KARVER
sailing experience
www.karver-systems.com

Karver KRS reefing headsail furler manual

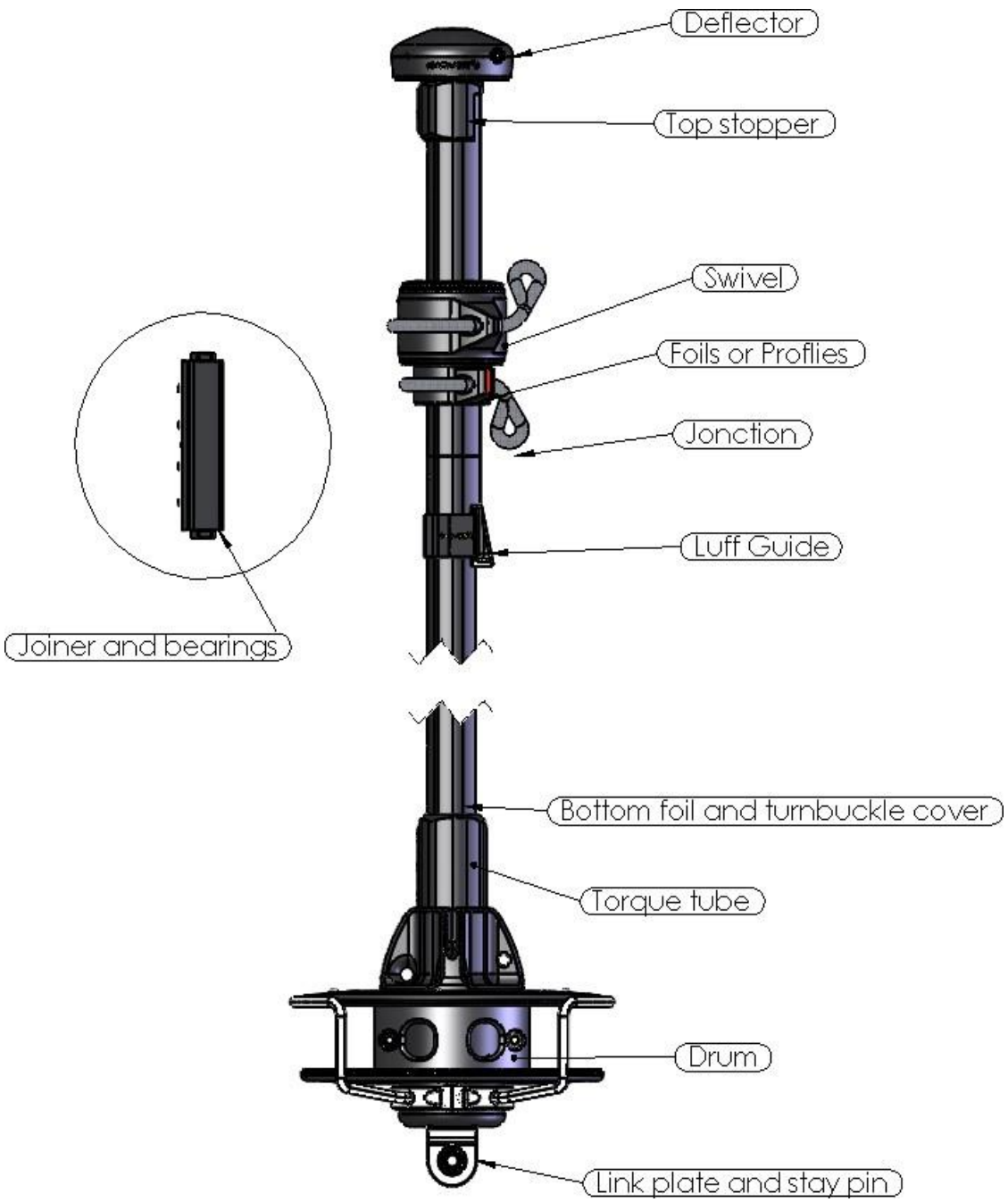
Thank you for choosing our reefing headsail furler as your sail reduction system.
By carefully following this guide, assembly will be carried out without any particular difficulty and will require approximately 2 to 3 hours without having to dismast.

To avoid possible problems during assembly, make sure that the following points have been completed:

- The diameter of your pin (compared to your diameter of eye)
- The diameter of the half-bearings corresponds to your forestay diameter
- The length of the profile to be cut (see p.7)

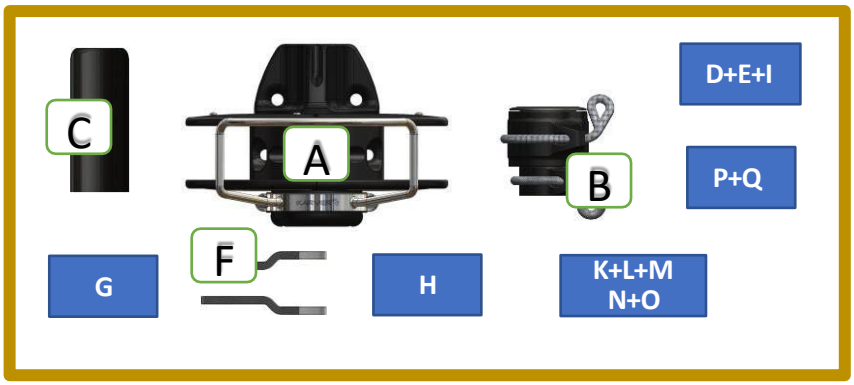
Contents

1. Anatomy of a reefing headsail furler:



2. boxes are delivered to you:

In the rectangular, the mechanics and assembly parts:



Option

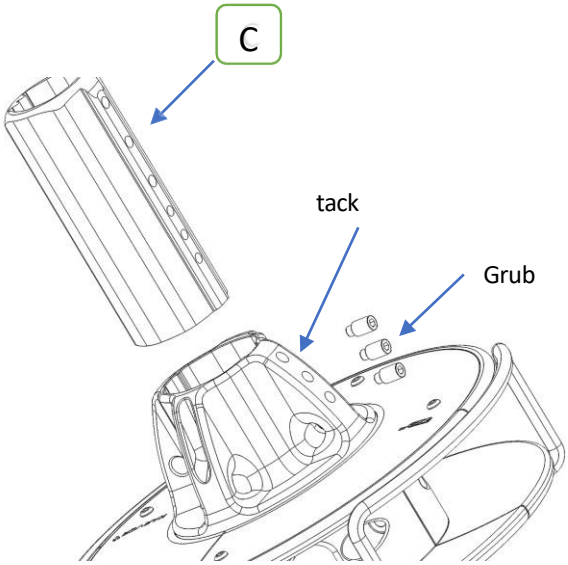
In the round cardboard, the aluminum profiles:

