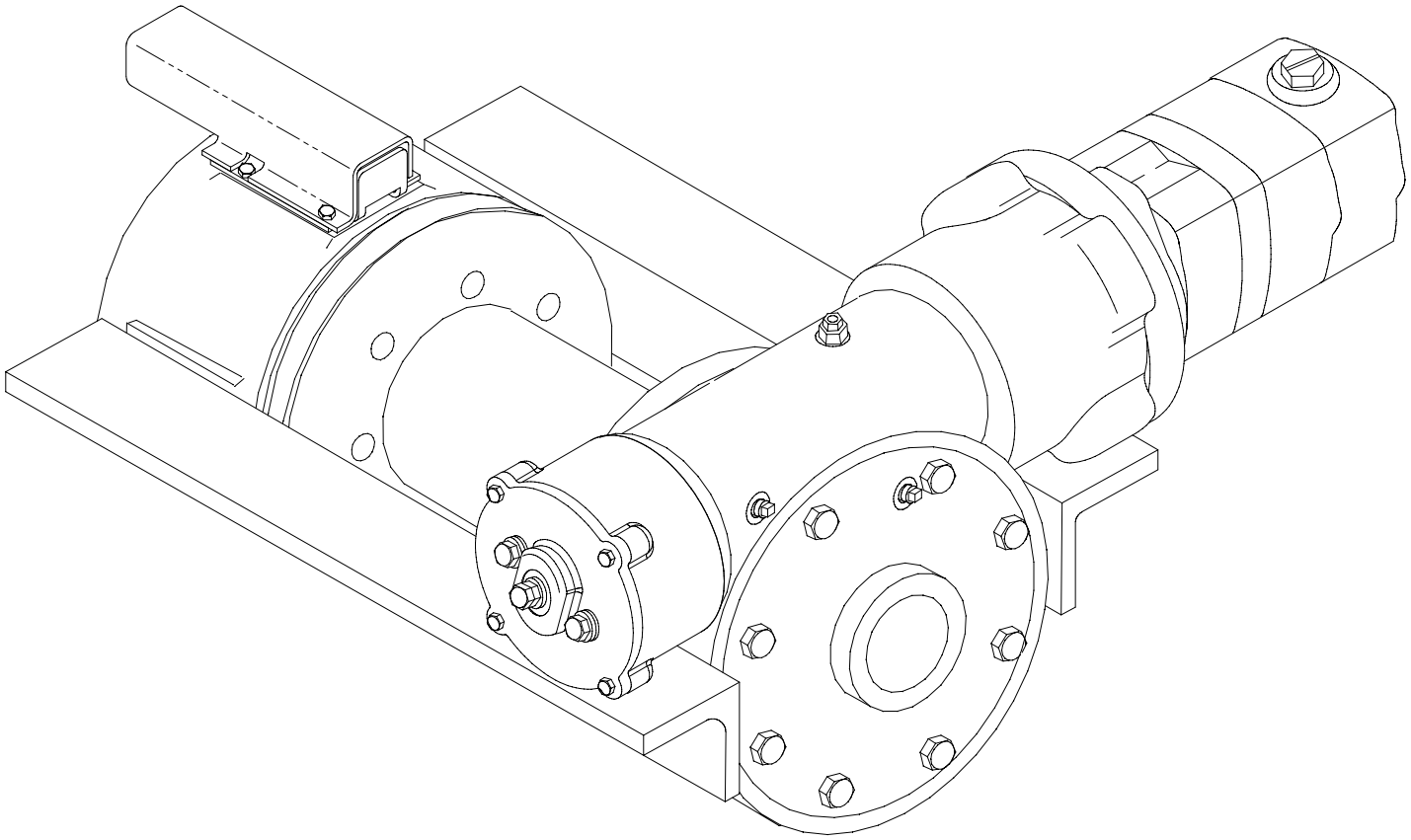
RAMSEY WINCH

OPERATING, SERVICE, AND MAINTENANCE MANUAL



MODEL H-930R
DOW-LOK® EQUIPPED
INDUSTRIAL LOW-MOUNT WINCH
PER GRANT WRECKER SPECIFICATIONS

CAUTION: READ AND UNDERSTAND THIS MANUAL BEFORE INSTALLATION AND OPERATION OF WINCH. SEE WARNINGS!

TABLE OF CONTENTS

RAMSEY MODEL H-930 DOW-LOK®

PLEASE READ THIS MANUAL CAREFULLY

This manual contains useful ideas in obtaining the most efficient operation from your Ramsey Winch, and safety procedures one needs to know before operating a Ramsey Winch. Do not operate this winch until you have carefully read and understand the "WARNINGS" and "OPERATION" sections of this manual.

WARRANTY INFORMATION

Ramsey Winches are designed and built to exacting specifications. Great care and skill go into every winch we make. If the need should arise, warranty procedure is outlined on the back of your self-addressed postage paid warranty card. Please read and fill out the enclosed warranty card and send it to Ramsey Winch Company. If you have any problems with our winch, please follow instructions for prompt service on all warranty claims. Refer to back page for limited warranty.

SPECIFICATIONS (Conforms to SAE J706)*

Rated Line Pull (lbs.)	30,000
(Kg.)	13,590
Gear Reduction	41:1
Weight (without cable)	515 lbs. (238 Kg.)

LAYER OF CABLE		1	2	3	4	5
*Rated line pull per layer	lbs.	30,000	25,200	21,700	19,100	17,000
	Kg.	13,600	11,430	9,840	8,660	7,710
*Cable Capacity	ft.	25	55	85	135	185
	m	7	16	28	41	56
*Line Speed @ 30 GPM	FPM	11	12	14	16	17
	MPM	3.3	3.6	4.3	4.9	5.2

* These specifications are based on recommended wire rope of 5/8" inch (16mm) 6x19 extra improved plow steel

NOTE: The rated line pulls shown are for the winch only. Consult the wire rope manufacturer for wire rope ratings.

WARNINGS:

CLUTCH MUST BE TOTALLY ENGAGED BEFORE STARTING THE WINCHING OPERATION.

DO NOT START WINCH MOTOR BEFORE ENGAGING CLUTCH

DO NOT DISENGAGE CLUTCH UNDER LOAD.

STAY OUT FROM UNDER AND AWAY FROM RAISED LOADS.

STAND CLEAR OF CABLE WHILE PULLING. DO NOT TRY TO GUIDE CABLE.

DO NOT EXCEED MAXIMUM LINE PULL RATINGS SHOWN IN TABLE.

DO NOT USE WINCH TO LIFT, SUPPORT, OR OTHERWISE TRANSPORT PEOPLE.

A MINIMUM OF 5 WRAPS OF CABLE AROUND THE DRUM BARREL IS NECESSARY TO HOLD THE LOAD.

CABLE ANCHOR IS NOT DESIGNED TO HOLD LOAD.

HYDRAULIC SYSTEM REQUIREMENTS

Refer to the performance charts, below, to properly match your hydraulic system to the H-930 Model winch performance. The charts consist of :

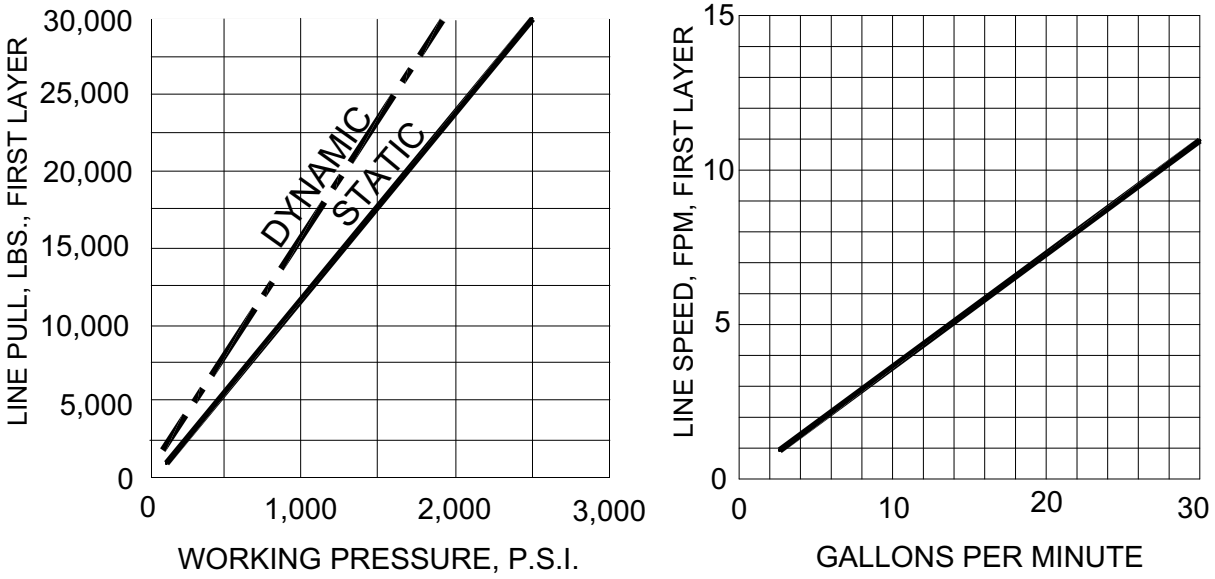
(1) Line pull (lb.) first layer vs. working pressure (PSI)

