

## FITTING & OPERATING INSTRUCTIONS



# T-MAX HYDRAULIC WINCH MODEL CHW9000 Mk3

3,550kg Line Pull Capacity

Part# 21785

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

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### **INTRODUCTION**

Thank you for purchasing a T-MAX CWH9000 Mk3 hydraulic winch, one of a range of professional hydraulic recovery winches available from the BHW Group Ltd.

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

Those responsible for the installation and the operation of this winch must read and understand this manual. The first section deals with the installation requirements and the second section is for the user and provides information to ensure safe use of the winch.

This introduction also includes information on the standards which must be met.

### PLEASE KEEP THIS OWNERS MANUAL WITH THE WINCH

### **STANDARDS & BHW GROUP LTD**

The BS EN14492-1 for power driven winches ensures conformity to both the essential Health and Safety requirements of the UK Health and Safety at Work Act 1974 and the EN Machinery Directive. Conformity to these standards is the joint responsibility of the winch supplier, the installer and the company operating the machine.

BHW Group Ltd products are fully compliant and carry a UKCA and 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 Ltd 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 Ltd.

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 x 1.5 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.

### THE T-MAX CWH9000 Mk3

The T-MAX CWH9000 Mk3 has been built to a BHW Group Ltd specification to comply with BS EN14492-1.

This winch is tough and will provide many years of reliable service if it is has been correctly installed and being correctly used within its load capacities.

Installers are advised to carry out a risk assessment on each individual installation.

It is important that adequate provision is made so that the load on the winch is transmitted into the body of the operating vehicle and then into the chassis based on a suitable mounting plate being used.

The operator must also adopt the correct procedures regarding operator instructions (pages 14-16).



S C E

### INSTALLER RESPONSIBILITY FOR UKCA AND CE COMPLIANCE

- 1. The winch is operated using a wanderlead or a radio control.
- 2. Emergency stop components and an isolator switch must be installed.
- 3. Use of a motor spool (open centre) control valve as per hydraulic system specifications (page 9). The use of a closed centre valve may result in damage to the winch.
- 4. System relief pressure as per hydraulic system specifications (page 9) should be applied.
- 5. Mount winch as per winch installation instructions (page 12).
- 6. Install 10mm 1960N/mm<sup>2</sup> grade, 6/36 wire core rope with minimum breaking load (MBL) of 7.12 Tonnes 69.8kN. Maximum rope length of 23m. This is the maximum rope length permissible to ensure compliance with BS EN14492-1 as this requires a 1.5 x wire rope diameter from the top layer to the drum flange.
- 7. Hook must have a safety latch and a minimum rated capacity of 2 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 2 tonne hook has therefore a minimum yield of 2T x 4 = 8 tonne. For pulling applications with a 2:1 factor of safety they are suitable for up to 4.0 tonne line pull.
- 8. Attach rope to the drum as per wire rope installation instructions (page 13).
- 9. Load test the winch following installation to check the integrity of the mounting.
- 10. You are also advised that adherence to the directive ISO4309:2004/2010 regarding care, installation and disposal of wire ropes also applies. (See section on Wire Ropes & Hooks, page 17).

### **WINCH RATING**

The winch rating on the T-MAX CHW9000 Mk3 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:

 $\frac{W}{25} + \frac{(W \times Angle \ of \ Gradient)}{60}$ 

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

EXAMPLE: If W, the weight of the rolling load being recovered is being pulled up skids, which form a gradient of 18°, the force on the rope is:

$$\frac{4}{25} + \frac{(4 \times 18)}{60} = 0.16 + 1.2 = 1.36T$$

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 BHW Group Ltd on +44 (0) 20 8953 6050 - we will be pleased to offer our assistance.



