
MODEL D
AIR HYDRAULIC PUMP
Max. Capacity: 10.000 PSI

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.

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

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 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 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.

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 10 oil per minute. If no lubricator is used, or when the unit will be idle for a long time, add a few drops of SAE 30 oil directly to the air intake weekly.

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. With all cylinder(s) retracted, the oil level should come to within 1/2" of the filler/breather cap. 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 within 1/2" of the top lip of the reservoir. 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. Fill to within 1/2" of the filler/breather cap.

Priming the Pump Unit

1. 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.
2. Allow the pump to cycle approximately 15 seconds.
3. Remove the screwdriver and depress the pump end of the pedal once more.
4. 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.

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, between the valve and the cylinder.
2. Tighten all connections securely but do not overtighten.

Fire-Resistant Hydraulic Fluid

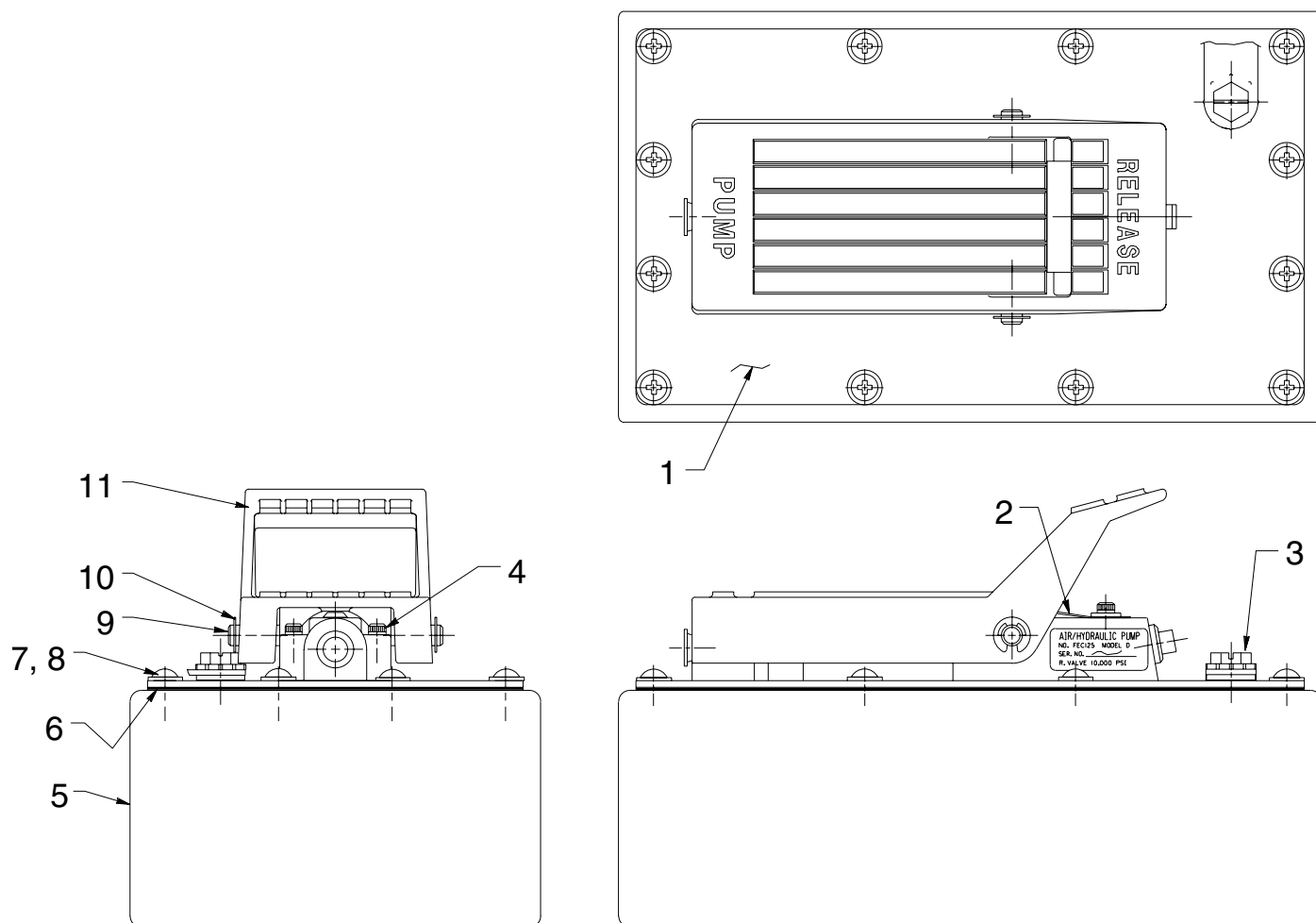
Flame Out 220™* fire-resistant hydraulic fluid is compatible with all Power Team Equipment. The use of this fluid does not require the changing of seals in any Power Team pump or cylinder and is available through your local Power Team distributor.