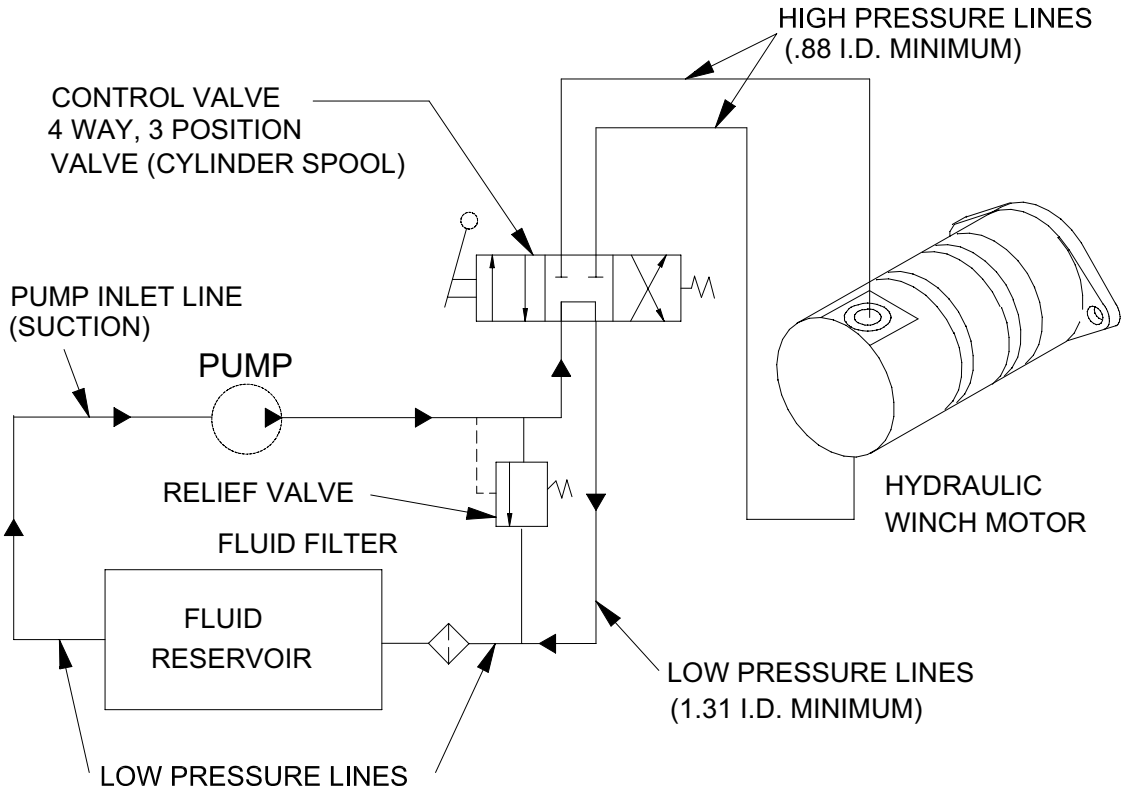
(2) Line speed, first layer (FPM) vs. gallons per minute (GPM).

Performance based on a motor displacement of 24 cubic inches with 30 GPM maximum flow rate. See page 15 for motor port size.

H-930 Performance

30,000 lb. Duty Rating
41:1 Gear Ratio





TECHNIQUES OF OPERATION

The best way to get acquainted with how your winch operates is to make test runs before you actually use it. Plan your test in advance. Remember, you hear your winch, as well as see it operate. Get to recognize the sounds of a light steady pull, a heavy pull, and sounds caused by load jerking or shifting. Gain confidence in operating your winch and its use will become second nature with you.

The uneven spooling of cable, while pulling a load, is not a problem, unless there is a cable pileup on one end of drum. If this happens, reverse the winch to relieve the load and move your anchor point further to the center of the vehicle. After the job is done you can unspool and rewind for a neat lay of the cable.

The Dow-lok® clutch provides free spooling and clutch engagement with the cable drum. With the clutch disengaged, the cable can be freespooled off the drum. For winching in the load, the clutch must be fully engaged with the drum.

TO DISENGAGE THE CLUTCH:

Run winch in the "out" direction until there is no load on the cable. Apply 70-90 psi to the air shift cylinder to disengage the clutch. Do not disengage the clutch under load.

TO ENGAGE THE CLUTCH:

There must be a minimum of 1 foot of slack in the cable before attempting to engage the clutch. This will allow the drum to rotate a minimum of 1/4 turn allowing engagement of the clutch before picking up the load. With this slack in the cable, exhaust air pressure from the air shift cylinder and then run the winch in the "in" direction until the clutch springs into engagement and the drum starts to turn. Clutch must be fully engaged before starting the winching operation.

WINCH MOUNTING

It is most important that this winch be mounted securely so that the three major sections (the clutch housing end, the cable drum, and the gear housing end) are properly aligned.

This Model H-930 winch for Grant Wrecker is furnished with mounting angles. Angle size is 1/2” x 4 x 4 high strength steel angle.

WINCH MAINTENANCE

Adhering to the following maintenance schedule will keep your winch in top condition and performing as it should with a minimum of repair.

A. WEEKLY

1. Check the oil level and maintain it to the oil level plug with SAE 140 EP gear oil. If oil is leaking out, determine location and repair.
2. Check the pressure relief plug in top of the gear housing. Be sure that it is in good operating condition so that hot oil gases may escape.
3. Lubricate cable with light oil.

B. MONTHLY

1. Lubricate the various grease fittings located in the cable drum, end bearing, clutch housing, or clutch operating linkage. Any good grade of moly-disulfide containing grease is acceptable.
2. Check the action of the locking ring. Make sure it is spring loaded and free to move fully against the cable drum in the engaged position and that it is pulled fully away from the cable drum and latched when disengaged.
3. Check the winch mounting bolts. If any are missing, replace them and securely tighten any that are loose. Use grade 5 or better bolts.
4. Check the torque setting of the oil cooled worm brake. Make any adjustments required, following the procedure described in *Adjusting the Oil Cooled Worm Brake* in this manual.
5. Inspect the cable. If the cable has become frayed with broken strands, replace immediately.

C. ANNUALLY

1. Drain the oil from the winch annually or more often if winch is used frequently.
   - · After draining, fill the winch to the oil level plug with clean kerosene.
   - · Run the winch a few seconds with no load in the "Reel In" direction.
   - · Drain the kerosene completely from the winch.
   - · Refill the winch with 10 1/4 pints all purpose SAE 140 EP gear oil.
2. Inspect frame and surrounding structure for cracks or deformation.
3. Gear wear can be estimated by rocking the drum back and forth and if necessary drain oil and remove cover for closer inspection.

CABLE INSTALLATION

1. Unwind cable by rolling it out along the ground to prevent kinking. Securely wrap end of cable, opposite hook, with plastic or similar tape to prevent fraying.
2. Insert the end of cable, opposite hook end, under drum and into the hole in drum barrel. Secure cable to drum barrel, using setscrew furnished with winch. TIGHTEN SETSCREW SECURELY.
3. Carefully run winch in the "reel-in" direction. Keeping tension on end of cable, spool all the cable onto drum, taking care to form neatly wrapped layers.

The wire rope can easily be removed from the drum by loosening the setscrew.

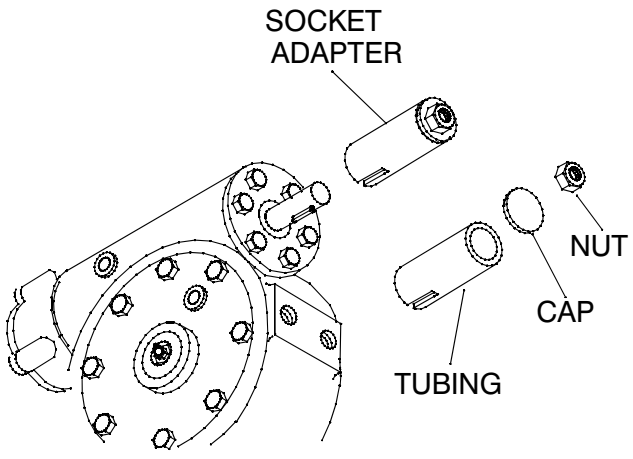
ADJUSTING THE OIL COOLED WORM BRAKE

The oil cooled, fully adjustable, automatic worm brake operates in the worm housing lubricant, all parts being submerged in oil. When the brake wears to the point that the load begins to drift, the brake can be adjusted as follows:

1. Loosen the adjusting screw lock nut.
2. Tighten the brake by turning the adjusting screw clockwise. **CAUTION:** Only 1/4 turn is usually required to adjust the brake. Over-tightening can cause over-heating, and damage to the brake parts. Tighten the lock nut after adjustment is completed.

If the brake does not respond to adjustment then a new leaf spring and brake disc is needed.

A torque wrench can be equipped with a special adapter to fit the input shaft (worm) of the winch. The adapter can be made by welding a nut to the end of a piece of tubing as shown in the following figure.



After welding the cap and nut to the tubing, slot the tubing, as shown. This will allow the special adapter to slide over the keyway and will then act as a large socket. A torque wrench can then be used to apply the proper torque. Turn the torque wrench so that the drum turns in the spool out direction or lowering direction. The torque rating for the brake on the Model H-930R Dow-Lok should be 65 to 75 ft. lbs. If torque wrench does not show the proper value as it turns, then the worm brake adjusting bolt should be turned clockwise 1/4 turn. Each time the adjusting bolt is turned, check the torque reading. Continue this procedure until the proper torque reading is achieved. Then tighten the lock nut.

