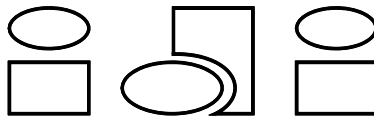


3:1 GUNDRILL COOLANT INTENSIFIER PUMP

**MODEL: HFG-31
INSTALLATION, OPERATION
& MAINTENANCE MANUAL**



INTERFACE DEVICES, INC.

230 Depot Road
Milford, CT 06460

Ph: (203) 878-4648
Fx: (203) 882-0885

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SECTION 1.0 INTRODUCTION

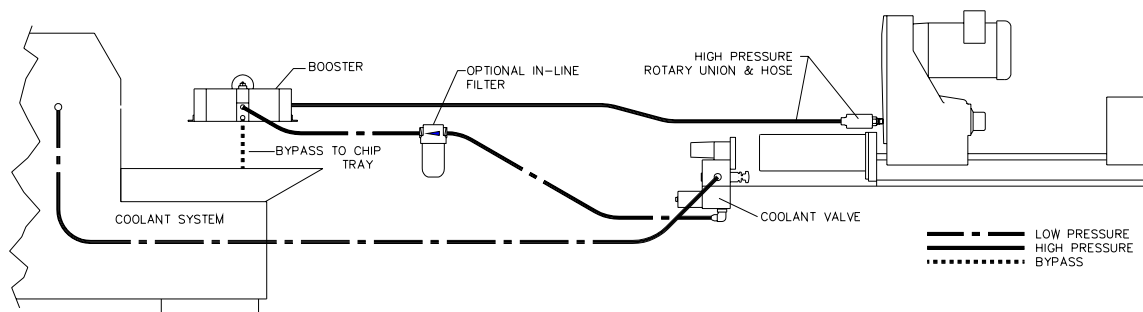
1.1 DESCRIPTION

The Model HFG-31 Gundrill Coolant Intensifier Pump, when installed directly in your existing low pressure coolant supply, line **triples** this pressure to the gundrill up to 3,000 psi. It consists of a reciprocating double-acting differential area cylinder driven by the low pressure supply and consumes no energy.

SECTION 2.0 INSTALLATION AND OPERATION

2.1 INSTALLATION

The unit is to be installed in-line between the coolant supply system and the inlet to the drill spindle, with a low pressure return line to the coolant system's reservoir. It may be mounted vertically or horizontally, giving consideration to being able to view the high pressure gauge during machine setup or operation. The following figure illustrates a typical installation:



Port connections on the intensifier are as follows:

- Low pressure inlet (stamped "P"): 3/8" NPT.
- Return to reservoir (stamped "T"): 3/8" NPT.
- High pressure out (Stamped "3P"): 1/4" NPT.

PRECAUTIONS:

1. Be certain that the above connections are correct, otherwise the unit will not operate and could be damaged.
2. Use only 3,000 psi working pressure fittings and hose from the high pressure intensifier outlet to the rotary union.
3. The rotary union must also be rated for 3,000 psi operation (ref: Deublin model number 1108-093-568).
4. Make sure the high pressure hose does not impose an undo side load on the rotary union throughout the stroke of the drill head (ie: sharp bends or improperly supported).

2.2 STARTUP

With a small diameter gundrill installed, the tip in its bushing and a part to be drilled clamped in place, turn on the coolant system and *set the pump pressure to BELOW 1,000 psi*. Energize the coolant solenoid valve. The intensifier should reciprocate immediately and an air-oil mixture should flow through the drill. Continue flowing until an air-free coolant flow is obtained. During this time note the pressure on the high pressure gauge. It should be three (3) times the coolant supply pressure. Also, during this time, check all hose and fitting connections for leaks.

2.3 OPERATION

Operation is automatic. Whenever the coolant supply valve is energized, the intensifier will run. When the valve is de-energized, the intensifier will stop. Before drilling, set the coolant supply pressure to yield the desired high pressure output to the drill.

CAUTION: Never exceed 1,100 psi inlet pressure

CAUTION: Never run the unit without a small gundrill in place (.125 dia. max.)

