# Operation, Service and Maintenance Manual


## Sierra H8 Hydraulic Winch

**Ramsey Winch Company**
P.O. Box 58151 - Tulsa, OK, 74158-1510 USA
Phone 1-800-777-2760 - Fax (918) 438-6688
http://www.ramsey.com

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# Introduction

Please read this manual carefully. This manual contains information to obtain the most efficient operation from your Ramsey Winch and safety procedures you need to know before operating a Ramsey Winch. Do not operate this winch until you have carefully read and understand the entire manual.

Ramsey Winches are designed and built to exacting specifications. Great care and skill go into every winch we make. Refer to the last page for information on the Ramsey Winch limited warranty.

At the time of publishing, this manual is accurate to the best of our knowledge. Ramsey Winch reserves the right to change any or all items, components and parts, necessary for any reason. This right does not obligate Ramsey Winch to immediately update the manual. If in doubt, please call your local Ramsey Winch distributor for the most up-to-date information.

## Warnings

**⚠ WARNING** ***Ensure the clutch is fully engaged before starting the winching operation.***

**⚠ WARNING** ***Do not start the winch motor before engaging the clutch.***

**⚠ WARNING** ***Do not disengage the clutch under load.***

**⚠ WARNING** ***Do not allow personnel under or near the raised load.***

**⚠ WARNING** ***Do not try to guide the cable during a pull. Stand clear of the cable.***

**⚠ WARNING** ***Do not exceed the maximum line pull ratings shown in specifications.***

**⚠ WARNING** ***Do not use the winch to lift, support, or otherwise transport people.***

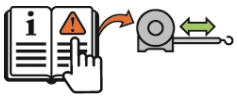
**⚠ WARNING** ***Always maintain a minimum of five wraps of cable around the drum. This is necessary to hold the load. The cable anchor is not designed to hold the load.***

**⚠ WARNING** ***In car carrier applications, after pulling the vehicle onto the carrier, secure the vehicle to the carrier bed. Do not maintain load on winch cable while transporting the vehicle. Do not use the winch as a tie down.***

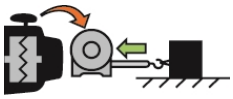
**⚠ WARNING** ***When pulling a heavy load, place a blanket, jacket, or tarpaulin over the cable five or six feet from the hook.***

**⚠ WARNING** ***Do not allow the load to shift or jerk.***

# Pictogram Definitions



Read and understand this entire manual before using the winch.



Clutch must be fully engaged during winching operations.

Do not disengage clutch under load.


Keep all personnel out from under and away from raised loads.

Do not use the winch to lift, support, or otherwise transport people.

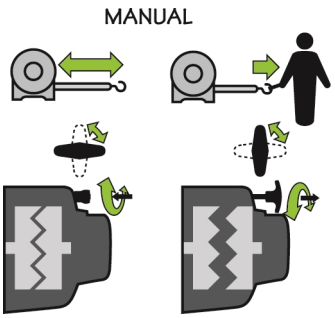

Do not exceed maximum line pull ratings shown in specifications. Shock loads must not exceed these ratings.

Keep yourself and others at a safe distance to the side of the cable when pulling under load. Do not step over a cable, or near a cable under load.

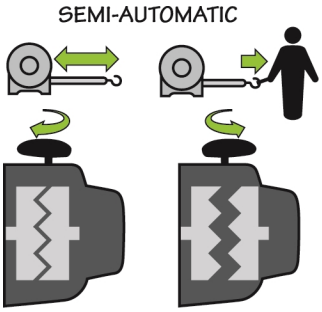
Do not use the winch in hoisting applications due to the required hoist safety factors and features.

Do not try to guide the rope during winching operations.

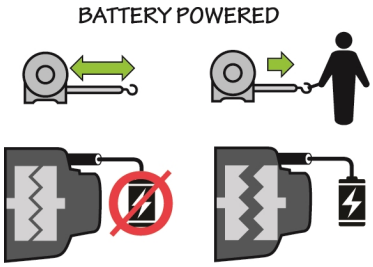
Always wear the appropriate personal protection equipment during winching operations.



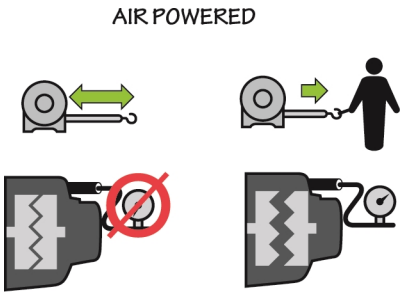

Illustrates the engaged and disengaged positions for the clutch handle on winches with a manual clutch.




Illustrates the engaged and disengaged positions for the clutch handle on winches with a semi-automatic clutch.

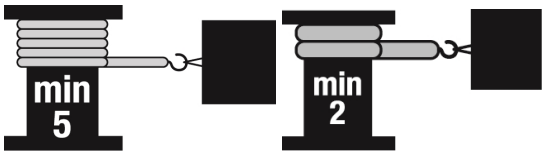



Illustrates the engaged and disengaged positions on winches with electric shift.

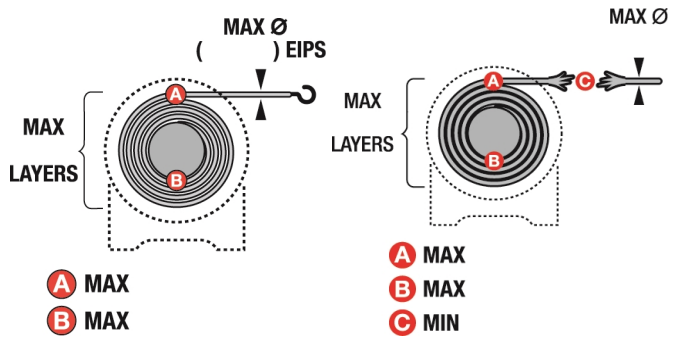



Illustrates the engaged and disengaged positions on winches with air shift.

The winch is intended to be used for vehicle recovery and pulling loads.




This image illustrates the minimum number of wraps of rope for the particular winch.



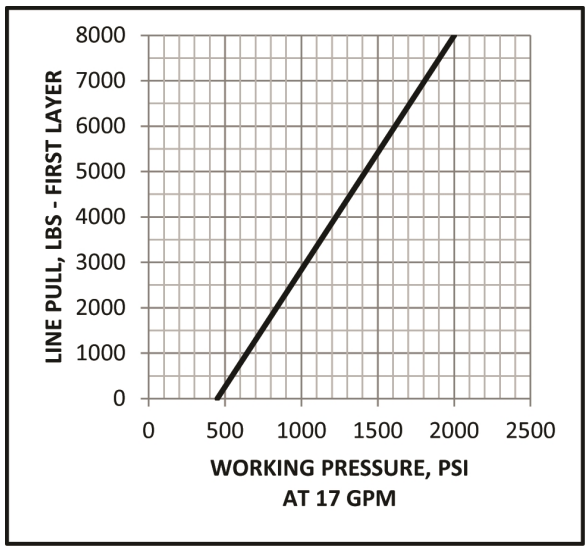

The blanks on these images will have printed data specific to the particular winch.

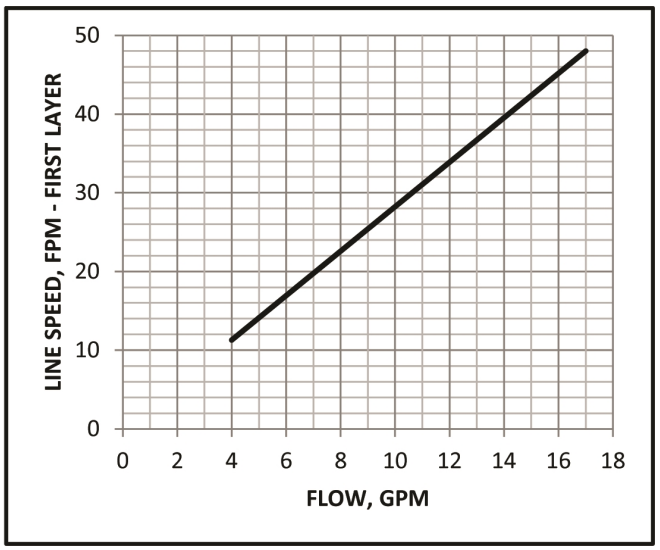
# Sierra H8 Specifications

## Performance Table

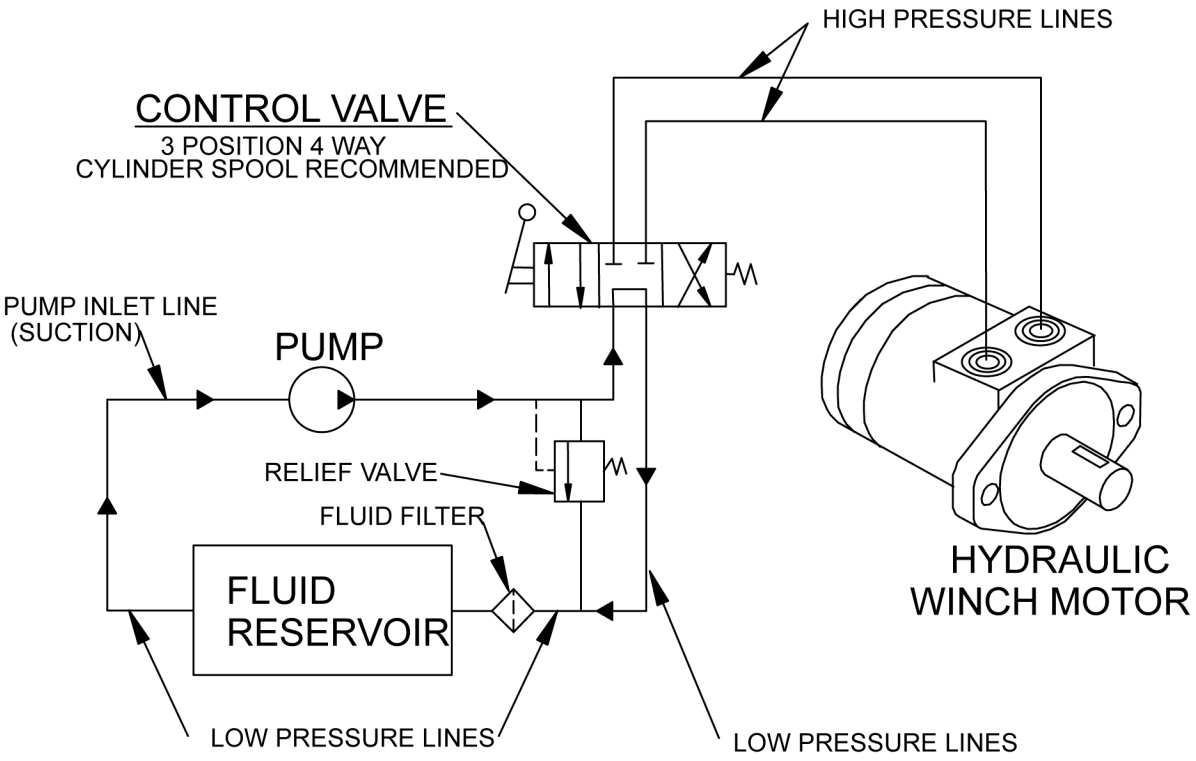
| SIERRA H8 | | | | | | |
|---|---|---|---|---|---|---|
| RATED LINE PULL | lbs. | | | | | 8000 |
| | kg. | | | | | 3620 |
| GEAR REDUCTION | | | | | | 17 |
| WEIGHT (WITHOUT CABLE) | | | | | | 90 lbs. |
| LAYER OF CABLE | | 1 | 2 | 3 | 4 | 5 |
| *RATED LINE PULL PER LAYER | lbs. | 8000 | 6700 | 5700 | 5000 | 4500 |
| | kg. | 3620 | 3040 | 2585 | 2270 | 2040 |
| CABLE CAPACITY | ft. | 25 | 55 | 90 | 130 | 175 |
| | m | 7.6 | 16.7 | 27.4 | 39.6 | 53 |
| LINE SPEED (AT 17 GPM) | fpm | 48 | 56 | 64 | 73 | 81 |
| | mpm | 14.5 | 17.0 | 19.4 | 22.1 | 24.6 |
| *These specifications are based on recommended 3/8" EIPS wire rope and a 4.8 Cu. In./Rev motor. | | | | | | |

## Performance Charts



# Hydraulic System Layout



# Winch Mounting

It is important to mount the winch securely so the three major sections (the motor end, the cable drum, and the gear housing end) are properly aligned. Excessive bushing wear and difficulty freespooling are usually symptoms of misalignment.

If the winch is mid-mounted, attach at least one tie-plate to the mounting feet at the bottom of the winch to maintain alignment. If the winch is foot mounted, attach at least one tie-plate at the midpoint to maintain alignment. It is always preferred to use both tie-plates in the final installed configuration.

Contact your local RAMSEY WINCH distributor or RAMSEY WINCH customer service for the recommended mounting kit. The mounting kit will allow the winch to be mounted in upright or midmount applications and meets the criteria of serving as a solid and true mounting surface.

If not using the RAMSEY WINCH mounting kit, or a RAMSEY WINCH mounting kit is not available, use the mounting hole patterns described in the Dimensional drawings. The mounting surface must be flat within 0.015 in. and sufficiently stiff to resist flexing.

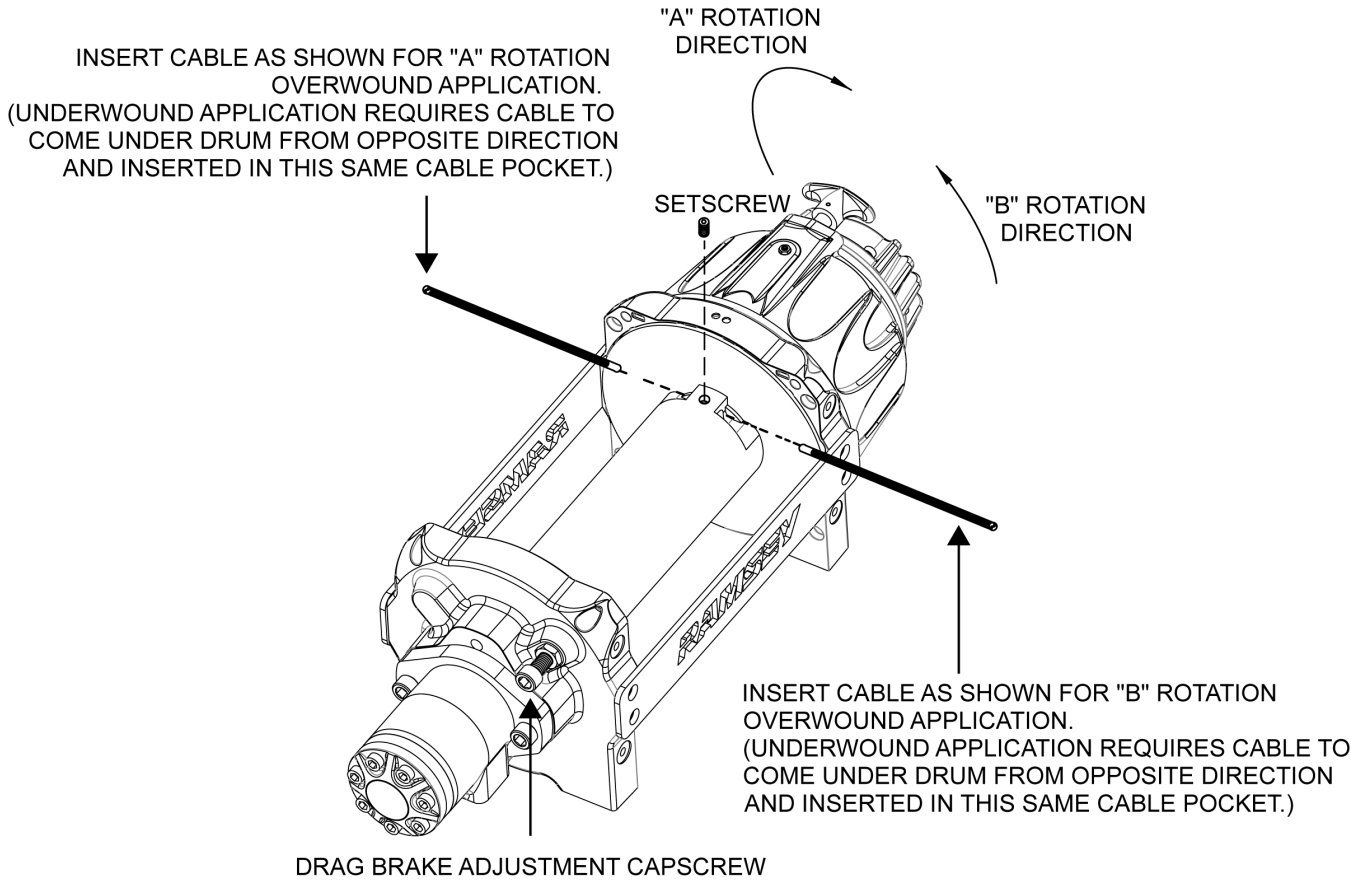
NOTICE

***If angles or a steel plate are used in mounting the winch, attach the provided tie-plates to the remaining mounting pads to the either the side or foot.***

# Cable Installation - Set Screw

An "A" or "B" decal on the motor end bearing indicates the spooling direction of the cable. If the decal is damaged or unreadable, contact Customer Service for addition information.

