

Wafer and Globe Style Silent Check Valve

Operation, Maintenance and Installation Manual

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VAL-MATIC® VALVE AND MANUFACTURING CORP.

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WAFER AND GLOBE-STYLE SILENT CHECK VALVE OPERATION, MAINTENANCE AND INSTALLATION

INTRODUCTION

This manual will provide you with the information to properly install and maintain the valve to ensure a long service life. The Silent Check Valve is ruggedly constructed with bronze or stainless steel trim to give years of trouble free operation. The valve should be installed in horizontal or vertical pipes carrying clean water. 14" and larger valves should be equipped with special springs for operation in vertical flow down applications.

The Silent Check Valve is designed to open fully to provide flow in the forward direction and close rapidly upon flow reversal. The valves are used to prevent reverse flow through pumps or in piping systems. The size, cold working pressure, and model number are stamped on the nameplate for reference.

This valve is not intended for fluids containing suspended solids such as wastewater. For wastewater and other high turbidity applications, use Val-Matic Series 500 Swing-Flex® Check Valves.

CAUTION

This valve is not intended for fluids containing suspended solids or hazardous fluids.

RECEIVING AND STORAGE

Inspect valves upon receipt for damage in shipment. Unload all valves carefully to the ground without dropping. When lifting, the valve should be secured by the body and never lifted by the bronze or stainless steel trim.

The valves should remain crated, clean and dry until installed to prevent weather related damage. For long term storage greater than six months, the rubber surfaces of the seat (when provided) should be coated with a thin film of FDA approved grease such as Lubriko #CW-606. Do not expose rubber seat to sunlight or ozone for any extended period.

DESCRIPTION OF OPERATION

The silent check valve is designed to prevent reverse flow automatically. On pump start-up, the flow of water enters the valve from the seat end (left side in Figure 1) and forces the disc open, allowing the passage of fluid through the valve.

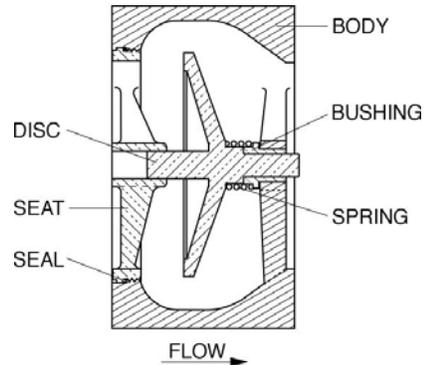
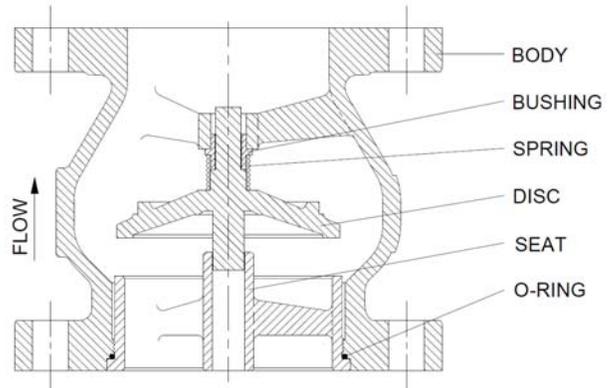
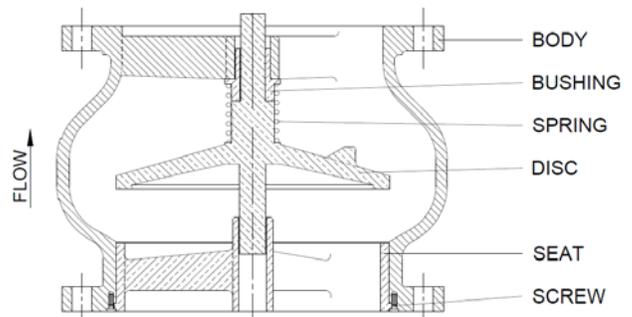


FIGURE 1. WAFER STYLE



Globe Style 2-1/2" to 12"



Globe Style 14" and larger

FIGURE 2. GLOBE STYLE

On pump shut-down, the spring closes the disc before a flow reversal takes place. This type of closure, which prevents flow reversal, is the factor which allows "silent" operation and prevents water hammer associated with check valve slam.

The valve body is supplied with either compact wafer ends as shown in Figure 1 for installation between mating flanges or in a flanged configuration, Figure 2.

The only moving parts in the valve are the disc and spring. The body bushing controls the movement of the disc and assures that the plug contacts the seat evenly. The valve may have an optional resilient seal for drop tight service.

INSTALLATION

The installation of the valve is important for its proper operation. The **flow arrow** on the valve body or nameplate must point in the direction of flow when the system is in operation. The valve can be installed in horizontal or vertical lines with the flow up or down. 14 inch and larger valves may require extra heavy springs for flow down applications; consult the factory.

Three diameters of straight pipe upstream of the valve are recommended to prevent turbulent flow streams through the valve, which can cause vibration and wear.

When installed in horizontal lines, the check valve does not have a specific upward orientation. The valve is usually installed so that the nameplate is visible on the side of the valve for future reference.

MATING FLANGES: The valve should be installed between standard flat-face flanges per ANSI B16.5 or AWWA C207. For globe style silent check valves 14" and larger, the installation requirements are illustrated in Drawing SS-974F on page 4. The mating flange inside diameter must overlap the valve seat to provide proper seat retention. Flanges or pipes having an expanded inside diameter (ductile iron or mortar-lined pipe) cannot be used on the inlet side of the valve. A ring flange having the maximum inside diameter shown on the drawing must be inserted between the valve and mortar-lined pipe. The threaded seat wafer style silent check valves do not require the mating flange to overlap the seat.

WARNING

On globe style check valves 14" and larger, flanges having an expanded inside diameter such as mortar-lined pipe cannot be used on the inlet side of the valve or damage may occur. Seat support rings are needed.

GASKETS AND BOLTING: The ring-type flange gasket can be rubber or compressed fiber but should be a maximum of 1/16" thick with the diameters shown in Drawing SS-974F for 14" and larger valves. The gasket must overlap the bronze or stainless steel seat to provide a seal between the seat and the body on globe style check valves 14" and larger. Flanged valves with ring gaskets should use ASTM A307 Grade B or SAE Grade 2 Carbon Steel bolts. Higher strength bolts should only be used with full-face gaskets.

ADJACENT VALVES: When mating the check valve with butterfly isolation valves, the clearance between the butterfly disc and the fully open check valve stem must be checked. The location of the stem is also shown on the check valve submittal drawings. 10 inch and smaller flanged end check valves have sufficient clearance for most butterfly valves. However, on 12 inch and larger valves, the plug shaft extends beyond the flange face and may interfere with the operation of adjacent valves. A short run of pipe or spacer may be needed between the check valve and the isolation valve.

INSTALLATION: Lower valve over mating flange using slings or chains around the valve body. Lubricate the flange bolts or studs and insert them around the flange. Lightly turn bolts until gaps are eliminated. The tightening of the bolts should then be done in graduated steps using the crossover tightening method. Recommended lubricated torques for use with resilient gaskets (75 durometer) is given in Table 1.

If leakage occurs, allow gaskets to absorb fluid and check torque and leakage after 24 hours. Do not exceed bolt rating or crush gasket more than 50 per cent of its thickness.

CAUTION

Mating flanges must be flat faced or damage to the valve may result.

