

**PARTS & OPERATORS  
MANUAL**

**dp WINCH**

*Pull Ahead!*

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**50BCX2L1B & 50BCX2R1B  
HYDRAULIC WINCHES**

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Rev 8/7/97

RELEASE DATE \_\_\_\_\_ SERIAL NUMBER \_\_\_\_\_

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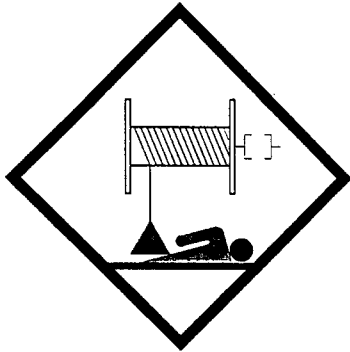
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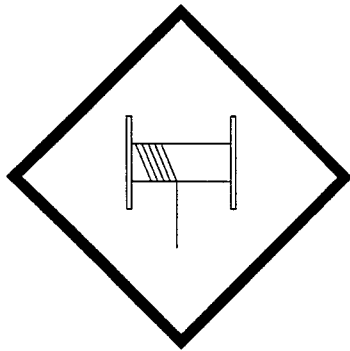
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**DANGER**

**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**

## 50BCX2L1B & 50BCX2R1B PERFORMANCE DATA

WIRE ROPE DIA. IN.	LAYER	LINE PULL LB.		LINE SPEED FPM		CABLE CAP.
		LOW	HIGH	LOW	HIGH	
7/8	1	50000	8100	38	232	37
	2	41400	6700	46	280	81
	3	35300	5710	53	329	134
	4	30700	4980	61	377	194
	5	27200	4410	69	426	261
	--	--	--	--	--	--

Drum capacities are in accordance with SAE J706.

Actual capacities are usually up to 10% greater than those shown.

Line speed is based on a maximum flow of 60 GPM. Line pull is based on 2600 PSI differential across the motor.

Because of continued product improvement, we reserve the right to make changes without notice.

### CAUTION:

The last 5 wraps of cable must be left on the drum to assist the cable clamp in holding the load.

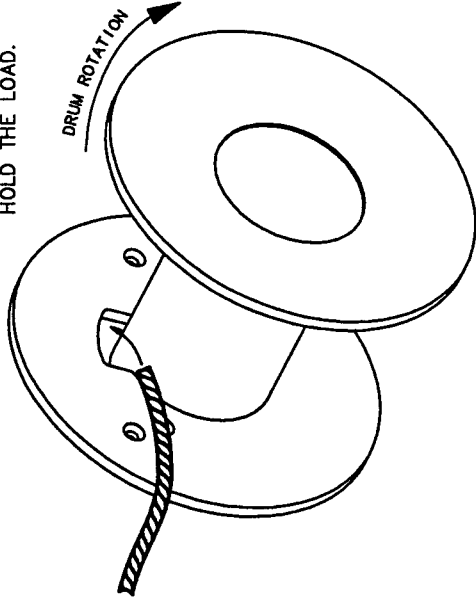
4/97

### WARNING:

Winches are not intended to be used for the  
lifting or moving of persons

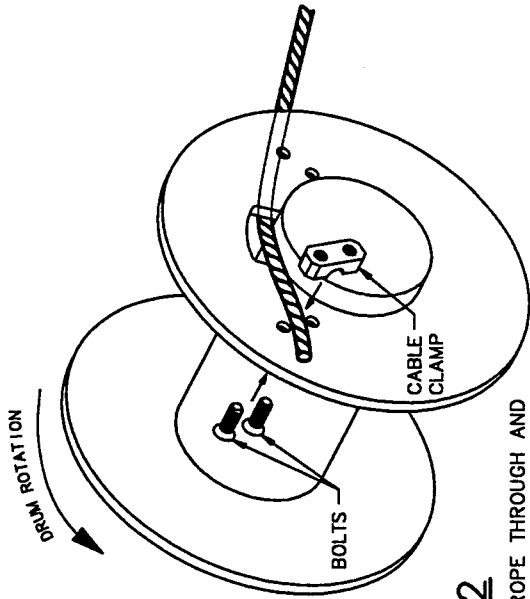
### STEP 1

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.

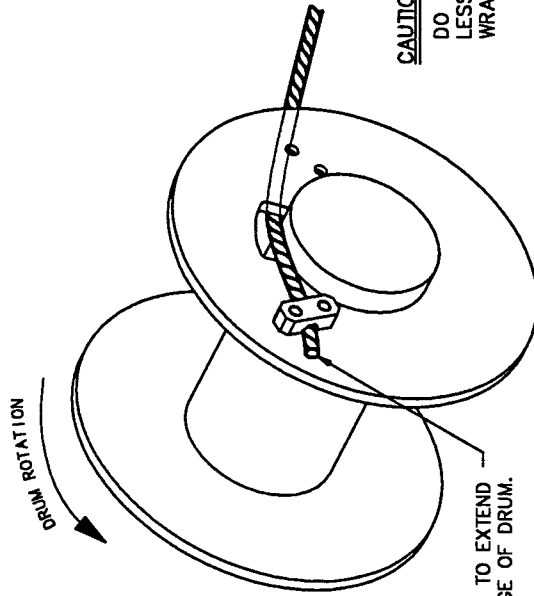


### STEP 2

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.



DO NOT ALLOW WIRE ROPE TO EXTEND PAST EDGE OF DRUM.

