RECKMANN

UDs
hydraulic furling system
aluminium foils
rod
RT

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Inhaltsverzeichnis

1 Introduction

1.1 Packing list UDs

Typ: UDs _____

headstay (type):	rod	-	size (mm, -)	_____	
Headstay length: D=	_____	mm	Unshortened foil length P	_____	mm
Rod collets/ swageterminal:	1	Pc	Topterminal	_____	
Halyard swivel:	1	Pc	__- shackle	_____	pcs
			Size	_____	
Installation manual	1	pc	Foil type (R/S)	_____	

Date _____

Customer _____

Dealer _____

Order number _____

1 Primary gear unit with foundation plate

1 Secondary gear unit with rt adjuster

1 Installed rod-link including rod-nose / jaw fitting

1 Foil adapter tube

1 Cardan shaft

___ Piston position indicator

___
___ Long bottom bushing

1	Feeder section*	☐	3000 mm	☐ 5980 mm
___	Standard section	☐	3000 mm	☐ 5980 mm
___	Standard section		1500 mm	
___	Top section		_____mm	

*length without furler spline and sliding tube

R10 up to R40

___ hose 200 mm
___ hose 340 mm
___ hose 500 mm (red marked)
___ hose 600 mm
___ hose 1740 mm
Top hose _____mm

R5 up to R7

___ Spacer tube 240 mm (slotted)
___ Spacer tube 1660 mm (slotted)
Splice bearing with two screws

___ Bottom bushing
___ Bearing for foil reinforcement
___ Bottom foil reinforcement
___ Foil connectors (from R10 up to R40 split)

___	
___	Delrin bearings (2 spares), R5,R6, R7 split
___	SS inserts for foil connectors (1 spare)
___	Screw for foil connectors (2 spares)
1	Top cap with screws (split)
1	Bottom threaded plates with screws
1	Sail feeder
___	Key for stay adjustment
1	Set socket wrenches
___	Winch handle

Additional equipment: _____

_____

Packed by _____

_____

2 Introduction and operating details

Dear Reckmann customer,

With the UDs reefing system you have purchased the latest reefing system on which you can rely. This unit is manufactured using the latest technical innovations and uses the best materials. It is a successful combination of design, performance and safety. We are confident that the UDs reefing system will provide you with enjoyment for many years.

2.1 How to use this manual

Read this manual carefully before assembly and operation of your Reckmann gear.
Points that need additional attention will be marked in the following way:

Note!
This sign marks points which need special attention.

Caution- Warning!
This sign marks the risk of injuries or other significant dangers.

tip
this triangle marks useful tips.

3 Operation of the furler

3.1.1 Important remarks for the operation of your Reckmann RF90 UDsfurling system

After your furling system was installed accordingly to this manual, we recommend to read the following notes carefully before you set your furling system into operation.

Note
Improper use according to this manual of the furler may cause loss of warranty.
Consult a Reckmann service partner in any case of problems.

Caution! General Warning!
Any modification or damage may influence the safe operation of the furler.

Please make sure that the furling system is in a well condition according to this manual.

Warning!
Adjusting with load on the sheet may damage the profile.
Adjust only when sheet is unloaded.

For stay tensioning purposes, your Reckmann furling gear is equipped with a hydraulic real time adjuster. The adjuster pulls the stay in relation to the foils. This means that the distance between the tack point at the furler and the halyard sheave / or lock varies during stay adjustment:

Releaseing the stay: distance gets longer – luff is tensioned
Tensioning the stay: distance gets smaller – luff becomes loose

Release the halyard / or unlock the lock before the real time adjuster is used.

Caution!
Risk of damages of the sails during real time adjuster operation.
Release the halyard or unlock the halyard lock before the stay is tensioned!

3.1.2 furling the sail

Release the sheet before the sail is furled.

Warning - Danger!
Furling the sail against a tensioned sheet may cause damages of the furler.
Release the sheet before you start furling the sail.

Note
Less halyard tension can cause halyard wrap. A halyard wrap blocks the furling gear and may cause damages of the foils.
Make sure that the halyard is under sufficient tension.

Note

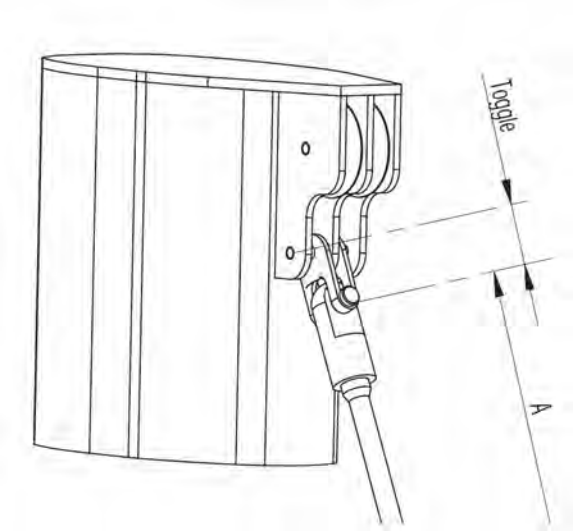
The genoa halyard has to be equipped with a swivel shackle. If the halyard gets twisted around the foil, the functioning of the furler will be impaired.
As mentioned above, the swivel shackle enables the halyard to lose its twist.

Note
Less headstay tension causes sag of the headstay which reduces the performance of the boat.
Please make sure that your headstay tension is sufficient.

3.1.3 Toggle

Please ensure that a toggle is installed at the top stay end. If there is no toggle installed, bending loads in the top terminal may cause the failure of the stay due to fatigue.

Warning!
Forestays without top toggles could break due to fatigue.
.
Make sure that a top toggle is installed.



Caution! Risk of flooding.
The deck flange of the furler is not watertight. To avoid flooding of the boat, the furler has to installed in a drainid compartment.

The Reckmann is installed directly to the deck. The deck has to tolerate the entire stay load
.

Caution!
Make sure that the deck is strong enough to carry the entire stay load.

Warning !
Lufftape remaining in the sail feeder at a fully hoisted sail may damage the feeder.
Make sure that the luff tape ends above the feeder at a fully hoisted sail.

3.2 Maintenance of the furler

To keep the furler in a good optical and technical condition, a regular service is required. Maintenance of the furler consists of two basic points:

- Regular maintenace by the customer
- Regular Service performed by one of our service partners

Note

Proper operation can only be ensured by regular service. Make sure that the maintenance plan of your furler is carried out carefully.

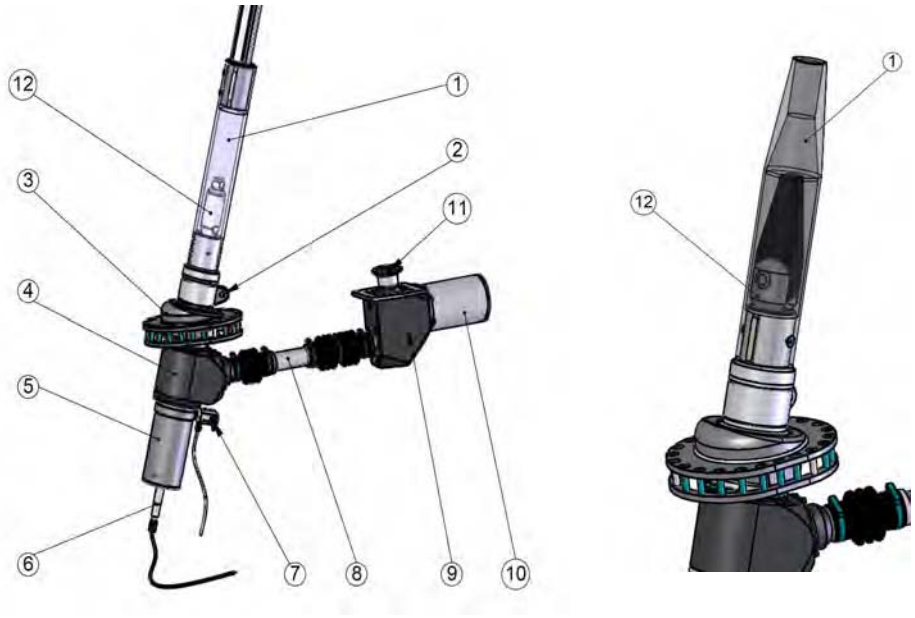
3.2.1 Maintenance to be carried out by the customer

Clean your furling gear regularly. Wash carefully all salt from the furler.
Stainless steel parts can be treated with special care product.
Additional for all electric and hydraulic furling units, the function of the manual backup drive and the condition of all hydraulic hoses / electric wires should be checked regular.

3.2.2 Maintenance to be carried out by a Reckmann service partner

To ensure the safe and proper operation of the furler, it has to be serviced every five years by an authorized Reckmann service partner. A table of all authorized Reckmann service partners can be found at the end of this manual or at www.reckmann.com

4 Product description



1	Foil adapter	7	Hydraulic ports
2	Tack ring	8	Cardan joint
3	Spherical deck bearing	9	Primary gear
4	Secondary gear unit	10	Motor
5	Adjuster	11	Manual backup
6	Piston position indicator	12	Rod link

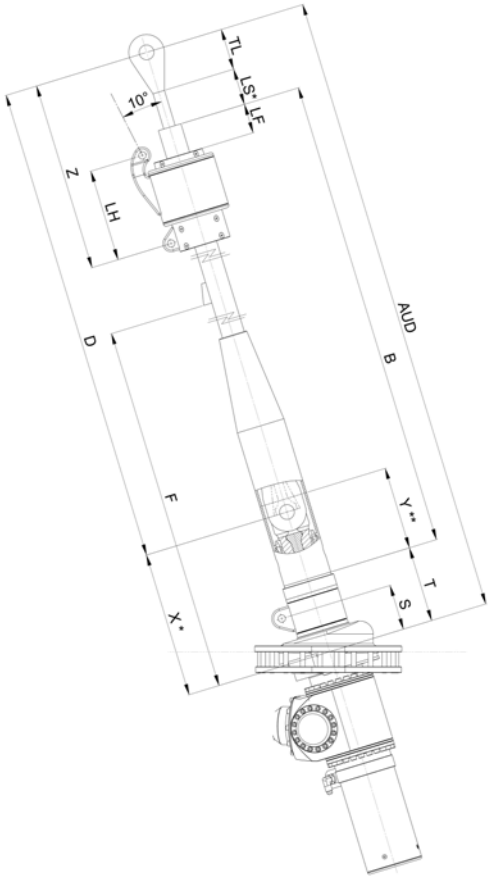
4.1 Tools required for assembly

Before assembling the reefing system, ensure that you have all the tools necessary. In addition to the allen keys enclosed with the system you will need:

