SINGER VALVE

Result-Based Solutions. Globally.™

Leakage Management Equipment & Accessories Catalog

About Singer Valve

Water Loss Specialists

Singer Valve Inc. has been designing, manufacturing and distributing pilot operated diaphragm control valves since 1957. Today, our valves are installed in virtually every country in the world.

Whether it is water loss management in Southeast Asia, water conservation concerns in Saudi Arabia, or urban distribution demands in the United States, Singer Valve provides custom solutions and personal service to our clients around the world. Thanks to our dedicated staff—many who have worked with us for decades—our commitment to quality and service is more than just words. It is our reality.

When it comes to having a complete product-line of valves and a variety of solutions to reduce leakage and combat water loss, Singer Valve has the depth to take on the toughest challenges. In fact, Singer is proud of its research and development spanning over 50 years, where the pioneering spirit and unique offering of valve solutions has benefited clients world wide.

Singer Valve also offers a complete range of transient and surge-related damage prevention products that are aimed at reducing the harmful stresses on lines and networks that can lead to pipe bursts. If your current pipeline concerns include high pressures, surges or transients, Singer Valve offers proven, proactive solutions that work continuously overtime. Singer valves work to anticipate and handle incidents before they become catastrophes. If you are designing a new system, or expanding an existing facility, speak with a Singer Valve expert and save yourself time, problems and money.

Some of our innovative products include:

- Surge Anticipating Relief Valve - RPS-L&H
- Surge Anticipating on Rate of Rise Pressure Relief Valve - RPS-RR
- Booster Pump Control - PG-BPC (Single Chamber) & BPC (Double Chamber)

RPS-L&H

RPS-RR

PG-BPC

BPC

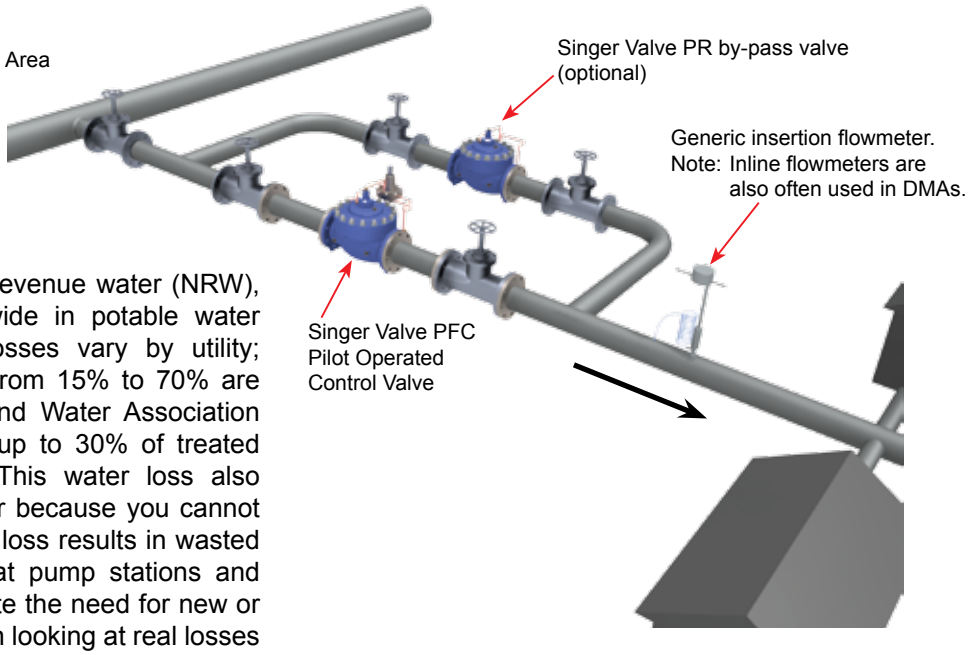
Our Vision

To be the preferred provider of the most innovative, reliable water control solutions in the world.

Our Mission

We are innovative designers and manufacturers of high quality differentiated control valves with excellent technical support and service to our customers.

