



AquaSense®

ZER-TM Series

Automatic Sensor-Operated Gear Driven Type Flushometer for Water Closets and Urinals

Installation, Operation, Maintenance and Parts Manual



ADA
DESIGNED

Water Closet Models:

| | |
|------------------|-------------|
| ZER6000AV-ONE-TM | 1.1 gpf |
| ZER6000AV-HET-TM | 1.28 gpf |
| ZER6000AV-WS1-TM | 1.6 gpf |
| ZER6000AV-DF-TM | 1.1/1.6 gpf |



ADA
DESIGNED

Urinal Models:

| | |
|------------------|-----------|
| ZER6003AV-ULF-TM | 0.125 gpf |
| ZER6003AV-EWS-TM | 0.5 gpf |
| ZER6003AV-WS1-TM | 1.0 gpf |

Power Options:

Battery (Standard)

⚠ WARNING: Cancer and Reproductive Harm - www.P65Warnings.ca.gov

⚠ ADVERTENCIA: Cáncer y daño reproductivo - www.P65Warnings.ca.gov

⚠ AVERTISSEMENT: Cancer et effets néfastes sur la reproduction - www.P65Warnings.ca.gov

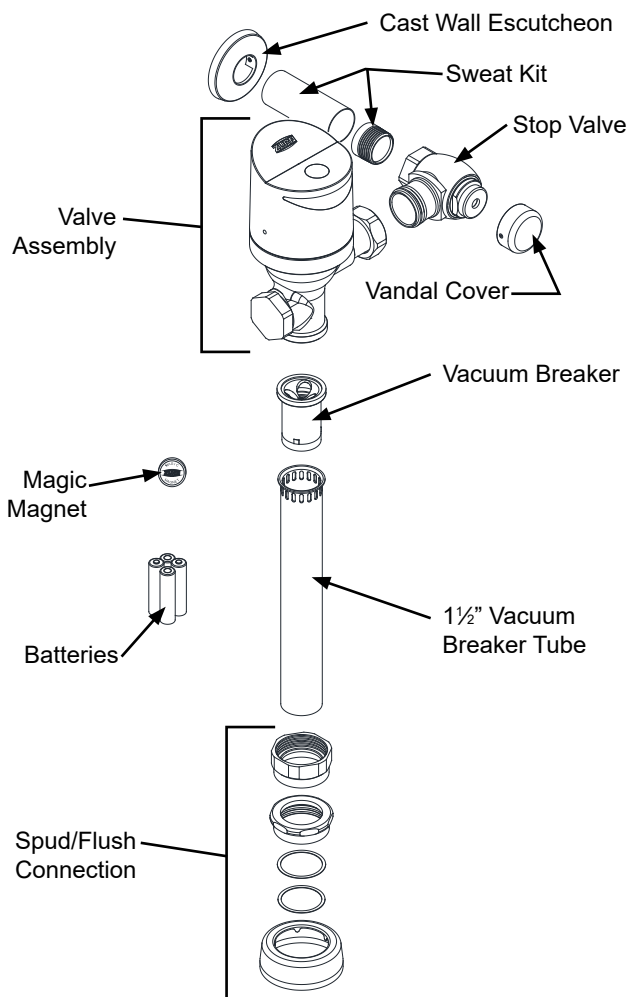
LIMITED WARRANTY

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 assumes 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 lists are approximate and are not guaranteed.

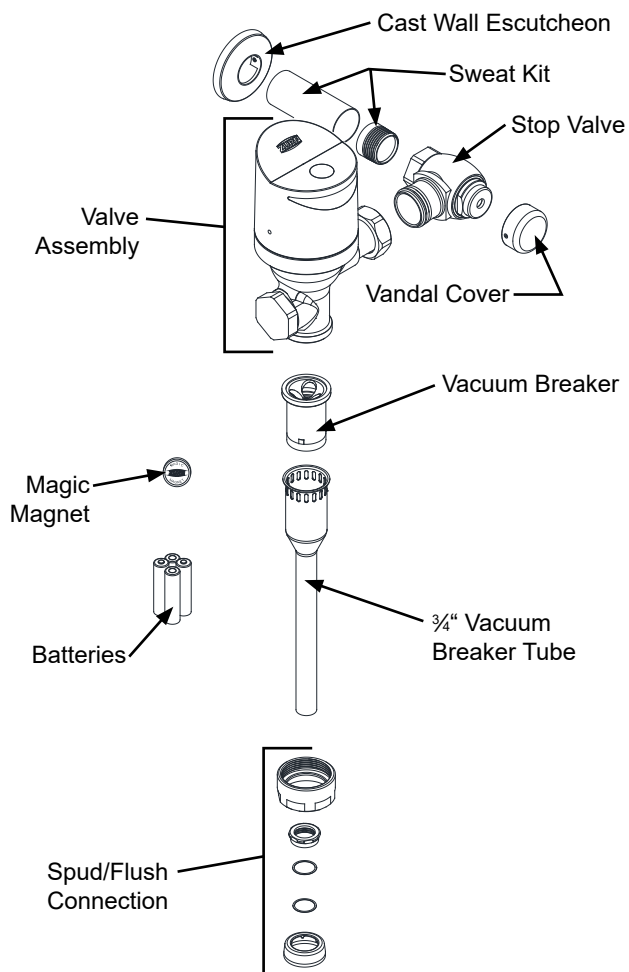
NOTICE: READ ENTIRE MANUAL PRIOR TO INSTALLING PRODUCT

ZER-TM Series Flush Valve Package Contents

ZER6000AV-TM



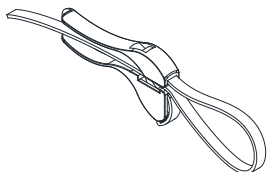
ZER6003AV-TM



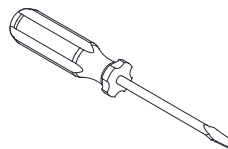
Required Tools



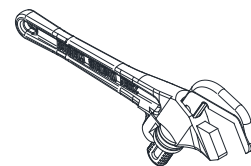
3/32", 5/64"
Allen Wrench
(Supplied)



Strap Wrench
(Supplied)



Flat Head
Screwdriver



Smooth Jawed
Wrench

Overview:

Zurn Aqua-Sense® ZER-TM Series Flushometer offers two models (closet/urinal) in a variety of flow rates. The ZER-TM design is a chrome plated brass body with an automatic sensor-operated gear driven valve. The flushometer incorporates a filtered bypass, high back pressure vacuum breaker, adjustable tailpiece, spud coupling, flange for top spud connection and an electronic override pushbutton (MOB) for alternative flushing method. The control stop has internal siphon-guard protection, vandal resistant stop cap, sweat solder kit, and cast wall flange with set screw. All internal and external gaskets and seals are chloramine resistant.

