



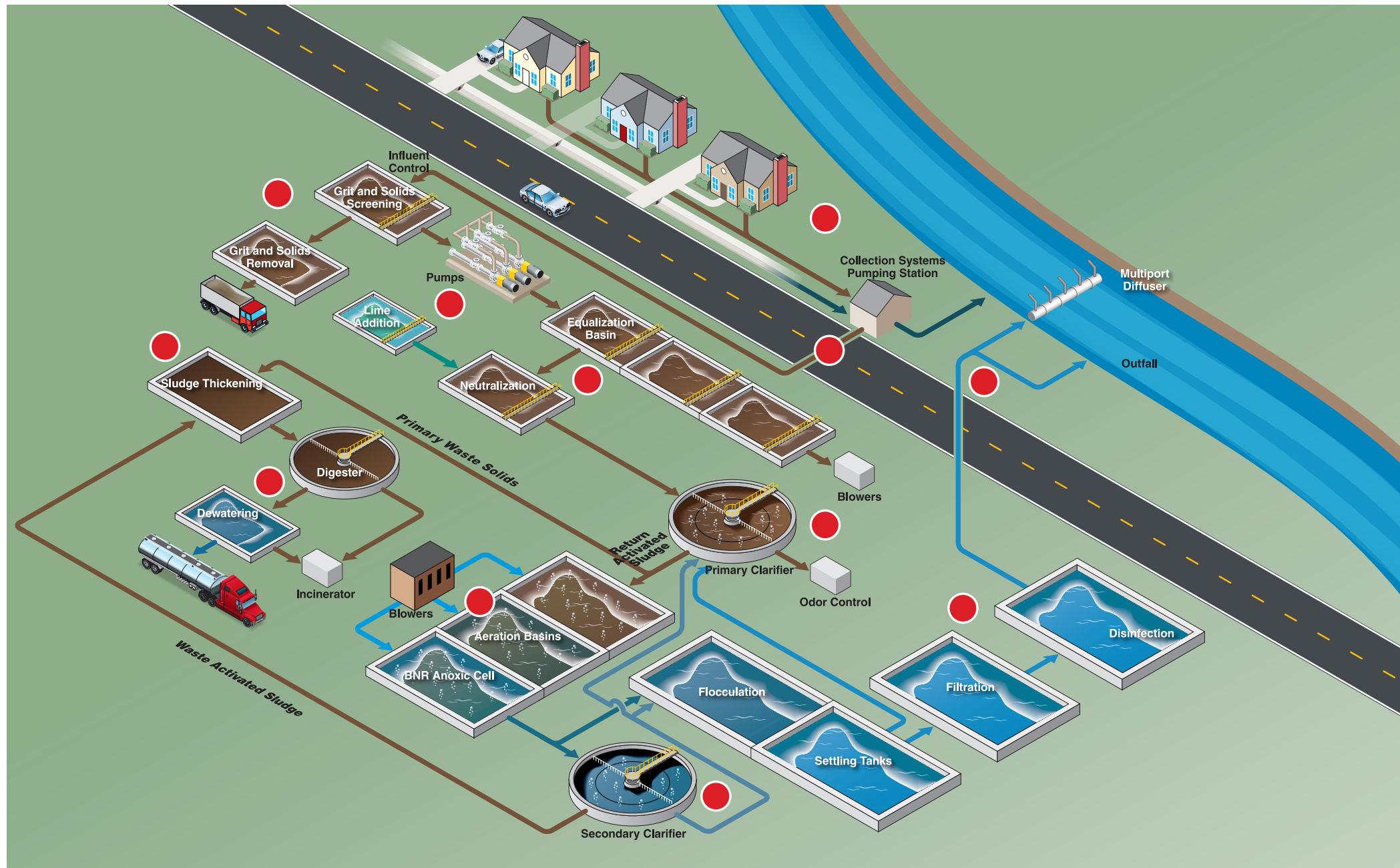
Red Valve

Wastewater Treatment Valve Selection Guide



The World Leader in Pinch and Check Valve Technology™

Total Solutions for Wastewater Treatment



● Red Valve Product Solutions

Red Valve works closely with designers and operators of wastewater treatment plants to provide innovative solutions to their most difficult challenges. Red Valve products are specifically engineered for the rigors of slurries such as sewage, sludge, scum and grit, as well as lime addition, digester gas control, backflow prevention and effluent discharge. Rely on Red Valve's "Total Solutions" for every step of your treatment process - from collection to final discharge.

