

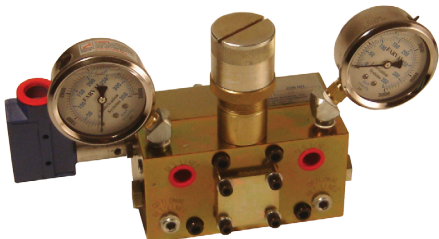


Operators Manual

DR4 REVERSING VALVES

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

DL1200 r#2



SECTION DS
DR4-5 REVERSING VALVE

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:

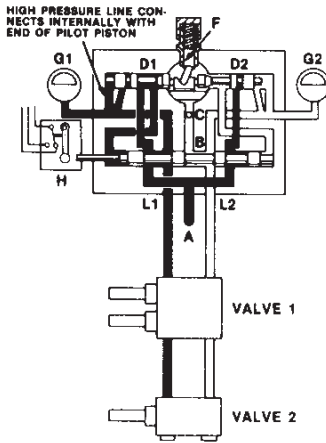
1. DR4-59 replaces DR4-37
2. DR4-60A replaces DR4-40A
3. DR4-60B replaces DR4-40B

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.

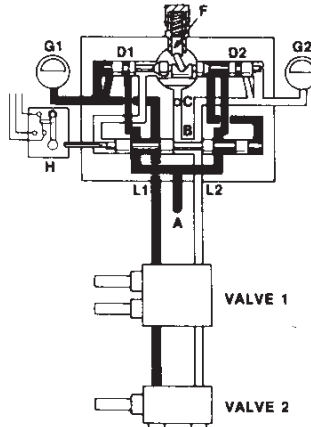


POS. 1

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.

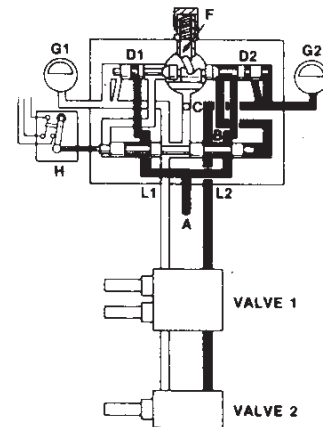


POS. 2

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.



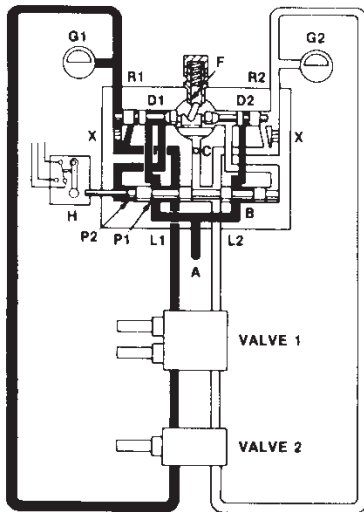
POS. 3

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.

