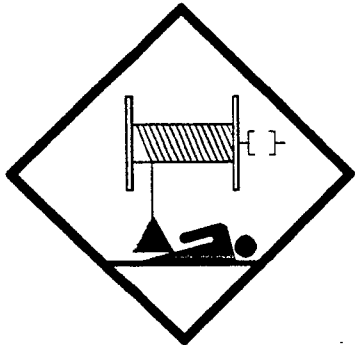


**HYDRAULIC WINCHES
30BBF4L2F
AND
30BBF4R2F**

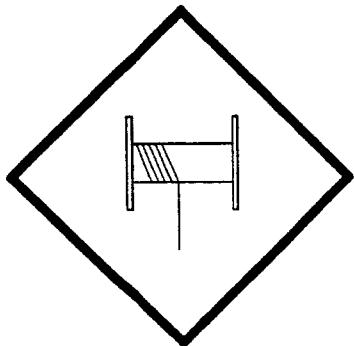
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DANGER

**DO NOT DISENGAGE
WINCH UNDER LOAD**



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**

OPERATING PROCEDURE FOR SHIFTING GEARS

The following steps are necessary for proper gear shifting operations.

Single Speed Gearbox*

Gear Dis-Engagement:

1. Winch must be "at rest" and have **no** load on cable.
2. Shift winch to out of gear "*free spool*" mode.

Gear Engagement:

1. Winch must be "at rest" and have **no** load on cable.
2. Shift winch to in-gear mode and **slowly** rotate drum 90° in pay out direction, and then **stop** rotation. Next, **slowly** rotate drum in pay in direction to insure gears are fully engaged and **begin** paying in of load.

Two Speed Gear Box*

Low Gear to High Gear:

1. Winch must be "at rest" and have **no** load on cable.
2. Shift winch from low gear to high gear and **slowly** rotate drum 90° in pay out direction, and then **stop** rotation. Next, **slowly** rotate drum in pay in direction to insure gears are fully engaged and **begin** paying in of load.

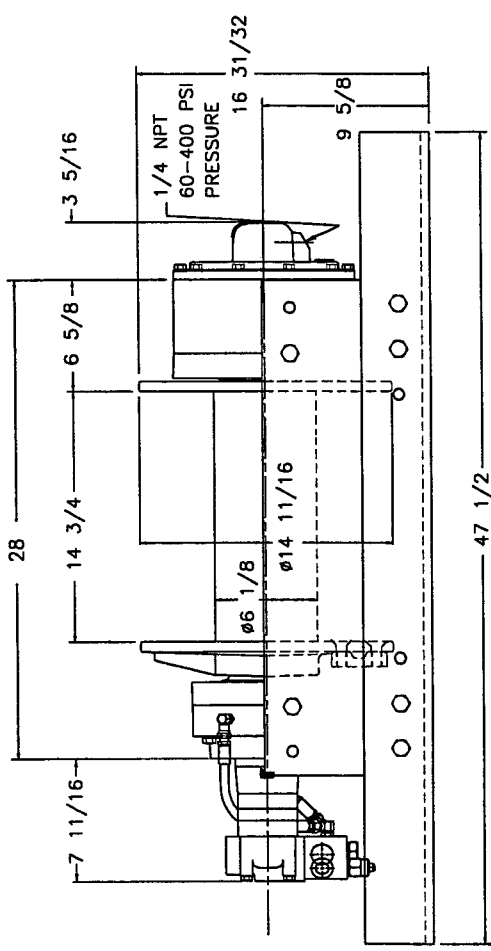
High Gear to Low Gear:

1. Winch must be "at rest" and have **no** load on cable.
2. Shift winch from high gear to low gear and **slowly** rotate drum 90° in pay out direction, and then **stop** rotation. Next, **slowly** rotate drum in pay in direction to insure gears are fully engaged and **begin** paying in of load.

* Also applies for two speed gear box with neutral position

WARNING!

If your winch has ever been "*shifted under load*" or has ever encountered "*rotational face contact of non-engaged gear components,*" the gear teeth could be damaged. Damaged gear teeth can prevent your winch from fully engaging into gear and could allow it to jump out of gear. If this has happened to your winch, this procedure may *not* insure that it is fully engaged and it may need to be inspected for possible gear damage.



NOTE: AS A MATTER OF CLARITY, FAIRLEAD NOT SHOWN IN FRONT VIEW.

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.

PERFORMANCE DATA			
CABLE SIZE 5/8" DIAMETER			
LAYER	LINE PULL (lbs)	LINE SPEED (ft./min.)	CABLE CAPACITY (ft.)
1	30000	29	38
2	25300	34	84
3	21900	39	135
4	19300	45	196
5	17200	50	263
6	15600	55	336

THE RATED LINE PULLS SHOWN ARE FOR THE WINCH ONLY. CONSULT THE WIRE ROPE MANUFACTURER FOR WIRE ROPE RATINGS.
 LINE SPEED IS BASED ON 25 CFM FLOW RATE.
 LINE PULL IS BASED ON 2800 PSI. OPTIONAL LOWER PRESSURE MOTORS ARE ALSO AVAILABLE.
 CABLE CAPACITIES ARE IN ACCORDANCE WITH SAE J706 WITH THE EXCEPTION OF THE LAST WRAP (ACTUAL CAPACITIES ARE USUALLY UP TO 10% GREATER THAN THOSE SHOWN).
 SEE WINCH HYDRAULIC SHEET FOR DETAILS OF LEFT & RIGHT HAND ROTATION.

30BBF4L2F & 30BBF4R2F WINCHES

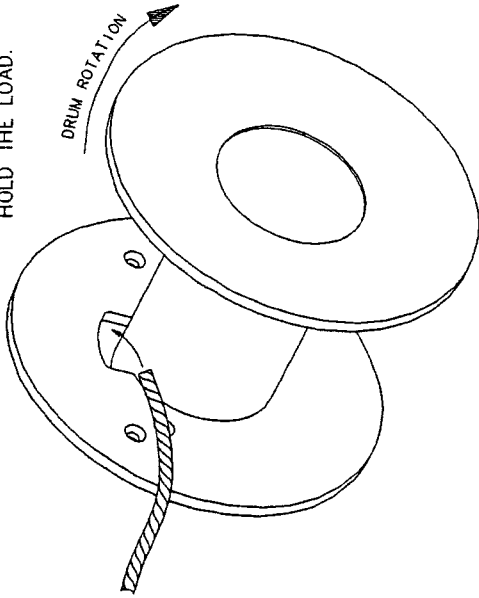
12/18/98

STEP 1

INSERT WIRE ROPE END INTO FLANGE OPENING.

