



SIMPLE & COMPOUND LEVER AIR RELEASE VALVE

INTRODUCTION

Cla-Val Air Release Valves (ARVs) are built with stainless steel trim to insure years of maintenance free service on water systems. ARVs are float operated and have a resilient orifice button for water tight shut off. Model number and working pressure (psi) are shown on the metal tag on each ARV. According to AWWA Std's C512-92

Note: These ARVs are not recommended for raw sewage use or fluids containing a major percentage of suspended solids. For this service use Series 34WW ARVs.

RECEIVING AND STORAGE

Upon receipt inspect shipment for damage, ARVs should remain boxed until they are ready to be installed.

DESCRIPTION OF OPERATION

ARVs operate automatically to release pockets of air from **high points** of water system (See fig. 1 & 2). ARVs are initially normally open and will vent air thru the orifice as the water system is filled with fluid. As the fluid level rises in the ARV so does the float to shut off the orifice. Subsequently as air in the system collects in the ARV, the fluid is displaced, allowing the float to drop, opening the orifice and the collected air pocket is vented. The cycle is continually repeated automatically, as air collects in the ARV.

INSTALLATION

ARV must be installed vertically in each high point for proper operational performance. Pipeline installations may require a valve vault or freeze protection. When ARVs shut some fluid may spill, therefore piping the outlet to a drain is recommended particularly in a pump room. A shut off valve could be installed at the ARV inlet for servicing.

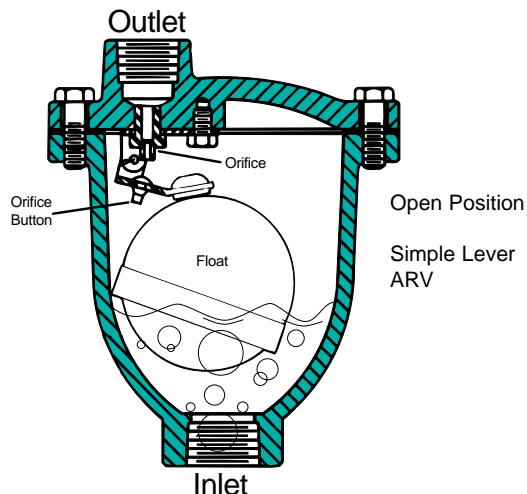


Fig. 1

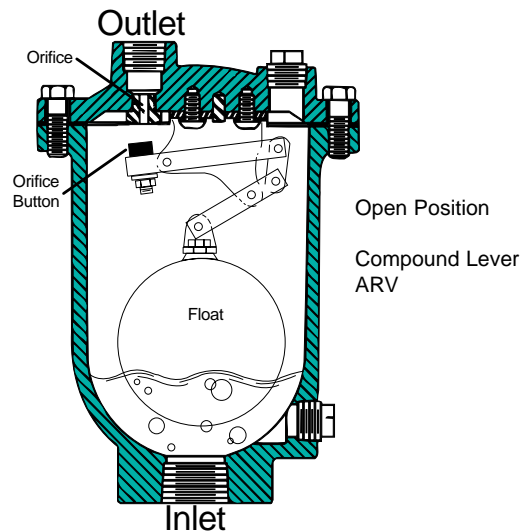


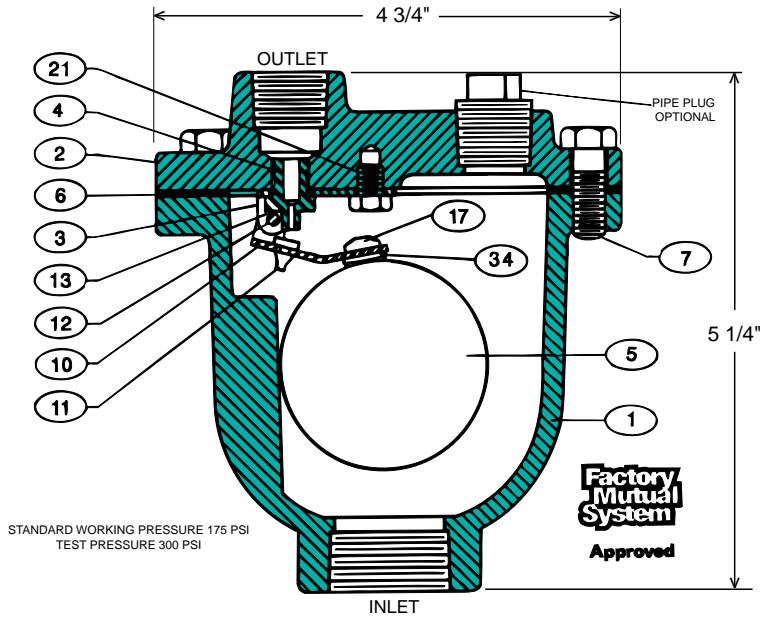
Fig. 2

CONSTRUCTION MATERIALS

Standard materials of construction are listed in Tables below for Simple and Compound Level ARVs.

All internal components are stainless steel with the exception of the orifice button.