### WINCH SPECIFICATIONS

#### Model

Construction Gear Type Gear Reduction Type of use Motor Brake

Freespool Clutch Weight

Line Pull by Layer Rope Capacity by Layer Line Speed at 60 l/min

## T-MAX CHW9000 Mk3 3.56 Tonne Planetary Hydraulic Winch BS EN14492-1 Compliant

Cast steel end housing with steel drum. Single Stage Planetary. 20.56:1 Car & Commercial Recovery – Ideal for Slide Bed. Low speed, high torque. 88cc/rev. Spring applied hydraulic disc brake and counter balance valve providing full 100% braking. Spring loaded lever. Winch only: 50kg. With roller guides, mounting kit and wire rope: 63kg.

LAYER 1 2 3 4 34.9 29.4 25.4 22.3 kΝ Maximum Rated Line Pull by Layer kgf 3560 3000 2600 2270 CHW9000 Rope Capacity т 9 15 25 30 Cumulative by Layer\* \* Line Speed at m/min 12 16 14 18 60 İ/min

\* Based on recommended 10mm wire rope and 88cc / rev. motor.

Recommended Wire Rope	10mm diameter – maximum. 1960N/mm <sup>2</sup> grade, 6 x 36 wire core construction. Recommended rope length 23m.
Minimum Breaking Strain	69.7kN (7,100kgf).
Rope to Mean Drum Ratio	10.2:1
Drum Dimensions	92mm diameter x 218mm length.
	Flange diameter 198mm.
Drum Rotation	Clockwise and counter clockwise as required.
Grease Type	MOBILITH SHC 007 or equivalent.
Hydraulic Oil Flow	60 l/min recommended. 75 l/min maximum.
	Higher flows will damage 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	140 bar. MAXIMUM. Do not exceed maximum operating pressure.
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. Stop control also on wanderlead if supplied.
Noise Level	79db
Ambient Temperature Range	-28°C to 60°C



### WINCH DIMENSIONS









### HYDRAULIC SPECIFICATIONS

### PERFORMANCE



#### HYDRAULIC SCHEMATIC - VALVE WITHOUT PRESSURE CARRY OVER Note: valves must have an 'open centre' motor spool fitted



### HYDRAULIC SCHEMATIC - VALVE WITH PRESSURE CARRY OVER Note: valves must have an 'open centre' motor spool fitted





### HYDRAULIC SPECIFICATIONS continued.

### GENERAL

Open System with low pressure return line filter.

#### RESERVOIR

Minimum capacity 30 litres. 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 =  $\frac{1}{2}$ ".
- Return to  $tank = \frac{3}{4}$ ".
- Reservoir to pump = 1".

#### HYDRAULIC MOTOR

 $^{7}$ /<sub>8</sub>" SAE – Straight thread 'O' ring port – use  $\frac{1}{2}$ " BSP with bounded washer.

#### CONTROL VALVE

4-way, 3-position, self-centring <u>open centre motor spool</u> 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 LTD CAN SUPPLY A WIDE SELECTION OF CONTROL VALVES INCLUDING: ELECTRIC AND ELECTRO/PNEUMATIC. THIS ENABLES THE WINCH TO BE OPERATED WITH A WANDERLEAD OR RADIO CONTROL.

### VALVES ARE SUPPLIED FULLY WIRED READY TO INSTALL.

#### **EMERGENCY STOP**

To ensure compliance with the EN 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 LTD CONTROL VALVES.

#### OIL RESERVOIR SUCTION STRAINER 250 microns (Approximately) RETURN LINE FILTER 250 microns (Approximately)

#### **IMPORTANT:**

Keep hose lengths to a minimum to reduce back pressure.

If hose lengths exceed 4 metres, increase nominal bore size.

Cleanliness within the hydraulic system is essential to ensure correct function and long life of the winch and all other components.

If other hydraulic equipment, e.g. 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 Ltd on +44 (0)20 8953 6050 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.