Qty/Ref	Description	KRS20	KRS25	KRS30	KRS40	KRS45	KRS50
A	Drum with its fitting	1	1	1	1	1	1
B	Swivel	1	1	1	1	1	1
C	Torque tube / Turnbuckle cover	1	1	1	1	1	1
D	Foil top endstop	1	1	1	1	1	1
E	Deflector	1	1	1	1	1	1
F	Link plate and pin*	1	1	1	1	1	1
G	Junction	5	6	7	8	9	10
H	Half bearing	14	16	18	20	22	24
I	Top junction	1	1	1	1	1	1
J	Luff guide (velcro)	1	1	1	1	1	1
K	Grub screw (2 types)	5	5	7	7	7	7
L	Drill bush	1	1	1	1	1	1
M	Headless screw for profiles	24	28	32	36	40	44
N	Plastic screw	3	3	3	4	4	4
O	Keys	2	2	2	2	2	2
P	Lower junction + Split tube	1+1	1+1	1+1	1+1	1+1	1+1
Q	2-meter Intermediate profile	5	6	7	8	9	10
R	Low profile	1	1	1	1	1	1
S	Low profile screw bag	1	1	1	1	1	1

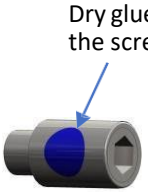
* 2 Standard, Medium or XL plates optional, 1 standard or optional adapted diameter pin, 2 washers, 2 nuts

3. Preparing the drum

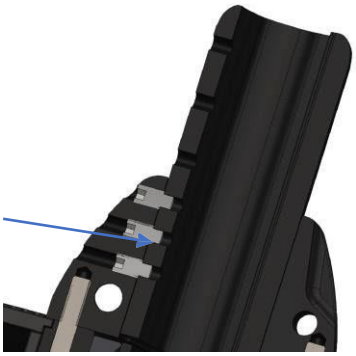
A- Installation of the standard drive ferrule or turnbuckle cover
The reefing headsail furler is delivered with the torque tube (C) unassembled (or optional turnbuckle cover), 2 or 3 screws are screwed into the tack of the reefing headsail furler and hold this torque tube in position.



- Unscrew the screws
- Insert the torque tube (C)
- Screw in the 2 or 3 grub screws (depending on the model) making them match the holes on the torque tube.



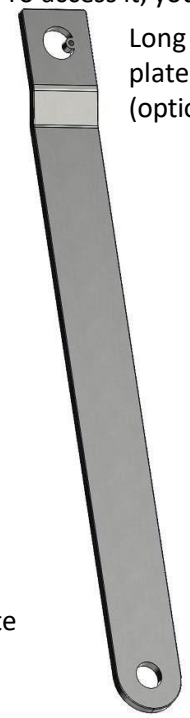
Align the screws and the holes in the torque tube (or turnbuckle cover)



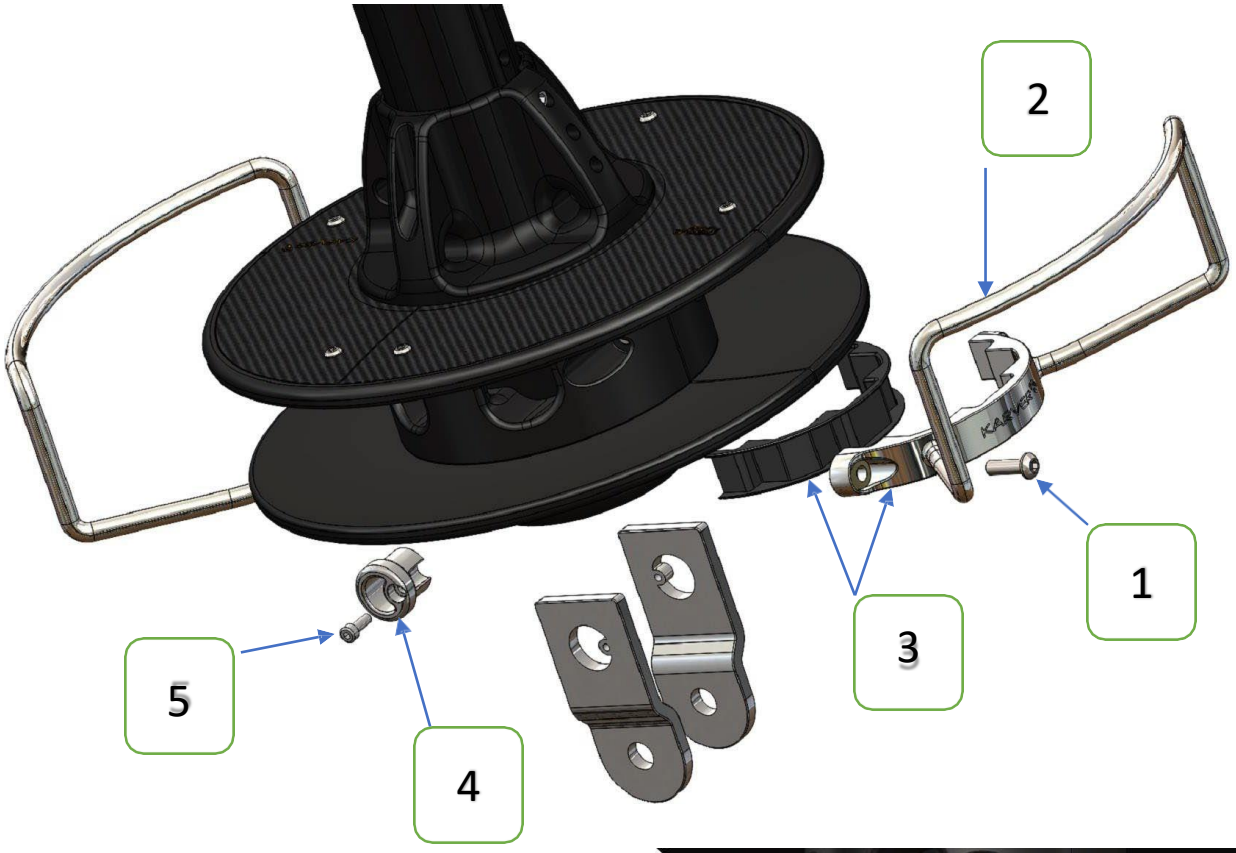
B- Installation of the link plates under the drum
The reefing headsail furler is delivered with the short (standard), medium (option), or long (option) link plates unassembled.
2 locks allowing the mounting of the plates are hidden under the stainless-steel arm. To access it, you must dismantle the stainless-steel arm, taking care of not losing the parts.

