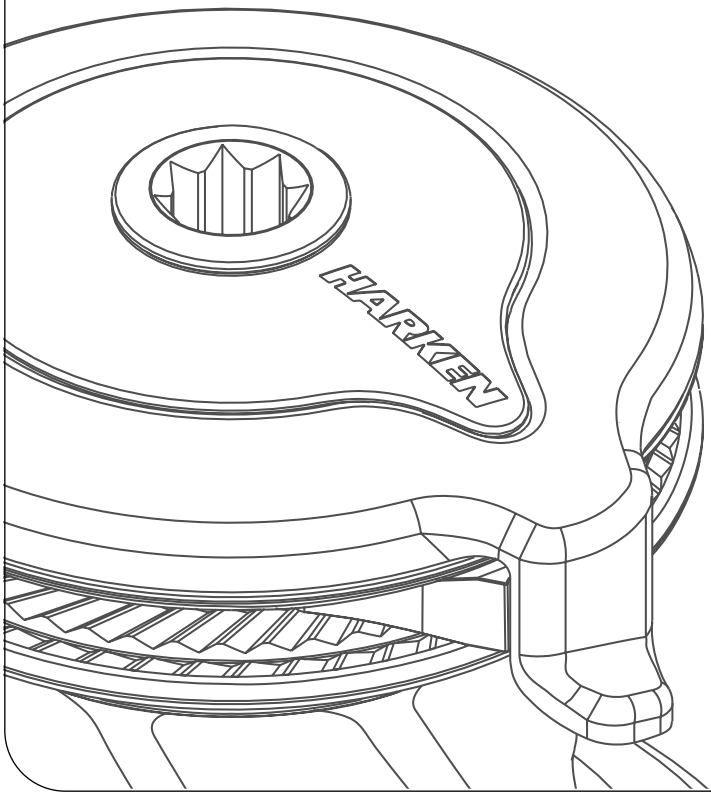
Installation and Maintenance Manual

MRW-E

Powered Radial Winch
46.2 ST EL/HY



HARKEN®

Introduction

This manual gives technical information on winch installation and maintenance, including disassembling and reassembling.
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.
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.
Installing third-party electrification kits voids the Harken® Limited Worldwide Warranty.

The installer is responsible for complying with all applicable safety regulations:
- Any residual risks must be analyzed based on the boat on which the system is installed and must be managed exclusively by the installing contractor.
- A safety management system must be implemented on each boat, including one or more emergency buttons.

The user remains responsible for the proper inspection and maintenance of each component of the system installed aboard.

Harken assumes no responsibility for the final design or the consequences of an accident.

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

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

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.

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.

Performance data

Winch 46.2 ST EL (electric)

	horizontal motor						vertical motor			
	12V (700 W)		24V (900 W)		48V (2000W)		12V (1500 W)		24V (2000 W)	
	1st speed	2nd speed	1st speed	2nd speed	1st speed	2nd speed	1st speed	2nd speed	1st speed	2nd speed
line speed (m/min)*	26,7	6,7	33,5	8,4	35,5	9,2	35,1	8,8	42,3	10,7
max load (Kg)	315	1300	315	1300	315	1300	315	1300	315	1300

*Line speed is measured with no load

	motor nominal power (W)			**current absorption at winch MWL (A)**		
	12V	24V	48V	12V	24V	48V
horizontal	700	900	2000	180	140	73
vertical	1500	2000	-	220	120	-

Winch 46.2 ST HY (hydraulic)

	1st speed	**2nd speed**
line speed (m/min)*	52,5	13,2
max load (Kg)**	315	1300

* at 20 l/min oil flow (5,28 Gal/min)

** at 120 bar at 20 l/min

NOTE
The ratio of the line load - pressure is evaluated at nominal flow rate.
The performance is evaluated measuring the pressure and flow on the motor ports.
The performance data are based on oil with a viscosity of 35mm²/s [165 SUS] and temperature of 50°C [120°F].

Weight

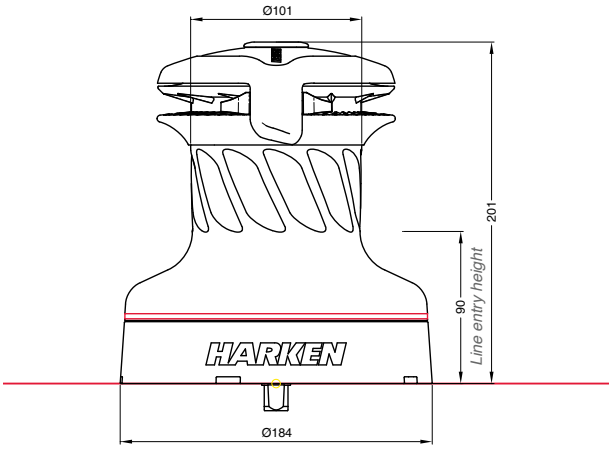
	ST A EH	**ST C/CW EH**	**ST A EV**	**ST C/CW EV**	**ST A H**	**ST C/CW H**
weight (Kg)	14,9	17,5	16,7	19,3	12,7	15,3

	ST BBB EH	**ST CCC EH**	**ST BBB EV**	**ST CCC EV**	**ST BBB H**	**ST CCC H**
weight (Kg)	18,6	18,6	20,4	20,4	16,4	16,4

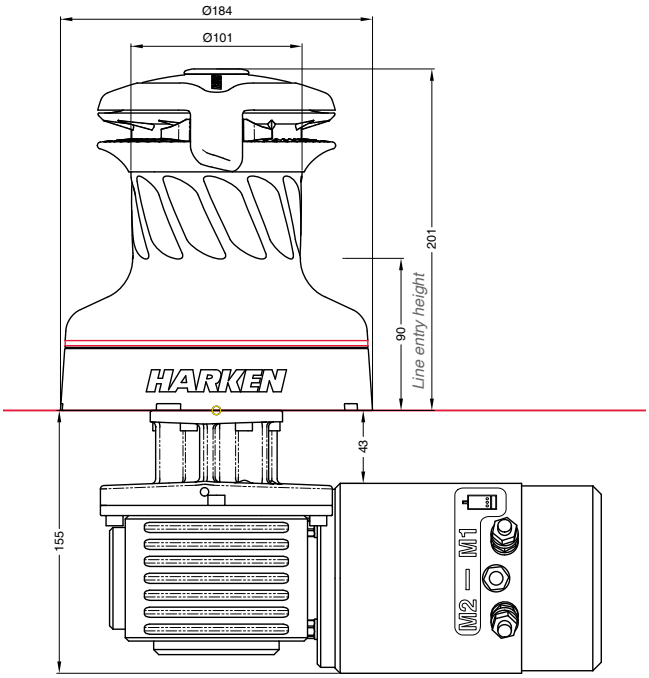
Versions:
A = drum in anodised aluminium; C = drum in chrome bronze; CW = chrome/white
BBB = all bronze; CCC = All-Chrome bronze
EH = horizontal electric winch
EV = vertical electric winch
H = vertical hydraulic winch