### KEEP A MINIMUM OF 5 WRAPS OF ROPEON 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.



### **INSTALLATION**

### WINCH MOUNTING

The winch must be securely mounted on a flat surface so that the three major sections (the motor end, cable drum and gear housing end) are properly aligned and tolerances specified are maintained. The mounting surface must be flat (level support) within 0.4mm and sufficiently stiff to resist flexing. In many applications, the body floor will be sandwiched between the mounting bracket and subframe sections.

It is advisable to use the drilling hole template (part #21084) provided to ensure correct alignment.

Winch securing holes (12.5mm Ø), must be kept in alignment and not oversized.

Mounting hole locations must be held within ±0.8mm.

The steel plate used for mounting should be at least 12mm thick (See recommended mounting plates below).

#### INACCURATE INSTALLATION OF THE WINCH CAN RESULT IN DRUM BINDING, CAUSING EXCESSIVE WEAR OF COMPONENTS WITHIN THE WINCH. THIS WILL NOT BE COVERED BY WARRANTY.

### BHW GROUP LTD DRILLING HOLE TEMPLATE

A steel drilling hole template is supplied with this winch. It has pre-drilled holes to enable the installer to mark and centre punch accurately before drilling.

Using the template - alternatives:

1) Laser:

Use a laser cutter plate capable of creating 8 x 12.5mm holes according to template measurements.

2) Mag Drill & Annular Cutter:

Using a Mag drill, use template provided to mark and centre punch holes. Using annular cutter with locating pin to machine 8 x 12.5mm holes.

3) Hand Drill:

Use template provided to mark and centre punch x 8 holes. Drill 3mm pilot holes. Open up holes to 7-8mm and finally drill to 12.5mm.



### FIXINGS

To mount the winch: 8 no. M12 x 40mm H/T HEX set BZP, 8 no. M12 Washers BZP. Torque setting is 90Nm.



### **INSTALLATION** Continued.

### BHW GROUP LTD MOUNTING PLATES (Options)

BHW mounting plates have been specifically designed for this T-MAX winch and its electric equivalent. They are 12mm thick and black powder coated with pre-drilled holes for correct alignment. Hole dimensions shown on mounting plates diagrams allow for the powder coating process. The correct drilling size for installation is 12.5mm.



### Part #19900 - Flat Reinforced Plate for Standard or Long Drum.





### **FREESPOOL CLUTCH POSITION**

The freespool clutch is supplied prefitted to the side of the winch end casing and also has an incorporated air shift fitting.

By removing the allen-key bolts at the end of the housing, the housing can be rotated to the desired position, moving the freespool clutch to one of several positions to suit the installation space.

If the airshifter option (see page 12) is not being used, it is recommended that a breather is fitted to the end to avoid any ingress of dirt or water.

DO NOT fully seal the air shift fitting as this may cause a vacuum which could cause the freespool facility to remain in the closed position.



### SECURING WIRE ROPE TO DRUM

#### BEFORE COMMENCING ENSURE VEHICLE ENGINE AND THE ISOLATOR SWITCH ARE TURNED OFF. ACTIVATE THE EMERGENCY STOP. WEAR PROTECTIVE GLOVES AT ALL TIMES. USE THE WEBBING STRAP PROVIDED WHEN HANDLING THE HOOK.

1. Ensure the wire rope wire rope is fully unravelled and in line with the winch to enable even spooling of the rope onto the drum. NEVER wind the wire rope straight onto the drum from a coil.

### ROPE TENSIONER IS SPRING LOADED. LOCK IT IN THE RAISED POSITION.

2. Raise the cable tensioner away from the rope drum and lock in position through corresponding holes in the tensioner frame and bracket using a suitably strong pin or bolt.

- 3. Rotate the rope drum under power until the rope fixing holes run vertically at the front of the winch.
- 4. Pass the rope end through the roller guides, UNDER the drum and back over the top of the drum to pass through the rope hole furthest way from the drum flange. Keep feeding the rope through to wrap around the drum FOUR TIMES and into the rope fixing hole nearest the drum flange.
- 5. Tighten the retaining screw ensuring that the rope end is flush with the exit of the hole and not protruding. The securing end of the rope needs to be tight up <u>inside</u> the drum casing to avoid contact with the drive shaft that runs through the centre of the drum.
- 6. Feedback any excess slack to tighten the four wraps neatly on the drum.
- 7. Carefully remove the locking pin from the cable tensioner to allow the rollers to rest on the rope.