General details of construction are illustrated in Figure 2. The body (1) is threaded for connection to the pipeline. The seat (4) is threaded into the cast cover (2).

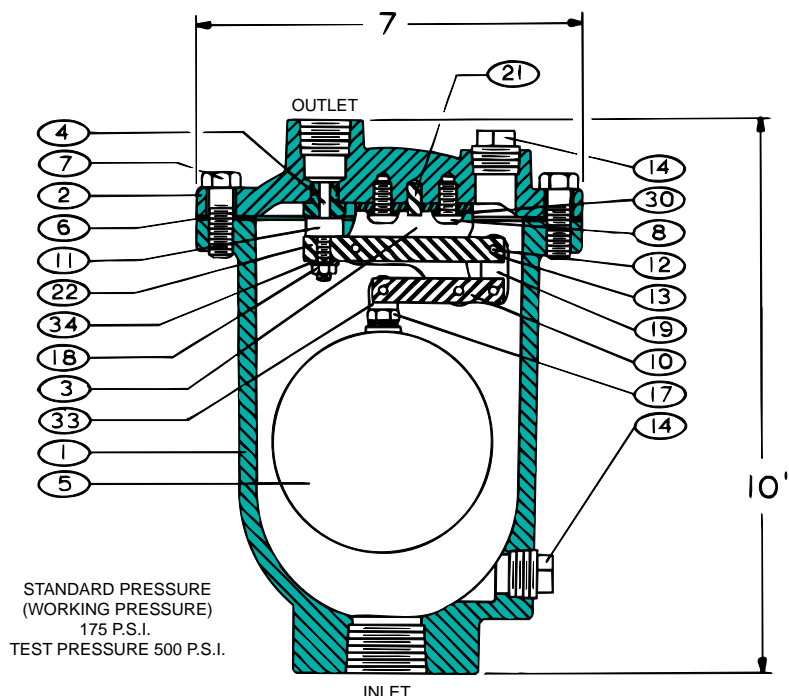


PARTS LIST

Item	Description	Material
1	Body	Cast Iron
2	Cover	Cast Iron
3	Lever Frame*	Stainless Steel
4	Seat*	Stainless Steel
5	Float*	Stainless Steel
6	Gasket*	Non-Asbestos
7	Cover Bolt	Alloy Steel
10	Float Arm*	Stainless Steel
11	Orifice Button*	Buna-N®
12	Pivot Pin*	Stainless Steel
13	Pin Retainer*	Stainless Steel
17	Float Retainer*	Stainless Steel
21	Locator*	Stainless Steel
34	Lock Washer*	Stainless Steel

*Recommended Repair Part Kit

Figure 2. Simple Lever Air Release Valves



PARTS LIST

Item	Description	Material
1	Body	Cast Iron
2	Cover	Cast Iron
3	Lever Frame*	Stainless Steel
4	Seat*	Stainless Steel
5	Float*	Stainless Steel
6	Gasket*	Non-Asbestos
7	Cover Bolt	Alloy Steel
8	Retaining Screw*	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	Iron
17	Float Retainer*	Stainless Steel
18	Lock Nut*	Stainless Steel
19	Link*	Stainless Steel
21	Locating Pin*	Stainless Steel
22	Orifice Button Arm*	Stainless Steel
30	Washer*	Stainless Steel
33	Clevis*	Stainless Steel
34	Lock Washer*	Stainless Steel

*Recommended Repair Part Kit

Figure 2. Compound Lever Air Release Valves

MAINTENANCE

The simple and compound Air Release Valves (ARV) require no regular lubrication or maintenance.

A Periodic inspection to verify operation can be performed. A manual drain valve can be installed in place of the lower drain plug (14 - Fig. 2) to perform this operation as shown in Figure 3.

