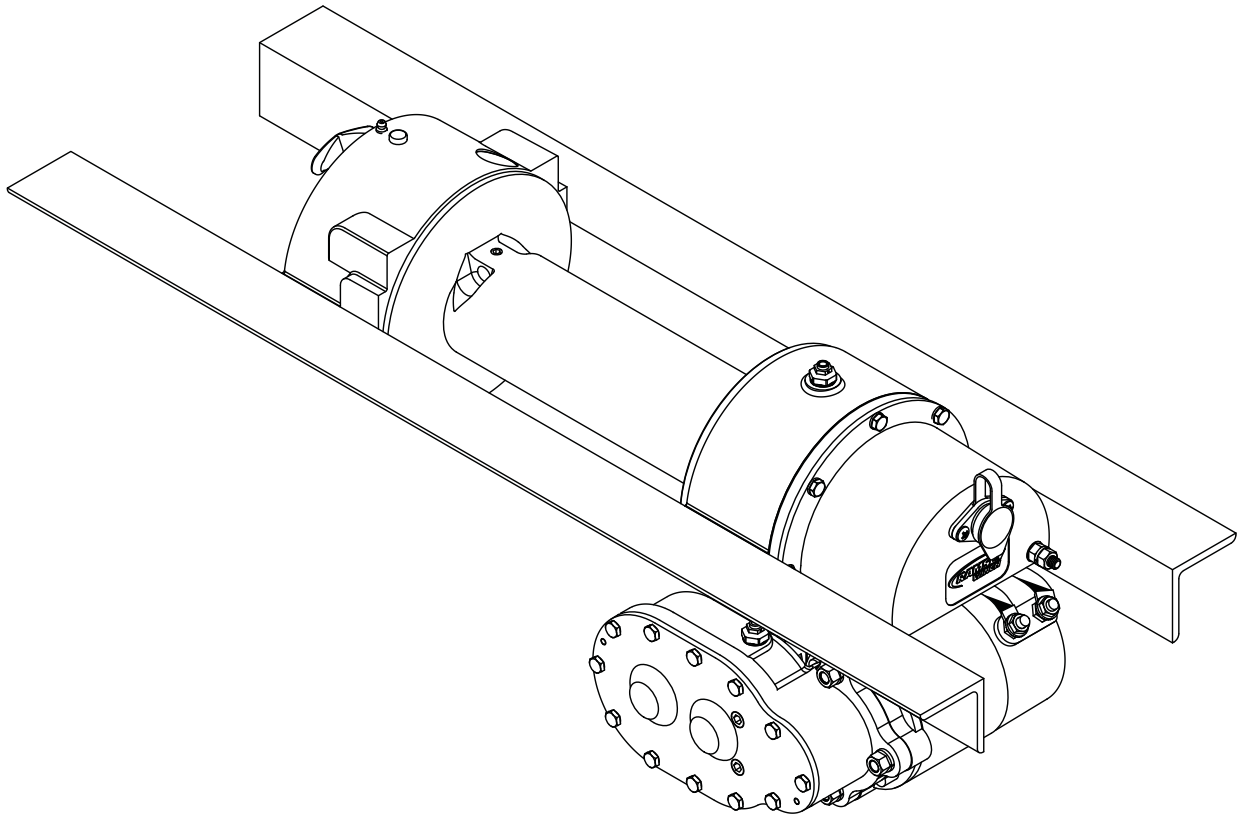




# OPERATING, SERVICE AND MAINTENANCE MANUAL



## MODEL DC-200 SERIES RAM-LOK®EQUIPPED INDUSTRIAL LOW-MOUNT WINCHES

INCLUDES: DC-200/DC-246, DC-24-200/DC-24-246.

DCY-200/DCY-246, DCY-24-200/DCY-24-246

AND MODELS EQUIPPED WITH OPTIONAL ADJUSTABLE, AUTO-  
MATIC OIL COOLED SAFETY BRAKE: DCG-200, DCYG-200 SE-  
RIES WINCHES



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

## TABLE OF CONTENTS

INTRODUCTION.....	1
WARRANTY INFORMATION.....	1
SPECIFICATION.....	1
TECHNIQUES OF OPERATION.....	2
WARNINGS.....	2
WINCH MAINTENANCE.....	3
WINCH MOUNTING.....	4
ELECTRICAL CONNECTIONS.....	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
TROUBLE SHOOTING GUIDE.....	8-9
INSTRUCTIONS FOR OVERHAUL OF RAMSEY MODEL DC-200 SERIES RAM-LOK® WINCHES	
DISASSEMBLY.....	10-13
REASSEMBLY.....	13-16
DIMENSIONAL DRAWING.....	17
PARTS LIST AND PARTS DRAWING.....	18-20
SOLENOID AND SWITCH ASSEMBLY PARTS LIST.....	21
TEST PROCEDURE FOR SOLENOID.....	22
TEST PROCEDURE FOR MOTOR.....	23
MOTOR ASSEMBLY PARTS LIST.....	24
LIMITED WARRANTY.....	25

# RAMSEY ELECTRICAL WINCH MODEL DC-200 SERIES

## 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<sup>▲</sup>

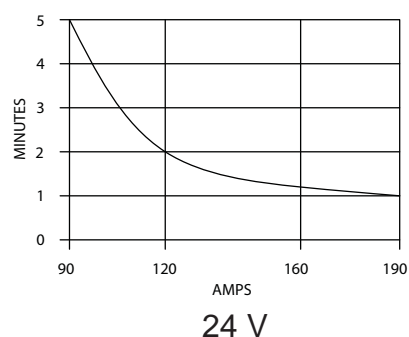
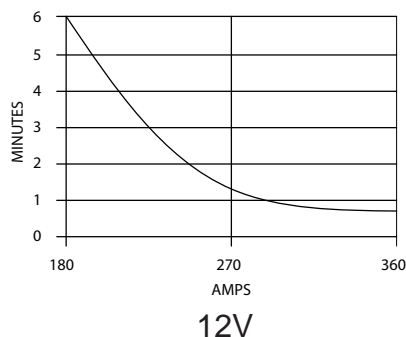
Rated Line Pull 1st Layer (l bs.).....		8,000							
(kgs.).....		3,630							
Total Gear Reduction: DC-200.....		470							
DC-246.....		360							
Weight: DC-200/DC-246 (long drum) .....		116 lb. (52.6 Kgs.)							
DCY-200/DCY-246 (short drum).....		105 lb. (47.6 Kgs.)							
MAXIMUM GEAR BOX OIL TEMPERATURE SHOULD NOT EXCEED..... 250°F									
Layer of Cable		1	2	3	4				
Rated Line Pull	Lbs.	8,000	6,700	5,700	5,000				
	Kgs.	3,620	3,030	2,580	2,260				
Long Drum Cable	Ft.	25	60	95	140				
	M.	7	18	28	42				
Short -Y- Drum	Ft.	15	30	55	75				
	M.	4	9	16	22				
Line Speed	VOLTS	NO LOAD		2000#LOAD		4000# LOAD		8000# LOAD	
		FPM		FPM		FPM		FPM	
		(MPM)	AMPS	(MPM)	AMPS	(MPM)	AMPS	(MPM)	AMPS
DC-200/DCY-200	12	14	65	7	110	5	180	3.5	280
DC-24-200/DCY-24-200	24	(4.3)	30	(2.1)	50	(1.5)	90	(1.1)	140
DC-246/DCY-246	12	16.5	70	8.5	140	5.5	200	3.5	330
DC-24-246/DCY-24/246	24	(5)	35	(2.5)	70	(1.7)	100	(1.1)	160

\*These specifications are based on recommended 3/8 inch dia. extra improved plow steel wire rope or equivalent.

▲Winch only conforms to SAE J706. For SAE qualification of mounting angles, if applicable, consult Ramsey Engineering.

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

Winch duty cycles are shown below:



## 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.

Check oil level of winch every six months. Replace oil annually or more often if winch is used frequently. Use 3/4 pint of all purpose E. P. 140 oil in the worm gear housing and 1/2 pint SAE 20 for spur gear box. If the oil is contaminated with metallic particles, inspect winch for cause of abnormal wear. Periodically check all electrical connections and mounting bolts. Tighten hardware if necessary.

The minimum ampere-hour rating of vehicle battery should be 70, and used with at least a 40 amp alternator. An Auxiliary battery is recommended to supply additional battery power. Inspect the cable frequently. If the cable becomes frayed with broken strands, replace immediately. Cable and hook assembly may be purchased from a Ramsey distributor. The RAM-LOK® semi-automatic clutch allows rapid unspooling of the cable, from cable drum, for hooking onto a load. The clutch is operated by the "T-handle", located on the end of the winch, as follows:

1. TO DISENGAGE CLUTCH, run the winch in the reverse (reel out) direction until the load is off the cable. Pull outward on the clutch handle, rotate it counter-clockwise 90° and release. The clutch is now locked out and the cable may be pulled off by hand.
2. TO ENGAGE CLUTCH, pull outward on the handle, rotate it clockwise 90° and release. Run the winch in reverse until the clutch handle snaps fully in or until the cable drum starts turning. At this point make sure the clutch handle is all the way in. 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.**

**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 PERSONNEL.**

**A MINIMUM OF 5 WRAPS OF CABLE AROUND THE DRUM BARREL IS NECESSARY TO HOLD THE LOAD. CABLE CLAMP IS NOT DESIGNED TO HOLD LOAD.**

**DISCONNECT THE REMOTE CONTROL SWITCH FROM WINCH WHEN NOT IN USE. A RAMSEY PART NO. 282053 SAFETY ON-OFF SWITCH IN YOUR VEHICLE IS RECOMMENDED.**

## 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. Check the action of the sliding clutch, making sure it is fully engaging and disengaging with the cable drum. Remove the plastic plug in top of the housing and observe if the clutch is fully engaging. 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 grade 5 bolts or better.
4. Check the torque setting of the oil cooled worm brake. Make any adjustments required, following the procedure described in ADJUSTING THE OIL COOLED WORM BRAKE in the Owner's Manual.
5. Check alignment of chain and sprockets and adjust as required to minimize wear.
6. 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 EP 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

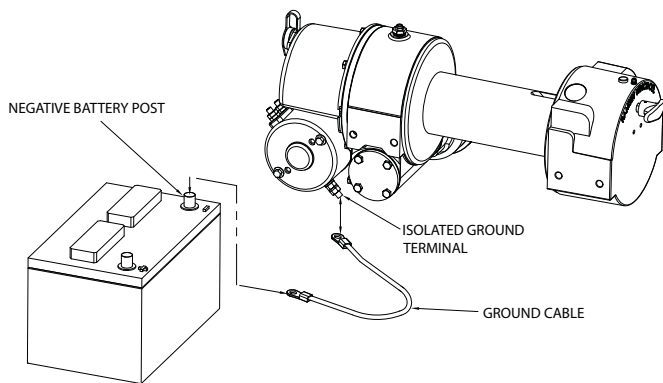
## WINCH MOUNTING

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 DC-200 Series winches are furnished with recommended mounting angles. Angle size is 1/4 x 2-1/2 x 2-1/2 x 36" Lg. high strength (50,000 PSI yield) steel angle.