- screwdriver
- cross head screwdriver
- drill
- 3.0 mm drill bit for R10 to R20 and
- 4.0 mm drill bit for R30 to R40
- 5,2mm drill bit for R5 to R7
- M6 thread drill for R5 to R7
- hacksaw
- sharp knife

5 Assembling the furling unit

5.1 Calculation of stay and foil length



Unit	Swivel	Stay	Foil	AUD	X *	Y **	T	LS *	LF	F	S	Z	LH	stroke
UD3s	FS R40	Rod	Alu	measurement centerline upper fitting (without toggle) - intersection point stay/deck	254	215	128	50	50	1830	77	depends on upper fitting dimensions	221	100
			Carbon					220						
		PBO	Carbon		246	140		220						
		EC6			***	***		***						
	FS R50	Rod	Alu		254	215		50					234	
			Carbon					220						
		PBO	Carbon		246	140		220						
		EC6			***	***		***						
	FS R5H MKIII	Rod	Alu		254	215		50					156	
			Carbon					220						
		PBO	Carbon		246	140		220						
		EC6			***	***		***						
UD4s	FS R50	Rod	Alu		294	215	185	50		1885	112		234	150
			Carbon					220						
		PBO	Carbon		326	170		220						
		EC6			***	***		***						
	FS R5H MKIII	Rod	Alu		294	215		50					156	
			Carbon					220						
		PBO	Carbon		326	170		220						
		EC6			***	***		***						
	FS R6H MKIII	Rod	Alu		294	215		50					194	
			Carbon					220						
		PBO	Carbon		326	170		220						
		EC6			***	***		***						
UD5s	FS R6H MKIII	Rod	Alu		340	270	206	50		2105	140		194	200
			Carbon					300						
		PBO	Carbon		390	220		300						
		EC6			***	***		***						
	FS R7H MKIII	Rod	Alu		340	270		50	100				235	
			Carbon					300						
		PBO	Carbon		390	220		300						
		EC6			***	***		***						
	FS R8H MKIII	Rod	Alu		340	270		50					302	
			Carbon					300						
		PBO	Carbon		390	220		300						
		EC6			***	***		***						
	FS R8L	Rod	Alu		340	270		50					369	
			Carbon					300						
		PBO	Carbon		390	220		300						
		EC6			***	***		***						

*	measurement with adjuster fully down! Max. length = X or LS + stroke
**	required length to reach the lower stay connection - slidable foil tube supplied with alu foils only
***	no standard - to be confirmed

For the calculation of the required stay length D and the required foil length B use the values in the table above. Please use the following calculations to determine the measurements. F means sail feeder height. Ensure that your furler is not customized. All measurements with real time adjuster fully down. All measurements in mm.

All measurements with realtime adjuster fully down!

B=AUD-TL-T-LS

with
AUD= length reference, measured from cl / deck cut out to the cl of top terminal pin. Note: Please refer to the notes mentioned in the “toggle” chapter.
TL= terminal length, depending on your topterminal
T= bottom deduction, see table above
LS = top deduction, see table above
B = required foil length including foil adapter tube. Sliding torque tubes in lowest position!

C=P-B

with
C = the foil package has to be shortened by this measurement.
B = see text above
P = unshortened (shipped)foil length, see packing list

The required stay length D is calculated as following:

D = AUD – X

Note

The provided rod nose has to be in the right direction on the bottom end of the stay when using a rod headstay. Ensure that the nose is on the stay before the cold head is pressed.

5.1.1 Foil size

The the next steps of foil assembly are depending on the foil size. Please jump to the chapter which describes the assembly of your foil size!

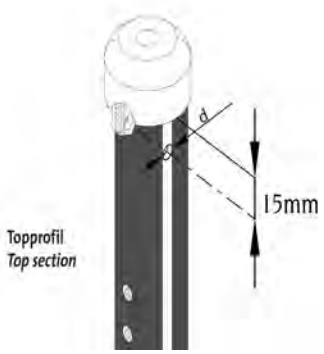
R10 bis R40, including foil reinforcement
R5 und R6
R7

Caution!
Please follow the description for the assembly of your foil size!

5.2 Foil assembly from R10 up to R40

5.2.1 Preparation of the top cap

Insert both half of the top cap into the top section and carefully drill a pilot hole (see table for d in the chapter preparations) on each side for the screws provided. Remove the top cap for installation later.

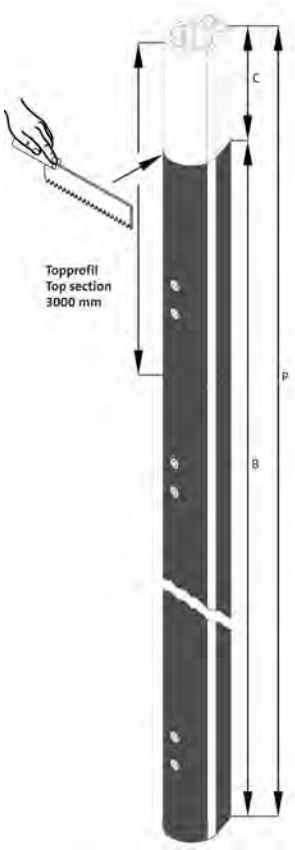


Required drill bit diameter for top cap assembly

R10	3 mm
R20	3 mm
R30	4 mm
R40	4 mm

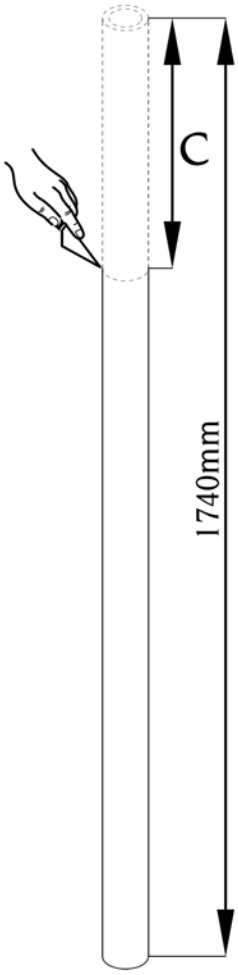
5.2.2 Shortening the top foil

Shorten one of your 3000mm standard foils by the measurement C. This shortened foil is now your top foil.



5.2.3 Shortening the top hose

Shorten the top foil by the measurement C..

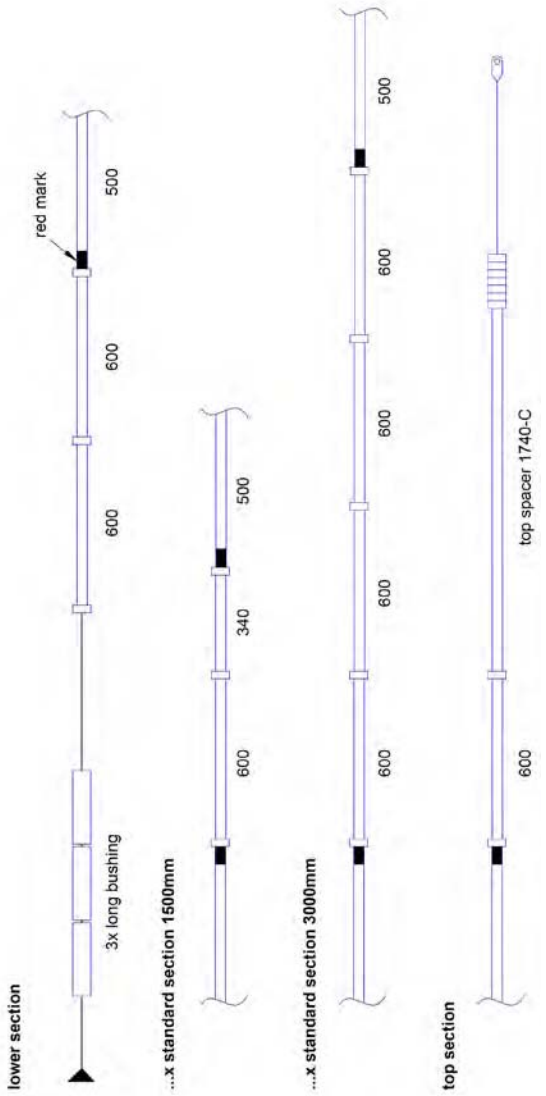


5.3 Assembly of bushings and spacer tubes

If your system was delivered with reinforced profiles please continue with the next chapter for the assemblyprocedure:

Rod headstay:
After assembly of the eye terminal and before cold heading the rod, slide the bushes and spacer tubes onto the forestay from the bottom to the top as shown in the diagram above. Fit the 7 top bushes first and then the top spacer which was cut to match the top section. It is important that the order and numbers of bushes and spacer tubes are fitted as shown in the diagram. This will ensure that the 500 mm spacers, which are marked red, will be correctly positioned for each foil section join. With some systems, depending on the total section lengths supplied, there may be a 1500 mm long section of foil. The bush and tube spacings for this particular section are fitted to the lower end of the stay, as illustrated, ensuring that it is situated on final assembly immediately above the feeder (bottom) section. Finally, after fitting all the bushes and spacer tubes in the correct sequence, fit the bushings and hoses for the feeder section according to the following diagram.
Wire headstay:
After fitting the lower terminal and before assembly of the top terminal, the bushes and spacer tubes are fitted from the top to the bottom as shown in the diagram above. Fit the bushings and hoses for the feeder section first. It is important that the order and numbers of bushes and spacer tubes are fitted as shown in the diagram. This will ensure that the 500 mm spacers, which are marked red, will be correctly positioned for each foil section join. With some systems, depending on the total section lengths supplied, there may be a 1500 mm long section of foil. The bush and tube spacings for this particular section are fitted to the lower end of the stay, as illustrated, ensuring that it is situated on final assembly. Finally after fitting all bushes and spacer tubes in the correct sequence, fit the top spacer and 7 bushes to the top end. Before fitting the top terminal, ensure that all the bush spacing is correct and will match the foil join positions.