125# FLANGE DATA			250# FLANGE DATA		
Valve Size (in)	Bolt Dia. (in)	Bolt Torque (ft-lbs)	Valve Size (in)	Bolt Dia. (in)	Bolt Torque (ft-lbs)
2.5	5/8	25-75	2.5	3/4	25-75
3	5/8	25-75	3	3/4	35-75
4	5/8	30-90	4	3/4	50-150
5	3/4	30-90	5	3/4	70-150
6	3/4	30-90	6	3/4	70-150
8	3/4	40-120	8	7/8	90-200
10	7/8	45-150	10	1	110-300
12	7/8	65-200	12	1 1/8	160-450
14	1	80-250	14	1 1/8	140-450
16	1	90-300	16	1 1/4	180-600
18	1 1/8	100-350	18	1 1/4	190-600
20	1 1/8	120-450	20	1 1/4	220-600
24	1 1/4	150-500	24	1 1/2	350-900
30	1 1/4	180-600	30	1 3/4	500-1500
36	1 1/2	250-750	36	2	700-2000
42	1 1/2	300-900	42	2	800-2500

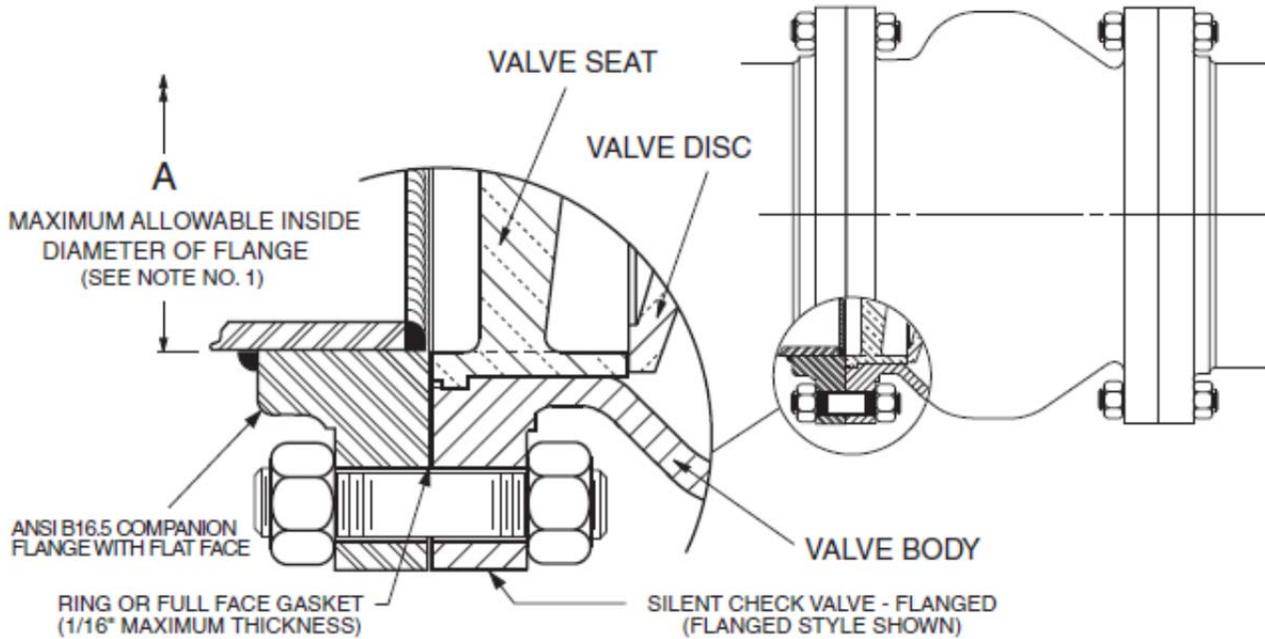
TABLE 1. FLANGE BOLT TORQUES

<p><u>CAUTION</u> The use of raised-face flanges or excessive bolt torque may damage valve flanges.</p>
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GLOBE STYLE SILENT CHECK VALVE INSTALLATION REQUIREMENTS

DAMAGE TO THE VALVE AND / OR INTERNAL LEAKAGE MAY RESULT IF PIPE FLANGES OTHER THAN THOSE WITH STANDARD FLAT FACES, CONFORMING TO ANSI B16.5 OR AWWA C207 ARE USED.

WARNING NOTICE: FLANGES HAVING AN EXPANDED INSIDE DIAMETER (OFTEN FOUND ON MORTAR LINED PIPE OR RUBBER EXPANSION JOINTS) CANNOT BE USED ON THE INLET SIDE OF THE VALVE. A SUPPORT RING HAVING A MAXIMUM INSIDE DIAMETER, AS SHOWN IN DRAWING NO. SS-1433, MUST BE INSERTED BETWEEN THE VALVE AND EXPANDED I.D. PIPE FLANGE.



NOTE NO. 1 - THE MATING COMPANION FLANGE I.D. MUST OVERLAP THE VALVE SEAT. THIS IS REQUIRED TO PROVIDE PROPER SEAT RETENTION.

NOTE NO. 2 - THE FLANGE GASKET MUST BE PROPERLY CENTERED AND OF THE SIZE INDICATED. THIS IS REQUIRED TO ACHIEVE A SEAL BETWEEN THE SEAT O.D. AND THE BODY I.D. INTERFACE AREA.

MAXIMUM ALLOWABLE INSIDE DIAMETER OF FLANGE (SEE NOTE NO. 1)

VALVE SIZE	A
14	14.140
16	16.160
18	18.180
20	20.200
24	24.250
30	30.250
36	36.250
42	42.250

STANDARD RING GASKET DIMENSIONS (SEE NOTE NO. 2)

VALVE SIZE	I.D. FOR 125 LB. AND 250 LB. GASKET	O.D. FOR 125 LB. GASKET	O.D. FOR 250 LB. GASKET
14	14.000	17.750	19.125
16	16.000	20.250	21.250
18	18.000	21.625	23.500
20	20.000	23.875	25.750
24	24.000	28.250	30.500
30	30.000	34.750	37.500
36	36.000	41.250	44.000
42	42.000	48.000	50.750

Revised 12-18-15

GLOBE STYLE SILENT CHECK VALVE FLANGE INSTALLATION REQUIREMENTS

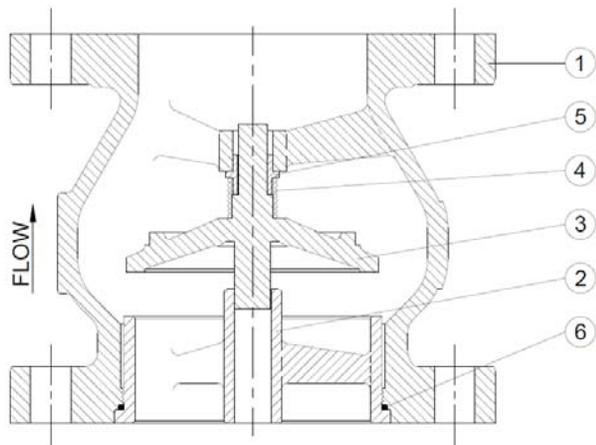
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VAL-MATIC®

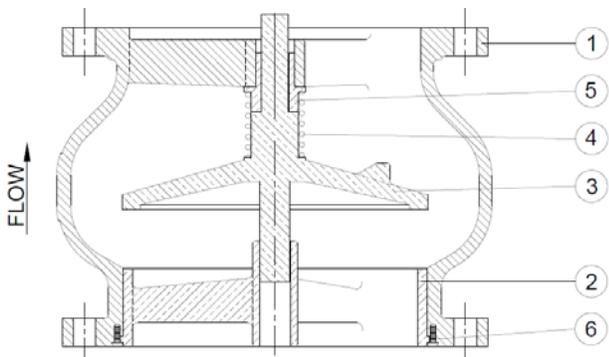
VALVE AND MANUFACTURING CORP.

DRWG. NO.

SS-974F



Globe Style 2-1/2" to 12"



Globe Style 14" and larger

FIGURE 3. GLOBE STYLE CHECK VALVE

VALVE CONSTRUCTION

The standard check valve body (1) is constructed of iron. See the specific Materials List submitted for the order if other than standard iron construction. The internal metal components are bronze or stainless steel. The disc (3) and spring (4) are the only moving parts and require no maintenance or lubrication. The general details of construction are illustrated in Figures 2 and 3.

The body (1) is either compact wafer style to fit between two pipe flanges or flanged style for connection to two pipe flanges. The 14" and larger globe style valve seat (2) is retained in the body (1) with screws (6) to allow assembly in the pipeline. The seat screws will not retain the seat against full pressure. The mating flange must properly retain the seat. Do not remove the upstream flange while the pipeline is full of water or the seat (2) may become dislodged from the body. The wafer style valve seat and the 2-1/2" to 12" globe style seat are threaded seats where no seat screws (6) are used.

WARNING
Removal of mating flanges without draining the pipeline may cause injury or damage to the valve.

