

# MODEL-A SERVO POSITIONER

PART NUMBER - P68583  
SERVICE INFORMATION

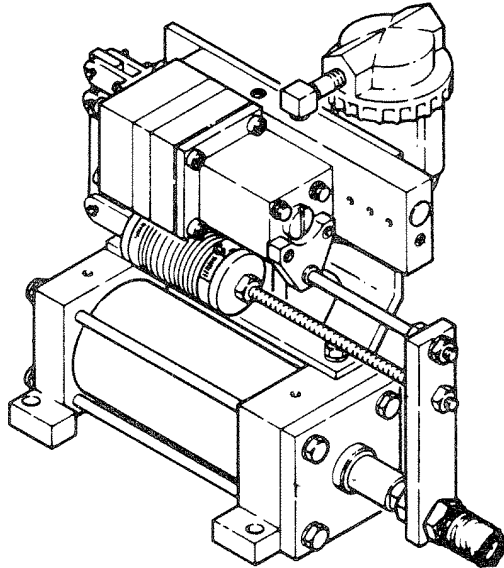


FIGURE 1. PICTORIAL VIEW

See Page 2 for **WARNING: INSTALLATION AND MOUNTING.**

Servo-Positioners offer accurate infinite positioning for devices with medium to heavy force requirements through the use of pneumatic or hydraulic power pressure media. The Servo-Positioner consists of a universal closed loop control valve portion mounted to a proven, dependable Powermaster® Cylinder designed for either pneumatic or hydraulic power pressure service.

## INSTALLATION

The Servo Positioners can be mounted in any position by the four bolts through the MS2 mounting of the cylinder portion. Be sure that this mounting is made with the positioner rod in its normal position with the rod eye connected to the load to be moved. Connect the inlet media to the port marked "P" on the top of the subplate. If that media is hydraulic fluid, remove the muffler (ref. No. 47) from exhaust port marked "E" on the end of the subplate and pipe back to the tank. Also when the media is hydraulic fluid, remove the breather plug (ref. No. 45) from the port marked "D" on the end of the subplate and connect to the tank drain system. When the media is to be pneumatic pressure, the muffler in port "E" and the breather plug in port "D" should remain in the place. The next

connection is the control signal to be applied from a pneumatic graduating controller. The model "A" positioner requires one control signal to stroke from normal retract to extend position. In order to maintain the sensitivity of these positioners, the graduating controller should provide at least equal sensitivity. Use a 3-Micron filter in the power inlet line for pneumatic media and a 10-Micron line filter for hydraulic media to ensure a long life.

## ADJUSTMENT

These units have been factory adjusted and field adjustments are not normally required. When maintaining the equipment, do not attempt to disassemble ref. No. 13A/B or ref. No. 30 from ref. No. 57 & 58. **Note:** Ref. No. 13B (spool) is factory set at a lapped spool dimension and is selectively fit to ref. 13A (bushing) at a minimum diametrical clearance tolerance.

## OPERATION

When the pneumatic control signal applied to the diaphragm of the portion is varied, the spool valve is moved to direct working fluid (air or hydraulic) to the appropriate side of the power cylinder and vent the opposite side. As the power cylinder moves to a new position, the feedback spring load changes until a position is reached where spring load equals diaphragm force. When this balance is reached the spool valve is returned to neutral position and the power cylinder travel stops.

<b>MAXIMUM AIR SUPPLY</b>	<b>250 psig</b>
<b>MAXIMUM HYDRAULIC SUPPLY</b>	<b>1000 psig</b>
<b>TEMPERATURE RANGE</b>	<b>(-20° to 160° F.)</b>

## MAINTENANCE

Periodically disassemble the power cylinder portion and servo valve portion for cleaning, inspection, and relubrication.  
**CAUTION:** Never disassemble the spool assembly.

Clean all metal parts with a non-flammable solvent and wash all rubber parts with soap and water. Rinse thoroughly and blow dry with a low pressure air jet. Replace those parts which are damaged or worn. As the reassembly proceeds, lubricate the piston seals and all rod packing and seals with Sun Oil Company No. 1897 anti-rust grease. Lubricate all "O" Rings with Dow Corning Number 55M in both the cylinder and servo valve portions.

