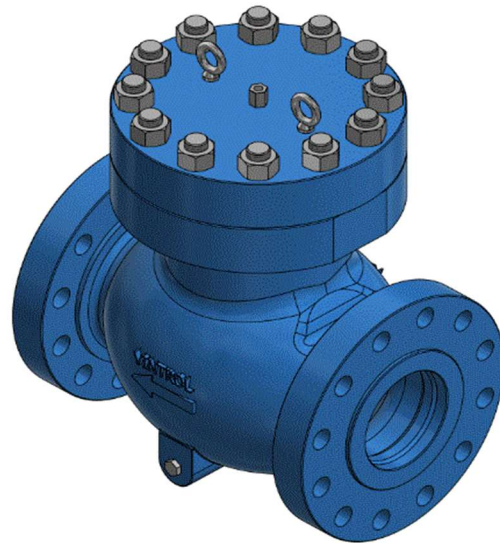




Series 50 Piston Check Valve

Installation, Operation & Maintenance



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I.INTRODUCTION

ViNtrol's Series 50 Piston Check Valve is designed for quiet operation and positive back flow prevention. The Piston seat can be removed and replaced while remaining inline for easy maintenance and repair. Available in sizes 2" thru 8", ANSI Class 600 & 900. For gas and liquid service applications, horizontal & vertical up flow service.



II. TRANSPORTATION & STORAGE

While loading or unloading, check for and adhere to any markings or arrows on the box/crate which may be present to indicate upward orientation. Valves should be stored, with protective end caps in place, in a suitably dry, clean environment, protected from the weather.

III. INSTALLATION

The ViNtrol D50 Piston Check Valve should be installed in the piping system mated to like sized flanges, using the appropriate gaskets or seals rings as required for either RF or RTJ used. The proper direction of flow must be maintained as indicated by an arrow on the side of the body of the valve. 6" & 8" valves should be installed in horizontal lines only with the piston in a vertical upright orientation, using the two lifting lugs provided in the bonnet to assist in installation. 2", 3" & 4" valves can generally be mounted in either horizontal or vertical line. However, spring loading may be required when piston is mounted in the horizontal plane. Consult the spring application chart for more information. **Please note: The valve will not function properly when the piston is mounted in the vertical down position.**

Spring Application

Application		Reciprocating	Centrifugal
Liquid	Vertical	Spring	No Spring
	Horizontal	No Spring	Spring
Gas	Vertical	Spring	Spring
	Horizontal	No Spring	No Spring

IMPORTANT: Assure that the adjacent pipeline is clean of all debris, scale, weld slag, etc. Completely flushing the system of such debris prior to installation will greatly reduce the possibility of seat compromise at startup. Failure to do so may result in damage to the soft seat, metal seat and/or seals during operation.

CAUTION

The valve end connection necks and lifting lugs (if included) are the proper places to attach lifting slings if necessary. Care should be taken to assure that flange end faces are not damaged during lifting. End-cap protectors should always be left in place until the valve is being installed in the pipeline. Prior to installation remove the end cap protectors.

Flanged-End Valves

Utilize properly-specified gaskets/seal rings, studs and nuts (supplied by customer) for the valve flange size, securing the valve between appropriate mating flanges. Studs/nuts or bolts should be lubricated and then tightened in a crisscross fashion. After hand-tightening, final wrench torque should follow ASME or gasket manufacturer's specification for the size.

IV. OPERATION

In the absence of differential pressure, gravity and spring force cause the piston to rest in the closed position. Pressure applied at the upstream end of the valve lifts the piston off the seat and allows flow. As flow varies, the piston floats within a cylinder. During upper travel of the piston in the liner, the fluid in the chamber on top of the piston begins to compress. This compressed fluid prohibits the piston to travel. This pressure is relieved by the actuation of the spring-loaded ball check valve in the piston. As pressure above the piston is relieved, the piston continues its upward travel. Should the flow cease, the piston lowers under spring and gravity force. This downward force causes a vacuum to develop above the piston which inhibits further downward movement. An orifice at the top of the piston permits pressure equalization above and below the piston. The piston can then lower until it contacts the seat and affects a bubble-tight seal preventing back-flow in the line. The ball check valve and orifice also serve to dampen any piston "slam" that may occur due to rapid flow fluctuations.

Orifice Selection

Gas Service

Valve Size	Orifice Size
2"	.031
3" & 4"	.046
6" & 8"	.062

Note: Size to next smaller orifice if "slam" exists.

Liquid Service (non-compressible)

A .218 orifice used. The ball check valve does not contain a ball provide a fluid passage to enter or evacuate above and below the piston. Fluid viscosity provides a cushioning virtually eliminating piston "slam".

V. MAINTENANCE

The D50 Piston Check Valve is designed for long, continuous operation with minimal maintenance required. Nonetheless, valve sealing components (seats, O-rings, packing, gaskets) should periodically be checked for damage or wear. It is recommended that only genuine ViNtrol parts be used for replacement.

Repair

WARNING!

Prior to disassembling valve, system pressure and flow must be bled completely. Valve should be drained utilizing the body bleed valve or plug.

