

**61CCX2L1C & 61CCX2R1C  
HYDRAULIC WINCHES**

# TABLE OF CONTENTS

## WINCH WARNING AND CAUTION NOTICES - READ BEFORE OPERATING WINCH

WINCH DRAWING - 61CCX2L1C & 61CCX2R1C

CABLE INSTALLATION

WINCH HYDRAULIC SYSTEM

PLUMBING DIAGRAM

GENERAL INFORMATION AND DP SERVICING INSTRUCTIONS

INSTALLATION DRAWING - MOTOR END - EXPLODED VIEW

PARTS LIST - MOTOR END.....1.10144

INSTALLATION DRAWING - DRUM - EXPLODED VIEW

PARTS LIST - DRUM.....1.20036

INSTALLATION DRAWING - GEAR END - EXPLODED VIEW

PARTS LIST - GEAR END.....1.30122

INSTALLATION DRAWING - INPUT SHAFT - EXPLODED VIEW

PARTS LIST - INPUT SHAFT.....1.40183

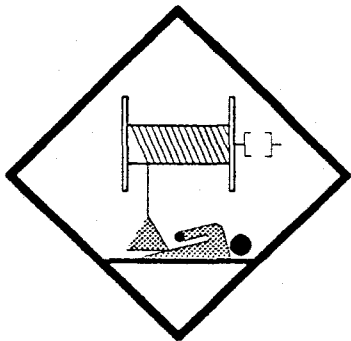
INSTALLATION DRAWING - BASE MOUNT - EXPLODED VIEW

PARTS LIST - BASE MOUNT.....1.50027

INSTALLATION DRAWING - GEAR END COVER - EXPLODED VIEW

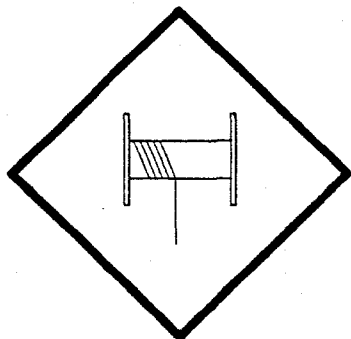
PARTS LIST - GEAR END COVER.....1.60024

WARRANTY, OIL SPECIFICATIONS AND HOW TO ORDER PARTS



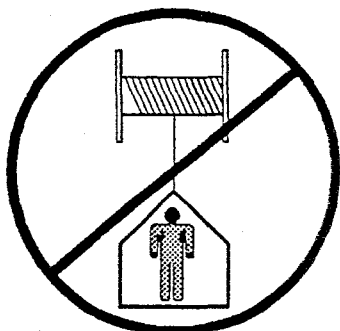
**DANGER**

**DO NOT**  
→ **DISENGAGE WINCH**  
**OR**  
→ **SHIFT 2 SPEED**  
**GEARBOX**  
**WHILE WINCH IS UNDER LOAD**  
**OR**  
**WHILE DRUM IS ROTATING**



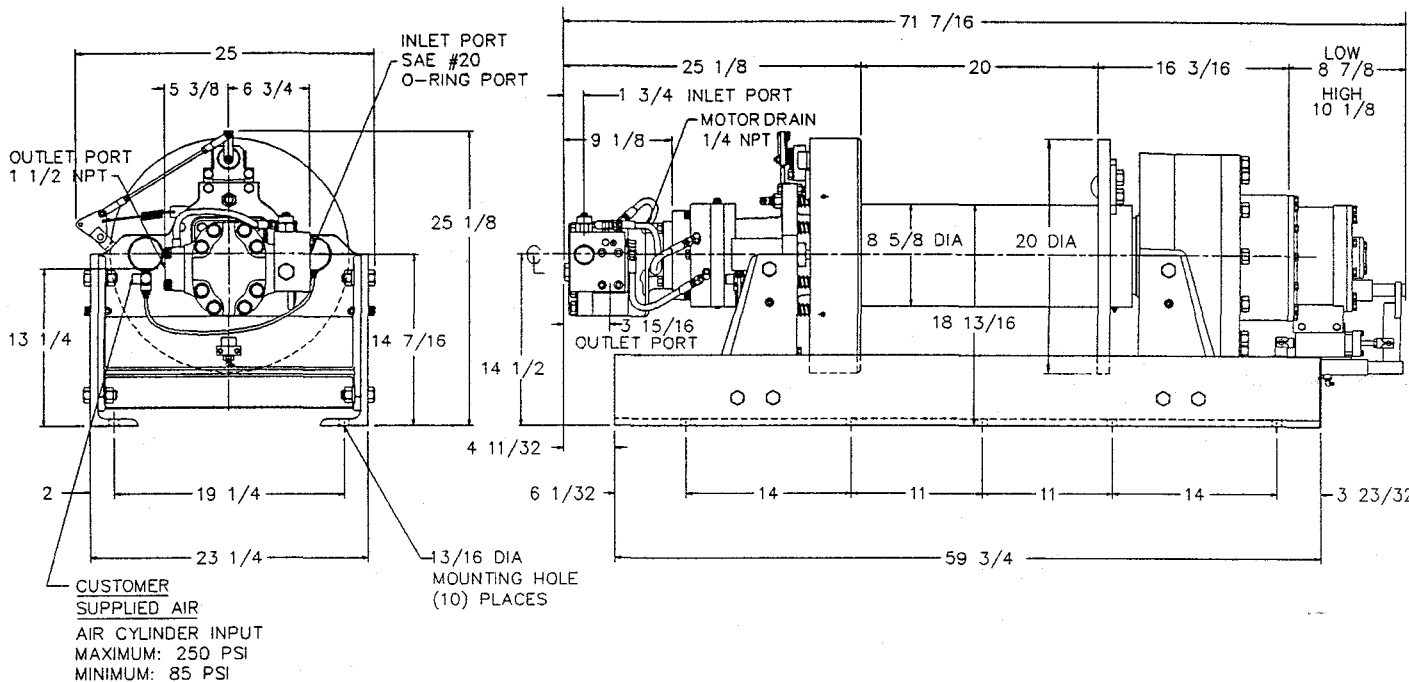
**DANGER**

**THE LAST FIVE**  
**WRAPS OF WIRE ROPE**  
**MUST BE LEFT ON**  
**THE DRUM TO ASSIST**  
**THE WIRE ROPE CLAMP IN**  
**HOLDING THE LOAD**



**WARNING**

**WINCHES ARE NOT**  
**TO BE USED FOR**  
**THE LIFTING OR**  
**MOVING OF**  
**PERSONS**



### CABLE CAPACITY

CABLE SIZE	1ST LAYER	2ND LAYER	3RD LAYER	4TH LAYER	5TH LAYER	6TH LAYER
3/4	59	127	205	292	389	495
7/8	51	112	182	261	350	
1	45	100	164	238		

CABLE CAPACITIES ARE IN ACCORDANCE WITH SAE J706 (ACTUAL CAPACITIES ARE USUALLY UP TO 10% GREATER THAN THOSE SHOWN)

### PERFORMANCE DATA

#### LOW SPEED LINE PULL (LBS) & LINE SPEED (FPM)

CABLE SIZE	1ST LAYER		2ND LAYER		3RD LAYER		4TH LAYER		5TH LAYER		6TH LAYER	
	LINE PULL	FPM	LINE PULL	FPM	LINE PULL	FPM	LINE PULL	FPM	LINE PULL	FPM	LINE PULL	FPM
3/4	60,000	26	51,725	30	45,455	34	40,540	38	36,585	42	33,335	46
7/8	60,000	26	50,670	31	43,850	36	38,645	40	34,545	45		
1	60,000	26	49,680	32	42,385	37	36,960	43				