Be sure to remove the muffler and clean in mineral spirits and blow dry in the reverse direction.

## SPOOL VALVE DESIGN

The parts list, exploded view and repair kits on the following pages show the current design of the servo positioner. The repair kits listed provide normal service parts for current units, plus necessary parts to update the spool valve assembly. All servo units of the current design have the valve spool attached to the diaphragm assembly.

## REPAIR KITS

REF.	QTY	DESCRIPTION	PC No.	REF.	QTY	DESCRIPTION	PC No.
—	1	Servo Repair Kit Pc. No. Consisting of:	P62386-0004	—	1	Piston & Tube Seal Repair Consisting of:	
13A/13B	1	ASSY., Spool Valve	P66030	7	2	O-RING, End Cover	
14	6	O-RING, 1/2"	P49708-0012	10	1	O-RING, Piston	
16	1	SPRING	P64065	11	2	O-RING, Piston Guide Ring	
18	1	O-RING, 1-3/8"	P49708-0026	12	1	O-RING, Piston	
19	1	O-RING, 1-1/16"	P49708-0118	18	1	SEAL	
24	1	DIAPHRAGM, Large	P61798-0001	All rubber parts are in repair kit P27133-0000 (see page 6 for drawing)			
27	1	DIAPHRAGM, Small	P61798				
48	7	O-RING, 7/16"	P49708-0011	4	1	CARTRIDGE, Rod Bearing Assy. P158826-0001 Consisting of:	
29	1	SCREW, 1/4-20 x 4"	P66039	4a	1	BEARING, Rod Assy. P158824	
61	1	FILTER (3 Micron) Element Kit P7524		1	1	KIT, Rod Seal P158828-0001 (includes 4b, c, d & e)	
				4b	1	WIPER, Rod P49141-0001	
				4c	1	PACKING, Rod "O" Ring P49708-0214	
				4d	1	O-RING, Rod Bearing P49708-0029	
				4e	1	RING, Back-Up P49584-0001	

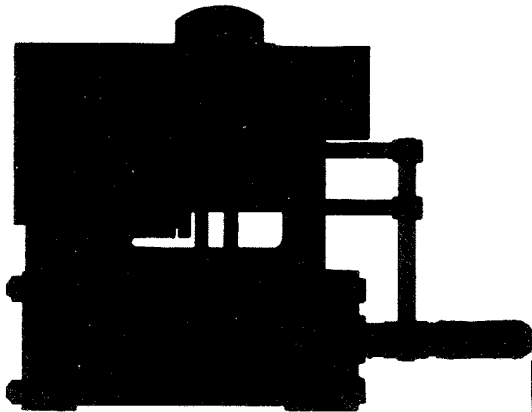
### WARNING: INSTALLATION AND MOUNTING

The user of these devices must conform to all applicable electrical, mechanical, piping and other codes in the installation, operation or repair of these devices.

**INSTALLATION!** Do not attempt to install, operate or repair these devices without proper training in the technique of working on pneumatic or hydraulic systems and devices, unless under trained supervision.

Compressed air and hydraulic systems contain high levels of stored energy. Do not attempt to connect, disconnect or repair these products when a system is under pressure. Always exhaust or drain the pressure from a system before performing any service work. Failure to do so can result in serious personal injury.

