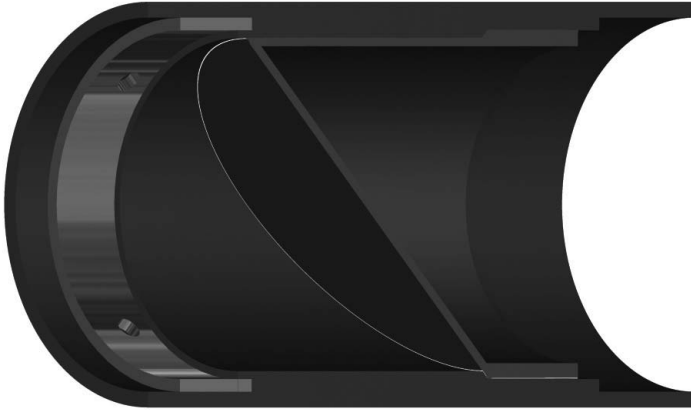


CHECKMATE[®] INLINE CHECK VALVES

INSTALLATION, OPERATION AND MAINTENANCE MANUAL



The revolutionary design of the CheckMate[®] Inline Check Valve provides superior backflow prevention and odor mitigation in stormwater, CSO and SSO outfalls. The CheckMate's[®] custom-engineered, all-rubber unibody design eliminates costly backflow from oceans, rivers and interceptors. The valve's unique elastomer fabric and wire reinforced design provides a proven record of maintenance-free performance, cost savings and results that no other inline check valve can match. The CheckMate[®] is built to suit all your site-specific and flow needs.

The CheckMate[®] has a 100% fabric and elastomer construction that eliminates corrosion problems. Because the CheckMate[®] is made with a unibody construction, there are no mechanical components that trap debris, corrode or fail.

The CheckMate[®] Valve's inherent flexibility virtually eliminates seating problems. The CheckMate[®] remains in the closed position until forward differential pressure opens it. The fabric-reinforced elastomer CheckMate[®] Valve seals around silt and small debris, preventing unwanted backflow.

The major advantage of the CheckMate[®] Valve is its extremely low headloss. The CheckMate[®] can open to a near full pipe diameter. This maximizes flow capacity of the outfall, which is particularly beneficial in low-lying areas where limited driving head is available.

Tideflex[®] Technologies recommends pinning all CheckMate[®] Valves for added security and stability. CheckMate's[®] effectively have a zero face-to-face dimension because they fit completely inside of the pipe. No modification of piping is required provided adequate pipe length exists.

IMPORTANT

Please take a moment to **review this manual**. The improper installation or use of this product may result in personal injury, product failure, or reduced product life. Tideflex[®] Technologies can accept NO liability resulting from the improper use or installation of this product. If you have any questions or problems, please call the customer service department at (412) 279-0044. We appreciate your comments. Thank you for choosing Tideflex[®] Technologies.

