

# FITTING & OPERATING INSTRUCTIONS



# RAMSEY HYDRAULIC WINCH MODEL RPH 133.4

13,600kg Line Pull Capacity

Part No 9951

CONFORMING TO EN14492-1 Cranes – Power driven winches and hoists – Part 1: Power Driven Winches

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# INTRODUCTION

Thank you for purchasing a RAMSEY HYDRAULIC WINCH from the BHW Group. Ramsey winches are recognised as being the finest in their class and widely used for commercial purposes throughout the world.

# PLEASE READ THIS MANUAL CAREFULLY BEFORE INSTALLATION OR OPERATION OF THE WINCH

As the new owner / operator of a Ramsey winch it is important that you read and digest the information contained in this handbook. Further help and advice can be obtained from the BHW Group's trained sales engineers.

This winch is of the highest quality and has been designed to give robust and efficient service for many years if care and attention are given to correct installation, safe operation and maintenance.

# PLEASE KEEP THIS OWNERS MANUAL WITH THE WINCH.

# WARNING:

YOU SHOULD NOT UNDER ESTIMATE THE POTENTIAL DANGER IN WINCHING OPERATIONS, NEITHER SHOULD YOU FEAR THEM.

RESPECT FOR THE WINCH AND COMMON SENSE IN ITS OPERATION WILL ENSURE SAFETY AND RELIABILITY.

Please note:

- THE USER SHALL ENSURE THAT THE OPERATING PERSONNEL ARE GIVEN THE NECESSARY TRAINING. All users of the equipment shall be fully trained in the safe use of winches. Training shall be conducted by BHW Group or by a competent winch trainer qualified for the particular application.
- THE OPERATOR SHALL ALWAYS WORK IN COMPLIANCE WITH THE OPERATING INSTRUCTIONS.
- A MOTOR SPOOL (OPEN CENTRE) DIRECTIONAL CONTROL VALVE IS REQUIRED FOR BRAKE OPERATION.
- CLUTCH MUST BE FULLY ENGAGED BEFORE STARTING THE WINCH.
- DO NOT DISENGAGE CLUTCH UNDER LOAD.
- STAY OUT FROM UNDER AND AWAY FROM RAISED LOADS.
- STAND CLEAR OF ROPE WHILE PULLING. DO NOT TRY TO GUIDE ROPE. The winch may be operated by a fixed workstation and / or by a mobile workstation (e.g. wanderlead or radio remote). As the positioning of the winch rope depends on the particular application of the job, the operator shall be aware of the 'Guide to Safe Winching' section to ensure they and others are positioned safely.
- A MINIMUM OF 5 WRAPS OF ROPE AROUND THE DRUM BARREL IS RECOMMENDED TO HOLD THE LOAD.
- AVOID CONDITIONS WHERE LOAD SHIFTS OR SNATCHES OCCUR.
- EXCESSIVE "INCHING" SHALL BE AVOIDED.
- THE WINCH IS NOT TO BE USED AS A LOAD SECURING DEVICE.
- DO NOT USE WINCH TO LIFT, SUPPORT, OR OTHERWISE TRANSPORT PERSONNEL. Any such use shall invalidate the warranty. Neither Ramsey nor BHW Group Limited shall be responsible for any claims arising from such use.

Installers are advised to carry out a risk assessment on each individual application - and the pressure relief valve needs to be adjusted to act as a load limiter following installation.



# **NEW EUROPEAN STANDARDS & BHW GROUP LIMITED**

The new harmonised European standard: EN14492-1 for power driven winches provide the means for conformity to essential Health and Safety requirements of the EC Machinery Directive. Conformity to these standards is the joint responsibility of the supplier, the installer and the company operating the product.

BHW Group Limited products are fully compliant and carry a CE mark. A Declaration of Conformity is also supplied with each winch.

Selecting the correct winch for the application is very important not only from the health and safety aspect, but also to maximise product life and value for money.

Our aim at BHW Group Limited is to ensure the correct machine is supplied to suit the application and we welcome the opportunity of discussing the proposed application and offer advice. It will help us considerably if information regarding the maximum and average loads to be lifted or pulled - and approximate frequency of use can be provided.

This winch is to be used only for the purpose of vehicle recovery when fitted to equipment designed for the purpose, or the loading of wheeled vehicles upon bodies designed for the purpose, or used for a purpose specifically agreed with the BHW Group Limited.

For recovery vehicles the permissible standard of wire rope MBF\*\* to winch rating can be a minimum 2:1 and the ratio of wire rope to mean drum diameter\* only 10:1. This minimum standard is permitted because the running time is so short and the winch rarely sees maximum load. Whilst this standard is very reduced compared to lifting winches it imposes a much higher standard of safety than on many products currently being supplied.

Winches with capacities over 1000kg must be load limited.

Maximum wire rope length on drum must leave 1.5 x wire rope diameter from the top layer to drum flange.

\* Mean drum diameter = the drum diameter plus the diameter of the wire rope.

\*\* MBF = the Minimum Breaking Force of the wire rope.

# **INSTALLER RESPONSIBILITY FOR CE COMPLIANCE**

1. VERY IMPORTANT Use only a motor spool (open centre) control valve as per Hydraulic System Specifications (Page 10). The use of a closed centre valve may result in damage to the winch.

**2.** If the winch is operated using a wanderlead or/and a radio control - refer to Hydraulic System Specifications (Page 10).

3. Adjust system relief pressure as per Hydraulic System Specifications (Page 10).

4. Mount winch as per winch installation instructions (Page 13).

**5.** Install 20mm, 1960N/mm<sup>2</sup> grade, 6 x 36 wire core rope, with minimum breaking strain of 278kN (28,356kgf). Maximum rope length of 62m for x 4 layers maximum.

6. Attach rope to the drum as per wire rope installation instructions (Page 13).

**7.** Hook must have a safety latch and a minimum rated capacity of 7.5 tonne. Use only high tensile grade 80 or 100. These hooks are rated and stamped for lifting and have a safety factor of 4:1. A 7.5 tonne hook has therefore a minimum yield of  $7.5 \times 4 = 30$  tonne.

For pulling applications with a 2:1 factor of safety they are suitable for up to 15 tonne line pull.



# **GUIDE TO SAFE WINCHING**

The following safety precautions must be observed at all times whilst using the winch. Failure to do so could result in serious injury to personnel or damage to the winch.

Locate position of Emergency Stop before use. The clutch must be fully engaged before starting to haul a load. Never attempt to disengage the clutch when winch is under load.

Winches shall only be used by persons trained in their use and in the user's particular application. (BHW Group Limited offer winch courses to suit most user applications.)

Keep yourself and others at a safe distance to the side of the wire rope when pulling under load.

Never step over, stand near or guide a rope under tension.

Always use heavy-duty riggers type gloves when handling the wire rope to protect against cuts or possible burns. Use the rope handling strop supplied.

Take care of the wire rope. Check regularly for signs of wear in the form of broken strands or severe kinks along its length. If there are more than 10 strands broken in any length of the rope equal to 10 times the rope diameter, then it will be significantly weakened and must therefore be replaced. Wear and tear can be prevented by regular application of rope dressing available in aerosol form from your winch supplier. Oil and grease should never be used.

Always ensure that the rope is rewound neatly back onto the drum after use. If the rope is tensioned whilst unevenly wound, then loose coils can become trapped and badly damaged.

Do not drive the vehicle to pull a load on the winch wire rope, e.g. as a tow rope. Any resulting shock load could break the rope or damage the winch.

If the winch is being operated at maximum capacity, drape a heavy blanket or tarpaulin over the wire rope, halfway along its length. The blanket will reduce the whiplash effect of a failed rope or load attachment point.

When recovering a vehicle, the winch hook should be attached to the towing hitch, if available, or to a strap or chain around a chassis leg or cross member. NEVER anchor the winch hook onto bumpers, or shipping/transit anchorage. It is the operator's responsibility to ensure load attachment points are of sufficient strength to withstand the winch pull.

Do not allow the load to 'snatch' during a pull, as this can momentarily double or even treble the load on the rope.

Try to position either your vehicle or position a snatch block to ensure as straight a pull as possible. Use a snatch block to turn any corners with the rope.

When attaching the hook to the load, always double check that the hook is secure and the safety catch is fully closed. Remember that if the hook breaks away under tension, serious injury can result as the hook will travel through the air at speed.

A minimum of five wraps of rope around the drum is necessary to support the rated load. The rope to drum securing clamp is not designed to hold the rated load.



