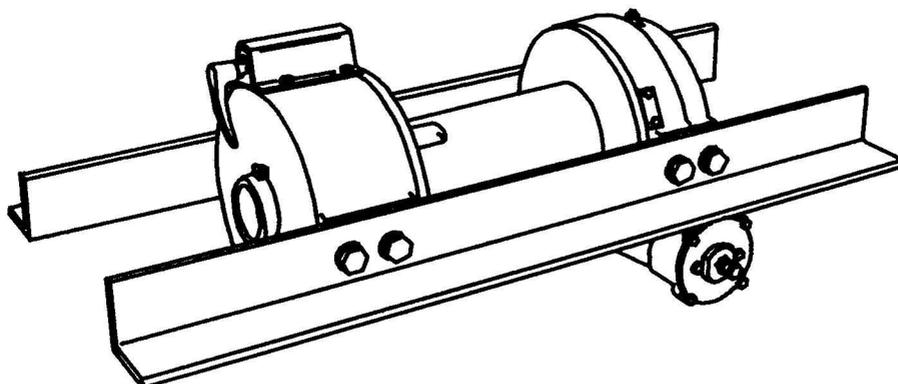




OPERATING, SERVICE  
AND MAINTENANCE  
MANUAL



**MODEL 930 SERIES  
MODEL H-930 SERIES  
DOW-LOK<sup>®</sup> EQUIPPED  
INDUSTRIAL LOW-MOUNT  
WINCHES**

**U.S. PATENT #4379502**



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

## NOTES

## TABLE OF CONTENTS

INTRODUCTION .....	1
WARRANTY INFORMATION.....	1
SPECIFICATIONS .....	1
TECHNIQUES OF OPERATION .....	2
WARNINGS .....	2
WINCH MAINTENANCE.....	3
WINCH MOUNTING .....	4
CABLE INSTALLATION .....	4
ADJUSTING THE OIL COOLED SAFETY BRAKE .....	4
SERVICING OF THE OIL COOLED SAFETY BRAKE.....	5
RE-ASSEMBLING AND CHECKING THE BRAKE .....	6
TEST FOR PROPER BRAKE ASSEMBLY.....	6
INSTRUCTIONS FOR CHECKING ASSEMBLY ARRANGEMENT AND SETTING OF WORM BRAKE .....	7
HYDRAULIC SYSTEMS/PERFORMANCE CHARTS .....	8
HYDRAULIC SCHEMATIC .....	9
TROUBLESHOOTING .....	9
INSTRUCTIONS FOR OVERHAUL OF 930/H-930 SERIES DOW-LOK WINCHES	
DISASSEMBLY .....	10-13
RE-ASSEMBLY.....	14-16
AIR SHIFTER OVERHAUL.....	17
DIMENSIONAL DRAWINGS .....	18-20
PARTS LIST AND PARTS DRAWING .....	21-26
LIMITED WARRANTY.....	BACK COVER

RAMSEY WINCH MODELS 930 & H-930 DOW-LOK<sup>®</sup>

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.

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 your 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 1st Layer (lbs).....		30,000				
		(Kgs).....13,590				
Gear Reduction: All Models.....41:1						
Shipping Weight: 930.....470 lbs. (213 Kgs.)						
H-930.....515 lbs. (238 Kgs.)						
Layer of Cable			1	2	3	4
Rated Line Pull All Models	Lbs.		30,000	24,500	20,700	18,000
	Kgs.		13,590	11,090	9,370	8,150
*Cable capacity All Models	Ft.		25	65	105	155
	M.		7	19	31	47
Line Speed		Worm RPM	1	2	3	4
930	FPM	370	14.3	19.4	22	26
	MPM		4.3	5.8	6.6	7.9
H-930	FPM	335	13.0	17.6	20	24
	MPM (35GPM)		3.9	5.3	6.0	7.2
*These specifications are based on recommended cable of 3/4" (19mm) 6x19 extra improved plow steel cable.						

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

## **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 the 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<sup>®</sup> clutch provides freespooling and clutch engagement with the cable drum. With the clutch disengaged, the cable can be freespoiled off the drum. For winching in the load, the clutch must be fully engaged with the drum.

Notches on the shifter shaft engage the bracket to positively latch the Dow-lok<sup>®</sup> clutch in the engaged, "IN" position or disengaged, "OUT" position.

**TO DISENGAGE CLUTCH** raise handle so notch clears bracket. Pull handle out and latch the shaft notch onto bracket.

**DO NOT ATTEMPT TO DISENGAGE WITH A LOAD ON THE WINCH.**

**TO ENGAGE CLUTCH** raise handle so notch clears bracket. and push handle in as far as it will go. The clutch will automatically spring into engagement and latch when the clutch aligns with the drum shaft. In order to attain full engagement, internal elements of the clutch **MUST** be aligned. This alignment will take place when cable drum or cable drum shaft turns a maximum of 1/4 revolution.

**DO NOT ATTEMPT TO LIFT A LOAD UNLESS NOTCH IN SHIFTER SHAFT IS SECURELY LATCHED. KEEP CLEAR OF SPRING LOADED HANDLE DURING AUTOMATIC ENGAGEMENT.**

The air-shifter clutch allows rapid unspooling of the cable, from cable drum, for hooking onto load. The air shifter requires a separate, regulated air supply of 60-90 PSI. The clutch is operated by an air-cylinder as follows:

**TO DISENGAGE CLUTCH** run the winch in the reverse "OUT" direction until the load is off the cable. Apply 60-90 PSI to inlet port fitting of air cylinder.

**TO ENGAGE CLUTCH** remove air pressure from air cylinder. Run the winch in reverse "OUT" direction until the cable drum starts turning. After the clutch is fully engaged, the winch is ready for winching in the cable.



## **WARNINGS**

**CLUTCH MUST BE TOTALLY ENGAGED BEFORE STARTING THE WINCHING OPERATION.**

**DO NOT DISENGAGE THE CLUTCH UNDER LOAD.**

**DO NOT LEAVE CLUTCH ENGAGED WHEN WINCH IS NOT IN USE.**

**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.**

## 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. 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 gasses 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. In the case of jaw clutch winches, check the action of the sliding clutch, making sure it is fully engaging and disengaging with the cable drum. Observe the jaws on both the clutch and cable drum, checking for rounding of the driving faces. If rounding has occurred they should be replaced immediately.
3. In the case of Dow-Lok clutches, 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.
4. Check the winch mounting bolts. If any are missing, replace them and securely tighten any that are loose. Make sure to use only grade 5 bolts or better.
5. 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 the Owner's Manual.
6. Check alignment of chain and sprockets and adjust as required to minimize wear.
7. 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.
2. Fill the winch to the oil level plug with clean kerosene. Run the winch a few minutes with no load in the reel in direction. Drain the kerosene from the winch.
3. Refill the winch to the oil level plug with all purpose E.P. 140 gear oil.
4. Inspect frame and surrounding structure for cracks or deformation.
5. Gear wear can be estimated by rocking the drum back and forth and if necessary drain oil and remove cover for closer inspection.

## 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.

All standard model 930/H-930 series winches are furnished with recommended mounting angles. Angle size is 1/2 x 4 x 4 high strength steel angle.

## CABLE INSTALLATION

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

## ADJUSTING THE OIL COOLED SAFETY BRAKE

The oil-cooled, fully adjustable, automatic safety 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:

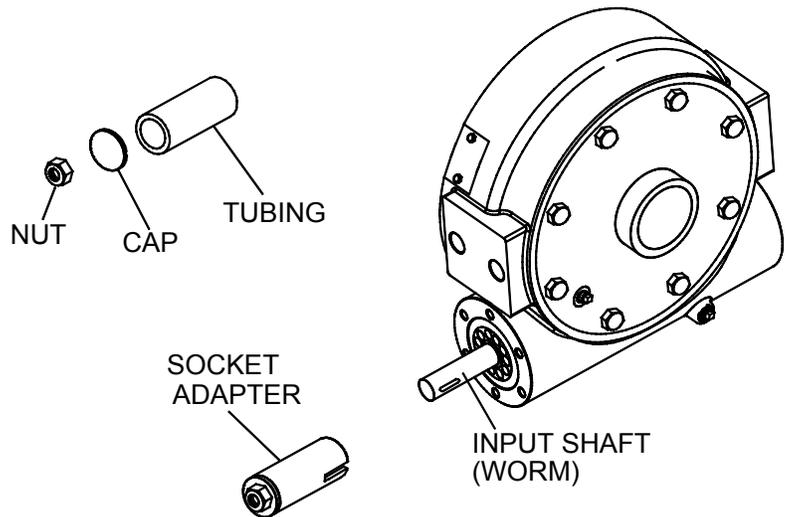
1. Loosen the lock nut on the adjusting screw.
2. Tighten the brake by turning the adjusting screw clockwise. CAUTION: Only 1/4 turn is usually required to adjust the brake. Over-tightening can cause overheating, and damage to the brake parts. Tighten the lock nut after adjustment is completed.

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 to 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 figure at right.

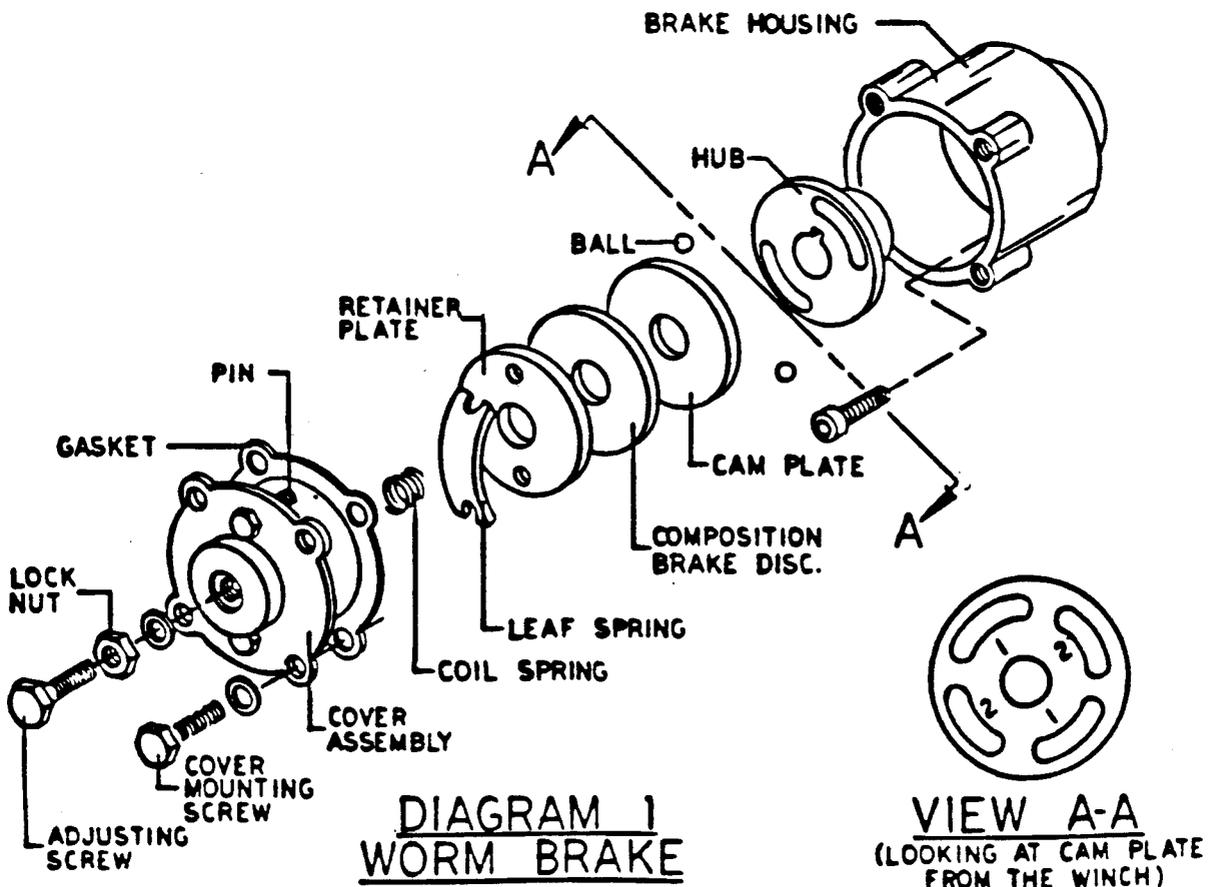
After welding the cap and nut to the tubing, slot the tubing as shown. This will allow the special adapter to slide over the keyway and will then act as a large socket. A torque wrench can then be used to apply the proper torque. Turn the torque wrench so

that the drum turns in the spool out direction or lowering direction. The torque rating for the brake on the Model 930/H-930 should be 65 to 75 ft-lbs. If the 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 locknut.