Specifications:

Voltage: 6 VDC Series [4 "AA" 1.5V Lithium Cells] or 6 VDC Series [4 "AA" 1.5V Alkaline Cells]

Sensor Range: Factory set for user at end of elongated bowl or field adjustable by installer

Important Safety Information:

- Installer is responsible for ensuring the product is installed and conforms to all plumbing codes and ordinances.
- Do not convert or modify this Zurn product yourself. All warranties will be voided.
- Water supply lines must be sized according to building designer in order to provide adequate water supply for each fixture.
- Flush all water lines prior to making connections.

Prior to Installation:

- The ZER-TM flushometer is designed to operate optimally between 25 psi (running) to 80 psi (static) water pressure (172 to 552 kPa). Higher running pressure may be required for some fixtures. Consult fixture manufacturer for details.
- When installing a flushometer, it is important that the flush volume matches the requirements of the plumbing fixture.
- To protect chrome finish, do not use toothed tools to install or service the flushometer.
- Before installing your Zurn® Gear Driven Flush valve, the items listed below should already be installed on site:
 - Closet or urinal fixture
 - Fixture carrier
 - Drain line
 - Water supply line

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.

Sweat Solder Adapter Installation Instructions - STEP 1

NOTE: Before installation, turn off water supplies to existing fixture and remove flushometer if replacing an existing device.

STEP 1.1

Measure distance from finished wall to the center line of the fixture spud. If necessary, cut water supply pipe 1-1/4" shorter than this measurement. Deburr by chamfering O.D. and I.D of end of water supply pipe.

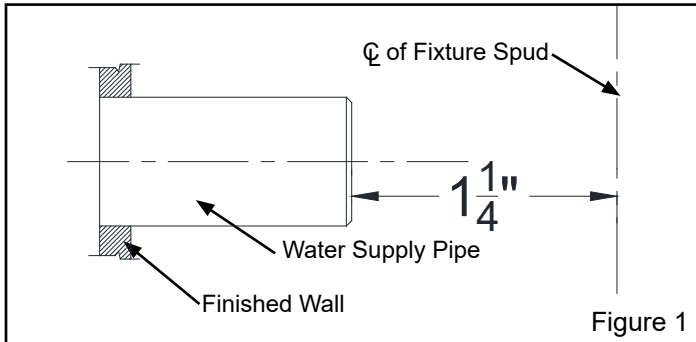


Figure 1

STEP 1.2

Slide threaded sweat solder adapter onto water supply pipe until shoulder stops on end of pipe. Then sweat-solder the adapter to water supply pipe.

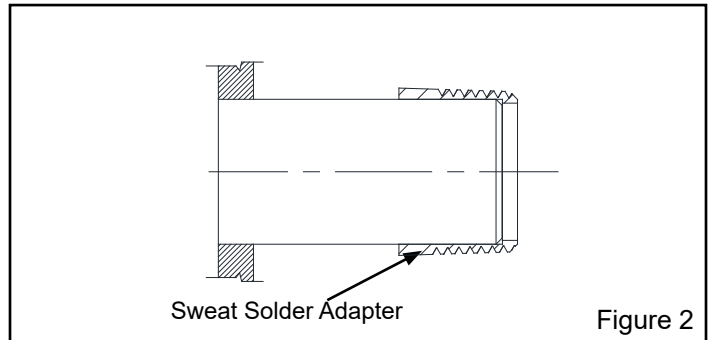


Figure 2

STEP 1.3

Measure distance from finished wall to first thread of sweat solder adapter. If necessary, cut chrome cover tube this length.

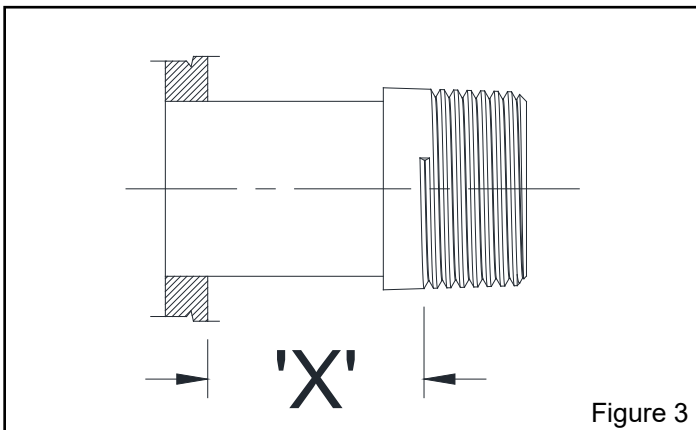


Figure 3

STEP 1.4

Slide wall escutcheon over chrome cover tube and slide both items over water supply pipe. Press wall escutcheon flush against finished wall and tighten set screw with hex wrench (supplied) to secure it in place.

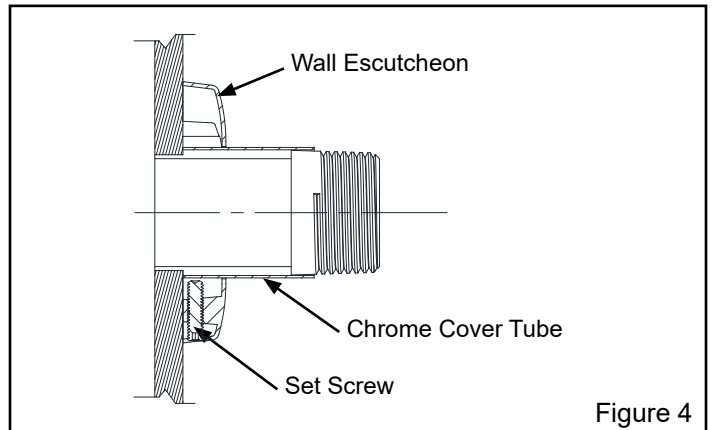


Figure 4

Control Stop Installation Instructions - STEP 2

STEP 2.1

Install control stop assembly by threading it onto water supply pipe and tightening with a smooth jawed wrench. Apply thread sealing compound or pipe tape to male NPT thread on sweat solder adapter only.

Prior to turning on main water supply line ensure all stop valves are closed off tight by using a flathead screwdriver and turning the stop valve adjustment screw clockwise.

