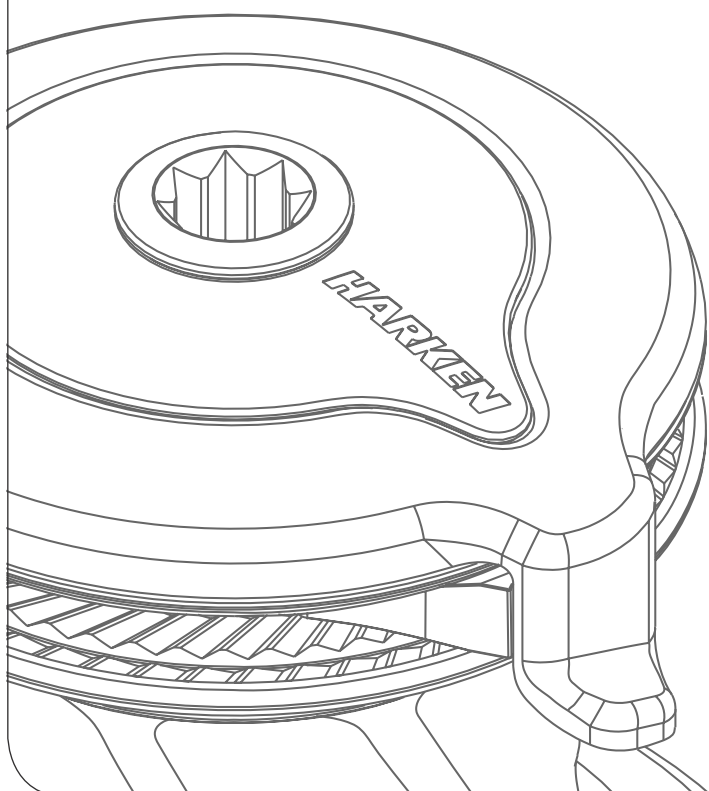


Installation and Maintenance Manual

MRU-02

Radial UniPower



HARKEN[®]

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Introduction

This manual gives technical information on winch installation and maintenance, including disassembling and reassembling.

This information is DESTINED EXCLUSIVELY for specialised personnel or expert users.

Installation, disassembling and reassembling of the winch by personnel who are not experts may cause serious damage to users and those in the vicinity of the winch.

Harken® accepts no responsibility for defective installation or reassembly of its winches.

In case of doubt the Harken® Tech Service is at your disposal at techservice@harken.it

This Manual is available only in English. If you do not fully understand the English language, do not carry out the operations described in this Manual.

Technical characteristics

Power ratio*	Gear ratio**
9,75 : 1	100 : 1

*Socket input

**Motor input

The theoretical power ratio does not take friction into account.

Performance data

UniPower Winch

	motor nominal power 700 W	motor nominal power 900 W
	12 V (700 W)	24 V (900 W)
line speed***	25 m/min - 82 ft/min	25 m/min - 82 ft/min
max load	900 Kg - 1984 lb.	900 Kg - 1984 lb.

***Line speed is measured with no load

Weight

	A	C
weight	12 Kg - 26,5 lb.	14,5 Kg - 32 lb.

Versions:

A = drum in anodised aluminium

C = drum in chromed bronze

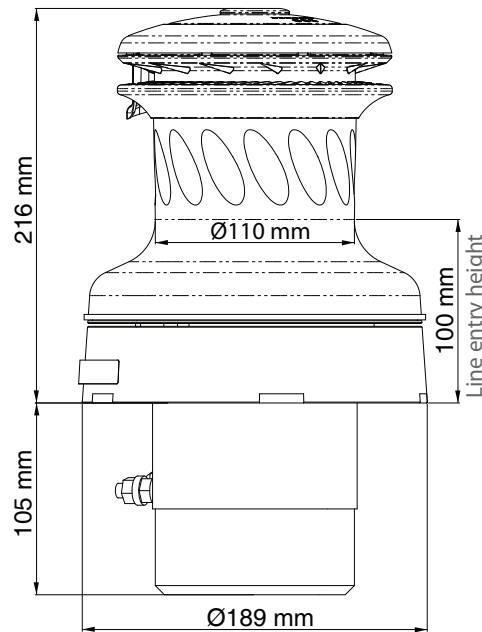
Maximum working load



WARNING!

The maximum working load (MWL) for the UniPower Radial Winch is 900 Kg (1984 lb). Subjecting the winch to loads above the maximum working load can cause the winch to fail or pull off the deck suddenly and unexpectedly during high loads causing severe injury or death.

Outline

UniPower Radial Winch

Installation

The winch must be installed on a flat area of the deck, reinforced if necessary to bear a load equal to at least twice the maximum working load of the winch. It is the installer's responsibility to carry out all structural tests needed to ensure that the deck can bear the load. Harken® does not supply the screws needed to install the winch since these may vary depending on the deck on which it is to be installed. It is the installer's responsibility to choose the correct screws taking account of the loads they will have to bear. Harken® assumes no responsibility for incorrect installation of its winches or for an incorrect choice of mounting screws.

