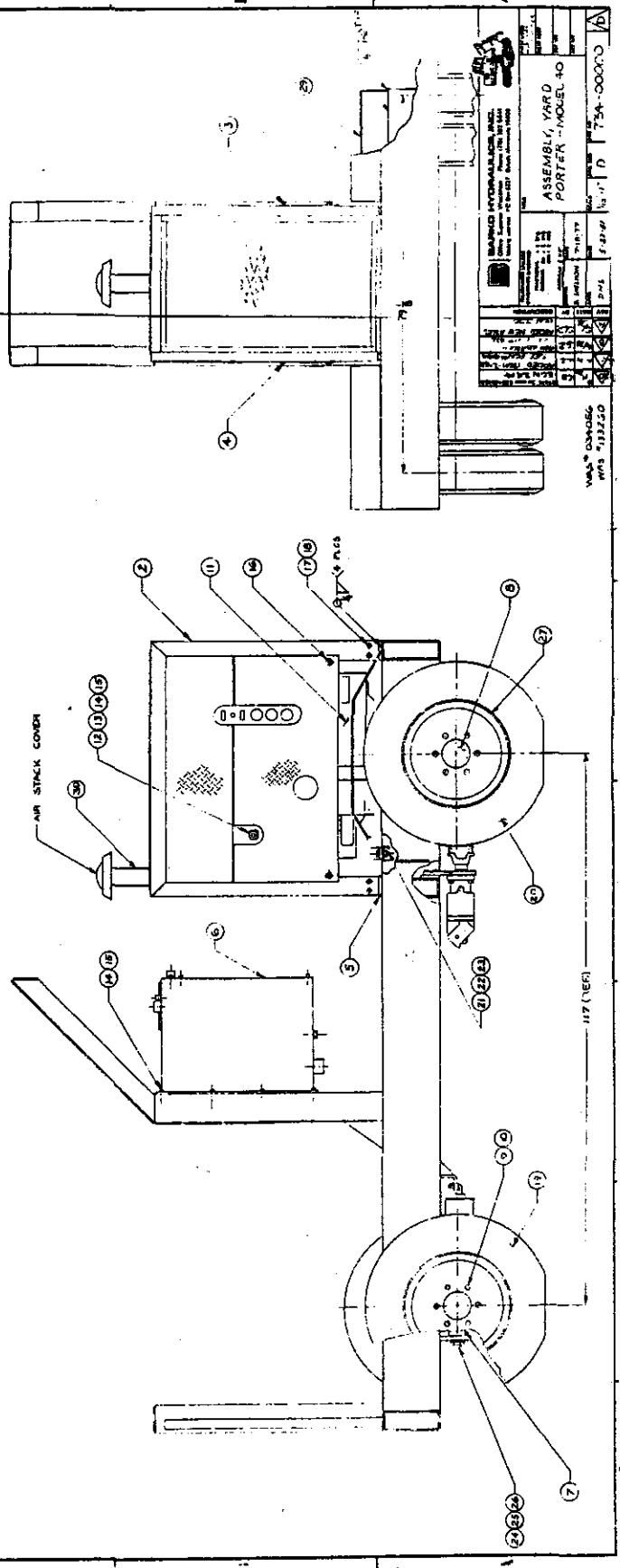
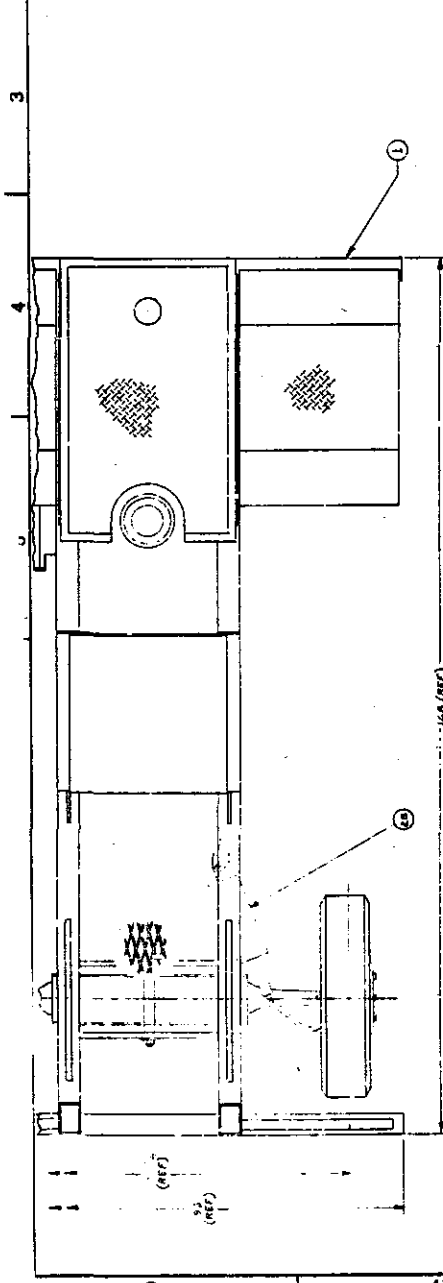
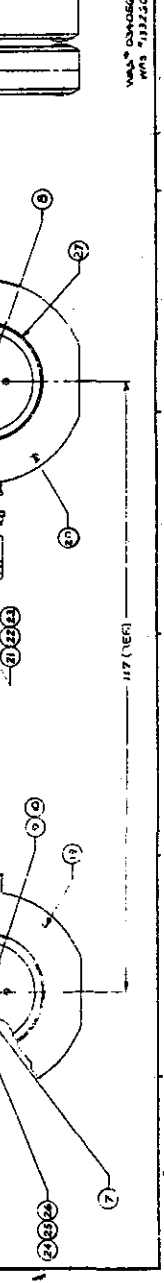


40804

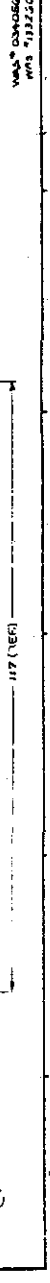
ITEM NO.	DESCRIPTION	QTY	UNIT
1	WELDMENT, PORTER FRAME	1	EA
2	WELDMENT, ENGINE MOUNT	1	EA
3	WELDMENT, ENGINE MOUNT	1	EA
4	WELDMENT, ENGINE MOUNT	1	EA
5	WELDMENT, ENGINE MOUNT	1	EA
6	WELDMENT, ENGINE MOUNT	1	EA
7	WELDMENT, ENGINE MOUNT	1	EA
8	WELDMENT, ENGINE MOUNT	1	EA
9	WELDMENT, ENGINE MOUNT	1	EA
10	WELDMENT, ENGINE MOUNT	1	EA
11	WELDMENT, ENGINE MOUNT	1	EA
12	WELDMENT, ENGINE MOUNT	1	EA
13	WELDMENT, ENGINE MOUNT	1	EA
14	WELDMENT, ENGINE MOUNT	1	EA
15	WELDMENT, ENGINE MOUNT	1	EA
16	WELDMENT, ENGINE MOUNT	1	EA
17	WELDMENT, ENGINE MOUNT	1	EA
18	WELDMENT, ENGINE MOUNT	1	EA
19	WELDMENT, ENGINE MOUNT	1	EA
20	WELDMENT, ENGINE MOUNT	1	EA
21	WELDMENT, ENGINE MOUNT	1	EA
22	WELDMENT, ENGINE MOUNT	1	EA
23	WELDMENT, ENGINE MOUNT	1	EA
24	WELDMENT, ENGINE MOUNT	1	EA
25	WELDMENT, ENGINE MOUNT	1	EA
26	WELDMENT, ENGINE MOUNT	1	EA
27	WELDMENT, ENGINE MOUNT	1	EA
28	WELDMENT, ENGINE MOUNT	1	EA
29	WELDMENT, ENGINE MOUNT	1	EA
30	WELDMENT, ENGINE MOUNT	1	EA



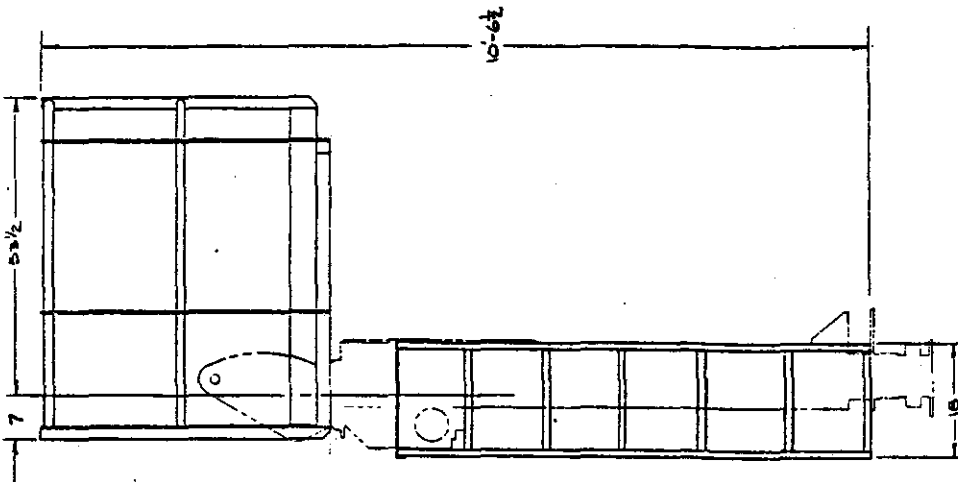
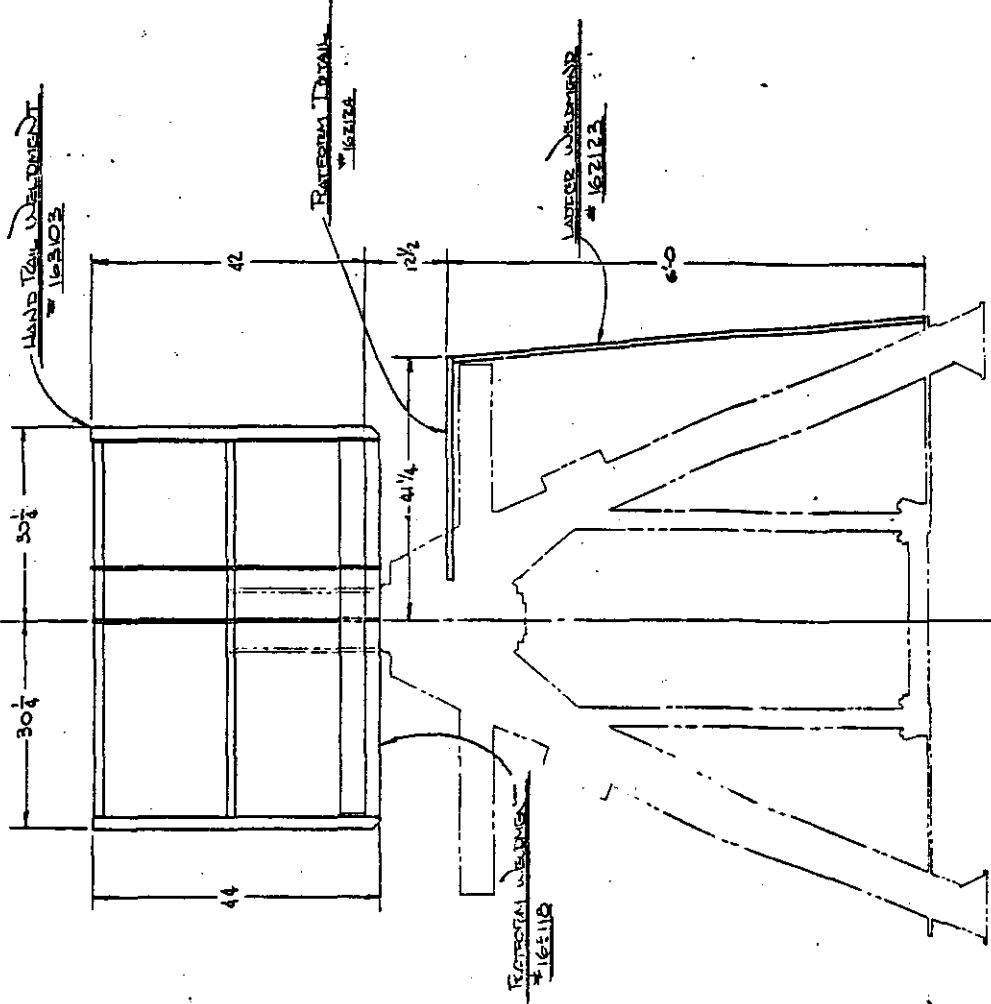
ITEM NO.	DESCRIPTION	QTY	UNIT
1	WELDMENT, PORTER FRAME	1	EA
2	WELDMENT, ENGINE MOUNT	1	EA
3	WELDMENT, ENGINE MOUNT	1	EA
4	WELDMENT, ENGINE MOUNT	1	EA
5	WELDMENT, ENGINE MOUNT	1	EA
6	WELDMENT, ENGINE MOUNT	1	EA
7	WELDMENT, ENGINE MOUNT	1	EA
8	WELDMENT, ENGINE MOUNT	1	EA
9	WELDMENT, ENGINE MOUNT	1	EA
10	WELDMENT, ENGINE MOUNT	1	EA
11	WELDMENT, ENGINE MOUNT	1	EA
12	WELDMENT, ENGINE MOUNT	1	EA
13	WELDMENT, ENGINE MOUNT	1	EA
14	WELDMENT, ENGINE MOUNT	1	EA
15	WELDMENT, ENGINE MOUNT	1	EA
16	WELDMENT, ENGINE MOUNT	1	EA
17	WELDMENT, ENGINE MOUNT	1	EA
18	WELDMENT, ENGINE MOUNT	1	EA
19	WELDMENT, ENGINE MOUNT	1	EA
20	WELDMENT, ENGINE MOUNT	1	EA
21	WELDMENT, ENGINE MOUNT	1	EA
22	WELDMENT, ENGINE MOUNT	1	EA
23	WELDMENT, ENGINE MOUNT	1	EA
24	WELDMENT, ENGINE MOUNT	1	EA
25	WELDMENT, ENGINE MOUNT	1	EA
26	WELDMENT, ENGINE MOUNT	1	EA
27	WELDMENT, ENGINE MOUNT	1	EA
28	WELDMENT, ENGINE MOUNT	1	EA
29	WELDMENT, ENGINE MOUNT	1	EA
30	WELDMENT, ENGINE MOUNT	1	EA



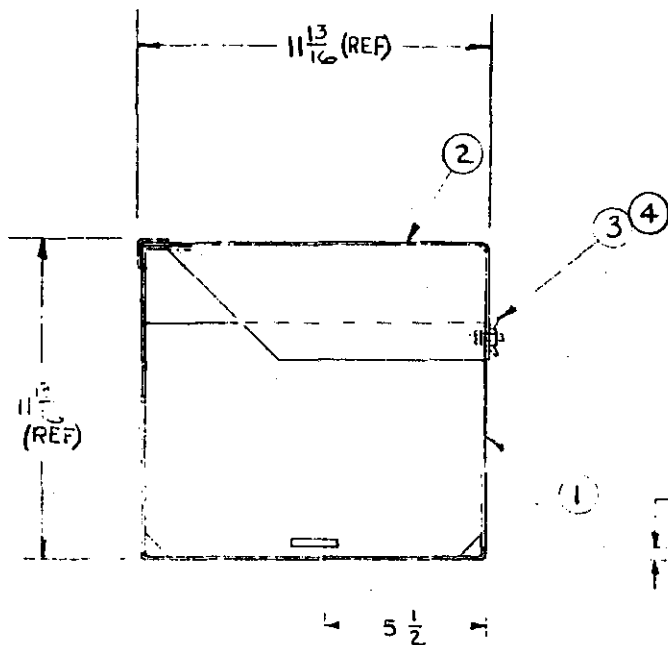
ITEM NO.	DESCRIPTION	QTY	UNIT
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2	WELDMENT, ENGINE MOUNT	1	EA
3	WELDMENT, ENGINE MOUNT	1	EA
4	WELDMENT, ENGINE MOUNT	1	EA
5	WELDMENT, ENGINE MOUNT	1	EA
6	WELDMENT, ENGINE MOUNT	1	EA
7	WELDMENT, ENGINE MOUNT	1	EA
8	WELDMENT, ENGINE MOUNT	1	EA
9	WELDMENT, ENGINE MOUNT	1	EA
10	WELDMENT, ENGINE MOUNT	1	EA
11	WELDMENT, ENGINE MOUNT	1	EA
12	WELDMENT, ENGINE MOUNT	1	EA
13	WELDMENT, ENGINE MOUNT	1	EA
14	WELDMENT, ENGINE MOUNT	1	EA
15	WELDMENT, ENGINE MOUNT	1	EA
16	WELDMENT, ENGINE MOUNT	1	EA
17	WELDMENT, ENGINE MOUNT	1	EA
18	WELDMENT, ENGINE MOUNT	1	EA
19	WELDMENT, ENGINE MOUNT	1	EA
20	WELDMENT, ENGINE MOUNT	1	EA
21	WELDMENT, ENGINE MOUNT	1	EA
22	WELDMENT, ENGINE MOUNT	1	EA
23	WELDMENT, ENGINE MOUNT	1	EA
24	WELDMENT, ENGINE MOUNT	1	EA
25	WELDMENT, ENGINE MOUNT	1	EA
26	WELDMENT, ENGINE MOUNT	1	EA
27	WELDMENT, ENGINE MOUNT	1	EA
28	WELDMENT, ENGINE MOUNT	1	EA
29	WELDMENT, ENGINE MOUNT	1	EA
30	WELDMENT, ENGINE MOUNT	1	EA



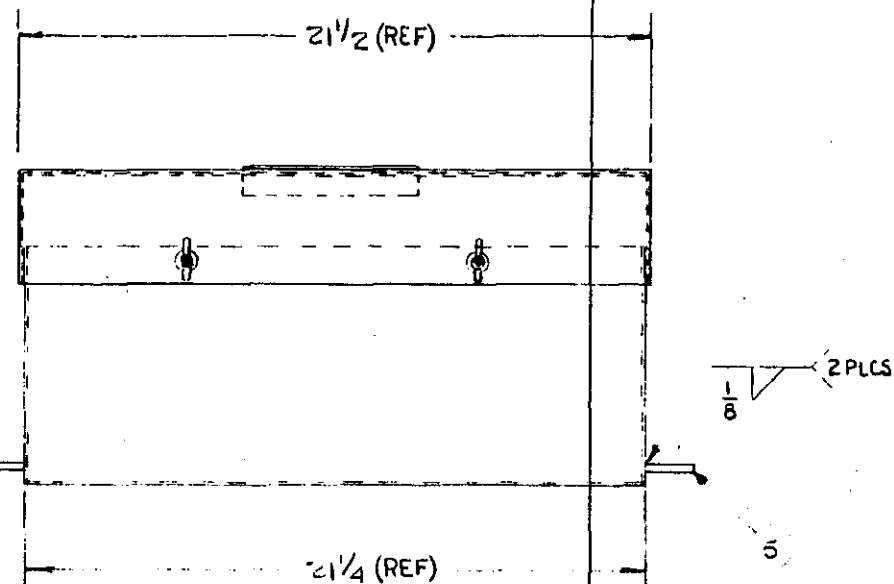
DATE	SYM	REVISION RECORD	AUTH.	DR.	CK.



