



Operators Manual

# FARVAL<sup>®</sup> CS2000 STATIONS

Description & Installation Instructions

2011F r#5

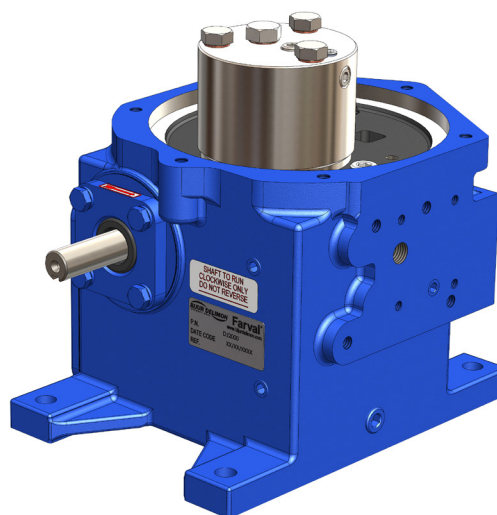


## Features

- Dual piston pump with working pressure rating of 3500 psi (240 bar).
- Life rating of pump more than 2 million cycles at 3500 psi.
- Steel reservoir supplied with visual indicator and low level warning switch standard.
- Simplified construction - internal porting eliminated tubing and fittings.
- Air bleed in reservoirs to eliminate air pockets.
- Adjustable relief valve - readily accessible on the outside.
- Functional interchangeable with older stations such as DJ10 and DJ25.



CS2212 Pump



DJ2000 Pump

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## INTRODUCTION

CS2000 stations store, control and supply the lubricant to systems. Depending on reservoir size, they can be used in systems that service anything from small machine tools to large machinery in steel mills, or from small to large off road machinery such as power drills, power shovels and drag lines.

### A. Standard Items

Standard items on these stations include a switch arrangement for automatic level warning systems, visual level indication, an adjustable pressure relief valve and a n electrically driven pump.

### B. Options

A variety of reservoir sizes, a reversing valve for DUALINE systems, and a high level warning switch are offered.

### C. Kits

Kits are available for mounting controls and NEMA 4 applications.

### D. General Specifications

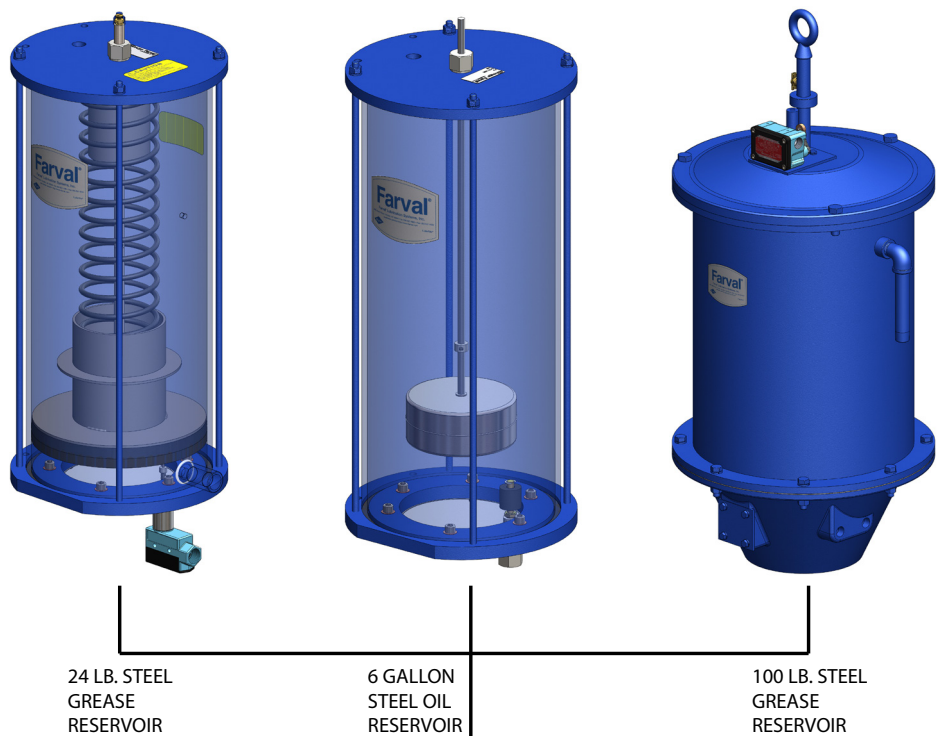
<b>Pump type</b>	Dual piston
<b>Pump output</b>	6.0 in <sup>3</sup> /min @ 175 strokes/min @ 1000 psi (70 bar)
<b>Maximum operating pressure</b> <small>*For higher pressures, consult engineering</small>	3500 psi * (240 bar)
<b>Gear ratio</b> <small>Note: Other ratios are available at extra cost.</small>	10:1 standard
<b>Lubricants</b>	Oil and Grease
<b>Reservoirs - Oil</b>	6 Gallon Steel 15 Gallon Steel 30 Gallon Steel
<b>Reservoirs - Grease</b>	10 Pound Plastic 10 Pound Steel 24 Pound Steel 100 Pound Steel
<b>Motor</b> <small>Note: Other motors are available at extra cost.</small>	1/3HP, 230/440V, 3 Phase, NEMA 48 Frame & TEFC
<b>Reversing Valve</b>	DR45 Standard on DUALINE stations Factory set @ 1500 psi (103 bar)
<b>Relief Valve</b>	All Stations Factory set @ 3000 psi (206 bar)

Description

Central Stations consist of a pump, reservoir and motor. Devices associated with particular types of systems are included with some stations. Optional equipment such as control mounts, are offered as kits. There are eight standard CS2000 Central Stations. With some basic features being made standard, this lineup should meet the needs of most applications. The eight standard units are shown in Figure 1.