**DANGER!**

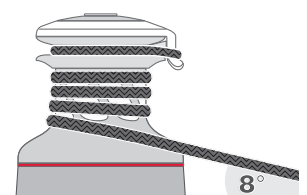
Incorrect installation of the winch may cause severe injury or death. Consult the yard that built the boat in the case of doubt over the correct positioning of the winch.

**WARNING!**

Failure to use the correct number and type of mounting fasteners or failure to ensure the correct deck strength can result in the winch pulling off the deck suddenly and unexpectedly during high loads causing severe injury or death.

**WARNING!**

Verify the entry angle of the sheet. This must be 8° with tolerance of $\pm 2^\circ$, to avoid sheet overrides and damaging the winch or making the winch inoperable leading to loss of control of the boat which can lead to severe injury or death.



Once you have decided the correct mounting position for the winch on the deck and checked the space available below deck for the motor and electrical wiring, proceed with the installation.

Installation procedure

To install the winch you must remove the drum and use Socket Head (SH) bolts.

Tools needed

 One medium flat-bladed screwdriver

To identify the various parts, refer to the exploded view at the end of this Manual.

 Torque to apply when assembling

Install the winch on the deck in the position you have chosen, keeping in mind the limits described on page 6 and using socket head (SH) bolts.
(See paragraph on installation)



1. Unscrew the central screw ($\approx 2\text{Nm}/18\text{ in-lb}$)



2. Slide off the assy socket n°31 and the cover n°13



3. Unscrew the three screws n°25 ($4\text{Nm}/35\text{ in-lb}$) and remove the self-tailing arm n°8 by rotating and lifting it.



4. Lift off the drum n°27

Carry out **Installation procedure**, then install the winch on the deck in the chosen position.

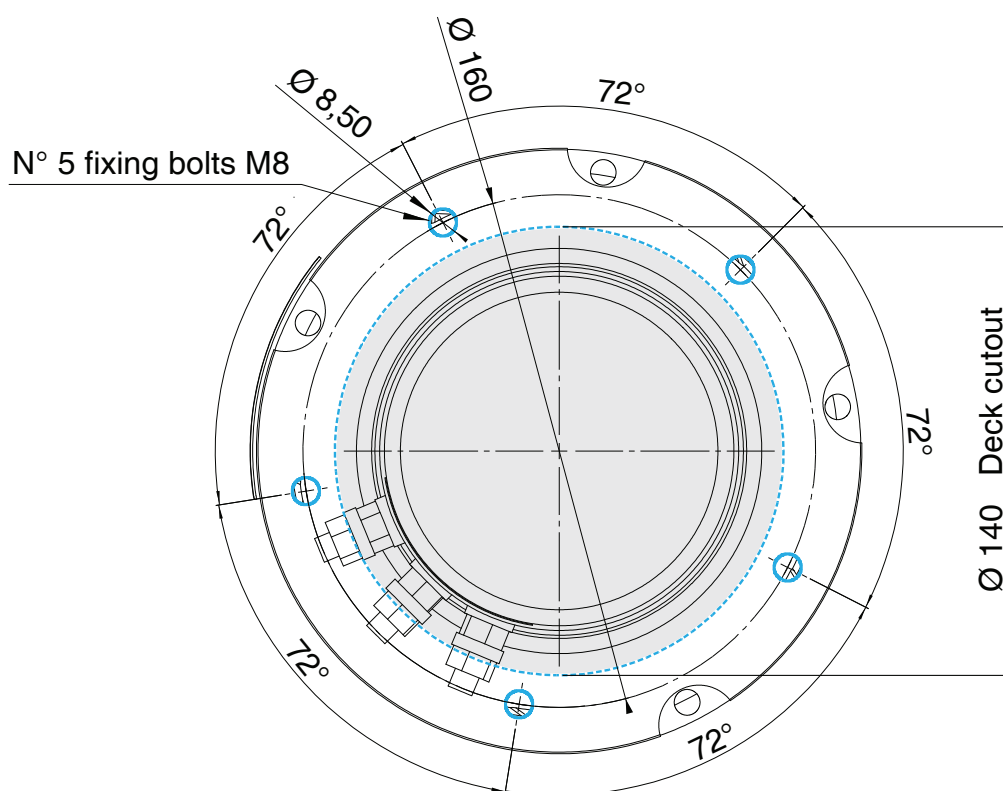
NOTICE

Before drilling the deck, check the space available below deck for the motor.

- A.** Position the base of the winch on the deck and mark the position of the holes or use the drilling cut-out template at the point where you have decided to place the winch.

Winch can be mounted in any direction without concern for drive gear location.

Below is a reduced scale diagram.



The drilling cut out template is available on the Harken® website, www.harken.com

- B.** Remove the winch and drill the five 8.5 mm diameter holes and the 140 mm hole.

- C.** Bolt the base of the winch to the deck using five socket headed M8 (not supplied by Harken®), correctly chosen for the thickness and type of the boat deck. Consult the yard that built the boat in case of doubt.



WARNING!

To install the winch on the deck, use only bolts in A4 stainless steel (DIN 267 part11). Bolts made of other materials may not have sufficient strength or may corrode which can result in winch pulling off deck suddenly and unexpectedly during high loads causing severe injury or death.