#### HIGH SPEED LINE PULL (LBS) & LINE SPEED (FPM)

CABLE SIZE	1ST LAYER		2ND LAYER		3RD LAYER		4TH LAYER		5TH LAYER		6TH LAYER	
	LINE PULL	FPM	LINE PULL	FPM	LINE PULL	FPM	LINE PULL	FPM	LINE PULL	FPM	LINE PULL	FPM
3/4	11,160	145	9,620	168	8,460	191	7,540	214	6,810	237	6,200	261
7/8	11,015	147	9,300	174	8,050	201	7,095	228	6,340	255		
1	10,870	149	9,000	180	7,680	210	6,700	241				

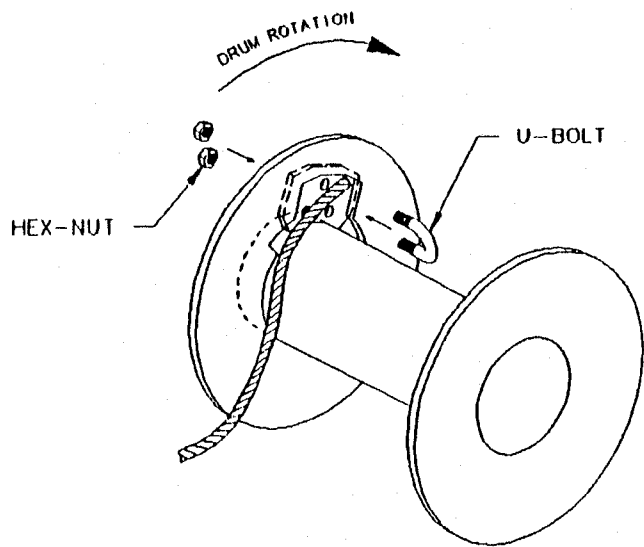
THE RATED LINE PULLS SHOWN ARE FOR THE WINCH ONLY. CONSULT THE WIRE ROPE MANUFACTURER FOR WIRE ROPE RATINGS.  
LINE SPEED IS BASED ON 60 GPM (MAXIMUM ALLOWABLE INPUT IS 80 GPM).  
LINE PULL IS BASED ON 2,500 PSI PRESSURE DIFFERENTIAL ACROSS THE MOTOR.

### RECOMMENDED BREAK-IN PROCEDURE

FULLY EXTEND CABLE AND MAKE (3) COMPLETE PULLS AT APPROXIMATELY HALF THE RATED CAPACITIES.  
THIS WILL EXTEND THE LIFE OF BOTH THE CABLE AND THE WINCH.

61CCX2L1C WINCH

6/6/95

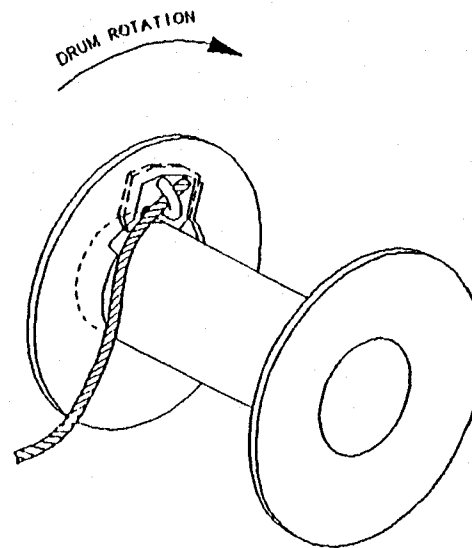


## STEP 1

ALIGN CABLE BETWEEN PROPER HOLES ACCORDING TO DRUM ROTATION. INSERT U-BOLT INTO HOLES AND THREAD ON NUTS FROM BACK OF FLANGE.

### CAUTION:

IF WINCH CABLE IS NOT INSTALLED FOR THE CORRECT DRUM ROTATION, THE WINCH BRAKE VALVE WILL NOT HOLD THE LOAD.



## STEP 2

ONCE NUTS ARE TIGHTENED SECURE, THE CABLE IS PROPERLY INSTALLED.

### CAUTION:

DO NOT OPERATE WINCH WITH LESS THAN 5 FULL CABLE WRAPS ON THE DRUM.

## COMMERCIAL INTERTECH MOTOR

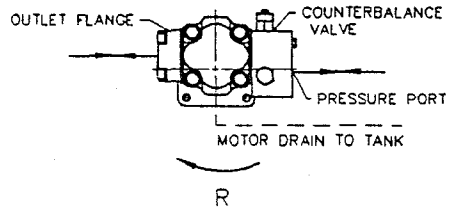
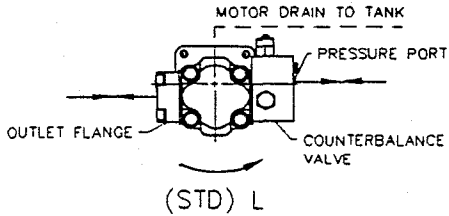
TO REVERSE WIRE ROPE PULL IN DIRECTION

### METHOD 1

REMOVE THE COUNTERBALANCE VALVE AND OUTLET FLANGE.  
REMOVE THE MOTOR MOUNTING BOLTS AND ROTATE THE MOTOR 180°.  
REASSEMBLE MOTOR, COUNTERBALANCE VALVE, AND OUTLET FLANGE.

### METHOD 2

SWITCH POSITIONS OF COUNTERBALANCE VALVE AND OUTLET FLANGE.  
NOTE: HOSES GOING TO BRAKE HOUSING MAY NEED TO BE LONGER.

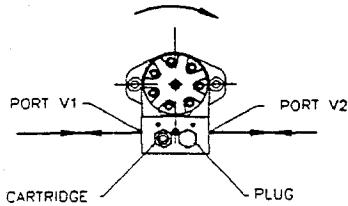


## CHAR-LYNN MOTORS

(STD) L PRESSURE TO V1 ROTATES WINCH DRUM  
CLOCKWISE WHEN VIEWED FROM MOTOR END.

R PRESSURE TO V2 ROTATES WINCH DRUM COUNTER  
CLOCKWISE WHEN VIEWED FROM MOTOR END.

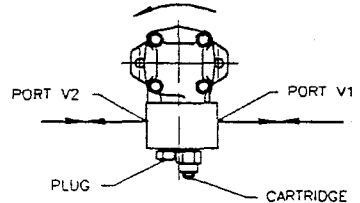
TO REVERSE WIRE ROPE PULL DIRECTION,  
SWITCH POSITIONS OF CARTRIDGE AND PLUG.



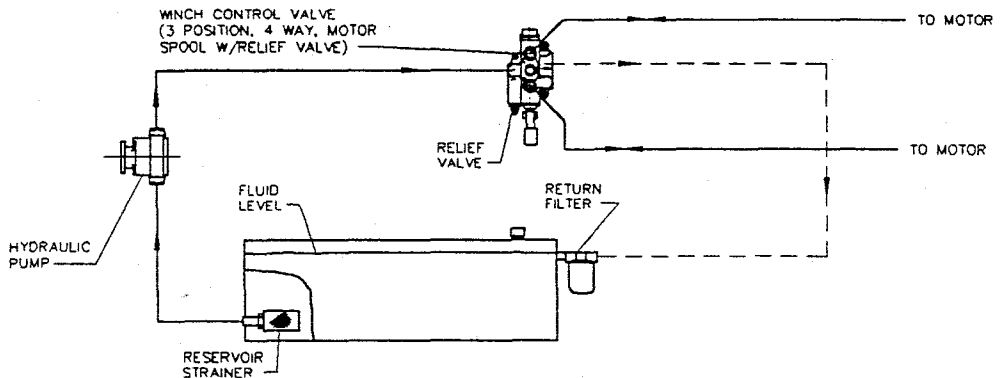
(STD) L PRESSURE TO V1 ROTATES WINCH DRUM COUNTER  
CLOCKWISE WHEN VIEWED FROM MOTOR END.

R PRESSURE TO V2 ROTATES WINCH DRUM  
CLOCKWISE WHEN VIEWED FROM MOTOR END.

