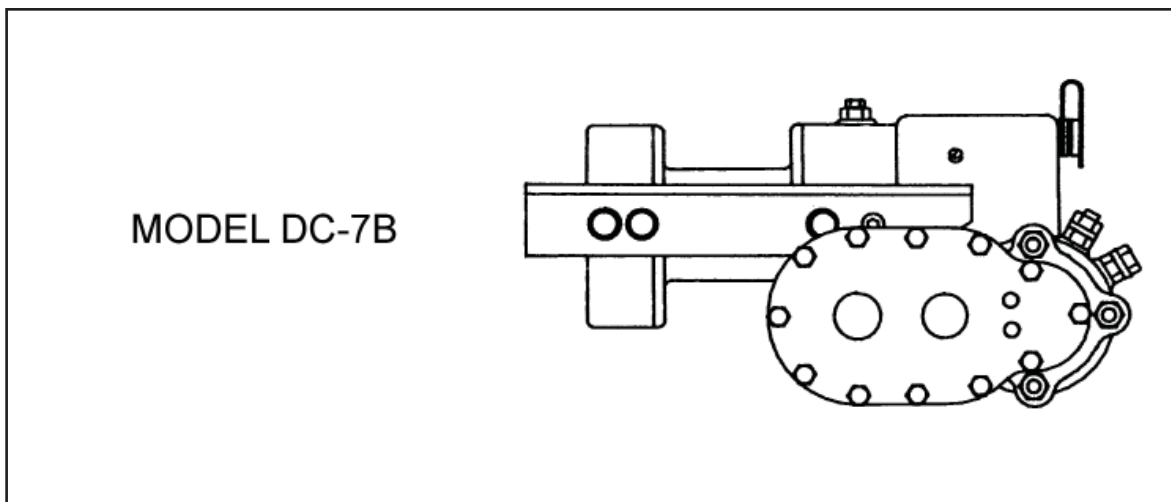
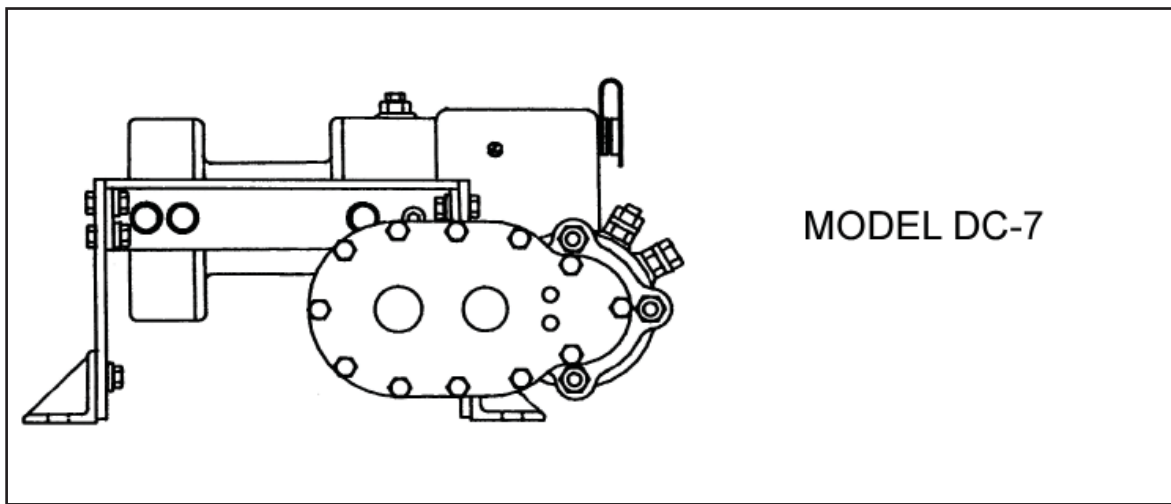




OPERATING, SERVICE, AND MAINTENANCE MANUAL

MODELS DC•7/DC•7B SERIES INDUSTRIAL LOW-MOUNT WINCHES



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

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RAMSEY ELECTRICAL WINCH MODEL DC-7 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

Rated Line Pull 1st Layer (Lbs.).....		3,000									
(Kgs.).....		1,360									
Total Gear Reduction: All Models.....		298:1									
Weight: DC-7		70 Lbs. (32 Kgs.)									
DCX-7		75 Lbs. (34 Kgs.)									
DC-78		60 Lbs. (27 Kgs.)									
DCX-78		65 Lbs. (29 Kgs.)									
MAXIMUM GEAR BOX OIL TEMPERATURE SHOULD NOT EXCEED.....		250°F.									
Layer of Cable		1		2		3		4		5**	
Rated Line Pull	Lbs.	3,000		2,600		2,300		2,000		1,800	
per layer	Kgs.	1,350		1,170		990		900		810	
*DC-7/78 Drum Cable	Ft	10		20		35		50		70	
capacity per layer	M	3		6		10		15		21	
*DCX-7/78 Drum Cable	Ft	15		40		65		95		125	
capacity per layer	M	4		12		19		28		38	
LINE SPEED	VOLTS	NO LOAD		1000# LOAD		2000# LOAD		3000# LOAD			
		FPM	AMPS	FPM	AMPS	FPM	AMPS	FPM	AMPS		
		(MPM)		(MPM)		(MPM)		(MPM)			
ALL MODELS	12	17	80	12	110	8	150	7	180		
	24	(5.2)	40	(3.7)	60	(2.4)	75	(2.0)	90		

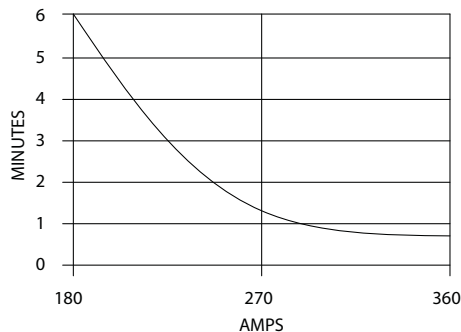
*These specifications are based on recommended 1/4" diameter extra improved plow steel wire rope.

**5th Layer does not conform to SAE J706

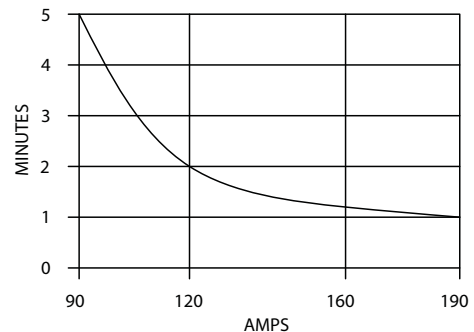
NOTE: The rated line pulls shown are for the winch only. Consult the wire rope manufacturer for wire rope ratings.

DUTY CYCLE

Winch duty cycles are shown below:



12 V



24 V

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 pile up 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.



WARNINGS:

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 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.
3. 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.
4. Check alignment of chain and sprockets and adjust as required to minimize wear.
5. Inspect the cable. If the cable has become frayed with broken strands, replace immediately.

