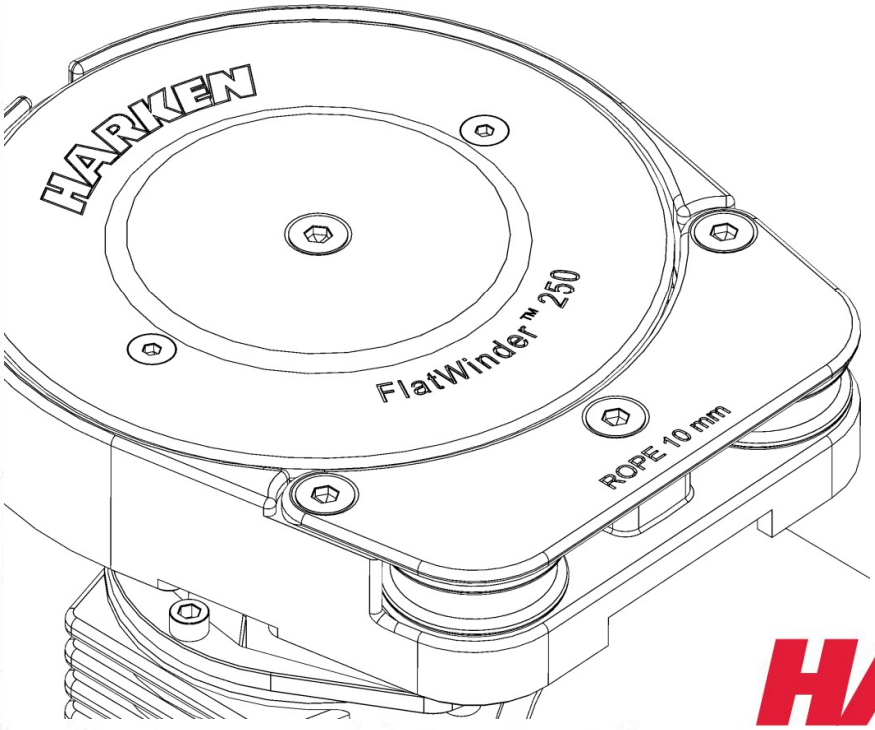
Installation and Maintenance Manual

MFW-02

FlatWinder™ 250 - 500



HARKEN®

Glossary

Intended use – specific and proper use of the winch for which it is designed

Improper use – use of the device in a different way from that indicated in the instructions for use specified in this manual

Qualified operator – persons who have attended specialisation and training about the use of the device

User – persons who use the winch regularly

WARNING!
this denotes mandatory actions by the user; without these actions, the user is subjected to injury and the device can be seriously damaged

DANGER!
this denotes the existence of the potential danger, which could cause injury or damage if the information or instructions are not followed

NOTE! this denotes important information concerning the device

Safety Information

WARNING! Read this manual carefully and fully understood before using the system to avoid personal injury or property damage during system operation.

- Install and use the winch only as described in the technical information supplied.
- Improper use can cause severe harms to users, equipment and the boat.
- This information is DESTINED EXCLUSIVELY for qualified operators.
- Installation of the winch by personnel who are not experts may cause serious damage to the winch and the boat.
- Never substitute any winch part with one that is not original. Even though they look similar and are both made by Harken®, the non-original part may not be suitable and the warranty will be invalidated.
- Do not apply to the winch loads greater than the MWL (Maximum Working Load).
- Wear suitable clothing when using the winch, to avoid loose ends of fabric becoming entangled in the winch.
- If the winch is powered by an electric motor:
  - Make sure the power is switched off before installing or carrying out maintenance on the winch.
- If the winch is powered by a hydraulic motor:
  - Do not operate the hydraulic motor during installation or maintenance
  - Do not let the oil in the system come into contact with your eyes or skin.
- Harken® cannot be responsible for damage or injury resulting from unsafe product use, lack of maintenance or incorrect product and /or system installation or operation.
- This manual is an integral part of the device and aims to provide all the information needed for its safe and correct use and for proper maintenance
- This manual gives technical information on winch installation and maintenance, including disassembling and reassembling.
- Installation, disassembling and reassembling of the winch by personnel who are not experts may cause serious damage to users and those in the proximity of the winch.
- 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. For any doubts, questions or comments contact the Harken distributors nearest to you, Special Project assistance, or contact the Harken Italy Technical Service by e-mail: techservice@harken.it
- See www.harken.com for additional safety information.

General advice

Intended use

Harken winches are designed and manufactured for a use on sailing boats to control sheets, halyards and related sail and rig systems. For any other usage, contact the Harken Italy Technical Service by e-mail: techservice@harken.it

Improper use

The Harken winch must not be used for purposes different from those outlined in “Intended use” chapter, or for purposes not mentioned in this manual or different from those mentioned.
The Harken winch must not be used if unauthorized modifications or interventions have been carried out.
Do not use the winch for hauling, mooring the boat or weighing the anchor.
Do not take turns round the base of the winch drum.
Do not use the winch to turn a line to another winch (cross-sheeting).

Introduction

This manual gives technical information on FlatWinder™ installation and maintenance, including disassembling and reassembling.
This information is DESTINED EXCLUSIVELY for specialised personnel or expert users.
Installation, disassembling and reassembling of the FlatWinder™ by personnel who are not experts may cause serious damage to users and those in the vicinity of the FlatWinder™.
Harken® accepts no responsibility for defective installation or reassembly of its FlatWinder™.
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

Rope diameter Ø10

Performance data

	FlatWinder™ 250		FlatWinder™ 500	
Voltage	12V	24V	12V	24V
max load (kg)	250	250	500	500
Line speed (m/min)**	35	35	26	32
Current absorption at max load (A)	210	140	320	160

***Line speed is measured with no load*

Weight

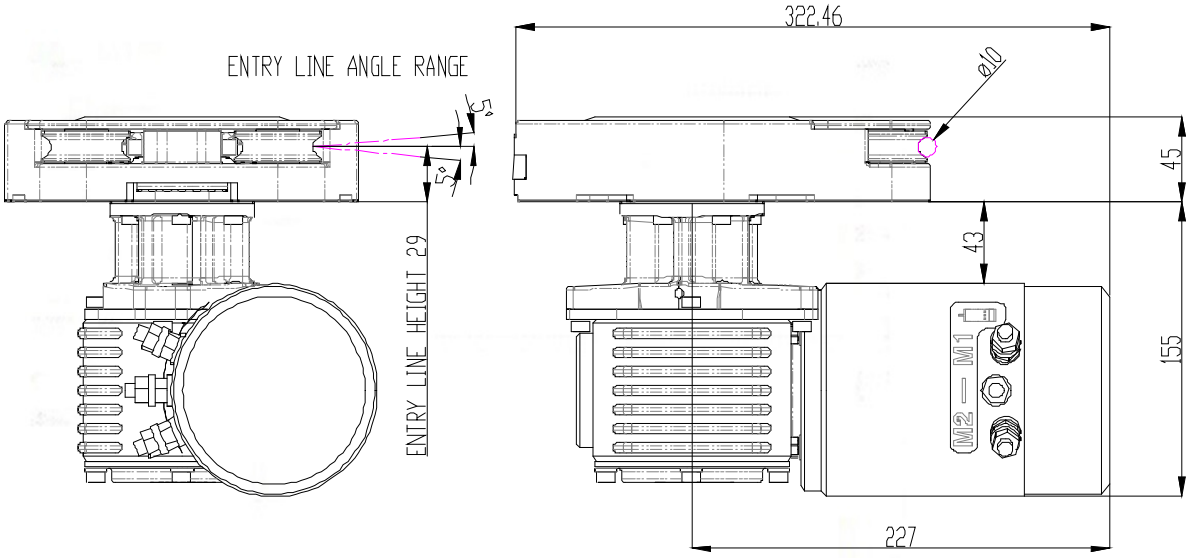
	FW250E A	FW500E A
weight (kg)	12.5	22.5

