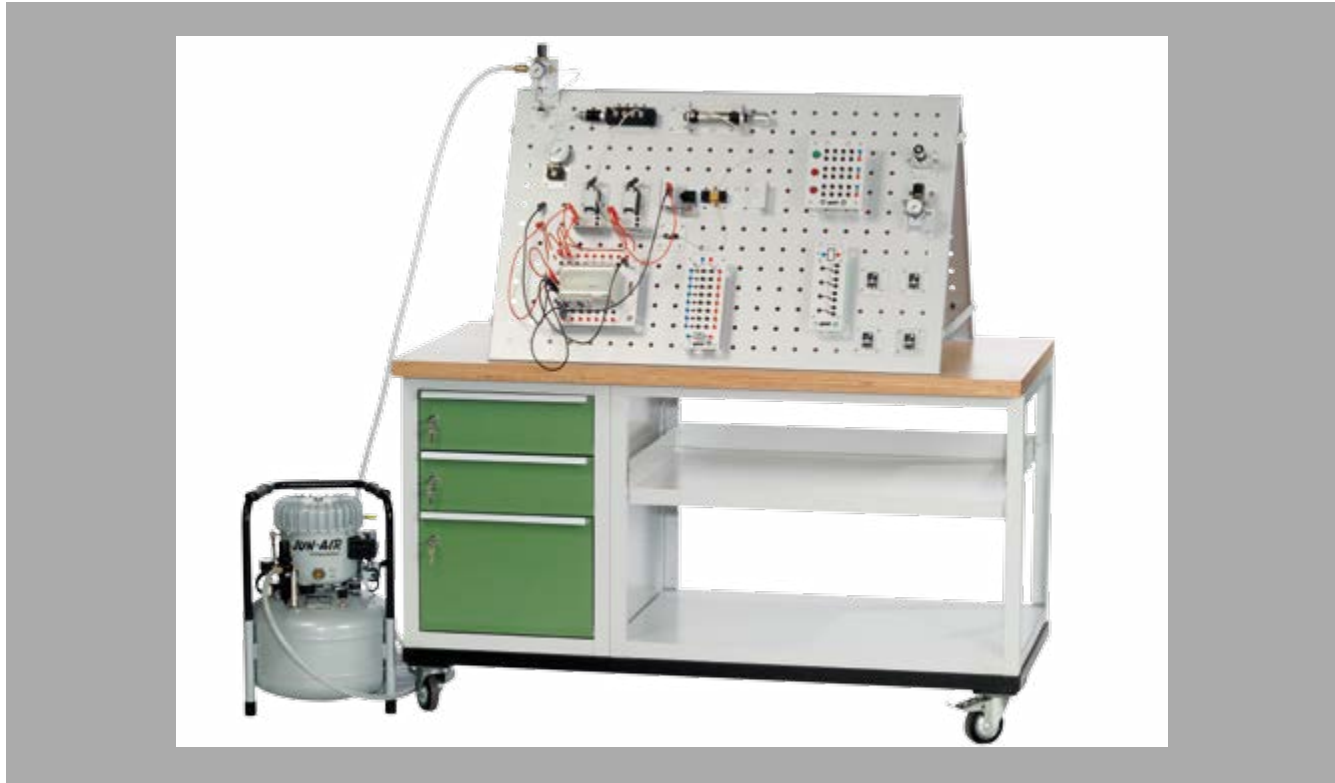


RT 770
Training System: Pneumatics, Electro-Pneumatics and PLC



- * Complete training system providing an experimental introduction to the fundamentals of pneumatics and electro-pneumatics - with PLC
- * Experiment scope and configuration based on the tried and proven concept course developed by the Bundesinstitut für Berufsbildung (BIBB; Federal Institute for Vocational Training)
- * 2 large-format metal assembly panels for fast, secure component mounting
- * Sturdy base construction, mobile, with drawer system for storage

