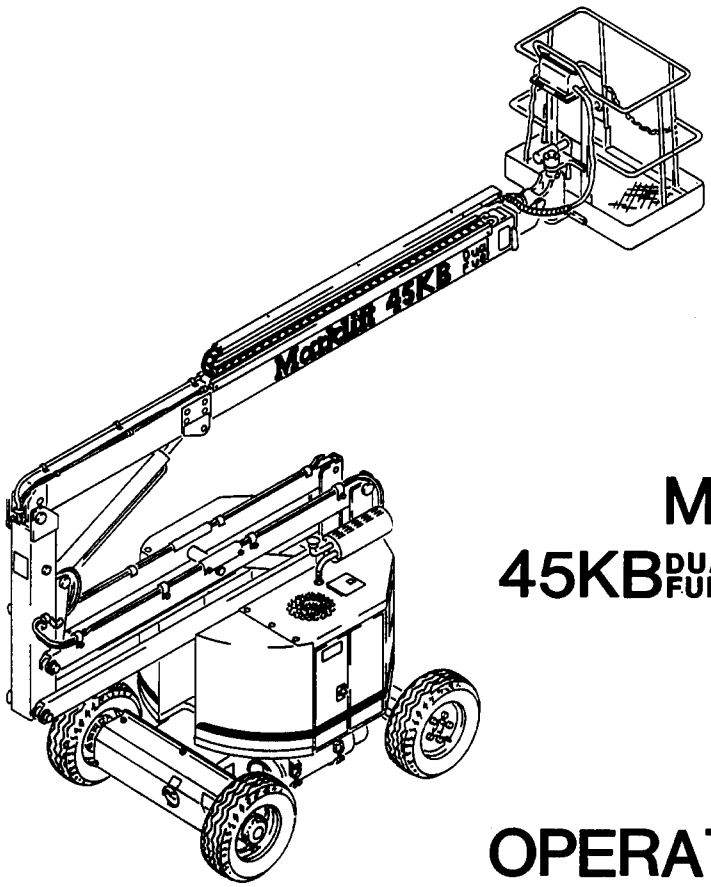
Marklift®

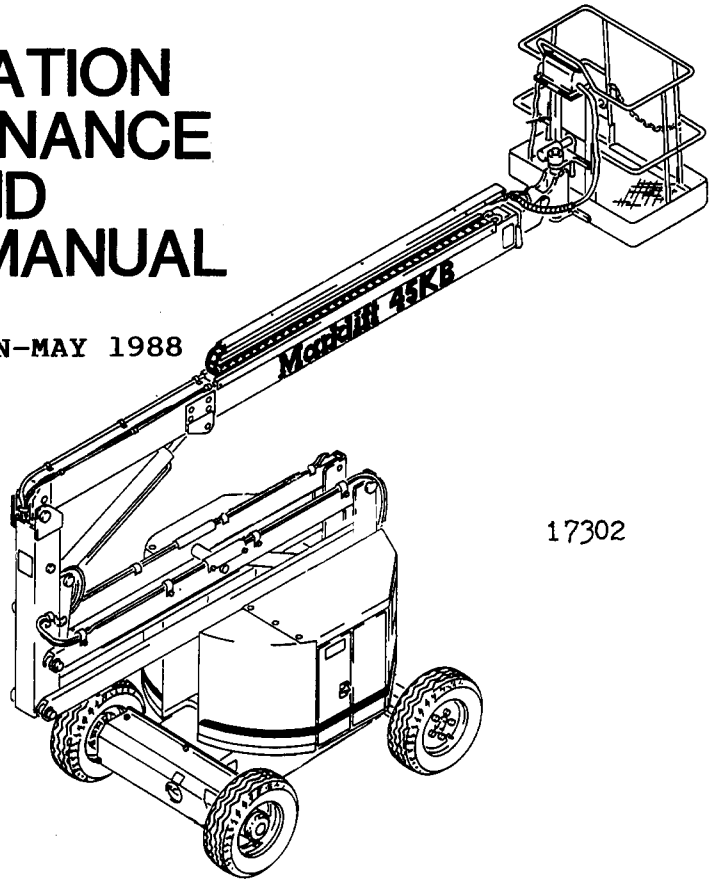


Marklift SELF PROPELLED KNUCKLE BOOM

MODELS 45KB DUAL FUEL AND 45KB

OPERATION MAINTENANCE AND PARTS MANUAL

FIRST EDITION-MAY 1988



17302

Mark of Quality

Mark Industries
P. O. Box 720
Long Beach Calif. 90801
(213) 639-9700
Toll Free (800) 421-1826
Telex 677-361

11. The **MARKLIFT** structure must not be used as a welding ground. Disconnect both battery leads prior to performing any welding operations.

12. **DO NOT** lean over platform guard railings to perform work.

13. **DO NOT** use ladders or scaffolding on the platform to obtain greater height.

14. **DO NOT** raise or lower boom into protuding objects.

15. **DO NOT** drive carriage or platform into stationary objects.

16. **DO NOT** store loose material in the work platform such as pipe, rope, extension cords, wire or miscellaneous boxes. If necessary to store such items, they must be positioned in such a way that no one will trip over them when operating or working in the platform.

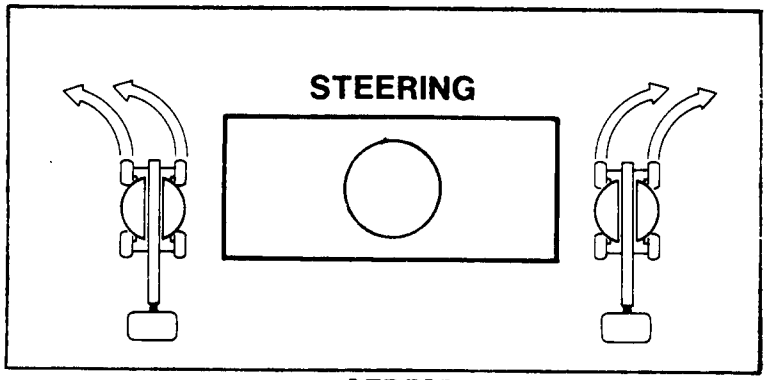
17. **DO NOT** alter equipment in any fashion.

18. **DO NOT** override any hydraulic, mechanical, or electrical safety devices.

19. **DO NOT** drive on uneven, sloping or soft terrain, as this is hazardous and must be avoided. The **MARKLIFT** must not be operated on more than a 5 degree out-of-plumb condition.

20. **DO NOT** work on platform if your physical condition is such that you feel dizzy or unsteady in any way.

21. **DO NOT** jump start other vehicles using **MARKLIFT** battery.

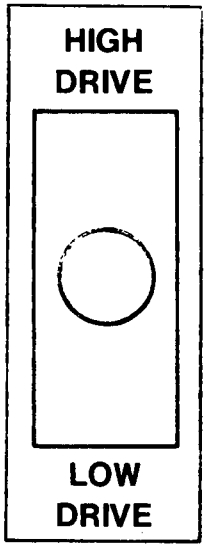


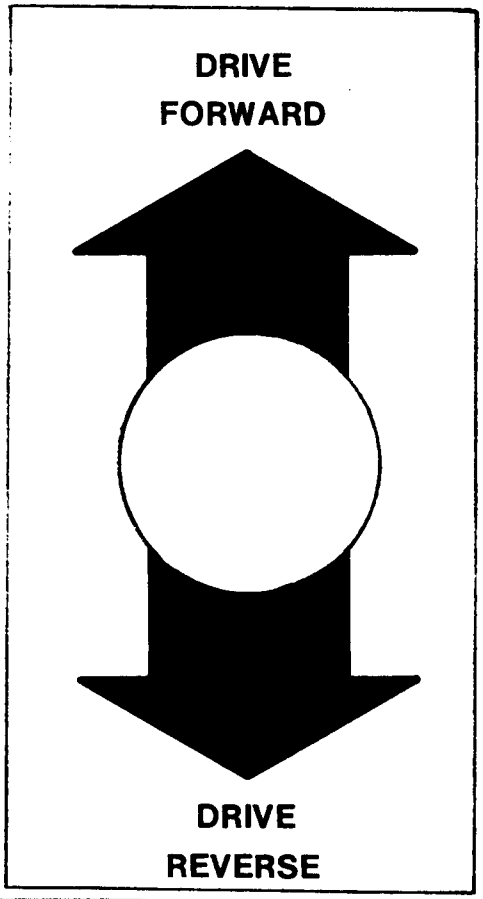
AERIAL CONTROL STATION

3. **DRIVE**

Forward and reverse drive is performed from the aerial control station only. The MARKLIFT is equipped with a high and low speed drive variance. For the drive to function, choose the drive desired and use both the forward / reverse joystick and the footswitch.

NOTE: Your **MARKLIFT** is equipped with a proportional drive control. When using the proportional drive function, press foot switch, raise controller locking device, then gradually move controller in direction selected.





AERIAL CONTROL STATION

B. UNLOADING

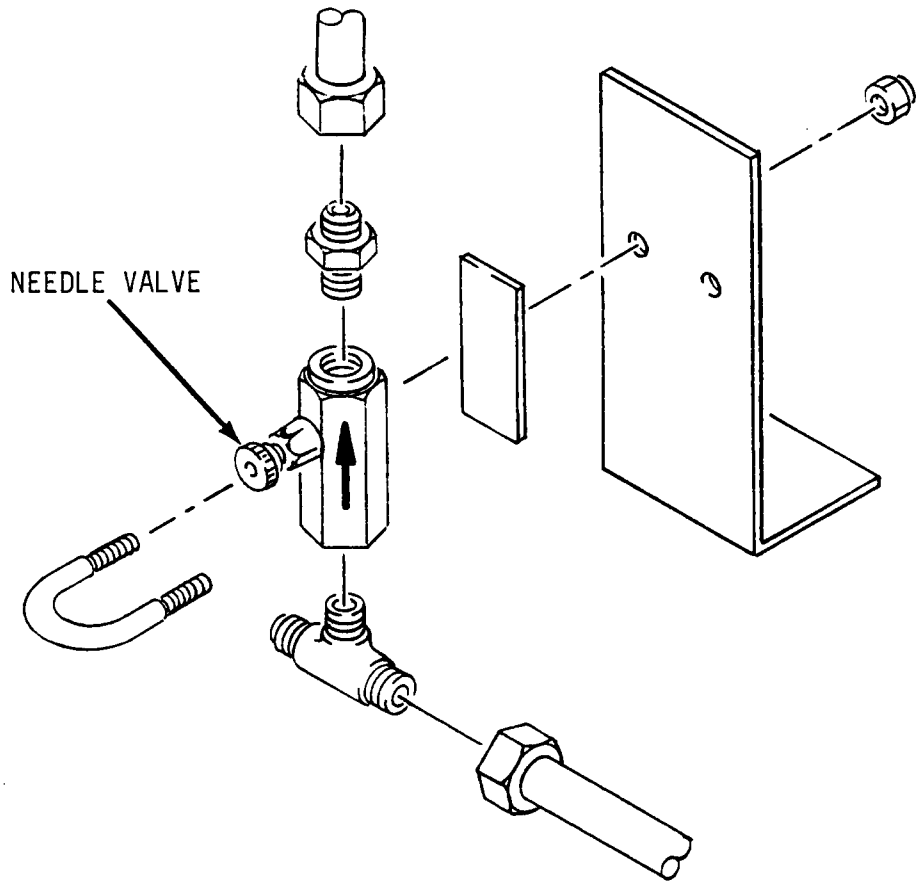
1) With the trailer on level ground, disconnect the tiedowns from the boom and insure that the winch cable is still properly attached to the **MARKLIFT.**

2) Select the low drive speed at the platform control console.