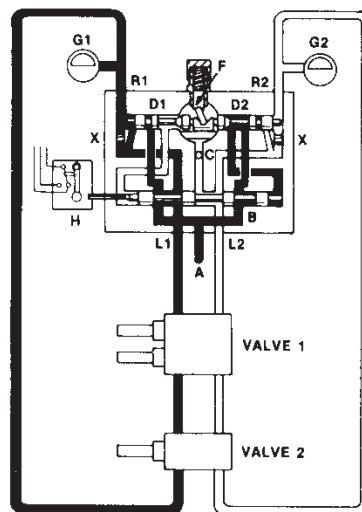
KEY

- LUBRICANT UNDER PRESSURE FROM PUMP
- RELIEF AND RETURN TO RESERVOIR

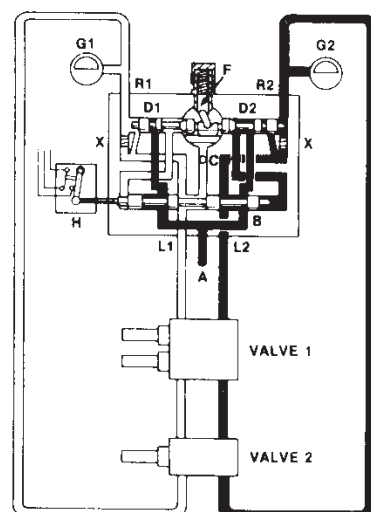
DR4'S IN LOOP SYSTEM