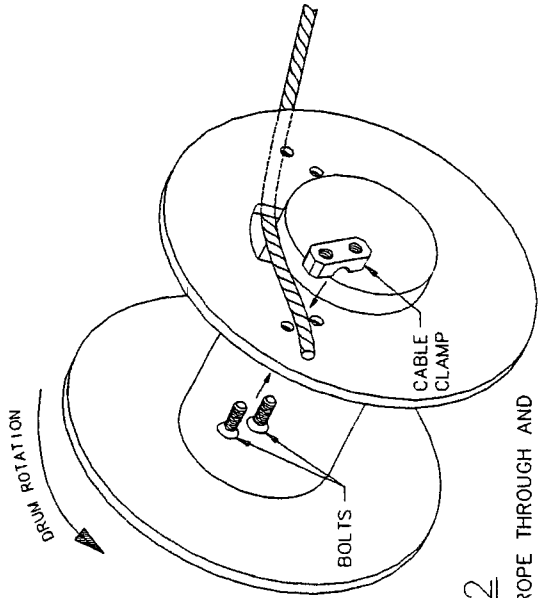
CAUTION:

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



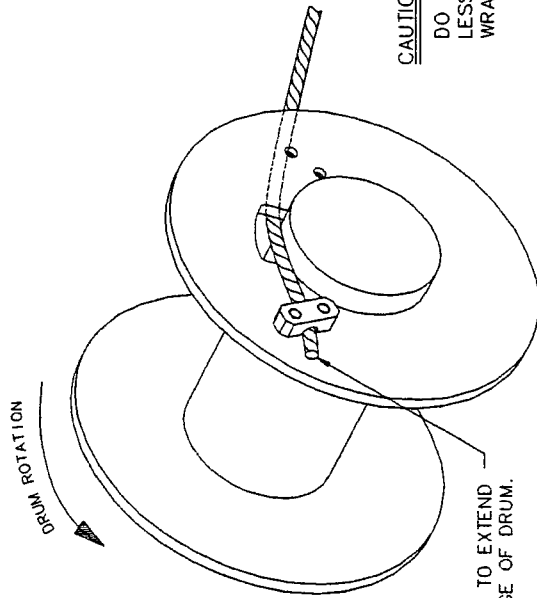
STEP 2

PULL WIRE ROPE THROUGH AND ALIGN BETWEEN FLANGE HOLES. POSITION CLAMP OVER WIRE ROPE, AND THREAD BOLTS AS SHOWN.



STEP 3

ONCE BOLTS ARE TIGHTENED SECURE, THE WIRE ROPE IS PROPERLY INSTALLED.



CAUTION:

DO NOT APPLY FULL LOAD TO WINCH WITH LESS THAN 5 FULL WIRE ROPE WRAPS ON THE DRUM.

WIRE ROPE INSTALLATION

COMMERCIAL INTERTECH MOTOR

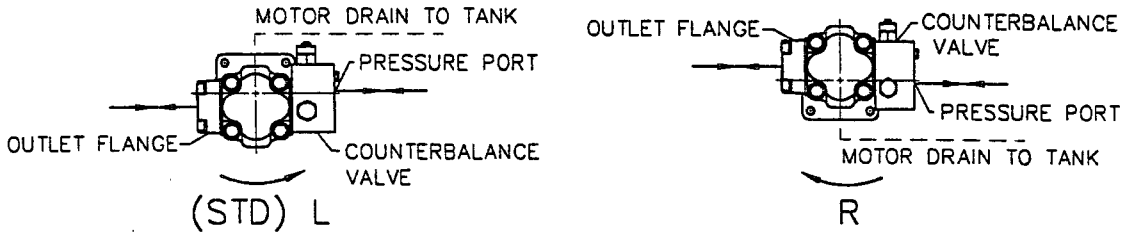
TO REVERSE WIRE ROPE PULL IN DIRECTION

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.

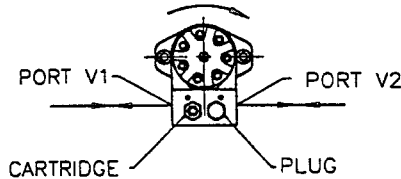


CHAR-LYNN MOTORS

(STD) L

- 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.

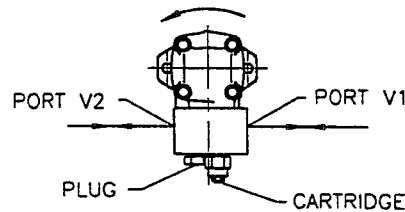
TO REVERSE WIRE ROPE PULL DIRECTION,
SWITCH POSITIONS OF CARTRIDGE AND PLUG.



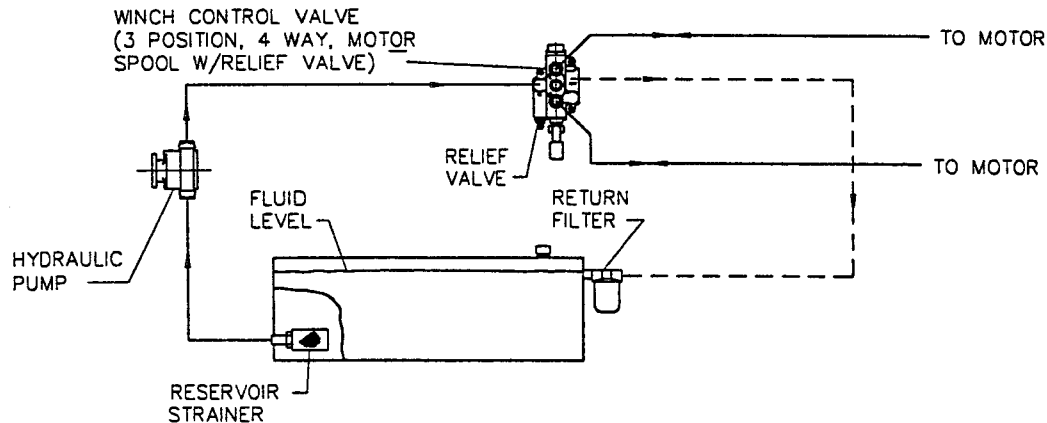
(STD) L

- 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.