## SERVICING OF THE OIL COOLED SAFETY 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.  
Note slots balls are in.
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 ball into appropriate slots of cam. (Refer to diagram 1, page 5). Use stiff grease to hold balls into place and slide cam over end of worm. Be sure that balls are secure, between cam slots and hub slots. Refer to Page 7 to determine proper ball slot setting.
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. Install drain plug and add 4 pints all purpose E.P. 140 oil.
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.

## 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, place the brake balls in the alternate set of slots in the cam plate, then carefully follow the instructions for re-assembling and checking the brake.

## INSTRUCTIONS FOR CHECKING ASSEMBLY ARRANGEMENT AND SETTING OF WORM BRAKE

When the worm brake is assembled the brake must be set with the balls in the #1 or the #2 set of cam slots. (View A-A, page 5). It is indicated on the name plate whether the balls were installed in the #1 or the #2 slots at the factory.

Three factors determine which slots the balls should be in:

1. Direction cable winds on the drum. It normally **WINDS OVER THE TOP** of the drum barrel.
2. The cut of the gear set, right or left gear. The last letter in the model number of the winch, either R or L, designates right or left gear set. Example: R-20AR, R-30L, 700R, 800L.
3. The side of the winch that the input shaft is on. The **INPUT SHAFT IS NORMALLY TOWARD THE CAB**. Whether the winch has the gear box on the right or on the left side of the winch does not affect the brake setting.

**EXAMPLE:** When cable winds over the top of the drum, winch has a right cut gear and input shaft is toward the cab (diagram 2), then the balls need to be in the #2 cam slots.

If any one of these three factors differ from those stated above, the balls need to be in the #1 slots in the cam. A second change in these factors requires the original arrangement, and if all three factors are different, the balls need to be in the #1 slots. (See page 5 and 6 for disassembly and assembly instructions).

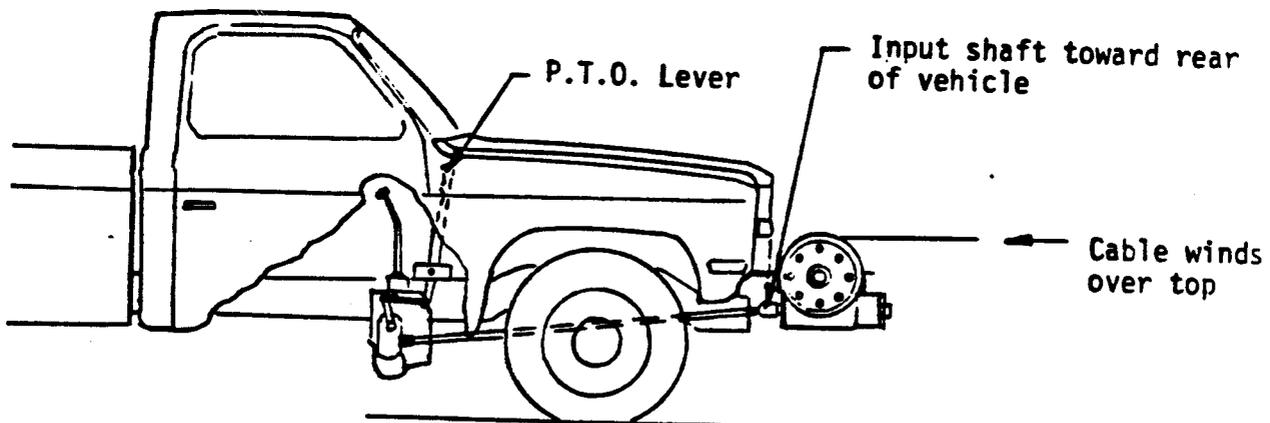


DIAGRAM 2

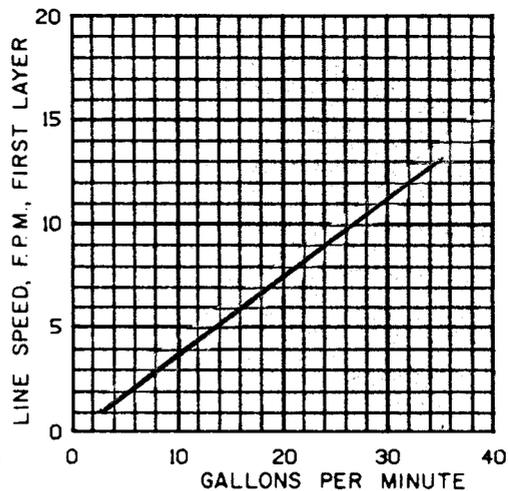
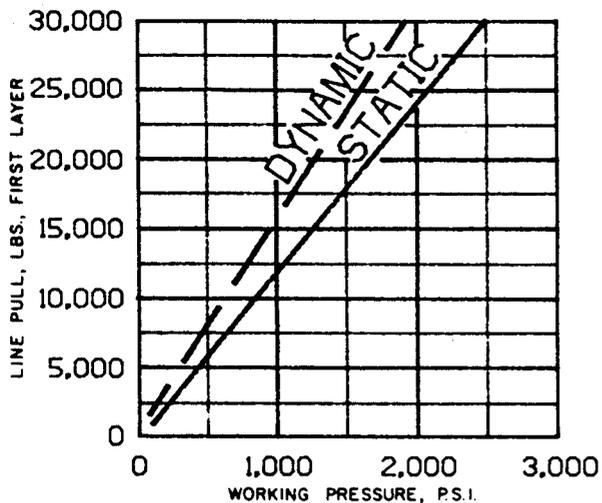
Three factors determine brake assembly arrangement.

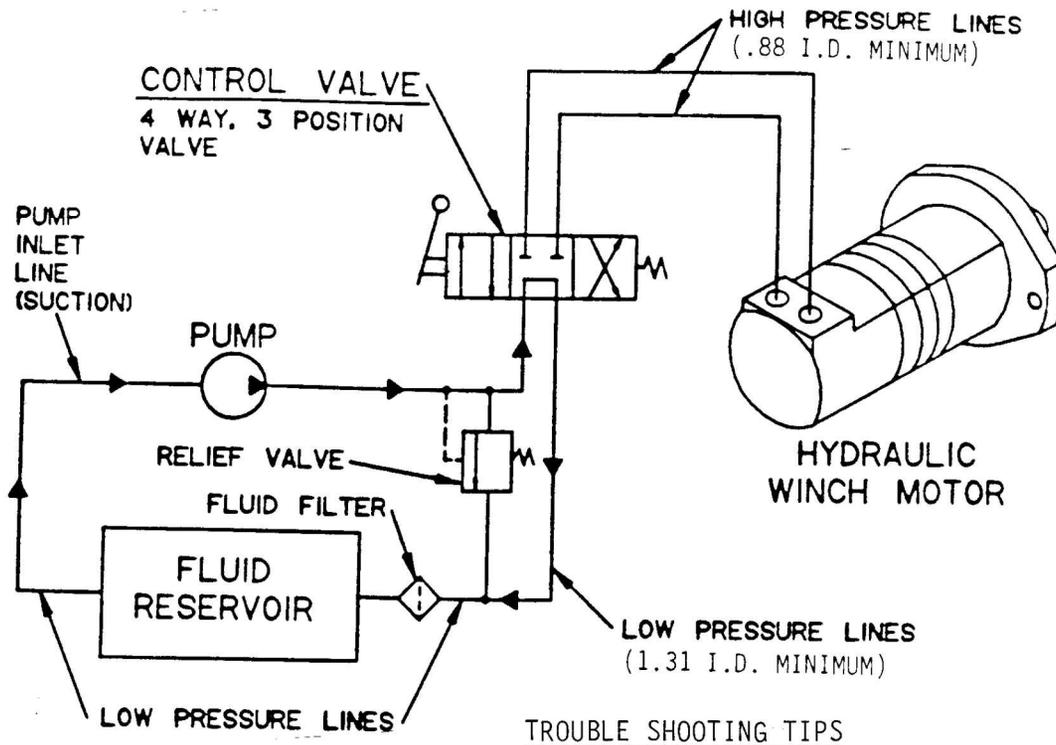
## HYDRAULIC SYSTEMS

Refer to the performance charts, below, to properly match your hydraulic system to the H-930 Series Winch performance. The charts consist of:  
(1) Line speed, first layer (F.P.M.) vs. gallons per minute (G.P.M.) and  
(2) Line pull (lbs.) first layer vs. working pressure (P.S.I.). STATIC (solid line) refers to hoisting a suspended load from rest; DYNAMIC (dotted line) refers to maintaining the motion of a moving load.

Performance based on a motor displacement of 24 cubic inches with 35 GPM maximum flow rate. See page 18 for motor port size.

