SINGER VALVE
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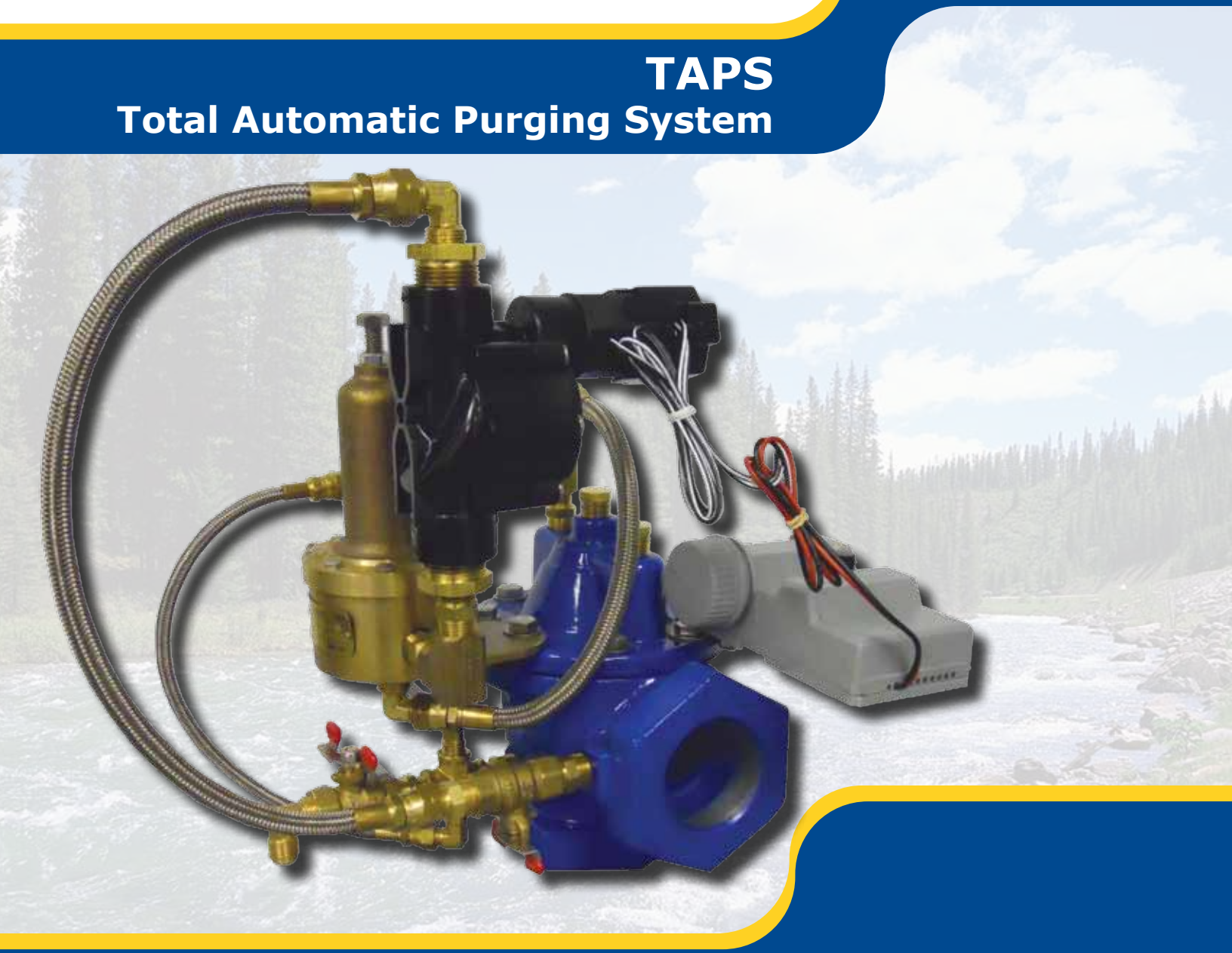
TAPS
Total Automatic Purging System



- **Enhances and maintains water quality**
- **Extends life of distribution infrastructure**
- **Reduces NRW (Non-Revenue Water) during flushing**
- **Durable Ductile Iron NSF-approved main body construction**

