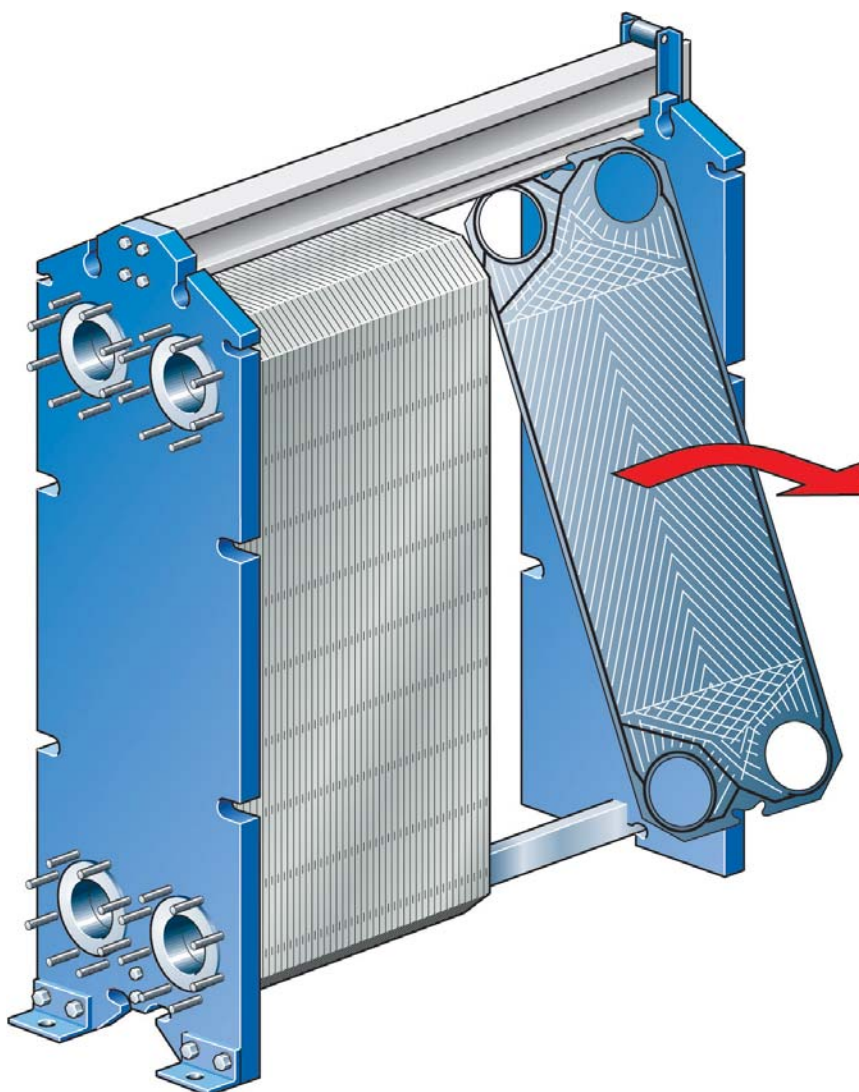




Instruction Manual Plate Heat Exchangers

M15 TL10 TL15 T20 TS20
MX25 M30 MA30



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EN

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How to contact Alfa Laval

Contact details for all countries are continually updated on our website.

Please visit www.alfalaval.com and contact your local Alfa Laval Representative.



EN Preface

This manual provides information needed to install, operate and carry out the maintenance of the Plate Heat Exchanger (PHE).

Safety considerations

The Plate Heat Exchanger shall be used and maintained in accordance with Alfa Laval's instructions in this manual. Faulty handling of the Plate Heat Exchanger may result in serious consequences with injuries to persons and/or property damage. Alfa Laval will not accept responsibility for any damage or injury that has resulted from not following the instructions in this manual.

The Plate Heat Exchanger shall be used in accordance with the specified configuration of material, media types, temperatures and pressure for the specific Plate Heat Exchanger.

The following models are covered in this manual:

- M15
- TL10
- TL15
- T20
- TS20
- MX25
- M30
- MA30
- TL35

Definitions of expressions

**Warning!**

Type of hazard

WARNING indicates a potentially hazardous situation that, if not avoided, could result in death or serious injury.

**Caution!**

Type of hazard

CAUTION indicates a potentially hazardous situation that, if not avoided, may result in minor or moderate injury.

**Note!**

NOTE indicates a potentially hazardous situation that, if not avoided, may result in property damage.

PHE drawings

The PHE drawings mentioned in the manual are the drawings included in the delivery of the Plate Heat Exchanger.

Warranty conditions

The warranty conditions are usually included in the signed sales contract prior to the order of the delivered PHE. Alternatively, the warranty conditions are included in the sales offer documentation or with a reference to the document specifying the valid conditions. If faults occur during the specified warranty period, always consult your local Alfa Laval Representative for advice.

Report the date when the Plate Heat Exchanger was put into operation to the local Alfa Laval Representative.

Advice

Always consult your local Alfa Laval Representative for advice on:

- New plate pack dimensions if you intend to change the number of plates
- Selection of gasket material if operating temperatures and pressures are permanently changed, or if another medium is to be processed in the PHE.

Storage of the PHE

Alfa Laval delivers the PHE ready to be put into service upon arrival if nothing else has been agreed. However, keep the PHE in the packing box until installation.

Regarding storage for longer periods of time, one month or more, certain precautions should be made to avoid unnecessary damage to the PHE.

Note!

Alfa Laval and its representatives reserve the right to inspect the storage space and/or equipment whenever necessary until the date of expiry of the warranty period stipulated in the contract. Notification has to be given 10 days prior to the date of inspection.

If there is any uncertainty about the storage of the PHE, consult an Alfa Laval Representative.

Storage in packing box

If the nature of storage after the delivery of the PHE is known in advance, inform Alfa Laval when ordering the PHE to ensure that it will be properly prepared for storage before packing.

Indoor storage

- Store inside a room with the temperature between 15 and 20°C (60 - 70°F) and humidity around 70%. For outdoor storage read [“Outdoor storage” on this page](#).
- To prevent damage to the gaskets, there should not be any ozone-producing equipment in the room such as electric motors or welding equipment.
- To prevent damage to the gaskets, do not store organic solvents or acids in the room and avoid direct sunlight, intensive heat radiation or ultraviolet radiation.
- The tightening bolts should be well covered with light grease coating.

Outdoor storage

If the PHE has to be stored outdoors, all the precautions mentioned in the section [“Indoor storage” on this page](#) should be taken. Also, protection against climate is very important.

The stored PHE shall be visually checked every third month. The check includes:

- Greasing of the tightening bolts
- Metal port covers
- Protection of the plate pack and gaskets

Taken out of service

If, for any reason, the PHE is shut down and taken out of service for a long period of time, follow the same advice as in the previous section [“Indoor storage” on this page](#). Although before storage following actions has to be done.

- Check the measurement of the plate pack (measure between frame and pressure plate, A dimension).
- Drain both media sides of the PHE.
- Depending on the media, the PHE should be rinsed and then dried.
- The connection should be covered if the piping system is not connected. Use a plastic or plywood cover for the connection.
- Cover the plate pack with non-transparent plastic film.

Installation after long-term storage

In cases when the PHE has been taken out of service for an extensive period of time, i.e. longer than one year, the risk of leakage when starting up increases. To avoid this problem it is recommended to let the gasket rubber rest and regain most of its elasticity.

