

**20UA9X3R2G-009
BUMPER PACKAGE**

TABLE OF CONTENTS

WARNING AND CAUTION NOTICES - READ BEFORE OPERATING PRODUCT

OPERATING PROCEDURES FOR SHIFTING GEARS

MOUNTING INSTRUCTIONS

DIMENSIONAL – 20UA9X3R2G-009 - BUMPER PACKAGE

WIRE ROPE INSTALLATION

HYDRAULIC SYSTEM

PLUMBING DIAGRAM

GENERAL INFORMATION AND DP SERVICING INSTRUCTIONS

INSTALLATION DRAWING - MOTOR END - EXPLODED VIEW

PARTS LIST - MOTOR END.....1.10117

INSTALLATION DRAWING - DRUM - EXPLODED VIEW

PARTS LIST - DRUM.....1.20084

INSTALLATION DRAWING - GEAR END - EXPLODED VIEW

PARTS LIST - GEAR END.....1.30123

INSTALLATION DRAWING - INPUT SHAFT - EXPLODED VIEW

PARTS LIST - INPUT SHAFT.....1.40239

INSTALLATION DRAWING - BASE MOUNT - EXPLODED VIEW

PARTS LIST - BASE MOUNT.....5.50220

INSTALLATION DRAWING - GEAR END COVER - EXPLODED VIEW

PARTS LIST - GEAR END COVER.....1.60115

BOLT TORQUE CHART

WINCH / GEAR BOX LUBRICATION

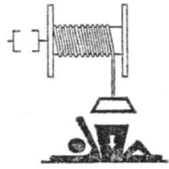

GENERAL INFORMATION

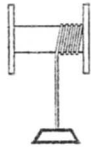

REPAIR & REPLACEMENT PARTS ORDERING INFORMATION



DP WINCH LIMITED WARRANTY



GENERAL WARNING SHEET

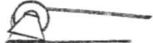

Review entire manual before installation or operation of winch.

	 DANGER
	Do not disengage gear box while winch is under load. Immediate loss of load control will result.

	 DANGER
	The last five wraps of wire rope must be left on the drum to assist the wire rope clamp in holding the load.

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

	 WARNING
	Wire rope can break without warning. Always keep a safe distance from the winch and wire rope while under a load. Consult the wire rope manufacturer for wire rope ratings and maintenance procedures.

	 WARNING
	Failure to adequately align, support, or attach winch to a suitable mounting base could result in a loss of efficiency or premature failure of winch, wire rope, or mounting base.

OPERATING PROCEDURE FOR SHIFTING GEARS

The following steps are necessary for proper gear shifting operations.

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:

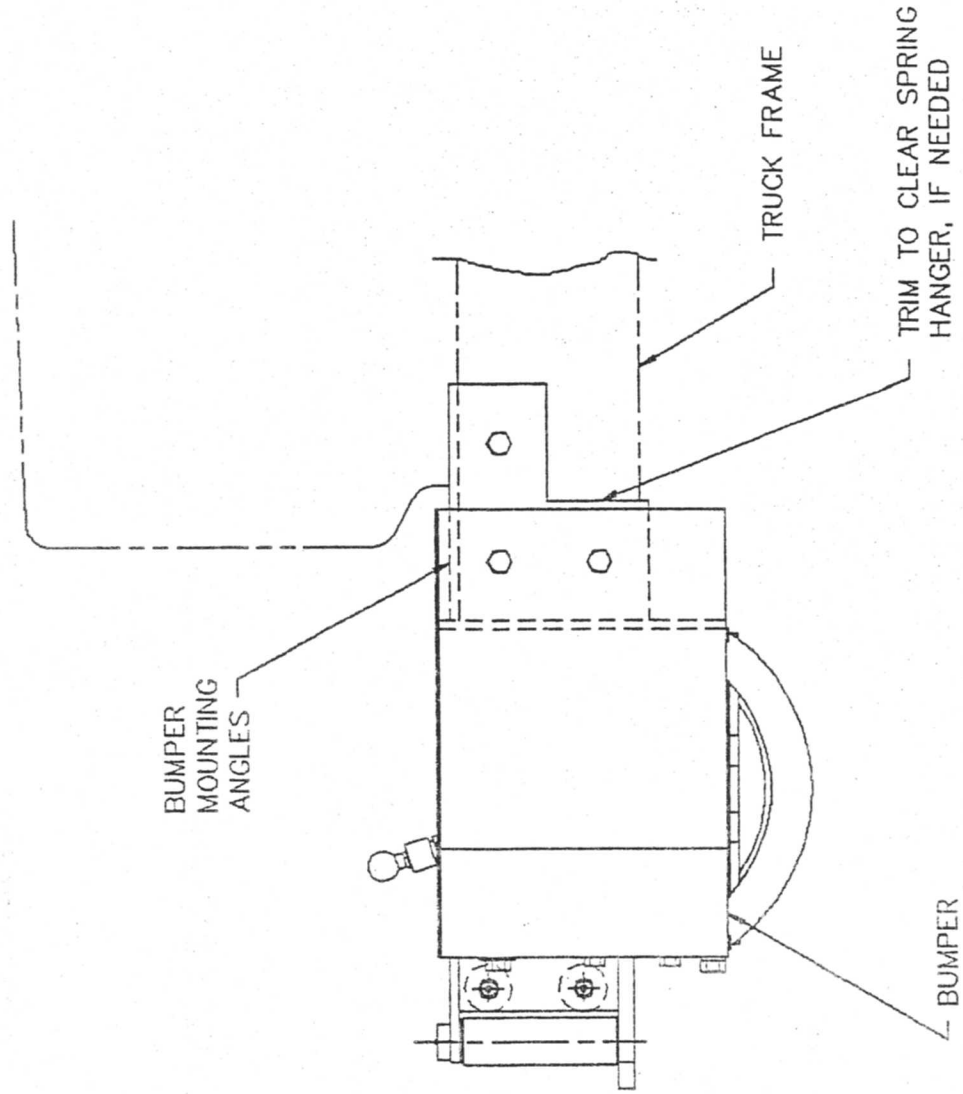
1. Winch must be "at rest" and have **no** load on cable.
2. Shift winch to in-gear mode and **slowly** rotate drum 90° in pay out direction, and then **stop** rotation. Next, **slowly** rotate drum in pay in direction to insure gears are fully engaged and **begin** paying in of load.

