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MANUAL FOR HYDRAULIC BOOM VANG



 **SELDÉN**

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1 Introduction

Congratulations on the purchase of your new hydraulic vang!

This manual covers installation and operating instructions for Seldén hydraulic vang. Please read the entire manual before assembly/usage and keep the manual available for future reference. The latest version is available at www.seldenmast.com.

Related installation manuals and user guides:

To derive the maximum benefit and enjoyment from your vang, we recommend that you study this manual carefully before attempting to assemble and operate the product. This is to avoid damage to your boat as well as to avoid personal injury. Seldén cannot be held responsible for any problems, damages or personal injuries arising from an improperly installed product.

Seldén limited warranty applies to this product. For full details please see our general conditions of sale.

The guarantee is only valid if the vang is installed and operated in accordance with this manual.

If the vang is repaired by anyone not authorized by Seldén Mast AB, the guarantee ceases to be valid.

Seldén Mast AB reserves the right to alter the content of the manual and design of the product without prior warning.

For latest update check www.seldenmast.se or contact Seldén for your own issue.

Safety Precautions

Carefully pay attention to, and follow the instructions with the following symbols:



ATTENTION

This symbol indicates a critical moment in the assembly or technical advice.



WARNING

This symbol indicates a potentially hazardous situation. If not avoided, this could result in serious personal injury or damage to property.

Choosing the correct version of hydraulic vang for your boat:

The key to a safe and properly working installation is correct dimensioning in relation to the boat size the products shall be used on. Seldén provides dimensioning guidelines in catalogues, leaflets and on the website. If there are any questions about selecting the right product, please consult an authorized Seldén dealer. All dealers are listed at www.seldenmast.com and divided in categories describing their competence. For Hydraulic vang we recommend authorized Seldén dealers or dealers in the category hydraulics.

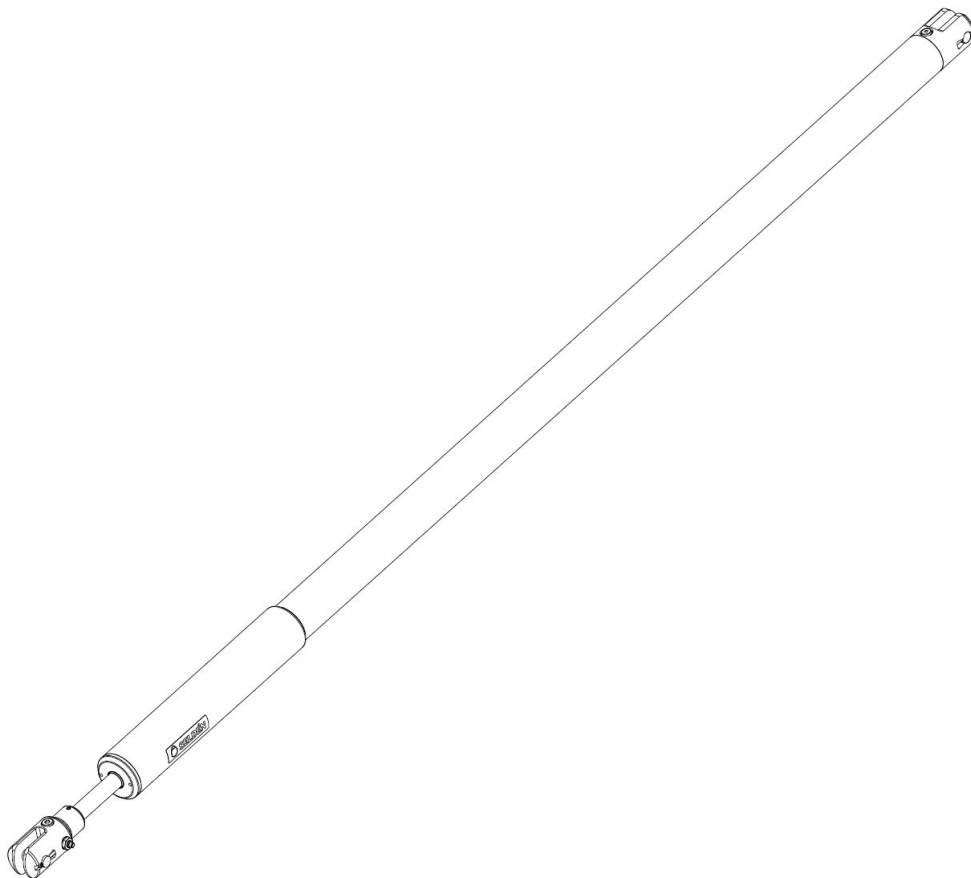
2 Hydraulic boom vang

The Selden hydraulic boom vang is a tool that's intended to be used on a sailing boat in the same way as a rodkicker to control vertical boom angle. The vang is a single acting cylinder that is operated using hydraulic pressure and pressurized gas. When the hydraulic pressure in the vang is increased, the vang will contract and pull the boom downwards. Whereas when hydraulic pressure is released from the vang, gas pressure acts as a spring and extends the vang and the boom is pushed upwards.

