

Sprinkler system with domestic water bypass instruction sheet

A domestic water bypass allows the Uponor AquaSAFE™ fire sprinkler system to operate properly even when flow-restricting devices, such as water softeners and filtration systems, are present in the home.

When a sprinkler activates and water pressure drops significantly, a pressure-reducing valve (PRV) opens and routes the water directly to the sprinkler system, taking the path of least resistance, thus avoiding the flow-restricting device.

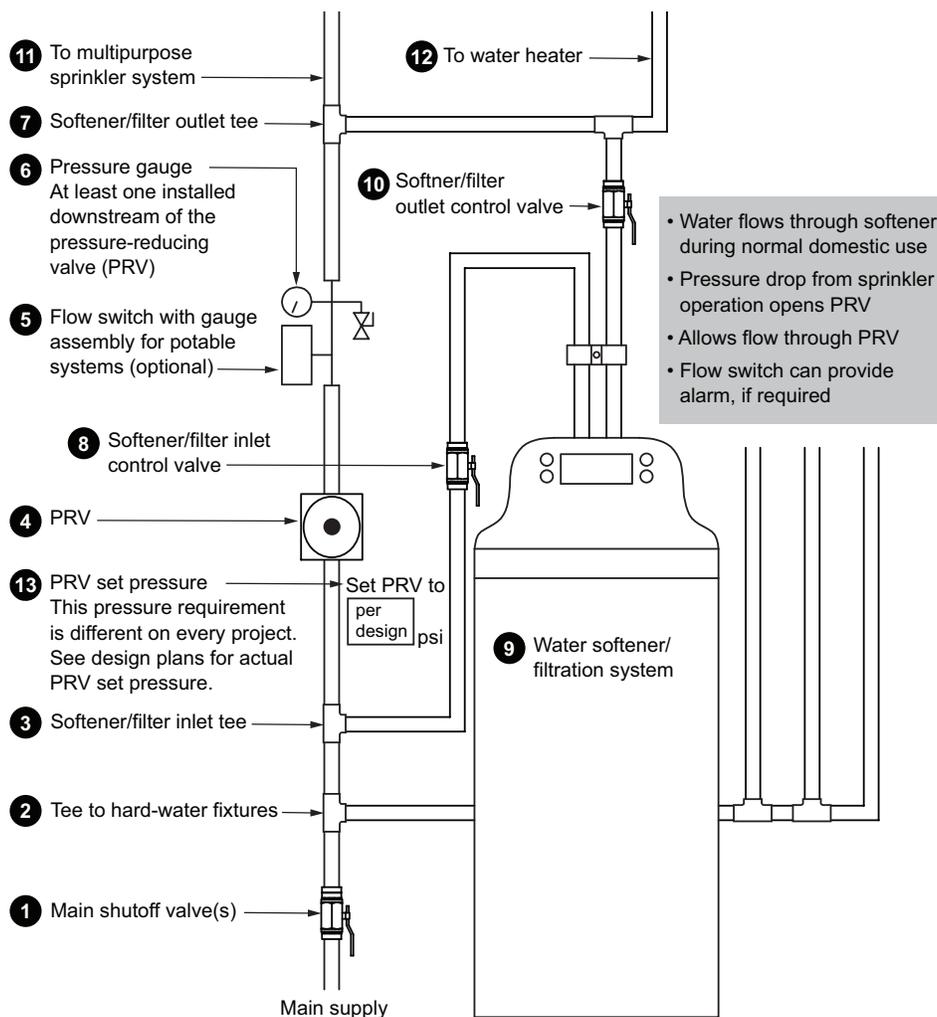
The PRV opens only during sprinkler activation and not domestic use. Therefore, the flow-restricting device does not negatively impact the water supply of the fire sprinkler system and allows homeowners to use regular residential plumbing devices versus commercial devices.

Note: When the flow switch detects water flow through the bypass, it can activate an optional alarm, which alerts occupants that the sprinkler system is operating.

Bypass components

- Pressure-reducing valve (PRV)
- Pressure gauge
- Alarm flow switch (if required)
- Electric alarm bell, horn or strobe light (if required)
- Required tubing and fittings

Domestic water bypass installation with optimal flow switch



Domestic water bypass installation guidelines

Refer to the figure on the front page and use the following steps to properly install a domestic water bypass.

1. Install the domestic water bypass line. There needs to be a straight line from the main shutoff valve (1) to the PRV (4) and also from the PRV to the softener/filter outlet tee (7). This will ensure proper operation of your fire sprinkler system. If additional 90° elbows are installed on the piping through the PRV, contact the Uponor Design Department at 888.594.7726 to recalculate the system.
2. Close the softener/filter inlet control valve (8). All of the water will now flow through the PRV and not through the domestic water softener/filtration system (9).
3. Now that the water softener/filtration system (9) is isolated, open a single plumbing fixture downstream of the PRV. The pressure gauge (6) will show a pressure drop downstream of the PRV. The pressure gauge (6) reading will continue to drop until it reaches the point at which the PRV is preset.
4. If the flowing pressure on the pressure gauge (6) is lower or higher than the pressure indicated on the bypass detail in the set pressure box (13), turn the adjusting nut on the PRV until the pressure gauge (6) reading matches the pressure on the bypass detail. DO NOT adjust the PRV so that the downstream pressure is lower than that shown on the bypass detail. Doing so will cause the sprinkler system to fail.
5. Open the softener/filter inlet control valve (8). The pressure gauge (6) reading will increase. The water is now flowing through the water softener/filtration system (9) only. If a sprinkler activates, the downstream pressure will drop below the PRV set point and water will flow through the PRV (4), thus introducing hard or unfiltered water into the system.
6. Turn off all domestic fixtures and perform the fire sprinkler flow test. If the PRV (4) has been set correctly, the flow test should be successful.
7. After the flow test is completed, open multiple outlets downstream of the PRV (4). Make note of how many outlets can be flowing before the pressure is equal to or below the PRV set pressure. Inform the customer that they will be able to flow a specified number of outlets simultaneously. If the customer exceeds that number of flowing fixtures, the system will receive hard or unfiltered water.

Troubleshooting

Hard or unfiltered water issues

If hard or unfiltered water is introduced into the system, it could be due to the following reasons.

1. The customer is exceeding the maximum amount of plumbing fixtures they can have flowing simultaneously. Inform them that they can also test the system by repeating the process in step 7 of the domestic water bypass installation guidelines.
2. The city pressure has changed significantly. If this occurs, the PRV will have to be readjusted.
3. The water softener is too small for the customer's domestic-use needs or is malfunctioning. The customer may need to purchase a water softener with higher flow characteristics or have their softener repaired.
4. The PRV has been set incorrectly (too high).

The flow test does not work

1. Make sure the PRV set pressure in the field is equal to or higher than the set pressure shown on the plan. If the actual PRV set pressure is lower than the set pressure shown on the bypass detail (13), there will not be enough pressure available to perform a successful flow test.
2. Contact the Uponor Design Department at 888.594.7726 to verify the friction loss across the PRV is not too great and to see if there is something else causing a flow restriction.

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