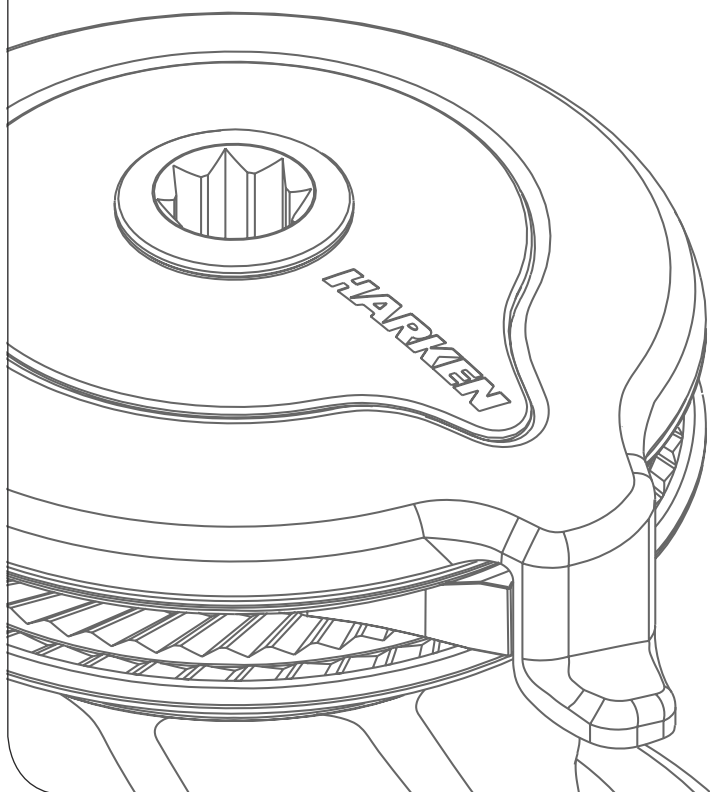


# Installation and Maintenance Manual

MRW-01

## Radial Winch 60.2 ST



**HARKEN**<sup>®</sup>

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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](mailto: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
1st speed	20,3 : 1	4,8 : 1
2nd speed	61 : 1	14,4 : 1

*The theoretical power ratio does not take friction into account.*

## Weights

	ST A version	ST C version
Weight (Kg)	10,2	13,9

Versions:

A = drum in anodised aluminium

C = drum in chromed bronze

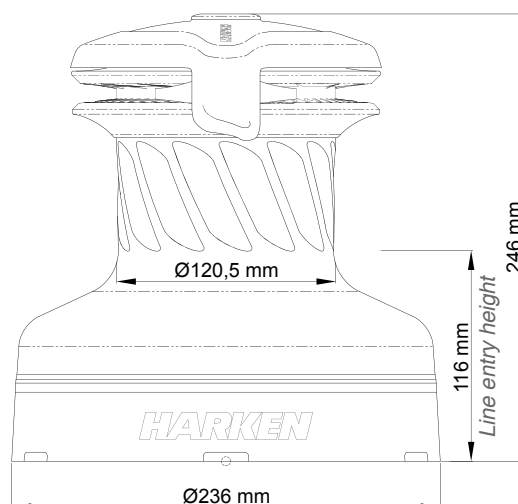
## Maximum working load



### WARNING!

The maximum working load (MWL) for the 60.2 ST Radial Winch is 1800 Kg (3968 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.



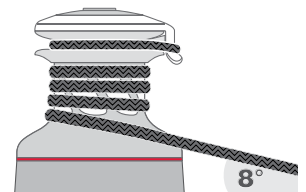
### WARNING!

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.



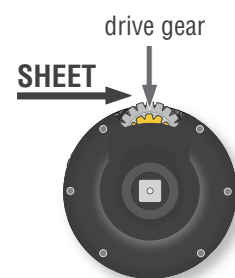
### WARNING!

Verify the entry angle of the sheet. This must be  $8^\circ$  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.



### WARNING!

Mount the winch on the deck so that the drive gear is positioned where the sheet enters the winch drum. Incorrect position of drive gear can weaken winch leading to failure which can cause an accident leading to severe injury or death.



Once you have chosen the correct mounting position for the winch on the deck proceed with 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




1. Unscrew the central screw ( 2Nm/18 in-lb)



2. Slide off the assy socket n°30 and the cover n°29



3. Unscrew the three screws n°28 ( 4Nm/35 in-lb)



4. Remove the self-tailing arm n°27 by rotating and lifting it.



5. Lift off the drum n°24

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.