Figure 1

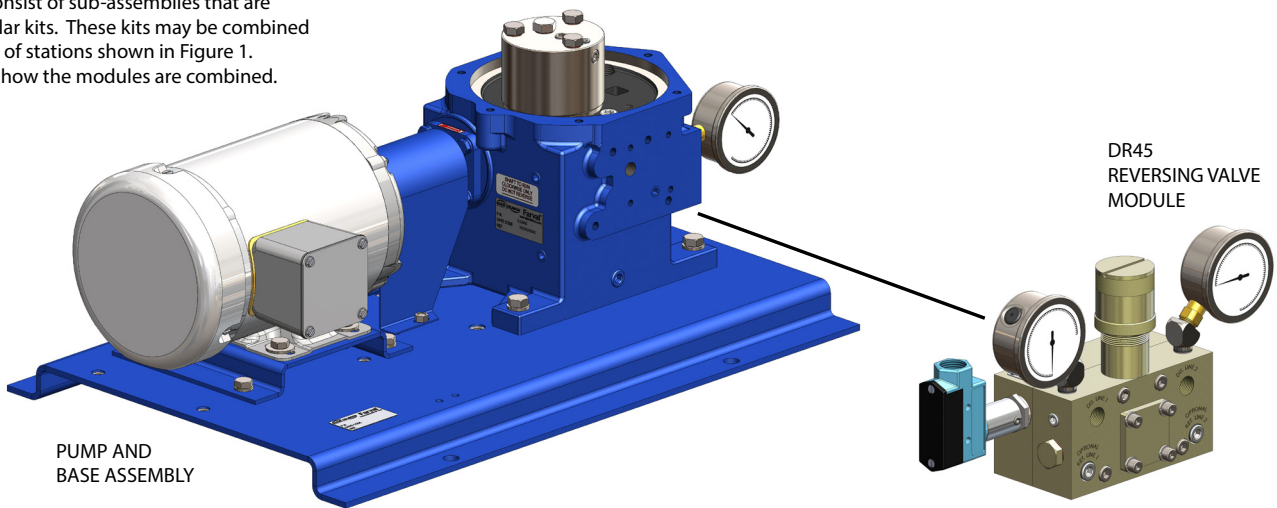
Part Number	Reservoir Size & Material	Type	High Level Warning Switch	Part Number	Reservoir Size & Material	Type	High Level Warning Switch
CS2224	24 lb. Steel	Dualine/Grease	No	CS2206	6 gal. Steel	Dualine/Oil	No
CS2225	24 lb. Steel	Dualine/Grease	Yes	CS2207	6 gal. Steel	Dualine/Oil	Yes
CS22101	100 lb. Steel	Dualine/Grease	Yes				



II. DESCRIPTION

CS2000 Stations consist of sub-assemblies that are designed as modular kits. These kits may be combined to form the variety of stations shown in Figure 1. Figure 2 illustrates how the modules are combined.

