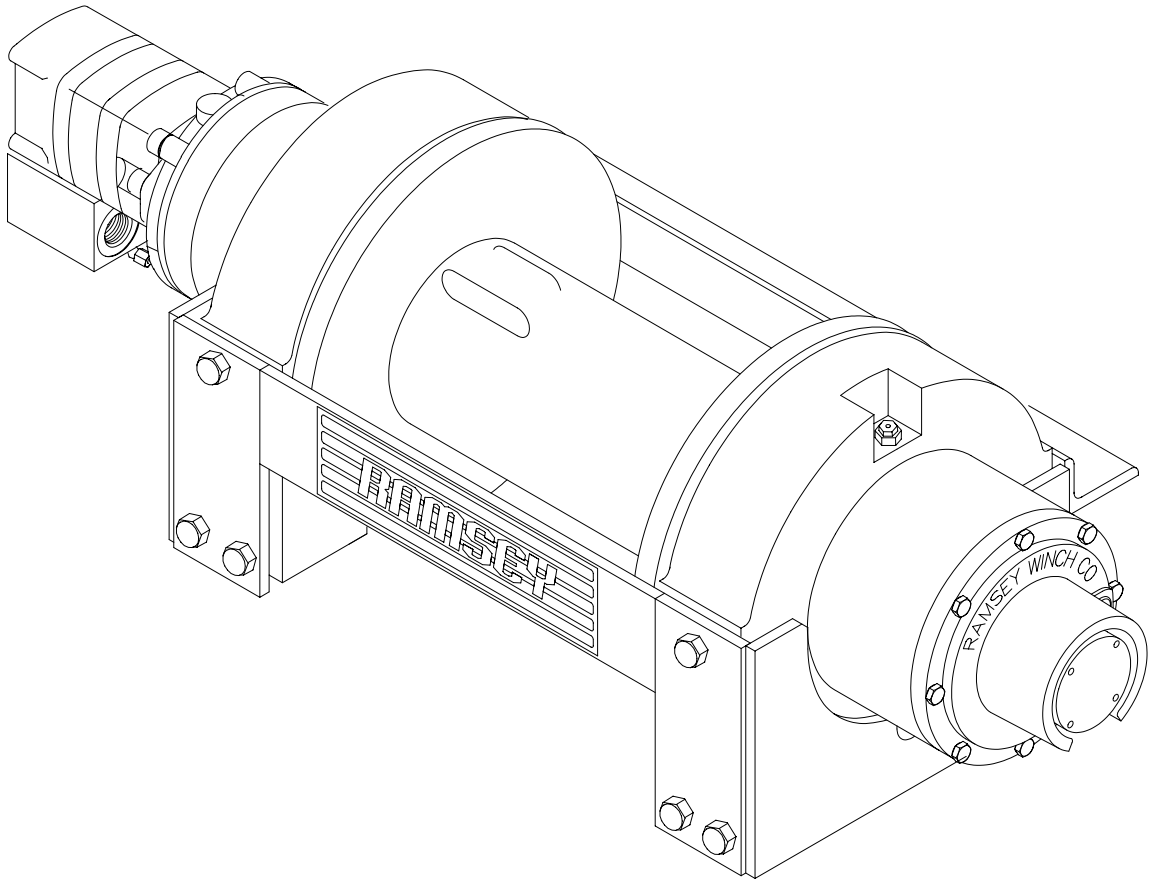




# OPERATING, SERVICE AND MAINTENANCE MANUAL



## MODEL RPH-20,000 INDUSTRIAL PLANETARY WINCH



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

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# RAMSEY HYDRAULIC PLANETARY WINCH MODEL RPH 20,000

## 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\*

Rated Line Pull (lb.).....		20,000				
(Kg).....		9,070				
Gear Reduction.....		25.53:1				
Weight (without wire rope and tensioner).....		375 lb. (170,0 Kg)				
LAYER OF CABLE		1	2	3	4	5
*Rated line pull per layer	Lbs. Kg.	20,000 9,070	16,900 7,660	14,700 6,660	13,000 5,890	11,600 5,260
*Cable capacity	Ft. M.	35 10	85 25	135 41	195 59	265 80
*Line speed (at 15 GPM)	FPM MPM	26 7,9	30 9,1	35 10,6	39 11,8	44 13,4
* These specifications are based on recommended wire rope of .56" dia. Extra Improved Plow Steel or equivalent.						

**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.**

## WINCH FRAME MOUNTING

Use (8) 1/2" diameter grade 5 or better bolts to attach mounting frame to the wrecker.

## CABLE INSTALLATION

The RPH-20000 winch has two tapered pockets cast into the drum. One pocket is for installations with the wire rope wound over the drum. The other pocket is for an underwound wire rope. When properly used, the wedge pocket design is one of the most secure anchoring methods available.

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. Slide the wire rope through narrow end of pocket against the drum flange and wrap the wire rope around the anchor "puck" and pull the wire rope and anchor back into the wide end of the pocket. Use a soft hammer to drive the back side of the wire rope, firmly seating the wire rope and anchor, into the pocket.
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.

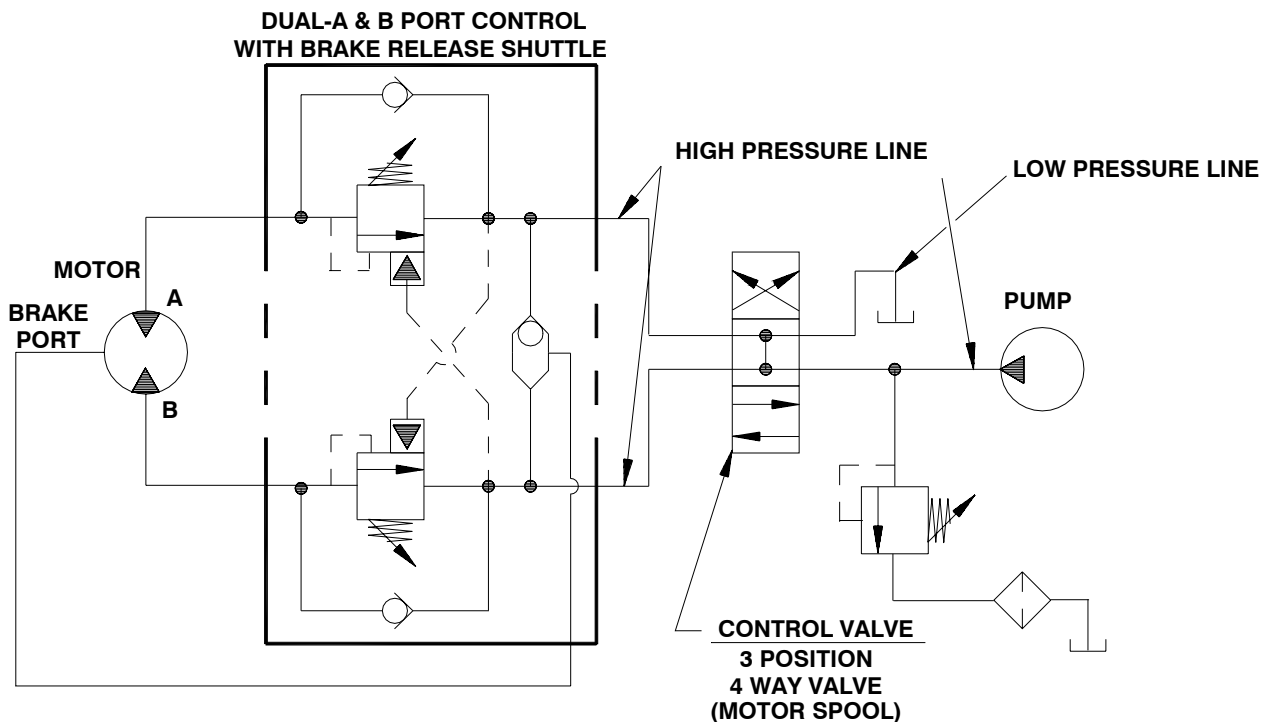
The wire rope can easily be removed from the drum by driving the anchor out the wide end of the pocket.