3) Using great care while driving and steering the **MARKLIFT** off the trailor, keep all slack out of the winch cable.

> **WARNING:** Do not allow slack in the winch cable when descending the ramp, due to the possibility of snapping the cable if the **MARKLIFT** descends too quickly in drive.

4) When all wheels are on level ground, disconnect the winch cable.



1. **ENGINE**

   A. **Will not start or run.**

      1) Check ground control box circuit breaker.
      2) Make sure fuel shut-off valve is open.
      3) Fuel selector should be in the "gasoline" position.
      4) Check for low battery.
      5) Check for fouled spark plugs.
      6) Check for water in gas tank.
      7) Check engine points.

   B. **No high speed.**

      1) Check aerial HIGH/LOW throttle switch.
      2) Check throttle solenoid valve.

   C. **No idle.**

      1) Check aerial HIGH-LOW throttle switch.
      2) Check throttle solenoid valve.

   D. **Dies under load.**

      1) Check governor setting.
      2) Check carburetor air/fuel mixture.

2. **HYDRAULIC WHEEL DRIVE MOTOR AND PUMP**

   A. Wheel drive motor turns wheel while unloaded, but slows down or stops when load is applied.

      1) Check hydraulic high pressure port with 3000 PSI gauge.

   B. **Pump producing excessive noise.**

      1) Check suction hose from tank to pump for kinks.
      2) Check hydraulic oil level (sight gauge on tank.)
      3) Check suction line fittings for tightness.
      4) Check oil.

C. PROCEDURES:

1. DRIVE PRESSURES (REFER TO FIG. 3 or 4).

1.1 CONNECT PRESSURE GAUGE ASSEMBLY (FIG.2) TO "GI" PORT.

1.2 CLOSE BRAKE ADJUSTING NEEDLE VALVE TO LOCK ON BRAKES.

1.3. START MACHINE AND OPERATE DRIVE FUNCTION (FORWARD OR REVERSE)

1.4 WITH BRAKES LOCKED, MAXIMUM DRIVE PRESSURE WILL REGISTER ON THE GAUGE.

1.5 DRIVE PRESSURE SHOULD BE: REFER TO TABLE I. (Page 18)

1.6 IF PRESSURE IS INCORRECT, REMOVE PLUG FROM DRIVE RELIEF VALVE WITH 5/16" ALLEN WRENCH.

1.7 INSERT 3/16" ALLEN WRENCH INTO RELIEF VALVE.

1.8 TO INCREASE PRESSURE TURN ALLEN WRENCH CLOCKWISE (CW) to DECREASE PRESSURE TURN COUNTERCLOCKWISE (CCW).

1.9 REPEAT OPERATING DRIVE FUNCTION UNTIL CORRECT PRESSURE SETTING IS ACHIEVED.

1.10 RE-ASSEMBLE RELIEF VALVE PLUG.

1.11 OPEN BRAKE ADJUSTING NEEDLE VALVE.

1.12 VERIFY BRAKE OPERATION, ADJUST IF NECESSARY.

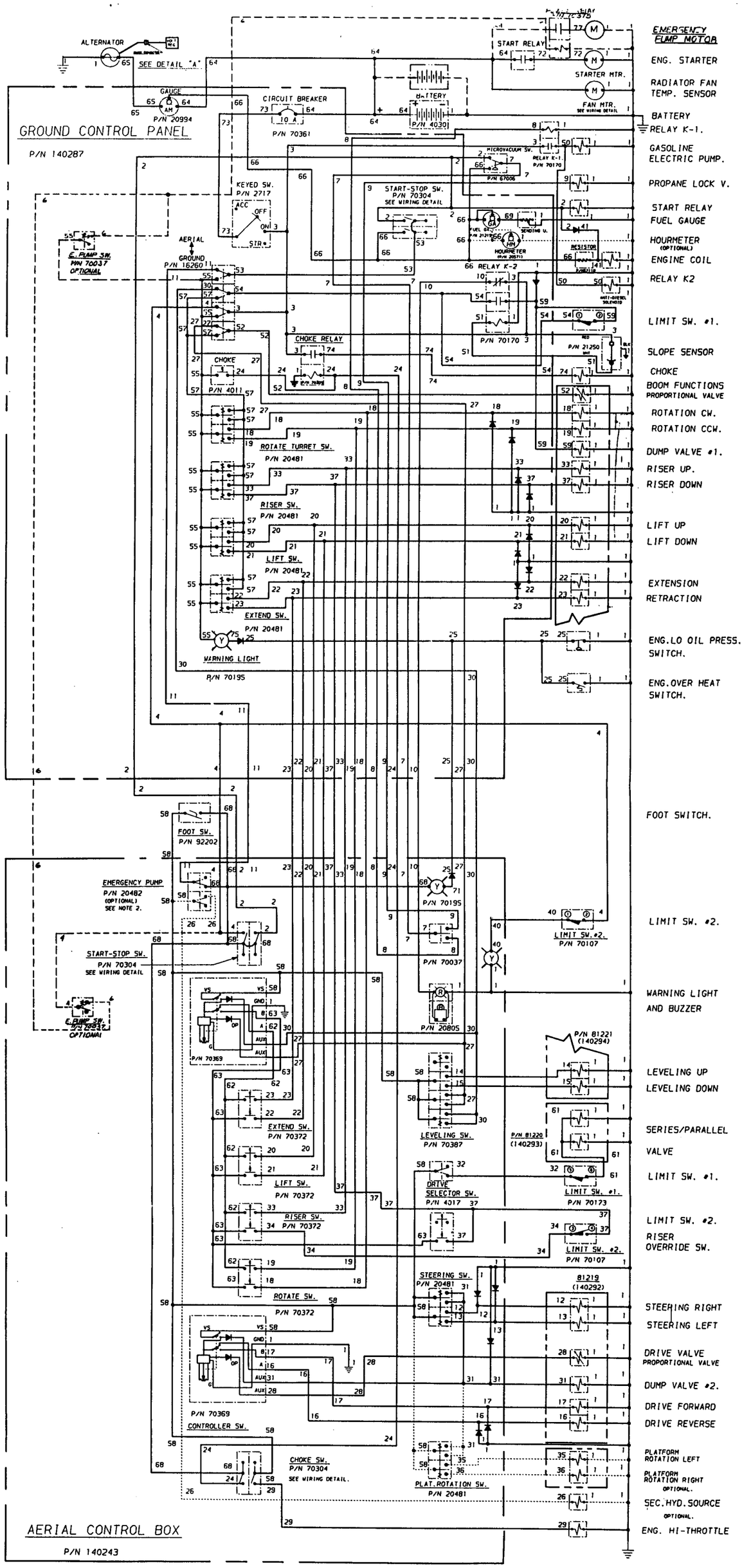
2. STEERING PRESSURES (REFER TO FIG. 3 or 4)

2.1 CONNECT PRESSURE GAUGE. ASSEMBLY (FIG.2) TO "G1" PORT.

2.2 START MACHINE AND OPERATE STEERING FUNCTION UNTIL STEERING CYLINDER IS BOTTOMED OUT. HOLD AND READ PRESSURE GAUGE.

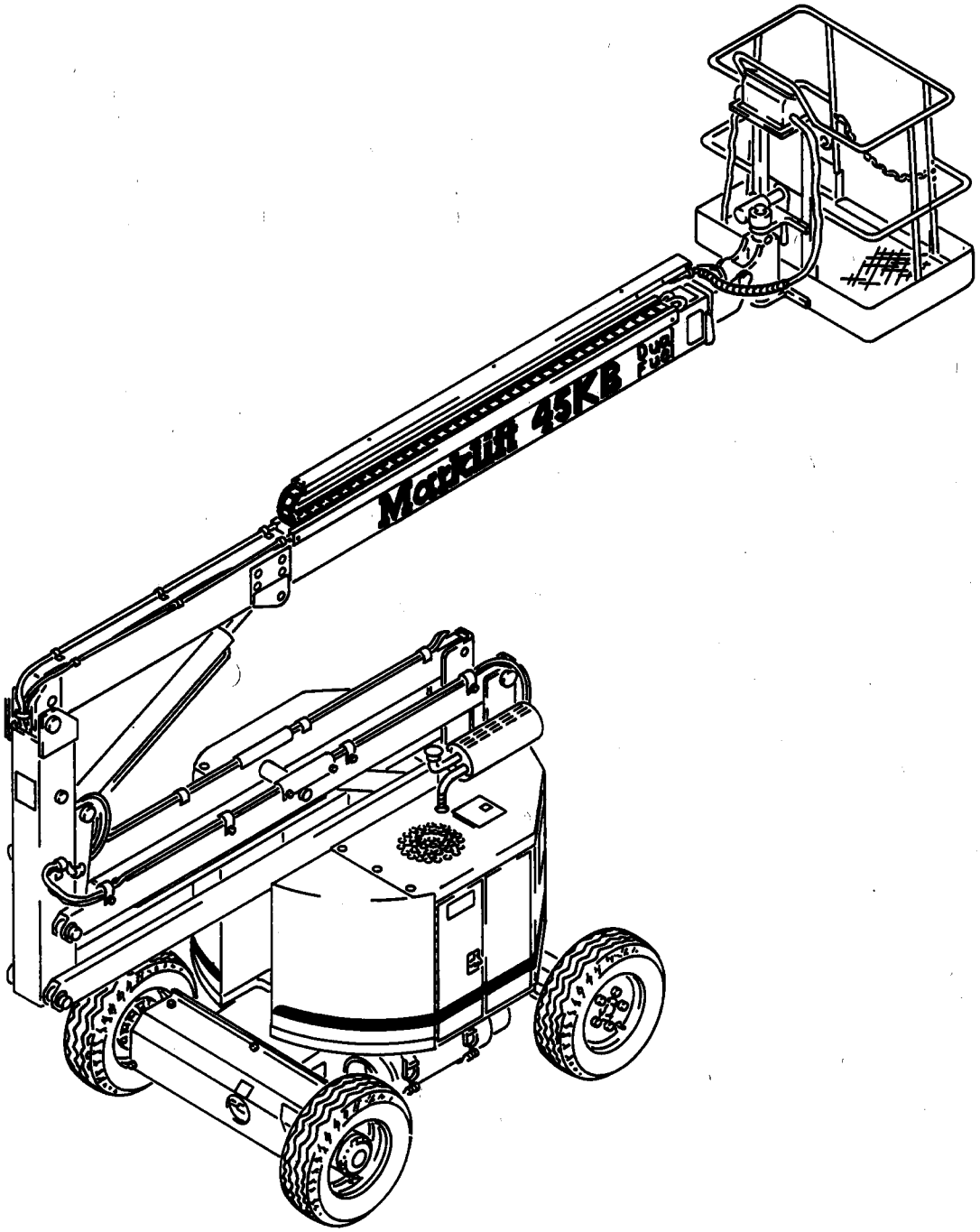
2.3 STEERING PRESSURE SHOULD BE: REFER TO TABLE I (Page 18)

