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AquaSense® EV™ ZEG Series

Automatic Sensor-Operated,
Battery-Powered Flushometer

**Installation, Operation, Maintenance,
and Parts Manual**
Patented and Patents Pending

California Energy Commission

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14-AAER-01

TN 73587

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**ZEG6003EV Flushometer for
Z5798 Low Flow Urinal
Sensor-Operated, Battery-Powered
Urinal System**

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.

PRIOR TO INSTALLATION

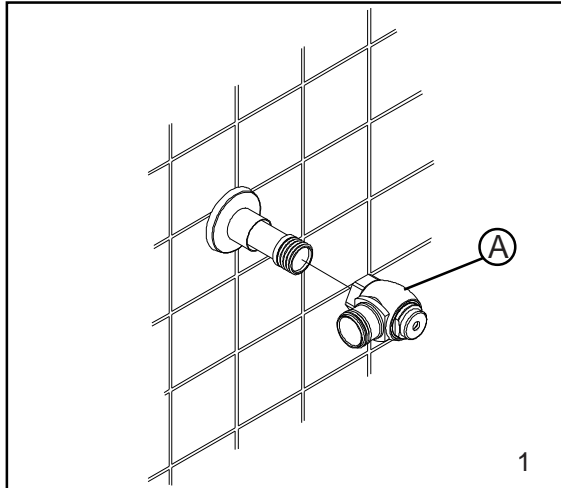
Prior to installing the ZEG EcoVantage urinal flushometer valve, install the items listed below:

- Urinal fixture
- Drain line
- Water supply line

The ZEG is designed to operate with 20 to 120 psi (138 to 827 kPa) of water pressure, however the required water pressure is determined by the fixture. Contact the fixture manufacturer for the proper static and flow operating pressures. Protect the chrome or special finish of this flushometer. **Do not use toothed tools to install or service the valve.**

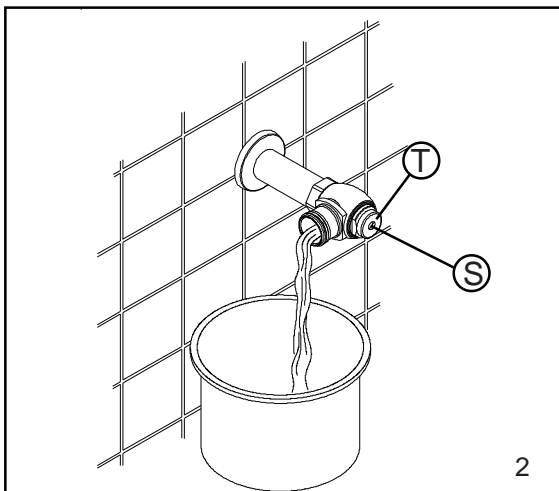
IMPORTANT:

- All Plumbing is to be installed in accordance with applicable codes and regulations.
- Water supply lines must be sized to provide an adequate volume of water for each fixture.
- Flush all water lines prior to operation (See Step 2).
- Dirt and debris can cause flush valve to run continuously.
- Sensor units should not be located across from each other or in close proximity to highly reflective surfaces.
- **DO NOT** use pipe dope or plumbers grease on any part or connection of this valve. These materials can block small orifices in the flush valve and cause malfunctions.



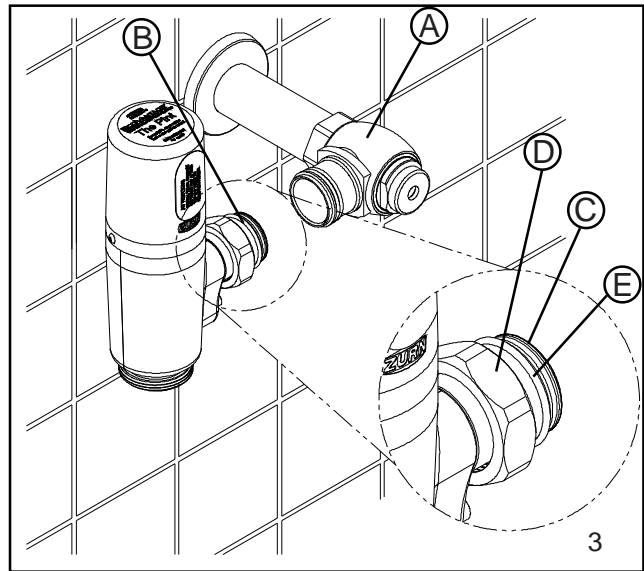
- 1.) Install stop valve assembly (A) using proper size supply escutcheon and sweat solder adapter kit if applicable.
Note: Thread sealing compounds should be avoided. Recommend teflon tape to seal NPT only.

