AIR-DRIVEN HYDRAULIC PUMPS

MODEL S-218-200D SERIES

Operation and Maintenance Manual

Sprague Products
Division of Curtiss-Wright Flow Control Corporation
Pumps, Boosters, Portable Testers, Valves, Fittings & Tube
10195 Brecksville Road, Brecksville, Ohio. 44141
tel: 440 838-7690 fax: 440 838-7513 www.cwfc.com

S218200D
10/05
12/06 Rev. 2

SPRAGUE
AIR DRIVEN HYDRAULIC PUMPS
MODEL S-218-200D

Table of Contents

1.0 Introduction

This handbook provides the necessary information to install, operate, service and overhaul the Sprague S-218-200D pump.

The Sprague S-218-200D pump is a reciprocating, single acting, double end piston type air-operated design. It uses an internally piloted air selector valve to cycle the pump. The pump employs the differential piston area principle. The pump will cycle rapidly at first, slow down as the pressure balance condition approaches and stop when the pressure balance is reached. The pump will hold the pressure balance indefinitely with minimal energy consumption, heat generation or parts movement. When a pressure imbalance occurs, the pump will automatically restart to restore the pressure balance.

By using a pressure regulator on the operating air supply line, the outlet fluid pressure can be adjusted to any pressure level to maximum operating psig.

2.0 Safety

DANGER !

PRESSURIZED AIR, GAS OR FLUID CAN CAUSE SEVERE INJURY OR DEATH IF MISUSED !

Take the following precautions to minimize risk :

- Read and understand this handbook in its entirety before operation or service of the pump.
- Always wear safety glasses.
- Never disconnect a pressurized line.

- Do not stand in the path of bleed valves when bleeding lines.
- Always confirm that the pressure rating of the devices connected to the outlet are greater than the pressure produced by the pump.

3.0 Installation

The S-218 series pump requires only bolt attachment to a base plate and plumbing connection of three lines:

1. From driving air source to pump air inlet ports.
2. From fluid source to pump liquid inlet ports.
3. From pump liquid outlet ports to working system.

To obtain effective sealing at both the liquid inlet and air inlet ports the NPT threads on the lines connecting to the pump should be wrapped with two wraps of teflon tape. Note: Tape to within one or two threads of the end of the fitting, not to the end. Do not use pipe dope. No special tools are needed to install or overhaul the pump.

For maximum performance locate the pump's liquid inlet port such that it is level with or below the liquid reservoir or liquid source. The pump will perform satisfactory in any location or position.

Mount using the two 17/32 dia. mounting holes provided in each of the two mounting brackets on the underside of the pump's air motor for attachment to a base plate or platform. See Figures 1, 2 and 3 for installation, clearance dimensions and port connections .

Plumbing must be rated for the maximum operating pressures encountered:

1. Remove all plastic shipping plugs, including pilot vent plug in the side of the end plate.
2. Connect driving air supply line to pump air inlet.
3. Connect liquid supply line from reservoir to pump inlet port.
4. Connect system liquid line to pump outlet port.
5. Mufflers may be attached to the pump's exhaust ports.

4.0 Operation

4.1 Air Supply

- 4.1.1 The pump requires lubricated driving air for longer seal life, however, the pump can be run on unlubricated air.
- 4.1.2 Normal driving air pressure should be 85 to 100 psig to obtain maximum performance, however, the pump will operate with less air pressure.
- 4.1.3 Supply air should be filtered to 40 micron.

4.2 To Start

- 4.2.1 Adjust regulator for minimum pressure.
- 4.2.2 Open valve in hydraulic circuit to allow free liquid flow.
- 4.2.3 Turn on driving air supply.

4.2.4 Adjust air pressure regulator. Minimum operating pressure for a new pump is 30 PSIG. (2.07 bars)
4.2.5 Slowly open the air shut off valve to start operating pump.
4.2.6 After pump has been primed, slowly close valve in hydraulic circuit.
4.2.7 Check pump and air circuit for leaks in lines, fittings, etc.
4.2.8 With pump and circuit operating properly, readjust air pressure regulator until desired pump discharge pressure is reached. The hydraulic circuit is ready to operate.

4.3 To Shutdown
4.3.1 Close air shut off valve. Normally after driving air supply has been adjusted, the pump can be on-off controlled at the air shut off valve.
4.3.2 After stopping pump, bleed off hydraulic pressure before disconnecting the hydraulic circuit.

5.0 Maintenance
5.1 No special tools are required to service pump. Use standard tools.
5.2 Refer to Table 1 below for a guide to general maintenance. Recommended inspection intervals may require adjustment to comply with local conditions or as determined by experience.

TABLE 1: SCHEDULE OF INSPECTION AND MAINTENANCE

	ITEM		INSPECTION PERIOD	REQUIRED MAINTENANCE
(1)	Driving air	(a)	10 hours	Check for and drain filter liquid accumulated in filter
		(b)	50 hours	Check filter element and other other components for clogging. Clean as required
(2)	Driving air Lubricator	(a)	10 Hours	Fill oil supply to fill line. Use SAE # 10 or equivalent good quality oil. (May be run using unlubricated air) Check oil drip rate (2 drops per minute normal) at adjustment knob.
(3)	Driving air Pressure regulator	(a)	Periodic	Check for air leaks. Repair as required.
(4)	Driving Air	(a)	10 Hours	Shut off inlet air pressure and check for zero reading.
		(b)	50 Hours	Calibrate against master gage.

(5)	Pump	(a)	50 Hours	Check pump and fittings for air or liquid leakage. Repair as required.

