



- 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.

For More Details Visit Our Website At: <u>www.sapengineers.com</u>, <u>www.sapengineers.co.in</u> E-mail:- <u>sales@sapengineers.com</u> SAP Engineers & Consultants, Kothrud, Pune-411 038, India. Ph-(020)25384737



Technical Specification:

PLC- PLC Make: Siemens Logo / Equivalent. Digital Inputs: 8, Digital Outputs: 4, 24 VDC operated. Digital Inputs: 8, Digital Outputs: 4, 24 VDC operated. 2 Single Acting Cylinder- Oty: 1 No: Bore: 40 mm × Stroke: 75mm/100mm, Mounting: Foot. 3 Double Acting Cylinder- Oty: 1 No: Bore: 40 mm × Stroke: 75mm/100mm, Mounting: Foot. 4 Solenoid Valve- Oty: 1 No: Bore: 40 mm × Stroke: 75mm/100mm, Mounting: Foot. 5 Pressure Relief Valve- Oty: 1 No. K", 60 Kg/cm ² Make: Polyhydron/ Equivalent 6 Flow Control Valve- Oty: 1 No. K", 60 Kg/cm ² Make: Polyhydron/ Equivalent 7 P & T Manifold Block Oty: 1 No. 4 ways, 1/4" Connection Make: Polyhydron/ Equivalent 8 Male Connector- %"Quick Release Couplings Make: Polyhydron/ Equivalent 9 Indicator- 24 VDC Operated Make: Polyhydron/ Equivalent 10 Proximity Sensors- 4 nos. Type: Inductive 2 wire, Diameter: 18 mm, Sensing Distance: 5 mm. 11 Pressure Gauge- Oty: 2 Nos., Arange- 100 Kg/cm ² , Joi I Size: 50/60 mm, Glycerin Filled. 12 Oil Hydraulic power pack- Filter, Suction & Drain port, Relief Valve with Pressure Gauge. 12 Oil Starter. Gear Pump: 3-5 L	No.	Item Name	Technical Specifications	
Image:	4	PLC-		
2 Single Acting Cylinder- Make: Polyhydron/ Equivalent 3 Double Acting Cylinder- Make: Polyhydron/ Equivalent 4 Solenoid Valve- Solenoid Valve- City: 1 No &/'', 60 Kg/cm ² Make: Polyhydron/ Equivalent 5 Pressure Relief Valve- Twake: Polyhydron/ Equivalent 6 Flow Control Valve- Oty: 1 No &/'', 60 Kg/cm ² Make: Polyhydron/ Equivalent 7 P & Thanifold Block Make: Polyhydron/ Equivalent 8 Male Connector- Wi 'Quick Release Couplings Make: Polyhydron/ Equivalent 9 Indicator- Indicator- 24 VDC Operated Make: Polyhydron/ Equivalent 10 Pressure Gauge- Oty: 2 Nos., Range-100 Kg/cm ² , Dial Size: 50/60 mm, Glycerin Filled. 11 Pressure Gauge- Oty: 2 Nos., Range-100 Kg/cm ² , Dial Size: 50/60 mm, Glycerin Filled. 12 Oil Hydraulic power pack- Filter, Suction & Drain port, Relief valve with Pressure Gauge. Gear Pump: 3-5 LPM, 40/60 Bar, Breather, Oil filter & suction, Electric Motor- Single Phase, 230VAC / 3 Phase 415 V AC, ½ HP/ 1 HP, DOL starter. 13 Pressure Relief Valve- (Optional)- Make: Polyhydron/ Equivalent 14 Pressure sequence valve (Optional)- (Optional)- Make: Polyhydron/ Equivalent 15 Hand Lever Valve (Optional)- (Optional)- Make: Polyhydron/ Equivalent 16 Hydraulic Accumulator (Optional)- Make: Polyhydron/ Equivalent 17 Hydraulic Motor (Optional)-	I			