NOTICE

To mount winches on the deck, do not use countersunk bolts.

- D.** Fill the mounting holes with a suitable marine sealant.
E. Remove the excess adhesive/sealant from the holes and base drainage channels.
F. Reassemble the winch following the steps in **Installation procedure** in the reverse order, and apply the products indicated in the section on maintenance.

NOTICE

Before closing the winch, make sure the holes and drainage channels in the base of the winch are not obstructed.


Positioning the self-tailing arm

Position the self-tailing arm so that the line leaving the winch is led into the cockpit.

Motor electric wiring

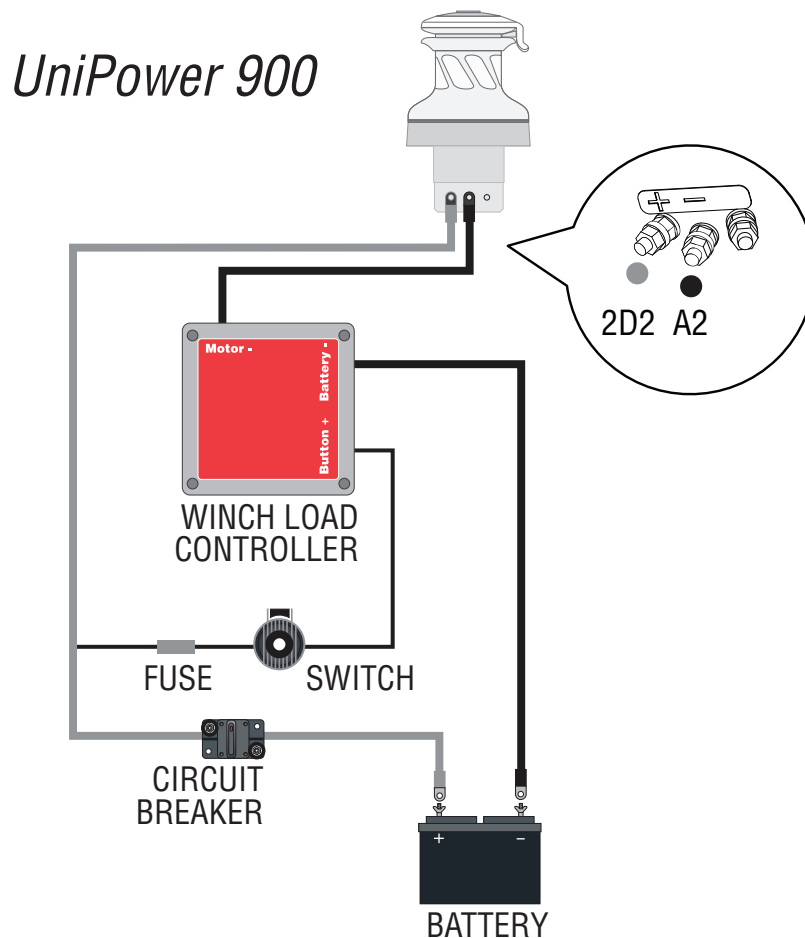
Electric wiring diagrams

Tools needed

-  Two number thirteen wrenches
- Two number ten wrenches

To guarantee greater efficiency in terms of safety and long life, it is obligatory to install the Winch Load Controller WLC200 UniPower 900.

Refer to the following diagrams for the electric wiring:



Fasten electric control box containing solenoids to bulkhead or wall. Install remote circuit breaker between power supply and electric control box. Locate push-button on deck in a convenient spot for easy winch operation.

Refer to the following chart for wire size:

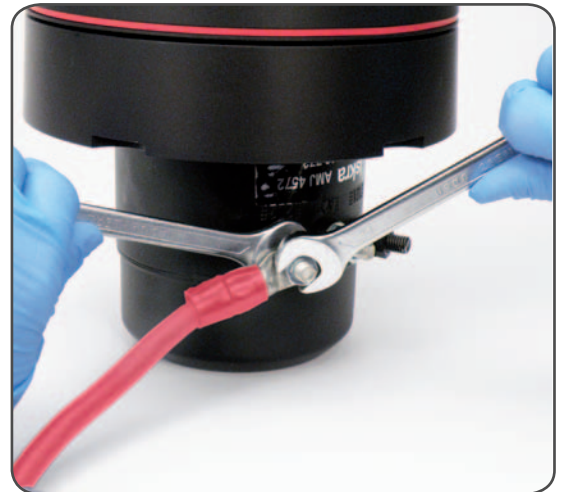
Total distance between winch and battery

Winch	Current voltage	Under 16.4 ft AWG	Under 5 m mm ²	16.4 - 32.8 ft AWG	5 m - 10 m mm ²	32.8 - 49.2 ft AWG	10 m - 15 m mm ²	49.2 - 65.6 ft AGW	15m - 20 m mm ²
UniPower	12 V	2	32	0	50	00	70	000	95
UniPower	24 V	5	16	3	25	2	35	0	50

After winch is assembled and before sailing, test the powered winch functioning: press the switch and check that the drum turns.