Outline

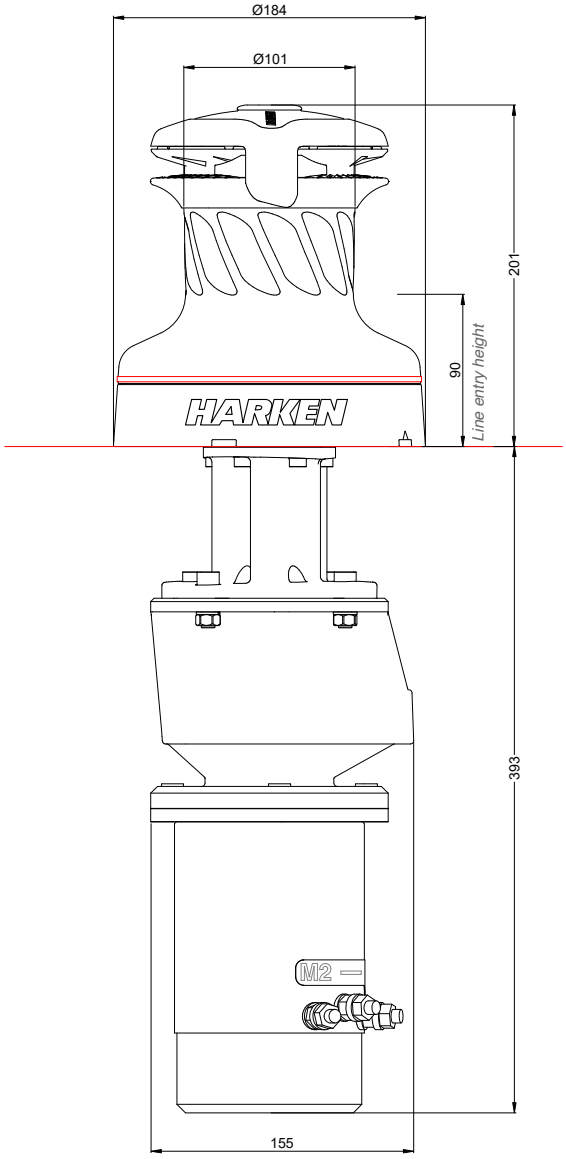
Winch 46.2 ST EL/HY



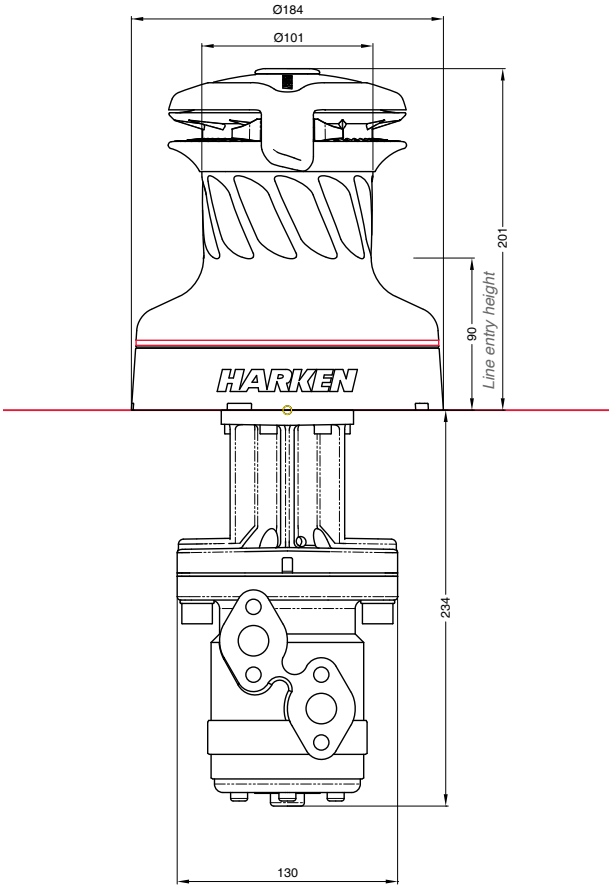
Horizontal electric motor (12V / 24V / 48V)



Vertical electric motor (12V / 24V / 48V)



Hydraulic motor



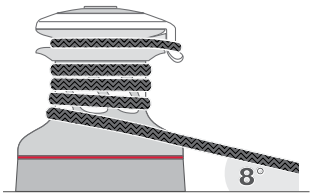
Installation

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.

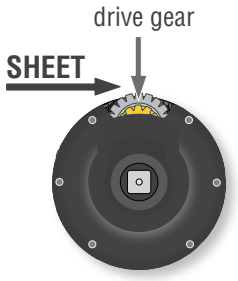
DANGER!
Incorrect installation of the winch may cause severe injury or death. Consult the yard that built the boat in the case of doubt over the correct positioning of the winch.

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.

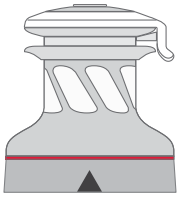
WARNING!
Verify the entry angle of the sheet. This must be 8° with tolerance of ±2°, to avoid sheet overrides and damaging the winch or making the winch inoperable leading to loss of control of the boat which can lead to severe injury or death.



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.



After correctly positioning the final drive gear with respect to the load, check that the motor, gearing, electrical wiring and/or hydraulic pipes can be housed below decks. To help find the optimal compromise, remember that, to make the installation of the motor easier, It can be coupled to the winch in different positions.
Once you have decided the correct mounting position for the winch on the deck and checked the space available below deck, proceed with the installation.

The winch can be installed following one of the two procedures below (Procedure1 or Procedure 2):

Procedure 1

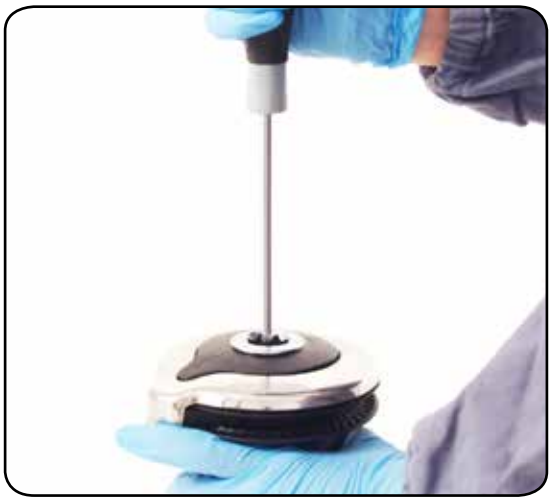
To install the winch you must remove the drum and use bolts as described ahead.

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. Pull out the disconnect rod



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

3. Slide off the assy socket and the cover.
Pay attention to the o-ring in the socket.

4. Unscrew the three screws
(🔧4Nm/35 in-lb)

5. Remove the self-tailing arm by rotating and lifting it.

6. Lift off the drum

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)

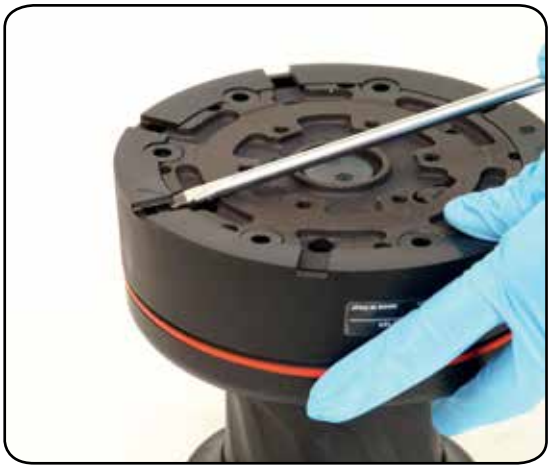
To install the winch, remove the winch skirt and use hexagonal headed (HH) bolts.

Tools needed: One medium flat-bladed screwdriver

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

See (paragraph on installation) the limits described on page 6 and using socket head (SH) bolts.

Torque to apply when assembling



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

2. Take off the base

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

4. Reposition the skirt 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 6 and using hexagonal headed (HH) bolts.

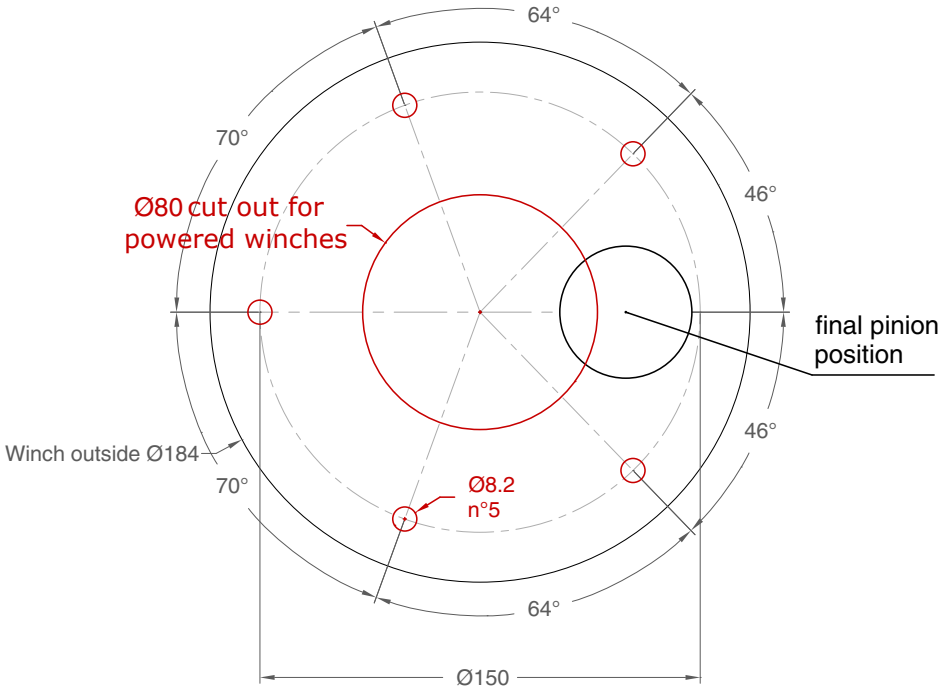
Winch installation procedure

Carry out Procedure 1 or Procedure 2, then install the winch on the deck in the chosen position.

NOTICE
Before drilling the deck, check the space available below deck for the flange and 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.

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 and a 80 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.

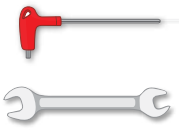
Motor installation procedure

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

WARNING!
The entire gearmotor assembly is IP54 graded: install the device under the deck, in a dry place and protected from the external environment, in a position where it is possible to check its status.

Once you have installed the winch on the deck, proceed with motor installation. The motor can be coupled to the winch in different positions. Check the space available below deck and choose the suitable position.

