

# STRITT & PRIEBE INC.

## COMMON TYPES OF VALVES USED IN INDUSTRIAL FLOW CONTROL INDUSTRY

### MULTI-TURN VALVES OR LINEAR MOTION VALVES

**The Gate Valve:** The gate valve is a general service valve used primarily for on - off, non-throttling service. The valve is closed by a flat face, vertical disc, or gate that slides down through the valve to block the flow.

**The Globe Valve:** The globe valve effects closure by a plug with a flat or convex bottom lowered onto a matching horizontal seat located in the center of the valve. Raising the plug opens the valve, allowing fluid flow. The globe valve is used for on - off service and handles throttling applications.

**The Pinch Valve:** The pinch valve is particularly suited for applications of slurries or liquids with large amounts of suspended solids. It seals by means of one or more flexible elements, such as a rubber tube, that can be pinched to shut off flow.

**The Diaphragm Valve:** The diaphragm valve closes by means of a flexible diaphragm attached to a compressor. When the compressor is lowered by the valve stem onto a weir, the diaphragm seals and cuts off flow. The diaphragm valve handles corrosive, erosive and dirty services.

**The Needle Valve:** The needle valve is a volume-control valve that restricts flow in small lines. The fluid going through the valve turns 90 degrees and passes through an orifice that is the seat for a rod with a cone-shaped tip. The size of the orifice is changed by positioning the cone in relation to the seat.

### QUARTER TURN VALVES OR ROTARY VALVES

**The Plug Valve:** The plug valve is used primarily for on-off service and some throttling services. It controls flow by means of a cylindrical or tapered plug with a hole in the center that lines up with the flow path of the valve to permit flow. A quarter turn in either direction blocks the flow path.

**The Ball Valve:** The ball valve is similar in concept to the plug valve but uses a rotating ball with a hole through it that allows straight-through flow in the open position and shuts off flow when the ball is rotated 90 degrees to block the flow passage. It is used for on-off and throttling services.

**The Butterfly Valve:** The butterfly valve controls flow by using a circular disc or vane with its pivot axis at right angles to the direction of flow in the pipe. The butterfly valve is used both for on-off and throttling services.

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## SPECIALTY VALVES

In addition to these standard valve products, many valve manufacturers produce custom-designed valves and actuators for specific applications. Valves are available in a broad spectrum of sizes and materials. Each design has its own advantages, and selection of the proper valve for particular application is critical. The factors generally considered in the selection of a valve include:

- The substance to be handled and the required flow rate.
- The requirement that the valve control and/or shut off the flow in the manner demanded by the service conditions.
- The ability of the valve to withstand the maximum working pressure and temperature.
- The ability of the valve to resist attack by corrosion or erosion.
- Actuator requirements, if any.
- Maintenance and repair requirements.

## SELF-ACTUATED VALVES

**The Check Valve:** The check valve is designed to prevent backflow. Fluid flow in the desired direction opens the valve, while backflow forces the valve closed.

**The Pressure Relief Valve:** The pressure relief valve is designed to provide protection from over-pressure in steam, gas, air and liquid lines. The valve "lets off steam" when safe pressures are exceeded, then closes again when pressure drops to a preset level.

## CONTROL VALVES

**The Control Valve:** The control valve is designed to ensure accurate proportioning control of flow. It automatically varies the rate of flow based on signals it receives from sensing devices in a continuous process. Some valves are designed specifically as control valves.

However, most types of valves can be used as control valves, both linear and rotary motion, by the addition of power actuators, positioners and other accessories.

(taken from VMA.org)