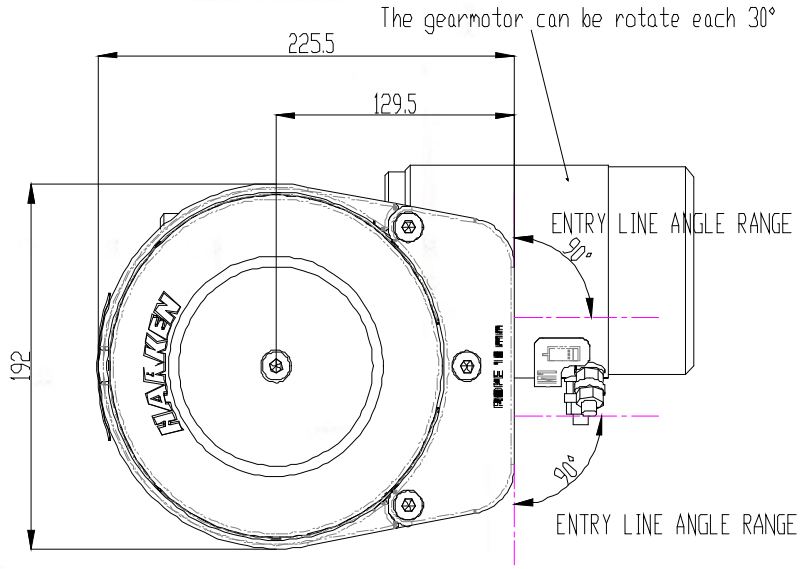
A = base and pulley anodised aluminum

Maximum working load

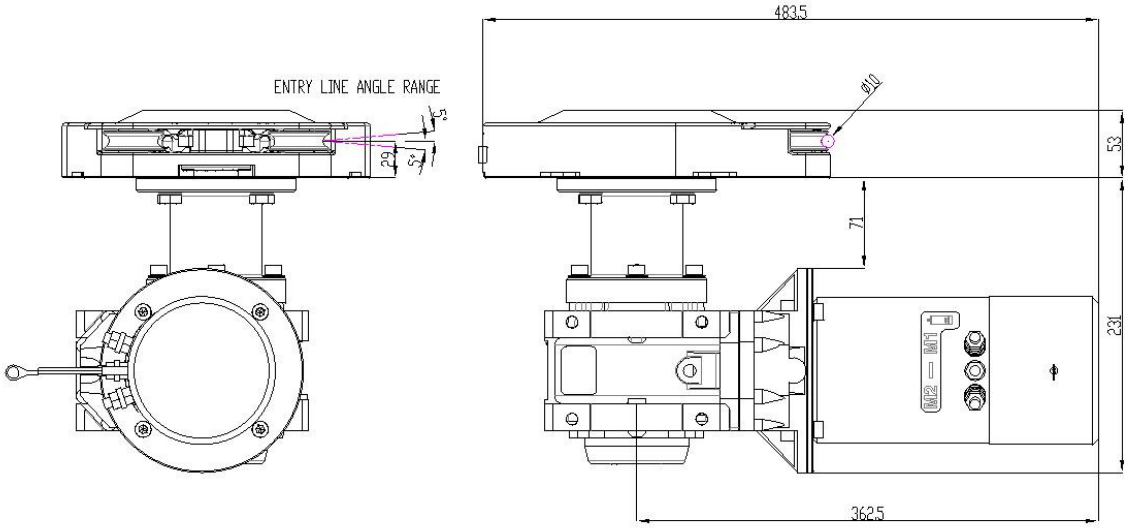
WARNING!
The maximum working load (MWL) for the FlatWinder™250 is 250 Kg (551 lb) and for the FlatWinder™500 is 500 Kg (1102 lb)
Subjecting the FlatWinder™ to loads above the maximum working load can cause the FlatWinder™ to fail or pull off the deck suddenly and unexpectedly during high loads causing severe injury or death.

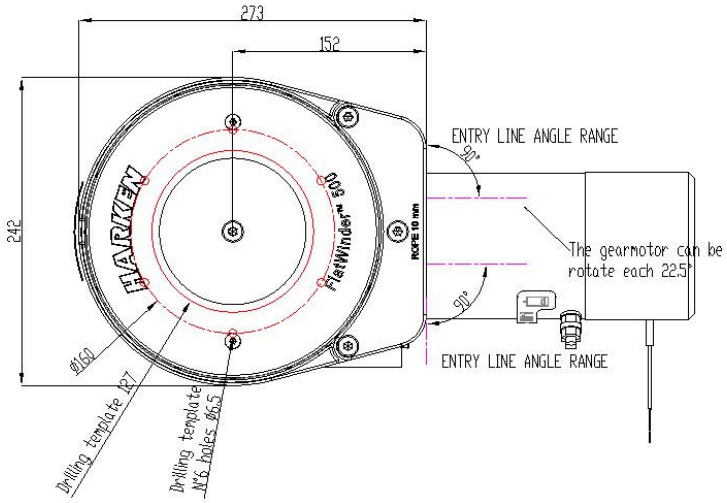
Outline FlatWinder™250



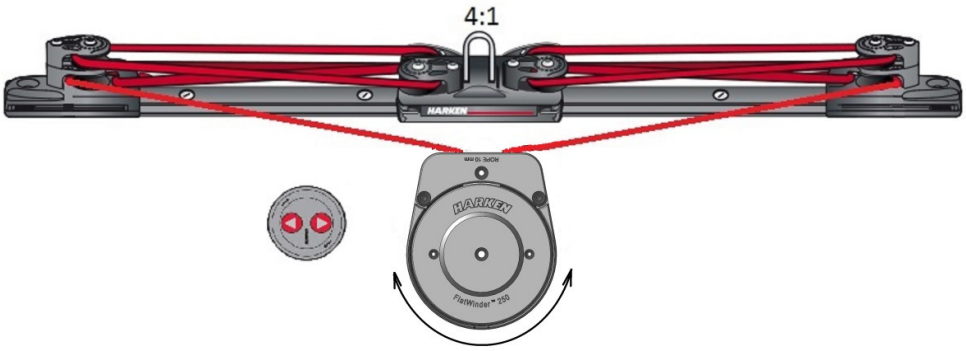


Outline FlatWinder™500





Typical traveler lay-out



Depending of traveler load can be used 2:1, 3:1 or 4:1 purchase

Installation

The FlatWinder™ 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 FlatWinder™.
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 FlatWinder™ 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 FlatWinder™ or for an incorrect choice of mounting screws.