1. Unwind the cable by rolling it out along the ground to prevent kinking. Securely wrap the end of the cable opposite of the hook with plastic or similar tape to prevent fraying.
2. Place the taped end of the cable into the hole in cable drum. Use the 3/8-16NC x 1/2" long hex socket drive setscrew to secure the cable to the drum. The setscrew is included with the drum assembly.
3. Carefully run the winch in the "reel-in" direction. Keeping tension on the end of the cable, spool all the cable onto the cable drum, taking care to form neatly wrapped layers.
4. With the cable installed, check the freespool operation. Disengage the clutch and pull on the cable at a walking speed. If the cable "birdnests," loosen the jam nut and turn the capscrew clockwise to increase drag on the drum. If the cable pull is excessive, loosen the capscrew by turning counterclockwise. Tighten the jam nut when the proper setting is obtained.



# Sierra Hydraulic Winch Operation

Familiarize yourself with winch by making test runs before the first pull. Plan your test in advance. You hear your winch 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 the drum. If this happens, reverse the winch to relieve the load and move your anchor point closer to the center of the vehicle. After the job is done you can unspool and rewind to neatly lay the cable.

## Manual Clutch Operation

### To disengage the clutch:

1. Run the winch in the "cable out" direction until the load is off the cable.
2. Pull the handle out and rotate 90°.
3. With the handle in the "DISENGAGED" position the cable can now be free-spooled from the drum.

### To engage the clutch:

1. Pull the handle out and rotate 90° and release the handle.
2. Run the winch in reverse until the clutch handle snaps fully into the "ENGAGED" position.
3. Do not attempt to pull a load unless the handle is fully at the "ENGAGED" position.
4. Do not force the handle or hammer the handle to engage.

## Air Clutch Operation

### To disengage the clutch:

1. Run the winch in the reverse (reel out) direction until the load is off the cable.
2. Apply air pressure to the 0.125-27 NPT port. 80 PSI (min.) 150 PSI (max.). Pressure must not exceed 150 PSI.

### To engage the clutch:

1. Remove air pressure from the cylinder (a return spring engages the plunger).
2. Run the winch in reverse until the clutch engages. Do not attempt to pull a load with the clutch not engaged.

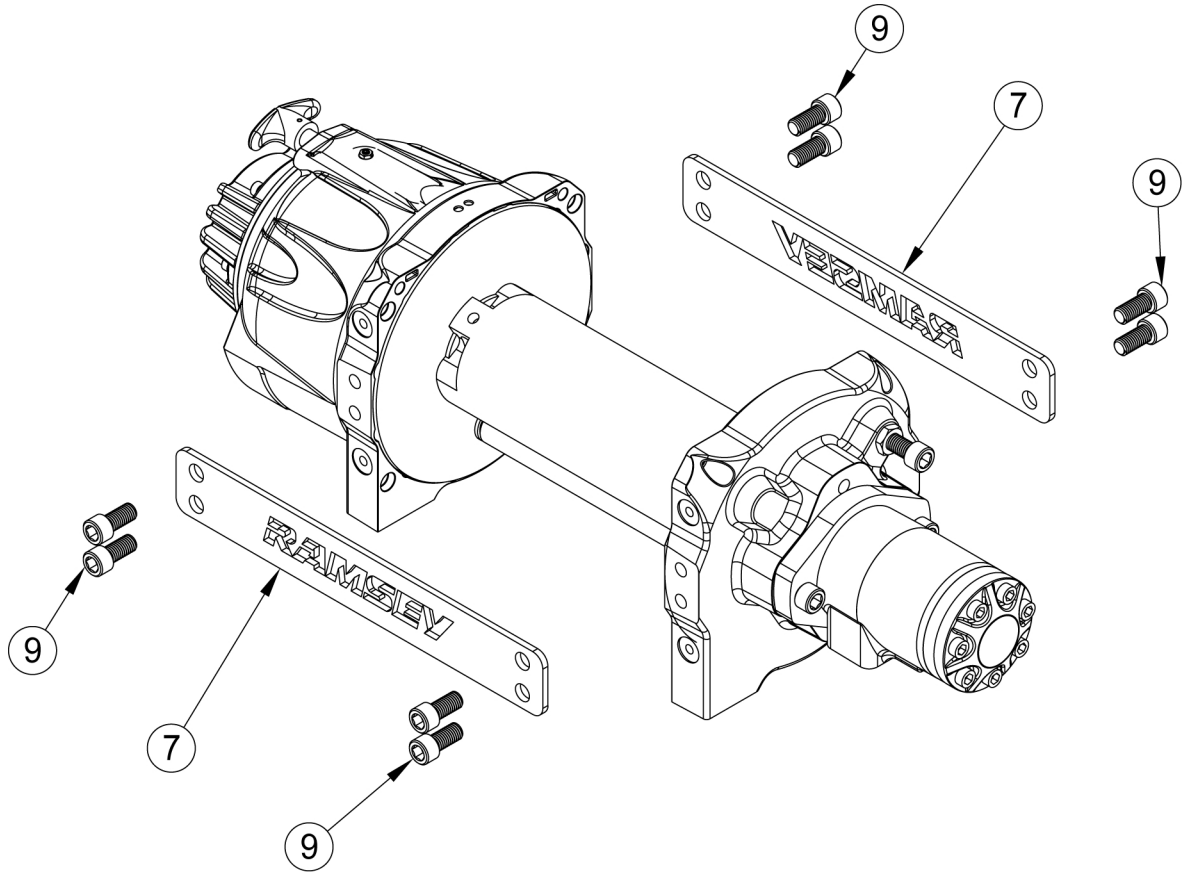
# Sierra Troubleshooting Guide

| CONDITIONS | POSSIBLE CAUSE | CORRECTION |
|---|---|---|
| **DRUM WILL NOT ROTATE WITH NO LOAD** | 1. Winch not mounted squarely causing end bearings to bind the drum.<br>2. Brake damaged.<br>3. Gears damaged. | 1. Check the mounting. Verify it's square.<br>2. Inspect and replace brake.<br>3. Inspect and replace damaged gears. |
| **DRUM WILL NOT ROTATE UNDER LOAD** | 1. Load greater than rated capacity of the winch.<br>2. Low hydraulic system pressure.<br>3. Winch not mounted squarely causing end bearings to bind the drum. | 1. Reduce load to less than the rated capacity of the winch.<br>2. Check pressure.<br>3. Check the mounting. Verify it's square. |
| **WINCH RUNS TOO SLOW** | 1. Low flow rate.<br>2. Hydraulic motor worn out. | 1. Check flow rate.<br>2. Replace motor. |
| **DRUM WILL NOT FREESPOOL** | 1. Clutch not disengaged.<br>2. Winch not mounted squarely causing end bearings to bind thedrum. | 1. Disengage clutch.<br>2. Check the mounting. Verify it's square. |
| **BRAKE WILL NOT HOLD** | 1. Brake damaged. | 1. Inspect and replace brake. |
| **LOAD DRIFTS** | 1. Worn brake. | 1. Overhaul the brake assembly. |
| **CABLE BIRDNESTS WHEN THE CLUTCH IS DISENGAGE** | 1. Drag screw improperly adjusted. | 1. Adjust drag screw. |
| **EXCESSIVE NOISE** | 1. Hydraulic system flow too high.<br>2. Drum in bind, winch not mounted squarely. | 1. Check flow rate.<br>2. Check the mounting. Verify it's square. |
| **DRUM CHATTERS in "REEL IN" DIRECTION** | 1. Low hydraulic system flow.<br>2. Low hydraulic system relief pressure setting. | 1. Check flow rate.<br>2. Check relief valve setting. |
| **CLUTCH DIFFICULT TO ENGAGE** | 1. Detent screw damaged or improperly adjusted. | 1. Replace or readjust detent screw. |

# Overhaul Section - Disassembly

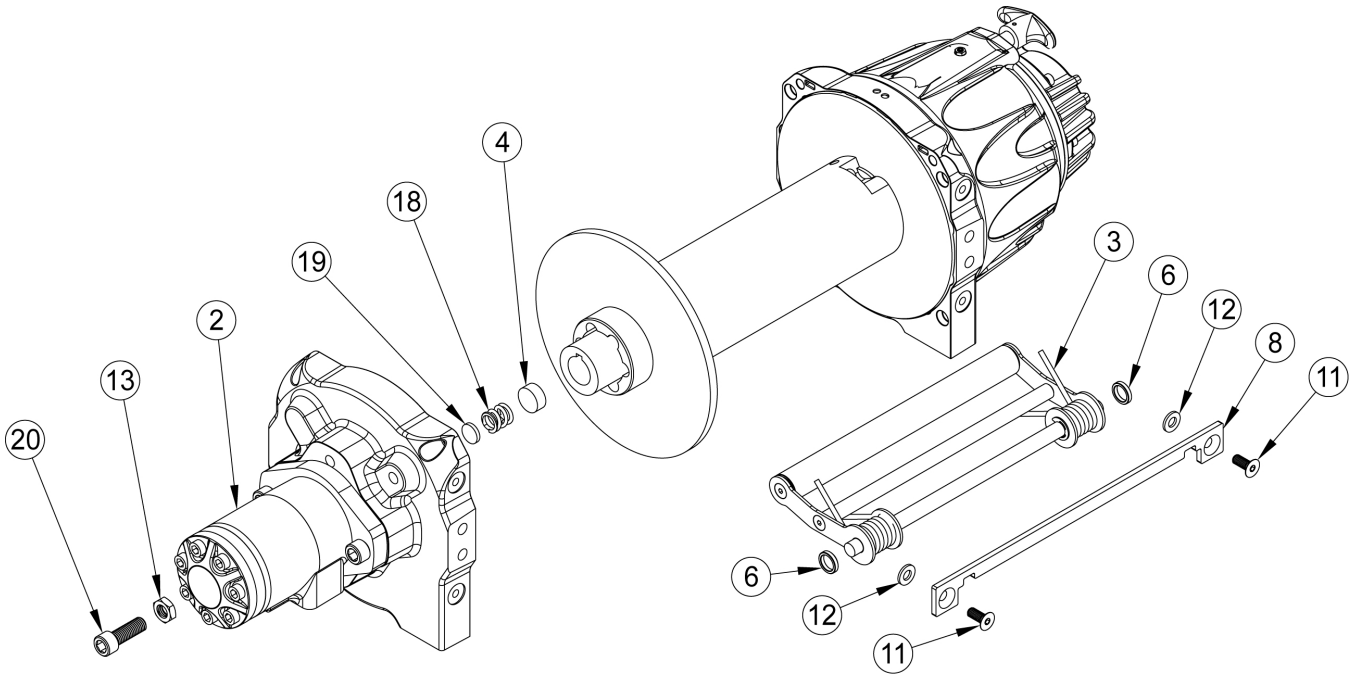
## Tie Bar Removal

1. Remove the capscrews (#9) to remove the tie plates (#7).



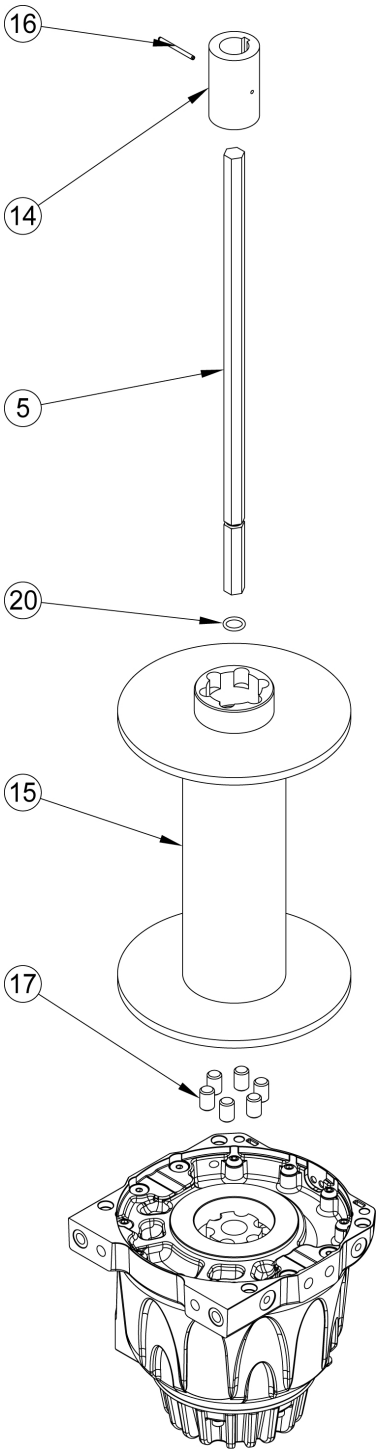
# Motor Assembly Removal

1. Carefully remove the spring retention plate (#8) by removing the capscrews (#11). Remove the washers (#12). Remove the spacers (#6) from the spring tensionser assembly (#3) and remove the spring tensioner assembly. Remove the motor assembly (#2) from the winch.
2. Remove the thrust disc (#19), spring (#18), and drag brake (#4) from the motor assembly. Remove the capscrew (#20) and jam nut (#13) from the motor assembly.



