

**PARTS & OPERATORS
MANUAL**



Pull Ahead !

**45BDX1L1D & 45BDX1R1D
HYDRAULIC WINCHES**

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Rev 4/17/97

RELEASE DATE _____ SERIAL NUMBER _____

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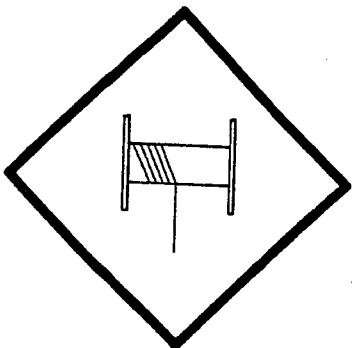
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WARRANTY, OIL SPECIFICATIONS AND HOW TO ORDER PARTS



DANGER

**DO NOT DISENGAGE
WINCH UNDER LOAD**



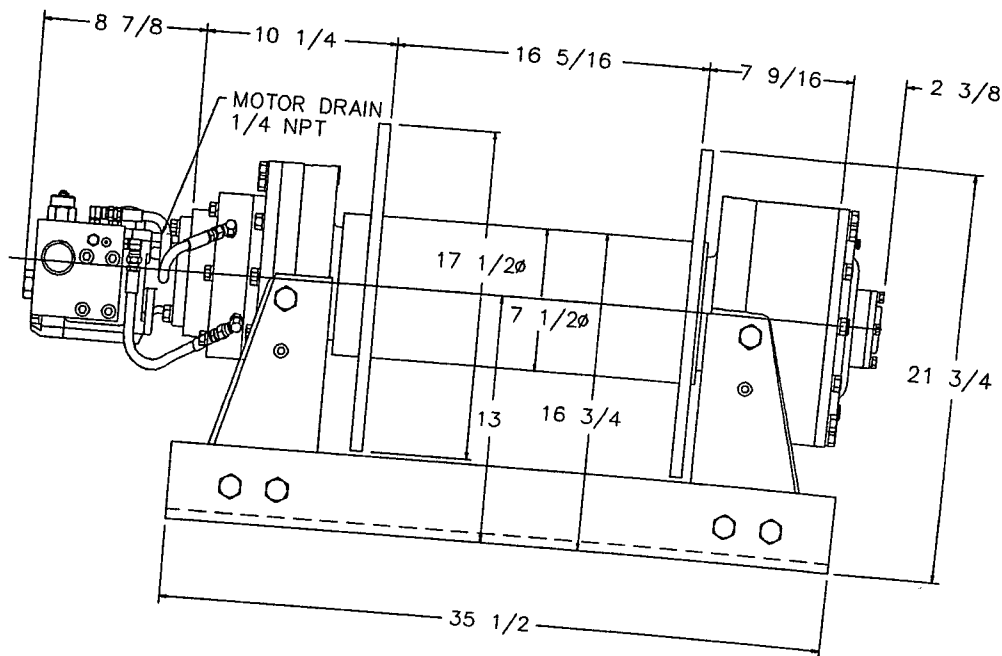
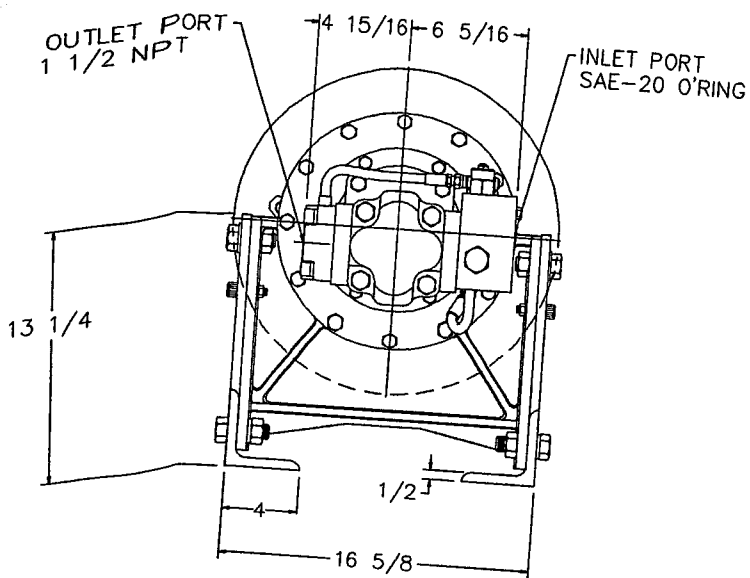
DANGER

**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**



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.

WINCH PERFORMANCE

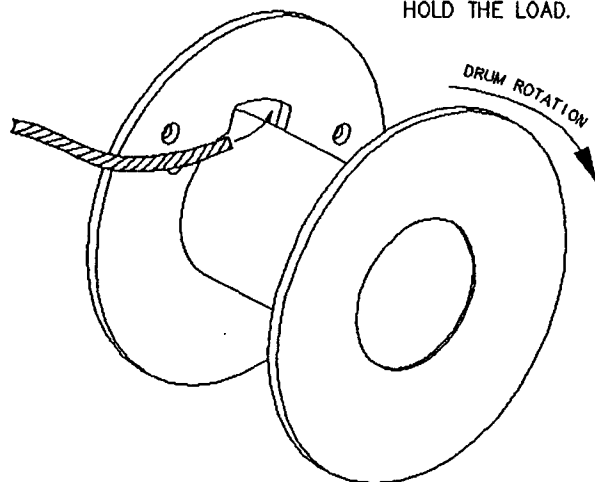
LAYER	7/8 ϕ CABLE CAP.	LINE PULL	LINE SPEED
1	37	45000	25
2	81	37200	30
3	133	31700	35
4	193	27700	40
5	261	24500	45

