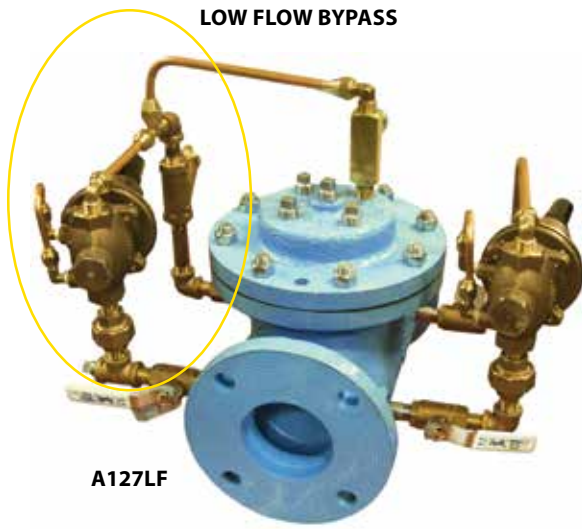


CONTROL VALVES

Pressure Reducing Valve Sizing Guide



A127LF

Sizing pilot operated reducing valves is not a complicated process. It starts with determining requirements and following these guidelines in valve size selection. Sizing the PRV involves two factors; Pressure Drop or Differential and Flow Rate.

STEP 1 –

Determine the application type where the valve is being used. Refer to the comments “Sizing Guidelines” under the category selected on page 5 and 6.

- Commercial / Residential Buildings –
- Refer to the fixture usage table for examples of usage in these types of applications.
- Distribution System
- Process System

STEP 2 –

Determine the pressure differential – this is the difference between the inlet pressure (–) minus the outlet pressure.

Example:

INLET 100 psi – OUTLET 50 psi (the pressure desired in the system) Difference = 50 psid

INLET 80 psi – OUTLET 40 psi (the pressure desired to provide to the system) Difference = 40 psid

STEP 3 –

Determine the flow rate (range) that your system may require, Minimum and Maximum flows.

STEP 4 –

Select the valve size from the table on the next page that best fits the application conditions. Select the valve size that provides minimum and maximum flow ranges (min.-max.) for the pressure drop/differential that was calculated. The following types of PRV applications may apply.

SINGLE VALVE

One valve can handle the minimum and maximum at the pressure drop/differential required.

Example: INLET 100 psi with 50 psi OUTLET pressure (differential 50 psi), flows from 25 gpm to 500 gpm. Line size is 4". Valve selection would be the reduced port 4". Outlet pressure would be constant 50 psi over the required flow range.

- 4" Full Port Valve 38-1000 gpm.
- 4" Reduced Port Valve (4" flanges x 3" internals) 29-630 gpm

SINGLE VALVE WITH LOW-FLOW BYPASS

Valves can be equipped with a direct acting regulator or low flow bypass to regulate extremely low flows. This bypass regulator, mounted on the larger main valve, is set at a pressure of 5-10 psi higher than the main valve pilot. It reduces pressure under low flow conditions until the flow rate increases beyond its capacity and the outlet pressure drops. When pressure reaches the main valve pilot setting, it opens to provide pressure at the higher flows. The low-flow bypass configuration is typical for use in “building applications.”

- Direct acting low flow regulators have limited flow capacity. They are most effectively applied to valves sizes 6" x 4" and smaller.

PARALLEL PRESSURE REDUCING VALVES

If one (1) valve is capable of handling the low flow requirements but not the high flow, then two parallel valves may be required. Similar to the low flow bypass, the smaller PRV controls the lower flow rates at a slightly higher pressure setting than the larger PRV. This PARALLEL configuration allows pressure control over a wide range of flows.

- To avoid a gap in flow ranges, select valves so the smaller valve high flow overlaps the larger valve low flow.

Example: INLET 80 psi with 40 psi OUTLET pressure (differential 40 psi) Flows from 10 gpm to 800 gpm.



Selection options would be:

LOW FLOW	
1 ½" flow range	5 gpm - 154 gpm
2" flow range	9 gpm - 260 gpm
HIGH FLOW	
4" flow range	38 gpm - 1000 gpm
6" x 4" flow range	41 gpm - 1100 gpm

PARALLEL PRESSURE REDUCING VALVE APPLICATION