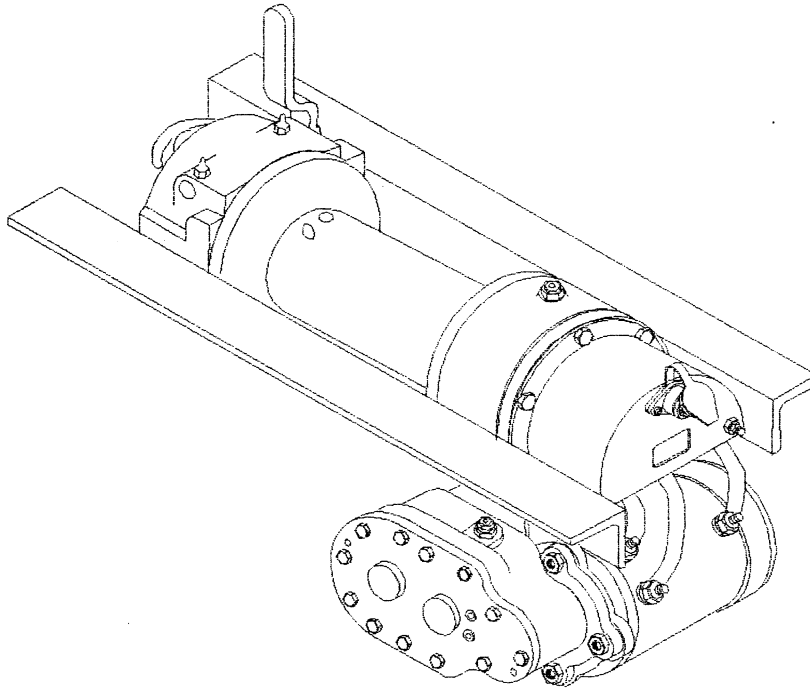




OPERATING, SERVICE AND MAINTENANCE MANUAL



MODEL DC-300 SERIES LEVER EQUIPPED INDUSTRIAL LOW-MOUNT WINCHES

INCLUDES: DC-300/DC-346, DC-24-300/DC-24-346.
DCY-300/DCY-346, DCY-24-300/DCY-24-346
AND MODELS EQUIPPED WITH OPTIONAL
ADJUSTABLE, AUTOMATIC OIL COOLED SAFETY
BRAKE: DCG-300, DCYG-300 SERIES WINCHES.



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

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RAMSEY ELECTRICAL WINCH MODEL DC-300 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^Δ

Rated Line Pull 1st Layer (lb.).....	9,000
(kgs.).....	4,070
Total Gear Reduction: DC-300.....	470
DC-346.....	360
Weight: DC-300/DC-346 (long drum).....	116 lb. (52.6 Kgs.)
DCY-300/DCY-346 (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 lb. per layer kgs.	9,000 4,070	7,500 3,390	6,400 2,890	5,600 2,530
*Long Drum Cable Ft. capacity per layer M.	25 7	60 18	95 28	140 42
*Short "Y" Drum cable capacity Ft. per layer M.	15 4	30 9	55 16	75 22

LINE SPEED	VOLTS	NO LOAD		2000# LOAD		4000# LOAD		9000# LOAD	
		FPM (MPM)	AMPS	FPM (MPM)	AMPS	FPM (MPM)	AMPS	FPM (MPM)	AMPS
DC-300/DCY-300	12	14	65	7	110	5	180	2.5	310
DC-24-300/DCY-24-300	24	(4.3)	30	(2.1)	50	(1.5)	90	(.7)	155
DC-346/DCY-346	12	16.5	70	8.5	140	5.5	200	2.5	360
DC-24-346/DCY-24-346	24	(5)	35	(2.5)	70	(1.5)	100	(.7)	180

*These specifications are based on recommended cable of 3/8" (9.5mm) EIPS cable.

Δ 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.

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

1. **TO DISENGAGE CLUTCH**, run the winch in the reverse (reel out) direction until load is off the cable. Grasp lever and push toward drum to the "OUT" position. The lever is latched "OUT" by ball and detent in jaw clutch and drum shaft. The cable may now be pulled from cable drum by hand.
2. **TO ENGAGE CLUTCH**, pull handle away from drum to the "IN" position, while rotating drum, until clutch jaws engage with drum jaws. **CLUTCH MUST BE TOTALLY ENGAGED DURING WINCHING OPERATION**. The lever is latched "IN" by ball and detent in jaw clutch and drum shaft. The plastic plug in top of clutch housing may be removed, for inspection of clutch, to assure total engagement.



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 E.P. 140 gear oil.
4. Inspect frame and surrounding structure for cracks or deformation.
5. Gear wear can be estimated by rocking the drum back and forth and if necessary drain oil and remove cover for closer inspection.

WINCH MOUNTING

It is most important that this winch be mounted securely so that the three major sections (the clutch housing end, the cable drum and the gear housing end) are properly aligned.

All standard model DC-300 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 3/8" dia. winch mounting bolt nearest to the drum flange on the motor end of the winch. 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.

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.

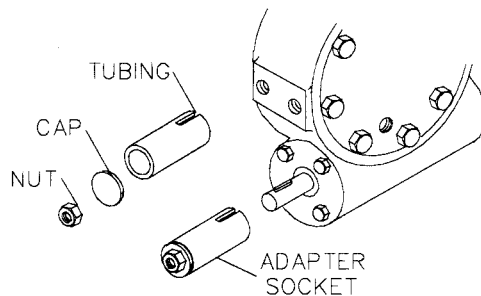
ADJUSTING THE OIL COOLED WORM BRAKE

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.

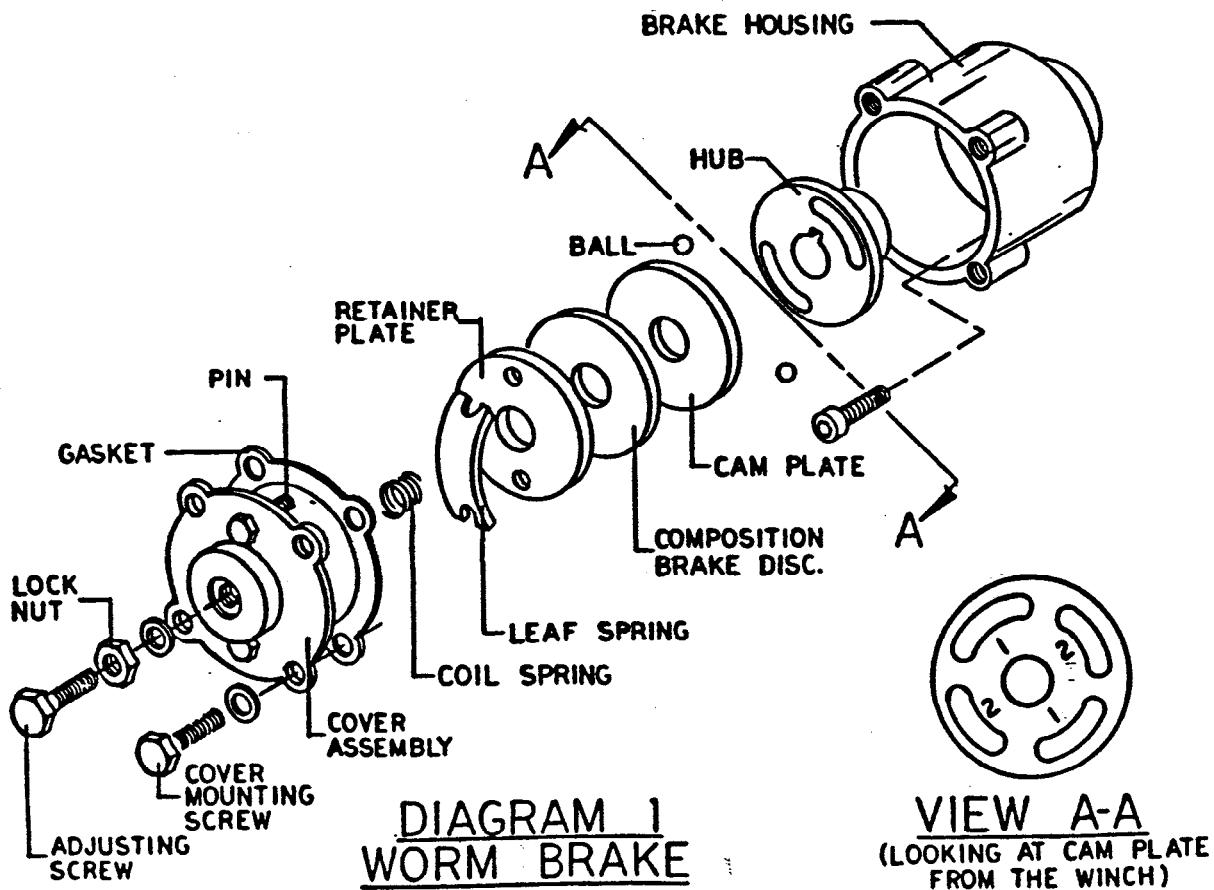
A torque wrench can be equipped with a special adapter to fit the input shaft (worm) of the winch. The adapter can be made by welding a nut to the end of a piece of tubing as shown in the following figure.