**MOUNTING!** Devices should be mounted and positioned in such a manner that they cannot be accidentally operated.



→  
O POSITION AT FULL RETRACT STROKE  
WITH TRAVEL TO EXTEND

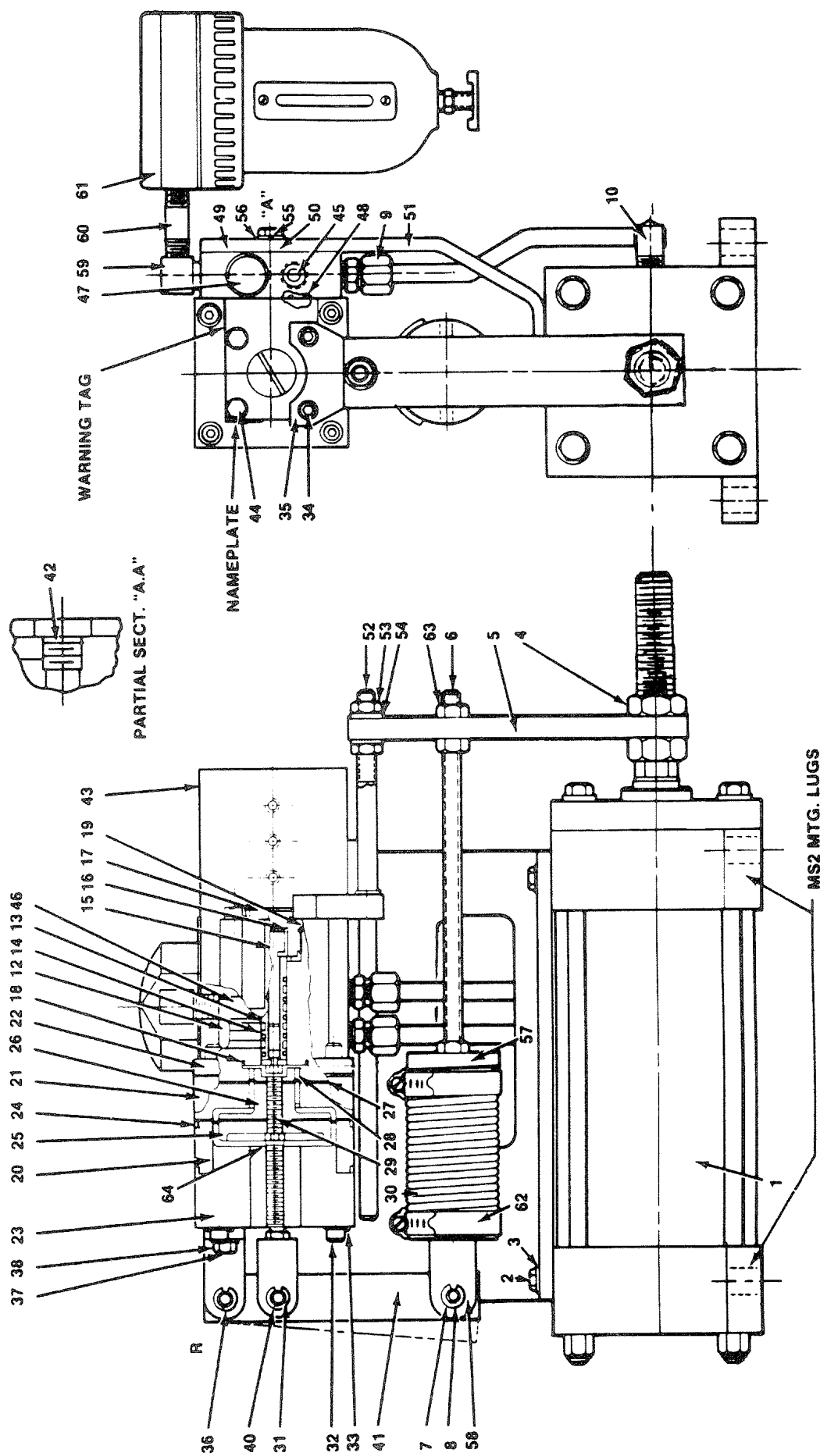


Figure 2. Assembly View

## 5" Bore Model "A" Servo Positioner Material List

<u>Item</u>	<u>Qty.</u>	<u>Description</u>	<u>Pc. No.</u>
1#	1	Cylinder, MS2 5 x 4 "	P165269#
2	2	Screw, 1/4-20 x 3/4	P49832-0034
3	2	Washer, 1/4 Lock	P49866-0009
4	3	Nut, 1-14 Jam	P49903-0037
5	1	Bar, Connecting	P61824-0005
6	1	Rod, Connecting	P61790
7	3	Pin, Pivot (9/17/80)	P48189
8	6	Ring, Ret. (9/17/80)	P49528-0001
9	2	Connector, Male Tube	P68576
10	2	Elbow, Male Tube	P48388
11	1	Bracket, Rod Eye (not furnished)	
12	1	Body, Valve	P68641
13a/b	1	Assy. Spool Valve (includes Bushing)	P66030
14*	6	O-Ring, 1/2"	P49708-0012
15	1	Seat Spring	P61785
16*	1	Spring	P64065
17	1	Nut, Retaining	P61794
18*	1	O-Ring, 1-3/8"	P49708-0026
19*	1	O-Ring, 1-1/16"	P49708-0118
20	1	Body Connector	P61818
21	1	Body, Control	P61819
22	1	Cover, Rear	P61820
23	1	Cover, Front	P61822
24*	1	Diaphragm, Large	P61798-0001
25	1	Follower, Large	P61795
26	1	Spacer, Diaphragm	P61796
27*	1	Diaphragm, Small	P61798
