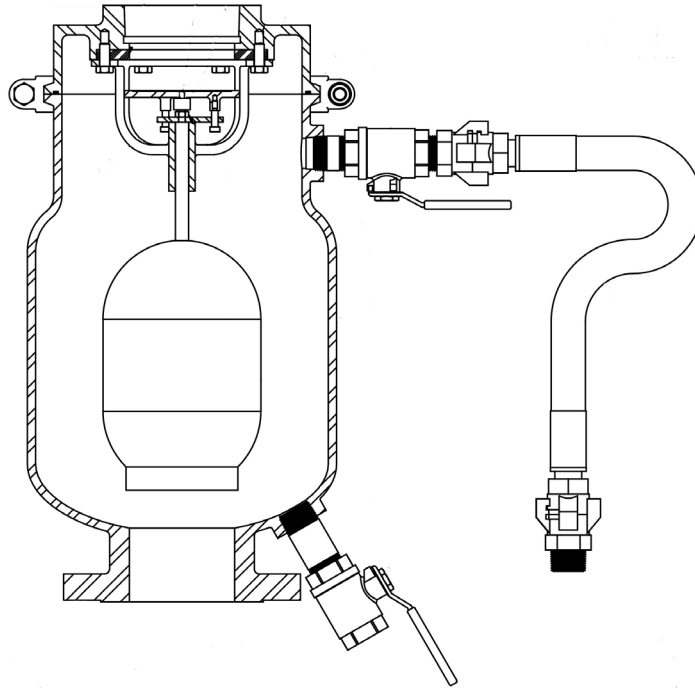


## UX41 Universal Combination Air Release Valve for Extreme Service (UX41B: UX41 Series with Backflushing Hoses)



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# UX41 and UX41B Series: Installation, Operation & Maintenance Manual

## INTRODUCTION

The UX41 Series is part of Crispin Valve's X Series line, which is available in Air & Vacuum, Pressure Air Release and Universal Combinations for Water and Wastewater applications. The valves feature our exclusive Head Exchange System, with its head-fixed stainless steel internals that are replaceable in-line and on-site. To clean, simply loosen the head assembly, which is sealed in place by a sanitary clamp fitting. Pull out the original head, weighing less than 10lbs, and pop in a spare so that the original head can be cleaned at your leisure. All 316 stainless construction makes the X Series impervious to corrosion, and all Crispin Valves are tested to the latest ANSI/AWWA C512 Standards. This manual will provide you with the information to properly install and maintain UX41 and UX41B Series Universal Combination Air Release Valves to ensure a long service life. Both are heavy-duty valves designed to stand up to the toughest industrial applications for years of trouble-free operation.



## INSTALLATION

Please read this entire IOM Manual prior to proceeding with the installation. The installation of the valve is important for its proper operation. The valve must be installed in the vertical position. Next, lower the valve over the mating nipple or flange. If mounted on a nipple, using Teflon tape, apply tape to the mating pipe nipple. Lightly thread the valve of the pipe nipple until tight. If using a flanged connection, align and apply the flange gasket on the flange, and lower the valve onto the mating flange. Then tighten the flange bolts. If leakage occurs, check the connections and re-tape the threaded connection if necessary.

## OPERATION

The Crispin UX41 and UX41B Series Universal Combination Air Release Valves are designed to permit automatic escape of large quantities of air from a pipeline when the line is being filled, and to permit air to enter the pipeline when the line is being emptied. The UX41 and UX41B will also release accumulating air while the line is in operation and under pressure. Therefore, the Crispin UX41 and UX41B Universal Combination Air Release Valves provide the function of an Air and Vacuum Valve and an Air Release Valve in a single body.

When the line is being filled, liquid rises into the valve and air escapes through the large orifice and into the atmosphere. Liquid entering the valve raises the float and lever mechanism, carrying with it the pressure plunger in the main valve. When the liquid has raised the float to its limit, the stainless steel main valve rests against the seat, and the pressure plunger also rests against its seat, which is the main valve. When this occurs, the valve is closed and no liquid can escape.

If accumulating air rises into the valve while the line is in operation and under pressure, it will displace the liquid at the top of the valve body, and the float will begin to drop as the liquid level drops. As this occurs, the pressure valve will open, permitting escape of the accumulating air, after which the liquid level will rise and the valve will close.