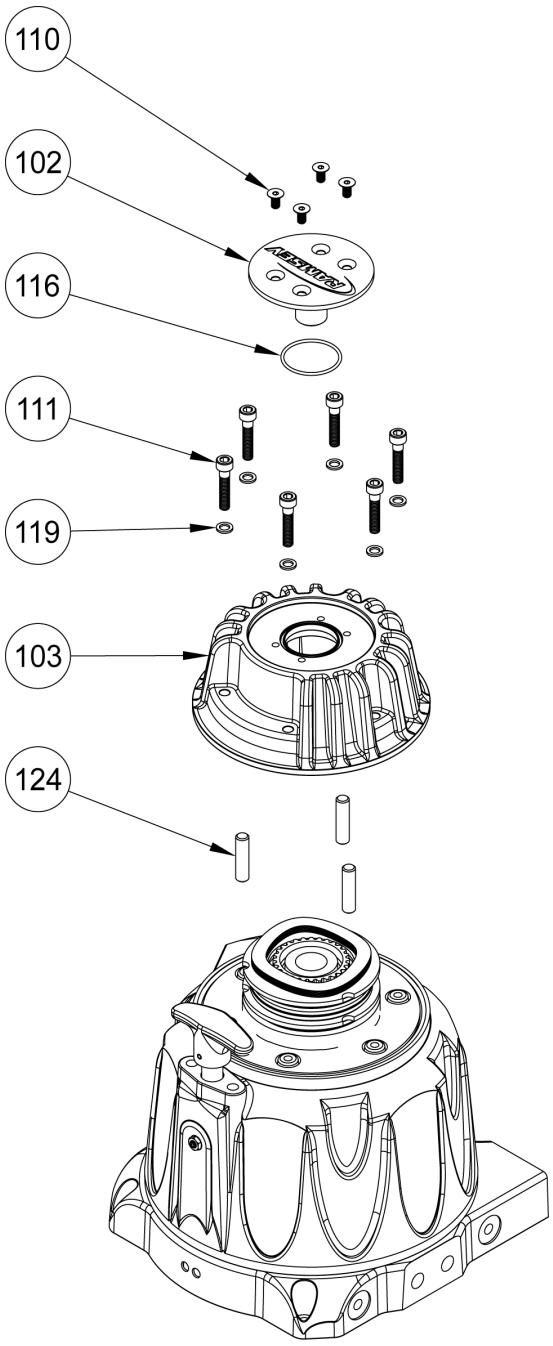
# Drum Removal

1. Pull the input coupling (#14) out of the drum (#15). Drive the roll pin (#16) out of the coupling (#14).
2. Pull the shaft (#5) out of the drum. Remove the O-ring (#20) from the shaft (#5).
3. Lift the drum (#15) off of the gear housing assembly and remove the dowel pins (#17).



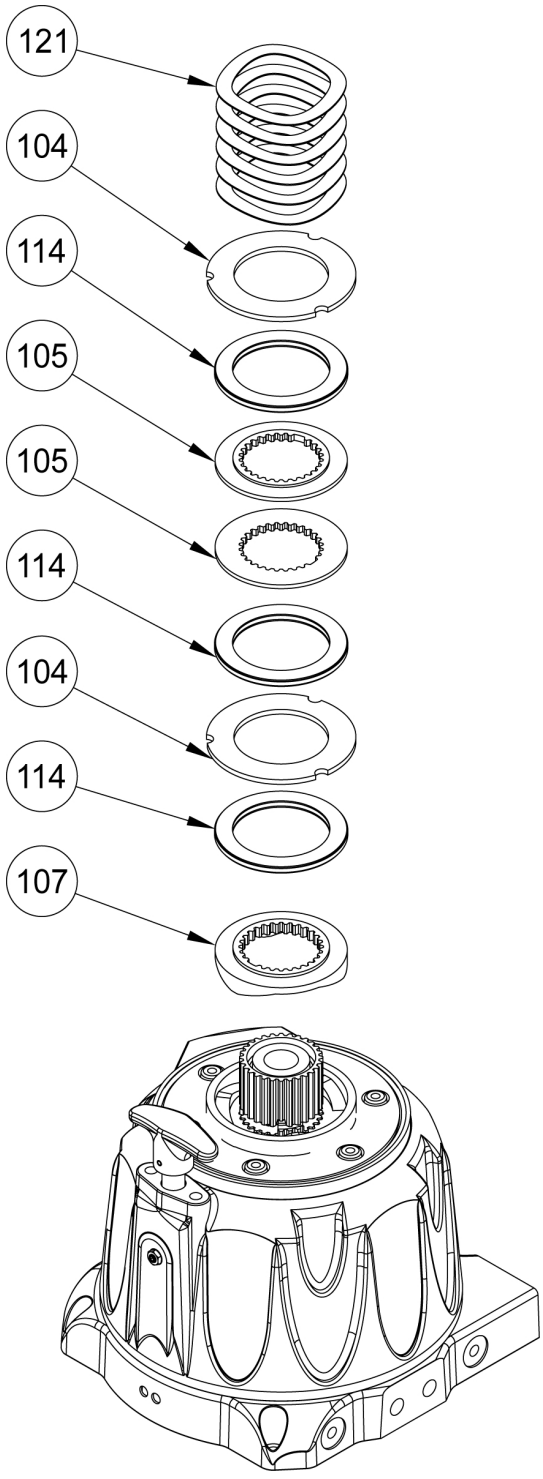
# Removing the Brake Cover

1. Set the gearbox assembly with the output side down.
2. Remove the brake housing (#103) by removing the capscrews (#111) and sealing washers (#119). The dowel pins (#124) will be loose when the brake housing is removed.
3. Remove the brake cover (#102) by removing capscrews (#110). Remove the O-ring (#116) from the brake housing (#103).



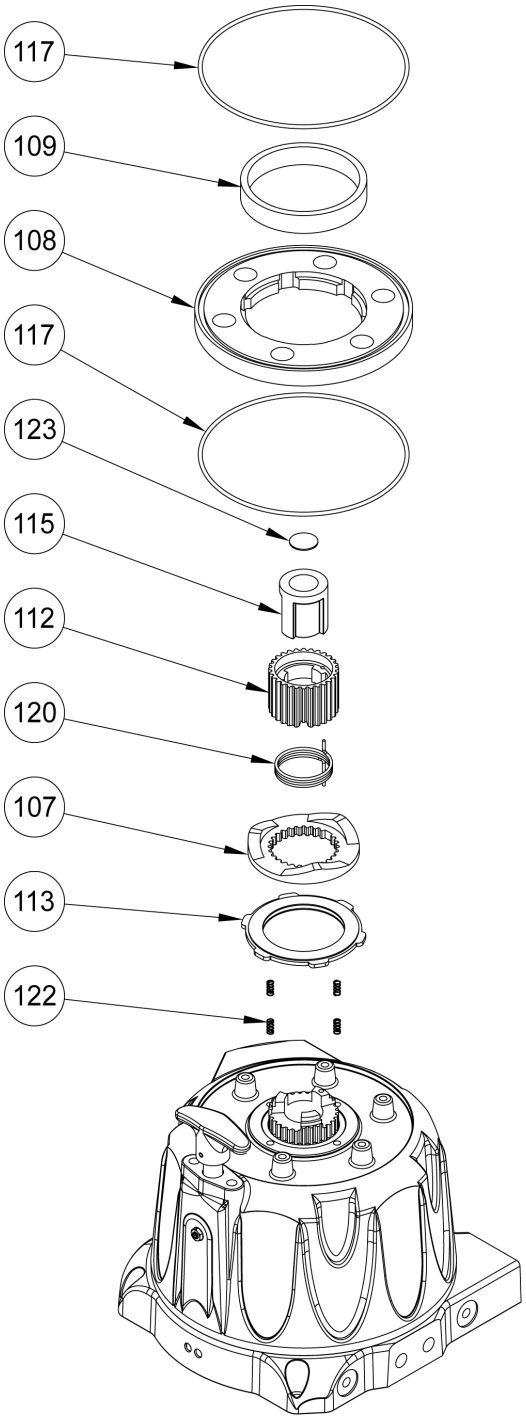
# Removing the Brakes

1. Remove the wave washers (#121), stator plate (#104), the brake disc (#114), two separator plates (#105), the brake disc, the stator plate, the brake disc, and the cam (#107).



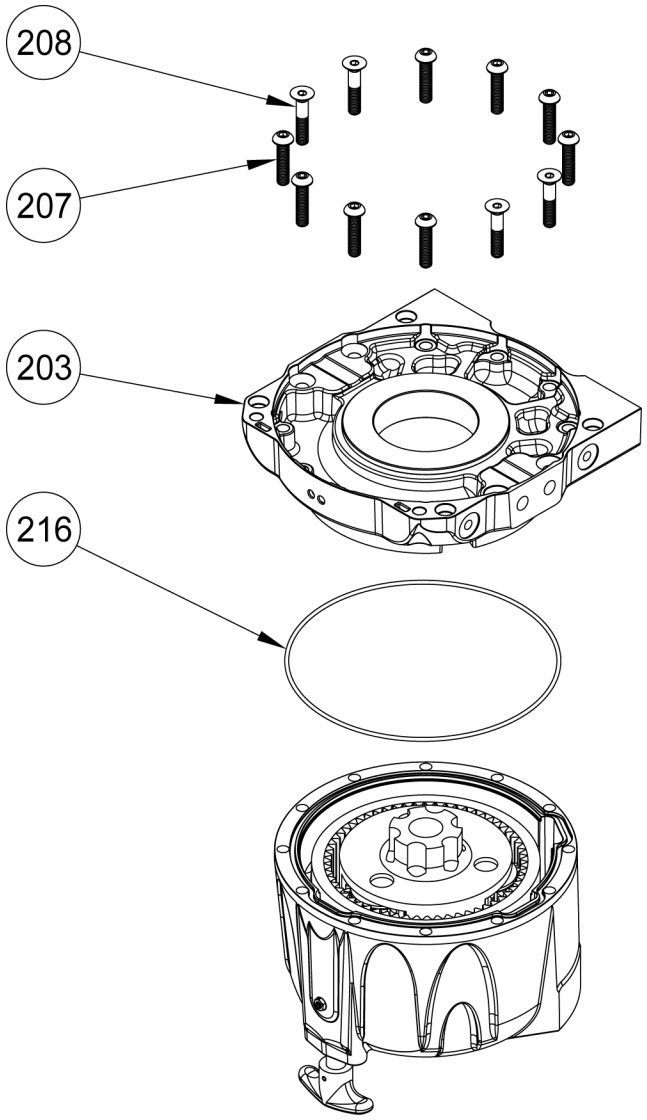
# Removing the Brake Hub

1. Remove the O-ring (#117) from the brake spacer (#108). Remove the brake spacer and cam pilot (#109).
2. Carefully press the cam pilot (#109) from the brake spacer (#108).
3. Remove the brake actuator (#115) and thrust washer (#123) from the brake hub (#112).
4. Remove the brake hub (#112), preload spring (#120), cam plate (#107), brake disc (#113) and springs (#122).



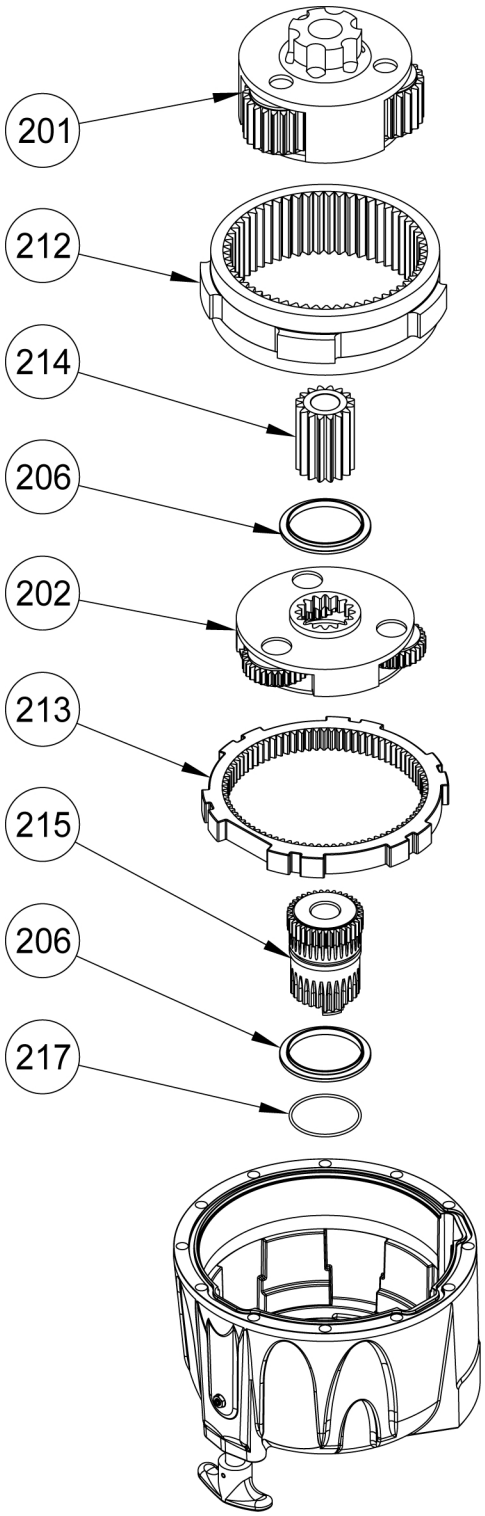
# Removing the End Bearing

1. Remove the end bearing (#203) by removing the capscrews (#208, #207). Remove the O-ring (#216).



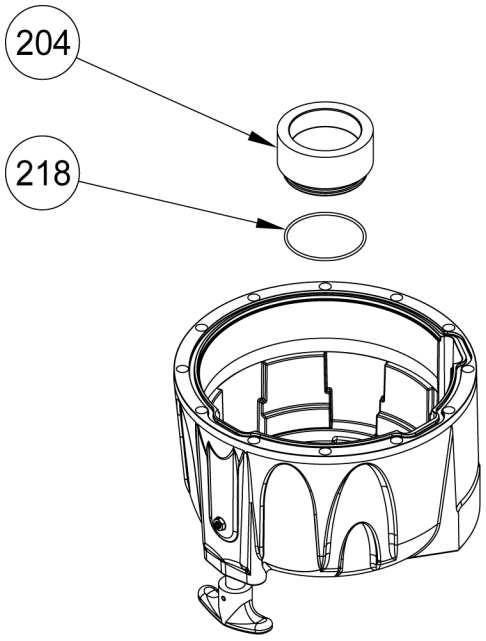
# Removing the Output Carrier Assembly

1. Remove the output carrier assembly (#201), output ring gear (#212), output sun gear (#214), and carrier spacer (#206).
2. Remove the input carrier assembly (#202), input ring gear (#213), and input sun gear (#215). Remove the O-ring (#217) and carrier spacer (#206) from the input sun gear.



