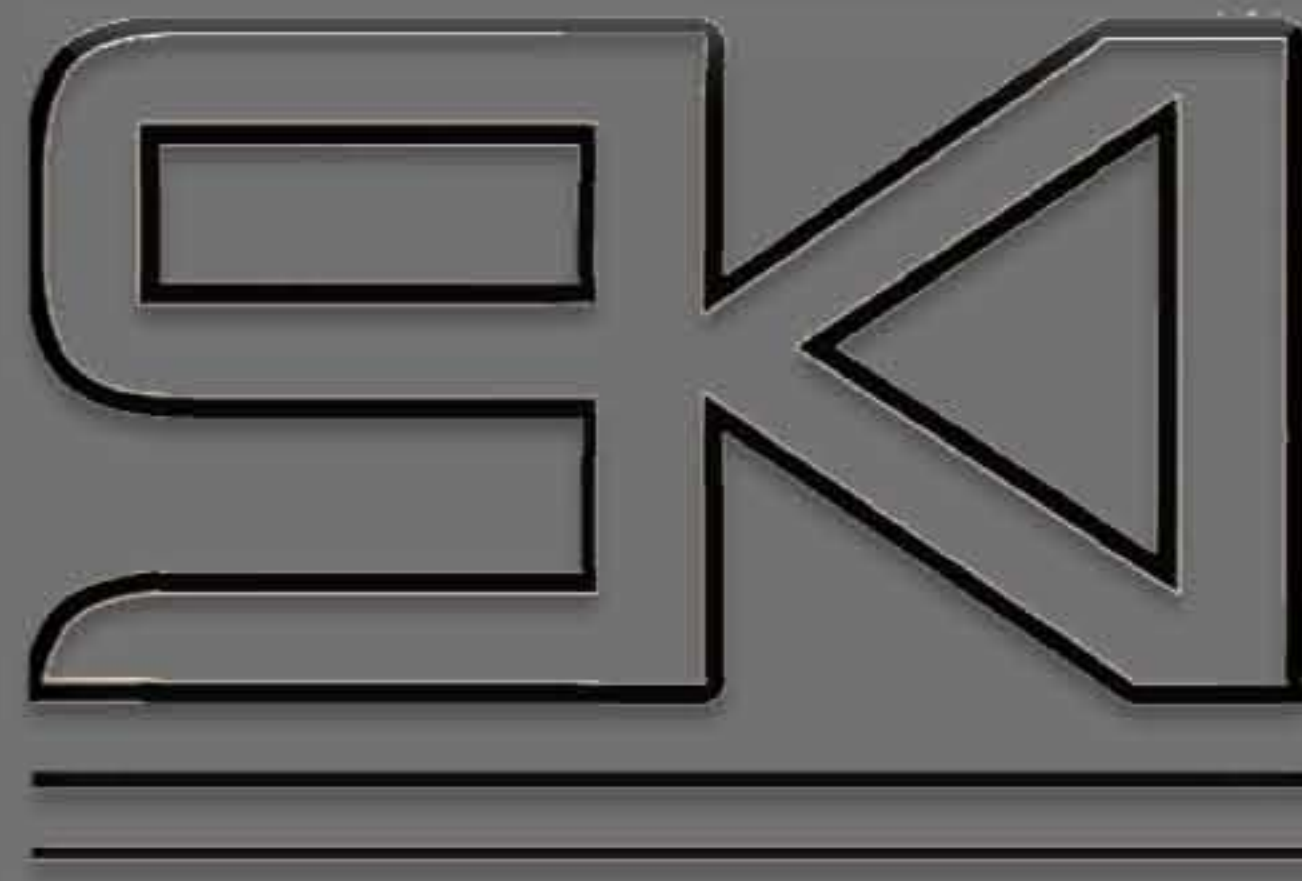


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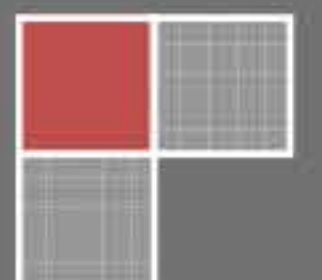
## CATALOGUE

