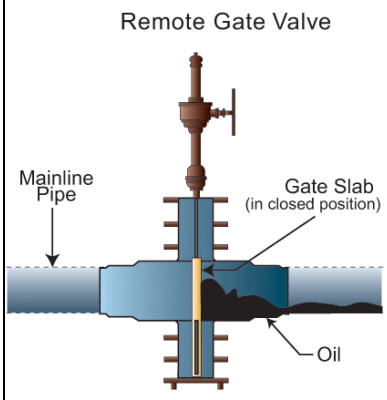
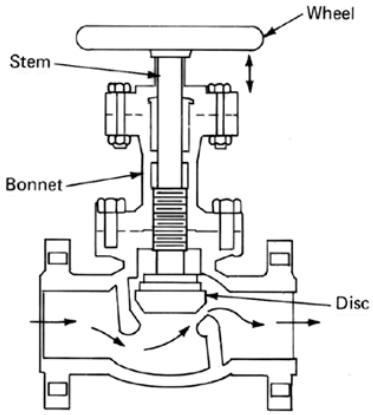
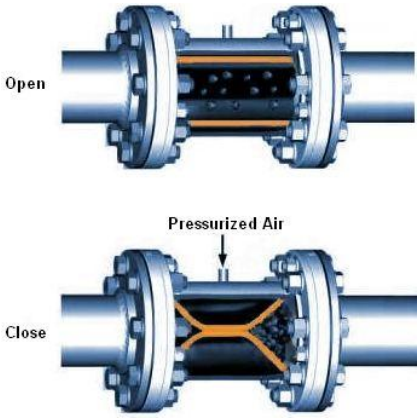
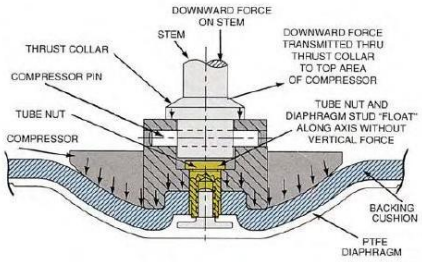
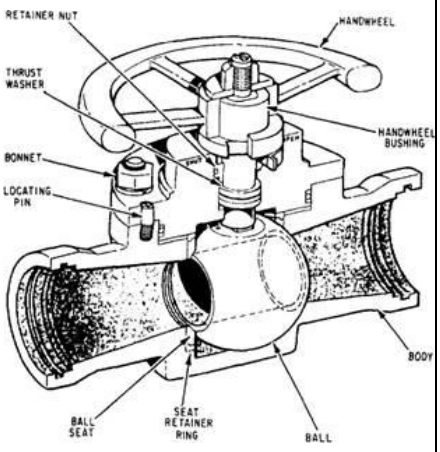
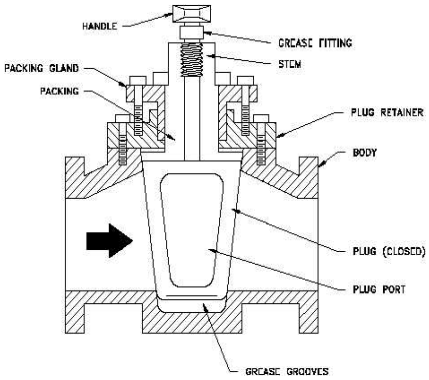
Type of Valve	Pros	Cons
Gate valve 	- Fully opened – little pressure drop across a gate valve. - Fully closed – good sealing against pressure. - Can open/close slowly to prevent fluid hammer and subsequent damage to the piping system. - Low cost. - High shutoff. - Has little resistance to flow.	- Operates only fully opened or fully closed. - Poor control. - Leakage may occur at low back pressures - Limited in throttling applications: leads to erosion due to flow having high speeds near the gate seat in open state. - Valve is prone to vibrate, which can lead to damage - Subject to seat & disk wear, repairs difficult to accomplish.
Globe valve 	- Relies on perpendicular movement of the disk away from the seat. - The annular space between the disk and seat ring gradually closes in this fashion, which gives the globe valve good throttling ability. - Easily automated to ensure precise throttling service. - Has less leakage along the seat because there is no “blocked-in” volume that remains as in a gate valve. - Can also be made resistant to fire and blowout.	- Low coefficient of flow leads to a high pressure drop across the valve. - This can cause damage to the system in the form of pump and system wear. - Globe valves typically weigh more than other types of valves with the same flow rating. -More expensive than most other valves.

