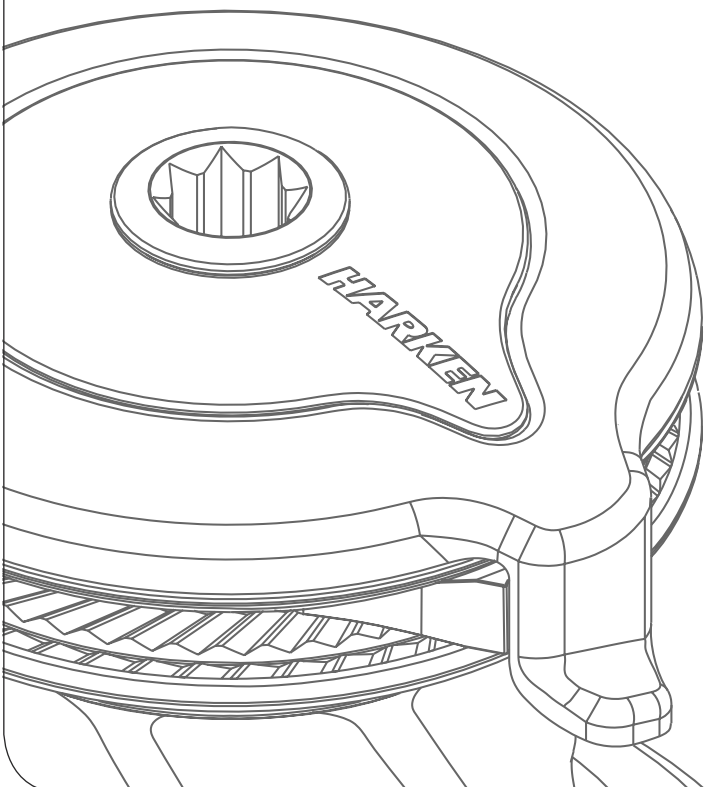


Installation and Maintenance Manual

MWRU-A

Radial UniPower 500



HARKEN[®]

Introduction	3
Technical characteristics	3
<i>Performance data</i>	3
<i>Weight</i>	3
<i>Rope range</i>	3
<i>Maximum working load</i>	3
Outline	4
Installation	4
<i>Installation procedure</i>	5
<i>Positioning the self-tailing arm</i>	6
<i>Motor installation procedure</i>	7
<i>Electric equipment</i>	7
Maintenance	9
<i>Washing</i>	9
<i>Maintenance table</i>	9
<i>Winch disassembly procedure</i>	9
<i>Winch exploded view with maintenance products</i>	12
<i>Winch assembly</i>	13
Harken® limited worldwide warranty	14
Ordering spare parts	14
Exploded view	15
Parts List	17
<i>UniPower 500 A</i>	17
<i>UniPower 500 C</i>	18

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.

NOTICE

To use and understand this manual, user must refer to other documents, available on web site www.harken.com and listed below:

- The Dual Function Control Box user manual, for the use of the Dual Function Control Box.
- The Dual Function Control Box installation manual, for all details, informations, wiring schemes and warnings about its installation

Technical characteristics

Power ratio*	Gear ratio**
10,7 : 1	135 : 1

*Socket input

**Motor input

The theoretical power ratio does not take friction into account.

Performance data

UniPower500 Winch

	motor nominal power 400 W	motor nominal power 400 W
	12 V	24 V
line speed***	7 m/min - 23 ft/min	7 m/min - 23 ft/min
max load	500 Kg - 1102 lb.	500 Kg - 1102 lb.

***Line speed is measured with no load

	motor nominal power (W)	Current absorption at MWL	
	12 V - 24 V	12 V	24 V
UniPower500 Winch	400	180 A	80 A

Weight

	A	C
Weight	6,7 Kg - 14,77 lb.	8,2 Kg - 18 lb.

