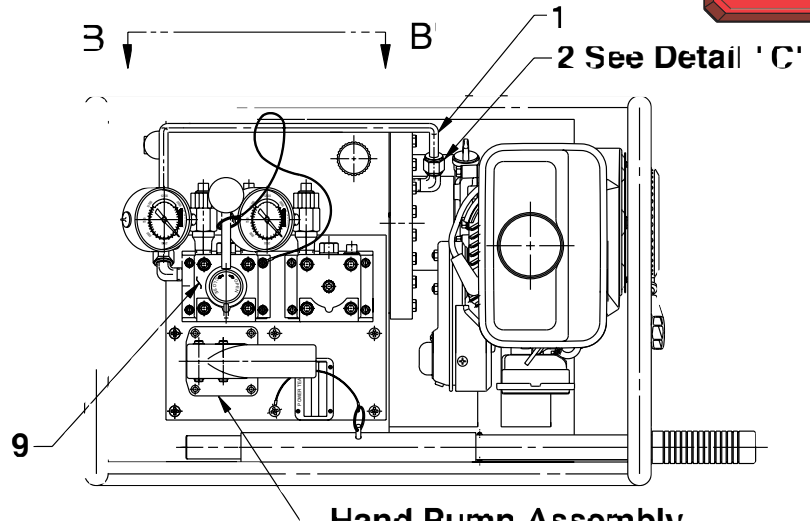
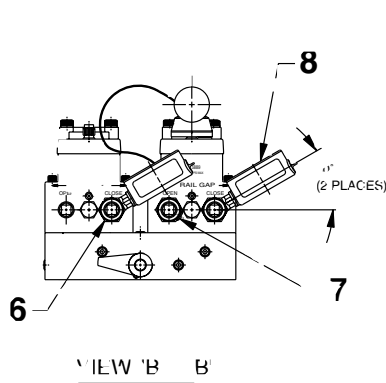
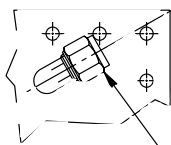
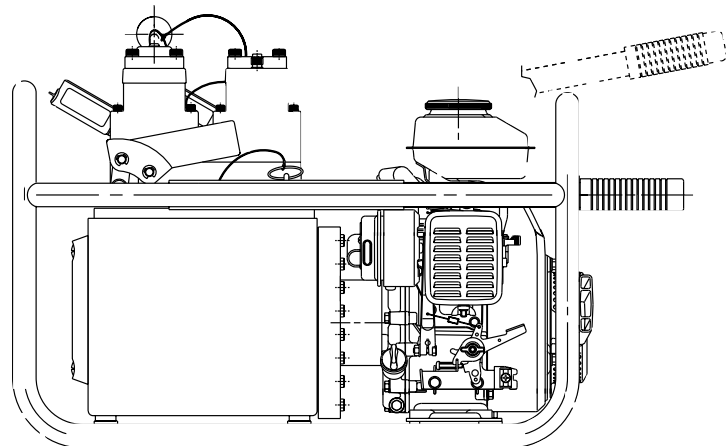
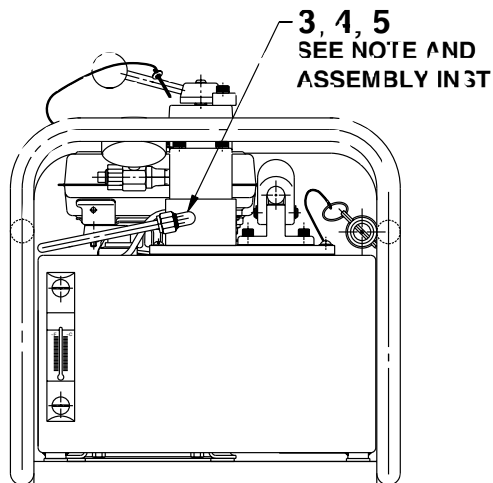


HYDRAULIC PUMP

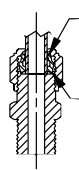
To Parts List



Hand Pump Assembly
See back sheet 5 of 9.



3, 4, 5
SEE NOTE AND
ASSEMBLY INST



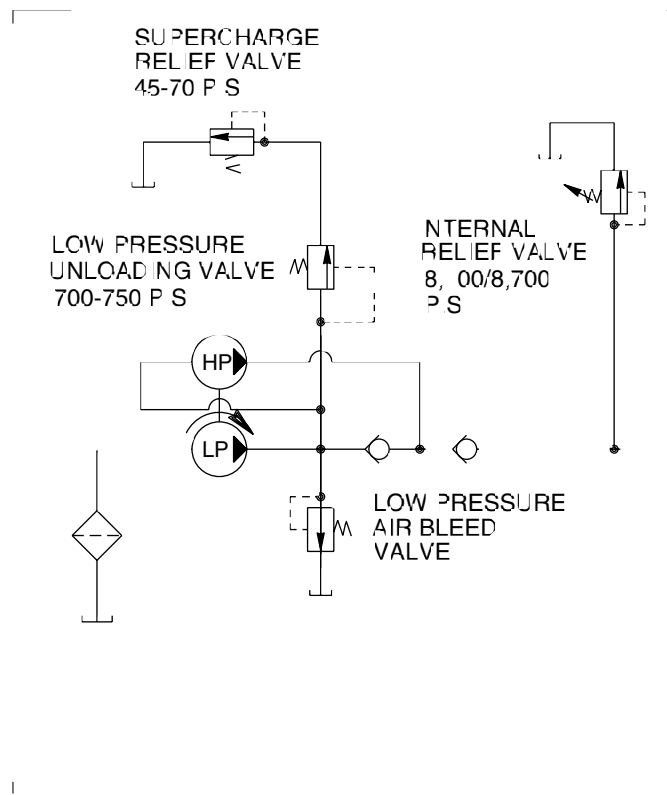
BE SURE MALE THREADS ON FITTING
ARE COMPLETELY COVERED BY THE NUT
(MINIMUM)

ASSEMBLY INSTRUCTIONS
1 LUBRICATE THE THREADS AND THE
CAMMING AREA OF THE NUT
NOTE: REMOVE NUT AND FERRULE
REPLACE WITH STAINLESS STEEL
NUT AND FERRULE.