Diagram shows two wraps illustrated for clarity. Orientation of the winch may vary from left to right depending on application.



### LOADING THE WIRE ROPE USING FREESPOOL CLUTCH

#### FREESPOOL CLUTCH MUST BE ENGAGED FOR ANY WINCHING OPERATION DO NOT HANDLE THE HOOK, USE A WEBBING STRAP AT ALL TIMES. ALWAYS WEAR PROTECTIVE GLOVES AND CLOTHING.

Once the wire rope has been secured to the winch drum, the freespool clutch needs to be set to 'engage' to load the remainder of the wire rope. See diagram on winch casing (shown on 'Labels', page 13).

The T-Bar handle should be returned to its central position and locked down. Ensure the T-Bar retracts fully back to the winch body, otherwise clutch will not engage.

To handle the rope further for loading, use a strop attached to the wire rope hook. Do not grip the hook directly with hands. WEAR GLOVES.

Before commencing winching, check that the wire rope is fully unravelled and in line with the winch drum to enable even spooling of the wire rope onto the drum.

During winching in, try and prevent the wire rope becoming slack as this will create loose layers on the drum. Retain tension on the wire rope at all times to obtain even layering.

Ensure hands are kept clear of roller guides at all times. Never allow hands near the winch or roller guides unless emergency stop control is activated.

When wire rope is wound back onto the drum after use, ensure firm hand tension is applied to the rope, via the strop attached to it, to obtain even layering.

### **AIR CYLINDER CLUTCH SHIFTER OPTION**

The air cylinder pipe fitting is already fitted into the side of the T-Bar handle of the freespool clutch. The air pipe required is 8mm diameter.

### USING AIR SHIFTER TO DISENGAGE CLUTCH

WITH NO LOAD ATTACHED: Apply air pressure to the pipe fitting.

WITH LOAD ATTACHED: Run the winch in the reverse (winch out) direction until load is off the cable. Apply air pressure to the pipe fitting.

**TO ENGAGE CLUTCH**: With no load attached, remove air pressure from the cylinder.

The minimum air pressure should be 6.5 - 7 Bar, and the MAXIMUM should be 8 Bar.



### NOTE: AIR PRESSURE EXCEEDING 8 BAR MAY DAMAGE THE WINCH. THIS WILL INVALIDATE ANY WARRANTY.

### SETTING PRESSURE RELIEF TO OBTAIN CORRECT WINCH LINE PULL FOR MANUAL AND ELECTRIC / MANUAL LEVER CONTROL VALVES

#### Two options:

1. Secure the wire rope to a load via a measuring device (load cell) with rope running on bare drum and operate the winch until the rated pull of the winch is achieved by adjusting the relief valve.

### ALWAYS KEEP A MINIMUM OF 5 WRAPS OF ROPE ON THE DRUM.

Adjustment is achieved on the manual valve by means of removing the chrome cap opposite 'P' port and winding screw in to increase load and out to decrease load. On the electric/manual valve, remove rubber plug next to the 'P' port and adjust in same way as described for manual valve with an allen key.

2. Install a pressure gauge into the 'P' port between pump and control valve. Block both motor ports using hydraulic caps. Operate system and adjust relief valve, as described in 1) to correct pressure setting for winch (see winch specification page 7). All control valves incorporated in the winch hydraulic system must be of an 'open centre' (motor spool) type.



### **OPERATOR INSTRUCTIONS**

### PLEASE READ THIS CAREFULLY BEFORE OPERATING THE WINCH.

It is important that you read and digest the information contained in this handbook. The winch is of the highest quality and has been designed to give a robust and efficient service for many years if care and attention are given at all times to correct, safe operation and maintenance.