#### 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

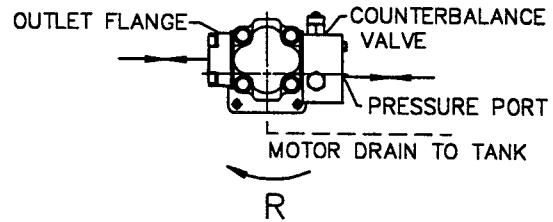
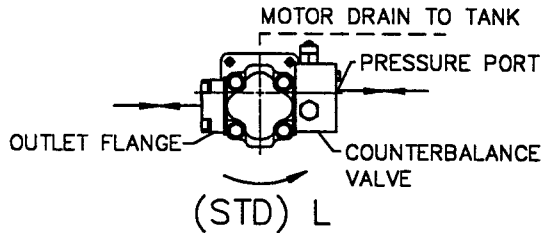
TO REVERSE WIRE ROPE PULL IN DIRECTION

### 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.

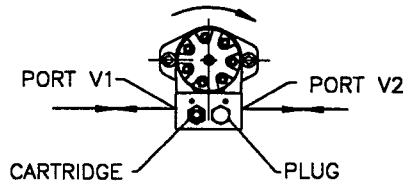


## CHAR-LYNN MOTORS

### (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.

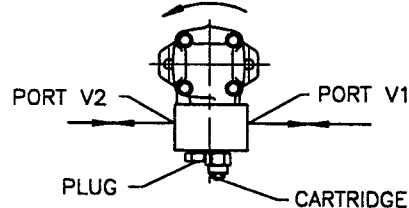
TO REVERSE WIRE ROPE PULL DIRECTION,  
SWITCH POSITIONS OF CARTRIDGE AND PLUG.



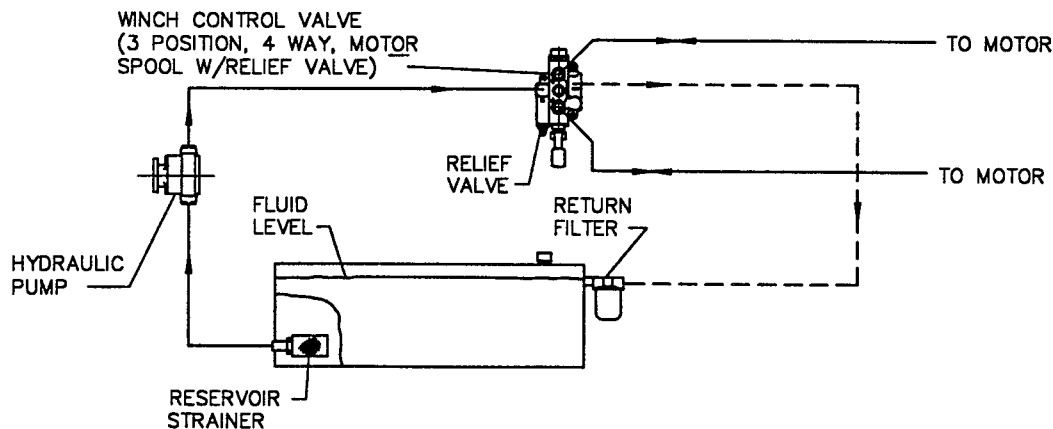
### (STD) L

- 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.