SECTION 3.0 MAINTENANCE AND TROUBLE SHOOTING

3.1 MAINTENANCE

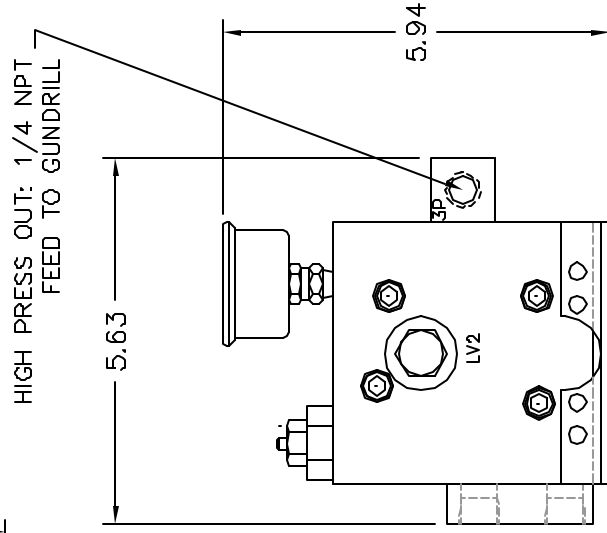
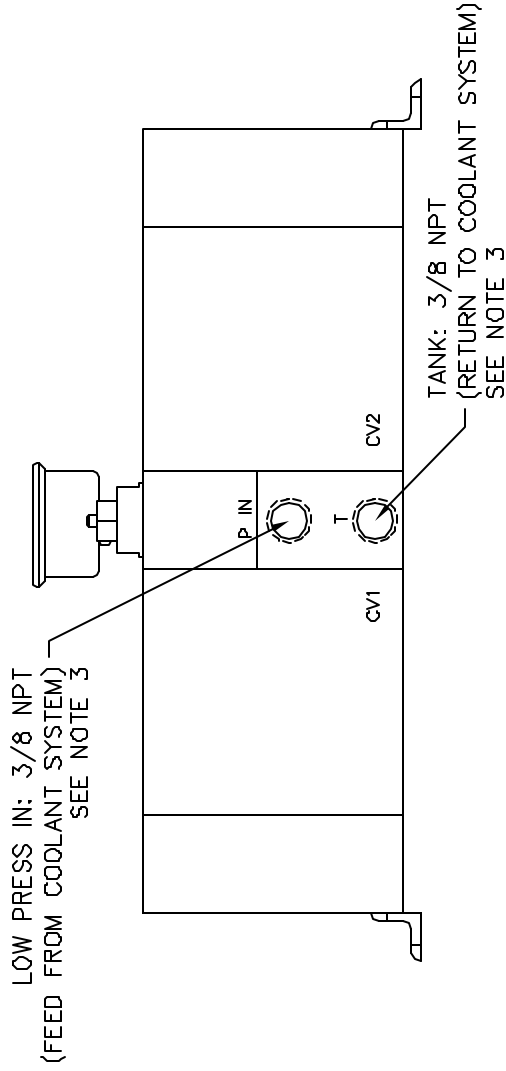
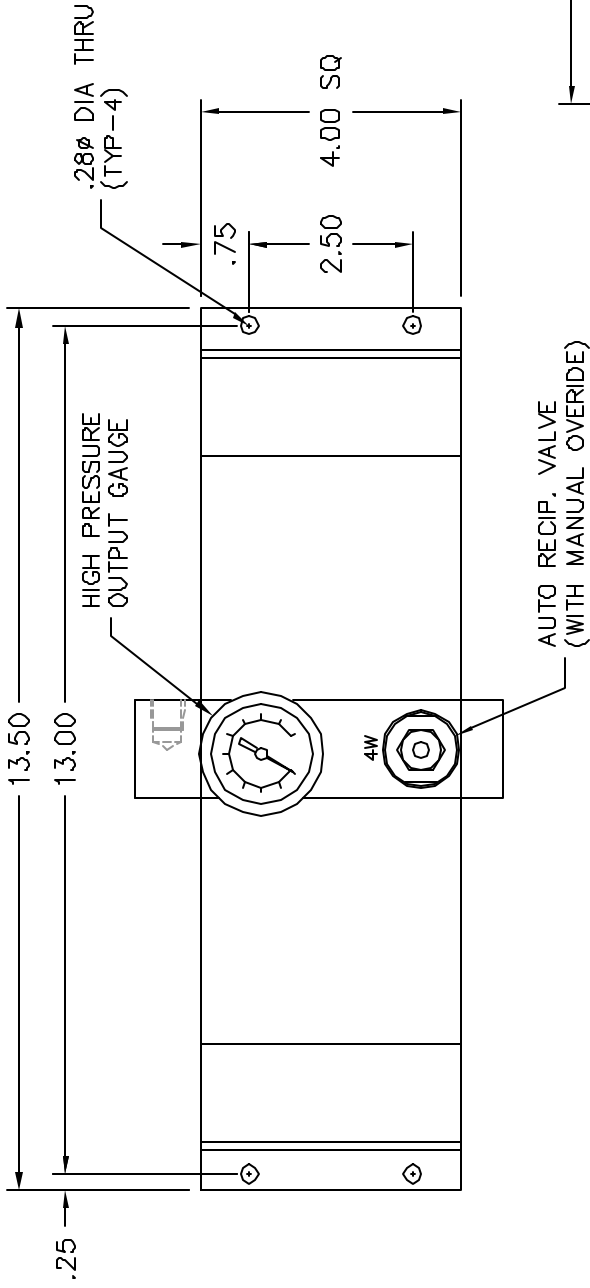
Routine maintenance is not required. However, due to the mildly abrasive nature of the coolant oil (ultra-fine drilled material particles), it is recommended that the unit be disassembled, inspected, cleaned and all dynamic seals be replaced every 1,000 hours.