SERVICING OF THE OIL COOLED WORM BRAKE

1. Remove the drain plug and drain the worm gear oil from the worm housing.
2. Back off the lock nut, then the adjusting screw, both two turns or more by turning them counter-clockwise.
3. Remove the cover mounting screws.
4. Remove the cover along with coil spring and leaf spring.
5. Remove the retainer plate, composition brake disc, cam plate and balls.
6. Inspect parts as follows:
   a) Composition brake discs are 1/4" thick when new. Replace if thinner than 3/16" or if surfaces are glazed or burnt.
   b) Inspect the flat, ground surface of the cam plate and retainer plate for glazing, warpage, or other damage. Glazing can be removed by scraping carefully.
   c) Inspect the leaf spring. It should be bowed 1/8".

RE-ASSEMBLING AND CHECKING THE BRAKE

1. Press brake hub into place over worm shaft and key.
2. Assemble balls in slot #2 of cam. Use stiff grease to hold balls in place and slide cam over end of worm. Be sure that balls are secure, between cam slots and hub slots.
3. Install brake disc.
4. Install retainer plate, smooth side toward brake disc.
5. Install the gasket on the cover with a small amount of grease or sealer.
6. The coil spring goes over the adjusting screw on the inside of the cover.
7. Install the notches of the leaf spring on the pins protruding through the cover. The hollow side of the leaf spring goes toward the brake.
8. Install brake housing cover, making sure the protruding pins go through the leaf spring and into the holes in the retainer plate.
9. Bolt cover into place with the mounting screws. Apply Loc-tite PST #567 thread sealer to drain plug, install drain plug and add 10 1/4 pints all purpose SAE 140 EP gear oil. Refer to *Instructions for Overhaul* for more information on assembling winch.
10. Turn winch in the hoisting direction at least one turn of the input shaft.
11. Turn the adjusting screw in until it is finger tight. Tighten jam nut to lock adjusting screw.

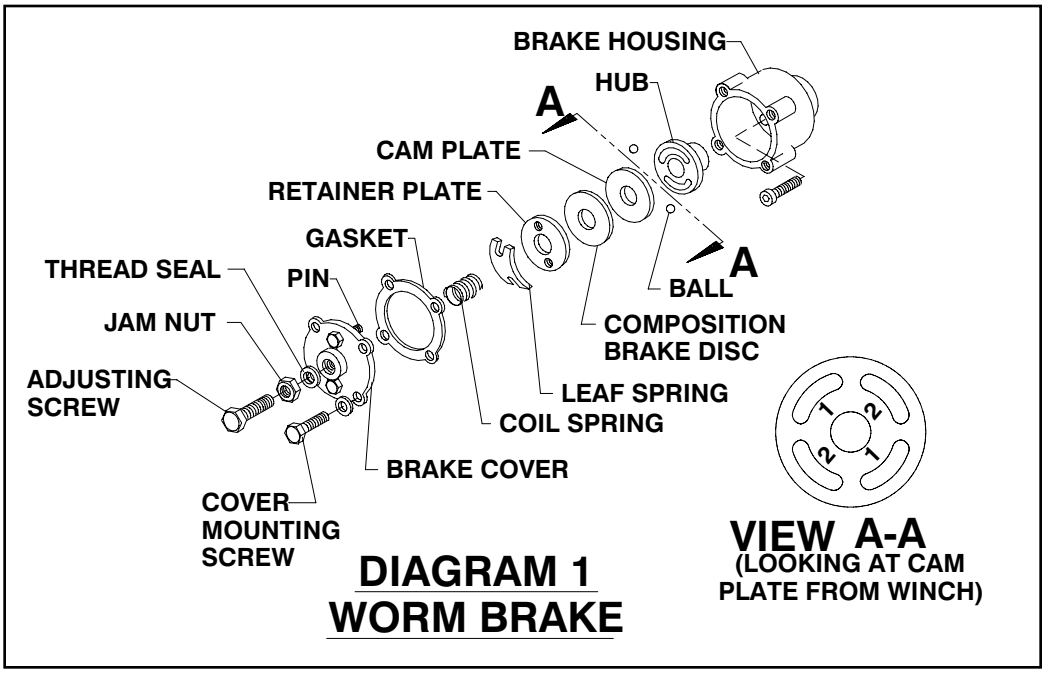


DIAGRAM 1
WORM BRAKE

TEST FOR PROPER BRAKE ASSEMBLY

After the brake has been adjusted to the proper torque setting disengage clutch. Start vehicle engine and run winch in the reel in (hoisting direction). Allow winch to run in this direction for one minute.

Place your hand on the safety brake housing. If housing is not hot to the touch then run winch in the reverse direction (cable out) for one minute. Brake housing should begin to heat.

When these conditions exist, proper installation has been made. If heating becomes noticeable when running the winch in forward rotation (hoisting direction), the brake should be again disassembled. When disassembled, confirm that the balls are in slot #2 of cam, then carefully follow the instructions for re-assembling and checking the brake.

TROUBLESHOOTING GUIDE

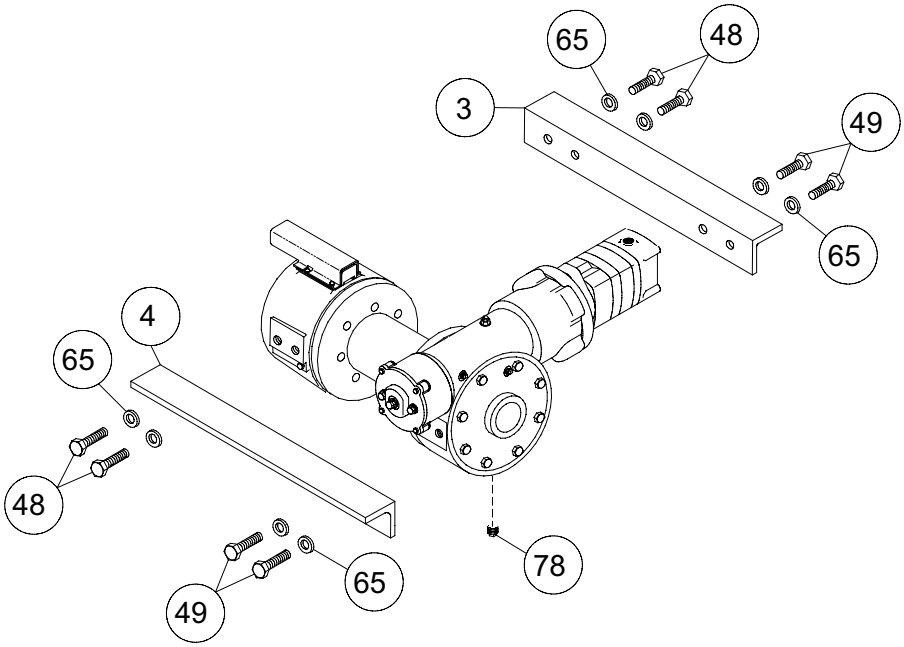
CONDITION	POSSIBLE CAUSE	CORRECTION
CLUTCH INOPERATIVE OR BINDS UP	Dry or rusted shaft.	Clean and lubricate.
	Bent yoke or linkage	Replace yoke or shaft assembly
	Debris in clutch	Clean and lubricate.
	Clutch not disengaging, drum does not freespool	Adjust clutch air shifter. See page 14.
OIL LEAKS FROM HOUSING	Seal damaged or worn	Replace seal.
	Too much oil.	Drain excess oil. Refer to *Techniques of Operation* .
	Damaged gasket	Replace gasket
LOAD DRIFTS DOWN	Safety brake has become worn.	Replace brake disc. See *Servicing of the Oil Cooled Safety Brake* .
	Safety brake out of adjustment	Turn adjusting bolt clockwise 1/4 turn or until load does not drift.
WINCH RUNS TOO SLOW	Hydraulic motor worn out.	Replace motor.
	Low flow rate.	Check flow rate. Refer to Hydraulic Systems Performance Chart, page 2.
CABLE DRUM WILL NOT FREE SPOOL	Winch not mounted squarely, causing end bearings to bind drum.	Check mounting. Refer to *Winch Mounting* section.
	Clutch not disengaged.	Check air pressure to clutch cylinder--70 psi minimum required. See page 14.
CABLE BIRDNESTS WHEN CLUTCH IS DISENGAGED	Drag brake disc worn.	Replace discs.
HYDRAULIC FLUID LEAKS FROM HOLE IN MOTOR ADAPTER	Damaged motor shaft seal.	Replace seal.

INSTRUCTIONS FOR OVERHAUL

Refer to parts lists and parts drawing for corresponding part numbers.

