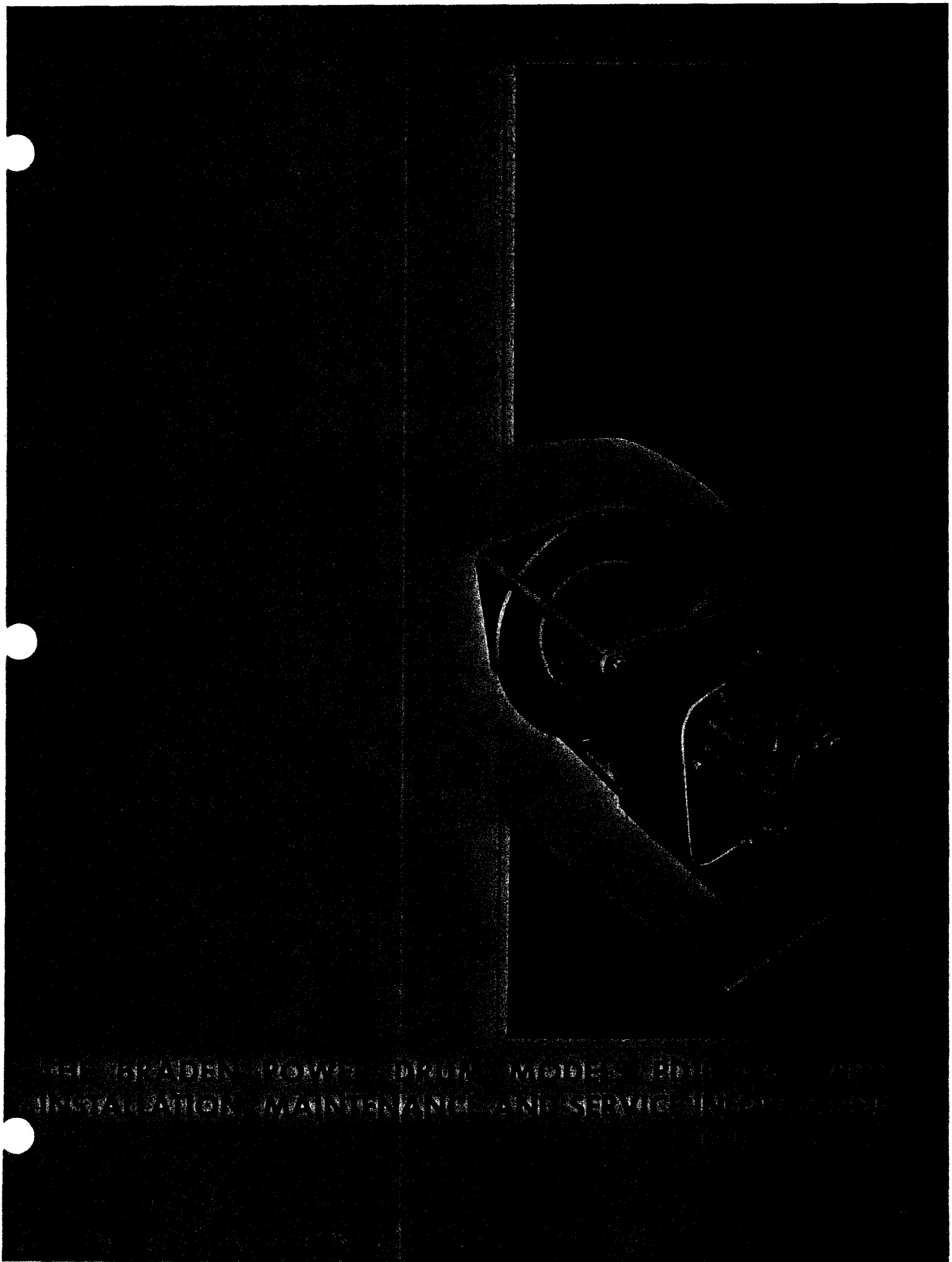




INSTALLATION SUGGESTIONS

ALL PD10 AND PD15 MODEL POWER DRUMS

1. The winch should be mounted with the center line of the cable drum horizontal. The base can be mounted in any position around this horizontal center line.
2. It is important that the winch is mounted on a surface that will not flex when the winch is used, since this would bind working parts of winch. Be sure that the winch is not mounted on an uneven surface. If necessary, use shim stocks to insure even mounting.
3. Hydraulic lines that operate winch should be one inch pipe or larger. Make lines as short as possible.
4. Make sure that hydraulic system back pressure is less than 100 PSI. If back pressure is higher than 100 PSI, the winch performance will be affected as well as the winch braking system which may allow the load to lower.
5. When the winch is holding a suspended static load, and other hydraulic units on the vehicle are being operated, back pressure in excess of 100 PSI in the winch directional valve may cause the load to lower.
6. The winch directional valve should have both working parts open directly into the tank lines in neutral positions.

MAINTENANCE SUGGESTIONS

I. CHECKING OIL LEVEL

1. Remove cable from winch.
2. There are two pipe plug holes in drum of winch. Turn winch drum until one plug is at highest point on drum. Oil should be level with lowest plug. Add 90 wt. (specified brands or equal) worm gear oil through top plug, if necessary.