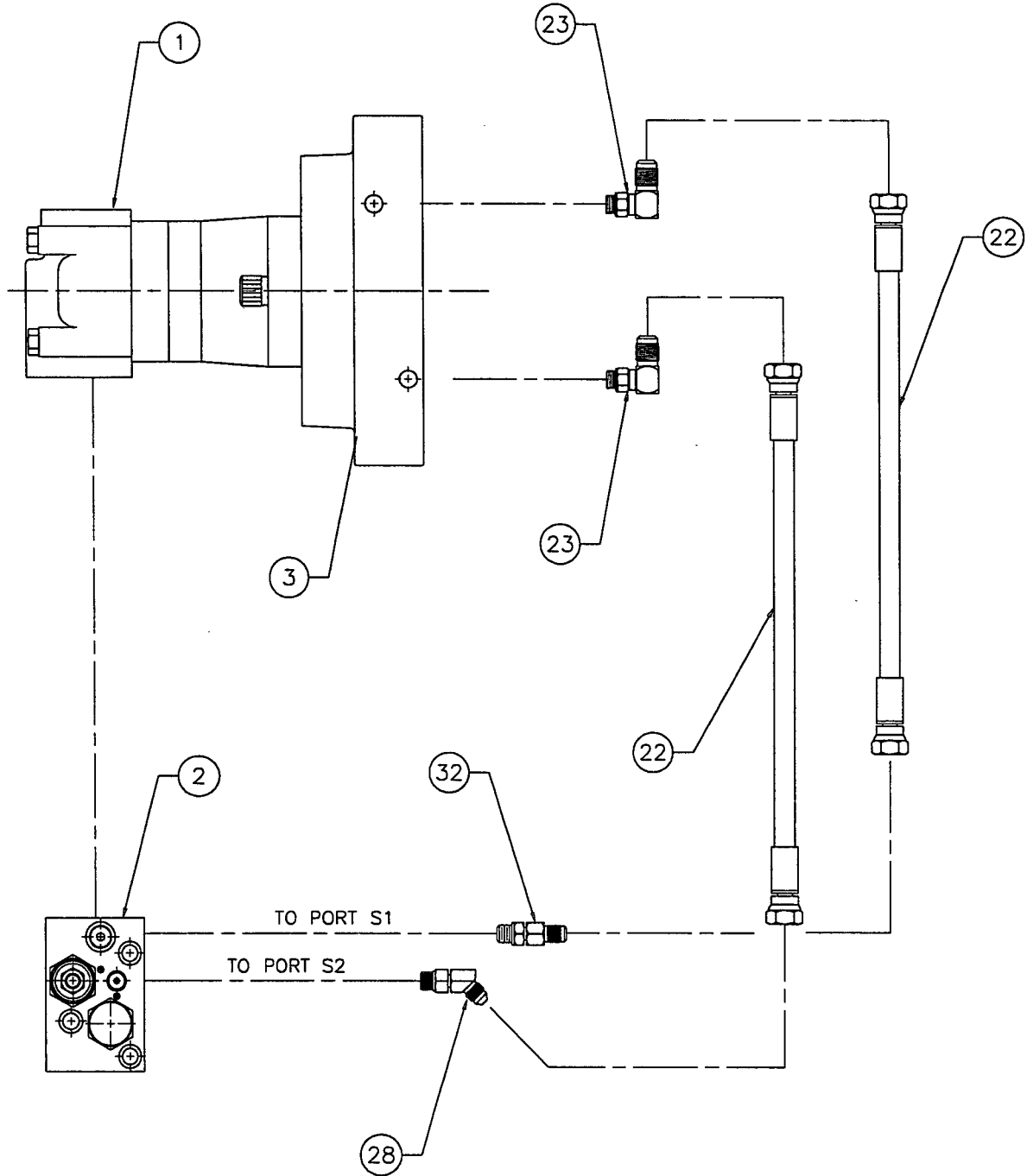
TYPICAL WINCH HYDRAULIC SYSTEM



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



REFER TO MOTOR END PARTS LIST 1.10248

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 1.10248)