Caution:
For foils R10 and R20 two additional bushings have to be placed at the bottom stay end.


red mark
500
600
600
3x long bushing
lower section
500
340
600
...x standard section 1500mm
500
600
600
600
600
...x standard section 3000mm
top spacer 1740-C
600
top section

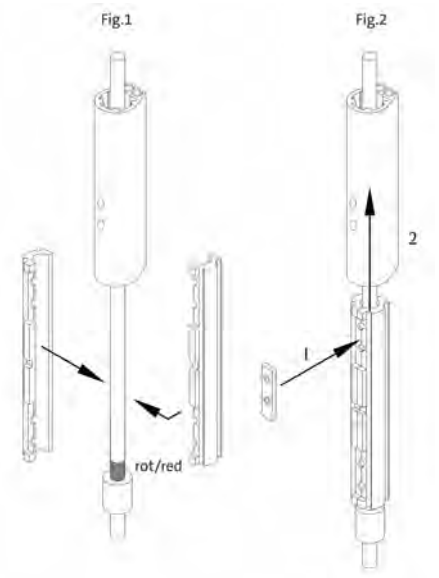
5.3.1 Foil assembly / split foil connectors

After the assembling of the bushes and hoses on the forestay and the shortening of the top profile start to assemble the profiles.

Sequence of the profiles:

Top section -- ..... x Standard section 3000 -- x

Standard section 1500 -- Lower section

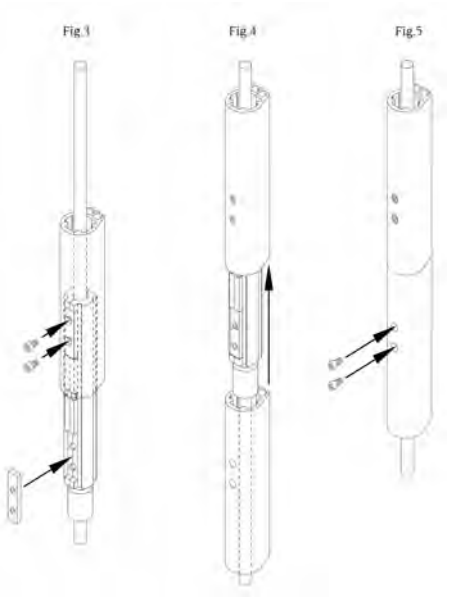


From the bottom end of the stay, slide on and feed the top profile along to the top end of the stay. When in place, assemble a pair of split join sleeves over the stay at the spacer tube, marked red, directly under the top section (fig. 1). Insert a stainless steel plate (1) into the recess on the top half of the join sleeve and make sure that the holes of the plate and the join sleeve are on the same side. Push the join sleeve half of its length into the upper foil section (2). (fig. 2).

Caution!

Ensure that the holes of the connector plate and foil are aligned. Otherwise the Tuff-Lock screws won't fit.

Secure the join sleeve with 2 tuff-lock screws (fig. 3). Slide the next piece of extrusion from the bottom end over the stay up to the join sleeve. Insert the lower stainless steel plate into the recess in the join sleeve (fig. 3). Slide the foil section over the join sleeve (fig.4) until it butts cleanly with the upper section and then secure it with 2 tuff-lock screws (fig.5). This process is repeated until all the foil sections are in place.

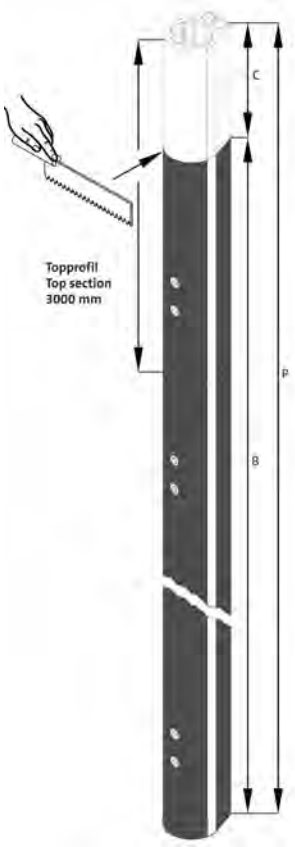


At least the foil reinforcement hast o be slid fully into the feeder section.

5.4 Foil assembly R5 and R6

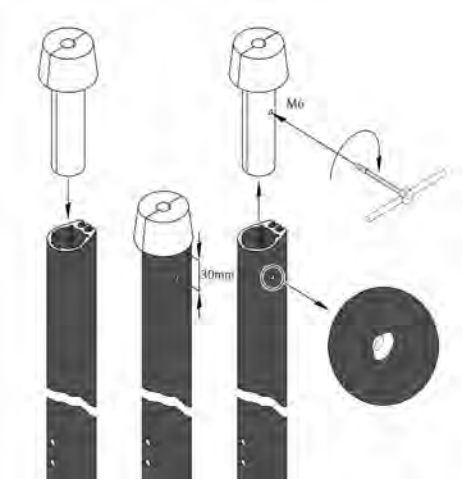
5.4.1 Shortening the top foil

Shorten one of your 3000mm standard foils by the measurement C. This shortened foil is now your top foil.



5.4.2 Preperation of the top cap

Insert both halfes of the top cap into the top section and carefully drill a pilot hole (table for d below) on each side for the screws provided. Remove the top cap for installation later. Make a thread of M6 in both of the top cap halves and suit the boreholes for the countersunk screws.



5.4.3 Sliding the top foil onto the stay

Step 1

From the bottom end of the stay, slide on and

feed the top section along to the top end of

the stay. (Fig. 1)

Step 2

There are four possibilities for installation a.) , b.) , c.) or d.) . Which is correct for your application depends on the measurement C, calculated on page 20:

a.) measurement C < 2150mm: Place two big split bushes and two long spacer tubes on the stay. Secure the bushes with tape and push them together into the top section. (Fig. 2) b.) measurement C > 2150mm : Place only one big split bush and only one long spacer tube on the stay. Secure the bush with tape and push them together into the top section. c.) measurement C > 3850mm :You need no bush and no spacer tube for the top section, go ahead with step 3 of the further installation explained on the next page.

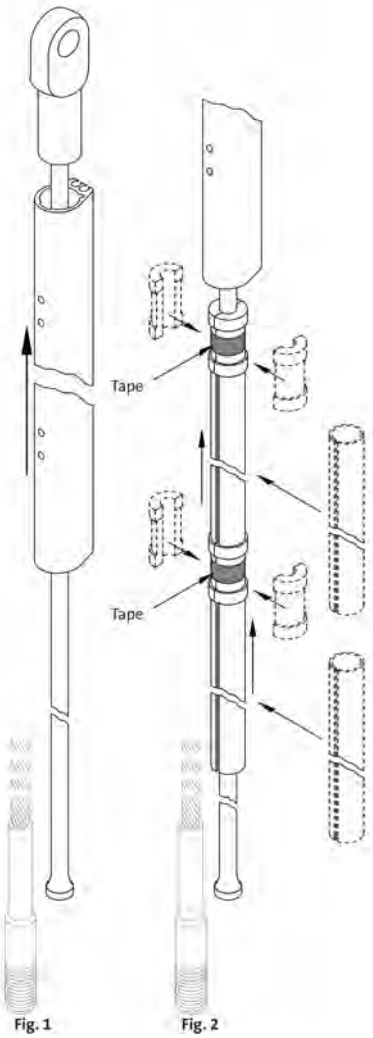


Fig. 1 Fig. 2

d.) measurement C > 5590mm :

You need no bush and no spacer tube for the top section. Either you have to cut the join sleeve or you leave out the top section. If you leave out the top section follow the installation on page 24 with step 5.

5.4.4 Sliding a connector onto the stay

Step 3:

Put a split join sleeve on the stay directly under the top section and assemble one split splice bearing at it's top and bottom end. Fix the splice bearings with the correct delrin screws. (Fig. 3)

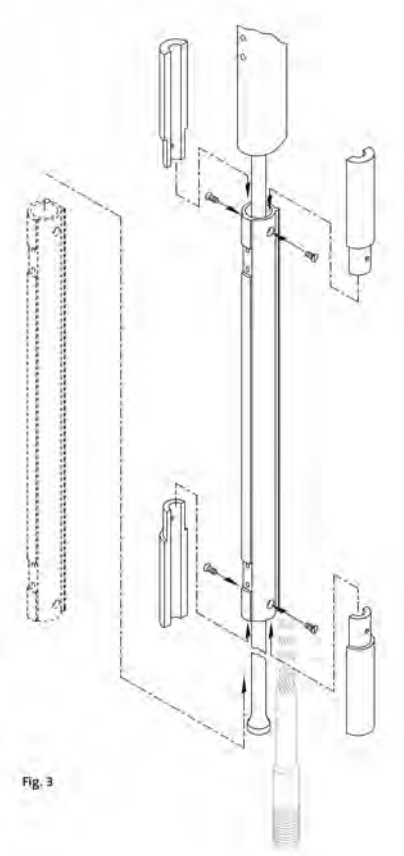


Fig. 3

5.4.5 Inserting a threaded plate

Step 4

Insert a stainless steel plate into the recess on the top half of the join sleeve. Push the join sleeve half of its length into the upper foil section. Secure the join sleeve with 2 tuff-lock screws. (Fig. 4)

Step 5

Slide the next piece of extrusion from the bottom end over the stay up to the join sleeve. Insert the lower stainless steel plate into the recess in the join sleeve. Slide the foil section over the join sleeve until it butts cleanly with the upper section and then secure it with 2 tuff-lock screws. (Fig. 5)

