

WINCH

DP Manufacturing, Inc
PO Box 471710
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USA

Parts & Operators Manual

HYDRAULIC WINCH 50BXT4X3B-010

Date:

Serial Number:

(918) 250-2450 • 1-800-DPWinch • Fax: (918) 250-2450 • www.dpwinch.com

Serving the crane, towing & recovery, utility, railroad, oilfield, mining, construction, marine, fishing, forestry, and other industries with quality planetary gear products since 1970.

5-1-06

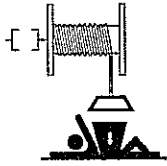



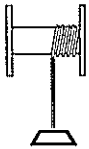

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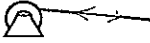

GENERAL WARNING SHEET

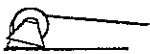

Review entire manual before installation or operation of winch.

	 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!

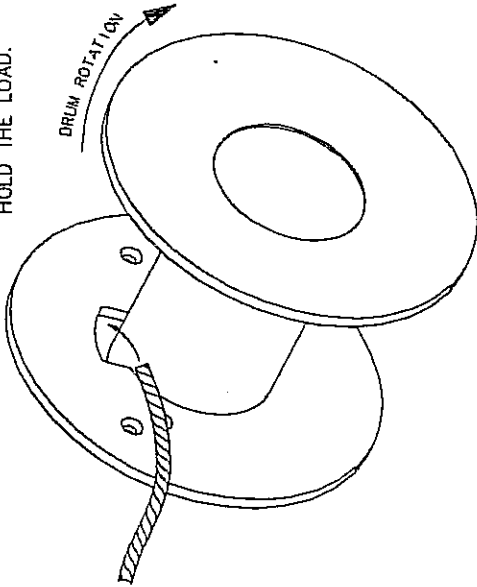
If your winch has ever been "*shifted under load*" or has ever encountered "*rotational face contact of non-engaged gear components*," the gear teeth could be damaged. Damaged gear teeth can prevent your winch from fully engaging into gear and could allow it to jump out of gear. If this has happened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

STEP 1

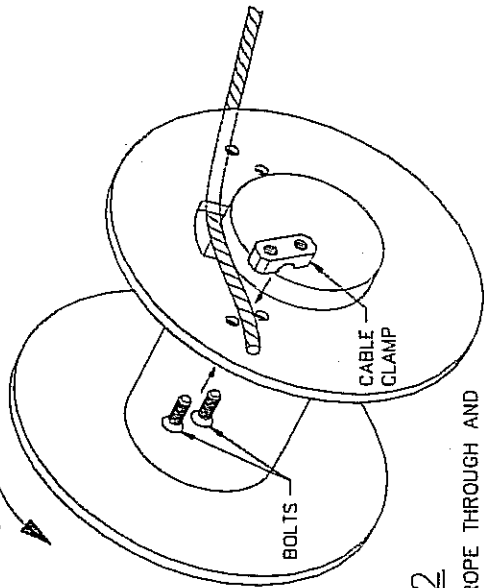
INSERT WIRE ROPE END INTO FLANGE OPENING.

CAUTION:

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



DRUM ROTATION



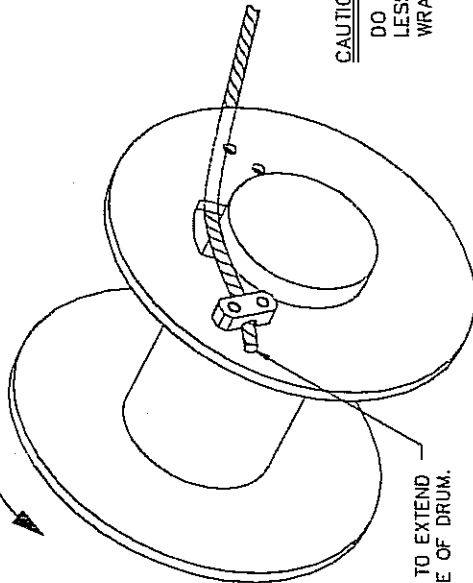
STEP 2

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.

DRUM ROTATION

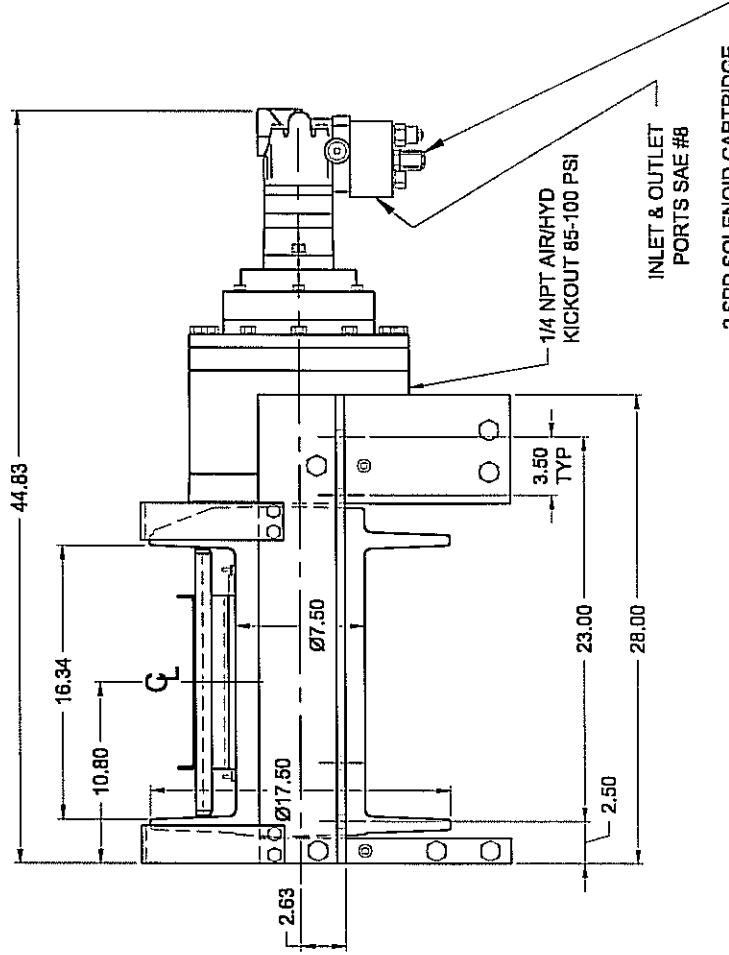


CAUTION:

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

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

WIRE ROPE INSTALLATION



2 SPD SOLENOID CARTRIDGE
 NORMAL MODE-LOW SPEED/HIGH TORQUE
 ENERGIZED MODE-12VDC-HIGH SPEED/LOW TORQUE

50BXT4X3B-010 - WINCH

12/9/02

S50 PERFORMANCE DATA

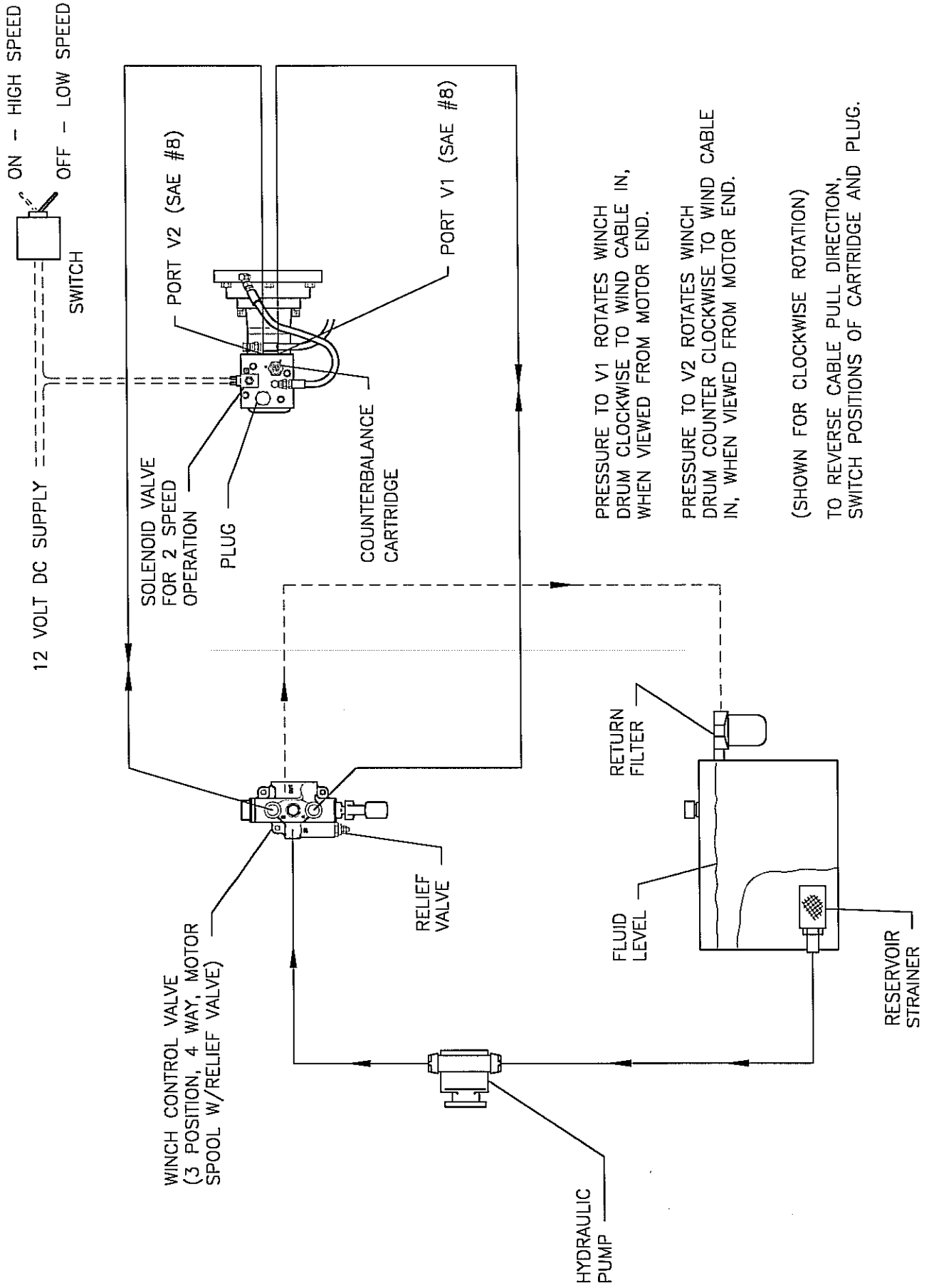
Layer	Drum Capacity ft	Line Pull - Low lbs	Line Pull - High lbs	Line Speed - Low fpm	Line Speed - High fpm
1	37	50000	25000	18	36
2	81	41400	20700	22	44
3	134	35300	17650	25	50
4	194	30700	15350	29	58
5	261	27200	13600	33	66

Performance is based on 25 gpm @ 2800 psi with Ø7/8 wire rope.

The rated line pulls shown are for the winch only. Consult the wire rope manufacturer for wire rope ratings. Cable capacities are in accordance with SAE J706. Actual cable capacities are up to 10% greater than shown.

*Last layer capacity does not meet SAE J706.

WINCH HYDRAULIC SYSTEM



PRESSURE TO V1 ROTATES WINCH DRUM CLOCKWISE TO WIND CABLE IN, WHEN VIEWED FROM MOTOR END.

