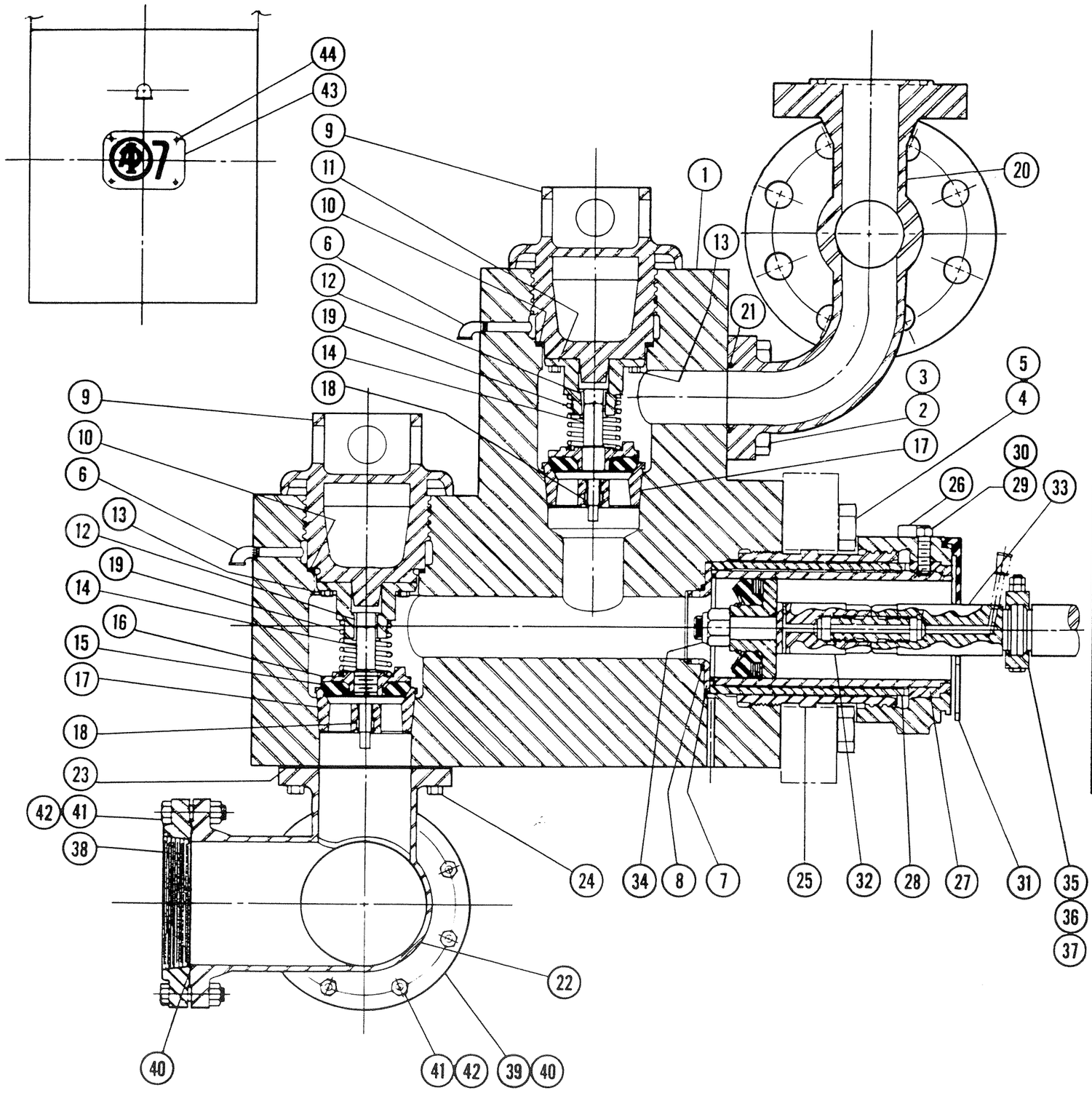


BILL OF MATERIAL			
ITEM	REQ'D	COMM NO	DESCRIPTION
1	3	10-300-181	FLUID END , STUDDED (INCLUDES ITEMS 2 THRU 8)
2	12	49-001-292	STUD, 1-3/8–8 X 4-1/2
3	12	75-511-754	NUT, 1-3/8–8 HEAVY HEX
4	12	49-002-837	STUD, 1-3/4 –8 X 7-1/2
5	12	75-510-126	NUT, 1-3/4–8 HEAVY HEX
6	6	86-342-103	ELBOW, 3/8 X 90° 150 # BLK M.I. STREET
7	3	10-300-184	PLATE, LINER WEAR
8	3	20-100-008	GASKET, LINER WEAR PLATE
9	6	10-300-005	COVER, VALVE
10	6	10-300-011	GASKET, VALVE COVER
11	6	10-300-004	SLEEVE, VALVE COVER
12	6	20-200-004	BUSHING, VALVE GUIDE
13	24	75-632-234	CAPSCREW, 5/8–11 X 1-1/4 SELF-LOCKING HEX HEAD HT
14*	6	20-160-928	VALVE W/ POLYURETHANE DISC (INCLUDES ITEMS 15 & 16) *
	6	20-160-929	VALVE W/ BUNA "N" DISC (INCLUDES ITEMS 15 & 16) *
15	6	20-180-049	DISC, POLYURETHANE
	6	20-180-050	DISC, BUNA "N"
16	6	20-860-044	NUT, VALVE
17	6	20-220-105	SEAT, VALVE (INCLUDES ITEM 18)
18	6	20-101-767	BUSHING, VALVE SEAT
19	6	20-160-225	SPRING, VALVE
20	1	10-303-175	MANIFOLD, DISCHARGE
21	3	99-609-345	"O"–RING (4-3/8 X 4" X 3/16)
22	1	10-303-081	MANIFOLD, SUCTION
23	3	10-300-201	GASKET, SUCTION MANIFOLD
24	24	75-634-382	CAPSCREW, 3/4–10 X 2" HEX HEAD HT
25	3	10-300-183	ADAPTER, LINER
26	3	10-303-092	NUT, LINER ADAPTER
27**	3	10-300-185	RING, LINER SPACER **
28**	3	10-303-091	SLEEVE, LINER CENTERING **
29†	9	75-632-758	SETSCREW, 3/4–10 X 1-3/4 SQUARE HEAD DOG POINT †
30**	9	75-632-760	SETSCREW, 3/4 –10 X 2-1/4 SQUARE HEAD DOG POINT **
31	3	20-460-668	SHIELD, LINER FLUSHING
32	3	20-150-123	ROD, PISTON
33	3	20-150-125	ROD, EXTERNSION
34	3	20-150-142	NUT, PISTON RETAINING
35	3	20-150-132	CLAMP, ROD (INCLUDES ITEMS 36 & 37)
36	6	75-074-694	BOLT, 5/8–11 X 6" HEX HEAD CAD. PLATED
37	12	75-510-438	NUT, 5/8–11 STAINLESS STEEL HEX
38	1	98-029-036	FLANGE, 8" 150 # RAISED FACE THREADED
39	2	98-031-036	FLANGE, 8" 150 # RAISED FACE BLIND
40	3	45-148-408	GASKET, SUCTION FLANGE
41	24	75-634-390	CAPSCREW, 3/4–10 HEX HEAD HT
42	24	75-510-312	NUT, 3/4–10 HEAVY HEX
43	3	10-300-202	PLATE, NAME
44	12	75-632-012	SCREW, No. 2 X 1/4 CAD. PLATED DRIVE

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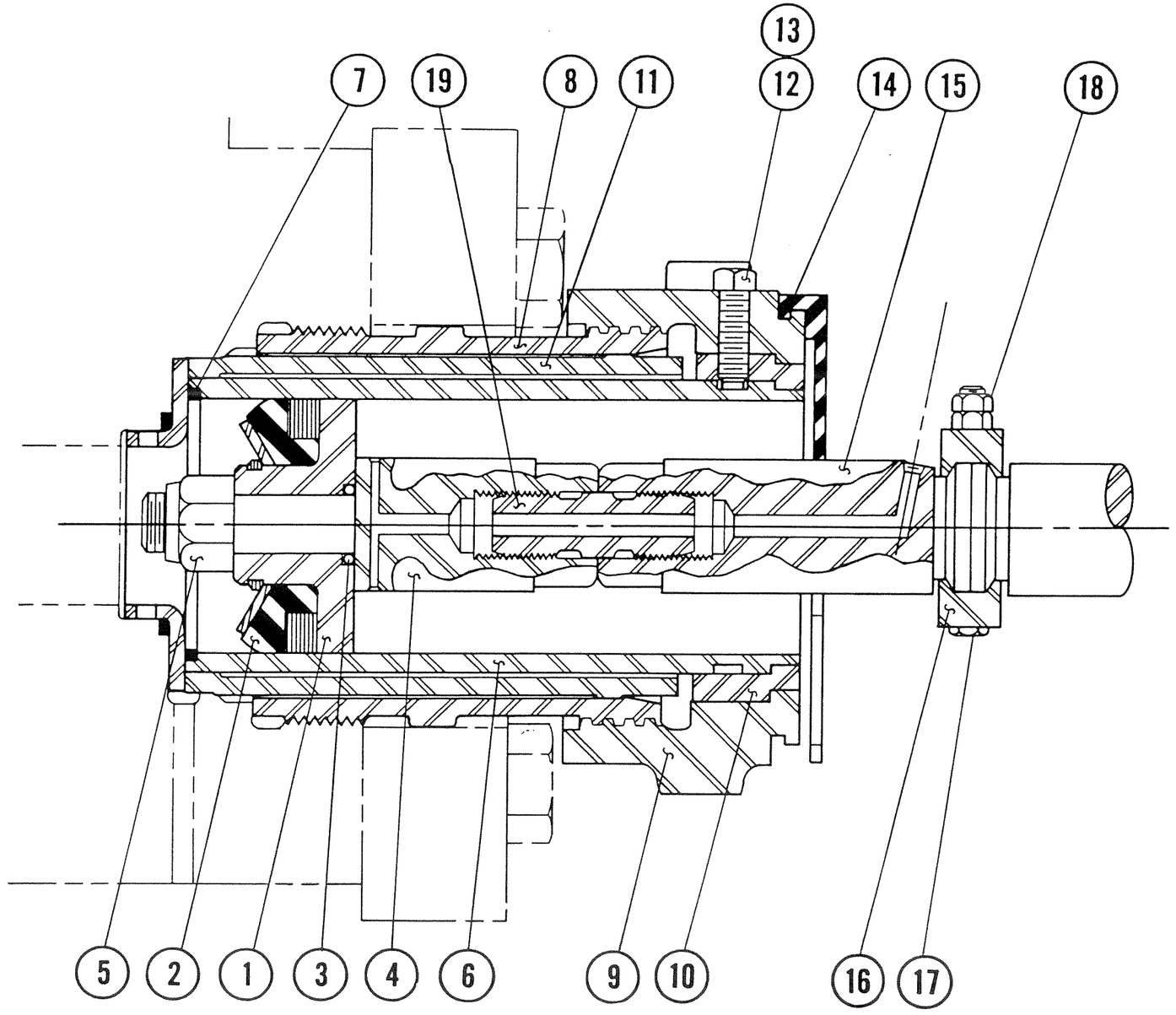
* SPECIFY TYPE OF VALVE WHEN ORDERING.
** NOT USED WITH 6-1/2" AND LARGER DIAMETER LINERS .
† USED WITH 6-1/2" AND LARGER DIAMETER LINERS ONLY.

ISSUE DATE: 3–15–90

NATIONAL - OILWELL

FLUID END
A1100-PT TRIPLEX PISTON PUMP

		DRAWING NO.	SIZE
		P196-AZ1	D



BILL OF MATERIAL

ITEM	REQ'D	COMM NO	DESCRIPTION
1*	3	20-020-502	PISTON COMPLETE, 5" (SERIES "B") *
	3	20-020-503	PISTON COMPLETE, 5-1/2 (SERIES "B") *
	3	20-020-504	PISTON COMPLETE, 5-3/4 (SERIES "B") *
	3	20-020-505	PISTON COMPLETE, 6" (SERIES "B") *
	3	20-020-507	PISTON COMPLETE, 6-1/2 (SERIES "L") *
	3	20-020-508	PISTON COMPLETE, 6-3/4 (SERIES "L") *
	3	20-020-509	PISTON COMPLETE, 7" (SERIES "L") *
	3	20-020-510	PISTON COMPLETE, 7-1/4 (SERIES "L") *
	3	20-020-511	PISTON COMPLETE, 7-1/2 (SERIES "L") *
	3	20-020-512	PISTON COMPLETE, 7-3/4 (SERIES "L") *
2**	3	20-040-005	RUBBER, 5" PISTON **
	3	20-040-009	RUBBER, 5-1/2 PISTON **
	3	20-040-011	RUBBER, 5-3/4 PISTON **
	3	20-040-013	RUBBER, 6" PISTON **
	3	20-040-037	RUBBER, 6-1/2 PISTON **
	3	20-040-039	RUBBER, 6-3/4 PISTON **
	3	20-040-041	RUBBER, 7" PISTON **
	3	20-040-043	RUBBER, 7-1/4 PISTON **
	3	20-040-045	RUBBER, 7-1/2 PISTON **
	3	20-040-047	RUBBER, 7-3/4 PISTON **
3†	3	99-607-325	"O"–RING (1-1/2 X 1-7/8 X 3/16) †
4	3	20-150-123	ROD, PISTON (INCLUDES ITEM 19)
5	3	20-150-142	NUT, PISTON RETAINING
6	3	05-330-500	LINER, 5" SUPER DI–HARD
	3	05-330-550	LINER, 5-1/2 SUPER DI–HARD
	3	05-330-575	LINER, 5-3/4 SUPER DI–HARD
	3	05-330-600	LINER, 6" SUPER DI–HARD
	3	05-330-651	LINER, 6-1/2 SUPER DI–HARD
	3	05-330-675	LINER, 6-3/4 SUPER DI–HARD
	3	05-330-700	LINER, 7" SUPER DI–HARD
	3	05-330-725	LINER, 7-1/4 SUPER DI–HARD
	3	05-330-750	LINER, 7-1/2 SUPER DI–HARD
	3	05-330-775	LINER, 7-3/4 SUPER DI–HARD
7	3	20-100-008	GASKET, 5" LINER
	3	20-100-009	GASKET, 5-1/2 LINER
	3	20-100-010	GASKET, 5-3/4 LINER
	3	20-100-011	GASKET, 6" LINER
	3	20-100-012	GASKET, 6-1/2 LINER
	3	20-100-016	GASKET, 6-3/4 LINER
	3	20-100-017	GASKET, 7" LINER
	3	20-100-018	GASKET, 7-1/4 LINER
	3	20-100-019	GASKET, 7-1/2 LINER
	3	20-100-020	GASKET, 7-3/4 LINER
8	3	10-300-183	ADAPTER, LINER
9	3	10-303-092	NUT, LINER ADAPTER
10††	3	10-300-185	RING, LINER SPACER ††
11††	3	10-303-091	SLEEVE, LINER CENTERING ††
12†††	9	75-632-758	SETSCREW, 3/4–10 X 1-3/4 SQUARE HEAD DOG POINT †††
13††	9	75-632-760	SETSCREW, 3/4–10 X 2-1/4 SQUARE HEAD DOG POINT ††
14	3	20-460-668	SHIELD, LINER FLUSHING
15	3	20-150-125	ROD, EXTENSION
16	3	20-150-132	CLAMP, ROD (INCLUDES ITEMS 17 & 18)
17	6	75-074-694	BOLT, 5/8–11 X 6" HEX HEAD CAD. PLATED
18	12	75-510-438	NUT, 5/8–11 STAINLESS STEEL HEX
19	3	10-305-203	STUD, PISTON ROD

* PISTON BODY HAS 1-1/2" BORE (FITS 1-1/2" DIAMETER ROD).

