NATIONAL OILWELL

PARTS LIST

FC-2200
TRIPLEX MUD PUMP

(EPL-1345)

NATIONAL-OILWELL
P.O. BOX 4638
HOUSTON, TEXAS 77210-4638

Issue Date: December 2000

Printed in U.S.A.

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FC-2200
TRIPLEX MUD PUMP

EPL-1345

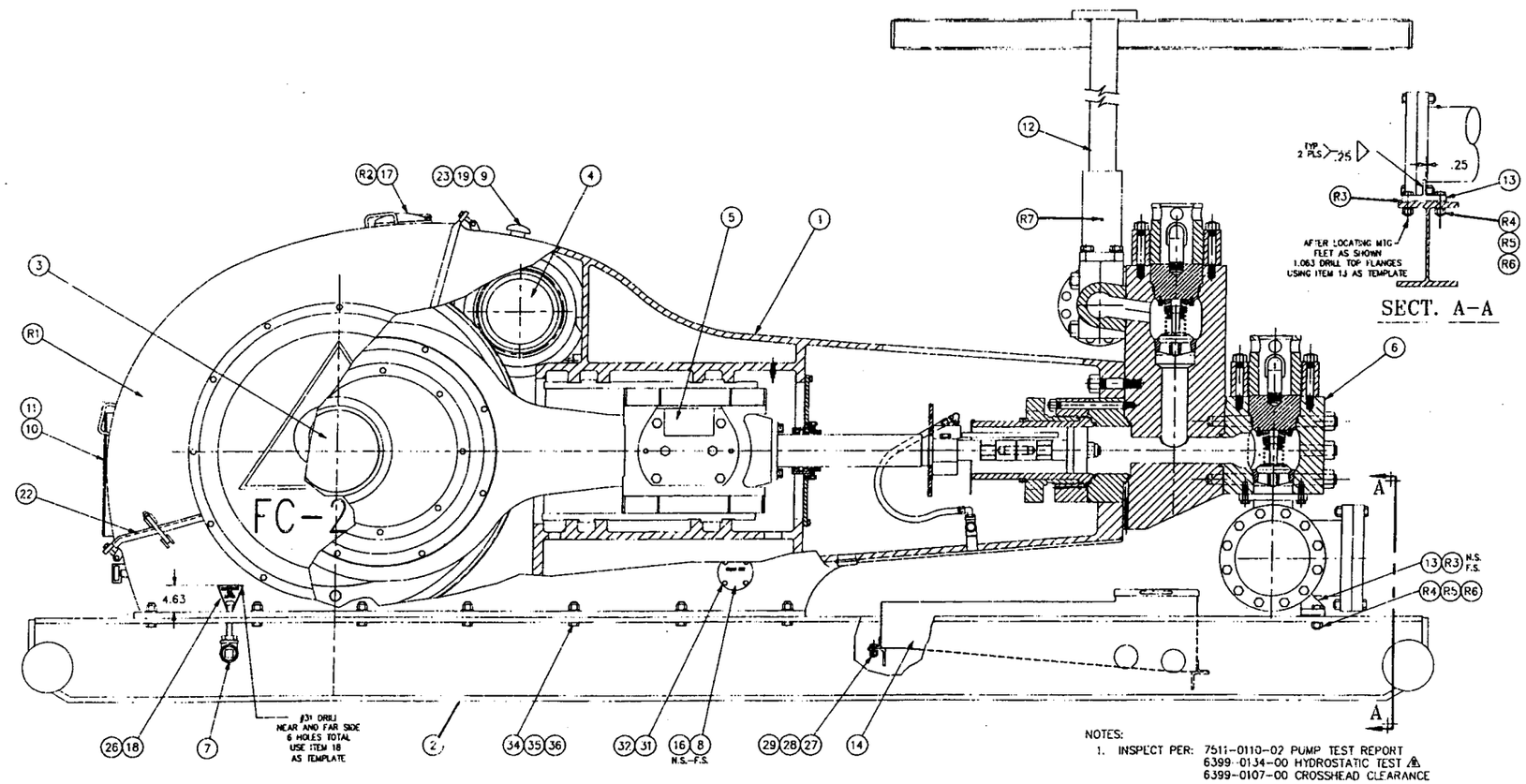
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Issue Date: December 2000

Printed in U.S.A.

BILL OF MATERIAL			
ITEM	REQ'D	PART NO.	DESCRIPTION
---	---	6323-0110-10	FC-2200 TRIPLEX MUD PUMP GENERAL ASSEMBLY (CONSISTS OF THE FOLLOWING)
1	1	6323-0027-00	FRAME ASSEMBLY, PUMP
2	1	6323-0077-00	SKID, MAIN
3	1	6323-0080-00	CRANKSHAFT ASSEMBLY
4	1	6323-0022-00	PINION SHAFT ASSEMBLY
5	1	6323-0060-10	CROSSHEAD ASSEMBLY
6	1	6323-0100-20	FLUID END ASSEMBLY
7	1	6323-0028-00	LUBRICATION ASSEMBLY, INTERNAL
8	2	6397-0264-00	COVER, CLEAN-OUT
9	1	6397-0186-00	CAP, BREATHER
10	1	6316-0127-00	GASKET, COVER PLATE
11	1	6316-0126-00	PLATE, COVER
12	1	6323-0113-00	CRANE, SERVICING
13	2	6323-0095-00	SUPPORT FOOT, SUCTION FLANGE
14	1	6323-0119-00	TANK, RECIRCULATING
16	2	7502-0581-00	GASKET, CLEAN-OUT COVER
17	2	7502-0103-00	GASKET, INSPECTION COVER

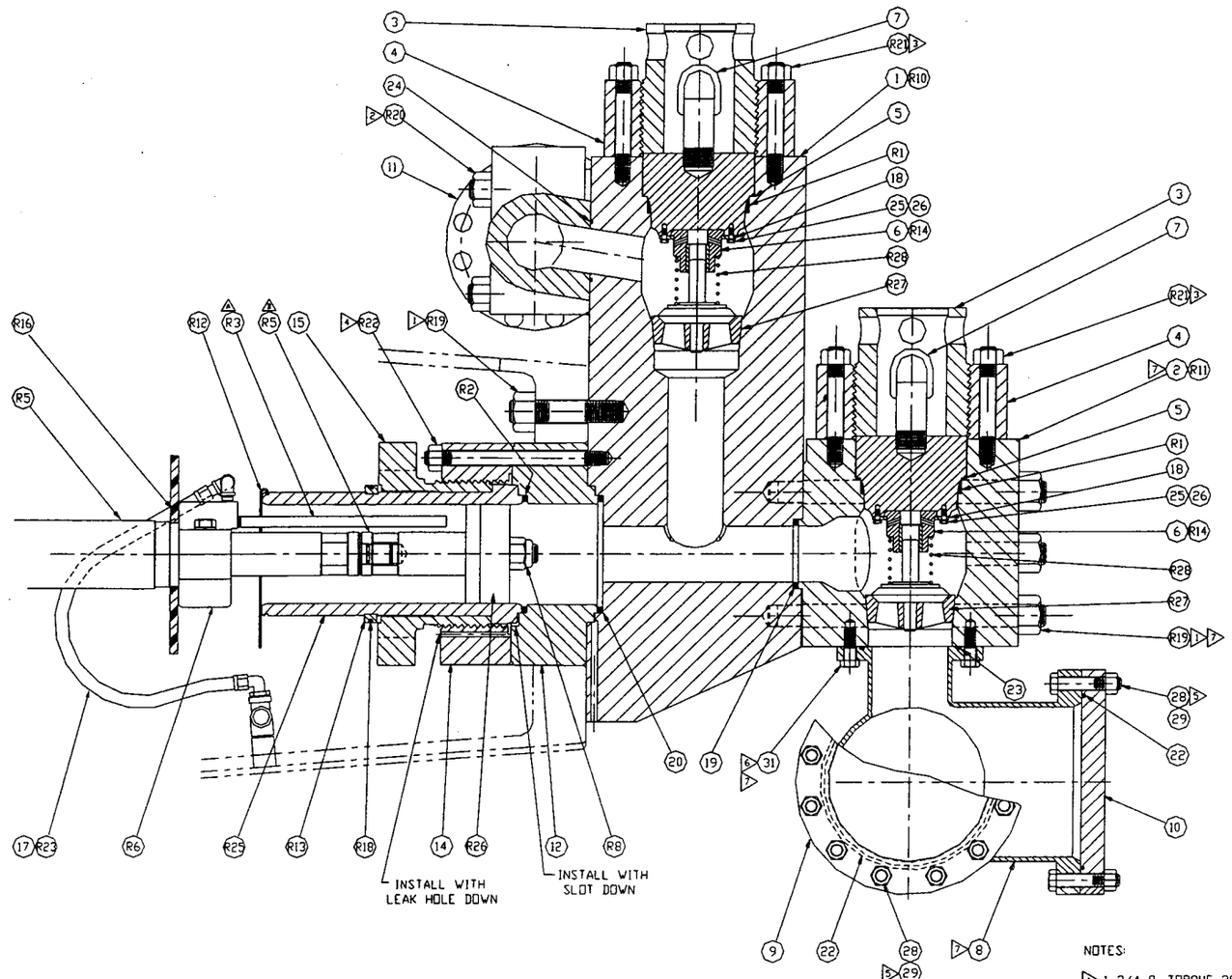
BILL OF MATERIAL			
ITEM	REQ'D	PART NO.	DESCRIPTION
18	2	7506-0032-00	NAMEPLATE, OIL LEVEL
19	1	7507-0200-00	STUD, BREATHER CAP
22	1	7602-5940-24	GASKET, GEAR CASE COVER
23	1	7602-1070-13	WOOL, 2 oz. COPPER
26	6	7601-1060-06	SCREW, NO. 6 X .38 DRIVE
27	4	7601-0330-96	CAPSCREW, 3/4" -10 X 1-3/4" LG. HEX HEAD
28	4	7601-0610-14	NUT, 3/4" - 10 HEX
29	4	7601-1320-18	WASHER, 3/4" LOCK
31	8	7601-0330-51	CAPSCREW, 1/2" - 13 X 1-1/2" LG. HEX HEAD
32	8	7601-1330-04	WASHER, 1/2" PLAIN
34	14	7601-0338-94	CAPSCREW, 1" - 8 x 3-1/2" LG. GR. 8 ZINC PLTD. HEX HEAD
35	14	7601-0721-24	NUT, 1" - 8 ZINC PLTD. LOCK
36	14	7601-1430-03	WASHER, 1" GALV. PLAIN
			—REFERENCE ITEMS—
R1	1	6323-0029-00	COVER, GEAR CASE
R2	2	7510-0201-00	DOOR, INSPECTION
R3	2	6323-0095-04	PLATE, SUPPORT
R4	4	7601-0331-35	CAPSCREW, 1" - 8 X 3-1/2" LG. HEX HEAD
R5	4	7601-0610-18	NUT, 1" -8 HEX
R6	4	7601-1320-33	WASHER, 1" LOCK
R7	1	7601-2070-08	FITTING, 1/4" GREASE



NATIONAL OILWELL
Houston, Texas, U.S.A.