Before the supply water is turned on, be sure all stop valves are closed off tight. The stop valves can be opened and closed by using the adjusting screw (S) located at the center of the stop valve cap (T). Stop valve adjustments can only be made by using the adjusting screw (S). **It is not necessary to remove the stop valve cap (T) when making adjustments. If for any reason it becomes necessary to remove the stop valve cap (T), be certain the water is shut off at the main supply valve.**

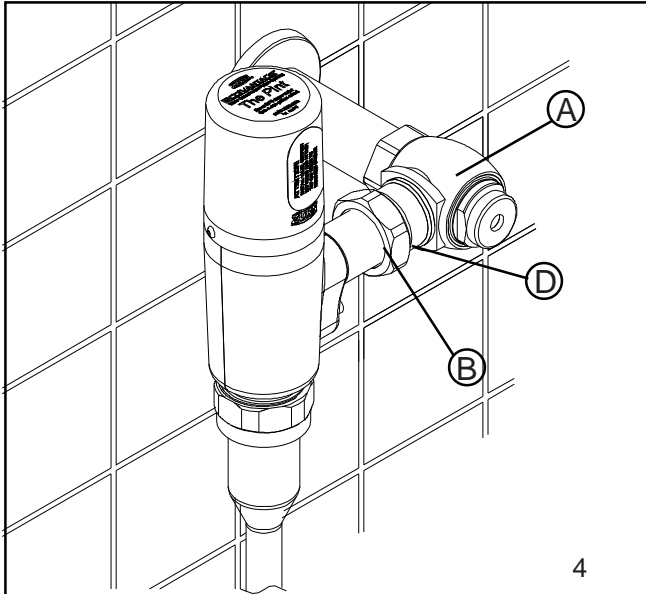


- 2.) When all stops are connected to the water supply and water pressure is available, it is recommended that the supply piping be flushed to remove dirt, metal chips, etc., from system.

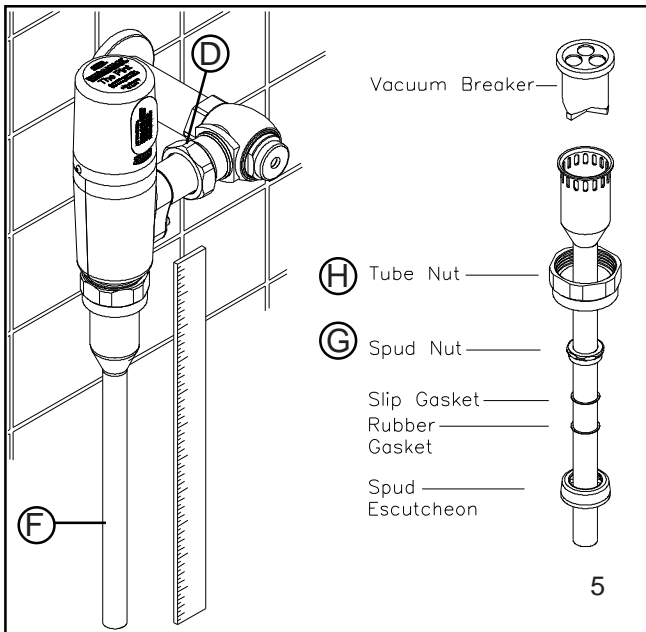
- A. Before the valve is installed, open each stop fully for a brief time and catch the water in a two gallon or larger bucket. For multiple installations, start with the stop valve closest to the water supply and work toward the most remote valve.
B. Due to the small passages and orifices, it is not possible to flush the piping through the low volume valve.
C. Once the lines are flushed, the valve can be installed.