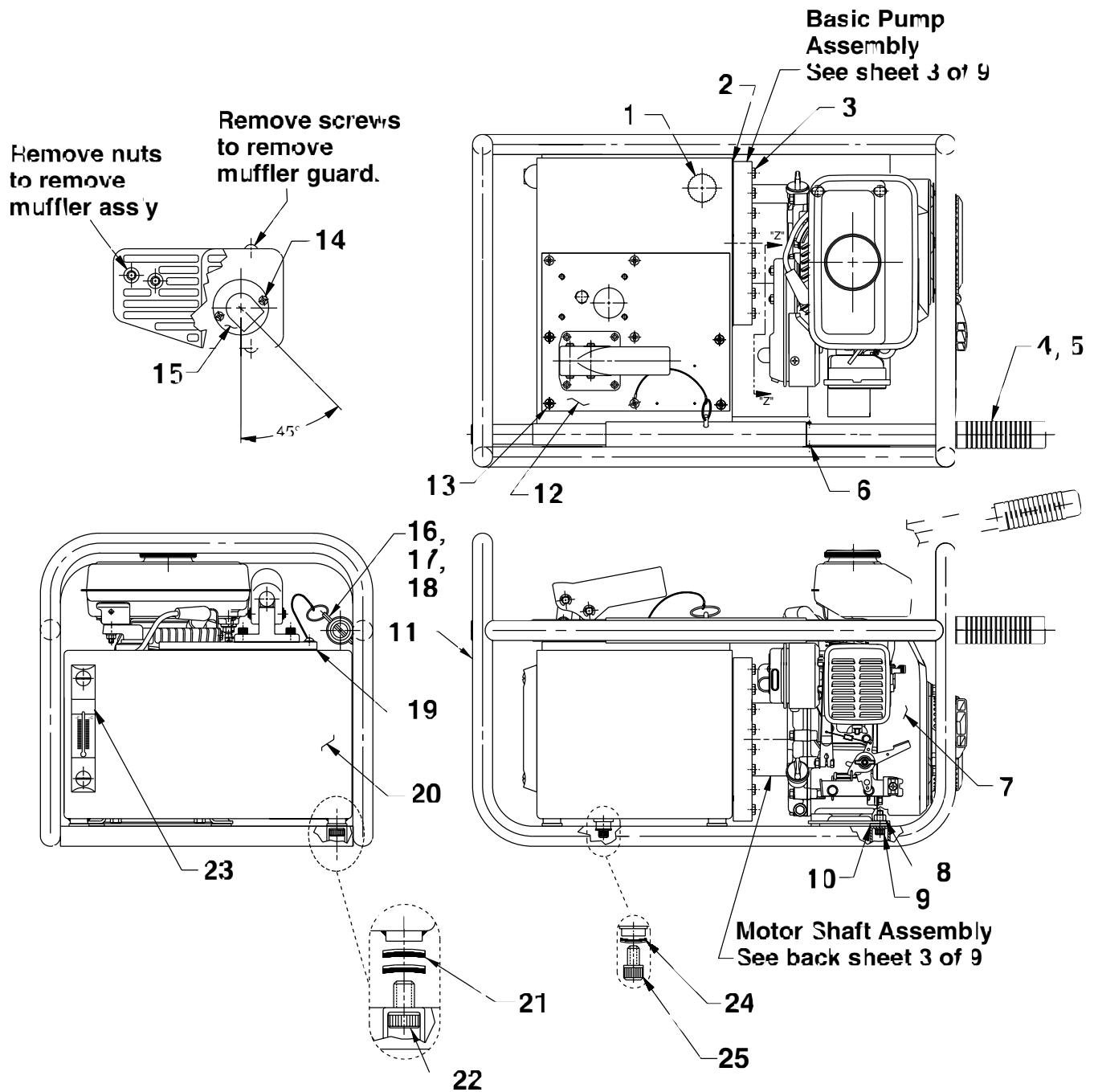
Item No.	Part No.	No. Req'd	Description
1	252150	1	Tube, Oil
2	10665	1	Fitting, Elbow (90 Deg. 1/4 NPTF; See Detail "C")
3	10475	1	Fitting, Elbow (90 Deg. 1/8 NPTF)
4	214270	2	Sleeve, Tube (3/8 Dia.)
5	214269	2	Fitting, Nut Tube (3/8 Tube)
6	9670	3	Fitting, Tee (1/4 x 3/8 x 3/8)
7	10479	1	Fitting, Plug (1/4 NPTF)
8	9040	2	Gauge (10000 P.S.I. 2-1/2" Dia.)
9	421439	1	Valve, Dual (See Sheet 7 of 9)



HYDRAULIC SCHEMATIC



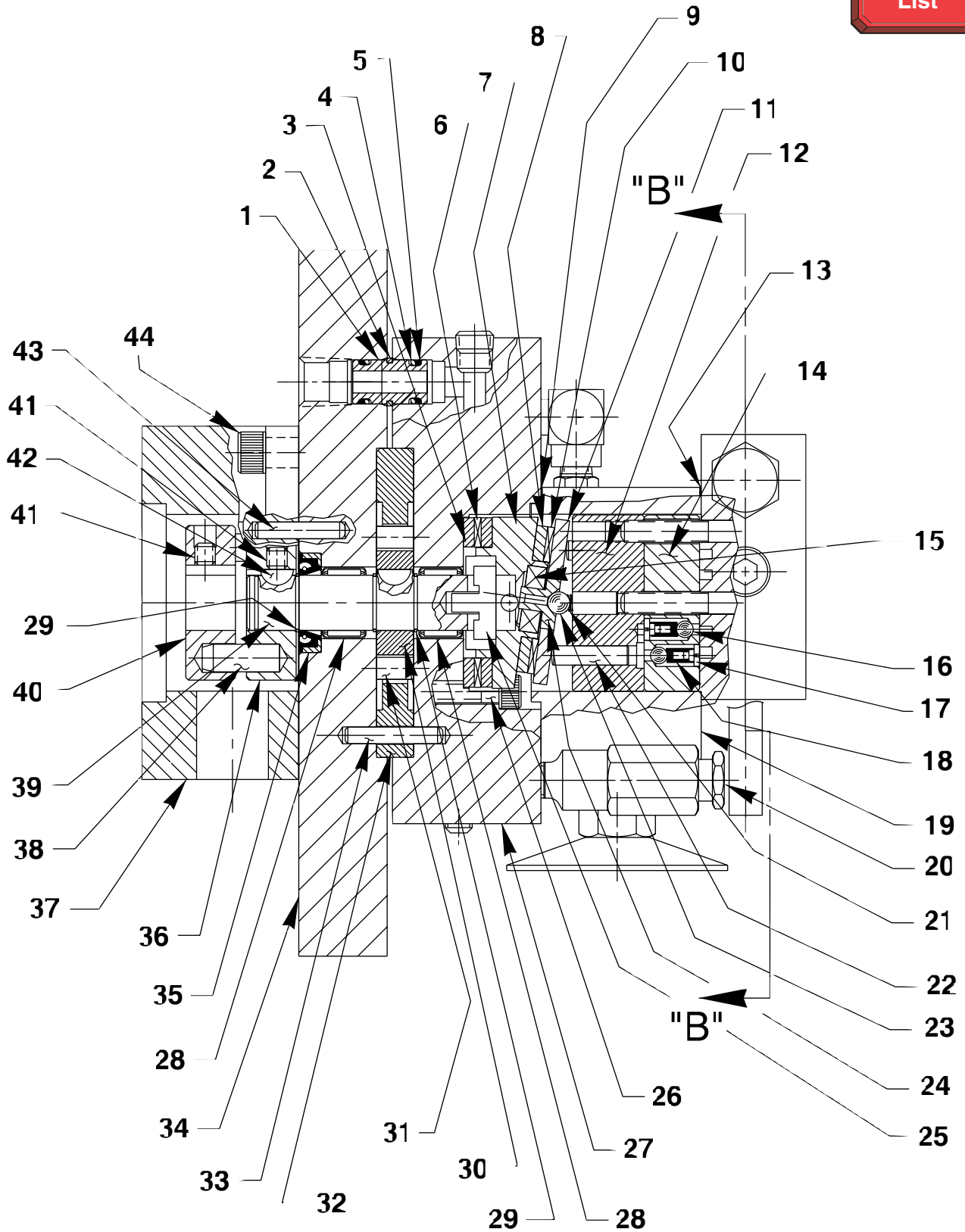
SPECIAL PUMP W/O VALVE

To Parts
List

Item No.	Part No.	No. Req'd	Description
1	252298	1	Plug
2	421243	1	Gasket (Note: Apply a bead of silicon gasket sealer on the sealing surfaces at assembly.)
3	10019	28	Cap Screw (1/4-20 UNC X 1-1/4 Lg.; Apply #242 Loctite)
4	351227	1	Handle
5	11390	1	Flex Grip Handle
6	10973	1	Pin (Note: Position pin with equal distance showing on each side of handle.)
7	251506	1	Gas Engine
8	13116	4	Locknut
9	11013	4	Cap Screw (5/16-18 X 1" Lg.)
10	251384	4	Rubber Bushing
11	65150YE3	1	Frame Weldment
12	65152	1	Pump only w/o handle (See back sheet 5 of 11)
13	10177	8	Machine Screw (1/4-20 UNC X 3/4 Lg.)
14	13532	2	Screw (#8-32 X 3/8 Lg.)
15	251505	1	Muffler Deflector
16	14949	2	Terminal
17	251447	.66 ft.	Aircraft Cable
18	251723	1	Quick Release Pin
19	421260	1	Gasket
20	65151YE3	1	Reservoir
21	252092	8	Rubber Bushing
22	213836	4	Cap Screw (1/2-20 UNF x 3/4 Lg.)
23	350431	1	Fluid/Temperature Gauge
24	19779	1	Seal Washer (Note: Place washer metal side against screw head as shown.)
25	10412	1	Cap Screw (3/8-16 x 1/2 Lg.)