1-MAGIC PNEUMATIC - ELECTROPNEUMATIC -PLC  
BASED TRAINER KIT (SKMT-06)

2- ELECTRO HYDRAULIC TRAINER KIT (SKHT-02)

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## ❖ MAGIC PNEUMATIC-ELECTROPNEUMATIC-PLC BASED TRAINER KIT (SKMT-06)



**Magic Pneumatic-Electro-pneumatic – PLC based Trainer Kit** is designed to train the students with the concept of fully pneumatic and electro-pneumatically and PLC ladder logic in combination to operate fully pneumatic, electro-pneumatic circuits and circuits on PLC based ladder logic .All the three kind of

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logics can be performed on this kit. Both kind of valve i.e. air pilot and solenoid operated valves and electrical limit switches are provided in this kit. The sequential operation of cylinder strokes is operated with both fully pneumatic and electro-pneumatic circuit as per circuit diagram provided with kit. The Students are required to connect air tubes in fully pneumatic circuits and air tubing plus electric connections in electro-pneumatic circuits. This gives hands-on experience to the students and built their confidence level. The Kit consists of mounting board and sturdy base and the pneumatic and electrical components such as Air Cylinders, FRL Unit, Pilot And Solenoid 24v Dc Operated Directional Control Valves, Roller Operated Valve, Electrical Limit Switches, Pilot Or Valves And Electrical Relay Box With Banana Pins And Electric Power Supply Unit 24 V DC, Pushbutton Switch Board And Three Relays With Terminal Board.etc. The students can perform either fully pneumatic or Electro-pneumatic or PLC based sequential circuits at a time. The change over from one system to other is very simple. Magic Pneumatic-Electro-pneumatic – PLC based Trainer Kit has capability to perform all fully pneumatic, electro-pneumatic and PLC based circuits. Only limitation is that at any given time either fully pneumatic or Electro-pneumatic or PLC based sequential circuits can be performed.