GENERAL ASSEMBLY
7500 P.S.I.
FC-2200 TRIPLEX MUD PUMP

SHEET 1 OF 1	SIZE:	DRAWING NO.:	REV.:
	D	PL 6323-0110-10	B



BILL OF MATERIAL			
ITEM	REQ'D.	PART NO.	DESCRIPTION
---	---	6323-0100-20	FLUID END ASSEMBLY, 7500 PSI (CONSISTS OF THE FOLLOWING)
1	3	6323-0108-00	STUDDED FLUID END (DISCHARGE)
2	3	6323-0109-00	STUDDED FLUID END (SUCTION)
3	6	6323-9087-90	RETAINER, THREADED
4	6	6323-9086-90	RING, THREADED
5	6	6323-0083-00	COVER, VALVE POT
6	6	6323-0103-00	GUIDE WITH BUSHING, VALVE
7	6	6323-0126-00	HANDLER, VALVE POT
8	1	6323-0085-00	MANIFOLD, SUCTION
9	1	6316-0105-95	FLANGE, SUCTION
10	1	6317-0074-95	FLANGE, BLIND
11	1	6323-0084-10	MANIFOLD, DISCHARGE (7500 PSI)
12	3	6323-9097-90	PLATE, WEAR
14	3	6323-0096-00	RING, LINER THREAD
15	3	6323-0099-00	LOCK, LINER
17	1	6323-0121-20	PIPING ASSEMBLY, FEED
18	6	6323-0093-00	RETAINER, VALVE GUIDE
19	3	6323-0128-00	SEAL, FLUID END MODULAR
20	3	6323-0127-00	SEAL, LINER
22	3	7602-1600-52	O-RING, SUCTION MANIFOLD
23	3	7602-1600-61	O-RING, SUCTION MANIFOLD TO FLUID END
24	3	7602-1600-30	O-RING, DISCHARAGE MANIFOLD TO FLUID END
25	24	7501-0051-00	SCREW, RETAINER
26	1	7602-5310-00	WIRE, .06 DIA. X 72" LG. STAINLESS STEEL
28	36	7601-0331-39	CAPSCREW, 1" - 8 X 5" LG. HEX HEAD
29	36	7601-0630-20	NUT, 1" - 8 HEX
31	18	7601-0333-30	CAPSCREW, 7/8" - 9 X 2-1/2" LG. GR. 5 HEX HEAD
		—LOOSE PARTS—	
R1	6	6323-0125-00	SEAL, VALVE POT
R2	3	6323-0127-00	SEAL, LINER
R3	3	7601-2588-08	NIPPLE, 1/2" X 16" LG. GALV. PIPE (THD. ONE END)
R5	3	6323-0117-20	PISTON ROD ASSEMBLY
R6	3	6323-0058-20	CLAMP, PISTON ROD
R8	3	7601-0721-35	NUT, 1-5/8" - 8 HEAVY LOCK
R10	3	6323-0081-00	FLUID END MODULE (DISCHARGE)
R11	3	6323-0082-00	FLUID END MODULE (SUCTION)
R12	3	6323-0107-20	COVER, LINER END
R13	3	6323-0101-00	RING, LINER LOCK
R14	6	6323-0102-00	BUSHING, VALVE GUIDE
R16	3	6323-0129-00	DISC, FLUID BAFFLE
R18	3	7602-1600-45	O-RING
R19	42	7601-0630-06	NUT, 1-3/4" - 8 HEAVY HEX
R20	12	7601-0630-17	NUT, 1-1/2" - 8 HEAVY HEX
R21	72	7601-0630-24	NUT, 1-1/4" - 8 HEAVY HEX
R22	36	7601-0630-26	NUT, 1-1/8" - 8 HEAVY HEX
R23	3	7503-0470-49	HOSE ASSEMBLY, 1/2"
		—OPTIONAL PARTS—	
R25	3	6323-0098-00	LINER, BASIC
R26	3		PISTON
R27	6		VALVE AND SEAT, API #8
R28	6		SPRING, VALVE

NOTES:

1. 1 3/4-8, TORQUE 2950-3000 LB-FT (LUB)
2. 1 1/2-8, TORQUE 1575-1625 LB-FT (LUB)
3. 1 1/4-8, TORQUE 950-1000 LB-FT (LUB)
4. 1 1/8-8, TORQUE 675-725 LB-FT (LUB)
5. 1"-8, TORQUE 184-194 LB-FT (LUB)
6. 7/8-9, TORQUE 220-250 LB-FT (LUB)
7. SUCTION MODULE, ITEM 2, AND SUCTION MANIFOLD, ITEM 8, MUST BE INSTALLED TOGETHER. TIGHTEN NUTS, ITEM R19, AND BOLTS, ITEM 31, PROGRESSIVELY.

NATIONAL OILWELL

Houston, Texas, U.S.A.

FLUID END ASSEMBLY
7500 P.S.I.
FC-2200 TRIPLEX MUD PUMP

SHEET 1 OF 1	SIZE:	DRAWING NO.:	REV.:
	D	PL 6323-0100-20	C

BILL OF MATERIAL			
ITEM	REQ'D	PART NO.	DESCRIPTION
---	---	6323-0005-01	FLUID END LOOSE PARTS (CONSISTS OF THE FOLLOWING)
1	3	6323-0058-20	CLAMP, PISTON ROD
2	3	6323-0117-20	PISTON ROD ASSEMBLY, TWO PIECE
3	3	7601-0721-35	NUT, 1-5/8" - 8 HEAVY LOCK (FOR PISTON ROD)
4	2	7602-0660-05	GASKET, RING JOINT (R-46)
5	3	7602-1600-47	O-RING (FOR LINER LOCK RING)
6	3	6323-0101-00	RING, LINER LOCK (TWO PIECE MATCH SET)
7	1	6323-0006-00	SET OF SEALS (PACKAGED)
8	3	6323-0107-20	COVER, LINER END
9	1	7602-5160-09	HOIST AND TROLLEY, 1/2 TON
10	1	6323-0131-00	TOOL, LINER HANDLING
11	3	6323-0129-00	DISC, FLUID BAFFLE
12	3	7601-2588-08	PIPE, 1/2" X 16" LG. GALV. (THD. ONE END ONLY)

APPLICABLE FOR FC-2200 PUMP WITH SERIAL NUMBERS 11 AND UP.

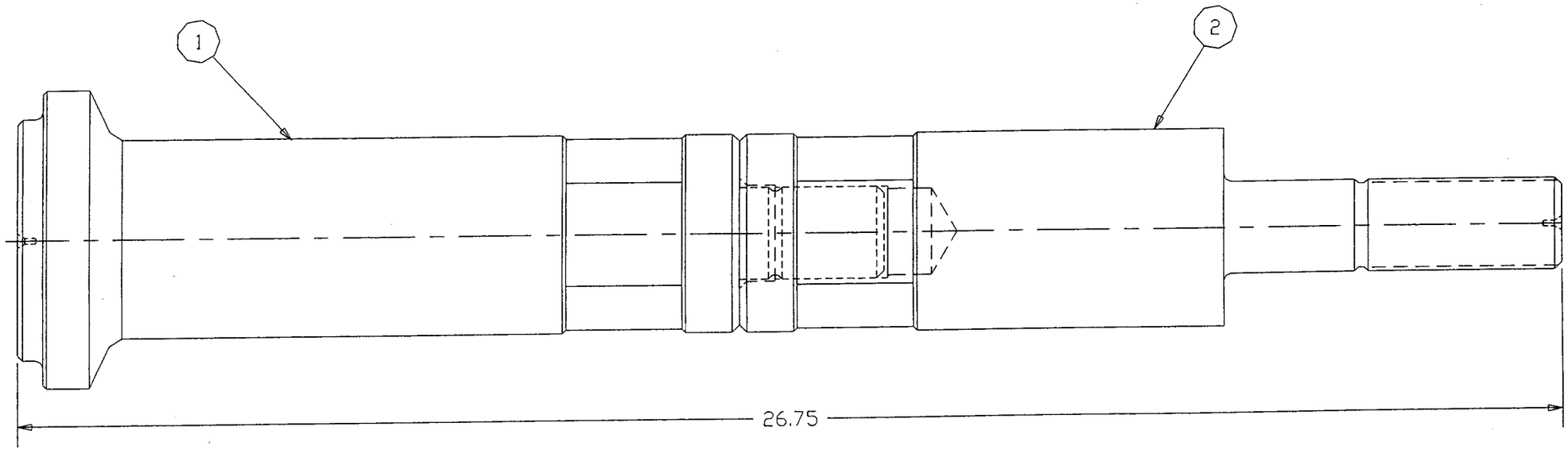
NATIONAL OILWELL

Houston, Texas, U.S.A.

LOOSE PARTS, FLUID END
FC-2200 TRIPLEX MUD PUMP

SHEET 1 OF 1	SIZE:	DRAWING NO.:	REV.:
	A	PL 6323-0005-01	C

BILL OF MATERIAL			
ITEM	REQ'D	PART NO.	DESCRIPTION
---	---	6323-0117-20	PISTON ROD ASSEMBLY, TWO PIECE (CONSISTS OF THE FOLLOWING)
1	1	6323-0112-20	ROD, EXTENSION END PISTON
2	1	6323-0111-10	ROD, PISTON END PISTON



NOTES:

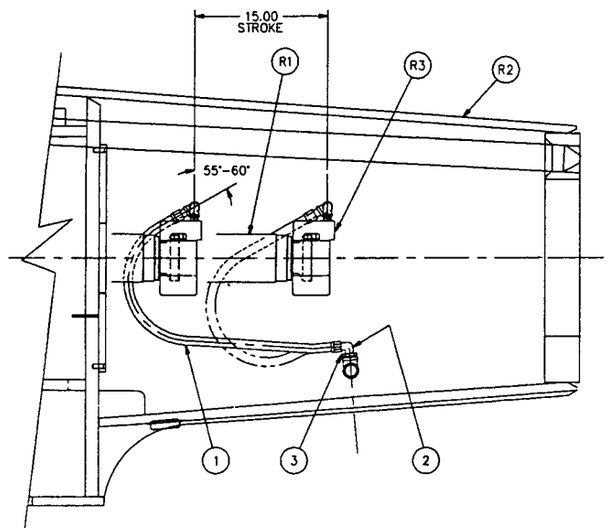
1. PRIOR TO ASSEMBLY, INSPECT THREADS FOR DAMAGE, NICKS, ETC. DAMAGED THREADS WILL CAUSE MISALIGNMENT AND FAILURE.
2. LUBRICATE THREADS PRIOR TO ASSEMBLY.
3. INSTALL ITEM 1 INTO ITEM 2 AND TIGHTEN SECURELY.

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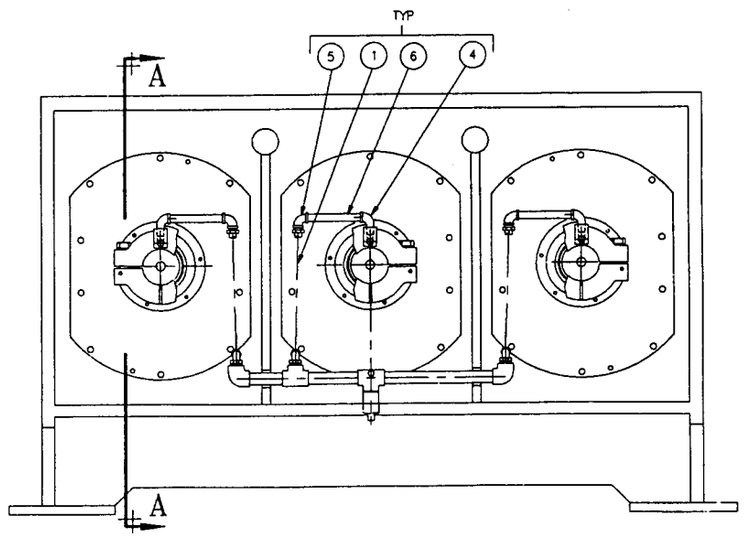
PISTON ROD ASSEMBLY
FC-2200 TRIPLEX MUD PUMP

SHEET 1 OF 1	SIZE:	DRAWING NO.:	REV.:
	B	PL 6323-0117-20	A

BILL OF MATERIAL			
ITEM	REQ'D	PART NO.	DESCRIPTION
---	---	6323-0121-20	FEED PIPING, LINER WASH (CONSISTS OF THE FOLLOWING)
1	3	7503-0400-39	HOSE ASSY., 1/2" MALE NPT X 7/8"-14 FEMALE SAE
2	3	7601-2090-40	ELBOW, 1/2" MPT X 7/8" - 14 MSAE HOSE ADAPTER
3	3	7601-2530-40	BUSHING, 1/2" X 1" GALV. HEX HEAD PIPE
4	3	7601-2570-89	ELBOW, 1/2" X 90 DEG. GALV. STREET
5	3	7601-2570-41	ELBOW, 1/2" X 90 DEG. GALV. PIPE
6	3	7601-2584-36	NIPPLE, 1/2" X 7" LG. GALV. PIPE
REFERENCE ITEMS			
R1	1	6323-0059-00	EXTENSION, CROSSHEAD
R2	1	6323-0027-00	FRAME ASSEMBLY, MACHINED
R3	3	6323-0058-20	CLAMP, PISTON ROD