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 REVERSING VALVES

DR4-5

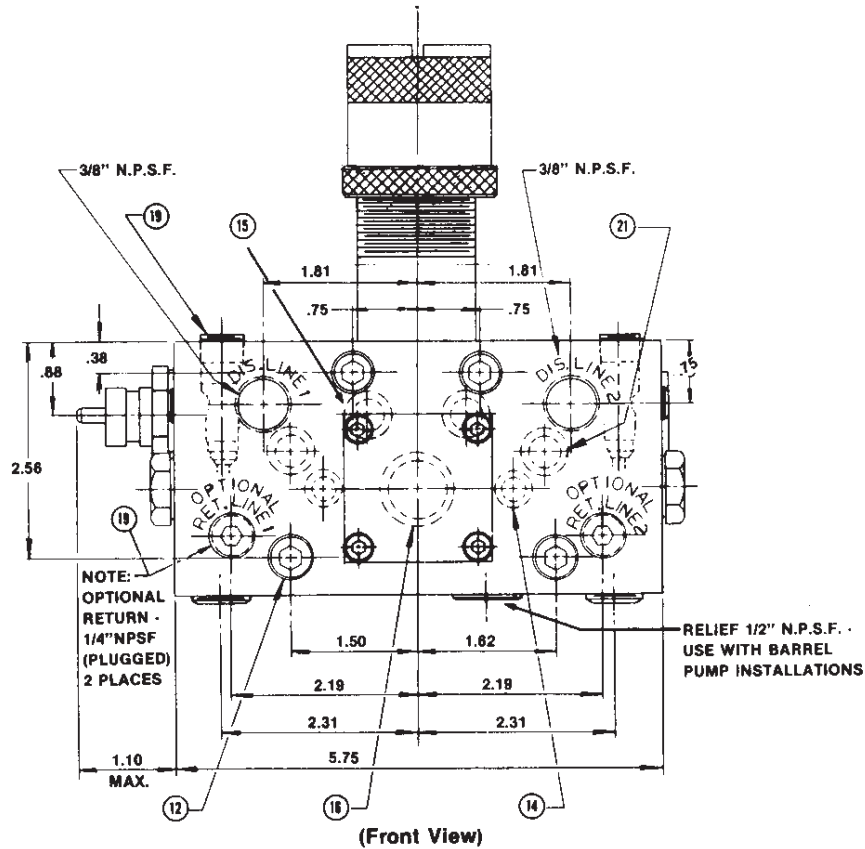
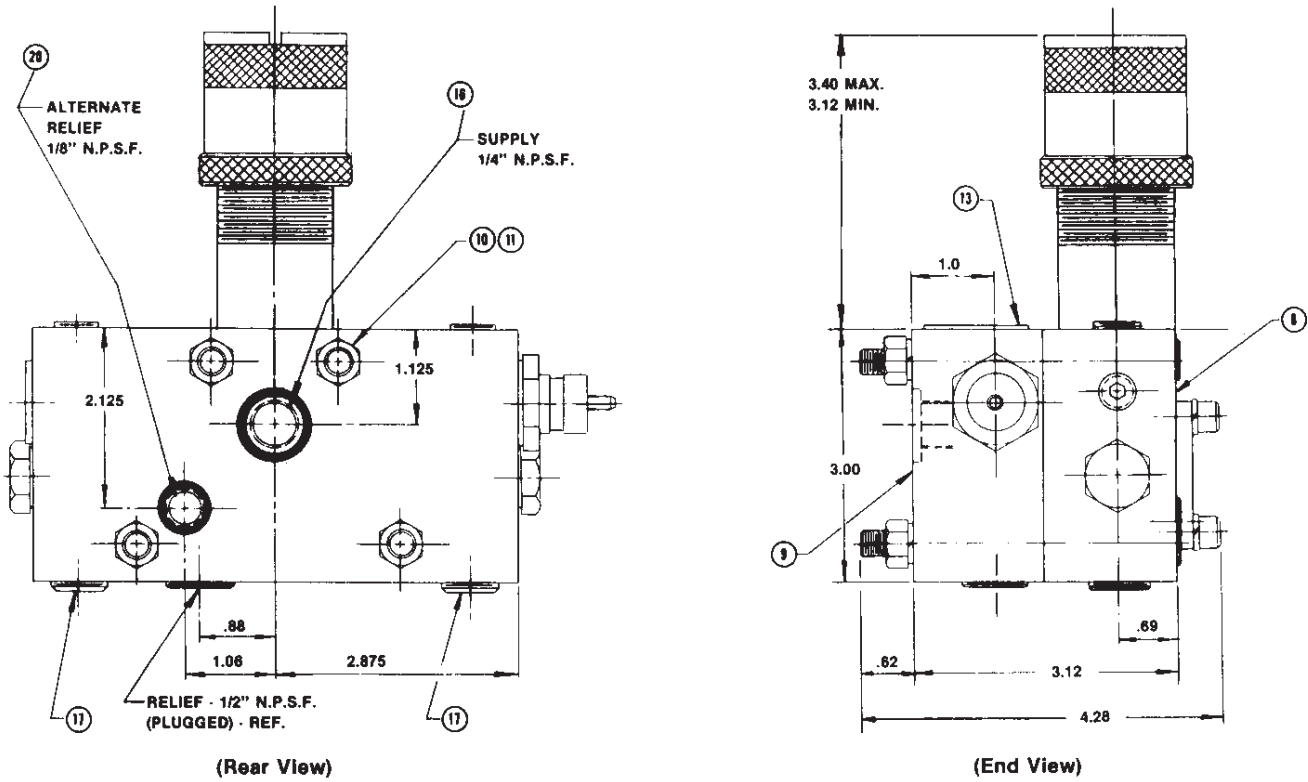