1. If the PHE is not in position, follow the instructions [“Installation” on page 7](#).
2. Note the measurement between frame and pressure plate (A dimension).
3. Remove feet attached to the pressure plate.
4. Loosen the tightening bolts. Follow the instructions [“Opening” on page 13](#). Open the PHE until the measure is 1.25A.
5. Leave the PHE between 24-48 hours, the longer the better, for gaskets to relax.
6. Re-tighten according to the instructions [“Closing” on page 16](#) or [“Closing - TL15-B” on page 18](#).
7. Alfa Laval recommends a hydraulic test to be carried out. The media, usually water, should be entered at intervals to avoid sudden shocks to the PHE. It is recommended to test up to the Design Pressure, refer to PHE drawing.

**EN****Environmental compliance**

Alfa Laval endeavours to perform its own operations as cleanly and efficiently as possible, and to take environmental aspects into consideration when developing, designing, manufacturing, servicing and marketing its products.

Unpacking

Packing material consists of wood, plastics, cardboard boxes and, in some cases, metal straps.

- Wood and cardboard boxes can be reused, recycled or used for energy recovery.
- Plastics should be recycled or burnt at a licensed waste incineration plant.
- Metal straps should be sent for material recycling.

Maintenance

- During maintenance, oil and wear parts in the machine are replaced.
- All metal parts should be sent for material recycling.
- Worn out or defective electronic parts should be sent to a licensed handler for material recycling.
- Oil and all non-metal wear parts must be taken care of in agreement with local regulations.

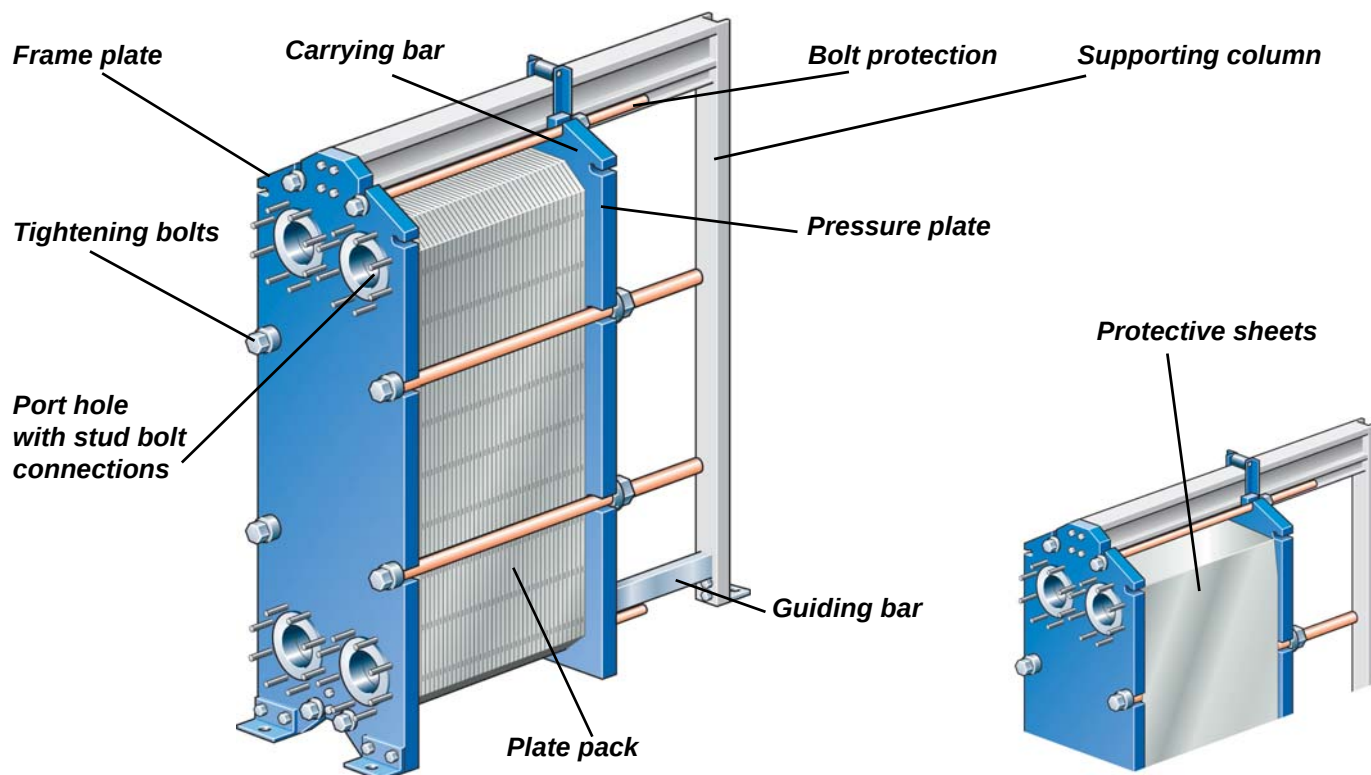
Scrapping

At end of use, the equipment shall be recycled according to relevant, local regulations. Besides the equipment itself, any hazardous residues from the process liquid must be considered and dealt with in a proper manner. When in doubt, or in absence of local regulations, please contact the local Alfa Laval sales company.

Description

EN

Main components



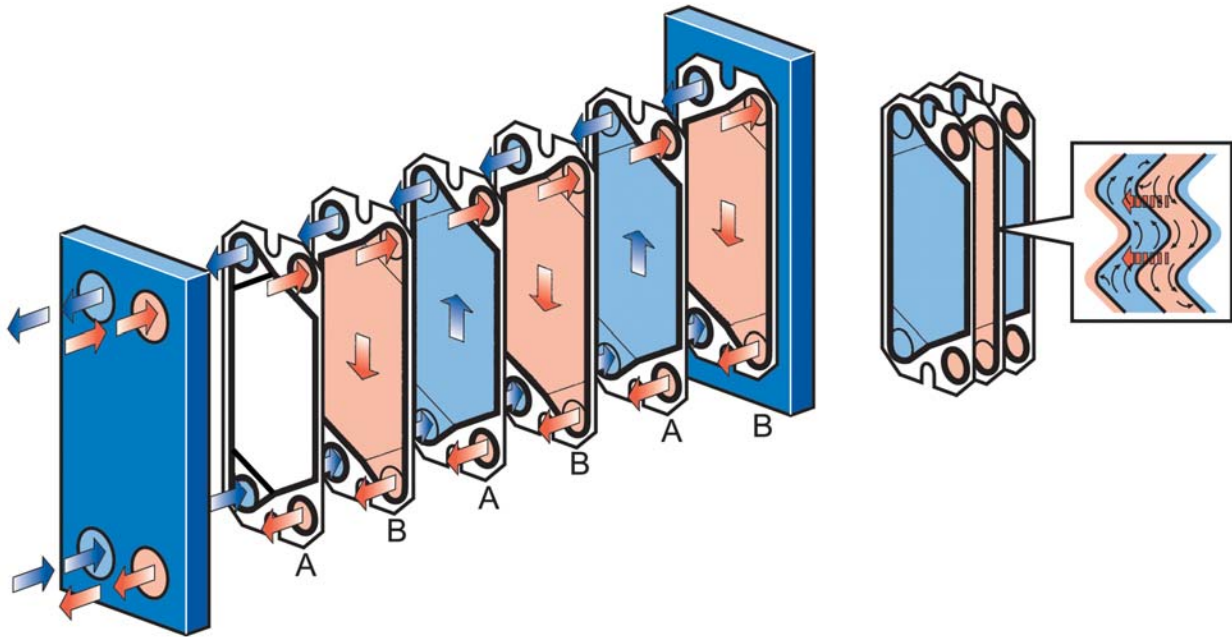
Bolt protection	Plastic tubes that protect the threads of the tightening bolts.
Carrying bar	Carries the plate pack and the pressure plate.
Frame plate	Fixed steel plate with a number of port holes for the connection of the piping system. The carrying and guiding bars are supported by the frame plate.
Guiding bar	Keeps the channel plates and the pressure plate in line at their lower end.
Plate pack	Heat is transferred from one medium to the other through the plates. The plate pack consists of channel plates, end plates, gaskets and, in some cases, transition plates. The measure of the plate pack is the A dimension, i.e the measurement between frame and pressure plate. Refer to PHE drawing.
Port holes with stud bolt connections	Port holes through the frame plate allow the media to enter into or exit from the Plate Heat Exchanger. Different types of connections can be used to connect the piping system to the apparatus. Threaded stud bolts around the port holes secure the connections to the apparatus. The port holes may be protected against corrosion by metal or rubber linings. The PHE can be equipped with different connection types. For details refer to PHE drawings.
Pressure plate	Moveable steel plate that can contain a number of port holes for the connection of the piping system.
Protective sheets	Cover the plate pack. Mandatory in the USA. Optional in other countries.
Supporting column	Supports carrying and guiding bars.
Tightening bolts	Compress the plate pack between the frame and pressure plate.