"Rely on Red" for Your Toughest Applications

What sets Red Valve products apart from traditional metal valves is their elastomer technology. In addition to providing a superior flow pattern, the elastomer sleeves deliver unsurpassed abrasion and corrosion resistance. As the only wetted part of the valve, the synthetic elastomer sleeve completely isolates the process fluid from the metal body and operating mechanism.



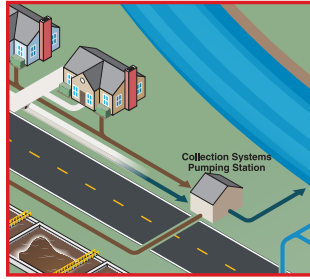
Electrically Actuated Series 5400E controls digester sludge accurately and requires no maintenance.



Series 75B is the ideal choice for below-grade service, with no packing, seats or bonnets to maintain.



Series 75 and Pressure Sensors with Hypalon Sleeves are the ideal choice for sodium hypochloride and other corrosive chemical additives. The sleeve is the only wetted part, providing a long-term, corrosion-resistant service life.



Collection Systems: The Professionals Choice

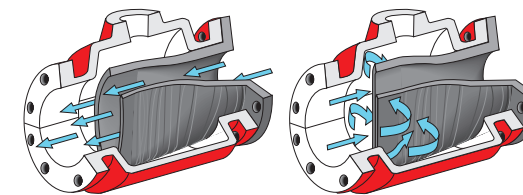
Red Valve's Large Diameter 84" Series 39 In-Line Check Valve is used for stormwater backflow prevention at this Santa Rosa, California plant.



Red Valve's Tideflex® CheckMate® UltraFlex® and Series 39 Check Valves are used in thousands of combined sewer overflow (CSO) systems to protect collection pumps from backflow during times of high tide and heavy rainfall. They operate on the same principle – forward hydraulic pressure opens the valve's bill to allow flow, and reverse pressure seals the bill, preventing backflow. The all-rubber construction is resistant to rust and corrosion, unlike flapgates with hinge-pins and seats that can misalign.

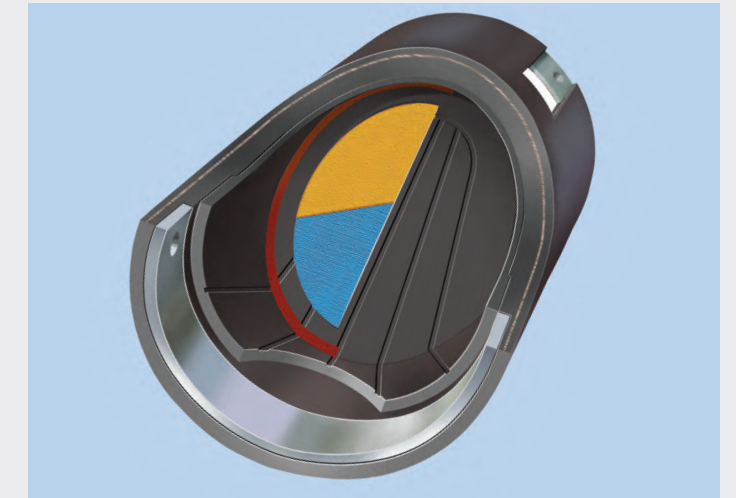
For in-line installations, Red Valve offers a variety of products. The Series 39 is constructed of a fabricated steel or cast iron body with an integral rubber check sleeve which handles flow with low head loss. The valve's operation is passive, requiring no outside energy source, levers or counterweights.

The patented CheckMate® UltraFlex® In-Line Check Valve is designed to be installed inside the pipe. The valve prevents backflow, odors, rodents and raw sewage from entering residences and businesses.



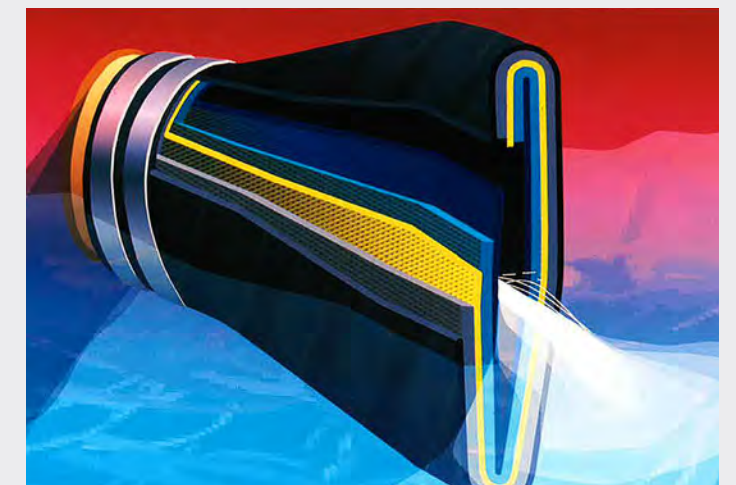
Engineered rubber check valves have memory: forward hydraulic pressure opens the valve, and reverse pressure seals the valve and prevents backflow.