3 Double Acting Cylinder- Outy: 1 No Bore: 40 mm × Stroke: 75mm/100mm, Mounting: Foot. Make: Polyhydron/ Equivalent 4 Solenoid Valve- Solenoid Valve- Oty: 2 Nos, 4/3 way, ½", 24VDC & 4/2 way, ½", 24 VDC Make: Polyhydron/ Equivalent 5 Pressure Relief Valve- Oty: 1 No, ½", 60 Kg/cm² Make: Polyhydron/ Equivalent 6 Flow Control Valve- Oty: 1 No, ¼", 60 Kg/cm² Make: Polyhydron/ Equivalent 7 P & T Manifold Block Male: Councetor- W'Quick Release Couplings Make: Polyhydron/ Equivalent 9 Indicator- P & T Mainfold Block Male Connector- W'Quick Release Couplings Make: Polyhydron/ Equivalent 9 Indicator- Proximity Sensors- 4 nos. Type: Inductive 2 wire, Diameter: 18 mm, Sensing Distance: 5 mm. 11 Pressure Gauge- Oty: 2 Nos., Range- 100 Kg/cm², Dial Size: 50/60 mm, Glycerin Filled. 12 Oil Hydraulic power pack- Filter, Suction & Drain port, Relief valve with Pressure Gauge. Gear Pump: 3-5 LPM, 40/60 Bar, Breather, Oil filter & suction, Electric Motor- Single Phase, 230VAC / 3 Phase 415 V AC, & HP/ 1 HP, DOL starter. 13 Pressure Relief Valve- Oty: 1 No. %", 60 Kg/cm² Make: Polyhydron/ Equivalent Oty: 1 No. %", 60 Kg/cm² Make: Polyhydron/ Equivalent Oty: 1 No. 3 LPM, Flange mounting type. Make: Polyhydron/ Equivalent Oty: 1 No. 3 LPM, Flange mounting type. Make: Polyhydron/ Equivalent Oty: 1 No., 3 LPM, Flange mounting type. Make: Polyhydron/ Equivalent Oty: 1 No., 3 LPM, Flange mounting type. Make: Polyhydron/ Equivalent Oty: 1 No., 3 LPM, Flange mounting type. Make: Polyhydron/ Equivalent Oty: 1 No., 3 LPM, Flange mounting type. Make: Polyhydron/	2	Single Acting Cylinder-	Qty: 1 No; Bore: 40 mm × Stroke: 75mm/100mm, Mounting: Foot.	
3 Double Acting Cylinder- Make: Polyhydron/ Equivalent 4 Solenoid Valve- Oty: 2 Nos, 4/3 way, W'', 24VDC & 4/2 way, W'', 24 VDC Make: Polyhydron/ Equivalent 5 Pressure Relief Valve- Oty: 1 No X'', 60 Kg/cm ² Make: Polyhydron/ Equivalent 6 Flow Control Valve- Oty: 1 No X'', 60 Kg/cm ² Make: Polyhydron/ Equivalent 7 P & T Manifold Block Male: Connector- V'' Culck Release Couplings Make: Polyhydron/ Equivalent 9 Indicator- Indicator- 24 VDC Operated Make: 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 ² , Dial Size: 50/60 mm, Glycerin Filled. 12 Oil Hydraulic power pack- MS powder coated oil tank capacity: 25/30 ltr, with Oil Level Indicator, Breather Filter, Suction & Drain port, Relief valve with Pressure Gauge. 13 Pressure Relief Valve- Qty: 1 No ¼'', 60 Kg/cm ² Make: Polyhydron/ Equivalent 14 Pressure sequence valve Qty: 1 No ¼'', 60 Kg/cm ² Make: Polyhydron/ Equivalent 15 Hand Lever Valve Qoptional)- Qty: 1 No ¼'' No ¼''', 60 Kg/cm ² Make: Polyhydron/ Equivalent 16 Hydraulic Motor (Optional)- Qty: 1 No.; 3 LPM, Flange mounting type. Make: Polyhydron/ Equivalent Qty: 1 No.; 3 LPM, Flange mounting type. Make: Polyhydron/ Equivalent Qty: 1 No.; Capacity: 0.075 Liters, mWP bar: 250 bar, Weight: 0.62 Kg, Connection: ½''' BSP; Make: Polyhydron/ Equivalent </th <th>Make: Polyhydron/ Equivalent</th>			Make: Polyhydron/ Equivalent	