3.2 TROUBLE SHOOTING GUIDE

(Refer to enclosed Exploded View Drawings & Hydraulic Schematic)

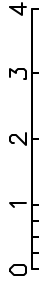
SYMPTOM	PROBABLE CAUSE(S)	REMEDY
<p>Pump cycles normally. Output pressure <u>less</u> than 3 times input pressure.</p>	<p>Coolant supply pressure gauge reading above actual supply pressure or Coolant output pressure gauge reading below actual output pressure.</p> <p>Restriction in supply line to intensifier.</p>	<p>Check calibration of both gauges (Older gauge on coolant supply most likely bad). Replace bad gauge.</p> <p>Kinked hose or blockage, such as clogged filter element in the optional pressure filter.</p>
<p>Pump will not cycle. Output pressure equals input pressure.</p>	<p>Four-way reciprocating valve spool stuck at mid-position.</p> <p>After trying remedy above, spool still sticks:</p> <p>Faulty "LV-1" (2-way limit valve is Broken, leaks or is contaminated).</p>	<p>Depress manual override pin on top of red recip. valve cap. Turn off coolant supply. Turn it back on (Re-sets air spool to end position.)</p> <p>Remove recip. valve cartridge from intensifier. Inspect for cut o-rings or contamination. Repair or replace (lubricate seals with grease before installation).</p> <p>Repair or replace.</p>
<p>Pump short cycles rapidly "chatters".</p>	<p>Faulty "LV-2" (2-way limit valve is Broken, leaks or is contaminated).</p>	<p>Repair or replace.</p>
<p>Pump cycles more rapidly than normal and lower than normal output pressure.</p>	<p>External leak at pump or downstream right up to the drill tip.</p> <p>Internal leak in pump.</p>	<p>Look for and correct.</p> <p>Check all dynamic and static seals.</p>
<p>Pump half cycles, showing alternately high and <u>LOW</u> pressure.</p>	<p>Faulty CV-3 or CV-4 (Output check valves).</p>	<p>Repair or replace.</p>
<p>Pump half cycles, showing alternately high and <u>NO</u> pressure.</p>	<p>Faulty CV-1 or CV-2 (Input check valves).</p>	<p>Repair or replace.</p>

For further assistance call INTERFACE DEVICES, INC. at 203/878-4648.

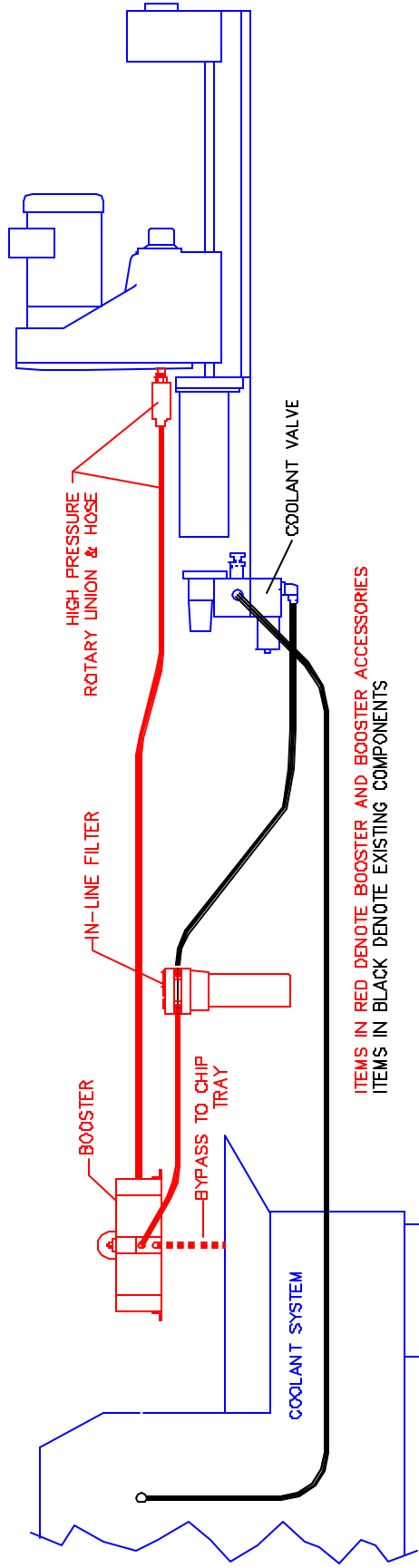


SPECIFICATIONS:

