

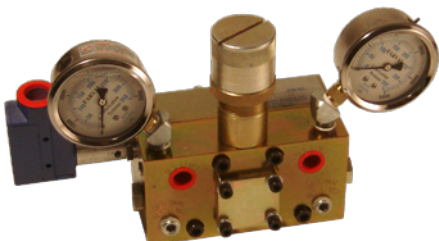


Operators Manual

DR4 REVERSING VALVES

DR4-5K, DR4-59, DR4-60A/B

DL1200 r#1





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INTRODUCTION

The reversing valve alternates the flow of lubricant thru the lines of Dual Line systems so that lubricant is directed first to one supply line then the other, during system cycles. The reversing action is automatic, controlled hydraulically by the action of a pressure sensing mechanism within the valve.

Model DR4-5 reversing valves supersedes the DR10, DR2, DR4-1, DR4-2, DR4-3, and DR4-4 reversing valves.

DR4-5 valves are available for both return and non-return systems with adjustable pressure range as indicated below.

PRESSURE RANGE	SYSTEM
500-3500	Non-Return
500-3500	Return (Loop)

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REVERSING VALVES WITH SUB-ASSEMBLIES

DR4 valves are assembled with various sub-assemblies (components) to fit the particular application; such as, loop or non-return system. Listed below are part numbers and description of the reversing valve with sub-assemblies.

<u>PART NUMBER</u>	<u>DESCRIPTION</u>
DR4-59	Reversing Valve (DR4-5) and Bracket Mounting assembly, for Non-Return Systems (See Figure 5).
DR4-60A	Reversing Valve and Bracket Mounting Assembly (DR4-59), with Line Strainer (LS-03-120), for Grease-Non-Return System (See Figure 6).
DR4-60B	Reversing Valve and Bracket Mounting Assembly (DR4-59), with Line Strainer (LS-03-106), for Oil-Non-Return System (See Figure 6).

NOTES:

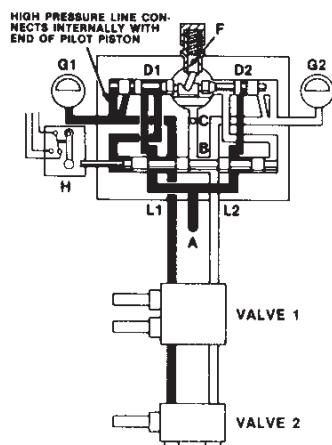
1. DR4-59 replaces DR4-37
2. DR4-60A replaces DR4-40A
3. DR4-60B replaces DR4-40B

DR4-5 Pressure Adjustment

- 1) Factory set @ 1500PSI
- 2) Always make adjustment while system is under pressure
- 3) Clockwise=higher pressure/CCW=lower pressure
- 4) Unscrewing too far will cause internal damage

DR4'S IN A NON-RETURN SYSTEM

The following schematic, with pistons and ports shown in one plane for clarity, shows one half of a complete DR4 reversing valve operating cycle for a non-return system. The other half cycle is identical except pressure is applied to line **L2** with line **L1** relieved. At the end of the second half cycle, piston **D** and **B** will have returned to position 1. Black indicated line under pressure.

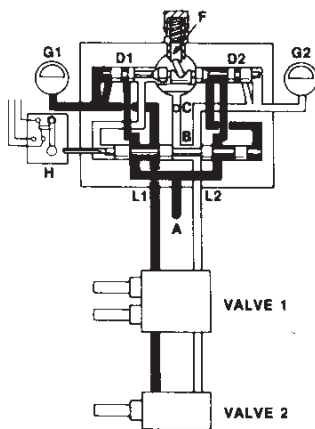


POS. 1

POS. 1: Timer (not shown) starts pump. Lube from pump enters at Port **A**. Reversing piston **B** at point **P1** directs flow from Port **A** to supply line **L1**. Line pressure at point **P2** holds piston **B** in position.

Line **L2** is relieved to the reservoir thru port **C**.

Rising pressure causes all measuring valves to discharge to bearing.