II. OIL CHANGE INFORMATION

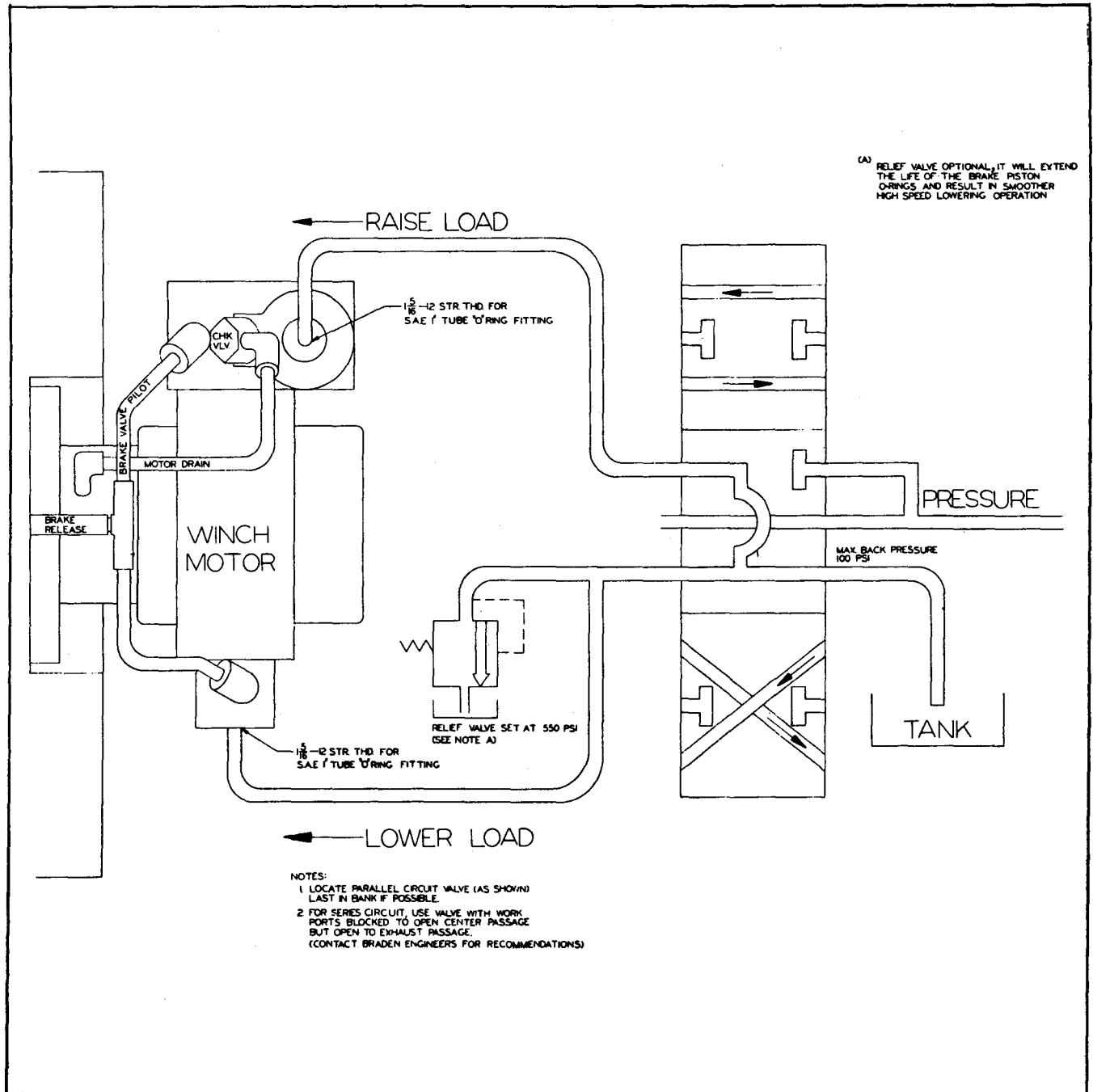
1. Oil should be drained after first 2 months operating time.
2. Fill winch with clean kerosene and run 15 minutes in each direction. Drain kerosene and add proper amount of approved 90 wt. worm gear oil. Oil should then be changed every 6 months.

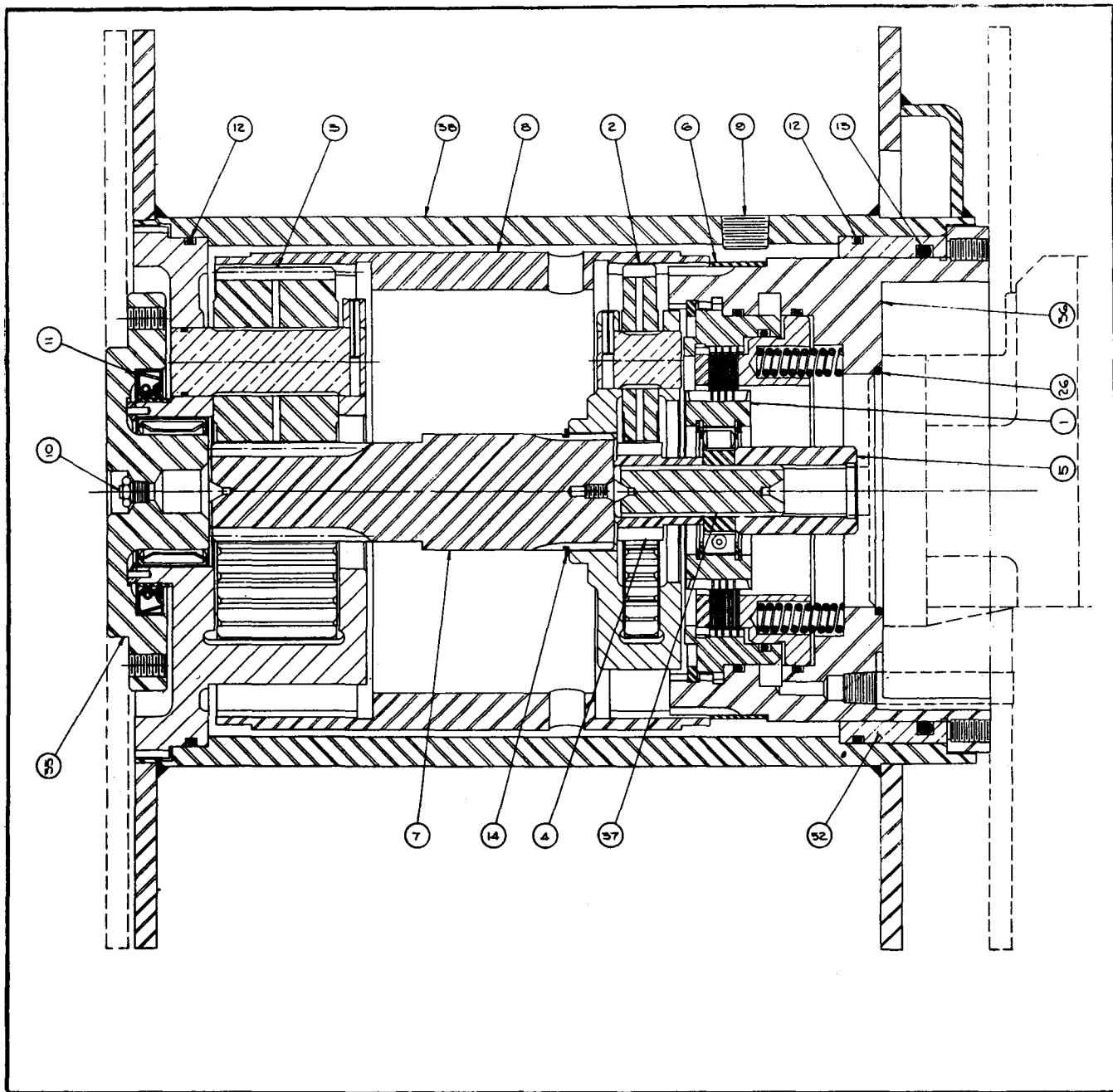
III. OIL CAPACITY RECOMMENDATIONS, PINTS