- 3.) Prior to inserting the flush valve tailpiece (B) into stop valve (A), be certain that the O-ring seal (C) is located in O-ring seal groove at the end of the tailpiece and that the locking nut (D) and locking snap ring (E) are located as shown. Care should be taken not to damage the O-ring when inserting the tailpiece into the stop valve. If lubrication is needed, wetting the O-ring with water will be sufficient.

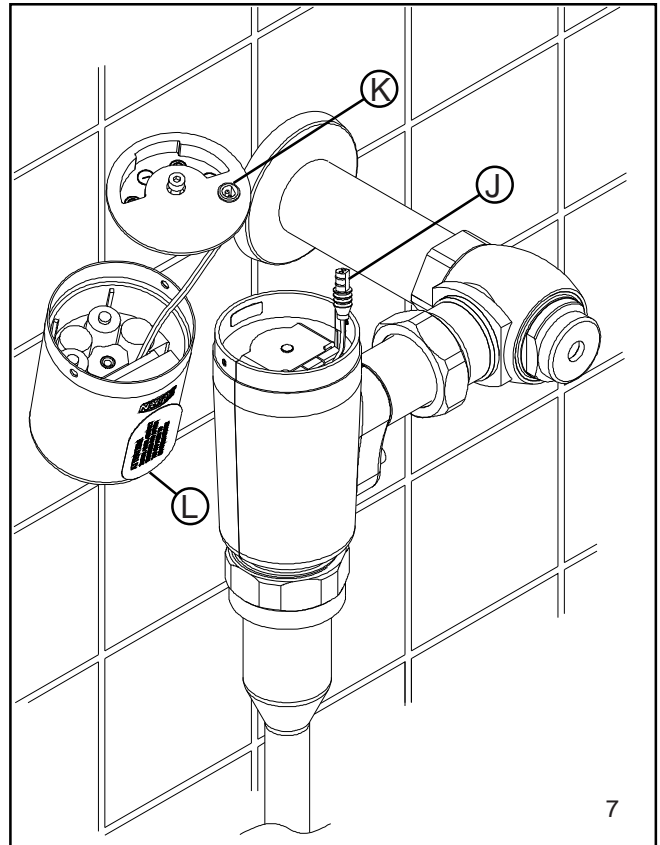


4.) Insert the flush valve tailpiece (B) into the stop valve (A) and hand tighten the lock nut (D) to the stop valve. Plumb the entire unit.



5.) Determine the length of vacuum breaker tube (F) required to join the flush valve and fixture spud. Cut the vacuum breaker tube, if required, to this length. Assemble the vacuum breaker tube assembly and spud nut assembly to the flush valve and fixture spud.

6.) Hand tighten spud nut (G) and vacuum breaker tube nut (H) to fixture and flush valve. Adjust the valve assembly for plumb. Tighten fixture spud nut (G), vacuum breaker tube nut (H) and lock nut (D) with a wrench. **Do not turn water on until batteries are inserted – see 7.**



7.)ACTIVATION

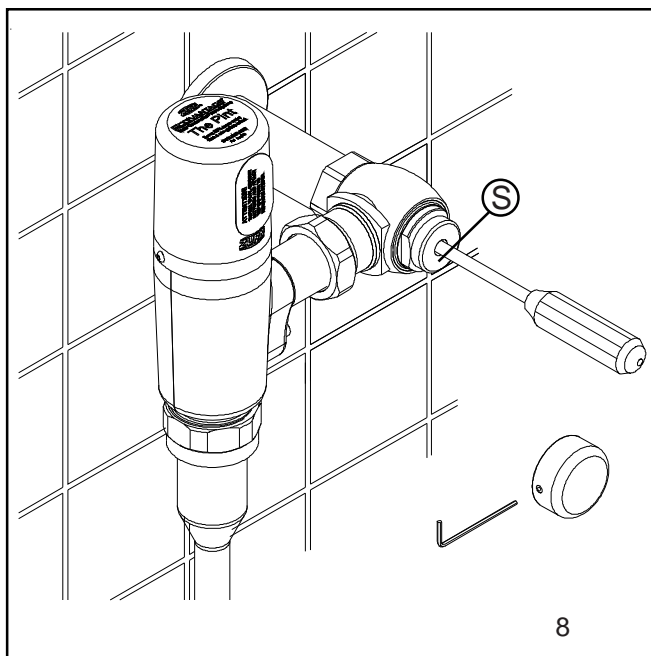
Using the 5/64" Allen wrench supplied with the valve, remove the two 6-32 button head screws holding the top assembly in place. Be sure to place the screws somewhere safe so they don't get lost.