BARKO HYEF/USCS
 DRAWING NO. 162102
 ASSEMBLY - HAND SAW - RATED TO VAIL - LADDER
 MODEL 40 VAIL PORTAL
 DATE 1/1/1961
 SCALE 1"=1'
 DWG. BY: J. R. BARKO
 DWG. NO. 162102



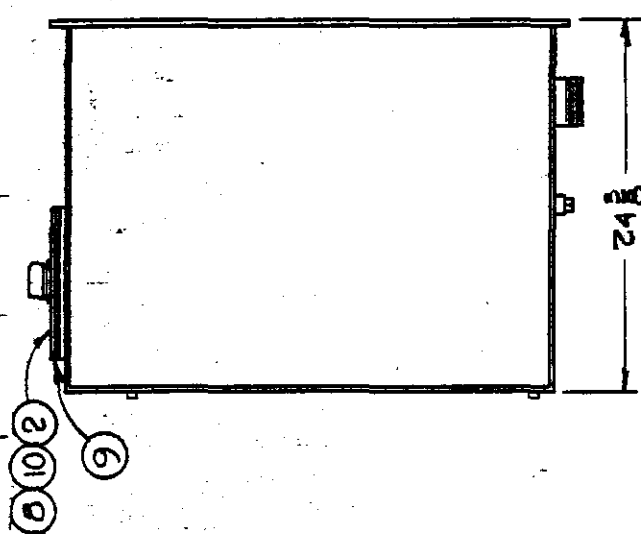
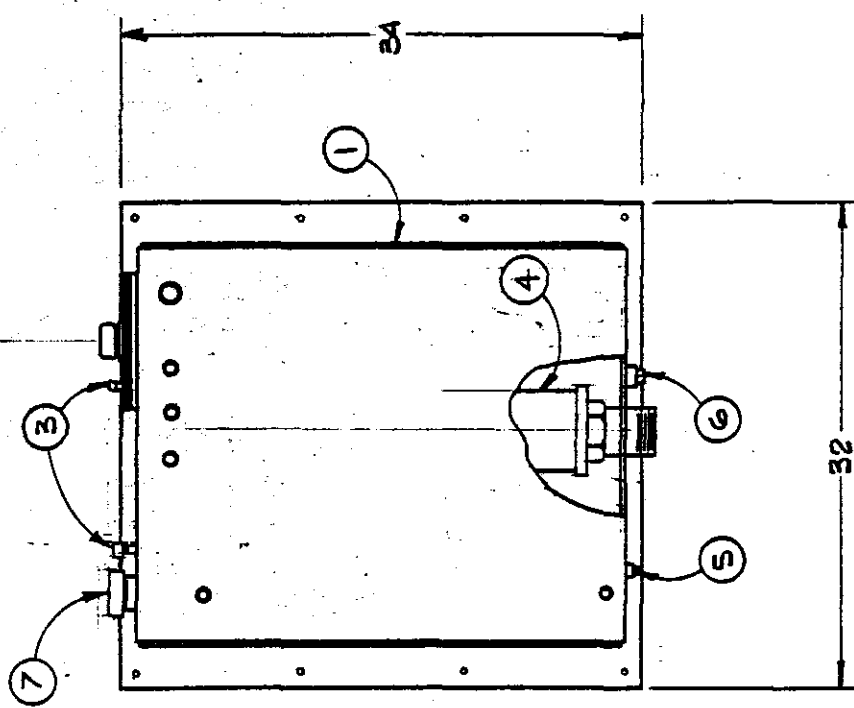
ITEM	QTY	MATL	PART NO	DESCRIPTION	WT
1	1	B/M	163-00128	WELDT- BATTERY BOX BASE	19
2	1	B/M	163-00129	WELDT- BATTERY BOX COVER	9
3	2	-	514-00435	NUT-WING 1/4-20	-
4	2	-	514-00080	WASHER-FLAT 1/4	-
5	2	-	401-00236	BAR-MTG. TAB	.11




C	5-15-81	CB	ECN 2414 ADDED ITEM 5
B	1-80	JDM	ADDED B/M TO DRAWING ECN 1291
1	1-77	RS	REMOVED COVER FROM JDM 1 EXST.
NO.	DATE	BY	REVISION
MATERIAL:			BARKO HYDRAULICS, INC. MANUFACTURERS OF BARKO STRONG-ARM LOGGING & INDUSTRIAL LOADERS P. O. Box 6227 / Duluth, Minnesota 55804 / (218) 727-7474
NO. REQ'D.	1	ASSEMBLY BATTERY BOX	
WT.	27.22	M-160	
ASST.	SCALE: 3"=1'-0"	DATE: 12-76	162-00168
MODEL:	160	DWN: SATTER	APR: DHS

FILMED

QTY	QTY	MATERIAL	Part No.	DESCRIPTION	WT.
1	1	---	645136	WELDMENT, RESERVOIR	35.3
2	1	---	643201	ASSEMBLY, INJECTION COVER	7
3	2	---	641101	WELDMENT, DIPSTICK	2
4	1	---	66019	STRAINER M-680-B	3
5	1	---	22304	FLX. PIPE 1/2"	.18
6	1	---	22306	FLX. PIPE 1"	.32
7	1	---	39507	CAP, VEL VAC #68G-2	-
8	6	---	14011	WASHER, LOCK 3/8	-
9	1	---	651302	GRASHER	-
10	6	---	10052	BOLT, HEX HD. 3/8-16 X 3/4 GR 2	-

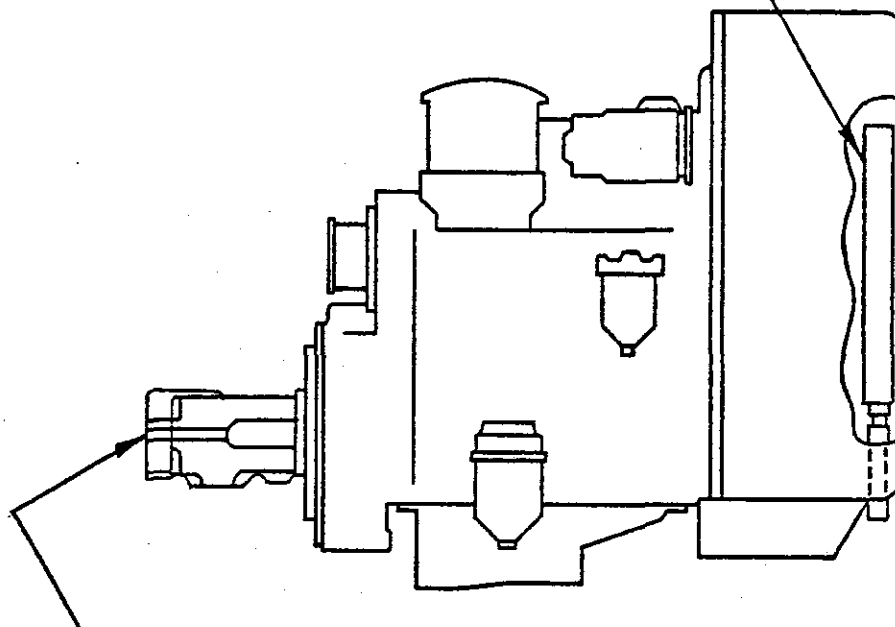


A 12-78 SZ		UPDATED		SEE ECN # 620	
NO.	DATE	BY	REVISION		
 BARKO HYDRAULICS MANUFACTURERS OF BARKO STRONG MAN LOGGING & MINISTAR LOGGERS 310 South 1st Avenue E. / Duluth, Minnesota 55803 / 218 727-7428					
NO. INFO. WT. ASBY.					
MODEL: 1620 PART: 1620-1					
SCALE: 1/8" = 1"				DATE: 3-15-77	
ASSEMBLY, RESERVOIR HYDRAULIC & FUEL OIL RESERVOIR				6120097	

HYDRAULIC OIL COOLER #53004

FOR MOTOR MOUNTING DETAILS

SEE PAGE 79



ENGINE/PUMP ADAPTER (For adaptor breakdown & type see page 78)

Pump 21 gal.	60603
Pump 28 gal.	60604
Pump 25 gal.	60617
Bolts (5/8 UNC x 1 $\frac{3}{4}$ lg)	2 req'd (Vickers)
($\frac{1}{2}$ UNC x 1 $\frac{3}{4}$ lg)	2 req'd (Commercial)
Lockwasher (5/8)	2 req'd (Vickers)
(1/2)	2 req'd (Commercial)

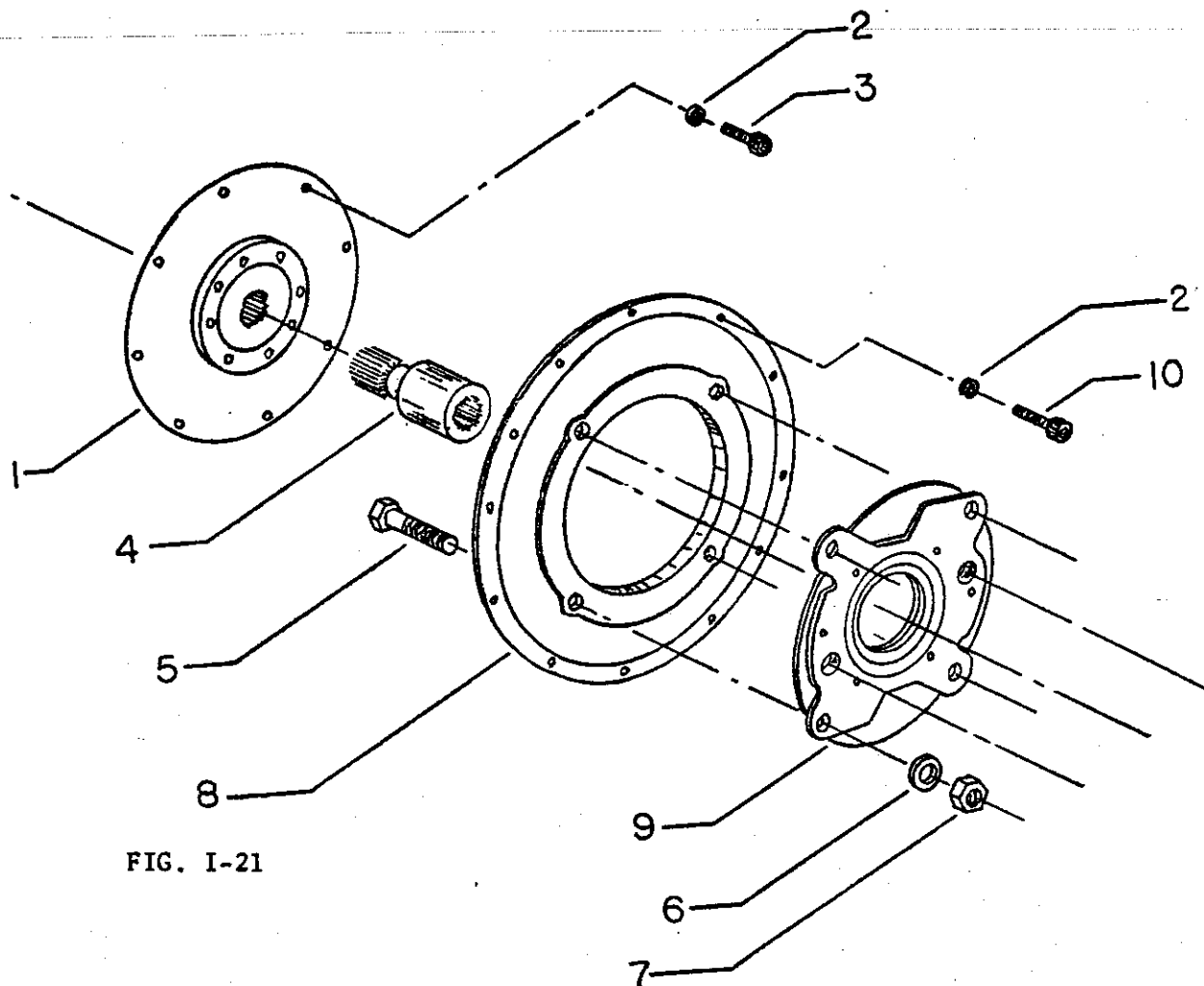
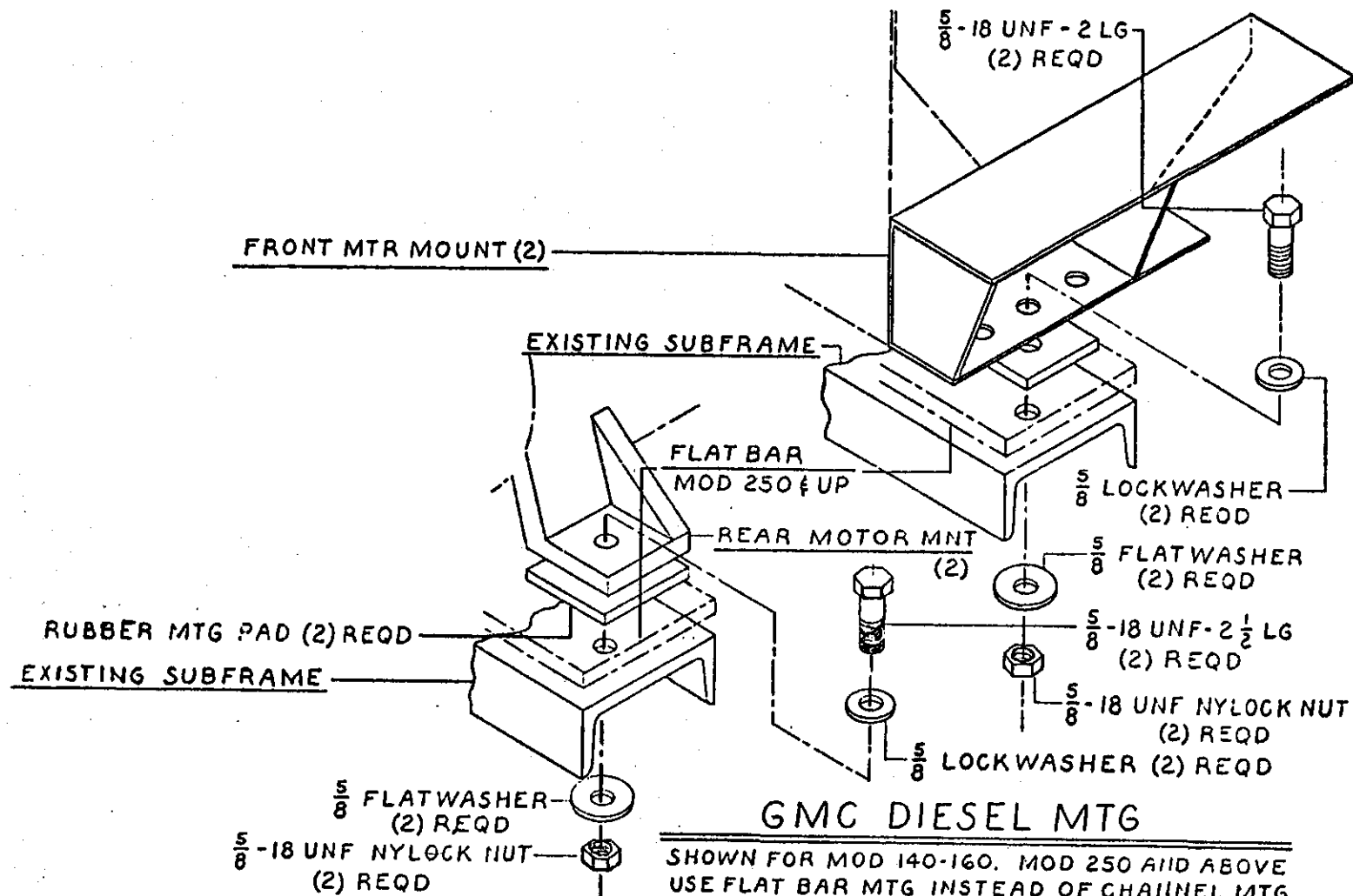
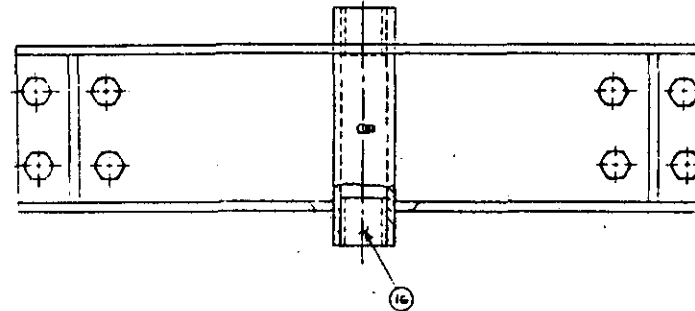


FIG. I-21

ENGINE/PUMP ADAPTER ASSEMBLY
PARTS LIST

ITEM NO	QTY	DESCRIPTION	PART NUMBER
-	-	ADAPTOR UNIT, complete (Vickers & Denison Pumps).....	43207
-	-	ADAPTER UNIT, complete (Commercial Pump)....	43205
1	1	PLATE, drive.....	43305
2	20	WASHER, lock, hi-collar.....	14311
3	8	CAPSCREW, socket heat 3/8"-UNC x 3/4 Lg....	11602
4	1	SHAFT, drive (SAE "C" (spline).....	43303
5	4	BOLT, 3/4-UNF - 2" long.....	11079
6	4	WASHER, lock.....	14016
7	4	NUT, hex.....	13313
8	1	ADAPTOR PLATE, engine (SAE #4).....	43300
9	1	ADAPTOR PLATE, pump.....	43302
10	12	CAPSCREW, socket head, 3/8-UNC- 1 1/4 long..	11605

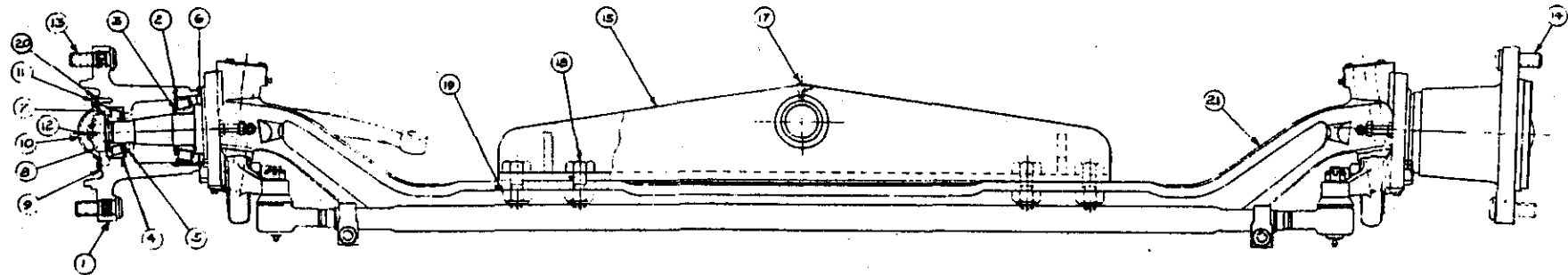




SEE NOTE 1

SEE NOTE 1

ITEM	QTY	MATERIAL	PART NO.	DISCRIPTION
1	2	---	35889	HUB - DAYTON X 1" 05-08826-204
2	2	---	41748	BEARING - CUP "45220
3	2	---	41747	BEARING - CONE "45284
4	2	---	41715	BEARING - CUP "2720
5	2	---	41746	BEARING - CONE "2793
6	2	---	44233	SEAL "CR-31203
7	2	---	35893	WASHER - G.M. "352937
8	2	---	35892	NUT, SPINDLE 1/8 X 1 1/2 LG
9	2	---	35895	GASKET, HUB CAP - G.M. "3650731
10	2	---	35894	CAP, HUB - G.M. "3750731
11	12	---	10000	BOLT, HEX HEAD 1/2 X 2 1/2 LG
12	2	---	43715	PIN, COTTER 1/8 X 1 1/2 LG
13	6	---	35897	STUD, WHEEL - H 30DD 59192
14	6	---	35890	STUD, WHEEL - R.H. BUDD 59191
15	1	---	134150	WELD, FRONT AXLE MTG FRAME
16	2	---	42032	BUSHINGS 2 1/2 X 2 1/2 X 2 1/2 LG
17	1	---	17304	GREASE FITTING 1/8 NPT-90°
18	8	---	10756	BOLT 5/8-11 UNC X 2 1/4 GRADE 5
19	8	---	13258	NUT, HEX - SELF LOCKING 5/8-11 UNC
20	2	---	14009	WASHER, LOCK - 1/4
21	1	---	35815	ASSEMBLY - AXLE



