



Operating and Maintenance Manual

Patriot 16,500

OM 914326-0625-C



READ AND UNDERSTAND THIS MANUAL BEFORE INSTALLATION AND OPERATION OF WINCH. SEE WARNINGS.

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Congratulations!

You have purchased the finest winch available in its service class. It features a highly efficient 3 stage planetary gear set which transmits torque from a series wound D.C. motor. A safe positive clutch allows free spooling for quick rope deployment. An automatic load holding brake is designed to hold the full rated capacity of the winch. It was designed and manufactured to provide you with the utmost in utility. As with any device that combines power and movement in its use, there are dangers if improperly used. At the same time, there are easier and faster ways for getting the job done if certain precautions are taken first. Please read this manual carefully. It contains useful ideas in obtaining the most efficient operation from your Ramsey Winch and safety procedures you need to know before beginning use. When you follow our guidelines for operation, your Ramsey Winch will give you many years of satisfying service. Thank you for choosing Ramsey. You will be glad you have one working for you.

Table of Contents

Section Title	Page
Introduction.....	5
Winch Specifications	8
Installation Details.....	9
Winch Operation.....	11
Maintenance	12
Troubleshooting Guide.....	14
Kits and Maintenance Parts	16
Limited Warranty.....	19

Notes

Introduction

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

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

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



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

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

Do not allow personnel under or near the load.

Do not step over or near a cable under a load.

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

Always maintain a minimum of five wraps of cable around the drum. This is necessary to hold the load. Do not use the winch as a tie down.

Apply blocks to wheels when vehicle is on an incline.

Ensure that the clutch is fully engaged before starting the winching operation.

Do not exceed maximum line pull rating shown in tables. Shock loads must not exceed these ratings.
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Use proper personal protective equipment (PPE) including but not limited to gloves and safety glasses when handling winch cable.

Do not disengage the clutch under load.

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

Modification, alteration, or deviation to the winch should only be made by Ramsey Winch Company.

Do not try to guide the cable during a loaded pull. Keep yourself and others a safe distance to the side when pulling a load.

Do not start the winch motor before engaging the clutch.

When respooling cable, it is necessary to keep a slight load on the cable. While wearing proper gloves, pull on the cable as the winch is wound in. Do not allow the cable to slip through hands. Do not approach the winch too closely. Disconnect the remote control switch once the cable is two to four feet away and finish spooling in cable by rotating drum by hand with clutch disengaged.

Winch clutch should be disengaged when winch is not in use.

Introduction



Do not move the vehicle to pull load on the winch cable.

Keep the duration of pulls as short as possible. Do not pull more than one minute at or near rated load. Do not maintain power to the winch if the motor stalls. Electric winches are for intermittent usage and should not be used in constant duty applications.

TIPS FOR SAFE OPERATION

Don't underestimate the potential danger in winching operations.

Observe spooling of cable onto drum. Side pulls can cause cable to pile up at one end of the drum. To correct uneven stacking, spool out the stacked section of cable and move it to the other end of the drum and continue winching. Uneven spooling of the winch cable can damage the winch. Observe your winch while in use while maintaining a safe distance.

Store the remote control switch inside your vehicle where it will not become damaged. Inspect the connectors and switch body before you plug it in.

Do not attach tow hooks to winch mounting apparatus. During stationary, double line pulls, then winch hook should be attached to the chassis of the vehicle.

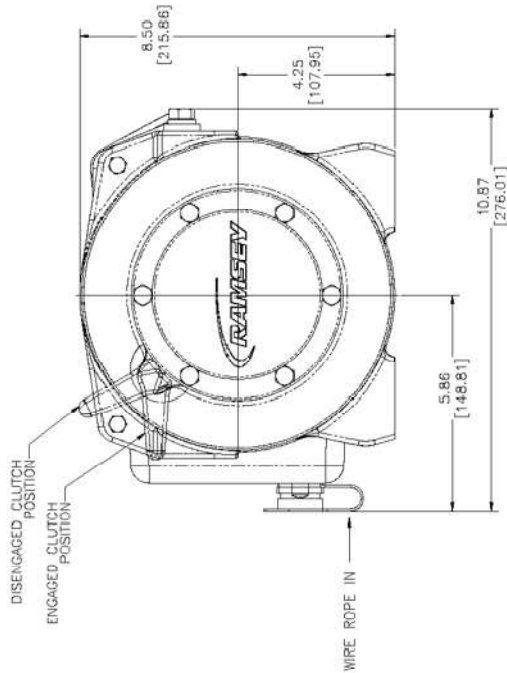
Since the greatest pulling power is achieved on the innermost layer of the winch, it is desirable to pull off as much line as possible for heavy pulls. If necessary, use a snatch block and double line arrangement.

