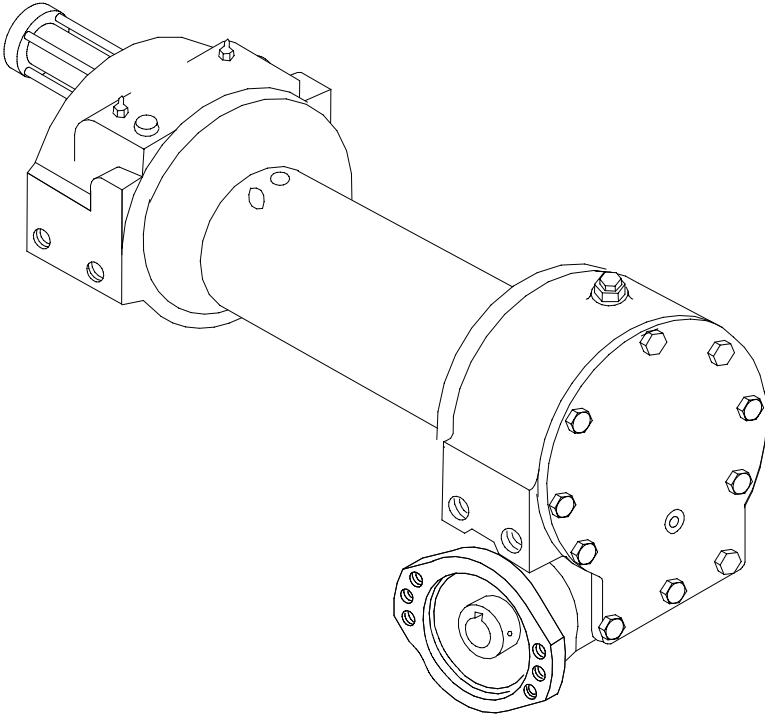




OPERATING, SERVICE AND MAINTENANCE MANUAL



MODEL HD-234 AIR SHIFT INDUSTRIAL LOW-MOUNT WINCHES



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

TABLE OF CONTENTS

INTRODUCTION	1
WARRANTY INFORMATION	1
SPECIFICATIONS	1
TECHNIQUES OF OPERATION	2
WARNINGS	2
WINCH MAINTENANCE	3
WINCH MOUNTING	3
CABLE INSTALLATION	3
HYDRAULIC SYSTEMS/PERFORMANCE CHARTS	4
TYPICAL LAYOUT/HYD. SYSTEM DIAGRAM	4
TROUBLE SHOOTING GUIDE	5
INSTRUCTIONS FOR OVERHAUL OF RAMSEY MODEL HD-234 WINCH	
DIS-ASSEMBLY	6-9
RE-ASSEMBLY	9-12
DIMENSIONAL DRAWING	14
PARTS LIST AND PARTS DRAWING	15-16
LIMITED WARRANTY	BACK COVER

RAMSEY WINCH MODEL HD-234

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 (lbs.)		8,000			
(kg)		3,620			
Gear Reduction		34:1			
Weight HD-234		110lbs. (50 kg)			
LAYER OF CABLE		1	2	3	4
*Rated line pull	lbs.	8,000	6,700	5,700	5,000
per layer	kg	3,620	3,030	2,610	2,290
**Long Drum	ft.	25	60	95	140
Cable capacity	m	8	18	30	43
**Line speed	FPM	28	34	39	44
	MPM	8,6	10,1	11,7	13,4
* Winch only conforms to SAE J706. For SAE qualification of mounting angles, if applicable, consult Ramsey Engineering					
** These specifications are based on recommended wire rope of 3/8 inch diameter 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.

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.

When pulling a load where there is even a remote chance of cable failure, place a blanket, jacket or tarpaulin over the cable about six feet behind the hook. This will slow the snap back of a broken cable and could prevent serious injury.

NOTE: The Ramsey level winder is an available accessory for tightly respooling unloaded cable onto the drum.

The winch clutch allows rapid unspooling of the cable, from cable drum, for holding onto a load. The clutch is operated by the lever located on the clutch housing of winch.