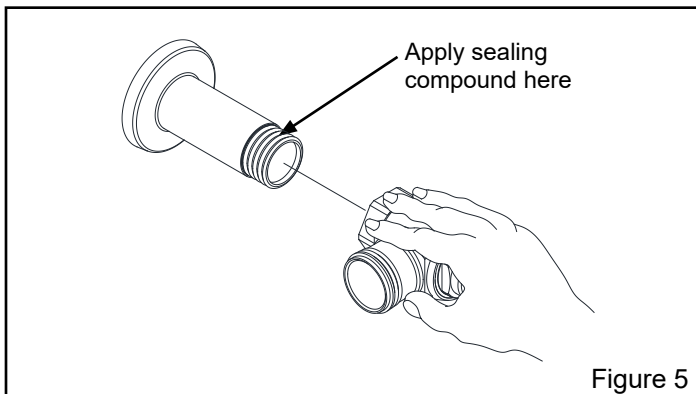


Figure 5

STEP 2.2

When all stop valves are properly connected to the water supply line and water pressure is available open the control stop using a flathead screwdriver and turning the stop valve adjustment screw counterclockwise.

Allow the water supply line to flush any debris or sediment that may be present in the line.

Close the control stop once the lines are completely flushed.

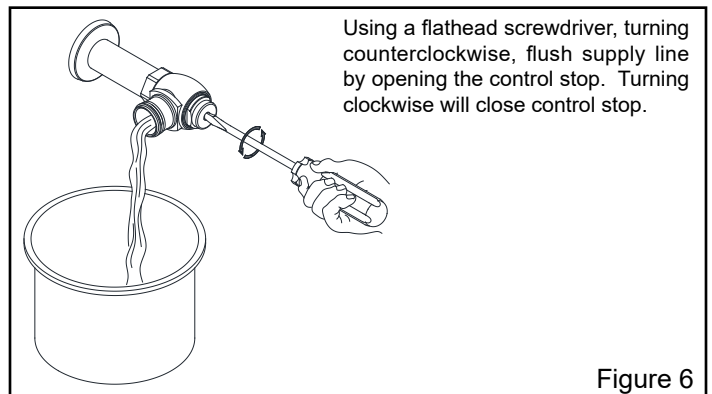


Figure 6

Flush Valve Installation - STEP 3

STEP 3.1

Prior to attaching flush valve to control stop(A) inspect and verify that the O-ring (C) is located within the O-ring groove at the tailpiece. Ensure the locking nut (D) and locking snap ring (E) are also present on the tailpiece. See Figure 7.

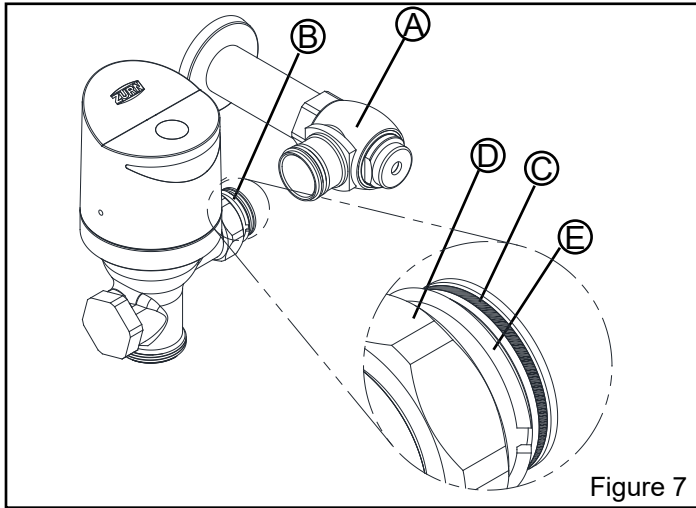


Figure 7

STEP 3.2

Lubricate O-ring with water and carefully insert flush valve tailpiece into the control stop valve to ensure O-ring remains seated. Tighten locking nut using a smooth jawed wrench. See Figure 8.

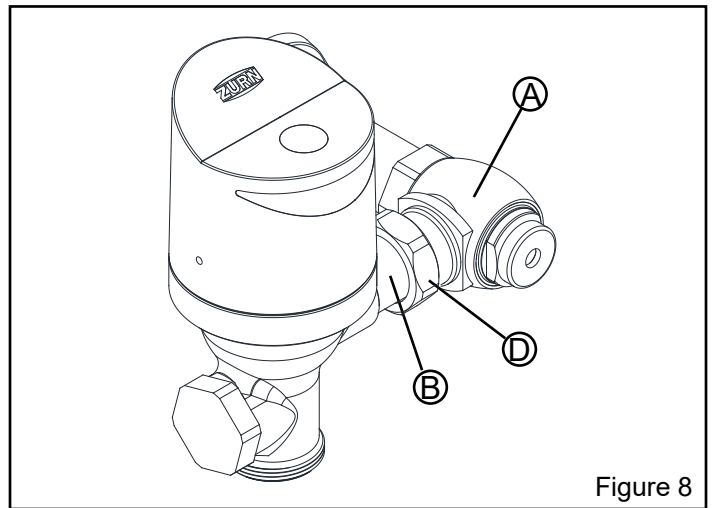


Figure 8

STEP 3.3

Determine the length of vacuum breaker tube required to join the flush valve and fixture spud, and cut if necessary. See Figure 9.

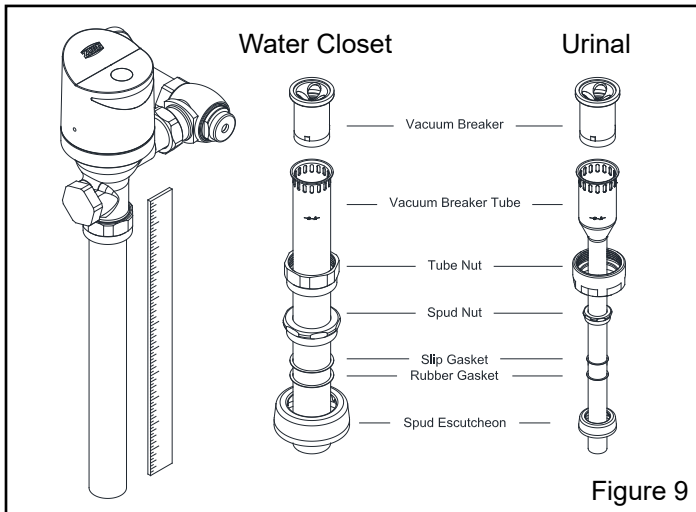


Figure 9

⚠ DO NOT use pipe sealant or plumbing grease on any valve component or coupling with the exception of the Control Stop Inlet! Ensure Vacuum Breaker does not twist or warp when tightening Vacuum Breaker Tube Nut.