Tight and neat spooling avoids cable binding.

DO NOT ATTEMPT TO WORK A BOUND CABLE UNDER LOAD.

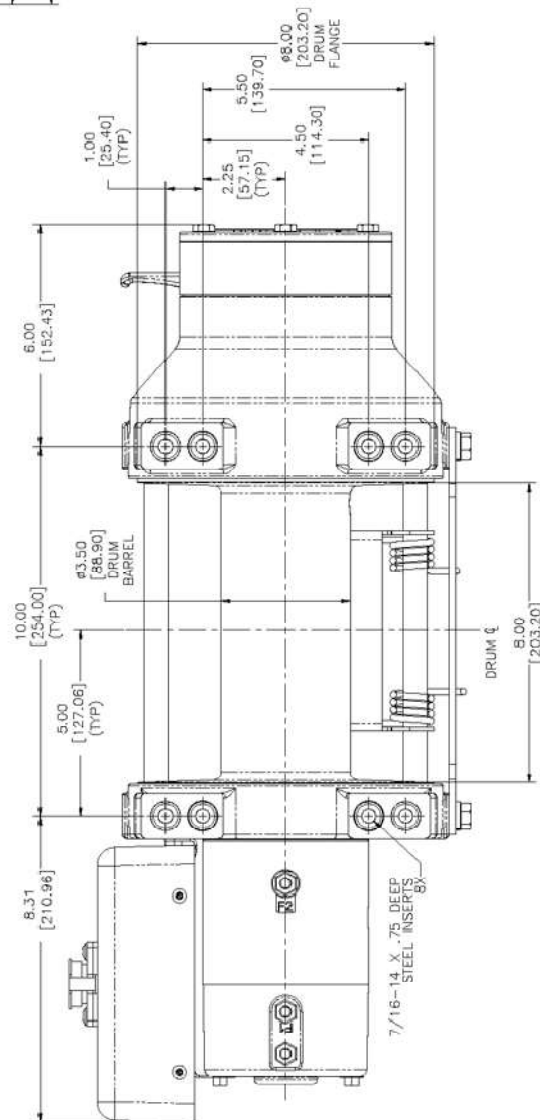
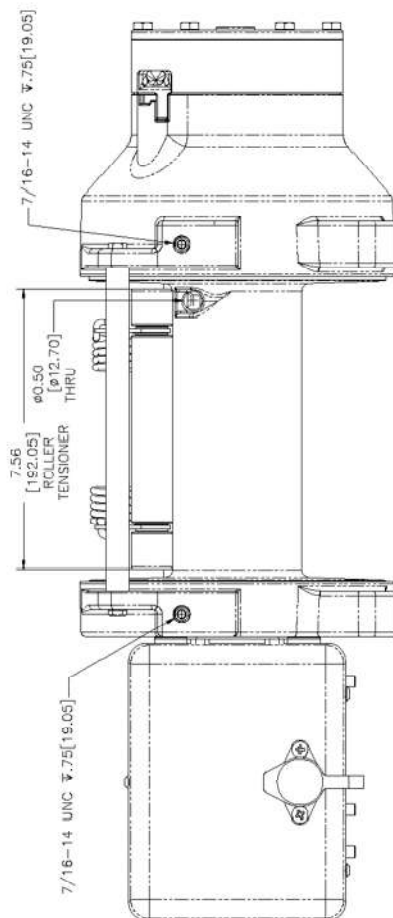
Notes