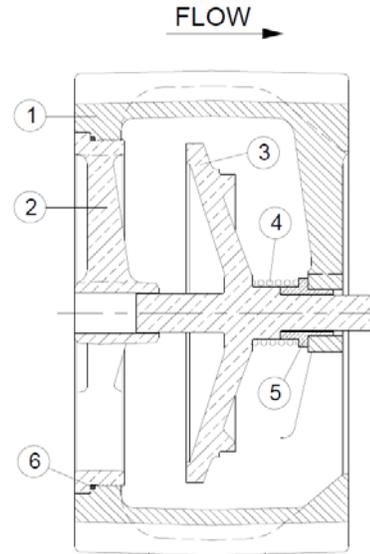


FIGURE 4. WAFER STYLE CHECK VALVE

<u>ITEM</u>	<u>DESCRIPTION</u>	<u>MATERIAL</u>
1	Body	Cast Iron
2	Seat ¹	Bronze or SS
3	Disc ¹	Bronze or SS (Optional Resilient)
4	Spring ¹	Stainless Steel
5	Bushing ¹	Bronze
6 ²	Screw ¹	Stainless Steel
6 ³	O-Ring ¹	EPDM

1. Recommended Spare Part
2. Globe style valve 14" and larger
3. Wafer style valve and Globe style 2-1/2" to 12"

TABLE 2. CHECK VALVE PARTS LIST

MAINTENANCE

Silent Check Valves require no scheduled lubrication or maintenance.

INSPECTION: Periodic inspection for leakage can be performed by listening for leakage noise from the valve while the pump is shut down. If leakage is heard, drain the pipeline, remove the valve, and inspect the seating surfaces for wear or mineral deposits. Clean, lap, or repair trim as needed.

TROUBLESHOOTING

Several problems and solutions are presented below to assist you in trouble shooting the valve assembly in an efficient manner.

- **Valve Chatters or Vibrates:** Verify that velocity is at least 4 feet per second. Noise sounding like rocks in the line can be cavitation due to high velocities, low downstream pressure, or an upstream expansion. Verify that there are three diameters of straight pipe upstream.
- **Valve Leakage:** Check upstream gasket and flange to verify that inside diameter meets the maximum "A" dimension given in Drawing SS-974. Drain line, remove valve, and inspect seating surfaces. If seat (2) is lifted above flange face, then mating flange and gasket are not securing the seat properly.
- **Valve Does Not Pass Flow:** Check flow arrow direction on valve body. Verify that downstream isolation valve is open and there is no line blockage downstream.
- **Valve Slams:** Remove valve and inspect spring. Heavier springs can be furnished for severe high-head applications. Consult factory if the valve is installed in a vertical pipe with the flow downward.

DISASSEMBLY

The valve should be removed from the pipeline for disassembly. A skilled mechanic with proper tools should perform all work on the valve. Refer to Figure 2 or 3.

WARNING

The line must be drained before removing the valve or pressure may be released causing injury.

1. Lay valve on flat surface or bench with the flow arrow facing down. 12" and larger valves require support for the spring during disassembly. Place a 2x4 board across the seat (2) and secure with C-clamps to the valve flange. For the globe style 14" and larger valve, remove the seat retaining screws (6) and seat (2). For the wafer style valve and 2-1/2" to 12" globe style valve, unthread the seat (2) from the body (1) in a counterclockwise direction.
2. For the globe style valves 14" and larger, examine narrow flange on the outside diameter of the seat (2). The retaining screws should have left a shallow dimple. If a deep depression is present, the gasket and flange internal

diameters should be checked to verify that they are greater than "A" on drawing SS-974.

3. Flip the seat (2) over and inspect the seating surface. Some minor dents and discoloration are normal. Grooves or wear areas will cause leakage and requires seat replacement. Note: Replace seat if the optional resilient seat o-ring is worn or damaged.
4. Lift disc (3) from body. Inspect shafts and seating surfaces for wear. The shaft diameter is normally about 1/32" smaller in diameter than the hole in the seat (2) and bushing (5). Some minor dents and discoloration are normal. Wear areas will cause leakage and require seat replacement. Heavy mineral deposits should be removed with lapping compound or fine sand paper.
5. Remove spring (4) and check for wear or cracks.
6. Remove bushing (5) and inspect for wear. The inside diameter of the bushing should be about 1/32" larger in diameter than the shaft.

REASSEMBLY

All parts must be clean and gasket surfaces should be cleaned with a stiff wire brush in the direction of the serrations or machine marks. Worn parts, gaskets, and seals should be replaced during reassembly.

1. Insert bushing (5) into body (1). The bushing is retained by the spring.
2. Lay spring (4) and disc (3) over bushing (5).
3. Install seat (2). On sizes 14" and larger secure with retaining screws (6). 12" and larger valves may require a 2x4 board and C-clamps to compress the spring into the body. For the thread seat valves, tighten the seats to the following values:

Threaded Seat Torque	
Valve Size	Torque
2"-3"	25 ft-lbs
4"-12"	50 ft-lbs

4. Install new gaskets and valve. Tighten flange bolts evenly using the crossover tightening method and the torque values given in Table 1 on page 2.

PARTS AND SERVICE

Parts and service are available from your local representative or the factory. Make note of the Valve Size and Model Number located on the valve nameplate and contact:

Val-Matic Valve and Manufacturing Corp.
905 Riverside Drive
Elmhurst, IL 60126
Phone: (630) 941-7600
Fax: (630) 941-8042
www.valmatic.com

A sales representative will quote prices for parts or arrange for service as needed.

LIMITED WARRANTY

All products are warranted to be free of defects in material and workmanship for a period of one year from the date of shipment, subject to the limitations below.

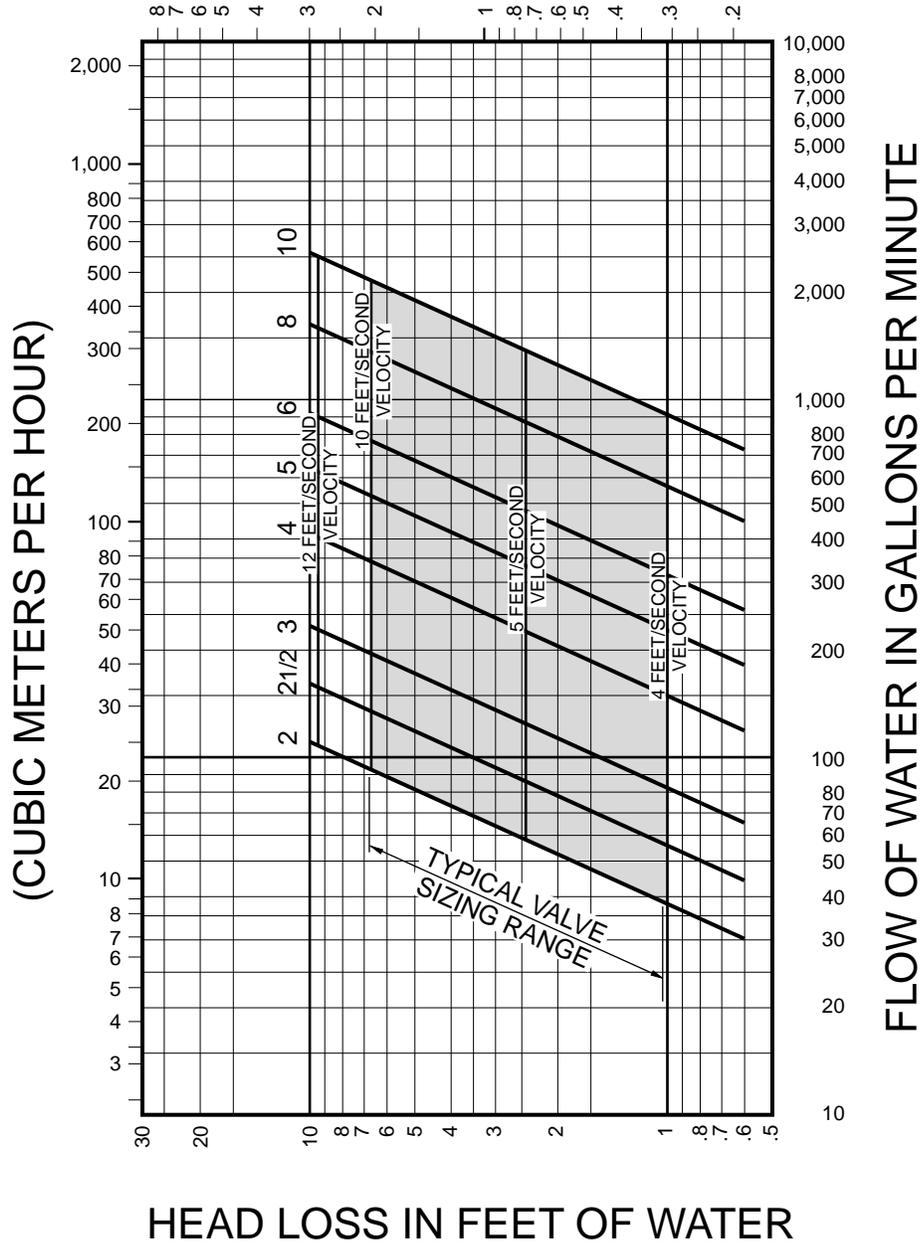
If the purchaser believes a product is defective, the purchaser shall: (a) Notify the manufacturer, state the alleged defect and request permission to return the product; (b) if permission is given, return the product with transportation prepaid. If the product is accepted for return and found to be defective, the manufacturer will, at his discretion, either repair or replace the product, f.o.b. factory, within 60 days of receipt, or refund the purchase price. Other than to repair, replace or refund as described above, purchaser agrees that manufacturer shall not be liable for any loss, costs, expenses or damages of any kind arising out of the product, its use, installation or replacement, labeling, instructions, information or technical data of any kind, description of product use, sample or model, warnings or lack of any of the foregoing. NO OTHER WARRANTIES, WRITTEN OR ORAL, EXPRESS OR IMPLIED, INCLUDING THE WARRANTIES OF FITNESS FOR A PARTICULAR PURPOSE AND MERCHANTABILITY, ARE MADE OR AUTHORIZED. NO AFFIRMATION OF FACT, PROMISE, DESCRIPTION OF PRODUCT OF USE OR SAMPLE OR MODEL SHALL CREATE ANY WARRANTY FROM MANUFACTURER, UNLESS SIGNED BY THE PRESIDENT OF THE MANUFACTURER. These products are not manufactured, sold or intended for personal, family or household purposes.