TABLE 2: TROUBLESHOOTING PUMP OPERATION

	PROBLEM		PROBABLE CAUSE	CORRECTION
(1)	Pump is not delivering liquid (pump running)	(a)	Reservoir liquid supply is low.	Add liquid as required.
		(b)	Liquid supply line to pump inlet check valve is clogged	Remove and clean line. Check reservoir, its inlet filter and outlet for accumulation of foreign matter. Clean as required.
		(c)	Foreign matter is lodged in pump inlet check valves	Remove and clean check valves. Replace o-rings.
		(d)	Leak in suction line allowing air into lines	Tighten lines
(2)	Pump is not delivering liquid (pump not running)	(a)	Driving air supply is disconnected, air shut off valve closed or air filter is clogged.	Reconnect line. Open valve. Clean air filter.
		(b)	Air pressure regulator not adjusted.	Adjust regulator.
		(c)	Air shuttle assembly is sticking or damaged	Remove and clean air Shuttle assembly or replace.
		(d)	Pilot valves are sticking or damaged.	Remove and clean pilot valves or replace.
		(e)	Piston seals damaged.	Replace seals.
		(f)	Fittings on tubes are loose, leaking air	Tighten fittings.

(3)	Pressure drop or pump fails to build up discharge flow (pressure)	(a)	leakage or blockage at inlet or outlet check valve poppet or seat. Damaged or worn o-ring.	Remove and clean check valve. Look for foreign matter lodged in seating areas. Replace damaged or worn o-rings.
		(b)	Damaged o-ring in outer groove of air piston, or scratched or scored cylinder. Either one will allow air pressure to escape to the exhaust port.	Replace o-ring. Inspect cylinder for score marks or scratches. If marred replace cylinder.
		(c)	Damaged piston seal.	Replace.
(4)	Hydraulic liquid in exhaust air	(a)	Damaged seals on liquid piston or cylinder may be scored.	Replace wear rings, piston rod seal. Inspect cylinder for score marks; polish as required. If cylinder is heavily scored or damaged, replace.
(5)	Air in system	(a)	Air leak in suction line from reservoir to pump or at pump inlet check valve.	Tighten line fittings; use teflon trap to seal fittings.
		(b)	Reservoir liquid level below reservoir suction outlet.	Check reservoir liquid level. Replenish liquid as required.

6.0
7.0 Disassembly

6.1 High pressure cylinder and check valve assemblies.

6.1.1 Check Valve assemblies: Using allen wrench, remove cylinder head assemblies (14) from both ends of pump. See Figure 4. Remove and discard o-ring (24). See Figure 7.

6.1.2 Inlet check valve assemblies: Place cylinder head assembly (14) in vise and remove inlet check valve assembly (26).

6.1.3 Outlet check valve assemblies: Rotate cylinder head assembly (14) in vise and

remove outlet check valve assembly (25). NOTE: outlet check valve assemblies (25) are installed with 240 foot pounds of torque and will require a large wrench to remove.

6.1.4 High pressure cylinders: To remove high pressure cylinders (2) from end plates (13), turn cylinders counterclockwise.

6.2 Air shuttle assembly: Disconnect the three air tube assemblies (37) through 39). See Figure 3. Remove three each 5/16" screws (65), lock washers (56) and flat washers (52) to disconnect air shuttle assembly (9) from top of pump. See Figure 4. Separate air shuttle assembly (9) from air tube (16) and remove o-ring (42) from air port. Separate air inlet housing (12) by removing screws (64) and washers (52 and 56).

6.2.1 Refer to Figure 5. Using vise to hold air shuttle assembly, remove the pressure end cap (73) and the exhaust end cap (11) by removing from each four screws (63), lock washers (55) and flat washers (51). Remove o-ring (47) from the pressure end cap (73). Using a screwdriver to reach through the exhaust port, remove the screw (62), nut (59), lock washer (54) and flat washer (50).

6.2.2 Using pliers through the other exhaust port, grip connecting rod (4) to prevent rotation. Use an extension socket to remove lock nut (58) and flat washer (49) from piston end of connecting rod. Using a teflon rod, push against opposite end of connecting rod to press air shuttle piston (7) out of air shuttle body (9). Unscrew and remove air shuttle piston (7) from connecting rod (4). Remove o-rings (42 and 44) from air shuttle piston (7).

6.2.3 Push connecting rod (4) in opposite direction to remove connecting rod and shuttle assembly. Disassemble the shuttle assembly on the workbench. Do NOT remove sleeve (8) unless damaged. Use Phillips screwdriver with care so as not to damage the porting holes in the sleeve. Disassemble the shuttle assembly on the workbench. This completes the disassembly of the air shuttle assembly.

6.3 Air motor assembly: Depending on the need for troubleshooting or general overhaul, the air motor assembly can be disassembled completely or partially in a particular area.

6.3.1 Remove nut (61), lock washer (57) and washer (53).

6.3.2 Remove studs (15), pilot valves (28) and brackets (27).

6.3.3 Remove end plates (13).

6.3.4 Remove air piston (17), liquid pistons (3) as an assembly from the air cylinder (1).

6.3.5 Remove seal retainer screws (23), seal retainers (22), seals (21), wear rings (20), and air piston seal (17). This completes disassembly of the pump.

8.0 Inspection

8.1 Wash all metal parts while unassembled in clean solvent. Dry parts thoroughly with air or lint free cloth. Remove hardened sediment with soft bristle brush. Do NOT scrape parts with a metal tool.

8.2 Under a light, and preferably under magnification, visually inspect parts for cracks, pitting, scoring, corrosion or galling.

8.3 Inspect all threaded parts for chipped, crossed or stripped threads.

8.4 Roll springs over a flat surface to check for wobble.

8.5 Check tube assemblies (37 through 39) for kinks, breaks or defective flares.

8.6 In the check valve (25 and 26) portions of the pump, check the valve body, poppet, spring and o-rings for nicks, excessive wear or rust. Refer to paragraph 9.5 and figures 8 and 9 for more information.

8.7 On the liquid piston assembly, replace the piston rod seals (21) and the wear rings (20) whenever disassembled. Check the cylinder (2) for scoring or scratches.