1. PRESSURE INTENSIFICATION: 3:1.
2. FLOW: 3 GPM "IN", 1 GPM "OUT" (2 GPM TO "TANK".)
3. WARNING: IMPROPER CONNECTION COULD DAMAGE THIS UNIT



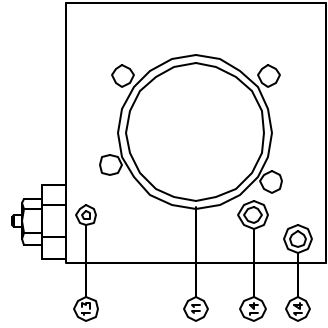
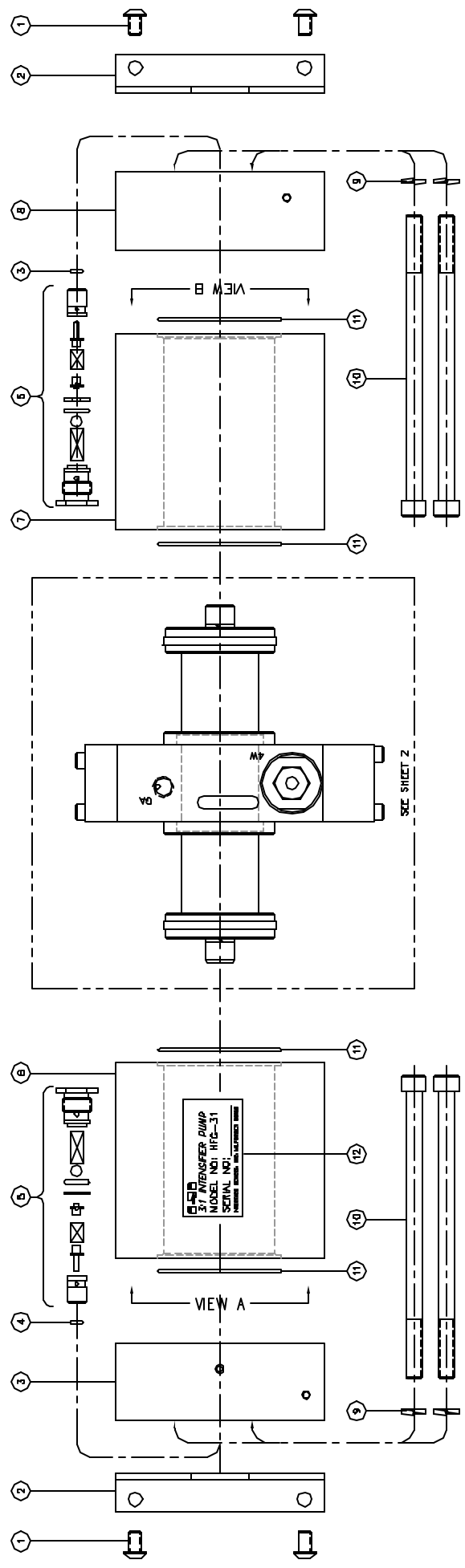
		INTERFACE DEVICES, INC. 230 DEPOT ROAD MILFORD, CT 06460	
SCALE: None	TITLE: GENERAL ARRANGEMENT,	3:1 DA OIL/OIL INTENSIFIER	
DWN BY: WNI	REF:		
DATE: 9/7/99	DWG NO: GA020399-1	REV:	
SHT: 1 OF: 1			



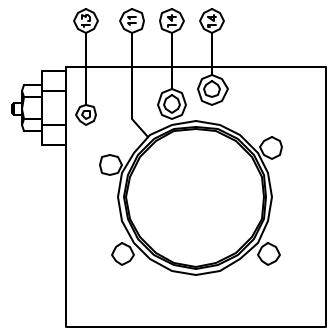
ITEMS IN RED DENOTE BOOSTER AND BOOSTER ACCESSORIES
 ITEMS IN BLACK DENOTE EXISTING COMPONENTS

