



The **PLC Based Electro Pneumatic Trainer (SAP – 20)** outlines basic of pneumatic control systems along with its components and their applications. It demonstrates the design, construction and applications of Electro-Pneumatic components and circuits.

FIG. PLC BASED ELECTRO-PNEUMATIC TRAINER

- The **PLC Based Electro Pneumatic Trainer (SAP – 20)** is capable of being used to demonstrate the design, construction and application of electro-pneumatic components and circuits.
- This PLC Based Electro pneumatic simulator is used for imparting training with a variety of different circuits which covers the basic pneumatic system. The simulator and its accessories are suitable for working at 10 bar pressure.
- This structure will have adequate space for proper orientation of valves and cylinders
- Industrial components are used in the kit so that the students get hands on practical training in using industrial components.
- The simulator will show the application of linear actuator, speed control circuits, logic control circuits etc.

Objectives: -

- ❖ Function & identification of Pneumatic components & their symbols.
- ❖ Direct and indirect manual controls, stroke dependent controls and pressure dependent controls with Different valves.
- ❖ Design & function of Pneumatic System.
- ❖ Functional diagrams.
- ❖ Application and fault findings of Pneumatic 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
01	Single Acting Cylinder with spring return-	Make: JELPC/ JANATICS / kushako/Eqvt QTY: -01 No.: Design type is Piston Cylinder. Operating Pressure 10 bar. Bore: 25 mm × Stroke: 100mm, Mounting: Foot
02	Double Acting Cylinder-	Make: JELPC/ JANATICS / kushako/Eqvt QTY: -01 No., Design – Piston Cylinder. Operating Pressure – 10 bar. Bore: 25 mm × Stroke: - 100mm, Mounting: Foot,
03	A.F.R. / F.R.L. Unit-	Make: JELPC/ JANATICS / kushako/Eqvt QTY: -01 No., ¼" Connection, 0-10 Kg/cm ²
04	5/2-way single sided Solenoid Valve with LED-	Make: JELPC/ JANATICS / kushako/Eqvt QTY: -01 No., ¼" connection, 230VAC/24 V DC, the statuses are indicated by LEDs on the housings. The valve is equipped with two manual overrides. Pneumatic Technical Data: Design-spool valve with pilot control, Pressure range – 150-800KPa (1.5-8 bar) Electrical Technical Data: Power Consumption – 1.5 W
05	3/2 Solenoid Valve, Single with LED-	Make: JELPC/ JANATICS / kushako/Eqvt QTY: -01 No., ¼" connection, 230VAC/24 V DC, the status is indicated by an LED on the housing. The valve is equipped with a manual override. Pneumatic Technical data: Design type is spool valve, pilot controlled with return spring, Pressure range: 250-800 kPa (2.5-8 bar), Electrical
06	Flow Control Valve-	Make: JELPC/ JANATICS / kushako/Eqvt QTY: -01 No., ¼" connection(F), Square Body.
07	Non-Return Valve-	Make: JELPC/ JANATICS / kushako/Eqvt QTY: -01 No., ¼" connection
08	Manifold Assembly-	QTY: - 1 No., ¼" connection, 6 ways. Manifold with 6 (2 ×3) Hex-Ball Valve. A common manifold for plastic tubing allows supply of compressed air to the control via six individual ports (for plastic tubing PUN 6×0.75)
09	Dual Pressure Valve (AND)-	Make: JELPC/ JANATICS / kushako/Eqvt QTY: -1 No., ¼" connection, the dual-pressure Valve is switched through to the output by applying compressed air to both the inputs (AND) Function. Design type is AND Gate (Dual Pressure Valve). Pressure Range: (1-10 Bar)
10	Shuttle Valve (OR)-	Make: JELPC/ JANATICS / kushako/Eqvt QTY: -1 No., ¼ inch B.S.P, The Shuttle Valve is switched through to the output by applying compressed air to one of the inputs (OR) function. Design type is OR gate (shuttle valve). Pressure range: (1-10 Bar)
11	Proximity switch	QTY: -04 Nos., Type: Inductive 2 wire, Diameter: 18 mm, Sensing Distance: 5 mm. The Proximity switch consists of a sensor, the mounting kit and the cable. This proximity switch gives a signal when it detects a metal. The status is indicated by an LED. Switching Voltage – 24 VDC, switching current – max. 200 mA, Switching Power – 6 W approx., switching accuracy - ±0.1mm

