FURLERS

HOLT Nautos™

Assembly and Installation Manual

Furlers #0 - #0HL - #1 - #1,5 - #2 - #2,5

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Dear assembler

Nautos and the product owner rely on your skill and expertise to assemble this furler.

In order to facilitate the assembling and guarantee the product's performance, we made our best efforts to gather as much information as possible in this manual.

Obviously, we are not able to cover all possible variations since there are different boat features and factors that cannot be foreseen.

Should you have any doubts or questions, please do not hesitate to contact us and we will be pleased to help you.

We recommend that, for compatibility reasons, besides safety and warranty requirements, you observe the limits below:

Furler Load and Dimension Limits

Limits	#0 std	#0 HL
Boats up to	25'	28'
Genoa up to	25sqm	30sqm
Forestay up to	Ø5mmx9,6m	Ø6mmx13,8m

Limits	#1	#1,5	
Boats up to	35'	38'	
Genoa up to	40sqm	52sqm	
Forestay up to	Ø8mmx16m	Ø8mmx 18m	
		or Ø8 Dyform	**Check**

Limits	#2	#2,5	
Boats up to	46'	49'	
Genoa up to	70sqm	90sqm	
Forestay up to	Ø10mmx20,6m	Ø12,7mmx23m	
		or Ø12 Dyform	**Check**

Below you will find the packing list that comes with the product and is also included on the first pages of the Operation Manual. The same list is used for all types of furlers, although the quantities may vary according to the model. Please, check if you have received all components. If any of the items are missing, contact your dealer or manufacturer immediately.

PACKING LIST

Type	Reference	Unit no.

01	Main set with spool and guard…….....	
01	Halyard swivel set…….....	
01	Torque tube….....	
___	2,13m standard sections	
01	Short lower section.....	
___	Standard connectors.....	
01	Short top connector….....	
01	Long lower connector.....	
___	Standard connector key…….....	
___	Short keys for lower and upper connectors…….....	
01	Feeder …….....	
01	Fast terminal Ø_____.....	
01	Swage terminal Ø_____.....	
01	Terminal lock-nut…….....	
01	Plastic spacer ring.....	
01	Brass ring –section/terminal.....	
___	Section joint screws…….....	
___	10g Threadlocker	
01	Spare screw set…….....	
01	Instruction Manual ….....	

Packed by:	Date:

The Warranty Term and Condition also comes with all products. Below you will find the transcript of this document. We would like to thank you for assisting the owner of the product throughout the assembly as well as helping him/her to fill out the document if necessary.

Termo de Garantia

Todos os produtos HoltNautos™ são garantidos contra defeitos de fabricação durante 5 (cinco) anos a contar da data da compra descrita na Nota Fiscal. Esta garantia é válida para as condições normais de uso (cruzeiro de recreio) e segundo recomendações indicadas no catálogo ou em documentos HoltNautos™.

A garantia fica reduzida nos seguintes casos:

- *As catracas têm garantia de 4 (quatro) anos.*
- *Terminais e esticadores prensados têm garantia de 02 (dois) anos.*
- *Todos os produtos recebem 2 anos de garantia, quando usados em regatas e cruzeiros excepcionais, como por exemplo, volta ao mundo ou uso profissional contínuo.*
- *As polias transparentes têm garantia de 1 (um) ano.*

Regatas, Uso Profissional ou Cruzeiros Excepcionais :

- Nestes casos, a Garantia só será válida se os equipamentos tiverem sido especificados diretamente pela fábrica, ou, por documento que ateste a concordância da fábrica com os equipamentos especificados.

A garantia não cobre

- *Desgaste normal, manchas de oxidação, descoloramento, tudo que não afeta a resistência das peças;*
- *Os danos resultantes de negligência ou falta de manutenção e instalação incorreta;*

Manutenção

As ferragens e moitões com rolamentos exigem lavagem com água doce e as peças constituídas de alumínio, uma lubrificação ocasional. Por medida de segurança as manilhas e peças submetidas a grande esforço, especialmente os eixos, as junções, as laterais dos moitões de estais volantes ou de popa, devem ser examinados regularmente. A aparição de fendas ou deformações indica que a peça não é mais utilizável e deve ser substituída. Neste caso consulte o catálogo e verifique se o produto foi utilizado de acordo com as indicações. Em caso de dúvida, consulte o revendedor ou o fabricante.

Catálogo

As ilustrações e descrições do catálogo HoltNautos™ não são contratuais e são dadas a título indicativo. A Nautos SA Indústria Metalúrgica se reserva a possibilidade de modificar, sem aviso prévio, as características técnicas dos produtos.

A reprodução integral ou parcial do catálogo só é permitida com autorização escrita do fabricante.

Procedimento

Para se beneficiar da garantia, as peças defeituosas devem ser entregues na rede de distribuidores ou enviadas diretamente à fábrica nos endereços abaixo, para reparo ou substituição. Preencha os campos abaixo e apresente cópia ou fax deste documento junto à peça com problema.

Descrição do Produto: _____ *N° da Nota Fiscal:* _____

Nome: _____ *Fone:* _____

Rua/N°: _____

Cidade: _____ *Estado:* _____ *E-mail:* _____

Nome do Barco: _____ *Tamanho/Tipo:* _____

Condição de uso: ☐ *Cruzeiro* ☐ *Regata*

Revendedor: _____

Descrição do Problema: _____

HOLTNautos®

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Tools needed for assembly

- **Grip pliers**
- **Hacksaw**
- **Wire-cutters 1x19**
- **File**
- **Sandpaper no. 100**
- **Cleaning cloth**
- **Insulating tape**
- **Wrench**
- **Terminal wrenches (depending on size)**

Other tools:

Furler #0 or #0HL:

- ¼" Screwdriver
- 7/8" (22mm) Wrench
- 11/16" (17mm) Wrench

Furler #1:

- ¼" Screwdriver
- 7/8" (22mm) Wrench
- ¾" (19mm) Wrench

Furler #1,5:

- ¼" Screwdriver
- 7/8" (22mm) Wrench
- 1.1/8" (28mm) Wrench

Furler #2:

- 3/8" Screwdriver
- 1.1/8" (28mm) Wrench

Furler #2,5:

- 3/8" Screwdriver
- 1.1/8" (28mm) Wrench
- 1.3/4" (45mm) Wrench

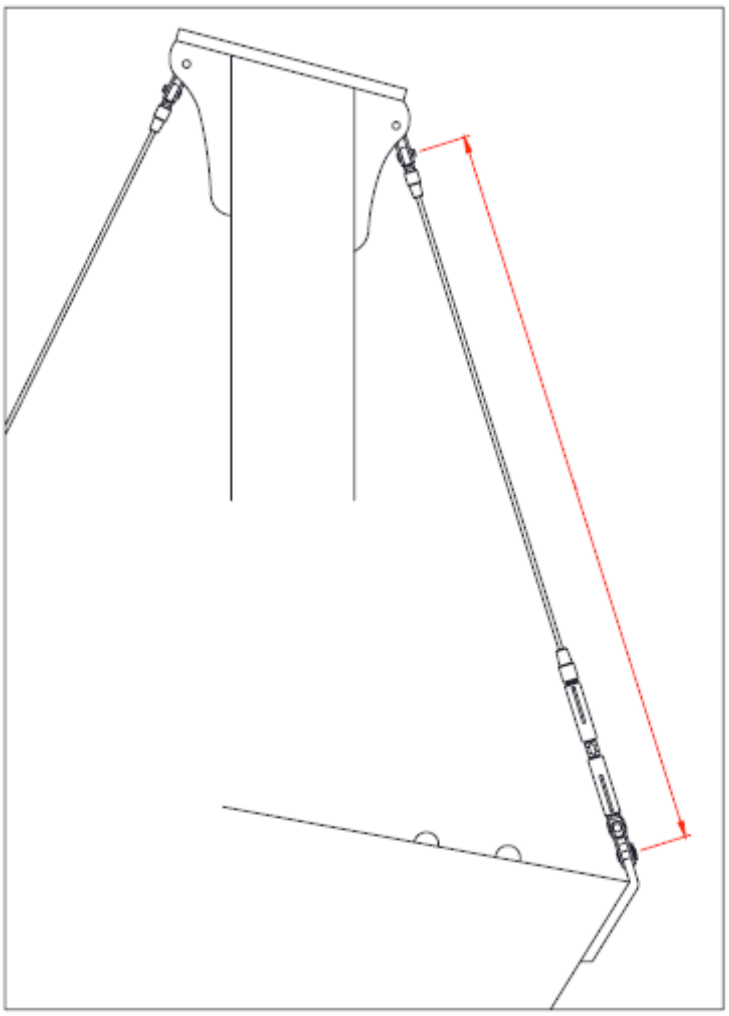
Instructions:

TERMINALS: The furler includes a fast connector terminal for the diameter of the line as requested. Via special request we can supply swage terminals.

MAST SUPPORT: Use a halyard as a provisional forestay (make sure it's safe) to support the mast during the furler's installation. Do not attach the temporary line to the chaimplate as it can interfere in the assembly.

WORKING AREA: The working area must be a flat surface, longer than the forestay and free of dust, dirt or sand. Several assembly steps require the use of a threadlocker, which must be applied on a clean and dry surface, therefore, we advise you not to assemble the furler on a rainy day. Nautos's furlers were designed to be assembled on a floor; assembly with the forestay hanging is not advised.

MEASURING THE LENGTH OF THE FORESTAY: Measure the forestay from the center of the pin that attaches it to the toggle at the masthead up to the hole of the chaimplate. The measurement must include all turnbuckles and toggles at the lower part, but exclude the toggle at the masthead.



Pic. 01

Every forestay must include a toggle at the masthead. The product includes a toggle on the lower screw of the turnbuckle. An additional toggle is not necessary, but it can be used in case of short line or when it is necessary to increase the distance between the spool and the deck (e.g. When hoisting the anchor). If that's the case, deduct the distance between the pins of the toggles from the total length of the forestay.

Forestay cutting X threaded terminal:

Standard threaded terminal: The threaded terminal (which usually comes with the product) must be used with a new forestay or when removing the existing turnbuckle. The forestay shortens up to 34 cm for the furler #0, 40 cm for furlers #1 and #1,5, 57 cm for furler #2 and 70 cm for the furler #2,5.

With the shortening, the turnbuckle will reach its maximum limit. Ideally, the forestay must be cut 30 cm, 36 cm, 52 cm and 64 cm, respectively, measured from the center of the pin of the chaimplate. These measurements will result in a turnbuckle that will be between half and 2/3 opened.

Long threaded terminal: Only for SWAGE TERMINAL!

This terminal has been designed 13 cm longer to make up for the loss caused by the removal of the existing turnbuckle from the forestay. It can be used when the forestay loses less than 47 cm for the furler #0, less than 53 cm for furlers #1 and #1,5, less than 70 cm for the furler #2 and less than 83 cm for the furler #2,5; leaving the turnbuckle at its limit. Ideally, these measurements must be 43 cm, 49 cm, 65 cm and 77 cm, always starting from the center of the pin of the chaimplate.

Warning

These measurements are theoretical only; for your safety simulate the assembly in order to confirm them. The terminals must only be installed after installing the sections and their joints!

DO NOT FORGET: MEASURE TWICE AND CUT ONLY ONCE!!

QUANTITY OF SECTIONS AND UPPER SECTION CUTTING

The length of the sections is adjusted according to the length of the forestay. Define the quantity of 2.13m sections and cut the upper section accordingly. In table "A" of this manual you will find the required measurements for the upper section, and in table "B" you will find the quantity of uncut sections to be used, as well as the quantity of joints or connectors for these sections.

Do not forget to simulate the assembly before cutting the line stretched on the floor, so that you can confirm or correct the measurement if necessary.

The type of top terminal may influence on the cutting length of the upper section. This setback can be avoided by simulating the assembly.

After determining the length of the top section, cut it (with a hacksaw with a fresh blade) based on an uncut section or, in some cases, according to the half section that is sent together with the product (when the manufacturer predetermines the sections to be used).

Carefully remove the burr from the cut part, using a file and sandpaper. Remove the chips left inside the cavity (a simple way to get it done is running water through the section and drying it well). If burrs are remained, the material may not be accurately set.

If the length of the upper section is shown as "zero" in table "A", the last standard section will be used as an upper section and the top special connector will be fit to this section.

When the upper section is shown to be up to 14 cm for the furlers #0, 15 cm for furlers #1 and 1,5 and, 20 cm for the furlers #2 and #2,5, the top connector will not be used, and the connector of the last section will be used to centralize the section on the line, which is the purpose of the top connector.

Cut the section as little as possible to prevent it from getting too short and cause malfunction or even cause the halyard swivel to “jump” from the section.

Make sure you cut the end that does not contain holes for the joint screws!

The sections must be within 4 to 5 cm from the upper terminal. This distance will allow the sections to be raised either for the adjustment of the turnbuckle or tightening of the terminal, etc.