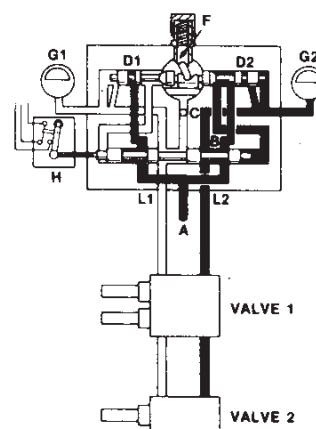


POS. 2

POS. 2: Pressure in line **L1** continues to rise, acting on pilot piston **D1**, until it can overcome the spring force applied at point **F**. (This is adjustable between 500-3,500 psi). The Pilot piston moves to the position shown.

Lube flow is re-directed to the right end of piston **B** by piston **D2**.

Pressure created by movement of pilot piston **D2** at its right end is relieved to reservoir thru port **C**.



POS. 3

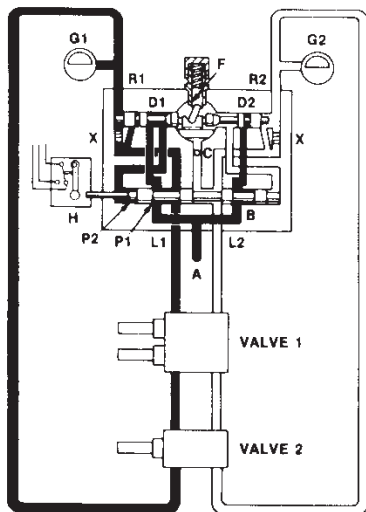
POS. 3: Rising pressure moves piston **B** to new position (extreme left) tripping switch **H** stopping pump and relieving line **L1**. When timer starts next half cycle, line **L2** will be pressurized and line **L1** relieved.

KEY

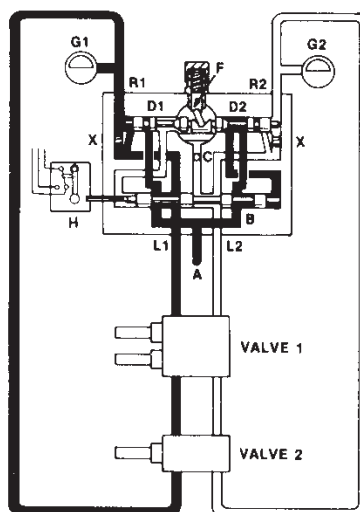
■ LUBRICANT UNDER PRESSURE FROM PUMP

□ RELIEF AND RETURN TO RESERVOIR

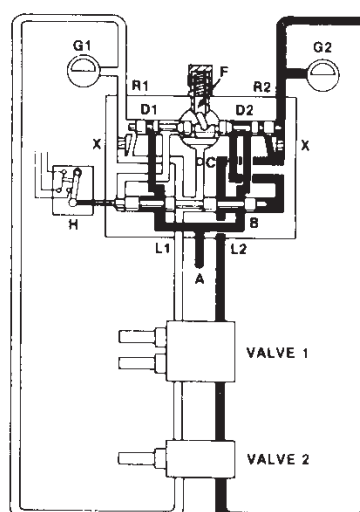
DR4'S IN LOOP SYSTEM



POS. 1



POS. 2



POS. 3

By installing two pipe plugs (U-119AC, see "X" pos. 1 above), and removing two pipe plugs (U-119BC) in the return ports **R1** and **R2**, the DR4's can be converted to loop operation. The two lines then make a complete loop operate the pilot piston. Valve operation is otherwise the same as the above description for non-return system.

