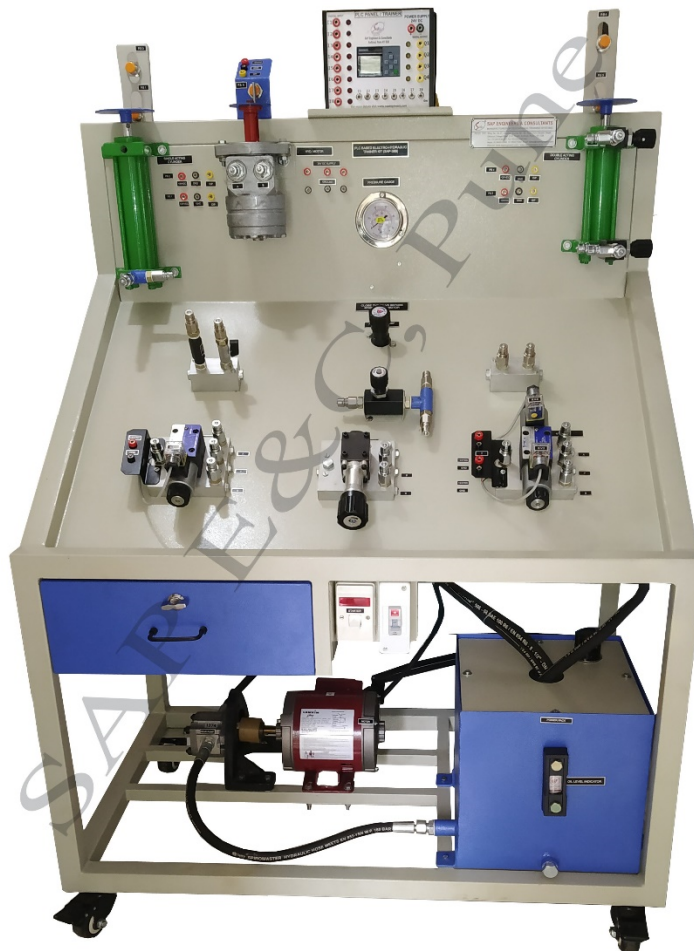


**SAP E & C PLC BASED ELECTRO-HYDRAULIC TRAINER**  
(PRODUCT CODE: SAP – 38/SAP-38B)



- The **PLC BASED Electro-Hydraulic Trainer (SAP – 38/SAP-38B)** outlines the basic Principle of Hydraulic Control System, Hydraulic Control System Components & its applications using electronic proximity position sensor & electro-mechanical actuators (solenoid valves).
- The power pack will be mounted on the bottom of simulator structure and the headers will be located at the front of simulator. The simulator will show the application of linear actuator, rotary actuator, pressure control circuits, speed control circuits, sequence control circuits, energy saving circuits, logic control circuits etc.

**OBJECTIVES-**

- ❖ Function & identification of Electro-Hydraulic components & their symbols.
- ❖ Direct and indirect manual controls, stroke dependant controls and pressure dependant controls with pressure sequence valves.
- ❖ Design & function of electro-hydraulic System.
- ❖ Functional diagrams.
- ❖ Application and fault findings of Electro Hydraulic controls.
- ❖ To empower students to design their own circuits.
- ❖ The Trainer is Modular & Upgradable
- ❖ Operation & Instruction Manual provided for Operation ease.