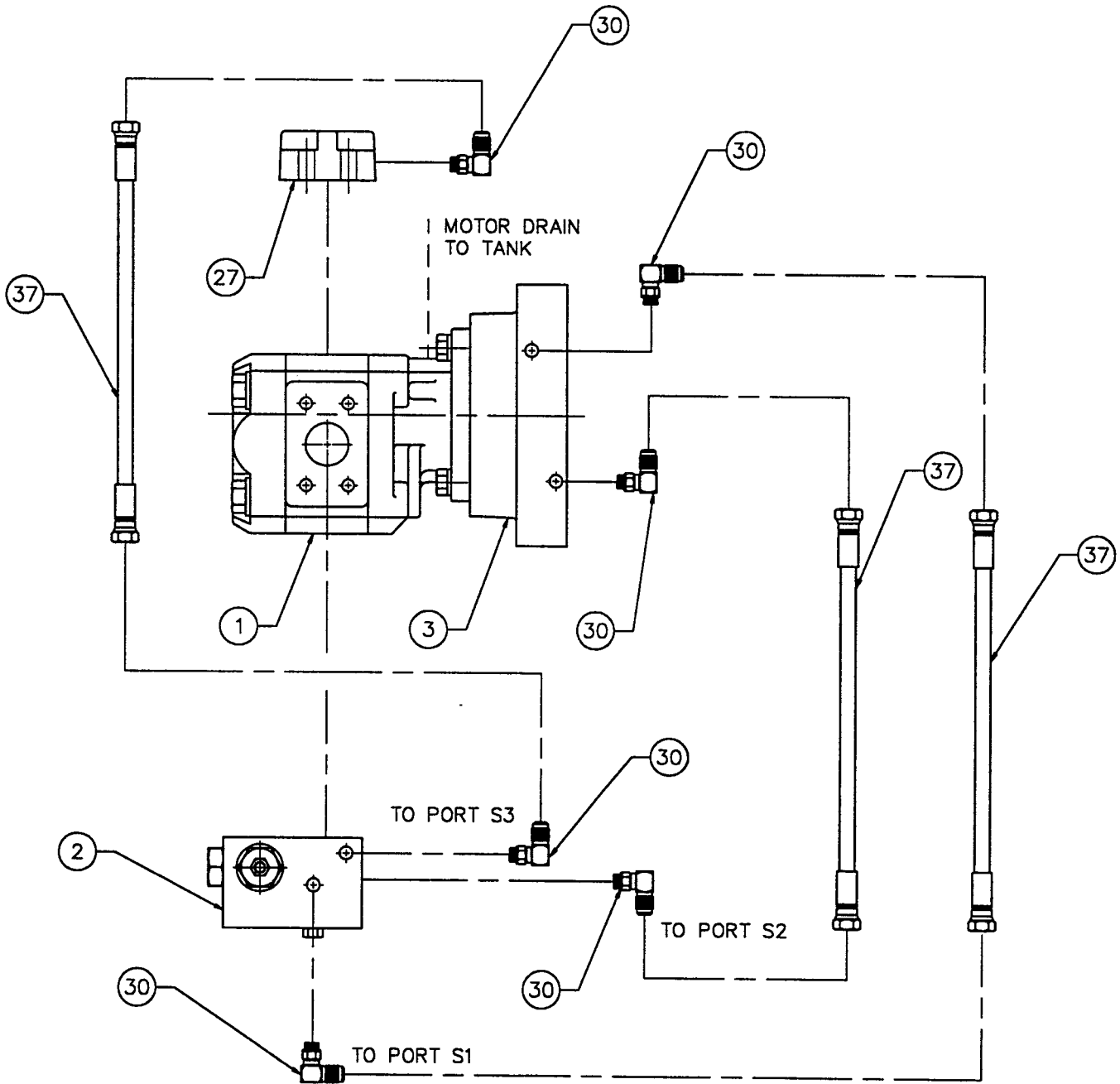
## TYPICAL WINCH HYDRAULIC SYSTEM



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



SEE 1.10374 MOTOR END INSTALLATION  
BILL OF MATERIALS

## 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 1.10374)

1. Disconnect brake hoses (item 37) at connections (item 30) 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 31), lock washers (item 32). Allow oil to drain.
3. Remove outer brake housing (item 3) by removing six capscrews (item 33) and lock washers (item 34).  
**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 16) 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 brake adapter (item 18).
6. Remove friction plates (item 7), drive plates (item 8), spacer ring (item 42), and dowel pins (item 9) from piston (item 6).
7. Remove piston (item 6) from brake adapter (item 18) 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 17) and bearing (item 16) from brake adapter (item 18).