DR4-5

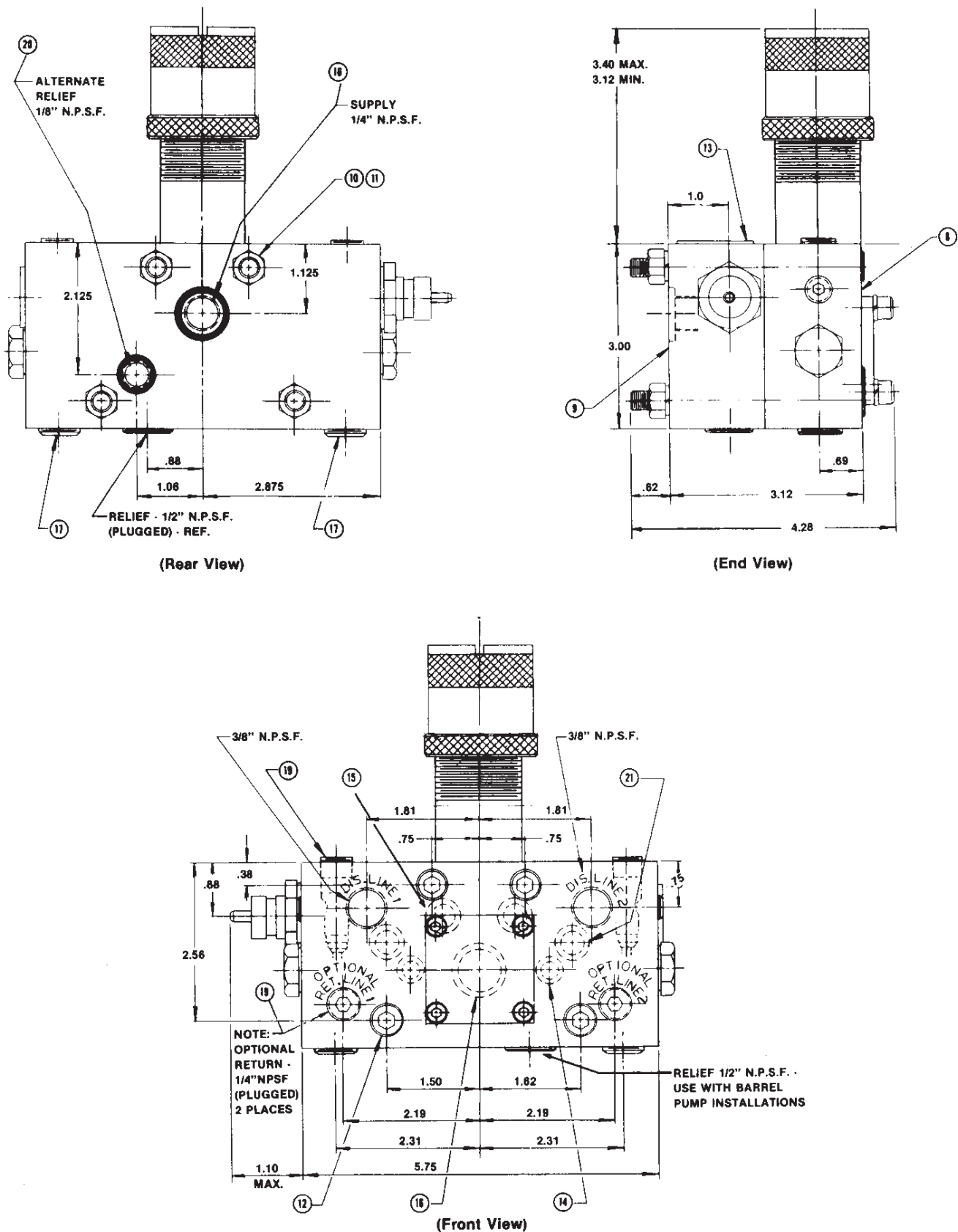