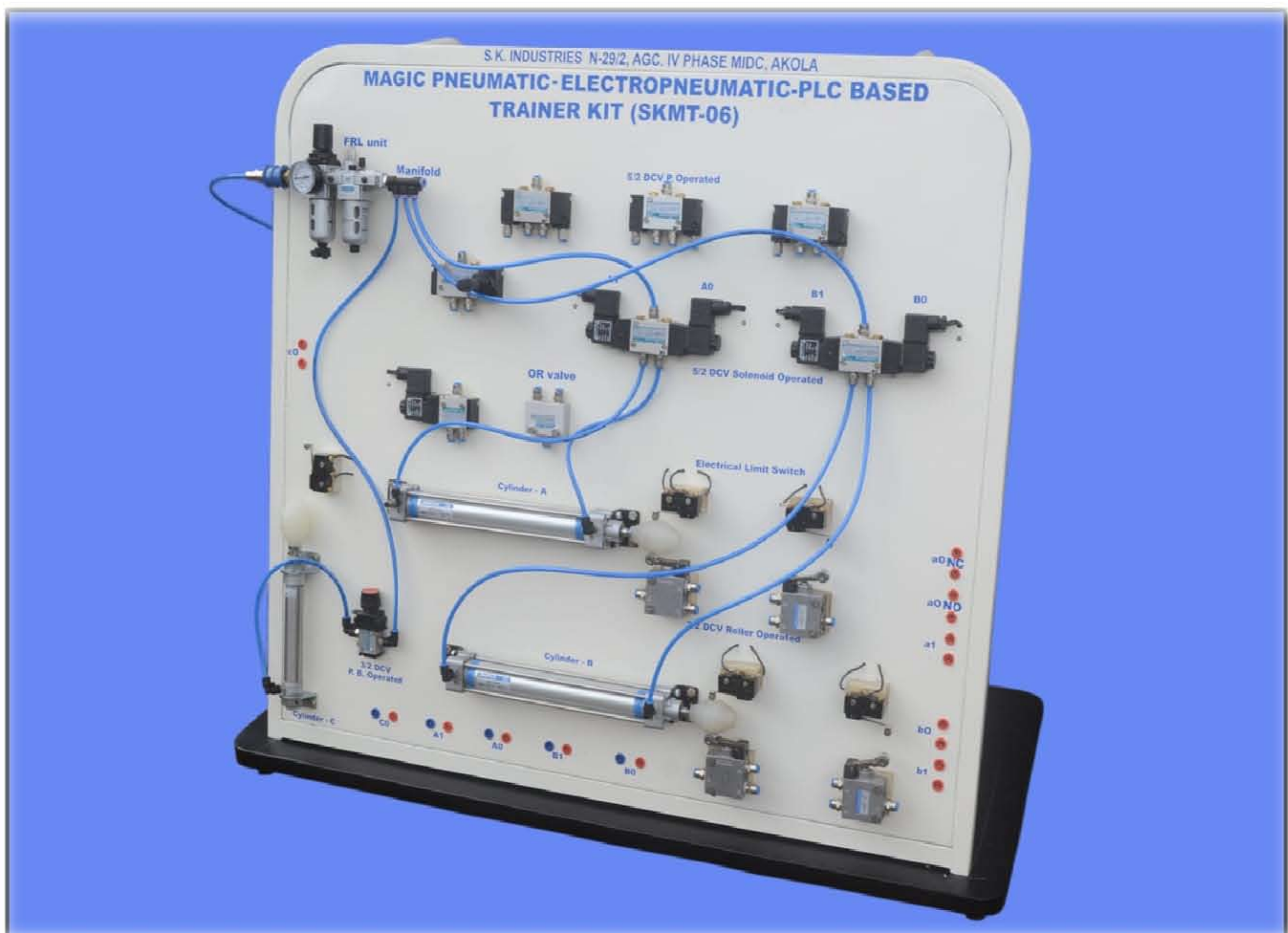
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## ❖ THREE DIFFERENT ARRANGEMENTS OF TRAINER KIT