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

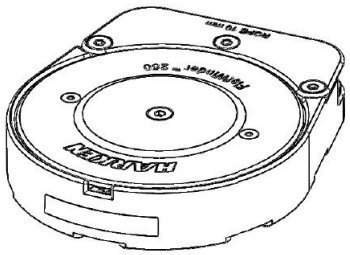
WARNING!
Failure to use the correct number and type of mounting fasteners or failure to ensure the correct deck strength can result in the FlatWinder™ pulling off the deck suddenly and unexpectedly during high loads causing severe injury or death.

WARNING!
Verify the entry angle of the sheet. This must follow the indication on the outline drawing to avoid overrides or damaging the FlatWinder™.

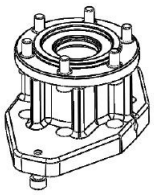
After correctly positioning the unit, check that the gearmotor, electrical components and wiring can be housed below decks.
To help find the optimal compromise, remember that, to make the installation of the gearmotor easier, it can be coupled to the FlatWinder™ in different positions (rotate each 30°).

Once you have decided the correct mounting position for the FlatWinder™ on the deck and checked the space available below deck, proceed with the installation.

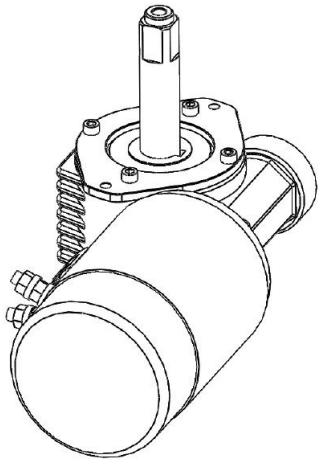
Parts included on the FatWInder™ 250:



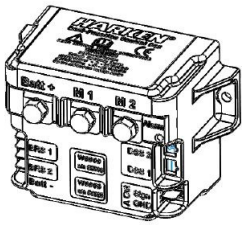
FlatWinder™ 250



Flange

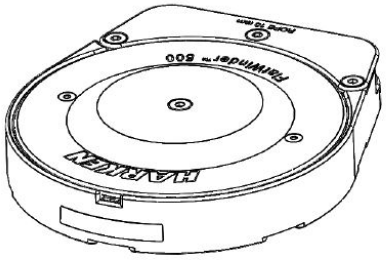


Gearmotor

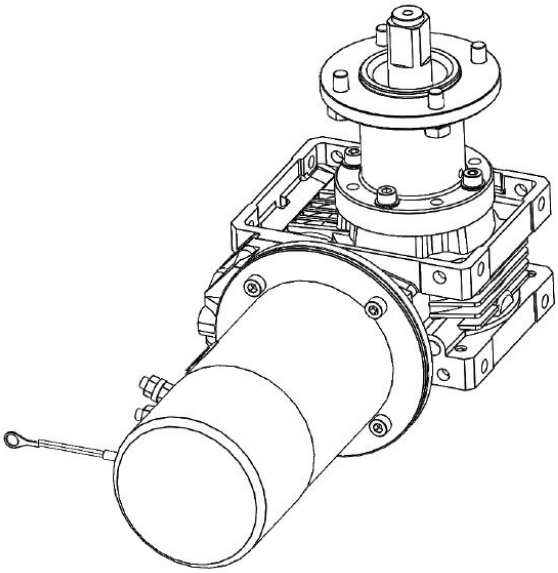


Dual function control box

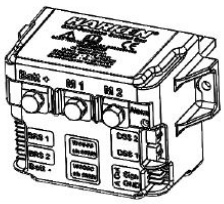
Parts included on the FatWinder™ 500:



FlatWinder™ 500



Gearmotor



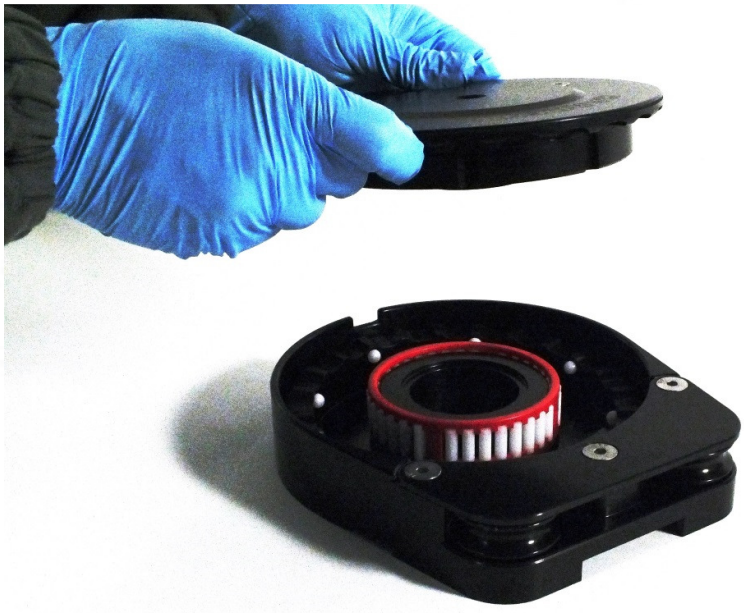
Dual function control box

FlatWinder™ installation procedure

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

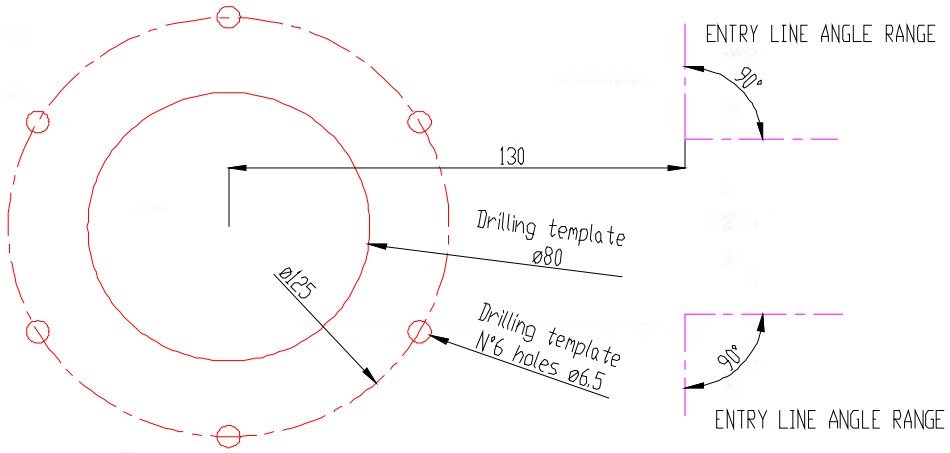
NOTICE
Before drilling the deck, check the space available below deck for the flange and the motor