PRESSURE TO V2 ROTATES WINCH DRUM COUNTER CLOCKWISE TO WIND CABLE IN, WHEN VIEWED FROM MOTOR END.

(SHOWN FOR CLOCKWISE ROTATION)
TO REVERSE CABLE PULL DIRECTION, SWITCH POSITIONS OF CARTRIDGE AND PLUG.

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 5.10182)

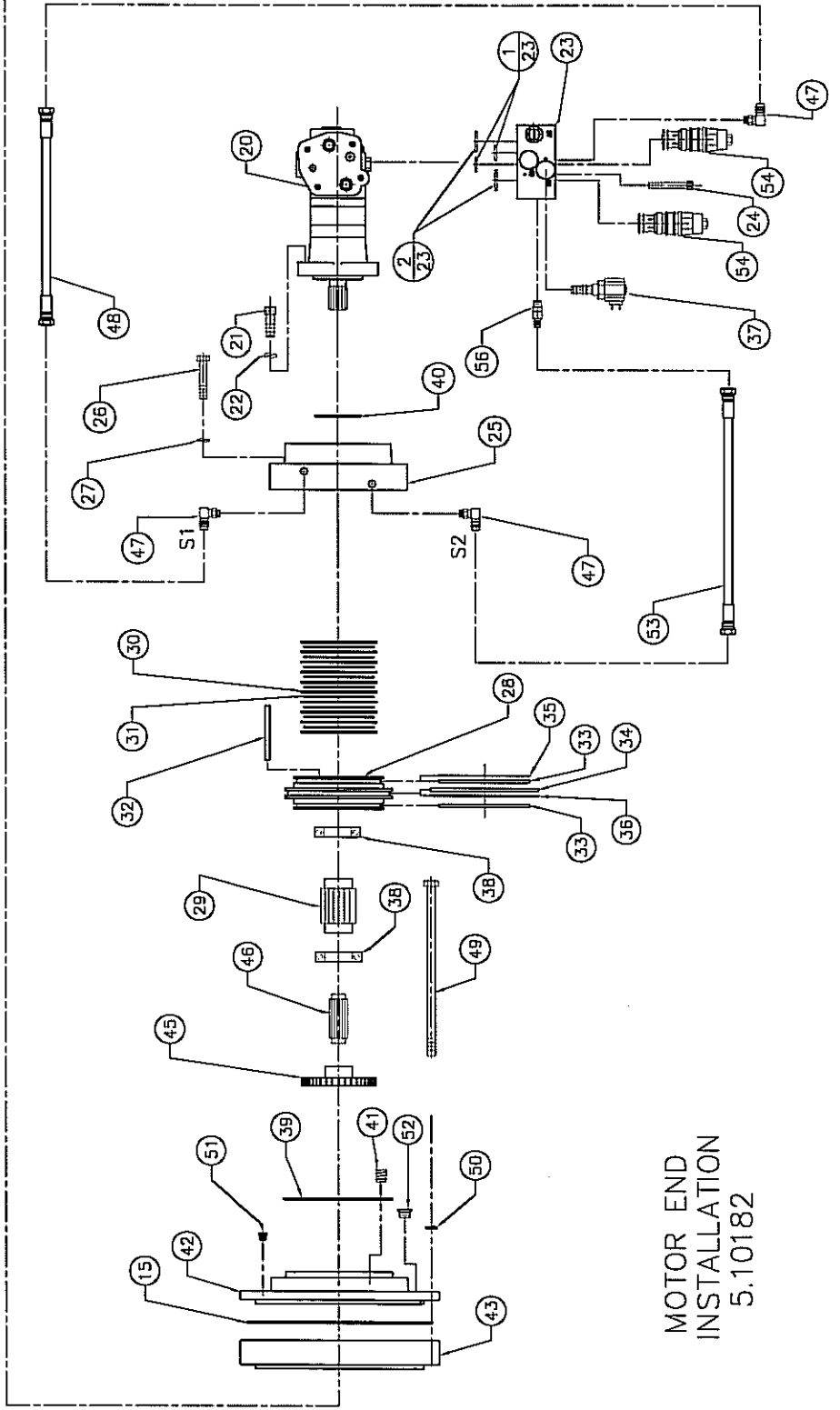
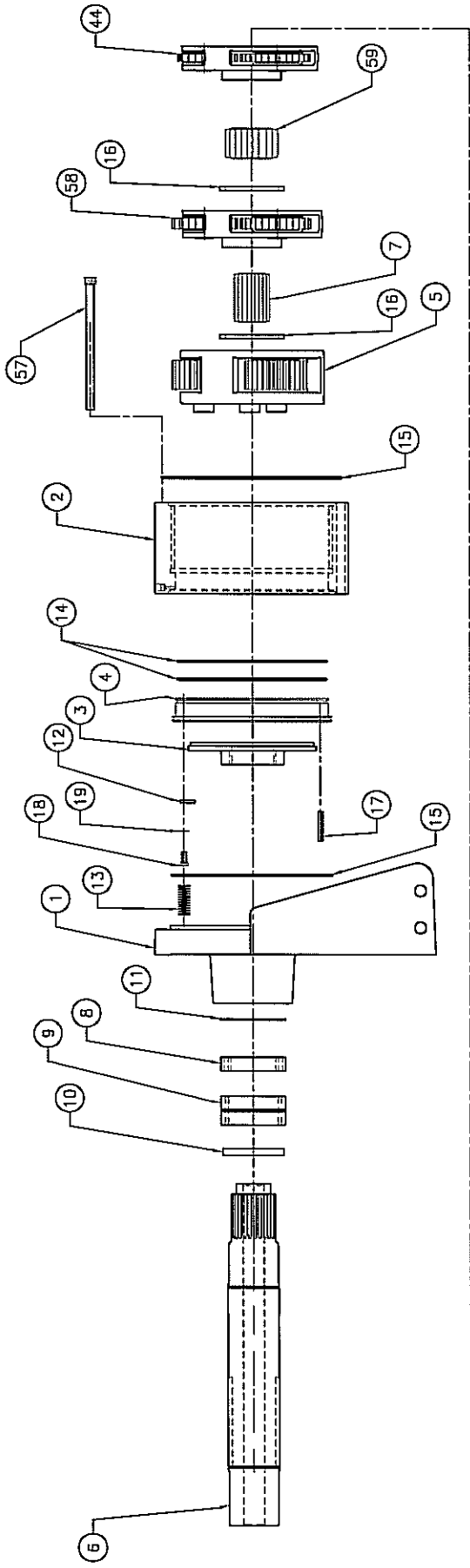
1. Disconnect brake hoses (item 48) at connections (item 47) on brake housing (item 25). wrap hose ends to prevent dirt contamination.
2. Disconnect motor (item 20) from brake housing (item 25) by removing capscrews (item 21), lock washers (item 22). Allow oil to drain.
3. Remove outer brake housing (item 25) by removing six capscrews (item 26) and lock washers (item 27).
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 25), the bearing (item 37) may come with it or remain on brake shaft (item 29), or the brake shaft may also slide out.
5. Remove o-ring (item 39) from brake adapter (item 42).
6. Remove friction plates (item 30), drive plates (item 31), and dowel pins (item 32) from piston (item 28).
7. Remove piston (item 28) from brake adapter (item 42) being careful not to damage o-rings on piston. Next, remove o-rings and back-up rings (item 33, 34, 35, & 36) from piston.
8. Finally, remove springs (item 41) and bearing (item 38) from brake adapter (item 42).

