

# Red Valve®

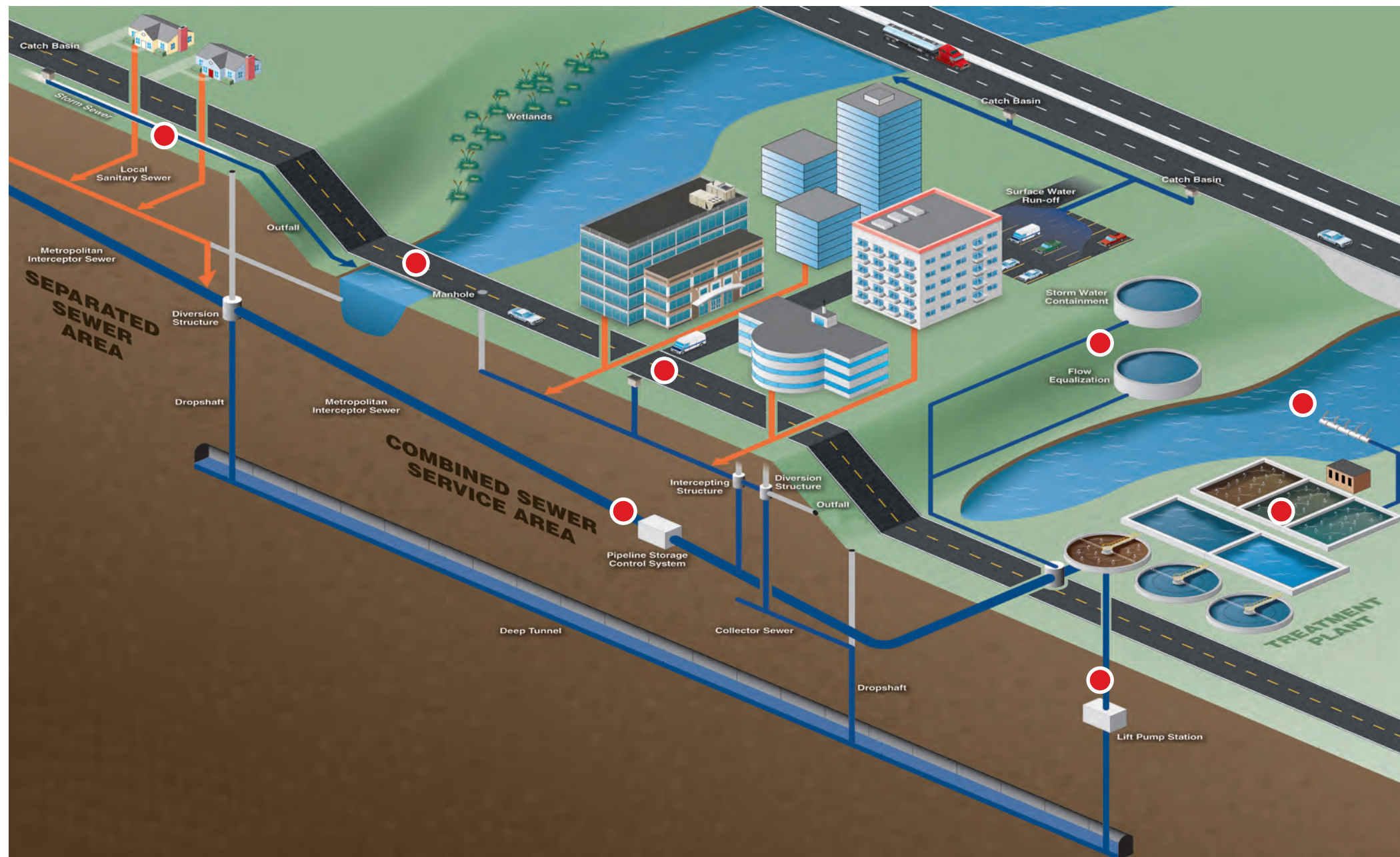
**MUNICIPAL COLLECTION AND DISTRIBUTION**  
Total System Solutions



