VALVE OPERATION:

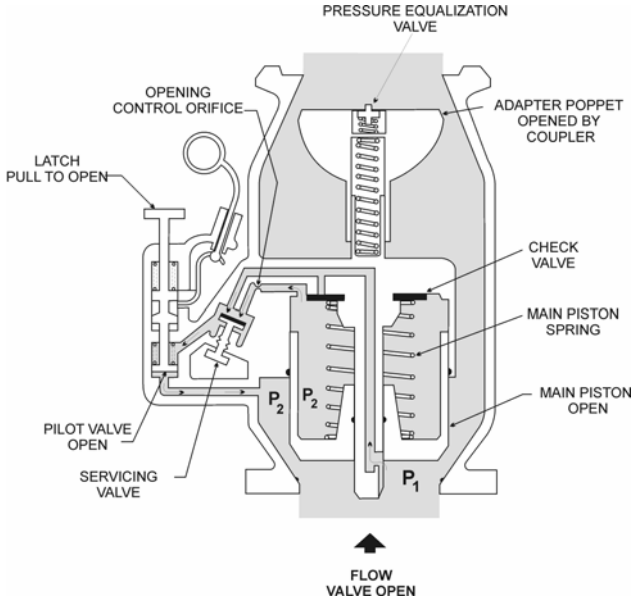


Figure A
Valve Open

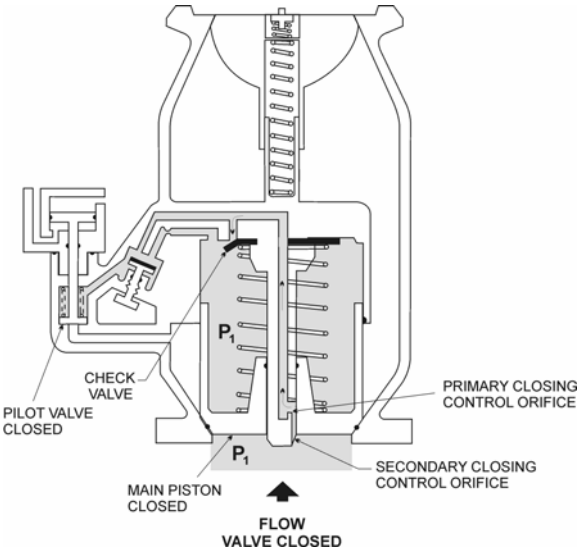


Figure B
Valve Closed

Figure A reflects a lanyard operated pilot valve shown in the open position. Figure B reflects an air operated pilot in a closed position. The operation of the Hydrant Valve, whether the pilot is lanyard or air operated, is identical. The only differences are in the operating mechanism that supplies the power to open and close the pilot valve. In the air operated pilot, the closing lanyard and opening latching mechanisms are replaced with an air operated piston as can be seen in the cutaway on the previous page. The dual air/lanyard operated pilot valve has the same normal air operated pilot valve function with a manual (lanyard) over-ride of the air supply. (Option X works the same as that shown in Figure B with the air/fuel operated piston being placed on the hose from the servicer.)

Pilot Valve Open –Servicing Valve Open

The open pilot valve allows the continuous passageway from the main piston chamber and from the closing control orifice. The piston chamber is vented through an opening control orifice and the open Servicing valve to a point in the Lower Valve Half. The pressure (P_2) at this point is less than the inlet pressure (P_1). The piston chamber pressure is also maintained at P_2 causing an unbalance of forces on the piston. The inlet pressure force is greater than the combined piston pressure force plus the spring force hence the valve will open to allow flow. This is assuming that the outlet adapter poppet in the Upper Valve Half has been opened by a Coupler.

The pilot poppet is maintained in the open position by one of two methods:

- Lanyard operated pilot - The pilot is opened by the pull of the "T" handle located on the top of the pilot valve. When it is pulled upward, the spring loaded latch attached to the lanyard pivots to lock the pilot into the open position.
- Air operated pilot/dual air-lanyard pilot - Air pressure applied to the pilot piston will maintain the pilot in the open position until the pressure has been depleted (by release of deadman).