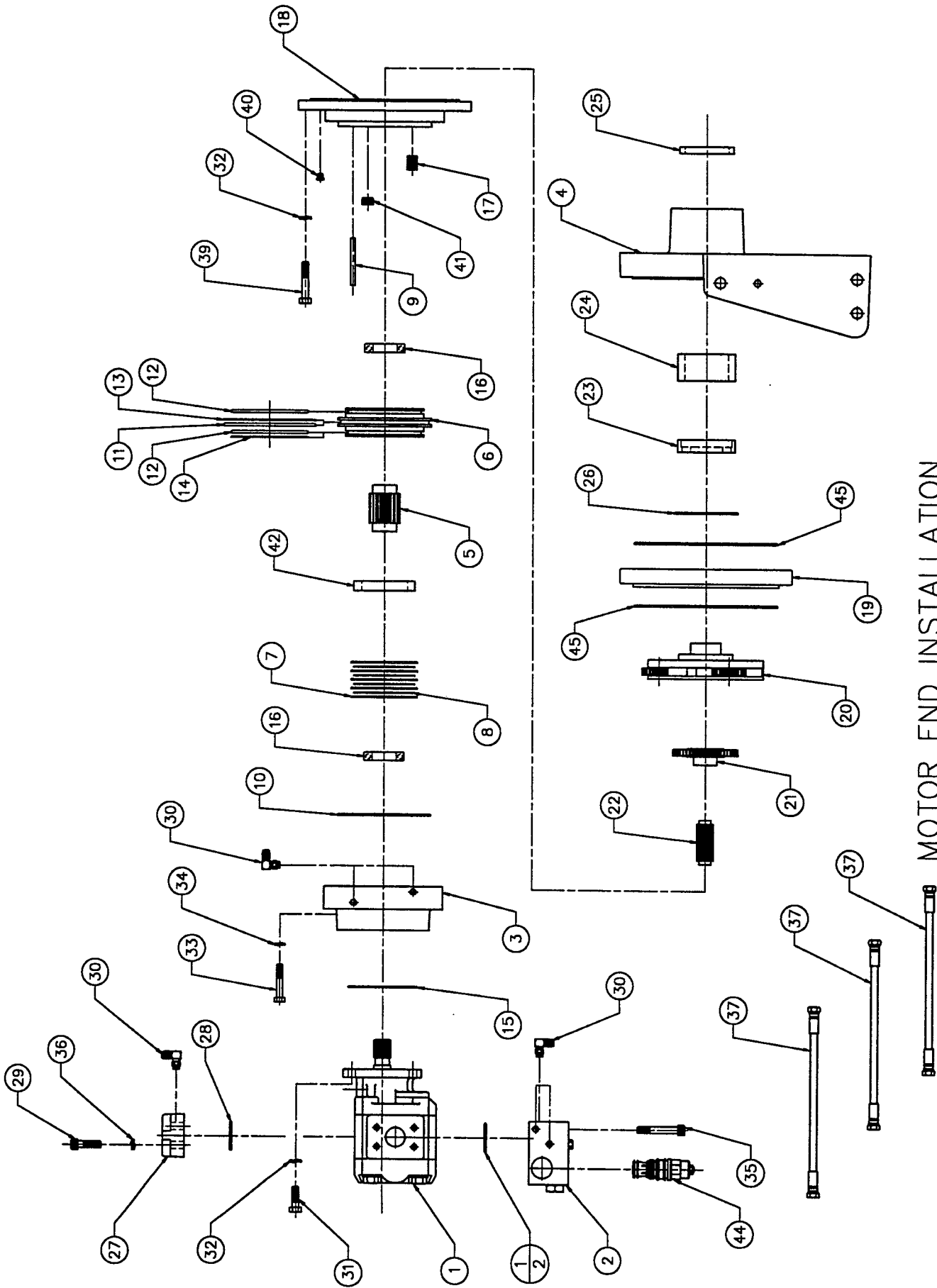
### ASSEMBLY OF BRAKE

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 16) into brake adapter (item 18). Next install shaft (item 5) into bearing (item 16).
4. Insert dowel pins (item 9) into respective holes in brake adapter (item 18).
5. Assemble o-rings and back up rings (item 11, 12, 13, & 14) on piston (item 6). Position back up rings as shown.
6. Insert piston (item 6) fitted with seals into brake adapter (item 18) and over dowel pins (item 9) and tap down until piston face is resting against springs (item 17).
7. Insert spacer ring (item 42), then 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 16) onto brake shaft (item 5).
9. Place o-ring (item 10) in position on brake adapter (item 18). 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 34) and capscrews (item 33) 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 15) can now be reinstalled on the housing (item 3). Then secure with capscrews (item 31), lock washers (item 32). Reconnect brake hoses (item 37) 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 (item 30) at brake slightly to bleed air from brake release hoses (item 37) 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).
  - (e) Damaged bearing (item 16).
  - (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 17), either broken or heat damaged and having taken a permanent set.
  - (b) Friction plates (item 7) worn out.
3. Oil leaks externally from brake:
  - (a) Damaged o-ring seal (item 10).





MOTOR END INSTALLATION  
1.10374

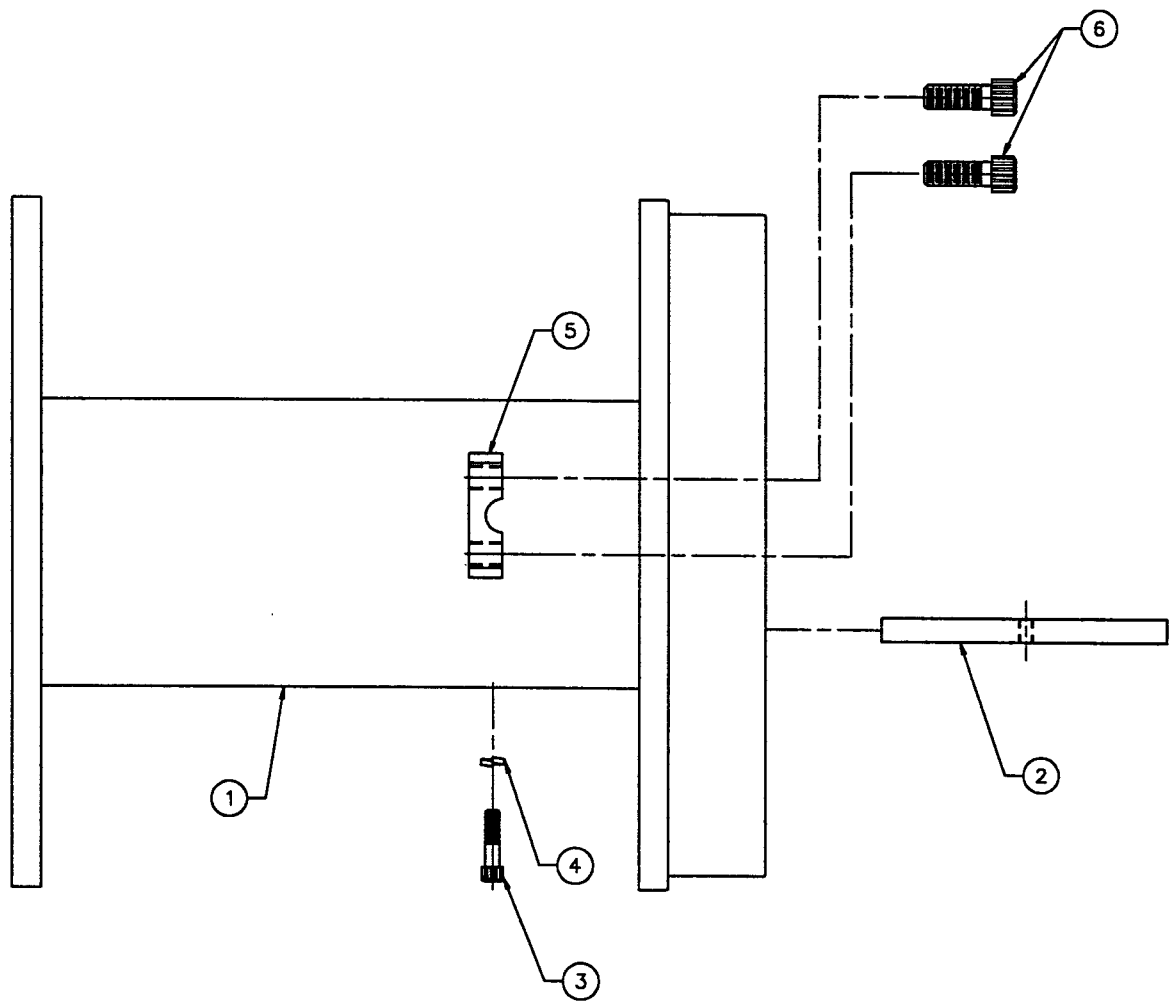
**1.10374 PARTS LIST  
MOTOR END INSTALLATION**

