



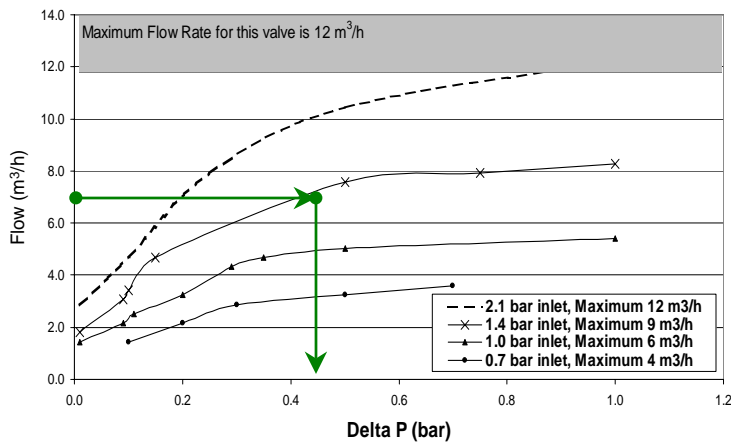
Agricultural Valves – Low Pressure Operation

The following charts explain the pressure and flow rate relationship for operation of Rain Bird Agricultural Valves at low pressure. All data shown are for valves with low pressure diaphragms and valve springs. Standard valve diaphragms and springs are for operation between 3.5 and 16 bar and should not be used in low pressure applications (0.4 - 3.4 bar pressure range).

Each graph also shows the maximum flow rate through the valve due to the limits of water velocity.

Open-Close Function

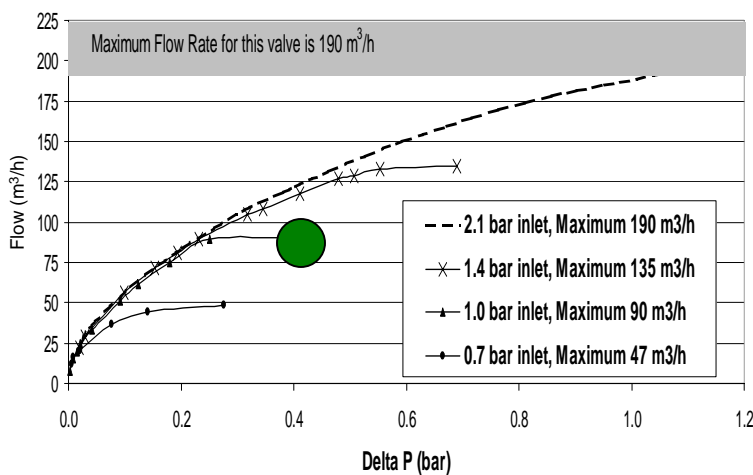
1" Valve



Each line shows the flow rate and pressure loss for a given inlet pressure.

The example with a 1 inch valve shows that when the inlet pressure is 1.4 bar, there is a 0.42 bar pressure loss at 7 m³/h flow rate.

4" Valve



The point where each inlet pressure line begins to straighten and go horizontal is the maximum flow rate at the given inlet pressure.

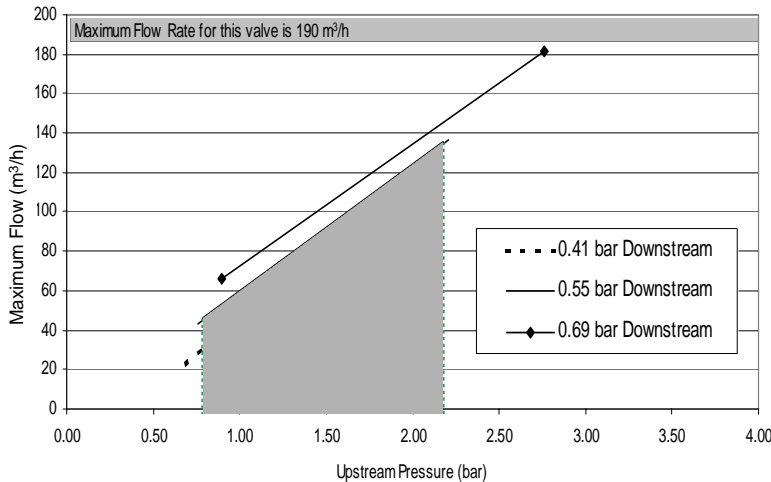
The example with a 4 inch valve shows that the maximum flow rate is 90 m³/h with an inlet pressure of 1 bar.

