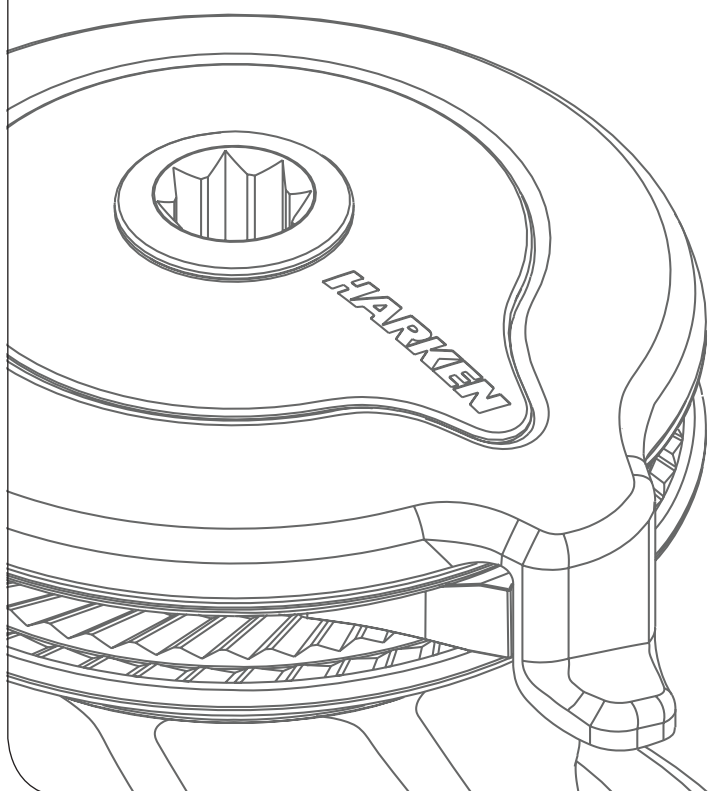


Installation and Maintenance Manual

MRW-03

Radial Winch 46.2 ST



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
1st speed	11,70 : 1	2,30 : 1
2nd speed	46,50 : 1	9,17 : 1

The theoretical power ratio does not take friction into account.

Weights

	ST A version	ST C/CW versions	ST BBB/CCC versions
Weight (Kg)	5,2	7,8	8,9

*Versions: A = drum in anodised aluminium; C = drum in chrome bronze; CW = chrome/white;
BBB = all bronze; CCC = All-Chrome bronze*

Maximum working load

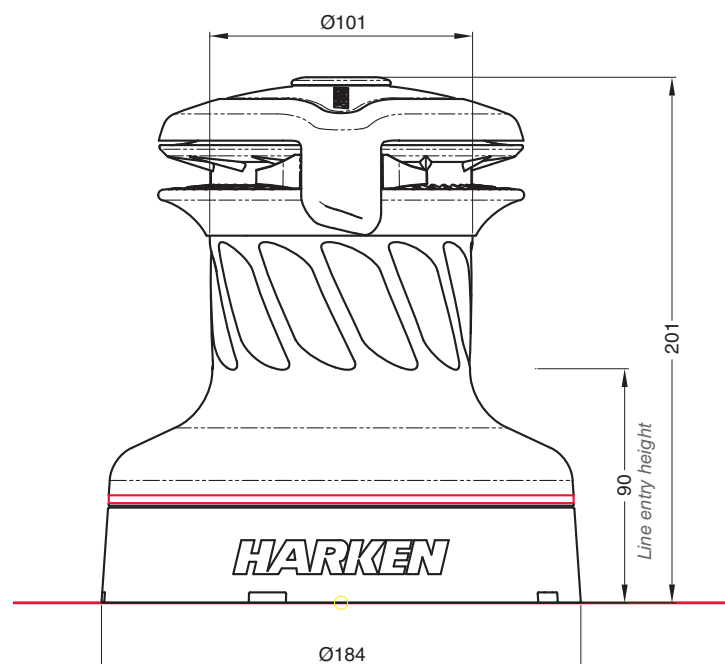


WARNING!

The maximum working load (MWL) for the 46.2 ST Radial Winch is 1300 Kg (2866 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.



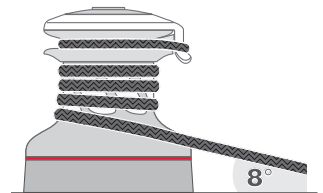
WARNING!

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!

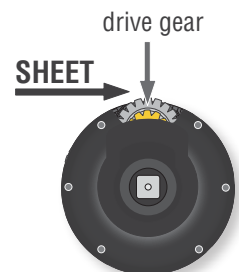
Verify the entry angle of the sheet. This must be 8° with tolerance of $\pm 2^\circ$, to avoid sheet overrides and damaging the winch or making the winch inoperable leading to loss of control of the boat which can lead to severe injury or death.



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.



NOTICE

For winch STA, STC and STCW versions only you can find the icon ▲ on the skirt to identify the drive gear position.



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


The winch can be installed following one of the two procedures below (**Procedure 1** or **Procedure 2**):

Procedure 1

To install the winch you must remove the drum and use bolts as described ahead.

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 ($\approx 2\text{Nm}/18\text{ in-lb}$)



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



3. Unscrew the three screws n°28
($\approx 4\text{Nm}/35\text{ in-lb}$)



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



5. Lift off the drum n°23

Winch STA, STC and STCW versions:

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.

Winch STBBB and STCCC versions:

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 or hexagonal headed bolts (HH).

Procedure 2 (not pertinent for ST BBB/CCC versions)

To install, you must remove the winch skirt and use hexagonal headed bolts.