PD10-1.....	3	PD10-7.....	3
PD10-2.....	3	PD10-8.....	3
PD15-1.....	3	PD10-5.....	5
PD15-2.....	3	PD10-6.....	5
PD10-3.....	3	PD15-7.....	3
PD10-4.....	3	PD15-8.....	3
PD15-3.....	3	PD15-5.....	5
PD15-4.....	3	PD15-6.....	5

PD WINCH CONTROL CIRCUIT

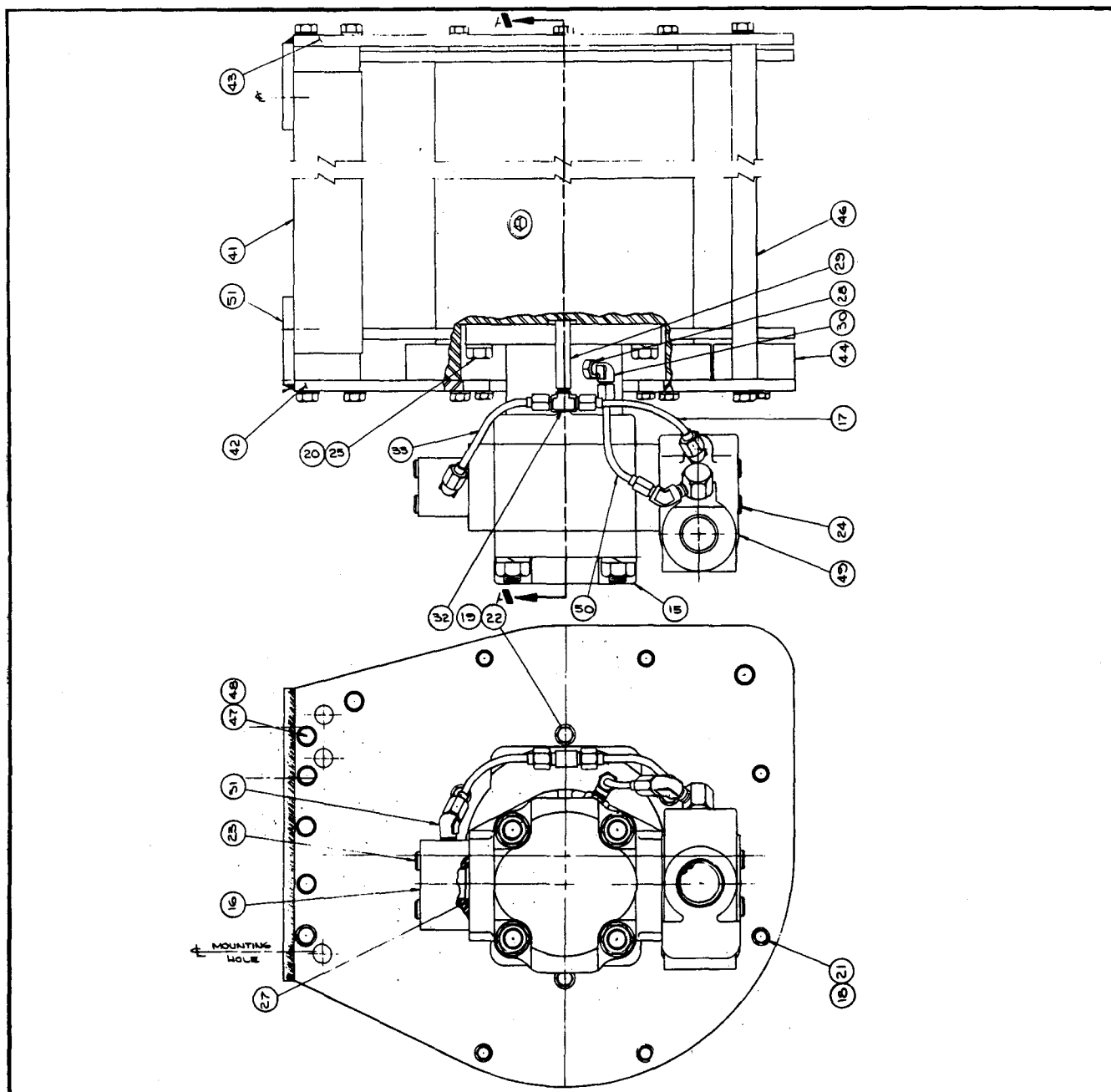
THE PD10 AND PD15 SERIES





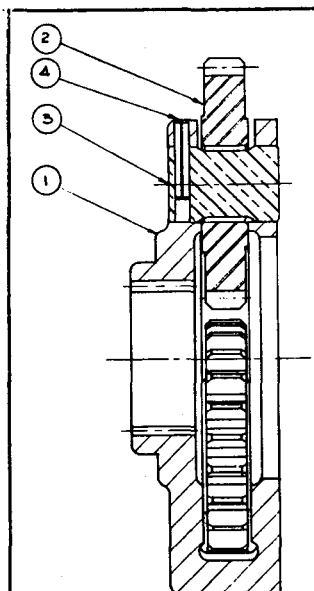
MATERIAL LIST-PD10 SERIES

Item No.	Qty.	Stock No.	Description	Item No.	Qty.	Stock No.	Description
1	1	81316	Brake/Clutch Assy.	18	6	11024	Lockwasher
2	1	81317	Primary Planet Assy.	19	12	18003	Lockwasher
3	1	81318	Secondary Planet Assy.	20	2	11026	Lockwasher
4	1	21054	Gear-Input Sun	21	6	11763	Capscrew
5	1	21055	Coupling-Motor	22	12	18046	Capscrew
6	1	21056	Spacer	23	4	21144	Capscrew
7	1	21095	Gear-Output Sun	24	4	21134	Capscrew
8	1	21101	Gear-Ring	25	2	13411	Capscrew
9	2	11084	Plug	26	1	21063	O-ring (4 x 4-1/4 x 1/8)
10	1	18062	Valve-Check	27	1	21150	O-ring (1-3/8 x 1-5/8 x 1/8)
11	1	21062	Seal-Oil	28	1	21162	Reducer
12	2	21033	O-ring (8-1/2 x 8-3/4 x 1/8)	29	1	21161	Nipple - Brk. Release
13	1	21064	O-ring (8 x 8-1/2 x 1/4)	30	1	21163	Elbow-Male 90°
14	1	21149	Snap Ring	31	2	21165	Elbow-Male 45°
15	1	21020	Motor-Hydraulic	32	1	21166	Tee-Male Branch
16	1	21136	Manifold	33	1	21169	Tube-Brk. Release
17	1	21168	Tube-Valve Pilot	35	1	21022	Support-Drum