**1 -1 ARRANGEMENT SHOWING MOUNTING BOARD WITH PNEUMATIC CONECTIONS**

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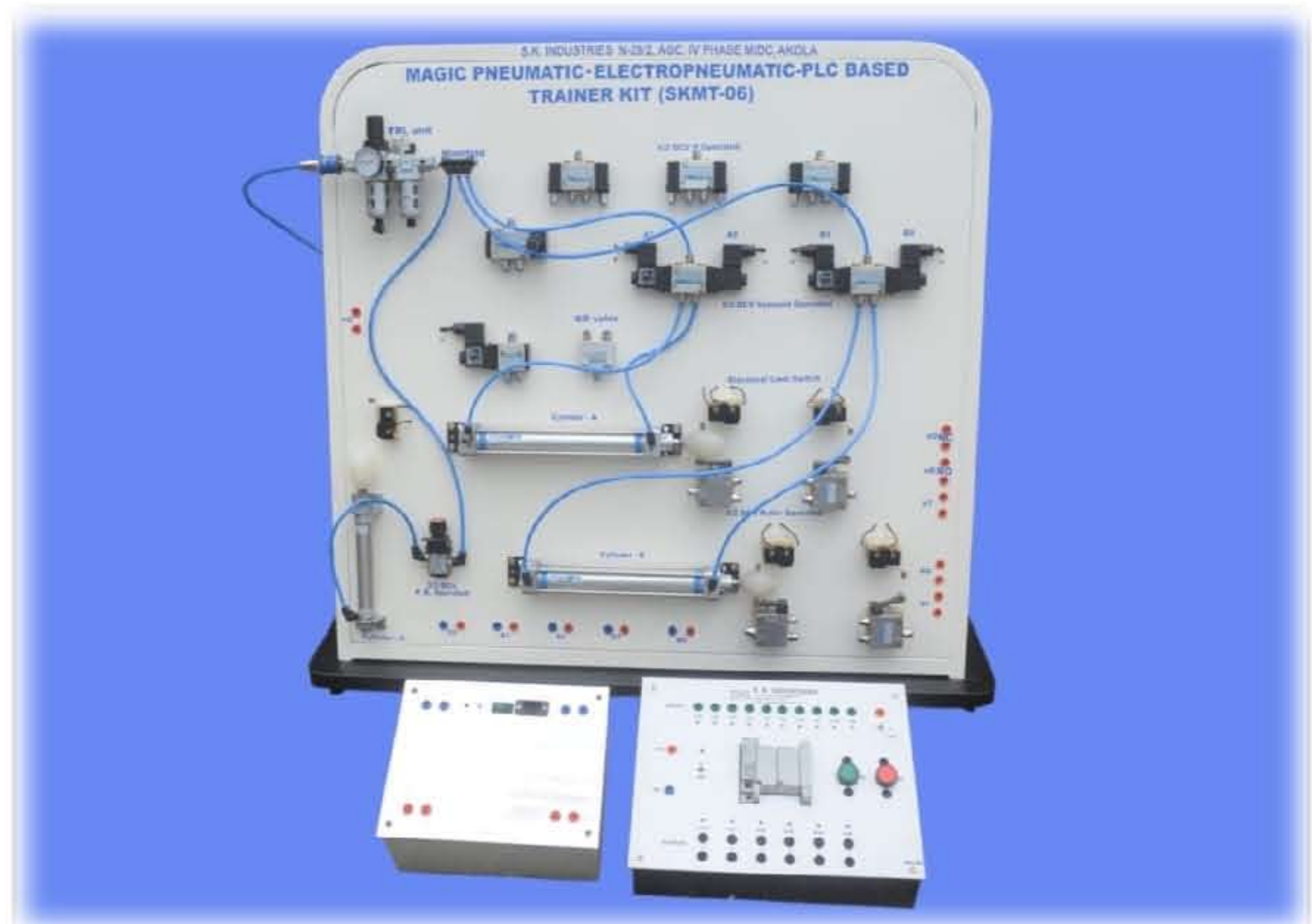
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**1-2 ARRANGEMANT SHOWING MOUNTING BOARD WITH PNEUMATIC ELECTRO SYSTEM**

**i.e..POWER SUPPLY AND RELAY PANEL BOARDS.**



**1-3 ARRANGEMENT SHOWING MOUNTING BOARD WITH POWER SUPPLY AND PLC PANEL**

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The Pneumatic And Electro-Pneumatic Circuit Diagram Details Will Be Provided With Kit For Circuit Design. Also Some PLC Ladder Logic Will Also Be Provided Along With Kit To Run Sequential Circuits For Trial Purpose.

Some Sample Fully Pneumatic And Electro Pneumatic Circuits Are Listed Below That Can Be Performed On Skmt-06 Kit.

## ❖ Fully Pneumatic Circuits-----

1. Design circuit for Single acting Cylinder To and fro single cycle using push button operated 3/2 way DCV.
2. Design circuit for Single acting Cylinder To and Fro Auto cycle using pilot operated 5/2 way DCV.
3. Design circuit for Single Double acting Cylinder To and Fro Auto cycle.
4. Design circuit for Single Double acting Cylinder To and Fro Auto cycle with start bottom option.
5. Design circuit for Two Double acting Cylinder for Auto cycle having sequence A1 B1 B0 A0.
6. Design circuit for Two Double acting Cylinder for Auto cycle having sequence A1 B1 B0 A0 with start bottom option.
7. Design circuit for Two Double acting Cylinder for Auto cycle having sequence A1 B1 B0 A0 with Auto and Manual start option.
8. Design circuit for Two Double acting Cylinder for Auto cycle having sequence A1 B1 A0 B0.
9. Design circuit for Two Double acting Cylinder for Auto cycle having sequence A1 B1 A0 B0 with start option.