### **H-930 Performance 30,000 Lb. Duty Rating 41:1 Gear Ratio**





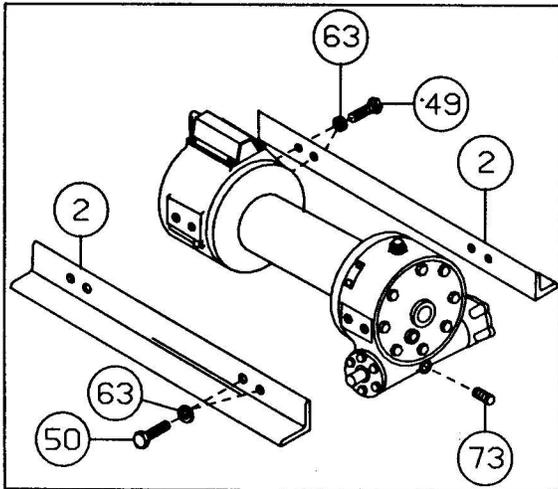
TROUBLE SHOOTING TIPS

CONDITION	POSSIBLE CAUSE	CORRECTION
CLUTCH INOPERATIVE OR BINDS UP.	<ol style="list-style-type: none"> <li>1. Dry or rusted shaft.</li> <li>2. Bent yoke or linkage.</li> </ol>	<ol style="list-style-type: none"> <li>1. Clean and lubricate</li> <li>2. Replace yoke or shaft assembly.</li> </ol>
CLUTCH HANDLE WON'T LATCH.	<ol style="list-style-type: none"> <li>1. Loose shaft bracket or linkage.</li> <li>2. Debris in clutch.</li> </ol>	<ol style="list-style-type: none"> <li>1. Adjust shift linkage per instructions, page 16 paragraph 22.</li> <li>2. Clean and lube per page 15 paragraph 19.</li> </ol>
OIL LEAKS FROM HOUSING.	<ol style="list-style-type: none"> <li>1. Seal damaged or worn.</li> <li>2. Too much oil.</li> <li>3. Damaged gasket.</li> </ol>	<ol style="list-style-type: none"> <li>1. Replace seal.</li> <li>2. Drain excess oil. Refer to TECHNIQUES OF OPERATION.</li> <li>3. Replace gasket.</li> </ol>
LOAD DRIFTS DOWN.	<ol style="list-style-type: none"> <li>1. Safety brake has become worn.</li> <li>2. Safety brake out of adjustment.</li> </ol>	<ol style="list-style-type: none"> <li>1. Replace brake disc. (See page 5, diagram 1).</li> <li>2. Turn adjusting bolt clockwise 1/4 turn or until load does not drift.</li> </ol>
WINCH RUNS TOO SLOW.	<ol style="list-style-type: none"> <li>1. Hydraulic motor worn out.</li> <li>2. Low flow rate.</li> </ol>	<ol style="list-style-type: none"> <li>1. Replace motor.</li> <li>2. Check flow rate. Refer to HYDRAULIC SYSTEMS flow chart, page 8.</li> </ol>
CABLE DRUM WILL NOT FREE SPOOL.	<ol style="list-style-type: none"> <li>1. Winch not mounted squarely, causing end bearings to bind drum.</li> </ol>	<ol style="list-style-type: none"> <li>1. Check mounting. Refer to WINCH MOUNTING page 4.</li> </ol>
CABLE BIRDNESTS WHEN CLUTCH IS DISENGAGED.	<ol style="list-style-type: none"> <li>1. Drag brake disc worn.</li> </ol>	<ol style="list-style-type: none"> <li>1. Replace discs.</li> </ol>
HYDRAULIC FLUID LEAKS FROM HOLE IN MOTOR ADAPTER.	<ol style="list-style-type: none"> <li>1. Damaged motor shaft seal.</li> </ol>	<ol style="list-style-type: none"> <li>1. Replace seal.</li> </ol>

# INSTRUCTIONS FOR OVERHAUL OF RAMSEY

## MODEL 930 "DOW-LOK" WINCH

### DISASSEMBLY



Refer to parts list and parts drawing pages for actual item numbers and corresponding parts numbers.

(1)

Drain oil from gear housing by removing pipe plug (item #73) from gear housing.

Shift clutch into the engaged "IN" position. Remove frame angles (item #2) from winch by unscrewing (items #49 & #50) cap screws with lockwashers (item #63).

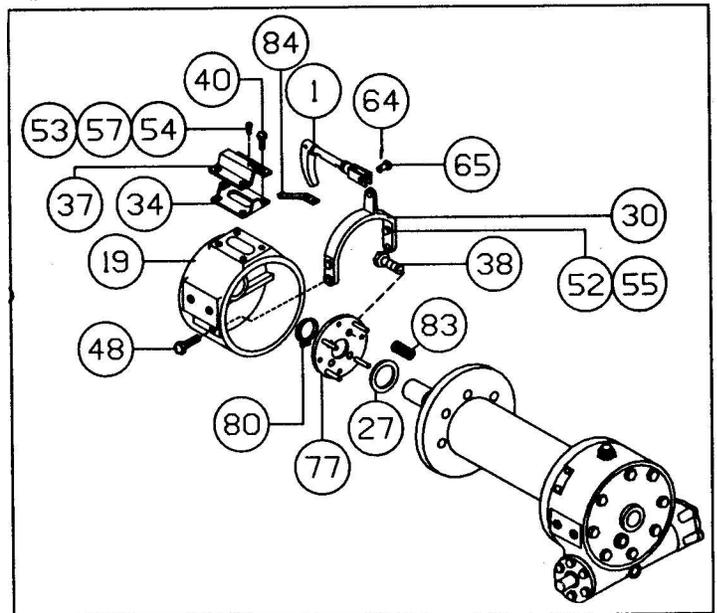
(2)

Remove two cap screws (item #48) from clutch housing (item #19). Remove the clutch shifter cover (item #37) by removing four cap screws (item #40). Remove the shifter lever assembly (item #1) by removing cotter pin and clevis pin (items #64 & #65).

**NOTE!** The shifter lever assembly (item #1) and bracket (item #34) will remain together. If it is necessary to separate them, you must loosen the large jam nut and screw the clevis and nut off the shifter shaft. If necessary remove the flat springs (item #84) by removing the two cap screws, lockwashers and nuts (items #53, #57 & #54).

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 drum. Press in on retainer plate (item #77) to relieve the spring tension and remove the retainer ring (item #80).

Remove four cap screws (item #38), retainer plate, springs (item #83) and spacer (item #27).



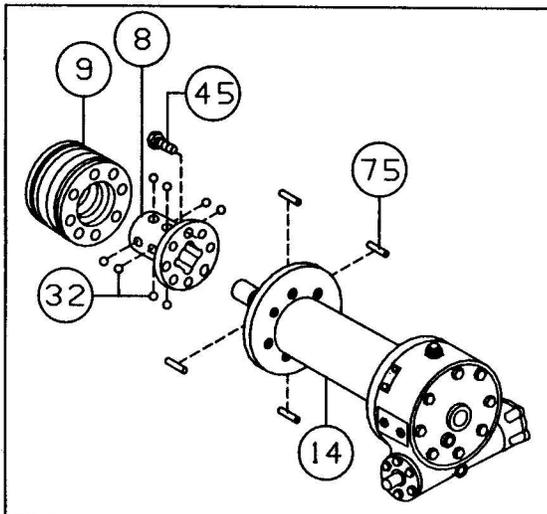
**NOTE:** For overhaul of Air Shifter, refer to page 17.

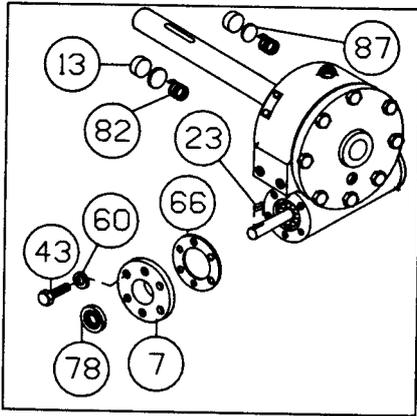
(3)

Slide the locking ring (item #9) from the clutch. **NOTE:** The locking ring cannot be removed unless the clutch is engaged, with dowel pins (item #75) seated in the shaft keyways.

Rotate the drum so the eight balls (item #32) and four dowel pins (item #75) can be removed.

If necessary, the clutch (item #8) may be disassembled from the drum by removing eight cap screws (item #45). Slide drum (item #14) from drum shaft.





(4)

Remove key (item #23) from worm gear shaft.

Remove bearing cap (item #7) and gasket (item #66) by unscrewing six capscrews (item #43) and lockwashers (item #60).

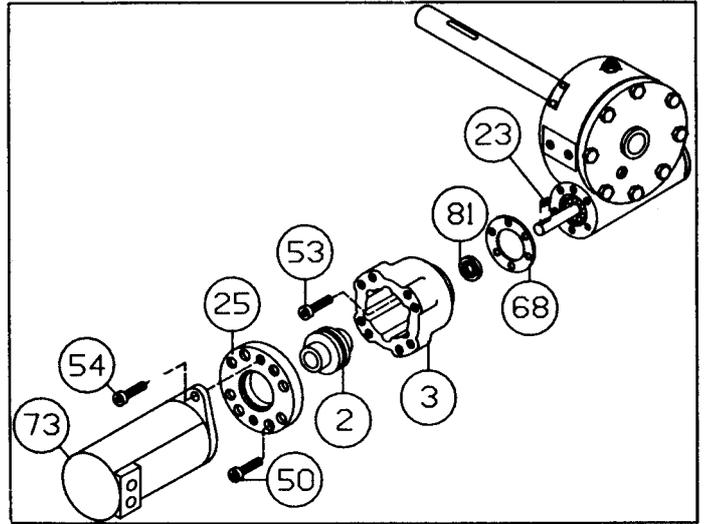
Remove seal (item #78) from bearing cap and press new seal into place.

Drag brake disc (item #13), spacer (item #87) and spring (item #82) should be examined and replaced if necessary.

(5)

Remove motor (item #73) from adapter plate (item #25) by removing capscrews (item #54). Remove adapter plate and coupling (item #2) from adapter (item #3) by unscrewing eight capscrews (item #50).

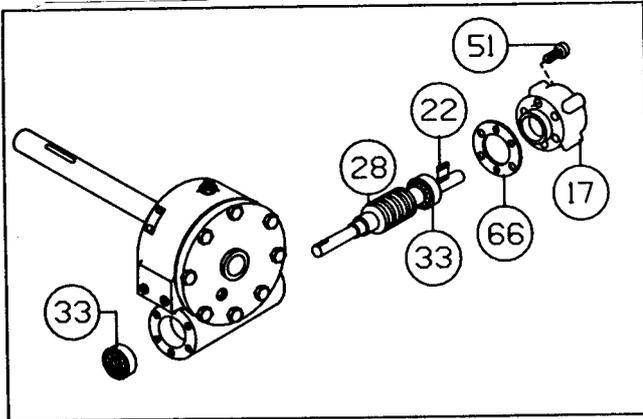
Remove key (item #23) from worm shaft. Unscrew six capscrews (item #53) and remove adapter from gear housing. Replace adapter seal (item #81) and gasket (item #68).



(6)

Refer to page 5, SERVICING OIL COOLED SAFETY BRAKE. Remove brake housing (item #17) from gear housing by unscrewing six (item #51) capscrews. Remove key (item #22) from worm. Remove worm (item #28) 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 housing, bearing can be pressed from end of worm.

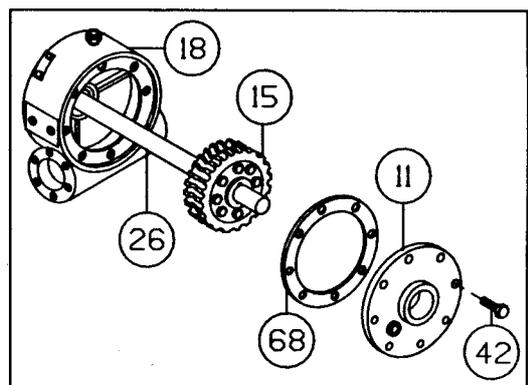
Check for signs of wear or damage to worm (item #28) and bearings (item #33). Replace if necessary.

