

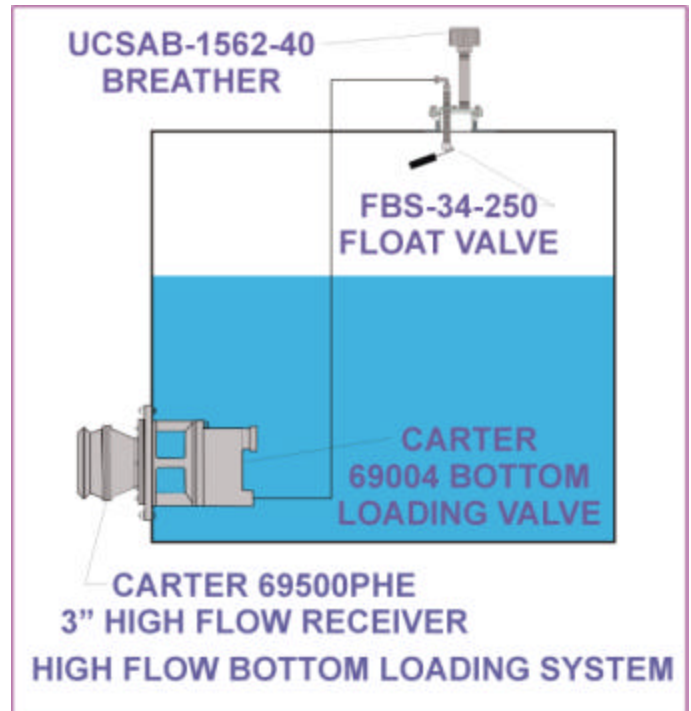
HIGH FLOW BOTTOM LOADING SYSTEM

MODEL CARTER 69004 BOTTOM LOADING VALVE

69004 CONTROL VALVE OPERATION

The 69004 is a piston operated valve that relies entirely on line pressure for operation. It is designed to be operated in conjunction with either a solenoid shutoff valve or a float operated valve as shown to the right. The piston facing upstream has a distinct sealing diameter that is smaller than the overall diameter of the piston. A spring of insignificant force (compared to the forces created by the line pressure) tends to keep the piston in the closed position against the friction of the piston seals.

When line pressure from the upstream pump is sensed by the piston it reacts upon the smaller seal diameter and is transferred into the piston chamber through a small orifice. The piston chamber is vented to the tank through an open solenoid valve. The path through the solenoid valve is significantly larger in effective diameter than the inlet orifice through the piston. This creates a lower pressure within the piston chamber than the line pressure. The force to open the valve is therefore much less than the forces to keep it closed, lower pressure by the pressure drop across the inlet orifice times the major piston diameter plus the spring. One might say that the pressure “gets out of the piston chamber faster than it can get in” hence it is significantly lower than the inlet pressure acting upon the inlet of the piston.



The piston opens to allow flow into the tank. When the float valve closes the bleed from the piston chamber is stopped and the line pressure is now on both sides of the piston. Now the balance of forces are in the “to close” direction and these forces plus the spring close the valve.



69004 3” Shutoff Valve

The 69004 is mounted within the tank as shown in the schematic above and for high flow applications a Carter 69500PHE Receiver is used to connect it to the loading facility. Flow rates up to 600 gpm are possible with the system as shown above. It can also be used with the AUS23A 2” Receiver for flow rates up to 210 gpm. The 69500PHE mates with the Carter High Flow Nozzle, 69000 as described later in this bulletin.

FEATURES

- High flow capability.
- Environmentally friendly - no spillage.
- Low Pressure Drop - 4.5 psi at 600 gpm.
- Shutoff without subjecting the tank to any pressure.
- Works with either a solenoid or float operated shutoff valve.

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