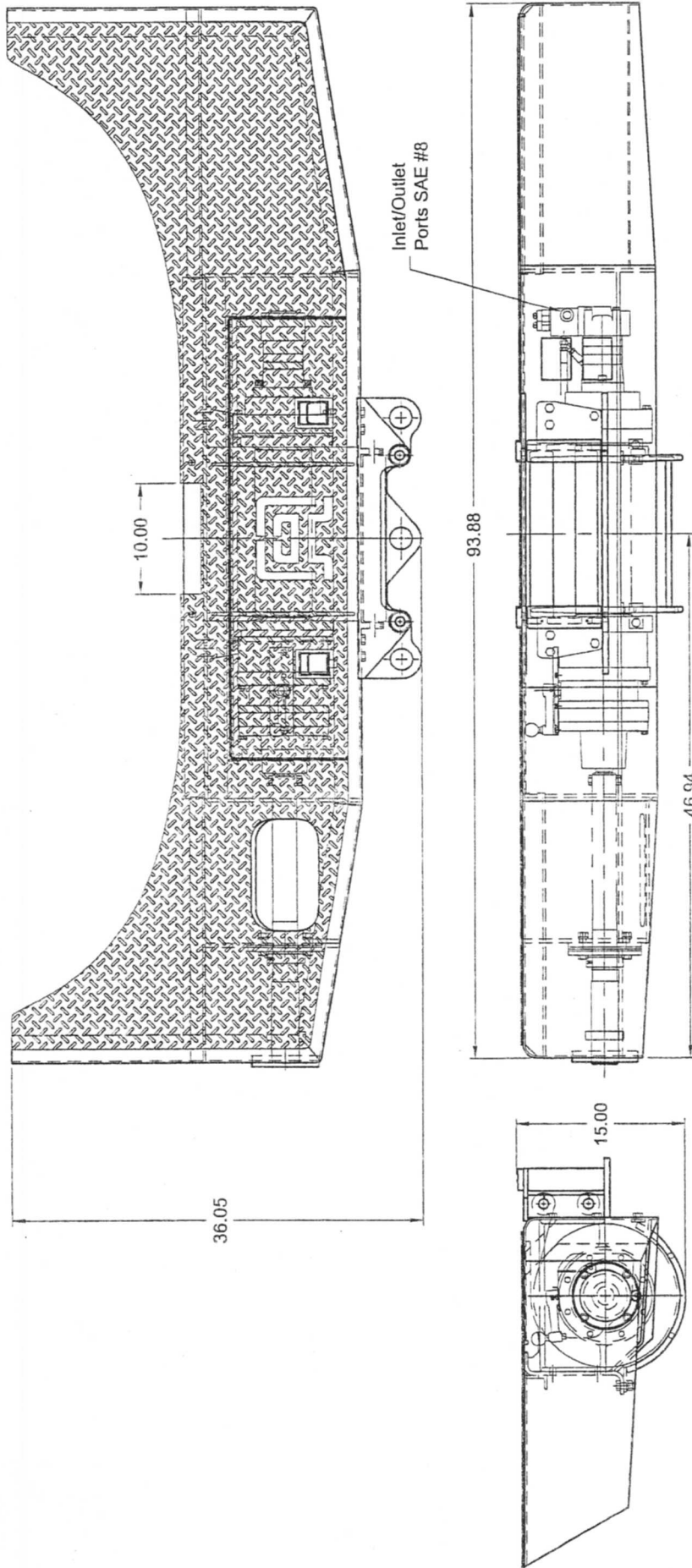
WARNING!

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.

MOUNTING INSTRUCTIONS

- 1) POSITION BUMPER RELATIVE TO FRONT OF TRUCK AS SHOWN.
- 2) LOCATE BUMPER MOUNTING ANGLES.
- 3) TRIM BUMPER MOUNTING ANGLES AS REQUIRED.
- 4) LOCATE AND DRILL HOLES IN BUMPER MOUNTING ANGLES FOR ATTACHMENT TO TRUCK FRAME.
- 5) WELD BUMPER MOUNTING ANGLES SECURELY TO BACK PLATE OF BUMPER.





EXTENSION SHAFT PERFORMANCE

Model	Output Shaft		7" Capstan		20" C.R.	
	Torque in-lb	Speed rpm	Line Pull lb	Line Pull lb	Line Pull lb	Line Pull lb
20U	12000	116	3000	1200	1200	1200

Line Pull/Speed based on Ø1" nonmetallic rope.

20U PERFORMANCE

Layer	Drum Capacity ft	Line Pull lbs	Line Speed fpm
1	33	20000	47
2	73	16900	56
3	119	14600	64
4	171	12800	73
5	230	11500	82
6	294*	10400	90

Line pull is based on 30 gpm

@ 2500 psi with a Ø9/16 wire rope.

The rated line pulls are for the winch only.

Consult the wire rope manufacturer for wire rope settings.

Cable capacities are in accordance with SAE J706.

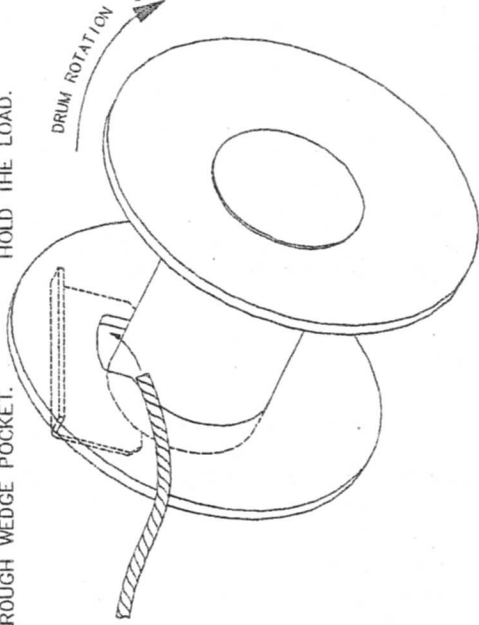
Actual cable capacities are usually up to 10% greater than those shown.

**20UA9X3R2G-009
BUMPER-WINCH**

12-1-05

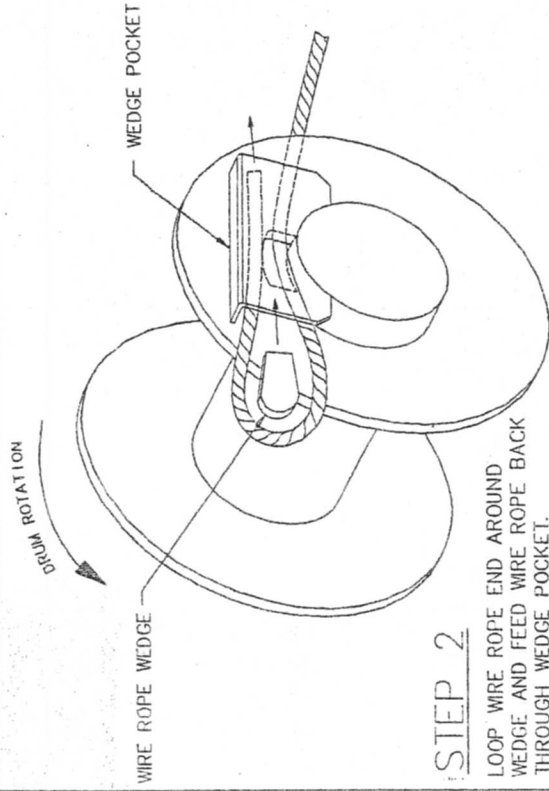
STEP 1

INSERT WIRE ROPE END INTO POCKET OPENING AND THROUGH WEDGE POCKET.



CAUTION:

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

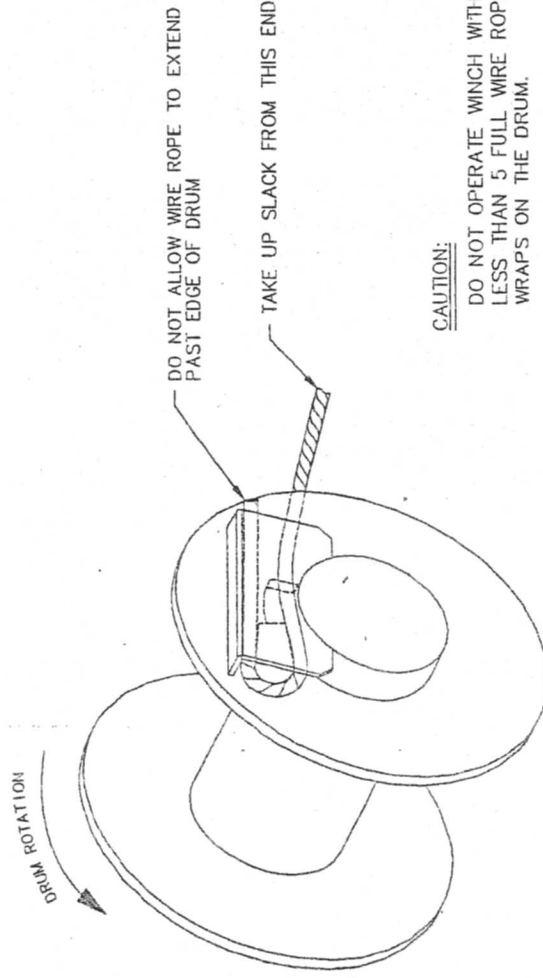


STEP 2

LOOP WIRE ROPE END AROUND WEDGE AND FEED WIRE ROPE BACK THROUGH WEDGE POCKET.