Tools needed



A number five hex key
A number six hex key (only for vertical electric motor)
A number ten hex key (only for hydraulic motor)
Two number thirteen wrenches

1. Position the flange

2. Tighten six M6 precote coated screws (8 Nm/ 71 in-lb)

3. Position the reduction gear and motor

4. Tighten the two screws (8 Nm/ 71in-lb).
Be sure to align the flange.

NOTICE
Before positioning the flange, check to make sure that seals (the first one is above the flange and the second one is under the flange) are seated correctly.

After winch is assembled and before sailing, test the powered winch functioning: insert the lock-in winch handle in the handle socket and check that the disconnect rod must disconnect gearbox.

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 mm²	16.4 - 32.8 ft AWG	5 m - 10 m mm²	32.8 - 49.2 ft AWG	10 m - 15 m mm²	49.2 - 65.6 ft AGW	15m - 20 m mm²
46.2	12V	2	32	0	50	00	70	000	95
46.2	24V	5	16	3	25	2	35	0	50
46.2	48V	8	8	6	14	4	18	3	25

Refer to the following chart for HCP model:

Winch size	Current voltage	HCP model	Ampere rating
46.2 HO	12V	HCP1717	80A
46.2 VT	12V	HCP1720	135A
46.2	24V	HCP1717	80A
46.2	48V	HCP1717	80A

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. 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

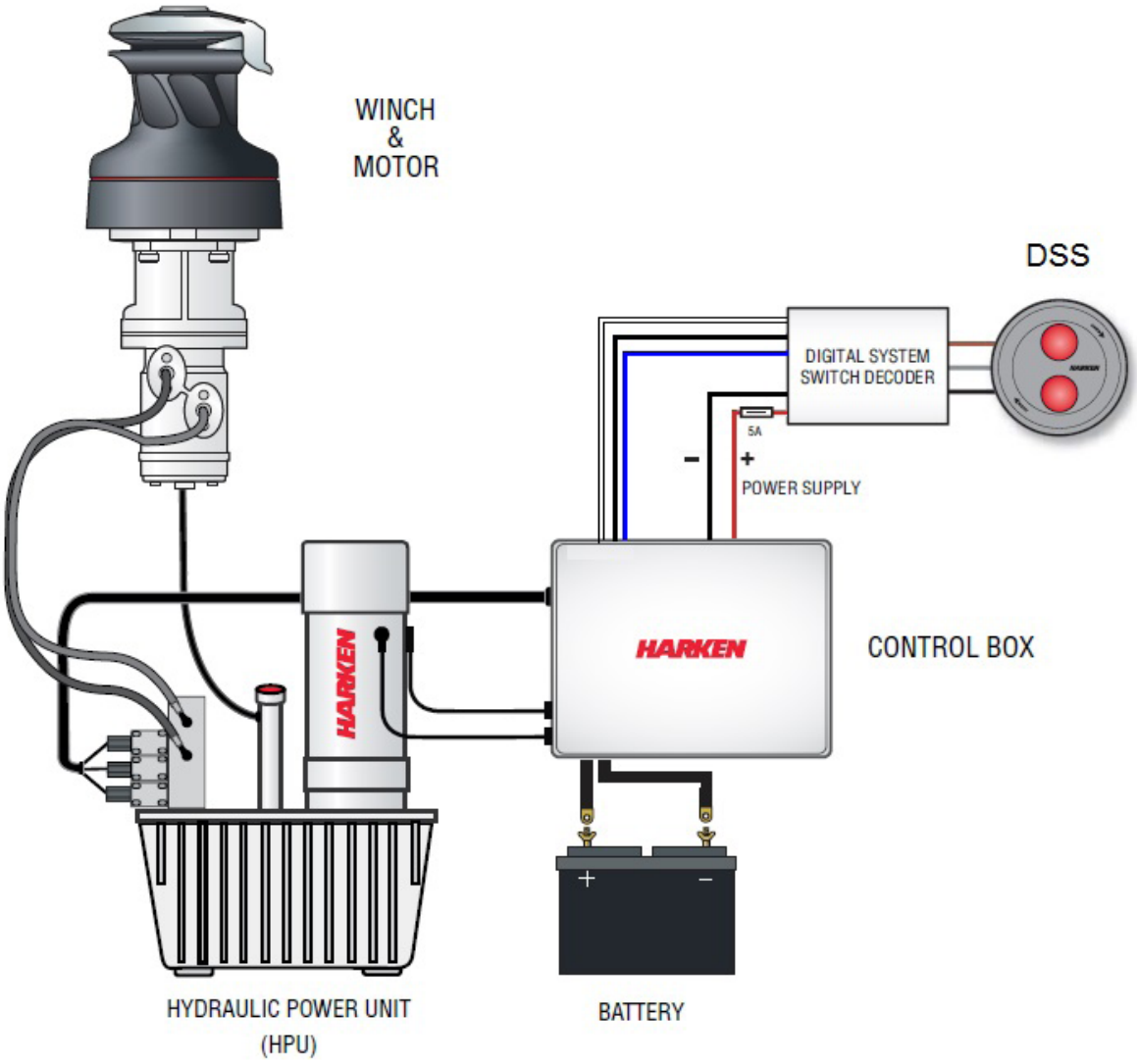
Hydraulic connections diagram

The hydraulic motor must be connected to a hydraulic system using two high-pressure tubes which serve for input or output according to the direction in which the motor will be run. The motor also needs a third connection with a low pressure tube for drainage, so that excess oil can return to the main tank to avoid shortening the life of the motor. This motor uses an open centre valve.

Refer to the following chart for the hydraulic system:

For the hydraulic motor:

Input/output pipe thread: G 1/2 – depth 15 mm
Drainage pipe thread: G 1/4 – depth 12 mm



WARNING!
Refer to the Hydraulic Power Unit and Control Box manual.

WARNING!
Refer to the Digital System Switch manual.

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. 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.

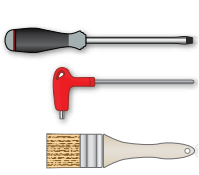
WARNING!
Periodic maintenance must be carried out regularly. Lack of adequate maintenance shortens the life of the winch, can cause serious injury and also invalidate the winch warranty. Installation and maintenance of winches must be carried out exclusively by specialized personnel.

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

In 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
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 **Procedure 1** as shown in the paragraph on winch installation and then do the following:

6. Completely unscrew the three screws and remove the stripper arm support

7. Slide out the central shaft

8. Unscrew the 6 hex screws

(🔧20Nm/177 in-lb)

9. Remove the assy housing

Important: washer may remain inside the drum support!

10. Remove the washer

11. Remove the gear

12. Remove the pawls carrier

13. Remove the gear

14. Remove the gear

15. Remove the gear

16. Remove the pawls carrier

17. Remove the washer

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

I. Unscrew the 4 screws
(🔧4Nm/35 in-lb)

II. Remove the jaws

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.

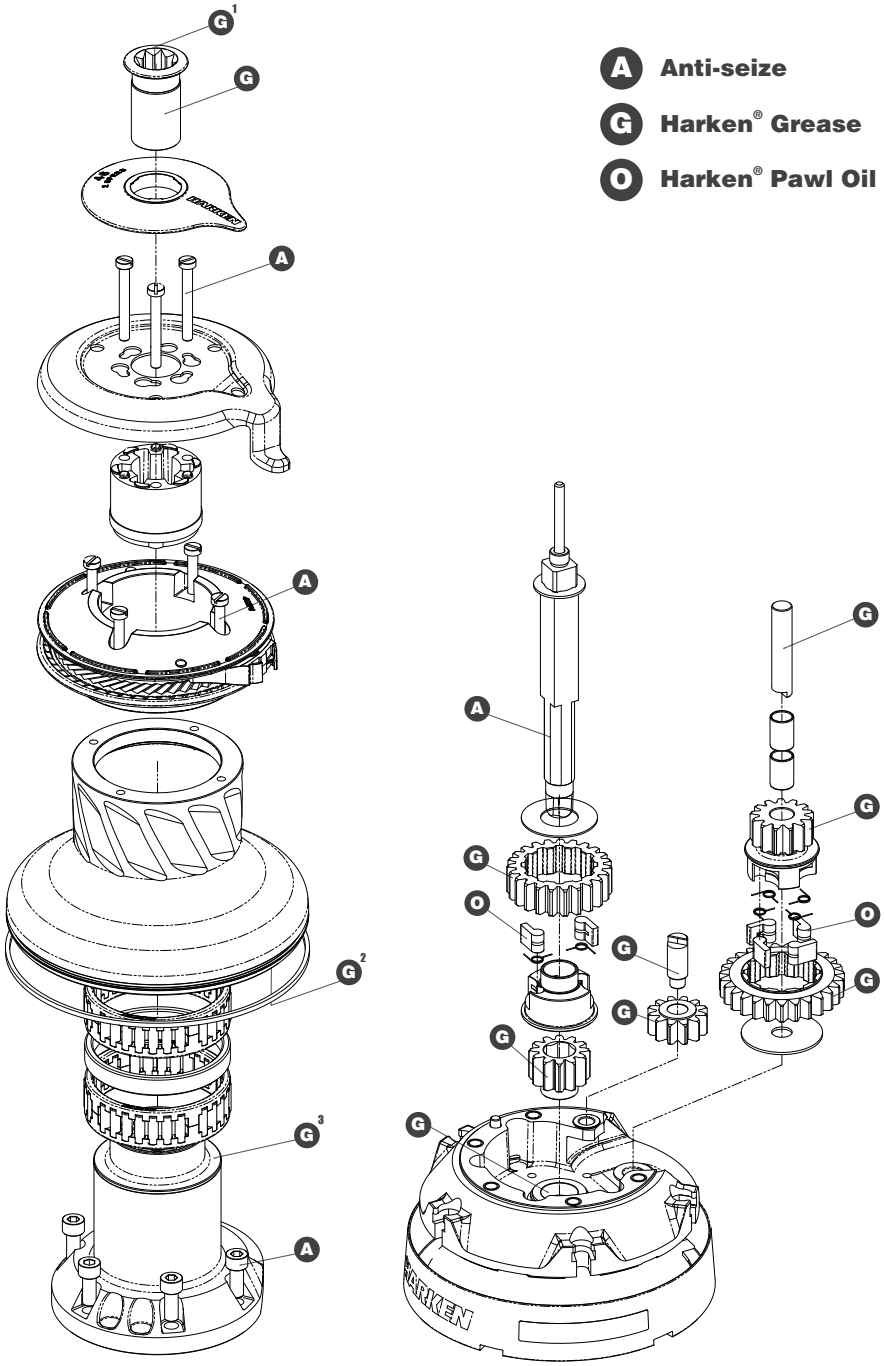
Carry out maintenance on components using the products listed below.