## HYDRAULIC SYSTEM REQUIREMENTS

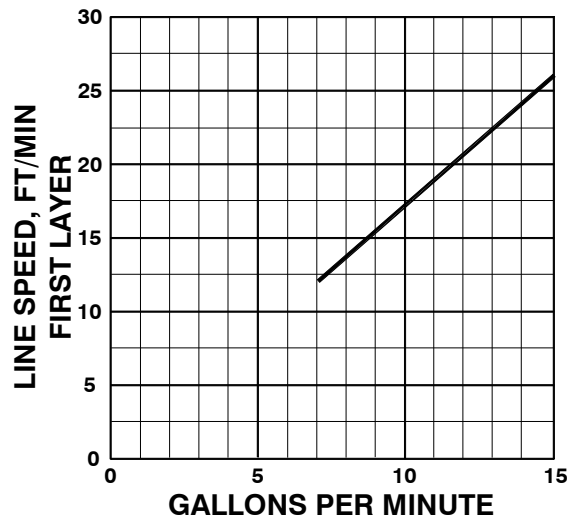
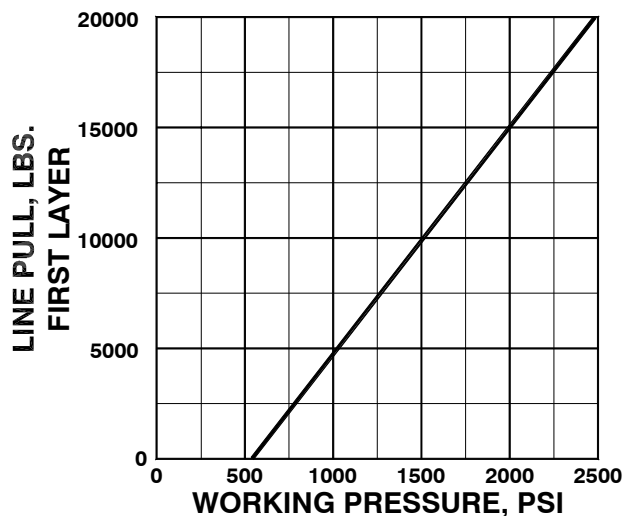
Refer to the performance charts, below, to properly match your hydraulic system to RPH-20000 winch performance. The charts consist of:

(1) Line pull (lb.) first layer vs. working pressure (PSI) and (2) Line speed, first layer (FPM) vs. gallons per minute (GPM). Performance based on a motor displacement of 8.0 cubic inches with 15 GPM maximum flow rate. See page 13 for motor port size.

## TYPICAL LAYOUT



## PERFORMANCE CHARTS



BASED ON 8.0 CU. IN/REV. MOTOR

## CLUTCH OPERATION

### To engage clutch:

1. Move the clutch control valve to the "clutch engaged" position.
2. Anytime the temperature is below freezing, run the motor in the "cable out" direction only until the drum starts to turn. In extreme cold temperatures (below 0° F/-18° C), pull out on the cable by hand only until the drum starts to turn.
3. Wait at least 3 seconds for the clutch to fully engage, after which the winch is ready to winch in the cable.

**WARNING:** Do not attempt to engage the clutch by first running the winch motor and then moving the clutch control valve to the "clutch-engaged" position while the motor is running. Do not start picking up the load at the same time the clutch is being engaged.

### To disengage clutch:

1. Run the winch in the "cable out" direction until the load is off the cable.
2. Move the clutch control valve to the "clutch-disengaged" position.  
The cable may now be pulled off by hand.

## WINCH OPERATION

The best way to get acquainted with how your winch operates is to make test runs before you use it. Plan your test in advance. Remember, you hear your winch, as well as see it operate; learn 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.

## 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 not plugged. Lubricate cable with light oil.

### B. MONTHLY

1. Check the winch mounting bolts. If any are missing, replace them and securely tighten any that are loose. Use grade 5 or better bolts.
2. 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 seconds 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 SAE 80W-140 gear oil.
4. Inspect frame and surrounding structure for cracks or deformation.

## TROUBLE SHOOTING GUIDE

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### CONDITIONS

### POSSIBLE CAUSE

### CORRECTION

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#### OIL LEAKS FROM WINCH

- |                           |  |
|---------------------------|--|
| 1. Seals damaged or worn. | 1. Replace seal.                         |
| 2. Too much oil.          | 2. Drain excess oil. Refer to OPERATION. |
| 3. Damaged gaskets.       | 3. Replace gaskets.                      |
- 

#### WINCH RUNS TOO SLOW

- |   |  |
|---|--|
| 1. Low flow rate<br>SYSTEMS performance | 1. Check flow rate. Refer to<br>HYDRAULIC SYSTEMS<br>performance chart page 3. |
| 2. Hydraulic motor worn out.            | 2. Replace motor.  |
- 

#### CABLE DRUM WILL NOT FREESPOOL

- |                          |  |
|--------------------------|--|
| 1. Clutch not disengaged | 1. Check air pressure to clutch<br>cylinder 90 PSI minimum<br>required-Refer to page 13. |
|--------------------------|--|
- 

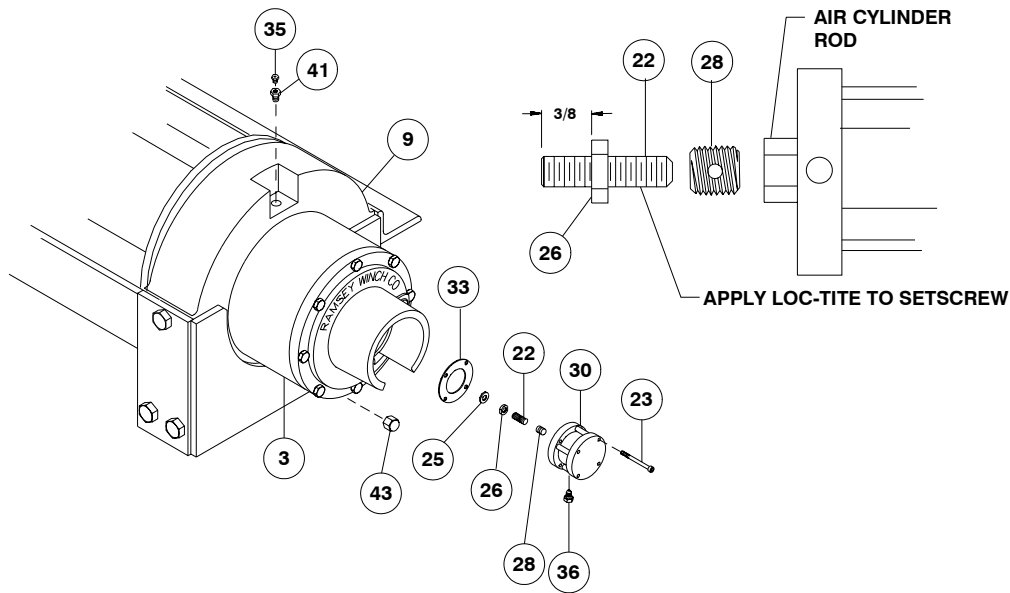
#### BRAKE WILL NOT RELEASE

- |                            |   |
|----------------------------|---|
| 1. Air in hydraulic system | 1. Bleed air from brake. Refer to<br>page 12. |
|----------------------------|---|
-