# **OPERATING METHOD**

It is very important that all users of this powerful winch equipment receive thorough training. As each winch installation and control method will vary reference should be made to the installers instructions. Particular attention should be paid to PTO engagement, disengagement and correct operating procedures for control valves. Particular attention should also be paid to the position of EMERGENCY STOP controls and the function of these should be tested.

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 recognise the sounds of a light steady pull, heavy pull, and sounds caused by load jerking or shifting. Gain confidence in operating your winch and its use will become second nature to 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 the drum. If this happens reverse the winch to relieve the load and move the anchor position of the hook further to the centre of the load so the winch has a direct pull. After completing the job unspool and rewind the cable neatly onto the drum.

# **CLUTCH OPERATION**

## To engage clutch:

1. Move the clutch control valve to the "clutch-engaged" position.

**2.** Anytime the temperature is below freezing, run motor in the "rope out" direction only until the drum starts to turn.

**2a.** In extreme cold temperatures (below -18°C/ 0°F), pull out on the rope by hand only until the drum starts to turn.

3. Wait at least 3 seconds for the clutch to fully engage, after which the winch is ready to winch in the rope.

**WARNING** Do not attempt to engage the clutch by first running the winch motor and then moving the clutch control valve to the "clutch-engaged" position while the motor is running. Do not start picking up the load at the same time the clutch is being engaged.

## To disengage clutch:

1. Run the winch in the "rope out" direction until the load is off the rope.

2. Move the clutch control valve to the "clutch-disengaged" position.

3. The rope may now be pulled off by hand.



# WINCH SPECIFICATIONS

Model	Ramsey RPH133.4 – 13.6 Tonne Hydraulic Winch EN 14492-1 Compliant				
Construction	Die cast aluminium end housings with steel drum				
Gear Type	Heavy duty case hardened steel worm with phosphor bronze wheel running in oil bath.				
Type of use	Intermittent commercial recovery and pulling of loads				
Motor	Low speed, high torque. 195cc/rev				
Brake	Self braking through the gear box				
Freespool Clutch	Air shift				
Weight	Winch only: 261kg With roller guides, mounting plate and wire rope: 320kg				
Gear Reduction	32:1				
Rated Line Pull and Line Speeds at 56 I/min.	Layer 1         133.4kN (13,600kgf)         Speed: 5.5.m/min.           Layer 2         111.2kN (11,342kgf)         Speed: 6.3.m/min.           Layer 3         95.3kN (9530kgf)         Speed: 7.2.m/min.           Layer 4         83.3kN (8497kgf)         Speed: 8.5.m/min.				
Recommended Wire Rope	20mm dia. (max.) x 50m (max.) 1960N/mm <sup>2</sup> grade 6 x 36 wire core				
Minimum Braking Strain	278kN (28,356kgf)				
Rope To Mean Drum Ratio	10:1				
Drum Dimensions	180mm diameter x 425mm length with cable wedge pocket anchor for improved load holding. Flange diameter 400mm.				
Drum Maximum Storage Capacity	60m (Using 20mm dia. wire rope).				
Drum Rotation	Clockwise or Anticlockwise as required				
Gearbox Oil Type	EP 140				
Hydraulic Oil Flow	75 I/min. maximum, 56 I/min. recommended. Higher flows will damage the motor and winch.				
Hydraulic Fluid	Viscosity 20-43 cSt (100-200 SUS) Maximum operating temperature 85°C. Cleanliness level of ISO 17-14 or better.				
Operating Pressure	190 bar (max.)				
Load Limiter	Hydraulic system must be fitted with hydraulic relief valve to limit winch line pull.				
Emergency Stop	Emergency Stop must be fitted to hydraulic system with 'oil dump' to tank between pump and directional control valve.				
Roller Guides (optional)	Extra Heavy Duty with greaseways and large diameter rollers				
Mounting rails	70 x 50 x 10mm mild steel angle (supplied with winch)				
Noise Level	76db				
Ambient Temperature Range	-28° to 60°C				





# **RPH 133.4 WITH FOOT MOUNTING ANGLES & AIR TENSIONER**





# **RPH 133.4 WITHOUT FOOT MOUNTING ANGLES**



# HYDRAULIC PERFORMANCE

Refer to the performance charts below to match the hydraulic system to the performance of the RPH 133.4.



BASED ON 195cc MOTOR

# HYDRAULIC SCHEMATIC - VALVE WITHOUT PRESSURE CARRY OVER



# HYDRAULIC SCHEMATIC - VALVE WITH PRESSURE CARRY OVER





# HYDRAULIC SYSTEM SPECIFICATIONS

General	Open System with low pressure return line filter.
Reservoir	Minimum capacity 80lt. must be fitted with 250 micron suction strainer, sight gauge and filler breather. Do not fill the tank, as space must be left for the oil to expand.
Hoses	Working pressure rating of hoses must be a minimum of 250 bar Minimum internal diameter of hoses and pipes:- Pressure hoses from pump to control valve and control valve to winch motor $\frac{3}{4}$ ". Return to tank = 1". Reservoir to pump = 1"
Hydraulic Motor	$1^{1}/_{16}$ " SAE straight thread 'O' ring port 2 places. Use adaptor to $\frac{3}{4}$ " BSP port.
Control Valve	4-way 3-position self-centring type. Open centre motor spool type must be used with inlet relief. The valve must be specified to ensure it meets the winch operating pressure and maximum flow requirements for satisfactory performance to be achieved.
BHW GROUP CAN SUPPLY A WID ELECTRIC AND ELECTRO/PNEUM WANDERLEAD OR RADIO CONTR	E SELECTION OF CONTROL VALVES INCLUDING: - ATIC.THIS ENABLES THE WINCH TO BE OPERATED WITH A OL. VALVES ARE SUPPLIED FULLY WIRED READY TO INSTALL.
Emergency Stop	To ensure compliance with the EU Machinery Directive an emergency stop must be included This will generally be in the hydraulic circuit and take the form of an electrically operated dumping valve. INCLUDED AS STANDARD ON BHW GROUP CONTROL VALVES.
Oil Reservoir Suction Strainer Return Line Filter -	<ul><li>250 microns (Approximately)</li><li>25 microns (Approximately).</li></ul>

IMPORTANT:Keep hose lengths to a minimum to reduce backpressure.<br/>If hose lengths exceed 4 metres, increase nominal bore size.<br/>Cleanliness within the hydraulic system is essential to ensure correct<br/>function and long life of the winch and all other components.

If other hydraulic equipment, (i.e. lorry loader crane), is also being included in the system, the selection of the PTO/PUMP is very important. This should be specified to meet the operating requirements of both the winch and crane. In some installations this will require a dual pump system. **Please contact BHW Group Limited for further information if required.** 

# CORRECT PRESSURE SETTING OF THE SYSTEM

Whether using a manual or electric control valve it is essential that the hydraulic pressure in the system is set correctly. This will ensure the winch is able to pull to its full rated capacity but without overloading. To do this secure the wire to a load via a measuring device (load cell) with rope running on the bare drum and operate the winch until the rated pull of the winch is achieved by adjusting the relief valve. CAUTION: IT IS RECOMMENDED TO KEEP A MINIMUM OF 5 WRAPS OF ROPE ON THE DRUM.

For adjustment method see valve suppliers instructions. A 125% proof load test should be carried out on completion to prove the integrity of the installation. The pressure relief valve must then be adjusted to provide the rated line pull of the winch and tamper proof seals must then be fitted.

The winch may be used with a snatch block so it is essential that provision is included for securing the rope hook adjacent to the winch. Note this provision must never be on the winch or winch frame as it would cause overloading.



# HYDRAULIC SYSTEM REQUIREMENTS

- **1.** Motor spool (open centre) control valve.
- 2. Emergency Stop: If winch is controlled by a direct-operated manual valve, that valve serves as the E-stop. If a remote operated control valve is used, a solenoid-operated hydraulic dump valve, normally open to tank, and an emergency stop switch (to open the dump valve) is required. The E-stop switch is to be normally closed and have a red, resettable push button actuator with a yellow background. The E-stop switch must be easily accessible to the operator.
- 3. Relief valve set to 207 bar which is the rated capacity limiter.
- **4.** Flow rate of 56,7 litres/min recommended maximum. Do not exceed 75,7 litres/min or motor and winch may be damaged.

**5.** Hydraulic fluid with a viscosity between 20-43 cSt (100-200 SUS). Maximum operating temperature 85C (180F). Cleanliness level of ISO 17-14 or better. The following page shows a schematic for the hydraulic system.