BASIC PUMP ASSEMBLY

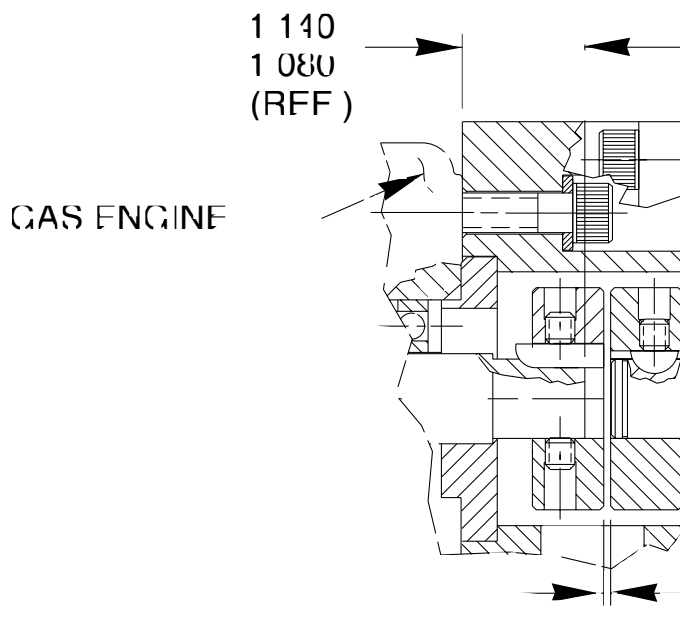
**To Parts
List**

Parts List, Form No. 101773, Back sheet 3 of 9

Item No.	Part No.	No. Req'd	Description
1	21094	1	Bushing
2	251124	1	Retaining Ring (External)
3	11227	2	Bearing Race
4	11863	2	Backup Washer (1/2 X 3/8 X 1/16)
5	10268	2	O-ring (1/2 X 3/8 X 1/16)
6	11228	1	Thrust Bearing
7	350487	1	Angle Plate
8	15432	1	Bearing Race
9	202691	1	Upper Gasket
10	15431	1	Needle Bearing
11	23548	1	Top Plate
12	41006	1	Barrel
13	202690	1	Lower Gasket
14	41007	1	Valve Head
15	11814	1	Ball Bearing
16	12223	4	Ball (3/16 Dia.)
17	24549	4	Ball Guide
18	10445	4	Compression Spring (5/32 O.D. X 3/4 Lg.)
19	350442	1	Spacer
20	38009	1	Relief Valve Assembly (Set at 8,100/8,700 PSI)
21	10361	1	Compression Spring (1/4 O.D. X 1" Lg.)
22	20775	2	Piston (7/32 dia.)
23	10375	1	Steel Ball (1/4 Dia.)
24	23547	1	Bearing Top Plate
25	200397	1	Key

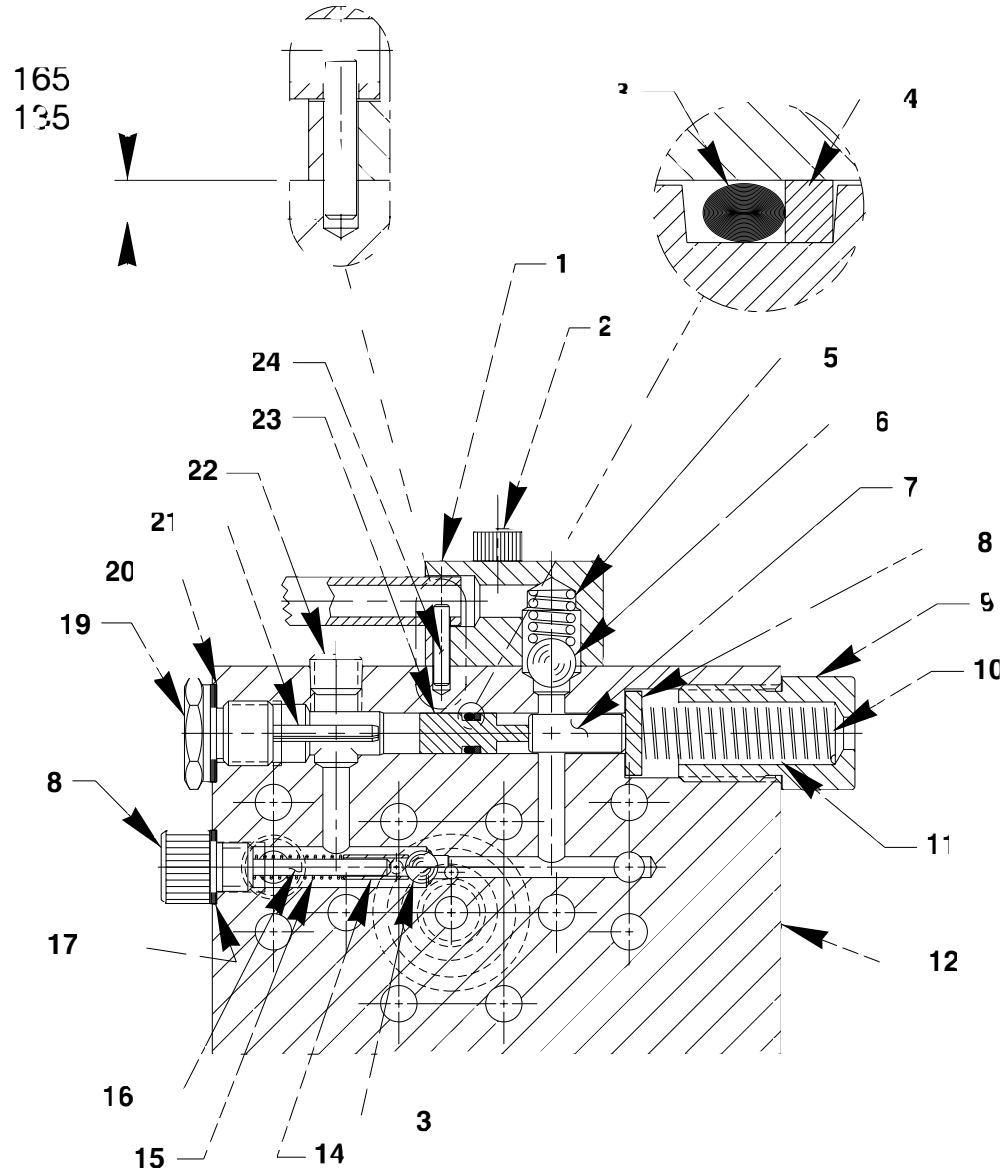


Item No.	Part No.	No. Req'd	Description
26	10854	4	Cap Screw (1/4-20UNC X 1-3/4 Lg.; Torque to 110/120 in. lbs.)
27	58773	1	Pump Body
28	12192	2	Needle Bearing
29	12178	3	Retaining Ring
30	24632	1	Rotor
31	12193	8	Roller
32	350500	1	Pump Ring (Adjust for minimum flow.)
33	211843	1	Dowel Pin
34	65117	1	Cover Plate
35	12194	1	Oil Seal
36	27001	1	Coupling
37	420818-1	1	Engine Mounting Plate (Locate assembly sight hole as shown.)
38	250800	2	Nylon Pin (Note: Lubricate with anti-seize thread lubricant type 13 or equivalent.)
39	202875	1	Shaft
40	27002	1	Coupling (See below)
41	10133	2	Set Screw (10-24 UNC X 1/4 Lg.; Apply a locking adhesive [Loctite 222 or equiv.] to both coupling set screws)
42	12179	2	Woodruff Key
43	211843	1	Dowel Pin
44	10030	4	Cap Screw (5/16-18 UNC X 3/4 Lg.)



