



AquaSense®

ZER-TM Series

Automatic Sensor-Operated Gear Driven Type Flushometer Retrofit Kit

Installation, Operation, Maintenance and Parts Manual



ADA
DESIGNED

Universal Kit Water Closet Kit:

ZERK-C-ONE-TM	1.1 gpf
ZERK-C-HET-TM	1.28 gpf
ZERK-C-WS1-TM	1.6 gpf
ZERK-C-DF-TM	1.1/1.6 gpf

Urinal Kit:

ZERK-U-ULF-TM	0.125 gpf
ZERK-U-EWS-TM	0.5 gpf
ZERK-U-WS1-TM	1.0 gpf



ADA
DESIGNED

Sloan Kit Water Closet Kit:

ZERK-C-ONE-TM-S	1.1 gpf
ZERK-C-HET-TM-S	1.28 gpf
ZERK-C-WS1-TM-S	1.6 gpf
ZERK-C-DF-TM-S	1.1/1.6 gpf

Urinal Kit:

ZERK-U-ULF-TM-S	0.125 gpf
ZERK-U-EWS-TM-S	0.5 gpf
ZERK-U-WS1-TM-S	1.0 gpf

Power Options:

Lithium Metal Battery (Standard)

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

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

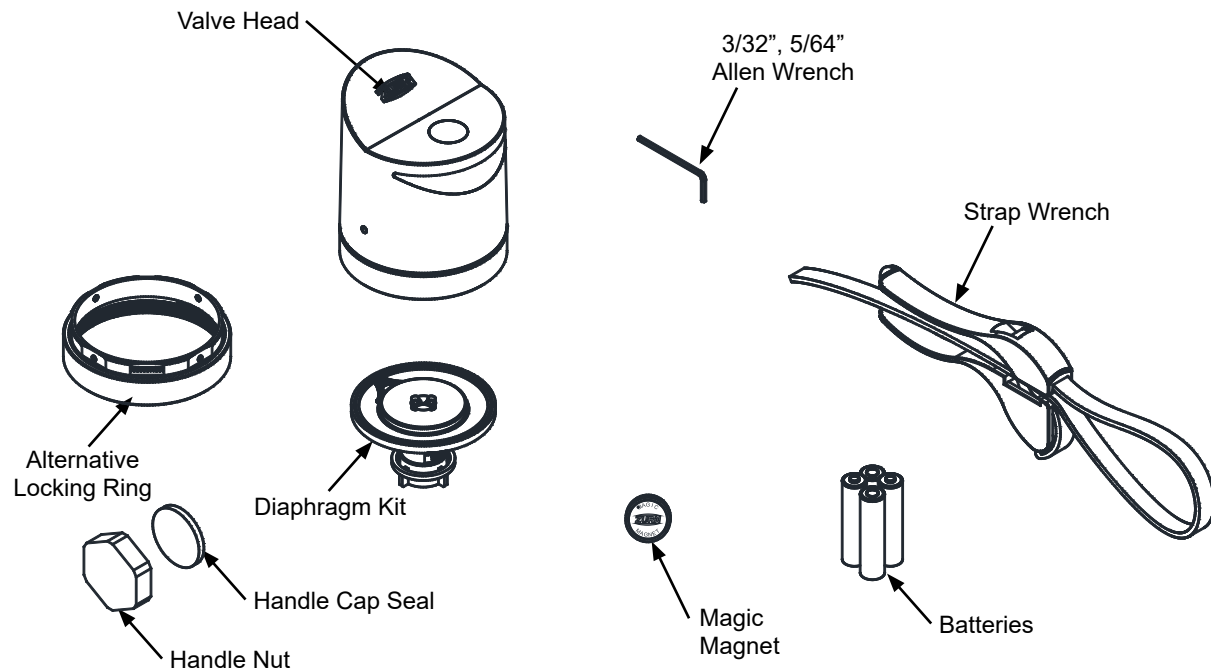
⚠ AVERTISSEMENT: Cancer et effets néfastes sur la reproduction - www.P65Warnings.ca.gov

LIMITED WARRANTY

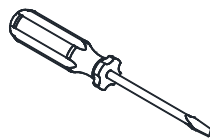
All goods sold hereunder are warranted to be free from defects in material and factory workmanship for a period of three years from the date of purchase. Decorative finishes warranted for one year. We will replace at no costs goods that prove defective provided we are notified in writing of such defect 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