When sailing, a hydraulic boom vang replaces the use of a topping lift which simplifies reefing and prevents the boom from dropping into the cockpit or onto the coach roof. This also allows for lifting the boom and preventing it from hanging on the sail, excellent for trimming the main in light air. When pressurized hydraulically, the vang will contract and pull the boom downwards. This can be useful when sailing downwind to prevent the boom end from lifting, helping flatten the sail and reduce twist.

When the mainsail is not used, the gas pressure in the vang will statically support the weight of the boom and the boom angle can be set to not impede the use of the cockpit are when in harbour.

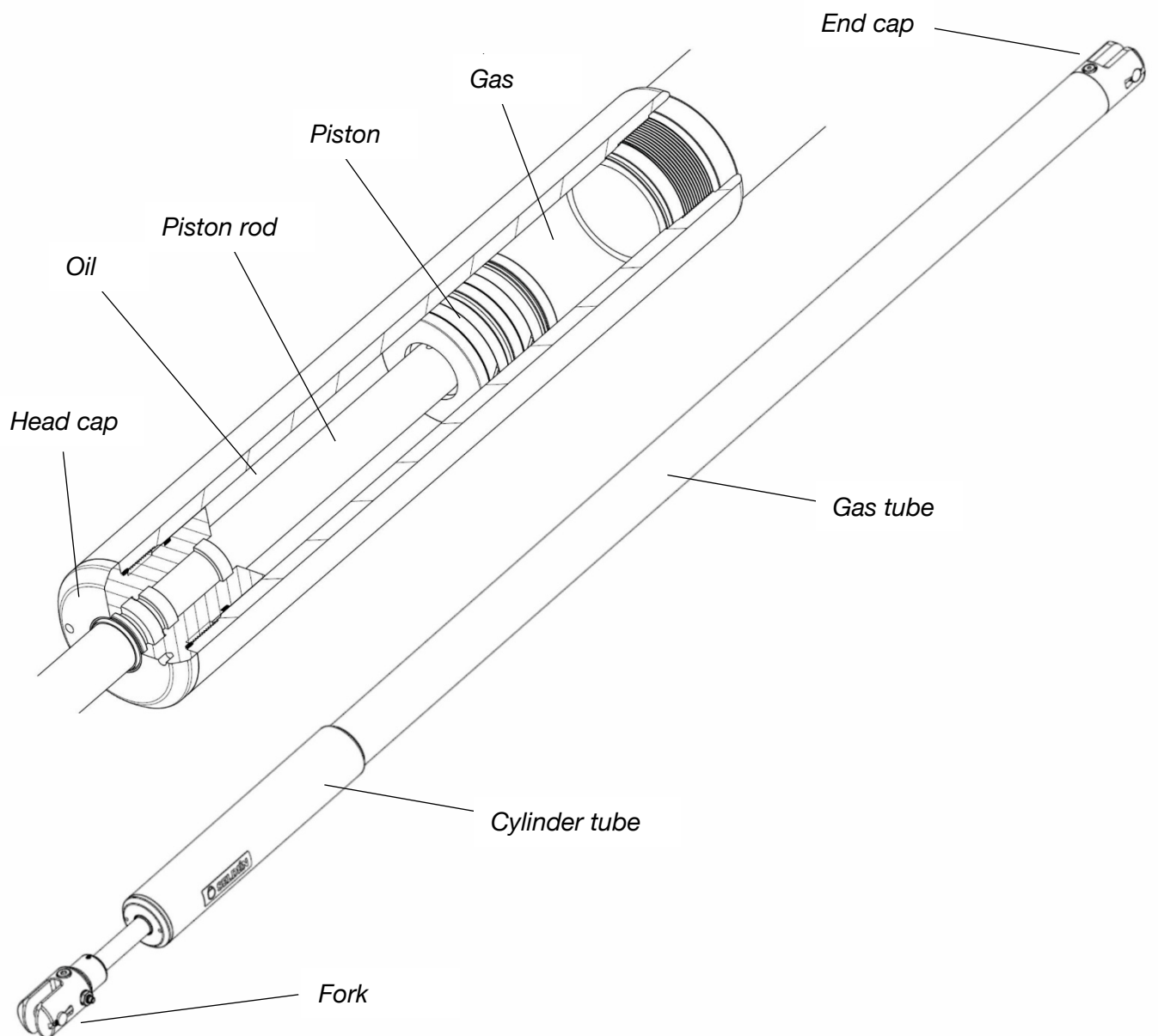
The main advantage of a hydraulic boom vang over a regular rodkicker is that no lines are used for control, reducing the number of lines needed in the cockpit. It gives the ability for stepless and effortless control of boom angle, while opening the possibility for push-button control.