Function

The Plate Heat Exchanger (PHE) consists of a pack of corrugated metal plates with port holes for input and output for the two separate fluids. The heat transfer between the two fluids will take place through the plates.

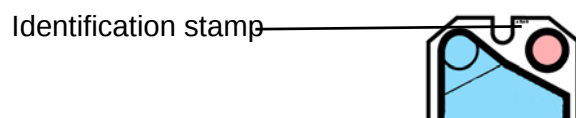
The plate pack is assembled between a frame plate and a pressure plate and compressed by tightening bolts. The plates are fitted with a gasket that seals the channel and directs the fluids into alternate channels. The plate corrugation promotes fluid turbulence and supports the plates against differential pressure.



Principle of plate pack arrangement

Identification of plate side

The A side of the plate is identified by the stamp with the **letter A** or the **model name**, in some cases both, at the top of the plate (see figure on the right-hand side).



Semi-welded PHE

For certain plate sizes there are semi-welded plates (cassettes) available. The function of the semi-welded PHE is the same as that of the conventional PHE. The chapters Installation and Operation in this manual are fully applicable here.

The chapter Maintenance is fully applicable when it comes to the parts Cleaning-In-Place and Pressure test after maintenance and partially applicable for the remaining part.

Installation

EN

Before installation

To consider before installation

- Before connecting any piping, make sure all foreign objects have been flushed out of the piping system that should be connected to the PHE.
- Before start-up, check that all tightening bolts are firmly tightened and that the correct measurements of the plate pack are used. Refer to PHE drawing.
- When connecting the piping system make sure the pipes do not subject the PHE to stress or strain.
- To avoid water hammer, do not use fast-closing valves.
- Safety valves should be installed according to current pressure vessel regulations.
- If the PHE surface temperature is expected to be hot or cold, the PHE should be insulated.
- It is recommended that protective sheets are used to cover the plate pack.
- For each model, design pressures and temperatures are marked on the identification plate. These must not be exceeded.

Requirements

Space

A minimum free space is needed for lifting plates in and out. Refer to the delivered drawing.

Foundation

Install on a flat foundation giving enough support to the frame.

Elbow

To make it easier to disconnect the PHE, an elbow should be flanged to the connection in the pressure plate, directed upwards or sideways, and with another flange located just outside the contour of the Plate Heat Exchanger.

Shut-off valve

To be able to open the PHE, shut-off valves should be provided in all connections.

Drip tray (optional)

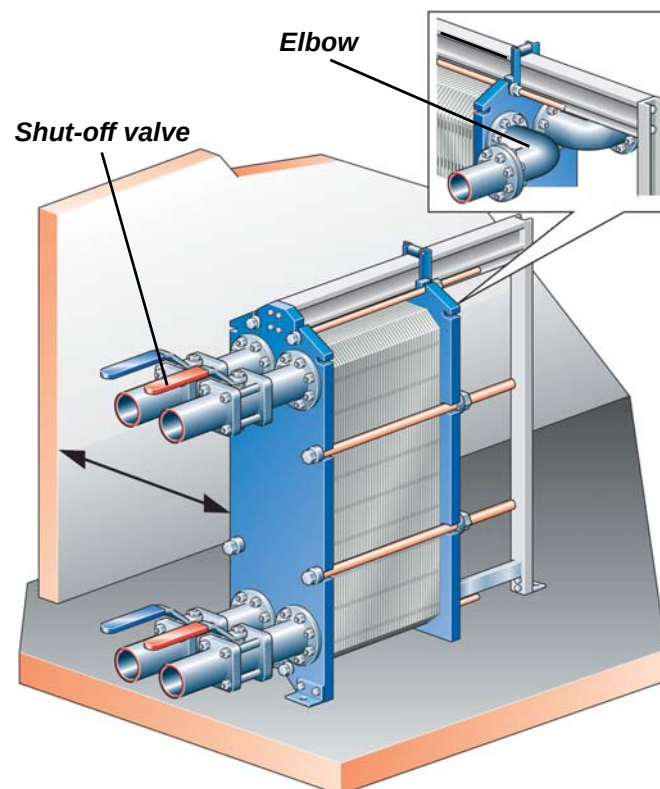
Depending on the type of fluid in the PHE and the type of installation, a drip tray (drainage box) may be necessary to avoid injury to personnel and damage to equipment.

Note!

Put the drip tray in place before positioning the PHE.

Connections in the pressure plate

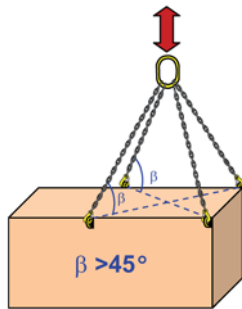
It is important that the plate pack has been tightened to the correct dimension A (check against PHE drawing) before the piping system is connected.



EN Lifting

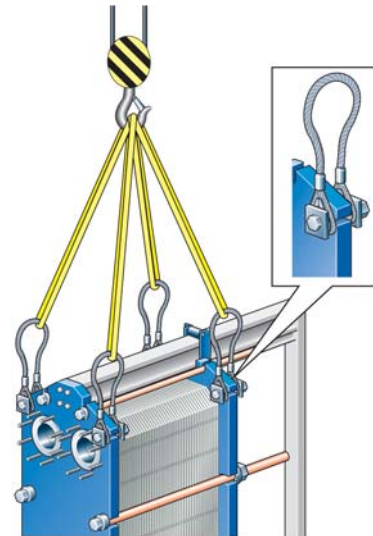
Straps should be used when lifting the PHE. Place straps according to picture.

The straps shall be attached according to the figures and with a minimum angle of 45° . Refer to the figure below.

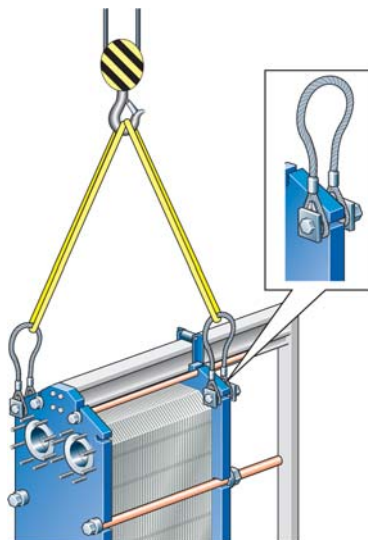


Warning!

