



## By-Pass Related Definitions

**By-pass system.** A set of valves that allow the shut off of flow to and from one or more water treatment devices and to provide untreated water to pass to fixtures. A simple by-pass system for one treatment unit is normally three valves.

**By-pass valve.** A valve to allow untreated water to flow to the distribution system when water treatment equipment is out of service.

**By-pass appurtenance.** A manufactured valve that performs the functions of a by-pass system, including stopping inlet and outlet flow and providing untreated water to distribution.

**Isolation valves.** Valves that shut off flow in the lines to or from a water treatment device.

**By-pass.** “By-pass” and “the by-pass” are often used in the industry. These terms can be in reference to a by-pass valve or to a by-pass system., as determined by the context. Therefore, “by-pass” alone is best NOT used in engineering specifications or in regulations.

## Function & Practice

Notes on by-pass systems:

1. A by-pass system provides the function of three valves:
  - a) A valve on the **supply** line to the water conditioning equipment that can be closed to prevent flow to the equipment,
  - b) A valve on the **treated water** line from the water conditioning equipment that can be closed to prevent flow to distribution or reverse flow into the outlet of the equipment,
  - c) A valve that can be opened to provide **untreated** water to flow to distribution. This valve is normally closed during the operation of the water treatment equipment.
2. Multiple water conditioning units should have, at a minimum, one by-pass system for the overall treatment system.
3. Multiple water conditioning units may have a number of different configurations of the by-pass system:
  - a. Each unit might have a three valve system,
  - b. Each unit might have inlet and outlet valves without a by-pass valve.
4. By-pass valves are sometimes unnecessary or inappropriate, as when treated water is provided for a point of use tap or taps, or to an icemaker or equipment requiring treated water. A by-pass valve can be a health threat if provided with equipment that treats water that is unsafe for human consumption.