



Assembly and testing instruction for gasketed plate heat exchanger kits

Applies for Alfa Laval T2, M3, TL3 and T5 units

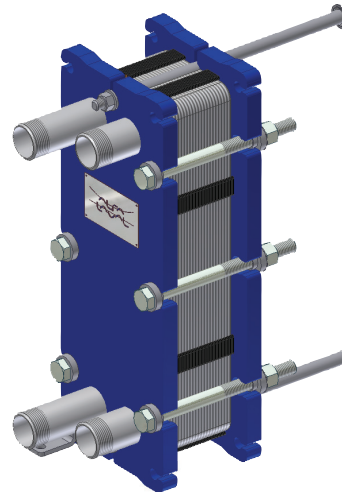


The Alfa Laval GPHE Kits assortment is setup with Frame Kits and Plate Kits. Each Frame Kit contains all frame components necessary to assemble a complete heat exchanger, including the 0-holed and 4-holed end plates, and has a pre-set number of 2-5 frames depending on the model. Each Plate Kit contains 50 channel plates and gaskets to be used together with a Frame Kit. The amount of plates to be used within a frame is determined by using one of Alfa Laval's configuration tools.

This instruction concerns assembling of Alfa Laval GPHE Kits unit based on the assembly process of a standard M3 unit with threaded pipe connection.



T2



M3



TL3



T5

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Step 1 - Put on name plate and Alfa Laval logotype sticker