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 300/346 should be 8 to 13 ft. lbs. (D-300, 13 to 18 ft.). If the torque wrench does not show the proper value as it turns, then the worm brake adjusting bolt should be turned clockwise 1/4 turn. Each time the adjusting bolt is turned, check the torque reading. Continue this procedure until the proper torque reading is achieved. Then tighten the lock nut.

SERVICING OF THE OIL COOLED SAFETY BRAKE

1. Remove the drain plug and drain the worm gear oil from the worm housing.
2. Back off the lock nut, then the adjusting screw, both two turns or more by turning them counter-clockwise.
3. Remove the cover mounting screws.
4. Remove the cover along with coil spring and leaf spring.
5. Remove the retainer plate, composition brake disc, cam plate and balls.
Note slots balls are in.
6. Inspect parts as follows:
 - a) Composition brake discs are $\frac{1}{8}$ " 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 $\frac{1}{8}$ ".



RE-ASSEMBLING AND CHECKING THE BRAKE

1. Press brake hub into place over worm shaft and key.
2. Assemble ball into appropriate slots of cam. (Refer to diagram 1, page 5). Use stiff grease to hold balls into place and slide cam over end of worm. Be sure that balls are secure, between cam slots and hub slots. Refer to Page 7 to determine proper ball slot setting.
3. Install brake disc.
4. Install retainer plate, smooth side toward brake disc.
5. Install the gasket on the cover with a small amount of grease or sealer.
6. The coil spring goes over the adjusting screw on the inside of the cover.
7. Install the notches of the leaf spring on the pins protruding through the cover. The hollow side of the leaf spring goes toward the brake.
8. Install brake housing cover, making sure the protruding pins go through the leaf spring and into the holes in the retainer plate.
9. Bolt cover into place with the mounting screws. Install drain plug and add 1 pint of SAE 140 EP 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 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 (see VIEW A-A, page 5). It is indicated on the name plate whether the balls were installed in the #1 or the #2 slots at the factory.

Three factors determine which slots the balls should be in:

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

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

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

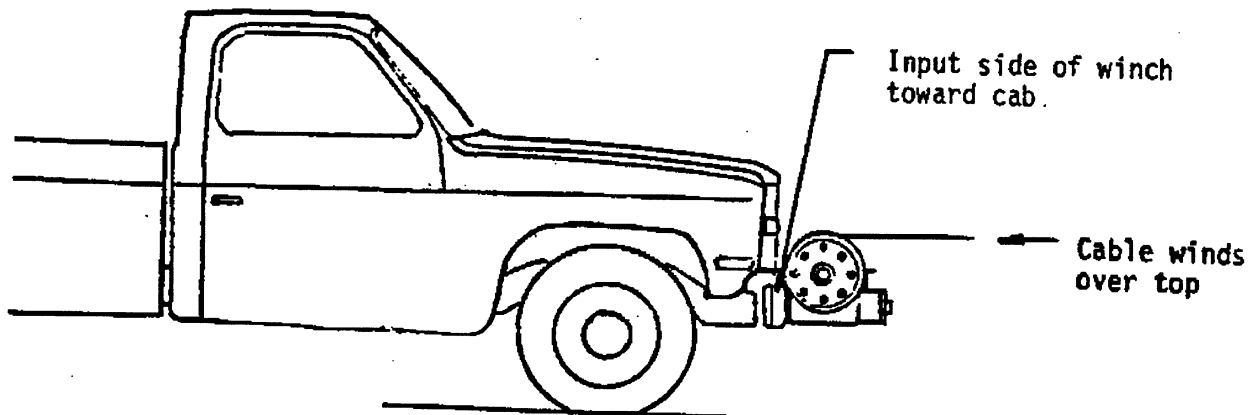


DIAGRAM 2

Three factors determine brake assembly arrangement.

TROUBLE SHOOTING GUIDE

CONDITION	POSSIBLE CAUSE	CORRECTION
CLUTCH INOPERATIVE OR BINDS UP.	<ol style="list-style-type: none"> 1. Dry or rusted shaft. 2. Bent yoke or linkage. 3. Clutch jaws are in contact. 	<ol style="list-style-type: none"> 1. Clean and lubricate. 2. Replace yoke or shaft assembly. 3. See TECHNIQUES OF OPERATION.
OIL LEAKS FROM HOUSING.	<ol style="list-style-type: none"> 1. Seal damaged or worn. 2. Too much oil. 3. Damaged gasket. 	<ol style="list-style-type: none"> 1. Replace seal. 2. Drain excess oil. Refer to TECHNIQUES OF OPERATION. 3. Replace gasket.
LOAD DRIFTS DOWN.	<ol style="list-style-type: none"> 1. Safety brake has become worn. 2. Safety brake out of adjustment. 	<ol style="list-style-type: none"> 1. Replace brake disc. (See Page 5, Diagram 1). 2. Turn adjusting bolt clockwise 1/4 turn or until load does not drift.
CABLE DRUM WILL NOT FREE SPOOL.	<ol style="list-style-type: none"> 1. Winch not mounted squarely, causing end bearings to bind drum. 	<ol style="list-style-type: none"> 1. Check mounting. Refer to WINCH MOUNTING Page 4.
CABLE BIRDNESTS WHEN CLUTCH IS DISENGAGED.	<ol style="list-style-type: none"> 1. Drag brake disc worn. 	<ol style="list-style-type: none"> 1. Replace discs.
MOTOR RUNS IN ONE DIRECTION ONLY.	<ol style="list-style-type: none"> 1. Inoperative solenoid or stuck solenoid. 2. Inoperative switch. 3. Broken wire or bad connection. 	<ol style="list-style-type: none"> 1. Jar solenoid to free contacts. Check by applying 12 volts to coil terminal (it should make an audible click when energized). 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. 3. Check for loose connection on switch and switch connector.
MOTOR RUNS, BUT DRUM DOES NOT TURN.	<ol style="list-style-type: none"> 1. Clutch not engaged. 2. Sheared drum shaft key. 3. Stripped bronze gear. 4. Parted shaft. 	<ol style="list-style-type: none"> 1-4. If clutch engaged but symptom still exists, it will be necessary to disassemble winch to determine cause and repair.

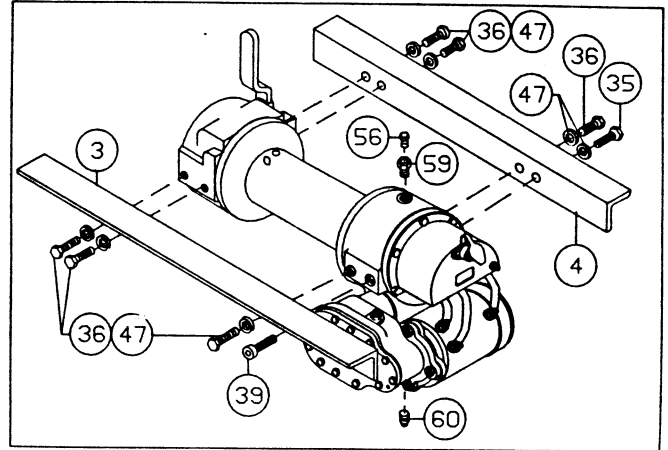
CONDITION	POSSIBLE CAUSE	CORRECTION
<p>MOTOR RUNS EXTREMELY HOT.</p> <p>MOTOR RUNS, BUT WITH INSUFFICIENT POWER, OR WITH LOW LINE SPEED.</p>	<ol style="list-style-type: none"> 1. Long period of operation. 2. Insufficient battery. 3. Electrical cables from battery to winch too small 4. Bad electrical connections. 5. Insufficient charging system. 	<ol style="list-style-type: none"> 1. Cooling-off periods are essential to prevent over-heating. 2. Check battery terminal voltage under load. If 10 volts or less, replace or parallel another battery to it at motor terminal. 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. 4. Check all connections for looseness or corrosion; Tighten, clean and grease. 5. Replace with larger capacity charging system.
<p>MOTOR WILL NOT OPERATE.</p>	<ol style="list-style-type: none"> 1. Inoperative solenoid or stuck solenoid. 2. Inoperative switch. 3. Inoperative motor. 4. Loose connections. 	<ol style="list-style-type: none"> 1. Jar solenoid to free contacts. Check by applying 12 volts to coil terminal (it should make an audible click when energized). 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. 3. If solenoids operate, check for voltage at armature post; replace motor. 4. Tighten connections on bottom side of hood and on motor.