** PISTON RUBBERS ARE PACKAGED IN "PAIRS". A PAIR OF PISTON RUBBERS CONSISTS OF TWO EACH, PISTON RUBBERS, PLATES AND SNAP RINGS. ONE PAIR OF RUBBERS WILL DRESS TWO SINGLE ACTING PISTONS.

† "O"–RINGS ARE PACKAGED SIX PIECES PER PACKAGE AND ARE IDENTIFIED AS COMMODITY NUMBER 20-680-020.

†† NOT USED WITH 5-1/2" AND LARGER DIAMETER LINERS AND PISTONS.

††† USED WITH 6-1/2" AND LARGER DIAMETER LINERS AND PISTONS ONLY.

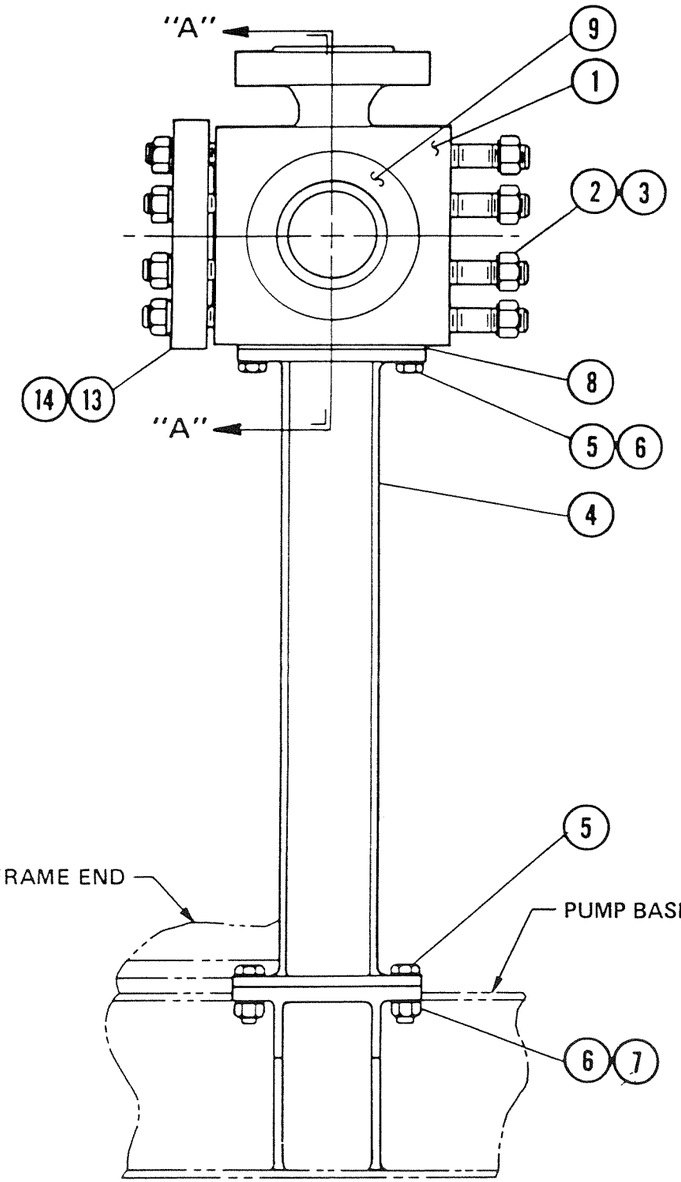
ISSUE DATE: 3–15–90

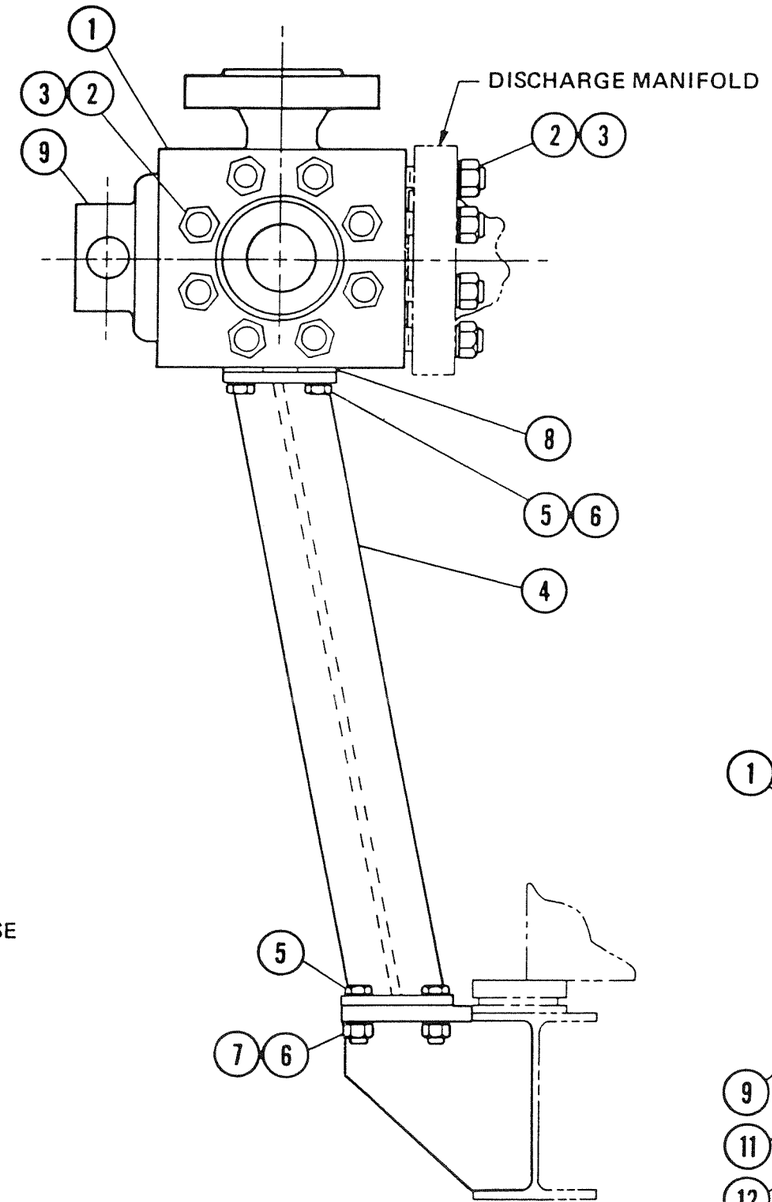
NATIONAL - OILWELL

LINER AND PISTON ASSEMBLY
A1100-PT TRIPLEX PISTON PUMP

DRAWING NO. P206-AS1

SIZE D

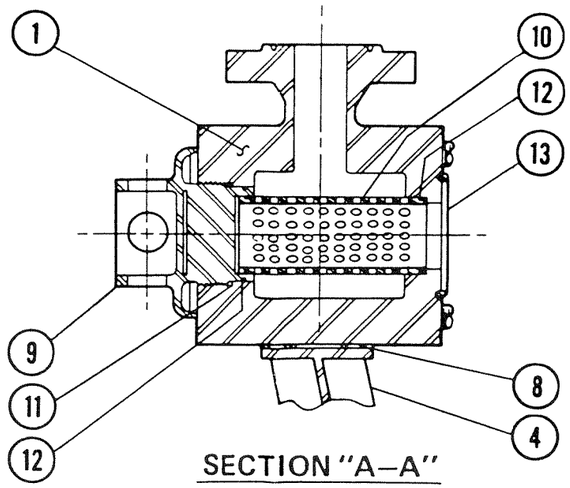




BILL OF MATERIAL			
ITEM	REQ'D	COMM NO	DESCRIPTION
1	1	10-307-005	BLOCK, STRAINER (INCLUDES ITEMS 2 AND 3)
2	24	45-810-062	STUD, 1-1/2–8 X 6-1/2
3	24	75-510-323	NUT, 1-1/2–8 HEAVY HEX
4	1	06-511-630	SUPPORT, STRAINER BLOCK
5	8	75-635-093	CAPSCREW, 1"– 8 X 2-1/2 HEX HEAD HT
6	8	75-770-478	LOCKWASHER, 1" EXTERNAL SHAKEPROOF
7	4	75-510-316	NUT, 1"–8 HEAVY HEX
8		10-307-064	SHIM SET (1REQ'D) CONSISTS OF THE FOLLOWING
	8	10-307-065	SHIM (16 GA. THICK)
	4	10-307-066	SHIM (11 GA. THICK)
9	1	10-307-009	COVER, STRAINER
10	1	10-307-010	STRAINER, DISCHARGE
11	1	99-609-258	"O"–RING (6-1/4 X 6" X 1/8)
12	2	99-609-249	"O"–RING (5-1/8 X 4-7/8 X 1/8)
13*	3	78-206-544	GASKET, R-44 OVAL RING *
14*	2	98-032-122	FLANGE, 5" 5000 #. RAISED FACE BLIND *

* ONE REQUIRED FOR OPPOSITE END OF DISCHARGE MANIFOLD.

3



SECTION "A–A"

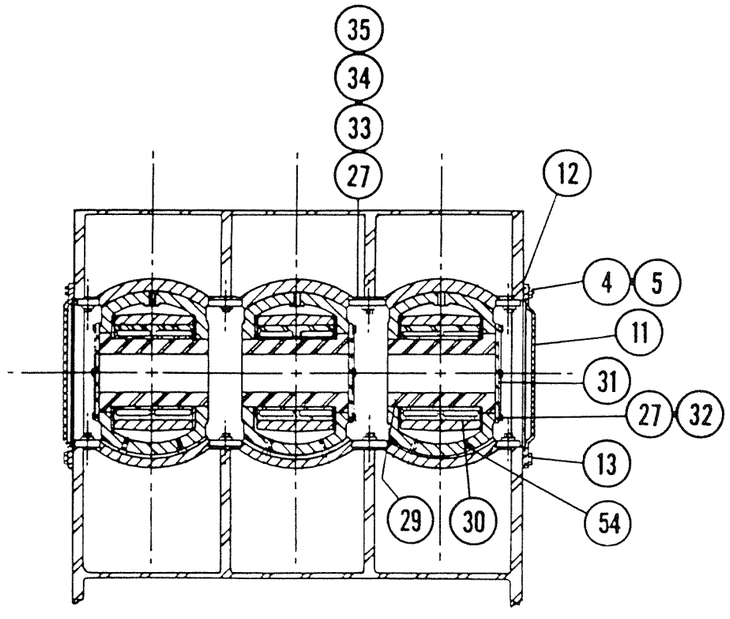
ISSUE DATE: 3–15–90

NATIONAL - OILWELL

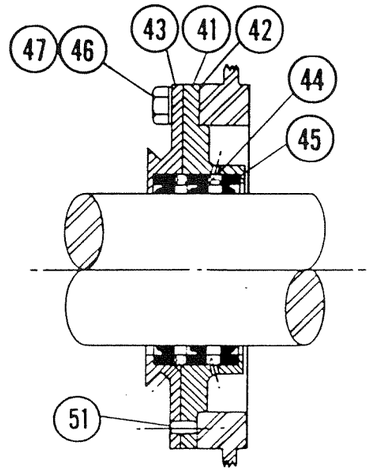
STRAINER BLOCK ASSEMBLY
A1100-PT TRIPLEX PISTON PUMP