Versions:

A = drum in anodised aluminium

C = drum in chrome bronze

Rope range: Ø8 - Ø14 mm

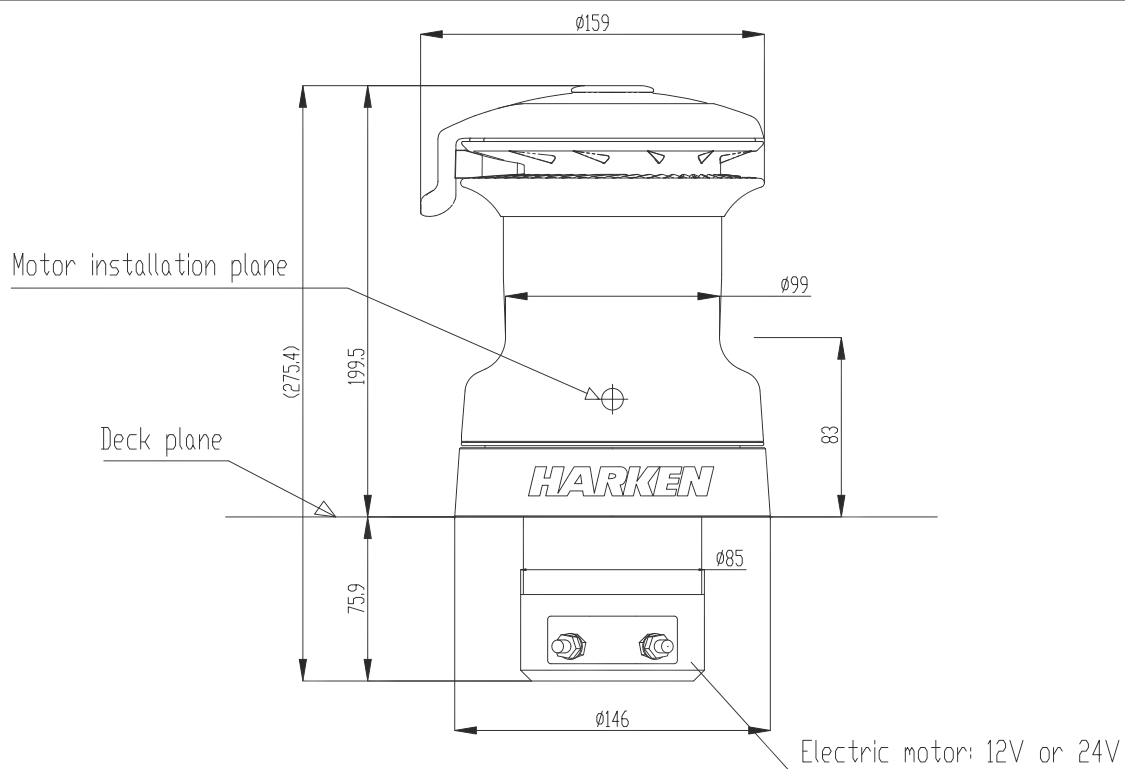
Maximum working load



WARNING!

The maximum working load (MWL) for the UniPower500 Radial Winch is 500 Kg (1102 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



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.



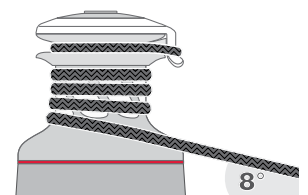
WARNING!

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, 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 4 and using socket head (SH) bolts.

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



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

NOTICE

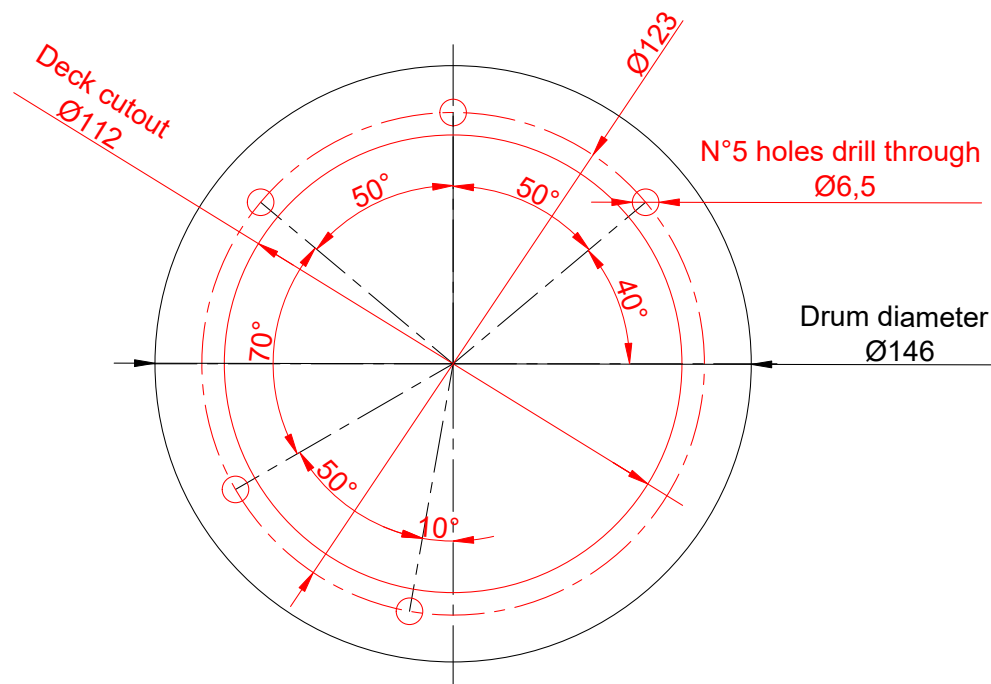
Before drilling the deck, check the space available below deck for the motor.

