

HYDRA-STOP

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DETERMINING THE RIGHT SOLUTION FOR YOUR NEXT POTABLE WATER PROJECT

A WHITE PAPER BY HYDRA-STOP

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Whether for planned, routine, or emergency maintenance and repairs, insertion valves are increasingly becoming a go-to solution for public water systems. While reliability and cost-effectiveness will always be paramount, getting the right insertion valve to fit the application can make or break a project.

WEIGHING THE OPTIONS

The following are features that should be considered when choosing an insertion valve.

VERSATILITY TO ACCOMMODATE UNKNOWNNS

A large portion of the U.S. water infrastructure was built between the late 1800s through the mid-1900s. Throughout that time and beyond, many things have changed in terms of pipe materials and diameters. An insertion valve needs to be able to fit typical pipe sizes and material and produce a reliable seal.

MINIMALLY INVASIVE TO THE PIPE AND SURROUNDING UTILITIES

Many times, water pipes are buried very close to other utility infrastructure, be it fiber optic cables, gas lines, phone lines, electricity, etc. Often this restricts the size of the necessary work area that valve installations require. That's why it's critical to use an insertion valve with the smallest possible footprint that can be installed in tight confines, minimizing the risk of disturbing other utility networks.

EASY AND QUICK INSTALLATION

For a repair, the clock is ticking. Each minute means more money spent on labor, non-revenue water, and more. The faster an insertion valve can be put in, the sooner the rest of the repair can take place and the job wrapped up.

INSTALLATION WITHOUT IMPEDING FLOW OR PRESSURE

Some insertion valves can be installed by tapping the pipe, similar to the process of adding a service line. Once the valve is tested and the pipe contained, the damaged section can be replaced. This avoids any negative impact to the system or customers' service, including water quality, flow, and pressure.

INSTALLABLE ON TUBERCULATED PIPES

When choosing an insertion valve, it's important to make sure it is designed with a reinforced resilient wedge which can seal in a tuberculated pipe without the need to ream or remove sections of pipe (Figure 1).



FIGURE 1.

COMPATIBILITY WITH OLDER INFRASTRUCTURE

To reduce the stress on older pipes, it's helpful to have an insertion valve that is relatively lightweight and requires no mechanical restraint. Sometimes, as municipalities grow around an existing water infrastructure, poor urban planning leads to pipes that are difficult to access. Having an insertion valve that can be installed in any orientation (Figure 2) can help make such jobs more feasible to complete in a timely and cost-effective manner.

An insertion valve that can be installed at any angle can help facilitate a quick repair in tight confines or difficult-to-access pipes.



FIGURE 2.

IMPACT ON TOTAL PROJECT COST

While the cost of the insertion valve itself matters, it's important to consider the total cost of any maintenance project and how the valve will influence that. An insertion valve that can minimize water loss, reduce or eliminate de-chlorination and re-chlorination, and be installed in the shortest time possible will save money on the total cost of the project.

PERFORMANCE TESTED

It's important to have a valve that is designed and tested to meet the four AWWA proof-of-design standard tests for resilient wedge gate valves, to ensure quality, durability, and longevity of the product. Those four tests are comprised of:

1. **Hydrostatic Gate Test:** Twice the rated pressure is applied to each side of the valve, one at a time, while zero pressure is applied to the opposite side.
2. **Torque Test:** The valve is over-torqued in the open and closed positions and then tested for warping and subsequent leakage.
3. **Leakage Test:** The valve is opened and closed 500 times at full rated pressure.

4. **Hydrostatic Shell Test:** Water is run through the valve at 2.5 times the rated pressure with the gate open.

ENGINEERING SPECIALIZATION

There are many manufacturers of insertion valves, but strong consideration should be given to those that specialize in the product. A jack of all trades is a master of none. Conversely, a hyper-focus on insertion valves and related products – line stops, tapping, etc. – means product development engineers can drill down on the challenges and limitations of the technology and invest in solving those problems in ways a company with more expansive offerings cannot.

QUICK TURNAROUND

Whether a project is planned, routine, or an emergency, it's critical to choose a product that can be delivered quickly and on time; especially in an emergency when every hour the problem remains unresolved costs money. The most commonly needed products and parts should be readily available, whether direct from the manufacturer or through a large, reliable service provider network.

KNOWLEDGEABLE SUPPORT STAFF

A surprisingly rare feature among insertion valve manufacturers is the availability of staff for guidance and product-specific technical support. Anything can go wrong in a routine or emergency maintenance scenario, and being able to call product experts for guidance on how to best utilize the valve in unexpected situations is invaluable. Even before a problem arises, it's worthwhile to consider a company that has robust training processes and installation instructions that are simple, repeatable, and easy to follow.

