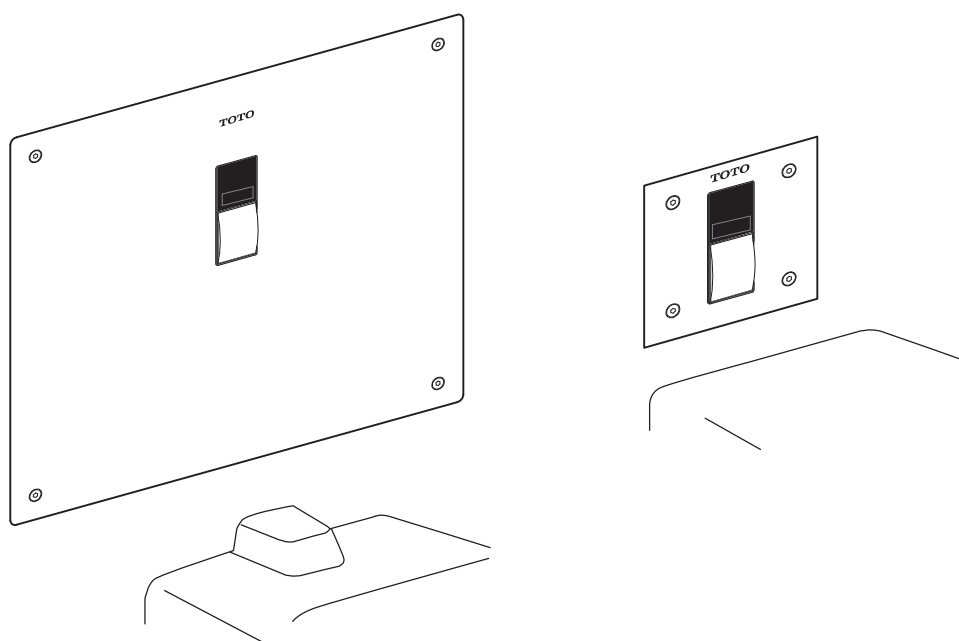


EcoPower Flush Valve for Toilet
Válvula de descarga EcoPower para inodoro
Valve de chasse EcoPower pour toilette
Válvula de descarga EcoPower para vaso sanitário



Warranty Registration and Inquiry

For product warranty registration, TOTO U.S.A. Inc. recommends online warranty registration. Please visit our web site <http://www.totousa.com>. If you have questions regarding warranty policy or coverage, please contact TOTO U.S.A. Inc., Customer Service Department, 1155 Southern Road, Morrow, GA 30260 (888) 295-8134 or (678) 466-1300 when calling from outside of U.S.A.

TABLE OF CONTENTS

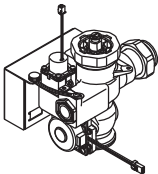
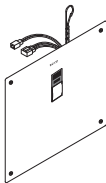

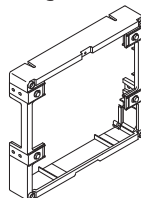

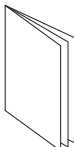


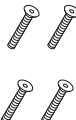




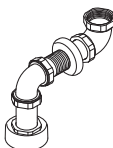
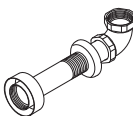
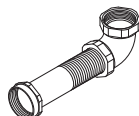

Thanks for Choosing TOTO!	2
Included Parts	2
Common Tools Needed	3
Initializing the Ecopower product.....	3
Features	3
Specifications	4
Technical Information	5
Warnings	5
Before Installation.....	6
Installation Procedure.....	7
Test Run.....	14
Note to the Installer	15
Using the Flush Valve	15
Periodic Maintenance	15
Care & Cleaning	15
Troubleshooting.....	16
Warranty	21
Rough-In Dimensions.....	82
Reclaimed Water Specifications.....	85

THANKS FOR CHOOSING TOTO!

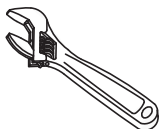
The mission of TOTO is to provide the world with healthy, hygienic and more comfortable lifestyles. We design every product with the balance of form and function as a guiding principle. Congratulations on your choice.

INCLUDED PARTS

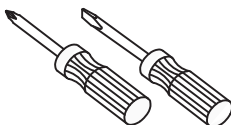
Check to make sure you have all these parts from the package:

 <p>Valve body assembly</p>		<div>Large cover</div>  <div>Small cover</div>  <p>Front cover</p>		<div>Large cover</div>  <div>Small cover</div>  <p>Base frame</p>	
 <p>Installation And Owner's Manual</p>	 <p>Notice label</p>	 <p>Connection cables</p>	 <p>Vandal proof hex screws</p>	 <p>Washer</p>	 <p>Hex wrench</p>
<p>Small cover only</p>  <p>Screws</p>	 <p>Vacuum breaker tube</p>	<div><div>TET3GB32 TET3LB32 TET3UB32 TET2GB32 TET2LB32 TET2UB32</div></div> <div><div>TET3GB33 TET3LB33 TET3UB33 TET2GB33 TET2LB33 TET2UB33</div></div> <div><div>TET3GB31 TET3LB31 TET3UB31 TET2GB31 TET2LB31 TET2UB31</div></div> <p>Flush pipe</p>			
 <p>Control stop</p>					

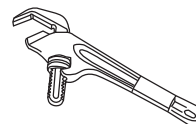
COMMON TOOLS NEEDED



Adjustable wrench



Screwdrivers (Phillips and Flat head)



Offset pipe wrench

INITIALIZING THE ECOPOWER PRODUCT

Thank you for choosing the latest innovation in low power consumption EcoPower products. Please note below the duration of time required to initialize the electronics.

It will take approximately 5 minutes after connecting the battery for the electronics to initialize.

This delay is a normal part of startup.

After approximately 30 seconds, the sensor LED will start flashing in 4 second intervals until the initialization is complete.

FEATURES

Fully Automatic and Hygienic

The EcoPower Flush Valve uses an infrared sensor to detect the user using and departing the fixture, to provide an automatic flush of the fixture after 3 seconds. No manual operation is required, improving the experience of use and hygiene of the fixture.

Courtesy Flush

When the fixture is not used for 24 hours the protection timer commands the system to flush in order to maintain the trap seal.

Manual Functionality

For maintenance and emergency use, the EcoPower Flush Valve is equipped with a manual flushing button.

Green Features

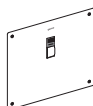

Conserves Power

The flushing of the fixture activates a hydropower generator which generates electric power for the next flush. (See About TOTO's Hydropower Generator, page 5)

Conserves Water

The EcoPower Flush Valve offers consecutive flush prevention to save water. After a flush, the valve will not automatically flush again for 30 seconds.

TOTO EcoPower Flush Valves are designed to work for 10 years, under normal conditions, with no minimum daily usage required.

