

Solenoid Valve Selection Guide

A solenoid valve is basically a motorized valve and are most frequently used to control the flow in a pressurized liquid, gas or air system, and can have a variety of operations within a system, such as turn on/off, release, dose, distribute or mixing of fluids. Solenoids offer fast and safe directional flow switching as well as high reliability, low control power and a compact design. It is important to identify all relevant specifications when selecting a solenoid valve, starting with determining the functional style.



Pilot-Operated

A pilot-operated solenoid valve utilizes the pressurized fluid or gas to activate the valve turning mechanism. A pilot operated solenoid valve is the most commonly used solenoid valve for air and water flow control. It can be used to affect the balance of pressure above and below the valve. Pressure in the system determines how fast the valve opens and closes, moderate to high pressure is best for these valves.

Direct Acting

The pressure and flow rates of this type of valve are limited by the power of the solenoid and its ability to turn under pressure. Direct acting solenoid valves are best used in low pressure fluid control systems, not suggested for high pressure rapid flow system.



Direct Lift or Direct Operated Valve

Direct lift valves combine the features of a Direct Acting Valves with those of a Pilot-Operated Solenoid Valves. The valve functions as a direct acting valve at low pressures and as a pilot operated valve at higher pressures. It is sometimes referred to as a "hung diaphragm" valve. Capable of operating at 0 pressure these solenoid valves are best used in low pressure transfer or supply systems where pressure may need to be increased or has a steadily increasing pressure climb during operation.

After selecting the correct type of solenoid valve select the correct specifications for the application. Below is a list of needed specifications and their meaning. Be sure your solenoid requirements are within the specification range of the system it is operating or failure will occur.

Operating pressure

Valves in the standard range are designed for pressure of max 80psi-435psi. The product range includes valves for special applications, designed for pressure of up to 1160 psi. When selecting a valve, your operating range should be within the specification range of the valves operating pressures.

Differential pressure/ MOPD

When selecting a valve the difference between inlet pressure and outlet pressure is the max. permissible differential pressure against which the valve can open. Also specified as MOPD: **Maximum Opening Pressure Differential**. The operating pressure of the valve should be below the MOPD of the valve selected or the solenoid will not open or close properly changing the amount of flow between cycles.

Media conditions

Solenoid valves have temperature ratings for the liquid or gas it is controlling in the system. The media (material flowing through the valve) must be below the max temperature rating or the valve will not open and close properly and may malfunction. Determine the minimum and maximum operating temperatures for the media you are working with to select the correct valve with the proper temperature rating.

Ambient conditions

The ambient temperature (operating environment conditions) must be within certain specified limits for the coil to function optimally. In wet or very humid environments solenoids with an IP67 enclosure classification must be selected to prevent a coil shortage from the moisture.

Coil voltage and power

When selecting a solenoid valve, knowing which voltage (a.c./d.c.) is available for an application is important to prevent a failure. Often the maximum permissible differential pressure on most valves can be increased by fitting a more powerful solenoid coil to the valve. The coil power determines the timing and turning strength of the solenoid, if the solenoid is not selected correctly delayed opening and closing will occur, if at all.



Information Sources Include: ASCO CO. , W.W. Grainger

If you are still having difficulty choosing a Solenoid Valve,
 please contact us at askzoro@zoro.com or 855-289-9676

Product Compliance and Suitability.

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