8.8 In the pilot air valve assemblies (28), check for free movement. Refer to paragraph 9.6 and Figure 6 for more information. In the air motor assembly, check cylinder (1) inside surface for scratches or galling. Check air piston's dynamic o-ring (45) and other o-rings for nicks or excessive wear.

8.9 In the air shuttle assembly, inspect o-rings and seals for nicks or excessive wear. Check interior surface of sleeve (8) for scoring or scratches.

9.0 Repair and replacement.

9.1 Polish metal parts to remove minute imperfections, minor scratches or scoring. Use wet or dry paper grit # 600.

9.2 Liquid pistons (3) and cylinders (2) should be checked for galling, minor scratches or nicks. Carefully polish to remove these flaws. Remove piston rod retainer screw (23), seal retainer (22), seals (21) and wear rings (20).

9.3 Clean all repaired parts in solvent as described in paragraph 7.1 preceding.

9.4 Replace all metal parts that fail to pass inspection or are damaged or worn beyond simple repair.

9.5 At each pump overhaul, replace all o-rings and springs.

10.0 Assembly

10.1 Assembly materials consist of:

Petroleum jelly or equivalent
Hydraulic oil, or petrolatum per Fed. Sec VV-P-36
Loctite 271 adhesive/sealer (Locktite Corp)
Loctite 242 Threadlocker
Molykote 55M grease (Dow Corning Co.)
Stoddard dry cleaning solvent per Fed Spec P-D-680
One "D" drill

Lubricate o-rings with petroleum jelly, hydraulic oil or petrolatum. Use Loctite 271 adhesive/sealer on set screws.

9.2 Air shuttle assembly. Refer to Figure 5.

9.2.1 Holding connecting rod (4) in vise. Install in sequence, lock nut (58), flat washer (49), shuttle (6) flat washer (49) and lock nut (58) onto shorter length of threads. top first, onto shorter length of threads. Tighten lock nut, but leave loose enough to allow shuttle to rotate fully. In grooves of shuttle (6), install in each groove an o-ring (75) and over the o-ring, install a shuttle seal (5).

9.2.2 If sleeve (8) had to be removed, lubricate four o-rings (46) and install in grooves of sleeve (8). Position air shuttle body, exhaust end up, in vise. Apply lube to the inner wall of body. Insert sleeve (8) fully into body, chamfered end up. Lubricate inside of sleeve and outside seals of assembled shuttle with Molykote. Insert shuttle assembly, rod side down, though sleeve.

9.2.3 Install countersink head screw (62) from inside body to lock sleeve in place. Attach on outside of body with flat washer (50), lock washer (54) and nut (59).

Tighten screw so that its underside head sits in chamber on end of installed sleeve.

9.2.4 Follow procedure below to obtain the proper adjustment between the shuttle piston (7) and the shuttle (6) relative to the sleeve (8). With the shuttle (6) and connecting rod (4) assembled and fully seated in body (9), insert the shank end of a "d" drill (.2460) into the body port (to air motor) and in through the drilled hole in the sleeve (8). The drill now acts as a temporary stop for the shuttle. Place the body (9) in vise, pressure end up. Coat o-rings (42 and 44) with Molykote and assemble on piston (7). Insert pliers through body to hold connecting rod to prevent rotation. Insert piston (3) into the body and screw onto end of connecting rod (4). With shuttle end pressed against the drill, screw the piston on rod until the piston end is flush with the pressure end of the body. Install lock washer (55) and nut (60) onto connecting rod (4) and tighten. Remove drill from assembled body. Before closing the two ends of the body (9) with end caps (73 and 11), check movement of shuttle (6) by pushing piston (7) from flush position to full down into body (9).

9.2.5 With shuttle shifted to any position, the drilled holes in the sleeve should not be blocked by the seals in the shuttle nor when the shuttle is shifted to the opposite position. If holes are misaligned, recheck thread adjustment procedure above.

9.2.6 Before closing this end of body, check to be sure set screw (66) which plugs air passageway is installed. Lubricate o-ring (47) and insert into groove in pressure end cap (73). Bolt pressure end cap to body (9) with four each flat washers (51), lock washers (55) and screws (63).

9.2.7 Reverse position of body (9) in vise. Bolt exhaust end cap (11) to body with four each flat washers (51), lock washers (55) and screws (63).

9.2.8 Coat four o-rings (42) with lube and insert two into air shuttle body (9) ports and two into the air inlet (12). This completes the assembly of the air shuttle assembly.

9.3 Air motor and high pressure assembly. See Figures 3, 4, 6 and 7.

9.3.1 If any of the items (3), (17) and/or (18) had to be replaced: With air piston (17) gripped firmly in vise apply Locktite 271 to adapter (18) threads and install into air piston (17).

9.3.2 Apply Locktite 271 to piston (3) threads and install pistons (3) into adapter (18) and tighten. Coat set screws (68) with Locktite and install into adapter (18) to lock pistons in place.

9.3.3 Install wear rings (20) onto the end of each piston (one per end).

9.3.4 Secure piston seal back up (77) and seal (21) onto each end of piston (3) with seal retainer (22) and retainer screw (23). Make sure that the back up ring (77) and seal (21) are installed in the correct direction, see Figure 7. Use one drop of Loctite 242 or equivalent on set screw (23) before securely torquing in position.

9.3.5 Coat o-ring (45) with Dow Corning 55 M grease and install into air piston (17) groove.

9.3.6 Pre-lubricate inside diameter of air motor cylinder (1) with Dow Corning 55 M grease and carefully slide over air piston/high pressure piston assembly.

