



# AquaVantage®

## ZH Series

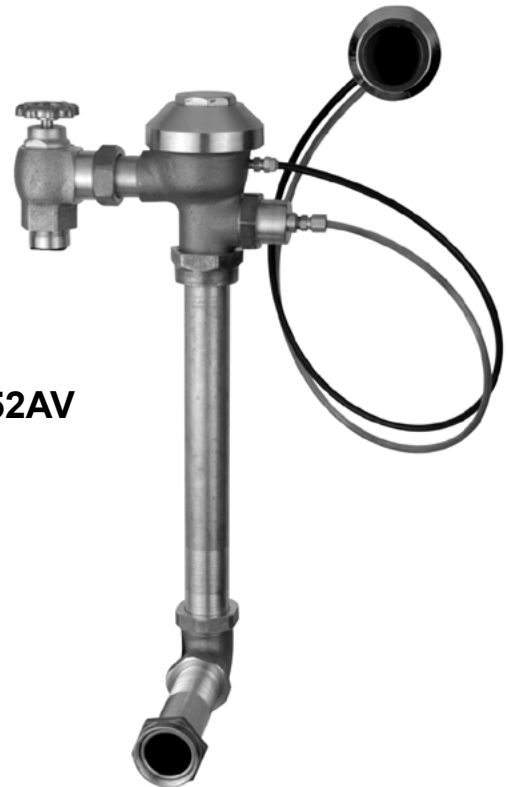
### Hydraulic-Operation Flush Valve

#### Installation, Operation, Maintenance and Parts Manual

Patented and Patents Pending



ZH6003AV



ZH6152AV

#### Hydraulic-Operation Closet/Urinal Systems

ZH6000AV

ZH6001AV

ZH6003AV

ZH6010AV

ZH6017AV

ZH6140AV

ZH6142AV

ZH6150AV

ZH6152AV

ZH6190AV

ZH6195AV

#### LIMITED WARRANTY

All goods sold hereunder are warranted to be free from defects in material and factory workmanship for a period of three years from the date of purchase. Decorative finishes warranted for one year. We will replace at no costs goods that prove defective provided we are notified in writing of such defect and the goods are returned to us prepaid at Sanford, NC, with evidence that they have been properly maintained and used in accordance with instructions. We shall not be responsible for any labor charges or any loss, injury or damages whatsoever, including incidental or consequential damages. The sole and exclusive remedy shall be limited to the replacement of the defective goods. Before installation and use, the purchaser shall determine the suitability of the product for his intended use and the purchaser assume all risk and liability whatever in connection therewith. Where permitted by law, the implied warranty of merchantability is expressly excluded. If the products sold hereunder are "consumer products," the implied warranty of merchantability is limited to a period of three years and shall be limited solely to the replacement of the defective goods. All weights stated in our catalogs and listed are approximate and are not guaranteed.

**NOTE:** The information in this manual is subject to change at any time without notice. Installations may be performed at different times of construction by different individuals. For this reason, these instructions should be left on-site with the facility or maintenance manager.

**NOTICE: READ ENTIRE MANUAL PRIOR TO INSTALLING PRODUCT.**

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by **ZURN ELKAY** Water Solutions

# AquaVantage® Vavle Rough-In, Product Specification, Models, and Options

## PRODUCT SPECIFICATIONS: ZURN AquaVantage® 'AV' ZH Series

**Exposed/Concealed Flush Valve** – Exposed/concealed, quiet diaphragm-type, chrome plated/rough brass, flushometer valve with Zurn's AquaVantage TPE, chlorine resistant, dual seal diaphragm with surface optimization and clog resistant dynamic orifice. The valve is complete with a non-hold-open type feature with a hydraulic push-button actuator that may be located up to 36" [914] (7' [2133] with -SW option) from the valve, high back pressure vacuum breaker, hex coupling nut, and adjustable tailpiece. Spud coupling and flange for top spud connection for exposed valves. Elbow flush connection and spud coupling for back spud connection for concealed valves. Control stop has internal siphon-guard protection and sweat solder kit. Exposed valves are supplied with vandal-resistant cap and a cast wall flange with setscrew. Internal seals are made of chlorine resistant materials. Electrical box for exposed valves supplied by others.

## MODELS

### Exposed

ZH6000AV – 1-1/2" Water closet valve with top spud connection.  
 ZH6001AV – 1-1/4" Urinal valve with top spud connection.  
 ZH6003AV – 3/4" Urinal valve with top spud connection.  
 ZH6010AV – 1-1/2" Water closet valve with back spud connection.  
 ZH6017AV – 1-1/2" Water closet valve with top spud connection.

### Concealed

ZH6140AV – 1-1/2" Water closet valve with back spud connection.  
 ZH6142AV – 1-1/2" Water closet valve with top spud connection.  
 ZH6150AV – 1-1/2" Water closet valve for flushing rim floor drains.  
 ZH6152AV – 1-1/2" Water closet valve with back spud connection.  
 ZH6190AV – 1-1/4" Water closet valve with back spud connection.  
 ZH6195AV – 3/4" Urinal valve with back spud connection.