Short plate (default)

Medium plate (option)



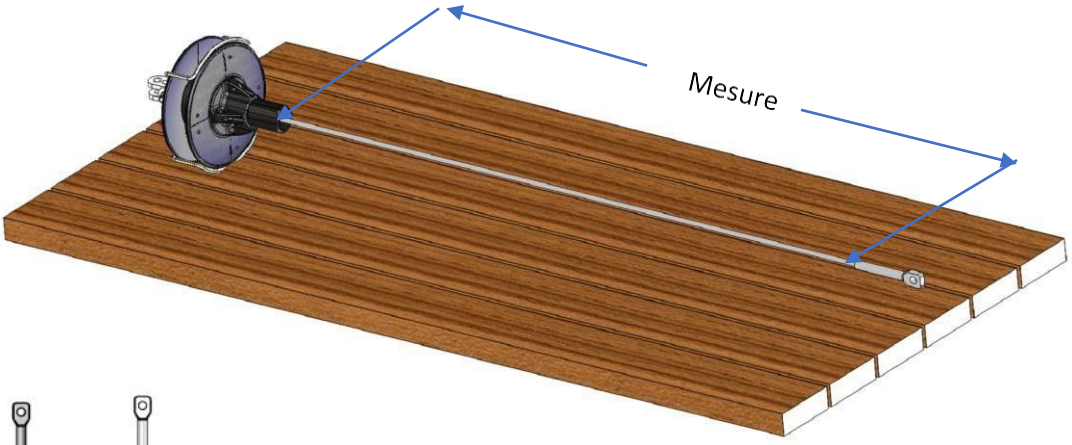
Long plate (option)



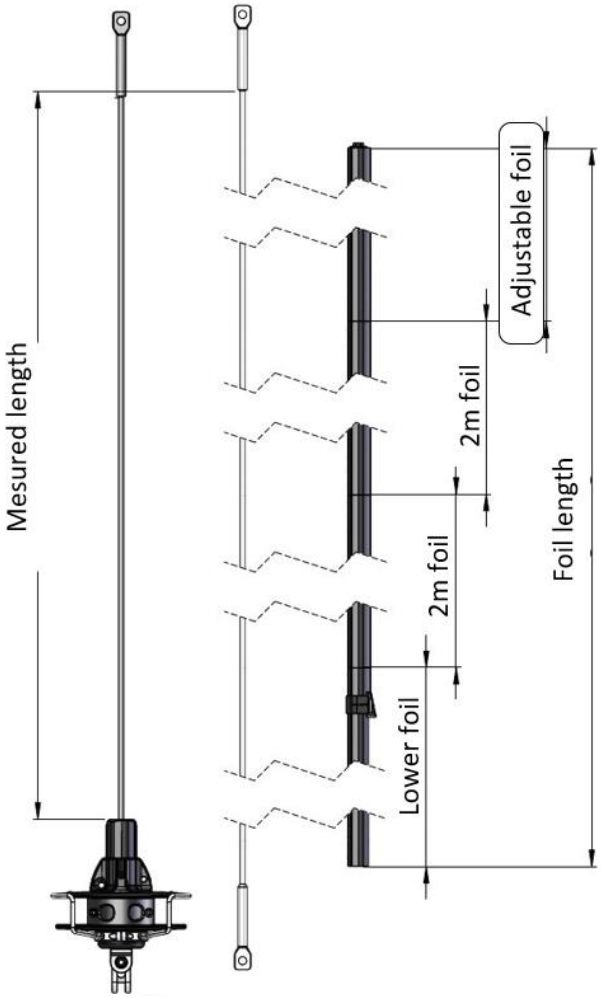
- Unscrew the 2 screws (1) on both sides of the stainless-steel arm (2).
- Remove the 2 insulating rubber halves with the 2 stainless steel arms (3).
- Remove the 2 locks (4) and its screw (5) from the drum.
- Insert the 2 link plates into the slot.
- Fit the locks (4) and tighten the screws (5) in the threaded holes of the link plates.
- Reinstall the 2 rubber halves and the 2 stainless steel arms (3) with the screws (1).

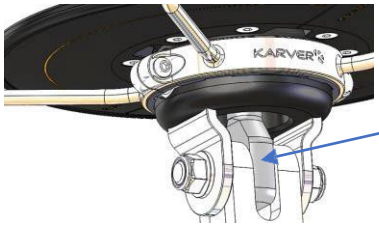
4. Calculation of the total length of aluminum profiles.

The aluminum profiles are delivered in length of 2m, in order to adapt the tubes to the length of the forestay, the easiest way is to place the forestay in the drum and measure the length from the top of the torque tube and the bottom of the swaged termination fixed on the mast.



This measurement operation can preferably be carried out with the forestay flat on the ground (recommended).





The forestay pin is inserted in the eye and the link plates.

The total length of the assembled profiles must be equal to this measured length.

5. Cutting the top profile

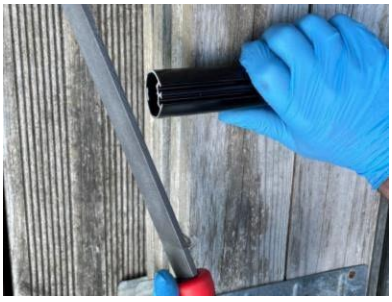
Once the total length of the profiles has been determined, it will be necessary to adapt the profile to the correct length. The top one will be inserted into the forestay first. If a mistake in measurement, it will be necessary to dismantle all the profiles… We therefore advise you to be focus during this step!

Example:
I install a KRS40.
I measure a dimension between the top of the torque tube and the top terminal of 15400mm. The total length of my profiles will therefore be: ***15400mm***

<u>The length is adjusted by cutting the upper profile:</u>
Each profile is 2m long or 2000mm (valid for the entire KRS range).
Regarding the upper profile to be cut:
The lower profile of the KRS40 is 534 mm (table below).
This leaves 15400 – 534 = 14866 mm = 14.866m.
Divided by a multiple of 2m or 7 profiles = 14m 866mm.
The upper profile must therefore be ***866mm****.*

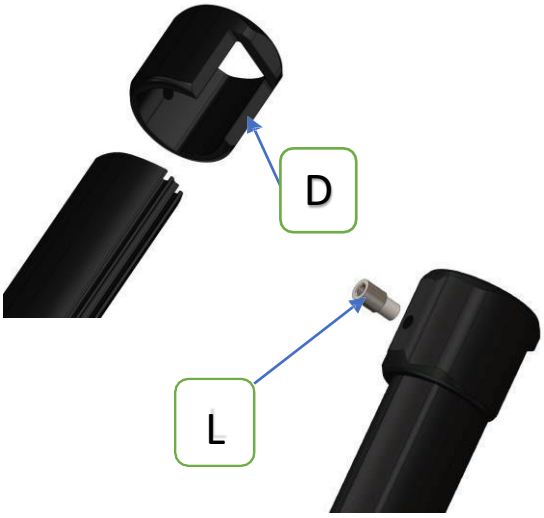
	Low profile (mm)	Intermediate profile length (mm)
KRS20	500	2000
KRS25	500	2000
KRS30	500	2000
KRS40	534	2000
KRS45	810	2000
KRS50	810	2000

Take a meter, a saw, and a file to deburr the cut.