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(METERS OF WATER)



SIZE	2	2 1/2	3	4	5	6	8	10
Cv	43	88	130	228	350	520	900	1,450

Revised 2-6-06

HEAD LOSS CHART FOR WAFER STYLE SILENT CHECK VALVES

DATE 10-16-02

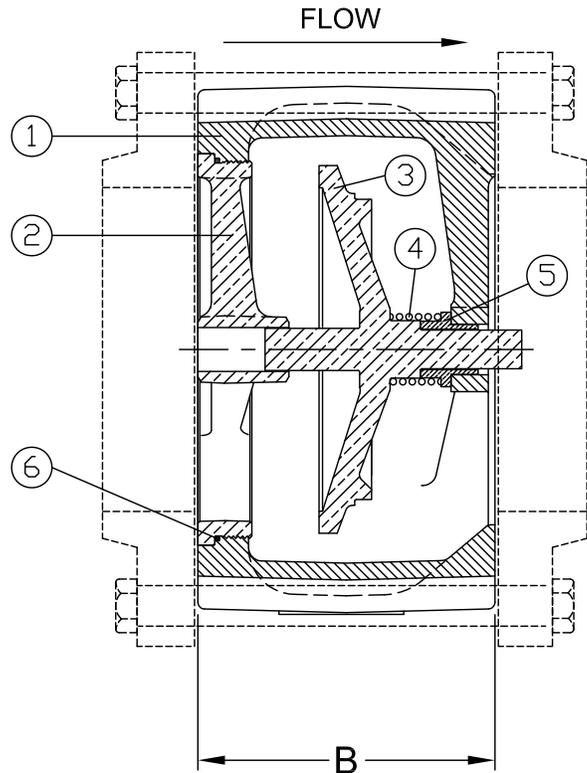
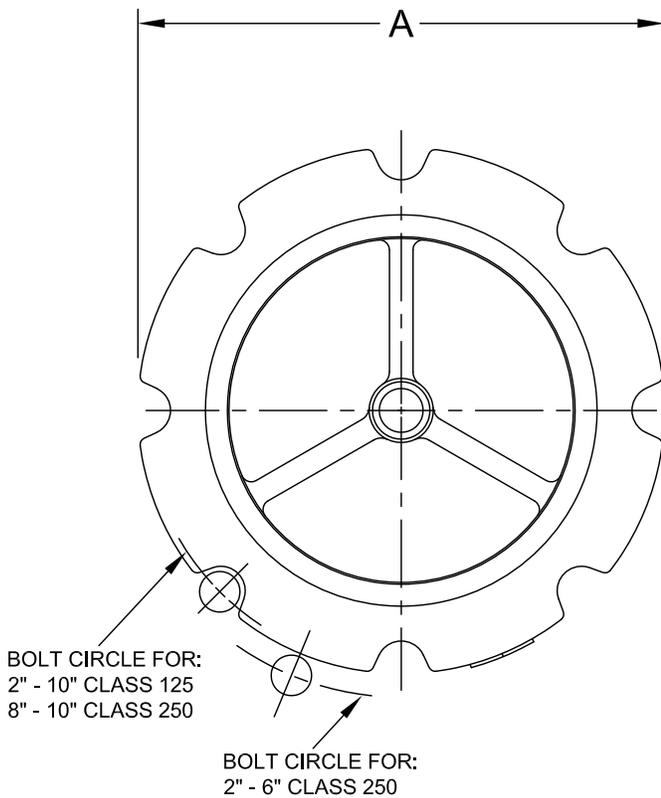


VALVE AND MANUFACTURING CORP.

DRWG. NO.

SS-1859

FLANGES, BOLTS, NUTS AND GASKETS SUPPLIED BY OTHERS.



VALVE DEPICTS 6 INCH SIZE TO SCALE.
SEE DRAWING NO. VM-1402A-M FOR STANDARD MATERIALS OF CONSTRUCTION.

VALVE SIZE	MODEL NO. *	ANSI CLASS	CWP PSI	A	B
2	1402A	125/250	400	4.25	2.63
2.5	1425A	125/250	400	5.00	2.88
3	1403A	125/250	400	5.75	3.13
4	1404A	125/250	400	7.00	4.00
5	1405A	125/250	400	8.75	4.75
6	1406A	125/250	400	9.75	5.50
8	1408A	125	200	13.38	6.50
8 **	1458A	250	400	13.38	6.50
10	1410A	125	200	16.00	8.25
10 **	1460A	250	400	16.00	8.25

* MODEL NUMBERS REFLECT BRONZE TRIM.

** NOT FM APPROVED.

Revised 1-28-11

WAFER STYLE SILENT CHECK VALVE

DATE 2-16-10



VALVE AND MANUFACTURING CORP.

DRWG. NO.

VMC-1402A

WAFER STYLE SILENT CHECK VALVE
SERIES NO.1400A.1 ANSI CLASS 125 & 250 (LEAD FREE)

STANDARD MATERIALS OF CONSTRUCTION

<u>PART NO.</u>	<u>PART NAME</u>	<u>MATERIAL</u>
1	BODY	CAST IRON ASTM A126, CLASS B
2	SEAT	SILICON BRONZE ASTM B584, C87600
3	DISC	SILICON BRONZE ASTM B584, C87600
4	SPRING	STAINLESS STEEL T316, ASTM A313
5	BUSHING	ALUMINUM BRONZE ASTM B505, C95400
6	O-RING	EDPM (NSF61 and WRAS APPROVED)

NOTE: ALL SPECIFICATIONS AS
LAST REVISED.

Revised 9-2-10

MATERIALS OF CONSTRUCTION

DATE 9/9/09

VAL-MATIC[®]

VALVE AND MANUFACTURING CORP.

DRWG. NO.