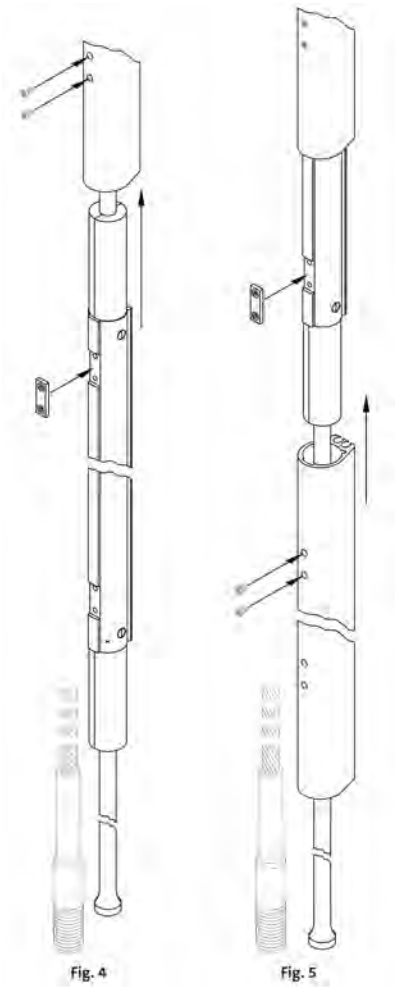
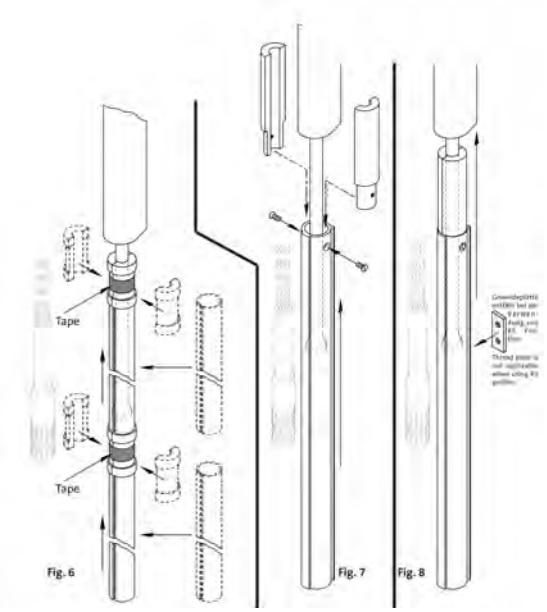


Fig. 4 Fig. 5

5.4.6 Sliding the remaining foils onto the stay

Step 6
Repeat step 2a to step 5 until all of the foil sections are in place. (you don't have to take measurement C into consideration when repeating step 2a)
Step 7
After fitting the last two big bushes and long spacer tubes (Fig. 6), assemble the lower reinforcement on the stay and fit a split splice bearing on its top end. (Fig. 7)
Step 8
Push the ready assembled reinforcement completly into the upper foil section. (Fig. 8)



5.4.7 Assembly of the feeder section

Step 9
Assemble one small split bush and one short spacer tube. Secure the split bush with tape and push them together into the upper foil section (Fig. 9). Repeat this for three times. (Fig. 10 to Fig. 12)

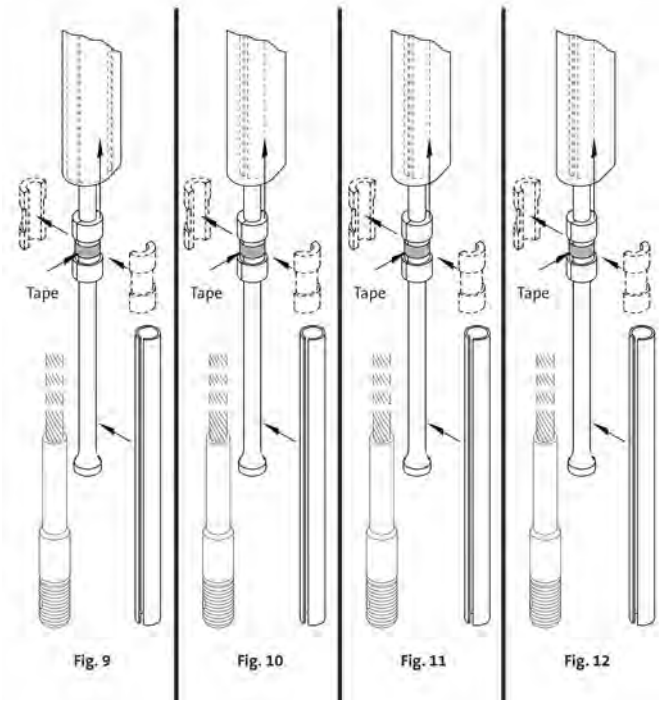


Fig. 9 Fig. 10 Fig. 11 Fig. 12

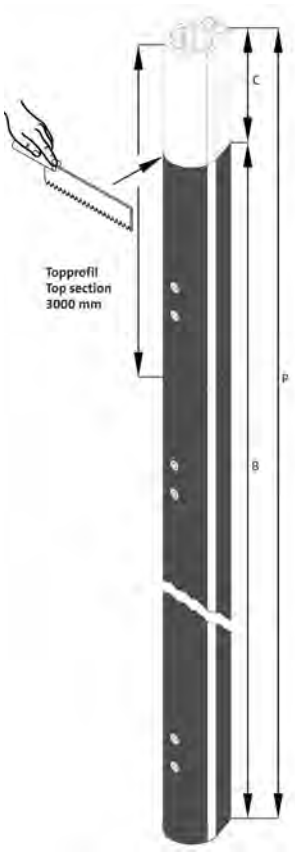
caution!

To avoid the bottom tube sliding on the bottom rod nose,
wrap some layers filament tape around the bottom end of the tube.

5.5 Foil assembly R7

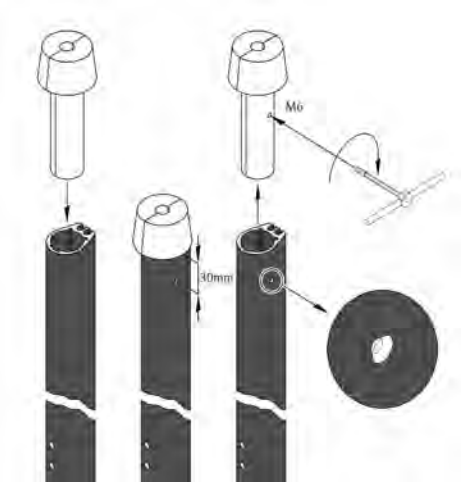
5.5.1 Shortening the top foil

Shorten one of your 3000mm standard foils by the measurement C. This shortened foil is now your top foil.



5.5.2 Preperation of the top cap

Insert both halfes of the top cap into the top section and carefully drill a pilot hole (table for d below) on each side for the screws provided. Remove the top cap for installation later. Make a thread of M6 in both of the top cap halves and suit the boreholes for the countersunk screws.



5.5.3 Sliding the top foil onto the stay

Step 1

From the bottom end of the stay, slide on and

feed the top section along to the top end of

the stay. (Fig. 1)

Step 2

There are four possibilities for installation a.) , b.) , c.) or d.) . Which is correct for your application depends on the measurement C, calculated on page 20:

a.) measurement C < 2150mm: Place two big split bushes and two long spacer tubes on the stay. Secure the bushes with tape and push them together into the top section. (Fig. 2) b.) measurement C > 2150mm : Place only one big split bush and only one long spacer tube on the stay. Secure the bush with tape and push them together into the top section. c.) measurement C > 3850mm :You need no bush and no spacer tube for the top section, go ahead with step 3 of the further installation explained on the next page.

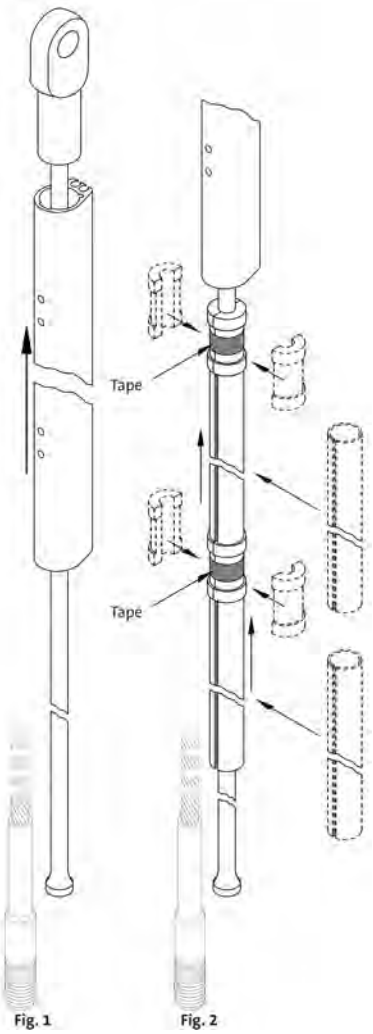


Fig. 1 Fig. 2

d.) measurement C > 5590mm :

You need no bush and no spacer tube for the top section. Either you have to cut the join sleeve or you leave out the top section. If you leave out the top section follow the installation on page 24 with step 5.

5.5.4 Sliding a connector onto the stay

Step 3

Put a split join sleeve on the stay directly under the top section and assemble one split splice bearing at it's top and bottom end. Fix the splice bearings with the correct delrin screws. (Fig. 3)

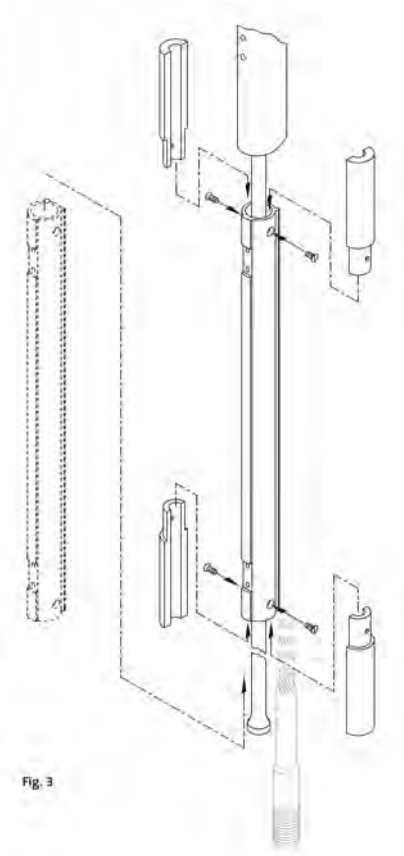


Fig. 3

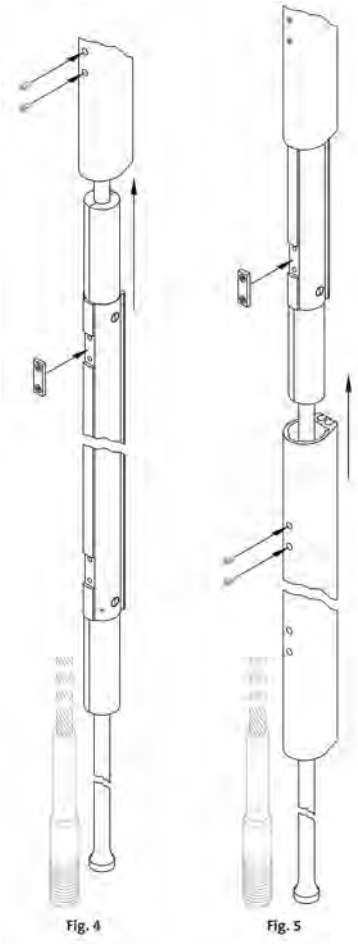
5.5.5 Inserting a threaded plate

Step 4

Insert a stainless steel plate into the recess on the top half of the join sleeve. Push the join sleeve half of its length into the upper foil section. Secure the join sleeve with 2 tuff-lock screws. (Fig. 4)