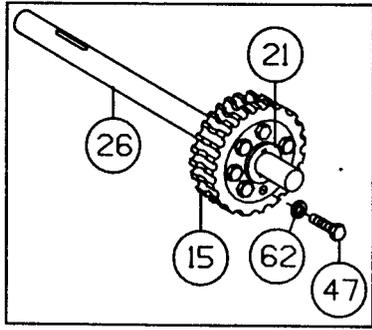


(7)

Remove gear housing cover (item #11) from gear housing (item #18) by unscrewing eight capscrews (item #42). Thread two of the capscrews into the two tapped holes of cover and tighten. This will pull the cover loose from gear housing.

Remove cover gasket (item #68) and pull shaft (item #26), with gear attached, from gear housing.





(8)

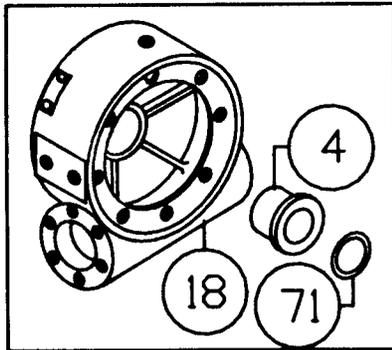
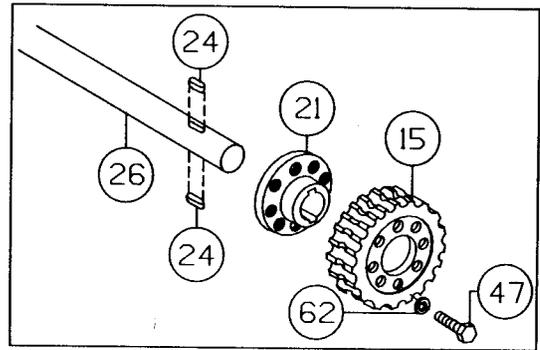
Check for signs of wear on gear teeth. If necessary, replace gear by removing eight capscrews (item #47) and lockwashers (item #62).

Place new gear (item #15) onto gear hub. Align holes in gear with holes in hub. Press gear onto hub. Be sure gear is seated all the way on the hub. Use **ten** capscrews (item #47) and lockwashers (item #62) to secure gear to hub. Torque to 121 ft. lbs. (164 Nm.) each.

(9)

If shaft and/or hub is damaged, replace as follows:

1. Tap keys (item #24) into short keyways of drum shaft (item #26).
2. Press shaft (item #26) and keys through gear hub (item #21) until end of keys on long end of shaft are flush with hub.
3. Secure gear to hub using **ten** (item #47) capscrews with lockwashers (item #62). Torque to 121 ft. lbs. (164 Nm.) each.

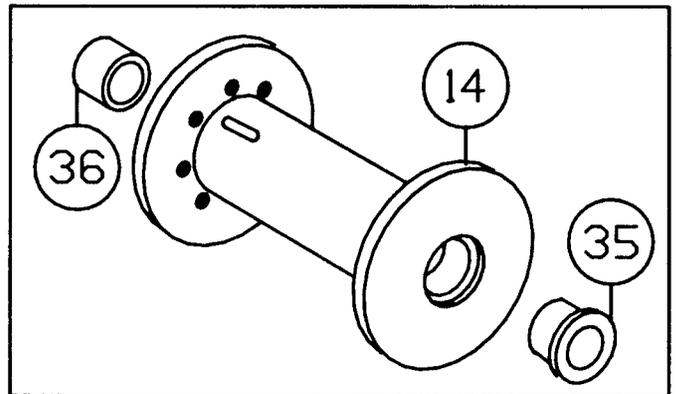


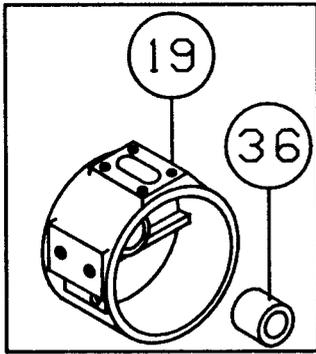
(10)

Check gear housing bushing (item #4) and o-ring (item #71) for signs of wear. Replace if necessary by pressing old bushing from gear housing. Press new bushing into place and insert new o-ring (item #71) into groove inside of bushing.

(11)

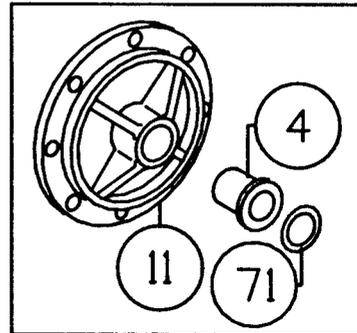
Check drum bushings (items #35 & #36) for signs of wear. Replace if necessary by pressing old bushings from drum (item #14). Press bushing (item #35) into bore in drum until its flange is seated against bottom of counterbore. Press bushing (item #36) into opposite bore on drum until end of bushing extends .50" from end of drum.



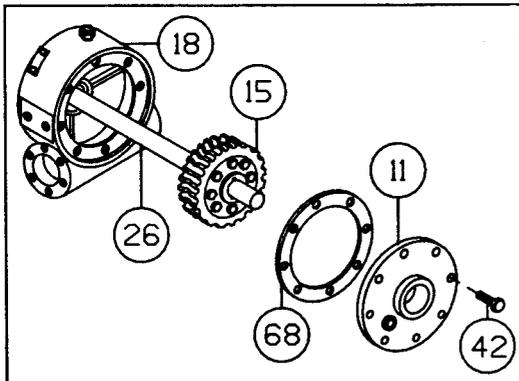


(12)  
Check end bearing bushing (item #36) for signs of wear. If necessary, remove old bushing and press new bushing into place.

(13)  
Check cover bushing (item #4) and o-ring (item #71) for signs of wear. Replace if necessary by pressing old bushing from gear housing. Press new bushing into place and insert new o-ring (item #71) into groove inside of bushing.



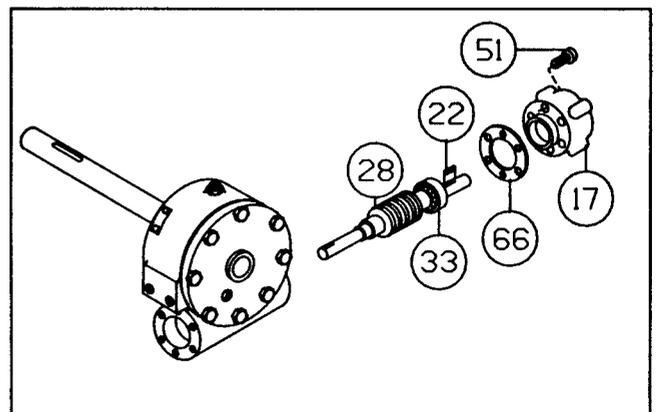
RE-ASSEMBLY

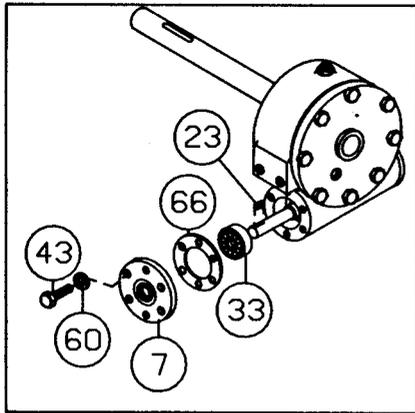


(14)  
Apply grease to end of shaft, opposite gear. Apply grease to bushing in gear housing (item #18). Place greased end of shaft through bushing in gear housing (item #18). Place gasket (item #68) onto gear housing cover (item #11). Apply grease to gear end of shaft and cover bushing. Place cover onto shaft and secure to housing with eight (item #42) cap screws. Tighten cap screws to 39 ft. lbs. (52 Nm.) each.

(15)  
Press bearing (item #33) onto worm (item #28). **NOTE:** Be sure that thick shoulder of bearings 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 #66) onto brake housing (item #17). Use six cap screws (item #51) to secure brake housing to gear housing. Tighten cap screws to 45 ft. lbs. (61 Nm.) each.

Place key (item #22) into keyway of worm (item #28). Refer to page 6 for reassembly and checking of worm brake.





(16)

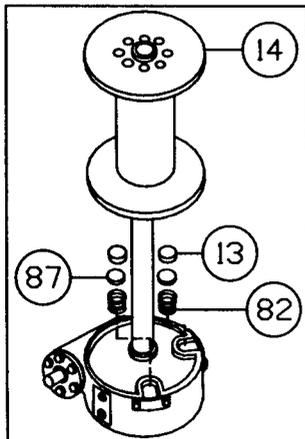
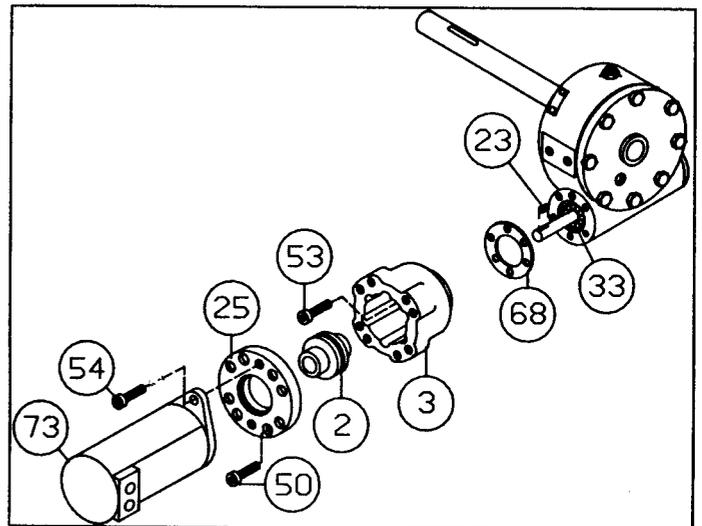
Press bearing (item #33) onto worm and into gear housing. NOTE: Be sure that thick shoulder of bearings outer race (side with manufacturer's name and part number) is out, away from worm threads. Attach bearing cap (item #7), to gear housing. Use six (item #43) capscrews and lockwashers (item #60) to secure. Tighten capscrews to 39 ft. lbs. (52 Nm.) each. Tap key (item #23) into keyway.

(17)

Press bearing (item #33) onto worm and into housing. NOTE: Be sure that thick shoulder of bearings outer race (side with manufacturer's name and part number) is out, away from worm threads. Attach adapter (item #3) to gear housing using six capscrews (item #53). Tighten capscrews to 45 ft. lbs. (61 Nm.) each. Insert key (item #23) into keyway of worm shaft. Slide coupling (item #2) over end of worm shaft. Attach adapter plate (item #25) to adapter using eight capscrews (item #50). Tighten capscrews to 21 ft. lbs. (28 Nm.) each.