- A.** Locate the point where you have decided to place the winch. Drill the deck with a $\varnothing 112$ mm hole, insert the motor through the hole, position the base of the winch on the deck and mark the position of the holes.

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 6.5 mm diameter holes and the $\varnothing 112$ mm hole.
C. Bolt the base of the winch to the deck using five socket headed M6 (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 installation procedure

Electric equipment

To guarantee greater efficiency in terms of safety and long life, for every winch model is mandatory to install the Dual Function Control Box.

To fasten the Dual Function Control Box containing solenoids to bulkhead or wall, for all installation details and for all electric wiring schemes, refer to the Dual Function Control Box manual.



WARNING!

Before installing and using the device, read carefully the Dual Function Control Box manual available on web site www.harken.com

Refer to the following chart for wire size:

Total distance between winch and battery

Winch size	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

Refer to the following chart for HCP model:

Winch size	Current voltage	HCP model	Ampere rating
UniPower	12 V	HCP1717	80A
UniPower	24 V	HCP1717	80A

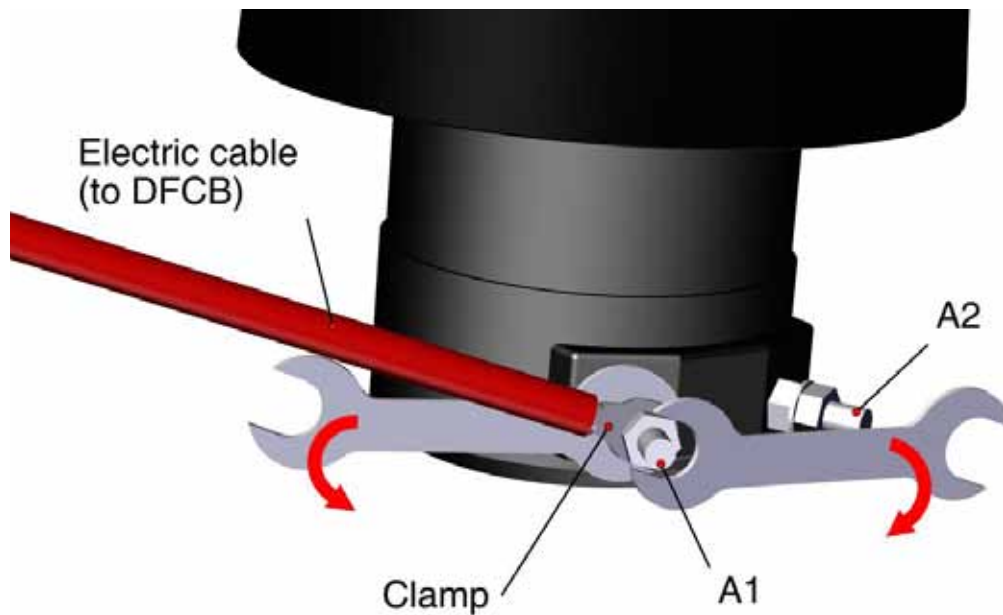
After winch is assembled and before sailing, test the powered winch functioning: press the switch and check that the drum turns.

NOTICE

The electric motor of UniPower 500 is a permanent magnet motor: by inverting the connections, drum inverts its rotation.