# WINCH RATING

The Ramsey winch rating on this model refers to its maximum rated line pull, measured as the force being applied to the winch in a horizontal plane. As in the case of all winches, this refers to the first layer of rope on the drum.

In most cases, when the winch is being used, there is no way of accurately determining the exact pull being applied. It is important, however, to try and establish that it is within the working capacity of both the winch and wire rope and this can be done by considering the following formulae which applies for gradients up to an angle of 45°. For wheeled vehicles, the pull required to move the load equals:

 $\frac{W}{25}$  + <u>(W x angle of gradient)</u>.

Where W = load in tonnes and angle of gradient is in degrees.

# EXAMPLE

If W, the weight of the rolling load being recovered is 30 tonne and is being pulled up skids, which form a gradient of 10°, the force on the rope is:

 $\frac{30}{25} + \frac{(30 \times 10)}{60} = 1.20 + 5 = 6.2 \text{ tonne.}$ 

NOTE: Ground factors make a significant difference to the force required.

Remember the winch pulling capacity reduces as the number of layers of wire rope increase on the drum.

If it is necessary to work beyond the limits of either the winch or wire rope, it is essential that a snatch block is employed which will enable the line pull to be nearly doubled.

If you should have any queries regarding the maximum load applied in a particular application, please do not hesitate to contact us and we will be pleased to offer our assistance.



# WINCH INSTALLATION

Irrespective of how the winch is mounted it is important that adequate provision is made so that the load is transmitted into the body of the vehicle and then into the chassis.

Never weld to chassis or drill top or bottom flange.

It is most important that the winch is mounted securely so that the three major sections the clutch housing end, cable drum and the gear housing end are properly aligned. Misalignment will cause the drum to bind and will lead to rapid wear of major components.

# **MOUNTING OPTIONS**



Left Hand Mounting

# **Right Hand Mounting**

**IMPORTANT NOTE**: installers must always ensure the winch can be easily removed for service and repair.

For this type of installation the longitudinal runner must be substantial enough to take the full winch loading.



# WIRE ROPE INSTALLATION BEFORE COMMENCING ENSURE HOST CHASSIS ENGINE IS STOPPED AND EMERGENCY STOP CONTROLS ARE ACTIVATED.

Wear protective gloves. Unwind rope by rolling it out along the ground to prevent kinking. Securely wrap plain end of rope (other end to hook), with plastic or similar tape to prevent fraying.



Pass plain end of rope through any guide rollers fairleads that may be fitted to the system towards the drum. Pass rope around drum, ENSURE IT IS PASSED AROUND THE DRUM THE RIGHT DIRECTION FOR CORRECT ROTATION. Place plain end of rope into tapered hole in winch drum. Then double it back through the hole, fitting the securing wedge in the loop formed by the rope and pulling it back into the tapered hole.

Carefully run winch in the "winch in" direction. Keeping tension on end of cable, spool all the cable onto the cable drum, taking care to form neatly wrapped layers. Keep hands away from drum and guide rollers. Do not allow rope to slide through hands.

The wire rope when fully loaded should allow a space of at least 1.5 x the rope diameter between the edge of the drum flange and the top layer of the loaded wire rope (Fig. 1). After installing cable, check freespool operation. Disengage clutch and pull on cable at a walking speed. If cable "bird nests", loosen jam nut and turn nylon setscrew clockwise to increase drag on drum. If cable pull is excessive, loosen nylon setscrew by turning counter clockwise. Tighten jam nut when proper setting is obtained.

## CAUTION: Over-tightened of jam nut may strip nylon setscrew.

# CARE OF THE WIRE ROPE

## NOTE: ISO 4309:2004/2010 - WIRE ROPES DIRECTIVE

ISO 4309:2004 / 2010 details guidelines for the care, installation, maintenance and examination of wire rope in service on winches, hoists and cranes, and enumerates the discard criteria to be applied to promote the safe use of the machinery. It is important that these guidelines for safe care, installation and ultimately disposal of wire ropes is strictly adhered to according to this directive.

It is most important that the wire rope is inspected on a regular basis, for kinks, flat spots, broken strands and other damage, and if necessary the damaged sections should be cut away and the rope re hooked or completely replaced.

Check both the rope and the hook and replace under any of the following circumstances:

- 10 strands of rope or more broken with a space of 25mm (See fig.1).
- Rope shows visible signs of wasting (See fig.2).
- Deformed or excessively corroded rope.
- Twisted rope.
- Bent rope.

It is good practice to regularly use rope lubricant, as this will prevent rust and corrosion, which can seriously reduce its working life. Rope lubricant is available from the BHW Group.

After using the winch always check to ensure that the wire rope is layered evenly on the drum. If this is not the case, power out the wire rope and rewind it to ensure even layers. This will significantly extend wire rope life. Normally the tension can be applied by hand – wear protective gloves.

Under no circumstances wrap the wire rope around the load being recovered and then attach the hook back onto the rope. This will result in serious rope damage or breakage. Always employ a chain or webbing strap from the hook to the load. WIRE ROPES ARE NOT COVERED BY WARRANTY.











# WINCH LABELS





# MAINTENANCE

Adhering to the following maintenance schedule should keep your winch in top condition and performing as it should, with a minimum of repair.

# WEEKLY

Check the oil level and maintain it to the oil level plug. If oil is leaking out, determine location & repair. Check the pressure relief plug in top of the gear housing. Be sure that it is not plugged. Lubricate rope with light oil.

# MONTHLY

Check the winch mounting bolts. If any are missing, replace them and securely tighten any that are loose. Use grade 5 or better bolts. Inspect the rope. If the rope has become fraved with broken strands, replace immediately.

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# ANNUALLY

Drain the oil from the winch annually or more often if winch is used frequently.

Fill the winch to the oil level plug with clean kerosene. Run the winch a few seconds with no load, in the reel in direction. Drain the kerosene from the winch.

Refill the winch to the oil level plug with all purpose SAE 80W-140 gear oil.

Inspect frame and surrounding structure for cracks or deformation.

# **TROUBLE SHOOTING**

CONDITION	POSSIBLE CAUSES	CORRECTIONS
Oil leaks from winch	1. Seals damaged or worn	1. Replace seal
	2. Too much oil	2. Drain excess oil.
	3. Damaged gasket	3. Replace gasket
Winch runs too slow	1. Low flow rate	1. Check flow rate. Refer to flow chart
	2. Hydraulic motor worn out	2. Replace motor
Rope drum will not freespool	1. Clutch not disengaged	1. Check air pressure to clutch cylinder 6,2 bar (90 PSI) mini mum required
	<ol> <li>If equipped with air tensioner, too much force on tensioner bar</li> </ol>	<ol><li>Reduce air pressure to tensioner actuators.</li></ol>
Brake will not release	1. Air in hydraulic system	1. Bleed air from brake.



Refer to parts list and drawing page for actual item numbers and corresponding part numbers.

1. Drain oil from gear housing (No.11) by removing plug (No.47) from end bearing. Remove reducer and relief fitting (Nos.41 & 46) If new air cylinder is required, remove air cylinder (No.37) from adapter (No.4 by removing (4) cap screws (No.26). Remove breather vent (No.42). Remove washer (No.30), nut and setscrew (Nos.31 &.25) and insert (No.34) from end of air cylinder rod. Apply Loc-tite to threads of nut (No.31) and thread onto setscrew (No.25) to 10 mm (3/8 inch) from drive end, as shown below. Apply Loctite to threads of setscrew and thread insert (No.34) over end of setscrew and against nut. Use set screw and nut to thread insert (No.34) into end of air cylinder rod. Tighten nut against cylinder rod, keeping 10 mm (3/8 inch) distance from drive end of setscrew to nut. Be sure breather vent (No.42), and relief fitting (No.41) are not damaged and in good operating condition. Remove and replace if necessary. Remove air cylinder adapter (No.4) and gasket (No.40) from gear housing cover by unscrewing x 4 cap screws (No.21).



**3.** Remove brake assembly screws (No.18) from brake (No.38a) to access (2) mounting screws item

(No.23) attaching brake adapter plate (No.38d) to end bearing item (No.10). **CAUTION: Brake is spring** 

loaded by clutch spring and must be restrained against end bearing as mounting screws (No.23) are removed. Remove coupling (No.8) and gasket (No.38e) from end bearing. Take note of mounting configuration for proper mounting of parts during re-assembly.



**2.** Disconnect tube (No.50) from elbow (No.35) and fitting (No.36) on bottom of brake (No.38). Remove motor (No.43) and gasket (No.38b) by removing (2) cap screws (No.24). Remove valve (No.51), if needed, from motor by loosening (3) cap screws (No.22) - (not shown).