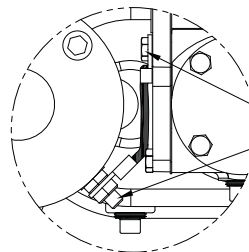
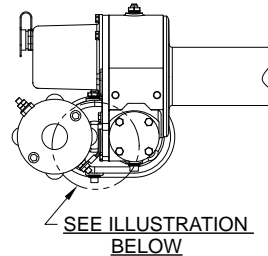
## ELECTRICAL CONNECTIONS

See dimensional drawing on page 17. Using a power cable with appropriate end terminals, connect the positive (+) battery terminal to the 5/16" dia. stud on the plastic solenoid cover on the winch. **IMPORTANT:** hold inner nut on stud with a wrench while tightening outer nut. Using a ground cable with appropriate end terminals, connect the negative(-) battery terminal to the motor isolated ground terminal. In applications where the chassis is non-grounded, a jumper wire (#440315) will be required between the winch and the motor isolated ground terminal. This ground is required to insure a sufficient ground to operate the solenoid assembly (see diagram below). For distances up to 15 feet from battery to winch, use #2 Ga. wire for the above connections. For distances greater than 15 feet, use wire larger than #2 Ga.

WINCH WILL NOT OPERATE UNLESS  
GROUND CABLE IS INSTALLED FROM THE  
ISOLATED GROUND TERMINAL TO THE  
NEGATIVE BATTERY POST.  
(SEE DIAGRAM BELOW)



**Isolated Motor Ground**



**For non-grounded chassis applications  
a jumper wire (#440315) is required to  
ground the solenoid assembly.**

## 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.

## WORM BRAKE ADJUSTMENT

### ADJUSTING THE OIL COOLED WORM BRAKE

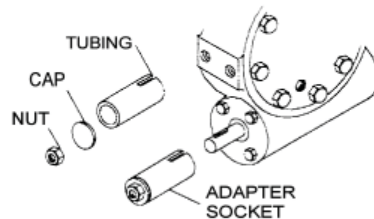
The oil-cooled, fully adjustable, automatic safety brake operates in the worm housing lubricant, all parts being submerged in oil. When the brake wears to the point that the load begins to drift, the brake can be adjusted as follows:

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 the input shaft (worm) of the winch. The adapter can be made by welding a nut to the end of a piece of tubing as shown in the following figure.

After welding the cap and nut to the tubing, slot the tubing as shown. This will allow the special adapter to slide over the keyway and will then act as a large socket. A torque wrench can then be used to apply the proper torque. Turn the torque wrench so that the drum turns in the spool out direction or lowering direction. The torque rating for the Model 200/246 should be 8 to 13ft. lbs. (D-200, 13 to 18ft. lbs.).

If the torque wrench does not show the proper value as it turns the worm brake adjusting bolt should be turned clockwise 1/4 turn. Each time the adjusting bolt is turned, check the torque reading. Continue this procedure until the proper torque reading is achieved. Then tighten the lock nut.



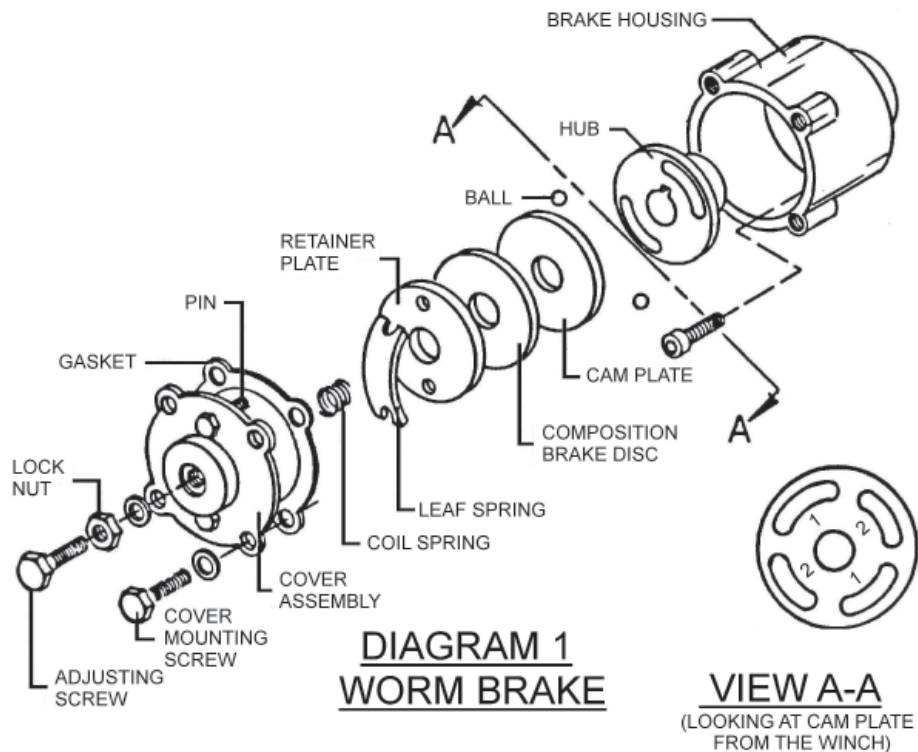
If the torque wrench does not show the proper value as it turns the worm brake adjusting bolt should be turned clockwise 1/4 turn. Each time the adjusting bolt is turned, check the torque reading. Continue this procedure until the proper torque reading is achieved. Then tighten the lock nut.



# SERVICING OF THE OIL COOLED SAFETY BRAKE

## 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, the slots the balls are in.
6. Inspect parts as follows:
  - a). Composition brake discs are 1/8" thick when new. Replace if thinner than 0.080" 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".





## **BRAKE - CHECKING / RE-ASSEMBLY AND TESTING**

### **BRAKE RE-ASSEMBLY**

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 1 pint all purpose EP 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 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).