DRAWING NO. P206-AJ1

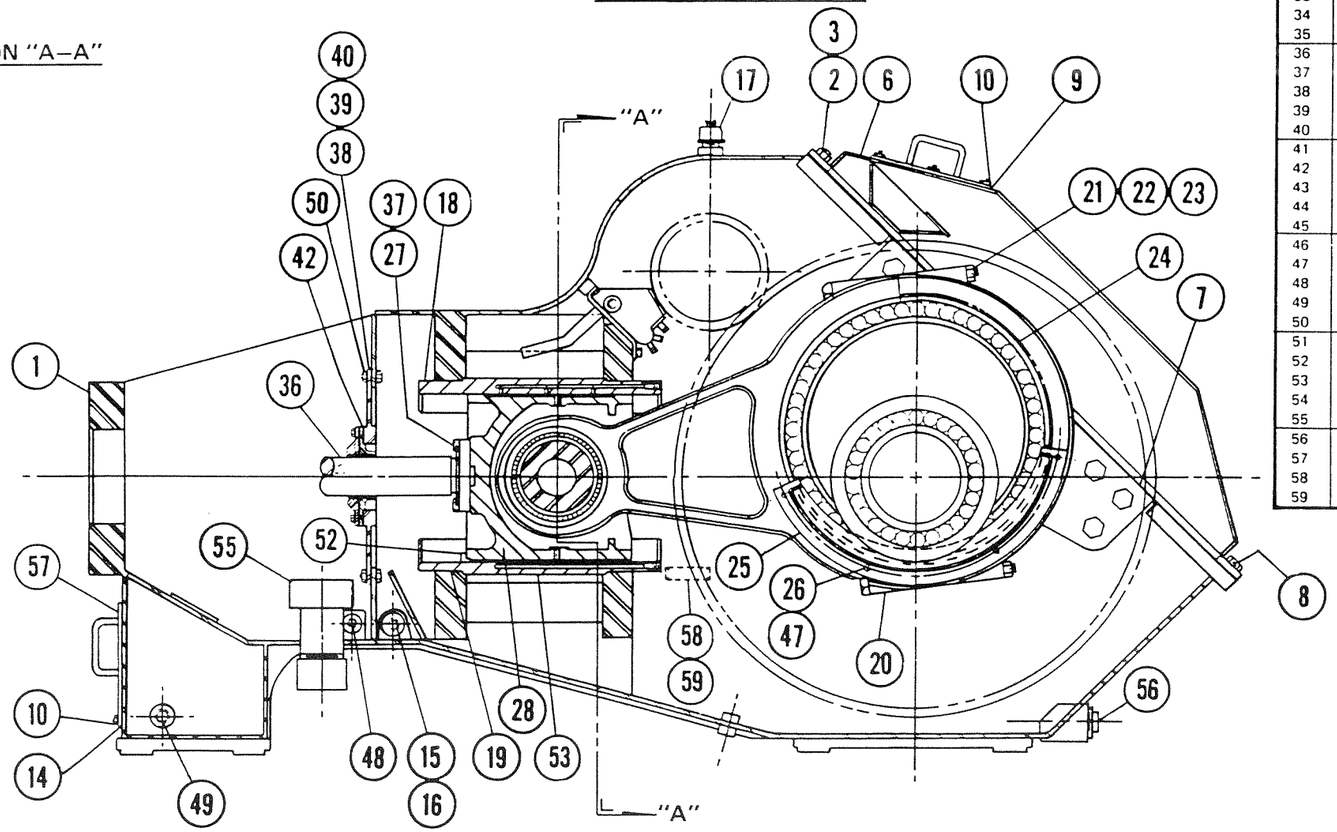
SIZE D



SECTION "A–A"



DIAPHRAGM ASSEMBLY



BILL OF MATERIAL			
ITEM	REQ'D	COMM NO	DESCRIPTION
1	1	10-303-024	FRAME END, STUDDED (INCLUDES ITEMS 2 AND 4)
2	2	29-000-700	STUD, 3/4–10 X 2-1/2
3	2	75-510-410	NUT, 3/4–10 HEX
4	4	29-000-777	STUD, 1/2–13 X 1-3/4
5	4	75-510-406	NUT, 1/2–13 HEX
6	1	10-303-025	COVER, CRANKCASE
7	1	10-303-046	GASKET, CRANKCASE COVER
8	18	75-634-373	CAPSCREW, 3/4–10 X 1-1/2 HEX HEAD HT
9	2	10-300-063	GASKET, INSPECTION COVER
10	42	75-510-404	NUT, 3/8–16 HEX
11	2	10-303-090	DOOR, FRAME (A1100-PT, NATIONAL-OILWELL)
12	2	10-303-042	GASKET, FRAME DOOR
13	24	75-634-349	CAPSCREW, 1/2–13 X 1" HEX HEAD HT
14	1	10-300-058	GASKET, SUMP COVER
15	1	86-429-001	NIPPLE, 2" X CLOSE SCH 40 BW STEEL PIPE
16	1	83-802-512	COCK, 2" BRASS DRAIN
17	1	64-229-100	BREATHER, AIR
18	3	10-303-009	GUIDE, CROSSHEAD
19		10-303-041	SHIM SET (12 REQ'D) CONSISTS OF THE FOLLOWING
	72	10-303-040	SHIM (.005" THICK)
20	3	10-303-047	ROD, CONNECTING (INCLUDES ITEMS 21 AND 22)
21	6	10-303-043	BOLT, 7/8 –9 X 15-1/4 CONNECTING ROD
22	6	75-513-112	NUT, 7/8–9 HEAVY SLOTTED HEX
23	6	75-102-088	COTTER, 1/8 X 2" STEEL
24	3	10-303-033	RETAINER, CONNECTING ROD TO ECCENTRIC BEARING
25	3	10-303-028	TROUGH, CONNECTING ROD OIL
26	12	75-634-415	CAPSCREW, 1/2 –13 X 3/4 HEX HEAD HT
27		59-800-016	WIRE, 16 GA. ANNEALED STEEL
28	3	10-303-073	CROSSHEAD
29	3	10-303-014	PIN, CROSSHEAD
30	3	65-725-960	BEARING, CROSSHEAD PIN
31	3	10-303-032	PLATE, CROSSHEAD PIN RETAINING
32	18	45-142-701	CAPSCREW, 3/4–10 X 1-1/2 DRILLED HEX HEAD HT
33	16	10-303-022	CLAMP, CROSSHEAD GUIDE
34	16	75-770-100	WASHER, SPHERICAL
35	16	45-143-503	CAPSCREW, 5/8 –11 X 2" DRILLED HEX HEAD HT
36	3	10-300-142	ROD, CROSSHEAD EXTENSION
37	12	45-142-703	CAPSCREW, 3/4–10 X 1-3/4 DRILLED HEX HEAD HT
38	1	10-303-050	GASKET (RIGHT HAND), DIAPHRAGM SUPPORT
39	1	10-303-051	GASKET (LEFT HAND), DIAPHRAGM SUPPORT
40	1	10-303-049	GASKET (CENTER), DIAPHRAGM SUPPORT
41	3	10-300-020	HOUSING, DIAPHRAGM
42	3	10-300-062	GASKET, DIAPHRAGM HOUSING
43	3	10-300-021	CAP, DIAPHRAGM
44	6	10-300-022	RING, DIAPHRAGM LANTERN
45	9	20-100-015	WIPER, ROD
46	18	75-634-352	CAPSCREW, 1/2–13 X 1-1/2 HEX HEAD HT
47	30	75-770-474	LOCKWASHER, 1/2 EXTERNAL SHAKEPROOF
48	2	86-485-416	PLUG, 2" C.I. CORED SQUARE HEAD PIPE
49	2	86-485-512	PLUG, 1-1/2 C.I. SOLID SQUARE HEAD PIPE
50	33	75-514-117	LOCKNUT, 1/2–13 HEX
51	6	45-127-305	PIN, 3/8 X 3/4 DOWEL
52	3	10-303-096	SHOE, CROSSHEAD
53	3	10-303-097	GUIDE, LOWER CROSSHEAD
54	12	75-633-119	SCREW, 1/2–13 X 1-1/4 FLAT HEAD MACHINE
55	1	10-300-258	COVER, OVERFLOW
56	1	86-486-120	PLUG, 2-1/2 SOLID SQUARE HEAD PIPE
57	1	10-303-135	COVER, FRONT SUMP
58	1	10-300-317	PLATE, CAUTION
59	24	75-632-012	SCREW, No. 2 X 1/4 STEEL DRIVE

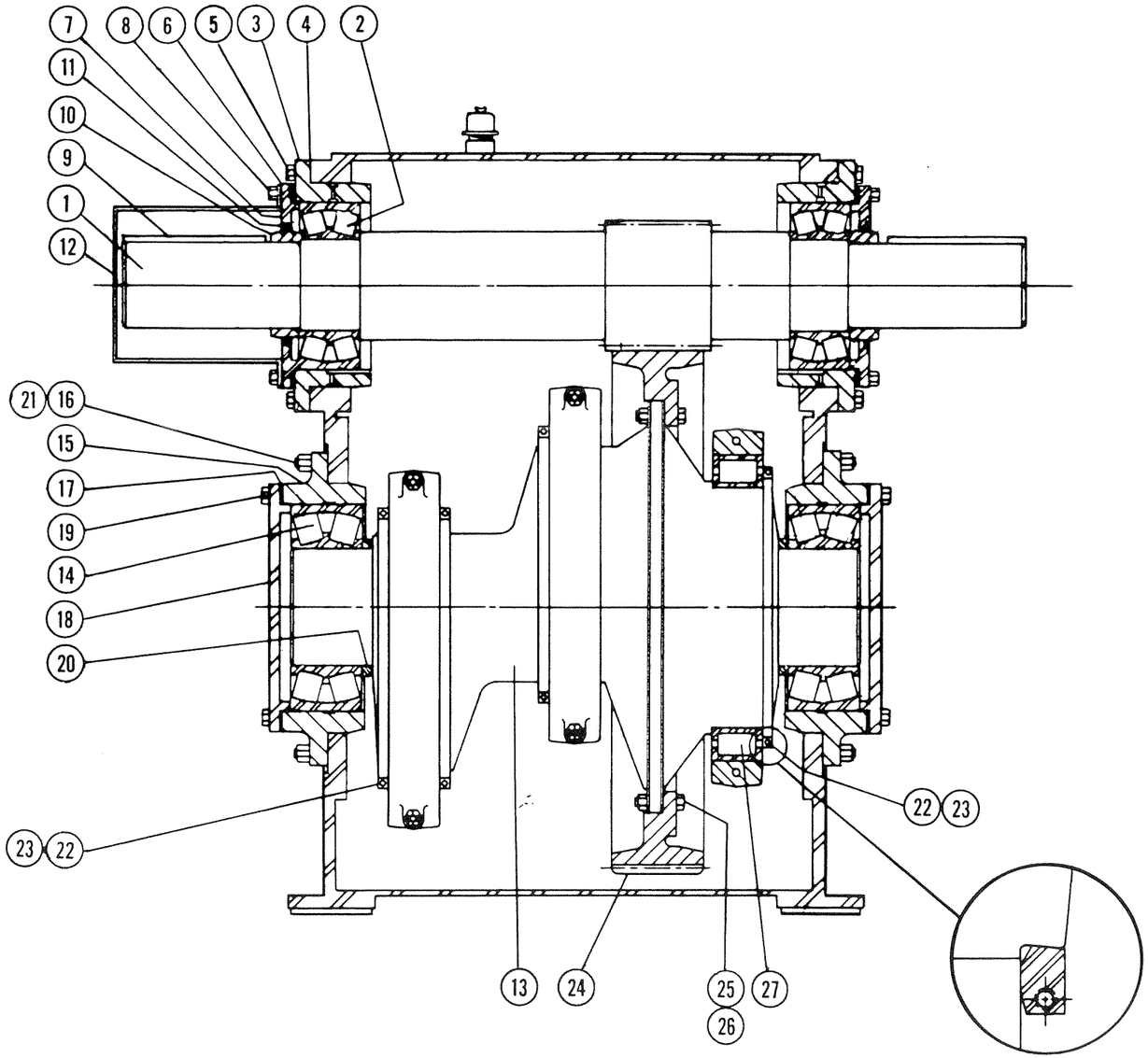
4

ISSUE DATE: 3–15–90

NATIONAL - OILWELL

POWER END
A1100-PT TRIPLEX PISTON PUMP

		DRAWING NO.	SIZE
		P196-AV1	D



BILL OF MATERIAL			
ITEM	REQ'D	COMM NO	DESCRIPTION
1	1	10-303-012	SHAFT (21 TEETH), PINION W/ INTEGRAL
2	2	65-725-000	BEARING, PINION
3	2	10-303-038	HOUSING, PINION BEARING
4	2	10-303-048	GASKET, PINION BEARING HOUSING
5	16	75-635-093	CAPSCREW, 1" – 8 X 2-1/2 HEX HEAD HT
6		45-803-900	SHIM SET (2 REQ'D) CONSISTS OF THE FOLLOWING
	12	45-803-901	SHIM (.005" THICK)
	10	45-803-902	SHIM (.007" THICK)
	6	45-803-903	SHIM (.020" THICK)
	2	45-803-904	SHIM (16 GAUGE)
7	2	10-303-053	RETAINER, PINION BEARING
8	16	75-634-383	CAPSCREW, 3/4 –10 X 2-1/4 HEX HEAD HT
9	2	45-803-923	KEY (2" X 1-1/2 X 13-1/2)
10	2	10-303-052	SLEEVE, PINION SHAFT
11	2	68-631-012	SEAL , OIL
12	1	10-303-055	COVER, PINION SHAFT EXTENSION
13	1	10-303-063	CRANKSHAFT
14	2	65-725-080	BEARING, MAIN
15	2	10-303-037	HOUSING, MAIN BEARING
16	30	10-303-132	STUD, 1"– 8 X 5"
17		45-803-917	SHIM SET (2 REQ'D) CONSISTS OF THE FOLLOWING
	12	45-803-918	SHIM (.005" THICK)
	10	45-803-919	SHIM (.007" THICK)
	6	45-803-920	SHIM (.020" THICK)
	2	45-803-921	SHIM (16 GAUGE)
18	2	10-303-054	RETAINER, MAIN BEARING
19	16	75-634-382	CAPSCREW, 3/4 –10 X 2" HEX HEAD HT
20	2	10-303-039	SPACER, MAIN BEARING
21	30	75-510-316	NUT, 1" – 8 HEAVY HEX
22*	4	10-303-061	RING, BEARING RETAINING *
23	8	75-632-445	CAPSCREW, 1/2 –13 X 2-1/4 SOCKET HEAD SELF-LOCKING HT
24	1	10-303-034	GEAR (94 TEETH), CRANKSHAFT
25	8	75-634-409	CAPSCREW, 1" – 8 X 4" HEX HEAD HT
26	8	75-514-120	LOCKNUT, 1" – 8 HEX
27	3	65-725-959	BEARING, CONNECTING ROD

* INCLUDES ITEM 23.