Respect for a winch and common sense in its operation, will ensure complete safety and reliability. Do not underestimate the potential danger in winching operations. Be aware of the basic dangers so you can avoid risk of accidents and unnecessary damage to the winch or the vehicle / application.

#### THESE SAFETY PRECAUTIONS MUST BE OBSERVED AT ALL TIMES WHILST USING THE WINCH.

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

Never step over, stand near or guide a rope under tension. Always use heavy duty gloves when handling the wire rope to protect against cuts or possible burns.

In an application where hand tension is applied to the hook whilst the rope is being wound back on to thedrum for storage there is a risk of the hand being pulled into the roller guide or rope tensioner.

**NEVER** hold the safety hook to rewind the winch – use the webbing strap attached to the hook. (See photograph on front cover).

Webbing straps are supplied with wire ropes provided by BHW Group Ltd are also available as replacements (part #9867) from BHW Group Ltd. Call (0)20 8953 6050.

Always apply tension to the wire rope when winching in to ensure that the wire rope is rewound neatly and evenly on to the drum. Loose coils or uneven wrapping are dangerous and can result in trapping or snatching when next used. It could also damage the wire rope or the winch.

These winches are fitted with a tension roller. It is very important when powering out under 'no load' to apply tension by hand to the wire rope, to prevent damage occurring to the rope due to any slack loops of cable developing on the winch drum. Wear gloves.

Do not drive your 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.

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.

If the winch is being operated at maximum capacity, drape a heavy blanket or coat over the wire rope, halfway along its length. The blanket will reduce the speed of a snapped rope.

Vehicle winching: The winch hook should be attached to a towing eye, using a webbing strap between the hook and the eye.

Do not attach to a strap or chain around a chassis leg or cross member, these are not designed to take a load. **NEVER** anchor the winch hook onto bumpers, or shipping / transit anchorage.

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 the anchor point to ensure a straight pull. Use a snatch block if it is necessary to turn any corners with the rope. Even wrapping on to the winch drum ensures a smooth winching operation.

A minimum of five wraps of wire rope must be retained on the winch drum when winching. Do not allow the wire rope to fully pay out off of the drum.

**Operators must firstly become familiar with the winch operating system with no loading applied.** Turn on the isolator switch. Activate (reset) the emergency stop. Start the vehicle engine. Ensure vehicle is in neutral and brakes are fully applied.

The hydraulic power supply to the winch must first be activated by operating the power take off (PTO) switch in the driver's cab. This may also be used to isolate additional the hydraulically powered equipment fitted.



### **OPERATOR INSTRUCTIONS continued.**

The winch system may be fitted with two means of winch operation:

**MANUAL LEVER CONTROL** This is a simple lever control, mounted on the winch, spring loaded to the 'stop' position. Moving the lever in either direction will enable 'winch in' and 'winch out'. The manual control is progressive so delicate control of the lever will regulate the speed of the winch. The rest position is 'STOP' as default.

**WANDERLEAD CONTROL** A wanderlead is plugged into to a socket positioned on the vehicle usually towards the rear of the vehicle.

With the winch under no load, but with hand tension applied via the webbing strap attached to the hook, power out and then power in the rope several times to familiarise yourself with the operation.

### ALWAYS WEAR PROTECTIVE GLOVES. DO NOT DIRECTLY HANDLE THE HOOK, USE A WEBBING STRAP AT ALL TIMES.

#### FREESPOOL CLUTCH

When the freespool clutch is disengaged by pulling and rotating the T-Bar, all drive and braking is removed from the winch so that it rotates freely.

The freespool clutch allows rapid unwinding (Freespool OUT) of the rope for hooking onto the item to be winched.

### ENSURE THE WINCH HAS NO LOAD ON IT BEFORE DISENGAGING THE CLUTCH. DO NOT ATTEMPT TO FREESPOOL WITH A LOAD ATTACHED TO THE ROPE HOOK.