1. **TO DISENGAGE CLUTCH**, run the winch in the reverse (reel out) direction until the load is off the cable. Apply 60-125 PSI to inlet port fitting of air cylinder.
2. **TO ENGAGE CLUTCH**, remove air pressure from air cylinder. Run the winch in reverse until the cable drum starts turning. The plastic plug in top of clutch housing may be removed for inspection of clutch to assure total engagement. 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 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 SETSCREW 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 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 sliding clutch—ensure it is fully engaging and disengaging with the cable drum. To observe if the clutch is fully engaging, remove the plastic plug in top of the housing. If clutch is not fully engaging:
 - Inspect clutch shifter assembly parts, check for damage or excessive wear and replace as necessary.
 - 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. Check the winch mounting bolts. If any are missing, replace them and securely tighten any that are loose. Make sure to use only SAE grade 5 bolts or better.
4. Check alignment of chain and sprockets and adjust as required to minimize wear.
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.
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 Phillips SMP 80W-90, Mobil HD 80W-90, Shell Spirax HD 80W-90, or CITGO MP 80W-90 gear oil only.**
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 (clutch housing end, cable drum, and gear housing end) are properly aligned. All standard model HD-234 series winches are furnished with recommended mounting angles. Angle size is 1/4 x 2-1/2 x 2-1/2 x 36" long high strength steel angle.

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, into the 7/16" dia. 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 the cable drum, taking care to form neatly wrapped layers.

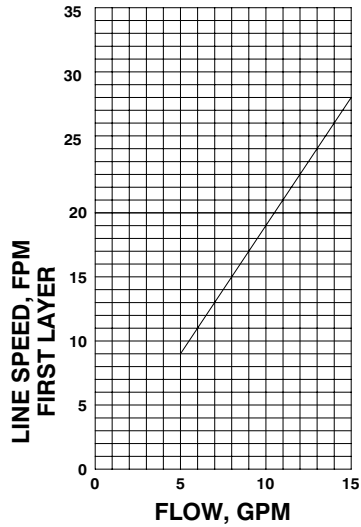
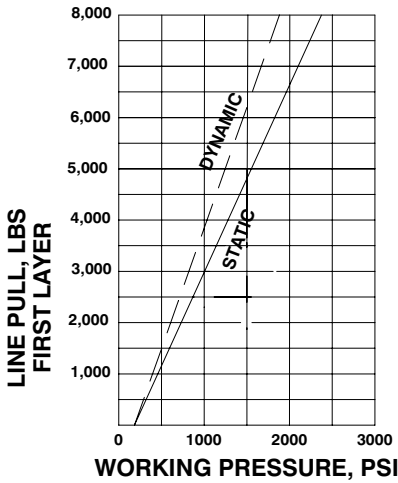
HYDRAULIC SYSTEMS

Refer to performance charts, below, to properly match your hydraulic system to the HD-234 winch performance. The charts consist of:

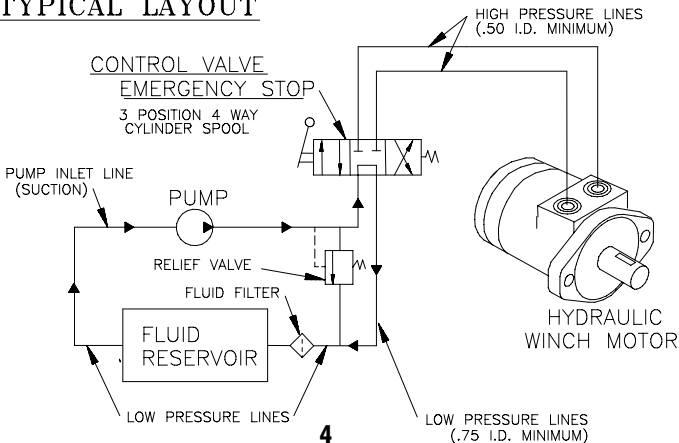
1. Line pull (lbs.) first layer vs. working pressure (PSI). STATIC (solid line) refers to hoisting a suspended load from rest; DYNAMIC (dashed line) refers to maintaining the motion of a moving load.
2. Line speed, first layer (FPM) vs. gallons per minute (GPM).

Performance based on a motor displacement of 3.6 cubic inches with 15 GPM maximum flow rate.