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 38) into brake adapter (item 42). Next install shaft (item 29) into bearing (item 38).
4. Insert dowel pins (item 32) into respective holes in brake adapter (item 42).
5. Assemble o-rings and back up rings (item 33, 34, 35, & 36) on piston (item 28). Position back up rings as shown.
6. Insert piston (item 28) fitted with seals into brake adapter (item 42) and over dowel pins (item 32) and tap down until piston face is resting against springs (item 41).
7. Insert a friction plate (item 30) alternating with a drive plate (item 31) into piston (item 28) and over shaft (item 29) until all plates are in place in sequence illustrated.
8. Next, place bearing (item 38) onto brake shaft (item 29).
9. Place o-ring (item 39) in position on brake adapter (item 29). Finally and with care not to pinch o-ring seals on piston, slide the housing (item 25) into place over the dowel pins (item 32) and tap down until firm. Install lock washers (item 27) and capscrews (item 26) in place until all six shoulder up. proceed to tighten evenly against spring pressure until housing face (item 25) is in full contact and capscrews are torqued to 50 ft. lbs.
10. The motor (item 20), and o-ring (item 40) can now be reinstalled on the housing (item 25). Then secure with capscrews (item 21), lock washers (item 22). Reconnect brake hoses (item 28) 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 39) at brake slightly to bleed air from brake release hoses (item 48) 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 33, 34, 35, or 36).
 - (c) Damaged piston (item 28).
 - (d) Damaged seal surfaces within housing (item 25).
 - (e) Damaged bearing (item 38).
 - (f) Friction or drive plates (items 30 or 31) warped or heat damaged.
2. Brake will not apply or applies but torque low:
 - (a) Damaged springs (item 41), either broken or heat damaged and having taken a permanent set.
 - (b) Friction plates (item 30) worn out.
3. Oil leaks externally from brake:
 - (a) Damaged o-ring seal (item 39).



