BHW
Bushey Hall Winchmaster
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FITTING & OPERATING INSTRUCTIONS

RAMSEY HYDRAULIC WINCH

MODEL H89 Long Drum

9078kgf (89kN) Line Pull Capacity

Part No: 12236

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

Manual Part No. 13549 / 24.09.12

Bushey Hall Winchmaster sales@bhwgroup.co.uk www.bhwgroup.com
Southern Office: Lismirrane Industrial Park, Elstree Road, Elstree, Herts, WD6 3EE Tel: +44 (0)20 8953 6050 Fax: +44 (0)20 8207 5308
Northern Office: 6 South Orbital Trading Park, Hedon Road, Hull, East Yorkshire, HU9 1NJ Tel: +44 (0)1482 223 663 Fax: +44 (0)1482 218 285
Bushey Hall Winchmaster is a division of BHW Group Limited. Registered in England No. 1342461

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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 CLOSED CENTRE DIRECTIONAL CONTROL VALVE IS REQUIRED FOR FULL BRAKING.**
- **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 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.

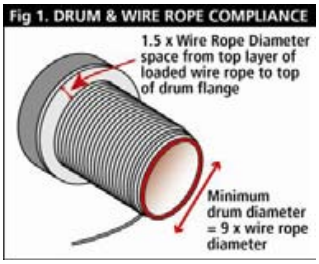
This winch is to be used only for the purpose of vehicle recovery when fitted to equipment designed for the purpose, or the loading of wheeled vehicles upon bodies designed for the purpose, or used for a purpose specifically agreed with the BHW Group Limited.

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 closed centre control valve as per Hydraulic System Specifications (Page 9). The use of a closed centre valve may result in damage to the winch.

2. The winch is operated using a wanderlead or/and a radio control - refer to Hydraulic System Specifications (Page 9) for Emergency Stop components to be installed.

3. Adjust system relief pressure as per Hydraulic System Specifications (Page 9).

4. Mount winch as per winch installation instructions (Pages 11-12).

5. Install 16mm, 1960N/mm^2 grade, 6 x 36 wire core rope, with minimum breaking strain of 18,250kgf (179kN). Maximum rope length of 60m x 4 layers.

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 at least 4.5 tonne, although BHW Group recommend 7 tonne, as a larger hook will suit more applications for the H89. Use only high tensile grade 80 or 100. Hooks supplied by BHW Group are rated and stamped for lifting and have a safety factor of 4:1. A 7 tonne hook has therefore a minimum yield of 7 x 4 = 28 tonne.
For pulling applications with a 2:1 factor of safety 7 tonne hooks are suitable for up to 14 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 freespool 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 burrs. Use the wire rope webbing strap 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.

Excessive wear and tear of the wire rope 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.

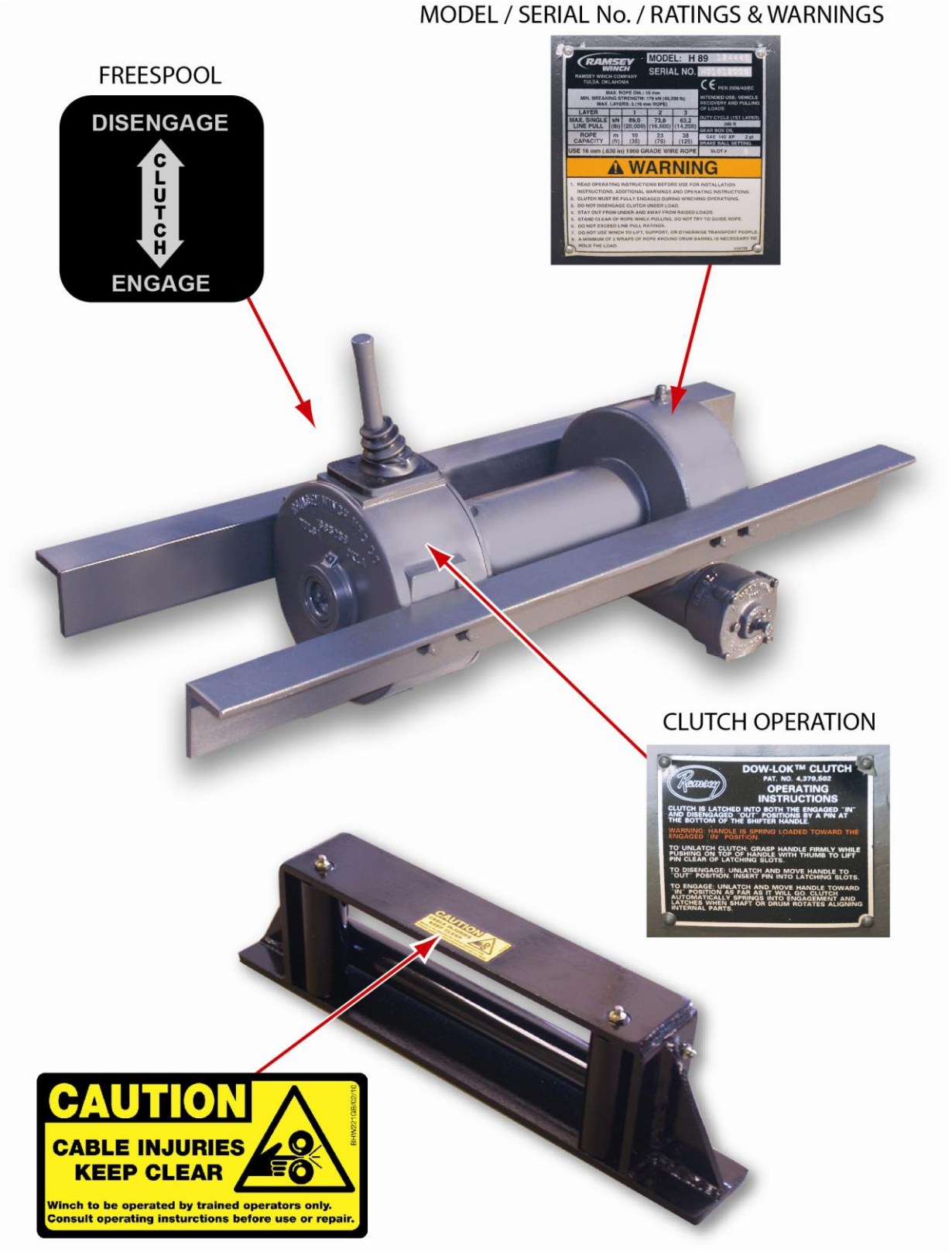
Do not allow the load to 'snatch' during a pull, as this can momentarily double or even treble the load on the rope.

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.

It is recommended that 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.