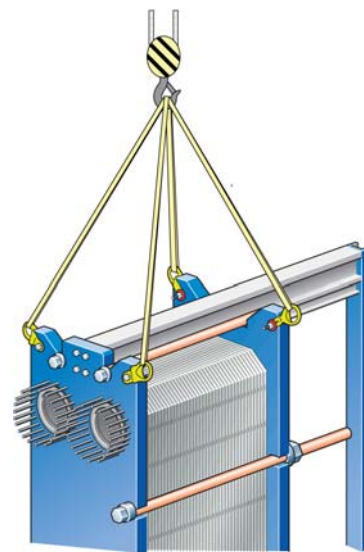
Never lift by the connections or the studs around them.



Lifting device for MX25, M30 and MA30.



Lifting device for M15, TL10, TL15, T20, TS20.



Lifting device for TL35.

For detailed information, contact an Alfa Laval Sales Representative for the document "Cargo Securing Instructions" (3490003791, 3490003792 and 3490003793).

Raising

EN

This instruction is valid when raising the PHE after delivery from Alfa Laval. Only use a strap approved for the weight of the PHE.

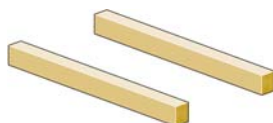


Caution!

The straps shall be long enough to be able to rotate the PHE without obstructions. Especially consider the space for the support column.

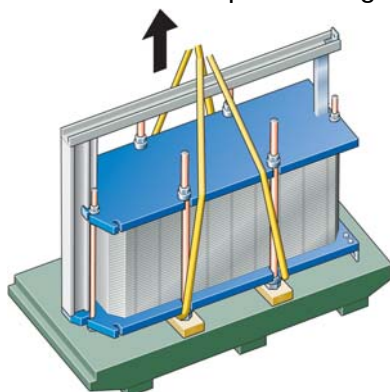
1

Place two timber beams on the floor.



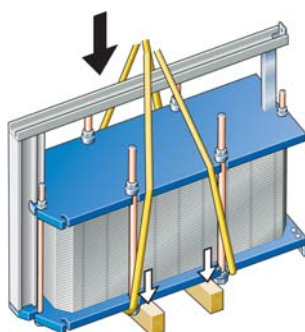
2

Lift the PHE off the pallet using e.g. straps.



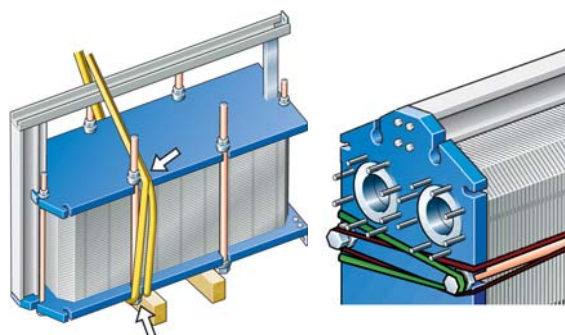
3

Place the PHE on the timber beams.



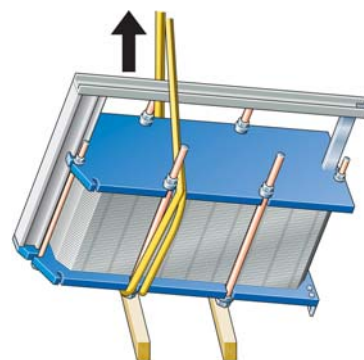
4

Place straps around one bolt on each side.



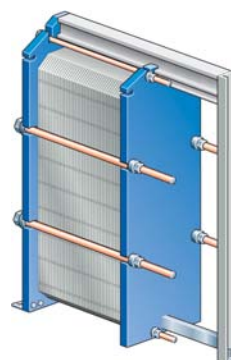
5

Lift the PHE off the timber beams.



6

Lower the PHE into a horizontal position and place it on the floor.



EN Operation

Start-up

During start-up, check that no visible leakages appear from the plate pack, valves or piping system.

Note!

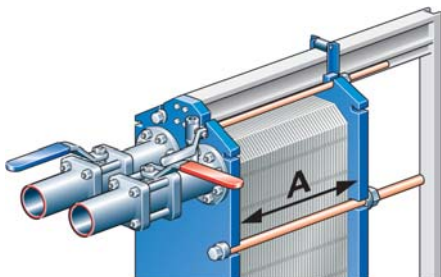
If several pumps are included in the system, make sure you know which one should be activated first.

Note!

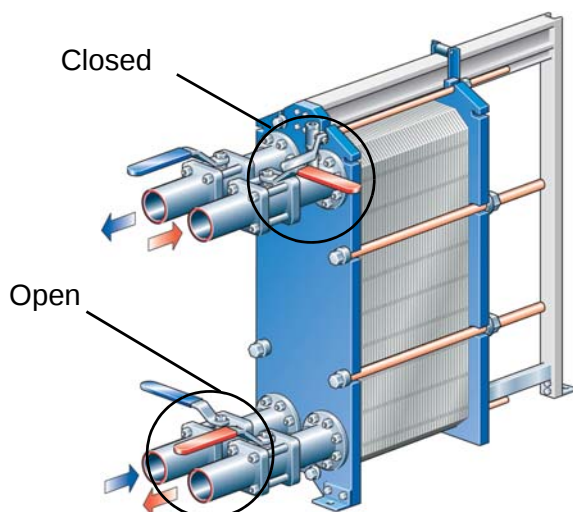
Adjustments of flow rates should be made slowly in order to avoid the risk of **pressure surge (water hammer)**.

Water hammer is a short-lasting pressure peak that can appear during start-up, or shut-down of a system, causing liquids to travel along a pipe as a wave at the speed of sound. This can cause considerable damage to the equipment.

- 1 Before start-up check that all tightening bolts are firmly tightened and that the dimension A is correct. Refer to PHE drawing.

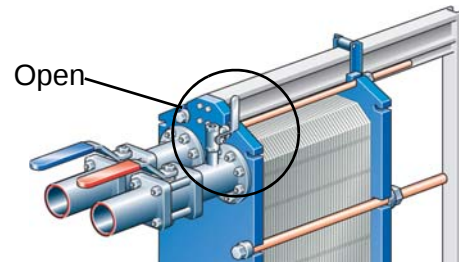


- 2 Check that the valve is closed between the pump and the unit controlling the system flow rate.

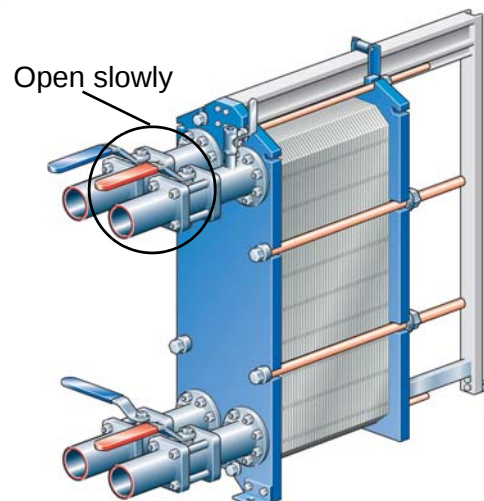


- 3 If there is a valve at the exit, make sure it is fully open.

- 4 Open the air vent and start the pump.



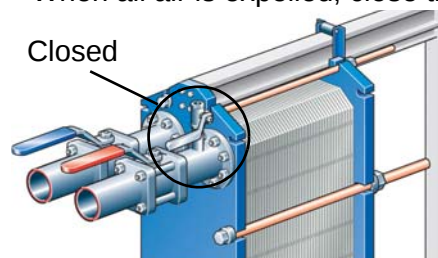
- 5 Open the valve slowly.