A. Remove the upper jaw (no tool require)

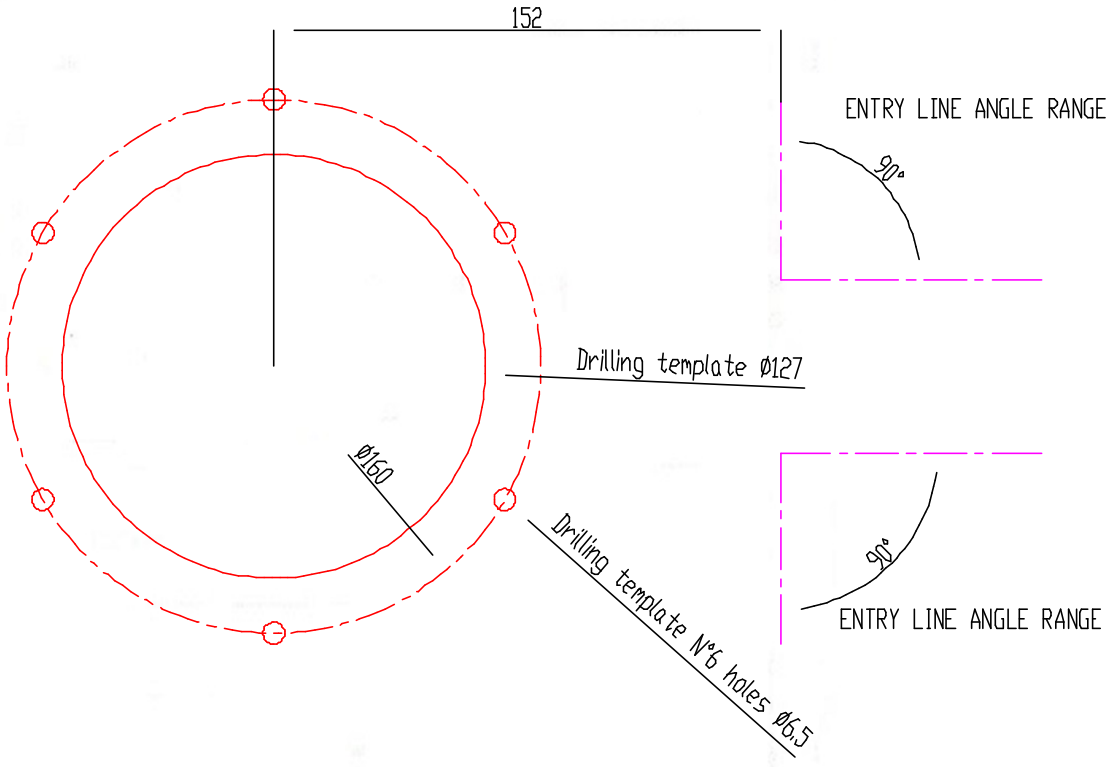


B. Position the base of the FlatWinder™ on the deck and mark the position of the holes or use the drilling cut-out template at the point where you have decided to place the FlatWinder™.

Below is a reduced scale diagram for FlatWinder™ 250.



Below is a reduced scale diagram for FlatWinder™ 500.



C. Remove the FlatWinder™ base and drill following the drilling template indication.

D. Bolt the base of the FlatWinder™ to the deck using six M6 bolts, Socket Head or Hexagonal Headed (not supplied by Harken®), correctly chosen for the thickness and type of the boat deck. Consult the yard that built the boat in case of doubt.

WARNING!
To install the FlatWinder™ 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 FlatWinder™ pulling off deck suddenly and unexpectedly during high loads causing severe injury or death.

NOTICE
To mount FlatWinder™ on the deck, do not use countersunk bolts.

E.Fill the mounting holes and central hole with a suitable marine sealant.

F. Remove the excess adhesive/sealant from the base drainage channels and flange interface surface

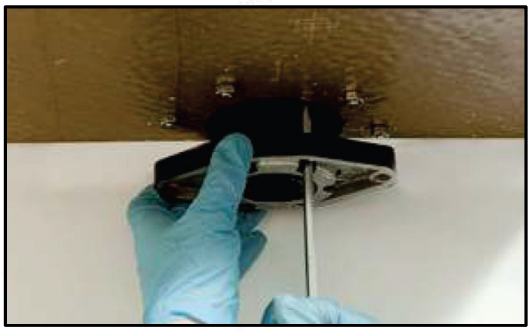
Once you have installed the base of the FlatWinder™ on the deck, proceed with motor installation. The motor can be coupled to the FlatWinder™ in different positions. Check the space available below deck and choose the suitable position.

Tools needed for FlatWInder™ 250:

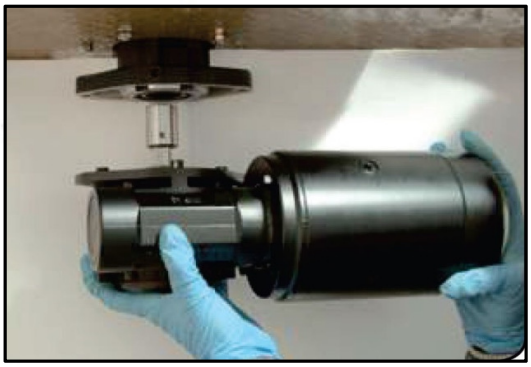
A number five hex key

Two number thirteen wrenches

G. Position the flange



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



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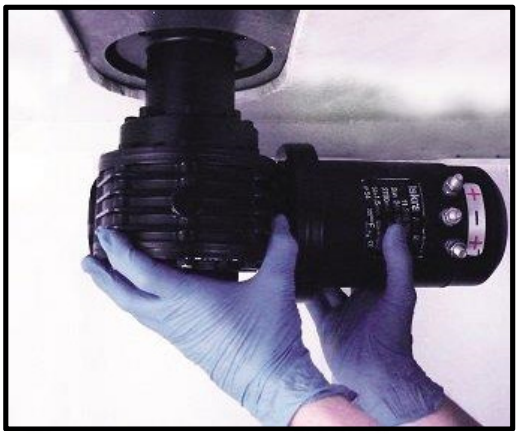
Tools needed for FlatWinder™ 500:

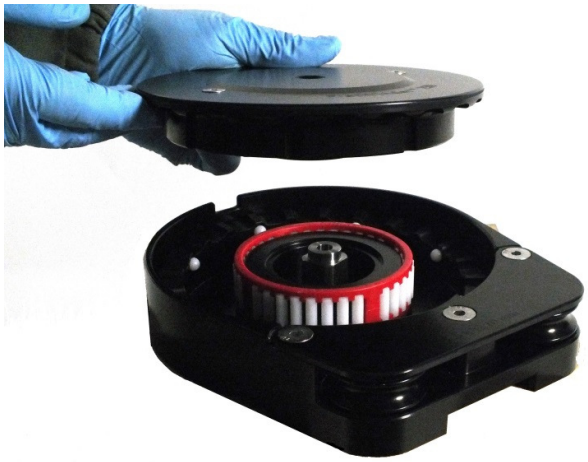
One number seventeen, two number thirteen wrenches