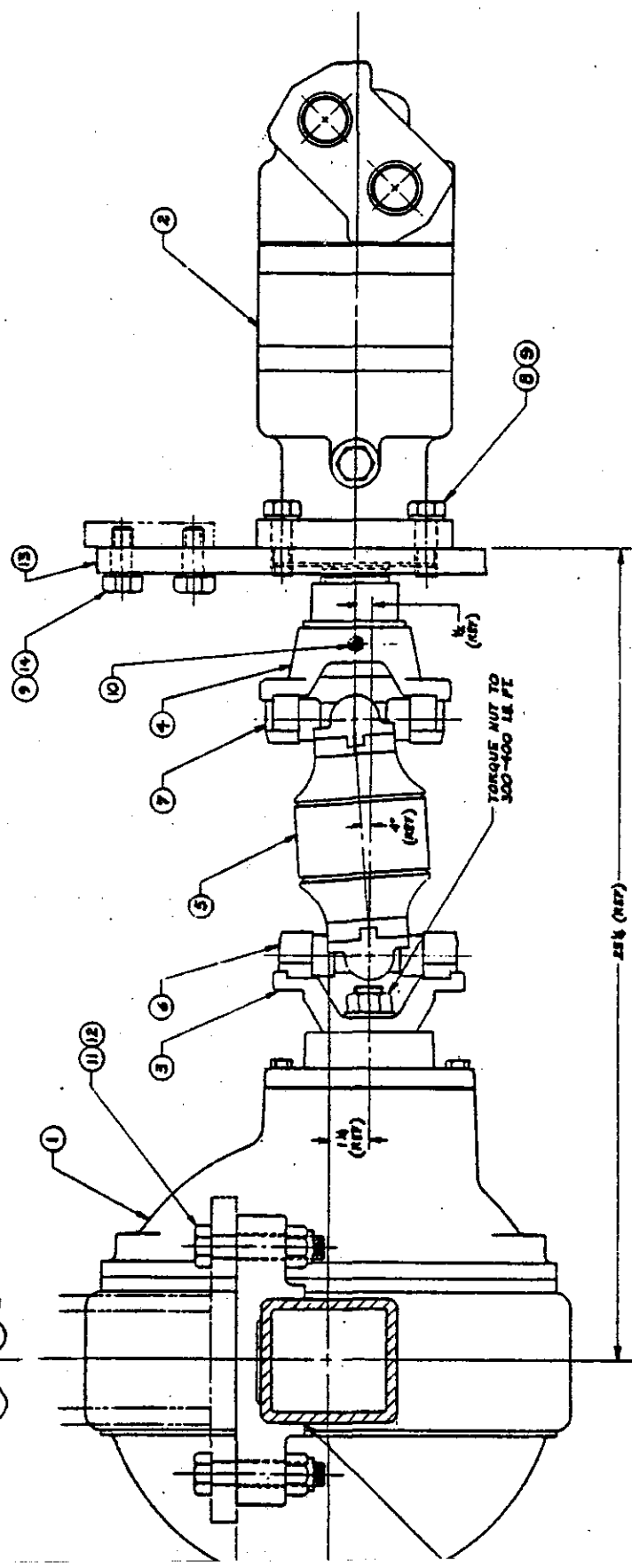
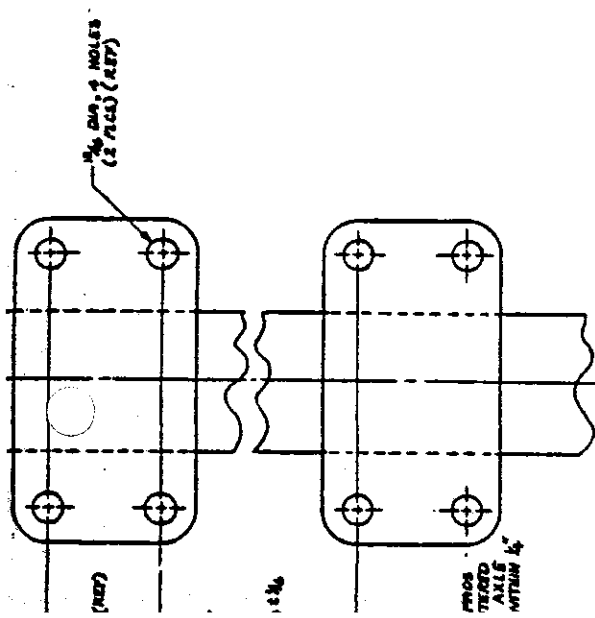
NOTES:

1) BEARING CUPS "41748 AND "41715 SUPPLIED AS PART OF ① HUB "35889

2) TIGHTEN ⑧ SPINDLE NUT TO 25 FT. LBS. BACK OFF 1/2 TURN, INSTALL ⑫ COTTER PIN

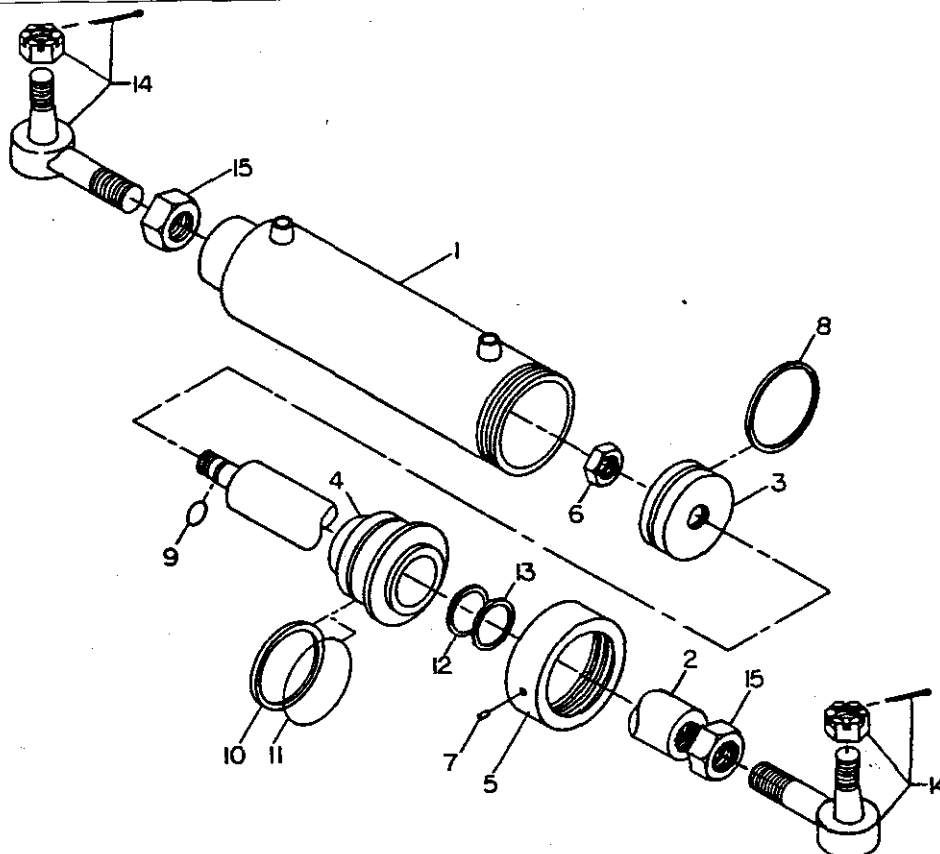
BARCO HYDRAULICS, INC. One Barco Way, Phone (714) 353-5500 10000 Highway 100, Suite 100, Orange, CA 92667		
DRAWING NO. 134-015 REV. 1 DATE 5-8-78 BY J. SHELTON CHECKED BY	ASSEMBLY - FRONT AXLE - YARD PORTER	PART NO. 134-015 REV. 1 DATE 5-8-78 BY J. SHELTON CHECKED BY

1	1	2524	ARMY, REAR AXLE - ROSSWELL 2524	REF
2	1	6006	MOTOR, HYD-2524-1000 MOD 6006	REF
3	1	48046	WHEEL, SPALD	REF
4	1	542211	WELDMNT, END YONE	REF
5	1	542214	WELDMNT, DRIVE LINE	REF
6	1	48046	WELDMNT, DRIVE LINE	REF
7	1	48046	WELDMNT, DRIVE LINE	REF
8	4	10754	BOLT, HEX NO. 1/2-11 UNC 11 1/2 GR 5	REF
9	4	14018	WASHER, LOCK 1/2	REF
10	1	17300	FITTING, GREASE 1/2 NPT STRAIGHT	REF
11	8	10754	BOLT, HEX NO. 1/2-11 UNC 11 1/2 GR 5	REF
12	8	12253	NUT, HEX-SELF LOCKING 1/2-11 UNC 6 F	REF
13	1	131368	PLATE, MOTOR MOUNTING	REF
14	4	10753	BOLT, HEX NO. 1/2-11 UNC 11 1/2 GR 5	REF



NOTE:
1. FILL DIFFERENTIAL WITH GL-5, SAE 90
HYPOID GEAR OIL

		ASSEMBLY, AXLE & DRIVE LINE (CYCLO PORTER)	
DRAWING NO. 364008 REV. 1	DATE 1-1-68 BY J. L. BARNES	PART NO. 364008 REV. 1	QUANTITY 1



STEERING CYLINDER
(3-1/2 X 14 WITH 2" ROD)

<u>ITEM NO.</u>	<u>QTY.</u>	<u>DESCRIPTION</u>	<u>PART NO.</u>
	1	ASSEMBLY, complete -----	812034
1	1	WELDMENT, butt and tube -----	832154
2	1	ROD -----	842901
3	1	PISTON -----	852014
4	1	GLAND -----	852300
5	1	GLAND, cap -----	852812
6	1	NUT, hex self locking 1-1/2-12 unf -----	13413
7	1	SCREW, set 3/8-16 unc X 3/8 -----	12616
(1) (3) 8	1	SEAL, piston -----	55171
(1) (3) 9	1	O RING, rod -----	65314
(2) (3) 10	1	O RING, gland -----	65333
(2) (3) 11	1	WASHER, back-up -----	65633
(2) (3) 12	1	SEAL, rod -----	55275
(2) (3) 13	1	WIPER -----	56900
14	2	TIE ROD, end (nut and key included) -----	35816
15	2	NUT, hex jam 1-16 un -----	14519
<u>SEAL KITS AVAILABLE</u>			
(1) PISTON SEAL KIT -----			65482
(2) GLAND SEAL KIT -----			65483
(3) COMPLETE SEAL KIT -----			65533

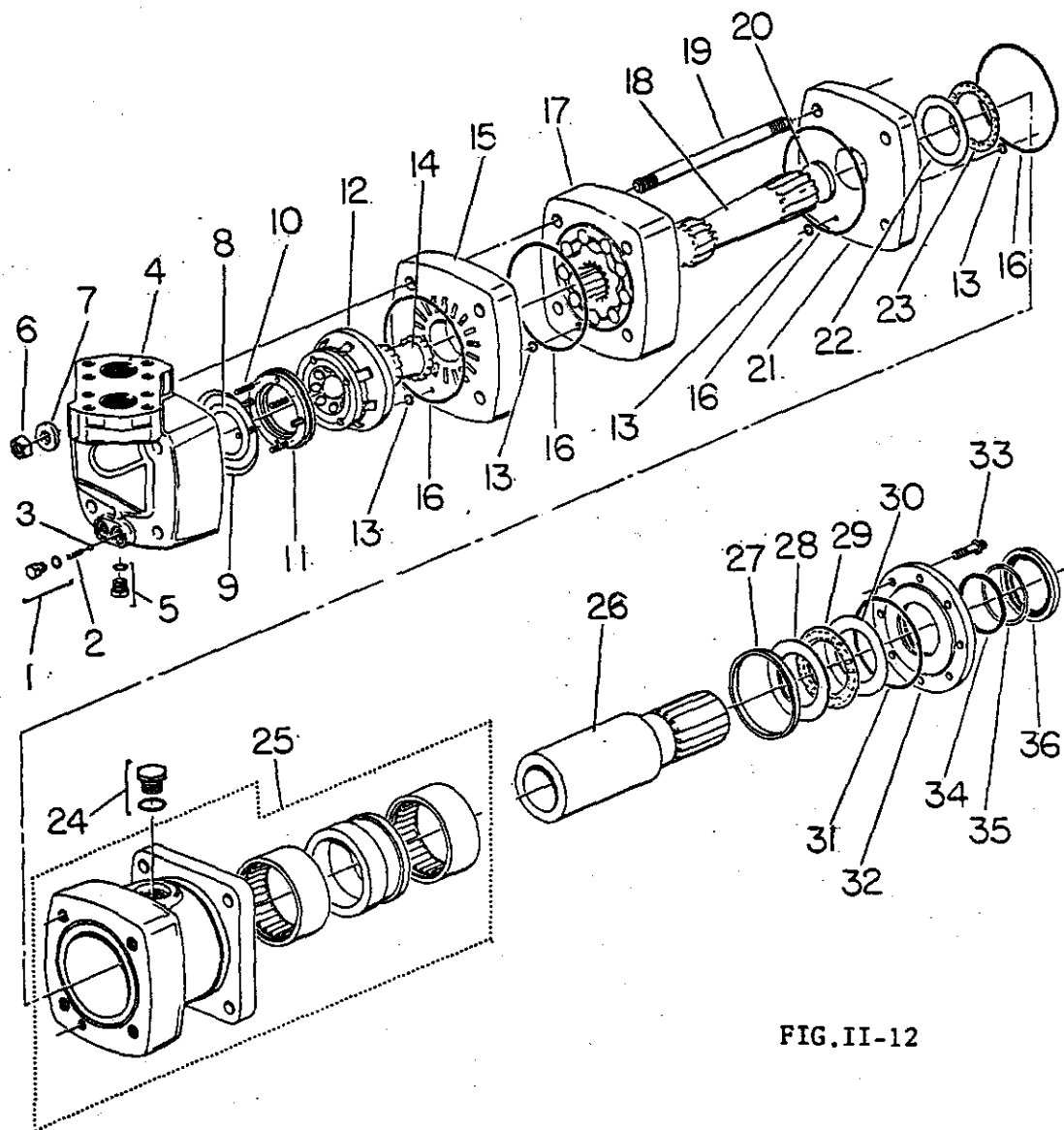


FIG. II-12

CHAR-LYNN 10,000 SERIES

PARTS LIST

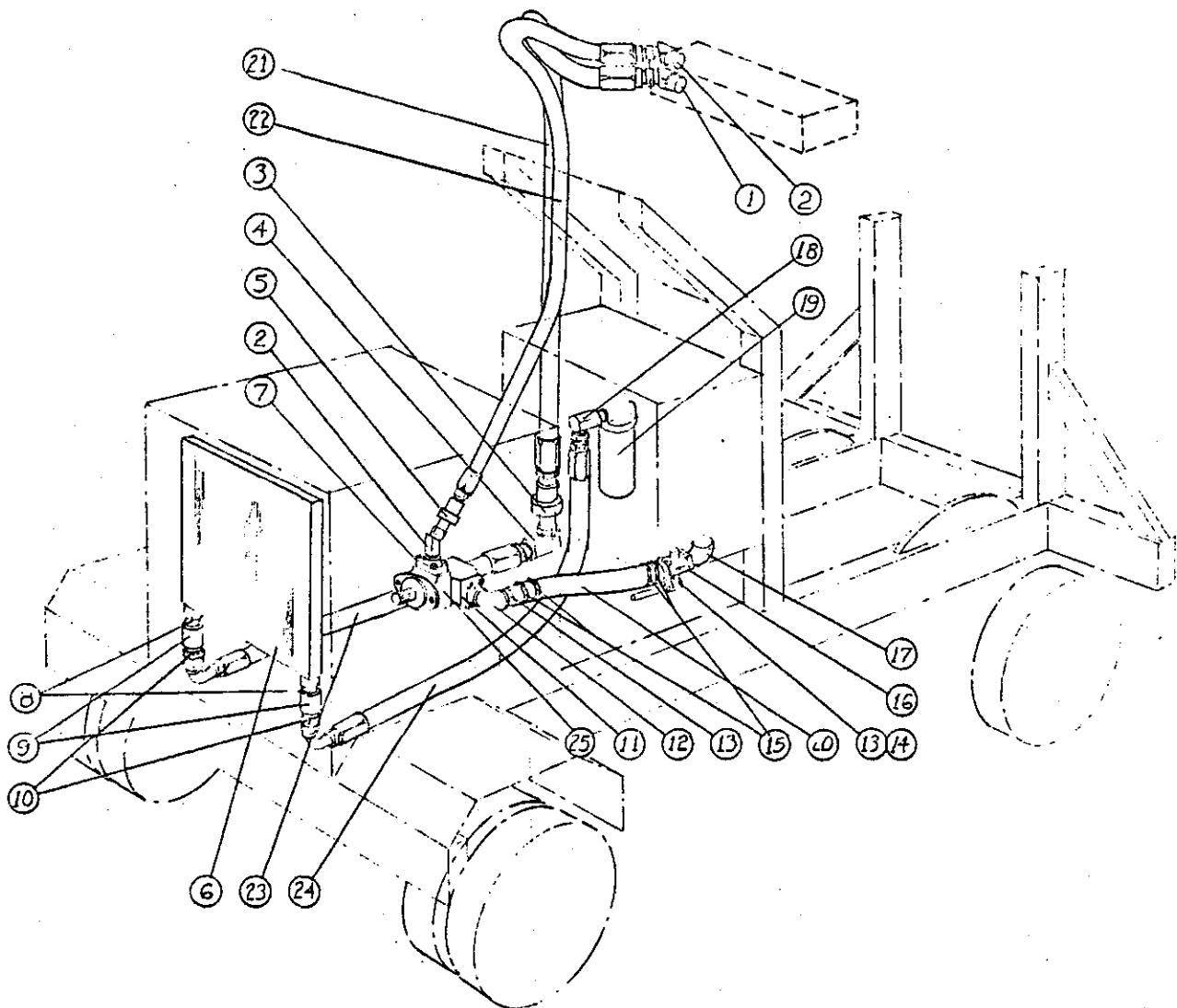
ITEM NO	QTY	DESCRIPTION	PART NUMBER
(1) (3) -	1	MOTOR, 10,000 series Char-Lynn.....	60016
(1) (3) 1	2	VALVE, check plug assembly.....	(60450)
2	2	SPRING.....	60451
3	2	BALL.....	60452
4	1	HOUSING.....	60453
5	1	PLUG, assembly.....	60454
6	4	NUT, hex.....	60455
7	4	FLATWASHER.....	60456
(1) (3) 8	1	SEAL, inner face.....	(60457)
(1) (3) 9	1	SEAL, outer face.....	(60458)
10	4	SPRING.....	60459
11	1	PLATE, balancing.....	60460
12	1	VALVE.....	60461
(1) (3) 13	4	SEAL.....	(60462)
14	1	VALVE, drive.....	60463
15	1	VALVE, plate.....	60464
(1) (3) 16	4	SEAL.....	(60465)
17	1	GEROLER.....	60466
18	1	DRIVE.....	60467
19	4	STUDS.....	60468
20	1	DRIVE, spacer.....	60469
21	1	WEAR, plate.....	60470
22	1	WASHER, thrust, rear.....	60471
23	1	BEARING, thrust, rear.....	60472
24	2	PLUG, assembly.....	60473
25	1	HOUSING, bearing kit.....	60474
26	1	SHAFT, output, splined.....	60475
27	1	SPACER, front bearing.....	60476
28	1	WASHER, thrust.....	60477
29	1	THRUST, bearing front.....	60478
30	1	WASHER, thrust.....	60479
(2) (3) 31	1	O-RING, front retainer.....	(60480)
32	1	RETAINER, front.....	60481
33	8	SCREW, cap.....	60482
(2) (3) 34	1	SEAL, shaft.....	(60483)
35	1	WASHER, back-up.....	60484
(2) (3) 36	1	SEAL, dirt.....	(60485)

NOTE:

NUMBERS IN BRACKETS () INDICATE SUPERCEDED NUMBERS

- (1) Included in Motor Seal Kit..... 65477
- (2) Included in Shaft Seal Kit..... 65478
- (3) Included in Complete Seal Kit..... 65480