## FLOW OPTIONS

### Closets

**-WS1** 1.6 Gal. Low Consumption Flush  
**-FF** 4.5 Gal. Full Flush  
**Standard Flush** 3.5 Gal. Per Flush

### Urinals

**-WS1** 1.0 Gal. Low Consumption Flush  
**-WS** 1.5 Gal. Per Flush  
**Standard Flush** 3.0 Gal. Per Flush

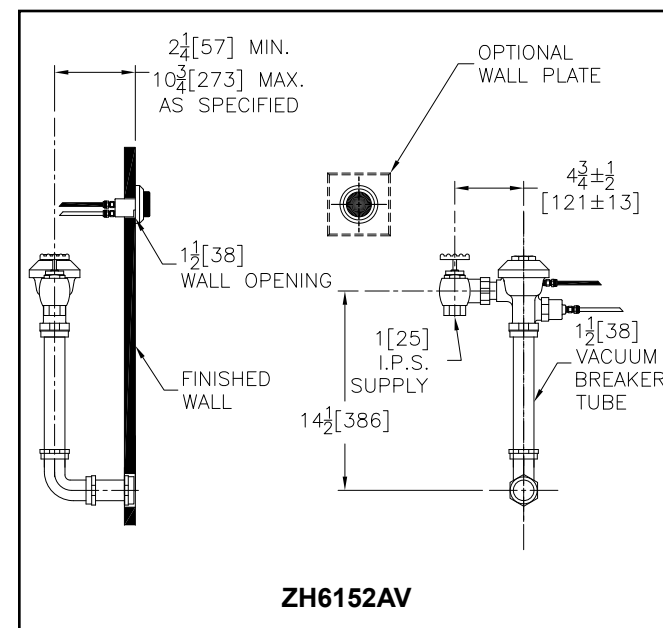
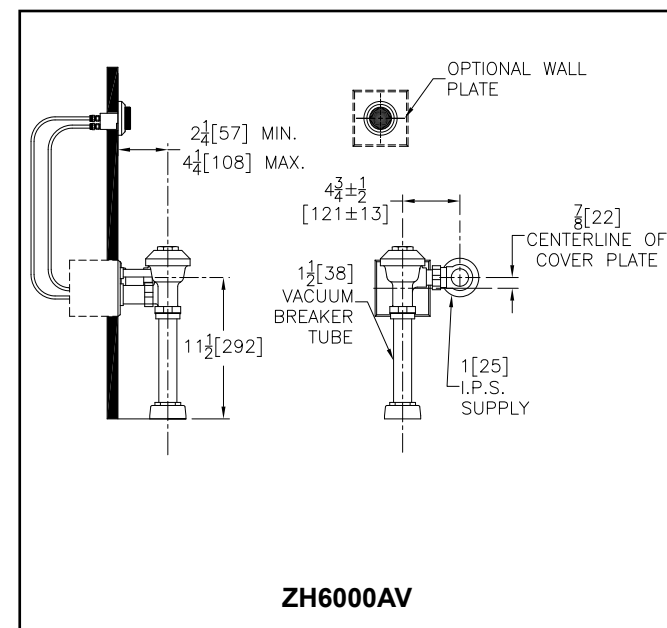
## SUFFIX OPTIONS

### Exposed

**-MB** 1" [25 mm] Metal Push Button Hydraulic Actuator  
**-SW** Side Wall Mounted Hydraulic Actuator  
**-WP** Wall Plate for Push Button (ZP-50)  
**-YJ** Split Ring Pipe Support-YK Solid Ring Pipe Support  
**-YO** Bumper on Angle Stop (Closets Only)  
 Other

### Concealed

**-FW** Fixture Wall Mounting Hydraulic Actuator  
**-MB** 1" [25 mm] Metal Push Button Hydraulic Actuator  
**-SW** Side Wall Mounted Hydraulic Actuator  
**-WP** Wall Plate for Push Button (ZP-50)  
 Other



# Sweat Solder Adaptor Installation Instructions for Exposed Valves

## Important:

- All plumbing is to be installed according to state and local codes and regulations.
- Water supply lines need to allow proper water flow for each fixture.
- Flush all lines of any **debris** before making connections.
- Do not use pipe sealant or plumbing grease on any fitting other than the control stop inlet.

The AquaVantage valve is designed to operate under several varieties of water pressure. The pressures fall between 10 and 100 psi (69 to 689 kPa). Each valve is tested at the lowest and highest pressures before being shipped. The minimum pressure is determined by the type of fixture purchased and the gallons per flush requested. Consult your catalog for flow options. Most low consumption valves (1.6 gallon) require a minimum of 25 psi flow pressure. Rough-in for plumbing and double gang box per specification sheet and Figure A. When installing your quality Zurn valve it is recommended that to protect the polished finish you do not use a toothed wrench. This will cause gouges and scratches on your valve.

## STEP NO. 1

Measure distance from finished wall to centerline of fixture spud; cut supply pipe 1-1/4" shorter than this measurement. Chamfer O.D. and I.D. (See Figure B.)

## STEP NO. 2

Slide threaded adaptor onto supply pipe until shoulder stops on end of pipe, then sweat-solder the adaptor to the water supply pipe. (See Figure C.)