THE RATED LINE PULLS SHOWN ARE FOR THE WINCH ONLY. CONSULT THE WIRE ROPE MANUFACTURER FOR WIRE ROPE RATINGS.
 LINE SPEED IS BASED ON 40 GPM FLOW RATE (MAXIMUM FLOW RATE 65 GPM).
 LINE PULL IS BASED ON 2500 PSI. OPTIONAL LOWER PRESSURE MOTORS ARE ALSO AVAILABLE.
 CABLE CAPACITIES ARE IN ACCORDANCE WITH SAE J706 (ACTUAL CAPACITIES ARE USUALLY UP TO 10% GREATER THAN THOSE SHOWN).

45BDX1L1D & 45BDX1R1D WINCHES

STEP 1

INSERT CABLE END INTO
FLANGE OPENING.

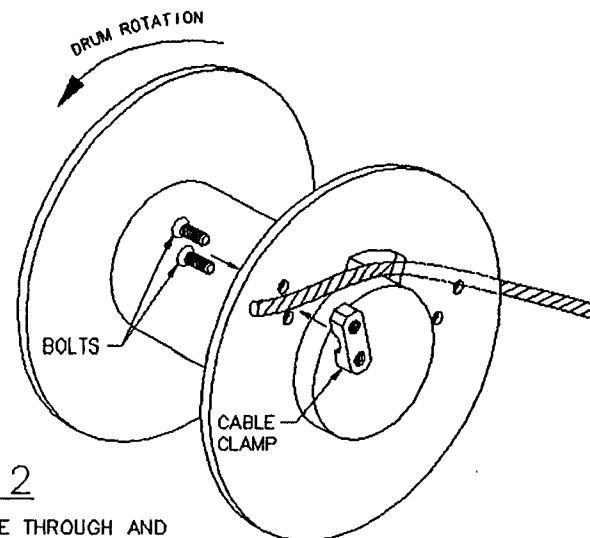


CAUTION:

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

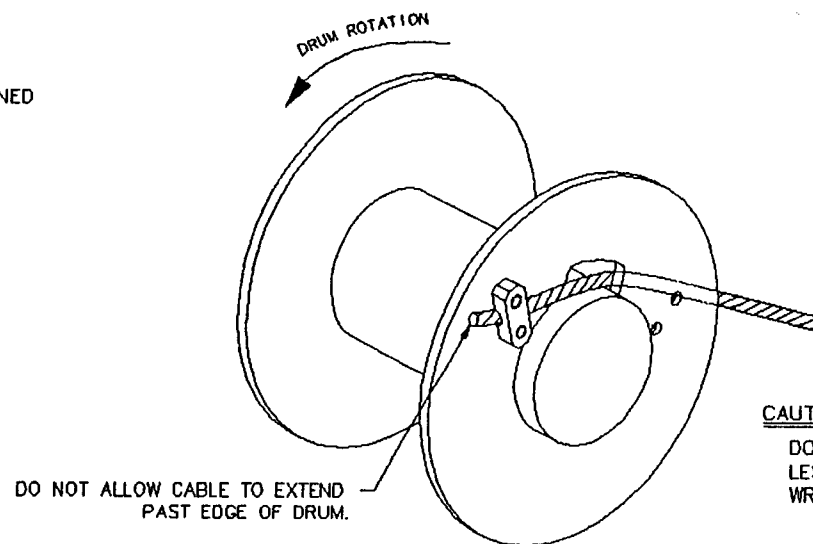
STEP 2

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



STEP 3

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



CAUTION:

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

CABLE INSTALLATION

COMMERCIAL INTERTECH MOTOR

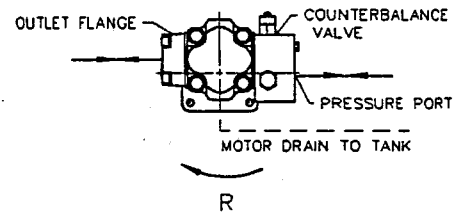
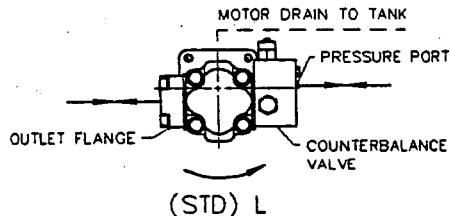
TO REVERSE WIRE ROPE PULL IN DIRECTION

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.

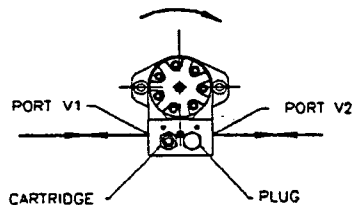


CHAR-LYNN MOTORS

(STD) L 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.

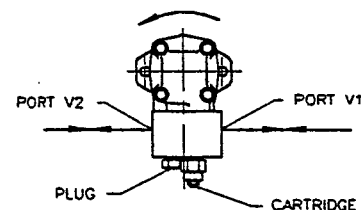
TO REVERSE WIRE ROPE PULL DIRECTION,
SWITCH POSITIONS OF CARTRIDGE AND PLUG.