Follow steps below only to install the winch using hexagonal headed bolts



6. Completely unscrew the three screws n° 28



7. Remove the stripper arm housing n°21



8. Slide out the central shaft n°19



9. Unscrew the 6 hex screws n°17  
( $\text{20Nm/177 in-lb}$ )



10. Remove the drum support n°16  
Important: washer n°7 may remain  
inside the drum support!

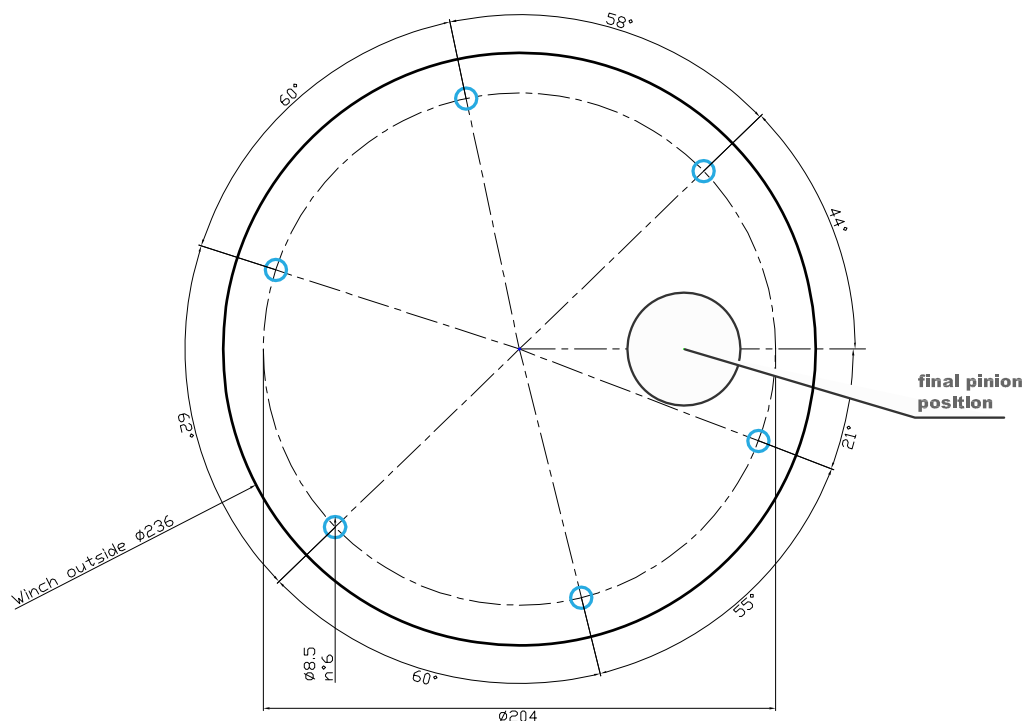
Install the winch on the deck in the position you have chosen, keeping in mind the limits described on page 4 and using hexagonal headed M8 bolts.

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

- 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.

Below is a reduced scale diagram.

The drilling cut out template is available on the Harken® website, [www.harken.com](http://www.harken.com)



- B.** Remove the winch and drill the six 8.5 mm diameter holes.  
**C.** Bolt the base of the winch to the deck using six M8 Socket Head (SH) bolts or six hexagonal headed M8 bolts (neither is 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** (page 5) 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.



## 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](mailto:techservice@harken.it)

### Disassembly procedure

#### *Tools needed*



One medium flat-bladed screwdriver  
A number six hex key



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** (page 5) as shown in the paragraph on winch installation and then do the following:



6. Completely unscrew the three screws n° 28



7. Remove the stripper arm housing n°21





8. Slide out the central shaft n°19



9. Unscrew the 6 hex screws n°17  
( $\approx 20\text{Nm}/177\text{ in-lb}$ )



10. Remove the drum support n°16  
Important: washer n°7 may remain  
inside the drum support!



11. Remove the gear n°6, pawls n°3 and the  
washer n°7



12. Remove the gear n°2



13. Remove the idler and pinion n°14



14. Remove roller bearings n°15



15. Remove the pawls n°11



16. Remove the gear n°10



17. Remove roller bearings n°12

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



I. Unscrew the 4 screws n°26  
( $\approx 4\text{Nm}/35\text{ in-lb}$ )



II. Remove the jaws n°23

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: 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.