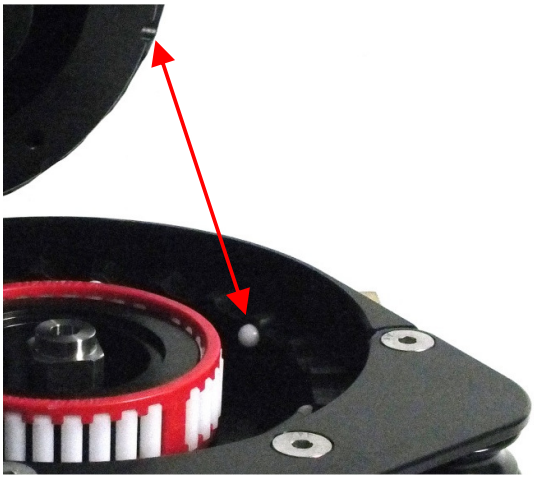


I. Position the reduction gear and motor

L. Tighten the four M10 screws (20Nm/177 in-lb)

M. Insert the upper jaw, align the white balls on the lower jaw with the grooves on the upper jaw





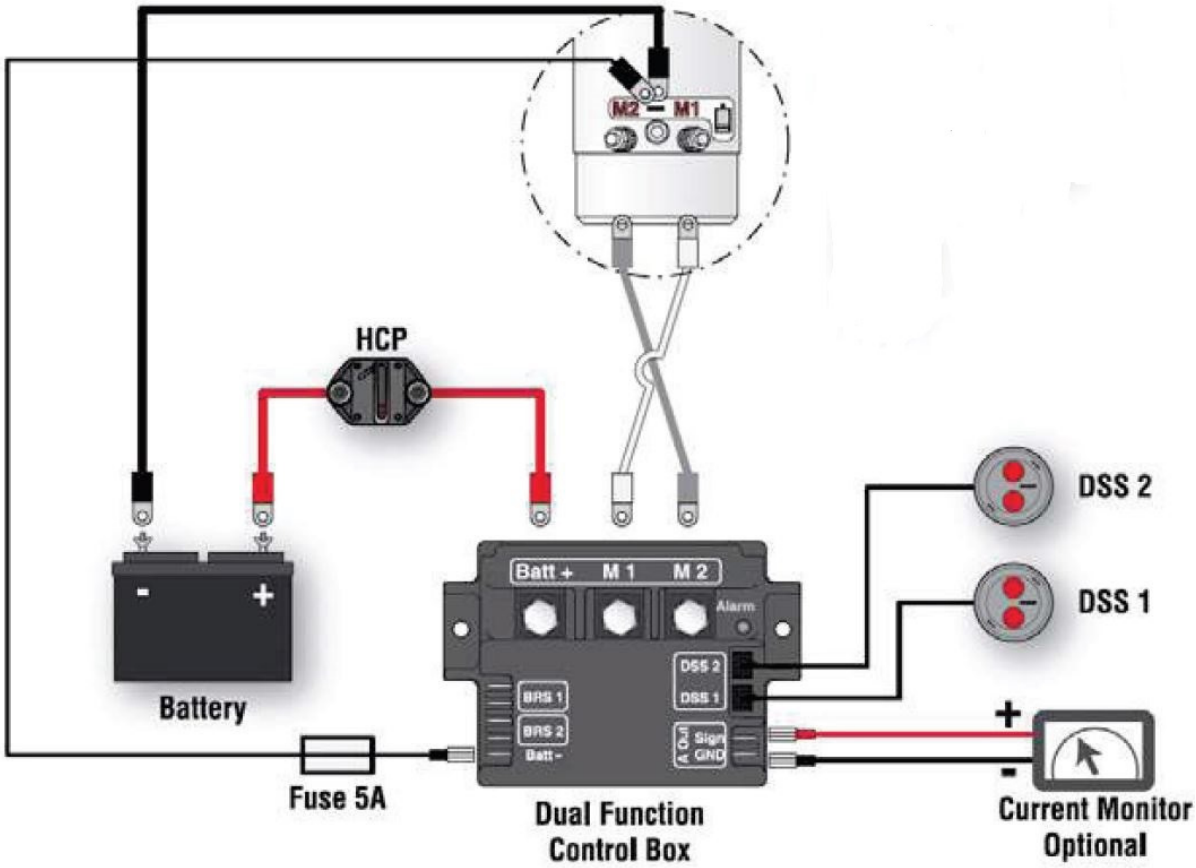
N. Tighten the central M8 screw (8Nm/71 in-lb)

Electric wiring diagrams

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

For more information, refer to the Dual Function Control Box manual.

Refer to the following diagrams for the electric wiring:



WARNING!
Read the Dual Function Control Box manual carefully before installing and using the device.

NOTICE
For other installations, refer to the Dual Function Control Box manual.

NOTICE
In case the direction of movement is not congruent with the DSS arrow invert the M1-M2 cable on the motor or on the Dual Function Control Box.

Fasten the Dual Function Control Box containing solenoids to bulkhead or wall: refer to the Dual Function Control Box manual. Install remote circuit breaker between power supply and Dual Function Control Box. Locate push-buttons on deck in a convenient spot for easy FlatWinder™ operation: refer to the Digital System Switch manual.

Refer to the following chart for wire size:

Total distance between FlatWinder™ and battery

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
12 V	2	32	0	50	00	70	000	95
24V	5	16	3	25	2	35	0	50

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. Be careful not to turn 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

Rope installation

The rope diameter should be 10mm and the cover characteristic should have high wearing resistance.
Insert the rope between the pulley and the peeler, turn the FlatWinder™ activating the electric motor on the proper direction.

WARNING!
Don't insert rope bigger than 10mm or rope with splice using the previous procedure, in case the rope have a splice should be remove the upper jaw and then engage

WARNING!
Keep far fingers or clothing when starting the engine to avoid to be entangled into the pulley

WARNING
In case of close loop line should be check regularly the tension of the rope, depending of temperature and humidity fiber rope can shrink a lot causing overtension on the system

Maintenance

Washing

FlatWinder™ 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 FlatWinder™ and especially anodised, chrome plated or plastic parts.
Do not use solvents, polishes or abrasive pastes on the logos or stickers on the FlatWinder™.
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 FlatWinder™ are not obstructed so that water does not collect.

Maintenance table

FlatWinder™ 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 FlatWinder™ with a part that is not original.

WARNING!
Periodic maintenance must be carried out regularly. Lack of adequate maintenance shortens the life of the FlatWinder™, can cause serious injury and also invalidate the FlatWinder™ warranty.
Installation and maintenance of FlatWinder™ 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 FlatWinder™.

In the case of doubt contact Harken® Tech Service at techservice@harken.it

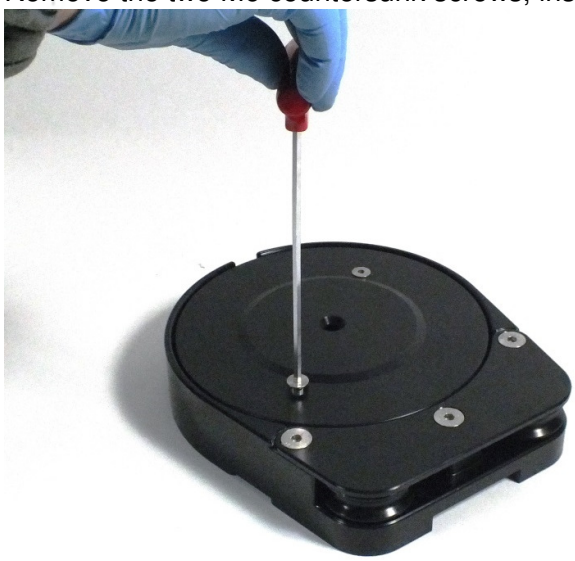
Disassembly procedure

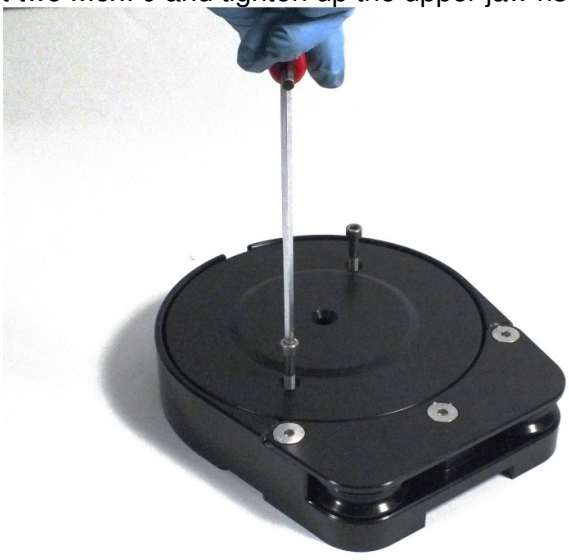
Tools needed

A number four hex key
A number five hex key

Remove the central M8 screw

NOTICE
To remove the upper jaw can be used the two top holes M6 as an extractor:
Remove the two M6 countersunk screws, insert two M6x70 and tighten up the upper jaw rise.