Winch Specifications



RATED LINE PULL	(lbs.)			16,500
	(kg.)			7,484
WEIGHT (WITHOUT CABLE)	(lbs.)			91
	(kg.)			41
LAYER OF CABLE		1	2	3	4
RATED LINE PULL	(lbs.)	16,500	13,500	11,423	9,900
PER LAYER	(kg.)	7,484	6,123	5,181	4,491
CABLE CAPACITY*	ft.	16	36	59	85
	m.	5	11	18	26

LINE PULL FIRST LAYER	(lbs.)	0	4000	8000	12000	16500
	(kg.)	0	1814	3629	5443	7484
LINE SPEED*	fpm.	22	12	8	6	2
	mpm	6.7	3.7	2.6	1.8	0.6
AMPS	(12V)	75.0	210.0	320.0	430.0	600.0
WIRE ROPE DIAMETER	7/16 in. EIPS or equivalent					
*DEPENDS ON CABLE BEING UNIFORMLY WOUND ONTO DRUM						



Installation Details

Installation Details

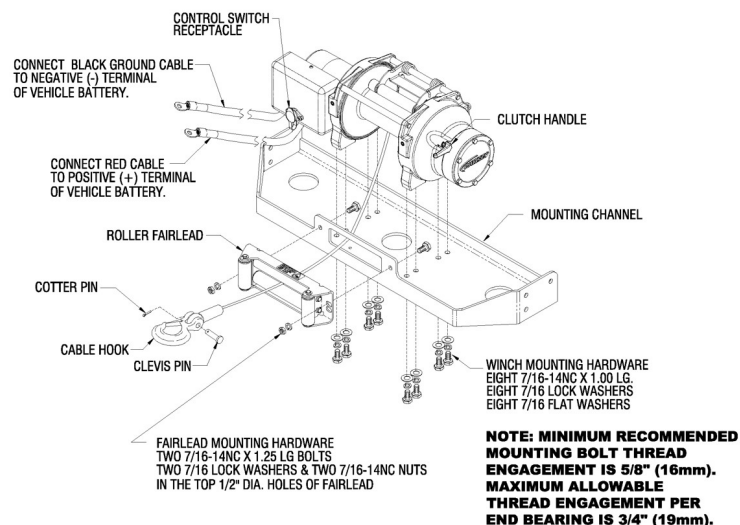
It is very important that the winch be mounted on a flat surface so that the three major sections (the motor end, the rope drum, and the gear housing end) are properly aligned. It is recommended that Ramsey kits be used to mount the winch. They are designed to align the winch and distribute up to the full rated load evenly, to avoid possible damage to the winch or vehicle.

NOTE: If recommended mounting is not used, a kit of equal design must be used.

NOTE: To ensure proper alignment of roller fairlead to winch, position larger (1/2") slots at top.

Attach winch to channel. Thread cap screws with lock washers through mounting holes in channel and into winch feet.

Substitution of attaching hardware items (bolts, nuts or washers) different from those supplied with your winch and mounting kit can lead to failure causing damage or serious injury (use SAE grade 5 bolts or better and torque to 47.45Nm (37 ft.lbs.)).



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, under drum and into the 1/2" diameter 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 drum, taking care to form neatly wrapped layers.