**Technical Specification:-**

No.	Item Name	Technical Specifications
1	PLC-	PLC Make: Siemens Logo / Equivalent, Digital Inputs: 8, Digital Outputs: 4, 24 VDC operated.
2	Single Acting Cylinder-	Qty: 1 No; Bore: 40 mm × Stroke: 75mm/100mm, Mounting: Foot. <b>Make:</b> Polyhydron/ Equivalent
3	Double Acting Cylinder-	Qty: 1 No Bore: 40 mm × Stroke: 75mm/100mm, Mounting: Foot. <b>Make:</b> Polyhydron/ Equivalent
4	Solenoid Valve-	Qty: 2 Nos, 4/3 way, ¼", 24VDC & 4/2 way, ¼", 24 VDC <b>Make:</b> Polyhydron/ Equivalent
5	Pressure Relief Valve-	Qty: 1 No ¼", 60 Kg/cm <sup>2</sup> . <b>Make:</b> Polyhydron/ Equivalent
6	Flow Control Valve-	Qty: 1 No ¼" (F), Square Body; <b>Make:</b> Polyhydron/ Equivalent
7	P & T Manifold Block	Qty: 1 No., 4 ways, 1/4" Connection <b>Make:</b> Polyhydron/ Equivalent
8	Male Connector-	¼" Quick Release Couplings <b>Make:</b> Polyhydron/ Equivalent
9	Indicator-	24 VDC Operated <b>Make:</b> Polyhydron/ Equivalent
10	Proximity Sensors-	4 nos. Type: Inductive 2 wire, Diameter: 18 mm, Sensing Distance: 5 mm.
11	Pressure Gauge-	Qty: 2 Nos., Range- 100 Kg/cm <sup>2</sup> , Dial Size: 50/60 mm, Glycerin Filled.
12	Oil Hydraulic power pack-	MS powder coated oil tank capacity: 25/30 ltr, with <b>Oil Level Indicator, Breather, Filter, Suction &amp; Drain port, Relief valve with Pressure Gauge.</b>  <b>Gear Pump:</b> 3-5 LPM, 40/60 Bar, Breather, Oil filter & suction,  <b>Electric Motor-</b> Single Phase, 230VAC / 3 Phase 415 V AC, ½ HP/ 1 HP,  DOL starter.
13	Pressure Relief Valve-	Qty: 1 No ¼", 60 Kg/cm <sup>2</sup> . <b>Make:</b> Polyhydron/ Equivalent
14	Pressure sequence valve	Qty: 1 No., ¼" (F), Square Body, 60kg/cm <sup>2</sup> <b>Make:</b> Polyhydron/ Equivalent
15	Hand Lever Valve (Optional)-	Qty: 1 No 4/3 way & 4/2-way Directional Control Valve <b>Make:</b> Polyhydron/ Equivalent
16	Hydraulic Motor (Optional)-	Qty: 1 No., 3 LPM, Flange mounting type. <b>Make:</b> Polyhydron/ Equivalent
17	Hydraulic Accumulator (Optional)-	Qty: 1 No.; Capacity: 0.075 Liters, mWP bar: 250 bar, Weight: 0.62 Kg, Connection: ½" BSP; <b>Make:</b> Polyhydron/ Equivalent
18	<b>Meter-in Circuit &amp; Meter Out Circuit</b>	
19	<b>Bleed-off Circuit</b>	
20	<b>Pulley Arrangement to carry load applied to the actuator, i.e., Double Acting Cylinder (Optional)</b>	
21	<b>Transverse &amp; Feed Circuit (Optional)</b>	
22	<b>Hydraulic Telescopic Cylinder (Optional), Hydraulic Counter Balance Valve (Optional)</b> Qty: 1 No., 1/4" Connection, <b>Make:</b> Polyhydron/ Equivalent	
23	<b>Limited Rotary Actuator (Optional)</b>	
24	<b>Sufficient Hydraulic Oil for hydraulic power pack.</b>	

**Note:** We will also provide pressure header, return header, leakage header fitted with quick coupler and other necessary fitting and fitting with quick couplers which would be required to develop the different said hydraulic circuits.

### Range of experiments:

- ❖ Study of fundamental principles of Hydraulics & its applications.
- ❖ Study of different hydraulic valves.
- ❖ Study of Pressure Relief valve (Pressure Control)
- ❖ Study of Direction control Valves (Hand Lever operated)
- ❖ Study of Direction control Valves (Electrically/Solenoid operated)
- ❖ Study of Flow control valve - Meter-in circuit,
- ❖ Study of Meter-out circuit
- ❖ Study of Bleed-off circuit.
- ❖ Study of Transverse & Feed Circuit
- ❖ Study of control of operation of Single acting Cylinder
- ❖ Study of control of operation of Double acting Cylinder
- ❖ Study of power pack control characteristics.
- ❖ Study of sequencing of two cylinders using Pressure sequence valve.
- ❖ Study of operation electro-hydraulic control.
- ❖ Study of sequencing operation of two cylinders using electro-hydraulic components.
- ❖ Study of operation Regenerative circuit.
- ❖ Study of operation Hydraulic Motor (Rotary Actuator) (Optional).
- ❖ Study of operation Hydraulic Accumulator (Optional).
- ❖ Study of operation of Telescopic Cylinder (Optional).
- ❖ Study of operation of Limited Rotary Actuator (Optional).

### Features: -

- ❖ Compact Ergonomic Design.
- ❖ ISO Symbol for each mounted component.
- ❖ User Friendly, Self-Explanatory Systems.
- ❖ Leak proof Safety Measures, sturdy piping & Robust Construction.
- ❖ Training Manuals mimic Charts for Operation Ease.
- ❖ System Frame with Caster Wheel Arrangement for ease in movement.
- ❖ M.S. powder coated cubical plant with standard Instrument Mountings.
- ❖ Inbuilt Safety Measures to avoid improper usage.
- ❖ Wall mounting assemblies of hydraulic actuator & self-reciprocating cylinder.
- ❖ Hydraulic motor (optional), Solenoid Valves (electro-hydraulic), Limit Switches.
- ❖ Proximity type sensors (electro-hydraulic),
- ❖ QRC Couplings provided Tubing /hose pipes for circulation of pressure.
- ❖ Manifold for distribution.
- ❖ Oil Hydraulic power pack for power supply.
- ❖ Optional components are available to allow fault operation and diagnosis training.

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**System Dimension**-3.5 Ft. (L) X 2Ft. ((W) X 4.5 Ft (H)

**Weight:** Approx. 120kg.

**Services Required:**

- ❖ Electric supply 1 $\phi$  230 V AC, 6A, 50Hz / 3 $\phi$  supply of 415 V AC, 16A, 50Hz suitably used for direct on line starting of an induction motor

**Note:**

All descriptive matter and illustrations are intended to give only a general idea of the equipment Detailed specifications may be altered at the company's discretion without any notice.