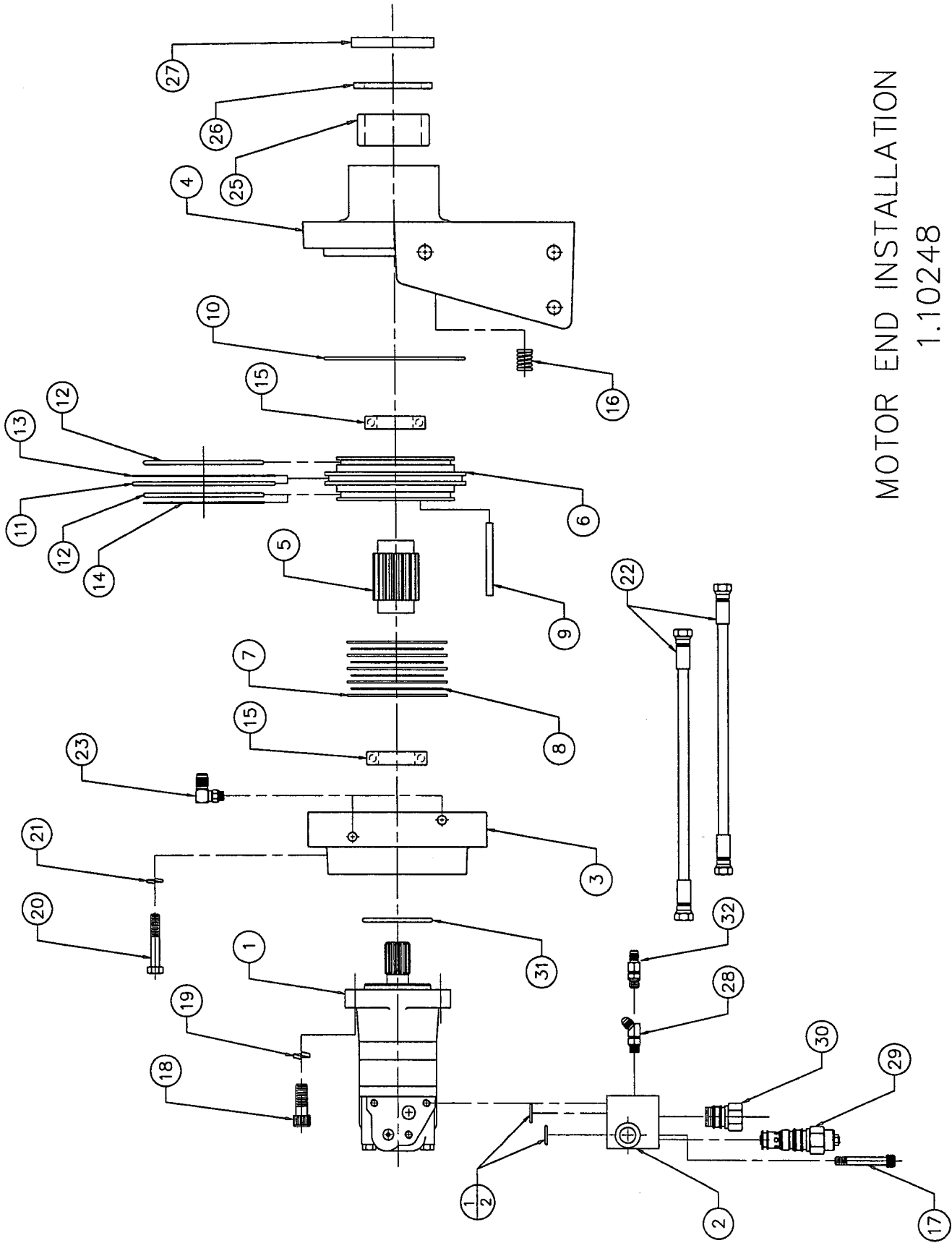
1. Disconnect brake hoses (item 22) at connections (item 23) on brake housing (item 3). wrap hose ends to prevent dirt contamination.
2. Disconnect motor (item 1) from brake housing (item 3) by removing two capscrews (item 18), lock washers (item 19). Allow oil to drain.
3. Remove outer brake housing (item 3) by removing six capscrews (item 20) and lock washers (item 21).
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 15) may come with it or remain on brake shaft (item 5), or the brake shaft may also slide out.
5. Remove o-ring (item 10) from end support (item 4).
6. Remove friction plates (item 7), drive plates (item 8), and dowel pins (item 9). from piston (item 6).
7. Remove piston (item 6) from end support (item 4) being careful not to damage o-rings on piston. Next, remove o-rings and back-up rings (item 11, 12, 13, & 14) from piston.
8. Finally, remove springs (item 16) and bearing (item 15) from end support (item 4).

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 15) into brake end support (item 4), then insert twelve springs (item 16) into holes in end support. Next install shaft (item 5) into bearing (item 15).
4. Insert dowel pins (item 9) into respective holes in end support (item 4).
5. Assemble o-rings and back up rings (item 11, 12, 13, & 14) on piston (item 6). Position back up rings as illustrated.
6. Insert piston (item 6) fitted with seals into end support (item 4) and over dowel pins (item 9) and tap down until piston face is resting against springs (item 16).
7. Insert a friction plate (item 7) alternating with a drive plate (item 8) into piston (item 6) and over shaft (item 5) until all plates are in place in sequence illustrated.
8. Next, place bearing (item 15) onto brake shaft (item 5).
9. Place o-ring (item 10) in position on end support (item 4). Finally and with care not to pinch o-ring seals on piston, slide the housing (item 3) into place over the dowel pins (item 9) and tap down until firm. Install lock washers (item 21) and capscrews (item 20) 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) and o-ring (item 31) can now be reinstalled on the housing (item 3). Then secure with capscrews (item 18), lock washers (item 19). Reconnect brake hoses (items 22) 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 through brake end.
12. Before running winch, loosen adapter connections (items 23) at brake slightly to bleed air from brake release hoses (items 22) 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 11, 12, 13, or 14).
 - (c) Damaged piston (item 6).
 - (d) Damaged seal surfaces within housing (item 3). Or end support (item 4).
 - (e) Damaged bearing (item 15).
 - (f) Friction or drive plates (items 7 or 8) warped or heat damaged.
2. Brake will not apply or applies but torque low:
 - (a) Damaged springs (item 16), either broken or heat damaged and having taken a permanent set.
 - (b) Friction plates (item 7) worn out.
- c cc3. Oil leaks externally from brake:
 - (a) Damaged o-ring seal (item 10).