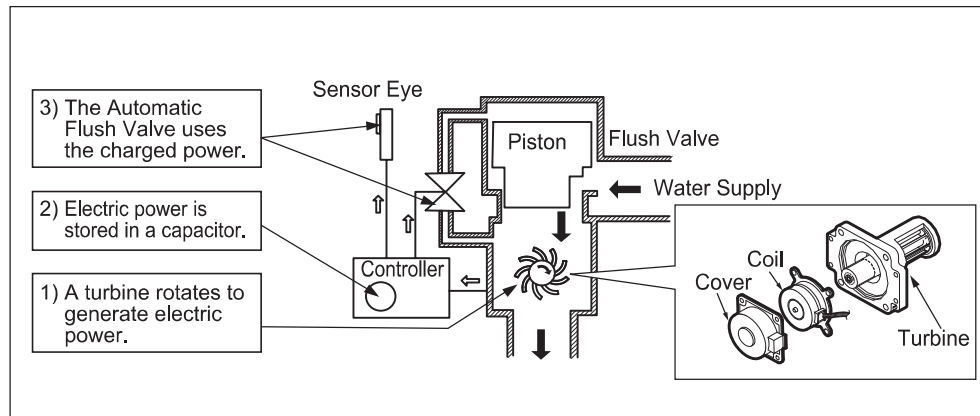
SPECIFICATIONS				
		Toilet		
Figure	Large cover			
	Small cover			
Model Number	Large cover	TET2GB	TET2LB	TET2UB
	Small cover	TET3GB	TET3LB	TET3UB
Rated Flush Volume		1.6 G (6 L)	1.28 G (4.8 L)	1.0 G (3.8 L)
Toilet type		Flush Valve type		
Control stop inlet		1" NPT		
Flush Valve inlet		1-1/4" NPSM		
Flush Valve outlet		1-1/2" NPSM		
Supply water pressure	Min (Flowing)	25 psi (173 kPa)		
	Max* (Static)	125 psi (862 kPa)		
Shutoff pressure		7 psi (48 kPa)		
Dimension of cover	Large cover	12-5/8" (H) ×14-3/16" (W) < 320 mm (H) ×360 mm (W) >		
	Small cover	4-23/32" (H) ×4-23/32" (W) < 120 mm (H) ×120 mm (W) >		
Detection range from the front		Within 39-3/8" (1000 mm)		
Detection time		6 seconds		
Delayed flush		3 seconds		
Trap seal protection		Automatic flushing every 24 hours of non-use		
Ambient temperature		32-104 °F (0-40 °C)		
Water temperature		34-104 °F (1-40 °C)		
NOTE: The type of fixture determines the minimum pressure required for the valve. Consult fixture manufacturer for the overall pressure requirement.				
* Water pressures over 80 psi are not recommended for most plumbing fixtures.				

TECHNICAL INFORMATION

About TOTO's Hydropowered Generator

The flow of water causes the turbine in the power generator to rotate. This process generates electric power and enables the automatic Flush Valve to operate. See ill. 1 below.

TET2LB
TET2GB
TET2UB
TET3LB
TET3GB
TET3UB



ill. 1 Hydropowered Generator

WARNINGS

Please read and adhere to these notes. Failure to do so could result in personal injury and/or property damage.

- Never splash water on the controller. The EcoPower Flush Valve is an electric appliance. Risk of product malfunction.
- Do not strike or kick the EcoPower Flush Valve. Risk of product malfunction or water leakage.
- Do not use the EcoPower Flush Valve at temperatures exceeding what local codes or product specification allow. Risk of product malfunction.
- Do not place an item in a room with high humidity such as shower area or sauna. Risk of product malfunction.
- Never attempt to disassemble, reassemble, repair or modify the EcoPower Flush Valve unless you are a professional. Risk of product malfunction and electric shock.
- Do not use standard vacuum breaker or control stop with reclaimed water flush valve.
- Do not use petroleum based products or pipe sealants, doing so could damage product and cause water damage.
- Use appropriate protective equipment such as gloves during installation or maintenance.
- Do not neglect Periodic Maintenance. Refer to the Periodic Maintenance section of the instruction manual.

ENGLISH

BEFORE INSTALLATION

ENGLISH

IMPORTANT: Plumbing installation must be 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 waterlines prior to operation.

- Toilet and urinal Flush Valves are not interchangeable, check the model number on the label to make sure you have the correct type. Toilet Flush Valve model numbers begin with 'TET' and Urinal Flush Valve model numbers begin with 'TEU' .
- Prior to installing your Flush Valve, install the items listed below:
 - Toilet bowl fixture
 - Drain line
 - Water supply line

The supply piping to these devices must be securely anchored to the building structure to prevent the installed device moving during use. Prevent marring to the exposed surface during installation.

IMPORTANT: Purge all air from the supply lines before connecting flush valve to the bowl. Trapped air in supply lines may crack the china.

- Avoid damaging the surface of the infrared sensor while unpacking.
- The toilet Flush Valve may not function if toilet seat or lid cover are left upright and block the sensor.
- For Reclaimed Water Flush Valve:
 - Only use reclaimed water angle stop and vacuum breaker.
- The detection range of the infrared sensor is shown on p.20.
- To prevent valve malfunction, do not install a handrail or any other object within the detection range of the sensor. Do not install the Flush Valve where sensor faces a mirror, stainless steel wall, other highly reflective surfaces or another infrared sensor.

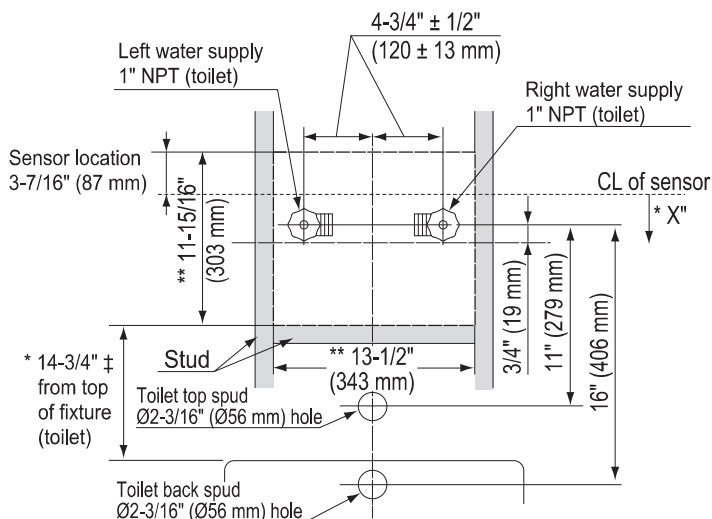
INSTALLATION PROCEDURE — LARGE COVER

1. Determine the installation location of the studs and water supply pipe relative to the position of the toilet.
2. If needed, slide a thread solder adapter on the water supply pipe.
3. Attach the control stop to the pipe.
4. Bore a guide hole for the flush pipe into the wall.

NOTE: Attach the control stop before installing the box fixing frame. Thread sealing compounds should be used on the male NPT threads only.

NOTE: For reclaimed water, do not use standard vacuum breaker or control stop.

NOTE: Do not use petroleum based products or pipe sealants.



* X", ± = At least 5" clearance from sensor to tip of toilet seat up position or to top of grab bar is required to avoid false detection.

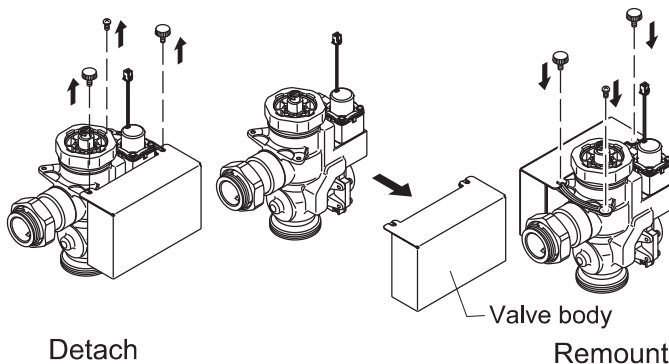
** Opening in wall



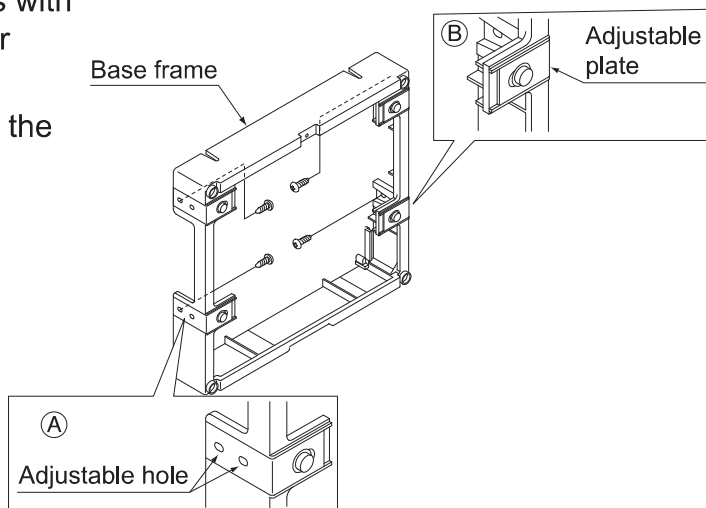
For use with a left water supply, detach the controller and remount it to opposite side of valve body.