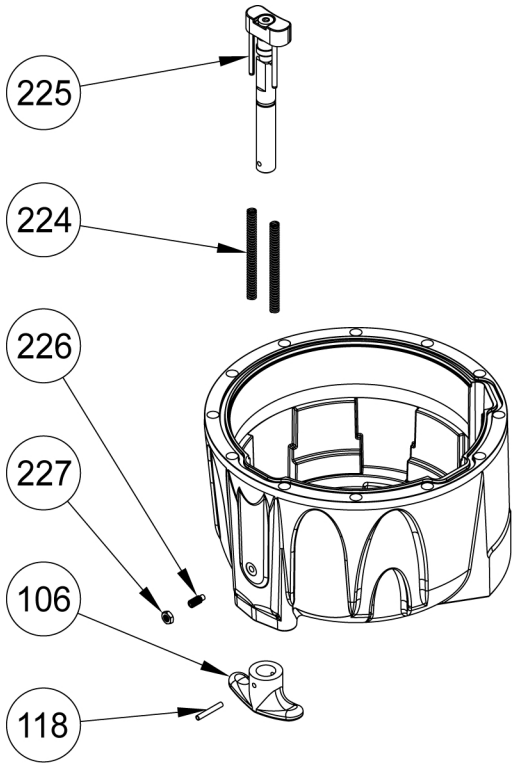
# Removing the O-ring Adapter

1. Press the O-ring adapter (#204) from the gear housing. Remove the O-ring (#218) from the O-ring adapter.



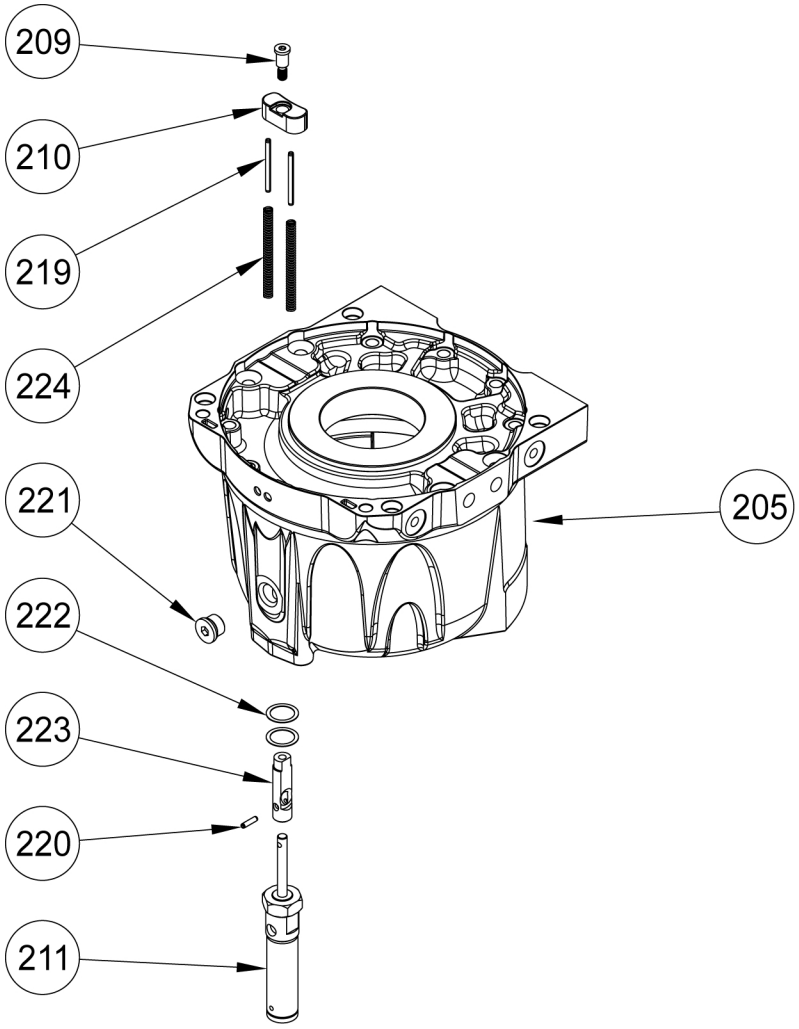
# Manual Shift

1. Remove the jam nut (#227) and the detent screw (#226).
2. Remove the handle (#106) by driving out the roll pin (#118). Slide the shifter shaft assembly (#225) from the housing (#224).



# Air Shift

1. Remove the plunger (#210) by removing the shoulder bolt (#209). Remove the roll pins (#219) from the plunger. Slide the clutch springs (#224) out of the gear housing (#205).
2. Remove the plug (#221) from the gear housing. Remove the air cylinder (#211) from the gear housing. Remove the shims (#222), if present, and the shifter shaft (#223) from the air cylinder (#211) by driving out the roll pin (#220).



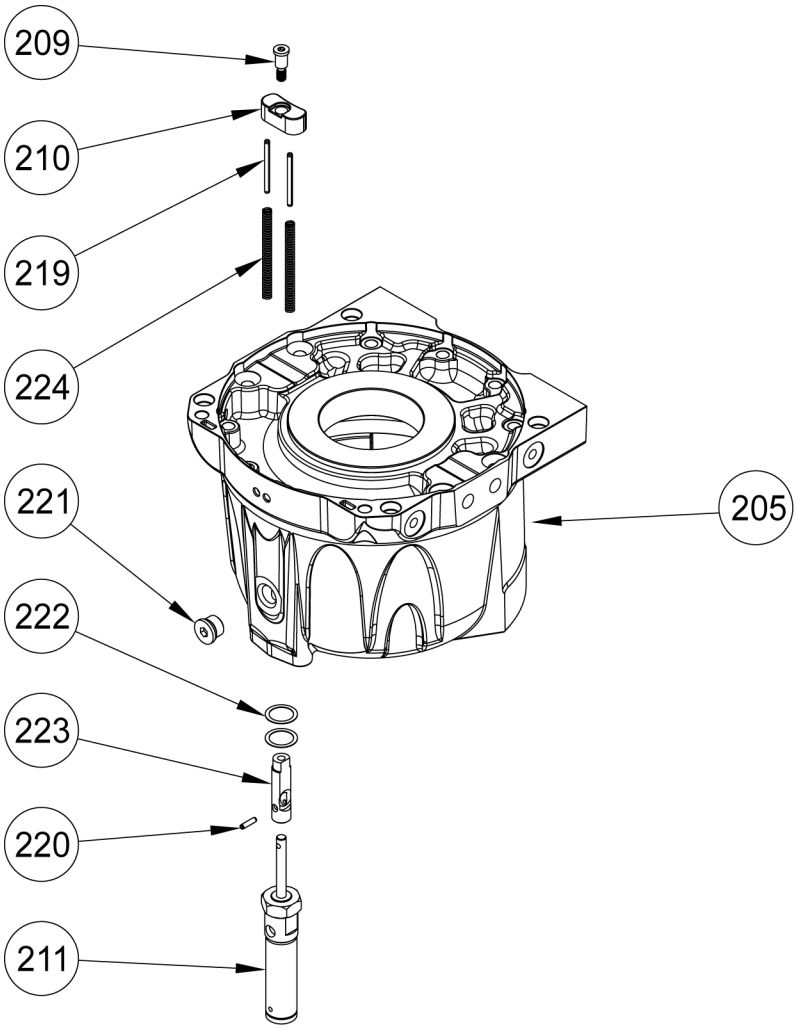
# Overhaul Section - Assembly

## Pre-assembly Preparation

1. Spray the inside of the gear housing, outside of the output ring gear, ring gear pilot in the end bearing, shifter shaft and plunger with water resistant WD40. Let dry completely before assembling the winch.

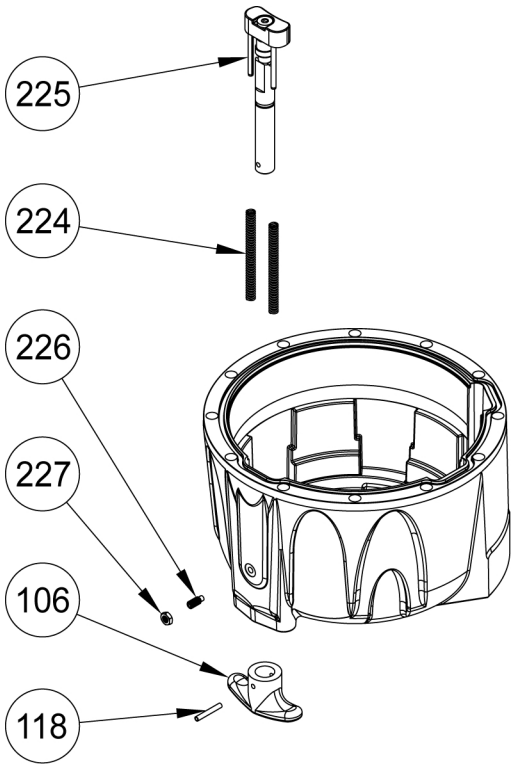
## Air Shift

1. Place the shifter shaft (#223) on the air cylinder (#211) using the roll pin (#220) to secure the shifter shaft on the air cylinder. Lightly coat the shifter shaft assembly with 75w90 synthetic gear oil. Insert the assembly into the gear housing. Use the shims (#222) to properly locate the port.
2. Place the clutch springs (#224) into the gear housing (#205). Press the roll pins (#219) into the plunger (#210) and place over the shift shaft in the gear housing. Secure the plunger onto the shifter shaft with the shoulder bolt (#209), use Red 263 Loctite on the threads. Install the plug (#221) in the gear housing.



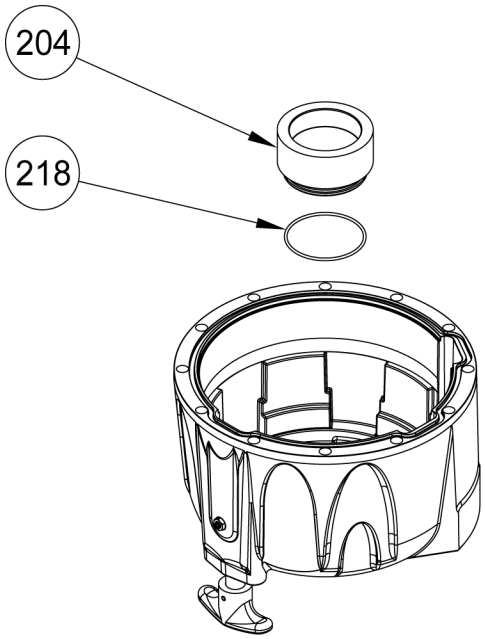
# Manual Shift

1. Slide the clutch springs (#224) into the gear housing. Lightly coat the shifter shaft assembly with 75w90 synthetic gear oil. Slide the shifter shaft assembly (#225) into the gear housing. Slide the clutch handle (#106) on the shifter shaft assembly and lock in place with the roll pin (#118).
2. Install the setscrew (#226) to hand tight then back off 1/4 turn. Use the jam nut (#227) to secure the setscrew.



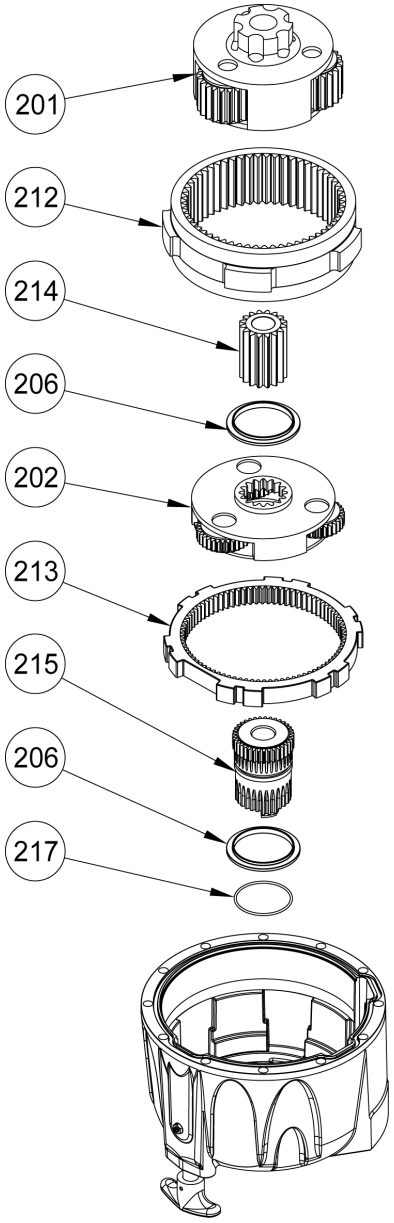
# Gear Housing

1. Lightly lubricate the O-ring (#218) with MOBILITH SHC 007 grease and place on the O-ring adapter (#204). Press the O-ring adapter into the gear housing.



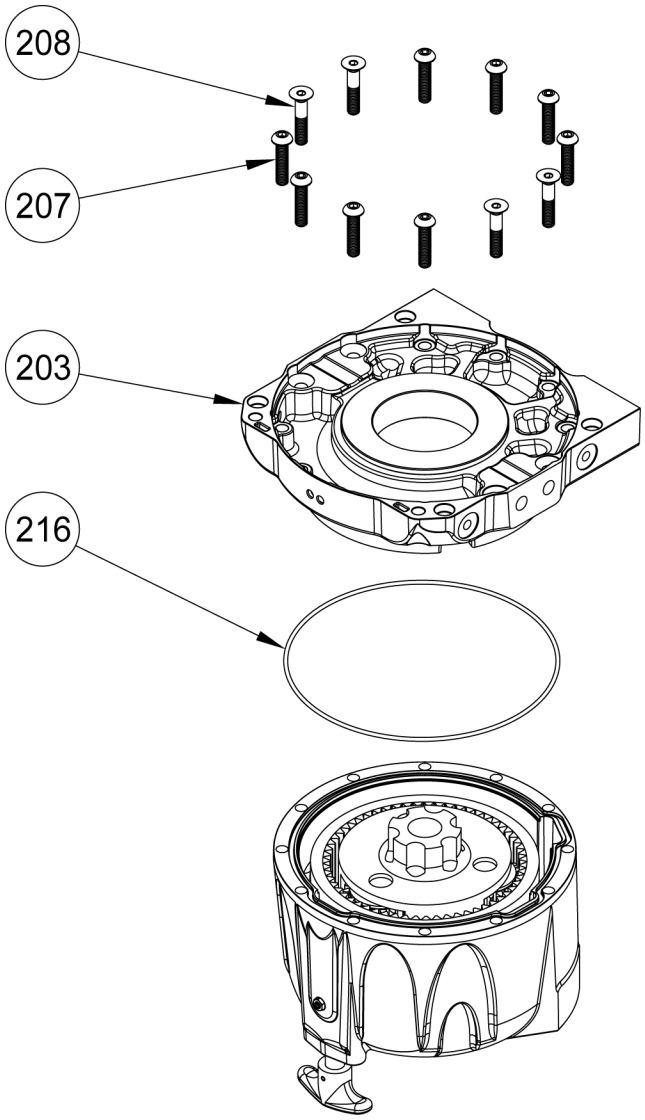
# Installing the Gear Sets

1. Place the O-ring (#217) and carrier spacer (#206) onto the input sun gear (#215). Slide the input sun gear into the into the gear housing. Generously apply MOBILITH SHC 007 grease to the sun gear teeth.
2. Install the input ring gear (#213) into the gear housing. Generously apply MOBILITH SHC 007 grease to the input ring gear's teeth. Wipe off any excess from the side of the ring gear. Slide the input carrier assembly (#202) into the input ring gear.
3. Place the carrier spacer (#206) onto the input carrier assembly. Insert the output sun gear (#214) into the input carrier assembly. Lightly apply MOBILITH SHC 007 to the sun gear teeth.
4. Lightly coat the outside of the output ring gear with 75w90 synthetic oil. Insert the output ring gear (#212) into the gear housing. Lightly apply MOBILITH SHC 007 grease to the output ring gear's teeth. Wipe off any excess from the side of the ring gear. Insert the output carrier assembly (#201) into the output ring gear. Ensure it properly aligns with the output sun gear.