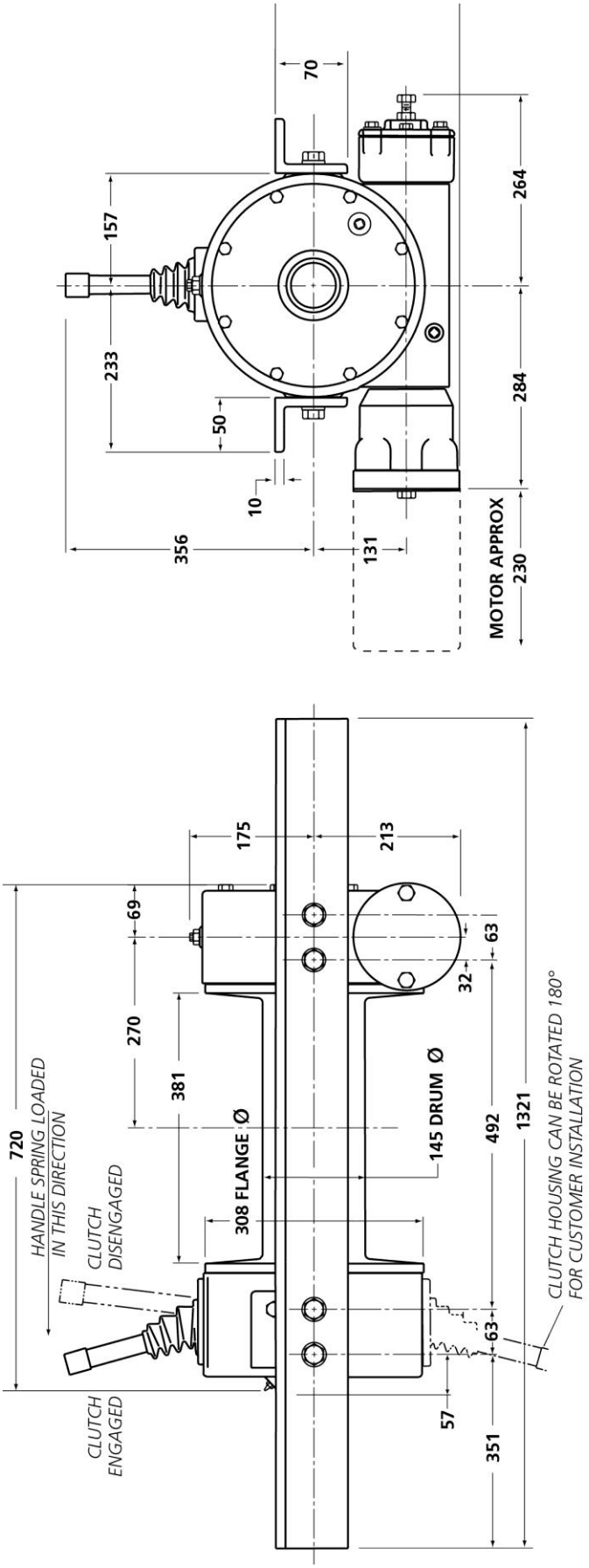
WINCH LABELS



WINCH SPECIFICATIONS

Model	**Ramsey H89** **9 Tonne Low Mount Hydraulic Wnch** **EN14492-1 Compliant**
Construction	Aluminium cast housings with steel drum.
Gear Type	Worm with phosphor bronze heavy duty wheel providing self braking, running in oil bath
Gear Reduction	40:1
Type of Use	Heavy Duty Intermittent recovery type
Motor	Hydraulic – 244cc/rev
Brake	Self braking through the gear box and worm brake
Freespool Clutch	Manual operation
Weight	Winch only: 150kg
Rated Line Pull (First layer)	89 kN (9078kgf)
Line Pull and LIne Speeds at 95 l/min.	**First Layer** 89kN (9078kgf) **Speed:** 4 m/min. **Second Layer** 74kN (7548kgf) **Speed:** 5 m/min. **Third Layer** 63kN (6426kgf) **Speed:** 6 m/min. *Based on recommended wire rope and 244cc / rev. motor*
Recommended Wire Rope	16mm Ø 1960N/mm^2 grade 6 x 36 wire core
Minimum Breaking Strain	179kN (18,250kgf)
Drum Maximum Storage Capacity	60m (Based on 16mm Ø wire rope)
Rope to Mean Drum Ratio	10.8:1
Drum Dimensions	127mm Ø x 381mm length. Drum flange 308mm Ø
Drum Rotation	Clockwise or Anticlockwise as required
Gearbox Oil Type	EP 140
Maximum Oil Flow	114 l/min
Recommended Oil Flow	95 l/min
Operating Pressure	Approximately 190 bar
Hydraulic Fluid	Viscosity 20-43 cSt (100-200 SUS) Maximum operating temperature 85°C. Cleanliness level of ISO 17-14 or better.
Roller Guides (optional)	Extra Heavy Duty with greaseways
Mounting Rails	102 x 102 x 13mm heavy duty steel angles, 1320mm long supplied with winch. A mounting bracket fixing kit is also available from BHW Group if required.
Noise Level	81db
Ambient Temperature Range	-28° to 60°C

DIMENSIONS AND LINE SPEEDS CHART



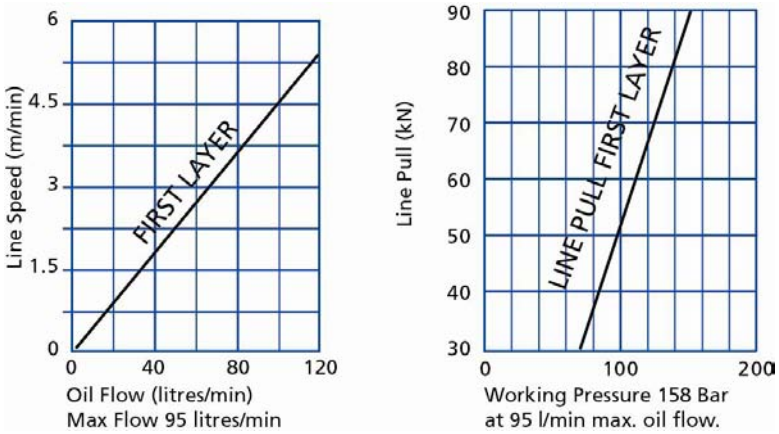
H-89
Line speed examples

		LAYER		
		1	2	3
Maximum Rated Line Pull by Layer	kN kgf	89 9078	74 7548	63 6426
H-800 Rope Capacity Cumulative by Layer (16mm Dia. Wire Rope)	m	10	23	38
*Line Speed at 95 l/min	m/min	4	5	6

* Based on recommended 16mm wire rope, 1960N/mm² grade and 244cc / rev. motor.

HYDRAULIC PERFORMANCE

Refer to the performance charts below to match the hydraulic system to the performance of the H89.



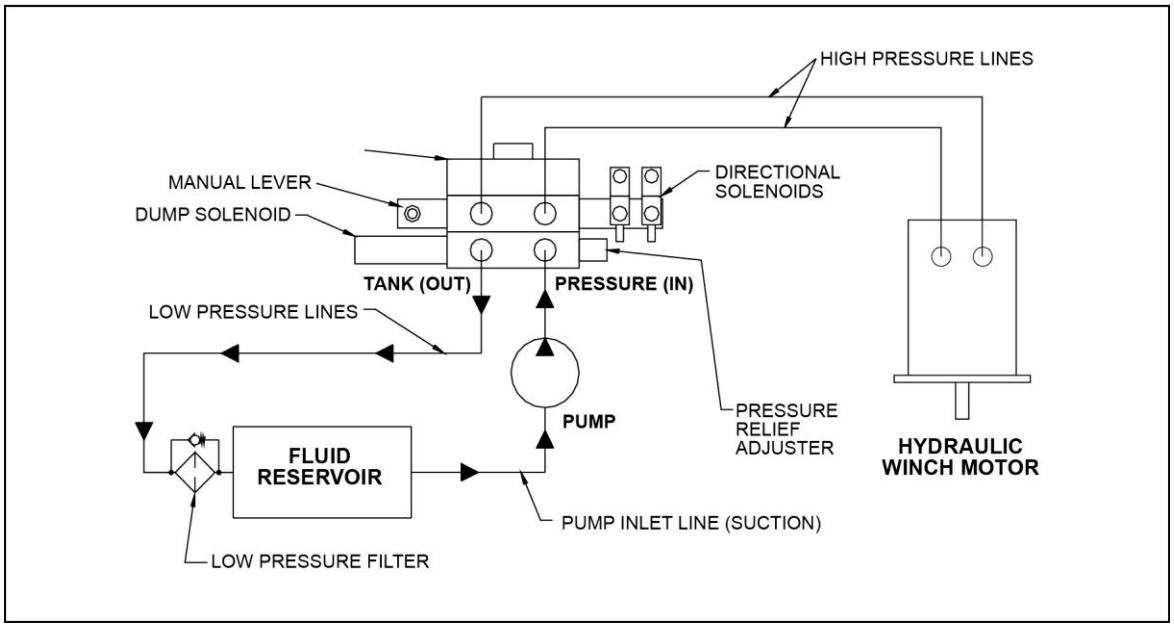
HYDRAULIC SYSTEM SPECIFICATIONS

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 ½". Return to tank ¾". Reservoir to pump 1"
Hydraulic Motor	3/4" BSP ports.
Control Valve	4-way 3-position self-centring type. Closed centre spool type should 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 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 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**	250 microns (Approximately) 25 microns (Approximately)
IMPORTANT:	Keep hose lengths to a minimum to reduce backpressure. 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.