INSTRUCTIONS FOR OVERHAUL OF RAMSEY

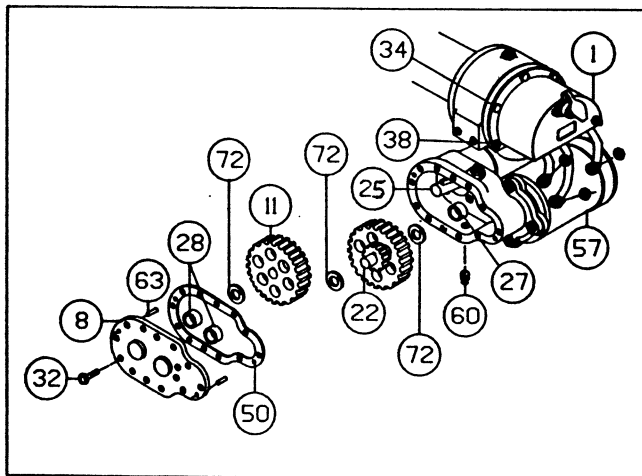
MODEL DC-300 SERIES LEVER

DIS-ASSEMBLY

1. Drain oil from gear housing by removing (item #60) plug from bottom of gear housing. Remove relief fittings and reducer (items #56 & #59) from top of gear housing. Remove mounting angles (items #3 & #4) from winch by removing hardware shown.

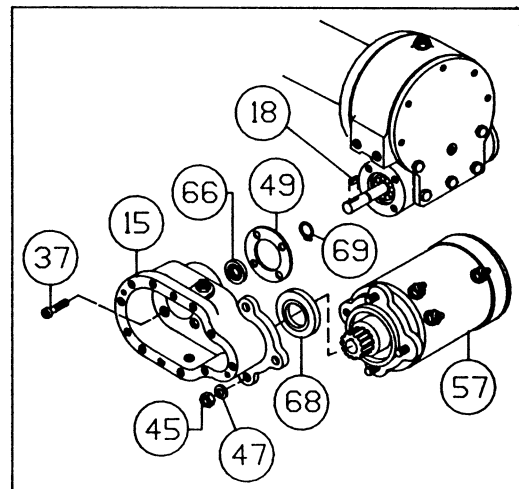


2. Drain oil from gear box by removing (item #60) plug. Remove cover and gasket (items #8 & #50) from spur gear housing by unscrewing twelve capscrews (item #32). Slide gear (item #11) from end of worm shaft (item #25). Remove spur gear shaft (item #22), with gears attached. Check bearings (item #28) and thrust washers (item #72) for signs of wear, replace if necessary. Remove old bearings and press new bearings into place.



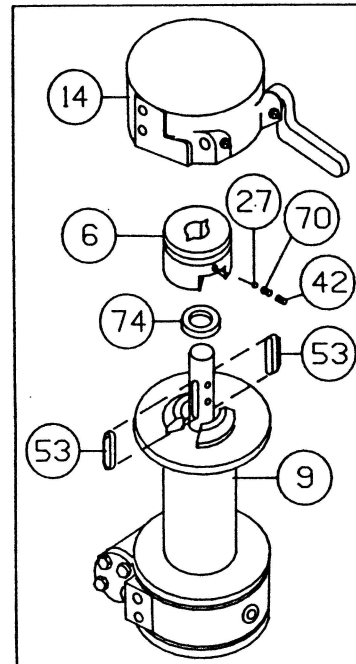
Remove solenoid assembly (item #1) by unscrewing capscrews (items #34 & #38). Disconnect solenoid cables from motor (item #57). Make note of which terminals cable are attached to.

3. Remove key (item #18) and snap ring (item #69) from worm shaft. Remove motor (item #57) from spur gear housing (item #15) by removing (3) nuts and lockwashers (items #45 & #47). Unscrew (4) capscrews (item #37) to remove spur gear box (item #15) and gasket (item #49) from gear housing. Replace lip seals (items #66 & #68) by pressing old seals from spur gear housing and pressing new seals into place.



- Slide clutch housing (item #14) from end of drum shaft. Remove setscrew, spring and poppet ball (items #42, #70 & #27) from jaw clutch (item #6). Slide jaw clutch from end of drum shaft.

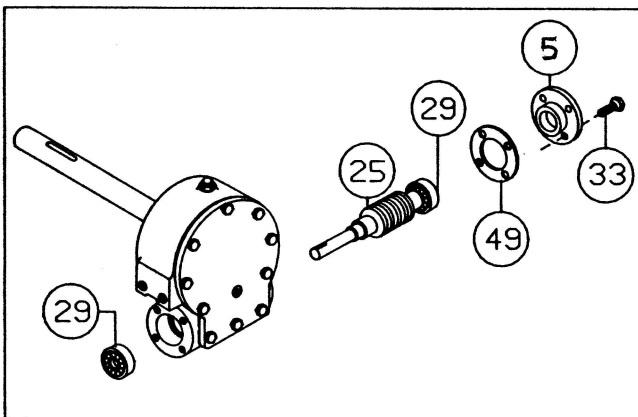
Remove (2) keys (item #53) from keyways. A screwdriver can be used, at notch, to aid in removal of keys. Once keys have been removed, drum (item #9) and thrust washer (item #74) can be removed from drum shaft. Parts under drum, thrust washer (item #73), spring and disc (items #71 & #48) should also be removed.



- Remove bearing cap (item #5) from gear housing by unscrewing four capscrews (item #33). Remove worm (item #25) and bearing (item #29) 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.

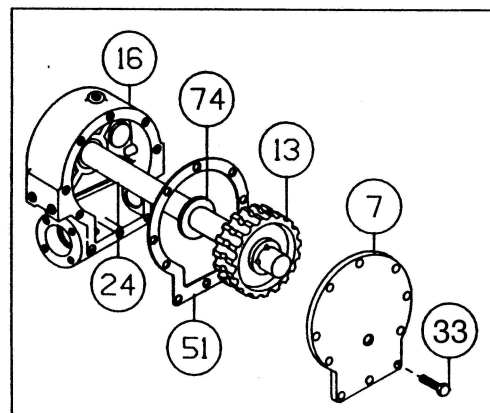
Check for signs of wear to worm (item #25) and bearings (item #29). Replace if necessary.

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.



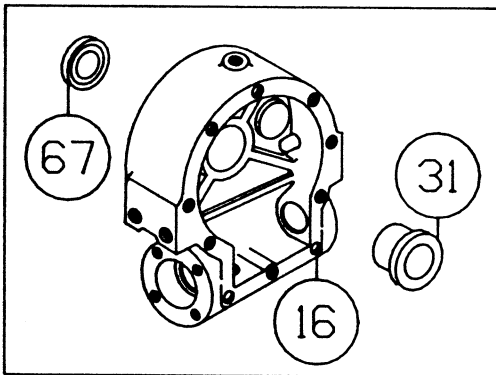
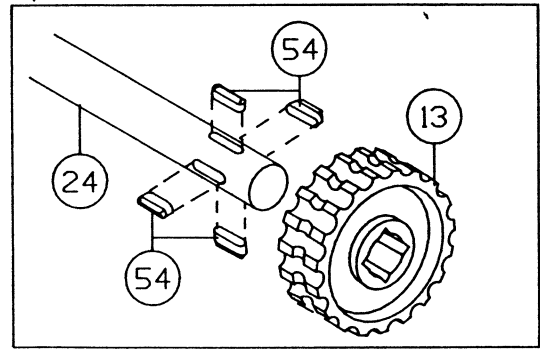
- Remove gear housing cover (item #7) from gear housing (item #16) by unscrewing five remaining capscrews (items #33). Place capscrew into two tapped holes of cover and tighten. This will pull the cover loose from gear housing.

Remove cover gasket (item #51) and pull shaft (item #24), with gear attached, and spacer (item #74) from gear housing.