HD-234 PERFORMANCE 8,000 LB. DUTY RATING - 34:1 GEAR RATIO



TYPICAL LAYOUT



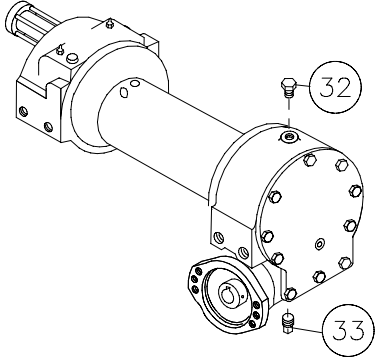
Troubleshooting Guide

CONDITION	POSSIBLE CAUSE	CORRECTION
CLUTCH INOPERATIVE OR BINDS UP	<ol style="list-style-type: none"> 1. Dry or rusted shaft. 2. Clutch jaws are in contact. 	<ol style="list-style-type: none"> 1. Clean and lubricate 2. See <i>Techniques of Operation</i> .
OIL LEAKS FROM HOUSING	<ol style="list-style-type: none"> 1. Seal damaged or worn. 2. Too much oil. 3. Damaged gasket. 	<ol style="list-style-type: none"> 1. Replace seal. 2. Drain excess oil. Refer to <i>Techniques of Operation</i> . 3. Replace gasket.
WINCH RUNS TOO SLOW	<ol style="list-style-type: none"> 1. Hydraulic motor worn out. 2. Low flow rate. 	<ol style="list-style-type: none"> 1. Replace motor. 2. Check flow rate. Refer to Hydraulic Systems flow chart.
CABLE BIRDNESTS WHEN CLUTCH IS DISENGAGED	<ol style="list-style-type: none"> 1. Drag brake disc worn. 	<ol style="list-style-type: none"> 1. Replace discs.
HYDRAULIC FLUID LEAKS OUT HOLE IN MOTOR ADAPTER	<ol style="list-style-type: none"> 1. Hydraulic motor shaft seal damaged. 	<ol style="list-style-type: none"> 1. Replace seal.

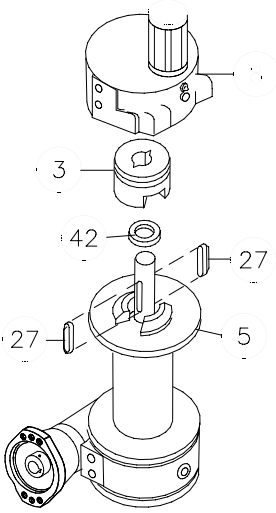
INSTRUCTIONS FOR OVERHAUL OF RAMSEY MODEL HD-234

DIS-ASSEMBLY

- 1. Drain oil from gear housing by removing plug (item #33) from bottom of gear housing. Remove plug (items #32) from top of gear housing.

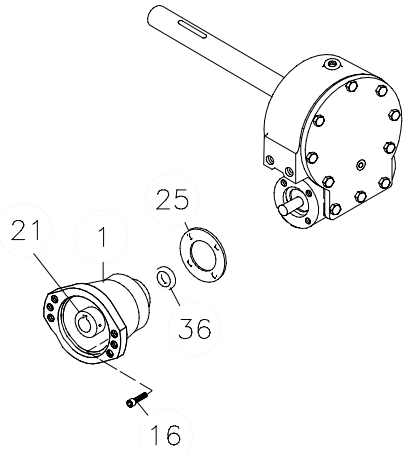


- 2. Remove clutch housing (item #8) and clutch (item #3) from winch assembly.
- 3. Remove two keys (item #27) from keyways. A screwdriver can be used, at notch, to aid in the removal of keys. Once keys have been removed, drum (item #5) and thrust washer (item #42) can be removed from drum shaft.