If the sections get too short, which is sometimes inevitable, you will have to use a block in front of the mast to prevent the halyard from twisting around the section when reefing.

TOP TERMINAL ASSEMBLY

Now it is the time to set the terminal at the top end of the forestay. If it is a swage terminal, make sure it is swaged by a skilled professional, in a proper machine, otherwise it may cause serious accidents! Safety comes first!

The assembly of the fast terminal is manual, no machines are needed. We recommend proper tools and careful assembly.

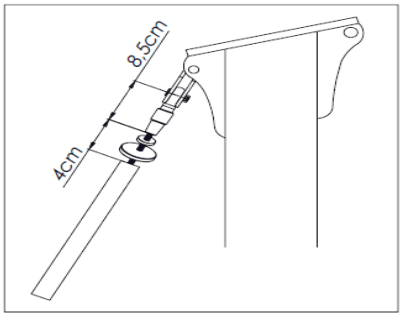
See further instructions on how to assemble the fast terminals on page 8 of this manual.

ASSEMBLY OF THE SECTIONS (FOILS)

For the assembly you will need threadlocker, screwdriver, sections, joints, rubber keys and joint screws.

At the top you will also need a brass washer (item 30 of the exploded view), and the plastic ring to avoid friction between the section and the terminal. As for the fast terminal, the section (without the rings) may work as a key and unscrew the terminal, causing serious consequences.

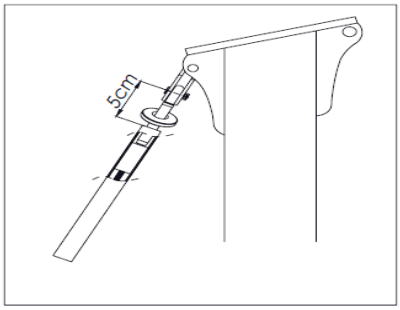
Insert the brass washer and after that the plastic spacer ring (item 59).



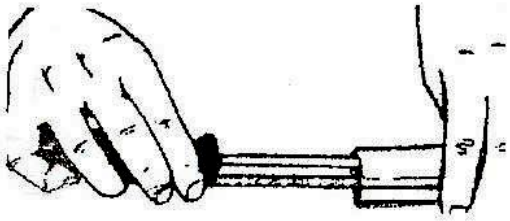
Pic. 02

Fit a short rubber key to the short top connector. Apply threadlocker to the key and connector and fit them to the top part of the section. The connector must be level with the top of the section.

In case of using a swage terminal the brass washer will not be used and the plastic ring must have its hole enlarged to fit the terminal.

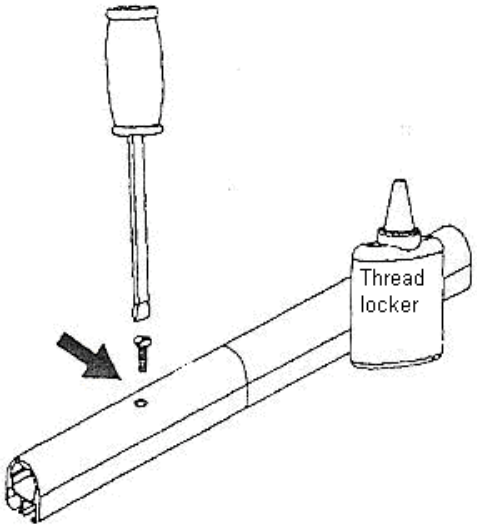


Pic.03



Pic.04

Attach to the line a standard connector with its respective rubber key. Apply threadlocker to the area that will be inserted in the section and to the key. Place the connector in the section, checking that the key is attached and the fixation holes correspond in position, which may be two or three according to the model. Tighten the screws after applying threadlocker.



Pic.05

Attach one standard section (2,13m) to the line and move it closer to the connector. Apply threadlocker to the connector and key. Fit the section to the connector until it touches the other section and the screw holes correspond. Tighten the screws according to the previous item.

Repeat the same operation until the long lower connector is fixed, using two keys. The short lower section must be fitted to the connector but not yet fixed. It must be free so that it can be pushed upwards and take the space of the feeder, which will allow between 4 and 6 cm of line slack to facilitate the terminal fixation.

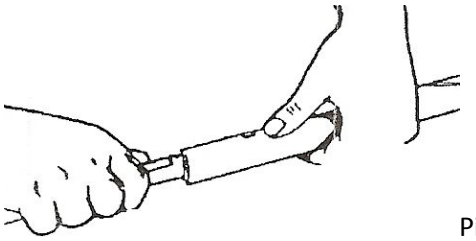
After installing the terminal, (see the following instructions) the section can be attached to the connector.

The feeder must be set up after placing the swivel set.

Ignore the previous two paragraphs if you are assembling a furler #0 standard, which does not use a long connector and feeder.

Repeat the same assembly procedure until you get to the lower short section, which has lowering channels, replacing the feeder.

When inserting the connector, observe that the adjustment key fits to the recess.



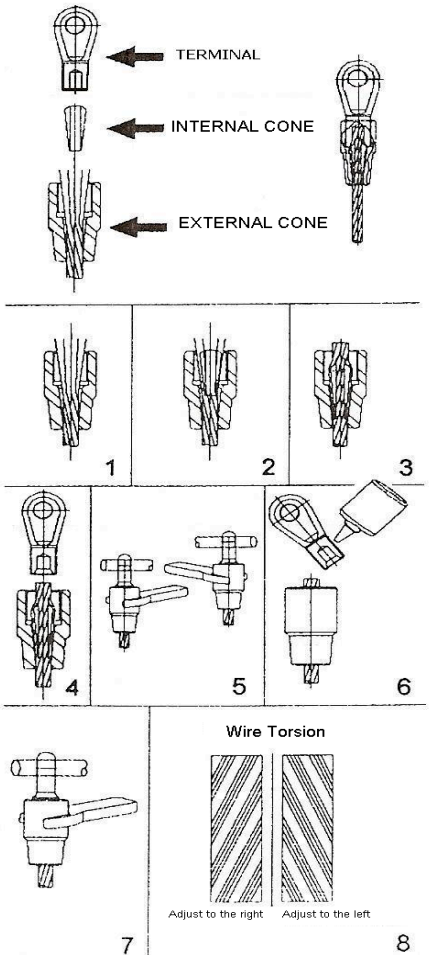
Pic.06

FAST TERMINAL INSTALLATION

The fast terminals are also called Norsemann®

The sections are now almost ready. **Insert the brass ring before assembling the terminal (item 30) and follow the instructions.**

Note: According to the diameter of the line, some external cones of the terminals may not go through the halyard swivel. Check it before assembling the terminal, so that the swivel can be assembled before it.



1 – Insert the end of the line into the external cone of the terminal and open the wires of the external layer.
2 – Place the internal cone in the line core. The end of the core must protrude around one and a half times the diameter of the line used.
3 – Reposition the external wires, distributing them equally around the cone.
4 – Insert all the wires into the body of the terminal and begin tightening.
5 – Carry on tightening, turning the external cone and fixing the body, if the line torsion is rightwards. If the torsion is leftwards, fix the external cone and turn the body. Tighten it until the line is compressed by the body.
Do not over tighten it! It is unnecessary and can damage the wires or screw thread.
6 – Reopen the terminal and check that the wires have regrouped uniformly. Apply threadlocker to the thread.
7 – Before reassembling it, fill up the dead hole of the terminal with a silicon sealant (preferably without acetic acid) and retighten it. Repeat the procedure until the sealant fills up the internal space. Clean out the excess.

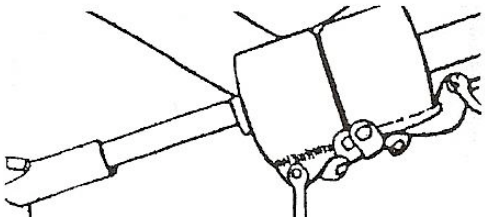
NOTE: In this kind of terminal, the wires undergo progressive compression, of which the maximum point is at the upper part of the cone. It will provide longer and safer life to the stainless steel.

Fit the brass washer to the line **BEFORE** installing the terminal.

It should rotate freely over the line, between the section and the terminal, and will avoid friction between them if the section should move along due to lack of tightening of the torque tube.

Without the washer there will be friction on the terminal and the system will not rotate easily, which could even unscrew the terminal. **If that occurs, the mast may fall!**

Attach the halyard swivel to the sections, making sure the rotating part (item 49) is facing upwards.

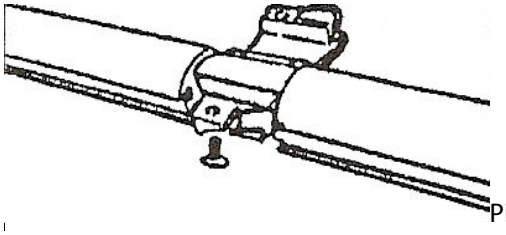


Check the correct attachment of the halyard swivel to the section, leaving space for the feeder.

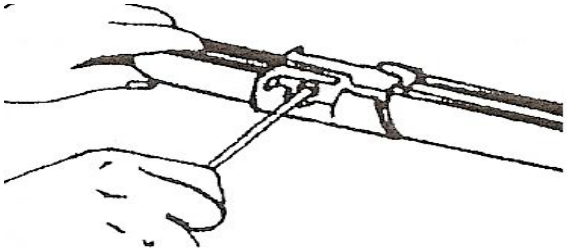
Pic. 07

Attach the feeder (item 39) in the space provided – at the lower joint of the sections.

See correct feeder attachment in the gap between the sections.

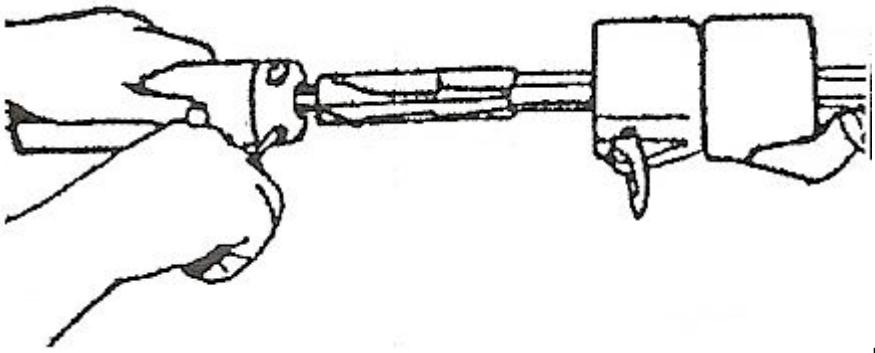


Pic. 08



Attach the feeder using its specific slotted screw. Apply threadlocker to the screw.

Pic.09



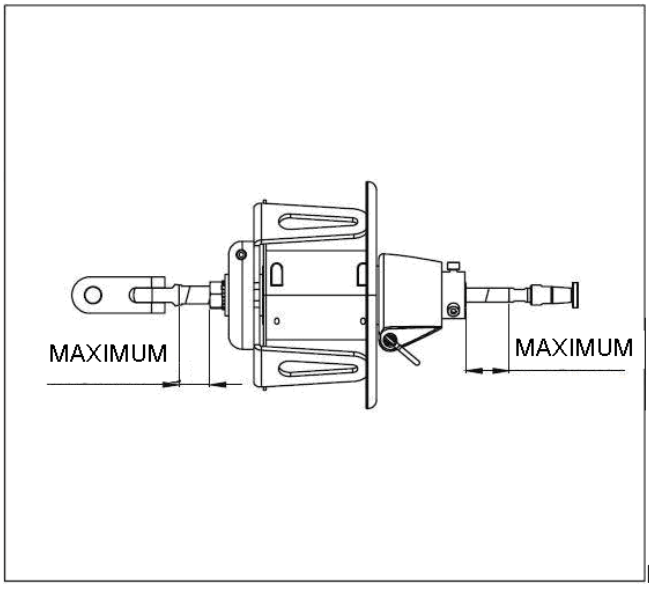
Pic.10

Attach the torque tube to the section to facilitate the rest of the assembly.

ATTACHING THE FURLER'S BODY TO THE SECTIONS

Fit the lock-nut (item 29) to the terminal and screw the furler's body to the terminal until you reach the maximum thread limit out of the turnbuckle, according to the table below. Do not leave the thread excessively exposed, be it in the lower or upper part of the turnbuckle. The only way to be sure that there is enough thread inside the turnbuckle is measuring the exposed thread.

The lower screw (item 1) has a mark (hole) which indicates the limit of exposed thread. Check and adjust its position.



Pic. 11

EXPOSED THREAD LIMITS:

Furler #0 and #0 HL: 3,5 Cm

Furler #1 and #1,5: 5,0 Cm

Furler #2: 6,0 Cm

Furler #2,5: 8,0 Cm

INSTALLING THE FURLER ON THE BOAT

The furler system is complete, before continuing the assembly, check everything out:

- Clean the sections and their channels. Make sure they are free from dirt, dust, burr and excessive threadlocker or sealant. The threadlocker can be easily removed before curing.