Should a pipeline be drained for any reason, or a large break develops within the pipeline, the float will drop all the way down as the liquid level lowers in the valve body. The valve will then be in the full open position, permitting the entrance of air and eliminating the danger of pipeline collapse due to a vacuum. The cycles will repeat automatically as each condition presents itself.



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## DISASSEMBLY (See drawing on pg 5)

The valve does not have to be removed from the pipeline for disassembly. All work on the valve should be performed by a skilled mechanic using the proper tools.

1. Isolate the Crispin UX Air Release Valve from the pipeline by closing the inlet isolation valve between the main and Air Valve.
2. Depressurize the valve by opening the Drain Valve (20) or by loosening Clamp Half (13).
3. Remove Clamp Half (13) by turning nuts counter clockwise. Remove Flange (2) from Valve Body (1) by lifting straight up.
4. Remove Seat Bolts (11). This gives access to the valve Seat (4). Inspect for wear and replace if necessary.
5. Remove Shoulder Bolts (8) from Float Guide Stand (10). Inspect the valve Plunger (5) for wear. If worn, replace and reset.
6. Inspect the Flange O-Ring (3). Replace if needed.

## REASSEMBLY (See drawing on pg 5)

Prior to 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.

1. Install the Flange O-Ring (3) and then install the Shoulder Bolts (8) to the Valve Assembly (12) by turning clockwise.
2. Install the Air/Vacuum Seat (4) and install Seat Bolts (11) to the Float Guide Stand (10) by turning clockwise.
3. Install Flange (2) onto Body (1).
4. Install Clamp (13) and install Clamp Bolts (14), Lock Washers (15) and Clamp Nuts (16). Turn clockwise to tighten.
5. Once complete with maintenance and with the Air Release Valve back on the main, gently close the Drain Valve (20) and reopen the isolation valve.

## MAINTENANCE

Although Crispin UX41 Universal Combination Air Release Valves do not require back flushing, it is recommended that a spare valve head assembly be kept on hand to “swap out” in the field. The head assembly removed from the valve can then be cleaned and put into stock to be used the next time a fresh head assembly is needed. Depending on each specific system, Crispin recommends that head assemblies be changed every 6-12 months. For customers who prefer a backflushing attachment (UX41B Series), instructions follow in the Backflushing section of this manual.

## SERVICE

Parts and service are available from your local representative or distributor. Make note of the Valve size, operating pressure and model number as located on the valve tag.



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## BACKFLUSHING (UX41B SERIES)

On sewage installations, UX41B Series valves with backflush attachments are supplied, if ordered, with an inlet gate valve, two (2) drain valves on the side of the body, and a quick disconnect hose.

The backflush hose is attached to a fresh supply of water at 20-90 psi. With the hose coupled to the drain valve, the inlet gate valve is closed, and the bottom drain is opened. At this point, the sewer system pressure will blow off some of the solids. The top drain valve is then opened, and the valve is backflushed with the fresh water. When it appears that the solids have been removed, the top drain valve is closed before the bottom drain valve, so that remaining water is allowed to escape, and then the bottom drain valve is closed. Then, the inlet gate is opened slowly.

On combinations with the Pressure Valve piped out of the side of the Air and Vacuum, the isolating valve between the Pressure and the Air and Vacuum is closed. The inlet to the Air and Vacuum is closed, and its bottom 1" drain valve is opened to relieve internal pressure and settled sludge. The bottom drain valve is also opened on the Pressure Valve for the same reason, and then backflushed with clean water. When the water passing out of the bottom drain valve is clear, this drain valve is closed, and the isolation valve is opened in order to facilitate backflushing of the Air and Vacuum valve. After backflushing is complete, all drain valves are closed, and the isolation valves are opened slowly to put the valve back in service.

Valves in combination on a yoke assembly are backflushed individually using the procedure outlined above.

## TROUBLESHOOTING (See drawing on pg 5)

### PRESSURE SEWER VALVE

#### Seat Leakage

- 1) If a low volume leak persists with the Plunger (5) or Seat (4) against the orifice, then the Plunger (5) and/or Seat (4) should be adjusted or replaced.
- 2) If the valve has been in operation for more than 5 years, replace the Plunger (5) and Seat (4).
- 3) More frequent backflushing may be required to prevent debris from reaching the orifice area.