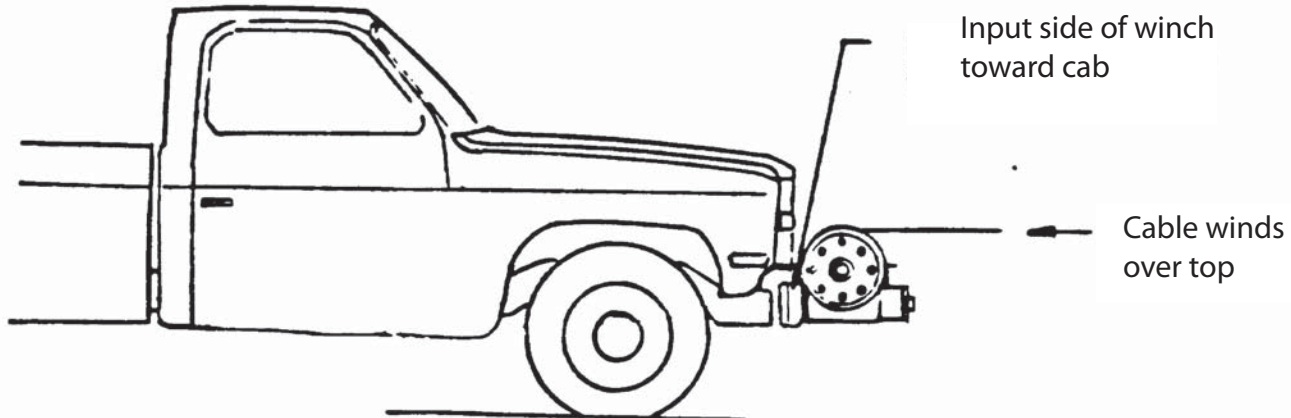


DIAGRAM 2

# TROUBLE SHOOTING GUIDE

## TROUBLE SHOOTING GUIDE

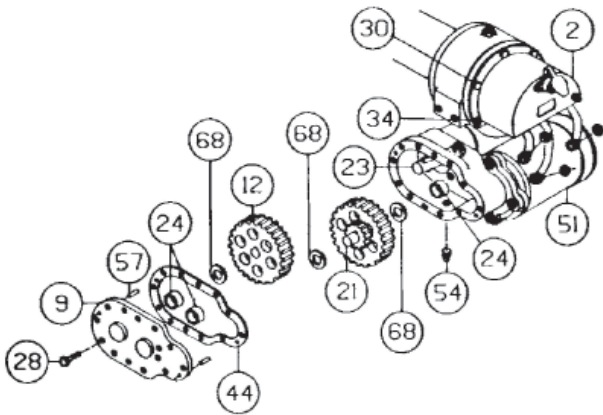
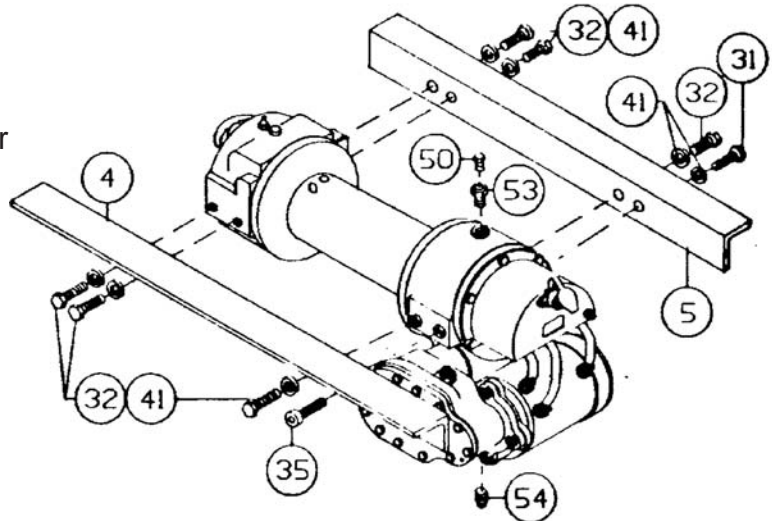
CONDITION	POSSIBLE CAUSE	CORRECTION
CLUTCH INOPERATIVE OR BINDS UP.	<ol style="list-style-type: none"> <li>1. Dry or rusted shaft.</li> <li>2. Bent yoke or linkage.</li> <li>3. Clutch jaws are in contact.</li> </ol>	<ol style="list-style-type: none"> <li>1. Clean and lubricate.</li> <li>2. Replace yoke or shaft assembly.</li> <li>3. See TECHNIQUES OF OPERATION.</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>
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>
MOTOR RUNS IN ONE DIRECTION ONLY.	<ol style="list-style-type: none"> <li>1. Inoperative solenoid or stuck solenoid.</li> <li>2. Inoperative switch.</li> <li>3. Broken wire or bad connection.</li> </ol>	<ol style="list-style-type: none"> <li>1. Jar solenoid to free contacts. Check by applying 12 volts to coil terminal (it should make an audible click when energized).</li> <li>2. Disengage winch clutch or remove armature lead. Remove switch plug from hood. Raise connector cover on hood and with a screw driver, short the bottom two pins. Solenoid should click. Short the two left hand pins. The other solenoid should operate. If both solenoids operate check for a broken wire in switch cable.</li> <li>3. Check for loose connection on switch and switch connector.</li> </ol>
MOTOR RUNS, BUT DRUM DOES NOT TURN.	<ol style="list-style-type: none"> <li>1. Clutch not engaged.</li> <li>2. Sheared drum shaft key.</li> <li>3. Stripped bronze gear.</li> <li>4. Parted shaft.</li> </ol>	<ol style="list-style-type: none"> <li>1-4. If clutch engaged but symptom still exists, it will be necessary to disassemble winch to determine cause and repair.</li> </ol>

CONDITION	POSSIBLE CAUSE	CORRECTION
<p>MOTOR RUNS EXTREMELY HOT.</p> <p>MOTOR RUNS, BUT WITH INSUFFICIENT POWER, OR WITH LOW LINE SPEED.</p>	<ol style="list-style-type: none"> <li>1. Long period of operation.</li> <li>2. Insufficient battery.</li> <li>3. Electrical cables from battery to winch too small</li> <li>4. Bad electrical connections.</li> <li>5. Insufficient charging system.</li> </ol>	<ol style="list-style-type: none"> <li>1. Cooling-off periods are essential to prevent over-heating.</li> <li>2. Check battery terminal voltage under load. If 10 volts or less, replace or parallel another battery to it at motor terminal.</li> <li>3. Must be #2 Ga. wire for distances up to 15 feet from battery to winch. Use larger than #2 Ga. for distances greater than 15 feet.</li> <li>4. Check all connections for looseness or corrosion; Tighten, clean and grease.</li> <li>5. Replace with larger capacity charging system.</li> </ol>
MOTOR WILL NOT OPERATE.	<ol style="list-style-type: none"> <li>1. Inoperative solenoid or stuck solenoid.</li> <li>2. Inoperative switch.</li> <li>3. Inoperative motor.</li> <li>4. Loose connections.</li> </ol>	<ol style="list-style-type: none"> <li>1. Jar solenoid to free contacts. Check by applying 12 volts to coil terminal (it should make an audible click when energized).</li> <li>2. Disengage winch clutch or remove armature lead. Remove switch plug from hood. Raise connector cover on hood and with a screw driver, short the bottom two pins. Solenoid should click. Short the two left pins. The other solenoid should operate. If both solenoids operate, check for a broken wire in switch cable.</li> <li>3. If solenoids operate, check for voltage at armature post; replace motor.</li> <li>4. Tighten connections on bottom side of hood and on motor.</li> </ol>

## NOTES

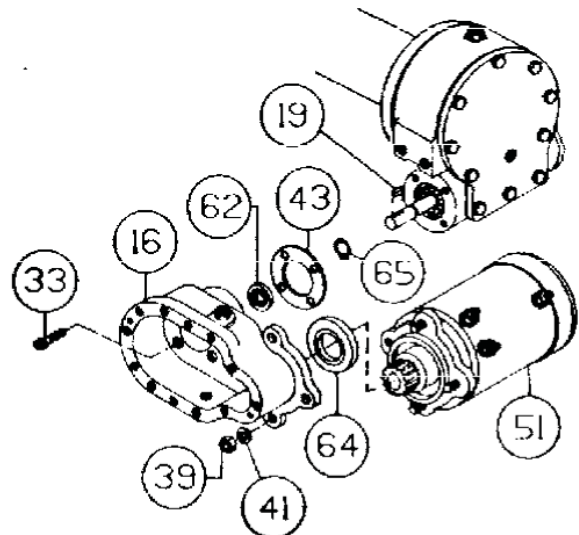
# INSTRUCTIONS FOR OVERHAUL OF RAMSEY MODEL DC-200 SERIES RAM-LOK DIS-ASSEMBLY

1. Drain oil from gear housing by removing (item #54) plug from bottom of gear housing. Remove relief fittings and reducer (items #50 & #53) from top of gear housing. Remove mounting angles (items #4 & #5) from winch by removing hardware shown.



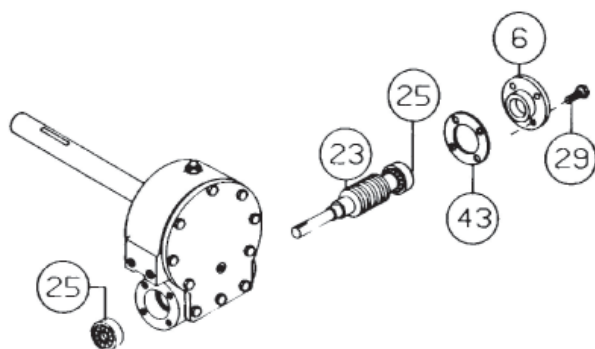
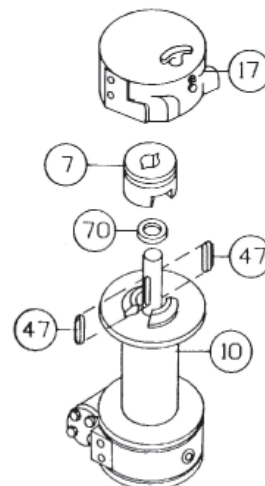
2. Drain oil from spur gear box by removing (item #54) plug. Remove cover and gasket (items #9 & #44) from spur gear housing by unscrewing twelve capscrews (item #28). Slide gear (item #12) from end of worm shaft (item #23). Remove spur gear shaft (item #21), with gears attached. Check bearings (item #24) and thrust washers (item #68) for signs of wear, replace if necessary. Remove old bearings and press new bearings into place. Remove solenoid assembly (item #2) by unscrewing capscrews (items #30 & #34). Disconnect solenoid cables from motor (item #51). Make note of which terminals cable are attached to.

3. Remove key (item #19) and snap ring (item #65) from worm shaft. Remove motor (item #51) from spur gear housing (item #16) by removing (3) nuts and lockwashers (items #39 & #41). Unscrew (4) capscrews (item #33) to remove spur gear box (item #16) and gasket (item #43) from gear housing. Replace lip seals (items #62 & #64) by pressing old seals from spur gear housing and pressing new seals into place.



4. Slide clutch housing (item #17) from end of drum shaft. Slide jaw clutch (item #7) from end of drum shaft.

Remove (2) keys (item # 47) from keyways . A screw driver can be used, at notch, to aid in removal of keys. Once keys have been removed, drum (item #10) and thrust washer (item #70) can be removed from drum shaft. Parts under drum, thrust washer (item #69), spring and disc (items #66 & #42) should also be removed.



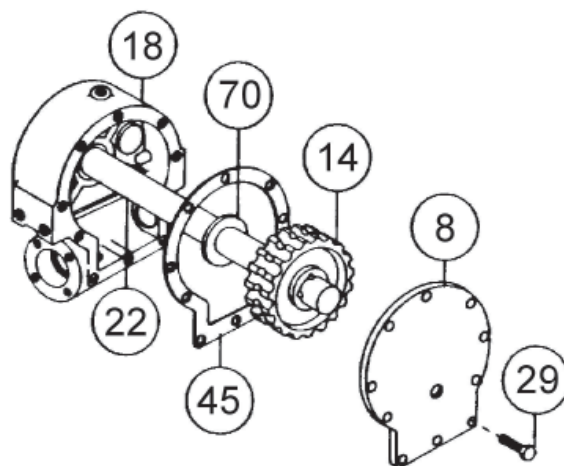
5. Remove bearing cap (item #6) from gear housing by unscrewing four capscrews (item # 29 ). Remove worm (item #23 ) and bearing (item #25) from gear housing. Use a soft hammer to gently tap input end of worm and drive worm and bearing from gear housing. Once worm has been removed from housing, bearing can be pressed from end of worm.

Check for signs of wear to worm (item #23) and bearings (item #25). Replace if necessary.

For models with optional worm brake refer to page 5, **SERVICING OF THE OIL COOLED SAFETY BRAKE**, for disassembly and page 6, for re-assembly instructions.