## STEP NO. 3

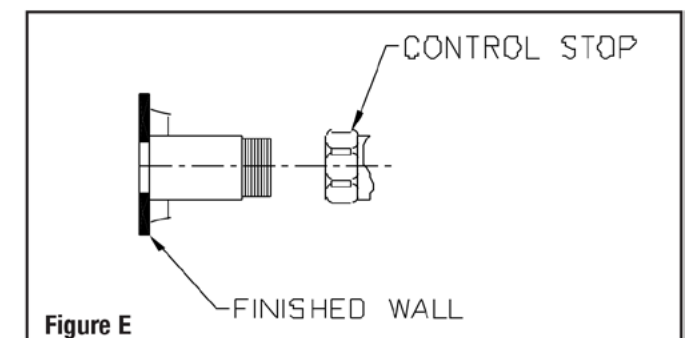
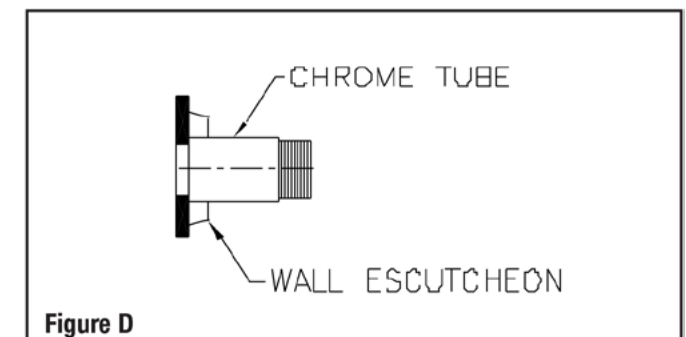
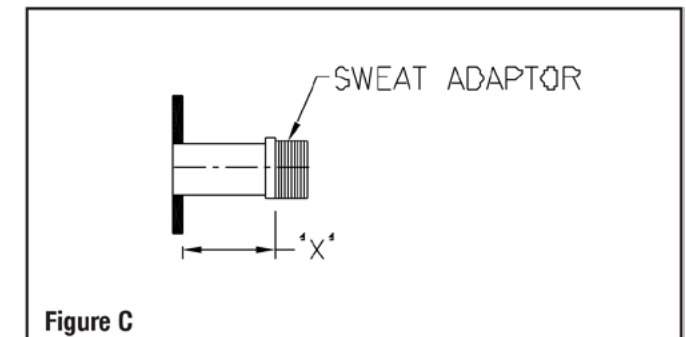
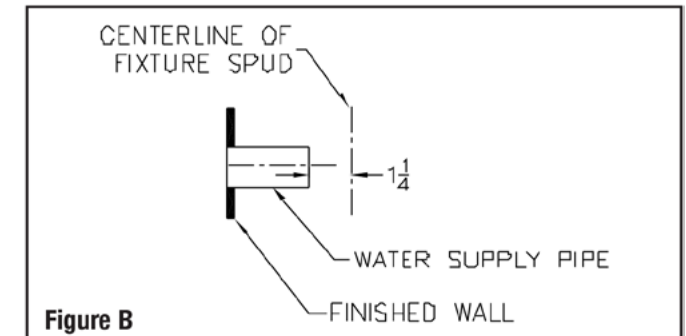
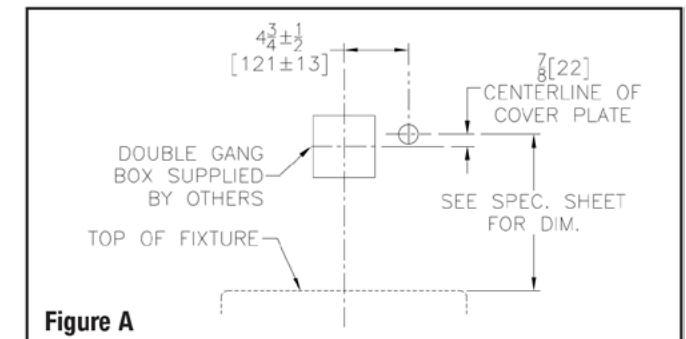
Measure from finished wall to first thread of adaptor for length of chrome tube. Cut chrome tube this length 'X'. (See Figure C.)

## STEP NO. 4

Slide wall escutcheon over chrome tube and slide both chrome tube and wall escutcheon over supply pipe pushing wall escutcheon all the way to the wall. (See Figure D.)

## STEP NO. 5

Screw control stop onto water supply adaptor. (See Figure E.)



# AquaVantage® Valve Installation Instructions for Exposed ZH Series

## STEP 1

### Control Stop Installation (Figure 1)

Install the Zurn control stop valve with "Siphon Guard" back check protection (and wall escutcheon on exposed flushometer installations) to the water supply line with outlet positioned as required.

**Note:** For sweat solder applications, see recommended instructions on Page 3 or refer to those included in the Zurn sweat solder kit.

## STEP 2

### Install Vacuum Breaker Flush Connection (Figure 2)

**Top Spud** – Slide the tube nut, spud nut, fiber washer, rubber gasket, and fixture escutcheon over the vacuum breaker tube and insert into fixture tube. Hand tighten spud nut into fixture spud.

**Back Spud** – Assemble pipe, elbow, coupling nuts, fiber washers, rubber gaskets, and fixture escutcheon as illustrated in Figure 2.