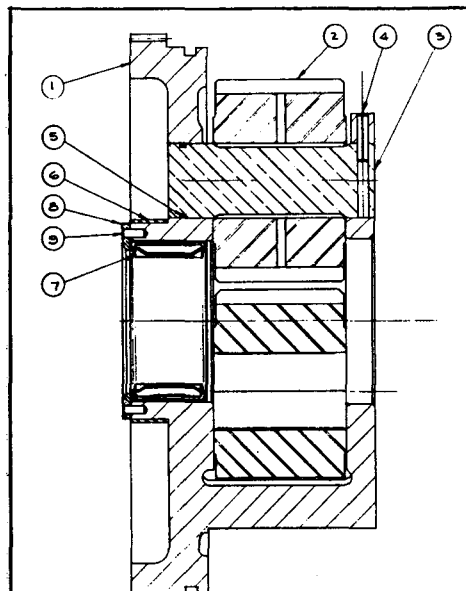


Item No.	Description	QUANTITY AND STOCK NUMBER							
		Qty.	PD10-1 PD10-2	Qty.	PD10-3 PD10-4	Qty.	PD10-5 PD10-6	Qty.	PD10-7 PD10-8
36	Brake Cylinder Assy.	1	81315	1	81315	1	81329	1	81315
37	Shaft-Input	1	21065	1	21065	1	21111	1	21065
38	Cable Drum Assy.	1	81321	1	81319	1	81320	1	81323
39	Clamp-Cable	1	21026	1	21026				
40	Capscrew	2	21043	2	21043				
41	Base	1	21082	1	21086	1	21085	1	21086
42	Plate-Mtr. Side	1	21077	1	21088	1	21083	1	21083
43	Plate-Side	1	21078	1	21087	1	21084	1	21084
44	Guard-Cable	3	21102	3	21103	3	21104	3	21104
45	Dowel Pin	6	21112	8	21112	10	21112	8	21112
46	Rod-Spacer	1	21139	1	21139	1	21137	1	21139
47	Lockwasher-Shakeproof	14	11014	14	11014	14	11014	14	11014
48	Capscrew	14	21964	14	21964	14	21964	14	21964
49	Counterbalance Valve Assy.	1	81322	1	81322	1	81322	1	81322
*50	Tube-Motor Drain	1	*21140	1	*21140	1	*21140	1	*21140
51	Strap	2	21184	2	21185	2	21185	2	21185
52	Bushing-Drum	1	21028	1	21028	1	21028	1	21028

*Change Item 50 to Stock No. 21146 for Models PD10-2, PD10-4, PD10-6 and PD10-8.

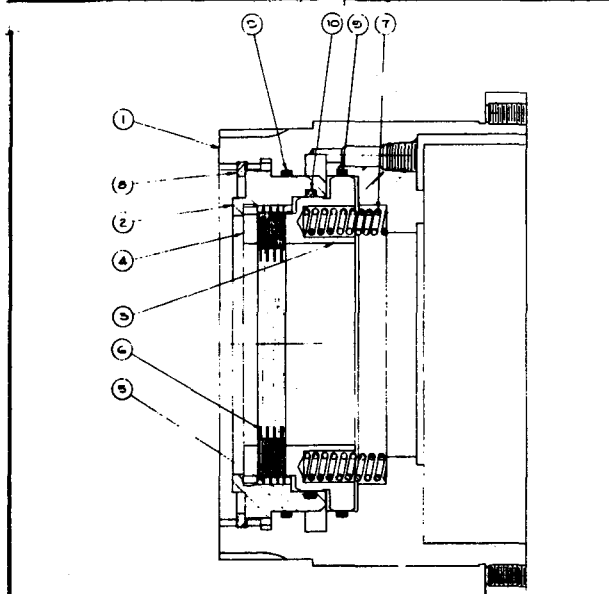


**PRIMARY PLANET
ASSEMBLY
STOCK NO. 81317**



**SECONDARY PLANET
ASSEMBLY
STOCK NO. 81318**

MATERIAL LIST- PD10 COMPONENTS



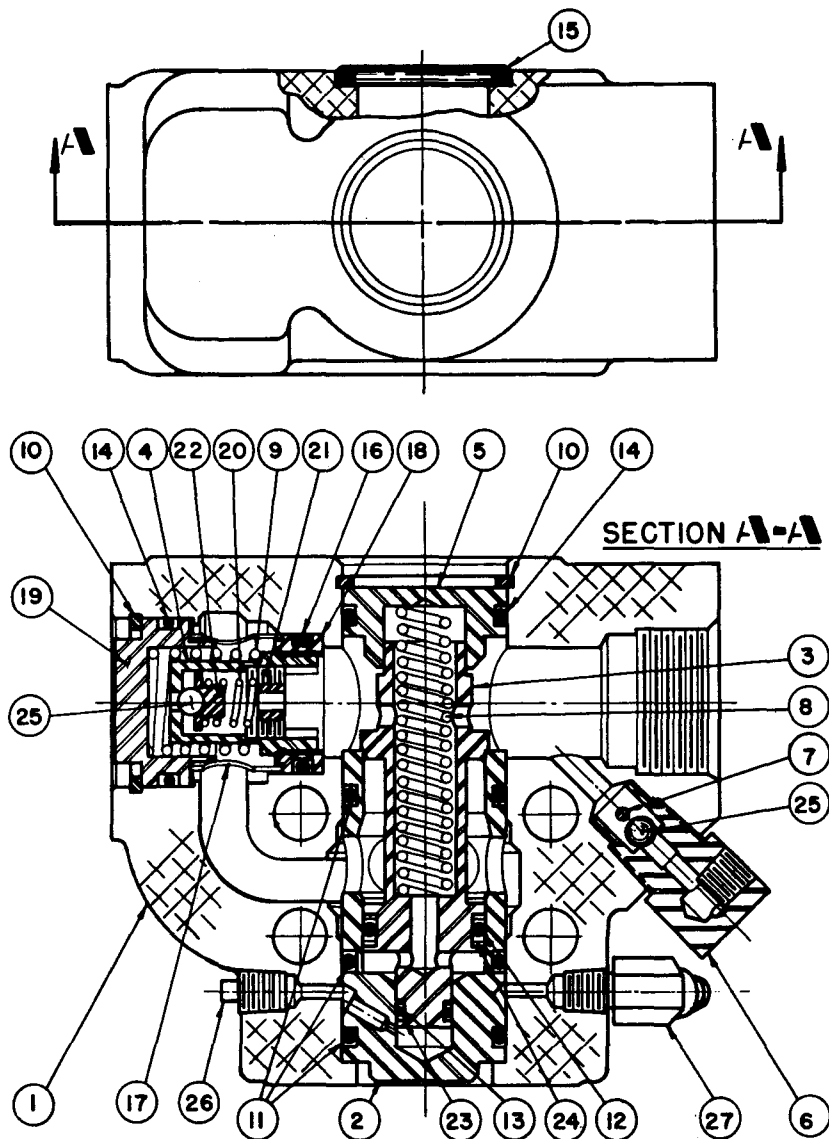
**BRAKE CYLINDER
ASSEMBLY
STOCK NO. 81329**