STEP 3.4

Assemble and secure the vacuum breaker tube assembly and spud nut assembly to the flush valve and fixture spud by hand tightening the spud nut and vacuum breaker tube nut.

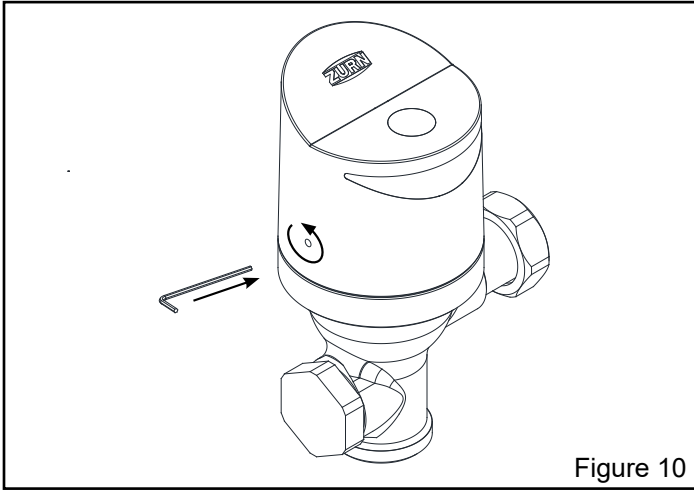
Adjust and plumb the valve assembly. Tighten all connections with smooth jawed wrench and turn on water supply at the control stop. See Figure 9.

⚠ DO NOT cut vacuum breaker tube shorter than 6" below the -C-L- indicator mark, as vacuum breaker must be 6" above the fixture. Consult plumbing Codes & Regulations for specific details.

Battery Installation - STEP 4

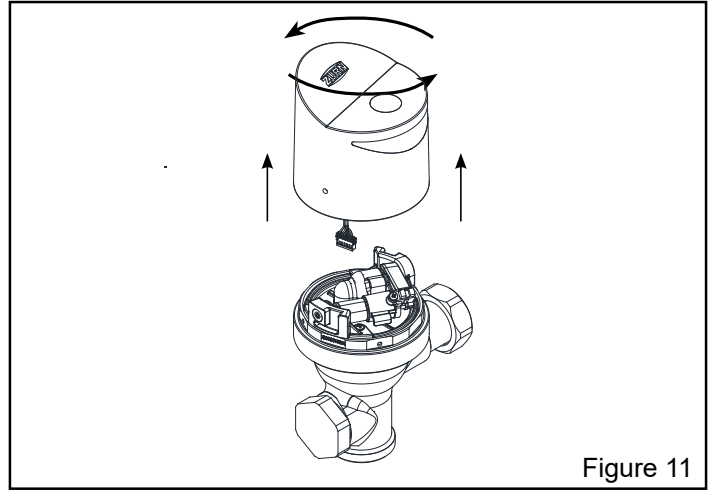
STEP 4.1

Use the 3/32" Allen Wrench to loosen the internal set screw counter-clockwise until it stops. Screw will retract into the shell.



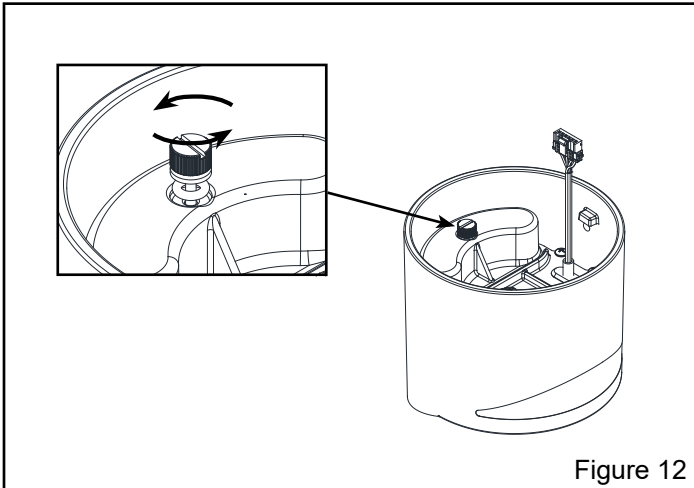
STEP 4.2

Remove the valve head by turning it counter-clockwise and lifting gently. Disconnect the wire harness before fully removing valve head.



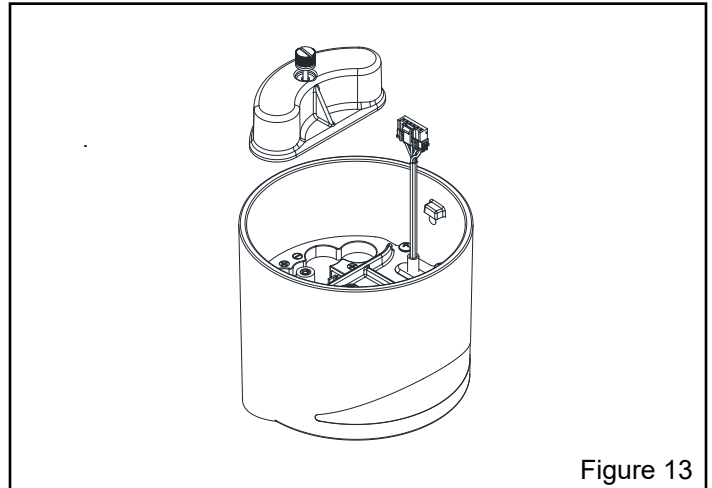
STEP 4.3

Flip the valve head upside down on a flat, soft surface. Loosen the knurled screw by hand to remove the battery cap. Use flat head screwdriver to loosen knurled screw if necessary.



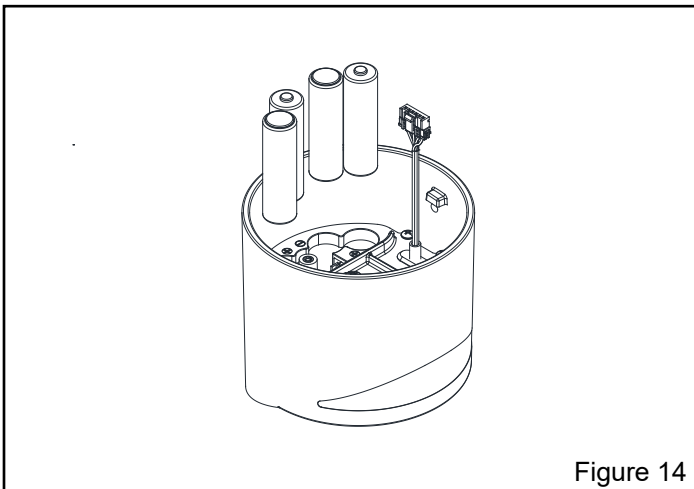
STEP 4.4

Remove the battery cap from the battery housing.