Note!

Avoid rapid temperature changes in the PHE. With media temperatures over 100°C, slowly increase the temperature preferably at least for one hour.

- 6 When all air is expelled, close the air vent.



- 7 Repeat steps 1– 6 for the second media.

Unit in operation

EN

Adjustments of flow rates should be made slowly in order to protect the system against sudden and extreme variations of temperature and pressure.

During operation, check that media temperatures and pressures are within the limits stated on the PHE-drawing and identification plate.

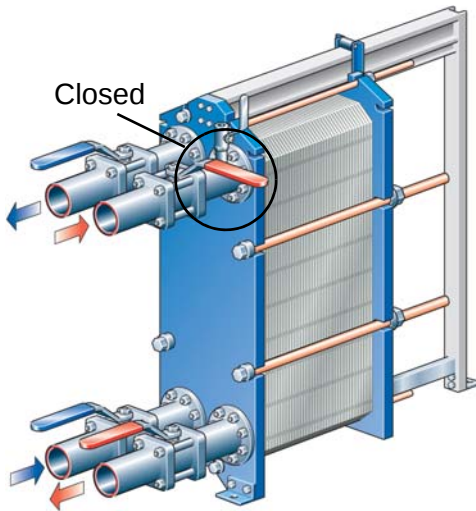
Shut-down

Note!

If several pumps are included in the system, make sure you know which one should be stopped first.

1

Slowly close the valve controlling the flow rate of the pump you are about to stop.



2

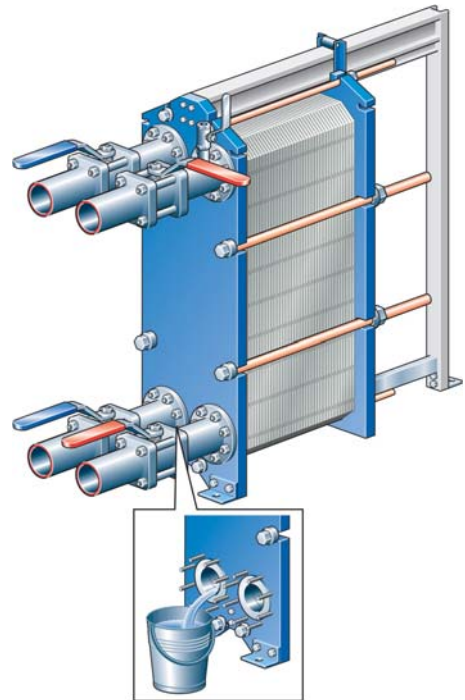
When the valve is closed, stop the pump.

3

Repeat steps 1–2 for the other side for the second media.

4

If the PHE is shut down for several days or longer, it should be drained. Draining should also be done if the process is shut down and the ambient temperature is below the freezing temperature of the media. Depending on the media processed, it is also recommended to rinse and dry the PHE plates and connections.



EN Maintenance

To keep the Plate Heat Exchanger in good condition regular maintenance is required.

The plates need to be cleaned on a regular basis. The frequency depends on several factors such as type of media and temperatures. Three methods can be used to perform cleaning. Refer to “[Cleaning-In-Place \(CIP\)](#)” on page 12, “[Manual cleaning](#)” on page 13 or a reconditioning at an Alfa Laval service center.

Cleaning-In-Place (CIP)

The Cleaning-In-Place (CIP) equipment permits cleaning of the PHE without opening it. The results of cleaning with CIP are as follows:

- Cleaning of fouling and descaling of lime deposits
 - Passivation of cleaned surfaces to reduce susceptibility to corrosion
 - Neutralization of cleaning liquids before draining.
- Follow the instructions of the CIP equipment.



Warning!

Use proper protective equipment, such as safety boots, safety gloves and eye protection, when using the cleaning agents.







Warning!

Corrosive cleaning liquids can cause serious injuries to skin and eyes!



Alfa Laval guarantees that plates, gaskets or glue are not damaged if the procedures given and cleaning agents prescribed are followed.

If CIP cannot be done, cleaning must be done manually. Refer to section “[Manual cleaning](#)” on page 13.



After a longer period of use, it may be required to re-gasket the PHE by exchanging the gaskets. Refer to “[Regasketing](#)” on page 19.

Other maintenance that should be performed regularly:

- Keep carrying bar and guiding bar cleaned and greased
- Keep the tightening bolts cleaned and greased.

CIP equipment

Model	Maximum number of plates			
	CIP 200	CIP 400	CIP 800	CIP 1800
M15-B/BD/E/M	316	600	600	600
TL10-B/P	333	522	522	522
TL15-B	165	257	665	665
T20-B/M/P	160	348	700	700
TS20-M	176	382	841	1971
MX25-B/M	83	180	395	925
M30	48	103	227	532
MA30-M/S/SM	49	107	234	549
TL35-B	55	120	263	617

Cleaning liquids

Liquids	Description
AlfaCaus	A strong alkaline liquid, for removing paint, fat, oil and biological deposits.
AlfaPhos	An acid cleaning liquid for removing metallic oxides, rust, lime and other inorganic scale. Contains repassivation inhibitor.
AlfaNeutra	A strong alkaline liquid for the neutralization of AlfaPhos before drainage.
Alfa P-Neutra	For the neutralization of Alfa P-Scale.
Alfa P-Scale	An acidic powder cleaner for the removal of primary carbonate scale but also other inorganic scale.
AlfaDescalent	A non-hazardous acidic cleaning agent for the removal of inorganic scale.
AlfaDegreaser	A non-hazardous cleaning agent for the removal of oil, grease or wax deposits. Additionally prevents foaming when using Alfacon Descaler.

Manual cleaning

EN

To perform manual cleaning it is required to open the PHE and lift out the plates to clean them.

Opening

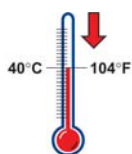
Note!

Before opening the PHE check the warranty conditions. If in any doubt, contact an Alfa Laval sales representative. Refer to "Warranty conditions" on page 2.



Warning!

If the Plate Heat Exchanger is hot, wait until it has cooled down to about 40°C (104°F).



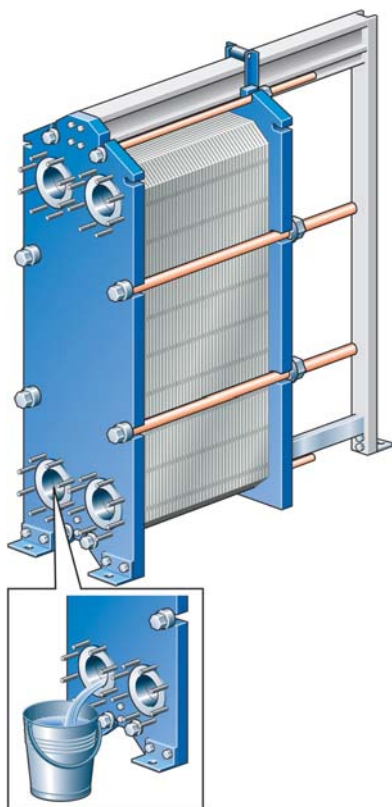
Warning!

If necessary, use proper protective equipment, such as safety boots, safety gloves and eye protection, depending on type of media in the PHE.



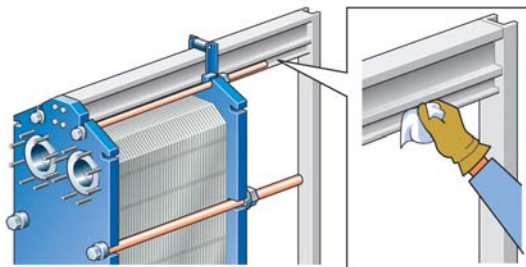
1

Drain the Plate Heat Exchanger.



