

Val-Matic® Wastewater Air/Vacuum Valve

Operation, Maintenance and Installation Manual

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VAL-MATIC'S WASTEWATER AIR/VACUUM 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 Wastewater Air/Vacuum Valve has been designed with stainless steel trim to give years of trouble free operation. Regular maintenance may be required for valves subject to fluids containing high suspended solids with greases/oils.

The Wastewater Air/vacuum valve is typically mounted at the high points in a force main to automatically exhaust large volumes of air during filling and allow air to reenter during draining. The valve is furnished in sizes 1" through 8" sizes and is often used in combination with a Wastewater Air Release Valve to release air while the force main is under pressure.

CAUTION

This valve is not intended for flammable liquids service.

The valve is a float operated, resilient seated valve designed to handle waste fluids. The valve may be equipped with backwash accessories for sewer service. The Size, Maximum Working Pressure and Model No. are stamped on the nameplate for reference.

Note: Low Durometer seats are available for low pressure applications.

RECEIVING AND STORAGE

Inspect valves upon receipt for damage in shipment. Handle all valves carefully without dropping. Valves should remain boxed, clean and dry until installed to prevent weather related damage. For long-term storage, greater than six months, the valve must remain in the box and stored indoors. Do not expose valve to sunlight or ozone for any extended period.

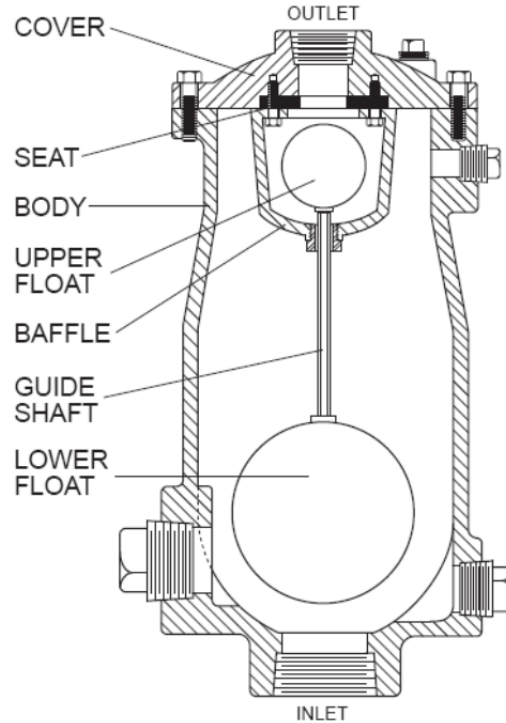


Figure 1. 4"-20" Air/Vacuum Valve

DESCRIPTION OF OPERATION

The Wastewater Air/Vacuum Valve, as shipped, is a normally open valve and will rapidly vent air through the top opening. As fluid enters the bottom of the valve, the float assembly will rise, pressing the upper float against the seat. The valve will remain closed until system pressure drops to near zero pressure. It will open during draining or when a vacuum condition occurs. The valve can be equipped with external valves and hose connections for backwashing.

The lower float provides buoyancy to seal the top float and prevent sewage from fouling the seat. The only moving parts in the valve are the float and float guide shaft. The guide shaft assures that the float enters the seat at the optimum angle and prevents float contact with any surface other than the resilient seat. Additional ports are provided for flushing, testing and draining purposes.

INSTALLATION

The installation of the valve is important for its proper operation. The valves must be installed at the system high points in the vertical position with the inlet down. For pipeline service, a vault with freeze protection, adequate screened venting, and drainage should be provided. During closure, some fluid discharge will occur so vent lines should extend to an open drain for in-plant installations. A shutoff valve should be installed below the valve to allow regular maintenance.

CAUTION

Install valve with "INLET" port down or leakage will occur.

VALVE CONSTRUCTION

The standard Wastewater Air/Vacuum Valve body and cover are cast iron. See specific Materials List submitted for the order if other than standard cast iron construction. All internal metal components are stainless steel with the exception of the seat, which is resilient. The general details of construction for 1" through 3" valves are illustrated in Figure 2. The general details of construction for 4" through 8" are illustrated in figure 3. The body (1) is threaded or flanged for connection to the pipeline.

