

HL 353

Hot water generator



Description

- **setup of a complete domestic heating system together with HL 353.01 and/or HL 353.02**
- **boiler with oil burner, oil tank and burner control**
- **design with high practical relevance by using commercially available heating technology components**

The hot water generator HL 353 is the supply unit for the trainers HL 353.01 and HL 353.02. A complete domestic heating system can be set up together with HL 353.01 and/or HL 353.02. All components are commercially available and have a high practical relevance.

The boiler together with oil burner, burner control and necessary safety devices is the main element of the supply unit. An oil tank with pump and safety fittings provides fuel. The trainers HL 353.01 and/or HL 353.02 are connected by quick-release couplings to the feed and return flow connectors. A circulating pump in the feed flow supplies the connected trainers with hot water.

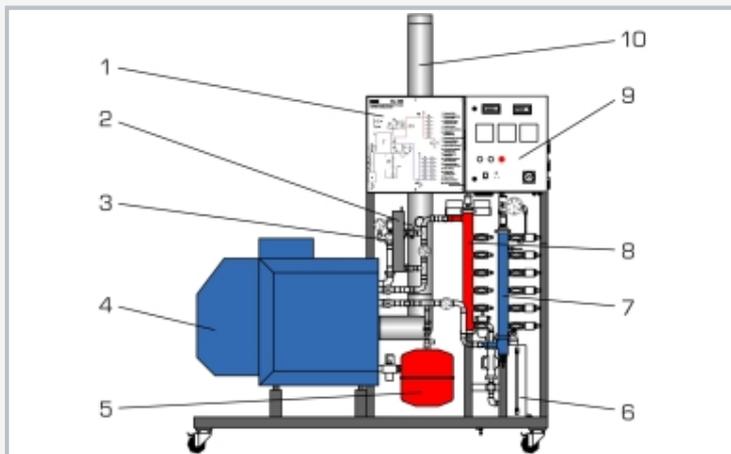
Dial thermometers are mounted at different points on the supply unit. The piping system contains several measuring points. Temperatures can be measured using two sensors; pressures for determining the differential pressure can be measured using a manometer at these measuring points.

Learning objectives/experiments

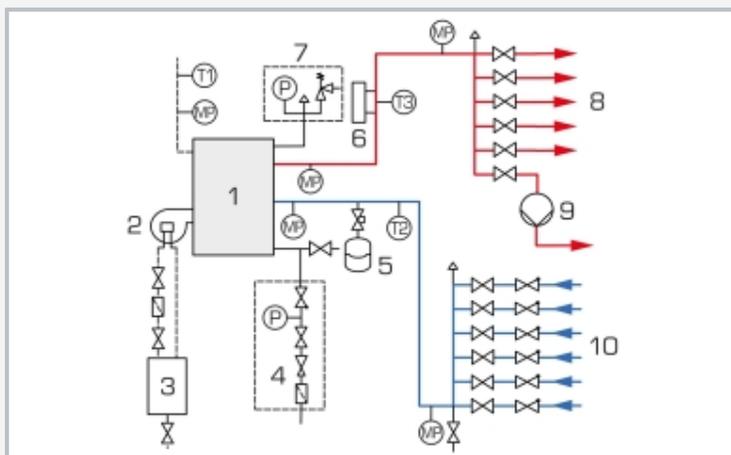
- setup of a hot water heating system for room heating
- function and design of commercially available components
- boiler with oil burner, burner control and safety devices
- measurement of differential pressures and temperatures
- together with HL 353.01 and/or HL 353.02
 - ▶ setup of a complete heating system: operation, function, control, energetic evaluation and calculation of emitted heating capacity
 - ▶ reading and comprehension of symbols and process schematics

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1 process schematic, 2 low water-level switch, 3 boiler safety group, 4 boiler with oil burner, 5 expansion vessel, 6 oil tank, 7 return flow, 8 feed flow, 9 switch cabinet with displays and controls, 10 exhaust pipe



1 boiler, 2 burner, 3 oil tank, 4 boiler filling device, 5 expansion vessel, 6 low water-level switch, 7 boiler safety group, 8 feed flow distributor, 9 circulating pump (feed flow), 10 return flow distributor; T1-T3 dial-gauge thermometer, MP measuring point for pressure or temperature



Complete heating system consisting of HL 353 and HL 353.02 distribution and control in heating systems

Specification

- [1] hot water generation for room heating
- [2] together with HL 353.01 and/or HL 353.02: setup of a complete domestic heating system
- [3] boiler with oil burner, boiler safety group, low water-level switch and circulating pump in feed flow
- [4] oil tank with pump and safety fittings
- [5] 3 dial-gauge thermometers
- [6] 2 temperature sensors and 1 differential pressure manometer for measurement of temperature and pressure at different measuring points
- [7] hot water connections with quick-release couplings

Technical data

Boiler

- heating capacity: 17...21kW
- max. water temperature: 75°C
- water content: 50L
- max. operating pressure: 3bar

Boiler safety group according to DIN 4751

- 2,5bar
- 50kW

Expansion vessel

- capacity: 12L
- max. pressure: 3bar

Circulating pump, feed flow

- max. power consumption: 60W
- max. flow rate: 3600L/h
- max. head: 4m

Oil tank: 36L

Measuring ranges

- temperature: 1x 0...300°C, 4x 0...100°C
- differential pressure: 0...2,5bar

230V, 50Hz, 1 phase

LxWxH: 1950x750x2400mm

Weight: approx. 255kg

Required for operation

exhaust gas routing (DN 130)
water connection, drain

Scope of delivery

- 1 trainer
- 1 manual

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Required accessories

- HL 353.01 Comparison of different heating types
- HL 353.02 Heat distribution and control in heating systems

Optional accessories

- HL 860 Exhaust gas analyser