YARD PORTER
HYDRAULIC SUPPLY AND RETURN CIRCUIT

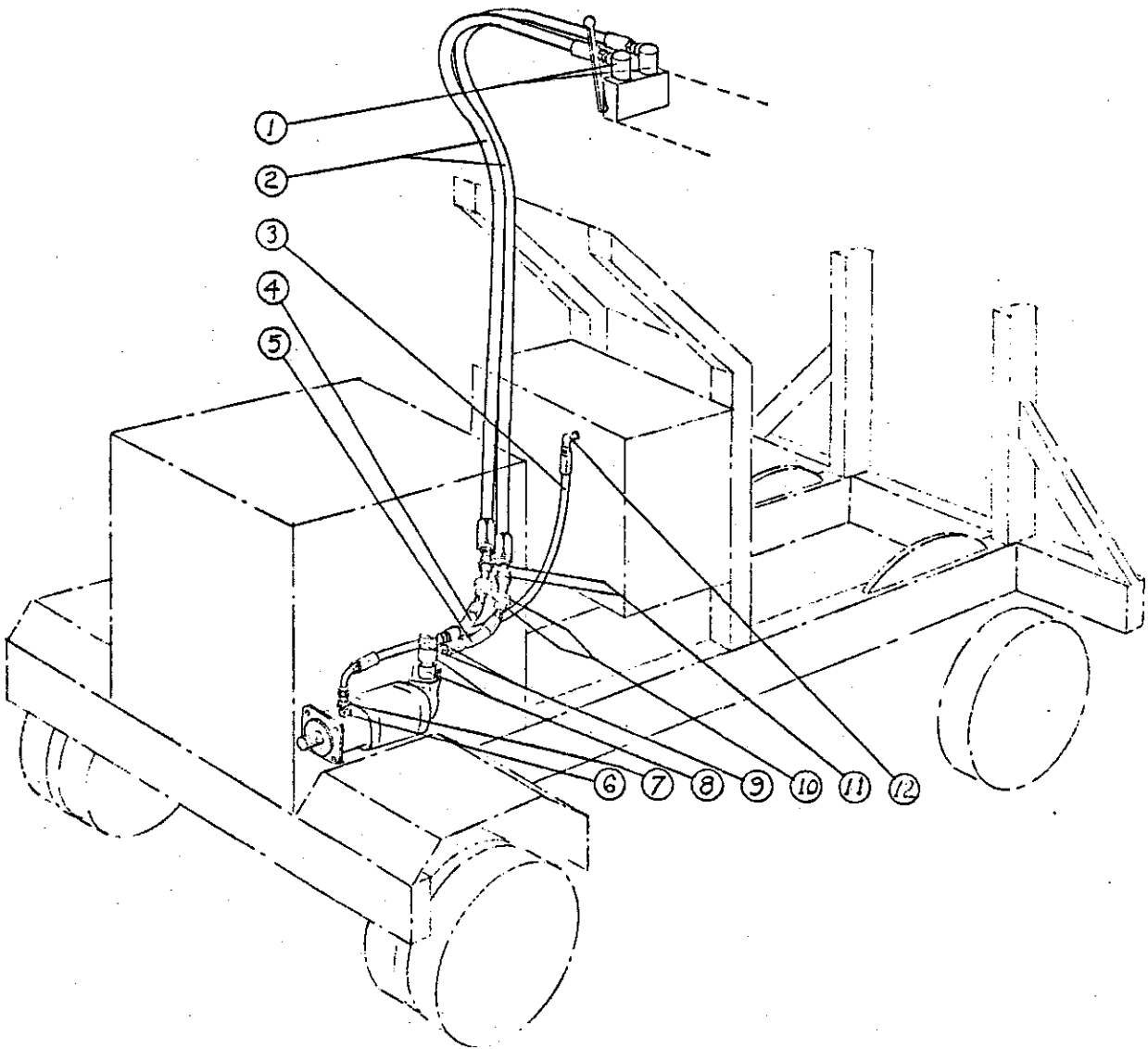


YARD PORTER
HYDRAULIC SUPPLY AND RETURN CIRCUIT
PARTS LIST

ITEM NO	QTY	DESCRIPTION	PART NO
1	1	FITTING, 1" M-1" F swivel, 45°.....	66111
2	2	FITTING, 1" M- $\frac{3}{4}$ " F swivel, 45°.....	66110
3	1	SWIVEL JOINT, 1" M - 1" F straight.....	66669
4	1	FITTING, 1" F-1" F swivel, 90°.....	66091
5	1	SWIVEL JOINT, $\frac{3}{4}$ " M- $\frac{3}{4}$ " F, straight.....	66668
6	(1)	OIL COOLER, see engine detail.....	
7	1	BLOCK FITTING, 1" - 1" F.....	67202
8	2	PIPE NIPPLE, 1" x 4" long.....	19798
9	2	PIPE COUPLINGS, 1".....	21672
10	2	FITTING, 1" M - 1" jic straight.....	66994
11	1	BLOCK FITTING, 1 $\frac{1}{2}$ " - 1 $\frac{1}{2}$ " F.....	67204
12	1	PIPE STREET "L", 1 $\frac{1}{2}$ " 300 lbs.....	21624
13	2	KING NIPPLE, 1 $\frac{1}{2}$ " pipe - 1 $\frac{1}{2}$ " hose.....	67664
14	1	PIPE BUSHING, 2 $\frac{1}{2}$ " M - 1 $\frac{1}{2}$ " F.....	22234
15	4	HOSE CLAMPS, 2".....	69507
16	1	2 $\frac{1}{2}$ " BUTTERFLY SHUT OFF VALVE.....	63089
17	1	PIPE STREET "L", 2 $\frac{1}{2}$ " 300 lbs.....	21626
18	1	FITTING, 1 $\frac{1}{4}$ " M - 1" F swivel, 90°.....	66069
19	1	FILTER, 33 micron.....	65000
(1) 20	1	SUCTION HOSE, 1 $\frac{1}{2}$ " x 22" long.....	20310
(2) 21	1	HOSE ASSEMBLY, 1" x 114" long.....	88102
(3) 22	1	HOSE ASSEMBLY, $\frac{3}{4}$ " x 105" long.....	70451
(4) 23	1	HOSE ASSEMBLY, 1" x 58" long.....	88035
(4) 24	1	HOSE ASSEMBLY, 1" x 92" long.....	88047
25	(1)	PUMP, 21 GPM, see engine detail.....	

- (1) Item 20 consists of the following:
SUCTION HOSE..... 94011
- (2) Item 21 consists of the following:
HOSE, 1" 4 wire VHP..... 94006
2 - 1" hose fittings VHP - 1" M pipe..... 66095
- (3) Item 22 consists of the followingL
HOSE, $\frac{3}{4}$ " 2 wire HP..... 94003
2 - $\frac{3}{4}$ " hose fittings HP $\frac{3}{4}$ " M pipe..... 65964
- (4) Items 23 and 24 consist of the following:
HOSE, 1" 4 wire VHP..... 94006
1 - 1" hose fitting VHP 1" M pipe..... 66095
1 - 1" hose fitting VHP 1" F 90° jic swivel 66393

YARD PORTER
HYDRAULIC DRIVE MOTOR CIRCUIT



YARD PORTER
HYDRAULIC DRIVE MOTOR CIRCUIT

ITEM NO	QTY	DESCRIPTION	PART NO
1	2	FITTING, $\frac{1}{2}$ M - $\frac{3}{4}$ F swivel 90°.....	66060
(1) 2	2	HOSE, $\frac{3}{4}$ HP - $\frac{3}{4}$ M pipe both ends 124" lg..	70455
(2) 3	1	HOSE, $\frac{1}{2}$ HP - $\frac{1}{2}$ M pipe to $\frac{1}{2}$ JIC 90° elbow 65" long.....	70913
(1) 4	1	HOSE, $\frac{3}{4}$ HP $\frac{3}{4}$ M pipe both ends 10" long...	70488
(1) 5	1	HOSE, $\frac{3}{4}$ HP - $\frac{3}{4}$ M pipe both ends 12" long.	70400
6	1	ADAPTER, 5/8 boss to $\frac{1}{2}$ F pipe.....	65976
7	1	ADAPTER, $\frac{1}{2}$ M pipe to $\frac{1}{2}$ jic str.....	66984
8	2	ADAPTER, 1" boss to 1" F pipe.....	65983
9	2	FITTING, 1" M - $\frac{3}{4}$ F swivel 90°.....	66066
10	2	SWIVEL JOINT, $\frac{3}{4}$ M - $\frac{3}{4}$ F straight.....	66668
11	2	COUPLINGS, HP $\frac{3}{4}$ ".....	66059

(1) Items 2, 4 and 5 consist of the following:

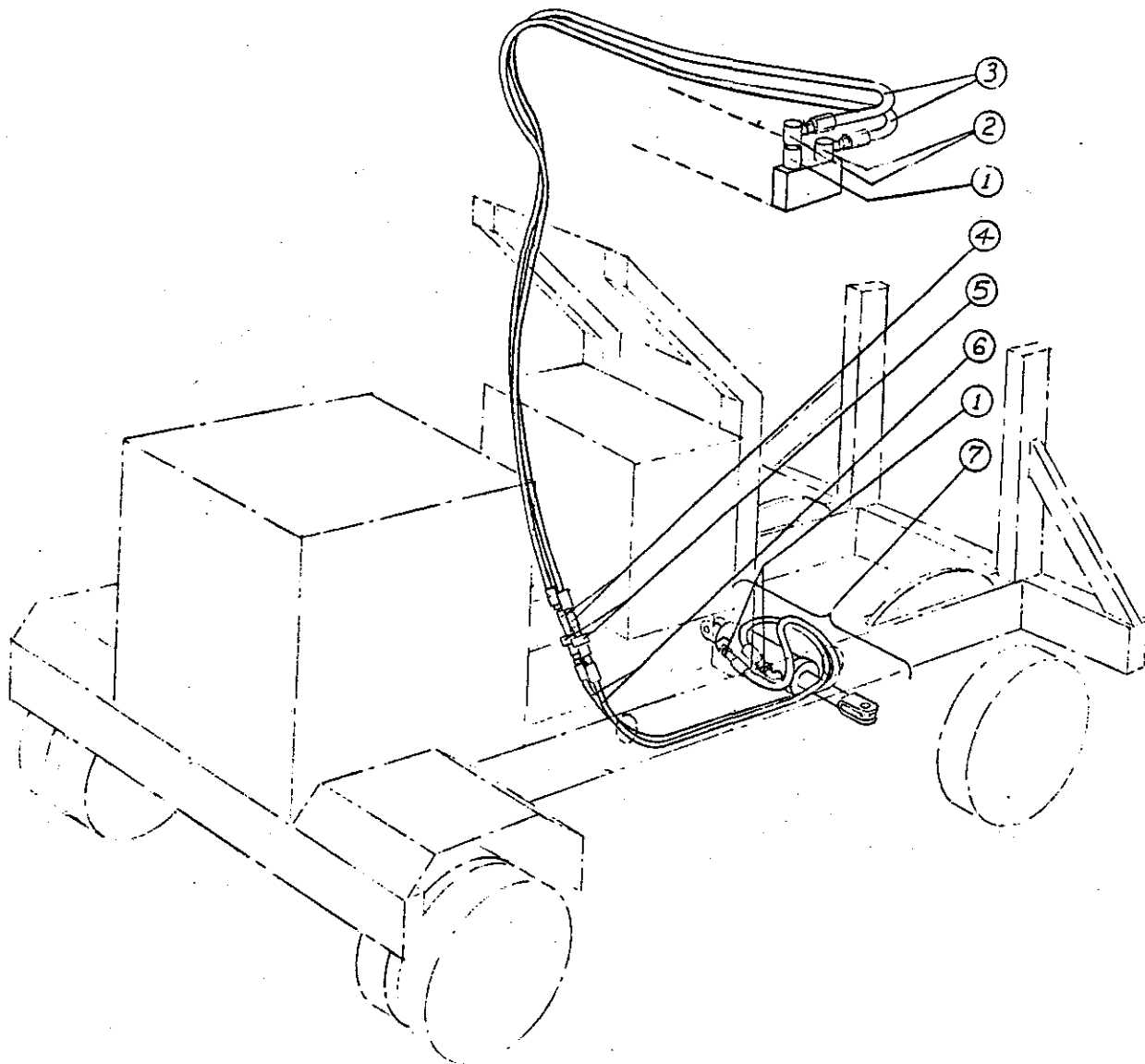
HOSE, $\frac{3}{4}$ " 2 wire..... 94003
2 - HOSE FITTINGS, $\frac{3}{4}$ M pipe..... 65964

(2) Item 3 consists of the following:

HOSE, $\frac{1}{2}$ " 2 wire..... 94002
1 - HOSE FITTING, $\frac{1}{2}$ M pipe..... 65962
1 - HOSE FITTING, $\frac{1}{2}$ F swivel 90° elbow.. 65933

YARD PORTER STEERING CIRCUIT

PARTS LIST

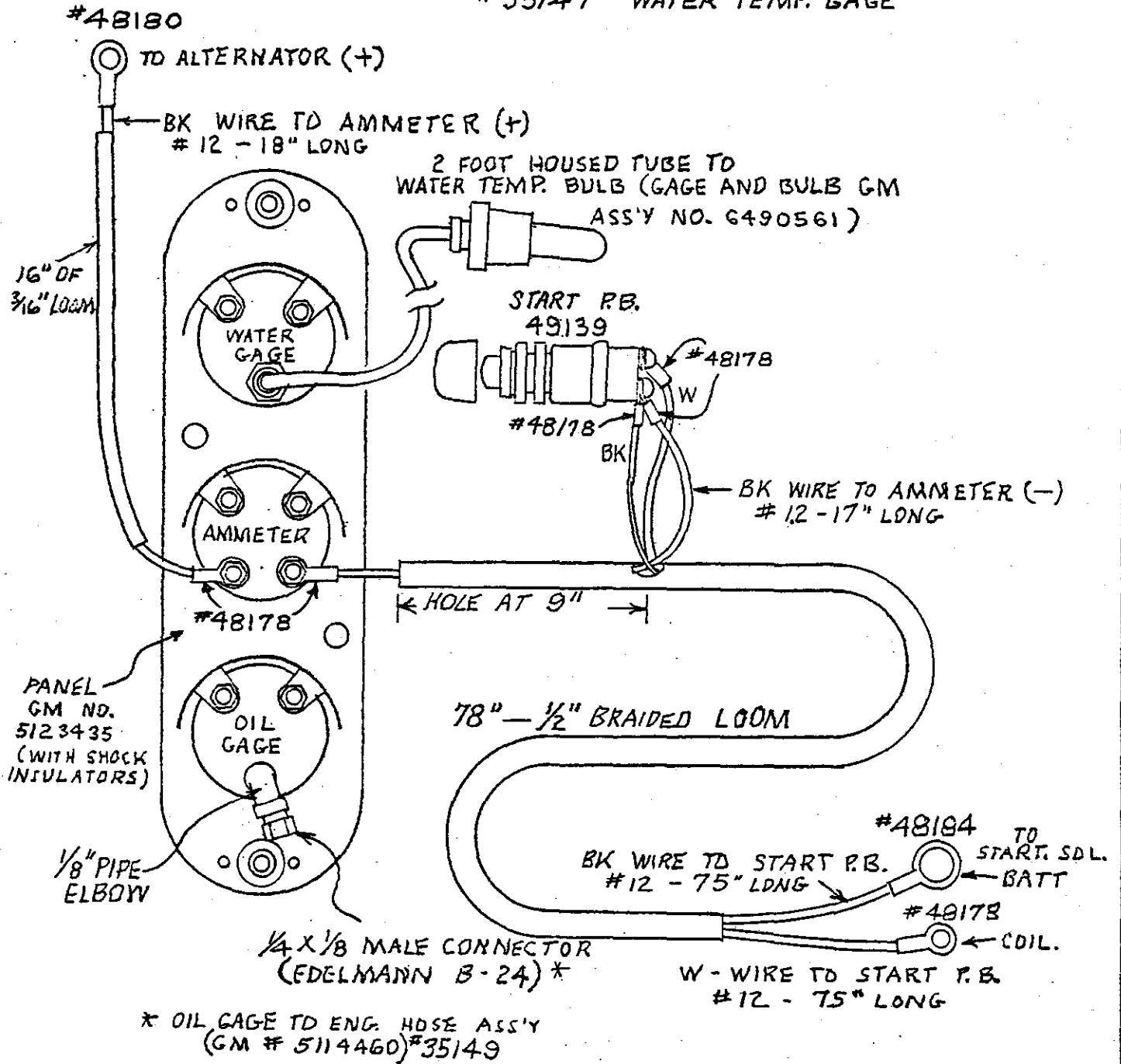



ITEM NO	QTY	DESCRIPTION	PART NO
1	3	HYD FITTING, ½ M pipe to 3/8 F pipe swivel straight.....	66007
2	2	HYD FITTING, 3/8 M pipe to 3/8 F pipe swivel - 90°.....	66055
(1) 3	2	HOSE ASSEMBLY, 3/8 M pipe to 3/8 F pipe 144" long.....	70160
4	2	3/8" HYDRAULIC COUPLING.....	66812
5	2	3/8" SWIVEL JOINT, straight.....	66666
(1) 6	2	HOSE ASSEMBLY, 3/8M pipe to 3/8 M pipe 116" long.....	70153
7	1	CYLINDER ASSEMBLY, 3½" x 6½".....	812028

(1) Items 3 & 5 consist of the following:

	3/8 - 2W hose.....	94001
2	Male pipe high pressure hose fitting.....	65960

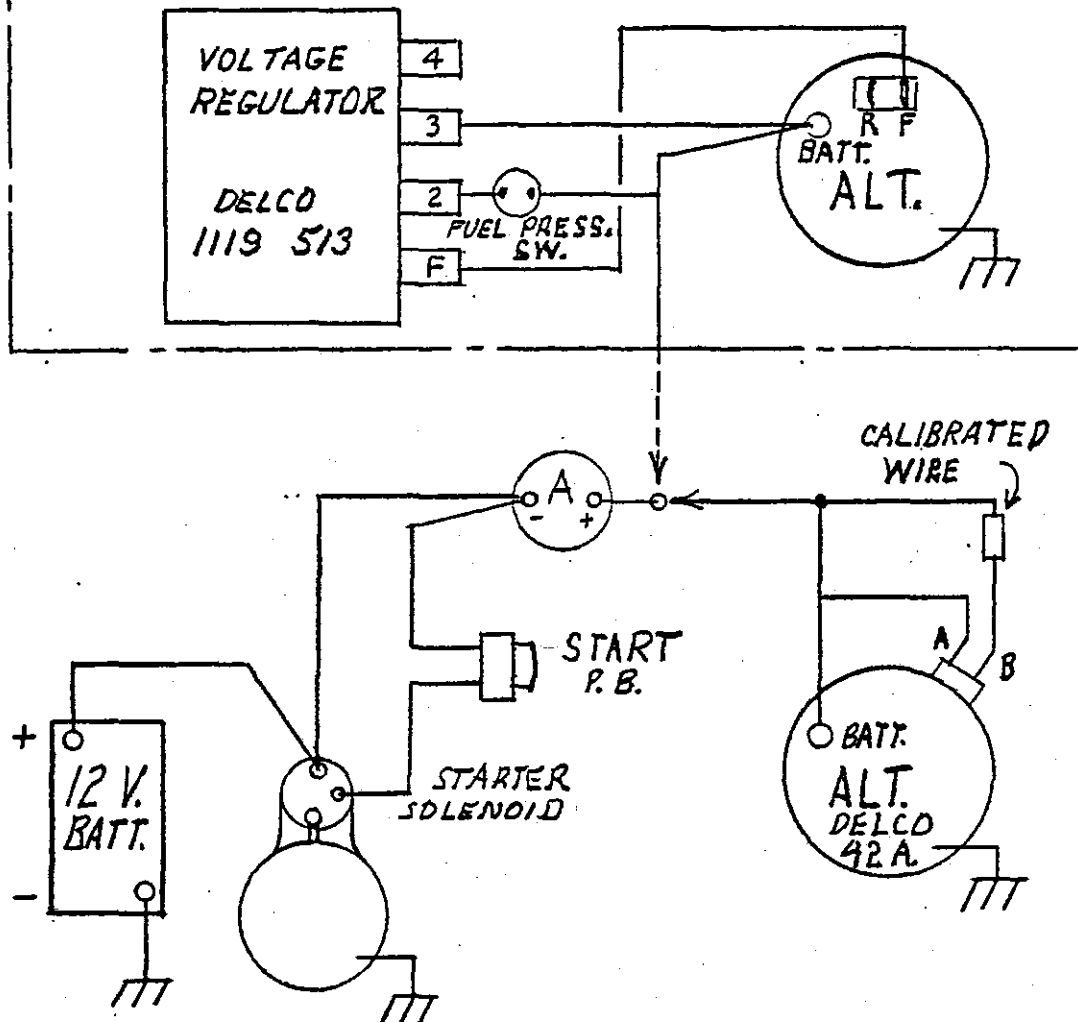
#49167 AMMETER (GM # 6474062)
 #35148 OIL GAGE (GM # 6463913)
 #35147 WATER TEMP. GAGE




NO.	DATE	BY	REVISION			
MATERIAL:				BARKO HYDRAULICS, INC. MANUFACTURERS OF BARKO STRONG-ARM LOGGING & INDUSTRIAL LOADERS P. O. Box 6227 / Duluth, Minnesota 55806		
NO. REQ'D.:			WIRING HARNESS — YARD PORTER AND REAR MOUNT (353 GM DIESEL)			
WT.:						
ASS'Y.:			SCALE:	DATE: APR/28/76	951000	
MODEL: 40-60			DWN.: MJH	APR.:		

951000

OPTIONAL CCT FOR ALTERNATOR W/O INTERNAL
VOLTAGE REGULATOR



NO.	DATE	BY	REVISION		
MATERIAL:				BARKO HYDRAULICS, INC. MANUFACTURERS OF BARKO STRONG-ARM LOGGING & INDUSTRIAL LOADERS P. O. Box 6227 / Duluth, Minnesota 55806	
NO. REQ'D.:			YARD PORTER & REAR MOUNT WIRING DIAG. - 353 DETROIT DIESEL ENGINE		
WT.:					
ASS'Y.:			SCALE: —	DATE: 4-26-76	901004
MODEL:			DWN: MJH	APR:	

40-100F

INTRODUCTION

This Parts Manual has been designed to assist you in identifying and ordering replacement parts for your Barko loader.