Singer Valve's Water Loss Management Solutions



Water loss, also known as non-revenue water (NRW), is a significant problem worldwide in potable water distribution systems. System losses vary by utility; however, water losses ranging from 15% to 70% are common. The Ontario Sewer and Water Association recently stated that in Canada up to 30% of treated water goes into the ground*. This water loss also contributes to non-revenue water because you cannot gain revenue from the loss. This loss results in wasted energy, decreased efficiencies at pump stations and treatment plants and it may create the need for new or increased storage facilities. When looking at real losses as they relate to non–revenue water, these losses can be divided into three main areas:

1. Leakage on transmission and / or distribution mains
2. Leakage and overflows at a utility's storage tanks
3. Leakage on service connections up to the point of customer metering

Typically, a water loss management consultant would review a utility's distribution system and develop numerous control zones with a single source of water (if possible). These zones are referred to as DMAs or District Metered Areas. Each DMA requires a meter and often a pilot-operated control valve. Assuming residential, commercial and industrial users are being metered you now have measured flow into the DMA as well as flow to your users. The difference then is your actual water loss (less theft and authorized, non-metered usage), assuming all meters are accurate. There is a direct correlation to pressure and leakage; if you reduce pressure by 1% you will reduce leakage by approximately 1.15% (subject to variation). The goal then is to develop multiple smaller DMAs within a utility and give clients just enough pressure to serve their needs while eliminating over pressures. It is common knowledge that a good pressure management approach is one of many solutions to reducing water loss but it is typically the most economical approach with immediate results.

**Source: Ontario Water & Construction Association, Toronto Losses*

Singer Valve's product line of "Leakage Reduction" valve offerings:

1. Standard Pilot Operated Control Valves, Model PR
2. Hydraulic solutions that allow valves to open fully at low pressures (daytime), Model PR-8761A
3. Battery operated control valves with two pressure settings, Model 2PR-SC-BT
4. SCADA operated control valves using 4-20 mA signal, Model PR-420 (AC/DC)
5. Hydraulic solutions that adjust pressures based on flow demands, Model PFC

Visit singervalve.com to learn more about leakage and our many alternative solutions.

SYSTEM INTEGRATION

Many third party manufacturers produce equipment that can be integrated with Singer's control valve technology and can adjust pressure based on time or flow. For more information, consult with the Singer Valve sales representative in your area. A global listing of reps is available on singervalve.com.

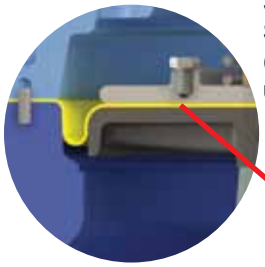
Feature Products

SRD :: Single Rolling Diaphragm

Singer Valve introduced the revolutionary rolling diaphragm design to the automatic control valve industry in 1983. Although rolling diaphragm technology has been used in railway air brakes for more than a century, Singer is the only pilot operated control valve company to adapt the technology for control valves. With water loss management a global priority and the accompanying need for precise pressure management, Singer Valve's pioneering design and engineering is leading the way.

Since the first Singer rolling diaphragm control valve in 1983 to the introduction of the rolling diaphragm technology on 6" (150 mm), 8" (200 mm) in addition to our existing range from 10" (250 mm) to 36" (900 mm), Singer has been steadfast in its dedication to offer precise pressure management. The advantage of rolling diaphragm technology in contrast to flat diaphragm, or traditional piston-style valves, is the incredible stability throughout a complete range of flows.

Singer's rolling diaphragm can control pressures with flows as high as any product offering in the marketplace today; however, the Singer difference is on extremely low flows. During the night most distribution systems have low flow and higher pressures. Traditional automatic control valves will often have seat chatter. At low flows the valve will chatter and vibrate. As a result, a smaller bypass valve is needed to control the lower flows.



Singer Valve's SRD Single Rolling Diaphragm (depicted in yellow) provides unequalled low flow stability

S106-PR

A Singer rolling diaphragm pressure reducing valve will provide stable, reliable and precise pressure control from maximum to virtually zero flow without the complication of additional low-flow bypass valves.

