

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. 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. 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. If both pumping units build pressure and stall, the unit has successfully been primed.

Periodic Cleaning

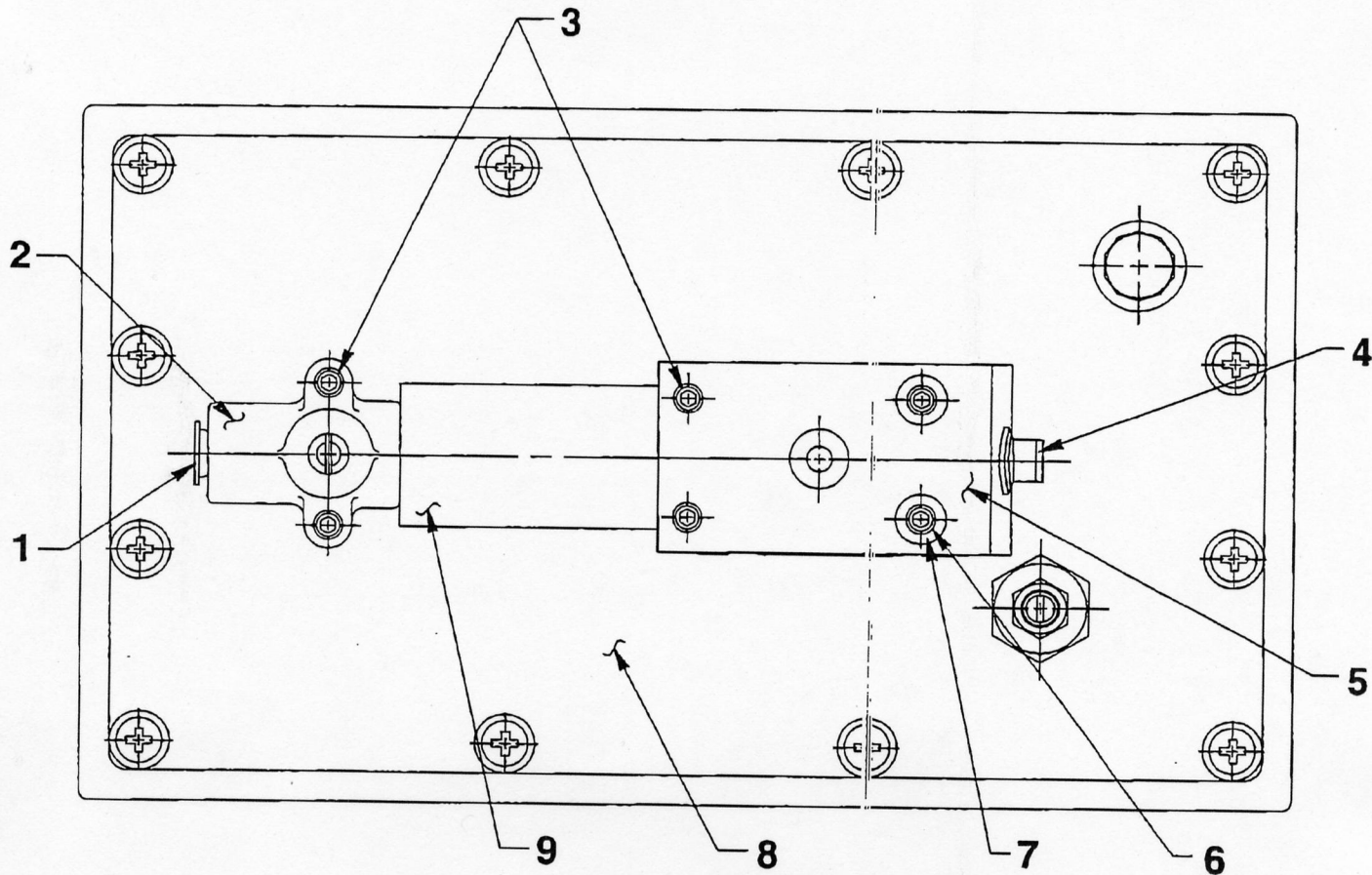
IMPORTANT: The greatest single cause of failure in hydraulic pumps is dirt. Keep the pump and attached equipment clean to prevent foreign matter from entering the system.

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.