Disassembly

Should the valve components need to be inspected/replaced, the valve can be disassembled as follows:

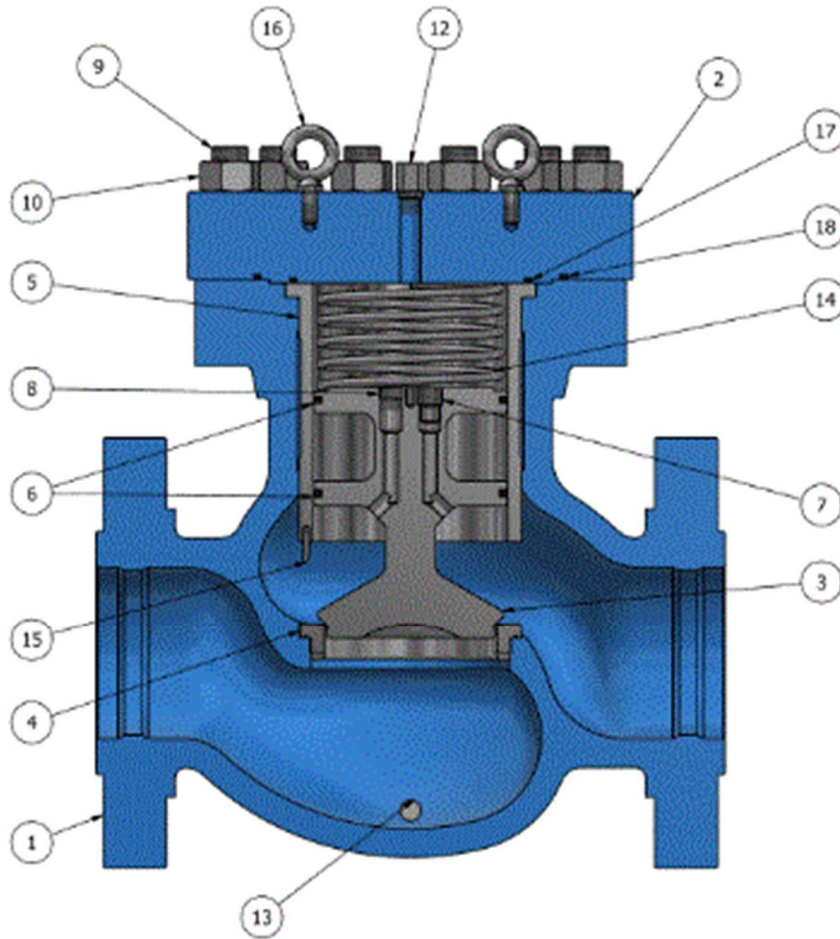
1. After pressure and flow have been bled remove bonnet nuts (10) and remove bonnet (2).
2. Remove spring (14).
3. Lift piston (3) out of valve by screwing bolts into holes in top of piston and lifting out of valve.
4. Inspect and replace piston rings (6) as necessary.
5. Remove sleeve (5).
6. Remove O-rings (17) that are in the sleeve or bonnet.
7. Remove locking pin (15) that has now been exposed.
8. Remove the seat (4) by unscrewing from body.

Reassembly

Clean and inspect all parts for damage or wear. Replace parts as necessary with ViNtrol factory new parts. Inspect and verify that the orifice and check valve in the top of piston are not clogged and are functional. Replace if required.

Assemble again reversing the previous process and applying grease.

1. Install seat.
2. Install seat locking pin.
3. Install sleeve.
4. Insure proper gaskets are install in sleeve if required.
5. Install piston insuring piston rings are in place.
6. Install bonnet insuring O-ring(s) if required in bonnet are in place.
7. Tighten bonnet nuts using a crisscross pattern.
9. Install bleed valve.



PARTS LIST			
ITEM	QTY	PART NUMBER	DESCRIPTION
1	1	BODY	ASTM A216 WCB
2	1	BONNET	ASTM A516 GR.70
3	1	PISTON	ATM A351 CF8M/ASTM A487 CA15
4	1	SEAT	ASTM A351 CF8M/ASTM A487 CA15
5	1	SLEEVE	CAST IRON/CF8M
6	2	PISTON RING*	CAST IRON/TEFLON®
7	1	CHECK VALVE*	4140 CARBON STEEL/316 STAINLESS STEEL (NACE)
8	1	ORIFICE*	316 STAINLESS STEEL
9	8, 12**	STUD	ASTM A193 GR. B7, B7M (NACE)/A320 GR. L7, L7M (NACE)
10	8, 12**	NUT	ASTM A194 GR. 2H, 2HM, 7, 7M (NACE)
12	1	BLEED VALVE	303 STAINLESS STEEL (NON-NACE)/316 STAINLESS STEEL (NACE)
13	1	DRAIN PLUG	CARBON STEEL/316 STAINLESS STEEL
14	1	SPRING	CARBON STEEL/INCONEL® X-750 (NACE)
15	1	LOCKING PIN	316 STAINLESS STEEL
16	2	EYE BOLT	CARBON STEEL
17	1	O-RING BONNET	HNBR
18	1	O-RING BONNET	HNBR