## ❖ Electro-Pneumatic Circuits-----

1. Design electrical circuit for Single acting Cylinder To and fro single cycle with start button.
2. Design electrical circuit for single acting Cylinder To and Fro Auto cycle using Auto and Manual mode option.
3. Design electrical circuit for Single Double acting Cylinder To and Fro Auto cycle.
4. Design electrical circuit for Single Double acting Cylinder To and Fro Auto cycle with start and stop bottom option.
5. Design electrical circuit for Two Double acting Cylinder for Auto cycle having sequence A1 B1 B0 A0 with cycle start and stop option.
6. Design electrical circuit for Two Double acting Cylinder for Auto cycle having sequence A1 B1 B0 A0 with Auto and Manual start option.
7. Many more different circuits can be performed with different sequential logic.

## ❖ Plc Based Ladder Logic Circuits for Various Sequential Operations of Pneumatic Cylinders.

**NOTE :** The Institute has to make provision of Air compressor and computer for PLC ladder programming of their own to conduct the above experiments.

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## ❖ ELECTRO HYDRAULIC TRAINER KIT (SKHT-02)

**Electro Hydraulic Trainer Kit** is designed to train the students with the concept of electro-Hydraulic circuits. The kit is designed considering the type of hydraulic systems required in industries to perform various operations.

The students can perform various types of circuits like sequential, bleed off, meter in meter out circuits. The kit is designed to clear student's concept of design of electrical ladder logic circuits to run hydraulic circuits which is real requirement of industries for automation.

The Students are required to connect electro-pneumatic circuits with proper hydraulic piping connections. This gives hands-on experience to the students and built their confidence level. The Kit consists of mounting board sturdy base having wheels to its trolley mounted with power pack. The components are mounted on board so that it's easy to make hydraulic connections as per circuit requirement. The relay panels are also positioned on kit trolley stand so that it's easy to connect electrical pins easily. The female connectors for output and input are provided on mounting board so that electro-hydraulic connections can be made very easily.

### **The Kit Will Consists Of Following Components-**

1. Duly painted Mounting Board (One No.) which is firmly fixed on table having wheels for easy handing. Cylinders, valves and some other hydraulic components are mounted on this mountings board.
2. Oil Hydraulic power pack: - MS Powder Coated Oil Tank, Capacity: 25 Liters. With oil Level Indicator, Gear Pump: 3-5 LPM, 40-70 Bar, Breather, Oil filter & suction.
3. Electric Motor: Single Phase, 230VAC / 3 Phase 415 V AC, ½ HP/ 1 HP, DOL starter.
4. Pressure Gauge: - 100 Kg/cm<sup>2</sup>, Dial Size: 100 mm-1 nos.
5. Double acting hydraulic cylinders  $\phi$ 40x stroke 100mm- 2nos.
6. Single acting cylinder  $\phi$ 40x stroke 75mm- 1nos.
7. Both side solenoid operated 4/3 way DCV-2nos.
8. Both side solenoid operated 4/2 way DCV-1nos.
9. Flow Control Valve: 01 Nos.
10. Check Valve.
11. Pressure relief valve.
12. Roller operated electrical Limit switches- 4nos.