STEP 3

ONCE SLACK IS TAKEN UP, THE WIRE ROPE IS PROPERLY INSTALLED.



CAUTION:

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

WIRE ROPE INSTALLATION

COMMERCIAL INTERTECH MOTOR

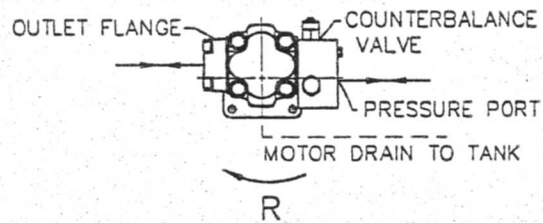
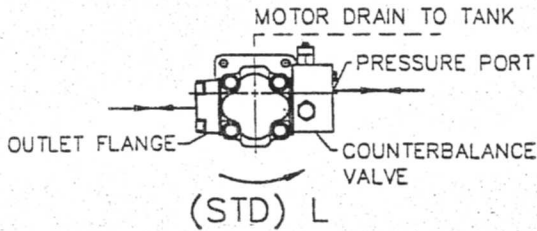
TO REVERSE WIRE ROPE PULL IN DIRECTION

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.



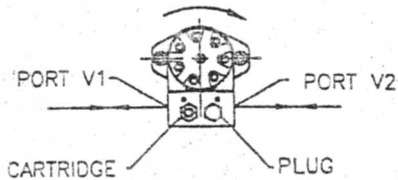
CHAR-LYNN MOTORS

(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.

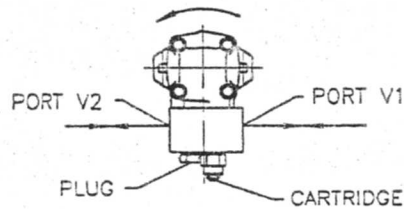


(STD) L

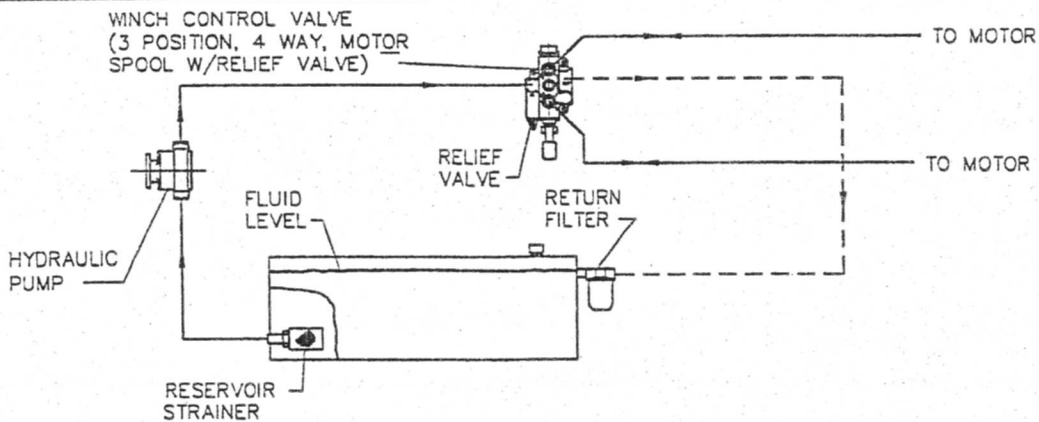
L PRESSURE TO V1 ROTATES WINCH DRUM COUNTER
CLOCKWISE WHEN VIEWED FROM MOTOR END.

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.



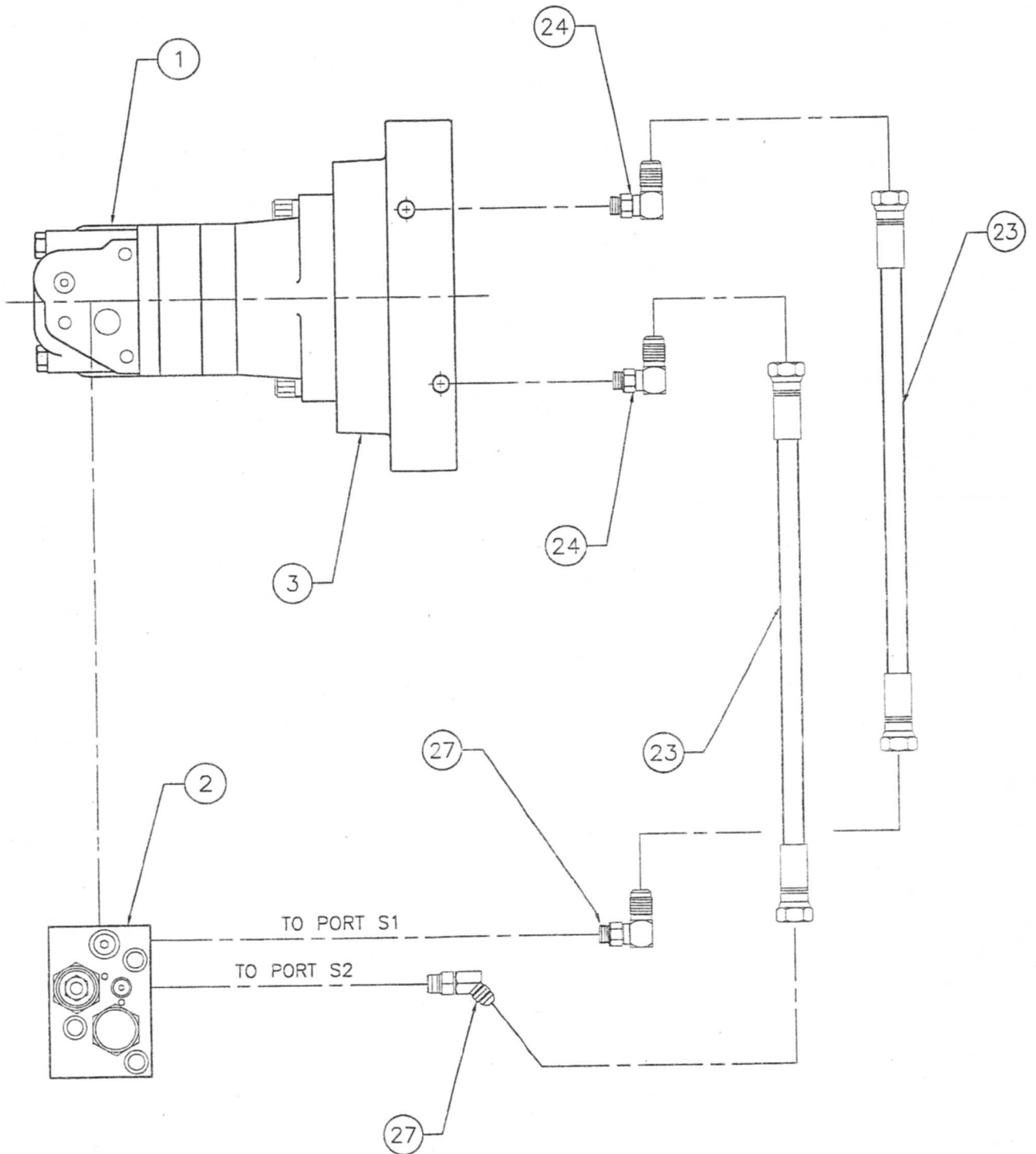
TYPICAL WINCH HYDRAULIC SYSTEM



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 1.10117 MOTOR END PARTS LIST