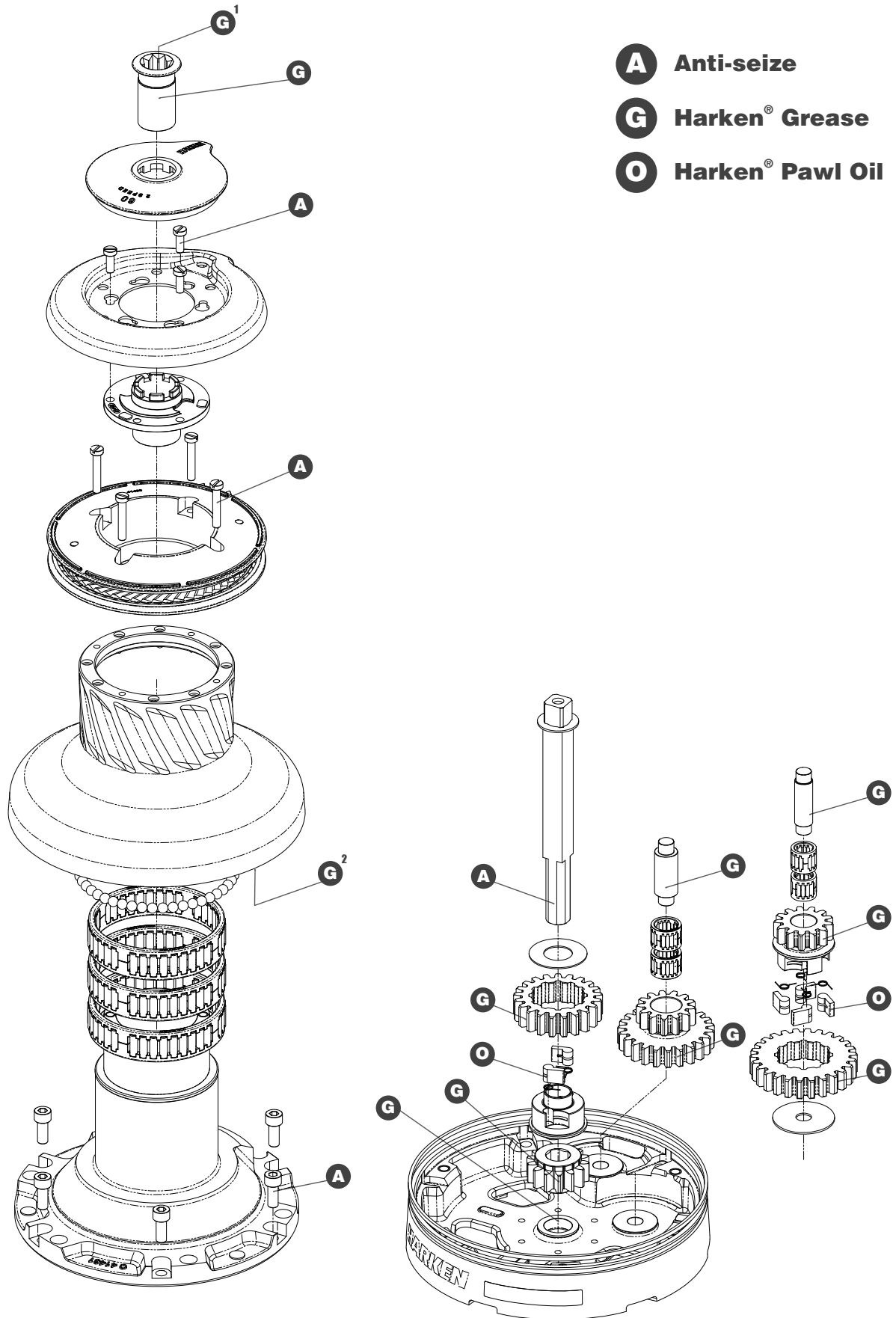
Inspect gears, bearings, pins and pawls for any signs of wear or corrosion.

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!

Exploded view with maintenance products

<sup>1</sup>Apply Harken® grease on assy socket screw  
<sup>2</sup>Apply Harken® grease on drum gear



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.

