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Gasketed Plate Heat Exchangers Installation, Operation and Maintenance

This document is your guide to the installation, operation and maintenance of Tranter Plate Heat Exchangers (PHE) and contains essential Health & Safety information.

We advise you to study the content carefully and to make this guide available to staff entrusted with the installation, operation and maintenance of the PHE.

Every Tranter PHE is provided with a name plate attached to the fixed cover. Details of the model number of your PHE can be found there. The model number identifies the heat transfer plate style and frame type of your unit.





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Gasketed Plate Heat Exchangers Installation, Operation and Maintenance

All types; check the name plate for your type, GFP, GWP, GCP, GCD, GXD, GXP, GLD or GLP

1 MAIN COMPONENTS

The PHE is in principle built up by a plate package of corrugated channel plates between the fixed and movable cover. Figure below shows the main components.



gule 1. Main components	
 Fixed Cover Plate 	End Support
2. Movable Cover Plate	6. Platepack
3. Upper Guiding Bar	7. Tightening Bolt
4. Lower Guiding Bar	8. Connection Port
2. Movable Cover Plate 3. Upper Guiding Bar 4. Lower Guiding Bar	 6. Platepack 7. Tightening Bolt 8. Connection Pol

2 GENERAL DESCRIPTION

Between two plates of steel the heat transfer surfaces, the heat exchanger plates, are clamped with the aid of tightening bolts. The heat exchanger's construction enables a plate heat exchanger to be easily opened for inspection and cleaning. Each heat exchanger plate is pressed in one piece, with no joints. Each plate has four holes punched out, one in each corner. Multipass heat exchangers have special turning plates in which two of the holes are left blank.

Rubber gaskets are glued in the gasket groove around the heat transfer surface and holes. The gaskets are supported on both sides by the corrugations in the plate. The gaskets are double around the holes to prevent leakage between the media. In the event of gasket failure the medium runs straight out of the exchanger.

2.1 GFP

GFP plates can be arranged in a Wide/Narrow configuration when only one fluid with large particles requires a wide gap, or placed in a Medium/Medium position when both fluids need the additional flow area. Both configurations are accomplished with a single plate geometry. Between two adjacent plates a flow channel is formed with the aid of the gaskets. The positioning of the gaskets produces a channel system through the entire plate pack in which the two heat exchanging media flow. Liquid flows parallel across the GFP heat exchanger plates.

2.2 GWP

Semi-welded plate heat exchangers consist of a number of plate pairs (also referred to as elements) and a frame assembly. Plate pairs are laserwelded together to form a sealed channel or element. In order to close off or seal two of the four portholes in the element, a laser weld is extended diagonally in front of the two vertically aligned ports. Refrigerant or corrosive fluids, which enter the sealed channel through the inlet port, flow inside the element. Each heat exchanger plate is pressed in one piece. In a standard one-pass unit, each plate (except for the end plate) has four holes punched out, one in each corner.

Tranter presses 3 different single plates called GW-80 plates. The different plate types are designated by a letter (C,D or F). Two GW-80 plates are laser-welded together to form an element. Two GW-80C plates are called a GW-81 element. Two GW-80F plates are called a GW-83 element. A plate pack normally consists of a start plate (single plate) + elements + end plate (GW-80D).

2.3 GCP/D, GXD/P, and GLD/P

These heat exchanger plates are made with two different arrowhead angles; one obtuse giving a high-theta plate, and one acute giving a low-theta plate. Between two adjacent plates a flow channel is formed with the aid of the gaskets. The positioning of the gaskets produces a channel system through the entire plate pack in which the two heat exchanging media flow. Liquid flows parallel across the GCP, GXP and GLP heat exchanger plates and diagonally across GCD, GXD and GLD heat exchanger plates.

3 INSTALLATION

Tranter's plate heat exchangers are pressure tested at the factory before delivery. When the heat exchanger is installed it is necessary to provide enough clearance around the PHE, see figure. This facilitates access to the PHE and provides for any necessary service tasks. The PHE must have a clearance on both sides. Under special considerations for space, these dimensions may be reduced but servicing the heat exchanger may be compromised.