ROLLING DIAPHRAGM: PROVEN TECHNOLOGY

In 1880, the Rolling Diaphragm Technology was utilized by Westinghouse Air Brake Company in its railway air brakes. Singer Valve adapted and then incorporated the technology for the Automatic Control Valve industry in the 1980s.

2PR-SC-BT :: Dual Adjustable Set-Point Pressure Reducing Valve

- Two Adjustable Outlet Pressure Set Points (Daytime / Night)
- Selectable Using Battery Operated Control
- Pressure Reducing Valve with two set points, high pressure and low pressure
- Time-based selection via latching solenoid and timer
- Self-contained, powered by a 9-volt battery (1 controller, 1 programmer)
- 24/7 time settings (can skip days)
- Multiple time selection possible (up to 10 time settings per 24 hour period)
- Reduces system pressure when not needed (low flow demand or night time), supplies increased pressure when required (high flow demand or day time)
- Recommended for systems where no external power source is available

2PR-SC-BT

PR :: Pressure Reducing Valve

106-PR Globe

- One Adjustable Set Point
- Ideal for most Pressure Ranges
- Pressure Reducing Valve
- Maintains accurate downstream pressure regardless of fluctuations in supply pressure or flow
- Many combinations and variations of functions possible with other pilots and features added
- Stable low flow
- Precise and easily adjustable downstream pressure

420-DC / AC :: Automated Control Pilot

420-DC

- Set-point fully controlled by SCADA
- Pressure Reducing Valve with electronic actuator
- 420(AC/DC) allows remote adjustment of pilot via 4-20mA from SCADA
- Low power (less than 0.5 Amp draw) actuator available in 24VDC or 120/240VAC
- Easy-to-use software for field calibration
- Fail safe operation, valve controls to last adjusted set-point on power or signal failure
- PR-420(AC/DC) maintains a constant downstream pressure regardless of fluctuations in supply pressure or flow. The electronic actuator allows SCADA operators to adjust pressure set-point remotely via 4-20mA
- Using SCADA system, the valve can be configured to automatically adjust the pressure set-point depending on time of day or flow demand

PR-8761A :: Extremely Low Supply Pressure Reducing Valve

PR-8761A

- One adjustable set-point (low flow / high pressure)
- Ideal for extremely low pressure
- Opens fully (high flow / low pressure)
- Maintains a constant downstream pressure regardless of fluctuations in supply pressure or flow
- High capacity pilots ensure valve opens fully when needed, and optimum modulation when required
- Purely hydraulic operation, uses no electronic controls or external power source
- Suitable for systems with occasional low supply pressure (10 psi / 0.68 bar or less*), PR-8761A ensures distribution gets maximum available flow and pressure during maximum system demand
- When supply pressure drops, valve opens fully. When supply pressure recovers, valve modulates to maintain downstream pressure desired

* Consult factory for further details

PFC :: Pressure Flow (Modulation) Valve

106-PFC Globe

- Pressure increases / decreases in controlled response to flow variations
- Pressure flow control
- A patented pressure reducing valve that increases the controlled downstream pressure as flow increases
- The maximum increase in pressure is adjustable up to 30 psi (2 bar) above base pressure. Simple hydraulic action will operate normally if valve is submerged.
- Hydraulically operated—no electrical requirements
- Reduce water loss/leakage substantially
- Maintain constant pressure at remote locations
- Reduce nighttime line breaks due to lower pressures
- Automatically reduces pressure and can vary downstream pressure according to flow
- Supplies water at preferred pressures under all flow conditions
- Existing valves can be field upgraded

Relief / Surge / Pump Control

At Singer Valve, we know that pipe bursts, as a result of transients and surges within a piping network, are very common. The costs for repairs are extremely high—not to mention potential harm to workers, lost water, litigation, down time and damage to equipment and the environment. It is common for water utilities that serve a typical population base of 1–1.5 million people to quote pipe burst occurrences between 500–1,000 incidents per year. Time spent planning against catastrophic failure is never wasted.