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 1.10117)

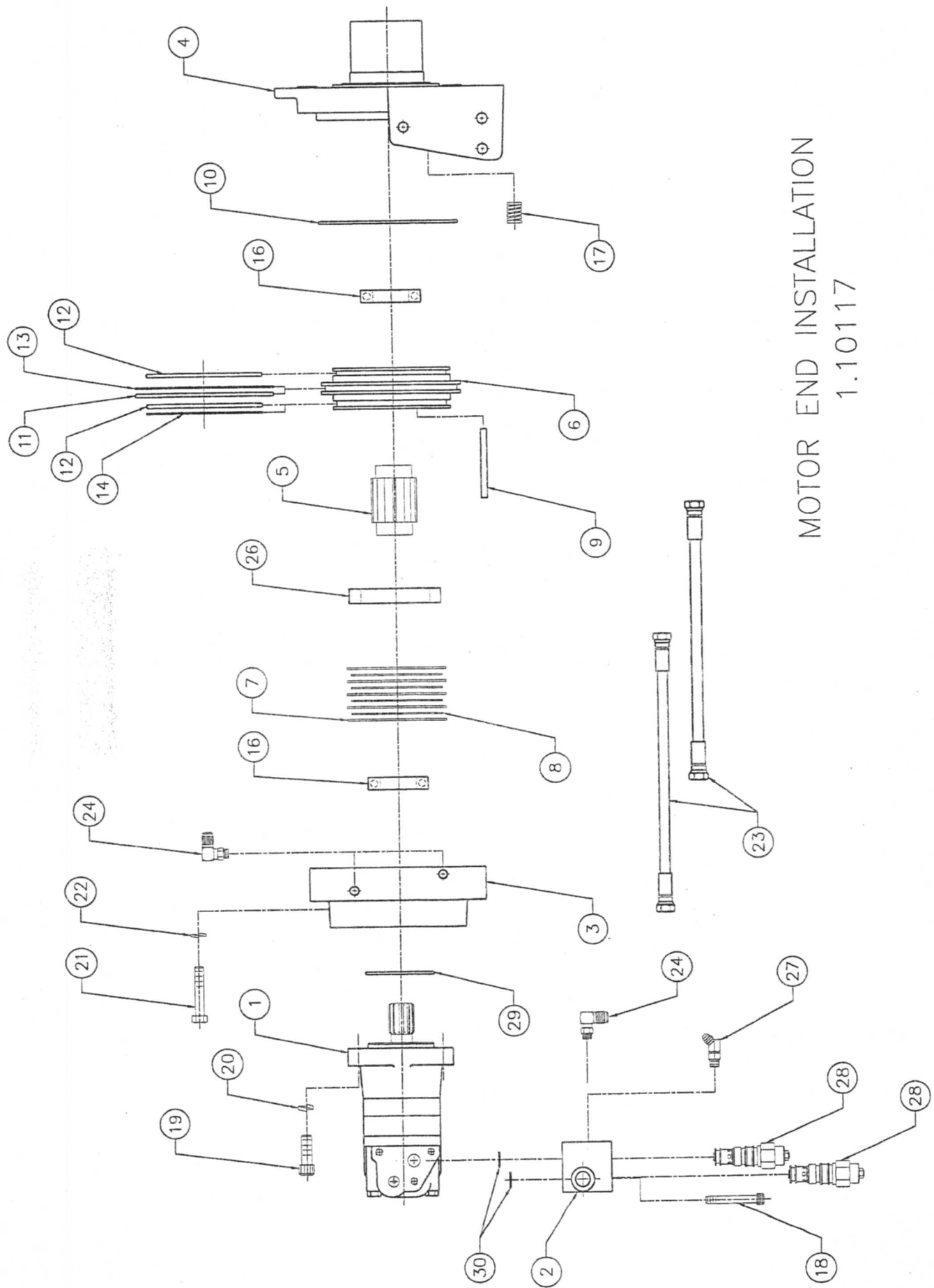
1. Disconnect brake hoses (item 23) at connections (item 24) on brake housing (item 3). wrap hose ends to prevent dirt contamination.
2. Disconnect motor (item 1) from brake housing (item 3) by removing two capscrews (item 19), lock washers (item 20). Allow oil to drain.
3. Remove outer brake housing (item 3) by removing six capscrews (item 21) and lock washers (item 22).
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 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 17) and bearing (item 16) 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 16) into brake end support (item 4), then insert twelve springs (item 17) into holes in end support. Next install shaft (item 5) into bearing (item 16).
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 17).
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 16) 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 22) and capscrews (item 21) 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 29) can now be reinstalled on the housing (item 3). Then insert into brake housing (item 3) and secure with capscrews (item 19), lock washers (item 20). Reconnect brake hoses (items 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 through brake end.
12. Before running winch, loosen adapter connections (items 24) at brake slightly to bleed air from brake release hoses (items 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 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 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
1.10117

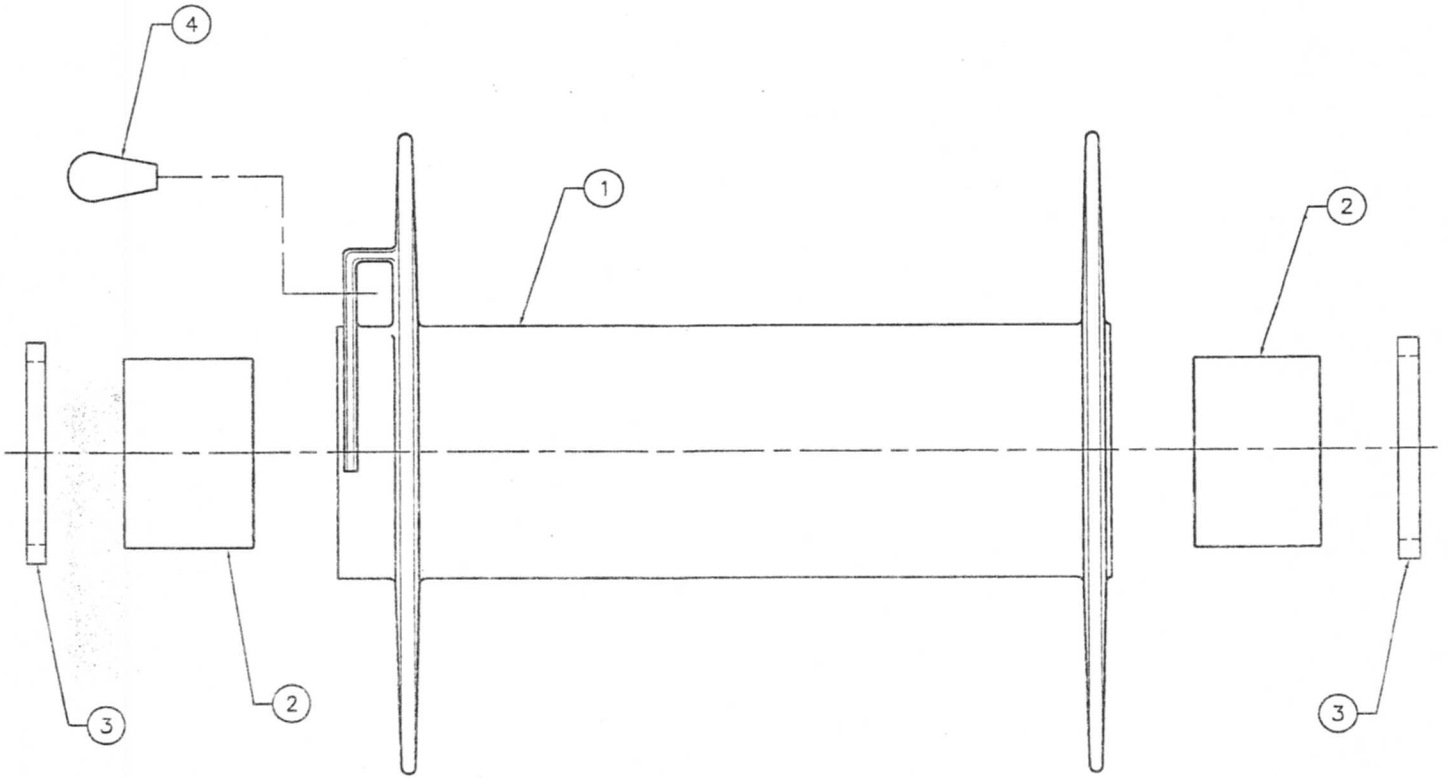
1.10117 PARTS LIST
MOTOR END INSTALLATION

