

# 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. Homed with Theory the Category to its Data Safe Store



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



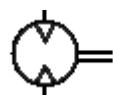
Accumulator



Air Dryer

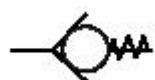


Air motor flow in one direction



Air motor flow in two directions

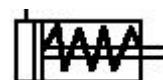
## C Symbols



Check valve spring loaded



Compressor

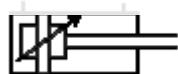


Cylinder spring return



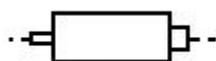
Cylinder double acting double rod

Cylinder double acting single fixed cushion

[Home](#) [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



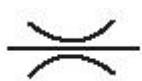
Filters and Regulators



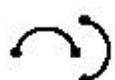
Filter with automatic drain



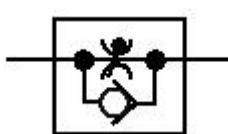
Filter with manual drain



Fixed restriction



Flexible hose line



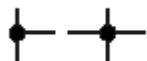
Flow control valve



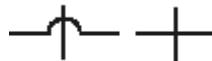
Flow gauge

**L Symbols****D**
[Home](#) [Theory](#) [Category](#) [Data](#) [Store](#)


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**

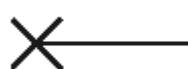
Pedal or Treadle



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

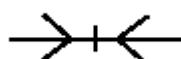


Pressure regulator adjustable self relieving



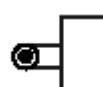
Push button

## Q Symbols

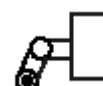


Quick connect coupling

## R Symbols

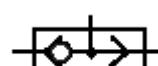


Roller



Roller one way

## S Symbols

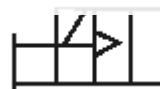


Shuttle valve

Silencer


[Home](#) [Theory](#) [Category](#) [Data](#) [Store](#)

Solenoid and pilot Manual override



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.

Home   Theory   Category   Data   Store



2/2 Way Valve

2 ports 2 positions



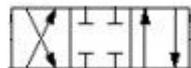
3/2 way valve

3 ports 2 positions



4/2 way valve

4 ports 2 positions



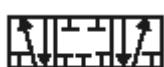
4/3 way valve

4 ports 3 positions



5/2 way valve

5 ports 2 positions

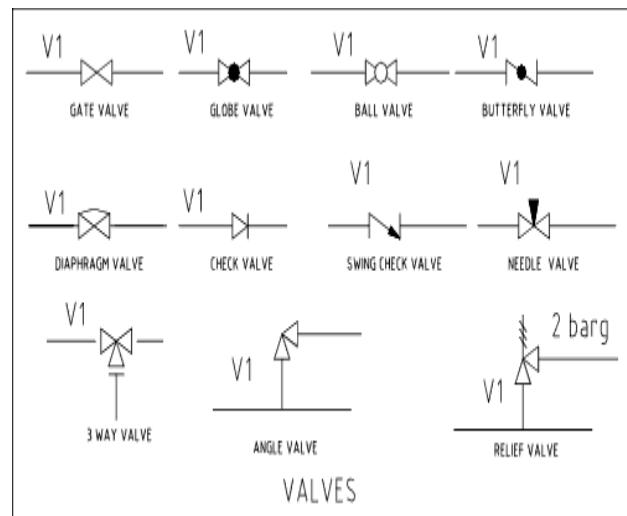


5/3 way valve

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 in mushroom		3/2 mechanical valve - twist selector/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