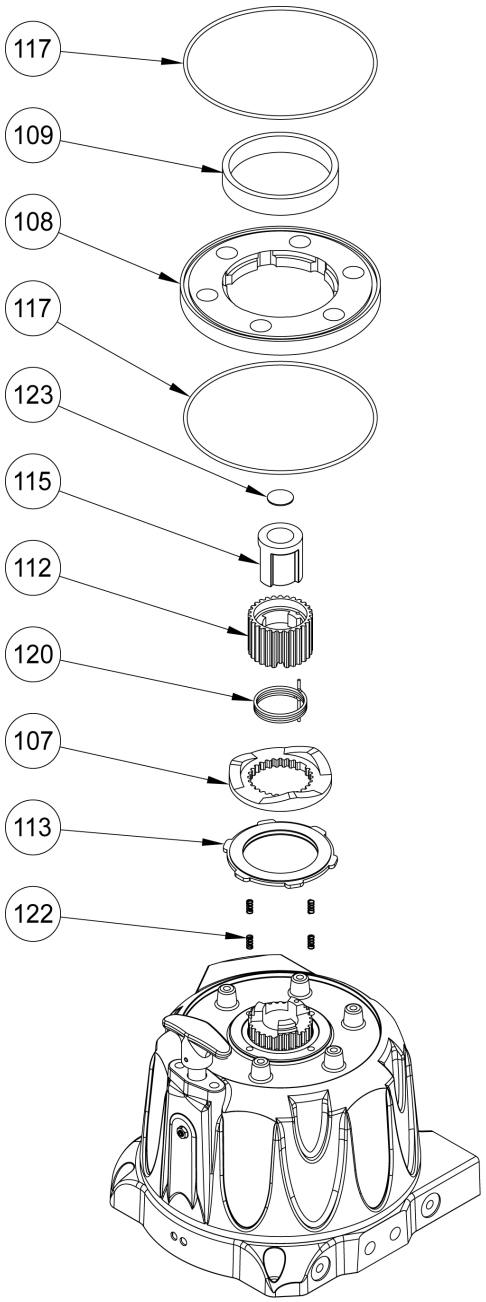
# End Bearing Assembly

1. Lubricate the O-ring (#216) with grease and place in the channel in the gear housing.
2. Align the end bearing (#203) on the output carrier assembly. Orient the end bearing as necessary. Use the capscrews (#207, #208) to attach the end bearing to the gear housing.

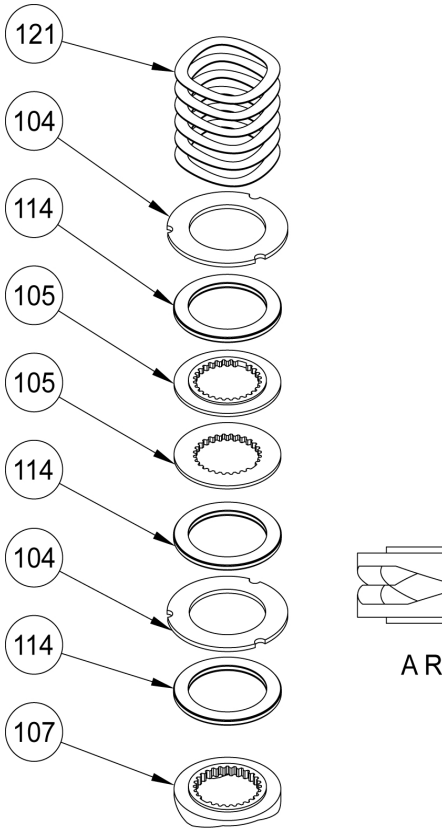


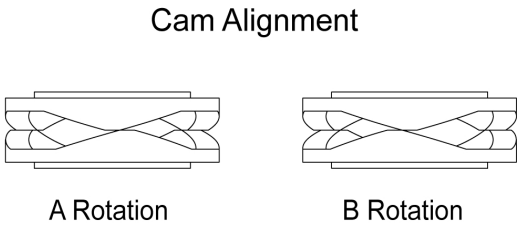
# Assembling the Brake

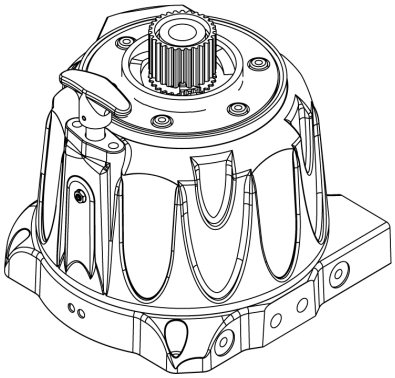
1. Install the springs (#122) in the gear housing. Place the brake disc (#113) and cam plate (#107) on the springs. Place the long leg of the preload spring (#120) into the hole in the input sun gear. Install the brake hub (#112) where the short leg of the spring is in the hole of the brake hub and the brake hub is piloted on the input sun gear.
2. Insert the brake actuator (#115) into the brake hub until it rests on the internal lugs of the brake hub. Rotate the brake actuator and press fully into the brake hub. Insert the thrust washer (#123) into the brake actuator.
3. Press the cam pilot (#109) into the brake spacer (#108). Lubricate the O-ring (#117) with grease and place into the groove. Place the brake spacer on the gear housing. Ensure the O-ring sits in the groove of the brake spacer. Lubricate the O-ring (#117) and place in top groove of the brake spacers.



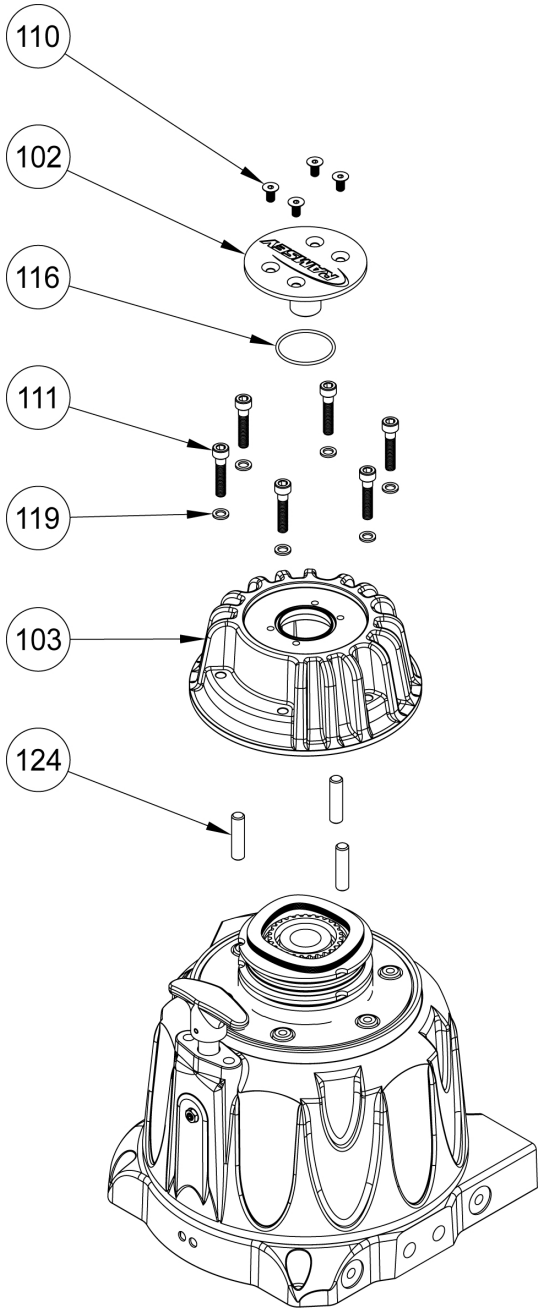
4. Place the cam (#107) on the brake hub. Align the cam to hit the corner of the cam surface in the relaxed position per cam alignment picture. Ensure the cams can rotate so they are fully collapsed. Install the brake discs (#114), the stator plates (#104), separator plates (#105) and wave washers (#121) in the order shown.



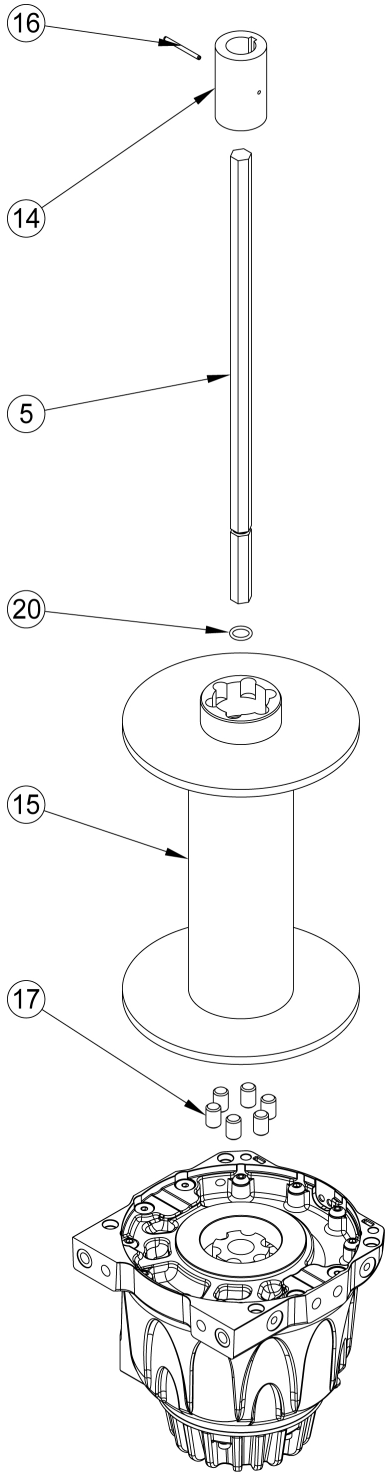



5. Place the dowel pins (#124) in the slots of the stator plates. Wrap a string around the outside of the dowel pins to prevent them from falling over. Lower the brake housing (#103) and align with all the dowel pins. Once the brake housing is on the dowel pins, remove the string and use a 5/8" hex shaft to rotate the brake actuator to close the brake.
6. While holding down the brake housing, install the sealing washers (#119) and capscrews (#111). Lightly lubricate the O-ring (#116) with grease and install the brake housing.
7. Install the brake cover (#102) with capscrews (#110).



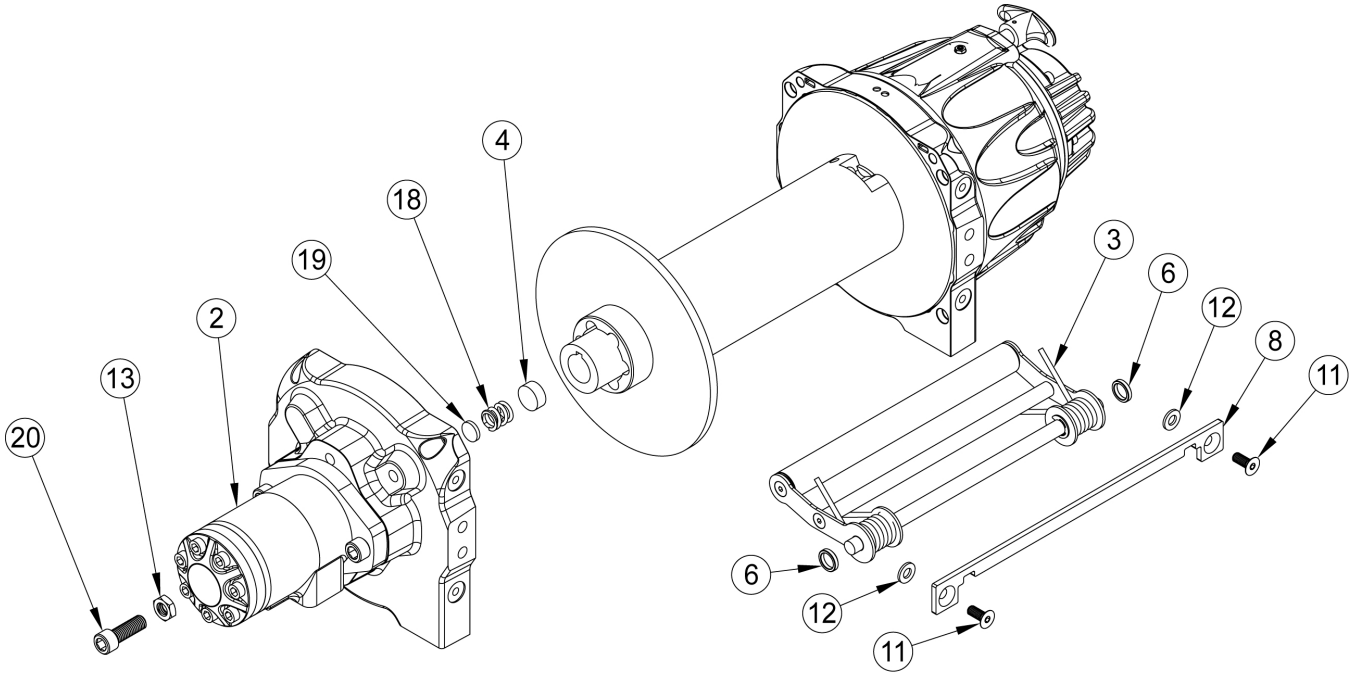
# Drum Assembly

1. Place a little MOBILITH SHC 007 grease on each of the dowel pins (#17) to hold them in place in the output carrier. Lower the drum (#15) onto the dowel pins ensuring they are properly lined up. Lightly grease the O-ring (#20) and slide onto the shaft (#5). Insert the roll pin (#16) into the coupling (#14) and slide onto the shaft. Slide the shaft through the drum and into the gear box.