C. ANNUALLY

1. Drain the oil from the winch annually or more often if winch is used frequently.
2. Fill the winch to the oil level plug with clean kerosene. Run the winch a few minutes with no load in the reel in direction. Drain the kerosene from the winch.
3. Refill the winch to the oil level plug with 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

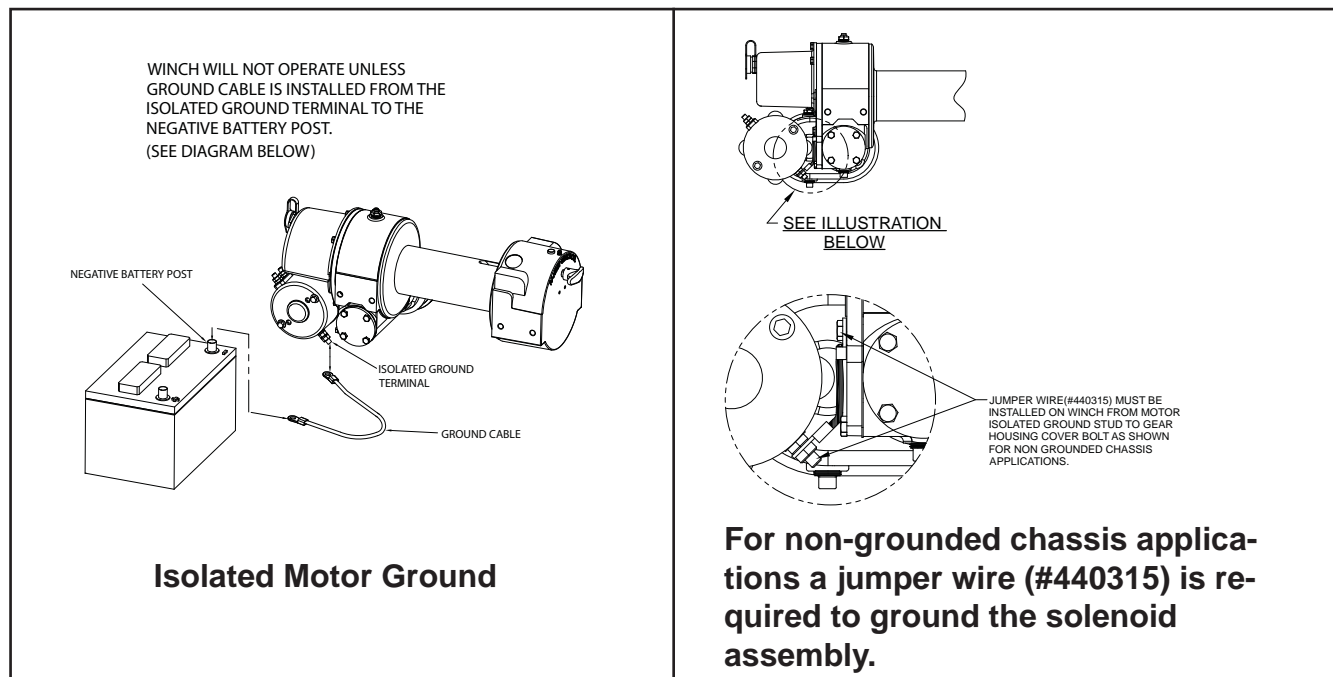
WINCH MOUNTING

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-7/DC-78 Series Winches are furnished with recommended mounting angles. Model DC-7 Winch is furnished with 1/4 x 2 x 2 high strength steel angles. Model DC-78 Winch is furnished with 3/16 x 1-1/2 x 2 high strength steel angle.

ELECTRICAL CONNECTIONS

See dimensional drawings on pages 12 & 13. 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.



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 21/64" 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.

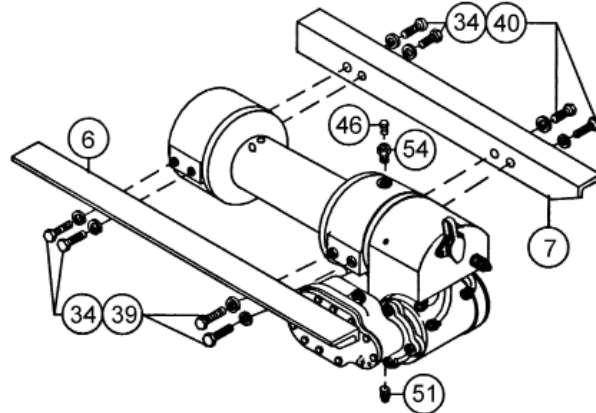
TROUBLE SHOOTING GUIDE

CONDITION	POSSIBLE CAUSE	CORRECTION
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.
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 volts to coil terminal (it should make an audible click when energized). (See Page 19) 2. Remove switch plug from hood. Raise connector cover on hood and with 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. Sheared drum shaft key. 2. Stripped bronze gear. 3. Parted shaft. 	<ol style="list-style-type: none"> 1-3. Dis-assemble winch to determine cause and repair.
<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 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 battery to winch too small. 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 system.
MOTOR WILL NOT OPERATE.	<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. Re-move 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. (See Page 20) 4. Tighten connections on bottom side of hood and on motor.

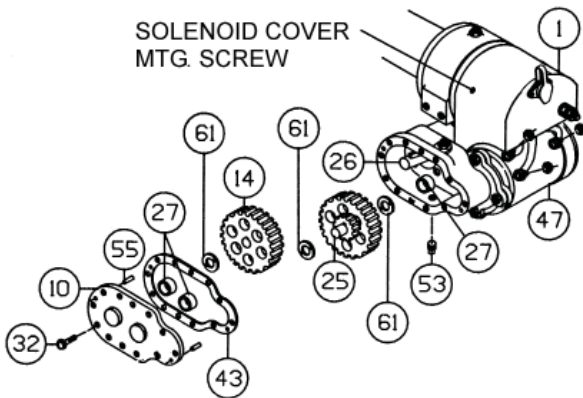
INSTRUCTIONS FOR OVERHAUL OF RAMSEY MODEL DC-7/DC-7B SERIES WINCHES DISASSEMBLY

1. Drain oil from worm gear housing by removing (item #51) plug from bottom of gear housing. Remove relief fitting and reducer (items #46 & #54) from top of gear housing. Remove winch from mounting angles (items #6 & #7) by removing hardware shown (items #34 & #40).

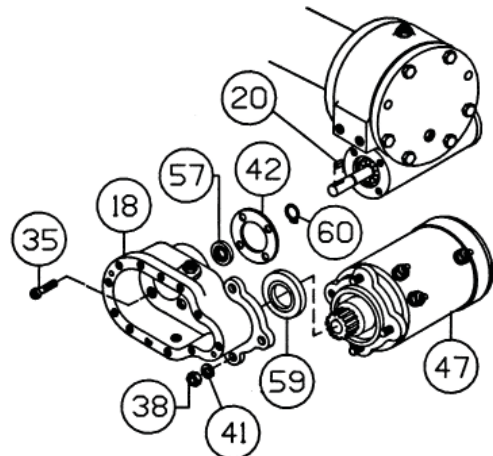
NOTE: DC-7B WINCH SHOWN. See Pg. 14 & 15 for mounting brackets and hardware for DC-7 winch.



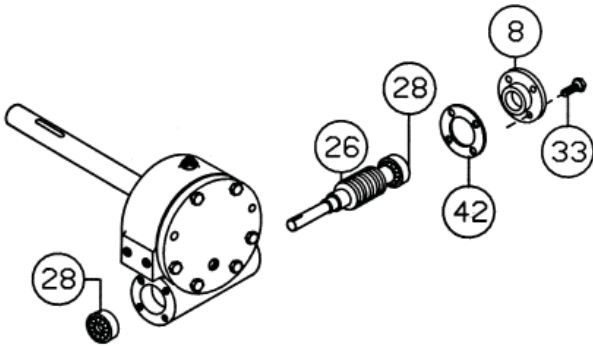
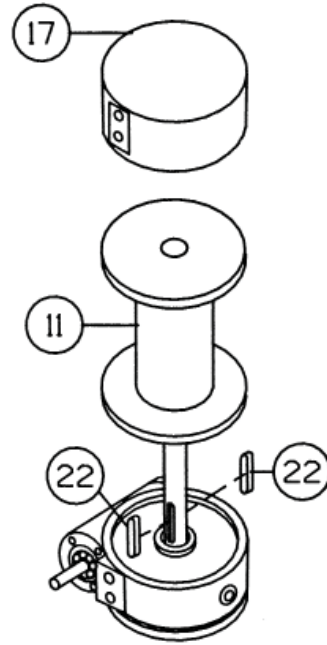
2. Drain oil from spur gear box by removing (item #53) plug, from bottom of spur gear box. Remove cover and gasket (items #10 & #43) from spur gear housing by unscrewing twelve cap screws (item #32). Slide gear (item #14) from end of worm shaft (item #26). Remove spur gear shaft (item #25), with gears attached. Check bearings (item #27) and thrust washers (item #61) for signs of wear, replace if necessary. Remove old bearings and press new bearings into place. Remove solenoid assembly (item #1) from winch as follows: Disconnect solenoid cables from motor (item #47). Make note of which terminals cables are attached to. Remove solenoid cover from solenoid mounting bracket by unscrewing two solenoid cover mounting screws. Solenoid mounting bracket may then be removed from winch by unscrewing two soc. hd. screws attaching solenoid bracket to gear housing of winch. SEE SOLENOID ASS'Y. PARTS LIST, Pg.18



3. Remove key (item #20) and snap ring (item #60) from worm shaft. Remove motor (item #47) from spur gear housing (item #18) by removing three nuts and lockwashers (items #38 & #41). Unscrew four capscrews (item #35) to remove spur gear box (item #18) and gasket (item #42) from gear housing. Replace lip seals (items #57 & #59) by pressing old seals from spur gear housing and pressing new seals into place.