**4.** Remove winch from upright mounting frame (No.2) by removing (8) cap screws (No.20), x 8 lock washers (No.29) and x 4 shoulder bolts (No.32). Pull motor end bearing (No.10) from drum assembly (No.1).

**5.** Pull drum assembly (No.1) upward from end bearing (No.11). Remove quad-rings (Nos.44 & 45) from grooves in drum bushings. Remove input shaft (No.13), clutch spring (No.49) and washer (No.33) from end bearing (No.11). Examine key (No.12) and input shaft for signs of wear, replace if damaged. Examine drum assembly (No.1) for signs of wear. If splines inside of drum driver (No.1g) are damaged, it must be replaced.

Remove drum driver (No.1g) by unscrewing x 8 cap screws (No.1f). Place well oiled O-ring (No.1d) into drum driver groove and attach driver to drum (No.1c) using x 8 cap screws (No.1f). Torque cap screws to 163 Nm (120 ft lb) each, in criss-cross pattern. Press old bushings (Nos.1a & No.1j) from drum (No.1c) and drum driver (No.1g).

Remove O-rings (Nos.1b & No.1h) from grooves in drum (No.1c) and drum driver bushing (No.1j). Place well oiled O-rings (No.1b & No.1h) into grooves in drum (No.1c) and outer diameter of drum driver bushing (No.1j). Press new bushing (No.1a) into end of drum (No.1c) opposite drum driver (No.1g) and press bushing (No.1j) into drum driver (No.1g) until flange of bushings are flush against drum (No.1c) and driver (No.1g).



**6.** Remove output coupling (No.9) and coupling shaft (No.7) from end bearing (No.11). Examine bearings (No.15), pressed in output coupling (No.9), for signs of wear.

Replace bearings, if necessary, by pressing old bearings from coupling and press new bearings (No.15) into each end of output coupling (No.9). Place coupling shaft (No.7) into bearings (No.15).



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**7.** Remove x 12 cap screws (No.17) to pull gear housing cover from ring gear. Remove input thrust washer, sun gear and carrier assemblies from inside of ring gear. Remove ring gear from end bearing (No.11). Examine shifter shaft (No.14) for signs of wear, replace if necessary. Examine bushing (No.16) for signs of wear. Replace bushing, if necessary, by pressing old bushing from housing and pressing new bushing into place.



**9.** Gently tap key (No.12) into keyway of input shaft (No.13). Liberally apply grease to shoulder of input shaft (No.13). Place spring (No.49) over splined end of shaft. Use grease to hold spring in place on shaft. Place spring and splined end of shaft through motor end bearing (No.10) and drum until shaft extends through bushing (No.16). Place clutch washer (No.33) over splined end of shaft and against spring.

Place end of output coupling assembly (No.9), with longest splines, through end bearing bushing (No.16) and mesh shaft coupling spline with splined end of shaft. Place short splined end of shifter shaft (No.14) through washer (No.33) and into shaft coupling (No.7), meshing splines of shifter shaft with splines in shaft coupling.



8. NOTE: DETERMINE MOUNTING CONFIGURATION OF WINCH (R.H. or L.H. MOUNTED) BEFORE ATTACHING UPRIGHT FRAME TO WINCH, TO ASSURE PARTS ARE MOUNTED TO PROPER SIDE, REFER TO WINCH MOUNTING CONFIGURATIONS, PAGE 9.

Seat well oiled quad-rings (Nos.44 & 45) into groove of bushing in each end of drum assembly (No.1), as shown. Carefully set drum assembly (No.1) down over motor end bearing item (No.10). Lift gear housing end bearing (No.11) and set into place on drum assembly.

Attach upright frame (No.2) to end bearings. Install x 4 shoulder bolts (No.32) and hand tighten. Install x 8 cap screws with lock washers (Nos.20 & 29). Tighten x 4 inner-most cap screws securely, check rotation of rope drum. Tighten x 4 outer-most cap screws securely, check rotation of rope drum. Torque cap screws, in previous inner-most then outer-most pattern, to 339 Nm (250 ft lb) each. Torque x 4 shoulder bolts to 41 Nm (30 ft lb) each. Make sure rope drum assembly rotates freely at this point.





10. Apply RTV sealing compound to ring gear mounting surface of end bearing (No.10). Place ring gear onto end bearing, aligning holes in ring gear with holes and gear housing end bearing. Use x 2 cap screws to temporarily secure ring gear to end bearing. Place x 2 gear carrier assemblies into ring gear meshing carrier gears with ring gear. Remove x 2 temporary cap screws, making sure that ring gear and carrier assemblies are securely against end bearing (No.10). Apply RTV sealing compound to cover mounting surface of ring gear (No.3) and attach cover to ring gear. Use x 12 cap screws (No.17) to secure gear box to gear housing end bearing. Torque cap screws to 53 Nm (39 ft lb) each, in criss-cross pattern.



**12.** Align key way of coupling with key on end of input shaft inside end bearing assembly. Slide coupling over end of shaft. Place gasket (No.38e) into position on motor mounting surface of end bearing item (No.10). Use x 2 screws (No.23) to attach adapter plate (No.38d) to motor end bearing. Torque cap screws to 115 Nm (85 ft lb) each. Place second gasket (No.38e) on adaptor plate. Insert brake shaft with key (No.38c) into coupling. Re-attach brake (No.38a) to adaptor plate using brake assembly screws (No.18). Torque cap screws to 132 Nm (97 ft lb) each.

**Note:** Care must be taken to assure brake assembly and adaptor plate are seated properly prior to installing assembly bolts (No.18). Damage will occur to rotor stack or shaft snap ring if not properly installed.



**11.** Slide input sun gear over shifter shaft (No.13) and mesh with teeth of input carrier. Apply grease to input thrust washer and place into slots of air cylinder adapter (No.4). Place gasket (No.40) into position on gear box cover with sealer and attach adapter to cover using x 4 cap screws (No.21) Apply Loctite PST thread sealer to threads of cap screws. Torque cap screws to 18 Nm (13 ft lb) each, in criss-cross pattern.

Pull rod from air cylinder as far as possible. Slide washer (No.30) over setscrew (No.25) and against nut attached to air cylinder rod. Place setscrew into hole of shifter shaft (No.13). Attach new air cylinder (No.37) and gasket (No.40) with sealer, to adapter using x 4 cap screws (No.26). Apply Loctite PST thread sealer to threads of cap screws. Torque cap screws to 7 Nm (5ft lb) each, in criss-cross pattern.





**13.** Attach motor (No.43) with gasket (No.38b) to brake (No.38). Use x 2 cap screws (No.24) and torque to 100 Nm (74 ft lb) each. Securely connect tube (No.50) to elbow (No.35) in bottom of valve and fitting (No.36) in bottom of brake (No.38).





**14.** Apply Permatex to threads of plug (No.47). Thread plug into tapped hole in bottom of gear housing end bearing (No.11). Pour approx.1.2 litres (2.50 pints) of SAE 80W-140 oil into end bearing. Check oil level by removing oil plug noted below. Insert relief fitting (No.41) and thread reducer (No.46) into end bearing at oil fill hole. Install winch and connect pressure lines. Bleed pressure release section of brake by loosening bleeder fitting on brake and allowing air to escape while slowly applying hydraulic system pressure to the winch (refer to bleeder fitting in step 13). Apply at least 15,9 bar (230 PSI) pressure to release brake and verify that brake releases, by observing that the winch drum rotates.

**15.** Check proper operation of clutch by applying air pressure to clutch air cylinder to disengage clutch. Verify that winch freespools. Re-engage clutch. A loud noise should be heard when clutch engages. Winch drum should not freespool.