<u>LOC.</u>	<u>PART NO.</u>	<u>DESCRIPTION</u>	<u>QTY.</u>
1	73032	MOTOR - HYDRAULIC	1
2	11541	VALVE - COUNTERBALANCE	1
1	9962	O-RING - 1 7/8 I.D. x 1/8 SECTION	1
3	11515	BRAKE - HOUSING	1
4	13975	SUPPORT - GEAR END	1
5	11688	SHAFT - BRAKE	1
6	11443	PISTON - BRAKE	1
7	11603**	PLATE - DISC - FRICTION	5
8	3159**	PLATE - DRIVE - BRAKE	4
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 - BACKUP - 6 1/4 I.D.	1
14	9852<	RING - BACKUP - 5.278 I.D. x .076	1
15	9620	O-RING - 5 I.D. x 3/32 SECTION	1
16	81434	BEARING - BALL - 1 3/4 I.D.	2
17	2319**	SPRING - COMPRESSION	12
18	14026	ADAPTER - BRAKE	1
19	14219	GEAR - RING	1
20	12437	ASSEMBLY - CARRIER - PLANETARY	1
21	11727	GEAR - SUN	1
22	11724	SHAFT - EXTENSION	1
23	11725	PLATE - THRUST	1
24	81438	BEARING - ROLLER	1
25	9888	SEAL - 3 1/4 I.D. x 4 O.D.	1
26	3279	RING - RETAINER - 4 1/4 x .109 THICK	1
27	12454	MANIFOLD - VALVE	1
28	9962	O-RING - 1 7/8 I.D. x 1/8 SECTION	1
29	1458	CAP SCREW - SOCKET HEAD - 1/2-13 NC x 1 3/4	4
30	76017	ADAPTER - 90° - #4 O-RING/#4 MJIC	6
31	1403	CAP SCREW - HEX HEAD - 1/2 - 13NC x 1 1/2 GRADE 5	4
32	1495	WASHER - LOCK - 1/2	8
33	1376	CAP SCREW - HEX HEAD - 7/16 UNC x 2 1/2 GRADE 8	6
34	1388	WASHER - LOCK - 7/16	6
35	1457	CAP SCREW - SOCKET HEAD - 1/2-13 NC x 3	4
36	1144	WASHER - LOCK - 1/2 - HI COLLAR	4
37	75037	HOSE - 1/4-R1 x 10"	3
38	10708*	TAG - WARNING	1
39	1408	CAP SCREW - HEX HEAD - 1/2-13 NC x 2 3/4 GRADE 5	4
40	3059*	VENT - RELIEF	1
41	76146	PLUG - O-RING - SAE #8 - SOCKET HEAD - 3/4 - 16	2
42	11486	SPACER	1
43	1179	CAPLUG - PLASTIC	1
44	70034	CARTRIDGE - COUNTER BALANCE	1
45	9957	O-RING - 10 1/2ID x 1/8 SECTION	2

\* NOT SHOWN ON EXPLODED DRAWING.

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

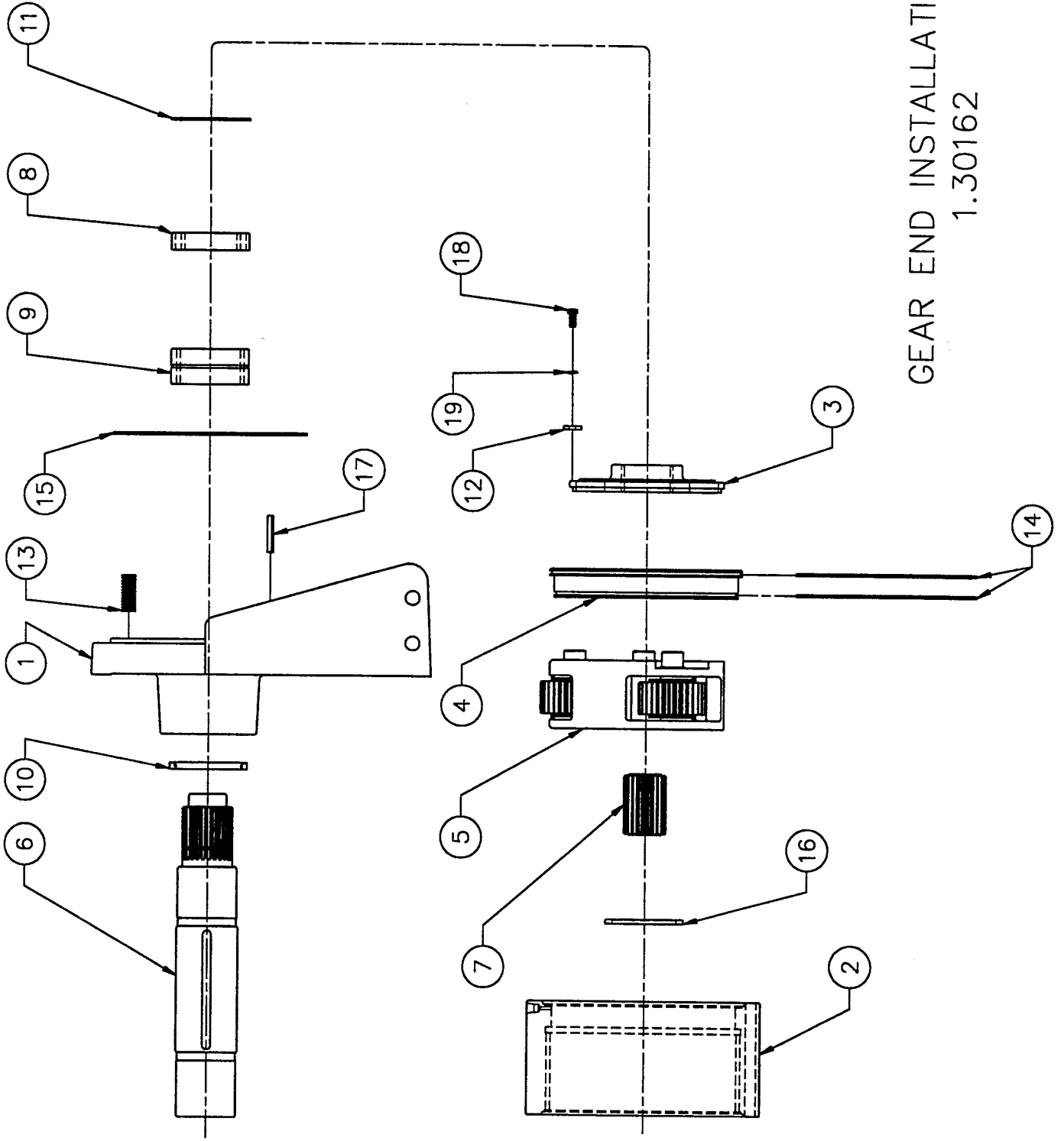
< ITEMS SOLD AS PART OF 9406 KIT ONLY.



