

Wastewater Combination Air Valve

Operation, Maintenance and Installation Manual

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Contact us for more information:

Valve & Equipment Consultants, Inc.

24116 Yoakum Street • Huffman, Texas 77336

Phone: 281-324-1500 • Fax: 281-324-4595

Email: sales@valveandequipment.com

Website: www.ValveAndEquipment.com

VAL-MATIC'S WASTEWATER COMBINATION AIR 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 Combination Air Valve has been designed with stainless steel trim to give years of trouble-free operation but regular maintenance is recommended for valves subject to fluids containing suspended solids or greases/oils.

The Air Valve is typically mounted at the high points in a force main to automatically release air during normal operation, exhaust large volumes of air during filling, and allow air to re-enter during draining. The valve is furnished in sizes 1" through 4" sizes.

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 furnished with backwash accessories. The Size, Maximum Working Pressure and Model No. are stamped on the nameplate for reference.

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.

DESCRIPTION OF OPERATION

The Wastewater Air 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 furnished with a backwash accessories kit containing external valves and hose connections for backwashing.

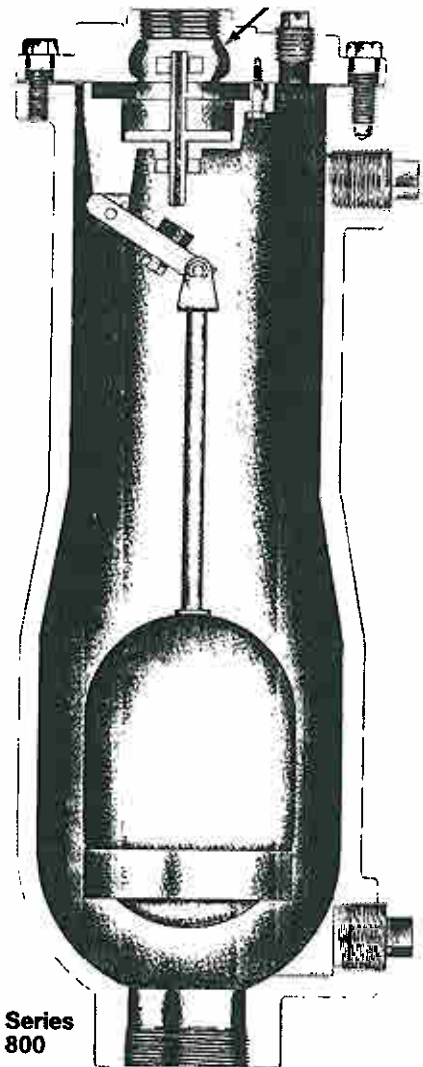


FIGURE 1. WW COMBINATION AIR VALVE

When air enters the valve, it is released through the outlet on the top of the valve. When fluid enters the valve, the float lifts to seal the orifice button against the stainless steel plug and in turn presses the plug against the resilient seat. The float has a skirt to assist in closure to prevent leakage. The plug contains a through-hole, which vents air when the force main is under pressure. When a vacuum condition occurs in the pipeline, the float and plug drop and air enters through the top of the valve. Additional ports are provided for backwashing and cleaning the valve.

INSTALLATION

The installation of the valve is important for its proper operation. 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 area in plant service. A shut-off 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 Combination Air Valve body and cover are cast iron. See the specific Materials List submitted for the order if other than standard cast iron construction. All internal components are stainless steel with the exception of the seat, which is resilient. The general details of construction for 1" through 4" valves are illustrated in Figure 2.

The body (1) is threaded for connection to the pipeline.