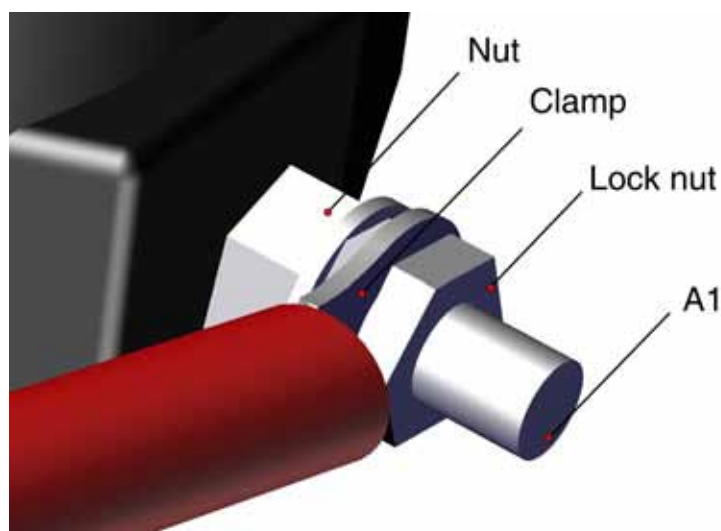
To make rotate drum clockwise, the positive pole is A1 of the figure below (so A1 is +, A2 is -)

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. 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 6 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 n°10 in the ring gear.



10. Slide out the first planetary assy n°23, the ring gear n°4, the o-ring n°10 and the pinion n°2.

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

Inspect balls inside the drum and carefully check the correct position; if it is necessary to put back any balls, push balls in the race (as shown below):



Once the winch is completely disassembled, clean the parts with a degreasing that does not leave residues, proper to clean metal components; 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.

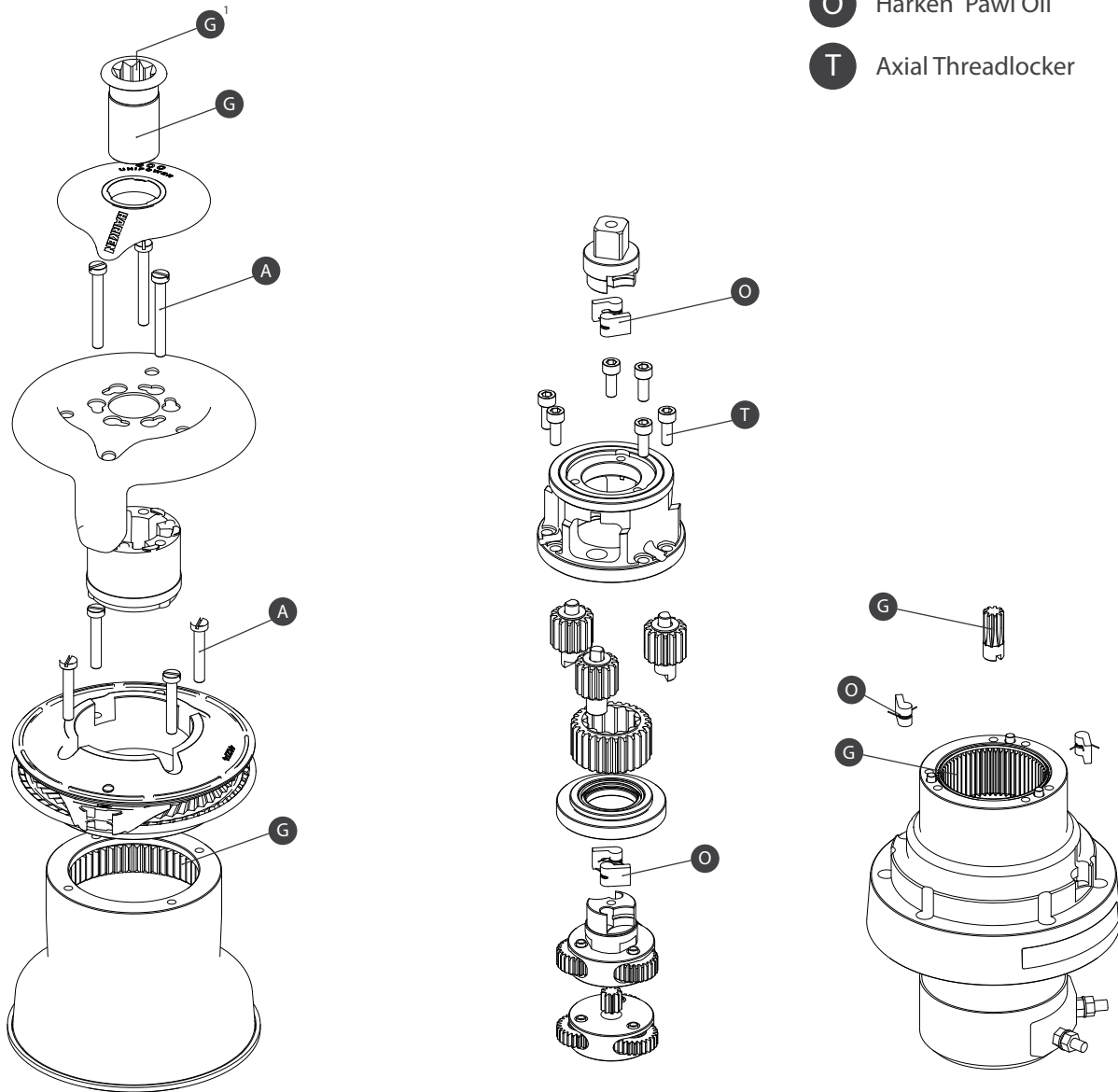
For more information on which products to use where, refer to the exploded diagram below.