TO REVERSE WIRE ROPE PULL DIRECTION,  
SWITCH POSITIONS OF CARTRIDGE AND PLUG.



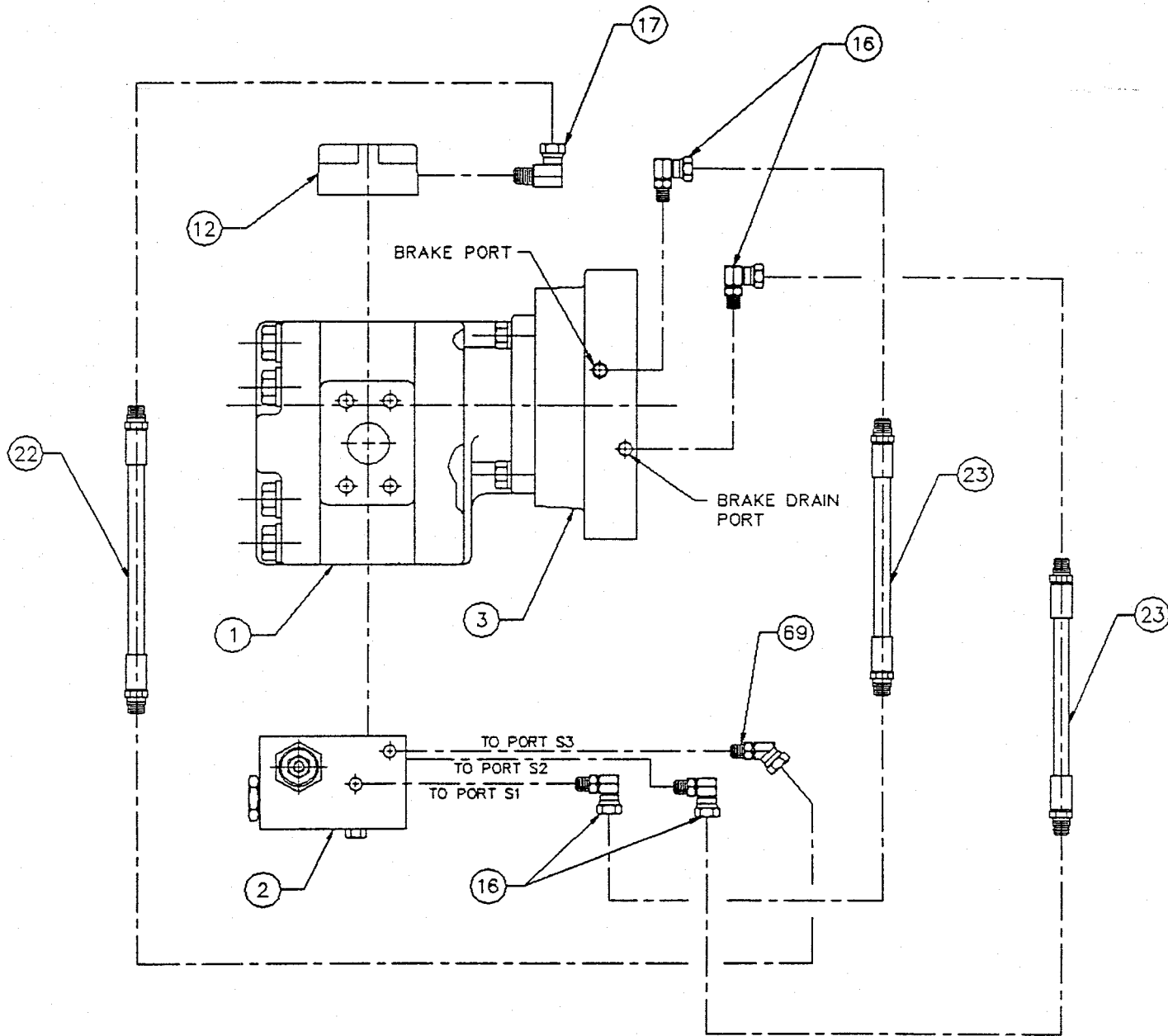
## TYPICAL WINCH HYDRAULIC SYSTEM



ALL UTILITY UNITS ARE BI-DIRECTIONAL WITHOUT MANIPULATION OF CARTRIDGE, AND OR PLUG LOCATIONS.

NOTE: IF TENSIONER AND, OR FAIRLEAD OPTIONS EXIST, THEN REVERSAL OF THEIR POSITION  
IN RELATION TO WINCH MUST TAKE PLACE BEFORE REVERSAL OF WIRE ROPE PULL DIRECTION CAN OCCUR.

# WINCH PLUMBING DIAGRAM



SEE MOTOR END INSTALLATION 1.10144

# SERVICE INSTRUCTIONS DP BRAKE

## GENERAL:

The winch is fully hydraulic with a multi disc wet brake. The brake is spring applied and hydraulically released, and will automatically set any time the winch control valve is in neutral or in case of power failure. When the hydraulic pressure is less than 270 psi, the brake will set. Hydraulic power must be restored before brake will release. Maximum brake torque is achieved at 0 psi. (These winches are not to be used for moving or lifting people.)

## DISASSEMBLY OF BRAKE (REFER TO MOTOR END INSTALLATION DRAWING 1.10144)

1. Disconnect brake hoses (item 23) at connections (item 16) on brake housing (item 3). wrap hose ends to prevent dirt contamination.
2. Disconnect motor (item 1) from brake housing (item 3) by removing four capscrews (item 51), lock washers (item 10). Allow oil to drain.
3. Remove outer brake housing (item 3) by removing six capscrews (item 53) and lock washers (item 54).  
**CAUTION: Since housing is under spring loading of approximately 3,500 lbs., the capscrews should be loosened evenly until spring force has been relieved.**
4. In removing housing (item 3), the bearing (item 67) may come with it or remain on brake shaft (item 68), or the brake shaft may also slide out.
5. Remove o-ring (item 46) from mid-brake housing (item 8).
6. Remove friction plates (item 18), drive plates (item 19), and dowel pins (item 20), from piston (item 9).
7. Remove piston (item 9) from mid-brake housing (item 8) being careful not to damage o-rings on piston. Next, remove o-rings and back-up rings (item 47, 48, 49, & 50) from piston.
8. Finally, remove springs (item 21) and bearing (item 67) from mid-brake housing (item 8).