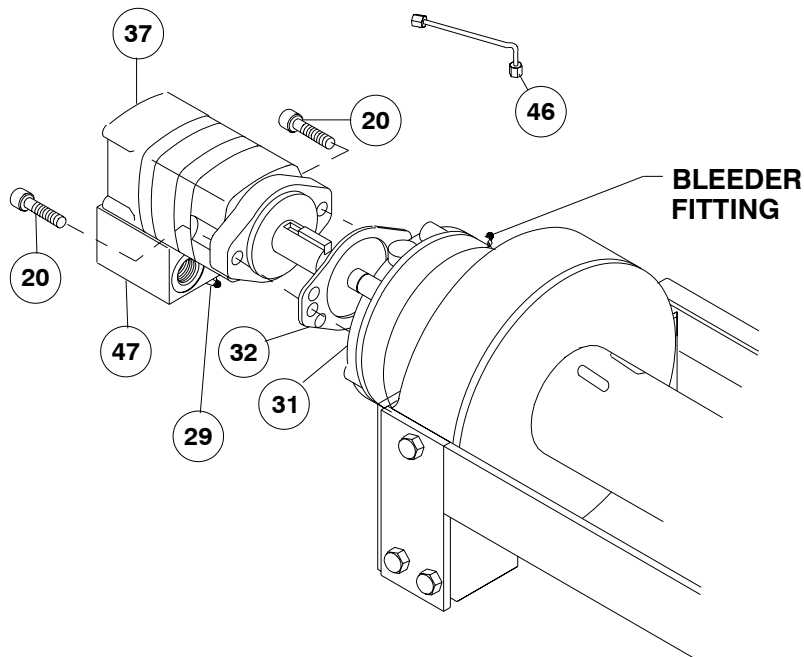
## INSTRUCTIONS FOR OVERHAUL

1. Drain oil from gear housing #9 by removing pipe cap #43 from pipe nipple in end bearing. Remove reducer #41 and relief fitting #35. If new air cylinder is required, remove air cylinder #30 from cover by removing (4) capscrews #23.

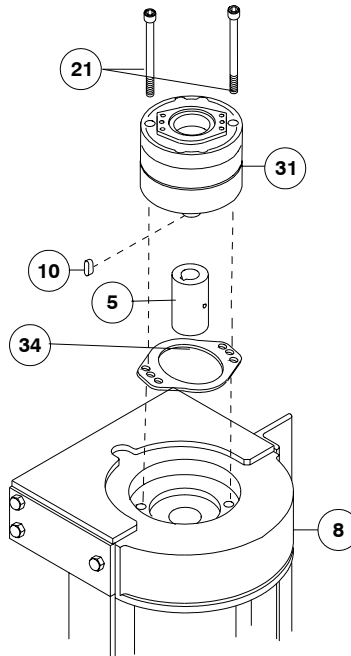
Remove washer #25, nut #26, setscrew #22, and insert #28 from end of air cylinder rod. Apply Loc-tite to threads of nut #26 and thread onto setscrew #22 to 3/8" from drive end, as shown below. Apply Loc-tite to threads of setscrew and thread insert #28 over end of setscrew and against nut. Use setscrew and nut to thread insert #28 into end of air cylinder rod. Tighten nut against cylinder rod, keeping 3/8" distance from drive end of setscrew to nut. If breather vent is damaged, remove and replace.



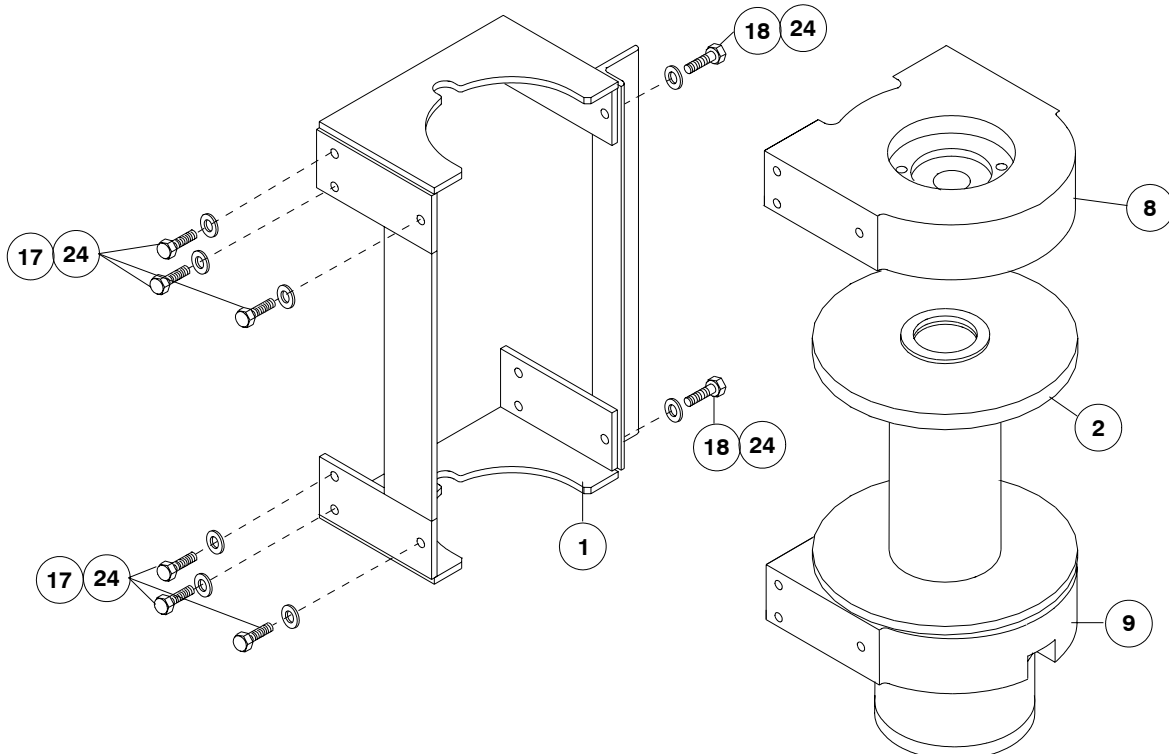
2. Disconnect tube #46 from elbows #29, as shown. Remove motor #37 and gasket #32 by removing (2) capscrews #20. Remove valve #47, if needed, from motor by loosening (3) capscrews #19, as shown on page 14.