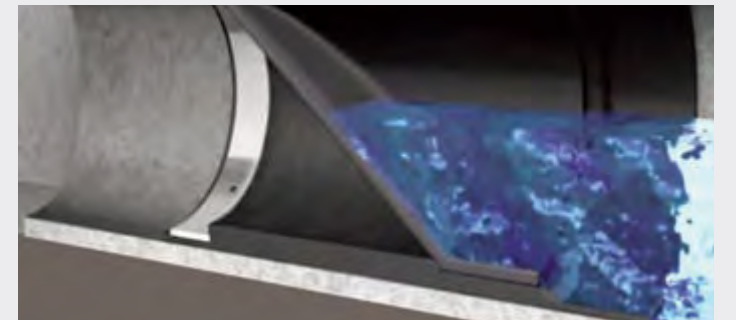


## Total System Solutions

For more than 60 years, Red Valve products and technologies have saved millions of dollars. Managing storm water and sanitary flow while mitigating capacity loss and property damage from collection system backflow. It challenges every municipality. Red Valve's "Total System Solutions", from the collection system through the treatment process to final discharge, is achieved with dependable products providing cost-effective solutions for specific applications.



● RedValve Product Solutions



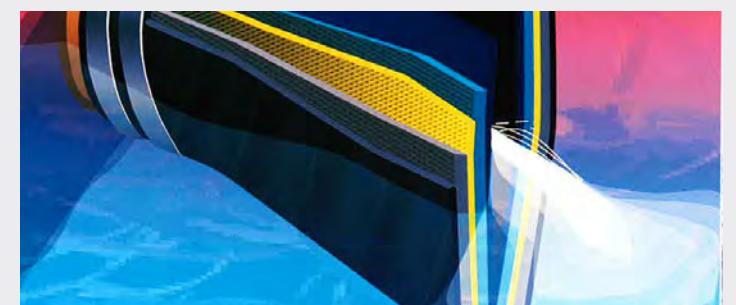
Checkmate® In-Line Check Valves provide absolute backflow prevention while eliminating odors.



Red Valve Control Pinch Valves are ideal for controlling and diverting raw sewage, CSO, Flow Equalization and Flow diversion.

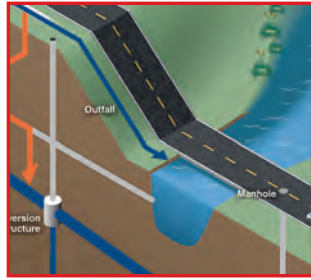


Tideflex® Check Valves are the best choice to prevent unwanted backflow from rivers, streams and tides. They are also ideal for protecting overflow CSO, discharge and outfall lines.



What sets Red Valve products apart from traditional valves is leading-edge elastomer technology. In addition to providing a superior flow pattern, the rubber sleeve provides unsurpassed abrasion and corrosion resistance, closing drop-tight around entrapped solids.





## Protecting Stormwater, Sanitary, CSO, SSO, Interceptors and Overflow Lines



Red Valve products are used in combined sewer overflow (CSO), sanitary and SSO systems to protect unwanted backflow flowing into storm water catchments during times of rising rivers, high tide and heavy rainfall. When these systems overflow, excess wastewater containing untreated human and industrial waste, toxic material, and debris is discharged directly into streams, rivers, and lakes.

In 1984, the United States Environmental Protection Agency (EPA) commissioned Tideflex® Technologies to develop and test an alternative to flapgate valves. In their report, Development and Evaluation of a Rubber “Duck Bill” Tide Gate, the EPA states, “Increasing the reliability and performance of tidegates has a beneficial impact on the general pollution abatement program for the nation’s waterways.”

In response, Red Valve Company patented its elastomer “duckbill” Tideflex® Check Valve to eliminate the operational and maintenance problems associated with flapgate check valves, including corrosion of mechanical parts, freezing open or shut, warping and clogging due to entrapped debris.

### Development and Evaluation of a Rubber “Duck Bill” Tide Gate

Peter A. Freeman, Angelita B. Fontana, and Richard Field

A unique 64 in. diameter “duckbill” rubber tide gate (RTG) was designed, fabricated, and installed in a typical New York City tide gate chamber. The operation of the RTG was observed over two years. The RTG was very effective in preventing the inflow of tidal waters and generally showed equal or improved performance compared to a typical flap gate. During early RTG use, the RTG was required to apply to release storm flows at a positive difference in upstream level of 4 ft or more and to remain closed preventing inflow at a downstream position head up to eight ft during high tide. Since inflow was observed when debris were introduced into the RTG, and capability of self-cleaning was exhibited, inflow would be significantly reduced if similar size debris was lodged in the conventional flapgate gate. The maintenance crew observed no risk posed where the RTG removed debris was required. The existing chamber required minor modifications for the installation of the RTG. The method of adapting the RTG to existing tide gate frame is critical to ensuring the reliability of the installation. The RTG was required to gate some winds and heavy rainfall during the two years of operation in New York City. The Project Summary was developed by EPA’s Risk Reduction Engineering Laboratory, Concord, NH, to announce key findings of the research project that is fully documented in a separate report of the same title (see Project Report entering information at back).