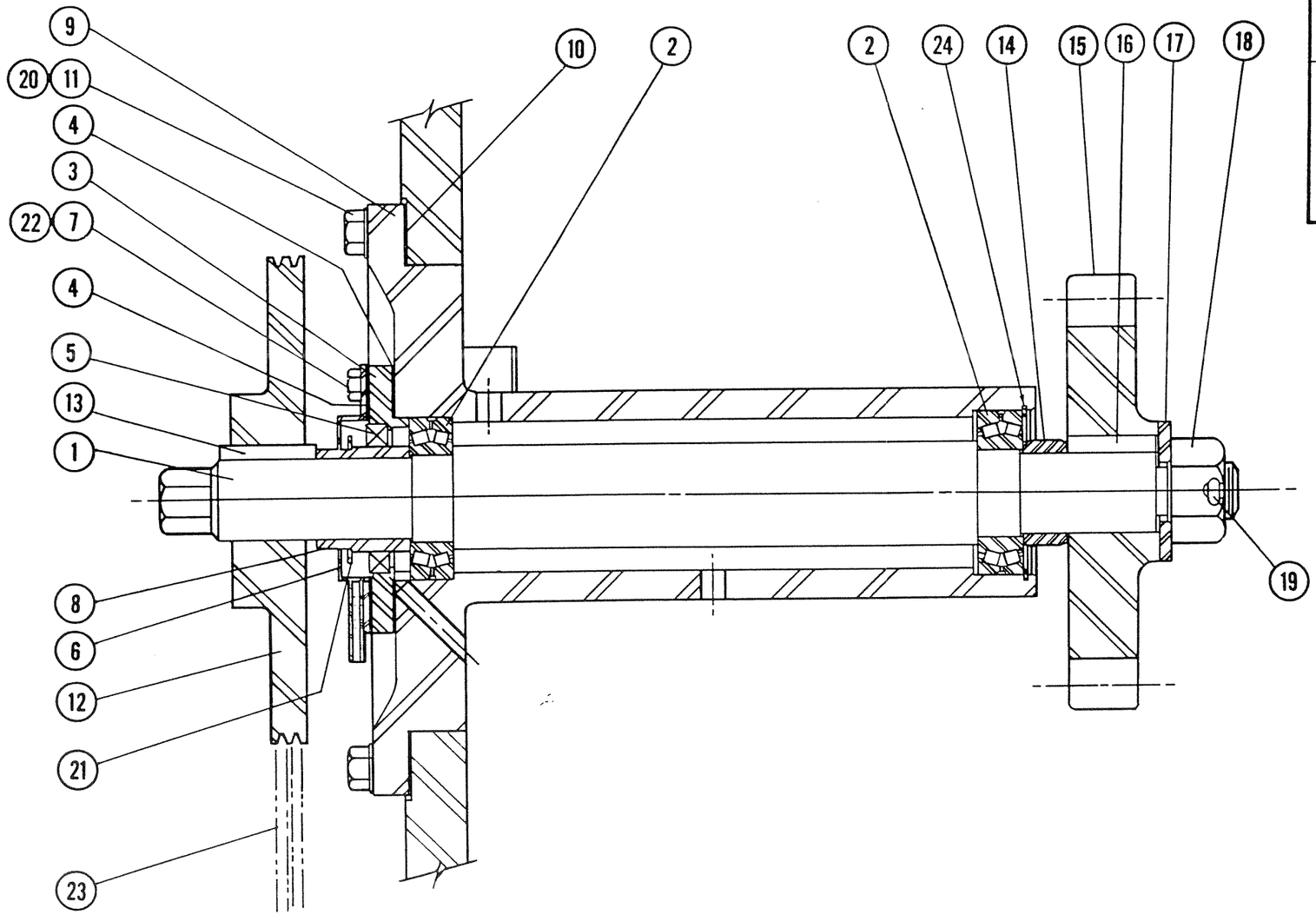
5

ISSUE DATE: 3–15–90

NATIONAL - OILWELL

SHAFT ASSEMBLIES
A1100-PT TRIPLEX PISTON PUMP

		DRAWING NO.	SIZE
		P199-AA1	C



BILL OF MATERIAL			
ITEM	REQ'D	COMM NO	DESCRIPTION
1	1	10-300-030	JACKSHAFT
2	2	65-725-031	BEARING, JACKSHAFT
3	1	10-300-032	RETAINER, JACKSHAFT BEARING
4	2	45-803-797	GASKET , RETAINER
5	1	68-630-235	SEAL, OIL
6	1	10-300-098	CATCHER, OIL
7	4	75-634-352	CAPSCREW, 1/2–13 X 1-1/2 HEX HEAD HT
8	1	10-300-034	SPACER, BEARING
9	1	10-300-031	BRACKET, JACKSHAFT
10	1	45-803-729	GASKET, BRACKET
11	6	75-634-359	CAPSCREW, 5/8–11 X 1-1/2 HEX HEAD HT
12	1	68-097-451	SHEAVE, 10.6 O.D. 3-V DOUBLE GROOVE DRIVE
13	1	45-802-800	KEY (1/2 X 1/2 X 2")
14	1	10-300-033	SPACER, BEARING
15	1	10-303-017	PINION (15 TEETH), JACKSHAFT
16	1	45-803-362	KEY (1/2 X 1/2 X 1-3/4)
17	1	10-300-035	WASHER, JACKSHAFT
18	1	75-513-018	NUT, 1-1/4 –7 SLOTTED HEX
19	1	75-104-013	COTTER, (3/16 X 2-1/2)
20	6	75-770-475	LOCKWASHER, 5/8 EXTERNAL SHAKEPROOF
21	1	10-300-099	SLINGER, OIL
22	4	75-770-474	LOCKWASHER, 1/2 EXTERNAL SHAKEPROOF
23	2	68-028-560	V-BELT, 3V-560
24	1	75-660-073	RING, RETAINING

6

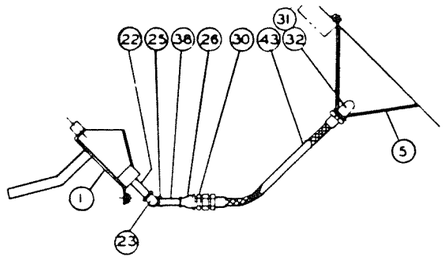
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NATIONAL - OILWELL

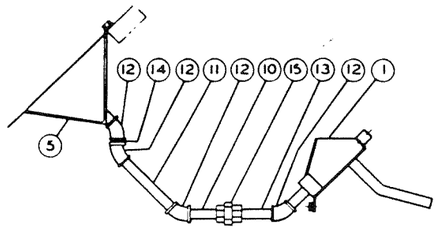
JACKSHAFT ASSEMBLY
A1100-PT TRIPLEX PISTON PUMP