Tools needed  One medium flat-bladed screwdriver

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



1. Remove the skirt n°2 with the help of the screwdriver placed as shown by the symbol 



2. Take off the skirt n°2



3. Position the 5 M8 hexagonal headed bolts in their holes



4. Reposition the skirt n°2 in its housing



5. Press down the skirt to position it correctly

NOTICE

Make sure the skirt is correctly clipped on to the base of the winch.

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 bolts (HH).
(See paragraph on installation)

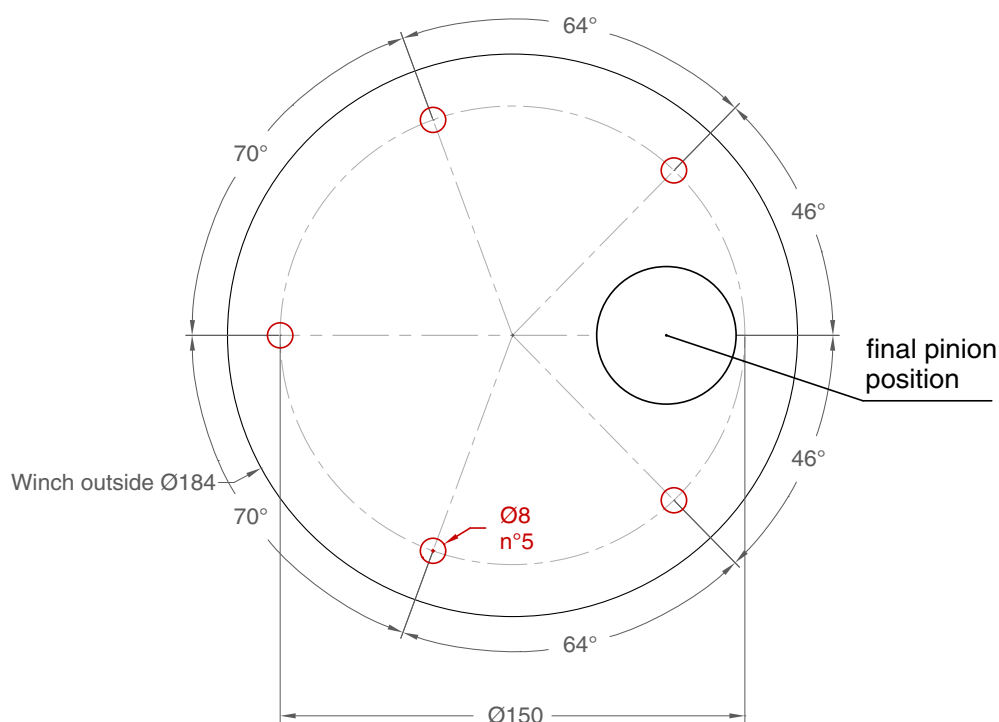
Installation procedure

Carry out Procedure 1 or Procedure 2, 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



B. Remove the winch and drill the five 8.2 mm diameter holes.

C. Bolt the base of the winch to the deck using five M8 bolts (not supplied by Harken®) as described at Procedure 1 or Procedure 2, 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 **Procedure 1** or **Procedure 2** 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.

MaintenanceWashing

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. Do not use polishes or abrasive pastes on anodised, chromed plated or plastics surfaces. 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

Disassembly procedure

Tools needed

-  One medium flat-bladed screwdriver
-  A number five 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 **Procedure 1** as shown in the paragraph on winch installation and then do the following:



6. Completely unscrew the three screws n° 28 and remove the stripper arm support n°22



7. Slide out the central shaft n°20



8. Unscrew the 5 hex screws n°17
($\approx 20\text{Nm}/177\text{ in-lb}$)



9. Remove the assy housing n°16
Important: washer n°13 may remain inside the drum support!



10. Remove the gear n°15



11. Remove the washer n°13



12. Remove the gear n°10 and remove the pawls carrier n°7.



13. Remove the gear n°3



14. Remove the pinion n°11. To facilitate the operation press the spring against the pawl with a blade



15. Slide off gear n°6



17. Remove washer n°5

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



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



II. Remove the jaws n°25

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.