FIGURE 2

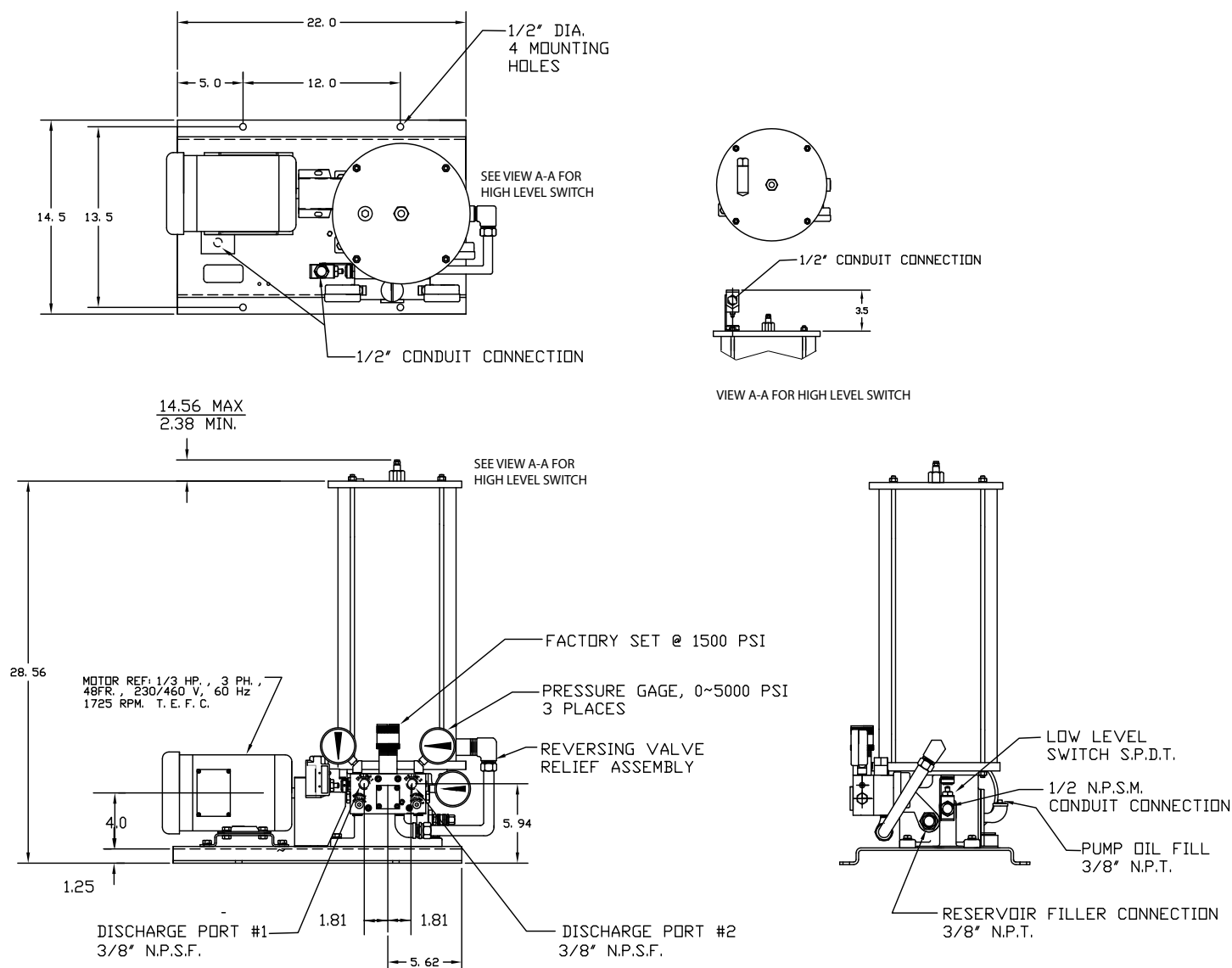


## E. MEDIUM CAPACITY DUALINE STATIONS

### OUTLINE AND MOUNTING DIMENSIONS

Figure 7

Part Number	Reservoir Size & Material	Type	High Level Warning Switch
CS2224	24 lb. Steel	Grease	No
CS2225	24 lb. Steel	Grease	Yes
CS2206	6 gal. Steel	Oil	No
CS2207	6 gal. Steel	Oil	Yes

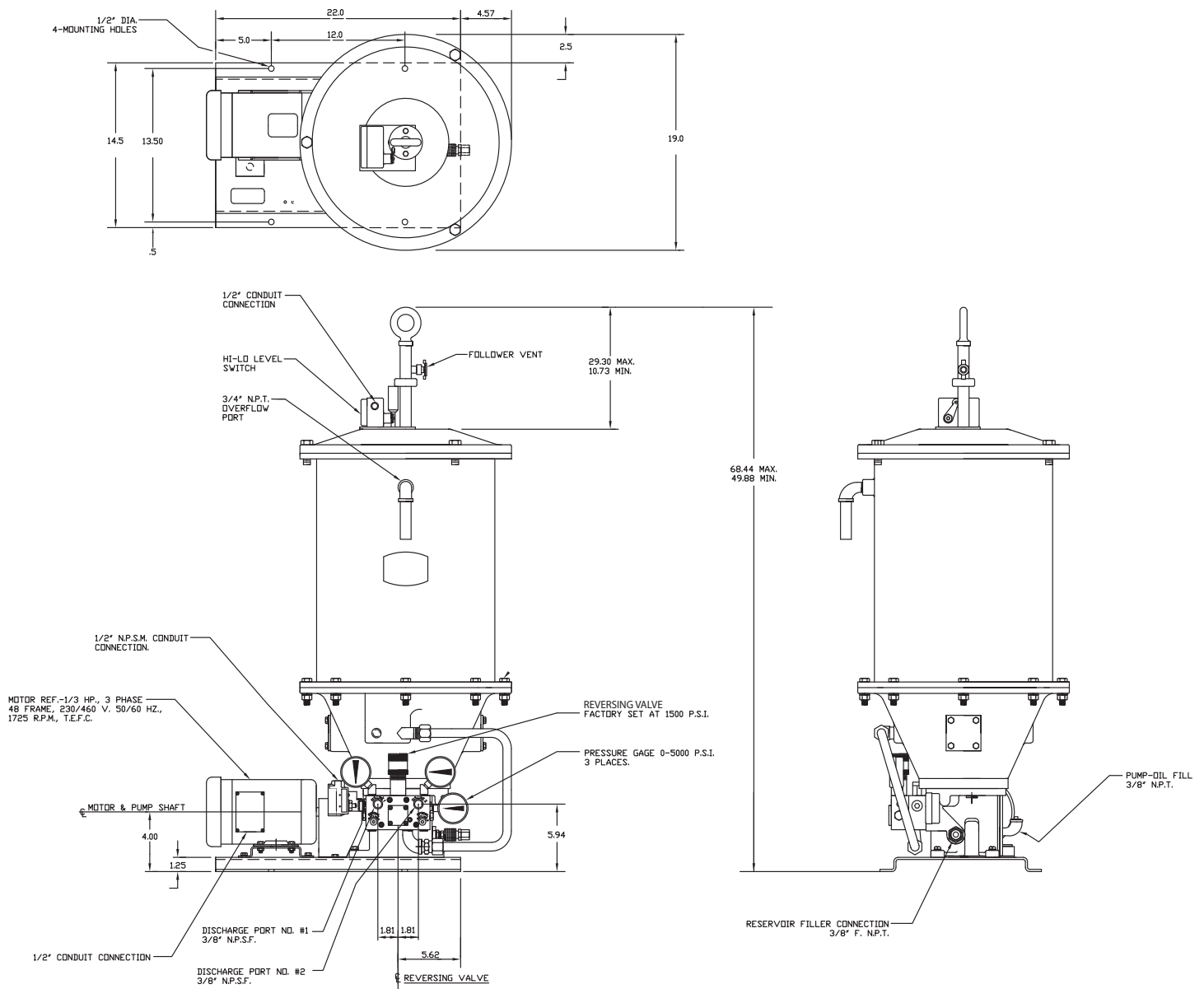


## G. LARGE CAPACITY DUALINE STATIONS

### OUTLINE AND MOUNTING DIMENSIONS

Figure 9

Part Number	Reservoir Size & Material	Type	High Level Warning Switch
CS22101	100 lb. Steel	Grease	Yes



## A. PUMP

CS2000 stations have dual piston pumps.