Figure 2. Clearance needed for future maintenance



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Clearance size		
Model	Length (L)	
GFP-057. 097. 187. 145. 205	1 200 mm	
GWP-081, 083	600 mm	
GCP-008, 012, 028	300 mm	
GCP-009, 016, 026 030	600 mm	
GCP-051, 052, 054	1 000 mm	
GCP-060	1 200 mm	
GCD-008, 012	300 mm	
GCD-009, 016, 030, 044	600 mm	
GCD-054	1 000 mm	
GXD-007	300 mm	
GXD-012, 018, 026, 042	600 mm	
GXD-051, 064, 085	1 000 mm	
GXD-091, 118, 060, 100, 140, 180, 145,	1 200 mm	
205, 265, 325		
GXP-007	300 mm	
GXP-012, 018, 026, 042	600 mm	
GXP-051, 064, 085	1 000 mm	
GXP-091, 118, 060, 100, 140, 180, 145,	1 200 mm	
205, 265, 325		
GLD-008	300 mm	
GLD-013	600 mm	
GLD-085	1 000 mm	
GLD-145, 205, 230, 240	1 200 mm	
GLD-265, 325, 330, 340, 430, 440	1 500 mm	
GLP-008	300 mm	
GLP-009, 013	600 mm	
GLP-085	1 000 mm	
GLP-152, 218, 230, 240	1 200 mm	
GLP-284, 330, 340, 430, 440	1 500 mm	

All connections to the heat exchanger must be provided with shutoff valves. The lower connections (S2 and S3; M2 and M3) must be provided with drain valves. The upper connections (S1 and S4; M1 and M4) must be provided with venting devices at their highest points. The hot side's regulating valve should be installed in the feed pipe between the pump and the shut-off valve.



Figure 3. Denomination of connections

All nozzle loading must be minimized during installation and operation. Make sure that the pipe system connected to the PHE is secured against sudden pressure surges and temperature fluctuations.

All connections to the movable cover must be made using removable 90° elbows, allowing the movable cover to be pushed back for servicing. Figure 4 shows the correct and incorrect piping installation. The installation to the left permits movement of the end frame when connections are disconnected.



Figure 4. Correct and incorrect piping installation



WARNING IN CASE OF WELDING, THE PHE MUST NOT BE USED AS A GROUNDING MECHANISM AS ELECTRIC ARCS MAY OCCUR BEWEEN THE HEAT TRANSFER PLATES.

4 OPERATION

Check that the operating data does not exceed that given on the heat exchanger's nameplate. Check that all tightening bolts are correctly tightened.

4.1 Pumps

Pumps feeding the heat exchanger must be provided with regulating valves. If the pumps can deliver a higher pressure than the rated pressure for the heat exchanger, safety valves must be installed. The pumps must not suck in air.

4.2 Start-up

To avoid pressure shock the pumps must be started against closed valves. The valves in the inlet and outlet should be opened at the same time as far as possible. The flow rate is then increased slowly until operating temperature is reached. Hammering must be avoided, otherwise the rubber gaskets may be displaced and cause leakage.

4.3 Venting

Immediately after start-up the exchanger must be vented. Remaining air can cause air locks and serious scorching of the plates, reducing the heat transfer capacity and increasing the risk of corrosion.

4.4 Shut-down

Shut-down should take place slowly. For longer periods of downtime and especially when there is a risk of freezing or if the medias are aggressive, the heat exchanger must be emptied and cleaned.





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5 MAINTENANCE 5.1 Opening the Heat Exchanger

- Make sure the unit is NOT under pressure and is emptied.
- Cool the heat exchanger. If possible allow the heat exchanger to stand and cool overnight. If the heat exchanger has been operated at a high temperature it can sometimes be easier to open the unit if it is not cooled down below 50-60°C. It can then be easier to separate the plates.
- Disconnect any connections to the movable cover plate.
- Note the current A dimension.
- Remove bolts 1.
- Loosen nuts 2, 3 and 4 alternately, so that the movable cover plate can move parallel with the frame plate.
- Remove bolts 3 and 4.
- Loosen nuts 2 alternately.



Figure 5. Schematic of untightening the PHE

5.1.1 Taking out the plates



If two or more plates have stuck together they must be separated carefully so that the gaskets are kept on the correct plate. The plates support each other in pairs. If a plate has been damaged and if it cannot be repaired or replaced with an identical one, the adjacent plate must also be taken out of the exchanger.

If the number of plates are changed, so is the thickness of the clamped plate pack, dimension A. (see 5.4.2). Special plates, such as the first and last plates, and turning plates in multipass heat exchangers, must be replaced with identical plates.

