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# Pneumatic symbols

## Pneumatic symbols

The development of pneumatic systems is assisted by a uniform approach to the representation of the elements and the circuits. The symbols used for the individual elements must display the following characteristics:

- Function
- Actuation and return actuation methods
- Number of connections
- Number of switching positions
- General operating principle
- Simplified representation of the flow path

## Pneumatic symbols

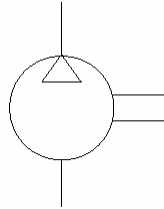
A symbol does not represent the following characteristics:

- Size or dimensions of the component
- Particular manufacturer, methods of construction or costs
- Operation of the ports
- Any physical details of the elements
- Any unions or connections other than junctions

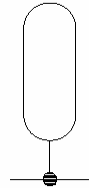
The standard used is ISO 1219

## Energy supply

Compressor with fixed capaci

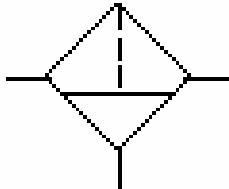


Air receiver and 'T' junction

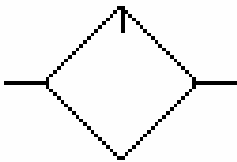


# Air service equipment

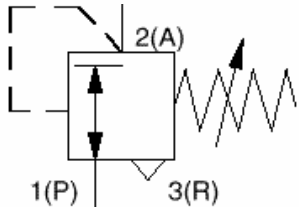
Air filter



Air lubricator



Pressure regulator



# Air service equipment

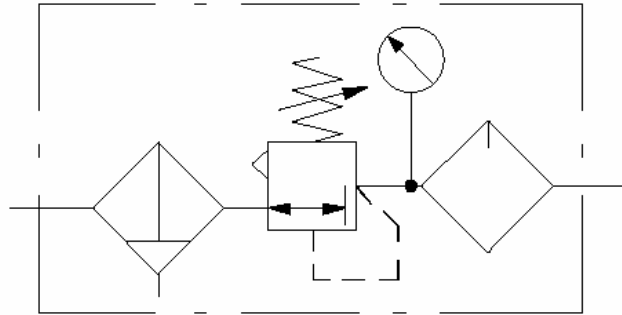
Air service unit

filter

Regulator

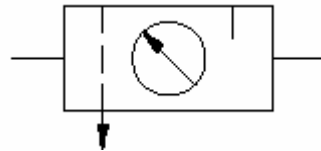
Gauge

Lubricator



Simplified air

Service unit



## Directional control valves

Each valve switching position is represented by a square.



The number of squares corresponds to the number of switching positions.



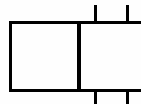
Lines indicate the flow path, arrows show the direction of flow.



Shut-off positions are identified in the boxes by lines drawn at right angles.



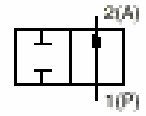
The connections (inlet and outlet ports) are shown by lines on the outside of the box.