**16.** Operate winch forward and reverse to verify that drum rotates.



# RAMSEY MODEL RPH133.4 PARTS DIAGRAM



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# **RAMSEY MODEL RPH133.4 PARTS LIST**

1         10350         DRUMASSEMBLY         30         1         10372         WASHER-THRUST           1         10353         ADMITING FRAME ASSEMBLY         31         1         10377         WUT 5/16-2ME ASIG           1         10254         ADAFTOR-ARR CVLINDER         33         2         10379         SHOUDER BOLT           1         10355         RODELMOS-ARR CVLINDER         33         2         10379         SHOUDER BOLT           1         10355         ROPE ANCHOR         33         2         10379         WUT 5/16-20 ELBOW           1         10355         ROPE MACLES         33         1         10380         IFTING 7/16-20 ELBOW           1         10356         ROPE MACLES         33         1         10380         IFTING 7/16-20 ELBOW           1         10356         ROPE MACLE         37         1         10380         IFTING 7/16-20 FLBOW           1         10356         ROUPING FRAKE         37         1         10381         IFTING 7/16-20 FLBOW           1         10356         ROUPER SHAFT         33         1         10382         BRAKE SHAFT 7/100N           1         10356         END BEARING MOTOR         38         1         10	of y	. Part No.	Description	E	em No.	oty.	Part No.	Description
10352         MOUNTING FRAME ASSEMBLY         31         1         10377         NUT 5/16         241k x 3/16 THK LOCK           10277         GEAR BOX         33         2         10378         SHOULDER BOLT           10354         NOEPCR-AR CYLINDER         33         2         10378         SHOULDER BOLT           10355         ROPE ANCHOR         33         1         10380         INSERT         -           10355         COUPLING - SHAFT         36         1         10381         FITTING 7/16 - 20 ELBOW           10356         COUPLING - SHAFT         36         1         10381         FITTING 7/16 - 20 ELBOW           10356         COUPLING - SHAFT         38         1         10381         FITTING 7/16 - 20 ELBOW           10278         COUPLING - GEAR         38         1         10381         FITTING 7/16 - 20 ELBOW           10278         COUPLING - GEAR         38         1         10381         FITTING 7/16 - 20 ELBOW           10278         COUPLING - GEAR         38         1         10381         FITTING 7/16 - 20 ELBOW           10278         CUUPLING - GARR         SHAFT         ARC         ARC/INIDER         ARC/INIDER           10278         END BEARING - GEAR         S		10350	DRUM ASSEMBLY		30	-	10372	WASHER - THRUST
10277         GEAR BOX         32         4         10378         SHOULDER BOLT           10354         ADAPTOR -MR CYLINDER         33         2         10379         WASHFR - CLUTCH           10355         ROPE ANCHOR         33         2         10379         WASHFR - CLUTCH           10356         COUPLING - SHAFT         36         1         10381         FITTING 7/16 - 20 FLBOW           10356         COUPLING - SHAFT         36         1         10381         FITTING 7/16 - 20 FLBOW           10358         COUPLING - SHAFT         36         1         10381         FITTING 7/16 - 20 FLBOW           10358         COUPLING - SHAFT         38         1         10382         BRAKE SHAFT FOUNDER           10358         COUPLING - SHAFT         38         1         10382         BRAKE SHAFT FOUND           10351         SHIFTER - SHAFT         38         1         ADAPTOR PLATE         ADAPTOR PLATE           10356         SHAFT - MPUT         386         1         ADAPTOR PLATE         ADAPTOR PLATE           10361         SHIFTER - SHAFT         38         1         10382         GASKET - ADAPTOR PLATE           10363         SHAFT - MPUT         386         1         10387		10352	MOUNTING FRAME ASSEMBLY		31	-	10377	NUT 5/16 - 24NF x 3/16 THK LOCK
10353         ADAPTOR - AIR CYLINDER         33         2         10375         WASHER - CLUTCH           10354         ANGLES         34         1         10380         INTING         INTING <td></td> <td>10277</td> <td>GEAR BOX</td> <td></td> <td>32</td> <td>4</td> <td>10378</td> <td>SHOULDER BOLT</td>		10277	GEAR BOX		32	4	10378	SHOULDER BOLT
10354         ANGLES         34         1         10380         INSERT           10355         ROPEANCHOR         35         1         8400         FITTING 7/16-20 ELBOW           10356         COUPLING-BRAKE         35         1         5337         AIR CYLINDER           10357         COUPLING-BRAKE         37         1         5337         AIR CYLINDER           10256         END BEARING-AUTOT         38         1         5337         AIR CYLINDER           10256         END BEARING-AUTOR         38         1         10382         BRAKE           10356         END BEARING-GEAR         38         1         10382         BRAKE           10356         END BEARING-GEAR         38         1         ADPTOR PLATE           10361         SHETER-SHAFT         386         1         ADPTOR PLATE           10361         SHETER-SHAFT         386         1         ADPTOR PLATE           10361         SHETER-SHAFT         386         1         ADPTOR PLATE           10362         BUSHING-THRUST         386         1         380         GASKET-ABC/INDER           10362         CAP SCREW 12-TINUT         388         1         10383         GASKET-ABC/INDER </td <td></td> <td>10353</td> <td>ADAPTOR - AIR CYLINDER</td> <td></td> <td>33</td> <td>2</td> <td>10379</td> <td>WASHER - CLUTCH</td>		10353	ADAPTOR - AIR CYLINDER		33	2	10379	WASHER - CLUTCH
10356         ROPE ANCHOR         35         1         8940         FITING 7/16-20 ERBOW           10356         CUDPLING-SHAFT         36         1         10381         EITING 7/16-20 ERBOW           10356         CUDPLING-OBRAKE         36         1         10381         EITING 7/16-20 ERBOW           10356         CUDPLING-OUTPUT         38         1         537         AIR CYLINDER           10356         END BEARING-MOTOR         38         1         10382         BRAKE SSEMBLY           10356         END BEARING-MOTOR         38         1         MOTOR GASKET           2211         KEY         384         1         MOTOR GASKET           2210         SHAFT-INPUT         384         1         MOTOR GASKET           210360         SHAFT-INPUT         386         1         MOTOR GASKET           210361         SHIFTER-SHAFT         384         1         MOTOR GASKET           210361         SHAFT-INPUT         386         1         MOTOR ASKET           210361         SHIFTER-SHAFT         384         1         MOTOR ASKET           210362         SHAFT-INPUT         384         1         MOTOR PLATE GASKET           210361         SHIFTER-S	3	10354	ANGLES		34	<del>.</del>	10380	INSERT
10356         COUPLING- SHAFT         36         1         10331         FITTING 7/16-20 STRAIGHT UNION           10357         COUPLING- BRAKE         37         1         5337         AR CVLINDER           10358         END BEARING- MOTOR         38         1         10382         BRAKE ASSEMBLY           10359         END BEARING- MOTOR         38         1         10382         BRAKE ASSEMBLY           10350         END BEARING- GEAR         38         1         MOTOR GASKET         38           10350         SHAFT-INPUT         38         1         MOTOR GASKET         8           10361         SHIFT-INPUT         386         1         ADAPTOR PLATE         8           10361         SHIFT-INPUT         386         1         ADAPTOR PLATE         8           10361         SHIFT-INPUT         386         1         ADAPTOR PLATE         8           10363         BEARING         386         1         ADAPTOR PLATE         8           10365         CAP SCREW 56-11NC X2% HX HD GRS         37         1         10383         GASKET-ADAPTOR           10366         CAP SCREW 51/2 HRUST         *38         1         1         10384         MOTOR PLATE GASKET		10355	ROPE ANCHOR		35	-	8940	FITTING 7/16 - 20 ELBOW
1         10357         COUPLING - BRAKE         37         1         5337         AIR CYLINDER           1         10278         COUPLING - OUTPUT         38         1         10382         BRAKE ASEMBLY           1         10358         END BEARING - MOTOR         38         1         10382         BRAKE ASEMBLY           1         10358         END BEARING - GEAR         38         1         ADAPTOR PLATE           1         10361         SHFT - INUT         386         1         ADAPTOR PLATE           1         10365         SHAFT - SHAFT         386         1         ADAPTOR PLATE           1         10361         BEARING         - 386         1         ADAPTOR PLATE           1         10365         CAP SCREW 3/8 + HD GRS         - 41         1         5402           1         10366         CAP SCREW 3/8 + HD GRS         - 44         1         5402           1<	_	10356	COUPLING - SHAFT		36	-	10381	FITTING 7/16 - 20 STRAIGHT UNION
I         10278         COUPLING-OUTPUT         38         1         10382         BRAKE ASSEMBLY           I         10358         END BEARING-MOTOR         38a         1         mOTOR GASKET           I         10359         END BEARING-MOTOR         38a         1         mOTOR GASKET           I         10359         END BEARING-GEAR         *38b         1         mOTOR GASKET           I         10360         SHAFT-INPUT         38d         1         mOTOR GASKET           I         10360         SHAFT-INPUT         38d         1         mOTOR GASKET           I         10361         SHIFTER-SHAFT         *38         2         ADAPTOR PLATE           I         10360         SHAFT-INPUT         *36         1         ADAPTOR PLATE           I         10361         SHIFTER-SHAFT         *38         2         ADAPTOR PLATE           I         10361         SHIFTER-SHAFT         *38         2         ADAPTOR PLATE           I         10365         CAP SCREW 12-13NC x37" HX HD GRS         *39         1         302           I         10365         CAP SCREW 12-13NC x27" HX HD GRS         *44         1         5420         QUAD-RUIC	_	10357	COUPLING - BRAKE		37	-	5337	AIR CYLINDER