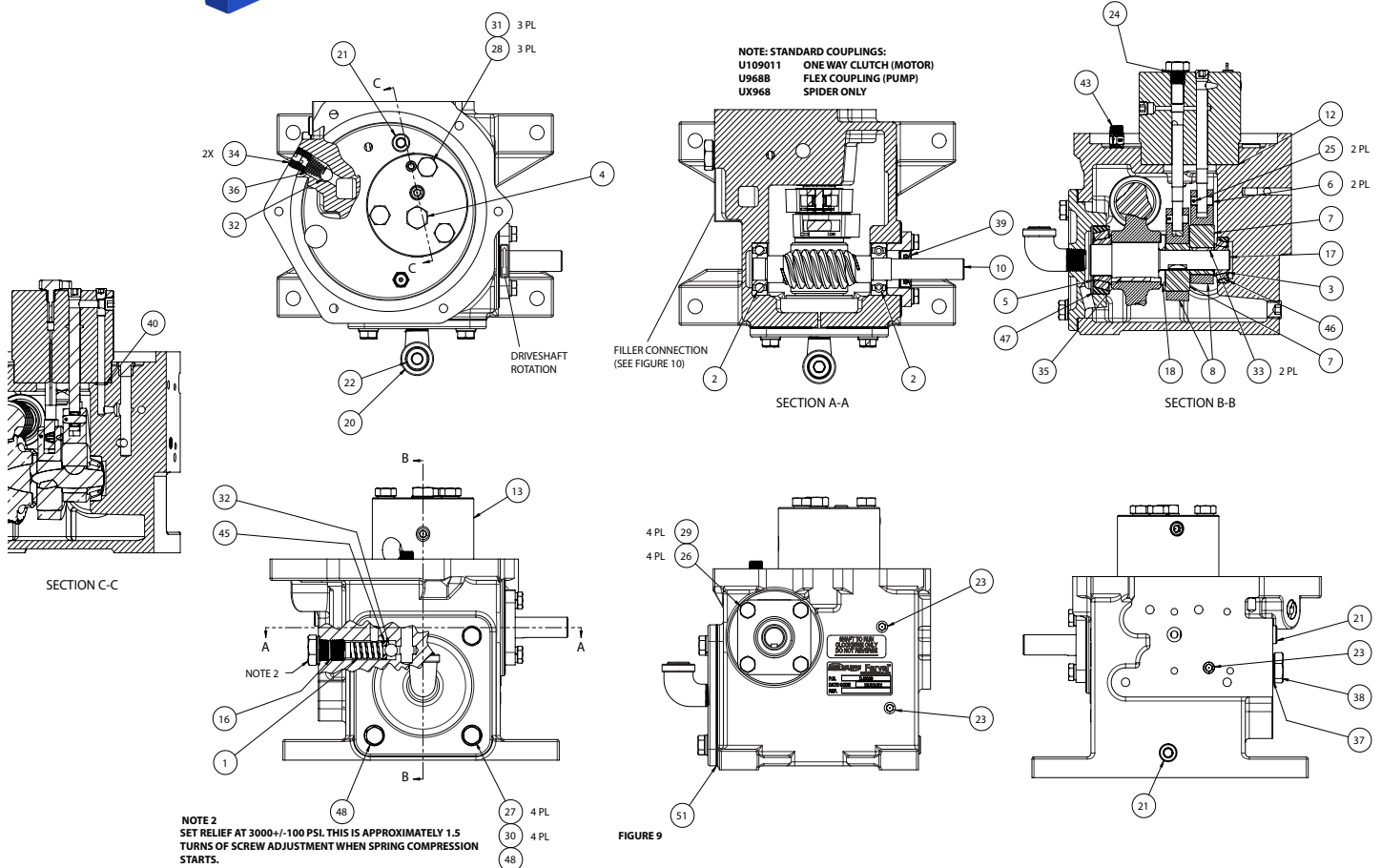
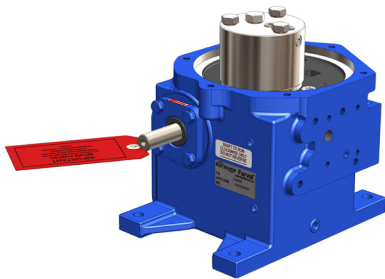
The two pistons are driven by eccentrics, a worm gear, and an electric motor.

The drive shaft rotation must be in the direction of the arrow shown by item 51 of Figure 9. All station assemblies include one-way couplings to prevent damage to the pump.

The crankcase of the pump should be filled with a 140SAE grade gear oil.

