

## SILENT CHECK VALVE SPECIFICATION

### Scope

1.1 This specification is intended to cover the design, manufacture, and testing of 2 in. (50 mm) through 48 in. (1200 mm) Silent Check Valves suitable for pressures up to 740 psig (5100 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 is fully closed at zero velocity preventing flow reversal and resultant water hammer or shock.

### Connections

2.1 Globe style valves shall be provided in sizes 2 in. (50 mm) through 48 in. (1200 mm) and have flanges in accordance with ANSI B16.1 for Class 125 or Class 250 iron flanges and ANSI B16.5 for Class 150 or Class 300 steel flanges. Iron flanges shall be flat faced. Sizes 10 in. (250 mm) and smaller shall be capable of mating directly to a wafer butterfly valve without disc interference.

2.2 Wafer style valves shall be provided in sizes 2 in. (50 mm) through 10 in. (250 mm) for installation between ANSI B16.1 Class 125 or Class 250 iron flanges or ANSI B16.5 Class 150 or Class 300 steel flanges.

### Design

3.1 The valve design shall incorporate a center guided, spring loaded disc, guided at opposite ends and having a short linear stroke that generates a flow area equal to the pipe size.

3.2 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.

3.3 All component parts shall be field replaceable without the need of special tools. A replaceable guide bushing shall be provided and 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 and to fully open at a flow velocity of 4 ft/sec. (1.22 M/sec).

3.4 The valve disc shall be concave to the flow direction providing for disc stabilization, maximum strength, and a minimum flow velocity to open the valve.

3.5 The valve disc and seat shall have a seating surface finish of 32 micro-inch or better to ensure positive seating at all pressures. The leakage rate shall not exceed one-half of the allowable rate for metal seated valves allowed by AWWA Standard C508 or 0.5 oz (15 ml) per hour per inch (mm) of valve diameter.

3.6 The valve flow way shall be contoured and unrestricted to provide full flow areas at all locations within the valve. Cv flow coefficients shall be equal to or greater than specified below and verified by an independent testing laboratory.

VALVE SIZE		Wafer Style Cv	Globe Style Cv
2 in.	(50 mm)	66	N/A
2.5 in.	(65 mm)	88	110
3 in.	(80 mm)	130	155
4 in.	(100 mm)	228	278
5 in.	(125 mm)	N/A	435
6 in.	(150 mm)	520	625
8 in.	(200 mm)	900	1115
10 in.	(250 mm)	1450	1770
12 in.	(300 mm)	N/A	2500

Revised 3-25-98

## SILENT CHECK VALVE SPECIFICATION

DATE 5-15-84



VALVE AND MANUFACTURING CORP.

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## SILENT CHECK VALVE SPECIFICATION

### Materials

4.1 The valve body shall be constructed of ASTM A126 Class B cast iron for Class 125 and Class 250 valves. Class 150 and Class 300 steel valves shall be constructed of ASTM A216 Grade WCB cast steel. Optional body material include ASTM A536 Grade 65-45-12 ductile iron.

4.2 The seat and disc shall be ASTM B584 Alloy C83600 cast bronze or ASTM B148 Alloy C95200 aluminum bronze. Optional trim material include ASTM A351 Grade CF8M stainless steel.

4.3 The compression spring shall be ASTM A313 Type 302 stainless steel with ground ends.

### Options

5.1 A Buna-N 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 Buna-N seal.

### Manufacture

6.1 The valves shall be hydrostatically tested at 1.5 times their rated cold working pressure. Additional tests shall be conducted per AWWA, ANSI, MSS or API standards when specified. When requested, the manufacturer shall provide test certificates, dimensional drawings, parts list drawings, and operation and maintenance manuals.

6.2 Valves shall be Factory Mutual approved in sizes up to 12 in. (300 mm).

6.3 The exterior of the valve shall be coated with a universal alkyd primer.

6.4 Silent Check Valves shall be Series #1400 (Wafer Style) or 1800 (Globe Style) as manufactured by Val-Matic® Valve & Mfg. Corporation, Elmhurst, IL, USA. or approved equal.

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SILENT CHECK VALVE SPECIFICATION

DATE 5-15-84

**VAL-MATIC®**

VALVE AND MANUFACTURING CORP.

