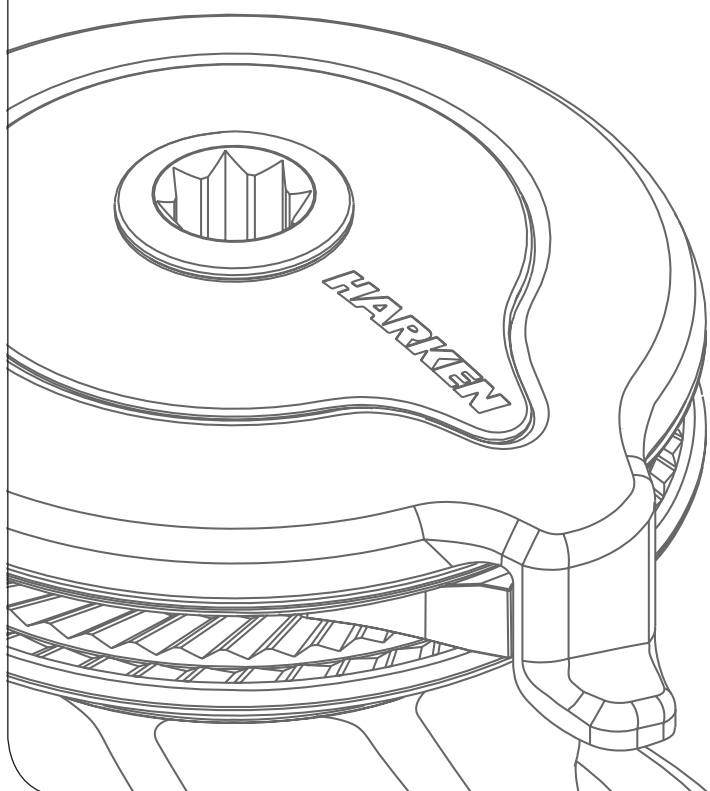


Installation and Maintenance Manual

MRW-02

Radial Winch 80.3 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	8,01 : 1	2,76 : 1
2nd speed	28,85 : 1	9,94 : 1
3rd speed	93,24 : 1	32,12 : 1

The theoretical power ratio does not take friction into account.

Weights

	ST A version	ST C version
Weight (Kg)	22,7	30,7

Versions: A = drum in anodised aluminium; C = drum in chrome bronze

Maximum working load

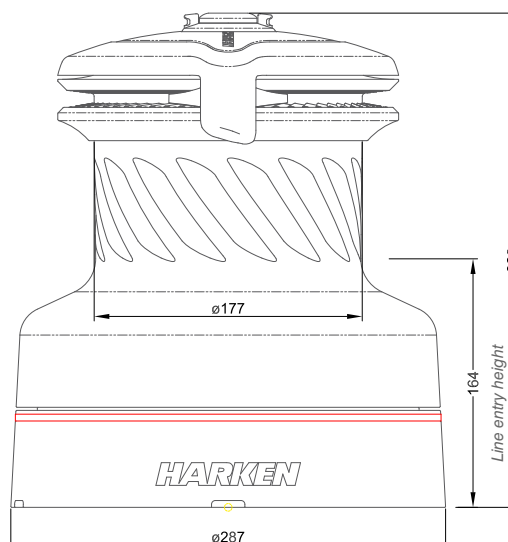


WARNING!

The maximum working load (MWL) for the 80.3 ST Radial Winch is 4500 Kg (9921 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.



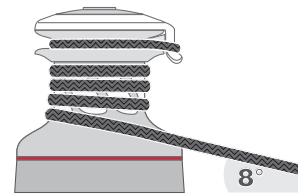
WARNING!

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!

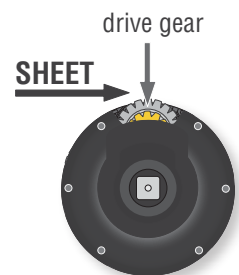
Verify the entry angle of the sheet. This must be 8° with tolerance of $\pm 2^\circ$, to avoid sheet overrides and damaging the winch or making the winch inoperable leading to loss of control of the boat which can lead to severe injury or death.



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.






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

Installation procedure

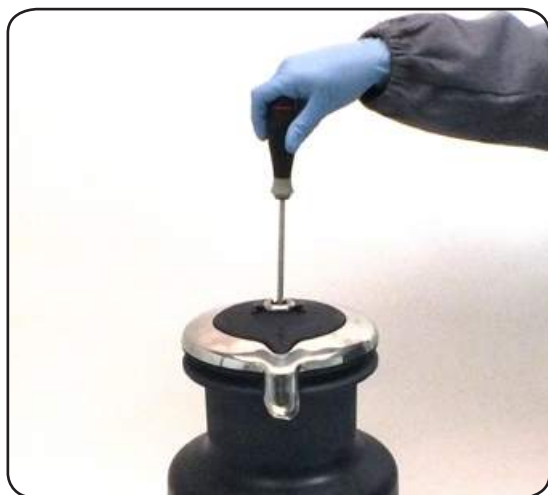
To install the winch you must remove the drum support and use Hexagon Head (HH) cap screws.