NOTICE

To connect motor, attach cable terminals to clamps between nut and lock nut. Hold nut in contact with motor using a spanner and tighten other nut with second spanner. Take special care not to turn the central spindles. Be careful not to turn central spindles. These instructions apply when assembling and disassembling. We recommend using a torque wrench so as to obtain a torque equal to and no greater than 10 Nm (88 in-lb).



NOTICE

Note that correct electrical contact sequence is:
Nut – Cable Terminal – Self-Locking Washer – Lock Nut



Maintenance

Washing

Winches must be washed frequently with fresh water, and in any case after each use. Do not allow teak cleaning products or other cleaners containing caustic solutions to come into contact with winches and especially anodised, chrome plated or plastic parts. Do not use solvents, polishes or abrasive pastes on the logos or stickers on the winches. Make sure that the holes and drainage channels in the base of the winch are not obstructed so that water does not collect.

Maintenance table

Winches must be visually inspected at the beginning and end of every season of sailing or racing. In addition they must be completely overhauled, cleaned and lubricated at least every 12 months. After an inspection, replace worn or damaged components. Do not replace or modify any part of the winch with a part that is not original.



WARNING!

Periodic maintenance must be carried out regularly. Lack of adequate maintenance shortens the life of the winch, can cause serious injury and also invalidate the winch warranty. Installation and maintenance of winches must be carried out exclusively by specialized personnel.

In the case of doubt contact Harken® Tech Service at techservice@harken.it

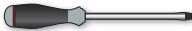





WARNING!


Make sure that the power is switched off before installing or carrying out maintenance on the winch.

Winch disassembly procedure

Tools needed

-  *One medium flat-bladed screwdriver*
-  *A number six hex key*
-  *Brush*
-  *Rags*

To identify the various parts refer to the exploded view at the end of this Manual.

 Torque to be applied in assembly phase

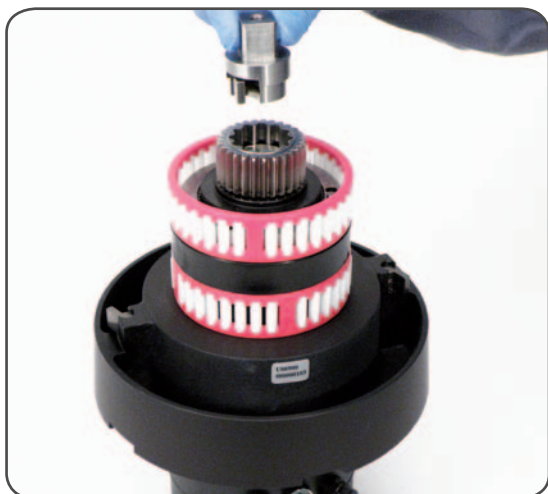
Carry out **Installation procedure** as shown in the paragraph on winch installation and then do the following:



5. Unscrew the 5 hex screws n°18
(20Nm/177 in-lb)



6. Slide off the gear carrier n°21.
Pay attention to rollers in the gear carrier.



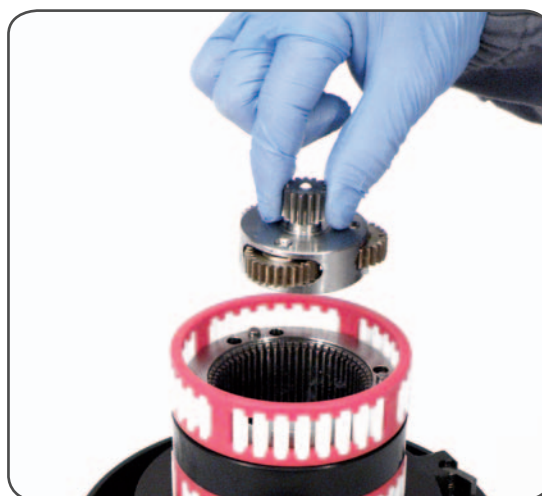
7. Slide out the pawls carrier n°20



8. Lift off the gear n°9



9. Remove the second planetary assy n°24 and remove flange n°11.
Pay attention to the o-ring in the ring gear.



10. Slide out the first planetary assy n°23

If it is necessary to replace any **jaws** of the winch, proceed as follows:



I. Unscrew the 4 screws n°14
($\approx 4\text{Nm}/35\text{ in-lb}$)



II. Remove the jaws n°28

Once the winch is disassembled, clean the parts: use a basin of diesel oil to soak metal components and rinse plastic parts in fresh water. Once you have done this, dry the parts with cloths that do not leave residue.

Inspect gears, bearings, pins and pawls for any signs of wear or corrosion.