1. Shift clutch into engaged "IN" position. Drain oil from gear housing by removing plug (item #78) from end bearing.

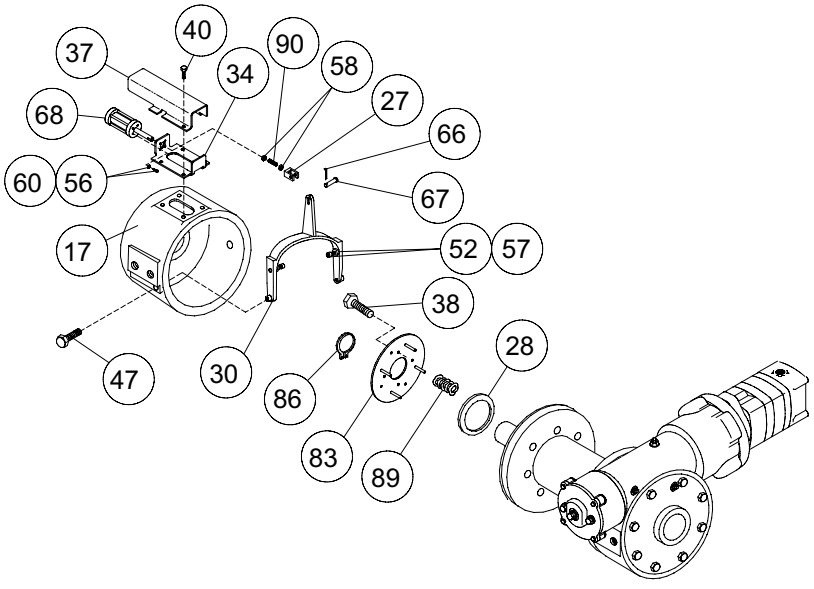
   Remove frame angles (item #3 & #4) from winch by removing capscrews (item #48 & #49) with lockwashers (item #65)



2. If the air cylinder and shifter needs to be removed, remove (4) capscrews (item #40) that hold shifter cover (item #37) and shifter bracket (item #34) onto clutch housing (item #17). Remove cotter pin (item #66) and clevis pin (item #67) that hold clevis (item #27) to yoke (item #30). Loosen jam nuts (item #58) and unscrew stud (item #90) from clevis and air cylinder (item #68).

   To remove air cylinder from shifter bracket, remove (4) capscrews (item #56) and lockwashers (item #60).

   Remove clutch housing from end of drum shaft along with yoke (item #30).

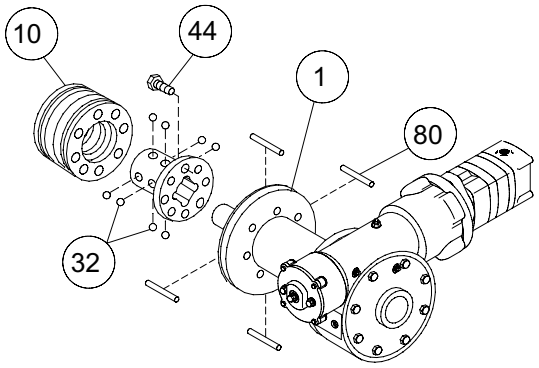


NOTE: It will be necessary to pull the yoke upward inside the clutch housing as far as it will go in order to clear the locking ring attached to the drum. Press in on retainer plate (item #83) to relieve spring tension and remove the retainer ring (item #28).

3. Slide the locking ring (item #10) from the clutch. **NOTE:** The locking ring cannot be removed unless the clutch is engaged, with dowel pins (item #80) seated in the shaft keyways.

   Rotate the drum so the (8) balls (item #32) and (4) dowel pins (item #80) can be removed.

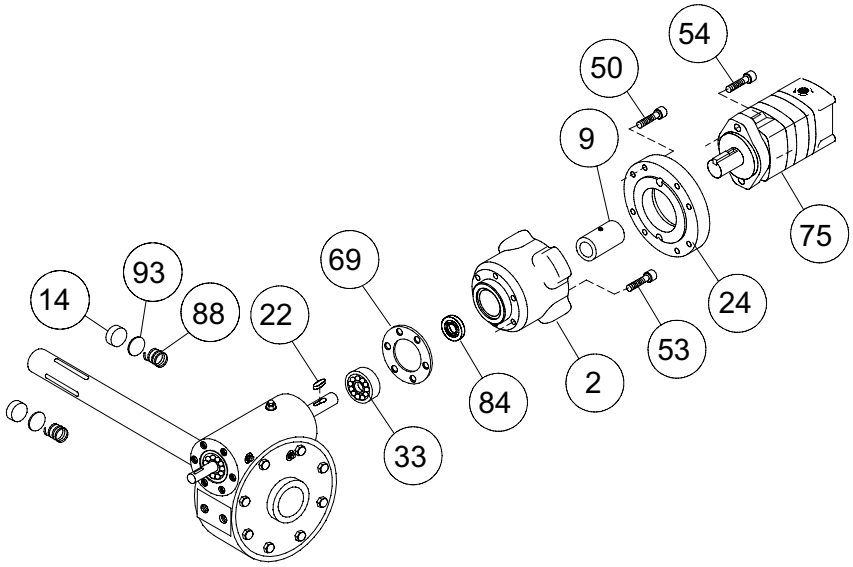
   If necessary, the clutch (item #8) may be disassembled from the drum by removing the (8) capscrews (item #44). Slide drum (item #1) from drum shaft.



4. Remove motor (item #75) from adapter plate (item #24) by removing capscrews (item #54). Remove adapter plate and coupling (item #9) from adapter (item #2) by removing (8) capscrews (item #50).

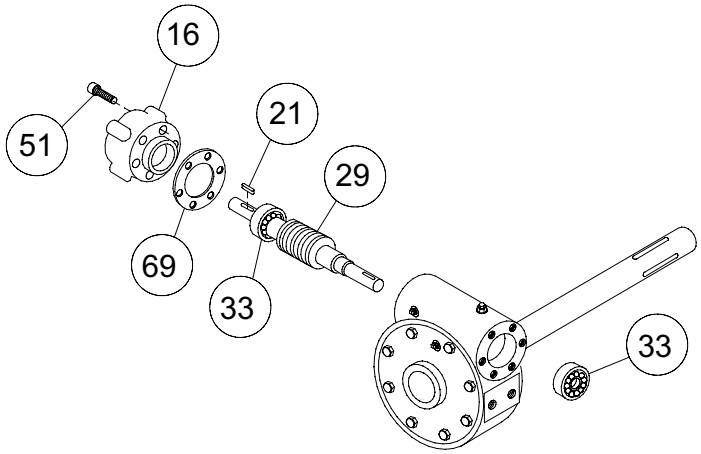
   Remove the key (item #22) from worm shaft. Unscrew (6) capscrews (item #53) and remove adapter from gear housing. Replace adapter seal (item #84) and gasket (item #69).

   The drag brake disc (item #14), spacer (item #93), and spring (item #82) should be examined and replaced if necessary.



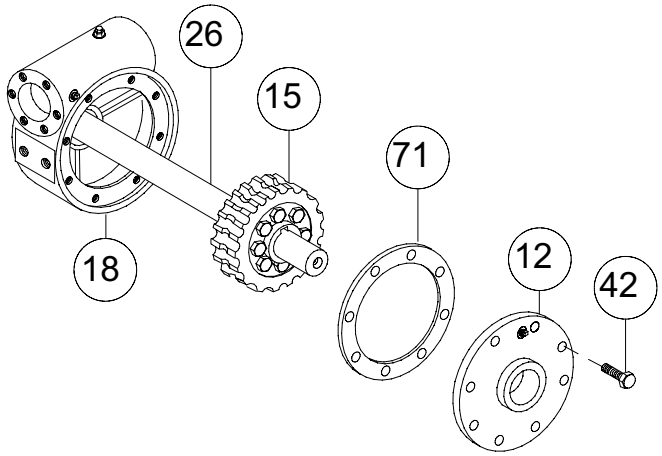
5. For further instructions, refer to *Servicing the Oil Cooled Safety Brake* on page 4. Remove brake housing (item #16) from gear housing by removing (6) capscrews (item #51). Remove key (item #21) from worm. Remove worm (item #29) and bearings (item #33) from gear housing. Use a soft hammer to gently tap input end of worm and drive worm and bearing from gear housing. Once worm has been removed from gear housing, bearing can be pressed from end of worm.

   Check for signs of wear or damage to worm and bearings. Replace if necessary.



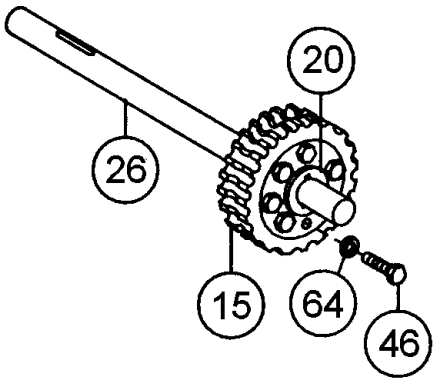
6. Remove gear housing cover (item #12) from gear housing (item #18) by removing (8) capscrews (item #42). Thread (2) of the capscrews into the two tapped holes of cover and tighten until the cover comes loose from the gear housing.

   Remove the cover gasket (item #71) and pull shaft (item #26), with gear attached, from gear housing.

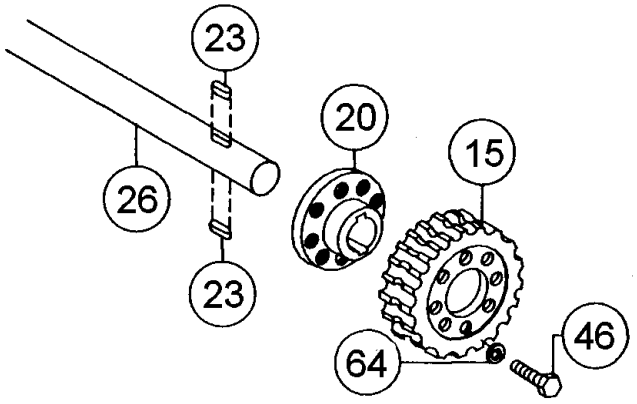


7. Check for signs of wear on gear teeth. If necessary, replace gear by removing (10) capscrews (item #46) and washers (item #64).