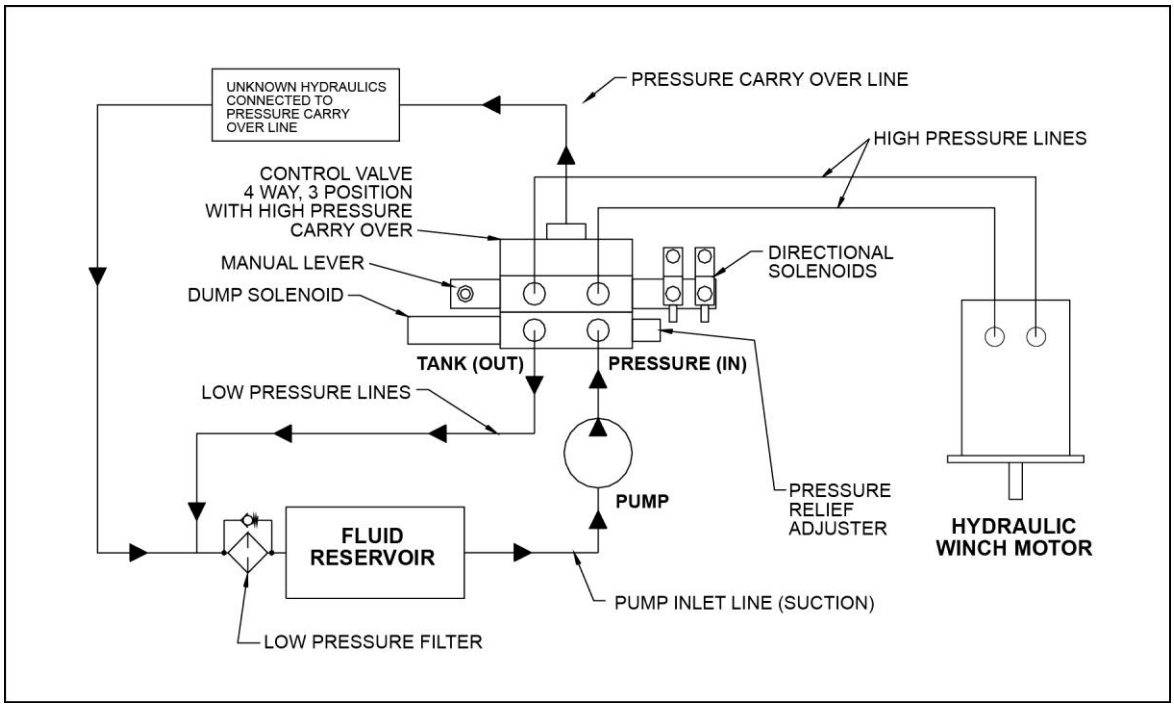
If other hydraulic equipment, (i.e. lorry loader crane), is also being included in the system, the selection of the PTO/PUMP is very important. This should be specified to meet the operating requirements of both the winch and crane. In some installations this will require a dual pump system. **Please contact BHW Group Limited for further information if required – call +44 (0)20 8953 6050.**

HYDRAULIC SCHEMATICS

VALVE WITHOUT PRESSURE CARRY OVER

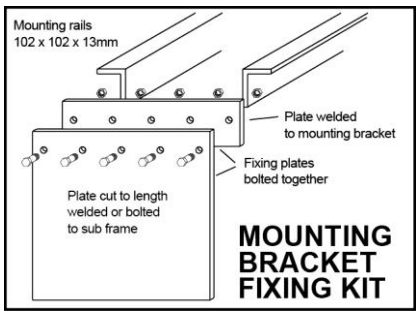


VALVE WITH PRESSURE CARRY OVER



WINCH INSTALLATION

The H89 is supplied complete with heavy duty mounting angles. An optional Mounting Bracket Fixing kit is also available from BHW Group - call +44 (0)20 8953 6050.



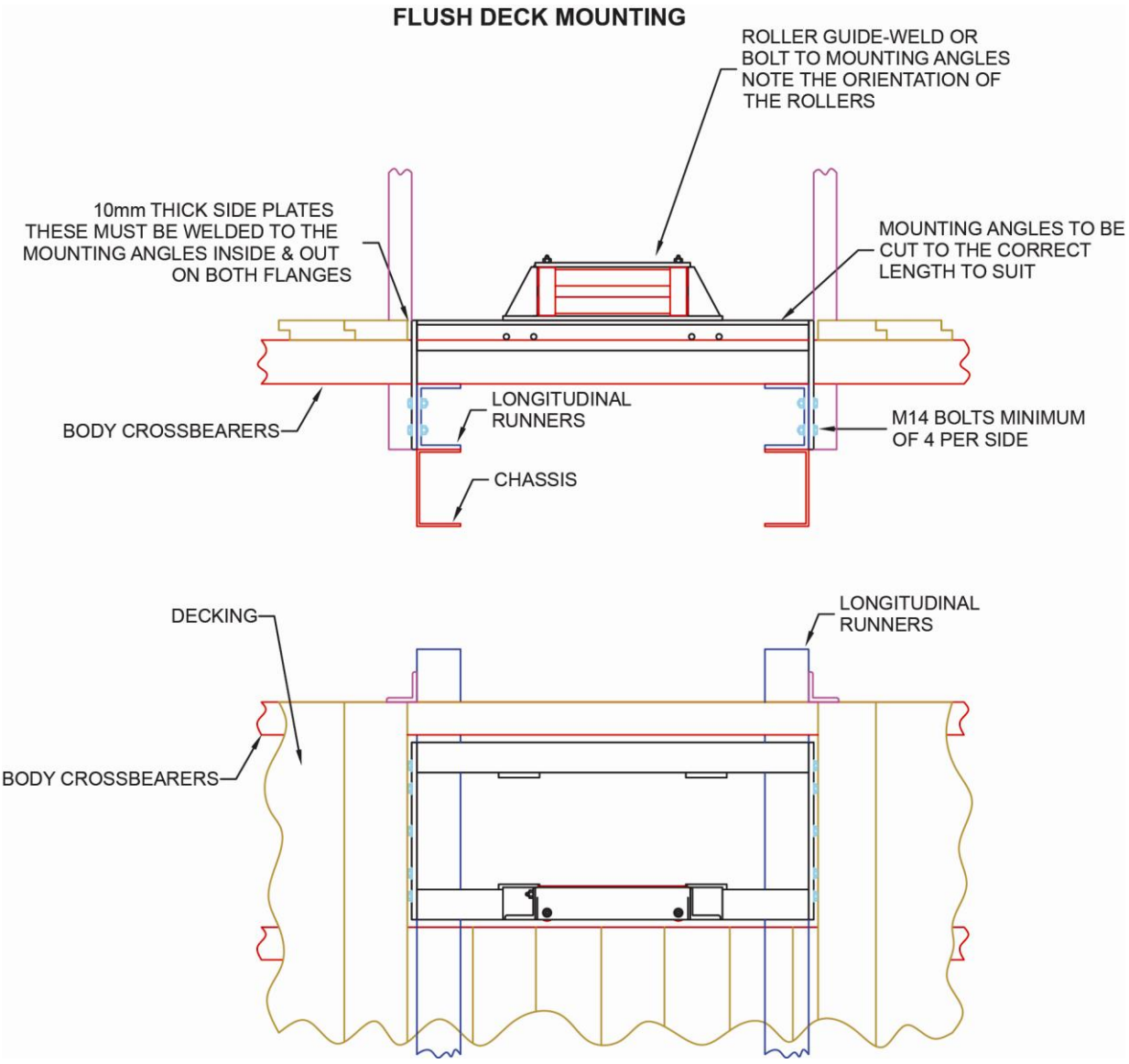
Irrespective of how the winch is mounted it is important that adequate provision is made so that the load is transmitted into the body of the vehicle and then into the chassis.

Never weld to chassis or drill top or bottom flanges.