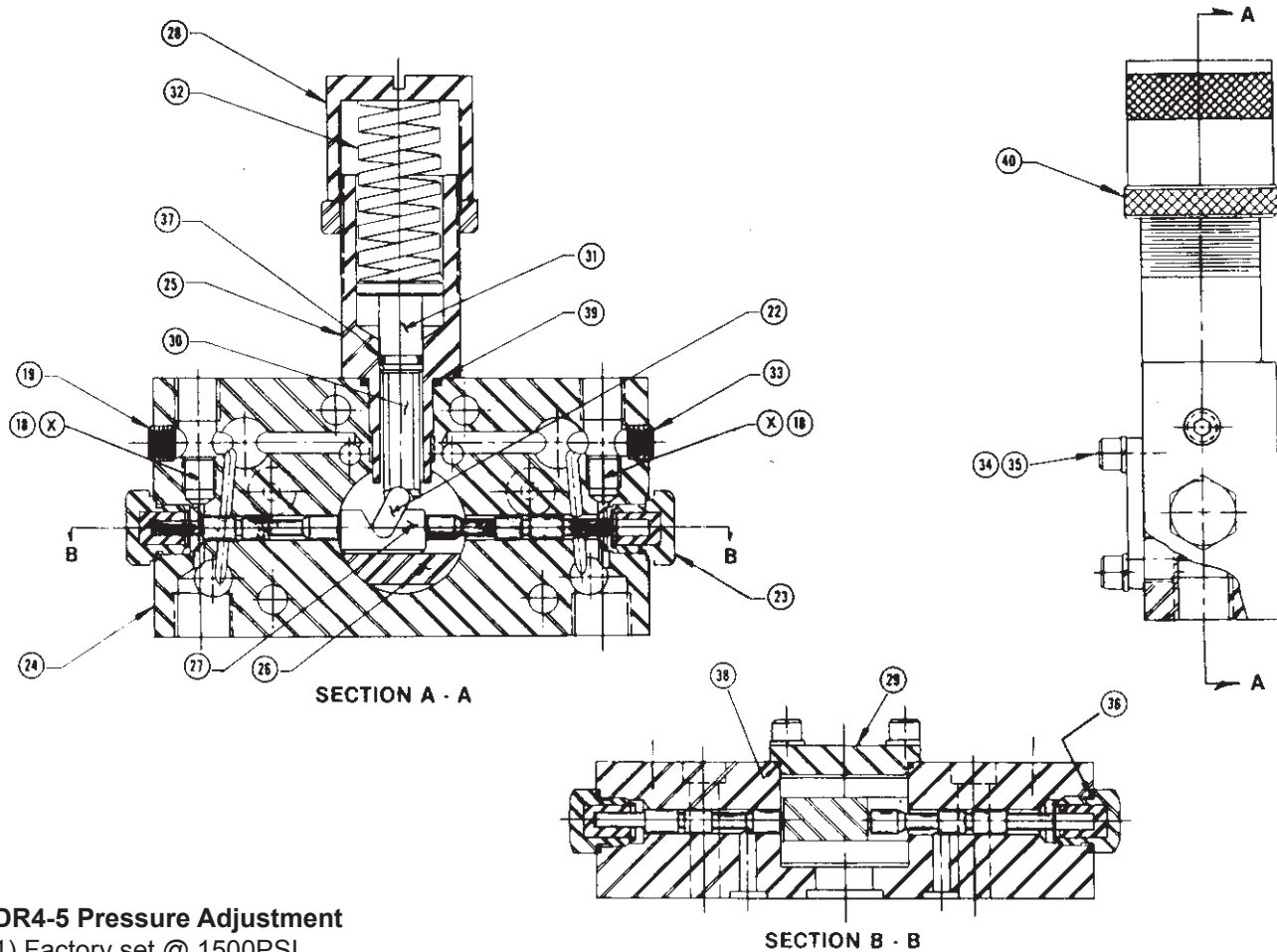


