

Level 1: Fundamentals

Fluid Power—Pneumatics

This pneumatic training course covers the use of compressed air for pneumatic control and as a signaling medium. A complete overview is given, covering compressors, storage, dryers and distribution as well as the design, construction and operation of a range of actuators, valves and ancillary equipment. The relevant ISO symbols are introduced and included in the circuit diagrams. This course ensures a sound competence the safe operation and maintenance of one of the most common automation elements in industry.

Course Topics

- Structure, function and application of single-acting and double-acting cylinders
- Calculating basic parameters
- Direct and indirect actuation
- Application and function of 3/2 and 5/2-way valves
- Methods of actuation of directional control valves
- Analyzing circuits
- Options for pressure measurement
- Pressure-dependent control systems
- Distinguishing flow control
- Logic operations: explaining and implementing AND/OR/NOT operations
- Function and application of limit switches
- Time delay valves
- Realizing oscillating movement
- Economic considerations of using pneumatic components

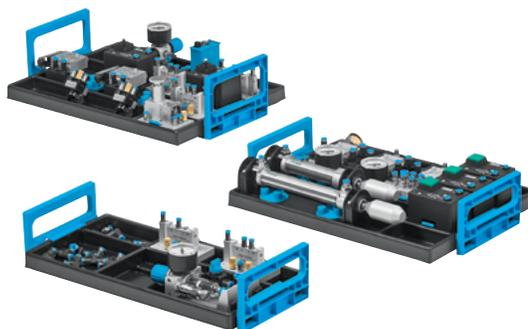
Core Competencies

- Interpret and draw pneumatic symbols
- Construct and troubleshoot pneumatic circuits
- Determine root cause of component failure
- Make speed adjustments to actuators
- Explain the force/pressure/area relationship
- Describe the different states an actuator can assume and the importance of each
- Identify/explain function of pneumatic components

Equipment

Basic Pneumatics Training Package

- Industrial-grade components pre-labeled with appropriate circuit symbols, providing learning reinforcement
- Repositionable components build a foundation of knowledge one device at a time, making it easier to teach circuit assembly
- Teachers can create their own circuits to reproduce specific pneumatic applications
- Pneumatic trainer engineered for extreme ease of use and durability
- Exceeds industrial safety standards
- Faulty component package for real-world troubleshooting



The same bench system is used for Pneumatics and Hydraulics.
Further use of the bench is realized in Level 2 certifications



Level 1: Fundamentals

Fluid Power—Hydraulics

This hydraulic training course is designed to familiarize students with the construction and operation of hydraulic components. Investigating the construction and operation of a range of hydraulic equipment, this hydraulic training course covers the fundamental principles of hydraulics as well as the individual components. Valves controlling pressure, flow rate, sequence and direction of flow are included and practical exercises are used to demonstrate their operation, based on standard symbol circuits. Maintenance and a systematic approach to fault finding are also covered.

Course Topics

- Equipment and circuit diagram symbols, reading and interpreting basic hydraulic circuit diagrams
- Physical principles of hydraulics
- Structure and mode of operation of basic components
- Measure volumetric flow and pressure
- Technology and characteristic data of valves and drive elements
- Intensive training for industrial practice: setting up systems in accordance with circuit diagrams, commissioning systems
- Fundamentals of proportional hydraulics

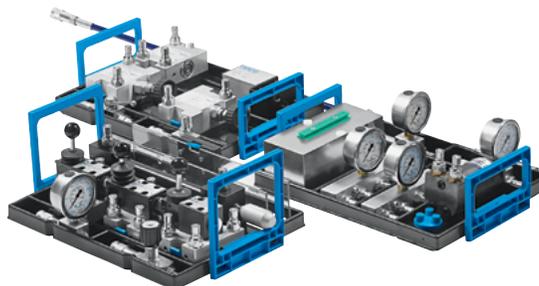
Core Competencies

- Design, assemble, test, and troubleshoot basic hydraulic circuits
- Identify and describe the construction, design features, and operation of hydraulic components
- Interpret technical specifications and data relating to hydraulic components and systems
- Identify and explain graphical symbols for hydraulic components
- Describe fundamentals of oil flow

Equipment

Basic Hydraulics Training Package

- Hydraulic trainer engineered for extreme ease of use and durability
- Exceeds industrial safety standards
- Many work surface options, including an “A” frame top to allow experiments on both sides of a bench
- Lockable storage available
- Industrial-grade components pre-labeled with appropriate circuit symbol, providing learning reinforcement
- Teachers can create their own circuits to reproduce specific hydraulic applications
- Faulty component package for real-world troubleshooting



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Further use of the bench is realized in Level 2 certifications