MOTOR END INSTALLATION
1.10248

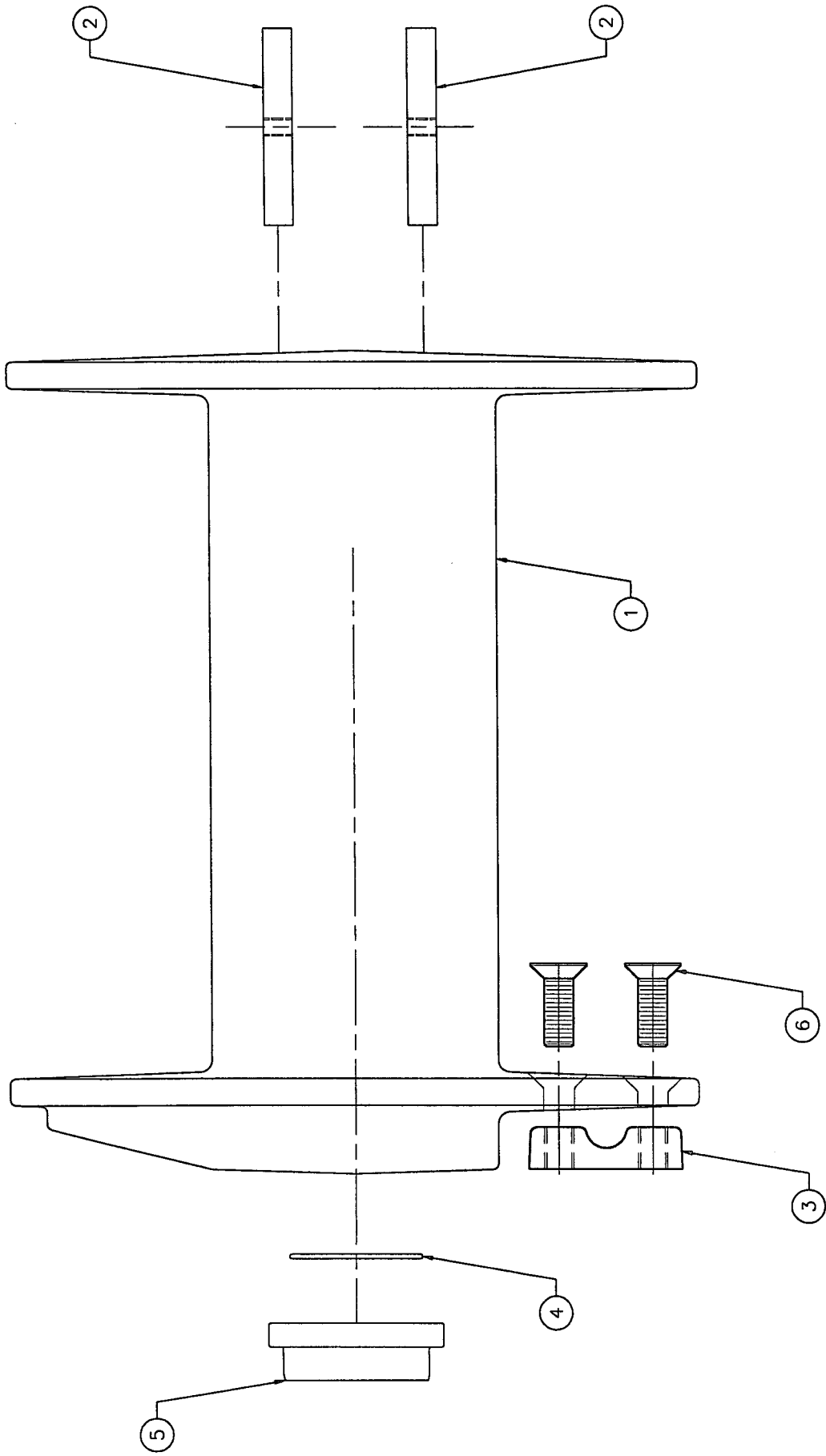
1.10248 PARTS LIST
MOTOR END INSTALLATION

<u>LOC.</u>	<u>PART NO.</u>	<u>DESCRIPTION</u>	<u>QTY.</u>
1	73067	MOTOR - HYDRAULIC	1
2	11604	VALVE - COUNTERBALANCE	1
1.	9817	O-RING - 13/16 I.D. x 3/32 SECTION	2
3	11535	BRAKE - HOUSING - OUTER	1
4	13299	SUPPORT - MOTOR END	1
5	11750	SHAFT - BRAKE	1
6	11443	PISTON - BRAKE	1
7	11603**	PLATE - DISC - FRICTION	10
8	3159**	PLATE - DRIVE - BRAKE	9
9	3263	PIN - DOWEL - 5/16 x 3 1/2	2
10	9844<	O-RING - 6 3/4 I.D. x 7 O.D. x 1/8 SECTION	1
11	9853<	O-RING - 6 1/2 I.D. x 3/16 SECTION	1
12	9851<	O-RING - 5 3/8 I.D. x 3/16 SECTION	2
13	9854<	RING - BACK-UP - 6 1/4 I.D. x .183	1
14	9852<	RING - BACK-UP - 5.278 I.D. x .076	1
15	81434	BEARING - BALL - 1 3/4 I.D.	2
16	2319**	SPRING - COMPRESSION 3/4	12
17	1345	CAP SCREW - SOCKET HEAD - 3/8 - 16UNC x 2 1/2	3
18	1143	CAP SCREW - SOCKET HEAD - 1/2 - 13NC x 1 1/2	2
19	1144	WASHER - LOCK - HI COLLAR - 1/2	2
20	1376	CAP SCREW - HEX HEAD - 7/16-UNC x 2 1/2	6
21	1388	WASHER - LOCK - 7/16	6
22	75038	HOSE - 1/4 R1 x 12"	2
23	76511	ADAPTER - SWIVEL - 90° - 1/4	2
24	10708*	TAG - WARNING	1
25	81454	BEARING - ROLLER - TORRINGTON	1
26	13288	WASHER - THRUST - BRONZE - 3.81 x .406	1
27	9890	SEAL - SHAFT - 3 1/8 I.D. x 4 O.D. x 3/8	1
28	76029	ADAPTER - SWIVEL - 45°	1
29	3177	CARTRIDGE - COUNTERBALANCE	1
30	70035	PLUG ASSEMBLY - VALVE - COUNTERBALANCE	1
31	9880	O-RING - 3 I.D. x 1/8 SECTION	1
32	76027	ADAPTER - STRAIGHT #4 - O-RING	1

* NOT SHOWN ON EXPLODED DRAWING.