9.3.7 Install pilot valve assemblies (28) to end plates (13).

9.3.8 Pre-lube o-rings (45) and install in groove on the end plates (13).

9.3.9 Insert the four studs (15) into one end plate (13)

9.3.10 Position this end plate (13) over one high pressure piston of the air cylinder/high pressure piston assembly. Assemble the second end plate onto the studs and remaining high pressure piston.
9.3.11 Slide brackets (27) over bottom two studs (15).
9.3.12 Install on to each stud (15) one washer (53), lock washer (57) and nut (61) and tighten to 50 foot pounds of torque.
9.3.13 Lubricate o-rings (19) and install onto cylinders (2).
9.3.14 At this time, for ease of assembly, you may want to assemble the check valves in the cylinder head. To assemble the check valves now, see paragraph 9.4.
9.3.15 With the eight screws (71) and washers (72) assemble each cylinder head (14) to a high pressure cylinder (2). Be sure to replace o-rings (24) on cylinder heads. See Figure 7.
9.3.16 Lubricate seals and wear rings on liquid piston assembly and install the sub assembled cylinder heads and high pressure cylinders onto the high pressure piston assembly. Screw each cylinder into the air motor end plates. Align the check valve ports for the proper orientation.
9.3.17 This completes the air motor assembly.

9.4 Air shuttle installation. See Figure 4.
9.4.1 Install air tube (16) into air shuttle valve and inlet air housing (12).
9.4.2 Be sure o-rings (42) are in place.
9.4.3 Bolt air shuttle valve and inlet air housings to air motor using washer, lock washer and screw (65, 52, 56 and 64, 56, 52) respectively.
9.4.4 Install tube assemblies (37, 38 and 39).

9.5 Check valve assemblies. Refer to Figures 8 and 9.
9.5.1 Install cylinder head (14) in vise.
9.5.2 Install outlet check valve seat (25-6) (serrated side down) in port.
9.5.3 Install outlet check valve gasket (25-5).
9.5.4 Install outlet check valve spring (25-3) into check valve body (25-1).
9.5.5 Install poppet o-ring (25-4) onto poppet (25-2) and insert into check valve onto spring making sure spring is recessed into poppet.
9.5.6 Lubricate check valve body threads and install carefully into check valve port of cylinder head making sure spring, gasket and seat are properly aligned. Tighten check valve assembly in port to 240 foot pounds of torque. Repeat for other check valve assembly.
9.5.7 Rotate cylinder head in vise and install inlet check valve assembly as follows: Install gasket (26-5) into check valve port of cylinder head making sure that the gasket is seated in bottom of bore.
9.5.8 Install o-ring (26-4) on poppet (26-2) and insert o-ring side down into check valve body (26-1).
9.5.9 Install spring (26-3) into check valve body so that it fits into recess in back of poppet.
9.5.10 Lubricate threads of check valve body and install check valve assembly into the cylinder head port. Tighten inlet check valve assembly with 240 foot pounds of torque. Repeat for the other check valve assembly.

9.5 Pilot Valve (28) assemblies. Refer to Figure 6.

9.5.1 Install pilot valve in a vise by clamping on cap (28-1)

9.5.2 Remove pilot seat (28-6) from cap (28-1).
9.5.3 Remove pilot spring (28-3) and piston (28-4). Inspect these parts for damage.
9.5.4 Remove retaining ring (28-8) using care not to damage the o-ring cavity. Replace o-ring (28-7) and push in new retaining ring.
9.5.5 Remove and replace o-rings (28-2), (28-5), (28-9), and (28-10).
9.5.6 Reassemble cap, spring, piston, and seat.

This completes the assembly of the S-218-200D.
For operating instructions see Paragraph 4.0.

ILLUSTRATED PARTS BREAKDOWN (IPB)

Item	Part No.	Description	Qty
1	001-103-2	Cylinder- Air	1
2	92527	Cylinder – Fluid	2
3	92528	Piston – Fluid	2
4	90229	Connecting Rod	1
5	90230	Seal – Shuttle	1
6	90231-1	Shuttle	1
7	90232-1	Piston – Shuttle, Air	1
8	90233-1	Sleeve – Shuttle, Air	1
9	90234-1	Body- Shuttle, Air	1
10	Not Used		
11	90236	Cap – End, Exhaust	1
12	90237-1	Housing – Inlet, Air	1
13	94086	Plate – End	2
14	92529	Head – Cylinder	2
15	90240	Stud	4
16	90241	Tube – Air	1
17	90242	Piston – Air	1
18	92530	Nut – Adaptor, Piston	1
19	91417-221	O-Ring	2
20	90086-2	Bearing	2
21	94095-200	Seal – Lip	2
22	93831-2	Retainer – Piston Seal	2
23	MS24694-C5	Screw - #8-32x17/32	2
24	91417-015-1	O-Ring	2
25	82648-11	Valve Ass'y – 9/16-18	2
26	82649-11	Valve Ass'y – ¼ NPT	2
27	90265-1	Bracket – Mounting	2
28	94119	Pilot Valve Assembly	2
29	Not Used		
30	Not Used		
31	Not Used		
32	Not Used		
33	Not Used		
34	Not Used		
35	Not Used		
36	Not Used		
37	94113	Tube Assembly	1
38	94137	Tube Assembly	1
39	94138	Tube Assembly	1
40	93997-4	Elbow	2
41	93995-4	Adaptor	1
42	79550-19	O-Ring	5
43	Not Used		
44	79550-27	O-Ring	1
45	79550-70	O-Ring	3
46	79551-2	O-Ring	4
47	91417-032	O-Ring	1
48	MS20822-4J	Elbow	4
49	AN960C416L	Washer – Flat, ¼	2
50	MS27183-8	Washer – Flat, #10	1
51	MS27183-10	Washer – Flat, 1/4	8
52	MS21183-12	Washer – Flat, 5/16	5
53	MS27183-21	Washer – Flat, 5/8	8
54	MS35338-43	Washer – Lock, #10	1
55	MS35338-44	Washer – Lock, ¼	9
56	MS35338-45	Washer – Lock, 5/16	5
57	MS35338-50	Washer – Lock, 5/8	8
58	MS21045-4	Nut – Locking ¼-28	2
59	MS35650-302	Nut – #10-32	1
60	MS51968-2	Nut – ¼-28	1
61	MS51968-20	Nut – 5/8-18	8
62	MS35191-275	Screw – #10-32x7/8	1
63	MS90725-7	Screw – ¼ x 7/8 Hx Hd	8
64	MS90725-42	Screw – 5/16 x 2-1/4 Hx Hd	2
65	MS90725-45	Screw – 5/16 x 3-1/4 Hx Hd	3
66	MS51023-48	Screw – Set #10-32x3/16	1
67	80063-2	Nameplate	1
68	MS51963-22	Screw – Set #6-32x1/4	3
69	Not Used		
70	Not Used		
71	MS16997-84	Screw – 5/16 x 2 Hx Hd	8
72	MS51848-11	Washer – Lock, 5/16	8
73	90235-1	Cap – End	1
74	94136-1	Tee	1
75	79550-21	O-Ring	2
76	Not Used		
77	94091	Ring – Back Up	2