Remove the top cover carefully and disconnect the solenoid wire connector (J) from the bulkhead connector (K). The cover and battery case can now be taken to an appropriate work area to install the AA cell batteries provided.

Remove the battery box cover screw using the 1/8" allen wrench provided. Turn the top assembly upside down and the screw will drop down and can be used to pull the cover off. Load the four heavy duty AA alkaline batteries following the battery orientation guide on the battery box cover. Note that the coil springs always contact the flat (negative) end of the battery. Insert the solenoid wire connector (J) into the bulkhead connector (K). Note that there are flats on the plugs that must align. Align and secure the battery case lid and gasket the with screw provided. Secure the top assembly to the valve housing using the original screws. Once this is completed, remove and discard the protective label (L) from in front of the lens.

Normal valve operation will occur when the valve senses an object (person). The LED will blink dimly four times about a second apart. There will be a pause and then a double blink. At that point the valve is charged. When the object leaves the view of the sensor, the valve will activate. This six second sensing cycle will prevent the valve from flushing needlessly when someone walks by.

If special circumstances require adjustment of the sensing distance, see Appendix A - Changing Activation Distance.



8.) The ZEG urinal valve comes preset for both flow volume and sensing distance. Each valve is operated at the factory using water to insure proper function before being packed for shipment. The valve does not require water pressure regulation for variation in water pressure within the specified pressure range (20 psi to 120 psi) due to internal pressure regulation.

Open the stop valve to wide open position using the adjusting screw (S) on the front of the stop valve. The water volume will never have to be adjusted with the stop valve as on some conventional urinal installations.

Install vandal resistant stop cover to complete the installation.

9.) LOW BATTERY WARNING

The LED will double flash every 30 seconds when the batteries reach a predetermined depletion level. There are approximately five hundred more flushes available once the LED starts flashing, at which time the valve will stop operating. The LED will continue the flash sequence until the batteries are replaced.

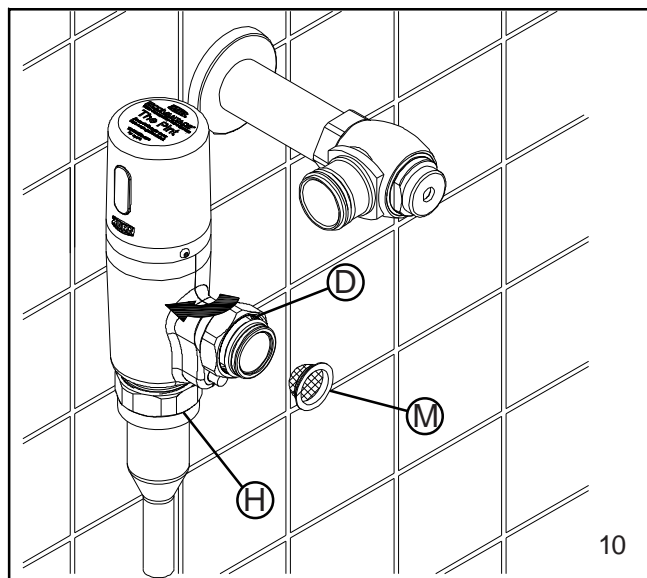
10.) FILTER

When accessing filter, be certain the stop valve is closed at adjusting screw (S) Figure 8.

The filter is in the end of the tailpiece (see Figure 10). To remove it for cleaning or inspection, loosen the locknut completely (D) and loosen tube nut (H) one turn. Swivel the valve and remove the filter. It can be cleaned using water and a brush. When reinstalling, the filter should snap into the tailpiece securely.