2.4 IF PRESSURE IS INCORRECT, COMPLETE STEPS 1.6 THRU 1.10 ON STEERING RELIEF VALVE.


GROUND CONTROL PANEL
P/N 140287
AERIAL CONTROL BOX
P/N 140243
ALTERNATOR
SEE DETAIL "A"
GAUGE
P/N 20994
CIRCUIT BREAKER
10 A.
P/N 70361
BATTERY
P/N 4030
KEYED SW.
P/N 2717
ACC
OFF
ON
STR
E. PUMP SW.
P/N 70037
OPTIONAL
AERIAL
GROUND
P/N 16260
CHOKE
P/N 4011
CHOKE RELAY
ROTATE TURRET SW.
P/N 20481
RISER SW.
P/N 20481
LIFT SW.
P/N 20481
EXTEND SW.
P/N 20481
WARNING LIGHT
P/N 70195
FOOT SW.
P/N 92202
EMERGENCY PUMP
P/N 20482
(OPTIONAL)
SEE NOTE 2.
START-STOP SW.
P/N 70304
SEE WIRING DETAIL
P/N 70369
CONTROLLER SW.
CHOKE SW.
P/N 70304
SEE WIRING DETAIL.
START-STOP SW.
P/N 70304
SEE WIRING DETAIL
MICROVACUUM SW.
RELAY K-1
P/N 70170
P/N 67006
FUEL GA.
P/N 21250
SENDING U.
HOURMETER
(OPTIONAL)
RESISTOR
RELAY K-2
P/N 70170
P/N 21250
SLOPE SENSOR
P/N 70195
P/N 70037
P/N 20805
LIMIT SW. #2.
P/N 70107
LEVELING SW.
P/N 70387
EXTEND SW.
P/N 70372
LIFT SW.
P/N 70372
RISER SW.
P/N 70372
ROTATE SW.
P/N 70372
DRIVE SELECTOR SW.
P/N 4017
STEERING SW.
P/N 20481
PLAT.ROTATION SW.
P/N 20481
P/N 81221
(140294)
P/N 81220
(140293)
LIMIT SW. #1.
P/N 70173
81219
(140292)
EMERGENCY PUMP MOTOR
ENG. STARTER
RADIATOR FAN TEMP. SENSOR
BATTERY RELAY K-1.
GASOLINE ELECTRIC PUMP.
PROPANE LOCK V.
START RELAY FUEL GAUGE
HOURMETER (OPTIONAL)
ENGINE COIL
RELAY K2
LIMIT SW. #1.
SLOPE SENSOR
CHOKE
BOOM FUNCTIONS PROPORTIONAL VALVE
ROTATION CW.
ROTATION CCW.
DUMP VALVE #1.
RISER UP.
RISER DOWN
LIFT UP
LIFT DOWN
EXTENSION
RETRACTION
ENG.LO OIL PRESS. SWITCH.
ENG.OVER HEAT SWITCH.
FOOT SWITCH.
LIMIT SW. #2.
WARNING LIGHT AND BUZZER
LEVELING UP
LEVELING DOWN
SERIES/PARALLEL VALVE
LIMIT SW. #1.
LIMIT SW. #2.
RISER OVERRIDE SW.
STEERING RIGHT
STEERING LEFT
DRIVE VALVE PROPORTIONAL VALVE
DUMP VALVE #2.
DRIVE FORWARD
DRIVE REVERSE
PLATFORM ROTATION LEFT
PLATFORM ROTATION RIGHT OPTIONAL.
SEC.HYD.SOURCE OPTIONAL.
ENG. HI-THROTTLE

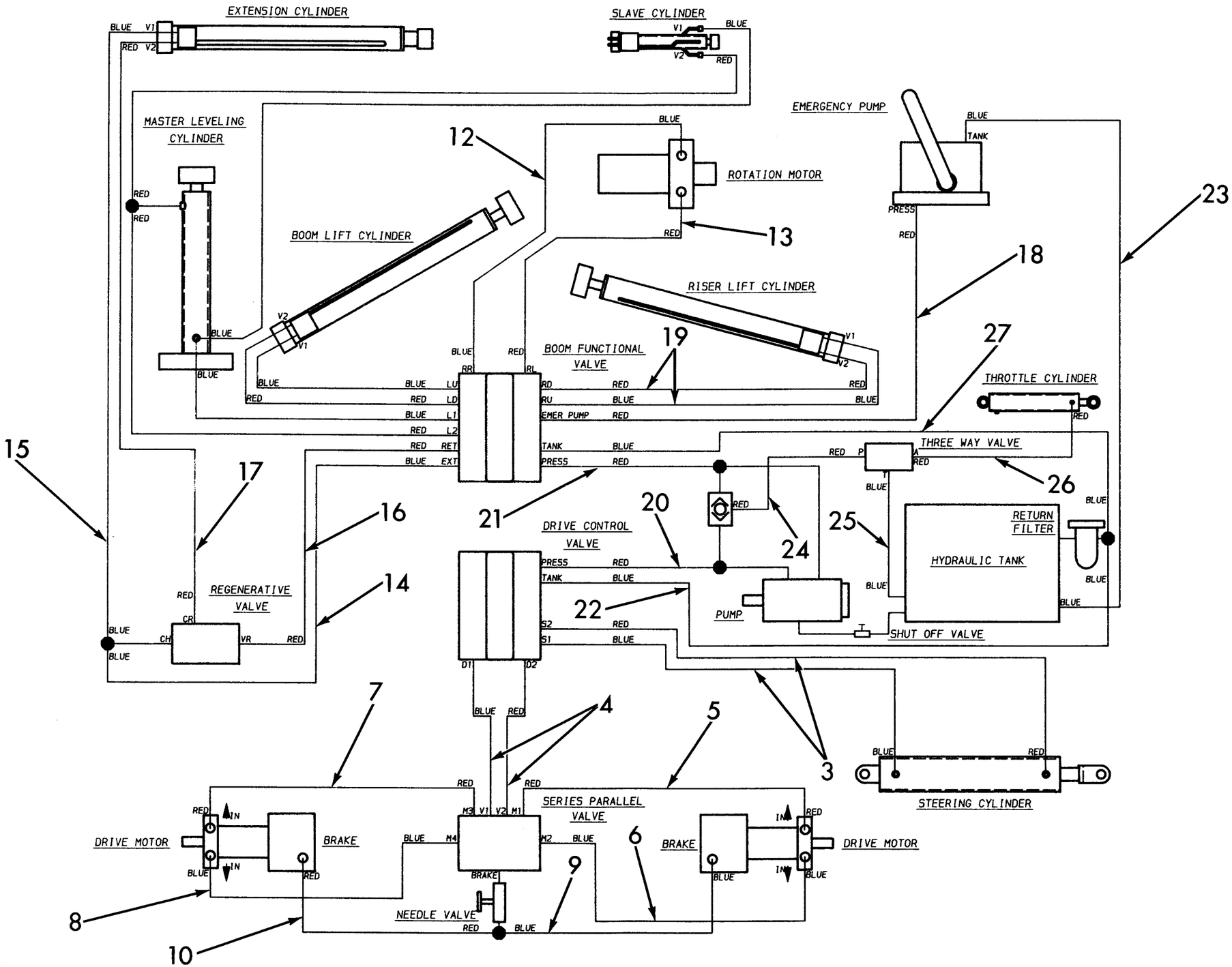
THIS **SECTION 2** IS ILLUSTRATED AS:

FIGURE	**1**	FINAL ASSEMBLY (45KBDF)
FIGURE	**2**	FINAL ASSEMBLY (45KB)
FIGURE	**3**	GROUND CONTROL PANEL ASSEMBLY (45KBDF)
FIGURE	**4**	GROUND CONTROL PANEL ASSEMBLY (45KB)
FIGURE	**5**	HYDRAULIC HOSE INSTALLATION (45KBDF)
FIGURE	**6**	HYDRAULIC HOSE INSTALLATION (45KB)



ITEM	PART NUMBER	DESCRIPTION 1234567	UNIT PER ASSY.
154	20419	.DECAL, DANGER KEEP CLEAR	2
156	140565	.COVER, LEFT FRONT	1
158	140566	.COVER, RIGHT FRONT	1
160	140562	.COVER, LEFT TOP	1
162	140563	.COVER, RIGHT TOP	1
164	2020	.DECAL, GAS OR PETROLEUM	2
168	2017	.DECAL, HYDRAULIC SYSTEM	2
170	140287	.ASSEMBLY, LOWER CONTROL PANEL (See Sect. 2, Fig. 3 for Details)	1
172	140564	.DOOR, RIGHT LATCHING	1
174	140496	.DECAL, EMERGENCY HAND PUMP	1
176	182701	.DECAL, GENERAL CHECKOUT	1
178	140495	.DECAL, EMERGENCY PUMP OPERATION	1
180	183301	.DECAL, WARNING	2
182	140551	.DECAL, FAN	1
184	140552	.DECAL, FAN FUSE	1
186	20879	.DECAL, DIPSTICK	1
188	140571	.BRACKET, RADIATOR	1
190	140567	.PANEL, LEFT REAR	1
192	140568	.PANEL, RIGHT REAR	1
194	2003	.DECAL, BATTERY WATER	1
196	65937	.TANK, PROPANE	1
-198	65135	.PROPANE (10 Gl.)	1

ITEM	PART NUMBER	DESCRIPTION 1234567	UNIT PER ASSY.
107	20660	.PLATE, IDENTIFICATION	1
108	63653	.RIVET, POP (attaching part)	4
109	20661	.PLATE, ANSI A92	1
110	63653	.RIVET, POP (attaching part)	4
112	20412	.DECAL, BLUE STRIP	2
114	20411	.DECAL, BLUE STRIP	4
116	61921	.SCREW, BUTTON HEAD	32
117	140569	.DOOR, LEFT LATCHING	1
118	140570	.DOOR, LEFT	1
119	20419	.DECAL, DANGER KEEP CLEAR	2
120	140565	.COVER, LEFT FRONT	1
122	140566	.COVER, RIGHT FRONT	1
124	140574	.COVER, LEFT TOP	1
126	140563	.COVER, RIGHT TOP	1
128	2017	.DECAL, HYDRAULIC SYSTEM	2
130	140305	.ASSEMBLY, LOWER CONTROL PANEL (See Sect. 2, Fig. 4 for Details)	1
132	140564	.DOOR, RIGHT LATCHING	1
134	140496	.DECAL, EMERGENCY HAND PUMP	1
136	182701	.DECAL, GENERAL CHECKOUT	1
138	140495	.DECAL, EMERGENCY PUMP OPERATION	1
140	183301	.DECAL, WARNING	2
142	22449	.DECAL, NO SMOKING DURING CHARGE	1
144	2003	.DECAL, BATTERY WATER	1
146	185701	.DECAL, BATTERY CHARGER INSIDE	1