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
- T** Axial Threadlocker



Apply Harken® grease where indicated above

NOTICE

On every gear and every component that must be greased, apply Harken® grease with a brush in a proper quantity as shown below:



NOTICE

Harken® grease to apply on all teeth: do not use excessive quantity of product to void wastes. If in contact with the pawls, an excess of grease can compromise the safety of the winch.

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.

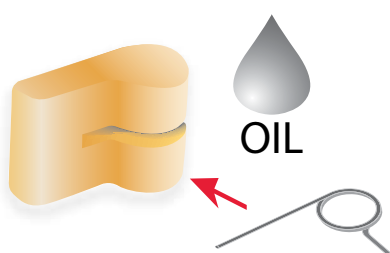
To tighten bolts, use the torque indicated in the disassembly procedure.



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

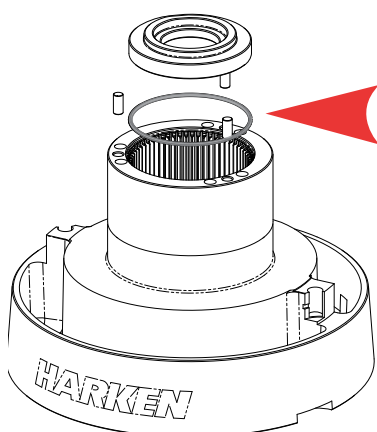


If the jaws have been disassembled, insert peeler between the two jaws, taking care that the letters TOP on the peeler are facing upwards.



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 n°10 between the ring gear n°4 and the flange n°11 and the position of rollers n°5 between the ring gear n°4 and the gear carrier n°21.

Check the correct position of the o-ring n°10 between the ring gear n°4 and the assy base n°3 and the position of the rollers n°5 between the ring gear n°4 and the assy base n°3.

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.



Manufacturer

Harken® Italy S.p.A.

Via Marco Biagi, 14
22070 Limido Comasco (CO) Italy
Tel: (+39) 031.3523511
Fax: (+39) 031.3520031
Email: info@harken.it
Web: www.harken.com

- **Tech Service**
Email: techservice@harken.it
- **Customer Service**
Tel: (+39) 031.3523511
Email: info@harken.it