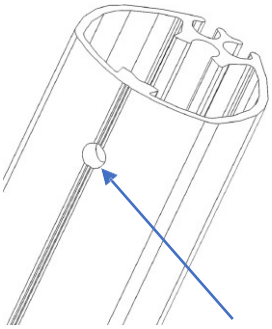


6. Drilling the top profile.

To allow the bearing and the junction to be fixed at the top profile, a 5mm diameter drilling is necessary on the part of the top profile which has just been cut.
To do this, fully fit the foil top endstop (D) onto the cut profile, screw the drill bush (L), using a drill and a 5mm drill.



Deburr then remove the drill bush (L) from the stop (D)



Drilling completed

7. Profile train assembly, either on the dock, or on the post forestay hung at the top of the mast.

Now that you are ready to thread the different elements over the forestay, the reefing headsail furler will be put on starting with the pieces that will end up at the top.
The forestay on the dock or in place, the operations are the same, the following sequence is carried out with the forestay dismantled flat on the dock or hulk, provide yourself with cardboard or protection to install under the entire length of the profiles so as not to scratch them.

A. Assembling the Deflector (E)

This 2-part part allows the halyards of the rotating mechanism and the swivel to be released.

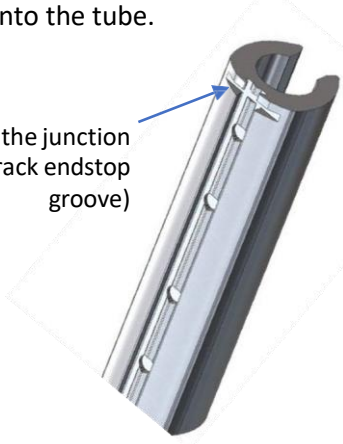
Assemble the 2 pieces and drill the hole central diameter of the forestay 0.5mm It must slide along the forestay.

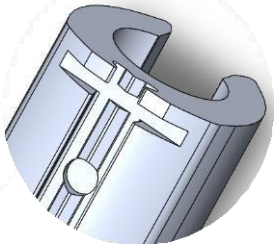
2 screws allow assembly around the forestay.

B. Assembly of the foil top endstop, the junction and the upper bearing

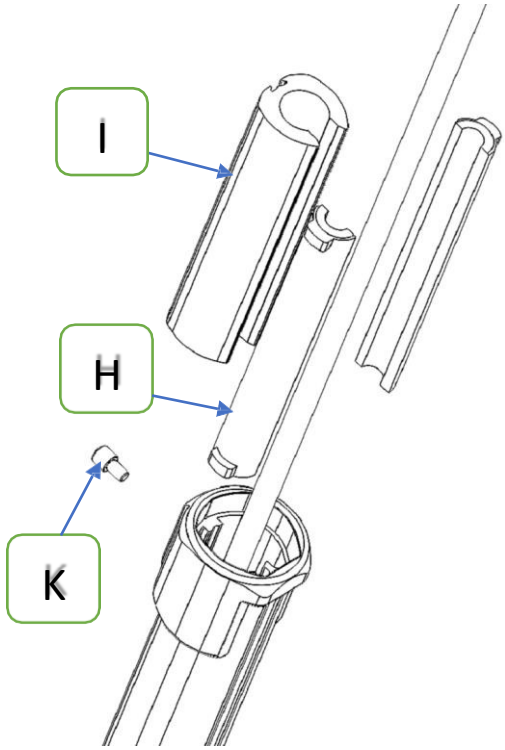
Take the upper junction which is grey (I) packed separately and 2 plastic half-bearings (H).
The junction has a groove at one of its ends which must go upwards, it is a track endstop which prevents it from going down into the tube.

Top of the junction (track endstop groove)





« The top side is lighter than the others and has a notch on one end which serves as a track endstop »



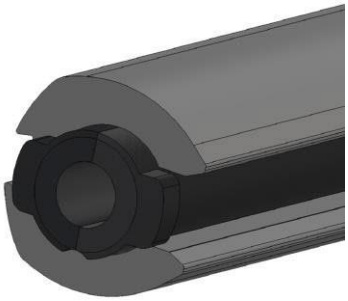
Installation of the 2 half-bearings and the junction

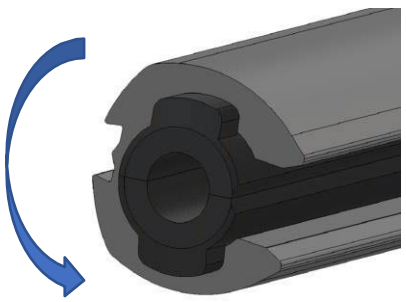
2 Types of profile top endstops exist, in both cases the stainless steel screw is oriented towards the bottom of the reefing headsail furler.

Insert the foil top endstop first.
Take the top junction and insert a half bearing into it.

Pass the assembly around the forestay.

Take a second half-fitting and slide it along the junction.





Turn 90° in the junction the 2 half bearings so that they can fit into the profile.

Insert the junction assembly / bearings fully in the profile.

Insert the upper foil top endstop and screw the M8 stainless steel grub screw (K) into the hole just made in the upper profile.

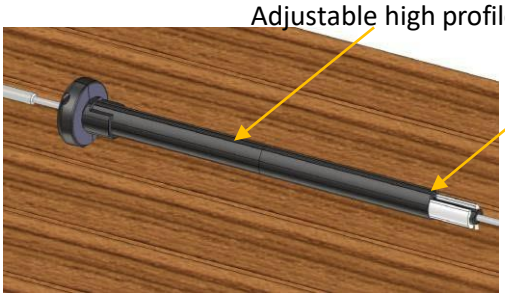
C. Installation of 2 m profiles

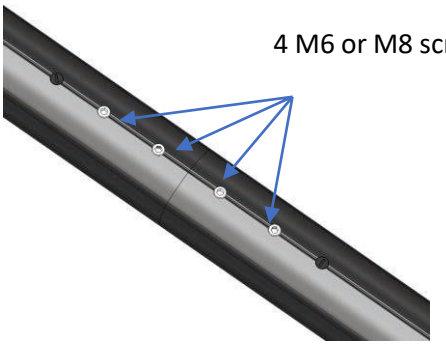
The connections between the tubes use junction fitted with half-bearings. This operation is similar to the assembly of the upper junction. The junction will fit into the profile only half of its length. And on the larger model a screw stop will help to find the junction's right position.