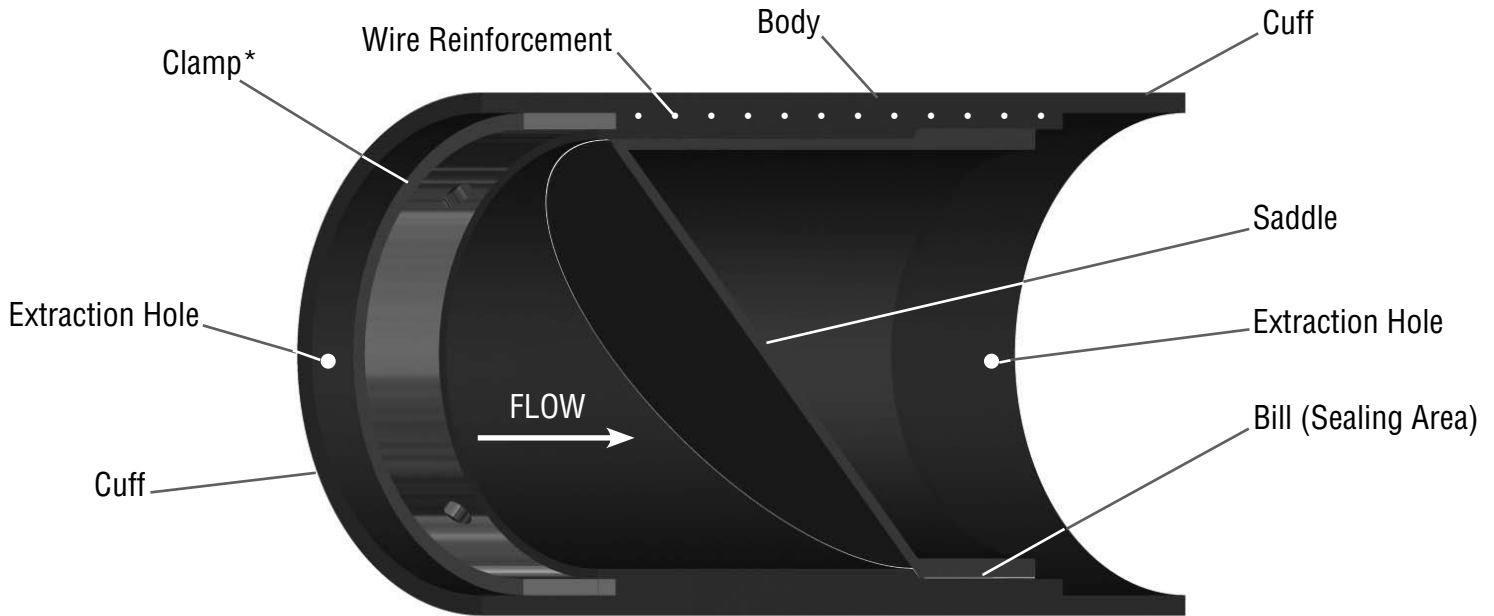
CheckMate® Installation Procedure

NEVER...
Install the valve at an angle

NEVER...
Use Sharp Tools on Rubber

NEVER...
Exceed Design Back Pressure

NEVER...
Install the Valve Backwards



*Clamps are installed in the upstream or downstream cuff, depending upon the application. The illustration above is shown clamped upstream.

CHECKMATE® INSTALLATION

1. Product Shipping

Valve sizes 2" - 18" are furnished with one clamp. Valves 20" - 60" ship with two clamps. 72" valves ship with three clamps.

NOTE: A clamp is installed on each end of the valve to keep the valve's shape during transit and storage. Once the installation orientation is determined the CheckMate® valve will be clamped from either the upstream or downstream side. **For valves with two or three clamps, they can be installed onto the same side of the valve and offset from each other, as illustrated in Figure 1.**

2. Unpacking & Lifting

Do not use sharp tools when unpacking this product as it may damage the valve.

For larger CheckMate® valves, the valve should be lifted with either a sling or with supports around the O.D. at each side of the valve to ease the installation procedure. Do not place an object through the valve in order to lift.

CAUTION: Do not try to bend, collapse or fold the valve in order to facilitate the installation as this will cause permanent damage and will not allow the valve to return to a fully round shape.

3. Inspection of Pipe I.D.

Check the inside diameter (I.D.) of the pipe section for rough or damaged areas. The inside surface should be uniform and relatively smooth. Long gouges or cracks in the pipe may allow water to pass and should be filled prior to installation. Do not attempt to install a CheckMate® in a smaller pipe I.D.

4. Pipe I.D. Measurements

The pipe I.D. is to be checked in the field. It should be a consistent diameter for the length of valve and should not be out of round. When there is a +/- tolerance on the pipe I.D., the CheckMate® Valve should be ordered to the smallest pipe I.D.. Then, rubber adhesive strip can be applied to both CheckMate® cuffs to build the cuff O.D. up to the actual pipe I.D. See procedure in #5.



Figure 1 – Clamps shown installed on the same side of valve

CheckMate® Rubber Adhesive Strip Build Up Procedure

5. Rubber Adhesive Strip Build up

When valve O.D. is smaller than the pipe I.D., one-sided rubber adhesive strip is used to build up the O.D. of both CheckMate® cuffs to the actual pipe I.D.