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.

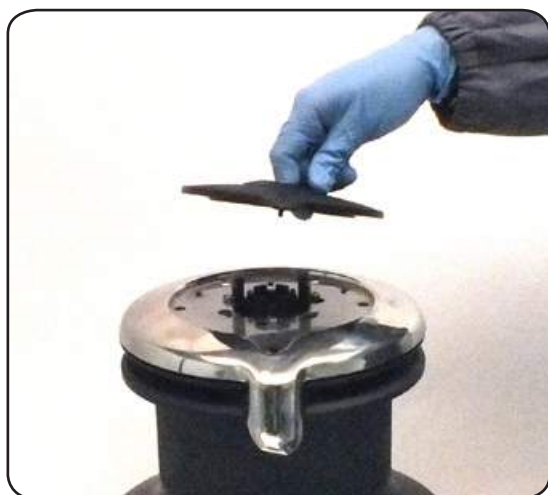
 Torque to apply when assembling



1. Unscrew the assy socket n°50



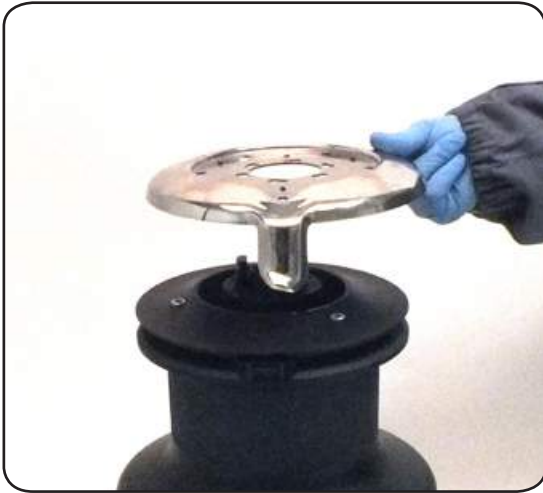
2. Slide off the assy socket n°49



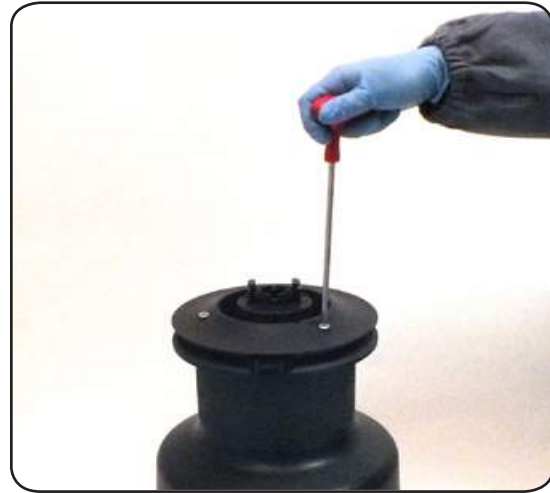
3. Remove the cover plate n°48



4. Unscrew the three screws n°43



5. Remove the self-tailing arm n°47 by rotating and lifting it



6. Unscrew the three screws n°44



7. Slide out the drum n°44



8. Unscrew the six screws n°23



9. Slide out the assy flange n°19



10. Slide out the assy command tube n°31



11. Slide out the roller bearings n°18



12. Unscrew the six screws n°22



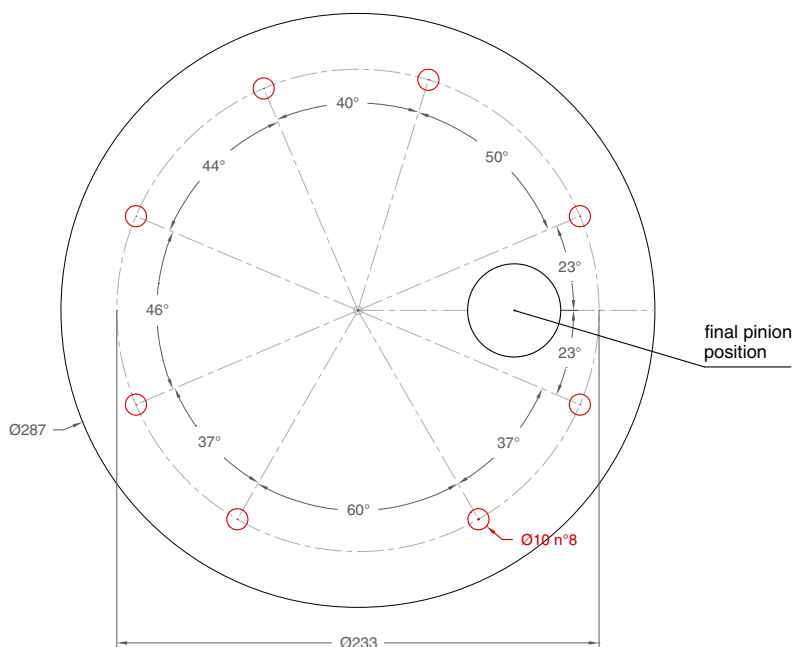
13. Slide out the drum support n°15

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



B. Remove the winch and drill the six 10 mm diameter holes.

C. Bolt the base of the winch to the deck using six M10 Socket Head (SH) bolts or six hexagonal headed M10 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. 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 six hex key
-  Rags

