

Technical Information Crossflow Heat Exchangers

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Allowed pressure differences

The following maximum allowed pressure differences applies to the different heat exchangers:

- H200, H300, R, L, T and M: 700 Pa
- Type-H all other sizes: 1800 Pa
- Type-F all sizes: 800 Pa
- Type-P all sizes: 6800 Pa
- Type-Z all sizes: 4000 Pa

The above pressure differences are the maximum values the heat exchangers can manage without permanent deformation of the channels. The pressure drop in the channels will however be influenced by pressure differences below these values.

Influence of pressure difference on pressure loss in heat exchangers

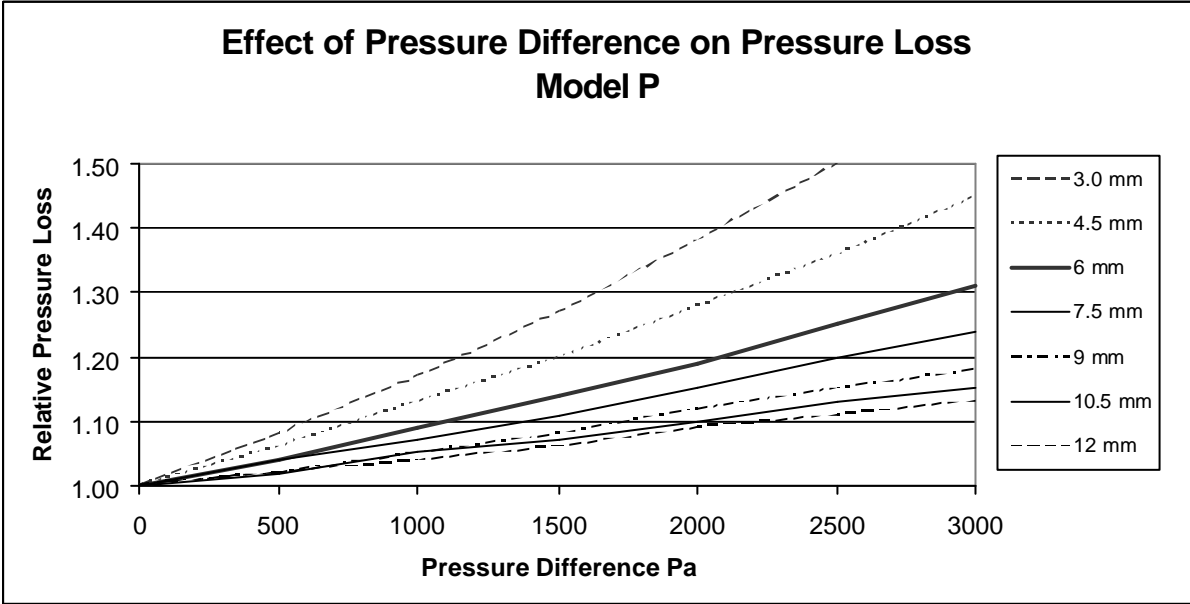
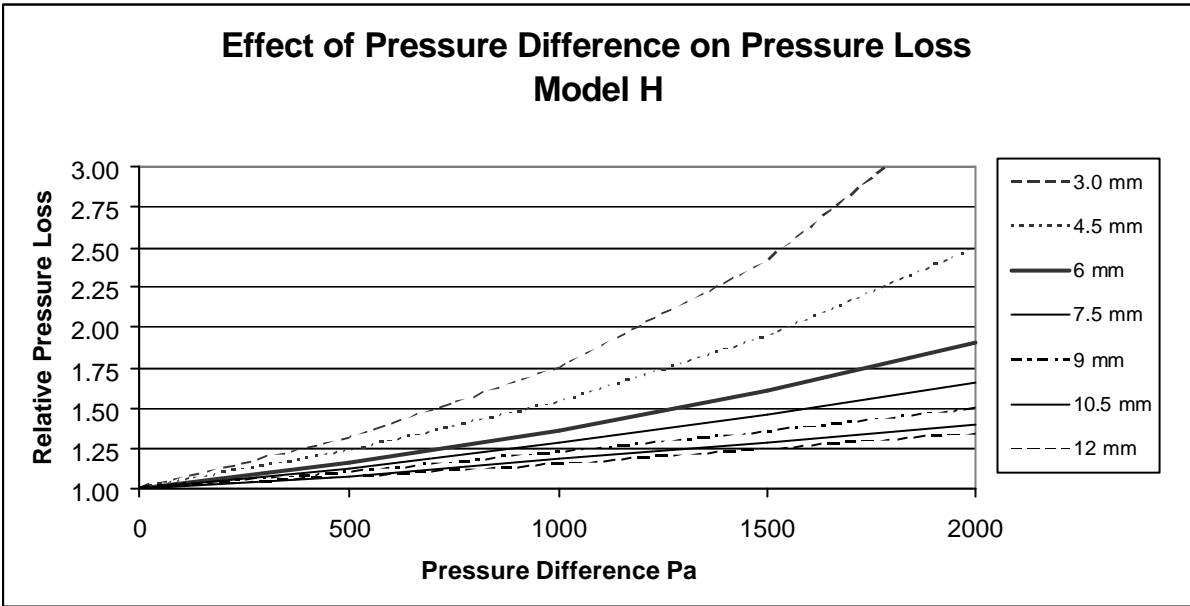
The pressure loss in a heat exchanger channel mainly depends on the air velocity in the channel and the channel geometry. If the plates (channel walls) in the heat exchanger is submitted to a differential pressure (i.e. the pressure is different in the exhaust and supply channels) then the plates will deflect. The amount of deflection will depend on plate material and material thickness, plate design, on how the plates are supported against each other and of course on the magnitude of the differential pressure.