4 Solenoid Valve- Oty: 2 Nos, 4/3 way, W', 24VDC & 4/2 way, W', 24 VDC 4 Solenoid Valve- Oty: 2 Nos, 4/3 way, W', 24VDC & 4/2 way, W', 24 VDC 5 Pressure Relief Valve- Oty: 1 No, W' (F), Square Body, Make: Polyhydron/ Equivalent 6 Flow Control Valve- Oty: 1 No, W' (F), Square Body, Make: Polyhydron/ Equivalent 7 P & T Manifold Block Oty: 1 No, W' (F), Square Body, Make: Polyhydron/ Equivalent 8 Male Connector- W'Ouick Release Couplings Make: Polyhydron/ Equivalent 9 Indicator- 24 VDC Operated Make: Polyhydron/ Equivalent 10 Proximity Sensors- 4 nos. Type: Inductive 2 wire, Diameter: 18 mm, Sensing Distance: 5 mm. 11 Pressure Gauge- Oty: 2 Nos, Range- 100 Kg/cm ² , Dial Size: 50/60 mm, Glycerin Filled. 12 Oil Hydraulic power MS powder coated oil tank capacity: 25/30 ltr, with Oil Level Indicator, Breather pack- Filter, Suction & Drain port, Relief valve with Pressure Gauge. Gear Pump: 3-5 LPM, 40/60 Bar, Breather, Oil filter & suction, 13 Pressure Relief Valve- Oty: 1 No. ¼'''' (F), Square Body, 60kg/cm ² Make: Polyhydron/ Equivalent 14 Pressure sequence valve Oty: 1 No. ¼''''' (F), Square Body, 60kg/cm ² Make: Polyhydron/ Equivalent 16 Hydraulic Mot	3	Double Acting Cylinder-	, ,	
4 Solenold Valve- Make: Polyhydron/ Equivalent 5 Pressure Relief Valve- Qty: 1 No. ¼", 60 Kg/cm². Make: Polyhydron/ Equivalent 6 Flow Control Valve- Qty: 1 No. ¼" (F), Square Body: Make: Polyhydron/ Equivalent 7 P & T Manifold Block Qty: 1 No. ¼ Ways, 1/4" Connection Make: Polyhydron/ Equivalent 8 Male Connector- ¼"Quick Release Couplings Make: Polyhydron/ Equivalent 9 Indicator- 24 VDC Operated Make: 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/cm², Dial Size: SO/60 mm, Glycerin Filled. 12 Oil Hydraulic power pack- MS powder coated oil tank capacity: 25/30 ltr, with Oil Level Indicator, Breather Filter, Suction & Drain port, Relief valve with Pressure Gauge. 13 Pressure Relief Valve- Qty: 1 No. ¼", (F), Square Body, 60kg/cm² Make: Polyhydron/ Equivalent 14 Pressure Relief Valve- Qty: 1 No. ¼", (F), Square Body, 60kg/cm² Make: Polyhydron/ Equivalent 14 Pressure Relief Valve- Qty: 1 No. ¼", (F), Square Body, 60kg/cm² Make: Polyhydron/ Equivalent 15 Hydraulic Motor Qty: 1 No. ¼", (F), Square Body, 60kg/cm² Make: Polyhydron/ Equivalent 16 <t< th=""><th></th></t<>				
Make: Polyhydron/ Equivalent 5 Pressure Relief Valve- Gty: 1 No ¼", 60 Kg/cm² Make: Polyhydron/ Equivalent 6 Flow Control Valve- Gty: 1 No., 4 ways, 1/4" Connection Make: Polyhydron/ Equivalent 7 P & T Manifold Block Male Connector- W"Quick Release Couplings Make: Polyhydron/ Equivalent 9 Indicator- Indicator- W"Quick Release Couplings Make: Polyhydron/ Equivalent 9 Indicator- Indicator- Wrowinity Sensors- 4 nos. Type: Inductive 2 wire, Diameter: 18 mm, Sensing Distance: 5 mm. 11 Pressure Gauge- Oty: 2 Nos., Range- 100 Kg/cm², Diameter: 18 mm, Sensing Distance: 5 mm. 12 Oil Hydraulic power pack- Filter, Suction & Drain port, Relief Valve with Pressure Gauge. 14 Pressure Relief Valve- DoL starter. Oty: 1 No. %", 60 Kg/cm² Make: Polyhydron/ Equivalent 14 Pressure sequence valve Oty: 1 No. %", 60 Kg/cm² Make: Polyhydron/ Equivalent 15 Pressure sequence valve Oty: 1 No. %", 60 Kg/cm² Make: Polyhydron/ Equivalent 14 Pressure sequence valve Oty: 1 No. %", 60 Kg/cm² Make: Polyhydron/ Equivalent			J	