DRUM INSTALLATION  
1.20162

**1.20162 PARTS LIST**  
**CABLE DRUM INSTALLATION**

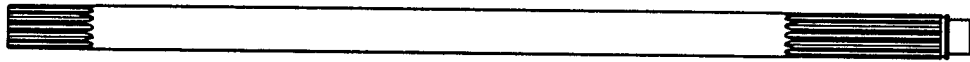
<b><u>LOC.</u></b>	<b><u>PART NO.</u></b>	<b><u>DESCRIPTION</u></b>	<b><u>QTY.</u></b>
1	14250	DRUM	1
2	11732	KEY - DRUM	2
3	1342	CAP SCREW - SOCKET HEAD - 3/8 - 16UNC x 1-1/2	2
4	1379	WASHER - LOCK - COLLAR - HI - 3/8	2
5	12169	CLIP - CABLE	1
6	1558	CAP SCREW - SOCKET HEAD - 5/8-11UNC x 1-1/2	2



GEAR END INSTALLATION  
1.30162

**1.30162 PARTS LIST**  
**GEAR END INSTALLATION**

<b><u>LOC.</u></b>	<b><u>PART NO.</u></b>	<b><u>DESCRIPTION</u></b>	<b><u>QTY.</u></b>
1	13976	SUPPORT - GEAR END	1
2	13974	GEAR RING - 103 TEETH	1
3	14197	CLUTCH - KICKOUT	1
4	14194	PISTON - KICKOUT	1
5	14195	CARRIER - ASSEMBLY - SECONDARY	1
6	14191	SHAFT - OUTPUT	1
7	13985	GEAR - SUN - SECONDARY - 20 TEETH	1
8	14189	RING - THRUST	1
9	81438	BEARING - ROLLER	1
10	9888	SEAL - 3 1/4 I.D. x 4 O.D.	1
11	3279	RING - RETAINER - 4 1/4 x .109	1
12	14193	RETAINER - PISTON	3
13	2338	SPRING - COMPRESSION - 3/4 O.D. x 2	3
14	9736	O-RING - 9 3/4 I.D. x 1/8 SECTION	2
15	9957	O-RING - 10 1/2 I.D. x 1/8 SECTION	1
16	13929	WASHER - THRUST - NYLON - 4 1/4 O.D. x 1/4	1
17	3251	PIN - SPIROL - 5/16 x 2	2
18	1190	CAP SCREW - HEX HEAD - 5/16 - 18NC x 3/4	6
19	1168	WASHER - LOCK - 5/16	6