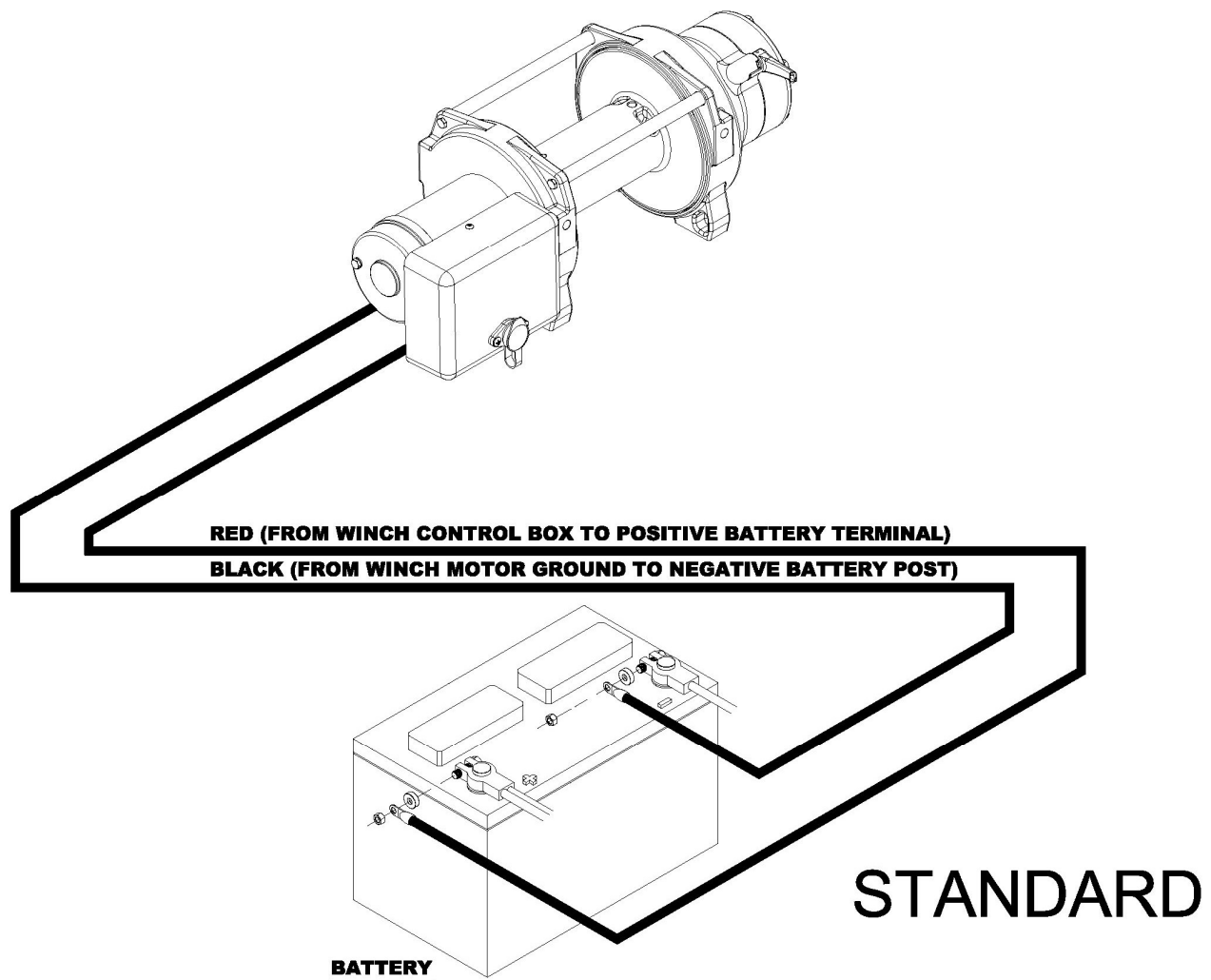
Inspect the cable frequently. If the cable becomes frayed with broken strands, replace immediately. Cable and hook assemblies may be purchased from a Ramsey distributor.

Installation Details

Electrical Instructions

For normal self recovery work, your existing electrical system is adequate. Your battery should be kept in good condition. A fully charged battery and proper connections are essential. Run the vehicle engine during winching operations to keep the battery charged. See below for complete wiring installation.

Figure below shows standard. Confirm all connections are secure.



Winch Operation

MANUAL CLUTCH OPERATING INSTRUCTIONS

The clutch provides free spooling and clutch engagement with cable drum. With the clutch disengaged, the cable can be pulled off the drum by hand. For winching in the load, the clutch must be fully engaged with the drum.

To disengage the clutch, run the winch in the reverse (Reel Out) direction until the load is off the cable and the cable drum stops turning. Pull outward on the clutch handle, rotate it to the disengaged position and release. The clutch is now locked out and the cable may be pulled off by hand.

(**Note:** If the clutch handle can't be pulled out, again run the winch momentarily in reverse to relieve pressure on the clutch.)



Do not attempt to disengage the clutch when there is a load on the cable.

To engage the clutch, rotate the handle to the engaged position 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. After the clutch is fully engaged, the winch is ready for winching in the cable.