5.1.2 Cleaning the plates

Fouling of the heat exchanger plate is often caused by the fluid flow through the exchanger being too low. Where possible, the flow should be increased to compensate for this. The flow through the exchanger should also be increased in the event the exchanger shows signs of reduced capacity or pressure drop.

Opening and cleaning the heat exchanger is necessary when products crystallise or heavily foul the plates or if the heat transfer surfaces have been scorched.

- The heat exchanger is opened in accordance with paragraph to 5.1.
- Do not use Steel wool, or carbon steel brushes. Stainless steel is not to be used on titanium plates.
- In the first instance the heat transfer surface is cleaned by rinsing with a powerful jet of water and scrubbing with a nylon, or similar, brush.
- Take care not to damage the gaskets.
- Oxide or chalk deposits are removed with a soft brush and a 2-5% nitric acid solution. (Hydrochloric or sulphuric acid are not be used). Organic deposits containing proteins are

removed with a soft brush and 2% solution of sodium hydroxide solution at 50°C.

Surfaces with greasy deposits are cleaned with kerosene and a soft brush. After cleaning, rinse thoroughly with water.



WARNING SODIUM HYDROXIDE AND CONCENTRATED NITRIC ACID MAY SERIOUSLY HARM THE SKIN AND MUCOUS MEMBRANES. THE SOLUTION MUST BE HANDLED WITH THE GREATEST CARE. ALWAYS WEAR PROTECTIVE GOGGLES

AND RUBBER GLOVES

With our range of Cleaning-in-Place (CIP), equipment you can clean your heat exchangers without dismantling. The equipment is followed by a range of environment-friendly and effective detergents, developed to remove different foulants. Please contact Tranter PHE for further information.

5.2 Gaskets and Gluing

5.2.1 GF, GX and GL gaskets

GFP, GXD, GXP, GLD and GLP heat exchanger plates differ from conventional plates, because the gasket groove lies in the plate's neutral plane. The gaskets used next to the cover plates, and partition plate in multipass heat exchangers, are half thickness.

5.2.2 GW gaskets

Specially designed, double-ring gaskets are glued at ports. Perimeter gaskets (also referred to as parallel gaskets) are placed on the element, creating a sealed envelope to contain the process fluid. The process fluid flows between the elements in the gasketed channels. The groove of the gasket is at the bottom plane of the plate. The corrugations in the plate support the gaskets on both sides.

5.2.3 GC gaskets

GCP and GCD heat exchanger plates have the gasket grooves in the plate's bottom plane. Therefore there is a full thickness gasket glued on the front side on every plate.

5.2.4 Adjusting the gaskets

A gasket that has come loose, either partly or entirely, must be glued in place. If only a short length has become detached, gluing can be carried out immediately before clamping, with the plate still sitting in the frame. If the entire gasket has become detached, the plate should be taken out of the heat exchanger.

5.2.5 Suitable gasket glue

Only certain glues may be used for gluing gaskets, namely Bostik 1782, 3M EC 1099, Bond Spray 77 or Pliobond 20/30 Synthetic glue. Do not use other types of glue, they may contain chlorine or other substances which attack the plate material. To facilitate application with a brush, the glue should be diluted with acetone. Maximum dilution 1:1.

5.2.6 Cleaning the gasket groove

The solvent must not contain chlorine. Remove any residue of old gaskets. Small patches of glue that are hard to remove, and are securely stuck to the gasket groove may remain there. They provide an excellent foundation for the new gasket. Wash the gasket groove so that it is completely free of oil and other greasy substances, using a rag and acetone or other solvent not containing chlorine compounds. Then let the plate dry.





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5.2.7 Gluing the gaskets

The glue is applied with a small flat brush to those parts of the plate's gasket groove in which the gasket shall lie. These parts of the gasket groove are easily recognised as they differ in colour arising from previous residues of glue. The gasket is then placed into position on the plate. After drying for about 30 seconds (the time depends on the thickness of the glue film and how much the glue has been diluted), the glue holds the rubber gasket firmly in place in the gasket groove, thus facilitating mounting. The plate must then be held under light pressure with the aid of other plates or a stiff sheet of other material of suitable weight for about 30 minutes.

When the glue joint has dried the gasket should be coated with talc to prevent the plates subsequently sticking to each other. The plates are then ready to assemble into the frame.