1.1 Place the sticker onto the frame plate according to the location sketch

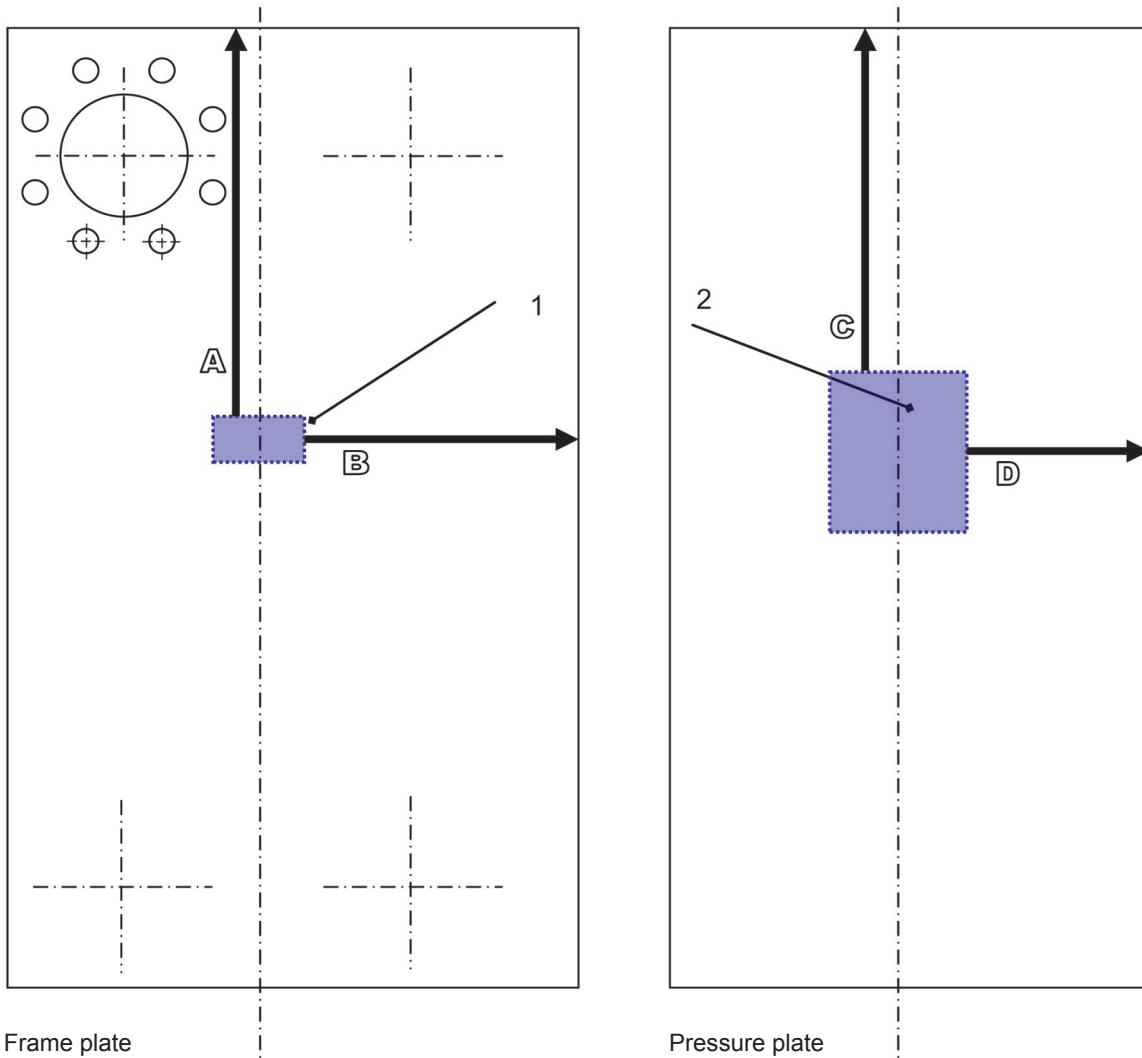


1.2 Mark the name plate position on the pressure plate according to the location sketch on page 6.



1.3 Drill four holes on the pressure plate to fit the holes in name plate and then put the name plate into position

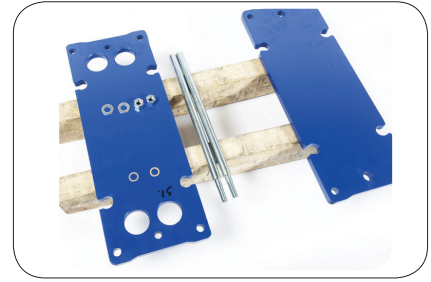
Marking elements location sketch



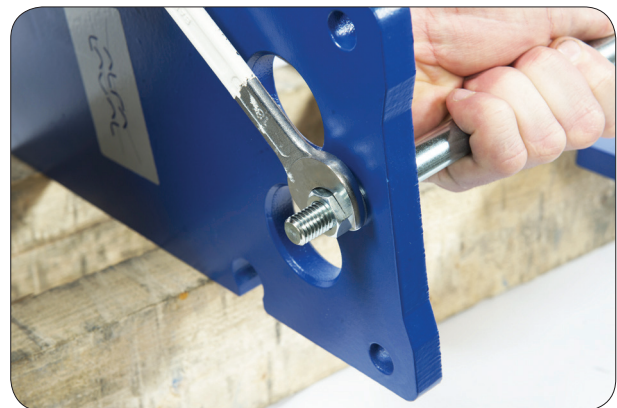
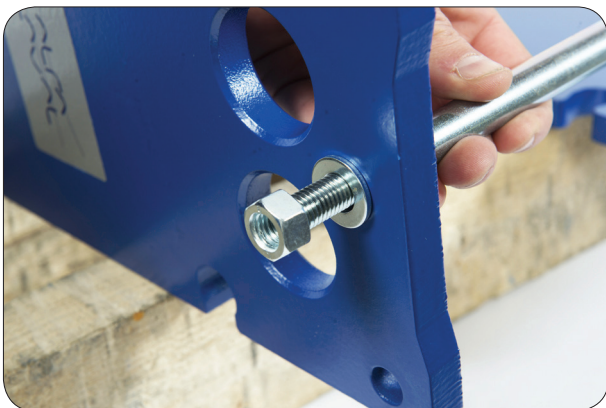
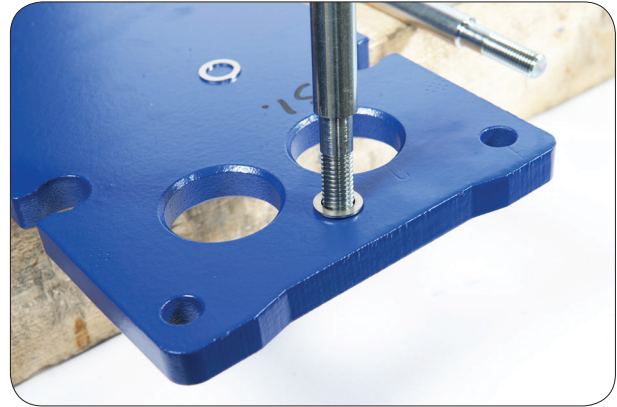
- 1. Alfa Laval logotype sticker
- 2. Name plate

