TECHNICAL TRAINING SOLUTIONS

ELECTRICAL COURSES | INSTRUMENTATION COURSES | MECHANICAL COURSES

LEARNING BY DOING

PNEUMATICS

COURSE 660: 4 DAYS: Max 8 Candidates

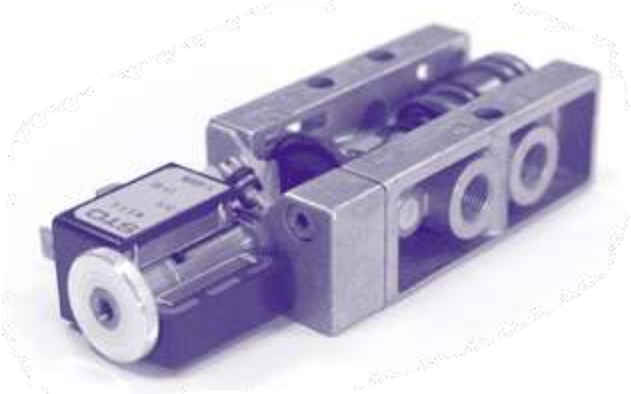
This course provides maintenance personnel and production operators etc with the skills and knowledge necessary to carry out maintenance tasks on pneumatic and electro-pneumatic systems.

PARTICIPANTS

Suitable for anyone who is required to maintain industrial pneumatic systems. No prior knowledge of pneumatic or electrical principles is necessary.

COURSE PRESENTATION

A practical approach is taken throughout this course with participants gaining valuable 'hands-on' experience on training equipment utilising industry-standard components designed to simulate industrial systems. Comprehensive course notes are provided.



COURSE OBJECTIVES

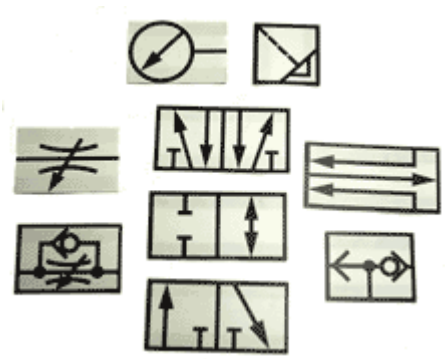
On completion of the course, participants will be able to

- understand the need for safe isolation and be able to apply safe working practices when working with pneumatic and electro-pneumatic systems
- demonstrate relevant underpinning knowledge (units, pressure, forces, etc)
- identify, inspect, adjust and replace:
  - sensors (pneumatic valves and electrical switches, proximity sensors and switches)
  - valves (air and solenoid operated, sequence, directional control)
  - actuators (cylinders and rotary)
  - AND / OR elements, relays, timers, flow controls and quick exhausts
- use visual indicators and manual overrides to check operation of components
- carry out repairs to pneumatic systems, replace fittings, plastic pipe-work, etc
- use pneumatic circuit drawings as an aid to systematic fault-finding
- understand how PLCs are interfaced and used to control pneumatic systems.

Successful completion of the course leads to the award of the Technical Training Solutions Certificate of Competence 660: Pneumatics.

What do candidates on the Pneumatics course actually do?

We begin by looking at the various symbols used to describe pneumatic components and get the candidates to think about how these devices would be used in various applications. We have a range of cut-away demonstration parts which the candidates use to understand how the devices function (and the faults that they might develop).



We use large magnetic symbols to ISO 1219-1 of pneumatic components (which stick onto whiteboards) so that our instructors can explain how the components function and how they are interconnected to create useful systems

A selection of our sectioned pneumatic components - candidates gain an understanding of the functionality by looking at these and appreciating what may go wrong with each component

We give our candidates a range of these components to analyse the functionality of.