Care and maintenance

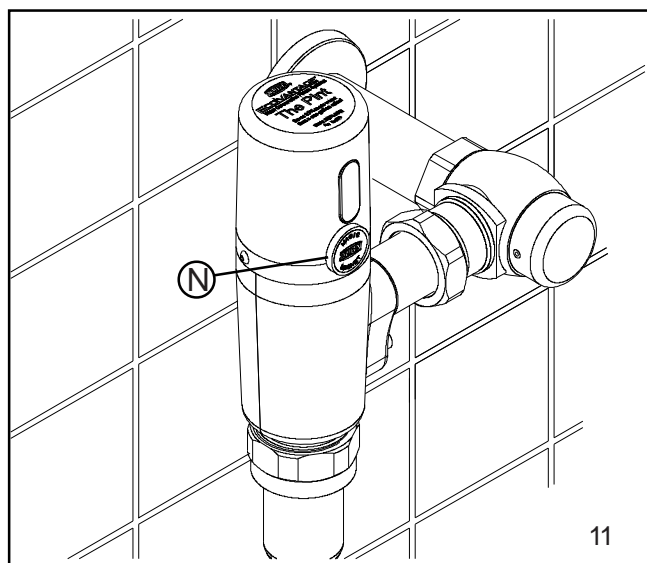
Do not pressure wash any flush valve containing electronics. Water and soap blown through seals at high pressure will damage electronics. Clean valves only with mild antibacterial soap and water using a soft cloth to clean and dry the exterior. Do not use cleaners containing abrasives or chlorine compounds (especially ammonium chloride) to clean flush valves because they will damage the chrome plated and plastic (lens) surfaces.



APPENDIX A TO CHANGE ACTIVATION DISTANCE FOR THE OBJECT LOCK SENSOR

The valve does not have to be disabled in any way to change the detection range. Included with each valve is a Zurn "Magic Magnet" that is used to initiate the auto-calibration mode. Calibration is accomplished as follows.

1. Place the Zurn "Magic Magnet" (N) on the front of the valve as shown in Figure 11 and moved around slightly until the LED comes on.
2. The LED will blink once brightly, then nine times dimly, then a final bright flash. A solid red light will appear in the sensor eye. This means the electronics are ready to calibrate.
3. Remove the magnet and stand in front of sensor about 20" away for the rest of the calibration. The calibration process takes about 60 seconds. Do not move during this process.
4. When calibration is completed the solid red light will disappear and the LED will blink twice brightly.



TROUBLE SHOOTING GUIDE

Problem	Possible Cause	Diagnosis	Solution
No lights are visible in the sensor eye. Valve does not flush.	Valve could be sensing a close by surface or reflections from some opposite surface.	Hold a flat object at an acute angle to the valve and see if it flushes (three ring binder works well)	Reduce sensing range Eliminate reflective object.
	Lens could be dirty or damaged.	Visual inspection of lens.	Clean or replace if obstructed or damaged
	Solenoid lead disconnected, reversed or broken wire.	Check plug insertion and wire continuity.	Reinsert plug or repair leads
	Battery corrosion has caused loss of contact.	Visual inspection	Replace batteries and clean or replace battery housing.
	Sensor not detecting user.	Hold hand at different ranges in front of valve to see if it can be detected.	Reset sensor range (Appendix A)
Light flashes randomly in sensor eye and valve does not flush	Electronics fault	Run through reset procedure below	
	Sensing range too short.	Hold hand close to lens to see if it will produce the 4 flash/2 flash pattern.	Reset range.
Lights follow normal sequence, valve does not flush.	Water not turned on.	Close stop, disconnect valve, crack stop to check for water.	Find source valve and turn on.
	Plugged filter.	Close stop, remove and inspect filter.	Clean and reinstall filter
	Stop valve closed.	Check stop screw.	Open stop valve
	Wiring fault.	Check solenoid leads and insertion of solenoid plug.	Reinsert plug or repair wiring
	Solenoid malfunction.	Remove solenoid and inspect diaphragm and plunger.	Clean P6900-SRK components. See parts list
Valve flushes but does not shut off.	Diaphragm damage or plugged diaphragm orifice.	Visual inspection.	Replace diaphragm
	Solenoid malfunction	Remove solenoid and inspect diaphragm and plunger.	Clean P6900-SRK components. See parts list
Valve leaks	Incorrectly installed.	Check for leak location.	Remove and reinstall. Pay close attention to alignment of inlet tube and outlet boss with mating pieces.
	Damaged O-ring on inlet tube.	Check for cuts.	Replace O-ring
LED flashes every 30 seconds.	Low battery voltage		Replace batteries
Valve operates backwards.	Solenoid connector not properly aligned.		Reconnect plug properly.