- Check out carefully the section screws. Make sure they are all flat with the surface. Salient heads will prevent sail hoisting and lowering.

- Check that the plastic and brass rings are into position at the top of the forestay. The plastic ring to the section and brass ring (if there is any) to the terminal.

- Make sure the halyard swivel is into position. The rotating part is the biggest one; it has the long shackle and must be facing upwards. It is also important that the feeder is correctly installed, although it can be inverted at any time.

- Raise the system carefully and attach the top terminal to the toggle of the masthead. Avoid shocks or bends during this procedure!

- Attach the turnbuckle's lower toggle to the forestay chaimplate and fix it with a pin.

- Make sure the lock-nut of the terminal, lower screw and lower washer is loose so that the turnbuckle can be operated.

- Adjust the tension of the stay turning the spool guard anticlockwise to stretch the line and clockwise to loosen it.

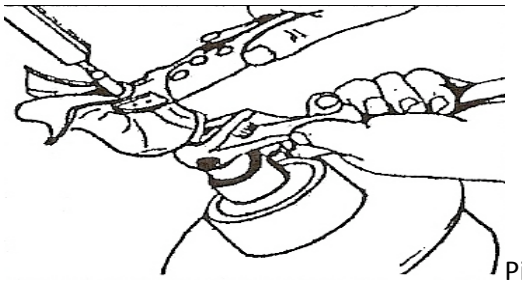
- Check that the exposed thread, on either side, is within the limits shown in the table (see below). If there is excessive thread and the tension of the line is normal, it means that the line is too short and you must add a toggle to the system.

- Align the spool guard to allow the line to move in its appropriate angle.

- Fit the washer to the retention pins and tighten the nut of the lower part of the drum set. It may be necessary to gently turn the set, so that the teeth of the washer can align with the pins.

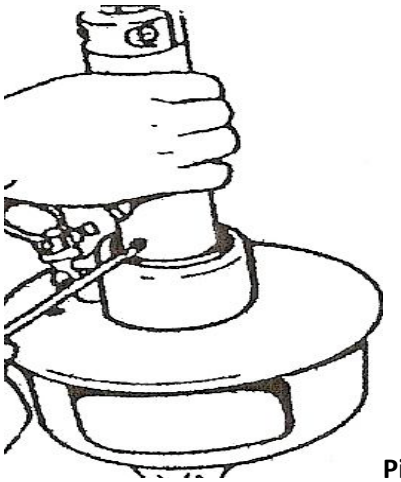
- Tighten the nut against the washer and also tighten the lock-nut of the terminal at the top of the drum.

- Tighten it firmly using a proper tool while holding the terminal with a pair of grip pliers (protect the terminal with a piece of cloth) or a wrench, and fix the terminal using the lock-nut.



Pic. 12

Loosen the torque tube from the section, fit it to the upper part of the set and fix it using the screws provided. Apply threadlocker to the screws and attach the torque tube to the drum set using the screws provided. Do not forget to apply threadlocker.



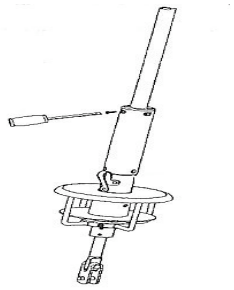
Pic.13

Raise the sections in a way that the upper section touches the top terminal. Otherwise, the halyard swivel may twist at the top.

Also, be careful not to apply too much pressure and provoke excess of friction.

Apply threadlocker to the screws of the jaw of the torque tube and screw the sections to the torque tube while holding them into position.

Now, install the lead blocks of the furling line.*



*To align the furling line correctly refer to the section that describes its installation.

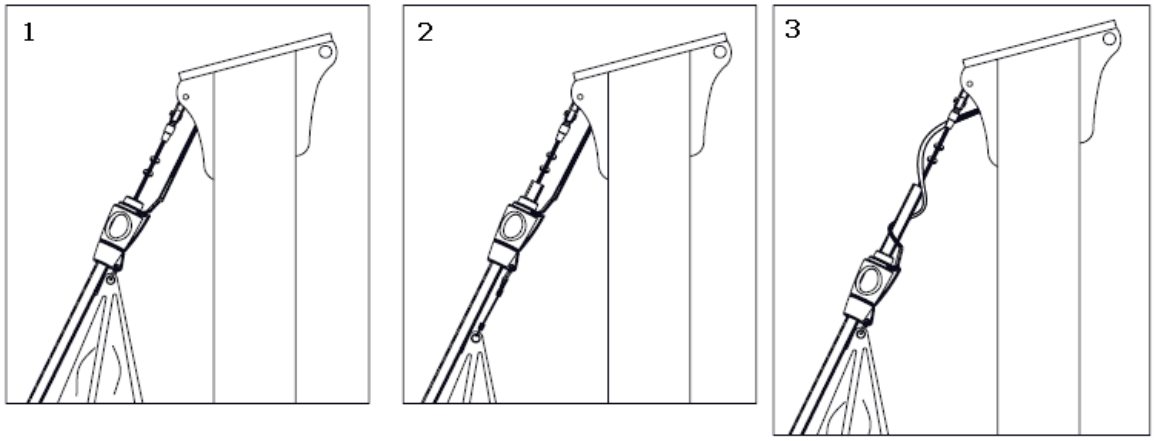
Pic. 14

HALYARD SWIVEL CORRECT HEIGHT

It is important that the halyard does not twist around the section. In some cases, the halyard gets parallel to the stay when the swivel is completely hoisted. In this case, a block will be necessary in front of the mast to keep the halyard nearer to the bow and avoid twisting.

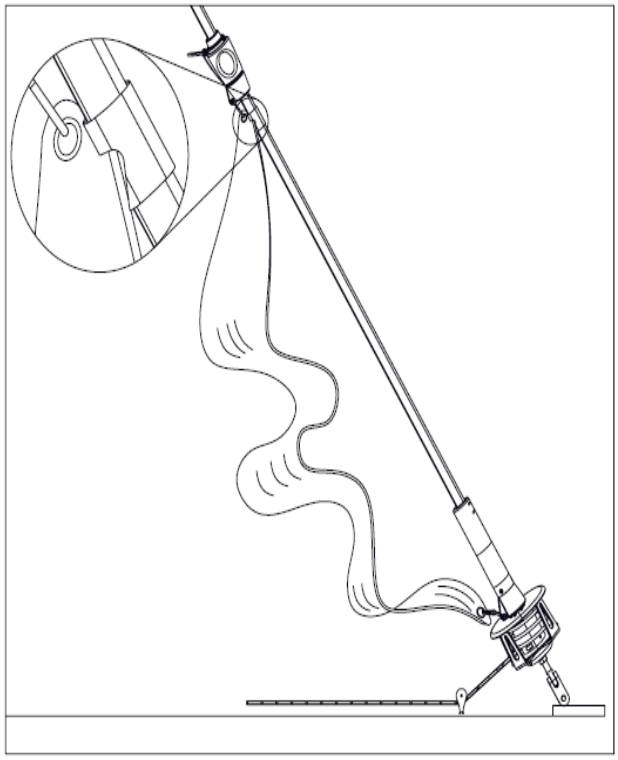
In the picture (1) below we can see a halyard swivel sufficiently close to the top preventing the halyard from twisting. In the picture (2), we can see an example of a short sail; in this case a steel cable sling will be necessary between the clew and swivel to allow the correct height. Picture (3) shows what may happen if the swivel is too low, allowing the halyard to twist around the section and the stay. Note that an exaggerated angle towards the stern will make sail hoisting difficult and may cause damage to the section.

Contact your dealer or skilled professional for assistance.



Pic. 15

HOISTING THE SAIL



1 – Attach the grip tack to the shackle above the spool.

2 – Tie the sheets to the clew.

3 – Attach the halyard to the top of the swivel set.

4 – Insert the upper part of the leech into the feeder.

5 – Attach the clew to the shackle of the swivel set.

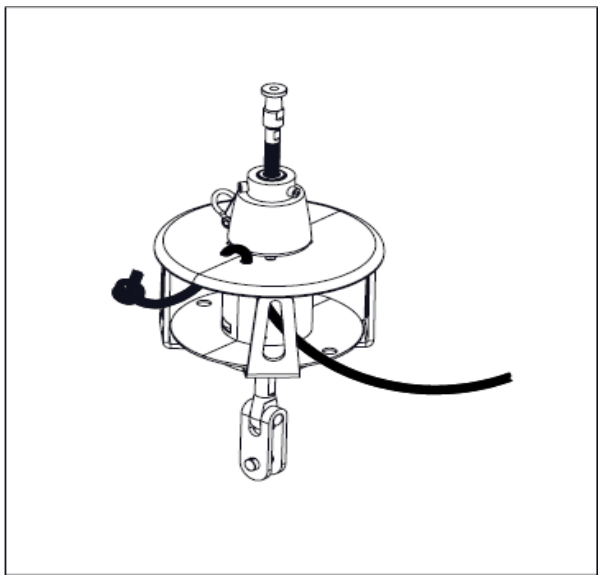
6 – Make sure the sail is lying near the forestay free from any obstacle.

7 – Hoist the sail normally.

Pic. 16

INSTALLING THE FURLING LINE AND LEAD

To attach the furling line to the spool pass it through one of the holes in the upper spool flange and then back through the second hole and tie a knot to secure it. Attach the line to the spool using a figure-eight knot.



Pic. 17

The furling line will reach the cockpit through several blocks. Find below some suggestions*:

- Furlers #0, #0HL, #1 and #1,5:

Quant	Code	Description
01	92710	SINGLE SWIVEL BLOCK. LEFT 57 mm
01	91035	FORGED ALUMINUM CLEAT
03	92414	SINGLE FIXED BLOCK 28 mm
04	91021	SMALL HEAD-PIECE
01	91020	MEDIUM HEAD-PIECE

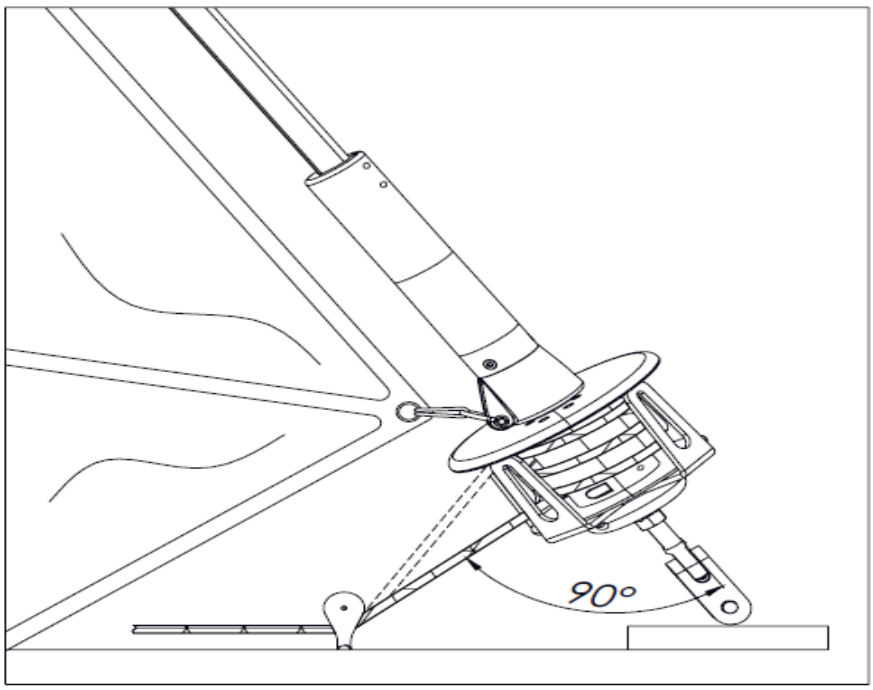
- FURLER #2 and #2,5:

Quant	Code	Description
01	92610	SINGLE SWIVEL BLOCK. LEFT 75 mm
01	91035	FORGED ALUMINUM CLEAT
04	92314	SINGLE FIXED BLOCK 28 mm
05	91021	SMALL HEAD-PIECE
01	91020	MEDIUM HEAD-PIECE

* The kits above are optional; they do not come with the product.

In some boats it is possible to attach the blocks to the bulwarks or stanchions, but, for the most of the boats the line will be too far from the edge.

The furling line must get to the drum perpendicular to the forestay. The direction of the furling line will change according to the quantity of line rolled around the drum.