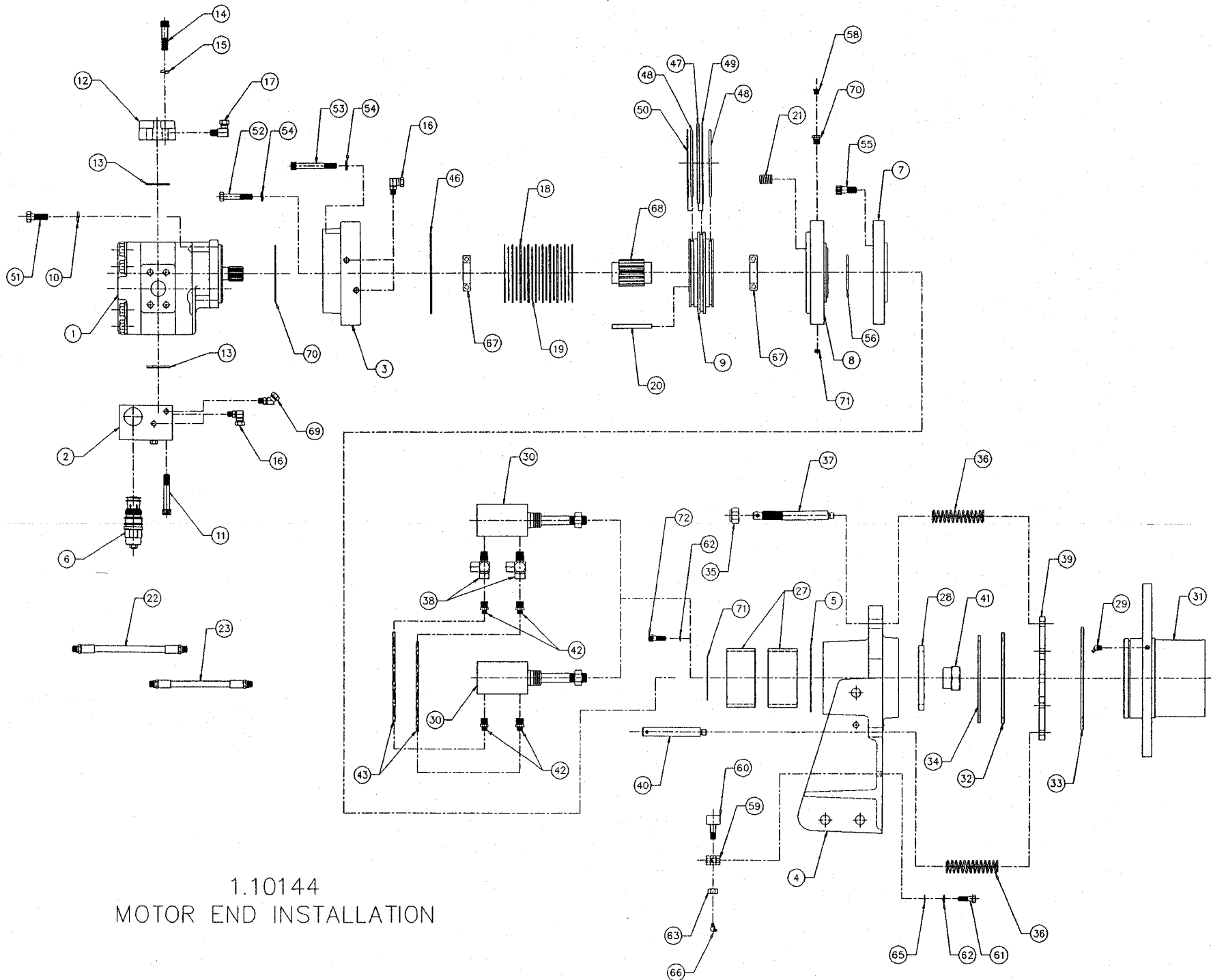
## ASSEMBLY OF BRAKE

1. Lubricate all o-rings and back-up rings with clean hydraulic oil used in the system.
2. Clean all parts thoroughly and visually examine for cuts, dents or other damage before assembly. Repair or replace parts with such defects.
3. Install bearing (item 67) into mid-brake housing (item 8), and insert twelve springs (item 21) into holes in housing. Next install shaft (item 68) into bearing (item 67).
4. Insert dowel pins (item 20) into respective holes in mid-brake housing (item 8).
5. Assemble o-rings and back up rings (item 47, 48, 49, & 50) on piston (item 9). Position back up rings as illustrated.
6. Insert piston (item 9) fitted with seals into mid-brake adapter (item 8) and over dowel pins (item 20) and tap down until piston face is resting against springs (item 21).
7. Insert a friction plate (item 18) alternating with a drive plate (item 19) into piston (item 9) and over shaft (item 68) until all plates are in place in sequence illustrated.
8. Next, place bearing (item 67) onto brake shaft (item 68).
9. Place o-ring (item 46) in position on mid-brake housing ( item 8). Finally and with care not to pinch o-ring seals on piston, slide the housing (item 3) into place over the dowel pins (item 20) and tap down until firm. Install lock washers (item 54) and capscrews (item 53) in place until all six shoulder up. proceed to tighten evenly against spring pressure until housing face (item 3) is in full contact and capscrews are torqued to 50 ft. lbs.
10. The motor (item 1) can now be reinstalled on the housing (item 3). Place o-ring (item 5) on pilot dia. of motor. Then insert into brake housing (item 3) and secure with capscrews (item 51), lock washers (item 10). Reconnect brake hoses (item 23) as shown on winch plumbing diagram.
11. Refill winch with oil through gear end cover fill port (refer to gear end cover installation drawing). Allow time for oil to travel throug brake end.
12. Before running winch, loosen adapter connections (item 16) at brake slightly to bleed air from brake release hoses (item 23) with hydraulic oil under pressure. Retighten connections and winch is ready to operate.  
(Note: pressure should not exceed 100 psi during bleeding.)

## BRAKE TROUBLE SHOOTING

1. Brake will not release:
  - (a) Insufficient system pressure to brake.
  - (b) Damaged o-rings or back up ring seals (item 47, 48, 49, or 50).
  - (c) Damaged piston (item 9).
  - (d) Damaged seal surfaces within housing (item 3) or mid-brake housing (item 3).
  - (e) Damaged bearing (item 67).
  - (f) Friction or drive plates (items 18 or 19) warped or heat damaged.
2. Brake will not apply or applies but torque low:
  - (a) Damaged springs (item 21), either broken or heat damaged and having taken a permanent set.
  - (b) Friction plates (item 18) worn out.
3. Oil leaks externally from brake:
  - (a) Damaged o-ring seal (item 46).





1.10144  
MOTOR END INSTALLATION

1.10144 PARTS LIST  
MOTOR END INSTALLATION

<u>LOC.</u>	<u>PART NO.</u>	<u>DESCRIPTION</u>	<u>QTY.</u>
1	73035	MOTOR - HYDRAULIC	1
2	11541	VALVE - COUNTERBALANCE	1
3	12489	HOUSING - BRAKE	1
4	11295	SUPPORT - END - MOTOR	1
5	1162	GASKET	1
6	70034	CARTRIDGE - VALVE	1
7	12280	ADAPTER - BRAKE	1
8	12279	HOUSING - BRAKE - MID	1
9	11443	PISTON - BRAKE	1
10	1495	WASHER - LOCK - 1/2	5
11	1457	CAP SCREW - SOCKET HEAD - 1/2 NC x 3	4
12	10506	FLANGE - 1-1/2 W/PORT	1
13	9962	O-RING - 1-7/8 I.D. x 1/8 SECTION	1
14	1459	CAP SCREW - SOCKET HEAD - 1/2 NC x 2	4
15	1144	WASHER - LOCK - HIGH COLLAR - 1/2	4
16	76511	ADAPTER - SWIVEL - 90° - #4 - 1/4	4
17	76503	ADAPTER - SWIVEL - 90° - 1/4 - 1/4	1
18	11603**	PLATE - DISC - FRICTION	10
19	3159**	PLATE - DRIVE - BRAKE	9
20	3263	PIN - DOWEL - 5/16 DIA. x 3-1/2 LG.	2
21	2319**	SPRING - COMPRESSION - BRAKE	12
22	75009	HOSE - 1/4 - 12 - R1	1
23	75005	HOSE - 1/4 - 9 - R1	2
24	1179*	CAPLUG - PLASTIC - 20 S.I.D.	1
25	1157*	PLUG - #4 RED - 1/4 NPT	1
27	11372	BEARING - BRONZE - 4-1/2 I.D.	2
28	9808	SEAL - SHAFT - 4-1/2 I.D. x 5-1/2 O.D.	1
29	1001	FITTING - GREASE - 45° - 1/8 NPT	2
30	72016	CYLINDER - AIR	2
31	11142	HUB - DRIVE	1
32	10957	BEARING - THRUST - 7-3/4 O.D. x 6-3/4 I.D. x 1/4 W.	1
33	10958	BEARING - THRUST - 8-3/4 O.D. x 6-3/4 I.D. x 1/4 W.	1
34	3099	RING - RETAINING - 6-5/16 I.D. x 5/32 W.	1
35	1693	NUT - LOCK - 3/4 NF	3
36	2316	SPRING	6
37	10964	PIN - GUIDE - SPRING	3
38	2088	TEE - SERVICE - 3/8 NPT	2
39	10954	PLATE - SHIFTER	1
40	10975	PIN - GUIDE - SPRING - SHORT	3
41	10991	NUT - SHOULDER - CYLINDER - AIR	2
42	3233	FITTING - STR. - 1/4 TUBE - 3/8 NPT	4
43	77800	TUBE - NYLON - 1/4 O.D.	5
44	10708*	TAG - WARNING	1
45	3112*	TIE - CABLE - LOCKING - SELF	2
46	9844<	O-RING - 6-3/4 I.D. x 1/8 SECTION	1
47	9853<	O-RING - 6-1/2 I.D. x 3/16 SECTION	1
48	9851<	O-RING - 5-3/8 I.D. x 3/16 SECTION	2