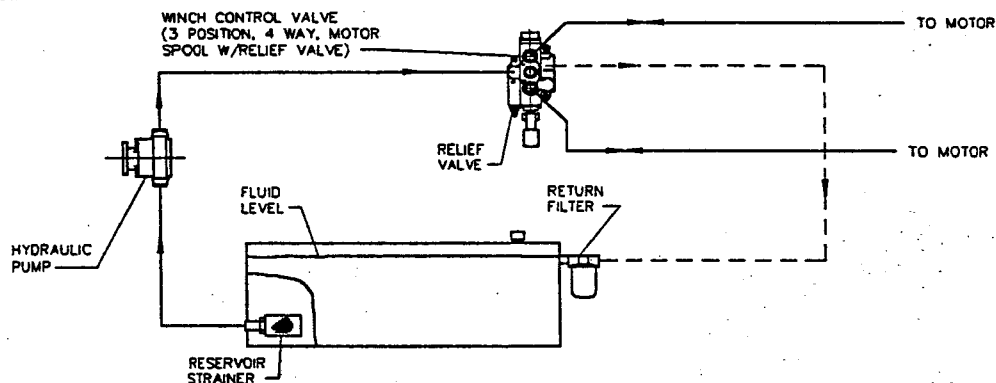
(STD) L PRESSURE TO V1 ROTATES WINCH DRUM COUNTER
CLOCKWISE WHEN VIEWED FROM MOTOR END.

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.



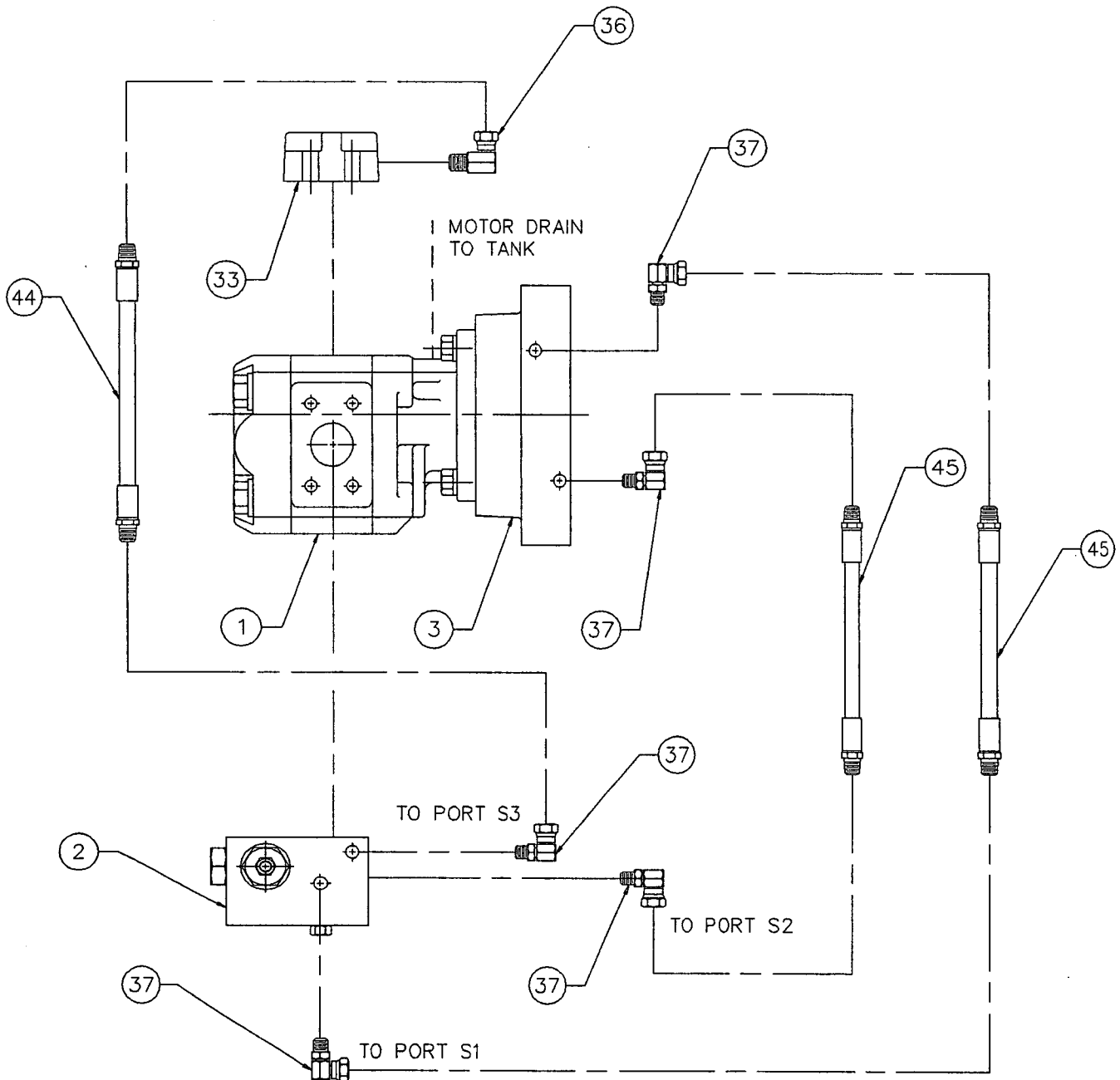
TYPICAL WINCH HYDRAULIC SYSTEM



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 1.10071 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 1.10071)

