❖ Types:

1- Ball Valve:

A ball Valve is a type pf valve that uses a hollow, pivoting ball to control the flow rate through it .

The valve is considered open when the ball's hole is in line with the flow and is considered closed when the handle is turned ¼ turn either CW or CCW

- Sizing
  its size varies from 0.2 to 48 inches (according to what you want)

- Applications
  Ball valve is used as a shut off and pressure and flow control for liquid and gas and is used in oil industries and natural gas industries

2- Butterfly Valve:

A butterfly valve is a type of valve that uses a disk that can rotate as a closing mechanism.

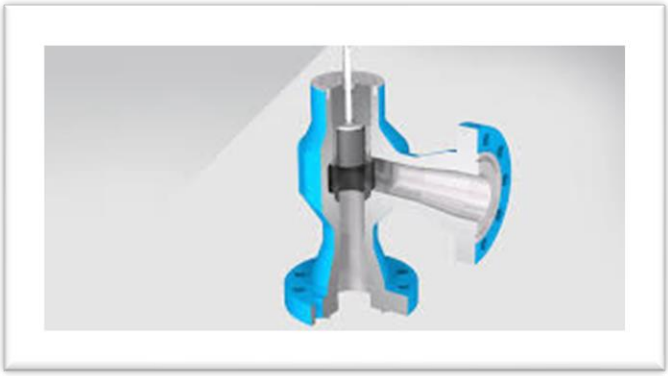
It is like the ball valve in the mechanism where it is fully closed or opened when turned ¼ turn but it can be half opened by turning the valve from the range 0-90

- Sizing
  Its size varies from 2 inches to 48 inches

- Applications
  Butterfly valves are used for mixed water temperature control ,interrupting product flow within the process and in petroleum industry due to lower cost

3- Choke Valve:

A choke valve is a type of control valves , it is a design of a valve with solid cylinder placed inside another slotted cylinder

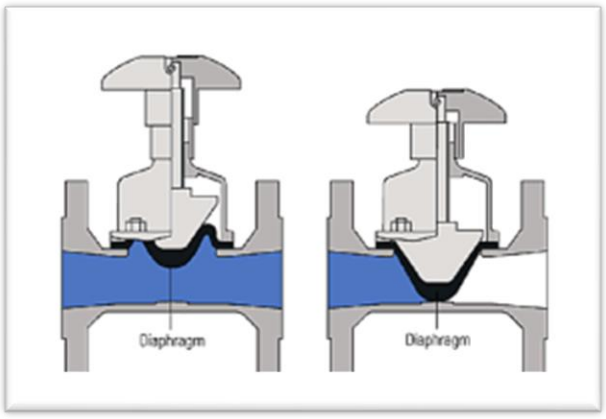


- Sizing
  The sizing of the choke valves depends on the body size and the pressure and the distance vertically and horizontally from the inlet flow side to the outlet flow side

- Applications
  It is used in internal combustion engine with carburetors to supply a richer fuel mixture when starting the vehicle and it is used in oil and gas production wells to control the flow

4- Diaphragm Valve:

A diaphragm valve is a type of valve that consists of two or more ports , a saddle or a seat which closes the valve



- Sizing
  Since there is no pressure drop in an open\closed system ,the size of the valve is determined by the volume of the fluid going through it and the flow coefficient

- Applications
  It is suited for corrosive applications like acid and bases and abrasive application where the diaphragm can be easily replaced once worn out

5- Gate Valve:

A gate valve is a type of valve which is the most common type of valve that is used in any process plan .

It opens by lifting a barrier out of the path of the fluid , the barrier's face can be parallel but are most commonly wedge-shaped to be able to apply pressure on the sealing surface

- Sizing
  Gate valve are usually used with huge pipe diameter from 2 inches to the largest pipelines due to being less complex to construct than the other valves

- Applications
  Gate valves are used in the oil and gas industry, pharmaceuticals, manufacturing, automotive, and marine , they are used to shut off fluids rather than regulating the flow and when fully open they don't obstruct the flow at all which result in very low flow resistance

6- Globe Valve:

A globe valve is a type of valve that is used for regulating flow in a pipeline .

It consists of a movable plug and stationary ring seat in a spherical body , the plug is connected to a stem which is operated by screw action using a handwheel in manual valves

- Sizing
  The size of the valve has to operate between 20 to 80% open at maximum required flow rate and also it is recommended to have the minimum opening no less than 20% to provide a safety margin at the minimum flow rate required

- Applications
  It is used in cooling water systems , fuel oil systems , Feedwater or chemical feed systems , Boiler and main steam vents and drains like steam valve

❖ Applications:

1- Check Valve:

It is a valve that allow fluid to flow through it in one direction only .

There are a lot of types of check valves from which is the ball valve , diaphragm valve which we already talked about

There are a lot of applications too for the check valves .

Check valves are often used with some types of pumps to prevent the back flow like supplying water to steam boilers

They are also used in industry processes in many fluid systems such as those in chemical and power plants and the injectors in a fuel injection system are check valves

They are also used in domestic use like in a washing machine a check valve called a backflow preventer is used to prevent contaminated water from re-entering the domestic water supply

2- Flow Control Valve:

A flow control valve regulates the flow or pressure of a fluid and it is controlled by flow meters or temperature gauges.

