



Sciencetech 2471 Electro Hydraulic WorkBench is designed to demonstrate the design, construction and application of Hydraulic components and circuits. It integrates PLC technology to build hybrid Industrial Automation systems with Hydraulic components and modules.

Hydraulic technology is found in numerous areas of engineering. Students investigate the basic “building blocks” of modern Hydraulics and how they are interconnected to form systems. Hydraulic Systems provide the power needed to control metal forming machinery, conveyor systems, component test stands, foundries and primary metals plants, presses, including cushions, clutches and brakes, automated assembly systems, packaging systems, pulp and paper industries, material handling, and robotic systems. PLC provides flexibility to design and build numerous systems using software and I/O interfaces without changes to the hard wired connections.

Features

- PLC operated Electro Hydraulic platform
- 12 Digital Inputs, 8 Digital Outputs
- Toggle switches, Push to On switch, Visual Indicator, Audio Indicator, double acting cylinder, solenoid valve, flow control valve, manifold, hand lever valve, limit switch, hydraulic motor, single acting cylinder, proximity sensor, power pack
- Industrial feel & look
- Function and identification of Hydraulic components and their symbols
- High execution speed
- Extremely easy and student friendly software
- Several sample Ladder programs
- Practice troubleshooting skills
- Extensive Learning
- Powerful instruction sets
- WorkBench has 4 wheels, suitable for movement installation
- Robust construction
- Board to attached documents
- 4 mm patch cord connections
- Mounting panel for Hydraulic components
- Storage drawers with telescopic locking facility, place in drawers for meters, patch cords, components, bread board and other accessories for storage, easy identification and access inside the drawers.
- MCB for ON/OFF control and over load protection
- Sequential & linear Hydraulic control
- Understanding of Industrial Hydraulic components
- Hydraulic safety awareness
- Product tutorial-Online

Scope of Learning

Study and use of :

- Study and use the NO (normally open) and NC (normally close) instruction bit.
- Study and implementation of NOT gate using PLC
- Study and implementation of AND gate PLC
- Study and implementation of OR gate PLC
- Study and implementation of NAND gate PLC
- Study and implementation of NOR gate PLC
- Study and implementation of XOR gate PLC
- Study and implementation of XNOR gate PLC
- Study and use of Set and Reset bit
- Study and use of Memory bit
- Study and use of Timer instruction
- Study and use of Counter instruction
- Study and use of Compare instruction
- Study and use of Arithmetic (Addition) instruction
- Study and use of Move instruction
- Control of Double Acting Cylinder_1 (DAC1) using Solenoid Valve_1 (SV1) and PLC
- Control of Single Acting Cylinder (SAC) using Solenoid Valve_2 (SV2) and PLC
- Control of Hydraulic motor using solenoid valve_3 and PLC
- Counting of double acting cylinder_1 piston forward movement using Limit switch and PLC

Technical Specifications

Programmable Logic Controller

Digital Inputs	:	12
Digital Outputs	:	8
Program size (Words)	:	2048
Boolean execution speed	:	0.33 μ s/Sequential instruction in average
Interfacing	:	USB
No. of ports	:	1
Input Voltage	:	24 V DC
Output Voltage	:	24 V DC
Power Supply	:	110V - 260V AC, 50/60Hz

General

Toggle Switches	:	5 nos.
Push to on Switch	:	4 nos
Visual Indicators	:	8 nos.
Audio Indicator	:	1 no.

Hydraulic Components

Double Acting Cylinders	:	1
Single Acting Cylinders	:	1
Hand lever valve	:	1
Manifolds	:	4
Flow control Valve	:	1
Solenoid Valves	:	3
Proximity Sensor	:	1
Hydraulic Motor	:	1
Limit Switch	:	1
Oil Hydraulic Power Pack	:	1 Capacity 20 Liter with oil level indicator, gear pump: 2LMP, 20-50bar, Breather Valve, Electric Motor 0.5HP, 230VAC, Relief Valve

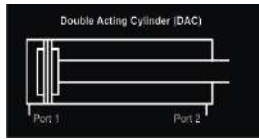
Hydraulic Components

Double Acting Cylinder

: **1no**



Physical View



Symbol

Bore Diameter : 50mm
 Stroke Length : 80mm
 Action : Double Acting
 Mounting : Mounting Eye
 Operating Pressure : 14 Bar to 20 Bar
 Port Size : 1/4"