VM-1402A.1-M

VAL-MATIC®

Silent Operation
Proven Performance
Cost Effective



Silent Check
Valves

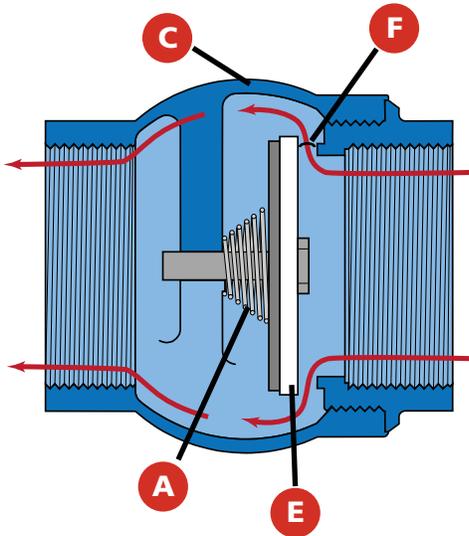


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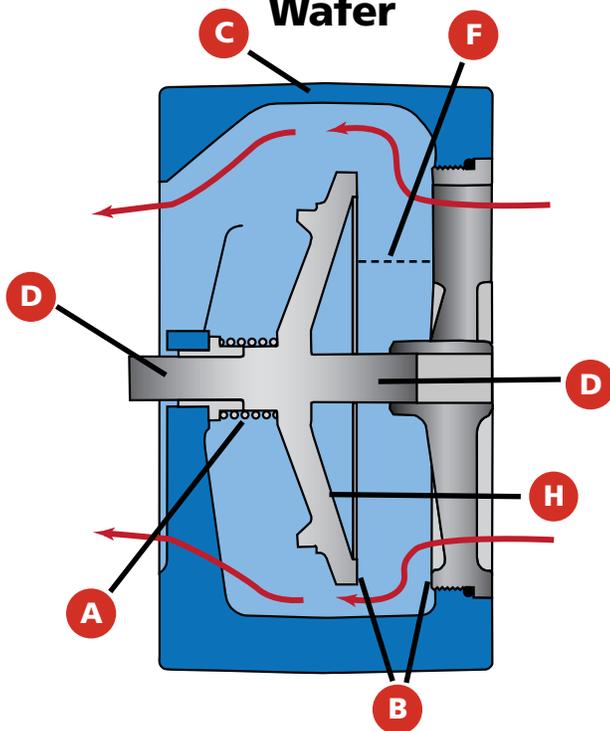
Certified Lead-Free
NSF/ANSI 61 & 372 Certified

Feature Highlights

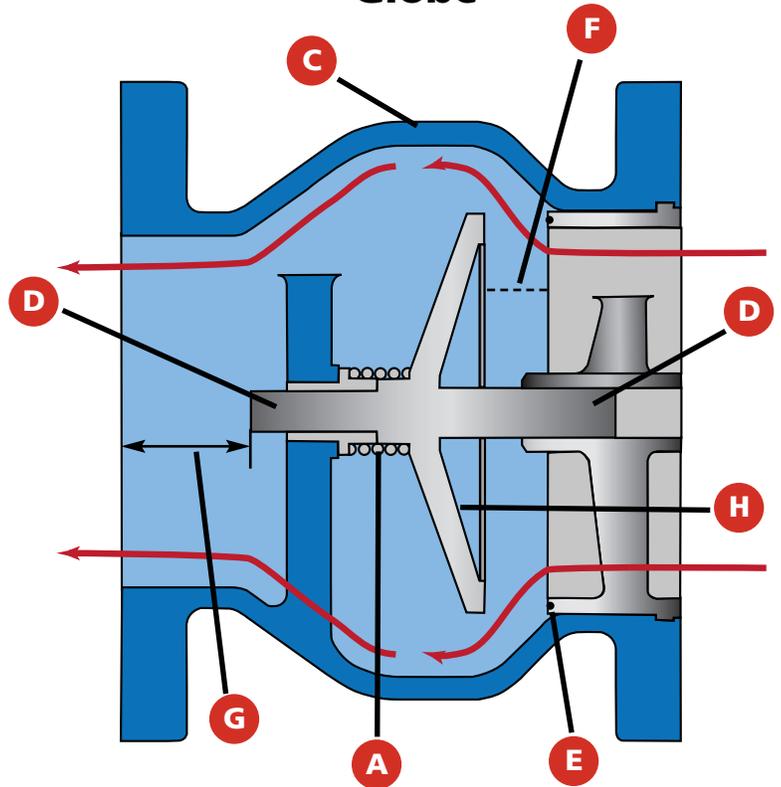
Threaded



Wafer



Globe



A. Heavy Duty Spring

Cycle tested over 100,000 times to ensure valve dependability and non-slam closure.

B. Metal-to-Metal Seating

For durability and extended life. Corrosion free seat and disc sealing surfaces are precision-machined flat and smooth to meet AWWA and MSS metal seat leakage criteria.

C. Expanded Flow Area

Tear-drop contour reduces headloss and provides energy savings.

D. Double Guided Disc

Prevents vibration and wear, ensuring long valve life.

E. Resilient Seat

Provides zero leakage. Standard on Threaded style, available on Wafer and Globe styles.

F. Short Stroke

The combination of short stroke and spring return assures non-slam closure.

G. Mate-ability

Globe style sizes 2½ through 10 in. mate to wafer style butterfly valves without the use of spool pieces.

H. Concave Disc

Concave to flow direction providing for disc stabilization, maximum strength and a minimum flow velocity to open the valve.

Features & Benefits

The Val-Matic Silent Check Valve has been the preferred choice by users for over 46 years. Its silent operation, low cost and proven performance in clean water applications has made it a favorite by design engineers and system operators.

Silent Operation

The Silent Check Valve is preferred over other types of valves because of its silent operation which reduces shock and water hammer. The Silent Check Valve is the fastest closing check valve because of its short stroke and spring-assisted closure. When flow occurs, the disc is lifted off the seat to allow forward flow. When the pump is stopped, the spring in the valve forces the disc closed before flow reverses, providing silent closure. Dynamic check valve tests show that surge pressure is significantly reduced when a silent check valve is used. (See Figures 1 & 2)

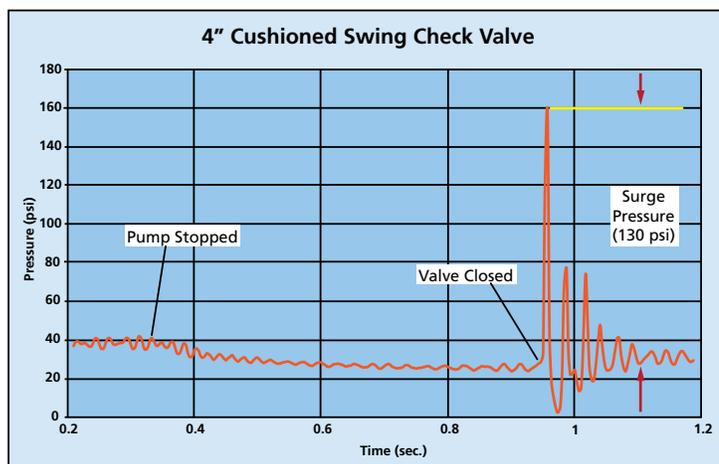


Figure 1 - Cushioned Swing Check Valve Dynamic Test Results

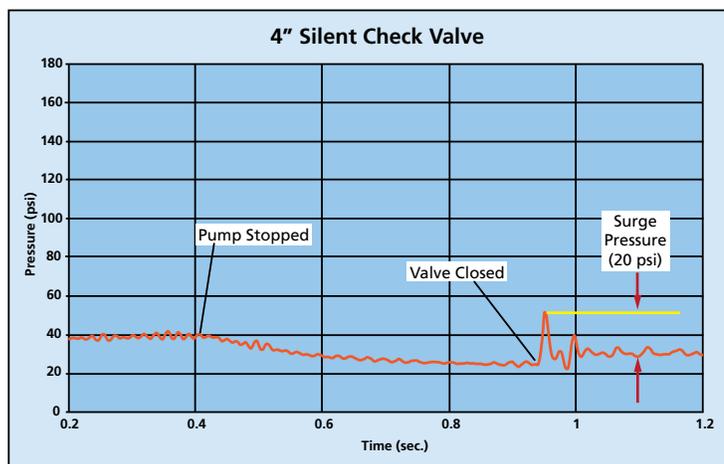


Figure 2 - Silent Check Valve Dynamic Test Results

Optional Resilient Seat

The Val-Matic Wafer and Globe Silent Check Valves incorporate an optional disc/seat design that provides zero leakage and reduces the potential for o-ring seal damage. The unique seating action begins with the initial contact between the metal valve disc and the

resilient o-ring providing a low pressure seal (See Figure 3). As pressure increases, the resilient seal is compressed which allows the disc to make contact with the metal portion of the valve seat (See Figure 4). This combined with excess area in the o-ring groove prevents over compression of the synthetic seal. The design also provides disc seal overlap of the resilient seal to prevent indentation ridges that can cause leakage and seal damage.