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

 Torque to apply when assembling

Carry out **Installation procedure** (page 4) as shown in the paragraph on winch installation and then do the following:



14. Slide out the assy clutch 3rd speed



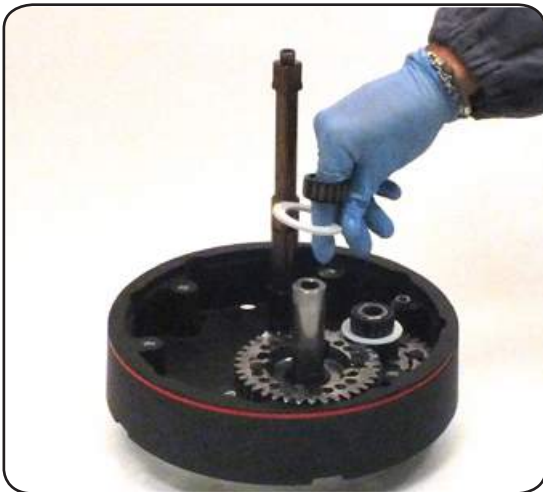
15. Slide out the assy ratchet hub 2nd speed



16. Remove the washer n°10



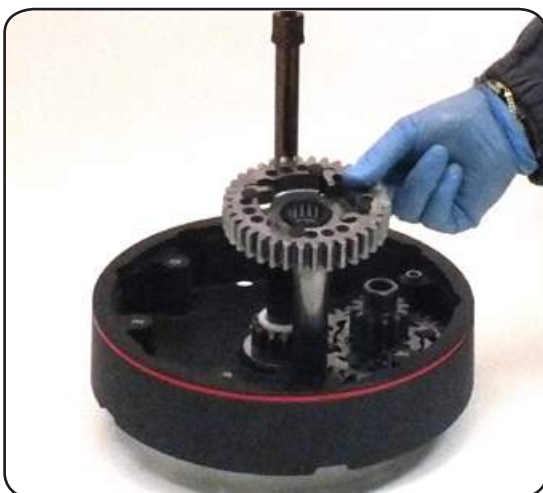
17. Slide out roller bearings n°2 and gear n°13



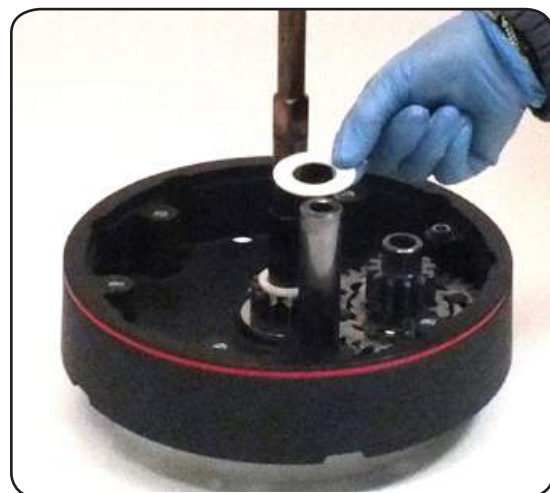
18. Remove the roller bearing n°2 and the washer n°14