Note: For breakdown of Item 25, see Figure 8
For breakdown of item 26, see Figure 9
For breakdown of item 28, see Figure 6

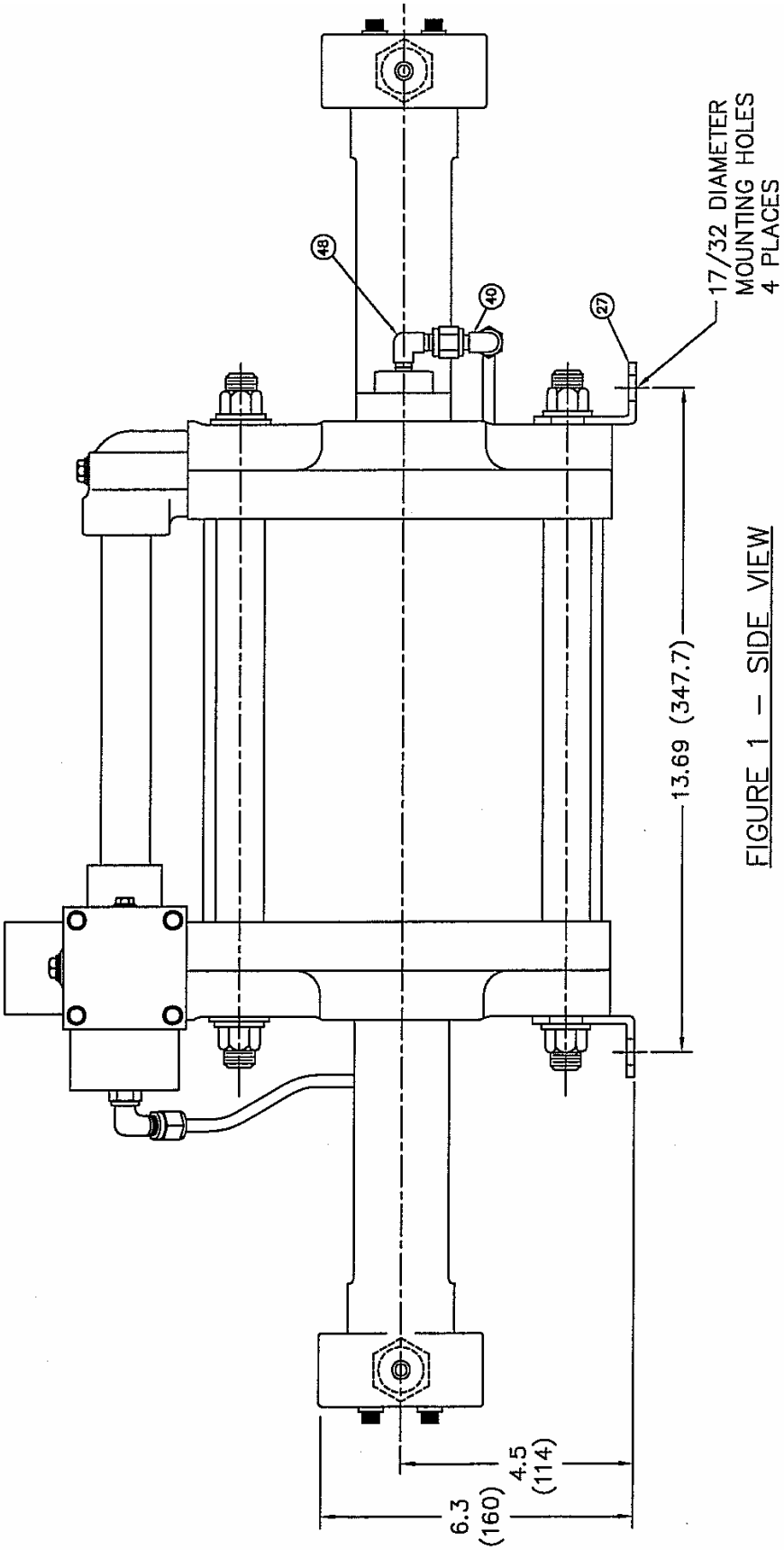


FIGURE 1 – SIDE VIEW

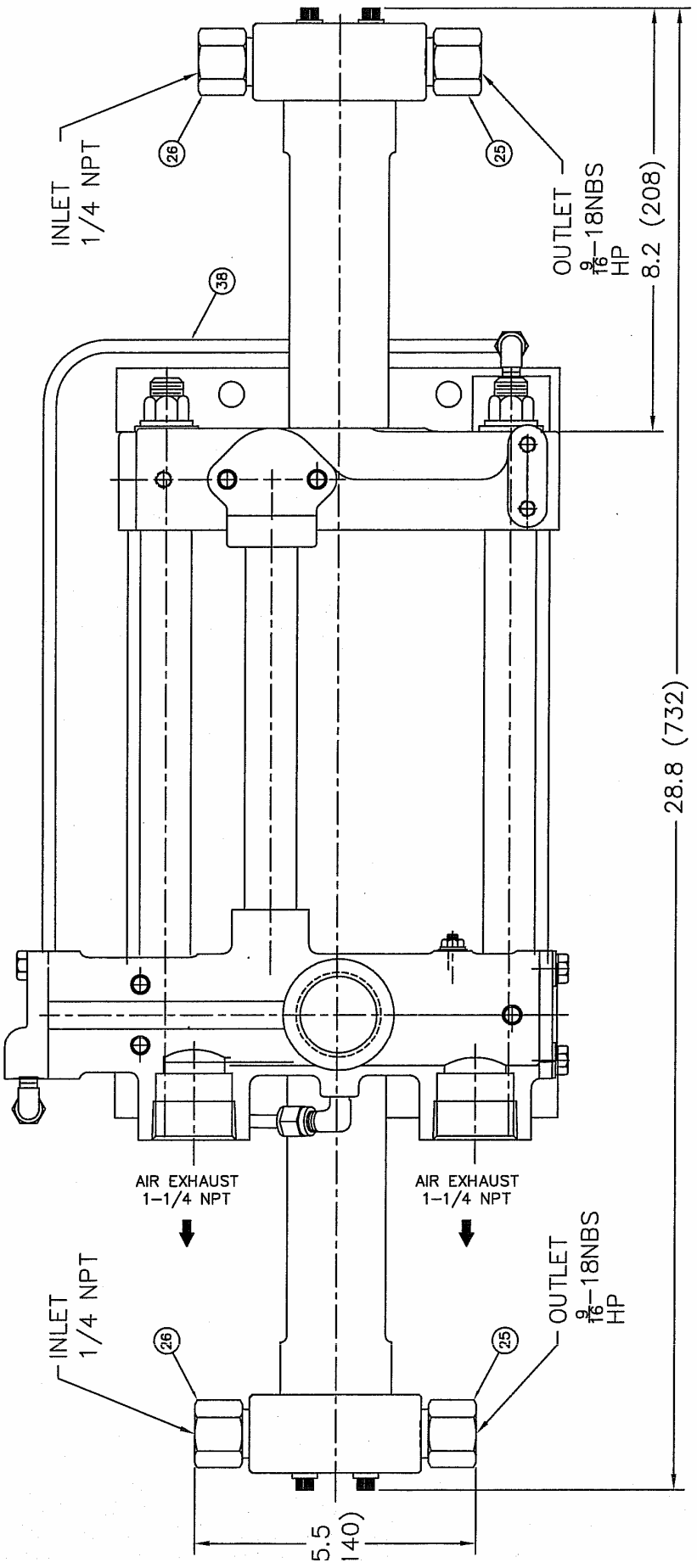


FIGURE 2 – TOP VIEW

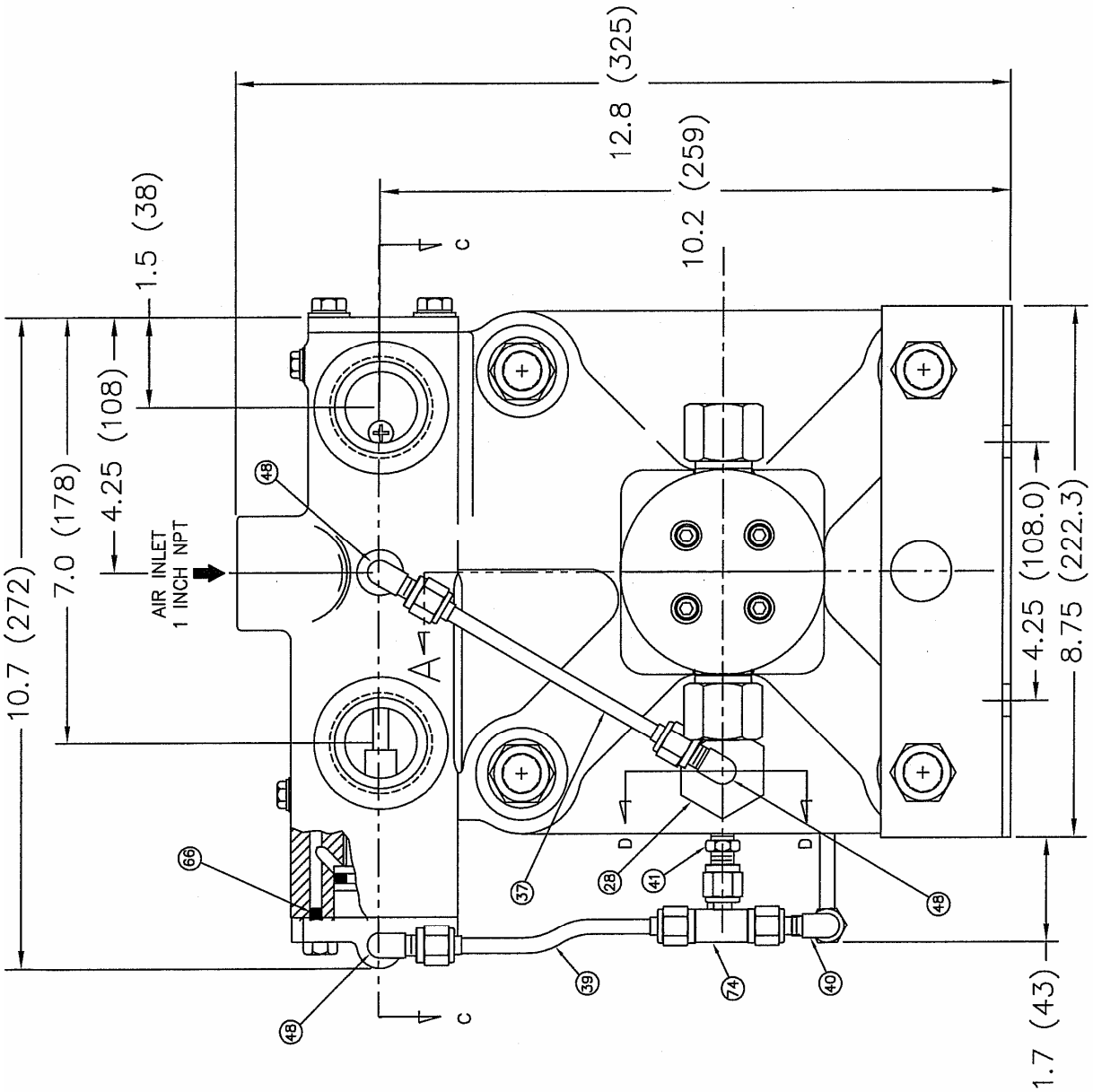


FIGURE 3 – END VIEW

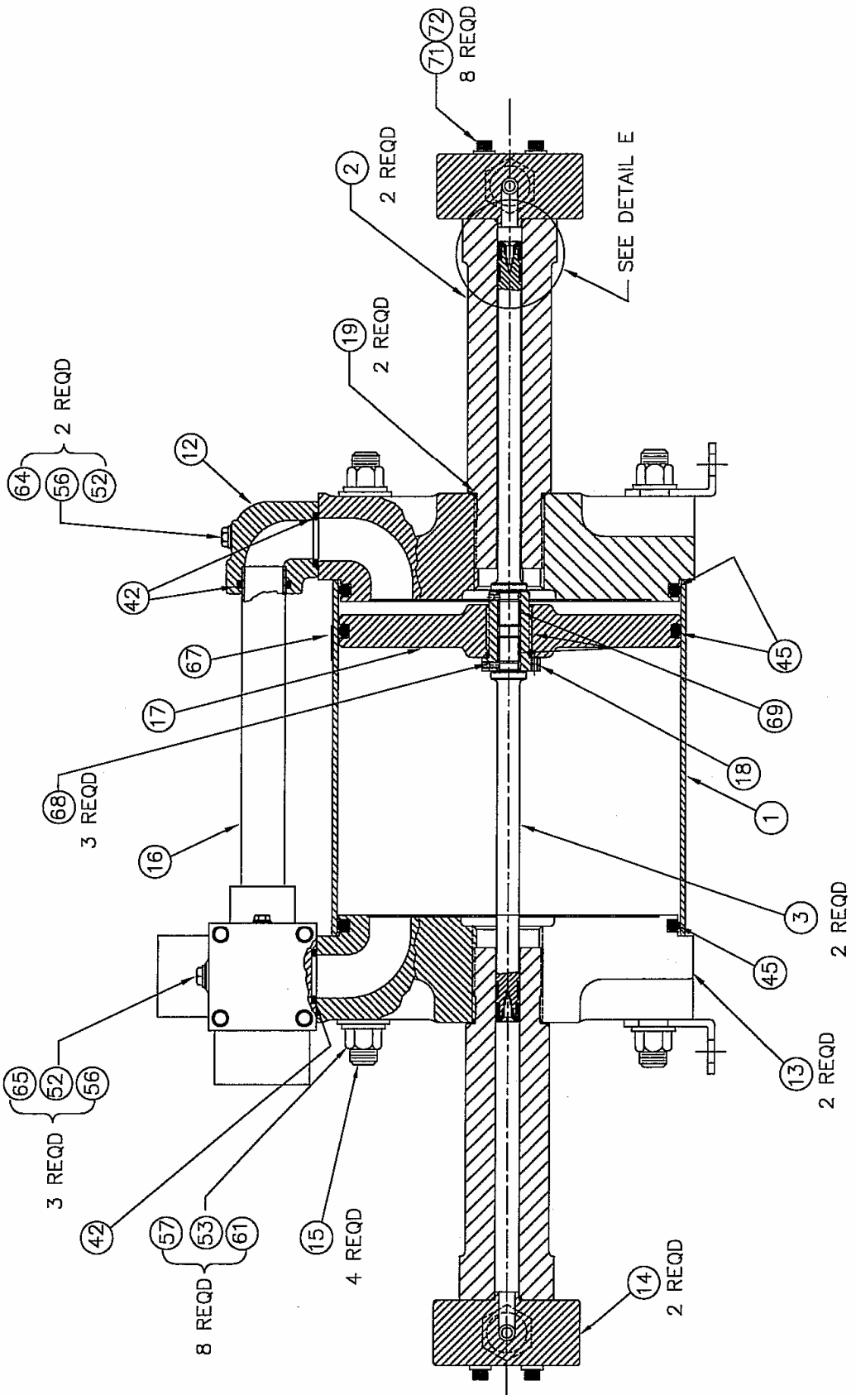


FIGURE 4 – SECTION A–A