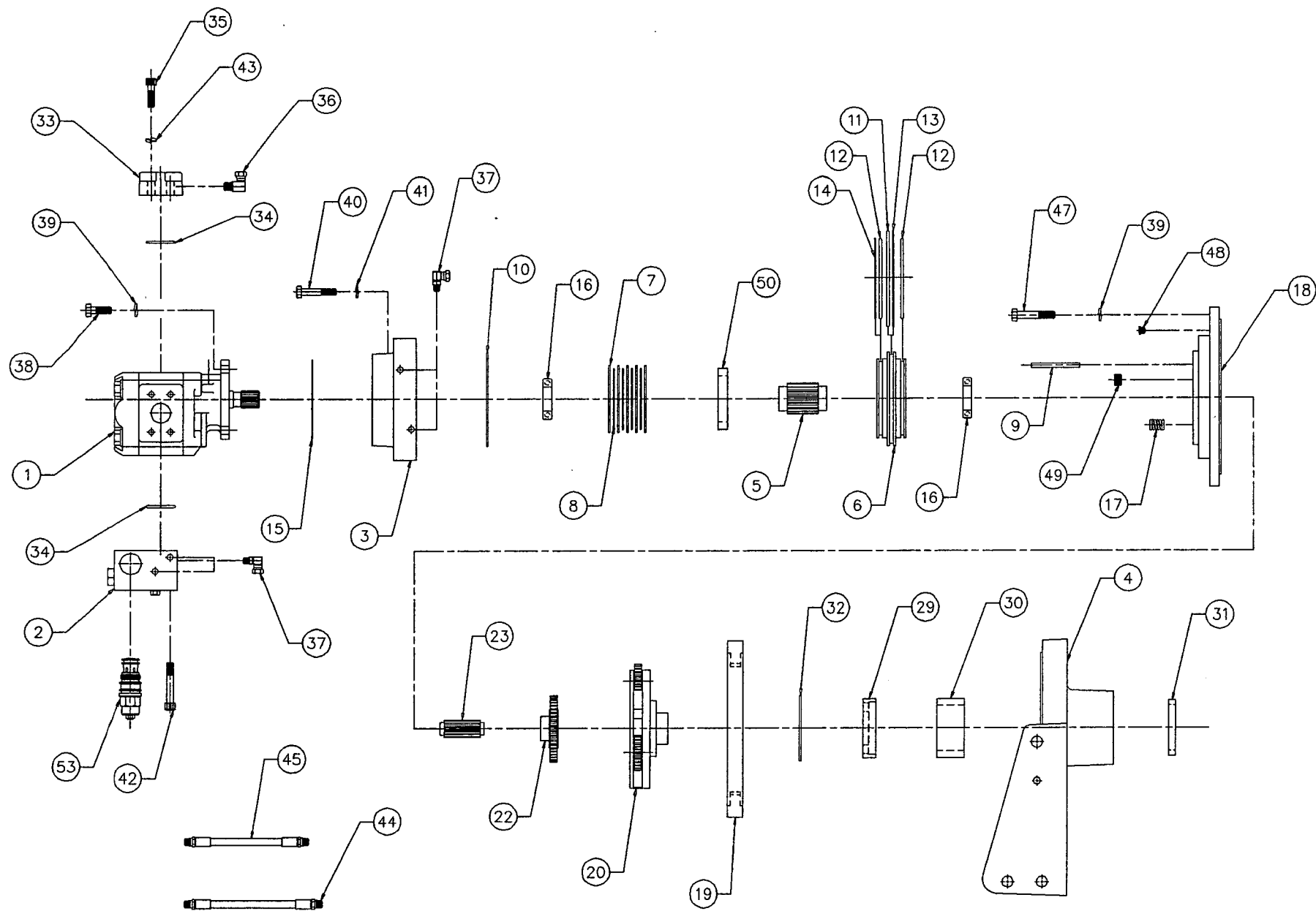
1. Disconnect brake hoses (item 45) at connections (item 37) on brake housing (item 3). wrap hose ends to prevent dirt contamination.
2. Disconnect motor (item 1) from brake housing (item 3) by removing four capscrews (item 38), lock washers (item 39). Allow oil to drain.
3. Remove outer brake housing (item 3) by removing six capscrews (item 40) and lock washers (item 41).
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 50), 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 illustrated.
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 50), 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 41) and capscrews (item 40) 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 gasket (item 15) with silicon sealant on pilot dia. of motor (item 1). Then insert into brake housing (item 3) and secure with capscrew (item 38), lock washers (item 39). Reconnect brake hoses (item 45) 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 37) at brake slightly to bleed air from brake release hoses (item 45) 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
1.10071