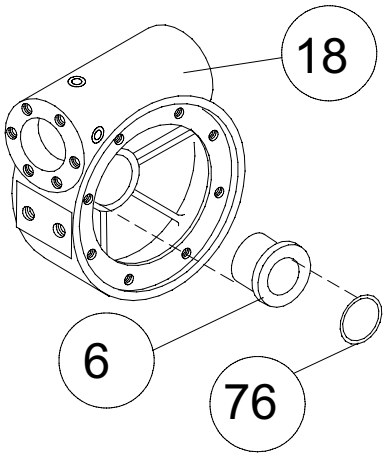
   Place new gear (item #15) onto gear hub. Align holes in gear with holes in hub. Press gear into hub. Be sure gear is seated all the way on the hub. Use (10) capscrews (#46) and lockwashers (item #64) to secure gear to hub. Tighten to 121 ft-lbs (164 Nm) torque each.



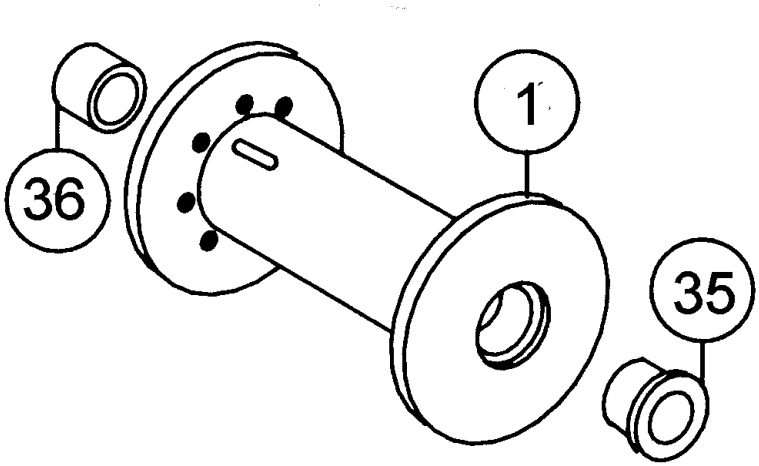
8. If shaft and/or hub is damaged, replace as follows:
   a. Tap keys (item #23) into short keyways of drum shaft (item #26).
   b. Press shaft (item #26) and keys through gear hub (item #20) until end of keys on long end of shaft are flush with hub.
   c. Secure gear to hub using (10) capscrews (item #46) with lockwashers (item #64). Tighten to 121 ft-lbs. (164 Nm) torque each.



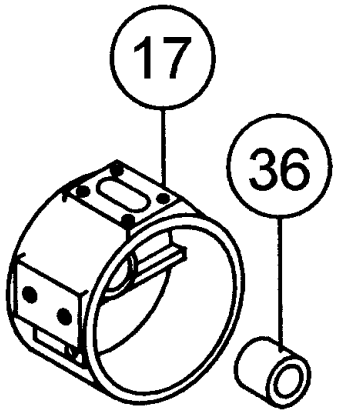
9. Check gear housing bushing (item #6) and o-ring (item #76) for signs of wear. Replace if necessary by pressing old bushing from gear housing. Press new bushing into place and insert new o-ring into groove inside of bushing.



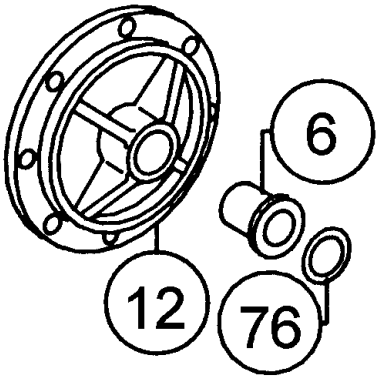
10. Check drum bushings (items #35 and #36) for signs of wear. Replace if necessary by pressing old bushings from drum (item #1). Press bushing (item #35) into bore in drum until its flange is seated against bottom of counterbore. Press bushing (item #36) into opposite bore on drum until end of bushing extends .5" from end of drum.



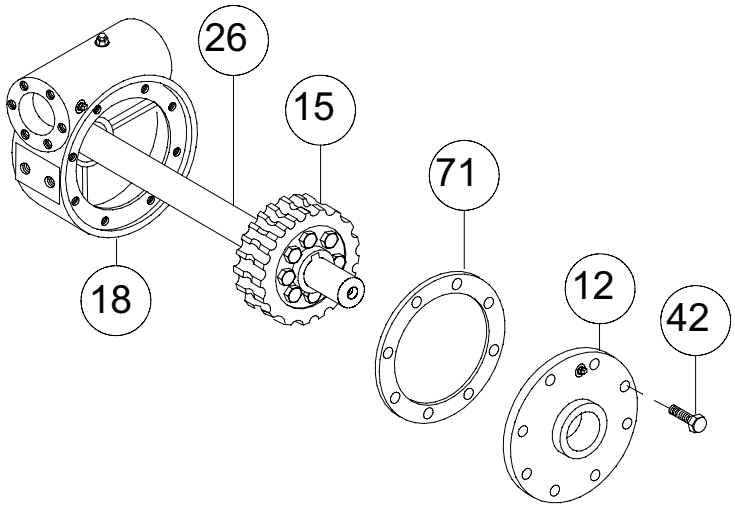
11. Check end bearing bushing (item #36) for signs of wear. If necessary, remove old bushing and press new bushing into place.



12. Check cover bushing (item #6) and o-ring (item #76) for signs of wear. Replace if necessary by pressing old bushing from gear housing. Press new bushing into place and insert new o-ring into groove inside of bushing.



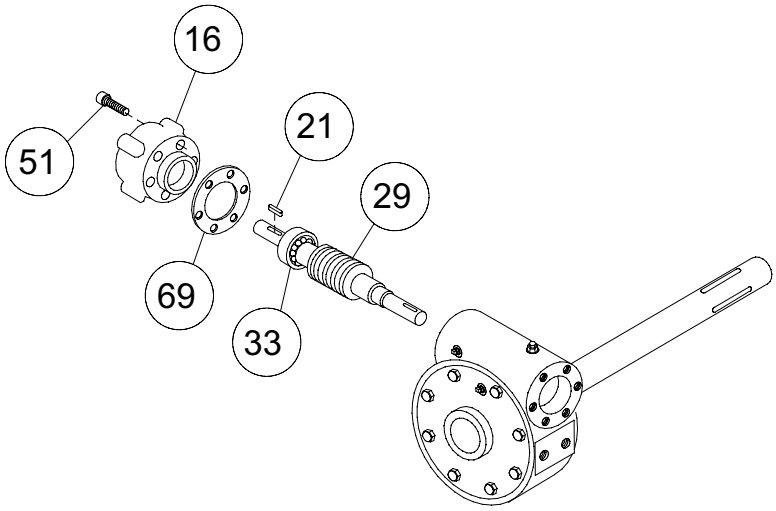
13. Apply grease to end of shaft, opposite gear. Apply grease to bushing in gear housing (item #18). Place greased end of shaft through bushing in gear housing. Place gasket (item #71) onto gear housing cover (item #12). Apply grease to gear end of shaft and cover bushing. Place cover onto shaft and secure to housing with (8) capscrews (item #42). Tighten capscrews to 39 ft-lbs. (52 Nm) each.



14. Press bearing (item #33) onto worm (item #29). **NOTE:** Be sure that thick shoulder of bearing's outer race (side with manufacturer's name and part number) is out, away from worm threads. Press bearing and worm into gear housing.

    Slip gasket (item #69) onto brake housing (item #16). Use (6) capscrews (item #51) to secure brake housing to gear housing. Tighten capscrews to 45 ft-lbs. (61 Nm) each.

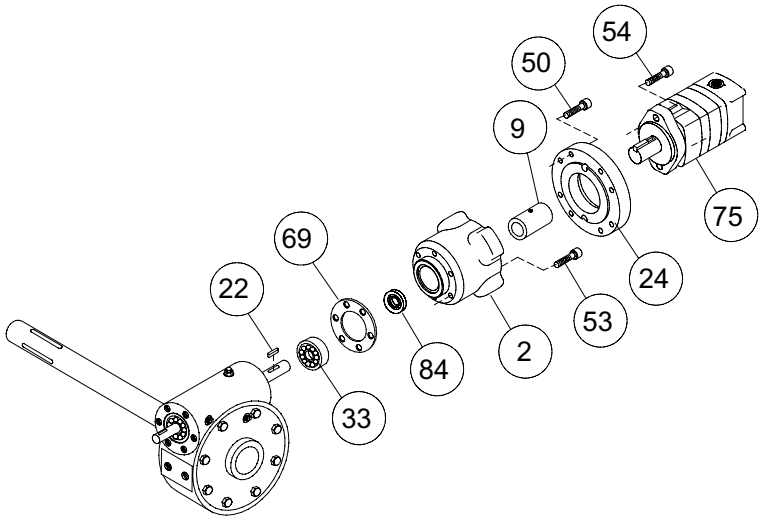
    Place key (item #21) into keyway of worm (item #28). Refer to *Reassembling and Checking the Brake,* page 6 .