Pic. 18

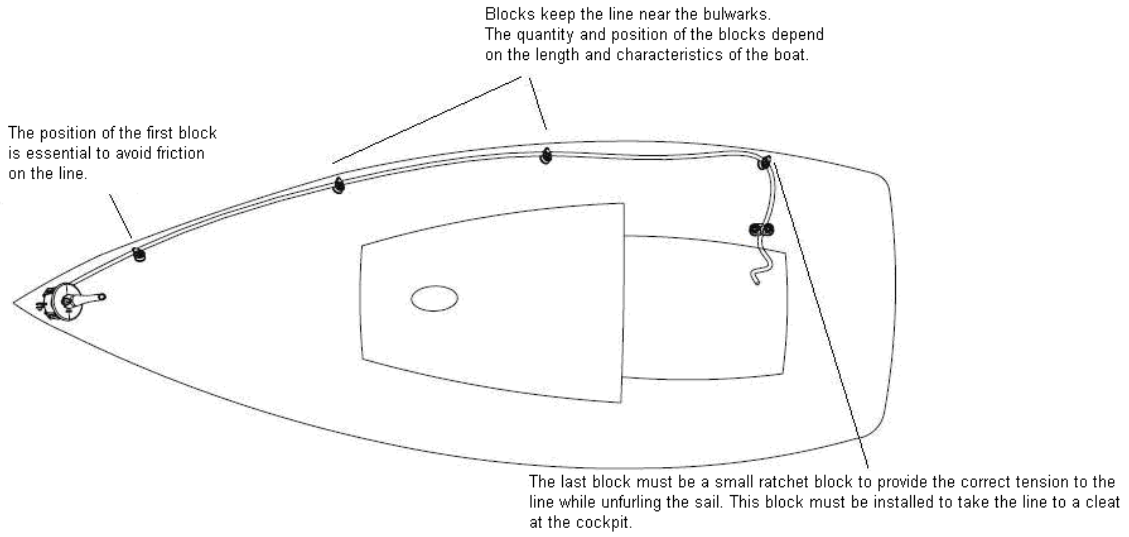
The furling line can get to the stern through either edge.

Place the first lead block so that the line enters the spool perpendicular (90°) to the forestay and vertically centralized.

Make sure the line is correctly centralized for all conditions when aligning the spool guard.

Note that the line exit angle changes as the quantity of furled line increases or decreases. For that reason, adjust the 90° angle with the line exiting at half height from the spool.

When the furling line is rolled clockwise, the exit will face starboard (the opposite will happen when the line is rolled anti-clockwise). Make sure there is no friction on the line with whatever quantity of rolled line, before tightening the screws. Usually, the line must be rolled so that it rotates clockwise when the sail is being furled. Incorrect rotation will cause the sail's UV protection (blue strip along leech and foot) to be inwards. See "Operation Troubleshooting", at the end of the manual, as how to solve this problem.



Pic. 19

Loosen both sheets completely. The sail must be totally released to facilitate the operation. In case of light wind conditions, you may need to hold the sheet a little to ensure the perfect furling. For all other cases, loosen the sheets completely.

Pull the furling line (it must come effortlessly). If the sail will not furl or it is hard to do so, there must be a problem with the system. See "Operation Troubleshooting".

DO NOT USE A WINCH FOR REEFING! The force of the winch may hide problems and cause serious damages to the system.

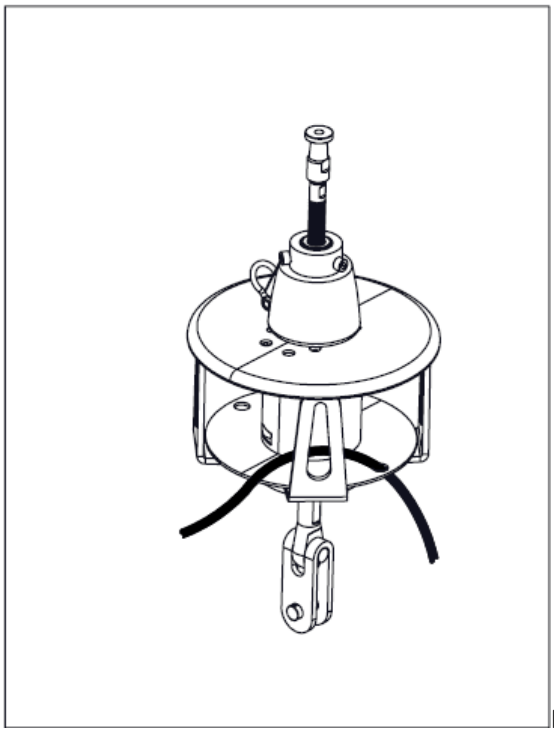
Attach the furling line and sheets.

Reefing follows the same procedure as furling and you must stop furling when the sail reaches the desired size.

The furling and reefing system has holes in the spool that can be used to lock the mechanism with the sail furled or unfurled. For that, use a shackle or tie a piece of cable. Locking the system prevents the sail from accidentally unfurling.

A bolt rope allows the sail to be used with less tension on the halyard compared to line grommets, therefore use only the necessary tension.

After strong wind conditions, which will apply high tension on the halyard, decrease the tension in order to avoid permanent deformation on the leech.



Pic. 20

CONVERSION INTO RACING

Remove the sail from the sections and furling line from the spool.

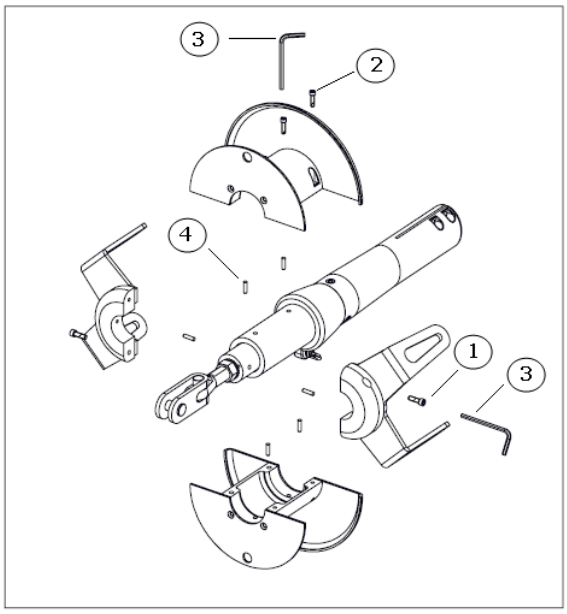
Remove the feeder (if there is one) and lower the halyard swivel until it touches the torque tube and reinstall the feeder.

Loosen the two screws from the plastic support of the spool guard and remove the two parts (screw number 1 in the picture).

Loosen the four screws from the spool and divide it in two parts (screw number 2 in the picture).

Attach the grip tack directly to the bow hardware. Attach the halyard to the clew.

See below the exploded view to guide you through the conversion.



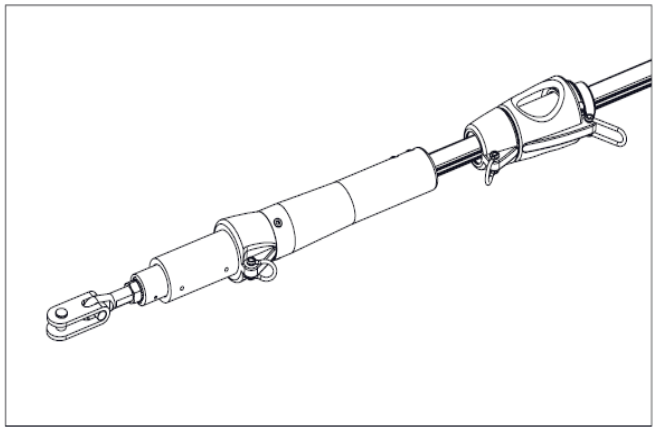
1 – Guard Screw

2 – Spool screws

3 – Allen key

4 – Dowel pins

Pic. 21



Turnbuckle without guard and spool. Halyard swivel and torque tube.

Pic. 22

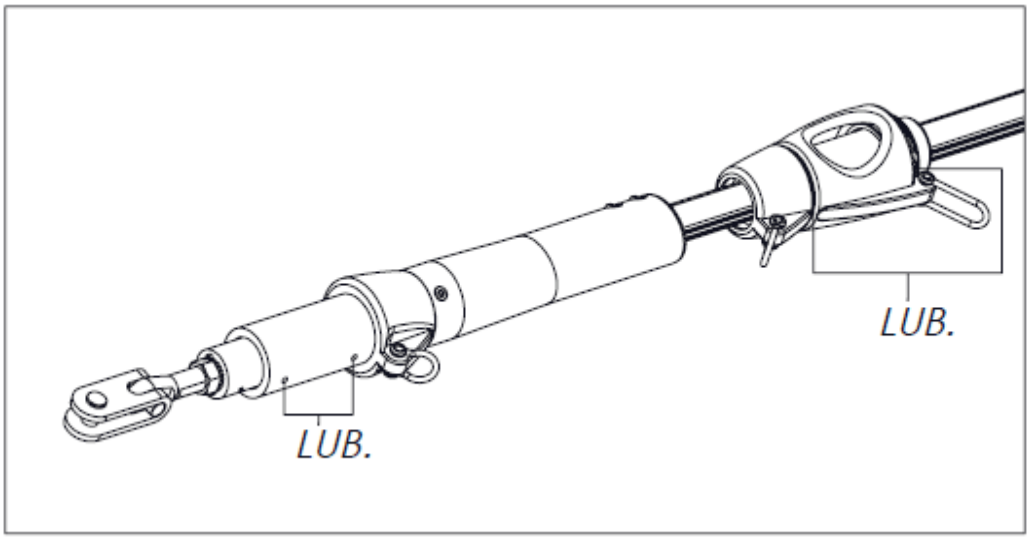
MAINTENANCE

First-rate material used for the construction of Nautos's furlers, Teflon® impregnated anodized aluminum, stainless steel, naval bronze, Torlon® and polyacetal, provides durability and low maintenance.

Heavy rain is enough to remove most of the salt and dirt from the bearings. Occasional cleaning using clean water will eliminate the remaining salt and dirt from the bearings.

It is advisable to apply a light lubricant like WD-40 or similar directly to the bearings of the halyard swivel. There are two lubrication points in the turnbuckle and they are both under the spool, which will have to be removed to apply the lubricant. The plastic tube is used to lubricate the points that are difficult to access.

You can also spray lubricant inside the torque tube as it will reach the non-visible bearings.



Pic. 23

It is very important that the swage terminals and threaded parts are carefully checked as for the existence of small cracks and signs of corrosion. Also check toggles and pins. Corroded or cracked hardware may compromise safety.

Always replace damaged parts.

TABLES

The following tables show the total length of the forestay (measured from hole to hole):

FURLER #0 STD AND #0 HL

Forestay total length (measured from hole to hole) According to the previous instructions.				Upper section length
meters	meters	meters	meters	centimeters
5,28	7,42	9,55	11,68	0
5,31	7,44	9,58	11,71	0
5,33	7,47	9,60	11,73	14,0
5,36	7,49	9,63	11,76	14,0
5,38	7,52	9,65	11,79	14,0
5,41	7,54	9,68	11,81	14,0
5,44	7,57	9,70	11,84	15,2
5,46	7,59	9,73	11,86	17,8
5,49	7,62	9,75	11,89	20,3
5,54	7,67	9,80	11,94	25,4
5,59	7,72	9,85	11,99	30,5
5,64	7,77	9,91	12,04	35,5
5,69	7,82	9,96	12,09	40,6
5,74	7,87	10,01	12,14	45,7
5,79	7,93	10,06	12,19	50,8
5,84	7,98	10,11	12,24	55,9
5,89	8,03	10,16	12,29	60,9
5,94	8,08	10,21	12,34	66,0
5,99	8,13	10,26	12,40	71,1
6,05	8,18	10,31	12,45	76,2
6,10	8,23	10,36	12,50	81,3
6,15	8,28	10,41	12,55	86,3
6,20	8,33	10,46	12,60	91,4
6,25	8,38	10,52	12,65	96,5
6,30	8,43	10,57	12,70	101,6
6,35	8,48	10,62	12,75	106,7
6,40	8,53	10,67	12,80	111,7
6,45	8,59	10,72	12,85	116,8
6,50	8,64	10,77	12,90	121,9
6,55	8,69	10,82	12,95	127,0
6,60	8,74	10,87	13,00	132,1
6,65	8,79	10,92	13,06	137,1
6,71	8,84	10,97	13,11	142,2
6,76	8,89	11,02	13,16	147,3
6,81	8,94	11,07	13,21	152,4
6,86	8,99	11,12	13,26	157,5
6,91	9,04	11,18	13,31	162,5
6,96	9,09	11,23	13,36	167,6
7,01	9,14	11,28	13,41	172,7
7,06	9,20	11,33	13,46	177,8
7,11	9,25	11,38	13,51	182,9
7,16	9,30	11,43	13,56	187,9
7,21	9,35	11,48	13,61	193,0
7,26	9,40	11,53	13,67	198,1
7,31	9,45	11,58	13,72	203,2
7,37	9,50	11,63	13,77	208,3

