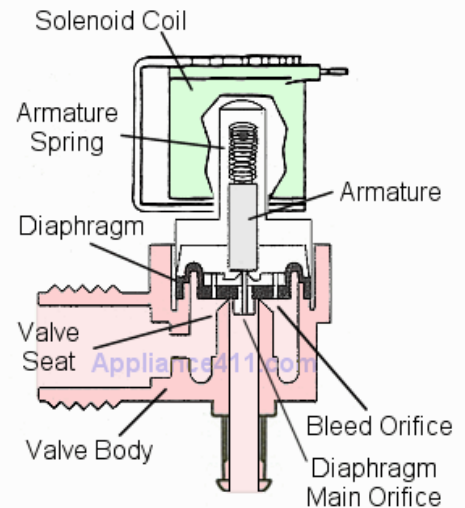


# Appliance Water Fill Valve Operation

The valve body provides an incoming water supply connection and a main passageway with a large orifice and seat where the water flow can be stopped. The outlet of the valve connects to the water system of the appliance or if part of a clothes washer 'mixing valve', empties into a hot/cold water mixing chamber before exiting the valve. In the case of a mixing valve, each solenoid has a separate valve system which is similar in construction and operation to the other.

A rubber diaphragm operated by water pressure against the valve seat is used to start and stop the flow of water through the valve. The diaphragm has several small bleed orifices outside the seat contact area and the main diaphragm orifice in its center. The armature of the valve serves to open the main diaphragm orifice as the solenoid is powered. A coiled spring holds the armature down against the main diaphragm orifice closing its aperture when the solenoid is not energized. The armature itself operates within a closed metal tube called the valve guide.



The following explains the basic valve operation:

When the valve is in the closed position (figure 2) with its solenoid coil not energized, water migrates through the diaphragm's bleed orifices allowing incoming water pressure to build up on top of the valve diaphragm. The bottom of the diaphragm being open to the valve outlet is essentially at atmospheric pressure. This pressure differential holds the valve shut.

When the solenoid is energized (figure 1), the resulting magnetic field pulls the armature up into the valve guide compressing the armature spring. When the armature moves up off the diaphragm it allows the water that has built up on the top side of the diaphragm to drain through the main center diaphragm orifice. The diaphragm's bleed orifices are much smaller than the main orifice so they will not allow enough water back through to maintain pressure on the top side of the diaphragm. As a result, the pressure on the top of the diaphragm is reduced causing the water pressure under the diaphragm to lift it off of the valve seat allowing a full flow of water through the main valve passageway.

When the solenoid is de-energized (figure 2), the armature spring pushes the armature down closing the main diaphragm orifice. Water flows through the diaphragm's bleed orifices building up pressure above it until it equalizes on both sides of the diaphragm. The force of the armature and spring then pushes the diaphragm down against the valve seat to stop water flow through it.

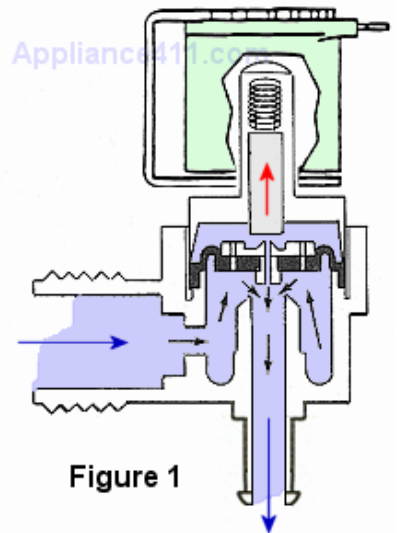


Figure 1

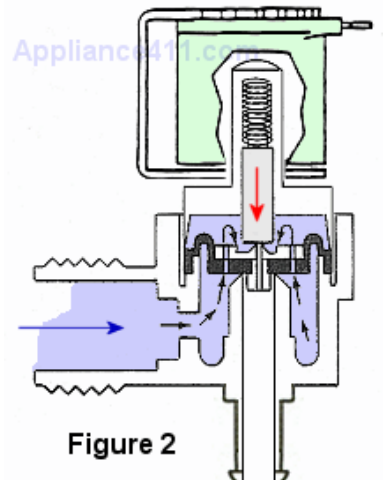


Figure 2

# Appliance Water Fill Valve Operation

## Constant GPM (gallons per minute) water valve

The water flow out of an appliance water valve is controlled by a rubber "flow washer" inside the valve body. This flow washer is designed to maintain a constant flow rate through the valve provided an incoming water pressure of between 20-30 PSI to 120 PSI is supplied to the valve.

## Testing

Using an ohmmeter the resistance of the solenoid coil(s) can be tested to see if they are defective or not. They should measure between 200 and 900 ohms depending on the coil's wattage. If the coil tests as having infinite resistance, it is defective.

To simulate normal valve operation on a 120 volt rated valve, each solenoid coil may be directly connected to a separate 120 volt power supply using a properly fused and grounded service test cord.