**Note: Assemble coupling (Item #40)
to engine shaft to dimension
indicated.**

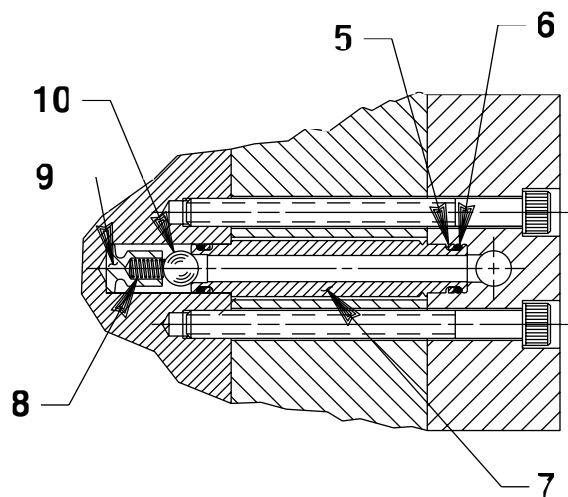
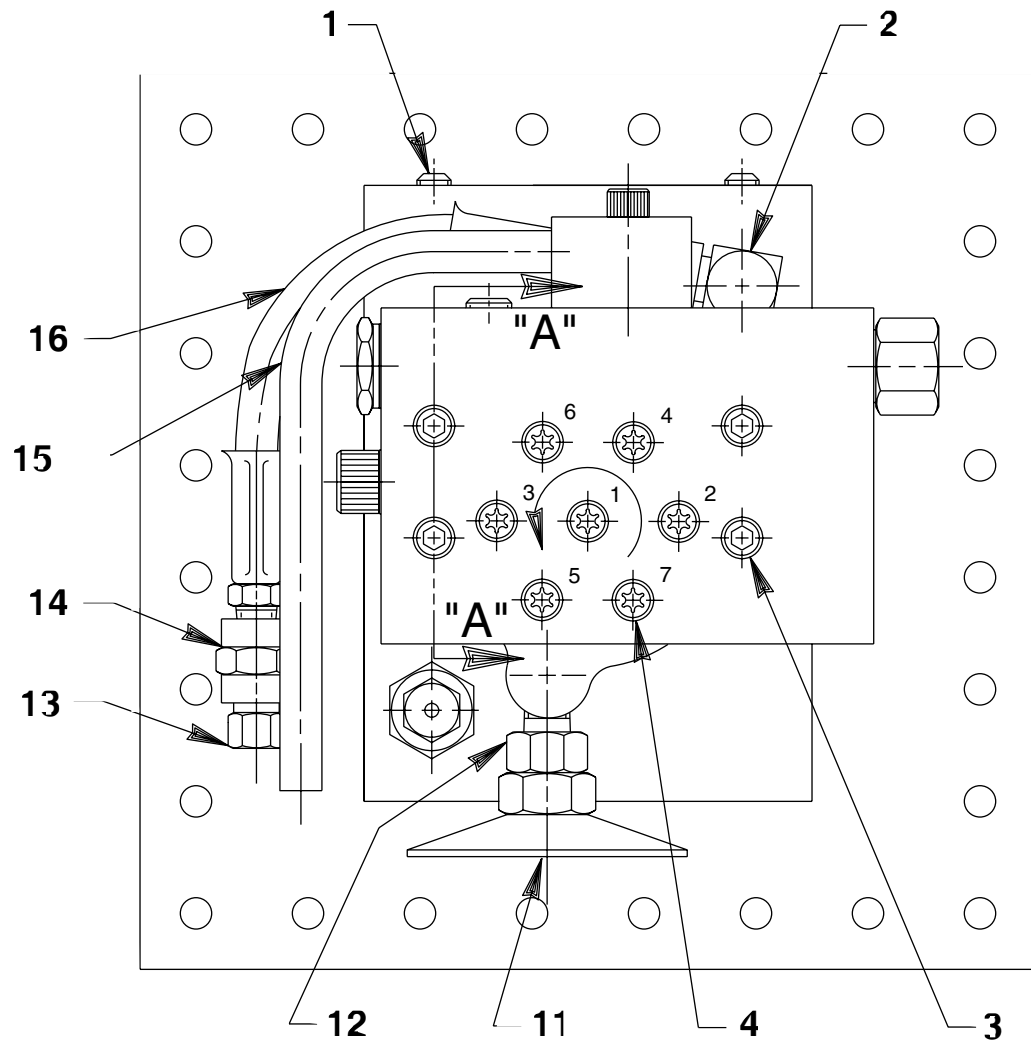
SECTION B-B



Item No.	Part No.	No. Req'd	Description
1	350501	1	Valve Body
2	10020	1	Cap Screw (1/4-20 UNC X 1-1/4 Lg.)
3	10265	1	O-ring (5/16 X 3/16 X 1/16)
4	15174	1	Backup Ring
5	10425	1	Compression Spring (3/8 O.D. X 3/4 Lg.)
6	10378	1	Steel Ball (3/8 Dia.)
7	250800	1	Dowel Pin (Note: Install with radius end of pin towards piston [Item #23].)
8	214692	1	Disk
9	308430	1	Unloading Valve Fitting
10	16470	1	Compression Spring (19/64 O.D. x 1-3/4 Lg.)
11	214694	1	Compression Spring (1/2 O.D. X 2-1/8 Lg.)

Item No.	Part No.	No. Req'd	Description
12	64308	1	End Plate
13	10375	1	Steel Ball (1/4 Dia.)
14	201998	1	Sleeve
15	14431	1	Compression Spring (3/16 O.D. X 3/4 Lg.)
16	12571	1	Pin
17	12042	1	Copper Washer (9/16 X 3/8 X 1/32)
18	29690	1	Screw (Torque to 175/185 in. lbs.)
19	250743	1	Ball Stop (Torque to 440/460 in lbs.)
20	14874	1	Copper Washer (.700 X 1/2 X 1/32)
21	11566	1	Roll Pin
22	10427	2	Pressure Plug (1/8 NPTF)
23	250954	1	Piston
24	11560	1	Pin