DRAWING NO. P196-AD1

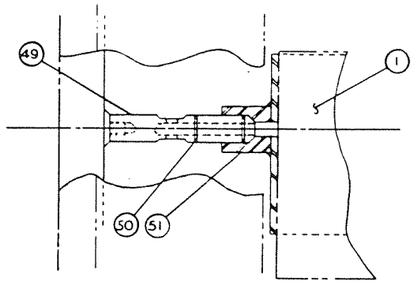
SIZE C



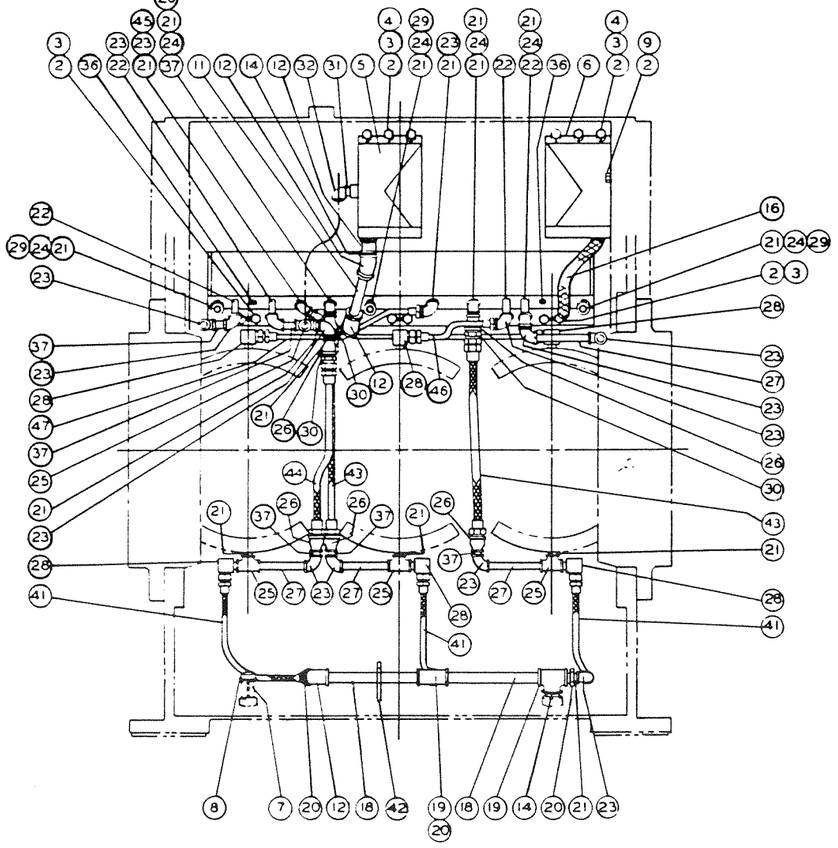
HOSE CONNECTION
LEFT SIDE – OIL SCRAPER

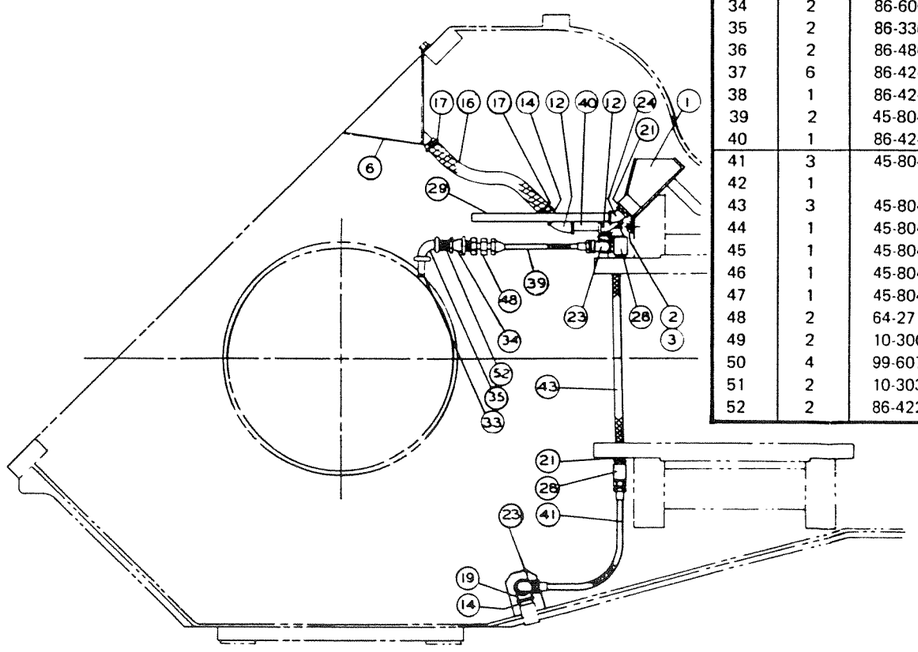


BOTTOM PIPING
LEFT SIDE – OIL SCRAPER



HALF SIZE SECTION
TROUGH PINION BEARING
OIL CONNECTOR





BILL OF MATERIAL			
ITEM	REQ'D	COMM NO	DESCRIPTION
1	1	10-303-065	THROUGH, OIL (INCLUDES ITEM 36)
2	13	45-143-001	CAPSCREW, 1/2–13 X 3/4 DRILLED HEX HEAD HT
3		59-800-016	WIRE, 16 GA. ANNEALED STEEL
4	6	75-770-204	WASHER, 1/2 HEAVY PLATE
5	1	10-303-030	SCRAPER (LEFT HAND), OIL
6	1	10-303-031	SCRAPER (RIGHT HAND), OIL
7	1	10-300-037	NIPPLE, STRAINER
8	1	86-132-008	CAP, 1" M.I. PIPE
9	1	75-770-474	LOCKWASHER, 1/2 EXTERNAL SHAKEPROOF
10	1	86-426-009	NIPPLE , 1" X 3" SCH 40 BW STEEL PIPE
11	1		NIPPLE, 1" X 7-1/4 SCH 40 BW STEEL PIPE
12	7	86-339-108	ELBOW, 1" X 45° 150# BLK M.I. PIPE
13	1	86-426-013	NIPPLE, 1" X 4" SCH 40 BW STEEL PIPE
14	3	86-426-001	NIPPLE, 1" X CLOSE SCH 40 BW STEEL PIPE
15	1	86-641-108	UNION, 1" 150# M.I. FEMALE GROUND JOINT
16	1	99-287-110	HOSE, 1-1/4 X 36"
17	2	99-092-558	CLAMP, HOSE
18	2	86-426-029	NIPPLE, 1" X 10" SCH 40 BW STEEL PIPE
19	2	86-543-108	TEE, 1" 150# M.I. PIPE
20	3	86-061-014	BUSHING, 1" X 1/2 C.I. 150# BLK HEX PIPE
21	14	86-424-001	NIPPLE, 1/2 X CLOSE SCH 40 BW STEEL PIPE
22	4	86-424-009	NIPPLE, 1/2 X 3" SCH 40 BW STEEL PIPE
23	15	86-336-104	ELBOW, 1/2 X 90° 150# BLK M.I. PIPE
24	6	86-339-104	ELBOW, 1/2 X 45° 150# BLK M.I. PIPE
25	5	86-543-104	TEE, 1/2 150 M.I. PIPE
26	7	86-600-010	COUPLING, 3/4 X 1/2 150# M.I. REDUCING
27	4	86-424-021	NIPPLE, 1/2 X 6" SCH 40 BW STEEL PIPE
28	6	64-271-214	ELBOW, 1/2 P.T. X 37° JIC 90° HOSE ADAPTER
29	3		PIPE, 1/2 X 14" SCH 40 BW STEEL
30	4	64-271-212	ADAPTER, 3/4 P.T. X 3/4 37° JIC HOSE
31	1	86-425-007	NIPPLE, 3/4 X 2-1/2 SCH 40 BW STEEL PIPE
32	1	86-336-106	ELBOW, 3/4 X 90° 150# BLK M.I. PIPE
33	2	86-422-005	NIPPLE, 1/4 X 2" SCH 40 BW STEEL PIPE
34	2	86-600-005	COUPLING, 1/2 X 1/4 150# BLK M.I. PIPE
35	2	86-336-102	ELBOW, 1/4 X 90° 150# BLK M.I. PIPE
36	2	86-486-508	PLUG , 1" C.I. SOLID SQUARE HEAD PIPE
37	6	86-424-003	NIPPLE, 1/2 X 1-1/2 SCH 40 BW STEEL PIPE
38	1	86-424-007	NIPPLE, 1/2 X 2-1/2 SCH 40 BW STEEL PIPE
39	2	45-804-436	HOSE, 1/2 X 34"
40	1	86-424-011	NIPPLE, 1" X 3-1/2 SCH 40 BW STEEL PIPE
41	3	45-804-374	HOSE, 1/2 X 16-7/8
42	1		SUPPORT, INTERNAL MANIFOLD
43	3	45-804-437	HOSE, 3/4 X 17"
44	1	45-804-366	HOSE, 3/4 X 19-1/2
45	1	45-804-405	HOSE, 1/2 X 25"
46	1	45-804-406	HOSE, 1/2 X 9-3/8
47	1	45-804-387	HOSE, 1/2 X 19-7/8
48	2	64-271-208	ADAPTER, 1/2 HOSE
49	2	10-300-136	CONNECTOR, PINION BEARING OIL
50	4	99-607-114	"O"–RING (7/8 X 11/16 X 3/32)
51	2	10-303-066	CONNECTOR, OIL TROUGH TO PINION BEARING
52	2	86-422-001	NIPPLE, 1/4 X CLOSE SCH 40 BW STEEL PIPE

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ISSUE DATE: 3–15–90

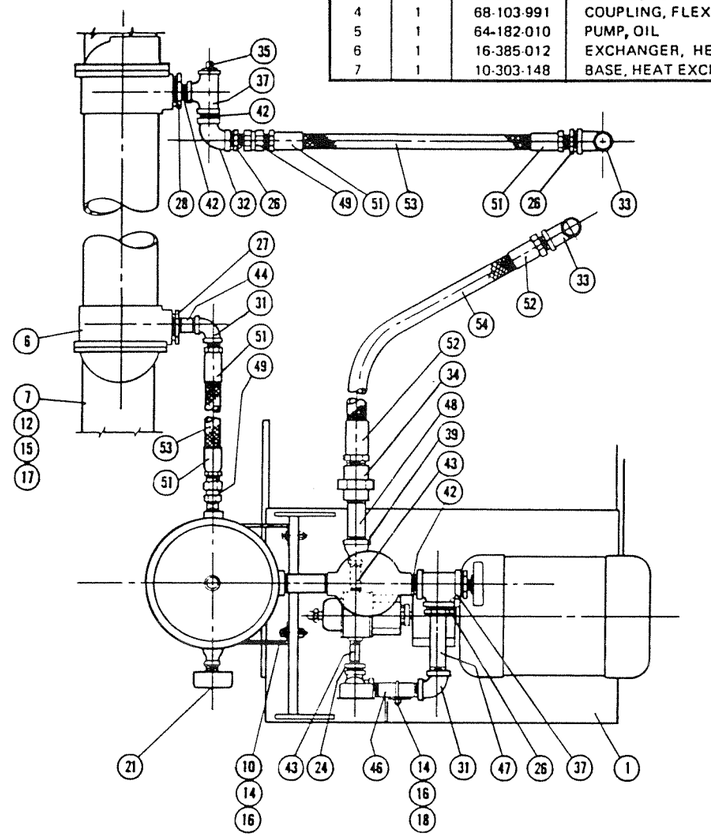
NATIONAL - OILWELL

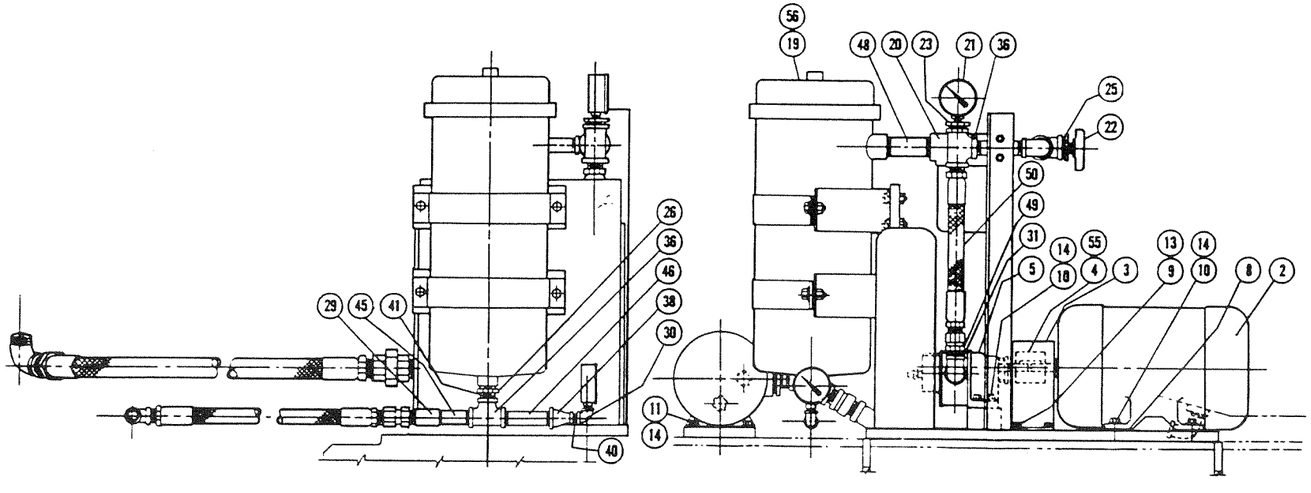
INTERNAL LUBRICATION SYSTEM
A1100-PT TRIPLEX PISTON PUMP

DRAWING NO. P196-BA1

SIZE D

BILL OF MATERIAL			
ITEM	REQ'D	COMM NO	DESCRIPTION
1	1	10-300-310	BASE, PUMP AND MOTOR
2*	1	74-450-830	MOTOR, ELECTRIC *
3	1	06-510-607	GUARD, COUPLING
4	1	68-103-991	COUPLING, FLEX
5	1	64-182-010	PUMP, OIL
6	1	16-385-012	EXCHANGER, HEAT
7	1	10-303-148	BASE, HEAT EXCHANGER





BILL OF MATERIAL			
ITEM	REQ'D	COMM NO	DESCRIPTION
8		45-194-207	SHIM SET (1 REQ'D) CONSISTS OF THE FOLLOWING
	3	45-194-208	SHIM (.020" THICK)
	3	06-015-462	SHIM (16 GAUGE)
9	4	75-633-707	CAPSCREW, 1/4–20 X 5/8 HEX HEAD HT
10	16	75-633-740	CAPSCREW, 3/8–16 X 1-1/4 HEX HEAD HT
11	4	75-634-335	CAPSCREW, 3/8–16 X 5/8 HEX HEAD HT
12	4	75-634-354	CAPSCREW, 1/2–13 X 1-3/4 HEX HEAD HT
13	4	75-770-470	LOCKWASHER, 1/4 EXTERNAL SHAKEPROOF
14	22	75-770-472	LOCKWASHER, 3/8 EXTERNAL SHAKEPROOF
15	4	75-770-474	LOCKWASHER, 1/2 EXTERNAL SHAKEPROOF
16	10	75-510-404	NUT, 3/8–16 HEX
17	4	75-510-308	NUT, 1/2–13 HEAVY HEX
18	1	45-804-150	U-BOLT, 3/8–16
19**	1	64-212-832	FILTER, FULL FLOW OIL **
20	1	64-212-003	FILTER, MAGNETIC OIL
21	2	78-256-532	GAUGE (0–200 P.S.I.), 2-1/2 OIL PRESSURE
22	1	78-684-250	THERMOMETER (0–250° F.)
23	1	86-061-008	BUSHING, 3/4 X 1/4 C.I. 150# BLK HEX PIPE
24	1	86-061-010	BUSHING, 3/4 X 1/2 C.I. 150# BLK HEX PIPE
25	1	86-061-014	BUSHING, 1" X 1/2 C.I. 150# BLK HEX PIPE
26	4	86-061-015	BUSHING, 1" X 3/4 C.I. 150# BLK HEX PIPE
27	1	86-061-026	BUSHING, 1-1/2 X 3/4 C.I. 150# BLK HEX PIPE
28	1	86-061-027	BUSHING, 1-1/2 X 1" C.I. 150# BLK HEX PIPE
29	1	57-000-006	COUPLING, 3/4 150# TAPPED PIPE
30	1	78-176-002	ELBOW, 1/4 X 90° 2000# FORGED STEEL PIPE
31	3	86-336-106	ELBOW, 3/4 X 90° 150# BLK M.I. PIPE
32	1	86-336-108	ELBOW, 1" X 90° 150# BLK M.I. PIPE
33	2	86-342-108	ELBOW, 1" X 90° 150# BLK M.I. STREET
34	1	86-657-208	UNION, 1" 150# FEMALE GROUND JOINT
35	1	86-485-508	PLUG, 1" C.I. SOLID SQUARE HEAD PIPE
36	2	86-543-106	TEE, 3/4 150# M.I. PIPE
37	2	86-543-108	TEE, 1" 150# M.I. PIPE
38	1	86-600-008	COUPLING, 3/4 X 1/4 150# M.I. REDUCING
39	1	86-600-014	COUPLING, 1" X 1/2 150# M.I. REDUCING
40	1	86-422-002	NIPPLE, 1/4 X CLOSE SCH 80 BW STEEL PIPE
41	1	86-425-001	NIPPLE, 3/4 X CLOSE SCH 40 BW STEEL PIPE
42	3	86-426-001	NIPPLE, 1" X CLOSE SCH 40 BW STEEL PIPE
43	2	86-424-007	NIPPLE, 1/2 X 2-1/2 SCH 40 BW STEEL PIPE
44	1	86-425-005	NIPPLE, 3/4 X 2" SCH 40 BW STEEL PIPE
45	1	86-425-009	NIPPLE, 3/4 X 3"SCH 40 BW STEEL PIPE
46	2	86-425-013	NIPPLE, 3/4 X 4" SCH 40 BW STEEL PIPE
47	1	86-425-017	NIPPLE, 3/4 X 5" SCH 40 BW STEEL PIPE
48•	2	86-426-013	NIPPLE, 1" X 4" SCH 40 BW STEEL PIPE
49	3	64-289-324	ADAPTER, 3/4 MALE TO FEMALE SWIVEL HOSE
50	1	45-804-717	HOSE, 3/4 X 12-1/2
51	4	64-271-012	COUPLING, 3/4 MALE HOSE
52	2	64-271-226	COUPLING, 1" MALE HOSE
53†		64-270-012	HOSE, 3/4 †
54††		64-270-016	HOSE, 1" ††
55	1	45-124-506	KEY (3/16 X 3/16 X 1")
56	1	64-212-848	ELEMENT, OIL FILTER