5.2.8 GW Gluing Instructions

It's very important to follow the gluing instructions on the plate specification sheet. Figure 6. shows all the possible gluing instruction for GW. Every element has one parallel gasket, GWP-080 Open, and two O-ring Gaskets, GW-080 Port Weld, glued S3/S4. The start plate has special start O-ring gaskets glued on the back side of the plate, two O-rings, GW-080 Start Open, for S1/S2 and two O-rings, GW-080 Start Weld, for S3/S4.





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LU The letter U denote chevron is pointing up. The ring down to the left

Figure 6. GW gluing Instructions

5.2.9 GF Gluing Instructions

It's very important to follow the gluing instructions on the plate specification sheet. Figure 7 shows all the possible gluing instructions for GFP. Each plate is glued with one full thickness gasket on the front side, except the last plate, which also has an additional half-thickness gasket on the back side. The first plate is only glued with a half-thickness gasket on the front side.





LL The letter L up to the right. The ring down to the left. LS The letter S up to the right. The ring down to the left.

Figure 7. GF gluing specification

5.2.10 GC Gluing Instructions

It's very important to follow the gluing instructions on the plate specification sheet. The first letter of the two letter gluing code indicates whether ringed port is to the lower left or right corner. The second indicates an Up or Down chevron direction. Each plate is glued with one full thickness gasket on the front side. The first plate is glued with a full thickness gasket that has rings at all port holes.

Parallel GCP

For GCP there is only one way to glue the gaskets onto the plate, see Figure 8.



Figure 8. GCP LU – The ringed port is to the left in the bottom of the plate. Chevron is pointing up



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Diagonal GCD

Figure 9 shows possible gluing instructions for GCD.





RU

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The letter U denote chevron is pointing up. The ring down to the right.

LU The letter U denote chevron is pointing up. The ring down to the left

Figure 9. GCD gluing Instructions

GL-008, GL-009, GL-152/218/284

These GL-plates has a conventional pattern and the gasket groove is in the neutral plane. But unlike standard GL plates these plates are glued as GC-plates. The channel gasket should be on the plate side with leak-tracks; these tracks appears as ditches around the ports, see Figure 10. The first plate has a half thickness gasket on front side with all ports gasketed. The end plate has a channel gasket on front side and a half gasket on the back side.





Figure 10. Close up of the leak-tracks and figure that shows where the leak-tracks can be found on the plate.

5.2.11 GL Gluing Instructions

It's very important to follow the gluing instructions on the plate specification sheet. Each plate is glued with one full thickness gasket on the front side, except the last plate, which also has an additional half-thickness gasket on the back side. The first plate is only glued with a half-thickness gasket on the front side.

Please note! For GL-008, GL-009, GL-152/218/284 see instruction 5.2.10.

Parallel GLP

Figure 11 shows possible gluing instructions for GLP.





EXCHANGERS

LORU The "O" up to the right. The ring down to the left.

LOLU The "O" up to the left. The ring down to the left.

Figure 11. GLP gluing Instructions

Diagonal GLD

Figure 12 shows possible gluing instructions for GLD.



LORU The "O" up to the right. The ring down to the left.

ROLU The "O" up to the left. The ring down to the right.

Figure 12. GLD gluing Instructions



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5.2.12 GX Gluing Instructions

It's very important to follow the gluing instructions on the plate specification sheet. Each plate is glued with one full thickness gasket on the front side, except the last plate, which also has an additional half-thickness gasket on the back side. The first plate is only glued with a half-thickness gasket on the front side.

Parallell GXP

Figure 13 shows all possible gluing instructions for GXP.

H-Plate





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LL

The letter L up to

the right. The ring

down to the left.

RG LB The letter G up to The letter B up the right. The ring the right. The ring to the right. The down to the right. ring down to the left

L-Plate

LK

The letter K up

to the right. The

ring down to the

RE The letter E up to the right. The



RR

Figure 13. GXP gluing instructions

RS

right

The letter S up

to the right. The

ring down to the



The letter R up to the right. The ring down to the right.

Diagonal GXD

Figure 14 shows all possible gluing instructions for GXD.

H-Plate





RC The letter C up to the right. The ring down to the right

LG The letter G up to the right. The ring down to the left.