4. Remove coupling (item #21) from adapter (item #1) by unscrewing four screws (item #16).

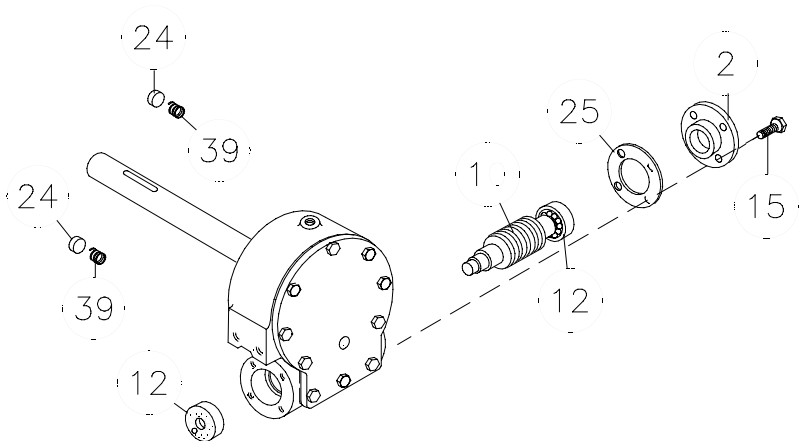
Replace adapter seal (item #36) and gasket (item #25).



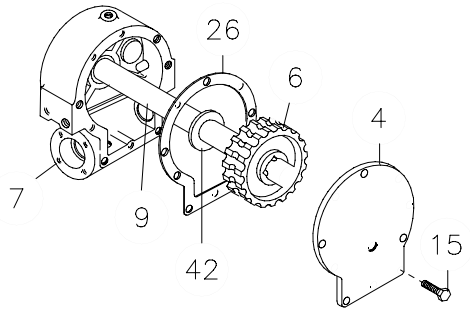
5. Remove bearing cap (item #2) from gear housing by unscrewing four capscrews (item #15). Remove worm (item #10) and bearings (item #12) from gear housing. Use soft hammer to gently tap input end of worm and drive worm and bearing from gear housing. Once worm has been removed from housing, bearing can be pressed from end of worm.

Check for signs of wear or damage to worm (item #10) and bearing (item #12). Replace if necessary.

Drag brake disc (item #24) and spring (item #39) should be examined and replaced if necessary.



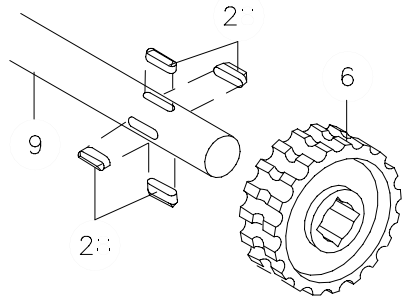
6. Remove gear housing cover (item #4) from gear housing (item #7) by unscrewing capscrews (item #15). Thread two of the capscrews into the two tapped holes of cover and tighten. This will pull the cover loose from the gear housing.



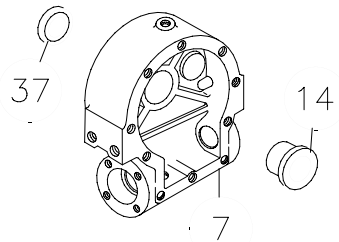
Remove cover gasket (item #26) and pull shaft (item #9), with gear attached, and thrust washer (item #42) from gear housing.

7. Check for signs of wear on gear teeth. If replacement of gear is necessary, replace as follows:

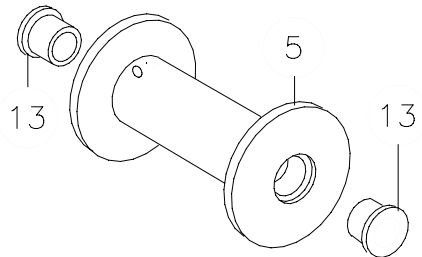
- a) Press gear (item #6) from shaft (item #9).
- b) Examine shaft keys and keyways. If distortion of keys and/or keyways is evident, shaft and keys should be replaced.
- c) Use a soft hammer to gently tap keys (item #28) into keyways. Press gear (item #6) over shaft and keys. Gear must be centered over keys.



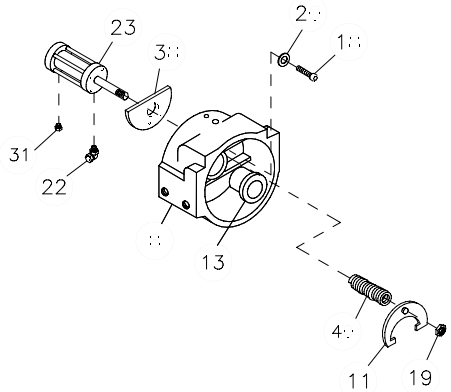
8. Remove seal (item #37) from back of gear housing (item #7). Press bushing (item #14) from gear housing. Press new bushing and seal back into place.