Figure 1 - Outside Dimensions

DR4-5

PRESSURE CONTROL - OVER - CENTER MECHANISM

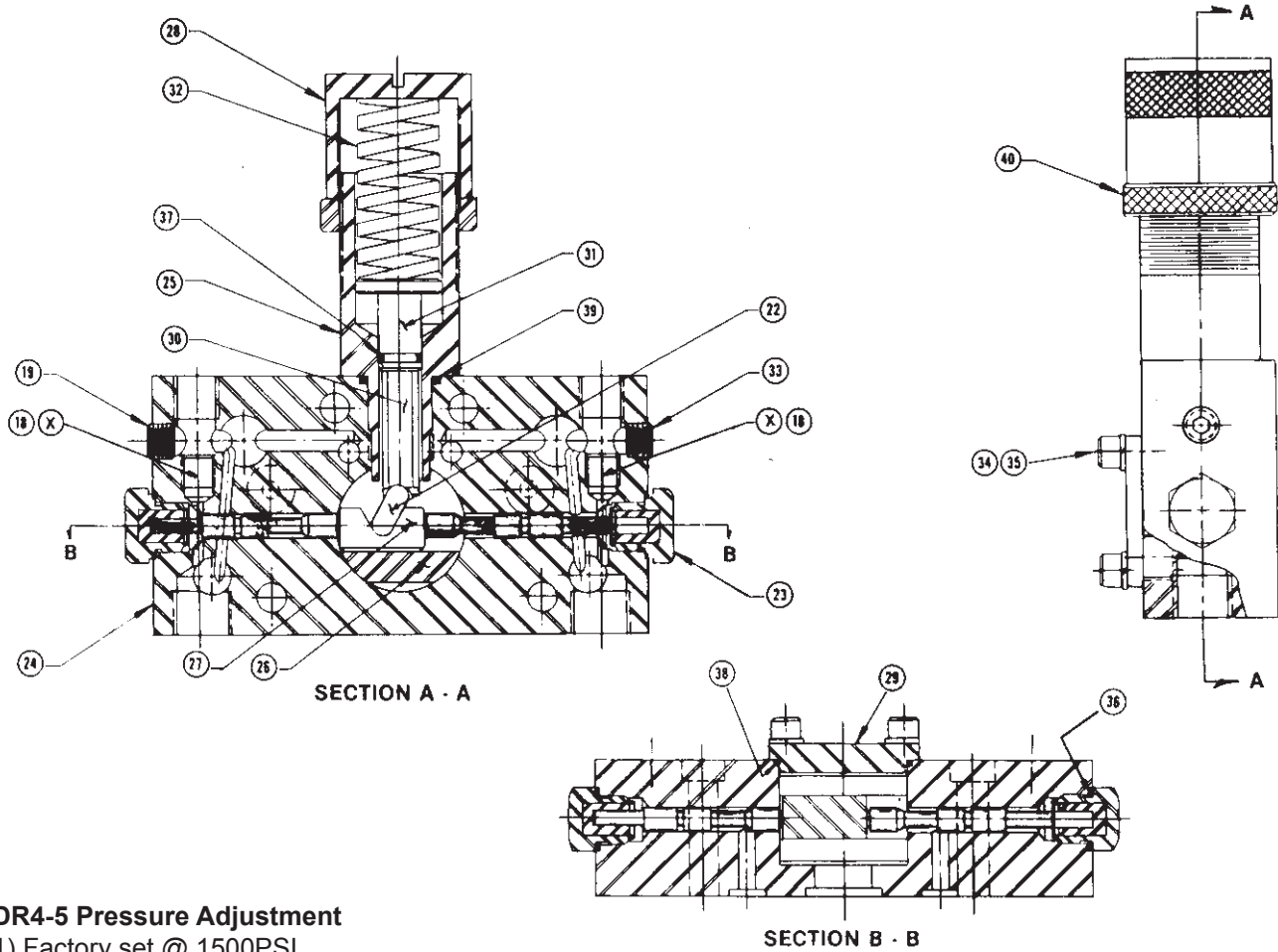
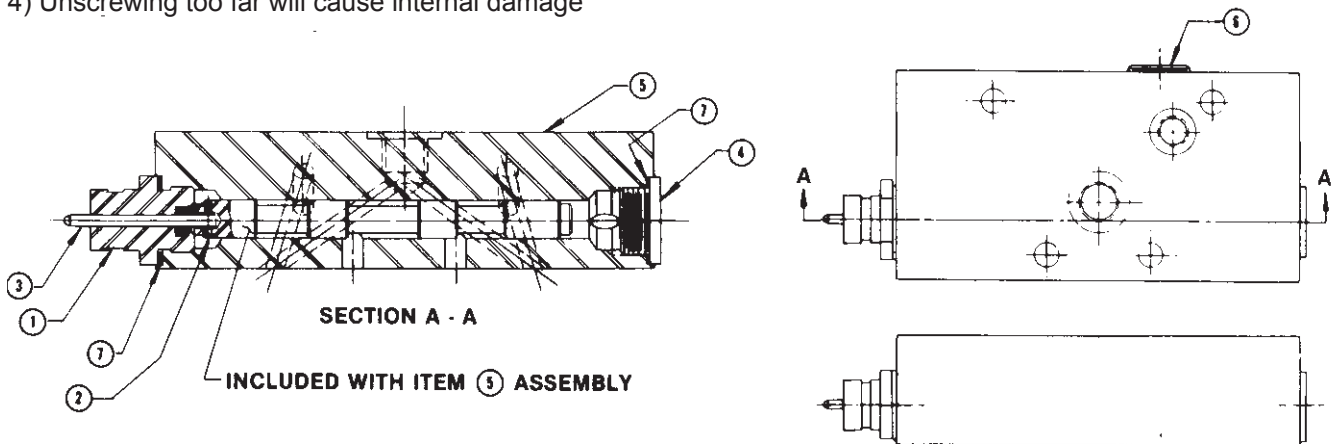


Figure 2 - Pressure Adjusting Sub-Assembly

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



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

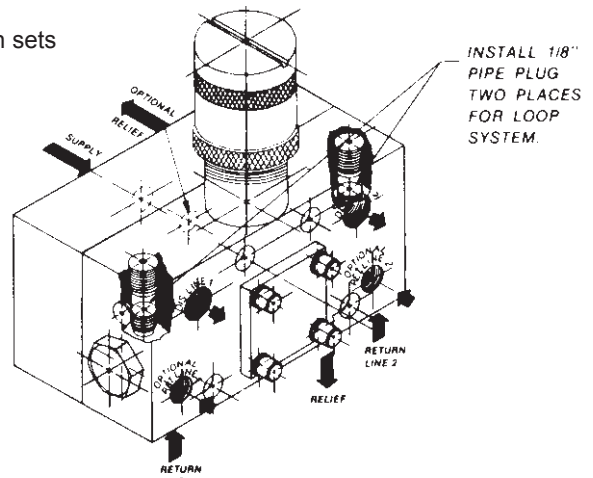
*Included in DR4-5 Repair Kit - Part # KIT12861A