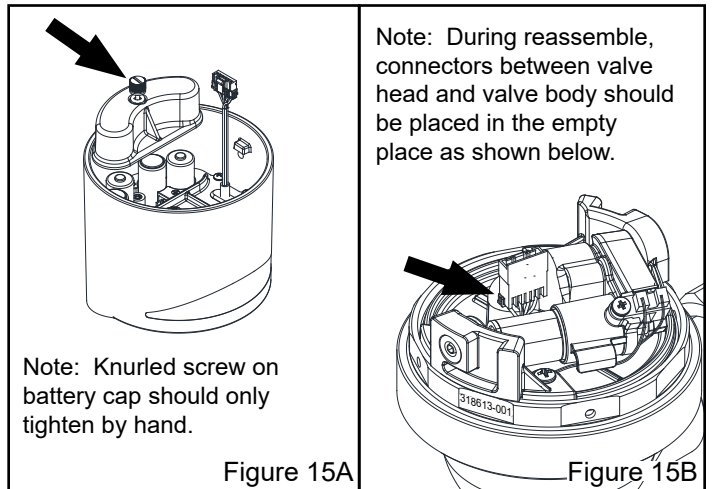
STEP 4.5

Insert four batteries (supplied) into battery housing and ensure the batteries are inserted in the correct orientation. Use AA Lithium Batteries or AA Alkaline batteries, but do not mix Lithium with Alkaline.



STEP 4.6

See notes below and reverse steps 4.1 - 4.4 to reinstall battery cap and valve head onto valve body. Then, turn control stop back on by turning counter-clockwise using a flat head screw driver.



Sensor Angle Adjustment (when necessary)

STEP 1

Turn off control stop using a flat head screw driver turning clockwise (See Figure 16). Then, use the electronic override button to flush the water out of the flush valve.

STEP 2

Mark down Locking ring original position relative to valve body with tape or marker. Loosen locking ring (See Figure 16) on valve head using strap wrench (supplied) turning counter-clockwise.

STEP 3

Rotate flush valve head to adjust sensor angle.

STEP 4

Tighten locking ring back to original position with strap wrench (supplied) by turning clockwise.

STEP 5

Turn control stop back on by turning counter-clockwise using a flat head screw driver.

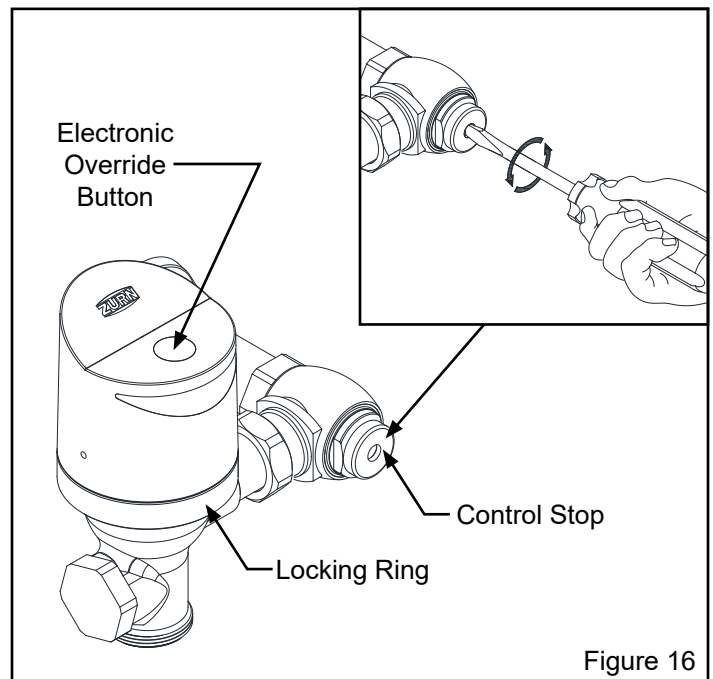


Figure 16

Diaphragm Replacement and Cleaning (when necessary)

STEP 1

Turn off control stop using a flat head screw driver turning clockwise (See Figure 16 above). Then, use the electronic override button to flush the water out of the flush valve.

STEP 2

Mark down Locking ring original position relative to valve body with tape or marker. Uninstall valve head by loosen locking ring (See Figure 16 above) using strap wrench (supplied) turning counter-clockwise.

STEP 3A - Cleaning Diaphragm Kit

Slide out existing diaphragm kit under valve head. Wash diaphragm and orifice thoroughly with water. Slide cleaned diaphragm back on to manifold stem. If cleaning diaphragm and orifice do not resolve issue, follow step 3B.

⚠ Do not to damage or enlarge orifice. Doing so will result in incorrect flush rate.

STEP 3B - Replace Diaphragm Kit

Slide out existing diaphragm kit under valve head and replace with new diaphragm kit onto manifold stem carefully.

STEP 4

Place valve head with diaphragm kit back onto valve body. Tighten locking ring back to original position with strap wrench (supplied) by turning clockwise.

STEP 5

Turn control stop back on by turning counter-clockwise using a flat head screw driver.

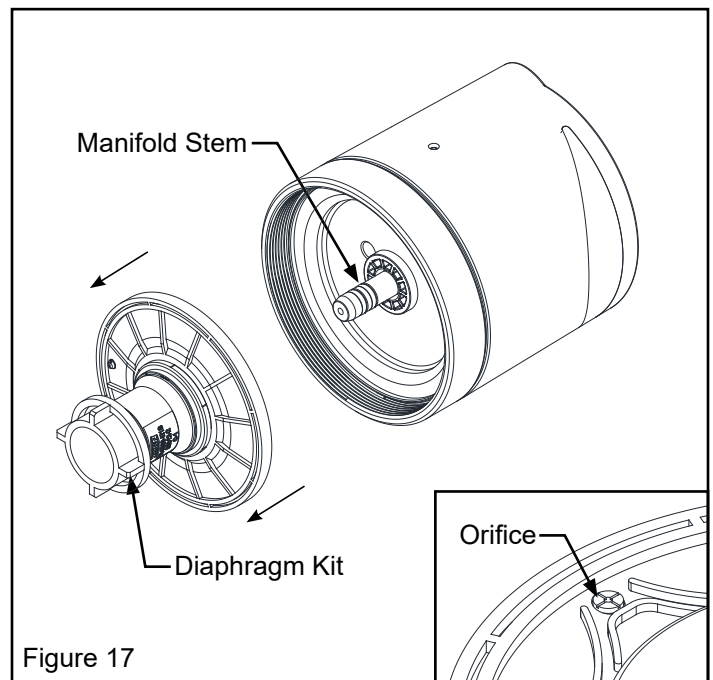


Figure 17

Sensor Range Adjustment (when necessary)

STEP 1

Place a piece of cardboard or a light-colored target at desired detection range away from sensor.