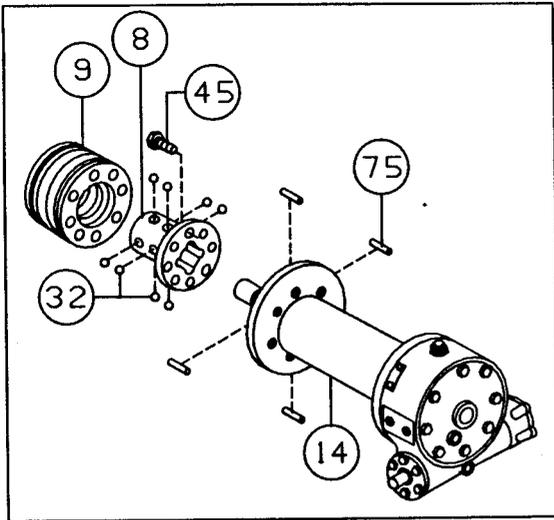
Place motor shaft, with key in keyway, into coupling. Secure motor (item #73) to adapter, using two capscrews (item #54).

Tighten capscrews to 102 ft. lbs. (138 Nm.) each.



(18)

Place winch with gear housing cover down on work bench. Drum shaft should be in vertical position. Set springs (item #82) into pockets of gear housing with drag brakes (item #13) on top of disc (item #87) and springs. Slide drum assembly (item #14) onto drum shaft as shown.

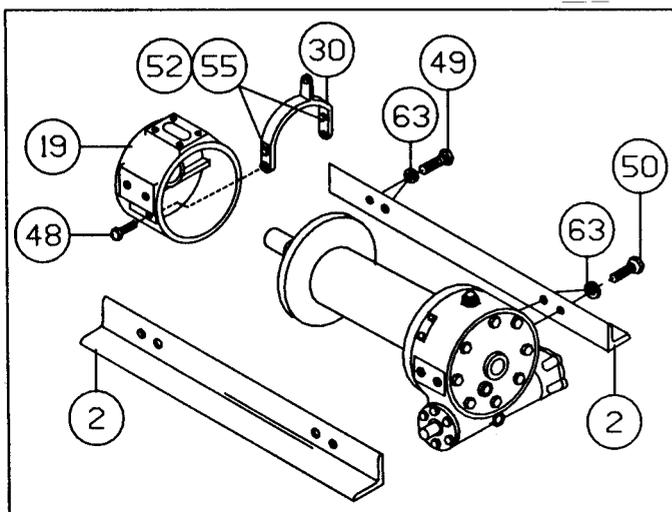
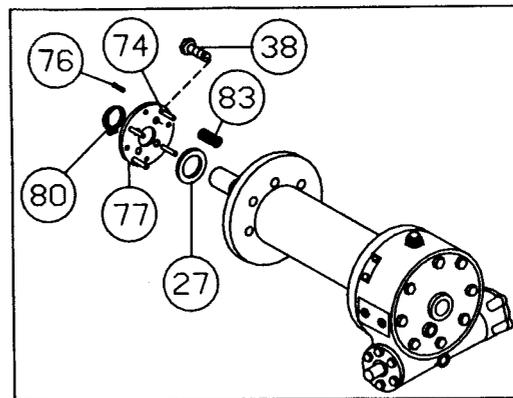


(20)  
Lightly grease the four springs (item #83) and place over four roll pins on retainer plate (item #77).

**NOTE:** If roll pins (items #74 & #77) are damaged, remove pins from plate and install new pins as follows:

Insert four roll pins (item #74) into same retainer plate holes. Drive pins into plate until pins extend 5/16" thru, the clutch housing side, of retainer plate. Drive roll pins (item #76) into ends of (item #74) pins, extending 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 #27), retainer plate, with springs, and secure to clutch using four cap screws (item #38). Torque cap screws to 9.7 ft./lbs. (13 Nm.) each. Firmly seat the retainer ring (item #80) into drum shaft groove.



(19)  
Place clutch (item #8) over end of drum shaft. Align the clutch over the pilot bushing in drum. Install the eight cap screws (item #45) and torque the cap screws to 103 ft. lbs. (139 Nm.) to securely seat the clutch to the drum.

Rotate the drum to align the clutch slots with the shaft keyways. Lightly grease four dowel pins, (item #75) and eight balls (item #32) with molybdenum disulfide or graphite bearing grease. Insert the four dowel pins and eight 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 #9) and clutch (item #8).

Slide locking ring onto the 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.

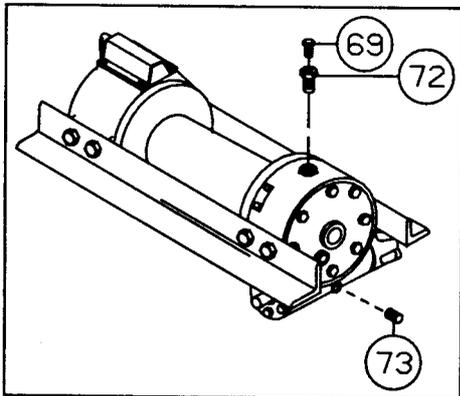
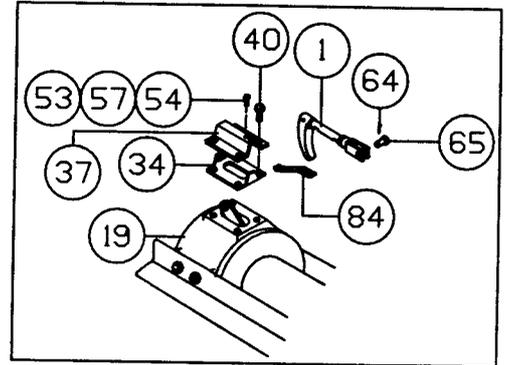
(21)  
Set the yoke (item #30) so that the screw heads (item #52) engage the external groove in the locking ring (item #9). Push the clutch housing (item #19) onto the drum shaft and latch the shifter assembly in the engaged "IN" position. Insert the two cap screws (item #48) and securely tighten.

Attach mounting angles (item #2) to winch assembly using four cap screws (item #49), at clutch housing, and four cap screws (item #50), at gear housing, with lockwasher (item #63). Torque cap screws to 500 ft. lbs. (678 Nm.) each.

(22)

The shift linkage on top of the clutch housing is adjusted at the factory to provide reliable shifting of the "Dow-Lok" clutch. When reassembling, it may be necessary to readjust it as follows. Attach the bracket (item #34) to the clutch housing with the capscrews (item #40). Attach the shifter lever assembly to the yoke using the clevis pin and cotter pin (items #64 & #65). With the clutch in the engaged "IN" position, the notch in the shifter shaft should be latched onto the bracket with a minimum of shaft end play so that the clutch is securely latched "IN". If adjustment is needed, loosen the large jam nut and screw the shaft into or out of the clevis as needed. Securely tighten the jam nut.

Lift up on the handle and pull it toward you as far as it will go until the other notch in the shaft latches onto the bracket, Thus securing the clutch in the disengaged "OUT" position. You should now be able to turn the cable drum freely by hand. After turning the cable drum by hand, lift up on the handle and push in as far as it will go. Turn the cable drum by hand a maximum of 1/4 revolution and the handle will spring to the "IN" position latching the clutch into engagement. Attach the cover (item #37) to the clutch housing and check the action of the clutch several times.



(23)

Insert plug (item #73) into bottom of gear housing.

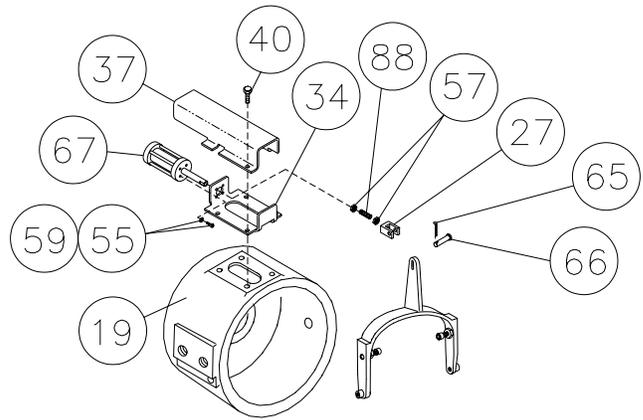
Remove plug (items #69 & #72) from top of gear housing. Pour 4 pints of E.P. 140 worm gear oil into hole and replace plugs.

## AIR SHIFTER OVERHAUL

### DISASSEMBLY

If the air cylinder needs to be removed, remove (4) capscrews (item #40) that hold the cover (item #37) and bracket (item #34) onto the clutch housing (item #19). Remove cotter pin (item #65) and clevis pin (item #66) that hold clevis (item #27) to yoke. Loosen jam nuts (item #57) and unscrew stud (item #88) from clevis and air cylinder (item #67).

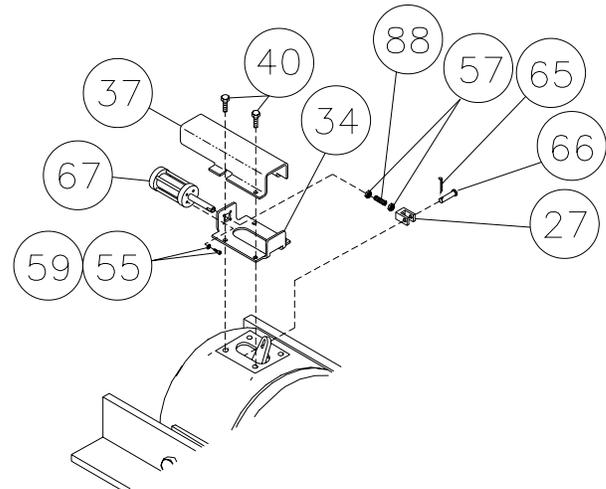
To remove air cylinder from bracket, remove (4) capscrews and lockwashers (items #55 and #59).



### RE-ASSEMBLY

Install 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 #67) using (4) capscrews and lockwashers (items #55 and #59). Tighten these screws to 45 in-lbs.

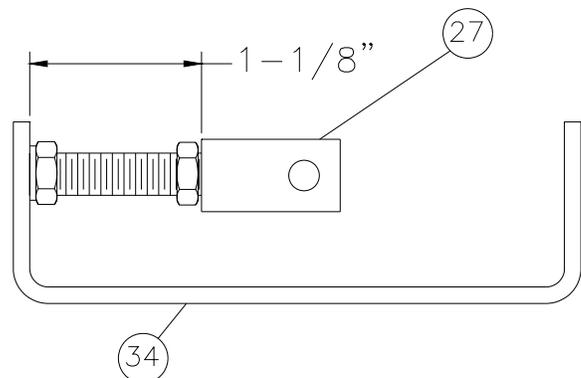
Apply Loc-tite #262 to stud (item #88). Install (2) jam nuts (item #57) onto stud, then attach stud to air cylinder shaft. Screw clevis (item #27) to other end of stud and adjust stud until back of clevis is 1-1/8" from bracket (item #34), as shown at right.