- Slide end bearing (item #17) and drum (item #11) from drum shaft. Remove two keys (item #22) from drum shaft.

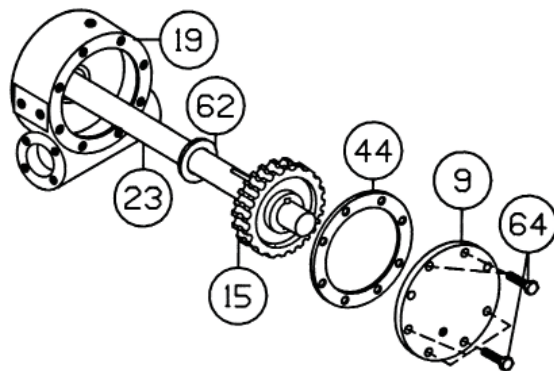


- Remove bearing cap (item #8) and gasket (item #42) from gear housing by unscrewing four cap-screws (item #33). Remove worm (item #26) and bearing (item #28) from gear housing. Use a soft hammer to gently tap input end of worm and drive worm and bearing from gear housing. Once worm has been removed from housing, bearing can be pressed from end of worm.

Check for signs of wear to worm (item #26) and bearings (item #28). Replace if necessary.

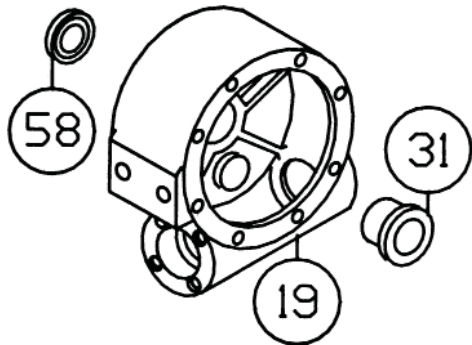
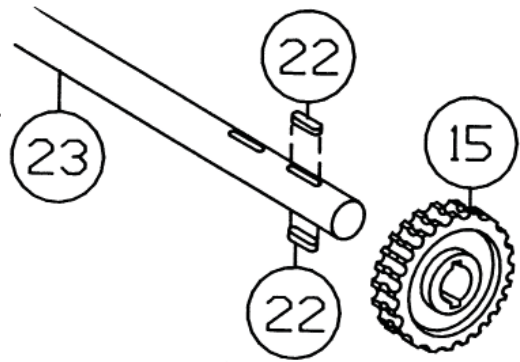
- Remove gear housing cover (item #9) from gear housing (item #19) by unscrewing six remaining capscrews (item #64).

Remove cover gasket (item #44) and pull shaft (item #23), with gear (item #15) attached, and thrust washer (item #62) from gear housing.



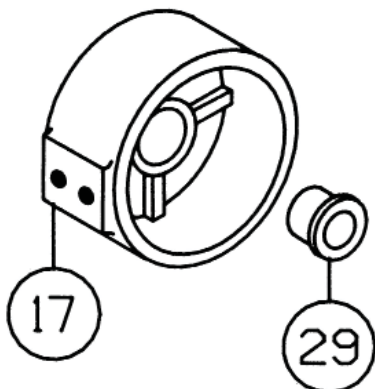
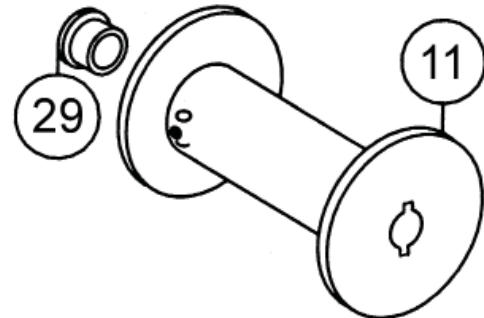
7. Check for signs of wear on gear teeth. If replacement of gear is necessary gear must be replaced as follows:

- a) Press gear (item #15) from shaft (item #23).
- b) Examine shaft keys (item #22) and keyways. If distortion of keys and/or keyways is evident, shaft and keys should be replaced.
- c) Tap keys (item #22) firmly into shaft keyways. Press shaft and keys through gear keyways until end of keys, on long end of shaft are flush with gear.

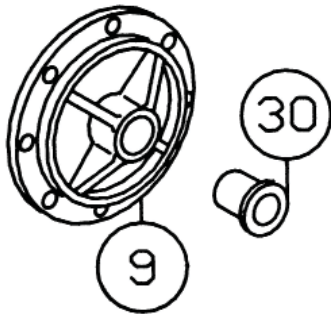


8. Remove seal (item #58) from back of gear housing (item#19). Press bushing (item #31) from gear housing. Press new bushing and seal back into place.

9. ON DCX-7 & DCX-7B ONLY. Check drum bushing (item #29) for signs of wear. Replace if necessary by pressing old bushing from drum and pressing new one into place.

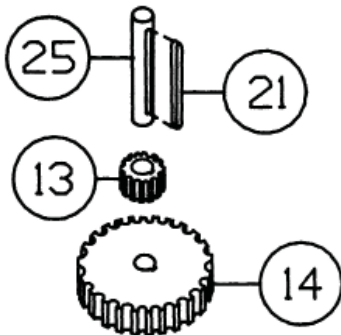
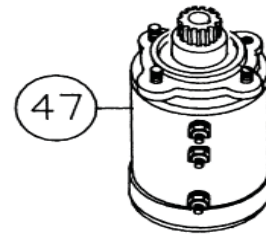


10. Check end bearing bushing (item #29) for signs of wear. If necessary, remove old bushing and press new bushing into place.



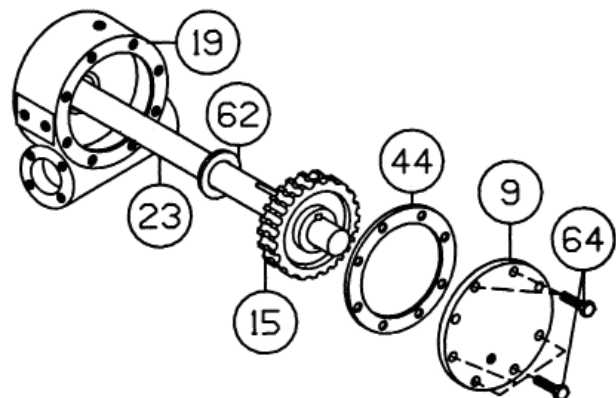
11. Check cover bushing (item #30) for signs of wear. Replace if necessary by removing old bushing and pressing new bushing into place.

12. Check motor for signs of wear. If necessary replace motor (item #47)



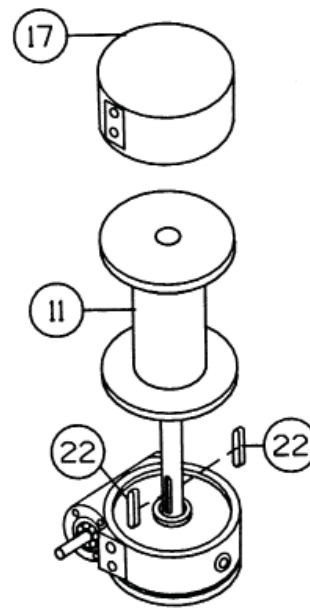
13. Check gears (items #13 & #14) of spur gear shaft assembly for signs of wear, replace if necessary. Press old gears from shaft (item #25). Tap key (item #21) into keyway of shaft (item #25). Press shaft through gears so that gears are centered on shaft and key.