If a higher flow rate is needed, the options are:

- Increase the upstream pressure, or
- Use a larger valve

Operation with a pressure reducing pilot

4" Valve

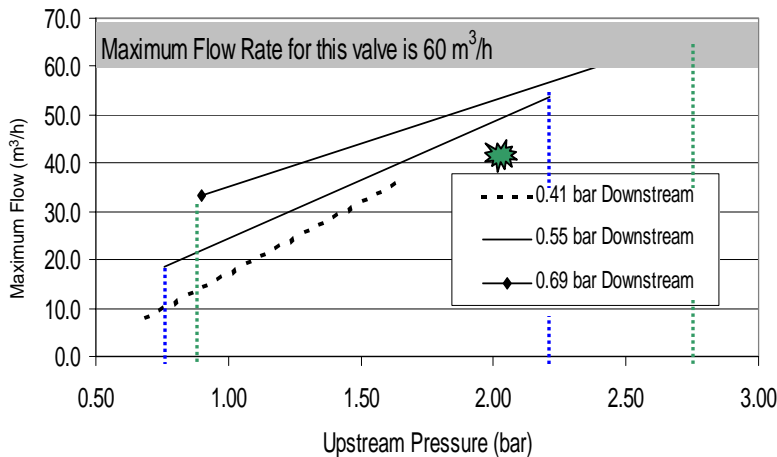



Each line represents a different downstream pressure.

With the pilot set at a certain downstream pressure, the valve will have stable operation when the upstream pressure and flow rate are at any point below the line for the set downstream pressure.

For example, if the pilot is set to maintain a 0.55 bar downstream pressure on a 4 inch valve, the upstream pressure and flow rate could be any value in the shaded area.

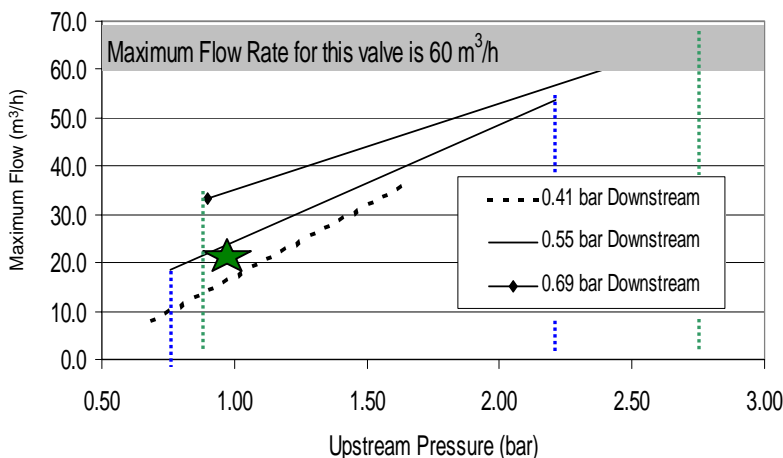
2" Valve




In this example for a 2 inch valve, the point  represents an upstream pressure of 2 bar and a 40 m³/h flow rate.

This valve can operate accurately if the downstream pressure is set at either 0.55 or 0.69 bar. However, it will not be stable at 0.41 bar downstream pressure, because the upstream pressure is more than 4 times the downstream pressure.