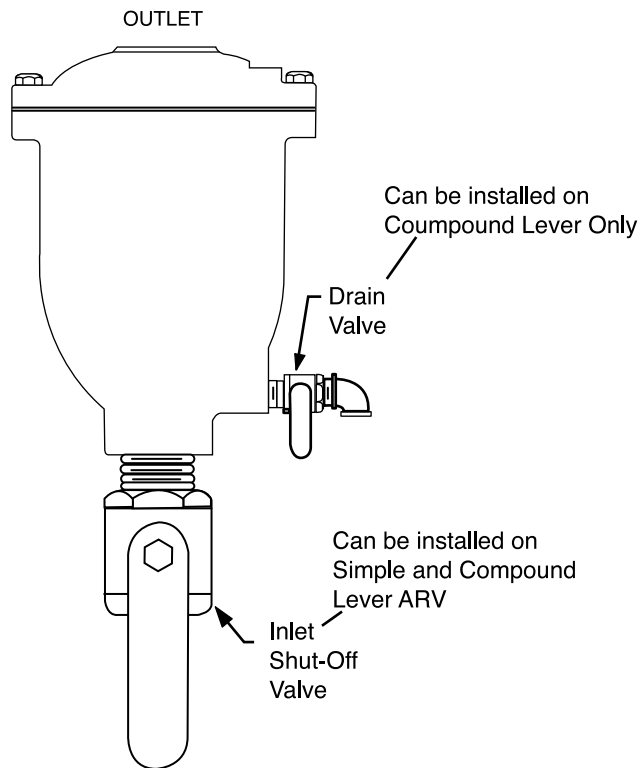


FIG. 3 INSPECTION

1. Partially open inlet shut off valve until water flow is visible. This will indicate the ARV is working properly. If only air flow observed is follow steps 2-6.
2. Close inlet shut-off valve.
3. Slowly open drain valve to allow fluid in ARV to drain. If draining is difficult, the orifice may be clogged (valve requires service).
4. Close drain valve.
5. Slowly crack open inlet shut-off valve to fill ARV with fluid. Observe the seating action and verify that valve closes without leakage.
6. If leakage occurs, remove ARV to inspect internals for wear or damage from foreign objects.

PROBLEMS

Solutions, presented below, will assist you troubleshooting the ARV assembly in an efficient manner.

- Leakage at Inlet Connection: Tighten valve threaded connection. If leaks persists, remove valve and seal threads with pipe sealant.
- Leakage at Cover: Tighten bolts per Table 2, or replace cover gasket.
- ARV Leaks when Closed: Flush ARV to remove debris. Disassemble and inspect seat, orifice button, for damage and float for water content.
- ARV not Venting Air: Check that system operating pressure does not exceed Working Pressure on ARV nameplate. Inspection per steps 2-6 and disassemble valve if problems persists.

DISASSEMBLY

Work on the ARV Should be one by a Qualified Mechanic

The ARV can be disassembled without removing it from the pipeline. Or for the ARV can be removed from the line. No special tools are required to make repairs.

WARNING: The valve must be depressurized before taking the cover off.

1. Close inlet shut-off valve. Open drain valve or slowly remove drain plug. Remove the cover bolts (7) from top cover
 2. Pry cover (2) loose and lift off ARV body.
 3. Remove the 2 retainer rings (13) and pivot pins (12) that pass through the lever frame (3). The float (5) and linkage will be free from the cover. Disconnect float from lever (10).
 4. To remove lever frame (3), remove two rounded-head fasteners (8). Rotate seat (4) counter-clockwise to remove.
 5. Remove locknut (18) and orifice button (11) from orifice button arm (22).
 6. Clean and inspect parts. Note: some floats contain sand for required weight; if water is detected, replace float. Replace worn parts as necessary and lubricate parts with food grade grease.
-

REASSEMBLY

Clean all parts and gaskets surfaces with a wire brush in the direction of the serrations or machine marks. Replace worn parts, gaskets and seals before reassembly. Refer to Figure 2.

1. Apply Loctite PST No. 565 thread sealant to seat (4) and screw into cover with maximum torque of 20 ft-lbs;
DO NOT OVER-TORQUE.
2. Screw down lever frame (3) to cover, over locating pin (21) in cover, with screws (8) and washers (30).
3. Install new orifice button (11) flush to arm (22). Assemble lockwasher (34) and locknut (18) over orifice button but do not tighten. (see 5)
4. Connect arms (10 & 22) and assemble to lever frame (3) with four pivot pins (12) and retaining rings (13); rings should snap over pins.
5. Adjust orifice button (11) so that orifice button arm (22) slopes up about 1/16" when resting gently against seat (4) as shown in Figure 4. Secure button by tightening lockwasher (34) and nut (18).
6. Attach float (5) by installing last pivot pin (12) into lever frame (3). Float should lift freely pressing the orifice button (11) against the seat (4) when pushed upward. Verify that all retainers rings (13) are properly secured.
7. Lay new cover gasket (6) on clean surface and apply a gasket compound such as Garlock 101-S to both surfaces. Assemble gasket (6) and cover (2) over bolt holes in body (1).
8. Lubricate bolts (7) and tighten to the torques in Table 2.
9. Install ARV back in service. Refer to installation instructions. Slowly open inlet shut-off valve. Valve is now back in operation mode.

SIZE	TORQUE (FT-LBS)
1/4"	6
5/16"	11
3/8"	19
7/16"	30
1/2"	45
7/8"	202

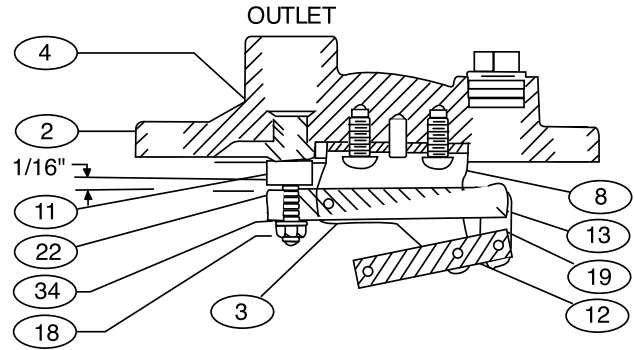


Figure 4. Compound Lever ARV mechanism for Orifice Button Adjustment

For above parts description and recommended spare parts kit see page 2

PARTS AND SERVICE

Parts and service are available from Cla-Val agent or distributor or the factory.
Note the ARV Model No. and Working Pressure are on the ARV nameplate.