DRWG. NO.

**SS-439**

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**PRESSURE / TEMPERATURE RATINGS  
 WAFER AND GLOBE STYLE SILENT CHECK VALVES**

TEMP. DEG. F.	MAXIMUM NON-SHOCK WATER SERVICE PRESSURE							
	GRAY IRON		DUCTILE IRON		GRAY IRON		DUCTILE IRON	
	125 LB. CLASS		150 LB. CLASS		250 LB. CLASS		300 LB. CLASS	
	2" - 12"	14" - 42"	2" - 12"	14" - 42"	2" - 12"	14" - 42"	2" - 12"	14" - 42"
0 - 150°	200	150	300	250	400	300	500	400
200°	190	135	280	230	370	280	460	370
250°	*	*	270	220	*	*	440	355
TEST PRESSURE	300	230	450	375	600	450	750	600

\* DUCTILE IRON RECOMMENDED FOR HOT WATER SERVICE ABOVE 200° F.

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**PRESSURE TEMPERATURE RATINGS**

DATE 5-2-78



**VALVE AND MANUFACTURING CORP.**

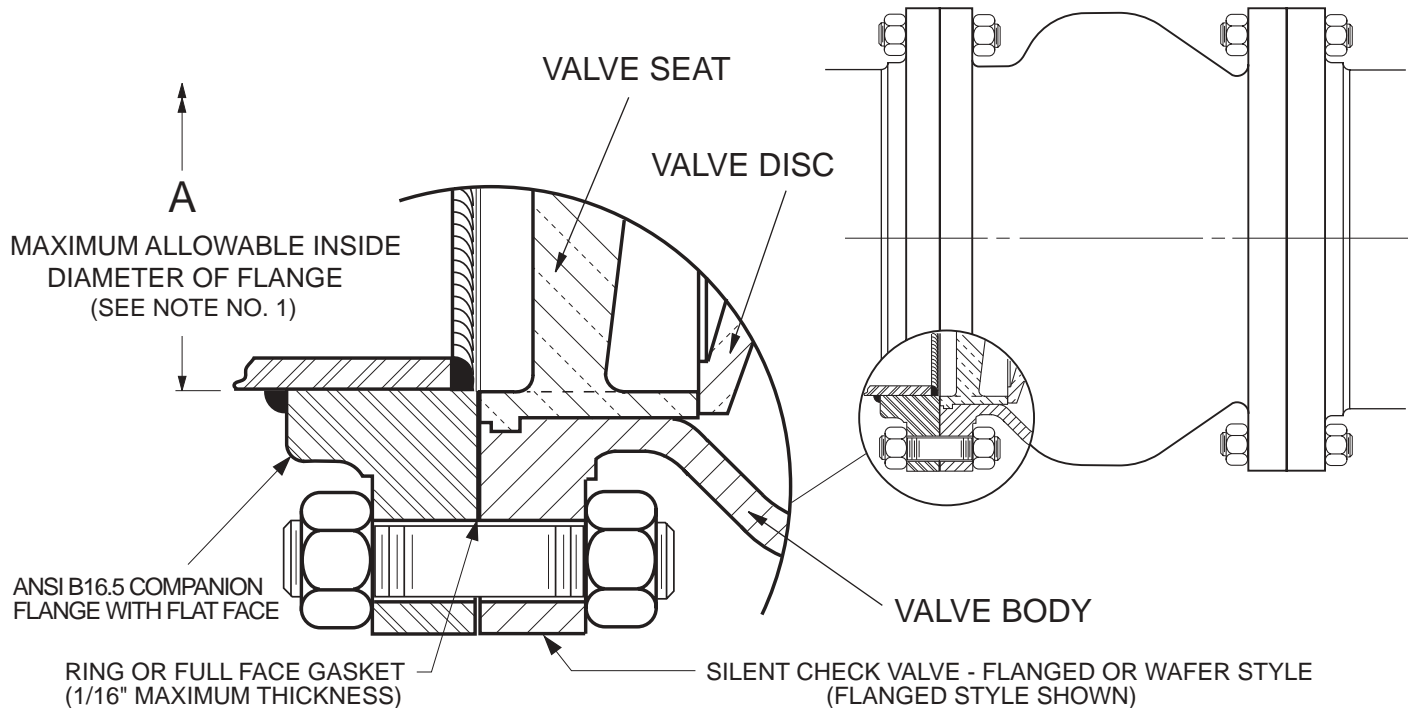
DRWG. NO.