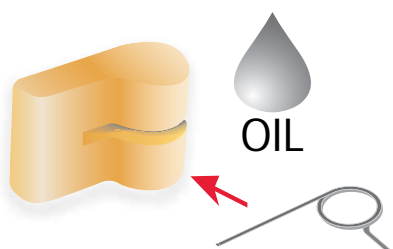
To tighten bolts, use the torque indicated in the disassembly procedure.



The icon ▲ on the Stripper Arm Housing indicates the Stripper Arm final position. Change the Stripper Arm Housing angle to modify the Stripper Arm final position.



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.

In case of doubt concerning the assembly procedure contact Harken® Tech Service: [techservice@harken.it](mailto: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](http://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.***

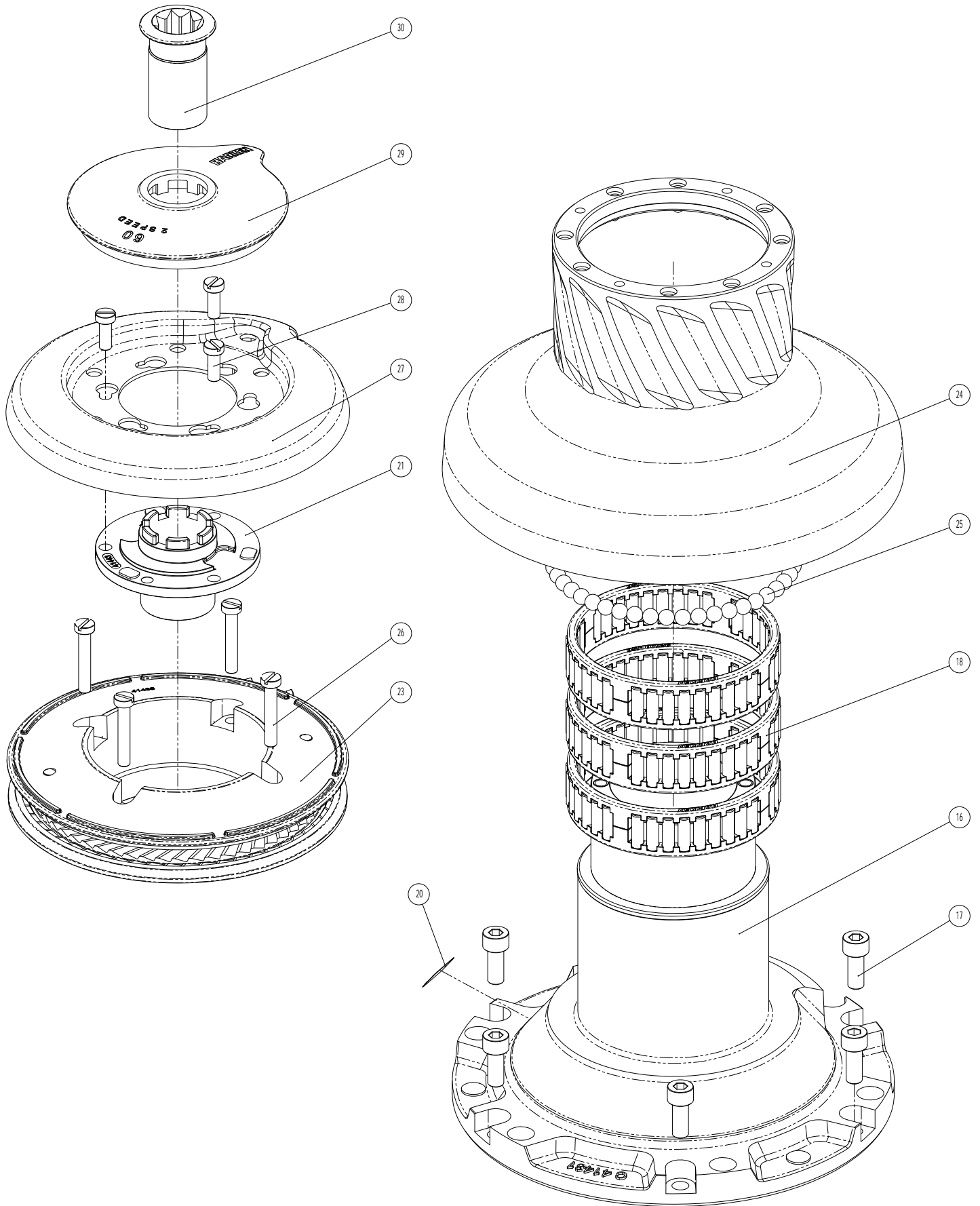
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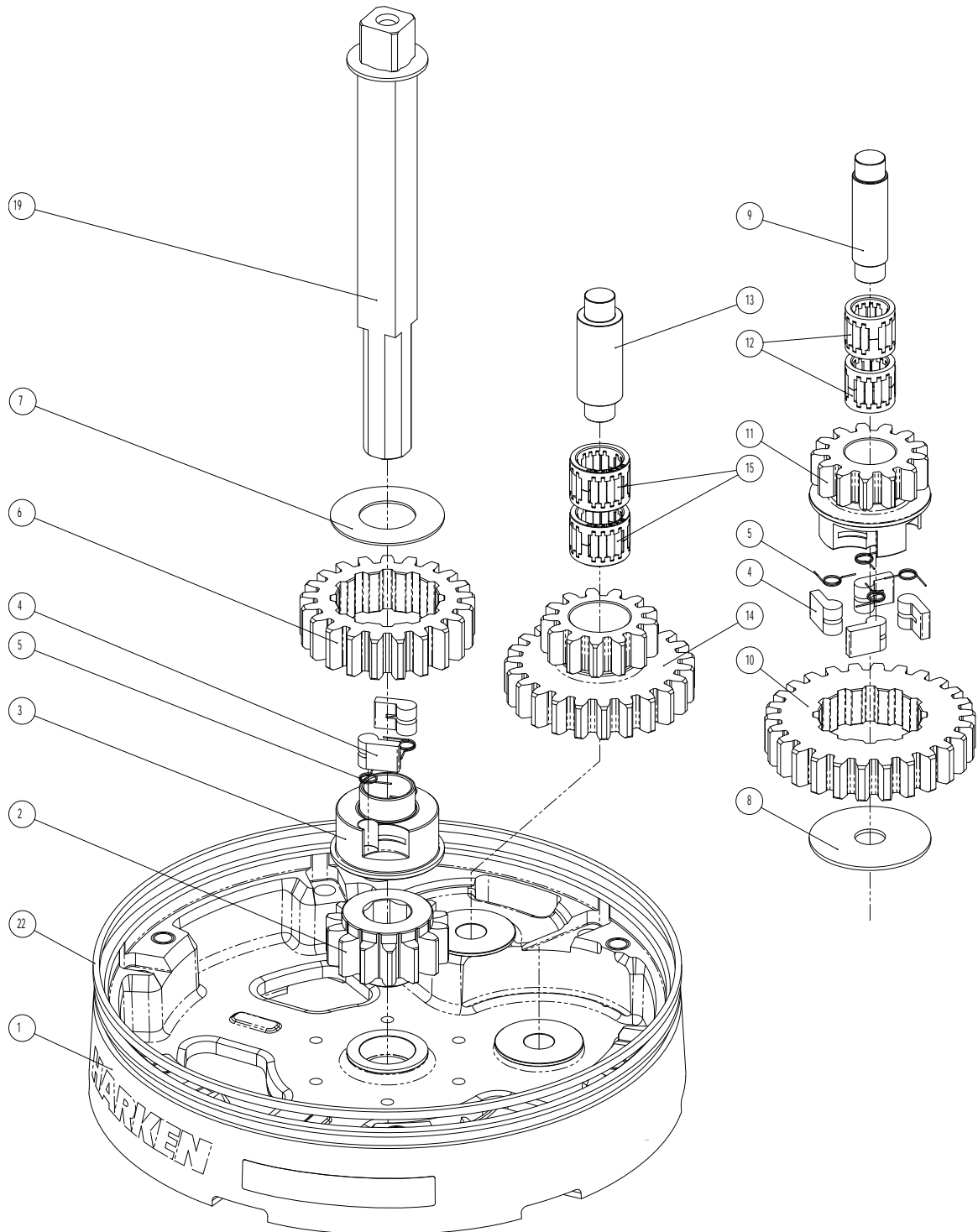
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## Radial Winch 60.2 STA