2" Valve



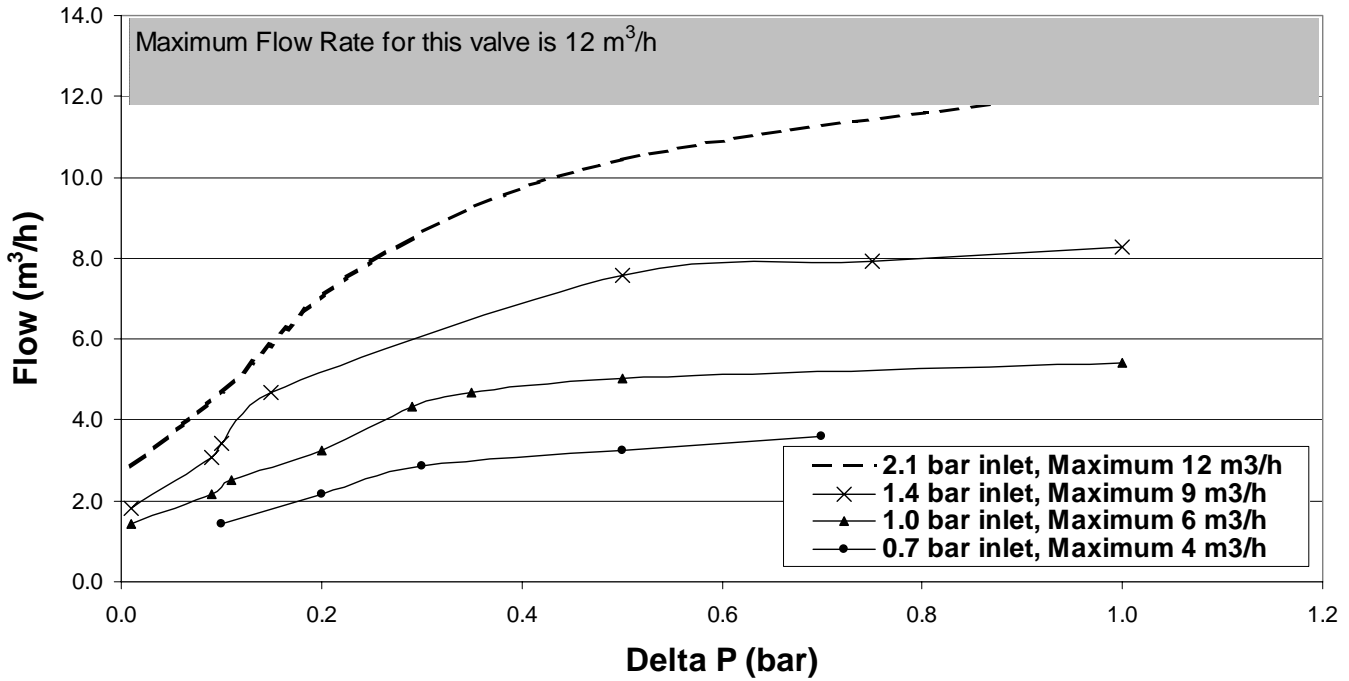
The point identified with a  shows stable operating conditions for 0.55 and 0.69 bar downstream pressure. This point is located below the 0.55 and 0.69 PSI downstream pressure line. However at the same flow and upstream pressure, the valve's operation would not be stable with the downstream pressure set at 0.41 bar (point is above the line).

If the upstream pressure and flow rate fall on a point above the set downstream pressure line, the options are:

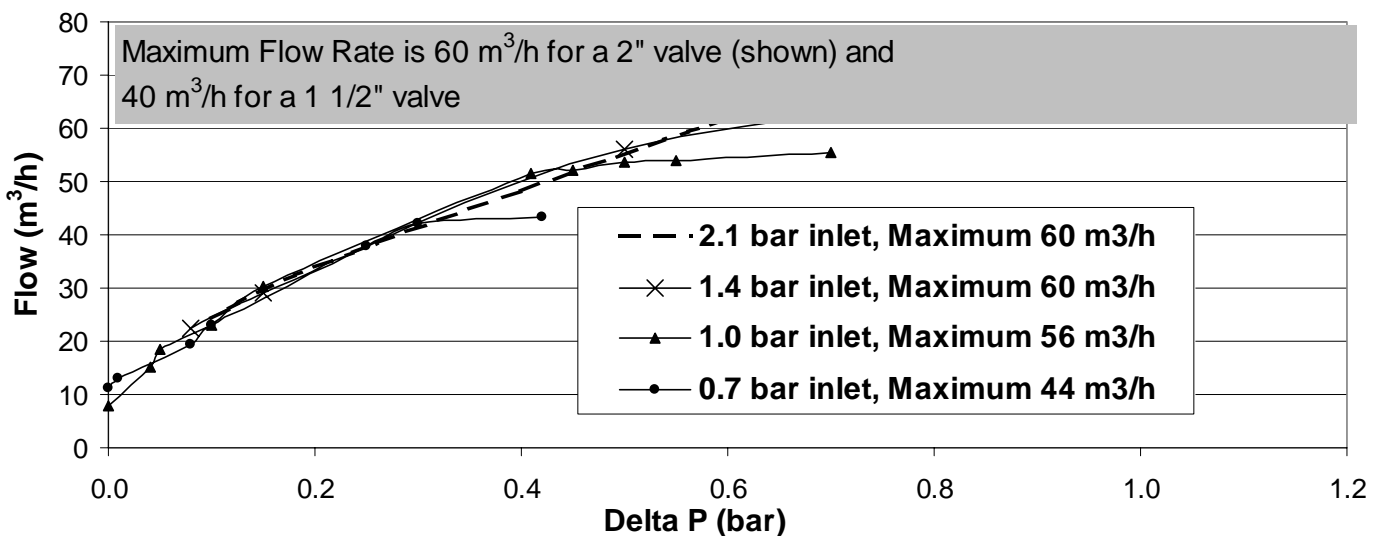
- Increase the upstream pressure
- Use a larger valve