6 Flow Control Valve- Qty: 1 No., ¼'' (F), Square Body; Make: Polyhydron/ Equivalent 7 P & T Manifold Block Qty: 1 No., 4 ways, 1/4" Connection Make: Polyhydron/ Equivalent 8 Male Connector- ¼''Quick Release Couplings Make: Polyhydron/ Equivalent 9 Indicator- 24 VDC Operated Make: 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 ² , Dial Size: 50/60 mm, Glycerin Filled. 12 Oil Hydraulic power pack- MS powder coated oil tank capacity: 25/30 ltr, with Oil Level Indicator, Breather Filter, Suction & Drain port, Relief valve with Pressure Gauge. 14 Pressure Relief Valve- Qty: 1 No.¼'', 60 Kg/cm ² Make: Polyhydron/ Equivalent 14 Pressure sequence valve Qty: 1 No.¼'' (F), Square Body, 60kg/cm ² Make: Polyhydron/ Equivalent 14 Pressure sequence valve Qty: 1 No.¼'' (F), Square Body, 60kg/cm ² Make: Polyhydron/ Equivalent 14 Pressure sequence valve Qty: 1 No.¼'' (F), Square Body, 60kg/cm ² Make: Polyhydron/ Equivalent 14 Pressure sequence valve Qty: 1 No., 3 LPM, Flange mounting type. Make: Polyhydron/ Equivalent 15 Had Lever Valve (Optional)- Qty: 1 No., 3 LPM, Flange mounting type. Make				
7 P & T Manifold Block Oty: 1 No., 4 ways, 1/4" Connection Make: Polyhydron/ Equivalent 8 Male Connector- ¼"Quick Release Couplings Make: Polyhydron/ Equivalent 9 Indicator- 24 VDC Operated Make: Polyhydron/ Equivalent 10 Proximity Sensors- 4 nos. Type: Inductive 2 wire, Diameter: 18 mm, Sensing Distance: 5 mm. 11 Pressure Gauge- Oty: 2 Nos., Range- 100 Kg/cm², Dial Size: 50/60 mm, Glycerin Filled. 12 Oil Hydraulic power pack- MS powder coated oil tank capacity: 25/30 ltr, with Oil Level Indicator, Breather Filter, Suction & Drain port, Relief valve with Pressure Gauge. 13 Pressure Relief Valve- Oty: 1 No., %'', 60 Kg/cm² Make: Polyhydron/ Equivalent 14 Pressure sequence valve Oty: 1 No., %'' (F), Square Body, 60kg/cm² Make: Polyhydron/ Equivalent 14 Pressure sequence valve Oty: 1 No., %'' (F), Square Body, 60kg/cm² Make: Polyhydron/ Equivalent 15 Hand Lever Valve (Optional)- Oty: 1 No., %'' (F), Square Body, 60kg/cm² Make: Polyhydron/ Equivalent 16 Hydraulic Accumulator (Optional)- Oty: 1 No., 3 LPM, Flange mounting type. Make: Polyhydron/ Equivalent 17 Hydraulic Accumulator (Optional)- Oty: 1 No.: Capacity: 0.075 Liters, mWP bar: 250 bar, Weight: 0.62 Kg, Connection: ½" BSP; Make: Polyhydron/ Equivalent 18 Mete				
8 Male Connector- ¼"Quick Release Couplings Make: Polyhydron/ Equivalent 9 Indicator- 24 VDC Operated Make: 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/cm², Dial Size: 50/60 mm, Glycerin Filled. 12 Oil Hydraulic power pack- MS powder coated oil tank capacity: 25/30 ltr, with Oil Level Indicator, Breather Filter, Suction & Drain port, Relief valve with Pressure Gauge. 13 Pressure Relief Valve- Qty: 1 No. ¼", 60 Kg/cm² Make: Polyhydron/ Equivalent 14 Pressure sequence valve Qty: 1 No. ¼", 60 Kg/cm² Make: Polyhydron/ Equivalent 14 Pressure sequence valve Qty: 1 No. ¼", 60 Kg/cm² Make: Polyhydron/ Equivalent 15 Hand Lever Valve Qty: 1 No. ¼", 60 Kg/cm² Make: Polyhydron/ Equivalent 16 Hydraulic Motor Qty: 1 No. ¼", 60 Kg/cm² Make: Polyhydron/ Equivalent 16 Hydraulic Accumulator Qty: 1 No. ½", 80 Kg/cm² Make: Polyhydron/ Equivalent 17 Hydraulic Accumulator Qty: 1 No.; Capacity: 0.075 Liters, mWP bar: 250 bar, Weight: 0.62 Kg, Connection: ½" BSP; Make: Polyhydron/ Equivalent 18 Meter-in Circuit & Meter Out Circuit 9 9 Beed-off Circuit				
