

## RT 450.03

### Controlled system module: pressure



#### Learning objectives/experiments

- planning, setting up, testing, optimising and assessing pressure control loops with different objectives and components
  - ▶ constructing a 1<sup>st</sup> order pressure control system
  - ▶ constructing a 2<sup>nd</sup> order pressure control system
- design and function of different instrumentation and control components
- technical terminology and symbols in industrial control engineering
- practical exercises: Implementing process and signal lines
- commissioning and troubleshooting of process engineering systems

#### Description

- main element in constructing a pressure control loop
- rapid installation into the RT 450 base module by modular panel assembly

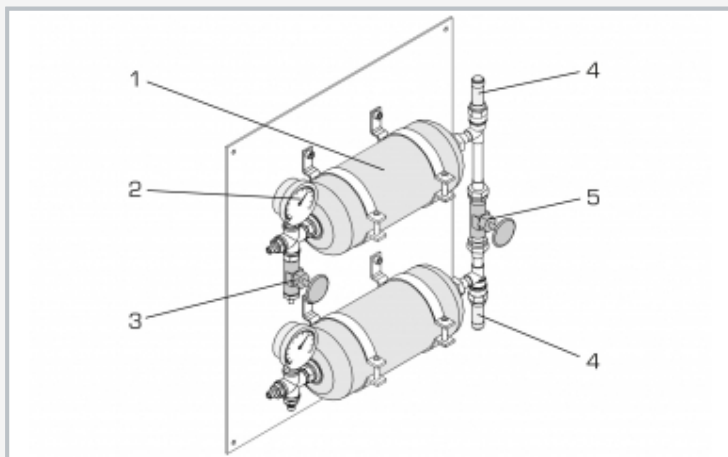
The RT 450.03 controlled system module is a panel-mounted ready-to-install element. In conjunction with other modular control components, it enables pressure control systems with different characteristic features to be constructed and investigated.

The panel is mounted on the frame of the base module RT 450. RT 450.03 consists of two steel pressure tanks and is operated with compressed air as the working medium. Each tank is fitted with a manometer and a safety valve. One tank also has a drain valve. Both tanks can be fitted with a pressure sensor. The tanks are interconnected by a vent valve and can therefore be connected in series. This makes it possible to represent both first and second order pressure control systems.

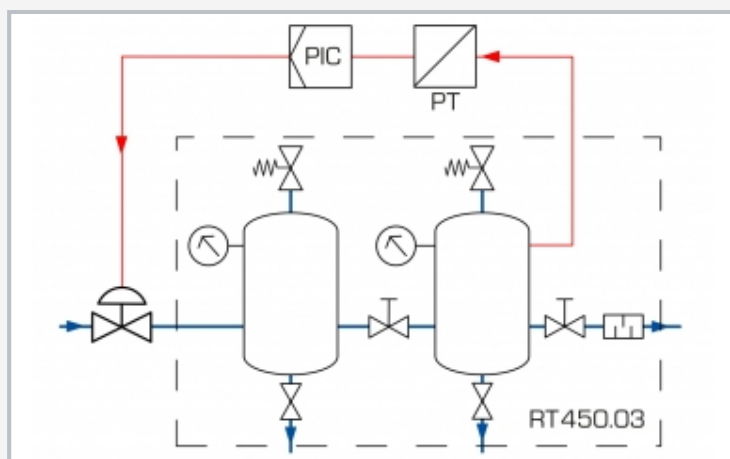
The RT 450 base module supplies the controlled system module with its working compressed air. Pneumatic hoses with quick-release couplings connect all the modules to a pressure control loop.

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1 pressure tank, 2 manometer, 3 drain valve, 4 safety valve, 5 vent valve



Process schematic



The illustration shows the layout of a pressure control system. In addition to the base module RT 450, it includes the following components:  
 RT 450.03 (controlled system module: pressure), RT 450.10 (controller), RT 450.12 (recorder), RT 450.20 (control valve) and RT 450.30 (pressure sensor).

### Specification

- [1] construction of a pressure control loop (in conjunction with other modules of the RT 450 series)
- [2] ready-to-install compact panel assembly
- [3] 2 pressure tanks with safety valves
- [4] direct pressure indication by 2 manometers
- [5] valve permits series configuration of both pressure tanks
- [6] series configuration of pressure tanks: investigation of coupled controlled system response compared to single-tank operation
- [7] 2 valves: 1x drain, 1x vent
- [8] copper piping
- [9] compressed air as working medium, supply via base module RT 450

### Technical data

Pressure tank

- capacity: 3L
- operating pressure: max. 6bar
- manometer: 0...10bar

Safety valve: adjustable to max. 10bar

LxWxH: 510x175x600mm

Weight: approx. 15kg

### Scope of delivery

- 2 pressure tanks mounted on panel, complete with valves and manometers

## RT 450.03

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#### Required accessories

080.45000	RT 450	Process Automation Training System: Base Module
Control with pneumatically driven control valve		
080.45020	RT 450.20	Control valve, pneumatically driven, Kvs 0,4
080.45010	RT 450.10	Continuous controller module
or		
080.45042	RT 450.42	PLC module with software
Control with electrically driven control valve		
080.45023	RT 450.23	Control valve, electrically driven, Kvs 0,4
080.45011	RT 450.11	Switching controller module
or		
080.45042	RT 450.42	PLC module with software
Sensor		
080.45030	RT 450.30	Pressure sensor, 0...6bar

#### Optional accessories

080.45014	RT 450.14	Software for controller configuration
080.45012	RT 450.12	Chart recorder module
080.45013	RT 450.13	Digital display
080.45040	RT 450.40	Visualisation software
with		
080.45041	RT 450.41	Profibus DP module for controller
or		
080.45043	RT 450.43	Profibus DP module for PLC