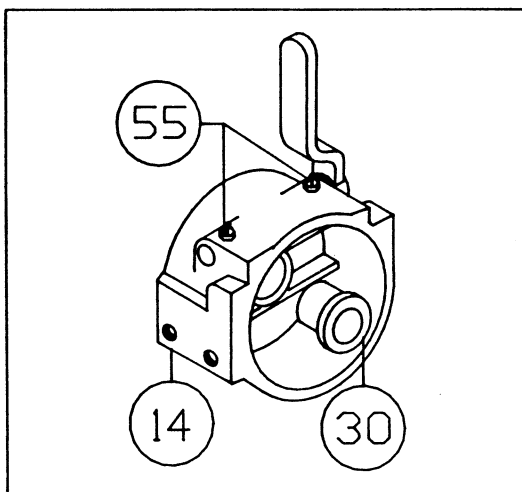
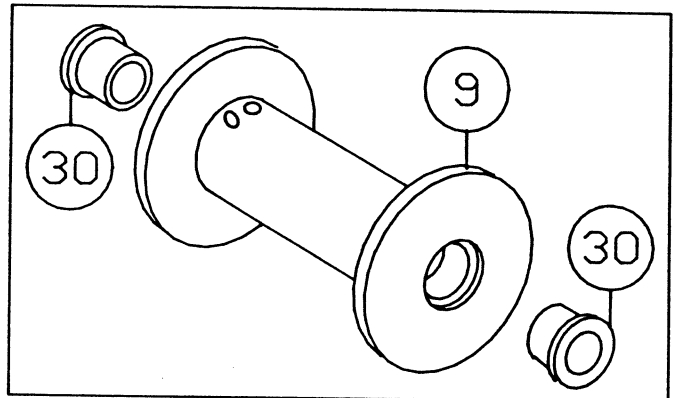
7. Check for signs of wear on gear teeth. If replacement of gear is necessary, replace as follows:

- a) Press gear (item #13) from shaft (item #24).
- 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 #54) into keyways. Press gear (item #13) over shaft and keys. Gear must be centered over keys.

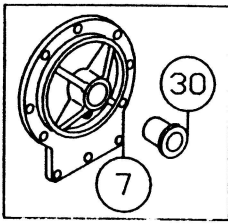


8. Remove seal (item #67) from back of gear housing (item #16). Check bushing (item #31) for signs of wear. Press bushing (item #31) from gear housing and replace if necessary. Press new bushing and seal back into place.

9. Check drum bushings (item #30) for signs of wear. Replace if necessary by pressing old bushings from drum and pressing new ones into place.

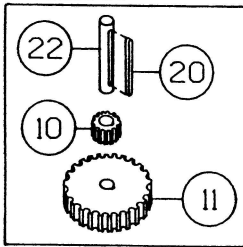
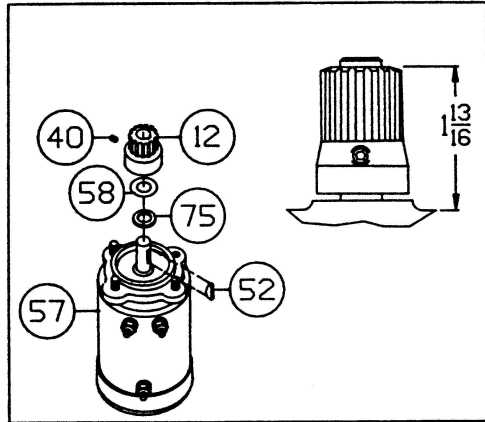


10. Check clutch housing bushing (item #30) for signs of wear. If necessary, remove old bushings and press new bushings into place. Apply grease to lube fittings (item #55) to lubricate clutch shifter shaft.



12. Check pinion gear on motor for signs of wear. If necessary replace gear (item #12), o-ring (item #58) and fiber washer (item #75) as follows:

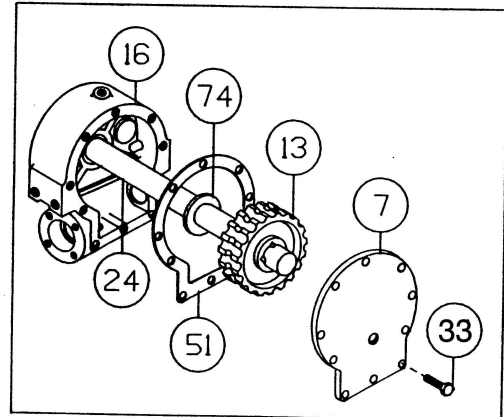
- a) Place fiber washer (item 75) and well oiled o-ring (item #58) over end of motor shaft and down to bottom of shaft.
- b) Insert key (item #52) into motor shaft keyway. Slide pinion gear over shaft and key. Use a hammer and 7/8" I.D. tube to drive pinion down hard enough to seat o-ring (#58) into groove in bottom of pinion gear.
- c) Slide pinion gear up toward end of shaft so that there is a 1-13/16" distance from top of gear to cast surface below gear. Tighten setscrew (item #40) securely enough to prevent pinion gear from moving on motor shaft.



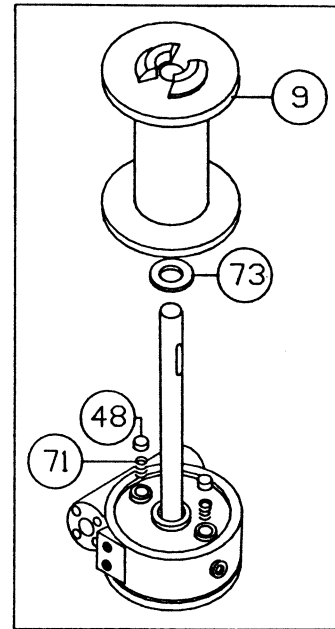
13. Check gears of spur gear shaft assembly for signs of wear, replace if necessary. Press old gears from shaft (item #22). Tap key (item #20) into keyway of shaft (item #22). Press shaft through gears so that gears are centered on shaft and key.

RE-ASSEMBLY

14. Apply grease to end of shaft, opposite gear. Apply grease to bushing in gear housing (item #16). Place greased end of shaft through spacer (item #74) and bushing in gear housing (item #16). Place gasket (item #51) onto gear housing cover (item #7). Apply grease to gear end of shaft and bushing in cover. Place cover onto shaft and secure to housing with five (item #33) 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 #73) over drum shaft and slide downwards until washer rests on gear housing. Set springs (item #71) and drag brake disc (item #48) into pockets of gear housing. Grease bushings in drum (item #9). Slide drum assembly onto drum shaft with drum jaws upward.



16. Slide thrust washer (item #74) over end of drum shaft. Press drum downward to compress drag brake springs in gear housing. Insert keys (item #53) 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 #6) over end of shaft and slide jaw clutch over keys.

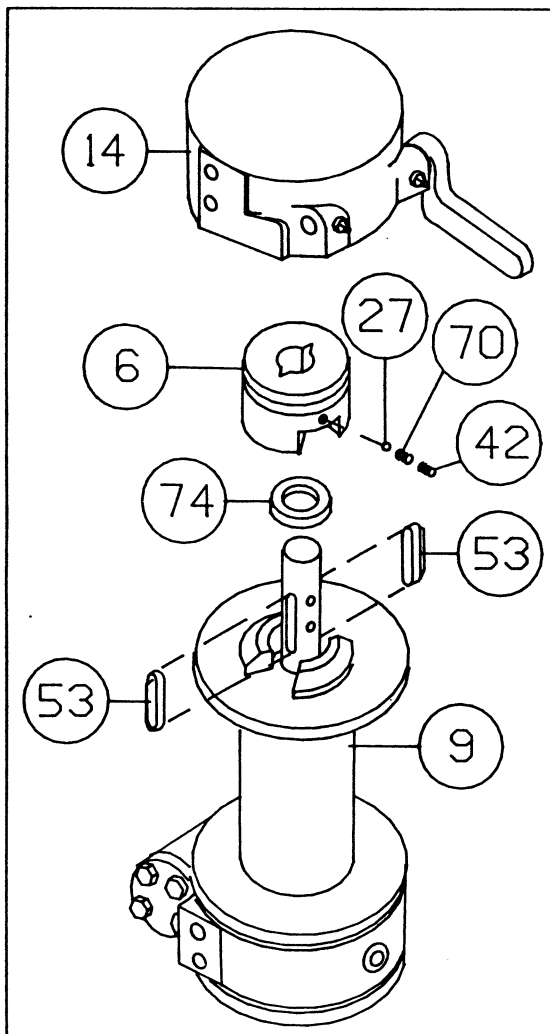
NOTE: Be sure that tapped hole on side of jaw clutch is on same side of shaft as the two ball detents. Insert ball poppet (item #27), spring (item #70) and setscrew (item #42) into tapped hole of jaw clutch.