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!

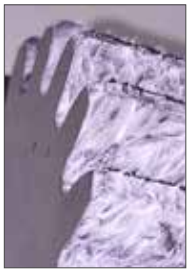
Exploded view with maintenance products



Apply Harken® grease where indicated above
Apply Harken® grease: 1. on assy socket screw - 2. on drum gear

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.

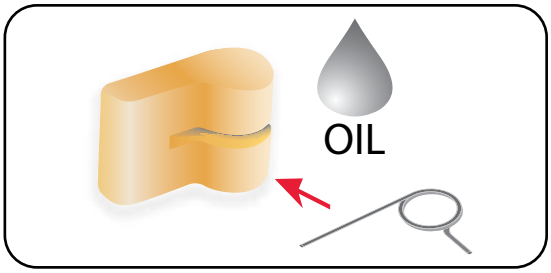
Assembly

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.

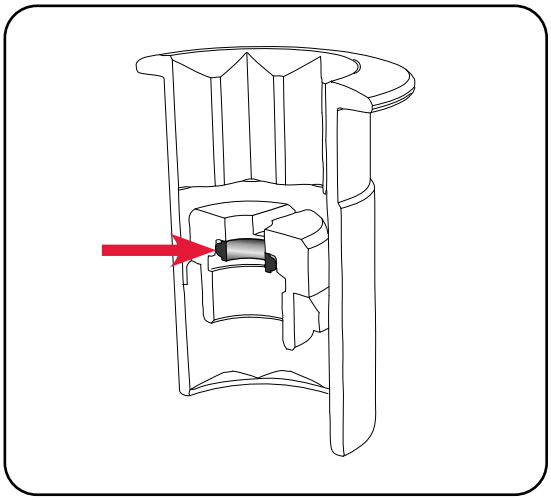
When positioning the stripper arm, align the peeler with it.

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 screw the central screw, check the correct position of the o-ring in the assy socket and apply Harken grease.

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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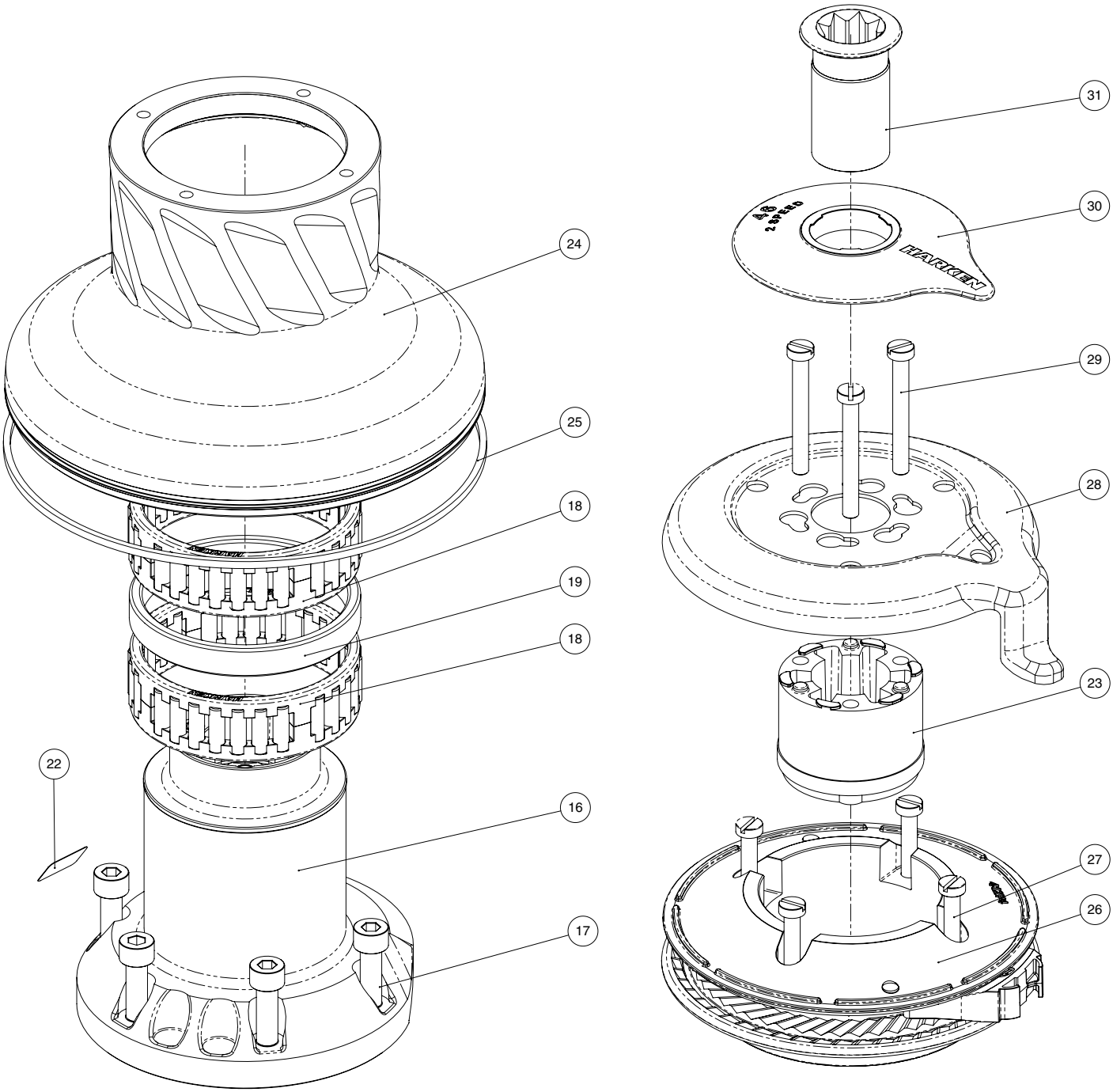
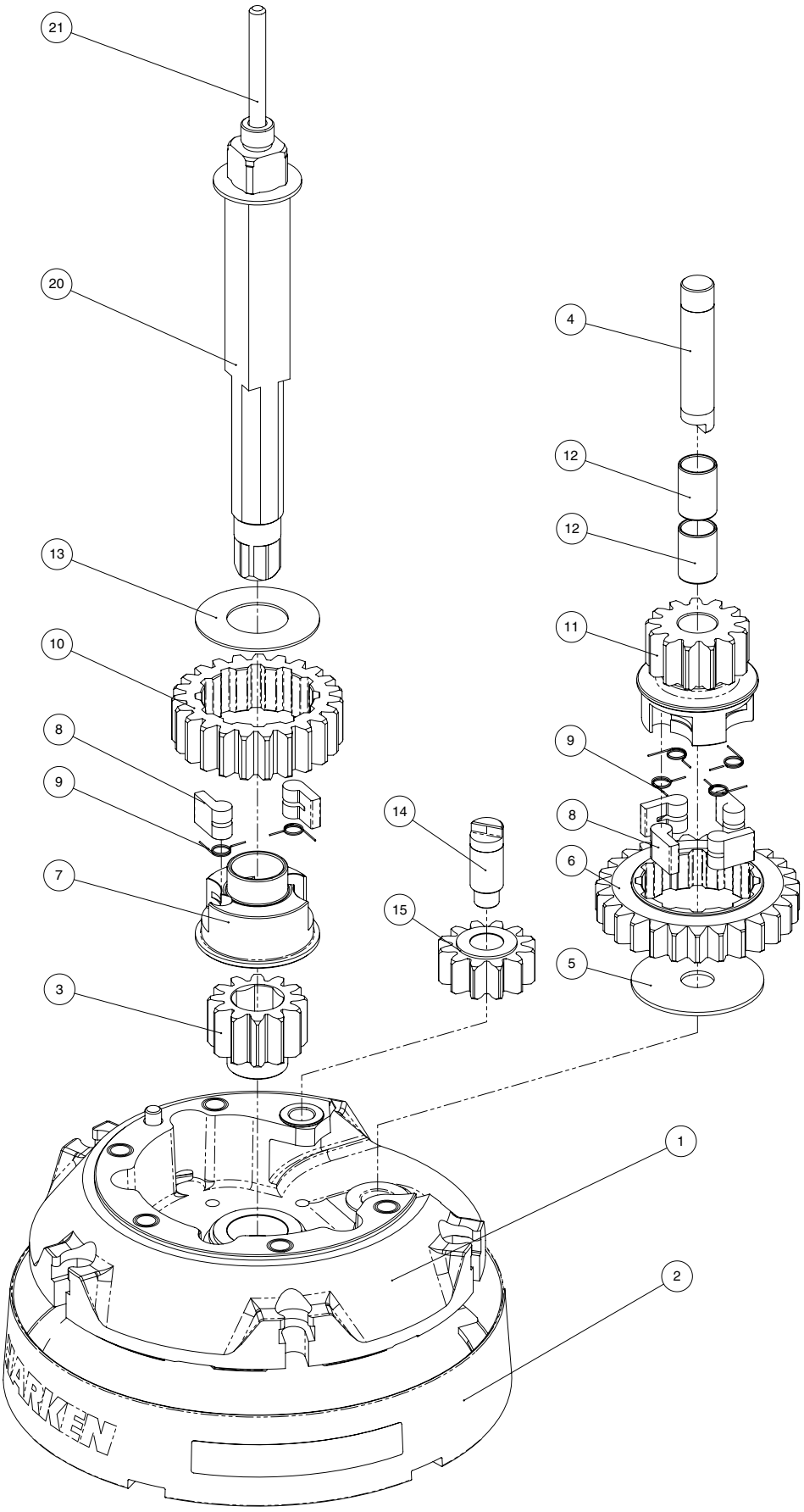
Exploded view