A= drum in anodised aluminium

Pos.	Q.ty	Code	Description
1	1	A 941430 00	Assy Base Winch 60 <i>Winch Serial Number Sticker</i>
2	1	S 41440 00 04	Gear Z14 W60
3	1	S 41303 00 04	Pawls Carrier Ø8xN2
4	6	S 00008 00 03	Pawl Ø8*
5	6	S 00038 00 01	Pawl Spring Ø8*
6	1	S 41439 00 41	Ratchet Gear Z21xN2
7	1	S 41312 00 02	Washer Ø22.5xØ45x1*
8	1	S278170002	Washer 12.5x48x1.5*
9	1	S281010004	Pin for gear
10	1	S 41442 00 41	Ratchet Gear Z26xN4
11	1	S 41441 00 04	Pawls Carrier Gear Z13 N4
12	2	A72821800	Roller Bearing 14/20/18*
13	1	S 41603 00 04	Gear Pin Ø12xØ18x52,5
14	1	S 41448 00 04	Idler and Pinion Z23/Z13 W60
15	2	A 741623 00	Roll bearing 24x18x18*
16	1	A 941431 00	Assy Housing Winch 60.2
17	6	M0643203	Screw M8x20 UNI5931*
18	3	A 741450 00	Roller Bearing Ø95xØ107x26*
19	1	A 941438 00	Assy Shaft Winch 60
20	1	S418760063	Winch Serial Number Sticker
21	1	S 41443 00 A0	Stripper Arm Housing W60/70
22	1	S 28170 00 97	Red line
23	1	A 941435 00	Assy Jaws Winch 60 <i>Lower Jaw W60</i> <i>Upper Jaw W60</i> <i>Peeler W60-70</i> <i>Spring</i>
24	1	A 741433 00	Drum Assembly W60 <i>Drum W60</i> <i>Ring gear Z57 W60</i> <i>Set screw M8x12 U5923 DIN913 A2</i>
25	47	M 06102 80	Ball 5/16**
26	4	M0601803	Screw UNI EN ISO 1207:1996 - M6x35 - A4
27	1	S414460019	Stripper arm Winch 60
28	3	M0601903	Screw M6x16 UNI1207*
29	1	S 41622 00 B1	Cover 2 Speed W60
30	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](http://www.harken.com)

\*\*Winch product sticker



## Radial Winch 60.2 STC

C=drum in chromed bronze

Pos.	Q.ty	Code	Description
1	1	A 941430 00	Assy Base Winch 60 <i>Winch Serial Number Sticker</i>
2	1	S 41440 00 04	Gear Z14 W60
3	1	S 41303 00 04	Pawls Carrier Ø8xN2
4	6	S 00008 00 03	Pawl Ø8*
5	6	S 00038 00 01	Pawl Spring Ø8*
6	1	S 41439 00 41	Ratchet Gear Z21xN2
7	1	S 41312 00 02	Washer Ø22.5xØ45x1*
8	1	S278170002	Washer 12.5x48x1.5*
9	1	S281010004	Pin for gear
10	1	S 41442 00 41	Ratchet Gear Z26xN4
11	1	S 41441 00 04	Pawls Carrier Gear Z13 N4
12	2	A72821800	Roller Bearing 14/20/18*
13	1	S 41603 00 04	Gear Pin Ø12xØ18x52,5
14	1	S 41448 00 04	Idler and Pinion Z23/Z13 W60
15	2	A 741623 00	Roll bearing 24x18x18*
16	1	A 941431 00	Assy Housing Winch 60.2
17	6	M0643203	Screw M8x20 UNI5931*
18	3	A 741450 00	Roller Bearing Ø95xØ107x26*
19	1	A 941438 00	Assy Shaft Winch 60
20	1	S418760063	Winch Serial Number Sticker
21	1	S 41443 00 A0	Stripper Arm Housing W60/70
22	1	S 28170 00 97	Red line
23	1	A 941435 00	Assy Jaws Winch 60 <i>Lower Jaw W60</i> <i>Upper Jaw W60</i> <i>Peeler W60-70</i> <i>Spring</i>
24	1	A 741434 00	Drum Assembly C W60 <i>Drum C W60</i> <i>Ring gear Z57 W60</i> <i>Set screw M8x12 U5923 DIN913 A2</i>
25	47	M 06102 80	Ball 5/16**
26	4	M0601803	Screw UNI EN ISO 1207:1996 - M6x35 - A4
27	1	S414460019	Stripper arm Winch 60
28	3	M0601903	Screw M6x16 UNI1207*
29	1	S 41622 00 B1	Cover 2 Speed W60
30	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](http://www.harken.com)

\*\*Winch product sticker