Unit type	A	B	C	D
T2	100 mm	22 mm	83 mm	25 mm
M3	170 mm	43 mm	134 mm	32 mm
TL3	250 mm	47 mm	285 mm	37 mm
T5	220 mm	76 mm	220 mm	65 mm

Step 2 - Assembly carrying bar and guiding bar

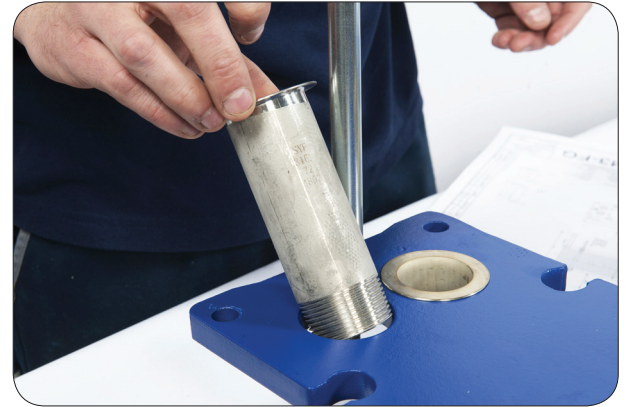
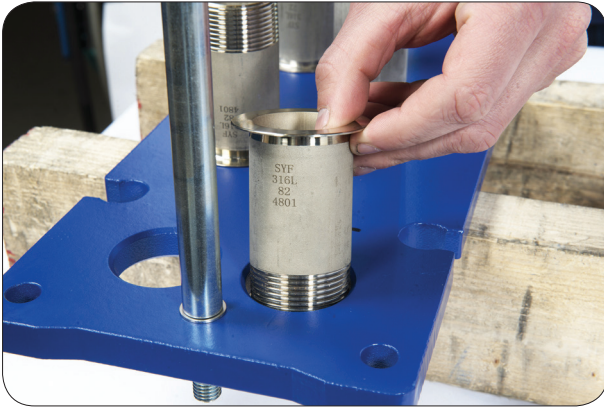


2.1 Place the carrying bar into the hole on the top of the frame plate.



2.2 Assemble the carrying bar with help of nut and repeat the procedure to assemble the guiding bar.

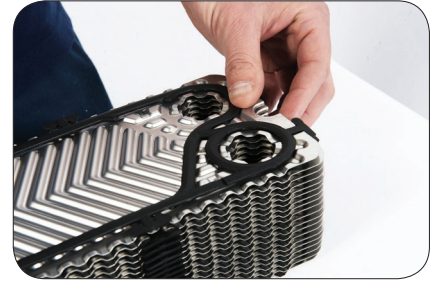
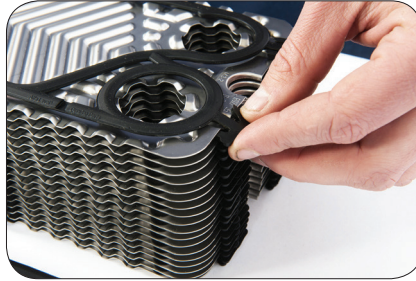
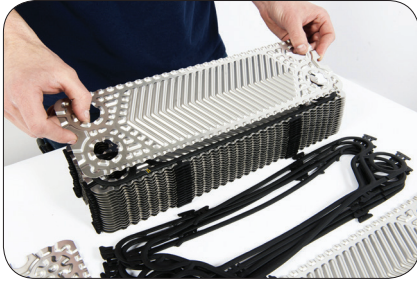
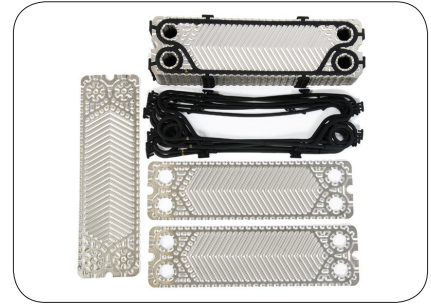
Step 3 - Assemble connections