Protect the wire connections inside the controller's case.



5. Fasten the base frame to the studs with four screws (prepared on site) after adjusting it. (A)
6. Secure the box with four screws in the adjustable plate. (B)

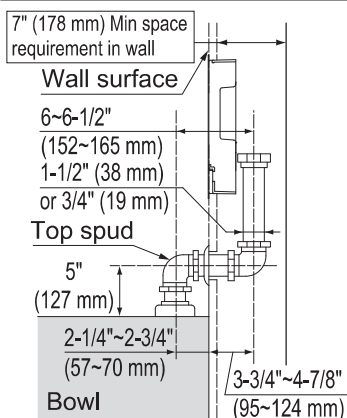


INSTALLATION PROCEDURE — LARGE COVER

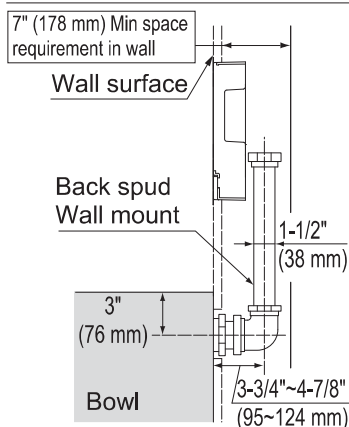
ENGLISH

7. Pass the flush pipe and the vacuum breaker through the guide hole (Step 4) and mount them on the bowl.
8. If required, cut the vacuum breaker tube to the proper length.

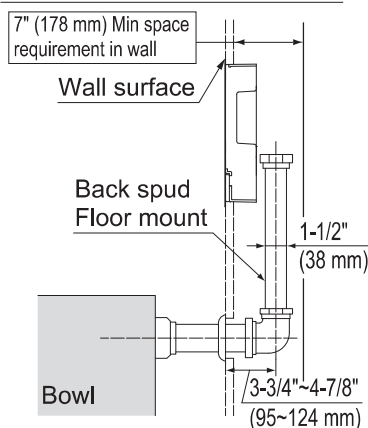
TET2LB32, TET2GB32
TET2UB32



TET2LB31, TET2UB31
TET2GB31

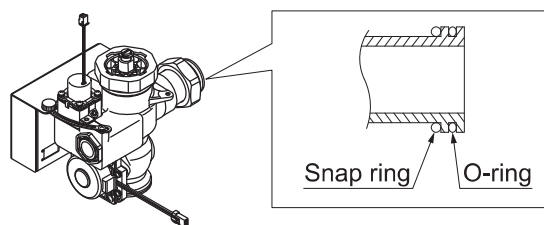


TET2LB33, TET2UB33
TET2GB33

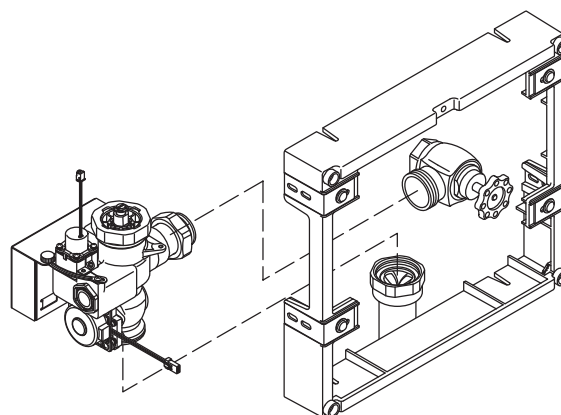


9. Make sure that the o-ring fits in the groove at the end of the Flush Valve tailpiece.

NOTE: Exercise care to avoid damaging the o-ring when inserting the tailpiece into the control stop. If lubrication is needed, wetting the o-ring with water is sufficient.

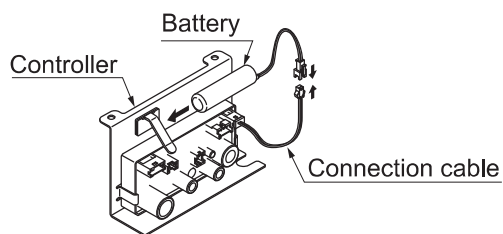


10. Connect the Flush Valve to the control stop and vacuum breaker tube.



INSTALLATION PROCEDURE — LARGE COVER

11. Connect the battery cable with the controller and set the battery in place.



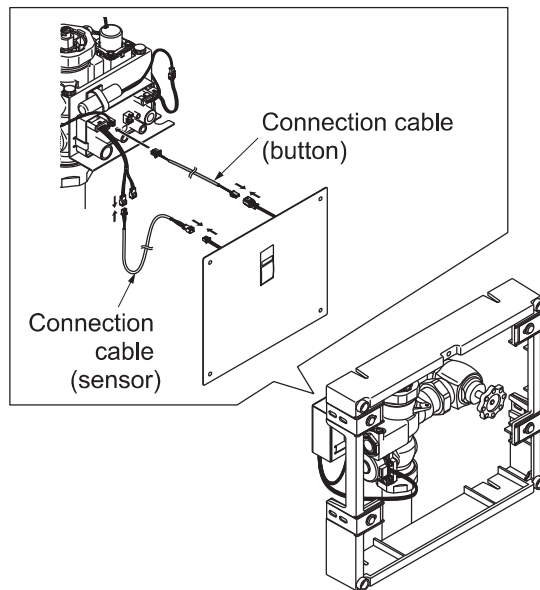
12. Connect the cables of infrared sensor and controller with the connection cable.

13. Connect the cables of manual button and controller with the connection cable.

NOTE: It will take 5 minutes after connecting the battery for the electronics to initialize. After approximately 30 seconds, the sensor LED will flash in 4 second intervals until the initialization completes.

14. Ensure all pipe connections are completely tightened to prevent leaking.

NOTE: If for any reason it becomes necessary to remove the control stop make sure the water is shut off at the main supply valve.

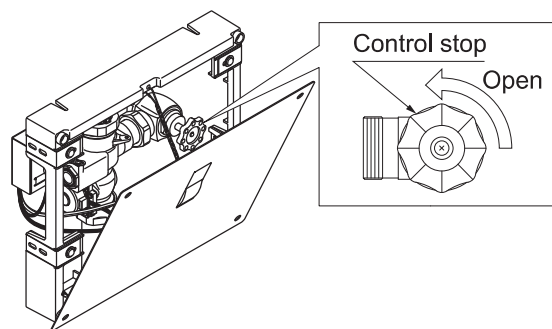


The Flush Valves are preset for flush volume as marked on the valve carton. The valve does not require adjustment for variation in water pressure within its operating range.

15. To set the Flush Valve for proper operation, open the control stop completely and activate the Flush Valve several times.

