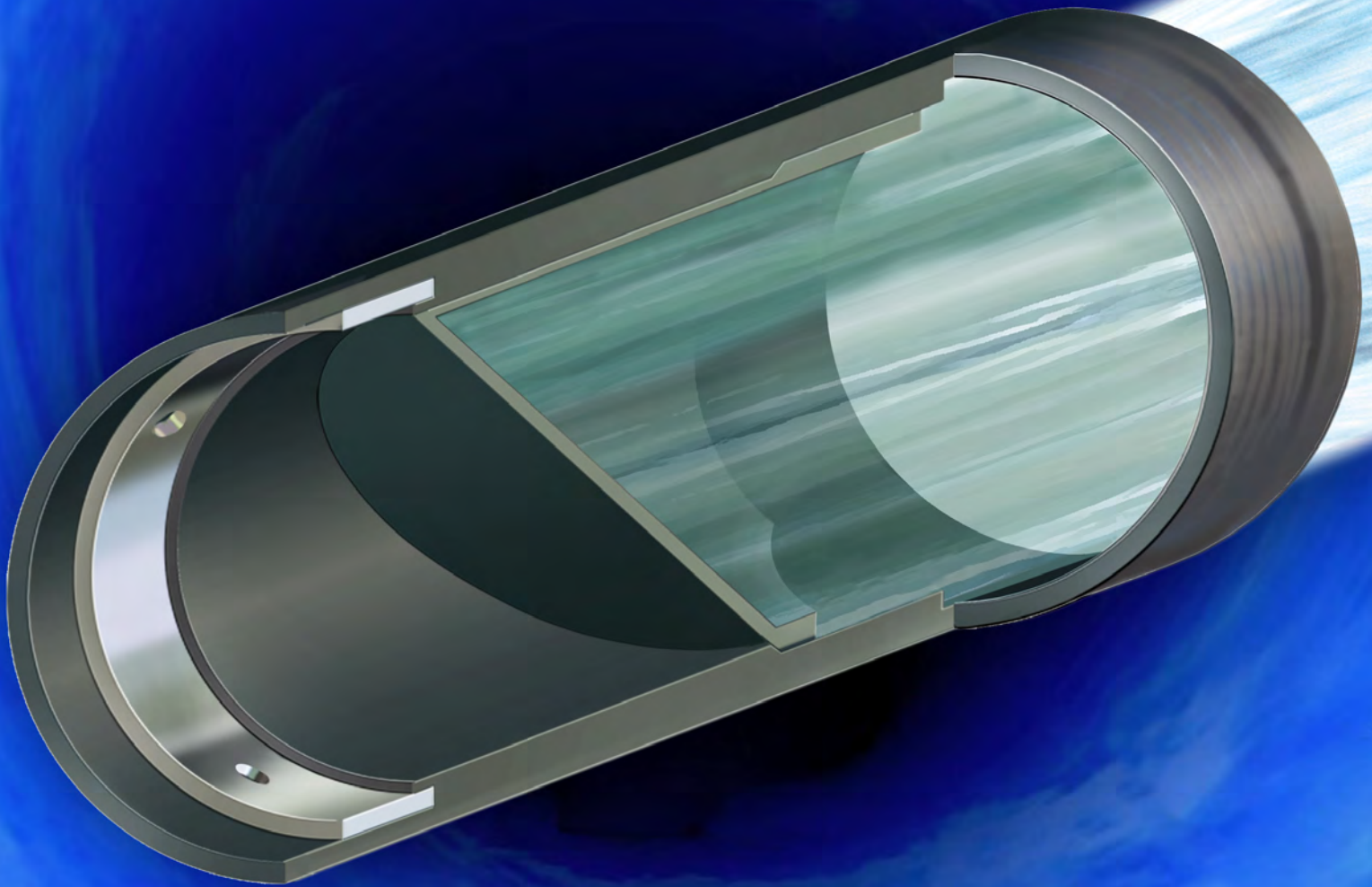


# Red Valve®

**THE CHECKMATE® ADVANTAGE**

The World's Most Reliable Check Valve  
Engineering Guide



Red Valve Company, Inc.