Maintenance

Check the action of the clutch monthly, ensuring it is fully engaging and disengaging. If clutch is not fully engaging, inspect clutch shifter assembly parts for damage or excessive wear. Replace as necessary.

Corrosion on electrical connections will reduce performance or may cause a short. Clean all connections especially in the remote control switch and receptacle. In salty environments use a silicone sealer to protect from corrosion.

All moving parts in the winch are permanently lubricated with Mobilith SHC 007 synthetic grease at the time of assembly. Under normal conditions factory lubrication will suffice. Lubricate cable periodically using light penetrating oil. Inspect for broken strands and replace if necessary. If the cable becomes worn or damaged, it must be replaced.

Notes

Troubleshooting Guide

Troubleshooting Guide

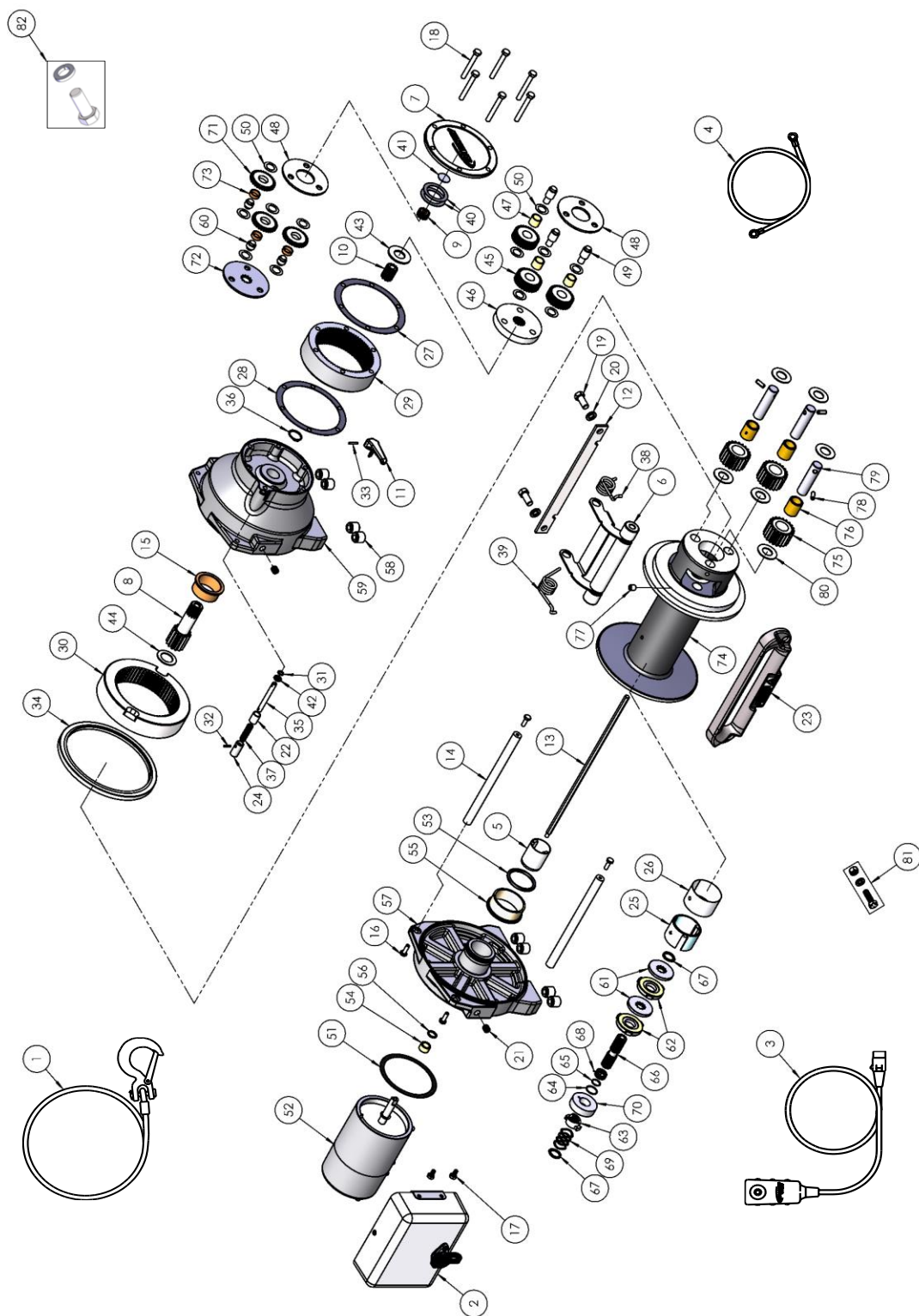
NOTE: The winch may make more noise when running in the "OUT" direction under load. This noise should decrease with use and is not detrimental to the winch operation.