Radial Winch 46.2 STA, STC, STCW EL/HY



Radial Winch 46.2 STA, STC, STCW EL/HY



Parts List

Radial Winch 46.2 STA EL/HY

A = drum in anodised aluminium

Pos.	Q.ty	Code	Description
1	1	A94189700	Assy Base Winch 46 EL/HY
			Base W46
	1	S413350080	*Roller Ø6x19*
	1	S4130900A7	*Bushing Ø22xØ25x8.5*
	1	S414890080	*Bushing Ø9xØ11x7*
	1	S413330085	*Bushing Ø12xØ14x11*
2	1	A94132300	Assy Skirt Winch 46
			Skirt W46
			*Winch Product Sticker***
3	1	S413020004	Gear Z12
4	1	S413300004	Pin Ø12x60
5	1	S278170002	Washer Ø12.5xØ48x1.5
6	1	S413260004	Gear Z27
7	1	S414260004	Pawls Carrier Ø8xN2
8	6	S000080003	Pawl Ø8*
9	6	S000380001	Pawl Spring Ø8*
10	1	S412830041	Gear Z23
11	1	S413250041	Pinion Z13
12	2	M6017694	Bushing PSM-1214-20
13	1	S413120002	Washer Ø22.5xØ45x1
14	1	S413070004	Pin Ø9xØ12x32.5
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	*Bushing for support*
17	5	M0606303	Screw M8x25 UNI 5931
18	2	A74133700	Bearing Ø75xØ87x26

Pos.	Q.ty	Code	Description
19	1	S413390080	Spacer
20	1	A94161000	Assy Central Shaft W46 EL/HY
			Central Shaft W46 EL/HY
	1	S413880002	*Washer Ø17.2xØ32x1.5*
21	1	S416110002	Disconnect Rod W46
22			Winch Serial Number Sticker
23	1	S4129400A0	Stripper arm support
24	1	S412720053	Drum W46
25	1	S281690097	Red line
26	1	A94127300	Assy Jaws winch 46
			Lower Jaw W46
			Upper Jaw W46
	1	S414280080	*Peeler W46 - 50*
	4	S385970001	*SPRING*
27	4	M0601803	Screw UNI EN ISO 1207 - M6x35 - A4
28	1	S413380019	Stripper Arm W46
29	3	M6007103	Screw M6x50 UNI6107
30	1	S4127000A5	Cover 2 speed W46
31	1	A94149300	Assy Socket W35-80 EL/HY
			Socket Handle W20/80
	1	S414940085	*Washer Ø25xØ15x4*
	1	S414930003	*Nut Screw for Disconnect Rod*
	1	M0679797	*O ring RC 2025 series*

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

***Winch product sticker*

Radial Winch 46.2 STC EL/HY

C = drum in chrome bronze

Pos.	Q.ty	Code	Description
1	1	A94189700	Assy Base Winch 46 EL/HY
			Base W46
	1	S413350080	*Roller Ø6x19*
	1	S4130900A7	*Bushing Ø22xØ25x8.5*
	1	S414890080	*Bushing Ø9xØ11x7*
	1	S413330085	*Bushing Ø12xØ14x11*
2	1	A94132300	Assy Skirt Winch 46
			Skirt W46
			*Winch Product Sticker***
3	1	S413020004	Gear Z12
4	1	S413300004	Pin Ø12x60
5	1	S278170002	Washer Ø12.5xØ48x1.5
6	1	S413260004	Gear Z27
7	1	S414260004	Pawls Carrier Ø8xN2
8	6	S000080003	Pawl Ø8*
9	6	S000380001	Pawl Spring Ø8*
10	1	S412830041	Gear Z23
11	1	S413250041	Pinion Z13
12	2	M6017694	Bushing PSM-1214-20
13	1	S413120002	Washer Ø22.5xØ45x1
14	1	S413070004	Pin Ø9xØ12x32.5
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	*Bushing for support*
17	5	M0606303	Screw M8x25 UNI 5931
18	2	A74133700	Bearing Ø75xØ87x26

Pos.	Q.ty	Code	Description
19	1	S413390080	Spacer
20	1	A94161000	Assy Central Shaft W46 EL/HY
			Central Shaft W46 EL/HY
	1	S413880002	*Washer Ø17.2xØ32x1.5*
21	1	S416110002	Disconnect Rod W46
22			Winch Serial Number Sticker
23	1	S4129400A0	Stripper arm support
24	1	S413240043	Drum W46 C
25	1	S281690097	Red line
26	1	A94127300	Assy Jaws winch 46
			Lower Jaw W46
			Upper Jaw W46
	1	S414280080	*Peeler W46 - 50*
	4	S385970001	*SPRING*
27	4	M0601803	Screw UNI EN ISO 1207 - M6x35 - A4
28	1	S413380019	Stripper Arm W46
29	3	M6007103	Screw M6x50 UNI6107
30	1	S4127000A5	Cover 2 speed W46
31	1	A94149300	Assy Socket W35-80 EL/HY
			Socket Handle W20/80
	1	S414940085	*Washer Ø25xØ15x4*
	1	S414930003	*Nut Screw for Disconnect Rod*
	1	M0679797	*O ring RC 2025 series*