Before commencing any winching operation, position your vehicle so that the winch is as square to the point of pull as possible to enable even spooling of the wire rope onto the drum.

#### **FREESPOOL OUT**

Lift the T-Bar and rotate it anti-clockwise. Wire rope can now be spooled off of the drum. Wearing gloves, handle the hook by the webbing strap provided and spool off the wire rope to attach it to the item to be winched. Once the hook has been fully secured to the item, the winch is now ready for pulling. Re-engage the clutch, by lifting the T-Bar up and rotate back clockwise to centred position.

### IMPORTANT SAFETY NOTICE – SPRING RETURN INDICATOR

This winch uses a spring loaded return to engage the freespool clutch.

**UNDER NO LOAD** Wearing gloves, rotate the drum very slowly by gently pulling the rope out slightly to make sure freespool clutch is fully engaged.

During winching try and prevent the wire rope becoming slack as this will create loose layers developing on the drum. This will cause uneven winching in when spooling of the rope back on the drum and may also damage the wire rope.

When returning wire rope to fully retracted position, ensure hands are kept clear of the roller guides the winch and the rope tensioner at all times. If your vehicle has a hook storage point, this should be used. Always operate the stop control before finally stowing winch rope. Never allow hands near the winch or roller guides unless stop control is activated.

When wire rope is wound back onto the drum without a load, ensure firm hand tension is applied to the rope, via the webbing strap attached to the hook, to obtain even layering.

Do not attempt to 'Freespool IN' large quantities of wire rope. Use the power of the winch with the clutch engaged and tension applied to the rope.

### WHEN WINCH IS NOT IN USE, THE EMERGENCY STOP SHOULD ALWAYS BE ACTIVATED AND THE ISOLATOR SWITCH SHOULD BE TURNED OFF.



25mm

### CARE OF THE WIRE ROPE

### 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-attached 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 within a space of 25mm or more (Fig. 1).
- Rope shows visible signs of wasting (Fig. 2).
- Deformed or excessively corroded rope.
- Twisted rope.
- Bent rope.
- Faulty or damaged hook or safety catch.
- The wire rope is 10% less than original diameter as specified, due to stretch during use.

Wire ropes and safety hooks must be replaced if damaged or worn.

A good habit is to rewind the rope on to the winch drum after it has been used, so that it is evenly layered. To do this rewind, keeping the wire rope under tension. Normally the tension can be applied by hand. Under no circumstances wrap the wire rope around the load being recovered and then attach the hook back on to 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.

Under no circumstances wrap the wire rope around the load being recovered and then attach the hook back on to the rope. This will result in serious rope damage or breakage.

Always employ a chain or webbing strap from the hook to the load.

If the winch is not being used on a regular basis it should be powered in and out from time to time to minimise corrosion of the internal motor components that may occur due to condensation. Energising the motor will generate heat, which will help dissipate any moisture.

### LABELS





### **TROUBLE SHOOTING**

CONDITION	POSSIBLE CAUSES	CORRECTIONS
Drum will not rotate at no load.	Winch not mounted squarely causing end bearings to bind up drum. Brake damaged. Gears damaged.	Check mounting. Refer to winch mounting page 11. Inspect and replace brake. Inspect and replace damaged gears.
Drum will not rotate under load.	Load greater than rated capacity of winch. Low hydraulic system pressure. Winch not mounted squarely causing end bearing to bind up drum.	Refer to specifications page 6 for line pull rating. Check pressure. Refer to hydraulic systems performance charts page 9. Check mounting. Refer to winch mounting page 11.
Winch runs too slow.	Low hydraulic system flow rate. Motor worn out.	Check flow rate. Refer to hydraulic systems flow charts page 9. Replace motor.
Drum will not freespool.	Clutch not disengaged. Winch not mounted squarely causing end bearings to bind drum. Side-mount bolts too long causing binding of ring gear.	Check operation. Check adjustment. Check mounting. Refer to winch mounting page 11. Check bolt length. Bolt thread must not engage threaded holes in sides of end bearing by more than the 50inch thread depth in the end bearing.
Load drifts.	Excessive back pressure. 6.9 bar (100psi) max.	Check for restrictions in hydraulic system. See Hydraulic System – pages 9-10.
Brake will not hold.	Incorrect directional control valve (cylinder spool closed centre).	Use only a motor spool (open centre) control valve.
Excessive noise.	Hydraulic system flow too high. Drum in bind winch not mounted squarely.	Check flow rate See page 9. Check mounting – see page 12.
Drum chatters in 'Winch In' position.	Low hydraulic system flow rate. Low hydraulic system relief pressure setting.	Check flow rate – see page 9. Check relief valve setting.