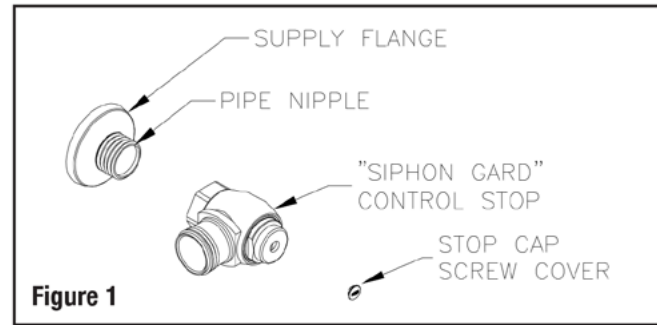
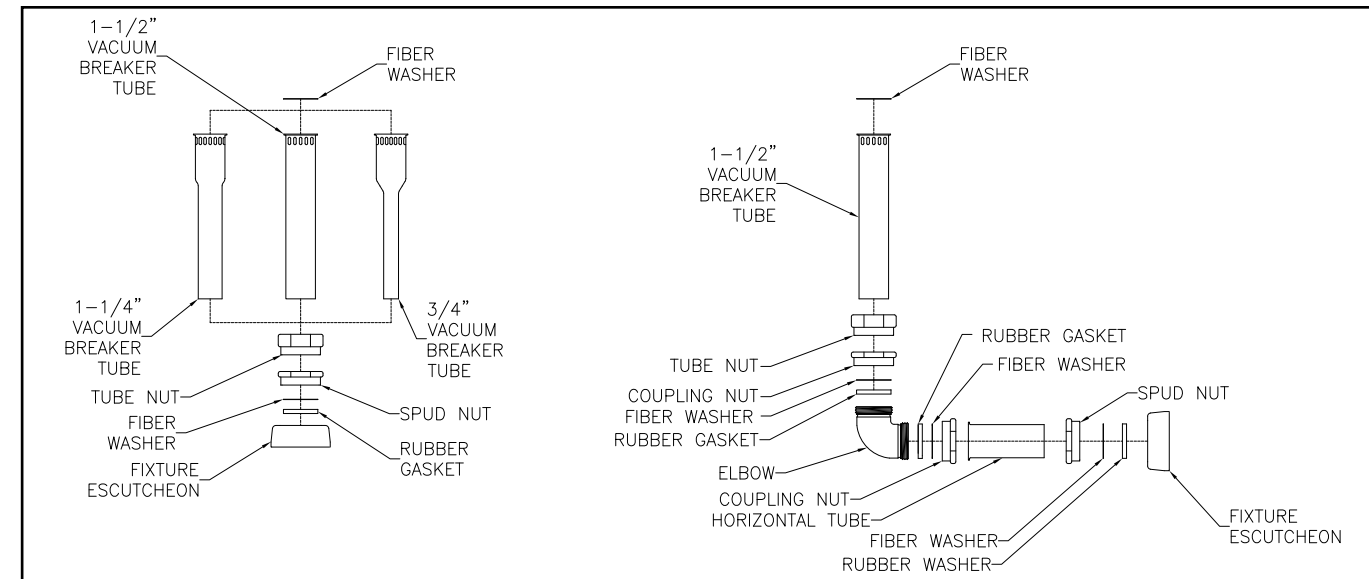


Figure 1



## STEP 3

### Installation of Main Valve Body

- Run the black inlet tube of the push button (Figure 4) through the small hole of the cover plate (Figure 3).
- Run the clear outlet tube of the push button (Figure 4) through the large bottom hole of the cover plate (Figure 3).
- Loosely mount the cover plate to the electrical box (Figure 3).
- Run the top black nylon tubing through the small cover tube and small cover tube ring (Figure 3).
- Run the top clear bottom nylon tubing through the large cover tube and large cover tube ring (Figure 3).
- Place the main valve body in position and connect the nylon tubing to the compression fittings on the back of the flushometer (Figure 4).
- Tighten the compression fittings but do not over tighten.
- Position valve body on control stop body and vacuum breaker tube. Valve body tailpiece compensates for mismatched rough-ins on the job. Maximum adjustment is 1/2" [13 mm] plus or minus the recommended 4-3/4" [121 mm] centerline of flush valve to centerline of control stop dimension (Figure 5).
- Align flush valve with centerline of fixture and tighten flush tube nut and tailpiece nut.
- Push the cover tubes flush against the valve body and tighten the setscrew on cover tube rings.
- Tighten the four screws on the wall plate using the hex wrench (Figure 3).
- Push the cover tube rings against the cover plate and tighten the setscrews (Figure 3).

# AquaVantage® Valve Installation Instructions for Exposed ZH Series

## STEP 4

Install push button actuator.

## STEP 5

Flush out supply line (Figure 6). Make sure the control stop is closed. Remove flushometer cover. Lift out the diaphragm kit assembly. Install the flushometer cover, wrench tight and open stop. Turn on water supply to flush line of any debris or sediment.

After completion, shut off control stop, remove cover and reinstall the diaphragm kit assembly. Install flushometer cover wrench tight.