0 700mm*
0 726mm*
0 751mm*

* Special lower section length

FURLER #1 and #1,5

Forestay total length (measured from hole to hole) According to the previous instructions.				Upper section length
meters	meters	meters	meters	centimeters
7,52	9,65	11,79	13,92	0
7,55	9,68	11,81	13,94	0
7,57	9,70	11,84	13,97	0
7,60	9,73	11,86	14,00	0
7,62	9,75	11,89	14,02	14,2
7,65	9,78	11,91	14,05	14,2
7,67	9,80	11,94	14,07	15,2
7,70	9,83	11,96	14,10	17,8
7,72	9,86	11,99	14,12	20,3
7,75	9,88	12,01	14,15	22,9
7,77	9,91	12,04	14,17	25,4
7,80	9,93	12,07	14,20	28,0
7,82	9,96	12,09	14,22	30,5
7,85	9,98	12,12	14,25	33,0
7,90	10,03	12,17	14,30	38,1
7,95	10,08	12,22	14,35	43,2
8,00	10,13	12,27	14,40	48,3
8,05	10,19	12,32	14,45	53,4
8,10	10,24	12,37	14,50	58,4
8,16	10,29	12,42	14,55	63,5
8,21	10,34	12,47	14,61	68,6
8,26	10,39	12,52	14,66	73,7
8,31	10,44	12,57	14,71	78,8
8,36	10,49	12,62	14,76	83,8
8,41	10,54	12,67	14,81	88,9
8,46	10,59	12,73	14,86	94,0
8,51	10,64	12,78	14,91	99,1
8,56	10,69	12,83	14,96	104,2
8,61	10,74	12,88	15,01	109,2
8,66	10,80	12,93	15,06	114,3
8,71	10,85	12,98	15,11	119,4
8,76	10,90	13,03	15,16	124,5
8,82	10,95	13,08	15,21	129,6
8,87	11,00	13,13	15,27	134,6
8,92	11,05	13,18	15,32	139,7
8,97	11,10	13,23	15,37	144,8
9,02	11,15	13,28	15,42	149,9
9,07	11,20	13,34	15,47	155,0
9,12	11,25	13,39	15,52	160,0
9,17	11,30	13,44	15,57	165,1
9,22	11,35	13,49	15,62	170,2
9,27	11,40	13,54	15,67	175,3
9,32	11,46	13,59	15,72	180,4
9,37	11,51	13,64	15,77	185,4
9,43	11,56	13,69	15,82	190,5
9,48	11,61	13,74	15,88	195,6
9,53	11,66	13,79	15,93	200,7
9,58	11,71	13,84	15,98	205,8
9,63	11,76	13,89	16,03	210,8

10cm* 18cm
13cm* 18cm
15cm* 18cm

Forestay total length (measured from hole to hole) According to the previous instructions.				Upper section length
meters	meters	meters	meters	centimeters
11,99	14,12	16,26	18,39	0
12,01	14,15	16,28	18,42	0
12,04	14,17	16,31	18,44	0
12,07	14,20	16,33	18,47	0
12,09	14,22	16,36	18,49	0
12,12	14,25	16,38	18,52	12,7
12,14	14,27	16,41	18,54	15,2
12,17	14,30	16,43	18,57	17,8
12,19	14,33	16,46	18,59	20,3
12,22	14,35	16,48	18,62	22,9
12,24	14,38	16,51	18,64	25,4
12,27	14,40	16,54	18,67	28,0
12,29	14,43	16,56	18,69	30,5
12,32	14,45	16,59	18,72	33,0
12,37	14,50	16,64	18,77	38,1
12,42	14,55	16,69	18,82	43,2
12,47	14,61	16,74	18,87	48,3
12,52	14,66	16,79	18,92	53,4
12,57	14,71	16,84	18,97	58,4
12,62	14,76	16,89	19,02	63,5
12,67	14,81	16,94	19,08	68,6
12,73	14,86	16,99	19,13	73,7
12,78	14,91	17,04	19,18	78,8
12,83	14,96	17,09	19,23	83,8
12,88	15,01	17,15	19,28	88,9
12,93	15,06	17,20	19,33	94,0
12,98	15,11	17,25	19,38	99,1
13,03	15,16	17,30	19,43	104,2
13,08	15,21	17,35	19,48	109,2
13,13	15,27	17,40	19,53	114,3
13,18	15,32	17,45	19,58	119,4
13,23	15,37	17,50	19,63	124,5
13,28	15,42	17,55	19,69	129,6
13,34	15,47	17,60	19,74	134,6
13,39	15,52	17,65	19,79	139,7
13,44	15,57	17,70	19,84	144,8
13,49	15,62	17,75	19,89	149,9
13,54	15,67	17,81	19,94	155,0
13,59	15,72	17,86	19,99	160,0
13,64	15,77	17,91	20,04	165,1
13,69	15,82	17,96	20,09	170,2
13,74	15,88	18,01	20,14	175,3
13,79	15,93	18,06	20,19	180,4
13,84	15,98	18,11	20,24	185,4
13,89	16,03	18,16	20,29	190,5
13,94	16,08	18,21	20,35	195,6
14,00	16,13	18,26	20,40	200,7
14,05	16,18	18,31	20,45	205,8
14,10	16,23	18,36	20,50	210,8

23cm* 13cm
23cm* 15cm
23cm* 18cm
23cm* 20cm

* Special lower section cutting length

FURLER #2,5

Forestay total length (measured from hole to hole) According to the previous instructions.				Upper section length
meters	meters	meters	meters	centimeters
14,17	16,31	18,44	20,57	0
14,20	16,33	18,47	20,60	0
14,22	16,36	18,49	20,62	0
14,25	16,38	18,52	20,65	0
14,27	16,41	18,54	20,68	0
14,30	16,43	18,57	20,70	12,7
14,33	16,46	18,59	20,73	15,2
14,35	16,48	18,62	20,75	17,8
14,38	16,51	18,64	20,78	20,3
14,40	16,54	18,67	20,80	22,9
14,43	16,56	18,69	20,83	25,4
14,45	16,59	18,72	20,85	28,0
14,48	16,61	18,75	20,88	30,5
14,50	16,64	18,77	20,90	33,0
14,53	16,66	18,80	20,93	38,1
14,58	16,71	18,85	20,98	43,2
14,63	16,76	18,90	21,03	48,3
14,68	16,82	18,95	21,08	53,4
14,73	16,87	19,00	21,13	58,4
14,78	16,92	19,05	21,18	63,5
14,83	16,97	19,10	21,23	68,6
14,88	17,02	19,15	21,29	73,7
14,94	17,07	19,20	21,34	78,8
14,99	17,12	19,25	21,39	83,8
15,04	17,17	19,30	21,44	88,9
15,09	17,22	19,35	21,49	94,0
15,14	17,27	19,41	21,54	99,1
15,19	17,32	19,46	21,59	104,2
15,24	17,37	19,51	21,64	109,2
15,29	17,42	19,56	21,69	114,3
15,34	17,48	19,61	21,74	119,4
15,39	17,53	19,66	21,79	124,5
15,44	17,58	19,71	21,84	129,6
15,49	17,63	19,76	21,89	134,6
15,54	17,68	19,81	21,95	139,7
15,60	17,73	19,86	22,00	144,8
15,65	17,78	19,91	22,05	149,9
15,70	17,83	19,96	22,10	155,0
15,75	17,88	20,02	22,15	160,0
15,80	17,93	20,07	22,20	165,1
15,85	17,98	20,12	22,25	170,2
15,90	18,03	20,17	22,30	175,3
15,95	18,09	20,22	22,35	180,4
16,00	18,14	20,27	22,40	185,4
16,05	18,19	20,32	22,45	190,5
16,10	18,24	20,37	22,50	195,6
16,15	18,29	20,42	22,56	200,7
16,21	18,34	20,47	22,61	205,8
16,26	18,39	20,52	22,66	210,8

The following table is to determine the number of 15 cm connectors and 2.13 m standard sections for the assembly, according to the length of the forestay, besides the special upper and lower sections.

FURLERS #0 STD AND #0 HL

Stay length	Quantity of connectors	Quantity of sections
From 5,28 m to 5,39 m	02	02
From 5,41 m to 7,39 m	03	02
From 7,42 m to 7,52 m	03	03
From 7,54 m to 9,53 m	04	03
From 9,55 m to 9,65 m	04	04
From 9,68 m to 11,66 m	05	04
From 11,68 m to 11,79 m	05	05
From 11,81 m to 13,79 m	06	05

The following table is to determine the number of 18 cm connectors and 2.13 m standard sections for the assembly, according to the length of the forestay, besides the special upper and lower sections.

FURLERS #1 E #1,5

Stay length	Quantity of connectors	Quantity of sections
From 7,52 m to 7,60 m	02	03
From 7,62 m to 9,63 m	03	03
From 9,65 m to 9,73 m	03	04
From 9,75 m to 11,76 m	04	04
From 11,78 m to 11,86 m	04	05
From 11,89 m to 13,89 m	05	05
From 13,91 m to 14,00 m	05	06
From 14,02 m to 16,03 m	06	06
From 16,05 m to 16,14 m	06	07
From 16,15 m to 18,21 m	07	07

The following table is to determine the number of 23 cm connectors and 2.13 m standard sections for the assembly, according to the length of the forestay, besides the special upper and lower sections.

FURLER #2

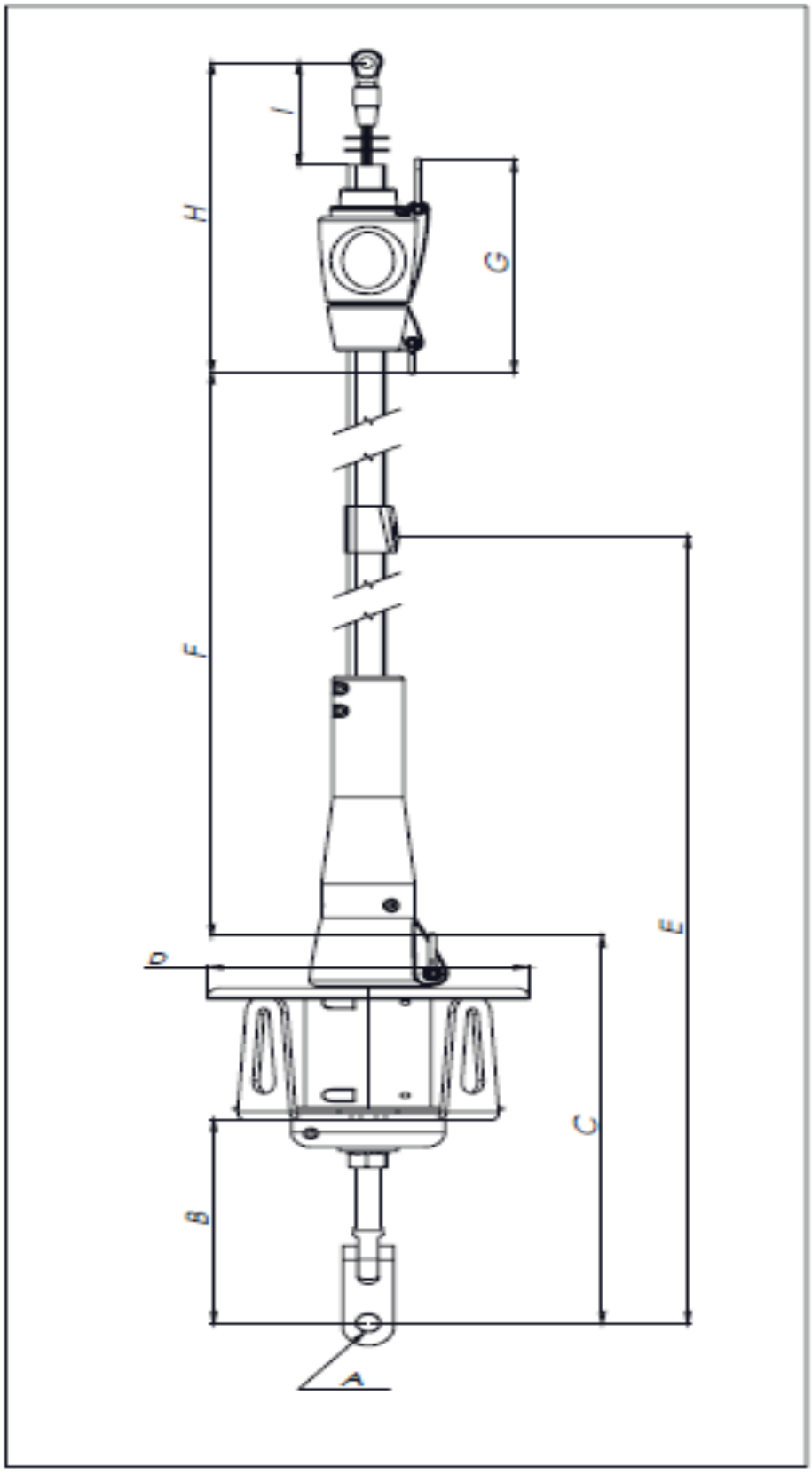
Stay length	Quantity of connectors	Quantity of sections
From 12,00m to 12,19m	04	05
From 12,22m to 14,10m	05	05
From 14,13m to 14,33m	05	06
From 14,35m to 16,23m	06	06
From 16,26m to 16,46m	06	07
From 16,48m to 18,36m	07	07
From 18,39m to 18,59m	07	08
From 18,62m to 20,55m	08	08

The following table is to determine the number of 23 cm connectors and 2.13 m standard sections for the assembly, according to the length of the forestay, besides the special upper and lower sections.

