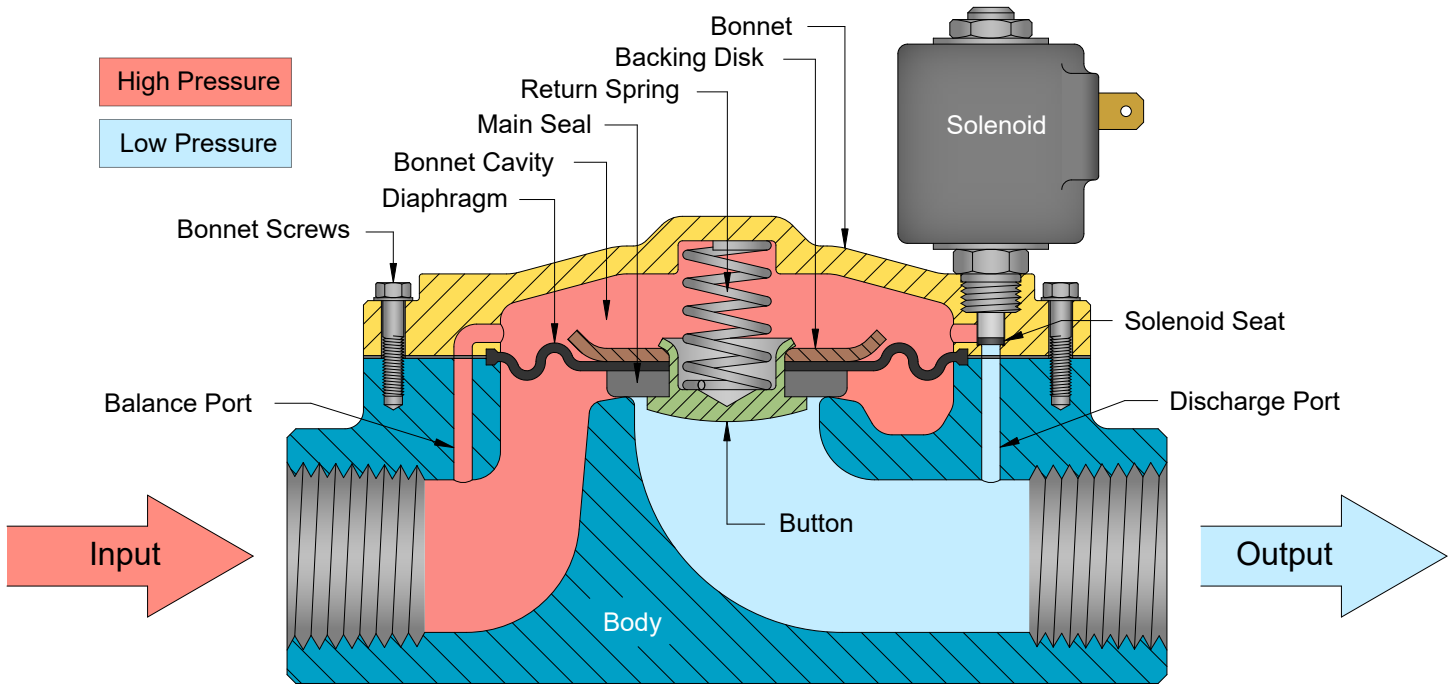


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Pilot Valves

by Brian S. Elliott



Large-capacity solenoid valves have their special design challenges. The size of the solenoid coil required to manufacture a direct-acting valve is prohibitive. In these cases, the pilot valve comes into play. To actuate, these valves use the energy generated by the differential pressure between the input and output. The valve is closed with a diaphragm-actuated seal. The input pressure is equalized between the input and the bonnet cavity via the balance port. To open the valve, the solenoid is energized and the solenoid seat opens. This action vents the bonnet cavity into the output port. The high input pressure acts against the bottom of the diaphragm and lifts the seat, opening the valve. When the solenoid is de-energized, high pressure builds above the diaphragm and the return spring forces the seal down, which closes the valve.

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