## STEP 6

### Adjust Control Stop

Adjust the control stop to meet the flow rate required for proper cleaning of the fixture. Open control stop counterclockwise 1/2 turn from closed position. Activate flushometer with pushbutton. Adjust the control stop after each flush until the rate of flow delivered properly cleanses the fixture. The final setting for urinals should be such that the fixture will not overflow when the valve is activated in succession. The stop cap screw cover should be replaced after final adjustments have been made.

## STEP 7

Install vandal-resistant cap with setscrews provided (Figure 7).

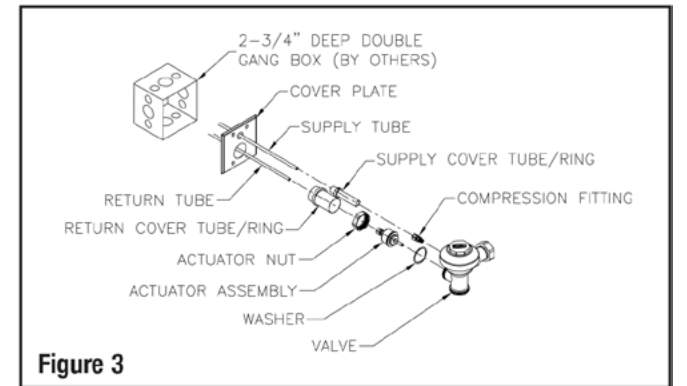


Figure 3

**Note:** No Teflon tap or thread sealer is required for compression fitting retainers.

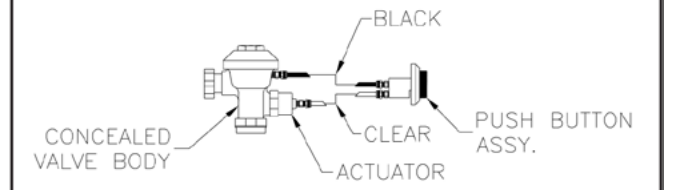


Figure 4

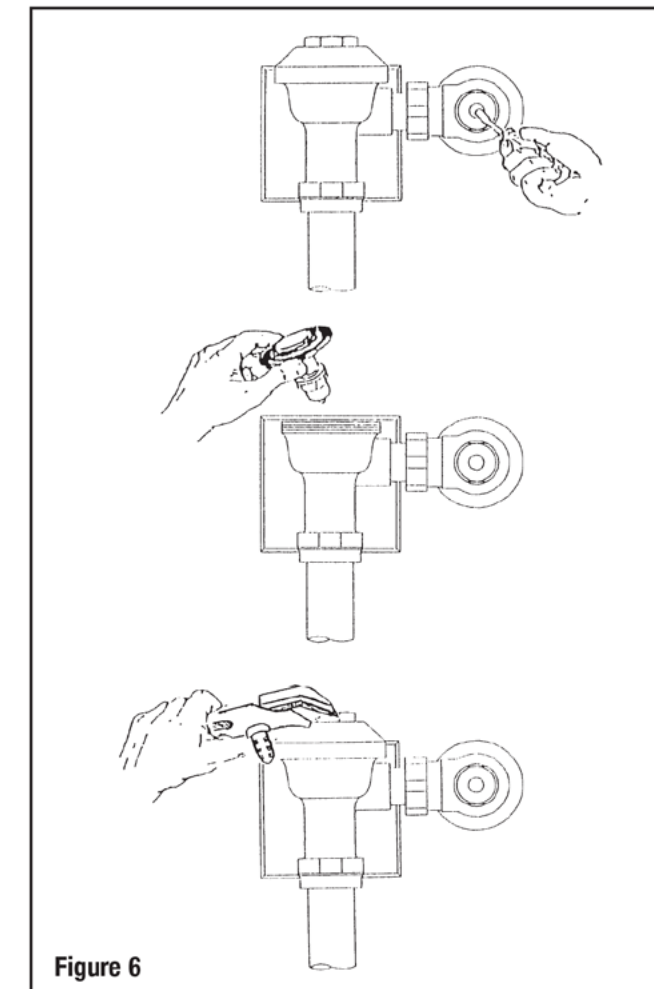


Figure 6

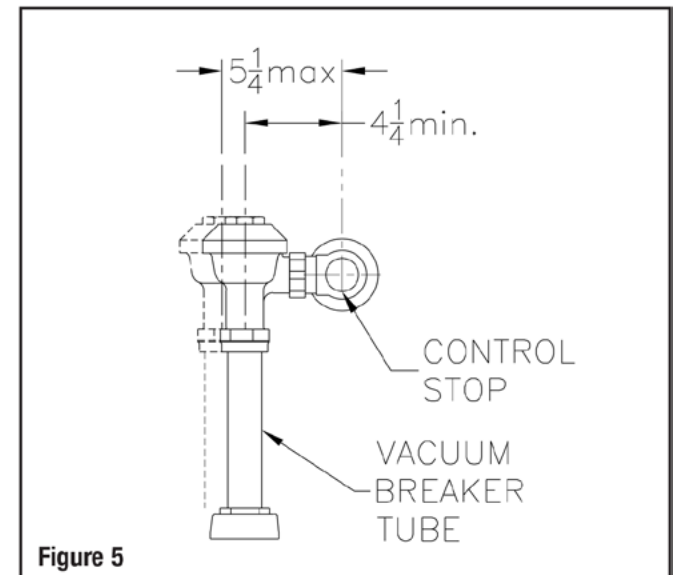


Figure 5

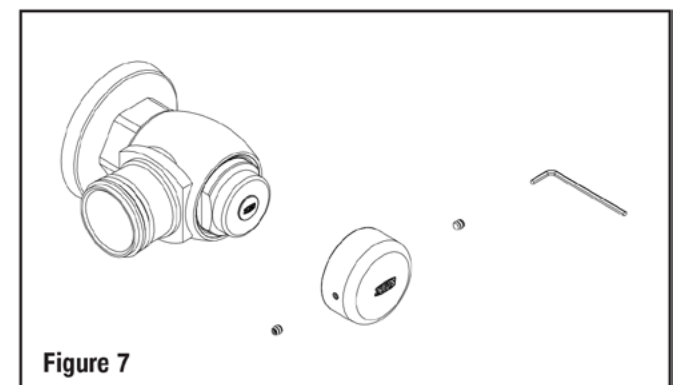


Figure 7

# AquaVantage® Valve Installation Instructions for Concealed ZH Series

## Scored Tubing Installation Instructions

Note: Due to possible high back pressure, this procedure must be followed when installing the concealed flush tube. Failure to follow these instructions can result in plumbing separation at the elbow.

These directions must be followed for all Zurn concealed and concealed penal fixture valves with 1 1/2" flush connections:

- When cutting scored vacuum breaker and horizontal connection tubes to fit, always leave at least **1 3/4" (32mm)** of scoring to insure proper engagement with the compression coupling.
- Install fixture flush connection. (**Figure 1**) Zurn penal flushometers are designed to connect to the stainless steel fixture in a chase behind the wall.
- A 1 1/2" pipe connection (not supplied by Zurn) must be used to connect the fixture inlet to the flanged/scored horizontal tube.
- Loosely assemble the concealed plumbing after placing all of the nuts, friction washers, and gaskets in place. This will locate the gaskets prior to applying the Loctite adhesive.
- Disassemble, clean and dry the plumbing to prepare for adhesive. Apply an 1/8" wide bead of the adhesive all around the scoring between the gasket and the end of both tubes. (**Figure 2**)
- DO NOT use any other pipe sealant or lubrication on these points.
- Assemble the horizontal tube to the fixture and tighten securely. Slip the elbow onto the horizontal tube while rotating and pushing it to spread the adhesive. Angle the elbow so the vacuum breaker tube can be inserted.
- Insert the vacuum breaker into the vacuum tube and the tube into the elbow, rotating it to spread the adhesive. Screw all nuts into place and tighten. The adhesive has a limited (2 minute) working time so tighten the connections immediately.
- Do NOT run water through the pipes for at least 24 hours so the adhesive can set properly.

Figure 1

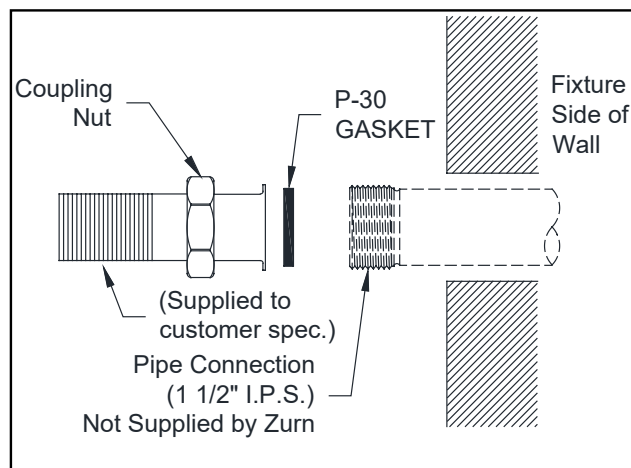
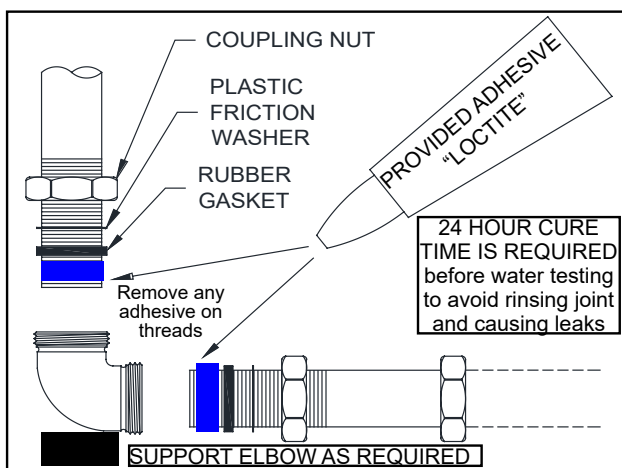