Note: When placing the target for a water closet consider that when standing at the front of the bowl the sensor is focused on the right upper thigh area.

STEP 2

Place the Zurn MagicMagnet® (supplied) on top flat surface (see Figure 18). Once magnet is in place, the blue LED illuminate continuously on for 5 seconds. The LED will quickly flash and then begin flashing once a second. The valve will then have entered Calibrate Mode and the magnet can be removed.

Note: The target must be in position no later than the end of the 2nd flash after the quick flash. The last 8 flashes will determine the new detection range.

STEP 3

After 10 LED flashes followed by a double flash the new detection range will be calibrated and set. If the Magnet was not removed at the end of the 5 second flash above, then the valve may enter Calibrate Mode again if the magnet is not removed immediately after the double flash.

⚠ Test new calibrated sensor range using targets of various material types/textures to ensure calibration accuracy. Verify that sensor range does not detect stall doors or other reflective surfaces.

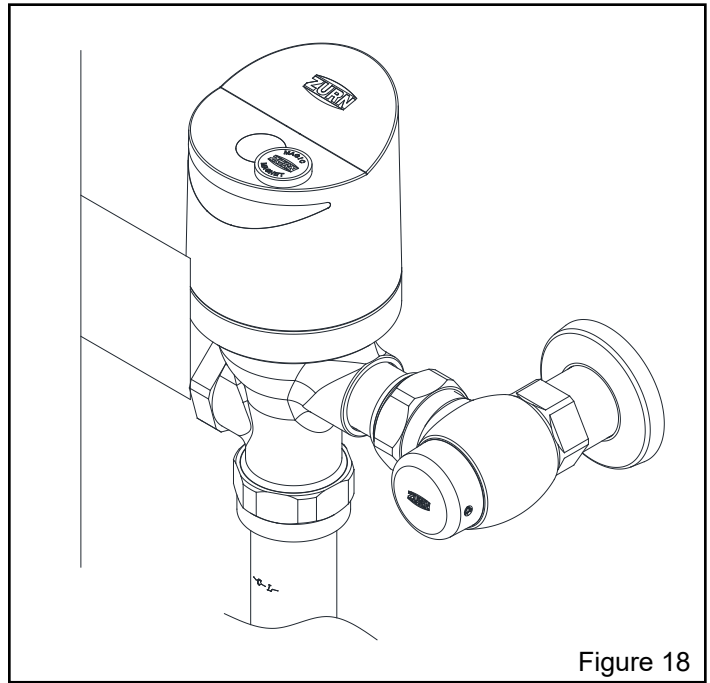


Figure 18

Courtesy Flush Settings (when necessary)

A courtesy flush can be enabled for the ZER-TM flushometer where the valve will automatically flush at a specified interval based on customer preference.

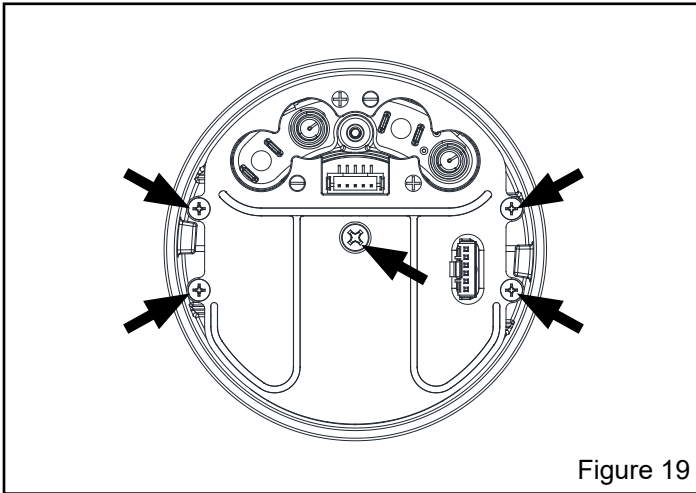


Figure 19

STEP 1

Reference Step 4 Battery installation section on page 6 to remove battery cap.

STEP 2

Remove 4 small screws on two sides and 1 long screw in the center (See figure 19) with cross head screwdriver.

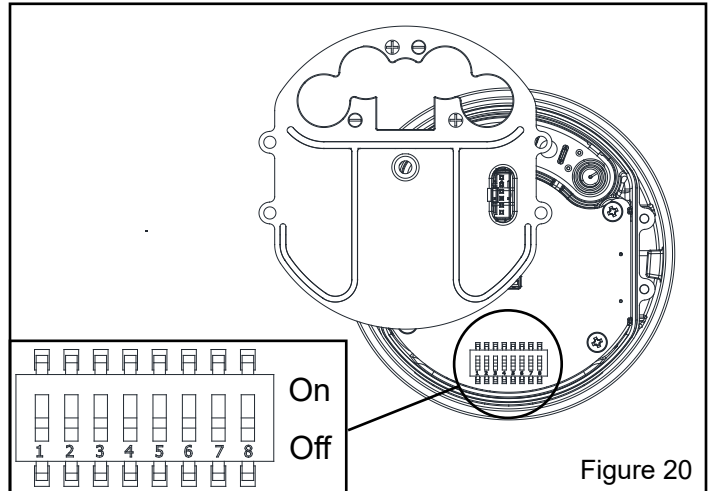


Figure 20

STEP 3

Detach electronic housing cover slowly without disconnect connector within electronic housing.

STEP 4

Manipulate Dipswitches #2 and #3 (See table below) located inside the electronic housing to change the courtesy flush interval.

| Courtesy Flush Interval | Dipswitch #2 | Dipswitch #3 |
|----------------------------|--------------|--------------|
| Disabled (Default Setting) | OFF | OFF |
| 24 hours | OFF | ON |
| 48 hours | ON | OFF |
| 72 hours | ON | ON |

Dual Flush User Guide (For ZER6000AV-DF-TM Only)

- The Dual Flush model supplies flush volumes of 1.1 and 1.6 gallons per flush. When a user is present for less than 60 seconds, the valve will flush with 1.1 gallons of water. When a user is present for over 60 seconds, the valve consumes 1.6 gallons of water. If the manual override button is pressed, the valve will always flush 1.6 gallons of water. A user must be present for a minimum of 8 seconds in order to trigger a flush.
- The Dual Flush model must be paired with a fixture with a flush volume range that includes 1.1 to 1.6 gallons per flush. For a list of recommended bowls, please refer to our website, www.zurn.com, or speak with your local Zurn rep.