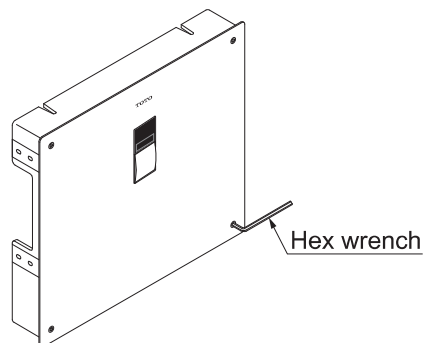
16. In the case of excessive flow rate because of high water pressure, gradually adjust the control stop clockwise (towards the closed position) until there is suitable water flow into the fixture.

NOTE: Adjust so water amount is not excessive and waste can flow properly.



NOTE: The control stop should never be opened to the point where the flow from the Flush Valve exceeds the flow capability of the fixture. In case of a valve failure, the water must NOT overflow from fixture.

17. Tighten the front cover screws into the base frame firmly with the hex wrench. Make sure no cord, wire or chain is caught between the front cover and base frame.

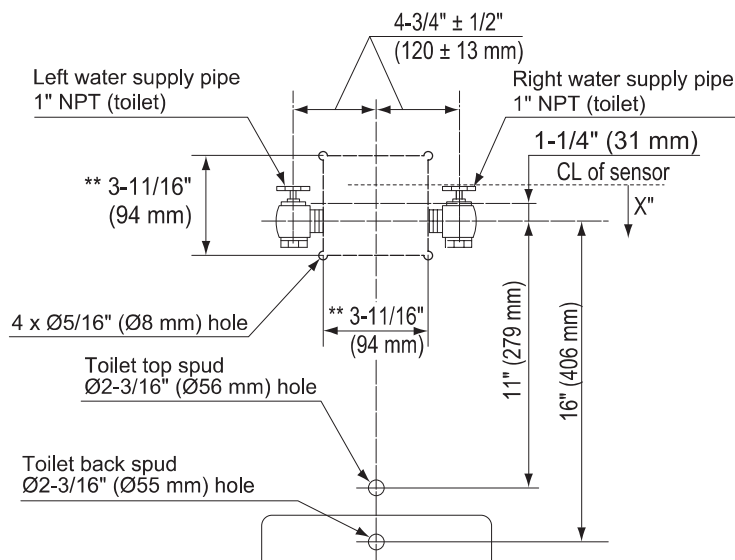


INSTALLATION PROCEDURE — SMALL COVER

ENGLISH

1. Determine the location of the water supply pipe.
2. If necessary, slide a sweat solder adapter on the water supply pipe.
3. Attach the control stop to the pipe.
4. Bore a guide hole for the flush pipe into the wall.

NOTE: Thread sealing compounds should be used on the male NPT threads only.

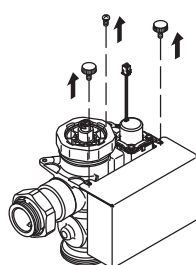


* X", \pm = At least 5" clearance from sensor to tip of toilet seat up position or to top of grab bar is required to avoid false detection.
 ** Opening in wall

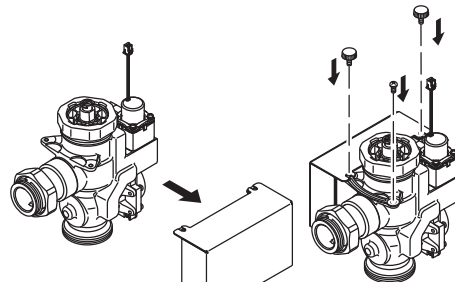
To use with a left water supply, detach the controller and remount it to opposite side of valve body.



Protect the wire connections inside the controller's case.



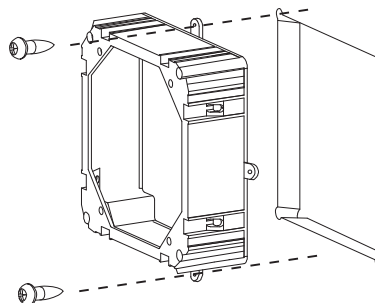
Detach



Remount

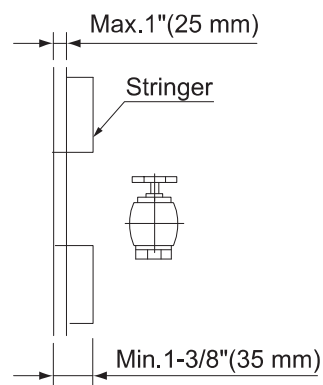
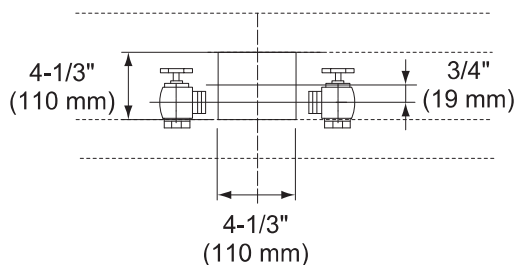
5. Secure base frame to the wall with two screws.
Other base frame installation options with stringer and for concrete wall on next page.

NOTE: Wall thickness must be 1/2" (13 mm) minimum and 1-3/8" (35 mm) maximum.
 If your wall thickness is less than 1/2" (13 mm), please attach wooden frame behind the wall.



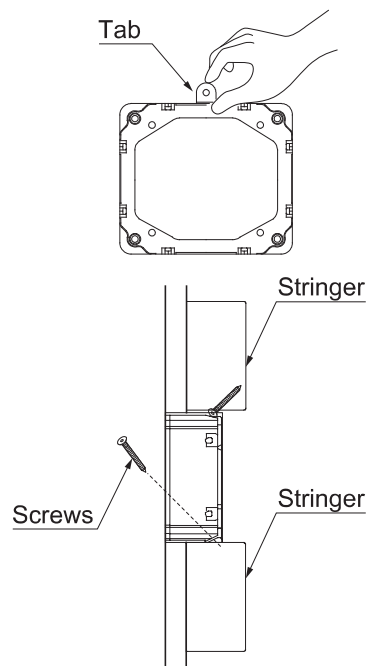
INSTALLATION PROCEDURE — SMALL COVER

Other base frame installation options



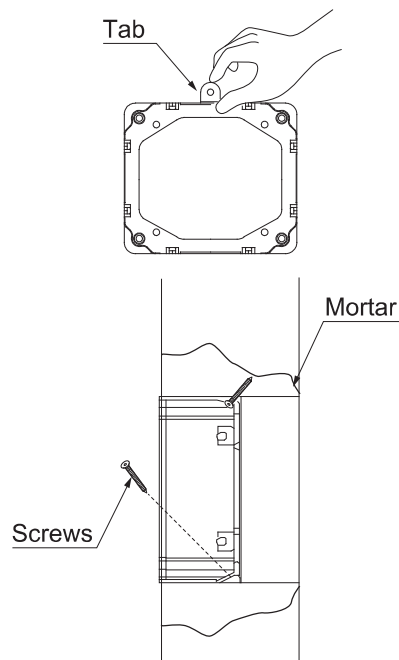
Option 5A (with stringer)

1. Remove all tabs on side of the base frame.
2. Fasten the base frame to stringer with 4 screws (prepared on site).



Option 5B (for concrete wall)

1. Cut out a place for the cover into the wall.
2. Remove all tabs on side of the base frame before installation.
3. Fix the base frame into place with mortar.
4. Secure the base frame with 4 screws (prepared on site), if needed.