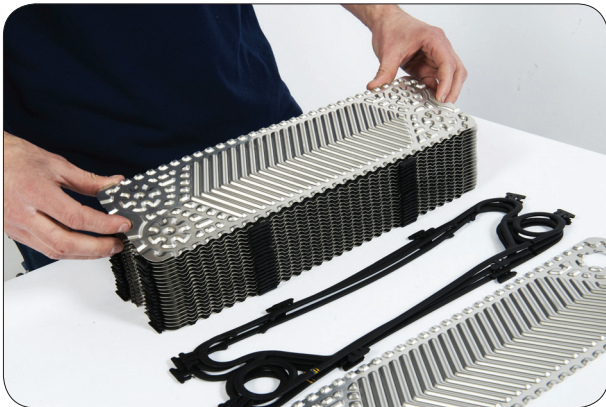
- Assemble the connections with the threaded side facing out from the frame plate. Position connection position according to the drawing of the heat exchanger.

SUPPLIER AGENT / REF. CUSTOMER NAME / REF. NO. SIGN	ITEM NO. Example	RISK CATEGORY N/A	PED	M3-FG	DATE Example 2013-05-20	REV NO. 0		REMARKS: TEST PRESSURE: 6.5 bar DESIGN PRESSURE: 5 bar MAX TEMPERATURE: 120 °C MIN TEMPERATURE: 0 °C NET WEIGHT: 39 kg WEIGHT WITH WATER: 44 kg	SIDE 1 6.5 bar 120 °C 0 °C 39 kg 44 kg	SIDE 2 6.5 bar 5 bar 55 °C 0 °C	GASKET: NBRP CLIP-ON PLATE MATERIAL: ALLOY 316 PLATE THICKNESS: 0.50 mm HEATING SURFACE: 1126L/125L PLATE GROUPING: 2900 kW HEAT LOAD: 2900 kW	Due to legal requirements this heat exchanger must be installed within EU/EEA	<div style="display: flex; justify-content: space-between;"> <div style="width: 45%;"> <p>FRAME PLATE (FIXED)</p> </div> <div style="width: 45%;"> <p>PRESSURE PLATE (MOVABLE) SECTION A-A PP = 20</p> </div> </div> <p style="text-align: center;">TOTAL LENGTH 400 TOTAL WIDTH 180 TOTAL HEIGHT 480</p>	ALL DIMENSIONS IN MILLIMETERS Do not use this drawing for foundation bolting or piping layout.																								
								<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th>SIDE</th> <th>MEDIA</th> <th>F.D.G.</th> <th>INLET</th> <th>TEMP.</th> <th>OUTLET</th> <th>TEMP.</th> <th>FLOW RATE</th> <th>PRESSURE DROP</th> <th>LIQUID VOL.</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>Water</td> <td></td> <td>S1</td> <td>120.0 °C</td> <td>S2</td> <td>97.9 °C</td> <td>32.9 l/s</td> <td>98.58 kPa</td> <td>2,58 dm³</td> </tr> <tr> <td>2</td> <td>Water</td> <td></td> <td>S3</td> <td>20.0 °C</td> <td>S4</td> <td>53.5 °C</td> <td>20.8 l/s</td> <td>53.43 kPa</td> <td>2,49 dm³</td> </tr> </tbody> </table>	SIDE	MEDIA	F.D.G.	INLET	TEMP.	OUTLET	TEMP.	FLOW RATE	PRESSURE DROP	LIQUID VOL.	1	Water		S1	120.0 °C	S2	97.9 °C	32.9 l/s	98.58 kPa	2,58 dm ³	2	Water		S3	20.0 °C	S4	53.5 °C	20.8 l/s	53.43 kPa	2,49 dm ³
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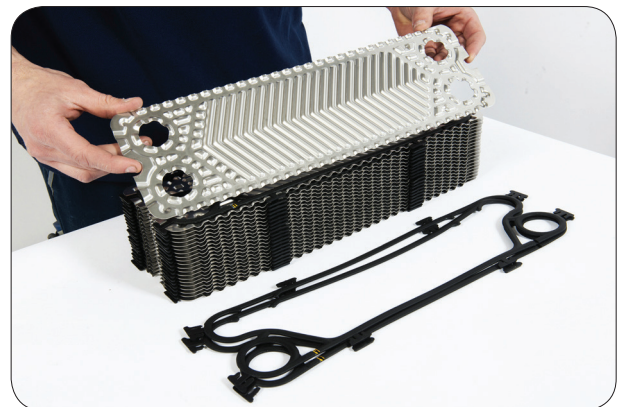
Step 4 - Assemble gaskets