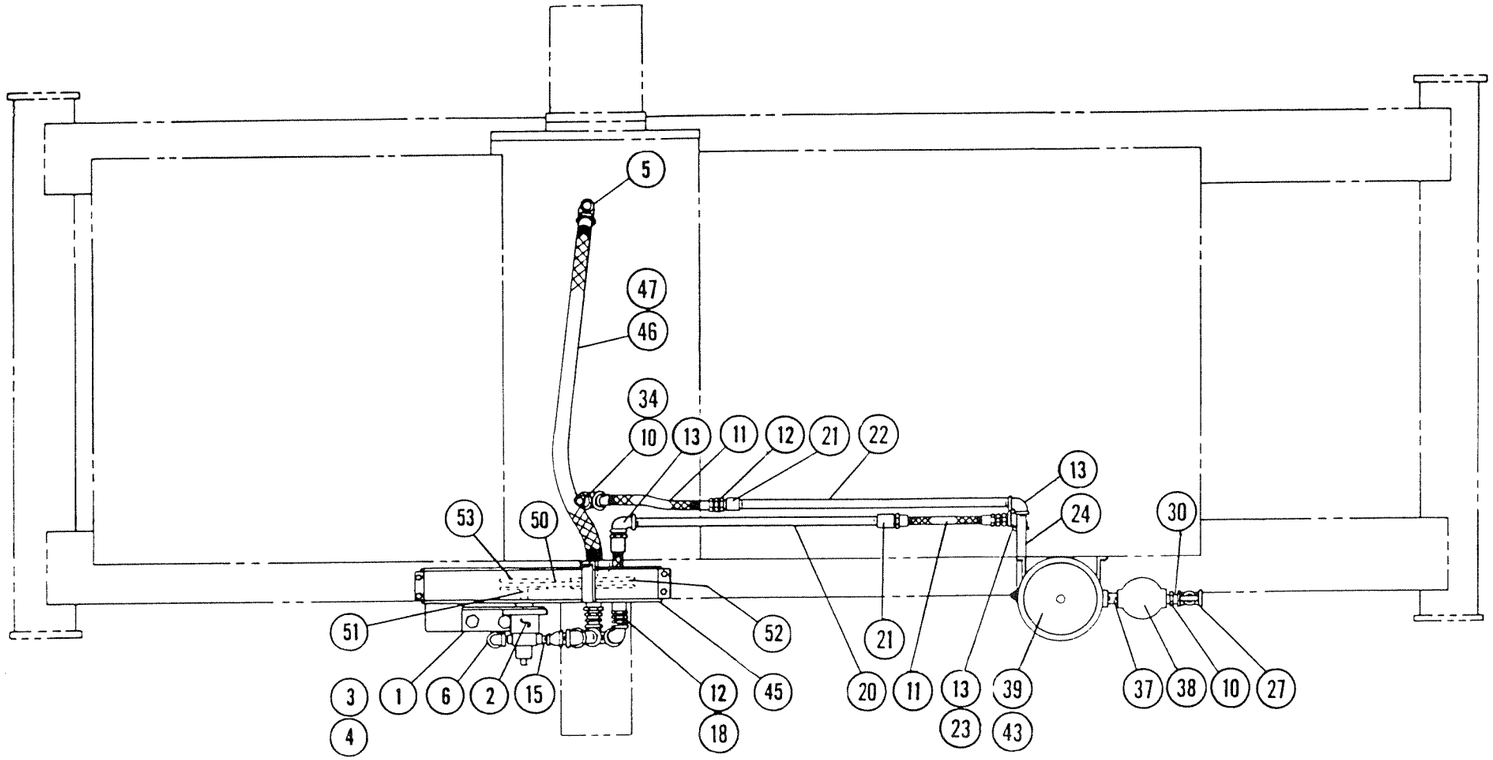
* ELECTRIC MOTR IS : 1-1/2 HP, 900 RPM, 230/460 VAC, 3 PHASE, 60 HERTZ EXPLOSION PROOF ELECTRIC MOTOR WITH 184-T FRAME.
** USE ITEM 56 AS THE REPLACEMENT FILTER ELEMENT FOR THE OIL FILTER.
† 3/4 I.D. MEDIUM–HIGH PRESSURE OIL RESISTANT HOSE WITH COUPLINGS HAVING 1" MALE THREADS ON EACH END. PLEASE SPECIFY OVER-ALL LENGTH WHEN ORDERING.
†† 1" I.D. MEDIUM–HIGH PRESSURE OIL RESISTANT HOSE WITH COUPLINGS HAVING 1" MALE PIPE THREADS ON EACH END. PLEASE SPECIFY OVER ALL LENGTH WHEN ORDERING.

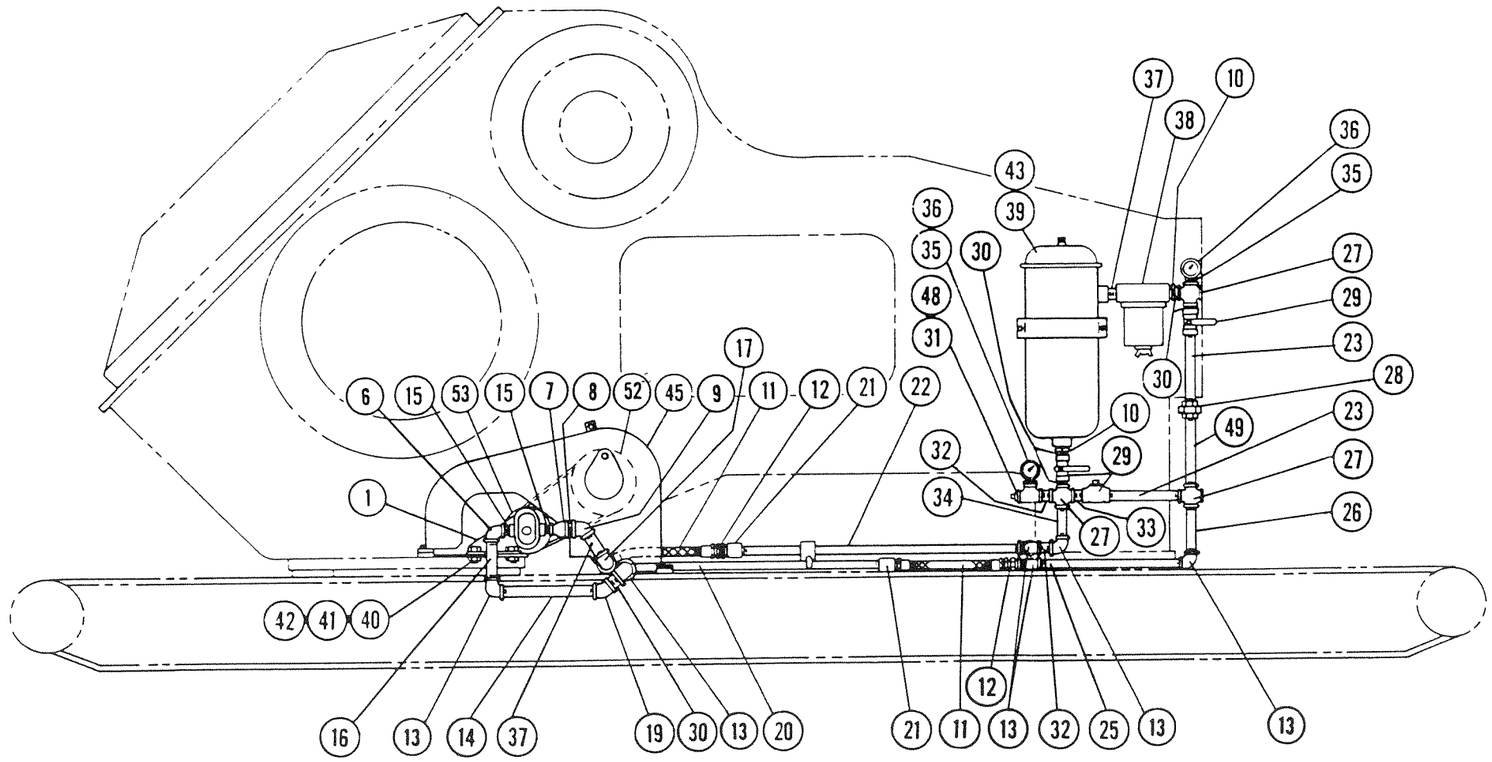
ISSUE DATE: 3–15–90

NATIONAL - OILWELL

EXTERNAL LUBRICATION SYSTEM
(ELECTRICAL)
A1100-PT TRIPLEX PISTON PUMP

		DRAWING NO.	SIZE
		P206-AF1	D





BILL OF MATERIAL			
ITEM	REQ'D	COMM NO	DESCRIPTION
1	1	10-303-018	BRACKET, OIL PUMP
2	1	64-182-042	PUMP, OIL
3	4	75-634-314	CAPSCREW, 3/8–16 X 1" HEX HEAD HT
4	4	75-770-472	LOCKWASHER, 3/8 EXTERNAL SHAKEPROOF
5	1	86-342-108	ELBOW, 1" X 90° 150# BLK M.I. STREET
6	1	86-359-016	ELBOW, 1/2 X 3/4 X 90° 150# BLK M.I. REDUCING
7	1	86-600-014	COUPLING, 1/2 X 1" 150# BLK M.I. REDUCER
8	1	86-426-001	NIPPLE, 1" X CLOSE SCH 40 BW STEEL PIPE
9	1	86-341-006	ELBOW, 1" X 45° 150# BLK M.I. PIPE
10	2	86-061-015	BUSHING, 1" X 3/4 C.I. 150# BLK HEX PIPE
11	2	45-171-917	HOSE, 3/4 X 12"
12	3	64-289-324	ADAPTER, 3/4 MALE UNION
13	8	86-336-106	ELBOW, 3/4 X 90° 150# BLK M.I. PIPE
14	1	86-425-031	NIPPLE, 3/4 X 11 SCH 40 BW STEEL PIPE
15	2	86-424-001	NIPPLE, 1/2 X CLOSE SCH40 BW STEEL PIPE
16	1	86-425-013	NIPPLE, 3/4 X 4" SCH 40 BW STEEL PIPE
17	1	86-336-108	ELBOW, 1" X 90° 150# BLK M.I. PIPE
18	1	45-804-050	HOSE, 3/4 X 26-3/4"
19	1	86-339-106	ELBOW, 3/4 X 45° 150# BLK M.I. PIPE
20	1		PIPE, 3/4 X 30" SCH 40 BW STEEL
21	2	57-000-006	COUPLING, 3/4 TAPPED PIPE
22	1		PIPE, 3/4 X 28" SCH 40 BW STEEL
23	3	86-425-025	NIPPLE, 3/4 X 8" SCH 40 BW STEEL PIPE
24	1	86-425-029	NIPPLE, 3/4 X 10" SCH 40 BW STEEL PIPE
25	1		PIPE, 3/4 X 16" SCH 40 BW STEEL
26	1	86-425-019	NIPPLE, 3/4 X 5-1/2 SCH 40 BW STEEL PIPE
27	3	86-240-106	CROSS, 3/4 150# M.I. PIPE
28	1	86-641-106	UNION, 3/4 150# M.I. FEMALE GOUND JOINT
29	3	83-899-802	VALVE, 3/4 BALL
30	5	86-425-001	NIPPLE, 3/4 X CLOSE SCH 40 BW STEEL PIPE
31	1	86-485-506	PLUG, 3/4 C.I. SOLID SQUARE HEAD PIPE
32	2	86-425-005	NIPPLE, 3/4 X 2" SCH 40 BW STEEL PIPE
33	1	86-425-007	NIPPLE, 3/4 X 2-1/2 SCH 40 BW STEEL PIPE
34	2	86-425-013	NIPPLE, 3/4 X 4" SCH 40 BW STEEL PIPE
35	2	86-061-008	BUSHING, 3/4 X 1/4 C.I. 150# BLK HEX PIPE
36	2	78-256-532	GAUGE, (0 – 200 P.S.I.), OIL PRESSURE
37	2	86-426-009	NIPPLE, 1" X 3" SCH 40 BW STEEL PIPE
38	1	64-212-003	FILTER, MAGNETIC OIL
39*	1	64-212-832	FILTER, FULL FLOW OIL *
40	2	75-068-020	CAPSCREW, 5/8–11 X 1-3/4 HEX HEAD HT
41	2	75-510-408	NUT, 5/8–11 HEX
42	2	75-770-475	LOCKWASHER, 5/8 EXTERNAL SHAKEPROOF
43	1	64-212-848	ELEMENT, OIL FILTER
44		64-270-030	GUARD, SPRING HOSE
45	1	10-303-003	GUARD, BELT
46	1	45-804-103	HOSE, 1" X 42"
47	1	64-271-234	ADAPTER, 1" HOSE
48	1	86-543-106	TEE, 3/4 150# M.I. PIPE
49	1	45-804-245	NIPPLE, 3/4 X 8-1/4 SCH 40 BW STEEL PIPE
50	1	68-028-560	V-BELT, 3V-560
51	2	45-803-774	KEY (3/16 X 3/16 X 1-3/4)
52	1	68-097-451	SHEAVE, 10.6 O.D. 3-V DOUBLE GROOVE DRIVE
53	1	68-097-458	SHEAVE, 6.5 O.D. 3-V SINGLE GROOVE DRIVEN

* USE ITEM 43 FOR THE REPLACEMENT FILTER ELEMENT FOR THE OIL FILTER.

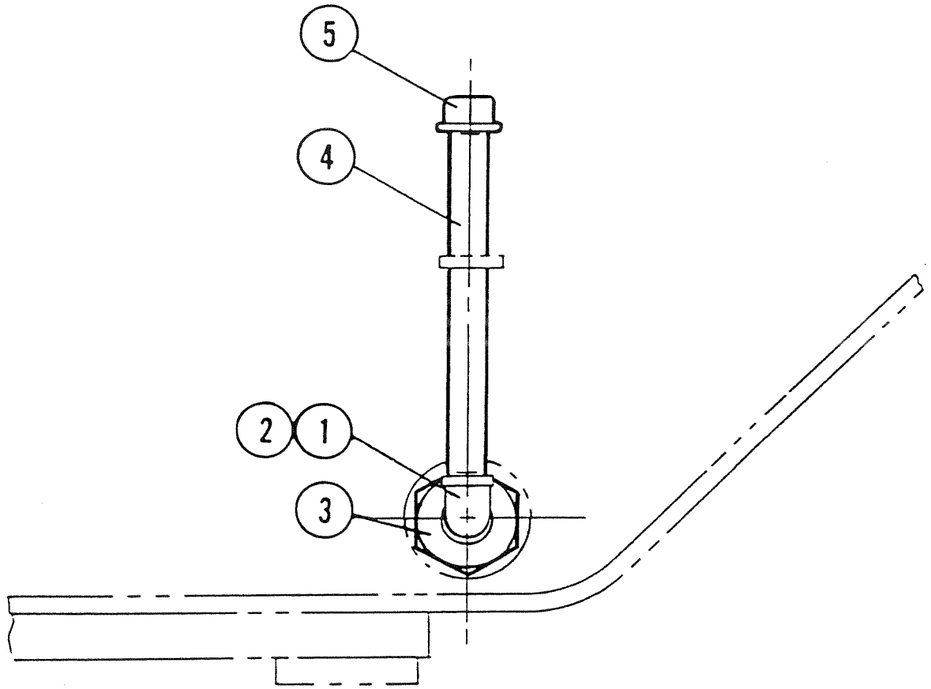
ISSUE DATE: 3–15–90

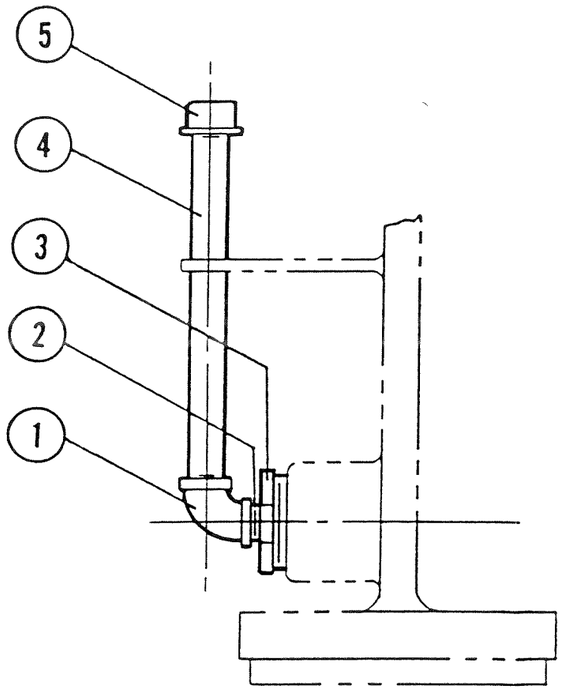
NATIONAL - OILWELL

EXTERNAL LUBRICATION SYSTEM
(MECHANICAL)
A1100-PT TRIPLEX PISTON PUMP

		DRAWING NO.	SIZE
		P196-AJ1	D

BILL OF MATERIAL			
ITEM	REQ'D	COMM NO	DESCRIPTION
1	1	86-336-104	ELBOW, 1/2 X 90° 150# BLK M.I. PIPE
2	1	86-424-001	NIPPLE, 1/2 X CLOSE SCH 40 BW STEEL PIPE
3	1	86-061-032	BUSHING, 2" X 1/2 C.I. 150# BLK HEX PIPE
4	1	86-424-029	NIPPLE, 1/2 X 10" SCH 40 BW STEEL PIPE
5	1	06-109-007	STICK, OIL LEVEL DIP