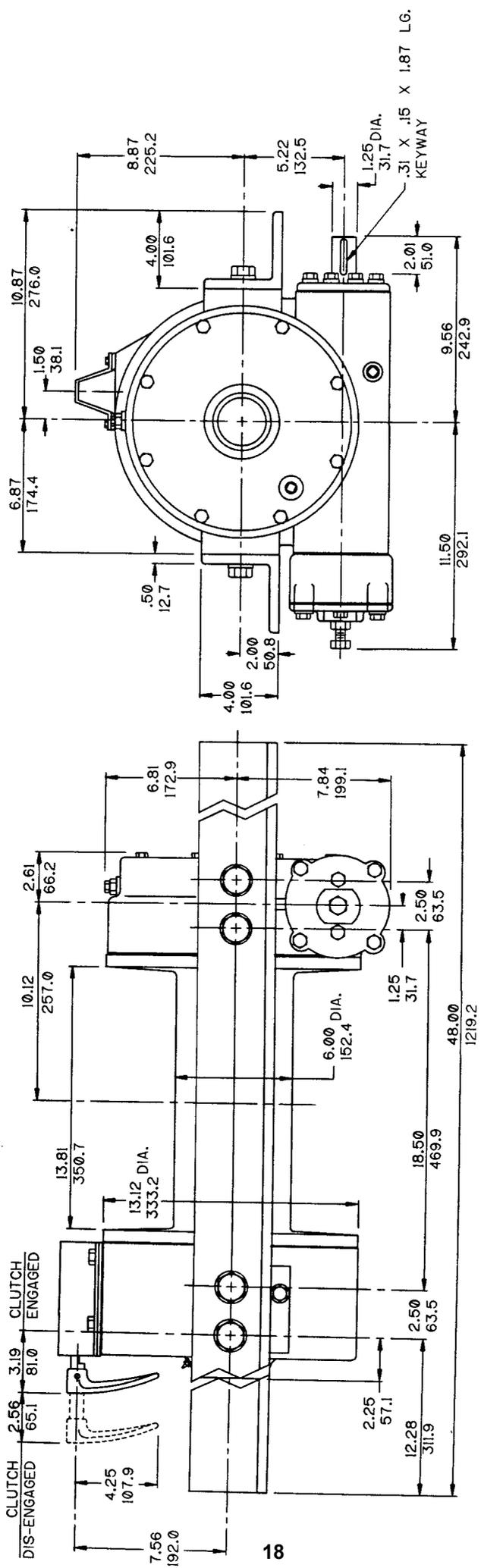


Pull yoke to fully engaged position, and attach clevis to shifter using pin (item #66) securing with cotter pin (item #65). Confirm that clevis pin is not in a bind when shifter is in engaged position. Adjust stud slightly if it is. Tighten jam nuts to keep stud in correct position.

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.

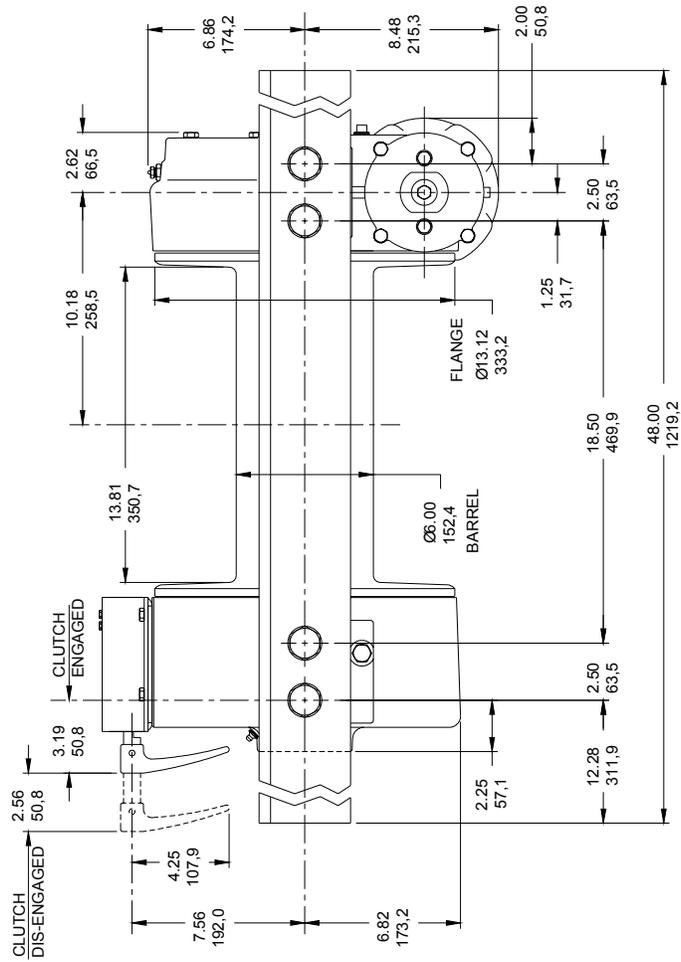
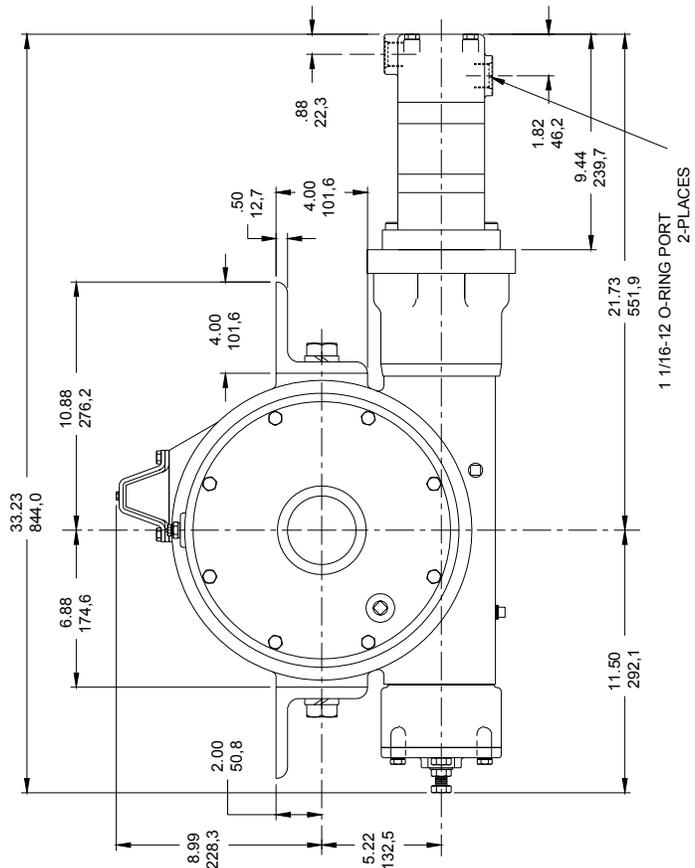
Install cover (item #37) using (2) capscrews (item #40). Tighten to 18 ft-lbs. torque.