I         10358         END BEARING - MOTOR         38a         1         BRAKE           I         10359         END BEARING - GEAR         *38b         1         MOTOR GASKET           I         5211         KEY         *38b         1         MOTOR GASKET           I         10360         SHAFT - INPUT         38c         1         MOTOR GASKET           I         10361         SHIFTE-INPUT         38c         1         ADAPTOR PLATE           I         10361         SHIFTE- SHAFT         *38c         2         ADAPTOR PLATE           I         10361         SHIFTE- SHAFT         *38c         2         ADAPTOR PLATE           I         10361         SHIFTE- SHAFT         *38c         2         ADAPTOR PLATE           I         10361         SHIFTE- SHAFT         *38c         1         ADAPTOR PLATE           I         10362         BLSHING - THRUST         *38c         2         ADAPTOR PLATE           I         10362         CAP SCREW 1/2 - 13NC x 3/2" HX HD GRS         41         1         5420         GASKET - NENT           I         10366         CAP SCREW 3/6 - 11NC x 2/2" HX HD GRS         43         1         10364         1	-	10278	COUPLING - OUTPUT		38	-	10382	BRAKE ASSEMBLY
1         10359         END BEARING - GEAR         *38b         1         MOTOR GASKET           1         5211         KEY         38c         1         BRAKE SHAFT KEY           1         5211         KEY         38c         1         BRAKE SHAFT KEY           1         10360         SHFT - INPUT         38d         1         ADAPTOR PLATE GASKET           2         10363         SHIFTER - SHAFT         *38         1         10383         GASKET - ADAPTOR           2         10363         BEARING         *38         1         10383         GASKET - ADAPTOR           2         10364         CAP SCREW 3/8 - 16NC x 5/y* HX HD GRS         *40         1         5380         GASKET - ADAPTOR           2         10365         CAP SCREW 3/8 - 16NC x 5/y* HX HD GRS         41         1         5402         RELIFF FITING           2         10366         CAP SCREW 1/2 - 13NC x 3/y* HX HD GRS         *44         1         5420         RELIFF R- VENT           2         10366         CAP SCREW 5/16 - 13NC x 2/y* HX DG RS         *44         1         5420         QUAD - RING           3         10366         CAP SCREW 5/16 - 13NC x 2/y* HX DG RS         *44         1         5420         QUAD - R	-	10358	END BEARING - MOTOR		38a	-		BRAKE
1         5211         KEY         38c         1         BRAKE SHAFT KEY           1         10360         SHAFT-INPUT         38d         1         ADAPTOR PLATE           1         10361         SHIFTER-SHAFT         38d         1         ADAPTOR PLATE           2         10363         BEARING         *38         2         ADAPTOR PLATE           2         10363         BEARING         *38         10383         GASKET-ADAPTOR           2         10364         CAP SCREW 3/8 · 16NC x 5/2' HX HD GRS         *40         1         5300         GASKET - ADAPTOR           2         10365         CAP SCREW 1/2 · 13NC x 3/2' HX HD GRS         *41         1         5402         RELIEF FITTING           2         10366         CAP SCREW 3/8 · 16NC x 2/2' HX HD GRS         *43         1         10384         MOTOR · HYDRAULIC           2         10366         CAP SCREW 3/8 · 16NC x 2/2' HX SOC HD         *46         1         10386         QUAD - RING           3         10366         CAP SCREW 3/8 · 16NC x 2/2' HX SOC HD         *47         1         10386         REDUCER           3         10369         CAP SCREW 3/6 · 18NC x 2/1'' SOC HD         *47         1         10387         PIDE PLUG     <	-	10359	END BEARING - GEAR		*38b	-		MOTOR GASKET
1         10360         SHAFT-INPUT         38d         1         ADAPTOR PLATE           1         10361         SHIFTER-SHAFT         38d         1         ADAPTOR PLATE           2         10363         BEARING         *38         2         ADAPTOR PLATE GASKET           2         10363         BEARING         *38         1         10383         GASKET - ADAPTOR           2         10362         BUSHING - THRUST         *39         1         10383         GASKET - ADAPTOR           2         10365         CAP SCREW 3/8 - 16NC x 5/% HX HD GRS         *40         1         5380         GASKET - ADAPTOR           2         10365         CAP SCREW 3/8 - 16NC x 2/% HX HD GRS         41         1         5380         GASKET - NOT           8         10366         CAP SCREW 3/8 - 10NC x 2/% HX HD GRS         *43         1         10384         MOTOR - HYDRAULIC           8         10366         CAP SCREW 5/16 - 18NC x 2/% HX BO GRS         *44         1         5420         QUAD - RING           1         10366         CAP SCREW 5/16 - 18NC x 2/% HX BO GRS         *44         1         5420         QUAD - RING           1         10366         CAP SCREW 5/16 - 18NC x 2/% HX BO GRS         *44 <t< td=""><td>-</td><td>5211</td><td>KEY</td><td></td><td>38c</td><td>-</td><td></td><td>BRAKE SHAFT KEY</td></t<>	-	5211	KEY		38c	-		BRAKE SHAFT KEY
1         10361         SHIFTER - SHAFT         *38e         2         ADAPTOR PLATE GASKET           2         10363         BEARING         *39         1         10383         GASKET - ADAPTOR           2         10362         BUSHING - THRUST         *39         1         10383         GASKET - ADAPTOR           2         10362         BUSHING - THRUST         *40         1         5380         GASKET - ADAPTOR           2         10365         CAP SCREW 3/8 - 16NC × 5/% HX HD GR5         41         1         5420         RELIEF FITTING           2         10366         CAP SCREW 3/8 - 16NC × 2/% HX HD GR5         43         1         10384         MOTOR - HYDRAULIC           8         10366         CAP SCREW 3/8 - 16NC × 2/% HX BG GR5         *44         1         64/2         1         10384           1         10368         CAP SCREW 3/8 - 16NC × 2/% HX SOC HD         *46         1         10386         QUAD - RING           1         10368         CAP SCREW 1/2 - 13NC × 1/% SOC HD         *46         1         10387         PIPE PLUG           1         10369         CAP SCREW 1/2 - 13NC × 1/% SOC HD         *47         1         10387         PIPE PLUG           1         10371	-	10360	SHAFT - INPUT		38d	-		ADAPTOR PLATE
2         10363         BEARING         *39         1         10383         GASKET-ADAPTOR           1         10362         BUSHING-THRUST         *40         1         5380         GASKET-AIR CYLINDER           2         10364         CAP SCREW 3/8 - 16NC x 5/x' HX HD GR5         41         1         5380         GASKET-AIR CYLINDER           2         10365         CAP SCREW 3/8 - 16NC x 2/x' HX HD GR8         42         1         5380         GASKET-AIR CYLINDER           8         10365         CAP SCREW 3/8 - 16NC x 2/x' HX HD GR5         43         1         10384         MOTOR - HYDRAULIC           8         10366         CAP SCREW 3/8 - 16NC x 2/x' HX HD GR5         *44         1         5420         QUAD - RING           3         10366         CAP SCREW 3/8 - 16NC x 2/x' HX SOC HD         *45         1         10386         REDUCER           3         10366         CAP SCREW 1/2 - 13NC x 1/x' SOC HD         *46         1         10387         PIPE PLUG           3         10369         CAP SCREW 1/2 - 13NC x 1/x' SOC HD         47         1         10387         PIPE PLUG           4         10371         CAP SCREW 1/2 - 13NC x 1/x' SOC HD         48         1         10389         PIN           <	-	10361	SHIFTER - SHAFT		*38e	2		ADAPTOR PLATE GASKET
1         10362         BUSHING-THRUST         *40         1         5380         GASKET-AIR CYLINDER           2         10364         CAP SCREW 3/8 - 16NC x 5/2" HX HD GRS         41         1         5402         RELIEF FITTING           2         10366         CAP SCREW 1/2 - 13NC x 3/2" HX HD GRS         41         1         5402         RELIEF FITTING           8         10366         CAP SCREW 5/8 - 11NC x 2/2" HX HD GRS         43         1         10384         MOTOR - HYDRAULIC           8         10366         CAP SCREW 5/8 - 11NC x 2/2" HX HD GRS         *44         1         5420         QUAD - RING           8         10366         CAP SCREW 3/8 - 16NC x 2/2" HX SOC HD         *45         1         10385         QUAD - RING           1         10368         CAP SCREW 3/8 - 16NC x 2/2" HX SOC HD         *46         1         10385         QUAD - RING           1         10369         CAP SCREW 1/2 - 13NC x 1" SOC HD         *46         1         10386         REDUCER           1         10370         CAP SCREW 1/2 - 13NC x 1" SOC HD         *47         1         10386         PINE PLUG           1         10371         CAP SCREW 1/2 - 13NC x 1" SOC HD         46         1         10387         PINE PLUG <td></td> <td>10363</td> <td>BEARING</td> <td></td> <td>*39</td> <td>-</td> <td>10383</td> <td>GASKET - ADAPTOR</td>		10363	BEARING		*39	-	10383	GASKET - ADAPTOR
2         10364         CAP SCREW 3/8 - 16NC × 5/²' HX HD GR5         41         1         5402         RELIEF FITTING           2         10365         CAP SCREW 1/2 - 13NC × 3/²' HX HD GR8         42         1         8952         BREATHER VENT           8         10366         CAP SCREW 3/8 - 11NC × 2/²' HX HD GR5         43         1         10384         MOTOR - HYDRAULIC           8         10366         CAP SCREW 3/4 - 10NC × 2/²' HX HD GR5         *44         1         5420         QUAD - RING           4         10368         CAP SCREW 5/16 - 18NC × 2/²' HX SOC HD         *45         1         10385         QUAD - RING           2         10370         CAP SCREW 5/16 - 18NC × 2/²' HX SOC HD         *46         1         10386         REDUCER           2         10370         CAP SCREW 1/2 - 13NC × 1/* SOC HD         *46         1         10387         PIPE PLUG           2         10371         CAP SCREW 1/2 - 13NC × 1/* SOC HD         48         1         10387         PIPE PLUG           2         10371         CAP SCREW 1/2 - 13NC × 1/* SOC HD         48         1         10387         PIPE PLUG           3         10371         CAP SCREW 1/2 - 13NC × 1/* SOC HD         48         1         10338         PIN	-	10362	BUSHING - THRUST		*40	-	5380	GASKET - AIR CYLINDER