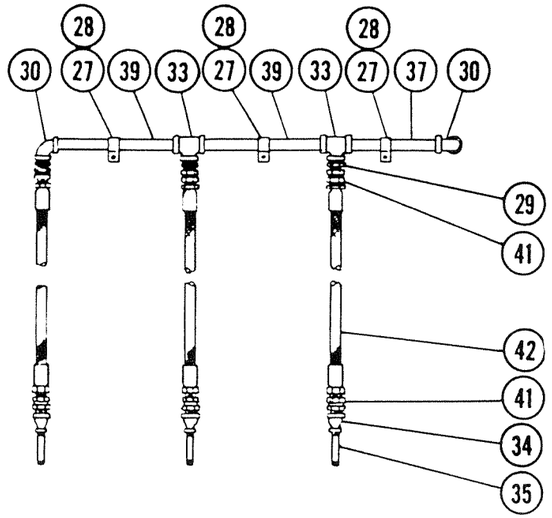
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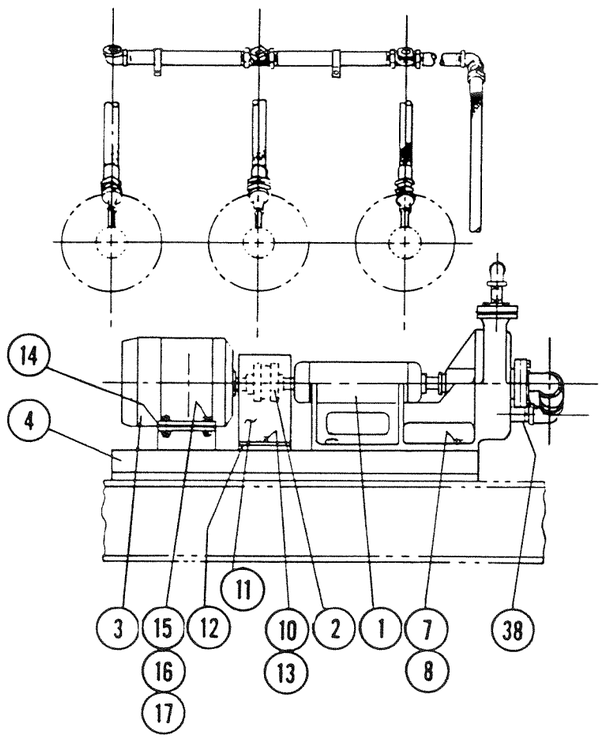
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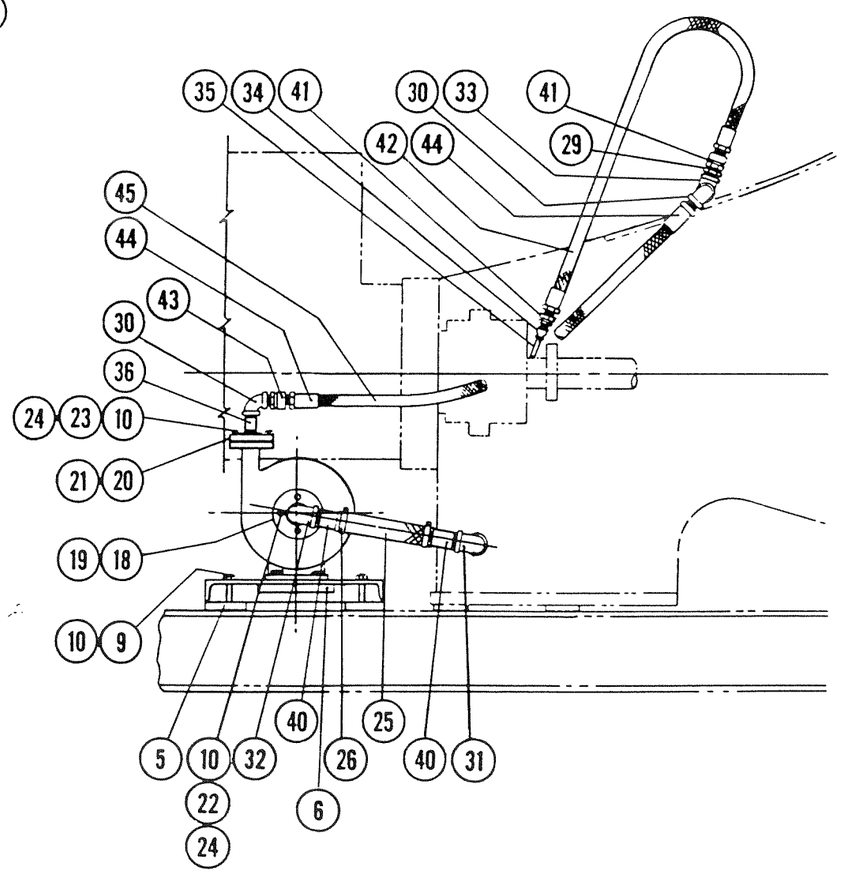
NATIONAL - OILWELL

OIL LEVEL PIPING ASSEMBLY
A1100-PT TRIPLEX PISTON PUMP

		DRAWING NO.	SIZE
		P185-AK1	B







BILL OF MATERIAL			
ITEM	REQ'D	COMM NO	DESCRIPTION
1	1	95-999-050	PUMP, 1" X 1-1/2 X 8-1/2 CENTRIFUGAL
2	1	68-103-964	COUPLING, FLEX
3*	1	74-450-826	MOTOR, ELECTRIC *
4	1	10-300-305	BASE, MOTOR AND PUMP
5	1	06-511-186	SUPPORT, BASE
6	2	06-510-597	PLATE, FLUSHING PUMP MOUNTING
7	4	75-634-361	CAPSCREW, 5/8–11 X 2" HEX HEAD HT
8	4	75-770-475	LOCKWASHER, 5/8 EXTERNAL SHAKEPROOF
9	4	75-634-350	CAPSCREW, 1/2–13 X 3" HEX HEAD HT
10	14	75-770-474	LOCKWASHER, 1/2 EXTERNAL SHAKEPROOF
11	1	10-300-299	GUARD, FLEX COUPLING
12	2	10-300-300	BLOCK, TAPPED
13	2	75-634-344	CAPSCREW, 3/8–16 X 2" HEX HEAD HT
14		29-001-153	SHIM SET (4 REQ'D) CONSISTS OF THE FOLLOWING
	2		SHIM (.002" THICK)
	2		SHIM (.005" THICK)
	2		SHIM (.010" THICK)
	2		SHIM (.015" THICK)
	1		SHIM (.0312" THICK)
	1		SHIM (.0625" THICK)
15	4	75-634-344	CAPSCREW, 3/8–16 X 2" HEX HEAD HT
16	4	75-510-404	LOCKNUT, 3/8–16 HEX STEEL
17	4	75-770-472	LOCKWASHER, 3/8 EXTERNAL SHAKEPROOF
18	1	98-029-012	FLANGE, 1-1/2 150# RAISED FACE THREADED
19	1	78-208-036	GASKET, 1-1/2 FLANGE
20	1	98-029-006	FLANGE, 1" 150# RAISED FACE THREADED
21	1	78-208-012	GASKET, 1" FLANGE
22	4	75-635-043	CAPSCREW, 1/2–13 X 2-1/4 HEX HEAD HT
23	4	75-634-353	CAPSCREW, 1/2–13 X 2" HEX HEAD HT
24	8	75-510-406	NUT, 1/2–13 HEX
25	1	99-287-816	HOSE, 2" I.D. X 10" RADIATOR
26	2	99-093-080	CLAMP, HOSE
27	3	64-228-103	STRAP, 1" PIPE
28	3	75-634-317	CAPSCREW, 5/16 –18 X 1/2 HEX HEAD HT
29	3	86-061-014	BUSHING, 1" X 1/2 C.I. 150# BLK HEX PIPE
30	3	86-336-108	ELBOW, 1" X 90° 150# BLK M.I. PIPE
31	1	86-336-112	ELBOW, 1-1/2 X 90° 150# BLK M.I. PIPE
32	1	86-342-112	ELBOW, 1-1/2 X 90° 150# BLK M.I. STREET
33	2	86-543-108	TEE, 1" 150# M.I. PIPE
34	3	86-600-005	COUPLING, 1/2 X 1/4 150# M.I. BLK REDUCING
35	3	86-422-007	NIPPLE, 1/4 X 2-1/2 SCH 40 BW STEEL PIPE
36	1	86-426-009	NIPPLE, 1" X 3" SCH 40 BW STEEL PIPE
37	1	86-426-025	NIPPLE, 1" X 8" SCH 40 BW STEEL PIPE
38	1	86-428-015	NIPPLE, 1-1/2 X 4-1/2 SCH 40 BW STEEL PIPE
39	2		PIPE, 1" X 13-1/8 SCH 40 BW STEEL
40	2		NIPPLE, 1-1/2 X 7-1/2 SCH 40 BW STEEL PIPE
41	6	64-289-320	UNION, 1/2 MALE ADAPTER
42	3	06-510-761	HOSE 1/2 X 48"
43	1	64-289-326	UNION, 1" MALE ADAPER
44	2	64-271-226	COUPLING, 1" MALE HOSE
45	1	64-270-016	HOSE, 1" X 51"

11

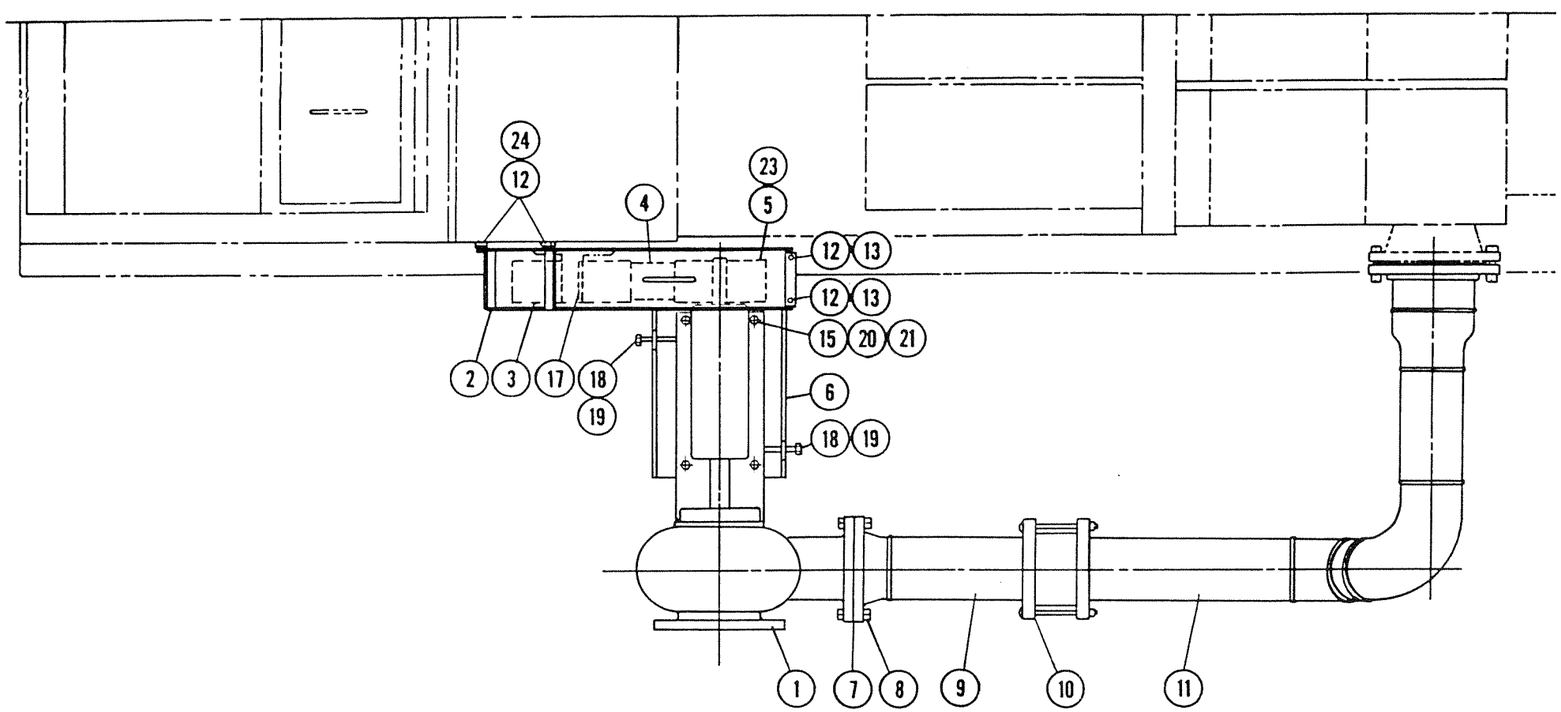
* ELECTRIC MOTOR IS: 3 HP, 1800 RPM, 230 / 460 VAC, 3 PHASE , 60 HERTZ EXPLOSION PROOF ELECTRIC MOTRO WITH 182-T FRAME.