Pilot Valve Closed – Servicing Valve Open

Pulling the lanyard, or depleting the air supplied to their respective pilots, will allow the spring loaded pilot poppet to close. This action blocks off the venting of the piston chamber to the lower pressure area downstream. The piston chamber begins to equalize to the inlet pressure (P_1) through the check valve. The piston area is greater than the effective seal area, hence the unbalance of forces caused by the equal pressure plus the spring will cause the piston to begin to close. As the piston moves toward the closed position, the piston chamber volume increases and must be filled through the two series orifices. The primary orifice is considerably larger than the secondary (slot). During the initial and majority of the travel of the piston, the primary orifice is fully exposed to the inlet pressure, hence the rate of closure is controlled by this orifice. When the piston moves far enough closed to cover the primary orifice, the secondary (smaller) orifice begins to control the closure rate. Hence the valve begins to close relatively rapidly and then slows down as it nears its closed position. The relative size and locations of these two orifices allows the valve to close to provide a minimum of overshoot and yet limit the surge pressure shock, on closing, and still maintain a closure rate in accordance with applicable international specifications.

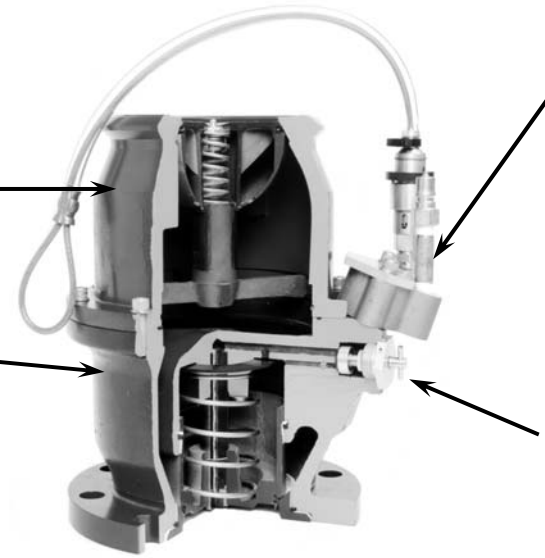
On "J" Defueling options the pilot valve is manually held closed by the thumb screw to allow defueling flow.

The dual pilot valve options F or U perform under normal situations the same as option E. The lanyard operation is only for emergency situations where the air supply is not released by the deadman valve.

Servicing Valve Closed - Pilot Valve Open or Closed

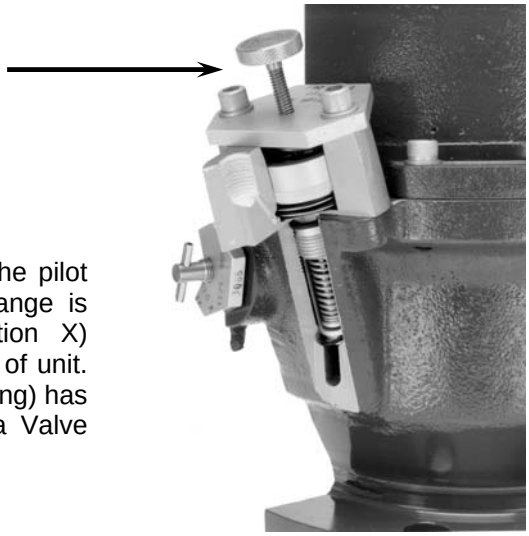
The closing of the Servicing Valve has the same affect as closing the Pilot Valve. That is, the flow passage from the piston chamber to the downstream side of the piston is blocked. The piston chamber pressure begins to equalize to the inlet pressure (P_1) through the check valve. The piston area is greater than the effective seal area, hence the unbalance of forces caused by the equal pressure, plus the spring, will cause the valve to stay closed.

HYDRANT VALVE OPERATION



* Refer to the appropriate service manual for correct part numbers for the various options

Typical Dual Air/Lanyard Operated Hydrant Valve

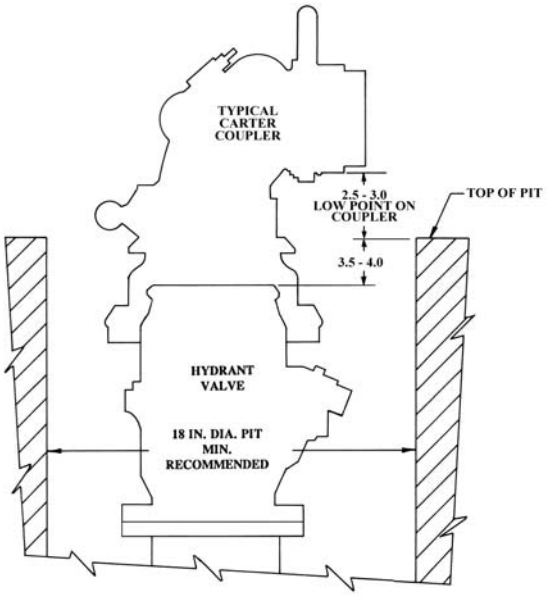


Note: The portion of the pilot below its mounting flange is identical (except Option X) regardless of the type of unit. Option X (patent pending) has a different insert as a Valve Stem Assembly.

