HL 720
Ventilation system

The illustration shows a similar unit.

Learning objectives/experiments

- design and operation of a ventilation system
- pressure measurements in the air duct
- determine the electric drive power of the fan
- determine the flow rate
- design and operation of components such as
  - protective grating
  - multi-leaf damper
  - filter
  - heat exchanger
  - fan
  - inspection cover
  - sound insulation link
  - ventilation grill with adjustable flow rate
  - fire protection flap
  - ceiling vents

Description

- **ventilation system with air handler**
- **high practical relevance due to the use of industrial components from ventilation technology**
- **representation of pressure curves**

In building services engineering ventilation systems are used for commercial premises, hospitals, restaurants or conference rooms to ensure the change of air exchange in the individual rooms. In real air handling units the air is heated or cooled by a heat exchanger and cleaned by filters, e.g. from pollen.

HL 720 demonstrates the operation of a ventilation system and its components. The components used are common in commercial ventilation technology and therefore are of high practical relevance. The ventilation system is operated as a pure air supply system.

The air enters via a weather louvre and flows through the components of the ventilation system, such as multi-leaf damper and filter. A fan ensures the air transport. Further down the air duct, typical components, such as sound insulation link, inspection flap, various air outlets and fire protection flap are arranged.

Sight windows enable an insight into the sound insulation link, filter and fan. The original component function remains intact.

The record of pressures and differential pressures at relevant measuring points enables the representation of a pressure curve for the whole system. The components act as in real ventilation systems as flow resistances. The electric drive power of the fan and the volumetric air flow rate are calculated.

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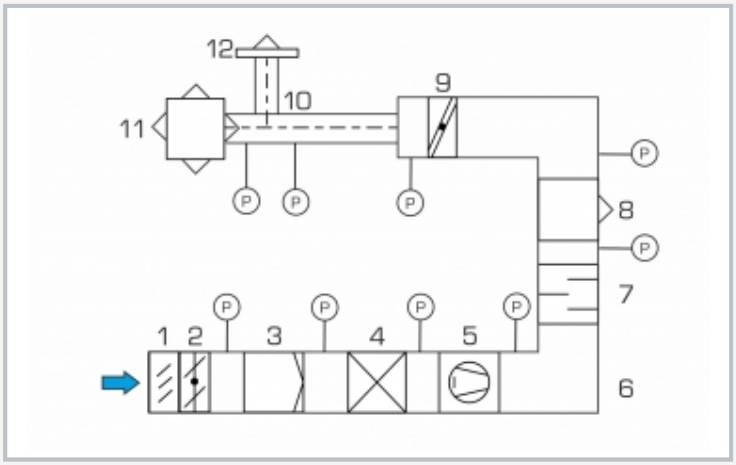
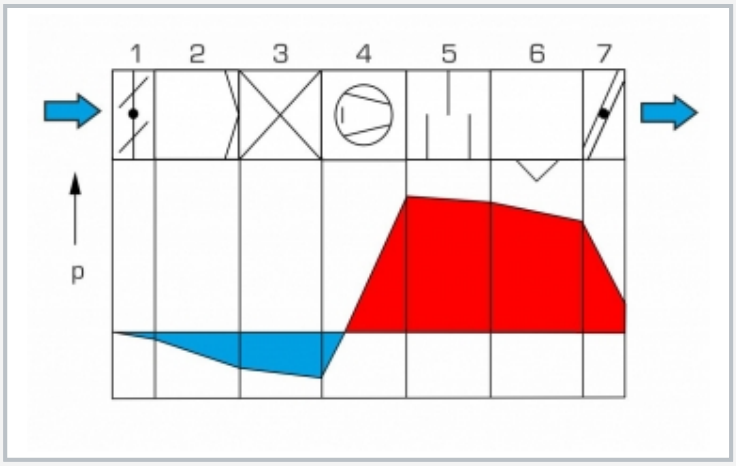
1 fire protection flap, 2 inclined tube manometer, 3 weather louvre, 4 multi-leaf damper, 5 filter, 6 heat exchanger, 7 fan with drive motor, 8 inspection cover, 9 air duct, 10 disc valve, 11 ceiling vent, 12 wall vent



1 weather louvre, 2 multi-leaf damper, 3 filter, 4 heat exchanger, 5 fan, 6 air duct, 7 sound insulation link, 8 wall vent, 9 fire protection flap, 10 branch, 11 air outlet for ceiling installations, 12 disc valve; P pressure



Pressure curve within the ventilation system: 1 multi-leaf damper, 2 filter, 3 heat exchanger, 4 fan, 5 sound insulation link, 6 wall vent, 7 fire protection flap;
red: overpressure, blue: vacuum

Specification

[1] design and operation of a ventilation system
[2] all components from ventilation technology, some with sight windows
[3] protective grating and adjustable multi-leaf damper at the air inlet
[4] filter for air purification
[5] belt-driven radial fan
[6] 2 sound insulation links
[7] various air outlets for air distribution in the room: disc valve, ceiling vent and ventilation grill with adjustable flow rate
[8] inspection cover for inspection purposes
[9] fire protection flap prevents the cross-over of fire and smoke in the air duct
[10] air duct with pressure measurement connections
[11] pressure measurements with inclined tube manometer
[12] current measurement to determine the power consumption of the fan
[13] determine the flow rate via differential pressure

Technical data

Air duct:
- 2 parts with WxH 630x305mm and 630x630mm

Fan
- max. flow rate: 2500m^3/h
- drive motor: 750W

Measuring ranges
- pressure: 0...7,5mbar
- current: 0...4A

400V, 50Hz, 3 phases
400V, 60Hz, 3 phases; 230V, 60Hz, 3 phases
UL/CSA optional
LxWxH: 1960x900x2000mm
Weight: approx. 263kg

Scope of delivery

1 experimental plant
1 set of instructional material

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Optional accessories

065.72200	HL 722	Control unit for ventilation system