**THESE ITEMS SOLD IN 9400 KIT ONLY.

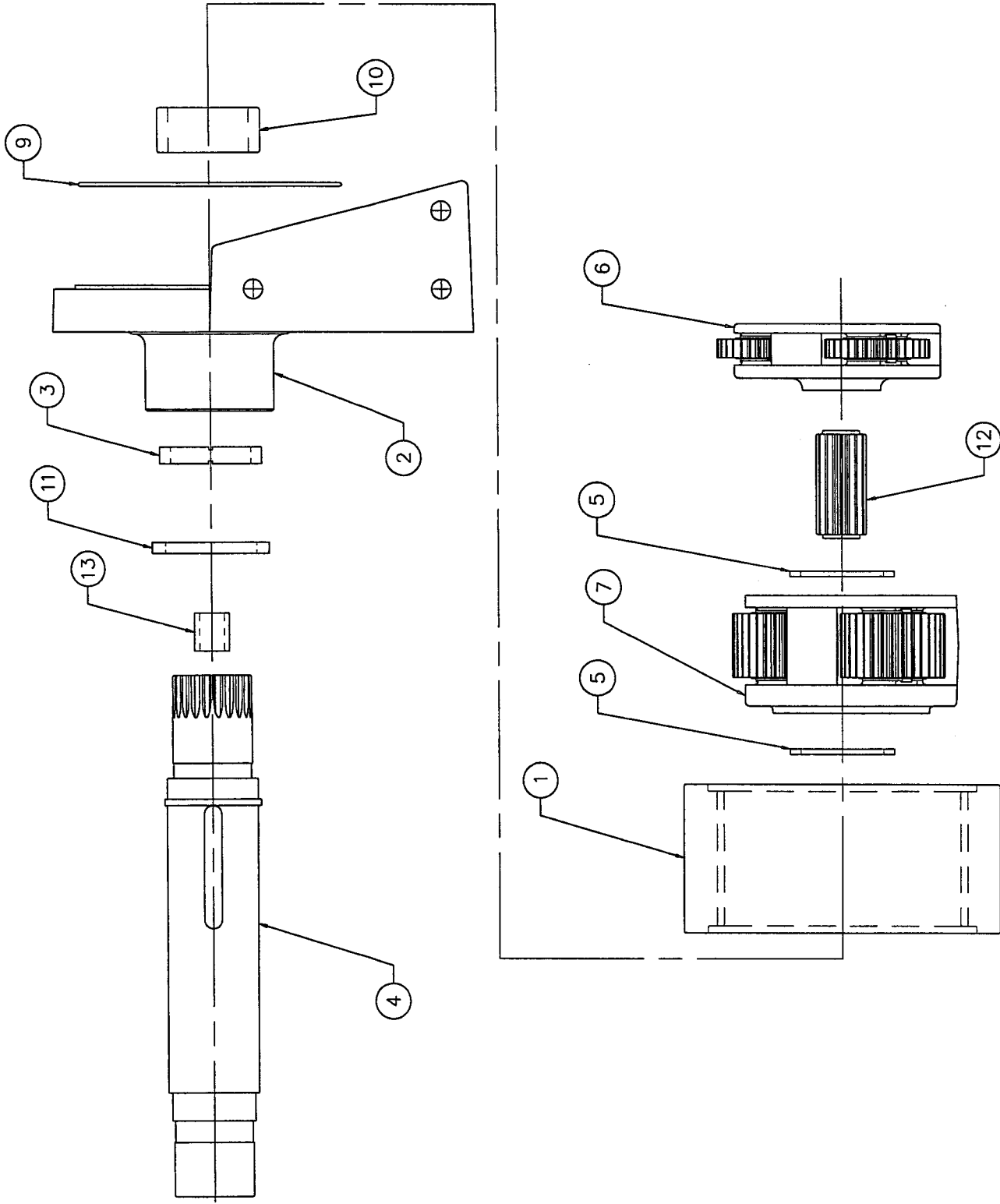
< THESE ITEMS SOLD IN 9406 KIT ONLY.



DRUM INSTALLATION
1.20135

1.20135 PARTS LIST
CABLE DRUM INSTALLATION

<u>LOC.</u>	<u>PART NO.</u>	<u>DESCRIPTION</u>	<u>QTY.</u>
1	13313	DRUM	1
2	13293	KEY - DRUM	2
3	12518	CLIP - CABLE - 5/8	1
4	9602	O-RING - 2 3/4 I.D. x 3 O.D. x 1/8 SECTION	1
5	13286	SPACER - DRUM	1
6	1587	CAP SCREW - FLAT - SOCKET HEAD - 5/8 - 11UNC x 1 3/4	2

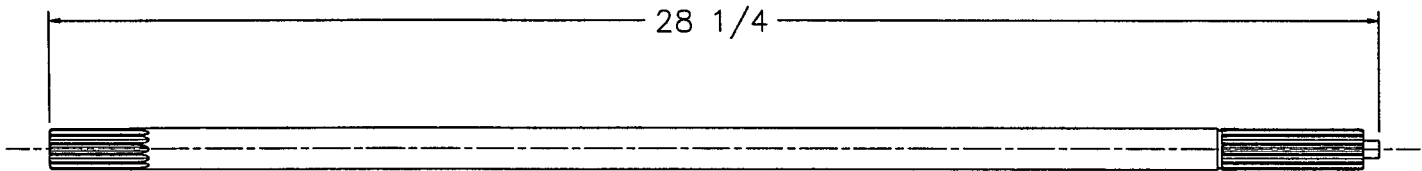


GEAR END INSTALLATION
 1.30113

1.30113 PARTS LIST
GEAR END INSTALLATION

<u>LOC.</u>	<u>PART NO.</u>	<u>DESCRIPTION</u>	<u>QTY.</u>
1	3126	GEAR RING	1
2	13300	SUPPORT - GEAR END	1
3	13288	RING - THRUST - 3.81 x .406	1
4	13315	SHAFT - OUTPUT	1
5	13164	WASHER - THRUST - NYLON - 3 1/2 O.D. x 3/16	2
6	12486	CARRIER - ASSEMBLY - PLANETARY - PRIMARY	1
7	12516	CARRIER - ASSEMBLY - SECONDARY	1
8	10848*	LABEL - WARNING	1
9	9695	O-RING - 8 3/4 I.D. x 1/8 SECTION	1
10	81454	BEARING - TORRINGTON	1
11	9890	SEAL - SHAFT - 3 1/8 I.D. x 4 O.D. x 3/8	1
12	13306	GEAR - SUN - SECONDARY	1
13	81608	BUSHING - 1 I.D. x 1.25 O.D. x 1	1