EXTENSION CYLINDER
SLAVE CYLINDER
MASTER LEVELING CYLINDER
ROTATION MOTOR
EMERGENCY PUMP
BOOM LIFT CYLINDER
RISER LIFT CYLINDER
BOOM FUNCTIONAL VALVE
THROTTLE CYLINDER
THREE WAY VALVE
RETURN FILTER
HYDRAULIC TANK
DRIVE CONTROL VALVE
REGENERATIVE VALVE
PUMP
SHUT OFF VALVE
SERIES PARALLEL VALVE
DRIVE MOTOR
BRAKE
NEEDLE VALVE
STEERING CYLINDER
12
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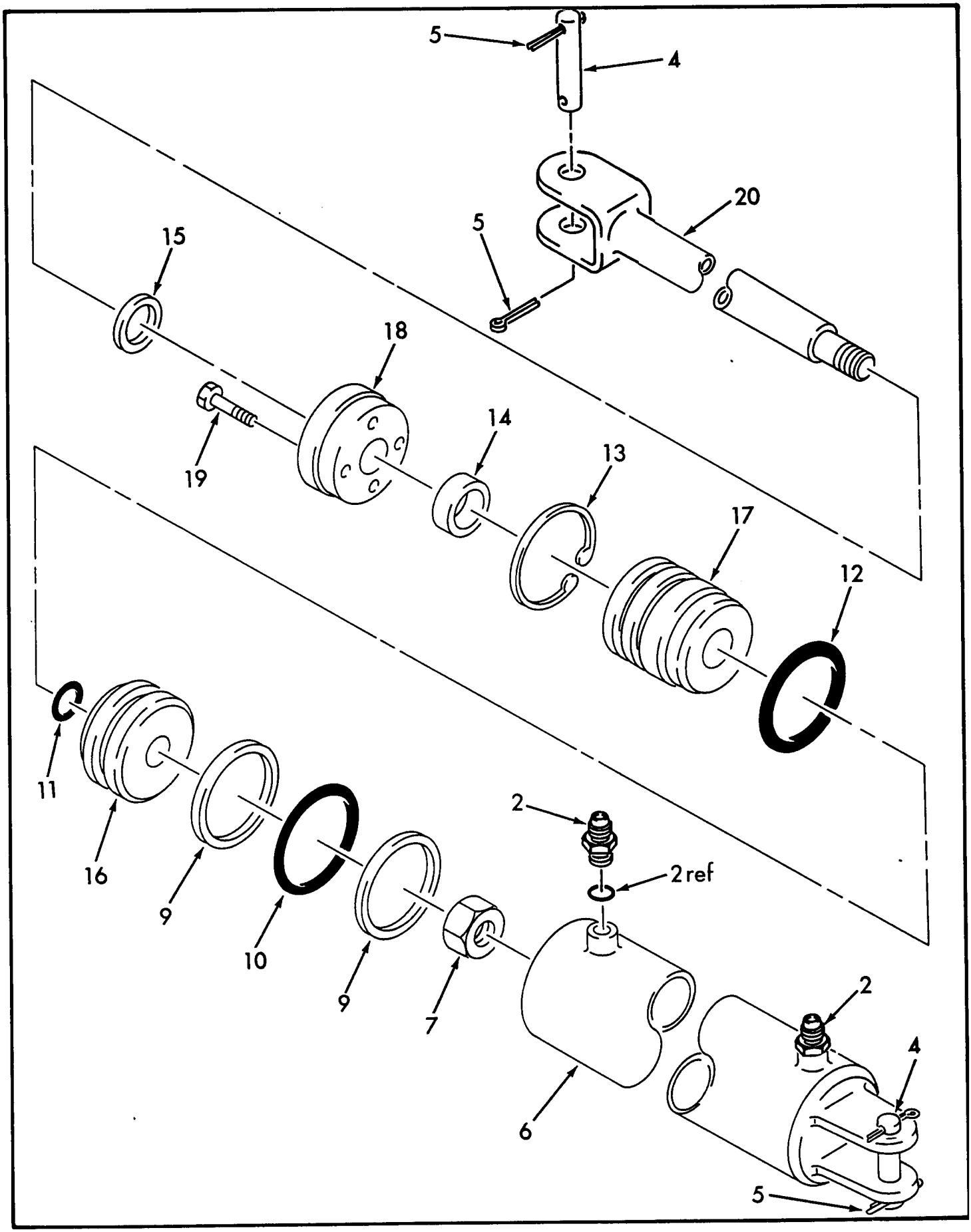
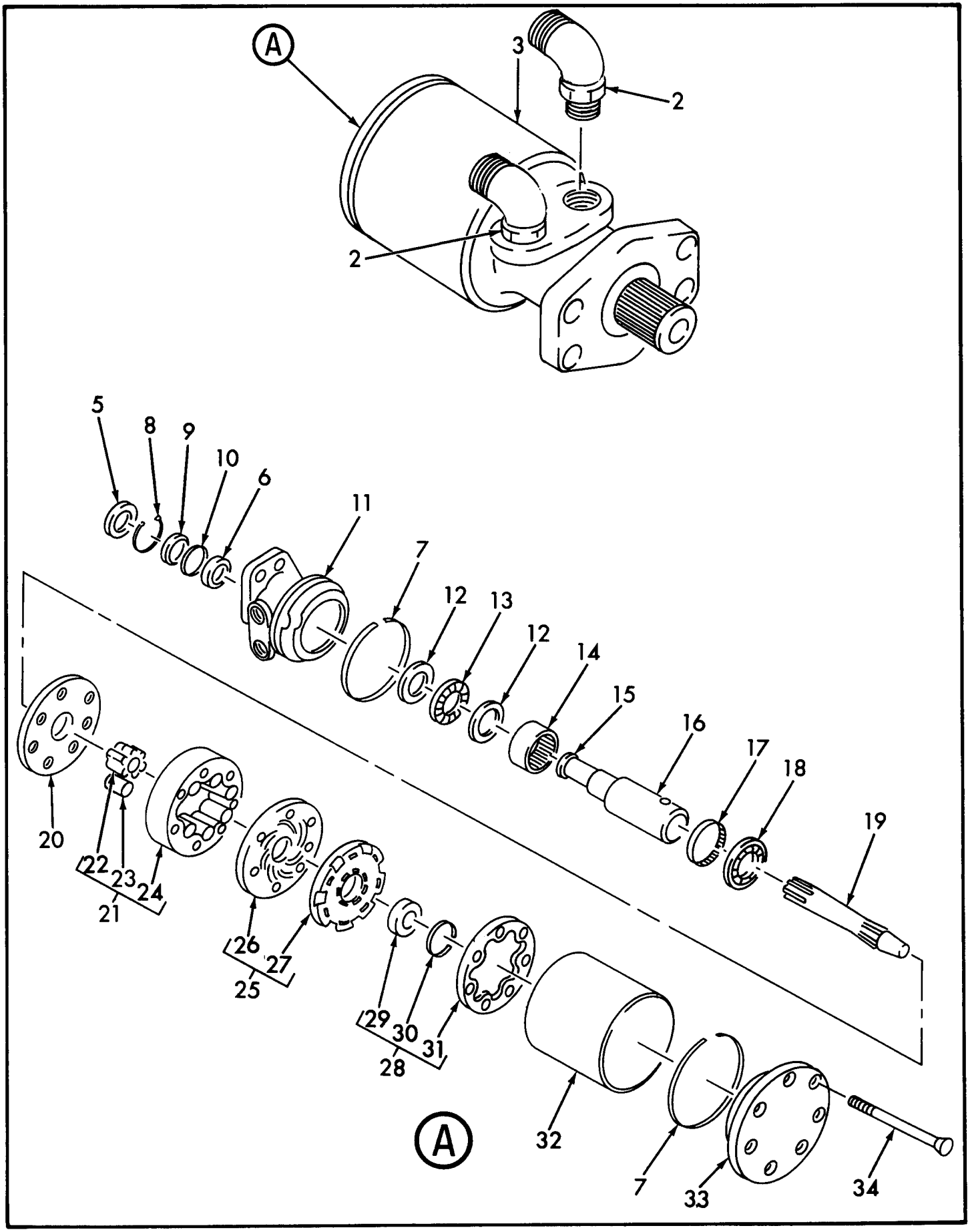
ITEM	PART NUMBER	DESCRIPTION 1234567	UNIT PER ASSY.
62	140166	.ASSEMBLY, FRONT AXLE WHEEL (See Sect. 3, Fig. 10 for Details)	2
64	65945	.NUT, CONICAL F.C. (attaching part)	18
66	140293	.ASSEMBLY, SERIES PARALLEL VALVE (See Sect. 3, Fig. 11 for Details)	1
68	60343	.SCREW, CAP (attaching part)	3
70	63319	.WASHER, LOCK (attaching part)	3
72	23722	.GEAR, RING	1
74	60546	.SCREW, CAP (attaching part)	18
76	65103	.FITTING, GREASE	2
78	140472	.PLATE, CARRIAGE BOTTOM COVER	1
80	60353	.SCREW, CAP (attaching part)	4
82	63401	.WASHER, LOCK (attaching part)	4
84	63301	.WASHER, FLAT (attaching part)	4
86	140438	.COVER	1
88	60353	.SCREW, CAP (attaching part)	5
90	63401	.WASHER, FLAT (attaching part)	5
92	63301	.WASHER, LOCK (attaching part)	5