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

CONVERSION OF DR4-5 REVERSING VALVE TO LOOP SYSTEM

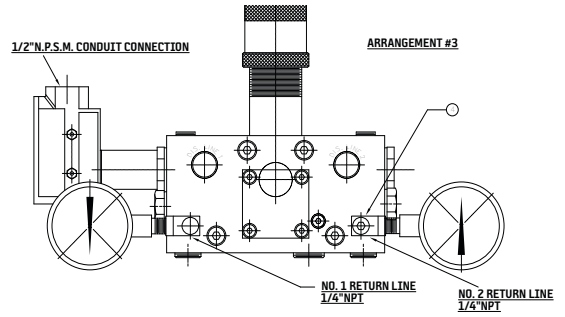
Valves are shipped for non-return systems, without the 1/8" pipe plugs installed (see illustration). All that is required is to make the discharge connections on the front face of the valve.

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.



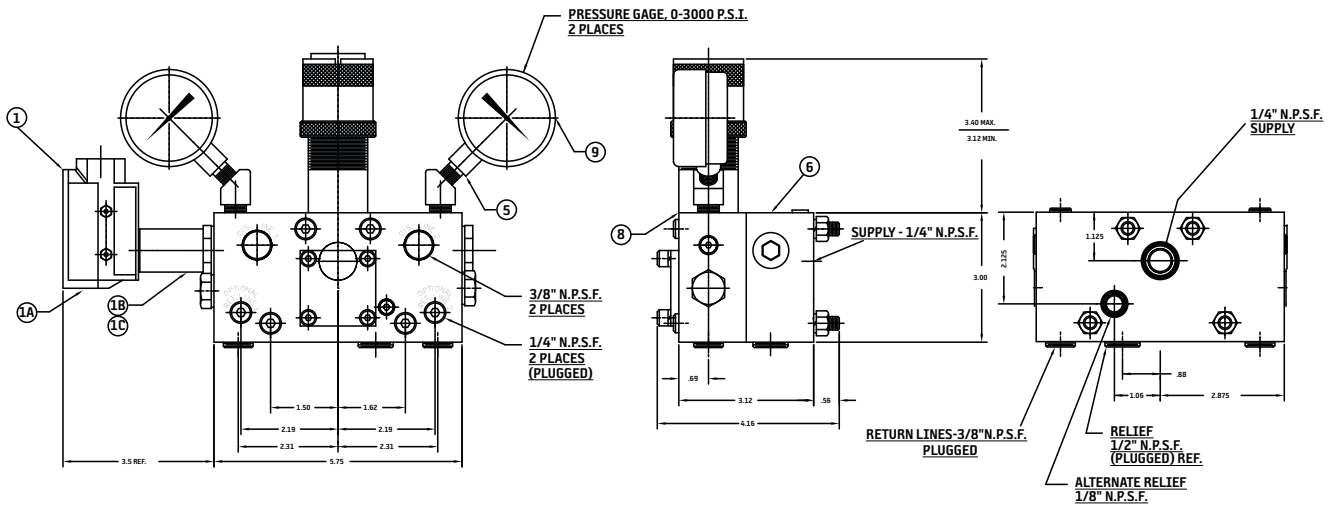
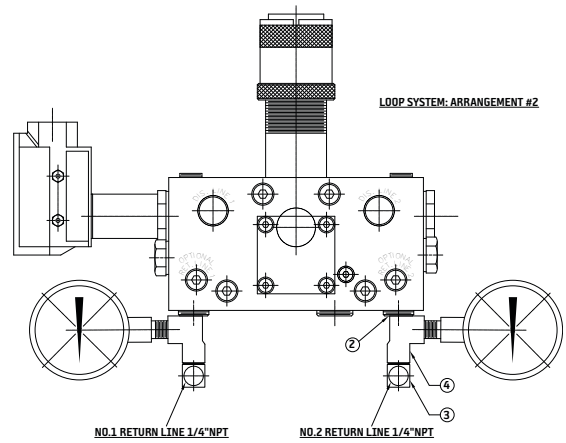
**REVERSING VALVE MODULE
(MODULE KIT DR45K)**