#### Valve Fails to Release Air

- 1) Backflush the valves to ensure that the internals are free to function.

### AIR AND VACUUM SEWER VALVE

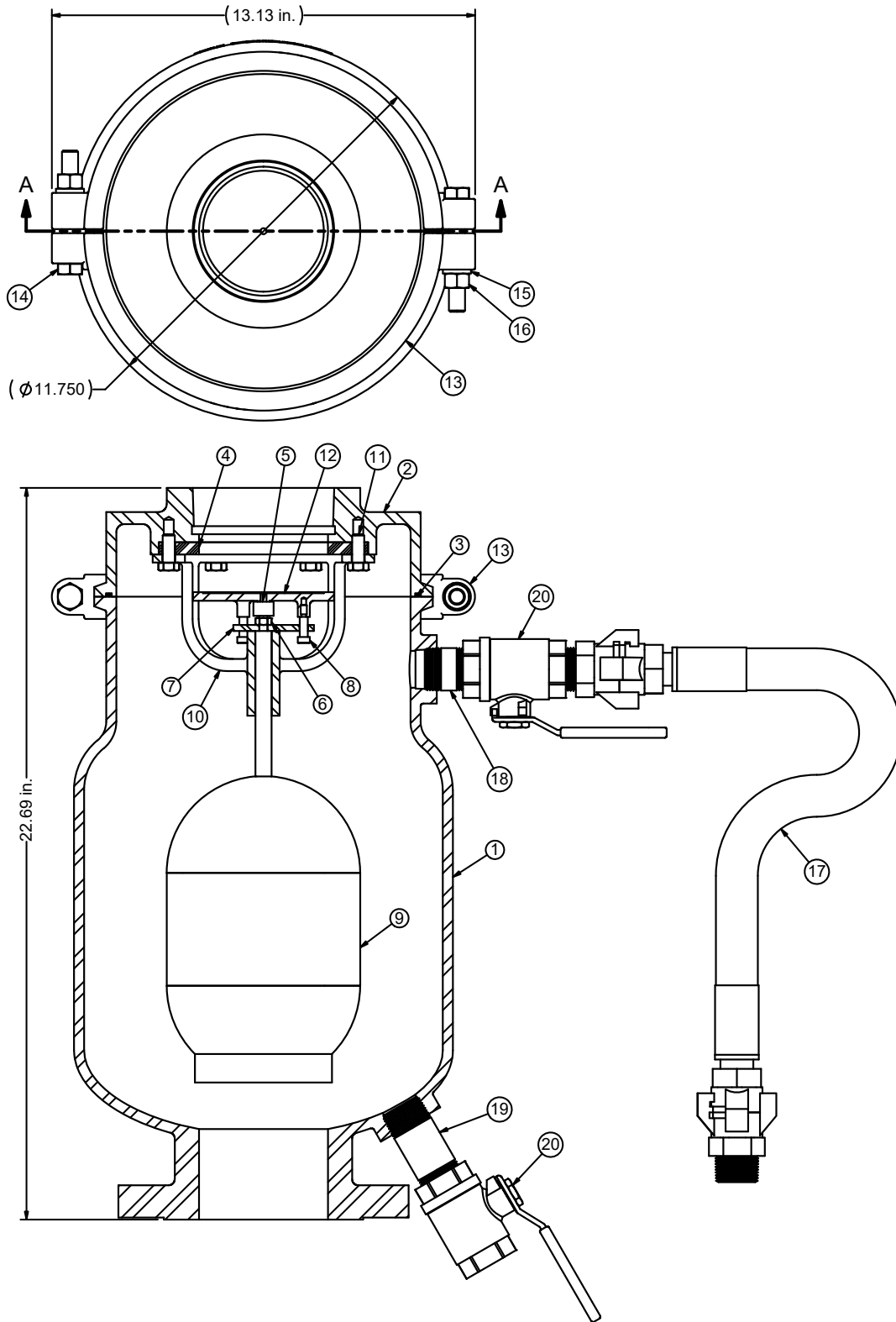
- 1) If the valve leaks on pressures less than 5 psi, then the Seat (4) is too hard and should be replaced with a softer seat.
- 2) If leaks persist at low or high pressures, backflush the valve to remove debris from the seat area.
- 3) If water blows out of the top, the valve may not be sized properly.