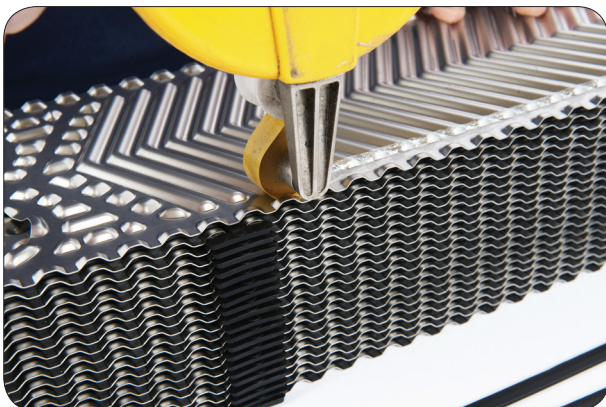
4.1 Assemble the gaskets onto the four-holed channel plates by using the fastening clips.



4.2 Repeat the above procedure to assemble the gasket onto the zero-holed end plate.



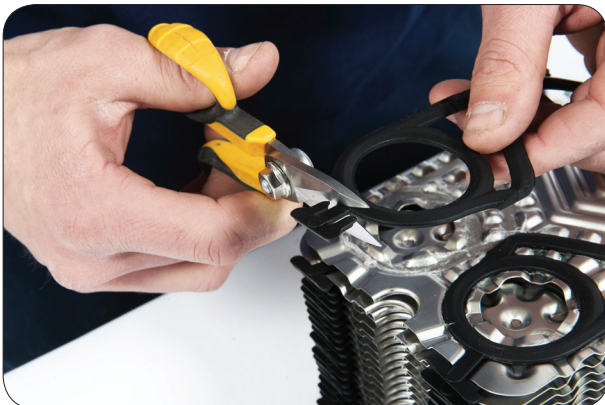
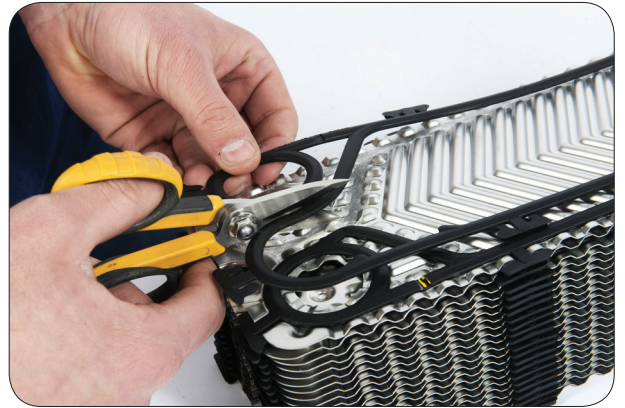
4.3 Repeat the above procedure to assemble the gasket onto the four-holed end plate.