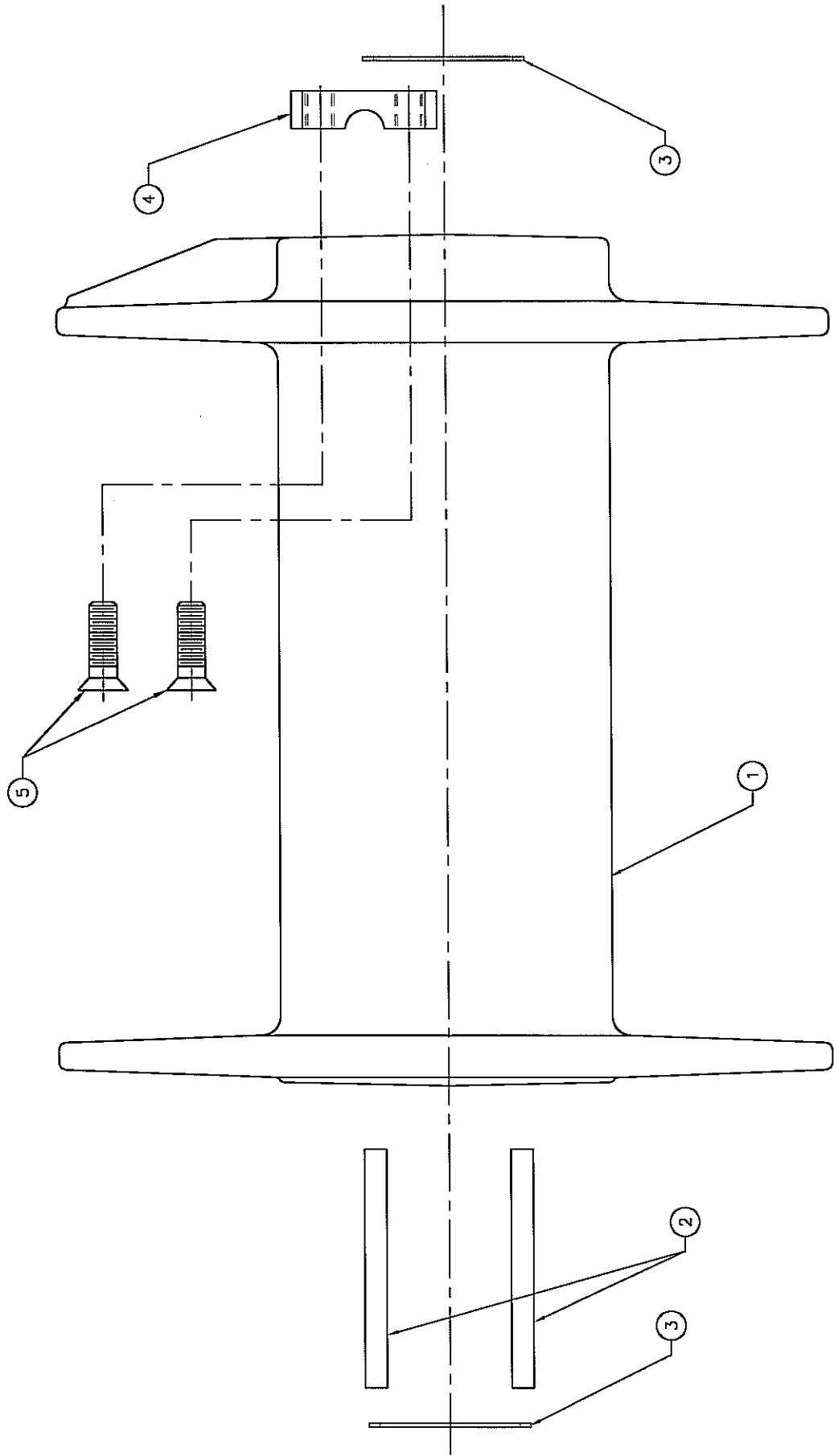
MOTOR END
INSTALLATION
5.10182

5.10182 PARTS LIST
MOTOR END INSTALLATION

<u>LOC.</u>	<u>PART NO.</u>	<u>DESCRIPTION</u>	<u>QTY.</u>
1	13976	SUPPORT – GEAR END	1
2	13974	GEAR – RING – 103 TEETH	1
3	14197	CLUTCH	1
4	14194	PISTON	1
5	14195	CARRIER – ASSEMBLY – SECONDARY	1
6	14191	SHAFT – OUTPUT	1
7	15114	GEAR – SUN – SECONDARY	1
8	14189	RING – THRUST	1
9	81438	BEARING – ROLLER	1
10	9888	SEAL – 3 ¼ I.D. x 4 O.D. x 15/32	1
11	3279	RING – RETAINER – 4 ¼ x .109 THICK	1
12	14193	RETAINER – PISTON	3
13	2338	SPRING – COMPRESSION – ¾ O.D. x 2" – FREE LENGTH	3
14	9736	O-RING – 9 ¾ I.D. x 1/8 SECTION	2
15	9957	O-RING – 10 ½ I.D. x 1/8 SECTION	3
16	13929	WASHER – THRUST – NYLON – 4 ¼ O.D. x ¼ THICK	2
17	3251	PIN – SPIRAL – 5/16 x 2	2
18	1190	CAP SCREW – HEX HEAD – 5/16 – 18NC x ¾	6
19	1168	WASHER – LOCK – 5/16	6
20	73119	MOTOR – HYDRAULIC	1
21	1143	CAP SCREW – SOCKET HEAD – ½ – 13NC x 1 ½	2
22	1144	WASHER – LOCK – ½ – HI COLLAR	2
23	12526	VALVE – COUNTERBALANCE	1
	1. 9705	O-RING – 1 1/8 I.D. x 1/8 SECTION	2
	2. 9817	O-RING – 13/16 I.D. x 3/32 SECTION	2
24	4341	CAP SCREW – SOCKET HEAD – 3/8 – 24NF x 2 ½	4
25	11535	HOUSING – BRAKE – OUTER	1
26	1376	CAP SCREW – HEX HEAD – 7/16 – UNC x 2 ½ – GRADE 8	6
27	1388	WASHER – LOCK – 7/16	6
28	11443	PISTON – BRAKE	1
29	11688	SHAFT – BRAKE	1
30	11603	PLATE – DISC – FRICTION	10
31	3159	PLATE – DRIVE – BRAKE	9
32	3263	PIN – DOWEL – 5/16 x 3 ½	2
33	9851	O-RING – 5 3/8 I.D. x 3/16 SECTION	2
34	9853	O-RING – 6 ½ I.D. x 3/16 SECTION	1
35	9852	RING – BACKUP – 5.278 I.D. x .076	1
36	9854	RING – BACKUP – 6 ¼ I.D. x .183	1
37	70138	CARTRIDGE-VALVE-3 WAY	1
38	81434	BEARING – BALL – 1 ¾ I.D.	2
39	9844	O-RING – 6 ¾ I.D. x 7 O.D. x 1/8 SECTION	1
40	9880	O-RING – 3 I.D. x 1/8 SECTION	1
41	2319	SPRING – COMPRESSION – ¾	12
42	53265	ADAPTER – BRAKE	1
43	53263	GEAR – RING – 92 TEETH	1
44	53261	CARRIER – ASSEMBLY	1
45	11727	GEAR – SUN	1
46	11724	SHAFT – EXTENSION	1
47	76017	ADAPTER – 90° – #4 O-RING/#4 MJIC	3
48	75039	HOSE – ¼ – R1 X 16"	1