3. Remove brake assembly (item #31) by removing (2) mounting screws (item #21) attaching brake to end bearing (item #8). Remove coupling (item #5) and gasket (item #34) from end bearing. Take note of mounting configuration for proper mounting of parts during re-assembly.



4. Remove winch from upright mounting frame (item #1) by removing (4) capscrews and lockwashers. Pull motor end bearing (item #8) from drum assembly (item #2).

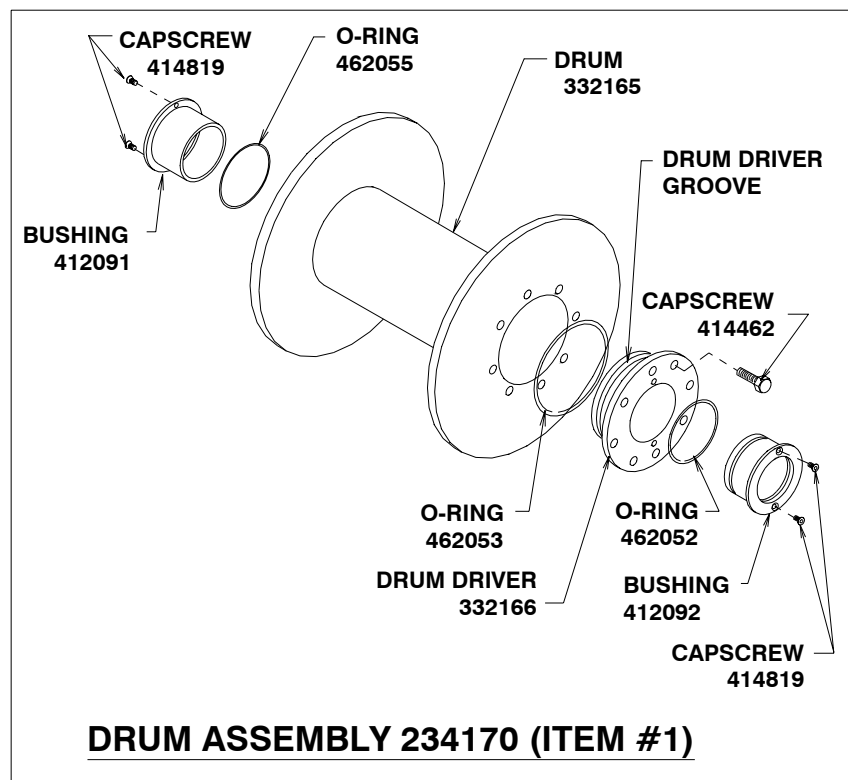
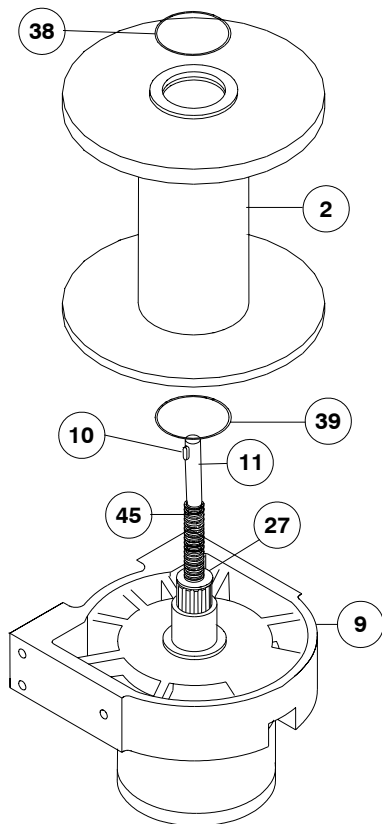




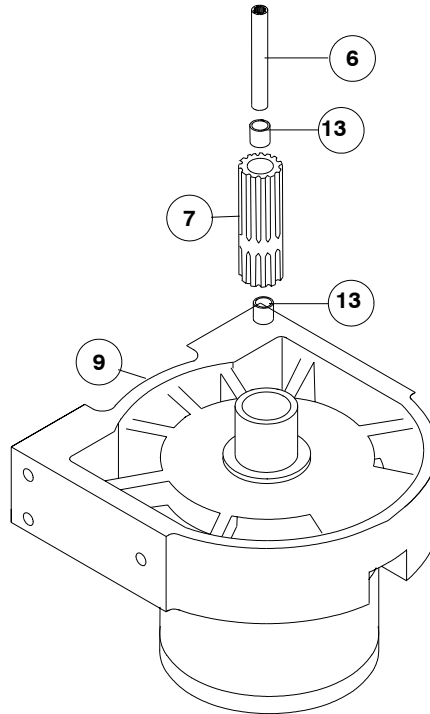
5. Pull drum assembly (item #2) upward from end bearing (item #9). Remove quad-rings (item #39 & #38) from grooves in drum bushings. Remove input shaft (item #11), clutch spring (item #45) and washer (item #27) from end bearing (item #9). Examine splined ends of input shaft for signs of wear, replace if damaged.

Examine drum assembly (item #2) for signs of wear. If splines inside of drum driver (332166) are damaged, drum driver must be replaced. Remove drum driver by unscrewing (8) capscrews (414462). Place well-oiled o-ring (462053) into drum driver groove and attach driver to drum (332165) using (8) capscrews (414462). Torque capscrews to 55 ft. lbs. each, in criss-cross pattern.

Press old bushings from drum and drum driver. Remove o-rings (462055 & 462052) from grooves in drum and drum driver-bushing (412092). Place well-oiled o-rings (462055 & 462052) into grooves in drum and outer diameter of drum driver bushing (412092). Press new bushing (412091) into end of drum opposite drum driver and press bushing (412092) into drum driver until flange of bushings are flush against drum and driver. Secure bushings to drum and drum driver using (2) capscrews (414819).

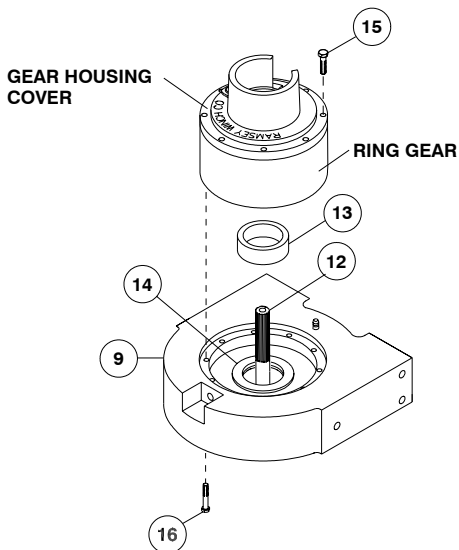


- Remove output coupling (item #7) and coupling shaft (item #6) from end bearing (item #9). Examine bearings (item #13), pressed in output coupling (item #7), for signs of wear. Replace bearings, if necessary, by pressing old bearings from coupling and press new bearings (item #13) into each end of output coupling (item #7). Place coupling shaft (item #6) into bearings (item #13).