ARRANGEMENT			ITEM #	DESCRIPTION	PART #
NO. 3 REQ'D	NO. 2 REQ'D	NO. 1 REQ'D			
1	1	1	1	SWITCH & BRACKET ASSEMBLY	FT15801C8
			1A	SWITCH	U10623
			1B	SWITCH BRACKET	37041
			1C	SET SCREW	37037
	2		2	BUSHING FACE 3/8"X1/4"P	U148C2
	2		3	ELBOW STREET 1/4"P	U152B
2	2		4	TEE STREET 1/4"P	U156B
		2	5	ELL STREET 1/4"P	U1103B
1	1	1	6	NAMEPLATE - MODEL	U1312C
1	1	1	8	REVERSING VALVE ASSEMBLY	DR45
2	2	2	9	PRESSURE GAUGE 0-5000 PSI	U902F



DR45 Pressure Adjustment

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

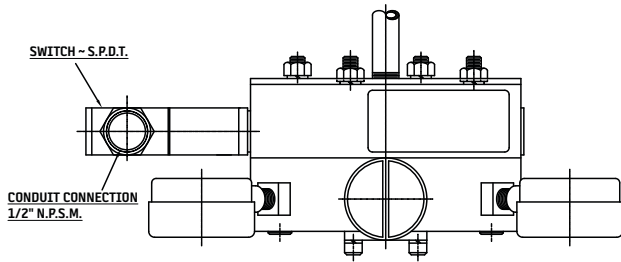


NON-RETURN SYSTEM

ARRANGEMENT #1

Standard from factory.

REVERSING VALVE



NO. REQ'D	ITEM #	DESCRIPTION	PART #
1	1	BRACKET - MOUNTING	BRA110198
1	2	REVERSING VALVE ASSY	DR45K
1	3	NIPPLE 1/2P X 1-1/8"LG	U101D2
1	4	ELBOW 1/2P	U103D
1	5	NAMEPLATE	U1312C
1	6	PLUG-PIPE-HEX-SOC 1/8	U119AC
2	7	PRESSURE GAUGE	U902F
1	8	SWITCH & BRACKET ASSY	FT15801C8
1	8A	SWITCH	U10623
1	8B	BRACKET	37041
1	8C	SCREW	37037

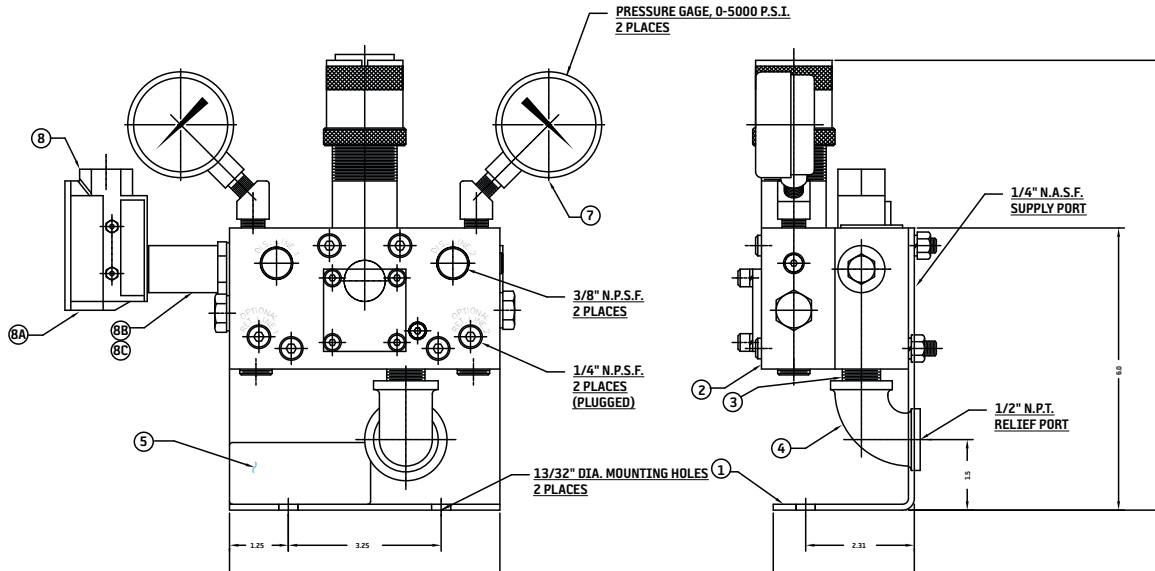
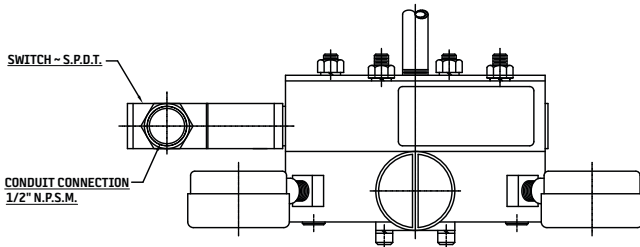