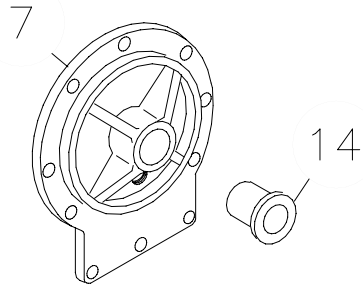
9. Check drum bushings (item #13) for signs of wear. Replace if necessary by pressing old bushings from drum. Press new ones into place.



10. Examine yoke (item #11) for damage. Yoke should be firmly attached to shaft. Replace if necessary. If air cylinder (item #23) needs to be replaced, remove it from the end of the clutch housing by removing 4 capscrews (item #18) and lockwashers (item #20). Inspect the breather vent (item #31) and elbow fitting (item #22) to ensure they are not plugged.

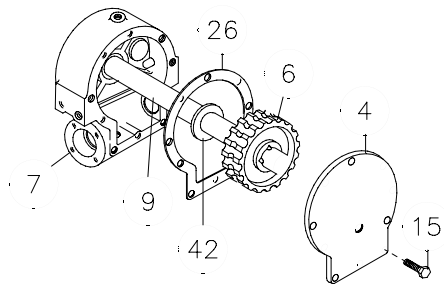


11. Check cover bushing (item #14) for signs of wear. If necessary remove old bushing and press new bushing into place.

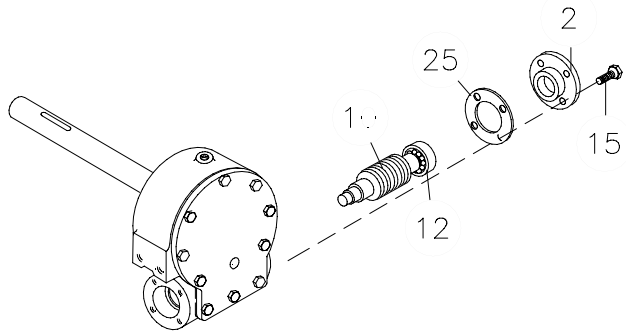


RE-ASSEMBLY

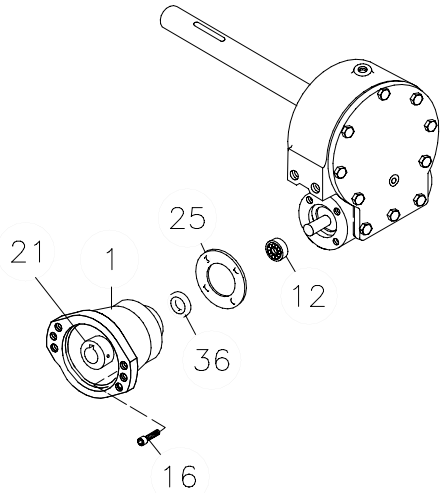
12. Apply grease to end of shaft, opposite gear. Apply grease to bushing in gear housing (item #7). Place greased end of shaft through thrust washer (item #42) and bushing in gear housing (item #7). Place gasket (item #26) onto gear housing cover (item #4). Apply grease to gear end of shaft and cover bearing. Place cover onto shaft and secure to housing with ten capscrews (item #15). **Tighten capscrews to 8 ft-lbs. (10.8 Nm) each.**



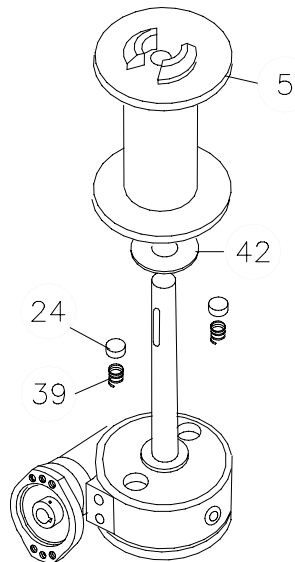
13. Press bearing (item #12) onto worm (item #10) Note: Be sure that thick shoulder of bearing's outer race (side with manufacturer's name and part number) is out, away from worm threads. Press bearing and worm into gear housing. Slip gasket (item #25) onto bearing cap (item #2). Use four cap-screws (item #15) to secure cap to gear housing. **Tighten capscrews to 8 ft-lbs. (10.8 Nm) each.**