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

***Winch product sticker*

Radial Winch 46.2 STCW EL/HY

CW = chrome/white

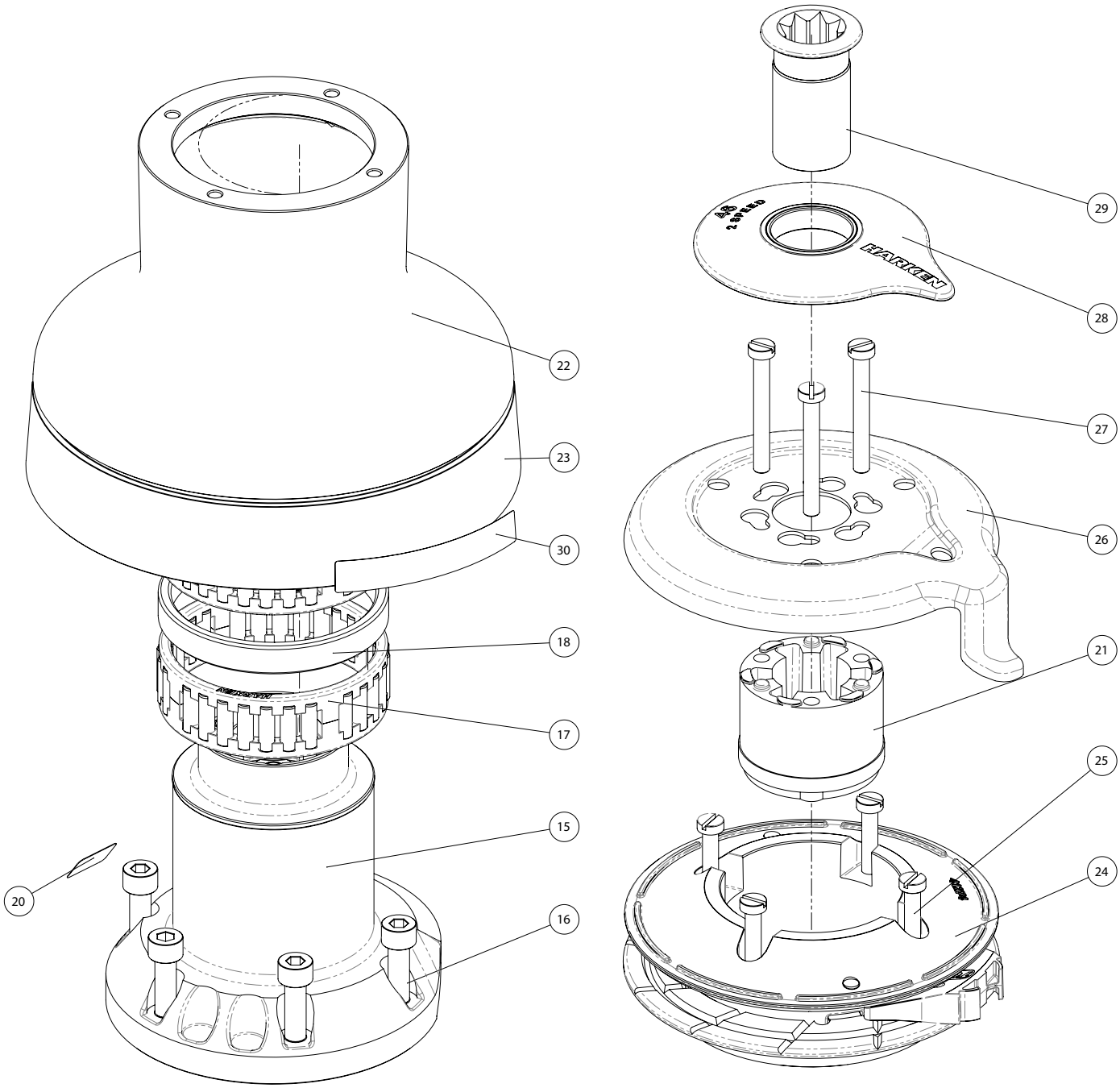
Pos.	Q.ty	Code	Description
1	1	A94132100	Assy Base Winch 46 EL/HY
			Base W46
	1	S413350080	*Roller Ø6x19*
	1	S4130900A7	*Bushing Ø22xØ25x8.5*
	1	S414890080	*Bushing Ø9xØ11x7*
	1	S413330085	*Bushing Ø12xØ14x11*
2	1	A94132300W	Assy Skirt Winch 46 RAL 9003
			Skirt W46 RAL9003
			*Winch Product Sticker***
3	1	S413020004	Gear Z12
4	1	S413300004	Pin Ø12x60
5	1	S278170002	Washer Ø12.5xØ48x1.5
6	1	S413260004	Gear Z27
7	1	S414260004	Pawls Carrier Ø8xN2
8	6	S000080003	Pawl Ø8*
9	6	S000380001	Pawl Spring Ø8*
10	1	S412830041	Gear Z23
11	1	S413250041	Pinion Z13
12	2	M6017694	IGUS Bushing PSM-1214-20
13	1	S413120002	Washer Ø22.5xØ45x1
14	1	S413070004	Pin Ø9xØ12x32.5
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	*Bushing for support*

Pos.	Q.ty	Code	Description
17	5	M0606303	Screw M8x25 UNI 5931
18	2	A74133700	Bearing Ø75xØ87x26
19	1	S413390080	Spacer
20	1	A94161000	Assy Central Shaft W46 EL/HY
			Central Shaft W46 EL/HY
	1	S413880002	*Washer Ø17.2xØ32x1.5*
21	1	S416110002	Disconnect Rod W46
22			Winch Serial Number Sticker
23	1	S4129400A0	Stripper arm support
24	1	S413240043	Drum C W46
25	1	S281690097	Red line
26	1	A94127300W	Assy Jaws winch 46
			Lower Jaw W46 RAL9003
			Upper Jaw W46 RAL9003
	1	S414280080W	*Peeler W46 - 50 RAL9003*
	4	S385970001	*SPRING*
27	4	M0601803	Screw UNI EN ISO 1207 - M6x35 - A4
28	1	S413380019	Stripper Arm W46
29	3	M6007103	Screw M6x50 UNI6107
30	1	S4127000A5W	Cover 2 speed W46 RAL9003
31	1	A94149300	Assy Socket W35-80 EL/HY
			Socket Handle W20/80
	1	S414940085	*Washer Ø25xØ15x4*
	1	S414930003	*Nut Screw for Disconnect Rod*
	1	M0679797	*O ring RC 2025 series*

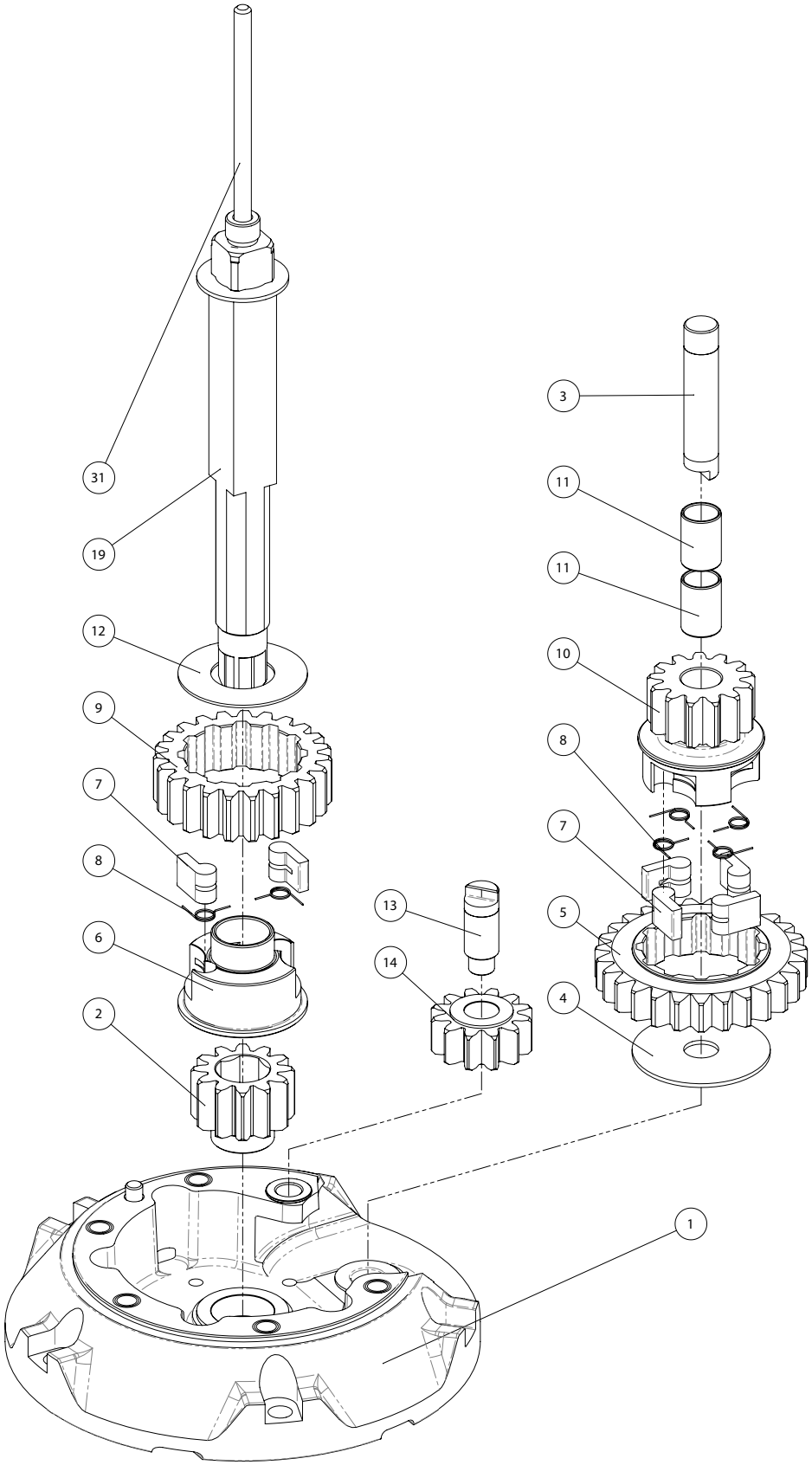
**Available with service kit; see website www.harken.com*