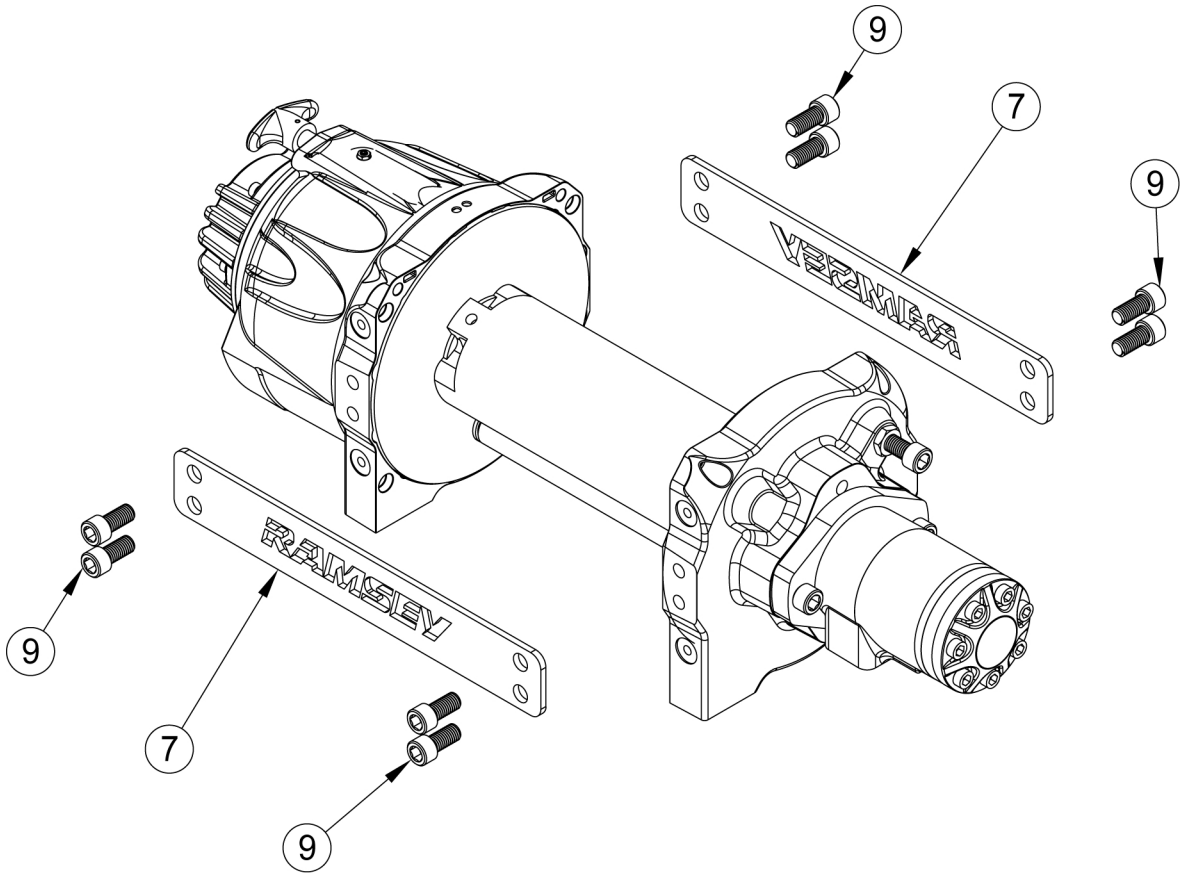
# Motor Installation

1. Install the thrust disc (#19), spring (#18), and the drag brake (#4) into the motor assembly (#2). Start sliding the motor assembly into the coupler.
2. Slide a spring tensioner spacer (#6) onto each end of the shaft of the spring tensioner. Place the spring tensioner assembly (#3) into the detent in the gear housing assembly. Align the spring tensioner with the detent in the motor assembly and slide the motor assembly fully into coupler. Use the capscrew (#11) to loosely install one side of the spring retention plate (#8) and the end bearing with the washers (#12) sandwiched between the two. Hold the spring retention plate vertical. Pull the legs of the springs back and rotate the spring retention plate and start the capscrews (#11).
3. Install jam nut (#13) onto the adjustment screw and hand-tighten the adjustment capscrew (#20) into the motor end bearing. Tighten the jam nut to specification.



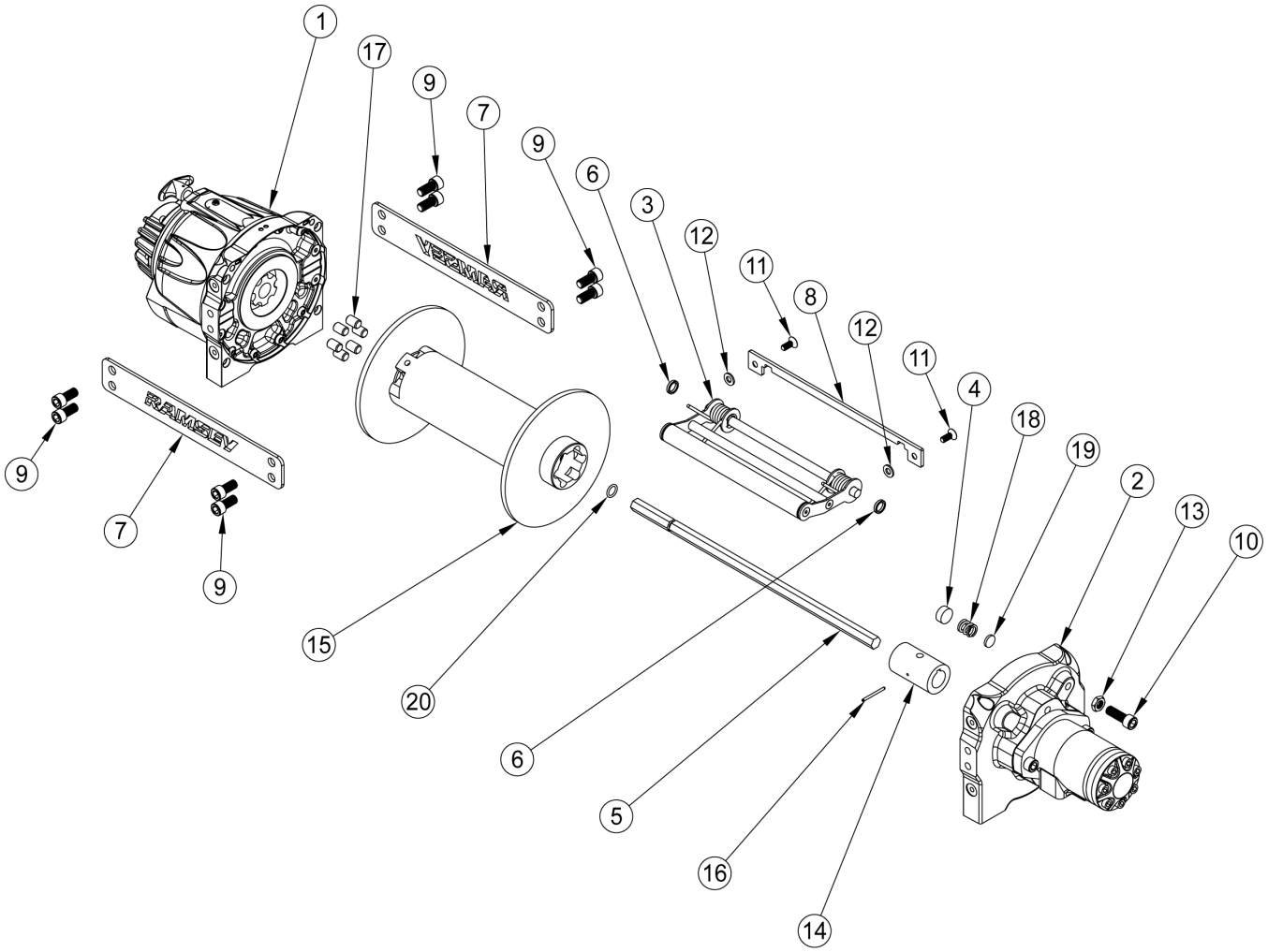
# Tie Bar Installation

1. Install the tie bars (#7) with the capscrews (#9).



# Assemblies and BOMs

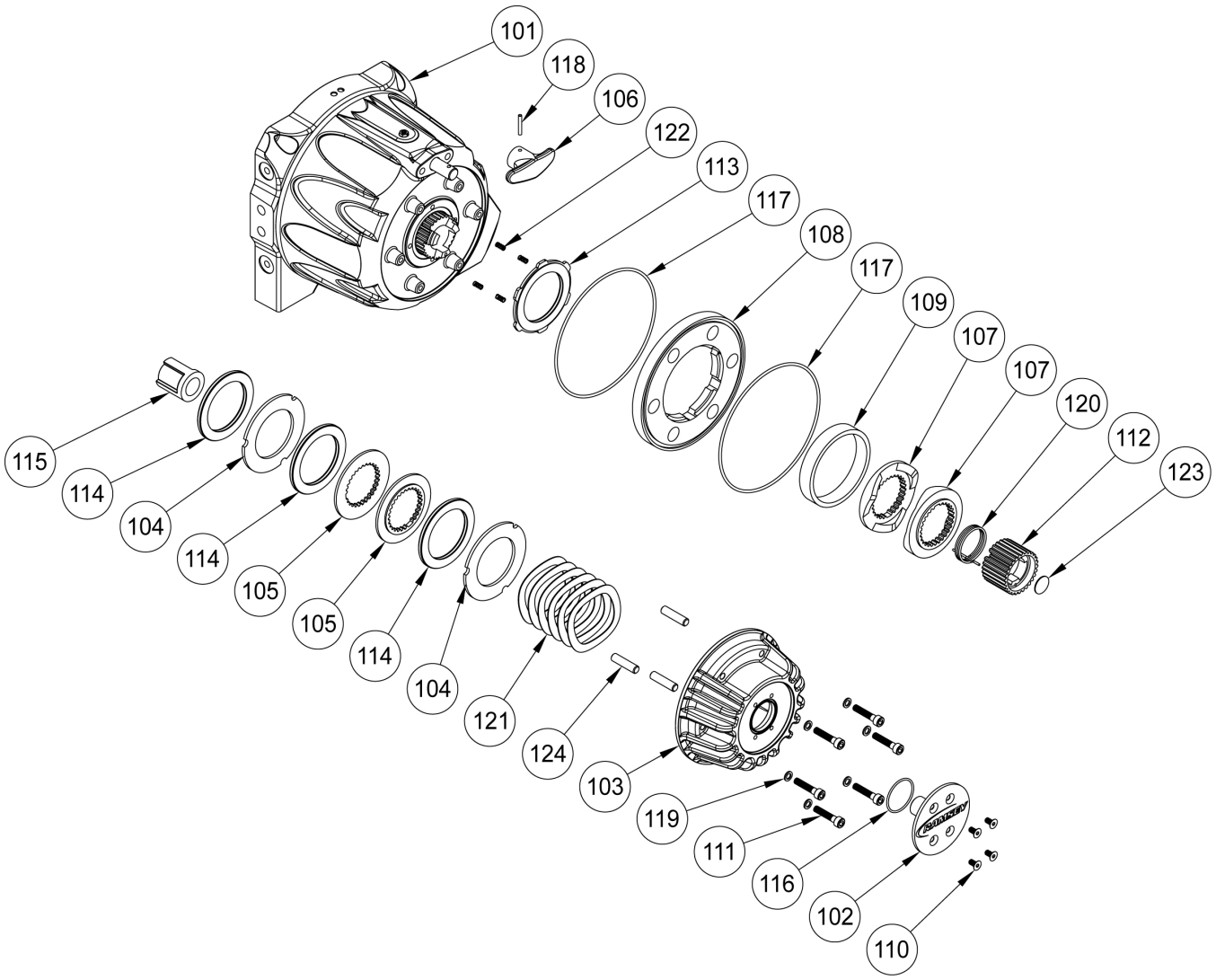
## Main Winch



# Main Winch BOM

| ITEM # | QTY. | PART NUMBER | DESCRIPTION |
|---|---|---|---|
| 1 | 1 | 297084 | GEAR SIDE ASSEMBLY- B Rotation, Manual Shift |
| | | 297093 | GEAR SIDE ASSEMBLY- B Rotation, Air Shift |
| | | 297095 | GEAR SIDE ASSEMBLY- A Rotation, Manual Shift |
| | | 297094 | GEAR SIDE ASSEMBLY- A Rotation, Air Shift |
| 2 | 1 | 297086 | MOTOR ASSEMBLY |
| 3 | 1 | 297088 | ROLLER TENSIONER ASSEMBLY- Long Drum |
| | | 297096 | ROLLER TENSIONER ASSEMBLY- Short Drum |
| 4 | 1 | 330010 | DRAG BRAKE |
| 5 | 1 | 357565 | INPUT SHAFT - Long Drum |
| | | 357566 | INPUT SHAFT - Short Drum |
| 6 | 2 | 362350 | SPACER |
| 7 | 2 | 395458 | TIE PLATE - Long Drum |
| | | 395476 | TIE PLATE - Short Drum |
| 8 | 1 | 395461 | SPRING RETENTION PLATE - Long Drum |
| | | 395477 | SPRING RETENTION PLATE - Short Drum |
| 9 | 8 | 415409 | CAPSCREW - M12X1.75X25mm SOCKET HEAD |
| 10 | 1 | 415410 | CAPSCREW - M12X1.75X35mm SOCKET HEAD |
| 11 | 2 | 415415 | CAPSCREW - M8 X 1.25 X 20mm LONG, FLAT SOCKET HEAD |
| 12 | 2 | 418167 | WASHER-5/16 SAE FLAT Z/P |
| 13 | 1 | 418546 | JAM NUT |
| 14 | 1 | 431058 | COUPLING |
| 15 | 1 | 436075 | DRUM-Long Drum |
| | | 436076 | DRUM-Short Drum |
| 16 | 1 | 470018 | ROLL PIN |
| 17 | 6 | 470155 | DOWEL PIN |
| 18 | 1 | 494154 | SPRING |
| 19 | 1 | 518099 | THRUST DISC |
| 20 | 1 | 462078 | O-RING-.549 ID X .103 THK, 2-113, SHIFTER SHAFT |

