

Solenoid Valve Symbols

Solenoid Valve and Common Pneumatic System Symbols.

Understanding ANSI / ISO Schematic Symbols for fluid power and pneumatic components are used to identify and graphically denote the function and operation of piped control systems. Understanding schematic symbols will help to better understand at a glance the application, control, direction, amount of flow for actuated valves, cylinders and rotary actuators.

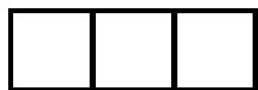
Basic Symbols.



Square or rectangular block specify a valve position.



Two square or rectangular blocks specify the valve has two possible positions



Three square or rectangular blocks specify the valve has three possible positions



Arrows specify the direction of flow, in this case in one direction, if a line has an arrow at each end then the flow is bi-directional or flow in both directions.



Symbol for closed port.



Symbol for two port valve with both ports closed.



Symbol for spring or rest position of valve. The spring pushes from the side that is drawn toward will return the valve to its safe position.



Symbol for pressure inlet port of valve.



Symbol for 2 port valve with two positions, one position valve open with flow in both directions or valve closed with both ports blocked.



Symbol for 3 port valve with 2 positions.

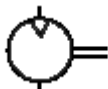
A Symbols



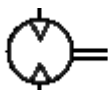
Accumulator



Air Dryer

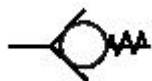


Air motor flow in one direction



Air motor flow in two directions

C Symbols



Check valve spring loaded



Compressor



Cylinder spring return



Cylinder double acting double rod

Cylinder double acting single fixed cushion



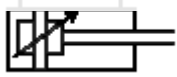
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Theory

Category

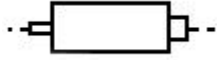
Data

Store



Cylinder double acting two adjustable cushions

D Symbols



Differential pressure



direction of flow

E Symbols



Exhaust Line or control line

F Symbols



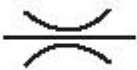
Filters and Regulators



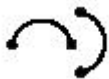
Filter with automatic drain



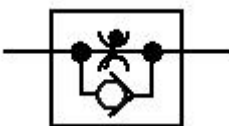
Filter with manual drain



Fixed restriction



Flexible hose line



Flow control valve

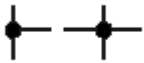


Flow gauge

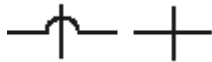
L Symbols

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Lever



Lines connected



Lines crossing



Lubricator

M Symbol



Muscular control

O Symbol



One paypass flow path and two closed ports

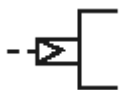


One flow path

P Symbol



Pedal or Treadle








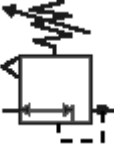
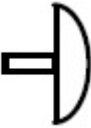
Pilot pressure external



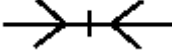
Pilot pressure internal





Plugged or blocked port

	Plunger or position indicator	Home	Theory	Category	Data	Store
	Pneumatic					
	Pressure actuated switch					
	Pressure gauge					
	Pressure regulator adjustable non relieving					
	Pressure regulator adjustable self relieving					
	Push button					

Q Symbols

	Quick connect coupling
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R Symbols

	Roller
	Roller one way

S Symbols

	Shuttle valve
	Silencer



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Solenoid and pilot Manual over ride



Solenoid with single winding



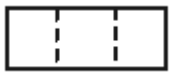
Spring



T Symbols



Two closed ports



Two distinct positions and one transitory centre position



Two flow paths



Two flow paths and one closed port



Two flow paths with cross connection

V Symbols



Vacuum pump



Variable restriction

W Symbols



Working line

Basic Valve Symbols.

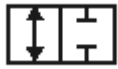
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2/2 Way Valve