Pinch valve 	- Flow passage runs straight without any crevices or turns. - No internal moving parts. - Very suitable for handling slurries and solids, something that other types of valves would not be able to do as well. - Can easily be interchanged with ball and plug valves if necessary. -Can give good flow control when closed enough. - Made from natural rubber, which can resist cracking and wear from corrosive fluids. - Can also have molded bodies reinforced with fabric attached to them.	- Offers little flow control at more opened positions due to the very negligible pressure drop. - If the fluid is highly erosive flow control should then be avoided to prevent the valve body from grooving. - Materials of construction are fairly limited. - Limited shutoff capabilities. - Often requires more time for maintenance. - Accommodates a relatively low maximum pressure.
Diaphragm valve 	- Similar to pinch valves: Flow passage is free of crevices and obstruction from moving parts. - Considered to be the "cleanest" type of valve – the one that is the least likely to cause contamination. - Weir-diaphragm design: used for higher pressure applications including throttling, corrosive/abrasive services – flow passage reduces flexing of the diaphragm to a minimum (PTFE). - Straightway-diaphragm design: used mainly for	- No industry-standard face-to-face dimensions, so it cannot be easily used to replace other types of valves. - "Multiturn" operation requires several rotations to fully open or close the disk via the actuator. - Lower limitations on temperature and pressure when compared to most other types of valves.

	on/off services as well as higher flow and slurry applications, diaphragm is thus more flexible (elastomer). Also used where the flow direction changes within the system. - Chemically compatible materials can be selected for almost any process fluid without having to upgrade current working parts. - Minimizes leakage into the atmosphere. - Effective control valve in certain vacuum applications.	
Ball valve  	- The ball moves across the seats with a wiping motion, to this type of valve can handle fluids with suspended solids. - Full-port pattern: the ball has a bore which is equal to the inside diameter of the pipe. - Venture pattern: economizes the construction of the valve to about ¾ of the nominal valve size. - Reduced-port pattern – causes only a small pressure drop, only useful for special operations such as the "pigging" of pipelines. - Easy to operate. - High flow capacity. - High temperature and pressure tolerance. - Low cost and weight. - Very safe.	- Poor throttling characteristics. - Must be designed to protect from flammable fluids to prevent the soft material used for the disk and seat and ball valves from perishing. - Must also prevent electric insulation from the polymeric seats and packings used in ball valves. - Abrasive solids can damage the seat and ball surfaces. - Lack of cleanliness can lead to contamination. - Cannot handle slurry applications effectively.

	- Can be adapted to use in multiple port configurations.	
Plug valve  	- Plugs can be designed for multi-port configurations. - Fluorocarbons provide excellent protection for corrosive applications that require "bubble-tight" shutoff. - Can resist viscous fluids without the need for more expensive alloys around the body of the valve. - Eccentric plug valves: plug is cut in half, higher seating force reduces friction, can provide tight shutoff. - Lubricated plug valves: tight shutoff for process fluids, suitable for abrasive fluids. - Quarter-turn design between closed, throttled, and open. - Compatibility with severe chemicals. - Standard face-to-face dimensions.	- Valve must have protection to ensure electrical contact for flammable liquids. - A high torque is often required for normal operation. - Trapped solids can contaminate the cavity of the plug. - Limited shut-off capability - Higher operation torques may also lead to larger and more expensive automation packages.