### Continuing a Legacy of Innovation, Leadership and Customer Service

More than 60 years ago, Red Valve Company was founded on a simple promise: provide the highest quality engineered valves backed by an unsurpassed level of technical innovation and customer service. With that promise began a legacy of leadership—and a never-ending quest to solve the world's toughest flow control challenges while exceeding our customers' expectations.

As the world leader in Pinch Valve and Check Valve technology, that legacy lives on every day at Red Valve Company, and the innovative CheckMate® Inline Check Valve is proof. The CheckMate® Inline Check Valve is rooted in the same superior understanding of elastomer technology as the legendary Tideflex® Check Valve, one of the most well-known valves proven for providing reliable long-lasting backflow prevention, across the globe.

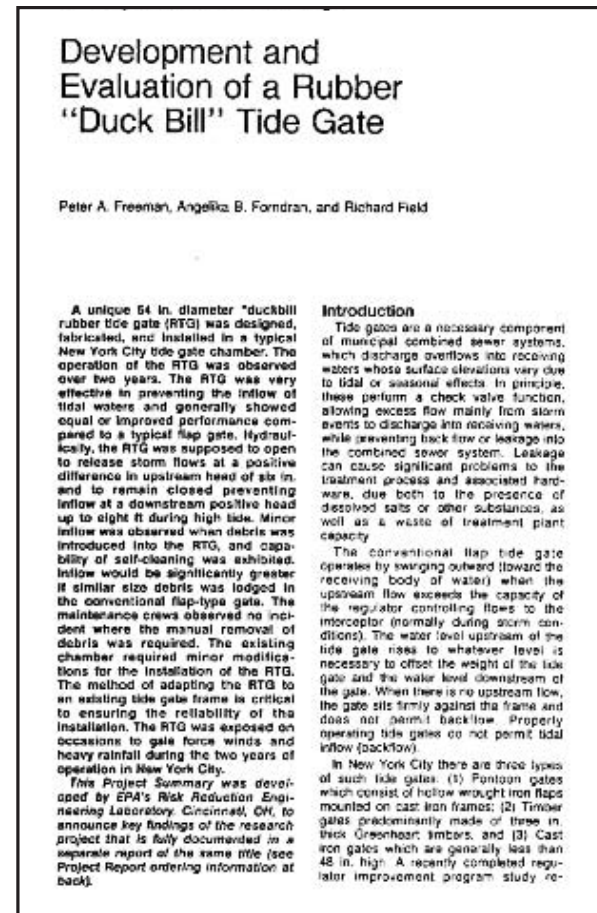
Being a world leader in valve technology is more than a slogan—it's a promise, carried forward by the hundreds of dedicated Red Valve employees and sales representatives around the world. Call us any time. We are ready to speak with you personally—right now.



The patented CheckMate® Inline Check Valve is rooted in the same superior understanding of elastomer technology as the legendary Tideflex® Check Valve, one of the most well-known valves in the world.

### A Pioneer in the Check Valve Industry

In 1984, the United States Environmental Protection Agency (EPA) commissioned Red Valve Company to develop and test an alternative to tide gate valves. In their report, Development and Evaluation of a



Rubber "Duck Bill" Tide Gate, the EPA states, "Increasing the reliability and performance of tide gates has a beneficial impact on the general pollution abatement program for the nation's waterways."

In response, Red Valve Company developed and 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.

The EPA rigorously tested 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 the creation of the Tideflex® Check Valve in 1984, years of research and development, testing and proven performance has led to the globalization of the TF-2 Tideflex® Check Valve and the next generation Tideflex® TF-1. With improved flow efficiency characteristics and the latest technology in elastomers, Red Valve continues to deliver on its promise of staying on the forefront of technology and new product development. The Tideflex® name is respected and recognized around the world as the most reliable valve for backflow prevention. It is also worth noting that the first Tideflex® Check Valve sold in 1984 is still in service today, with more than 700,000 Tideflex® Check Valves in service around the world, reliably solving inflow and intrusion problems.