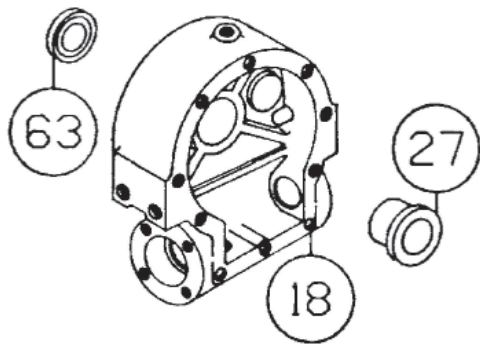
6. Remove gear housing cover (item #8) from gear housing (item #18) by unscrewing five remaining capscrews (items #29). Place capscrew into two tapped holes of cover and tighten. This will pull the cover loose from gear housing.

Remove cover gasket (item #45) and pull shaft (item #22), with gear attached, and spacer (item #70) from gear housing.

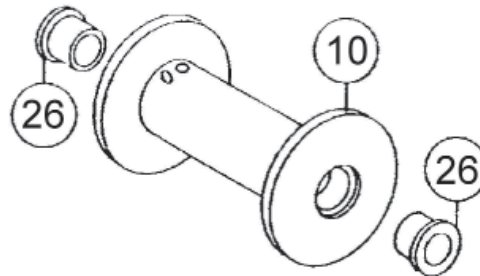




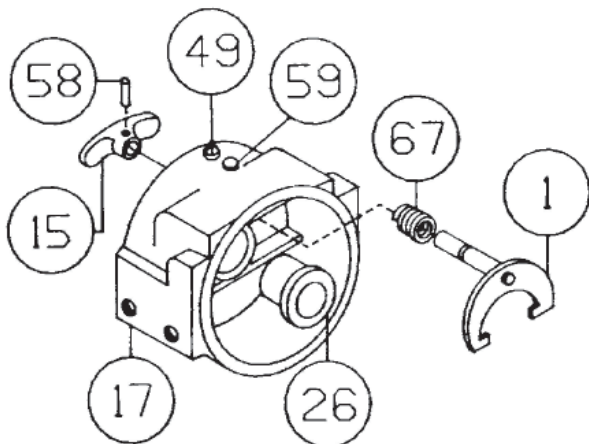
7. Check for signs of wear on gear teeth. If replacement of gear is necessary, replace as follows:
  - a) Press gear (item #14) from shaft (item #22).
  - b) Examine shaft keys and keyways, if distortion of keys and/or keyways is evident, shaft and keys should be replaced.
  - c) Use a soft hammer to gently tap keys (item #48) into keyways. Press gear (item #14) over shaft and keys. Gear must be centered over keys.



8. Remove seal (item #63) from back of gear housing (item #18). Check bushing (item #27) for signs of wear. Press bushing (item #27) from gear housing and replace if necessary. Press new bushing and seal back into place.



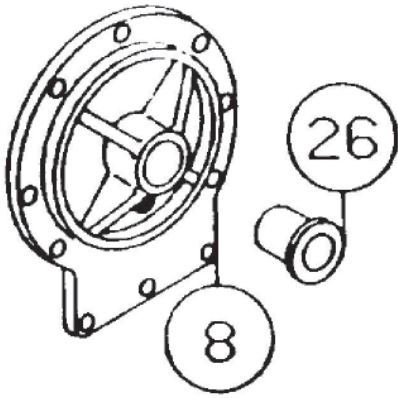
9. Check drum bushings (item #26) for signs of wear. Replace if necessary by pressing old bushings from drum (item #10) and pressing new ones into place.



10. Examine shifter assembly (item #1) for damage to yoke. Yoke should be firmly attached to shaft, yet, able to swivel freely around shaft. Replace if necessary by removing pin (item #58) from handle (item #15). Remove rubber plug (item #59) from housing. Unscrew set-screw enough to allow shifter assembly to be removed from housing.

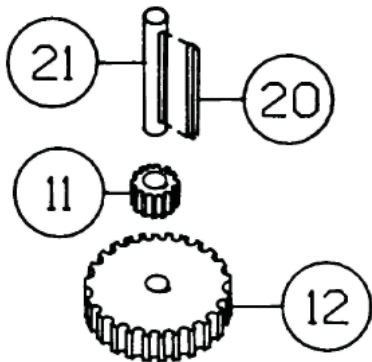
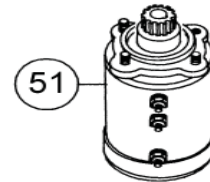
Check clutch housing bushing (item #26) for signs of wear. Remove if necessary by pressing old bushing from housing (item #17) and pressing new one into place.

Install new shifter assembly (item #1) by placing end of shaft, opposite yoke, through spring (item #67) and into housing item (#17). Attach (item #15) handle to shaft using roll pin (item #58). Tighten setscrew, in housing, enough to allow shifter assembly to operate properly. Replace rubber plug.



11. Check cover bushing (item #8) for signs of wear. Replace if necessary by removing old bushing and pressing new bushing into place.

12. Check pinion gear on motor for signs of wear. If necessary replace motor (item # 51).

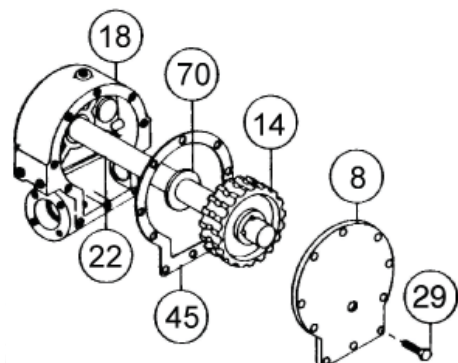


13. Check gears of spur gear shaft assembly for signs of wear, replace if necessary. Press old gears from shaft (item #21). Tap key (item #20) into keyway of shaft (item #21). Press shaft through gears so that gears are centered on shaft and key.

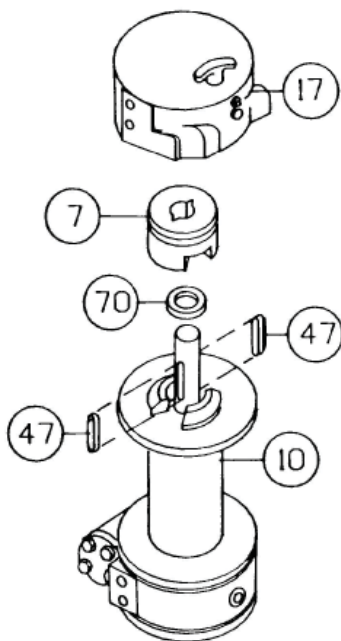
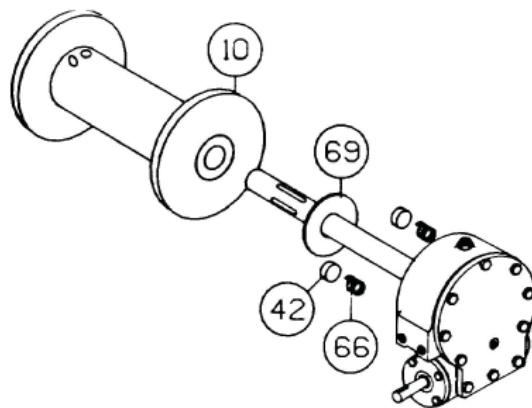
### **RE-ASSEMBLY**

14. Apply grease to end of shaft, opposite gear. Apply grease to bushing in gear housing (Item#18). Place greased end of shaft through spacer (item #71) and bushing in gear housing (item #18). Place gasket (item #51) onto gear housing cover (item #8). Apply grease to gear end of shaft and bushing in cover.

Place cover onto shaft and secure to housing with five (item #29) capscrews at five lower holes.



15. Place winch, with gear housing cover down, on work bench. Drum shaft should be in vertical position. Slide thrust washer (item #69) over drum shaft and slide downwards until washer rests on gear housing. Set springs (item #66) and drag brake disc (item #42) into pockets of gear housing. Grease bushings in drum (item #10). Slide drum assembly onto drum shaft with drum jaws upward.



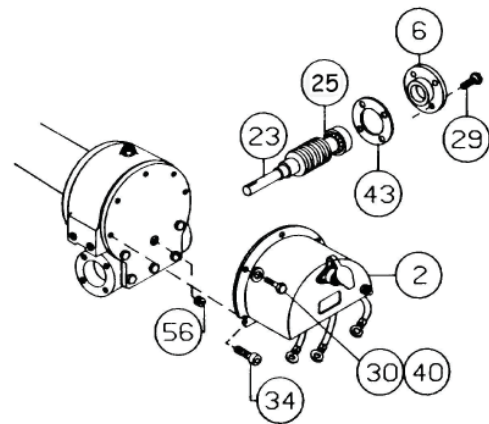
16. Slide thrust washer (item #70) over end of drum shaft. Press drum (item #10) downward to compress drag brake springs in gear housing.

Insert keys (item #47) 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 #7) over end of shaft and slide jaw clutch over keys. Set clutch housing (item #17) over end of drum shaft. Pull jaw clutch (item #7) upward, toward clutch housing, enough to allow yoke, in clutch housing, to fit properly in groove around jaw clutch.

17. Press bearing (item #25) onto worm (item #23)  
 NOTE: Be sure thick shoulder of bearings outer race (side with manufacturer's name and number ) is out, away from worm threads. Press bearing and worm into gear housing. Slip gasket (item #43) onto bearing cap (item #6). Use four capscrews (item #26) to secure cap to gear housing. Torque capscrews to 7 ft-lbs. (9.4 Nm) each.

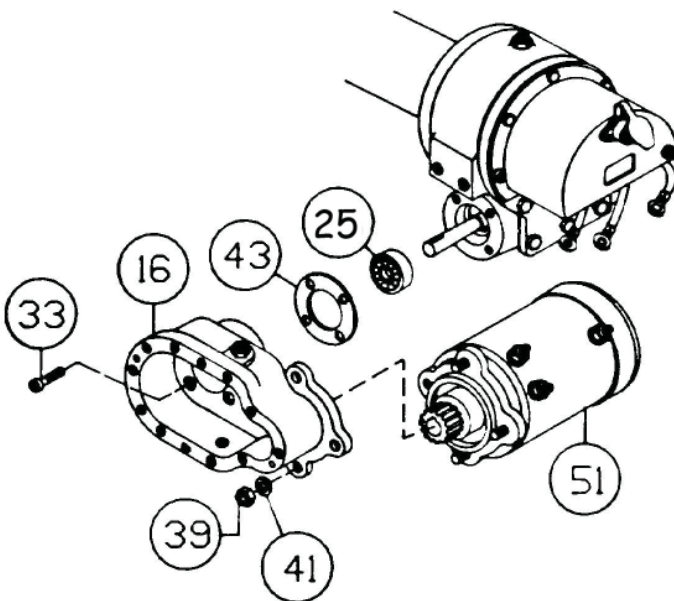
Attach solenoid assembly (item #2) to gear housing. Use two (item #34) capscrews and three (item #30) capscrews with three flatwashers (item #40). Tighten capscrews to 7 ft-lbs. (9.4 Nm) each. Insert plug (item #56) into tapped hole of cover. Permatex may be applied to threads to help prevent oil leakage. TIGHTEN plug securely.