19. Remove the roller bearing n°2 and the washer n°10



20. Remove the gear n°12



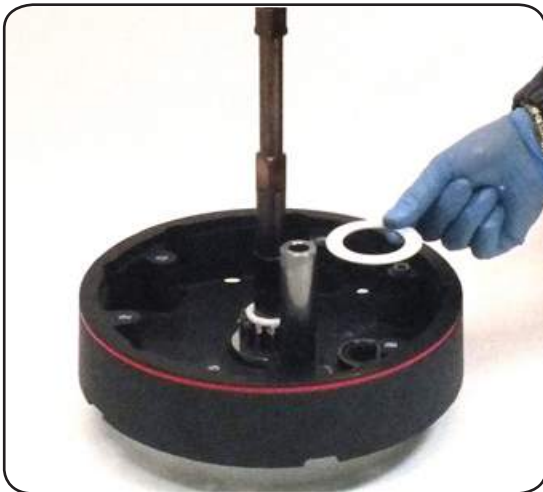
21. Remove the washer n°10



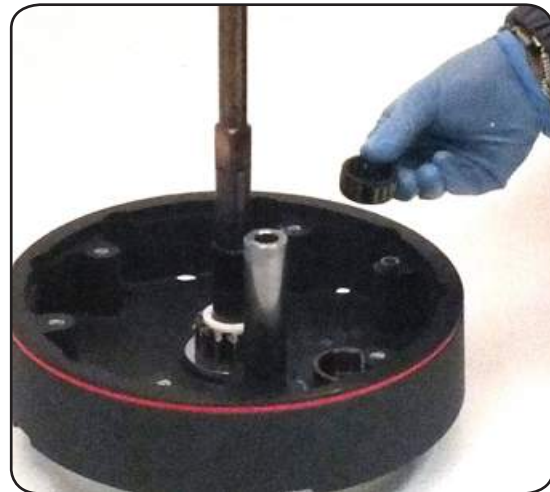
22. Slide out the gear assy n°9



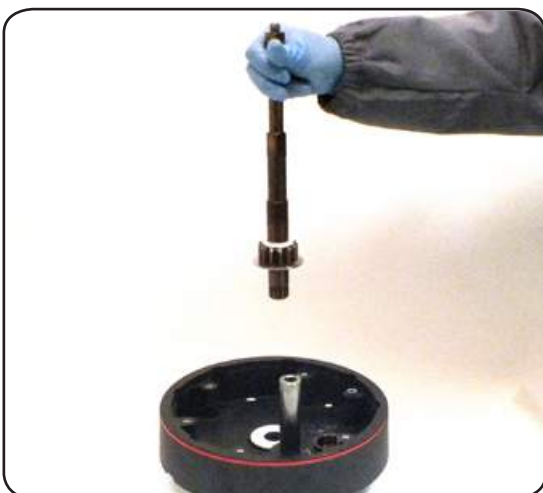
23. Remove the gear n°4



24. Remove the washer n°3



25. Remove the roller bearing n°2



26. Remove the central shaft n°25 and the washer n°27



27. Remove the washer n°26

Important: The plastic washer must be positioned in contact with the winch base.

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

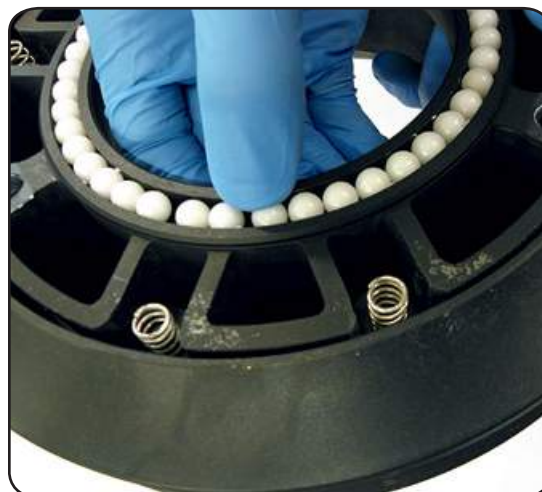


I. Unscrew the 3 screws n°44
($\approx 4\text{Nm}/35\text{ in-lb}$)



II. Remove the jaws

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.

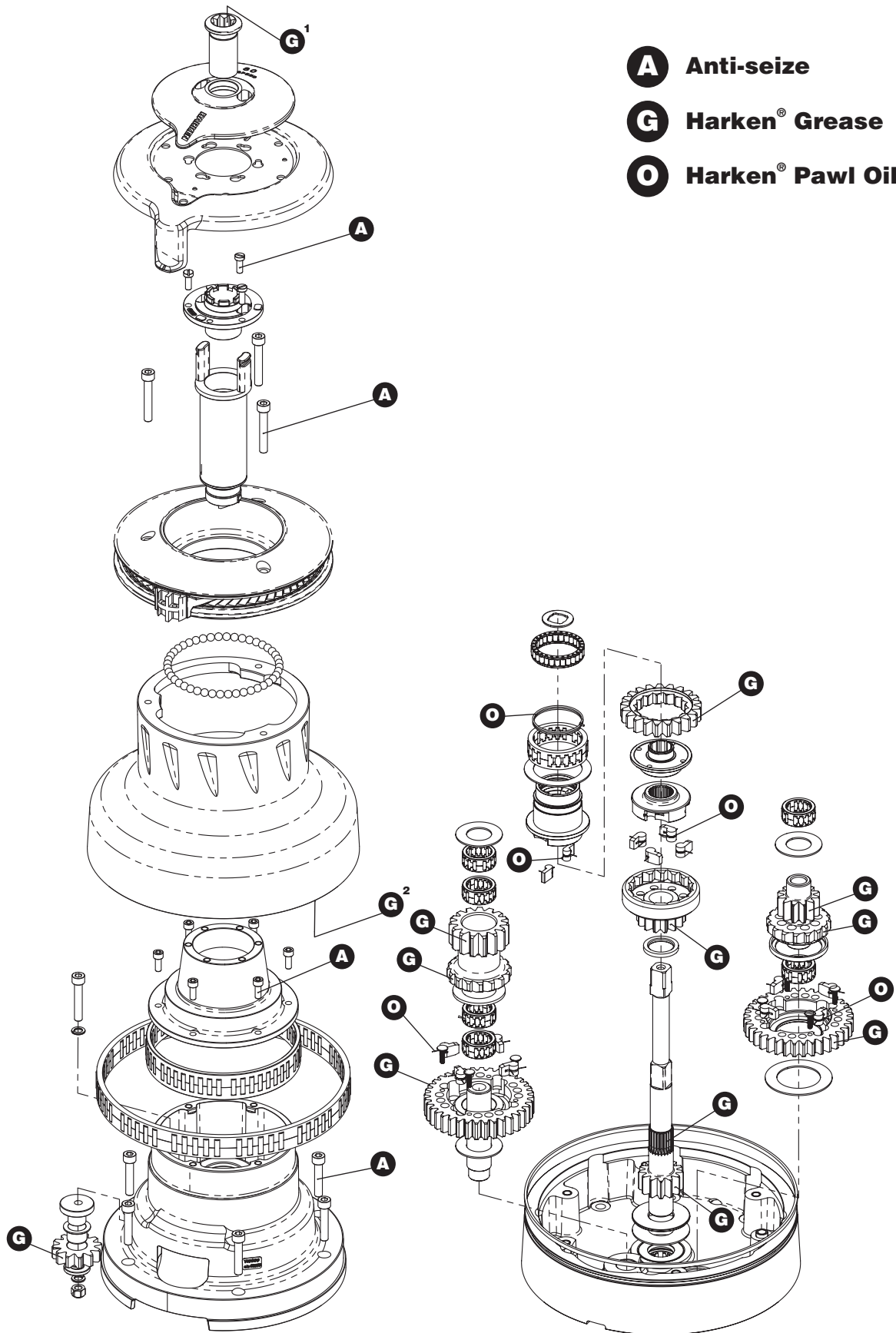
Carry out maintenance on components using the products listed below.