9 Indicator- 24 VDC Operated Make: 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/cm², Dial Size: 50/60 mm, Glycerin Filled. 12 Oil Hydraulic power pack- MS powder coated oil tank capacity: 25/30 ltr, with Oil Level Indicator, Breather Filter, Suction & Drain port, Relief valve with Pressure Gauge. 13 Bressure Relief Valve- Qty: 1 No. ¼r', 60 Kg/cm². Make: Polyhydron/ Equivalent 14 Pressure sequence valve Qty: 1 No. ¼r', 60 Kg/cm². Make: Polyhydron/ Equivalent 14 Pressure sequence valve Qty: 1 No. ¼r', 60 Kg/cm². Make: Polyhydron/ Equivalent 15 Hand Lever Valve (Optional)- Qty: 1 No. ¼r' (F), Square Body, 60Kg/cm². Make: Polyhydron/ Equivalent 16 Hydraulic Motor (Optional)- Qty: 1 No. ¼r' (F), Square Body, 60Kg/cm². Make: Polyhydron/ Equivalent 17 Hydraulic Accumulator (Optional)- Qty: 1 No. ¼r' (F), Square Body, 60Kg/cm². Make: Polyhydron/ Equivalent 18 Meter-in Circuit & Meter Out Circuit Qty: 1 No., 3 LPM, Flange mounting type. Make: Polyhydron/ Equivalent 19 Bleed-off Circuit Qty: 1 No.; Capacity: 0.075 Liters, mWP bar: 250 bar, Weight: 0.62 Kg, Connection: ½r BSP; Make: Polyhydron/ Equivalent 20 <t< th=""><th></th><th></th><th></th></t<>				
10 Proximity Sensors- 11 4 nos. Type: Inductive 2 wire, Diameter: 18 mm, Sensing Distance: 5 mm. 12 11 Pressure Gauge- 0ty: 2 Nos., Range- 100 Kg/cm², Dial Size: 50/60 mm, Glycerin Filled. 12 Oil Hydraulic power pack- 14 MS powder coated oil tank capacity: 25/30 ltr, with Oil Level Indicator, Breather Filter, Suction & Drain port, Relief valve with Pressure Gauge. 15 13 Pressure Relief Valve- 14 Oty: 1 No. ¼'', 60 Kg/cm² Make: Polyhydron/ Equivalent 14 14 Pressure sequence valve (Optional)- 15 Oty: 1 No. ¼'' (F), Square Body, 60kg/cm² Make: Polyhydron/ Equivalent 15 16 Hydraulic Motor (Optional)- 17 Oty: 1 No.; Capacity: 0.075 Liters, mWP bar: 250 bar, Weight: 0.62 Kg, Connection: ½" BSP; Make: Polyhydron/ Equivalent 18 17 Meter-in Circuit & Meter Out Circuit 19 Bleed-off Circuit 20 19 Bleed-off Circuit 20 Pulley Arrangement to carry load applied to the actuator, i.e., Double Acting Cylinder (Optional) 21 21 Transverse & Feed Circuit (Optional) 22 Hydraulic Telescopic Cylinder (Optional), Hydraulic Counter Balance Valve (Optional)Oty: 1 No., 1/4" 23				