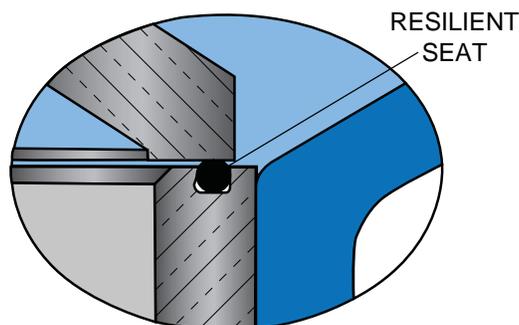


Figure 3 - Resilient Seating Detail at Low Pressure

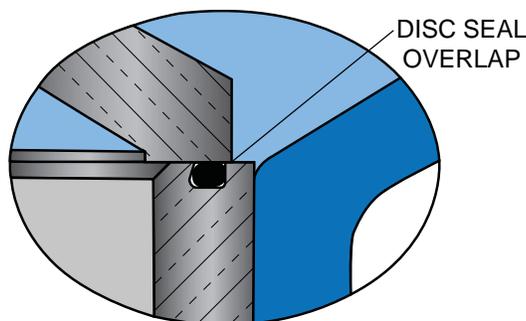


Figure 4 - Resilient Seating Detail at High Pressure

Installation Versatility

All three styles of Silent Check Valves can be installed in either horizontal or vertical lines with the flow up or down.* The operation of the valve is not affected by its installation position. Sizes 2 - 6 in. are dual rated to fit between both ANSI Class 125 and 250 flanges. In applications where space is limited, the compact wafer style is the preferred choice. Globe Style Silent Check Valves in sizes 2½ - 10 in. are able to mate to wafer style butterfly valves without the use of spool pieces or any other adaptors. (See Illustration on page 5.)

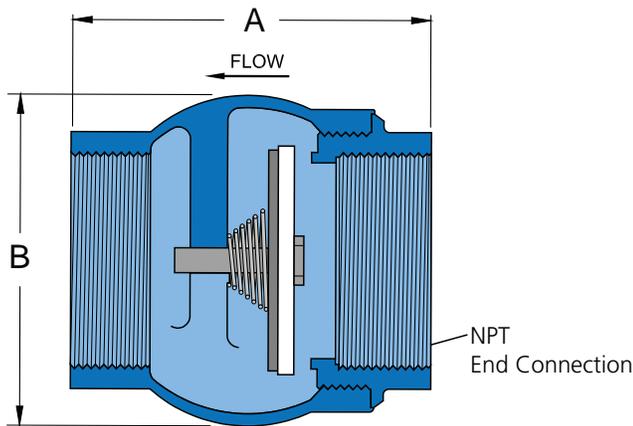
Product Certifications

Val-Matic Silent Check Valves are NSF/ANSI 372 certified Lead-Free and are NSF/ANSI 61 certified for drinking water. Wafer style (2-10 in.) and Globe style (2½-12 in.) Silent Check Valves are Factory Mutual approved for use in fire protection systems. All Val-Matic Valves are manufactured under a certified ISO 9001 quality management system.

*Note: Valves 14" and larger require a heavy duty spring for flow down applications.

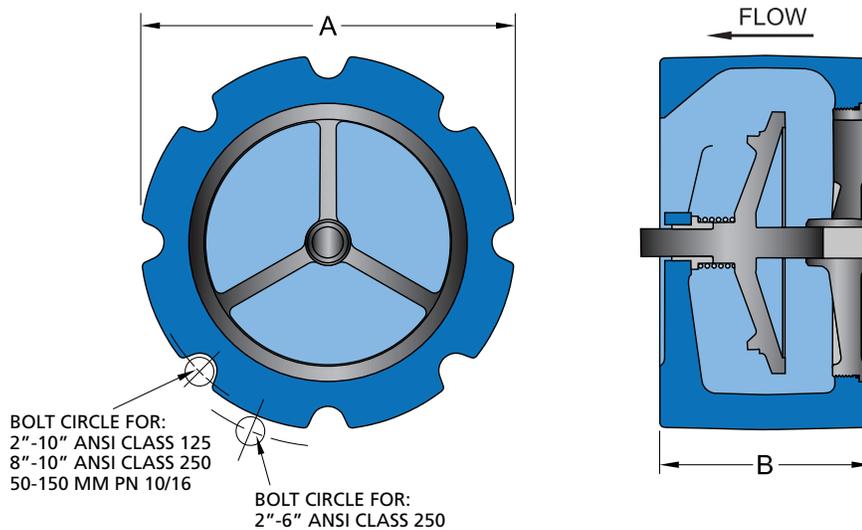
Installation Dimensions

Series 1400THR - Threaded



Dimensions				
Valve Size (NPT)	CWP psig (Bar)	A in (mm)	B in (mm)	Weight lb (kg)
1/2	250 (17.2)	2.06 (52.3)	1.38 (35.0)	.38 (.17)
3/4	250 (17.2)	2.25 (57.1)	1.63 (41.4)	.48 (.22)
1	250 (17.2)	2.63 (66.8)	2.00 (50.8)	.81 (.37)
1 1/4	250 (17.2)	2.94 (74.6)	2.38 (60.4)	1.22 (.55)
1 1/2	250 (17.2)	3.31 (84)	2.75 (69.8)	1.61 (.73)
2	250 (17.2)	3.68 (93.4)	3.38 (85.8)	5.13 (2.33)

Series 1400A - Wafer



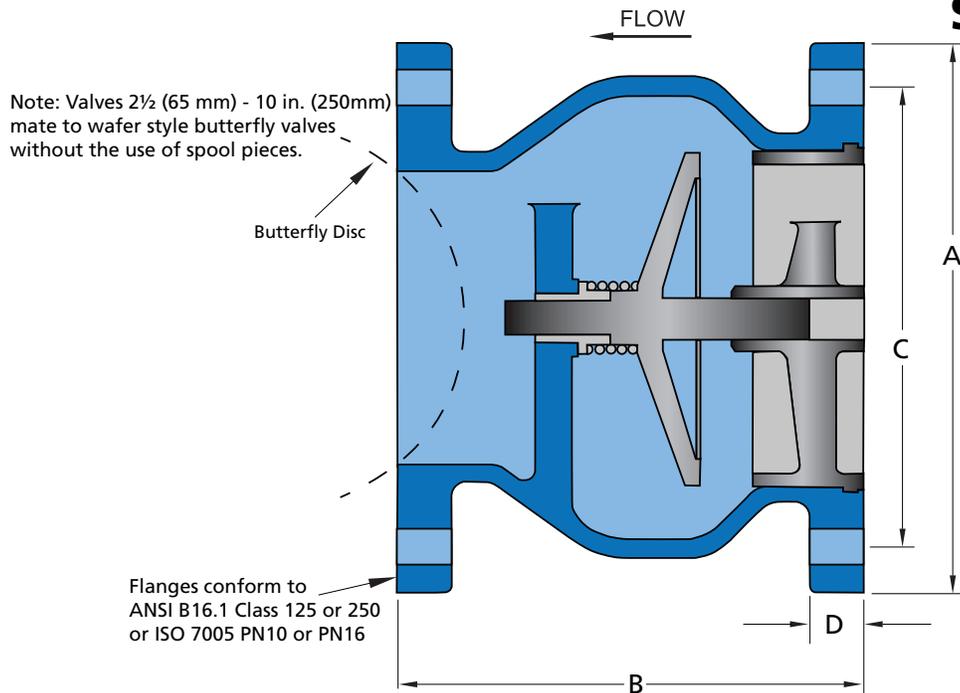
Dimensions - Inch					
Valve Size	CWP (psig)	ANSI Class	A	B	Weight (lb)
2*	400	125/250	4.25	2.63	6
2 1/2*	400	125/250	5.00	2.88	7
3*	400	125/250	5.75	3.13	11
4*	400	125/250	7.00	4.00	19
5*	400	125/250	8.75	4.75	28
6*	400	125/250	9.75	5.50	41
8	200	125	13.38	6.50	81
	400	250	13.38	6.50	89
10	200	125	16.00	8.25	99
	400	250	16.00	8.25	137

Dimensions - Metric					
Valve Size	CWP (Bar)	PN Class	A	B	Weight (kg)
50	27.6	10/16	107.9	66.8	3
65	27.6	10/16	127	73.1	4
80	27.6	10/16	146	79.5	5
100	27.6	10/16	177.8	101.6	9
125	27.6	10/16	222.2	107.9	13
150	27.6	10/16	247.6	139.7	19

*Note: Sizes 2 - 6 in. are dual rated to fit between both ANSI Class 125 and 250 flanges.