14. Apply grease to end of shaft, opposite gear. Apply grease to bushing in gear housing (item #19). Place greased end of shaft through thrust washer (item #62) and bushing in gear housing. Place gasket (item #44) onto gear housing cover (item #9). Apply grease to gear end of shaft and bushing in cover. Place cover onto shaft and secure to housing with six (item #64) capscrews.

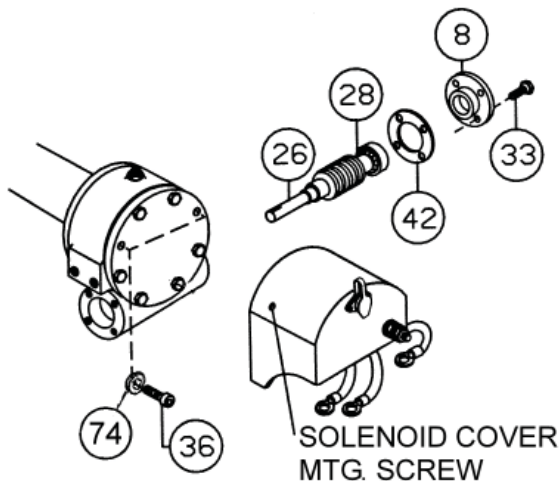


15. Place winch, with gear housing cover down, onto work bench. Drum shaft should be in vertical position. Place keys (item #22) into keyways of shaft. A rubber or brass mallet will be needed to gently tap keys into position. Apply grease to keys and end of shaft. Slide keyway end of drum (item #11) over drum shaft and keys.

Apply grease to bushing in end bearing (item #17) and end of drum shaft. Slide end bearing over end of drum shaft.



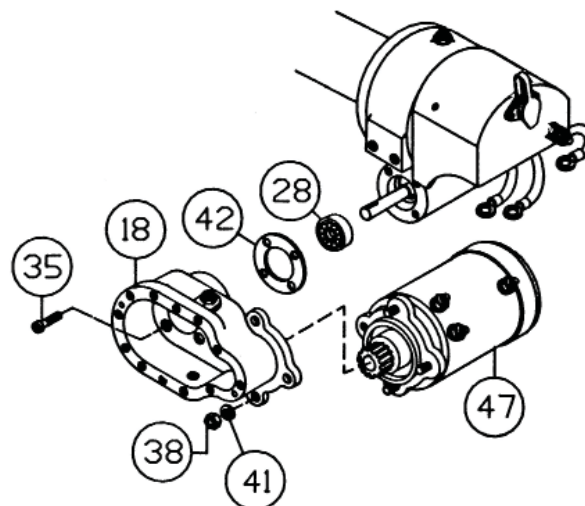
16. Press bearing (item #28) onto worm (item #26). NOTE: Be sure thick shoulder of bearings outer race (side with manufacturer's name and part number) is out, away from worm threads. Press bearing and worm into gear housing. Slip gasket (item #42) onto bearing cap (item #8). Use four capscrews (item #33) to secure cap to gear housing. Torque capscrews to 8ft. lbs. (10.8 Nm.) each.



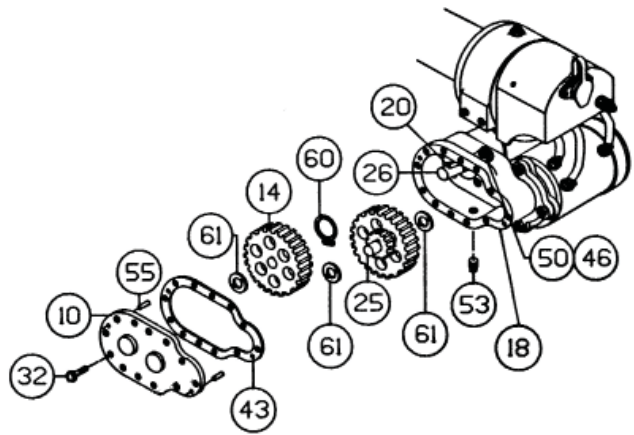
Attach solenoid assembly to winch as follows: Place flatwashers (item #74) between gear housing cover and solenoid bracket. Use two (item #36) cap screws to fasten solenoid bracket to gear housing. Tighten all cover mounting cap screws to 8ft. lbs. (10.8 Nm) each. Secure solenoid cover to solenoid bracket using two solenoid cover mounting screws.

SEE SOLENOID ASSEMBLY PARTS LIST
PAGE 18

17. Press bearing (item #28) 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 #42) onto spur gear housing (item #18). Secure spur gear housing to worm gear housing using four cap screws (item #35). Torque cap screws to 8ft. lbs. (10.8 Nm.) each. Mount motor (item #47) to spur gear housing (item #18) using three lock washers and nuts (items #41 & #38). Attach solenoid cables to motor terminals. Tighten all nuts securely.



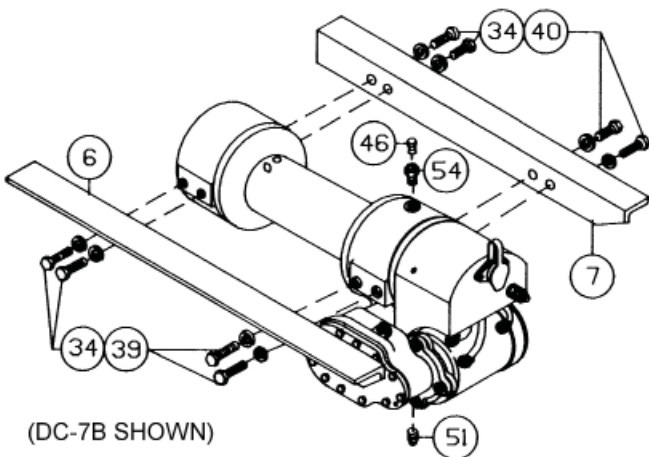
18. Place snap ring (item #60) over end of worm shaft (item #26) and set into snap ring groove. Insert key (item #20) into keyway of worm shaft. Place thrust washer (item #61) over each end of spur gear shaft (item #25). Set spur gear shaft assembly into bearing of spur gear housing. Slide gear (item #14) and thrust washer over end of worm shaft.



Insert pins (item #55) into spur gear housing (item #18). Attach cover (item #10) and gasket (item #43) to spur gear housing using twelve capscrews (item #32). Torque capscrews to 8ft. lbs. (10.8 Nm.) each.

Remove reducer and fitting (items #50 & #46) from top of spur gear housing. Fill spur gear box with 1/2 pint of SAE 20 motor oil. Replace reducer and fittings into top of spur gear housing. Tighten reducer and fitting securely.

19. Attach mounting angles (items #6 & #7) using eight capscrews (item #34) with lockwashers (item #39 & #40). Torque capscrews to 12 ft. lbs. (16 Nm.) each. Insert plug (item #51) into bottom of gear housing. Permatex may be applied to threads to help prevent leakage.