Harken® limited worldwide warranty

The Harken winch is covered by a warranty: if during the warranty period the winch proves defective or suffers breakages, as indicated in the warranty, the manufacturer, after checking the device, will repair or replace the defective components.

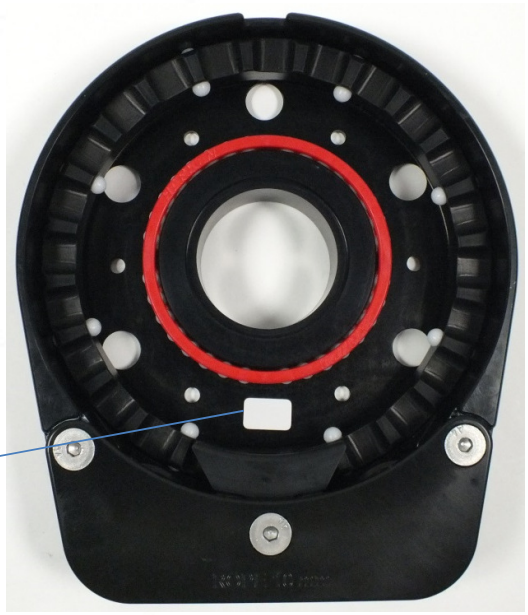
NOTE!
Modifications carried out by the user, without explicit written authorization from the manufacturer, will invalidate the warranty and relieve the manufacturer of any responsibility for damage caused by the defective product

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 FlatWinder™ for which the parts are required.

The serial number of the FlatWinder™ is printed inside the base.



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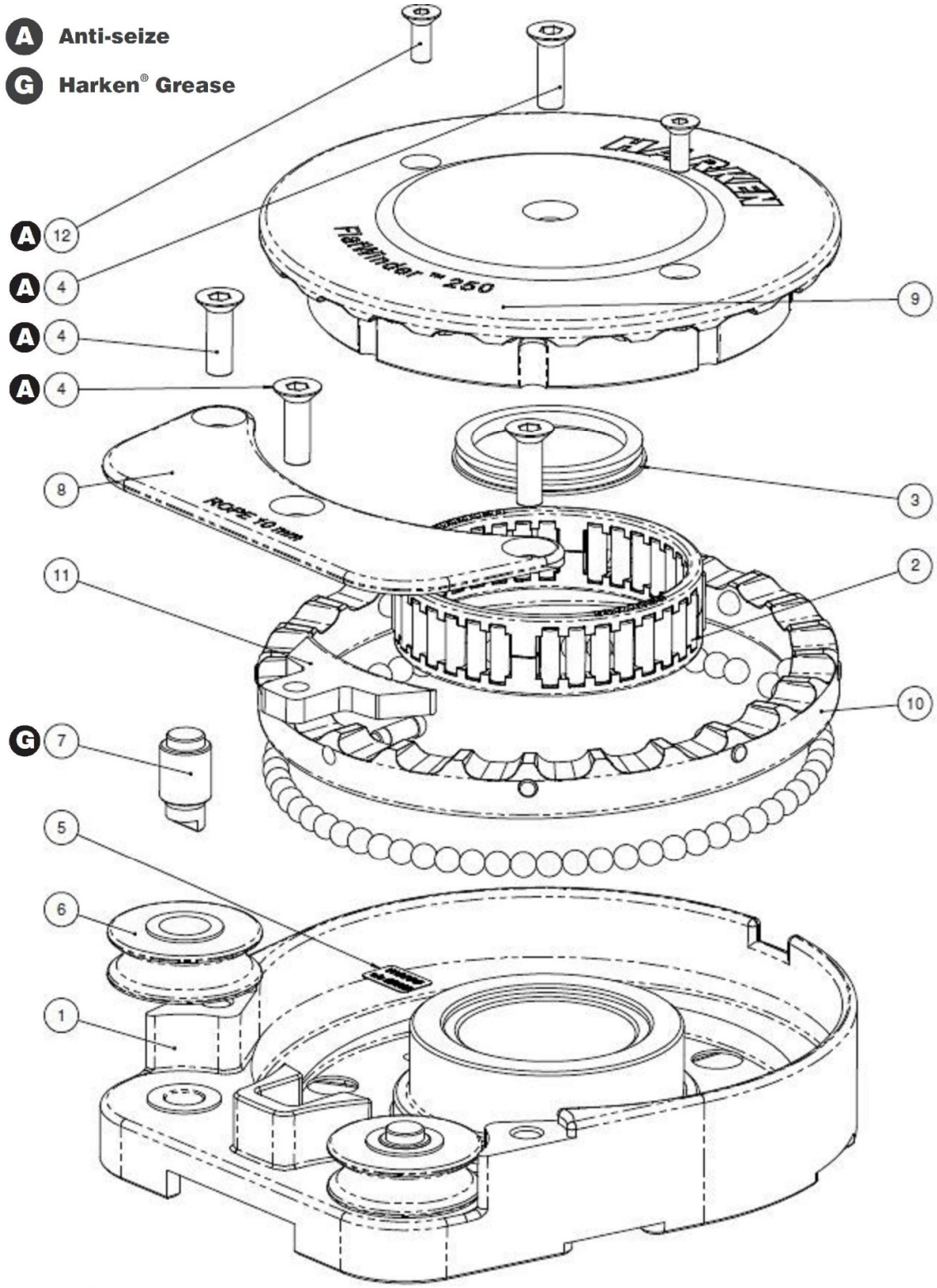
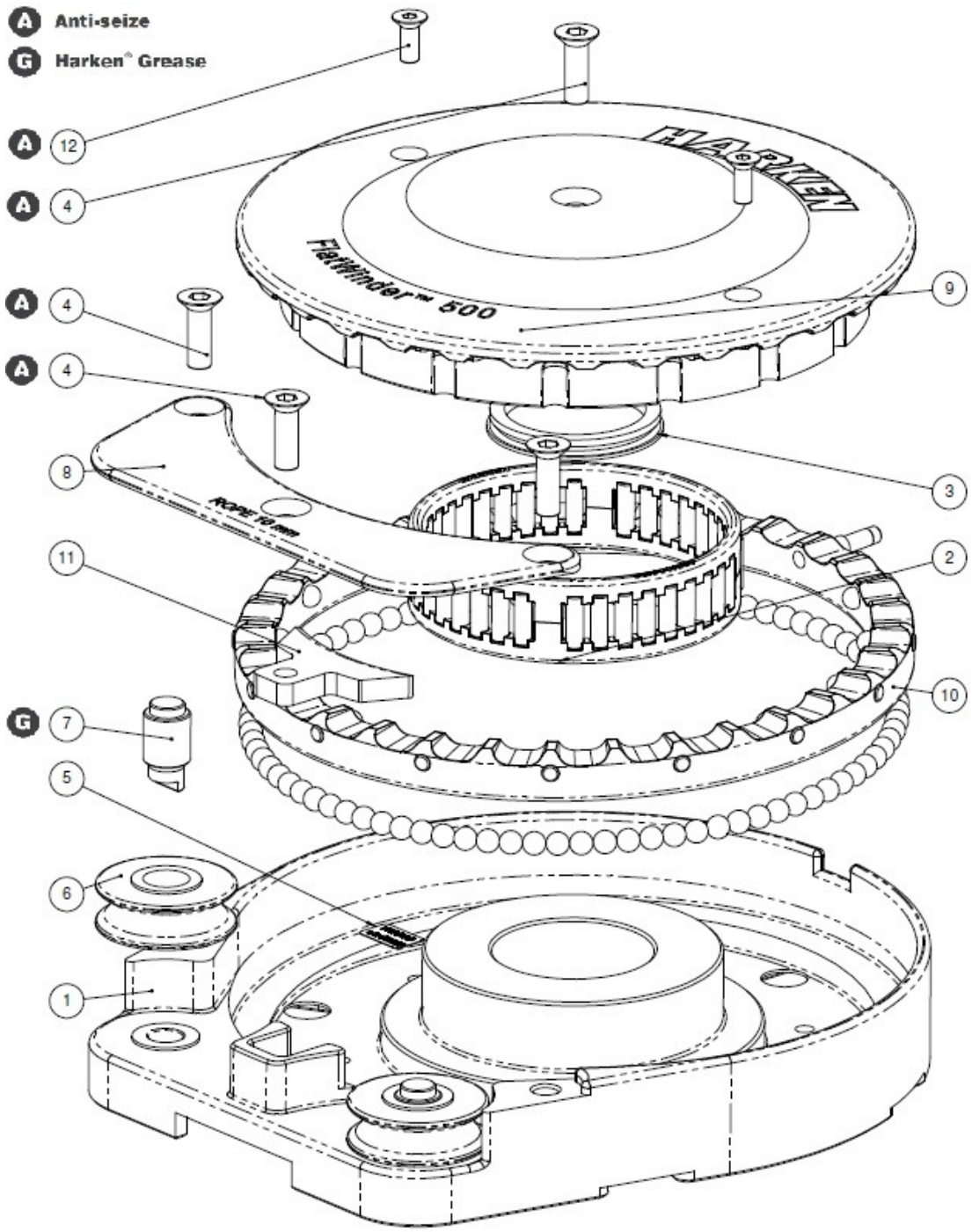
Exploded view