2         10365         CAP SCREW 1/2 - 13NC x 3/x <sup>x</sup> HX HD GR8         4.2         1         8952         BREATHER VENT           8         10366         CAP SCREW 5/8 - 11NC x 2/x <sup>x</sup> HX HD GR5         4.3         1         10384         MOTOR - HYDRAULIC           4         10367         CAP SCREW 5/8 - 11NC x 2/x <sup>x</sup> HX HD GR5         *44         1         5420         QUAD - RING           4         10368         CAP SCREW 5/16 - 18NC x 3/x HX SOC HD         *45         1         10385         QUAD - RING           3         10369         CAP SCREW 1/2 - 13NC x 1" SOC HD         *46         1         10386         REDUCER           2         10370         CAP SCREW 1/2 - 13NC x 1" SOC HD         *46         1         10387         PIPE PLUG           2         10371         CAP SCREW 1/2 - 13NC x 1" SOC HD         46         1         10387         PIPE PLUG           2         10371         CAP SCREW 1/2 - 13NC x 1" SOC HD         48         1         10387         PIPE PLUG           2         10371         CAP SCREW 1/2 - 13NC x 1" SOC HD         48         1         10388         PING           4         10372         SET SCREW 5/16 = 24NF x 1" SOC HD         48         1         10389         SPRING <tr< td=""><td>2</td><td>10364</td><td>CAP SCREW 3/8 - 16NC × 5½" HX HD GR5</td><td></td><td>41</td><td>1</td><td>5402</td><td>RELIEF FITTING</td></tr<>	2	10364	CAP SCREW 3/8 - 16NC × 5½" HX HD GR5		41	1	5402	RELIEF FITTING
8         10366         CaP SCREW 5/8 - 11NC × 2½" HX HD GR5         4.3         1         10384         MOTOR - HYDRAULIC           8         10367         CAP SCREW 3/4 - 10NC × 2½" HX HD GR5         *44         1         5420         QUAD - RING           4         10368         CAP SCREW 5/16 - 18NC × 2½" HX SOC HD         *45         1         10385         QUAD - RING           3         10369         CAP SCREW 5/16 - 18NC × 2½" HX SOC HD         *46         1         10386         REDUCER           2         10370         CAP SCREW 1/2 - 13NC × 1" SOC HD         46         1         10387         PIPE PLUG           2         10371         CAP SCREW 1/2 - 13NC × 1" SOC HD         47         1         10387         PIPE PLUG           1         10372         SET SCREW 5/16 = 24NF × 1" SOC HD         48         1         10387         PIPE PLUG           1         10372         SET SCREW 5/16 = 24NF × 1" SOC HD         49         1         10388         PING           1         10372         SET SCREW 5/16 = 24NF × 1" SOC HD         49         1         10389         PRING           1         10373         SCREW No.10 - 24NE × 1" SOC HD         49         1         10399         PRING           1 <td></td> <td>10365</td> <td>CAP SCREW 1/2 - 13NC x 31/2" HX HD GR8</td> <td></td> <td>42</td> <td>-</td> <td>8952</td> <td>BREATHER VENT</td>		10365	CAP SCREW 1/2 - 13NC x 31/2" HX HD GR8		42	-	8952	BREATHER VENT
8         10367         CAP SCREW 3/4 - 10NC x 21/" HX HD GR5         *44         1         5420         QUAD - RING           4         10368         CAP SCREW 5/16 - 18NC x 3/" HX SOC HD         *45         1         10385         QUAD - RING           3         10369         CAP SCREW 5/16 - 18NC x 3/" HX SOC HD         *45         1         10386         REDUCER           2         10370         CAP SCREW 1/2 - 13NC x 1/" SOC HD         46         1         10386         REDUCER           2         10371         CAP SCREW 1/2 - 13NC x 1/" SOC HD         47         1         10387         PIPE PLUG           1         10372         SET SCREW 1/2 - 13NC x 1/" SOC HD         48         1         10387         PINE PLUG           1         10372         SET SCREW 5/16 = 24NF x 1" SOC HD         48         1         10388         PIN           1         10372         SET SCREW 5/16 = 24NF x 1" SOC HD         49         1         10389         SPRING           1         10373         SCREW No.10 - 24nc X 2/" HX SOC         49         1         10389         SPRING           1         10373         SCREW No.10 - 24nc X 2/" HX SOC         50         1         10390         TUBE ASSEMBLY           1	8	10366	CAP SCREW 5/8 - 11NC × 21/2" HX HD GR5		43	ſ	10384	MOTOR - HYDRAULIC
4         10368         CAP SCREW 5/16 - 18NC x <sup>3</sup> /" HX SOC HD         *45         1         10385         QUAD - RING           3         10369         CAP SCREW 3/8 - 16NC x 2½" HX SOC HD         46         1         10386         REDUCER           2         10370         CAP SCREW 1/2 - 13NC x 1" SOC HD         46         1         10386         REDUCER           2         10371         CAP SCREW 1/2 - 13NC x 1" SOC HD         47         1         10387         PIPE PLUG           2         10371         CAP SCREW 1/2 - 13NC x 1" SOC HD         48         1         10388         PIN           1         10372         SET SCREW 1/2 - 13NC x 1" SOC HD         48         1         10388         PING           1         10372         SET SCREW 1/2 - 13NC x 1" SOC HD         48         1         10388         PING           1         10372         SET SCREW 1/2 - 13NC x 1" SOC HD         48         1         10389         SPRING           1         10373         SCREW No.10 - 24nc X 2½" HX SOC         49         1         10389         SPRING           1         10374         NUT 5/8 - 11NC REG HEX Z/P         50         1         10391         VALVE - CONTROL           1         10375	$\infty$	10367	CAP SCREW 3/4 - 10NC × 21/1" HX HD GR5		*44	-	5420	QUAD - RING
3         10369         CAP SCREW 3/8 - 16NC x 2½" HX SOC HD         46         1         10386         REDUCER           2         10370         CAP SCREW 1/2 - 13NC x 1/4" SOC HD         47         1         10387         PIPE PLUG           2         10371         CAP SCREW 1/2 - 13NC x 1/4" SOC HD         47         1         10387         PIPE PLUG           2         10371         CAP SCREW 1/2 - 13NC x 1/4" SOC HD         48         1         10388         PIN           1         10372         SET SCREW 5/16 = 24NF x 1" SOC HD         49         1         10389         PRING           4         10373         SCREW No.10 - 24nc X 2½" HX SOC         50         1         10390         TUBE ASSEMBLY           8         10374         NUT 5/8 - 11NC REG HEX Z/P         51         1         10390         TUBE ASSEMBLY           8         10375         LOCK WASHER 5/8 MED SECT         52         1         10391         VALVE - CONTROL           8         0056         LOCK WASHER 3/4 MED SECT         53         1         10392         NAME & DATA PLATE	4	10368	CAP SCREW 5/16 - 18NC x 3/1 HX SOC HD		*45	-	10385	QUAD - RING
2         10370         CAP SCREW 1/2 - 13NC × 1" SOC HD         47         1         10387         PIPE PLUG           2         10371         CAP SCREW 1/2 - 13NC × 11/4" SOC HD         48         1         10388         PIN           1         10372         SET SCREW 5/16 = 24NF × 1" SOC HD         48         1         10389         PIN           4         10372         SET SCREW 5/16 = 24NF × 1" SOC HD         49         1         10389         SPRING           8         10373         SCREW No.10 - 24nc X 2½" HX SOC         50         1         10390         TUBE ASSEMBLY           8         10374         NUT 5/8 - 11NC REG HEX Z/P         51         1         10391         VALVE - CONTROL           8         10375         LOCK WASHER 5/8 MED SECT         52         1         10391         VALVE - CONTROL           8         9056         LOCK WASHER 3/4 MED SECT         53         1         10392         NAME & DATA PLATE	3	10369	CAP SCREW 3/8 - 16NC x 21/2" HX SOC HD		46	-	10386	REDUCER
2         10371         CAP SCREW 1/2 - 13NC x 11/4" SOC HD         48         1         10388         PIN           1         10372         SET SCREW 5/16 = 24NF x 1" SOC HD         49         1         10389         SPRING           4         10373         SCREW No.10 - 24nc X 2½" HX SOC         49         1         10389         SPRING           8         10374         NUT 5/8 - 11NC REG HEX Z/P         51         1         10390         TUBE ASSEMBLY           8         10375         LOCK WASHER 5/8 MED SECT         52         1         10391         VALVE - CONTROL           8         9056         LOCK WASHER 3/4 MED SECT         53         1         10392         NAME & DATA PLATE	2	10370	CAP SCREW 1/2 - 13NC × 1" SOC HD		47	-	10387	PIPE PLUG
1         10372         SET SCREW 5/16 = 24NF × 1" SOC HD         49         1         10389         SPRING           4         10373         SCREW No.10 - 24nc X 2½" HX SOC         50         1         10390         TUBE ASSEMBLY           8         10374         NUT 5/8 - 11NC REG HEX Z/P         51         1         10391         VALVE - CONTROL           8         10375         LOCK WASHER 5/8 MED SECT         52         1         10392         NAME & DATA PLATE           8         9056         LOCK WASHER 3/4 MED SECT         53         1         10392         NAME & DATA PLATE	2	10371	CAP SCREW 1/2 - 13NC x 11/4" SOC HD		48	-	10388	PIN
4         10373         SCREW No.10 - 24nc X 2½" HX SOC         50         1         10390         TUBE ASSEMBLY           8         10374         NUT 5/8 - 11NC REG HEX Z/P         51         1         10391         VALVE - CONTROL           8         10375         LOCK WASHER 5/8 MED SECT         52         1         10392         TENSIONER ASSEMBLY           8         9056         LOCK WASHER 3/4 MED SECT         53         1         10392         NAME & DATA PLATE	-	10372	SET SCREW 5/16 = 24NF x 1" SOC HD		49	1	10389	SPRING
8         10374         NUT 5/8 - 11NC REG HEX Z/P         51         1         10391         VALVE - CONTROL           8         10375         LOCK WASHER 5/8 MED SECT         52         1         TENSIONER ASSEMBLY           8         9056         LOCK WASHER 3/4 MED SECT         53         1         10392         NAME & DATA PLATE	4	10373	SCREW No.10 - 24nc X 21/2 HX SOC		50	-	10390	TUBE ASSEMBLY
8         10375         LOCK WASHER 5/8 MED SECT         52         1         TENSIONER ASSEMBLY           8         9056         LOCK WASHER 3/4 MED SECT         53         1         10392         NAME & DATA PLATE	8	10374	NUT 5/8 - 11NC REG HEX Z/P		51	1	10391	VALVE - CONTROL
8 9056 LOCK WASHER 3/4 MED SECT 53 1 10392 NAME & DATA PLATE	<sub>∞</sub>	10375	LOCK WASHER 5/8 MED SECT		52	-		TENSIONER ASSEMBLY
	8	9056	LOCK WASHER 3/4 MED SECT		53	-	10392	NAME & DATA PLATE