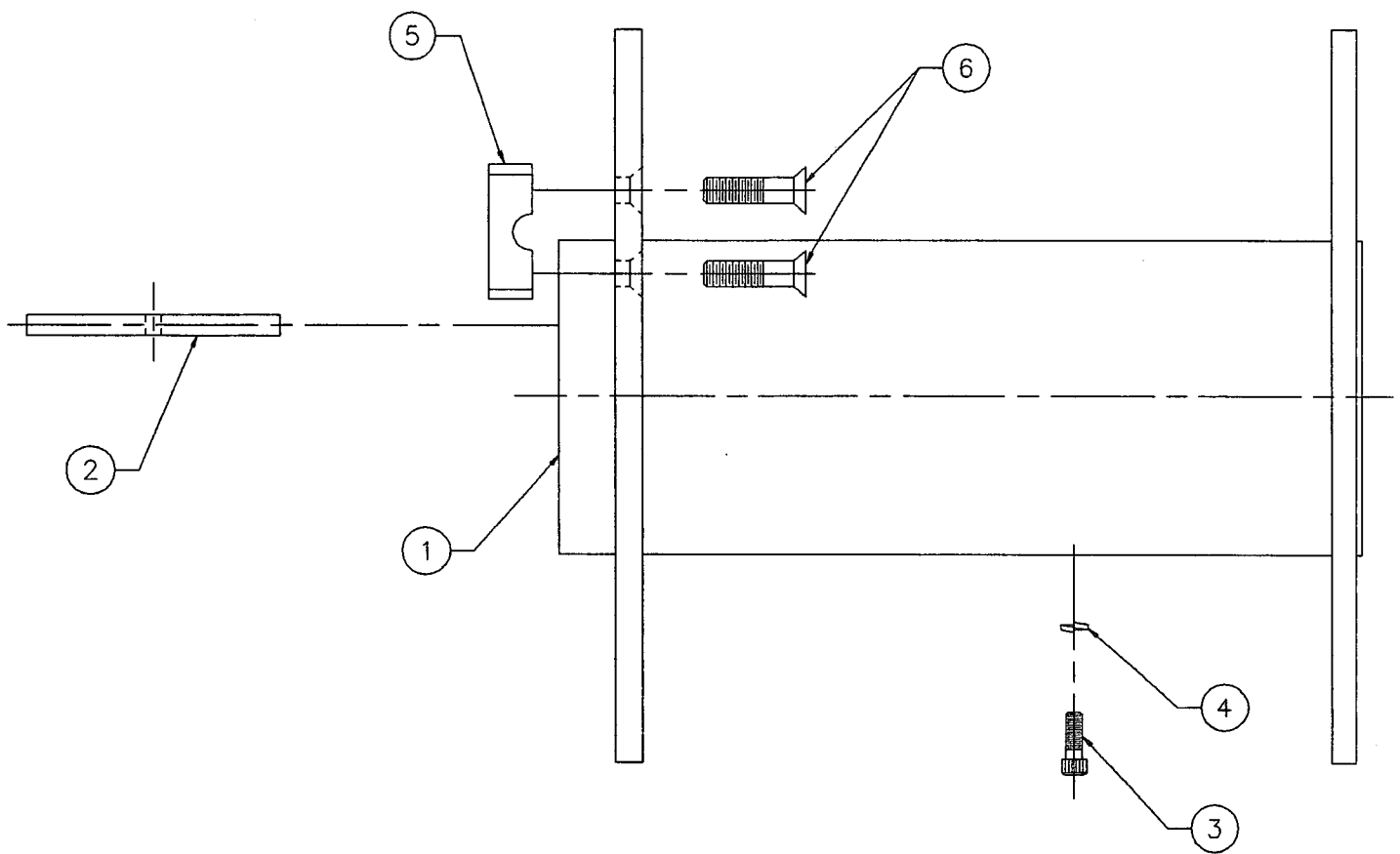
1.10071 PARTS LIST
MOTOR END INSTALLATION

<u>LOC.</u>	<u>PART NO.</u>	<u>DESCRIPTION</u>	<u>QTY.</u>
1	73032	MOTOR - HYDRAULIC	1
2	11541	VALVE - COUNTERBALANCE	1
3	11515	HOUSING - BRAKE - OUTER	1
4	11553	SUPPORT - END - GEAR	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 DIA. x 3-1/2 LG.	2
10	9844<	O-RING - 6-3/4 I.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 - 6-1/2 I.D.	1
14	9852<	RING - BACK-UP - 5-3/8 I.D.	1
15	1162	GASKET	1
16	81434	BEARING - BALL - 1-3/4 I.D.	2
17	2319**	SPRING - COMPRESSION - BRAKE	12
18	11719	ADAPTER - BRAKE	1
19	11718	GEAR - RING - 92 T.	1
20	12437	ASSEMBLY - CARRIER - PLANETARY	1
22	11727	GEAR - SUN	1
23	11724	SHAFT - EXTENSION	1
29	11725	PLATE - THRUST	1
30	81438	BEARING - ROLLER - 3-1/4 I.D. x 4-1/4 O.D.	1
31	9888	SEAL - 4 O.D. x 3-1/4 I.D.	1
32	3279	RING - RETAINING - 4-11/16 O.D.	1
33	10506	FLANGE - 1-1/2 W/PORT	1
34	9962	O-RING - 1-7/8 I.D. x 2-1/8 O.D.	1
35	1458	CAP SCREW - SOCKET HEAD - 1/2 NC x 1-3/4	4
36	76503	ADAPTER - SWIVEL - 90° - 1/4 - 1/4	1
37	76511	ADAPTER - SWIVEL - 90° - #4 - 1/4	5
38	1403	CAP SCREW - HEX HEAD - 1/2 NC x 1-1/2	4
39	1495	WASHER - LOCK - 1/2	16
40	1376	CAP SCREW - HEX HEAD - 7/16 NC x 2-1/2	6
41	1388	WASHER - LOCK - 7/16	6
42	1457	CAP SCREW - SOCKET HEAD - 1/2 NC x 3	4
43	1144	WASHER - LOCK - HIGH COLLAR - 1/2	4
44	75006	HOSE - 1/4 - 10 - R1	1
45	75005	HOSE - 1/4 - 9 - R1	2
46	10708*	TAG - WARNING	1
47	1408	CAP SCREW - HEX HEAD - 1/2 NC x 2-3/4	12
48	3059	VENT - RELIEF	1
49	1988	PLUG - PIPE - 1/2 NPT	1
50	11486	SPACER - BRAKE	1
51	1179*	CAPLUG - PLASTIC - I.D. - 20S	1
52	1157*	CAPLUG - #4 - 1/4 NPT	1
53	70034	CARTRIDGE - VALVE	1