FURLER #2,5

Stay length	Quantity of connectors	Quantity of sections
From 14,13 m to 14,33 m	05	06
From 14,35 m to 16,26 m	06	06
From 16,31 m to 16,46 m	06	07
From 16,48 m to 18,39 m	07	07
From 18,44 m to 18,62 m	07	08
From 18,64 m to 20,52 m	08	08
From 20,57 m to 20,73 m	08	09
From 20,75 m to 22,66 m	09	09

In order to help you with cutting the sail, assembly, etc.; we inform below the furlers' general dimensions:



Pic. 24

SAIL DIMENSION TABLE

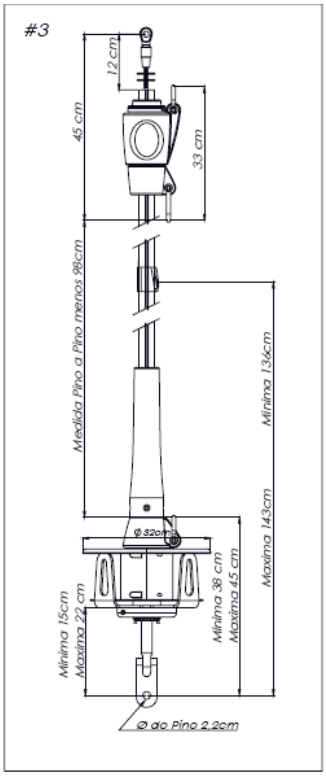
Position	# 0	# 1	#1,5	#2	#2,5	#3	Position
	Measurement	Measurement	Measurement	Measurement	Measurement	Measurement	
	cm	cm	cm	cm	cm	cm	
A Ø	0,95	1,3	1,4	1,6	1,9	2,2	A
B max	12,0	14,5	15,5	20,5	22,0	22,0	B max
B min	8,5	9,5	10,5	14,5	15,0	15,0	B min
C max	27,0	30,0	31,0	40,0	45,0	45,0	C max
C min	23,5	25,0	26,0	34,0	38,0	38,0	C mín
D Ø	16,0	19,5	19,5	25,0	32,0	32,0	D
E max	100,0	110,0	111,0	136,0	143,0	143,0	E max
E min	96,5	105,0	106,0	130,0	136,0	136,0	E min
F	Measured pin to pin, **K** value already deducted						F
G	23,0	25,0	25,0	28,0	28,0	33,0	G
H	32,0	36,0	36,0	40,0	40,0	45,0	H
I	9,0	11,0	11,0	12,0	12,0	12,0	I
J	**Measurement to be informed by the customer when ordering the furler**						J
K	-61,0	-68,0	-68,0	-82,0	-93,0	-98,0	K

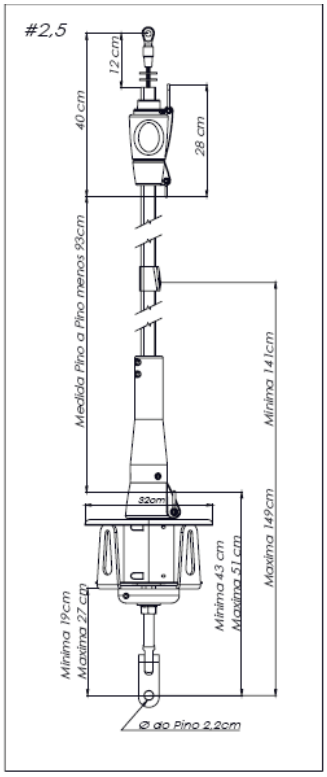
Position	Description
A Ø	Toggle pin diameter
B max	Maximum distance from pin to the base of spool
B min	Minimum distance from pin to the base of spool
C max	Maximum distance from pin to tack shackle
C min	Minimum distance from pin to tack shackle
D Ø	Spool cover diameter
E max	Maximum distance from pin to the sail's entry point in the feeder
E min	Minimum distance from pin to the sail's entry point in the feeder
F	Leech length (J - K)
G	Upper swivel's between shackles measurement
H	Distance from clew to upper pin of the stay
I	Distance from upper pin to the top of the sections
J	Forestay length, measured pin to pin
K	Value to be deducted from "pin to pin" measurement which results in the leech length

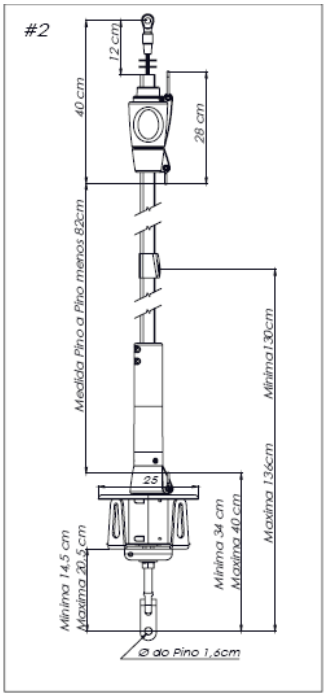
Note:

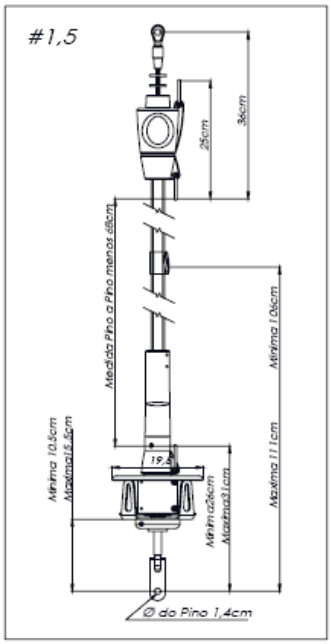
a) The maximum and minimum measurements result from the use of the turnbuckle.

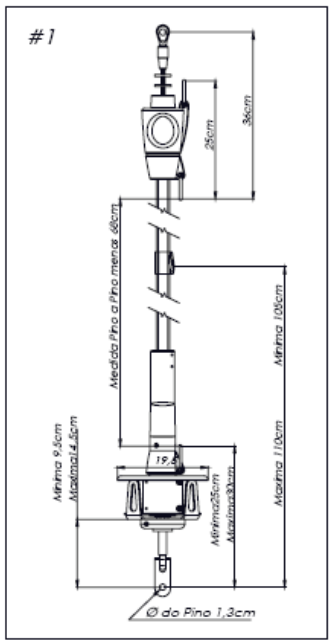
b) Forestay measurement **(J)** is determinant of both the size of the furler to be installed and to calculate the quantity of sections and cable cutting and **must be informed** together with the stay diameter when ordering the product. (See "Limits and loads" table at the beginning of the manual)