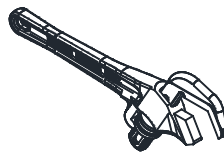
ZER-TM Series Retrofit Kit Package Contents



Required Additional Tools



Flat Head
Screwdriver



Smooth Jawed
Wrench

Overview:

Zurn Aqua-Sense® ZER-TM Series Retrofit kit offers 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 retrofit kit incorporates a diaphragm kit with filtered bypass and valve head with an electronic override pushbutton (MOB) for alternative flushing method. 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 Flush valve Retrofit kit, the items listed below should already be installed on site:
 - Closet or urinal fixture
 - Fixture carrier
 - Flush valve
 - Drain line
 - Water supply line

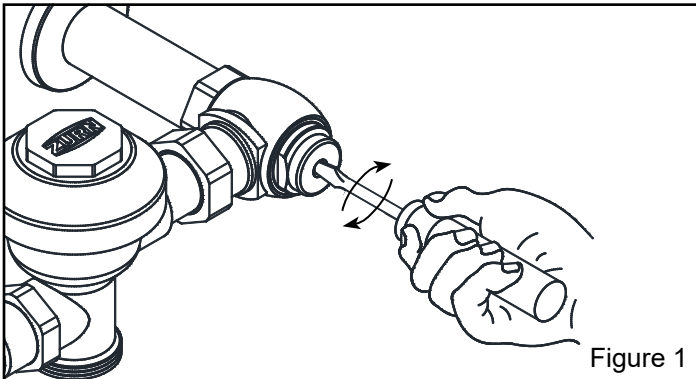
NOTE: The information in this manual is subject to change at any time without notice. Installations may be performed at different times of construction by different individuals. For this reason, these instructions should be left on-site with the facility or maintenance manager.

Retrofit Valve Head - STEP 1

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

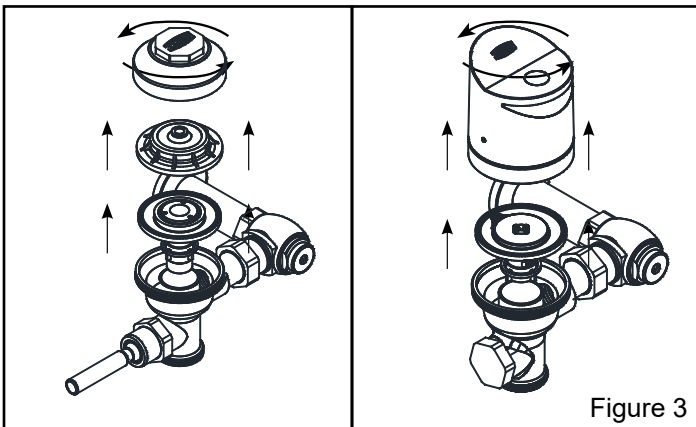
STEP 1.1

Remove vandal-resistant cover with allen wrench from control stop (if present) and turn control stop clockwise to turn off the water supply.



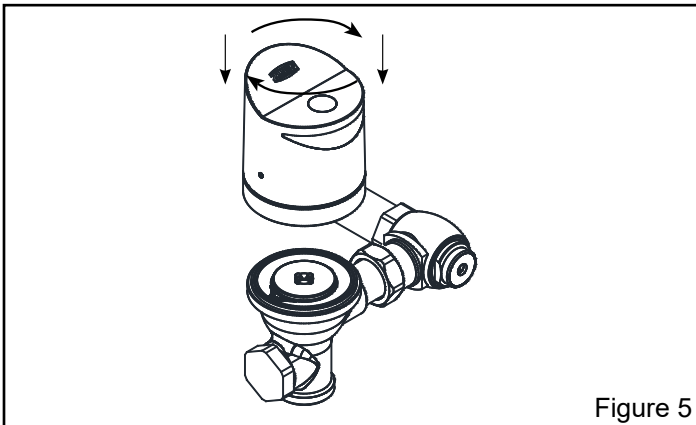
STEP 1.3

Uninstall existing valve cap/valve head with supplied strap wrench by turning counter-clock wise, then remove the diaphragm within by sliding it straight up carefully.



