

Measure the A-dimension (plate pack thickness) at several points around the plate pack. Compare with theoretical value.

Check that the covers are parallel and not drawn out of alignment.

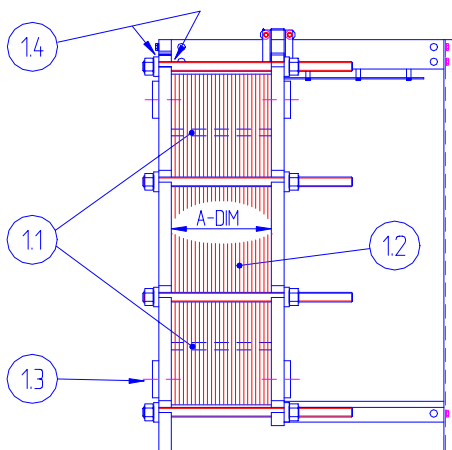
If a PHE is leaking, it is important to localize the leak before the unit is dismantled, otherwise it often becomes more difficult to rectify the problem.

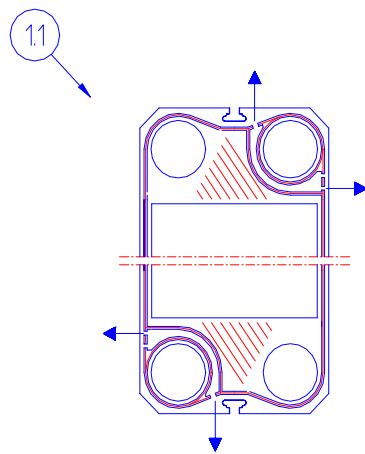
To rectify a minor leak, it may be sufficient to tighten the unit a bit further. Ensure that the plate pack is not tightened below the minimum A-dimension.

1. Localizing the leak

The unit should be inspected thoroughly on all sides including top and bottom of the plate pack. Pinpoint all leaks by counting the number of plates from a cover and by accurate measurements. If possible, connection ports that are not under pressure should be inspected for leaks.

There are, in principle, four different types of leaks:





1.1. Leakage through the leakage vent:

The most common reason for this type of leakage is gasket failure; either the ring or the diagonal gasket.

If the gaskets are in good condition and correctly located in the gasket grooves, check for possible corrosion in the areas between the ring and diagonal gasket by visual inspection or dye penetration.

1.2. If a leakage occurs over a gasket on the side of a plate pack at any position excluding the ones described in 1.1, the gasket and its correct location in the gasket groove should be inspected. The sealing surfaces (gasket & groove) must be free from dirt that may jeopardize the integrity of the seal.

1.3. If there is an internal leak in a plate heat exchanger, the reason is probably a hole/crack in a plate caused by corrosion or mechanical damage.

To localize this type of leak, it is necessary to disconnect one of the lower connections, pressurize the other side and observe where the drops come from.

Note that it may be necessary to switch sides to find the hole or crack.

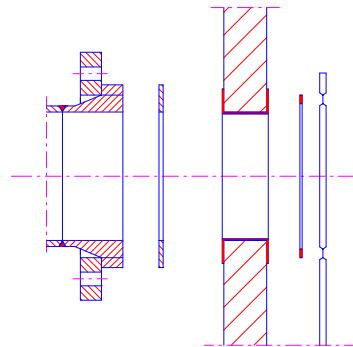
Measure the distance from the cover to the leak to determine which plates are suspected. Check these plates visually and by dye penetration.

For multi pass units, it may be necessary to remove turning plates to see through the whole plate pack from the connection.

1.4. If a leak occurs adjacent to a frame cover near a port, the reason could be:

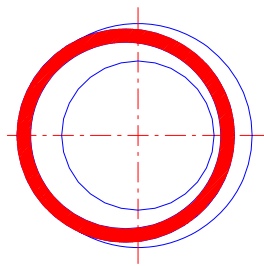
- Cracks in the metal liner results in leakage between the cover plate and the liner. If this occurs on the inside of the cover, it is often easy to see.

If it occurs on the outside of the cover, it can sometimes be difficult to see the difference between this and a leaking gasket for the connection flange.



- A leak at the cover inside can also be caused by the ring gasket on the first plate not sealing correctly to the liner.

If this is due to incorrect centering of the liner/ring gasket, it can be remedied by adjusting the carrying bar. In certain cases, it may be possible to adjust the liner somewhat by moving it sideways in the cover port hole.



2. Determining which liquid is leaking

If both liquids in the heat exchanger are the same, it is possible to determine which of the two liquids is leaking:

2.1 External leakage on the side of the exchanger:

If the unit is assembled according to TEMPCO standard, the liquid in the first channel (that is the channel formed by plate numbers 1 and 2) corresponds to connections 2 and 4.

Channel No	Corresponds to connection
Even	1 and 3
Odd	2 and 4

2.2 Leakage through the leakage vent:

If only one side of the exchanger is pressurized, and the leak occurs through the leakage vent, the following applies:



Pressurized connections	Leakage from channel with even no	Leakage from channel with odd no
1 and 3	Diagonal gasket failure	Ring gasket failure <u>or</u> hole in plate between ring and diagonal gasket
2 and 4	Ring gasket failure <u>or</u> hole in plate between ring and diagonal gasket	Diagonal gasket failure

3. Types of gaskets failures

3.1. Gaskets not located correctly in the gasket groove

3.2. Gasket crushed (split). This is caused by excessive deformation of the rubber material by, for example:

- excessive tightening of the plate pack
- swelling of the gasket material by chemical attack and/or high temperatures.
- gaskets squeezed between contact point due to incorrect location of the gasket in the groove.

Note: Certain types of elastomers are more sensitive to crush, especially peroxide cured qualities and fluorinated rubbers.

3.3. Gasket attacked chemically by the liquid. This can lead to the gasket being dissolved, swelled, hardened etc.

3.4. Gasket has lost its elasticity due to heat aging.