CONDITIONS	POSSIBLE CAUSE	CORRECTION
MOTOR RUNS IN ONLY ONE DIRECTION	DEFECTIVE SOLENOID OR STUCK SOLENOID. OVERLOAD INTERRUPT HAS TRIPPED. LAST LAYER SHUT OFF HAS TRIPPED.	JAR EACH SOLENOID TO FREE CONTACTS. CHECK EACH SOLENOID BY APPLYING 24 VOLTS TO COIL TERMINAL (IT SHOULD MAKE AN AUDIBLE CLICK WHEN ENERGIZED). RUN WINCH "IN" CABLE "OUT" DIRECTION TO RESET. RUN WINCH IN CABLE "OUT" DIRECTION FOR ENTIRE TOP LAYER TO ALLOW SWITCH TO RESET.
MOTOR RUNS EXTREMELY HOT	INSUFFICIENT BATTERY	CHECK BATTERY TERMINAL VOLTAGE UNDER LOAD. IF 20 VOLTS OR LESS, REPLACE OR PARALLEL ANOTHER BATTERY TO IT.
MOTOR RUNS, BUT WITH INSUFFICIENT POWER OR WITH LOW LINE SPEED	BAD CONNECTION INSUFFICIENT CHARGING SYSTEM	CHECK BATTERY CABLE FOR CORROSION; CLEAN AND GREASE. REPLACE WITH LARGER CAPACITY CHARGING SYSTEM.
MOTOR RUNS, BUT DRUM DOES NOT TURN	CLUTCH NOT ENGAGED	IF CLUTCH ENGAGED BUT SYMPTOMS STILL EXIST, IT WILL BE NECESSARY TO DISASSEMBLE WINCH TO DETERMINE CAUSE AND REPAIR.
MOTOR WILL NOT OPERATE	DEFECTIVE SOLENOID OR STUCK SOLENOID DEFECTIVE MOTOR LOOSE CONNECTIONS	JAR SOLENOID TO FREE CONTACTS. CHECK SOLENOID BY APPLYING 24 VOLTS TO COIL TERMINAL (IT SHOULD MAKE AND AUDIBLE CLICK WHEN ENERGIZED). IF SOLENOIDS OPERATE, CHECK FOR VOLTAGE AT ARMATURE POST; REPLACE MOTOR. TIGHTEN CONNECTIONS ON BOTTOM SIDE OF HOOD AND ON MOTOR.

