

Manual for Hand operated hydraulic pump station MKII



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1 Introduction

Congratulations on the purchase of your new Hand operated hydraulic pump station MKII.

This manual covers installation and operating instructions for Hand operated hydraulic pump station MKII.

Please read the entire manual before assembly / usage and keep the manual available for future reference. The latest version is available at www.seldenmast.co

To derive the maximum benefit and enjoyment from your Seldén hydraulic pump station, we recommend that you study this manual carefully.

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

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

If the hydraulic pump station 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.

2 Hand operated hydraulic pump station MKII

2.1 Product presentation, main components

The hydraulic pump station is part of a hydraulic system aboard a sailing boat. The pump station is intended to be placed in the cockpit of the boat, connected by hoses to cylinders such as backstay / halyard tensioners as well as boom vang.

The pump is operated with a handle that is moved back and forth to pump oil to the cylinders. Oil is pumped into the system for each of the directions that the handle is moved (Dual Action).

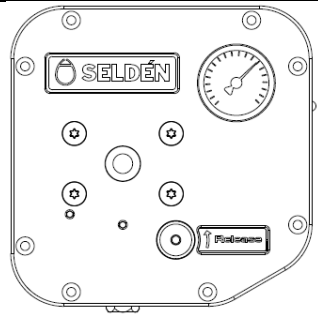
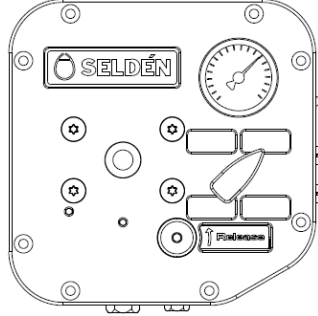

A pressure gauge shows the oil pressure in the activated circuit.

The pump has two flow rates (2-speed). Switching between them takes place automatically. The purpose is to achieve high speed adjustment of a cylinder when the load level is low, and to reduce the necessary force needed to operate the pump when the load on the cylinder is high. The switching pressure level can be adjusted by the user.

The maximum oil pressure accomplished by pumping can also be adjusted by the user. It is limited by a relief valve.

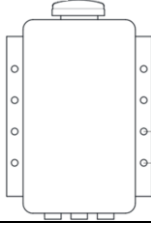
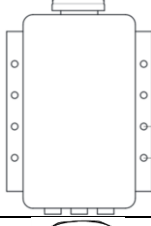

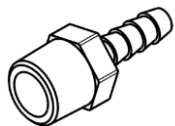

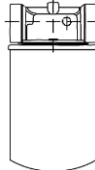
Pressure is released by opening a release valve, letting oil from the cylinder return to the tank.

MAIN COMPONENTS

Part No.	Denomination	
586-503-01	PUMP STATION 1-FUNCT.MK2, NATURE	
586-505-01	PUMP STATION 1-FUNCT.MK2, BLACK	
586-504-04	PUMP STATION 4-FUNCT.MK2, NATURE	
586-506-04	PUMP STATION 4-FUNCT.MK2, BLACK	
587-101-01	PUMP HANDLE L=500 PUMP STATION	

TANK, FILTER AND FITTINGS

We recommend fitting a quality hydraulic return filter such as Selden part no 550-134-01

Part No.	Denomination	
585-300-01	HYDR.RESERVOIR TANK/CAP, 3.8 L	
585-304-01	HYDR.RESERVOIR TANK/CAP, 5.7 L	
585-610	PLUG NPTF 3/8" NYLON	
585-638	ADAPT.NPTF 3/8" MALE - HOSE BARB 1/4"	
585-639	ADAPT.NPTF 3/8" MALE - HOSE BARB 3/8"	
585-306	HOSE CLAMP Ø13 PA (1/4" hose)	
585-307	HOSE CLAMP Ø15 PA (3/8" hose)	
550-134-01	FILTER+HOUSE (3/8" NIPPLES)	

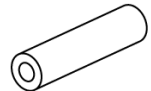
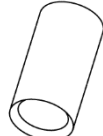
HIGH PRESSURE HOSES AND FITTINGS


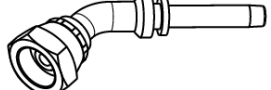
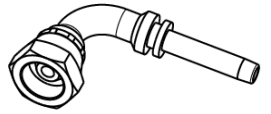
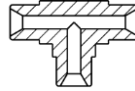
All high-pressure output ports come with 1/8" BSP adapters 585-600 already mounted.

After removing the caps, fittings 585-606, -607, -608 will fit directly against it.