LS The letter L up to the right. The ring down to the right

Figure 14. GXD gluing instructions

RL

The letter S up to the right. The ring down to the left.

L-Plate



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5.3 Plates

5.3.1 Marking

GFP, GXD, GXP

GFP, GXD, GXP plates are identified by means of an embossed code letter. This letter can be found to the RIGHT of the UPPER carrying bar cut-out, when the plate is facing TOWARDS the frame plate.



Figure 15. Placement of letter code in hanging specification

GWP





Figure 16. GWP When the plates and elements are in the unit the gas ports (pear shaped ports), are to the left, S3 and S4.

GCP

GCP elements are identified by the chevron that is either pointing up or down. The gasket on the plate should be facing TOWARDS the frame plate, see Figure 17.



Figure 17. GCP Two hanging combinations LU or RD

GCD

GCD elements are identified by the chevron that is either pointing up or down. The gasket on the plate should be facing TOWARDS the frame plate, see Figure 18.



Figure 18. Two hanging combinations RU or LD

GLP

GLP plates are identified by the "O". This mark can be found to the lower or upper RIGHT of the UPPER carrying bar cut-out, when the plate is facing TOWARDS the frame plate, see Figure 19.







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GLD

GLD plates are identified by the "O". This mark can be found to lower or upper RIGHT of the UPPER carrying bar cut-out, when the plate is facing TOWARDS the frame plate, see Figure 20.



Figure 20. Placement of 'O' in hanging specification

5.3.2 Special arrangement for draining multi-pass heat exchangers

The blank ports in the turning plate for two-pass grouping and the first turning plate for three-pass grouping are provided with holes, 3 mm in diameter.



Figure 21. Partition plate

5.3.3 Partition/Support plates for multi-pass grouping

This information only applies to the following types:

GFP-057, 097, 187, 145, 205 GCP-060 GXD-060, 085, 091, 100, 118, 140, 145, 205, 265, 325 GXP-060, 085,091,100, 118, 140, 145, 205, 265, 325 GLD-085, 145, 205, 230, 240, 265, 325, 330, 340, 430, 440 GLP-085, 145, 152, 205, 218, 230, 240, 265, 284, 325, 330, 340, 430, 440

To prevent deformation of the blank ports in multi-pass grouped heat exchangers, a partition plate of stainless steel is placed after every turning plate.

5.4 Assembly

Before the heat exchanger is assembled, inspect all gaskets and surfaces that lie against the gaskets. Particles that may jeopardize the integrity of the seals or damage the gaskets or sealing surfaces must be removed. Note that contaminants usually collect at the lower part of the plates.

Plates that have been provided with new gaskets must be checked to make sure that the gaskets are in the correct gasket groove. For

GX and GL you should also check the $\frac{1}{2}$ thickness gaskets on the first and last plates.

5.4.1 Inserting the plates

Every delivery can, if requested, be accompanied by a computer printout of the grouping scheme, giving each plate's code letter together with the plate's position in the heat exchanger. Make certain that the plate pack is assembled correctly. The plate edges shall form a regular honeycomb pattern.



Coneci

Figure 22. Correct and Incorrect pattern of platepack

When the GX and GL plates are correctly positioned the flanged cut-outs at the upper carrying bar should point towards each other.



Figure 23. PHE top view. The flanged cut-outs points to each other

5.4.2 Tightening the heat exchanger

The plate pack must be compressed to a specific thickness, the A - dimension. The A-dimension $\pm 3\%$ gives the inside length in millimetres between the fixed cover plate and the movable cover plate.



Figure 24. A-dimension is the dimension between the cover.



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Example:

A plate heat exchanger GXD-042 has a total of 51pcs of **0.4mm** plates in the plate pack. The tightening length, A-dimension, of the plate pack is: **3.7** x 51 = 188.7mm. The A-dimension is depending on the plate thickness; with 51pcs of **0.5mm** plates the A-dimension will instead be: **3.8** x 51 = 193.8mm.

The above example can be applied to all the heat exchangers specified in this document.

NOTE! The A-dimension is calculated based on draw depth, plate thickness and number of plates. The constant (in above example 3.7 for GX-042) given in below table is calculated from the specified plate thickness. The constant has to be recalculated in accordance with the plate thickness (in above example 3.7+0.1 = 3.8 when the plate thickness is 0.5mm instead of 0.4mm).