Headquarters

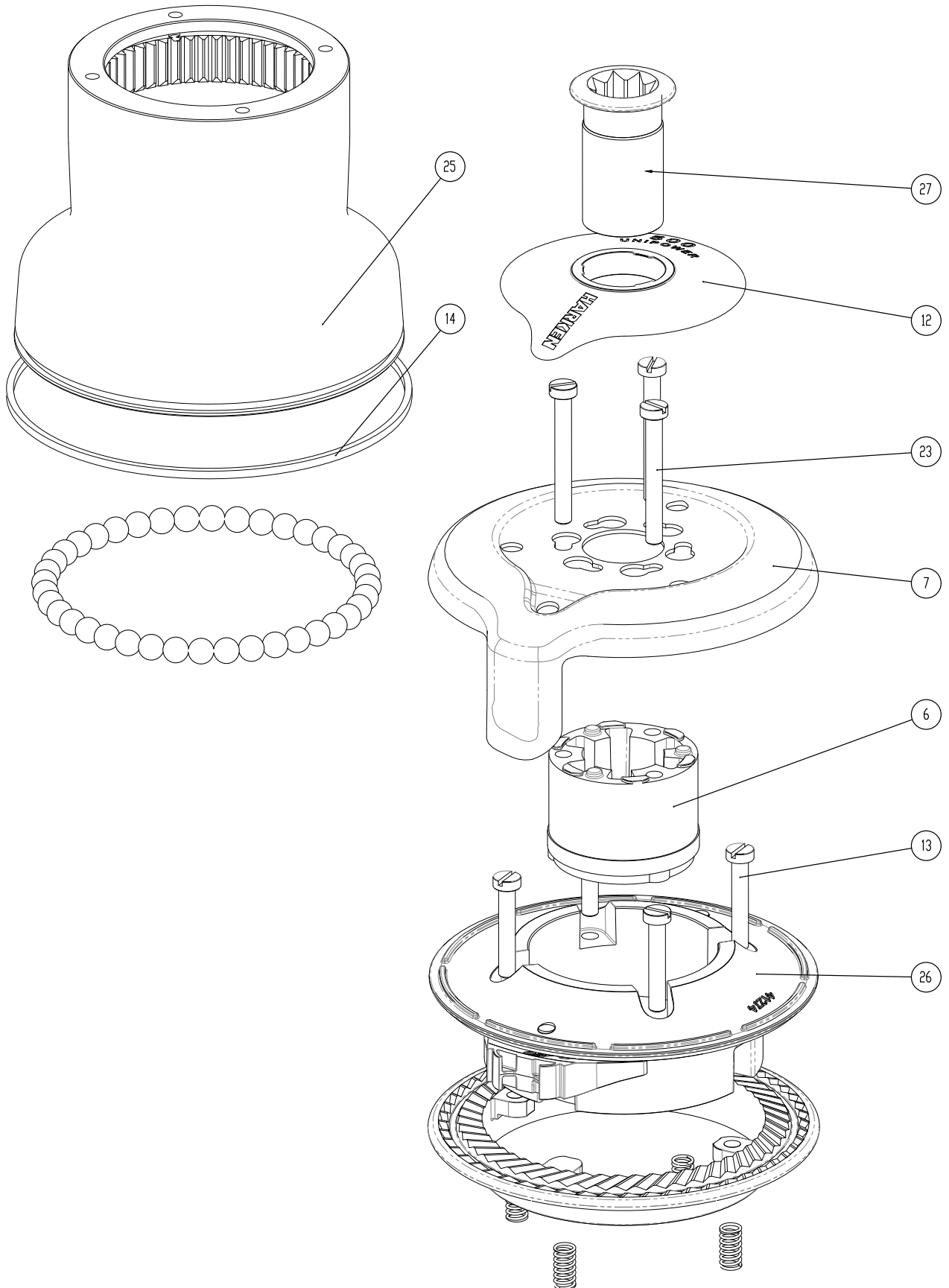
Harken®, Inc.

1251 East Wisconsin Avenue
Pewaukee, Wisconsin 53072-3755 USA
Tel: (262) 691.3320
Fax: (262) 691.3008
Email: harken@harken.com
Web: www.harken.com