Trouble-shooting Guide Cont'd

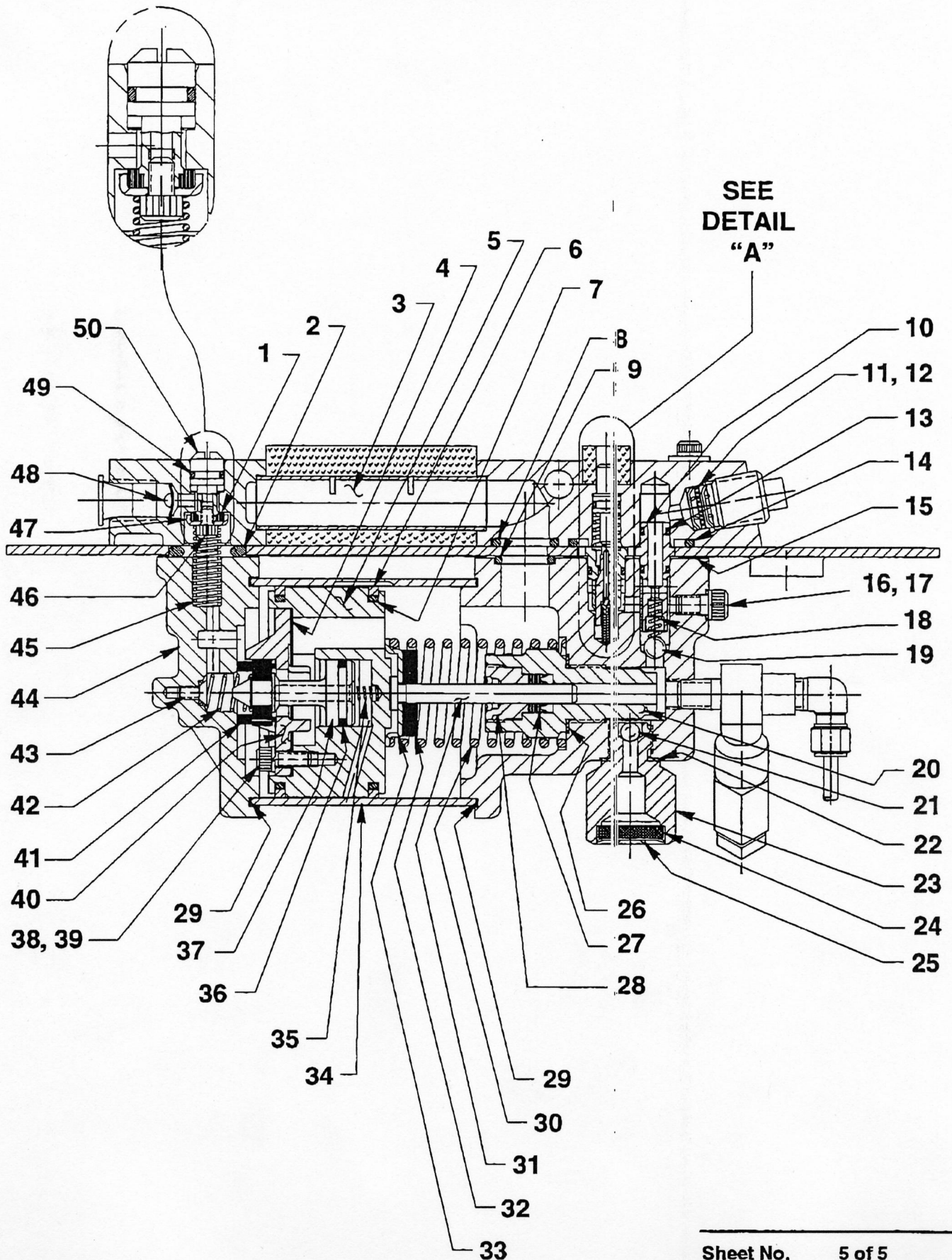
PROBLEM	CAUSE	SOLUTION
Low oil delivery (cylinder extends slowly)	<ol style="list-style-type: none"><li data-bbox="586 241 894 271">1. Inadequate air supply.<li data-bbox="586 333 833 363">2. Clogged oil filter.<li data-bbox="586 363 1002 394">3. Air trapped in hydraulic system.	<ol style="list-style-type: none"><li data-bbox="1068 241 1490 333">1. Check air supply -- 40 CFM minimum at 100 PSI is required to achieve full speed.<li data-bbox="1068 333 1295 363">2. Clean the filter.<li data-bbox="1068 363 1503 435">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"><li data-bbox="586 492 925 553">1. Loose or cross-threaded connections.	<ol style="list-style-type: none"><li data-bbox="1068 492 1464 553">1. Check for leakage and re-fit if necessary.
Excess oil spray from muffler.	<ol style="list-style-type: none"><li data-bbox="586 649 956 680">1. Air lubricator is set too rich.	<ol style="list-style-type: none"><li data-bbox="1068 649 1475 711">1. Turn adjuster clockwise until closed and then open 1/8 turn.