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

TROUBLE-SHOOTING GUIDE

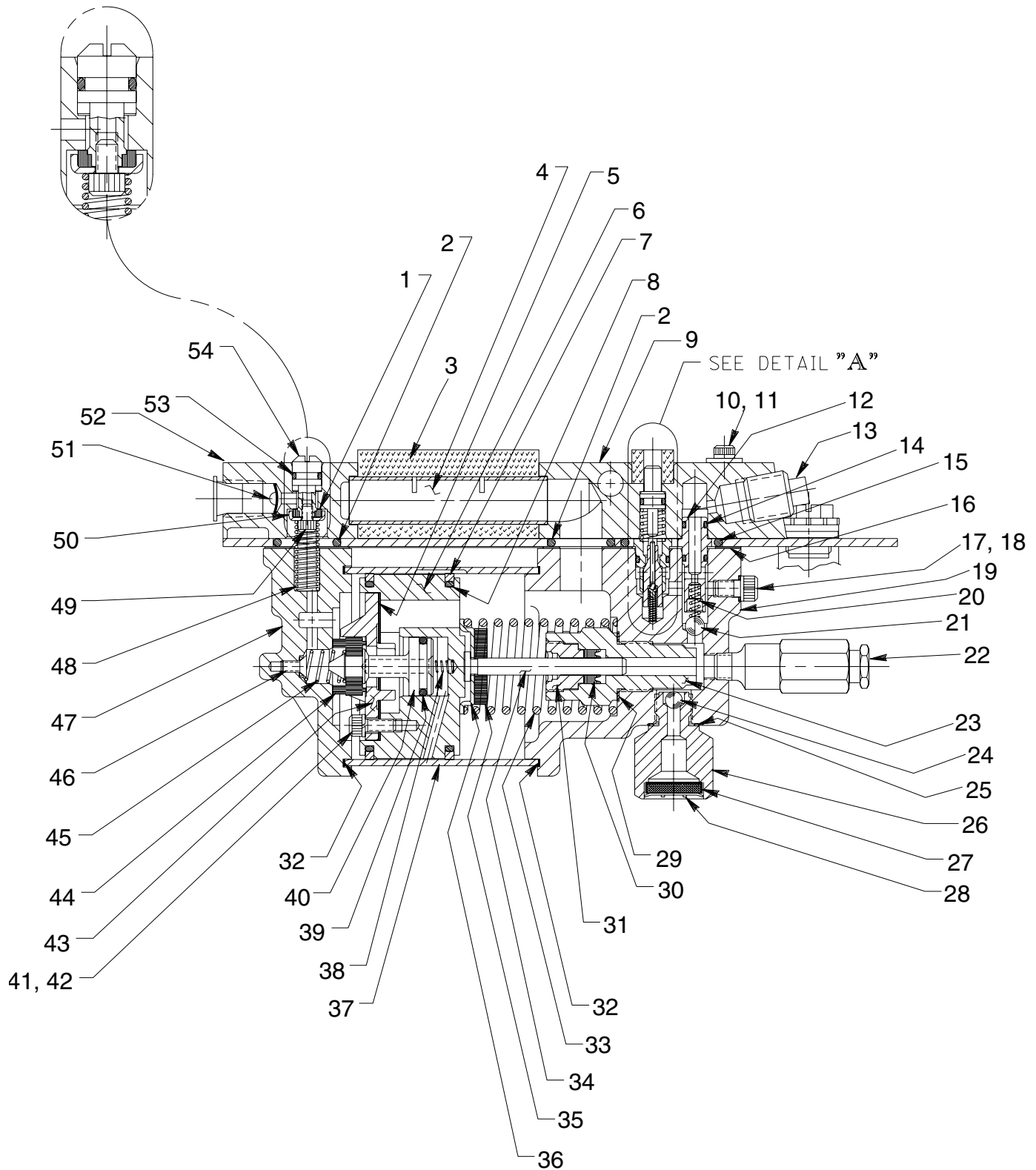
PROBLEM	CAUSE	SOLUTION
Pump reciprocates but no oil delivery. (cylinder will not extend)	<ol style="list-style-type: none"> 1. Low oil level. 2. Pump not primed. 3. Oil filter contamination. 	<ol style="list-style-type: none"> 1. Add oil as instructed in Preventive Maintenance section. 2. Prime pump 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)	<ol style="list-style-type: none"> 1. Faulty gauge. 2. Reservoir not vented. 3. Oil level too low. 4. Leaky connection or hose. 5. Excess air in oil. 6. Defective 3-way/4-way valve 7. Leaking clamps. 	<ol style="list-style-type: none"> 1. Replace gauge. 2. Vent reservoir by removing shipping plug and installing filler/vent cap. 3. Fill reservoir to within 1/2" of fill hole. 4. Tighten connections or replace hose. 5. Bleed unit as instructed in Preventive Maintenance section. 6. Replace valve. 7. Replace clamps.
Pump will not build to maximum pressure (air motor stopped running)	<ol style="list-style-type: none"> 1. Inadequate air supply. 2. Air regulator not set properly. 3. Leaking air line or connections. 	<ol style="list-style-type: none"> 1. Check air supply. Minimum of 100 PSI air pressure is needed to obtain 10,000 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)	<ol style="list-style-type: none"> 1. Inadequate air supply. 2. Clogged oil filter. 3. Air trapped in hydraulic system. 	<ol style="list-style-type: none"> 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.	<ol style="list-style-type: none"> 1. Loose or cross-threaded connections. 2. Defective 3-way/4-way valve. 3. Defective clamps. 	<ol style="list-style-type: none"> 1. Check for leakage and re-fit if necessary. 2. Replace valve. 3. Replace clamps.
Pump will continue to run slowly even after desired pressure is reached.	<ol style="list-style-type: none"> 1. Defective 3-way/4-way valve. 2. Defective clamps. 	<ol style="list-style-type: none"> 1. Replace valve. 2. Replace clamps.
Excess oil spray from muffler.	<ol style="list-style-type: none"> 1. Air lubricator is set too rich. 	<ol style="list-style-type: none"> 1. Turn adjuster clockwise until closed and then open 1/8 turn.