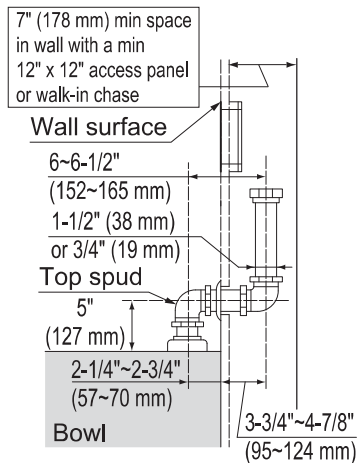
ENGLISH

INSTALLATION PROCEDURE — SMALL COVER

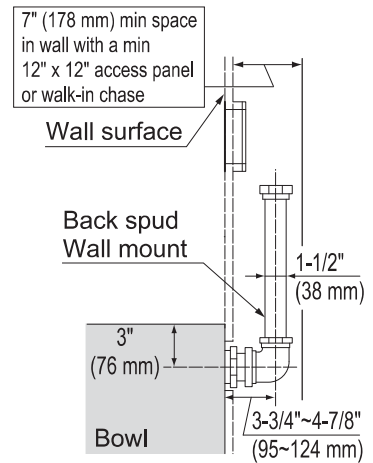
ENGLISH

6. Pass the flush pipe and the vacuum breaker through the guide hole (Step 4) and mount them on the bowl.
7. If required, cut the vacuum breaker tube to the proper length.

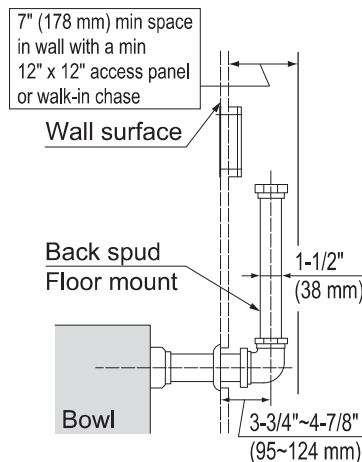
TET3LB32, TET3GB32
TET3UB32



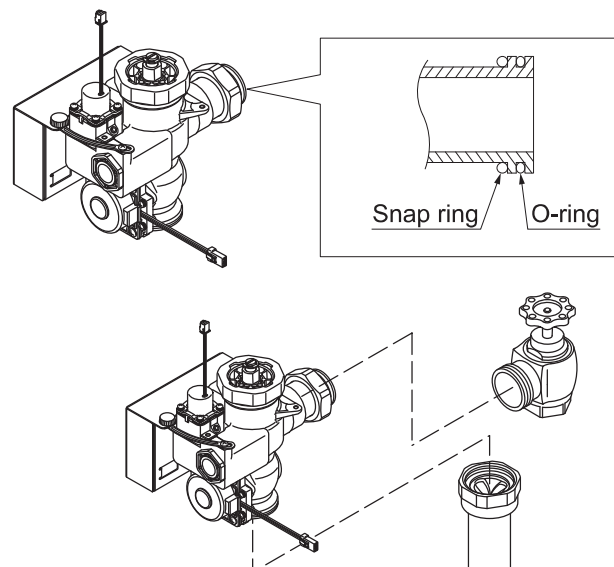
TET3LB31, TET3UB31
TET3GB31



TET3LB33, TET3UB33
TET3GB33

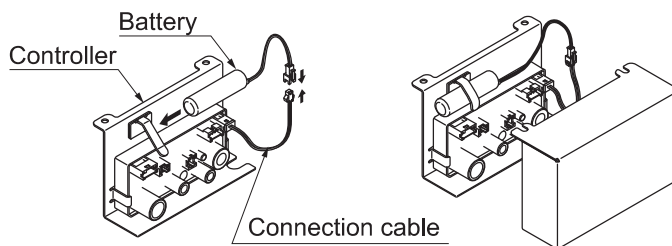


8. Make sure that the o-ring fits in the groove at the end of the Flush Valve tailpiece.
9. Exercise care to prevent damage to the o-ring when inserting the tailpiece into the control stop. If lubrication is needed, wetting the o-ring with water is sufficient.
10. Connect the Flush Valve to the control stop and vacuum breaker tube.
11. Tighten the coupling nut with a wrench to prevent a water leak.

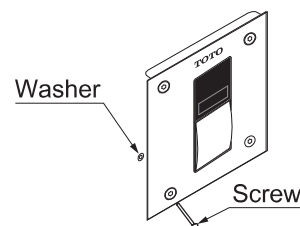


INSTALLATION PROCEDURE — SMALL COVER

12. Connect the battery cable with the controller and set the battery in place.



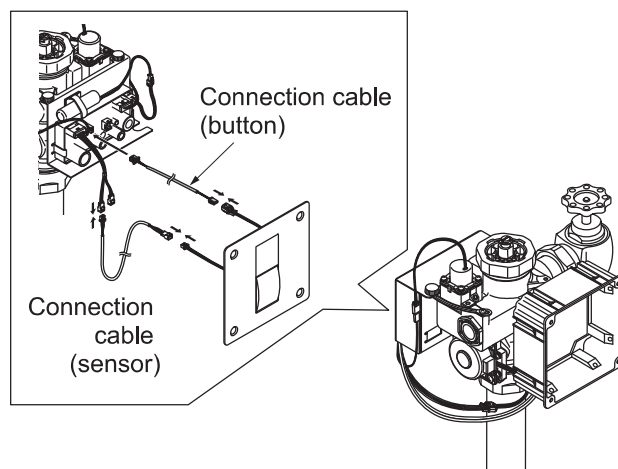
13. Attach the vandal proof screws to the front cover using washers.



14. Connect the cables of infrared sensor and controller with the connection cable.
15. Connect the cables of manual button and controller with the connection cable.

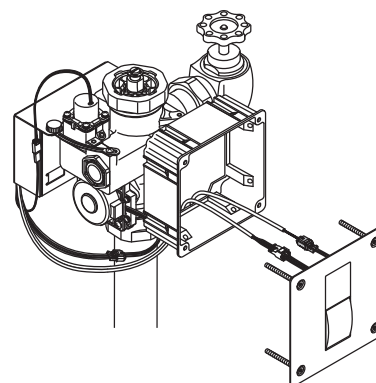
NOTE: It will take 5 minutes after connecting the battery for the electronics to initialize.

After approximately 30 seconds, the sensor LED will flash in 4 second intervals until the initialization completes.



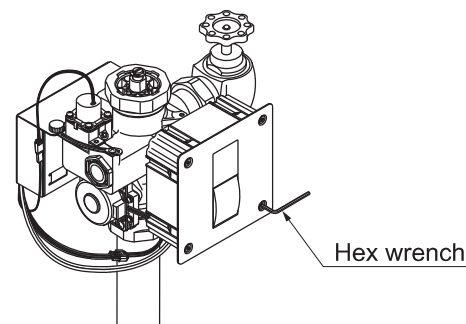
16. Before the supply water is turned on, be sure all water leaks are eliminated by tightening all the pipe connections.

NOTE: If for any reason it becomes necessary to remove the control stop, make sure the water is shut off at the main supply valve.



17. Fasten the front cover to the base frame by tightening the screws with the supplied hex wrench.

18. Take care so that no cord, wire or chain gets caught between the front cover and the base frame.

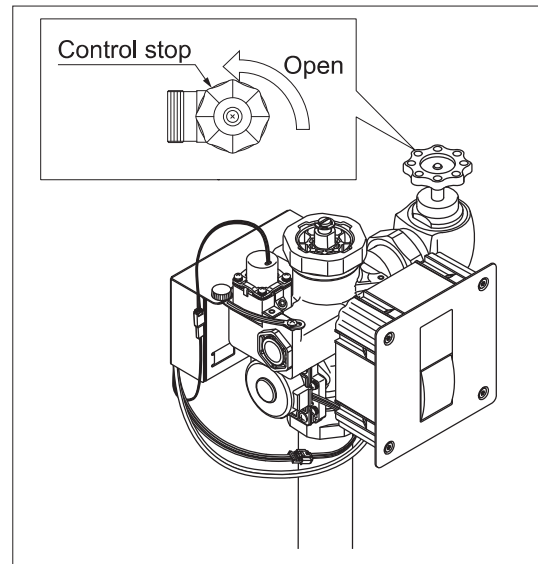


INSTALLATION PROCEDURE — SMALL COVER

The Flush Valves are preset for flush volume as marked on the valve carton. The valves do not require adjustment for variation for water pressure within its operating range.