The One and Only CheckMate® UltraFlex®

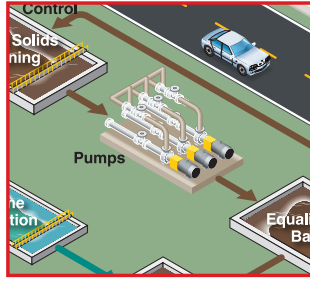


The CheckMate® UltraFlex® In-Line Check Valve, with patented "Snap Pressure" technology, opens much faster than other check valves, allowing the pipeline and entire collection system to drain faster, with no moving or metal parts and hinges or rivets to corrode or fail. Because the valve "snaps" open with far less head pressure, pipeline capacity is significantly increased, allowing a free flow of water during weather events, minimizing the chance for standing water to collect upstream. Beware of imitations – the CheckMate® UltraFlex® Valve's exceptional dependability and longevity are the product of elastomer experience and knowledge no other company can match, including patented "Arc Notch" construction and saddle grooves.

The Legendary Tideflex® Check Valve



Red Valve's legendary elastomer technology and knowledge is the reason for the Tideflex® Check Valve's unrivaled performance. Every Tideflex® Valve is reinforced with various natural and synthetic plies, specifically engineered for your exact application.



Pump and Lift Stations Rely on Red Valve

This pump station includes Series 39 Check Valves, Series 75 Manual Pinch Valves, Redflex® Expansion Joints to absorb vibration, and Pressure Sensors for accurate readings that can be integrated with SCADA systems.



Wherever pumps are used to move or lift water, Red Valve products can be found, providing solutions for a wide range of applications. Wastewater is most often collected by gravity sewers and then lifted by pumps to allow it to flow through the treatment process. Red Valve products are designed to handle slurries, such as raw sewage, through full-port designs and abrasion-resistant materials. There are no flow direction changes and no cavities or dead spaces where material can build up.

Red Valve Knife Gate Valves' rugged design and thin profile are ideal for pump isolation or bypass lines.

Red Valve's Tideflex® and CheckMate® UltraFlex® In-Line Check Valves provide unmatched backflow prevention to keep drainage lines empty and prevent potential flooding. They are often used at the discharge point to prevent floodwaters or tidal surges from entering the pipeline.

The viscous nature of wastewater creates problems with accurate pressure measurement. Traditional gauges and diaphragm seals clog quickly and do not signal the pump to stop when a blockage is encountered, often damaging pumps and other process equipment.

Red Valve Pressure Sensors feature a full-port opening and a 360-degree sensing element to ensure an accurate pressure reading, regardless of conditions. Red Valve Pressure Sensors are the only sensors that will stay operational on difficult process fluids such as sewage, sludge and scum.

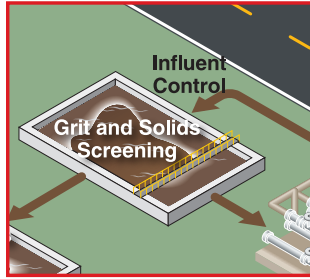
Large Diameter Knife Gate Valves Performing Reliably...Since 1987!



These Large Diameter Knife Gate Valves were installed in the City of Houston, Southwest Pumping Station, in 1987. They have been performing reliably ever since.



Unlike conventional knife gate valves, the Series D Flexgate Valve does not require line pressure to seal the gate against the seat. Seats are available in a variety of elastomer materials to match almost any application.