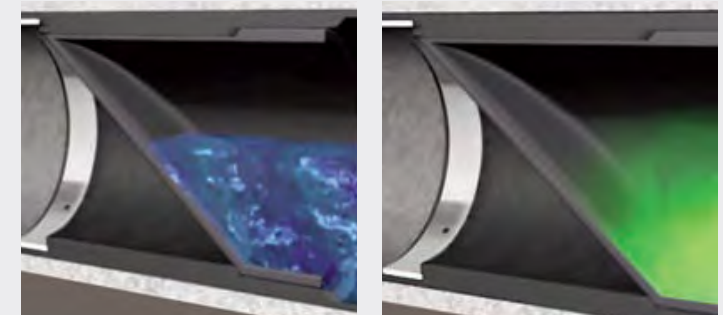
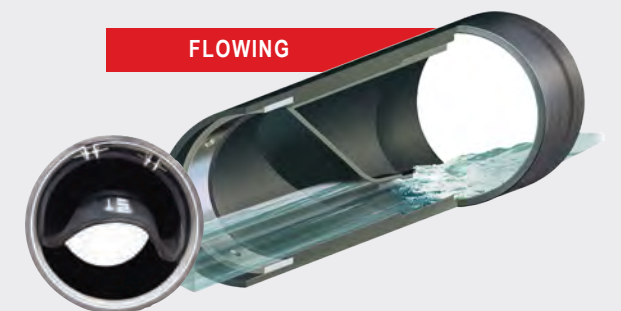


### CheckMate® Valve Solves City's Odor Problem

When foul odors were plaguing a soybean producing town in Illinois, officials turned to Red Valve for the most reliable, cost-effective solution.

A chemical deodorizing system and a pump station were also evaluated, but far exceeded budget constraints. The CheckMate® Inline Check Valve proved to be the perfect solution.

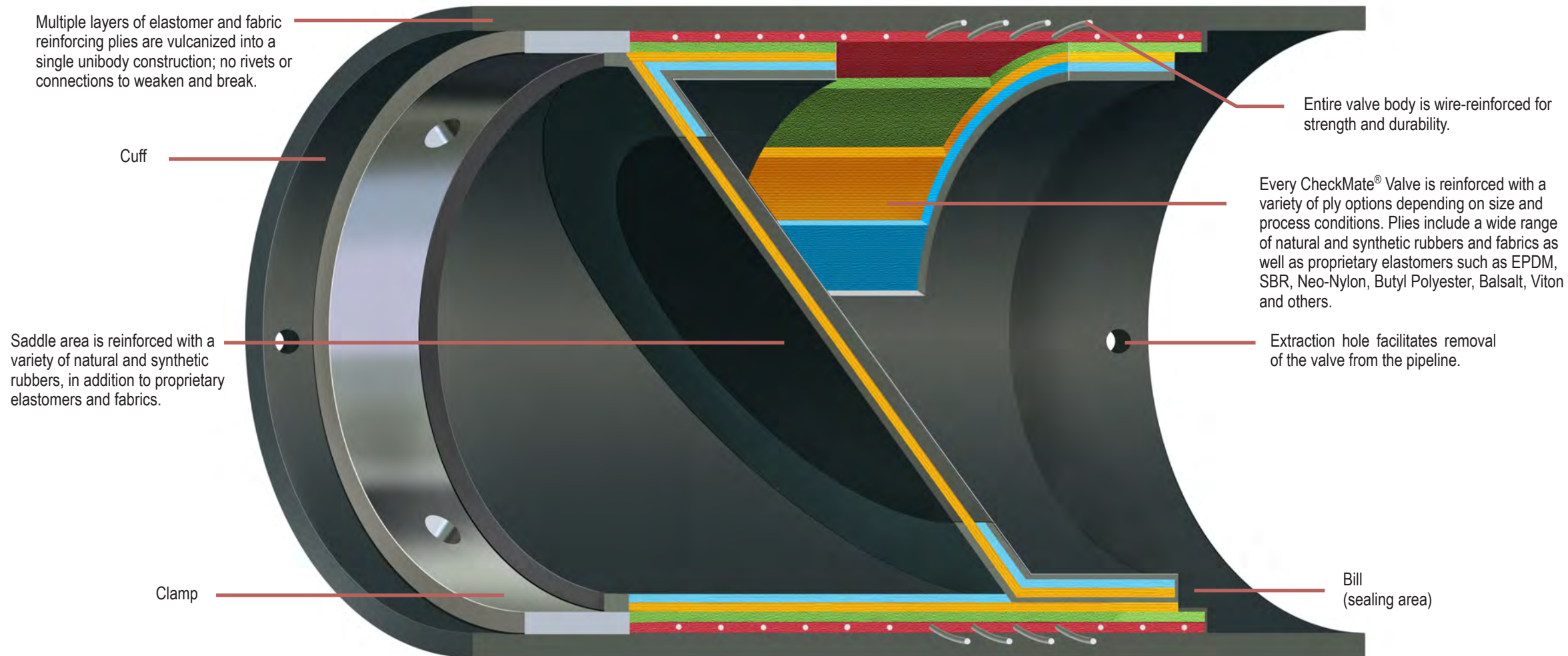
The CheckMate® Inline Valve was installed in 2012 and has worked flawlessly ever since, completely blocking the backdraft of the odor. Best of all, there has been zero maintenance expense. According to a public works official, ***"This is one of the most cost-effective solutions to a nagging quality of life problem the City has ever implemented. We are now looking at other parts of the combined sewer system that has a few small odor problems due to escaping sewer gas."***