18. Press bearing (item #25) onto worm and into worm gear housing. NOTE: Be sure thick shoulder of bearings outer race (side with manufacturer's name and number) is out, away from worm threads.

Place gasket (item #43) onto spur gear housing (item #16). Secure spur gear housing to worm gear housing using four capscrews (item #33). Torque capscrews to 7 ft-lbs. (9.4 Nm) each.

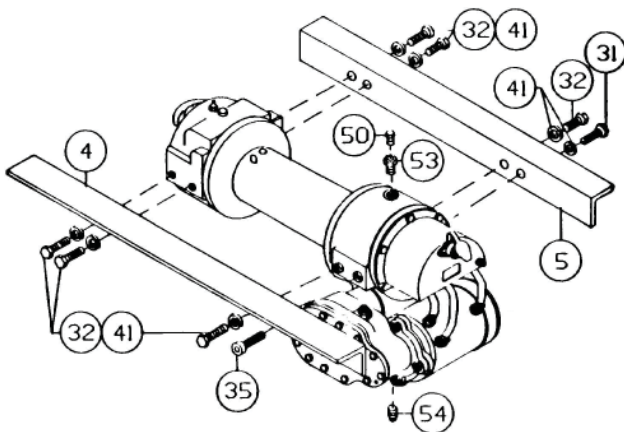
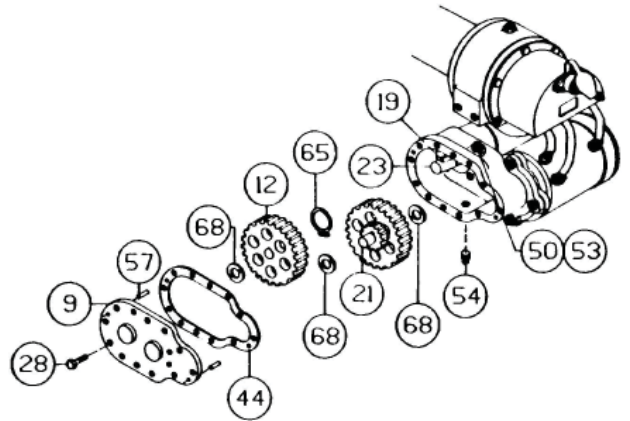
Mount motor (item #51) to spur gear housing (item #16) using three lockwashers and nuts (items #39 & #41). Attach solenoid cables to motor terminals. Tighten all nuts securely.



19. Place snap ring (item #65) over end of worm shaft (item #23) and set into snap ring groove. Insert key (item #19) into keyway of worm shaft. Place thrust washer (item #68) over each end of spur gear shaft (item #21). Set spur gear shaft assembly into bearing of spur gear housing. Slide gear (item #12) and (item #68) thrust washer over end of worm shaft (item #23).

Insert pins (item #57) into cover (item #9 ). Place gasket (item #44) onto cover. Attach cover and gasket to spur gear housing using twelve capscrews (item #28). Torque capscrews to 8 ft. lb. (10.8 Nm.) each. Insert plug (item #54) into bottom of spur gear housing. Permatex may be applied to threads to help prevent oil leakage.

Remove reducer and fitting (items #50 & #53) from top of spur gear housing. Pour 1/2 pint of SAE 20 weight motor oil into spur gear box. Replace reducer and fitting into top of spur gear housing. Tighten reducer and fitting securely.



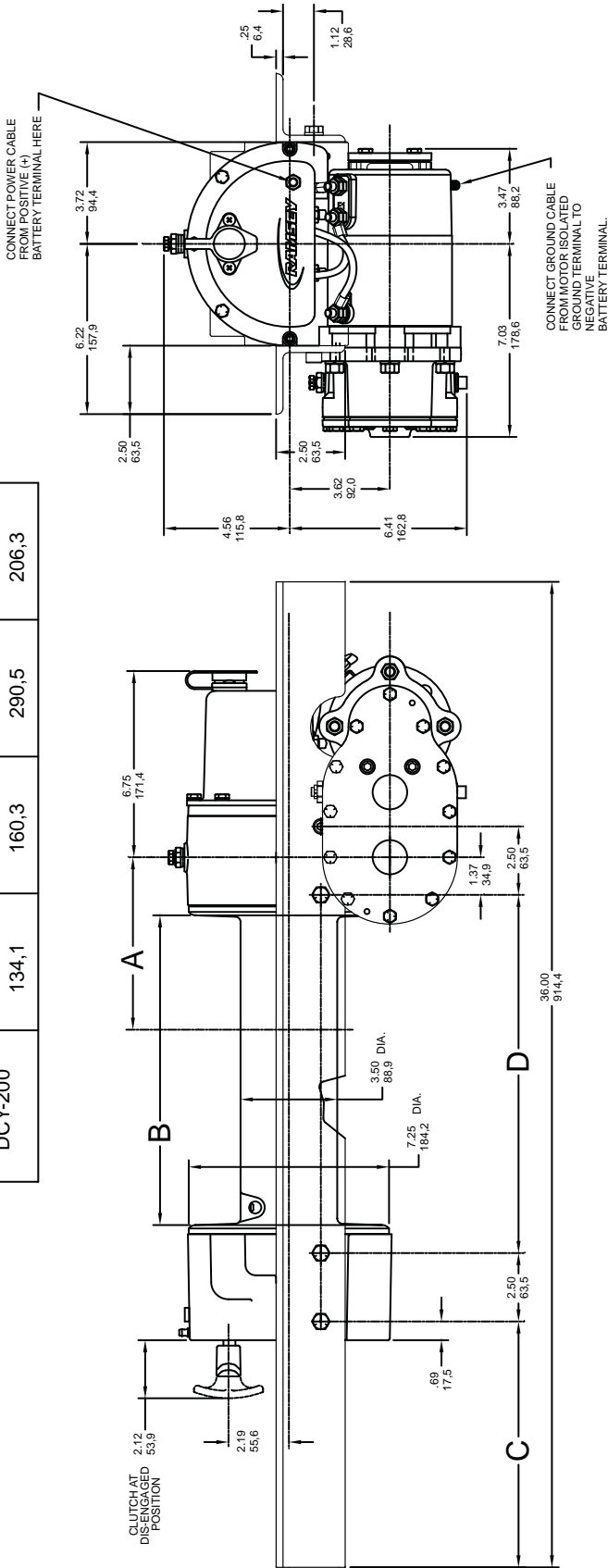
20. Attach mounting angles (items #4 & #5) using six capscrews (item #32) with lock washers and capscrews (items #35 & #31) . Torque capscrews to 34 ft. lb. (46 Nm.) each. Insert plug (item #54) into bottom of gear housing. Permatex may be applied to threads to help prevent leakage.

Pour 3/4 pint of EP 140 gear oil into housing through hole in top of housing. Insert relief fitting (item #50) into reducer (item #53) . Reducer should then be placed into hole on top of gear housing. Tighten fitting and reducer securely.

# DIMENSIONAL DRAWING

## DC-200 SERIES

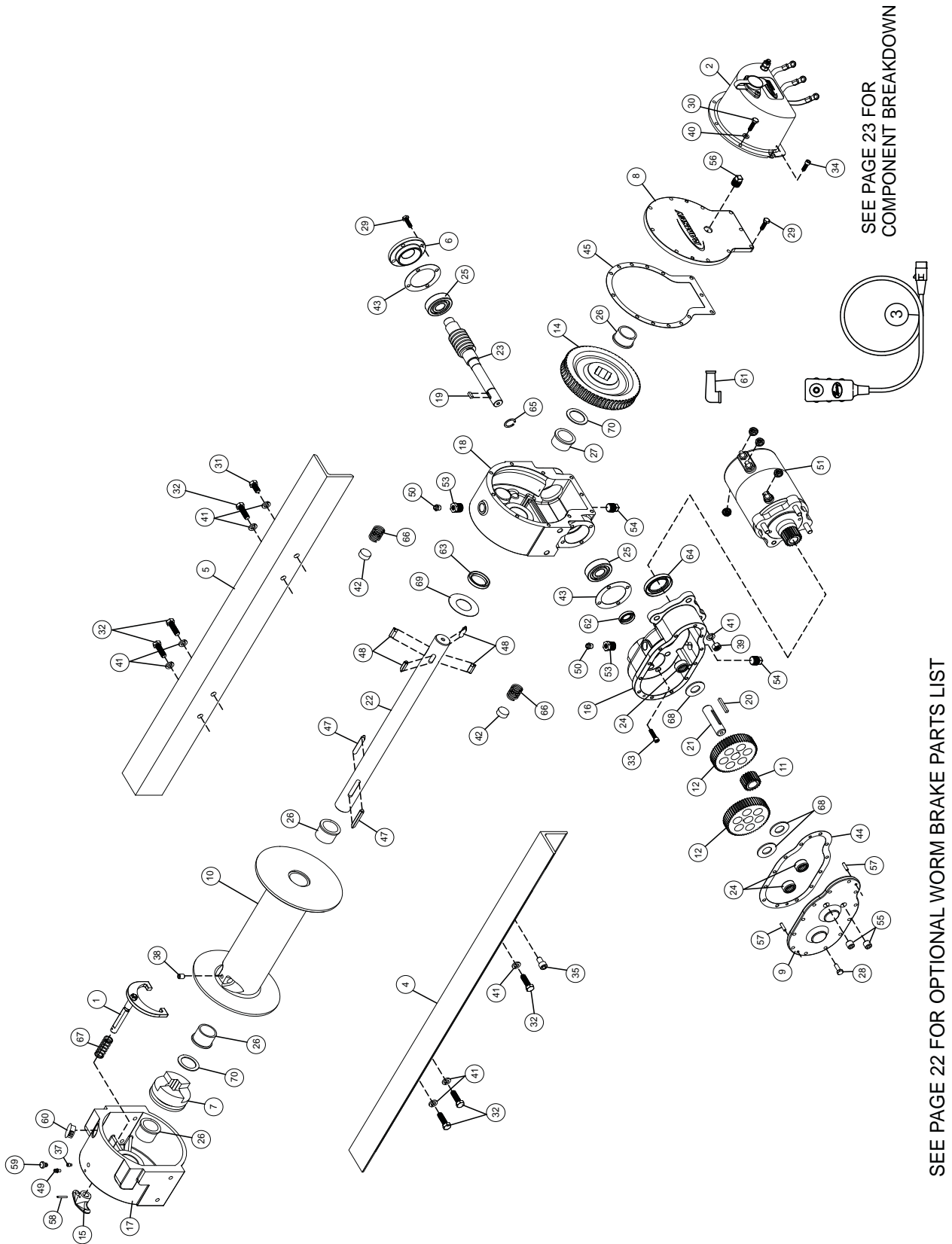
WINCH MODEL	A INCHES MM	B INCHES MM	C INCHES MM	D INCHES MM
DC-200	7.78 197,6	11.31 287,3	8.94 227,0	13.12 333,3
DCY-200	5.28 134,1	6.31 160,3	11.44 290,5	8.12 206,3