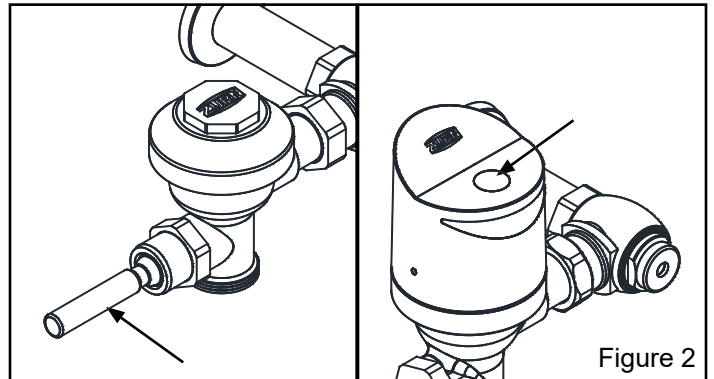
STEP 1.5

Install valve head on to diaphragm kit loosely by turning locking clockwise by hand. While locking ring is installed loosely, adjust valve sensor to face user location. Once sensor angle is set correctly, turn locking ring to a full stop clockwise by hand, then tighten it down using strap wrench for at least a third of a turn more.



STEP 1.2

Press and hold the handle for 3 seconds for manual flush valve or press manual override button for Automatic flush valve to release any residual pressure.

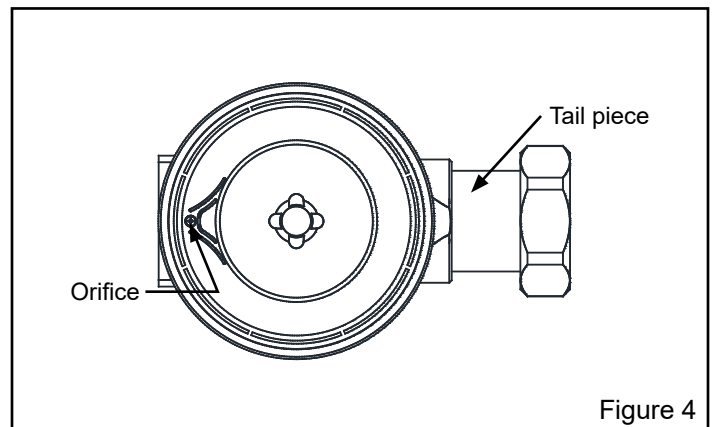


STEP 1.4a

Test fit Alternative Sloan Locking Ring on valve Body. If it fits, follow instruction on page 5 to replace locking ring on valve head, then continue to step 1.4b. Otherwise, follow step 1.4b.

STEP 1.4b

Remove valve head and diaphragm kit from packing and carefully slide diaphragm kit into valve body with orifice placed on the opposite side of the tailpiece



STEP 1.6

If retrofit from another ZER-TM Series Flush Valve, Skip to Step 3 for battery installation instruction. Else, follow Step 2 to install handle nut.

Replacing Handle Nut - STEP 2 (If applicable)

STEP 2.1

Uninstall existing handle on manual flush valve or actuator on automatic flush valve by turning the handle nut counter-clockwise with a smooth jawed wrench (not supplied).

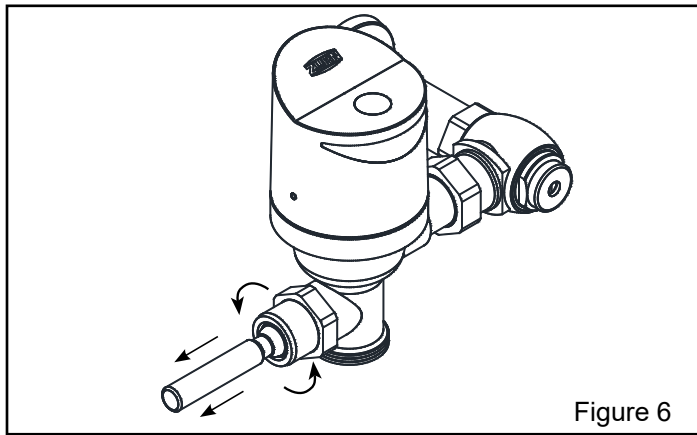


Figure 6

STEP 2.2

Place handle cap seal in handle nut. Then turn handle nut clockwise by hand to a full stop, then tighten it for at least a third of a turn clockwise with a smooth jawed wrench (not supplied).