NOTE: No special tools are required.



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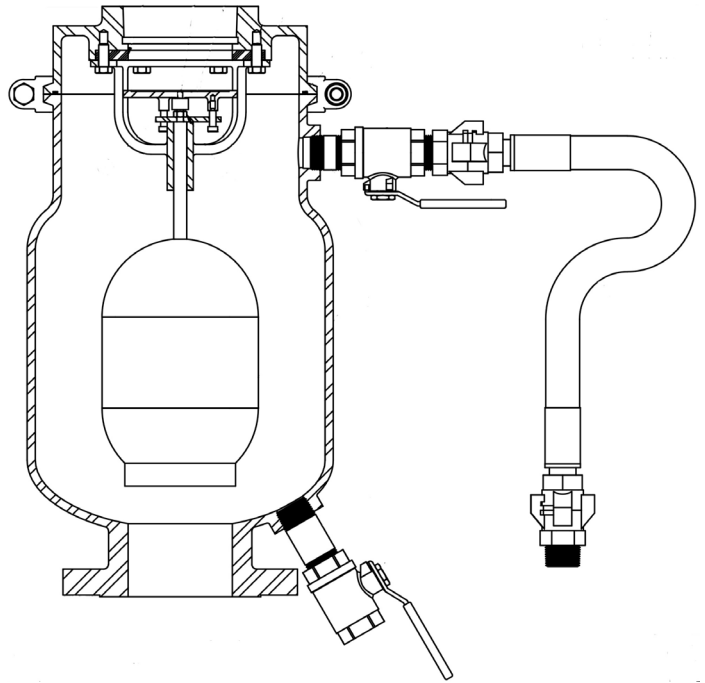
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# UX41 and UX41B Series: Installation, Operation & Maintenance Manual

## 4" Class 150 Universal Combination Air Release Valve with Back Flush Assembly

### Parts List

| ITEM | DESCRIPTION       | MATERIAL             |
|------|-------------------|----------------------|
| 1    | VALVE BODY        | A351 GR. CF8M        |
| 2    | FLANGE            | A351 GR. CF8M        |
| 3    | FLANGE O-RING     | Viton                |
| 4    | SEAT              | Viton                |
| 5    | PLUNGER           | Viton & 316 SS       |
| 6    | PLUNGER NUT       | 316 Stainless Steel  |
| 7    | VALVE GUIDE PLATE | 316 Stainless Steel  |
| 8    | SHOULDER BOLT     | 316 Stainless Steel  |
| 9    | FLOAT ASSEMBLY    | 316 Stainless Steel  |
| 10   | FLOAT GUIDE STAND | A351 GR. CF8M        |
| 11   | SEAT BOLT         | 316 Stainless Steel  |
| 12   | VALVE ASSEMBLY    | 316 Stainless Steel  |
| 13   | CLAMP             | A351 GR. CF8M        |
| 14   | CLAMP BOLT        | 316 Stainless Steel  |
| 15   | LOCK WASHER       | 316 Stainless Steel  |
| 16   | CLAMP NUT         | 316 Stainless Steel  |
| 17   | HOSE              | CAD. PLT STL, Rubber |
| 18   | NIPPLE            | 316 Stainless Steel  |
| 19   | NIPPLE            | 316 Stainless Steel  |
| 20   | DRAIN VALVE       | 316 Stainless Steel  |



### ANSI B16.5 CL 160 Inlet Flange Data

|                      |          |
|----------------------|----------|
| Flange Diameter      | 9.00 in. |
| Flange Thickness     | 0.94 in. |
| Bolt Circle Diameter | 7.50 in. |
| Number of Bolt Holes | 8        |
| Bolt Hole Diameter   | 0.75 in. |
| Raised Face Diameter | 6.19 in. |
| Raised Face Height   | 0.06 in. |

### Orifice Data

| Diameter | Working Pressure |
|----------|------------------|
| 5/32     | 20-200 psi       |

### NOTES:

- 1) INLET SIZE: 4" CLASS 150 RAISED FACE FLANGE
- 2) OUTLET SIZE: 4" NPT
- 3) APPROX. WT: 122 LBS.



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