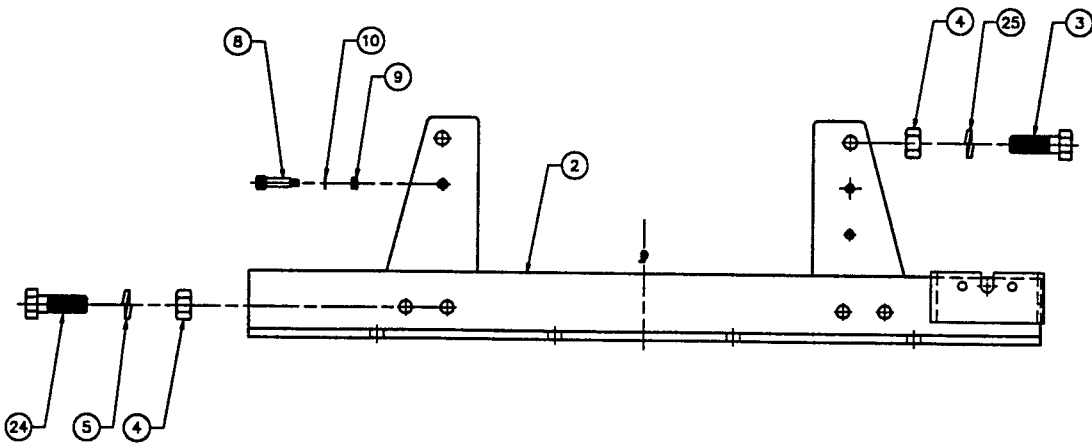
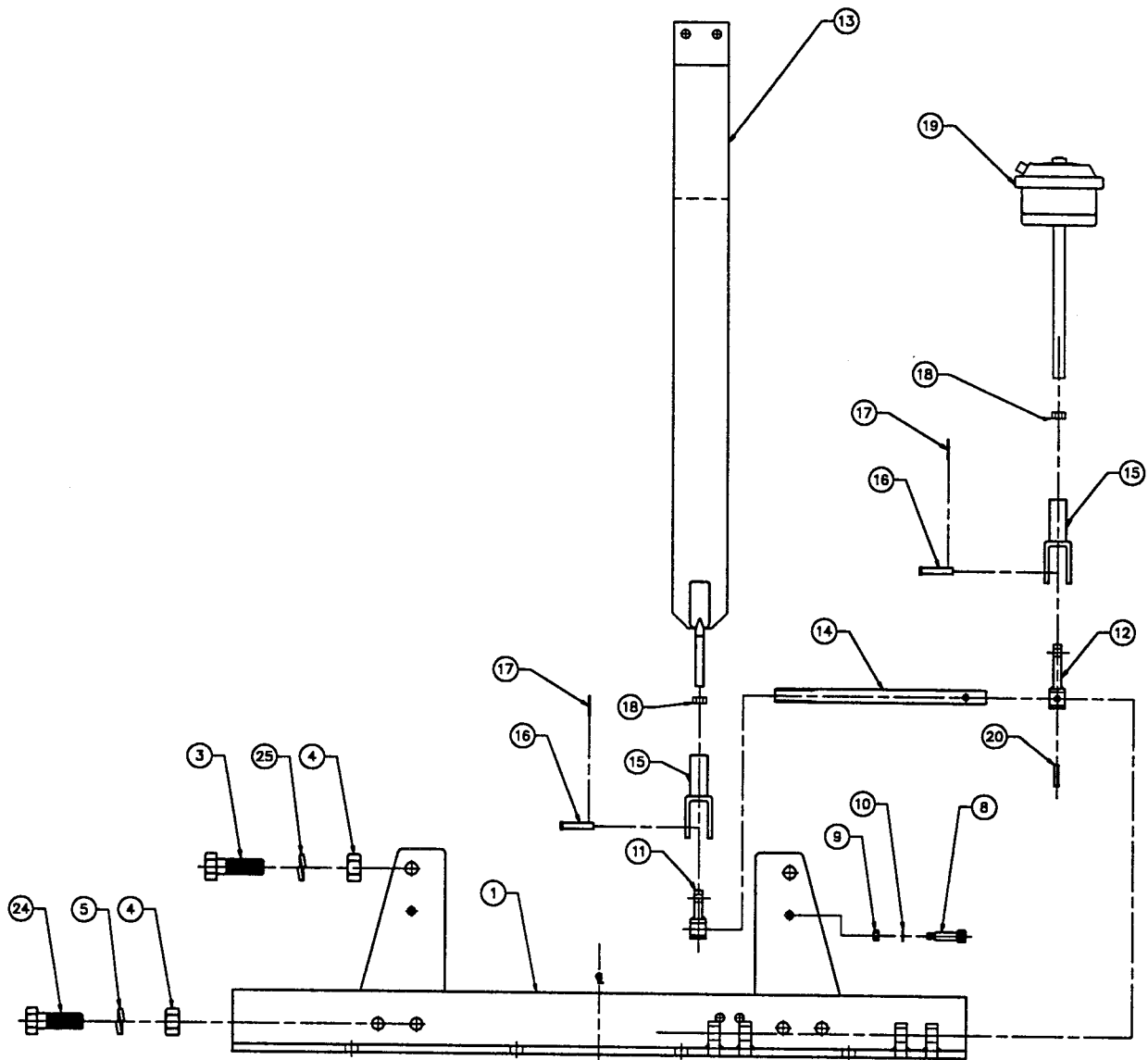


INPUT SHAFT INSTALLATION  
1.40265

**1.40265 PARTS LIST**  
**INPUT SHAFT INSTALLATION**

<b><u>LOC.</u></b>	<b><u>PART NO.</u></b>	<b><u>DESCRIPTION</u></b>	<b><u>QTY.</u></b>
1.	14044	SHAFT - INPUT	1