Open-Close Operation

1" Valve w/LP Diaphragm and Spring Pressure Loss Vs. Flow

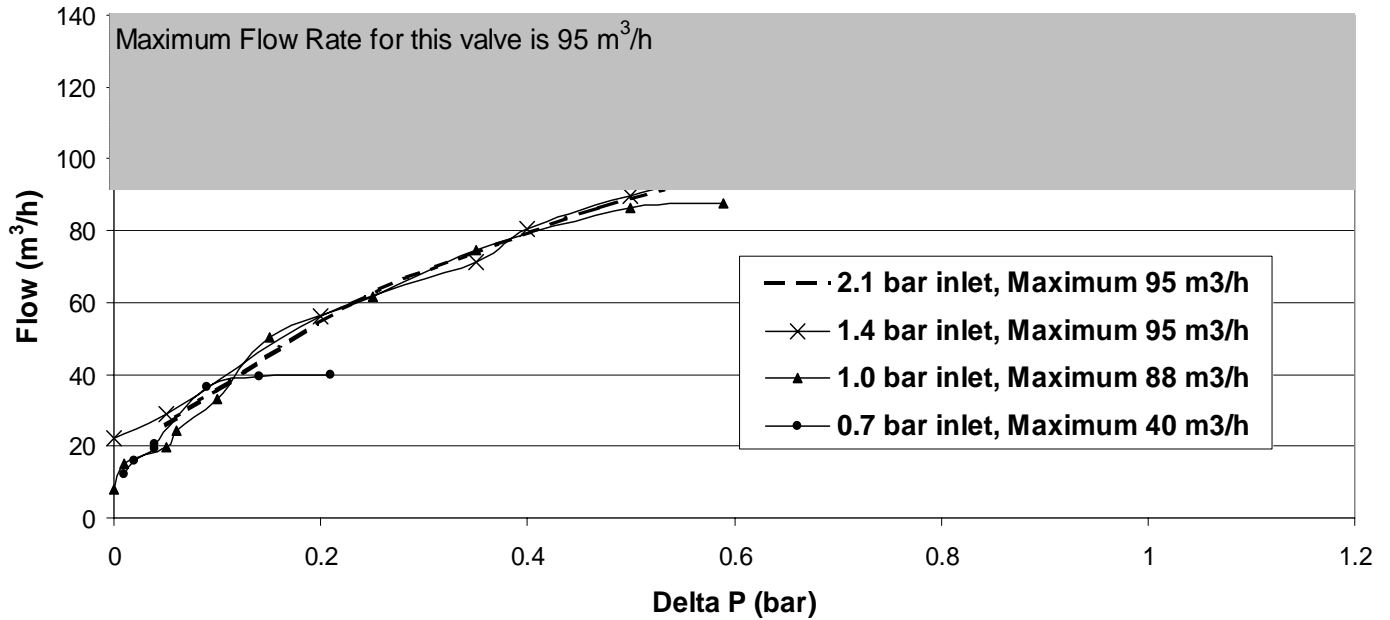


1 1/2" and 2" w/LP Diaphragm and Spring Pressure Loss Vs. Flow

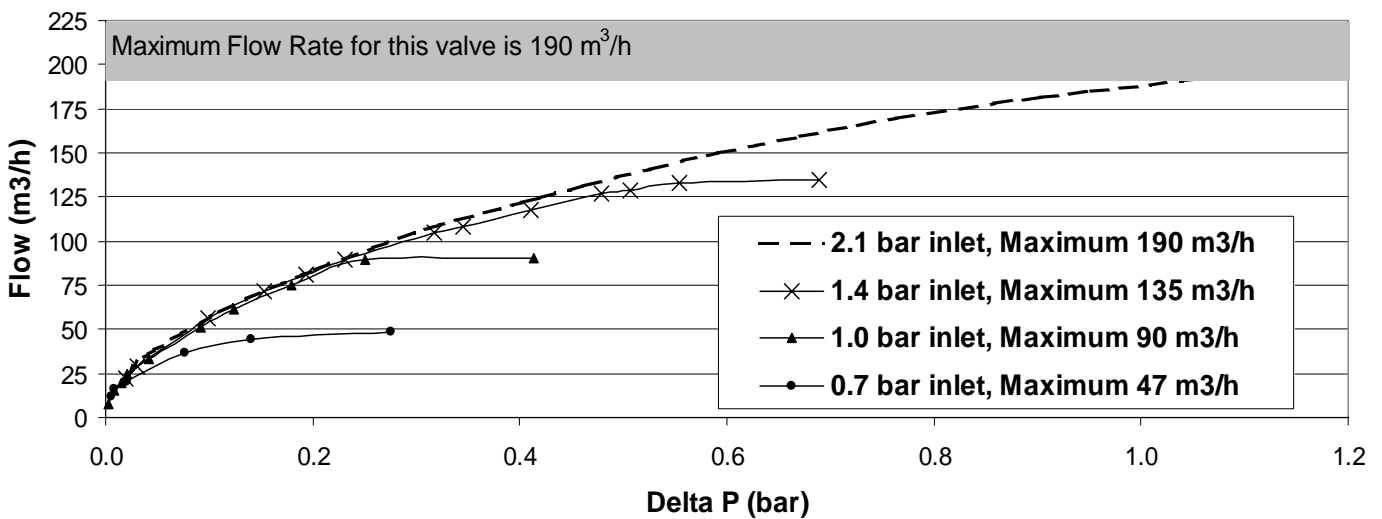


Open-Close Operation