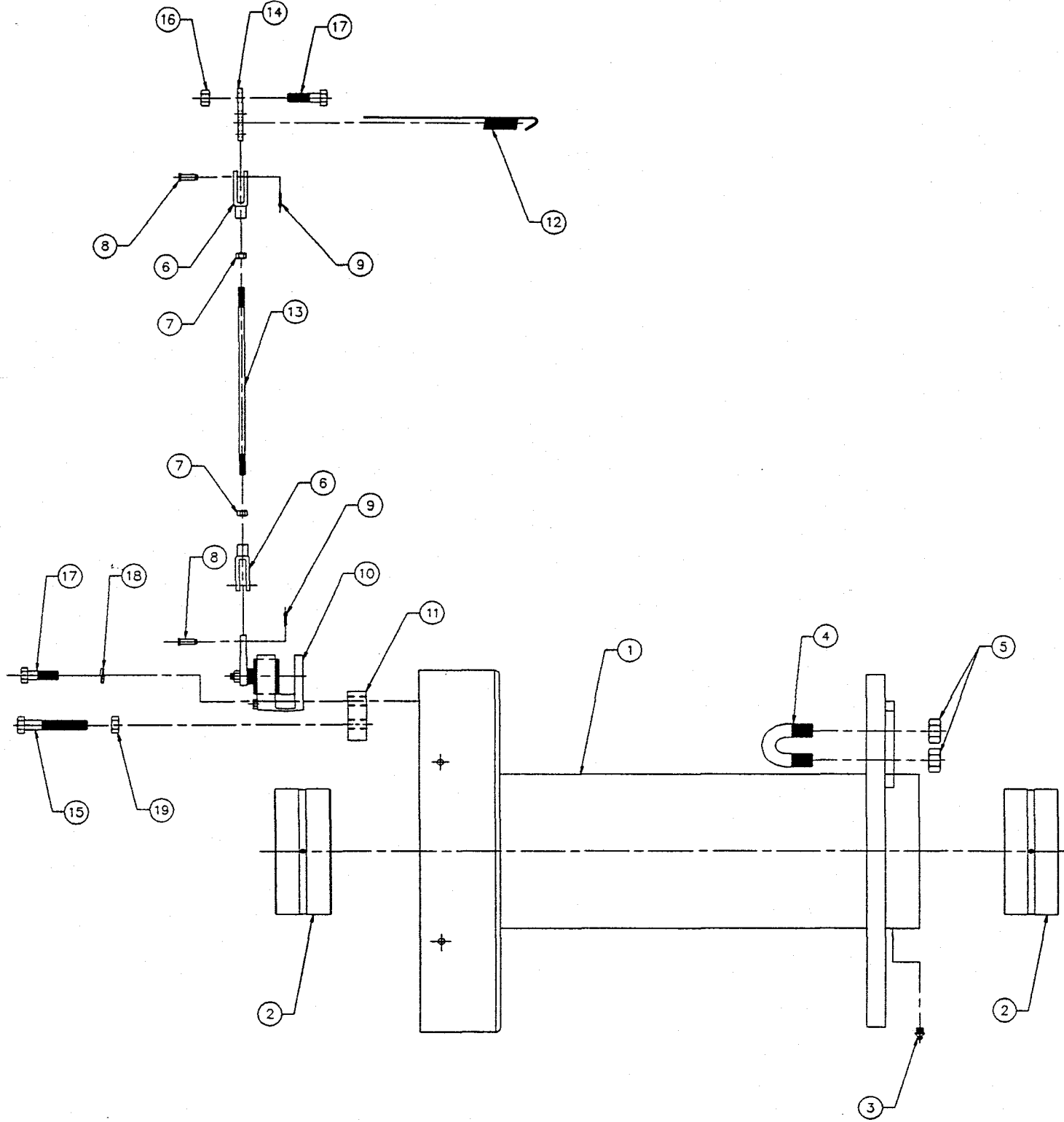
1.10144 PARTS LIST  
MOTOR END INSTALLATION CONTINUED

<u>LOC</u>	<u>PART NO</u>	<u>DESCRIPTION</u>	<u>QTY.</u>
49	9854<	RING - BACK-UP - 6-1/2 I.D.	1
50	9852<	RING - BACK-UP - 5-3/8 I.D.	1
51	1403	CAP SCREW - HEX HEAD - 1/2 NC x 1-1/2	4
52	1376	CAP SCREW - HEX HEAD - 7/16 NC x 2-1/2	2
53	1375	CAP SCREW - SOCKET HEAD - 7/16 NC x 3-1/2	4
54	1388	WASHER - LOCK - 7/16	6
55	1454	CAP SCREW - SOCKET HEAD - 1/2 NC x 1-1/4	4
56	9602	O-RING - 2-3/4 I.D. x 1/8 SECTION	1
58	3059	VENT - RELIEF	1
59	11600	SUPPORT - CAM - FOLLOWER - DRUM	1
60	81518	FOLLOWER - CAM	1
61	1303	CAP SCREW - HEX HEAD - 3/8 NC x 1-1/4	2
62	1395	WASHER - LOCK - 3/8	5
63	1491	NUT - HEX - 1/2 NF	1
65	1398	WASHER - FLAT - SAE - 3/8	2
66	3284	FITTING - GREASE - DRIVE	1
67	81434	BEARING - BALL - 1-3/4 I.D.	2
68	11688	SHAFT - BRAKE	1
69	76516	ADAPTER - SAE #4 - M x 1/4 F - 45	1
70	9620	O-RING - 5 I.D. x 3/32 SECTION	1
71	11577	PLATE - THRUST	1
72	1340	CAPSCREW - SOCKET HEAD - 3/8 16UNC x 1	3