11 Pressure Gauge- Qty: 2 Nos., Range- 100 Kg/cm², Dial Size: 50/60 mm, Glycerin Filled. 12 Oil Hydraulic power pack- MS powder coated oil tank capacity: 25/30 ltr, with Oil Level Indicator, Breather Filter, Suction & Drain port, Relief valve with Pressure Gauge. 13 Pressure Relief Valve- Qty: 1 No. %T, 60 Kg/cm². Make: Polyhydron/ Equivalent 14 Pressure sequence valve Qty: 1 No. %T'' (F), Square Body, 60kg/cm². Make: Polyhydron/ Equivalent 14 Pressure sequence valve Qty: 1 No. %T'' (F), Square Body, 60kg/cm². Make: Polyhydron/ Equivalent 15 Hand Lever Valve (Optional)- Qty: 1 No. / %T'' (F), Square Body, 60kg/cm². Make: Polyhydron/ Equivalent 16 Hydraulic Accumulator (Optional)- Qty: 1 No., 3 LPM, Flange mounting type. Make: Polyhydron/ Equivalent 17 Hydraulic Accumulator (Optional)- Qty: 1 No.; Capacity: 0.075 Liters, mWP bar: 250 bar, Weight: 0.62 Kg, Connection: ½T SP; Make: Polyhydron/ Equivalent 18 Meter-in Circuit & Meter Out Circuit 19 Bleed-off Circuit 20 Pulley Arrangement to carry load applied to the actuator, i.e., Double Acting Cylinder (Optional) 21 Transverse & Feed Circuit (Optional) 22 Hydraulic Recorpic Cylinder (Optional), Hydraulic Counter Balance Valve (Optional)Qty: 1 No., 1/4" Connection, Make: Polyhydron/ Equivalent <t< th=""><th></th><th></th><th>1 55</th></t<>			1 55	
12 Oil Hydraulic power pack- MS powder coated oil tank capacity: 25/30 ltr, with Oil Level Indicator, Breather Filter, Suction & Drain port, Relief valve with Pressure Gauge. Gear Pump: 3-5 LPM, 40/60 Bar, Breather, Oil filter & suction, Electric Motor- Single Phase, 230VAC / 3 Phase 415 V AC, ½ HP/ 1 HP, 13 Pressure Relief Valve- Qty: 1 No ¼'', 60 Kg/cm² Make: Polyhydron/ Equivalent 14 Pressure sequence valve Qty: 1 No., ¼'' (F), Square Body, 60kg/cm² Make: Polyhydron/ Equivalent 15 Hand Lever Valve (Optional)- Qty: 1 No., ¼'' (F), Square Body, 60kg/cm² Make: Polyhydron/ Equivalent 16 Hydraulic Motor (Optional)- Qty: 1 No., 3 LPM, Flange mounting type. Make: Polyhydron/ Equivalent 17 Hydraulic Accumulator (Optional)- Qty: 1 No.; Capacity: 0.075 Liters, mWP bar: 250 bar, Weight: 0.62 Kg, Connection: ½'' BSP; Make: Polyhydron/ Equivalent 18 Meter-in Circuit & Meter Out Circuit 19 Bleed-off Circuit 20 Pulley Arrangement to carry load applied to the actuator, i.e., Double Acting Cylinder (Optional) 21 Transverse & Feed Circuit (Optional) 22 Hydraulic Telescopic Cylinder (Optional), Hydraulic Counter Balance Valve (Optional)Qity:1 No., 1/4'' Connection, Make: Polyhydron/ Equivalent 23 Limited Rotary Actuator (Optional)		6		
pack- Filter, Suction & Drain port, Relief valve with Pressure Gauge. Gear Pump: 3-5 LPM, 40/60 Bar, Breather, Oil filter & suction, Electric Motor- Single Phase, 230VAC / 3 Phase 415 V AC, ½ HP/ 1 HP, DOL starter. 13 Pressure Relief Valve- Qty: 1 No.¼", 60 Kg/cm² Make: Polyhydron/ Equivalent 14 Pressure sequence valve Qty: 1 No.¼" (F), Square Body, 60kg/cm² Make: Polyhydron/ Equivalent 15 Hand Lever Valve (Optional)- Qty: 1 No.¼" (F), Square Body, 60kg/cm² Make: Polyhydron/ Equivalent 16 Hydraulic Motor (Optional)- Qty: 1 No., 3 LPM, Flange mounting type. Make: Polyhydron/ Equivalent 17 Hydraulic Accumulator (Optional)- 18 Meter-in Circuit & Meter Out Circuit 19 Bleed-off Circuit 20 Pulley Arrangement to carry load applied to the actuator, i.e., Double Acting Cylinder (Optional) 21 Transverse & Feed Circuit (Optional) 22 Hydraulic Telescopic Cylinder (Optional), Hydraulic Counter Balance Valve (Optional)Qity:1 No., 1/4" Connection, Make: Polyhydron/ Equivalent 23 Limited Rotary Actuator (Optional)		· · ·		