Technical Description

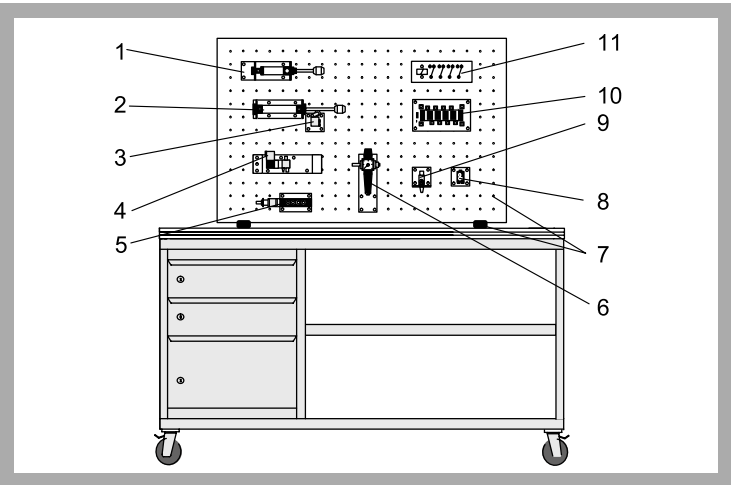
The RT 770 is a fully equipped training system with all necessary components and aids to conduct a comprehensive training course in the fundamentals of pneumatic and electro-pneumatic controls. The didactic structure of the course is based on the long-established BIBB training concept. In addition to the BIBB course experiments, RT 770 also includes a PLC (programmable logic controller).

The system comprises standard industrial components. The board-mounted components are securely attached to the assembly panels by a special quick-clamping system. The assembly area consists of two panels that are arranged in a roof-like configuration and can be used simultaneously. Pneumatic and electro-pneumatic circuits are constructed with the aid of pneumatic hoses and laboratory cables. A miniature compressor supplies the experiments with compressed air. The sturdy trolley provides clearly laid out storage for the components. An extensive package of literature and media is supplied.

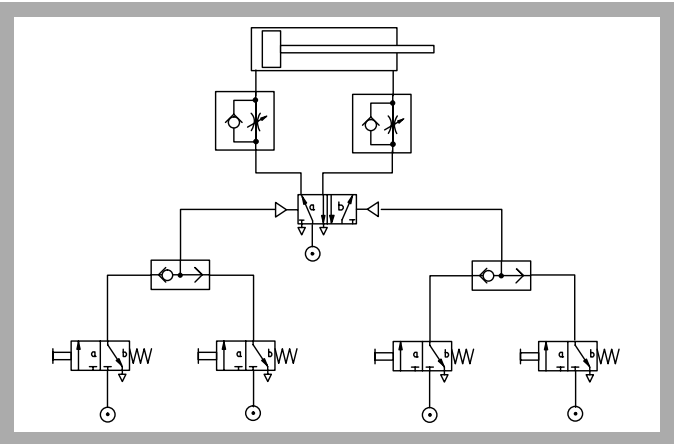
Learning Objectives / Experiments

- physical principles of pneumatics and electro-pneumatics
- fundamentals of, and terms used in, process control
- design and function of pneumatic components
- logic elements, logic diagram
- multi-way valves, pressure, shut-off and flow control valves
- controls with starting and setup conditions (automatic/manual/jog mode)
- controls with boundary conditions
- routing and time controls (process and time controlled sequencers)
- position-dependent controls
- troubleshooting and commissioning

RT 770
Training System: Pneumatics, Electro-Pneumatics and PLC



1 cylinder, single-acting, 2 cylinder, double-acting, 3 3/2-way valve with roller lever, 4 3/2-way valve, 5 distributor block with hand valve, 6 maintenance unit, 7 assembly panel, 8 dual pressure valve (AND gate), 9 quick-vent valve, 10 sequencer, 11 relay board



