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Integrated Hydraulic and Pneumatic Trainer

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Integrated Hydraulic and Pneumatic Trainer

The Integrated Hydraulic and Pneumatic Trainer is a versatile "two-in-one" system, featuring hydraulic training on one side and pneumatic training on the other, each with an independent PLC controller. This **Integrated Hydraulic and Pneumatic Trainer** allows users to conduct basic experiments in both pneumatic and hydraulic control circuits. It also supports advanced training modules, such as electric-pneumatic control, pneumatic-hydraulic control, electric-hydraulic control, and comprehensive pneumatic-electric-hydraulic control. Ideal for skill development in PLC, solenoids, pneumatics, hydraulics, and relays, this **Integrated Hydraulic and Pneumatic Trainer** is an excellent tool for vocational training and education.

SKU: 0401030040

Key Features of Integrated Hydraulic and Pneumatic Trainer

- **Industrial-Grade Components:** The trainer uses real hydraulic and pneumatic components, execution modules, relay control units, and PLCs, ensuring practical, industry-relevant training.
- **Modular Design:** Hydraulic and pneumatic modules with elastic pins can be easily assembled on the aluminum T-slot training panel, enabling the creation of various circuits.
- **Advanced PLC Integration:** Equipped with a Mitsubishi PLC FX1N-20MR, featuring a 12-point signal input and an 8-point signal output, providing robust control capabilities.

- **High-Pressure System:** The system supports a rated pressure of up to 6.3Mpa, making it suitable for students, scholars, and professionals in hydraulic engineering to design and experiment with complex hydraulic transmission and programmable control systems.
- **Safety Features:** The trainer includes three-phase power leakage protection and DC power supply with overcurrent protection, ensuring a safe learning environment.

Typical Hydraulic Training Contents of the Integrated Hydraulic and Pneumatic Trainer

Typical Hydraulic Training Contents

1. Directional Control Circuits

1.1 Sequence Action Circuit

- 1.1.1 Reversing Circuit using Manual Directional/Reversing Valve
- 1.1.2 Reversing Circuit via Pilot Oriented Pressure Relief/Overflow Valve

1.2 Sequence Action Circuit

- 1.2.1 Sequence Action Circuit with Sequence Valve
- 1.2.2 Sequence Action Circuit using Pressure Relay
- 1.2.3 Sequence Action Circuit with Limit Switch
- 1.2.4 Sequence Action Circuit using Travel/Reversing Valve

1.3 Lock Circuits

- 1.3.1 Lock Circuit using Mid-Position Function Solenoid Reversing Valve
- 1.3.2 Lock Circuit with Pilot Check Valve

2. Pressure Control Circuits

- **2.1 Pressure Regulating Circuit**
  - 2.1.1 Single-Stage Pressure Regulating Circuit
  - 2.1.2 Two-Stage Pressure Regulating Circuit
- **2.2 Pressure Reducing Circuit**
  - 2.2.1 Pressure Reducing Circuit using Pressure Reducing Valve
- **2.3 Booster Circuit**
  - 2.3.1 Booster Circuit using Booster Cylinder
- **2.4 Pressure Relief (Pressure-Venting) Circuit**
  - 2.4.1 Pressure Relief Circuit via Reversing Valve

3. Speed Control Circuits

- **3.1 Throttle Speed Regulating Circuit**
  - 3.1.1 Oil-Inlet Throttle Speed Regulating Circuit
  - 3.1.2 Oil-Return Throttle Speed Regulating Circuit
  - 3.1.3 Reversing Speed Regulating Circuit with Gear Pump
  - 3.1.4 Complex Speed Control Circuit using Joint Gear Pump and Speed Regulating Valve
  - 3.1.5 Secondary Feed Circuit using Series Speed Regulating Valve
  - 3.1.6 Secondary Feed Circuit using Parallel Speed Regulating Valve
- **3.2 Speed Shift Circuit**
  - 3.2.1 Speed Shift Circuit using Flow Valve
- **3.3 Synchronization Circuit**
  - 3.3.1 Synchronization Circuit with Series Hydraulic Cylinders

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Typical Pneumatic Training Contents

1. Pressure Control Circuits

- 1.1 Secondary Pressure Control Circuit
- 1.2 High and Low Pressure Shift Circuit
- 1.3 Overload Protection Circuit
- 1.4 Unloading Circuit

2. Directional Control Circuits

- 2.1 Single-Acting Cylinder Reversing Circuit
- 2.2 Double-Acting Cylinder Reversing Circuit
- 2.3 Single-Cylinder Reciprocating Control Circuit
- 2.4 Single-Cylinder Continuous Reciprocating Control Circuit
- 2.5 Sequence Action Circuit for Straight Cylinder and Rotating Cylinder
- 2.6 Multi-Cylinder Sequence Action Circuit
- 2.7 Double Cylinders Synchronous Action Circuit

3. Speed Control Circuits

- 3.1 Single-Acting Cylinder Speed Regulating Circuit
- 3.2 One-Way Speed Regulated Circuit for Double-Acting Cylinder
- 3.3 Two-Way Speed Regulated Circuit for Double Pneumatic Acting Cylinder
- 3.4 Speed Shift Circuit
- 3.5 Buffer Circuit

4. Other Circuits

- 4.1 Relay Circuit
- 4.2 Counting Circuit
- 4.3 Interlock Circuit
- 4.4 Four Cylinders Linkage Circuit
- 4.5 Application Circuit of OR-Gate Type Shuttle Valve
- 4.6 Application Circuit of Quick Exhaust Valve

Main Technical Parameters of the Integrated Hydraulic and Pneumatic Trainer

1. Motor

Power: 750W

Rated Voltage: 380V

2. Variable Vane Pump

- Maximum Pressure: 7MPa
- Displacement: 8mL/r
- Rotational Speed: 1400 r/min

3. Hydraulic Pump Station

- Maximum Volume: 90L
- Noise Level: ≤58dB

4. Air Compressor

- Power: 250W
- Power Supply: 220V
- Rated Output Pressure: 1MPa
- Noise Level: ≤58dB

5. Power Supply

- AC Supply: Three-Phase Five-Wire, 380V ± 10%, 50Hz