Influent Flow Control: Specify Red Valve for Reliability

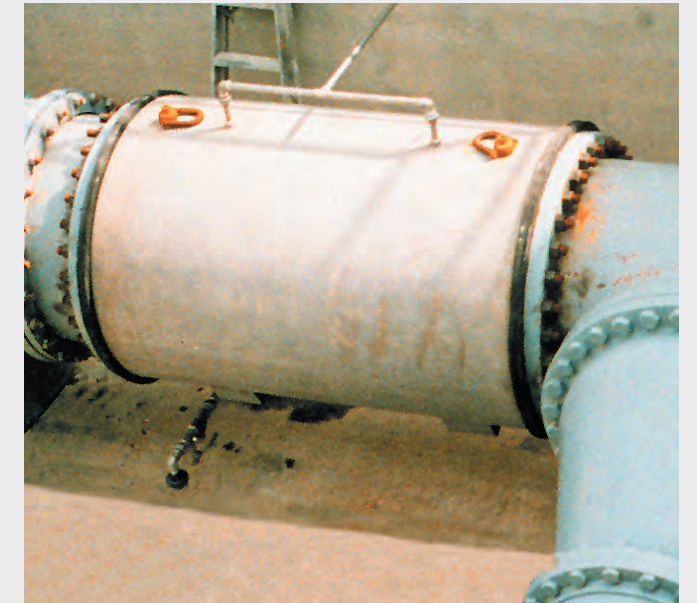


66" Air Actuated Type A Megaflex®
on a flow equalization system in Texas.

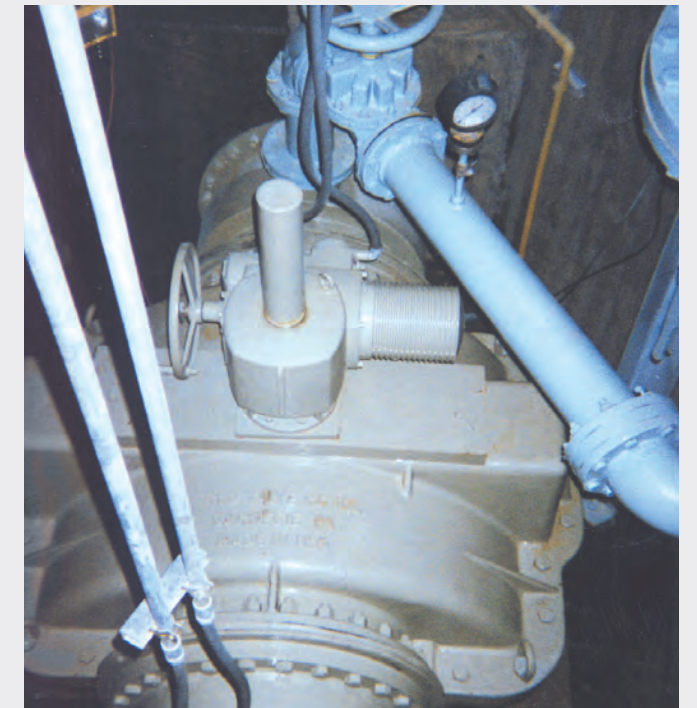
One of the most difficult applications in wastewater treatment is influent flow control. In these large diameter systems, long-term reliability is essential. It is crucial that the valve be able to handle anything that can flow into the sewer lines, including tree branches, plastic bags, bottles, sand and grit, chemical spills, aluminum cans, and other debris that can clog traditional valves. Even if the influent flow control valve is installed after initial screening, it must still deal with concentrated sewage and abrasive grit, which often moves at a considerable velocity as it enters the treatment process.

Red Valve's Large Diameter Pinch Valves' full-port openings allow for no obstructions and no change in the direction of flow. There are no crevices or dead spots where debris can collect, and flexible but rugged walls of the elastomer sleeves prevent build up while sealing around entrapped solids for a drop-tight shutoff.

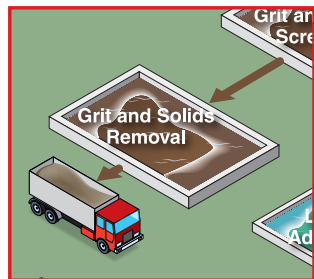
**"Rely on Red" for the Toughest
Influent Applications!**



Type A Megaflex®, with fabricated steel body and Neoprene sleeve, controlling raw sewage entering a wastewater treatment plant in Georgia.



30" Series 5200E Influent Flow Control Valve used at a wastewater treatment plant in Georgia.



Grit Removal: Red Valve Is Your Workhorse



Large Diameter Series 75 Manual Pinch Valves

During the pretreatment stage, wastewater is passed through a bar screen to remove large debris. It then moves on to a de-grit chamber, where small solids, such as stones, gravel and metal particles, are removed. This grit is extremely abrasive and will wear metal seated valves quickly. The Series 75 Manual Pinch Valve uses a rugged elastomer sleeve that absorbs the impact of the particles. The sleeve lasts longer than even expensive metal alloys and is easy and inexpensive to replace.