\*\* These items are not included in some models.



# **ROPE TENSIONER OVERHAUL**

Refer to the Rope Tensioner diagram on the following page for the assembly of the Rope Tensioner.

The rope tensioner requires an independent, adjustable air supply of between 3,4 bar (50 PSI) and 6,2 bar (90 PSI).

Do not operate the winch with the tensioner activated against a bare drum. The winch should only be operated with at least one wrap of rope around the drum with the tensioner energised.

**1.** To remove the air tensioner from the winch, disconnect the air supply from the tensioner. Remove the cap screws (No.8), lock washers (No.11) and nuts (No.9) that mount the tensioner to the winch frame. Disassemble the tensioner as shown on the following page and remove any parts that are worn.

**2.** Re-assemble the tensioner assembly. Mount the tensioner to the winch frame, placing the spacers (No.4) between the tensioner bracket and the winch frame. Centre the tensioner bar (No.2) between the drum flanges using a tape measure or scale. Tighten the mounting bolts to 102 Nm (75 ft lb) of torque.

**3.** Install the rope on the drum. After a few wraps of the rope are wound onto the drum, connect the air supply to the tee fitting (No.14) to energise the tensioner against the drum. As the rope winds onto the drum, watch the tensioner to ensure that it moves freely and does not touch either drum flange.

4. Adjust the air supply until the rope does not "bird nest" when it is freespooling.



# **ROPE TENSIONER ASSEMBLY & PARTS LIST**

Item No.	Qty.	BHW Part No.	Description	Item No.	Qty.	BHW Part No.	Description
1	1	11477	TENSIONER ASSEMBLY	10	4	10374	NUT 5/8 - 11NC HX
2	1	11478	TENSION BAR	11	2	11486	LOCK WASHER 1/2
3	1	11479	PIN	12	2	11487	FLAT WASHER 1/2
4	1	11480	SPACER	13	2	11488	COTTER PIN
5	1	11481	TUBE	14	1	11489	FITTING - TEE
6	1	11482	BRACKET ASSEMBLY	15	1	11490	FITTING - ELBOW
7	3	11483	CAP SCREW 3/8 - 16NC x ¾ LG HX HD GR5	16	2	5338	AIR ACTUATOR
8	2	11484	CAP SCREW 1/2 - 13NC x 3.5 LG HX HD GR5	17	2	11491	PIPE PLUG
9	2	11485	NUT 1/2 - 13NC HX				



# WARRANTY

BHW GROUP LIMITED, the authorised Ramsey Servicing Distributor in the UK and Ireland warrants each new winch and ancillary equipment supplied against factory defects in material and workmanship for one year from date of purchase. Responsibility for removing the winch or ancillary equipment is the owner's together with its return, transportation prepaid to BHW Group Limited.

BHW Group Ltd will, under this Warranty, without charge repair or replace at its option, parts, which on inspection are deemed to be defective. The loss of use of the product, loss of time, inconvenience, commercial loss or consequential damages are not covered.

Warranty does not apply where the product has been tampered with or altered in any way, or where the serial number or date stamp has been defaced, altered or removed, or if in the view of BHW Group Limited the damage or failure occurred from misuse, negligence or accident.

# THIS WARRANTY EXCLUDES THE WIRE ROPE

BHW Group Limited reserve the right to change the design of any product without assuming any obligation to modify any product previously supplied. Fitted vehicles or equipment returned under warranty should be sent to BHW Group Limited service department at the address indicated below, with full name and address of sender, and a statement detailing the defect.

Winch performance figures may vary from those shown as they are dependent on system back pressure, mechanical efficiency of winch motor and length and diameter of hydraulic hoses used for installation.



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SERIAL NUMBER.....

DATE OF PURCHASE.....

Ramsey RPH 133.4 Hydraulic Winches are manufactured in the USA.