2 ports 2 positions



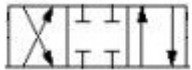
3/2 way valve

3 ports 2 positions



4/2 way valve

4 ports 2 positions



4/3 way valve

4 ports 3 positions



5/2 way valve

5 ports 2 positions

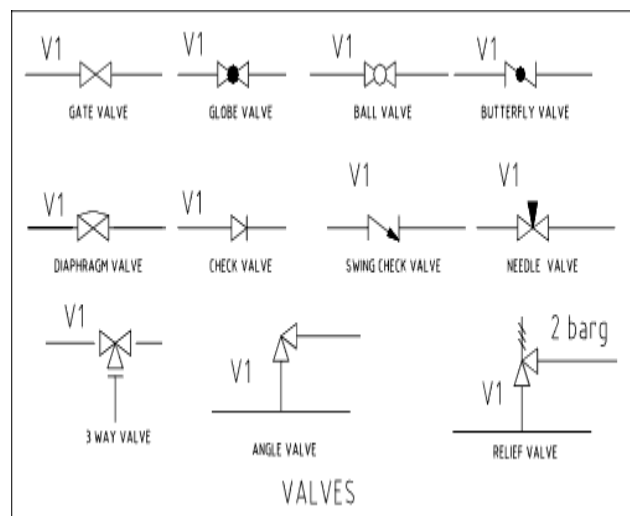






























5/3 way valve

5 ports 3 positions

Mechanical valve symbols.

Basic Valve Symbols.



 2/2 mechanical valve - basic	 2/2 mechanical valve - mushroom
 2/2 mechanical valve - push button	 2/2 mechanical valve - foot pedal
 2/2 mechanical valve - twist selector	 2/2 mechanical valve - roller level
 2/2 hand valve	 3/2 mechanical valve - basic NC
 3/2 mechanical valve - basic	 3/2 mechanical valve with integrated exhaust port - basic
 3/2 mechanical valve - roller level	 3/2 mechanical valve with integrated exhaust port - roller level
 3/2 mechanical valve - one way roller level	 3/2 mechanical valve with integrated exhaust port - one way roller level
 3/2 manual valve - twist selector	 3/2 mechanical valve - mushroom
 3/2 mechanical valve - flash mushroom	 3/2 mechanical valve - twist selector or toggle lever/mushroom
 3/2 mechanical valve with integrated exhaust port - flash push button	 3/2 mechanical valve with integrated exhaust port - push button
 3/2 mechanical valve - foot pedal	 3/3 mechanical valve
 3/2 hand valve	 3/2 air operated valve
 3/2 air operated valve NC	 3/2 air operated valve NO
 5/2 mechanical valve - basic	 5/2 mechanical valve - roller level

Common Valve Symbols.



3 way plug valve

Angle valve hand operated

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Angle valve



Ball valve



Bleeder valve



Butterfly valve



Check non return valve



Check valve



Control valve



Diaphragm valve



Flange valve



Flanged valve

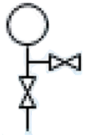


Float operated valve



Four way valve

Gate valve hand operated

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Gauge



Globe valve hand operated



Globe valve



Hydraulic valve



Motorised valve



Needle valve



Plug Cock valve



Powered valve



Pressure relief valve



Pressure sustaining valve



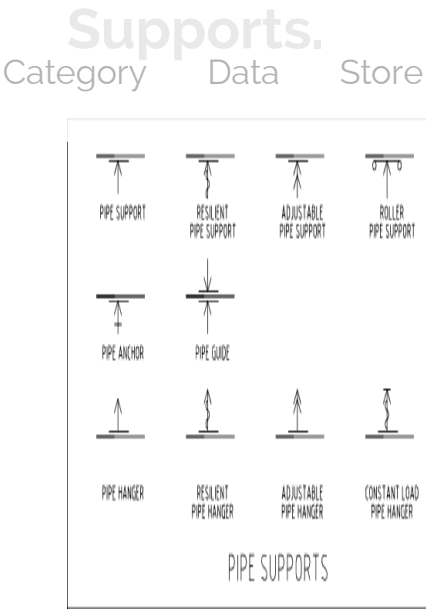
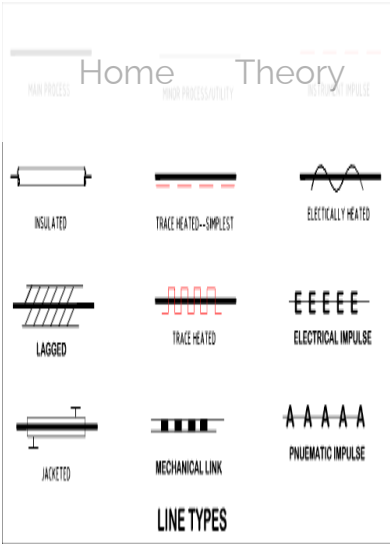
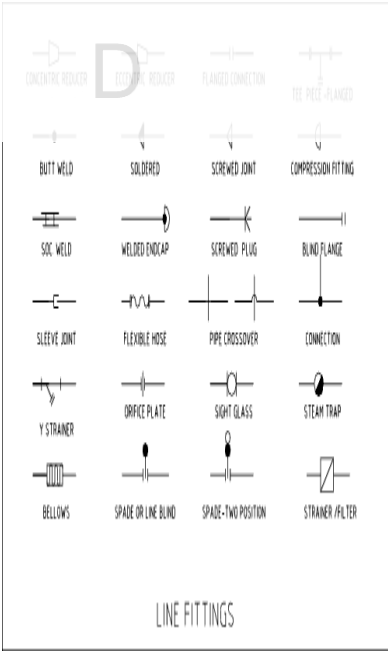
Solenoid valve