ISSUE DATE: 3–15–90

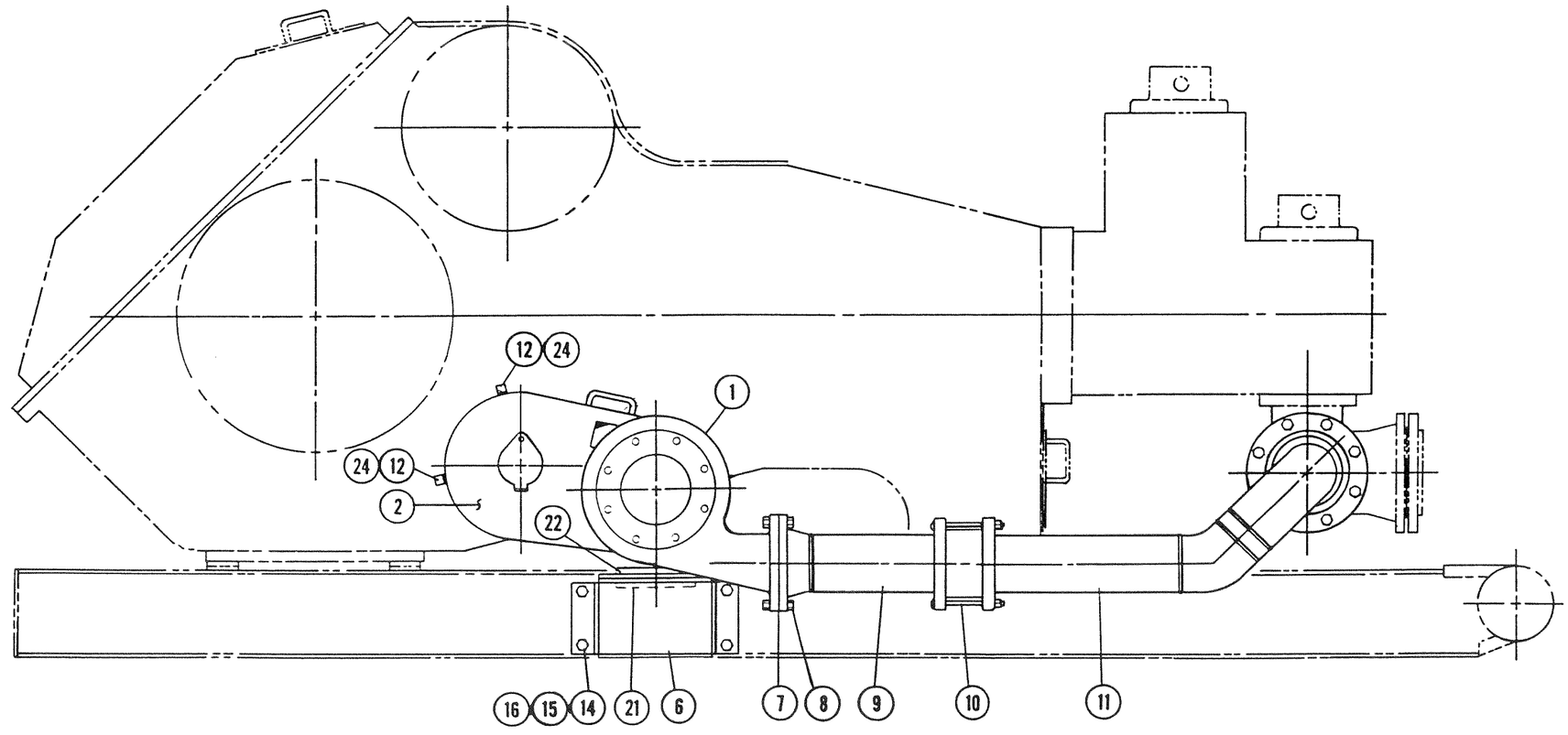
NATIONAL - OILWELL

LINER FLUSHING SYSTEM
A1100-PT TRIPLEX PISTON PUMP

		DRAWING NO.	SIZE
		P206-AG1	D



BILL OF MATERIAL			
ITEM	REQ'D	COMM NO	DESCRIPTION
1	1	95-999-067	PUMP, 6 X 8 "R" CENTRIFUGAL CHARGING
2	1	10-303-110	GUARD, BELT
3	1	68-097-466	SHEAVE, 11.8 O.D. 5-V SIX GROOVE DRIVE
4	6	68-029-063	V-BELT, 5V-630
5	1	68-639-839	SHEAVE, 9.75 O.D. 5-V SIX GROOVE DRIVEN
6	1	10-303-112	BRACKET, PUMP MOUNTING
7	1	45-802-038	GASKET, FLANGE
8	8	75-659-066	STUD WITH NUTS, 3/4 –10 X 3" ALL THREAD
9	1	06-509-871	MANIFOLD, 6" PUMP
10	1	78-106-063	COUPLING, 6" DRESSER SLEEVE
11	1	10-303-111	PIPE, 6" FABRICATED SUCTION CHARGING
12	4	75-770-472	LOCKWASHER, 3/8 EXTERNAL SHAKEPROOF
13	2	75-634-313	CAPSCREW, 3/8–16 X 3/4 HEX HEAD HT
14	4	75-635-028	CAPSCREW, 5/8–11 X 5" HEX HEAD HT
15	8	75-770-475	LOCKWASHER, 5/8 EXTERNAL SHAKEPROOF
16	4	75-510-408	NUT, 5/8–11 HEX
17	1	45-802-800	KEY (1/2 X 1/2 X 2")
18	2	75-634-536	SCREW, 1/2–13 X 4" SQUARE HEAD CUP POINT SET
19	2	75-510-506	NUT, 1/2–13 HEX JAM
20	4	75-634-367	CAPSCREW, 5/8–11 X 3-1/4 HEX HEAD HT
21	2	10-300-093	RETAINER
22	2	10-300-094	BLOCK, SHIM
23	1	68-646-038	HUB, 1-7/8 X 1/2 X 1/4 "E" QD SHEAVE
24	2	75-634-335	CASCREW, 3/8–16 X 5/8 HEX HEAD HT



ISSUE DATE: 3–15–90

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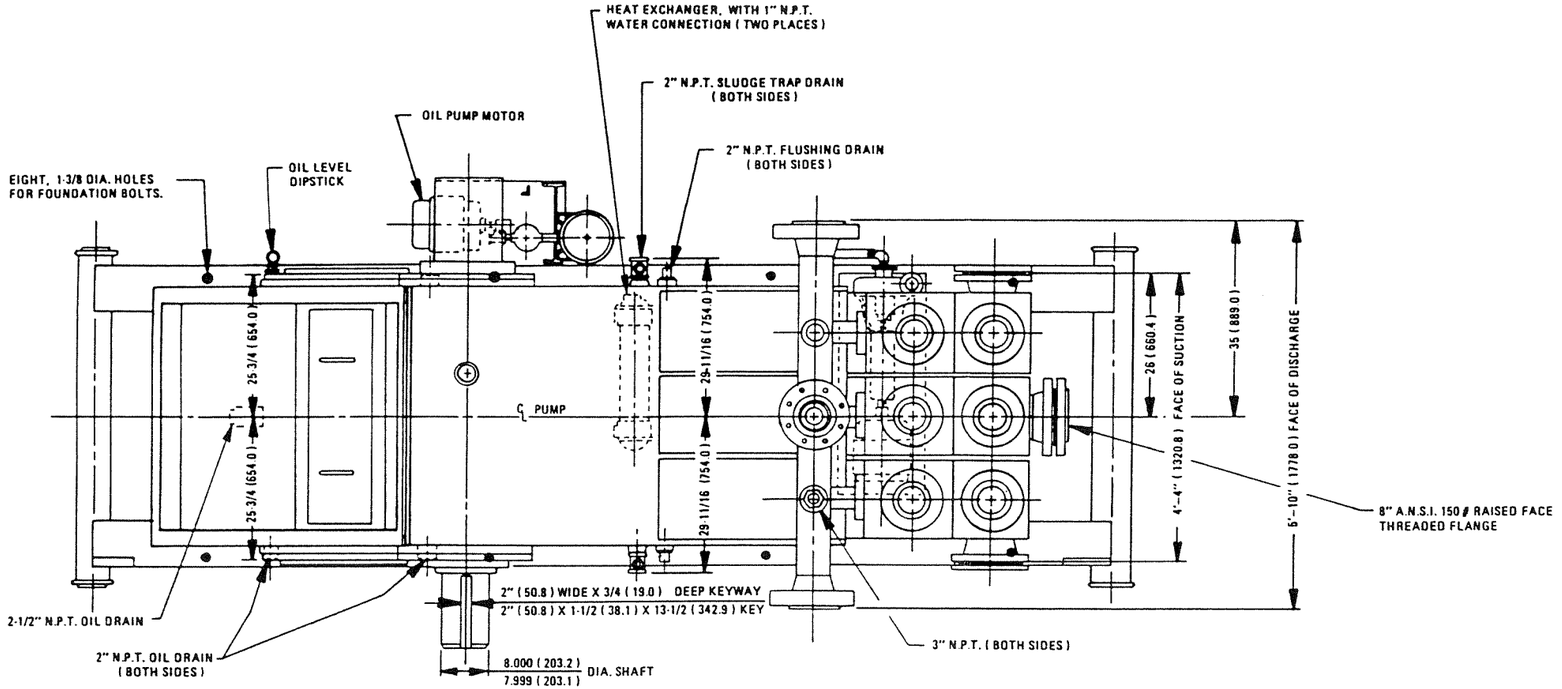
CHARGING PUMP ASSEMBLY
A1100-PT TRIPLEX PISTON PUMP

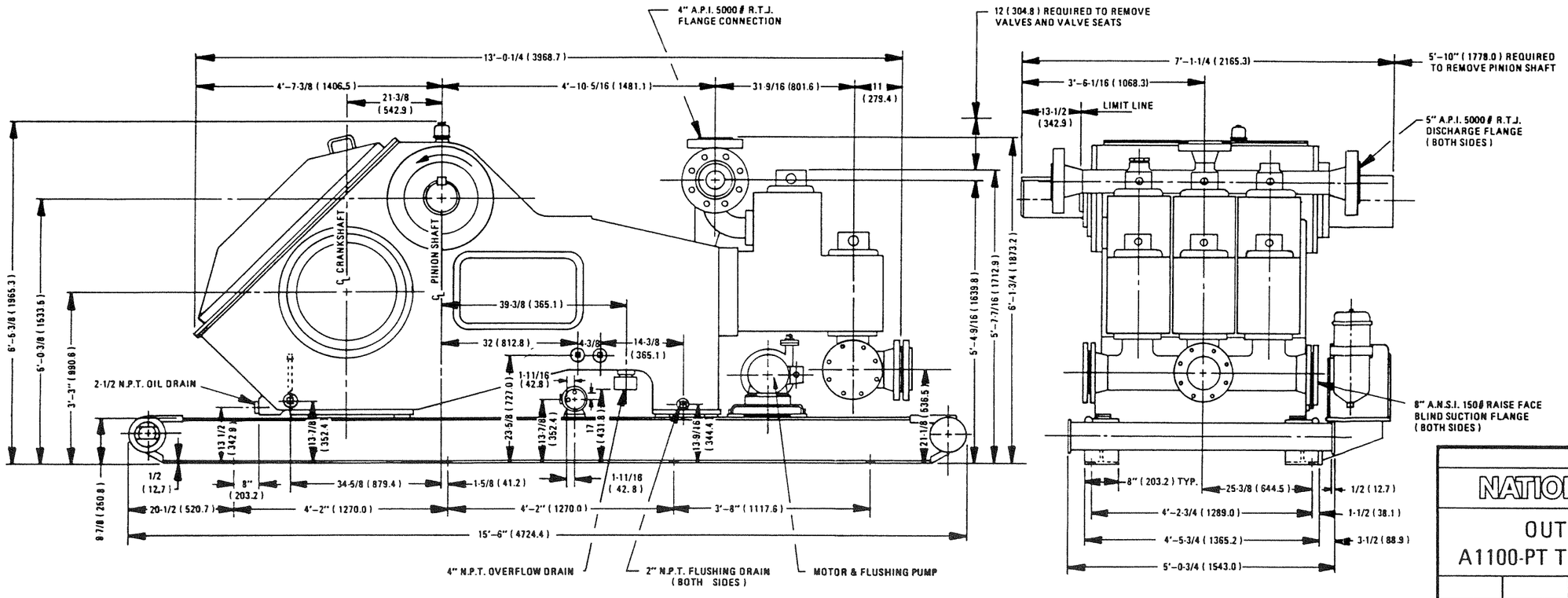
DRAWING NO. P206-AD1

SIZE D

NOTE: THESE DIMENSIONS ARE ACCURATE BUT SHOULD NOT BE USED FOR INSTALLATION UNLESS CERTIFIED. DIMENSIONS IN BRACKETS ARE MEASURED IN MILLIMETERS.

PUMP, AS SHOWN, IS FOR RIGHT HAND DRIVE. LEFT HAND DRIVE IS OPPOSITE THAT SHOWN.





ISSUE DATE: 3—15—90

NATIONAL - OILWELL

OUTLINE DRAWING
A1100-PT TRIPLEX PISTON PUMP

		DRAWING NO.	SIZE
		P206-F2	D