### Introduction

Tide gates are a necessary component of municipal combined sewer systems, which discharge the received water whose surface elevation may rise to 10 ft or more above the normal water level. These perform a check valve function, allowing excess flow from the storm water to discharge into receiving waters, while preventing backflow or sewage into the combined sewer system. Leakage can cause significant problems in the treatment process and associated facilities, due both to the presence of debris and to the potential for odor as well as a waste of treatment plant capacity. The conventional flap tide gate operates by swinging toward the receiving body of water when the upstream flow exceeds the capacity of the regulator controlling flow to the receiving body. During storm discharges, the water level upstream of the tide gate rises to a point where it is necessary to swing the flap of the tide gate and the water level downstream of the gate rises to a point where the tide gate will not swing back. Properly operating tide gates do not permit backflow (backflow).

The EPA rigorously tested and evaluated the Tideflex® Check Valve for two years and found that the valve showed, “Significant improvement over flapgate valves in terms of leakage inflow, entrapment of debris, capability to self clean and susceptibility to marine fouling.” Since its creation in 1984, years of research and development, testing and proven performance have revolutionized backflow prevention and led to the

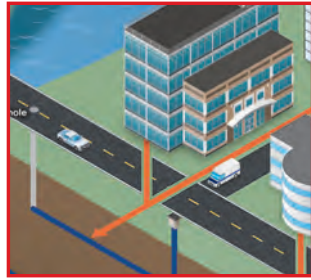
development and advancement of the next-generation of Tideflex® and CheckMate® Check Valves, today’s most reliable valves for backflow prevention. The first Tideflex® Check Valve sold in 1984 is still in service, with more than 700,000 Tideflex® Check Valves solving a wide range of inflow and intrusion challenges around the world today.



**Problem:** Traditional flap gate valves get stuck open, allowing millions of gallons of water to go back into systems or treatment plants for re-treating.

**Solution:** Forward hydraulic pressure opens the valve’s bill to allow flow, and reverse pressure seals the bill, preventing backflow. Every Tideflex® and CheckMate® Valve is custom built for each application, as well as independently tested and field validated to ensure maximum backflow prevention and minimum headloss.





## ***Wetlands, Industrial Drainage, Airport and Highway Run-Off, and Odor Control.***

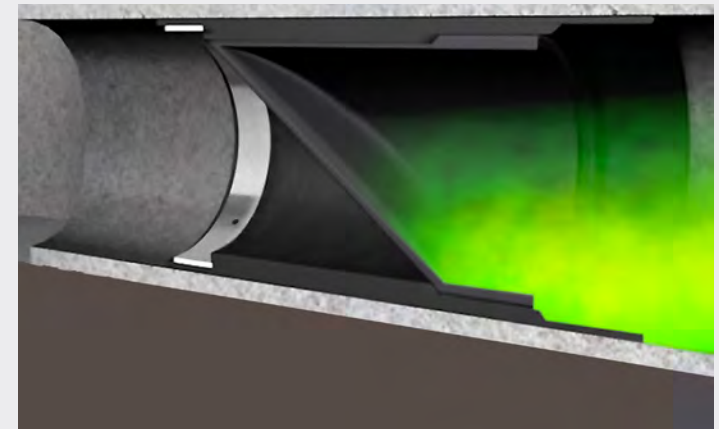


Like the legendary Tideflex® Check Valve, the CheckMate® Inline Check Valve has a 100% fabric and elastomer unibody construction that eliminates corrosion problems while providing absolute backflow prevention. There are no mechanical parts to catch debris, corrode or fail. Tideflex® Check Valves and CheckMate® Inline Check Valves are used extensively within large surface water areas that demand backflow prevention, such as airport runways, highways and parking lots—anywhere flowing or standing water present a potential problem.

Tideflex® Check Valves protect runoff from hazardous spills, runoff from mining operations, leachate from landfills and in cases where saltwater is infiltrating protected wetland areas. Low-lying areas protected by levees depend on Tideflex® Check Valves to prevent surges from storms and tides from entering the collection system. The low cracking pressure of the valve allows easy draining, even when little difference in elevation exists.