Installation Dimensions

Series 1800 - Globe



Dimensions - Inch							
Valve Size	CWP (psig)	ANSI Class	A	B	C	D	Weight (lb)
2 1/2	200	125	7.00	5.50	5.50	0.69	19
	400	250	7.50	5.50	5.88	1.00	30
3	200	125	7.50	6.00	6.00	0.94	28
	400	250	8.25	6.00	6.63	1.13	36
4	200	125	9.00	7.25	7.50	0.94	43
	400	250	10.00	7.25	7.88	1.25	59
5	200	125	10.00	8.50	8.50	0.94	55
	400	250	11.00	8.50	9.75	1.38	78
6	200	125	11.00	9.75	9.50	1.00	78
	400	250	12.50	9.75	10.63	1.44	103
8	200	125	13.50	12.50	11.75	1.13	102
	400	250	15.00	12.50	13.00	1.63	179
10	200	125	16.00	15.50	14.25	1.19	208
	400	250	17.50	15.50	15.25	1.88	253
12	200	125	19.00	14.25	17.00	1.25	294
	400	250	20.50	14.25	17.75	2.00	401
14	150	125	21.00	15.75	18.75	1.38	380
	300	250	23.00	15.75	20.25	2.13	511
16	150	125	23.50	17.63	21.25	1.44	501
	300	250	25.50	17.63	22.50	2.25	697
18	150	125	25.00	18.75	22.75	1.56	724
	300	250	28.00	18.75	24.75	2.38	959
20	150	125	27.50	20.63	25.00	1.69	890
	300	250	30.50	20.63	27.00	2.50	1,180
24	150	125	32.00	24.00	29.50	1.88	1,220
	300	250	36.00	24.00	32.00	2.75	1,680
30	150	125	38.75	29.25	36.00	2.13	2,100
	300	250	43.00	29.25	39.25	3.00	2,700
36	150	125	46.00	45.00	42.75	2.38	4,400
	300	250	50.00	46.00	46.00	3.38	5,100
42	150	125	53.00	50.00	49.50	2.63	7,200
	300	250	57.00	50.00	52.75	3.69	7,900

Dimensions - Metric							
Valve Size	CWP (Bar)	PN Class	A	B	C	D	Weight (kg)
65	16	10/16	178	140	145	18	9
80	16	10/16	192	152	160	24	13
100	16	10/16	220	184	180	24	20
125	16	10/16	250	216	210	24	25
150	16	10/16	285	248	240	25	35
200	16	10	340	318	295	29	46
	16	16	340	318	295	29	81
250	16	10	395	362	350	30	94
	16	16	405	362	355	30	114
300	16	10	445	394	400	32	133
	16	16	460	394	410	32	181
350	10	10	505	400	460	35	172
	16	16	520	400	470	35	231
400	10	10	565	448	515	37	227
	16	16	580	448	525	37	316
450	10	10	615	476	565	40	328
	16	16	640	476	585	40	434
500	10	10	670	524	620	43	403
	16	16	715	524	650	43	535
600	10	10	780	610	725	48	553
	16	16	840	610	770	48	762

Valve Construction

PRESSURE RATINGS

MAXIMUM PRESSURE RATINGS				
SERIES	DESCRIPTION	SIZE RANGE	END CONNECTION	CWP psig (Bar)
1400THR	Threaded	1/2" - 2" (15-50mm)	Threaded NPT	250 (17.2)
1400A	Wafer Style	2" - 6" (50-150mm)	Wafer Class 125/250	400 (27.6)
		8" - 10" (200-250mm)	Wafer Class 125	200 (13.8)
		8" - 10" (200-250mm)	Wafer Class 250	400 (27.6)
1800	Globe Style	2 1/2" - 12" (65-250mm)	Flanged Class 125	200 (13.8)
		14" - 42" (300-1050mm)	Flanged Class 125	150 (10.3)
		2 1/2" - 12" (65-250mm)	Flanged Class 250	400 (27.6)
		14" - 42" (300-1050mm)	Flanged Class 250	300 (20.7)

MATERIALS OF CONSTRUCTION

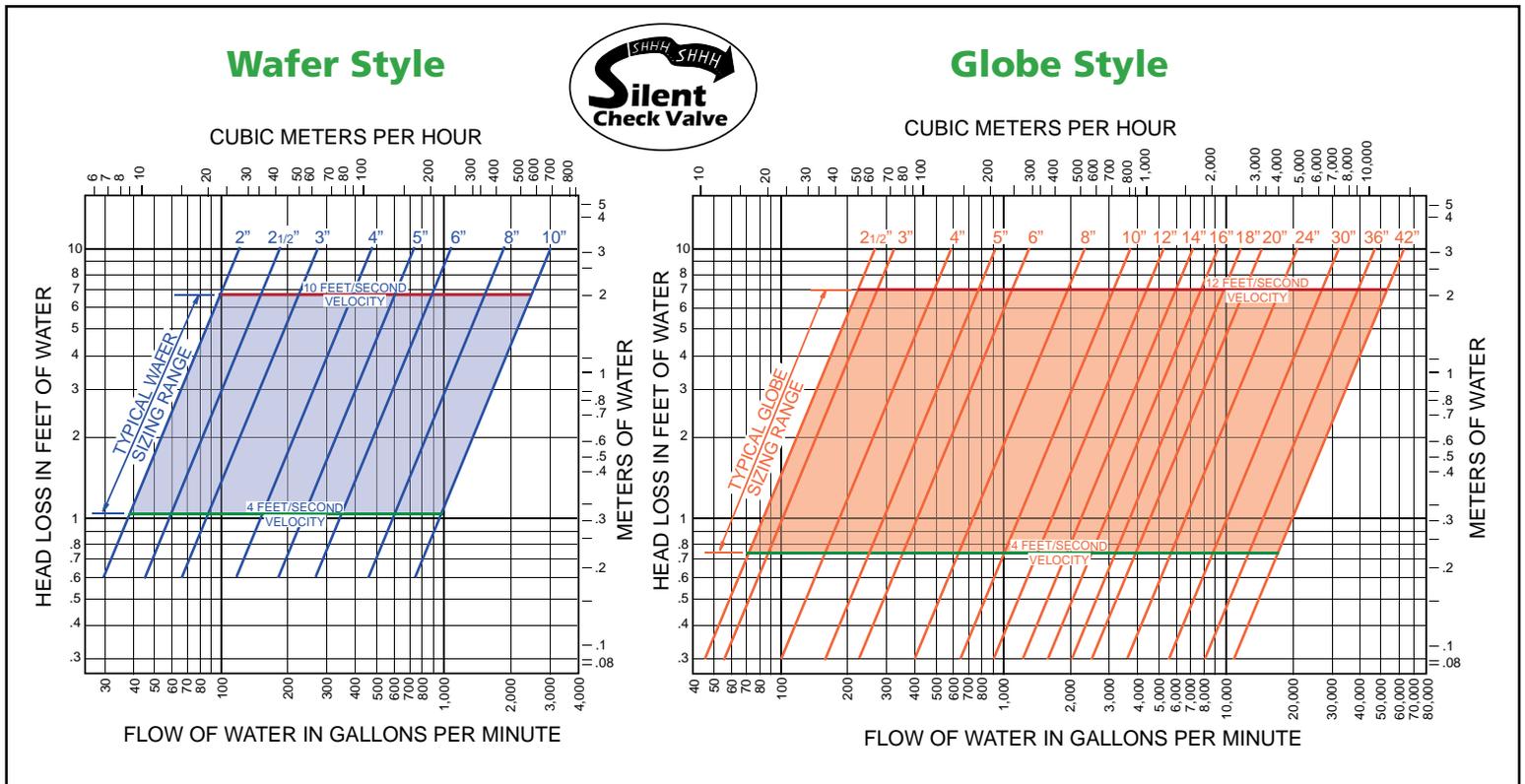
Threaded Style

COMPONENT	STANDARD
Body	Lead-Free Bronze
Disc	Lead-Free Bronze
Seat	Teflon
Spring	T316 Stainless Steel