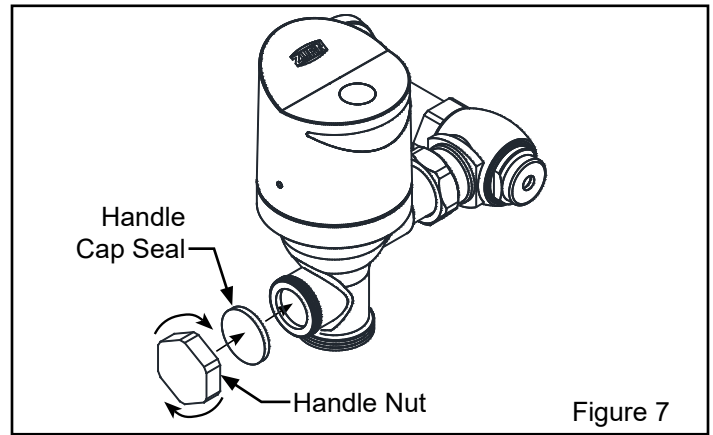


Figure 7

Battery Installation - STEP 3

STEP 3.1

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

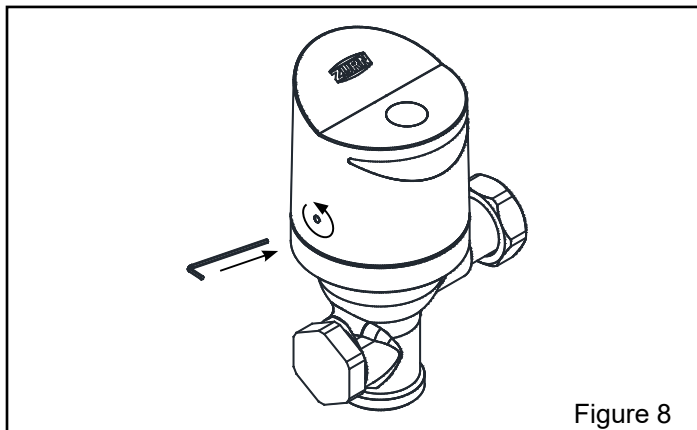


Figure 8

STEP 3.2

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

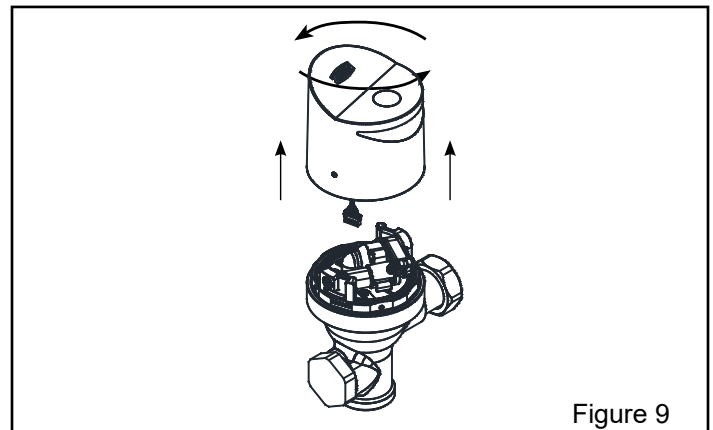


Figure 9

STEP 3.3

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.

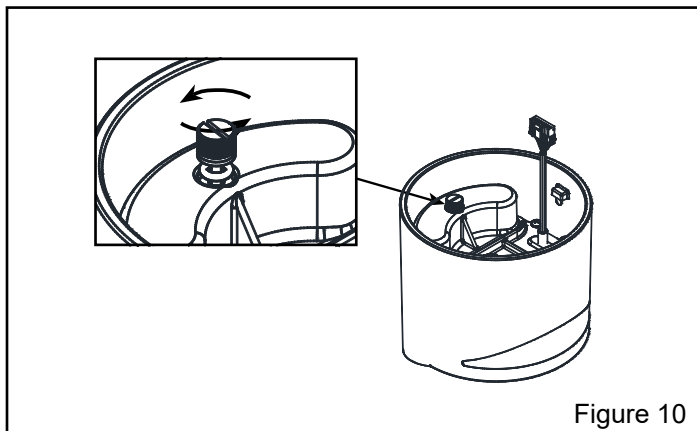


Figure 10

STEP 3.4

Remove the battery cap from the battery housing.