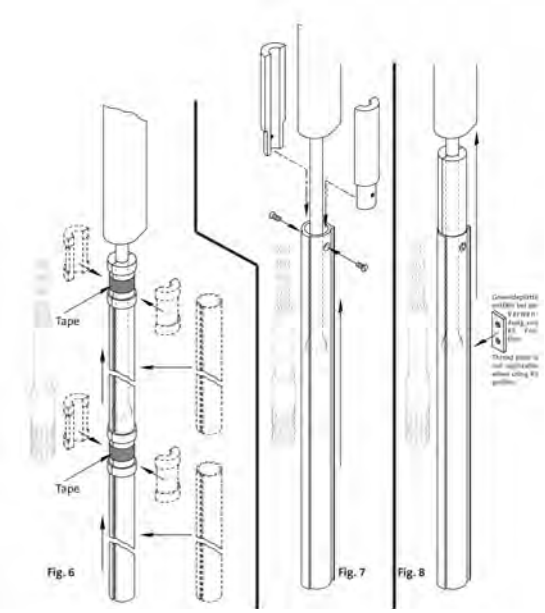
Step 5

Slide the next piece of extrusion from the bottom end over the stay up to the join sleeve. Insert the lower stainless steel plate into the recess in the join sleeve. Slide the foil section over the join sleeve until it butts cleanly with the upper section and then secure it with 2 tuff-lock screws. (Fig. 5)



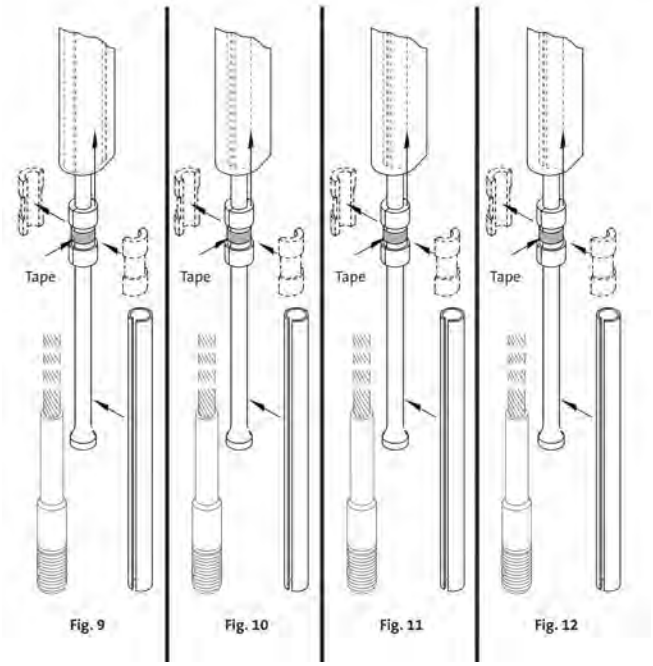
5.5.6 Sliding the remaining foils onto the stay

Step 6
Repeat step 2a to step 5 until all of the foil sections are in place. (you don't have to take measurement C into consideration when repeating step 2a)
Step 7
After fitting the last two big bushes and long spacer tubes (Fig. 6), assemble the lower reinforcement on the stay and fit a split splice bearing on its top end. (Fig. 7)
Step 8
Push the ready assembled reinforcement completly into the upper foil section. (Fig. 8)



5.5.7 Assembly of the feeder section

Step 9
Assemble one small split bush and one short spacer tube. Secure the split bush with tape and push them together into the upper foil section (Fig. 9). Repeat this for three times. (Fig. 10 to Fig. 12)

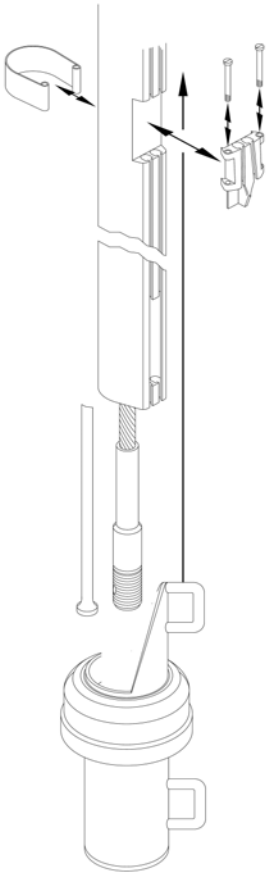


caution!

To avoid the bottom tube sliding on the bottom rod nose,
wrap some layers filament tape around the bottom end of the tube.

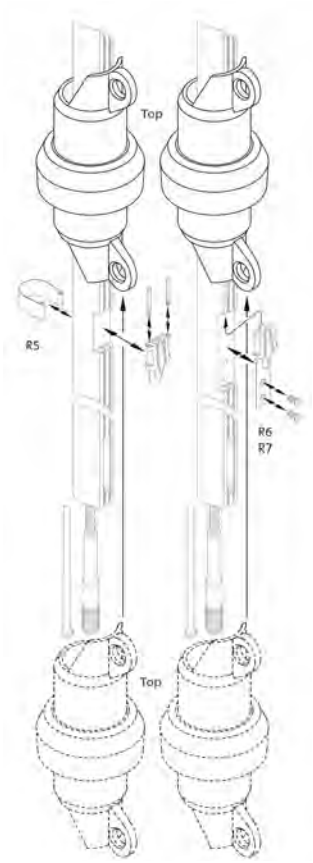
5.6 Assembly of halyard swivel and sail feeder for foils R10 and R20

When the halyard swivel is on the profile lay the sail feeder in its recess in the foil. Secure it with the clamp and the two provided screws as it is shown on the picture.



5.7 Halyard swivel and sail feeder assembly R5, R6 und R7

Slide the halyard swivel over the stay and foilsection along into a position above the sail feeder. Check that the swivel travels smoothly over the foil and that it is the correct way up. If the sail feeder is in place, it has to be removed to allow the swivel to pass: Profile R5: Place the sail feeder into position in the recess on the lower foil section, then slide the securing clip on the foil. Fix the clip and the sail feeder with two screws. Profile R6 and R7: Place the sail feeder into position in the recess on the lower foil section and secure it with two screws.

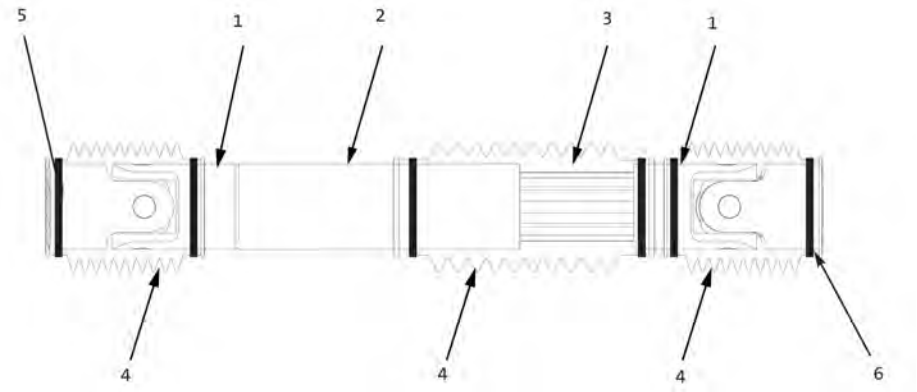


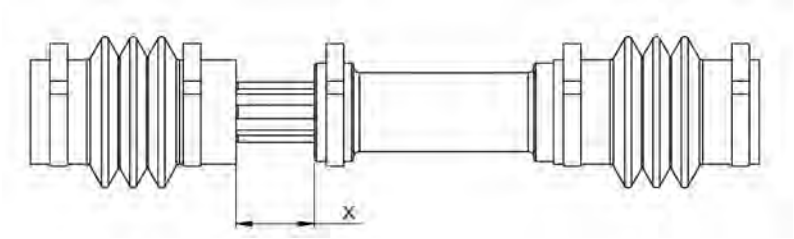
Note

For the following installations
the swivel has to be placed above the sail feeder

5.8 Cardan shaft connection:

1 Cardan joint
2 Spline shaft
3 Spline collar
4 Folding bellow
5 screws
6 Hose clamps





assembly of the shaft:

Please pay attenion to the following points while assembling the cardan shaft connection of the primary and the secondary gear box. Slide three folding bellows on the shaft. Slide the cardan joint on the shaft of one fore gearbox which is near by the length adjustment of the shaft. Take care that the key is in correct position. Repeat this step for the second cardan joint. Secure the joints on the shaft. The forks of the cardan joint have to be aligned as shown on the illustration below, each universal is marked with a “0” for easier alignment.

Ensure that the move out of the spline shaft is in middle position (X=X0). The maximum move out is X=XMAX.

Secure the joints on the gear box shafts with the screws. The angle of the two joints to the shaft have to be similar, else it would force strong abrasion. Now slide the bellows, filled with grease, over the joints and secure them with the hose clamps provided

Caution!

The slpine shaft may be damaged when it is pulled out over the maximum value XMAX.

Caution!

The universal joints may be damaged when the deflection angle exceeds 10°. The deflection angles of both joints have to be similar.

Caution!

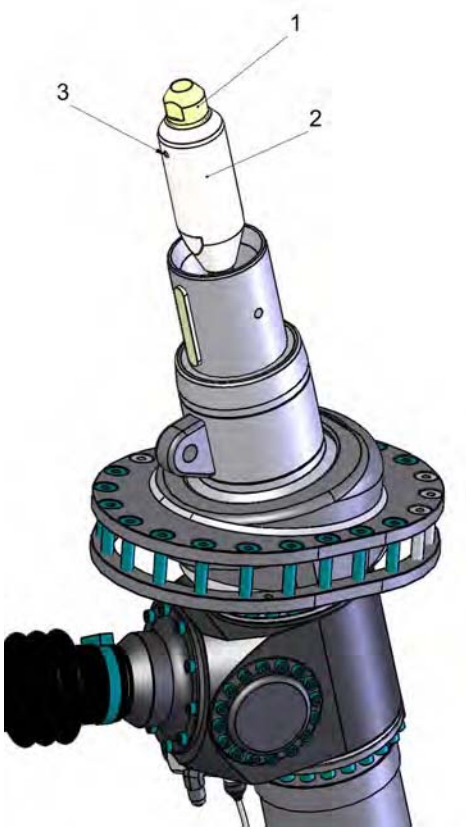
Misalignement of the universals causes excessive friction.
Make sure that the "0" marks at each end of the shaft are aligned.