* NOT SHOWN ON EXPLODED DRAWING

**THESE ITEMS SOLD IN 9401 KIT ONLY

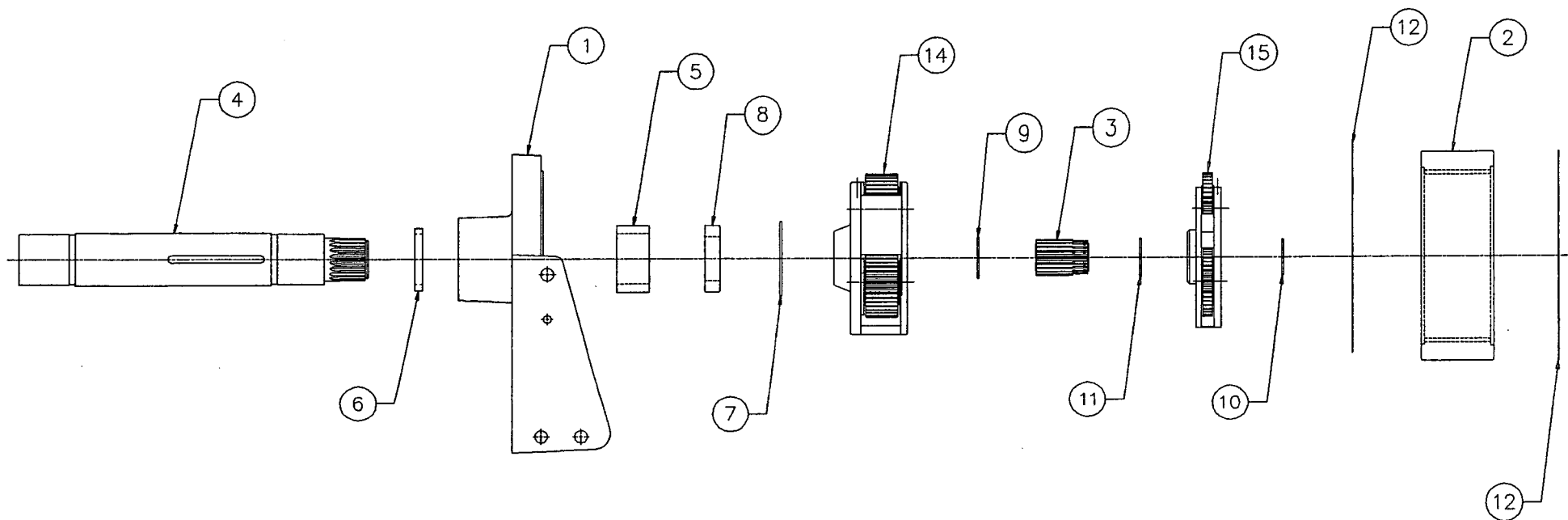
< THESE ITEMS SOLD IN 9406 KIT ONLY



DRUM INSTALLATION
1.20046

1.20046 PARTS LIST
CABLE DRUM INSTALLATION

<u>LOC.</u>	<u>PART NO.</u>	<u>DESCRIPTION</u>	<u>QTY.</u>
1	11550	DRUM	1
2	11732	KEY - DRUM	2
3	1342	CAP SCREW - SOCKET HEAD - 3/8 NC x 1-1/2	2
4	1379	WASHER - LOCK - COLLAR - HI - 3/8	2
5	12518	CLIP - CABLE	1
6	1586	CAP SCREW - FLAT HEAD SOCKET - 5/8 NC x 2-1/4	2

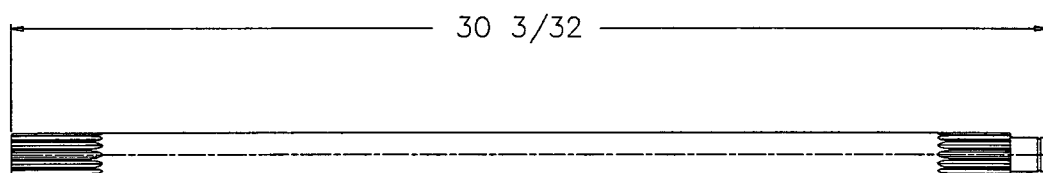


GEAR END INSTALLATION
1.30029

1.30029 PARTS LIST
GEAR END INSTALLATION

<u>LOC.</u>	<u>PART NO.</u>	<u>DESCRIPTION</u>	<u>QTY.</u>
1	11553	SUPPORT - END - GEAR	1
2	81121	GEAR - RING - 103 T.	1
3	10989	GEAR - SUN - 20 T.	1
4	11552	SHAFT - OUTPUT	1
5	81438	BEARING - ROLLER - 3-1/4 I.D. x 4-1/4 O.D.	1
6	9888	SEAL - 3-1/4 I.D. x 4 O.D.	1
7	3279	RING - RETAINING - 4-11/16 O.D.	1
8	11555	RING - THRUST - 2-7/8 I.D. x 4-1/4 O.D.	1
9	3041	RING - RETAINING - 2-5/16 I.D. x 2-11/16 O.D.	1
10	3057	RING - RETAINING - 2 I.D. x 2-5/16 O.D.	1
11	3056	RING - RETAINING - 2-1/8 I.D. x 2-7/16 O.D.	1
12	9998	GASKET - COVER - LARGE	2
13	10848*	LABEL - WARNING	1
14	3034	CARRIER - SECONDARY	1
15	3047	CARRIER - PRIMARY	1