NOTICE: Clean and dry the exterior of the valve prior to beginning rubber adhesive strip build up procedure.



STEP A: Place the valve on a solid, flat surface with the clamped end hanging slightly over the edge of the surface.



STEP B: Slowly rotate the valve while firmly pressing the rubber adhesive strip onto itself in concentric layers until valve O.D. is equal to or a fraction smaller than pipe I.D.



STEP C: Repeat steps A and B on the opposite side of the valve to ensure uniformity of the CheckMate's® O.D. is consistent and matches the pipe I.D.



STEP D: Lubricate the valve and rubber adhesive strip surface. Slide valve into pipe. Ensure the area marked TOP is in the 12:00 position.



STEP E: Check O.D. of the valve to ensure it fits snugly into the I.D. of pipe. If loose, add another layer(s) of the rubber adhesive strip.



STEP F: Once in place, tighten the clamp to secure it against the pipe and compress the rubber adhesive strip.

CheckMate® Installation Procedure

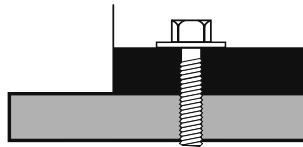
6. Preparation

The CheckMate® Valve uses expanding clamp(s) to exert pressure outwards on the walls of the valve to wedge it in place within the pipe. The walls of the pipe should be clean and free of debris prior to installation.

The valve should be inserted fully into the pipe so that no part of the cuff or bill extends outside the pipe. Ensure that the valve is not slanted at an angle with the bill pointing upwards or downwards. The valve centerline should be parallel to the pipe centerline.

Tideflex® Technologies recommends pinning the CheckMate® Valve on all installations. See below.

Four pre-drilled holes are provided in each expansion clamp. At least one clamp should be pinned. On exposed pipe, holes can be drilled through the valve and pipe, and a bolt run through secured with a nut. For buried pipe, silicon or similar sealant should be used to seal bolts.



7. Lubrication

The outside of the valve can be lubricated with a water-based lubricant prior to inserting the valve into the pipe. If the taping procedure has been used, the surface of the tape can be lubricated to aid insertion.

CAUTION: Do not use petroleum-based lubricants on this product or on the vulcanized rubber tape.

8. Plumb Lines and Arrows

The CheckMate® Valve arrives with a “top” arrow, “flow” arrow and plumb lines, marked in white, at the 12:00 and 6:00 position of the valve. Utilize this marking to orient the valve in the pipe, as well as to ensure the valve is oriented correctly in pipe section.

9. Valve Orientation

The CheckMate® Valve must be installed in a horizontal pipe. Valves 4” – 18” (nominal) are supplied with a single clamp. The clamp turnbuckle should be oriented at top dead center as delineated by the plumb line.

Valves 20” – 60” (nominal) are supplied with two clamps. The turnbuckles should be oriented 45° from the top center plumb line.

The 72” is supplied with three clamps. The turnbuckle for one clamp to be at top center. The other clamps to be 45° to each side of top center.

10. Insertion Into Pipe

Clamp to support the shape of the cuff should be hand tight and should be extended outward, but only tight enough to loosely keep the shape of the cuff during installation.

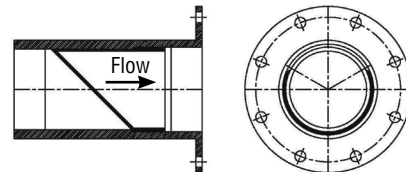
CAUTION: If you expand the clamp excessively at this step it will hinder or prevent the CheckMate® valve being fully inserted into the pipe.