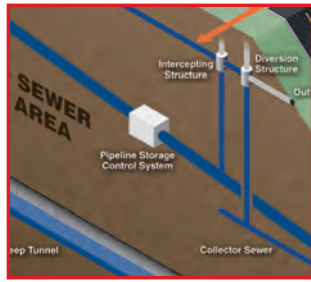
Pump and Lift Stations play an important role in municipality collection and distribution systems. Wherever pumps are being used to move or lift fluids, Red Valve Pinch Valve products are the ideal choice.



CheckMate® Inline Check Valves use state-of-the-art elastomers and fabric technology with no metal hinges, rivets, fasteners or moving parts. The valve's unibody construction is ideally suited for CSO and diversion chamber applications, installed at the upstream or downstream side of a diversion chamber. When used in interceptor and manhole installations, they prevent unwanted backflow and odors from damaging the community.

*For an animated demonstration of the CheckMate® in operation, please visit: <http://www.tideflex.com/checkmate>*





## Flow Control, Equalization, Diversion, Deep Tunnel and In-Line Storage



One of the most challenging applications for any municipality is influent flow control. Red Valve's unique products such as the Type A Megaflex Valve are specifically designed to store, control and isolate storm water flows within collection system piping. This control strategy minimizes combined sewer overflow volume and frequency.

Red Valve Pinch Valves, including the Type A Megaflex Valve, are designed to remain open for long periods of time and will still close drop tight when actuated, even on entrapped solids.

Sewage, storm water and combined flow can then be stored within the pipeline or diverted to an EQ Tank or Deep Tunnel and released to the treatment plant at a controlled pace for processing. The Type A Megaflex provides long-term reliability and is able to handle anything that can flow into sewer lines, including tree branches, plastic bags, bottles, sand and grit, wipes, aluminum cans and other residential debris.

*Red Valve's Megaflex Valve shown in various open/closed positions. The highly durable elastomer sleeve closes drop tight on entrapped solids.*



Red Valve Control Pinch Valves are available in sizes up to 84" and are the ideal choice for diverting and controlling flow from collection systems to EQ basins or detention tanks, along with flow from basin to plant.

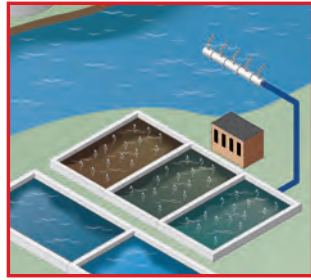


Simple and efficient Tideflex® Check Valves, used as mixing and aeration nozzles, are the perfect solution for preventing stagnation in storm water storage and detention basins.



The Type A Control Valve is highly effective handling concentrated sewage and abrasive grit, which often moves at a considerable velocity as it enters the treatment process.





## *Effluent Discharge, Single Point, Multi Port Diffusers*



Tideflex® Check Valves and CheckMate® Inline Check Valves are proven, reliable components in Effluent Diffuser Systems designed to increase dispersion and eliminate backflow. During an overflow event, or final discharge, flow passes freely across the valve, with the benefit of preventing unwanted river, bay or ocean water from entering the collection system.

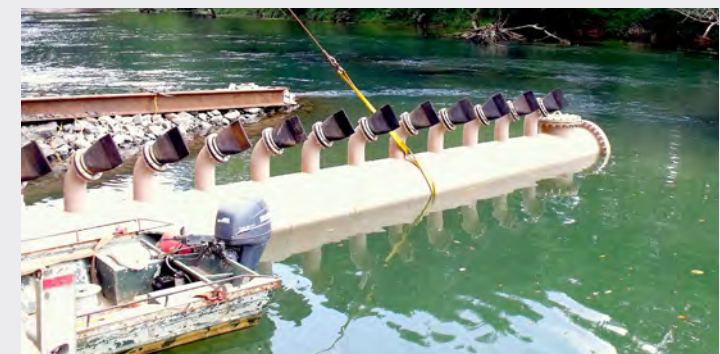
Tideflex® Effluent Diffuser Systems are used in land, rivers and lakes to reduce pollution levels, eliminate sticks, and reduce foaming, providing a proven long-term, maintenance-free service life while protecting outfalls from sand, grit, silt, nutrient pollution and marine growth that hinders performance and is costly to remove.



For Sub-Sea Multi-Port Effluent Diffuser Systems, Red Valve Engineers use CFD Modeling, CORMIX and other software programs to exactly meet hydraulic specifications. All Effluent Diffuser Systems come equipped with Redflex™ Rubber Elbows and Risers, which increase flexibility and reduce the possibility of breakage.