28	1	Follower, Small	P61784
29	1	Screw, 1/4 - 20 x 4	P66039
30*	1	Spring Control	P63891
31	1	Nut, 1/4 - 20 Jam	P49903-0015
32	8	Screw, 1/4 - 20 x 1 3/4	P49856-0012
33	4	Washer, 1/4 Lock	P49866-0009
34a	2	Screw, 1/4 - 20 x 3 1/2	P49835-0072
34b	2	Washer	P49696-0004
35	1	Yoke, Rod Guide	P61829
36	1	Bracket, Clevis	P68572
37	2	Screw, 1/4 - 20 x 5/8	P49832-0076
38	2	Washer, 1/4 Lock	P49866-0009
39	1	Spring, Diaphragm Return	P55013
40	1	Yoke, Diaphragm	P68574
41	1	Lever, Control	P68577
42	1	Plug, 1/4 Pipe	P49685-0002
43	1	Subplate	P61813
44	2	Screw, 1/4 - 20 x 3 1/4	P49832-0080
45	1	Plug, 1/4 Breather	P49594
46	1	Strainer, Inlet	P55267
47	1	Silencer	P49499
48*	7	O-Ring, 7/16"	P49708-0011
49	4	Screw, 1/4 - 20 x 1 1/2	P49836
50	2	Screw, 1/4 - 20 x 1 1/4	P49856-0056
51	1	Bracket, Mounting	P61815
52	1	Guide, Rod	P61806
53	5	Nuts, 3/8 - 24 Jam	P49903-0018
54	2	Washer, 3/8 Lock	P49866-0011
55	3	Screw, 1/4 - 20 x 3/4	P49832-0034
56	3	Washer, 1/4 Lock	P49866-0009
57	1	Retainer, Front Spring	P68571
58	1	Clevis, Rear Spring	P68578
59	1	Elbow	P49111
60	1	Nipple	P49722-0008
61	1	Filter (3 Micron Element) Unit	P64925-0001
62	1	Nut, ESNA 1/4-20	P49923-0020
63	2	Clamps	P48050-0001