12	Pressure Gauge-	QTY: 01 No., 0-7 Kg/cm ² , connection ½” BSP, Dial Size: 100 mm
13	Pneumatic Motor-	QTY: -01 No., Unidirectional, Air pressure: 0-90 psi.
14	PLC Panel	Make: Siemens Logo / A-B MICRO 810 Equivalent, QTY: 1 NO, Digital Input: 8, Digital Output: 4, Input / Output LED indication on front Facia of the panel.
15	5/3 Hand Lever Valve	Make: JELPC/ JANATICS / kushako/Eqvt QTY: -01 No., ¼” connection,
16	3/2 Hand Lever Valve	Make: JELPC/ JANATICS / kushako/Eqvt QTY: -01 No., ¼” connection,
17	Sintered Silencer-	QTY: -06 Nos. Approx, ¼” connection.
18	Male Connector-	QTY: -34 Nos. Approx, ¼” connection.
19	Quick Push-Pull connectors-	Sufficient shall be supplied for branching of the tubing for making of the circuitry.
20	Plastic Tubing-	PUN 6×0.75, Exterior Diameter-6mm, Interior Diameter- 4mm, Transparent – 10mtr/Blue-10mtr
21	Set of molded Cables-	1/1.5 Meter (1 core): Red- 06 Nos, Black- 06 Nos. Yellow- 03 Nos. BS5 Patch cords: Red - 04 Nos. (Approx. 300mm), Black - 04 Nos. (Approx.300mm)
22	Air Compressor (Optional)-	QTY: -01 No., Tank capacity: 20/24 Liters, Discharge: 2 CFM, Motor: 1 H. P/2 H. P 230 V AC Operated, Max.Pressure:8-10Kg/cm ² Working pressure: 5-6 kg/cm ²
23	Mounting Plates.	
24	Quick Connectors, T-Connectors.	
25	Quick Exhaust Valve, Hand Slide Valve, Time Delay Valve (optional).	

Note: We will also provide headers, fitted with push on connector and other necessary fittings which would be required to develop the different said pneumatic circuits. Apart from the above we will also supply sintered bronze silencer, push on connector for 6 mm O.D tube, headers fitted with push on connectors and 6 mm O.D nylon tube of adequate length and necessary fitting

Range of experiments-

- ❖ Study of pneumatic cylinders, single acting, double acting.
- ❖ Study of construction & operation of pneumatic equipment's such as 5/2-way Solenoid valve, 3/2-way valve, proximity switches,
- ❖ Study of Electro – Pneumatic Trainer.
- ❖ Study of Self Reciprocation of Single Acting Cylinder by Using Electric Limit Switch & 3/2 Solenoid Valve.
- ❖ Study of Self Reciprocation of Double Acting Cylinder by Using Proximity Switches & 5/2 Single Sided S.V.
- ❖ Study of AND Valve (Dual Pressure Valve)
- ❖ Study of Shuttle Valve (OR Valve)
- ❖ Study of Quick Exhaust Valve
- ❖ Study of operation of Hand Lever Valve (3/2 & 5/3 DCV)

SAP E & C PLC BASED ELECTRO PNEUMATIC TRAINER
(PRODUCT CODE: SAP-20/PCST-13)



- ❖ Study of Flow Control Valve & Pneumatic Motor.

Features-

- ❖ Compact Ergonomic Design.
- ❖ ISO Symbol for each mounted component
- ❖ User Friendly, Self-Explanatory Systems.
- ❖ Leak proof Safety Measures, sturdy piping & Robust Construction.
- ❖ Enhanced Electrical Safety Considerations.
- ❖ Training Manuals mimic Charts for Operation Ease.
- ❖ M.S. powder coated cubical plant with standard Instrument Assemblies.
- ❖ Inbuilt Safety Measures to avoid improper usage.
- ❖ Relay board logic circuit operation.
- ❖ Profile Plate.
- ❖ Caster wheel mounted movable frame

System Dimension: 3.5 Ft. (L) X 2 Ft. (W) X 5 Ft. (H)

Weight: Approx. 35 Kg.

Services Required-

- ❖ Compressed clean, dry air supply at 7-8 Kg/cm².
- ❖ Electric Supply of 1 ϕ 230 V AC, 6A, 50Hz.

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.



SAP ENGINEERS & CONSULTANTS