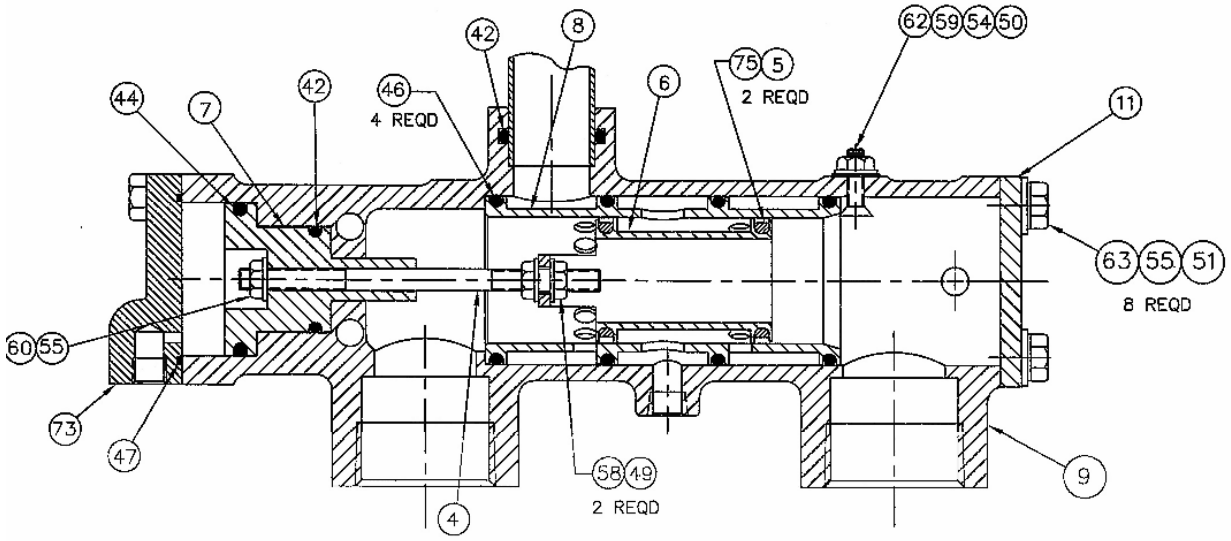


FIGURE 5 – SECTION C–C

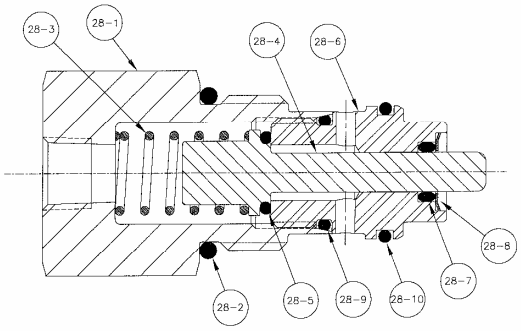


FIGURE 6: SECTION D–D

ITEM	PART NUMBER	DESCRIPTION	QTY
28–10	91417–016–1	O–RING	1
28–9	91417–014–1	O–RING	1
28–8	94120	RING – RETAINING, INTERNAL	1
28–7	91417–009–1	O–RING	1
28–6	94116	SEAT – PILOT VALVE	1
28–5	91417 011–1	O–RING	1
28–4	94118	PISTON – PILOT VALVE	1