### PARTS DIAGRAM





### **PARTS LIST**

ltem	Description	Qty	Part No.
1	CHW III Gear Box Cover + Free Spool	1	21805
2	CHW III Thrust Washer	1	21806
3	CHW III Inner Gear	1	21807
4	CHW III Gear Box Tube	1	21808
5	CHW III Sun Gear	1	21809
6	CHW III Gear Carrier Assembly	1	17950
7	CHW III Antifriction Washer	1	21810
8	CHW III Gear Box Base	1	21811
9	Big Base Anti -Dust Nylon Bearing	2	17952
10	Transition Shaft Assembly	1	17953
11	Dustproof Nylon Bearing	2	17954
12	Tie Bar [220mm long]	3	17955
13	CHW III Drum Assembly	1	21812
14	CHW II Motor Base	1	17957
15	CHW II Brake End Plate	1	17958
16	CHW III Motor Coupling	1	21816
17	CHW III Brake Assembly	1	22422
18	CHW III Brake Housing	1	21813
19	CHW II Brake Clamp	1	17962
20	CHW II Brake Gland	1	17963
21	Hydraulic Motor BMR315	1	21814
22	Double Direction Counter Balance Valve	1	21815
23	Wire Rope Tensioner	1	19660
24	Roller Guide	1	21365
25	8mm x 10mm Grub Screw	2	4525

Please provide the details of the winch including serial number and date of purchase when ordering any replacement parts. This will enable our sales engineers at BHW Group Ltd to correctly identify what you need.



### MAINTENANCE

### **REGULAR MONTHLY MAINTENANCE**

Externally the winch should be kept clean in order to prevent any build-up of corrosion on external working parts. Inspect roller guides for grooving and if excessive, wire rope life will be reduced. Worn guides should be replaced to ensure wire rope is not damaged.

- Check winch for any damage.
- Check winch mounting for any distortion and realign / retighten mounting bolts if necessary.
- Operate free spool clutch mechanism to ensure correct operation, giving full engagement and disengagement.
- All external-moving parts should be lubricated with lightweight oil.
- All electrical connections and wiring should be inspected for loose connections, corrosion or fraying.
- Check the tie bars that hold the winch in alignment replace if bent or broken.
- Check the emergency STOP control to ensure it functions correctly by operating the winch and pushing the STOP button.

### WARRANTY

BHW Group Ltd, as an authorised T-MAX distributor in the UK and Ireland, warrants each new T-MAX 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 Ltd.

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 Ltd the damage or failure occurred from misuse, negligence or accident.

### THIS WARRANTY EXCLUDES ANY WIRE ROPE

BHW Group Ltd 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 Ltd 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.



Lismirrane Industrial Park, Elstree Road, Elstree, Herts, WD6 3EE, UK

Telephone: +44 (0)20 8953 6050 Email: <u>sales@bhwgroup.com</u> Website: www.bhwgroup.com

### T-MAX CHW9000 Mk3 HYDRAULIC WINCH

SERIAL NUMBER.....

DATE OF PURCHASE.....