DIMENSIONS SHOWN ARE INCHES OVER MILLIMETERS

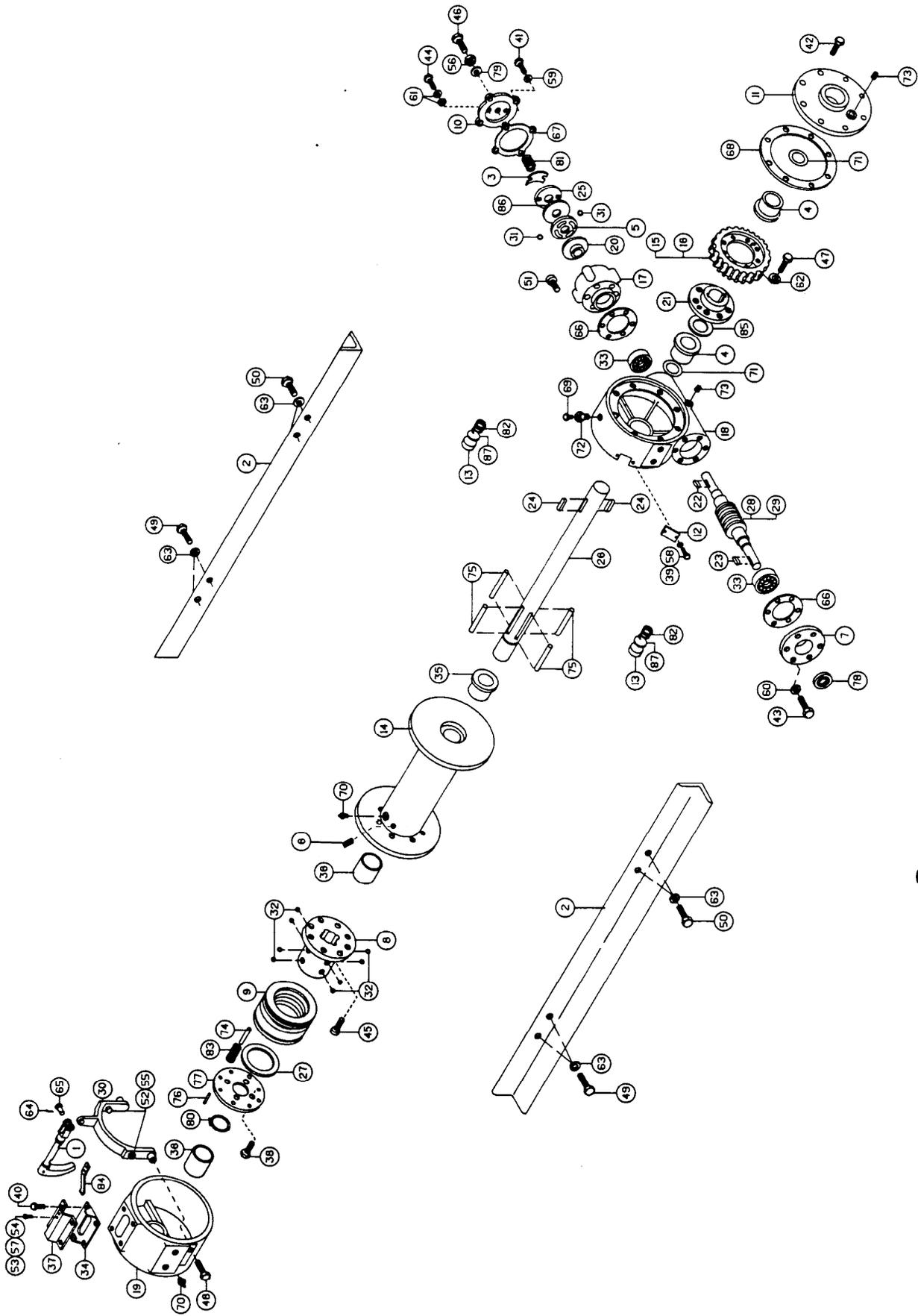
**Model 930 Dow-Lok®**



DIMENSIONS SHOWN ARE INCHES OVER MILLIMETERS

Model H-930 Dow-Iok®

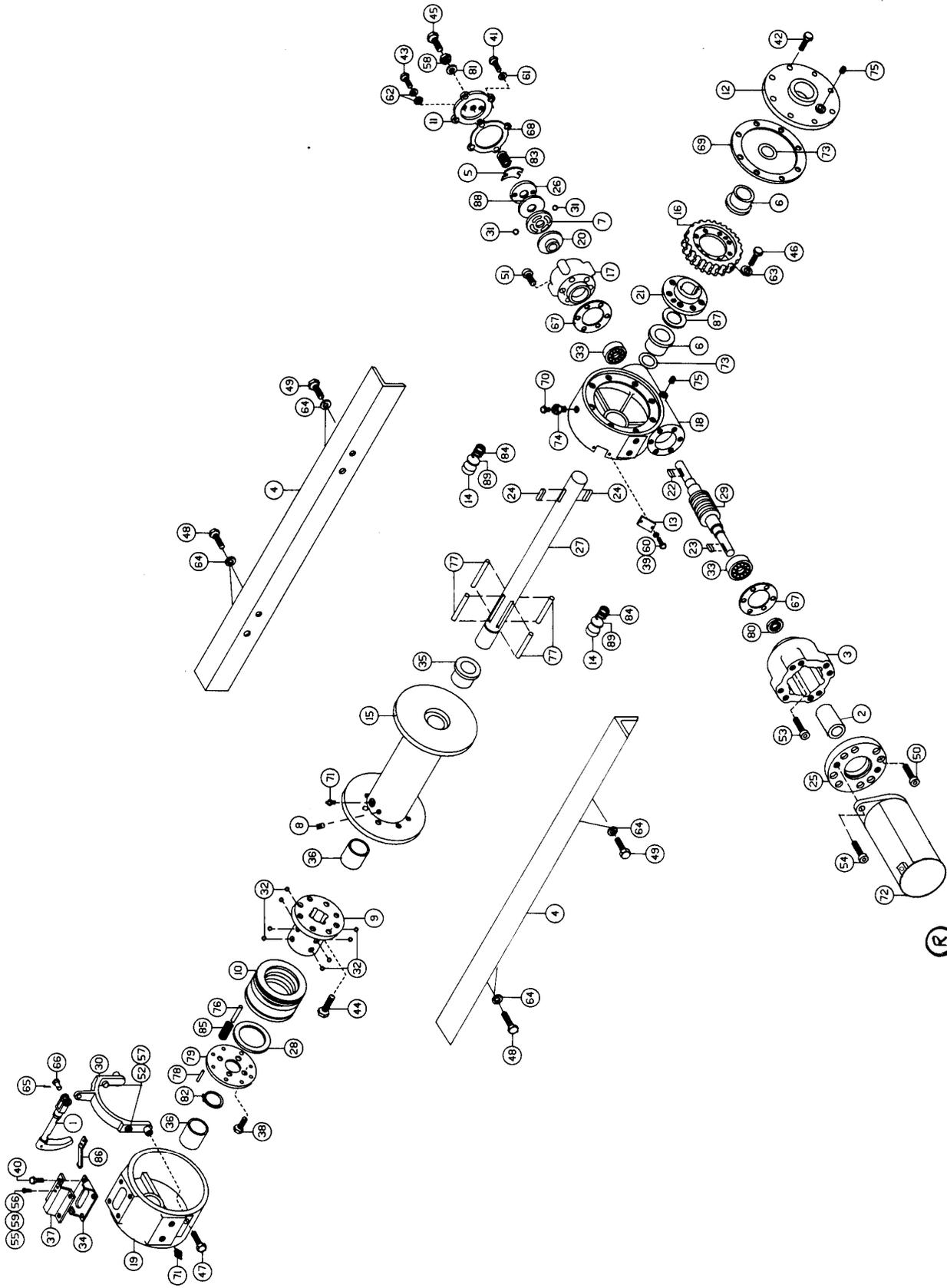




**Model 930 Dow-Lok** <sup>®</sup>

**PARTS LIST**  
Model 930 Dow-Iok®

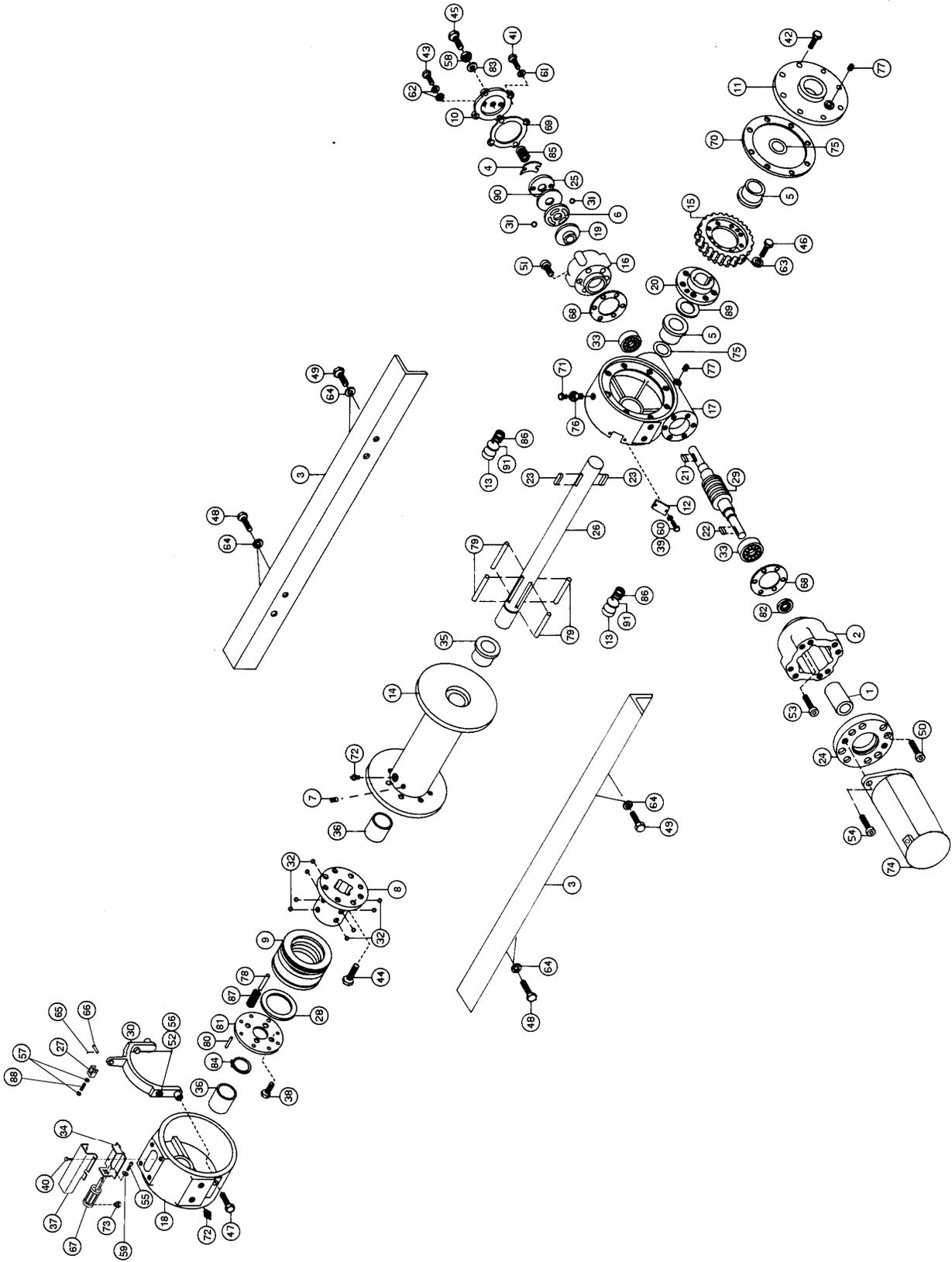
Item No.	Qty.	Part No.	Description	Item No.	Qty.	Part No.	Description
1	1	276040	SHIFTER ASSEMBLY	45	8	414571	CAPSCREW - 1/2-20NF X 1 LG HX HG GR 5
2	2	302902	ANGLE	46	1	414603	CAPSCREW - 1/2-20NF X 1-3/4 LG HX HD ALL-THRD GR 5
3	1	306035	SPRING - FLAT	47	10	414606	CAPSCREW - 1/2-20NF X 2 LG HX HD GR 8
4	2	308083	BUSHING	48	2	414619	CAPSCREW - 1/2-13NC X 2-1/2 LG HX HD ALL-THRD C.P.
5	1	314007	CAM PLATE	49	4	414784	CAPSCREW - 7/8-9NC X 2 LG HX HD GR 5
6	1	416059	SETScrew - 3/8-16NC X 1/2 LG CUT POINT	50	4	414786	CAPSCREW - 7/8-9NC X 2 LG HX HD NYLOK H.P.
7	1	316006	CAP-BEARING	51	6	414897	CAPSCREW 3/8-16NC X 1 LG SOC. HD.
8	1	324151	CLUTCH	52	2	414905	CAPSCREW 3/8-16NC X 1-1/4 LG SOC. HD.
9	1	324321	LOCKING RING	53	2	416236	SCREW - #10-24NC X 1/2 HX HD CP
10	1	328027	COVER - BRAKE	54	2	418004	NUT #10-24NC HX REG CP
11	1	328122	COVER - GEAR HSG.	55	2	418035	NUT 3/8-16NC HX REG C.P.
12	2	328127	COVER - DRAG BRAKE	56	1	418067	NUT 1/2-20NF HX JAM
13	2	330010	SHOE - DRAG BRAKE	57	4	418141	LOCKWASHER - #10 MED
14	1	332132	DRUM	58	4	418149	LOCKWASHER 1/4 MED SECT CP
15	1	334150	GEAR - R.H.	59	4	418163	LOCKWASHER 5/16 MED SECT C.P.
16	1	334152	GEAR - L.H.	60	6	418177	LOCKWASHER 3/8 MED SECT CP
17	1	338221	HOUSING - BRAKE	61	4	418184	WASHER - FLAT 3/8 ALUM.
18	1	338253	HOUSING - GEAR	62	10	418217	LOCKWASHER 1/2 MED SECT
19	1	338254	HOUSING - CLUTCH	63	8	418258	LOCKWASHER 7/8 MED SECT
20	1	340011	HUB - BRAKE	64	1	424005	COTTER PIN
21	1	340068	HUB - GEAR	65	1	424205	PIN - CLEVIS
22	1	342053	KEY	66	2	442192	GASKET
23	1	342083	KEY	67	1	442194	GASKET
24	2	342153	KEY	68	1	442195	GASKET
25	1	352021	PLATE - RETAINER	69	1	456008	FITTING - RELIEF
26	1	357457	SHAFT - DRUM	70	2	456031	FITTING - LUBE
27	1	362224	SPACER	71	2	462013	QUAD RING
28	1	368181	WORM - R.H.	72	1	468002	REDUCER
29	1	368185	WORM - L.H.	73	2	468011	PIPE PLUG
30	1	370052	YOKE	74	4	470042	PIN - ROLL
31	2	400007	BALL - BRAKE	75	4	470044	PIN - DOWEL
32	8	400011	BALL - CLUTCH	76	4	470056	PIN - ROLL
33	2	402045	BEARING - BALL	77	1	474030	PLATE - RETAINER
34	1	408112	BRACKET - CLUTCH SHIFTER	78	1	486068	SEAL - OIL
35	1	412051	BUSHING	79	1	486078	THREAD SEAL
36	2	412052	BUSHING	80	1	490025	RING - RETAINER
37	1	413026	COVER - SHIFTER	81	1	494010	SPRING
38	4	414038	CAPSCREW - 1/4-20NC X 3/4 LG HX HD GR 5	82	2	494002	SPRING - DISC
39	4	414055	CAPSCREW - 1/4-20NC X 1/2 LG HX HD C.P.	83	4	494069	SPRING
40	4	414069	CAPSCREW - 5/16-18NC X 3/4 HX HD	84	2	494078	SPRING - FLAT
41	4	414111	CAPSCREW - 5/16-18NC X 1 LG HX HD GR 5	85	1	518016	THRUST WASHER
42	8	414277	CAPSCREW - 3/8-16NC X 1 LG HX HD NYLOK H.P.	86	1	530007	DISC - BRAKE
43	6	414282	CAPSCREW - 3/8-16NC X 1 1/4 LG HX HD GR 5	87	2	530094	SPACER - BRAKE
44	2	414399	CAPSCREW - 3/8-24NF X 1-1/4 LG HX HD ALL-THRD NYLOK				