If jaw clutch and, or drum shaft have been replaced two detents for ball MUST be drilled as follows:

Slide jaw clutch over end of shaft. Align jaws of clutch with jaws of drum. Use a 1/4" dia. drill, using hole in jaw clutch as a guide, to drill a 1/8" deep detent in shaft. Slide jaw clutch upward 3/4" and drill 2nd detent.

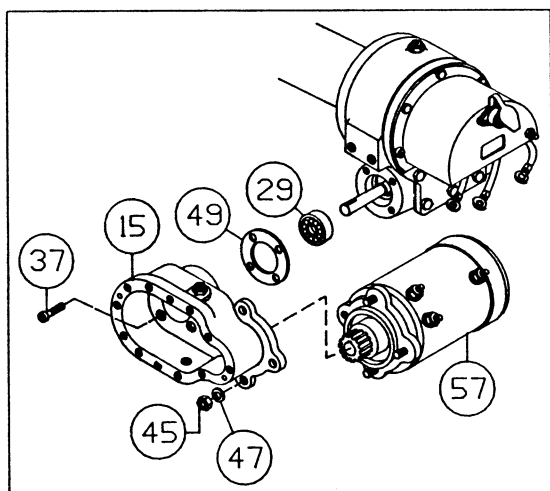
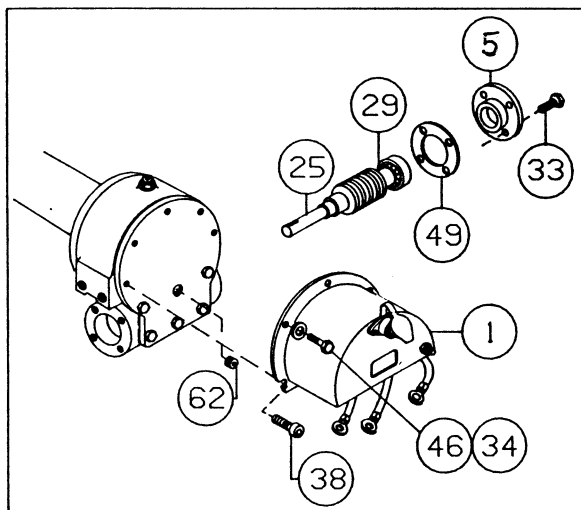
Apply grease to bushing in clutch housing assembly (item #14). Set clutch housing onto end of drum shaft. Pull jaw clutch upward, toward clutch housing, enough to allow yoke in clutch housing, to fit properly in groove around jaw clutch. Slide clutch housing assembly and jaw clutch downward into place.

The setscrew should be tightened enough to allow ball, when placed in ball detents, to sufficiently lock jaw clutch "IN" and "OUT".



17. Press bearing (item #29) onto worm (item #25). 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 #49) onto bearing cap (item #5). Use four capscrews (item #33) to secure cap to gear housing. Torque capscrews to 8 ft. lb. (10.8 Nm.) each.

Attach solenoid assembly (item #1) to gear housing. Use two (item #38) capscrews and three (item #46) capscrews with three flatwashers (item #34). Tighten capscrews to 8 ft. lb. (10.8 Nm.) each. Insert plug (item #62) into tapped hole of cover. Permatex may be applied to threads to help prevent oil leakage. **TIGHTEN** plug securely.



18. Press bearing (item #29) 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 #49) onto spur gear housing (item #15). Secure spur gear housing to worm gear housing using four capscrews (item #37). Torque capscrews to 8 ft. lb. (10.8 Nm.) each.

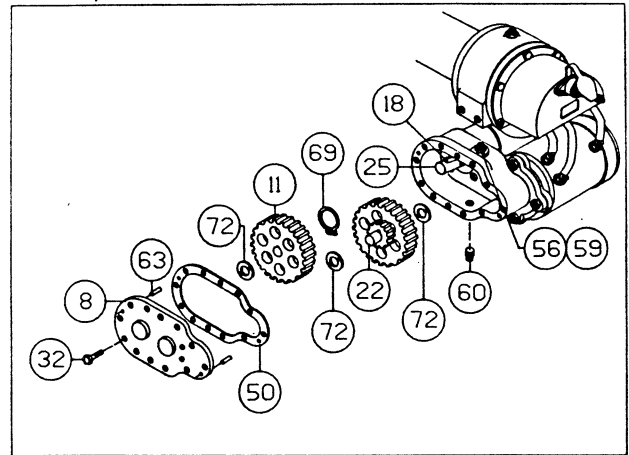
Mount motor (item #57) to spur gear housing (item #15) using three lockwashers and nuts (items #47 & #45). Attach solenoid cables to motor terminals. Tighten all nuts securely.

19. Place snap ring (item #69) over end of worm shaft (item #25) and set into snap ring groove. Insert key (item #18) into keyway of worm shaft. Place thrust washer (item #72) over each end of spur gear shaft (item #22). Set spur gear shaft assembly into bearing of spur gear housing. Slide gear (item #11) and (item #72) thrust washer over end of worm shaft (item #25).

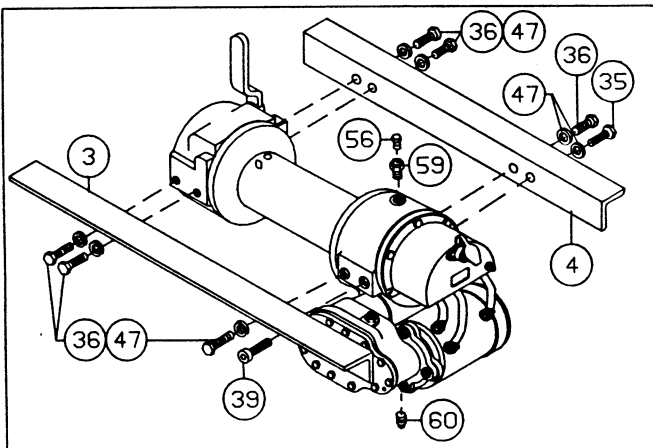
Insert pins (item #63) into cover (item #8). Place gasket (item #50) onto cover. Attach cover and gasket to spur gear housing using twelve capscrews (item #32). Torque capscrews to 8 ft. lb. (10.8 Nm.) each.

Insert plug (item #60) into bottom of spur gear housing. Permatex may be applied to threads to help prevent oil leakage.

Remove reducer and fitting (items #56 & #59) 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.