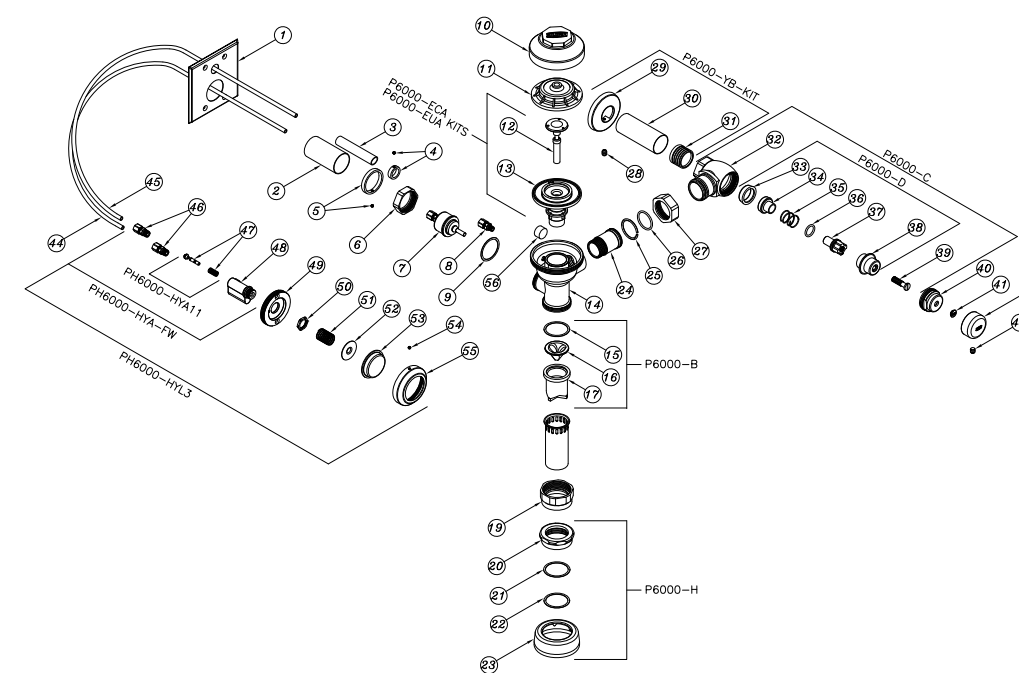
Figure 2



# AquaVantage® Repair Kits

## Part Identification

1. Chrome Cover Plate
2. Return Cover Tube
3. Supply Cover Tube
4. Cover Tube Ring with Setscrew
5. Cover Tube Ring with Setscrew
6. Handle Nut
7. Hydraulic Plunger Assembly
8. 1/16" Compression Fitting
9. Gasket
10. Valve Body Cover
11. Plastic Cover
12. Trip Mechanism
13. Diaphragm Repair Kit
14. Valve Body
15. Vacuum Breaker Friction Washer
16. Vacuum Breaker Insert
17. Vacuum Breaker Duckbill
18. Vacuum Breaker Tube
19. Vacuum Breaker Tube Nut
20. Spud Nut
21. Spud Friction Washer
22. Spud Sleeve
23. Spud Escutcheon
24. Tailpiece
25. Snap Ring
26. Tailpiece O-Ring
27. Locking Nut
28. Setscrew for Cast Wall Flange
29. Cast Wall Escutcheon
30. Supply Cover Tube
31. Sweat Solder Adaptor
32. Stop Body
33. Piston Seal
34. Piston
35. Stop Spring
36. Guide O-Ring



37. Piston Guide
38. Guide Holder
39. Adjusting Screw
40. Stop Cap
41. Snap Cap Screw Cover
42. Vandal-Resistant Control Stop Cover
43. Setscrew for Control Stop Cover

44. 1/4" Return Tube
45. 1/4" Supply Tube
46. 1/8" Compression Fitting
47. Piston Assembly
48. Actuator Body
49. Mounting Plate
50. Securing Nut
51. Spring for Large Push Button

52. Spacer for Large Push Button
53. Large Push Button
54. Escutcheon Setscrew
55. Escutcheon for Large Push Button
56. Filter

Covers and Repair Kits	Product No.
Outside Cover - CP – Item 10	P6000-LL
Inside Cover – Item 11	P6000-L
Low Consumption Closet Kit – 1.6 gal. flush	P6000-ECA-WS1
Water Saving Closet Kit – 3.5 gal. flush	P6000-ECA-WS
Full Flow Closet Kit – 4.5 gal. flush	P6000-ECA-FF
Low Consumption Urinal Kit – 1.0 gal. flush	P6000-EUA-WS1
Water Saving Urinal Kit – 1.5 gal. flush	P6000-EUA-WS
Full Flush Urinal Kit – 3.0 gal. flush	P6000-EUA-FF

Repair Parts – Inside Parts	Product No.
Urinal Relief Valve – Item 12	P6000-EU13
Closet Relief Valve – Item 12	P6000-EC13

AquaVantage Rebuild Kits	Product No.
Closet and Urinal Rebuild Kits Include: Items 4-9, 12, 13, 15-17, 26	P6000-ECA-WS-RK P6000-ECA-WS1-RK P6000-EUA-WS-RK P6000-EUA-WS1-RK

Actuator Assembly and Repair Kits	Product No.
Hydraulic Large Push Button Assembly, Fixture Wall	PH6000-HYL3-FW
Hydraulic Large Push Button Assembly, Side Wall	PH6000-SHYL3-SW
Hydraulic Metal Push Button Assembly	PH6000-HYL-MB
Hydraulic Metal Push Button Assembly for Penal Use	PH6000-HYLP-MBP
Repair Kit for Hydraulic Actuator	PH6000-HYA11