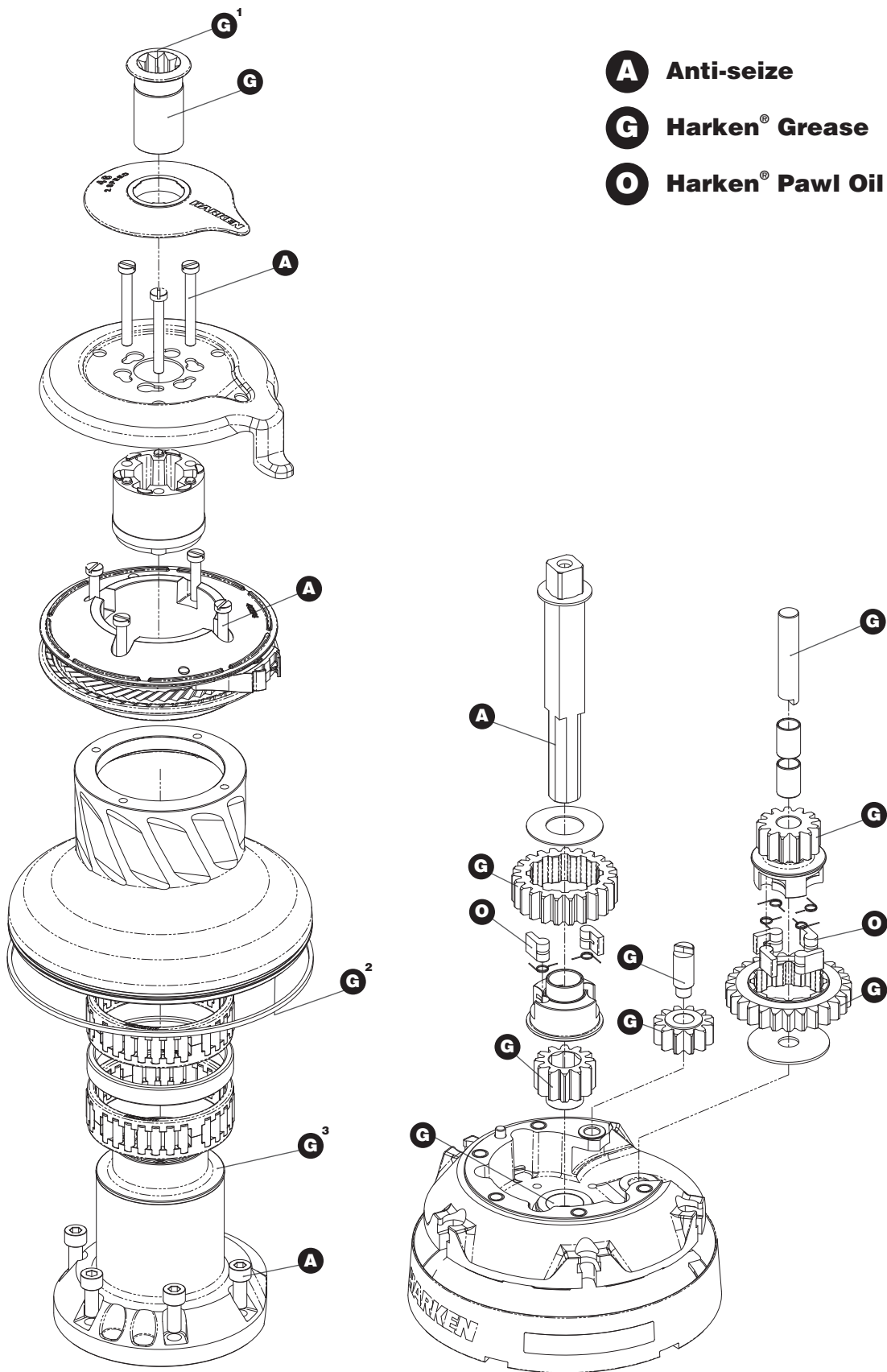
Replace worn or damaged components.

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



1. Apply Harken® grease on assy socket screw - 2. Apply Harken® grease on drum gear
3. Apply Harken® grease on the middle step of assy housing

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.