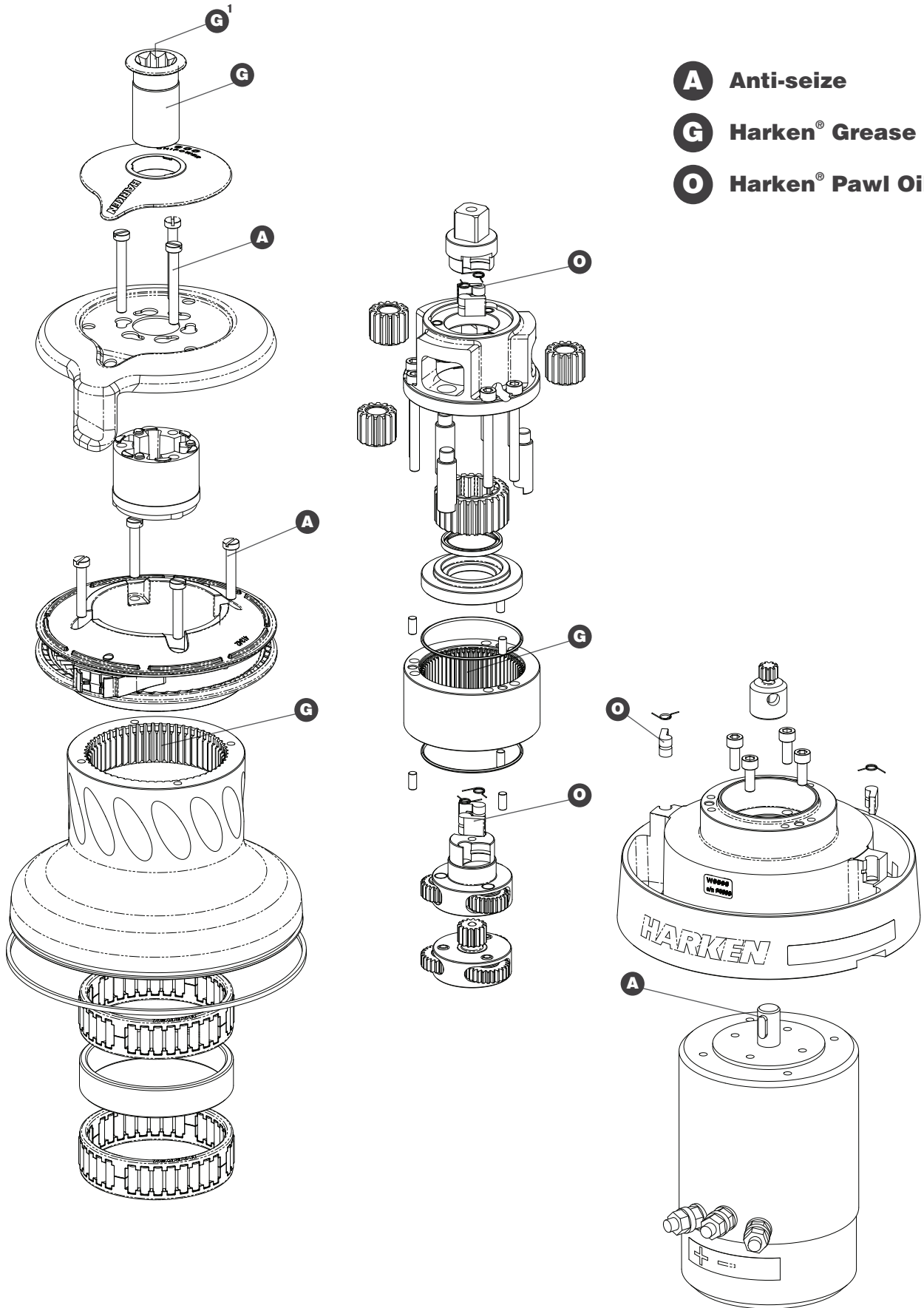
Carefully check the teeth of gears and ring gears to make sure there are no traces of wear.

Check the roller bearings and check there are no breaks in the bearing cages.
Replace worn or damaged components.

Carry out maintenance on components using the products listed below.
For more information on which products to use where, refer to the exploded diagram below.

Use a brush to lightly lubricate all gears, gear pins, teeth and all moving parts with grease.
Lightly lubricate the pawls and springs with oil. Do not use grease on the pawls!

Winch exploded view with maintenance products



- A** Anti-seize
- G** Harken® Grease
- O** Harken® Pawl Oil

¹Apply Harken® grease on assy socket screw
²Apply Harken® grease on drum gear

Winch assembly

Make sure that the holes and drainage channels in the base of the winch are not obstructed
 Assemble the winch in the reverse order of the sequence in the section on disassembly.

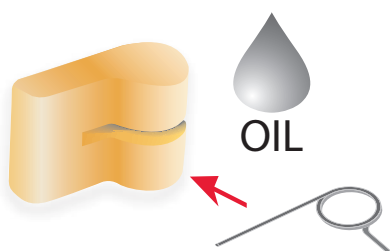
To tighten bolts, use the torque indicated in the disassembly procedure.



When positioning the stripper arm, align the peeler with it.

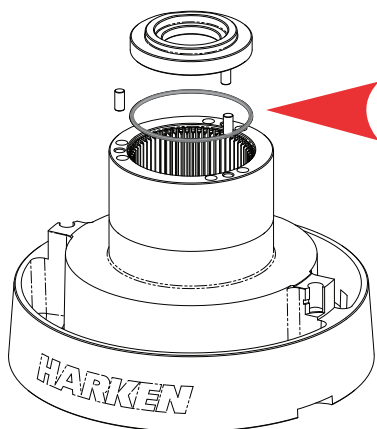


If the jaws have been disassembled, insert peeler between the two jaws, taking care that the letters TOP on the peeler are facing upwards.



