Automatics Software CD ROM

What does it do?

This is a self contained CD ROM for learning pneumatics and for optional use with Automatics hardware.

Benefits

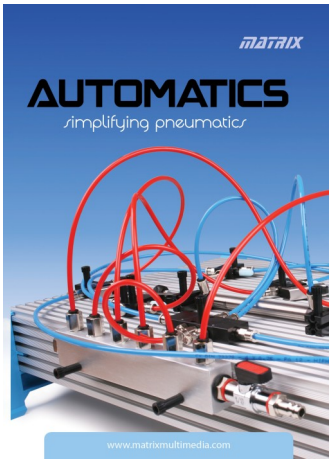
- Unique educational tool for learning pneumatics.
- Easy to use interactive software for intuitive learning.
- Ease of access - easy to navigate.
- Flexible and creative educational courseware.
- Optional use with Automatics

Features

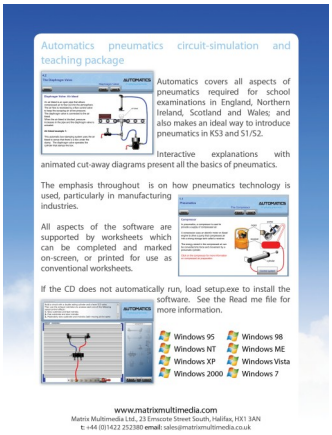
- A thorough introduction to pneumatics
- A progressive explanation of pneumatics including components and functions.
- Relevant information to transfer over to Automatics hardware
- Interactive and accessible educational information.
- Ability to interactively build and simulate pneumatic circuits and circuit diagrams.
- Interactive examples, exercises, tasks and tests.

Description

This CD ROM provides you with an educational resource for teaching and learning pneumatics. The course takes you through the fundamentals of pneumatics step by step and allows you to learn and/or teach at your own pace. You will be able to learn about pneumatic functions, components and systems with this knowledge you can create your own circuit diagrams and simulate using the software. You can also build the pneumatic circuits shown in the software using the Automatics hardware based on the information you have learnt so far.



CD ROM is shipped in a DVD case



Learning time

Flexible.

Prerequisites

- None

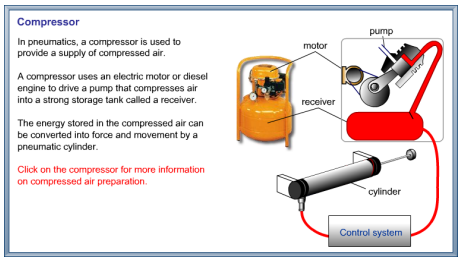
Automatics software package contents

- Download and run software
- Extra circuit diagram examples
- Homework worksheets
- Homework answer sheets

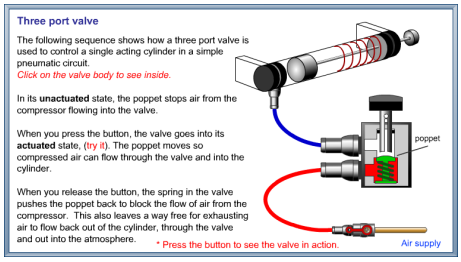
How to use this CD ROM

This CD ROM can be used as a programme of self study at home or in industry. It is also suitable for use with students as part of a structured course, or as an introduction to pneumatics Automatics.

Screen images

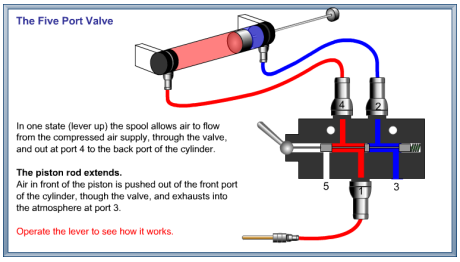


Introductory section of basic pneumatic functions and components

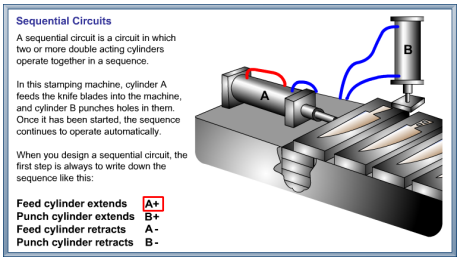


Interactive explanation of components and how they function.

Screen images



Interactive explanation of further advanced components



Animated example of a sequential circuit (in this case) used in a pneumatic stamping systems.

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Learning objectives

Study of the CD ROM—will achieve the following objectives:

- Gain a thorough understanding of pneumatics from basic components and functions through to advanced circuits and systems.
- Develop the skills to build functional and efficient pneumatic circuit.
- Develop a good understanding of how pneumatic systems are controlled.
- Develop a good understanding of electro pneumatics and electrical control in pneumatic systems.

CD ROM contents

The CD ROM is structured with flexible approach and optional content it is easily navigated by menus and buttons and content is split into 3 categories, main structured content, homework sheets containing tasks and tests, and simulations where you can interactively build pneumatic circuits. The 'hwk' sheets and 'sims' are attached to the main content and contain section specific information to test what you have learned so far.

General contents

Introduction

Introduction to pneumatics, compressed air, compressor, pneumatic systems, applications of pneumatics, advantages and disadvantages of pneumatics, safety precautions.

Homework:
1) functions, advantages, alternative systems.

Single acting cylinder, 3 port valves

Single acting cylinder, three port valve, valve actuators, application of single acting cylinder and 3/2 valve, piston speed control + application, flow control valves.

Homework:
1) components, functions, circuits.
2) circuits, components, functions.

Simulation:
1) manifold, using 'sims'
2) flow control valve, instroke / outstroke speed.

Double acting cylinder, 5 port valves

Double acting cylinder, five port valve, piston speed control, pilot-operated five port valve, pilot/pilot five port valve, semi-automatic return circuit + application, automatic return circuit + application.

Homework:
1) components, functions
2) circuits, components, functions.

Simulation:
1) lever 5/2 valve with exhaust restrictors, speed control.
2) (semi) automatic return circuit, speed control.

Time delay, diaphragm valve, logic

Reservoir, time delay + application, diaphragm valve, air bleed, pressure decay sensing, logic, logic "AND" function + application, logic "OR" function + application.

Homework:
1) components, circuits, functions
2) component, circuits, functions
3) circuits, logic functions, components, functions, applications.

Simulation:
1) semi-automatic return circuit, time delay, reservoir, speed control.
2) air bleed, diaphragm valve, speed control.
3) AND + OR logic functions.

Sequential circuit

Sequential circuit + step by step application, circuit + explanation, cascade method + step by step application + step by step circuit.

Homework:
1) circuits, components, functions.

Simulation:
1) sequential circuit sequence A+ B+ A- B-

Electrical control of pneumatics

Solenoid valves, solenoid valve types, solenoid/ solenoid valve, switches, push switch, toggle switches, microswitch, reed switch, computer control + system + explanation.

Homework:
1) electrical, components, functions, switches.

Circuit diagrams

Circuit diagrams + examples, list of circuit diagram examples, circuit diagram component symbol library + list, creating circuit diagrams interactively.

Force, pressure, area calculations

Force unit measurement (Newtons), force exerted by a cylinder + mathematic formula + explanation, instroke and outstroke forces + calculation explanation.

Homework:
1) mathematics, components, functions.

System requirements

PC with CD ROM drive and Windows 95 or greater.

Hardware requirements

None.

Optional: Automatics kit/solution e.g. Automatics essentials.