Table 1. Wastewater Air/Vacuum Valve Parts List

<u>Item</u>	<u>Description</u>	<u>Material</u>
1	Body	Cast Iron
2	Cover	Cast Iron
4	Seat*	Buna-N
5	Upper Float*	Stainless Steel
5L	Lower Float*	Stainless Steel
6	Gasket*	Non-Asbestos
7	Cover Bolt	Alloy Steel
8	Retaining Screw	Stainless Steel
9	Guide Bushing*	Stainless Steel
15	Cushion*	Buna-N
20	Guide Shaft*	Stainless Steel
27	Washer*	Stainless Steel
28	Pipe Plug	Malleable Iron

*Recommended Spare Part

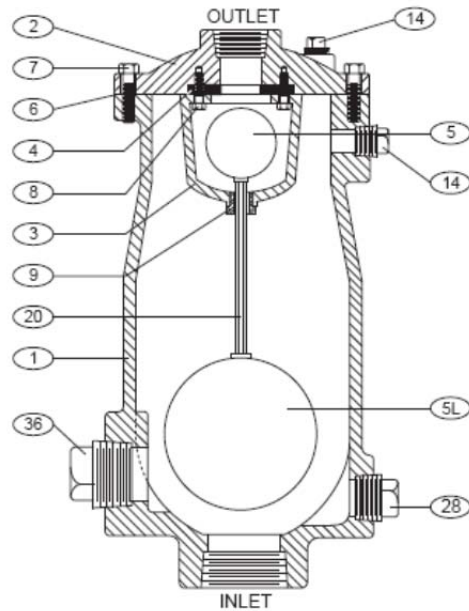


Figure 2. 1"-3" Wastewater Air/Vacuum Valve

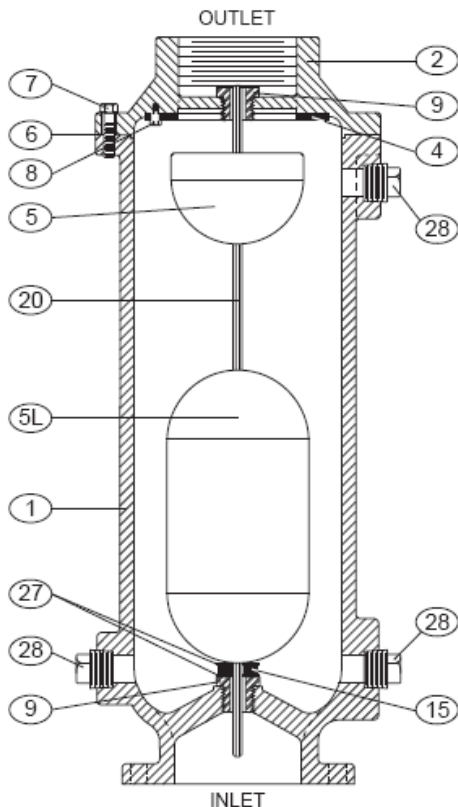


Figure 3. 4"-8" Wastewater Air/Vacuum Valve

MAINTENANCE

The Wastewater Air/Vacuum Valve should be scheduled for inspection and backwash on a regular basis. The use of Fusion Bonded Epoxy (FBE) interior coating greatly minimizes the need for backwashing. Based on experience in service, a more frequent backwash regimen may be desirable to minimize leakage.

WARNING

Wear safety glasses to look into the valve outlet after installation. Released fluid can cause injury.

INSPECTION: Periodic inspection to verify operation can be performed. The valve should not leak fluid at any connection or through the outlet. If there is leakage through the outlet, perform a backwash procedure on the valve.

LUBRICATION: The Wastewater Air/Vacuum valve is a self-contained automatic valve and does not require lubrication to enhance its operation.

TOOLS: No special tools are needed to maintain or repair the valve. The valve should be equipped with backwash valves and hoses for ease of backwashing.

BACKWASH PROCEDURE: In order to properly backwash the valve, a 1" clean water supply of at least 30 psi is needed. This supply should be connected to the top of the valve with the rubber hose with quick disconnect couplings as provided and shown in Figure 4. **NOTE:** quick disconnect hose fittings provided with valve are "Air King" rated for 110 psi from Dixon Valve, Chestertown, MD.