Theory Category Data Store

## Common Valve Symbols.

3 way plug valve



Angle valve hand operated



Angle valve



Ball valve



Bleeder valve



Butterfly valve



Check non return valve



Check valve



Control valve



Diaphragm valve



Flange valve



Flanged valve

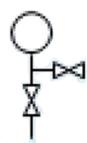


Float operated valve



Four way valve

Gate valve hand operated



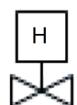
Gauge



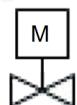
Globe valve hand operated



Globe valve



Hydraulic valve



Motorised valve



Needle valve



Plug Cock valve



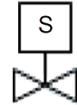
Powered valve



Pressure relief valve



Pressure sustaining valve

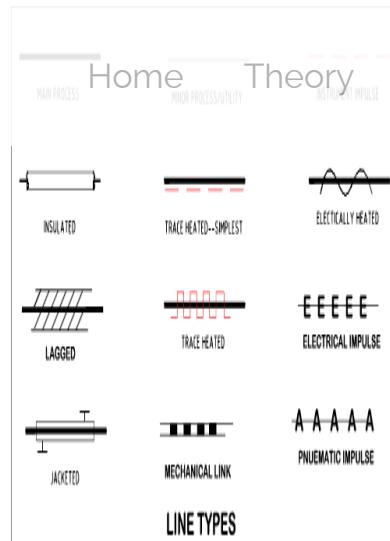
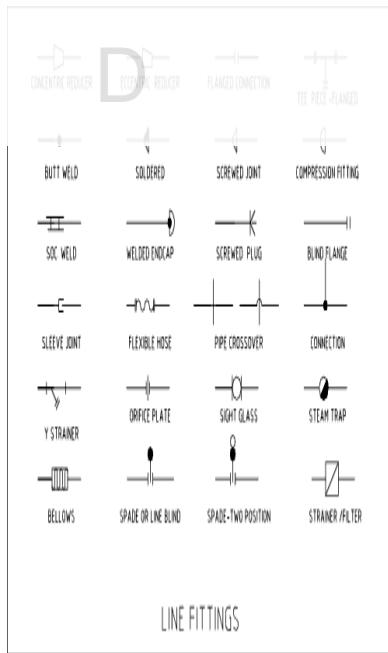


Solenoid valve

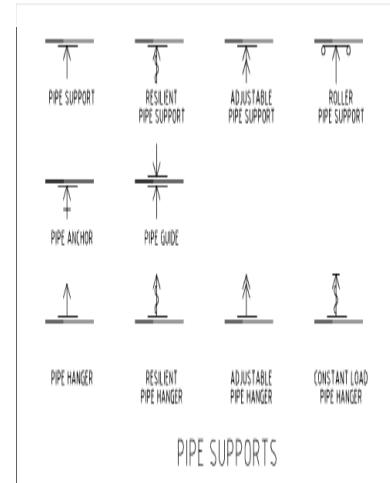
**Symbols for fittings.**

**Symbols for Lines.**

**Symbols for Pipe**



Supports. Category Data Store



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).



two position two way normally open plunger operated valve with spring return



Two position two way normally closed direct solenoid operated valve with spring return

## Instrument Identifiers.

Measured Variable	Type	Component
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F = Flow

R = Recorder

T = Transmitter

L = Level

Home  
I = IndicatorTheory  
Category  
M = ModifierData  
Store

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.