SECTION A-A



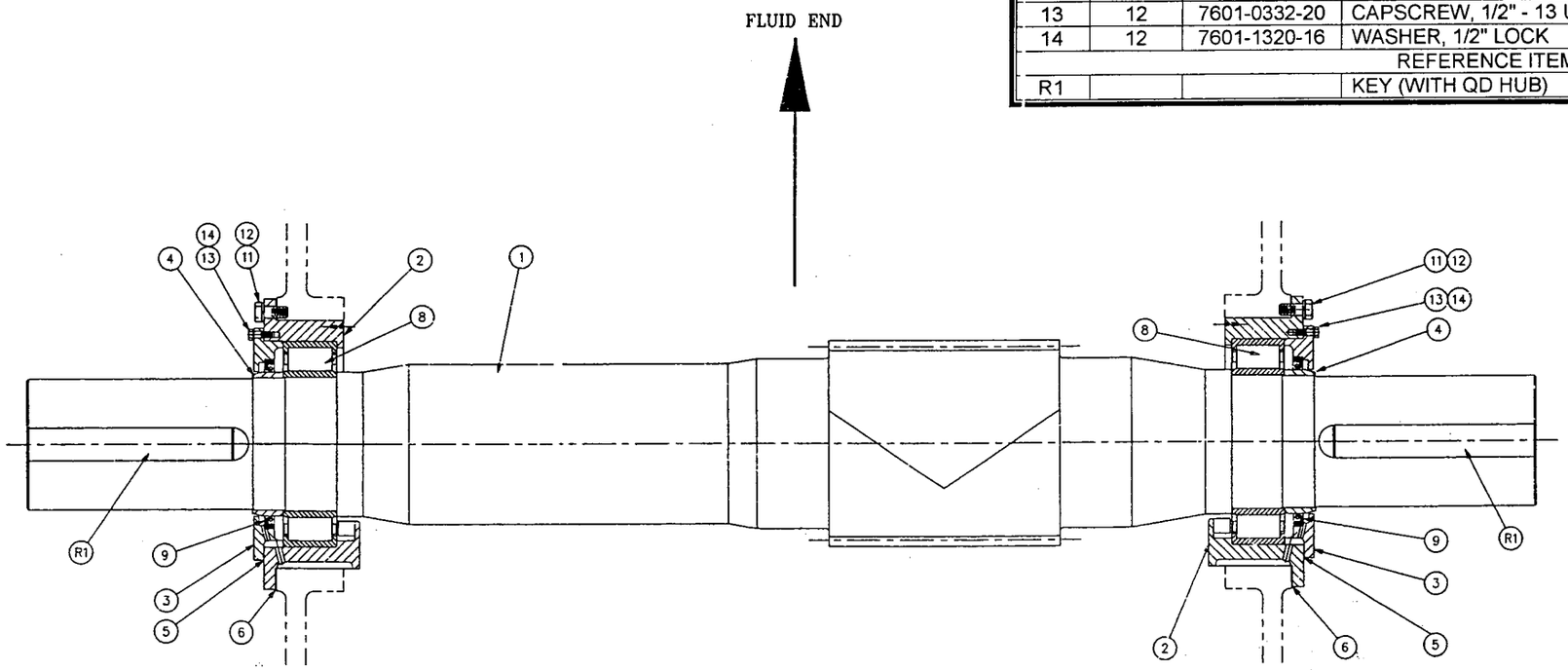
SERIAL NO. 11 AND UP

NATIONAL OILWELL
Houston, Texas, U.S.A.

LINER WASH
FEED PIPING ASSEMBLY
FC-2200 TRIPLEX MUD PUMP

SHEET 1 OF 1	SIZE:	DRAWING NO.:	REV.:
	C	PL 6323-0121-20	A

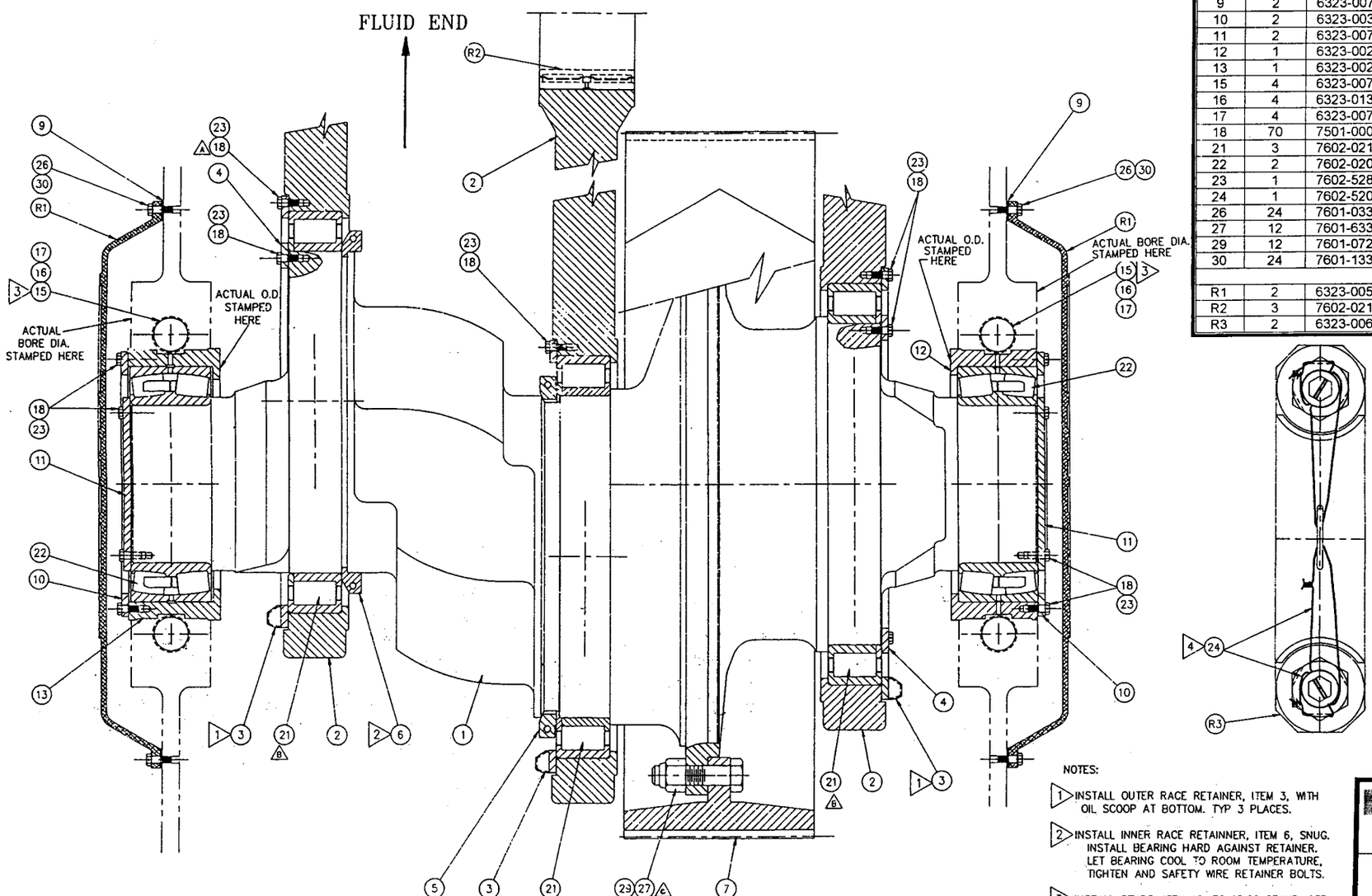
BILL OF MATERIAL			
ITEM	REQ'D	PART NO.	DESCRIPTION
---	---	6323-0022-00	PINION SHAFT ASSEMBLY (CONSISTS OF THE FOLLOWING)
1	1	6323-0021-00	SHAFT, PINION
2	2	6323-0018-00	CARRIER, BEARING
3	2	6323-0019-00	CARRIER, OIL SEAL
4	2	6323-0020-00	SPACER, BEARING
5	2	7502-0997-00	GASKET, OIL SEAL CARRIER
6	2	7502-0998-00	GASKET, CARRIER TO FRAME
8	2	7602-0213-07	BEARING
9	2	7602-2133-02	SEAL, OIL
11	16	7601-0334-32	CAPSCREW, 7/8" - 9 UNC X 2-1/4" LG. GR. 5 HEX HEAD
12	16	7601-1320-19	WASHER, 7/8" LOCK
13	12	7601-0332-20	CAPSCREW, 1/2" - 13 UNC X 1-1/2" LG. GR. 5 HEX HEAD
14	12	7601-1320-16	WASHER, 1/2" LOCK
REFERENCE ITEM			
R1			KEY (WITH QD HUB)



NATIONAL OILWELL
Houston, Texas, U.S.A.

PINION SHAFT ASSEMBLY
FC-2200 TRIPLEX MUD PUMP

SHEET 1 OF 1	SIZE:	DRAWING NO.:	REV.:
	D	PL 6323-0022-00	



BILL OF MATERIAL			
ITEM	REQ'D	PART NO.	DESCRIPTION
---	---	6323-0080-00	CRANKSHAFT ASSEMBLY (CONSISTS OF THE FOLLOWING)
1	1	6323-0011-01	CRANKSHAFT, MACHINED
2	3	6323-0012-00	STRAP, ECCENTRIC
3	3	6323-0013-00	RETAINER, ECCENTRIC OUTER RACE
4	2	6323-0014-00	RETAINER, ECCENTRIC INNER RACE
5	1	6323-0070-00	RETAINER, CENTER INNER RACE
6	1	6323-0065-00	RETAINER, ECCENTRIC INNER BEARING
7	1	6323-0023-00	GEAR, ECCENTRIC RING
9	2	6323-0078-00	GASKET, MAIN BEARING COVER
10	2	6323-0039-00	RETAINER, MAIN BEARING OUTER RACE
11	2	6323-0071-00	RETAINER, MAIN BEARING INNER RACE
12	1	6323-0025-00	CARRIER, BEARING (LEFT HAND)
13	1	6323-0024-00	CARRIER, BEARING (RIGHT HAND)
15	4	6323-0072-00	STUD, 3-1/4" - 8 X 25-3/4" LG. MAIN BEARING
16	4	6323-0130-00	NUT, 3-1/4" - 8 MAIN BEARING STUD
17	4	6323-0076-10	SHIM SET, MAIN BEARING CARRIER
18	70	7501-0004-00	CAPSCREW, 5/8" - 11 X 1-1/2" LG. DRILLED HEX HEAD
21	3	7602-0213-06	BEARING, ECCENTRIC
22	2	7602-0201-67	BEARING, MAIN
23	1	7602-5289-60	WIRE, .06" DIA. X 80 FT. SOFT IRON
24	1	7602-5200-96	WIRE, 11 GA. X 8 FT. SOFT IRON
26	24	7601-0330-77	CAPSCREW, 5/8" - 11 X 1-3/4" LG. HEX HEAD
27	12	7601-6330-76	CAPSCREW, 1-3/4" - 5 UNC X 7" LG. GR. 5 HEX HEAD
29	12	7601-0720-21	NUT, 1-3/4" - 5 ESNA HEAVY HEX
30	24	7601-1330-05	WASHER, PLAIN
REFERENCE ITEMS			
R1	2	6323-0054-00	COVER, MAIN BEARING
R2	3	7602-0213-05	BEARING, CROSSHEAD
R3	2	6323-0068-00	CAP, MAIN BEARING

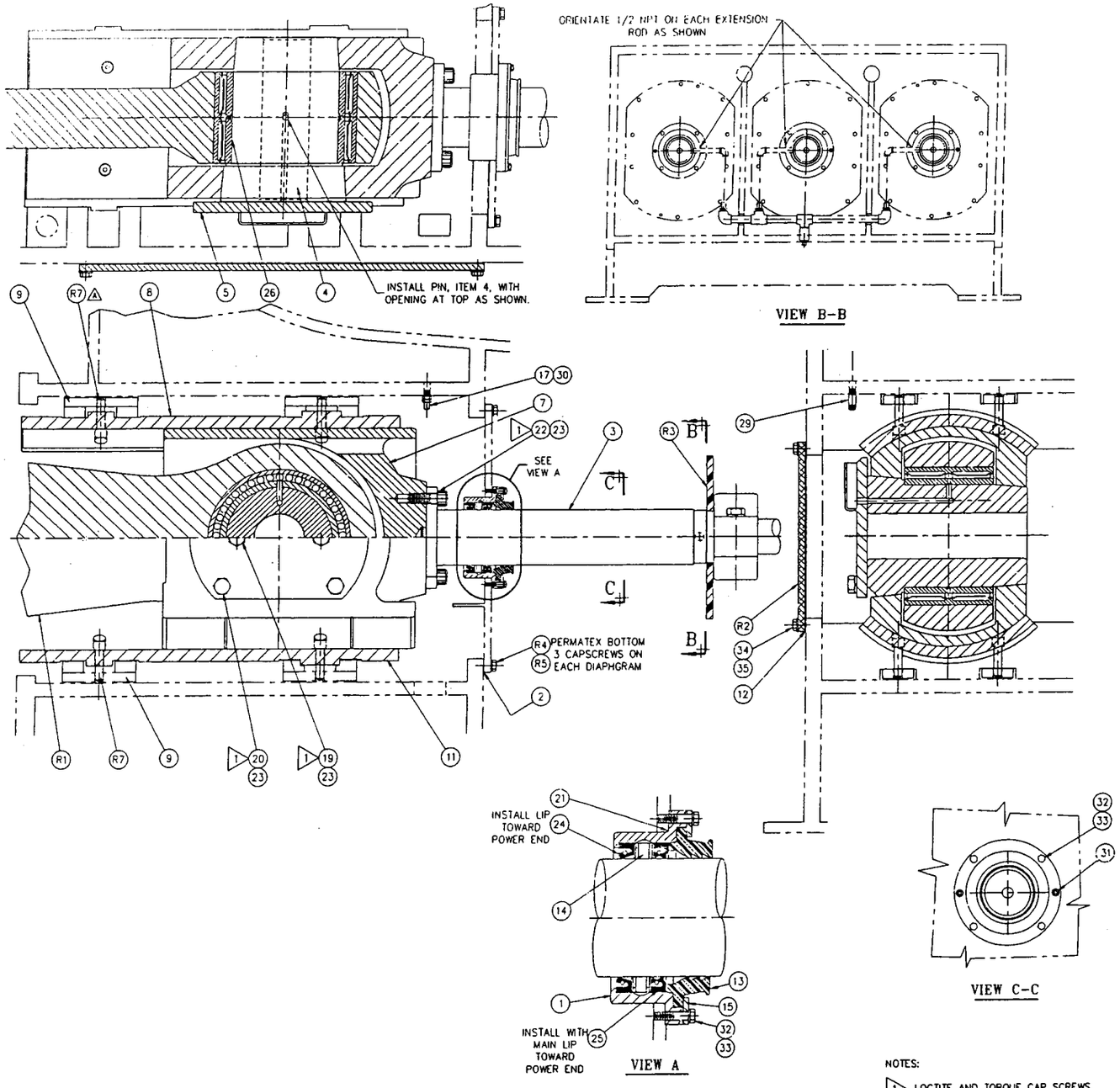
NOTES:

1. INSTALL OUTER RACE RETAINER, ITEM 3, WITH OIL SCOOP AT BOTTOM. TYP 3 PLACES.
2. INSTALL INNER RACE RETAINNER, ITEM 6, SNUG. INSTALL BEARING HARD AGAINST RETAINER. LET BEARING COOL TO ROOM TEMPERATURE, TIGHTEN AND SAFETY WIRE RETAINER BOLTS.
3. INSTALL STUDS, ITEM 15, TO 18.00 STAND-OFF. SHIM TO OBTAIN .004 TIGHT FIT PER PROCEDURE 6399-0066-03. TENSION STUDS PER 6399-0168-01.
4. SAFETY WIRE NUTS TO STUDS AND STUDS THRU CAP HANDLE

NATIONAL OILWELL
Houston, Texas, U.S.A.

CRANKSHAFT ASSEMBLY
FC-2200 TRIPLEX MUD PUMP

SHEET 1 OF 1	SIZE:	DRAWING NO.:	REV.:
	D	PL 6323-0080-00	D



NOTES:

1. LOCTITE AND TORQUE CAP SCREWS PER 6399-0066-02.

BILL OF MATERIAL			
ITEM	REQ'D	PART NO.	DESCRIPTION
---	---	6323-0060-10	CROSSHEAD ASSEMBLY (CONSISTS OF THE FOLLOWING)
1	3	6323-0043-00	BOX, DIAPHRAGM STUFFING
2	3	6323-0073-00	GASKET
3	3	6323-0059-10	EXTENSION, CROSSHEAD
4	3	6323-0056-00	PIN, CROSSHEAD
5	3	6323-0057-00	RETAINER, CROSSHEAD PIN
7	3	6323-0010-00	CROSSHEAD
8	3	6323-0189-00	GUIDE, UPPER CROSSHEAD
9	24	6323-0067-00	PLATE, LOCKING
11	3	6323-0190-00	GUIDE, LOWER CROSSHEAD
12	2	6323-0063-00	GASKET, CROSSHEAD DOOR
13	3	6323-0041-00	WIPER, DIAPHRAGM STUFFING BOX ROD
14	3	6323-0044-00	SPACER, STUFFING BOX
15	3	6323-0045-00	RETAINER, ROD WIPER
17	3	7508-0020-31	TUBING ASSEMBLY, 3/8" COPPER
19	6	7501-0141-00	CAPSCREW, 1"-8 X 2-1/4" LG. GR. 5 DRILLED HEX HEAD
20	12	7501-0139-00	CAPSCREW, 1"-8 X 2-1/2" LG. GR. 5 DRILLED HEX HEAD
21	3	7602-1610-40	"O"-RING (STUFFING BOX TO FRAME)
22	18	7501-1269-00	CAPSCREW, 1" - 8 X 2-1/2" LG. DRILLED SOCKET HEAD
23	1	7602-5313-70	WIRE, .06 DIA. X 370" STAINLESS STEEL
24	3	7602-2133-01	SEAL, SINGLE LIP OIL
25	3	7602-2160-09	SEAL, DOUBLE LIP OIL
26	3	7602-0213-05	BEARING, CROSSHEAD
29	4	7601-2580-08	NIPPLE, 3/8" X 2" LG. PIPE
30	3	7601-2730-07	CONNECTOR, 5/8" - 18 X 3/8" NPT TUBING
31	6	7601-0340-16	CAPSCREW, 3/8" - 16 X 1-1/2" LG. SOCKET HEAD
32	12	7601-0330-33	CAPSCREW, 3/8" - 16 X 1-3/4" LG. HEX HEAD
33	18	7601-1320-14	WASHER, 3/8" LOCK
34	28	7601-0330-76	CAPSCREW, 5/8" - 11 X 1-1/2" LG. HEX HEAD
35	28	7601-1330-05	WASHER, 5/8" SMALL O.D. WASHER
R1	3	6323-0012-00	STRAP, ECCENTRIC
R2	2	6323-0062-00	DOOR, CROSSHEAD
R3	3	6323-0129-00	DISC, FLUID BAFFLE
R4	30	7601-0330-77	CAPSCREW, 5/8" - 11 X 1-3/4" LG. HEX HEAD
R5	30	7601-1320-49	WASHER, 5/8" LOCK
R6	1	6323-0121-00	PIPING, LINER WASH FEED
R7	24	7601-0340-95	CAPSCREW W/NYLOK LOCK, 3/4" - 10 X 3" LG. SOCKET HEAD

NATIONAL OILWELL
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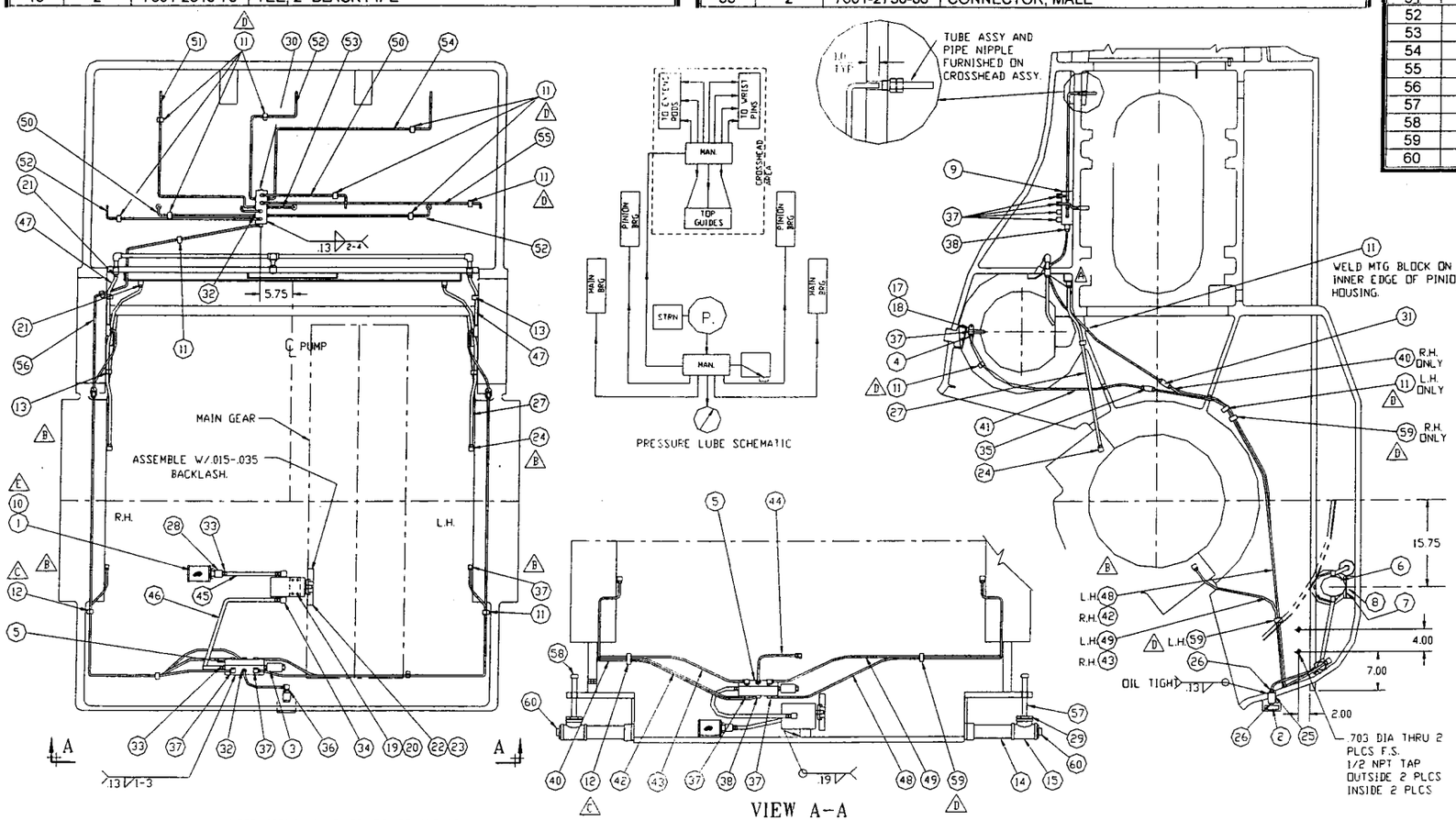
CROSSHEAD ASSEMBLY
FC-2200 TRIPLEX MUD PUMP

SHEET 1 OF 1	SIZE:	DRAWING NO.:	REV.:
	D	PL 6323-0060-10	A

BILL OF MATERIAL			
ITEM	REQ'D	PART NO.	DESCRIPTION
---	---	6323-0028-00	LUBRICATION ASSEMBLY, POWER END (CONSISTS OF THE FOLLOWING)
1	1	7602-1070-03	FILTER, 3/4" NPT AIR
2	1	7602-1150-98	GAUGE (0-160 PSI), OIL PRESSURE
3	1	7602-2914-78	VALVE, RELIEF
4	2	6397-0316-01	JET, OIL
5	1	6920-0259-00	MANIFOLD
6	1	7602-1830-82	PUMP WITHOUT RELIEF VALVE, OIL
7	1	6319-0095-00	SHIM SET
8	1	6323-0079-00	PLATE, MOUNTING
9	1	6316-0169-00	MANIFOLD, CROSSHEAD
10	1	7601-2091-39	ADAPTER, 3/4" FEMALE NPT X 1/2" MALE NPT REDUCING
11	13	7514-0212-00	CLAMP, 3/8" SINGLE TUBING
12	2	7514-0231-00	CLAMP, 3/8" TRIPLE TUBING
13	4	7514-0007-00	CLAMP, 1/2" SINGLE TUBING
14	2	7601-2580-56	NIPPLE, 2" X 8" LG. SCH. 40 PIPE
15	2	7601-2610-78	TEE, 2" BLACK PIPE

BILL OF MATERIAL			
ITEM	REQ'D	PART NO.	DESCRIPTION
17	4	7601-0330-03	CAPSCREW, 1/4" - 20 X 3/4" LG. HEX HEAD
18	4	7601-1320-38	WASHER, 1/4" LOCK
19	4	7601-0330-32	CAPSCREW, 3/8" - 16 X 1-1/2" LG. HEX HEAD
20	4	7601-1320-14	WASHER, 3/8" LOCK
21	4	7601-2730-08	CONNECTOR
22	1	6319-0094-00	PUMP, 5.67 P.D. 16 TEETH GEAR OIL
23	1	7504-0002-00	KEY, 3/16" X 3/16" X 1" LG.
24	2	7601-2750-35	ELBOW, MALE
25	1	7601-2550-27	COUPLING, 1/2" X 3000# PIPE
26	2	7601-2530-04	BUSHING, 1/2" X 1/8" HEX HEAD PIPE
27	2	7508-0300-37	TUBING ASSEMBLY, 1/2" OD COPPER
28	1	7601-2550-85	COUPLING, 1/2" STD. PIPE
29	2	7601-2531-40	BUSHING, 2" X 1/2" HEX HEAD
30	1	7601-2590-76	PLUG, 1/4" PIPE
31	1	7601-2810-03	UNION
32	6	7601-2730-04	CONNECTOR, MALE
33	2	7601-2730-86	CONNECTOR, MALE