Circuit diagram of experimental setup for logical OR element



Relay board

Specification

- [1] comprehensive trainer for demonstration and exercises in pneumatics, electro-pneumatics and PLCs
- [2] 2 perforated metal panels for quick component fixing
- [3] standard industrial pneumatic and electro-pneumatic components
- [4] various multi-way valves, pressure, shut-off and flow control valves
- [5] electric limit switch, various proximity switches, solenoid valves, signal board
- [6] PLC with programming software
- [7] integrated power supply unit to supply the electro-pneumatics and the PLC
- [8] 2x maintenance units + distributor block for simultaneous use of both panels
- [9] hoses, cables and tools to construct the experiments
- [10] miniature compressor for compressed air supply

Technical Data

- 2 assembly panels, LxH: 1100x700mm each
- Compressor
 - tank: 24L
 - intake capacity: 50L/min
 - power output: 32L/min at 8bar
 - max. pressure: 8bar
 - motor: 0,34kW
- PLC with display
 - inputs: 8
 - outputs: 4
 - EEPROM
 - programming software
- Size of components: nominal width 3
- Pneumatic hose: 4/2mm
- Power supply unit: 24VDC, 4A

Dimensions and Weight

- LxWxH: 1530x750x1540mm
- Weight: approx. 160kg

Required for Operation

- 230V, 50/60Hz, 1 phase or 120V, 60Hz, 1 phase

Scope of Delivery

- 1 training system, complete
- 1 miniature compressor
- 1 PLC with software
- 1 set of instructional material

Order Details

080.77000 RT 770 Training System: Pneumatics, Electro-Pneumatics and PLC

RT 700 Training System: Fundamentals of Hydraulics



- * Complete training system providing an experimental introduction to the fundamentals of hydraulics
- * Experimental scope and configuration based on the tried and proven concept course developed by the Bundesinstitut für Berufsbildung (BIBB; Federal Institute for Vocational Training)
- * Large-format metal assembly panel for quick and safe component mounting
- * Solid base construction with oil drip tray, hydraulic unit and component storage system

Technical Description

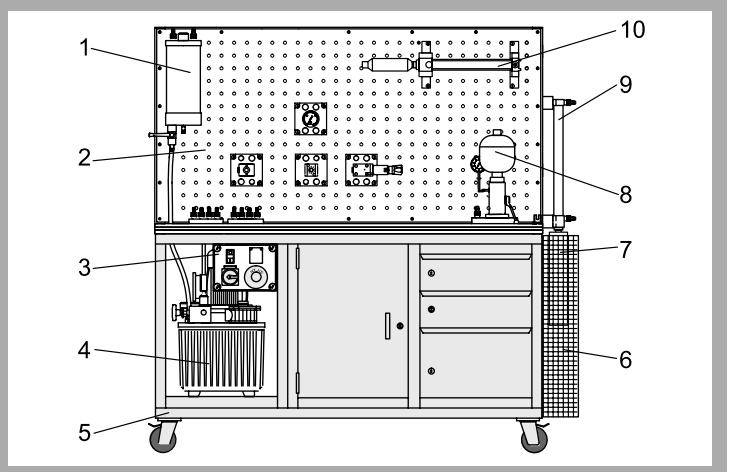
RT 700 is a fully equipped training system with all necessary components and aids to conduct a comprehensive training course in the fundamentals of hydraulic controls. The didactic structure of the course is based on the long-established BIBB concept of training in hydraulic drive engineering.

The central element of the unit is the large assembly panel. Here, two different circuits can be easily constructed using items from the kit of modern standard industrial components and connecting hoses. A special quick-clamping system ensures all components are securely attached. The component connections face outward to allow easy interconnection by means of quick-couplers. An oil drip tray is positioned beneath the full width of the assembly panel. The sturdy mobile base unit houses the hydraulic unit and the electrical switch box. There is generous space for all the system components to be accommodated in drawers and cabinets.