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TAPS
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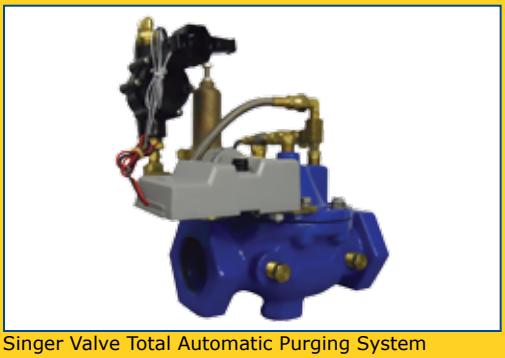
Singer Valve on TAPS

Resolve your water quality issues by flushing and scouring your distribution lines to eliminate biofilm and sediment build-up while maintaining water quality. Reduce NRW Non-Revenue Water during flushing cycle times resulting in financial savings. Our Singer Valve Total Automatic Purging System (**TAPS**) operates using an automatic control valve and a battery-operated timer to control the time, length and pressure required to flush your distribution system effectively. The results are impressive — better water quality, reduced non-revenue water and healthier system distribution piping and components.



Singer Valve Total Automatic Purging System

Identifying the Problem



Water travels through underground pipes at times less than 1.5 miles/h (2.4 km/h). This slow movement causes sediment like rust and minerals to accumulate in the pipe and it may cause biofilm (bacteria) to grow, which coats the inside of the pipe. The combination of sediment and biofilm leads to poor water quality and restricted water flow as well as the deterioration of the water distribution network.

The industry's standard solution to removing sediment and biofilm in a water distribution system is through a process called flushing. Flushing removes water rapidly from the system, allowing the force of the water to scour the pipes and dislodge deposits. The most common flushing procedure is opening fire hydrants where the discharged water flows off the street just like rainwater. By periodically flushing water pipes, this process helps to remove sediment and biofilm build-up, maintain the distribution system piping infrastructure and ensure a consistent quality of water.

The standard flushing procedure, however, has its drawbacks. It can waste a significant volume of water resulting in NRW (Non-Revenue Water) which is water that the utility does not bill for. Although standard flushing helps to clean the pipes, it often does not increase the water velocity enough to ensure the pipes are scoured thoroughly. As a result, corrosion of the distribution piping network can lead to leakage and pipe breaks resulting in costly repairs and consequential damages due to those breaks.

Failure to implement an effective flushing program and actually scour the distribution piping network to improve the water quality, results in three costly potential issues:

- Poor water quality and low residuals
- Organic growth and Biofilm damaging Infrastructure
- Government (EPA-USA) fines and other costly repairs

Poor water quality and low chlorine residuals will result within the distribution network without a regularly timed flushing program. This is specifically true in areas of low water usage or dead ends where due to low volume usage water quality falls off and becomes stagnant. As the water quality falls below standards this allows for biofilm, heterotrophs, and coliforms to begin forming or to accumulate in the water distribution network piping. This can lead to illness and overall contamination of the water supply. Moreover, as the water quality decreases below acceptable levels and standards, this can lead to government (EPA-USA) fines and penalties. The formation of these types of biofilm can also lead to degradation of the supply system piping. Once this internal erosion of the piping infrastructure begins it is difficult to reverse. This internal corrosion eventually leads to pipe leakage (NRW) and breaks. These breaks can and usually do have associated consequential damages in addition to the pipe bursts which are the responsibility of the utility. Boil advisories, re-routed traffic patterns, and interrupted service can all be the results of not having an effective flushing program.

Another concern with typical flushing type valve systems on the market is that they are either a full open or full closed type of operation. There is no concern for fire flow or required minimum system pressure conditions. If a typical flushing valve is called to operate, it does not recognize the distribution supply system needs or conditions such as fire flow requirements. A flushing valve installed on a line without a pressure sustaining control can lead to inadequate fire pressure supply with devastating results.

TAPS AT A GLANCE

- ***TAPS*** *is versatile.*
  Installation above or underground in a meter pit or enclosure.
- ***TAPS*** *is durable.*
  Made with ductile iron, fusion epoxy coated.
- ***TAPS*** *has an NSF-approved main valve options available.*
- ***TAPS*** *is Hydraulically sensitive in maintaining minimum system pressures.*
- ***TAPS*** *is affordable.*
  Features and functionality at a competitive price.