Care and Cleaning Instruction

- Do not use any abrasive or chemical cleaners to clean the flushometer.
- The suggested cleaning of chrome plated surfaces is simply to clean them with mild soap and water, then dry. Commercial cleaning compounds are never recommended.
- Upon cleaning other areas of the restroom, be sure the sensor lenses are protected from other cleaning chemicals/solvents to prevent potential damages to the sensor and/or electronics.
- Valves used in installations subject to shut down because of cold and freezing conditions should be maintained in the following manner. After the main supply has been shut off and the water drained from the system, remove the stop valve cap and stop valve internals to allow the water to drain from the flush valve itself.

Trouble Shooting Guide

| Problem | Indicator | Cause | Corrective Action | |
|---|--|--|--|--|
| Flush valve does not flush. | No water flushed. | Stop valve is closed | Open stop valve | |
| | No lights on sensor board | Batteries not making contact | Remove and reinstall batteries correctly. See step 4 on page 5 for reference. | |
| | Sensor flashes every 10 seconds | Low battery voltage indication | | |
| | Sensor flashes every 30 seconds | Continuous user detection of object within sensor range | Inspect and clean lens | |
| | | | Identify and remove any user from sensor field | |
| | | | Reduce sensor range distance (see page 6 for Sensor Range Adjustment instructions) | |
| | Sensor detects user but fails to flush upon exiting sensor range | Battery power level too low to activate flush valve (Sensor firmware prevents valve from opening when there is not enough energy to fully close) | Replace batteries. See step 4 on page 5 for reference. | |
| | | | Dirty sensor lens | Clean sensor lens with warm water and mild soap until free of debris |
| | | | Loose or damaged wire harness | Inspect wire harness and connection between electronics and motor |
| | User not detected. | Sensor range may need to be adjusted | Increase sensor range distance (see page 8 for Sensor Range Adjustment instructions) | |
| Flush valve is aimed at an angle. | | Rotate flush valve head to be perpendicular to wall. See page 6 for adjusting the flush valve head. | | |
| Manual override button does not initiate a flush. | Battery power level too low to activate flush (computer prevents valve from opening when there is not enough energy to also fully close) | Replace batteries. See step 4 for reference. | | |

Trouble Shooting Guide

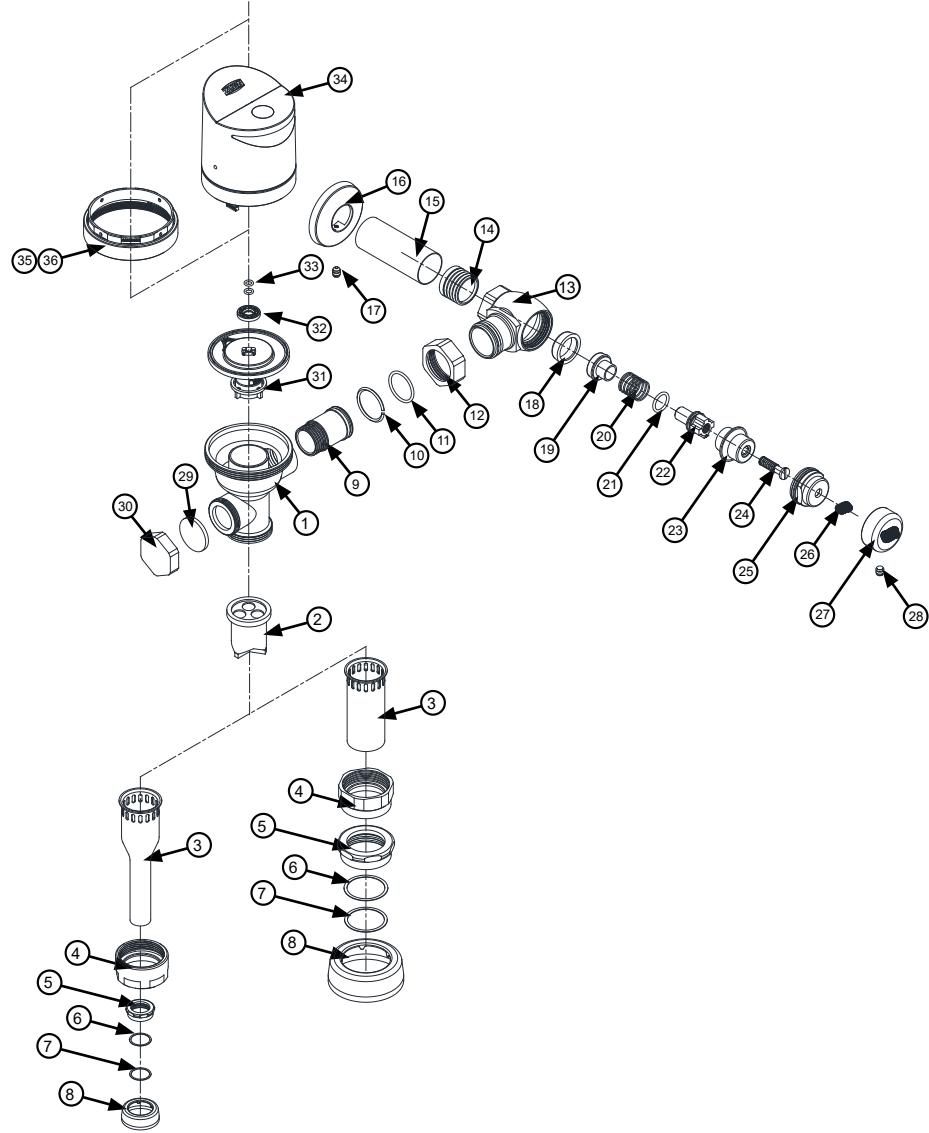
| Problem | Indicator | Cause | Corrective Action |
|---|--|--|--|
| Valve does not evacuate fixture | Insufficient volume of water to adequately siphon fixture. | Stop valve is not open enough. | Open stop valve for desired volume of water. |
| | | Insufficient volume or pressure at supply. | Increase incoming water supply pressure to minimum 35psi. |
| | Valve shuts off too quickly or short flushes. | Damaged or punctured diaphragm. | Install new diaphragm replacement kit. (See page 6 for replacement instruction) |
| | | Enlarged by-pass orifice. | Install new diaphragm replacement. (See page 6 for replacement instruction) |
| | | Diaphragm kit is not matched to the fixture. | Install new diaphragm replacement kit. (See page 6 for replacement instruction) |
| Valve is flushing too long or not shutting off. | High water delivery or continuous flow. | By-pass orifice is plugged or partially plugged. | Examine by-pass orifice and clean if necessary being certain not to enlarge orifice opening. (See page 6 for cleaning instruction) |
| Water splashes out of fixture. | Water splashes onto floor during flush cycle. | Supply volume is too high. | Slowly close the control stop to lower water pressure. |
| | | Mineral accumulation on vortex or spreader holes of fixture. | Remove the mineral build up. |
| Flush is not considered quiet. | Flush is loud. | Control stop may not be adjusted for quiet operation. | Adjust the control stop for quiet operation keeping in mind the fixture evacuation requirements. |
| | | Fixture may be contributing to noise. | Check noise created by fixture by placing a cover over the bowl opening to separate valve noise from bowl noise. If it is determined the fixture is too noisy, consult with fixture manufacturer. |
| | | Piping system may be source of noise. | High pressure in the system can sometimes be controlled by the stop valve. Other sources of noise may be the absence of air chambers and shock arrestors, loose pipes, improper size pipes, etc. In these cases the building engineer should be consulted. |
| Valve leaking near valve head. | Water droplets seen between valve head and valve body. | Locking ring not tight. | Tighten locking ring. See Sensor Angle Adjustment section for reference. |
| Valve flushed with no user present | Valve flushed with no user present | Highly reflective environment | Re-calibrate sensor range - see Sensor Range Adjustment section (page 7) |
| | | Sensor range set too far; picking up other objects | |
| | | Flush valve may be configured to exchange the water in the trap-way at every [24 / 48 / 72] hours after no usage (default is OFF). | See page 7 for instructions on changing dipswitch settings to achieve desired trap exchange timing. |