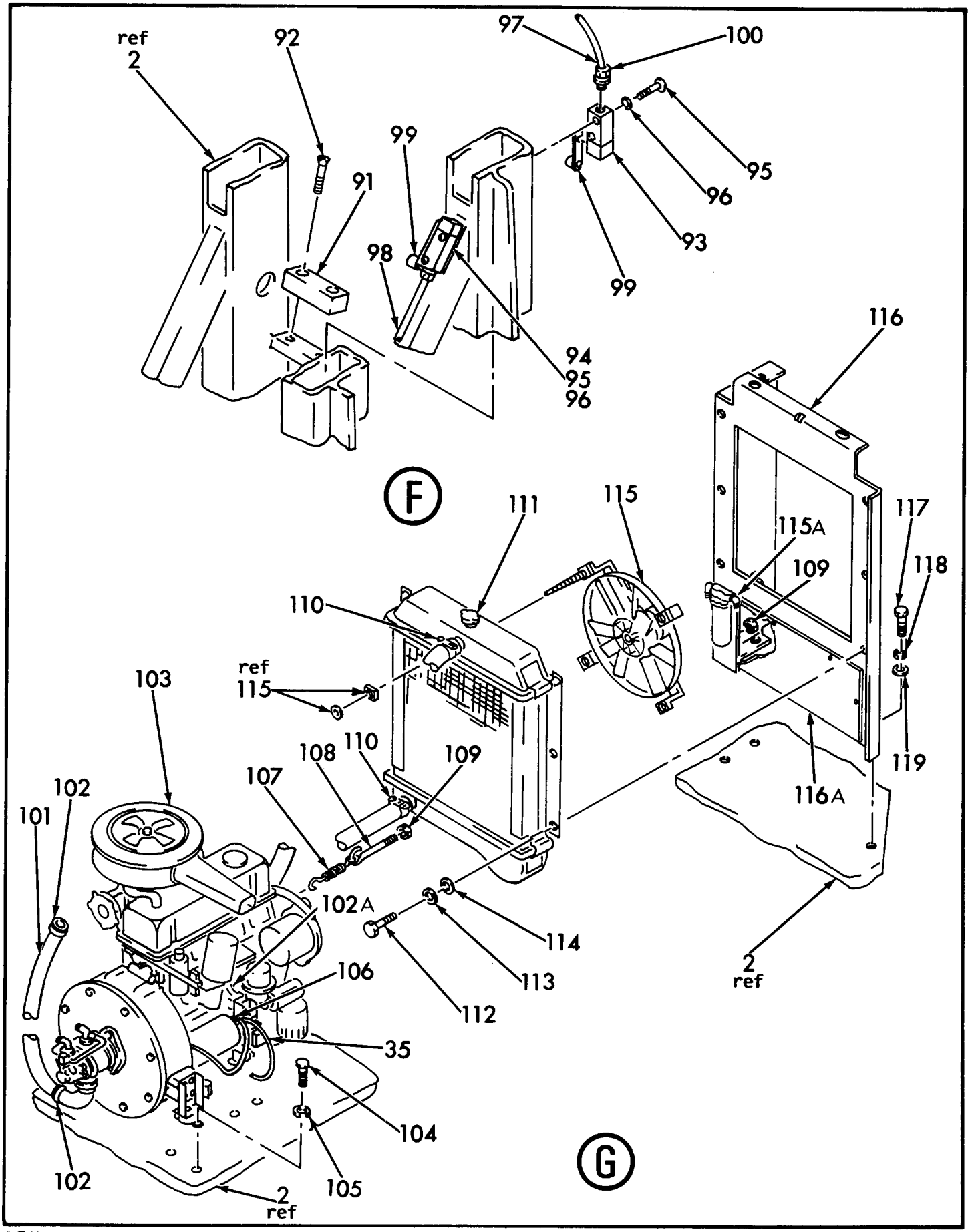
STEERING CYLINDER ASSEMBLY



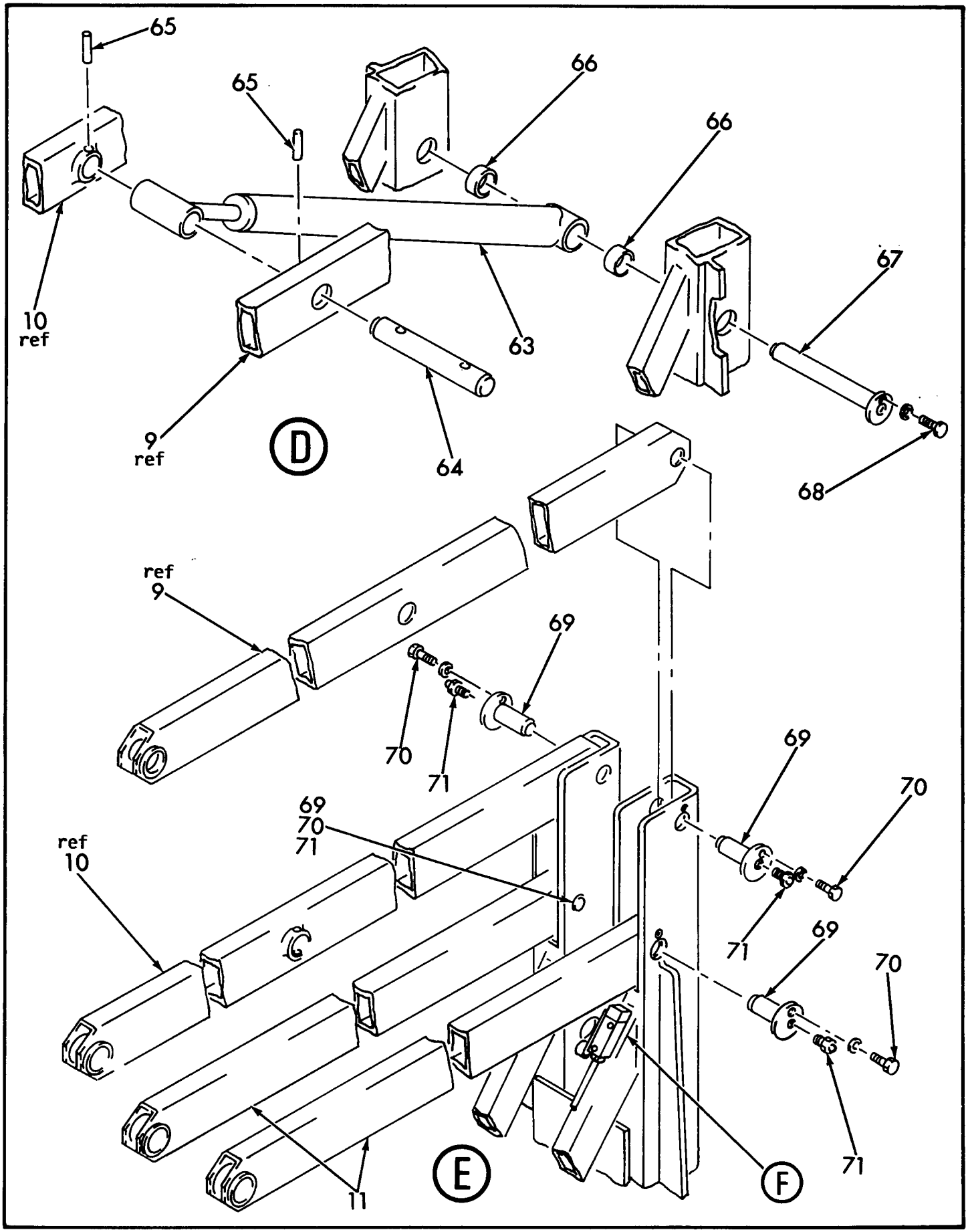
DRIVE MOTOR ASSEMBLY (45 KB)



TURRET ASSEMBLY (45 KBDF)
(continued)



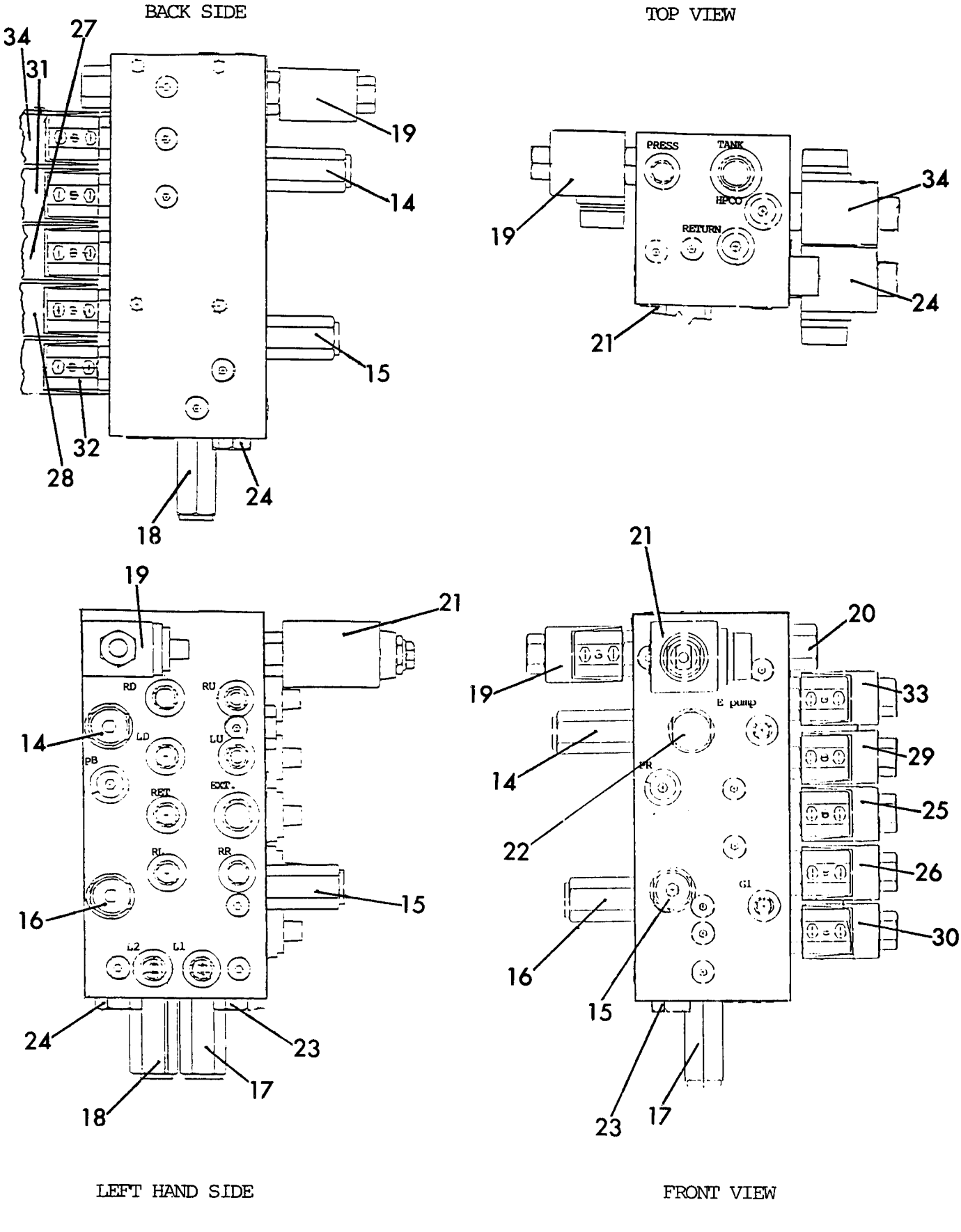
TURRET ASSEMBLY (45 KB)
(continued)