Singer Valve's Flushing Solution

The Total Automatic Purging System (**TAPS**), which our Singer Valve engineers have designed and manufactured, is one of the most innovative flushing solutions in the industry today. **TAPS** can dramatically increase the quality of your distribution water and it will lengthen the life of your distribution system's piping network. Our automatic flushing system is comprised of pilot-operated control valves and a battery-operated timer for timed pressure and flow control thereby optimizing the flushing process. The **TAPS** valves provide positive opening and closing to ensure that water quality is maintained through effective flushing of the distribution network. The flushing process also maintains the internal workings of the distribution system, reducing the chance of biofilm growth and contaminants. The overall results? Fewer costly repairs due to reducing pipe erosion that lead to costly pipe breaks and repair. Improved water quality throughout the distribution network. Reduction of NRW, through efficient velocity and volume control during flushing cycles.

How Singer Valve Flushing System Works

At Singer Valve, our aim is to lead the industry with innovative technology and practical solutions for your water distribution and water quality issues. Our Total Automatic Purging System (**TAPS**) is one example of that commitment. Here's how **TAPS** works.

The **TAPS** unit is comprised of a hydraulically operated valve that introduces or releases water from the control chamber above the diaphragm to maintain accurate water control. Our Total Automatic Purging System is an above or below-ground solenoid-controlled flushing valve that is fitted with the Singer Model 106-PG globe or angle main valve body. The unit is hydraulically controlled by an externally mounted pilot system that allows the valve to open or close and maintain system pressure during flushing operations. It also uses a 9-volt battery-operated timer that is programmed via a handheld unit for the desired time of operation. The waterproof battery-operated timer and latching solenoid pilot provides two positions (on/off) open/close operation. The solenoid either applies inlet/system pressure to the main valve operating chamber for closure or releases pressure from the operating chamber for flushing and pipe scouring. Water in the pilot system is also piped to the outlet of the main valve. The main valve discharges from the system to drain or to atmosphere providing automatic water line flushing. When the unit is prompted to operate, the valve opens and begins the flushing process. The **TAPS** unit also includes a pressure sustaining feature to insure minimum upstream pressure is maintained for fire flow and system needs during flushing operations. The pressure sustaining feature also allows you to regulate the flow at each site installation reducing the amount of NRW at each location. Each specific location where a flushing valve is installed can be set to maximize the line velocity for affective flushing and pipe scouring while limiting the total amount of water required with no excess waste (NRW). The unit can be fitted with additional pressure control options so it can perform different functions for any specific application requirements. A sampling port is also provided for water quality analysis.

WHY SINGER VALVE DOES IT BETTER!

Our **TAPS** unit is the industry's best flushing system because it is an actual ductile iron fusion epoxy (NSF-approved options available) control valve that is easily programmed for multiple flushing operations and functionality. **TAPS** optimizes the flushing process by scouring and cleaning pipes, reducing corrosion and improving water quality. There's also a sampling port for inspecting water quality in the field.

How Your System Benefits

When you add a Singer Valve Total Automatic Purging System (**TAPS**) to your distribution system, your system will benefit in five key ways:

- Durable and dependable flushing operation using proven control valve technology
- Maintain system upstream pressure (fire flow demand) during flushing operations
- Positive flushing velocity to insure effective pipe scouring and maintaining water quality
- Reduce NRW by limiting the amount of water required during flushing operations
- Most cost effective flushing valve on the market