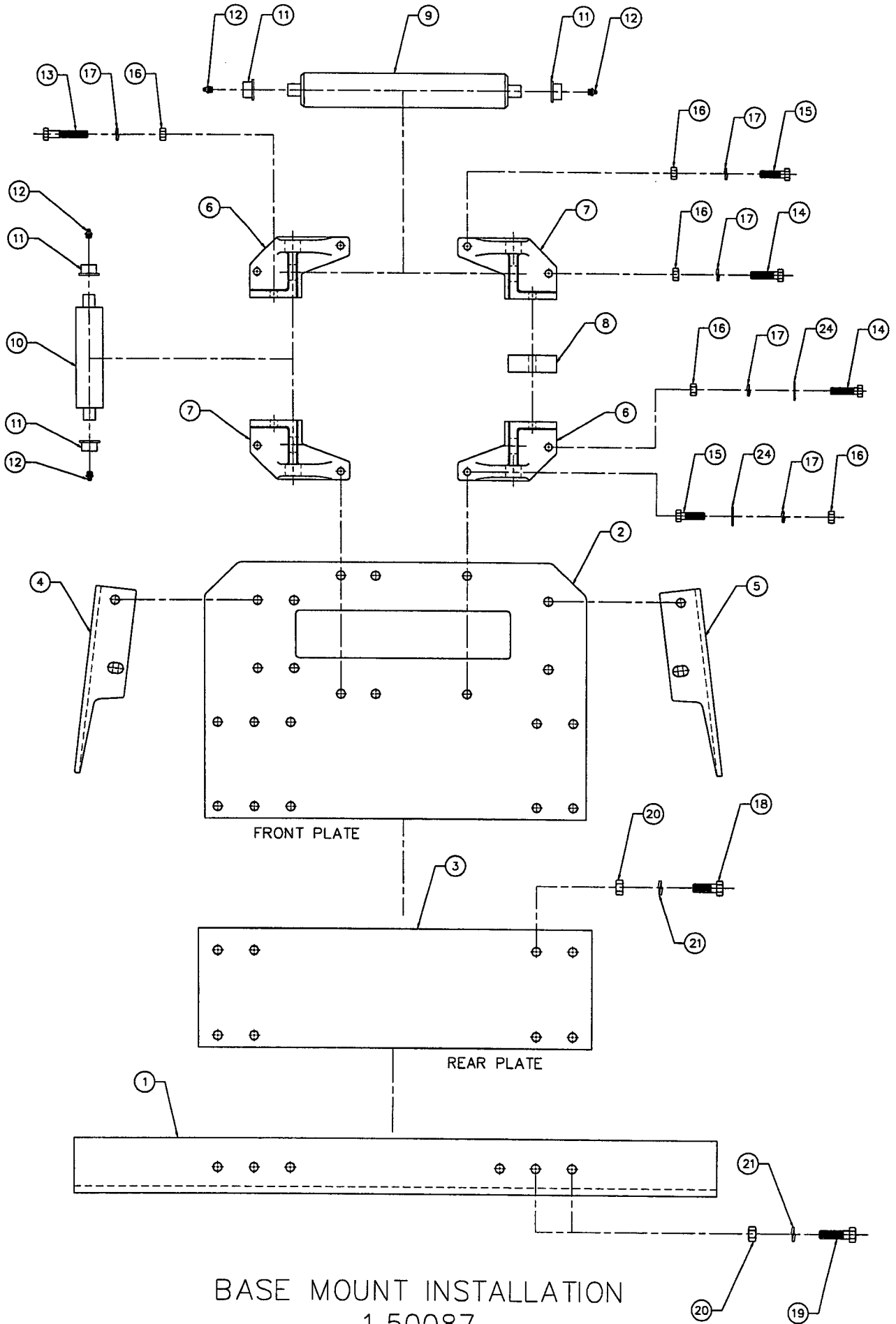
* NOT SHOWN ON EXPLODED DRAWING.