3" C w/LP Diaphragm and Standard Spring Pressure Loss Vs. Flow

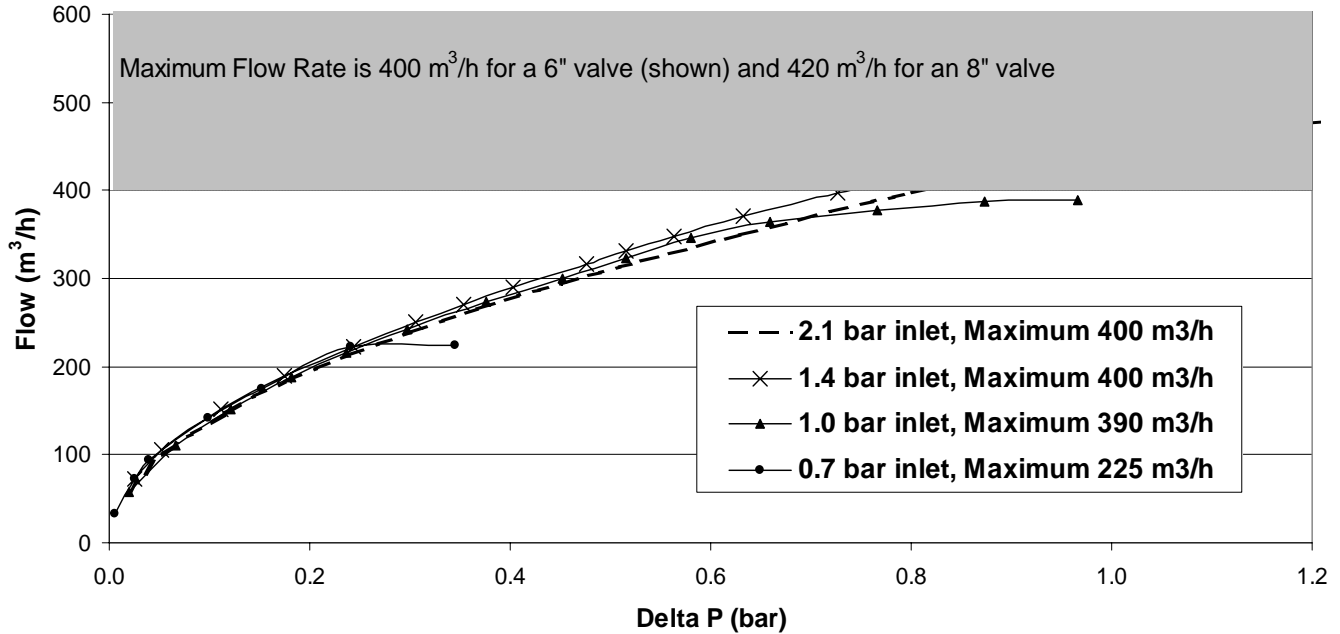


4 " w/LP Diaphragm and Spring Pressure Loss Vs. Flow



Open-Close Operation

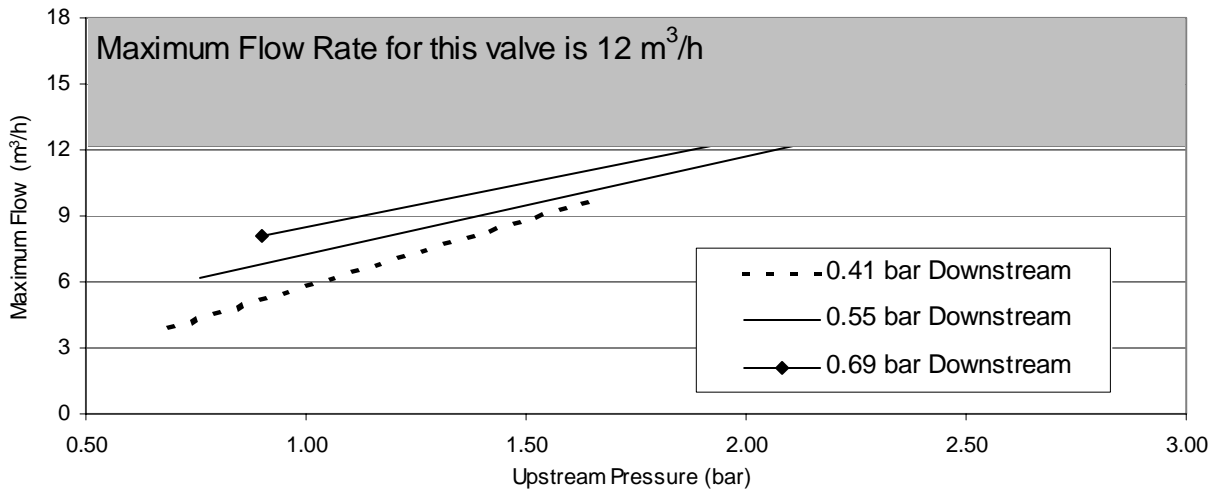
6" and 8" w/LP Diaphragm and Spring Pressure Loss Vs. Flow