<u>LOC.</u>	<u>PART NO.</u>	<u>DESCRIPTION</u>	<u>QTY.</u>
1	73106	MOTOR - HYDRAULIC	1
2	11604	VALVE - COUNTERBALANCE	1
1.	9817	O-RING - 13/16 I.D. x 3/32 SECTION	2
3	11535	HOUSING - BRAKE - OUTER	1
4	11995	SUPPORT - END - MOTOR	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
17	2319**	SPRING - COMPRESSION - 3/4 x 1	12
18	1345	CAP SCREW - SOCKET HEAD - 3/8 - 16UNC x 2 1/2	3
19	1143	CAP SCREW - SOCKET HEAD - 1/2 - 13NC x 1 1/2	2
20	1144	WASHER - LOCK - HI COLLAR - 1/2	2
21	1376	CAP SCREW - HEX HEAD - 7/16UNC x 2 1/2 - GRADE 8	6
22	1388	WASHER - LOCK - 7/16	6
23	75038	HOSE - 1/4 - R1 x 12"	2
24	76017	ADAPTER - 90°	2
25	10708*	TAG - WARNING	1
27	76029	ADAPTER - 45°	1
28	3177	CARTRIDGE - VALVE	2
29	9880	O-RING - 3 I.D. x 1/8 SECTION	1
30	76027	ADAPTER - STRAIGHT - #4 - O-RING x #4MJIC	1

* NOT SHOWN ON EXPLODED DRAWING.

**THESE ITEMS SOLD IN 9400 KIT ONLY.

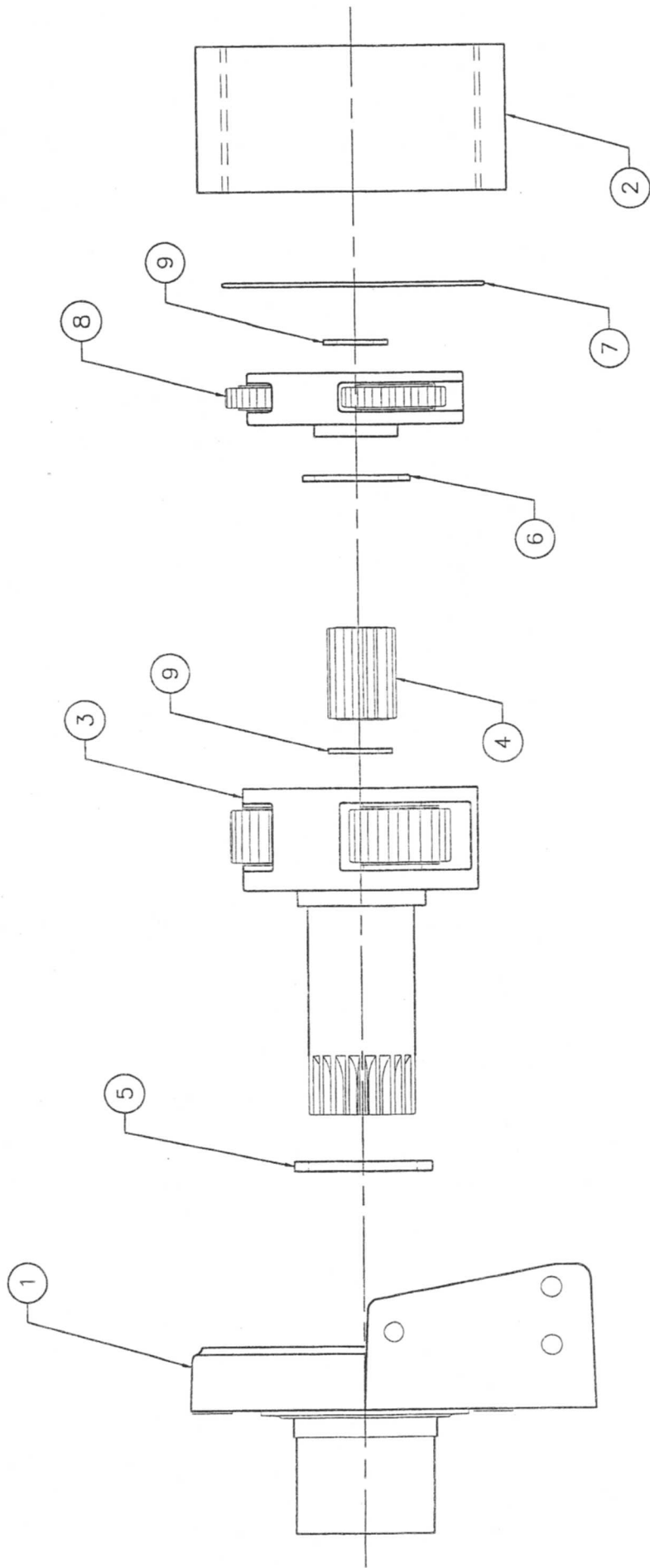
THESE ITEMS SOLD IN 9406 KIT ONLY.



DRUM INSTALLATION
1.20084

1.20084 PARTS LIST
CABLE DRUM INSTALLATION

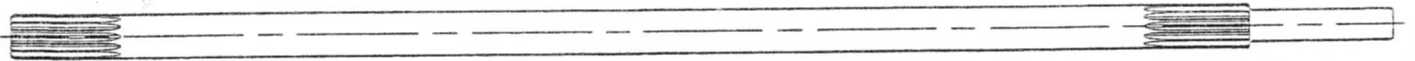
<u>LOC.</u>	<u>PART NO.</u>	<u>DESCRIPTION</u>	<u>QTY.</u>
1	12350	DRUM	1
2	11947	BEARING - BRONZE - 3 1/2 I.D. x 3 3/4 O.D.	2
3	9929	SEAL - SHAFT - 3 5/8 I.D. x .357	2
4	10529	WEDGE - CABLE - 7/16	1