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



## There Is Only One CheckMate® Inline Valve!



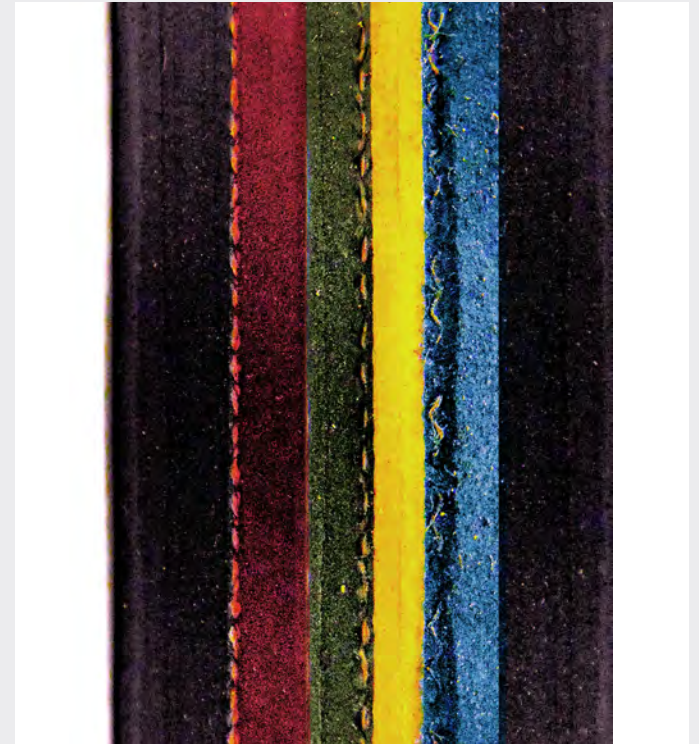
### The CheckMate® Inline Check Valve: Accept No Substitutes!

The innovative CheckMate® Inline Check Valve has quickly become the specified choice for inline residential, municipal and commercial areas where complete, dependable backflow prevention is critical. It has also become the valve of choice for municipal and industrial applications such as storm water, wastewater, highway runoff, CSO, SSO and flood control by preventing unwanted backflow that can cause surges and flooding. The CheckMate® Inline Check Valve minimizes damage to wetlands, beaches and residential areas and

eliminates hydraulic surges to wastewater treatment plants, saving municipalities millions of dollars in maintenance and treatment costs.

One of the keys to the CheckMate® Valve's exceptional dependability and longevity is Red Valve's unmatched elastomer experience—experience, application knowledge and engineering know-how. Every CheckMate® Inline Check Valve is hand-fabricated, made of multiple layers of varying natural and

synthetic elastomers, wire and fabric-reinforced plies, all of which are vulcanized into a robust unibody valve. Unlike competing designs, there are no molded parts or mechanical fasteners and rivets that will loosen, act as catch points, break or corrode—ever. The key to CheckMate® Valve's longevity, performance and low headloss characteristics is the design and construction.