Improve Water Quality



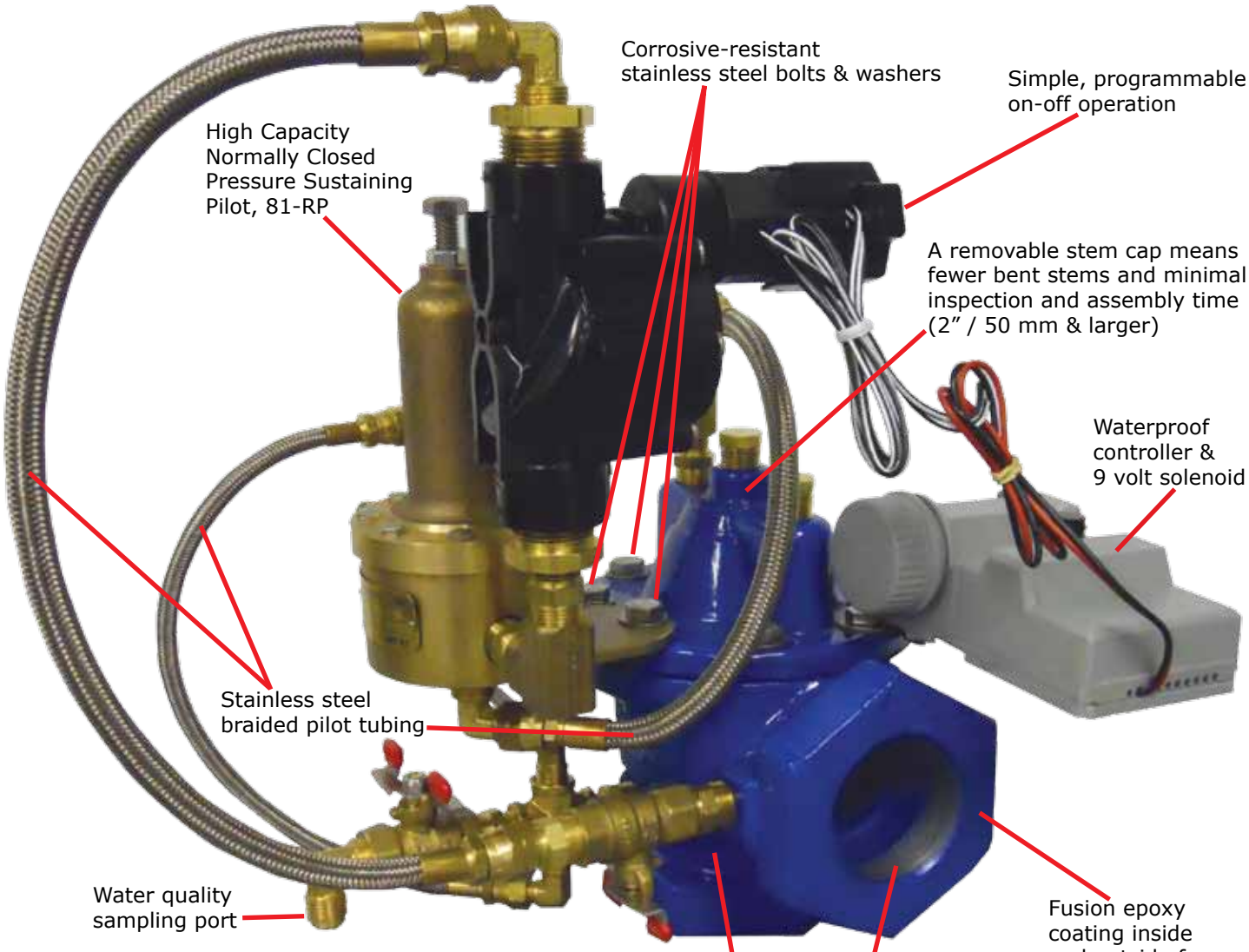
Through proper flushing and pipe scouring your water quality will improve immediately and maintain drinking water standards over time. Because **TAPS** provides for automatically controlling proper flushing cycles and velocity, fresh water is effectively drawn into areas where water quality traditionally falls below standards leading to water quality fines and penalties. Having a range of **TAPS** valves sizes available from ½" / 15 mm through 12" / 300 mm, insures that each installation will provide an effective flushing operation. For example: a 24" / 600 mm line with a 2" / 50 mm flushing valve installed will not provide for effective velocity to pull or draw fresh water into that zone.

In addition to providing correct **TAPS** valve sizing, each unit provides for sustaining pressure, which in addition to proper sizing can be set to dial in the correct effective flushing velocity and flow for each individual installation point. Each **TAPS** unit also includes a water sampling port for testing water quality at each installation site.

TAPS
Total Automatic Purging System

The Singer Valve Advantage

At Singer Valve, we are all about innovative design solutions. Our Singer **TAPS** Total Automatic Purging System resolves your distribution water quality issues while simultaneously scouring your transmission lines to eliminate biofilm and sediment build-up. So, what's the difference between Singer **TAPS** and others on the market? Take a look.