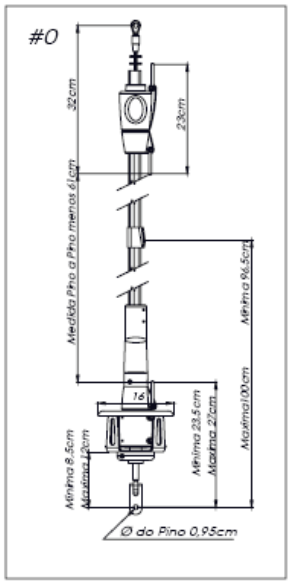












Máxima = maximum

Mínima = minimum

Medida pino a pino menos... = Pin to pin measurement minus…

Ø do pino = pin Ø

1 Lower screw set

2 Toggle

3 Pin

4 Cotter pin

5 Fixed pin

6 Left lock-nut

7 Washer

8 Spool guard set

9 Guard support

10 Allen screw

11 Half guard

12 Flathead slotted screw

13 Spool set

14 Flathead Allen screw

15 Lower disc

16 Core

17 Guide pin

18 Allen screw

19 Upper disc

20 Bronze shaft set

21 Lock pin

22 Balls

23 Lower swivel

24 Balls cap

25 Shackle

26 Fast terminal set

27 External cone

28 Internal cone

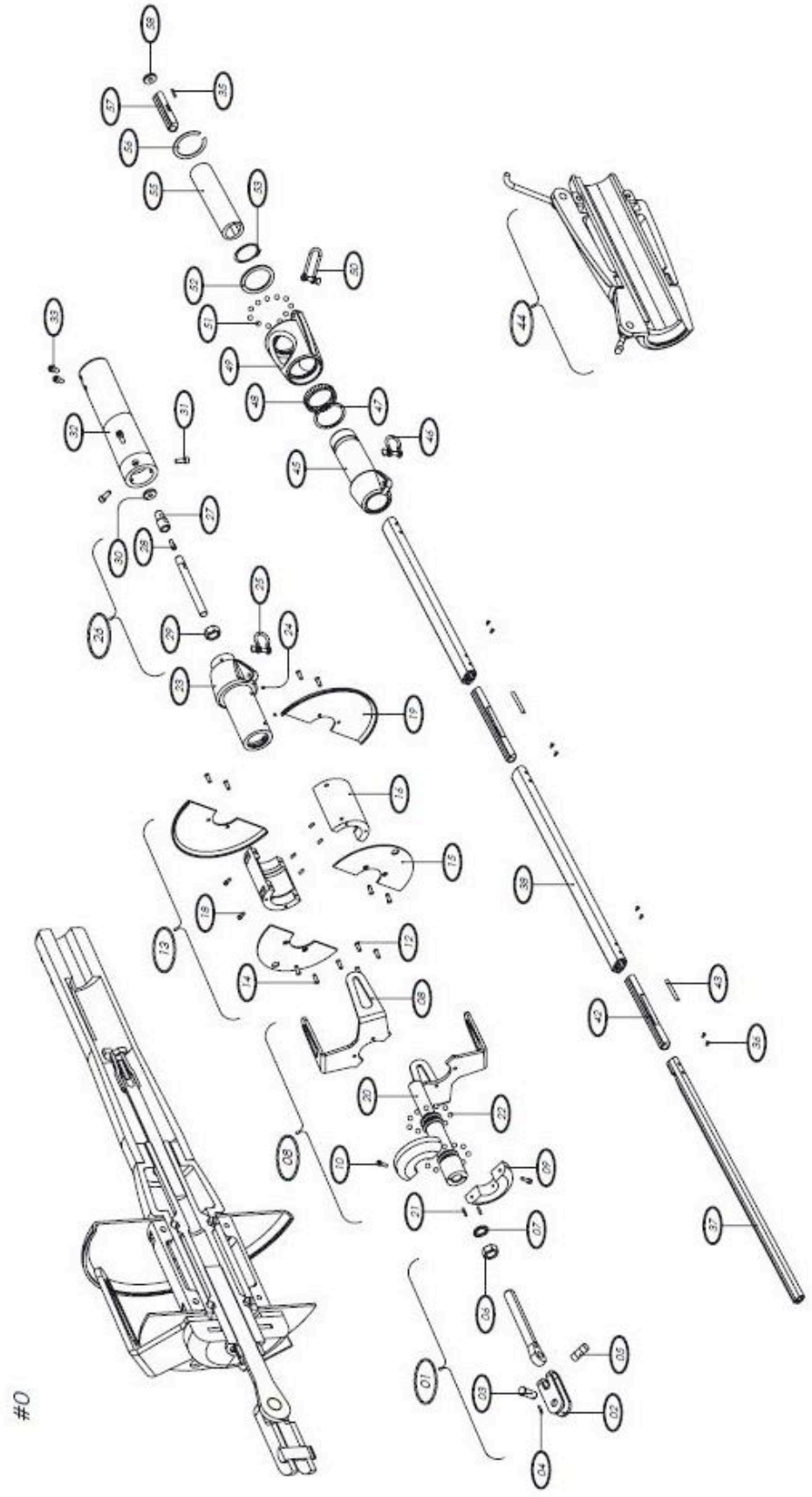
29 Terminal lock-nut

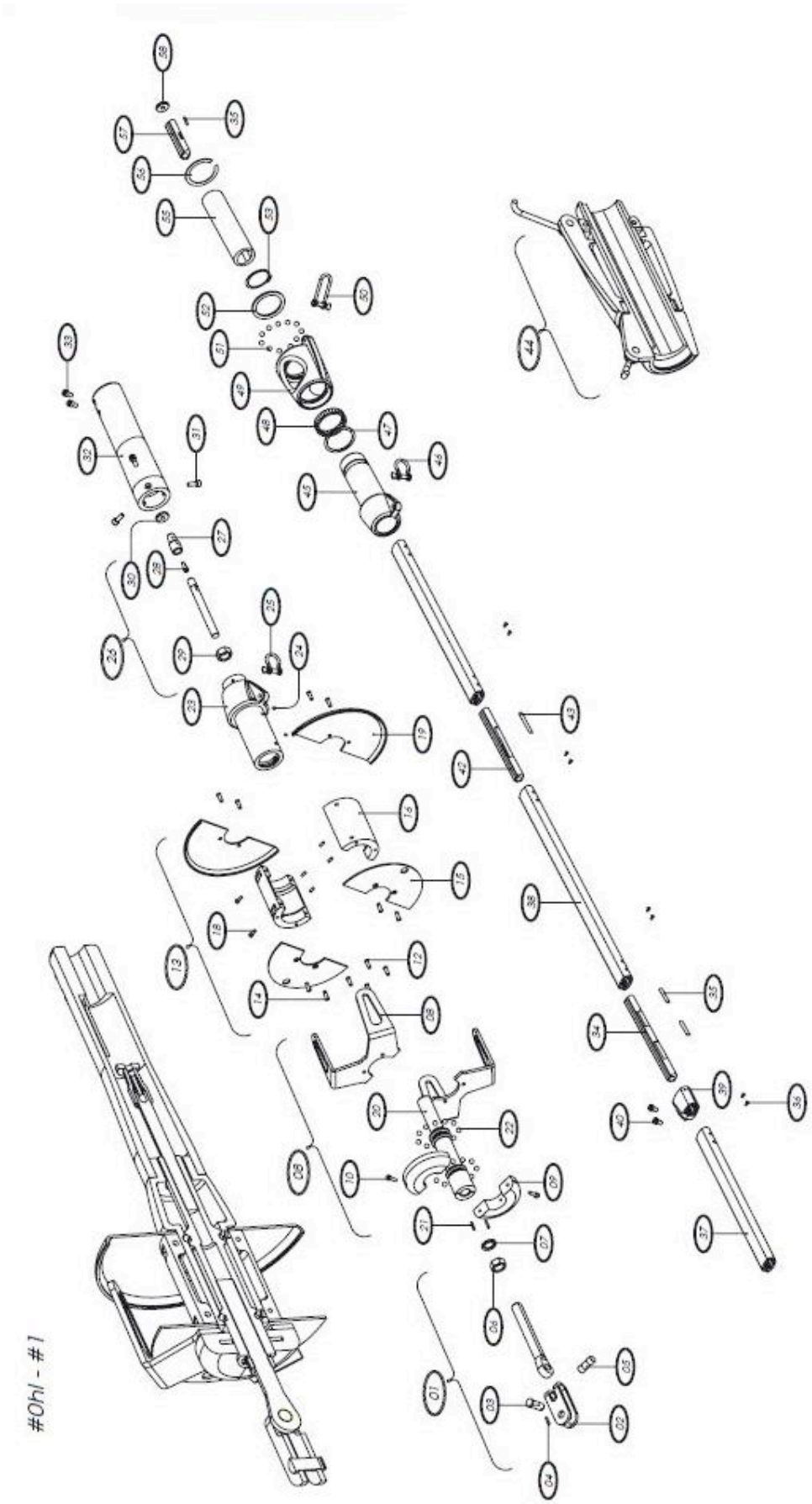
#0 std - 95350	#0 hl - 95351	# 1 - 95355	# 1,5 - 95356	# 2 - 95360	# 2,5 - 95367

Item	Descrição	Qt.	Código	Qt.	Código	Qt.	Código	Qt.	Código	Qt.	Código	Qt.	Código
01	Conj do parafuso inferior	1	91350.80	1	91350.80	1	91355.80	1	91356.80	1	91360.80	1	91365.80
02	Toggle	1	93000.02	1	93000.02	1	93002.02	1	93004.02	1	93005.02	1	93006.02
03	Pino	1	93000.01	1	93000.01	1	93002.01	1	93004.01	1	93005.01	1	93006.01
04	Contra-pino	1	31.021	1	31.021	1	31.021	1	31.021	1	31.021	1	31.025
05	Pino fixo	1	93000.03	1	93000.03	1	93002.03	1	93004.03	1	93005.03	1	93006.03
06	Contra-porca rosca esquerda	1	91350.06	1	91350.06	1	91355.06	1	91355.06	1	91360.06	1	91365.06
07	Arruela dentada	1	91350.07	1	91350.07	1	91355.07	1	91355.07	1	91360.07	1	91365.07
08	Conj da proteção do carretel	1	95350.82	1	95350.82	1	95355.82	1	95355.82	1	95360.82	1	95367.82
09	Suporte da proteção	2	95350.09	2	95350.09	2	95355.09	2	95355.09	2	95360.09	2	95367.09
10	Parafuso Allen	2	30.023	2	30.023	2	30.023	2	30.023	2	30.194	2	30.194
11	Meia proteção	2	95350.08	2	95350.08	2	95355.08	2	95355.08	2	95360.08	2	95367.08
12	Parafuso fenda cabeça chata	4	30.060	4	30.060	4	30.060	4	30.060	4	30.068	4	30.226
13	Conj do carretel	1	95350.81	1	95350.81	1	95355.81	1	95355.81	1	95360.81	1	95367.81
14	Parafuso Allen cabeça chata	8	30.192	8	30.192	8	30.192	8	30.192	8	30.206	8	30.038
15	Disco inferior	2	95350.11	2	95350.11	2	95355.11	2	95355.11	2	95360.11	2	95367.11
16	Miolo	2	95350.13	2	95350.13	2	95355.13	2	95355.13	2	95360.13	2	95367.13
17	Pino guia	4	95350.48	4	95350.48	4	95355.48	4	95355.48	4	95360.48	4	95367.48
18	Parafuso Allen	4	30.249	4	30.249	4	30.249	4	30.249	4	30.025	4	30.028
19	Disco superior	2	95350.12	2	95350.12	2	95355.12	2	95355.12	2	95360.12	2	95367.12
20	Conj do eixo de bronze	1	95350.83	1	95350.83	1	91355.83	1	91356.83	1	91360.83	1	91367.83
21	Pino de trava	2	91350.15	2	91350.15	2	91355.15	2	91355.15	2	91360.15	2	91365.15
22	Esferas	30	26.015	30	26.008	26	26.009	26	26.009	30	26.009	34	26.007
23	Giratório inferior	1	95350.16	1	95350.16	1	95355.16	1	95355.16	1	95360.16	1	95367.16
24	Tampão das esferas	2	91350.49	2	91350.49	2	91355.49	2	91355.49	2	91355.49	2	91365.49
25	Manilha balão	1	26.037	1	26.037	1	26.037	1	26.037	1	26.038	1	26.039
26	Conj do term rápido	1	vide abaixo	1		1		1		1		1	
27	Cone externo	1	vide abaixo	1		1		1		1		1	
28	Cone interno	1	vide abaixo	1		1		1		1		1	
29	Contra-porca do terminal	1	30.155	1	30.155	1	30156	1	91360.25	1	91360.25	1	91365.25
30	Anel de bronze	1	91350.64	1	91350.64	1	91350.64	1	91350.64	1	91350.64	1	91365.64
31	Parafuso Allen	3	30.021	3	30.021	3	30.021	3	30.021	3	30.207	4	30.207
32	Conj do tubo de torque	1	95350.85	1	95350.85	1	95355.85	1	95355.85	1	95360.85	1	95367.85
33	Parafuso Allen	2	30.022	2	30.022	2	30.249	2	30.249	2	30.027	2	30.027
34	Conector longo inferior			1	91350.42	1	91355.42	1	91355.42	1	91360.42	1	91360.42
35	Chaveta curta de borracha	1	95350.53	3	95350.53	3	95355.53	3	95355.53	3	95360.53	3	95360.53
36	Parafuso fenda cab chata	CN	30.054	CN	30.054	CN	30.054	CN	30.054	CN	30.055	CN	30.055
37	Perfil curto inferior	1	91348.40	1	91350.40	1	91355.40	1	91355.40	1	91360.40	1	91360.40
38	Perfil normal	CN	91350.41	CN	91350.41	CN	91355.41	CN	91355.41	CN	91360.41	CN	91360.41
39	Alimentador bi-partido			1	91350.87	1	91355.87	1	91355.87	1	91360.87	1	91360.87
40	Parafuso fenda cab chata			2	30.058	2	30.058	2	30.058	1	30.059	1	30.059
41	Parafuso fenda cab chata									1	30.060	1	30.060
42	Conector normal	CN	91350.43	CN	91350.43	CN	91355.43	CN	91355.43	CN	91360.43	CN	91360.43
43	Chaveta longa de borracha	CN	91350.54	CN	91350.54	CN	91355.54	CN	91355.54	CN	91360.54	CN	91360.54
44	Conj destorcedor da adriça	1	95350.90	1	95350.90	1	95355.90	1	95355.90	1	95360.94	1	95360.94
45	Corpo do destorcedor	1	95350.37	1	95350.37	1	95355.37	1	95355.37	1	95360.37	1	95360.37
46	Manilha balão	1	26.037	1	26.037	1	26.037	1	26.037	1	26.038	1	26.038
47	Anel de encosto roletes	1	95350.47	1	95350.47	1	95355.47	1	95355.47	1	95360.46	1	95360.46
48	Roletes	25	92800.06	25	92800.06	30	92800.06	30	92800.06	33	92800.06	33	92800.06
49	Destorcedor da adriça	1	95350.32	1	95350.32	1	95355.32	1	95355.32	1	95360.32	1	95360.32
50	Manilha longa 8mm	1	26.033	1	26.033	1	26.033	1	26.033	1	26.034	1	26.034
51	Esferas	24	26.015	24	26.015	20	26.009	20	26.009	22	26.009	22	26.009
52	Anel de encosto esferas	1	95350.46	1	95350.46	1	95355.46	1	95355.46	1	95360.47	1	95360.47
53	Anel segurança	1	91350.47	1	91350.47	1	91355.47	1	91355.47	1	91393.51	1	91393.51
54	Parafuso Allen M5 x 20									2	30.237	2	30.237
55	Deslizante plástico	1	95350.38	1	95350.38	1	95355.38	1	95355.38	1	95360.38	1	95360.38
56	Anel de seg do deslizante	1	91350.39	1	91350.39	1	91355.39	1	91355.39	1	91360.39	1	91360.39
57	Conector curto superior	1	91350.44	1	91350.44	1	91355.44	1	91355.44	1	91360.44	1	91360.44
58	Anel afastamento da adriça	1	91350.48	1	91350.48	1	91355.48	1	91355.48	1	91360.48	1	91360.48
59	Jg parafusos sobressalentes	1	95350.94	1	95350.94	1	91355.95	1	91355.95	1	91360.93	1	95367.94
60	Conj. terminal rápido	4mm	91350.91	4mm	91350.91	6mm	91355.92	7mm	91360.90	7mm	91360.90	10mm	91365.92
61	Conj. terminal rápido	5mm	91350.92	5mm	91350.92	7mm	91355.93	8mm	91360.91	8mm	91360.91	12mm	91365.93
62	Conj. terminal rápido	6mm	91350.93	6mm	91350.93	8mm	91355.94			10mm	91360.92		
63	Cone externo	4mm	93014.06	4mm	93014.06	6mm	93016.06	7mm	93017.06	7mm	93017.06	10mm	93019.06
64	Cone interno	4mm	93014.07	4mm	93014.07	6mm	93016.07	7mm	93017.07	7mm	93017.07	10mm	93019.07
65	Cone externo	5mm	93015.06	5mm	93015.06	7mm	93017.06	8mm	93018.06	8mm	93018.06	12mm	93020.06
66	Cone interno	5mm	93015.07	5mm	93015.07	7mm	93017.07	8mm	93018.07	8mm	93018.07	12mm	93020.07
67	Cone externo	6mm	93016.06	6mm	93016.06	8mm	93018.06			10mm	93019.06		
68	Cone interno	6mm	93016.07	6mm	93016.07	8mm	93018.07			10mm	93019.07		

30 Brass ring	36 Flathead slotted screw	42 Standard connector	48 Rollers	54 M5x20 Allen screw	60 Fast terminal set	66 Internal cone
31 Allen screw	37 Short lower section	43 Long rubber key	49 Halyard swivel	55 Plastic sliding	61 Fast terminal set	67 External cone
32 Torque tube set	38 Stand. section	44 Halyard swivel set	50 8mm shackle	56 Sliding safety ring	62 Fast terminal set	68 Internal cone
33 Allen screw	39 Feeder	45 Swivel body	51 Balls	57 Short upper connector	63 External cone	
34 Long lower connector	40 Flathead slotted screw	46 Shackle	52 Ball backup ring	58 Spacer ring	64 Internal cone	
35 Short rubber key	41 Flathead slotted screw	47 Roller backup ring	53 Safety ring	59 Spare screw set	65 External cone	