**Symbols for
fittings.**

**Symbols for
Lines.**

**Symbols for
Pipe**

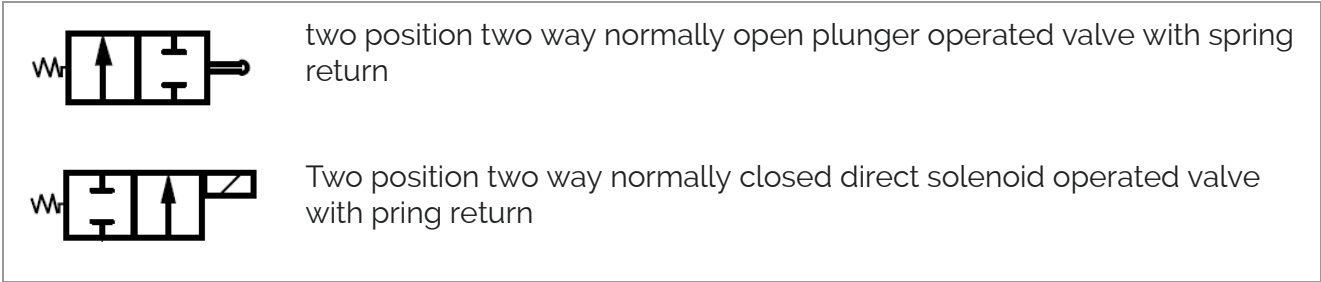


Solenoid control valves that change valve position Open/Close etc by direct movement from a solenoid are called Direct Acting.

Solenoid control valves that change position Open/Close etc by opening small pilot circuits allowing pressurised air, fluid or gas to move the valve are called pilot operated or servo pressure assisted valves.

Two way and three way valves with a mechanical return spring that automatically return the valve back

to the rest position are called normally closed (failsafe closed) or normally open (failsafe open).



Instrument Identifiers.

Measured Variable	Type	Component
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F = Flow	R = Recorder	T = Transmitter
L = Level	I = Indicator	M = Modifier
P = Pressure	C = Controller	E = Element
Q = Quantity	A = Alarm	
T = Temperature		

Actuators.

Actuators provide clamping, movement, rotation, turn and position from fluid power, pneumatic and hydraulic circuits. Powered by pneumatic air or hydraulic lines.

Cylinders.

Cylinders provide linear movements powered by pneumatic air lines..

Rotary Actuators.

