

Solenoid Valve World: Enhanced Design: Assisted Lift Solenoid Valve

[Assisted lift solenoid valves](#), also known as kick pilot valves, are engineered to function effectively from zero pressure or even in vacuum conditions. This capability is achieved through a diaphragm that is mechanically linked to the armature core (plunger). When the solenoid coil is energised, it generates a magnetic field that lifts the plunger into the open position, thereby assisting in the valve's operation.

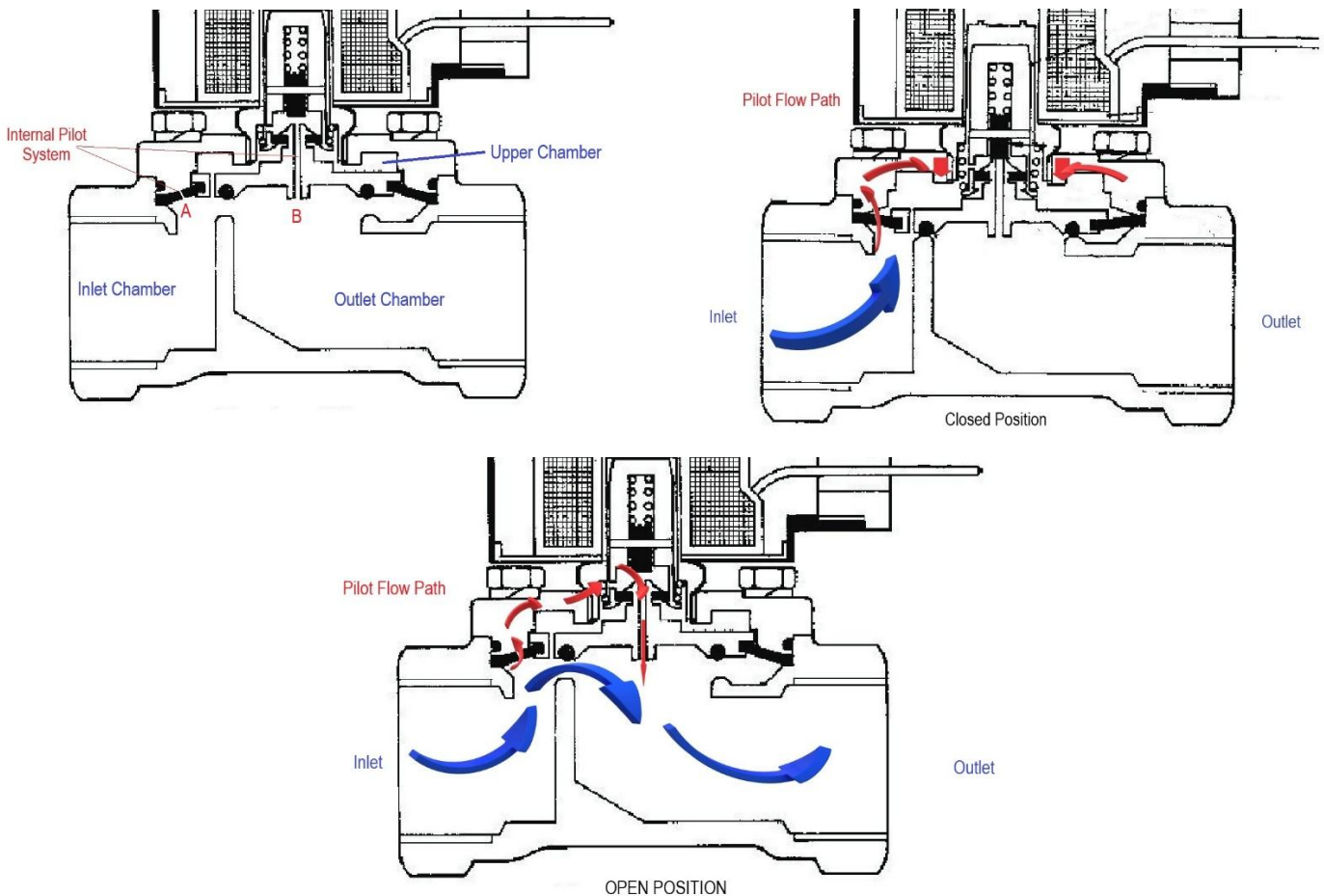
The internal pilot mechanism further facilitates valve opening by leveraging any existing pressure differential (i.e., the difference in pressure between the valve's inlet and outlet).

The accompanying diagram illustrates a 2/2 normally closed valve in its closed and then open position. Notably, the internal pilot system, features a small inlet pilot hole in the diaphragm. This hole allows the controlled fluid or gas to enter the upper chamber above the diaphragm.

Key Design Considerations

- The inlet pilot hole (designated as A in the diagram) is deliberately smaller than the central outlet pilot base (designated as B). This size difference ensures that when the valve opens, the pressure in the upper chamber is released through B more rapidly than it can be replenished through A.
- The diagram further depicts the solenoid valve in its energized, open state, allowing the main flow (indicated by blue arrows) to pass through. Concurrently, the pilot flow (denoted in red) is also active, ensuring seamless operation.

This design enhancement optimises valve performance, particularly in low-pressure applications, by improving reliability and responsiveness.



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