FEATURES AT A GLANCE

- Ductile iron globe or angled body main valve
- NSF-approved main valve options
- Warm & cold weather climate installation
- Positive, drip tight shut-off
- Simple, programmable on-off operation
- Waterproof controller and 9-volt solenoid
- Water quality sampling port
- Three-year warranty on non-electrical components

Optional end connections:

- ½" / 15 mm – 3" / 75 mm NPT connection
- 2" / 50 mm – 6" / 150 mm groove connection
- 1 ½" / 40 mm – 12" / 300 mm 150# flange connection

Model A106-SC-BT-R-TAPS

Extend The Life Of Distribution Pipes

Think of your distribution network as a reactor. Corrosion can occur within the piping network eroding and deteriorating the pipe walls from the inside out. This corrosion known as biofilm can cause heterotrophs, coliforms and bulk organisms to begin to form and accumulate within the distribution supply system. Proper flushing will extend the life and improve the condition of your distribution pipes and system components. By flushing your system regularly with **TAPS**, your distribution network will gradually improve or eliminate all build-up of biofilm and contaminants, and the water quality will improve significantly. Upon installation, **TAPS** will remove debris and build-up within the pipes, effectively halting both corrosion and erosion within the distribution system. Over time, as **TAPS** eliminates debris, build-up and contaminants, your system will require fewer repairs and less maintenance as the interior of the distribution network is maintained through regular flushing and pipe scouring operations.

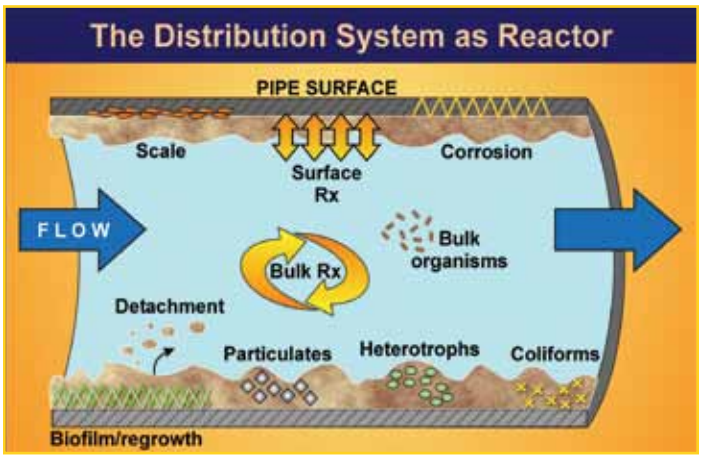


Image courtesy of Montana State University Center for Biofilm Engineering

Conserve Non-Revenue Water

Corrosion can occur within the piping network eroding the pipe walls from the inside out leading to pipe breaks and leakage within the distribution network. This leakage along with pipe breaks attributes to NRW (Non-Revenue Water) which is water that the utility loses and does not bill for. In addition to leakage are the associated costs of pipe breaks, consequential damages, and boil advisories.

Considering traditional flushing using fire hydrants there is no way to effectively ensure that the lines have been properly flushed and scoured. **TAPS** with its unique pressure sustaining feature can insure proper velocity for flushing and pipe scouring while limiting the amount of water required thus reducing NRW (Non-Revenue Water). This results in a substantial cost savings over traditional hydrant flushing and other flushing valve systems on the market. **TAPS** is a fully automatic system comprised of a control valve and timer that regulates the pressure and the frequency of flushing cycles. **TAPS** scours the internal piping system with a regulated velocity of water without the need for opening fire hydrants and wasting NRW.

The Uniqueness of TAPS

Singer Valve's **TAPS** is unique because it is a true water valve for potable water systems. It is manufactured with the same high quality components and meets the same high performance standards that all of our Singer Valve products have.