For further assistance with troubleshooting, visit <http://www.zurn.com/>

ZER-TM Series Repair Kits

Part Identification

1. Valve Body
2. Vacuum Breaker Duckbill
3. Vacuum Breaker Tube
4. Vacuum Breaker Tube Nut
5. Spud Nut
6. Spud Friction Washer
7. Spud Sleeve
8. Spud Escutcheon
9. Tailpiece
10. Snap Ring
11. Tailpiece O-Ring
12. Locking Nut
13. Stop Body
14. Sweat Solder Adapter
15. Supply Cover Tube
16. Cast Wall Escutcheon
17. Setscrew for Cast Wall Flange
18. Piston Seal
19. Piston
20. Stop Spring
21. Guide O-Ring
22. Piston Guide
23. Guide Holder
24. Adjusting Screw
25. Stop Cap
26. Snap Cap Screw Cover
27. Vandal Resistant Control Stop Cover
28. Setscrew for Control Stop Cover
29. Handle Cap Seal
30. Handle Nut
31. Diaphragm Kit
32. Volume Control Ring
33. Manifold Stem O-Ring
34. ZER-TM Valve Head
35. Locking Ring
36. Sloan Locking Ring



| Control Stop Repair Kit and Parts | Product No. |
|--|-------------|
| Control Stop Repair Kit for 1" and 3/4", Items 18-24 | P6000-D-SD |
| Seal Seat for 1" and 3/4", Item 18 | P6000-D42 |
| VP Control Stop Repair Kit for 1" and 3/4", Items 18-24 | P6000-D-VP |
| Sweat Solder Connection with Cast Wall Flange, Items 14-16 | P6000-YBYC |

| Adjustable Tailpieces | Product No. |
|---|-------------|
| Adjustable Tailpiece for Standard Flush Valve, Items 9-11 | P6000-J1 |
| Tailpiece Coupling Assembly, Items 10-12 | P6000-K |
| Tailpiece Locking Ring, Item 10 | P6000-C30 |
| Tailpiece O-Ring, Item 11 | P6000-C31 |
| Coupling Nut, Item 12 | P6000-C32 |

| Flush Connections and Spud Coupling Kits | Product No. |
|---|-------------|
| Vacuum Breaker Repair Kit, Item 2 | P6000-B |
| Spud Coupling Assembly for Water Closet, Items 5-8. Specify size. | P6000-H |
| Spud Coupling Assembly for Urinal, Items 5-8. Specify size. | P6003-H |

| ZER-TM Valve Head Repair Kit and Parts | Product No. |
|--|----------------------|
| Locking Ring, Item 35 | PER6000-M-RING |
| Sloan Locking Ring, Item 36 | PER6000-M-RING-S |
| Valve Head, (1.1 gpf), Item 34 | PERK6000-L-1.1 |
| Valve Head, (1.28 gpf), Item 34 | PERK6000-L-1.28 |
| Valve Head, (1.6 gpf), Item 34 | PERK6000-L-1.6 |
| Valve Head, (1.6/1.1 gpf), Item 34 | PERK6000-L-1.6/1.1 |
| Valve Head, (0.125gpf), Item 34 | PERK6003-L-0.125 |
| Valve Head, (0.5 gpf), Item 34 | PERK6003-L-0.5 |
| Valve Head, (1.0 gpf), Item 34 | PERK6003-L-1.0 |
| Valve Head for Sloan, (1.1 gpf), Item 34 | PERK6000-L-1.1-S |
| Valve Head for Sloan, (1.28 gpf), Item 34 | PERK6000-L-1.28-S |
| Valve Head for Sloan, (1.6 gpf), Item 34 | PERK6000-L-1.6-S |
| Valve Head for Sloan, (1.6/1.1 gpf), Item 34 | PERK6000-L-1.6/1.1-S |
| Valve Head for Sloan, (0.125 gpf), Item 34 | PERK6003-L-0.125-S |
| Valve Head for Sloan, (0.5 gpf), Item 34 | PERK6003-L-0.5-S |
| Valve Head for Sloan, (1.0 gpf), Item 34 | PERK6003-L-1.0-S |

| ZER-TM Diaphragm Repair Kit | Product No. |
|---|----------------|
| Closet Repair Kit - (1.1, 1.28, 1.6, 1.6/1.1 gpf), Item 31-33 | PER6000-EC |
| Urinal Repair Kit - (0.125 gpf), Item 31-33 | PER6003-EU-ULF |
| Urinal Repair Kit - (0.5, 1.0 gpf), Item 31-33 | PER6003-EU |