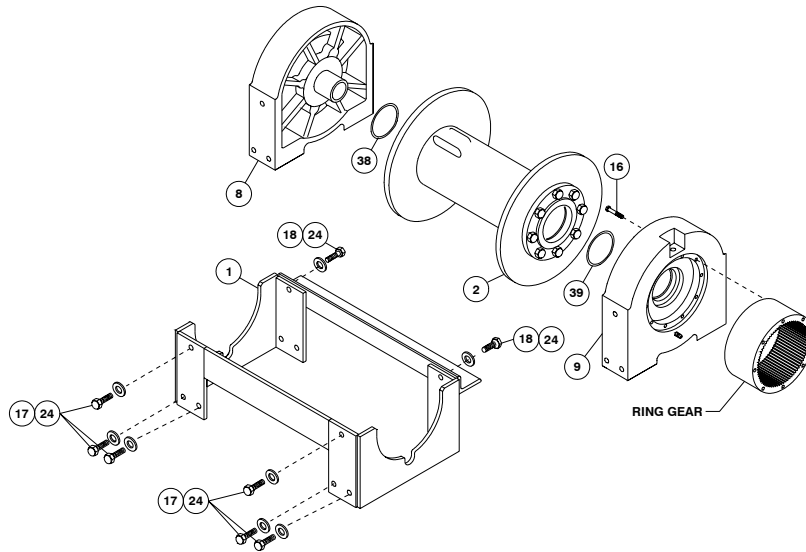
- Remove (8) capscrews (item #15) to pull gear-housing cover from ring gear. Remove input thrust washer, sun gear, carrier assemblies, and spacer (item #13) from inside of ring gear. Examine splines of ring gear and if necessary, remove ring gear from end bearing (item #9) by removing (12) capscrews (item #16). Examine bushing (item #14) for signs of wear. Replace bushing, if necessary, by pressing old bushing from housing and pressing new bushing into place.

Apply RTV sealing compound to ring gear-mounting surface of end bearing (item #9). Place ring gear onto end bearing, aligning holes in ring gear with holes and gear housing end bearing. Secure ring gear to end bearing using (12) capscrews (item #16). Torque to 40 ft.lbs, each in a criss-cross pattern. Examine shifter shaft (item #12) for signs of wear, replace if necessary.



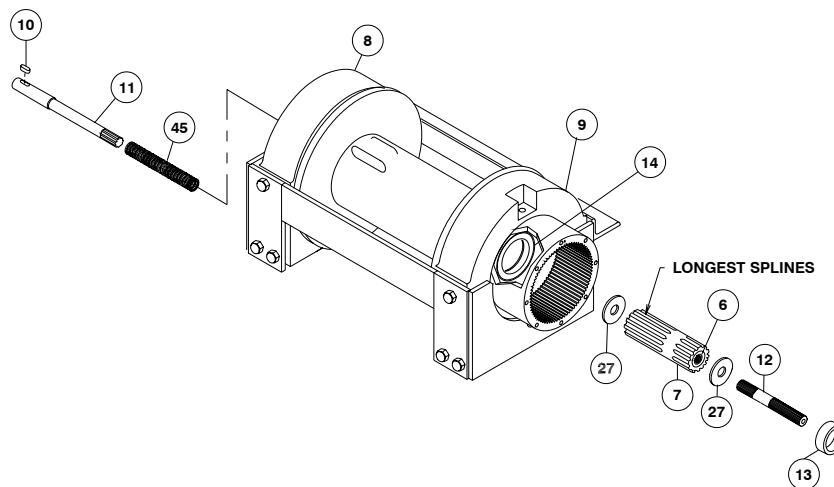
8. NOTE: DETERMINE MOUNTING CONFIGURATION OF WINCH (R.H. or L.H. MOUNTED) BEFORE ATTACHING FRONT AND REAR FRAME ASSEMBLY TO WINCH, TO ASSURE PARTS ARE MOUNTED TO PROPER SIDE, REFER TO WINCH MOUNTING CONFIGURATIONS, STEP 15 PAGE 12.

Seat well-oiled quad-rings (item #38 & #39) into groove of bushing in each end of drum assembly (item #2), as shown. Carefully set drum assembly (item #2) down over motor end bearing (item #9). Lift gear-housing end bearing (item #9) and set into place on drum assembly. Install frame assembly (item #1) using capscrews and lockwashers shown below. Tighten (4) capscrews securely, check rotation of cable drum.

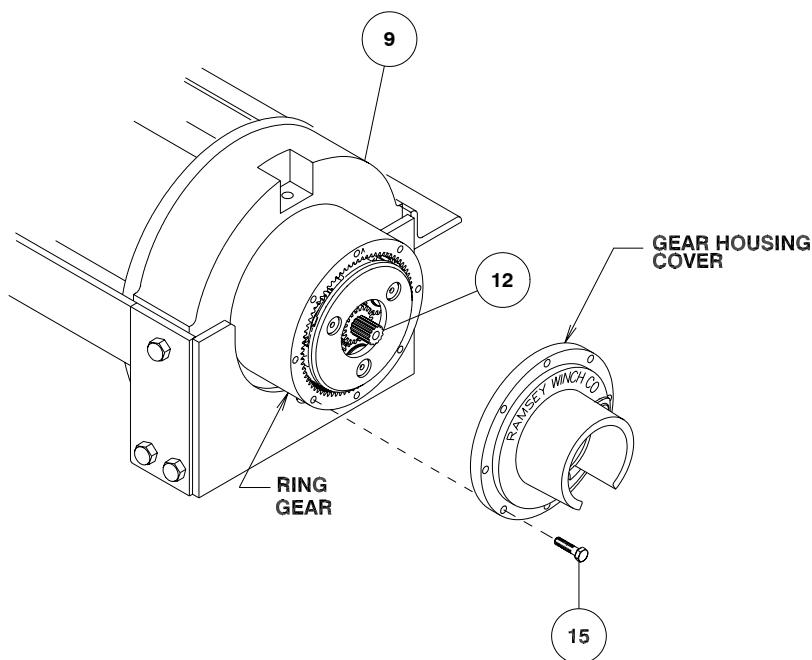


9. Liberally apply grease to shoulder of input shaft (item #11). Place spring (item #45) over longer splined end of shaft. Use grease to hold spring in place against shoulder of shaft.

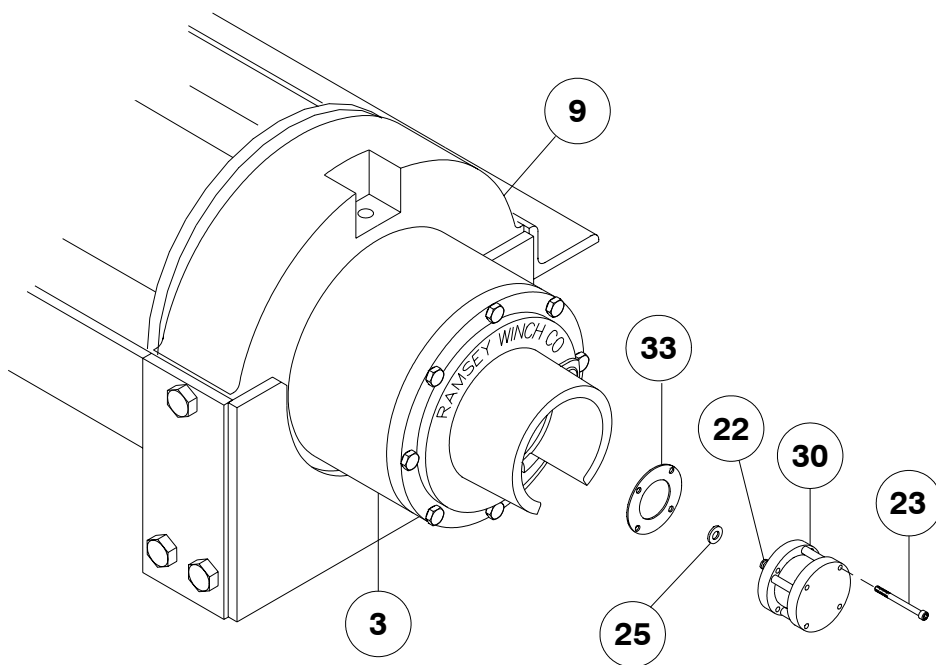
Place spring and shaft through motor end bearing (item #8) and drum until shaft extends through bushing (item #14) in end bearing (item #9). Place clutch washer (item #27) over splined end of shaft and against spring. Place end of output coupling assembly (item #7), with longest spline inward, through end bearing bushing (item #14) and mesh shaft coupling spline with splined end of shaft. Place short splined end of shifter shaft (item #12) through washer (item #27) and into shaft coupling (item #6), meshing splines of shifter shaft with splines in shaft coupling. Place spacer (item #13) over output coupling assembly (item #7).