GEAR END INSTALLATION
1.30123

1.30123 PARTS LIST
GEAR END INSTALLATION

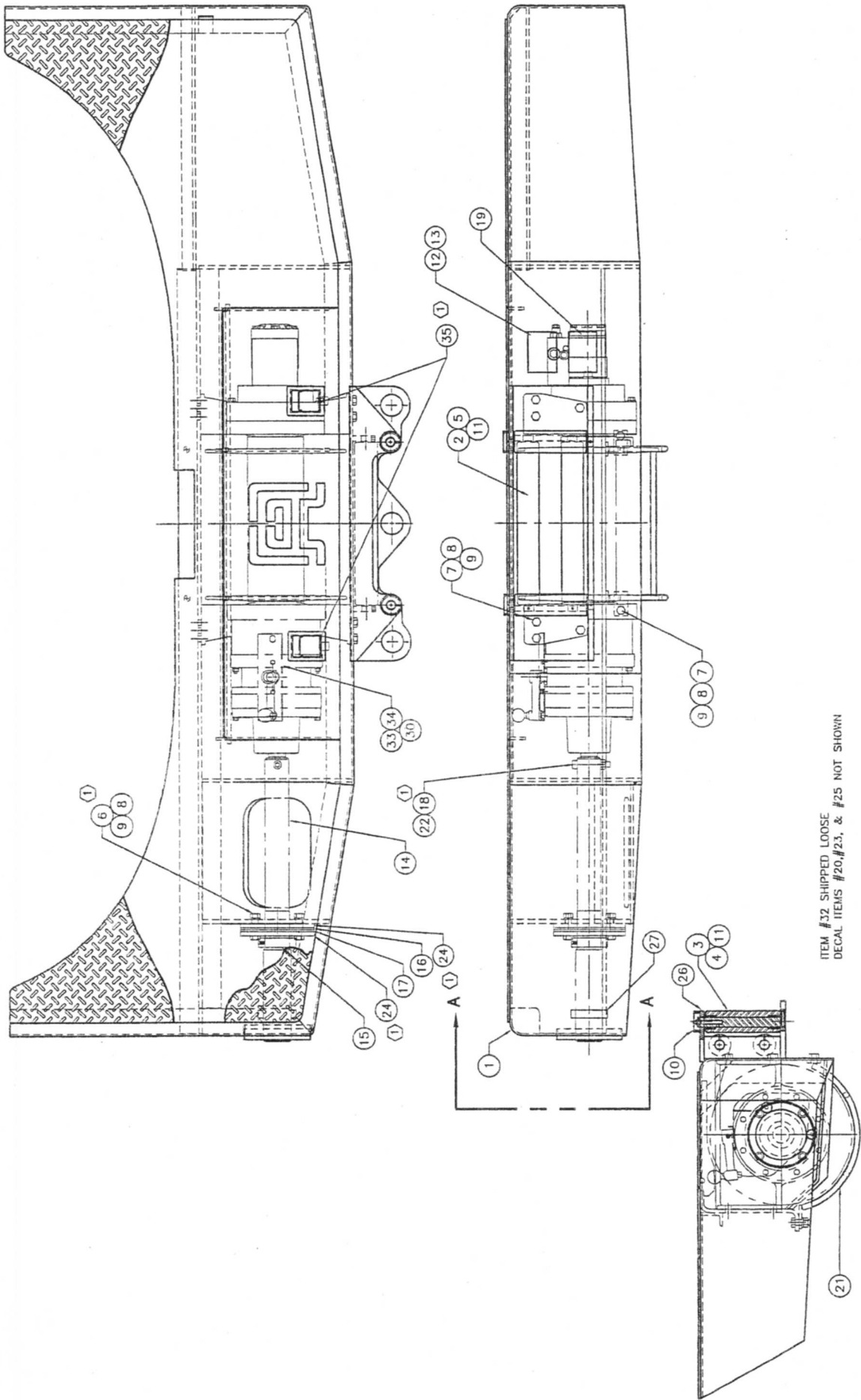
<u>LOC.</u>	<u>PART NO.</u>	<u>DESCRIPTION</u>	<u>QTY.</u>
1	13374	SUPPORT - GEAR END	1
2	81107	GEAR - RING	1
3	13379	ASSEMBLY - CARRIER - SECONDARY	1
4	13380	GEAR - SUN	1
5	12572	WASHER - THRUST - NYLON	1
6	12083	WASHER - THRUST - NYLON	1
7	9897	O-RING - 6 1/2 I.D. x 3/32 SECTION	1
8	3378	CARRIER - PRIMARY	1
9	13385	WASHER - THRUST - 1.625 O.D. x .937 I.D. x .125	2



INPUT SHAFT INSTALLATION
1.40239

1.40239 PARTS LIST
INPUT SHAFT INSTALLATION

<u>LOC.</u>	<u>PART NO.</u>	<u>DESCRIPTION</u>	<u>QTY.</u>
1	13425	INPUT - SHAFT	1



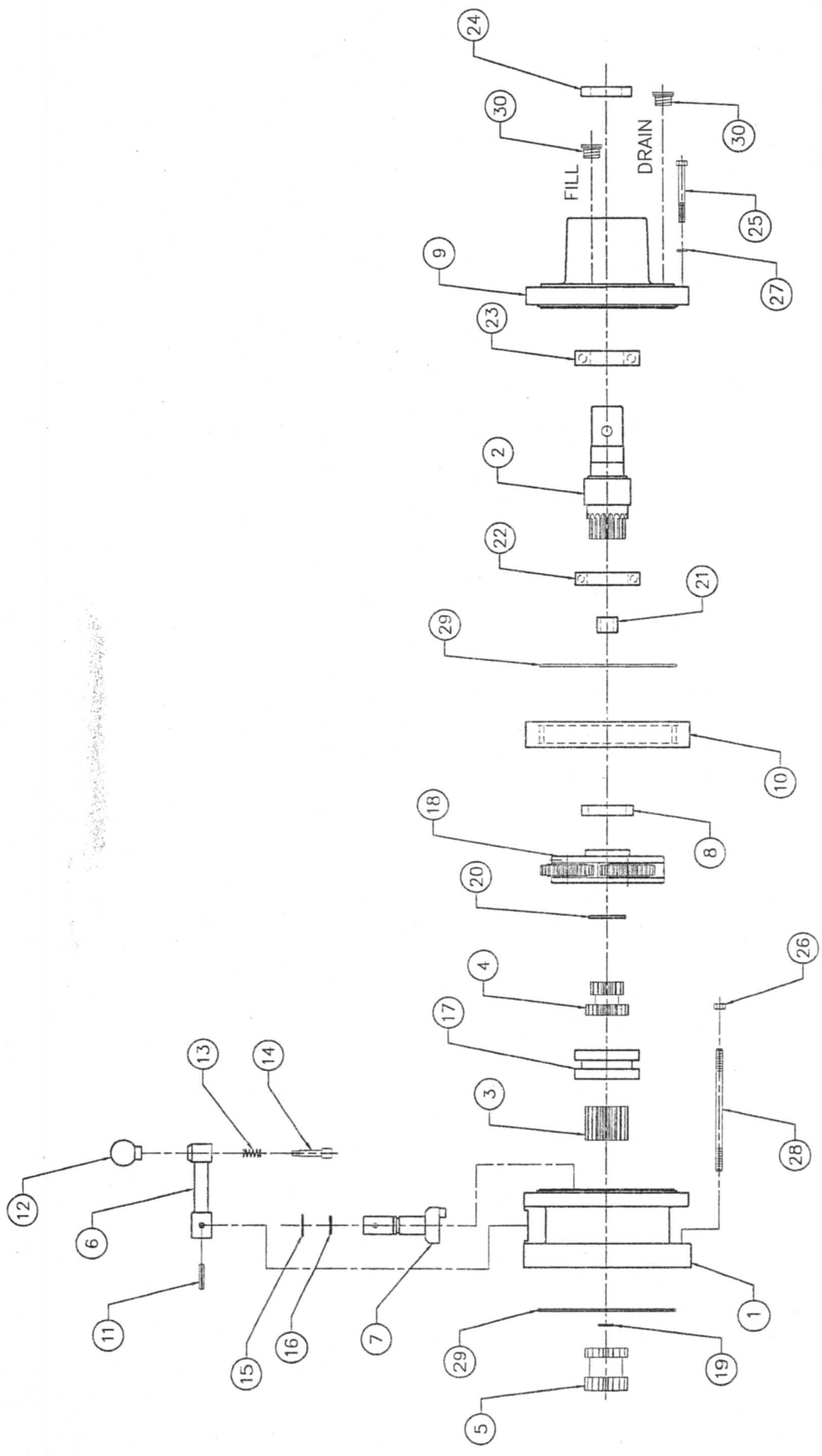
ITEM #32 SHIPPED LOOSE
 DECAL ITEMS #20, #23, & #25 NOT SHOWN