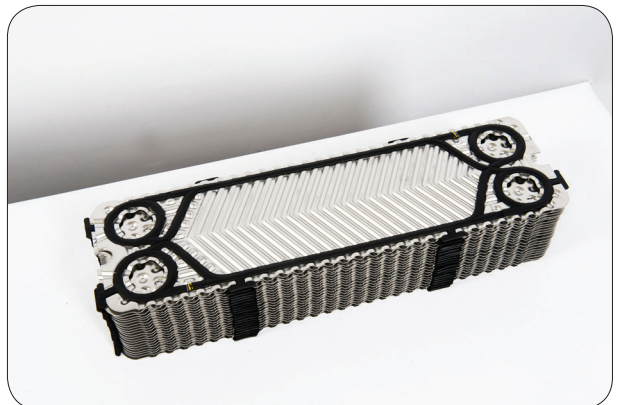
4.4 Apply glue in the gasket groove.



4.5 Cut two channel plate gaskets into half.

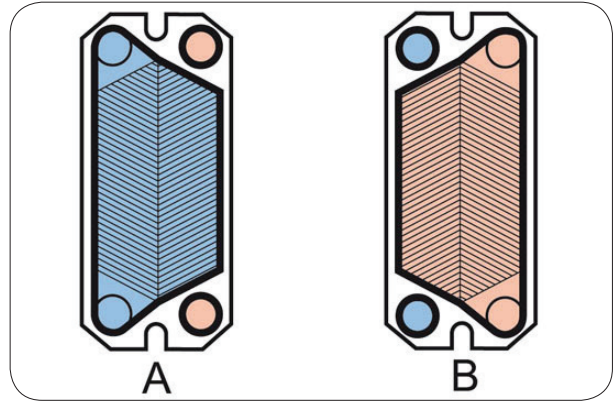
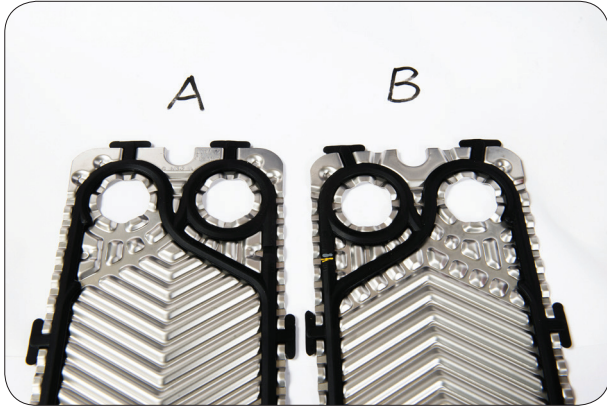


4.6 Cut off the clips from one of the half gaskets.

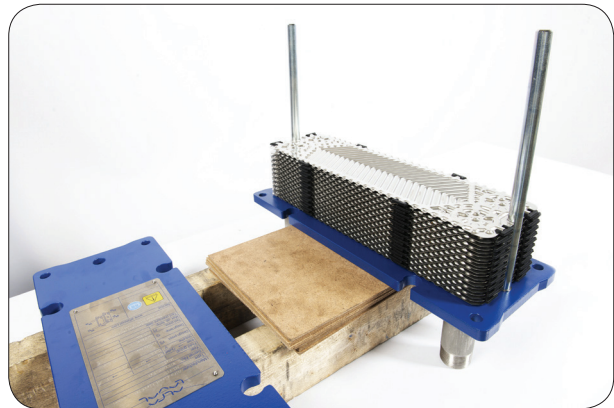


4.7 Combine the two half gaskets and assemble them onto the end plate.

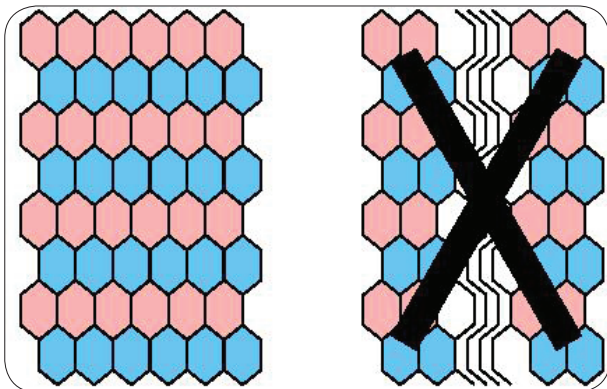
Step 5 - Assemble plates



5.1 Assort the A-plates and B-plates according to the fishbone pattern.



5.2 Assemble the plates according to the plate list of the configured heat exchanger.



5.3 Check that the plate pack forms a honey comb pattern. If not, the plates are not properly inserted.

Plate Listing Date : 2013-05-20

Customer :
 Model : M3-FG
 Project :