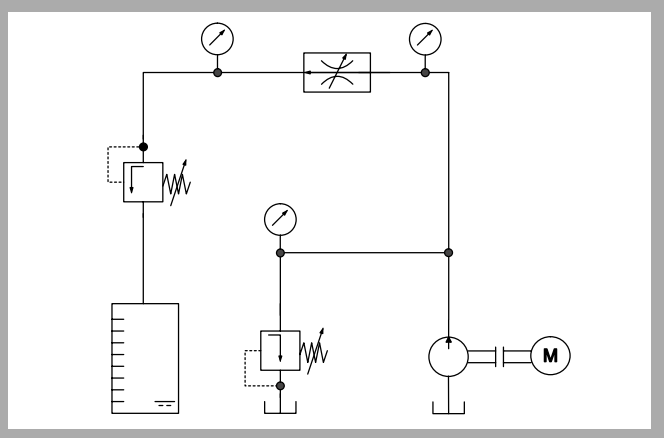
The well-structured instructional material sets out the fundamentals and provides a step-by-step guide through the experiments.

- Learning Objectives / Experiments**
- Comprehensive experimental introduction to the fundamentals of hydraulic drive and control engineering
- familiarisation with terms and symbols
 - representation of hydraulic circuits
 - drive unit
 - multi-way valves and drives
 - shut-off and flow control valves
 - pressure valves and pressure switches
 - hydraulic accumulators
 - application circuits
 - commissioning and maintenance

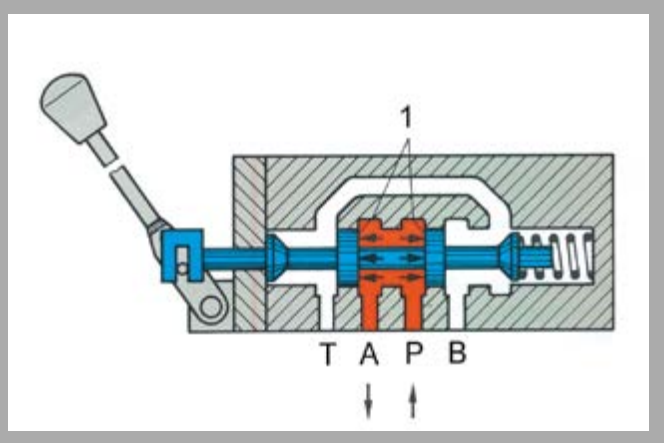
RT 700 Training System: Fundamentals of Hydraulics



1 measuring tank, 2 assembly panel, 3 switch box, 4 drive unit with gear pump, 5 mobile built-under unit, 6 guard grille, 7 weight, 8 diaphragm accumulator, 9 loaded cylinder, 10 differential cylinder



Circuit diagram of experimental setup for 2-way flow control valve



Sectional drawing of a 4/2-way valve: 1 control piston, force-equalised

- Specification**
- [1] training system providing an introduction to the fundamentals of hydraulic control engineering, BIBB concept
 - [2] perforated metal panel for quick component fixing
 - [3] oil drip tray
 - [4] standard industrial hydraulic components
 - [5] various multi-way valves, pressure limiting, check, restrictor, flow control and non-return valves
 - [6] hydraulic motor
 - [7] diaphragm accumulator
 - [8] weighted piston with guard
 - [9] pressure hoses with self-closing quick-couplers
 - [10] drive unit with gear pump

- Technical Data**
- Assembly panel, LxH: 1420x700mm
- Drive unit
- with gear pump
 - working pressure: 100bar
 - flow rate: 4cm³ per revolution
 - power output: 1,5kW
 - speed: 1500min⁻¹
- Oil tank capacity: 25L
- Measuring tank: 3L, transparent
- Diaphragm accumulator
- 1L, opening pressure: 140bar
- Pressure hoses, type 1SN DN 6, max. 225bar
- Emergency-off button

- Dimensions and Weight**
- LxWxH: 1700x740x1700mm
- Weight: approx. 350kg

- Required for Operation**
- 230V, 60Hz, 3 phases or 400V, 50/60Hz, 3 phases

- Scope of Delivery**
- 1 training system, complete
 - 1 set of instructional material