**Model H-930 Dow-Lok<sup>®</sup>**

**PARTS LIST**  
**Model 930 Dow-Iok®**

Item No.	Qty.	Part No.	Description	Item No.	Qty.	Part No.	Description
1	1	276040	SHIFTER ASSEMBLY	46	10	414606	CAPSCREW - 1/2-20NF X 2 LG HX HD GR.8
2	1	299733	COUPLING ASSEMBLY	47	2	414619	CAPSCREW - 1/2-13NC X 2-1/2 LG HX HD ALL-THRD C.P.
3	1	300048	ADAPTER	48	4	414784	CAPSCREW - 7/8-9NC X 2 LG HX HD GR.5
4	2	302902	ANGLE	49	4	414786	CAPSCREW - 7/8-9NC X 2 LG HX HD NYLOK H.P.
5	1	306035	SPRING - FLAT	50	8	414871	CAPSCREW - 5/16-18NC X 1-1/4 LG SOC HD LOK-WEL
6	2	308083	BUSHING	51	6	414897	CAPSCREW 3/8-16NC X 1 LG SOC. HD.
7	1	314007	CAM PLATE	52	2	414905	CAPSCREW 3/8-16NC X 1-1/4 LG SOC. HD.
8	1	416059	SETScrew - 3/8-16NC X 1/2 LG CUT POINT	53	6	414909	CAPSCREW 3/8-16NC X 1-3/4 LG SOC HD LOK-WEL
9	1	324151	CLUTCH	54	2	414950	CAPSCREW 1/2-13NC X 1-3/4 LG SOC HD LOK-WEL
10	1	324321	LOCKING RING	55	2	416236	SCREW - #10-24NC X 1/2 HX HD CP
11	1	328027	COVER - BRAKE	56	2	418004	NUT #10-24NC HX REG CP
12	1	328122	COVER - GEAR HSG.	57	2	418035	NUT 3/8-16NC HX REG C.P.
13	2	328127	COVER - DRAG BRAKE	58	1	418067	NUT 1/2-20NF HX JAM
14	2	330010	SHOE - DRAG BRAKE	59	4	418141	LOCKWASHER - #10 MED
15	1	332132	DRUM	60	4	418149	LOCKWASHER 1/4 MED SECT CP
16	1	334150	GEAR - R.H.	61	4	418163	LOCKWASHER 5/16 MED SECT C.P.
17	1	338221	HOUSING - BRAKE	62	4	418184	WASHER - FLAT 3/8 ALUM.
18	1	338253	HOUSING - GEAR	63	10	418217	LOCKWASHER 1/2 MED SECT
19	1	338254	HOUSING - CLUTCH	64	8	418258	LOCKWASHER 7/8 MED SECT
20	1	340011	HUB - BRAKE	65	1	424005	COTTER PIN
21	1	340068	HUB - GEAR	66	1	424205	PIN - CLEVIS
22	1	342053	KEY	67	2	442192	GASKET
23	1	342083	KEY	68	1	442194	GASKET
24	2	342153	KEY	69	1	442195	GASKET
25	1	350535	PLATE - ADAPTER	70	1	456008	FITTING - RELIEF
26	1	352021	PLATE - RETAINER	71	2	456031	FITTING - LUBE
27	1	357457	SHAFT - DRUM	72	1	458049	MOTOR-HYD.
28	1	362224	SPACER	73	2	462013	QUAD RING
29	1	368181	WORM - R.H.	74	1	468002	REDUCER
30	1	370052	YOKE	75	2	468011	PIPE PLUG
31	2	400007	BALL - BRAKE	76	4	470042	PIN - ROLL
32	8	400011	BALL - CLUTCH	77	4	470044	PIN - DOWEL
33	2	402045	BEARING - BALL	78	4	470056	PIN - ROLL
34	1	408112	BRACKET - CLUTCH SHIFTER	79	1	474030	PLATE - RETAINER
35	1	412051	BUSHING	80	1	486068	SEAL - OIL
36	2	412052	BUSHING	81	1	486076	THREAD SEAL
37	1	413028	COVER - SHIFTER	82	1	490025	RING - RETAINER
38	4	414038	CAPSCREW - 1/4-20NC X 3/4 LG HX HD GR.5	83	1	494010	SPRING
39	4	414055	CAPSCREW - 1/4-20NC X 1/2 LG HX HD C.P.	84	2	494002	SPRING - DISC
40	4	414069	CAPSCREW - 5/16-18NC X 3/4 HX HD	85	4	494069	SPRING
41	4	414111	CAPSCREW - 5/16-18NC X 1 LG HX HD GR5	86	2	494078	SPRING - FLAT
42	8	414277	CAPSCREW - 3/8-16NC X 1 LG HX HD NYLOK H.P.	87	1	518016	THRUST WASHER
43	2	414399	CAPSCREW - 3/8-24NF X 1-1/4 LG HX HD ALL-THRD NYLOK	88	1	530007	DISC - BRAKE
44	8	414571	CAPSCREW - 1/2-20NF X 1 LG HX HG GR.5	89	2	530094	SPACER - BRAKE
45	1	414603	CAPSCREW - 1/2-20NF X 1-3/4 LG HX HD ALL-THRD GR.5				



**Model H-930 Dow-lok® with Air Shifter**

# PARTS LIST

## Model H-930 Dow-Iok® with Air Shifter

Item No.	Qty.	Part No.	Description	Item No.	Qty.	Part No.	Description
1	1	299733	COUPLING ASSEMBLY	47	2	414619	CAPSCREW - 1/2-13NC X 2-1/2 LG HX HD ALL-THRD C.P.
2	1	300048	ADAPTER	48	4	414784	CAPSCREW - 7/8-9NC X 2 LG HX HD GR.5
3	2	302902	ANGLE	49	4	414786	CAPSCREW - 7/8-9NC X 2 LG HX HD NYLOK H.P.
4	1	306035	SPRING - FLAT	50	8	414871	CAPSCREW 5/16-18NC X 1-1/4 LG SOC. HD. LOK-WEL
5	2	308083	BUSHING	51	6	414897	CAPSCREW 3/8-16NC X 1 LG SOC. HD.
6	1	314007	CAM PLATE	52	2	414905	CAPSCREW 3/8-16NC X 1-1/4 LG SOC. HD.
7	1	416059	SETSCREW-3.8-16NC X 1/2 SETSCREW, CUT POINT	53	6	414909	CAPSCREW 3/8-16NC X 1-3/4 LG SOC. HD. LOK-WEL
8	1	324151	CLUTCH	54	2	414950	CAPSCREW 1/2-13NC X 1-3/4 LG SOC. HD. LOK-WEL
9	1	324321	LOCKING RING	55	4	416262	SCREW - #10-32NF X 3/4 HX SOC ZIP
10	1	328027	COVER - BRAKE	56	2	418035	NUT 3/8-16NC HX REG C.P.
11	1	328122	COVER - GEAR HSG.	57	2	418041	NUT - 3/8-24NF HX JAM ZIP
12	2	328127	COVER - DRAG BRAKE	58	1	418067	NUT 1/2-20NF HX JAM
13	2	330010	SHOE - DRAG BRAKE	59	4	418141	LOCKWASHER - #10 MED
14	1	332132	DRUM	60	4	418149	LOCKWASHER 1/4 MED SECT C.P.
15	1	334150	GEAR - R.H.	61	4	418163	LOCKWASHER 5/16 MED SECT C.P.
16	1	338221	HOUSING - BRAKE	62	4	418184	WASHER - FLAT 3/8 ALUM.
17	1	338253	HOUSING - GEAR	63	10	418217	LOCKWASHER 1/2 MED SECT
18	1	338254	HOUSING - CLUTCH	64	8	418258	LOCKWASHER 7/8 MED SECT
19	1	340011	HUB - BRAKE	65	1	424005	COTTER PIN
20	1	340068	HUB - GEAR	66	1	424029	PIN - CLEVIS
21	1	342053	KEY	67	1	433026	AIR CYLINDER
22	1	342083	KEY	68	2	442192	GASKET
23	2	342153	KEY	69	1	442194	GASKET
24	1	350535	PLATE - ADAPTER	70	1	442195	GASKET
25	1	352021	PLATE - RETAINER	71	1	456008	FITTING - RELIEF
26	1	357457	SHAFT - DRUM	72	2	456031	FITTING - LUBE
27	1	358067	CLEVUS - AIR SHIFTER	73	1	456038	BREATHER VENT FITTING
28	1	362224	SPACER	74	1	458049	MOTOR - HYD.
29	1	368181	WORM - R.H.	75	2	462013	QUAD RING
30	1	370056	YOKE - SHIFTER	76	1	468002	REDUCER
31	2	400007	BALL - BRAKE	77	2	468011	PIPE PLUG
32	8	400011	BALL - CLUTCH	78	4	470042	PIN - ROLL
33	2	402045	BEARING - BALL	79	4	470044	PIN - DOWEL
34	1	408330	BRACKET - AIR SHIFTER	80	4	470056	PIN - ROLL
35	1	412051	BUSHING	81	1	474030	PLATE - RETAINER
36	2	412052	BUSHING	82	1	486068	SEAL - OIL
37	1	413100	COVER - SHIFTER	83	1	486076	THREAD SEAL
38	4	414038	CAPSCREW - 1/4-20NC X 3/4 LG HX HD GR.5	84	1	490025	RING - RETAINER
39	4	414055	CAPSCREW - 1/4-20NC X 1/2 LG HX HD C.P.	85	1	494010	SPRING
40	4	414069	CAPSCREW - 5/16-18NC X 3/4 HX HD	86	2	494002	SPRING - DISC
41	4	414111	CAPSCREW - 5/16-18NC X 1 LG HX HD GR.	87	4	494069	SPRING
42	8	414277	CAPSCREW - 3/8-16NC X 1 LG HX HD NYLOK H.P.	88	1	502014	STUD
43	2	414399	CAPSCREW - 3/8-24NF X 1-1/4 LG HX HD ALL-THRD NYLOK	89	1	518016	THRUST WASHER
44	8	414571	CAPSCREW - 1/2-20NF X 1 LG HX HG GR.5	90	1	530007	DISC - BRAKE
45	1	414603	CAPSCREW - 1/2-20NF X 1-3/4 LG HX HD ALL-THRD GR.5	91	2	530094	SPACER - BRAKE
46	10	414606	CAPSCREW - 1/2-20NF X 2 LG HX HD GR.8				

## NOTES

## NOTES

## 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, nor shall it apply to a product upon which repairs or alterations have been made, unless authorized by the Manufacturer, or for equipment misused, neglected or which has not been installed correctly.

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 of 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.



### **Ramsey Winch Company**

Post Office Box 581510 • Tulsa, Oklahoma 74158  
Telephone: (918) 438-2760 • [www.ramsey.com](http://www.ramsey.com)  
FAX: (918) 438-6688

OM-912416-0507-H