IDI GUNDRILL COOLANT PUMP TYPICAL CONNECTION

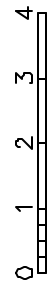
		INTERFACE DEVICES, INC. 230 DEPOT ROAD MILFORD, CT 06460	
SCALE: 1/16	TITLE: CONNECTION DIAGRAM, GUNDRILL INTENSIFIER		
DWN BY: WNI	REF:		
DATE: 1/24/03	DWG NO: GA-030124-1		
SHT: 1 OF: 1	REV:		



RIGHT CYLINDER VIEW B
(ROTATED 90°)



LEFT CYLINDER VIEW A
(ROTATED 90°)

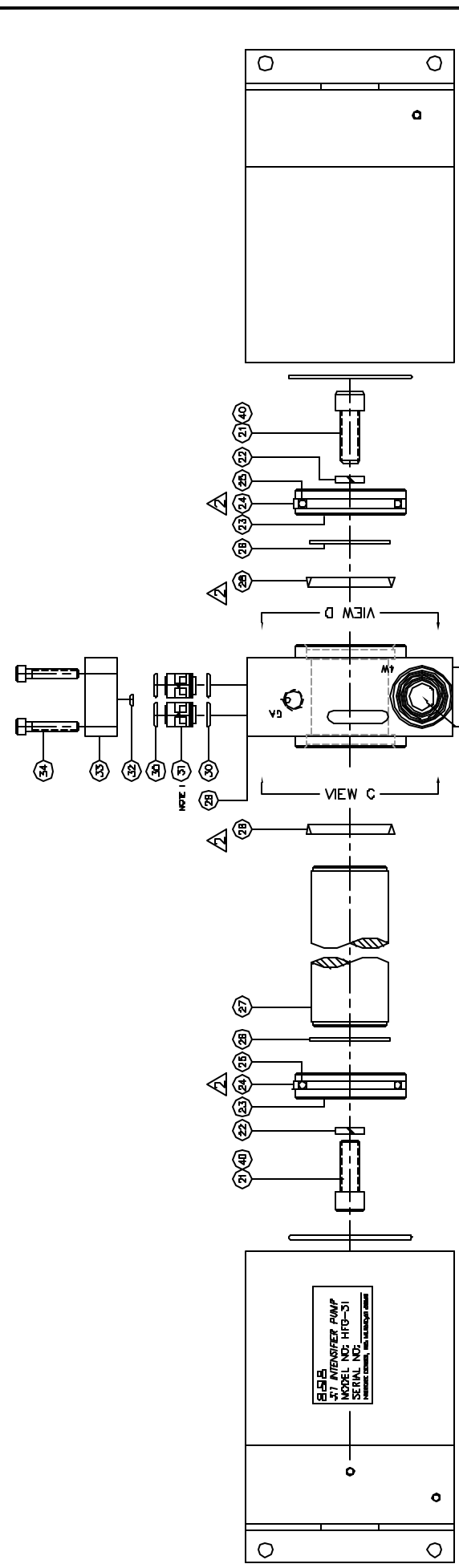


INCHES ON ORIGINAL DWG

ITEM	QTY	PART NUMBER	DESCRIPTION
20			
19			
18			
17			
16			
15			
14	4	ISO-011V7	O-RING
13	2	ISO-008V7	O-RING
12	1	10758	NAMETAG
11	4	ISO-035V7	O-RING
10	B	5/16-18 x 5.5	SOC HD CAP SCR
9	B	5/16	HI COLLAR WASHER
8	1	10757	CAP, RIGHT
7	1	10735	CYLINDER, RIGHT
6	1	10736	CYLINDER, LEFT
5	2	10792	VALVE, 2-W LIMIT
4	2	ISO-005V7	O-RING
3	1	10756	CAP, LEFT
2	2	10262	MOUNTING BRACKET
1	4	1/4-20 x .38	BUT HD CAP SCR

INTERFACE DEVICES, INC.	DESCRIPTION
230 DEPT. ROAD	
MILFORD, CT 06440	
SCALE 1/2	TITLE ASSEMBLY, GUNDRILL PUMP
REV: WNI	
DATE 4/15/00	
SIT: 1 OF: 2	INC NO: HFG-31