DIMENSIONS SHOWN ARE INCHES OVER MILLIMETERS



# DC-200 SERIES EXPLODED DRAWING



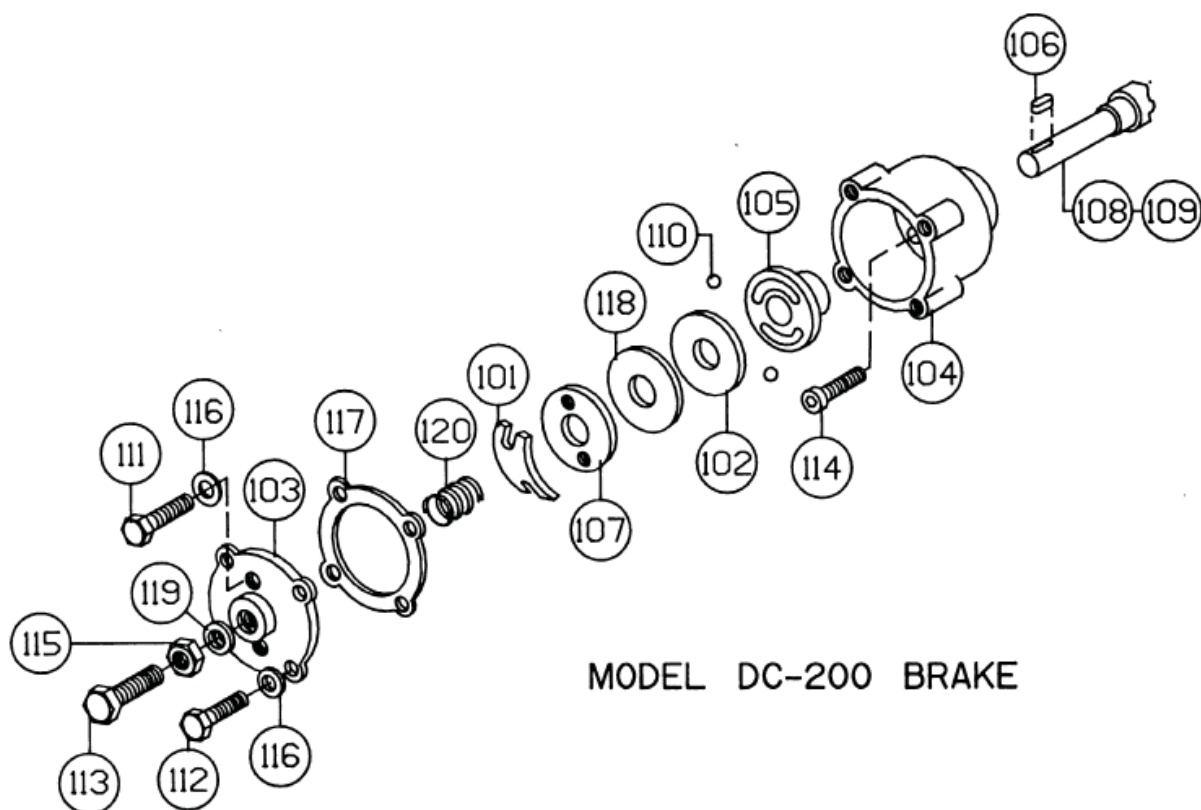


# PARTS LIST DC-200 SERIES

ITEM NO.	QTY.	PART NO.	DESCRIPTION	ITEM NO.	QTY.	PART NO.	DESCRIPTION
1	1	276056	ASSY-SHIFTER,HD200&HDG350	40	3	418154	WASHER
2	1	296902	SOLENOID ASSY-12VDC	41	10	418177	LOCKWASHER
3	1	296903	SOLENOID ASSY-24VDC	42	2	330010	DRAG BRAKE
4	1	282001	SWITCH ASSY	43	2	442184	GASKET
5	1	302808	ANGLE-STD	44	1	442185	GASKET
	1	302811	ANGLE-MOD. "Y"	45	1	442205	GASKET
	1	302809	ANGLE-STD	46			NOT USED
6	1	302810	ANGLE-MOD. "Y"	47	2	450006	KEY-BARTH,5/16X1 7/8LG,W/V-GRV JAW
7	1	316083	CAP-BRG	48	4	450016	KEY-BARTH,5/16X 15/16L,PWD MET,MSG7
8	1	324160	JAW CLUTCH	49	1	456001	FITTING- LUBE
9	1	328134	COVER-GEAR HSG	50	2	456008	RELIEF FIT-1/8- 27PFT,BALL CHECK,Z/P
10	1	328106	COVER-SPUR GH	51	1	262037	12V, ELECTRIC MOTOR
	1	332105	DRUM-STD			262036	24V, ELECTRIC MOTOR
	1	332007	DRUM-MOD "Y"	52			NOT USED
11	1	334001	GEAR-IDLER	53	2	468002	REDUCER
12	1	334003	GEAR	54	1	468011	PIPE PLUG - SQ HD
13			NOT USED	55	2	468017	PIPE PLUG - HEX SOC HD
14	1	334161	GEAR-RH,SL,	56	1	468018	PIPE PLUG - HX SOC HD
15	1	336010	HANDLE-CLUTCH SHIF	57	2	470001	PIN
16	1	338203	HSG-SPUR GR	58	1	470033	SPIROL PIN
17	1	338208	CLUTCH HSG-RAM-LOK	59	1	472012	PLUG
18	1	338273	HOUSING-GEAR,MOD.	60	1	472013	PLUG
19	1	342023	KEY-SQ ENDS,3/16X3/16X1/2 LG,C1018	61	1	482013	RUBBER BOOT
20	1	342033	KEY-SQ ENDS,3/16X3/16X1-7/16LG,SOFT	62	1	486009	OIL SEAL
21	1	356901	SHAFT-SPUR GH,3/4X2 13/16LG PURCH C	63	1	486017	OIL SEAL
22	1	357479	SHAFT-DRUM,200,4 KEYSEATS,4140CF HT	64	1	486023	SHAFT, SEAL
	1	357481	SHAFT-DRUM - MOD. "Y"	65	1	490003	SNAP RING
23	1	368001	WORM-R.H. 60:1	66	2	494002	SPRING
	1	368019	WORM-R.H. 46:1	67	1	494053	SPRING
24	2	402001	BEARING - NEEDLE	68	3	518002	THRUST WASHER
25	2	402002	BEARING - BALL	69	1	518014	THRUST WASHER
26	2	412003	BUSHING	70	1	518015	THRUST WASHER
27	2	412045	BUSHING	71			NOT USED
28	12	414038	CAPSCREW-1/4-20NCX3/4,HXHD,GR-5,Z/P				
29	10	414045	CAPSCREW-1/4-20NCX7/8 LG. HEX HD,				
30	3	414059	CAPSCREW-1/4-20NCX1LG GR-5 HXHD Z/P				
31	1	414279	CAPSCREW-3/8-16NCX3/4 LG,HXHD,GR-5				
32	6	414282	CAPSCREW-3/8-16NCX1 1/4LG,HXHD GR-5				
33	4	414845	CAPSCREW-1/4-20NC X1,HXSOCHD,NYLOK				
34	2	414856	CAPSCREW-1/4-20NCX3/4LG,HXSOCHD Z/P				
35	1	414912	CAPSCREW-3/8-16NC X5/8LG,HXSOCHD				
36			NOT USED				
37	1	416030	SS-1/4-20NCX3/8,HXSOC,F.DOG,NYL,Z/P				
38	1	416059	SETSCREW3/8-16NCX1/2 HX SOCK HD				
39	3	418040	NUT-3/8-24NF HEX REG ZINC PLATED				
							FOR GASKET KIT & SEAL KIT ORDER P/N 246039

## DC-200 BRAKE EXPLODED DRAWING

Item No	Qty	Part No.	Description
101	1	306034	SPRING-FLAT
102	1	314008	CAM PLATE
103	1	328128	COVER
104	1	338007	HOUSING-BRAKE
105	1	340002	HUB
106	1	342027	KEY
107	1	352022	RETAINER PLATE
108	1	368021	WORM-R.H. 60:1 RATIO
109	1	368022	WORM-R.H. 46:1 RATIO
110	2	400003	BALL
111	2	414021	CAPSCREW 1/4-20NCx 1 LG. HX.HD. GR.5 NY-LOK HVY.PATCH
112	4	414039	CAPSCREW 1/4 20NCx 1 LG. HX.HD. GR.5
113	1	414228	CAPSCREW 3/8-16NCx-1/2 LG. HX.HD. ALL-THRD.
114	4	414821	CAPSCREW 1/4-20NCx7/8LG. BUTTON HD.
115	1	418036	NUT 3/8-ISNC HX.JAM
116	6	418154	WASHER-FLAT 1/4 ALUM.
117	1	442189	GASKET
118	1	474001	PLATE-THRUST
119	1	486069	THREAD SEAL
120	1	494007	SPRING