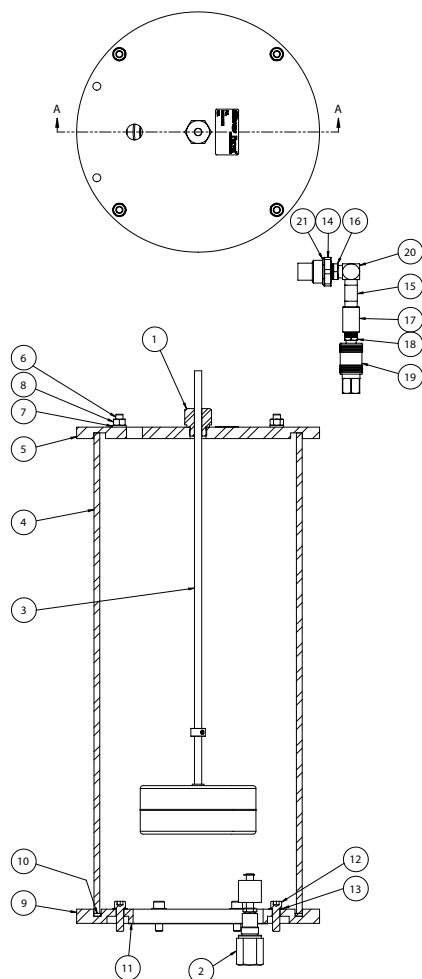
## DJ2000 PUMP

No. Req'd	Item No.	Description	Part Number	No. Req'd	Item No.	Description	Part Number
1	1	MAIN SPRING	200870	4	26	HEX HD BOLT	U204A3
2	2	BEARING, SINGLE ROW	AF1001	4	27	HEX HD BOLT	U204B5
1	3	BEARING CONE, SINGLE ROW	AF10041	3	28	HEX HD BOLT	U204C12
1	4	PLUG, MAIN PISTON BORE	PLU10758B	4	29	LOCK WASHER	U213E
1	5	BEARING CONE	AF10141	4	30	LOCK WASHER	U213F
2	6	WRIST PIN	DC2512	3	31	COPPER WASHER	U1305F
2	7	ECCENTRIC	DJ1010101	2	32	3/8" BALL	U230E
2	8	CONNECTING ROD	DJ1010111	2	33	WOODRUFF 505	U233E
1	10	WORM & GEAR KIT	LA10547	2	34	5/8-18 RETAINER SCREW, SLOTTED	U1204G
1	12	SHIM KIT	LB10552	1	35	1/4 X 15/16 L. STRAIGHT KEY	U1215C6
1	13	PISTON AND CYLINDER ASSEMBLY	LB10546	1	36	SPRING	U1304J
1	16	FLAT POINT SET SCREW	U250G8	1	37	COPPER WASHER	U1305L
1	17	SHAFT - GEAR AND ECCENTRIC	SHA10735B	1	38	CLOSURE PLUG	U1501J
1	18	GEAR SPACER	SPA10718A	1	39	SHAFT SEAL, .375 OIL	U1738B
1	20	ELBOW, 1/4 MPT X 3/8 FPT	U1023	1	40	O-RING BUNA	U1720009
3	21	1/4-18 NPTF PLUG, PLATED	U119BC	1	43	CHECK VALVE ASSEMBLY, 1/8 NPT	B4942
1	22	3/8-18 NPTF, PLUG PLATED	U119CC	1	45	SPRING RETAINER	RET10925B
3	23	1/8-27 NPTF PLUG	U1351	1	46	BEARING CUP, SINGLE ROW	AF10042
1	24	COPPER WASHER,	U1305AB	1	47	BEARING CUP	AF10142
2	25	COTTER PIN	U201A4	2	48	COPPER WASHER	U1305E

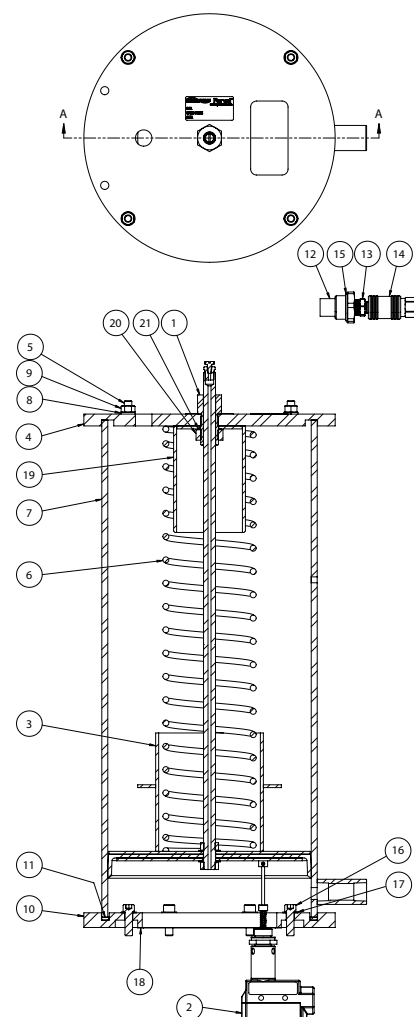


**T2004 - 6 GAL. OIL - STEEL**

No. Req'd	Item No.	Description	Part Number
1	1	Retainer - Float Rod	RET10799B
1	2	Float Switch Assembly	LB10584
1	3	Float Assembly	LB10610
1	4	Body - Reservoir	BOD10906B
1	5	Cover - Reservoir	COV10839C
4	6	Rod - Tie	ROD10840B
4	7	Washer - Lock - 5/16"	U213F
4	8	Nut - Hex - 5/16" - 18	U219B
1	9	Plate - Base Reservoir	PLA10850C
1	10	Gasket	GAS10843A
1	11	Gasket	GAS10873B
6	12	Screw - Soc. HD Cap. - 5/16" - 18 x 1"	U225B2
6	13	Washer - Copper 21/64" I.D.	U1305E
1	14	Filler Screen Assembly	T30S10151A
1	15	Nipple Pipe - 1/4" x 2"	U10185
1	16	Bushing - Reducing - 1/4" - 3/8"	U104C2
1	17	Coupling - Pipe Straight - 1/4"	U112B
1	18	Plug - Quick Disconnect - 1/4" MP	U421BC
1	19	Coupling - Quick Disconnect	U422C
1	20	Elbow - Steel Street - 1/4"	U1104B
1	21	Washer - Copper 1" I.D.	U1305AA