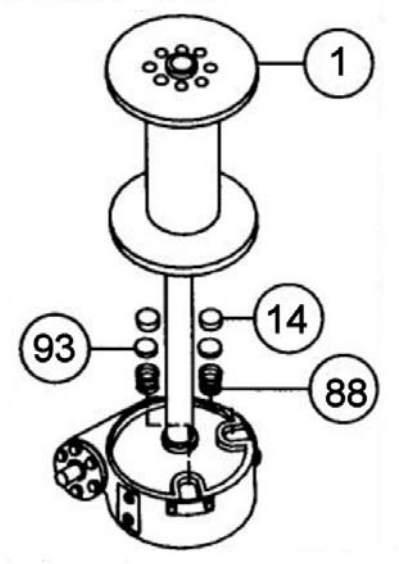
15. Press bearing (item #33) onto worm and into housing. **NOTE:** Be sure that thick shoulder of bearing's outer race (side with manufacturer's name and part number) is out, away from worm threads. Attach adapter (item #2) to gear housing using (6) capscrews (item #53). Tighten capscrews to 45 ft-lbs. (61 Nm) each.

    Insert key (item #22) into keyway of worm shaft. Slide coupling (item #9) over end of worm shaft. Attach adapter plate (item #24) to adapter using (8) capscrews (item #50). Tighten capscrews to 21 ft-lbs (28 Nm) each.

    Place motor shaft, with key in keyway, into coupling. Secure motor to adapter, using (2) capscrews (item #54). Tighten capscrews to 102 ft-lbs. (138 Nm) each.



16. Place winch with gear housing cover down on work bench. Drum shaft should be in a vertical position. Set springs (item #88) into pockets of gear housing with drag brakes (item #14) on top of disc (item #93) and springs. Slide drum assembly onto drum shaft.

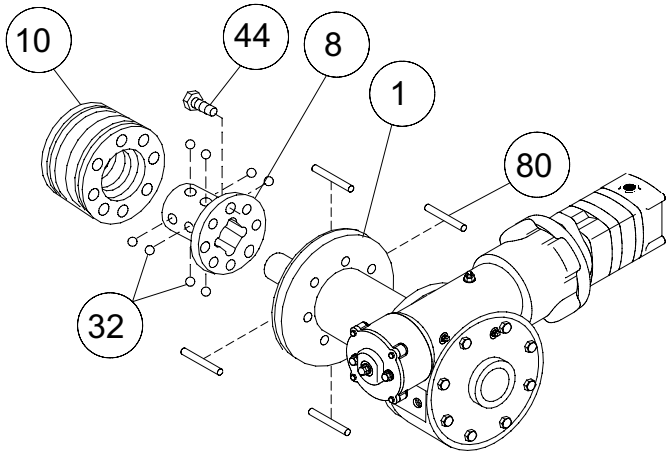


17. Place clutch (item #8) over end of drum shaft. Align clutch over the pilot bushing in drum. Install (8) capscrews (item #44) and tighten the capscrews to 103 ft-lbs. (139 Nm) torque to securely seat the clutch to the drum.

    Rotate the drum to align the clutch slots with the shaft keyways. Lightly grease (4) dowel pins (item #80) and (8) balls (item #32) with molybdenum disulfide or graphite bearing grease. Insert the dowel pins and balls. In the engaged position the balls are nearly flush with the clutch.

    Lightly grease the internal and external groove and bore in locking ring (item #10) and clutch (item #8).

    Slide locking ring onto clutch. When fully engaged, the locking ring touches the clutch flange and there is .71 to .73 inches between the end of the locking ring and the end of the clutch.

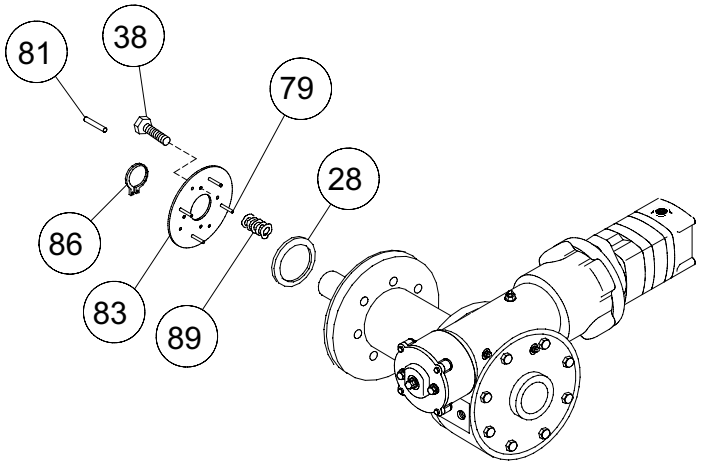


18. Lightly grease the (4) springs (item #89) and place over (4) roll pins (item #79) on retainer plate (item #83).

    NOTE: If roll pins (items #79 and #81) are damaged, remove and install new pins as follows:

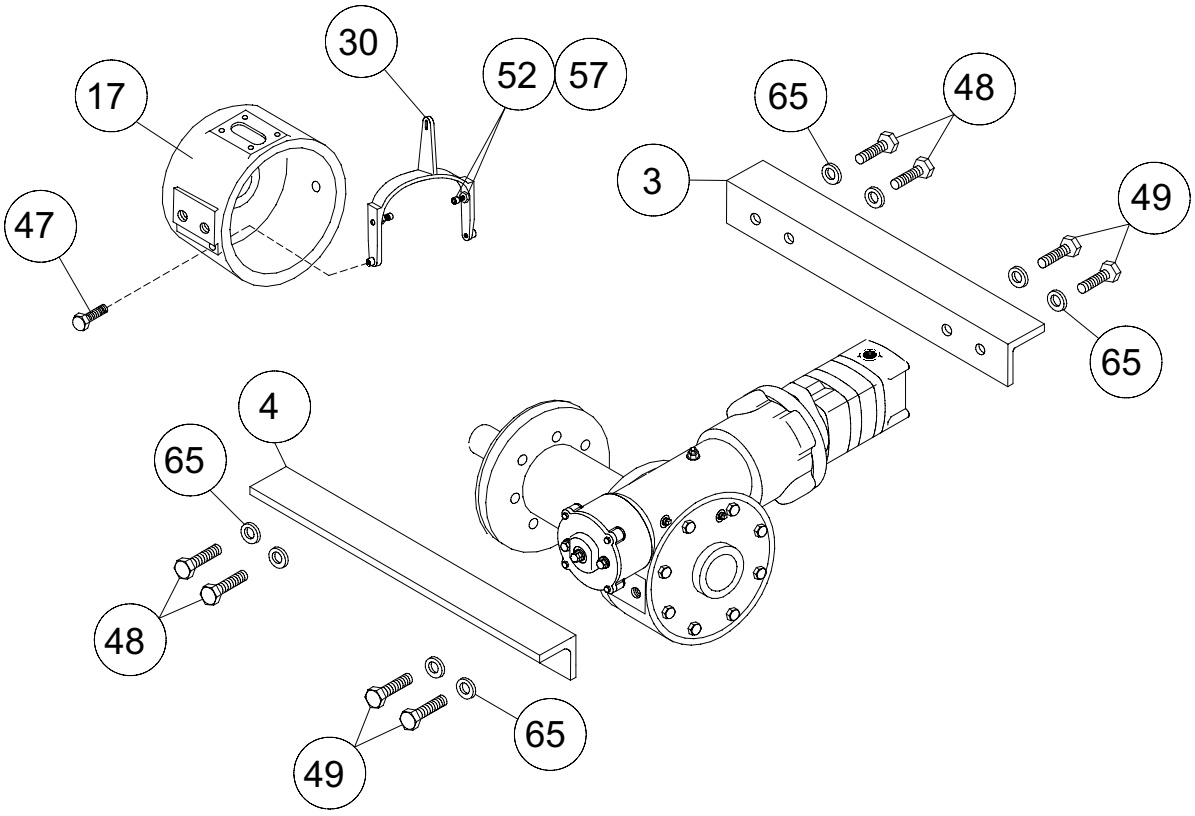
    Insert four roll pins (item #79) into same retainer plate holes. Drive pins into plate until pins extend 5/16" through the clutch housing side of the retainer plate. Drive roll pins (item #81) into ends of (item #79) pins that extend 5/16" beyond retainer plate, until ends of roll pins are flush. Check to make sure that roll pins still extend 5/16" through retainer plate.

    Install spacer (item #28), retainer plate, with springs, and secure using (4) capscrews (item #38). Tighten capscrews

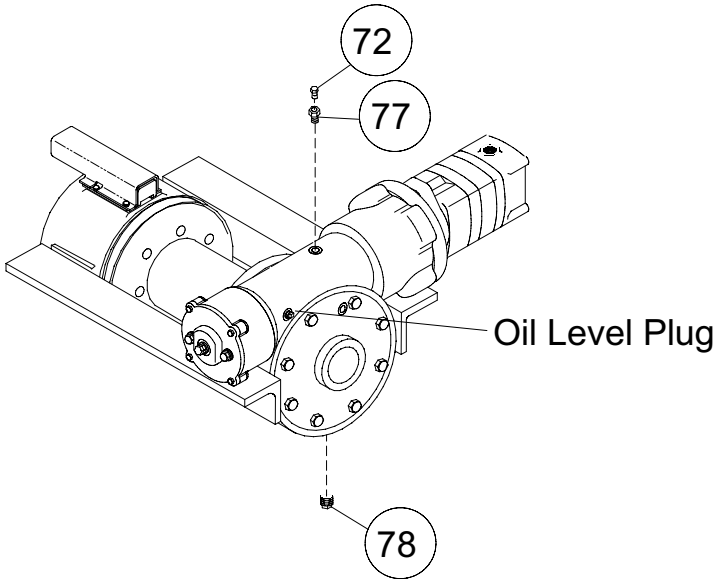


19. Set the yoke (item #30) so that the screw heads (item #52) engage the external groove in the locking ring. Push the clutch housing (item #17) onto the drum shaft and latch the shifter assembly in the engaged “IN” position. Insert the (2) capscrews (item #47) and securely tighten.