The manual is divided into seven sections: Nomenclature, Structural Upper, Structural Lower, Mechanical, Electrical, Hydraulic and Options and Accessories.

Your Barko loader has been designed to provide you with long, efficient service—and, in its manufacture, only the highest quality parts and components have been used.

"THE USE OF PARTS OTHER THAN GENUINE BARKO OR APPROVED PARTS MAY VOID ANY PRODUCT WARRANTY THAT MAY BE IN EFFECT AT THE TIME OF SUBSTITUTION."



MODEL 40



MAXIMUM HYDRAULIC PRESSURE FOR THIS MACHINE IS 1,750 psi. SETTINGS HIGHER THAN THIS MAY RESULT IN HARM TO PERSONS AND PROPERTY.

BARKO HYDRAULICS, INC.

In many instances, we have learned that the hydraulic relief valves of this equipment have been reset, increasing the maximum system pressure, and with it, the load the unit will lift before the relief valve opens. In some instances, the consequences of increasing this setting have been serious. The function of the relief valve is to provide a fuse action to protect the machine and the operator from overloading. When overloaded, different portions of the machine can become stressed to a level where parts fracture and serious physical damage to the equipment and personnel can result. **This is an extremely dangerous practice.**

Accordingly, you are advised that the setting of this valve is limited to a maximum of **1,750 psi.** Pressure settings in excess of this level render each and all Barko warranties null and void and constitute an obvious misuse and abuse of our product.

ROOF MOUNT COLLECTOR ONLY

SERIAL NO. OF COLLECTOR

SBHC10-1	Collector Seal Kit #65219 consists of the following: 11 - O-RING (3/32") 11 - RING, teflon (3/32")
SBHC10-2	
SBHC10-3	
SBHC10-4	
SBHC10-5	
SBHC10-6	
SBHC10-7	
SBHC10-8	
SBHC10-9	
SBHC10-15	
SBHC10-10	Collector Seal Kit #65220 consists of the following: 11 - O-RING (1/8") 11 - RING, teflon (1/8")
SBHC10-11	
SBHC10-12	
SBHC10-13	
SBHC10-14	
SBHC10-16P	*Collector Seal Kit #65218 consists of the following: ** 2 - POLYPAK 9 - O-RING (1/8") 9 - RING, teflon (1/8")
SBHC10-17P	
SBHC10-18P	
SBHC10-19P	
SBHC10-20P	

NOTE: When ordering seals for a collector, check the serial number on the collector and compare it with the list above. (ex. collector with S/N SBHC10-12 would take Seal Kit #65220) When new spool is ordered for collectors SBHC10-1 thru SBHC10-14, order new Seal Kit #65218 also.

- * All collectors with S/N SBHC10-16P and up will take this seal kit.
- ** A "P" on collector serial number indicates collector with poly-packs.

TABLE OF CONTENTS

ITEM

INTRODUCTION

1. ORDERING INSTRUCTIONS
2. LUBRICATION CHART
3. TOOL LIST
4. HYDRAULIC SCHEMATIC
5. WARRANTY

- | | | | |
|---------|-----|---|--------------------------|
| SECTION | I | - | STRUCTURAL COMPONENTS |
| | A | - | OPTIONS (IF APPLICABLE) |
| SECTION | II | - | HYDRAULIC COMPONENTS |
| | A | - | OPTIONS (IF APPLICABLE) |
| SECTION | III | - | SERVICE INFORMATION |

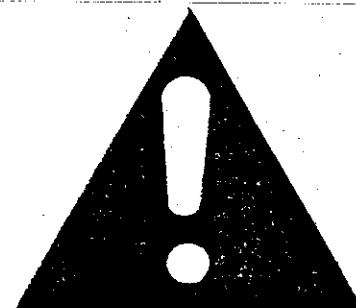
MODIFICATIONS














Slight modifications in design as dictated by field experience or desire to improve the unit, or changes of materials due to inability to procure those originally specified may become necessary. Such changes in design will be obvious and, wherever possible, parts or assemblies will be interchangeable with the original design.

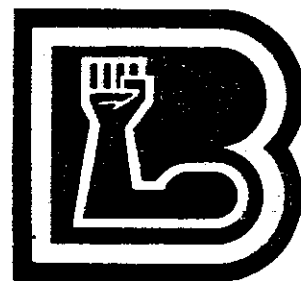
ILLUSTRATIONS

The illustrations in the manual are intended to show typical construction of the various parts. In some instances the shapes or details of the parts illustrated may not exactly represent their actual appearance; however, they will serve to show the servicing methods explained or help to identify parts performing the same function.

CAUTION



-  1. Under no circumstances should any modifications be made to Barko loaders without factory authorization. This machine was designed to do a specific job and alterations to loader could result in injury to operator or machine.
-  2. If loader is not functioning properly, machine should be shut down and proper repair procedures followed.
-  3. Read this manual thoroughly. Get to know the operation and care of your Barko Loader.
-  4. Become as familiar as possible with the requirements of each loading job and the terrain you'll be working in before you start each job.
-  5. Go through the pre-start checklist thoroughly before you start each job — to make sure your equipment is in safe, working condition. Be sure all damage or defects are corrected first by qualified service personnel.
-  6. Make sure that all walking and climbing surfaces of the loader are free of dirt, debris, water, grease, oil, ice and snow . . . and don't leave loose tools and rags on the loader. One slip can be disastrous.
-  7. Be sure to wear shoes with some kind of non-slip soles—and always use both hands when climbing aboard the machine.
-  8. Do not allow anyone to ride on the outside of the cab or anywhere else on the machine while you're operating. Only the operator should be on the machine.
-  9. Be constantly aware of people and obstacles in your job area while operating—and never allow anyone to be under your boom or load.
-  10. If your machine is equipped with stabilizers, do not operate the loader until you have lowered the stabilizers and the machine is on firm, level ground or cribbing.
-  11. Try to keep your eyes on the load at all times. If you must look elsewhere, bring the loader to a stop.
-  12. **DO NOT OPERATE THE LOADER NEAR POWER LINES!** If you must work near them, have them disconnected first.
-  13. Be sure to wear safety equipment and clothing required for working with, or near heavy equipment—and keep that hard hat on.



The oil in a hydraulic system serves as the power transmission medium. It is also the system's lubricant and coolant. Selection of the proper oil is a requirement for satisfactory system performance and life.

Recommendations presented in this data sheet will assist in the selection of suitable oils for use with Sperry Vickers' products. Sperry Vickers does not publish a recommended oil list by brand name or supplier due to the extremely wide variety of oil types on the market.

In most cases, use of these recommendations will lead to selection of a suitable oil. However, due to the complex nature of oil formulation, the variety of oils available and peculiarities of individual hydraulic applications, there will be rare instances where an oil selected on the basis of these recommendations will yield unsatisfactory results. Sperry Vickers cannot be responsible for such exceptions. In this respect, the customer is encouraged to consult his Sperry Vickers representative when selecting an oil.

IMPORTANT FACTORS IN SELECTING AN OIL

1. **ADDITIVES** — Research has developed a number of additive agents which materially improve various characteristics of oil for hydraulic systems. These additives are selected to reduce wear, increase chemical stability, inhibit corrosion and depress the pour point.

Pump performance and reliability are directly affected by the anti-wear additive formulation contained in the oil. Oils providing a high level of anti-wear protection are recommended for optimum performance and long life.

2. **VISCOSITY** — Viscosity is the measure of fluidity. The oil selected must have proper viscosity to maintain an adequate lubricating film at system operating temperature.

In addition to dynamic lubricating properties, oil must have sufficient body to provide an adequate sealing effect between working parts of pumps, valves, cylinders and motors, but not enough to cause pump cavitation or sluggish valve action. Optimum operating viscosity of the oil should be between 16 cSt (80 SUS) and 40 cSt (180 SUS).

"Viscosity index" reflects the way viscosity changes with temperature. The smaller the viscosity change, the higher the viscosity index. The viscosity index of hydraulic system oil should not be less than 90. Multiple viscosity oils, such as SAE 10W-30, incorporate additives to improve viscosity index (polymer thickened). Oils of this type generally exhibit both a temporary and permanent decrease in viscosity due to oil shear encountered in the operating hydraulic system. The actual viscosity can, therefore, be far less in the operating hydraulic system than what is shown in normal oil data. Accordingly, when such oils are selected, it is necessary to use those with high shear stability to insure that viscosity remains within recommended limits while in service.

3. **CHEMICAL STABILITY** — Oxidative and thermal stability are essential characteristics of oils for Mobile hydraulic systems. The combination of base stocks and additives should be stable during the expected lifetime of the oil when exposed to the environment of these systems.

SUITABLE TYPES OF OIL

1. **CRANKCASE OIL** having letter designation SC, SD or SE per SAE Technical Report J183a. Note that one oil may meet one or more of these designations.
2. **ANTI-WEAR HYDRAULIC OIL** — There is no common designation for oils of this type. However, they are

produced by all major oil suppliers and provide the anti-wear qualities of the above designated crankcase oils.

3. **CERTAIN OTHER TYPES OF PETROLEUM OIL** are suitable if they meet the following provisions:

- A. Contain the type and content of anti-wear additives found in the above designated crankcase oils, or have passed pump tests similar to those used in developing anti-wear type hydraulic oils.
- B. Meet the viscosity recommendations shown in the following table.
- C. Have sufficient chemical stability for Mobile hydraulic system service.

OIL VISCOSITY RECOMMENDATIONS

HYDRAULIC SYSTEM OPERATING TEMPERATURE RANGE*	SAE VISCOSITY DESIGNATION
-10°F. to 130°F. (-23°C. to 54°C.)	5W 5W-20 5W-30
0°F. to 180°F. (-18°C. to 83°C.)	10W
0°F. to 210°F. (-18°C. to 99°C.)	10W-30
50°F. to 210°F. (10°C. to 99°C.)	20-20W

*Temperatures shown are cold (ambient) start-up to maximum operating. During cold start-up, avoid high-speed operation of hydraulic components until the system is warmed up to provide adequate lubrication.

ARTIC CONDITIONS represent a specialized field where extensive use is made of heating equipment before starting. If necessary, this and judicious use of the following recommendations should be used:

1. SAE 5W or 5W-20 oil.
2. Oils specially developed for use in arctic conditions; such as synthetic hydrocarbons, esters, or mixtures of the two.

Operating temperature should be closely monitored to avoid exceeding a temperature of 130°F. (54°C.) with any lightweight oil.

SPECIAL REQUIREMENTS

When special considerations indicate a need to depart from recommended oils or operating conditions, consult your Sperry Vickers representative.

CLEANLINESS

Thorough precautions should always be observed to insure the hydraulic system is clean:

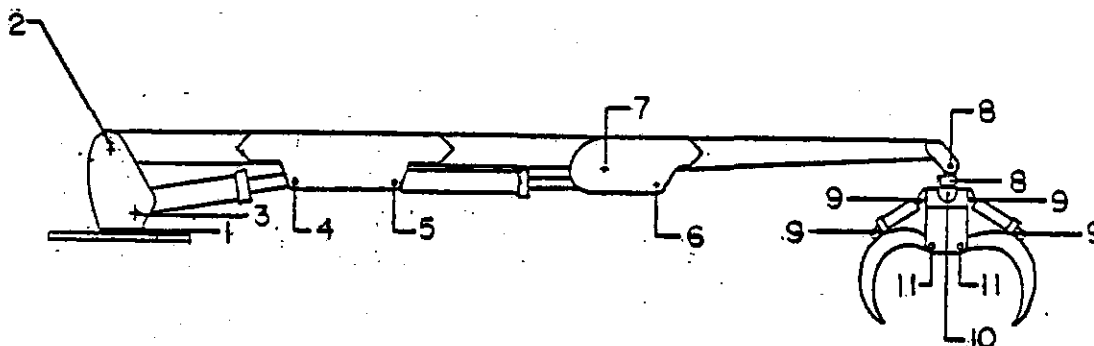
- A. Clean (flush) entire system to remove paint, metal chips, welding shot, etc.
- B. Filter each change of oil to prevent introduction of contaminant into the system.
- C. Provide continuous oil filtration to remove sludge and products of wear and corrosion generated during the life of the system.
- D. Provide continuous protection of the system from entry of airborne contamination by sealing the system and/or by proper filtration of the air.
- E. During usage, proper oil filling and servicing of filters, breathers, reservoirs, etc., cannot be overemphasized.
- F. Thorough precautions should be taken, by proper system and reservoir design, to insure that aeration of the oil will be kept to a minimum.

ORDERING INSTRUCTIONS - PARTS

All parts for your BARKO HYDRAULIC LOADER may be ordered from your nearest authorized distributor or from the factory, if your area is served directly by the factory. This includes all hydraulic parts for valves, cylinders, pumps, motors, hose and fittings, in addition to the mechanical and structural parts of the loader.

When ordering parts, please specify the following information:

1. PART NUMBER - Specify Barko part number as given in your Owner's manual.. Do not take numbers from castings, etc.
2. QUANTITY - of each part ordered.
3. NAME OF PART - Use proper description or title given in the Owner's Manual.
4. RIGHT OR LEFT HAND - if applicable, right or left hand is your right or left when operating the loader from the normal operators seat position behind the boom.
5. MODEL & SERIAL NUMBERS - IMPORTANT!!! Model & Serial numbers are found on the title page of the Owner's Manual and on the identification plate attached to the loader frame.
6. SHIPPING INSTRUCTIONS - Specify definite shipping instructions such as Bus, Air Frt., Air Express, Parcel Post or Truck. When no instructions are given, parts will be shipped Best Way i. e., shipping method will be determined by shipping cost, nature of the part and urgency of the repair.
7. RETURN ADDRESS - When ordering parts, always include a return address where part should be sent.
8. RETURN PARTS - New parts returned by distributor or customer to the factory will have a 15% handling charge subtracted from the amount of the part unless parts were sent by mistake from the factory.
9. SHORTAGE - On all parts shipments & packing kits, if any parts are missing (other than parts marked Backordered) call the factory immediately.
10. WARRANTY - Warranty parts must be returned by prepaid freight or by Barko truck.



LUBRICATION CHART

MODEL 40-60 ROOF MOUNT

ITEM NO	LUBRICATION POINTS	TYPE OF LUBRICANT	INTERVAL
1	Bearing	For a general lubrication use a lithium base grease with E.P. additives and rust inhibitors. Above 32° F-#2 grease: below 32° F-#1 grease.	24 hours, or twice weekly.
2	Main Boom Pivot	Items 2-11 use a multi-purpose grease. Apply with pressure gun until grease is visible at ends of bushings.	15 Hours or twice weekly (minimum)
3 & 4	Main Lift Cylinder	"	"
5 & 6	Jib Cylinder	"	"
7	Jib Knuckle Pivot	"	"
8	Grapple Hanger	"	8 hours or each day
9	Grapple Cylinder	"	"
10	Grapple Head	"	"
11	Grapple Arms	"	"

START-UP INSTRUCTIONS

Your pre-operational check should include the following:

1. Check reservoir oil level.
2. Check lubrication chart and diagram to determine if all points have been properly lubricated.
3. Check hydraulic piping against hydraulic diagram for correctness of connections.
4. Check mounting installation for completeness and security.
5. Start engine and check for proper engine speed. Compare actual swing time with rating on specification page.
6. Operate all systems to extreme limits of travel in order to raise hydraulic pressure in each line to maximum. Check for leaks in connections.
7. You are now ready to operate the BARKO HYDRAULIC LOADER.

COLD WEATHER INSTRUCTIONS

When the oil viscosity is below 4,000 SSU (SAE 10W @ 20° F, SAE 20 @ 35° F, SAE 30 @ 50° F), extreme care should be used in starting the machine operation to allow warming of the hydraulic oil to a temperature suitable for proper circulation. The following method may be used to warm the oil:

1. Jog Pump: on 5 seconds off 20 seconds (ten times) then on 20 seconds off 20 (about 5 times). Idle system a few minutes.
2. Run pump at 1/2 speed (about 800 to 1000 engine RPM) and run any ram to end and stall it, thus blowing oil thru the pressure relief valve. Relieve pressure 10 seconds of each minute.
3. Oil passing thru the relief valve does no useful work and picks up 8-1/2 degrees of warmth per 1000 pounds of pressure drop. (Approx. ten times.)

When the oil viscosity is below 20,000 SSU (SAE 10 @ -5° F, SAE 20 @ 7° F), warm tank (up about 40 degrees) before starting pump, then follow step above.

For prolonged service in sub zero temperatures, ATF Type "A" and Mil 5606 specification hydraulic oil may be used.

SERVICE AND MAINTENANCE INSTRUCTIONS

Details of parts and construction for your BARKO HYDRAULIC LOADER are shown on the individual parts list. The exploded views are arranged in proper order for assembly and dis-assembly so that, in general, parts may be removed in the order shown.

Two lifting lugs are provided on the boom, one closest to boom pivot for raising entire loader assembly and one farthest out for boom and job assembly.

Instruction for servicing pump, motor, valves and filter are covered on separate pages.

It is of utmost importance that the entire hydraulic system be kept clean and free from dirt, grit, water, air or acids at all times. Periodic draining, cleaning and refilling with new oil is recommended to insure proper performance and service. All openings in the hydraulic circuit must be properly capped, if component units are removed. These units should also be capped or plugged to protect them from entry of foreign matter.

Service and clean the hydraulic system oil filters at each oil change. Quite often a new oil will have a lint like material, which when present in the oil will plug oil filters. For this reason, the filters should be checked during the first 25 hours of operation after any considerable amount of oil has been added to the hydraulic system.

Always drain hydraulic fluid system after working machine because the oil will be warm and will flow freely, which is needed to carry all the dirt and sludge with it.

FOLLOWING, IS A LIST OF WRENCHES THAT CAN BE PURCHASED
FROM BARKO. FOR USE ON YOUR BARKO LOADER.

<u>PART NUMBER</u>	<u>TOOL</u>
27000	FOR USE WHEN REPLACING SPOOL SEALS IN 25P VALVES
042200	WRENCH - 1 1/2" BOLT
042201	WRENCH - 2" BOLT
042202	WRENCH - 2 1/2" BOLT
042203	WRENCH - 3 1/2" BOLT

WARRANTY

Barko Hydraulic Loader

Barko Hydraulics Warranty to Dealers and/or original purchasers of hydraulic loaders and parts thereof manufactured by Barko Hydraulics is:

- A. Hydraulic loaders and parts manufactured by Barko Hydraulics will conform to the designation or description under which they are sold.
- B. Hydraulic loaders and parts manufactured by Barko Hydraulics shall be delivered free from all security interests, liens and other encumbrances, good title shall be conveyed, and transfer rightful.
- C. Hydraulic loaders manufactured by Barko Hydraulics will be free from defects in materials and workmanship for a period of three (3) months or five hundred (500) hours of operation from first day in service, whichever occurs first, provided first day of service is not later than sixty (60) days from delivery to dealer and/or original purchaser,
 - a. unless Barko Hydraulics extends the period in which such first day of service is to occur, and Barko Hydraulics or dealer certifies such extended period for warranty to commence.
- D. Replacement parts manufactured by Barko Hydraulics will be free from defects in material and workmanship for a period of three (3) months or five hundred (500) hours of operation from first day in service, whichever occurs first, provided first day of service is not later than one hundred twenty (120) days from delivery to Dealer and/or original purchaser, and installation of repair parts is made by authorized Dealer.
- E. Barko Hydraulics liability under this Warranty or otherwise shall be limited to providing a replacement part for any non-conforming part, not including freight, special charges or cost of installation, or in the alternative, at Barko Hydraulics' sole option, the cost of repairs (excluding travel) during normal working hours to that non-conforming part.

Proof of any defect in any hydraulic loader or replacement part must be submitted to designated Dealer of Barko Hydraulics' factory within ten (10) days from the date on which the defect was originally discovered.

Barko Hydraulics makes no warranty with respect to parts supplied to it by other manufacturers; these components shall be subject to the warranties of their respective manufacturers.

This warranty does not extend to any of the following:

1. Defects, damage or deterioration due to normal use, wear and tear, exposure, storage or corrosion. Normal use ordinarily effects hoses, seals and packings, work surfaces and the like.
2. Normal maintenance service or the replacement or repair of parts required to be replaced or repaired in the course of normal maintenance service. Normal maintenance ordinarily includes replacement of filters, seals and the like.
3. Defects, damage or deterioration due to failure to properly maintain equipment or parts, including but not limited to inspections or maintenance not in accordance with manuals, schedules or good practice.
4. Damage or defects caused by abuse of the equipment or parts by overloading, misapplication, improper operation or use, installation of unapproved accessories or unauthorized alterations.
5. Damage or defects resulting from repairs of equipment or parts in an unauthorized manner or the installation of components other than Barko Hydraulics or authorized parts.