ASSEMBLY PART NUMBER 10794



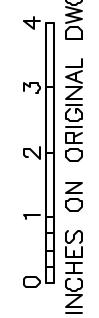
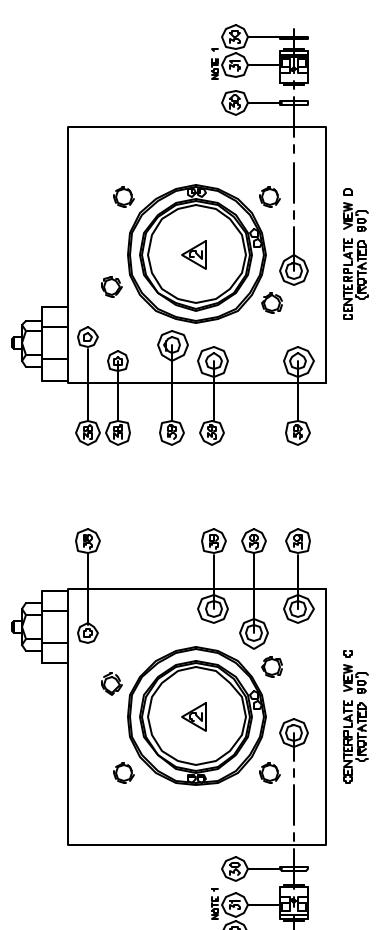
41	A/R50305	GREASE	
40	A/R242	LOC TITE	
39	4 ISO-011V7	O-RING	
38	2 ISO-008V7	O-RING	
37	1 10763	INPUT BLOCK	
36	1 ISO-016V7	O-RING	
35	1 10793	VALVE ASSY, 4-W HPO	
34	1 10-24 x 1.00	SOC HD CAP SCR	
33	1 10764	OUTPUT BLOCK	
32	1 ISO-004V7	O-RING	
31	4 IUG-C-04V15	CHECK VALVE	
30	4 18.5 x 1.5mm	O-RING	
29	1 10734	CENTERPLATE	
28	2 M11MSR128YT99	SEAL	
27	1 10762	PISTON SHAFT	
26	2 ISO-028V7	O-RING	
25	2 ISO-223V7	O-RING	
24	2 PT1202125129NA	GLIDE RING	
23	2 10761	PISTON	
22	2 3/8	HI COLLAR WASHER	
21	2 3/8-16 x 1.00	SOC HD CAP SCR	
ITEM	QTY	PART NUMBER	DESCRIPTION

MIRAGE LOGOS, INC.	
230 BERT ROAD	
MERRILL, CT 06460	
SCALE: 1/2	TITLE: ASSEMBLY,
DWG BY: WNI	GUNDRILL PUMP
DATE: 4/13/00	REF:
SHEET NO: 2	DWG NO: HFG-31
REV:	

NOTES:

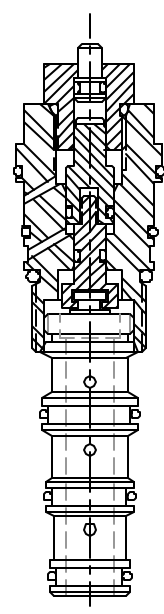
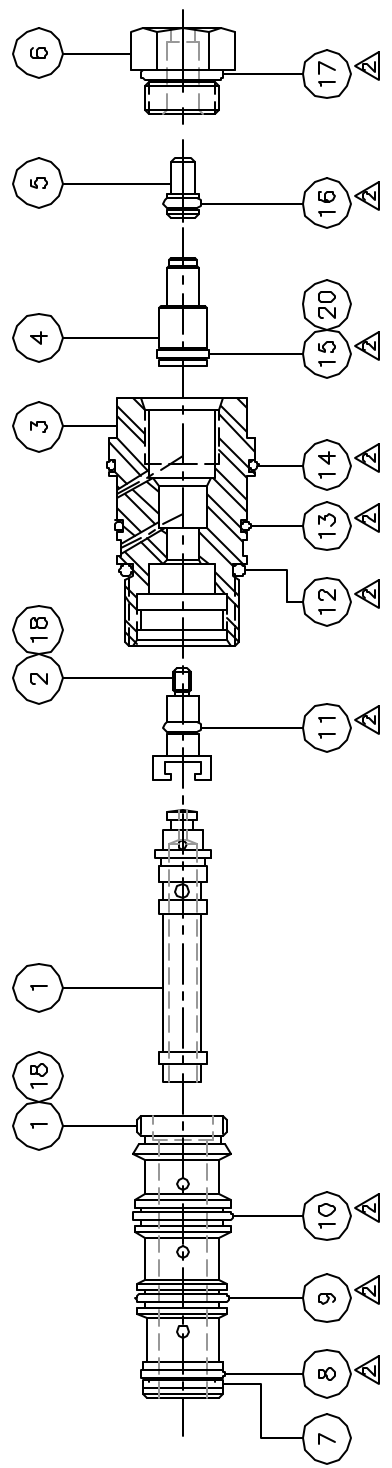
- ORIENTATION OF ITEM 31 IS CRITICAL TO PROPER OPERATION.