Key features of the Singer Valve **TAPS** unit:

- NSF-approved options available.
- Meets all AWWA C530 standards.
- Has a pressure sustaining feature that prevents over drafting during flushing.
- Not limited to size; units are available from ½" / 15 mm to 12" / 300 mm.
- Manufactured with ductile iron 65/45/12 and includes NSF-approved heat fusion epoxy powder.
- 316 stainless steel seat with a lifetime warranty.
- Stainless steel braided pilot tubing.
- Sampling port for water quality analysis.
- Can be serviced or maintained in the field.
- Fully adjustable to achieve optimal flushing velocity.
- Flushing flows can be matched with flushing cycle time to reduce the loss of non-revenue water.
- Optional end connections:
  - ½" / 15 mm to 3" / 75 mm NPT threaded connection
  - 2" / 50 mm to 6" / 150 mm groove connection
  - 1 ½" / 40 mm to 12" / 300 mm 150# flange connection

Other valves on the market just don't compare to Singer Valve. Many of the competitors' parts and components are manufactured from plastic. Many of them have neither NSF approval nor meet AWWA standards and cannot be serviced or maintained in the field. Our **TAPS** unit is manufactured with the same standard features that all Singer Valve products have, such as stainless steel bolts and washers, a stainless steel valve stem with wrench flat, and a 316 stainless steel seat with lifetime warranty. We provide product warranties and performance guarantees along with superior customer service before and after installation.

Maintaining Fire Flow Capacity

The Model 106-SC-BT-R-TAPS flushing or blow off valve provides unique control of distribution supply pressure while flushing and scouring distribution dead ends. Conventional flushing valves open fully, exhausting all available system water pressure. If fire flow is required during the flushing process, a fully open valve would dissipate required fire flow pressure. The **TAPS** valve maintains minimum line pressure during the flushing cycle time. In the event that the flushing cycle is in operation with the valve open, and fire flow pressure demand is required, the **TAPS** valve maintains the minimum required fire flow line pressure. Other flushing valves on the market cannot provide this crucial fire flow pressure requirement.

TAPS
Total Automatic Purging System

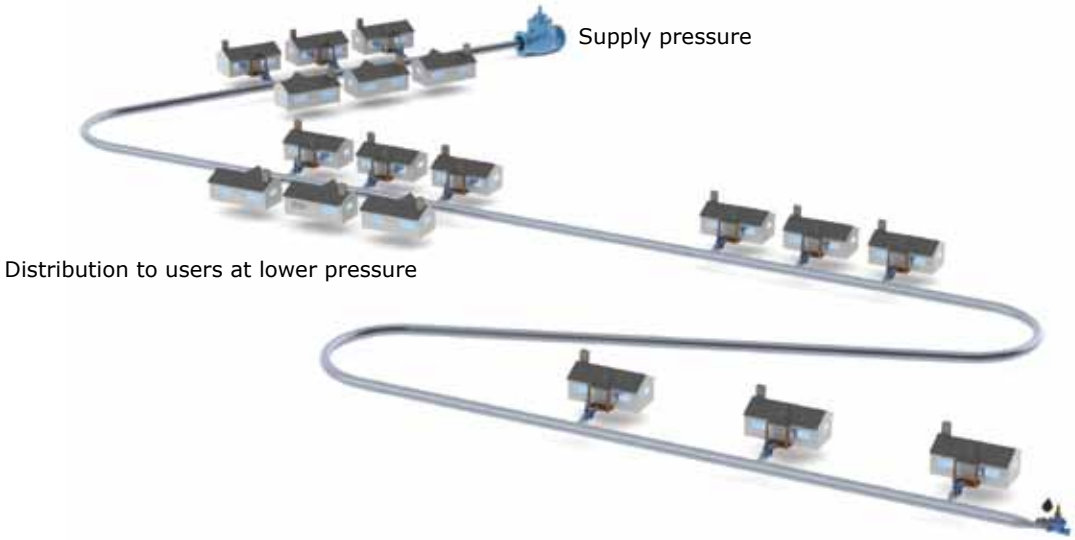
Typical Applications

The Singer Valve **TAPS** Total Automatic Purging System is ideal for:

- Distribution systems that run through rural areas and that have long piping runs, low demand or dead-end lines
- Distribution systems in areas that have experienced natural disasters, leaving a massive infrastructure with no or little demand because the population has decreased drastically
- Distribution systems in areas that have experienced serious economic conditions, causing the population to decrease drastically and leaving a large infrastructure with little or no demand
- Areas of development that have been abandoned or where construction has been delayed, resulting in large trunk lines that have minimal usage or demand.
- Looped systems where there is no usage between users, resulting in a potentially stagnant area in the distribution system
- High-rise buildings with little or no water usage, resulting in stagnant water areas within the building