Operation with a Pressure Reducing Pilot

1" Valve with LP diaphragm and 3-way pilot (gray spring)

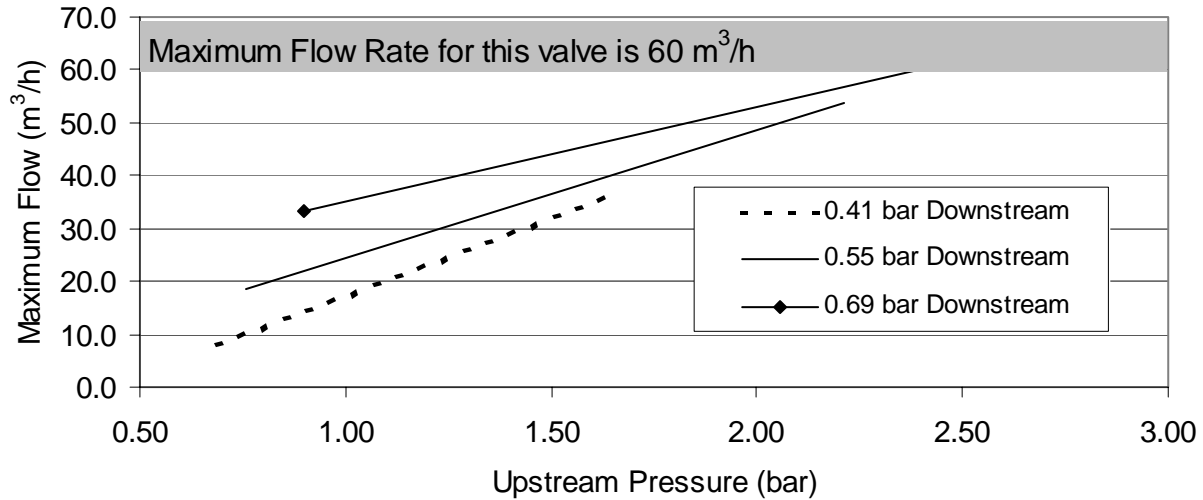
Line Indicates Maximum Flow for Given Upstream
and Downstream Pressure