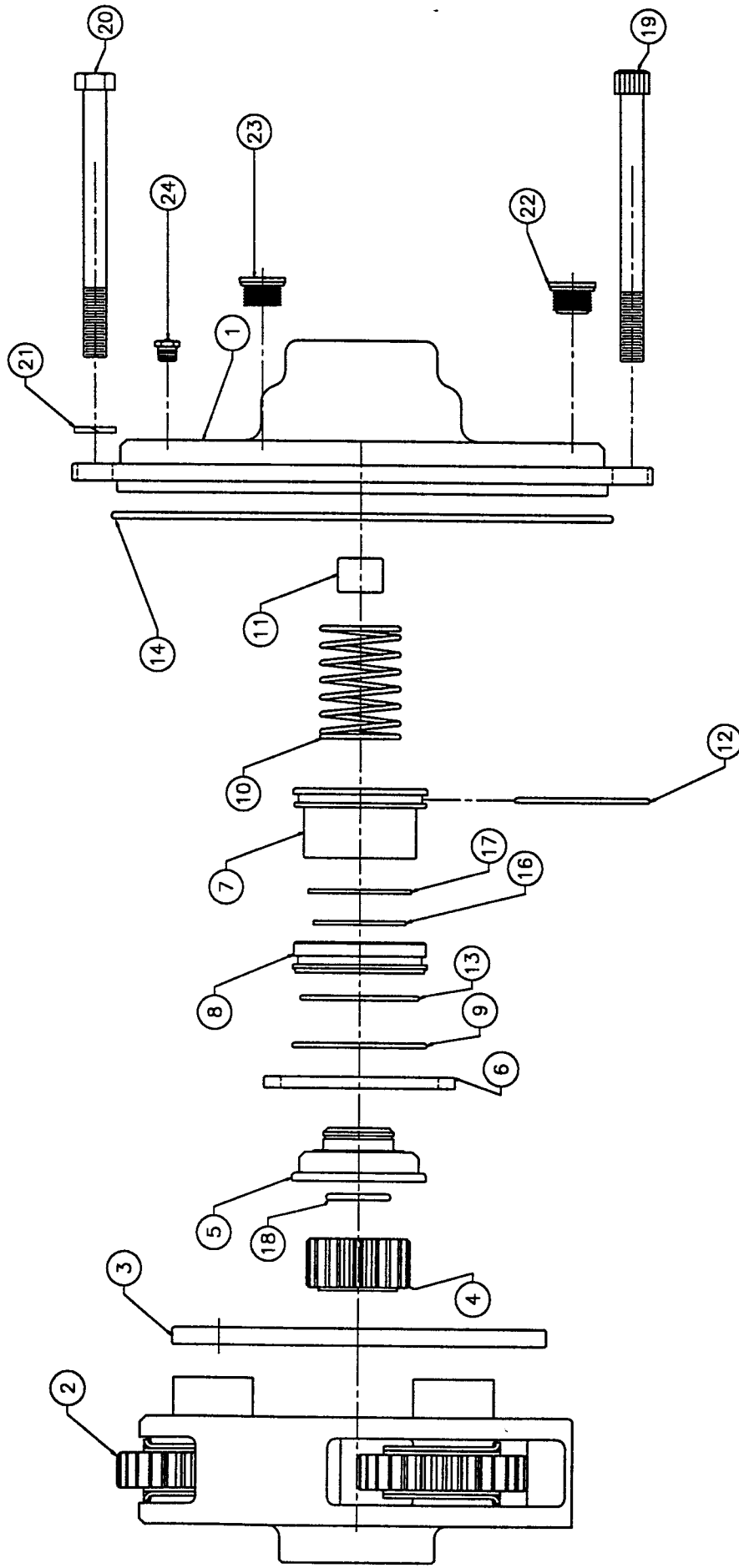


BASE MOUNT INSTALLATION  
1.50320

**1.50320 PARTS LIST**  
**BASE MOUNT INSTALLATION**

<u>LOC.</u>	<u>PART NO.</u>	<u>DESCRIPTION</u>	<u>QTY.</u>
1	14252	BASE ANGLE - REAR	1
2	14251	BASE ANGLE - FRONT	1
3	1604	CAP SCREW - HEX HEAD - 3/4 -10NC x 2 GRADE 8	4
4	1690	NUT - HEX - 3/4 - 10NC	12
5	1695	WASHER - LOCK - 3/4	8
6	10466*	PLATE - INFORMATION	1
7	1165*	RIVET - DRIVE	4
8	1475	SHOULDER BOLT - SOCKET HEAD - 1/2 x 1	4
9	1390	NUT - HEX - 3/8 - 16NC GRADE 2	4
10	1394	WASHER - FLAT - 3/8	4
11	14086	LEVER - BRAKE - BAND - 2" x 7/8" SPLINED BORE	1
12	14257	LEVER - BRAKE - BAND - 2" x 7/8" BORE	1
13	14258	BAND - ASSEMBLY - BRAKE	1
14	14259	SHAFT - BRAKE - BAND	1
15	1076	YOKE - CLEVIS - 1/2 NF	2
16	3133	PIN - CLEVIS - 1/2"D x 1 1/2L	2
17	1013	PIN - COTTER - 1/8 x 1	2
18	1491	NUT - HEX - 1/2 - 20NF	2
19	3696	SPRING - PNEUMATIC - BRAKE - AIR - W/CLEVIS	1
20	3697	PIN - SPIROL - 3/8 x 1 1/2L - HEAVY DUTY	1
21	1403	CAP SCREW - HEX HEAD 1/2 - 13NC x 1 1/2 GRADE 2	2
22	1490	NUT - HEX - 1/2 - 13NC GRADE 2	2
23	1495	WASHER - LOCK - 1/2	2
24	1605	CAP SCREW - HEX HEAD 3/4 - 10NC x 2 1/4 GRADE 5	8
25	1698	WASHER - FLAT - 3/4	4

\* NOT SHOWN ON EXPLODED DRAWING.



COVER END INSTALLATION  
1.60131

**1.60131 PARTS LIST**  
**GEAR END COVER INSTALLATION**

<u>LOC.</u>	<u>PART NO.</u>	<u>DESCRIPTION</u>	<u>QTY.</u>
1	14041	COVER - END	1
2	14034	CARRIER ASSY	1
3	14035	PLATE - DRIVE	1
4	14036	GEAR - SUN PRI	1
5	14039	COUPLING - KICKOUT 2 SPEED	1
6	14037	WASHER - THRUST	1
7	14040	PISTON - KICKOUT - 2 SPEED	1
8	14038	SLEEVE - PISTON - KICK OUT - 2 SPEED	1
9	3632	RING - RET -RD - 3 OD x 3.4	1
10	2323	SPRING - COMPRESSION - .192 SEC x 1 15/16 OD	1
11	81620	BUSHING - 3/4 I.D. x 1 OD x 3/4 LG	1
12	9602	O-RING - 2 3/4 I.D. x 3 OD x 1/8	2
13	9678	O-RING - 2 1/2 I.D. x 1/8	1
14	9957	O-RING - 10 1/2 I.D. x 1/8	1
15	3631	CAPLUG -PROTECTIVE - #2	1
16	3267	RING - RETAINER - 1 9/16 x .062T	1
17	13929	WASHER - THRUST	1
18	12037	RING - RETAINER 1.15 I.D. x .14	1
19	1450	CAP SCREW - SOCKET HEAD - 1/2 - 13 NC x 7	2
20	1449-5	CAP SCREW - HEX HEAD - 1/2 - 13 NC x 7 1/2 - GRADE 5	10
21	1495	WASHER - LOCK - 1/2	10
22	76343	PLUG - SOCKET HEAD - BOSS - O-RING #10	1
23	76344	PLUG - O-RING BOSS - #10 SOCKET HEAD - 7/8 - 14	1
24	3059	VENT - RELIEF	1

# ***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.