Typical Application 1

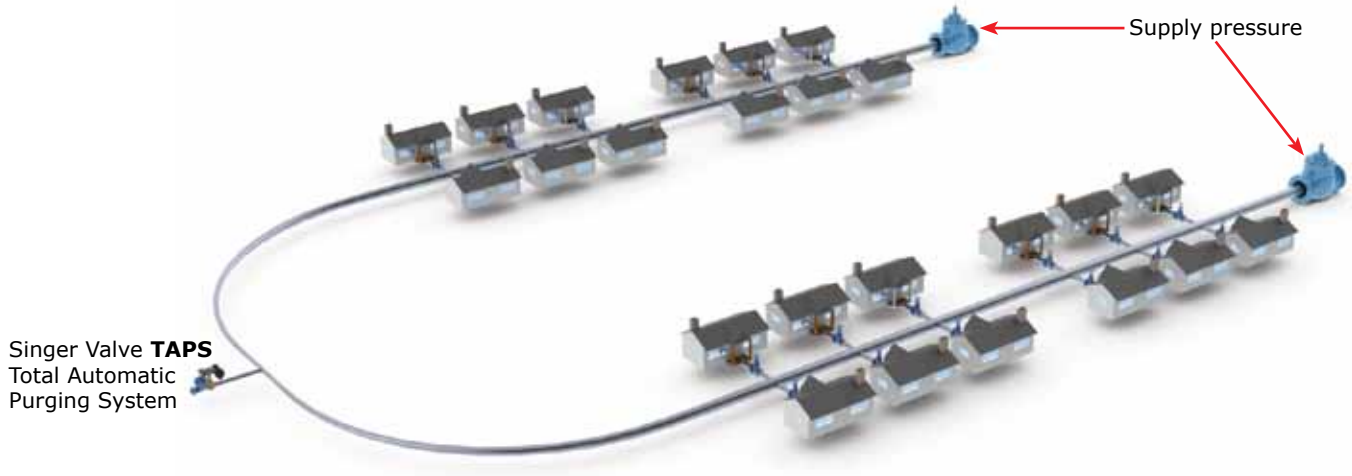
Distribution systems that run through rural areas and that have long piping runs, low demand or dead end lines



Singer Valve **TAPS** Total Automatic Purging System

Loop Systems

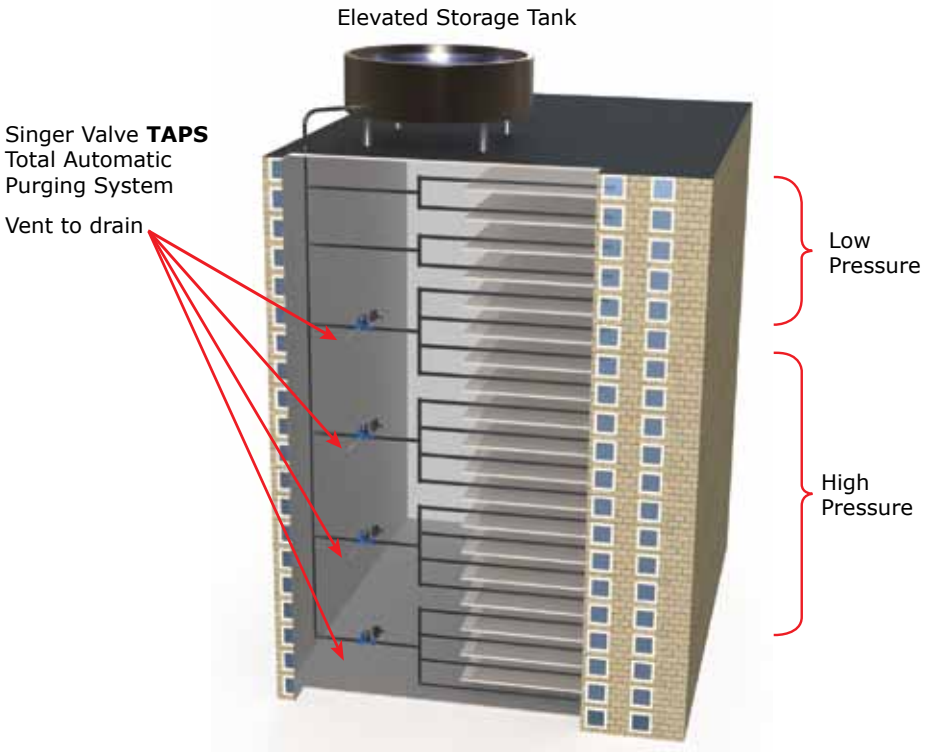
Looped systems where there is no usage between users, resulting in a potentially stagnant area in the distribution system