Figure 5 - DR459 Reversing Valve and Bracket Mounting Assembly for Non-Return Systems



ARRANGEMENT		ITEM #	DESCRIPTION	PART #
NO. 2 REQ'D	NO. 1 REQ'D			
X	-	-	REV VLV & BRKT ASSEM. W/LINESTRAINER	DR460A
X	-	-	REV VLV & BRKT ASSEM. W/LINESTRAINER	DR460B
1	1	1	REV VALVE & BRKT ASSEM.	DR459
X	1	2	LINESTRAINER 3/8	LS03120
1	1	3	NIPPLE 1/4PX3"LG	U101B8
1	1	4	NIPPLE 3/8PX1-1/2"LG	U101C2
1	1	5	ELBOW-REDUCER 3/8X1/4	U113CB
1	1	6	NAMEPLATE	U1312C
1	X	7	LINESTRAINER	LS03106
2	2	8	PRESSURE GAUGE	U902F
1	1	9	SWITCH & BRACKET ASSY	FT15801C8
1	1	9A	SWITCH	U10623
1	1	9B	BRACKET	37041
1	1	9C	SCREW	37037

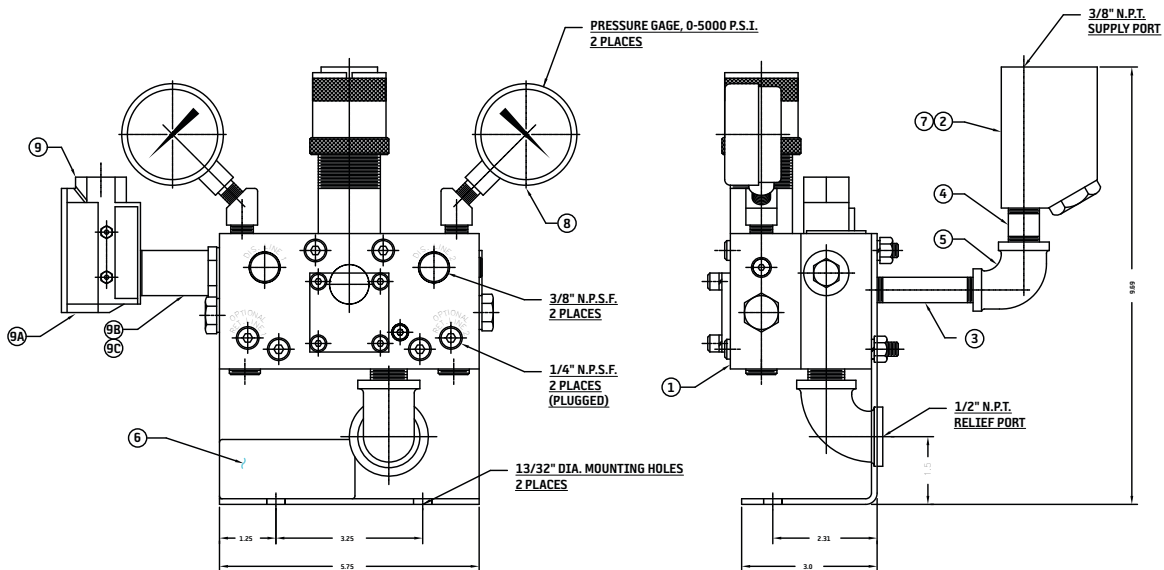


Figure 6 - DR460A(Arrangement 1) Reversing Valve and Bracket Mounting Assembly (DR459), with Line Strainer(LS03120) for Grease Non-Return Systems. DR460B (Arrangement 2) Reversing Valve Bracket Mounting Assembly (DR459), with Line Strainer (LS03106) for Oil Non-Return Systems.



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