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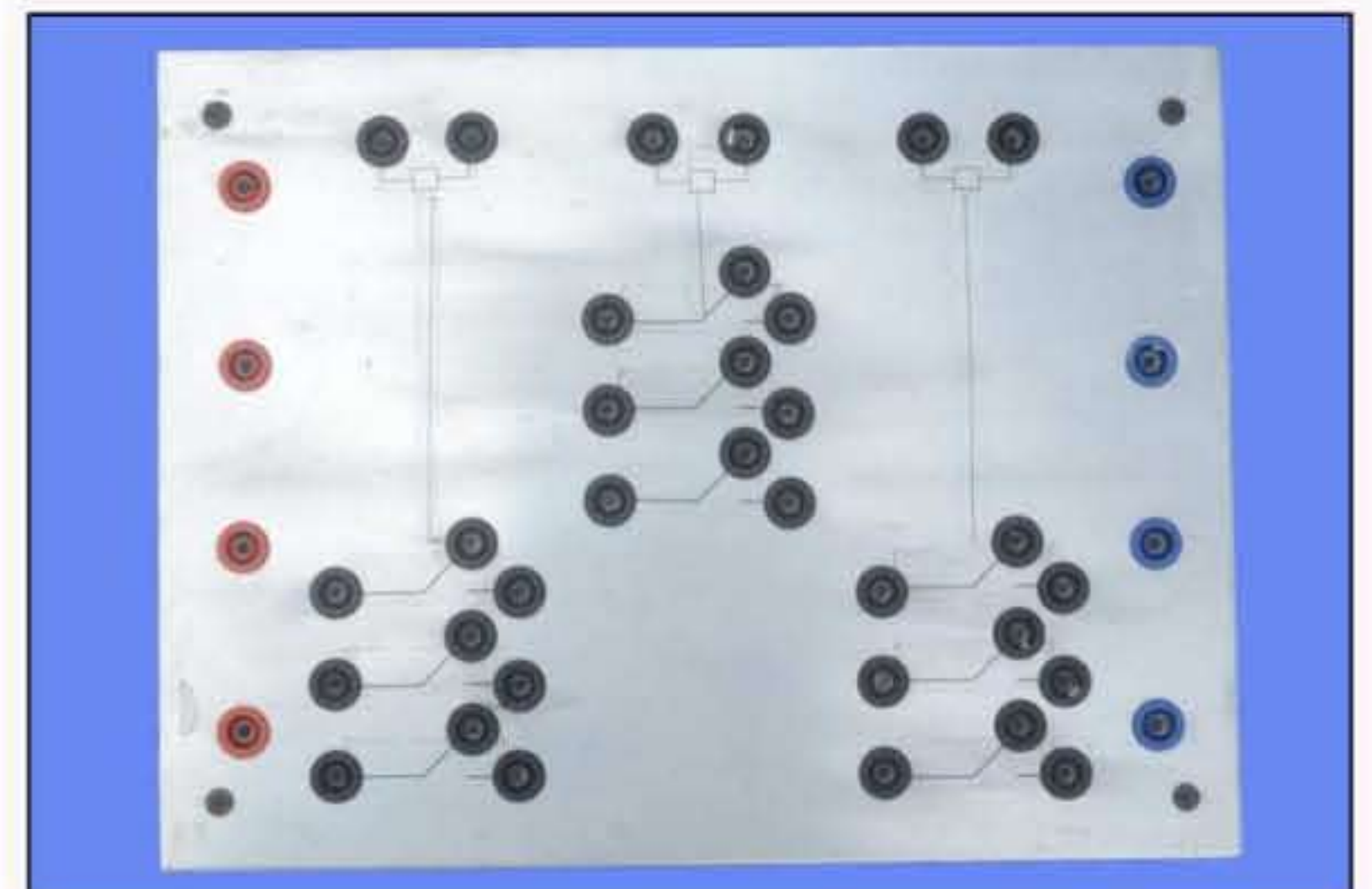
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13. Manifold for oil distribution.
14. Electrical Relay Box With Banana Pins And Electric Power Supply Unit 24 V DC, Pushbutton Switch Board And Three Relays With Terminal Board.etc.
15. Other Accessories- Branch Tee, connectors, Hydraulic Hoses with Couplers etc.