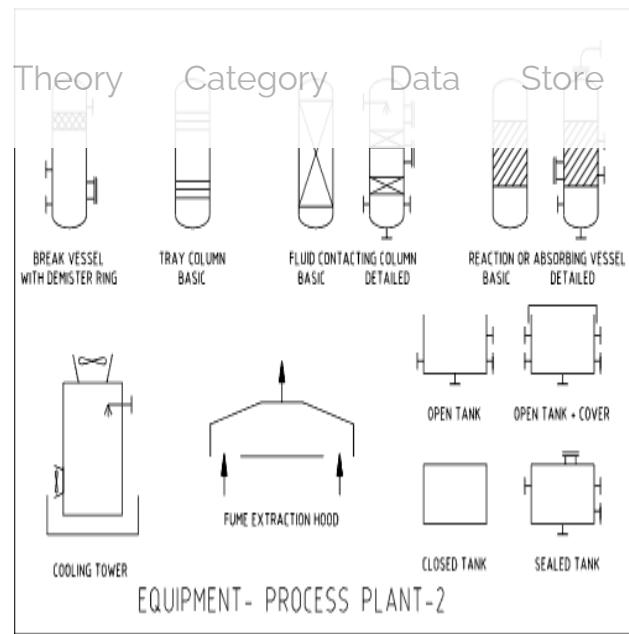
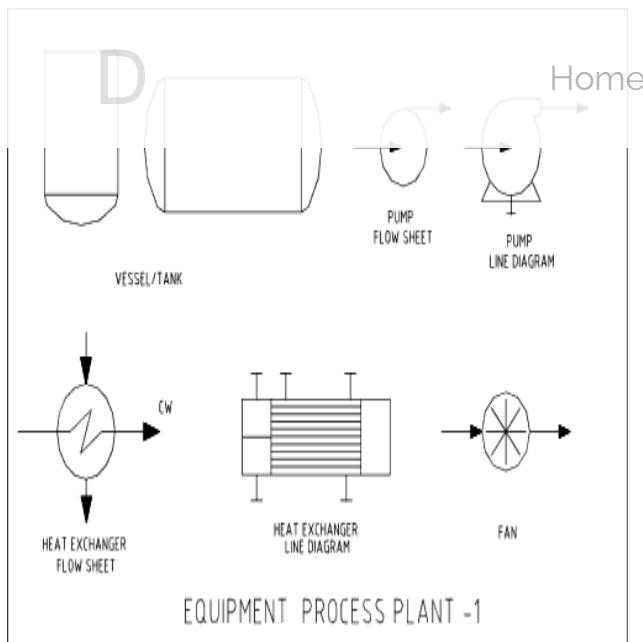
Rotary actuators provide rotational force to actuate ball, butterfly, gate and globe valves. These can be quarter turn, half turn, full turn and multi turn actuators powered by pneumatic or hydraulic lines.

## Air Motors.

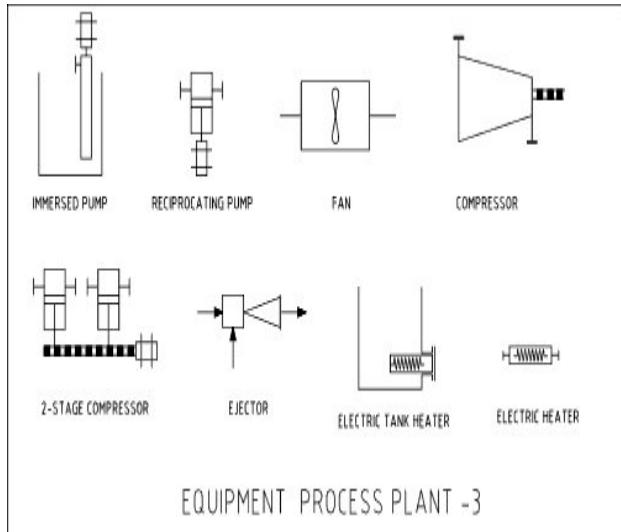
Air motors provide continuous fast rotation and are powered by pneumatic air lines.

## Process equipment symbols plant 1

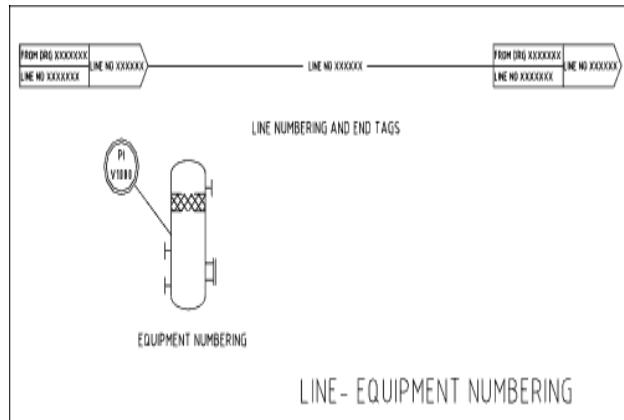
## Process equipment symbols plant 2



## 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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