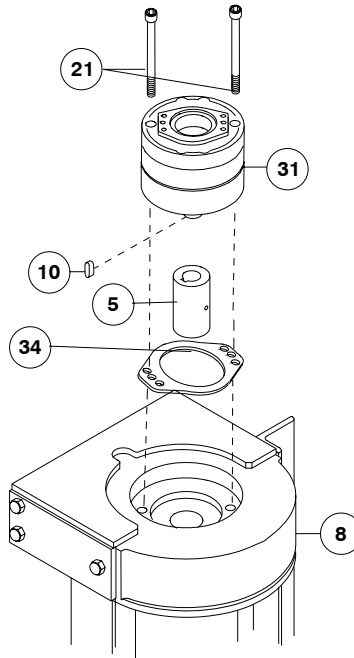
- Place (2) gear carrier assemblies into ring gear meshing carrier gears with ring gear. Make sure that ring gear and carrier assemblies are securely against end bearing (item #9). Inspect cover o-ring for damage and replace if necessary. Attach cover to ring gear. Use (8) capscrews (item #15) to secure gearbox cover to gear housing end bearing. Torque capscrews to 18 ft. lbs. each, in criss-cross pattern.



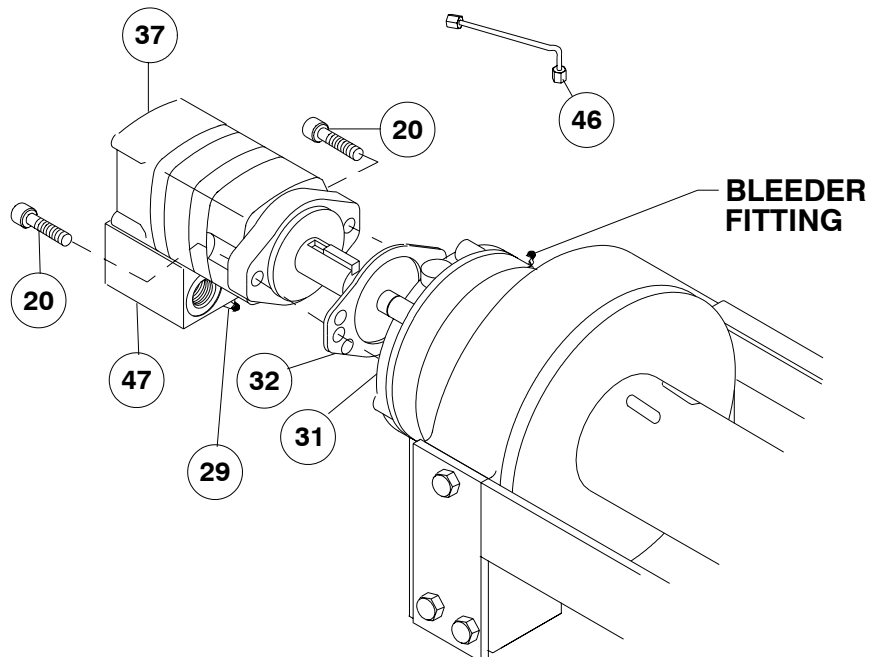
- Pull rod from air cylinder as far as possible. Slide washer (item #25) over setscrew (item #22) and against nut attached to air cylinder rod. Place setscrew into hole of shifter shaft (item #12). Attach new air cylinder (item #30) and gasket (item #33) with sealer, to adapter using (4) capscrews (item #23). Apply Loc-tite PST thread sealer to threads of capscrews. Torque capscrews to 5 ft. lbs. each, in criss-cross pattern.



12. With pin (item #44) installed in coupling, slide coupling (item #5) over end of input shaft below. Slide coupling over end of shaft (item #12). Place gasket (Item #34) into position on motor mounting surface of end bearing (item #8). Insert brake shaft into coupling. Use (2) screws (item #21) to attach brake assembly to motor end bearing. Torque capscrews to 85 ft lbs each.

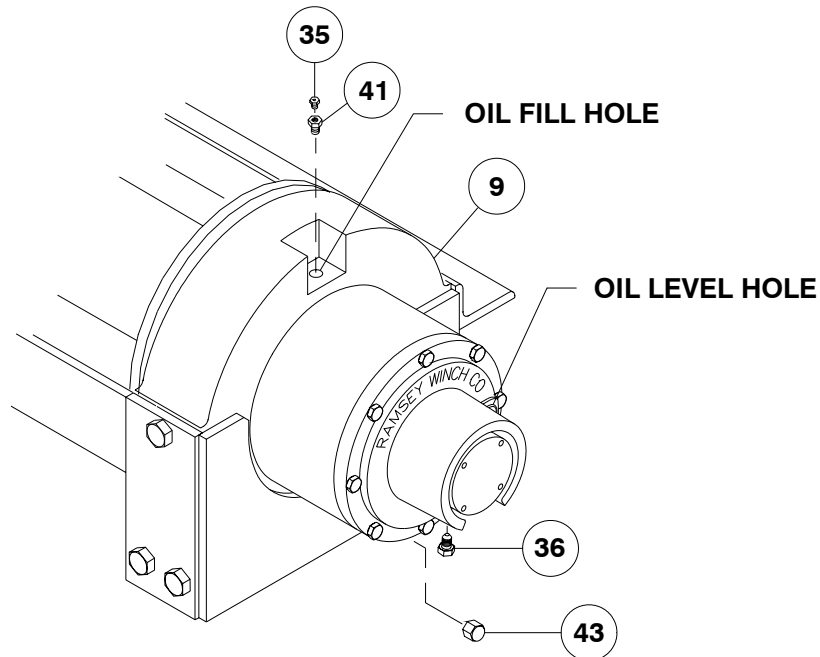


13. Attach motor (item #37) with well oiled gasket (item #32) to brake (item #31). Use (2) capscrews (item #20) and torque to 74 ft. lbs. each. Securely connect tube (item #46) to elbow (item #29), in valve (item #47), and brake (item #31).



14. Apply Permatex to threads of pipe cap (item #43). Thread pipe cap onto pipe nipple in bottom of gear housing end bearing (item #9). Pour approx. 1.75 pints of SAE 80W-140 oil into end bearing. Check oil level by removing oil plug noted below. Insert relief fitting (item #35) and thread reducer (item #41) into end bearing at oil fill hole.