Stock No. 81317 - Primary Planet Carrier Assembly			
Item No.	Qty.	Stock No.	Description
1	1	21023	Carrier-Primary Planet
2	3	21046	Gear-Primary Planet
3	3	21048	Shaft-Prime Planet Gear
4	3	21049	Rollpin (3/16 dia. x 3/4)

Stock No. 81318 - Secondary Planet Carrier Assembly			
Item No.	Qty.	Stock No.	Description
1	1	21021	Carrier-Secondary Planet
2	3	21047	Gear-Secondary Planet
3	3	21057	Shaft-Secondary Planet
4	3	21058	Rollpin
5	3	21160	O-ring (1-1/16 x 1-3/16 x 1/16)
6	1	21050	Sleeve-Wear
7	1	21051	Bearing-Roller
8	1	21059	Washer-Thrust
9	2	21060	Pin-Thrust Washer

Stock No. 81329 - Brake Cylinder Assembly			
Item No.	Qty.	Stock No.	Description
1	1	21066	Cylinder-Brake
2	1	21092	Ring-Brake
3	1	21027	Piston-Brake Release
4	3	21035	Plate-Back Up
5	4	21029	Disc-Brake
6	4	21036	Disc-Friction
7	16	21037	Springs-Brake
8	1	21038	Ring-Retainer
9	2	10052	O-ring (6 ID x 6-1/4 OD)
10	1	21040	O-ring (5-1/4 ID x 5-1/2 OD)
11	1	21100	Plate-Spring

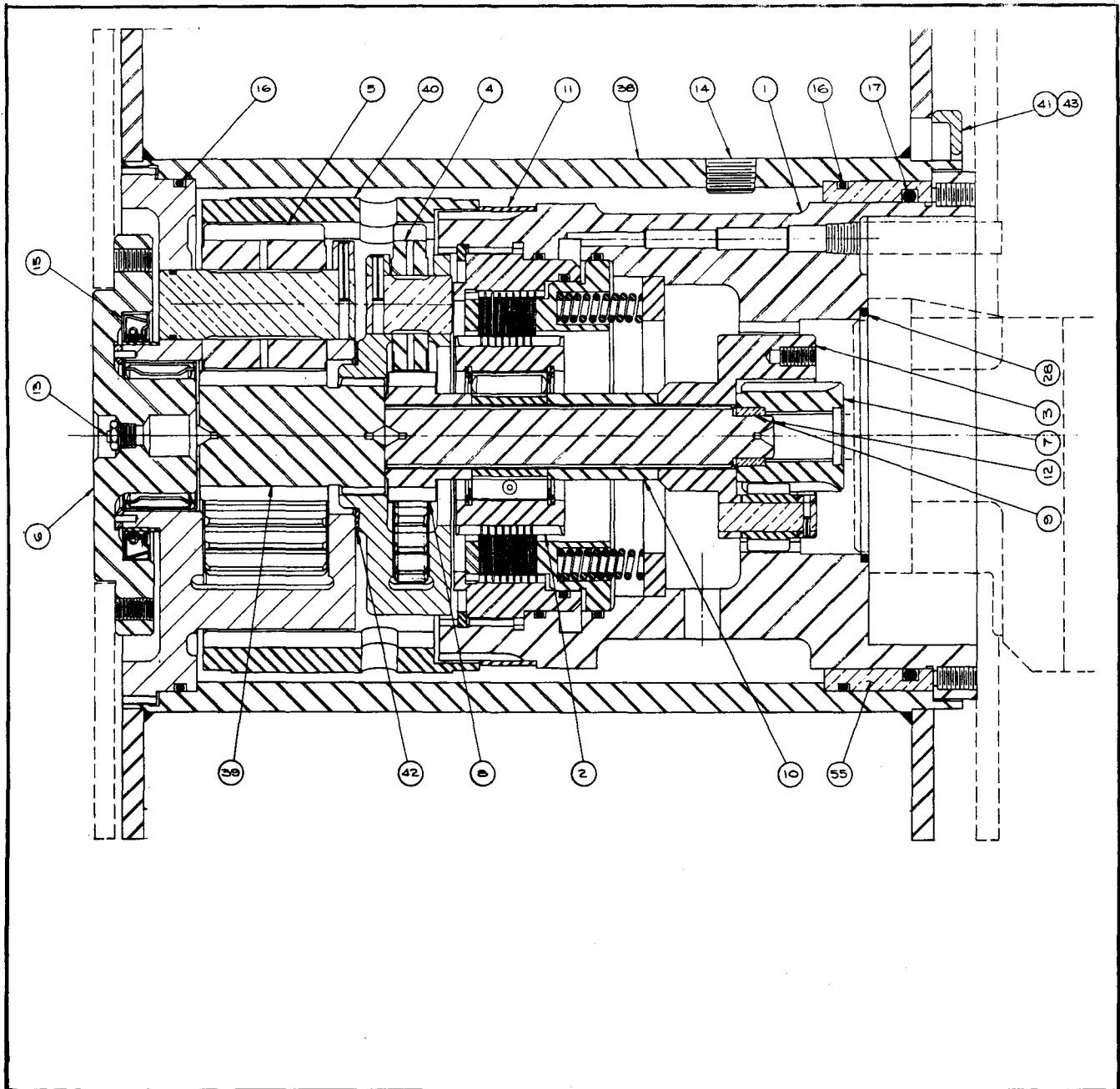
Stock No. 81315 - Brake Cylinder Assembly			
Item No.	Qty.	Stock No.	Description
1	1	21024	Cylinder-Brake
2	1	21034	Ring-Brake
3	1	21027	Piston-Brake Release
4	1	21035	Plate-Back Up
5	4	21029	Disc-Brake
6	4	21036	Disc-Friction
7	16	21037	Springs-Brake
8	1	21038	Ring-Snap (TRUARC No. 5000-625)
9	2	10052	O-ring (6 ID x 6-1/4 x 1/8)
10	1	21040	O-ring (5-1/4 ID x 5-1/2 x 1/8)