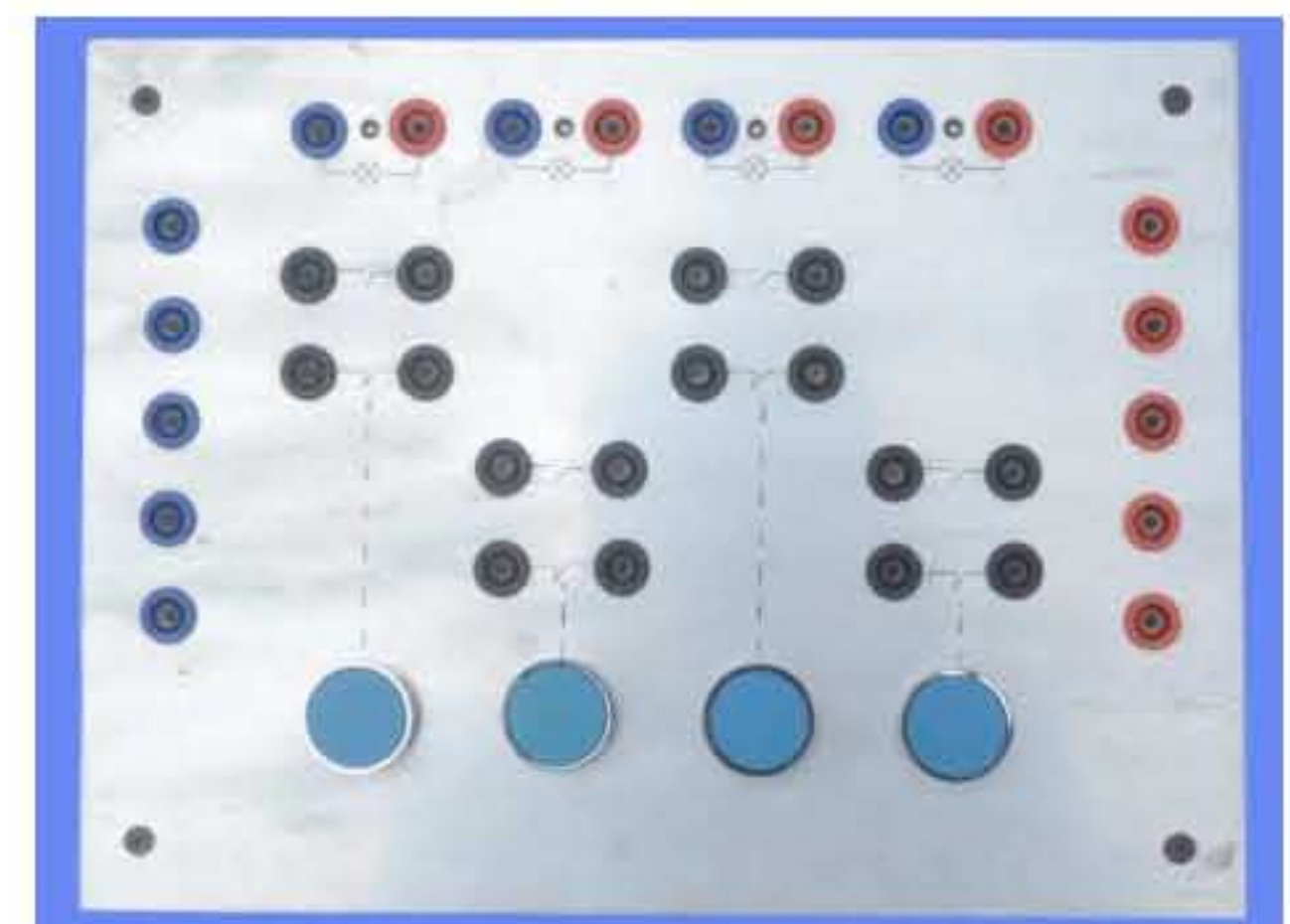


**Hydraulic system with cylinder and DCV'S**

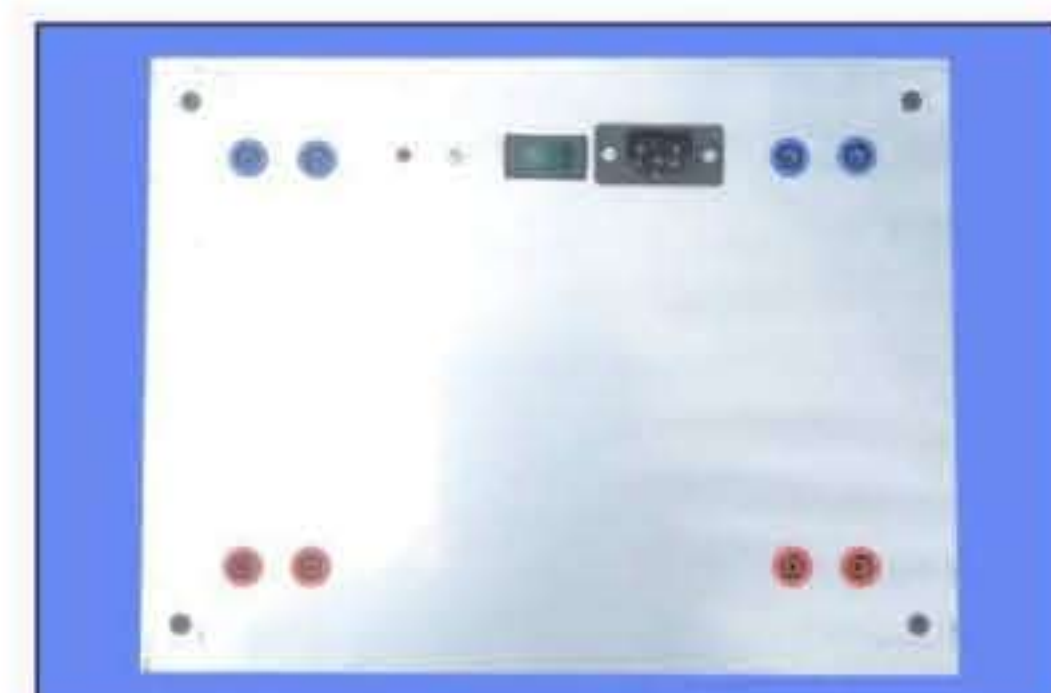
**Mounted on panel**



**Relay panel**



**Push Button type relay panel**



**24V POWER SUPPLY**



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## Experiments that can be performed on kit are as under-

The Hydraulic and Electro-Hydraulic Circuit Diagram details will be provided with Kit for Circuit Design. Also Some PLC Ladder Logic will also be provided along with Kit to run various hydraulic, electro hydraulic and PLC base circuits.

Some Sample Fully Hydraulic and Electro-Hydraulic Circuits are listed below that Can Be Performed on our **SKHT-02** Kit.

### ❖ Study of electro-hydraulic control.

1. Design electro hydraulic circuit for single acting Cylinder To and Fro Auto cycle using solenoid valve.
2. Design circuit for Double acting Cylinder To and Fro Auto cycle.
3. Design electro hydraulic circuit for double acting Cylinder To and Fro Auto cycle with start bottom option.
4. Design electro hydraulic circuit for Two double acting Cylinder for sequence A1-B1-A0-B0.
5. Design electro hydraulic circuit for Two double acting Cylinder for sequence A1-B1-A0-B0 with start button option.
6. Design circuit for speed control of cylinder using unidirectional flow control valve.
7. Design of bleed off circuit.
8. Meter in meter out circuit.
9. Study of fundamental principles of electro Hydraulics & its applications.

**NOTE : The Institute has to make provision of 3 phase Power supply.**