Red Valve's legendary elastomer technology and knowledge is the real story behind the CheckMate® Valve's unrivaled performance. Every CheckMate® Valve is reinforced with various natural and synthetic plies, specifically engineered for your specific application.

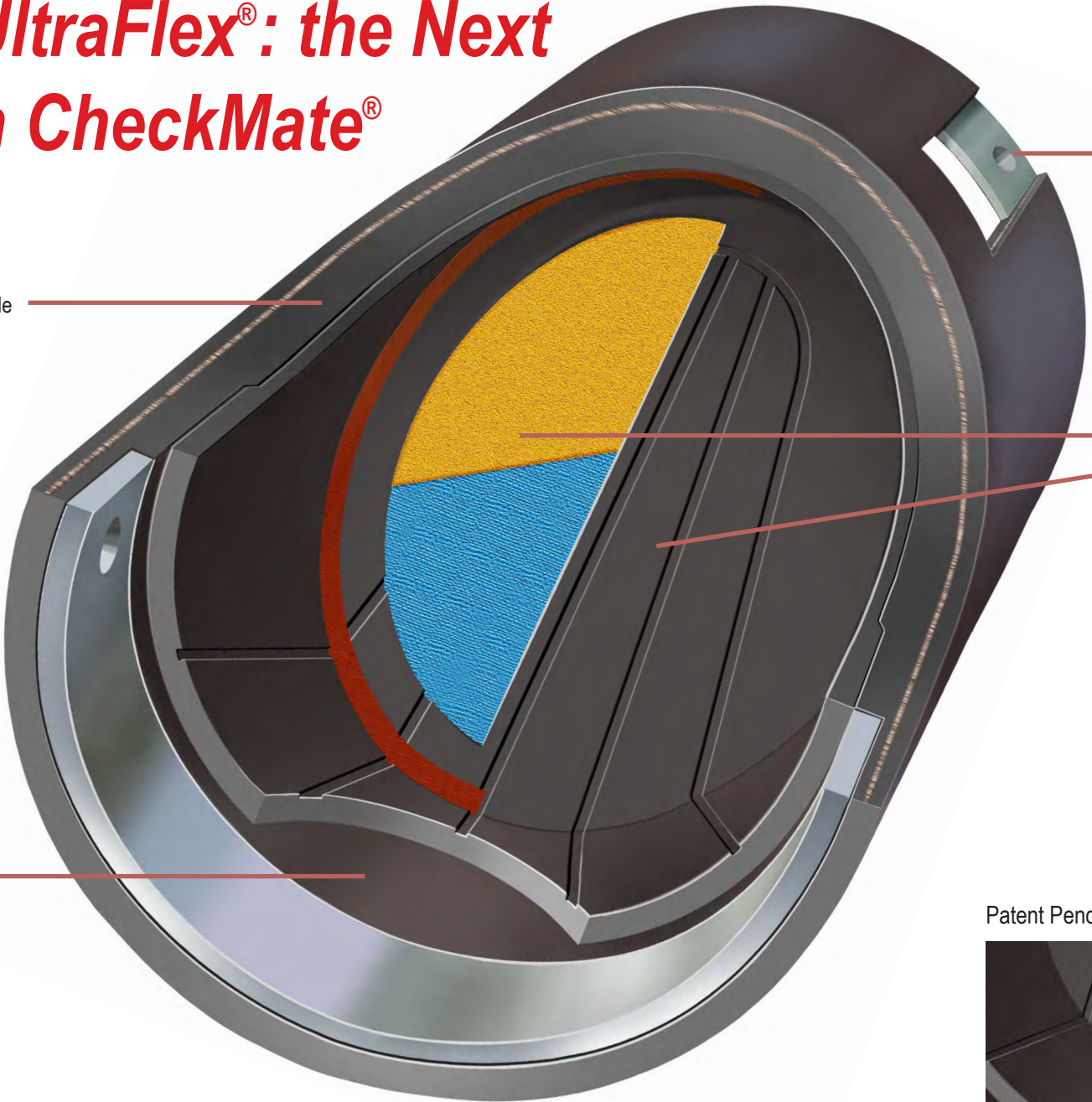


CheckMate® Inline Check Valves use state-of-the-art elastomers and fabric technology with no metal hinges, rivets, fasteners or moving parts. The valve's unibody construction is ideally suited for CSO and diversion chamber applications and installed inside the pipeline on either the upstream or downstream side of a diversion chamber.