BUMPER INSTALLATION - 5.50220

5.50220 PARTS LIST
BUMPER INSTALLATION

<u>LOC.</u>	<u>PART NO.</u>	<u>DESCRIPTION</u>	<u>QTY.</u>
1	53534	BUMPER - WELDMENT	1
2	12047	ROLLER - HORIZONTAL - BUMPER	2
3	12048	ROLLER - VERTICAL - BUMPER	2
4	12043	SHAFT - ROLLER - VERTICAL - BUMPER	2
5	12042	SHAFT - ROLLER - HORIZONTAL - BUMPER	2
6	1405	CAPSCREW-HH-1/2-13NC x 2-GRADE 8	4
7	1403	CAP SCREW - HEX HEAD - 1/2 - 13NC x 1 1/2 - GRADE 5	16
8	1490	NUT - HEX - 1/2 - 13NC - GRADE 2	20
9	1495	WASHER - LOCK - 1/2	20
10	1000	FITTING - GREASE - STR - 1/8 NPT	4
11	81611	BUSHING - BRONZE - .882 I.D. x 1.254 O.D. x 1 LG.	8
12	10466*	PLATE - ID - WINCH	1
13	1165*	RIVET - TYPE - U	4
14	14436	SHAFT - EXTENSION	1
15	81431	BEARING - FLANGE	1
16	81435	STAMPING - BEARING	1
17	81436	STAMPING - BEARING - WITH ZERK	1
18	1457	CAPSCREW-SH-1/2-13NC x 3	1
19	10848*	LABEL - WARNING	1
20	11483	DECAL - SHIFTER	1
21	53087	GUARD - DRUM	1
22	1492	NUT - LOCK - HEX - 1/2 - 13NC	1
23	11309	DECAL - CAUTION	1
24	11974	PLATE - OUTBOARD - BEARING	2
25	12041	TAG - INSTRUCTION - HANDLE INSTALLATION	1
26	3456	PIN - SPRING - 3/16 x 13/16	4
27	11979	PIN - BAYONET - EXTENSION	1
30	1295	WASHER - LOCK - 1/4	1
32	12184	BRACKET - MOUNTING	2
33	1200	CAP SCREW - HEX HEAD - 1/4-20NC x 1/2 GRADE 8	2
34	11955	PLATE - LOCATOR - SHIFTER - 18U	1
35	90203	LOCK-DOOR-HANDLE-PADDLE-RECESD-64-21-13	3

* NOT SHOWN ON EXPLODED DRAWING.



MANUAL KICKOUT
 GEAR END COVER INSTALLATION
 1.60115

1.60115 PARTS LIST
GEAR END - COVER - INSTALLATION

<u>LOC.</u>	<u>PART NO.</u>	<u>DESCRIPTION</u>	<u>QTY.</u>
1	11956	HOUSING - CLUTCH	1
2	11961	SHAFT - PTO - 18U	1
3	11959	GEAR - INPUT - DRIVE - CLUTCH	1
4	12110	GEAR - SUN	1
5	13419	GEAR - SUN - PRIMARY	1
6	11954	ARM - SHIFTER	1
7	11968	SHIFTER - DRIVE - CLUTCH	1
8	11962	SPACER - SHAFT	1
9	13433	COVER - SUPPORT - SHAFT	1
10	11957	GEAR - RING	1
11	3325	PIN - SPRING - 1/4 x 1 1/4	1
12	3750	ROUND - KNOB - FLAT - 1 1/4"	1
13	2322	SPRING - COMPRESSION	1
14	11969	PIN - LOCATOR	1
15	3257	RING - RETAINER - 7/8 x .042 THICK	1
16	9821	O-RING - 11/16 I.D. x 3/32 SECTION	1
17	11967	GEAR - DRIVE - CLUTCH	1
18	3412	CARRIER - PRIMARY - NO SUN GEAR	1
19	3321	RING - RETAINER - 7/8 x .08 - THICK - ROUND	1
20	11973	WASHER - THRUST - SHAFT	1
21	81618	BUSHING - BRONZE - 5/8" I.D. x 1" O.D. x 3/4	1
22	81455	BEARING - BALL - 9110K	1
23	81456	BEARING - BALL - 208K	1
24	9855	SEAL - OIL - 1 9/16 I.D. x 2 7/16 O.D.	1
25	1253	CAPSCREW-HH-5/16-18NC x 3 GRADE 5	8
26	3073	NUT - HEX - 5/16 - 18NC	8
27	1168	WASHER - LOCK - 5/16	16
28	1288	STUD - 5/16 - NC x 6	8
29	9897	O-RING - 6 1/2 I.D. x 3/32 SECTION	3
30	76146	PLUG - O-RING - SAE - #8 - SOCKET HEAD - 3/4 - 16	2

Calculated Generic Bolt Installation Torques

Nominal Diameter/ Thread Pitch	Grade (5) T		Grade (8) T	
	lb*Ft	(lb*in)	lb*Ft	(lb*in)
1/4-20	6.3	(76)	8.9	(107)
5/16-18	13	(156)	18.5	(221)
3/8-16	23		33	
7/16-14	37		53	
1/2-13	57		80	
5/8-11	113		159	
3/4-10	200		282	
7/8-9	322		454	
1-8	483		682	
1 1/8-7	596		966	

This table is used for applications without external loads. Reference EN11000.

This standard defines generic torque values for installing threaded fasteners used in the manufacture of DP products. This document is not intended to over-ride or otherwise change specific torque values defined individually on other DP documents.

GENERAL INFORMATION

MISCELLANEOUS LUBRICATION POINTS

dp fairlead rollers require lubrication by a medium heavy oil on a weekly basis. Fairlead rollers are supplied with oil impregnated bronze bearing and require a few drops of medium heavy oil at each bearing location.

Manual kick out levers should be cleaned and lubricated with a coat of light oil on the shaft and detent mechanism (avoid excessive oil build up, which will attract dust).

PNEUMATIC SYSTEM

This product uses air pressure to power the drum disengagement. This component requires clean dry air for trouble free service. A typical pneumatic system should have an FDL (filter, dryer, lubricator) and a pressure regulator. More than (1) pressure regulator may be required, depending on the pressure requirements of the different components. It is important to keep moisture from entering the winch. Moisture could cause corrosion. If temperatures fall below 32°F, moisture could freeze and render the component inoperable. *See the dimensional drawing for the pressure requirements.*

EXTENDED STORAGE PROCEDURES

If you plan to store your *dp* product for more than 90 days some extra precautions are required to insure your product will be ready to perform when put back into service.