MATERIAL LIST-COUNTERBALANCE VALVE ASSEMBLY

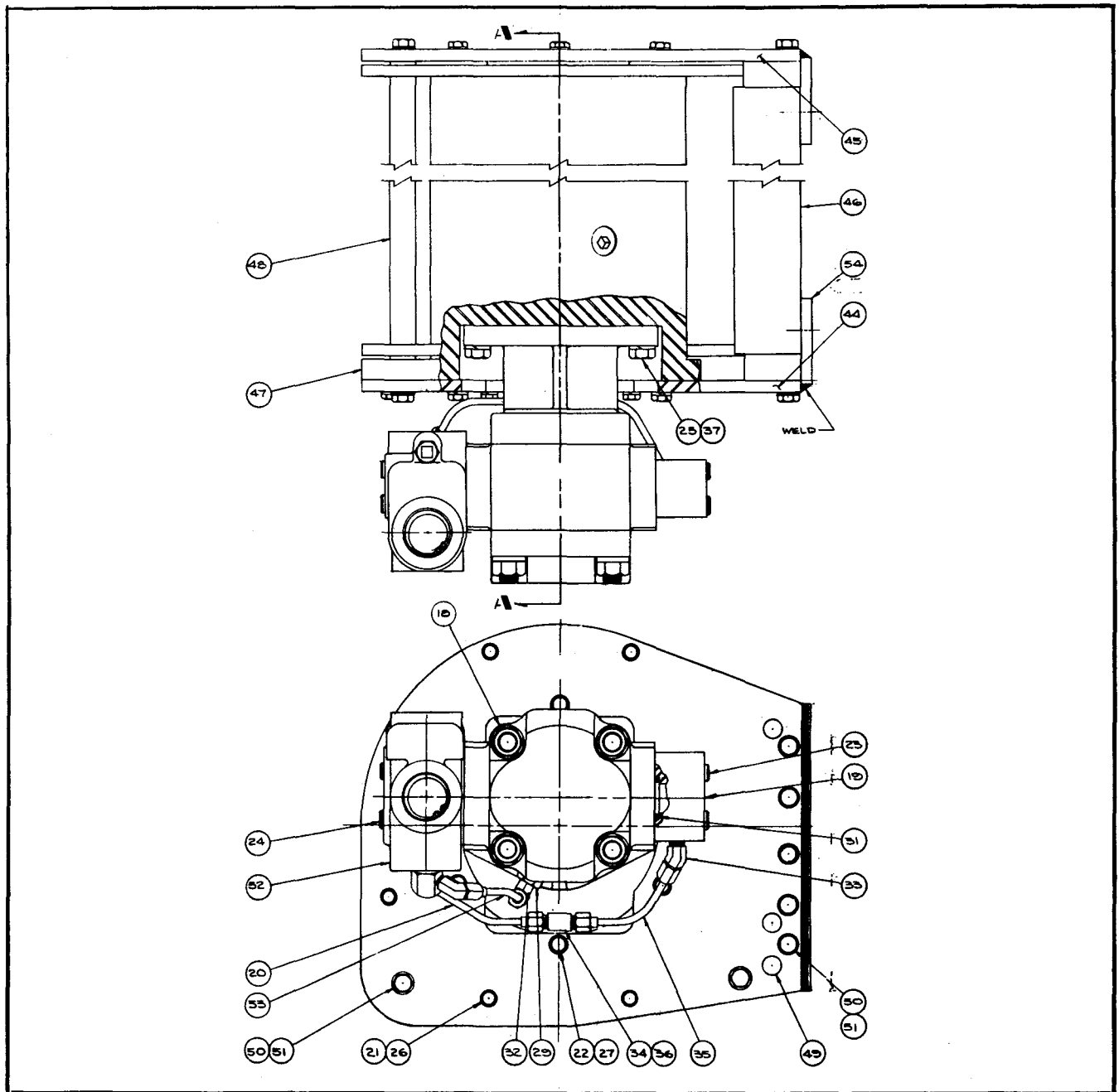
STOCK NO. 81322 APPLICABLE TO BOTH THE PD10 AND THE PD15 SERIES

Item No.	Qty.	Stock No.	Description	Item No.	Qty.	Stock No.	Description
1	1	21025	Housing-Valve	15	1	21150	O-ring (1-3/8 x 1-5/8 x 1/8)
2	1	21118	Cylinder-Valve	16	1	12465	O-ring (1 x 1-1/4 x 1/8)
3	11	21116	Piston-Valve	17	1	21151	Sleeve-Check Valve
4	1	21117	Valve-Check	18	1	21152	Seat-Check Valve
5	1	21115	Retainer-Spring	19	1	21153	Stop-Check Valve Spring
6	1	21124	Valve-Mtr. Drain Check	20	1	13048	Spring-Adj. Nut
7	1	12025	Rollpin	21	1	21154	Nut-Press. Relief Spring
8	1	21113	Spring-Valve Piston	22	1	21155	Retainer-Press. Relief Ball
9	1	21156	Spring-Check Valve	23	2	21157	Ring-Back-up
10	2	21121	Snap Ring	24	2	21159	Ring-Back-up
11	3	21120	O-ring (1-1/4 x 1-1/2 x 1/8)	25	2	21158	Ball-Press. Relief Ball
12	1	21123	O-ring (7/8 x 1-1/8 x 1/8)	26	1	17309	Plug-Pipe
13	1	21119	O-ring (3/8 x 1/2 x 1/16)	27	1	21189	Filter Fitting
14	2	21148	O-ring (1-5/16 x 1-9/16 x 1/8)				