BASIC PUMP TOP VIEW



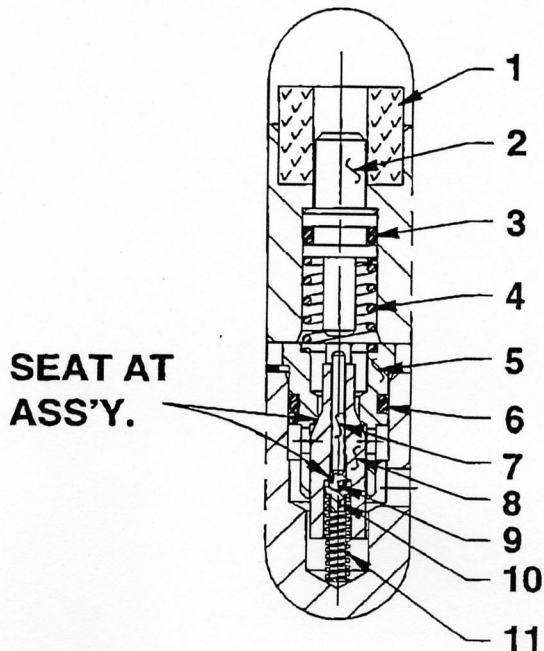
Item No.	Part No.	No. Req'd	Description
1	14794	1	Plastic Cap
2	37199	1	Intake Air Valve Body
3	11151	4	Cap Screw (10-24 UNC X 1-1/4 Lg.; Torque to 50/60 in. lbs.)
4	11127	1	Pressure Plug
5	58563	1	Release Valve Body
6	11435	2	Soc. Hd. Cap Screw (0-24 UNC x 1-3/4 Lg.; Torque to 50/60 in. lbs.)
7	11089	2	Washer (#10 bolt)
8	58704BK2	1	Cover Plate
9	29992	1	Foam Tube

