

# HM 365.14

## Centrifugal pumps, series and parallel connected



### Description

- operating behaviour of two pumps in series or parallel connection
- part of the GUNT FEMLine

In complex systems, pumps can be connected in series or in parallel. In series operation, the heads are added, and in parallel operation the flow rates of the pumps are added. The series and parallel configuration of pumps is very well suited to understand the similarities with an electric circuit.

HM 365.14 is equipped with two standard centrifugal pumps that are delivered ready for installation, mounted on a plate. The centrifugal pumps are installed in the supply unit HM 365.10 with just a few simple steps, connected via hoses with quick-release couplings, and attached with clamping levers. To power the pumps, they are connected to the drive unit HM 365 with a V-belt.

The pressures at the inlet and outlet of the centrifugal pumps are recorded with sensors. The measured values are read from digital displays on the supply unit and can be transmitted simultaneously via USB directly to a PC, where they can be analysed using the included software.

### Learning objectives/experiments

- in combination with HM 365 and HM 365.10
  - ▶ recording of pump characteristics
  - ▶ determination of the power requirement and the hydraulic power in series or parallel connection
  - ▶ determination of the pump efficiency
  - ▶ determination of the system characteristics and the operating point for both cases

### Specification

- [1] examination of standard centrifugal pumps
- [2] operation with HM 365.10 Supply unit for water pumps
- [3] powered by HM 365 Universal drive and brake unit
- [4] pressure sensors at the inlet and outlet of the pumps
- [5] pressure display on the display unit of HM 365.10

### Technical data

- Standard centrifugal pump
- max. flow rate: 20m<sup>3</sup>/h
  - max. head: 23m
  - nominal speed: 2900min<sup>-1</sup>

LxWxH: 540x840x510mm  
Weight: approx. 97kg

### Scope of delivery

- 2 centrifugal pumps
- 1 set of tools

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Required accessories

HM 365	Universal drive and brake unit
HM 365.10	Supply unit for water pumps