

HL 392C

Safety & control in heating systems



Description

■ trainer for the investigation of heating system safety fittings with data acquisition

Using the trainer various safety and control devices can be investigated and evaluated. Typical industrial components are used.

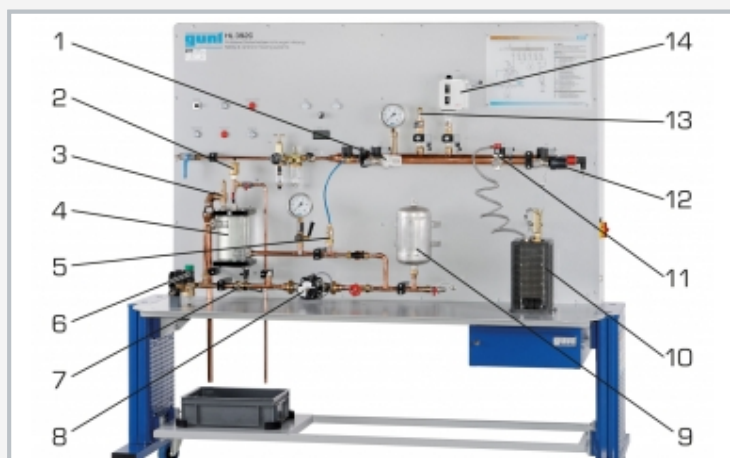
The measured values are transmitted directly to a PC via USB where they can be analysed using the software included, e.g. representation of the data in diagrams.

Learning objectives/experiments

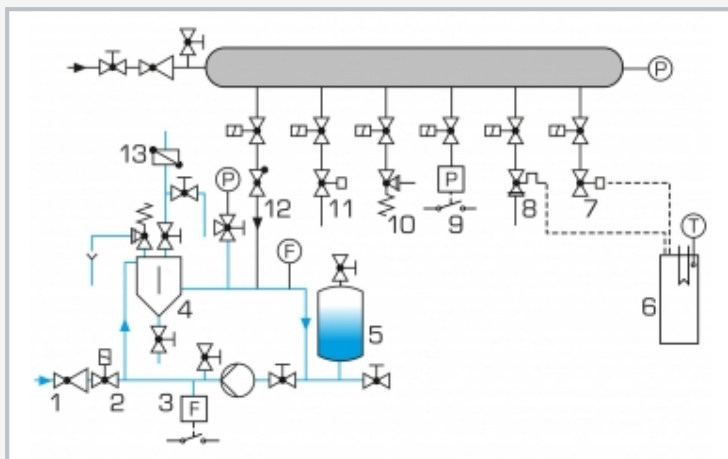
- function and operating behaviour of
 - ▶ safety valve
 - ▶ quick-action ventilating valve
 - ▶ safety pressure cut-out
 - ▶ thermal discharge safety device
 - ▶ thermostatic valve
 - ▶ temperature controller
 - ▶ air separator
 - ▶ flow switch

HL 392C

Safety & control in heating systems



1 thermostatic valve, 2 quick-action ventilating valve, 3 safety valve, 4 air separator, 5 non-return valve, 6 pressure reducing valve, 7 flow switch, 8 pump, 9 expansion vessel, 10 heater, 11 thermal discharge safety device, 12 temperature controller, 13 safety pressure cut-out, 14 safety pressure cut-out



process schematic: 1 pressure reducing valve, 2 solenoid valve, 3 flow switch, 4 air separator, 5 expansion vessel, 6 heater, 7 temperature controller, 8 thermal discharge safety device, 9 safety pressure cut-out, 10 safety valve, 11 thermostatic valve, 12 non-return valve, 13 quick-action ventilating valve; T temperature, P pressure, F flow; blue: water circuit, grey: compressed air

Specification

- [1] investigation of heating safety fittings
- [2] demonstration of the function of safety fittings using compressed air: thermostatic valve, safety pressure cut-out, safety valve, temperature controller, thermal discharge safety device
- [3] demonstration of the function of safety fittings in a closed water circuit with circulating pump and expansion vessel: air separator, quick-action ventilating valve, safety valve, flow switch, pressure reducing valve
- [4] electrical heater for thermal safety fittings: temperature controller, thermal discharge safety device
- [5] GUNT software for data acquisition via USB under Windows 8.1, 10

Technical data

Thermal discharge safety device

- actuated at: 98°C

Temperature controller: 70...100°C

Safety pressure cut-out: 1...10bar, adjustable

Safety valve: 2,4bar

Flow switch: 7,7...13,4L/min (increasing flow rate)

Pressure reducing valve: 1,5...6bar

Heater: 800W

Pump

- power consumption: 70W
- max. flow rate: 60L/min
- max. head: 4m

Measuring ranges

- flow rate: 1...25L/min
- temperature: 0...160°C
- pressure: 2x 0...10bar

230V, 50Hz, 1 phase

230V, 60Hz, 1 phase; 230V, 60Hz, 3 phases

UL/CSA optional

LxWxH: 2010x820x1890mm

Weight: approx. 210kg

Required for operation

compressed air: 3bar

water connection, drain

PC with Windows

Scope of delivery

- 1 trainer
- 1 collecting tank
- 1 set of accessories
- 1 GUNT software + USB cable
- 1 manual