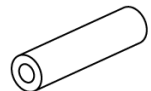
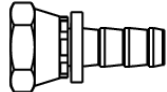
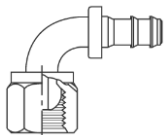
Selden backstay / halyard tensioners have 585-600 adapters fitted at delivery and require straight 1/8" fittings such as 585-606 below because of limited space.

Selden vang's have 1/4" or 3/8" ports in the fork but come with adapters to BSP 1/8" mounted.

Part No.	Denomination	
540-965	HYDR.HOSE 1/4" KEVLAR	
540-919	CLAMP HYDR HOSE 1/4" ST	

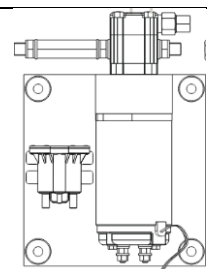
585-606	HYDR COUPLING 1/8" NUT HOSE 1/4" 0° ST	
585-607	HYDR COUPLING 1/8" NUT HOSE 1/4" 45° ST	
585-608	HYDR COUPLING 1/8" NUT HOSE 1/4" 90° ST	
585-636	T-ADAPTOR BSPP 1/8" 60° CONE ST	

LOW PRESSURE HOSES AND FITTINGS

Part No.	Denomination	
585-700	HYDR.HOSE, PUSH-LOK 1/4"	
585-701	HYDR.HOSE, PUSH-LOK 3/8"	
585-614	NIP.PLOK NUT,BSPP1/4-HOSE1/4 ST	
585-640	NIPPLE P-LOK BSPP NUT 3/8" HOSE 3/8" ST	
585-624	NIPPLE P-LOK BSPP NUT 1/4",HOSE 1/4" 90° ST	
585-641	NIPPLE P-LOK BSPP NUT 3/8",HOSE 3/8" 90° ST	

2.2 Optional parts

The pump manifold has a high-pressure inlet (plugged at delivery) that allows an electric pump to be installed. It allows for raising the pressure in the chosen circuit by pressing a button instead of pumping by hand. Pressure up to 250 bar (adjustable).

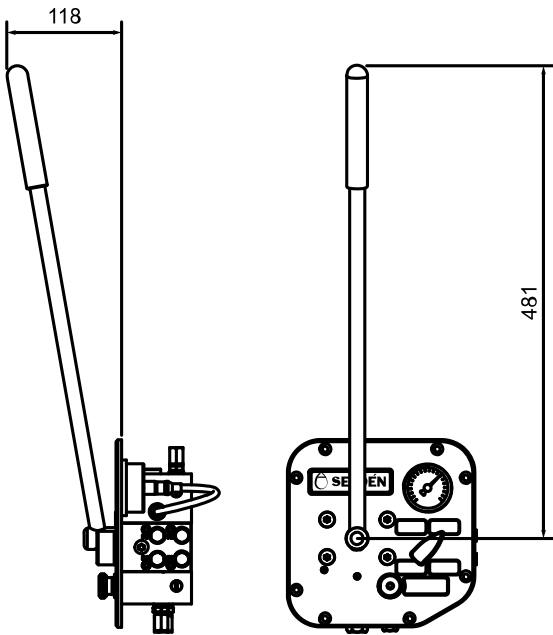
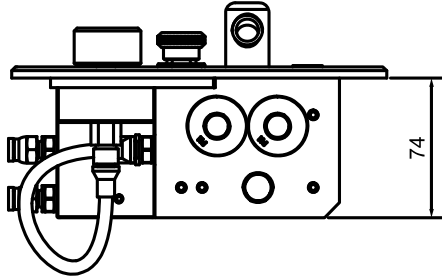
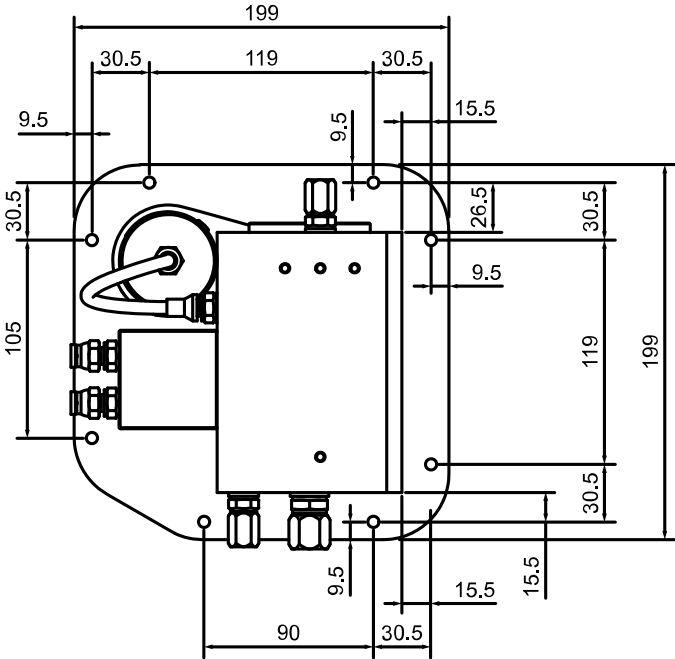
Part No.	Denomination	
587-805-01	HYDRAULIC PUMP 0.8 KW 12V	
587-800-01	HYDRAULIC PUMP 0.8 KW 24V	

