

Automation to Manage Multi-Pivot Systems



Unlike manual valves that require trips to the pivot point to start and stop the pivot, pairing Valley® controls and Nelson® hydraulic control valves is convenient. They give growers the ability to open and close them automatically at the command of the pivot panel, preventing unnecessary and costly watering, as well as multiple trips to the pivot point. For added protection, these valves can be fitted with a pressure control pilot to provide constant pressure and a rate-of-flow pilot to automatically slow-fill the pivot during system startup.



Key Benefits:

- Save time and labor by reducing the number of trips to the pivot point
- Improve performance by preventing watering in place due to unexpected shutoffs
- Maintain constant water pressure to protect multi-pivot system pipes
- Prevent water hammer damage by automatically slow-filling the pivot during system startup



Two Nelson Kits for Maximizing Efficiency and Savings

1. 4" Valve x 6" Flange Adapter Kit
Quick and easy placement for a 4" valve in 6" pipe
2. 6" Valve x 8" Flange Adapter Kit
Quick and easy placement for a 6" valve in 8" pipe

Valve Sizing Considerations

Proper valve sizing is critical in designing control valve systems. The valves must be sized correctly for the reactive control functions to work properly (reducing, sustaining or shutoff). A high percentage of control valve problems can be directly traced to the initial selection of the wrong valve size. Be aware of these two common challenges:

Challenge #1 - Sizing the Valve for Proper Flow

The most common error occurs in over-sizing a pressure control valve. The error occurs by ignoring the operation and specifying that the size of the pressure control valve be the same diameter as the pipe. While this simplifies installation, it may result in the use of a valve that is too large. At lower flow rates, this oversizing leads to severe problems, such as cavitation, water hammer and pressure cycling.

Challenge #2 - Accounting for the Correct Amount of Pressure Drop

The second common error is selecting the control valve from low graphs. This sets the limits of minimum and maximum flow rates for each size, but does not account for the pressure drop across the valve. Incorrect valve sizing can cause loss of pressure in your pivot. Since both flow rate and pressure drop determine valve performance, both must be taken into account for the proper sizing of reactive control valves.

TOP PERFORMER

When tested against competitive 3" and 4" valves, the Nelson 4" 800 Series pressure-reducing valve proved to be:*

1. The Most Accurate

The Nelson 800 Series Valve is the only valve able to maintain an outlet pressure within +/- 0.5 psi.

2. The Most Efficient

The Nelson 800 Series Valve has 1/2 to 1/10 the pressure loss of other valves.

3. The Best for Low-Pressure Regulation

The Nelson 800 Series Valve uses the most advanced 3-way pilot in the industry, which requires the lowest pressure differential to maintain a constant outlet pressure. Other valves that use two-way pilots can require a pressure differential of 10 psi.

* Burt, C.M. and K. Feist 2013. Low-Pressure Testing: Pressure Regulating Valves. Irrigation Training & Research Center, California Polytechnic State University, San Luis Obispo, California, USA. Report R13-003. See also 2013 Proceedings of the Irrigation Association Show, Austin, TX.