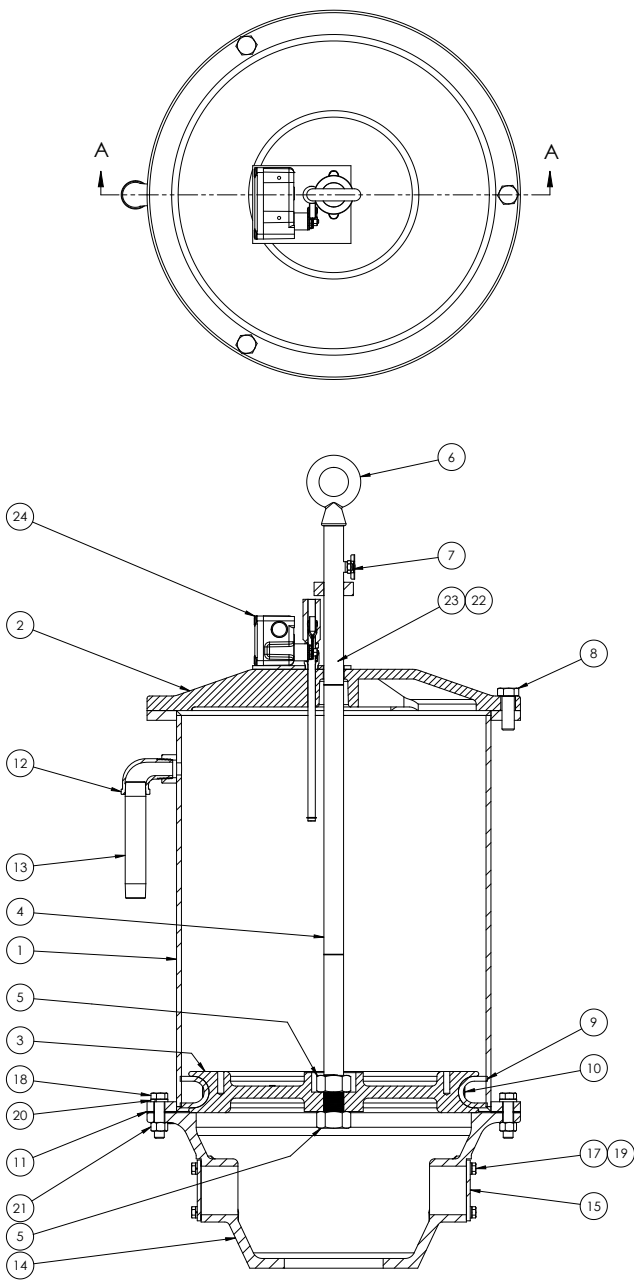

**T2005 - 24 LB. GREASE - STEEL**

No. Req'd	Item No.	Description	Part Number
1	1	Retainer - Follower Rod	RET10929B
1	2	Kit Switch & Indicator Res. Level	LB10578
1	3	Follower Assembly	LB10609
1	4	Cover - Reservoir	COV10839C
4	5	Rod - Tie	ROD10840B
1	6	Spring - Reservoir	SPR10841B
1	7	Body - Reservoir	BOD10842B
4	8	Washer - Lock - 5/16"	U213F
4	9	Nut - Hex 5/16" - 18	U219B
1	10	Plate - Base Reservoir	PLA10850C
1	11	Gasket	GAS10843A
1	12	Filler Screen Assembly	T30S10151A
1	13	Plug - Quick Disconnect - 3/8" FP	U421CC
1	14	Coupling - Quick Disconnect - 3/8" FP	U422C
1	15	Washer - Copper - 1" I.D.	U1305AA
6	16	Screw - Soc. HD Cap. - 5/16" - 18 x 1"	U225B5
6	17	Washer - Copper - 21/64" I.D.	U1305E
1	18	Gasket	GAS10873B
1	19	Tubing - Spring Guide	TUB11128B
1	20	Nut - Jam - Hex 3/4" - 16	U239J
1	21	Washer - Copper	U1305S