APPLY ITEM 41 GREASE TO O-RINGS, SEALS, PISTONS, AND PUMP BORE AS SHOWN (JETLUBE WHITE LITHIUM OR EQUAL)



ASSEMBLY PART NUMBER 10794

REV	DESCRIPTION	DATE
A	ITEM 8 WAS -012; ITEM 8 WAS -013; ITEM 10 WAS 12/22/00 -014; ITEM 10 QTY WAS 1; ADDED NEW ITEM 7	1/8/01
B	RELEASED ITEMS 18 & 17; ITEM 7 WAS 017	5/11/01
C	ADDED ITEM 20	



ASSEMBLY NOTES:

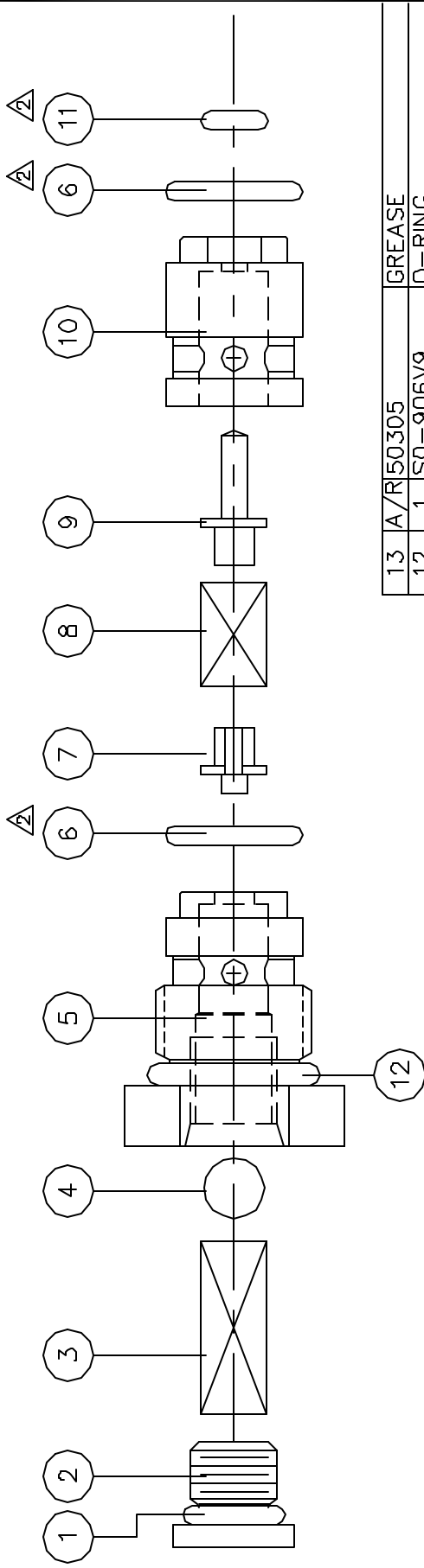
- 1 APPLY ITEM 18 LOCTITE TO ITEMS 1 AND 2 THREADS
- 2 APPLY ITEM 19 GREASE TO ALL O-RINGS (JET LUBE WHITE LITHIUM, OR EQUAL)

20	1	530660-10	DOUBLE DELTA SEAL
19	A/R	50305	GREASE
18	A/R	#242	LOCTITE (BLUE)
17	1	50-906V7	O-RING
16	1	50-006V7	O-RING
15	1	50-010V7	O-RING
14	1	50-022V7	O-RING
13	1	50-020V7	O-RING
12	1	50-908V7	O-RING
11	2	50-0106V7	O-RING
10	1	50-016V7	O-RING
9	1	50-015V7	O-RING
8	1	50-014V7	O-RING
7	1	D14	PTFE SPLIT BACK UP
6	1	10598	RETAINER
5	1	10467	OVERRIDE PIN
4	1	10807	PILOT PISTON
3	1	10381	HOUSING
2	1	10806	CLEVIS
1	1	10795	SPOOL/SLEEVE SET

ITEM QTY	PART NUMBER	DESCRIPTION
INTERMEX SERVICES, INC. 230 DEPOT ROAD MURFreesboro, TN 37130		
SCALE:	FULL	TITLE VALVE ASSEMBLY, 4-W HFO
DWN BY:	WNI	
DATE:	3/23/00	REF: 3:1 Oil/Oil Gundrill Pump
SPT:	1 OF 1	DWG NO: V0003231
		REV: C