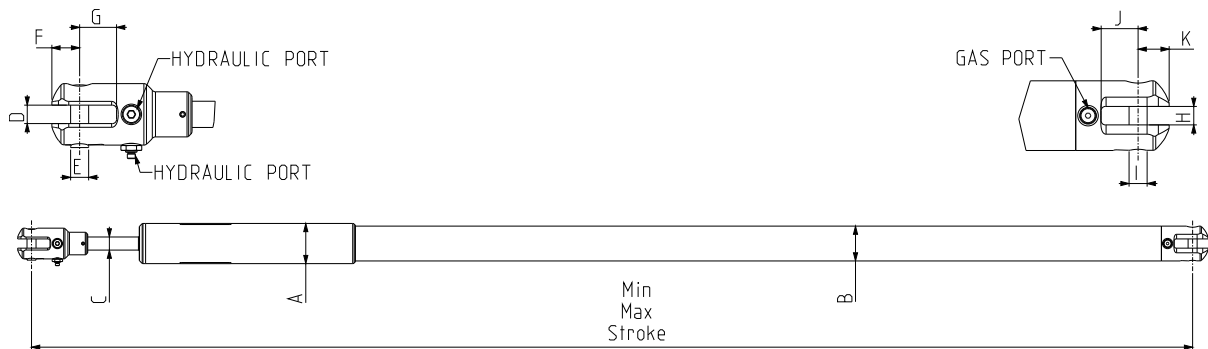
2.1 Technical specification

Parts and nomenclature

In the schematics below, the names of all the parts of the vang can be viewed.



Technical dimensions



All dimensions are in mm unless otherwise specified

Vang size	HV 46	HV 69	HV 106	HV 89
Min	2400	2685	2720	2790
Max	2680	2965	3030	3130
Stroke	280	280	310	340
A	Ø67	Ø79	Ø98	Ø110
B	Ø60	Ø70	Ø85	Ø95
C	Ø22	Ø25	Ø32	Ø35
D	16	20,5	22,5	26
E	Ø16	Ø19	Ø22	Ø25
F	24	32,2	33,8	34,2
G	32	38,5	45	50,5
H	16	20,5	22,5	26
I	Ø16	Ø19	Ø22	Ø25
J	34	40	45	50
K	25	33	37,8	34

Technical specifications

<i>Vang size</i>	HV 46	HV 69	HV 106	HV89
<i>Nature anodized part-no.</i>	580-033-02	580-035-02	580-041-02	580-017-01
<i>Black anodized part-no.</i>	580-034-02	580-036-02	580-042-02	580-018-01
Max return Force [kN]	8,4	12,2	19	24,4
Max pulling force at 250 Bar (max pump pressure) [kN]	31	58	71	89
Max load at 345 Bar (gas filled) [kN]	46	69	106	138
Weight [kg]	12.3	15.4	25	31
Gas Pressure [Bar]	42	42	42	42
Max hydraulic working pressure [Bar]	345	345	345	345
Hydraulic port connections	1/4" BSPP	1/4" BSPP	3/8" BSPP	3/8" BSPP

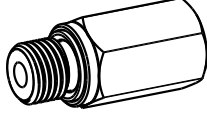
Technical specifications (Oil and gas)

Oil viscosity	ISO VG 32 or ISO VG 46		
Oil Quality, standards to be met	Mineral based hydraulic oil meeting or surpassing standard DIN 51524 part 3, HVLP ISO VG 32/46 Or DIN 51524 part 2, HLP ISO VG 32/46		
Oil recommendation	Statoil Hydraway HVXA 46		
Examples of alternative oils with comparable properties	BRAND	PRODUCT NAME	TYPE
	Shell	Tellus S2 M	HLP
	BP-Castrol	Hyspin AWS	HLP
	Total	Azolla ZS	HLP
	Fuchs	Renolin B	HLP
	Chevron	Rando HD	HLP
	Shell	Tellus S4 VX	HVLP

	Fuchs	Renolin B HVI	HVLP
	Fuchs	Renolin ZAF HVXA	HVLP
	BP-Castrol	Hyspin AWH-M	HVLP
	Total	Equivis ZS	HVLP
Gas	Nitrogen		

2.2 Optional parts

The following parts are not mandatory but recommended to be purchased along with the boom vang.

