

# Basic Pneumatics | Multimedia Courseware



## Multimedia Courseware: MB834

Pneumatic power is used in everything from air brakes and hand tools to spray painters and industrial robots. Amatrol's Multimedia Courseware – Basic Pneumatics (MB834) teaches learners about essential basic pneumatics concepts applicable across a variety of modern industries, such as manufacturing, transportation, and construction. Learners using Amatrol's basic pneumatics eLearning course begin by studying the physical principles of pneumatics, such as pressure and flow, and how pneumatic mechanisms are used in real world applications. From this building block, learners begin practicing industry-relevant pneumatic skills, like constructing pneumatic circuits.

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### Teach Basic Pneumatics

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Amatrol's eLearning curriculum is unique in that it thoughtfully combines in-depth theoretical knowledge with practical, hands-on skills. This powerful combination of knowledge and skills solidifies understanding and creates a strong foundation for pursuing more advanced skills.

#### **Pneumatic Power Systems**

Learners begin with an introduction to pneumatics, including pneumatic power, circuit connections, and basic cylinder circuits. Individual lessons focus on topics like pneumatic pressure, the basic components of a pneumatic system, pneumatic schematics, and the function and operation of various types of pneumatic cylinders. Learners will also practice skills, such as reading a pneumatic pressure gauge, using a tee to connect two circuit branches together, and designing a multiple cylinder pneumatic circuit.

#### **Basic Pneumatic Circuits**

Learners will study the components and operation of basic pneumatic circuits, including single-acting cylinder circuits, basic motor circuits, and pneumatic schematics. Individual lessons focus on topics like 3/2 pneumatic directional control valves, air mufflers, pneumatic motors, and pneumatic circuit schematics. Learners will also practice skills, such as connecting and operating a single-acting pneumatic cylinder using a 3/2 manually-operated DCV, connecting and operating a uni-directional pneumatic motor using a 3-port, manually-operated DCV, and designing and drawing a schematic for a multiple actuator pneumatic circuit.

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### Pressure, Flow, Valves & Circuits

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#### **Principles of Pneumatic Pressure and Flow**

Learners using Amatrol's basic pneumatics eLearning course will study basic principles of pneumatic pressure and flow, including pressure vs. cylinder force, pneumatic leverage, pressure and volume, and air flow and resistance. Individual lessons focus on topics like the force output of extending and retracting cylinders, Pascal's Law, Boyle's Law, and resistance in a pneumatic system. Learners will also practice skills, such as calculating the retraction force of a cylinder given its size and pressure, measuring Delta P across pneumatic components, and converting between absolute pressure and gauge pressure.

#### **Pneumatic Speed Control Circuits**

Learners will study various aspects and components of pneumatic speed control circuits, including: air flow control and measurement; flow control valves; and speed control. Individual lessons focus on topics like the function and operation of various types of valves, operation and applications of meter-in and meter-out flow control circuits, exhaust and pressure port speed control, and independent speed control circuits. Learners will also practice skills,

such as connecting and operating a needle valve to control actuator speed, connecting and adjusting a flow control valve to control speed of an actuator, and designing an independent speed control circuit.

## **Virtual Simulator**

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### **Motor Control Troubleshooting Virtual Simulator | Preview**

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For example, the precision gauging eLearning course covers important topics, such as:

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