BILL OF MATERIAL			
ITEM	REQ'D	PART NO.	DESCRIPTION
34	2	7601-2752-00	ELBOW, MALE
35	2	7601-2810-02	UNION
36	1	7601-2750-04	ELBOW, MALE
37	11	7601-2750-05	ELBOW, MALE
38	2	7601-2750-06	ELBOW, MALE
40	1	7508-0920-28	TUBING ASSEMBLY, 3/8" OD COPPER
41	2	7508-0340-19	TUBING ASSEMBLY, 5/16" OD COPPER
42	1	7508-0920-19	TUBING ASSEMBLY, 5/16" OD COPPER
43	1	7508-0640-19	TUBING ASSEMBLY, 5/16" OD COPPER
44	1	7508-0160-19	TUBING ASSEMBLY, 5/16" OD COPPER
45	1	7508-0130-45	TUBING ASSEMBLY, 5/8" OD COPPER
46	1	7508-0270-45	TUBING ASSEMBLY, 5/8" OD COPPER
47	2	7508-0180-40	TUBING ASSEMBLY, 1/2" OD COPPER
48	1	7508-1050-19	TUBING ASSEMBLY, 5/16" OD COPPER
49	1	7508-0780-19	TUBING ASSEMBLY, 5/16" OD COPPER
50	1	7508-0260-22	TUBING ASSEMBLY, 5/16" OD COPPER
51	1	7508-0420-22	TUBING ASSEMBLY, 5/16" OD COPPER
52	3	7508-0360-22	TUBING ASSEMBLY, 5/16" OD COPPER
53	2	7508-0150-22	TUBING ASSEMBLY, 5/16" OD COPPER
54	1	7508-0530-22	TUBING ASSEMBLY, 5/16" OD COPPER
55	1	7508-0460-22	TUBING ASSEMBLY, 5/16" OD COPPER
56	1	7508-0480-28	TUBING ASSEMBLY, 3/8" OD COPPER
57	2	7601-2585-86	NIPPLE, 1/2" NPT X 8" LG. BLK. PIPE
58	2	6397-0181-00	DIPSTICK, OIL LEVEL
59	3	7514-0209-00	CLAMP, 3/8" DOUBLE TUBING
60	2	7601-2590-98	PLUG, 2" PIPE

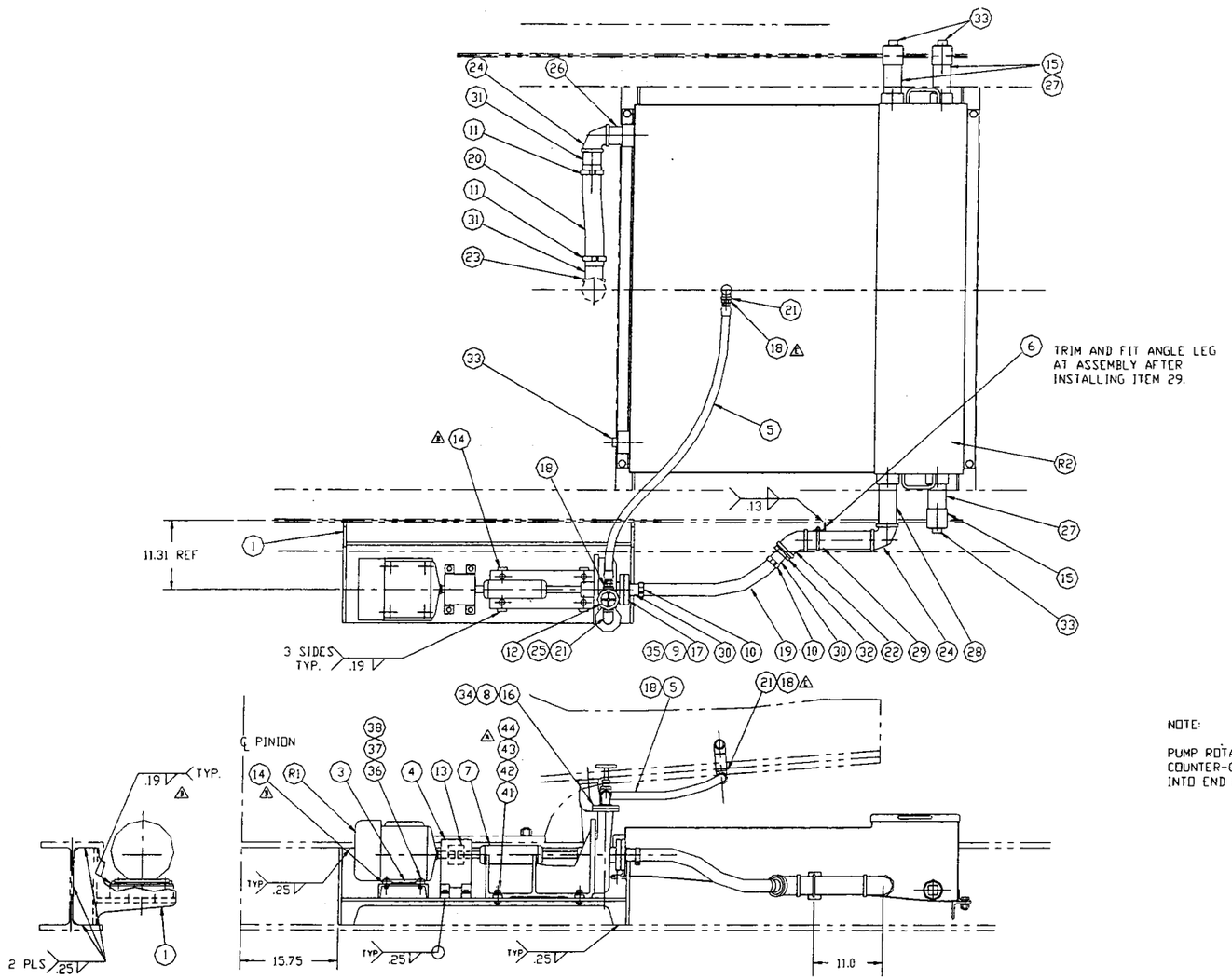


NOTE: ITEMS 14, 15, 29, 57, 58 AND 60 MUST BE INSTALLED AFTER PUMP FRAME IS MOUNTED ON MAIN SKID. TRIM HOLE IN MAIN SKID AS NECESSARY TO PROVIDE .06 CLEARANCE FOR ITEM 14.

NATIONAL OILWELL
Houston, Texas, U.S.A.

POWER END
LUBRICATION ASSEMBLY
FC-2200 TRIPLEX MUD PUMP

SHEET 1 OF 1	SIZE:	DRAWING NO.:	REV.:
	D	PL 6323-0028-00	E



BILL OF MATERIAL			
ITEM	REQ'D	PART NO.	DESCRIPTION
---	---	6323-0120-00	LINER WASH ASSEMBLY, LEFT HAND (CONSISTS OF THE FOLLOWING)
1	1	6323-0122-00	BRACKET, LINER WASH MOUNTING
3	2	6911-1366-00	SHIM SET, MOTOR
4	1	6911-1365-00	GUARD, COUPLING
5	1	7518-0500-83	HOSE ASSEMBLY, 1" X 50" LG.
6	1	7514-0139-00	CLAMP, 2-1/2" PIPE
7	1	7602-1820-34	PUMP, 1" X 1-1/2" CENTRIFUGAL
8	1	7602-0661-44	GASKET, 1" X 150# FLANGE
9	1	7602-0661-45	GASKET, 1-1/2" X 150# FLANGE
10	2	7602-0720-04	CLAMP, HOSE
11	2	7602-0720-41	CLAMP, HOSE
12	1	7602-2910-19	VALVE, 1" GLOBE
13	1	7602-0831-28	COUPLING
14	8	7504-0801-00	KEY, 1/2" X 1/2" X 1-1/8" LG.
15	3	7601-2551-03	COUPLING, 2-1/2" GALV. PIPE
16	1	7601-2063-17	FLANGE, 1" X 150# THREADED
17	1	7601-2060-13	FLANGE, 1-1/2" X 150# THREADED
18	4	7601-2091-40	ADAPTER, 1-5/16" - 12 MALE SAE 37 DEG. X 1" -11-1/2 MALE PIPE THD.
19	1	7601-3240-26	HOSE, 1-1/2" X 26" LG.
20	1	7601-4310-18	HOSE, 2-1/2" X 18" LG.
21	2	7601-2570-91	ELBOW, 1" X 90 DEG. GALV. STREET
22	1	7601-2570-18	ELBOW, 2-1/2" X 45 DEG. GALV. PIPE
23	1	7601-2570-95	ELBOW, 2-1/2" X 90 DEG. STREET
24	2	7601-2570-47	ELBOW, 2-1/2" X 90 DEG. GALV. PIPE
25	1	7601-2581-60	NIPPLE, 1" X CLOSE GALV. PIPE
26	1	7601-2582-34	NIPPLE, 2-1/2" X 4" LG. GALV. PIPE
27	3	7601-2582-36	NIPPLE, 2-1/2" X 6" LG. GALV. PIPE
28	1	7601-2582-39	NIPPLE, 2-1/2" X 8-1/2" LG. GALV. PIPE
29	1	7601-2588-24	NIPPLE, 2-1/2" X 12" LG. GALV. PIPE
30	2	7601-2583-84	NIPPLE, 1-1/2" COMBINATION HOSE
31	2	7601-2583-52	NIPPLE, 2-1/2" COMBINATION HOSE
32	1	7601-2530-98	BUSHING, 2-1/2" X 1-1/2" LG. GALV. HEX HEAD PIPE
33	4	7601-2590-15	PLUG, 2-1/2" GALV. PIPE
34	4	7601-1261-19	BOLT WITH NUTS, 1/2" - 13 X 2-1/2" LG. STUD
35	4	7601-1261-20	BOLT WITH NUTS, 1/2" - 13 X 2-3/4" LG. STUD
36	4	7601-0332-42	CAPSCREW, 3/8" - 16 X 1-5/8" LG. HEX HEAD
37	4	7601-0610-05	NUT, 3/8" - 16 HEX
38	4	7601-1320-14	WASHER, 3/8" LOCK
41	4	7601-0330-78	CAPSCREW, 5/8" - 11 X 2" LG. HEX HEAD
42	4	7601-1320-30	WASHER, 5/8" LOCK
43	4	7601-0610-12	NUT, 5/8" - 11 HEX
44	4	7601-1330-05	WASHER, 5/8" PLAIN
REFERENCE ITEMS			
R1	1		MOTOR, 3 HP 182 T FRAME ELECTRIC
R2	1	6323-0119-00	TANK, 138 GALLON

NOTE:

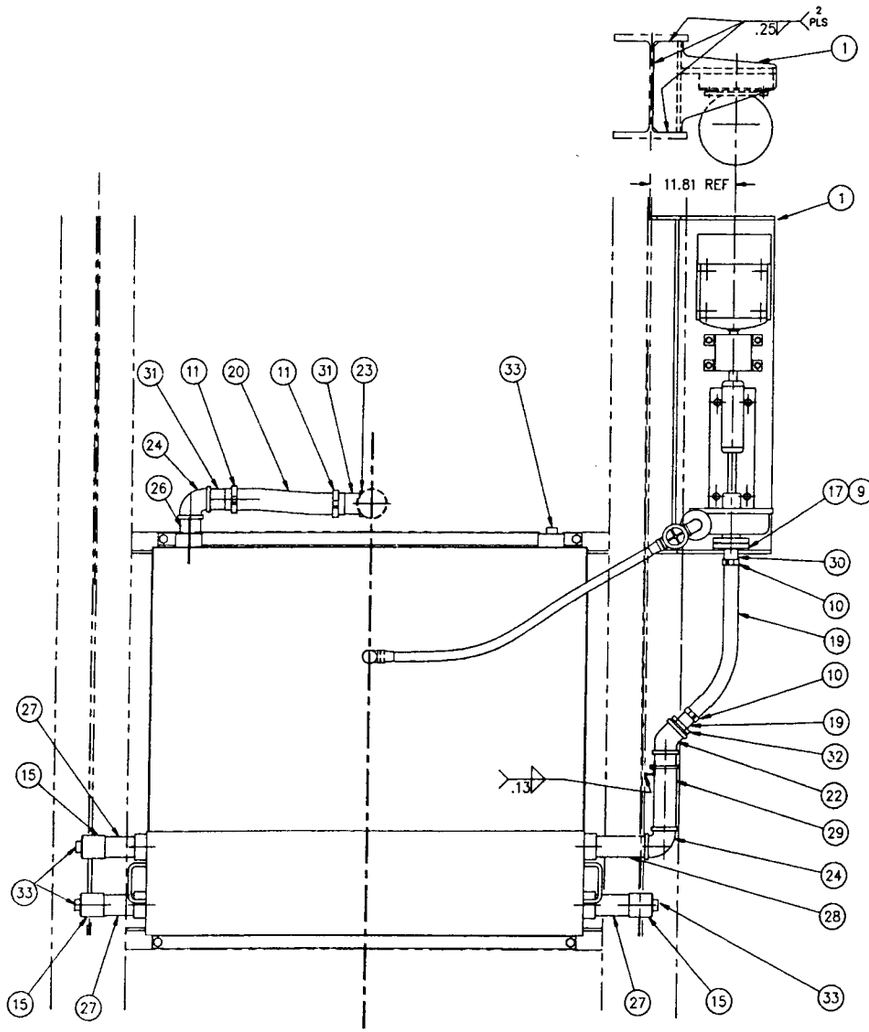
PUMP ROTATION SHOULD BE COUNTER-CLOCKWISE LOOKING INTO END OF PUMP SHAFT.