Caustic and chemical solutions such as carbon, ferric chloride and lime, are used to equalize wastewater in the first stage of treatment. While these materials present tough problems for metal valves, Red Valve's Control Pinch Valves' advanced elastomer sleeves resist abrasion and corrosion. Their flexing action breaks apart dewatered solids each time the valve is actuated, even after long periods of inactivity.



Air Actuated Type A Valves on a distribution column.



Series 75 in a de-grit chamber.

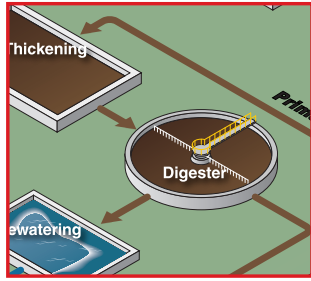
The World Leader in Grit Removal Technologies



Series 40 Pressure Sensors reliably withstand the rigors of grit removal, to provide an accurate pressure reading.

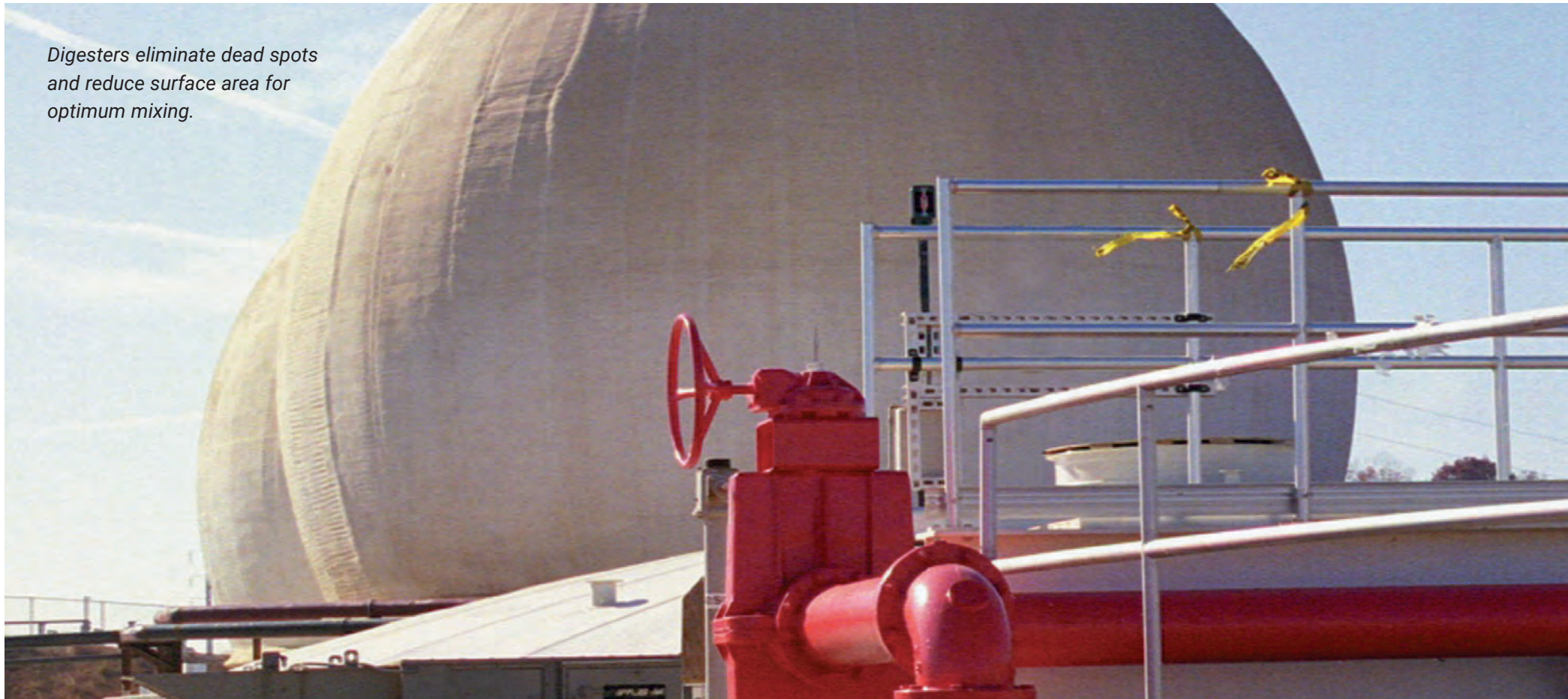


Series 5400E Control Valves are specified in automated grit systems because they provide dependable service under the toughest conditions.