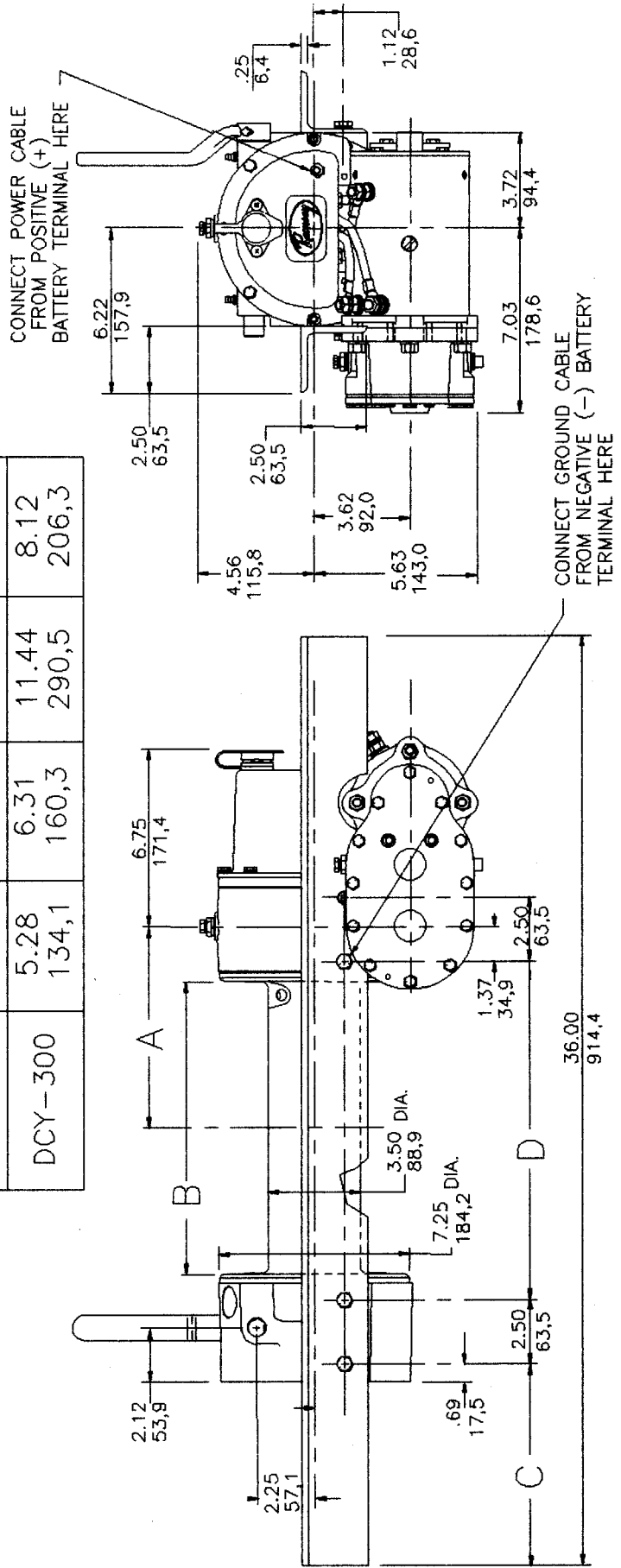


20. Attach mounting angles (items #3 & #4) using six capscrews (item #36) with lockwashers and capscrews (items #39 & #35). Torque capscrews to 34 ft. lb. (46 Nm.) each. Insert plug (item #60) into bottom of gear housing. Permatex may be applied to threads to help prevent leakage.

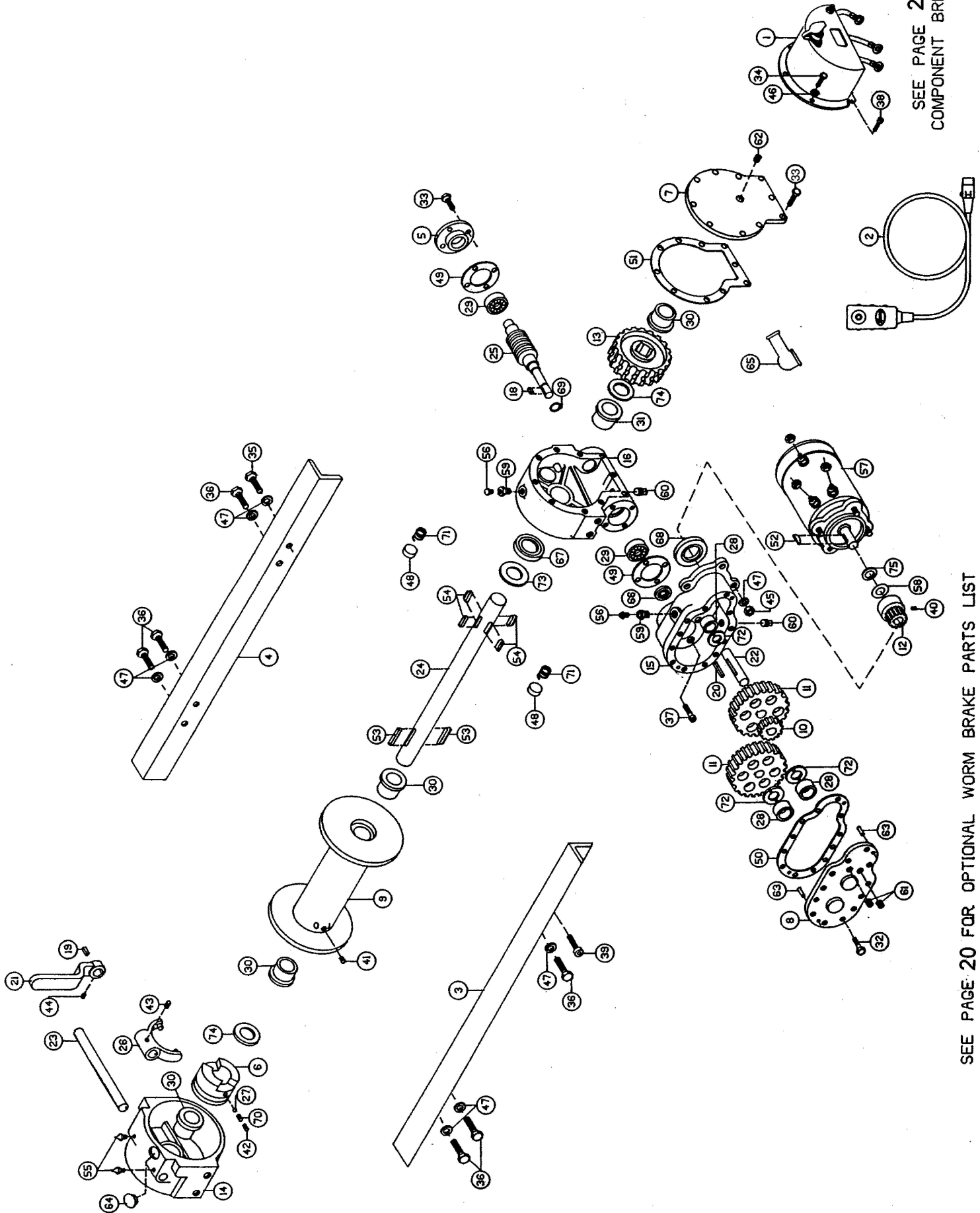


Pour 3/4 pint of EP 140 gear oil into housing through hole in top of housing. Insert relief fitting (item #56) into reducer (item #59). Reducer should then be placed into hole on top of gear housing. Tighten fitting and reducer securely.

WINCH MODEL	A INCHES MM	B INCHES MM	C INCHES MM	D INCHES MM
DC-300	7.78 197,6	11.31 287,3	8.94 227,0	13.12 333,3
DCY-300	5.28 134,1	6.31 160,3	11.44 290,5	8.12 206,3