2.3 Technical specification

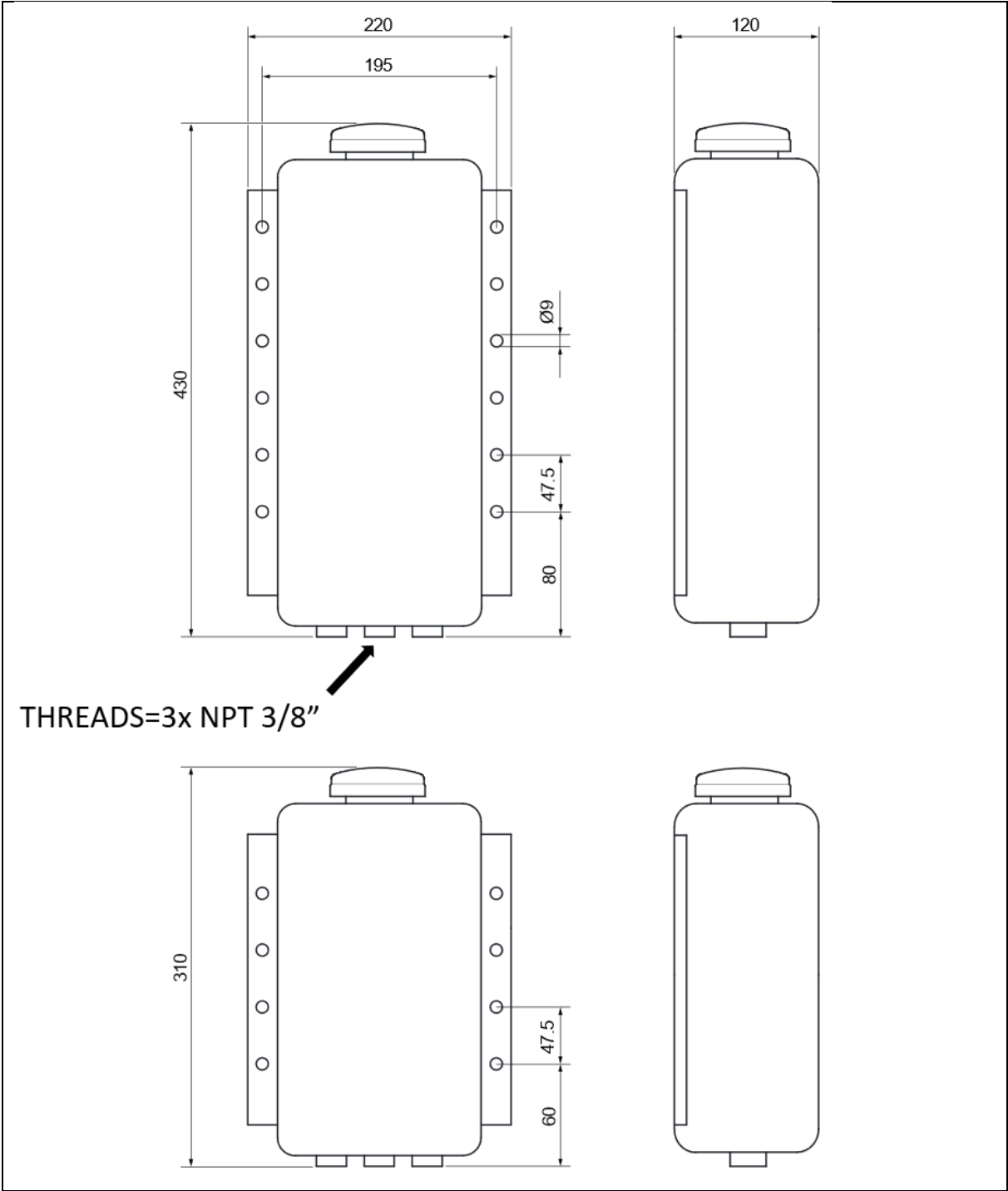
Hand operated hydraulic pump station MKII	
Maximum working pressure	345 bar
Weight 4-function / 1-function	5000 / 4300 g
Oil volume per stroke high / low speed	20.1 / 5.6 cm ³
Oil viscosity	ISO VG 46 or ISO VG 32
Oil Quality, standards to be met	DIN 51524 part 3 , HVLP 46
Seldén Standard Oil	Statoil Hydraway HVXA 46
Examples of alternative oils with comparable properties	Shell Tellus S2 V 46 / 32
Hose, high pressure	SAE 100 R8 WP 345 bar

Dimensions

Hydraulic pump



Hydraulic fluid reservoir 3.8 / 5.7 L



3 Installation

3.1 Installation preparation

Precautions



The hydraulic system should be professionally installed. Installation may only be performed by personnel with prior experience of marine hydraulic installations!