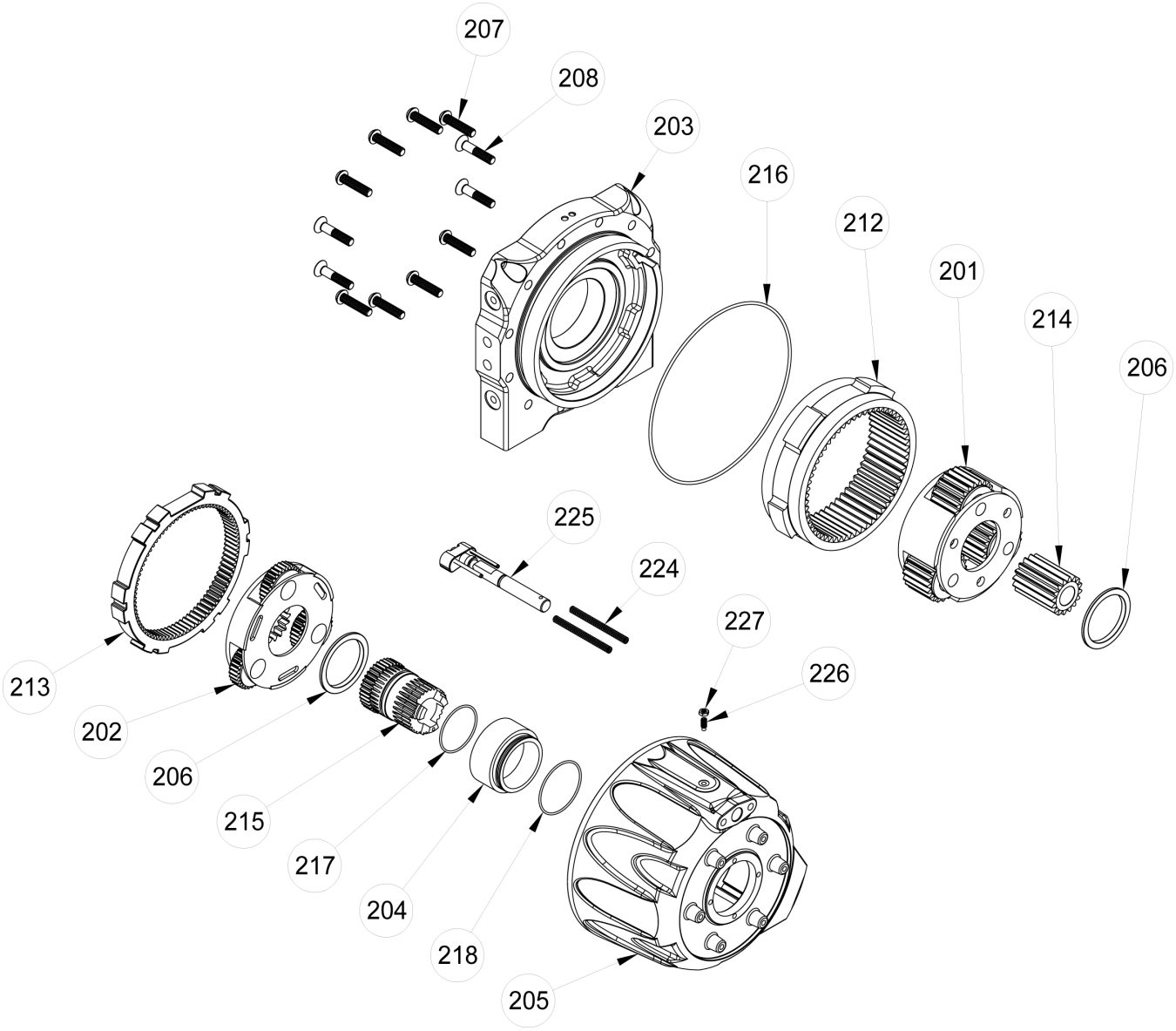
# Brake Assembly Manual Shift



# Brake Assembly Manual Shift BOM

| ITEM # | QTY. | PART NUMBER | DESCRIPTION |
|---|---|---|---|
| 101 | 1 | 297085 | GEAR BOX ASSEMBLY |
| 102 | 1 | 297104 | BRAKE COVER |
| 103 | 1 | 328196 | BRAKE HOUSING |
| 104 | 2 | 330024 | BRAKE STATOR |
| 105 | 2 | 330025 | SEPARATOR PLATE |
| 106 | 1 | 336010 | HANDLE |
| 107 | 2 | 340083 | CAM PLATE-DRIVEN |
| 108 | 1 | 362348 | BRAKE SPACER |
| 109 | 1 | 412177 | CAM PILOT |
| 110 | 4 | 415402 | SCREW - M5X0.8X10mm FLAT HEAD |
| 111 | 6 | 415412 | CAPSCREW - M6 X 1.0 X 30mm LONG |
| 112 | 1 | 431057 | BRAKE HUB |
| 113 | 1 | 438048 | BRAKE DISC |
| 114 | 3 | 438049 | BRAKE DISC |
| 115 | 1 | 438050 | BRAKE ACTUATOR |
| 116 | 1 | 462119 | O-Ring |
| 117 | 2 | 462123 | O-RING -160 |
| 118 | 1 | 470033 | SPIROL PIN |
| 119 | 6 | 486107 | WASHER SEALING |
| 120 | 1 | 494147 | SPRING - B ROTATION |
| | | 494144 | SPRING - A ROTATION |
| 121 | 6 | 494150 | WAVE WASHER |
| 122 | 4 | 494151 | SPRING |
| 123 | 1 | 518091 | THRUST DISC |
| 124 | 3 | 470162 | DOWEL PIN |

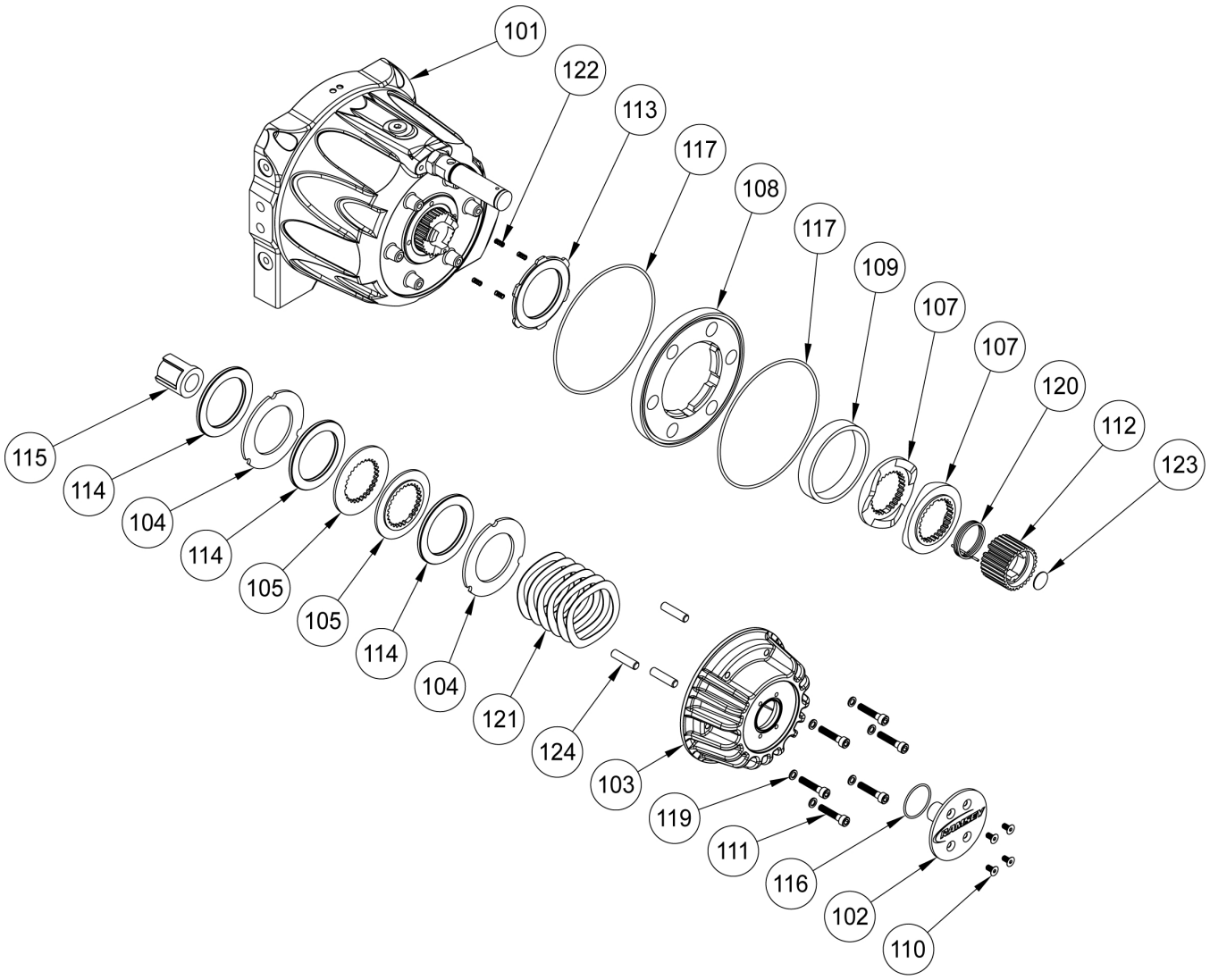
# Gear Box Assembly Manual Shift



# Gear Box Assembly Manual Shift BOM

| ITEM # | QTY. | PART NUMBER | DESCRIPTION |
|---|---|---|---|
| 201 | 1 | 247045 | OUTPUT CARRIER ASSEMBLY |
| 202 | 1 | 247049 | INPUT CARRIER ASSEMBLY |
| 203 | 1 | 297102 | END BEARING ASSEMBLY |
| 204 | 1 | 300077 | ORING ADAPTER |
| 205 | 1 | 328188 | GEAR COVER |
| 206 | 2 | 362347 | SPACER |
| 207 | 8 | 415405 | CAPSCREW - M8X1.25X35mm BUTTON HEAD SOCKET |
| 208 | 4 | 415413 | M8 X 1.25 X 40mm FLAT HEAD SOCKET CAPSCREW |
| 212 | 1 | 444120 | OUTPUT RING GEAR |
| 213 | 1 | 444126 | INPUT RING GEAR |
| 214 | 1 | 444144 | OUTPUT SUN GEAR |
| 215 | 1 | 444145 | INPUT SUN GEAR |
| 216 | 1 | 462114 | O-RING -168 |
| 217 | 1 | 462124 | ORING |
| 218 | 1 | 462125 | ORING |
| 224 | 2 | 494143 | SPRING |
| 225 | 1 | 276065 | SHIFTER ASSEMBLY |
| 226 | 1 | 416288 | SETSCREW - M5 X0.8X8mm EXTENDED POINT |
| 227 | 1 | 418545 | JAM NUT |

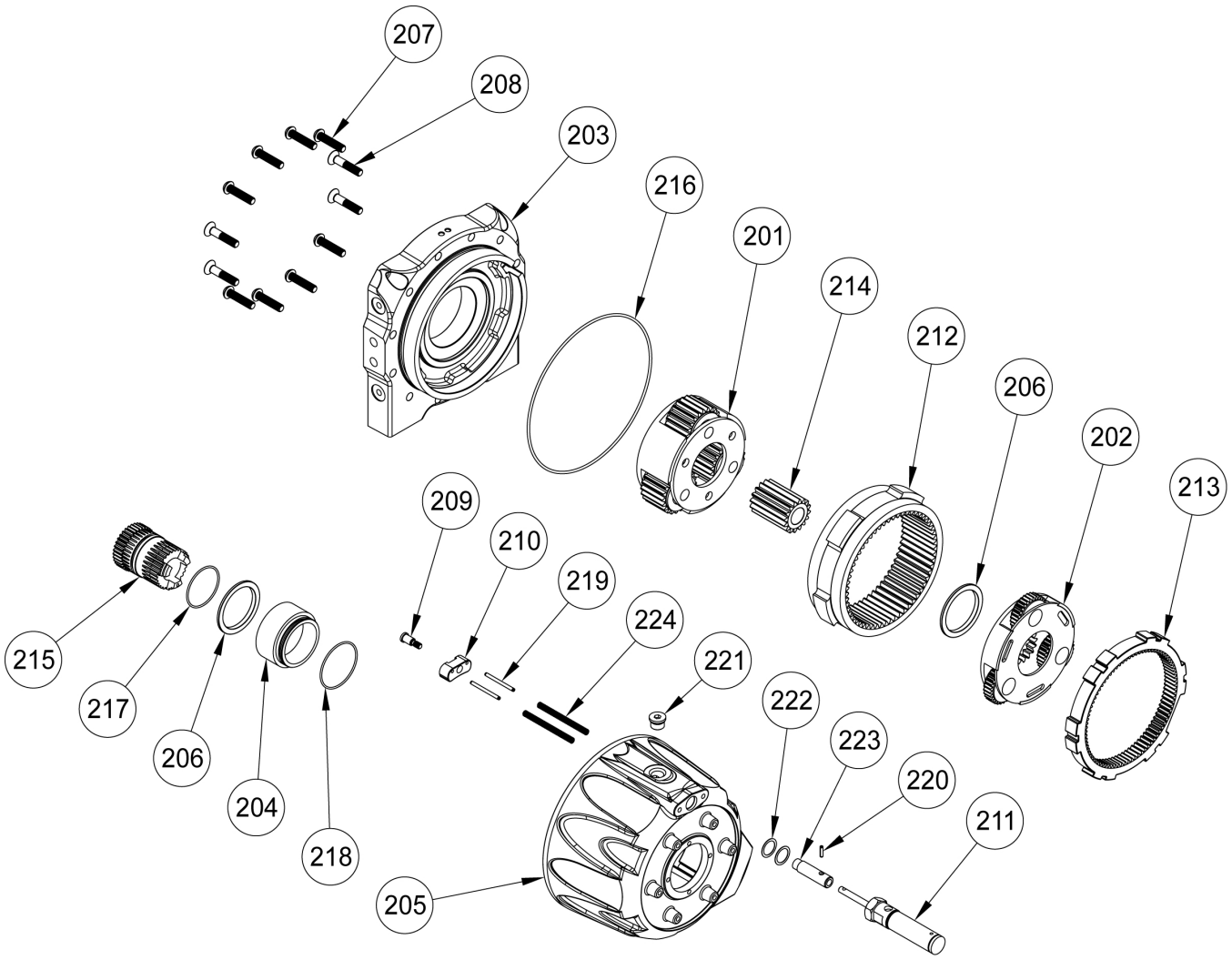
# Brake Assembly Air Shift



# Brake Assembly Air Shift BOM

| ITEM # | QTY. | PART NUMBER | DESCRIPTION |
|---|---|---|---|
| 101 | 1 | 297092 | GEAR BOX ASSEMBLY |
| 102 | 1 | 297104 | BRAKE COVER |
| 103 | 1 | 328196 | BRAKE HOUSING |
| 104 | 2 | 330024 | BRAKE STATOR |
| 105 | 2 | 330025 | SEPARATOR PLATE |
| 107 | 2 | 340083 | CAM PLATE-DRIVEN |
| 108 | 1 | 362348 | BRAKE SPACER |
| 109 | 1 | 412177 | CAM PILOT |
| 110 | 4 | 415402 | SCREW - M5X0.8X10mm FLAT HEAD |
| 111 | 6 | 415412 | CAPSCREW - M6 X 1.0 X 30mm LONG |
| 112 | 1 | 431057 | BRAKE HUB |
| 113 | 1 | 438048 | BRAKE DISC |
| 114 | 3 | 438049 | BRAKE DISC |
| 115 | 1 | 438050 | BRAKE ACTUATOR |
| 116 | 1 | 462119 | O-Ring |
| 117 | 2 | 462123 | O-RING -160 |
| | | | |
| 119 | 6 | 486107 | WASHER SEALING |
| 120 | 1 | 494147 | SPRING - B ROTATION |
| | | 494144 | SPRING - A ROTATION |
| 121 | 6 | 494150 | WAVE WASHER |
| 122 | 4 | 494151 | SPRING |
| 123 | 1 | 518091 | THRUST DISC |
| 124 | 3 | 470162 | DOWEL PIN |