Caution!

Unsecured screws may come loose due to vibrations.Secure all screws with Loctite or
a similar securing fluid.

6 Connecting foils and furler

6.1 Connection of stay and furler



After the secondary gear unit was installed to the deck, the headstay can be connected to the furler.

Apply Tef-Gel or similar to the thread of the rod nose. Screw the rod nose (1) into the connector until no thread is visible above the connector (2). Secure the connection with both provided grub screws (3).

Caution!

After the nose is srewed entirely into the connector, no thread may be visible above the connector.

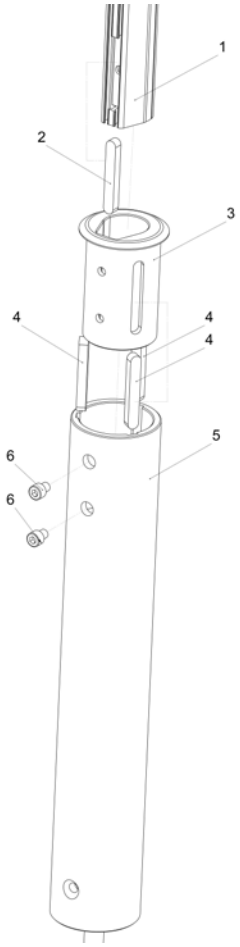
Caution!

Risk of seizing of the thread!
Apply Tef-Gel or simiral to the thread before the nose is screwed into the connector!

6.2 Components of the foil connection assembly

The connection of furler and foils consits

of the following components:



1	Feeder section
2	Key
3	Foil spec. Insert
4	Keys
5	Torque Tube
6	Securing screws

To access the stay connector, the entire torque tube assembly can be slided on the feeder section: Release both securing screws (6) and slide the torque tube on the feeder section.

After the stay is connected, the torque tube is slided back in its position. Secure it with both securing screws (6).

6.3 Connection of foils and furler

Coat the shaft with Tef-Gel, lay the spacer ring (3) onto its recess on the shaft, then insert the keys in the keyways in the gearbox shaft, push the lowest foil section with in-glued profile adapter over the shaft. Secure the foil with the provided countersunk screws.

.

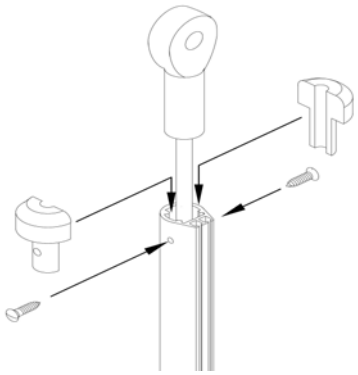
Caution!

Risk of corrosion!
Apply Tef-Gel or similar to all screws, keys and the foil flange before assembly!

6.4 Assembly of the top cap

(as an option)

Ensure that all the delrin bushes are inside the foil section and then insert the top cap into the top profile and secure in place with the two screws provided.



6.5 Installation of the entire furling system

The following points should be noted for the installation of the the Reckmann furler:

Avoid damage of the profiles during installation through excessive bending. The headstay unit can be installed in two ways:

It can either be fitted to a stepped mast as shown in fig.1

or together with the mast when it is stepped as described in fig. 2.

If the second way is chosen, bending of the headstay at the mastheadhas to be avoided, particularly if the halyard

sheave protrudes beyond the headstay pin.

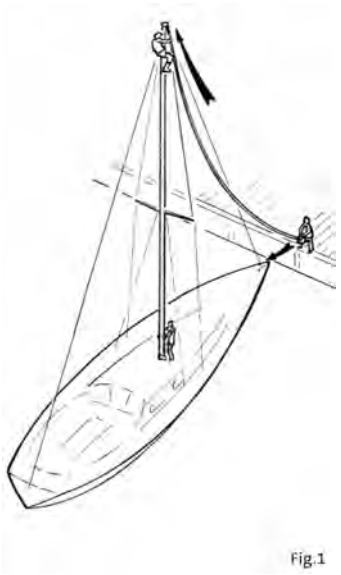


Fig.1

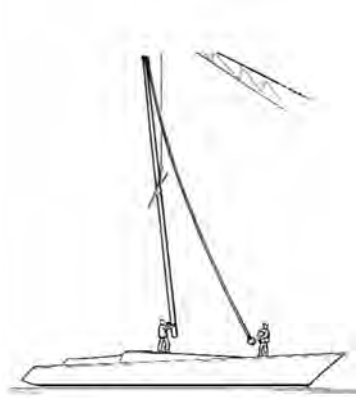
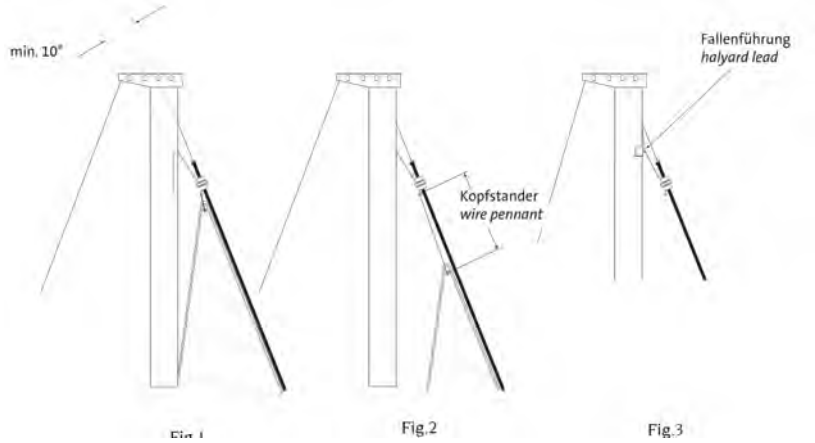


Fig.2

Warning, Danger!

Do not attach the hoisting rope to the halyardswivel as it could damage the
the halyard swivel itself.
Attach the hoisting line to the headstay, directly below the top terminal.

6.6 Configuration of the head



Halyard leads

To prevent the genoa halyard from twisting around the forestay, the angle between forestay and halyard must be at least 10 ° (fig. 1). If this requirement is not fulfilled a halyard lead must be fitted.

(fig.3)

Position of the halyard swivel If the boat is equipped with more than one headsail, each one should be given equal luff length so that the halyard swivel will be located at the same level when the sail is hoisted. It is imperative that the halyard shackle is always at the same position at the top, i.e. approx. 20cm from the halyard sheave. If the sails are not cut to the same length, a wire pennant must be fitted to ensure that the halyard swivel is always at the same hight when the sail is hoisted. (fig 2)

Note

The angle between halyard and headstay has to be at least 10°. If the angle is less than 10° a halyard lead has to be installed.

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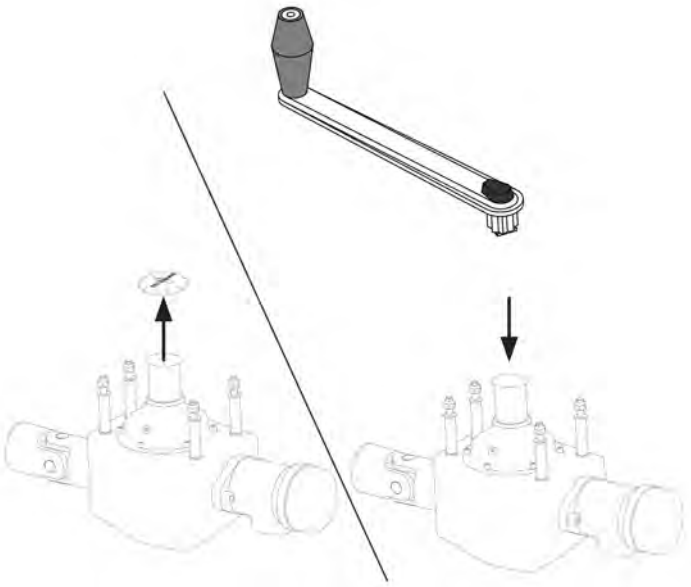
6.7 Operation of the manual backup drive



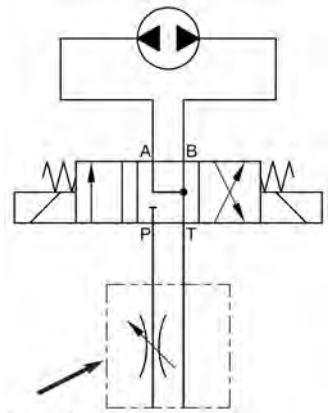
If a defect affects a normal operation of the furler impossible, sails can be furled manually by hand. Manual handling requires a standard winch handle inserted into the winch socket. Insert the handle completely into the socket, it has to be locked in place, otherwise the drive is not separated from the gear. If problems arise when inserting the handle into the socket, try to turn the handle while inserting to allow easier coupling of the parts. We would like to point out that there is no power transmitted to the handle at any time, due to the special gear construction. It is possible to take the hands off the handle in any position without recoil. Please note! Make sure that the winch handle is always completely connected with the socket during the manual operation. The emergency manual drive is automatically switched off by pulling the handle out of the winch socket.

6.8 Valve configuration of the motor

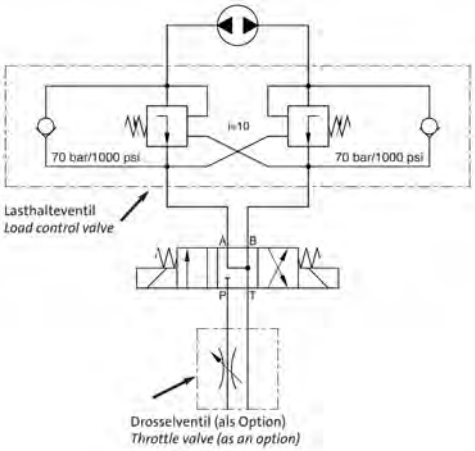
The UDs series furlers should be controlled by a 4/3 directional control valve with symbol 4. In dependence of the power pack flow rate a throttle valve is required in line P. The oil flow should not exceed the number mentioned in the spec sheet at the end of this manual, otherwise the hydraulic drive could be damaged.
From UDs-4 up, a load control valve is required in the line from the directional valve to the hydraulic drive. We recommend to place this valve block close to the hydraulic drive and not direct on the power pack.
If you run furlers from UDs-4 up without
a load control valve, a safe operation is not guaranteed. The required valve block includes two load control valves with a control ratio of i=10 and an adjustable control pressure between 70 bar and 175 bar.
We offer this load control valve block with an aluminium housing and two valve cartridges. The thread size for the hydraulic line fittings is 1/2". If you like us to deliver this block, please contact us.