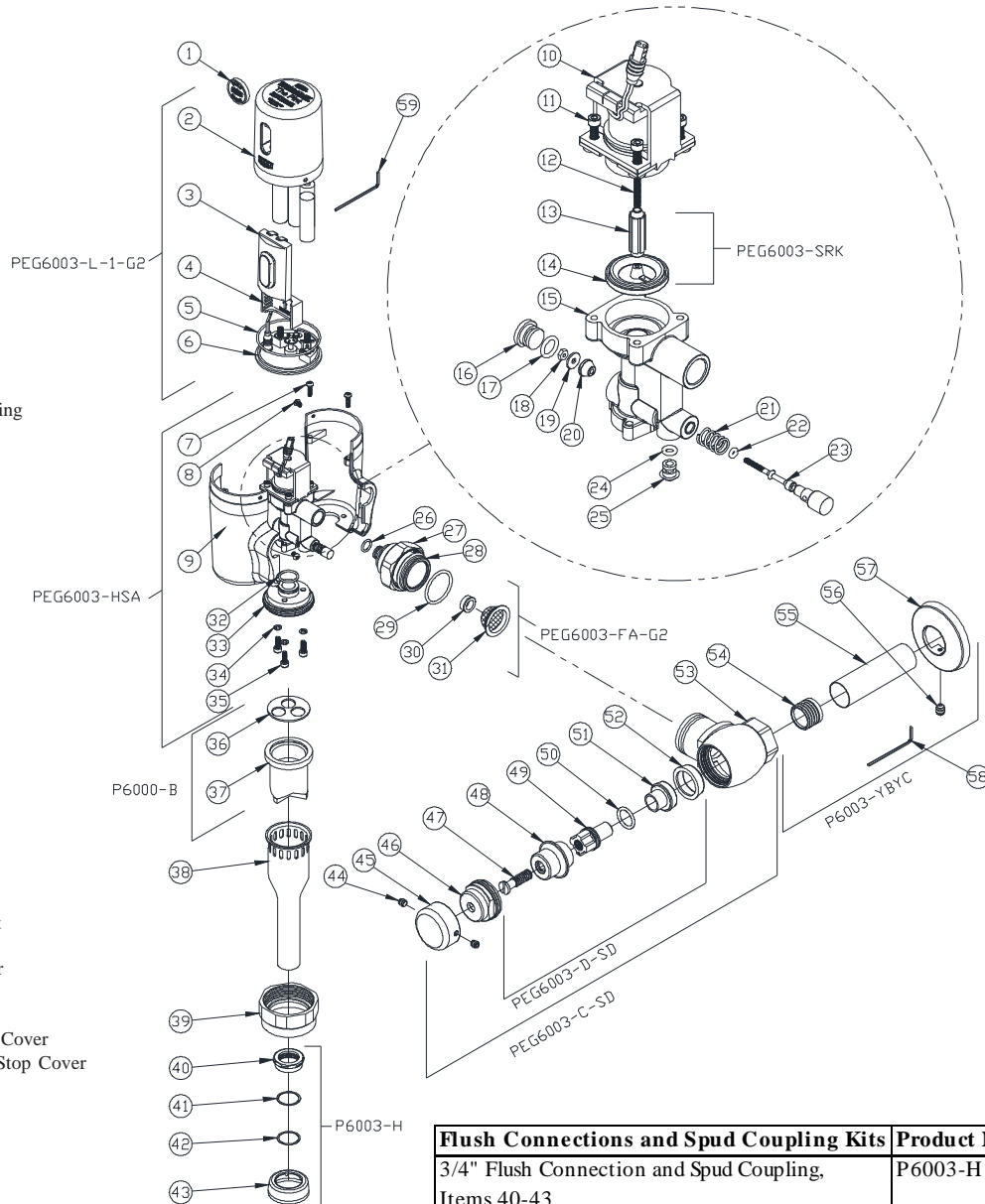
Electronics Reset Procedure: Remove battery cover (J) Figure 7). Allow electronics to set for a minimum of 4 minutes. Resecure the battery cover and gasket with screw provided. Reconnect solenoid wire connector. Place top cover assembly back on valve housing, carefully tuck wires into housing. Secure cover with two screws provided.