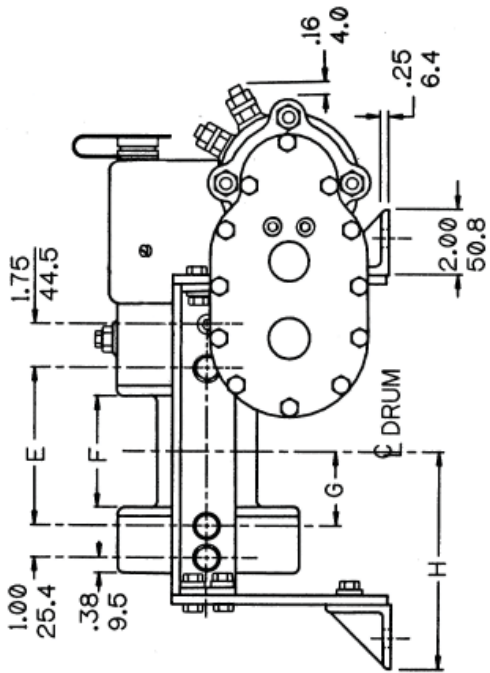
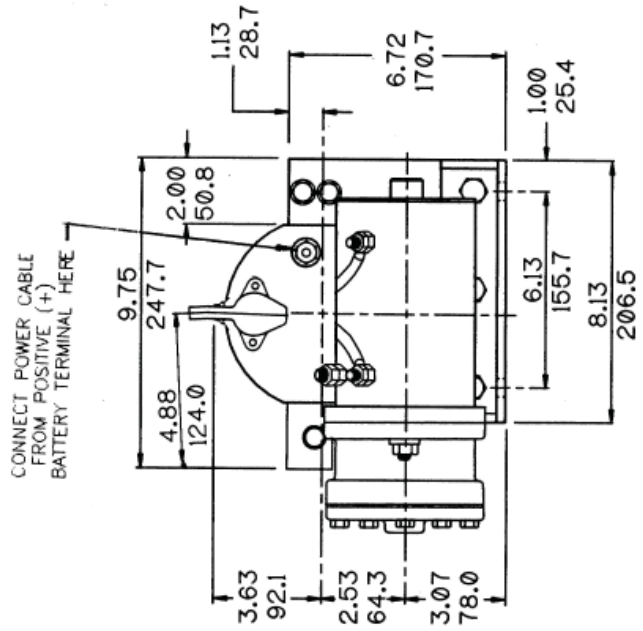
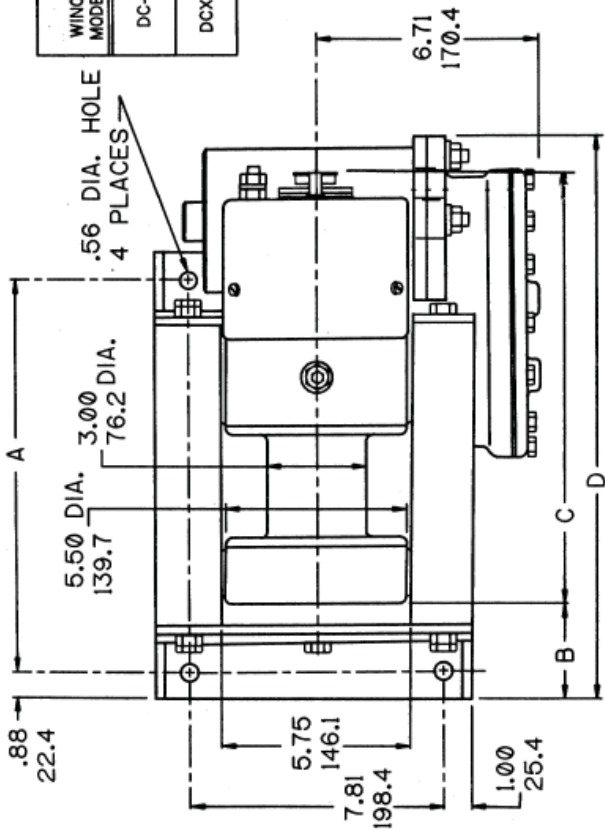


(DC-7B SHOWN)

Pour 3/4 pint of EP 140 gear oil into housing thru hole in top of housing. Insert relief fitting (item #46) into reducer (item #54). Reducer should then be placed into hole on top of gear housing. Tighten fitting and reducer securely. **NOTE:** DC-78 winch shown. See pages 14 & 15 for mounting brackets and hardware for DC-7 winch.

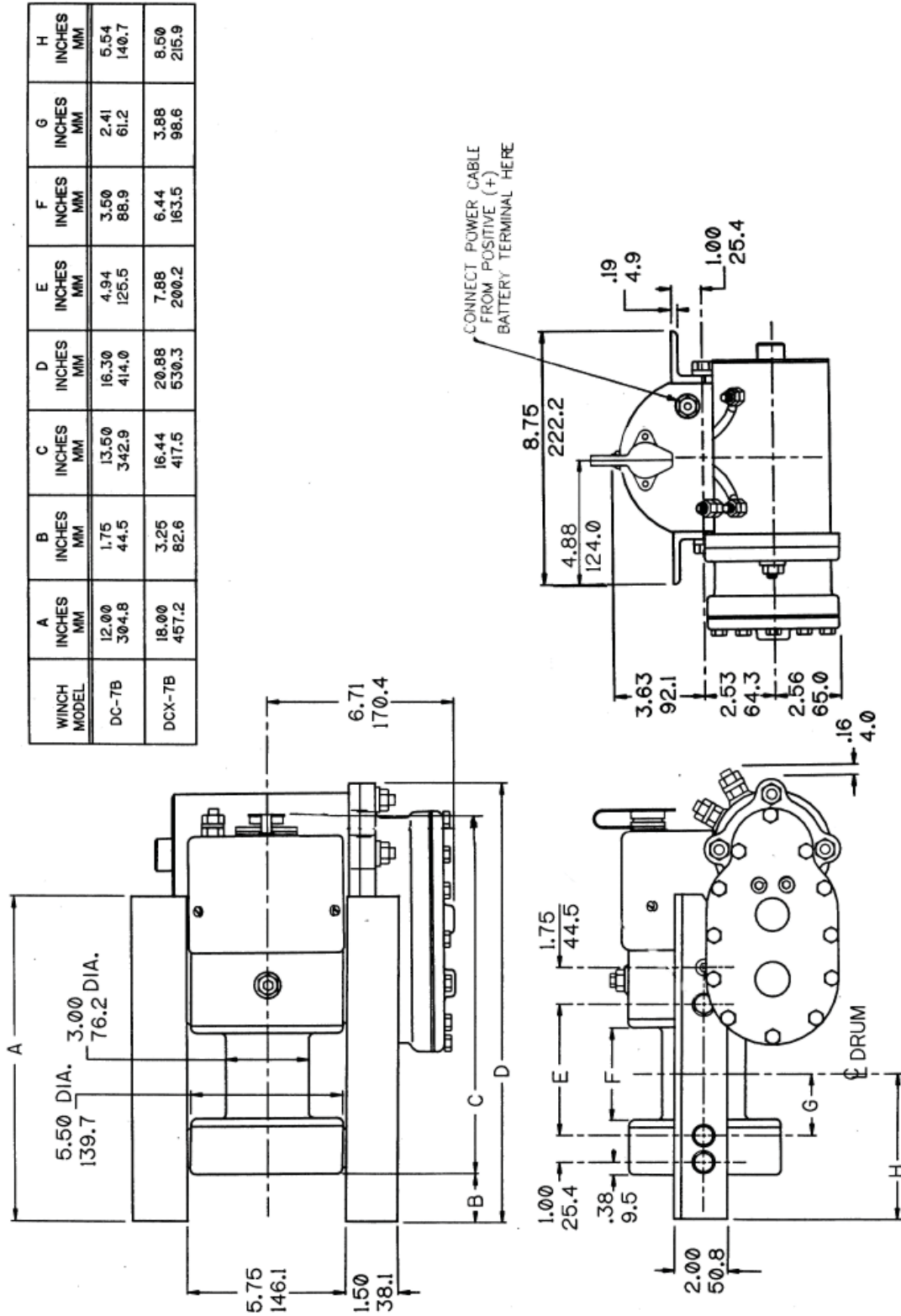
DIMENSIONAL DRAWING DC7 / DCX7

WINCH MODEL	A INCHES MM	B INCHES MM	C INCHES MM	D INCHES MM	E INCHES MM	F INCHES MM	G INCHES MM	H INCHES MM
DC-7	12.06 306.3	2.88 69.1	13.50 342.9	17.23 437.6	4.94 125.5	3.50 88.9	2.41 61.2	6.47 164.3
DCX-7	15.38 390.7	3.00 76.2	16.44 417.5	20.17 512.3	7.88 200.2	6.44 163.5	3.88 98.6	8.25 209.5