Control Stop Repair Kit and Parts	Product No.
Control Stop Repair Kit for 1" and 3/4", Includes Items 33-39	P6000-D-SD
Seal Seat for 1" and 3/4", Includes Item 33	P6000-D42
VP Control Stop Repair Kit for 1" and 3/4", Includes Items 33-39	P6000-D-VP
Sweat Solder Connection with Cast Wall Flange, Includes Items 29-31	P6000-YB

Adjustable Tailpieces	Product No.
Adjustable Tailpiece for Standard Flush Valve, Includes Items 24-26	P6000-J1
Tailpiece Coupling Assembly, Includes Items 25-27	P6000-K
Tailpiece Locking Ring, Includes Item 25	P6000-C30
Tailpiece O-Ring, Includes Item 26	P6000-C31
Coupling Nut, Includes Item 27	P6000-C32

Flush Connections and Spud Coupling Kits	Product No.
Flush Tube Assembly for Flush Valves, Includes Items 15-19. Specify diameter and length.	P6000-A
Vacuum Breaker Repair Kit, Includes Items 15-17	P6000-B
Spud Coupling Assembly, Includes Items 20-23. Specify size.	P6000-H

# AquaVantage® Trouble Shooting Guide

Problem	Cause*	Corrective Action*
Valve will not operate.	<ol style="list-style-type: none"> <li>1. Water supply is shut off.</li> <li>2. Internal valve filter is plugged.</li> <li>3. Tubing is hooked up improperly.</li> <li>4. Plunger orifice is clogged.</li> <li>5. Damaged or worn seals in HYM Actuator.</li> </ol>	<ol style="list-style-type: none"> <li>1. Turn on water supply/stop valve.</li> <li>2. Clean or replace filter.</li> <li>3. Refer to instructions for proper connections.</li> <li>4. Remove plunger and clear orifice.</li> <li>5. Replace HYM Actuator.</li> </ol>
Insufficient volume of water to adequately evacuate fixture.	<ol style="list-style-type: none"> <li>1. Stop valve is not open enough.</li> <li>2. Urinal trip mechanism installed in closet valve.</li> <li>3. Inadequate supply running pressure.</li> <li>4. Diaphragm kit is not matched to the fixture.</li> </ol>	<ol style="list-style-type: none"> <li>1. Open stop valve until desired flush.</li> <li>2. Replace black urinal trip mechanism with a white closet trip mechanism.</li> <li>3. To determine if the supply is adequate to evacuate the fixture, remove all working parts except for the diaphragm, then open the stop valve and evaluate flush.</li> <li>4. Replace diaphragm kit with proper assembly.</li> </ol>
Flush valve shuts off too quick or is short flushing.	<ol style="list-style-type: none"> <li>1. Damaged or punctured diaphragm.</li> <li>2. Enlarged orifice.</li> </ol>	<ol style="list-style-type: none"> <li>1. Replace diaphragm to remedy problem.</li> <li>2. Replace diaphragm to remedy problem.</li> </ol>
Flush valve will not shut off.	<ol style="list-style-type: none"> <li>1. Trip mechanism is not seating properly.</li> <li>2. By-pass orifice is plugged or partially plugged.</li> </ol>	<ol style="list-style-type: none"> <li>1. Disassemble parts and clean thoroughly.</li> <li>2. Examine by-pass orifice and clean if necessary, being careful not to enlarge orifice opening.</li> </ol>
Continuous trickle of water through valve.	<ol style="list-style-type: none"> <li>1. Tubing is hooked up improperly.</li> <li>2. Debris lodged between piston assembly and valve seat.</li> </ol>	<ol style="list-style-type: none"> <li>1. Refer to instructions for proper connections.</li> <li>2. Remove the piston from the push button assembly and inspect and clean both the spool and the valve seat.</li> </ol>
Actuator assembly leaking.	<ol style="list-style-type: none"> <li>1. Actuator assembly handle nut is loose.</li> <li>2. Actuator assembly gasket(s) are missing.</li> </ol>	<ol style="list-style-type: none"> <li>1. Tighten the actuator assembly nut.</li> <li>2. Install gasket(s).</li> </ol>
Push button assembly leaking.	<ol style="list-style-type: none"> <li>1. Compression fitting or nuts are loose.</li> <li>2. Piston O-Ring is damaged.</li> </ol>	<ol style="list-style-type: none"> <li>1. Tighten nuts or fittings.</li> <li>2. Replace piston assembly.</li> </ol>

## Care of Chrome Plated Surfaces

The suggested cleaning of chrome-plated surfaces is to simply wash with mild soap and water, then dry. Commercial cleaning compounds are never recommended as they may dull the luster and the decorative finishes.

## Seasonal Use

Valves used in installations subject to shutdown during cold and/or freezing conditions should be maintained in the following manner: After the main supply has been shut off and the water has been drained from the system, remove the stop cap and the stop valve internals to allow the water to drain from the flush valve itself. The tubing must also be disconnected from the push button assembly and the actuator assembly to allow for drainage.