**SS-120**

# 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) CANNOT BE USED ON THE INLET SIDE OF THE VALVE. A RING FLANGE HAVING A MAXIMUM INSIDE DIAMETER, AS SHOWN IN "A" DIMENSION BELOW, MUST BE INSERTED BETWEEN THE VALVE AND MORTAR LINED 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	VALVE SIZE	A
2 1/2	2.940	14	14.140
3	3.570	16	16.160
4	4.570	18	18.180
5	5.660	20	20.200
6	6.720	24	24.250
8	8.720	30	30.250
10	10.880	36	36.250
12	12.880	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	VALVE SIZE	I.D. FOR 125 LB. AND 250 LB. GASKET	O.D. FOR 125 LB. GASKET	O.D. FOR 250 LB. GASKET
2 1/2	2.875	4.875	5.125	14	14.000	17.750	19.125
3	3.500	5.375	5.875	16	16.000	20.250	21.250
4	4.500	6.875	7.125	18	18.000	21.625	23.500
5	5.562	7.750	8.500	20	20.000	23.875	25.750
6	6.625	8.750	9.875	24	24.000	28.250	30.500
8	8.625	11.000	12.125	30	30.000	34.750	37.500
10	10.750	13.375	14.250	36	36.000	41.250	44.000
12	12.750	16.125	16.625	42	42.000	48.000	50.750