ASSEMBLY PART NUMBER 10793

REV	DESCRIPTION	DATE
D	REDESIGNED; NEW ITEMS (5) (10) ADDED (1)	9/26/00



ITEM	QTY	PART NUMBER	DESCRIPTION
13	A/R	50305	GREASE
12	1	SO-906V9	O-RING
11	1	SO-004V7	O-RING
10	1	10791	SLEEVE
9	1	1079B	STEM
8	1	C02400380380M	SPRING - ASSOC
7	1	11109	BALL PLUNGER
6	2	SO-012V9	O-RING
5	1	10790	HOUSING
4	1	φ.219	CHROME BALL
3	1	C02400350620M	SPRING - ASSOC
2	1	2HP50N-S	HOLLOW HEX PLUG
1	1	SO-902V7	O-RING

SCALE: NA	TITLE: ASSEMBLY, 2-W LIMIT VALVE
DWN BY: WNI	
DATE: 8/24/00	REF: 3:1 OIL/OIL GUNDRILL PUMP
SHIFT: 1	DWG NO: V0008241
	REV: D

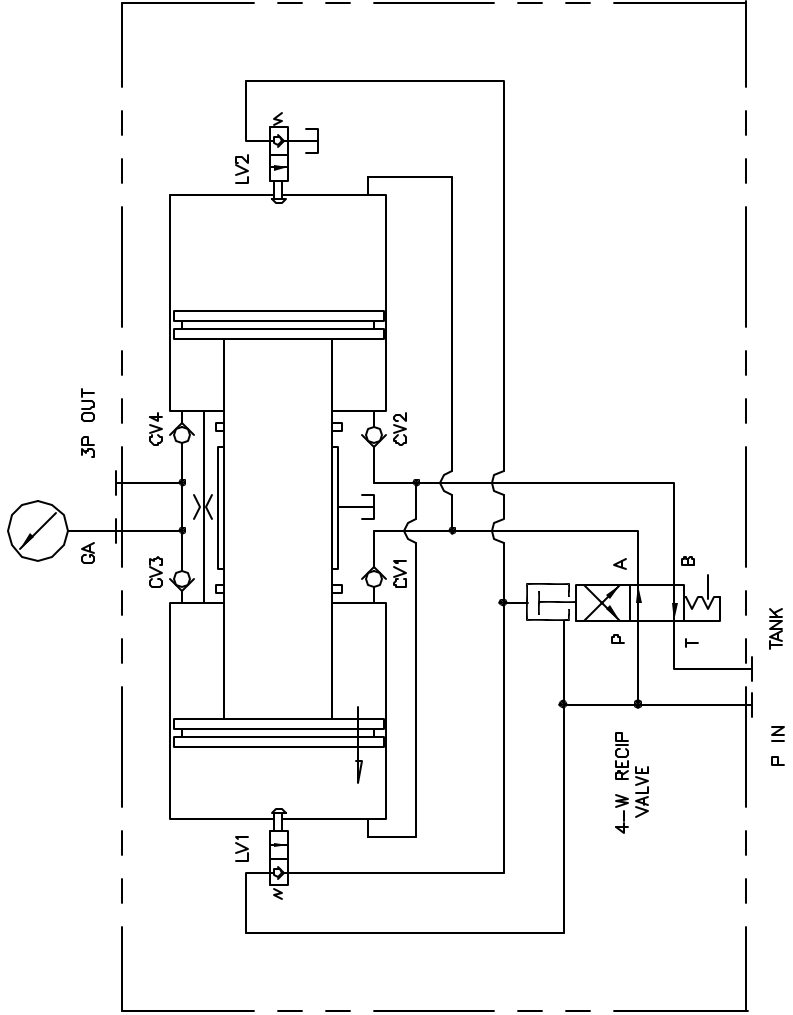
NOTES:

1 TWO VALVES REQUIRED PER PUMP

△ APPLY ITEM 13 GREASE TO ALL O-RINGS
(JET LUBE WHITE LITHIUM OR EQUAL)

ASSEMBLY PART NUMBER 10792

REV	DESCRIPTION	DATE
A	SWAP A & B PORTS TO CYLS.	9/8/00
B	ADD CREEP ORIFICE	10/11/02



		INTERFACE DEVICES, INC. 230 DEPOT ROAD MILFORD, CT 06460
SCALE: NONE	TITLE: HYDRAULIC SCHEMATIC	
DWN BY: TWH	3:1 DA COOLANT INTENSIFIER	
DATE: 1/11/99	REF: GUNDRILL PUMP	
SHT: 1 OF: 1	DWG NO: HSD11199	REV: B