Wafer and Globe Style Silent Check Valve

INSTALLATION,

OPERATION

AND

MAINTENANCE MANUAL

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 containing suspended solids such as wastewater.

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

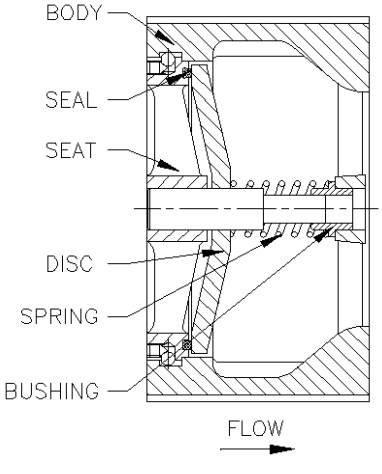
RECEIVING AND STORAGE

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.

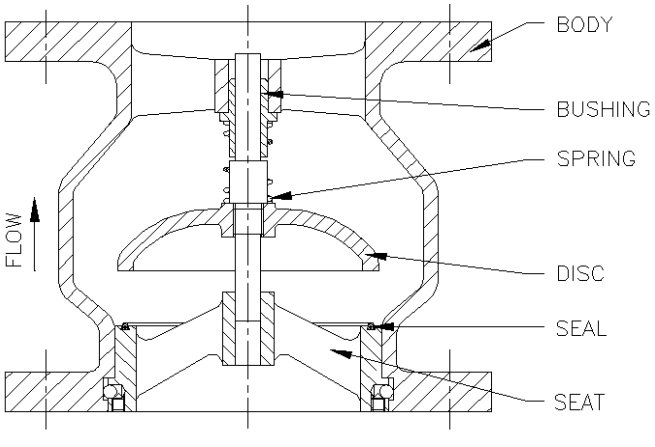
The valves should remain crated, clean and dry until installed to prevent weather related damage. For long term storage greater than six months, the rubber surfaces of the seat (when provided) should be coated with a thin film of FDA approved grease. Do not expose rubber seat to sunlight or ozone for 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 (below in Figure 1) and forces the disc open, allowing the passage of fluid through the valve.



WAFER STYLE



GLOBE STYLE

Figure 1 SILENT CHECK VALVE

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

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

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 stalled 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 rizontal lines, the check valve orientation. The valve is usually nstalled 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, the installation requirements are illustrated in Annex 1. 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) can’t be used on the inlet side of the valve. A ring flange having the maximum 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.

CAUTION:
Mating flange must be flat faced otherwise will damage the the valve.

WARNING:
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

The ring-type flange gasket can be rubber or compressed fiber but should be a maximum of 1/16” thick with the thick with the diameters shown in Annex 1. The gasket must overlap the bronze or stainless steel seats to provide a seat between the seat and the body.

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. Ten inch and smaller flanged end check valves have sufficient clearance for most butterfly valves. However, on 12 inch and larger valves, the 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 be done in graduated steps using the crossover tightening method. Recommended lubricated torques for use with resilient gaskets (75 durometer) are 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.

125# FLANGE DATA		
Valve Size (in)	Bolt Dia.(in)	Bolt Torque(Ft-lbs)
2	5/8	25-75
2.5	5/8	25-75
3	5/8	25-75
4	5/8	25-75
5	3/4	30-90
6	3/4	30-90
8	3/4	30-90
10	7/8	45-150
12	7/8	65-200
14	1	80-250
16	1	90-300
18	1 1/8	100-350
20	1 1/8	120-450
24	1 1/4	150-500

TABLE 1 FLANGE BOLT TORQUE

CAUTION:
The use of raised face flanges or excessive bolt torque may damage valve flange.

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

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 and inspect the sealing surfaces for wear or mineral deposits. Clean, lap, or repair trim as needed.

TROUBILESHOOTING

Several problems and solutions are presented below to assist you in trouble shooting the valve assembly in an 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 expanded. Verify that there are three diameters of straight pipe upstream.