Single Acting Cylinder

: **1no**



Physical View



Symbol

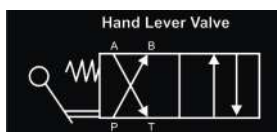
Bore Diameter : 50mm
 Stroke Length : 60mm
 Action : Single Acting
 Mounting : Mounting Eye
 Operating Pressure : 14 Bar to 20 Bar
 Port Size : 1/4"

Direction Control Valve with Hand Lever Operation

: **1no**



Physical View



Symbol

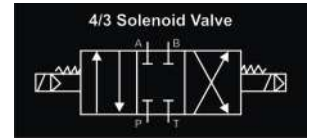
Type : 4/2 (4 Port -2 Way)
 Operating Pressure : 14 Bar to 30 Bar
 Port Size : 1/4"

Solenoid Valve

: **3nos**



Physical View



Symbol

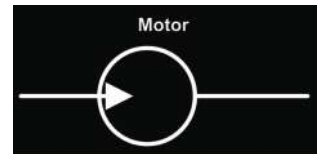
Port Size : 1/4"
 Coil : Double Coil
 Operating Pressure : 14 Bar to 30 Bar

Hydraulic Motor

: **1 no**



Physical View



Symbol

Type : Bidirectional
 Port Size : 1/4"
 Operating Pressure : 14 Bar to 30 Bar

Block Manifold

: **4nos**



Physical View



Symbol

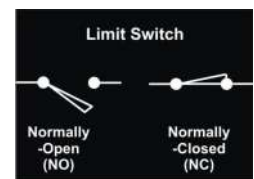
Port Size : 1/4" 4 ways

Limit Switch

: **1no**



Physical view



Symbol

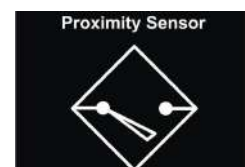
Type : Lever Type
 Supply : +24V DC

Proximity Sensor

: **1no**



Physical view



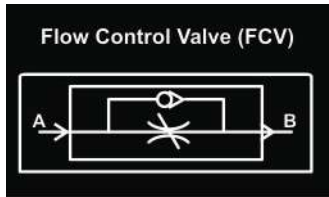
Symbol

Type : Inductive
 Supply : +24V DC

Flow Control Valve : 1no



Physical View



Symbol

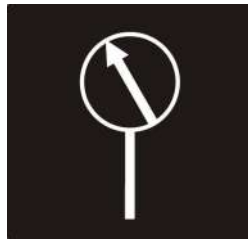
Port Size : 1/4"

Operating Pressure : 14 Bar to 30 Bar

Pressure Gauge : 1no



Physical View



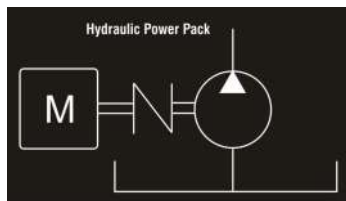
Symbol

Operating Pressure : 0 Bar to 70 Bar

Hydraulic Power Pack : 1no



Physical View



Symbol

Tank Oil : MS Powder Coated

Capacity : 25 Liters. with Oil Level Indicator, Breather, Oil filter & Suction

Gear Pump : 2 LPM

Pressure : 40-70 Bar

Electric Motor : Single Phase, 1/2 HP 230VAC

Caster wheel : 4 (2with lock & 2 without lock)

Size : 4"

MCB : 1 no

Supply : 230VAC

Current : 16Ampere

Dimension in mm : H1727 x W1400 x D830

Included Accessories

4mm Patch Cord 30" (Red) : 5 nos.

4mm Patch Cord 30" (Black) : 5 nos.

4mm Patch Cord 30" (Yellow): 5 nos.

4mm Patch Cord 30" (Blue) : 5 nos.

4mm Patch Cord 18" (Yellow): 10 nos.

4mm Patch Cord 18" (Blue) : 10 nos.

Mains Cord : 1 no.

RS232 to 4 Pin DIN Cable : 1 no.

USB to Serial Converter : 1 no.

Hydraulic Power Pack : 1 no.

Windows OS Based PC (optional)

Note: Windows OS Based Computer is required to explore PLC experiments

Software window