Gear Pump: 3-5 LPM, 40/60 Bar, Breather, Oil filter & suction, Electric Motor- Single Phase, 230VAC / 3 Phase 415 V AC, ½ HP/ 1 HP, DOL starter. 13 Pressure Relief Valve- Qty: 1 No ¼", 60 Kg/cm² Make: Polyhydron/ Equivalent 14 Pressure sequence valve Qty: 1 No., ¼" (F), Square Body, 60kg/cm² Make: Polyhydron/ Equivalent 15 Hand Lever Valve (Optional)- 16 Hydraulic Motor (Optional)- 17 Hydraulic Accumulator (Optional)- 18 Meter-in Circuit & Meter Out Circuit 19 Bleed-off Circuit 20 Pulley Arrangement to carry load applied to the actuator, i.e., Double Acting Cylinder (Optional) 21 Transverse & Feed Circuit (Optional) 22 Hydraulic Telescopic Cylinder (Optional), Hydraulic Counter Balance Valve (Optional)Oty:1 No., 1/4" Connection, Make: Polyhydron/ Equivalent 23 Limited Rotary Actuator (Optional)	12	j		
Image: Strate Strate Strate Electric Motor- Single Phase, 230VAC / 3 Phase 415 V AC, ½ HP/ 1 HP, DOL starter. Image: Strate S		pack-	Filter, Suction & Drain port, Relief valve with Pressure Gauge.	
Image: Strate Strate Strate Electric Motor- Single Phase, 230VAC / 3 Phase 415 V AC, ½ HP/ 1 HP, DOL starter. Image: Strate S			Gear Pump: 3-5 I PM 40/60 Bar Breather Oil filter & suction	
DOL starter. 13 Pressure Relief Valve- Qty: 1 No ¼'', 60 Kg/cm ² . Make: Polyhydron/ Equivalent 14 Pressure sequence valve Qty: 1 No., ¼'' (F), Square Body, 60kg/cm ² . Make: Polyhydron/ Equivalent 15 Hand Lever Valve (Optional)- 16 Hydraulic Motor (Optional)- 17 Hydraulic Accumulator (Optional)- 18 Meter-in Circuit & Meter Out Circuit 19 Bleed-off Circuit 20 Pulley Arrangement to carry load applied to the actuator, i.e., Double Acting Cylinder (Optional) 21 Transverse & Feed Circuit (Optional), Hydraulic Telescopic Cylinder (Optional), Hydraulic Rotary Actuator (Optional) 21 Irransverse & Feed Circuit (Optional), Hydraulic Telescopic Cylinder (Optional), Hydraulic Counter Balance Valve (Optional), Qty:1 No., 1/4" Connection, Make: Polyhydron/ Equivalent 23 Limited Rotary Actuator (Optional)				
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14Pressure sequence valveQty: 1 No., ¼'' (F), Square Body, 60kg/cm². Make: Polyhydron/ Equivalent15Hand Lever Valve (Optional)-Qty: 1 No 4/3 way & 4/2-way Directional Control Valve Make: Polyhydron/ Equivalent16Hydraulic Motor (Optional)-Qty: 1 No., 3 LPM, Flange mounting type. Make: Polyhydron/ Equivalent17Hydraulic Accumulator (Optional)-Qty: 1 No.; Capacity: 0.075 Liters, mWP bar: 250 bar, Weight: 0.62 Kg, Connection: ½" BSP; Make: Polyhydron/ Equivalent18Meter-in Circuit & Meter Out Circuit19Bleed-off Circuit20Pulley Arrangement to carry load applied to the actuator, i.e., Double Acting Cylinder (Optional)21Transverse & Feed Circuit (Optional)22Hydraulic Telescopic Cylinder (Optional), Hydraulic Counter Balance Valve (Optional)Qty:1 No., 1/4" Connection, Make: Polyhydron/ Equivalent23Limited Rotary Actuator (Optional)	12	Drossuro Doliof Volvo		
