

HM 300

Hydraulic circuit with centrifugal pump



Description

- measurement of pressure conditions in valves and fittings and a pump
- measurement of the flow rate
- clearly arranged pump circuit

Hydraulic circuits are designed according to their task and their area of application. Designing hydraulic circuits requires knowledge of flow behaviour and pressure losses in valves and fittings, as well as characteristics of the pump. A hydraulic circuit can be compared to an electrical circuit. This analogy can be made evident in the HM 300 experimental unit.

The HM 300 experimental unit includes a centrifugal pump, a rotameter, a diaphragm valve, a water tank and various other valves and fittings. After filling the system once the experimental unit can be operated independently from the water supply.

The flow is adjusted by valves and read off a rotameter. The pressure measuring points in the pipe system are designed as annular chambers. This creates a largely interference-free pressure measurement. Also supplied is an electronic pressure meter for differential pressure measurement. The pressure measurement points are connected in pairs to the pressure meter and the respective differential pressure read off the display.

Learning objectives/experiments

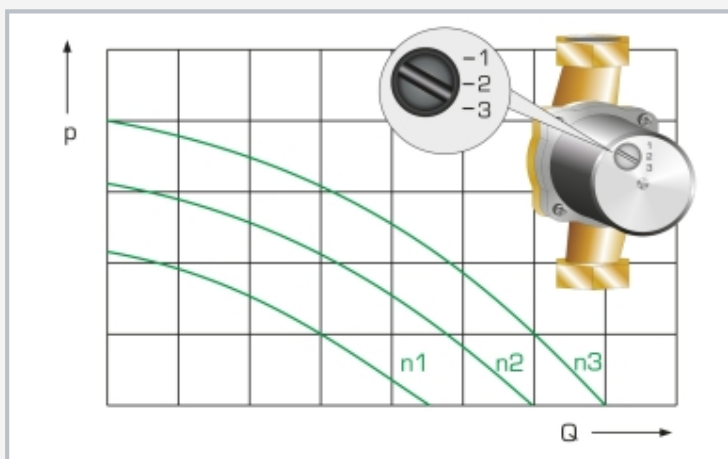
- recording the pump characteristic
- pressure losses at various valves and fittings depending on the flow
- determination of the operating point in a hydrostatic circuit

HM 300

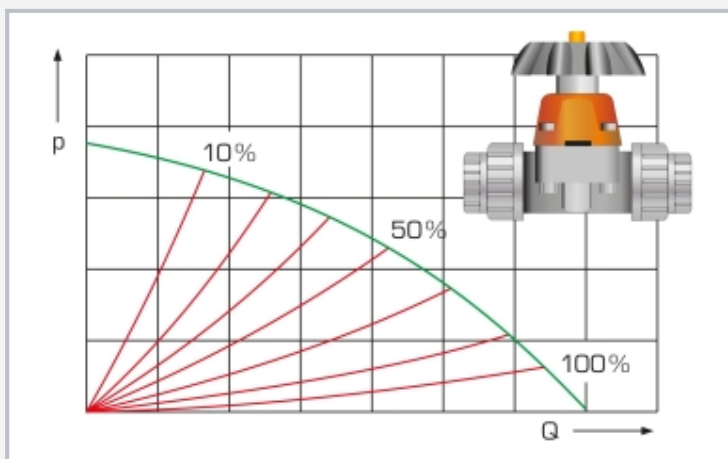
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1 flow meter, 2 pressure meter, 3 pump, 4 tank, 5 valve for throttling, 6 diaphragm valve, 7 pressure measuring points



Characteristics of the pump at different speeds: n speed, p pressure, Q flow rate



Characteristics of the valve at different degrees of openness up to 100%: p pressure, Q flow rate

Specification

- [1] pressure conditions at various measuring objects
- [2] measuring objects: pump, flow meter, diaphragm valve
- [3] centrifugal pump with 3 different speeds
- [4] closed water circuit
- [5] flow can be adjusted via valves
- [6] flow measurement using rotameter
- [7] annular chambers allow easy measurement of pressure
- [8] differential pressure measurement using electronic pressure meter

Technical data

Tank

- volume: 8,5L

Pump:

- max. power consumption: 44W
- max. flow rate: 2,8m³/h
- max. head: 4m
- three switching stages for speed selection

Measuring ranges

- flow rate: 150...1600L/h
- differential pressure: ±350mbar

230V, 50Hz, 1 phase

230V, 60Hz, 1 phase; 120V, 60Hz, 1 phase

UL/CSA optional

LxWxH: 1000x610x1100mm

Weight: approx. 55kg

Scope of delivery

- 1 experimental unit
- 1 pressure meter
- 1 set of instructional material

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Optional accessories

WP 300.09

Laboratory trolley