump does not reciprocate or stops reciprocating during operation (before reaching stall-out pressure)</p> <p>NOTE: The Retaining Ring (Part No. 11034) must be installed with the flat side, or sharp edge, placed toward the retainer as shown.</p> <p style="text-align: center;">Figure 2</p>	<ol style="list-style-type: none"> 1. Broken return spring (20) or retaining ring (18) if so equipped 2. Loose air piston screws (29) 3. Sticky shuttle valve <ul style="list-style-type: none"> (A) Swollen o-ring (23) (B) Swollen bumper (31) (C) Broken Spring (22) (D) Excess oil in shuttle chamber 4. Tight air piston <ul style="list-style-type: none"> (A) Swollen o-rings (33) 5. Air leakage <ul style="list-style-type: none"> (A) Check air piston seals (23), (25) and (33) (B) Bumper (31) sealing surface 	<p>Replace (see Figure 2)</p> <p>Apply Loctite® and torque to 50-55 in. lbs.</p> <p>Replace</p> <p>Replace</p> <p>Replace</p> <p>Drain off excess oil</p> <p>Replace o-rings to reduce friction</p> <p>Replace if defective</p> <p>Replace if defective</p>
<p>Pump reciprocates but no oil delivery (Cylinder will not extend)</p>	<ol style="list-style-type: none"> 1. Low oil level 2. Pump not primed <ul style="list-style-type: none"> (A) Check oil filter for contamination (B) Outlet check spring (5) too strong (C) If pump will not prime or repeatedly loses prime after attempting all of preceding procedures, check the travel of the inlet check ball (9) 	<p>Replenish oil reservoir</p> <ul style="list-style-type: none"> (a) Depress air intake valve and hydraulic release valve simultaneously (b) Invert pump - fill intake filter (12) with oil - depress pedal end marked "pump" (c) Remove relief valve (7) and fill chamber with oil, then reinstall relief valve <p>Remove filter and clean</p> <p>Replace</p> <p>Ball must be flush with or below surface of filter adapter (11). If necessary replace filter adapter (11)</p>
<p>Low oil delivery (Cylinder extends slowly)</p>	<ol style="list-style-type: none"> 1. Reservoir not vented 2. Inadequate air supply <ul style="list-style-type: none"> (A) Check air input supply (B) Contamination, check air side of pump. Thoroughly inspect the slot in the air cylinder tube (60) 3. Hydraulic failure <ul style="list-style-type: none"> (A) Check the oil filter (12) for contamination 	<p>Vent reservoir</p> <p>Should be 20 C.F.M. minimum Clean and reassemble</p> <p>Clean and reinstall</p>



PROBLEM	CAUSE	SOLUTION
Low oil delivery (Cylinder extends slowly) cont'd	(B) Air in hydraulic system	Bleed the system as described in "PREVENTIVE MAINTENANCE" section
	(C) Check the travel of the inlet ball check (9)	Ball must be flush with or below the surface of the filter adapter (11). If necessary replace filter adapter (11)
Pump will not build to maximum pressure (No visible leakage)	1. Check the air supply	100 PSI is required to obtain maximum pressure
	2. Internal leakage (A) Low relief valve setting (7) (B) Inlet check ball (9) not sealing properly (C) Defective copper washer (10)	Readjust Reseat filter adapter (11) and ball (9) if necessary Replace
	3. Contamination (dirt) under pedal in release valve causing poppet and ball to be held off seat	Clean thoroughly and replace foam tube (80 [10,000 PSI]) or (78 [3,200 PSI])
	4. Outlet check ball (6) not seating properly	Reseat body (8) and replace ball (6) if necessary
	5. Release valve mechanism not seating properly	Max. 10,000 PSI Units -- Check pin (54), ball (50), release poppet (49), spring (52), o-ring (53) and poppet retainer (48). Max. 3,200 PSI Units -- Check spring (52), ball (50), o-ring (49) and ball retainer (48).
	6. Defective seals	Check o-ring (47) and copper washer (4) and replace if necessary
Pump builds pressure but will not hold system pressure	1. Check hydraulic connections	Refit as needed
	2. Contamination (dirt) under pedal in the release valve causing poppet and ball to be held off seat	Clean thoroughly and replace foam tube (80 [10,000 PSI]) or (78 [3,200 PSI])
	3. Outlet check ball (6) not seating properly	Reseat body (8) and replace ball (6)
	4. Release valve mechanism not seating properly	Max. 10,000 PSI units -- Check pin (54), ball (50), release poppet (49), spring (52), o-ring (53) and poppet retainer (48) Max. 3,200 PSI units -- Check spring (52), ball (50), o-ring (49) and ball retainer (48)
	5. Defective seals	Inspect o-ring (47) and copper washer (4) and replace if necessary
	6. Leakage in attached cylinder.	Repair as required



PROBLEM	CAUSE	SOLUTION
Excessive oil leakage visible at air muffler	1. Defective seals	
	(A) High pressure seal-U-cup (16)	Replace
	(B) Copper washer (14)	Replace and torque to 90-100 ft. lbs.
	(C) Paper gasket (19), Model C only	Replace
	(D) Rubber seal (59)	Replace
	2. Excess oil in air supply	Adjust air line lubricator
	3. Pump body (8) porosity	Replace
Reservoir gasket blow-out	1. Air leakage past any of the following seals if defective	
	(A) O-rings (35)	Replace
	(B) Rubber seal (59)	Replace
	(C) Paper gasket (41)	Replace
	2. Reservoir overfilled with oil	Check oil level
Pump continues to run after release of foot pedal	1. Defective seal (38)	Replace