Proper precautions and the use of reliable disaster avoidance solutions, such as surge anticipating and rate of rise relief valves, are your best insurance against excessive system stresses, losses, failures and down times. Combined with booster pump controls, your entire piping network can be protected against most network failures caused by transients and surges Singer Valve offers a variety of preventative solutions that can significantly decrease the number and frequency of pipe bursts.

Surge Anticipating Relief Valves

Surge Anticipating Relief Valves react to the period of low pressure after a power failure—unlike standard relief valves that only start to open when the system pressure exceeds the pilot setting. If a surge increases rapidly, standard relief valves may not have time to open. Surge anticipating relief valves have a second pilot that opens the valve whenever the system pressure falls below its set point, ensuring the valve is at least partially open when the overpressure wave returns.

Surge anticipating relief valves need static pressure to operate properly (a minimum of 100' or 30m is typical). This common and reliable style of valve is often found on larger distribution and trunk mains. These valves can be easily tested (and their operation can be replicated) in a static condition in the field. Surge Anticipating Relief Valves can also utilize a solenoid valve instead of low pressure pilot. No static pressure is required with a solenoid, because the valve closes on a timer. The valve opens on either power loss, or by the high pressure pilot. If power loss is the major concern, then this style of valve can be an excellent choice. Timing for the solenoid to close is normally coordinated with the critical period – the time it takes for the surge return.

Correct sizing of surge anticipating relief valves is important. Always consult with Singer Valve, or work with a knowledgeable surge consultant.

OUR PERFORMANCE GUARANTEE

When you submit and describe your application needs to us in writing, we guarantee in writing that our solution will meet your performance expectations.

Rate of Rise Relief Valves

Rate of Rise Relief Valves add an additional safety feature to standard relief valves by opening when they detect a sudden change in pressure. This valve uses positive pressure to force it open (or close) and removes the risk of failure to close if the pressure does not recover.

Rate of rise relief valves do not require downstream static pressure to operate effectively, so downstream elevation is not required. Sizing of rate of relief valves is not critical.

Rate of rise relief valves immediately start opening whenever pressure begins to rise rapidly. These valves utilize a nitrogen bladder to allow accurate sensing of pressure rise and are an excellent selection if the local topography has minimal static pressure available, or if oversized valves are specified. Always consult with Singer Valve, or work with a knowledgeable surge consultant to assist in valve sizing, location and selection.

Booster Pump (Inline) Control

Booster Pump Control (BPC) valves are located in line, downstream of the pump when single speed motors are utilized. When started, the pumps start against a closed valve. The solenoid is then energized, opening the BPC. At pump shut down, the solenoid valve is de-energized by the system control to put the valve into closing mode. There is an electronic limit switch located on the stem of the BPC, so when the valve is almost fully closed, a signal goes back to the pump control panel (or relays) to shut the pump down. Opening and closing speeds on the BPC are adjustable, so they are an efficient way to manage pump control and do not require any downstream static pressure.

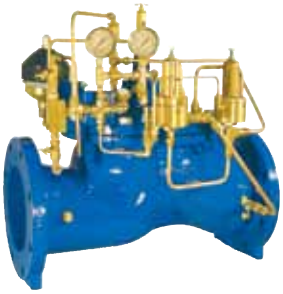
Always consult with Singer Valve, or work with a knowledgeable surge consultant when sizing BPC valves.

RPS-L&H :: Surge Anticipating Relief Valve

106-RPS-L&H Globe

- Automatically opens to dissipate the excess energy of a surge
- Two adjustable pilot set points allow for protection in both high and low pressure situations
- Remains closed, drip tight, when the system pressure is within the normal operating range
- Opens quickly to relieve high pressures or opens on under pressure to anticipate the return of a surge wave
- Automatically resets after low or high pressure incidents
- Easy to test in the field

RPS-RR :: Surge Anticipating on Rate of Rise Pressure Relief Valve



106-RPS-RR Globe

- In addition to the standard relief function, this valve responds to an abnormal rate of rise of pressure and opens rapidly to dissipate a surge
- Does not rely on downstream static pressure or elevation to operate
- Immediately opens when a sudden pressure change is detected
- Utilizes nitrogen bladder to accurately sense pressure rise