Types of flow control valves are ball valve , butterfly valve which we already talked about

Process plants consist of hundreds, or even thousands, of control loops all networked together to produce a product to be offered for sale To reduce the effect of these load sensors and transmitters collect information about the process variable and its relationship to some desired set point.

A controller then processes this information and decides what must be done to get the process variable back to where it should be after a load disturbance occurs; The most common final control element in the process control industries is the control valve

The control valve manipulates a flowing fluid, such as gas, steam, water, or chemical compounds, to compensate for the load disturbance

3- Pressure Control Valve:

A Pressure control valve keeps the system pressure below a desired limit, and they are found in every hydraulic system

The pressure control valve uses a spring to control the pressure , if the pressure is below the valve setting the fluid flows freely from inlet to outlet

The pressure control valve is used in air compressors , aircraft, and aerospace , oxyfuel welding and cutting , mining industries and used in inlet flow of load in pressure reactor

4- Safety Valve:

A safety valve is a valve that acts like a fail safe , they were first developed for use on steam boilers

There are two main types of safety valves which are Spring loaded safety valves and pilot operated safety valves

The primary purpose of a safety valve is the protection of life, property and environment so it is designed to open and relieve excess pressure from vessels or equipment and to reclose and prevent the further release of fluid after normal conditions have been restored

Safety valves are used in water heaters where they prevent disaster in certain configurations in the event that a thermostat should fail

They are used in pressure cookers as a safety interlock which locks the lid when internal pressure exceeds atmospheric pressure, to prevent accidents from a sudden release of very hot steam

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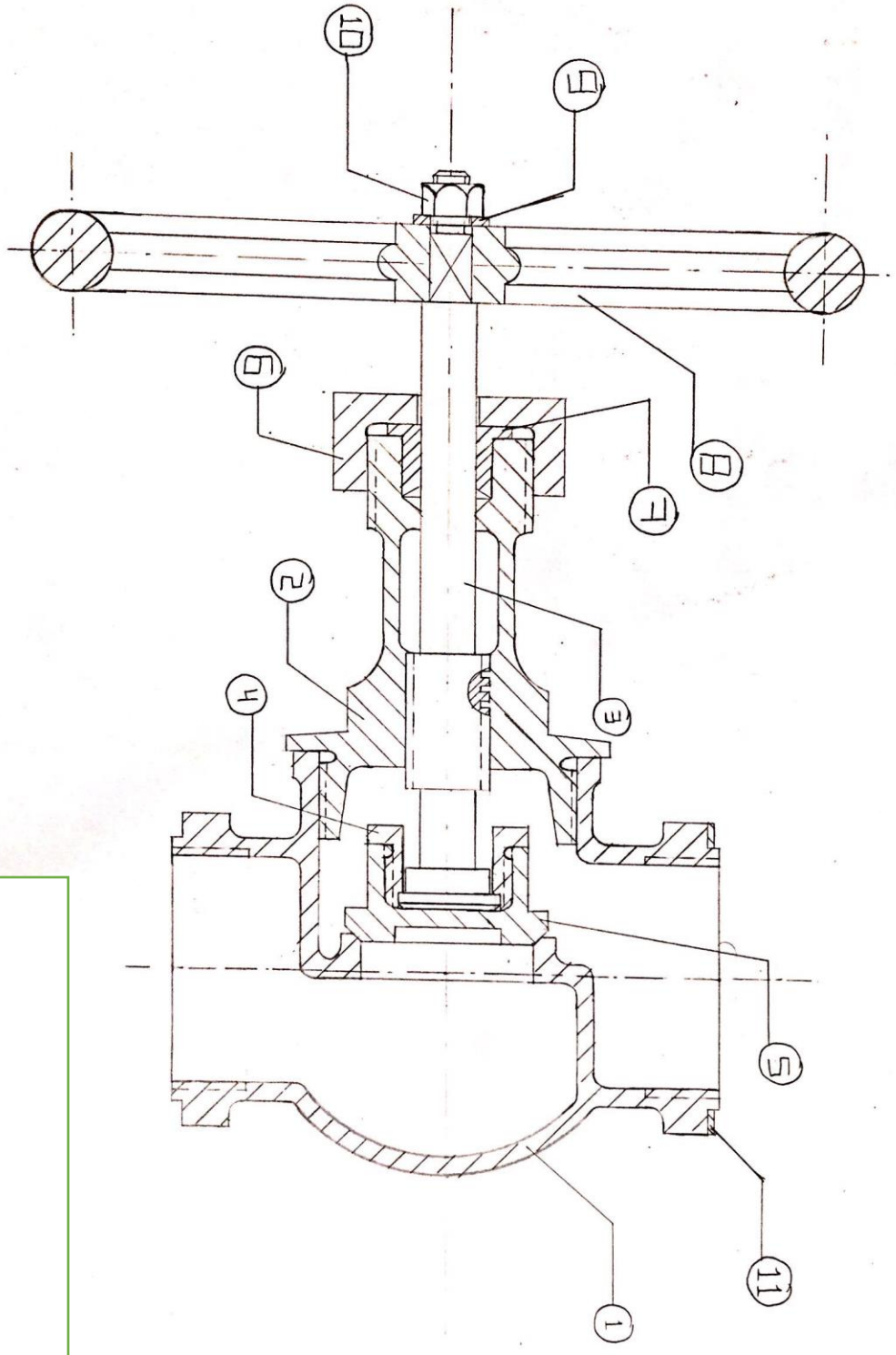
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