BOTTOM VIEW AND SECTION A-A

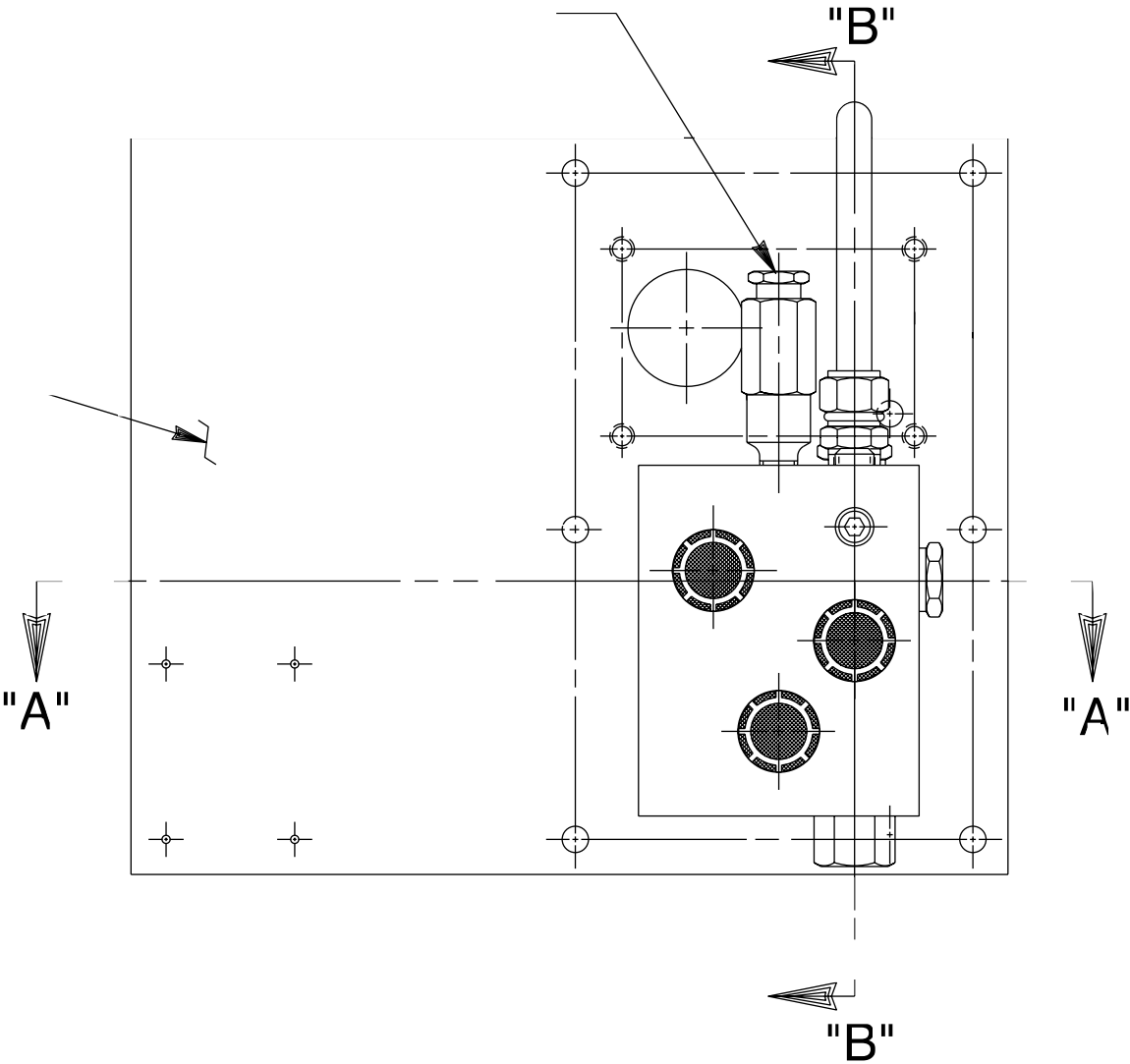


SECTION A-A

Item No.	Part No.	No. Req'd	Description
1	15130	2	Plug (1/16 NPTF)
2	13229	1	Street Elbow
3	11956	4	Cap Screw (1/4-20 UNC X 3" Lg.; Torque to 110/120 in. lbs.)
4	16747	7	Screw (1/4-28 UNF X 1-3/4 Lg.; Lubricate under head and on threads. Torque to 165/175 in. lbs. Torque in sequence shown.)
5	15085	2	Backup Ring
6	10267	2	O-ring (7/16 X 5/16 X 1/16)
7	202688	1	Tube
8	15141	1	Spring (3/16 O.D. X 5/8 Lg.)
9	202681	1	Ball Stop
10	10377	1	Steel Ball (5/16 Dia.)
11	29682	1	Strainer
12	250801	1	Intake Tube
13	306957	1	Air Bleed Valve
14	18841	1	Pipe Connector
15	350444	1	Drain Tube
16	350842	1	Hydraulic Hose

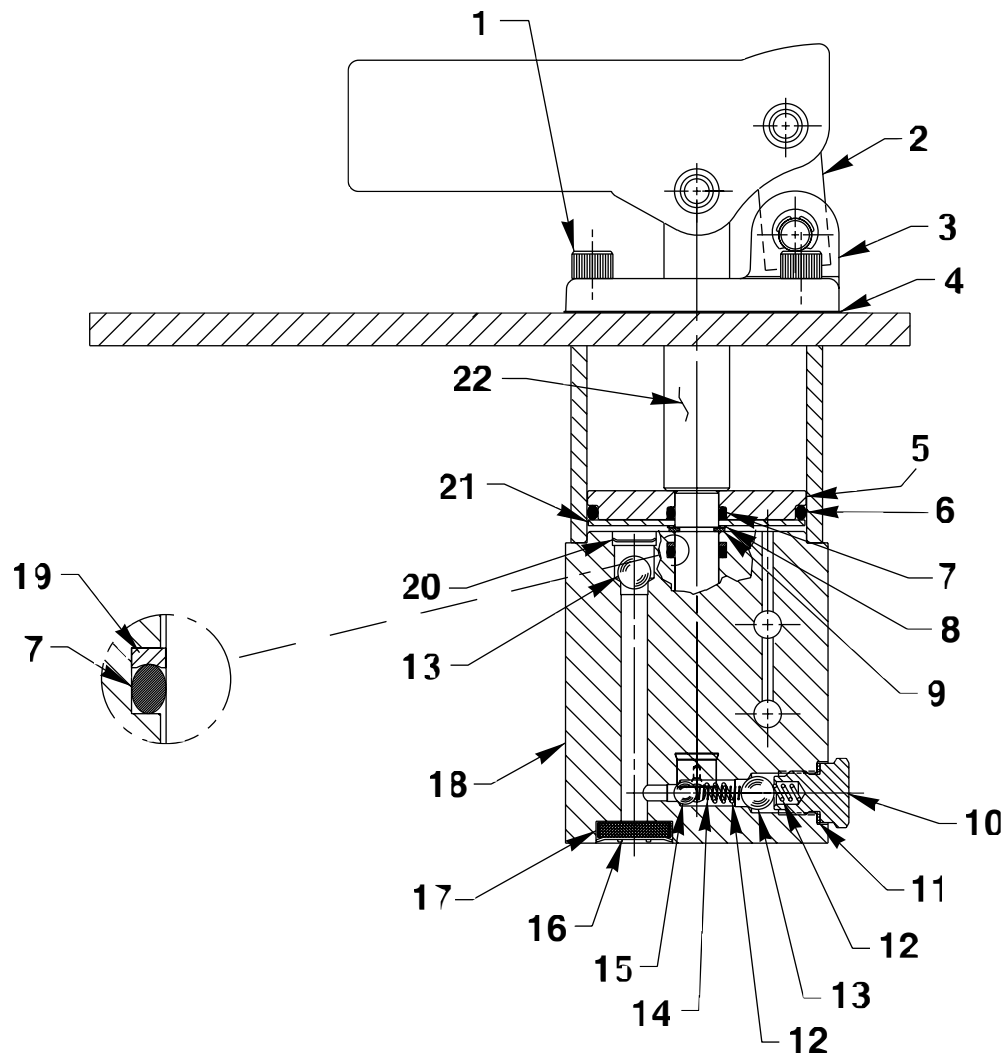


HYDRAULIC HAND PUMP W/O HANDLE



Item No.	Part No.	No. Req'd	Description
1	58790	1	Cover Plate
2	21278-80	1	Relief Valve Assembly (Set at 8,100/8,700 PSI)