To assemble the pawls:

correctly position the spring in its housing as shown at left. Hold the spring closed and slide the pawl into its housing. Once in position, check that the pawls can be easily opened and closed with a finger.



NOTICE

Before assembly the winch check the correct position of the o-ring between the ring gear n°4 and the flange n°11 and the position of rollers between the ring gear n°4 and the gear carrier n°21.

In case of doubt concerning the assembly procedure contact Harken® Tech Service: techservice@harken.it

Harken® limited worldwide warranty

Refer to the Harken® Limited Worldwide Warranty in the Harken® Catalogue and on the website www.harken.com

Ordering spare parts

Spare parts can be requested from Harken® as described in the Harken® Limited Worldwide Warranty, indicating the part number in the Parts List and including the serial number of the winch for which the parts are required.

The serial number of the winch is printed on a plate on the drum support of the winch.



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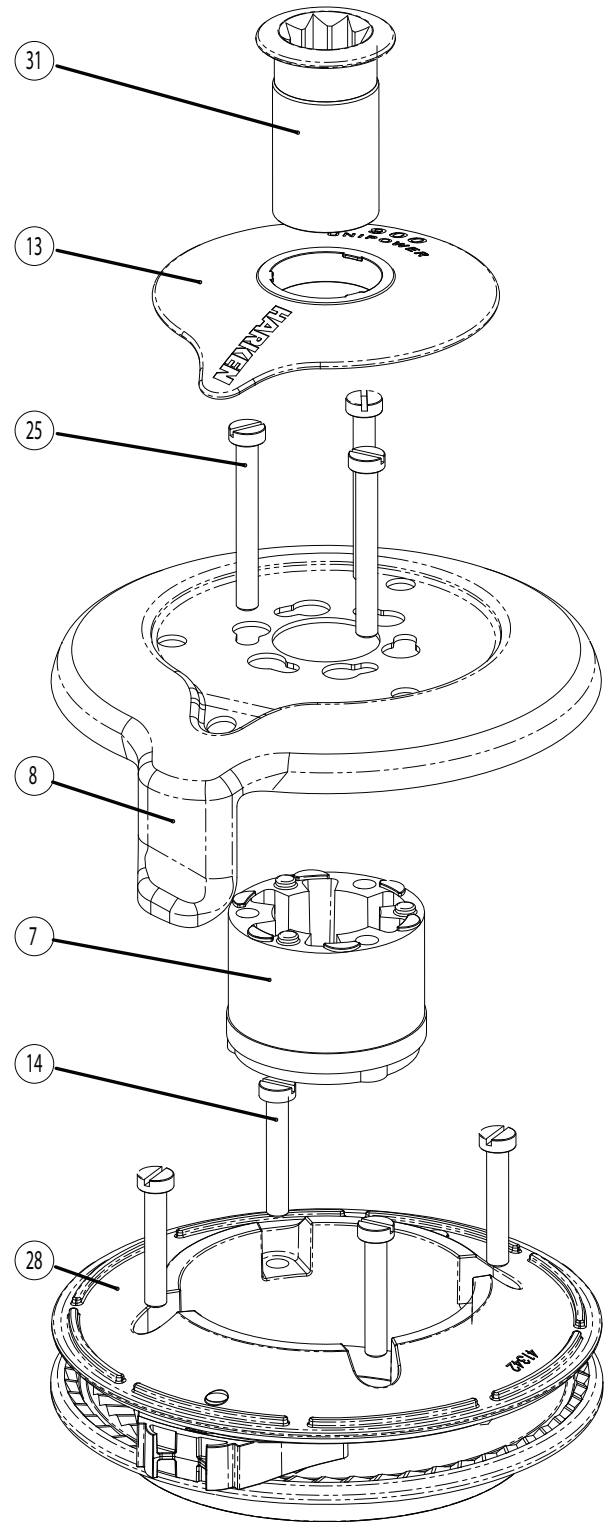
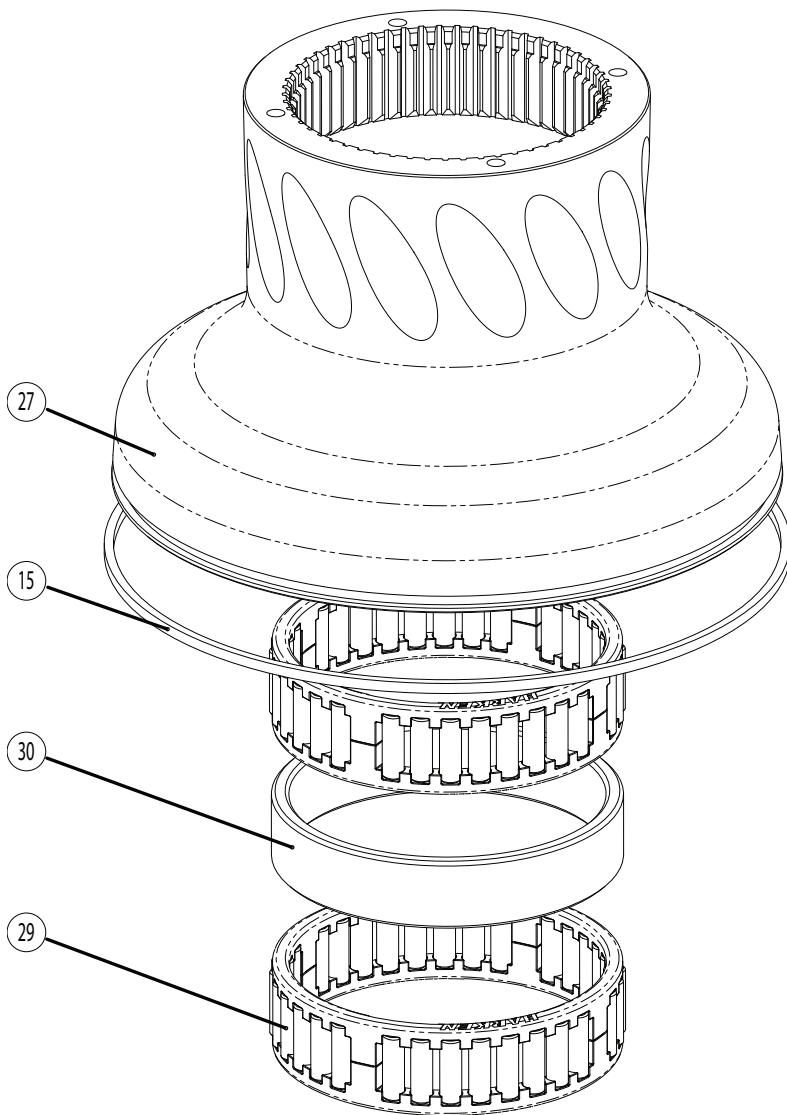
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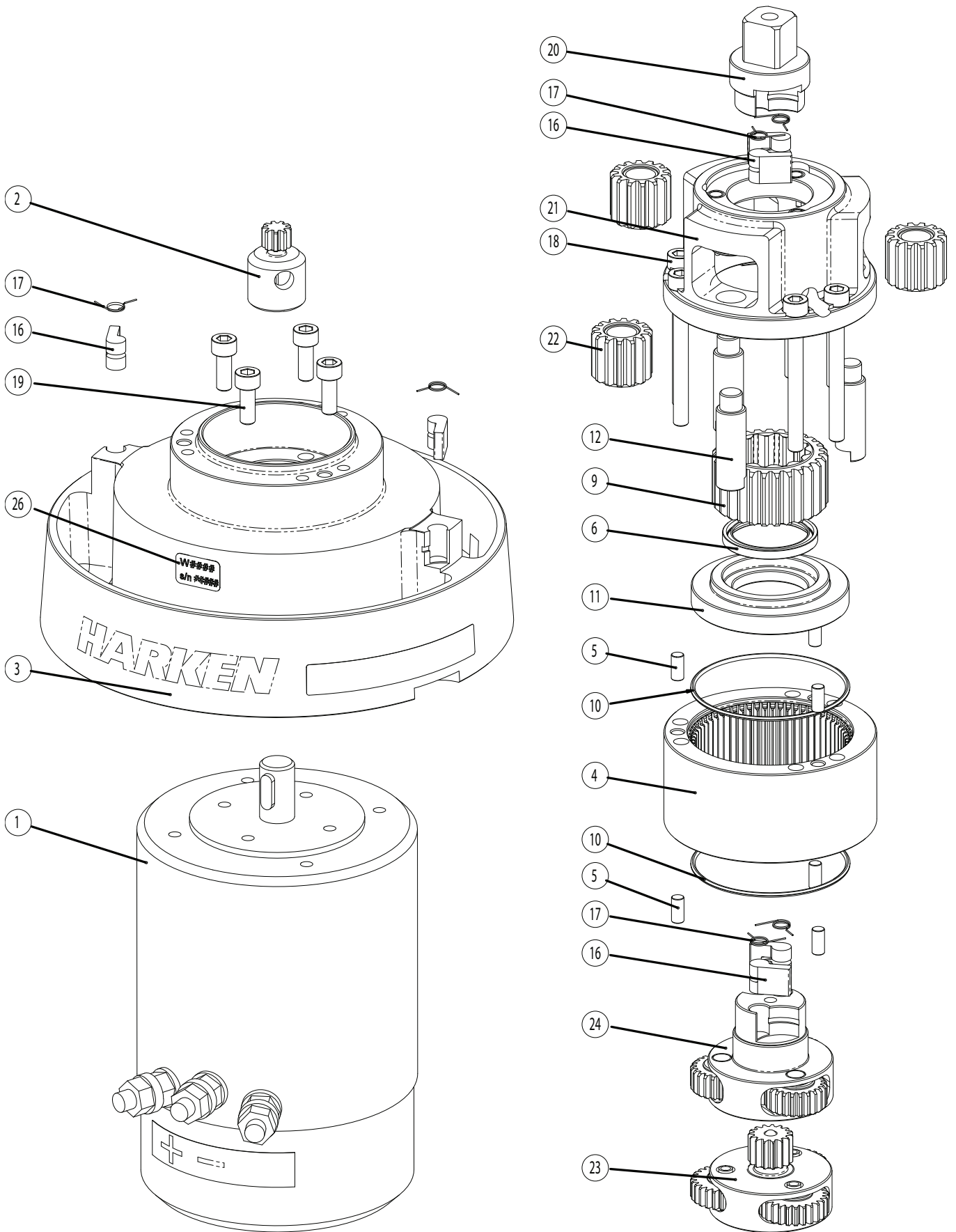
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UniPower 900 A