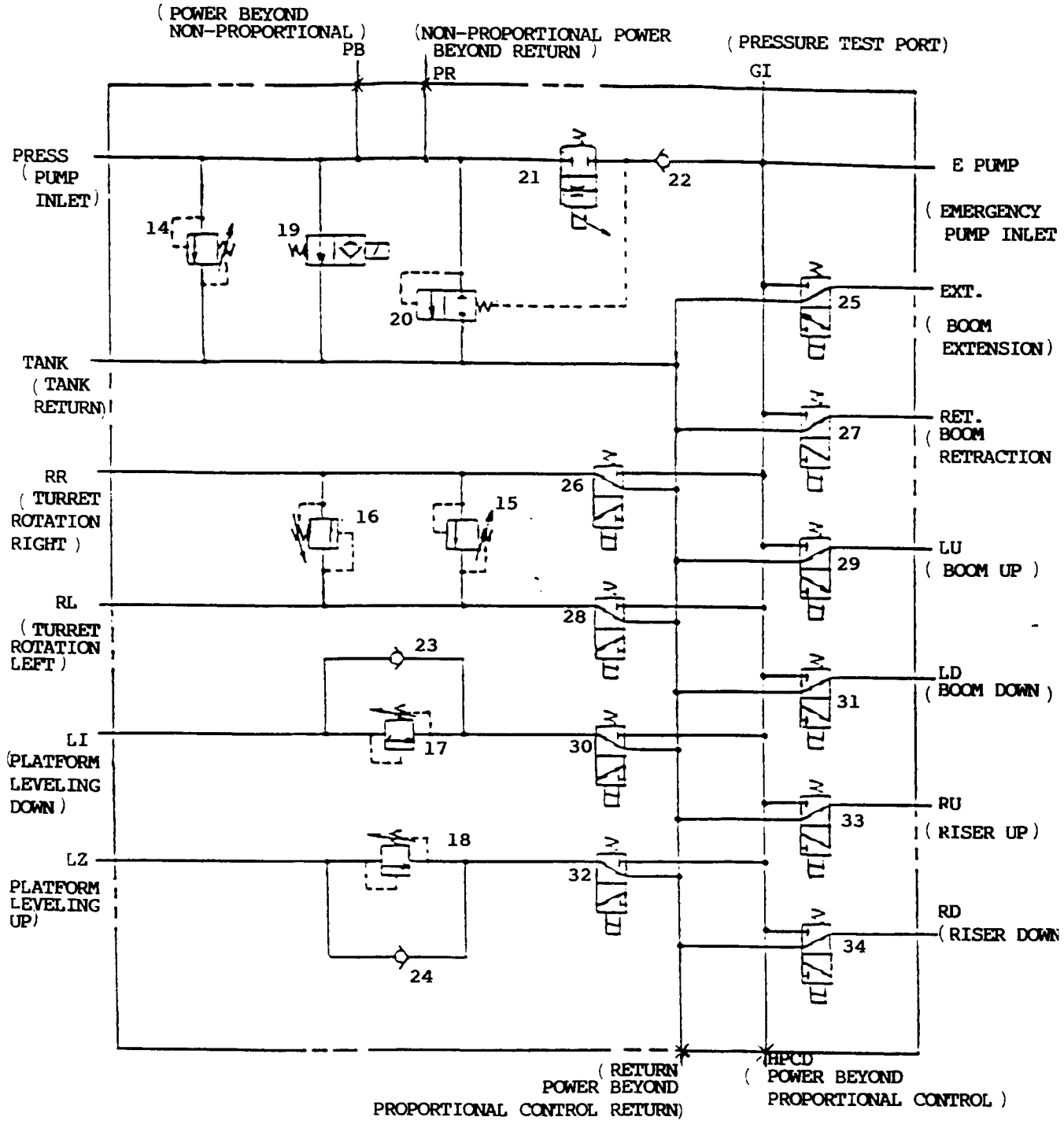


BOOM/RISER LIFT CYLINDER ASSEMBLY (continued)

ITEM	PART NUMBER	DESCRIPTION 1234567	UNIT PER ASSY.
-1	140056	ASSEMBLY, BOOM/RISER LIFT CYLINDER (See Sect. 4, Fig. 1 or 2 for NHA)	REF
2	80004-08	.CONNECTOR, STRAIGHT THREAD	2
3	81205	.VALVE, HOLDING	1
-3A	67394	..KIT, SEAL	1
4	60319	.SCREW, CAP (attaching part)	3
5	63301	.WASHER, LOCK (attaching part)	3
-6	140576	.CYLINDER, LIFT	1
7	67180	..BUSHING, D.U.	4
8	67176	..ASSEMBLY, BARRELL	1
9	67177	..ASSEMBLY, ROD	1
10	67178	..PISTON	1
11	67231	..HEAD, T	1
-12	67230	..KIT, SEAL	1
13		...O-RING	1
14		...O-RING	1
15		...O-RING	1
16		...O-RING	1
17		..O-RING	1
18		...O-RING	1
19		..NUT, LOCK	1
20		..RING, WEAR	2
21		..RING, WEAR	1
22		..CAP	
23		..SCREW, CAP (attaching part)	4

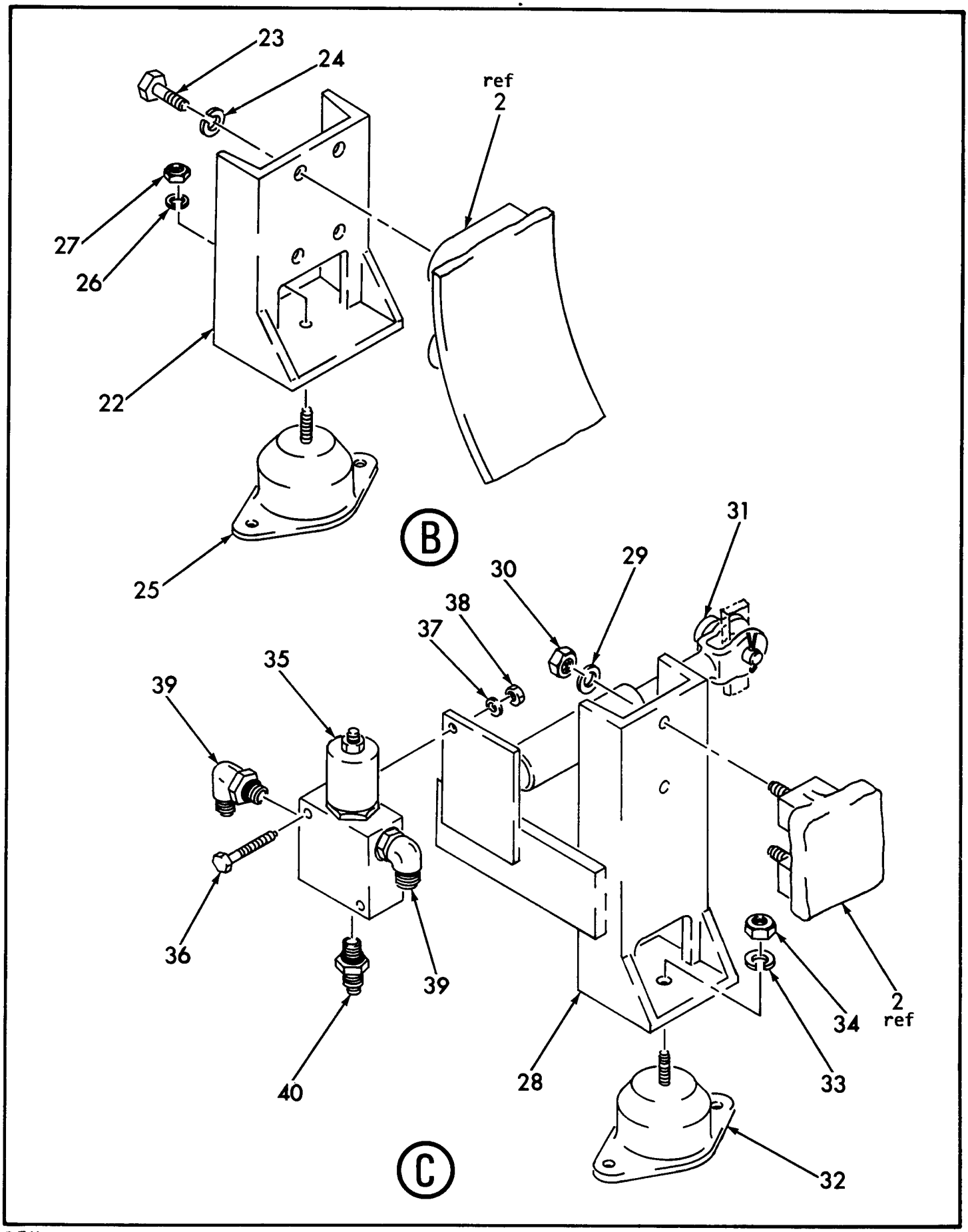
FUNCTIONAL BOOM VALVE PACKAGE ASSEMBLY (45 KBDF) (continued)



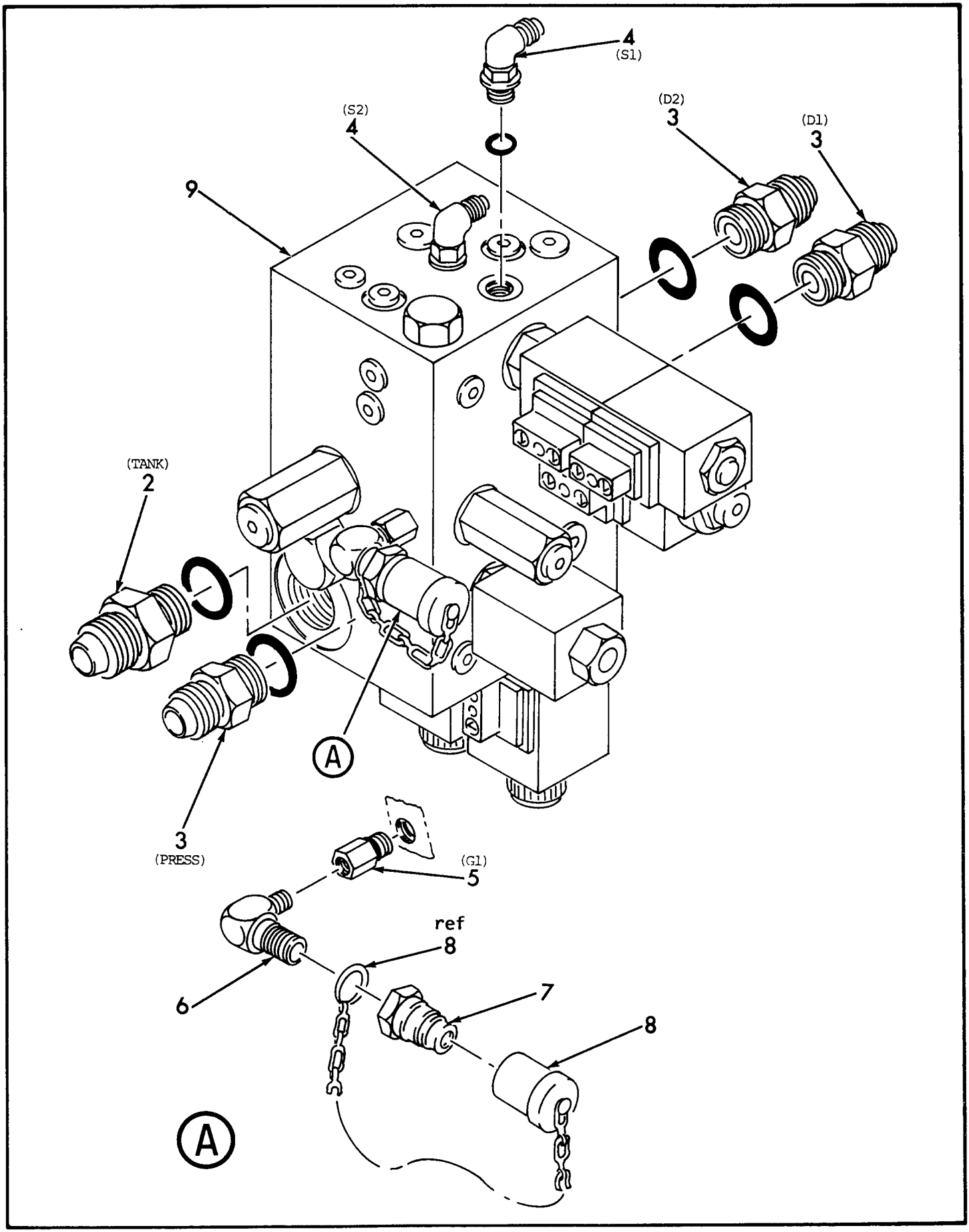


14. MAIN SYSTEM RELIEF
16. ROTATION RIGHT RELIEF
15. ROTATION LEFT RELIEF
17. LEVELING 1 RELIEF
18. LEVELING 2 RELIEF
19. UNLOADING VALVE
20. DIFFERENTIAL SENSING VALVE
21. PROPORTIONAL SOLENOID VALVE
22. CHECK VALVE
23. LEVELING 1 CHECK VALVE
24. LEVELING 2 CHECK VALVE
25. EXTENSION VALVE
26. TURRET ROTATION RIGHT VALVE
27. RETRACTION VALVE
28. TURRET ROTATION LEFT VALVE
29. LIFT UP VALVE
30. LEVELING VALVE (DOWN)
31. LIFT DOWN VALVE
32. LEVELING 2 valve (UP)
33. RISER UP VALVE
34. RISER DOWN VALVE

ENGINE AND PUMP ASSEMBLY (45 KBDF)
(continued)



DRIVE/STEER VALVE PACKAGE ASSEMBLY (45KBDF)



REV.