19. Open the control stop completely.
20. Activate the Flush Valve several times.
21. In the case of excessive flow rate, adjust the flush volume, gradually adjust the control stop clockwise, towards the closed position, until there is suitable water flow into the fixture.

NOTE: Adjust so water amount is not excessive and waste can flow properly.



WARNING: Do not open the control stop to the point where the flow from the Flush Valve exceeds the flow capability of the fixture. In case of a valve failure, the water must not overflow from the fixture.

TEST RUN

After connecting the battery, the initialization process takes 5 minutes. After approximately 30 seconds, the sensor LED will start flashing in 4 second intervals until the initialization is complete. Please wait before starting the Test Run.

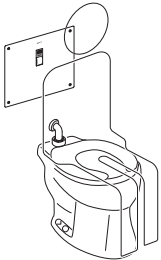

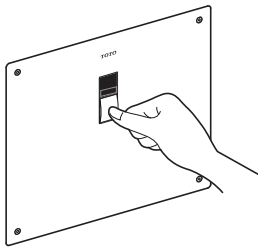
1. **For Toilet:** Sit on the toilet seat.
2. Stay there for 6 seconds or more and then leave the toilet seat. The valve should automatically flush after 3 seconds.
3. Press the manual flushing button for 2 seconds and make sure the valve flushes properly and the sensor red light of the sensor is on.
4. Recheck all the pipe connections for water leaks. If the Flush Valve does not operate properly, refer to the Troubleshooting section on p.16.

NOTE TO THE INSTALLER

After the Flush Valve unit has been properly installed, please explain to your customer how to use it and tell them to observe the following instructions:

1. Do not put any object in front of the sensor window which could obstruct the sensor, causing it to malfunction.
2. In case of any trouble, consult the troubleshooting section on p.16. If you lack the necessary skills required or have difficulty following the directions for installation, maintenance, repairs, troubleshooting or adjustments of the product, do not proceed without assistance from a qualified person.

USING THE FLUSH VALVE

Infrared Sensor	Flushing	Manual Flushing Button
 <p>The infrared sensor detects a user of the toilet.</p>	 <p>When the user stays in place longer than 6 seconds then moves away, the controller sends a signal to the operating unit to automatically trigger the Flush Valve after 3 seconds delay.</p>	 <p>Use the manual flush switch for maintenance or emergencies.</p>

Flushing Every 24 hours

When the toilet is not used for 24 hours the protection timer commands the system to flush in order to maintain the trap seal.

PERIODIC MAINTENANCE

Please check your EcoPower Flush Valve at least once a month according to the following instructions to avoid risk of property damage.

Check the piping to see if there is any leakage or loose connection.

Inspect the VB duckbill at least twice a year.

Over time, the vacuum breaker duckbill may begin to break down.

If the duckbill is worn, stiff, or leaking, replace it.

CARE & CLEANING

IMPORTANT! Do not scratch the sensor or faceplate when cleaning.

- Avoid using any cleaning materials that may scratch the surface.
- Never use polishing powder, detergent that includes coarse particles, thinners, benzene, acids, alkaline detergents, or nylon scrub brushes.
- To safely clean the surface, wipe it using a soft cloth dampened with diluted dishwashing detergent and dry it with another soft cloth. If this does not adequately clean the surface, wipe the area with a neutral detergent and wet cloth.

TROUBLESHOOTING

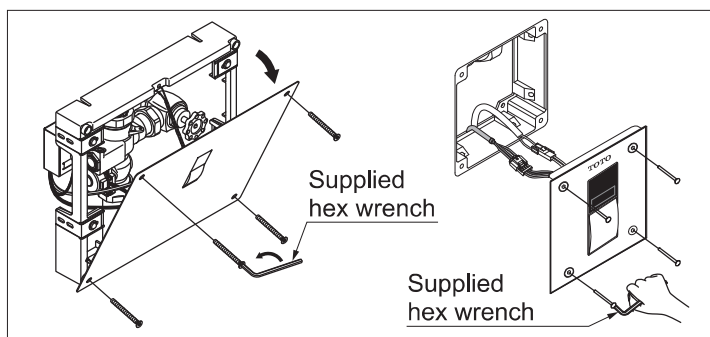
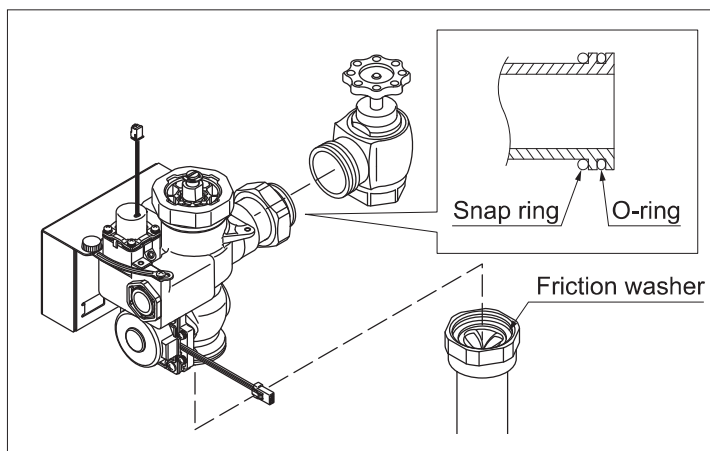
Problem	Possible Cause	Suggested Action	Ref. Page
No water comes from the flush valve	The main valve in water supply line or the control stop is shut off	Open the main valve or the control stop	-
	The connector is not connected	Connect the wire	-
	The surface of the glass in front of the infrared sensor is dirty	Clean the surface of the glass	-
	The glass is broken	Contact distributor for replacement	-
	There is a reflective surface in front of the sensor	Remove the reflective surface from the sensor	20
	The infrared sensor or the solenoid is out of order	Contact distributor for replacement	-
	The small holes in the solenoid diaphragm are clogged	Clean the small hole in the diaphragm and filter	19
	Hydropower generator clogged	Service Hydropower Generator	-
Water does not stop flowing	The small hole in the piston is clogged	Clean the small hole in the piston	18
	The sealing area of the piston is dirty	Clean the sealing area of the piston	18
	The sealing area of the solenoid diaphragm is dirty	Clean the sealing area of the diaphragm and filter	19
	Piston U-packing damaged	Inspect & replace if necessary	18
The discharge quantity is too small	The control stop or the screw of the piston valve are not adjusted properly	Adjust the discharge quantity by the control stop and the screw of the piston valve	19
The discharge quantity is too much			
The flow rate is too low	Water supply pressure is too low (below rated minimum pressure)	Consult with a plumbing contractor	-
	The control stop is not open enough	Adjust the control stop properly	19
The flow rate is too high	The control stop is not adjusted properly	Adjust the control stop properly	19
A red light in the sensor window blinks	The battery is weak	Check voltage with multimeter, if below 2.6 V, contact TOTO for replacement battery	19

NOTE: Do not dismantle parts of the flush valve which are not specified in the troubleshooting guide.
If you need further assistance, please call TOTO Tech Services at (888) 295-8134.