28–3	94121	SPRING	1
28–2	91417–910–1	O–RING	1
28–1	94117	CAP – PILOT VALVE	1

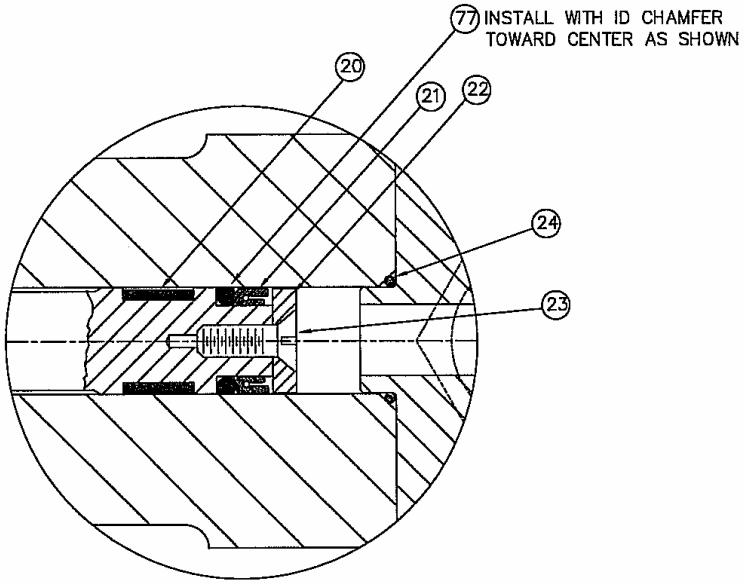
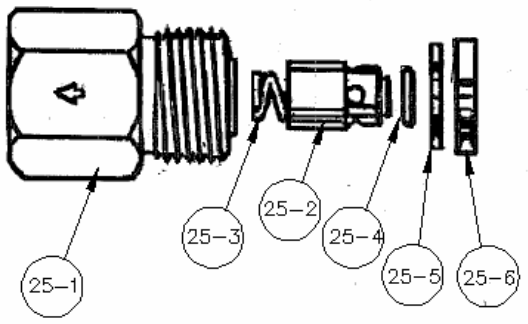


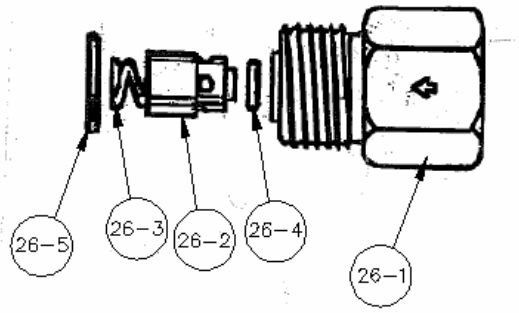
FIGURE 7 – DETAIL E (2 EA REQD)

FIGURE 8 – ITEM 25
OUTLET CHECK VALVE ASS'Y



ITEM	PART NO.	DESCRIPTION
25	82648–11	CHECK VALVE – OUTLET 9/16
25–1	89298–1	BODY – CHECK VALVE 9/16
25–2	89297	POPPET
25–3	S–216–63	SPRING
25–4	79550–5–1	O–RING
25–5	S–216–28–8	GASKET
25–6	S–216–27–4	SEAT – CHECK VALVE

FIGURE 9 – ITEM 26
INLET CHECK VALVE ASS'Y



ITEM	PART NO.	DESCRIPTION
26	82649–11	CHECK VALVE – INLET 1/4 NPT
26–1	89298	BODY – CHECK VALVE 1/4 NPT
26–2	89297	POPPET
26–3	S–216–63	SPRING
26–4	79550–5–1	O–RING
26–5	S–216–28–10	GASKET