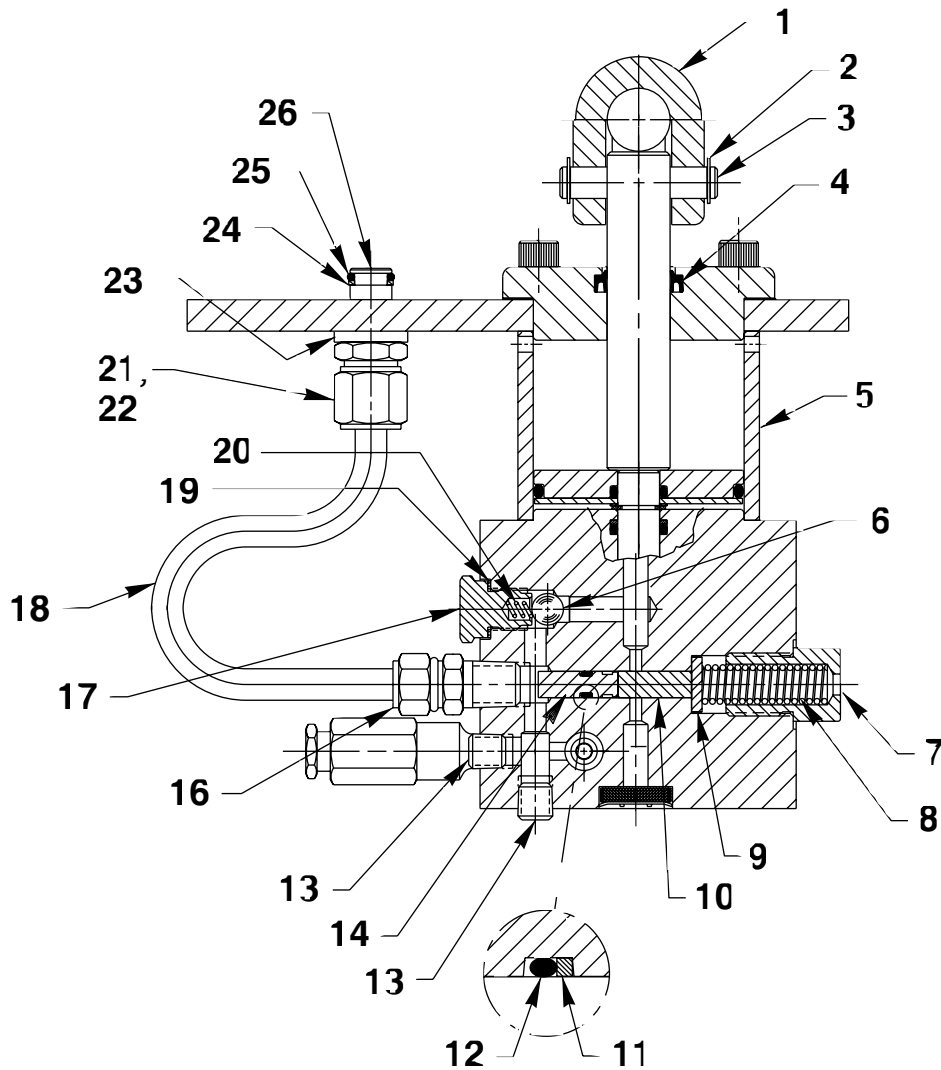
HAND PUMP - SECTION A-A



Item No.	Part No.	No. Req'd	Description
1	250671	4	Screw (5/16-24 UNF X 3-1/2 Lg.; Torque to 240/250 in. lbs. Note: Torque in increments of 100 in. lbs.)
2	21603	1	Pivot Block
3	420978BK2	1	End Cap
4	22143	1	End Cap Gasket
5	420343	1	Piston
6	10295	1	O-ring (2-1/2 x 2-1/4 x 1/8)
7	10271	2	O-ring (11/16 X 1/2 X 3/32)
8	215727	1	Washer (.955 x .510 x .300)
9	11581	1	Retaining Ring (External)
10	305975	1	Valve Screw (Torque to 350/370 in. lbs.)
11	14874	1	Soft Copper Washer (.700 X 1/2 X 1/32)

Item No.	Part No.	No. Req'd	Description
12	10444	2	Compression Spring (3/16 I.D. X 13/32 Lg.)
13	10378	3	Steel Ball (3/8 Dia.)
14	211797	1	Spring (5/32 O.D. X 5/8 Lg.)
15	10375	1	Steel Ball (1/4 Dia.)
16	214586	3	Retaining Ring (Internal)
17	214578	3	Filter (Insert screen with cupped side in.)
18	64202	1	Pump Body
19	213987	1	Backup Washer (11/16 X 1/2 X 3/64)
20	250670	2	Retaining Ring
21	250626	1	Pressure Washer
22	351039	1	High Pressure Piston

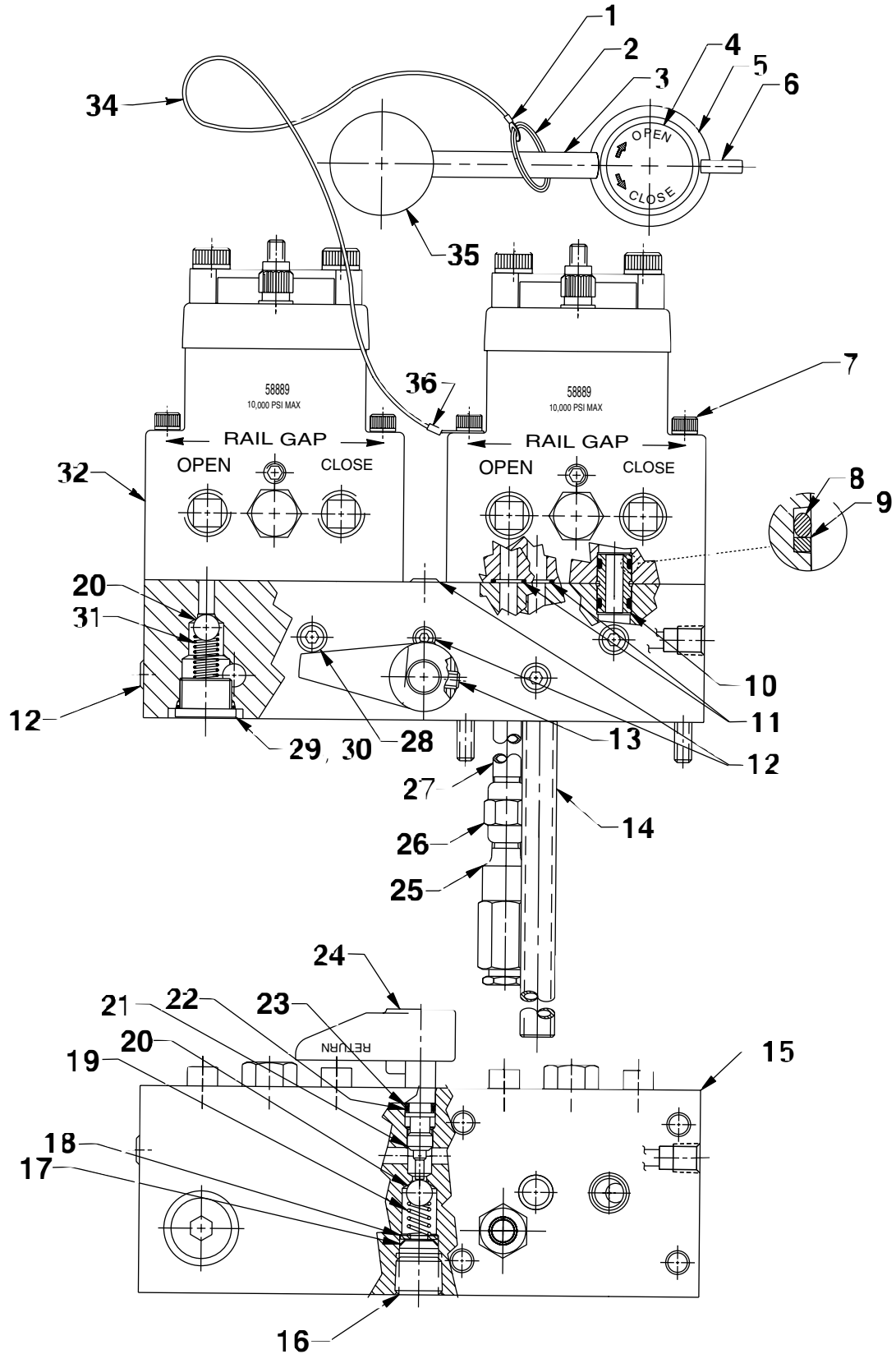
HAND PUMP - SECTION B-B



Item No.	Part No.	No. Req'd	Description
1	30701	1	Lever
2	11032	6	Retaining Ring
3	21609	3	Clevis Pin
4	251728	1	Rod Wiper
5	350302	1	Spacer
6	10378	1	Steel Ball (3/8 Dia.)
7	308430	1	Unloading Valve Fitting
8	10367	1	Compression Spring (1/2 O.D. X 2" Lg.)
9	214692	1	Disc
10	250672	1	Dowel Pin
11	15174	1	Backup Ring
12	10265	1	O-ring (5/16 X 3/16 X 1/16)
13	10427	2	Pressure Plug (1/8 NPTF)
14	250658	1	Unloading Valve Piston

Item No.	Part No.	No. Req'd	Description
16	10661	1	Straight Fitting
17	305975	1	Valve Screw (Torque to 350/370 in. lbs.)
18	351250	1	Oil Line
19	14874	1	Soft Copper Washer (.700 X 1/2 X 1/32)
20	10444	1	Compression Spring (3/16 I.D. X 13/32 Lg.)
21	10430	1	Tube Sleeve
22	10431	1	Tube Nut (Torque to 40/50 ft. lbs.)
23	21484	1	Spacer
24	11863	1	Backup Washer (1/2 X 3/8 X 1/16)
25	10268	1	O-ring (1/2 X 3/8 X 1/16)
26	20787	1	Valve Connector (Torque to 20/30 ft. lbs.)

DUAL MANUAL VALVE

**To Parts
List**

Item No.	Part No.	No. Req'd	Description
1	11208	1	Terminal
2	251756	1	Key Ring
3	21639	1	Stud (Note: Apply Loctite #242 to threads [both ends].)
4	251733	1	Decal
5	420996	1	Stem End
6	10714	1	Pin
7	251077	4	Cap Screw (1/4-20 UNC x 4-3/4 Lg.)
8	10268	4	O-ring (1/2 X 3/8 X 1/16)
9	11863	4	Backup Washer (1/2 X 3/8 X 1/16)
10	21094	2	Bushing
11	10301	4	O-ring (5/8 X 1/2 X 1/16)
12	15130	3	Plug (1/16 NPTF)
13	10556	2	Set Screw (1/4-20 UNC X 1/4 Lg.; Torque to 30/50 in. lbs.)
14	200609	1	Drain Tube
15	65165	1	Manifold Block
16	16232	1	Pipe Plug (3/8 NPTF)
17	11088	1	Retaining Ring
18	11089	1	Washer (#10 bolt)
19	11024	1	Compression Spring (1/4 O.D. X 5/8 Lg.)