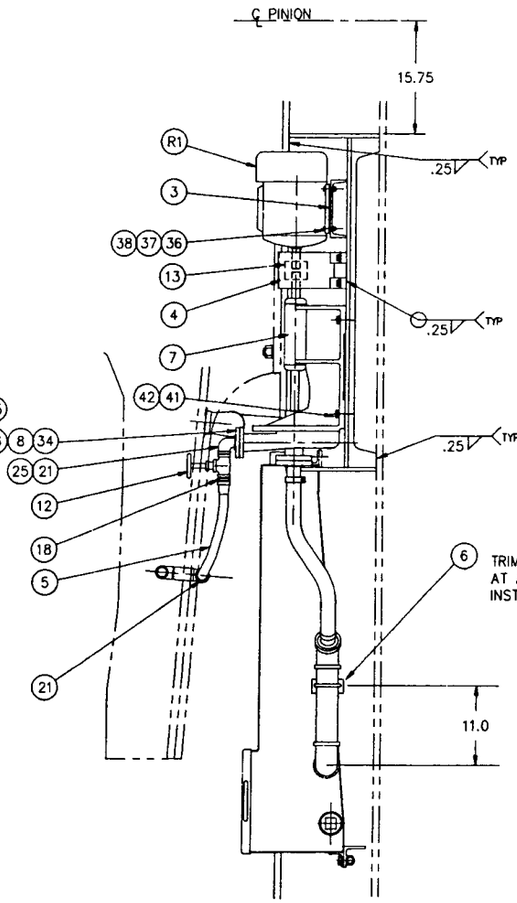
NOTE: OPTIONAL EQUIPMENT, PLEASE SPECIFY WHEN ORDERING

NATIONAL OILWELL
Houston, Texas, U.S.A.

LINER WASH ASSEMBLY (LEFT HAND) FC-2200 TRIPLEX MUD PUMP

SHEET 1 OF 1	SIZE:	DRAWING NO.:	REV.:
	D	PL 6323-0120-00	E





NOTE: OPTIONAL EQUIPMENT, PLEASE SPECIFY WHEN ORDERING.

BILL OF MATERIAL

ITEM	REQ'D	PART NO.	DESCRIPTION
---	---	6323-0124-00	LINER WASH ASSEMBLY, RIGHT HAND (CONSISTS OF THE FOLLOWING)
1	1	6323-0123-00	BRACKET, LINER WASH MOUNTING
3	2	6911-1366-00	SHIM SET, MOTOR
4	1	6911-1365-00	GUARD, COUPLING
5	1	7518-0440-66	HOSE ASSEMBLY, 1" X 44" LG.
6	1	7514-0139-00	CLAMP, 2-1/2" PIPE
7	1	7602-1820-34	PUMP, 1" X 1-1/2" CENTRIFUGAL
8	1	7602-0661-44	GASKET, 1" X 150# FLANGE
9	1	7602-0661-45	GASKET, 1-1/2" X 150# FLANGE
10	2	7602-0720-04	CLAMP, HOSE
11	2	7602-0720-41	CLAMP, HOSE
12	1	7602-2910-19	VALVE, 1" GLOBE
13	1	7602-0831-28	COUPLING
14	8	7504-0801-00	KEY, 1/2" X 1/2" X 1-1/8" LG.
15	3	7601-2551-03	COUPLING, 2-1/2" GALV. PIPE
16	1	7601-2063-17	FLANGE, 1" X 150# THREADED
17	1	7601-2060-13	FLANGE, 1-1/2" X 150# THREADED
18	1	7601-2090-28	ADAPTER, HOSE
19	1	7601-3240-26	HOSE, 1-1/2" X 26" LG.
20	1	7601-4310-18	HOSE, 2-1/2" X 18" LG.
21	2	7601-2570-91	ELBOW, 1" X 90 DEG. GALV. STREET
22	1	7601-2570-18	ELBOW, 2-1/2" X 45 DEG. GALV. PIPE
23	1	7601-2570-95	ELBOW, 2-1/2" X 90 DEG. STREET
24	2	7601-2570-47	ELBOW, 2-1/2" X 90 DEG. GALV. PIPE
25	1	7601-2581-60	NIPPLE, 1" X CLOSE GALV. PIPE
26	1	7601-2582-34	NIPPLE, 2-1/2" X 4" LG. GALV. PIPE
27	3	7601-2582-36	NIPPLE, 2-1/2" X 6" LG. GALV. PIPE
28	1	7601-2582-39	NIPPLE, 2-1/2" X 8-1/2" LG. GALV. PIPE
29	1	7601-2588-24	NIPPLE, 2-1/2" X 12" LG. GALV. PIPE
30	2	7601-2583-84	NIPPLE, 1-1/2" COMBINATION HOSE
31	2	7601-2583-52	NIPPLE, 2-1/2" COMBINATION HOSE
32	1	7601-2530-98	BUSHING, 2-1/2" X 1-1/2" LG. GALV. HEX HEAD PIPE
33	4	7601-2590-15	PLUG, 2-1/2" GALV. PIPE
34	4	7601-1261-19	BOLT WITH NUTS, 1/2" - 13 X 2-1/2" LG. STUD
35	4	7601-1261-20	BOLT WITH NUTS, 1/2" - 13 X 2-3/4" LG. STUD
36	4	7601-0332-42	CAPSCREW, 3/8" - 16 X 1-5/8" LG. HEX HEAD
37	4	7601-0610-05	NUT, 3/8" - 16 HEX
38	4	7601-1320-14	WASHER, 3/8" LOCK
41	4	7601-0330-77	CAPSCREW, 5/8" - 11 X 1-3/4" LG. HEX HEAD
42	4	7601-1320-30	WASHER, 5/8" LOCK
			REFERENCE ITEMS
R1	1		MOTOR, 3 HP 182 T FRAME ELECTRIC
R2	1	6323-0119-00	TANK, 138 GALLON

NOTE:

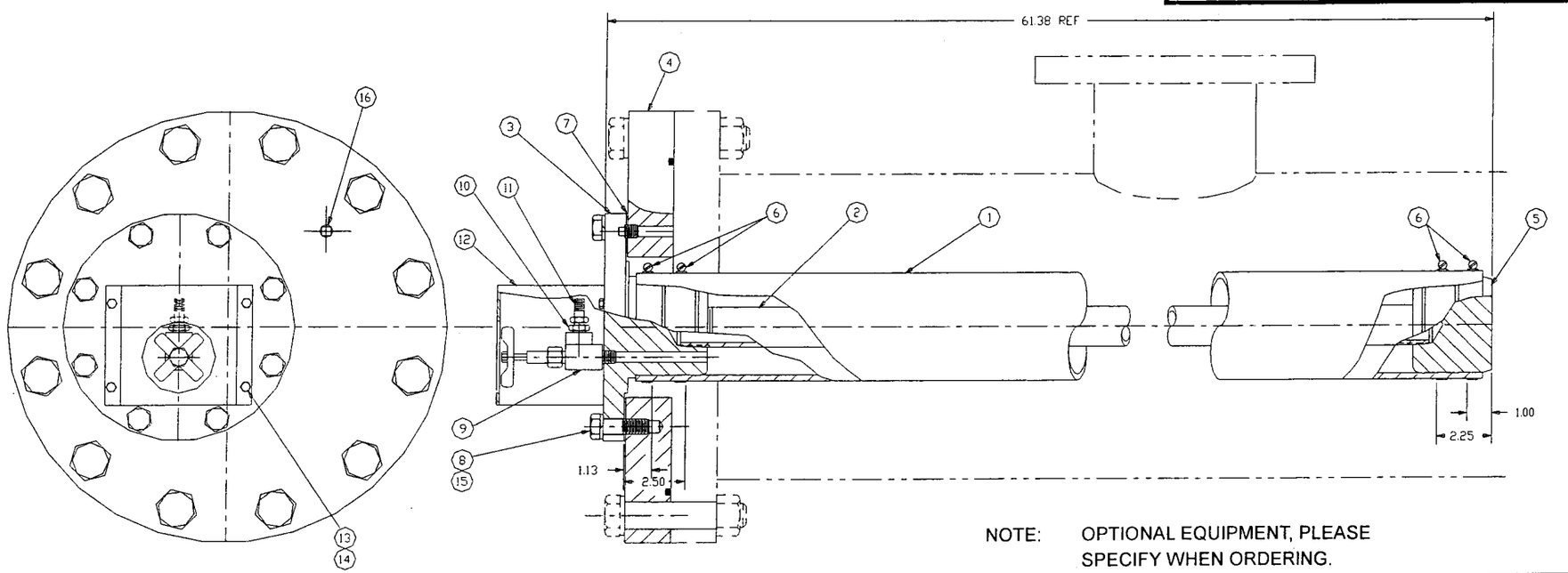
MISSION PUMP ROTATION SHOULD BE COUNTER-CLOCKWISE LOOKING INTO END OF PUMP SHAFT.

NATIONAL OILWELL
Houston, Texas, U.S.A.

LINER WASH ASSEMBLY (RIGHT HAND) FC-2200 TRIPLEX MUD PUMP

SHEET 1 OF 1	SIZE:	DRAWING NO.:	REV.:
	D	PL 6323-0124-00	A

BILL OF MATERIAL			
ITEM	REQ'D	PART NO.	DESCRIPTION
---	---	6922-0062-90	SD-8 SUCTION DESURGER ASSEMBLY (CONSISTS OF THE FOLLOWING)
1	1	6922-0054-00	BLADDER
2	1	6922-0066-00	ROD, SUPPORT
3	1	6922-0063-90	FLANGE, CHARGING
4	1	6922-0048-90	FLANGE, ADAPTER
5	1	6922-0065-00	PLUG, END
6	4	7602-0721-30	CLAMP, HOSE
7	1	6922-0053-00	GASKET
8	8	7601-0330-77	CAPSCREW, 5/8" - 11 X 1-3/4" LG. HEX HEAD
9	1	7602-2910-77	VALVE, 1/4" NEEDLE
10	1	7601-2530-01	BUSHING, 1/4" X 1/8" HEX HEAD PIPE
11	1	7602-2918-05	VALVE WITH 1/8" VALVE STEM, AIR TANK
12	1	6922-0067-00	GUARD, VALVE
13	4	7601-0330-01	CAPSCREW, 1/4" - 20 X 1/2" LG. HEX HEAD
14	4	7601-1320-38	WASHER, 1/4" LOCK
15	8	7601-1320-30	WASHER, 5/8" LOCK
16	1	7601-2590-08	PLUG, 1/4" PIPE



NOTE: OPTIONAL EQUIPMENT, PLEASE SPECIFY WHEN ORDERING.

PRECHARGING RECOMMENDATION:

APPROXIMATELY 50% OF ANTICIPATED SUCTION PRESSURE WITH MAXIMUM PRECHARGE OF 10 PSIG (69 KPa).

ANY TYPE OF AUTO TIRE INFLATION EQUIPMENT MAY BE USED TO CHARGE DAMPENER. LIKEWISE AN AUTO TIRE GAUGE MAY BE USED TO CHECK THE PRESSURE.