The liability of Barko Hydraulics, except as to Paragraphs A and B above, arising out of supplying hydraulic loaders or replacement parts thereof, or their use, whether premised on warranties, contract, negligence or otherwise, shall not in any case exceed the cost of correcting the defects in the hydraulic loaders or replacement parts therefor as herein provided, and upon expiration of the applicable warranty period herein all such liability shall terminate.

Barko Hydraulics shall in no event be liable for any incidental, consequential, or special damages or for any expenses or delays caused by defective material or workmanship, and no allowance will be made for repairs, replacements or alterations without Barko Hydraulics prior written approval. The foregoing shall constitute the sale and exclusive remedy of Dealer and Buyer on the sale and exclusive liability of Barko Hydraulics.

The warranties stated herein are in lieu of all other warranties whether written or oral, statutory, express or implied, including any warranty of merchantability or fitness for purpose.

SECTION I

40-60 ROOF MOUNT

STRUCTURAL/MECHANICAL

DESCRIPTION	PAGE NUMBER(S)
HEAD & BASE (40 Continuous).....	
HEAD & BASE (40 with stops).....	
HEAD & BASE (60 Continuous).....	
HEAD & BASE (60 with stops).....	
MAIN & SECONDARY BOOM.....	
LOG & PULP GRAPPLE (Bypass).....	
PULP GRAPPLE (Butt).....	
LOG GRAPPLE (Bypass).....	

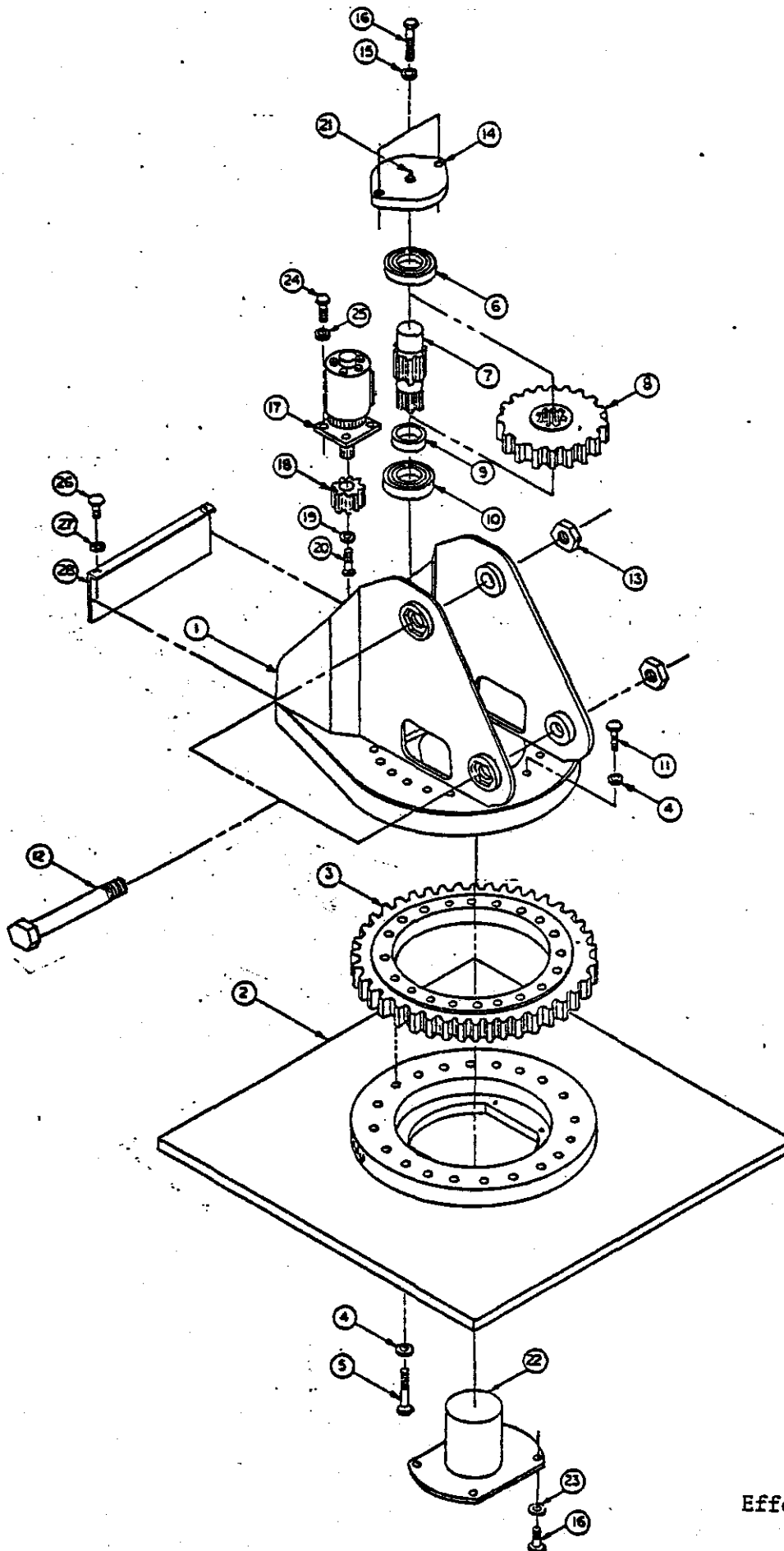


Fig. I-1

Effective: 8/5/75

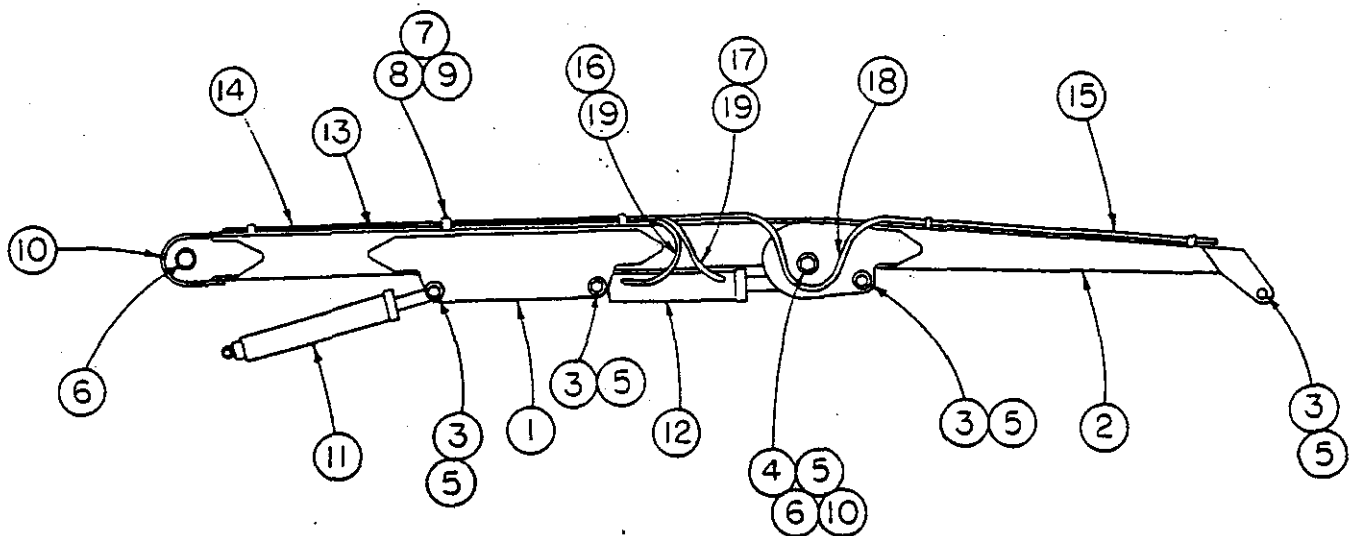
MODEL 40 ROOF MOUNT
CONTINUOUS ROTATION
PARTS LIST

ITEM NO	QTY	DESCRIPTION	PART NUMBER
1	1	HEAD, weldment.....	124008
2	1	BASE, weldment.....	123120
3	1	BEARING, turntable.....	41529
4	36	FLATWASHER, 5/8" grade 9.....	14150
5	20	BOLT, 5/8"-UNC x 4" grade 9.....	11402
6	1	BEARING.....	41533
7	1	SHAFT, pinion.....	401815
8	1	PINION, swing.....	401820
9	1	PINION, spacer.....	401821
10	1	BEARING.....	41534
11	16	BOLT, 5/8"-UNC x 1-3/4" grade 9....	11403
12	2	BOLT, body fit 1-1/2" x 11".....	482205
13	2	NUT, nylock 1-1/2".....	13413
14	1	COVER, bearing.....	471206
15	2	FLATWASHER, 1/2".....	14084
16	6	BOLT, 1/2"-UNC x 1-3/4".....	10106
17	1	MOTOR, hydraulic.....	60029
		For breakdown on motor see pg.28, Fig. II-7	
18	1	PINION.....	401831
	1	PINION, retainer.....	481805
19	1	LOCKWASHER, 3/8".....	14082
20	1	BOLT, 3/8"-UNC x 1-1/4" grade 9...	11445
21	1	FITTING, grease.....	17300
22	1	COLLECTOR.....	693013
		For breakdown on collector see pg.32, Fig II-9	
23	4	LOCKWASHER, 1/2".....	14013
24	4	BOLT, socket head 9/16"-UNC x 2"..	11685
25	4	LOCKWASHER, 9/16".....	14085
26	2	BOLT, 3/8"-UNC x 1".....	10054
27	2	LOCKWASHER, 3/8".....	14082
28	1	COVER, back.....	121432

Change Notice No. 1

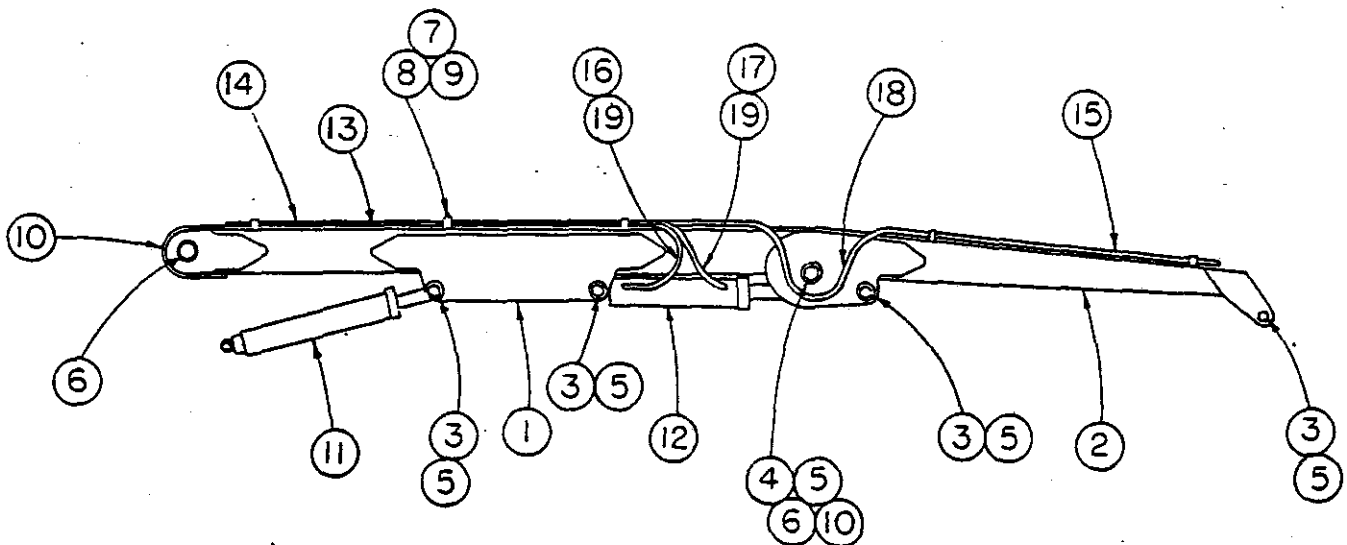
Supersedes Page Dated: 8/5/75

Effective: 11/24/75



MODEL 40 BOOM ASSEMBLY
(STRAIGHT SECONDARY STD. LENGTH)

<u>ITEM NO.</u>	<u>QTY.</u>	<u>DESCRIPTION</u>	<u>PART NO.</u>
1	1	ASSEMBLY, boom (complete)	103029
2	1	WELDMENT, main boom	103202
3	4	WELDMENT, straight jib	113206
4	1	BOLT, body fit 1-1/2 X 8 long	482201
5	1	BOLT, body fit 1-1/2 X 9-1/4 long	482262
6	5	NUT, nylock 1-1/2	13413
7	4	BEARING, tapered roller	41015
8	17	CLAMP, pipe	491000
9	17	WASHER, lock	14011
10	17	NUT, hex	13008
11	2	FITTING, grease	17300
12	1	ASSEMBLY, cylinder	812406
13	1	ASSEMBLY, cylinder	812407
14	4	ASSEMBLY, hydraulic tubing	93482
15	2	ASSEMBLY, hydraulic tubing	93431
16	4	ASSEMBLY, hydraulic tubing	93437
17	1	ASSEMBLY, hose	71608
18	1	ASSEMBLY, hose	71607
19	4	ASSEMBLY, hose	71830
	2	ADAPTOR 08MP-08FPX	66008



MODEL 40 BOOM ASSEMBLY
(STRAIGHT SECONDARY 2' EXTENSION)

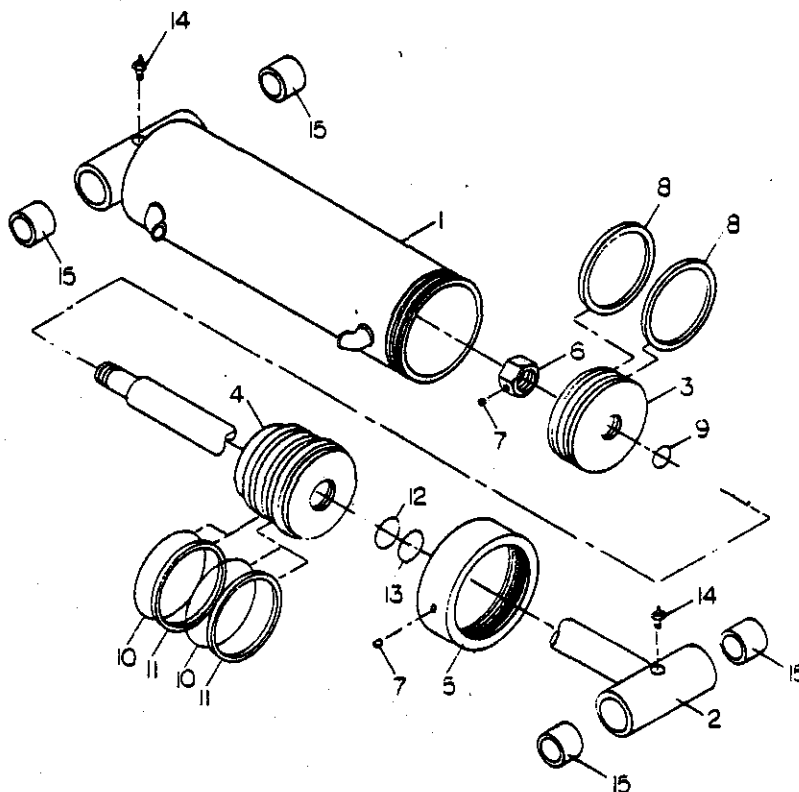
<u>ITEM NO.</u>	<u>QTY.</u>	<u>DESCRIPTION</u>	<u>PART NO.</u>
	1	ASSEMBLY, boom (complete)	103030
1	1	WELDMENT, main boom	103210
2	1	WELDMENT, straight jib	113207
3	4	BOLT, body fit 1-1/2 X 8 long	482201
4	1	BOLT, body fit 1-1/2 X 9-1/4 long	482262
5	5	NUT, nylock 1-1/2	13413
6	4	BEARING, tapered roller	41015
7	17	CLAMP, pipe	491000
8	17	WASHER, lock	14011
9	17	NUT, hex	13008
10	2	FITTING, grease	17300
11	1	ASSEMBLY, cylinder	812406
12	1	ASSEMBLY, cylinder	812407
13	4	ASSEMBLY, hydraulic tubing	93484
14	2	ASSEMBLY, hydraulic tubing	93437
15	4	ASSEMBLY, hydraulic tubing	93483
16	1	ASSEMBLY, hose	71608
17	1	ASSEMBLY, hose	71607
18	4	ASSEMBLY, hose	71830
19	2	ADAPTOR 08MP-08FPX	66008

EFFECTIVE DATE 3/8/78

SECTION II
40-60 ROOF MOUNT

HYDRAULIC COMPONENTS

DESCRIPTION	PAGE NUMBER(S)
MAIN BOOM CYLINDER.....	
SECONDARY BOOM CYLINDER.....	
GRAPPLE CYLINDER.....	
VICKERS SINGLE PUMP.....	
COMMERCIAL SINGLE PUMP.....	
SWING MOTOR.....	
GRAPPLE MOTOR.....	
HYDRAULIC COLLECTOR.....	
GRAPPLE CUSHION VALVE.....	
HANDLE LINKAGE.....	
MAIN RELIEF VALVE.....	
VALVE BANK	
SWING VALVE SECTION.....	
GRAPPLE OPEN & CLOSE VALVE SECTION.....	
MAIN LIFT VALVE SECTION.....	
SECONDARY BOOM VALVE SECTION.....	
GRAPPLE ROTATE VALVE SECTION.....	
FLOAT POSITIONER.....	
SUCTION, PRESSURE & RETURN CIRCUIT.....	
SWING CIRCUIT.....	
MAIN LIFT CIRCUIT.....	
GRAPPLE OPEN & CLOSE CIRCUIT.....	
GRAPPLE ROTATE CIRCUIT.....	
SECONDARY BOOM CIRCUIT.....	