World-Class Digester Performance

Digesters eliminate dead spots and reduce surface area for optimum mixing.



Today's digesters provide highly efficient mixing of waste-activated sludge. Unlike conventional digesters, egg digesters contain much smaller spots for solids to collect. Because the reduced surface area creates a smaller scum blanket, a higher percentage of waste is continuously mixed. To match this performance with the most efficient and reliable process equipment available, designers of digesters around the world rely on Red Valve Manual and Control Pinch Valves.

Digester gases are composed of methane, water and other compounds that create sulfurous and sulfuric acids, which in turn can quickly corrode metal plug valves. Corrosion occurs not only in the valve's interior, but also in the closing

mechanisms, affecting the valve's ability to achieve positive shutoff and causing significant maintenance problems. Plug valve manufacturers have tried to provide various solutions, such as aluminum, stainless steel and rubber-lined valves, but have had only minimal success.

Red Valve's rugged sleeves are constructed of non-permeable and corrosion-resistant elastomers. The sleeve isolates the valve body by keeping the process medium completely enclosed. For isolation applications, Red Valve Manual Pinch Valves' bi-directional, drop-tight shutoff yields reliable service, time after time, year after year.



Control Pinch Valves operating at the 200 MGD Seletar Wastewater Treatment Plant in Singapore.

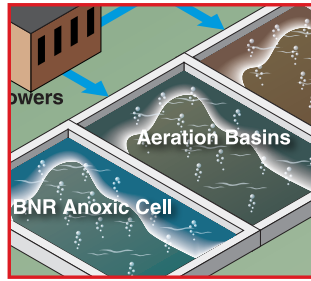
"Rely on Red" for Products Built to Handle the Toughest Sludge



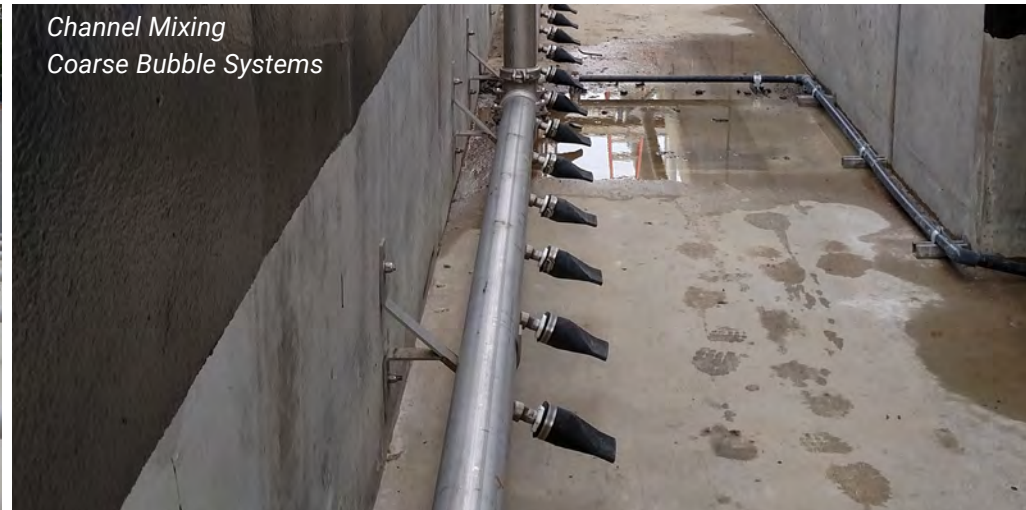
Manual Series 75 Pinch Valves on reactivated sludge provide years of maintenance-free operation.



Series 75 Manual Pinch Valves installed on waste activated sludge pipelines.



Maintenance-Free Aeration and Mixing



Biological wastewater treatment systems require adequate mixing of the large fluid bodies to keep the biosolids in suspension. The design of proper mixing energy and operational run times is key in achieving an optimized process. Red Valve engineering designs these mixing systems with sufficient energy based on the solids concentration and the proper operational time. These types of biosolids have a tendency to readily settle to the bottom of the tank so it is key to have equipment that can quickly resuspend these solids for process treatment optimization.