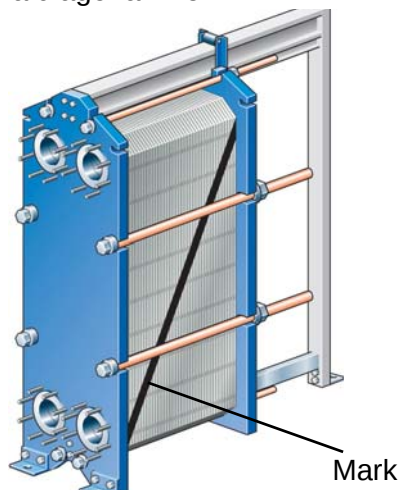
2

Inspect the sliding surfaces of the carrying bar and clean and grease it.



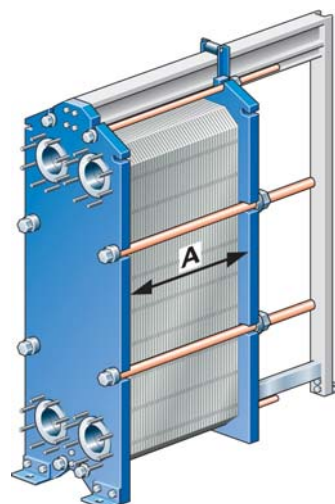
3

Mark the plate assembly on the outside with a diagonal line.



4

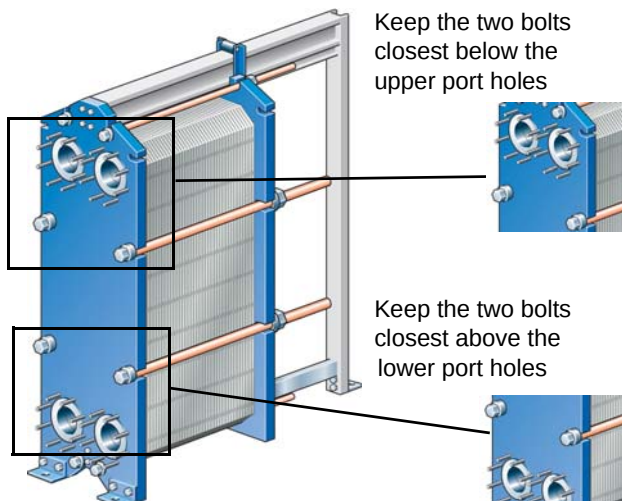
Measure and note the dimension A.



Note!

Brush the threads of the tightening bolts with a steel wire brush and then grease before loosening them.

- EN 5** Keep the four bolts in position, according to the figure below. Loosen the other bolts and remove them.

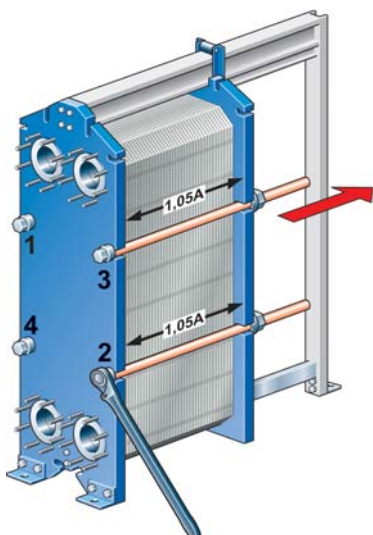


- 6** The remaining four bolts are opened alternately and diagonally in two steps, see figures below.

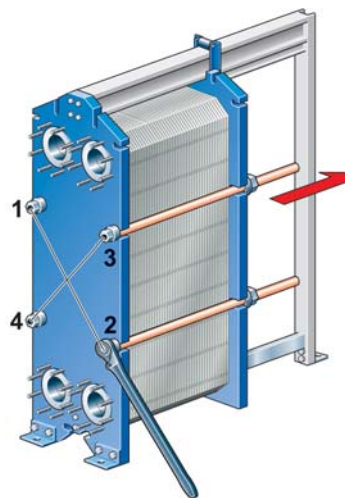
Be careful to ensure that the frame plate and pressure plate are always in parallel. Skewing of the pressure plate during opening must not exceed 10 mm (**2 turns per bolt**) across the width and 25 mm (**5 turns per bolt**) vertically.

Step	Bolt No.	To dimension
1	1-2-3-4	1.05A
2	1-2 or 3-4	Opening

Step 1: Loosen the four bolts alternately and diagonally until the plate package measures 1.05A.



- Step 2: Loosen the two diagonal pairs of bolts alternately, as shown in the figure below.

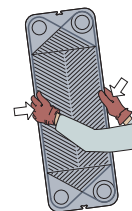


- 7** Open the plate pack by letting the pressure plate glide on the carrying bar.



Caution!

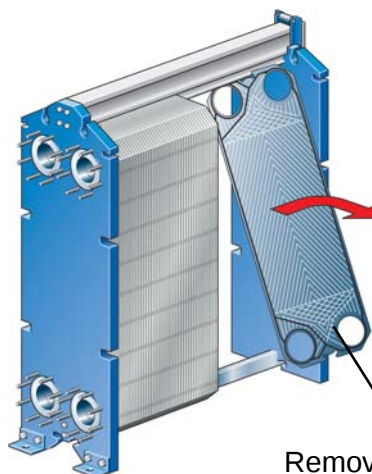
To avoid hand injuries from sharp edges, protective gloves should always be worn when handling plates and protective sheets.



Note!

Plates should be numbered, do this before removing the plates.

Plates do not need to be removed if cleaning is done using only water, i.e. without cleaning agent.



Warning!

The plate pack may still contain a small residual amount of liquid after draining. Depending on the type of product and type of installation, special arrangements, e.g. drainage box, may be necessary to avoid injury to personnel and damage to equipment.

Manual cleaning of opened units



Caution!

Never use hydrochloric acid with stainless steel plates. Water of more than 330 ppm Cl may not be used for the preparation of cleaning solutions. It is very important that carrying bars and support columns in aluminium are protected against chemicals.

Note!

Be careful not to damage the gasket during manual cleaning.

Deposits removable with water and brush

Plates do not need to be removed from the PHE during cleaning.



Warning!

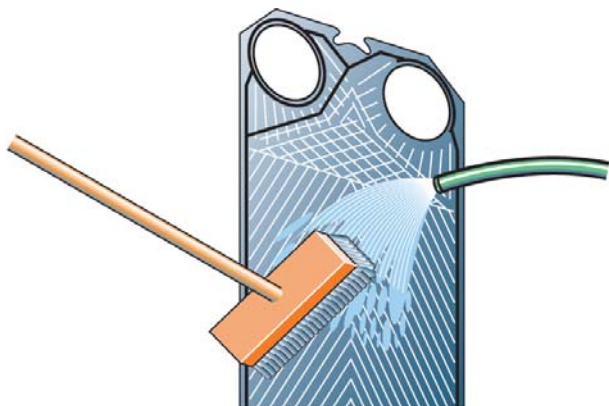
If necessary, use proper protective equipment. Consider risks like loose particles and what kind of media has been used in the PHE.

1

Start cleaning when the heating surface is still wet and the plates are hanging in the frame.

2

Remove deposits using a soft brush and running water.



3

Rinse with water using a high pressure hose.