Air Operated Pilot (with defuel capability)

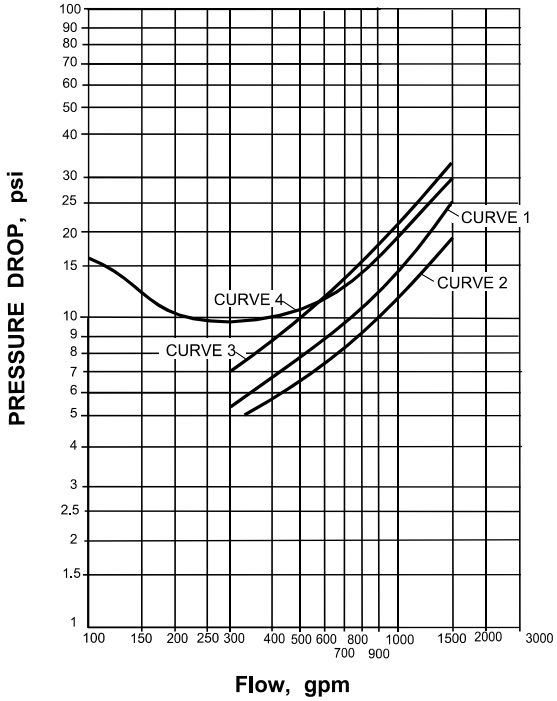
INSTALLATION INFORMATION:

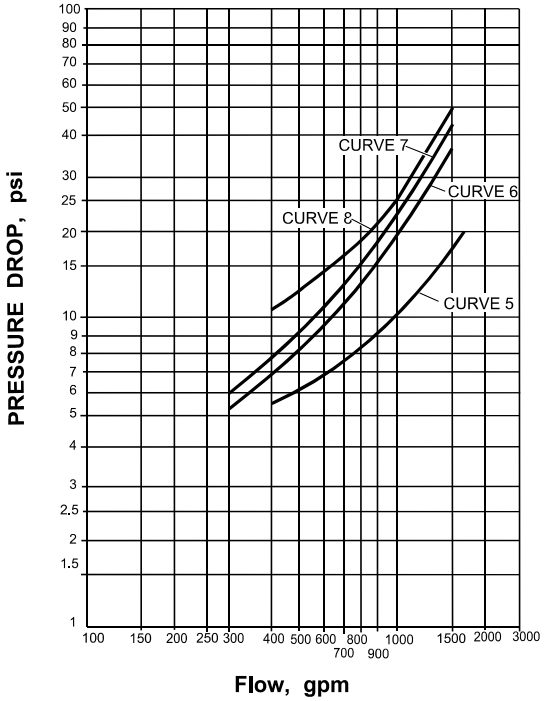
It is critical that the mating coupler (shown at right) be connected correctly and the pit lid be able to close completely. The hydrant valve's installation depth depends upon the brand of pit used. The thickness of the pit lid should be checked to be sure that it will clear the hydrant valve before setting the pit. The dimensions noted herein were correct for pits made in the United States at the time of printing. Carter can not be responsible for changes in the pits. The dimensions shown are for reference only.



FLOW CHARACTERISTICS:

The charts presented below depicts typical pressure drop versus flow characteristics of the 60554 Series Hydrant Pit Valves. (Option X does not alter the pressure drop characteristics of the 60554).





Curve 1 60554BDGH (IP Hydrant) or 60554BFGH, 20-mesh screen & 61525 Coupler.

Curve 2 60554BD, (BE), (BU) - 20-mesh screen & 61525.

Curve 3 60554BJ, 20-mesh screen & 61525 - fueling direction.

Curve 4 60554BJ, 20-mesh Screen & 61525 - defueling direction.

Curve 5 60554D, (E), (U) - no screen & 61525.

Curve 6 60554E (D), (U) - no screen & 60600H.

Curve 7 60554E (D), (F) - no screen & 60700K.

Curve 8 60554E (D), (U) - no screen & 60600K.