Description	Item No.	Illustration
Restrictor valve ¼" ø1,2	587-830	

3 Installation



Installation of a hydraulic vang must be carried out by a competent installer who has read and understood this installation manual, the purpose and function of the vang, has checked the required loads needed for the boat it's installed on as well as installing requirements prior to installation.

Hydraulic pressure can be dangerous, and installation should only be done by personnel with previous experience of installing hydraulic equipment in marine environments.

Seldén Mast AB does not take responsibility for incorrect installation of the vang or any damage that's caused to the mast, boom or boat in general due to improper planning of the installation.

Precautions

Before attempting to install the hydraulic vang, please note the following precautions:



Only use hydraulic hoses and connectors suitable for marine environment and working pressure 345 bar.



Be careful to avoid any impurities entering the hydraulic system.

3.1 Installation preparation and notes

The hydraulic boom vang is to be part of a hydraulic system that's already installed on the boat. The boom vang will require a hose connecting, for information about hoses, pump station and tank suitable for this product, please see separate manual 597-145 on Seldén website.


Before installing the boom vang, make sure hydraulic hose with appropriate fitting are prepared and accessible near the mast kicker bracket where the vang will be installed. The vang has hydraulic ports both on top and to the side. See illustration under technical dimensions chapter.

The vang uses split pins on the clevis pins, for advice regarding split pins; please see separate manual 595-540 on Seldén website.

It's recommended to pressurize the vang and run the piston rod in and out a few times before installing the vang. This is to bleed out excess air and to lubricate all the sealings, this will make the vang move more smoothly once installed.

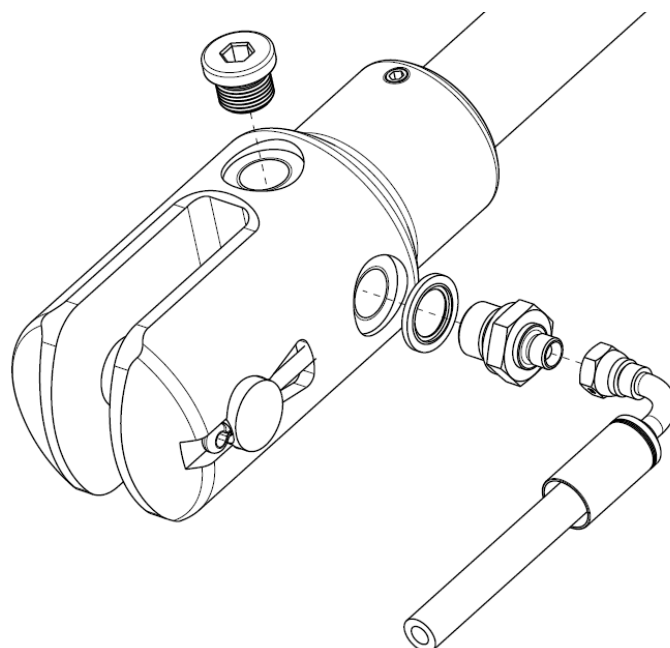
3.2 Step by step installation

1.	Cover the working area below the boom with protective sheets to avoid scratches on the deck or vang.
2.	Remove the transportation cover from the vang.
3.	Support the outer end of the boom using a topping lift, halyard or other type of support.