BASIC PUMP ASSEMBLY



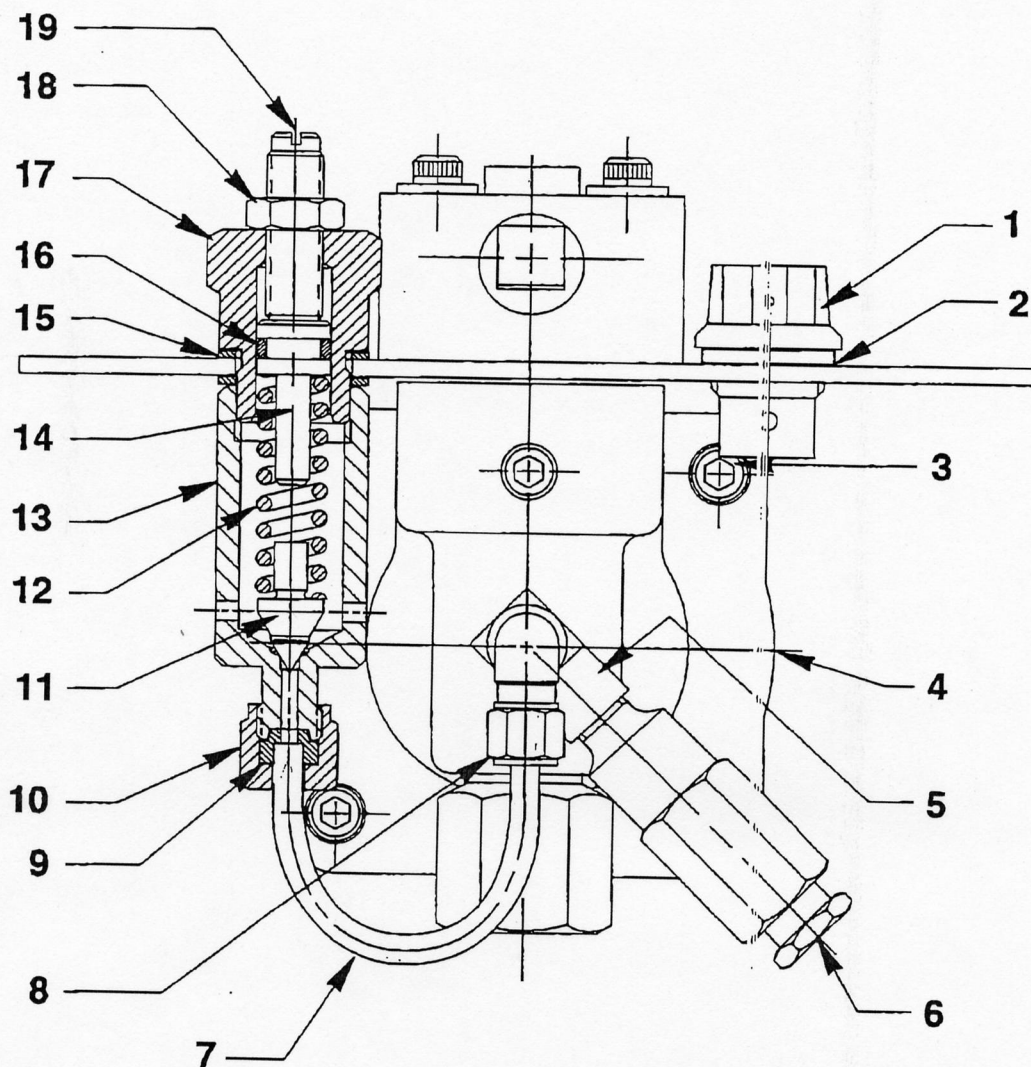
Item No.	Part No.	No. Req'd	Description	Item No.	Part No.	No. Req'd	Description
1	28182	1	Air Valve Poppet	29	17429	1	Backup Ring
2	251717	1	O-ring (1" x 5/8 x 3/16, -312; Nitrile)				(2-15/16 X 2-3/4 X .045, -148)
3	28387	1	Muffler	30	13938	1	Spring (1.452 O.D. X 4-7/16 Lg.)
4	28239	1	Gasket	31	28226	1	Piston
5	52390	1	Piston Body	32	203143	1	Bumper
6	14265	2	Piston Ring	33	210994	1	Spring Guide
7	251835	2	O-ring (2-5/16 x 2-1/8 x 3/32, -138; Nitrile)	34	351122	1	Air Cylinder (Note: Locate groove on upper half (top) of pump with chamfered tube ends toward rear head as shown.)
8	10276	1	O-ring (1" X 3/4 X 1/8, -210; Nitrile)	35	12692	1	Spring (3/16 O.D. X 1-11/16 Lg.)
9	10272	1	O-ring (3/4 X 9/16 X 3/32, -113; Nitrile)	36	211052	1	O-ring (.900 X .706 X .097, -909; Nitrile)
10	34378	1	Check Valve Body	37	305475	1	Exhaust Valve Stem
11	250638	1	Oil Filter Disc	38	10241	3	Lockwasher (For #10 bolt)
12	11088	2	Retaining Ring	39	211054	3	Screw (#10-24 X 1/2 Lg.; Torque to 50/55 in. lbs.)
13	211053	2	O-ring (3/8 X 1/4 X 1/16, -010; Nitrile)	40	33822	1	Piston End Plate
14	11841	1	O-ring (1-5/8 x 1-3/8 x 1/8, -220; Nitrile)	41	28183	1	Piston Poppet
15	351021	1	Gasket	42	205679	1	Spring (.485 O.D. X .915 Lg.)
16	10442	1	Washer (3/8 X 1/4 X 1/32)	43	205674	1	Screw (8-32 UNC X 3/8 Lg.; Torque to 12/18 in. lbs.)
17	10002	1	Cap Screw (1/4-20 UNC X 3/8 Lg.; Torque to 90/110 in. lbs.)	44	51480	1	Rear Head
18	10445	1	Compression Spring (5/32 O.D. X 3/4 Lg.)	45	12691	1	Compression Spring (3/8 O.D. X 1-1/2 Lg.)
19	10423	1	Steel Ball (9/32 Dia.)	46	13936	1	Soc. Hd. Cap Screw (8-32 UNC x 1/4 Lg.)
20	45278	1	Piston Cylinder (Torque to 90/100 ft. lbs. oiled)	47	28198	1	Seal Guide
21	10375	1	Steel Ball (1/4 Dia.)	48	216296	1	Filter Disc
22	10261	1	Copper Washer (3/4 X 19/32 X 1/32)	49	10267	1	O-ring (7/16 X 5/16 X 1/16, -011; Nitrile)
23	308893	1	Filter Adapter (Torque to 40/50 ft. lbs. oiled)	50	33841	1	Actuator Button
24	214578	1	Filter				
25	214586	1	Internal Retaining Ring				
26	10263	1	Copper Washer (1" X .765 X 1/32)				
27	13934	1	U-cup				
28	304295	1	Retainer (Note: Apply loctite No. 277 to external threads and torque to 80/100 in. lbs.)				