EXPLODED VIEW

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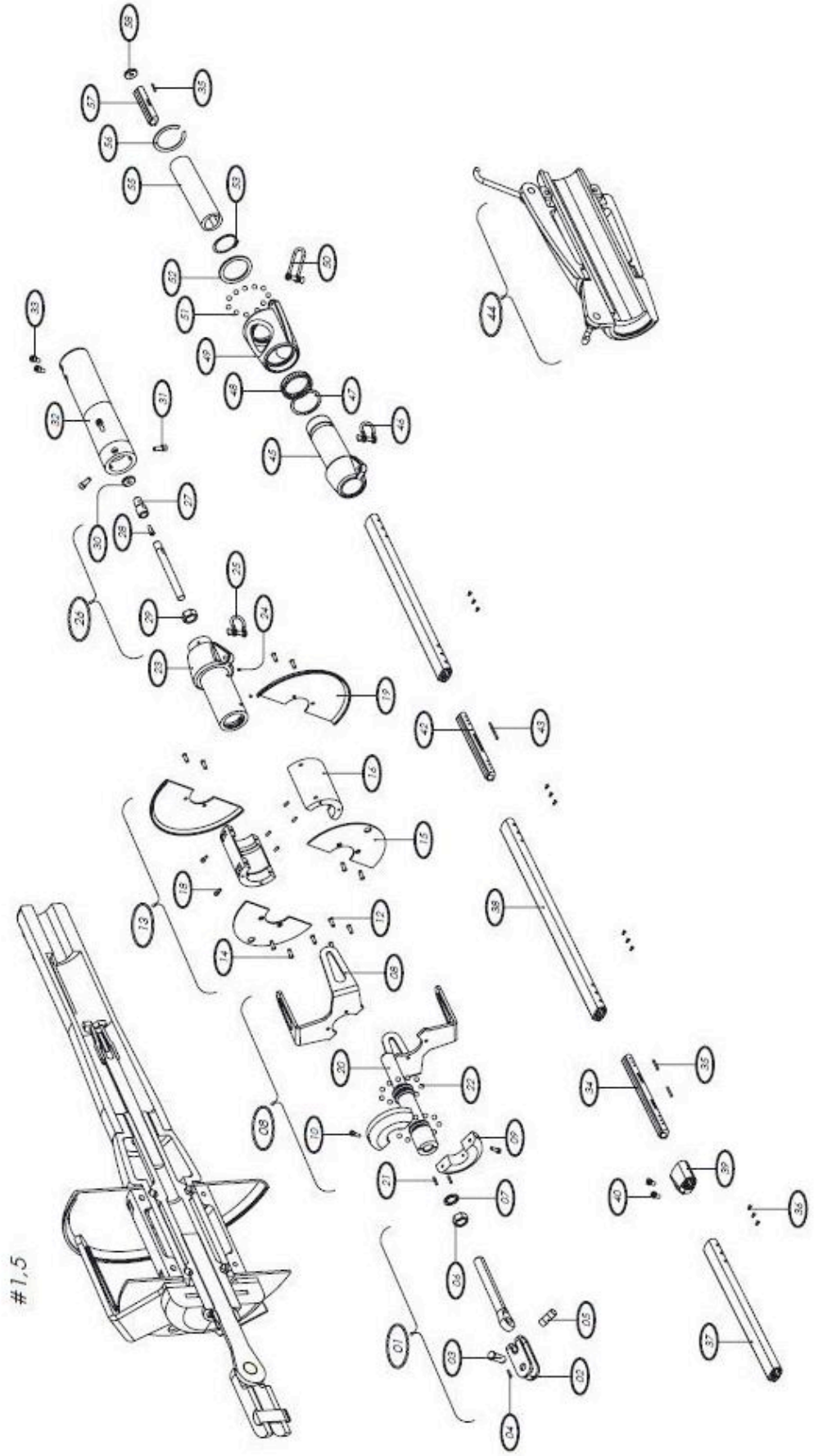
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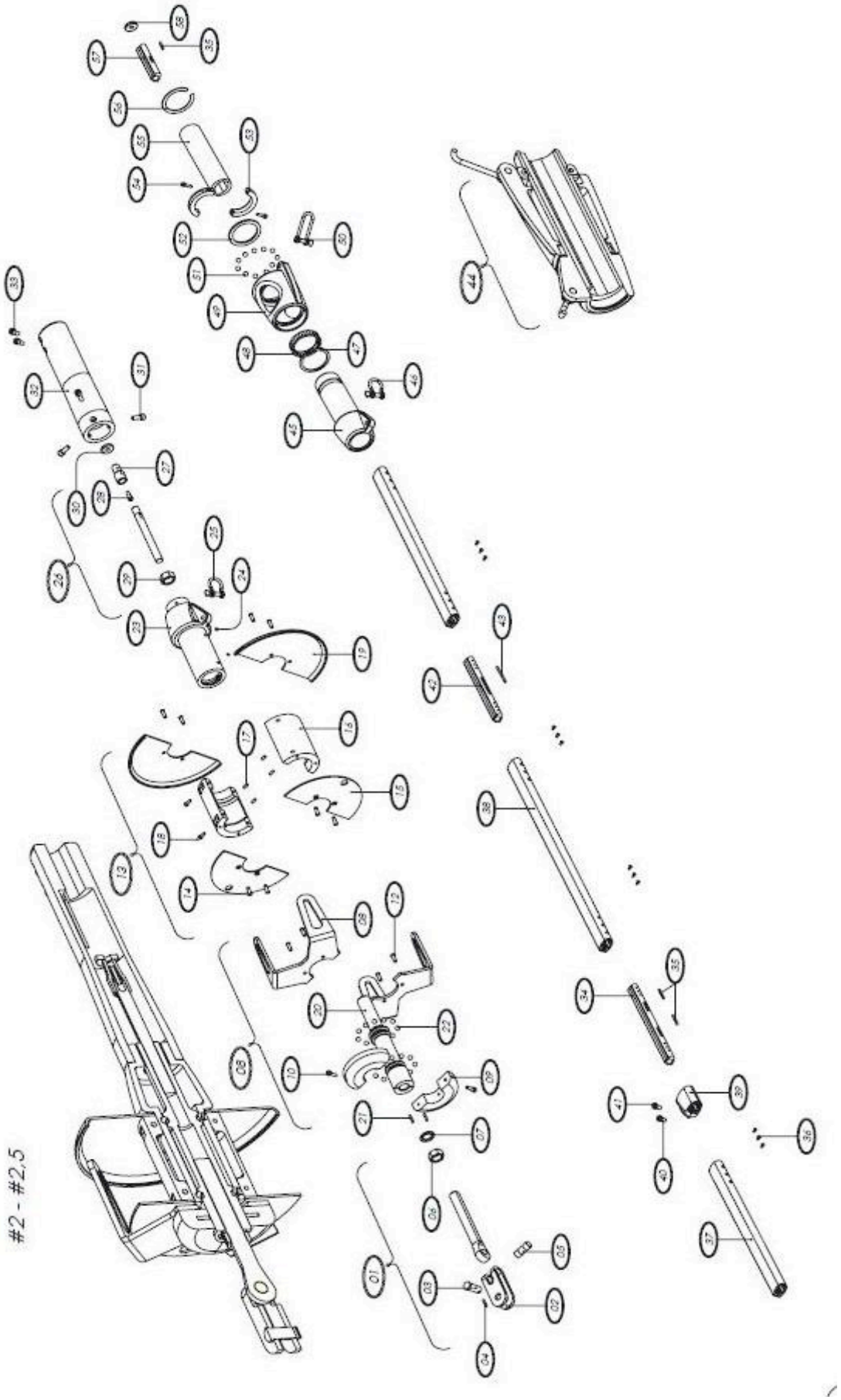
#2 - #2,5

TROUBLESHOOTING

PROBLEM	PROBABLE CAUSE	SOLUTION
Screws will not fit into the holes	The holes are dirty or not aligned	Clean the holes or check the alignment of the holes; if they can not be aligned, contact the manufacturer. Do not drill
Connectors missing	Swage terminal may be inside one of the sections	Check the interior of the sections
Too many connectors	For the same kind of assembly there was one connector too many	Leave the surplus connector inside one of the sections
Swage terminal will not go through the sections	Section or terminal with dirt or burr or warped terminal	Clean and remove burrs from terminal and section. Return the stay to dealer. Do not try to straighten the terminal!
Connector will not fit to section	Section or connector with dirt or burr	Clean and remove burr from section and connector
After installing the stay, it shows excessive thread in the terminal or turnbuckle	Stay is too short	Add a toggle to the forestay. Do not sail with excessive thread! (See further information on how to adjust the tension of the forestay in this manual)
Section is too long	Calculation or measurement error	Small mistakes (up to 15 cm) may be corrected by shortening the special lower section
Section is too short	Calculation or measurement error	Mistakes (up to 35 cm) may be corrected by replacing the special lower section with a longer one
Sail will not furl	Halyard twists around the stay because the angle between the mast and the halyard is too small	See assembly instructions concerning the halyard ideal angle. You may need to install a block in front of the mast

Sail will not furl		See assembly instructions concerning the halyard ideal angle. You may need to install a block in front of the mast
	Halyard twists around the stay because the swivel is too low	See instructions on the ideal height of the halyard swivel. A wire rope sling my be necessary to raise the set to the correct height
	Sections are touching the terminal of the turnbuckle	Release clip from torque tube and raise sections
	Sections are too high and get stuck on the upper terminal	Release clip from torque tube and lower sections until they rotate easily
	Auxiliary halyard twists around sail when it furls	Keep auxiliary halyard away from forestay passing it behind the crosspieces
	There is salt or dirt in bearings	Clean bearings using fresh water and lubricate them with WD 40 or similar one
	Furling line is stuck in the spool	Superposition may be avoided using a ratchet block 92710 to keep the tension on cable during sail unfurling
	Sheets are stuck	Release sheets
	Line is not rolled around spool	Remove sheets and rotate spool clockwise until you roll the necessary quantity of line
	Line passes through the ratchet block 92710 in the wrong direction.	Place the block in the correct direction
Sail will not unfurl	Halyard twists around the stay because the angle between mast and halyard is too small.	See assembly instructions regarding halyard's ideal angle. You may need to install a diverter in front of the mast.
	Halyard twists around the stay because the swivel is too low.	See instructions regarding the swivel's ideal height. A wire rope sling may be necessary to raise it to the

Sail will not unfurl	**Halyard twists around the stay because the swivel is too low.**	**correct height.**
	Sections are touching turnbuckle terminal	**Release clip from torque tube and raise sections**
	Sections are too high and get stuck to the upper terminal	**Release clip from torque tube and lower the sections until they rotate easily**
	Auxiliary halyard twists around sail when it furls	**Keep auxiliary halyard away from forestay passing it behind the crosspieces**
	There is salt or dirt in bearings	**Clean bearings using fresh water and lubricate them with WD 40 or similar one**
	Furling line is stuck	**Release furling line**
Sail will not furl completely	**There is not enough furling line in the spool or the auxiliary halyard twists around the sail**	**Add more line to the spool or move auxiliary halyard away**
Section will not rotate freely or rotates elliptically	**Insufficient tension on the stay**	**Stretch forestay and/or backstay to eliminate slack**
Sail will not furl correctly	**Low tension on sheets while furls**	**Keep the sheets under light tension as furling in light wind conditions**
Sail will not keep furled	**Sail is furling loosely or furling line is not locked**	**Keep sheets under light tension as you furl or lock the furling line**
Sail is difficult to hoist	**The leech rope does not fit into the channel**	**Sheath may be torn or damaged**
	Sail gets stuck at the feeder	**Check leech rope diameter and reposition sail on the deck**
	Halyard swivel gets stuck at a screw	**Tighten sections' coupling screws. Heads must be level with surface!**
	Channels are dirty	**Clean channels**
Sail is difficult to hoist	**Halyard swivel touches the**	**Leech is too long and must be cut or halyard must be led to a higher point in the**

completely or leech can not be tensioned	**stop or the angle between the halyard and mast is too wide and halyard tends towards the stern**	**mast. It may require complex changes like halyard diverter relocation**
Sail can not be lowered	**Halyard twists around stay**	**Angle between stay and halyard is too small. Increase angle**
	Screw is not level with the section	**Tighten screw**
	Halyard swivel came out of the section	**Section is too short or too low. Try raising it and if it is not sufficient it must be increased**
UV protection facing inwards when furling	**Furling line is inverted in the spool**	**Remove sheets. Pull out the line completely from the spool. Rotate spool to the opposite side.** **Warning: Check the spool guard alignment. If necessary adjust it.**