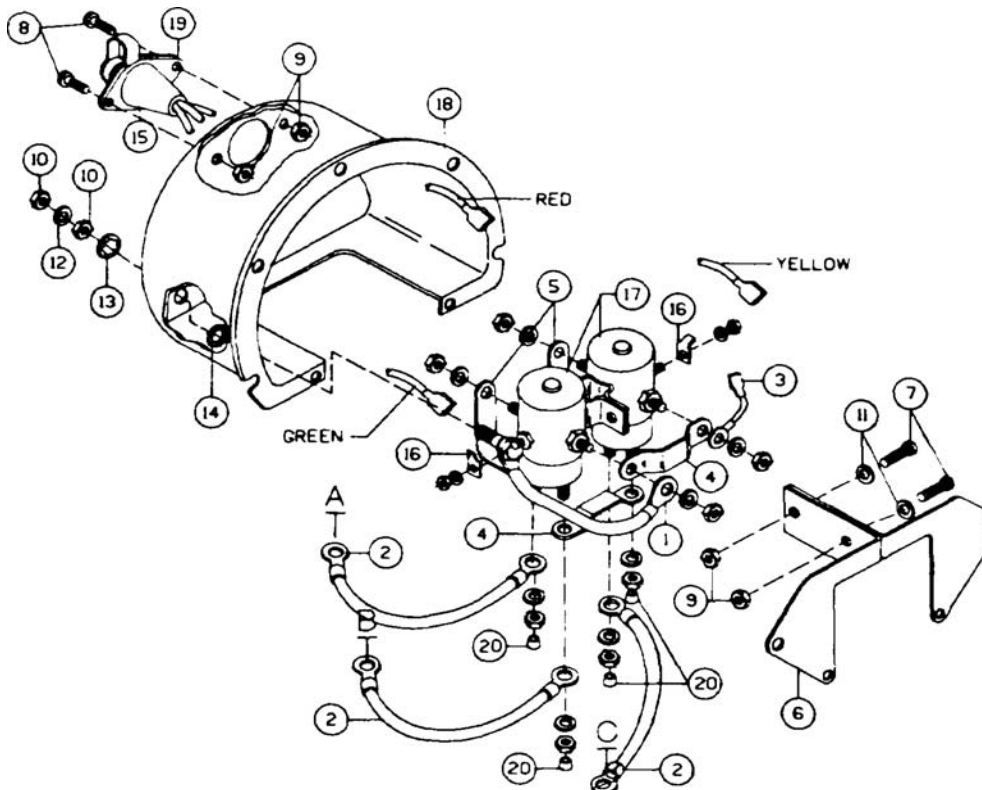


MODEL DC-200 BRAKE

## Solenoid Assembly Parts

**278027 - 12V**

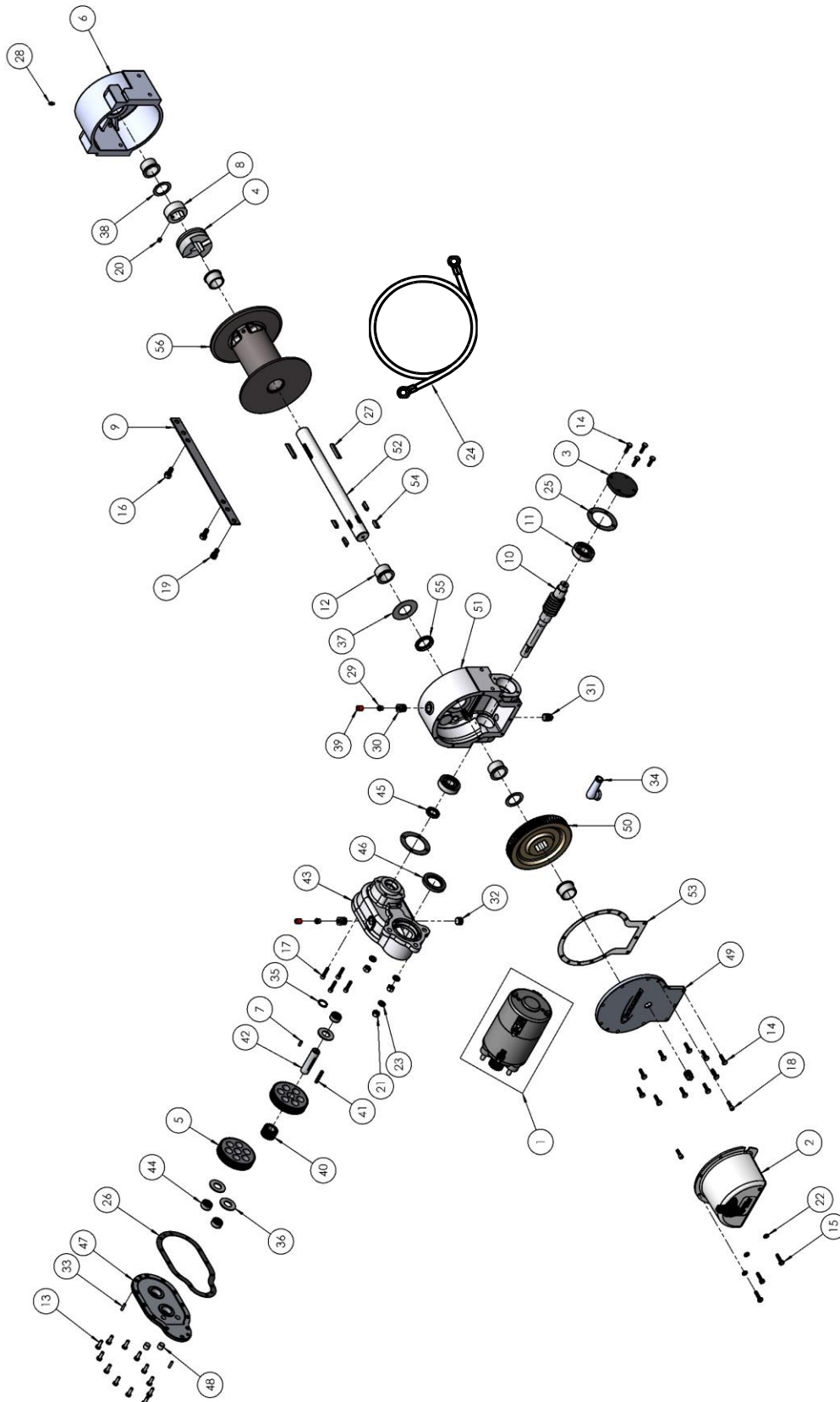
**278028 - 24V**



Item No.	Qty. Req'd	Part No.	Description
1	1	280009	Cable-Bolt Ass'y.
2	3	289077	Wire Ass'y
3	1	289091	Wire Ass'y
4	2	364001	Strap
5	2	364002	Strap
6	1	408035	Solenoid Bracket
7	2	416216	Screw
8	2	416227	Screw
9	4	41Em4	Nut
10	2	410022	Nut 1/4 - 18NC Hx. Reg
11	2	418140	Flat Washer #10
12	1	418163	Lockwasher 5/16 Med Sect
13	1	418164	Lockwasher 5/16 Internal
14	1	418165	Lockwasher 5/16 External
15	1	43)013	Female Connector
16	2	440071	Terminal - Tab
17	2	440110	Solenoid- 12V
18	1	472071	Cover
19	1	482029	Cover-Connector
20	4	530106	Cover-Terminal

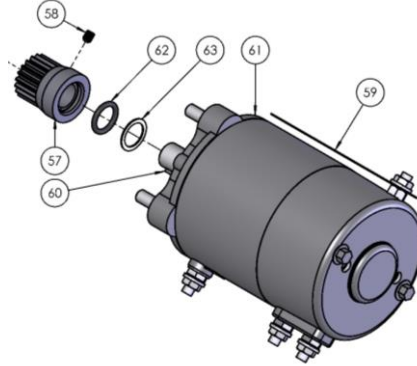
## Kits and Maintenance Parts

**112192**



## Kits and Maintenance Parts

### 112192



				KITS					
Item#	QTY.	PART NUMBER	DESCRIPTION	222061	246060	248055	250510	250528	283094
1	1	262037	ELECTRIC MOTOR ASSEMBLY						
2	1	296902	SOLENOID ASSY						
	1	296998	COVER ASSY-SOLENOID						
3	1	316083	CAP-BRG, DIA 3.0 OD						
4	1	324160	JAW CLUTCH	X					
5	2	334003	GEAR-INTER&DRIVE					X	
6	1	338409	CLUTCH HSG						
7	1	342023	KEY-SQ ENDS,3/16X3/16X1/2 LG					X	
8	1	362238	SPACER-BLKD CLUTCH	X					
9	1	364017	STRAP-SHIP,1/8 X 1 X 14 LG						
10	1	368001	WORM 1 5/8DIA X 9 3/8LG						
11	2	402002	BEARING-BALL				X		
12	5	412045	BUSHING			X			
13	12	414038	CAPSCREW-1/4-20NCX3/4,HXHD,GR-5						
14	14	414045	CAPSCREW-1/4-20NCX7/8 LG. HEX HD, GR 5						
15	3	414059	CAPSCREW-1/4-20NCX1LG GR-5 HXHD						
16	2	414279	CAPSCREW-3/8-16NCX3/4 LG,HXHD,GR-5						
17	4	414845	CAPSCREW-1/4-20NC X1,HXSOCHD						
18	2	414856	CAPSCREW-1/4-20NCX3/4LG,HXSOCHD						
19	1	414912	CAPSCREW-3/8-16NC X5/8LG,HXSOCHD						
20	1	416041	SETSCREW-5/16-18NCX3/8,SOCHD	X					