Steps identical to the previous chapter.

The junction equipped with the bearings is inserted only halfway (up to a screw acting as a track endstop)

Collect the junction screws and the Torx key from the package, screw with a maximum torque of 5N.m, the screws must not.

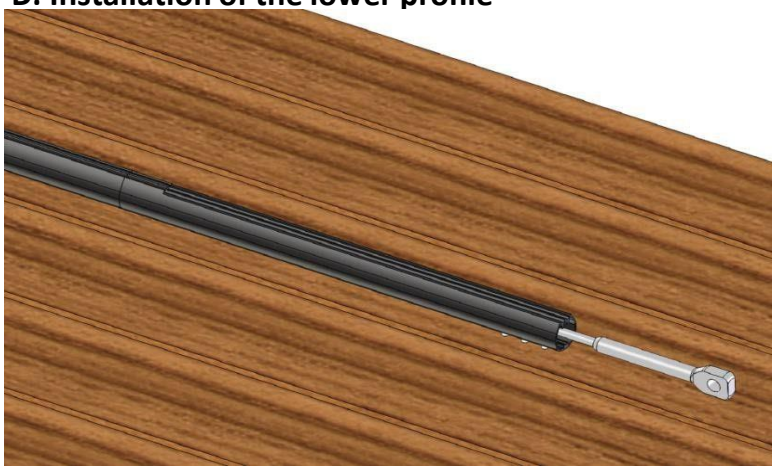




4 M6 or M8 screws depending on model.

The different profiles are thus assembled one by one using the junctions and bearings around the forestay. The tubes must be perfectly joined and screwed correctly with the 4 screws.

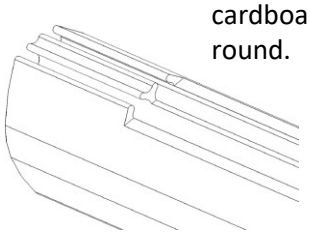
D. Installation of the lower profile



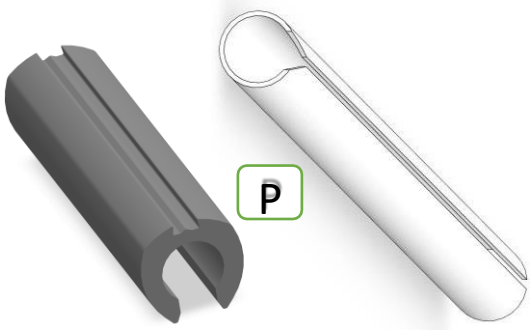
The low profile has a notch which allows to hoist the sail using the stainless-steel luff guide, it is placed in the drum via the torque tube or turnbuckle cover.

Installation of the last junction and bearings using the split tube.

Recover the lower profile cut into the cardboard tube round.



In a split tube (P) you will find a single junction as well as a split tube.
2 half-bearings (H) will also be necessary.



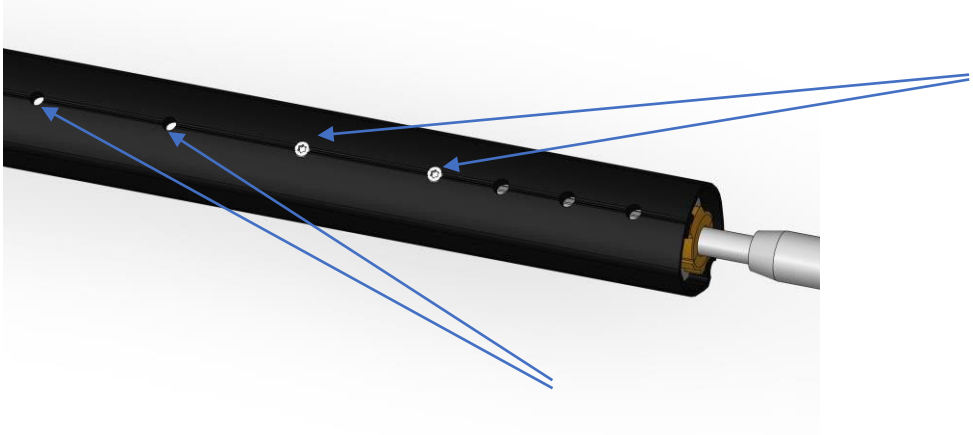
Once the complete foil length is in place, there is still available space for the lower junction.

Insert the lower junction (P) and
2 plastic half-bearings
on the forestay.

Using the notch made in the split plastic tube, fit the tube around the forestay between the 2 junctions.

This plastic tube will prevent the junction from going up and thus
allow installation
of the lower profile

If the cut length of the profiles has been respected and the drum has been chosen according to the termination of the cable, then there must remain some clearance between the end of the lower profile and the swaged end of the cable.



Screw the 2 screws (S) in contact with the junction

Screw in the black plastic screws (N) on unused threads

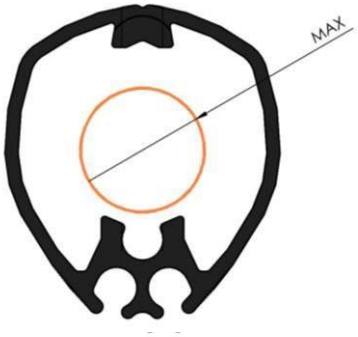
E. Possible adjustment of the height of the last junction equipped with bearings

If the swaged end fitting is too long, it is possible to fit it partly inside the profile.

Swaged end fitting remains out of the foil (standard)

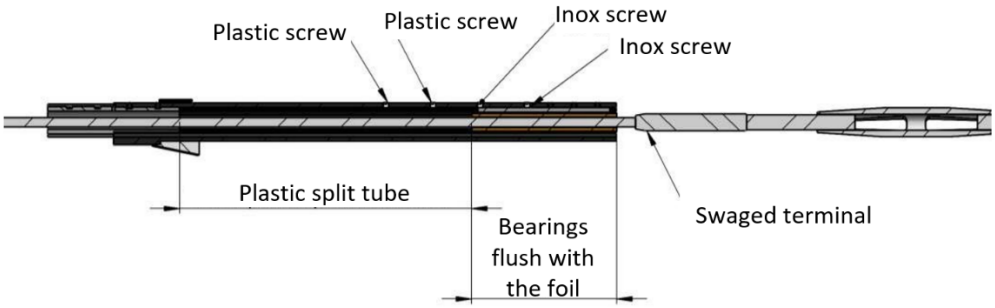
If swaged end into the foil, follow the next step below :

Check that the swaged terminal is not too large compared to the space available inside the profile.