4.	Mount the fork of the vang on the mast kicker bracket using the clevis and split pin.
5.	Connect the hydraulic hose to one of the hydraulic ports on the vang as shown in section 3.3
6.	<p>Adjust the support for the outer end of the boom carefully until the hole in the end cap matches the hole in the boom kicker bracket. Mount the clevis and split pin.</p> <p>If it's not possible to adjust the support of the boom as described above the following method can also be used.</p> <p>Very carefully pressurize the vang and move the piston in and out until it matches the hole in the boom kicker bracket.</p> <p> Be very careful during this step to not trap any fingers while trying to position the vang and boom bracket.</p>
7.	<p>Run the vang back and forth throughout its full stroke 5 times to bleed the system of air. Make sure the boom does not hit spray hood or coach roof when the vang is fully compressed.</p> <p>As standard we recommend the boom to be able to lift $\sim 10^\circ$ and lowered $\sim 5^\circ$.</p>

3.3 Connecting hydraulic hose to vang

The hydraulic hose can be connected to whichever of the two ports in the fork that suits your installation. The port that is not used needs to be plugged using the plug with integrated seal that is already mounted on the vang upon delivery.



4 Operation

4.1 Normal operation

The hydraulic vang helps to support the boom both when sailing and in harbor. In some situations (typically motoring in seaway with lowered / furled mainsail) it is recommended to use a lifting line “topping lift” at the outer boom end in combination with a tightened main sheet to stabilize the boom further. The hydraulic vang also works as any other rodkicker / vang to prevent the boom from lifting when easing the main sheet at downwind sailing.

5 Trouble shooting

Here's a list of possible issues and solutions to problems that can occur with your vang.



Hydraulic pressure can be dangerous, these problems should only be addressed by trained personnel with marine hydraulic experience.

Problem	Information	Probable cause of the problem	Action
Not enough return force	The return force (pushing action when no oil pressure is present) is achieved by gas pressure inside the boom vang. Each vang size has a maximum compression load, see "Max Return Force" elsewhere in this manual.	Gas pressure is reduced because of leakage.	Have the vang serviced and refilled with nitrogen gas.
Not enough tension in vang.	The tension achieved by the vang is proportional to the oil pressure.	Air in the hydraulic system or leakage past the piston seals.	Check the hydraulic system for trapped air.

6 Service and maintenance

6.1 Cleaning

It's recommended rinsing the vang with freshwater at regular intervals. If detergents are used for cleaning it is important to rinse all traces off with fresh water afterwards. Most detergents contain elements that can corrode aluminium. Silicone free wax can be used to protect the surfaces.

6.2 Applying grease

It's recommended to lubricate the clevis pins on both the end cap and the fork of the vang at regular intervals to reduce wear and avoid creaking sounds. We recommend using Omega 95 grease as lubricant. Apply on the contact surfaces of the shafts, just a small amount on all the contact surfaces will suffice.

6.3 Periodic Servicing

We recommend that you have the vang serviced at intervals of no more than five years in normal use. For boats used in charter operations or circumnavigation etc. the vang should be serviced on a more frequent basis. Please contact your authorized Selden dealer.



It is of great importance that the hydraulic hoses are inspected as a part of the maintenance. They are to be replaced if they show signs of wear.



If contaminants are found during service (or at any other time), it's recommended to change the oil of the whole hydraulic system. Hydraulic components, especially valves, are sensitive to foreign particles in the fluid.

6.4 Releasing the nitrogen-gas

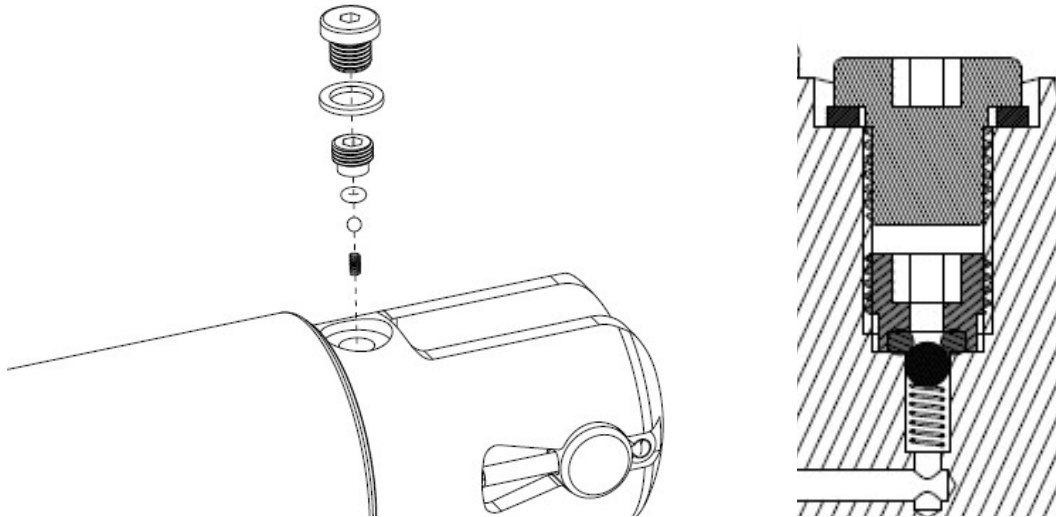


If the nitrogen-gas needs to be released from the vang. It's very important that this is **not** done in a confined space. We recommend that it is released in a well-ventilated area or in the open (outside).