## Kits and Maintenance Parts

**112192**

				KITS					
Item#	QTY.	PART NUMBER	DESCRIPTION	222061	246060	248055	250510	250528	283094
21	3	418040	NUT-3/8-24NF HEX						
22	3	418154	WASHER-1/4 FLAT , DIA.50 OD X 0.063 THK						
23	3	418177	LOCKWASHER-3/8 MED SECT						
24	1	440315	ASSEMBLY-WIRE JUMPER GROUND						
25	2	442184	GASKET-BRG CAP		X		X		
26	1	442185	GASKET-SPUR GR BX		X				
27	2	450006	KEY-BARTH,5/16X1 7/8LG						
28	1	456001	FITTING-LUBE						
29	2	456008	RELIEF FIT-1/8-27PFT						
30	2	468002	RED-3/8-1/8NPTF GEN						
31	2	468011	PIPE PLUG-3/8-18NPTF,7/16 SQ HD						
32	1	468018	PIPE PLUG-3/8-18NPTF HXSOCHD						
33	2	470001	DOWEL PIN-3/16 DIA X 3/4 LG						
34	1	482013	GROMMET						
35	1	490003	SNAP RING					X	
36	3	518002	THRUST WASHER ID-.766					X	
37	1	518014	THRUST WASHER ID-1.270			X			
38	2	518015	THRUST WASHER ID-1.252			X			
39	2	530069	COVER-VENT PLUG						
40	1	334001	GEAR-IDLER					X	
41	1	342033	KEY-SQ ENDS,3/16X3/16X1-7/16LG					X	
42	1	356901	SHAFT-SPUR GH,3/4X2 13/16LG					X	
43	1	338203	HSG-SPUR GR						
44	3	402001	BEARING NEEDLE						
45	1	486009	OIL SEAL		X		X		
46	1	486023	SHAFT, SEAL		X			X	X
47	1	328106	COVER-SPUR GH						
48	2	468017	PIPE PLUG-1/4-18NPTF,HEX SOC HD						
49	1	328134	COVER-GEAR HSG						
50	1	334161	GEAR-RH, WORM GEAR				X		

## Kits and Maintenance Parts

### 112192

				KITS					
Item#	QTY.	PART NUMBER	DESCRIPTION	222061	246060	248055	250510	250528	283094
51	1	338273	HOUSING-GEAR						
52	1	357481	SHAFT-DRUM				X		
53	1	442205	GASKET-GH CVR		X		X		
54	4	450016	KEY-BARTH,5/16X 15/16L				X		
55	1	486017	OIL SEAL		X		X		
56	1	332200	DRUM						
57	1	334129	PINION-MAKE FROM GEAR BLANK					X	X
58	1	416029	SETSCREW-1/4-20X5/16,HXSOC						X
59	1	434747	TAG, BATTERY GROUND CABLE						
60	1	450001	KEY-WOODRUFF					X	X
61	1	458204	MOTOR 12V						
62	1	462015	O-RING-1/8 X 3/4 X 1 OD		X			X	
63	1	518018	WASHER						



## TEST PROCEDURE FOR SOLENOIDS

Steps to follow when testing current flow through DC solenoids.

It should be noted that when testing a 12 volt or 24 volt solenoid, the DC motor and battery must be of the same voltage.

To test the solenoids: (See Figure 1).

1. Securely clamp a motor to a bench or work surface.
  2. Attach a #6 gauge jumper wire from "A" terminal on the motor to one of the field terminals on the motor, (F-2).
  3. Attach the other motor field terminal (F-1) to one of the side terminals of the solenoid.
  4. Ground the solenoid to the motor with a wire as shown.
  5. Attach positive (+) battery wire to the opposite side terminal of solenoid.
  6. Ground the negative (-) battery wire to the motor housing.
  7. Touch "hot" wire, from the positive battery terminal, to small terminal of the solenoid.
  8. The motor should now be running if the solenoid is good. If not, make sure the motor will run directly from the battery. (See motor test procedure page 20).
- (See Figure 2). When hooked up as shown in Figure 2, motor should start running.

When the "hot" wire is touched to the small terminal the motor will stop operating.

The top terminals are normally closed; ie: connected, and the side terminals open, or not connected. When the solenoid operates, the top terminals are disconnected and the side terminals are connected.

Take care not to bring hot wires into contact with ground in order to prevent electrical arcing.

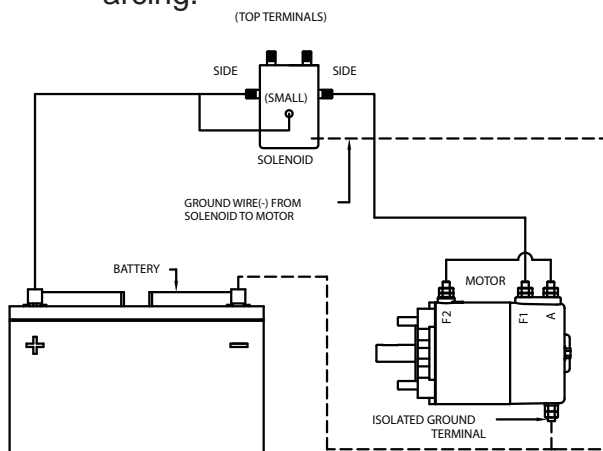


FIGURE-1

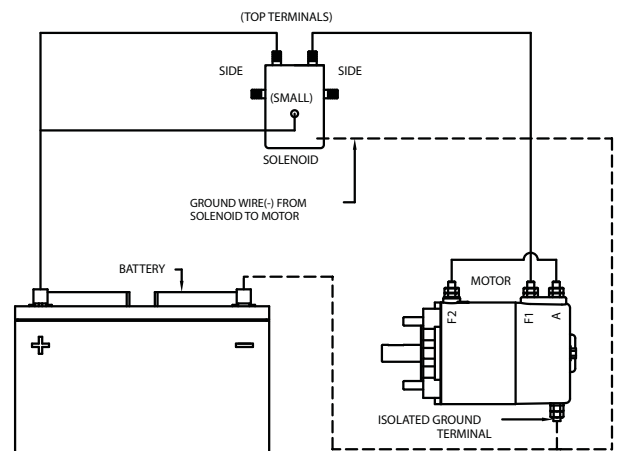
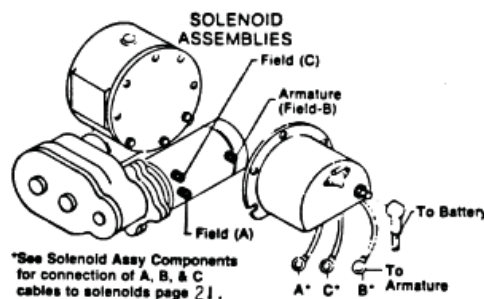


FIGURE-2



## TEST PROCEDURE FOR MOTOR

### TEST PROCEDURE FOR MOTOR

The Ramsey Winch motor is a (4 pole-4 coil) series wound 12 volt or 24 volt DC motor. The 4 pole, 4 coil feature provides high torque at low speeds.

To test the motor to determine if it is functioning properly, first securely fasten the motor to a bench or work surface so it will not jump or move around during test procedure (the starting torque of motor is high).

1. Connect a jumper wire (at least a number 6 wire) from F-1 to "A" motor terminals (See Figure 1)
2. Attach a wire (at least a number 6 wire) from positive (+) battery terminal to F-2 motor terminal. Ground negative (-) battery terminal to motor isolated ground terminal (See Figure 1). Motor should now run.

To reverse the direction of rotation:

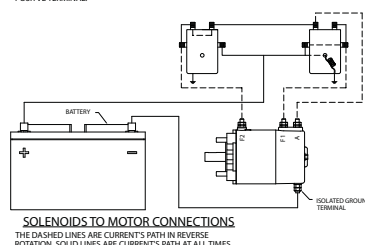
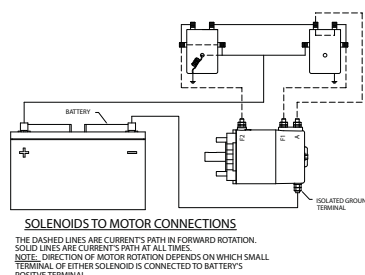
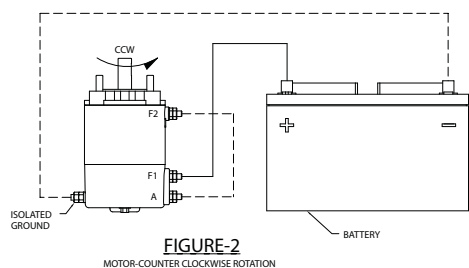
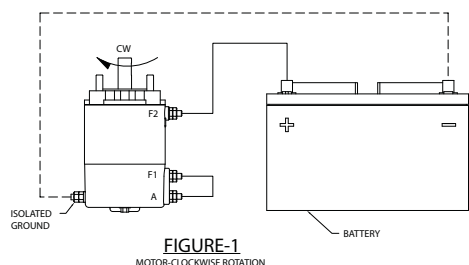
1. Attach jumper wire from F-2 to "A" motor terminals (See Figure 2).
2. Attach wire from positive (+) battery terminal to F-1 motor terminal. Ground negative (-) battery terminal to motor housing (See Figure 2).

**NOTE:** Always attach battery wire solidly to motor terminals. Make and break the connection of the negative (-) battery terminal at the motor housing. This avoids burning the motor terminals.

**CAUTION:** Do not run the motor for a long period of time in fashion mentioned above, because the motor could become damaged.

The motor running idle on the bench will draw 55 amperes and must run free and easy. If the ampere draw is more than 60 amps and the motor runs rough or has a strange sound, it should be replaced. With the motor attached in place on a winch (less cable on drum) the ampere draw should be approximately 65 to 70 amps. If after following the procedure outlined, the test on the winch significantly exceeds 70 amperes refer to your Owners Manual for trouble shooting suggestions on the mechanical portion of the winch.

See Figure 3 for the solenoids connection to the motor and the battery.



**FIGURE-3**

## 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



### RAMSEY WINCH COMPANY

Post Office Box 581510 Tulsa, Oklahoma 74158-1510

Telephone: (918) 438-2760      FAX: (918) 438-6688

912408-0325-AA