Deposits not removable with water and brush

Plates must be removed from the PHE during cleaning. For a choice of cleaning agents, refer to "Cleaning liquids" on page 12.



Warning!

Use proper protective equipment, such as safety boots, safety gloves and eye protection, when using the cleaning agents.



Warning!

Corrosive cleaning liquids can cause serious injuries to skin and eyes!



1

Brush with cleaning agent.



2

Rinse immediately with water.



Note!

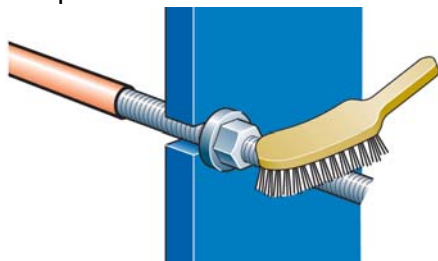
Long exposure to the cleaning agents can damage the gasket glue.



EN Closing

Follow the instructions below to ensure that the Plate Heat Exchanger will be properly closed. For TL15-B, follow the separate instructions, Refer to [“Closing - TL15-B”](#) on page 18.

- 1** Check that all the sealing surfaces are clean.
- 2** Brush the threads of the bolts clean, using a steel wire brush or the Alfa Laval thread cleaner. Lubricate the threads with a thin layer of grease, e.g. Gleitmo 800 Lubriplate or equivalent.

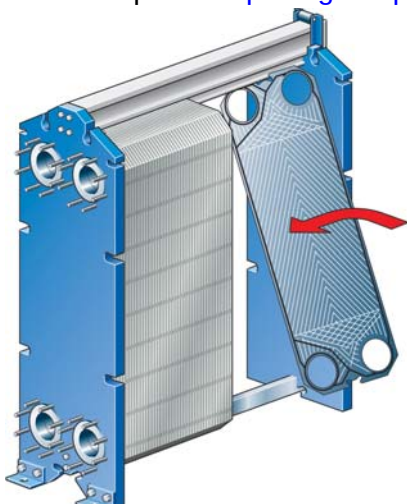


- 3** Attach gaskets to the plates or check that all the gaskets are properly attached.

Note!

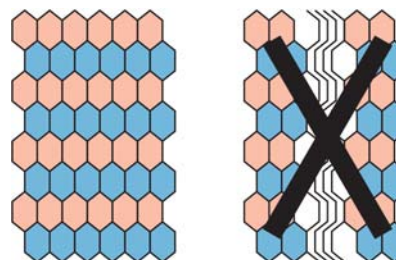
If the gasket is wrongly positioned, it will show by the fact that it rises out of the gasket groove or that it is positioned outside the groove.

- 4** Insert the plates in alternate directions and with the gaskets turned towards the frame plate or pressure plate as specified on the plate hanging list. Use the marked line that was done when the PHE was opened. Refer to step 3 in [“Opening”](#) on page 13.



5

If the plates are correctly assembled, the edges form a “honeycomb” pattern, see picture below.



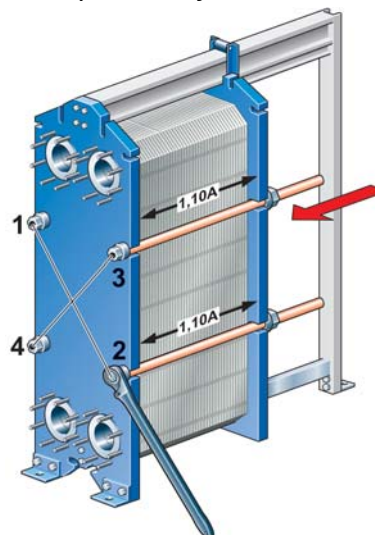
6

Press the plate assembly together. Tightening is done in two steps, see figures below. Be careful to ensure that the frame plate and the pressure plate are always in parallel.

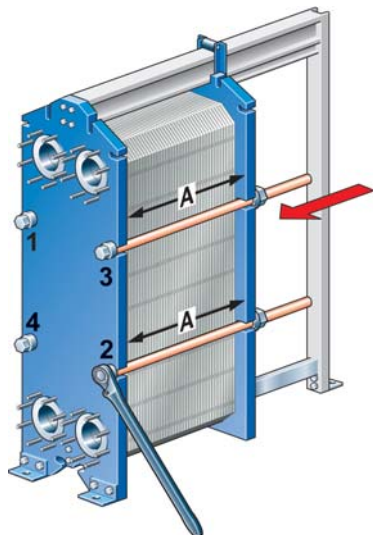
Step	Bolt No.	To dimension
1	1-2 or 3-4	1.10A
2	1-2-3-4	A

Step 1: Tighten the two diagonal pairs of bolts alternately until the plate package measures 1.10A.

Be careful to ensure that the frame plate and pressure plate are always in parallel. Skewing of the pressure plate during opening must not exceed 10 mm (**2 turns per bolt**) across the width and 25 mm (**5 turns per bolt**) vertically.



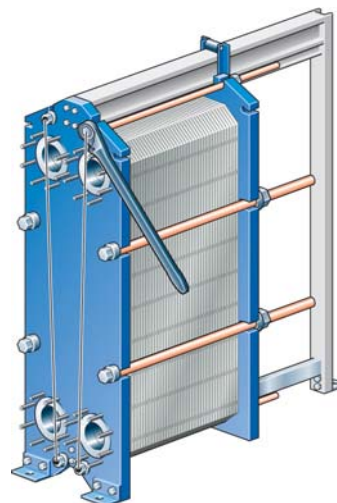
Step 2: After that, bolts are tightened alternately and diagonally, as shown in the figure below. Check the dimension A during tightening at the positions of the bolts that are being used.



7

Place the other bolts in position.

- Inspect the washers.
- When fully tightened, the bolts should all be equally tensioned.



Note!

The final tightening to reach dimension A is recommended to be divided into steps.

Max tightening torque

When a pneumatic tightening device is used, see table below for maximum torque. Measure dimension A during tightening.

Bolt size	Bolt with bearing box		Bolt with washers	
	N·m	kpm	N·m	kpm
M24			450	45
M30			900	90
M39	1300	130	2000	200
M48	2100	210	3300	330

For manual tightening, the tightening torque has to be estimated.

If dimension A cannot be reached

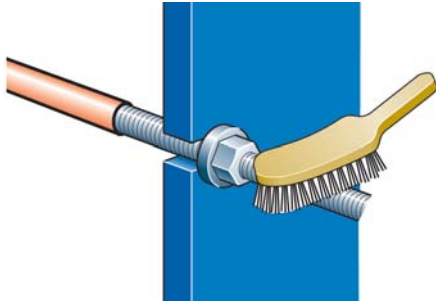
- Check the number of plates and the dimension A.
- Check that all the nuts and bearing boxes are running freely. If not, clean and lubricate, or replace.

Closing - TL15-B

Follow the instructions below to ensure that the Plate Heat Exchanger will be properly closed.

Closing instructions

- 1** Check that all the sealing surfaces are clean.
- 2** Brush the threads of the bolts clean, using a steel wire brush or the Alfa Laval thread cleaner. Lubricate the threads with a thin layer of grease, e.g. Gleitmo 800 Lubriplate or equivalent.



- 3** Attach gaskets to the plates or check that all the gaskets are properly attached.

Note!