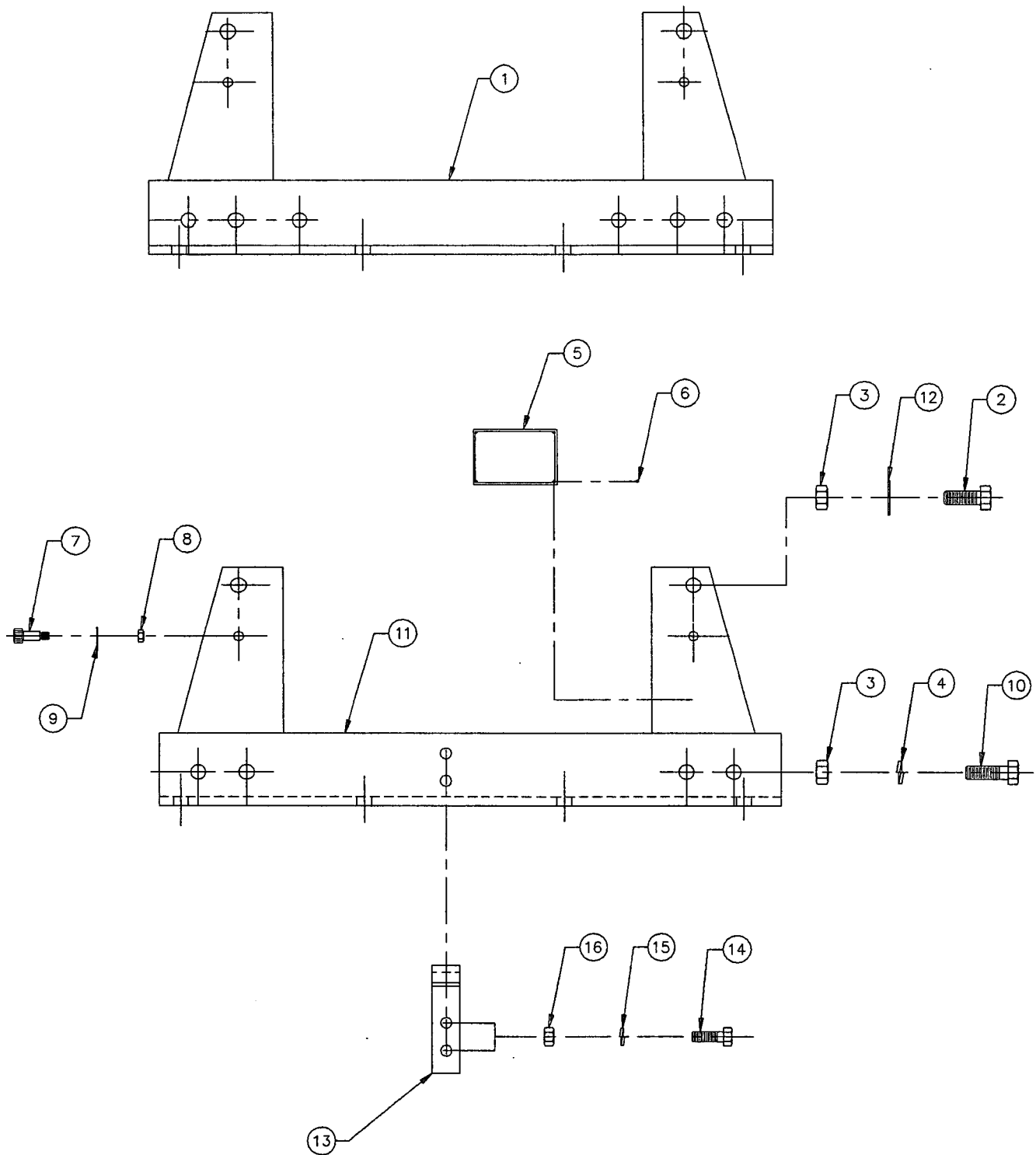
*NOT SHOWN ON EXPLODED DRAWING



INPUT SHAFT INSTALLATION
1.40107

1.40107 PARTS LIST
INPUT SHAFT INSTALLATION

<u>LOC.</u>	<u>PART NO.</u>	<u>DESCRIPTION</u>	<u>QTY.</u>
1	11743	INPUT - SHAFT	1

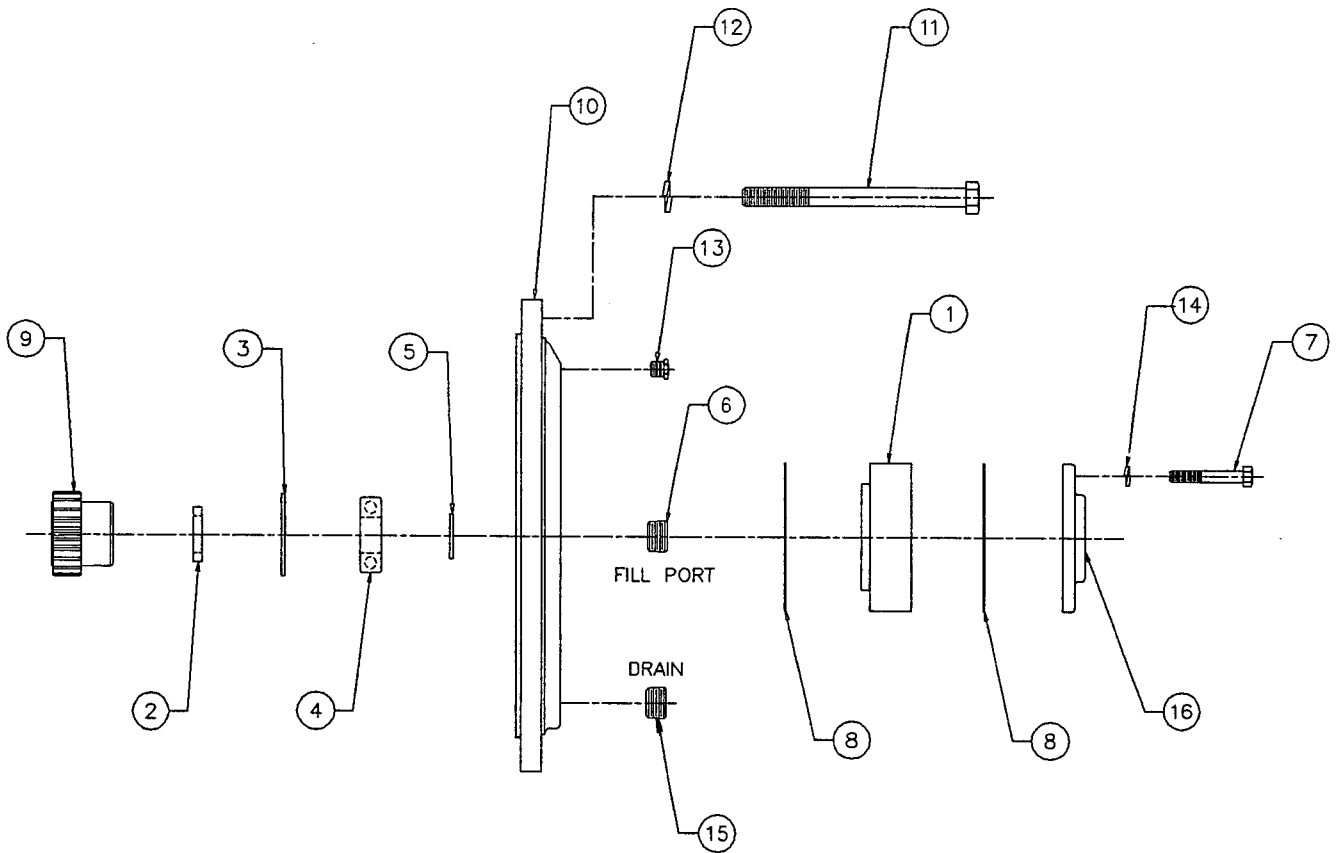


BASE MOUNT INSTALLATION
1.50127

1.50127 PARTS LIST
BASE MOUNT INSTALLATION

<u>LOC.</u>	<u>PART NO.</u>	<u>DESCRIPTION</u>	<u>QTY.</u>
1	12601	BASE - ANGLE	1
2	1604	CAP SCREW - HEX HEAD - 3/4-10 x 2	4
3	1690	NUT - HEX - 3/4-10 NC	12
4	1695	WASHER - LOCK - 3/4	8
5	12616*	PLATE - ID - WINCH	1
6	1165*	RIVET - TYPE - U	4
7	1475	SHOULDER BOLT - SOCKET HEAD - 1/2 x 1	4
8	1390	NUT - HEX - 3/8-16 NC	4
9	1394	WASHER - FLAT - 3/8	4
10	1605	CAP SCREW - HEX HEAD - 3/4-10 NC x 2 1/4	8
11	12602	BASE - ANGLE	1
12	1698	WASHER - FLAT - 3/4	4
13	13270	HOOK - STORAGE	1
14	1403	CAP SCREW - HEX HEAD - 1/2-13 NC x 1 1/2	2