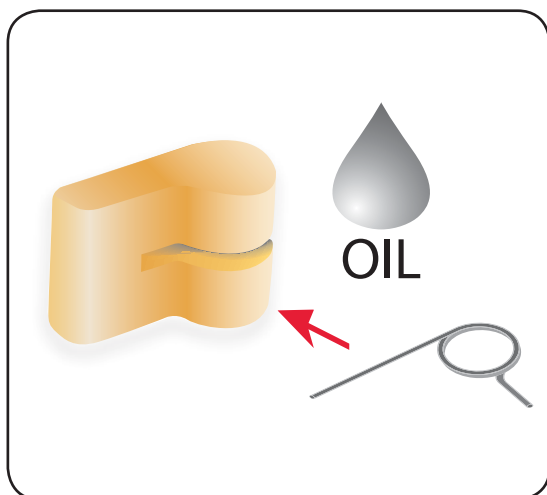
To tighten bolts, use the torque indicated in the disassembly procedure.



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.

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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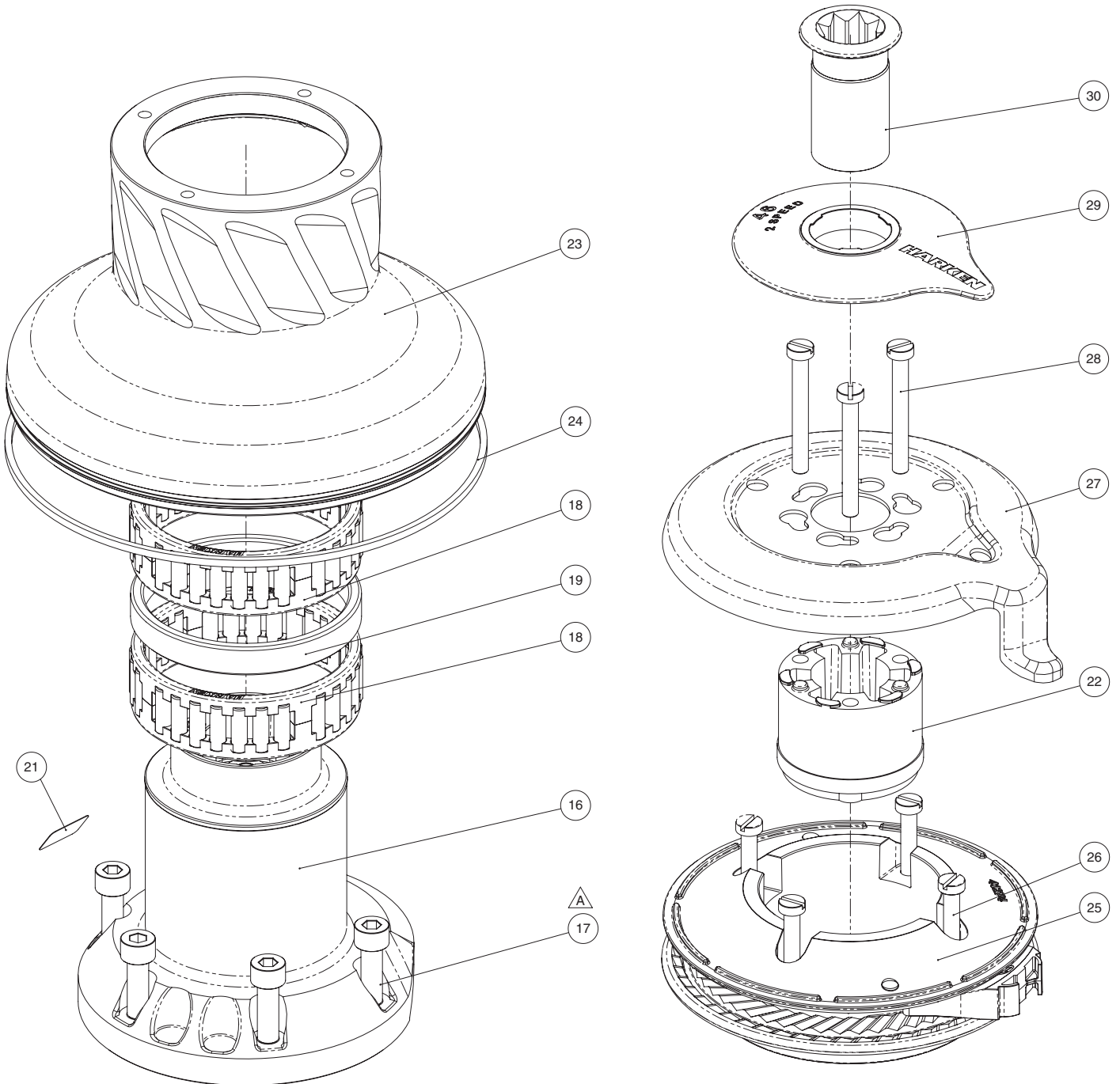
Harken®, Inc.