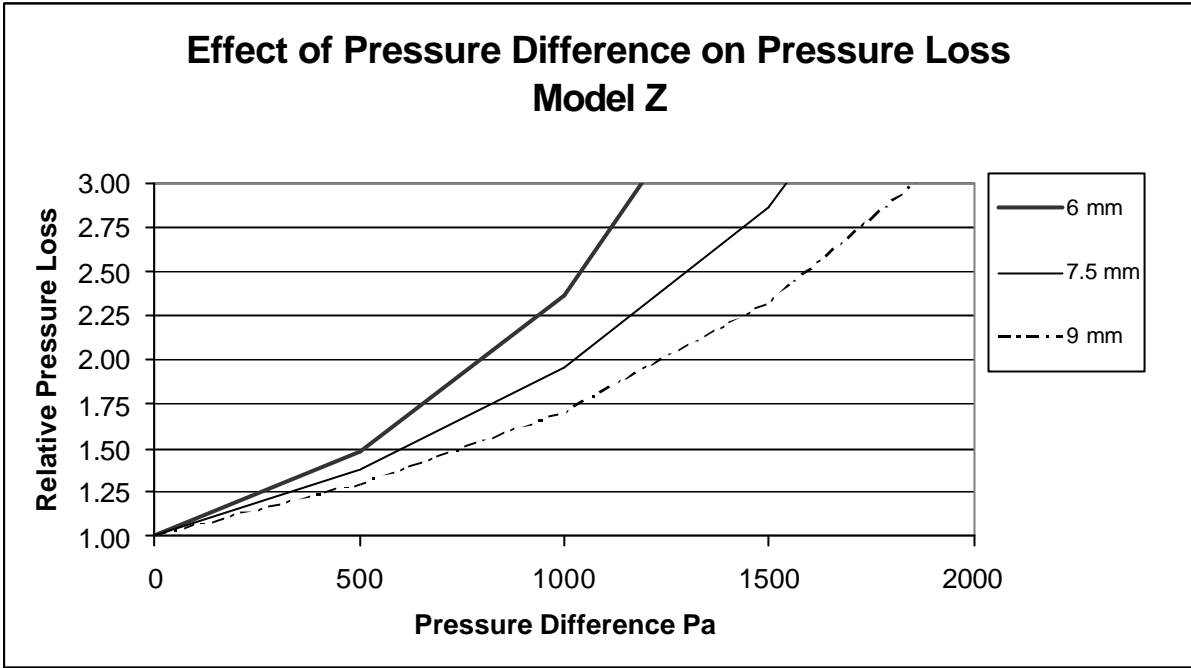


High pressure difference will affect the heat exchanger and must be taken in consideration .

When there is enough pressure difference for the plates to deflect, one channel will be narrower, and thus the pressure loss in that channel will increase, and the other channel will be wider with a lower pressure loss as a result.

With the diagram below the effect on the H-series (size 600 and larger), P-series and Z-series heat exchangers may be predicted. The diagrams are built on a few measures only, wherefrom general assumptions have been made. The diagrams are not to be understood as technically proven in detail, but gives a rough general idea of the impact of differential pressures.





The software calculation result shows pressure drop without consideration of any effects caused by differential pressure, as this may differ between different applications.

For normal applications with around 200 Pa differential pressure the effect appears to be only a few percent, and do not necessary need any further adjustments. However, at high differential pressures the calculated pressure drops should be adjusted.