- Order Details**
- 080.70000 RT 700 Training System:
Fundamentals of Hydraulics

RT 770 *Training System: Pneumatics, Electro-Pneumatics and PLC*

The station includes the following components:

- 1x single-acting cylinder
- 2x double-acting cylinder with end position damping
- 2x double-acting cylinder with end position damping and 2 limit switches (NO contacts)
- 2x maintenance unit
- 2x 8-way distributor block with manual slider valve
- 2x 3/2-way valve with push-button, locked at rest position
- 1x 3/2-way valve with mushroom-type button, locked at rest position
- 1x 3/2-way valve with push-button, open at rest position
- 2x 3/2-way valve with tipping roller lever, locked at rest position
- 4x 3/2-way valve with roller lever, locked at rest position
- 1x 3/2-way valve, pressurised on one side
- 1x 3/2 delay valve, locked at rest position
- 1x 5/2-way valve with hand lever, locked at rest position
- 3x 5/2-way valve dual-pressurised
- 1x 5/3-way valve with spring-centred mid position, all connections locked
- 2x one-way restrictor, adjustable
- 1x quick-vent valve with sound absorber
- 2x changeover valve (OR)
- 5x dual pressure valve (AND)
- 1x 3/2-way valve with pressure sequence actuator (pressure input valve)
- 1x pressure reducing valve with drain
- 1x device for pulling load
- 1x sequencer for 4 steps
- 3x manometer, 0...10bar

Components for electro-pneumatic experiments:

- 1x 3/2-way solenoid valve with spring return, locked at rest position
- 3x 5/2-way solenoid valve with spring return, locked at rest position
- 3x 5/2-way solenoid valve, impulse
- 3x relay board, 4 changeover contacts
- 2x electric limit switch (roller touch contact, can be used as NC contact and NO contact)
- 1x proximity switch, inductive (NO contact)
- 1x proximity switch, capacitive, with LED (NO contact)
- 1x proximity switch, optical, with LED (NO contact)
- 2x signal board (1x touch contact, locking, 2x touch contact, non-locking)
- 1x pressure switch
- 1x signalling unit and distributor

- 1x PLC with programming software

- 1x power supply unit, 24VDC
- 20x T-piece, flash connection
- 1x pneumatic hose 4/2mm, PA/colourless, 25m roll
- 1x hose cutter
- 20x laboratory cable, 1000mm, red
- 20x laboratory cable, 1000mm, black
- 20x laboratory cable, 500mm, red
- 20x laboratory cable, 500mm, black

RT 700 *Training System: Fundamentals of Hydraulics*

The kit includes the following components:

- 1x hydraulic accumulator
- 2x pressure limiting valve, directly controlled, pressure range: 4...160bar
- 1x adjustable restrictor valve
- 1x double-acting cylinder, stroke 250mm
- 1x double-acting cylinder, stroke 400mm, weight 19,5kg
- 1x measuring tank
- 4x manometer 0...160bar
- 1x gear motor
- 3x check valve
- 1x 2/2-way valve, locked at rest position
- 1x 2/2-way valve with jockey roller
- 1x 3/2-way valve, locked at rest position
- 1x 4/2-way valve, hand-operated, continuous at rest
- 1x 4/3-way valve with latch lock, hand-operated
- 1x 4/3-way valve mid position P and T connected, hand-operated
- 1x non-return valve, hydraulic releasing
- 2x non-return valve
- 2x one-way restrictor, adjustable
- 1x 2-way flow control valve
- 1x 3-way pressure reducing valve
- 1x accumulator filling device
- 1x pressure limiting valve, pre-controlled
- 2x metering valve pre-controlled

- 1x hose set
- 1x resistance line NG6, screw fitting
- 1x resistance line NG6, elbowed
- 1x resistance line NG4, elbowed
- 1x guard grille
- 2x screwdriver
- 1x single-end wrench, size 9 (DIN 894)
- 2x Allen key, size 4, 6