GENERAL ASSEMBLY

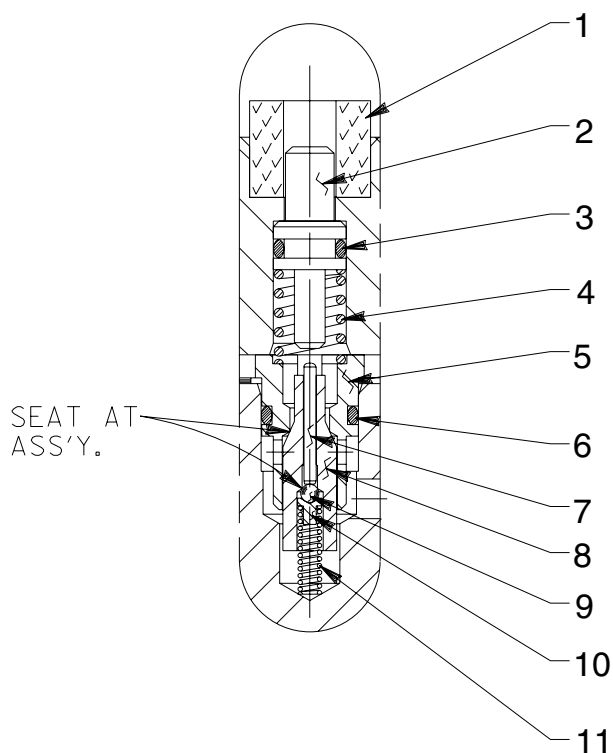


Item No.	Part No.	No. Req'd	Description
1	52640-BK2	1	Cover Plate
2	302466	1	Clip Spring
3	20937S	1	Cap and Gasket Assembly
4	11151	4	Soc. Hd. Cap Screw (#10-24 x 1-1/4 Lg; Torque to 50/60 in. lbs.)
5	64153-BL2	1	Reserovir
6	46271	1	Reservoir Gasket
7	10177	12	Rd. Hd. Machine Screw (1/4-20 x 3/4 Lg.)
8	250607	12	Washer (Weath-R-Seal)
9	28386	1	Pin
10	11032	2	Retaining Ring
11	41322	1	Foot Pedal