CheckMate® Clamping Diagrams

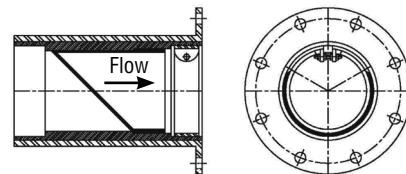
Downstream Clamp



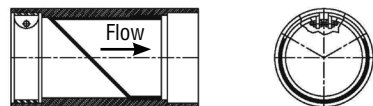
Downstream Flanged



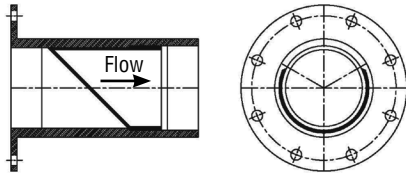
Downstream Flanged Thimble Insert



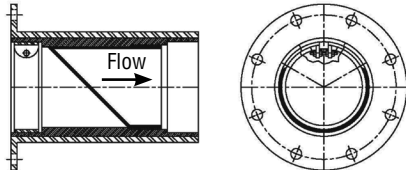
Upstream Clamp



Upstream Flanged



Upstream Flanged Thimble Insert



11. Pallet Push for Larger CheckMate® Valves

Larger CheckMate® valves can be pushed into the pipe utilizing the shipping pallet. The pallet should be placed perpendicular to the valve being inserted into the pipe. Then, with assistance from an excavator, push with consistent even force against the shipping pallet to insert the CheckMate® valve into the pipe.

See the image to the right for the suggested positioning and usage of the excavator's shovel assistance for larger-sized CheckMate® valves. Clamps must be installed to prevent damage to cuff.

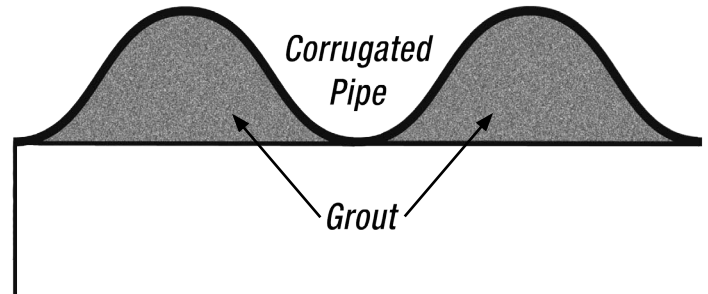


Pallet Push method for installing CheckMate® Valve

12. Corrugated Pipe and Smooth Wall (PVC, HDPE) Pipe Installation

For installation on corrugated pipe, it is recommended that the corrugations be filled with hydraulic cement (or similar material) that will provide a smooth I.D.

For smooth wall pipe, it is recommended that the valve be pinned.



Nominal Pipe Size I.D.*		Overall Length**		Number of Clamps	Cuff Depth		Backpressure Rating	
Inches	Millimeters	Inches	Millimeters		Inches	Millimeters	Feet	Meters
4	100	7.86	200	1	1.5	38	40	12
6	150	11	279	1	2	51	40	12
7	178	12.75	324	1	2	51	40	12
8	200	15.23	387	1	2	51	40	12
9	225	15.38	391	1	2	51	40	12
10	250	16.12	409	1	2	51	40	12
12	300	23	584	1	2	51	40	12
14	350	25.75	654	1	4	102	20	6
16	400	28.61	727	1	4	102	20	6
18	450	31	787	1	4	102	20	6
20	500	42.14	1070	2	8	203	20	6
24	600	47.5	1207	2	8	203	20	6
30	750	54.87	1394	2	8	203	20	6
36	900	62.25	1581	2	8	203	20	6
42	1050	70.62	1794	2	8	203	13	4
48	1200	79	2007	2	8	203	13	4
54	1350	86.37	2194	2	8	203	13	4
60	1500	102.5	2604	2	12	305	13	4
72	1829	119	3203	3	12	305	10	3

*Larger sizes available upon request.

**Shorter lengths available.

CheckMate® Installation Notes

1. It is important that the CheckMate® is installed level within the pipe. The CheckMate® may "gap open" if installed improperly.
2. The sealing area of the CheckMate® must have room to expand outwards, while bottom of the sealing area rises. The area around the sealing area must be kept free of debris to allow the bill to close in order for the valve to seal properly.
3. The CheckMate® effectively reduces the inside diameter of the pipe in which it is installed, creating a restriction. It may also create a "ledge" inside the pipe, causing standing water.
4. Back pressure in excess of the back pressure rating may cause valve failure.
5. Should the conditions that the CheckMate® was designed for change, (line pressure, back pressure, chemical compatibility) the performance of the valve may suffer.
6. CheckMate® Valves must be installed in true round pipe which is concentric across the entire length. Out of round pipe may cause the sealing area of the valve to distort and gap, which will cause the valve to leak.