1. Pipe valve B to drain prior to backwashing.
2. Close inlet valve A.
3. Open valve B.
4. Connect water supply C and supply water for three minutes to flush the body area. Close valve B. This will wash the seat and mechanism area.

5. Additional washing of seat area can be accomplished by placing the water supply over the discharge port with valve C closed.
6. Slowly open valve A to place unit back in service.

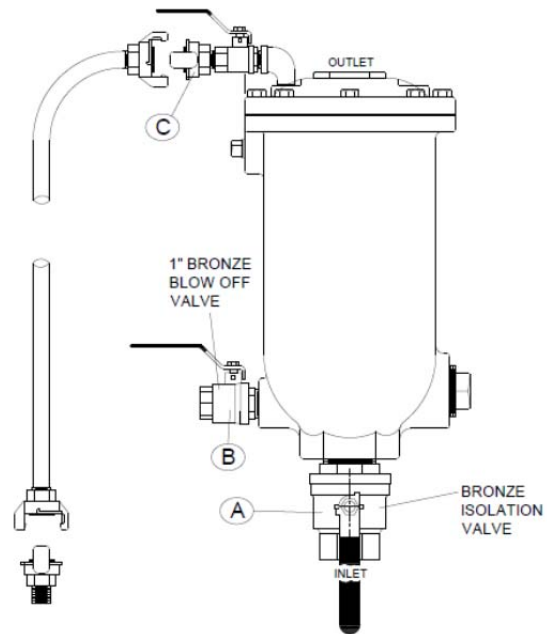


Figure 4. Backwash Piping

TROUBLESHOOTING

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

1. Leakage at Bottom Connection: Tighten valve threaded connection. If leak persists, remove valve and seal threads with thread sealant or tape.
2. Leakage at Cover: Tighten bolts in a crossover pattern per Table 2, replace gasket.
3. Valve Leaks when Closed: Backwash valve to remove debris. Disassemble and inspect seat and float for damage. NOTE: Many floats contain sand for weight, but if water is detected replace float.

DISSASSEMBLY

The valve can be disassembled without removing it from the pipeline. Or for convenience, the valve can be removed from the line. All work on the valve should be performed by a skilled mechanic with proper tools. No special tools are required.

WARNING

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

1. Close inlet shutoff valve (A). Open drain valve (B) or remove drain plug. Remove the cover bolts (7) on the top cover.
2. Pry cover (2) loose and lift off valve body. On models with 2" inlets, the float assembly will be connected to the cover.
3. Remove the retainer screws (8) and inspect the seat for cracks in the rubber or wear in the sealing surface.
4. On 3" and larger valves, lift the float (5) from body.
5. Turn guide bushing (9) to remove it from the baffle (3) [or body (1) on 4" and larger flanged valves].

6. Clean and inspect parts. Note: some floats contain sand for extra weight; if water is detected, replace float. Replace worn parts as necessary.

REASSEMBLY

All parts must be cleaned 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. Refer to Figures 2 and 3.

1. Apply Loctite 680 thread sealant to guide bushing threads (9) and thread bushing into baffle (3) [or body (1) on 4" and larger flanged valves].
2. Lay seat (4) and baffle over inverted cover and fasten with screws (8) with maximum torque of 10 ft-lbs. DO NOT OVER TORQUE. [4" and larger flanged valves will not have a baffle.]
3. Assemble float (5) with Loctite 680 on the threaded connections.
4. On 4" and larger valves, carefully lower the float assembly into the body so that the cushion (15) and washer (27) are over the guide bushing (9).
5. Lay cover gasket (6) over body flange and secure with lubricated bolts (7) to the torque shown in Table 2.
6. Place valve back in service. Refer to the Installation instructions on page 2. Slowly open inlet isolation valve.

Table 2. Valve Cover Bolts Torques

<u>Size</u>	<u>Torque (ft-lbs)</u>
1/4"	6
5/16"	18
3/8"	31
7/16"	50
1/2"	75
5/8"	150
3/4"	250

PARTS AND SERVICE

Parts and service are available from your local representative or the factory. Make note of the valve Model No. and Working Pressure located on the valve nameplate and contact:

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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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