INDUSTRIAL PNEUMATICS

FOR AUTOMATION

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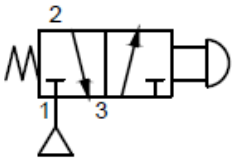
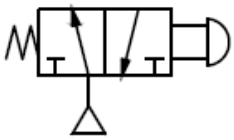
Three Way Valves

The three way valve has three ports. A three way valve can be of four different configurations as listed and illustrated below:

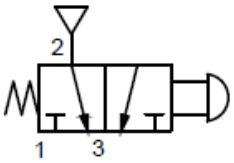
Normally non-passing (NC)
Normally passing (NO)
Diverter
Selector



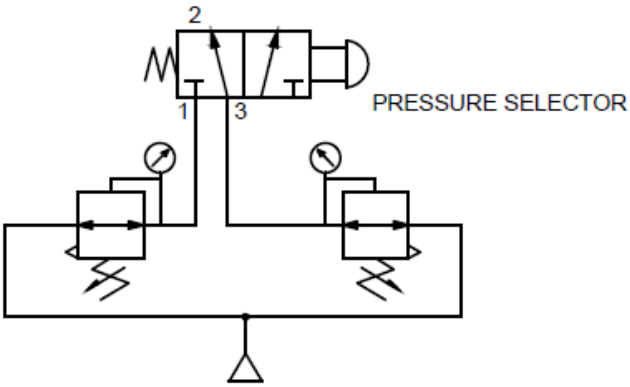
3 WAY NORMALLY NON-PASSING
SPRING RETURN
PUSH BUTTON VALVE