Red Valve's Coarse Bubble Mixing and Aeration Systems are designed to achieve complete mixing from the tank floor to the water surface. The check valve diffuser design allows for the blower system to be cycled on and off. This is very beneficial for denitrification periods and creating anoxic conditions. The diffuser discharge end is located a few inches off the floor which provides complete resuspension of the settled solids which occurred during the off cycles.

These systems can provide maintenance-free operation while also allowing operations to significantly reduce blower run times resulting in substantial costs savings for energy usage. These systems are constructed from durable schedule 10 grade 304L or 316L stainless steel providing an operational life over twenty years.

Digester Optimization

Tideflex® Coarse Bubble Mixing Systems can be operated in ON/OFF mode to produce a biological selector where facultative anaerobic bacteria is cultivated as the dominant microorganism. These bacteria excel in denitrification and nutrient uptake. These alternating systems can reduce operational horsepower by 40 to 50%.

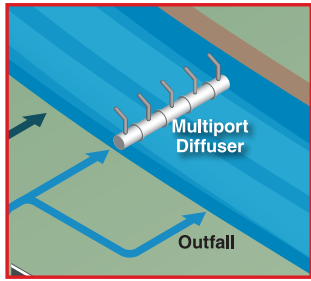


Digester Mixing Systems



Septage Receiving Tank Mixing

Septage receiving tanks contain wastewater which is typically in a high anaerobic state. It is beneficial to aerobic treatment processes to have this fluid converted prior to direct feed into the aerobic process. This conversion can be achieved within these receiving tanks by applying coarse bubble diffused aeration and mixing. Adequate mixing also enhances the transfer of this fluid by achieving a homogeneous fluid. Red Valve's Tideflex® Check Valve Diffusers provide maintenance-free operation in this high solids process fluid.



Effluent Diffusers: World's Most Effective Systems

(12) 6" Tideflex® Diffuser Valves with integral 3 foot risers discharging to a shallow river.



Red Valve provides a complete line of custom-engineered Effluent Diffuser Systems that help protect the environment by maximizing jet velocity of discharging effluent. This improves mixing and initial dilution while preventing backflow into the header pipe.

Wide bill or conventional Tideflex® Nozzles are both custom-built to exact specifications and fabricated to ensure required hydraulics throughout the entire flow range. All systems are equipped with Redflex® Rubber Elbows and integral wire-reinforced Rubber Risers, which are flexible yet strong enough to deflect and return when impacted, reducing the possibility of damage to the outfall header pipe and risers.

Red Valve has conducted extensive independent testing of Tideflex® Nozzles from 2" (50mm) to 48" (1200mm) and has developed an exclusive hydraulic modeling program to assist engineers in designing multi-port diffusers. The program provides data on jet velocity, effective diameter and open area, along with headloss at all flow rates. This data can also be compared to the hydraulics of fixed-diameter ports to illustrate the hydraulic advantages of variable orifice Tideflex® Nozzles.



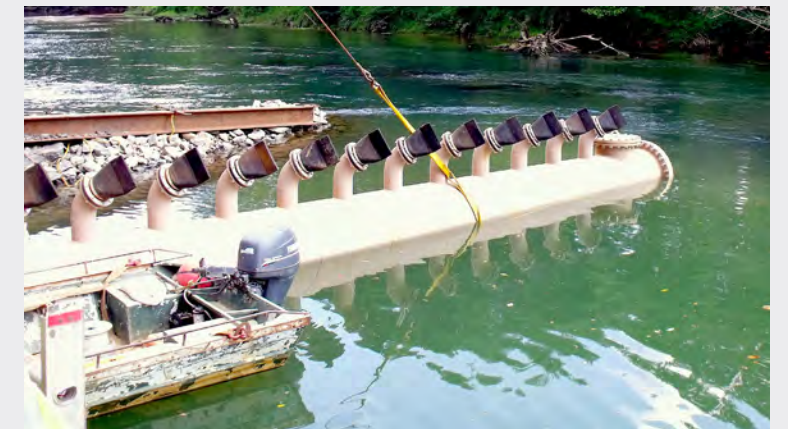
(12) 1,050mm Tideflex® Diffuser Valves installed on emergency outfall in Hong Kong.