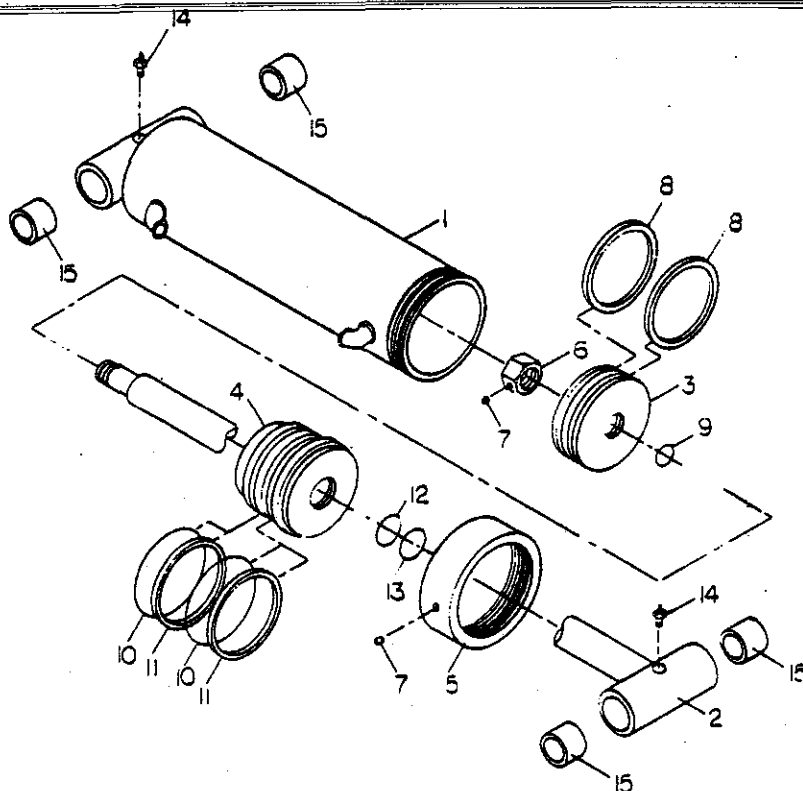


MODEL 40

MAIN BOOM CYLINDER

(5 x 24 WITH 2 1/4" ROD)

<u>ITEM NO</u>	<u>QTY</u>	<u>DESCRIPTION</u>	<u>PART NO</u>
0	1	ASSEMBLY, complete-----	812406
1	1	WELDMENT, butt and tube-----	832015
2	1	WELDMENT, rod-----	842012
3	1	PISTON-----	852002
4	1	GLAND-----	852303
5	1	CAP, gland-----	852813
6	1	NUT, hex-----	13119
7	2	SCREW, set-----	12616
(1) (3) 8	2	SEAL, piston-----	
(1) (3) 9	1	O-RING-----	
(2) (3) 10	2	O-RING-----	
(2) (3) 11	2	WASHER, back up-----	
(2) (3) 12	1	SEAL, rod-----	
(2) (3) 13	1	SEAL, wiper-----	
14	2	FITTING, grease-----	17300
15	4	BUSHING, bronze-----	42020
<u>SEAL KITS AVAILABLE</u>			
(1)		PISTON SEAL KIT-----	65484
(2)		GLAND SEAL KIT-----	65488
(3)		COMPLETE SEAL KIT-----	65586



MODEL 40

SECONDARY BOOM CYLINDER

(5 x 24 WITH 2 1/2" ROD)

<u>ITEM NO.</u>	<u>QTY</u>	<u>DESCRIPTION</u>	<u>PART NO</u>
0	1	ASSEMBLY, complete-----	812407
1	1	WELDMENT, butt and tube-----	832016
2	1	WELDMENT, rod-----	842012
3	1	PISTON-----	852002
4	1	GLAND-----	852303
5	1	CAP, gland-----	852813
6	1	NUT, hex-----	13119
7	2	SCREW, set-----	12616
(1) (3) 8	2	SEAL, piston-----	
(1) (3) 9	1	O-RING-----	
(2) (3) 10	2	O-RING-----	
(2) (3) 11	2	WASHER, back-up-----	
(2) (3) 12	1	SEAL, rod-----	
(2) (3) 13	1	SEAL, wiper-----	
14	2	FITTING, grease-----	17300
15	4	BUSHING, bronze-----	42020
<u>SEAL KITS AVAILABLE</u>			
(1)		PISTON SEAL KIT-----	65484
(2)		GLAND SEAL KIT-----	65488
(3)		COMPLETE SEAL KIT-----	65586

Effective 4-1-78

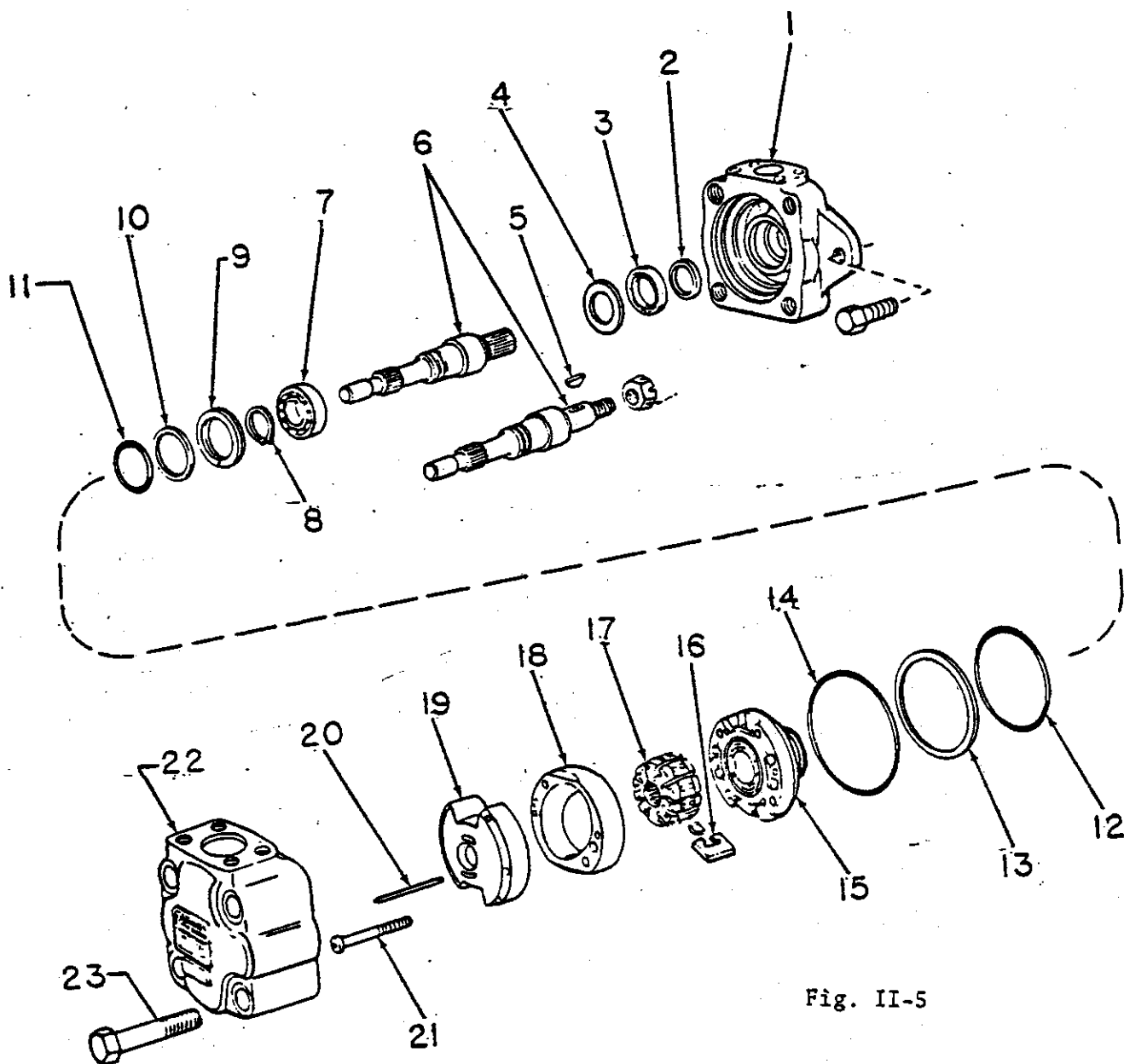


Fig. II-5

VICKERS SINGLE PUMP
PARTS LIST

ITEM NO	QTY	DESCRIPTION	21 GPM	28 GPM
-	1	PUMP, complete assembly R. H....	60603	60604
-	1	PUMP, complete assembly L. H....	60602	60605
1	1	BODY.....	59534	59578
(1)2	1	SEAL, wiper.....	(44512)	(44512)
(1)3	1	SEAL.....	(59569)	(59569)
4	1	WASHER.....	59537	59537
5	1	KEY.....	59532	59532
	1	SHAFT, (keyed).....	59567	59567
6	1	SHAFT, (splined).....	59584	59584
7	1	BEARING.....	59529	59529
8	1	RING, snap.....	59528	59528
9	1	RING, lock.....	59536	59536
(1)(2)10	1	RING, back-up.....	(59562)	(59562)
(1)(2)11	1	SEAL, o-ring.....	(65414)	(65414)
(1)(2)12	1	SEAL, o-ring.....	(65417)	(65417)
(1)(2)13	1	RING, back-up.....	(59559)	(59559)
(1)(2)14	1	SEAL, o-ring.....	(65418)	(65418)
(2)15	1	PLATE, pressure.....	-	-
(2)16	1	VANE, assembly.....	(59576)	(59556)
(2)17	1	ROTOR.....	-	-
(2)18	1	RING.....	-	-
(2)19	1	PLATE, wear, sub-assembly.....	-	-
(2)20	2	PIN.....	(59558)	(59551)
(2)21	2	SCREW.....	-	-
22	1	COVER.....	59577	59575
23	4	BOLT.....	59579	59574

NOTE: Part numbers in brackets () are superceded numbers and are serviced only in appropriate kits.

(1)	Included in Seal Kit.....	65507	65507
(2)	Included in Cartridge kit.....	65251	65253

Effective: 8/5/75

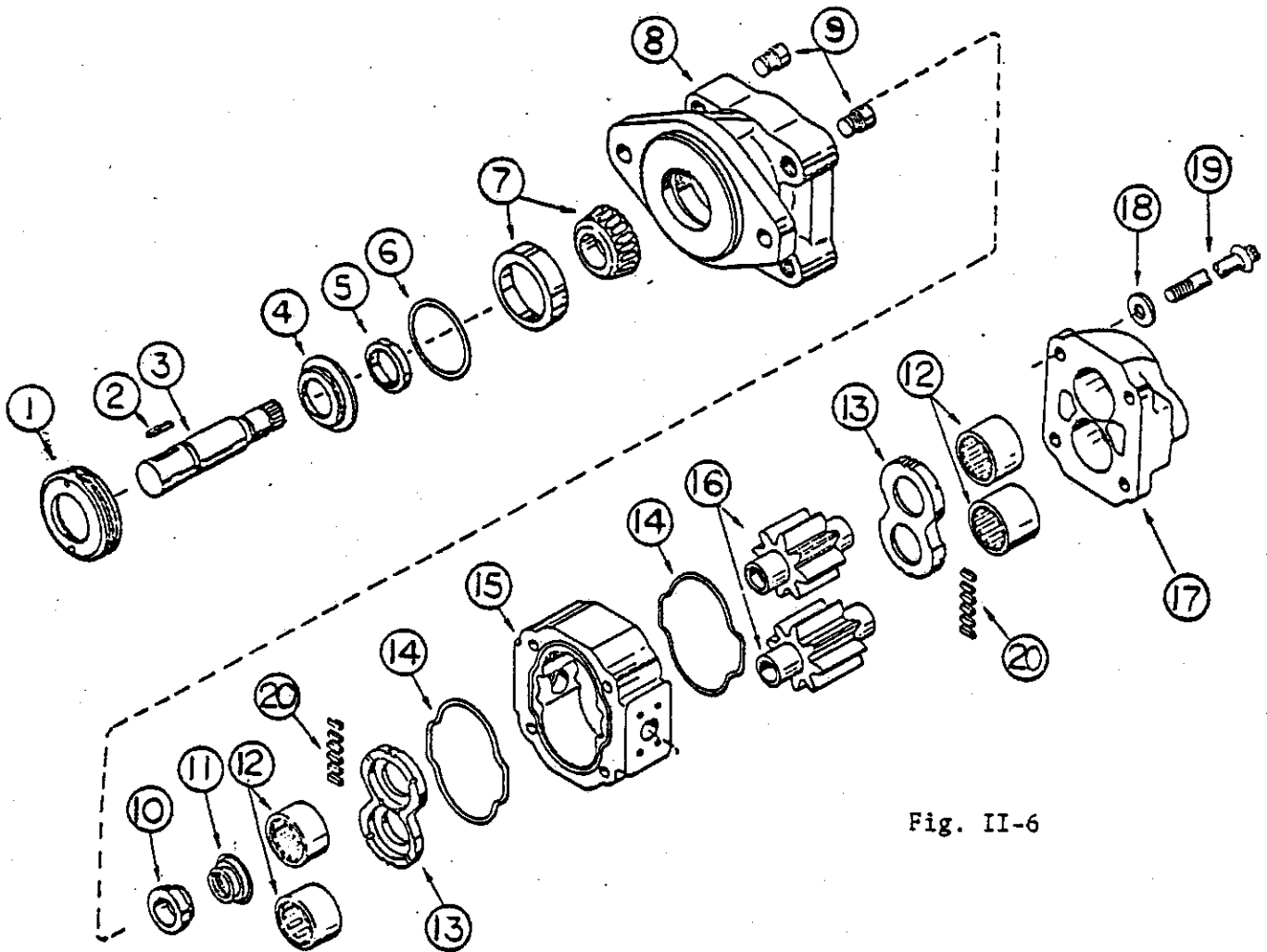


Fig. II-6

COMMERCIAL SINGLE PUMP
PARTS LIST

ITEM NO	QTY	DESCRIPTION	25 GPM	31 GPM
-	1	PUMP, assembly.....	60617	60514
1	1	RING, retainer.....	60673	60625
2	1	KEY.....	60679	60631
3	1	SHAFT, splined.....	60677	60630
	1	SHAFT, keyed.....	60676	60676
4	1	SEAL, retainer.....	60674	60626
(1)5	1	SEAL, double lip.....	(60627)	(60627)
(1)6	1	O-RING.....	(60628)	(60628)
7	1	BEARING, assembly.....	60675	60629
8	1	END COVER, shaft.....	60680	60634
9	1	CHECK, assembly.....	60681	60635
(1)10	1	BUSHING, bronze shaft.....	(60636)	(60636)
(1)11	1	SPRING, conical.....	(60637)	(60637)
12	4	BEARING.....	60682	60638
13	2	PLATES, thrust.....	60678	60678
(1)14	2	GASKET, o-ring.....	(60662)	(60662)
15	1	HOUSING, gear.....	60663	60671
16	2	GEARS, matched.....	60664	60686
17	1	END COVER, port.....	60653	60653
18	4	WASHERS.....	60654	60654
19	4	FASTENERS.....	60665	60665
20	2	SEALS, pocket.....	(65581)	(65581)

NOTE: Numbers in brackets () indicate superceded numbers and are serviced only in appropriate kits.

(1) Included in Seal Kit.....#65580

Change Notice No. 1
Supercedes Page Dated: 8/5/75
Effective: 11/24/75

4000 SERIES
CHAR LYNN MOTOR

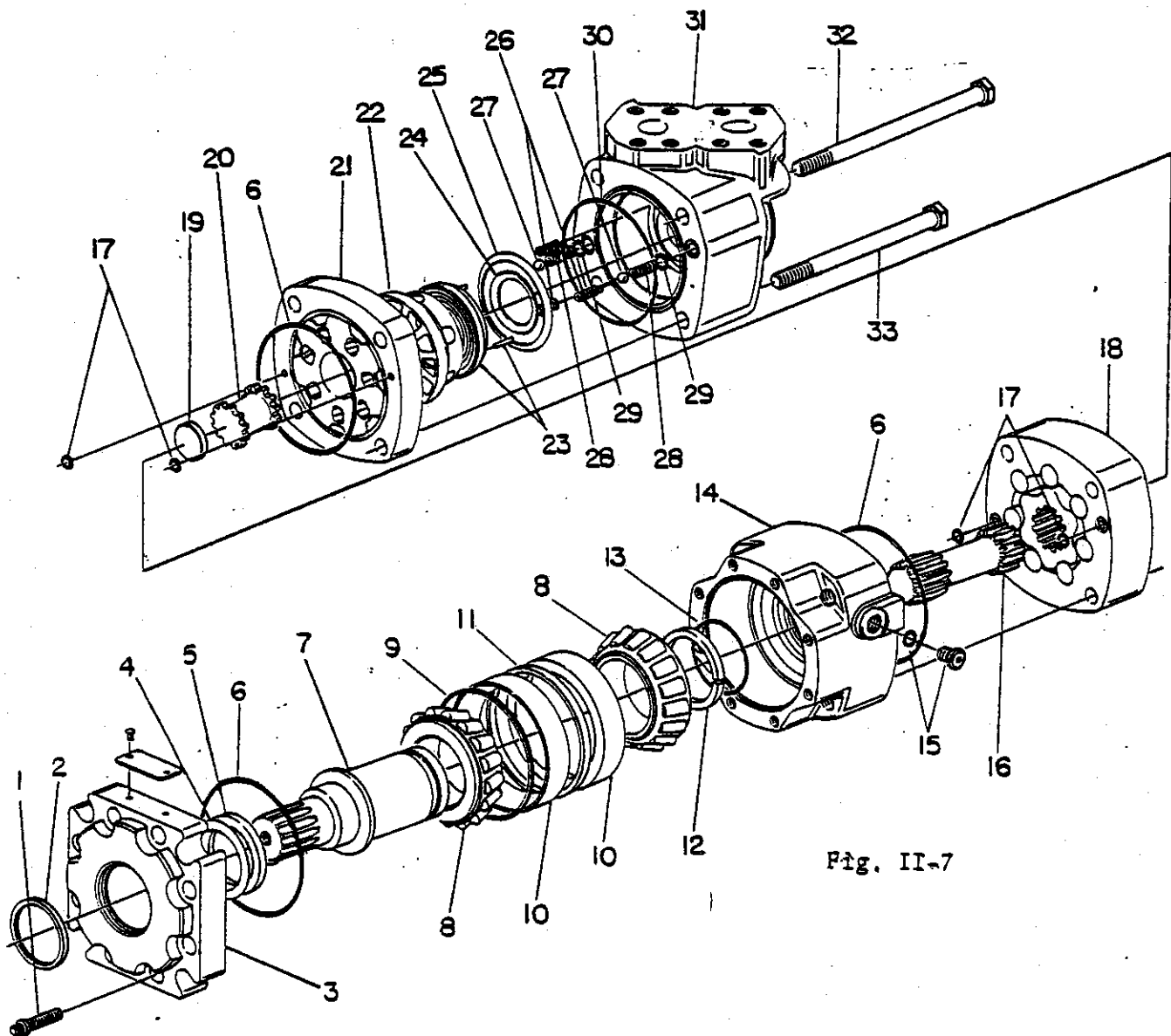


Fig. II-7

SWING MOTOR
4000 SERIES CHAR-LYNN
PARTS LIST

<u>ITEM NO.</u>	<u>QTY.</u>	<u>DESCRIPTION</u>	<u>PART NO.</u>
-	1	MOTOR, complete-----	60029
1	8	SCREW, cap-----	60345
(3) 2	1	SEAL, dust-----	-
3	1	RETAINER, front-----	60347
(3) 4	1	WASHER, back-up-----	-
(3) 5	1	SEAL, shaft-----	-
(2) 6	2	SEAL-----	-
(3) 6	1	SEAL-----	-
(1) 7	1	SHAFT, splined-----	-
(1) 8	2	BEARING, cone-----	-
9	1	KIT, spacer-----	60393
(1) 10	2	BEARING, cup-----	-
(1) 11	1	BEARING, spacer-----	-
(1) 12	1	RETAINER, rings-----	-
(3) 13	1	SEAL-----	-
14	1	HOUSING, bearing-----	60395
15	2	PLUG, assembly-----	60348
16	1	DRIVE-----	60387
(2) 17	4	SEAL-----	-
18	1	GEROLER-----	60388
19	1	SPACER, geroler-----	60389
20	1	DRIVE, valve-----	60390
21	1	PLATE, valve-----	60391
22	1	VALVE-----	60392
23	1	PLATE, balance assembly-----	60394
(2) 24	1	SEAL, face inner-----	-
(2) 25	1	SEAL, face outer-----	-
26	3	SPRING-----	60361
27	2	BALL, steel-----	60452
28	2	SPRING-----	60451
(2) 29	2	SEAL-----	-
(2) 30	1	SEAL-----	-
31	1	HOUSING, valve-----	60396
32	2	BOLT-----	60397
33	2	BOLT-----	60398
(1) Included in Shaft & Bearing Kit-----			65214
(2) Included in Motor Seal Kit-----			65215
(3) Included in Shaft Seal Kit-----			65216

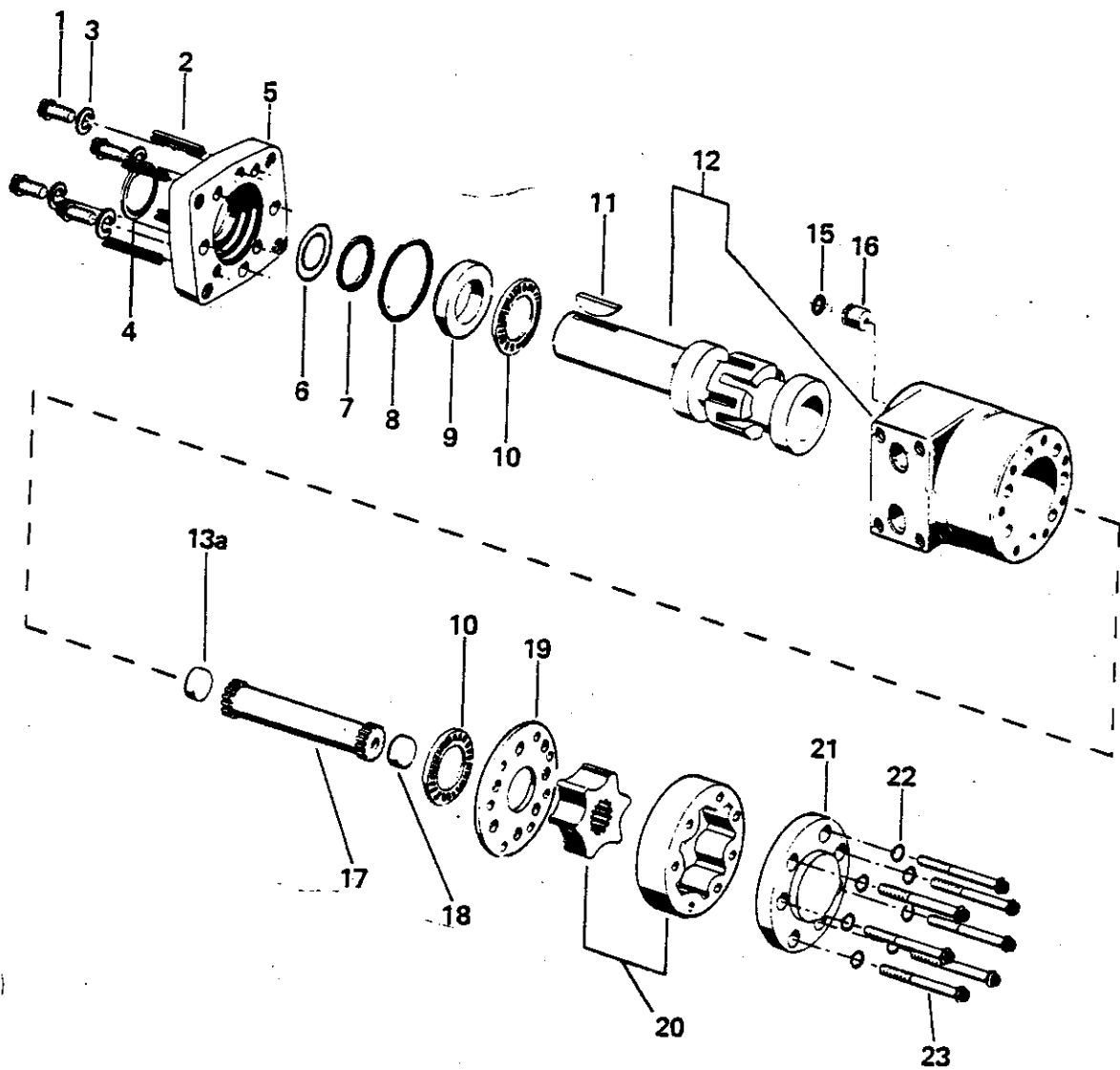


Fig. II-8

Effective: 8/5/75

CHAR-LYNN
GRAPPLE ROTATE MOTOR
PARTS LIST

ITEM NO	QTY	DESCRIPTION	PART NUMBER
-	1	Complete Motor Assembly.....	60000
1	4	SCREW, cap.....	59601
2	4	PIN, roll.....	59602
3	4	WASHER.....	14036
(1) 4	1	SEAL.....	(59604)
5	1	PLATE, mounting.....	59605
(1) 6	1	WASHER, back-up.....	(-)
(1) 7	1	SEAL, quad.....	(59606)
(1) 8	1	SEAL, O-ring.....	(65375)
9	1	BEARING, race.....	59608
10	2	BEARING, thrust.....	59609
11	-	KEY, Woodruff (not used).....	-
12	1	HOUSING & SHAFT ASSEMBLY.....	59611
		(Includes Spacer 13A).....	-
(1) 15	1	SEAL, o-ring.....	(65385)
16	1	PLUG, housing.....	59614
17	1	DRIVE.....	59616
18	1	SPACER.....	59617
19	1	PLATE, spacer.....	59618
20	1	GEROTOR SET.....	59619
21	1	CAP, end.....	59620
(1) 22	7	WASHER, seal.....	(-)
23	7	SCREW, seal.....	59621

NOTE: Part numbers in brackets () are superceded numbers and are serviced only in appropriate kits.