14. Press bearing (item #12) onto worm and into gear 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.
15. Place gasket (item #25) onto adapter (item #1). Slide seal (item #36) onto worm. Slide tapered end of coupling (item #21) over end of worm shaft. Attach adapter and coupling to gear housing using four screws (item #16). **Tighten screws to 12 ft-lbs. (16.3 Nm) each.**



16. Place winch with gear housing cover down on work bench. Drum shaft should be in vertical position. Slide thrust washer (item #42) over drum shaft and slide downward until washer rests on gear housing. Set springs (item #39) into pockets of gear housing with drag brakes (item #24) on top of springs. Slide drum assembly (item #5) onto drum shaft with drum jaws upward.

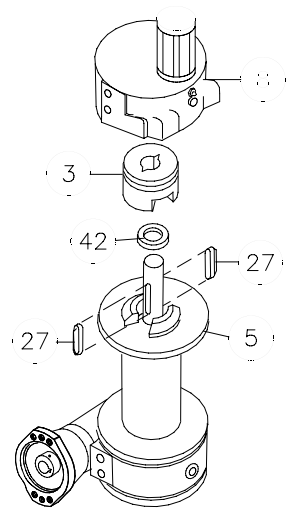


17. Place thrust washer (item #42) over end of drum shaft and slide downward until space rests on drum. Press drum downward to compress springs in gear housing.

Insert keys (item #27) into keyways with sharp edge of keys pointing outward and notched end of keys upward. A rubber or brass mallet will be needed to gently tap keys into position.

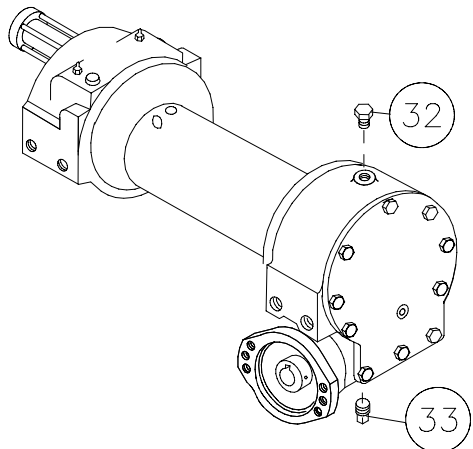
Apply grease to keys and end of shaft. Place jaw clutch (item #3) over end of shaft and slide jaw clutch over keys.

Set clutch housing (item #8) over end of drum shaft. Pull jaw clutch (item #3) upward, toward clutch housing, enough to allow yoke, in clutch housing, to fit properly in groove around jaw clutch.



18. Insert plug (item #33) into bottom of gear housing. Permatex may be applied to threads to help prevent leakage.

Pour 3/4 pint of **Phillips SMP 80W-90, Mobil HD 80W-90, Shell Spirax HD 80W-90, or CITGO MP 80W-90 gear oil only** into housing through hole in top of housing. Plug (item #32) should then be placed into hole on top of gear housing. Tighten reducer securely.