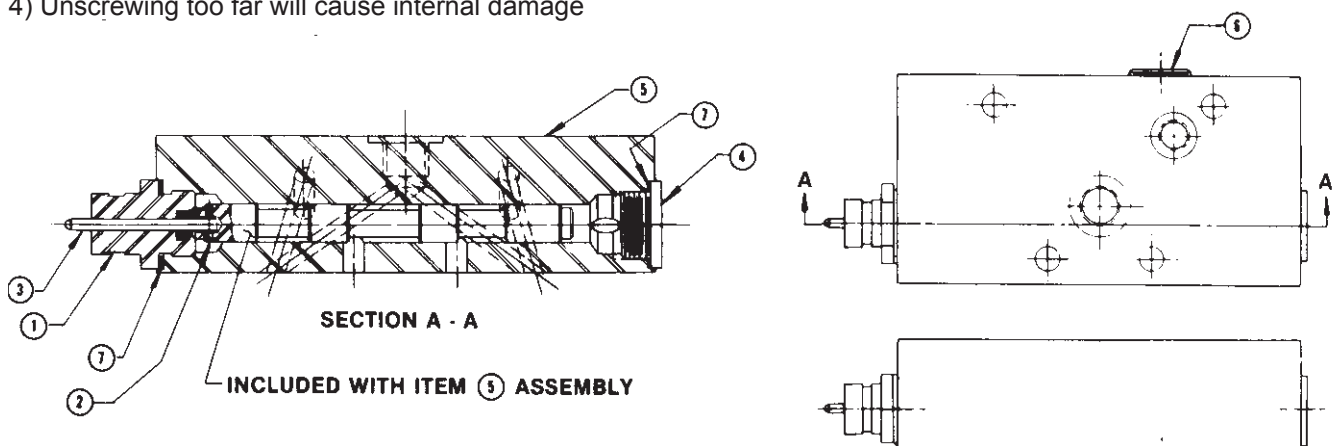
Figure 1 - Outside Dimensions

DR4-5

PRESSURE CONTROL – OVER – CENTER MECHANISM

**DR4-5 Pressure Adjustment**

- 1) Factory set @ 1500PSI
- 2) Always make adjustment while system is under pressure
- 3) Clockwise=higher pressure/CCW=lower pressure
- 4) Unscrewing too far will cause internal damage

Figure 2 - Pressure Adjusting Sub-Assembly**NOTES:**

1. Installing U-119AC 1/8" pipe plugs at "X" will convert the DR4-5 from a Non-return type to a loop type.
2. System pressure can be adjusted with cap
3. Factory setting: 1500 psi

Figure 3 - Flow Control Sub-Assembly

DR4 REVERSING VALVES

DR4-5 PARTS

ITEM NO.	QUANTITY	PART NUMBER	DESCRIPTION
1	1	200903	Packing Gland Assembly
2	1	U-1220-A4	Pin Spirol
3	1	FT-2518-7	Stem Indicator
4	1	U1522H	Plug Main Bore
5	1	LB-10485	Body Piston Assem. W/Pins
6	1	U-119-DC	Plug Pipe Hex Soc. 1/2"
7	2	U-1305-AN*	Washer - Copper, 3/4"
8	1	DR4-1003-5	Pressure Adjustment Assem.
9	1	DR4-1004-5	Flow Control Valve Assem.
10	4	U-213-FS	Washer - Loch 5/16"
11	4	U-219-B	Nut - Hex 5/16-18
12	4	U-225-B15	Screw - Soc. Hd. Cap 5/16-18 x 3 1/2
13	1	U-1312-C	Nameplate
14	2	U-1720-011*	Seal "O" Ring
15	2	U-1720-110*	Seal "O" Ring
16	2	U-1720-115*	Seal "O" Ring
17	2	U-119-CC	Plug Pipe Hex Soc. 3/8
18	2	U-119-AC	Plug Pipe Hex Soc. 1/8
19	4	U-119-BC	Plug Pipe Hex Soc. 1/4
20	1	U-1720-111*	Seal "O" Ring
21	2	U-1722J*	Seal Quad Ring
22	1	DR4-1010-1*	Link - Throw
23	2	LB-10484	Plug & Sleeve Assembly
24	1	LB10459	Body/Piston Assembly
25	1	RET10567B	Retainer
26	1	PLA10568B	Plate - Slipper
27	1	BLO10570B*	Block - Slider
28	1	CAP10571A	Cap-Pressure Adj. Spring
29	1	PLA10573B	Plate - Cover
30	1	RET10574B	Retainer - Pivot Guide
31	1	PLU10575B	Plug - Pivot Guide Contact
32	1	SPR10652B*	Spring
33	2	U-119-AC	Plug Pipe Hex Soc. 1/8
34	4	U-212-A1	Screw Soc. Hd. Cap - 1/4-28 x 1/2
35	4	U-213-E	Washer - Lock 1/4
36	2	U-1305-AC*	Washer - Copper - 5/8 OD
37	1	U-1720-012*	Seal "O" Ring
38	1	U-1720-029*	Seal "O" Ring
39	1	U-1720-116*	Seal "O" Ring
40	1	NUT11027A	Nut - Lock

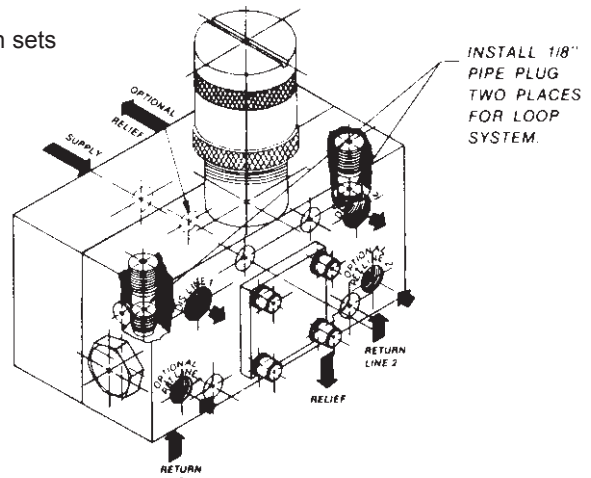
*Included in DR4-5 Repair Kit - Part # KIT12861A