BASIC PUMP ASSEMBLY SIDE VIEW



Item No.	Part No.	No. Req'd	Description	Item No.	Part No.	No. Req'd	Description
1	28182	1	Piston Poppet	31	304295	1	Nut Retainer (NOTE: Apply Loctite No. 277 to external threads and torque to 80/100 in. lbs.)
2	10276	2	O-ring (1" x 3/4 x 1/8, -210)	32	17429	2	Backup Ring
3	29992	1	Foam Tube	33	13938	1	Compression Spring
4	28387	1	Muffler	34	28226	1	Piston
5	28239	1	Gasket	35	203143	1	Bumper
6	52390	1	Pison Body	36	210994	1	Spring Guide
7	14265	2	Piston Seal	37	37434	1	Air Cylinder (NOTE: Locate groove on upper half [top] of pump with chamfered tube end towards rear head.)
8	11229	2	O-ring (2-3/8 x 2-3/16 x 3/32, -139)	38	12692	1	Compression Spring
9	52381	1	Release Valve Body	39	211052	1	O-ring (.900 x .706 x .097, -909)
10	11435	2	Soc. Hd. Cap Screw (#10-24 x 1-3/4 Lg.; Torque to 50/60 in. lbs.)	40	305475	1	Exhaust Valve Stem
11	11089	2	Washer	41	211054	3	Soc. Hd. Cap Screw (#10-24 x 1/2 Lg.; Torque to 50/55 in. lbs.)
12	34378	1	Check Valve Body	42	10241	3	Lockwasher
13	211061	1	Plastic Plug (3/8 NPTF)	43	33822	1	Piston End Plate
14	211053	2	O-ring (-010)	44	28183	1	Piston Poppet
15	10281	1	O-ring (1-1/2 x 1-1/4 x 1/8, -218)	45	205679	1	Compression Spring
16	34283	1	Gasket	46	205674	1	Flange Hd. Screw (#8-32 x 3/8 Lg.; Torque to 12/18 in. lbs.)
17	10002	1	Soc. Hd. Cap Screw (1/4-20 x 3/8 Lg.; Torque to 90/110 in. lbs.)	47	51480	1	Rear Head
18	10442	1	Copper Washer (3/8 x 1/4 x 1/32)	48	12691	1	Compression Spring
19	50494	1	Pump Body	49	13936	1	Soc. Hd. Cap Screw (#8-32 x 1-1/4 Lg.)
20	10445	1	Compression Spring	50	28198	1	Seal Guide
21	10423	1	Steel Ball (9/32 dia.)	51	216296	1	Disc Filter
22	21278	1	Relief Valve Assembly (Set at 10,100/10,700 PSI)	52	37199	1	Air Intake Body
23	45278	1	Piston Cylinder (Torque to 90/110 ft. lbs. oiled)	53	10267	1	O-ring (7/16 x 5/16 x 1/16, -011)
24	10375	1	Steel Ball (1/4 dia.)	54	33841	1	Actuator Button
25	10261	1	Soft Copper Washer	PARTS INCLUDED BUT NOT SHOWN			
26	308893	1	Filter Adapter (Torque to 40/50 ft. lbs. oiled.)	17428	1	Soc. Hd. Cap Screw (1/4-20 x 4" Lg; Torque to 85/95 in. lbs. oiled; NOTE: Cross torque in increments of 30 in. lbs.)	
27	214578	1	Filter				
28	214586	1	Retaining Ring (Internal)				
29	10263	1	Soft Copper Washer				
30	13934	1	U-cup				

**DETAIL A**

Item No.	Part No.	No. Req'd	Description
1	206504	1	Foam Tube
2	28227	1	Release Valve Button
3	211053	1	O-ring (-010)
4	13944	1	Compression Spring
5	34377	1	Retainer Poppet
6	15279	1	O-ring (-012)
7	13937	1	Dowel Pin (NOTE: Place tapered end toward ball.)
8	29037	1	Release Valve Poppet
9	14443	1	Steel Ball (3/32 dia.)
10	209736	1	Eyelet
11	13959	1	Compression Spring

Sheet No. 4 of 4

Issue Date: Rev. 12-20-92