If a hydraulic leak is suspected, keep a safe distance. A hydraulic leak can be dangerous if the ejected hydraulic fluid pierces the skin. If hydraulic fluid is suspected to have pierced the skin, immediately get professional medical attention!

Planning the installation

Make sure the tank is located as high as possible compared to the pump station.

The function of the pumpstation is not guaranteed if the tank is installed at a level lower than 1m under the pumpstation.

All hoses shall be mounted securely and it is important that the length of the hoses allow large radius bends.

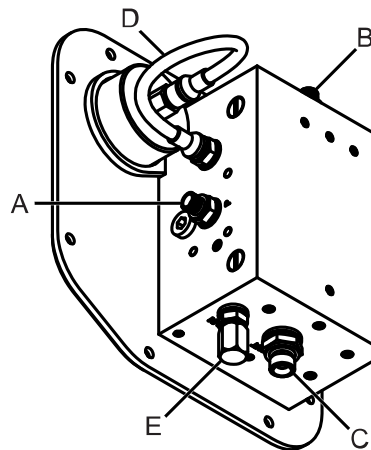
Caution! All high pressure hoses must be rated for the working pressure 345 bar and professionally assembled.

3.2 Connection of hoses, Single function pump station

1.
Connect the hydraulic high pressure hose from the cylinder to the 1/8 inch connector (A) on the pump station. Tighten the connector to a torque of 19 Nm.

2.
Connect the hydraulic low pressure hose **from the hydraulic fluid reservoir** to the 1/4 inch connector marked "T in" (B). Tighten the connector to a torque of 34 Nm.

3.
Connect the hydraulic low pressure hose from the pump station **to the hydraulic fluid reservoir** to the 1/4 inch connector marked "T out" (C). Tighten the connector to a torque of 34 Nm.



ATTENTION! Perform the connections cautiously so that the hose (D) to the pressure gauge is not squeezed!

Note! All hose connectors on the pump station, has got BSP (British Standard Pipe) threads.

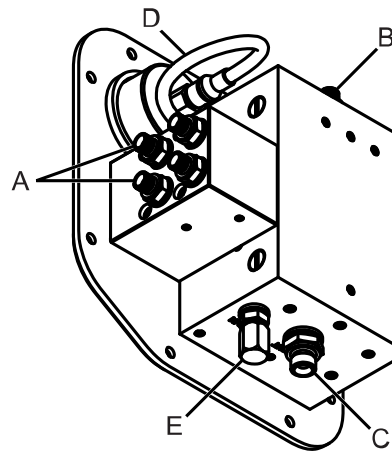
Note! The connector (E) is **only** to be used for the **electrical** pump **optional** part! This connector is plugged at delivery. If an electrical pump optional part is **not** to be used, do **not** unplug the connector!

3.3 Connection of hoses, Four function pump station

1.
Connect the hydraulic high pressure hoses from the cylinders (or the other devices controlled by the hydraulic pump station) to the 1/8 inch connectors (A) on the pump station. Tighten the connectors to a torque of 19 Nm.

2.
Connect the hydraulic low pressure hose **from the hydraulic fluid reservoir** to the 1/4 inch connector marked "T in" (B). Tighten the connector to a torque of 34 Nm.

3.
Connect the hydraulic low pressure hose from the pump station **to the hydraulic fluid reservoir** to the 1/4 inch connector marked "T out" (C). Tighten the connector to a torque of 34 Nm.



ATTENTION! Perform the connections cautiously so that the hose (D) to the pressure gauge is not squeezed!

Note! All hose connectors on the pump station, has got BSP (British Standard Pipe) threads.

Note! The connector (E) is **only** to be used for the **electrical** pump **optional** part! This connector is plugged at delivery. If an electrical pump optional part is **not** to be used, do **not** unplug the connector!

Note! Check that unused high pressure ports (A) are plugged.