MAINTENANCE

Inspection

Valves should occasionally be inspected for damage, wear, and buildup of debris. The frequency of the inspections should be determined by the severity of the service and the environment in which it operates.

The clamps should be checked for proper tension, and be sure that the inside of the valve is free of debris. Soft marine growth is normal on valves in submerged applications. Because hard marine growth such as barnacles will not bond well to the CheckMate®, they can be easily removed. Also insert pins to ensure they are tight.

STORAGE

If your CheckMate® is to be stored for a period of time prior to installation, the following storage guidelines will help to preserve the valve and assure a trouble-free installation:

1. Store in a clean, cool, dry location. Avoid exposure to light, electric motors, dirt, or chemicals.
2. Store valve vertically on floor or pallet.
3. Store valve to prevent other items from contacting check sleeve to prevent possible damage.
4. Store this manual with the valve, so that it is readily available at time of installation.

TROUBLESHOOTING GUIDE

Sleeve Inverted or Distorted

1. Excessive back pressure, water surge, or water hammer.

Leaking Around Perimeter of Valve

1. Tighten clamp.
2. Check for cracks and holes in surface of pipe.
3. If taped, check tape to ensure the pipe I.D. has been fully sealed

Backflow

1. Debris lodged inside bill.

TIDEFLEX® TECHNOLOGIES WARRANTY

WARRANTIES - REMEDIES - DISCLAIMERS - LIMITATION OF LIABILITY

Unless otherwise agreed to in writing signed by Tideflex® Technologies, all Products supplied by Tideflex® Technologies will be described in the specifications set forth on the face hereof.

THE WARRANTIES SET FORTH IN THIS PROVISION ARE EXCLUSIVE AND IN LIEU OF ALL OTHER WARRANTIES WHETHER STATUTORY, EXPRESS OR IMPLIED (INCLUDING ALL WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE AND ALL WARRANTIES ARISING FROM COURSE OF DEALING OR USAGE OR TRADE).

Tideflex® Technologies Products are guaranteed for a period of one year from date of shipment, against defective workmanship and material only, when properly installed, operated and serviced in accordance with Tideflex® Technologies' recommendations. Replacement for items of Tideflex® Technologies manufacture will be made free of charge if proved to be defective within such year; but not claim for transportation, labor or consequential damages shall be allowed. We shall have the option of requiring the return of the defective product to our factory, with transportation charges prepaid, to establish the claim and our liability shall be limited to the repair or replacement of the defective product, F.O.B. our factory. Tideflex® Technologies will not assume costs incurred to remove or install defective products nor shall we incur back charges or liquidated damages as a result of warranty work. Tideflex® Technologies does not guarantee resistance to corrosion erosion, abrasion or other sources of failure, nor does Tideflex® Technologies guarantee a minimum length of service, or that the product shall be fit for any particular service. Failure of purchaser to give prompt written notice of any alleged defect under this guarantee forthwith upon its discovery, or use, and possession thereof after an attempt has been made and completed to remedy defects therein, or failure to return product or part for replacement as herein provided, or failure to install and operate said products and parts according to instructions furnished by Tideflex® Technologies, or failure to pay entire contract price when due, shall be a waiver by purchaser of all rights under these representations. All orders accepted shall be deemed accepted subject to this warranty which shall be exclusive of any other or previous warranty, and shall be the only effective guarantee or warranty binding on Tideflex® Technologies, anything on the contrary contained in purchaser's order, or represented by any agent or employee of Tideflex® Technologies in writing or otherwise, not withstanding implied warranties. TIDEFLEX® TECHNOLOGIES MAKES NO WARRANTY THAT THE PRODUCTS, AUXILIARIES AND PARTS ARE MERCHANTABILITY OR FIT FOR ANY PARTICULAR PURPOSE.



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