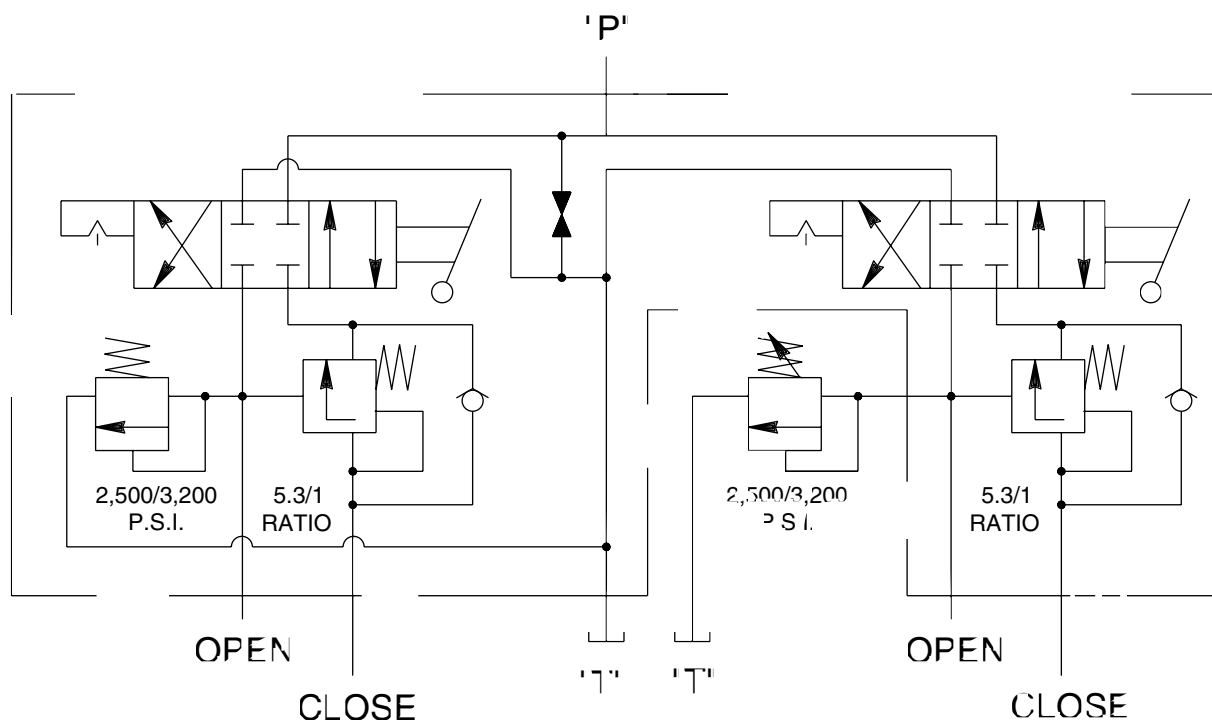
Item No.	Part No.	No. Req'd	Description
20	10378	2	Steel Ball (3/8 Dia.)
21	304849	1	Release Valve Screw
22	15085	1	Backup Ring
23	10267	1	O-ring (7/16 X 5/16 X 1/16)
24	213109	1	Handle (See assembly instructions below.)
25	21278-28	1	Relief Valve Assembly (Set at 2,700/3000 PSI)
26	18841	1	Straight Fitting
27	14463	1	Pipe Fitting
28	14972	4	Pipe Plug (1/4 NPTF)
29	214014	1	Drive Plug (3/4-16 UNF)
30	215193	1	O-ring (13/16 X 5/8 X 3/32)
31	10428	1	Compression Spring (1/2 O.D. X 3/4 Lg.)
32	58889	2	Manual Valve Assembly (See sheet 7 of 8)
34	251447	1 ft.	Aircraft Cable
35	211911	1	Plastic Knob
36	14949	1	Terminal



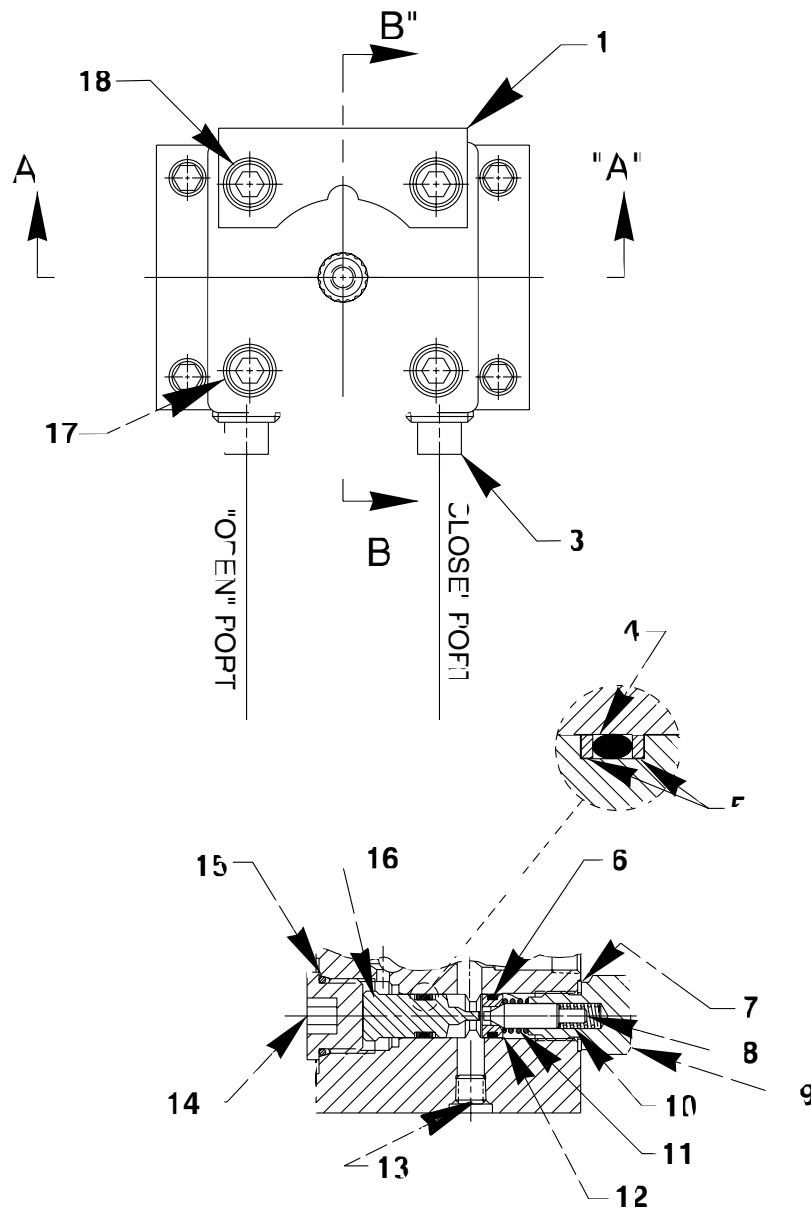
INSTRUCTIONS FOR HANDLE ASSEMBLY

1. Turn the stem [Item #21] into the manifold body [Item #15] until the stem and ball [Item #20] just meet. (The ball must be against the seat.)
2. Back out the stem 15° / 20°.
3. Leave enough gap (approximately 9/16") between the handle and manifold body so there is still clearance when the handle is rotated in any position.
4. Torque set screws to 30/50 in. lbs.

HYDRAULIC SCHEMATIC



MANUAL VALVE



Item No.	Part No.	No. Req'd	Description
1	350982	1	Bracket
3	11127	2	Pressure Plug (3/8 NPTF)
4	10267	1	O-ring (7/16 X 5/16 X 1/16)
5	15085	2	Backup Ring
6	*14763	1	O-ring (7/16 X 5/16 X 1/16)
7	*14874	1	Soft Copper Washer (.700 X 1/2 X 1/32)
8	250020	1	Poppet
9	307136	1	Valve Screw (Torque to 250/280 in. lbs.)
10	11024	1	Compression Spring (1/4 O.D. X 5/8 Lg.)
11	250022	1	Compression Spring (7/16 O.D. X 13/32 Lg.)