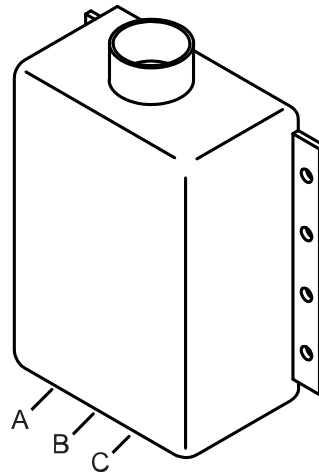
3.4 Connection of hoses, Hydraulic fluid reservoir

There are three NPT 3/8 inch connections (A), (B) and (C) on the hydraulic fluid reservoir.

We recommend nylon fittings Selden part no 585-638, -639 fitted with Teflon thread tape.

Hose clamp 585-306, -307 is recommended.

Unused ports in the tank can be sealed with nylon plug Selden part no 585-610.

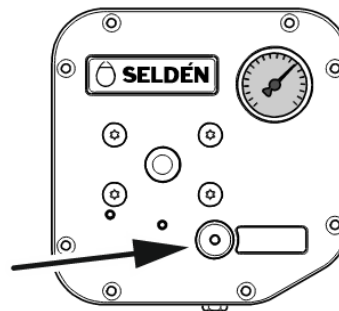


3.5 Air bleeding, first use.

1. Connect all hoses (low and high pressure)

2. Fill the tank to 2/3 level

3. Open the release valve



4. Pump the handle back and forth 40 times. This will circulate oil through the low pressure circuit.

5. Close the release valve and check the oil level

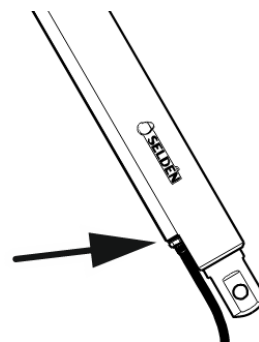
6. For each cylinder repeat the following:

Get the rod in its extended position (with a minimum of oil in the cylinder/vang)

Disconnect at the fitting.

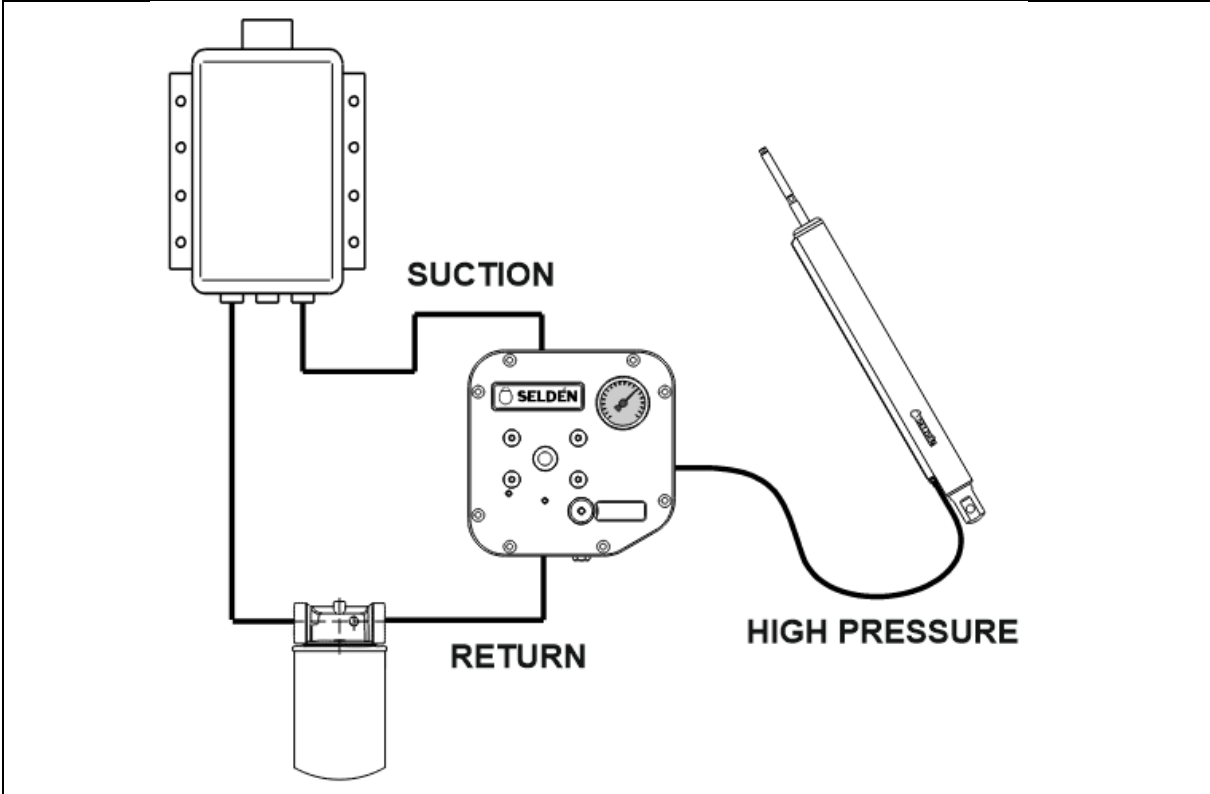
Carefully pump until oil exits.