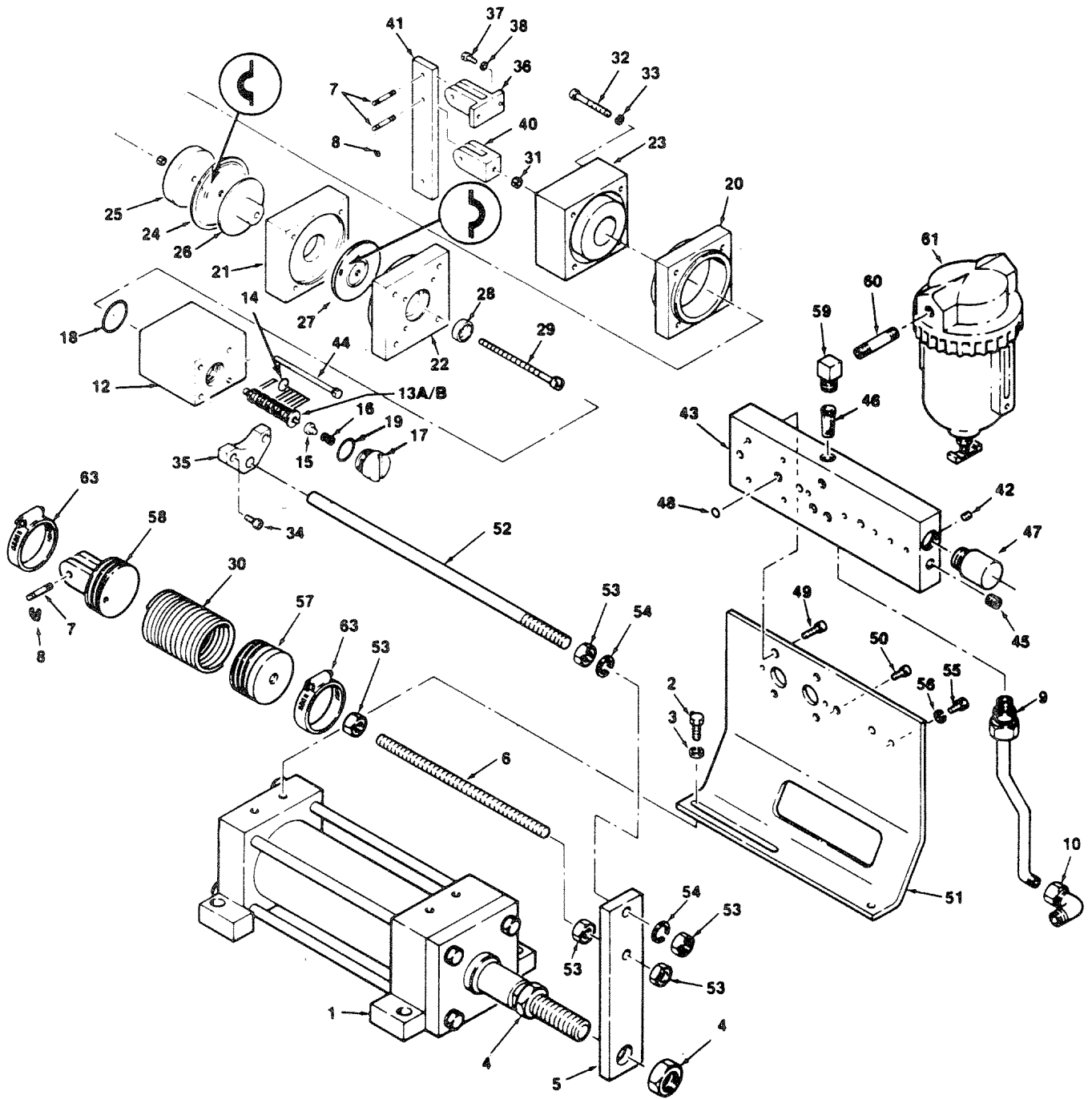


Figure 3. Exploded View

5" Bore x 4" Stroke 1-14M Thread

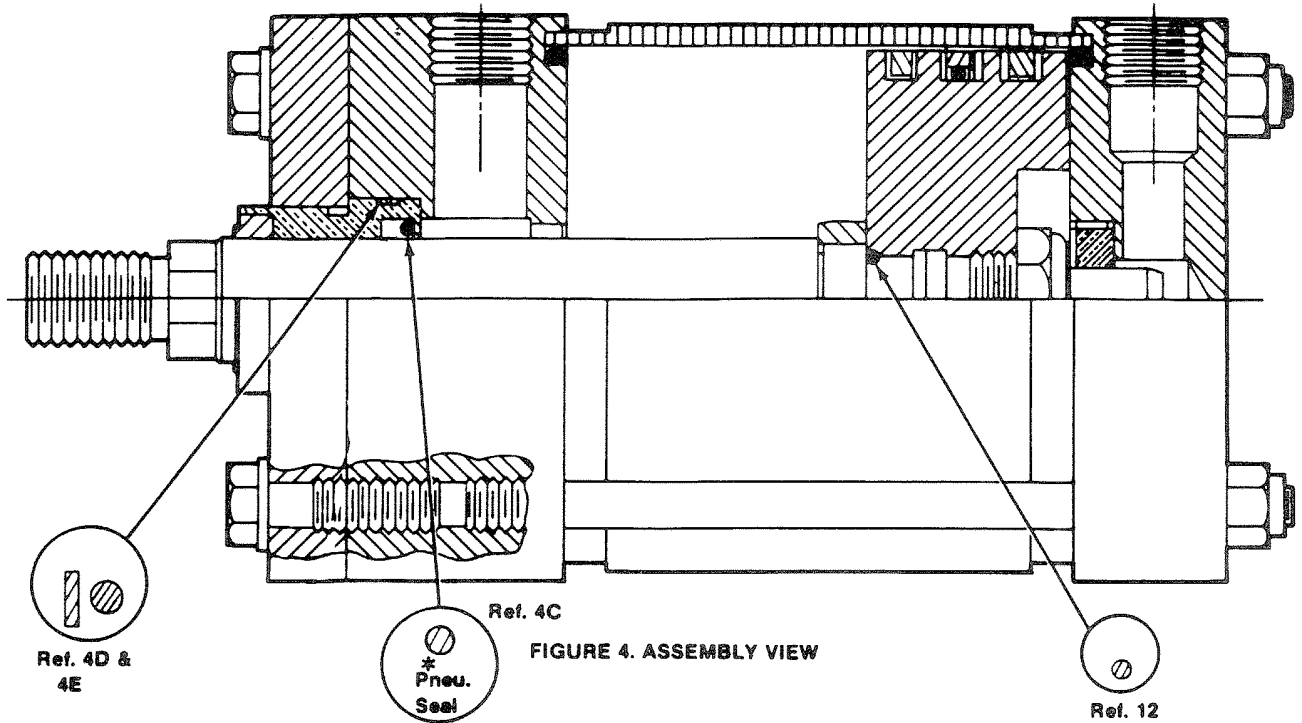


FIGURE 4. ASSEMBLY VIEW

Ref.	Description	Qty.	Pc. No.
1	SCREW, Cap	4	P49832-0042
2	WASHER, Lock	4	P49866-0012
3	PLATE, Retainer Head	1	P164477-0003
4*	CARTRIDGE, Rod Bearing Assy.	1	P158826-0001
4a*	BEARING, Rod Assy.	1	P158824
	KIT, Rod Seal (includes 4b, c, d & e)		P158828-0001
4b*	WIPER, Rod	1	P49141-0001
4c*	Seal Rod	1	P49708-0214
4d*	O-Ring, Rod Bearing	1	P49708-0029
4e*	Ring, Back-Up	1	P49584-0001
5	NUT, Tie Rod Lock	4	P49605-0017
6	HEAD, Cp.	1	P165270
	KIT, Piston (includes Nos. 7, 8, 9, 10, 11, 12 & 18)		
7*	O-RING, End Cover	2	In repair kit
8	NUT, Piston Bearing Retaining	1	P49923-0007
9	PISTON	1	P108085
10*	O-RING, Piston	1	In repair kit
11*	Piston Guide Ring	2	In repair kit
12*	O-RING, Piston Rod	1	In repair kit
13	ROD, Piston, 1-14 Thd.	1	P165272-3040
15	TUBE, Cylinder	1	P110404-0040
16	TIE ROD	4	P105929-0040
17	CAP, Cp.	1	P165270
18*	SEAL	1	In repair kit

\*Recommended spare parts to be retained in stock at all times.