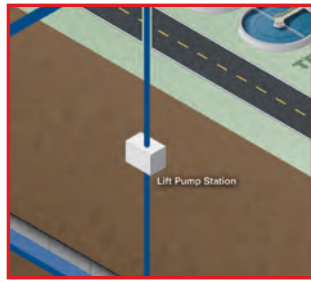


Tideflex® Check Valves are the best choice to prevent unwanted backflow from rivers, streams and tides. They are also ideal for overflow CSO, discharge and outfall lines.



Red Valve provides complete, engineered Single and Multi-Port Effluent Diffuser Systems to improve the quality of discharge and help protect the environment.





## Pump and Lift Stations



Pump and Lift Stations play a very large role in municipality collection and distribution systems. Wherever pumps are being used to move or lift fluids, Red Valve Pinch Valve products are the professional's choice for a wide range of Pump and Lift Station applications.

Red Valve Knife Gate Valves combine a thin profile with a rugged bi-directional elastomer seat design that are ideal for pump isolation or bypass lines. Red Valve Knife Gate Valves are

manufactured with stainless steel wetted parts and a heavy duty gate specifically designed for clean water, abrasive or corrosive slurries.

*Red Valve's in-line Tideflex® Check Valves and Pinch Valves provide years of continuous, reliable performance in pumping applications.*

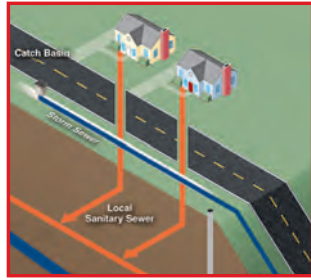


**Red Valve Pressure Sensors** are used to protect pumps from running dry or over pressuring the line by providing accurate, dependable pressure movement. With full 360° pressure reading, Red Valve sensors are the only sensors that will stay operational on difficult process fluids such as sewage, sludge, and scum.



**Redflex® Expansion Joints** absorb vibration, compensate for pipe misalignment and movement. They help alleviate piping stress, compensate for movement, reduce noise and isolate vibration. 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.





## Unmatched Elastomer Expertise: The Red Valve Difference



Every red Valve Pinch Valve Sleeve, along with every Tideflex® Check Valve and CheckMate® In-line Check Valve, is hand-fabricated, utilizing a wide range of natural and synthetic elastomers and wire and fabric-reinforced plys. Red Valve has more Pinch and Check Valve elastomer knowledge and manufacturing experience than any other company in the world.

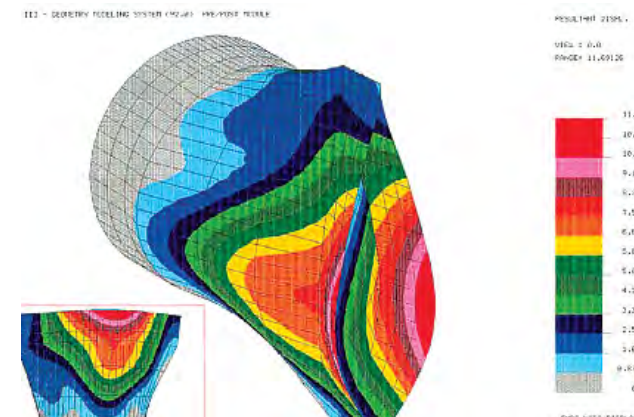
### Independent Hydraulic Testing

Red Valve has conducted extensive independent hydraulic testing of Tideflex® Check Valves since the 1980's. With our extensive amount of test data, Red Valve has developed modeling programs used to provide hydraulic characteristic curves for every Tideflex® Check Valve.



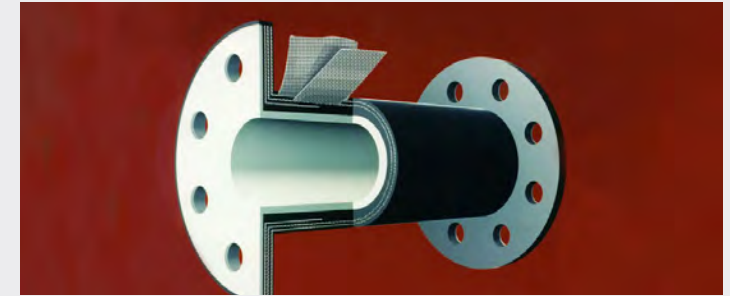
### In-house Testing

To supplement independent hydraulic testing, Red Valve continually conducts research and development and additional in-house testing to improve existing products and develop new products.

