

## General requirements:

Number of pipe penetrations per cabinet	2
max. cut-out cross-section per cabinet	1412mm <sup>2</sup>
max. pipe diameter (d)	28mm
max. hose diameter (d)	28mm
max. cable diameter (3x 1,5 <sup>2</sup> ) (d)	8mm
Pipe material	steel /stainless steel
max. pipe wall thickness	1mm
max. hose wall thickness	3mm

### Note!

A: Pipes and cables are installed in holes with their nominal diameters (d).

B: Hoses < Ø20mm are installed in holes with their nominal diameters (d).

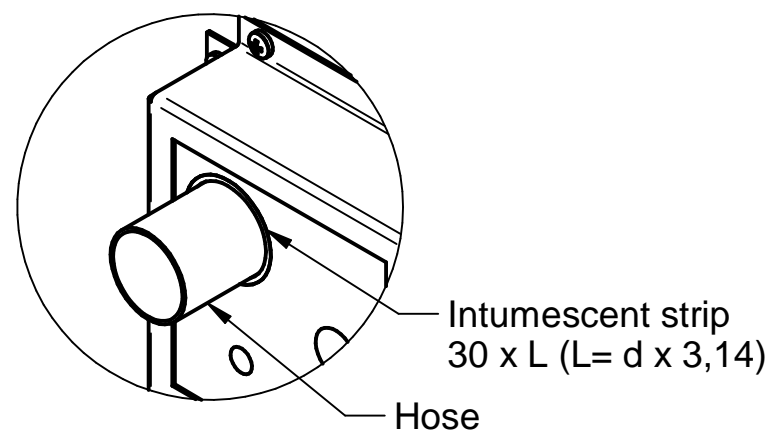
C: Hoses ≥ Ø20mm are wound continuously completely with a layer of intumescent strip (see Fig. 1). Drillhole diameter= nominal diameter (d) + 3,6mm.

D: Drillholes can be designed to the upper tolerance of the nominal diameter (d) or at most be rounded up to the next full millimetre. Gaps between the pipe/ hose/ cable and the insulation must be avoided.

E: Unused drillholes must be closed properly!

F: The minimum distance between the holes must be 15mm (see Fig.2).

Fig.1



Cross-section calculation:

$$A = \text{Cross-section area} = 3,14/4 \times d^2 \approx 0,785 \times d^2$$

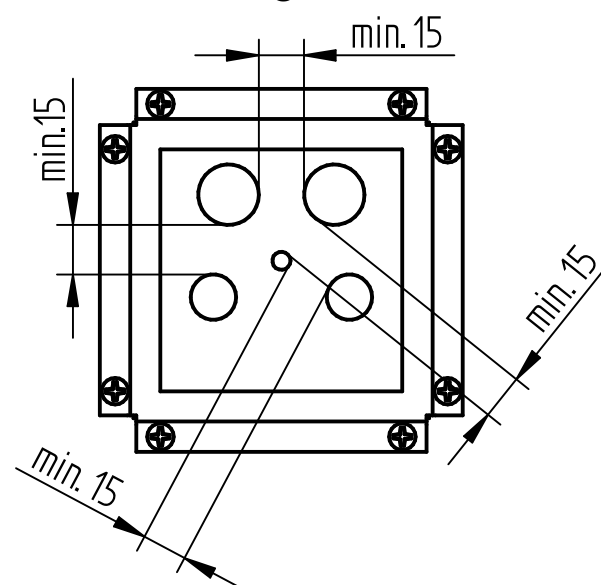
Example for assignment:

1x Ø20mm + 2x Ø15mm:

$$A = 1 \times 0,785 \times 20\text{mm}^2 + 2 \times 0,785 \times 15\text{mm}^2$$

$$A = 667,25\text{mm}^2$$

Fig.2



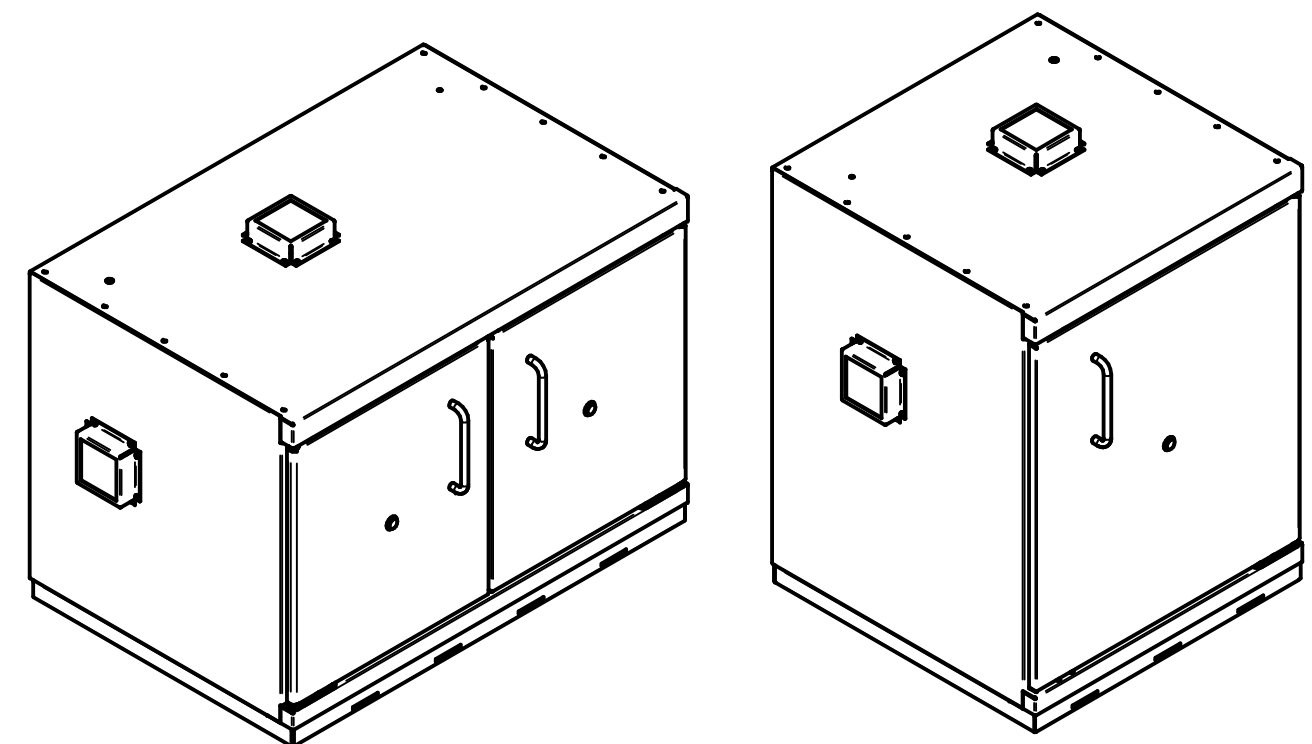
The drillhole must always be perpendicular to the attachment area.

The door locking must not have any negative effects, when attaching the pipe penetration!

The ventilation shafts (areas above and under the ventilation connections) must not be damaged, when attaching the pipe penetration on the rear panel.

The pipes/ hoses/ cables to be fed in must not block the doors!

The pipes/ hoses/ cables to be fed in must not block the inside valve flaps!



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UTS, BENCH

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