\* NOT SHOWN ON EXPLODED DRAWING

\*\*ITEMS SOLD AS PART OF 9401 KIT ONLY

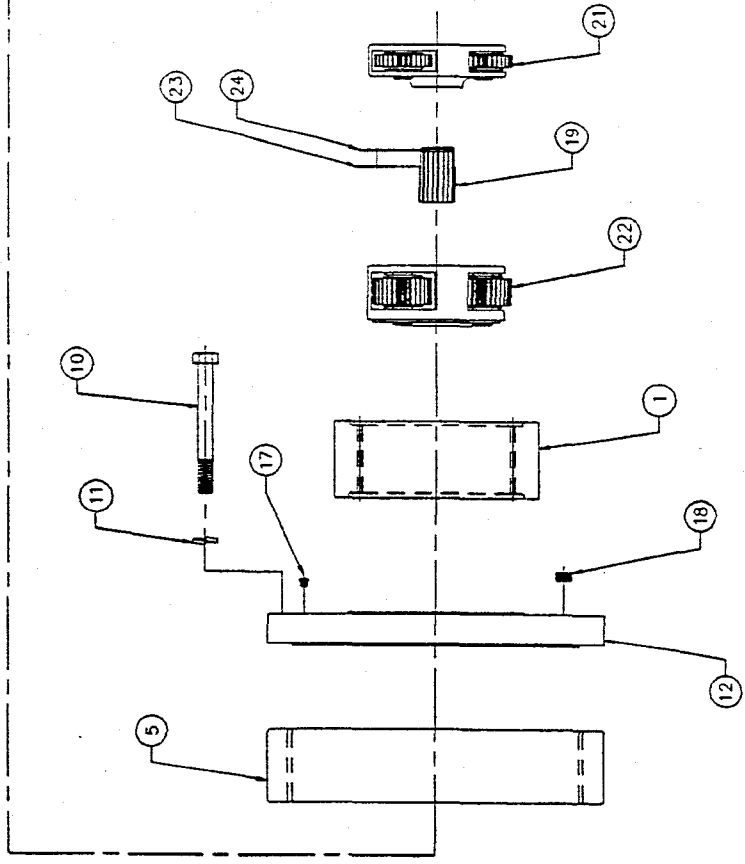
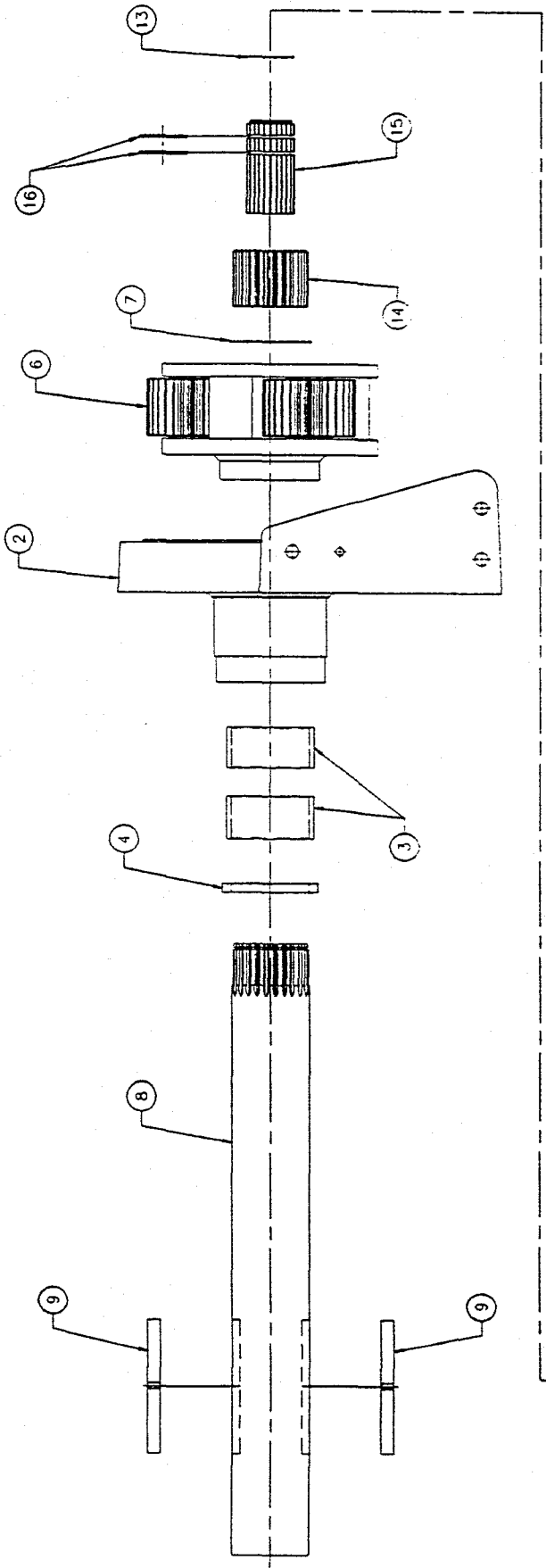
< ITEMS SOLD AS PART OF 9406 KIT ONLY



DRUM INSTALLATION  
1.20036

1.20036 PARTS LIST  
CABLE DRUM INSTALLATION

<u>LOC.</u>	<u>PART NO.</u>	<u>DESCRIPTION</u>	<u>QTY.</u>
1	11141	DRUM	1
2	10977	BEARING - BRONZE	2
3	1000	FITTING GREASE - STR. - 1/8 NPT	1
4	10782	U BOLT - 1"	1
5	1690	NUT - HEX - 3/4 NC	2
6	1073	YOKE - CLEVIS - 5/16 NF	2
7	1281	NUT - HEX - 5/16 NF	2
8	3117	PIN - YOKE - 5/16	2
9	1006	PIN - COTTER - 3/32 x 1/2	2
10	11300	BRAKE - DISC	1
11	11287	BRACKET - BRAKE	1
12	2306	SPRING - TENSION - BRAKE	1
13	11294	ROD - CONTROL - BRAKE	1
14	11296	PLATE - SECTOR - BRAKE - CONTROL	1
15	11290	SCREW - BRAKE - ADJUSTING	2
16	1492	NUT - LOCK - 1/2 NC	1
17	1404	CAP SCREW - HEX HEAD - 1/2 NC x 1-3/4	3
18	1495	WASHER - LOCK - 1/2	2
19	1490	NUT - HEX - 1/2 NC	2



GEAR END INSTALLATION  
1.30122

**1.30122 PARTS LIST**  
**GEAR END INSTALLATION**

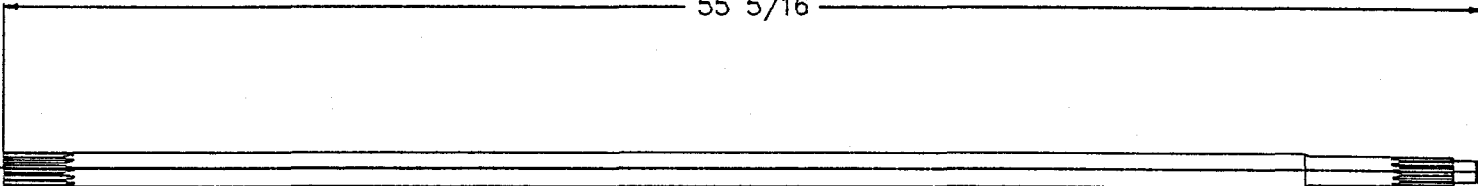
<u>LOC.</u>	<u>PART NO.</u>	<u>DESCRIPTION</u>	<u>QTY.</u>
1	81108	GEAR - RING	1
2	11654	SUPPORT - END - GEAR	1
3	11372	BEARING - BRONZE - 4-1/2 I.D.	2
4	9808	SEAL - SHAFT	1
5	10997	GEAR - RING - 4.5	1
6	11101	ASSEMBLY - CARRIER - 4.5 x 1	1
7	3060	RING - RETAINING - 4 I.D.	1
8	11144	SHAFT - OUTPUT	1
9	11369	KEY - TAPPED - DRUM	2
10	1618	CAP SCREW - HEX HEAD - 3/4 NC x 7	12
11	1695	WASHER - LOCK - 3/4	12
12	10774	COVER - ADAPTER	1
13	3041	RING - RETAINING - 2-5/16 x 1/16 W.	1
14	10998	GEAR - SUN - PLANETARY - 4.5 x 1	1
15	11585	SHAFT - OUTPUT PLANETARY	1
16	3148	RING - RETAINING - 2 SECTION	4
17	3059	VENT - RELIEF	1
18	3048	PLUG - MAGNETIC - 1/2 NPT	1
19	11139	GEAR - SUN - SECONDARY - 17 T.	1
20	10848*	LABEL - WARNING	1
21	13409	ASSEMBLY - CARRIER - PRIMARY	1
22	13093	ASSEMBLY - CARRIER - SECONDARY	1
23	3042	RING - RETAINING - 1-13/16 I.D.	1
24	3043	RING - RETAINING - 1-3/4 I.D.	1