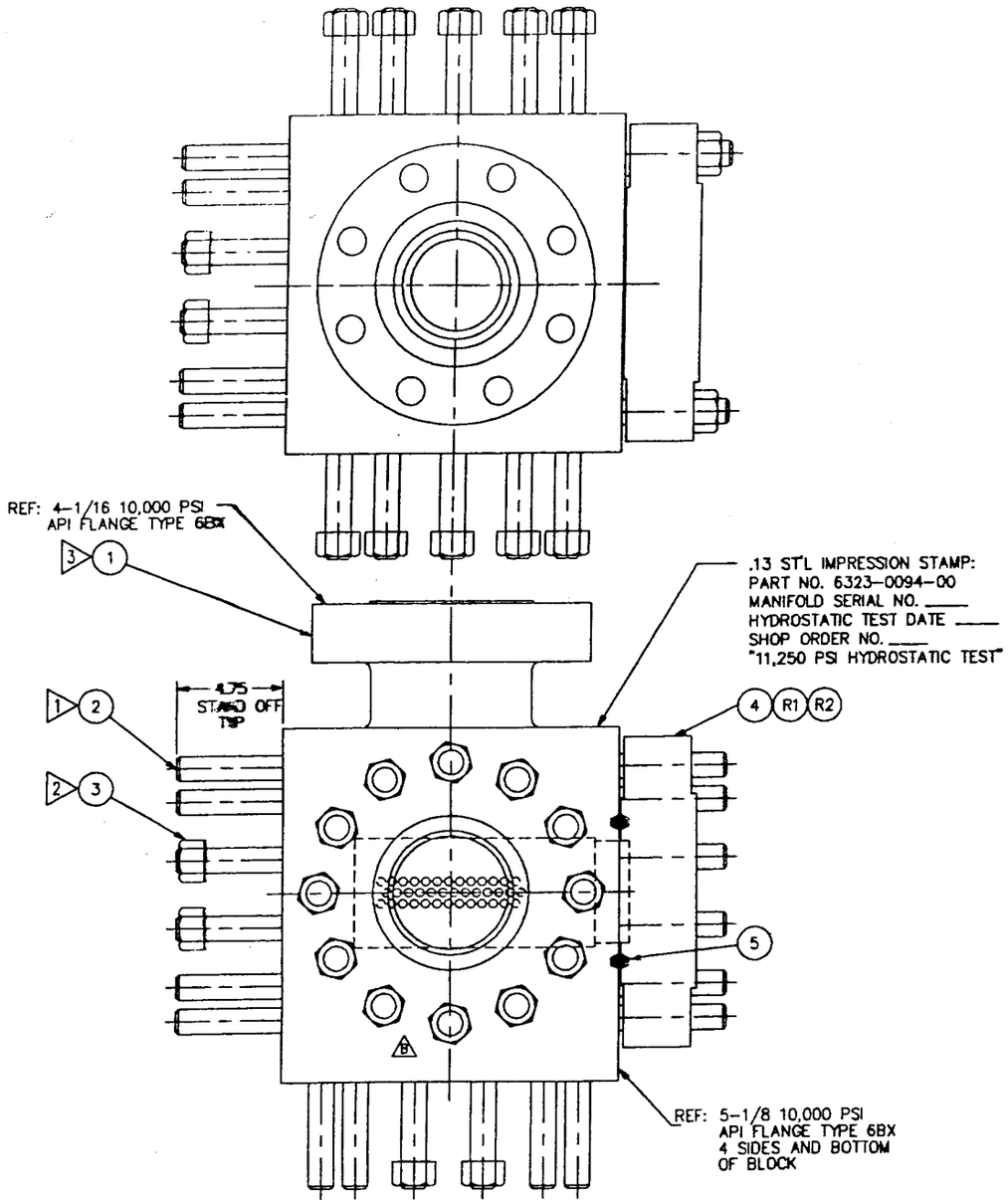
IF DESIRED PRESSURE IS EXCEEDED, BLEED OFF PRESSURE BY DEPRESSING PIN IN CENTER OF VALVE STEM, ITEM 11.

INSTALL CLAMPS, ITEM 6, TO DIMENSIONS SHOWN AND TIGHTEN TO 35-40 LB-IN.

NATIONAL OILWELL
Houston, Texas, U.S.A.

SD-8 SUCTION DESURGER ASSY.
FC-2200 TRIPLEX MUD PUMP

SHEET 1 OF 1	SIZE:	DRAWING NO.:	REV.:
	D	PL 6922-0062-90	C



BILL OF MATERIAL			
ITEM	REQ'D	PART NO.	DESCRIPTION
---	---	6323-0094-00	7500 PSI BLOCK MANIFOLD ASSEMBLY (CONSISTS OF THE FOLLOWING)
1	1	6323-0088-00	BLOCK, MANIFOLD
2	60	7507-3411-10	STUD, 1-1/8"
3	60	7601-0630-26	NUT, 1-1/8" - 8UNC HEAVY HEX
4	1	6323-0091-00	STRAINER ASSEMBLY
5	1	7602-0662-56	GASKET, BX-169
R1	REF.	6323-0089-00	STRAINER
R2	REF.	6323-0092-00	FLANGE, STRAINER

NOTES:

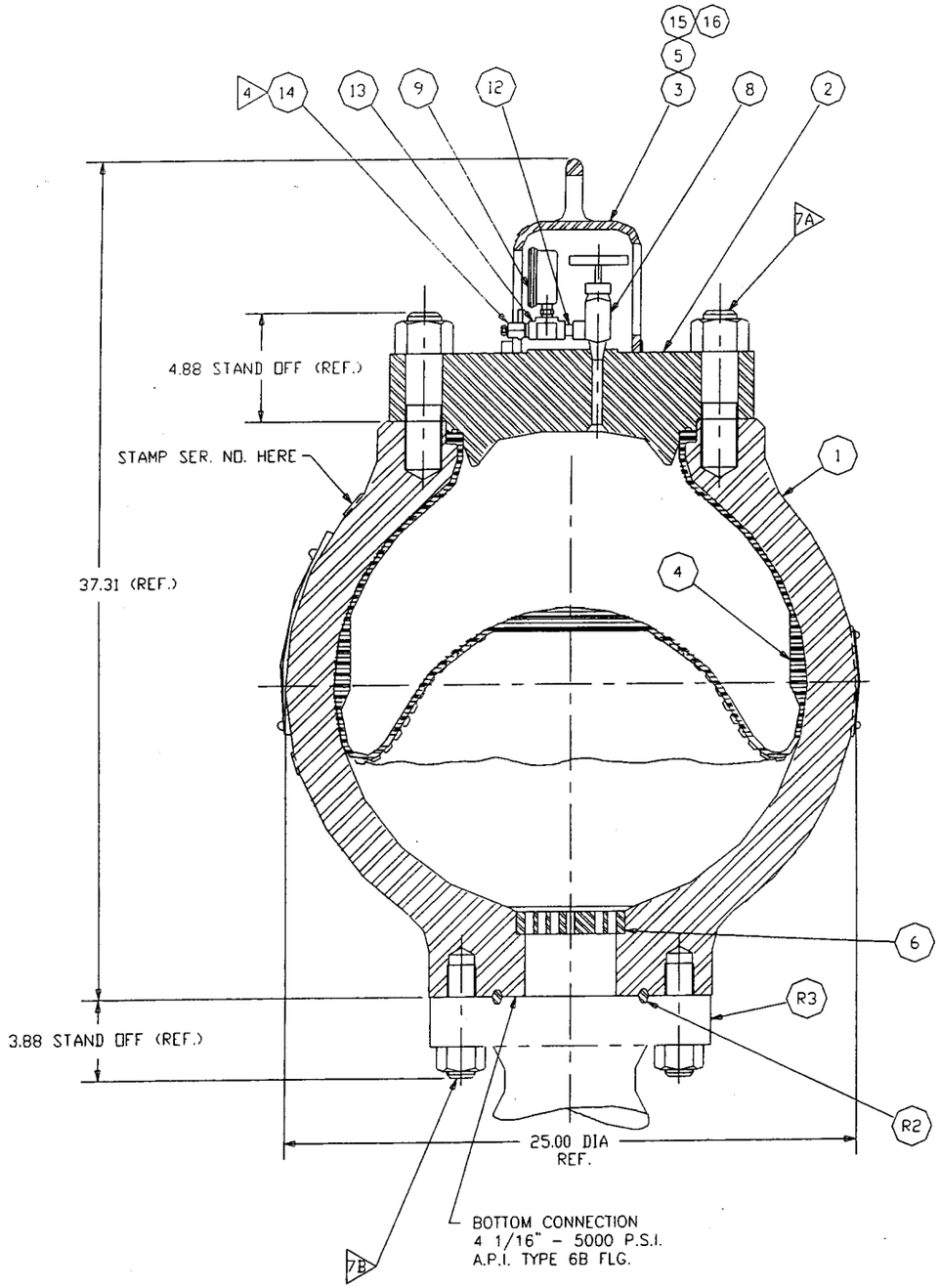
1. STUD MAKE-UP TORQUE: 320 FT-LBS
2. 1-1/8 - 8UNC NUT TORQUE: 675-725 FT-LB (LUB)
3. HYDROSTATIC TEST TO 11,250 PSI PER CONTINENTAL EMSCO SPECIFICATION 6399-0134-00.
4. MATING FLANGES FOR 5-1/8 10,000 PSI SIDES AND BOTTOM MUST BE RAISED FACE.

NOTE: OPTIONAL EQUIPMENT, PLEASE SPECIFY WHEN ORDERING.

NATIONAL OILWELL
Houston, Texas, U.S.A.

BLOCK MANIFOLD ASSEMBLY
7500 P.S.I.
FC-2200 TRIPLEX MUD PUMP

SHEET 1 OF 1	SIZE:	DRAWING NO.:	REV.:
	C	PL 6323-0094-00	B



BILL OF MATERIAL			
ITEM	REQ'D	PART NO.	DESCRIPTION
---	---	6922-0021-00	PD-55 PULSATION DAMPENER ASSY. (CONSISTS OF THE FOLLOWING)
1	1	6922-0022-00	STUDDED ASSEMBLY
2	1	6922-0017-00	HEAD
3	1	6922-0008-00	COVER, GUAGE
4	1	6922-0003-00	BLADDER
5	1	6922--0023-00	PLATE ASSEMBLY, NAME
6	1	6922-0019-00	PLUG, BOTTOM
8	1	7602-2910-00	VALVE, NEEDLE
9	1	7602-1153-03	GAUGE (0-6000 PSI), PRESSURE
12	1	7601-6582-79	NIPPLE, 1/4" X CLOSE S.S. PIPE
13	1	7601-2612-29	TEE, 1/4" STAINLESS STEEL PIPE
14	1	7602-2938-29	VALVE, 1/4" S.S. BLEED
15	4	7601-0340-29	CAPSCREW, SOCKET HEAD
16	4	7601-1320-16	WASHER, 1/2" LOCK
17	1	6399-0088-00	CHARGING INSTRUCTIONS
REFERENCE INFORMATION			
R2	1	7602-0660-03	GASKET, R-39 RING JOINT
R3	1	6397-0498-00	FLANGE, ADAPTER

NOTES:
1. TEST WITH 100 PSI AIR PRESSURE AFTER ASSEMBLY, THEN VENT.
2. VENT
3. 7511-0110-12 TEST REPORT.
4. BEFORE CHARGING OR DISASSEMBLY, BLEED OFF ANY EXISTING PRESSURE IN GAUGE AREA BY TURNING APPROX. 1/4 TO 1/2 TURN, THEN REMOVE PURGE VALVE.
5. BLADDERS MUST BE STORED IN AN AREA PROTECTED FROM THE WEATHER. THE CONTAINER MUST BE CLOSED TO PREVENT AIR AND LIGHT EXPOSURE TO BLADDER.
6. APPROX. MUD VOL. 20 GALLONS.
7. A. REF STUD NUT TORQUE 1575 - 1625 FT. LBS (1 1/2 -8 THREAD).
   B. REF. STUD NUT TORQUE 950 - 1000 FT. LBS. (1 1/4 - 8 THREAD)
8. PRIOR TO USE, PRECHARGE WITH DRY NITROGEN GAS. REFER TO NAMEPLATE OR OPERATION AND MAINTENANCE MANUAL FOR INSTRUCTIONS.