5.10182 PARTS LIST
MOTOR END INSTALLATION

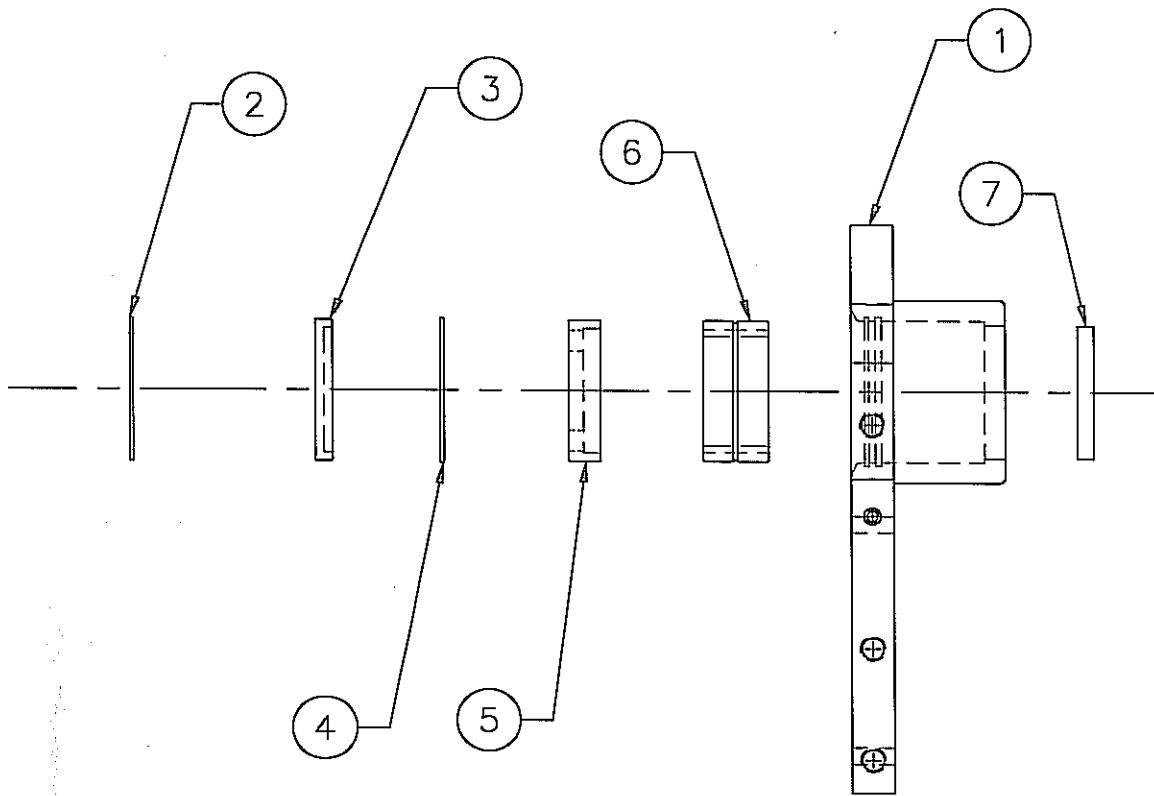
<u>LOC.</u>	<u>PART NO.</u>	<u>DESCRIPTION</u>	<u>QTY.</u>
49	4093	CAP SCREW – HEX HEAD – ½ – 13NC x 9 ½ –GRADE 5	10
50	1495	WASHER – LOCK – ½	10
51	3059	VENT – RELIEF	1
52	76146	PLUG – O-RING – SAE#8 – SOCKET HEAD – ¾ – 16	2
53	75032	HOSE – ¼ – R1 x 14"	1
54	3177	CARTRIDGE	2
56	76027	ADAPTER – STRAIGHT – #4 O-RING x #4 MJIC	1
57	1450	CAP SCREW – SOCKET HEAD – ½ – 13NC x 7	2
58	14032	CARRIER – ASSEMBLY – PRIMARY	1
59	53264	GEAR – SUN 29 TEETH	1



DRUM INSTALLATION 5.20163

5.20163 PARTS LIST
DRUM INSTALLATION

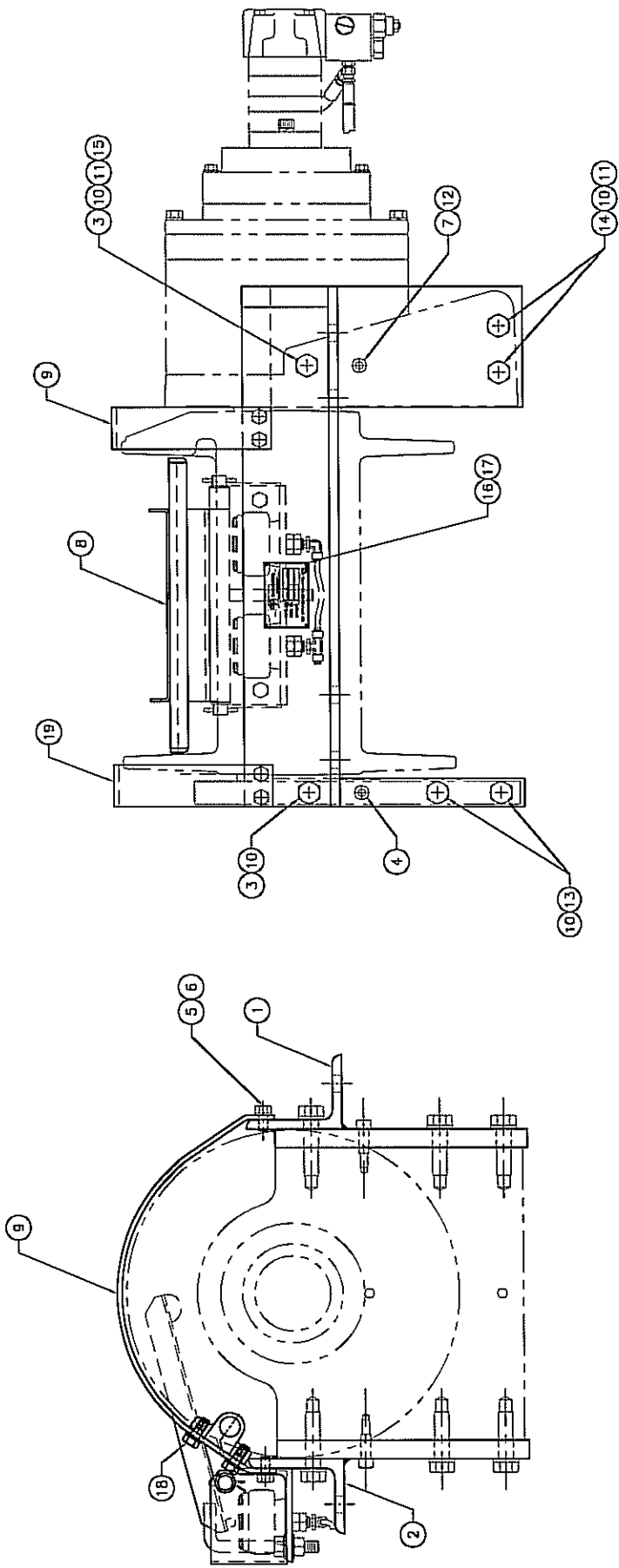
<u>LOC.</u>	<u>PART NO.</u>	<u>DESCRIPTION</u>	<u>QTY.</u>
1	53555	DRUM – WINCH	1
2	14371	KEY – SHAFT – OUTPUT	2
3	3714	RING – RETAINER – EXTERNAL – 3.35 O.D. x .093 THICK	2
4	12518	CLIP – CABLE	1
5	1586	CAPSCREW – FLAT SOCKET HEAD – 5/8 – 11NC x 2 ¼ – GRADE 8	2