ITEM	DESCRIPTION	MATERIAL
1	Body	Cast Iron
2	Cover	Cast Iron
3	Baffle	Cast Iron
4	Seat*	Buna-N
5	Float*	Stainless Steel
6	Gasket*	Non-Asbestos
7	Cover Bolt	Alloy Steel
8	Retaining Screw*	Stainless Steel
9	Guide Bushing*	Stainless Steel
10	Float Arm*	Stainless Steel
11	Orifice Button*	Buna-N
12	Pivot Pin*	Stainless Steel
13	Retaining Ring*	Stainless Steel
14	Pipe Plug	Steel
15	Cushion*	Buna-N
16	Plug	Steel
17	Float Retainer*	Stainless Steel
18	Lock Nut*	Stainless Steel
20	Guide Shaft*	Stainless Steel
28	Pipe Plug	Steel
33	Clevis*	Stainless Steel
34	Lockwasher*	Stainless Steel
35	Guide Shaft Retainer*	Stainless Steel
36	Pipe Plug	Steel
*RECOMMENDED REPAIR PART KIT		

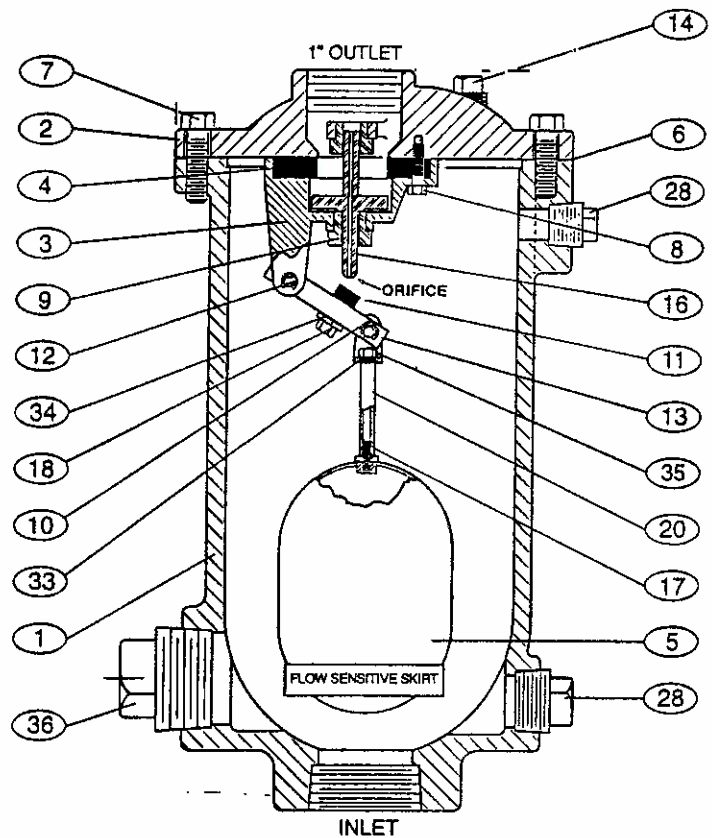


FIGURE 2. 1"-4" WW COMBINATION AIR VALVE

MAINTENANCE

The Wastewater Combination Air Valve should be scheduled for regular inspection and backwash on a monthly basis. 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 valve is a self-contained automatic valve and does not require any 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 a drain prior to backwashing.
2. Close inlet valve A.
3. Open valve B.
4. Connect water supply to C, open valve D, and supply water for 3 minutes to flush seat and mechanism area. Close valves D and B. This will wash the body 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.