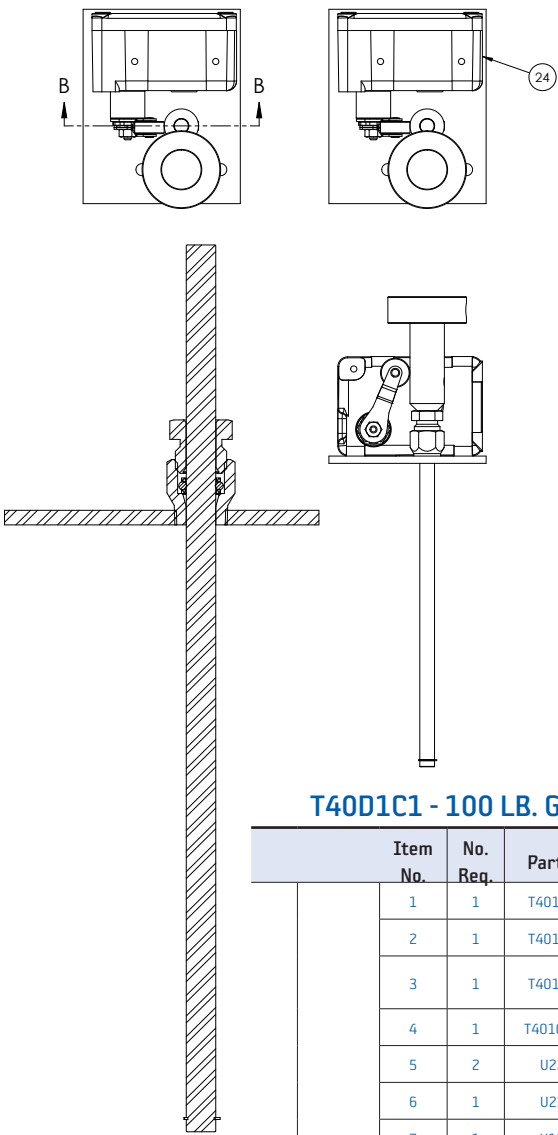


Parts Description - Reservoirs



SECTION A-A

NOTE: SOME ITEMS HAVE BEEN ROTATED  
IN THE SECTION VIEW FOR CLARITY



SECTION B-B  
SCALE 1 : 1

T40D1C1 - 100 LB. GREASE - STEEL

		Item No.	No. Req.	Part No.	Description
T40D1C1	RESERVOIR ASSEMBLY	1	1	T4010051	RESERVOIR BODY, 100LB
		2	1	T4010071	COVER, 100LB RES.
		3	1	T4010101	FOLLOWER PLATE, MACHINED
		4	1	T4010111A	INDICATOR ROD
		5	2	U220J	HEX NUT, 1-14
		6	1	U232F	EYEBOLT, SHOULDERED
		7	1	U127B	DRAIN COCK, 1/4NPT
		8	3	U204F2	HEX HD BOLT
		9	1	T4010272	FOLLOWER SEAL
		10	1	T4010302	BAND CLAMP
		11	1	T4010241	RESERVOIR GASKET
		12	1	U1025	STREET ELBOW 3/4 NPT X 3/4 NPT
		13	1	U101E18	PIPE NIPPLE, 3/4 X 6
		18	8	U204E7	HEX HD BOLT
		20	8	U213J	1/2 LOCK WASHER
		21	8	U219E	1/2-13 HEX NUT
		22	2	U213E	1/4 LOCK WASHER
		23	2	U204A2	HEX HD BOLT
T40D1A21	RESERVOIR ADAPTER ASSEMBLY	14	1	T4010061	RES.ADPT 100LB & 200LB
		15	2	T4010141	CLOSED END COVER
		17	8	U204B10	HEX HD BOLT
		19	8	U213F	LOCK WASHER
		24	1	T4010202	HI-LO LEVEL SWITCH ASSY

### C. REVERSING VALVE MODULE (MODULE KIT DR45K)

No. Required Arrangements			Item #	Description	Part Number
#3	#2	#1			
1	1	1	1	Switch and Adapter Assembly	FT15801C8
			1a	Switch	U10623
			1b	Switch Adapter	37041
			1c	Set Screw	37037
	2		2	Bushing - Face - 3/8" x 1/4" P.	U148C2
	2		3	Elbow - Street - 1/4" P. Brass	U152B
2	2		4	Tee - Street - 1/4" P.	U156B
		2	5	Elbow - Street - 1/4" P. 45 Deg.	U1103B
1	1	1	6	Reversing Valve Assembly	DR45
2	2	2	7	Gauge-Pressure 0-5,000 P.S.I.	U902F

#### DR45 Pressure Adjustment:

1. Factory set @ 1500 psi
2. Always make adjustment while system is under pressure
3. Clockwise = Higher pressure  
Counter Clockwise = Lower pressure
4. Unscrewing too far will cause internal damage

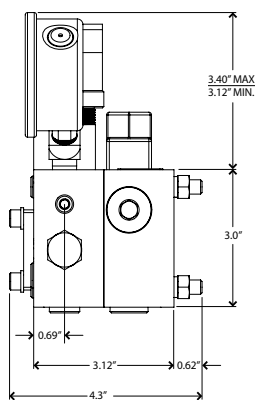
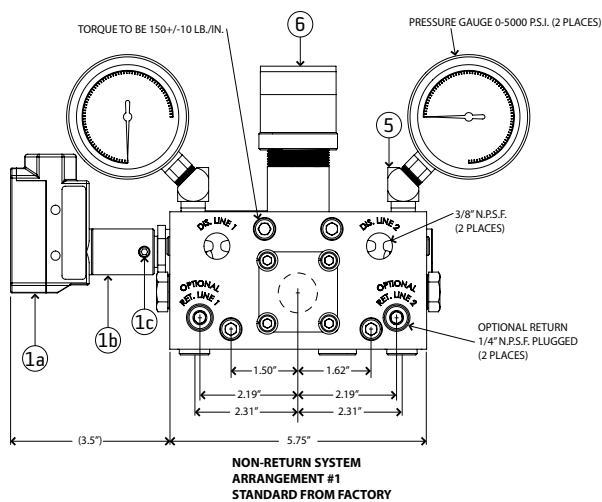
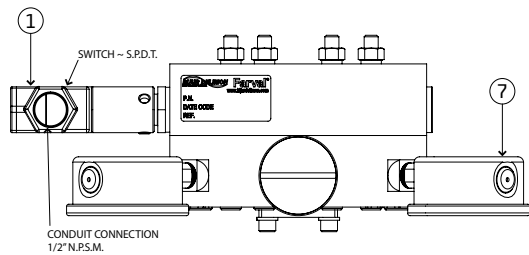
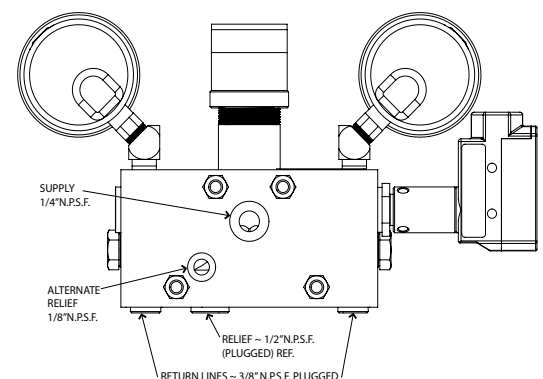