NOTES

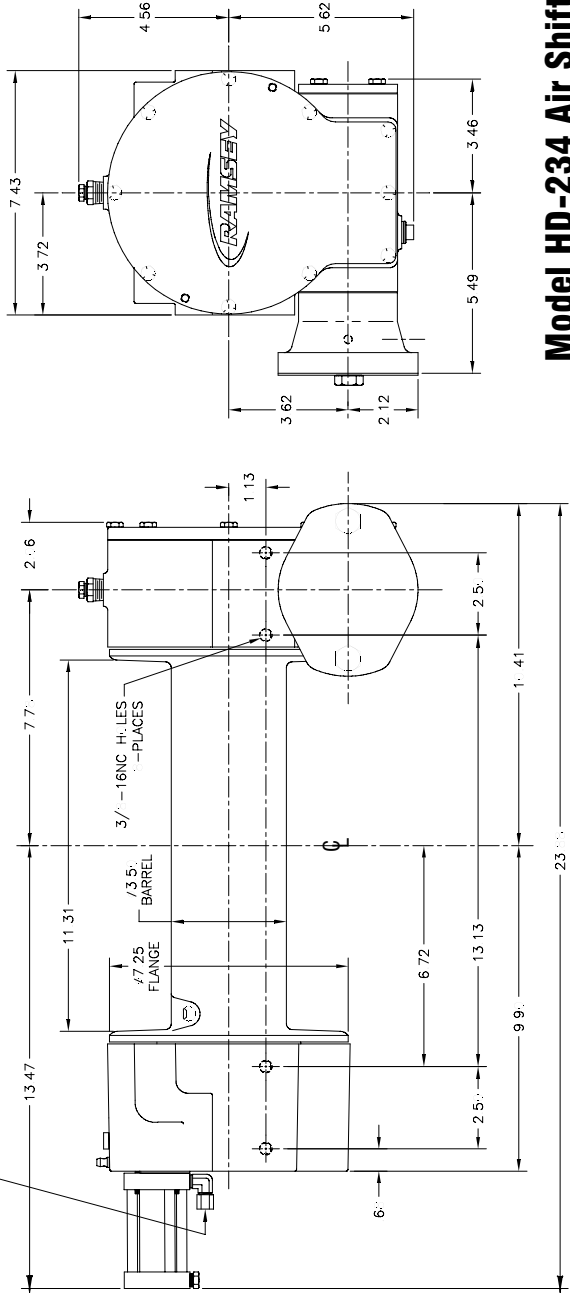
**CLUTCH
ENGAGED**

The clutch is spring loaded for engagement when air pressure is removed from air shifter. Verify air shifter control valve lever position for engaged position. This tag, 434385, must be mounted as near as possible to air shifter control lever in the ENGAGED position.