Revised 5-12-98

SILENT CHECK VALVE FLANGE INSTALLATION REQUIREMENTS

DATE 4-7-96

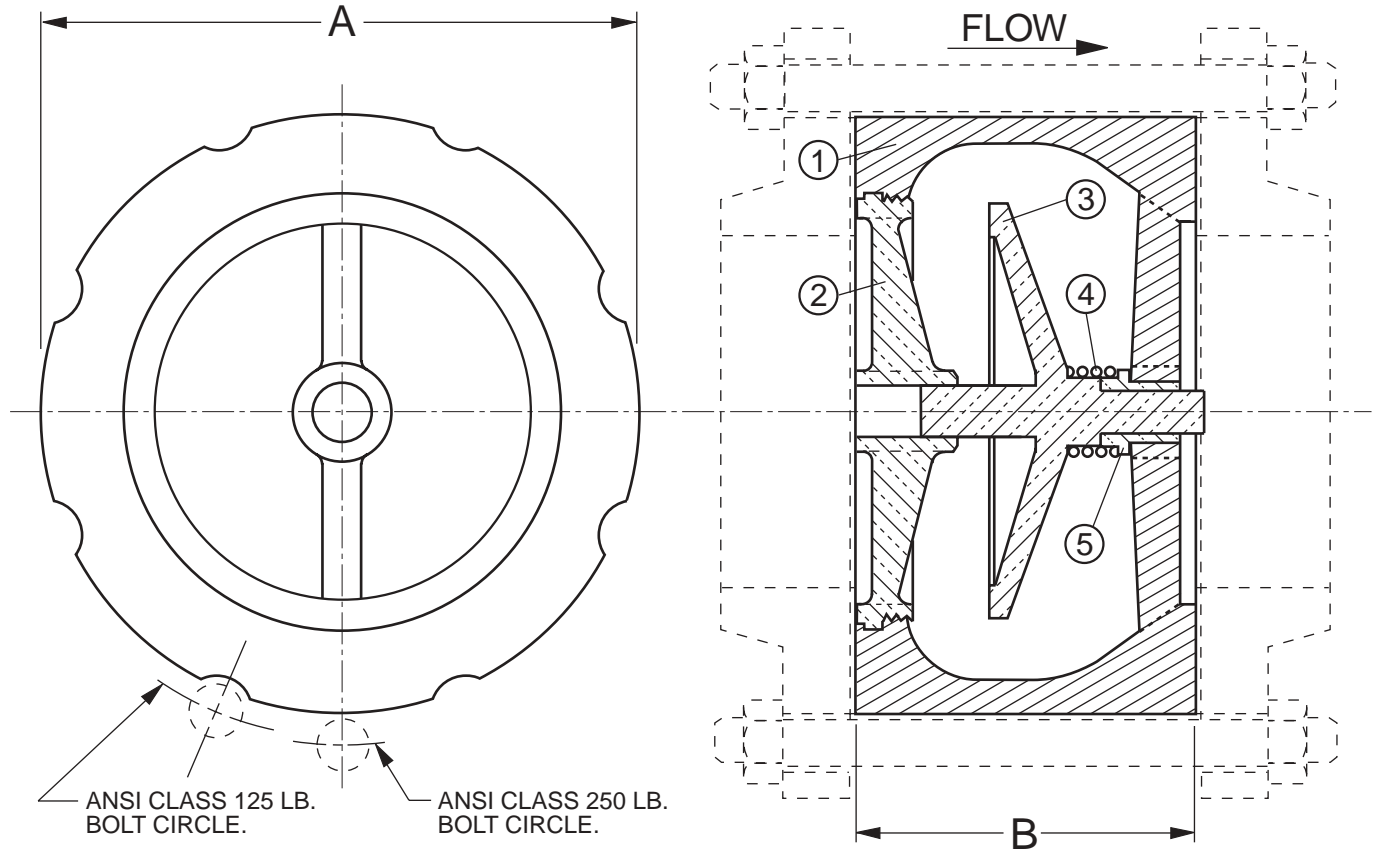
**VAL-MATIC**<sup>®</sup>

VALVE AND MANUFACTURING CORP.

DRWG. NO.

SS-974

FLANGES, BOLTS, NUTS AND GASKETS ARE SUPPLIED BY OTHERS.



<u>PART NO.</u>	<u>NAME</u>	<u>PART NO.</u>	<u>NAME</u>
1	BODY	4	SPRING
2	SEAT	5	BUSHING
3	DISC		

SEE DRAWING NO. VM-1402-M FOR STANDARD MATERIALS OF CONSTRUCTION.

ANSI 125 / 250 LB. CLASS				
VALVE SIZE	MODEL* NO.	CWP (P.S.I.)	A	B
2	1402	400	4 1/4	2 5/8
2 1/2	1425	400	5	2 7/8

\* MODEL NUMBERS REFLECT BRONZE TRIM.

Installation Requirements

Refer to drawing SS-974 entitled Silent Check Valve Flange Installation Requirements for mating flanges.

Revised 2-4-99

WAFER STYLE SILENT CHECK VALVE

DATE 4-1-67

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VALVE AND MANUFACTURING CORP.

DRWG. NO.

VM-1402

# WAFER STYLE SILENT CHECK VALVE

SERIES NO. 1400 ANSI CLASS 125 & 250

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	BRONZE ASTM B584, ALLOY C83600
3	DISC	BRONZE ASTM B584, ALLOY C83600
4	SPRING	STAINLESS STEEL T302, ASTM A313
5	BUSHING	BRONZE ASTM B16, ALLOY C36000
6 *	RETAINING SCREWS	STAINLESS STEEL T304, ASTM F879

\* SEAT RETAINING SCREWS NOT FURNISHED ON VALVE SIZES 2" & 2 1/2".

NOTE: ALL SPECIFICATIONS AS  
LAST REVISED.