Danger of death
Potentially Asphyxiating
Atmosphere

1.	Remove the plug in the cylinder end with a 6mm hex key. Be careful and use protective equipment in case this plug has been pressurized.
2.	Push the ball downwards with a thin device such as a small screwdriver or a 2mm hex key. <ul style="list-style-type: none">- Be careful not to damage the o-ring seal.- Use hearing protection.
3.	It takes about one minute to release all the nitrogen gas.



6.5 Removal of the vang

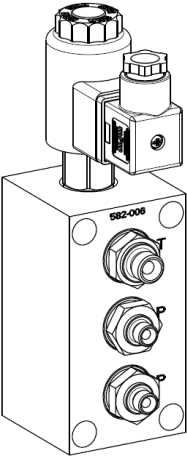
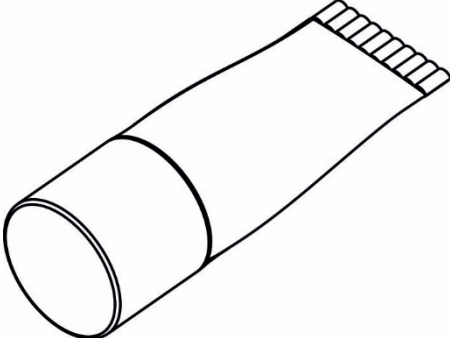
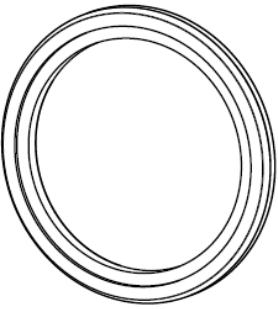
1.	Cover the working area below the boom with protective sheets to avoid scratches on the deck or vang.
2.	Lift the boom outboard end with a topping lift or a halyard just to the point where the clevis pin in the boom bracket is unloaded.
3.	Remove the clevis pin and carefully put the vang down on the deck or have someone hold the outer end of the vang.
4.	Release the hydraulic pressure in the vang and allow it to extend to its longest position. Be ready when the vang moves. Make sure that all the pressure has been released and that the vang has extended fully.
5.	Disconnect the hydraulic hose from the vang. Be sure to plug both the hose end and the coupling on the vang.
6.	Remove the clevis pin from the mast bracket and remove the vang.

6.6 Storage

If the vang is to be stored; please see to it that no stainless parts such as halyard wires or standing rigging is in contact with the aluminium surfaces of the hydraulic boom vang, otherwise galvanic corrosion may occur.

See to it that during storage, the boom vang is kept dry and with access to air circulating around it. Do not wrap it in plastic or other impervious material.

7 Spare parts and accessories

Description	Item No.	Illustration
Dump valve 12V Dump valve 24V	582-006-12 582-006-24	
Lubrication grease	312-501	
Seal kits HV 44 HV 57 HV 89 HV 46 HV 69 HV 106 HV 138	585-871-01 585-872-01 585-873-01 585-877-01 585-878-01 585-879-01 585-880-01	

8 Warranty

Seldén Mast AB guarantees the vang for 2 years. The guarantee covers faults arising from defective design, materials or workmanship.

The guarantee is only valid if the product is assembled, operated and maintained in accordance with this manual and is not subjected to loads in excess of those indicated in the brochure and on the Seldén website.

Complete shipment and warranty conditions are to be found on Seldéns website www.seldenmast.com. See Resources/Partners information/General information/General conditions of sale (595-546-E).

If the system is repaired or modified by anyone other than Seldén Mast AB or one of our authorized dealers, the guarantee ceases to be valid.

Seldén Mast AB reserves the right to alter the content and design without prior warning.

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The Seldén Group is the world's leading manufacturer of mast and rigging systems in carbon and aluminium for dinghies, keelboats and yachts.

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Our well known brands are Seldén and Furlex. The worldwide success of Furlex has enabled us to build a network of over 750 authorised dealers covering the world's marine markets. So wherever you sail, you can be sure of fast access to our service, spare parts and know-how.

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