Tideflex® Diffuser Valves

- Prevent Intrusion of Debris, Sediment, Saltwater and Aquatic Life
- Provide Proven Long-Term, Maintenance-Free Service Life
- Enhance Jet Velocity
- Improve Initial Dilution
- Provide a More Uniform Flow Distribution Across Parts
- Promote Significant Improvement in Saltwater Purging

Proven Performance On:

- Marine Outfalls
- Inland Outfalls
- Retrofit Outfall Pipelines



Maximum Flexibility With Redflex® Expansion Joints



Redflex® Expansion Joints and Rubber Fittings are designed to alleviate piping stress, compensate for movement, reduce noise and isolate vibration. Made in the U.S.A. by Red Valve Company, Redflex® Expansion Joints can be custom-built in a variety of styles and configurations to accommodate pipe size reduction, misalignments and offsets. Red Valve offers flanged and slip-on connections, single or multiple arches and a range of elastomers to meet process conditions, including Teflon-lined joints for severely corrosive applications.

Redflex® Products:

- Expansion Joints
- Rubber Elbows
- Rubber Fittings
- Ducting Joints
- Vibration Pipes
- Teflon Lined
- Flanged or Slip-On
- Sizes 1" - 108"

Reflex Elastomer Selections:

- Pure Gum Rubber - 180° F
- EPDM - 300° F
- Viton - 400° F
- Butyl - 250° F
- Neoprene - 230° F
- Teflon Lined - 250° F
- Hypalon - 230° F

Redflex® Expansion Joints Are Ideal For:

- Aeration Systems
- Chemical Feed Pumps
- Pump Vibration Elimination
- Odor Control Systems
- Grit Pumps
- Blower Vibration Elimination

Red Valve Pressure Sensors: Precise Measurement, No Instrument Fouling

The viscous nature of wastewater creates challenges with accurate pressure measurement. Traditional gauges and diaphragm seals clog quickly and do not signal the pump to stop when a blockage is encountered, often damaging the pumps and other process equipment. Red Valve Pressure Sensors solve this problem with full-port openings and 360-degree sensing elements to ensure accurate pressure readings, regardless of conditions. Red Valve Pressure Sensors never plug or foul like traditional diaphragm seals on slurries.



Red Valve Pressure Sensors are used with pressure gauges and transmitters, sending signals to protect pumps from running dry.

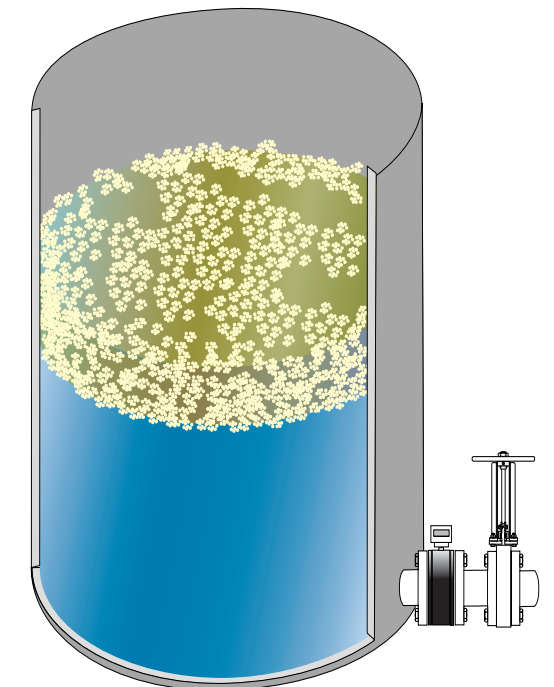


Red Valve Pressure Sensors used for accurate reading of polymer feed system.

Red Valve Tank Level Sensors are unaffected by foaming, ice and other conditions that cause errors in ultrasonic and capacitance level sensors. Their high-sensitivity, solid-state pressure transmitters are completely isolated from the process fluid by an elastomer sleeve that transmits pressure through a fluid fill, accurate to 2".

The pressure transmitter senses gauge pressure for vented tanks and differential pressure for pressurized tanks. It can easily be calibrated for process fluid density or specific gravity in any height of tank. The output signal is 4~20 mA. An integral LED display is available and can be calibrated in virtually any units, e.g., percentages, inches H₂O, etc.

The sensor's elastomer diaphragm provides maximum surface area with minimum diameter allowing installation close to the bottom of the tank. The sensor can also be "rodded" from the outside of the tank to the inside of the tank, if necessary, in the event of severe blockage.





Red Valve offers a worldwide, world-class custom service network. With corporate offices in Pittsburgh, PA, manufacturing facilities in Gastonia, NC, and 114 sales representatives in 61 countries around the globe, Red Valve has the sales engineering team to help you select the best choice of valves and related products for your applications.

Represented by:



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