DETAIL "A"



Item No.	Part No.	No. Req'd	Description
1	206504	1	Foam Tube
2	28277	1	Release Valve Button
3	211053	1	O-ring (3/8 X 1/4 X 1/16, -010)
4	13944	1	Spring (3/8 O.D. X 1/2 Lg.)
5	34377	1	Poppet Retainer
6	15279	1	O-ring (1/2 X 3/8 X 1/16, -012)
7	13937	1	Dowel Pin (Note: Place tapered end toward ball.)
8	29077	1	Release Valve Poppet
9	14443	1	Steel Ball (3/32 Dia.)
10	209716	1	Ball Retainer
11	13939	1	Compression Spring (1/8 O.D. x 1/2 Lg.)

BASIC PUMP END VIEW

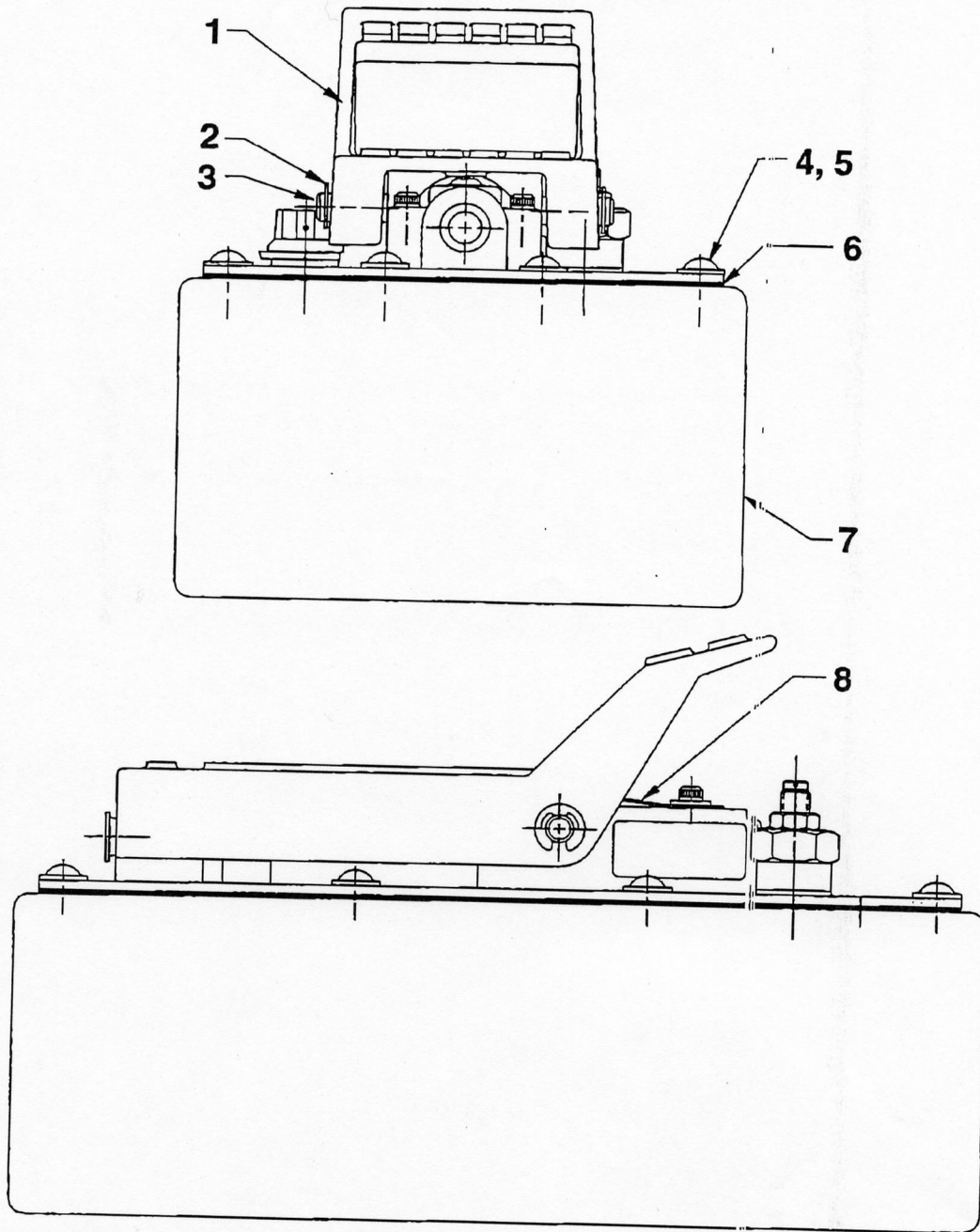


Item No.	Part No.	No. Req'd	Description
1	251689	1	Filler/Breather Cap
2	10273	2	O-ring (13/16 X 5/8 X 3/32, -114; Nitrile)
3	17428	4	Soc. Hd. Cap Screw (1/4-20 UNC X 3-1/2 Lg.; Torque to 85/95 in. lbs. oiled. Note: Cross torque in increments of 30 in. lbs.)
4	64767	1	Pump Body
5	18969	1	Pipe Tee
6	21278	1	Relief Valve Assembly
7	250958	1	Oil Line 253366 NEW # 32.0B
8	11278	1	Tube Elbow
9	11174	1	Tube Sleeve

Item No.	Part No.	No. Req'd	Description
10	11342	1	Tube Nut
11	21046	1	Valve Stem
12	10495	1	Compression Spring (1/2 O.D. X 1-5/8 Lg.)
13	22361	1	Body
14	21306	1	Spring Guide
15	10263	2	Copper Washer (1" X .765 X 1/32)
16	10268	1	O-ring (1/2 X 3/8 X 1/16, -012; Nitrile)
17	21305	1	Valve Cap
18	10386	1	Nut (3/8-24 UNF)
19	22362	1	Adjusting Screw

INCLUDES ITEM #s 8, 9, 10
BRAZED TYPE NOT CRIMP
FERULES


GENERAL ASSEMBLY



Item No.	Part No.	No. Req'd	Description
1	41322	1	Foot Pedal
2	11032	2	Retaining Ring
3	28386	1	Pin
4	10177	12	Machine Screw
5	250607	12	Washer
6	46271	1	Reservoir Gasket
7	64153BK2	1	Reservoir
8	302466	1	Spring Clip

PARTS INCLUDED BUT NOT SHOWN
 305494 1 Decal

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. Pressure regulator set too low. 	<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 with cylinders retracted. 4. Tighten connections or replace hose. 5. Bleed unit as instructed in Preventive Maintenance section. 6. Increase pressure regulator setting.
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.

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 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 Power Team HTS6 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 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.

Adjusting the Pressure Regulating Valve

The pressure regulating valve can be adjusted to bypass oil at a given pressure setting while the pump continues to run.

IMPORTANT:

- For easy adjustment of the pressure regulating valve, always adjust the pressure by *increasing* it to a desired pressure setting. The pressure range for this unit is from 1,000 PSI to 10,000 PSI.
1. Loosen the locknut on the pressure regulating valve, and turn the adjusting screw a few turns counterclockwise (CCW) to decrease the pressure setting to a lower than desired pressure.
 2. Connect the pump completely.
 3. Slowly turn the adjusting screw in a clockwise (CW) direction to gradually increase the pressure setting. When the desired pressure setting is reached, lock the adjusting screw into position by tightening the locknut.

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.**