FIGURE 17

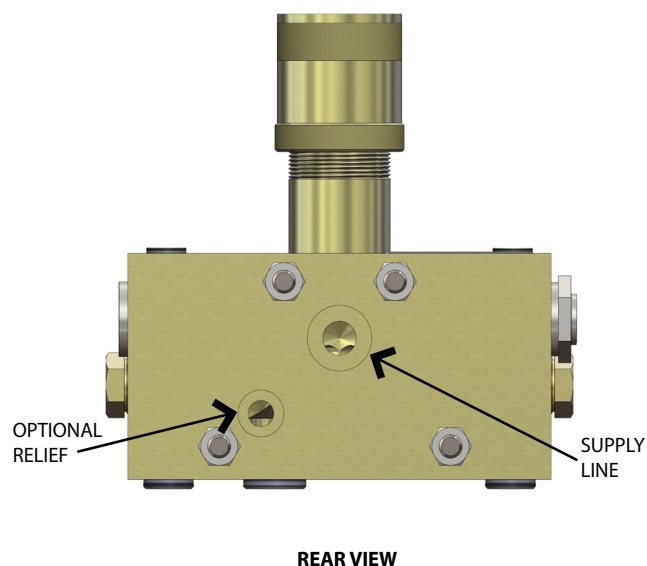
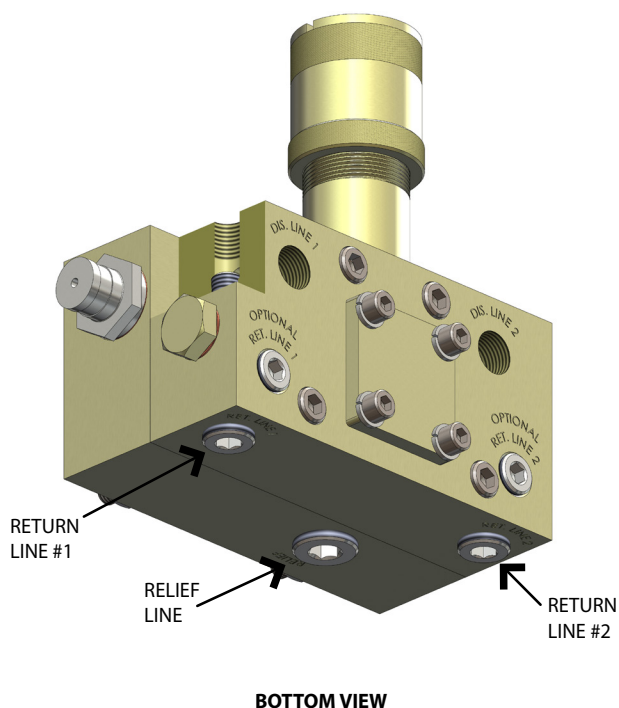
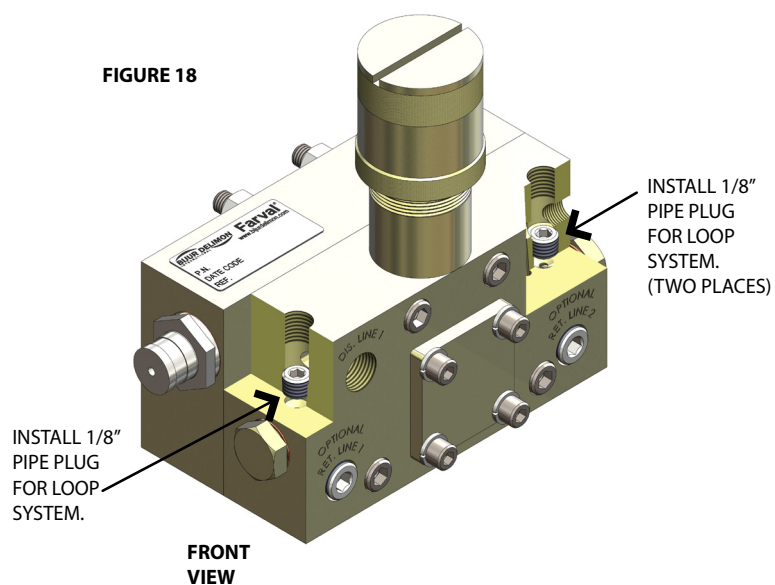


REAR VIEW

Refer to the following documents for more info:

+ Operators Manual #DL1200: DR4 Operator Manual

**FIGURE 18**



## CONVERSION OF DR45 REVERSING VALVE TO LOOP SYSTEM

Valves are shipped for non-return systems, without the 1/8" pipe plug installed. All that is required 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.

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