INPUT SHAFT INSTALLATION
1.40223

1.40223 PARTS LIST
INPUT SHAFT INSTALLATION

<u>LOC.</u>	<u>PART NO.</u>	<u>DESCRIPTION</u>	<u>QTY.</u>
1	13311	INPUT - SHAFT	1

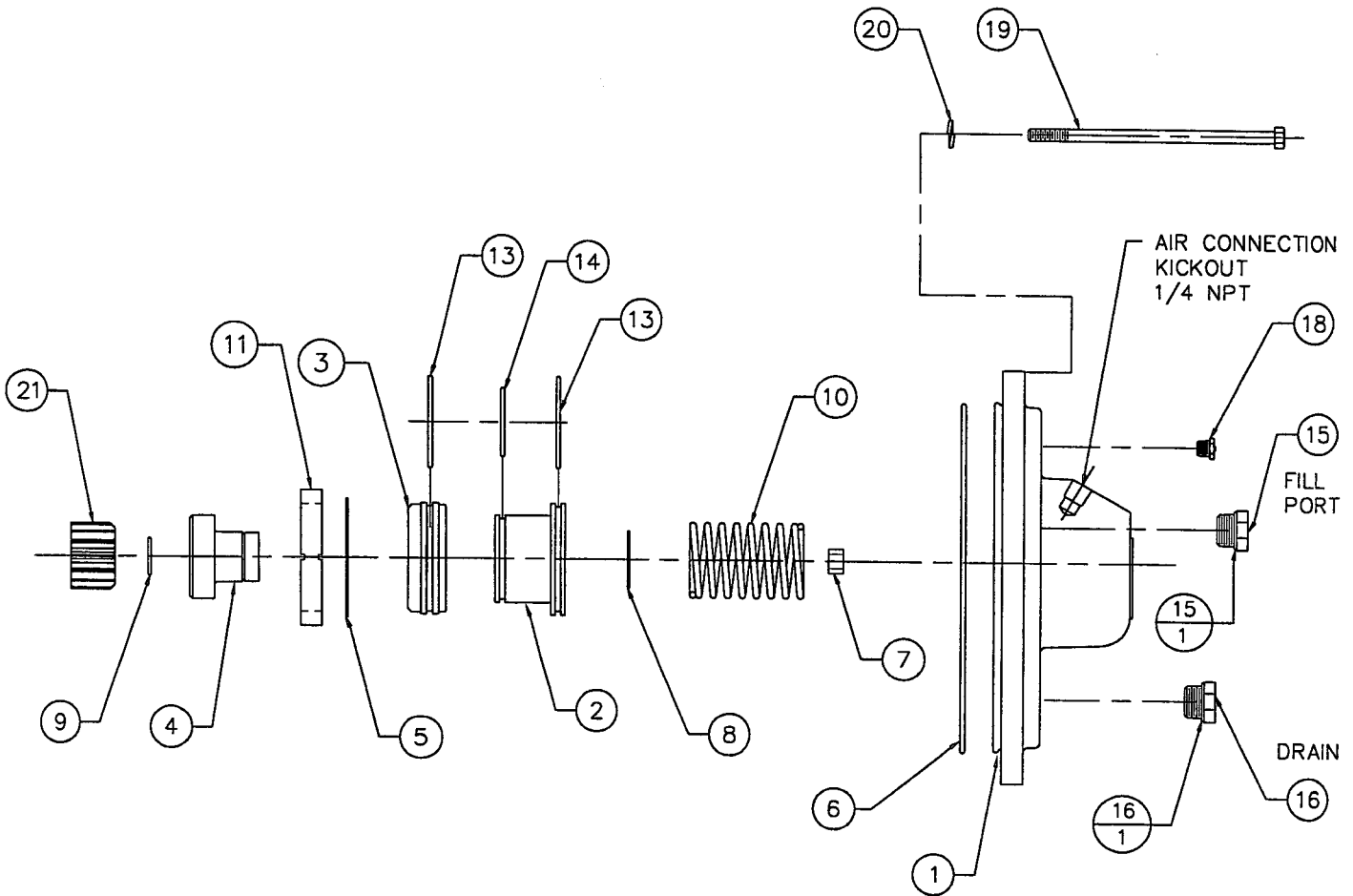


BASE MOUNT INSTALLATION
 1.50087

1.50087 PARTS LIST
BASE ANGLE INSTALLATION

<u>LOC.</u>	<u>PART NO.</u>	<u>DESCRIPTION</u>	<u>QTY.</u>
1	11990	BASE - ANGLE	2
2	11991	PLATE - MOUNTING	1
3	11992	PLATE - SIDE	1
4	12051	BRACE - SUPPORT - LEFT	1
5	12052	BRACE - SUPPORT - RIGHT	1
6	11700	BRACKET - FAIRLEAD - LEFT	2
7	11701	BRACKET - FAIRLEAD - RIGHT	2
8	11749	SPACER	2
9	12135	ROLLER - HORIZONTAL	2
10	11745	ROLLER - SHORT	2
11	81607	BUSHING - BRONZE - FLANGED - 7/8 I.D.	8
12	1000	FITTING - GREASE - STR. - 1/8 NPT	8
13	1442	CAP SCREW - HEX HEAD - 1/2 - 20NF x 3 - GRADE 8	2
14	1444	CAP SCREW - HEX HEAD - 1/2 - 20NF x 2 - GRADE 8	4
15	1443	CAP SCREW - HEX HEAD - 1/2 - 20NF x 1 3/4 - GRADE 8	4
16	1491	NUT - HEX - 1/2 - 20NF	10
17	1495	WASHER - LOCK - 1/2	10
18	1504	CAP SCREW - HEX HEAD - 5/8 - 11NC x 2 - GRADE 5	4
19	1505	CAP SCREW - HEX HEAD - 5/8 - 11NC x 2 1/4 - GRADE 5	8
20	1590	NUT - HEX - 5/8 - 11NC - GRADE 2	12
21	1595	WASHER - LOCK - 5/8	12
22	1165*	RIVET - TYPE - U	4
23	10466*	PLATE - ID - WINCH	1
24	1494	WASHER - FLAT - 1/2	4

* NOT SHOWN ON EXPLODED DRAWING.



AIR/HYDRAULIC KICKOUT
 GEAR END COVER INSTALLATION
 1.60102

1.60102 PARTS LIST
GEAR END COVER INSTALLATION

<u>LOC.</u>	<u>PART NO.</u>	<u>DESCRIPTION</u>	<u>QTY.</u>	
1	13675	COVER - GEAR END	1	
2	13295	PISTON - AKO - B/C/D	1	
3	13296	CYLINDER - PISTON	1	
4	13297	COUPLING - DRIVE	1	
5	3632	RING - RETAINER - ROUND SECTION - 3 O.D. x 3.4	1	
6	9695	O-RING - 8 3/4 I.D. x 1/8 SECTION	1	
7	81612	BUSHING - BRONZE - 5/8 O.D. x 3/8" I.D. x 3/8	1	
8	3303	RING - RETAINER - 1 1/4 x .05 THICK	1	
9	3321	RING - RETAINER - 7/8 x .08 THICK - ROUND SECTION	1	
10	2309	SPRING - COMPRESSION	1	
11	13288	WASHER - THRUST - NYLON - 3.81 x .406 W	1	
13	9672	O-RING - 2 5/8 I.D. x 1/8 SECTION	2	
14	9704	O-RING - 2 1/8 I.D. x 2 3/8 O.D. SECTION	1	
15	76344	PLUG - SOCKET HEAD - O-RING - BOSS #10 7/8 - 14	1	
	1.	9992	O-RING - RAVINE - 1 1/4	1
16	76343	PLUG - SOCKET HEAD - O-RING - BOSS - MAG - #10	1	
	1.	9992	O-RING - RAVINE - 1 1/4	1
17	1157*	CAPLUG - #4 RED - 1/4	1	
18	3059	RELIEF - VENT	1	
19	1317	CAP SCREW - HEX HEAD - 3/8 x 16NC x 5 1/2 - GRADE 8	12	
20	1395	WASHER - LOCK - 3/8	12	
21	13235	GEAR - SUN - 15 TEETH	1	

* NOT SHOWN ON EXPLODED DRAWING.

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 factor 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 affect 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 product 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 Products 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.
PO Box 471710
Tulsa, Oklahoma 74147
(918) 250-2450

OIL SPECIFICATIONS

HYDRAULIC SYSTEM

<u>AMBIENT TEMP. RANGE</u>	<u>HYDRAULIC OIL</u>
120°F To -15°F	SAE10W HYDRAULIC
40° F To -50°F	MIL-L-46167 (OEA)

Filtration Level: 25 Micron or lower
Control Valve Type: 3-position-4-way Motor Spool

LUBRICATION

<u>AMBIENT TEMP. RANGE</u>	<u>GEAR LUBRICANT*</u>
120°F TO 10°F	SAE 50
40°F TO -25°F	75W90
30°F TO -50°F	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.