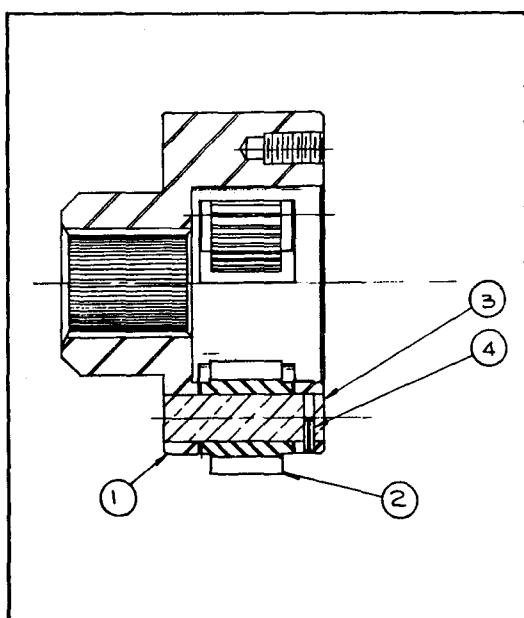
MATERIAL LIST-PD15 SERIES

Item No.	Qty.	Stock No.	Description	Item No.	Qty.	Stock No.	Description
1	1	81325	Brake Cylinder Assy.	20	1	21168	Tube-Valve Pilot
2	1	81324	Brake/Clutch Assy.	21	6	11763	Capscrew
3	1	81326	Primary Planet Assy.	22	12	18046	Capscrew
4	1	81327	Secondary Planet Assy.	23	4	21144	Capscrew
5	1	81328	Output Planet Carrier Assy.	24	4	21134	Capscrew
6	1	21022	Support-Drum	25	2	13411	Capscrew
7	1	21098	Gear-Motor	26	6	11024	Lockwasher
8	1	21072	Gear-Secondary Sun	27	12	18003	Lockwasher
9	1	21070	Shaft-Input	28	1	21063	O-ring (4 x 4-1/4 x 1/8)
10	1	21071	Spacer-Input Shaft	29	1	21162	Reducer
11	1	21056	Spacer	30	1	21161	Nipple-Brk. Release
12	1	21076	Bushing-Mtr. Gear	31	1	21150	O-ring (1-3/8 x 1-5/8 x 1/8)
13	1	18062	Valve-Check	32	1	21163	Elbow-Male 90°
14	2	11084	Plug	33	2	21165	Elbow-Male 45°
15	1	21062	Seal-Oil	34	1	21166	Tee-Male Branch
16	2	21033	O-ring (8-1/2 x 8-3/4 x 1/8)	35	1	21169	Tube-Brk. Release
17	1	21064	O-ring (8 x 8-1/2 x 1/4)	37	1	11026	Lockwasher
18	1	21020	Motor-Hydraulic	55	1	21028	Bushing-Drum
19	1	21136	Manifold				

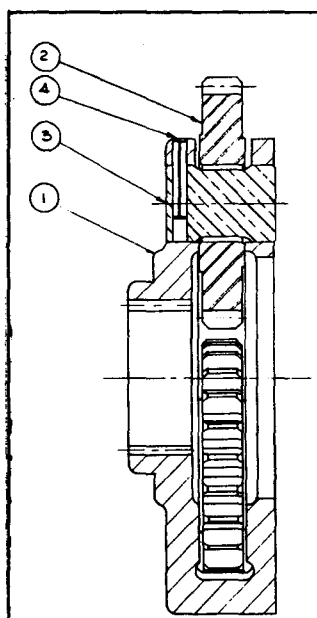


Item No.	Description	QUANTITY AND STOCK NUMBER							
		Qty.	PD15-1 PD15-2	Qty.	PD15-3 PD15-4	Qty.	PD15-5 PD15-6	Qty.	PD15-7 PD15-8
38	Cable Drum Assy.	1	81319	1	81319	1	81320	1	81323
39	Gear-Output Sun	1	21096	1	21096	1	21109	1	21096
40	Gear-Ring	1	21074	1	21074	1	21108	1	21074
41	Clamp-Cable	1	21026	1	21026				
42	Bearing Race	1	21061	1	21061			1	21061
43	Capscrew	2	21043	2	21043				
43	Snap Ring					1	21149		
44	Plate-Side Mtr.	1	21080	1	21088	1	21083	1	21083
45	Plate-Side	1	21081	1	21087	1	21084	1	21084
46	Base	1	21082	1	21086	1	21085	1	21086
47	Guard-Cable	3	21103	3	21103	3	21104	3	21104
48	Rod-Spacer	1	21139	1	21139	1	21137	1	21139
49	Dowel Pin	8	21112	10	21112	10	21112	10	21112
50	Capscrew	14	21964	14	21964	14	21964	14	21964
51	Lockwasher-Shakeproof	14	11014	14	11014	14	11014	14	11014
52	Counterbalance Valve Assy.	1	81322	1	81322	1	81322	1	81322
*53	Tube-Mtr. Drain	1	*21140	1	*21140	1	*21140	1	*21140
54	Strap	2	21184	2	21185	2	21185	2	21185

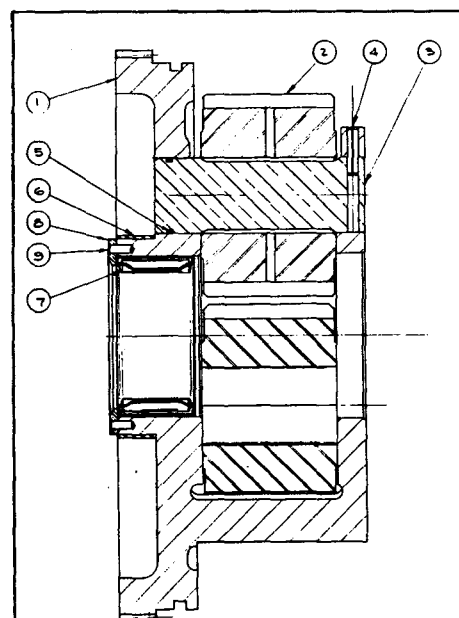
*Change Item 53 to Stock No. 21146 for Models PD15-2, PD15-4, PD15-6 and PD15-8.