(1) Included in Seal Kit..... 65511

Effective: 8/5/75

MODEL 40-60 ROOF MOUNT

HYDRAULIC COLLECTOR
PARTS LIST

ITEM NO.	QTY	DESCRIPTION	PART NUMBER
-	1	COLLECTOR, assembly.....	693013
1	1	BARREL.....	693408
2	1	SPOOL.....	693216
3	1	PLATE, mounting.....	692305
4	4	BOLT, 5/16"-18 UNC x 1" long.....	11575
5	4	LOCKWASHER, 5/16".....	14310
(1)6	9	RING, teflon.....	(50160)
(1)7	2	POLYPAK.....	(55030)
(1)8	9	O-RING.....	(65376)

(1) Included in Seal Kit..... 65218

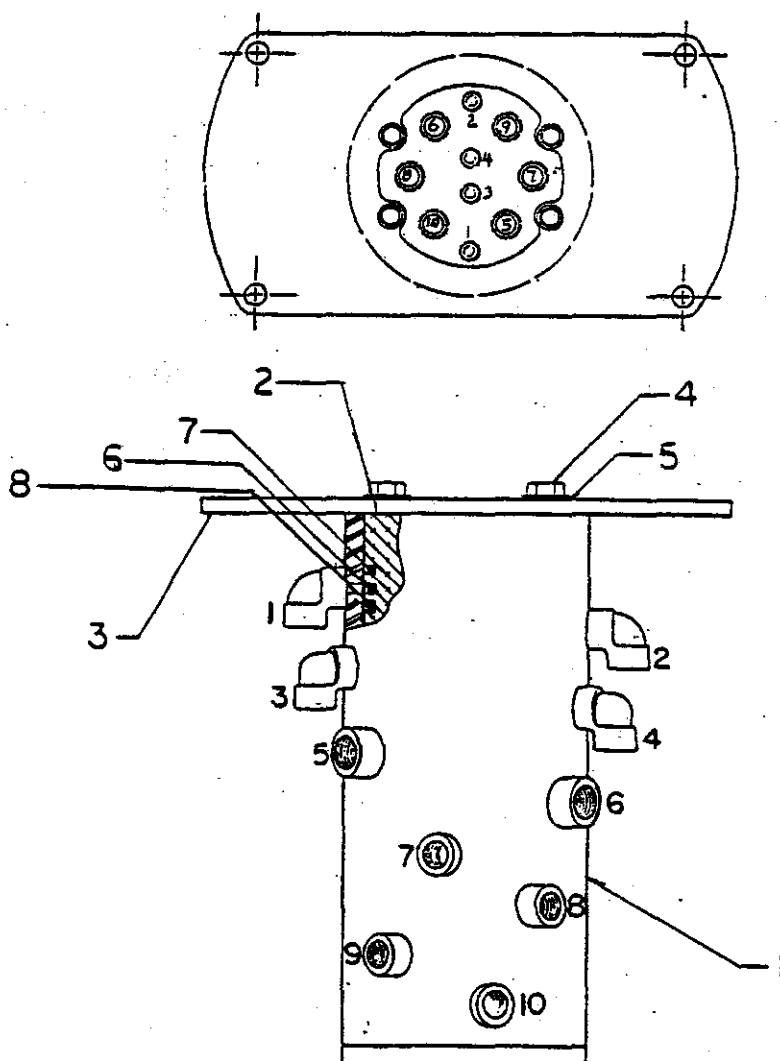


Fig. II-9

Effective: 8/5/75

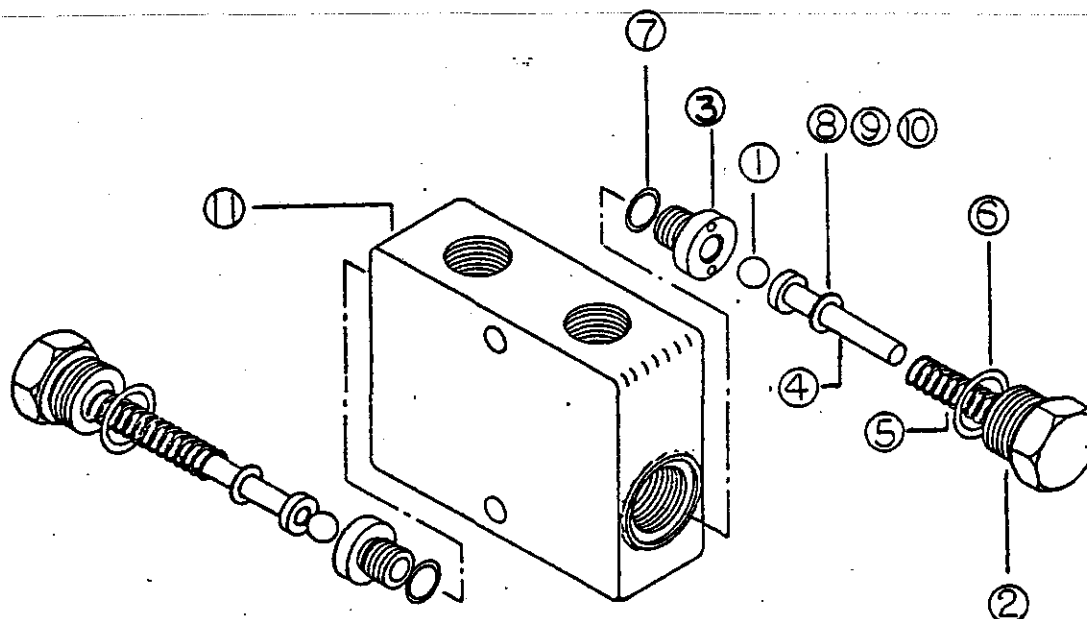


FIG.II-29

GRAPPLE CUSHION VALVE

Fig. II-10

- PARTS LIST

ITEM NO	QTY	DESCRIPTION	PART NUMBER
-	1	VALVE, cushion.....	63010
(1) 1	2	BALL, steel.....	(58301)
(1) 2	2	CAP, spring.....	(58302)
(1) 3	2	SEAT, standard.....	(58303)
(1) 4	2	GUIDE, ball and spring.....	(58304)
(1) 5	2	SPRING.....	(58317)
(1) 6	2	O-RING, spring cap.....	(58306)
(1) 7	2	O-RING, seat.....	(58307)
8	as req'd	WASHER, steel spacer, .010" thick.....	58310
9	as req'd	WASHER, steel spacer, .040" thick.....	58311
10	as req'd	WASHER, steel spacer, .020" thick.....	58312
11	1	HOUSING, valve.....	58313

NOTE: NUMBERS IN BRACKETS () INDICATE SUPERCEDED NUMBERS.
 (1) Included in Cushion Valve Kit..... 52039

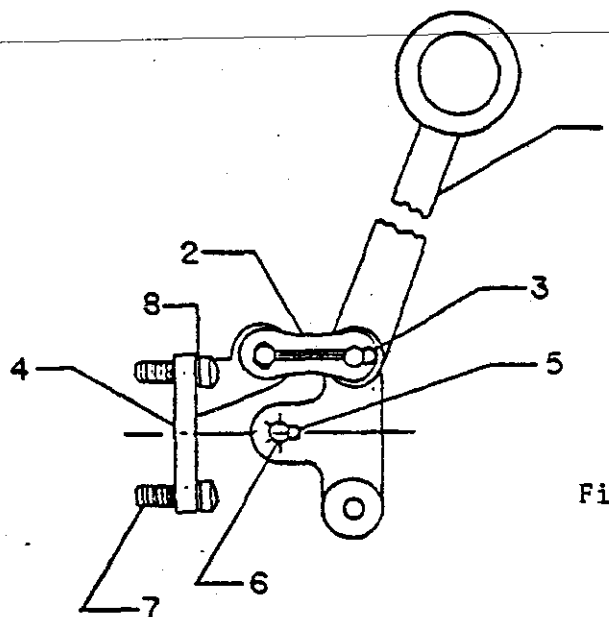


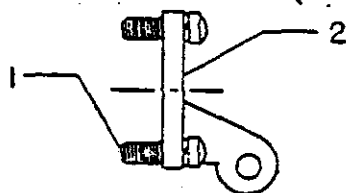
Fig. II-18

HANDLE ASSEMBLY

PARTS LIST

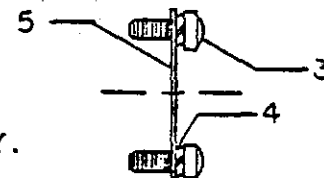
ITEM NO	QTY	DESCRIPTION	PART NUMBER
-	1	HANDLE, assembly.....	52006
(1)	1	HANDLE.....	(58009)
(2)	2	LINK, handle.....	(58003)
(3)	1	PIN, cotter.....	(58004)
(4)	1	BRACKET, handle.....	(58008)
(5)	1	PIN, cotter.....	(58001)
(6)	1	PIN, handle.....	(58000)
(7)	4	SCREW, machine.....	(58019)
(8)	4	LOCKWASHER.....	(58002)

NOTE: Numbers in brackets () indicate superceded numbers.
Serviced only in appropriate kits.



HANDLE BRACKET

Fig. II-19



RETAINER ASSY.

Fig. II-20

ITEM NO	QTY	DESCRIPTION	PART NUMBER
-	1	BRACKET, handle.....	52007
1	4	SCREW.....	
2	1	BRACKET.....	
-	1	RETAINER, assembly.....	52029
3	4	SCREW.....	
4	4	LOCKWASHER.....	
5	1	PLATE, retainer.....	

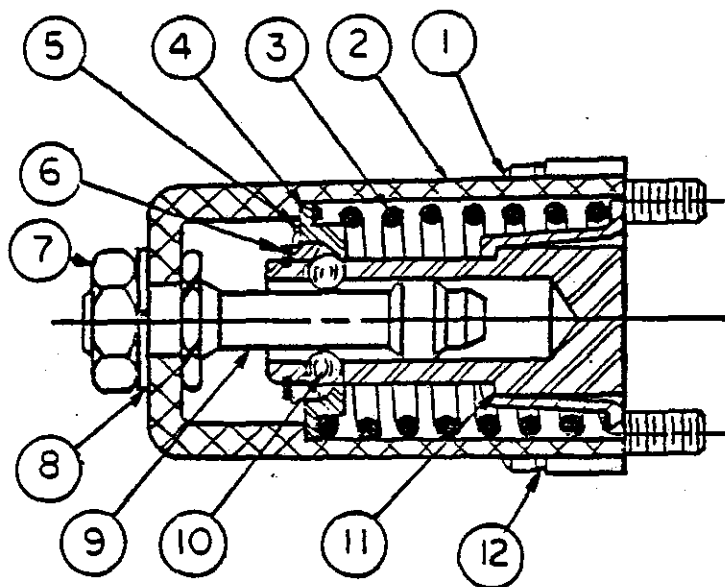


Fig.II-21

FLOAT POSITIONER
PARTS LIST

ITEM NO	QTY	DESCRIPTION	PART NUMBER
-	1	FLOAT POSITIONER, assembly....	52068
1	4	SCREW.....	-
2	1	BONNET.....	-
3	1	SPRING, centering.....	-
4	1	COLLAR, stop.....	-
5	1	RETAINER, detent ball.....	-
6	1	RETAINER, ring.....	-
7	1	NUT.....	-
8	1	LOCKWASHER.....	-
9	1	POSITIONER, spool.....	-
10	4	BALL.....	-
11	1	COLLAR, stop.....	-
12	4	LOCKWASHER.....	-

Effective: 8/5/75

SERVICE INFORMATION

MAIN PUMP (VICKERS OR COMMERCIAL SINGLE PUMP)
SWING MOTOR (4000 CHAR-LYNN)
GRAPPLE MOTOR (X5X CHAR-LYNN)
INSTRUCTIONS FOR REPLACING SEALS IN VALVE
INSTRUCTIONS FOR CENTER SECTION ASSEMBLIES
FILTER ELEMENT REPLACEMENT INSTRUCTIONS
INSTRUCTIONS FOR REPLACING BY-PASS SPRING IN FILTER
HYDRAULIC HINTS

INTRODUCTION

This Parts Manual has been designed to assist you in identifying and ordering replacement parts for your Barko loader.

The manual is divided into seven sections: Nomenclature, Structural Upper, Structural Lower, Mechanical, Electrical, Hydraulic and Options and Accessories.

130
Your Barko loader has been designed to provide you with long, efficient service—and, in its manufacture, only the highest quality parts and components have been used.

**“THE USE OF PARTS OTHER THAN
GENUINE BARKO OR APPROVED PARTS
MAY VOID ANY PRODUCT WARRANTY
THAT MAY BE IN EFFECT AT THE TIME OF
SUBSTITUTION.”**



MODEL 130



MAXIMUM HYDRAULIC PRESSURE FOR THIS MACHINE IS 2,000 psi. SETTINGS HIGHER THAN THIS MAY RESULT IN HARM TO PERSONS AND PROPERTY.

BARKO HYDRAULICS, INC.

In many instances, we have learned that the hydraulic relief valves of this equipment have been reset, increasing the maximum system pressure, and with it, the load the unit will lift before the relief valve opens. In some instances, the consequences of increasing this setting have been serious. The function of the relief valve is to provide a fuse action to protect the machine and the operator from overloading. When overloaded, different portions of the machine can become stressed to a level where parts fracture and serious physical damage to the equipment and personnel can result. **This is an extremely dangerous practice.**

Accordingly, you are advised that the setting of this valve is limited to a maximum of **2,000 psi.** Pressure settings in excess of this level render each and all Barko warranties null and void and constitute an obvious misuse and abuse of our product.

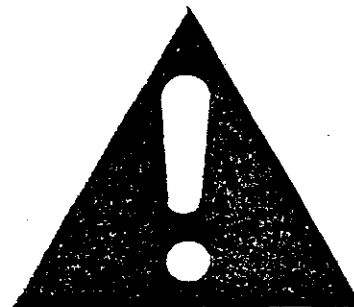
MODIFICATIONS














Slight modifications in design as dictated by field experience or desire to improve the unit, or changes of materials due to inability to procure those originally specified may become necessary. Such changes in design will be obvious and, wherever possible, parts or assemblies will be interchangeable with the original design.

ILLUSTRATIONS

The illustrations in the manual are intended to show typical construction of the various parts. In some instances the shapes or details of the parts illustrated may not exactly represent their actual appearance; however, they will serve to show the servicing methods explained or help to identify parts performing the same function.

CAUTION



-  1. Under no circumstances should any modifications be made to Barko loaders without factory authorization. This machine was designed to do a specific job and alterations to loader could result in injury to operator or machine.
-  2. If loader is not functioning properly, machine should be shut down and proper repair procedures followed.
-  3. Read this manual thoroughly. Get to know the operation and care of your Barko Loader.
-  4. Become as familiar as possible with the requirements of each loading job and the terrain you'll be working in before you start each job.
-  5. Go through the pre-start checklist thoroughly before you start each job — to make sure your equipment is in safe, working condition. Be sure all damage or defects are corrected first by qualified service personnel.
-  6. Make sure that all walking and climbing surfaces of the loader are free of dirt, debris, water, grease, oil, ice and snow . . . and don't leave loose tools and rags on the loader. One slip can be disastrous.
-  7. Be sure to wear shoes with some kind of non-slip soles—and always use both hands when climbing aboard the machine.
-  8. Do not allow anyone to ride on the outside of the cab or anywhere else on the machine while you're operating. Only the operator should be on the machine.
-  9. Be constantly aware of people and obstacles in your job area while operating—and never allow anyone to be under your boom or load.
-  10. If your machine is equipped with stabilizers, do not operate the loader until you have lowered the stabilizers and the machine is on firm, level ground or cribbing.
-  11. Try to keep your eyes on the load at all times. If you must look elsewhere, bring the loader to a stop.
-  12. **DO NOT OPERATE THE LOADER NEAR POWER LINES!** If you must work near them, have them disconnected first.
-  13. Be sure to wear safety equipment and clothing required for working with, or near heavy equipment—and keep that hard hat on.



START-UP INSTRUCTIONS

Your pre-operational check should include the following:

1. Check reservoir oil level.
2. Check lubrication chart and diagram to determine if all points have been properly lubricated.
3. Check hydraulic piping against hydraulic diagram for correctness of connections.
4. Check mounting installation for completeness and security.
5. Start engine and check for proper engine speed. Compare actual swing time with rating on specification page.
6. Operate all systems to extreme limits of travel in order to raise hydraulic pressure in each line to maximum. Check for leaks in connections.
7. You are now ready to operate the BARKO HYDRAULIC LOADER.

COLD WEATHER INSTRUCTIONS

When the oil viscosity is below 4,000 SSU (SAE 10W @ 20° F, SAE 20 @ 35° F, SAE 30 @ 50° F), extreme care should be used in starting the machine operation to allow warming of the hydraulic oil to a temperature suitable for proper circulation. The following method may be used to warm the oil:

1. Jog Pump: on 5 seconds off 20 seconds (ten times) then on 20 seconds off 20 (about 5 times). Idle system a few minutes.
2. Run pump at 1/2 speed (about 800 to 1000 engine RPM) and run any ram to end and stall it, thus blowing oil thru the pressure relief valve. Relieve pressure 10 seconds of each minute.
3. Oil passing thru the relief valve does no useful work and picks up 8-1/2 degrees of warmth per 1000 pounds of pressure drop. (Approx. ten times.)

When the oil viscosity is below 20,000 SSU (SAE 10 @ -5° F, SAE 20 @ 7° F), warm tank (up about 40 degrees) before starting pump, then follow step above.

For prolonged service in sub zero temperatures, ATF Type "A" and Mil 5606 specification hydraulic oil may be used.