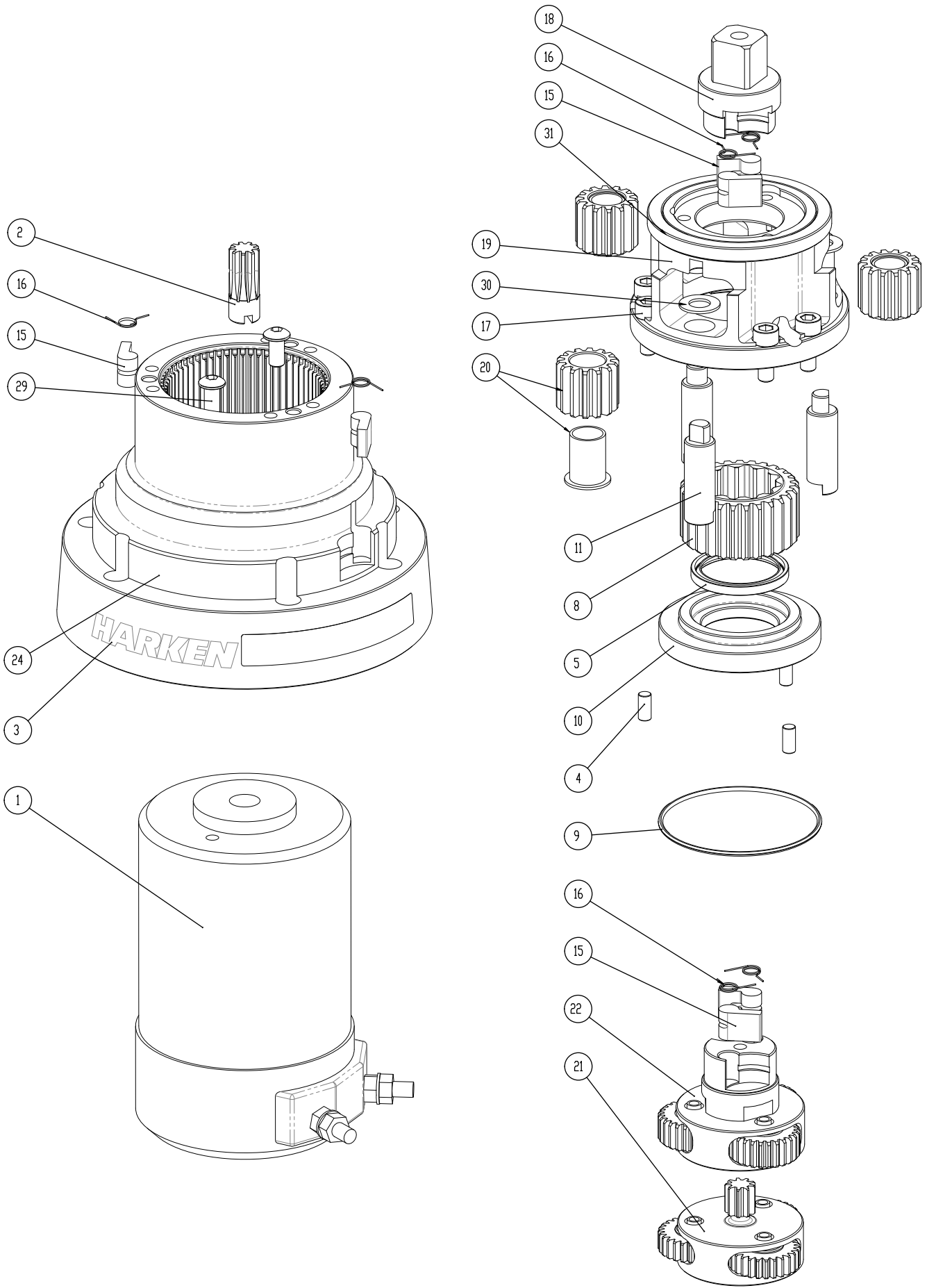
- **Tech Service**
Email: technicalservice@harken.com
- **Customer Service**
Tel: (262) 691-3320
Email: customerservice@harken.com