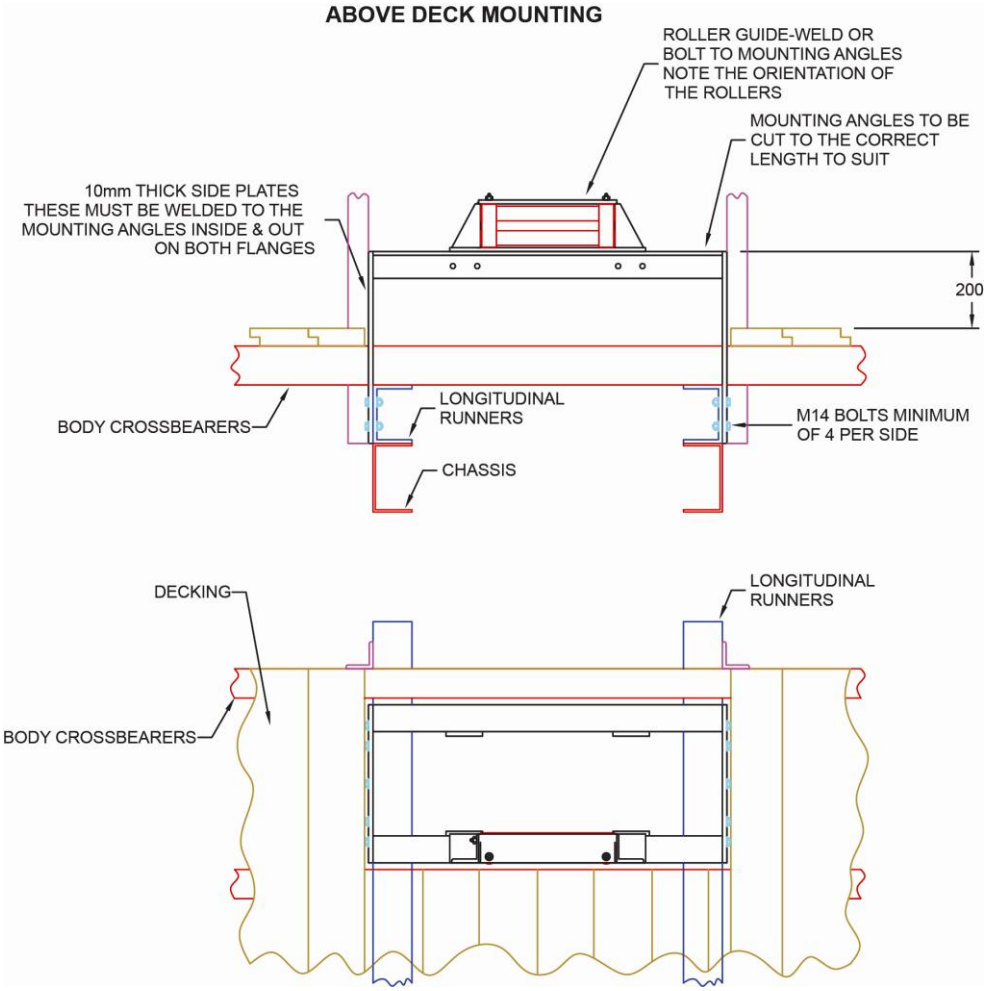
It is most important that the winch is mounted securely so that the three major sections the clutch housing end, cable drum and the gear housing end are properly aligned. Misalignment will cause the drum to bind and will lead to rapid wear of major components.

Mounting angles should be cut to length each end to suit the application and the angles butt-welded to a 10mm plate each end. NOTE both sides of the angle are welded and good weld penetration is essential. The plate is bolted through the longitudinal runner using 4 x M14 x 40mm bolts with nylock washers each side.

The following diagrams show flush mounting and mounting above the deck:



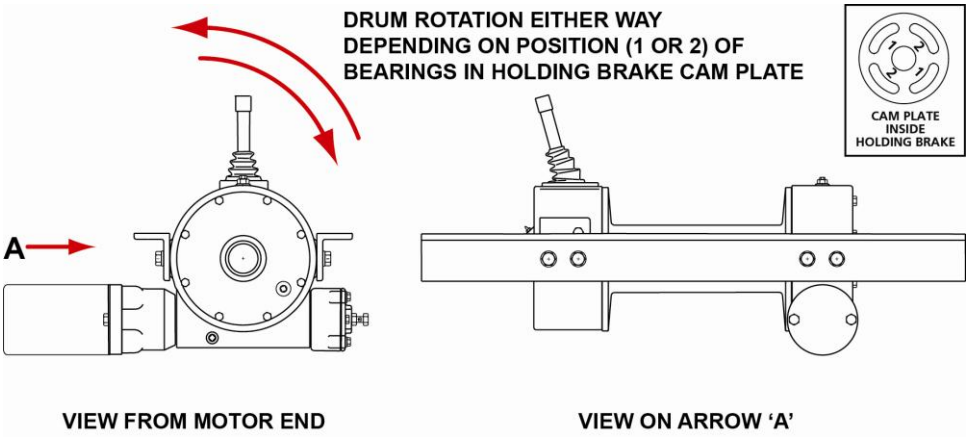
WINCH INSTALLATION



IMPORTANT NOTES: Installers must always ensure the winch can easily be removed for service and repair. For these types of installation, the longitudinal runner must be substantial enough to take the full winch loading

ROLLER FAIRLEAD
A roller fairlead should always be fitted in front of the winch to help prevent the wire rope passing over the drum flanges and becoming trapped between the drum and the end casing.

WINCH ROTATION



The drum rotation is dependant on the position of the ball bearings within the holding brake cam plate – please see following section on holding brake information.

HOLDING BRAKE INFORMATION

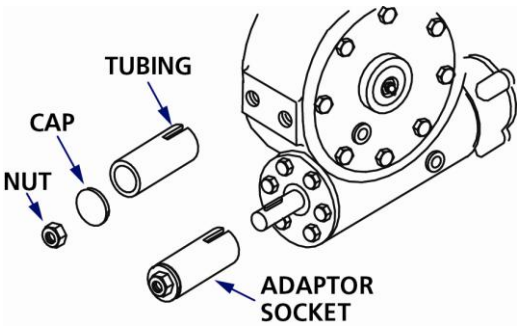
ADJUSTING THE OIL COOLED HOLDING BRAKE

The oil cooled, fully adjustable, automatic holding brake operates in the worm housing lubricant, all parts being submerged in oil.

The brake can be adjusted as follows:
Loosen the lock nut on the adjusting screw.
Tighten the brake by turning the adjusting screw clockwise.

CAUTION: Only 1/4 turn is usually required to adjust the brake. Over tightening can cause overheating, and damage to the brake parts. Tighten the lock nut after adjustment is completed. If the brake does not respond to adjustment, then a new leaf spring and brake disc is needed.

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



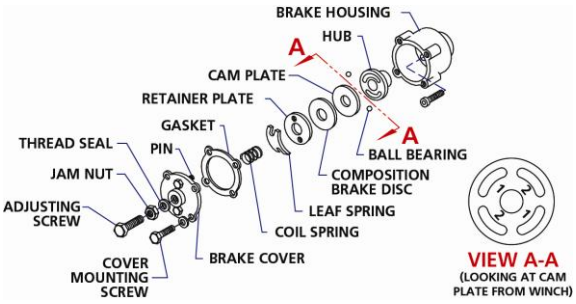
After welding the cap and nut to the tubing, slot the tubing, as shown. This will allow the special adaptor to slide over the keyway and will then act as a large socket.

A torque wrench can then be used to apply the proper torque. Turn the torque wrench so that the drum turns in the spool out direction or lowering direction. The torque rating for the brake on the H89 should be 68 to 75 Nm (50 to 55 ft.lb.).

If torque wrench does not show the proper value as it turns, then the worm brake adjusting bolt should be turned clockwise 1/4 turn. Each time the adjusting bolt is turned, checked the torque reading. Continue this procedure until the proper torque reading is achieved, then tighten the lock nut.

HOLDING BRAKE INFORMATION

SERVICING OF THE OIL COOLED HOLDING BRAKE



1. Remove the drain plug and drain the worm gear oil from the worm housing.
2. Loosen off the lock nut, then the adjusting screw, both two turns or more by turning them counter-clockwise.
3. Remove the cover mounting screws.
4. Remove the cover along with coil spring and leaf spring.
5. Remove the retainer plate, composition brake disc, cam plate and ball bearings. Note which slots ball bearings are in, No.1 or No.2. This will determine the brake engagement direction.
6. Insert parts as follows:
   a) Composition brake discs are 6mm (1/4") thick when new. Replace if thinner than 5mm (3/16") or if surfaces are glazed or burnt.
   b) Inspect the flat, ground surface of the cam plate and retainer plate for glazing, warping, or other damage. Glazing can be removed by scraping carefully.
   c) Inspect the leaf spring. It should be bowed approximately 3mm.

RE-ASSEMBLING AND CHECKING THE HOLDING BRAKE

1. Press brake hub into place over worm shaft and key.
2. Assemble balls in appropriate slots of cam. See name and data tag for brake ball slot position. Use stiff grease to hold ball bearings into place and slide cam over end of worm. Be sure that ball bearings are secure, between cam slots and hub slots. Install brake disc.
3. Install retainer plate, smooth side toward brake disc.
4. Install the gasket on the cover with a small amount of grease or sealer.
5. The coil spring goes over the adjusting screw on the inside of the cover.
6. Install the notches of the leaf spring on the pins protruding through the cover. The hollow side of the leaf spring goes toward the brake.
7. Install brake housing cover, making sure the protruding pins go through the leaf spring and into the holes in the retainer plate.
8. Bolt cover into place with the mounting screws. Install drain plug and add 1.8 litres (3-3/4 pints) of general purpose E.P. 140 oil.
9. Turn winch in the hoisting direction at least one turn of the input shaft.
10. Turn the adjusting screw in until it is finger tight.