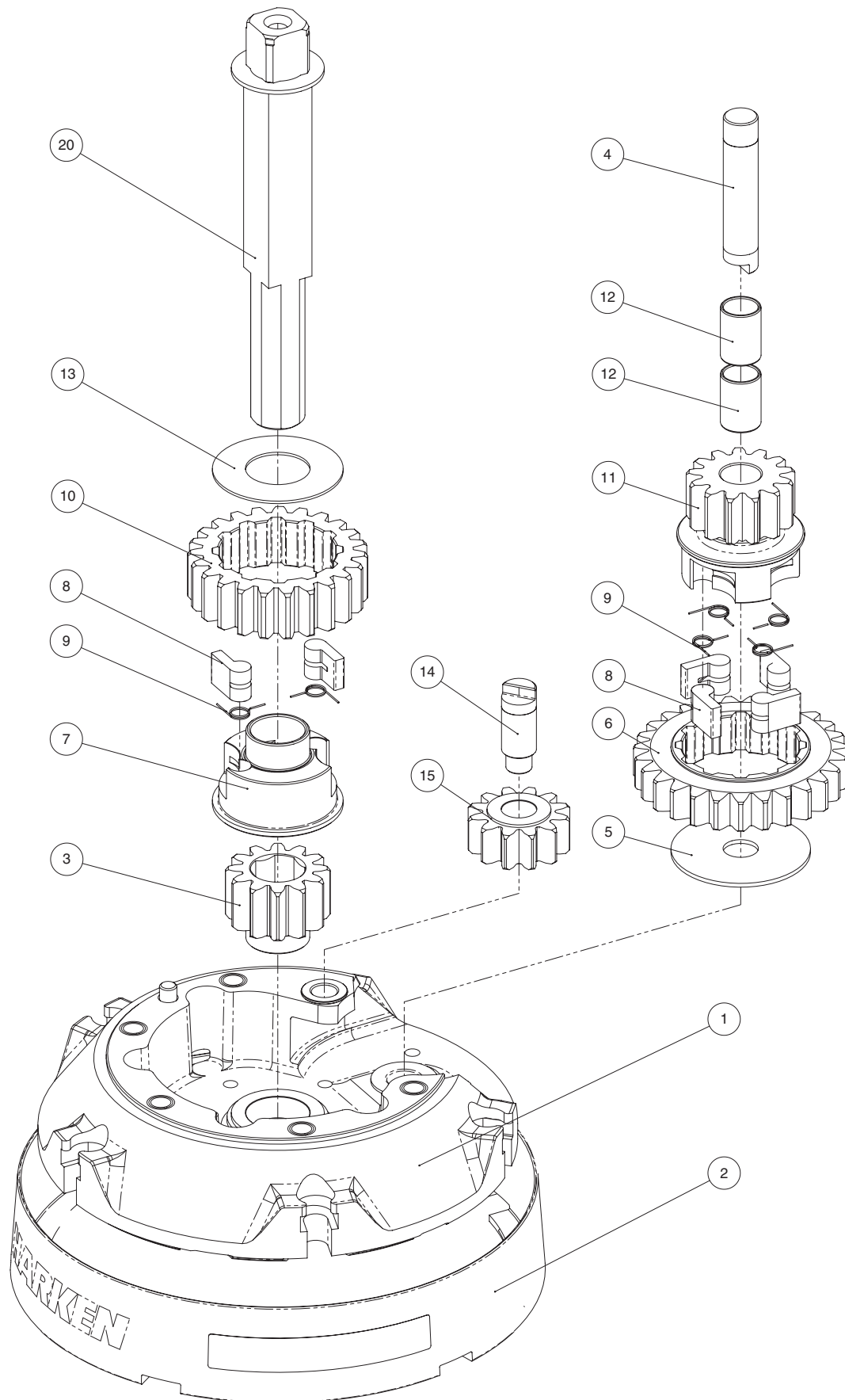
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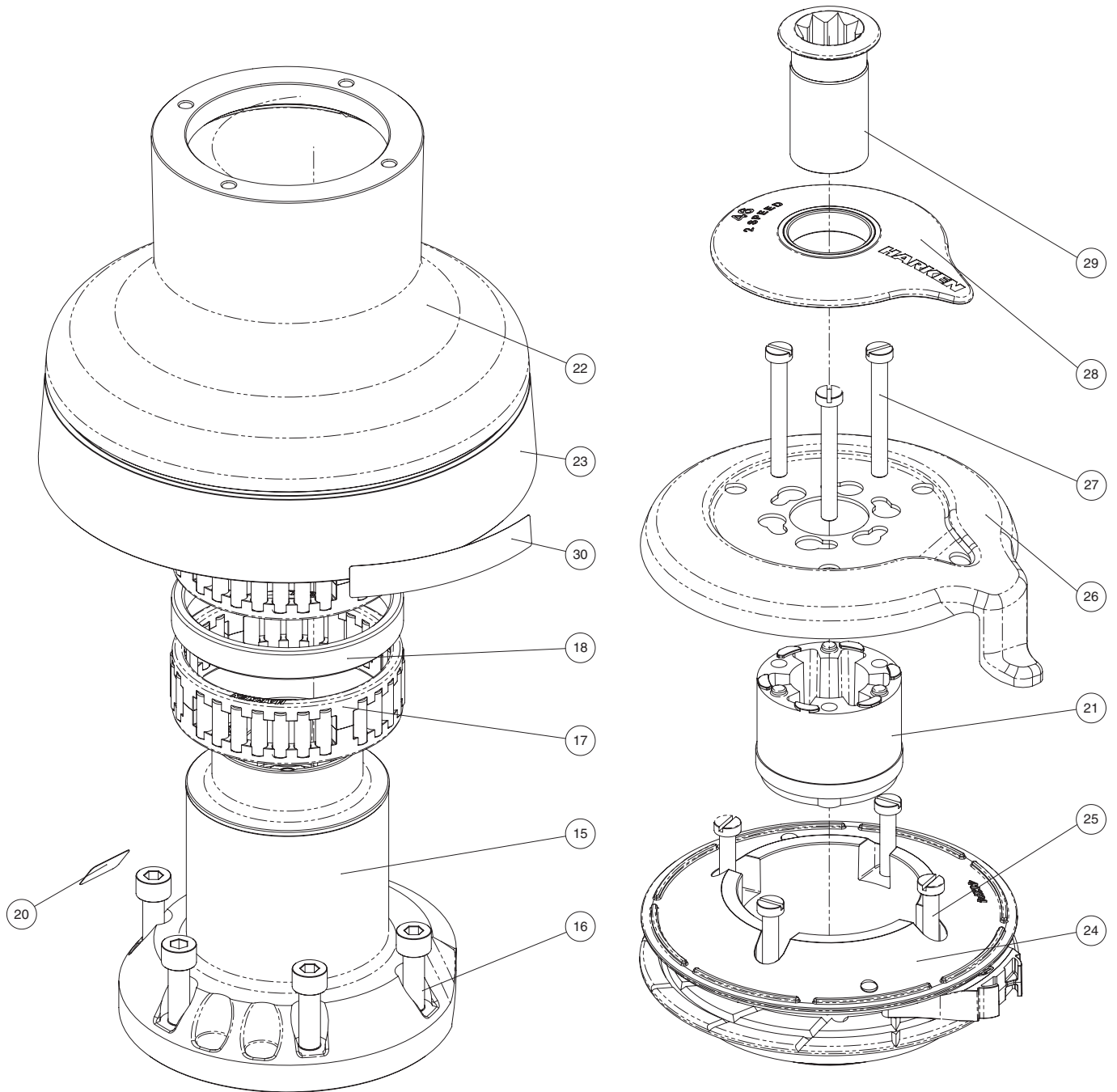
Exploded view