A= drum in anodised aluminium

Pos.	Q.ty	Code	Description
1	1	A 949533 00	Kit Motor 0,7kW 12V Unipower 900
		A 965086 00	Kit Motor 0,9kW 24V Unipower 900
2	1	S 49031 00 04	Pinion Z=9
3	1	A 949033 00	Assy base Unipower 900** <i>Winch Serial Number Sticker</i>
4	1	S 49034 00 04	Ring gear Z=63
5	6	S450660003	Roller Ø5x10.5*
6	1	M 06483 97	Seal 30x38x4 NBR
7	1	S4129400A0	Stripper arm support
8	1	S 41344 00 19	Stripper Arm W50
9	1	S 49078 00 04	Gear Z=27
10	2	M 60045 97	O Ring 2237
11	1	S 49080 00 80	Flange
12	3	S 49081 00 04	Pin Ø12*
13	1	S 49088 00 A5	Cover Unipower 900
14	4	M0601803	Screw UNI EN ISO 1207:1996 - M6x35 - A4*
15	1	S281690097	Red line
16	6	S 00008 00 03	Pawl Ø8*
17	6	S 00038 00 01	Pawl Spring Ø8*
18	6	M 06061 03	Screw M6x60 UNI5931*
19	4	M0635103	Socket head screw M6x16 UNI 5931
20	1	S 49096 00 04	Pawls carrier
21	1	A 949041 00	Gear carrier
22	3	A 949039 00	Gear assembly Z=10
23	1	A 949098 00	First planetary assy
24	1	A 949100 00	Second planetary assy
25	3	M6007103	Screw M6x50 UNI6107*
26	1	S418760063	Winch Serial Number Sticker
27	1	A 949042 00	Assy Drum Unipower <i>Drum Unipower 900</i> <i>Ball 3/16"</i>
28	1	A 949077 00	Assy Jaws Unipower 900 <i>Lower Jaw W50</i> <i>Upper Jaw Unipower 900</i> <i>Peeler W46-50</i> <i>Springs</i>
29	2	A 741351 00	Bearing Ø85xØ97x26*
30	1	S 41352 00 80	Spacer
31	1	A94136400	Assy Socket W20-80 <i>Screw M8x20 UNI 6109*</i> <i>Washer Ø7.7xØ25x5.8</i> <i>Socket Handle W20/80</i>

*Service kit available; see winch kit section on the website www.harken.com

**Winch product sticker



UniPower 900 C

C=drum in chromed bronze

Pos.	Q.ty	Code	Description
1	1	A 949533 00	Kit Motor 0,7kW 12V Unipower 900
		A 965086 00	Kit Motor 0,9kW 24V Unipower 900
2	1	S 49031 00 04	Pinion Z=9
3	1	A 949033 00	Assy base Unipower 900** <i>Winch Serial Number Sticker</i>
4	1	S 49034 00 04	Ring gear Z=63
5	6	S450660003	Roller Ø5x10.5*
6	1	M 06483 97	Seal 30x38x4 NBR
7	1	S4129400A0	Stripper arm support
8	1	S 41344 00 19	Stripper Arm W50
9	1	S 49078 00 04	Gear Z=27
10	2	M 60045 97	O Ring 2237
11	1	S 49080 00 80	Flange
12	3	S 49081 00 04	Pin Ø12*
13	1	S 49088 00 A5	Cover Unipower 900
14	4	M0601803	Screw UNI EN ISO 1207:1996 - M6x35 - A4*
15	1	S281690097	Red line
16	6	S 00008 00 03	Pawl Ø8*
17	6	S 00038 00 01	Pawl Spring Ø8*
18	6	M 06061 03	Screw M6x60 UNI5931*
19	4	M0635103	Socket head screw M6x16 UNI 5931
20	1	S 49096 00 04	Pawls carrier
21	1	A 949041 00	Gear carrier
22	3	A 949039 00	Gear assembly Z=10
23	1	A 949098 00	First planetary assy
24	1	A 949100 00	Second planetary assy
25	3	M6007103	Screw M6x50 UNI6107*
26	1	S418760063	Winch Serial Number Sticker
27	1	A 949461 00	Assy Drum C Unipower <i>Drum C Unipower 900</i> <i>Ball 3/16"</i>
28	1	A 949077 00	Assy Jaws Unipower 900 <i>Lower Jaw W50</i> <i>Upper Jaw Unipower 900</i> <i>Peeler W46-50</i> <i>Springs</i>
29	2	A 741351 00	Bearing Ø85xØ97x26*
30	1	S 41352 00 80	Spacer
31	1	A94136400	Assy Socket W20-80 <i>Screw M8x20 UNI 6109*</i> <i>Washer Ø7.7xØ25x5.8</i> <i>Socket Handle W20/80</i>

*Service kit available; see winch kit section on the website www.harken.com

**Winch product sticker