Valve bodies and Pistons are selectively fitted and must be replaced in sets

CONVERSION OF DR4-5 REVERSING VALVE TO LOOP SYSTEM

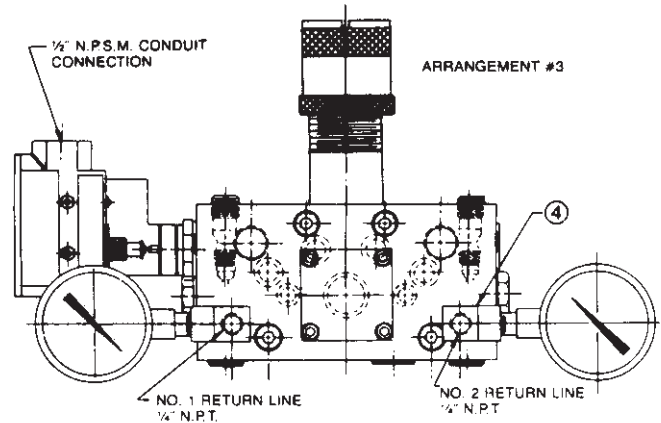
Valves are shipped for non-return systems, without the 1/8" pipe plugs installed (see illustration). All that is required is to make the discharge connections on the front face of the valve.

For loop systems, install the 1/8" pipe plugs as shown and make the return connections to either the return ports on the front face, or the two return ports located on the bottom of the valve.



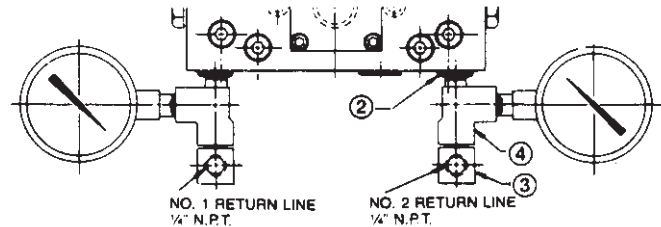
REVERSING VALVE MODULE (MODULE KIT DR4-5K)

No. Required Arrangement			Item No.	Description	Part Number
#3	#2	#1			
1	1	1	1	Switch and Bracket Assembly	FT - 1580-IC8
			1a	Switch	U - 10623
			1b	Switch Bracket	FT - 1552-B
	2		2	Bushing - Face - 3/8" x 1/4" P	U - 148-C2
	2		3	Elbow - Street - 1/4" P	U - 152-B
2	2		4	Tee - Street - 1/4" P	U - 156-B
		2	5	Ell - Street - 1/4" P	U - 1103-B
1	1	1	6	Nameplate - Model	U - 1312-C
1	1	1	7*	Nameplate - Pressure Setting	NAM10431A
1	1	1	8	Reversing Valve Assembly	DR4-5
2	2	2	9	Gage - Pressure 0-5,000 P.S.I.	U - 902-F