18 SOLENOID VALVE: FORWARD DRIVE P/N 67220

Same as "G" except selects forward direction of travel(C3 and C1 in low speed/C1 in high speed)

19 BRAKE SHUTTLE VALVE.67240

Pressure signal from drive direction select solenoid valves (G & H) is directed out to brake release port and to spring chamber of differential pressure sensing valve (Item E) this forces the valve closed increasing inlet flow to the drive proportional control valve (Item F).

20 ORIFICE PLUG P/N 67349

Provides for relief of oil flow across flow divider combiner (Item L) when drive wheel motor is cramped in tight turn, prevents tire from scuffing while turning.

21 FLOW DIVIDER COMBINER P/N 67219

This valve regulates supply flow to the drive motors insuring that inlet or return flow is divided or combined equally and thus insuring that maximum torque can be generated at each drive wheel irregardless of the driving surface.

22 23 SOLENOID VALVE: (HIGH/LOW SPEED) SERIES PARALLEL P/N 67220

These valves operate simultaneously to connect the drive motors in a series circuit for high travel speed. In the forward direction C1 is the supply port, crosses the motor, returns at C2 to supply the second motor down stream through C3 and then returns across the motor to C4 and subsequently back to tank. This flow is reversed when drive is reversed. In a parallel circuit (forward direction of travel) supply ports C1 and C3 provide flow to both motors simultaneously ports C2 and C4 are return to tank. This flow is reversed when reverse low speed drive is selected

24 SYSTEM UNLOADING/DUMP VALVE.66676

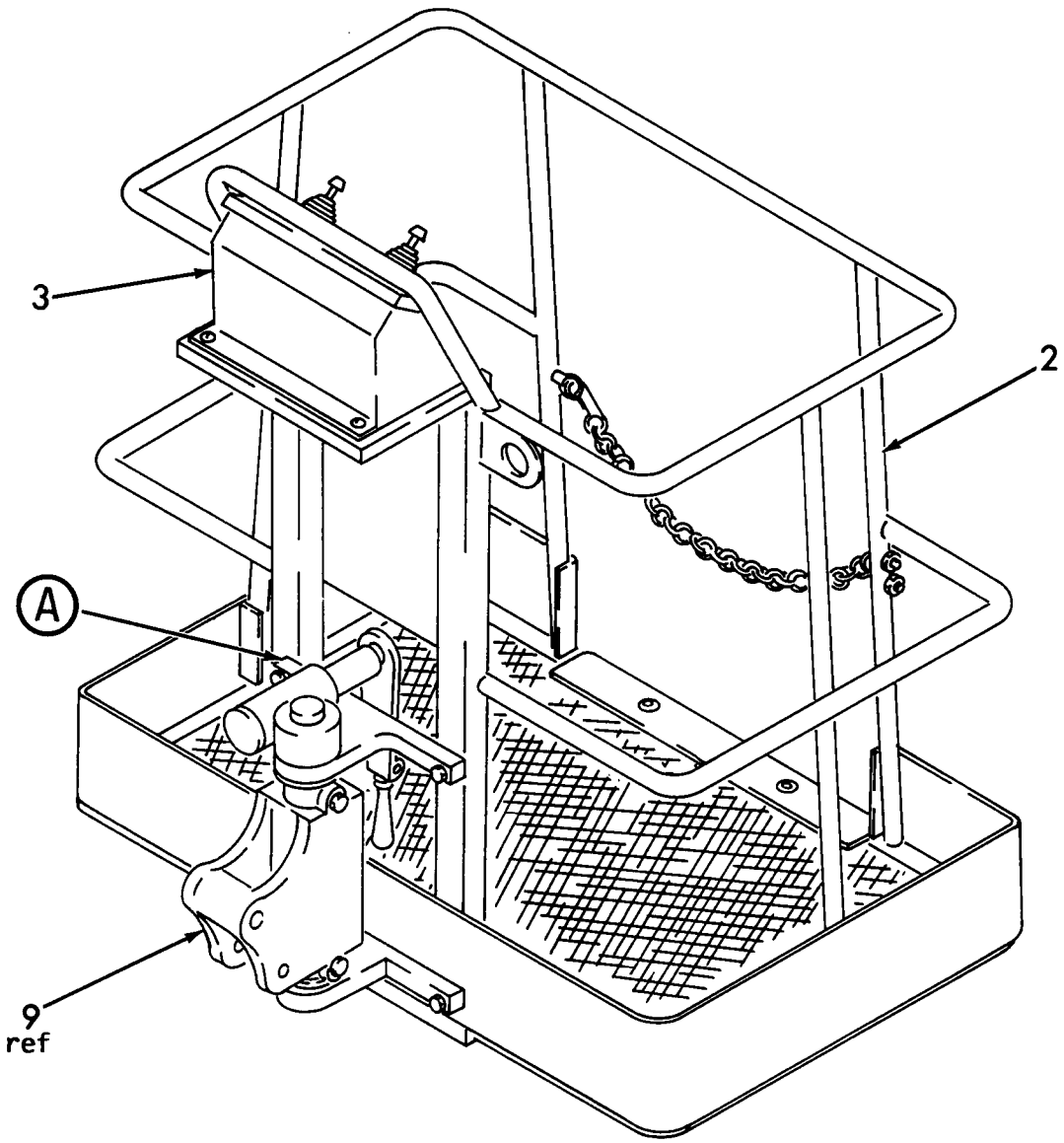
This valve is operated by the micro-switch on the controller handle, when closed it insures full pump flow is delivered to the selected function. When not operated it allows pump flow to be exhausted back to tank without being affected by the system relief valve.

INNER BOOM SUB-ASSEMBLY (continued)

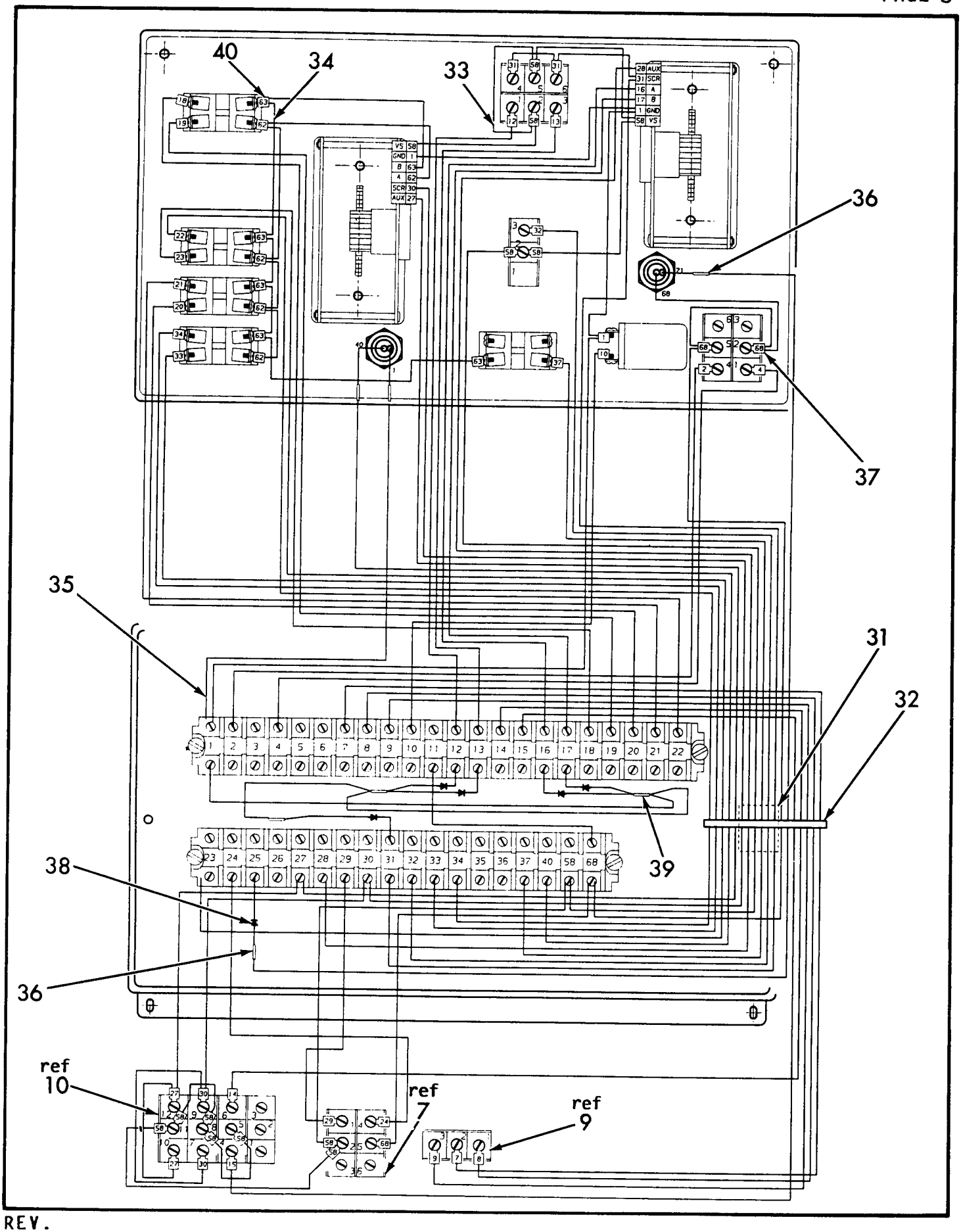
ITEM	PART NUMBER	DESCRIPTION 1234567	UNIT PER ASSY.
-1	140120	SUB-ASSEMBLY, INNER BOOM (See Sect. 5, Fig. 1 for NHA)	REF
2	140124	.MACHINING, INNER BOOM	1
3	140055	.ASSEMBLY, EXTENSION CYLINDER (See Sect. 5, Fig. 3 for Details)	1
4	140398	.PAD, INNER BOOM TOP WEAR	1
5	61829	.SCREW, CAP (attaching part)	4
6	140395	.PAD, EXTENSION CYLINDER WEAR	2
7	140397	.PAD, INNER BOOM BOTTOM WEAR	1
8	61824	.SCREW, CAP (attaching part)	4
9	63403	.WASHER, FLAT	4
10	61318	.NUT, LOCK (attaching part)	4
11	140424	.PIN, ROD END EXTENSION CYLINDER	1
12	62234	.SCREW, SET	1
13	140058	.SUB-ASSEMBLY, SLAVE CYLINDER (See Sect. 5, Fig. 4 for Details)	1
14	140415	.PIN, CAP END SLAVE CYLINDER	1
15	62201	.SCREW, SET	1

- ITEM NOT ILLUSTRATED

PLATFORM ASSEMBLY (45 KB)



AERIAL CONTROL BOX ASSEMBLY (45 KBDF)
(AFT. MAR. 88)
(continued)



AERIAL CONTROL BOX ASSEMBLY (45 KB)
(AFT. MAR. 88)
(continued)

ITEM	PART NUMBER	DESCRIPTION 1234567	UNIT PER ASSY.
-1	140307	ASSEMBLY, AERIAL CONTROL BOX (See Sect. 6, Fig. 2 for NHA)	REF
2	140315	.MACHINING, AERIAL CONTROL BOX	1
3	70417	.SWITCH, TOGGLE	5
4	70195	.LIGHT, INDICATOR	1
5	20805	.ALARM, BUZZER	1
6	4017	.SWITCH, TOGGLE	2
7	772	.PLUG	1
8	20481	.SWITCH, TOGGLE	1
9	771	.PLUG	3
10	70383	.SWITCH, LEVELING	1
11	20884	.GUARD, SWITCH	3
12	70303	.GUARD, SWITCH	1
13	140579	.DECAL, UPPER CONTROL	1
14	182703	.DECAL, PLATFORM LEVELING SWITCH	1
15	16215	.RELIEF, STRAIN	1
16	16105	.NUT, LOCK	1
17	2806	.RELIEF, STRAIN	1
18	2808	.NUT, LOCK	1
19	70392	.COVER, RECEPTACLE	1
20	70391	.RECEPTACLE, G.F.C.I.	1
-21	70394	.CONNECTOR, TWIST-ON WIRE	2
22	4027	.BLOCK, TERMINAL	40

- ITEM NOT ILLUSTRATED

OPEN CAPACITOR—When the ohmmeter leads are connected to the capacitor terminals, the meter needle does not move and stays at high resistance (∞). A bulge in the top of the capacitor may be visible if the capacitor has failed "Open."