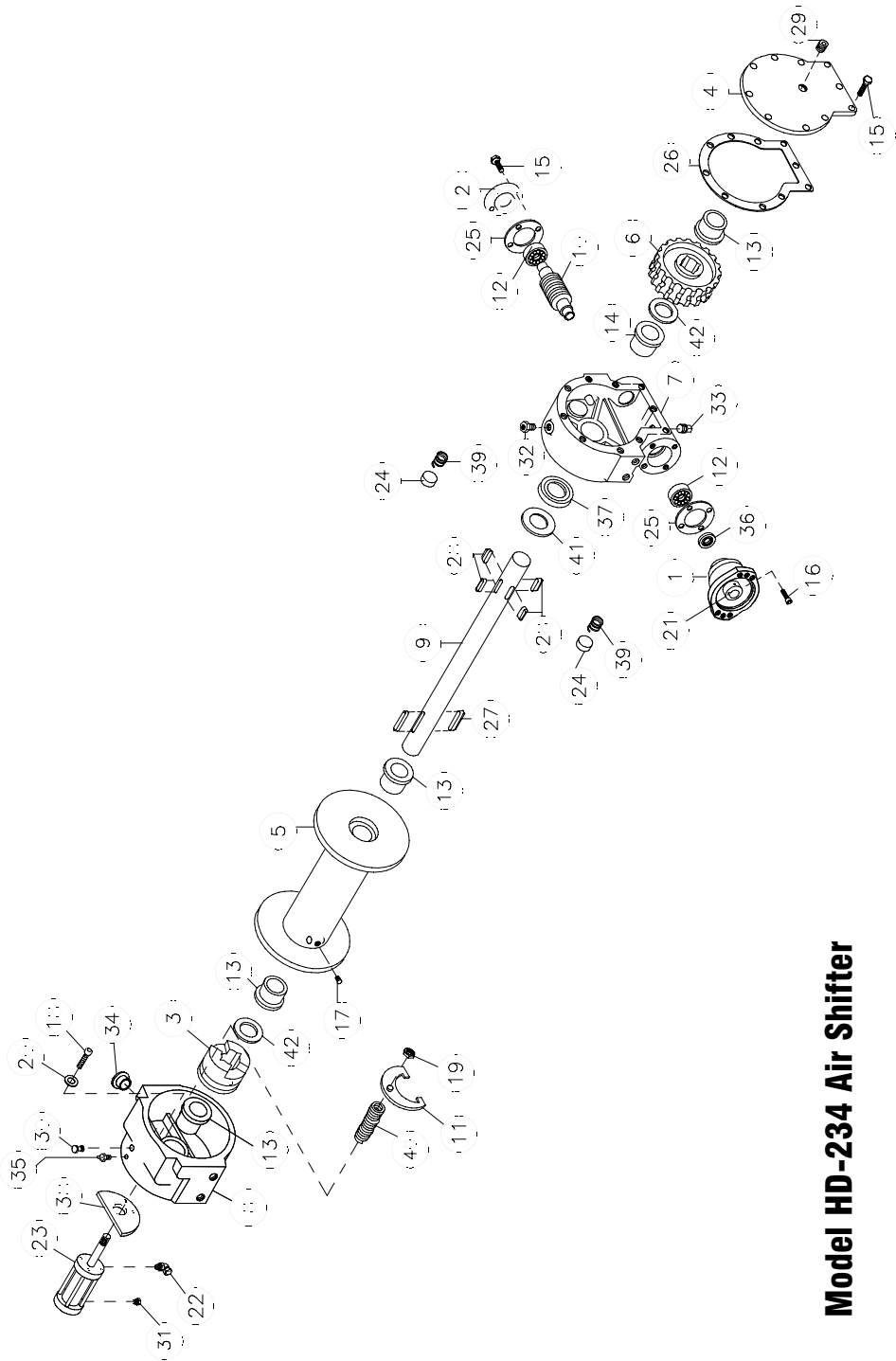
**CLUTCH
DISENGAGED**

The clutch is dis-engaged by applying 60-125 psi air pressure to air shifter. Verify air shifter control valve lever position for dis-engaged position. This tag, 434386, must be mounted as near as possible to air shifter control lever in the DIS-ENGAGED position.

COMPRESSOR FITTING F.R. 1/4" O.D. TUBING
(60 PSI MINIMUM) (125 PSI MAXIMUM) F.R. (DIS-ENGAGING CLUTCH
(CLUTCH IS SPRING ENGAGE))



Model HD-234 Air Shifter



Model HD-234 Air Shifter

PARTS LIST MODEL HD-234 AIR SHIFTER

Item No.	Qty.	Part No.	Description	Item No.	Qty.	Part No.	Description
1	1	300039	ADAPTER	22	1	432031	FITTING
2	1	316083	BEARING CAP	23	1	433021	AIR CYLINDER
3	1	324160	JAW CLUTCH	24	2	438014	DISC - BRAKE
4	1	328134	GEAR HOUSING COVER	25	2	442184	GASKET
5	1	332105	DRUM - STD	26	1	442205	GASKET
6	1	334183	WORM GEAR - RH	27	2	450006	KEY - BARTH
7	1	338273	GEAR HOUSING	28	4	450016	KEY - BARTH
8	1	338309	CLUTCH HOUSING	29	1	456001	FITTING - LUBE
9	1	357479	SHAFT - DRUM	30	1	456008	FITTING - RELIEF
10	1	368205	WORM, R.H.	31	1	456038	FITTING - VENT
11	1	370058	YOKE	32	1	468002	REDUCER
12	2	402002	BALL BEARING	33	2	468011	PIPE PLUG
13	4	412003	BUSHING	34	1	472012	PLUG-RUBBER
14	1	412045	BUSHING	35	1	472013	PLUG-PLASTIC
15	14	414038	CAPSCREW - 1/4-20NCX3/4, HXHD, GR-5, ZIP	36	1	486009	OIL SEAL
16	2	414521	CAPSCREW - 1/2-13NCX1LG HXHD	37	1	486017	OIL SEAL
17	1	416059	SETScrew - 3/8-16NCX1/2 HX SOCK HD CUP	38	1	488012	SHIM-AIR SHIFTER
18	4	416198	SCREW - #6-32 NC X 1LG. HXSOCHD, ZIP	39	2	494002	SPRING
19	1	418044	NUT - 3/8-16NC	40	1	494053	SPRING
20	4	418136	LOCKWASHER - #6 MED SECTION	41	1	518014	THRUST WASHER
21	1	431007	COUPLING	42	2	518015	THRUST WASH

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

P.O. Box 581510 • Tulsa, Oklahoma 74158-1510 USA

Phone: (918) 438-2760 • Fax: (918) 438-6688

www.ramsey.com