A sectioned ISO 6431 cylinder

A sectioned filter / regulator / lubricator with automatic drain

A sectioned ISO 6432 cylinder

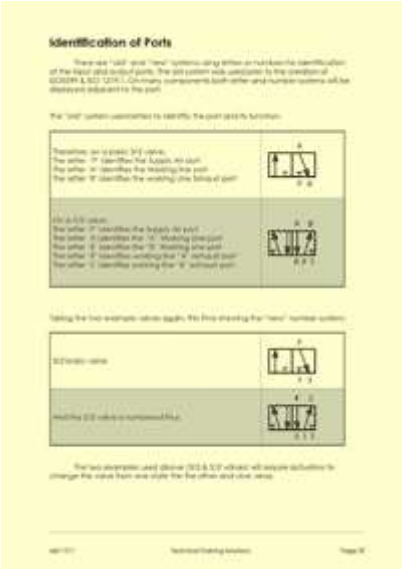
A sectioned solenoid valve

A sectioned sequence valve

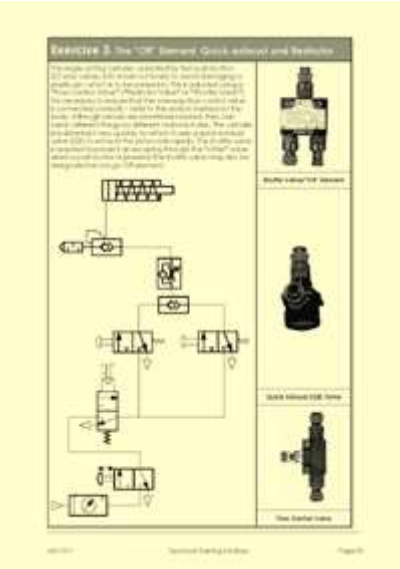
A sectioned pneumatic timer

A sectioned pneumatic reflex proximity detector

The candidates are then given the task of thinking about how these components would be used in various applications, *without getting involved in all the mathematics and physics associated with this technology*. Some extracts from the course notes for the pneumatics course help to demonstrate this approach:



Page 29 from the course notes



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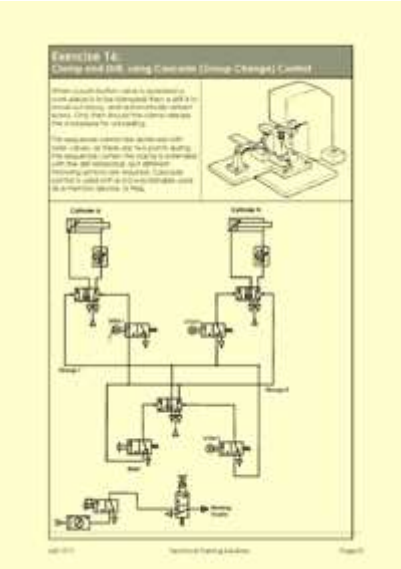


Page 51 from the course notes

We then present the candidates with a range of pneumatic components with which to build circuits themselves:

One of the AND elements

One of the restrictors

One of the 3/2 roller valves

One of the 3/2 piloted valves

One of the double-piloted 5/2 way valves

One of the rodless cylinders

One of the single-piloted 5/2 way valves

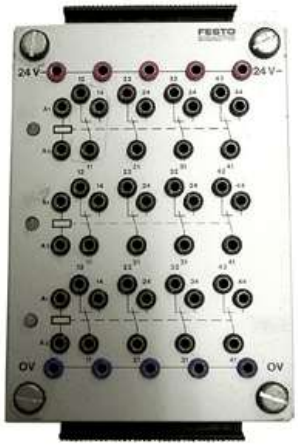
One of the magnetic piston double-acting cylinders

One of the single-acting cylinders

Electro-pneumatic components are then introduced to the course:

One of the push-button valves

One of the solenoid-operated 5/2 way valves



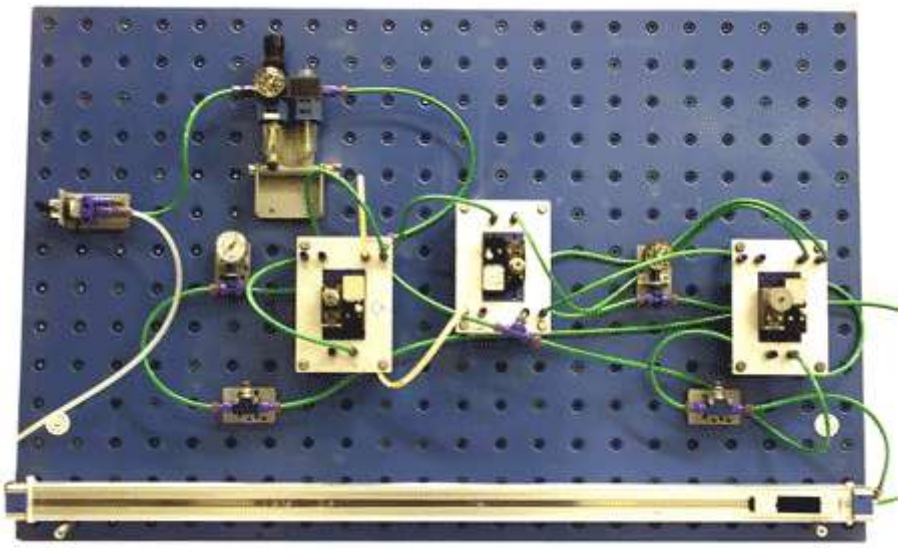
One of the relay boards

One of the optical proximity switches

One of the roller microswitches

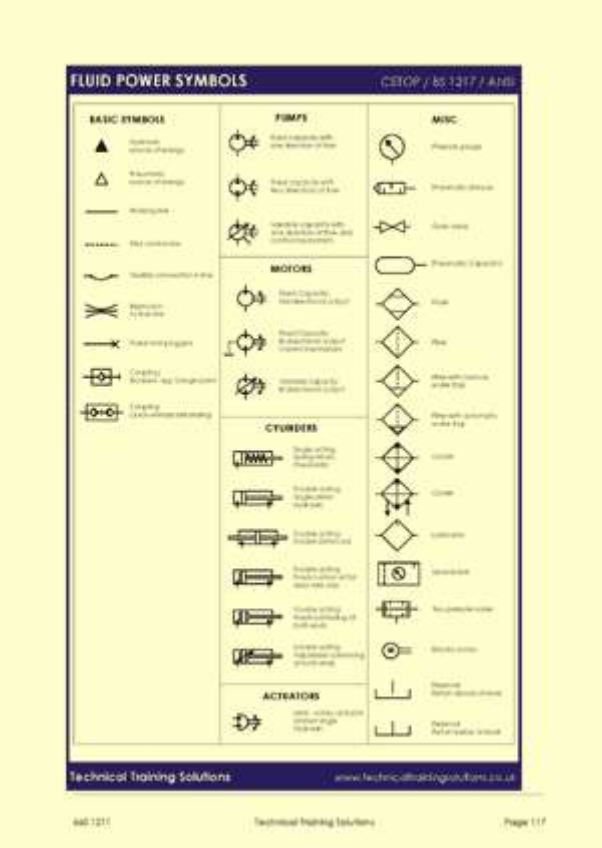
One of the inductive proximity sensors

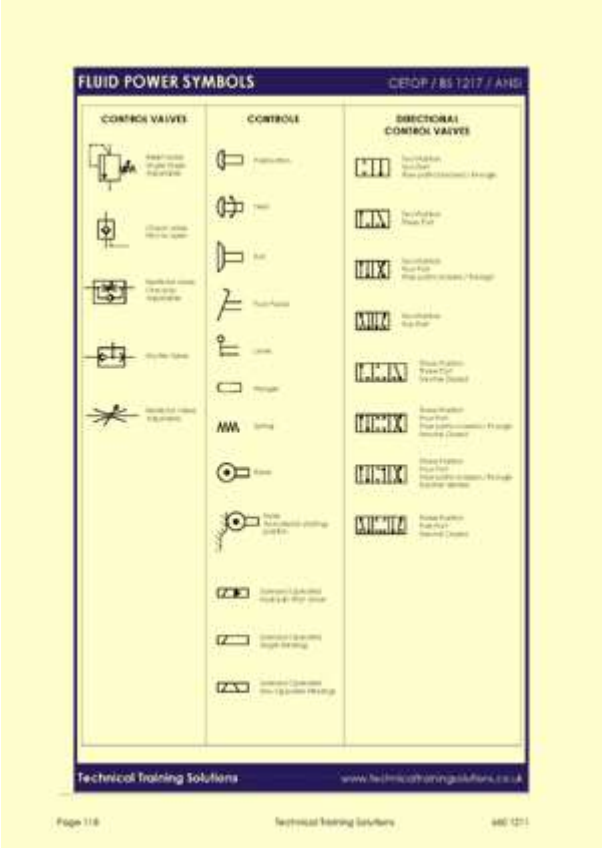
The candidates build these various circuits on our modular boards, allowing them to gain familiarity with the interconnections of the discrete devices as well as the operation of the components within a larger system. Faultfinding skills are also developed at this stage.



One of the modular assembly boards which candidates use to interconnect pneumatic components in the practical exercises to form various useful systems on the course

The course also provides candidates with a range of useful reference material, for example the range of threads used for pneumatic components, recommended oils and a full list of symbols that they are likely to come across:





An extract from the course notes for the course, showing symbols to ISO 1219-1 and BS 2917

If you would like to see some of the equipment used on the pneumatics course for yourself, then please call us to arrange a visit to our offices in Kent. Alternatively, we can visit you anywhere in the British Isles.

CONTACT US

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