FlatWinder™ 250



Pos.	Q.ty	Code	Description
1	1 2	A96901700 *S413330085*	Assy Base *Base* *Bushing Ø12xØ14x11* *Winch Product Sticker***
2	1	A74135100	Bearing Ø85xØ97x26
3	1	M0651997	Ring Seal
4	4	M0666203	Screw UNI 5933:2003 M8x25-A4
5	1	S418760063	FlatWinderTM Serial Number Sticker
6	2 1	A96994000 *M0637394*	Assy pulley Ø48 *Pulley* *Bushing Ø16xØ18x17*
7	2	S699410002	Pin
8	1	S699430052	Plate
9	1	S690160052	Upper jaw
10	1 66 8	A96901500 *MP129* *S690190080*	Assy lower jaw *Lower jaw* *Ball 5/16" torlon* *Spherical pin Ø6x6*
11	1	S698380080	Peeler
12	2	M0666603	Screw M6x16 UNI 5933

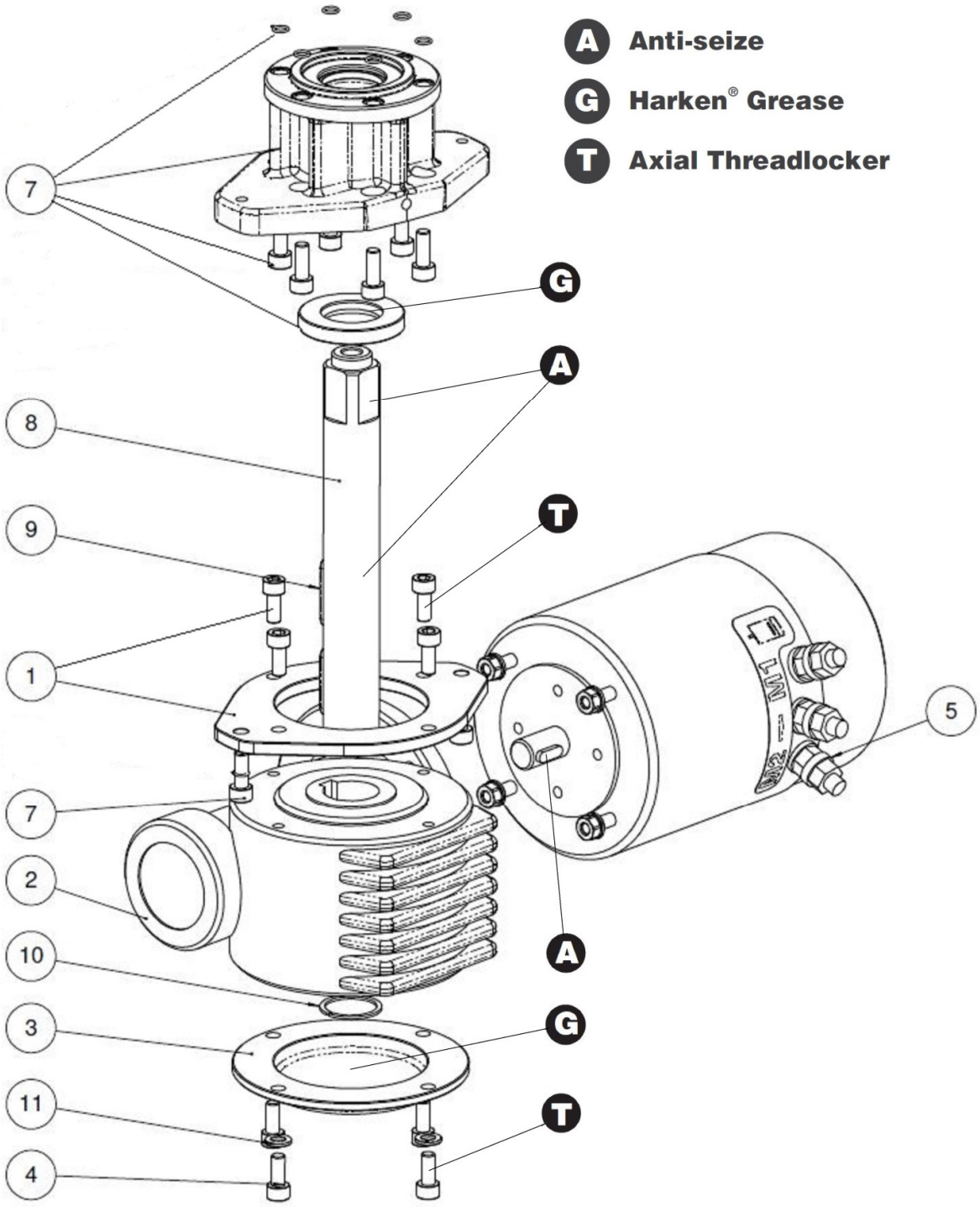
FlatWinder™ 500



Pos.	Q.ty	Code	Description
1	1	A97042200	Assy Base
			Base
	2	*S413330085*	*Bushing Ø12xØ14x11*
			*Winch Product Sticker***
2	1	A74147500	Bearing Ø102xØ114x26
3	1	M0651997	Ring Seal
4	4	M0666203	Screw UNI 5933:2003 M8x25-A4
5	1	S418760063	FlatWinder™ Serial Number Sticker
6	2	A96994000	Assy pulley Ø48
			Pulley
	1	*M0637394*	*Bushing Ø16xØ18x17*
7	2	S699410002	Pin
8	1	S704230052	Plate
9	1	S704250052	Upper jaw
10	1	A97042400	Assy lower jaw
			Lower jaw
	86	*MP129*	*Ball 5/16" torlon*
	16	*S690190080*	*Spherical pin Ø6x6*
11	1	S698380080	Peeler
12	2	M0666603	Screw M6x16 UNI 5933