DIMENSIONS SHOWN ARE INCHES OVER MILLIMETERS



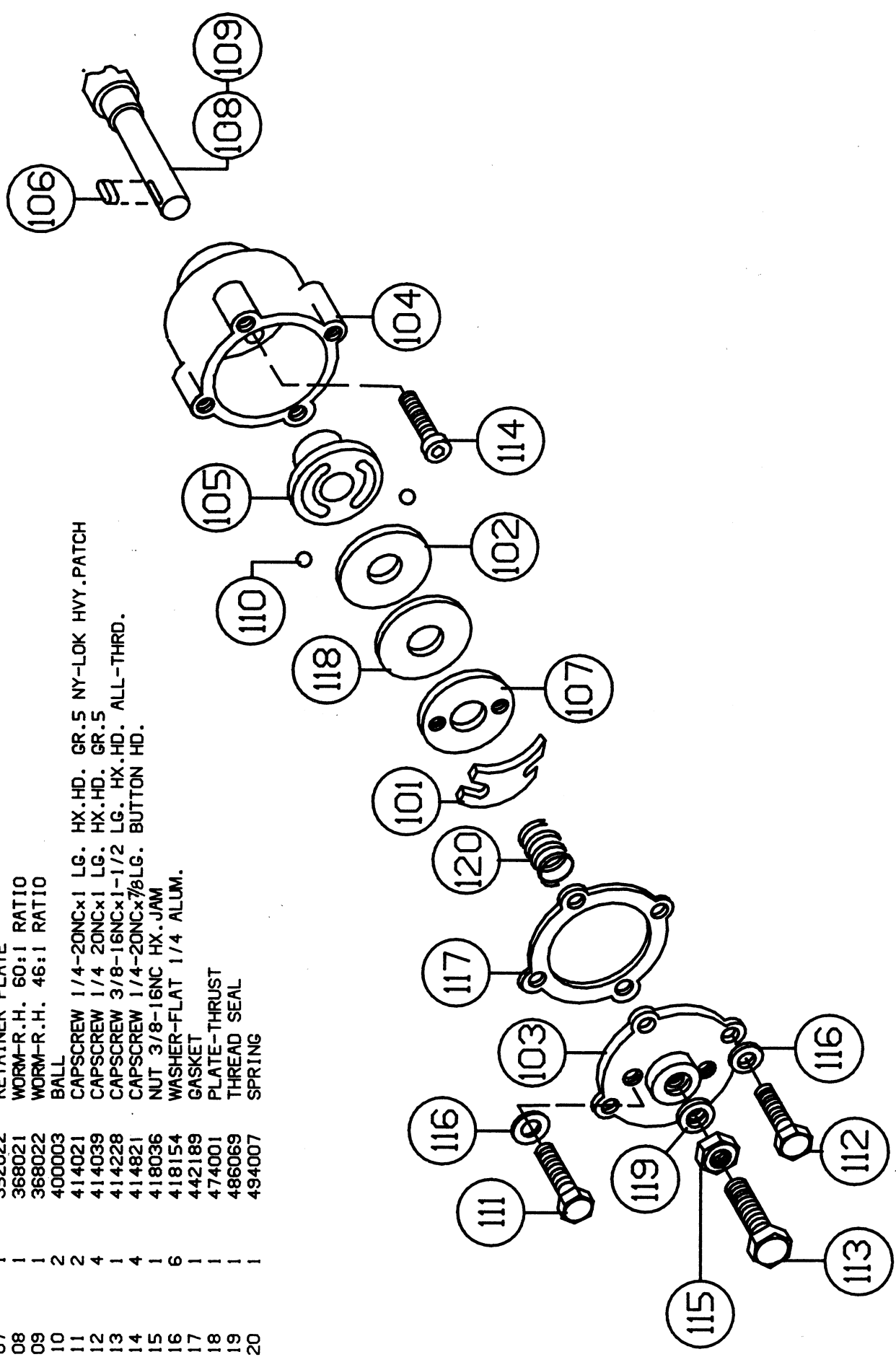
SEE PAGE 21 FOR
COMPONENT BREAKDOWN

SEE PAGE 20 FOR OPTIONAL WORM BRAKE PARTS LIST

**PARTS LIST
MODEL DC-300 SERIES**

ITEM NO.	QTY	PART NO.	DESCRIPTION
1	1	278027	SOLENOID ASSEMBLY-12V
2	1	278028	SOLENOID ASSEMBLY-24V
3	1	282001	SWITCH ASSEMBLY
4	1	302808	ANGLE (STD)
5	1	302811	ANGLE (MOD. Y)
6	1	302809	ANGLE (STD)
7	1	302810	ANGLE (MOD. Y)
8	1	316083	CAP-BEARING
9	1	324161	JAW CLUTCH
10	1	328143	COVER-WORM GEAR HOUSING
11	1	328106	COVER-SPUR GEAR HOUSING
12	1	332007	DRUM-MOD. Y
13	1	332105	DRUM-STD.
14	1	334001	IDLER GEAR
15	2	334003	GEAR
16	1	334129	PINION
17	1	334161	GEAR R.H.-60:1
18	1	334163	GEAR R.H.-46:1
19	1	338003	HOUSING-CLUTCH
20	1	338203	HOUSING-SPUR GEAR
21	1	338273	HOUSING-GEAR
22	1		NOT USED
23	1	342023	KEY-SQUARE
24	1	342024	KEY
25	1	342033	KEY-ROUND
26	1	344008	LEVER
27	1	356901	SHAFT-SPUR
28	1	356902	SHAFT-SHIFTER
29	1	357487	SHAFT-DRUM-STD.
30	1	357488	SHAFT-DRUM-MOD. Y
31	1	368001	WORM-R.H.-60:1
32	1	368019	WORM-R.H.-46:1
33	1	370055	YOKE
34	1	400001	BALL-POPPET
35	3	402001	BEARING-NEEDLE
36	2	402002	BEARING-BALL
37	4	412003	BUSHING
38	1	412045	BUSHING
39	12	414038	CAPSCREW 1/4-20NCX3/4 LG HX HD Z/P GR5
40	9	414045	CAPSCREW 1/4-20NCX7/8 LG HX HD GR5
41	3	414059	CAPSCREW 1/4-20NCX1 LG HX HD Z/P
42	3	414279	CAPSCREW 3/8-16NCX3/4 LG HX HD GR5
43	6	414282	CAPSCREW 3/8-16NCX1-1/4 LG HX HD Z/P GR5
44	4	414845	CAPSCREW 1/4-20NCX1 LG SOC HD NYLOK
38	2	414856	CAPSCREW 1/4-20NCX3/4 LG SOC HD Z/P
39	1	414912	CAPSCREW 3/8-16NCX5/8 LG SOC HD
40	1	416029	SETSCREW 1/4-20NCX5/16 LG SOC HD
41	1	416059	SETSCREW 3/8-16NCX1/2 LG SOC HD
42	1	416040	SETSCREW 5/16-11NCX1/4 LG SOC HD
43	1	416084	SETSCREW 1/4-20NCX1/2 SQ HD
44	1	416109	SETSCREW 5/16-1/2 LG SQ HD
45	3	418040	NUT 3/8-24NF HX REG Z/P
46	3	418154	WASHER 1/4 FLAT ALUM.
47	10	418177	LOCKWASHER-3/8 MED SECT Z/P
48	2	438014	DRAG BRAKE
49	2	442184	GASKET
50	1	442185	GASKET
51	1	442205	GASKET
52	1	450001	KEY
53	2	450006	KEY (BARTH)
54	4	450016	KEY (BARTH)
55	2	456006	LUB FITTING
56	2	456008	RELIEF FITTING
57	1	458071	MOTOR-12V
58	1	458005	MOTOR-24V
59	1	462015	O-RING
60	2	468002	REDUCER
61	2	468011	PIPE PLUG SQ. HD.
62	2	468017	PIPE PLUG SOC. HD.
63	1	468018	PIPE PLUG SOC. HD.
64	2	470001	PIN
65	1	472013	PLUG
66	1	482013	RUBBER BOOT
67	1	486009	OIL SEAL
68	1	486017	OIL SEAL
69	1	486023	OIL SEAL
70	1	490003	SNAP RING
71	2	494001	SPRING - POPPET
72	3	494002	SPRING
73	1	518002	THRUST WASHER
74	1	518014	THRUST WASHER
75	2	518015	THRUST WASHER
76	1	518018	FIBER WASHER
			FOR GASKET KIT & SEAL KIT ORDER #246039

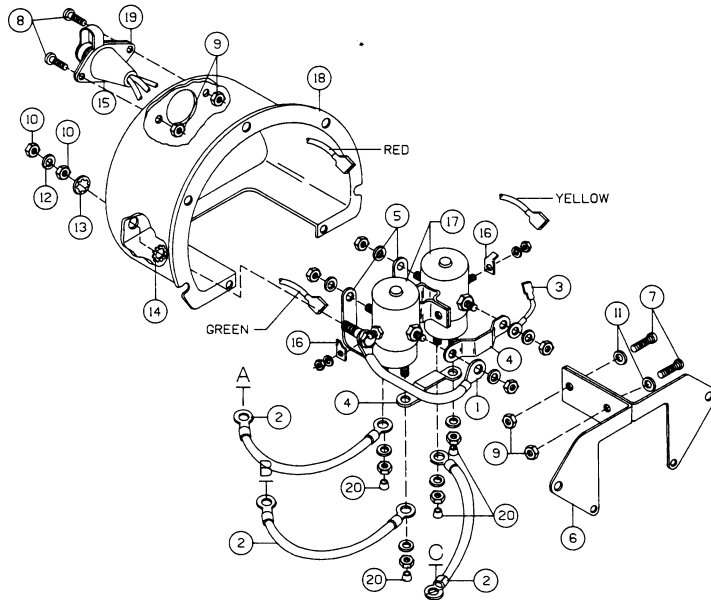
ITEM NO.	QTY.	PARTS NO.	DESCRIPTION
101	1	306034	SPRING-FLAT
102	1	314008	CAM PLATE
103	1	328128	COVER
104	1	338007	HOUSING-BRAKE
105	1	340002	HUB
106	1	342027	KEY
107	1	352022	RETAINER PLATE
108	1	368021	WORM-R.H. 60:1 RATIO
109	1	368022	WORM-R.H. 46:1 RATIO
110	2	400003	BALL
111	2	414021	CAPSCREW 1/4-20NCx1 LG. HX.HD. GR.5 NY-LOK HVY.PATCH
112	4	414039	CAPSCREW 1/4 20NCx1 LG. HX.HD. GR.5
113	1	414228	CAPSCREW 3/8-16NCx1-1/2 LG. HX.HD. ALL-THRD.
114	4	414821	CAPSCREW 1/4-20NCx7/8LG. BUTTON HD.
115	1	418036	NUT 3/8-16NC 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



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	418004	Nut
10	2	418022	Nut $\frac{3}{8}$ -18NC Hx.Reg..
11	2	418140	Flat Washer #10
12	1	418163	Lockwasher $\frac{3}{8}$ Med. Sect.
13	1	418164	Lockwasher $\frac{3}{8}$ Internal
14	1	418165	Lockwasher $\frac{3}{8}$ External
15	1	430013	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

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. Ground the negative (-) battery wire to the motor housing.
6. Touch "hot" wire, from the positive battery terminal, to small terminal of the solenoid.
7. 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 23).
8. To test the upper contacts use the same hookup except use the top terminals. (See Figure 2).