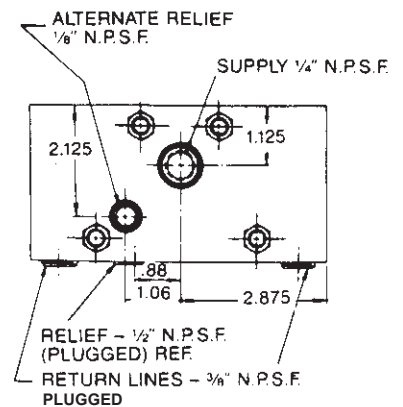
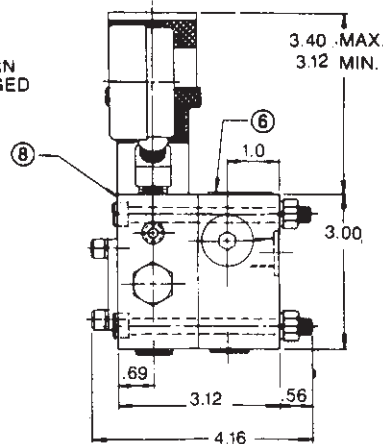
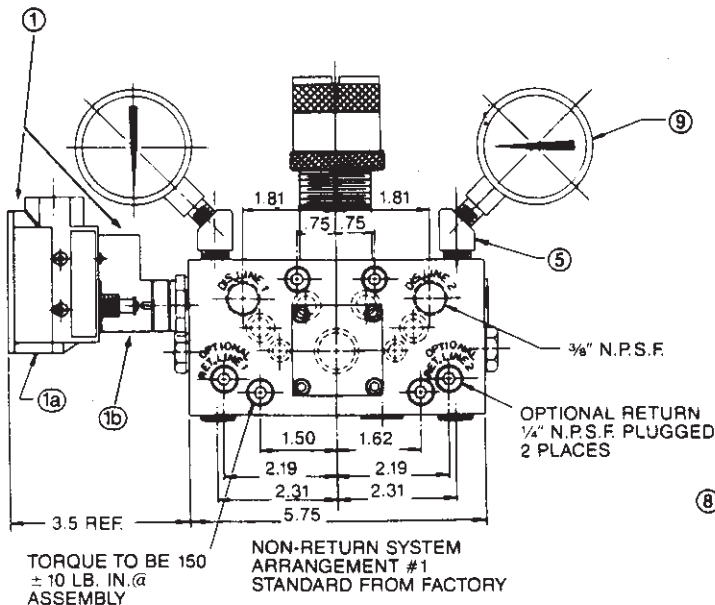