ZEG6003EV 1/8th Gallon Urinal Parts Breakdown

Parts Identification

1. Magic Magent
2. Cover
3. Lens/Electronics Assembly
4. Electronics Wedge
5. Cover O-ring
6. Electronics Housing Cover
7. Housing Screw
8. Cover Screw
9. Housing (2 sides)
10. Solenoid
11. Solenoid Screw
12. Solenoid Spring
13. Solenoid Plunger
14. Solenoid Diaphragm
15. Solenoid Valve Body
16. Manual Override Plug
17. Manual Override Plug O-ring
18. Manual Override Nut
19. Manual Override Washer
20. Manual Override Seal
21. Manual Override Spring
22. Manual Override O-ring
23. Manual Override Shaft
24. Bottom Plug O-ring
25. Bottom Plug
26. Tailpiece Inner O-ring
27. Tailpiece Nut
28. Tailpiece
29. Tailpiece O-Ring
30. Flow Control
31. Filter
32. Tube Adaptor O-ring
33. Tube Adaptor
34. Tube Adaptor Seal
35. Tube Adaptor Screw
36. Vacuum Breaker Insert
37. Duckbill
38. Vacuum Breaker Tube
39. Vacuum Breaker Tube Nut
40. 3/4" Spud Nut
41. 3/4" Spud Friction Washer
42. 3/4" Spud Sleeve
43. 3/4" Spud Escutcheon
44. Setscrew for Control Stop Cover
45. Vandal-Resistant Control Stop Cover
46. Stop Cap
47. Adjusting Screw
48. Guide Holder
49. Piston Guide
50. Guide O-Ring
51. Piston
52. Piston Seal
53. Stop Body
54. Sweat Solder Adapter
55. Supply Cover Tube
56. Setscrew for Cast Wall Escutcheon
57. Cast Wall Escutcheon
58. Hex Wrench 5/64"
59. Hex Wrench 1/8"



Control Stop Repair Kit and Parts	Product No.
Control Stop Repair Kit for 1" and 3/4", Includes Items 47-52	PEG6000-D-SD
3/4" Control Stop Replacement, Includes Items 46-53	PEG6003-C-SD-CP
Seal Seat for 1" and 3/4", Includes Item 52	P6000-D42
Sweat Solder Adapter, Includes Item 54	P6003-YBA
Sweat Kit and Escutcheon, Includes Items 54-	P6003-YBYC

Flush Connections and Spud Coupling Kits	Product No.
3/4" Flush Connection and Spud Coupling, Items 40-43	P6003-H
Vacuum Breaker Repair Kit, Items 36-37	P6000-B

Lid and Housing Kits	Product No.
1/8 GPF Cover Replacement Kit, Items 2-6	PEG6003-L-1-G2
1/8 GPF Housing Replacement Kit, Items 7-35	PEG6003-HSA-G2
1/8 GPF Lid O-ring, Item 5	PEG6003-CVR-ORING-G2

Solenoid and Valve Kits	Product No.
1/8 GPF Solenoid Repair Kit, Items 12-14	PEG6003-SRK
1/8 GPF Solenoid Replacement Kit, Items 10-11	PEG6003-M
1/8 GPF Filter Replacement Kit, Items 31	PEG6003-FA-G2

Replacement Parts and Repair Kits	Product No.
1/8 GPF Cover screw, Item 8	PEG6003-CVR-S

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