END SUPPORT INSTALLATION 5.30066

5.30066 PARTS LIST
END SUPPORT INSTALLATION

<u>LOC.</u>	<u>PART NO.</u>	<u>DESCRIPTION</u>	<u>QTY.</u>
1	53256	SUPPORT – END	1
2	3279	RING – RETAINER – 4 ¼ x .109 THICK	1
3	53266	CAP – END	1
4	9958	O-RING – 4 ¼ I.D. x 4 ½ O.D. x 1/8 SECTION	1
5	11725	PLATE – THRUST	1
6	81438	BEARING – ROLLER – TORRINGTON	1
7	9888	SEAL – 3 ¼ I.D. x 4 O.D. x 15/32	1



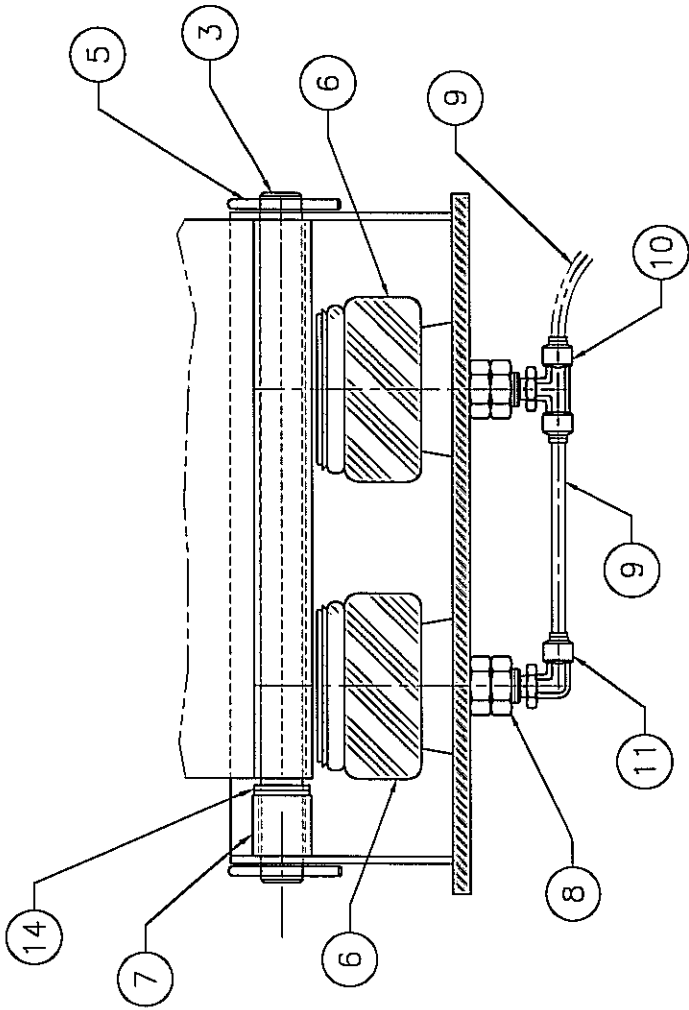
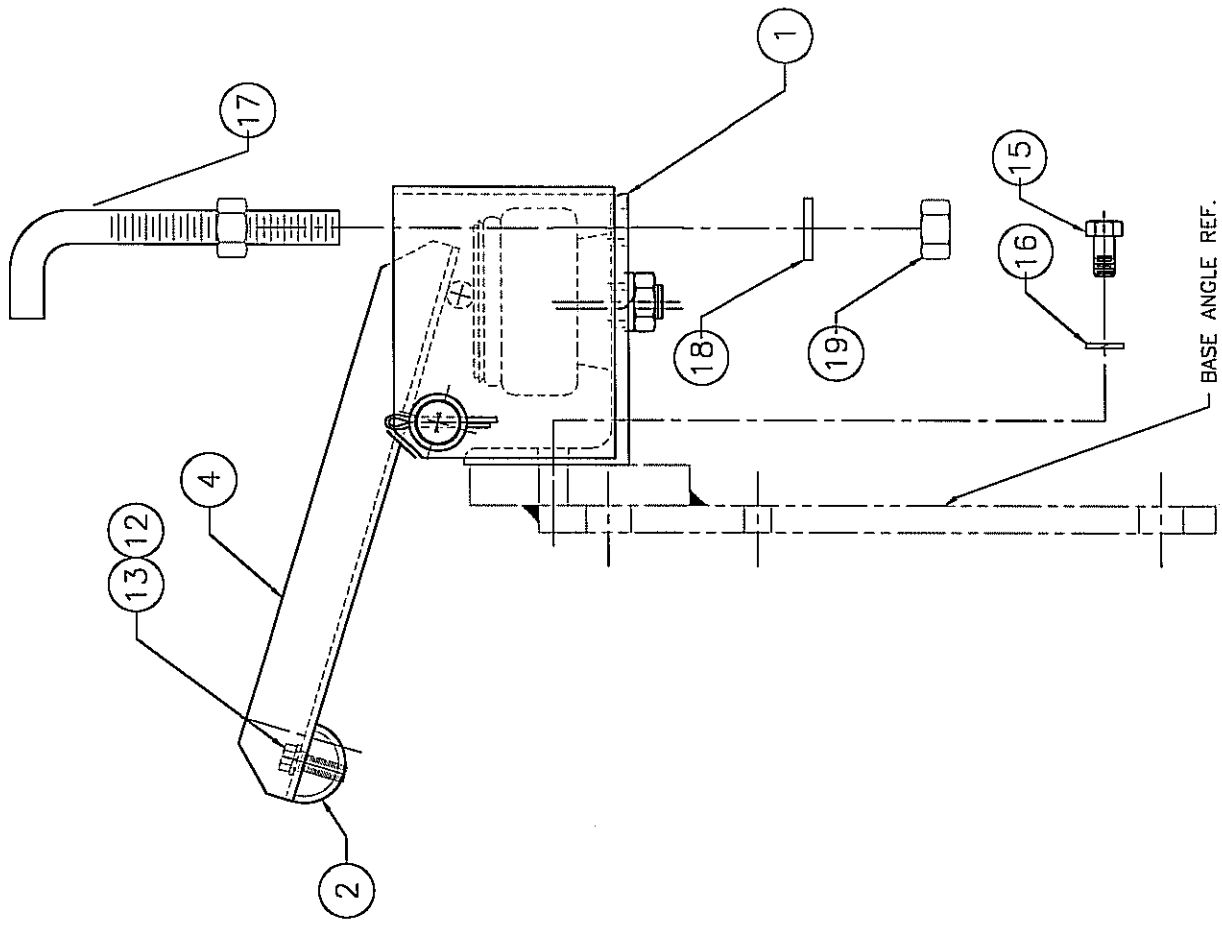
RIGHT HAND ROTATION SHOWN