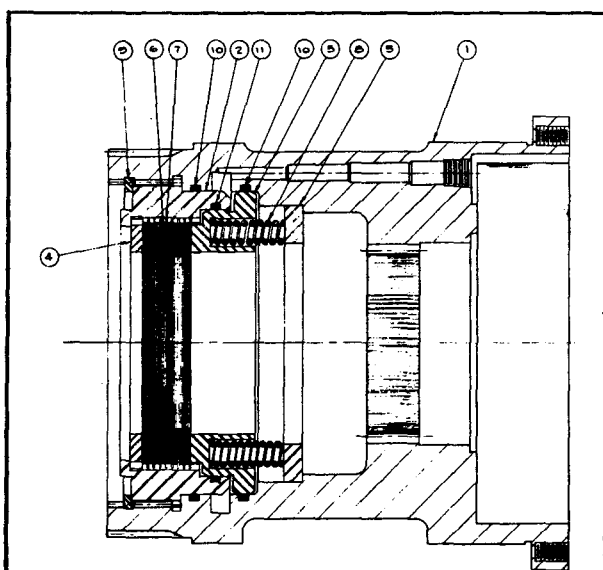
**PRIMARY PLANET
ASSEMBLY
STOCK NO. 81326**



**SECONDARY PLANET
ASSEMBLY
STOCK NO. 81327**



**OUTPUT PLANET
CARRIER ASSEMBLY
STOCK NO. 81328**



**BRAKE CYLINDER
ASSEMBLY
STOCK NO. 81325**

MATERIAL LIST- PD15 COMPONENTS

Stock No. 81326 - Primary Planet Assembly

Item No.	Qty.	Stock No.	Description
1	1	21069	Carrier-Planet
2	3	21067	Gear-Planet
3	3	21068	Shaft
4	3	21045	Rollpin

Stock No. 81327 - Secondary Planet Assembly

Item No.	Qty.	Stock No.	Description
1	1	21023	Carrier-Planet
2	3	21099	Gear-Planet
3	3	21048	Shaft-Planet Gear
4	3	21049	Rollpin

Stock No. 81328 - Output Planet Carrier Assembly

Item No.	Qty.	Stock No.	Description
1	1	21021	Carrier-Output
2	3	21073	Gear-Planet
3	3	21057	Shaft-Planet Gear
4	3	21058	Rollpin
5	3	21160	O-ring (1-1/16 x 1-3/16 x 1/16)
6	1	21050	Sleeve-Wear
7	1	21051	Bearing-Roller
8	1	21059	Washer-Thrust
9	2	21060	Pin-Thrust Washer

Stock No. 81325 - Brake Cylinder Assembly

Item No.	Qty.	Stock No.	Description
1	1	21066	Cylinder-Brake
2	1	21092	Ring-Brake
3	1	21027	Piston-Brk. Release
4	1	21035	Plate-Back Up
5	1	21100	Plate-Spring
6	8	21029	Disc-Brake
7	8	21036	Disc-Friction
8	16	21037	Spring-Brake
9	1	21038	Snap Ring
10	2	10052	O-ring (6 ID x 6-1/4 OD)
11	1	21040	O-ring (5-1/4 ID x 5-1/2 OD)

SUGGESTIONS FOR TROUBLE SHOOTING

A. Winch will not lower load.

This problem indicates the winch brake is not hydraulically releasing. The problem can be cured by disassembling and cleaning the counterbalance valve. Be sure to follow the following disassembly and cleaning directions for the counterbalance valve:

1. Remove the counterbalance valve from the winch by first removing all tubing from the valve.
2. Next, remove four socket head bolts holding the valve to the hydraulic motor.
3. Remove both snap rings (No. 10 on assembly drawing).
4. Carefully push valve cylinder (No. 2), valve piston (No. 3) and spring retainer (No. 5) out of valve body.
5. Carefully push check valve (No. 4) and check valve spring stop (No. 19) out of valve body.
6. Remove check valve seat (No. 18).
7. Remove all O-rings and examine for cuts or nicks. Replace if necessary.
8. Clean all parts in kerosene, dry with compressed air.
9. Examine cylinder and piston assembly for cuts in valve seat.
10. Be sure that small orifice in cylinder is open.
11. Re-assemble three O-rings on cylinder and apply a light coat of grease to cylinder.
12. Carefully push cylinder into valve body.
13. Fill small end of cylinder with light oil.
14. Assemble O-rings on piston, apply a light coat of grease and push piston into cylinder.
15. Replace spring and cap and insert snap ring.
16. Install check valve seat (No. 18), check valve (No. 4), check valve sleeve (No. 17), check valve spring (No. 9), and check valve spring stop (No. 19) into valve and install snap ring.
17. Mount valve on hydraulic motor and install tubing.

B. Winch leaks large volume of oil through vent plug. This is caused by hydraulic oil leaking into winch through hydraulic motor seal or damaged O-ring in the winch brake.

1. In order to determine cause of leak remove tubing

from motor manifold to winch brake.

2. Attach hydraulic jack to brake connection and apply 500 PSI to brake. The brake should be able to hold this pressure for ten minutes. Be sure all connections are tight and that oil does not leak back into the jack.
3. If the brake is able to hold pressure, then the motor seal is leaking and should be replaced according to motor manufacturer's recommendations.
4. If the hydraulic seal is replaced, it is necessary to remove the drain line check valve from the counterbalance valve. Be sure check valve is clean and that it does not leak. Replace, if necessary.
5. If the brake will not hold pressure, the winch should be returned to the factory for repair.

C. Winch will not hoist rated load.

1. Be sure that winch has not been mounted on an uneven surface. If necessary shim stock should be used.
2. Be sure to check for proper hydraulic pressure to winch counterbalance valve. Check pressure at the winch for accurate readings.
3. Be sure that hydraulic system that runs winch is not running over 180°F.
4. Remember that winch ratings are established on first layer of cable.
5. Be sure cable sheaves used with the winch are operating efficiently.

D. Winch runs hot (over 200°F) or makes excessive noise.

1. Be sure winch has not been mounted on an uneven surface.
2. Be sure hydraulic system that runs winch is not running over 180°F.

E. Winch slowly drops load with control valve in neutral position.

1. Caused by excessive back pressure at motor manifold. Back pressure must be limited to 100 PSI or less.

F. Winch chatters while raising rated capacity load.

1. This is probably caused by relief valve in hydraulic system trying to by-pass.