15	1495	WASHER - LOCK - 1/2	2
16	1490	NUT - HEX - 1/2-13 NC	2

*NOT SHOWN ON EXPLODED DRAWING



SINGLE SPEED GEAR END COVER INSTALLATION
1.60014

1.60014 PARTS LIST
SINGLE SPEED GEAR END COVER INSTALLATION

<u>LOC.</u>	<u>PART NO.</u>	<u>DESCRIPTION</u>	<u>QTY.</u>
1	10985	HOUSING - BEARING - SHAFT - INPUT	1
2	10984	SPACER - INPUT	1
3	3104	RING - RETAINING - 2-1/4 O.D.	1
4	81426	BEARING - BALL - 1 I.D.	1
5	3103	RING - RETAINING - 7/8 I.D.	1
6	1988	PLUG - PIPE - 1/2	2
7	1250	CAP SCREW - HEX HEAD - 5/16 NC x 2	4
8	9997	GASKET - COVER - SMALL	2
9	10988	GEAR - SUN - 20 T.	1
10	10686	COVER - REAR - LARGE	1
11	1417	CAP SCREW - HEX HEAD - 1/2 NC x 6	12
12	1495	WASHER - LOCK - 1/2	12
13	3059	VENT - RELIEF	1
14	1168	WASHER - LOCK - 5/16	4
15	3048	PLUG - MAGNETIC - 1/2 NPT	1
16	3000	COVER - REAR - SMALL	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.