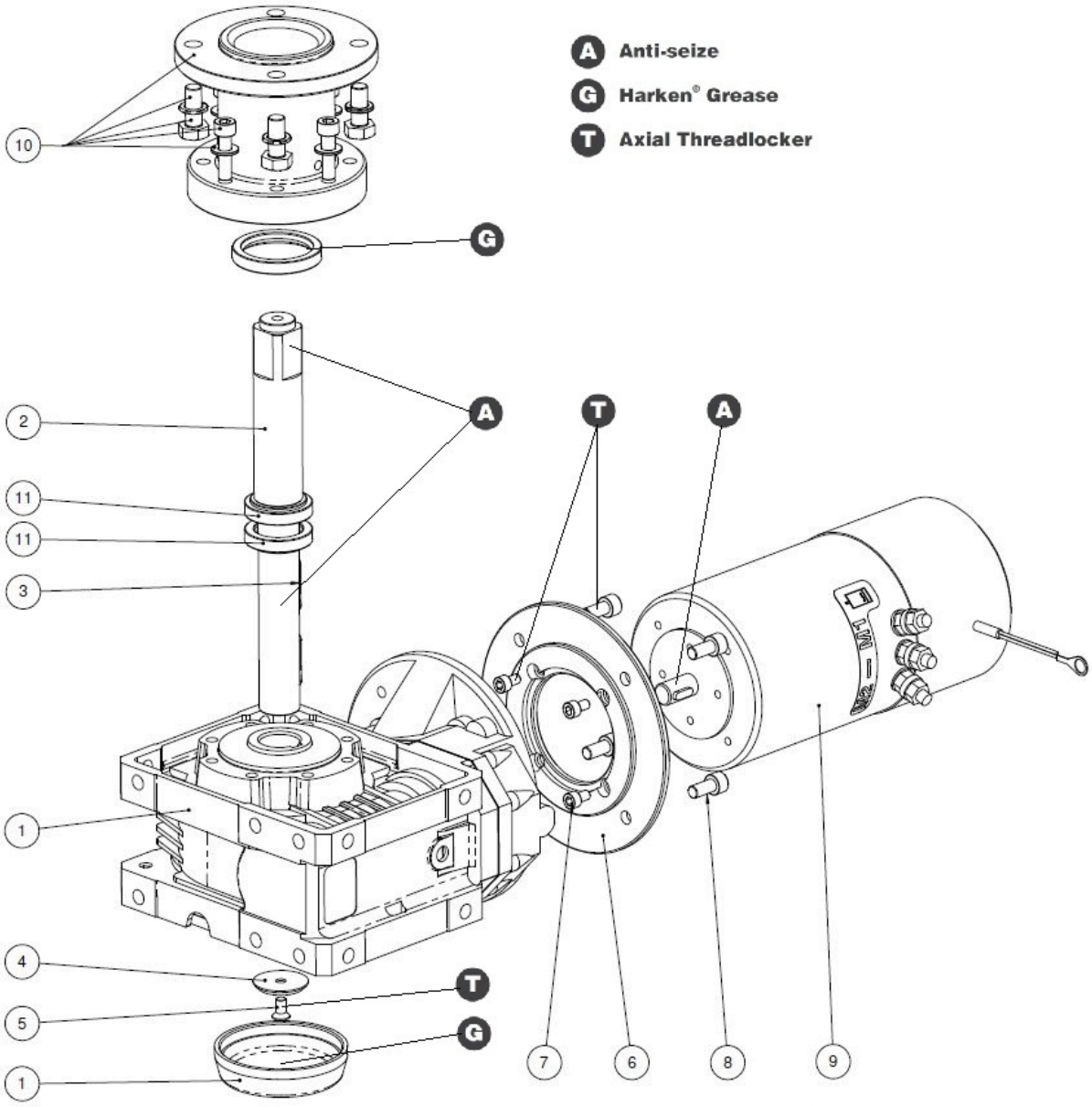
*** Winch product sticker*

Horizontal electric motor 12V/24V FlatWinder™250



Pos.	Q.ty	Code	Description
1	1	A94149200	KIT Assy Electric Motor Flange
			Electric Motor Flange
	4	*M0606803*	*Screw M6x14 UNI 5931*
2	1	A77026200	Black painted gear box
3	1	S690200080	Flange
4	4	M0606803	Screw M6x14 UNI 5931
5	1	A96015400	KIT EL Motor 12V 0,7kW
	1	A96015700	KIT EL Motor 24V 0.9kW
			Electric Motor
			Polarity motor sticker
			Screw stud M6x26
			Washer Ø6
			Nut M6 UNI5588
	1	*M6014206*	*Key DIN 6885 5x5x15*
6	1	S477440063	Sticker for gearbox
7	1	A97026100	KIT EL HO flange FlatWinder
			Horizontal Motorgear Flange
	8	*S415360003*	*Screw M6x16 UNI EN ISO 5931:2003*
	8	*M601560097*	*O-Ring Seal ORM 0055-10 (Ø5.5x1)*
	1	*M0620697*	*Seal Ø25x47x7*
8	1	S690180004	Shaft
9	2	M0640403	Key 8x7x32
10	1	M0630402	Smalley Ø25
11	4	M0621303	Washer Ø6

Horizontal electric motor 12V/24V FlatWinder™500



Pos.	Q.ty	Code	Description
1	1	A77057400	Black painted gear box
2	1	S704260004	Trasmission shaft
3	2	M0628106	Key 8x7x35
4	1	S374870002	Stop Washer
5	1	M0604003	Screw M6x12 UNI 5933
6	1	S705750052	Adapter flange motor
7	4	M0639103	Screw M6x10 UNI 5931
8	4	M0614403	Screw M8x16 UNI 5931
9	1 1	A97057700 A97057600 *M6014206*	KIT EL Motor 12V 1,5kW KIT EL Motor 24V 1,5kW *Electric Motor* *Polarity motor sticker* *Key DIN 6885 5x5x15*
10	1 1 4 4 4 4	A94329700 *M0673997* *M0623503* *M0611703* *M0624503* *M0648702*	Assy flange *Flange for Gear box* *Seal 42x55x8* *Screw M10x25 UNI 5931* *Washer 10.5* *Screw M8x30 UNI 5931* *Washer 8.5*
11	2	S432980080	Spacer for Seal

Manufacturer/EU Representive

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