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.

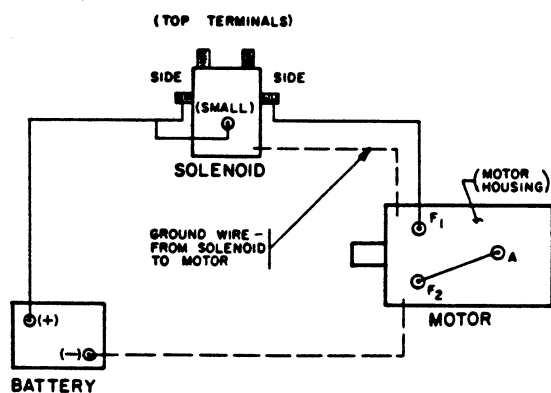


FIGURE-1

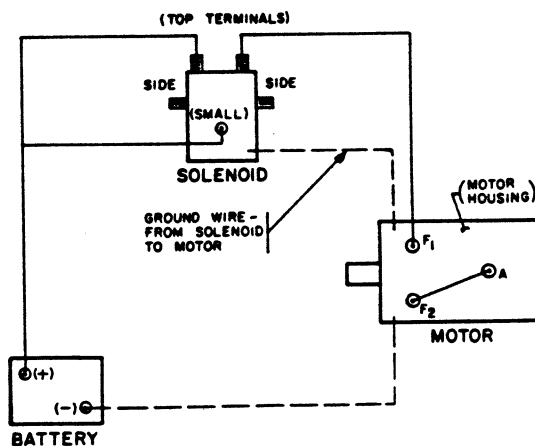
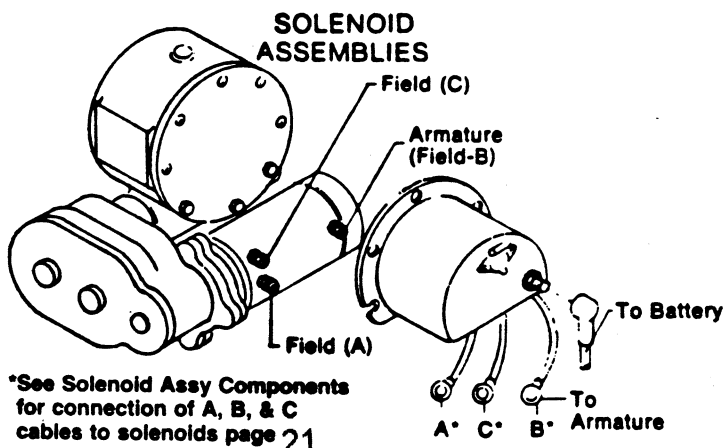


FIGURE-2



TEST PROCEDURE FOR MOTOR

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 housing (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.

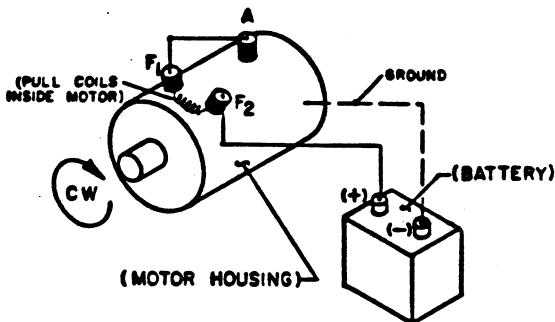


FIGURE-1
MOTOR-CLOCKWISE ROTATION

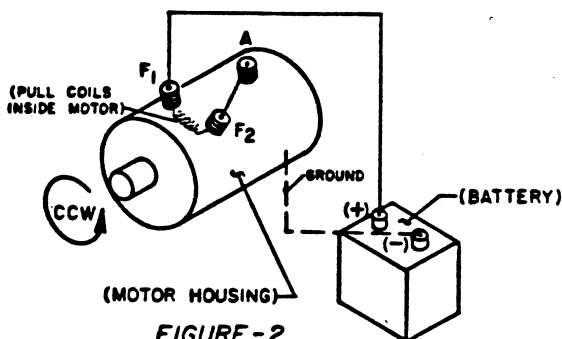
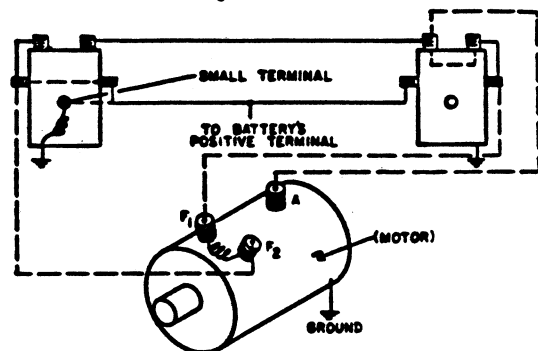
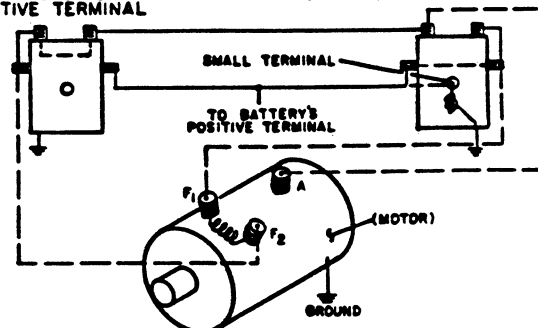


FIGURE-2
MOTOR-COUNTER CLOCKWISE ROTATION



SOLENOIDS TO MOTOR CONNECTIONS

THE DASHED LINES ARE CURRENT'S PATH IN FORWARD ROTATION. SOLID LINES ARE CURRENT'S PATH AT ALL TIMES.
NOTE: DIRECTION OF MOTOR ROTATION DEPENDS ON WHICH SMALL TERMINAL OF EITHER SOLENOID IS CONNECTED TO BATTERY'S POSITIVE TERMINAL



SOLENOIDS TO MOTOR CONNECTIONS

THE DASHED LINES ARE THE CURRENT'S PATH IN REVERSE ROTATION. SOLID LINES ARE CURRENT'S PATH AT ALL TIMES.

FIGURE-3

MOTOR PARTS REPLACEMENT

Replacement parts for the motor are limited to brush kits for routine replacement of worn brushes.

There are two voltages of electric motors used 12 volt, part #458001 and 24 volt, part #458005. (Reference item no. 57 of Winch Parts List).

Within these two voltages, there is one other feature of the motor construction that needs to be noted to specify the correct replacement brush kit, this being the type of bearing cap used on the commutator/brush end of the motor (opposite the drive end). Some motors have a cast iron bearing cap (approximately 1/4 inch thick at the outside edge), the other utilizes a stamped steel bearing cap (approximately 3/32 inch thick at the outside edge). This is easily determined by visual inspection of the motor before disassembly.

The correct brush replacement kits are to be specified according to the following table:

	Opposite Drive End Cast Iron Bearing Cap	Opposite Drive End Stamped Steel Bearing Cap
12 volt motor (458001)	440211	440084
24 volt motor (458005)	440212	440084

NOTES

LIMITED WARRANTY

RAMSEY WINCH warrants each new RAMSEY Winch to be free from defects in material and workmanship for a period of one (1) year from date of purchase.

The obligation under this warranty, statutory or otherwise, is limited to the replacement or repair at the Manufacturer's factory, or at a point designated by the Manufacturer, of such part that shall appear to the Manufacturer, upon inspection of such part, to have been defective in material or workmanship.

This warranty does not obligate RAMSEY WINCH to bear the cost of labor or transportation charges in connection with the replacement or repair of defective parts, nor shall it apply to a product upon which repair or alterations have been made, unless authorized by Manufacturer, or for equipment misused, neglected or which has not been installed correctly.

RAMSEY WINCH shall in no event be liable for special or consequential damages. RAMSEY WINCH makes no warranty in respect to accessories such as being subject to the warranties of their respective manufacturers.

RAMSEY WINCH, whose policy is one of continuous improvement, reserves the right to improve its products through changes in design or materials as it may deem desirable without being obligated to incorporate such changes in products of prior manufacture.

If field service at the request of the Buyer is rendered and the fault is found not to be with RAMSEY WINCH's product, the Buyer shall pay the time and expense to the field representative. Bills for service, labor or other expenses that have been incurred by the Buyer without approval or authorization by RAMSEY WINCH will not be accepted

See warranty card for details.



RAMSEY WINCH COMPANY

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