TEST FOR PROPER HOLDING BRAKE ASSEMBLY

After the brake has been adjusted to the proper torque setting, disengage clutch. Start vehicle engine and run winch in the reel in (pulling direction). Allow winch to run in this direction for one minute.

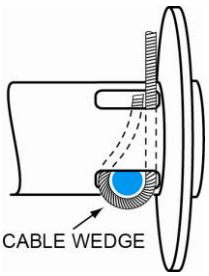
Place your hand on the safety brake housing. If housing is not hot to the touch then run winch in the reverse direction (rope out) for one minute. Brake housing should begin to heat.

When these conditions exist, proper installation has been made. If heating becomes noticeable when running the winch in forward rotation (pulling direction), the brake should be again disassembled.

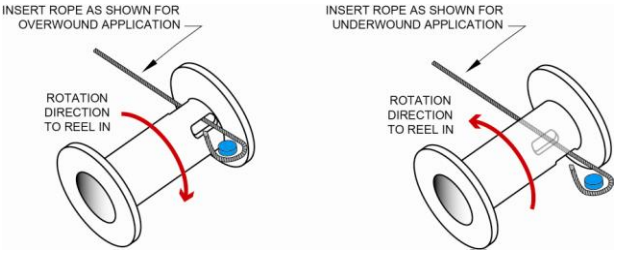
When disassembled, place the brake ball bearings in the alternative set of slots in the cam plates, then carefully follow the instructions for re-assembling and checking the brake.

WIRE ROPE INSTALLATION

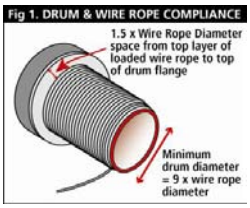
BEFORE INSTALLING WIRE ROPE ENSURE HOST CHASSIS ENGINE IS STOPPED AND EMERGENCY STOP CONTROLS ARE ACTIVATED.



Unwind wire rope by rolling it out along the ground to prevent kinking. Securely wrap plain end of wire rope (other end to hook), with plastic or similar tape to prevent fraying. Pass plain end of wire rope through any guide rollers or fairleads that may be fitted to the system towards the drum. Pass rope around drum, ENSURE IT IS PASSED AROUND THE DRUM IN THE RIGHT DIRECTION FOR CORRECT ROTATION.
Place plain end of wire rope into tapered hole in winch drum. 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 wire rope 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 wire rope, check freespool operation. Disengage clutch and pull on wire rope at a walking speed.

CARE OF THE WIRE ROPE

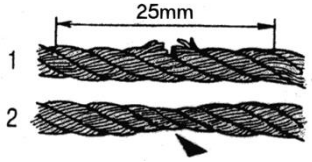
NOTE: ISO 4309:2004/2010 – WIRE ROPES DIRECTIVE

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.

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.

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

For adjustment methods 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.

The suggested method is to use BHW Group's "HOOK RETURN LINE ASSEMBLY' Part No.10629.

FREESPOOL CLUTCH

The Dow-Lok clutch provides free spooling and clutch engagement with the cable drum. With the clutch disengaged, the cable can be free spooled off the drum. For winching in the load the clutch must be fully engaged with the drum.

The Dow-Lok clutch is latched into either the engaged, "In" position or the disengaged "Out" position by a pin at the bottom of the shifter handle that fits into latching slots.

TO UNLATCH CLUTCH: run winch in the reverse (reel out) direction until the load is off the cable. Grasp handle firmly and whilst pushing on the top of the handle with the thumb for leverage, lift until pin clears latching slots.

TO DISENGAGE CLUTCH: unlatch and push handle to "Out" position and fully insert pin into latching slots. **DO NOT ATTEMPT TO DISENGAGE WITH A LOAD ON THE WINCH.**

TO ENGAGE CLUTCH: unlatch and pull handle toward "In" position as far as it will go. In order to attain full engagement, internal elements of the clutch must be aligned. This alignment will take place when cable drum or cable drum shaft turns a maximum of % revolution. The clutch will automatically spring into engagement and pin will drop into "In" slots when this alignment takes place.

DO NOT ATTEMPT TO LIFT A LOAD UNLESS PIN IS FULLY INTO "IN" SLOTS. KEEP CLEAR OF SPRING LOADED HANDLE DURING AUTOMATIC ENGAGEMENT.

MAINTENANCE

Keep to the following maintenance schedule and you will keep your winch in top condition and performing, as it should, with a minimum of repairs.

MONTHLY

Check for any oil leaks from the gearbox.
Check that all mounting bolts are tight
Check all unions for hydraulic leaks and tighten if necessary
Check filter in hydraulic low pressure return line and replace if indicated by colour code indicator
Check operation of emergency stop controls.
Lubricate all grease nipples
Carry out full inspection of wire rope.
Check the free spool mechanism for full engagement and disengagement.

ANNUALLY

Drain the oil from the winch by removing the drain plug. Refill to the oil level plug with paraffin and run the winch with no load for 2 minutes in the reel in direction. Drain the paraffin from the winch, and refill with all purpose EP 140 gear oil.
Inspect the winch installation for cracks and deformation.
Tighten all winch-securing bolts.
Inspect hydraulic fluid in system and replace if necessary. Basic trouble shooting symptoms:
Replace hydraulic tank suction strainer.

TROUBLE SHOOTING

CONDITION	POSSIBLE CAUSES	CORRECTIONS
Clutch inoperative or binds up	Dry or rusted shaft Bent yoke or linkage Clutch jaws are in contact	Clean and lubricate Replace yoke or shaft assembly
Oil leaks from housing	Seal damaged or worn Too much oil Damaged gasket	Replace seal Drain excess oil Replace gasket
Winch runs too slow	Hydraulic motor worn out Low flow rate	Replace motor Check flow rate
Cable drum will not freespool	Winch not mounted squarely, causing end bearing to bind drum	Check mounting
Cable 'bird nests when clutch is disengaged	Drage brake disc worn	Replace discs
Hydraulic fluid leaks out of hole in motor adaptor	Hydraulic motor shaft seal damaged	Replace seal

OVERHAUL OF H89

DIS-ASSEMBLY

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

1. Drain oil from gear housing by removing pipe plug No.88 from gear housing. Shift clutch into engaged "IN" position.
(NOTE: If equipped with air shifter, remove air shifter cover No.43, cotter pin No.75, and clevis pin No.76. Remove air shifter sub-assembly No.5.).

Remove frame angles No.7 & No.8 from winch assembly.

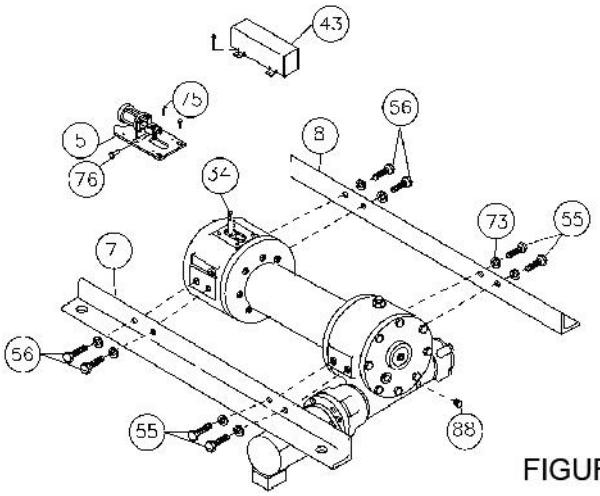


FIGURE 1

2. Remove two capscrews No.53 from clutch housing No.21 and unlatch shifter assembly No.34.
Remove clutch housing from end of drum shaft.
Press in on retainer plate No.93, to relieve the spring tension and remove the retainer ring No.96.
Remove four cap screws No.44, retainer plate No.93, springs No.99 and spacer No.35.

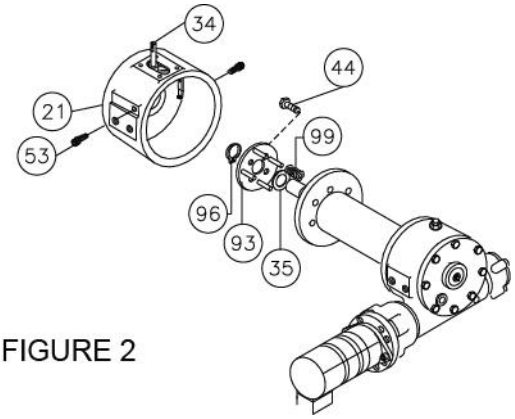


FIGURE 2

3. Slide the locking ring No.14 from the clutch.
NOTE: The locking ring cannot be removed unless the clutch is engaged, with dowel pins No.90 seated in the shaft keyways. Rotate the drum so the eight balls No.39 and four dowel pins No.90 can be removed.
If necessary, the clutch No.13 may be disassembled from the drum by removing eight capscrews No.50.
Slide drum No.18 from drum shaft.