Introducing UltraFlex®: the Next Generation in CheckMate® Technology!

Entire valve is vulcanized into a single unibody construction; no rivets or connections to weaken and break.



Clamp

Saddle area features strategically placed reinforcing ribs and segmented pads customized for each application.

The "Arc Notch" in the UltraFlex® Valve's bill functions as a hinge, greatly reducing the forces required to unseat the valve. This patented design achieves a very low snap-open pressure.

Unmatched Elastomer Research, Innovation and Knowledge

The patented CheckMate UltraFlex® Inline Check Valve features drastically improved hydraulic and performance characteristics to its predecessor, the original CheckMate® Check Valve. Strategically placed reinforcing ribs, segmented pads and the "Arc Notch" bill combine to significantly improve flow efficiency with significantly reduced headloss, while providing absolute backflow protection.

Once upstream head pressure reaches a specific level, CheckMate® Inline Check Valves are designed to "snap" or "pop"

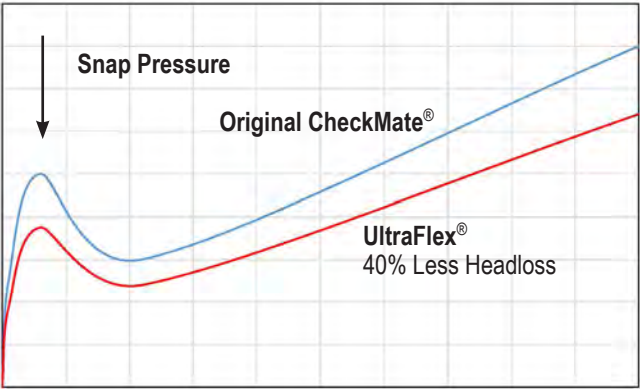
open, allowing the rapid discharge of flow. The new UltraFlex®, with its patented "Arc Notch" and optimized construction, allows the next generation CheckMate® Valve to open 40% sooner. As a result, the pipeline and entire collection system drains up to 40% faster. Because the UltraFlex® Valve "snaps" or "pops" open with less head pressure, pipeline capacity is significantly increased while the chance for standing water to collect upstream of the valve is totally eliminated.

Patent Pending



Strategically placed reinforcing ribs, segmented pads and the bill's unique "Arc Notch" combine to significantly improve flow efficiency with significantly reduced headloss while providing absolute backflow protection.

UltraFlex® Boasts 40% Lower "Snap Pressure"



The new CheckMate UltraFlex® Valve boasts a 40% lower snap pressure requirement to open or unseat the valve, without compromising the valve's ability to seal. This greatly improves capacity in pipelines and the rapid drainage of upstream flow through the valve. With its patented "Arc Notch" design, the CheckMate UltraFlex® Inline Check Valve boasts a significantly improved flow efficiency, due to reduced head pressure levels required to "snap" open the valve.



When upstream head reaches 50-75% of pipe diameter (for example, 9" head in a 12" valve), the UltraFlex® bill "snaps" open into a concave shape, allowing substantially more flow with the same amount of head. The valve will progressively open with increased head and flow. Picture shows moment when the valve "snaps" open.



The CheckMate® Valve will crack open and flow with as little as 1" of head pressure.



Once the CheckMate® Valve "snaps" open, it achieves rapid discharge of flow.



## Independently Tested, Field Validated



### Independent Hydraulic Testing

CheckMate® Inline Check Valves are independently tested to determine their hydraulic characteristics in both free and submerged discharge applications. Published hydraulic data is validated through this independent testing, and Finite Element Analysis data is also provided to ensure the CheckMate® Valve meets your exact specifications. CheckMate® Valves are ideally suited for interceptor, manhole and outfall pipelines because

they allow flow to discharge with very little headloss and prevent backflow. The CheckMate® Valve's innovative inline design allows it to be easily installed without modifications to existing structures, making it the perfect choice for both municipalities and commercial property owners.

*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.*



Thousands of CheckMate® Inline Check Valves are currently in service around the globe.