DIMENSIONS SHOWN ARE INCHES OVER MILLIMETERS

DIMENSIONAL DRAWING DC-7B / DCX-7B



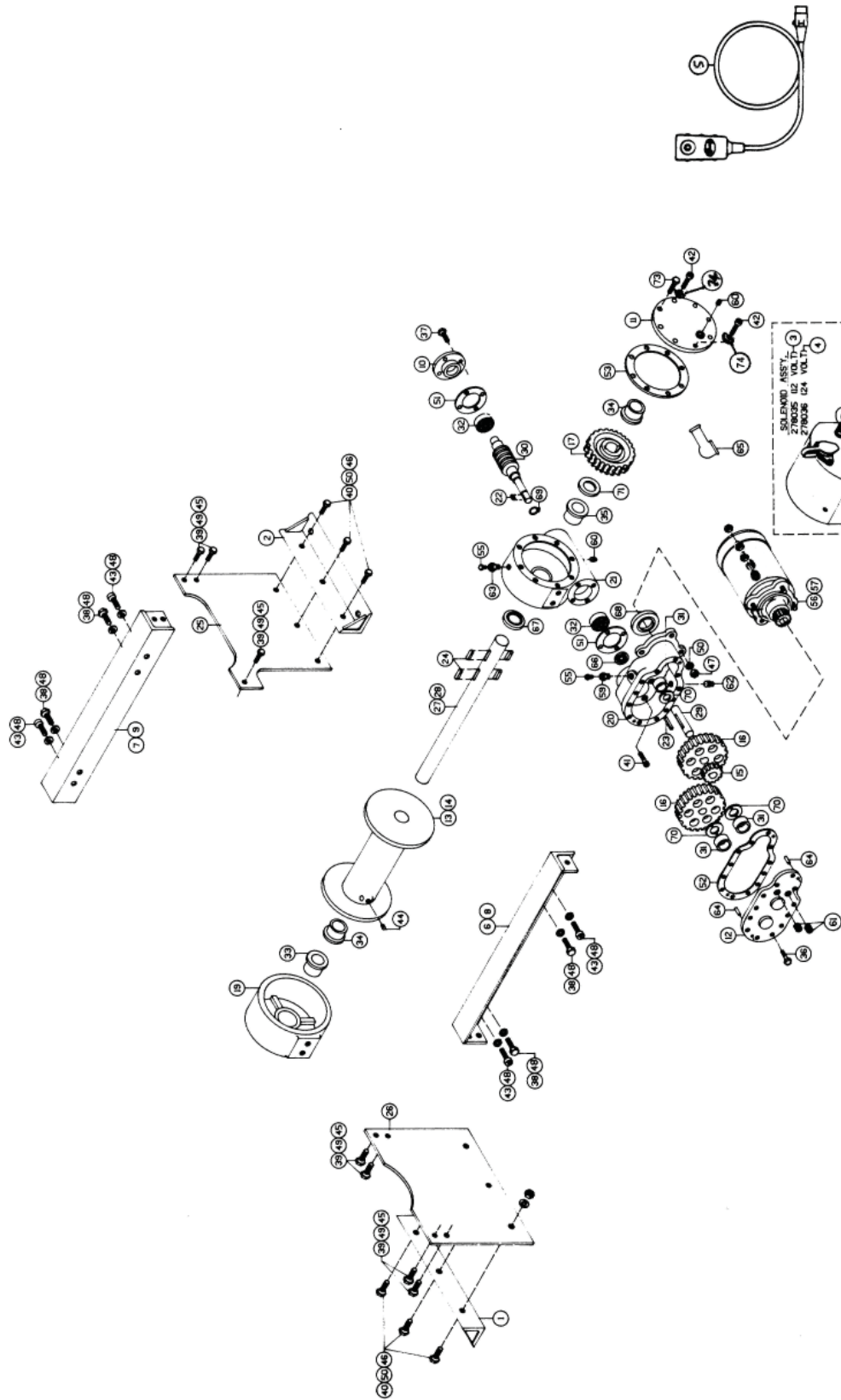
DIMENSIONS SHOWN ARE INCHES OVER MILLIMETERS

PARTS LIST

MODEL DC-7 & DC-7X 12V & 24V

PART NO.	QTY.	QTY.	DESCRIPTION	ITEM NO.	QTY.	PART NO.	DESCRIPTION
1	1	206007	FOOT BRACE	40	6	414310	CAPSCREW 3/8-16NCX1 HX HD CP
2	1	206008	FOOT BRACE (MOTOR SIDE)	41	4	414845	CAPSCREW 1/4-20NCX1 LG SOC HD NYLOK
3	1	278035	SOLENOID ASSEMBLY 12V	42	2	414850	CAPSCREW 1/4-20NCX3/4 LG SOC HD CP
4	1	278036	SOLENOID ASSEMBLY 24V	43	4	414873	CAPSCREW 5/16-18NCX3/4 LG SOC HD CP
5	1	282001	SWITCH ASSEMBLY	44			NOT USED
6	1	299617	ANGLE DC7	45	7	418022	NUT 5/16-18NC HX REG CP
7	1	299618	ANGLE DC7	46	6	418035	NUT 3/8-16NC HX REG CP
8	1	299621	ANGLE DC7X	47	3	418040	NUT 3/8-24NF HX REG CP
9	1	299622	ANGLE DC7X	48	8	418163	LOCKWASHER 5/16 MED SECT CP
10	1	316083	BEARING CAP	49	7	418163	LOCKWASHER 5/16 MED SECT CP
11	1	328009	COVER	50	9	418177	LOCKWASHER 3/8 MED SECT CP
12	1	328106	COVER	51	2	442184	GASKET
13	1	332051	DRUMDC7	52	1	442185	GASKET
14	1	332053	DRUMDC7X	53	1	442186	GASKET
15	1	334001	GEAR IDLER	54			NOT USED
16	2	334003	GEAR	55	2	456008	RELIEF FITTING
17	1	334007	GEAR	56	1	262037	MOTOR 12V
18			NOT USED	57	1	262036	MOTOR 24V
19	1	338053	END BEARING	58			NOT USED
20	1	338203	SPUR GEAR HOUSING	59	1	468002	REDUCER
21	1	338238	GEAR HOUSING	60	2	468010	PIPE PLUG
22	1	342023	KEY	61	2	468017	PIPE PLUG
23	1	342033	KEY	62	1	468018	PIPE PLUG
24	4	342075	KEY	63	1	468024	REDUCER
25	1	350331	END PLATE (MOTOR END)	64	2	470001	DOWELL PIN
26	1	350332	END PLATE (OPP. MOTOR END)	65	1	482013	RUBBER BOOT
27	1	357446	DRUM SHAFT DC7	66	1	486009	OIL SEAL
28	1	357447	DRUM SHAFT DC7X	67	1	486017	OIL SEAL
29	1	356901	SHAFT	68	1	486023	OIL SEAL
30	1	368132	WORM	69	1	490003	SNAP RING
31	3	402001	BEARING	70	3	518002	THRUST WASHER
32	2	402002	BEARING	71	1	518015	THRUST WASHER
33	1	412003	BUSHING	72			NOT USED
34	2	412046	BUSHING DC7X	73	6	414020	CAPSCREW 1/4-20NCX3/4 LG HX HDGR5
	1	412046	BUSHING DC7				HVY PATCH
35	1	412046	BUSHING	74	2	418153	FLAT WASHER 1/4
36	12	414038	CAPSCREW 1/4-20NCX3/4 LG HX HD GR5				
37	4	414045	CAPSCREW 1/4-20NCX7/8 LG HX HD GR5				FOR GASKET AND SEAL ORDER
38	4	414137	CAPSCREW 5/16-18NCX3/4 LG HX HD CP				PART NO 246033
39	7	414071	CAPSCREW 5/16-18NCX1 LG HX HD GR5				