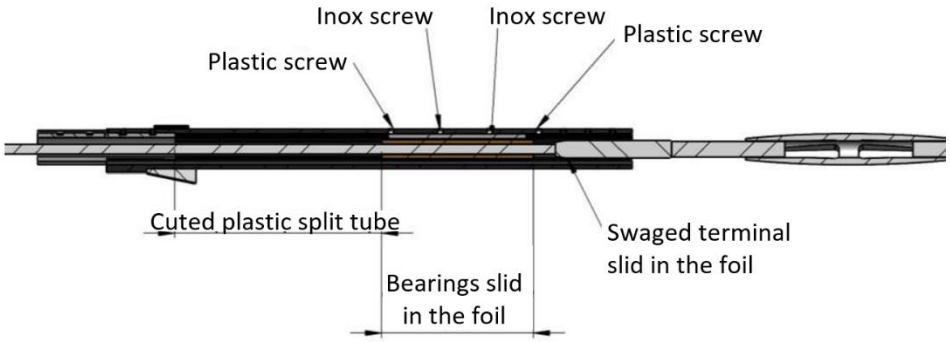


Max terminal (In mm)	
KRS20	9
KRS25	12
KRS30	12
KRS40	18
KRS45	26
KRS50	26

If the swaged terminal is below these values, it is then possible to slide in several inches to inside the profile.



The position of the fitting and the lower junctions is determined by the length of the split plastic tube. You can adjust length by cutting it, see picture below:



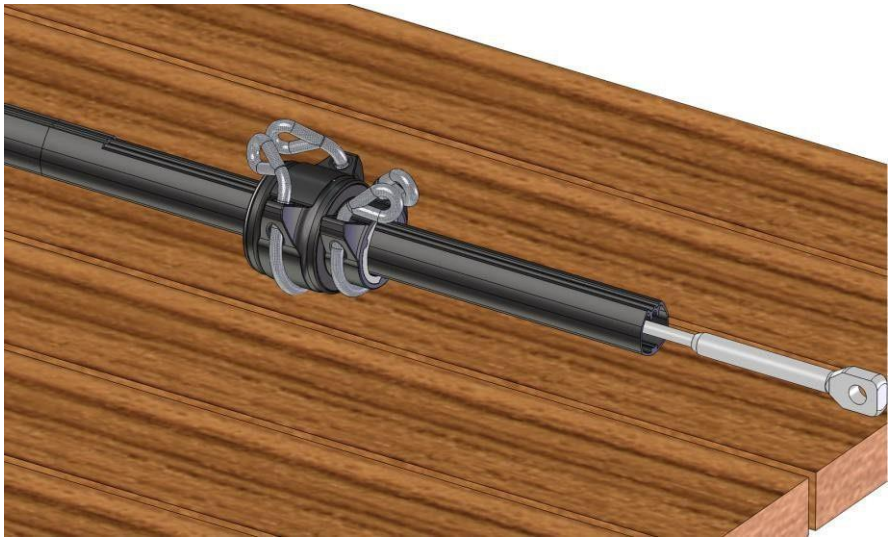
Cut the tube to the length necessary to fit the swage terminal.

Cut the plastic tube to a maximum of 100mm

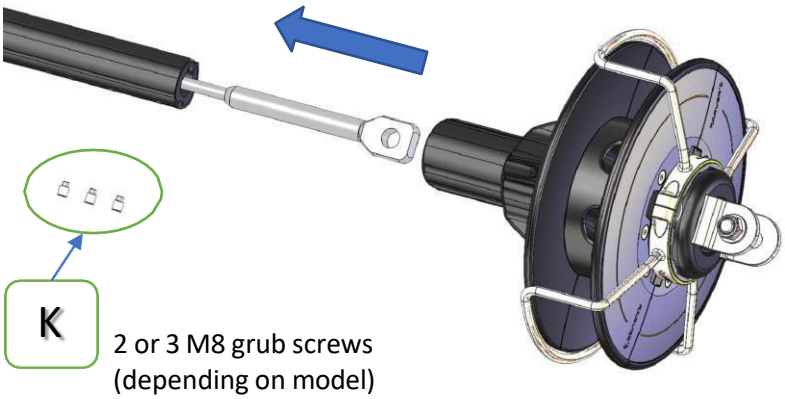
Once the plastic split tube is cut, the junction will go up into the lower profile.

8. Installing the swivel.

Mount the swivel on the profiles before mounting the drum
The larger diameter part mounts towards the top of the mast

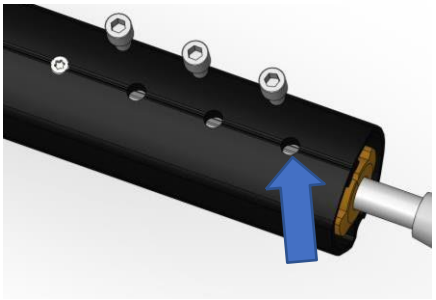


9. Drum assembly



2 or 3 M8 grub screws
(depending on model)

The drum equipped with its torque tube/turnbuckle is mounted on the lower profile.



Fit the 2 or 3 M8 grub screws in the holes on the lower profile.

In order to match with predrilled holes.

Mount the supplied pin through the link plates, the toggle, and the forestay terminal.

Screw, leaving a little play for the toggle.

10. Boarding

Hook a halyard onto the swivel and pull it up against the foil top endstop.

Put a rappel rope down to lower the halyard and the swivel once mounted.

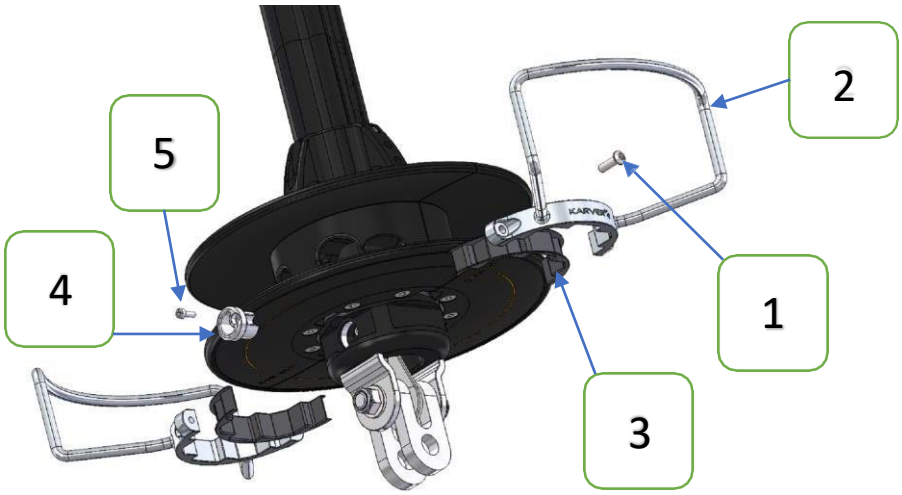
Hoist the reefing headsail furler - mounted forestay, to prevent excessive swing of the profiles.