Radial Winch 46.2 STA, STC, STCW

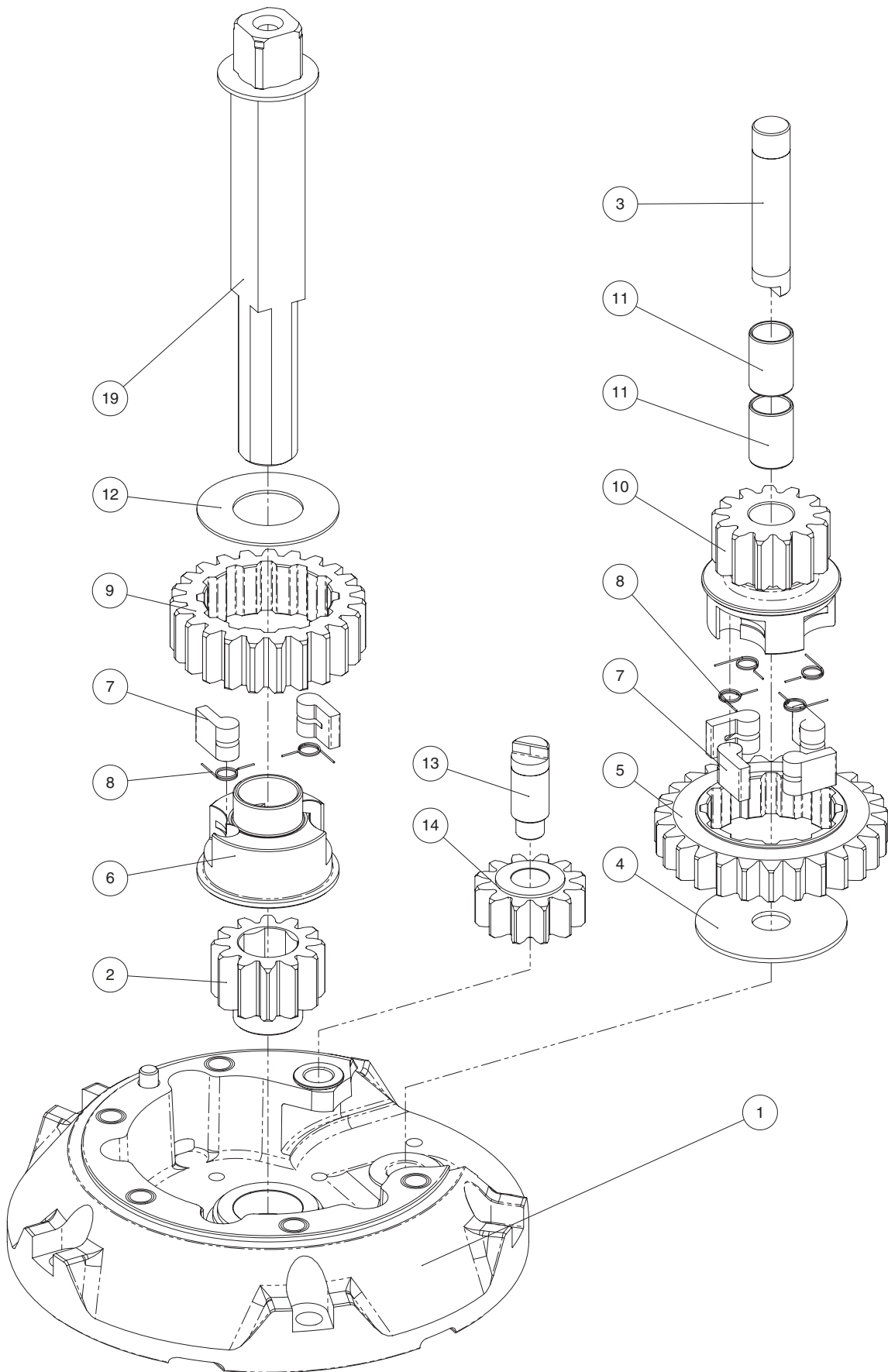


Radial Winch 46.2 STA, STC, STCW

Radial Winch 46.2 STBBB, STCCC



Radial Winch 46.2 STBBB, STCCC



Parts List

Radial Winch 46.2 STA

A= drum in anodised aluminium

Pos.	Q.ty	Code	Description	Pos.	Q.ty	Code	Description
1	1	A94132100	Assy Base Winch 46 Base W46 Heli-coil M8x10	18	2	A74133700	Bearing Ø75xØ87x26
	1	S413350080	Roller Ø6x19	19	1	S413390080	Spacer
	1	S4152300A7	Bushing Ø22xØ25x9.5	20	1	A94161400	Assy Central Shaft Winch 46 Central shaft W46 ST
	1	S414890080	Bushing Ø9xØ11x7	1	1	S413880002	Washer Ø17.2xØ32x1.5
	1	S413330085	Bushing Ø12xØ14x11	21			Winch Serial Number Sticker
2	1	A941323 00	Assy Skirt Winch 46 Skirt W46 Winch Product Sticker**	22	1	S4129400A0	Stripper arm support
3	1	S413020004	Gear Z12	23	1	S412720053	Drum W46
4	1	S413300004	Pin Ø12x60	24	1	S281690097	Red line
5	1	S278170002	Washer Ø12.5xØ48x1.5	25	1	A94127300	Assy Jaws winch 46 Lower Jaw W46 Upper Jaw W46
6	1	S413260004	Gear Z27	1	1	S414280080	Peeler W46 - 50
7	1	S414260004	Pawls Carrier Ø8xN2	4	4	S385970001	SPRING
8	6	S000080003	Pawl Ø8*	26	4	M0601803	Screw UNI EN ISO 1207:1996 - M6x35 - A4
9	6	S000380001	Pawl Spring Ø8*	27	1	S413380019	Stripper Arm W46
10	1	S412830041	Gear Z23	28	3	M6007103	Screw M6x50 UNI6107
11	1	S413250041	Pinion Z13	29	1	S4127000A5	Cover 2 speed W46
12	2	M6017694	IGUS Bushing PSM-1214-20	30	1	A94136400	Assy Socket W20-80 Socket Handle W20/80
13	1	S413120002	Washer Ø22.5xØ45x1	1	1	S415130085	Washer Ø7.7xØ25x5.8
14	1	S413070004	Pin Ø9-Ø12x32.5	1	1	M0614303	Screw M8x20 UNI 6109
15	1	A94133400	Assy Gear Z12 Gear Z12				
	2	S414900080	Bushing Ø12xØ14x8				
16	1	A94132200	Assy Housing Winch 46 Housing Winch 46				
	1	S414900080	Bushing Ø12xØ14x8				
	1	S413330085	Bushing Ø12xØ14x11				
	1	S4133200B3	Heli-coil M6x9 Bushing for support				
17	5	M0606303	Screw M8x25 UNI 5931				