■ DISASSEMBLY

If the whole valve needs to be removed from the water supply for servicing, please be aware of the cautions below:

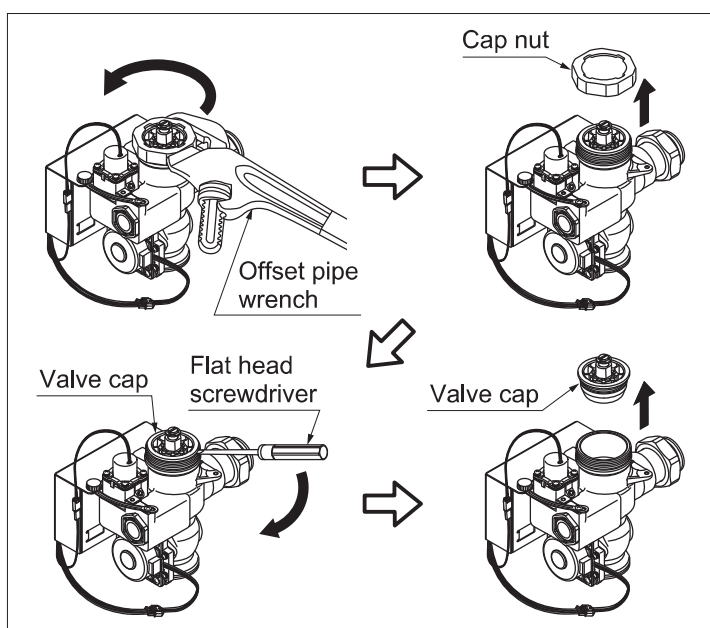
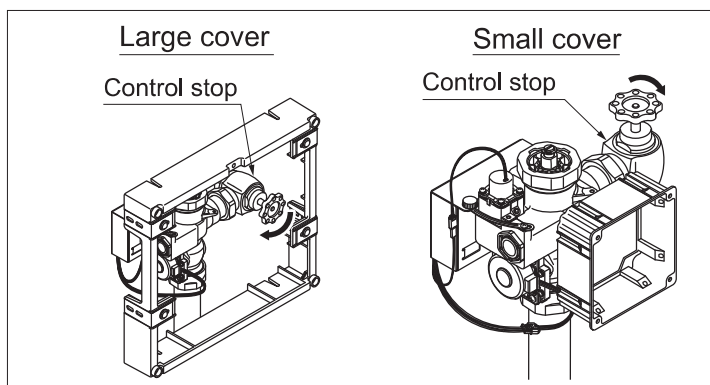
1. Be careful not to lose or tear the friction washer at the outlet connection to the vacuum breaker tube nut. To maintain a proper seal, replace the washer if necessary.
2. When re-installing the valve to the water supply, avoid pinching the o-ring.



■ CLEANING PISTON ASSEMBLY

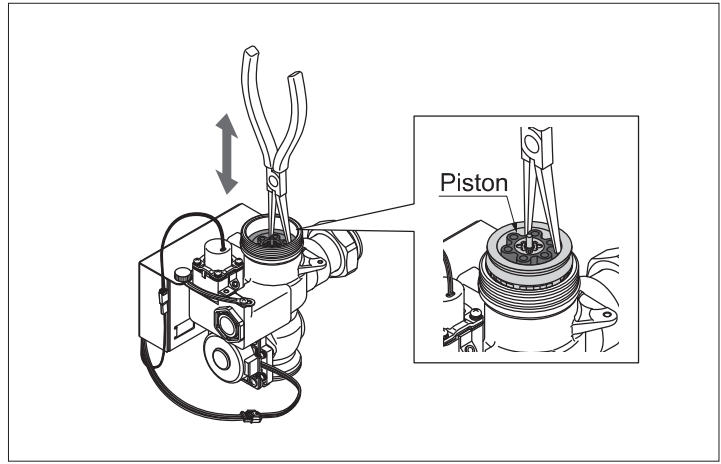
1. Remove the screws from the front cover using the tamper resistant hex wrench (provided).
2. Open the front cover carefully, and disconnect the harnesses of the push button and the sensor.
3. Move the front cover out carefully to have the access to the flush valve body.
4. Turn the control stop clockwise to turn off the water.
5. Remove the cap nut using a offset pipe wrench.
6. Remove the valve cap using a flat head screwdriver.

NOTE: Be careful not to damage the solenoid valve or harness when attaching or detaching the cap nut or valve cap.



7. Take out the piston assembly.

NOTE: If you have trouble gripping the piston assembly, use the needle nose pliers as shown in the illustration.



8. Check the small hole in the piston to see if it is clogged with debris, insert a small wire to unclog hole if needed.

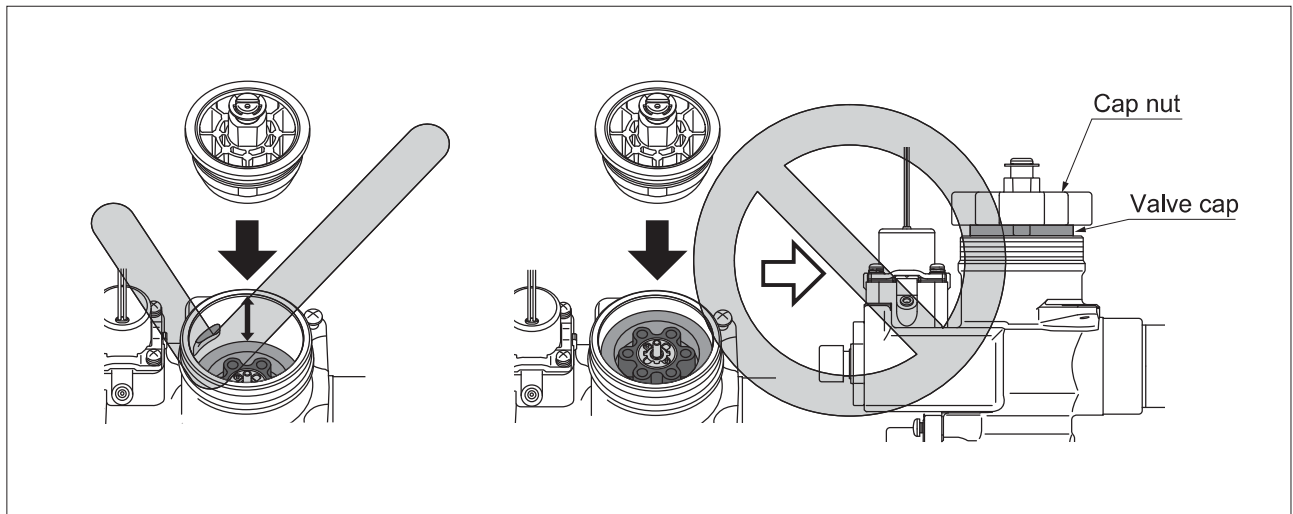
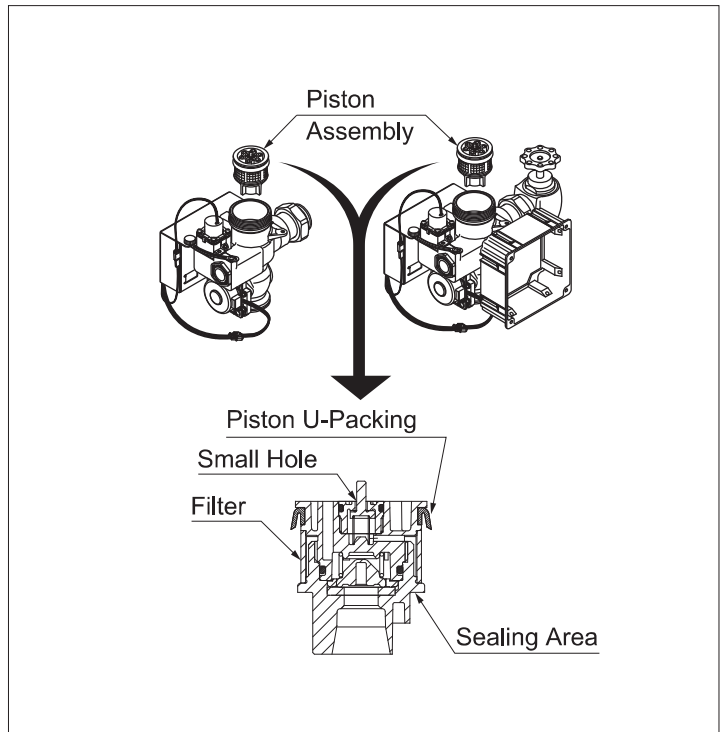
9. Check the filter to see if it is clogged with debris and gently brush it to clean.