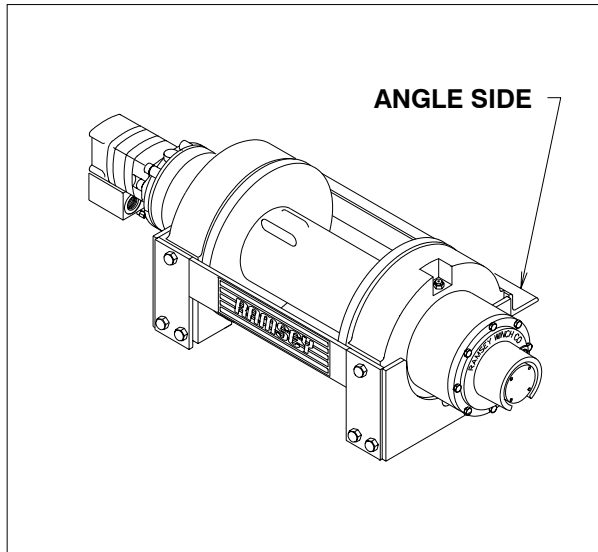
Install winch and connect pressure lines. Apply at least 230 PSI pressure to release brake and verify that brake releases, by observing that the winch drum rotates.



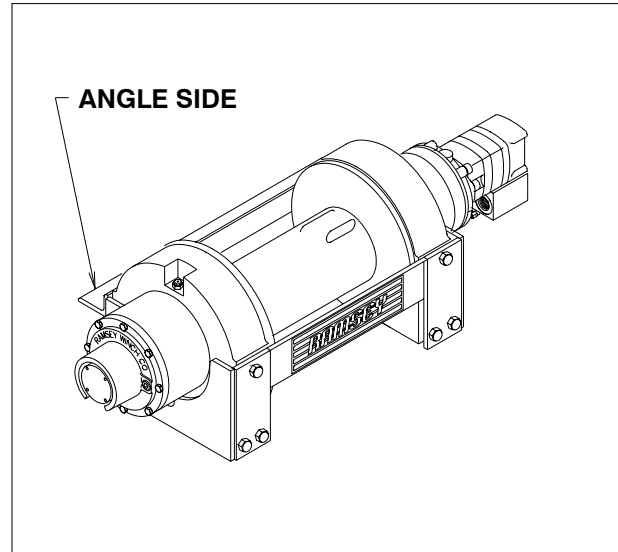
15. Check proper operation of clutch by applying air pressure to clutch air cylinder to disengage clutch. Verify that winch freespools. Re-engage clutch. A loud noise should be heard when clutch engages. Winch drum should not freespool.

16. Operate winch forward and reverse to verify that drum rotates.

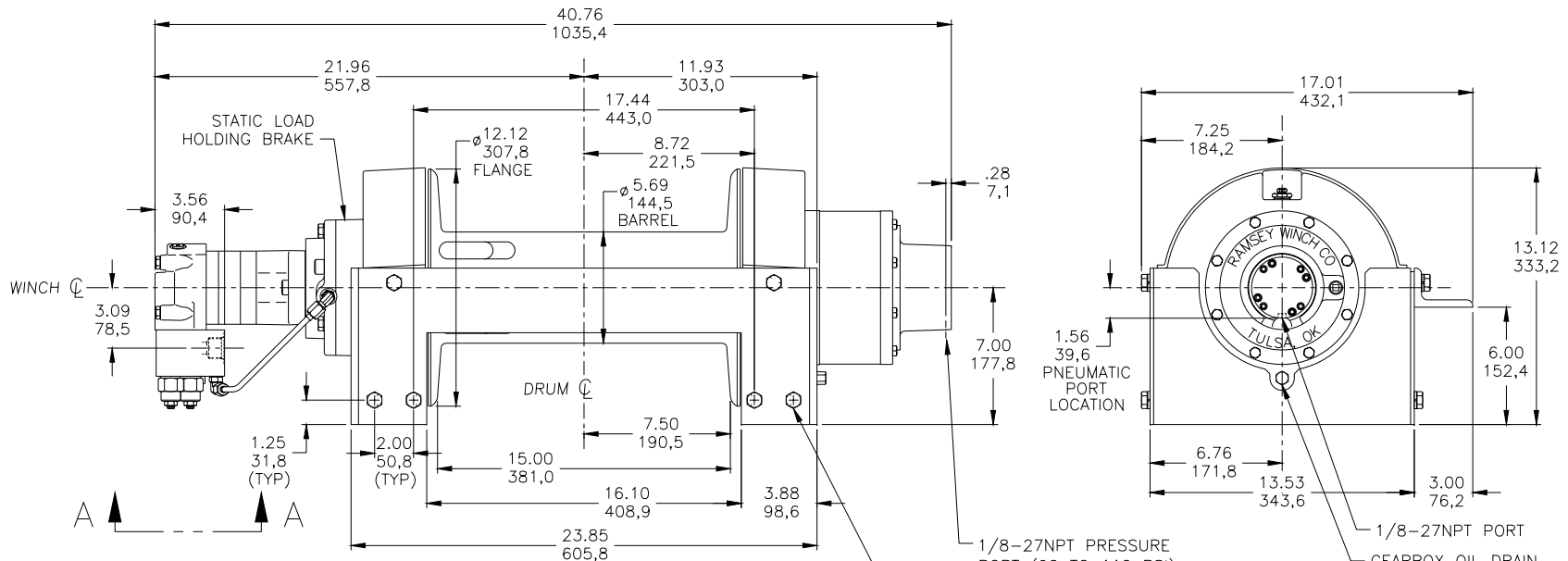
# WINCH MOUNTING CONFIGURATIONS



**R. H. MOUNTING  
CONFIGURATION**



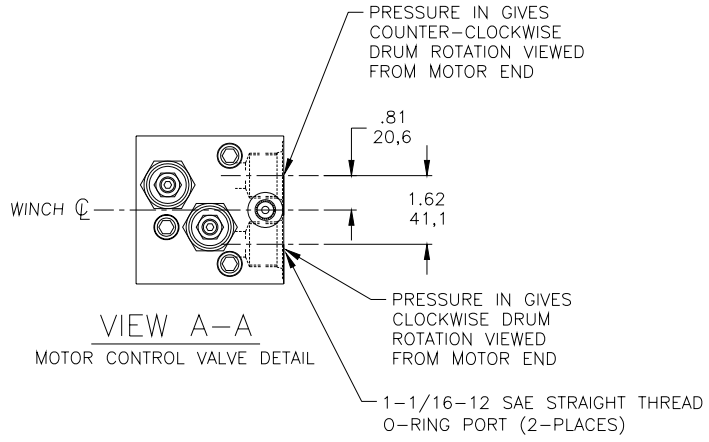
**L. H. MOUNTING  
CONFIGURATION**



1/8-27NPT PRESSURE PORT (90 TO 110 PSI) FOR DISENGAGING CLUTCH. (CLUTCH IS SPRING ENGAGED) SEE END VIEW FOR TRUE ORIENTATION OF PORT