(17) NOT SHOWN

REF. DIMENSIONAL DWG. 6399-0091-00

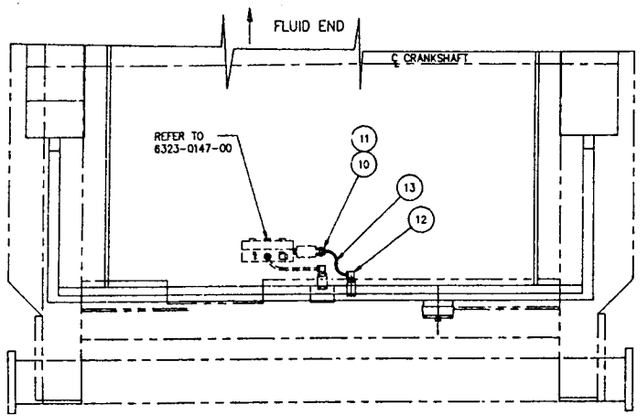
NOTE: **OPTIONAL EQUIPMENT, PLEASE SPECIFY WHEN ORDERING.**

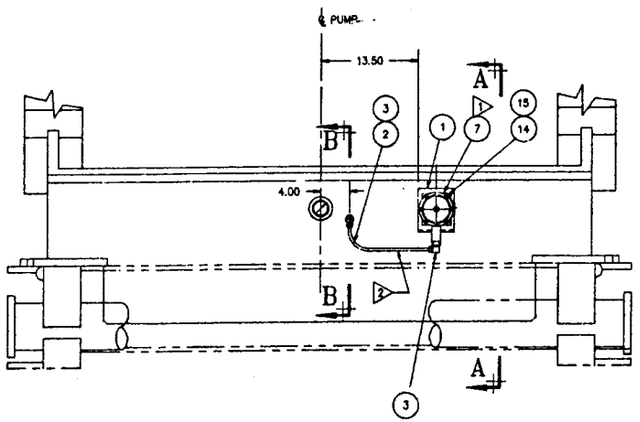
NATIONAL OILWELL
Houston, Texas, U.S.A.

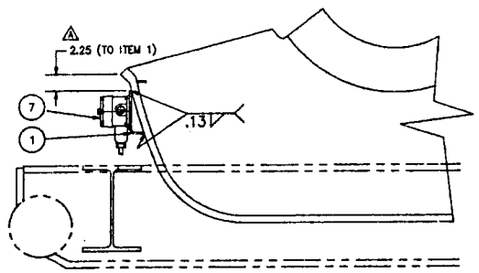
PD-55
PULSATION DAMPENER ASSY.
FC-2200 TRIPLEX MUD PUMP

SHEET 1 OF 1	SIZE:	DRAWING NO.:	REV.:
	C	PL 6922-0021-00	S

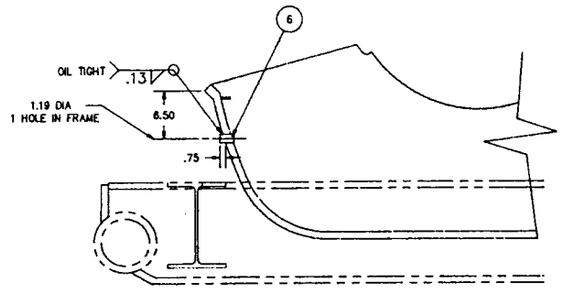
BILL OF MATERIAL			
ITEM	REQ'D	PART NO.	DESCRIPTION
---	---	6323-0146-00	PRESSURE SWITCH INSTALLATION (CONSISTS OF THE FOLLOWING)
1	1	6323-0139-00	BRACKET, PRESSURE SWITCH MOUNTING
2	1	7601-3380-16	TUBING, 3/8" OD X 16" LG. COPPER
3	2	7601-2752-59	ELBOW, 3/8" T. X 1/2" M.P.T. X 90 DEG.
6	1	7601-2550-27	COUPLING 1/2" X 3000# BLK. PIPE
7	1	7602-2641-96	SWITCH, PRESSURE
10	1	7601-2530-03	BUSHING, 1/2" X 1/4" BLK. PIPE
11	1	7601-2730-03	ADAPTER, 1/4" T. X 1/4" M.P.T. TUBING
12	1	7601-2750-03	ELBOW, 1/4" T. X 1/4" M.P.T. TUBING
13	1	7508-0240-10	TUBING ASSEMBLY, 1/4" O.D. COPPER
14	4	7601-0330-03	CAPSCREW, 1/4" - 20 X 3/4" LG. HEX HEAD
15	4	7601-1320-38	WASHER, 1/4" LOCK







SECTION A-A



SECTION B-B
ONLY CPLG SHOWN FOR CLARITY

NOTES:

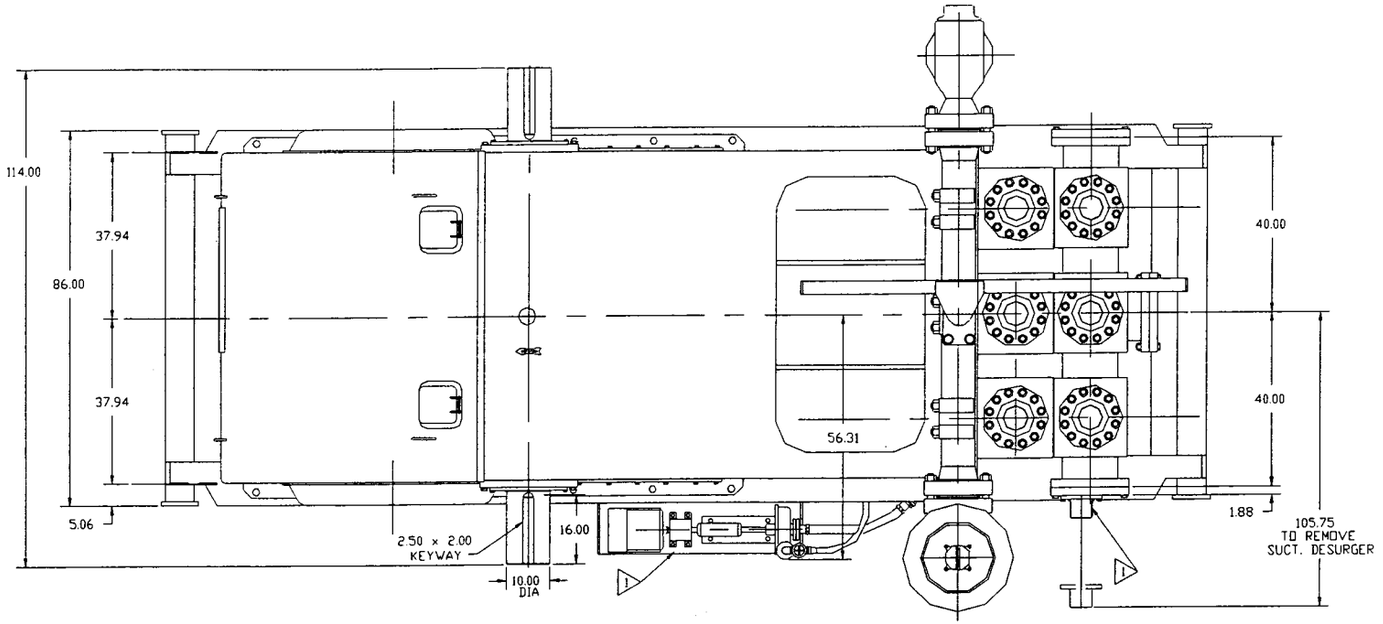
1. PRESSURE SWITCH PRESET AT 10 PSI.
2. SHAPE TUBING TO BE CLOSE AS POSSIBLE TO BACK OF POWER END FRAME, TO AVOID BEING STEPPED ON.

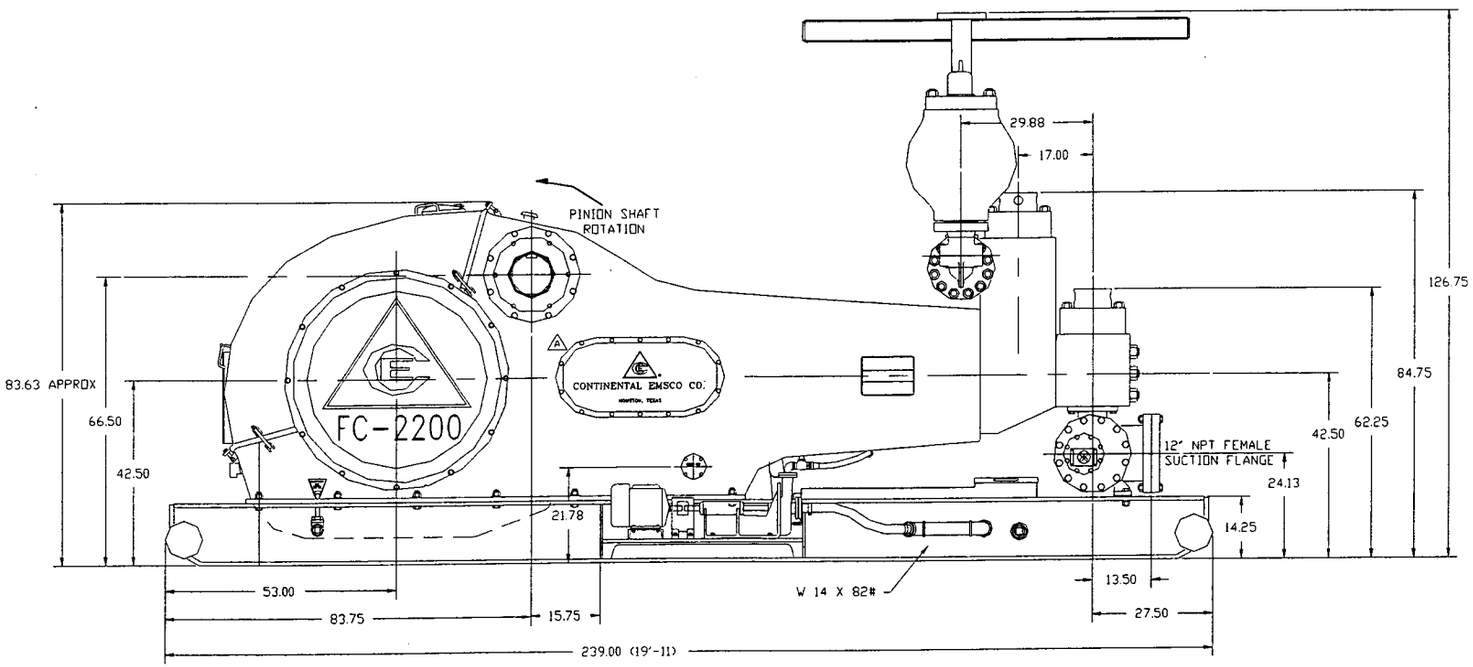
NOTE: OPTIONAL EQUIPMENT, PLEASE SPECIFY WHEN ORDERING.

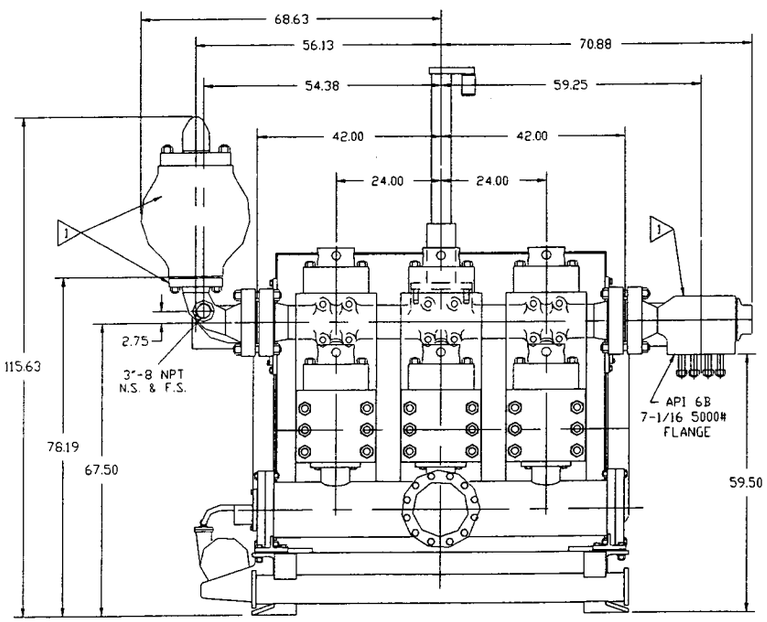
NATIONAL OILWELL
Houston, Texas, U.S.A.

PRESSURE SWITCH INSTALLATION
FC-2200 TRIPLEX MUD PUMP

SHEET 1 OF 1	SIZE:	DRAWING NO.:	REV.:
	D	PL 6323-0146-00	A







NOTES:

1. LINER WASH PUMP, ACCESSSORY MANIFOLD, PULSATION DAMPENER, STRAINER HOUSING AND SUCT. DESURGER MAY BE MOUNTED RIGHT OR LEFT HAND SIDE.
2. VERTICAL DIMENSIONS SUBJECT TO SKID BEAM TOLERANCE

NATIONAL OILWELL

Houston, Texas, U.S.A.

GENERAL DIMENSIONS
FC-2200 TRIPLEX MUD PUMP

SHEET 1 OF 1	SIZE:	DRAWING NO.:	REV.:
	D	PL 6323-0002-00	A