MODEL DC-7 AND DCX-7 12 V & 24 V EXPLODED VIEW



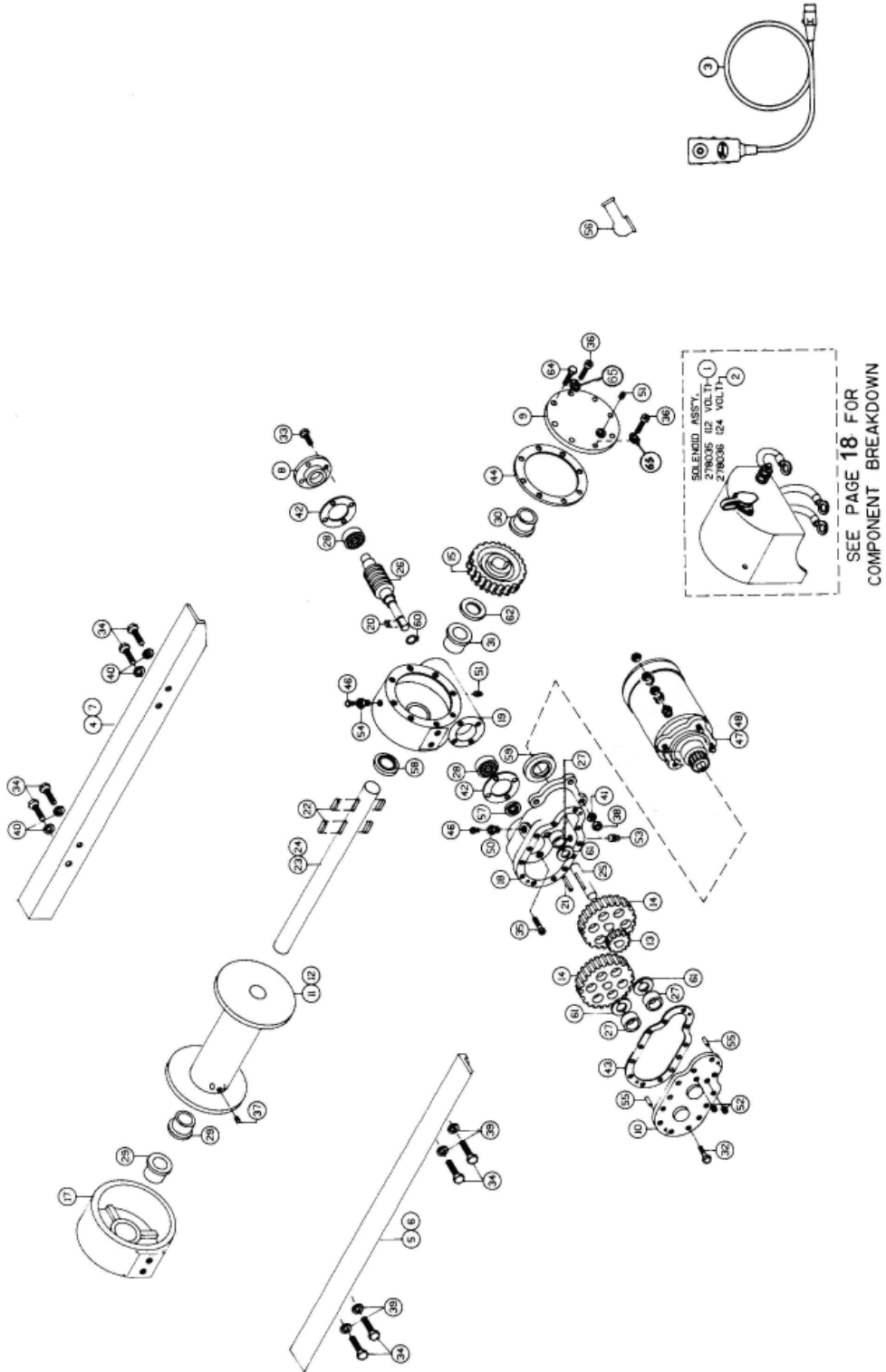
Model DC-7 & DCX-7 12V & 24V

SEE PAGE 18 FOR
COMPONENT BREAKDOWN

PARTS LIST
MODEL DC-7B & DC-7BX 12V & 24V

ITEM NO.	QTY.	PART NO.	DESCRIPTION	ITEM NO.	QTY.	PART NO.	DESCRIPTION
1	1	278035	SOLENOID - 12V	36	2	414850	CAPSCREW 1/4-20NCX3/4 LG
2	1	278036	SOLENOID - 24 V	37			NOT USED
3	1	282001	SWITCH ASSY	38	3	418040	NUT 3/8-24NF HX REG CP
4	1	299617	ANGEL- DC78	39	4	418163	LOCKWASHER 5/16 MED
5	1	299618	ANGEL- DC78	40	4	418163	LOCKWASHER 5/16 MED
6	1	299621	ANGEL- DC78X	41	3	418177	LOCKWASHER 3/8 MED
7	1	299622	ANGEL- DC78X	42	2	442184	GASKET
8	1	316083	BEARING CAP	43	1	442185	GASKET
9	1	328009	COVER	44	1	442186	GASKET
10	1	328106	COVER	45			NOT USED
11	1	332051	DRUM - DC78	46	2	456008	RELIEF FITTING
12	1	332053	DRUM DC78X	47	1	458071	MOTOR—12V
13	1	334001	GEAR IDLER	48	1	458005	MOTOR—24V
14	2	334003	GEAR	49			NOT USED
15	1	334007	GEAR	50	1	468002	REDUCER
16			NOT USED	51	2	468010	PIPE PLUG
17	1	338053	END BEARING	52	2	468017	PIPE PLUG
18	1	338203	SPUR GEAR HOUSING	53	1	468018	PIPE PLUG
19	1	338238	GEAR HOUSING	54	1	468024	REDUCER
20	1	342023	KEY	55	2	470001	DOWELL PIN
21	1	342033	KEY	56	1	482013	RUBBER BOOT
22	4	342075	KEY	57	1	486009	OIL SEAL
23	1	357446	DRUM SHAFT - DC78	58	1	486017	OIL SEAL
24	1	357447	DRUM SHAFT - DC78X	59	1	486023	OIL SEAL
25	1	356901	SHAFT	60	1	490003	SNAP RING
26	1	368132	WORM	61	3	518002	THRUST WASHER
27	3	402001	BEARING	62	1	518015	THRUST WASHER
28	2	402002	BEARING	63			NOT USED
29	2	412003	BUSHING DC78X	64	6	414020	CAPSCREW 1/4-20NCX3/4 LG
	1	412003	BUSHING DC78	65	2	418153	FLAT WASHER 1/4
30	1	412046	BUSHING	FOR GASKET & SEAL ORDER PART NO. 246033			
31	1	412046	BUSHING				
32	12	414038	CAPSCREW 1/4-20NCX3/4 LG HXHD				
33	4	414045	CAPSCREW 1/4-20NCX7/8 LG HXHD				
34	8	414137	CAPSCREW 5/16-18NCX3/4 LG HXHD				
35	4	414845	CAPSCREW 1/4-20-NCX1 LG				