### Features and Benefits of CheckMate®

- Extremely Low Headloss
- No Moving Mechanical Parts to Corrode, Catch Debris or Fail
- Heavy Duty Elastomer Unibody Construction
- Quick and Easy Installation
- Seals Around Debris
- Operates on Differential Pressure, Totally Passive
- Virtually No Maintenance
- Self-draining, 1" of Cracking Pressure
- Silent, Non-slamming
- Available in Sizes 3" (75 mm) to 84" (2100 mm)
- Extensive Independent Hydraulic Testing



CheckMate® Valves are ideally suited for interceptor, manhole and outfall pipelines, because they maximize pipeline storage and capacity while preventing backflow into upstream pipelines, collection systems and sewage treatment plants.



## Simple Design for Simple Installation

The CheckMate® Inline Check Valve is extremely easy to install, regardless of the existing environment or piping. Its inherent design makes it the most user-friendly inline check valve on the market today. From the upstream or downstream end of the pipe, simply insert the valve into position and clamp it into place. Typically, no modification to the pipe or structure is required to install the CheckMate®. Because the CheckMate® is recessed inside of the pipe, additional permitting is not required. The results are construction cost savings, reduced installation time, and reduced operational costs.

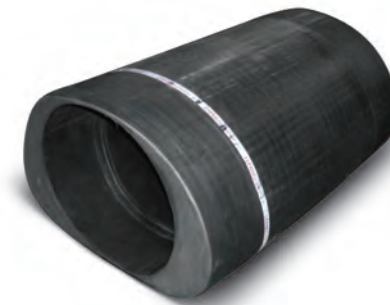


*CheckMate® Valves are easily installed regardless of difficult pipe end geometry or pipes in poor end condition. There is no need to rebuild headwalls.*

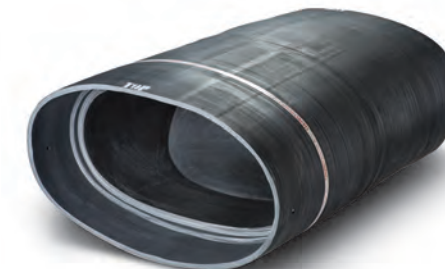
## A Wide Range of Shapes and Sizes

### Elliptical, Arch and Rectangular Pipes

Elliptical, Arch and Rectangular Pipes for drainage and flood prevention projects have become popular, particularly in high water table areas with shallow surface gradients. CheckMate® Inline Check Valves are the perfect solution as they can be customized to meet your specifications.



*Elliptical Pipe CheckMate®*



*Arch Pipe CheckMate®*



*Rectangular Pipe CheckMate®*

### Rubber Flanged

Rubber Flanged CheckMate® Valves can be manufactured with an integral rubber upstream or downstream flange. The flanged CheckMate® gets inserted into the host pipe, then can be bolted to a mating flange or anchored to a concrete headwall. The flange can be circular with standard drilling, or circular, square or rectangular with custom flange drilling. The valve is supplied with retaining rings for mounting.

### Thimble Inserts

A CheckMate® Thimble Insert is simply a CheckMate® Valve that is factory installed, clamped and pinned into flanged or plain-end pipe. The thimble insert assembly can either be inserted into the I.D. of the host pipe, or can be mounted to a mating flange or concrete headwall and extend beyond the pipe. Plain end thimble inserts are inserted into the host pipe and non-shrink grout is placed between the thimble insert O.D. and host pipe I.D. to form the seal.



*There is no need to rebuild headwalls, as is required with less advanced inline check valves (above)*



*Upstream Flanged CheckMate®*



*CheckMate® Thimble Insert*





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**Red Valve®**

Valve Selection Guide for Wastewater Treatment

**Red Valve®**

**MUNICIPAL COLLECTION AND DISTRIBUTION**  
Total System Solutions



## **“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 and municipal collection and distribution systems.

Since 1953, Red Valve has provided products for each phase of collection, distribution, separation, aeration, treatment and final discharge. Our complete product line provides customers with one source for on/off and control valves, check valves, pressure measurement, expansion compensation, air diffusers and effluent diffusers. 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 new “Total System Solution” brochure for Municipal Collection and Distribution, or our comprehensive Valve Selection Guide for Wastewater Treatment.*