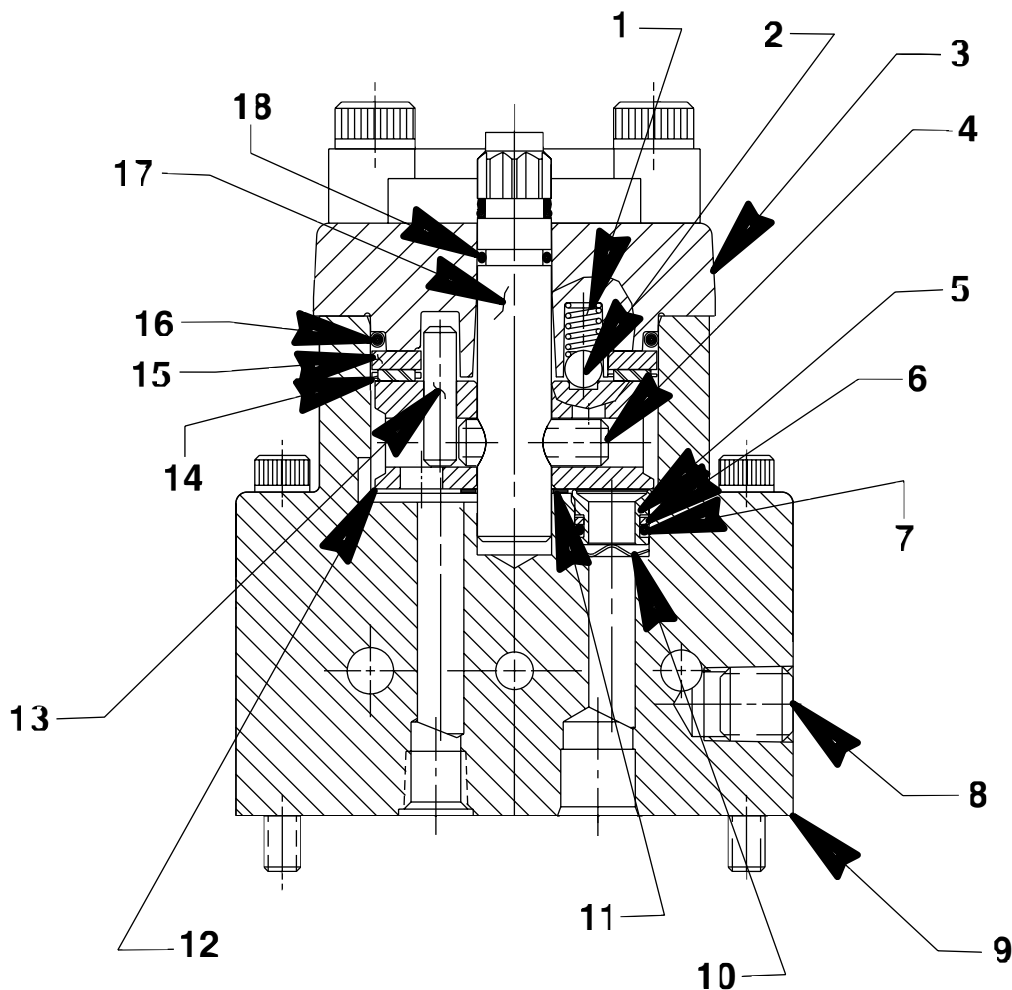
Item No.	Part No.	No. Req'd	Description
12	250021	1	Seat
13	15130	4	Plug (1/16 NPTF)
14	214014	1	O-ring Plug (Note: Discard rubber o-ring.)
15	*215193	1	O-ring (13/16 X 5/8 X 3/32)
16	251592	1	Piston
17	11013	2	Cap Screw (Torque to 300/320 in. lbs.)
18	10948	2	Cap Screw (Torque to 300/320 in. lbs.)
19	10139	1	Set Screw (1/4-20 x 3/4 Lg.; Torque to 50/60 in. lbs. and Loctite 242 or equivalent.)

Note: Shaded areas reflect last revision(s) made to this form.

Sheet No. 8 of 9

Rev. 2 Date: 24 Sep. 1998

MANUAL VALVE - SECTION A-A

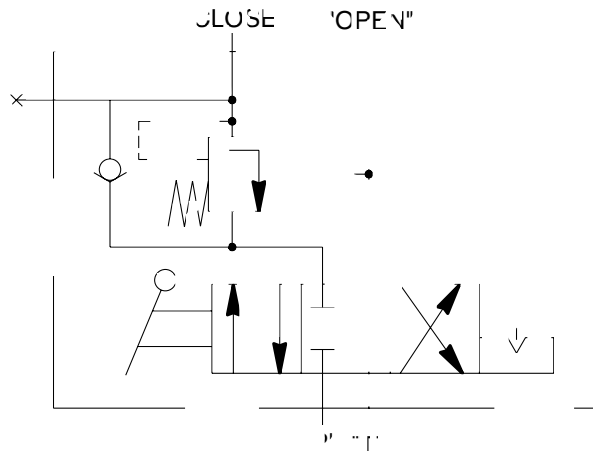


Item No.	Part No.	No. Req'd	Description
1	15691	1	Compression Spring (1/4 O.D. X 5/8 Lg.)
2	10375	1	Steel Ball (1/4 Dia.)
3	61343	1	Valve Cap
4	10496	1	Pin
5	202480	3	Seal
6	*11863	3	Backup Washer (1/2 X 3/8 X 1/16)
7	*10268	3	O-ring (1/2 X 3/8 X 1/16)
8	14972	1	Pipe Plug (1/4 NPTF)
9	64651	1	Valve Body

Item No.	Part No.	No. Req'd	Description
10	21975	3	Spring Washer
11	214801	1	Spacer Washer
12	306032	1	Rotor
13	250056	1	Pin
14	11228	1	Thrust Bearing
15	11227-1	1	Bearing Race
16	*15892	1	O-ring (1.956 X 1.720 X .118)
17	46048	1	Stem
18	*13943	1	O-ring (1/2 X 3/8 X 1/16)

Part numbers marked with an asterisk (*) are contained in Repair Kit No. 300571.

SPECIFICATIONS



HYDRAULIC SCHEMATIC

Valve, Manual mounted, manual detented,
3-position, 4-way, closed center with "OPEN"
port release system. (5.3 to 1 ratio)

Rated Pressure: 10,000 PSI

Case Pressure: 500 PSI

Rated Flow: 5 GPM

FUNCTION:

Center Position: All parts blocked.

"CLOSE" Position: Pressure to "CLOSE" port;
"OPEN" port to tank.

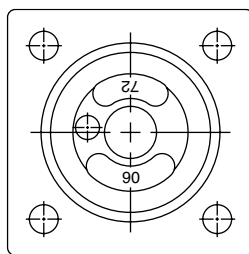
"OPEN" Position: Pressure to "OPEN" port.

"CLOSE" port to hold until pressure ratio
is obtained and then releases to tank.

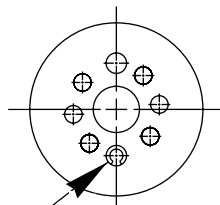
"CLOSE" port will remain open as long as
"OPEN" port maintains pressure ratio.

NOTE: "CLOSE" port is blocked with "OPEN"
and pressure ports open to tank during
transition between valve positions.
Pressure ratio is the pressure differential
in the "CLOSE" and "OPEN" ports.

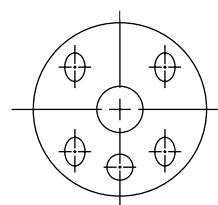
INTERNAL ASSEMBLY ORIENTATION OF PARTS



**END CAP
BOTTOM VIEW**

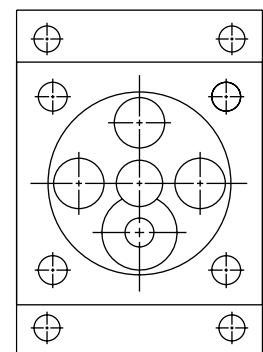


**ROTOR
TOP VIEW**



**ROTOR
BOTTOM VIEW**

ROLL PIN LOCATION
POSITION OPENING AS SHOWN)



**VALVE BODY
TOP VIEW**