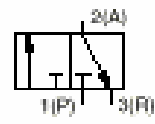
# Directional control valves

Number of ports  
 Number of switching positions

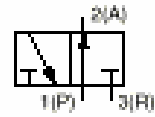
2/2-way valve



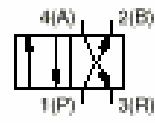
3/2-way valve, normally closed



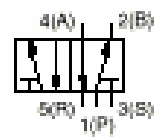
3/2-way valve, normally open



4/2-way valve

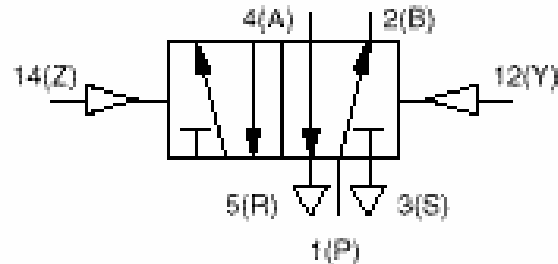
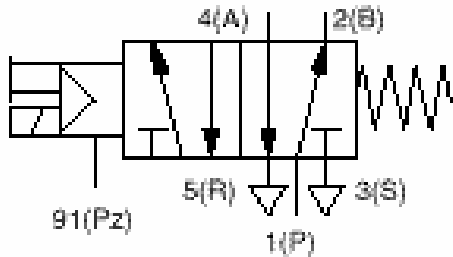
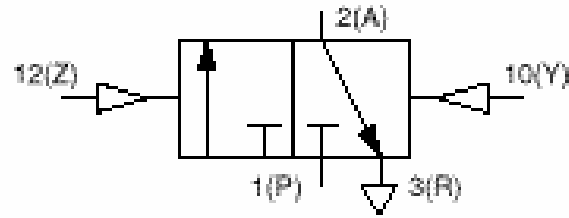
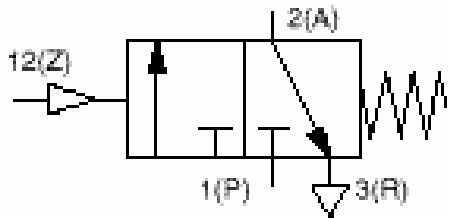


5/2-way valve





# Directional control valves

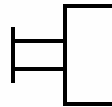


# Directional control valves

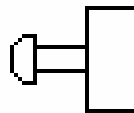
Methods of actuation

Mechanical

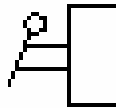
General manual operation



Push button



Lever operated



Detent lever operated

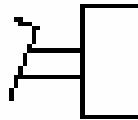


# Directional control valves

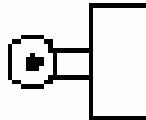
Methods of actuation

Mechanical

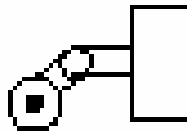
Foot pedal



Roller operated



Idle return, roller

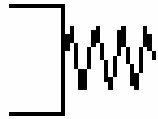


# Directional control valves

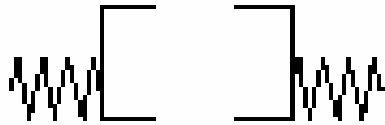
Methods of actuation

Mechanical

Spring return



Spring centered

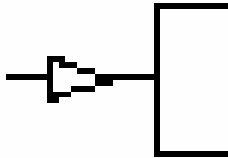


# Directional control valves

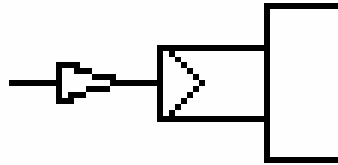
Methods of actuation

Pneumatic

Direct pneumatic actuation

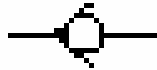


Indirect pneumatic  
actuation (piloted)