***Winch product sticker*

Radial Winch 46.2 STBBB, STCCC EL/HY



Radial Winch 46.2 STBBB, STCCC EL/HY



Radial Winch 46.2 STBBB EL/HY

BBB = all bronze

Pos.	Q.ty	Code	Description
1	1	A96633900	Assy base Winch 46 EL/HY
			Base W46
	1	S413350080	*Roller Ø6x19*
	1	S4130900A7	*Bushing Ø22xØ25x8.5*
	1	S414890080	*Bushing Ø9xØ11x7*
	1	S413330085	*Bushing Ø12xØ14x11*
2	1	S413020004	Gear Z12
3	1	S413300004	Pin Ø12x60
4	1	S278170002	Washer Ø12.5xØ48x1.5
5	1	S413260004	Gear Z27
6	1	S414260004	Pawls Carrier Ø8xN2
7	6	S000080003	Pawl Ø8*
8	6	S000380001	Pawl Spring Ø8*
9	1	S412830041	Gear Z23
10	1	S413250041	Pinion Z13
11	2	M6017694	Bushing PSM-1214-20
12	1	S413120002	Washer Ø22.5xØ45x1
13	1	S413070004	Pin Ø9xØ12x32.5
14	1	A94133400	Assy Gear Z12
			Gear Z12
	2	S414900080	*Bushing Ø12xØ14x8*
15	1	A94132200	Assy housing Winch 46
			Housing Winch 46
	1	S414900080	*Bushing Ø12xØ14x8*
	1	S413330085	*Bushing Ø12xØ14x11*
	1	S4133200B3	*Bushing for support*
16	5	M0606303	Screw M8x25 UNI 5931
17	2	A74133700	Bearing Ø75xØ87x26
18	1	S413390080	Spacer

Pos.	Q.ty	Code	Description
19	1	A94161000	Assy Central Shaft W46 EL/HY
			Central Shaft W46 EL/HY
	1	S413880002	*Washer Ø17.2xØ32x1.5*
20			Winch Serial Number Sticker
21	1	S4129400A0	Stripper arm support
22	1	S688150043	Drum W46 BBB
23	1	S281690097	Red line
24	1	A96933000	Assy Jaws winch 46 BBB
			Lower Jaw W46 BBB
			Upper Jaw W46
	1	S414280080	*Peeler W46 - 50*
	4	S385970001	*Spring*
25	4	M0601803	Screw UNI EN ISO 1207 - M6x35 - A4
26	1	S7123100F0	Stripper Arm W46 BBB
27	3	M6007103	Screw M6x50 UNI6107
28	1	A76933100	Cover W46 ST BBB
29	1	A94149300	Assy Socket W35-80 EL/HY
			Socket Handle W20/80
	1	S414940085	*Washer Ø25xØ15x4*
	1	S414930003	*Nut Screw for Disconnect Rod*
	1	M0679797	*O ring RC 2025 series*
30			Winch Product Sticker**
31	1	S416110002	Disconnect Rod W46

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

***Winch product sticker*

Radial Winch 46.2 STCCC EL/HY

CCC = All-Chrome bronze

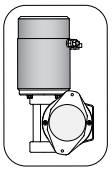
Pos.	Q.ty	Code	Description
1	1	A96633900	Assy Base Winch 46 EL/HY
			Base W46
	1	S413350080	*Roller Ø6x19*
	1	S4130900A7	*Bushing Ø22xØ25x8.5*
	1	S414890080	*Bushing Ø9xØ11x7*
	1	S413330085	*Bushing Ø12xØ14x11*
2	1	S413020004	Gear Z12
3	1	S413300004	Pin Ø12x60
4	1	S278170002	Washer Ø12.5xØ48x1.5
5	1	S413260004	Gear Z27
6	1	S414260004	Pawls Carrier Ø8xN2
7	6	S000080003	Pawl Ø8*
8	6	S000380001	Pawl Spring Ø8*
9	1	S412830041	Gear Z23
10	1	S413250041	Pinion Z13
11	2	M6017694	Bushing PSM-1214-20
12	1	S413120002	Washer Ø22.5xØ45x1
13	1	S413070004	Pin Ø9xØ12x32.5
14	1	A94133400	Assy Gear Z12
			Gear Z12
	2	S414900080	*Bushing Ø12xØ14x8*
15	1	A94132200	Assy Housing Winch 46
			Housing Winch 46
	1	S414900080	*Bushing Ø12xØ14x8*
	1	S413330085	*Bushing Ø12xØ14x11*
	1	S4133200B3	*Bushing for support*
16	5	M0606303	Screw M8x25 UNI 5931
17	2	A74133700	Bearing Ø75xØ87x26
18	1	S413390080	Spacer
19	1	A94161000	Assy Central Shaft W46 EL/HY
			Central Shaft W46 EL/HY
	1	S413880002	*Washer Ø17.2xØ32x1.5*
20			Winch Serial Number Sticker
21	1	S4129400A0	Stripper arm support
22	1	S681060043	Drum CCC W46
23	1	S281690097	Red line
24	1	A96812000	Assy Jaws winch 46 CCC
			Lower Jaw W46 CCC
			Upper Jaw W46 RAL9003
	1	S414280080W	*Peeler W46 - 50 RAL9003*
	4	S385970001	*SPRING*
25	4	M0601803	Screw UNI EN ISO 1207 - M6x35 - A4
26	1	S413380019	Stripper Arm W46
27	3	M6007103	Screw M6x50 UNI6107
28	1	A76811300	Cover 2 speed W46 CCC
29	1	A94149300	Assy Socket W35-80 EL/HY
			Socket Handle W20/80
	1	S414940085	*Washer Ø25xØ15x4*
	1	S414930003	*Nut Screw for Disconnect Rod*
	1	M0679797	*O ring RC 2025 series*
30			Winch Product Sticker**
31	1	S416110002	Disconnect Rod W46