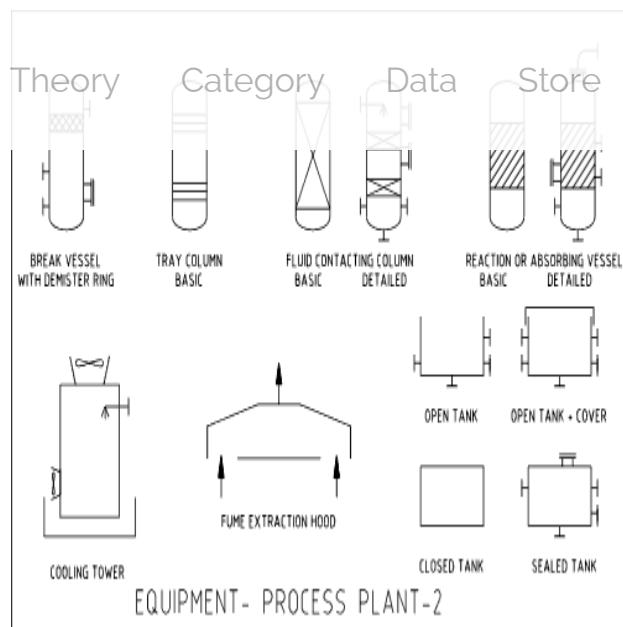
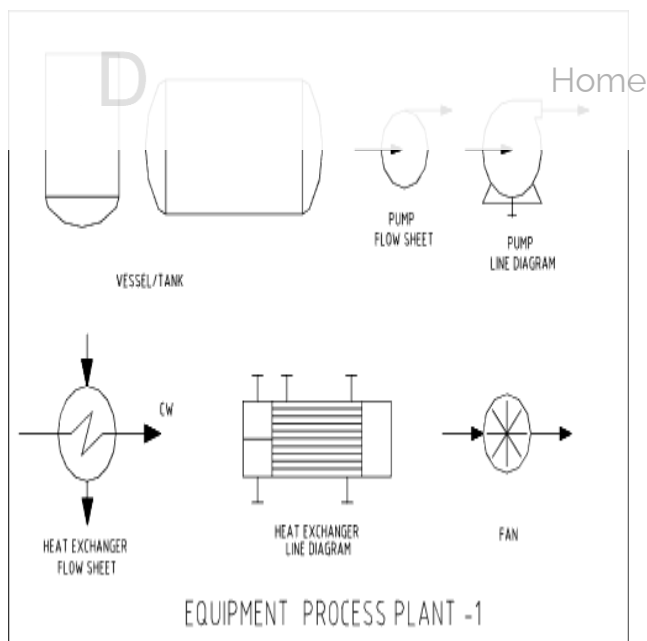
Rotary actuators provide rotational force to actuate ball, butterfly, gate and globe valves. These can be quarter turn, half turn, full turn and multi turn actuators powered by pneumatic or hydraulic lines.

Air Motors.

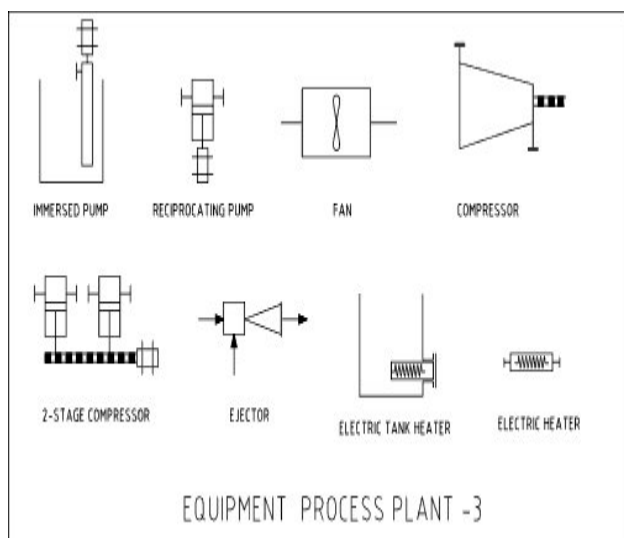
Air motors provide continuous fast rotation and are powered by pneumatic air lines.

**Process equipment
symbols plant 1**

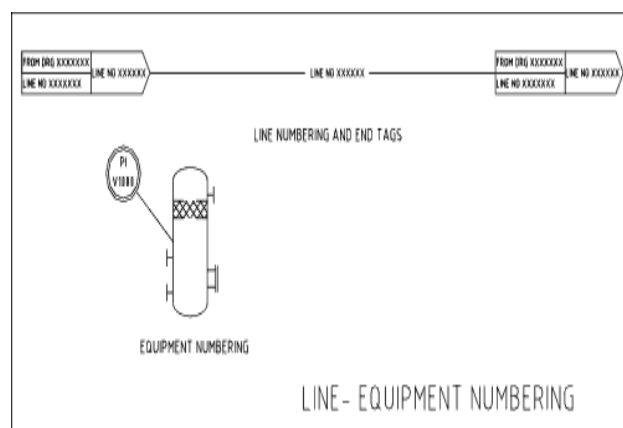
**Process equipment
symbols plant 2**



Process equipment symbols plant 3



Line Tags and Equipment Identification.



Process equipment details and drawings relate to the type of schematic drawing provided. Typically a process flow schematic drawing will provide basic levels of technical information to highlight basic essential flow control and flow paths. An engineering line diagram of P and ID will show more detailed and precise information.

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