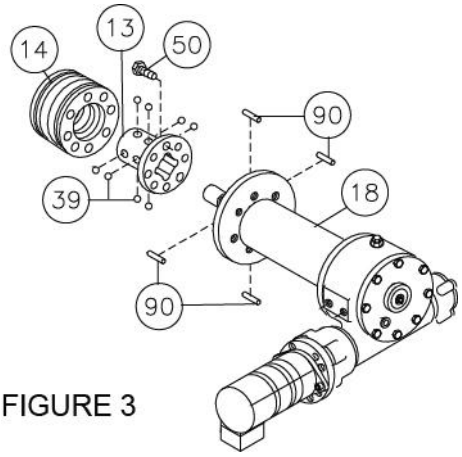


FIGURE 3

OVERHAUL OF H89

4. Remove motor No.85 from adapter plate No.29 by removing capscrews No.59.
Remove adapter plate and coupling No.3 from adapter No.6 by unscrewing eight capscrews No.56.

Remove key No.26 from worm shaft.
Unscrew six capscrews No.58 and remove adapter from gear housing. Replace adapter seal No.94 and gasket No.78.

NOTE: Drag brake No.17, spacer No.103 and springs No.98 should be examined and replaced if necessary.

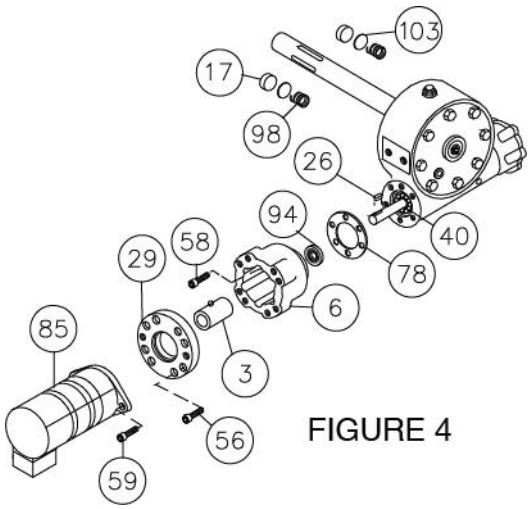


FIGURE 4

5. Remove brake housing No.20 from gear housing by unscrewing six No.57 capscrews.
Remove key No.25 from worm.
Remove worm No.36 and bearings No.40 from gear housing.
Use a soft hammer to gently tap input end of worm, driving worm and bearing from gear housing.
Once worm has been removed from housing, bearing can be pressed from end of worm.
Check for signs of wear or damage to worm No.36 and bearings No.40. Replace if necessary.

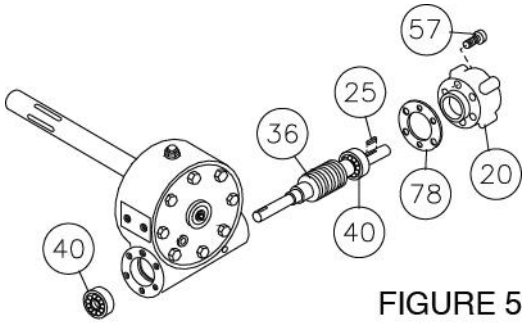


FIGURE 5

6. Remove gear-housing cover No.16 from gear housing No.22 by unscrewing eight capscrews No.47.
Thread two of the capscrews into the two tapped holes of cover and tighten.
This will pull the cover loose from gear housing.
Remove cover gasket No.80 and pull shaft No.32, with gear No.19 and spacer No.101 attached, from gear housing.
If necessary, replace gear.

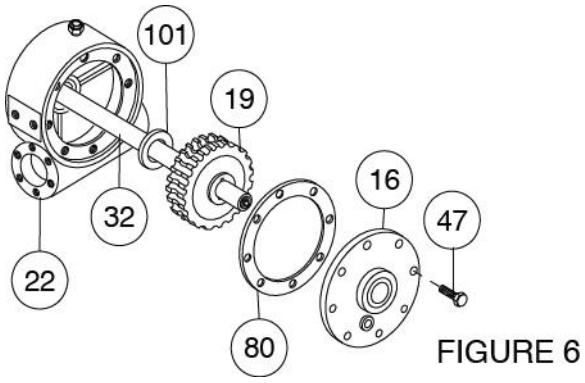


FIGURE 6

OVERHAUL OF H89

7. Check lube fittings No.84 and reducer No.87 for damage and replace if necessary.

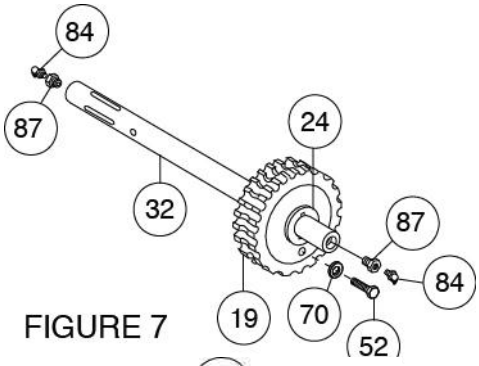


FIGURE 7

8. If shaft and/or gear is damaged, replace as follows:

a. Tap keys No.27 into short keyways of drum shaft No.32.

b. Press shaft No.32 and keys through gear hub No.19 until end of keys on long end of shaft are flush with gear.

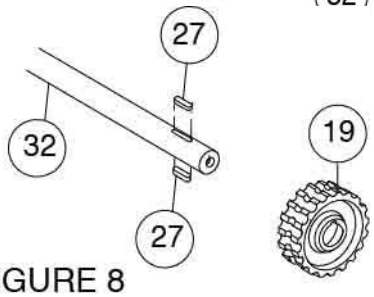


FIGURE 8

9. Check gear housing bushing #10 and “O” ring No.86 for signs of wear.
Replace if necessary by pressing old bushing from gear housing No.22.
Press new bushing into place and insert new “O” ring No.86 into groove inside of bushing.

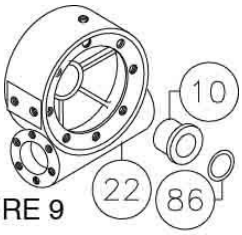


FIGURE 9

10. Check drum bushings No.41 & No.42 for signs of wear.
Replace if necessary by pressing old bushings from drum No.18.
Press bushing No.41 into bore in drum until flange is seated against bottom of counterbore.
Press bushing No.42 into opposite bore on drum until end of bushing extends .50" from end of drum.

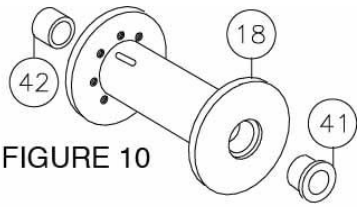


FIGURE 10

11. Check end bearing bushing No.42 for signs of wear.
If necessary, remove old bushing and press new bushing into place.

FIGURE 11

12. Check cover bushing No.10 and “O” ring No.86 for signs of wear.
Replace if necessary by pressing old bushing from gear housing cover No.16.
Press new bushing into place and insert new “O” ring No.86 into groove inside of bushing.

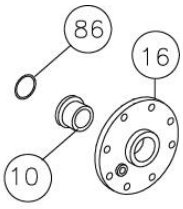


FIGURE 12

OVERHAUL OF H89

RE-ASSEMBLY

13. Slide spacer No.101 over long end of shaft and place against gear hub.
Apply grease to end of shaft, opposite gear.
Apply grease to bushing in gear housing No.22.
Place greased end of shaft through bushing in gear housing No.22.
Place gasket No.80 onto gear housing cover No.16.
Apply grease to gear end of shaft andcover bushing.
Place cover onto shaft and secure to housing with eight No.47 capscrews.
Tighten capscrews to 53 Nm (39 ft-lb) each.