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

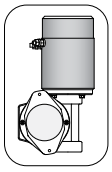
***Winch product sticker*

Horizontal electric motor 12V / 24V / 48V

TOP VIEW

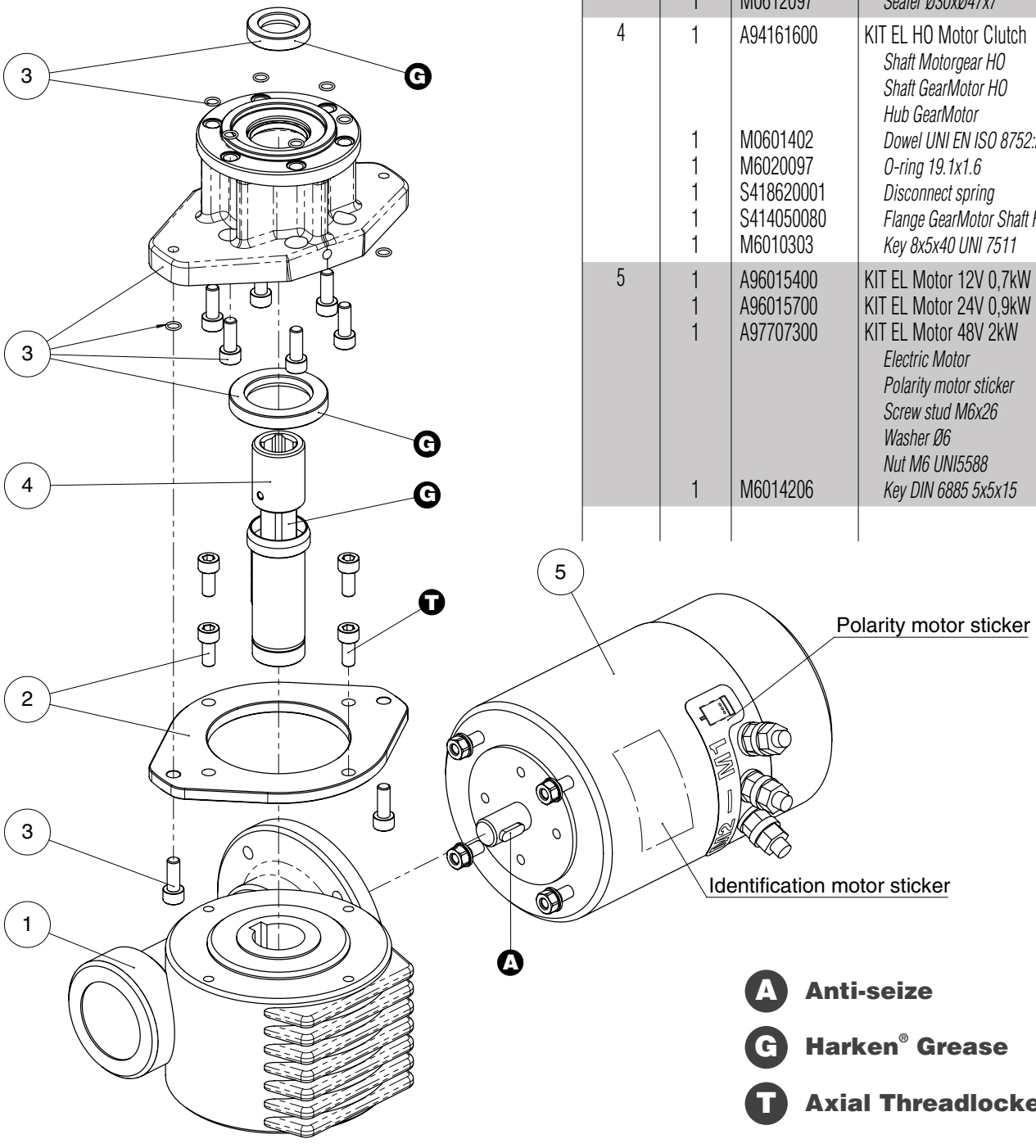


* ***Motor installed in right-hand configuration.***



** ***Motor installed in left-hand configuration.***

Pos.	Q.ty	Code	Description
1	1	A93127900	KIT Gear Reduction 1/24
	1	A94194900	KIT LM Gear Reduction 1/24
2	1	A94149200	KIT Assy Electric Motor Flange
	1	A94149200L	KIT Assy Electric Motor Flange Left
			Electric Motor Flange
	4	M0606803	*Screw M6x14 UNI 5931*
3	1	A94149500	KIT EL HO Motor Flange
			Horizontal Motorgear Flange
	8	S415360003	*Screw M6x16 UNI EN ISO 5931:2003 precote coating*
	8	M601560097	*O-Ring Seal ORM 0055-10 (Ø5,5 x Ø1)*
	1	M6007297	*Lip seal Ø17xØ30x7*
	1	M0612097	*Sealer Ø30xØ47x7*
4	1	A94161600	KIT EL HO Motor Clutch
			Shaft Motorgear HO
			Shaft GearMotor HO
			Hub GearMotor
	1	M0601402	*Dowel UNI EN ISO 8752:2000- Ø4x24*
	1	M6020097	*O-ring 19.1x1.6*
	1	S418620001	*Disconnect spring*
	1	S414050080	*Flange GearMotor Shaft HO*
	1	M6010303	*Key 8x5x40 UNI 7511*
5	1	A96015400	KIT EL Motor 12V 0,7kW
	1	A96015700	KIT EL Motor 24V 0,9kW
	1	A97707300	KIT EL Motor 48V 2kW
			Electric Motor
			Polarity motor sticker
			Screw stud M6x26
			Washer Ø6
			Nut M6 UNI5588
	1	M6014206	*Key DIN 6885 5x5x15*



A **Anti-seize**

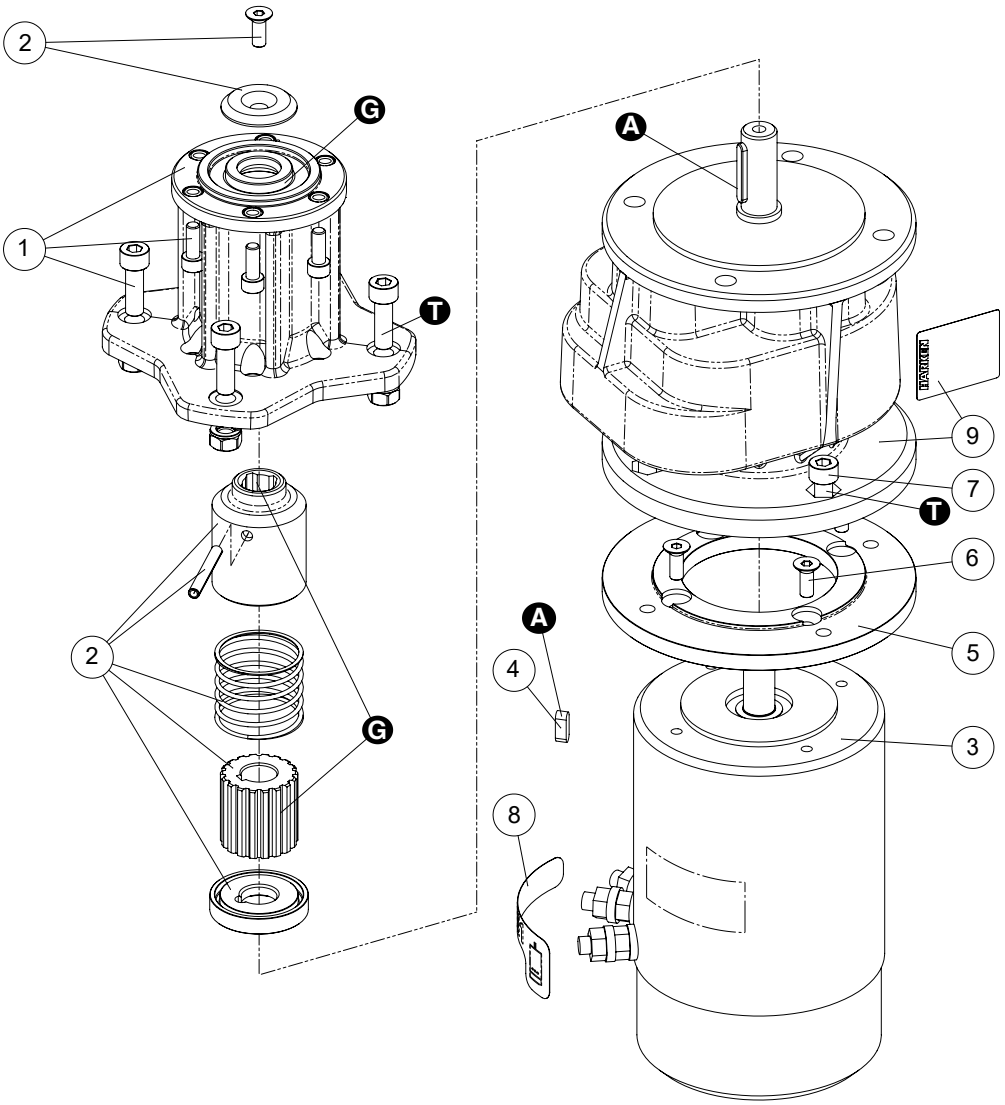
G **Harken® Grease**

T **Axial Threadlocker**

Vertical electric motor 12V / 24V / 48V

Pos.	Q.ty	Code	Description
1	1	A94150500	KIT EL VT Motor Flange
	1		Vertical Motorgear Flange
	1		Lip seal 17x30x7
	6		Seal Ø5,5 x Ø 1
	6	S415360003	*Screw M6x16 UNI EN ISO 5931:2003*
	4	M0606303	*Screw M8x25 UNI 5931*
	4	M0602903	*NUT M8 - UNI 5588 - A4*
	4	M0603103	*WASHER 8.4 U1751 DIN127 A4*
2	1	A94193700	KIT EL VT Motor Clutch
	1		*Connecting Coupling ø31.5*
	1		*Spring pin 5x40 DIN1481*
	1	S326490001	*Spring*
	1	S415030004	*Toothed coupling*
	1	S415040080	*Bushing*
	1	S329360080	*Washer*
	1	M0666603	*Screw M6x16 UNI 5933*

Pos.	Q.ty	Code	Description
3	1	G601070E	Electric motor 1.5 kW 12V
		G601060E	Electric motor 2kW 24V
		G603390E	Electric motor 2kW 48V
4	1	M6014206	Key DIN 6885 5x5x15
5	1	S717830052	Adaptation flange PAM90 B14 PAM71
6	4	M0666603	Screw M6x16 UNI 5933
7	4	M7745103	Socket head screw UNI 5931 M8x14 A4
8	1	S480730063	Sticker ISKRA motor
9	1	A93293700	KIT VT Gearbox (AS16F20.96)
	1		*Vertical WormBox 20.96 B5 B5 P71/63*
	1		*Sticker for gearbox*



A **Anti-seize**

G **Harken® Grease**

T **Axial Threadlocker**

Hydraulic motor

Pos.	Q.ty	Code	Description
1	1	G045942000Y	Hydraulic motor W46-60
2	1	S415000080	Hydraulic Motor Spacer
3	1	A94193200	KIT Clutch HY Motor W46-70
			Toothed coupling
			Connecting Coupling Ø31.5
	1	M0620401	*Spring pin 5x40 DIN1481*
	1	S415010080	*Bushing*
	1	S326490001	*Spring*
	1	S329360082	*Washer*
	1	M0635303	*Screw M8x16 UNI6109*

Pos.	Q.ty	Code	Description
4	1	A94149100	KIT HY Motor Flange W46-70
			Hydraulic Motorgear Flange
	6	S415360003	*Screw M6x16 UNI EN ISO 5931:2003*
			precote coating
	6	M6015697	*O-Ring Seal ORM 0055-10 (Ø5,5 x Ø1)*
	1	M6007297	*Lip seal Ø17xØ30x7*
	2	M0621503	*Washer D.13 U1751 DIN127*
	2	M0667103	*Screw M12x35 UNI5931*