15 Hand Lever Valve (Optional)- Qty: 1 No 4/3 way & 4/2-way Directional Control Valve Make: Polyhydron/ Equivalent 16 Hydraulic Motor (Optional)- Qty: 1 No., 3 LPM, Flange mounting type. Make: Polyhydron/ Equivalent 17 Hydraulic Accumulator (Optional)- Qty: 1 No.; Capacity: 0.075 Liters, mWP bar: 250 bar, Weight: 0.62 Kg, Connection: ½" BSP; Make: Polyhydron/ Equivalent 18 Meter-in Circuit & Meter Out Circuit 19 Bleed-off Circuit 20 Pulley Arrangement to carry load applied to the actuator, i.e., Double Acting Cylinder (Optional) 21 Transverse & Feed Circuit (Optional) 22 Hydraulic Telescopic Cylinder (Optional), Hydraulic Counter Balance Valve (Optional)Qty:1 No., 1/4" 23 Limited Rotary Actuator (Optional)				
 15 (Optional)- Make: Polyhydron/ Equivalent 16 Hydraulic Motor (Optional)- Qty: 1 No., 3 LPM, Flange mounting type. Make: Polyhydron/ Equivalent (Optional)- Qty: 1 No.; Capacity: 0.075 Liters, mWP bar: 250 bar, Weight: 0.62 Kg, Connection: ½" BSP; Make: Polyhydron/ Equivalent 18 Meter-in Circuit & Meter Out Circuit 19 Bleed-off Circuit 20 Pulley Arrangement to carry load applied to the actuator, i.e., Double Acting Cylinder (Optional) 21 Transverse & Feed Circuit (Optional) 22 Hydraulic Telescopic Cylinder (Optional), Hydraulic Counter Balance Valve (Optional)Qty:1 No., 1/4" Connection, Make: Polyhydron/ Equivalent 23 Limited Rotary Actuator (Optional) 	14			
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17Hydraulic Accumulator (Optional)-Qty: 1 No.; Capacity: 0.075 Liters, mWP bar: 250 bar, Weight: 0.62 Kg, Connection: ½" BSP; Make: Polyhydron/ Equivalent18Meter-in Circuit & Meter Out Circuit19Bleed-off Circuit20Pulley Arrangement to carry load applied to the actuator, i.e., Double Acting Cylinder (Optional)21Transverse & Feed Circuit (Optional)22Hydraulic Telescopic Cylinder (Optional), Hydraulic Counter Balance Valve (Optional)Qty:1 No., 1/4" Connection, Make: Polyhydron/ Equivalent23Limited Rotary Actuator (Optional)	10	-	ety. Tho., 5 Er M, Hange mounting type. Make. Torynyaron/ Equivalent	
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22 Connection, Make: Polyhydron/ Equivalent 23 Limited Rotary Actuator (Optional)				
23 Limited Rotary Actuator (Optional)				
24 Sufficient Hydraulic Oil for hydraulic power pack.	24			

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.

For More Details Visit Our Website At: <u>www.sapengineers.com</u>, <u>www.sapengineers.co.in</u> E-mail:- <u>sales@sapengineers.com</u> SAP Engineers & Consultants, Kothrud, Pune-411 038, India. Ph-(020)25384737



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.



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

Weight: Approx. 120kg.

Services Required:

 Electric supply 1φ 230 V AC, 6A, 50Hz / 3φ 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.