## Non-return valves

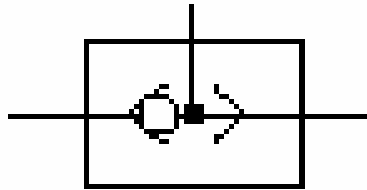
Check valve



Spring loaded check valve

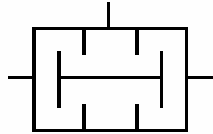


Shuttle valve: 'or' function

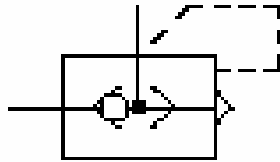


## Non-return valves


Two pressure valve:  
'AND' function

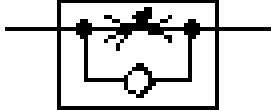


Quick exhaust valve



## Flow control valves

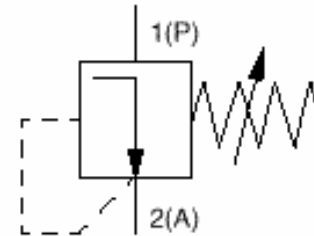
Flow control valve adjustable 

One-way flow control valve 

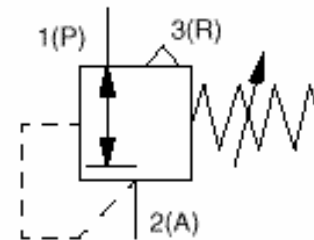


## Pressure valves

Adjustable pressure regulating valve,  
non-relieving type

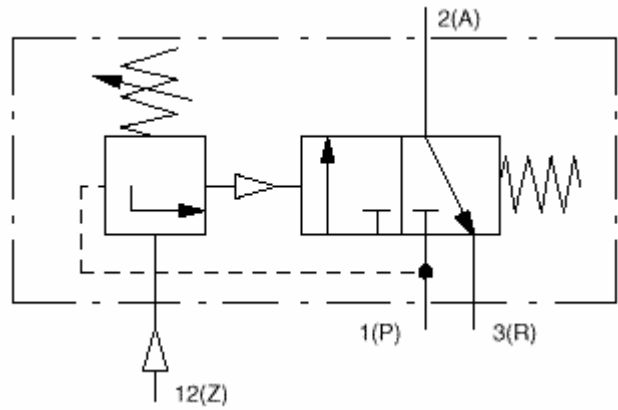


Adjustable pressure regulating valve,  
relieving type (overloads are vented)



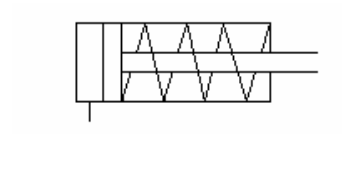
# Pressure valves

Sequence valve combination

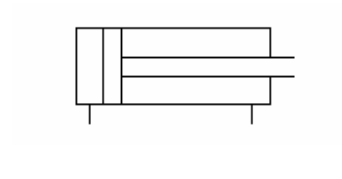


# Linear actuators

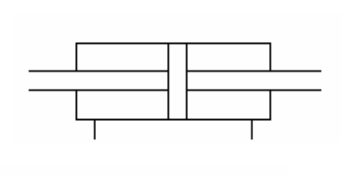
Single acting cylinder



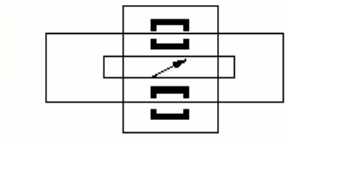
Double acting cylinder



Double acting cylinder with  
double ended piston rod

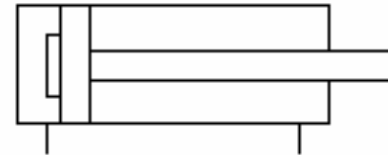


Rodless cylinder

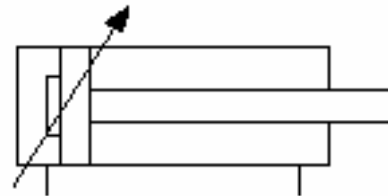


## Linear actuators

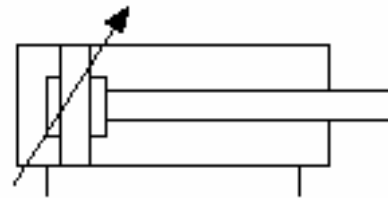
Double-acting cylinder with non-adjustable cushioning in one direction



Double-acting cylinder with single adjustable cushioning

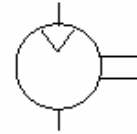


Double-acting cylinder with adjustable cushioning at both ends

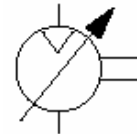


## Rotary actuators

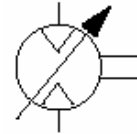
Air motor, rotation in one direction, fixed capacity



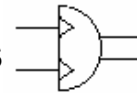
Air motor, rotation in one direction, variable capacity



Air motor, rotation in both directions, variable capacity

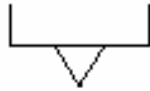


Rotary actuator, limited travel, rotation in both directions

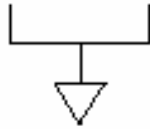


## Auxiliary symbols

Exhaust port



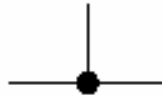
Exhaust port with threaded connector



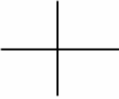
Silencer

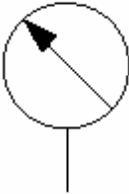


Line connection



## Auxiliary symbols

Crossing lines (not connected) 

Pressure gauge 

Visual indicator 