Operation with a Pressure Reducing Pilot

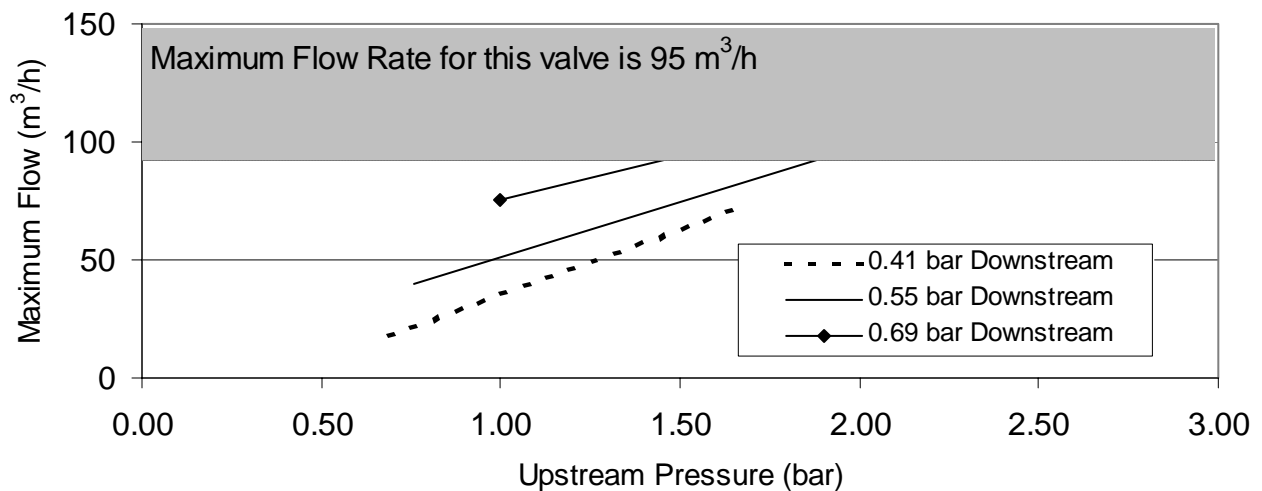
2" Valve with LP diaphragm and 3-way pilot (gray spring)

Line Indicates Maximum Flow for Given Upstream and Downstream Pressure



3"C with LP Diaphragm and 3-way pilot (gray spring)

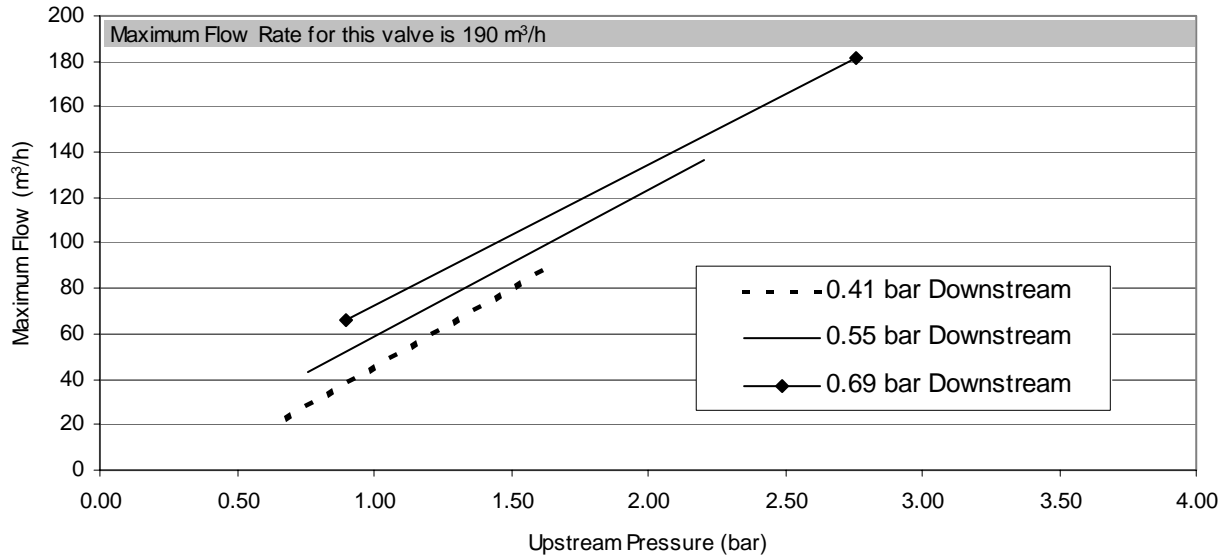
Line Indicates Maximum Flow for Given Upstream and Downstream Pressure



Operation with a Pressure Reducing Pilot

4" with LP Diaphragm and 3-way pilot (gray spring)

Line Indicates Maximum Flow for Given Upstream and Downstream Pressure



6" with LP Diaphragm and 3-way pilot (gray spring)

Line Indicates Maximum Flow for Given Upstream and Downstream Pressure