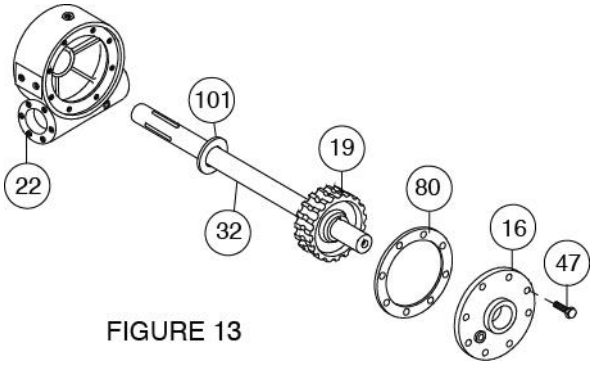


FIGURE 13

14. Press bearing No.40 onto worm No.36.
NOTE: Be sure that the thick shoulder of bearings outer race (side with manufacturer's name and part number) is out, away from worm threads.
Press bearing and worm into gear housing.
Slip gasket No.78 onto brake housing No.20.
Use six capscrews No.57 to secure brake housing to gear housing.
Tighten capscrews to 61 Nm (45 ft-lb) each.
Place key No.25 into keyway of worm No.36.

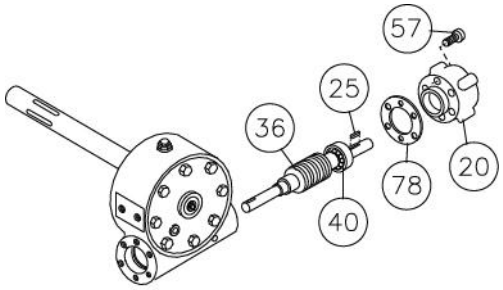


FIGURE 14

15. Press bearing No.40 onto worm and into housing.
Be sure that thick shoulder of bearings outer race (side with manufacturer's name and part number) is out, away from worm threads.
Attach adapter No.6 to gear housing using six capscrews No.58.
Tighten capscrews to 61 Nm (45 ft-lb) each. Insert key No.26 into keyway of worm shaft.
Slide coupling No.3 over end of worm shaft. Attach adapter plate No.29 to adapter using eight capscrews No.56.
Tighten capscrews to 28 Nm (21 ft-lb) each.
Place motor shaft, with key in keyway, into coupling.
Secure motor No.85 to adapter, using two capscrews No.59.
Tighten capscrews to 138 Nm (102 ft-lb) each.

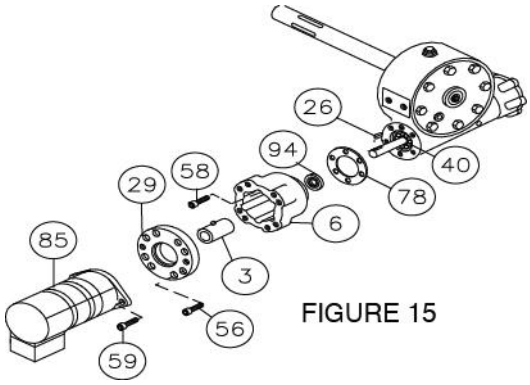


FIGURE 15

16. Place winch with gear housing cover down on a workbench.
Drum shaft should be in vertical position.
Set springs No.98 into pockets of gear housing with drag brakes No.17 on top of disc No.103 and springs.
Apply grease to shaft and drum bushings.
Slide drum assembly No.18 onto drum shaft as shown.

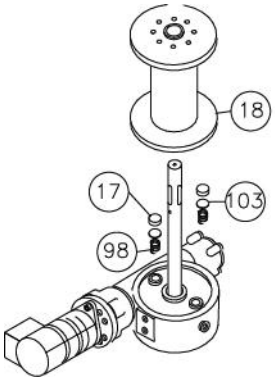


FIGURE 16

OVERHAUL OF H89

RE-ASSEMBLY

17. Place clutch No.13 over end of drum shaft.
Align the clutch over the pilot bushing in drum.
Install the eight capscrews No.50 and torque the capscrews to 138 Nm (102 ft-lb), securely seat the clutch at 138 Nm (102 ft-lb) to securely seat the clutch to the drum.
Rotate the drum to align the clutch slots with the shaft keyways.
Lightly grease four dowel pins No.90 and eight balls No.39.
Use molybdenum disulfide or graphite bearing grease, insert the four dowel pins No.90 and eight balls No.39.
In the engaged position the balls are nearly flush with the clutch.
Lightly grease the internal and external groove and bore in locking ring No.14 and clutch No.13.
Slide locking ring onto the clutch.
When fully engaged, the locking ring touches the clutch flange and there is 18 to 18,5 mm (.71 to .73 in) between the end of the locking ring and the end of the clutch.

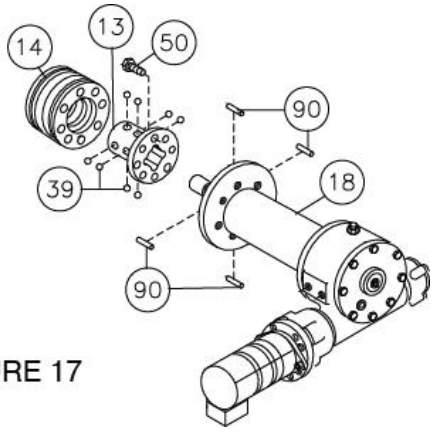


FIGURE 17

18. Place four springs No.99 over four roll pins on retainer plate No.93.
Install spacer No.35 and retainer plate and secure to clutch using four capscrews No.44.
Tighten capscrews to 13 Nm (9.7 ft-lb) each.
Firmly seat the retainer ring No.96 into drum shaft groove.
Set the shifter assembly so that the screw heads engage the external groove in the locking ring No.14.
Push the clutch housing No.21 onto the drum shaft and latch the shifter assembly in the engaged "IN" position.
Insert the two capscrews No.53.

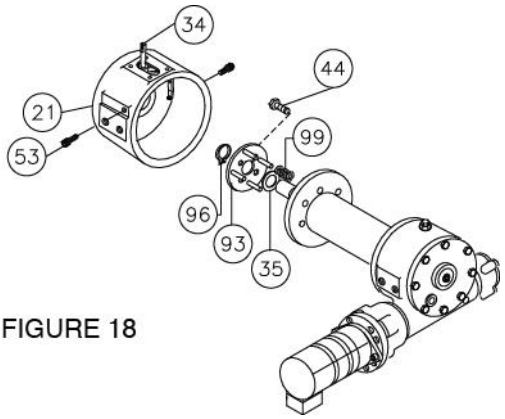


FIGURE 18

19. Attach mounting angles No.7 & No.8 to winch assembly.
Use capscrews No.55 & No.56 and lockwashers No.73.
Tighten capscrews to 393 Nm (290 ft-lb) each.
Insert plug No.88 into hole in bottom of gear housing.
Remove plugs No.81 & No.87 from top of housing.
Pour 1.77 litres (3.75 pints) of E.P. 140 oil into hole and replace plugs.

(NOTE: If equipped with Air Shifter: Attach air shifter assembly, but do not torque prior to adjustment. Attach clevis No.33 to shifter shaft No.34 No.33 to shifter shaft No.34 with clevis pin No.76 and cotter pin No.75. Attach cover No.43).