Tighten the fitting again

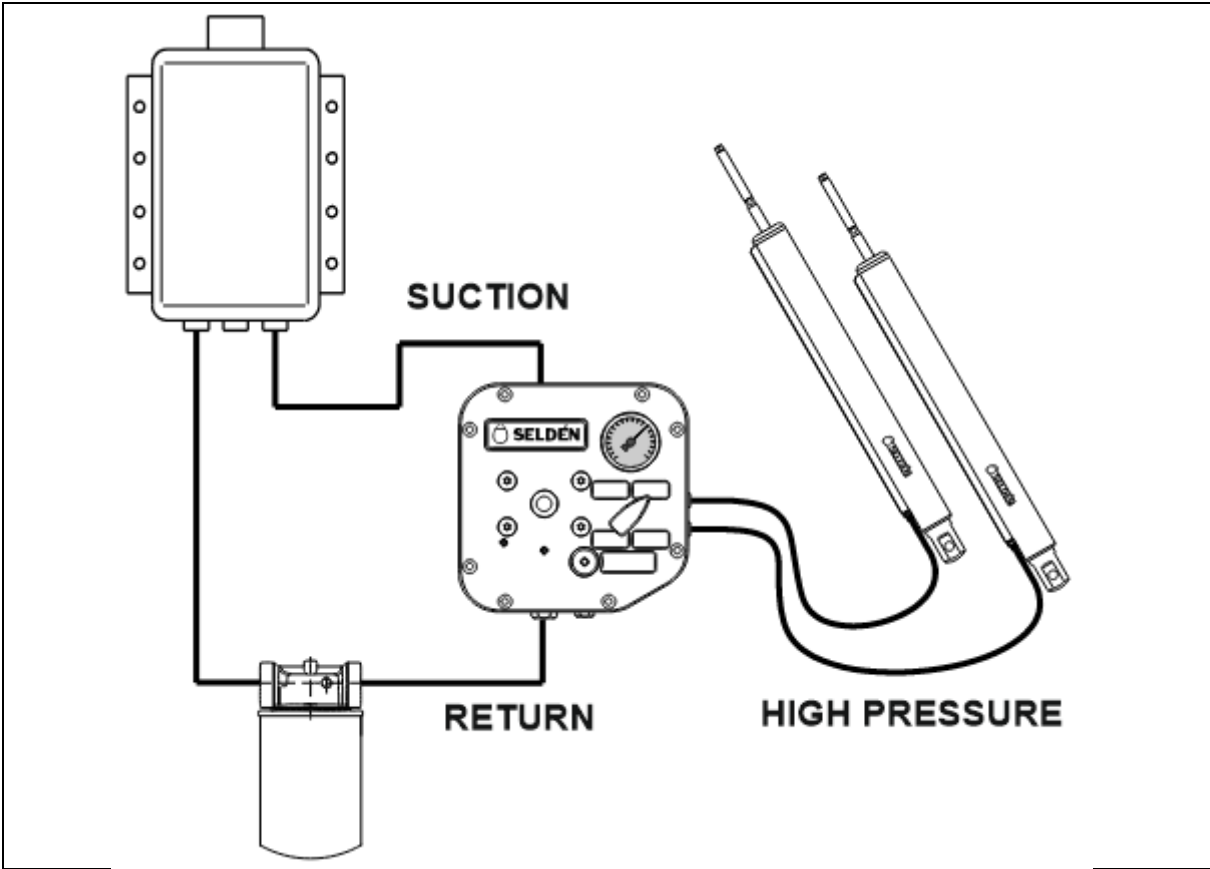


3.6 Hose layout examples

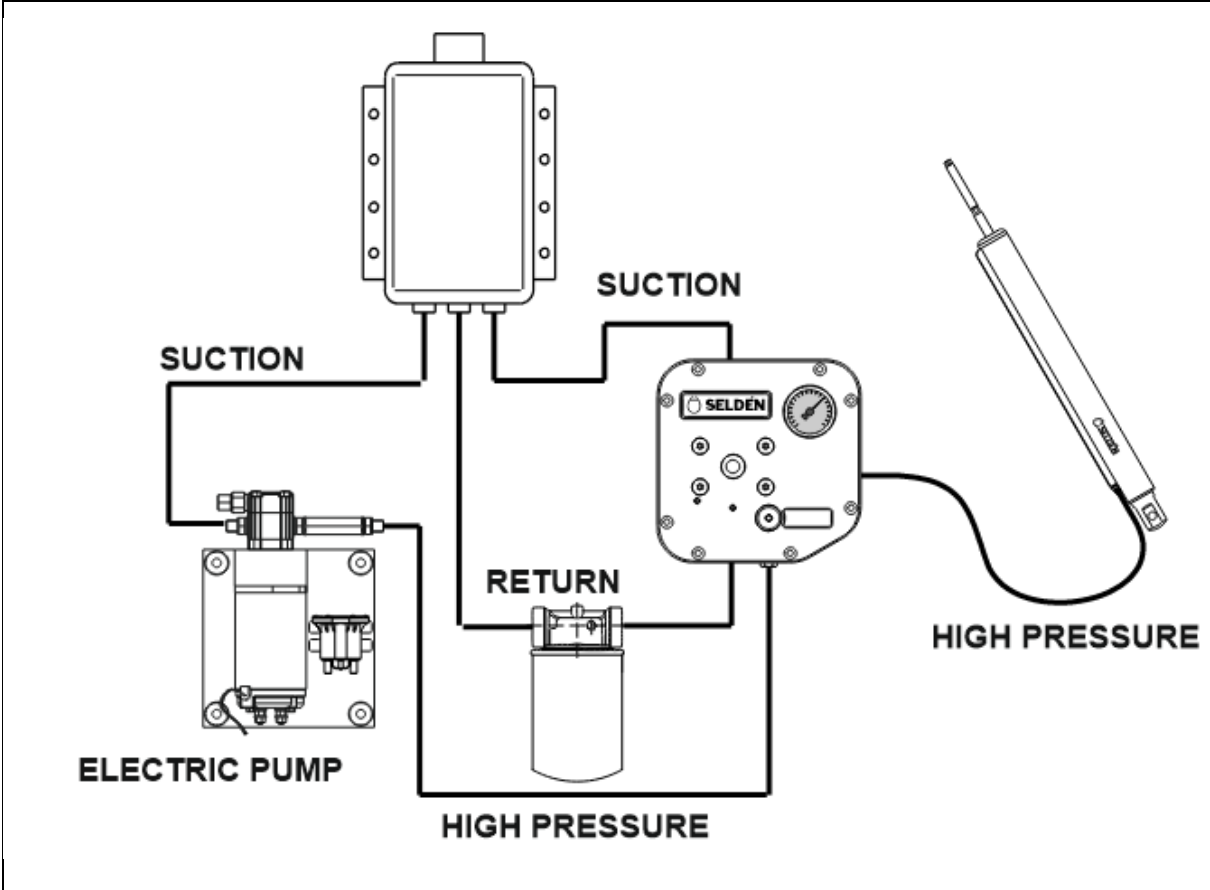