Connect the mast chainplate pin then the deck chainplate pin.

Follow the same sequence for the assembly carried out direct on the mast. A halyard will raise the elements gradually along the forestay.

11. Adjusting a forestay with turnbuckle:

Reefing headsail furler with turnbuckle cover:
In order to be able to adjust the turnbuckle under the drum, you will have to lift the drum mechanism.



- Unscrew the 2 screws (1) on both sides of the stainless-steel arm (2).
- Remove the 2 insulating rubber halves with the 2 stainless steel arms (3).
- Remove the 2 locks (4) and its screw (5) from the drum.

Leaving the plates fixed on the forestay universal joint, raise the reefing headsail furler along the lower profile to gain access to the turnbuckle.

Reverse operations following the steps above.

Reefing headsail furler with medium or long plates
This option allows the reefing headsail furler to be raised, either to escape the anchor or a pulpit, or to install a turnbuckle under the drum.
Proceed in the same way as the option with turnbuckle cover in order to disconnect the plates from the drum. The turnbuckle is accessible for adjustment.

12. Continuous line installation

Lights at the bottom of the drum allows to fix a single line with simple stop knot.

Tighten the knot tightly and place it at the bottom of the reservation provided for this purpose.

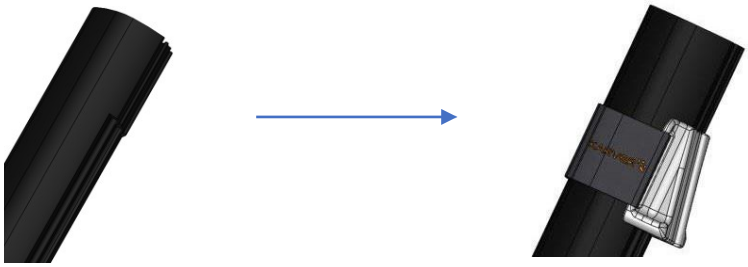
Diameter of operating rope	
Model	Diam. (mm)
KRS25	6 or 8
KRS30	8 or 10
KRS40	8 or 10
KRS45 and 50	10 or 12

Orientation of the operating rope

The position of the first return block must allow entry of the rope into the drum of the furler at an angle of 90° in relation to the profiles.

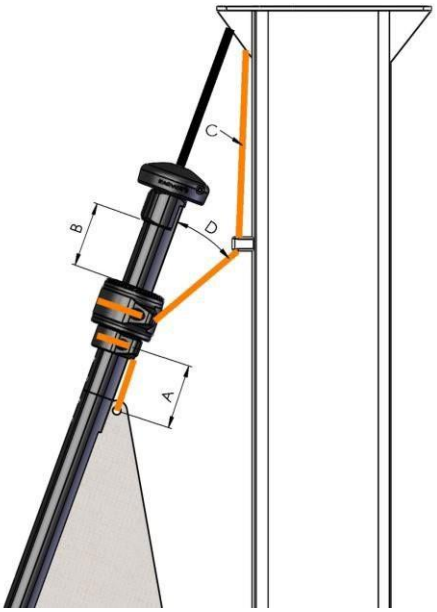
The rope must pass inside of the stainless steel guide.

13. Installation of the luff guide



Install temporarily the velcro scratch with feeder. Remove and store it until the next hoist.

14. Position of swivel height and halyard angle



The textile attachment (A) between the sail and the swivel must be as short as possible.

The distance between the top of the swivel and the endstop (B) must be between 100 and 200mm. A high load strope on the tack can be made to adjust this length.

The angle (D) between the halyard (C) and the reefing headsail furler must be between 15° and 35°, an eye strap can be added if necessary.

15. Tips

Once the sail is hoisted on your furler, remove the luff guide (K) from the lower profile so as not to damage your sail when you roll it up. Keep the luff guide on board.

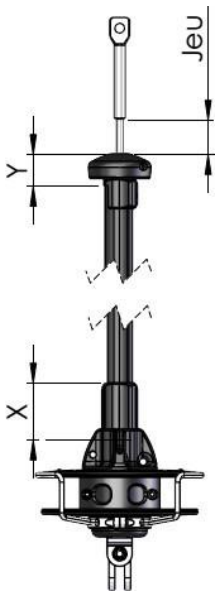
16. Maintenance tips

Your Karver KRS reefing headsail furler has been designed to operate for many years without specific maintenance. To keep it in perfect working order for as long as possible, remember to rinse it with clean water regularly.
If you encounter problems with your reefing headsail furler, do not hesitate to contact your Karver dealer or your rigger.

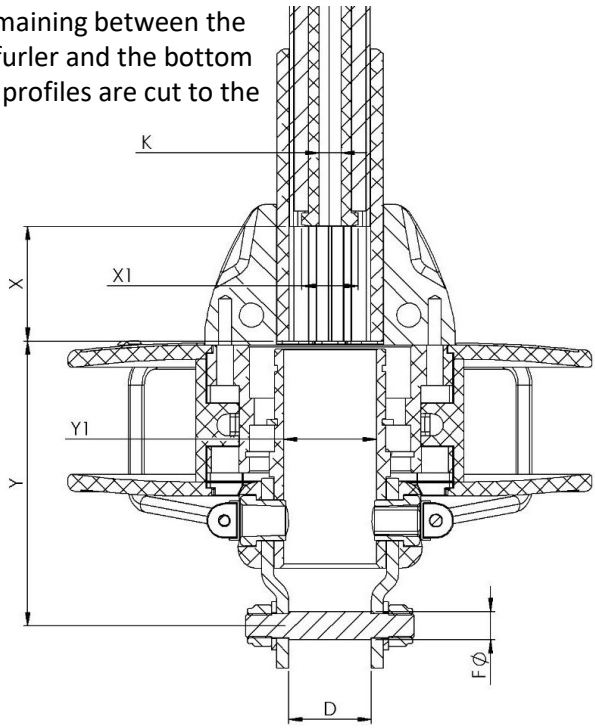
Never use WD40 (or similar) on the drum. Swivel seals as this could damage them irreparably damaged.