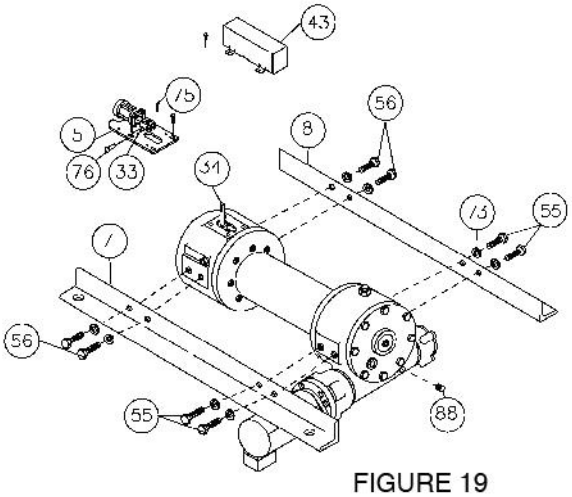
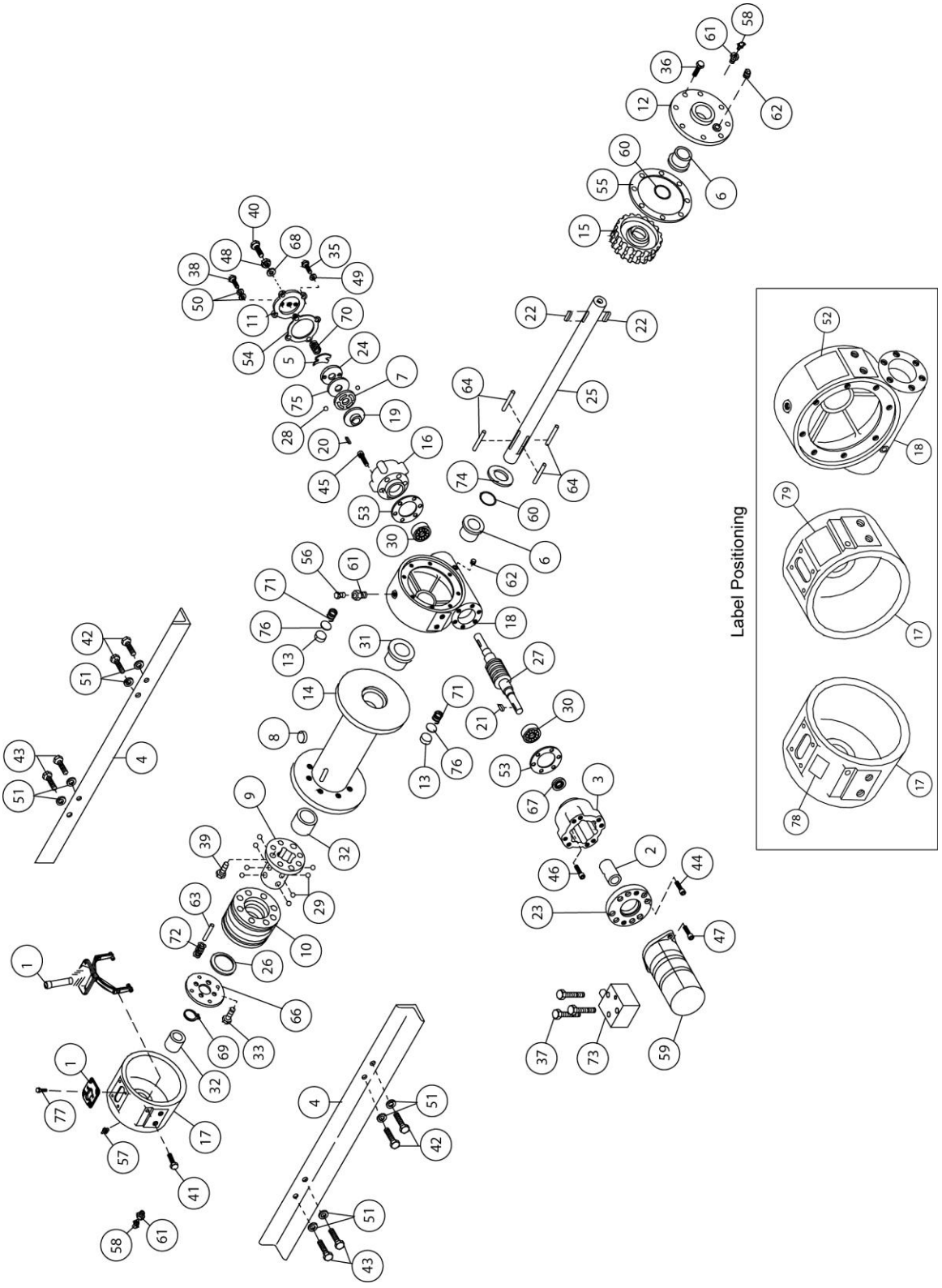


FIGURE 19

H89 PARTS DIAGRAM



Item No.	Qty	BHW No.	Description
1	1	5039	MANUAL SHIFTER ASSEMBLY
2	1	13516	COUPLING ASSEMBLY
3	1	5088	ADAPTOR
4	2	13517	ANGLE - STANDARD
5	1	5092	SPRING - FLAT
6	2	5096	BUHING
7	1	5097	CAM PLATE
8	1	5098	CABLE ANCHOR ("STD" DRUM ONLY)
9	1	5111	CLUTCH
10	1	5121	LOCKING RING
11	1	13518	COVER - BRAKE
12	1	13519	COVER - GEAR HOUSING
13	2	5128	SHOE - DRAG BRAKE
14	1	5140	DRUM (STANDARD)
15	1	13520	GEAR R/H
16	1	13521	HOUSING - BRAKE
17	1	5181	HOUSING - CLUTCH
18	1	5183	HOUSING - GEAR
19	1	5202	HUB - BRAKE
20	1	5209	KEY
21	1	10600	KEY
22	2	13522	KEY
23	1	5217	PLATE - HYDRAULIC ADAPTOR
24	1	5219	PLATE - RETAINER
25	1	5140	SHAFT - DRUM (STD)
26	1	13523	SPACER
27	1	13524	WORM R/H
28	2	5264	BALL - BRAKE
29	8	5265	BALL - CLUTCH
30	2	5271	BEARING - BALL
31	1	5286	BUSHING
32	2	5287	BUSHING
33	4	11341	CAPSCREW 1/4-20NC x 3/4 LG HX HD GR5
34	4	13525	CAPSCREW 5/16-18NC x 3/4 LG HX HD
35	4	13526	CAPSCREW 5/16-18NC x 1 LG HX HD GR5
36	8	13527	CAPSCREW 3/8-16NC x 1 LG HX HD GR5 NYLOK HVY P
37	3	13528	CAPSCREW 3/8-16NC x 3 1/4 HX HD Z/P G5
38	2	13529	CAPSCREW 3/8-24NF x 1 1/4 LG ALL-THRD GR5
39	8	13530	CAPSCEW 1/2-20NF x 1 LG HX HD GR5
40	1	13531	CAOSCREW 1/2-20NF x 1 3/4 LG ALL THRD GR5
41	2	9054	CAPSCREW 1/2-13NC x 2 1/2 LG HX HD ALL THRD ZP
42	4	13532	CAPSCREW 3/4-10NC x 1 3/4 GR5 NYLOK HVY PATCH
43	4	9055	CAPSCREW 3/4-10NC x 1 3/4 GR5
44	8	5313	CAPSCREW 5/16-18NC x 1 1/4 LG SOC HD LOK-WEL
45	6	13533	CAPSCEW 3/8-16NC x 1 LG SOC HD
46	6	13534	CAPSCEW 3/8-16NC x 1 3/4 LG SOC HD LOK-WEL
47	2	13535	CAPSCEW 1/2-13NC x 1 3/4 LG SOC HD LOK-WEL
48	1	13536	NUT 1/2-20NF HX JAM
49	4	8937	LOCKWASHER 5/16 MED SECT PLTD
50	4	13537	WASHER - FLAT 3/8 ALUMINIUM
51	8	9056	LOCKWASHER 3/4 MED SECT
52	1	13538	LABEL - NAME & DATA
53	2	5371	GASKET
54	1	5373	GASKET
55	1	5374	GASKET
56	1	5402	FITTING - RELIEF
57	1	13539	FITTING - LUBE
58	2	13540	LUBE FITTING
59	1	6219	MOTOR - HYD
60	2	5420	QUAD RING
61	3	5429	REDUCER
62	2	5430	PIPE PLUG
63	4	5437	PIN - ROLL
64	4	5438	PIN - DOWEL
65	4	13541	PIN - ROLL
66	1	13542	PLATE - RETAINER
67	1	5471	SEAL - OIL
68	1	5473	THREAD SEAL
69	1	5482	RING - RETAINER
70	1	5489	SPRING
71	2	5491	SPRING - DISC
72	4	5496	SPRING
73	1	13543	VALVE - COUNTER BALANCE
74	1	13544	THRUST WASHER
75	1	5527	DISC - BRAKE
76	2	5528	SPACER - BRAKE
77	4	13545	CA[SCREW 5/16-18NC x 3/4 LG HX HD
78	1	13546	LABEL - CLUTCH ENGAGEMENT / DISENGAGEMENT
79	1	13547	LABEL - CLUTCH OPERATION

RAMSEY H89 / HY89 - ONE YEAR LIMITED 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 Limited 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

Ramsey Winch Co. and BHW Group Limited reserve the right to change the design of any product without assuming any obligation to modify any product previously supplied. Winches or equipment returned under warranty should be despatched to the relevant division of the 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.

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

Telephone: +44 (0)20 8953 6050
Fax: +44 (0)20 8207 5308
Email: sales@bhwgroup.co.uk
Website: www.bhwgroup.com

RAMSEY H89 HYDRAULIC WINCH

SERIAL NUMBER……

DATE OF PURCHASE……

The Ramsey H89 Hydraulic Winch is manufactured in the USA.