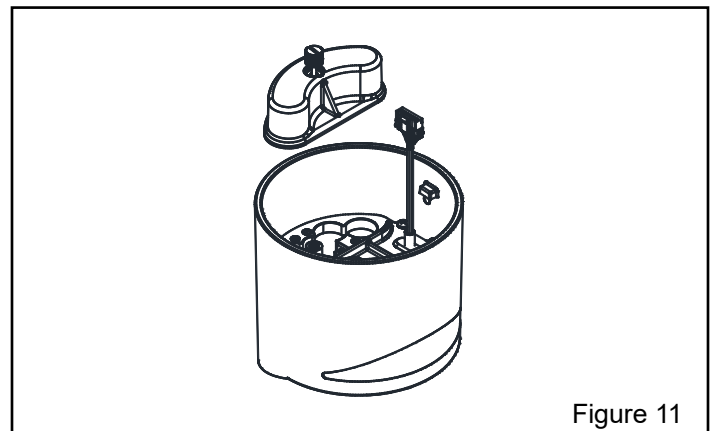


Figure 11

Battery Installation - STEP 3

STEP 3.5

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.

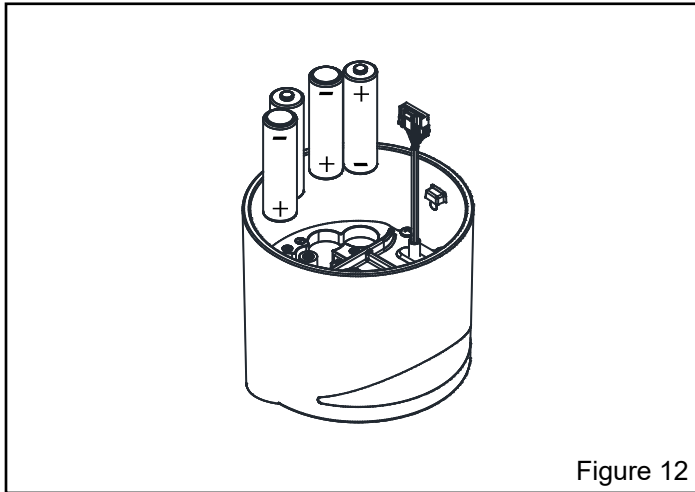
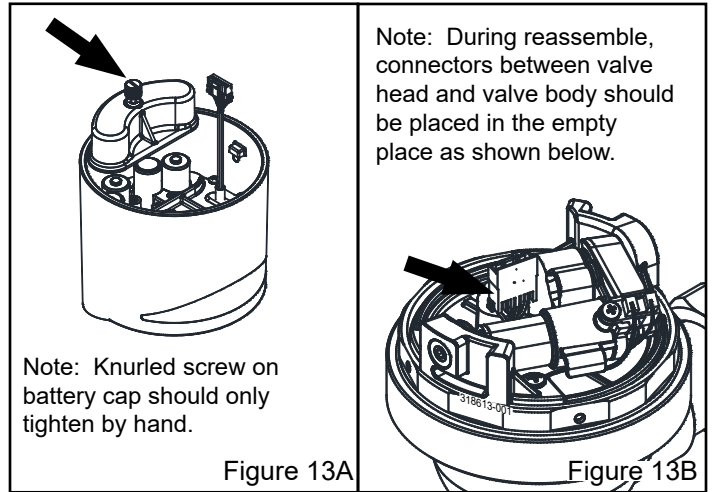


Figure 12

STEP 3.6

See notes below and reverse steps 3.1 - 3.4 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.



Locking Ring Replacement (when necessary)

STEP 1

Follow battery installation step 3.1 & 3.2 to separate shell assembly from manifold assembly.

STEP 2

Remove the three phillip head screws on the ring insert to separate ring insert from the manifold assembly.

STEP 3

Switch out standard locking ring with alternative Sloan locking ring. Note that standard locking ring should read "318613-001" on indicated location (See Figure 14) while alternative Sloan locking ring should read "318613-002".

STEP 4

Reinstall ring insert back on to manifold assembly using the same three phillip head screws.

STEP 5

Ensure the cables are placed inside the cable routing features on both motor bracket and ring insert. Also, the connector should be placed in the empty place indicated in Figure 15 before reassembling the shell assembly.

STEP 6

Reverse step 3.1 & 3.2 in battery installation section to reassemble shell assembly.

