



## Actuated Valves Technical General System Terms & Actuator Terms

The following valve actuation terminology is provided for better understanding and elimination of miscommunications. Terms and definitions are grouped by related topics and listed in alphabetical order.

### GENERAL SYSTEM TERMS

**Ambient Temperature** - The temperature of the air surrounding the actuator. Generally stated as a maximum and minimum for proper actuator operation. Note that ambient temperature range for an actuator may exceed that of a plastic valve and should not be considered to be the same as the service temperature.

**Maximum Line Pressure** - The media pressure against which the valve will have to close.

**Maximum Service Temperature** - Maximum temperature of the media. Service temperature should be considered in selection of the proper thermoplastic valve material for the application.

**Media** - The material flowing through a valve.

**Modulating** - Throttling or regulating the flow through a valve by varying the position between open and closed.

**On-Off Service** - Basic full open or full closed operation to start or stop flow.

**Operating Torque** - Force required to operate a valve, expressed in inch-pounds or foot-pounds

**Supply Pressure** - Facility air pressure supply required to operate pneumatic actuator.

### ACTUATOR TERMS

**Double Acting** - A Pneumatic actuator which uses air to both open and close the valve. Also referred to as "Air-to-Air" operation.

**Electric Actuator** - An electromechanical device used to actuate (open, close or modulate) a valve. An electric motor and gear train is used to actuate the valve. Numerous application considerations must be made in using an electric actuator. These include, duty cycle, cycle time, supply voltage, operating temperature and enclosure rating (NEMA) for use of electric devices under various environmental conditions.

**Fail-Closed** - Spring return in a pneumatic actuator which closes the valve upon loss of air pressure. Also referred to as "Air-to Spring Close" or "Spring-to-Close" operation.

**Fail-Open** - Spring return in a pneumatic actuator which opens the valve upon loss of air pressure. Also referred to as "Air-to-Spring Open" or "Spring-to-Open" operation.

**Pneumatic Actuator** - An air operated mechanical device used to actuate (open, close or modulate) a valve. The actuator converts air pressure into mechanical force most commonly using either a piston or diaphragm. The mechanical force output can be either rotational, as in actuation of a ball valve, or linear as commonly used in actuation of a diaphragm valve. Pneumatic actuators are not significantly limited by duty cycles and cycle time (virtually instantaneous) found with electric actuators. However, they may require additional accessories to further control speed of operation and a voltage supply for certain electric signal devices which may be desired.

**Spring Return** - An actuator using a spring to return the valve to either an open or closed position upon loss of power. Spring returns are most commonly used with pneumatic actuators, but can be used on electric actuators where it is necessary for the valve to open or close by design or by system failure (see also Fail-Close and Fail-Open terms).