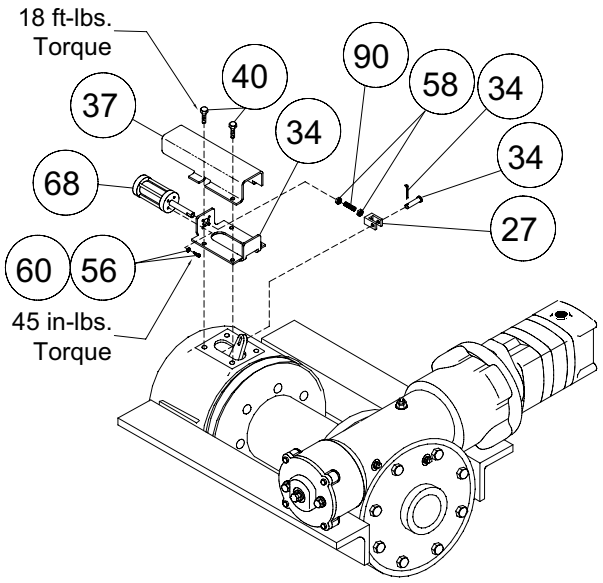
    Apply Loc-tite PST #567 thread sealer to capscrews (item #49) to be installed in gear housing. Attach mounting angles (items #3 & 4) to winch assembly using (4) capscrews (item #48) and lockwashers (item #65), at clutch housing, and (4) capscrews (item #49) and lockwashers (item #65) at gear housing. Tighten capscrews to 500 ft-lbs (678 Nm) each.



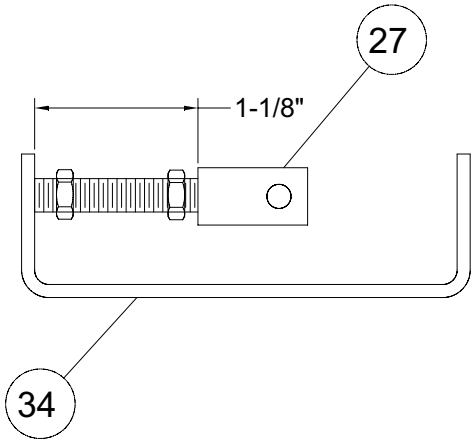
20. Apply Loc-tite PST #567 thread sealer to the pipe plug (item #78). Insert plug into bottom of gear housing. Remove reducer and relief fitting (items #72 and #77) from top of gear housing. Pour 10 1/4 pints of SAE 140 EP gear oil into hole. Apply Loc-tite PST #567 thread sealer to the reducer and relief fitting and replace. Oil level can be checked at oil level plug.



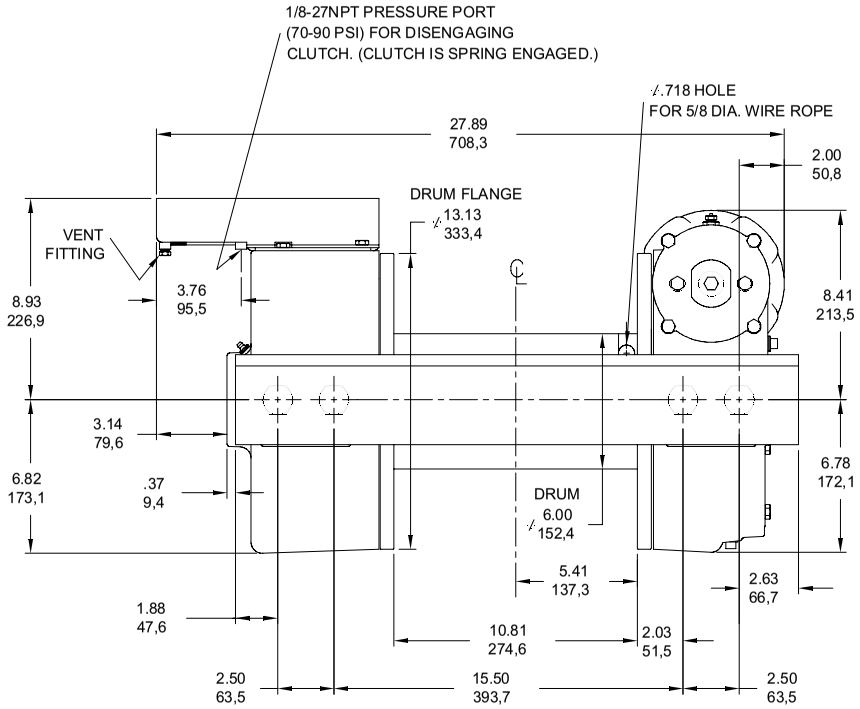
21. Install airshifter bracket (item #34) using (2) capscrews (item #40), reserving the other (2) capscrews to install the cover later. Tighten to 18 ft-lbs. torque. Install the air cylinder (item #68) using (4) screws and lockwashers (items #56 and #60). Tighten these screws to 45 in.-lbs.



22. Apply Loc-tite #262 to stud (item #90). Install (2) jam nuts (item #58) onto stud, then attach stud to air cylinder shaft. Screw clevis (item #27) to other end of stud and adjust stud until back of clevis is 1 1/8" from bracket (item #34), as shown at right.



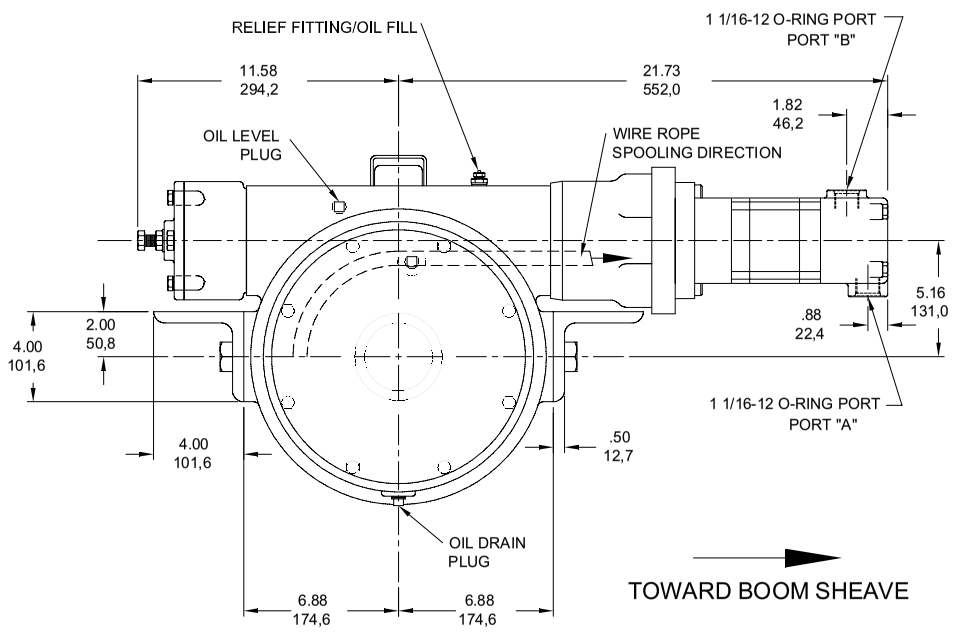
23. Pull yoke to fully engaged position, and attach clevis to shifter using pin (item #67), securing with cotter pin (item #66). Confirm that clevis pin is not in a bind when shifter is in engaged position. Adjust stud slightly if it is. Tighten jam nuts to keep stud in correct position.
24. Connect air pressure (70-90 PSI) to inlet port of air cylinder and disengage clutch. Confirm that clutch is fully disengaged and freespool winch. Release air pressure and confirm that travel of air cylinder shaft is 1/8 to 3/16". Continue to freespool winch and confirm that winch shifts to full engagement.
25. Install air cylinder cover (item #37) using (2) capscrews (item #40). Tighten to 18 ft-lbs. torque.
26. Operate winch forward and reverse and confirm that drum rotates.