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



1. Apply Harken® grease on assy socket screw - 2. 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.

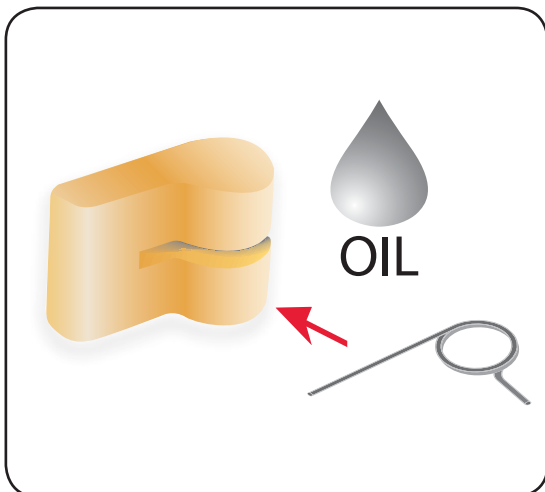


The icon ▲ on the Stripper Arm Housing indicates the Stripper Arm final position. Change the Stripper Arm Housing angle to modify the Stripper Arm final position.



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.



To assemble the clutch pin

Mount the spring with the pin pointing upwards so that it is wound in an anti-clockwise direction starting from the pin.

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

Harken® limited worldwide warranty

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

Ordering spare parts

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

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



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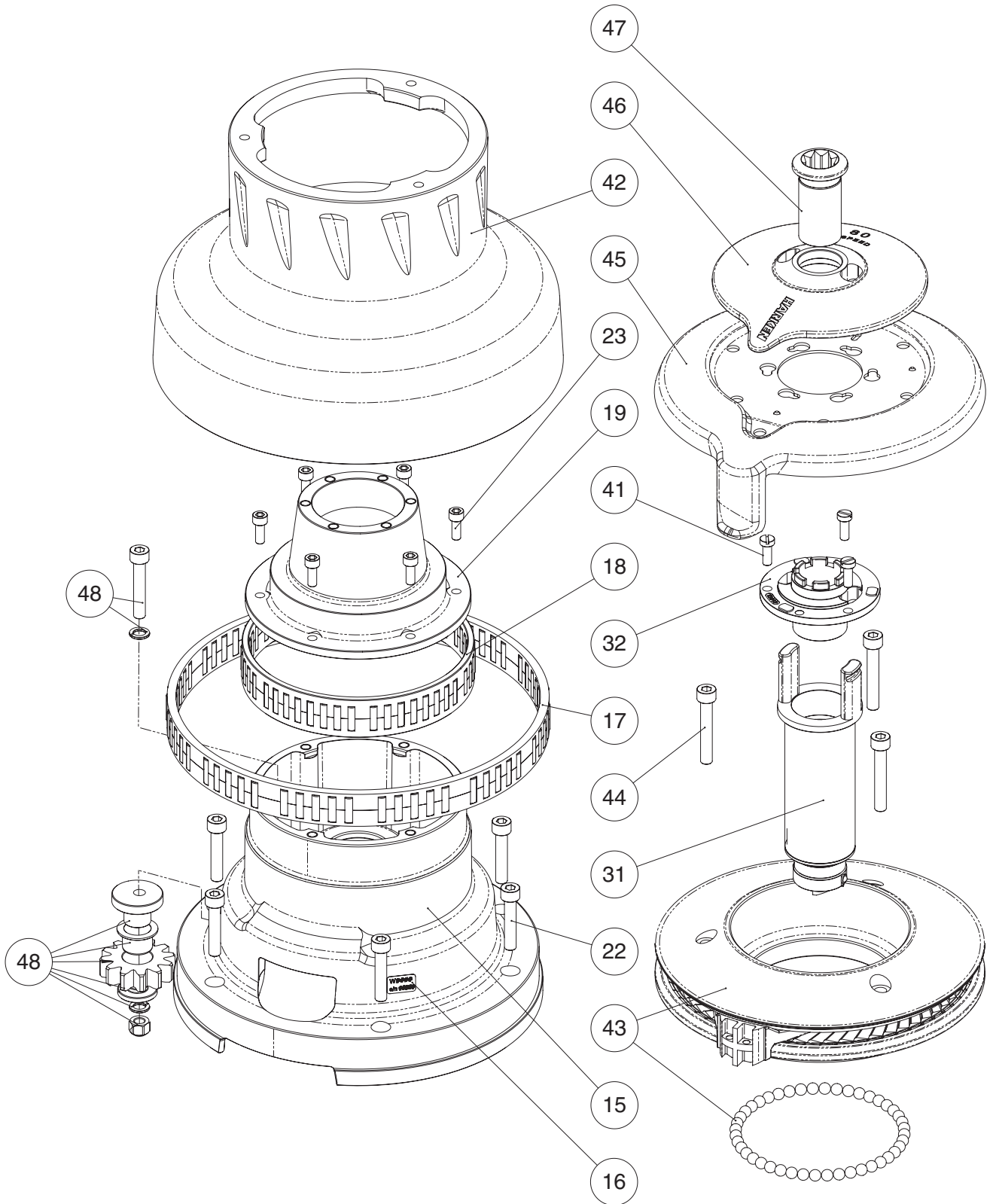
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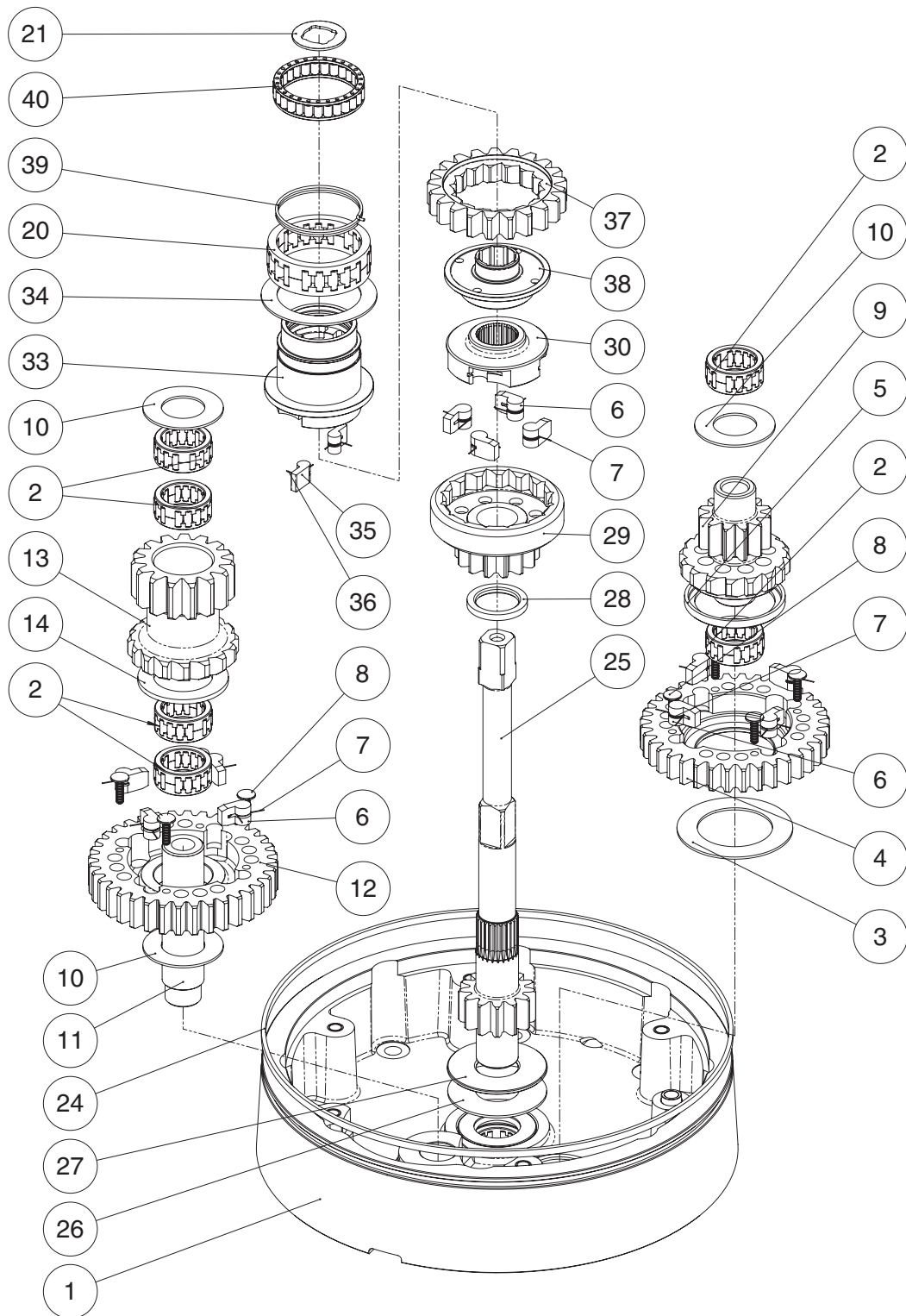
- **Tech Service**
Email: **technicalservice@harken.com**
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Tel: **(262) 691-3320**
Email: **customerservice@harken.com**