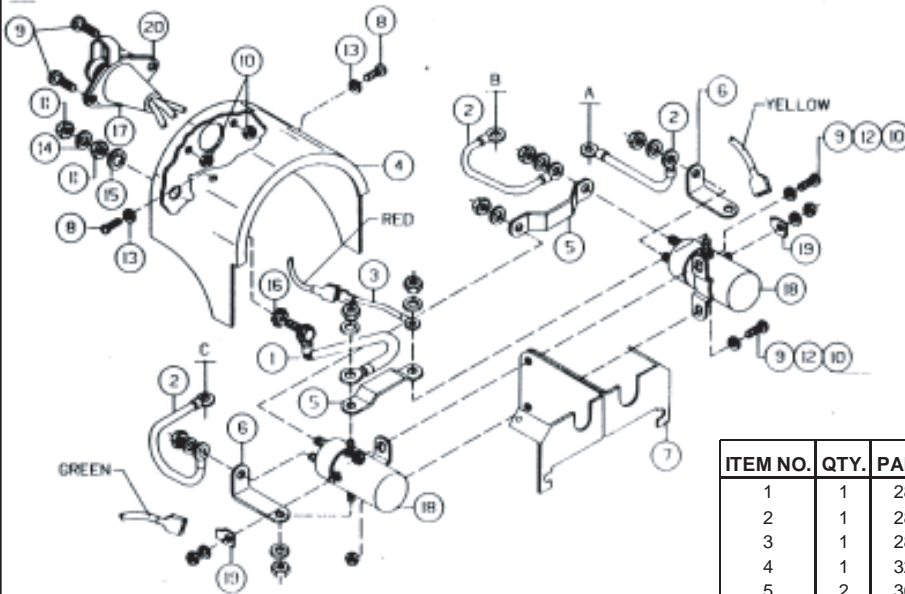
**MODEL DC-7B AND DCX-7B 12 V & 24 V
EXPLODED VIEW**



Model DC-7B & DCX-7B 12V & 24V

SOLENOID ASSEMBLY PARTS

278035 - 12 V
278036 - 24 V



NOTES:

1. Nuts and lockwashers not labeled are part of solenoid.
2. Letters A,B,C indicates connection to motor terminals A,B,C (See Page 19.)

ITEM NO.	QTY.	PART NO.	DESCRIPTION
1	1	280009	CABLE&BOLT ASSY-W/ALL 12&24V SOL
2	1	289077	WIRE ASSY-4.5LG,#6GA GPT BLK,2-TER
3	1	289091	WIRE ASSY-EXT,FEM CONN TO SOL,PL
4	1	328104	COVER-SOLEN,DC7&8,INJ/MOLD,PURC
5	2	364001	STRAP-COPPER ,MAKE FROM FINISHED
6	2	364002	STRAP-COPPER ,MAKE FROM FINISHED
7	1	408038	BRACKET-SOL MTG,DC7,8,FOLDED,16G
8	2	416199	MACHSCREW8-32NCX1/2LG.RD HD SLO
9	4	416216	SCREW-#10-24NCX1/2LG.RDHD,SLOT,Z
10	2	418004	NUT-HEX #10-24NC REG.,ZINC PLATED
11	2	418022	NUT-5/16-18NC HEX REG,ZINC PLATED
12	2	418140	WASHER-#10 FLAT STEEL,SAE,ZINC PLT
13	2	418142	WASHER-#8,FLAT,ALUMINUM
14	1	418163	LOCKWASHER-5/16 MED SECT,ZINC PL
15	1	418164	WASHER-5/16 SHAKE PRF,INT TEETH,Z
16	1	418165	WASHER-5/16 SHAKE PRF,EXT TEETH,Z
17	1	430013	CONNECTOR-FEMALE RECEPTACLE,M
18	1	440114	SOLENOID - 24 VOLT
18	1	440110	SOLENOID 12 VOLT
19	2	440071	TERMINAL TAB-MALE,AMP#61499-1,BRAS
20	1	482029	COVER-FEMALE RECEPTACLE,URETHA

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 isolated ground terminal.
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 20).
8. To test the upper contacts use the same hookup except use the top terminals. (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.

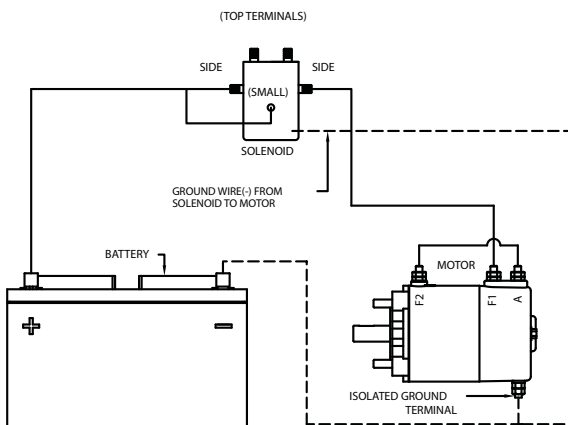


FIGURE-1

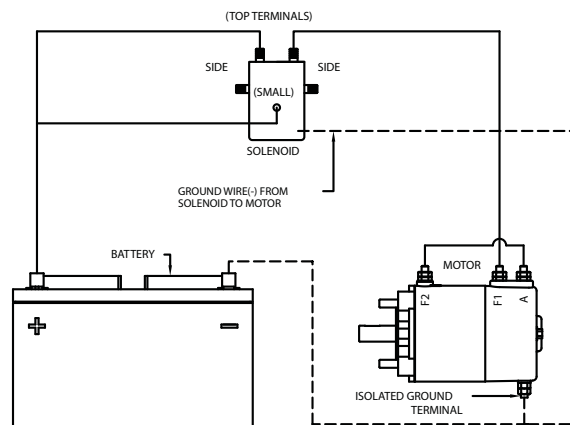
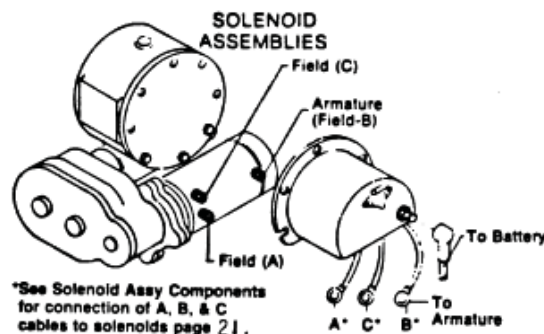


FIGURE-2



TEST PROCEDURE FOR MOTOR

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 •• motor terminals (See Figure 2).
2. Attach wire from positive (+)battery terminal to F-1 motor terminal. Ground negative(-) battery terminal to motor isolated ground terminal (See Figure 2).

NOTE: Always attach battery wire solidly to motor terminals. Make and break the connection of negative (-) battery terminal at the motor isolated ground terminal. 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 arum) 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

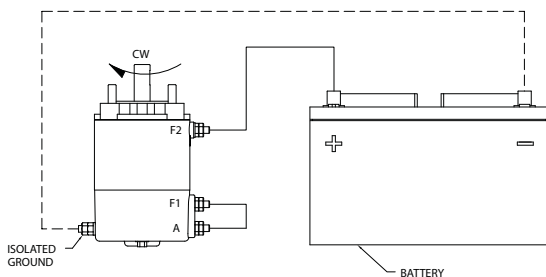
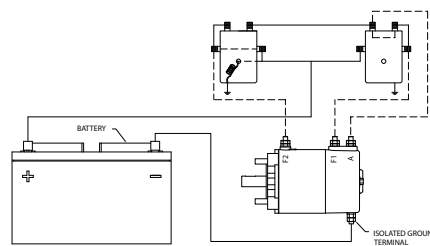


FIGURE-1
MOTOR-CLOCKWISE ROTATION



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.

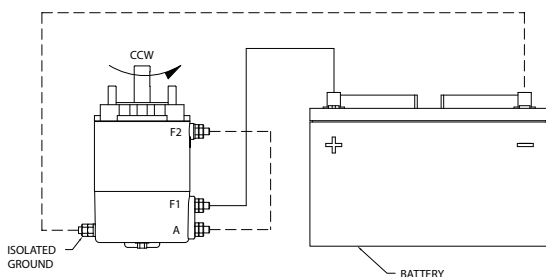
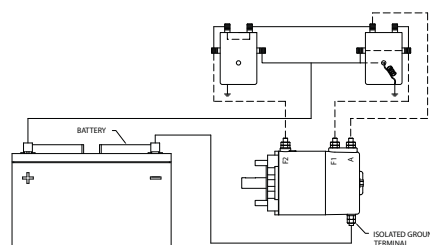


FIGURE-2
MOTOR-COUNTER CLOCKWISE ROTATION



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

FIGURE-3

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



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