One function pump station



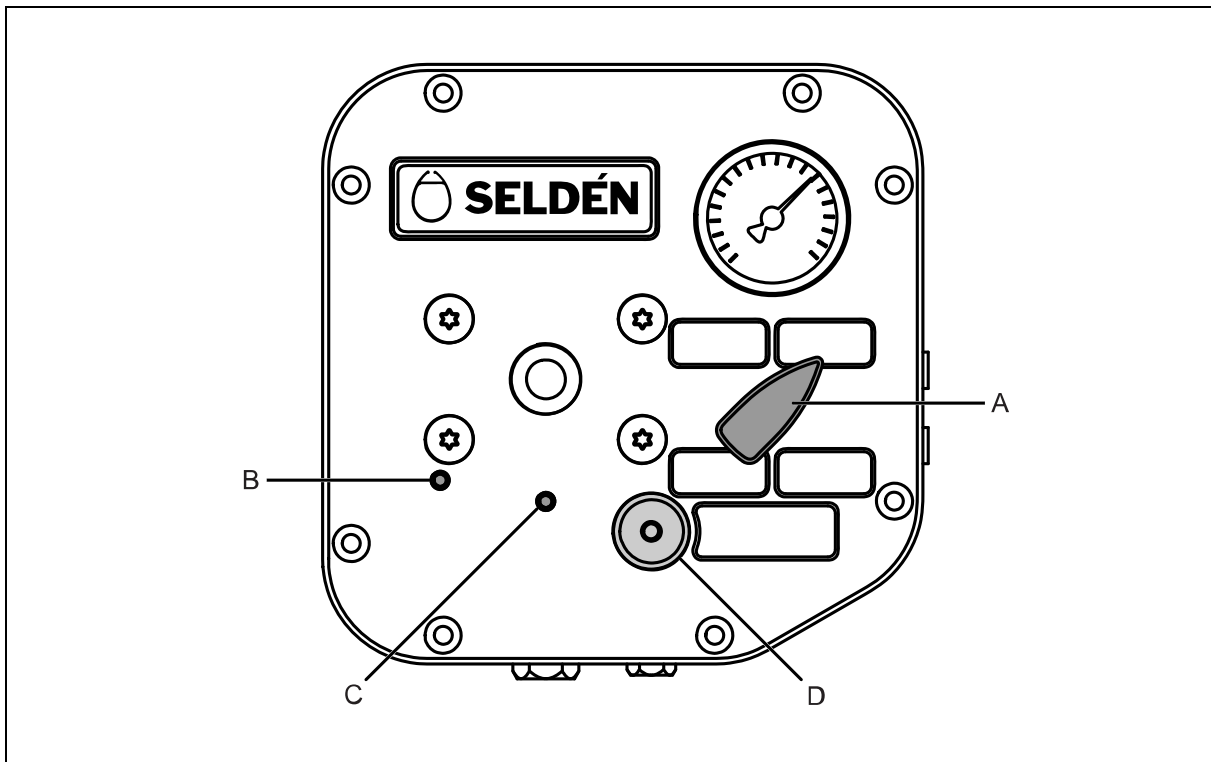
Hose layout example with four function pump station, two functions used