Notes

Kits and Maintenance Parts

109241



Kits and Maintenance Parts

109241

				KITS						
ITEM #	QTY.	PART NUMBER	DESCRIPTION	207055	222059	246075	246086	248069	283092	293019
1	1	216046	CABLE ASSEMBLY							
2	1	278178	ASSEMBLY-SOLENOID							
	1	296572	ASSY-COVER, SOLENOID							
3	1	282001	SWITCH ASSY-12FT LG							
4	1	289141	WIRE ASSY-GRND							
5	1	296600	ASSEMBLY-MOTOR COUPLING						X	
6	1	299796	ASSEMBLY-ROLLER							
7	1	328138	COVER-GEAR HSG							
8	1	334193	GEAR-OUTPUT SUN							
9	1	334265	GEAR-INPUT,SUN							
10	1	334266	GEAR-SECONDARY SUN							
11	1	336034	LEVER-CLUTCH		X					
12	1	350810	TIE PLATE-TENSIONER SPRING							
13	1	357514	SHAFT-INPUT							
14	2	395419	TIE BAR-PLANETARY							
15	1	412085	BUSHING-DRUM					X		
16	4	414038	CAPSCREW-1/4-20NCX3/4,HXHD							
17	2	414055	CAPSCREW-1/4-20NCX1/2LG,HXHD							
18	6	414159	CS-5/16-18UNCX2.50,HXHD							
19	2	414462	CAPSCREW-7/16-14NCX1LG,HXHD Z/P							
20	2	418198	LOCKWASHER-7/16							
21	2	416068	SETSCREW-7/16-14NCX1/2,SOCHD							
22	1	418458	SPACER-CLUTCH SHAFT		X					
23	1	422017	ASSY-HAWSE FAIRLEAD							
24	1	426042	PLUNGER-CLUTCH		X					
25	1	438033	SHELL-DISC BRAKE							
26	1	438042	INSULATOR-BRAKE							
27	1	442238	GASKET-GH COVER			X				
28	1	442239	GASKET-RING GEAR			X				
29	1	444114	RING GEAR INPUT							
30	1	444140	GEAR-RING							
31	1	462064	O-RING, 5/16X7/16X1/16		X	X				
32	1	470088	PIN-SPRING		X					
33	1	470097	PIN-SPRING 1/8 X.75		X					
34	1	486106	SEAL-OIL, 7.75 OD X 6.75 ID X .38 THK				X			
35	1	489025	SHAFT-SHIFT CLUTCH		X					
36	1	490037	SNAP RING							
37	1	494104	SPRING-SHIFTER		X					
38	1	494158	SPRING-R.H. ROLLER TENSIONER							
39	1	494159	SPRING-L.H. ROLLER TENSIONER							
40	2	518020	THRUST WASHER-1.39 ID							
41	1	518027	THRUST DISC-.035X.922DIA							
42	1	518060	WASHER-CLUTCH LEVER		X					

Kits and Maintenance Parts

109241

				KITS						
ITEM #	QTY.	PART NUMBER	DESCRIPTION	207055	222059	246075	246086	248069	283092	293019
43	1	518061	SPACER-INPUT-INTER GEAR							
45	3	334264	GEAR-INTERMEDIATE							
46	1	350713	CARRIER-PLANET-INTERMEDIATE							
47	3	412102	BUSHING							
48	2	413095	PLATE-CARRIER							
49	3	470096	PIN-INT PLANET, 1/4X.62							
50	12	518062	WASHER							
51	1	442233	GASKET-MOTOR			X				
52	1	458118	MOTOR-12V							
53	1	462041	O-RING-3/16X2-1/40DX1-7/8ID			X			X	
54	1	402122	BEARING					X		
55	1	412084	BUSHING-DRUM					X		
56	1	462118	ORING-.520 ID X .720 OD X .100 THK			X				
57	1	338463	END BEARING							
58	8	416306	THREADED INSERT							
59	1	338464	END BEARING							
60	3	470098	PIN-INPUT PLANET							
61	2	350702	DISC-BRAKE STATOR	X						
62	2	438034	PAD-BRAKE	X						
63	1	438041	CAM-SPLINED BRAKE							
64	1	462065	O-RING, 2-018 VITON (75 DUROMETER)	X		X				
65	1	462066	O-RING, 2-015 VITON (75 DUROMETER)	X		X				
66	1	489028	SHAFT-SPLINED BRAKE							
67	2	490048	SNAP RING	X						
68	1	494118	SPRING	X						
69	4	494119	WASHER-WAVE	X						
70	1	438045	CAM-BRAKE							
71	3	334263	GEAR-INPUT PLANET							
72	1	350695	PLATE-CARRIER							
73	3	412103	BUSHING-INPUT PLANET GEAR							
74	1	332288	DRUM-MACHINED							X
75	3	334173	GEAR-OUTPUT							X
76	3	412089	BUSHING-PLANET							X
77	1	416059	SETSCREW3/8-16NCX1/2 HX SOCK HD CUP							
78	3	470086	ROLL PIN-1/4 X 11/16LG							X
79	3	470090	PIN-PLANET							X
80	6	518047	WASHER-THRUST,.063 THK.X1.50 OD							X
81	1	257164	BOLT SET-W/422017							
82	1	257587	BOLT SET - PATRIOT 16,500							

INDUSTRIAL WINCH
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.



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