3 WAY NORMALLY PASSING
SPRING RETURN
PUSH BUTTON VALVE



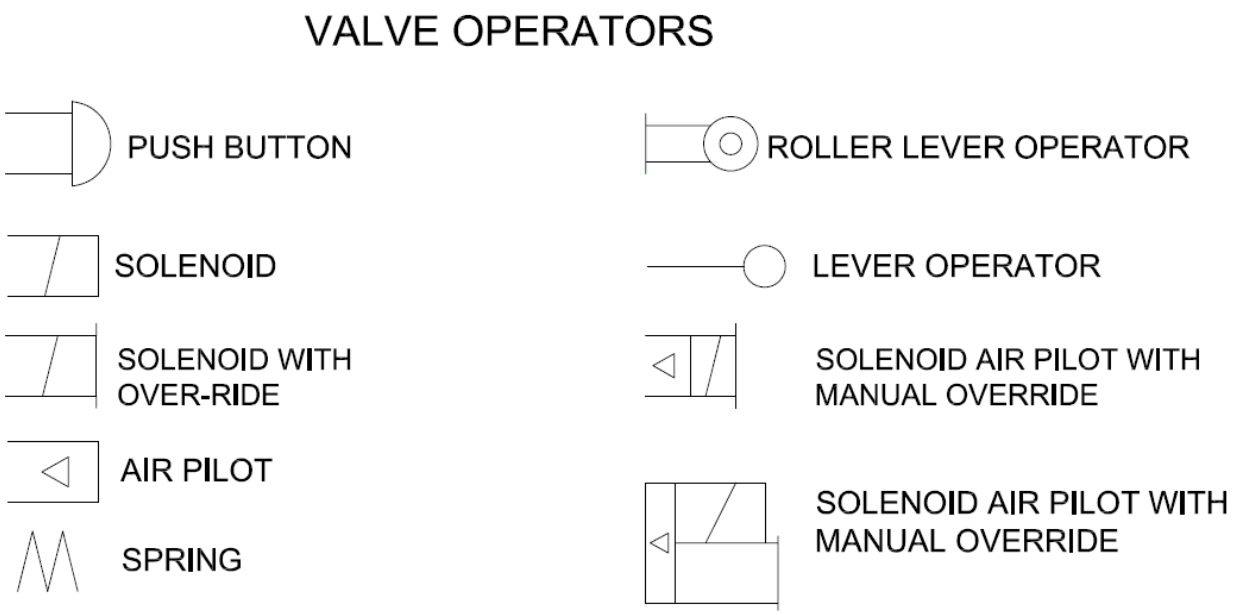
DIVERTER VALVE



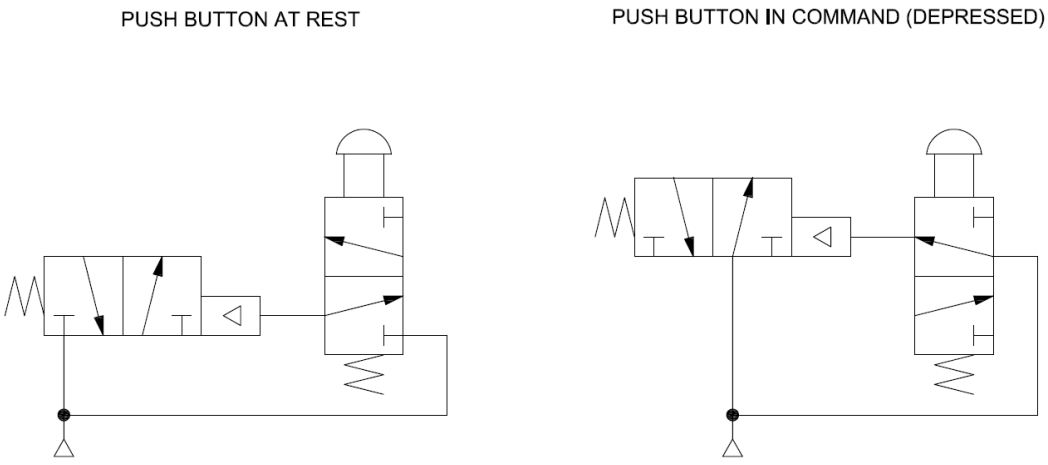
PRESSURE SELECTOR

Three way valves are generally used to control single acting air cylinders (described in the actuators chapter). They are also used as logic devices to enable, disable, or direct airflow to specific parts of circuits for control purposes.

A three way valve is usually a two position valve with two operators. An operator is the part of the valve that shifts the valve spool into a certain position. Some of the most common valve operators are listed below:

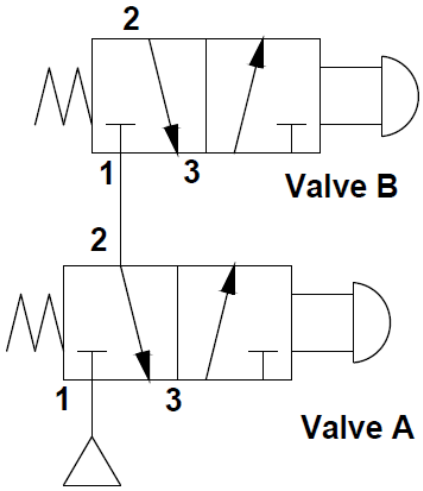


When a three way valve is used to actuate another valve it is referred to as **piloting**. Below is an example of a push button three way valve used to pilot another three way air-piloted valve.



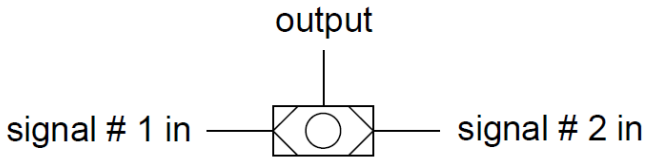
In pneumatic control circuitry three way valves may be used in series configurations as shown below:

Series example:

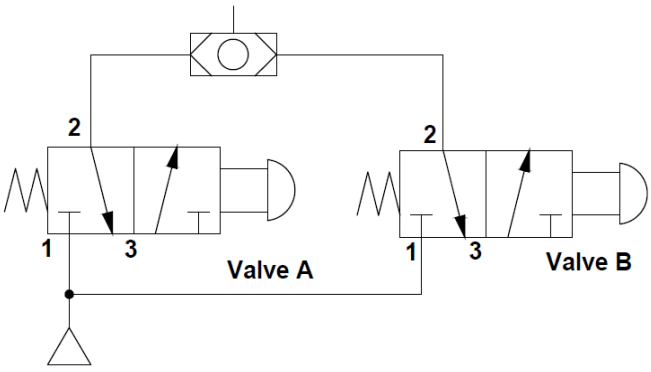


Note: Both valves **"A" and "B"** must be actuated for air to exit port 2 of valve "B"
SERIES = "AND" LOGIC

In pneumatic circuitry three way valves may also be used in parallel configurations but a **shuttle valve** is necessary to prevent compressed air from exiting the alternate, non-actuated valve's, exhaust port. A shuttle valve is a logical "or" device.



Parallel example:



Note: Actuating either valve **"A" or "B"** will cause an output from the shuttle valve. **PARALLEL = "OR" LOGIC**