Singer Valve **TAPS** Total Automatic Purging System

High Rise Buildings

Hi-rise buildings with little or no water usage, resulting in stagnant water areas within the building



Installations

The Singer Valve **TAPS** unit is versatile because it can be used in a variety of applications. Here are a few ideas:

The 2" / 50 mm globe style unit with threaded connections can be used as a mobile device, attaching it to fire hydrants throughout the system and moved to different areas when needed.

The 2" / 50 mm globe or angle style unit can be installed in an oversized meter box and hard piped to a storm drain or a ditch so it is out of sight. This application is great for warm weather conditions.

The 2" / 50 mm globe style unit can be installed below ground, below the frost level and hard piped to a storm drain or a ditch so it is out of sight. This application is great for cold weather conditions. Option drain back valve must be used in vertical discharge piping to drain any water left in the vertical column to avoid freezing.

The smaller units ½ - 1" / 15 - 25 mm can be installed within a building in areas of water quality concern to maintain water quality standards with that building. Waste can be discharged to a drain.

Larger flushing valve sizes are recommended for larger supply lines to ensure the flow velocity is strong enough to flush and scour the piping network.

Key Options

- Horizontal or vertical installation
- Drain back valve for cold weather climate installations
- Visual position indicator
- Inlet pressure gauge
- Anti-cavitation trim
- Discharge Duckbill check valve
- 120 VAC electrical options
- NSF approval

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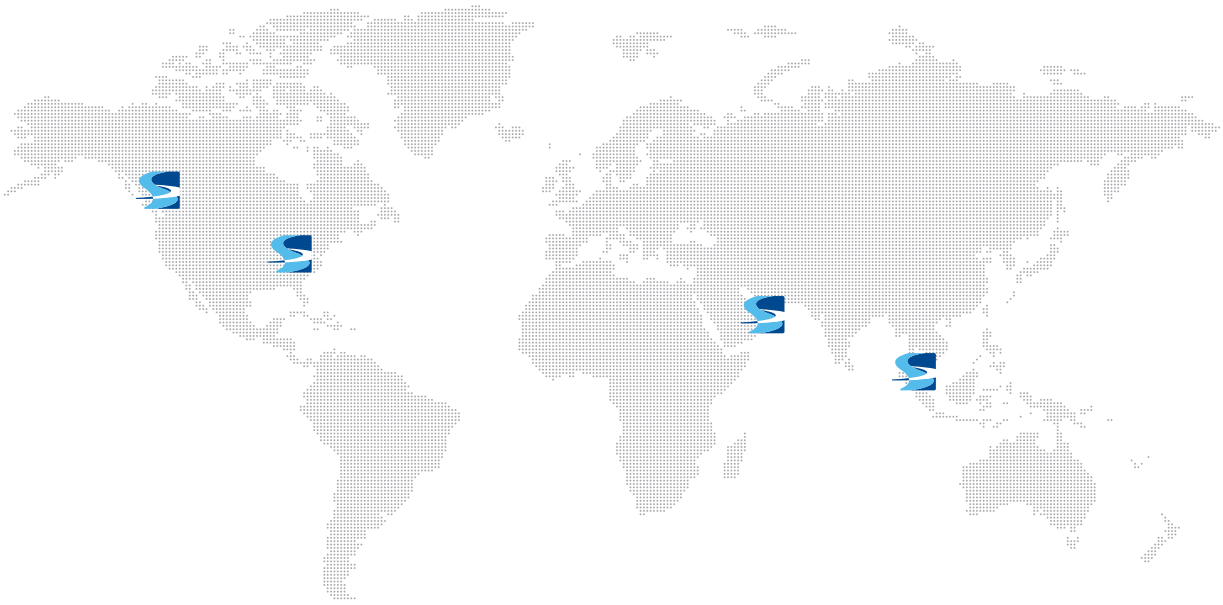

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