17. Appendices

(In mm)	X	Y	Clearance
KRS20	51	39	12
KRS25	76	39	37
KRS30	78	39	39
KRS40	95	54	41
KRS45	108	54	54
KRS50	108	54	54



X= Embedding of the profile in the torque tube Y= Height of the deflector
Clearance = cable length remaining between the top of the reefing headsail furler and the bottom of the swaged fitting (if the profiles are cut to the correct length)



Finished luff grooves.

Description	Inner diameter of finished luff grooves
KRS20	5mm
KRS25	5mm
KRS30	5mm
KRS40	5mm
KRS45	6 mm
KRS50	6 mm

INNER DRUM DIMENSION TO ALLOW CABLE FITTING

	KRS20	KRS25	KRS30	KRS40	KRS45	KRS50
K max	7	10	10	13	20	20
Y	172	123	207	141	168	168
Y1	36	36	46	46	60	60
X	44	59	16	57	80	80
X1	9	12	12	18	26	26
D	41	41	41	41	61	61
F	10	10.12	12,14,16	12,14,16	18,22,25	18,22,25

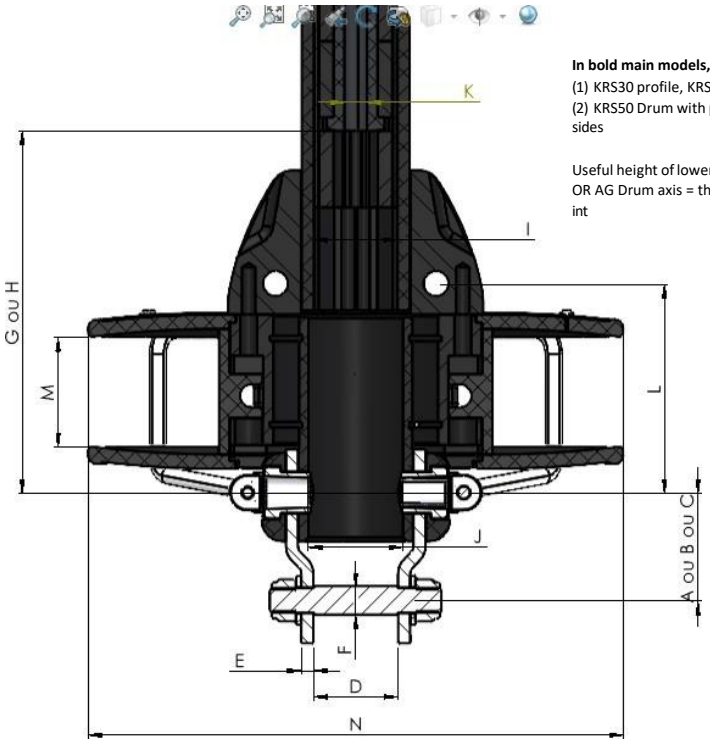
K=	Maximum diameter of the forestay
Y=	Diameter height Y1
Y1=	Internal diameter of the mechanism
X=	Length from bottom of profile to first plastic fitting
X1=	Maximum diameter of forestay termination at height Y
D=	Width between stainless steel plates
F=	Standard pin diameters
*	This length can be increased by 100mm by cutting the split plastic tube (see assembly instructions)

DRUM DIMENSION

4 main versions: Short batten, inter batten, long batten, turnbuckle cover.

Distances in mm

		KRS20	KRS25	**KRS30**	**KRS40**	KRS45	**KRS50**
A	Drum axis- Link plate S	38.8	38.8	48.3	53	60	60
B	Drum axis- Link plate M	166	166	237	240	270	270
C	Drum axis- Link plate XL	266	266	387	390	550	550
D	Width between Link plate	41	41	41	41	61	61
E	Link plate thickness	4	4	6	6	6	6
F	**Standard** shaft diameter and options	**10**, 12, 14	**12**, 14, 16	12, **14**, 16, 19	16, **19**, 22, 25	19, **22**, 25, 28	25, **28**, 32, 35
G	Drum pin - turnbuckle cover option (useful interior height)	381	410	440	474.5	614	614
H	Drum-drive torque tube pin (useful interior height)	132.2	133.2	153	138.5	173	173
I	Inner diameter drive torque tube	32	32	46	46	54	54
J	Drum inner diameter	32	32	46	46	60	60
K	Standard inner bearing diameter	7.5	8.5 and 10.5	8.5 and 10.5	11 and 13.5	16.5 and 20.5	16.5 and 20.5
L	Drum axis - tack point	96.6	96.6	101.5	101.5	121.7	121.7
M	Internal drum height	55.2	55.2	53	53	65	65
N	drum diameter	180	180	220	260	320	320
	Drum capacity according to rope diameter	20m (6mm)	20m (6mm)	20m (8mm)	28m (8mm)	33m (10mm)	33m (10mm)
	Drum capacity according to rope diameter	12m (8mm)	12m (8mm)	12m (10mm)	18m (10mm)	24m (12mm)	24m (12mm)



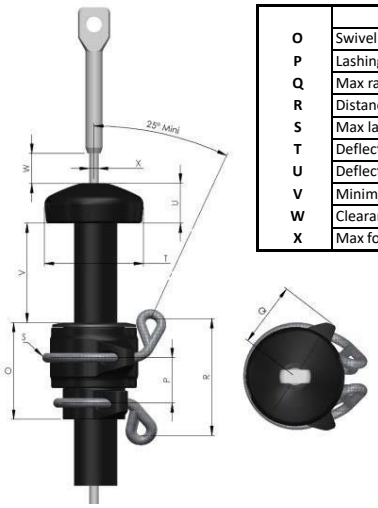
In bold main models, KRS25 and 45 are variations.

(1) KRS30 profile, KRS30 swivel, KRS20 Drum

(2) KRS50 Drum with plastic flange and carbon veneer, KRS50 swivel, lighter profile, and sides

Useful height of lower landing forestay axis = AH
OR AG Drum axis = that in the int
int

SWIVEL DIMENSION



		KRS20	KRS25(1)	**KRS30**	**KRS40**	KRS45(2)	**KRS50**
O	Swivel height	87.9	87.9	87.9	101.4	126.5	126.5
P	Lashing holes center distance	37.4	37.4	37.4	47.5	65.4	65.4
Q	Max radius	56	56	56	67.6	87.5	87.5
R	Distance between eye lashing	80	80	80	120	140	140
S	Max lashing diameter	11	11	11	12	15	15
T	Deflector **diameter**	70	70	70	104	104	104
U	Deflector Height	37	37	37	42	42	42
V	Minimum profile height above the swivel	80	80	80	80	100	150
W	Clearance between **deflector and swaged terminal**	30	30	40	40	60	60
X	Max forestay diameter	7.5	10	10	13	20	20

(1) Swivel identical to KRS30

(2) Swivel identical to KRS50