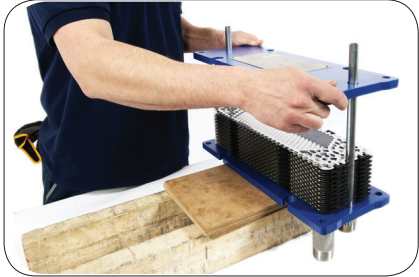
		Hot side		Cold side	
Plate Fam. / Plate Grp / Frame / Plate material / thickness	M3 / FG / ALLOY 316 / 0,50 mm				
Grouping	26L				125L
Sealing material	NBRP CLIP-ON				NBRP CLIP-ON
Nozzle orientation	S1 > S2				S4 < S3

The plates are assembled with the gasket side facing the frame plate.

Plate No	Plate Code No	A/B	1	2	3	4	Plate Pattern
	FramePlate						
1	373017 4483	A	O	O	O	O	M3 2
2	372917 4403	A	O	O	O	O	M3 1
3	372917 4403	A	U	---	U	U	M3 1
4 6...48	372917 4...03	B			U	==== U	M3 1
5 7...49	372917 4...03	B					M3 1
50	372917 4...13	E	U	---	U	O	M3 1
51	373017 44...3	A	O	O	U	==== U	M3 1
52	373017 44...3	A					M3 2
	PressurePlate						

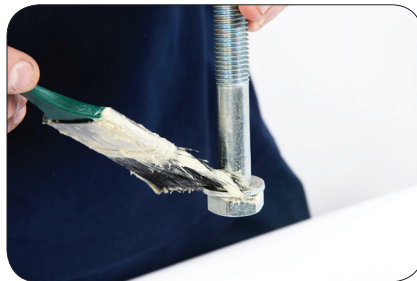
Article No.	Quant.
373017 4403	1
372917 4403	50
373017 4416	1
Total	52

Step 6 - Assemble pressure plate

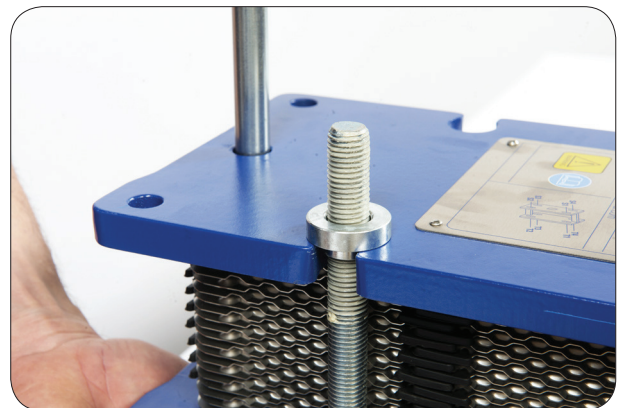
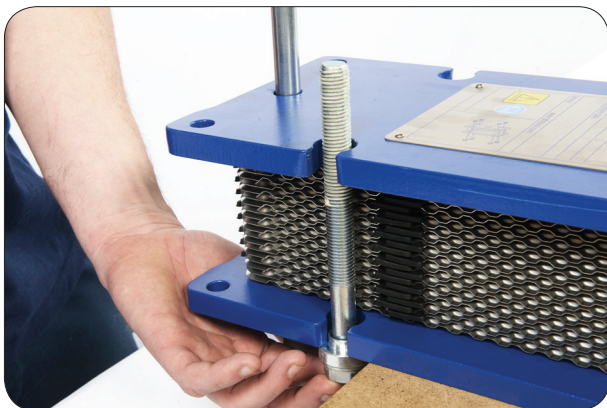