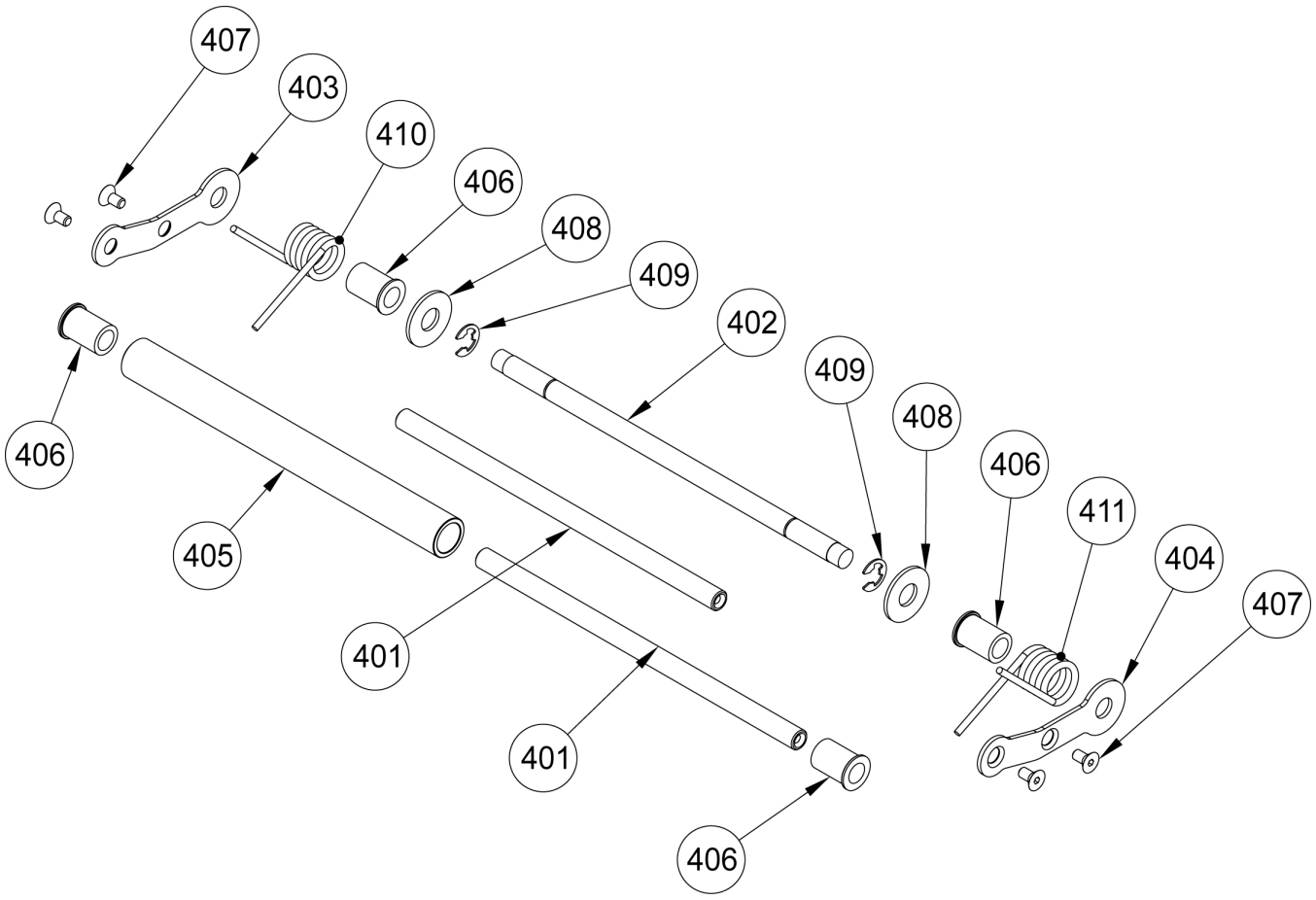
# Gear Box Assembly Air Shift



# Gear Box Assembly Air Shift BOM

| ITEM # | QTY. | PART NUMBER | DESCRIPTION |
|---|---|---|---|
| 201 | 1 | 247045 | OUTPUT CARRIER ASSEMBLY |
| 202 | 1 | 247049 | INPUT CARRIER ASSEMBLY |
| 203 | 1 | 297102 | END BEARING ASSEMBLY |
| 204 | 1 | 300077 | ORING ADAPTER |
| 205 | 1 | 328197 | GEAR COVER |
| 206 | 2 | 362347 | SPACER |
| 207 | 8 | 415405 | CAPSCREW - M8X1.25X35mm BUTTON HEAD SOCKET |
| 208 | 4 | 415413 | M8 X 1.25 X 40mm FLAT HEAD SOCKET CAPSCREW |
| 209 | 1 | 418549 | SHOULDER BOLT |
| 210 | 1 | 426070 | PLUNGER |
| 211 | 1 | 433027 | AIR CYLINDER |
| 212 | 1 | 444120 | OUTPUT RING GEAR |
| 213 | 1 | 444126 | RING GEAR |
| 214 | 1 | 444144 | OUTPUT SUN GEAR |
| 215 | 1 | 444145 | ADAPTER-SUN GEAR |
| 216 | 1 | 462114 | O-RING -168 |
| 217 | 1 | 462124 | ORING |
| 218 | 1 | 462125 | ORING |
| 219 | 2 | 470018 | ROLL PIN |
| 220 | 1 | 470159 | PIN-SPRING, n.125 X .5 LG |
| 221 | 1 | 472052 | PLUG-#6 SAE O-RING PORT |
| 222 | 2 | 488007 | SHIM |
| 223 | 1 | 489039 | SHIFTER SHAFT |
| 224 | 2 | 494143 | SPRING |

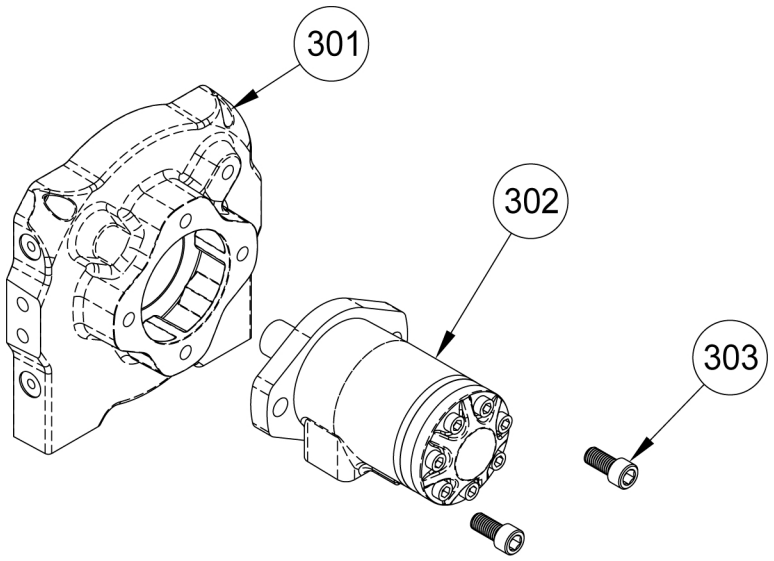
# Roller Tensioner Assembly




# Roller Tensioner Assembly BOM

| ITEM # | QTY. | PART NUMBER | DESCRIPTION |
|---|---|---|---|
| 401 | 2 | 346071 | ROLLER SHAFT |
| 402 | 1 | 346072 | TENSIONER BAR |
| 403 | 1 | 350775 | ARM |
| 404 | 1 | 350776 | LEVER ARM |
| 405 | 1 | 354065 | ROLLER |
| 406 | 4 | 412108 | BUSHING |
| 407 | 4 | 414819 | CAPSCREW-.250-20UNC X .50 LG. |
| 408 | 2 | 418223 | WASHER-1/2 FLAT |
| 409 | 2 | 490079 | RETAINING RING |
| 410 | 1 | 494145 | SPRING-TORSION |
| 411 | 1 | 494146 | SPRING-TORSION |

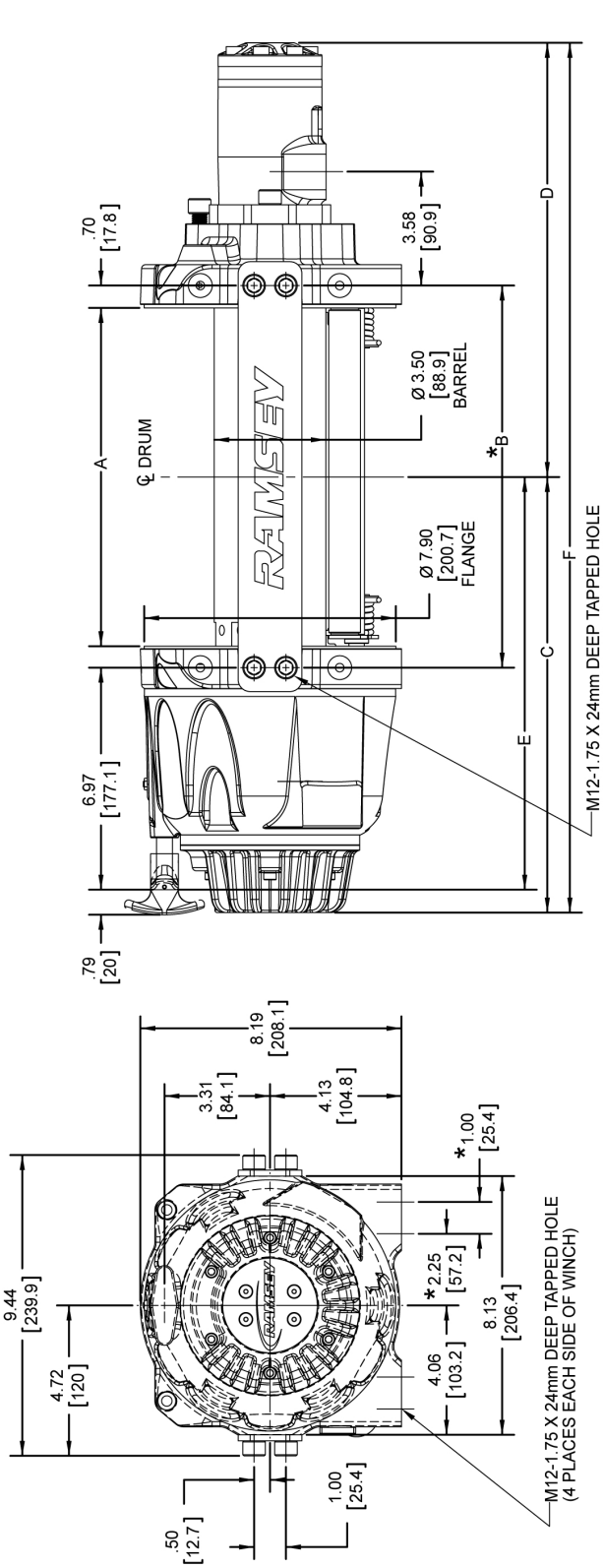
# Motor Assembly




# Motor Assembly BOM

| ITEM # | QTY. | PART NUMBER | DESCRIPTION |
|---|---|---|---|
| 301 | 1 | 297103 | END BEARING ASSEMBLY |
| 302 | 1 | 458050 | MOTOR |
| 303 | 2 | 415409 | CAPSCREW - M12X1.75X25mm SOCKET HEAD |

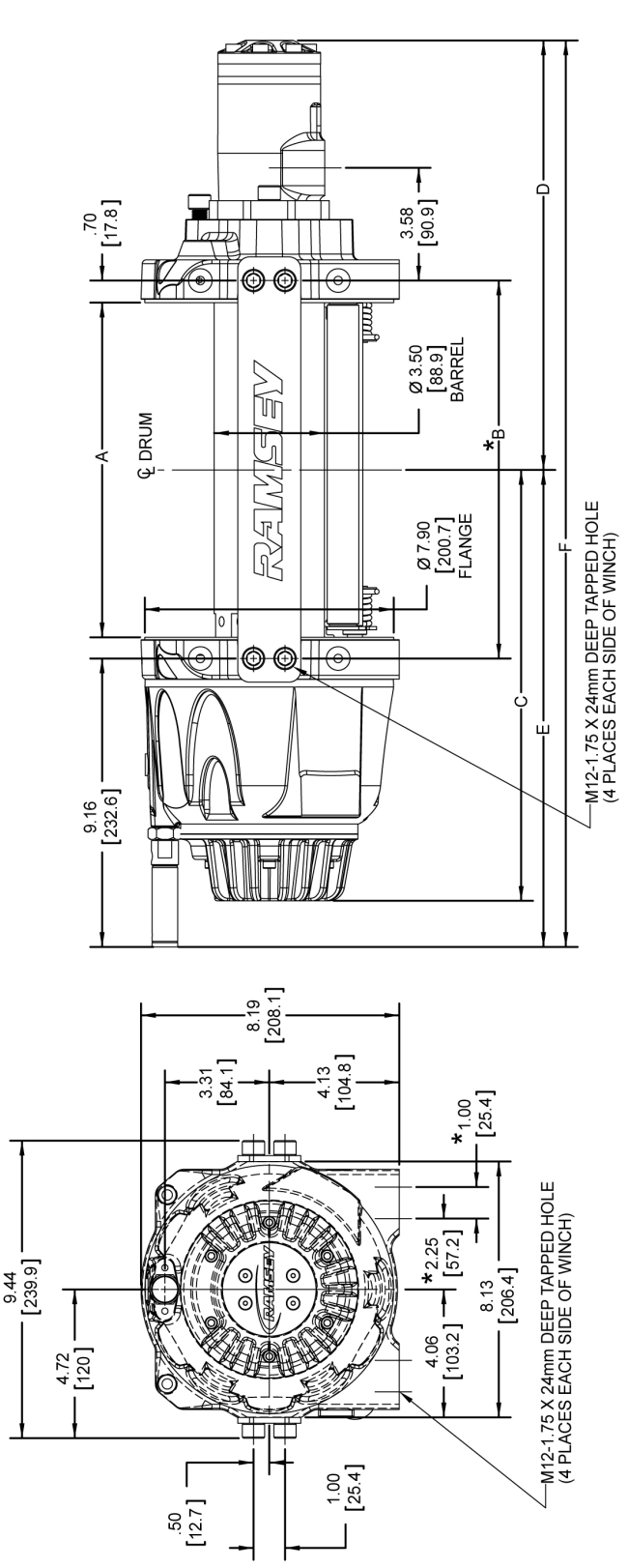
# Dimensional Drawing - Manual Shift




| WINCH DRUM | A INCHES MM | B INCHES MM | C INCHES MM | D INCHES MM | E INCHES MM | F INCHES MM |
|---|---|---|---|---|---|---|
| LONG DRUM | 10.63 270.0 | 12.00 304.8 | 13.68 347.4 | 13.64 346.5 | 12.96 329.1 | 27.31 693.8 |
| STANDARD DRUM | 8.63 219.2 | 10.00 254.0 | 13.68 347.5 | 12.64 321.1 | 11.96 303.8 | 25.31 642.9 |
| SHORT DRUM | 6.63 168.4 | 8.00 203.2 | 13.68 347.5 | 11.64 295.7 | 10.96 278.4 | 23.30 592.1 |

NOTES:
1. DIMENSIONS SHOWN ARE INCHES OVER MILLIMETERS.
2. WINCH MOUNTING CAPSCREWS MUST MEET OR EXCEED SAE GRADE 5 SPECIFICATION.
*3. THESE HOLE LOCATIONS MUST BE HELD WITHIN±0.03 (0.8mm) OF TRUE POSITION. RECOMMENDED MOUNTING HOLE DIAMETER IS .50 (12.7mm)
4. "B" ROTATION SHOWN

# Dimensional Drawing - Air Shift




| WINCH DRUM | A INCHES MM | B INCHES MM | C INCHES MM | D INCHES MM | E INCHES MM | F INCHES MM |
|---|---|---|---|---|---|---|
| LONG DRUM | 10.63 270.0 | 12.00 304.8 | 13.68 347.4 | 13.64 346.5 | 15.14 384.7 | 28.79 731.2 |
| STANDARD DRUM | 8.63 219.2 | 10.00 254.0 | 13.68 347.5 | 12.64 321.1 | 14.14 359.2 | 26.79 680.5 |
| SHORT DRUM | 6.63 168.4 | 8.00 203.2 | 13.68 347.5 | 11.64 295.7 | 13.14 333.8 | 24.79 629.7 |

NOTES:
1. DIMENSIONS SHOWN ARE INCHES OVER MILLIMETERS.
2. WINCH MOUNTING CAPSCREWS MUST MEET OR EXCEED SAE GRADE 5 SPECIFICATION.
*3. THESE HOLE LOCATIONS MUST BE HELD WITHIN±0.03 (0.8mm) OF TRUE POSITION. RECOMMENDED MOUNTING HOLE DIAMETER IS .50 (12.7mm)
**4. CAUTION: PRESSURE MUST NOT EXCEED 150 PSI.
5. "B" ROTATION SHOWN.

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# Limited Warranty

RAMSEY WINCH warrants each new RAMSEY WINCH to be free from defects in material and workmanship for a period of two (2) years 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.

For more information or to make a warranty claim, contact your local distributor or RAMSEY WINCH customer service.


**Ramsey Winch Company**
P.O. Box 58151 - Tulsa, OK, 74158-1510 USA
Phone 1-800-777-2760 - Fax (918) 438-6688
http://www.ramsey.com