Wafer & Globe Style

COMPONENT	STANDARD	OPTIONAL
Body	Cast Iron	Stainless Steel Ductile Iron
Disc	Lead-Free Bronze	Al-Bronze (Lead-Free) Stainless Steel
Seat	Lead-Free Bronze	Al-Bronze (Lead-Free) Stainless Steel
Resilient Seat	-	Buna-N EPDM
Spring	T316 Stainless Steel	Heavy Duty Spring

Headloss Chart



Size	2	2-1/2	3	4	5	6	8	10	12	14	16	18	20	24	30	36	42
Wafer Cv	43	88	130	228	350	520	900	1450	-	-	-	-	-	-	-	-	-
Globe Cv	-	127	155	278	435	625	1115	1770	2500	3400	4400	5600	6900	10,000	15,400	22,400	30,400

SCOPE

- 1.1 This specification covers the design, manufacture, and testing of 1/2 in. (15 mm) through 2 in. (50 mm) Bronze Threaded Silent Check Valves, 2 in. (50 mm) through 10 in. (250 mm) Wafer Silent Check Valves and 2 1/2 in. (65 mm) through 42 in. (1050 mm) Globe Silent Check Valves suitable for pressures up to 500 psig (3450 kPa) water service.
- 1.2 The Check Valve shall be of the silent operating type that begins to close as the forward flow diminishes and fully closes at zero velocity preventing flow reversal and resultant water hammer. The dynamic characteristics of the valve shall be published and verified by independent laboratory test data.

STANDARDS AND APPROVALS

- 2.1 The valves for use in fire protection systems shall be Factory Mutual approved in Wafer Style sizes 2 in.- 6 in. Class 125/250, 8 in.- 10 in. Class 125 and Globe Style 2 1/2 in.- 10 in. Class 125/250, 12 in. Class 125.
- 2.2 Stainless steel valves shall meet the requirements of ASME B16.34 and MSS SP-126.
- 2.3 The valves used in potable water service shall be certified to NSF/ANSI 61, Drinking Water System Components – Health Effects, and certified to be Lead-Free in accordance with NSF/ANSI 372.
- 2.4 Manufacturer shall have a quality management system that is certified to ISO 9001 by an accredited, certifying body.

CONNECTIONS

- 3.1 Threaded Style valves shall be provided in sizes 1/2 in. (15mm) through 2 in. (50mm) and have a two-piece body with female threaded NPT ends.
- 3.2 Globe style valves shall be provided in sizes 2 1/2 in. (65 mm) through 42 in. (1050 mm) and have flat faced flanges in accordance with ASME B16.1 for Class 125 or Class 250 iron flanges or in sizes 65 mm to 600 mm in accordance with ISO 7005 PN10 or PN16. Sizes 10 in. (250 mm) and smaller flanged valves shall be capable of mating directly to a wafer butterfly valve without disc interference.
- 3.3 Wafer style valves shall be provided in sizes 2 in. (50 mm) through 10 in. (250 mm) for installation between ASME B16.1 Class 125 or Class 250 iron flanges or sizes 50 mm to 100 mm in accordance with ISO 7005 PN10 or PN16. Stainless steel wafer style valves shall include raised faces for installation between ASME B16.5 Class 150 flanges.

DESIGN

- 4.1 The valve design shall incorporate a center guided, spring loaded disc and have a short linear stroke that generates a flow area equal to the nominal valve size.
- 4.2 The operation of the valve shall not be affected by the position of installation. The valve shall be capable of operating in the horizontal or vertical positions with the flow up or down. Heavy duty springs for vertical flow down installations shall be provided when specified on 14 in. and larger valves.
- 4.3 All component parts shall be field replaceable without the need of special tools. Wafer and Globe styles shall be provided with a replaceable guide bushing held in position by the spring. The spring shall be designed to withstand 100,000 cycles without failure and provide a cracking pressure of 0.5 psi.

- 4.4 The wafer and globe disc shall be concave to the flow direction providing for disc stabilization, maximum strength, and a minimum flow velocity to open the valve.
- 4.5 The valve disc and seat shall have a seating surface finish of 16 micro-inch or better to ensure positive seating at all pressures. The leakage rate shall not exceed the allowable rate for metal seated valves allowed by AWWA C508 and MSS SP-125 or 1 fl oz (30 ml) per hour per inch of nominal size.
- 4.6 Wafer-style valve seats shall be fully retained with full size threads, and sealed with an o-ring. Globe style valve seats shall be contained with a machined counterbore and restrained by the mating flange and gasket.

MATERIALS

- 5.1 The threaded valve body and disc shall be ASTM B584 copper alloy C87600 lead-free bronze. The seat shall be TFE. The spring shall be Type 316 stainless steel.
- 5.2 Globe and wafer valve bodies shall be constructed of ASTM A126 Class B cast iron for Class 125 and Class 250 valves and ASTM A351 Grade CF8M for Class 150 stainless steel valves. Optional body material includes ASTM A536 Grade 65-45-12 ductile iron.
- 5.3 Globe and wafer seat and disc shall be ASTM B584 Alloy C83600 cast bronze or ASTM B148 Alloy C95200 aluminum bronze. Optional trim material includes ASTM B584 copper alloy C87600 lead-free bronze or ASTM A351 Grade CF8M stainless steel.
- 5.4 Globe and wafer compression spring shall be ASTM A313 Type 316 stainless steel with ground ends.

OPTIONS

- 6.1 A resilient seal shall be provided on the seat when specified to provide zero leakage at both high and low pressures without overloading or damaging the seal. The seal design shall provide both a metal-to-metal and a metal-to-resilient seal.
- 6.2 Valve interiors and exteriors shall be coated with an NSF/ANSI 61 certified fusion bonded epoxy in accordance with AWWA C550 when specified.

MANUFACTURE

- 7.1 The valves shall be hydrostatically tested at 1.5 times their rated cold working pressure and seat tested at the valve CWP. When requested, the manufacturer shall provide test certificates, dimensional drawings, parts list drawings, and operation and maintenance manuals.
- 7.2 The exterior of the valve shall be coated with a universal alkyd primer.
- 7.3 Silent Check Valves shall be Series #1400THR.1 (Threaded Style), Series #1400A (Wafer Style) or 1800 (Globe Style) as manufactured by Val-Matic® Valve & Mfg. Corporation, Elmhurst, IL. USA or approved equal.

VAL-MATIC®

Val-Matic's quality of design and meticulous workmanship has set the standards by which all others are measured. Quality design features such as the AWWA **Ener•G® Ball Valve** with its energy efficient design, fusion bonded epoxy and adjustable resilient seating....**Cam-Centric® Plug Valves** have more requested features than any other eccentric plug valve....**American-BFV® Butterfly Valves** include a field replaceable seat without the need for special tools....**Tilted Disc® Check Valves** with high strength and wear resistant aluminum bronze trim as standard....**Silent Check Valves** featuring combined resilient/metal-to-metal seating and are **NSF/ANSI 61 & 372 Certified**....**Sure Seal Foot Valves** provided with a heavy duty stainless steel screened inlet....**Swing-Flex® and Surgebuster® Check Valves** designed with an unrestricted full flow area....**Dual Disc® Check Valves** utilizing stabilized components to provide extended life....**Air Release, Air/Vacuum and Combination Air Valves** provided standard with Type 316 stainless steel trim....**VaultSafe®** family of products includes the **FloodSafe® Inflow Preventer**, **FrostSafe®** two-way damper and the **VentSafe®** vent pipe security cage. These features coupled with our attention to detail put Val-Matic Valves in a class by themselves. All products are certified Lead-Free.

Val-Matic is totally committed to providing the highest quality valves and outstanding service to our customers. Complete customer satisfaction is our goal.

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to Quality!

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