The GFP A-dimension is: (Plate thickness 0.8 mm)

GFP-057, 097, 187	0,8 mm	8.5 × number of plates
GFP-145, 205	0,8 mm	8.6 × number of plates

The GWP A-dimension is: (Plate thickness 0.5 mm)

GWP-081	0.5 mm	2.9 × number of plates
GWP-083	0.5 mm	2.9 × number of plates

The GCP A-dimension is:

GCP-008	0,4 mm	2,5 x number of plates
GCP-009	0,4 mm	2,9 x number of plates
GCP-012	0.6 mm	3.1 × number of plates
GCP-016	0.4 mm	2.25 × number of plates
GCP-026	0.5 mm	4.5 × number of plates
GCP-028	0.4 mm	2.45 × number of plates
GCP-030	0.6 mm	3.1 × number of plates
GCP-051	0.5 mm	4.5 x number of plates
GCP-052	0.5 mm	4.5 x number of plates
GCP-054	0.4 mm	2.1 x number of plates
GCP-060	0.5 mm	4.9 x number of plates

The GCD A-dimension is:

GCD-008	0,4 mm	2,5 x number of plates
GCD-009	0,4 mm	2,9 x number of plates
GCD-012	0.6 mm	3.1 × number of plates
GCD-016	0.4 mm	2.25 × number of plates
GCD-030	0.6 mm	3.1 × number of plates
GCD-044	0.5 mm	2.1 x number of plates
GCD-054	0.4 mm	2.1 x number of plates

The GXD A-dimension is:

GXD-007	0.5 mm	3.0 × number of plates
GXD-026/042	0.4 mm	3.7 × number of plates
GXD-051	0.5 mm	3.8 × number of plates
GXD-064, 091, 118	0.5 mm	3.4 × number of plates
GXD-060, 100, 140, 180	0.5 mm	3.8 × number of plates
GXD-085, 145, 205, 265, 325	0.5 mm	3.8 × number of plates

The GXP A-dimension is:

GXP-007	0.5 mm	3.0 × number of plates
GXP-026, 042	0.4 mm	3.7 × number of plates
GXP-051	0.5 mm	3.8 × number of plates
GXP-064, 091, 118	0.5 mm	3.4 × number of plates
GXP-060, 100, 140,	0.5 mm	3.8 x number of plates
180		
GXP-085, 145, 205,	0.5 mm	3.8 x number of plates
265, 325		

The GLD A-dimension is:

GLD-008	0.4 mm	2.5 x number of plates
GLD-013	0.4 mm	3.3 x number of plates
GLD-085, 145, 205,	0.5 mm	3.8 x number of plates
265, 325		
GLD-230, 240, 330,	0.5 mm	5.0 x number of plates
340, 430, 440		

The GLP A-dimension is:

GLP-008	0.4 mm	2.5 × number of plates	
GLP-009	0.4 mm	2.9 × number of plates	
GLP-013	0.4 mm	3.3 × number of plates	
GLP-085, 145, 205,	0.5 mm	3.8 x number of plates	
265, 325			
GLP-152, 218, 284	0.5mm	4.3 × number of plates	
GLP-230, 330, 430	0.5 mm	5.0 × number of plates	

NOTE:

With large plate packs the A-dimension, due to tolerances in the plate thickness and depth of pressing, can deviate somewhat from that given above by, $\pm 3\%$. With the correct A-dimension the plates lie in metallic contact with each other. Check this by examining the plate edges around the heat exchanger. Further compression can deform the plates. The nuts must be tightened alternately. The movable cover plate must always be moved parallel to the frame at all times, and not drawn out of alignment.

See Figure 25.

- Tighten bolts 2 alternately.
- As the resistance increases also tighten bolts 3 and 4 always alternately.
- Tighten bolts 1.
- Check the A-dimension along the heat exchanger.



WARNING! NEVER TIGHTEN THE EXCHANGER WHILE IT IS UNDER PRESSURE



Figure 25. Schematics of tightening the PHE.





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5.4.3 Lubrication

The tightening bolts must be kept lubricated with molybdenum disulphide or its equivalent, particularly on the sections of thread used for opening and closing the equipment.

6 SPARE PARTS

When ordering spare parts the heat exchanger type and serial number must be quoted. These are given on the unit's name plate.

7 CONTACTS

Visit our web, www.tranter.com for accurate information.

If you don't have access to the internet you may call our European head office:

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