PG-BPC :: Booster Pump Control Valve (Single Chamber)

206-PG-BPC Globe

- Mounted in-line
- Pumps start against a closed valve
- Electronic link between valve and pump coordinates valve opening and closing and pump starting and stopping
- Opening and closing speeds of valve are adjustable
- Often combined with pressure reducing, pressure sustaining and rate flow functions

BPC :: Booster Pump Control Valve (Double Chamber)

106-BPC Globe

- Mounted in-line, where the double chamber valve is designed to open fully and minimize losses
- Prevents surges associated with the starting and stopping of pumps
- Solenoid activated and electronically linked to pump to coordinate opening and closing of valve and starting and stopping of pump
- Faster and more efficient than single chamber types

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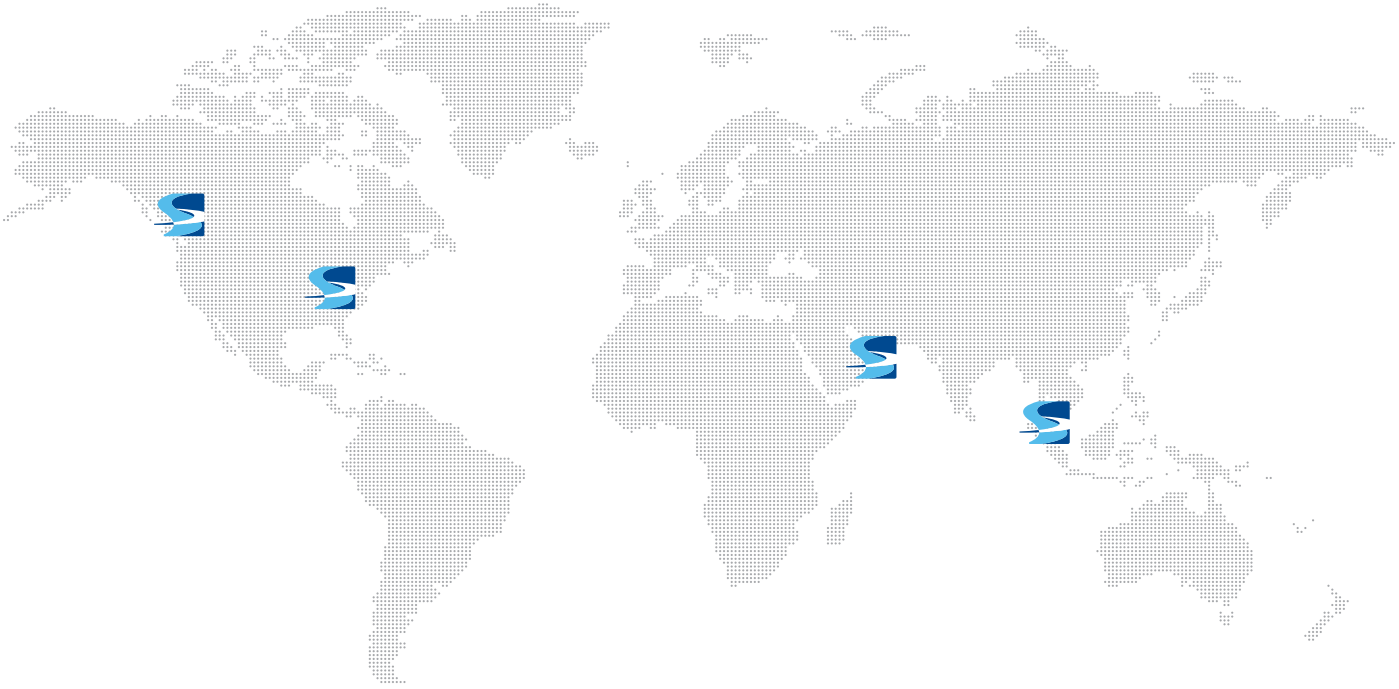

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