Exploded view

Radial Winch 80.3 STA, STC



Radial Winch 80.3 STA, STC



Parts List

Radial Winch 80.3 STA

A= drum in anodised aluminium

Pos.	Q.ty	Code	Description	Pos.	Q.ty	Code	Description
1	1	A94158200	Base assembly	28	1	S405860080	Spacer
	1	A74506900	Base winch 80	29	1	A94055700	Assy Pinion Z14
			Bearing Ø25xØ35x15		1	S455420081	Pinion Z14
			Plug for instrumented base Ø13x4				Bushing Ø24,5xØ28,5x27
			Heli-coil M8x10	30	1	S405620004	hub 2nd Ratchet
	1	S476030004	Centering bushing Ø12	31	1	A94159500	Assy Clutch 3rd speed W80
			Heli-coil M10x10				Assy command tube W80
			Bush gear shaft Ø32xØ39x22	1	1	S415420004	Dog Clutch 3 speed
			Bushing Ø39xØ32x22	2	2	M6009463	Spring loaded ball plunger Ø6
	1	M0620697	Seal Ø25xØ47x7	32	1	S4155700A0	Stripper arm support
			Winch Product Sticker**	33	1	S415400004	Pawls Carrier 3 speed
2	6	A74506900	Bearing Ø25xØ35x15	34	1	S495120080	Washer Ø50,2xØ69x1,5
3	1	S434170081	Washer Ø69xØ45x1,5	35	2	S000080003	Pawl Ø8*
4	1	S423870004	Gear Z=36 - Winch 990 PR 80	36	2	S000380001	Pawl Spring Ø8*
5	1	S402260041	Bushing 4th. gear pinion	37	1	S417990041	Ratchet Gear Z21xN4
6	12	S392440004	Pawl Ø10*	38	1	S418000080	Flange 1st speed W80
7	12	S285040001	Pawl Spring*	39	1	S377510001	Clutch Spring
8	8	HFS753	plug-pawl retainer	40	1	A73422600	Bearing 45x55x12
9	1	S405580004	Pinion 3rd speed	41	3	M0601903	Screw M6x16 UNI1207
10	3	S434110081	Washer Ø48xØ26x1,5	42	1	A74159000	Drum assembly W80
11	1	S405830004	Shaft -FD pinion	43	1	A94159200	Assy Jaws Winch 80
12	1	S405550004	Gear Z36 - Winch 990				Upper Jaw ST W80
13	1	S405540004	Final Drive Pinion				Lower Jaw ST W80
14	1	S438860081	Washer Ø54xØ35,2x3		6	S385970001	SPRING
15	1	A94158700	Assy Housing W80		1	S6876800C0	Peeler winch 80
			Housing W80-1000		44	M0610280	Ball 5/16"
			Bushing 39x32x22	44	3	M0624703	Screw M8x50 UNI5931
			Heli-coil M6x9	45	1	A94159901	Kit stripper arm
16			Winch Serial Number Sticker				Stripper-arm W80
17	1	A74059500	Roller Bearing lower 990				Pin
18	1	A74158900	Roller bearing Ø148x160x30	46	1	S4180100B7	Cover W80.3 ST
19	1	A94159600	Assy flange	47	1	A94154700	Assy Socket 3speed
			Stripper arm support				Socket Handle 3 speed
			Heli-coil M6x9		1	S415130085	Washer Ø7,7xØ25x5,8
20	1	A73129200	ROLLER BEARING 50-62-20 ERTA P		1	M0614303	Screw M8x20 UNI 6109
21	1	S413880002	Washer Ø17,2xØ32x1,5	48	1	A96726500	W80-1000 3 speed kit
22	6	M0624603	Screw M8x40 UNI5931		1	S672650004	winch 80-1000 3 Speed Pin
23	6	M0635103	Socket head screw M6x16 UNI 5931		1	S414550081	Bushing Ø22xØ25x15,5
24	1	S386550097	Red line		1	S672840080	Washer 3 speed W80-1000
25	1	S416400004	Shaft Z13 W80		1	S417980004	Idler Gear Z12
26	1	S434160081	Washer Ø59xØ26x1,5		1	M0679903	Nut selflock UNI 7473:1975 - M8 - A4
27	1	S402050004	Washer Ø25,2xØ61x2,4		2	M0603103	WASHER 8.4 U1751 DIN127 A4
					1	M0632403	Screw M8x45 UNI 5931