BASE ANGLE INSTALLATION - 5.50173

5.50173 PARTS LIST
BASE ANGLE INSTALLATION

<u>LOC.</u>	<u>PART NO.</u>	<u>DESCRIPTION</u>	<u>QTY.</u>
1	53249	BASE ANGLE – FRONT	1
2	53250	BASE ANGLE – REAR	1
3	1608	CAP SCREW – HEX HEAD – ¾ – 10NC x 3 – GRADE 5	8
4	1477	SHOULDER BOLT – SOCKET HEAD – ½ x 1 ¼	2
5	1795	WASHER – LICK – ½	8
6	1401	CAP SCREW – HEX HEAD – ½ – 13NC x 1	8
7	1390	NUT – HEX – 3/8 – 16NC – GRADE 2	2
8	55244	KIT – CABLE HOLD DOWN	1
9	53257	GUARD – DRUM – TOP	1
10	1695	WASHER – LOCK – ¾	10
11	1690	NUT – HEX – ¾ – 10NC	6
12	1476	SHOULDER – BOLT – SOCKET HEAD – ½ x 1 ½	2
13	1606	CAP SCREW – HEX HEAD – ¾ – 10NC x 2 ½ – GRADE 5	4
14	1394	WASHER – FLAT – 3/8	2
15	1698	WASHER-FLAT-3/4	2
16	10466	PLATE-INFORMATION-WINCH	1
17	1165*	RIVET-DRIVE	4
18	55237	KIT-DRAG BRAKE-DRUM-FLNG-GRD MNT	1
19	55245	GUARD-DRUM-SLOTTED-DRAG BRAKE-S50	1

* NOT SHOWN ON EXPLODED DRAWING



CABLE HOLD DOWN KIT
 55244

KIT- CABLE HOLD DOWN
PART NO. 55244

<u>LOC.</u>	<u>PART NO.</u>	<u>DESCRIPTION</u>	<u>QTY.</u>
1	52859	BRACKET - MOUNTING	1
2	14014	BAR - RUB - 1 1/2" - HALF ROUND	1
3	13968	PIN - PIVOT	1
4	53464	ARM - PIVOT	1
5	1027	PIN - COTTER - 3/16 x 1 1/2	2
6	3445	SPRING - CUSHION - AIR - GOODYEAR	2
7	13973	SPACER - PIN - 1 1/8 LONG	1
8	1589	NUT - JAM - 5/8 - 11NC - HEX	4
9	69095	TUBING - NYLON - 1/4 O.D. - AIR - DOT - COLD	1
10	78402	ADAPTER - TEE - BRANCH - 1/4 x 1/8	1
11	78403	ADAPTER - 90°	1
12	1168	WASHER - LOCK - 5/16	3
13	1166	CAP SCREW - HEX HEAD - 5/16 - 18NC x 1	3
14	13063	WASHER - THRUST	2
15	1401	CAP SCREW - HEX HEAD - 1/2 - 13NC x 1	2
16	1495	WASHER - LOCK - 1/2	2
17	4082	BOLT - ANCHOR - 5/8" x 6 W/2" 90° - W/ NUT	1
18	1598	WASHER - FLAT - 5/8 - SAE	2
19	1590	NUT - HEX - 5/8 - 11 - GRADE 2	1

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.