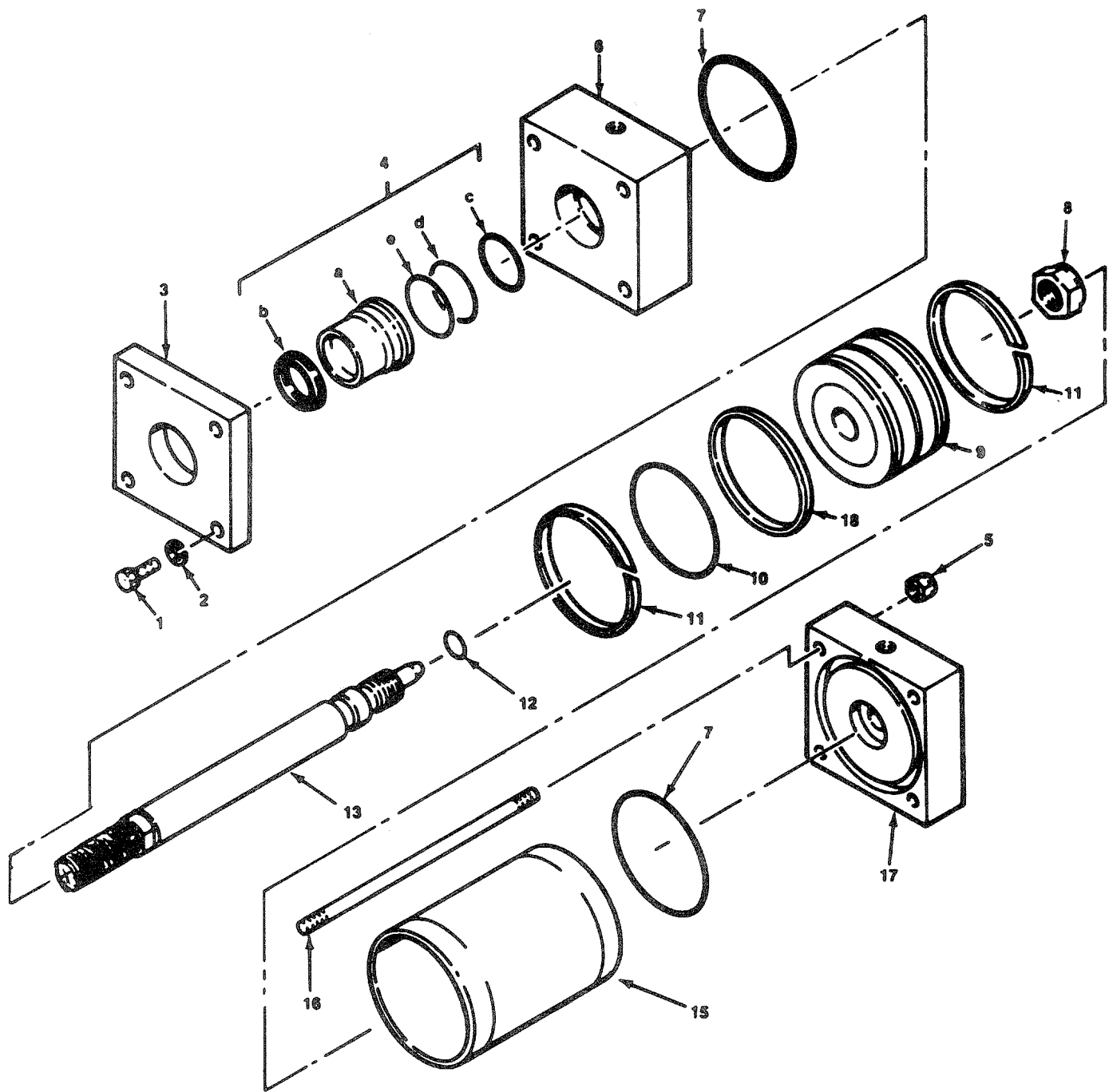
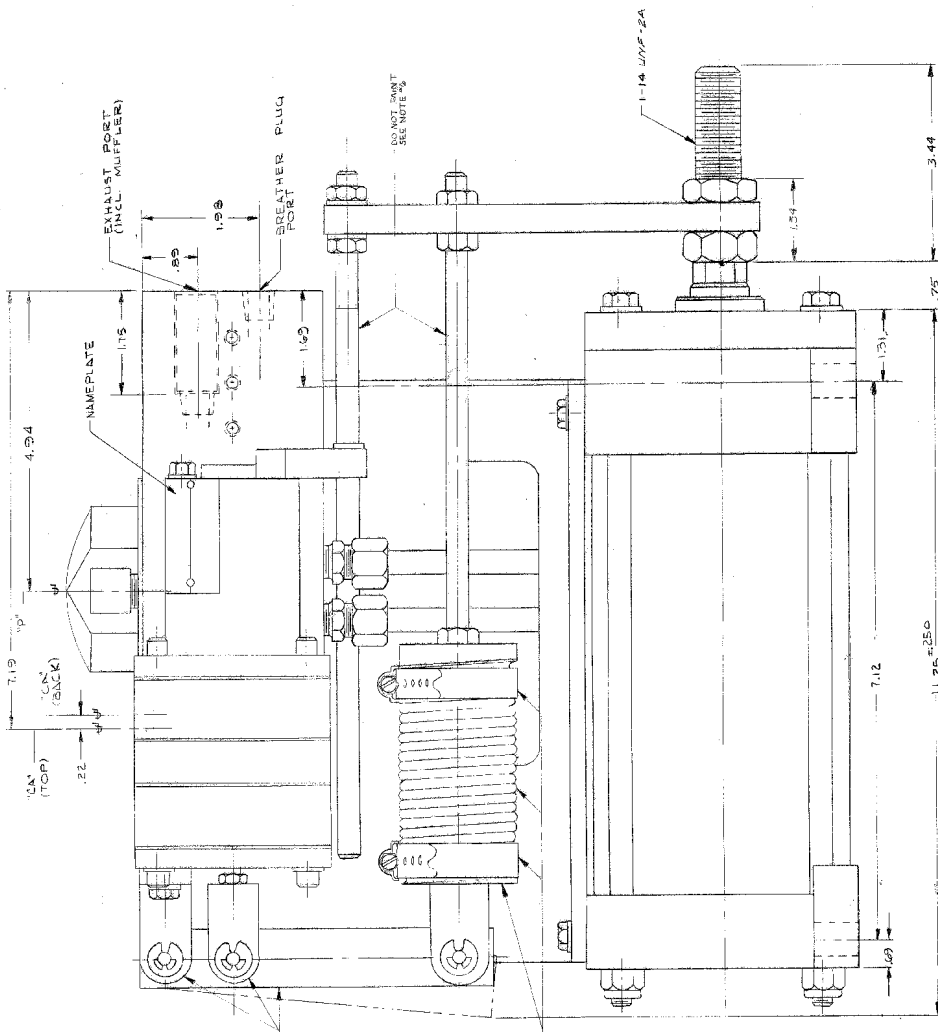
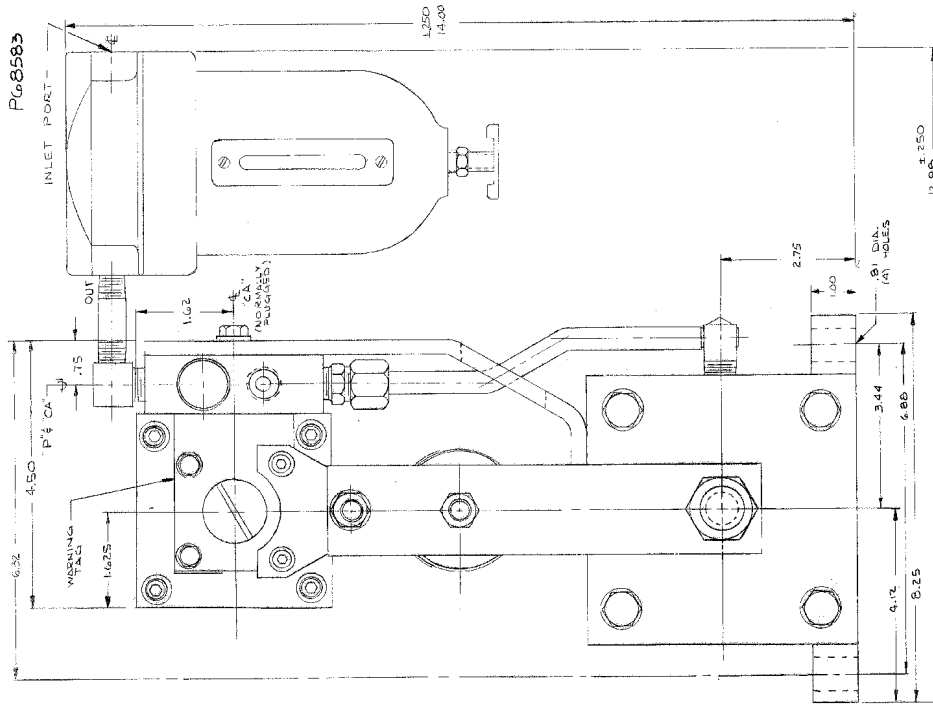


Figure 5. Special PowerMaster® Cylinder  
Exploded View





**Notes:**

- 1.) All ports 1/4"-18 NPTF
- 2.) Power Unit: MS2 PowerMaster® Cylinder
- 3.) Operating Pressure: Hydraulic 1000 P.S.I.  
Pneumatic 250 P.S.I. max.
- 4.) Control Pressure: Pneumatic 120 P.S.I. max.
- 5.) "P" Power Inlet Port, "CA" Control Inlet Port  
5) Black Epoxy Paint