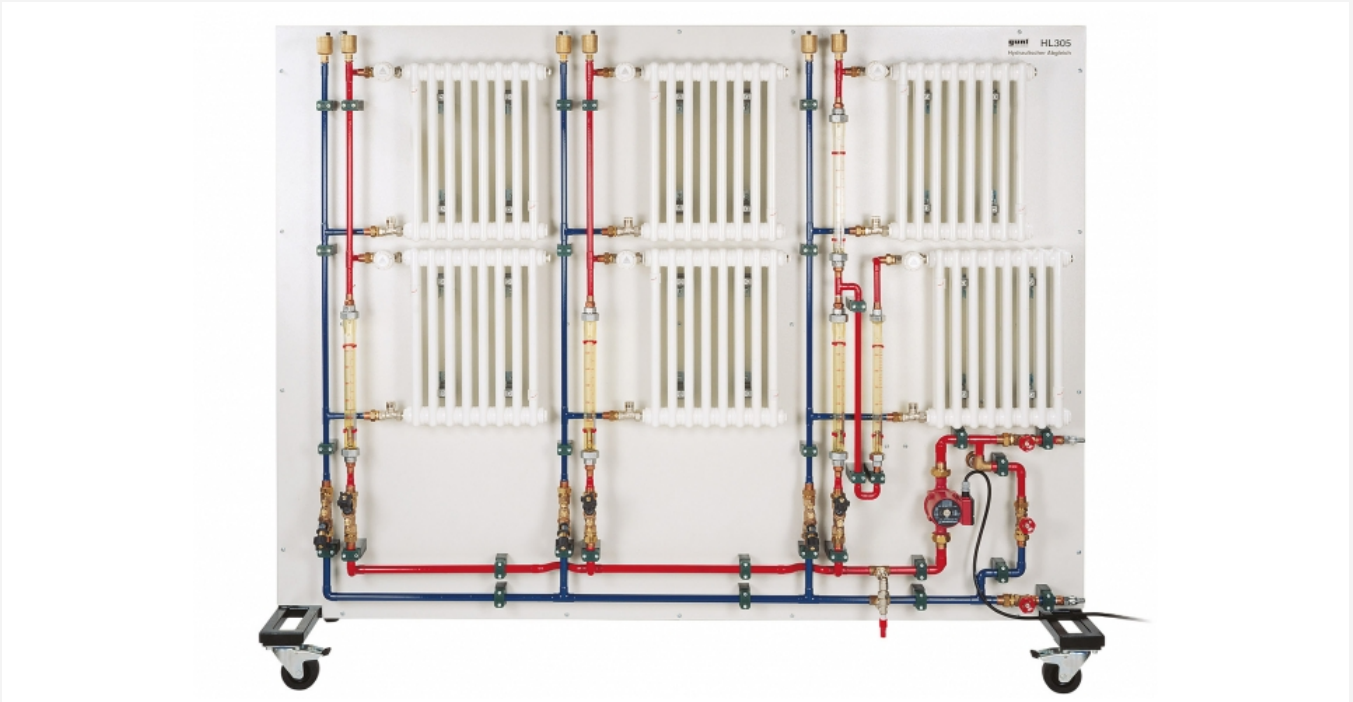


HL 305

Hydronic balancing of radiators



Description

- balancing of a heating system
- water connections made using quick-release couplings

Hydronic balancing is used to limit the amount of water which is calculated for each radiator. Balancing ensures that all radiators can be supplied with hot water at all operating points according to their thermal requirement. The balancing is performed using adjustable lockshield valves.

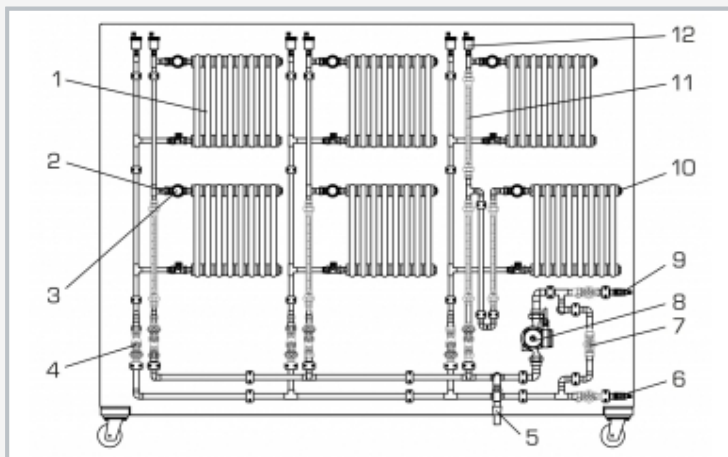
The trainer uses commercially available components to implement three heating subcircuits with radiators, thermostatic valves and a circulating pump. All three subcircuits can be shut-off individually. Once filled, the system is independent of the water mains or feed flow and return flow pipe connections. However, it can be operated in conjunction with a heating circuit.

Learning objectives/experiments

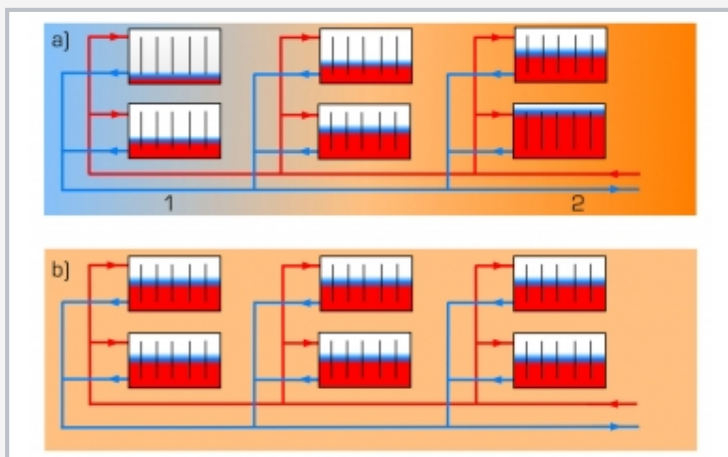
- variable pipework resistance
- balancing valve
- preset thermostatic valve
- differential pressure relief valve

HL 305

Hydronic balancing of radiators



1 radiator, 2 thermostatic valve, 3 sensor, 4 balancing valve, 5 differential pressure over-flow valve, 6 water connection return flow, 7 gate valve, 8 pump, 9 water connection feed flow, 10 bleed valve for radiator, 11 rotameter, 12 automatic air vent



a) distribution of temperature in radiators without hydronic balancing:
1: rooms are too cold, 2: rooms are too warm;
b) distribution of temperature in radiators with hydronic balancing results in equal distribution of temperature in rooms;
red: feed flow, blue: return flow

Specification

- [1] trainer for heating and plumbing
- [2] 6 radiators with thermostatic valve, bleed valve and adjustable lockshield valve
- [3] expansion vessel, safety group according to DIN 4751, overflow valve
- [4] 5 rotameters
- [5] 1 surface thermometer for temperature measurement at radiator inlets and outlets
- [6] water connections using quick-release couplings, diameter inside 13mm, for optional connection to an external heating circuit

Technical data

Pump

- power consumption: 60W
- max. flow rate: 60L/min
- max. head: 4m

6 balancing valves: PN 16

Measuring ranges

- flow rate: 1x 30...320L/h, 4x 50...640L/h
- temperature: 1x -50...300°C

230V, 50Hz, 1 phase
230V, 60Hz, 1 phase
LxWxH: 2250x750x1790mm
Weight: approx. 210kg

Scope of delivery

- 1 trainer
- 1 thermometer
- 1 manual