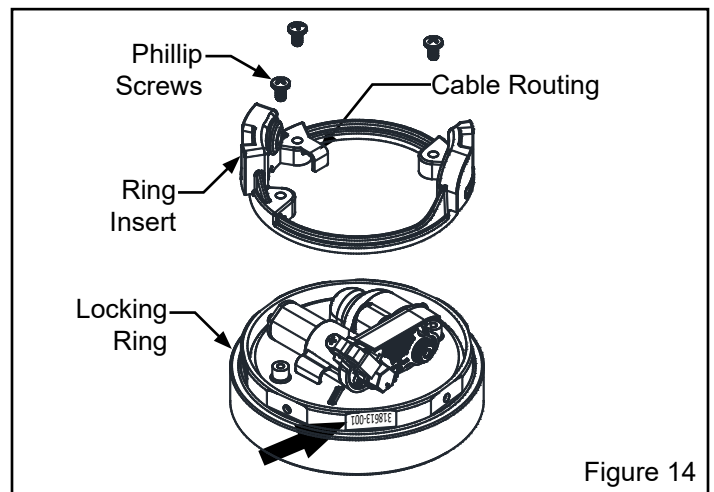


Figure 14

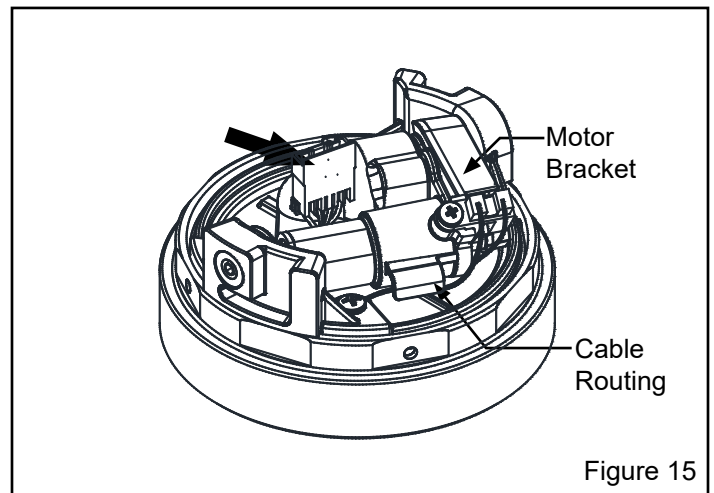


Figure 15

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

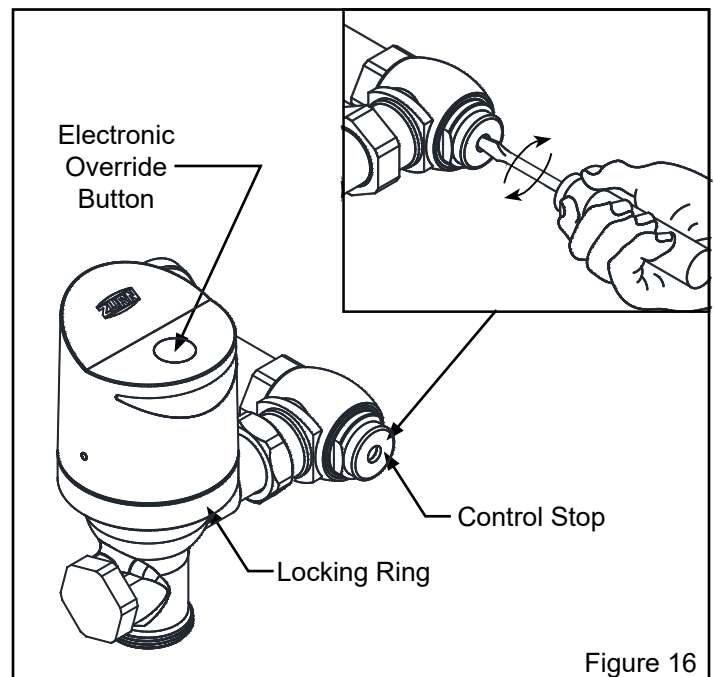
Rotate flush valve head to adjust sensor angle.

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.



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 loosening 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 kit back into the valve body with the orifice on the opposite side from the tail piece. 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