Warning!
Exceeding the maximum values of oil flow and pressure may cause damages of the furler. Make sure the max. values named in the spec. sheet at the end of this manual are not exceeded.

Getriebe bis Größe UDs-3



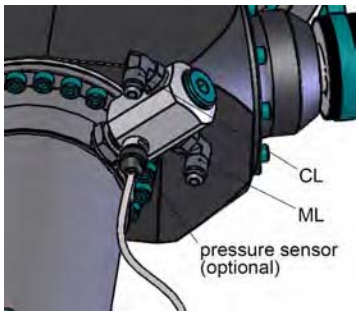
Getriebe ab Größe UDs-4



7 Connection of the hydraulic hoses to the real time adjuster

The Reckmann real time adjuster has a main line (ML) and a control line (in case of an installed po-check valve).
Both protection caps need to be removed from the ports before the hoses can be connected.
Both ports can be identified by their thread size:

ML	¼‘
CL	1/8‘



8 Stay adjustment with the real time adjuster

Depending on the scope of supply of your furler, it is equipped with a load control valve. Please see the specification sheet at the end of the manual for this information.
Make sure that both (when the adjuster is NOT equipped with a po-check valve just one) ports are connected proper.

Warning – Risk of damages!

The real time adjuster is a tool for stay tension adjustment. Its high load level may cause damages of the foils and sails when not complete disconnected. Release the halyard and detach halyard locks before operation of the real time adjuster.

Tensioning the stay:
Pump oil into the main line (ml) port of the adjuster to tension the stay. The po-check valve (if installed) is unlocking in this direction automatically. Information regarding the adjuster stroke can be found in the technical specification table at the end of this manual.

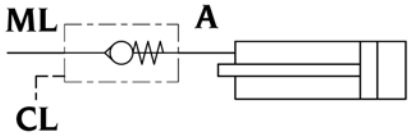
Warning – risk of damages!

Exceeding oil flow and pressure may cause damages of the furler.
Make sure that the max. cont. pressure in the adjuster does not exceed **350 bar** (**250 bar** for UD3)and the max. oil flow dies not exceed 2l/min.

If your adjuster is equipped with a po-check valve, you can make the main line pressure free. The po-check valve will keep the pressure in the adjuster.

Releasing the system

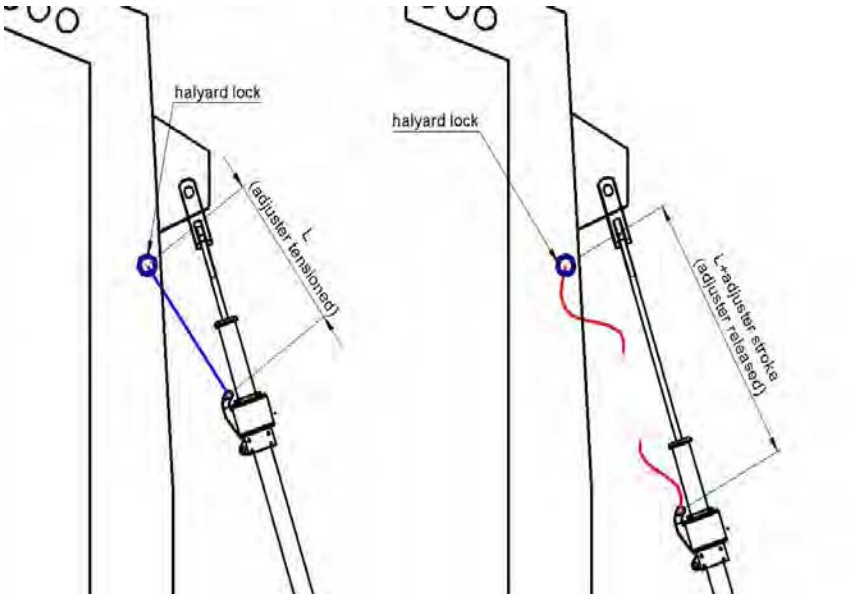
Function diagram of the po-check valve:



If a po-check valve is installed, it has to be unlocked for releasing the stay tension. The piston will be pulled out by the stay load.
To unlock the po-check valve, the control line cl needs to be pressurized. Due to the proportion of area in the valve, the required pressure to unlock the valve can be calculated in the following way:
Pcl=(pa/2,6)+2,5
Due to leakage in the valve, it can be necessary to adjust the pressure in the control line.

8.1 Stay adjustment in relation to halyard tension

The real time adjuster is tensioning the stay in relation to the foils. The stay retratcts topside of the profiles when tensioned (fig.1) and expands out of the foils when eased (fig. 2). While easing the distance between halyard swivel and halyard lock enlarges.
Now if neither the halyard nor the cunnigham is eased, the real time adjuster released, the luff of the sail will be loaded.



When you are operating a halyard lock you need to ease the Cunningham when the real time adjuster is released.
If you do not have a halyard lock you have to ease the halyard.
Please make sure you only adjust the stay while the sail is unfurled.

Operating safe is a simple step by step process, which can de done either with PLC logic or manual.

Please follow these steps to adjust the stay tension:

Tensioning the stay:

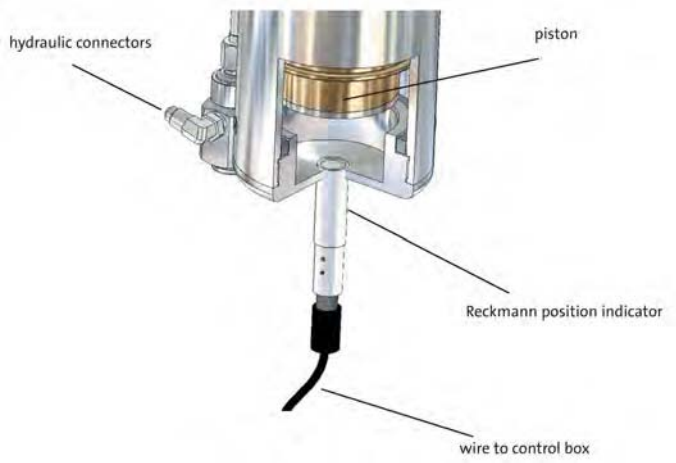
1. Unfurl the sail completely
2. Tension stay (without load)
3. Tension Cunningham (without sheet load)

Easing the stay:

1. Unfurl the sail
2. Ease Cunningham (without sheet load)
3. Ease stay (without sheet load)

Note!
Each function should be locked until the previous function is completed or
eased/tensioned to a predetermined point/pressure.

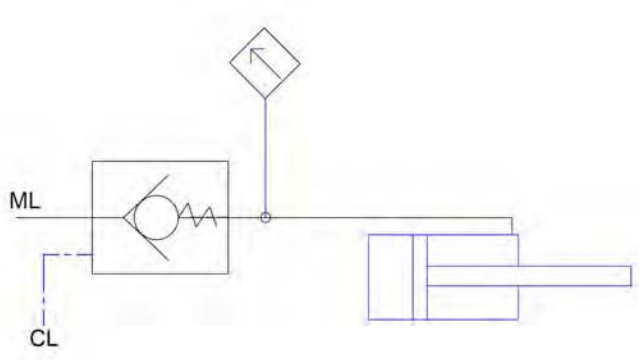
8.2 Piston position indicator (as an option)



To report the position of the piston of the real time adjuster to the helmsman, Reckmann uses a special electronic sensor. The sensor is situated at the bottom of the adjuster. It is easily accessible for cleaning or changing. The sensor can be connected to the electronic system available on the yacht, for example B&G Hercules or Hydra servers. Reckmann deliveres the sensor ready configured with a small connection box. The sensor has the following technical specifications:
operating voltage: from 10V up to 30V dc
electric power: 40 mA
output: linear analog voltage
0V up to 10V (6.5V) dc, rising characteristic
wiring: pin 1: +10 up to +30 V dc (brown)
pin 2: signal, 0 up to 10 V dc (white)
pin 3: gnd (blue)
0 V @ piston fully down
10 V @ piston in highest position

8.3 Pressure sensor (as an option)

As an option we provide a pressure sensing unit to monitor the pressure in the adjuster. This value is corresponding with the load on the stay. The pressure can be measured as long as the adjuster is not in top position. There are two versions of the pressure sensor: one with 0,5...4,5V output and one with 4...20mA output. Please find the specs referring to your sensor on the following pages.
Hydraulic connection of the sensor:



Caution!

The sensor cannot measure the pressure inside the adjuster when it is fully extended.
Do not fully extend the adjuster to ensure a proper function of the sensor.
.

8.3.1 Sensor with 0,5 ... 4,5V output

The sensor comes with a 2m wire. The housing is made of stainless steel and the wire is sealed to the sensor. The Sensor requires a M8x1 thread for the connection to the hydraulic system.

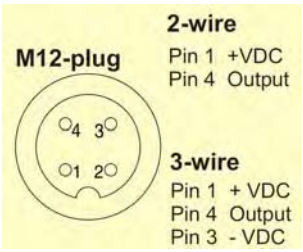
Electric connection of the sensor:

Power supply +	8...28V	brown
ground	-	green
Signal	0,5...4,5V	white

8.3.2 Sensor with 4...20mA output

The sensor is connected with a M12 plug. The plug with attached cable is made from stainless steel and plastic. The connection is IP67 watertight, the sensor housing is made of stainless steel. We recommend to protect the sensor and the cable from direct contact to sea water. The sensor is connected with a ¼' to M8x1 adapter to the hydraulic system.