\*NOT SHOWN ON EXPLODED DRAWING

1.40183 PARTS LIST  
INPUT SHAFT INSTALLATION

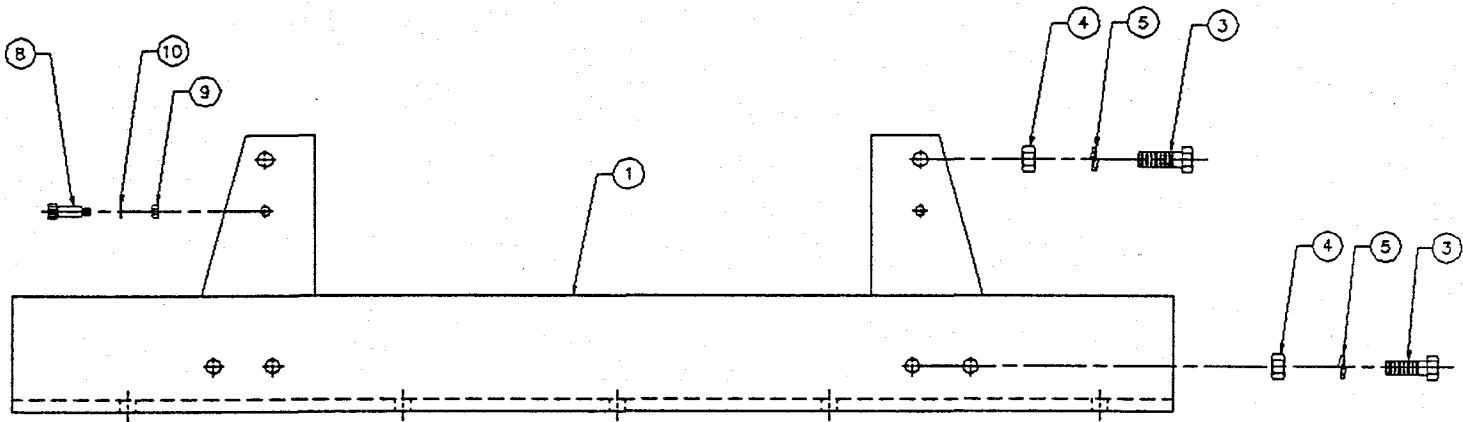
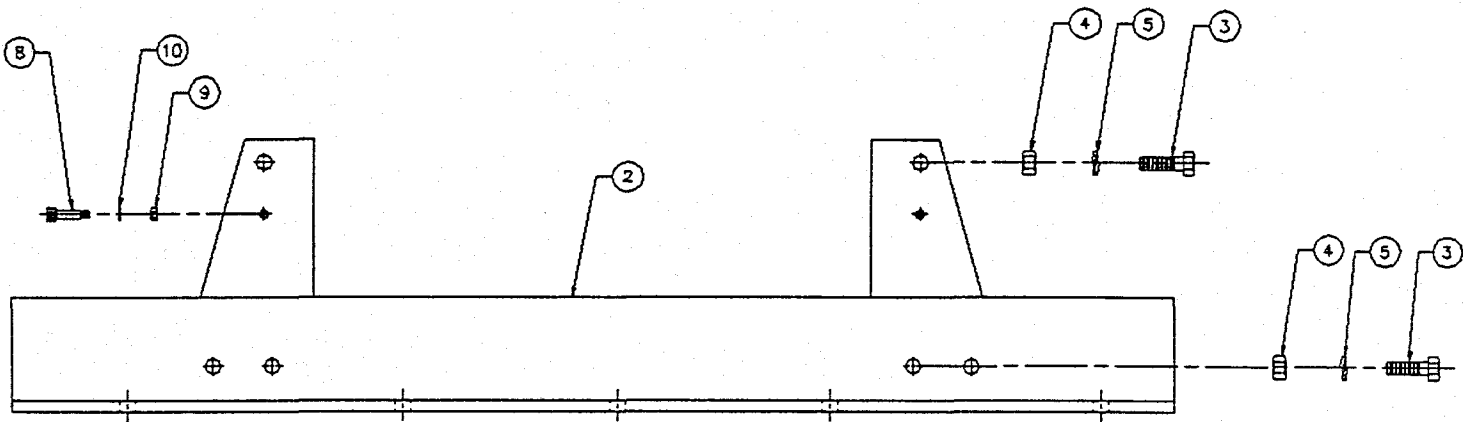
<u>LOC.</u>	<u>PART NO.</u>	<u>DESCRIPTION</u>	<u>QTY.</u>
1	13031	SHAFT - INPUT	1

