

## P3510/P3511 PNEUMATIC CIRCUIT TRAINING RIG

### INTRODUCTION

The increasing use of pneumatic circuitry in industry has created a growing demand for detailed knowledge of the subject. The P3510 "Pneumatic Circuit Trainer" has been developed in conjunction with **Mannesmann Rexroth**, leaders in industrial pneumatics, and along with its comprehensive User Manual forms the basis of a complete course in pneumatics suitable for use in Educational and Industrial Establishments.

The order of the experiments presented, is intended to give a progressively expanding insight into pneumatic components and circuit design.

### FEATURES

- ◆ Self contained low weight mobile training unit.
- ◆ System provides practical experience using original components including logic controlled systems.
- ◆ Suitable for teaching students at all levels of pneumatics in Colleges, Universities and Industrial Technical Centres.
- ◆ Comprehensive training manual.

### EXPERIMENTAL CAPABILITY

Basic pneumatic circuits

- ◆ Control of a single acting cylinder
- ◆ Control of a double acting cylinder with 3/2 valves
- ◆ Control of a double acting cylinder with 5/2 valves
- ◆ Speed control of a double acting cylinder

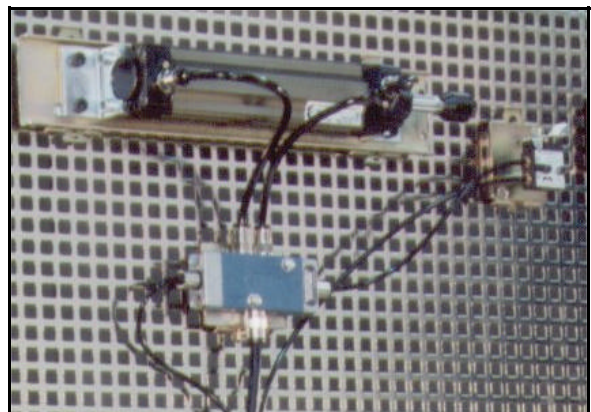
### EXPERIMENTAL CAPABILITY (CONTINUED)

- ◆ Pilot operating control of a double acting cylinder
- ◆ Control of a double acting cylinder from alternative positions
- ◆ Two handed safety circuit demonstrations
- ◆ Automatic return of a double acting cylinder
- ◆ Removal of trapped signals
- ◆ "Impact" circuit with a quick exhaust valve
- ◆ Pressure decay circuit
- ◆ Time delay circuits
- ◆ Continuous cycling of a double acting cylinder
- ◆ Introductory control of a double acting cylinder
- ◆ Introductory sequencing control using a double acting and a single acting cylinder.

### TENDER SPECIFICATION

The **P3510** unit is a free standing single sided training rig complete with all equipment for basic pneumatic training exercises. It forms the basis to which all subsequent training units may be added.

The pneumatics training rig comprising of a mobile training unit, having an anodised aluminium frame and hardwearing worktop. Underneath a set of lockable drawers for components and accessories storage.



The upper section of the bench is arranged as a grid plate, upon which all valves and cylinders are fitted with the rapid clip system using standard DIN rail clips.

**P3511** is a dual sided version of P3510.

The system provides practical experience using original components - including logic controlled systems.

Together with the extension kits it is suitable for teaching students at all levels in industrial pneumatics, electro pneumatics and associated PLC technology in Colleges, Universities and Industrial Technical Training Centres.

P3510 basic pneumatics circuits kit comprises of 1 each of the following:

- 1 Filter/Regulator with pressure gauge
- 1 Manifold with 3/2 way stop cock
- 1 Single acting cylinder – 20 mm dia, 50 mm stroke
- 1 Double acting cylinder – 20 mm dia, 100 mm stroke
- 1 Pressure gauge – scaled 0-10 bar
- 1 3/2 control valve – push button, spring return
- 1 3/2 control valve – pneumatic actuation, spring return, NO/NC
- 1 3/2 control valve – roller lever, spring return
- 1 3/2 control valve – one way trip roller, spring return
- 1 5/3 control valve – double pneumatic actuation
- 1 Pressure relief valve – adjustable 0.5 to 5.2 bar sequence valve
- 1 5/2 control valve – lever actuation, spring return
- 1 5/2 control valve – double pneumatic actuation
- 1 5/2 control valve – pneumatic actuation, spring return
- 1 Time delay valve, 0-20 secs
- 1 Check choke valve, screw in
- 1 Quick exhaust valve with silencer
- 1 Shuttle valve (OR element)
- 1 Dual pressure valve (AND element)
- 1 Pressure regulator with pressure gauge
- 1 Proximity nozzle (reflex sensor) inlet 3-7 bar, outlet 3-10 mbar
- 1 Low pressure amplifier, inlet 3-12 mbar, outlet 2-8 bar
- 1 Sequencer with 4 step memories, entry and exit module
- 1 Pack 'Tee' connectors
- 1 Pack hose or cable binders
- 1 4 mm dia plastic tube, 6 m long
- 1 Pack sealing plugs for push/pull connector
- 1 Hose cutter

**Above items are duplicated when supplied with P3511**

- 1 Fundamentals of pneumatics manual

## ADDITIONAL EQUIPMENT

P3512 Advanced Electro Pneumatic Components Kit (\*) For advanced tests comprises of 1 each of the following:

- 1 Control switch, ON-OFF
- 1 Push button, 1 closed contact, 1 open contact

- 1 Limit valve – roller actuation, spring return
- 1 Relay – 3 changeover switches, 24 VDC
- 1 Relay switch on delay to 30 secs, 24 VDC
- 1 Relay switch off delay to 30 secs, 24 VDC
- 1 Pressure switch, 1 closed contact, 1 open contact
- 1 3/2 solenoid valve – solenoid actuation, spring return, NC
- 1 5/2 solenoid valve – solenoid actuation, spring return
- 1 5/2 solenoid valve – double solenoid actuation
- 1 5/3 solenoid valve – double solenoid actuation, closed
- 1 Solenoid cable with end sleeves (form B)
- 1 Solenoid cable with end sleeves (form A)
- 1 Indicator light
- 1 Terminal strip on top hat rail, 25 terminals with bridges
- 1 Top hat rail, 250 mm long
- 1 Plastic cable 0.75 mm<sup>2</sup>, 100 m blue
- 1 Plastic cable 0.75 mm<sup>2</sup>, 100 m red
- 1 Hose or cable binder
- 1 Pack cable end sleeves
- 1 Fundamentals of Electro-pneumatics manual

P3514 PLC Kit (\*) A PLC system which includes digital and analogue inputs and outputs. This unit also requires programme module P3515 for standard programming.

P3515 PC Software for use with P 3514  
Comprises a PC based programming module for programming of module P3514. A PC running "Windows" is required.

P3517 Air Compressor for use with P3510/  
P3511 Comprises a floor standing compressor with a 15 litre reservoir for operating P3510 & P3511 training rigs.

P3518 Training Manuals Set of training manuals covering basic and advanced pneumatics and electro pneumatics.

P3519 Overhead Slides Set of overhead slides for pneumatics and electro-pneumatics.

\* **Dependent on training needs up to two sets may be needed on dual sided rigs.**

## SERVICE

230 volt 50 Hz single phase  
110 volt 50 Hz single phase  
Optional: Laboratory Air Supply.

## PHYSICAL DETAILS

**P3510/P3511** 1100 x 700 x 1685 mm  
Weight: Nett 145 kg, Gross 170 kg.

**P3514** 490 x 400 x 1100 mm  
Weight: Nett 90 kg, Gross 120 kg.

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