- Wash and dry the exterior of the winch.
- Service the wire rope as recommended by the wire rope manufacturer.
- The winch should be filled with the appropriate corrosion-inhibiting lubricant and operated for 5 minutes in both directions to distribute the lubricant. The winch should then be filled to the highest possible level, I.E. vent high (this will insure the maximum coverage of internal components). *Note: drain oil to normal operation level before returning to service.*
- The internal components of the pneumatic system should be coated with a corrosion-inhibiting lubricant. If a pneumatic lubrication system is not installed, this can be accomplished by spraying an aerosol lubricant into the ports of the components and shifting several times to distribute the lubricant evenly.
- All ports should be plugged (i.e. motor inlet/outlet ports, drum disengagement)
- Lubricate all external components
 - Fairlead rollers
 - Pivot points of cable hold down
 - Manual drum disengagement handle

HYDRAULIC SYSTEM

FLUID SPECIFICATIONS

When choosing a fluid, it is important to consider the start-up and operating temperatures of the hydraulic system. Generally the fluid is thick when started and with movement it warms and thins out. Premium grade petroleum based hydraulic fluids will provide the best performance. They contain anti-wear agents, rust/oxidation inhibitors, and anti-foaming agents. *dp* recommends an oil viscosity of 20-43 cSt and a temperature range of 100-140°F. The oil viscosity should never fall below 13 cSt or the temperature rise above 180°F. Oil viscosity greater than 43 cSt is not normally detrimental to the motors used on *dp* products, except 2 speed and variable displacement motors. *Consult your local hydraulic fluid distributor for assistance in selecting a fluid that would best suit your climate and application.*

FLUID / SYSTEM MAINTENANCE

Maintaining correct fluid viscosity and cleanliness level is essential for all hydraulic systems. *dp* products are used in a wide variety of applications and it is impossible to publish a fluid maintenance schedule that would cover every situation. *dp* recommends that the minimum hydraulic fluid cleanliness be maintained at an ISO Cleanliness Code 18/13 rating. *Your hydraulic system designer can recommend an adequate filtration system and maintenance schedule to achieve this rating.*

WINCH LUBRICATION

LUBRICANT SPECIFICATIONS

Gear lubrication is an important component in insuring the long life of your winch. The type of lubricant will have a great influence. Generally a gear lubricant should have a viscosity of 100 to 250 cSt at the expected ambient operating temperature. For operation in lower temperature ranges, it is imperative that the pour point of the lubricant be at least 10° below the lowest ambient temperature. The oil you select should meet GL5 performance standards for high pressure, possess rust/oxidation inhibitors, and low foaming properties. Many lubricants available under a variety of trade names meet these requirements. Unless otherwise requested, the gear oil your winch was shipped with is *GL5 80W90*. Consult your local lubricant distributor on the selection that best fits your climate and application.

GENERAL LUBRICANTS

For Reference Only

Temperature (°F)	Type of oil	Viscosity (cSt) At 40°/100°C
10° to 120°	85W140	360/25
-25° to 40°	80W90	145/15
-50° to 30°	Synthetic ISO 32	31/6

All types of lubricant listed here conform to MIL SPEC-L-2105D.

CHANGE INTERVAL

The initial lubricant should be changed after the first 10 hours of operation. During this "breaking in" period it is normal for the lubricant to contain minuscule black & bronze particles. Subsequent changes should be scheduled every 250 hours of operation or annually.

LUBRICATION LEVEL

The oil level should be checked with the winch centerline horizontal. The winch should be filled to the bottom of the fill/level plug. If your winch has more than (1) fill/level plug, select the plug that is slightly above the centerline. *if unit is mounted in a non-standard orientation, consult dp Service Department for lubrication level information.*

GREASE

If the winch comes with a fairlead that has grease fittings on the rollers, the grease used conforms to MIL-G-10924 and should be used in the temp range of -50° F to 120° F.

1. Oil Check and Fill
 - a. Remove oil fill plug.
 - b. Oil level should be visible. If overfull and thin it may indicate hydraulic oil leakage through the brake. correct by draining and refilling before operating winch. If this condition continues winch should be checked for seal failure. See "Trouble Shooting Information."
 - c. Add specified gear lubrication oil as required to bring to proper level.
 - d. If winch lubrication oil consistently checks low, inspect unit for leaking seals or gaskets.
2. Oil Drain and Replacement
 - a. Remove oil drain & fill plug.
 - b. Drain oil.
 - c. Clean drain plug and replace. Fill with oil to proper level.
 - d. Oil should be changed after the first 6 weeks of operation. Change should then be on an annual basis.
3. **CAUTION:** Winch lubrication oil is not hydraulic oil.

Note: dp Manufacturing, Inc. takes no responsibility for the subsequent performance of hydraulic or mechanical components if oil, grease or hydraulic fluid possessing properties other than what dp Manufacturing, Inc. recommends is used.

REPAIR & REPLACEMENT PARTS ORDERING INFORMATION

To insure satisfactory product performance after repairs, always use genuine dp Manufacturing replacement parts.

MODEL IDENTIFICATION

Always furnish the **dp** Model Number and Serial Number when ordering parts. This information is found on the product nameplate and/or stamped on top of the motor end support.

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.

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

FACTORY RETURNS / SERVICE

Advanced authorization is required prior to the return of any items to **dp** Manufacturing, Inc. Contact the **dp** Service Department for a Return Goods Authorization (RGA) number. Shipment to and from **dp** Manufacturing, Inc. shall be at the customers expense.

Remit all correspondence concerning parts, service, and returned goods authorization to:

dp Manufacturing, Inc.
PO Box 471710
5647 South 122nd East Ave
Tulsa, Oklahoma 74146

Phone (918) 250-2450
Fax (918) 250-0690
E-Mail service@dpwinch.com

Notes:

DP Winch Limited Warranty

Effective 1/1/2005

SUPERSEDES ALL PRIOR WARRANTIES

Seller warrants that each article sold under this order shall at the time of shipment (i) conform to applicable specifications, and (ii) be free from defects in material and workmanship during normal and ordinary use and service (the "Warranty").

Buyer's exclusive remedy and Seller's sole obligation under this Warranty shall be, at Seller's option, to repair or replace any article or part thereof which has proven to be defective, or to refund the purchase price of such article or part thereof.

This Warranty shall expire one (1) year from the date the article is first shipped by Seller. Notice of claimed breach of this Warranty must be given by Buyer to Seller within the applicable period. Such notice shall include an explanation of the claimed warranty defect and proof of date of purchase of the article or part thereof for which warranty coverage is sought. No allowances shall be made by Seller for any transportation, labor charges, parts, "in and out" costs, adjustments or repairs, or any other work, unless such items are authorized in writing and in advance by Seller. Nor shall Seller have any obligation to repair or replace items which by their nature are expendable.

If an article is claimed to be defective in material or workmanship, or not to conform to the applicable specifications, Seller will either examine the article at Buyer's site or issue shipping instructions for return to Seller. This Warranty shall not extend to any articles or parts thereof which have been installed, used, or serviced otherwise than in conformity with Seller's applicable specifications, manuals, bulletins, or instructions, or which shall have been subjected to improper installation, operation, or usage, misapplication, neglect, overloading, or employment for other than normal and ordinary use and service.

This Warranty shall not apply to any articles or parts thereof furnished by Seller to Buyer's specifications and/or furnished by Buyer or acquired from others at Buyer's request.

SELLER MAKES NO EXPRESS WARRANTIES AND NO IMPLIED WARRANTIES OF ANY KIND, OTHER THAN THE WARRANTY EXPRESSLY SET FORTH ABOVE. SUCH WARRANTY IS EXCLUSIVE AND IS MADE AND ACCEPTED IN LIEU OF ANY AND ALL OTHER WARRANTIES, EXPRESS OR IMPLIED, INCLUDING WITHOUT LIMITATION THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE.

The remedies for this Warranty shall be only those expressly set forth above, to the exclusion of any and all other remedies of whatsoever kind. The limited remedies set forth above shall be deemed exclusive, even though they may fail their essential purpose. No agreement varying or extending the foregoing Warranty, remedies, exclusions, or limitations shall be effective unless in a writing signed by an executive officer of Seller and Buyer. This Warranty is non-transferable.

Under no circumstances shall Seller be liable (i) for any damage or loss to any property other than the warranted article or part thereof, or (ii) for any special, indirect, incidental, or consequential damage or loss, even though such expenses, damages, or losses may be foreseeable.

The foregoing limitations on Seller's liability in the event of breach of warranty shall also be the absolute limit of Seller's liability in the event of Seller's negligence in manufacture, installation, or otherwise, with regard to the articles covered by this Warranty, and at the expiration of the Warranty period as above stated, all such liabilities shall terminate.