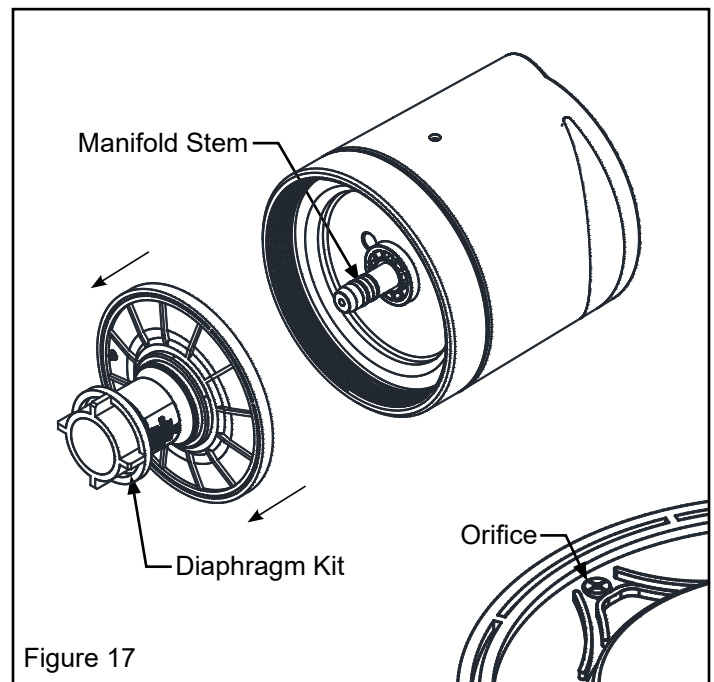
Slide out existing diaphragm kit under valve head and replace with new diaphragm kit back into the valve body with the orifice on the opposite side from the tail piece. Inspect o-rings and replace with supplied o-rings if damage is seen.

STEP 4

Place valve head back onto diaphragm kit. 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.



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 red 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.

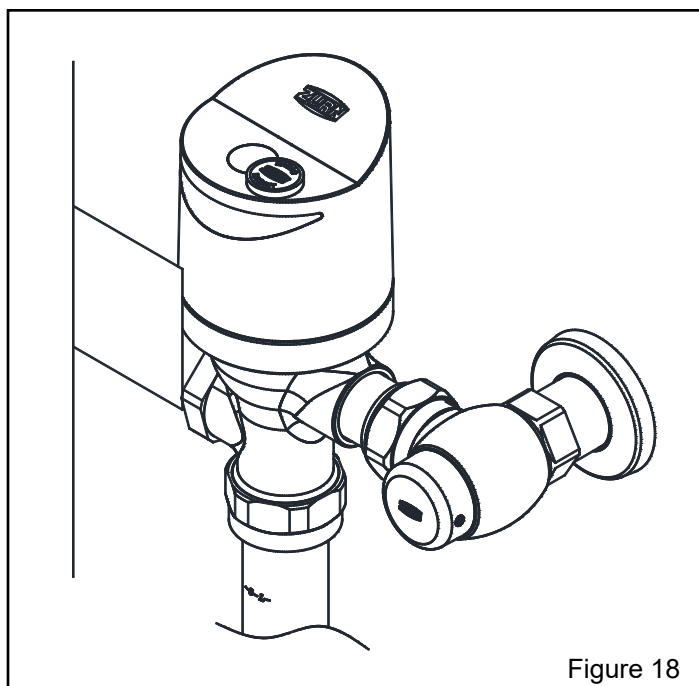


Figure 18

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.

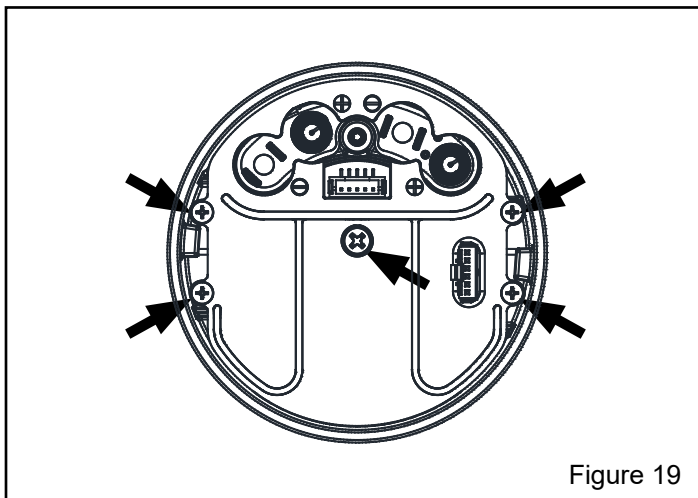


Figure 19

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.