10. Check the sealing area of the piston and clean it if it is dirty.

11. Check the U-Packing for cracks or damage.

12. Reassemble in reverse order.

NOTE: Please be sure to push the piston all the way down. The top of the piston should sit approximately 1-1/8" (28 mm) below the rim of the valve. Otherwise the valve cap will not assemble properly and there is a risk of leakage.

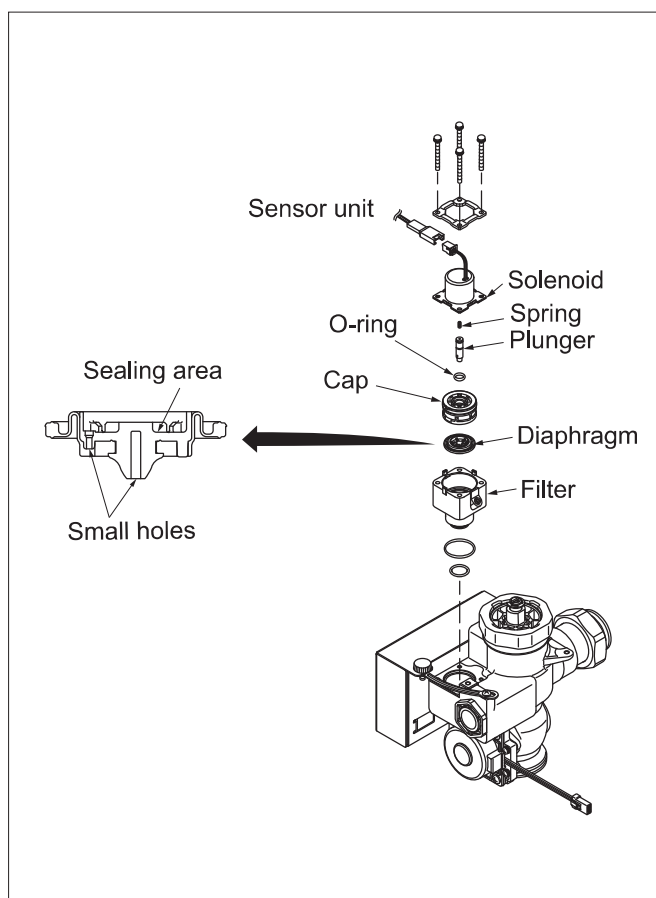


■ CLEANING DIAPHRAGM AND FILTER

1. Remove the screws from the front cover using the tamper resistant hex wrench (provided).
2. Open the front cover carefully, and disconnect the harnesses of the push button and the sensor.
3. Move the front cover out carefully to have the access to the flush valve body.
4. Turn the control stop clockwise to turn off the water.
5. Disconnect the solenoid harness.
6. Remove the solenoid and take out the diaphragm.
7. Check the small holes and sealing area.

NOTE: See the illustration for disassembly.

NOTE: Do not stretch or alter the shape of the spring in the solenoid valve in any way. It will void the warranty.



■ CHECKING SOLENOID

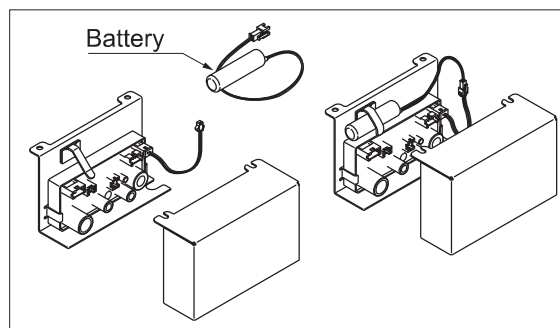
1. Make sure the batteries are properly placed and cables are connected.
2. With water supply turned off, place your hand in front of the sensor for 6 seconds.
3. Remove and listen for a “click” sound after 3 seconds. This indicates the solenoid plunger has been activated.

■ BATTERY REPLACEMENT

A special lithium back-up battery is used. Replace only with the included TOTO back up battery.

If a red light in the sensor window blinks with the cycle of 4 seconds, it is time to replace the battery.

1. Remove the old battery.
2. Set the new battery at the proper position.



■ ADJUSTMENT OF THE FLOW RATE

1. Adjust the flow rate by the turning the control stop.
2. Turn the control stop clockwise to decrease the flow rate and turn the control stop counter-clockwise to increase.

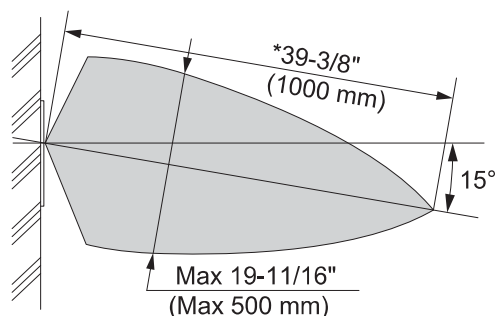
NOTE: Adjust so water amount is not excessive and waste can flow properly.

■ DETECTION RANGE

The detection range of the infrared sensor is set at the factory and does not need further adjustment.

*Measure on a 300mm x 300mm square white board.

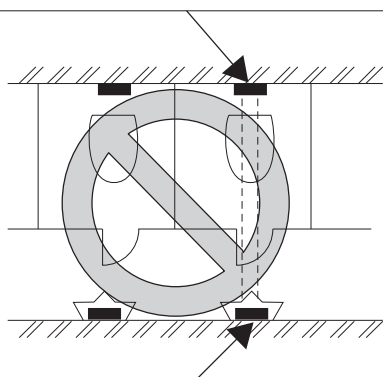
*The Detection Range diagram below is for illustrative purposes.



PRECAUTION

DO NOT place the infrared sensor of one flush valve in line with sensor of another Flush Valve.

Another infrared sensor.

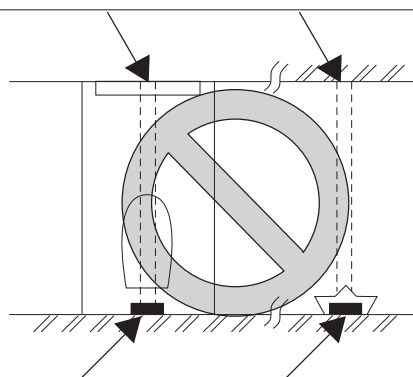


Infrared sensor of the automatic Flush Valve.

PRECAUTION

DO NOT place the infrared sensor in front of a mirror, stainless steel wall, or other highly reflective surface.

Mirror, stainless steel wall or other highly reflective surface.



Infrared sensor of the automatic Flush Valve.

NOTE: In some cases, the valve may not detect a user if the toilet seat is left in an upright position. This can be caused by the rough-in dimension or gap of the open front commercial seat. Please lower the seat or contact a plumbing contractor to change the height of the valve.

The sensor can have trouble detecting users wearing black clothes in some conditions.