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

**Winch product sticker



Radial Winch 46.2 STC

C=drum in chrome bronze

Pos.	Q.ty	Code	Description	Pos.	Q.ty	Code	Description
1	1	A94132100	Assy Base Winch 46 Base W46 Heli-coil M8x10	18	2	A74133700	Bearing Ø75xØ87x26
	1	S413350080	Roller Ø6x19	19	1	S413390080	Spacer
	1	S4152300A7	Bushing Ø22xØ25x9.5	20	1	A94161400	Assy Central Shaft Winch 46 Central shaft W46 ST
	1	S414890080	Bushing Ø9xØ11x7	1	1	S413880002	Washer Ø17.2xØ32x1.5
	1	S413330085	Bushing Ø12xØ14x11	21			Winch Serial Number Sticker
2	1	A94132300	Assy Skirt Winch 46 Skirt W46 Winch Product Sticker**	22	1	S4129400A0	Stripper arm support
3	1	S413020004	Gear Z12	23	1	S413240043	Drum W46 C
4	1	S413300004	Pin Ø12x60	24	1	S281690097	Red line
5	1	S278170002	Washer Ø12.5xØ48x1.5	25	1	A94127300	Assy Jaws winch 46 Lower Jaw W46 Upper Jaw W46
6	1	S413260004	Gear Z27	1	1	S414280080	Peeler W46 - 50
7	1	S414260004	Pawls Carrier Ø8xN2	4	4	S385970001	SPRING
8	6	S000080003	Pawl Ø8*	26	4	M0601803	Screw UNI EN ISO 1207:1996 - M6x35 - A4
9	6	S000380001	Pawl Spring Ø8*	27	1	S413380019	Stripper Arm W46
10	1	S412830041	Gear Z23	28	3	M6007103	Screw M6x50 UNI6107
11	1	S413250041	Pinion Z13	29	1	S4127000A5	Cover 2 speed W46
12	2	M6017694	IGUS Bushing PSM-1214-20	30	1	A94136400	Assy Socket W20-80 Socket Handle W20/80
13	1	S413120002	Washer Ø22.5xØ45x1	1	1	S415130085	Washer Ø7.7xØ25x5.8
14	1	S413070004	Pin Ø9-Ø12x32.5	1	1	M0614303	Screw M8x20 UNI 6109
15	1	A94133400	Assy Gear Z12 Gear Z12				
	2	S414900080	Bushing Ø12xØ14x8				
16	1	A94132200	Assy Housing Winch 46 Housing Winch 46				
	1	S414900080	Bushing Ø12xØ14x8				
	1	S413330085	Bushing Ø12xØ14x11				
	1	S4133200B3	Heli-coil M6x9 Bushing for support				
17	5	M0606303	Screw M8x25 UNI 5931				

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

**Winch product sticker



Radial Winch 46.2 STCW

CW = chrome/white

Pos.	Q.ty	Code	Description	Pos.	Q.ty	Code	Description
1	1	A94132100	Assy Base Winch 46 Base W46 Heli-coil M8x10	18	2	A74133700	Bearing Ø75xØ87x26
	1	S413350080	Roller Ø6x19	19	1	S413390080	Spacer
	1	S4152300A7	Bushing Ø22xØ25x9.5	20	1	A94161400	Assy Central Shaft Winch 46 Central shaft W46 ST
	1	S414890080	Bushing Ø9xØ11x7	1	1	S413880002	Washer Ø17.2xØ32x1.5
	1	S413330085	Bushing Ø12xØ14x11	21			Winch Serial Number Sticker
2	1	A94132300W	Assy Skirt Winch 46 Skirt W46 RAL9003 Winch Product Sticker**	22	1	S4129400A0	Stripper arm support
3	1	S413020004	Gear Z12	23	1	S413240043	Drum C W46
4	1	S413300004	Pin Ø12x60	24	1	S281690097	Red line
5	1	S278170002	Washer Ø12.5xØ48x1.5	25	1	A94127300W	Assy Jaws winch 46 Lower Jaw W46 RAL9003 Upper Jaw W46 RAL9003
6	1	S413260004	Gear Z27	1	1	S414280080W	Peeler W46 - 50 RAL9003
7	1	S414260004	Pawls Carrier Ø8xN2	4	4	S385970001	SPRING
8	6	S000080003	Pawl Ø8*	26	4	M0601803	Screw UNI EN ISO 1207:1996 - M6x35 - A4
9	6	S000380001	Pawl Spring Ø8*	27	1	S413380019	Stripper Arm W46
10	1	S412830041	Gear Z23	28	3	M6007103	Screw M6x50 UNI6107
11	1	S413250041	Pinion Z13	29	1	S4127000A5W	Cover 2 speed W46 RAL9003
12	2	M6017694	IGUS Bushing PSM-1214-20	30	1	A94136400	Assy Socket W20-80 Socket Handle W20/80
13	1	S413120002	Washer Ø22.5xØ45x1	1	1	S415130085	Washer Ø7.7xØ25x5.8
14	1	S413070004	Pin Ø9-Ø12x32.5	1	1	M0614303	Screw M8x20 UNI 6109
15	1	A94133400	Assy Gear Z12 Gear Z12				
	2	S414900080	Bushing Ø12xØ14x8				
16	1	A94132200	Assy Housing Winch 46 Housing Winch 46				
	1	S414900080	Bushing Ø12xØ14x8				
	1	S413330085	Bushing Ø12xØ14x11				
	1	S4133200B3	Heli-coil M6x9 Bushing for support				
17	5	M0606303	Screw M8x25 UNI 5931				