6.1 Put the pressure plate on the carrying bar while the unit is lying down.

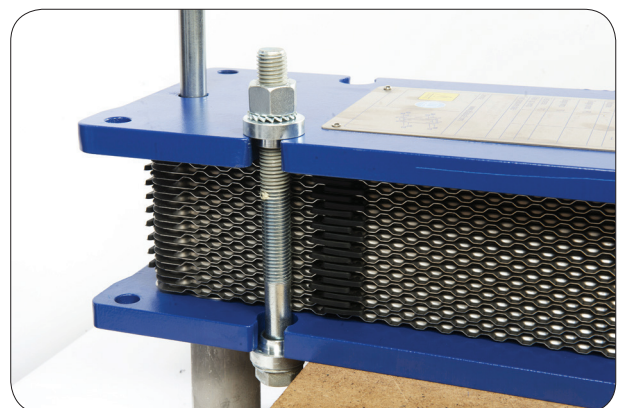
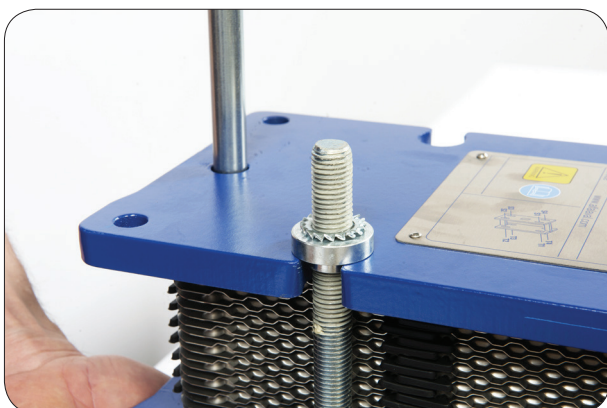
Step 7 - Assemble tightening bolts



7.1 Grease the tightening bolts and nuts.



7.2 Assemble the tightening bolts, washers and nuts.



Step 8 - Pressure test

8.1 Perform a single-sided pressure testing of the primary side. This is recommended to be done with pressurised water. Use a holding time of 10 minutes and a test pressure of 1.3 x design pressure. During the meantime, keep the secondary side open for visible inspection of the portholes for internal leakage.

8.2 Perform a visual inspection to detect leakage, gasket/plate deformation or other abnormal changes.

8.3 Fill out the holding time and test result for the primary side on the Quality Card, see example on page 16.

8.4 Perform a single-sided pressure testing of the secondary side. This is recommended to be done with pressurised water. Use a holding time of 10 minutes and a test pressure of 1.3 x design pressure. During the meantime, keep the primary side open for visible inspection of the portholes for internal leakage.

8.5 Perform a visual inspection to detect leakage, gasket/plate deformation or other abnormal changes.

8.6 Fill out the holding time and test result for the secondary side on the Quality Card.



Note: Test pressure = 1.3 x design pressure. If the customer order contains any special requirements regarding pressure test then those are to be carried out. Examples of special requirements are different holding time or double sided pressure testing.

8.7 Make sure the following information is stated on the quality card:

- a. general order information
- b. design parameters
- c. component marking numbers.

8.8 Fill out the following information on the quality card:

- d. manometer number
- e. result of pressure test.

8.9 Perform a final inspection and fill out the information on the quality card.

8.10 The assembly responsible person signs the quality card.

8.11 The manufacturer's quality inspector checks that the unit is built in accordance with GPHE Kits instruction, Assembly instruction and local regulations.

8.12 Clean the unit and do touch-up painting to make sure no paint is missing on the unit.

8.13 Perform a final check of the following:

- a. general accomplishment of assembly
- b. outward finish of all visible surfaces
- c. the symmetric appearance of the unit
- d. position of holes for anchoring bolts.

Alfa Laval in brief

Alfa Laval is a leading global provider of specialized products and engineered solutions.

Our equipment, systems and services are dedicated to helping customers to optimize the performance of their processes. Time and time again.

We help our customers to heat, cool, separate and transport products such as oil, water, chemicals, beverages, foodstuffs, starch and pharmaceuticals.

Our worldwide organization works closely with customers in almost 100 countries to help them stay ahead.

How to contact Alfa Laval

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