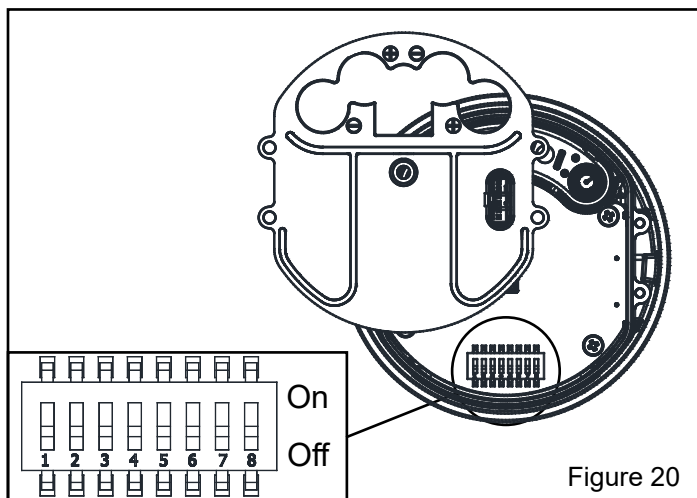


Figure 20

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

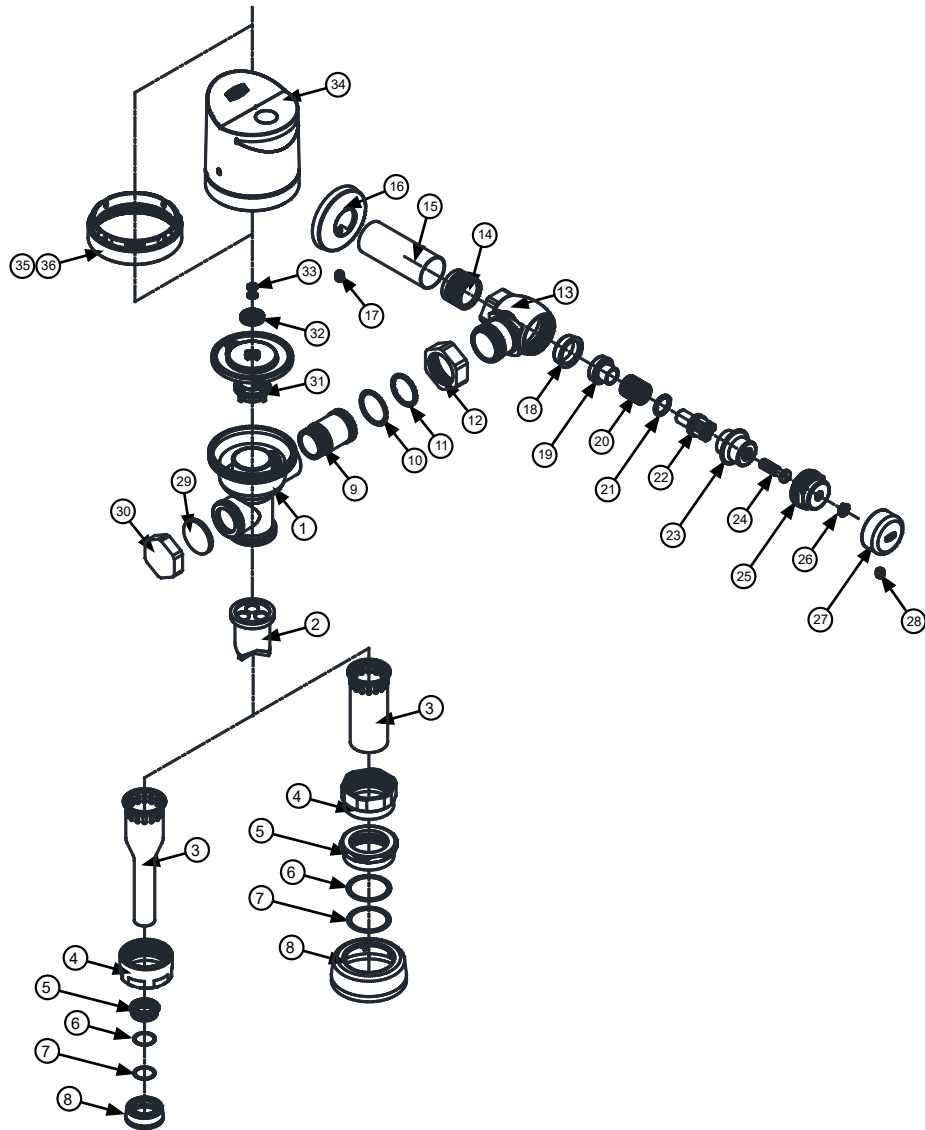
Problem	Indicator	Cause	Corrective Action
Valve does not evacuate fixture	Insufficient volume of water to adequately siphon fixture.	Stop valve is not open enough.	Open stop valve for desired volume of water.
		Insufficient volume or pressure at supply.	Increase incoming water supply pressure to minimum 25psi.
	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