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

**Winch product sticker



Radial Winch 46.2 STBBB

BBB = all bronze

Pos.	Q.ty	Code	Description	Pos.	Q.ty	Code	Description
1	1	A96633300	PERFORMA Assy Base Winch 46 <i>PERFORMA Base W46 Heli-coil M8x10</i>	18	1	S413390080	Spacer
	1	S413350080	<i>Roller Ø6x19</i>	19	1	A94161400	Assy Central Shaft Winch 46 <i>Central shaft W46 ST</i>
	1	S4152300A7	<i>Bushing Ø22xØ25x9.5</i>		1	S413880002	<i>Washer Ø17.2xØ32x1.5</i>
	1	S414890080	<i>Bushing Ø9xØ11x7</i>	20			Winch Serial Number Sticker
	1	S413330085	<i>Bushing Ø12xØ14x11</i>	21	1	S4129400A0	Stripper arm support
2	1	S413020004	Gear Z12	22	1	S688150043	Drum BBB W46
3	1	S413300004	Pin Ø12x60	23	1	S281690097	Red line
4	1	S278170002	Washer Ø12.5xØ48x1.5	24	1	A96933000	Assy Jaws winch 46 BBB <i>Lower Jaw W46 BBB</i>
5	1	S413260004	Gear Z27				<i>Upper Jaw W46</i>
6	1	S414260004	Pawls Carrier Ø8xN2		1	S414280080	<i>Peeler W46 - 50</i>
7	6	S000080003	Pawl Ø8*		4	S385970001	<i>SPRING</i>
8	6	S000380001	Pawl Spring Ø8*	25	4	M0601803	Screw UNI EN ISO 1207:1996 - M6x35 - A4
9	1	S412830041	Gear Z23	26	1	S693290019	Stripper Arm W46 BBB
10	1	S413250041	Pinion Z13	27	3	M6007103	Screw M6x50 UNI6107
11	2	M6017694	IGUS Bushing PSM-1214-20	28	1	A76933100	Cover 2 speed W46 BBB
12	1	S413120002	Washer Ø22.5xØ45x1	29	1	A94136400	Assy Socket W20-80 <i>Socket Handle W20/80</i>
13	1	S413070004	Pin Ø9-Ø12x32.5		1	S415130085	<i>Washer Ø7.7xØ25x5.8</i>
14	1	A94133400	Assy Gear Z12 <i>Gear Z12</i>		1	M0614303	<i>Screw M8x20 UNI 6109</i>
	2	S414900080	<i>Bushing Ø12xØ14x8</i>	30			Winch Product Sticker**
15	1	A94132200	Assy Housing Winch 46 <i>Housing Winch 46</i>				
	1	S414900080	<i>Bushing Ø12xØ14x8</i>				
	1	S413330085	<i>Bushing Ø12xØ14x11</i>				
	1	S4133200B3	<i>Heli-coil M6x9</i> <i>Bushing for support</i>				
16	5	M0606303	Screw M8x25 UNI 5931				
17	2	A74133700	Bearing Ø75xØ87x26				

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

**Winch product sticker



Radial Winch 46.2 STCCC

CCC = All-Chrome bronze

Pos.	Q.ty	Code	Description	Pos.	Q.ty	Code	Description
1	1	A96633300	PERFORMA Assy Base Winch 46 <i>PERFORMA Base W46 Heli-coil M8x10</i>	18	1	S413390080	Spacer
	1	S413350080	<i>Roller Ø6x19</i>	19	1	A94161400	Assy Central Shaft Winch 46 <i>Central shaft W46 ST</i>
	1	S4152300A7	<i>Bushing Ø22xØ25x9.5</i>		1	S413880002	<i>Washer Ø17.2xØ32x1.5</i>
	1	S414890080	<i>Bushing Ø9xØ11x7</i>	20			Winch Serial Number Sticker
	1	S413330085	<i>Bushing Ø12xØ14x11</i>	21	1	S4129400A0	Stripper arm support
2	1	S413020004	Gear Z12	22	1	S681060043	Drum CCC W46
3	1	S413300004	Pin Ø12x60	23	1	S281690097	Red line
4	1	S278170002	Washer 12.5x48x1.5	24	1	A96812000	Assy Jaws winch 46 CCC <i>Lower Jaw W46 CCC Upper Jaw W46 RAL9003 Peeler W46 - 50 RAL9003 SPRING</i>
5	1	S413260004	Gear Z27		1	S414280080W	
6	1	S414260004	Pawls Carrier Ø8xN2		4	S385970001	
7	6	S000080003	Pawl Ø8*	25	4	M0601803	Screw UNI EN ISO 1207:1996 - M6x35 - A4
8	6	S000380001	Pawl Spring Ø8*	26	1	S413380019	Stripper Arm W46
9	1	S412830041	Gear Z23	27	3	M6007103	Screw M6x50 UNI6107
10	1	S413250041	Pinion Z13	28	1	A76811300	Cover 2 speed W46 CCC
11	2	M6017694	IGUS Bushing PSM-1214-20	29	1	A94136400	Assy Socket W20-80 <i>Socket Handle W20/80</i>
12	1	S413120002	Washer Ø22.5xØ45x1		1	S415130085	<i>Washer Ø7.7xØ25x5.8</i>
13	1	S413070004	Pin Ø9-Ø12x32.5		1	M0614303	<i>Screw M8x20 UNI 6109</i>
14	1	A94133400	Assy Gear Z12 <i>Gear Z12</i>	30			Winch Product Sticker**
	2	S414900080	<i>Bushing Ø12xØ14x8</i>				
15	1	A94132200	Assy Housing Winch 46 <i>Housing Winch 46</i>				
	1	S414900080	<i>Bushing Ø12xØ14x8</i>				
	1	S413330085	<i>Bushing Ø12xØ14x11</i>				
	1	S4133200B3	<i>Heli-coil M6x9 Bushing for support</i>				
16	5	M0606303	Screw M8x25 UNI 5931				
17	2	A74133700	Bearing Ø75xØ87x26				

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

**Winch product sticker