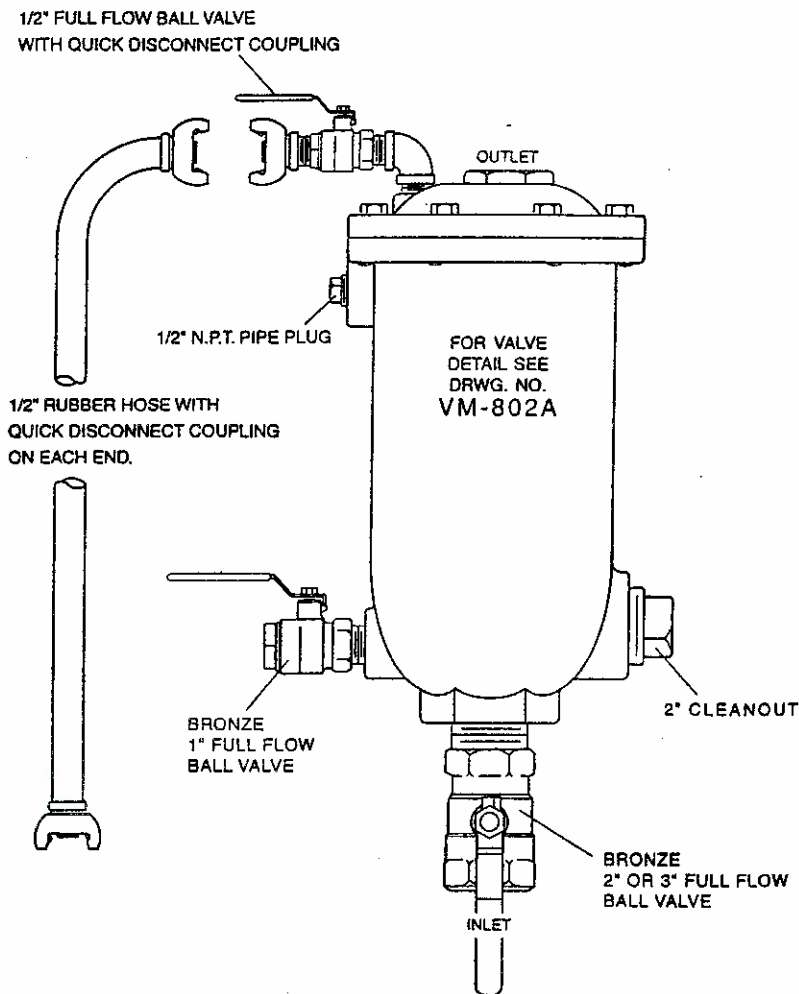


FIGURE 3. BACKWASH PIPING

TROUBLESHOOTING

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

● **Leakage at Bottom Connection:** Tighten valve threaded connection. If leak persists, remove valve and seal threads with thread sealant or tape.

● **Leakage at Cover:** Tighten bolts in a cross-over pattern per Table 2, replace gasket.

● **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.

DISASSEMBLY

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.

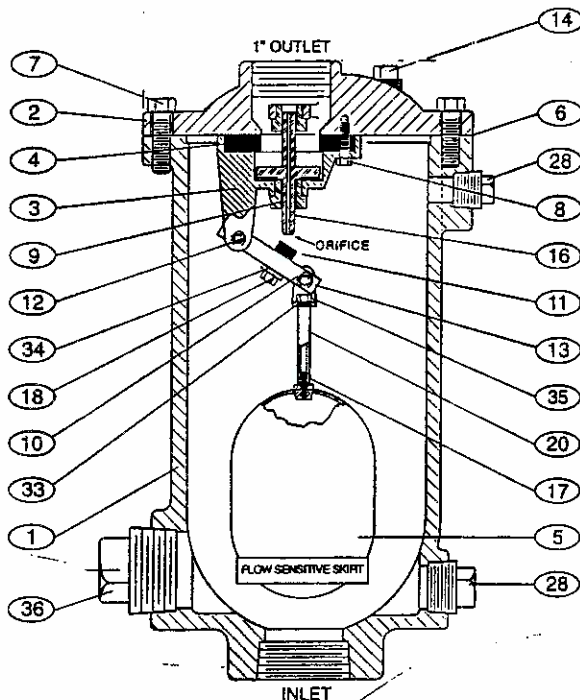


FIGURE 4. VALVE DETAIL

1. Close inlet shut-off valve (A). Open drain valve (B) or remove drain plug (28). Remove the cover bolts (7) on the top cover.
2. Pry cover (2) loose with sharp chisel and lift off valve. The float will be connected to the cover.
3. Remove the retainer screws (8) and inspect the seat (4) and button (11) for cracks in the rubber or wear in the sealing surface.
4. Remove the plug (16) from the baffle(3). The small orifice through the plug should be clean. The plug shaft and bushing (9) ID should be polished clean with 4x0 steel wool or 320 grit polishing compound.
5. Turn guide bushing (9) to remove it from the baffle (3). Remove the retaining rings (13) to disassemble the float arm assembly.
6. Clean and inspect parts. Note: some floats contain sand for extra weight; if water is detected, replace float. Replace worn parts as necessary.

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.