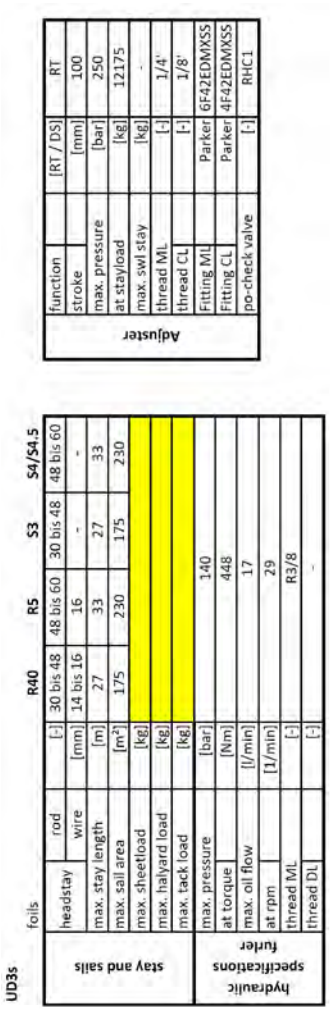
Electric connection of the sensor: (2-pin version)



Technical data:

Pressure range	0...400 bar
Max. excess pressure	600 bar
Output signal (2 wire)	4...20 mA
Ub	12...36V
Housing material	1.4305

9 specifications



UD3s	foils			R40	R5	S3	S4/S4.5
stay and sails	headstay	rod	[-]	30 bis 48	48 bis 60	30 bis 48	48 bis 60
		wire	[mm]	14 bis 16	16	-	-
	max. stay length		[m]	27	33	27	33
	max. sail area		[m²]	175	230	175	230
	max. sheetload		[kg]				
	max. hallyard load		[kg]				
	max. tack load		[kg]				
hydraulic specifications furler	max. pressure		[bar]	140			
	at torque		[Nm]	448			
	max. oil flow		[l/min]	17			
	at rpm		[1/min]	29			
	thread ML		[-]	R3/8			
	thread DL		[-]	-			

Adjuster		[RT / DS]	RT
stroke		[mm]	100
max. pressure		[bar]	250
at stayload		[kg]	12175
max. swl stay		[kg]	-
thread ML		[-]	1/4"
thread CL		[-]	1/8"
Fitting ML		Parker	6F42EDMXSS
Fitting CL		Parker	4F42EDMXSS
po-check valve		[-]	RHC1

JD4s

	foils			R5	R7	S5	S5.5
stay and sails	headstay	rod	[-]	60 bis 76	76 bis 91	60 bis 76	76 bis 91
		wire	[mm]	19	21	-	-
	max. stay length		[m]	36	38	36	38
	max. sail area		[m²]	275	320	275	320
	max. sheetload		[kg]				
	max. halyard load		[kg]				
	max. tack load		[kg]				
hydraulic specifications furler	max. pressure		[bar]	140			
	at torque		[Nm]	918			
	max. oil flow		[l/min]	37			
	at rpm		[1/min]	33			
	thread ML		[-]	R3/8'			
	thread DL		[-]	-			

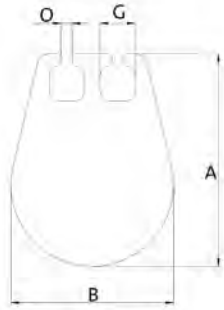
Adjuster	function	[RT / DS]	RT
	stroke	[mm]	150
	max. pressure	[bar]	350
	at stayload	[kg]	-
	max. swl stay	[kg]	-
	thread ML	[-]	1/4'
	thread CL	[-]	1/8'
	Fitting ML	Parker	6F42EDMXSS
	Fitting CL	Parker	4F42EDMXSS
	po-check valve	[-]	RHC 1/0

UD5s

	Profiltyp			R6	R7	S6	S6.5/S7
stay and sails	headstay	rod	[-]	91	115 bis 150	91	115 bis 150
		wire	[mm]	26	28 bis 32	-	-
	max. stay length		[m]	40	50	40	50
	max. sail area		[m²]	350	500	350	500
	max. sheetload		[kg]				
	max. halyard load		[kg]				
	max. tack load		[kg]				
hydraulic specifications furler	max. pressure		[bar]	175			
	at torque		[Nm]	1102			
	max. oil flow		[l/min]	40			
	at rpm		[1/min]	44			
	thread ML		[-]	R3/8'			
	thread DL		[-]	-			

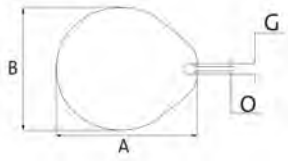
Adjuster	function		[RT / DS]	RT
	stroke		[mm]	200
	max. pressure		[bar]	350
	at stayload		[kg]	-
	max. swl stay		[kg]	-
	thread ML		[-]	1/4'
	thread CL		[-]	1/8'
	Fitting ML		Parker	6F42EDMXSS
	Fitting CL		Parker	4F42EDMXSS
	po-check valve		[-]	RHC 1/0

R20-R7 / S2-S2.5



	G	O	A	B
R20	6,4	2,3	35,8	28,8
R30	7,5	3	45,5	36,1
R40	7,5	3	49,1	38,7
R5	7,5	3,8	60,0	47,0
R6	7,5	3,5	72,0	60,0
R7	7,5	3,3	85,0	72,0
R8	8	3,2	107,0	93,0

R8 / S3-S7



	G	O	A	B
S2	7,2	2,8	38,5	29,0
S2.5	7,2	2,8	38,5	32,2
S3	7,2	2,8	49,0	38,5
S4	7,2	2,8	55,4	44,4
S4.5	7,2	2,8	60,0	50,8
S5	7,2	2,8	67,1	56,6
S5.5	7,2	2,8	72,8	62,7
S6	7,2	2,8	82,0	68,9
S6.5	7,2	2,8	86,9	76,2
S7	10	3,8	91,3	81,3

All measures are mm, mistakes
and changes with reservation.

10 Dealer network and service stations

Denmark

Nordic Mast A/S
Torben Jacobsen
Bergensvej 6
DK–6230 Rödekro
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F.: +45 74 630543
info@nordicmast.com

With Marine A/S
Leangbutka 31
N - 1392 Vettre
T.: +47 66 79 89 14
F.: +47 66 79 74 83
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Sweden

Ewalco Marine
Magnus Wosse
Baggakersgatan 4a
SE - 400 93 Göteborg
T.: +46 31 706 3898
F.: +46 31 876 535
mw@ewalco.se

Elvström Sobstad Norge A/S
Espen Kamperhaug
Sjøsenteret Vallø-PO Box 148
N - 3166 Tolsvrød
T.: +47 3341 4141
F.: +47 3341 4142
info@elvstrom-sobstad.no

Norway

Southern Cross Spars A/S
Sandviksvn 120
N - 1363 Høvik
T.: +47 959 77482
F.: +47 9720 18 18
ed@southerncross.no

United Kingdom

HYS Rigging
Dennis Fisher
Port Hamble
GB– Hampshire SO31 4NN
T.: +44 2380 454111
F.: +44 2380 455682
rigging@hambleyachtservices.co.uk

Netherlands
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F.: +31 345 56 9849
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France
Gréement Import
13 Rue du Chéne Lassé - BP
F–44803 Saint - Herblain
T.: +33 2 28 03 01 01
F.: +33 2 28 03 19 91
bb@greementimport.fr

Croatia
ASPAR Rigging
Luzine bb
CRO-51000 Rijeka
T.: +385 51 674 031
F.: +385 - 51 674 031
aspar-rigging@ri.t-com.hr

Italy
G&G Rigging srl
Walter Giovanelli
Via Mazzini 33
I–20099 Sesto S. Giovanni
T.: +39 02 454 811 90
F.: +39 02 365 138 95
info@gegrigging.com

Spain
Yachttech
Oliver Blume
C /Ca'n Valero 40, Nave
E–07011 Palma de Mallorca
T.: +34 971 200052
F.: +34 971 296504
info@yachttech.net

Sinera Rigging
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E-08039 Barcelona
T.: +34 932 254 934
F.: +34 932 251 949
info@sinerarigging.com

Slovenia
DNA d.o.o.
Miha Spendal
Kantetova 85
1000 Ljubljana
T.: +386 41 730 970
F.: +386 12776 606
dnamsp@siol.net

Malta
XS Marine Ltd.
James Xuereb
26, Paul Borg Str.
Attard, Atd 2632
T.: +356 7900 9300
F.: +356 2141 3894
info@xs-marine.com

Greece
Kafetzidakis Sails
Kostas Kafetzidakis
90 Tzavella
GR–18533 Piraeus
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F.: +30 210 413 16 24
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Turkey
Mavituna Mumessillik Muhendislik
Songür Ulus
Yayla Mah. Istasyon Cad. Bandros
Mevkii, Eksioglu MimozaSitesi,
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F.: +64 9 3583309
info@southernspars.com

New Zealand Rigging Ltd.
31 Woodside Ave - Northcote
NZ– Auckland
T.: +64 9 480 8090
F.: +64 9 480 9190
bart@nzrigging.com

Australia

Riggtech
Phill Bate
Royal Prince Alfred Yacht Club
2/16 Mitala Street,
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T.: +61 2 9997 8100
F.: +61 2 9979 6848
info@riggtech.com.au

USA

Nance and Underwood
262 Southwest 33rd st.
USA - FT Lauderdale, FL 33315
T.: +1 954 764 6001
F.: +1 954 764 5977
nanceandunderwood@aol.com

Caribbean

Antigua Rigging Ltd.
Stan Pearson
English Harbour
Antigua, West Indies
T.: +1 268 4638575
F.: +1 268 5621294
info@antiguarigging.com

Euro Marine Trading, Inc.
Siebe Noordzy
62 Halsey Street, Unit M
USA– Newport, RI 02840
T.: +1 401 849 0060
F.: +1 401 849 3230
info@euromarinetrading.com

FKG Marine Rigging
Kevin Gavin
37 Wellington Road
99998 St. Maarten
Netherlands Antilles
Tel. +599 544 4733
Fax. +599 544 2171
kevin@fkg-marine-rigging.com

Florida Rigging & Hydraulics, Inc.
3905 Investment Lane, Suite 9
USA– Riviera Beach, FL 33404
T.: +1 561 8637444
F.: +1 561 8637711
cehinger@rigginghydraulics.com

Offshore Spars
Mike Feldmann
50200 E.Russell Schmidt Blvd.
USA– Chesterfield, MI 48051
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F.: +1 586 598 4705
mike@offshorespars.com

Rigworks Inc.
Ray Pope
2540 Shelter Island Drv.
USA - San Diego , CA 92106
T.: +1 619 223 3788
F.: +1 619 223 3099
info@rigworks.com

Rigg Pro
14 Regatta Way
USA - Portsmouth, RI 02871
T.: +1 401 683 2151
F.: +1 401 683 7878
john.b@southernspars.com