VIEW FROM BEHIND WINCH

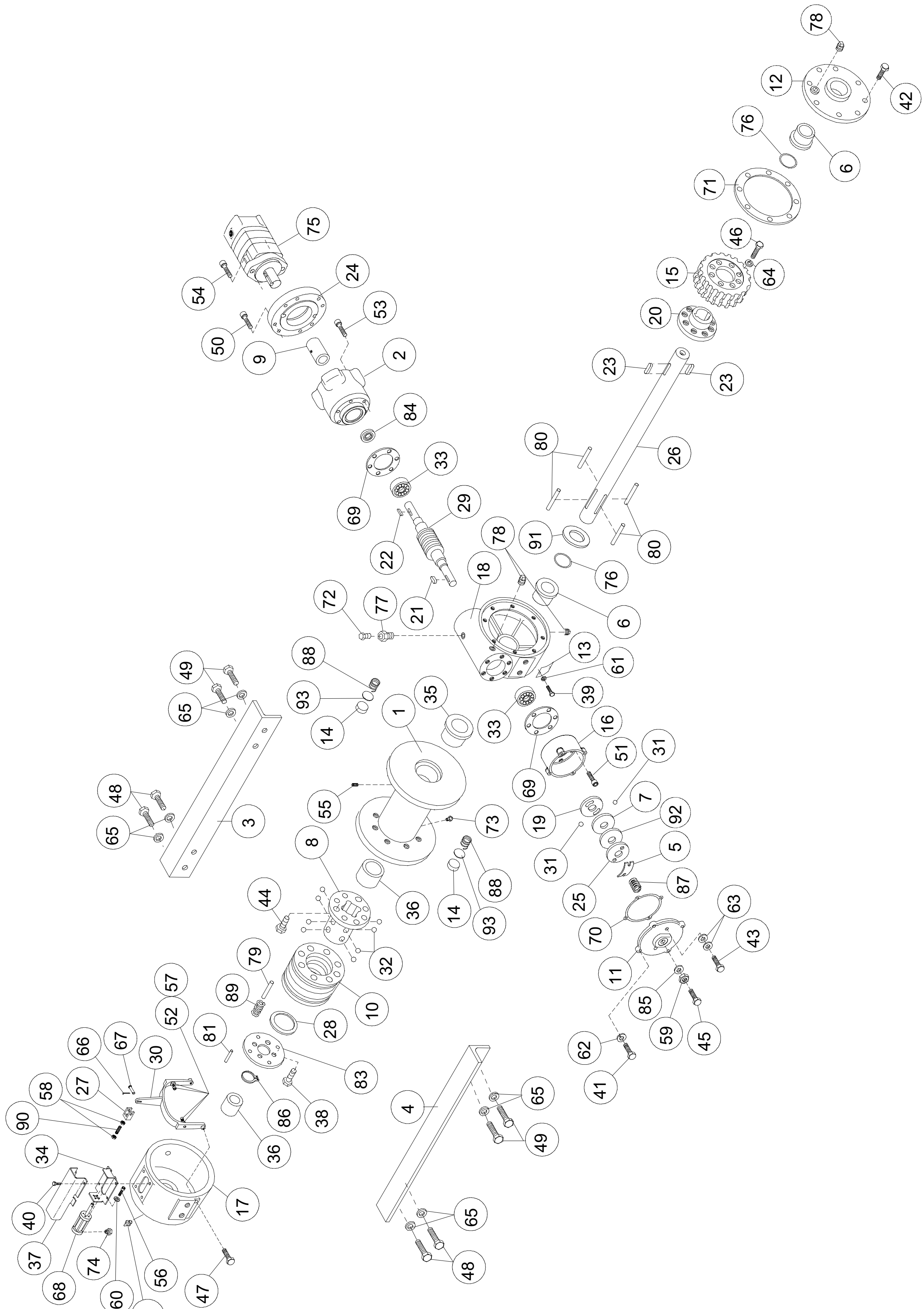
LOOKING TOWARD BOOM SHEAVE

WINCH OIL CAPACITY: 10 1/4 PINTS OF SAE EP-140



VIEW FROM DRIVER'S SIDE

DIMENSIONS SHOWN ARE INCHES OVER MILLIMETERS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H-930 WINCH

Item No.	Qty.	Parts No.	Description
1	1	234193	DRUM ASSEMBLY
2	1	300048	ADAPTER - MOTOR
3	1	303092	ANGLE - MOTOR SIDE
4	1	303093	ANGLE - BRAKE SIDE
5	1	306035	SPRING - FLAT
6	2	308083	BUSHING
7	1	314007	CAM PLATE
8	1	324151	CLUTCH
9	1	299733	COUPLING - MOTOR
10	1	324321	LOCKING RING
11	1	328027	COVER - BRAKE
12	1	328122	COVER - GEAR HOUSING
13	2	328127	COVER - DRAG BRAKE
14	2	330010	SHOE - DRAG BRAKE
15	1	334150	GEAR - RING R.H.
16	1	338221	HOUSING - WORM BRAKE
17	1	338254	HOUSING - CLUTCH
18	1	338343	HOUSING - GEAR
19	1	340011	HUB - BRAKE
20	1	340068	HUB - GEAR
21	1	342053	KEY
22	1	342083	KEY
23	1	342153	KEY
24	1	350535	PLATE - HYD ADAPTER
25	1	352021	RETAINER PLATE
26	1	357173	SHAFT - DRUM
27	1	358067	CLEVIS - AIR SHIFTER
28	1	362224	SPACER - DRUM
29	1	368181	WORM - R.H.
30	1	370056	YOKE - SHIFTER
31	2	400007	BALL - BRAKE
32	8	400011	BALL - CLUTCH
33	2	402045	BALL BEARING
34	1	408330	BRACKET - AIR SHIFTER
35	1	412051	BUSHING - GEAR HSG
36	2	412052	BUSHING - END BRG
37	1	413100	COVER - SHIFTER
38	4	414038	CAPSCREW - 1/4-20NC X 3/4 HX HD GR5
39	4	414055	CAPSCREW - 1/4-20NC X 1/2 HX HD Z/P
40	4	414069	CAPSCREW - 5/16-18NC X 3/4 HX HD
41	4	414111	CAPSCREW - 5/16-18NC X 1 HX HD GR5
42	8	414277	BOLT - 3/8-16NC X 1 HX HD GR5 NYLOK
43	2	414399	BOLT - 3/8-16NF X HX GR5 ALL-THREAD
44	8	414572	CAPSCREW - 1/2-20NF X 1 1/4 GR5
45	1	414603	CAPSCREW - 1/2-20NF X 1 3/4 GR5 ALL-THREAD
46	10	414606	CAPSCREW - 1/2-20NF X 2 HX HD GR8
47	2	414619	BOLT - 1/2-13NC X 2.5 HX HD GR5 ALL-THREAD
48	4	414784	CAPSCREW - 7/8-9NC X 2 HX HD GR5
49	4	414786	CAPSCREW - 7/8-9NC X 2 HX HD GR5 NYLOK
50	8	414871	SCREW - 5/16-18NC X 1 1/4 HX SOC
51	6	414897	CAPSCREW - 3/8-16NC X 1 SOCKET HD
52	2	414905	CAPSCREW - 3/8-16NC X 1 1/4 SOC HD
53	6	414909	CAPSCREW - 3/8-16NC X 1 3/4 HX SOC
54	2	414950	SCREW - 1/2-13NC X 3/4 HX SOC
55	1	416059	SETSCREW - 3/8-16NC X 1/2
56	4	416262	SCREW - #10-32NF X 3/4 HX SOC Z/P
57	2	418035	NUT - 3/8-16NC HX REG Z/P
58	2	418041	NUT - 3/8-24NF HX JAM Z/P
59	1	418067	NUT - 1/2-20NF HX JAM
60	4	418141	LOCKWASHER - #10 MED
61	4	418149	LOCKWASHER - 1/4 MED Z/P
62	4	418163	LOCKWASHER - 5/16 MED Z/P
63	4	418184	FLAT WASHER - 3/8 ID X 5/8 OD X 1/8
64	10	418217	LOCKWASHER - 1/2 MED
65	8	418258	LOCKWASHER - 7/8 MED
66	1	424005	COTTER PIN
67	1	424029	PIN - CLEVIS
68	1	433026	AIR CYLINDER
69	2	442192	GASKET
70	1	442194	GASKET
71	1	442195	GASKET
72	1	456008	RELIEF FITTING
73	2	456031	LUBE FITTING
74	1	456038	BREATHER VENT FITTING
75	1	458049	MOTOR
76	2	462013	QUAD RING
77	1	468002	REDUCER
78	2	468011	PIPE PLUG
79	4	470042	ROLL PIN
80	4	470044	DOWEL PIN
81	4	470056	ROLL PIN
82			
83	1	474030	PLATE - RETAINER
84	1	486068	SEAL
85	1	486076	SEAL
86	1	490025	RING - RETAINER
87	1	494010	SPRING
88	2	494002	SPRING - BRAKE DISC
89	4	494069	SPRING
90	1	502014	STUD
91	1	518016	THRUST WASHER - GEAR HSG
92	1	530007	THRUST PLATE - BRAKE
93	2	530094	SPACER - BRAKE DISC

LIMITED WARRANTY

RAMSEY WINCH warrants each new RAMSEY Winch to be free from defects in material and workmanship for a period of one (1) year from date of purchase.

The obligation under this warranty, statutory or otherwise, is limited to the replacement or repair at the Manufacturer's factory, or at a point designated by the Manufacturer, of such part that shall appear to the Manufacturer, upon inspection of such part, to have been defective in material or workmanship.

This warranty does not obligate RAMSEY WINCH to bear the cost of labor or transportation charges in connection with the replacement or repair of defective parts, not shall it apply to a product upon which repair or alterations have been made, unless authorized by the Manufacturer, or for equipment misused, neglected or which has not been installed correctly.

RAMSEY WINCH shall in no event be liable for special or consequential damages. RAMSEY WINCH makes no warranty in respect to accessories such as being subject to the warranties of their respective manufacturers.

RAMSEY WINCH, whose policy is one of continuous improvement, reserves the right to improve its products through changes in design or materials as it may deem desirable without being obligated to incorporate such changes in products of prior manufacture.

If field service at the request of the Buyer is rendered and the fault is found not to be with RAMSEY WINCH's product, the Buyer shall pay the time and expense to the field representative. Bills for service, labor, or other expenses that have been incurred by the Buyer without approval or authorization by RAMSEY WINCH will not be accepted.

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OM-914114-0207-B