DR4-5 Pressure Adjustment

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LOOP SYSTEM
ARRANGEMENT #2



REVERSING VALVE

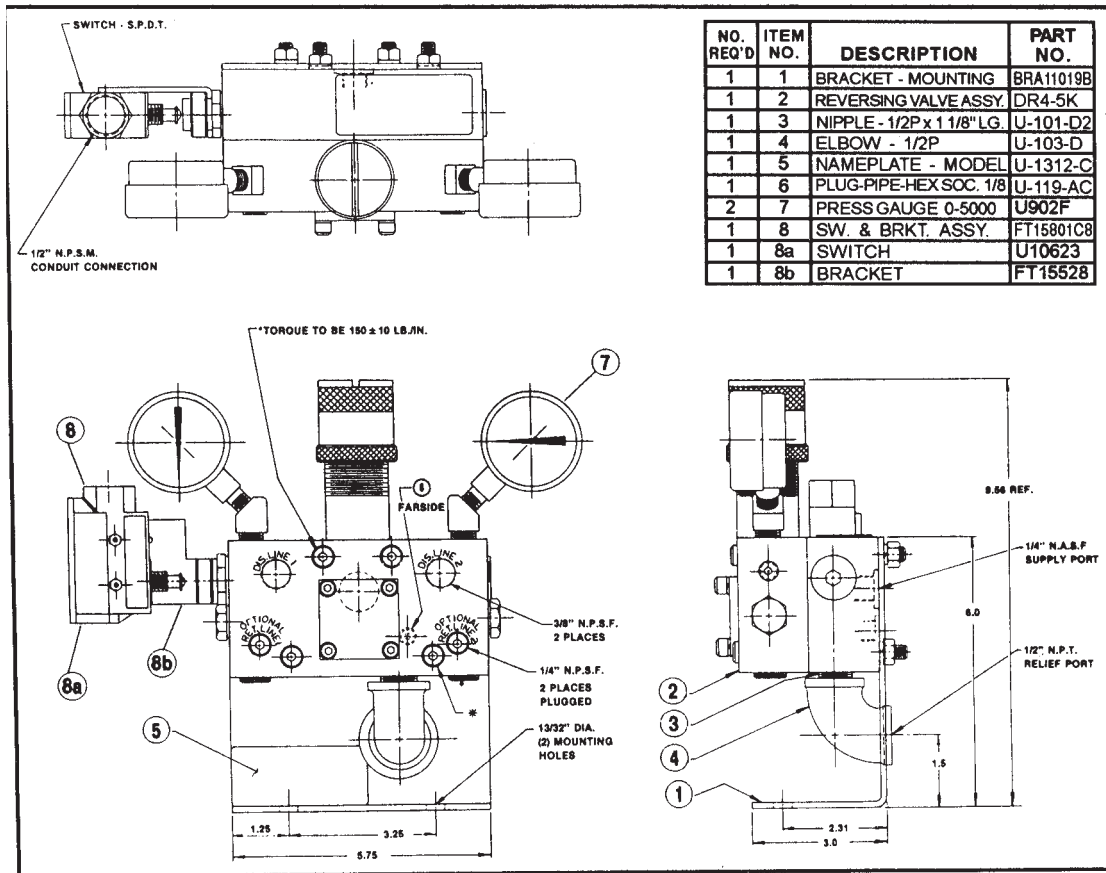


Figure 5 - DR4-59 Reversing Valve and Bracket Mounting Assembly for Non-Return Systems

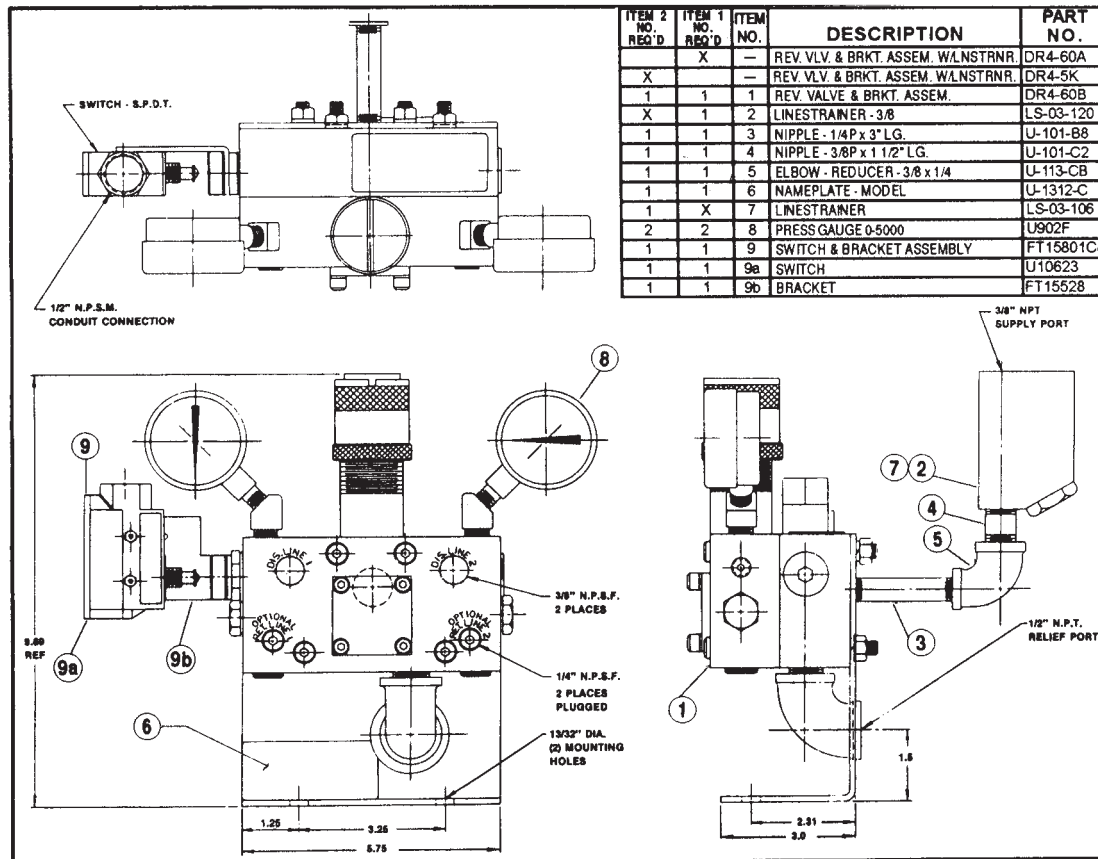


Figure 6 - DR4-60A Reversing Valve and Bracket Mounting Assembly (DR4-59), with Line Strainer (LS-03-120) for Grease-Non-Return Systems.
 DR4-60B Reversing Valve Bracket Mounting Assembly (DR4-59), with Line Strainer (LS-03-106) for Oil-Non-Return Systems.