• Valve Leakage: Check upstream gasket and flange to verify that inside diameter meets the required dimension given in Annex 1. Drain line, remove valve, and inspect seating surfaces. If the seat is lifted above flange face, that mating flange and gasket are not securing the seat properly. 5 Drain line, remove valve, and inspect seating surfaces.

• 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.

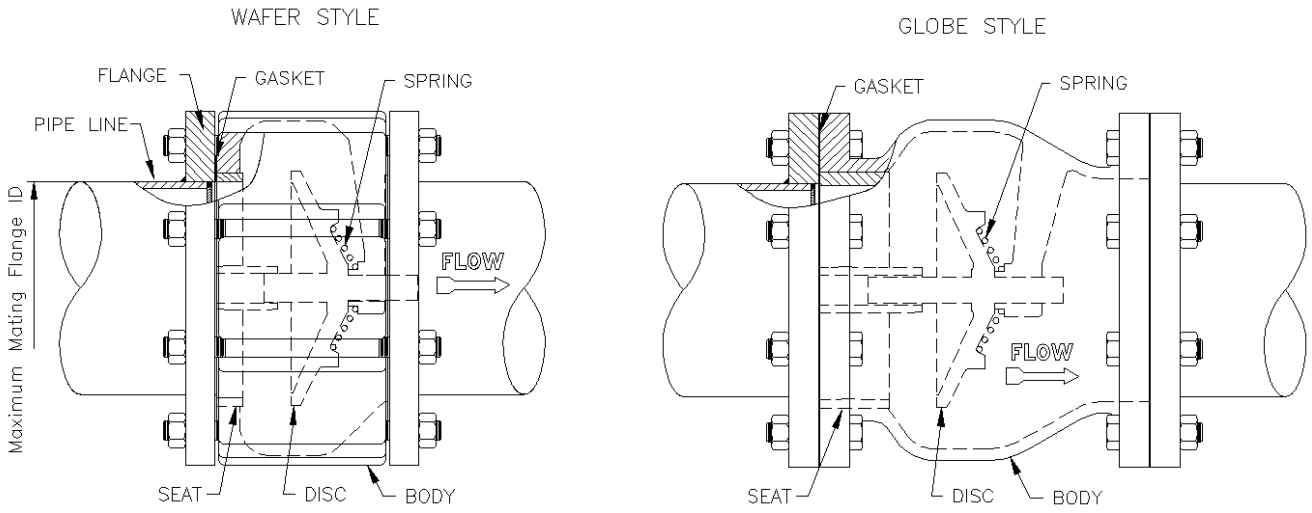
• Valve Slams : Remove valve and inspect spring. Heavier springs can be furnished for severe high-head applications. Consult factory if the valve is installed in a vertical pipe with the flow downward

PARTS AND SERVICE

Parts and service are available from the factory. Make note of the Valve Size and Model number located on the number located on the valve nameplate and contact:

ANNEX 1

INSTALLATION REQUIREMENTS FOR WAFER AND GLOBE SILENT CHECK VALVE



NOTE NO. 1

FLAT FLANGES AND RING GASKETS(RUBBER OR COMPRESSED RIBER) ARE REQUIRED.

NOTE NO. 2

THE MATING COMPANION FLANGE I.D. MUST OVERLAP THE VALVE SEAT. THIS IS REQUIRED TO PROVIDE PROPER SEAT RETENTION.

NOTE NO. 3

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 THE BODY I.D INTERFACE. AREA

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Valve Size (in)	MAX.Allowable ID of Flange (mm)	STANDARD RING GASKET DIMENSIONS		
		GASKET I.D.(mm)	OD For 125LB WAFER TYPE(mm)	OD For 125LB GLOBE TYPE(mm)
2	70	65	104	104
2.5	70	73	123	123
3	85	89	136	136
4	120	115	164	164
5	140	142	194	194
6	165	163	220	220
8	210	215	271	271
10	260	258	331	331
12	315	310	377	377
14	365	355	-----	440
16	415	415	-----	490
18	450	450	-----	540
20	505	505	-----	595
24	616	610	-----	715

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