One function pump station and electric pump



4 Operation



- A Selector valve
- B Adjustment of pressure level for the switch between high/low speed
- C Adjustment, maximum pump pressure
- D Pressure release screw

Increasing pressure

Tighten the pressure release screw by gently turning it clockwise until it reaches its end position. Tightening it too firmly may damage the needle valve seat. In case of the four-function pump station, make sure that the correct circuit is activated by turning the selector valve. Operate the pump handle back and forth to increase oil pressure, increasing tension in the connected cylinder.

Decreasing pressure

Turn the selector valve to activate the circuit whose pressure is to be lowered. Open the pressure release screw by turning it anti-clockwise. The valve opens, letting oil escape from the pressurized cylinder into the tank.

Setting maximum pump pressure

The maximum pump pressure can be adjusted by using a 4 mm hex key. The valve is set to 345 bar at delivery. Clockwise rotation increases the setting and counter clockwise rotation decreases it.

In the clockwise direction, avoid tightening the screw too firmly against its end position! If the adjustment screw is tightened to tight, the valves inside the pump may be damaged.

Do not to unscrew the adjustment screw more than a maximum of 3 revolutions from its innermost position. If unscrewed more than that, leakage may occur!

High speed/low speed switch pressure

To increase the pressure level at which the valve switches, using a 4 mm hex key, gently turn the speed switch pressure adjustment valve clockwise. Avoid tightening it firmly against its end position. If tightened too firmly, the valves inside the pump may be damaged.

To decrease the pressure level at which the valve switches, turn the valve counter clockwise. Do not to unscrew the valve more than a maximum of 3 revolutions from its innermost position. If unscrewed more than that, leakage may occur!

5 Service and maintenance

Cleaning

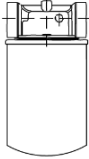
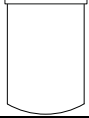

We recommend rinsing the unit with freshwater at regular intervals. If detergents are used for cleaning it is important to rinse all traces off with fresh water afterwards. Most detergents contain elements that can corrode aluminium. Silicone free wax can be used to protect the surfaces.

Periodic service

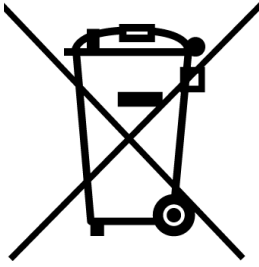
We recommend handing the hydraulic pump station in for periodic service and maintenance at a professional service provider, at intervals of no more than five years in normal use.

For boats used in charter operations or circumnavigation etc. the unit should be serviced on a more frequent basis!

6 Spare parts and accessories

Part No.	Denomination	
550-134-01	FILTER+HOUSE (3/8" NIPPLES)	
550-135	OIL FILTER(SPIN-ON FOR 550-134)	
585-301	VENTILATED CAP 2 1/4"	

7 Disposal



The crossed out wheeled bin symbol on the product means that used electrical and electronic equipment (WEEE) should not be mixed with general household waste. For proper treatment, recovery and recycling, please take this product(s) to designated collection points where it will be accepted free of charge. Alternatively, in some countries, you may be able to return your products to your local retailer upon purchase of an equivalent new product.

Disposing of this product correctly will help save valuable resources and prevent any potential negative effects on human health and the environment, which could otherwise arise from inappropriate waste handling.

Please contact your local authority for further details of your nearest designated collection point.

8 Warranty

Seldén Mast AB guarantees Hand operated hydraulic pump station MKII 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.

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