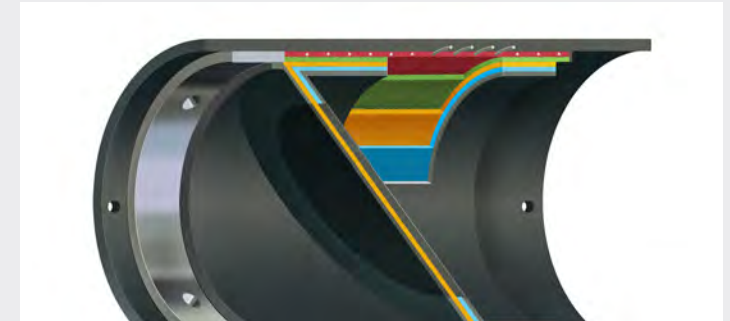


### Finite Element Analysis (FEA)

Red Valve conducts extensive Finite Element Analysis to custom-engineer different elastomers for specific requirements, such as resilience, durometer, compression set resistance, tensile strength, force, deflection and elongation. Every Pinch Valve sleeve, Tideflex® Check Valve and CheckMate® In-line Check Valve is custom-engineered to meet your specific hydraulic needs.

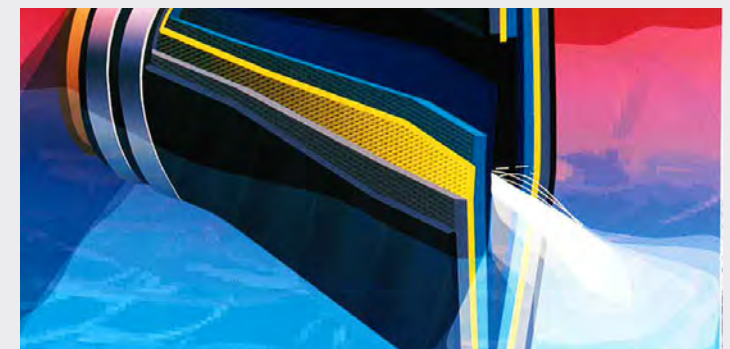


When you specify a Red Valve Pinch Valve, you can be confident knowing the internal elastomer sleeve is superior in design, construction, durability and performance. Every Red Valve pinch valve sleeve is backed by our unmatched elastomer technology, knowledge and manufacturing expertise.



### The One and Only CheckMate® In-Line Check Valve

One of the keys to the CheckMate® Valve's exceptional dependability and longevity is in the elastomer experience and knowledge no other company can match. Beware of imitations. The patented new CheckMate UltraFlex® Valve provides superior sealing with significantly less head pressure, no moving or metal parts and hinges or rivets to corrode or fail.



### The Legendary Tideflex® Check Valve

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





Red Valve Company, Inc.

**Tideflex**  
Technologies

600 N. Bell Ave.  
Carnegie, PA 15106

PHONE:  
412/279-0044

FAX:  
412/279-7878

[www.tideflex.com](http://www.tideflex.com)

The information presented in this catalog is provided in good faith. Red Valve Company, Inc. and Tideflex® Technologies reserves the right to modify or improve its design specifications without notice and does not imply any guarantee or warranty for any of its products from reliance upon the information contained herein. All orders are subject to Red Valve Company, Inc. and Tideflex® Technologies' standard terms and warranty and are subject to final acceptance by Red Valve Company, Inc. and Tideflex® Technologies.

Viton is a registered trademark of DuPont Dow Elastomers. Hypalon is a registered trademark of DuPont Performance Elastomers. Tideflex, Red Valve, and the Red Valve "rv" logo are registered trademarks of the Red Valve Company, Inc.

© 2016 Red Valve Company  
All rights reserved.



# Red Valve

## Valve Selection Guide for Wastewater Treatment



## “Rely on Red” for a Total System Solution to Your Water and Wastewater Treatment Challenges

No other company can match Red Valve's “Total System Solution” for water and wastewater treatment plants. Since 1953, red Valve has provided products for each phase of treatment - collection, separation, aeration, treatment and final discharge.

Our complete product line allows customers to use one source for all their slurry handling needs, including on/off and control valves, check valves, pressure measurement, expansion compensation, air diffusers and effluent diffusers. No other company provides such a complete approach to the wastewater process. All Red Valve products are designed to handle the rigors of handling raw sewage, sludge, scum and grit with abrasion-resistant, non-clogging designs.

*Contact us today for a free copy of our Valve Selection Guide for Wastewater Treatment.*