55 5/16



INPUT SHAFT INSTALLATION  
1.40183



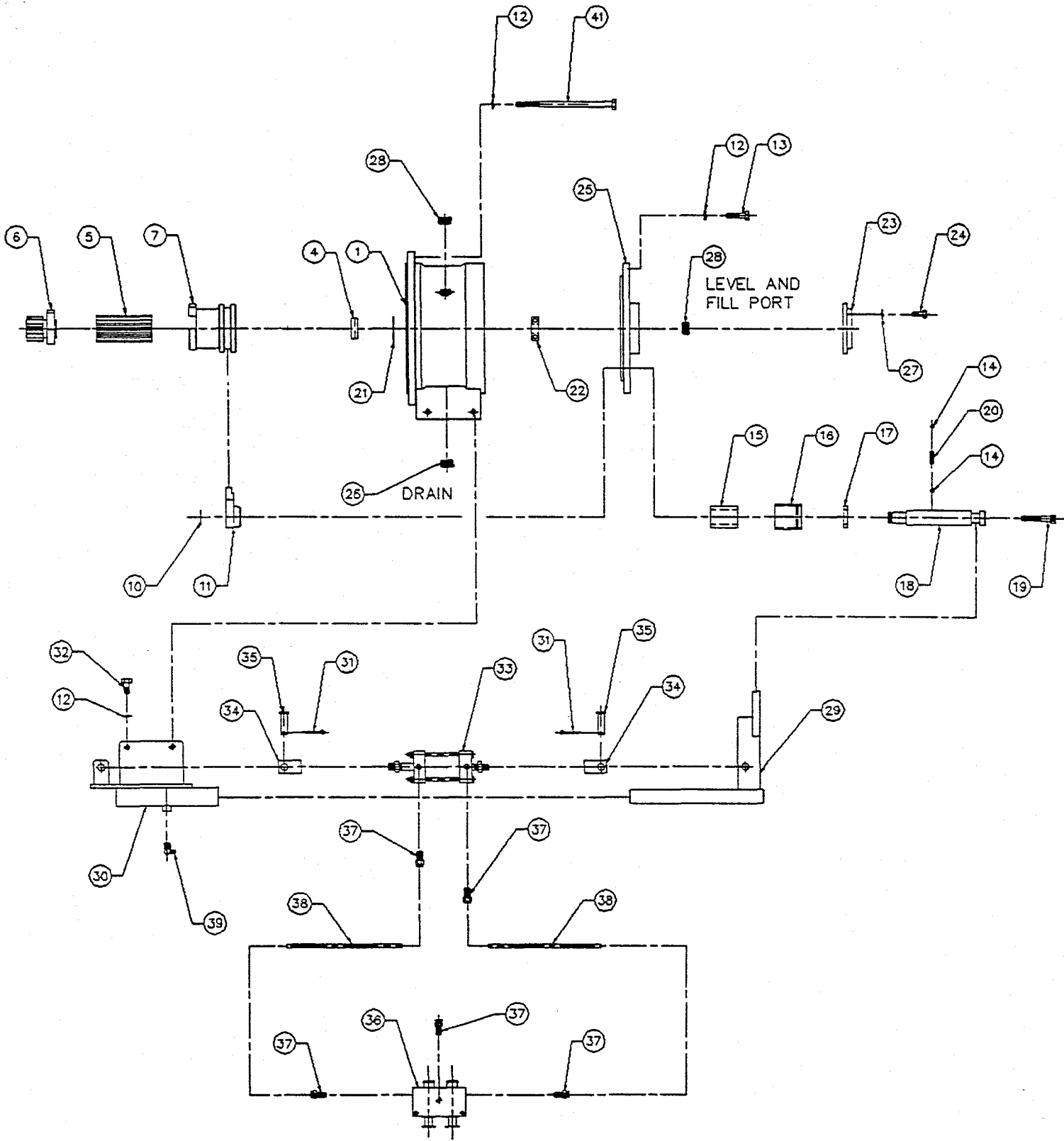


BASE MOUNT INSTALLATION  
 1.50027

1.50027 PARTS LIST  
BASE MOUNT INSTALLATION

<u>LOC.</u>	<u>PART NO.</u>	<u>DESCRIPTION</u>	<u>QTY.</u>
1	11302	ANGLE - BASE - RIGHT	1
2	11304	ANGLE - BASE - LEFT	1
3	1605	CAP SCREW - HEX HEAD - 3/4 NC x 2-1/4	12
4	1690	NUT - HEX - 3/4 NC	12
5	1695	WASHER - LOCK - 3/4	12
6	10466*	PLATE - ID - WINCH	1
7	1165*	RIVET - TYPE - U	4
8	1477	BOLT - SHOULDER - SOCKET HEAD - 1/2 x 1-1/4	4
9	1390	NUT - HEX - 3/8 NC	4
10	1394	WASHER - FLAT - 3/8	4

\*NOT SHOWN ON EXPLODED DRAWING



TWO SPEED AIR/HYDRAULIC KICKOUT  
 GEAR END COVER INSTALLATION  
 1.60024

**1.60024 PARTS LIST**  
**GEAR END COVER INSTALLATION**

<u>LOC.</u>	<u>PART NO.</u>	<u>DESCRIPTION</u>	<u>QTY.</u>
1	11201	HOUSING - GEAR END	1
4	11340	SPACER - INPUT SHAFT	1
5	11204	COUPLING - SHAFT	1
6	11200	GEAR - LOW - 2 SPEED	1
7	11208	HUB - DRIVE	1
10	1395	WASHER - LOCK - 3 /8	26
13	1303	CAP SCREW - HEX HEAD - 3/8 NC x 1-1/4	10
14	3116	BALL - BEARING - 1/4 DIA.	2
15	11248	BUSHING - DETENT - 2 SPEED	1
16	11159	HOUSING - SHIFTER - 2 SPEED	1
17	9809	SEAL - SHAFT	1
18	11155	SHAFT - SHIFTER	1
19	1343	CAP SCREW - SOCKET HEAD - 3/8 NC x 2	2
20	2318	SPRING	1
21	3109	RING - RETAINING - 2-1/32 O.D. x 1/16 THICKNESS	1
22	81428	BEARING - BALL - 21/32 I.D.	1
23	11105	COVER - SMALL	1
24	1190	CAP SCREW - HEX HEAD - 5/16 NC x 3/4	4
25	11202	COVER - GEAR END	1
26	3049	PLUG - MAGNETIC - 3/8 NPT	1
27	1168	WASHER - LOCK - 5/16	4
28	1988	PLUG - PIPE - 1/2	2
29	11221	YOKE - SHIFT	1
30	11220	BRACKET - CYLINDER	1
31	1013	PIN - COTTER - 1/8 DIA. x 1 LG.	2
32	1301	CAP SCREW - HEX HEAD - 3/8 NC x 3/4	4
33	72018	CYLINDER - AIR	1
34	3132	CLEVIS - 1/2	2
35	3133	PIN - CLEVIS - 1/2	2
36	71016	VALVE - AIR	1
37	3134	ADAPTER - STR. - PUSH-ON - 1/4 TUBE - 1/8 NPT	5
38	77800	HOSE - PLASTIC - 1/4 O.D. x .040 W.	25
39	1002	FITTING - GREASE - 90° - 1/8 NPT	1
41	1317	CAP SCREW - HEX HEAD - 3/8 NC x 5-1/2 - GRADE 8	12

# ***BOLT TORQUES***

<u>SIZE</u> THREADS / IN. ↓	<u>GRADE 5</u> <i>ft.lb.</i>	<u>GRADE 8</u> <i>ft.lb.</i>
1/4 - 20	6	9
5/16 - 18	13	18
3/8 - 16	23	35
7/16 - 14	35	55
1/2 - 13	55	80
9/16 - 12	80	110
5/8 - 11	110	170
3/4 - 10	200	280
7/8 - 9	320	460
1 - 8	480	680
1-1/8 - 7	600	960
1-1/4 - 7	840	1360
1-3/8 - 6	1100	1780

***NOTE: SUGGESTED TIGHTENING VALUES ONLY***

***UNLESS OTHERWISE NOTED.***

# WARRANTY

DP Manufacturing, Inc. warrants each product manufactured by it to be free from defects in material or workmanship for a period not to exceed one year from the date of shipment.

This warranty is limited to replacing any part or parts manufactured by DP manufacturing, Inc. and found, upon examination at our factory, to be defective due to materials or workmanship. Freight, express and/or installation charges shall be borne by the purchaser. Provided further, that the purchaser gives written notice to the factory of such defects, and that during said period the product was properly cared for and operated under normal conditions.

DP Manufacturing, Inc. will not warrant any part that has failed as a result of abuse, negligence, misuse, accident or installation made by other, nor, to any part made inoperative because of wear occasioned by use, nor any product which has been altered in any way so in our judgment affects its operation or reliability.

DP Manufacturing, Inc. will not be liable for loss of time to the purchaser while the product is out of service, nor for any labor or other expense, damage or loss, statutory or otherwise, occasioned, or claimed to be occasioned, by such defective parts or failure. The correction of such defects by repair or replacement shall constitute a fulfillment of all the company's obligation to the purchaser.

No employee, agent, distributor, or dealer of DP Manufacturing, Inc. shall have the right to modify or change this warranty without written authorization signed by an officer of DP Manufacturing, Inc.

This warranty is in lieu of all warranties expressed or implied and any and all other obligations or liabilities on its part contractual or otherwise.

DP Manufacturing, Inc. reserves the right to make changes and improvements in its products without incurring any obligation to install any such changes or improvements upon its products previously manufactured.

## HOW TO ORDER PARTS

**IMPORTANT:** To insure satisfactory product performance after repairs, always use genuine DP Manufacturing replacement parts.

### 1. MODEL IDENTIFICATION

Always furnish the DP Model Number and Serial Number when ordering parts. This information is found on the product nameplate.

### 2. PART NUMBER AND DESCRIPTION

In addition to the serial number, always give the part number and description of each part ordered.

If there is any doubt as to the correct part number and description, furnish a dimensional sketch or return the part to be replaced, transportation charges prepaid.

Your cooperation in furnishing as much information as possible will assist us in filling your orders correctly in the shortest possible time.

Send orders to:

DP Manufacturing, Inc.  
5647 South 122nd East Ave.  
Tulsa, Oklahoma 74146  
(918) 250-2450

## OIL SPECIFICATIONS

### HYDRAULIC SYSTEM

#### AMBIENT TEMP. RANGE

120°F to -15°F

40°F to -50°F

Filtration Level: 25 Micron or lower

Control Valve Type: 3-position-4-way Motor Spool

#### HYDRAULIC OIL

SAE10WHydraulic

MIL-L-46167 (OEA)

### LUBRICATION

#### AMBIENT TEMP. RANGE

120°F to 10°F

40°F to -25°F

30°F to -50°F

#### GEAR LUBRICANT\*

SAE 50

75W90

Conoco DN600 or Equiv.

Initial Change: After 6 weeks or 10 hours of operation.

Periodic Change: Lube should be changed on an annual basis or every 50 hours of operation.

\* Maintain amount of lube at level plug.

\* If unit is not mounted horizontally, consult factory for fill and drain.