SHORTED CAPACITOR—When the ohmmeter leads are connected to the capacitor terminals, the meter needle jumps immediately to zero ohms and remains there.

If the capacitor is "Open" or "Shorted" it must be replaced.

⚠ **CAUTION: Use only a 6 Mfd, 660 volt AC rated capacitor for replacement (Part No. 02390S). The use of a different value capacitor may result in improper charging, capacitor failure, transformer burnout, and/or battery damage.**

3. If the charger DC circuit and capacitor check good, a test of the transformer is necessary. Refer to Section 7 — "Transformer Short or Burn-Out" for test procedures.

PART D — ELECTRONIC TIMER KIT REPLACEMENT

The Electronic Timer Kit should always be replaced as a complete assembly. The tools required are a Phillips head screwdriver, 3/8" and 11/32" wrenches, and pliers. No soldering is required. To replace the kit follow the step-by-step procedures listed below.

1. Disconnect the charger power supply cord from its outlet and the DC output connector from the battery connector, and remove the charger cover.
2. Disconnect the green, black, and red wires of the Electronic Timer Kit as shown in Figure 4. Then remove the black and white leads of the power supply cord and both primary transformer coil leads from the Electronic Timer Kit terminal tabs. The Kit can be removed by removing the three mounting screws on the charger front panel. Save all hardware for reassembly.
3. Install the replacement Electronic Timer Kit by reversing the disassembly procedures described in Step 2. When reconnecting the wires to the Electronic Timer Kit terminal tabs support the terminal board to prevent damage to the electronic circuit board. Connect either transformer primary lead to terminal #2, and the remaining primary lead to terminal #3.

   Connect the black lead of the power supply cord to terminal #1 on the Electronic Timer Kit and the white lead of the power supply cord to terminal #2.

   Connect the red wire of the Electronic Timer Kit along with the white lead of the DC cord to the Heat Sink Assembly. Connect the black wire of the Electronic Timer Kit along with the black lead of the DC cord to the ammeter post. Do not allow the ammeter post to turn when tightening the nut. Reconnect the green wire of the Electronic Timer Kit along with the transformer secondary lead to the diode lead terminal.

⚠ **CAUTION: Be sure all connections are clean and tight. Also check to be sure all wires and terminals are positioned so they do not short together or to the charger case.**

4. Replace the charger cover and check the Electronic Timer Kit for proper operation as follows:
   a. With the DC output connector disconnected from the battery connector, insert the power supply cord into an outlet. The relay on the Electronic Timer Kit should not close. A DC voltmeter connected across the DC output connector should indicate zero volts.
   b. Disconnect the power supply cord from its outlet and connect the DC output connector to the battery connector. The relay on the Electronic Timer Kit should close with an audible "click" after a two to five second delay.
   c. If the Electronic Timer Kit does not operate as (a) and (b) above, refer to the wiring diagram in Figure 8 and check to be sure the charger is wired correctly. If the Electronic Timer Kit operates properly, the charger is ready for use. Always monitor the first charge cycle to verify that the charger is turning off properly.

FIGURE 5
Diode Continuity Test

SECTION 2 — CHARGER FUSE BLOWS

The charger fuse consists of two fusible links mounted in a single assembly on the charger front panel. Each fuse link is electrically connected in series with one diode to provide protection for the transformer in the event of a diode failure. Visually check the fuse to determine if one or both fuse links are blown and refer to Part A or B for appropriate test procedures. Note: Replace the complete fuse assembly (Part No. 08776S) if the fuse is blown. Do not attempt to repair the fuse link as inadequate charger protection may result.

PART A — SINGLE FUSE LINK BLOWS

This condition is normally caused by a short circuit failure of one diode. The fuse link will blow when the charger DC output connector is connected to the battery connector, regardless of whether the power supply cord is connected to an outlet. To check the diodes, disconnect the power supply cord from its outlet and the DC output connector from the battery connector, and then disconnect one transformer secondary coil lead from the diode terminal. Using a low voltage continuity tester, connect one tester lead to the diode mounting plate and the other tester lead to a diode terminal as shown in Figure 5.

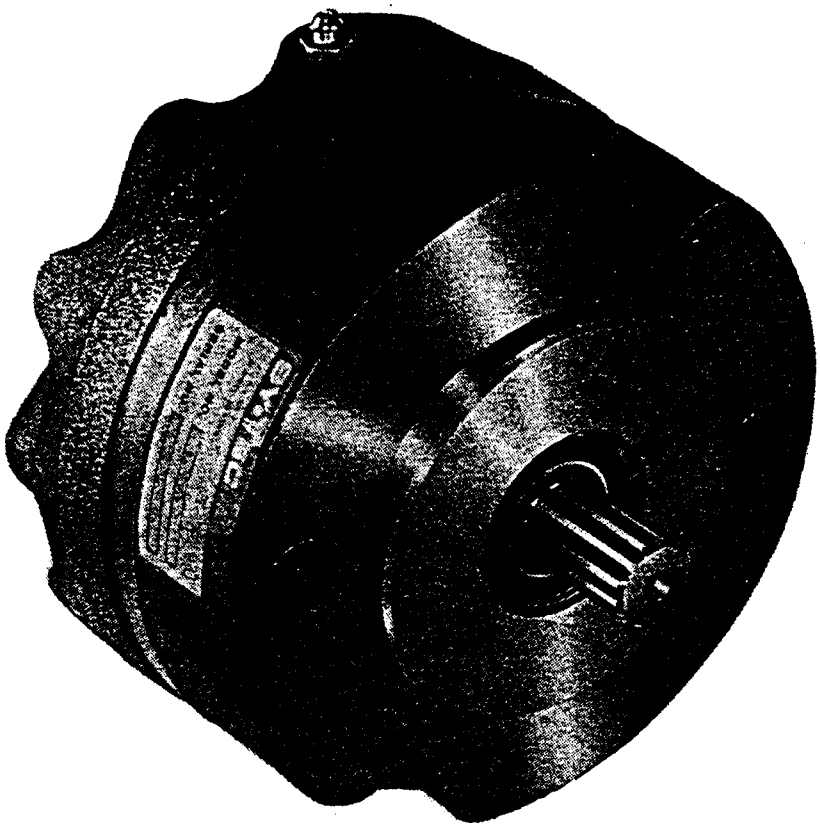
Note the reading and then reverse the tester leads and check each diode again. If a diode conducts current in both directions, it is "shorted" and the complete Heat Sink Assembly with Diodes (Part No. 09653S) must be replaced.

SY·TEC SERIES

MULTIPLE DISC BRAKE

(dry design - SAE B size)

SERVICE MANUAL MICO



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18. Do not remove thrust washers (8), thrust bearing (9) and needle bearings (10) and (12) unless there is absolute evidence of damage. Needle bearings should be free to rotate and not show signs of surface breakdown. If needle bearing (10) requires replacement, use a 1.490 maximum diameter shaft and press out thrust washers (8), thrust bearing (9) and needle bearings (10) and (12). The housing assembly face should be placed on a block of wood during the pressing operation to protect it. Discard thrust washers, thrust bearing and needle bearings and replace with new parts as parts may have been damaged when being pressed out.

If needle bearing (12) needs replacement use a bearing puller to remove needle bearing, care should be taken to not damage the housing assembly (6) face with the bearing puller.

TORQMOTOR ASSEMBLY

(Reference Figure MAB-200-2)

Important: Before starting assembly, clean all parts with a clean petroleum base solvent and air dry. Do not wipe dry with rags. Be sure all dried paint lips have been removed from edges of lapped surfaces. Unless otherwise indicated, do not oil or grease parts before assembly. Note: Lubricate All Seals before assembly with SAE 10W-40 SD oil or clean grease.

1. In a vise, clamp down on the housing assembly (6) port bosses with the small bore end pointed up. Assemble new seal (5) with lip side inward, assemble shim (4), spacer (3) and retaining ring (2). Be sure the rounded edge of the retaining ring (2) is faced inward.

2. Apply a small amount of clean grease to the back side of new dirt seal (1) and assemble into housing assembly (6).

3. Remove housing assembly (6) from vise, turn over and reclamp in vise with large bore end up. (*** See Note.)

4. Apply "Scotch" tape around splines or keyway on coupling shaft (11) to prevent damaging seal (5). Assemble coupling shaft (11).

5. Assemble thrust bearing (13).

6. Assemble drive link (14).

7. Assemble wear plate (15).

8. Assemble rotor assembly (16) with counterbore in rotor (16.1) down.

9. Assemble manifold plate (17), manifold (18) and commutator ring (21).

10. Assemble commutator (19) and new bonded ring (20).

11. Assemble new seal rings (7) on housing assembly (6) and end cover assembly (23).

12. Apply a generous amount of "STP" to both ends on sleeve protector (22) and assemble over unit and onto unit and onto housing assembly (6). Make sure sleeve protector is setting in a non-cocked position.

13. Assemble end cover assembly (23) onto sleeve protector (22) in a non-cocked position.

14. Assemble seven special bolts (24) and screw in finger tight. Alternately and progressively tighten the seven special bolts to pull end cover assembly (23) and sleeve protector (22) down into place. (Torque the seven special bolts to 50 ± 5 ft. lbs.)

*** NOTE
If it was necessary to remove thrust washers (8), thrust bearing (9), needle bearing (10) and needle bearing (12), the following assembly procedure must be followed.

1. Assemble new thrust washer (8), new thrust bearing (9), new thrust washer (8) in this order into housing assembly (6).

2. Press in new needle bearing (10) with suitable tools to a 2.365 ± .030 dimension into housing assembly (6). Note: Bearing should indicate which side to press against.

3. Press in new needle bearing (12) with suitable tools to a .18 ± .03 dimension into housing assembly (6). Note: Bearing should indicate which side to press against.