1/2-13UNC, GRADE 5 CAPSCREW (6-PLACES) EACH SIDE

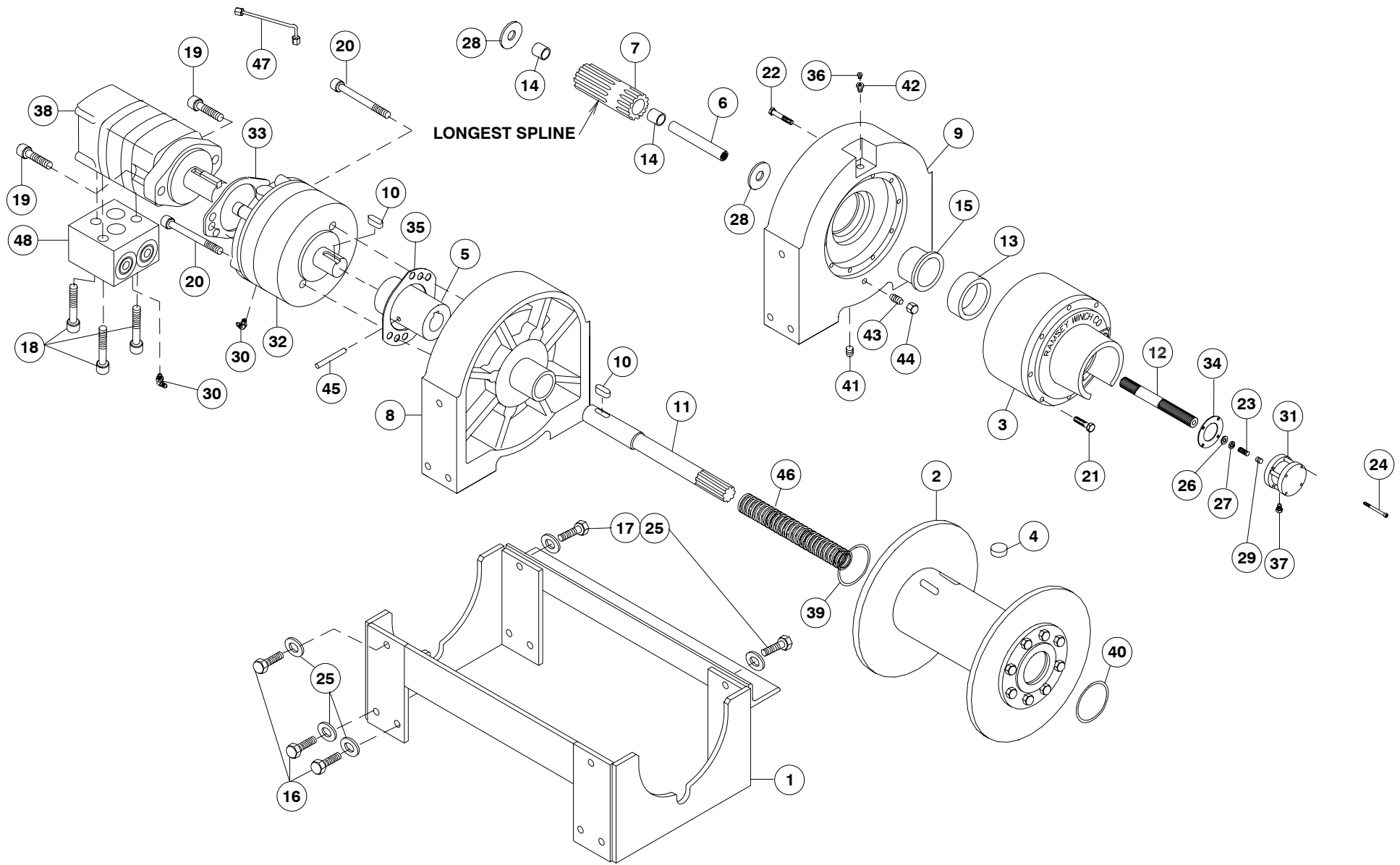
1/8-27NPT PORT  
GEARBOX OIL DRAIN



DIMENSIONS SHOWN ARE INCHES OVER MILLIMETERS.

# MODEL RPH-20000





RPH 20000

**PARTS LIST – RPH 20000**

16

ITEM	QTY.	PART #	DESCRIPTION	ITEM	QTY.	PART NO.	DESCRIPTION
1	1	242157	ASSY-FRAME	25	12	418218	LOCKWASHER 1/2 MED SECT
2	1	234170	DRUM ASSEMBLY	26	1	418432	WASHER – THRUST
3	1	296504	GEAR BOX	27	1	418433	NUT – 5/16-24 NF X 3/16 THK LOCK
4	1	314010	CABLE ANCHOR	28	2	418462	WASHER – CLUTCH
5	1	324290	COUPLING – BRAKE	29	1	426045	INSERT
6	1	324294	COUPLING – SHAFT	30	2	432018	FITTING – HYD 7/16-20 90° ELBOW
7	1	324299	COUPLING – OUTPUT	31	1	433014	AIR CYLINDER
8	1	338294	END BEARING – MOTOR	32	1	438020	BRAKE
9	1	338315	END BEARING – GEAR	33	1	442215	GASKET – BRAKE & MOTOR END*
10	2	342194	KEY – RD END	34	1	442217	GASKET – AIR CYLINDER*
11	1	357496	SHAFT – INPUT	35	1	442224	GASKET – BRAKE OUTPUT FACE*
12	1	358073	SHIFTER SHAFT	36	1	456008	RELIEF FITTING
13	1	362269	SPACER	37	1	456038	BREATHER VENT
14	2	402119	BEARING	38	1	458081	MOTOR – HYDRAULIC
15	1	412090	BUSHING – THRUST	39	1	462012	QUAD. RING*
16	10	414561	CAPSCREW 1/2-13 NC X 1-1/4 LG HX HD GR 5	40	1	462050	QUAD. RING*
17	2	414551	CAPSCREW 1/2-13 NC X 1-1/2 LG HX HD GR 5	41	1	468017	PIPE PLUG
18	3	414935	CAPSCREW 3/8-16NC X 2-1/2 LG HX SOC HD	42	1	468024	REDUCER
19	2	414948	CAPSCREW 1/2-13NC X 1-1/4 LG SOC HD	43	1	468036	PIPE NIPPLE
20	2	414958	CAPSCREW 1/2-13NC X 4 LG SOC HD	44	1	468037	PIPE CAP
21	8	415152	BOLT – M8-1.25X30MM LG. HX HD GR 8.8 Z/P	45	1	470091	PIN
22	12	415207	BOLT – M10-1.25X60MM LG. HX HD GR 8.8 Z/P	46	1	494108	SPRING
23	1	416051	SETSCREW 5/16-24 NF X 1 LG SOC HD	47	1	509006	TUBE ASSEMBLY
24	4	416233	CAPSCREW #10-24NC X 2-1/2 LG HX SOC HD	48	1	516011	CONTROL VALVE

\* THESE ITEMS ARE PART OF SEAL AND GASKET KIT #246047 WHICH ALSO INCLUDES (3) O-RINGS USED IN DRUM ASSEMBLY #234170 (SEE PAGE 7) AND O-RING USED ON GEAR BOX COVER (SEE PAGE 10).



## 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 repair or alterations have been made, unless authorized by 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.

*See warranty card for details.*



## RAMSEY WINCH COMPANY

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OM-914041-1105-G