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

**Winch product sticker



Radial Winch 80.3 STC

C=drum in chrome bronze

Pos.	Q.ty	Code	Description	Pos.	Q.ty	Code	Description
1	1	A94158200	Base assembly	28	1	S405860080	Spacer
	1	A74506900	Base winch 80	29	1	A94055700	Assy Pinion Z14
	1		Bearing Ø25xØ35x15		1	S455420081	Pinion Z14
	1	S476030004	Plug for instrumented base Ø13x4				Bushing Ø24,5xØ28,5x27
	1		Heli-coil M8x10	30	1	S405620004	Hub 2nd Ratchet
	1	M0620697	Centering bushing Ø12	31	1	A94159500	Assy Clutch 3rd speed W80
	1		Heli-coil M10x10		1	S415420004	Assy command tube W80
	1		Bush gear shaft Ø32xØ39x22		2	M6009463	Dog Clutch 3 speed
	1		Bushing Ø39xØ32x22				Spring loaded ball plunger Ø6
	1		Seal Ø25xØ47x7	32	1	S4155700A0	Stripper arm support
	1		Winch Product Sticker**	33	1	S415400004	Pawls Carrier 3 speed
2	6	A74506900	Bearing Ø25xØ35x15	34	1	S495120080	Washer Ø50,2xØ69x1,5
3	1	S434170081	Washer Ø69xØ45x1,5	35	2	S000080003	Pawl Ø8*
4	1	S423870004	Gear Z=36 - Winch 990 PR 80	36	2	S000380001	Pawl Spring Ø8*
5	1	S402260041	Bushing 4th. gear pinion	37	1	S417990041	Ratchet Gear Z21xN4
6	12	S392440004	Pawl Ø10*	38	1	S418000080	Flange 1st speed W80
7	12	S285040001	Pawl Spring*	39	1	S377510001	Clutch Spring
8	8	HFS753	plug-pawl retainer	40	1	A73422600	Bearing 45x55x12
9	1	S405580004	Pinion 3rd speed	41	3	M0601903	Screw M6x16 UNI1207
10	3	S434110081	Washer 48x26x1,5	42	1	A74159100	Drum assembly W80 C
11	1	S405830004	Shaft -FD pinion	43	1	A94159200	Assy Jaws Winch 80
12	1	S405550004	Gear Z36 - Winch 990				Upper Jaw ST W80
13	1	S405540004	Final Drive Pinion				Lower Jaw ST W80
14	1	S438860081	Washer Ø54xØ35,2x3				SPRING
15	1	A94158700	Assy Housing W80				Peeler winch 80
	1		Housing W80-1000				Ball 5/16"
	1		Bushing 39x32x22	44	3	M0624703	Screw M8x50 UNI5931
	1		Heli-coil M6x9	45	1	A94159901	Kit stripper arm
16			Winch Serial Number Sticker				Stripper-arm W80
17	1	A74059500	Roller Bearing lower 990				Pin
18	1	A74158900	Roller bearing Ø148x160x30	46	1	S4180100B7	Cover W80.3 ST
19	1	A94159600	Assy flange	47	1	A94154700	Assy Socket 3speed
	1		Stripper arm support				Socket Handle 3 speed
	1		Heli-coil M6x9				Washer Ø7,7xØ25x5,8
20	1	A73129200	ROLLER BEARING 50-62-20 ERTA P				Screw M8x20 UNI 6109
21	1	S413880002	Washer Ø17,2xØ32x1,5	48	1	A96726500	W80-1000 3 speed kit
22	6	M0624603	Screw M8x40 UNI5931				winch 80-1000 3 Speed Pin
23	6	M0635103	Socket head screw M6x16 UNI 5931				Bushing Ø22xØ25x15,5
24	1	S386550097	Red line				Washer 3 speed W80-1000
25	1	S416400004	Shaft Z13 W80				Idler Gear Z12
26	1	S434160081	Washer Ø59xØ26x1,5				Nut selflock UNI 7473:1975 - M8 - A4
27	1	S402050004	Washer Ø25,2xØ61x2,4				WASHER 8.4 U1751 DIN127 A4
							Screw M8x45 UNI 5931

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

**Winch product sticker