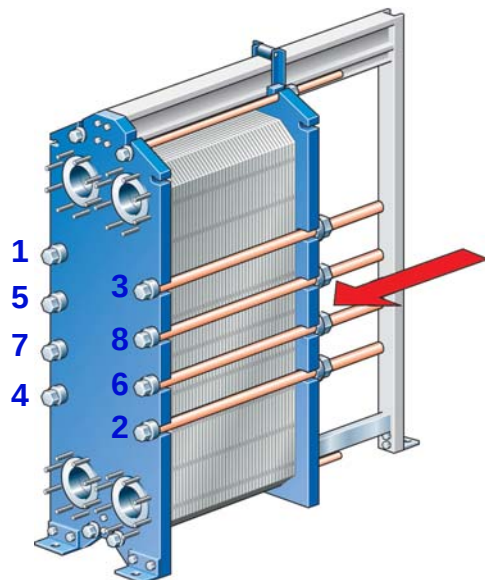
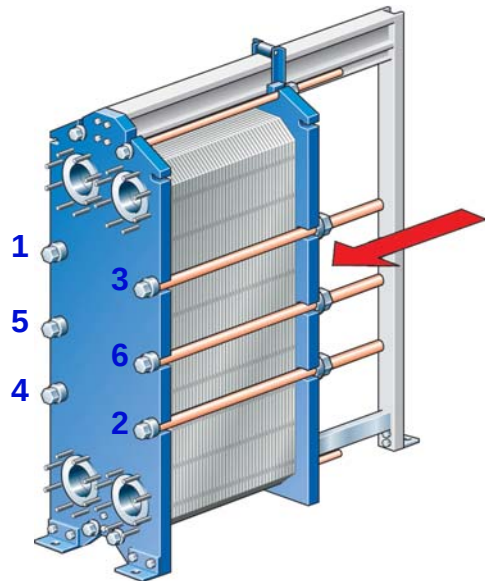
If the gasket is wrongly positioned, it will show by the fact that it rises out of the gasket groove or that it is positioned outside the groove.

- 4** Insert the plates in alternate directions and with the gaskets turned towards the frame plate or pressure plate as specified on the plate hanging list. Use the marked line that was done when the PHE was opened. Refer to step 3 in "Opening" on page 13.
- 5** Press the plate package together and put the tightening bolts in their positions.

6

Tighten the bolts alternately in numeric order, 1 to 6 (8). Repeat this procedure until the dimension A is reached.

Note!
Make sure that the frame plate and the pressure plate are always positioned in parallel (within maximum 10 mm).



Pressure test after maintenance

EN

Before start-up of production, whenever plates or gaskets have been removed, inserted or exchanged, it is strongly recommended to perform a pressure test to confirm the internal and external sealing function of the PHE. During this test, one media side at a time must be tested with the other side open to the ambient pressure.



Caution!
The pressure testing shall be performed at a pressure equal to the operating pressure of the actual unit, but never above the design pressure as stated on the nameplate.

The recommended test time is 10 minutes for each media.

Please note that PHE units for refrigeration applications and units with media not mixable with water must be dried after hydrostatic pressure testing.

Please consult the local office/representative of the supplier for advice on the pressure testing procedure.

Regasketing

The procedures below relate to Field gaskets, Ring gaskets and End gaskets.



Note!
Before removing the old gaskets check how they are attached.

Clip-on

- 1** Open the PHE, [refer to ["Opening" on page 13](#)] and remove the plate that is to have a new gasket.



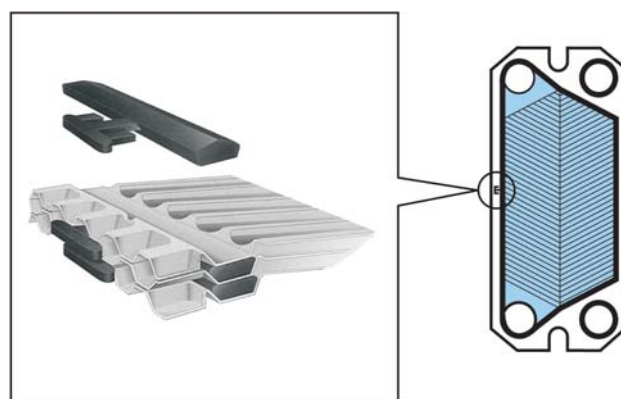
Note!
Before opening the PHE check the warranty conditions. If in any doubt, contact an Alfa Laval sales representative. Refer to ["Warranty conditions" on page 2](#).

- 2** Remove the old gasket.
- 3** Ensure that all sealing surfaces are dry, clean and free of foreign matter such as fat, grease or similar.
- 4** Check the gasket and remove rubber residual before attaching it.



Note!
Especially the end plate gasket!

- 5** Attach the clip-on gasket to the plate. Slip the gasket prongs under the edge of the plate.





Note!
Make sure the two gasket prongs are in the correct position.

- 6** Repeat the procedure until all plates that are needed to be regasketed are done. Close the PHE according to ["Closing" on page 16](#).

EN Clip-AD gaskets (MX25 and TL15)
The Clip-AD gasket represents a system with the conventional Clip-on fastening around the ports and fastening by means of adhesive tape along the sides of the plates.

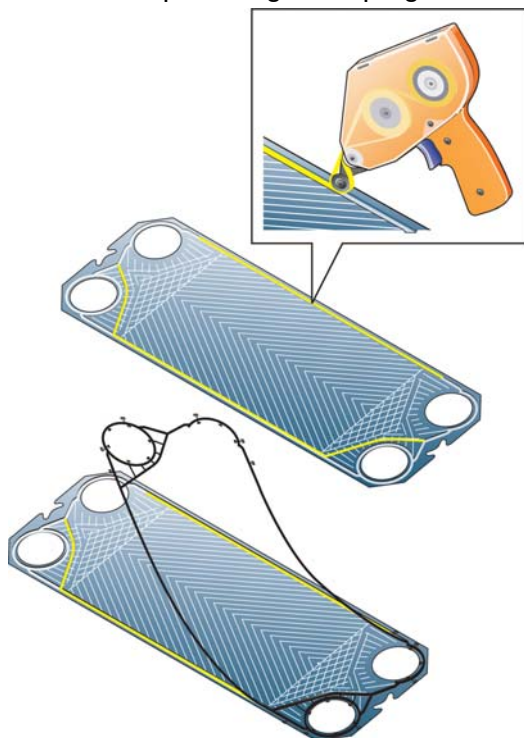
The use of the adhesive tape (GC1) is a simple way to obtain secure gasket positioning. It is adhered to the gasket groove by means of a special tape gun, making it easy to apply the tape exactly where wanted.

- 1** Open the PHE [refer to [“Opening” on page 13](#)] and remove the plate that is to have a new gasket.

Note!

Before opening the PHE check the warranty conditions. If in any doubt, contact an Alfa Laval sales representative. Refer to [“Warranty conditions” on page 2](#).

- 2** Remove the old gasket.
- 3** It is not necessary to remove old tape as the film is very thin. Make sure, however, that the gasket groove is clean and dry.
- 4** Adhere tape, using the tape gun.



- 5** Attach the gasket to the plate. Slip the gasket prongs under the edge of the plate.

- 6** Close the plate heat exchanger according to [“Closing” on page 16](#).

Glued gaskets

Use glue recommended by Alfa Laval. Separate gluing instructions will be delivered together with the glue.



Caution!

Other glues than those recommended can contain chlorides that can damage the plates.



Caution!

Do not use sharp tools when removing the glued gasket to avoid damage to the plates.

Semi-welded gaskets

These instructions are only valid when cassettes are used. Refer to Plate hanging list!

- 1** Follow steps 1 to 4 in the instructions for Clip-on gaskets. Refer to [“Clip-on” on page 19](#).
- 2** Channel Cassette - Attach adhesive tape to the gasket groove.
- 3** Place the Ring gasket and attach it with the clip-on.