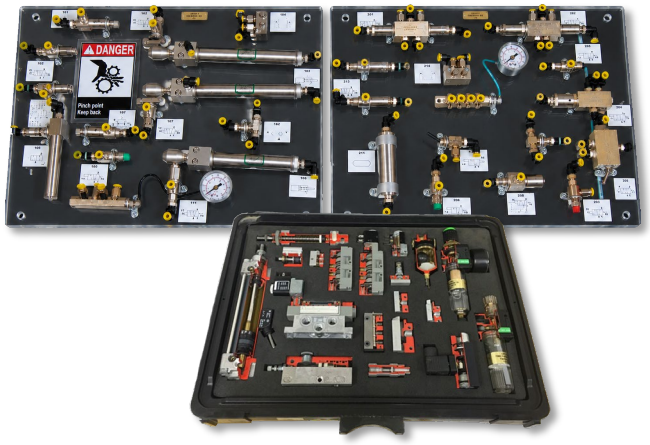
PNEUMATIC PRINCIPLES

PNEUMATIC

The foundations of pneumatics in a concise and practical class. Explaining core componentry and circuits to develop safe and practical skills. formerly: Pneumatics for Industry, Level 1 Pneumatics

WHO WILL BENEFIT?

Any and all newcomers will benefit from this course. Fluid power industry professionals, maintenance technicians, machine operators, and sales representatives will be empowered with foundational knowledge. Even seasoned personnel will likely experience increased understanding of their core competencies. No prerequisites.



WHAT IS IT ABOUT?

This course correlates core hydraulic principles with practical machine operation and maintenance duties. Procedures to ensure the safety of personnel and to prevent damage to machinery will be discussed. Introductory physics and fluid mechanics will be explained. Fluid power symbols appearing in schematics will be correlated to real-world componentry to develop print reading skills. The location of components in a hydraulic system will be identified and proper adjustment procedures demonstrated. Hands-on lab exercises will reinforce fluid power concepts, component locations, proper connections, and the effects of adjustments on system operations.

WHAT IS INCLUDED?

Course Length: 2 days of training depending on format and schedules. 1-day as an add-on class.
Written Materials: Fluid Power Textbook, Hands-On Pneumatic Lab Manual, Fluid Power Data Booklet, handouts, and printed client schematics and documents whenever provided for review.
Equipment: Pneumatic Trainer Boards, take-apart/cut-away demo hydraulic components
+ All other needed materials to execute the training such as PPE, notepads, toolboxes, pens, extension cords, etc.

TOPICS

Pneumatic System Overview
General & Pneumatic Safety
Lockout/Tagout/Verify
PPE
Basic Fluid Mechanics & Gas Laws
Air Compressors
Pneumatic Systems
Pneumatic Schematic Reading
Conditioning & Distribution of Compressed Air
Contaminants, Temperature, & Moisture
Hose & Fittings
Filters & Dryers
Regulators
Lubricators
Air Receivers
Cylinders, Motors, & Actuators
Controlling a Pneumatic System
Directional, Shut-Off, Check Valves
Flow Control Valves
Shuttle Valves
Exhaust/Mufflers & Time-Volume Reservoirs
Pneumatic Circuits & Applications

OBJECTIVES

- Recognize compressed air safety practices
- State advantages and disadvantages of pneumatic systems
- Explain relationship between gauge and absolute pressures
- Identify schematic symbols and be able to read a basic circuit
- Explain the fundamental construction and operation of compressors
- Explain the effect of contaminants in compressed air systems
- Explain how pneumatic filter locations and ratings
- State the purpose of a pressure regulator
- Illustrate how an air lubricator works
- Recognize the need to monitor compressor oil level and condition
- Distinguish between venting and non-venting regulators
- Explain the fundamental construction and operation of cylinders
- State how to replace seals and packing in cylinders
- Identify Symptoms of leaking seals in air cylinders
- Explain the fundamental construction and operation of directional valves
- Explain the fundamental construction and operation of flow control valves.

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