Exploded view

Winch Radial UniPower 500 A, C



Winch Radial UniPower 500 A, C



Parts List

UniPower 500 A

A = drum in anodised aluminium

Pos.	Q.ty	Code	Description	Pos.	Q.ty	Code	Description
1	1	G60982000E	Motor 12V 400W	22	1	A97394000	Second planetary assy
	1	G60983000E	Motor 24V 400W				<i>Pawl Carrier</i>
2	1	S732590004	Pinion Z=9				<i>Gear Z=26</i>
3	1	A97326000	Assy base Unipower 500				<i>Pin Ø8</i>
			<i>Support Unipower 500</i>				<i>Bushing Ø8xØ10x12</i>
			<i>Winch Product Sticker**</i>				<i>Ball 3/16"</i>
4	3	S450660003	Roller Ø5x10.5	23	3	M6007103	Slotted cup head screw M6x50 UNI 6107
5	1	M0648397	Seal Ø30xØ38x4 NBR	24	1	S418760063	Winch Serial Number Sticker
6	1	S4129400A0	Stripper arm support	25	1	A97326500	Assy Drum Unipower 500
7	1	S413380019	Stripper Arm W46				<i>Drum Unipower 500</i>
8	1	S490780004	Gear Z=27		40	M0610280	<i>Ball 5/16"</i>
9	1	M6004597	O-Ring 2237	26	1	A97326600	Assy Jaws Unipower 500
10	1	S490800080	Flange				<i>Lower jaw</i>
11	3	S732630004	Pin Ø12				<i>Upper jaw Unipower 500</i>
12	1	S7394500A5	Cover Unipower 500		1	S414280080	<i>Peeler</i>
13	4	M0601803	Screw UNI EN ISO 1207:1996 - M6x35		4	S385970001	<i>Spring</i>
14	1	S281680097	Red line	27	1	A94136400	Assembly Socket
15	6	S000080003	Pawl Ø8				<i>Socket Handle</i>
16	6	S000380001	Pawl Spring Ø8				<i>Washer Ø7.7xØ25x5.8</i>
17	6	M0635103	Socket head screw M6x16 UNI 5931				<i>Screw M8x20 UNI 6109</i>
18	1	S490960004	Pawls carrier	28	1		DF900UP-12
19	1	S732640053	Gear carrier	29	2	M0625303	Socket button head screw M6x12 ISO7380 A4
20	3	A94903900	Gear assembly Z=10	30	3	S011130080	Washer 8,5x16x1
	1	S490390004	<i>Gear Z=14</i>	31	1	S732670080	Ring Ø72xØ60x6
	1	M6017594	<i>Bushing 121418-20</i>				
21	1	A97393900	First planetary assy				
			<i>Gear Carrier</i>				
			<i>Gear z=26</i>				
			<i>Ball 3/16"</i>				
			<i>Pin Ø6</i>				
			<i>Bushing Ø6xØ8x10</i>				

*Available with service kit; see website www.harken.com

**Winch product sticker



UniPower500 C

C = drum in chrome bronze

Pos.	Q.ty	Code	Description	Pos.	Q.ty	Code	Description
1	1	G60982000E	Motor 12V 400W	22	1	A97394000	Second planetary assy
	1	G60983000E	Motor 24V 400W				<i>Pawl Carrier</i>
2	1	S732590004	Pinion Z=9				<i>Gear Z=26</i>
3	1	A97326000	Assy base Unipower 500				<i>Pin Ø8</i>
			<i>Support Unipower 500</i>				<i>Bushing Ø8xØ10x12</i>
			<i>Winch Product Sticker**</i>				<i>Ball 3/16"</i>
4	3	S450660003	Roller Ø5x10.5	23	3	M6007103	Slotted cup head screw M6x50 UNI 6107
5	1	M0648397	Seal Ø30xØ38x4 NBR	24	1	S418760063	Winch Serial Number Sticker
6	1	S4129400A0	Stripper arm support	25	1	A97442800	Assy Drum Unipower 500 C
7	1	S413380019	Stripper Arm W46				<i>Drum Unipower 500 C</i>
8	1	S490780004	Gear Z=27		40	M0610280	<i>Ball 5/16"</i>
9	1	M6004597	O-Ring 2237	26	1	A97326600	Assy Jaws Unipower 500
10	1	S490800080	Flange				<i>Lower jaw</i>
11	3	S732630004	Pin Ø12				<i>Upper jaw Unipower 500</i>
12	1	S7394500A5	Cover Unipower 500		1	S414280080	<i>Peeler</i>
13	4	M0601803	Screw UNI EN ISO 1207:1996 - M6x35		4	S385970001	<i>Spring</i>
14	1	S281680097	Red line	27	1	A94136400	Assembly Socket
15	6	S000080003	Pawl Ø8				<i>Socket Handle</i>
16	6	S000380001	Pawl Spring Ø8				<i>Washer Ø7.7xØ25x5.8</i>
17	6	M0635103	Socket head screw M6x16 UNI 5931				<i>Screw M8x20 UNI 6109</i>
18	1	S490960004	Pawls carrier	28	1		DF900UP-12
19	1	S732640053	Gear carrier	29	2	M0625303	Socket button head screw M6x12 ISO7380 A4
20	3	A94903900	Gear assembly Z=10	30	3	S011130080	Washer 8,5x16x1
	1	S490390004	<i>Gear Z=14</i>	31	1	S732670080	Ring Ø72xØ60x6
	1	M6017594	<i>Bushing 121418-20</i>				
21	1	A97393900	First planetary assy				
			<i>Gear Carrier</i>				
			<i>Gear z=26</i>				
			<i>Ball 3/16"</i>				
			<i>Pin Ø6</i>				
			<i>Bushing Ø6xØ8x10</i>				

*Available with service kit; see website www.harken.com

**Winch product sticker