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MATERIALS OF CONSTRUCTION

DATE 7/14/82

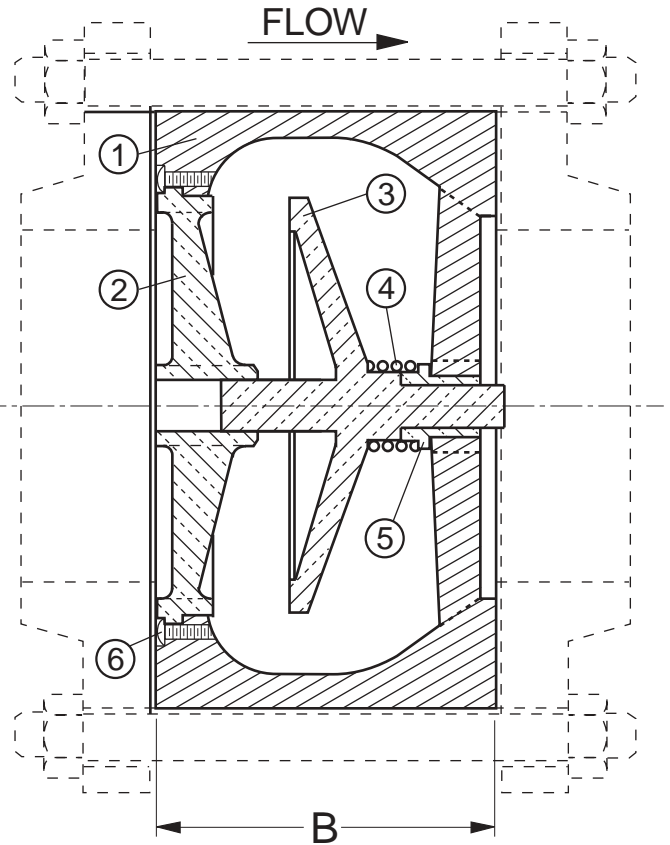
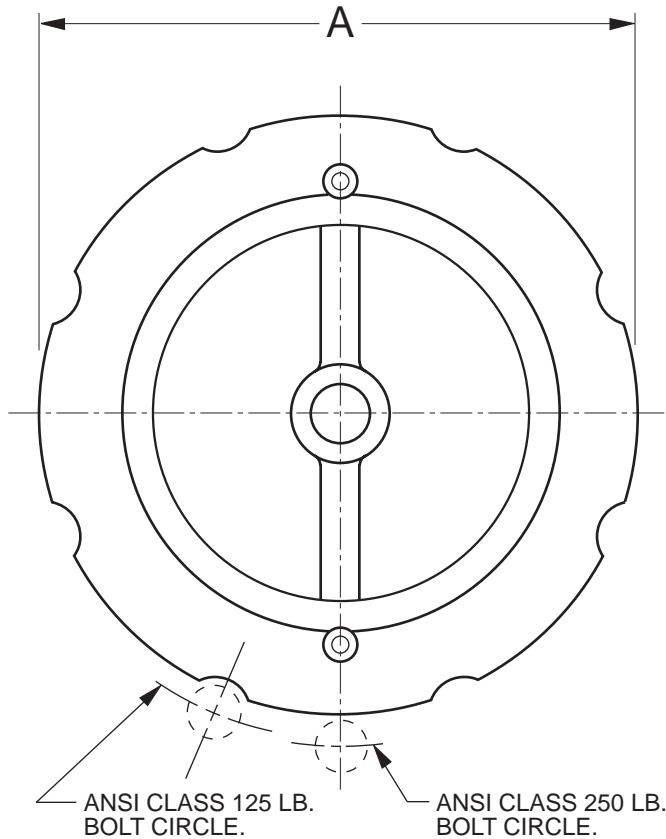
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VALVE AND MANUFACTURING CORP.

DRWG. NO.

VM-1402-M

FLANGES, BOLTS, NUTS AND GASKETS ARE SUPPLIED BY OTHERS.



PART NO.      NAME

1            BODY  
2            SEAT  
3            DISC

PART NO.      NAME

4            SPRING  
5            BUSHING  
6            RETAINING SCREWS

SEE DRAWING NO. VM-1402-M FOR STANDARD MATERIALS OF CONSTRUCTION.

ANSI 125 / 250 LB. CLASS				
VALVE SIZE	MODEL NO.*	CWP (P.S.I.)	A	B
3	1403	400	5 3/4	3 1/8
4	1404	400	7	4
5	1405	400	8 3/4	4 3/4
6	1406	400	9 3/4	5 1/2

\* MODEL NUMBERS REFLECT BRONZE TRIM.

Installation Requirements

Refer to drawing SS-974 entitled Silent Check Valve Flange Installation Requirements for mating flanges.

Revised 4-17-98

WAFER STYLE SILENT CHECK VALVE

DATE 4-1-67

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VALVE AND MANUFACTURING CORP.

DRWG. NO.

VM-1403