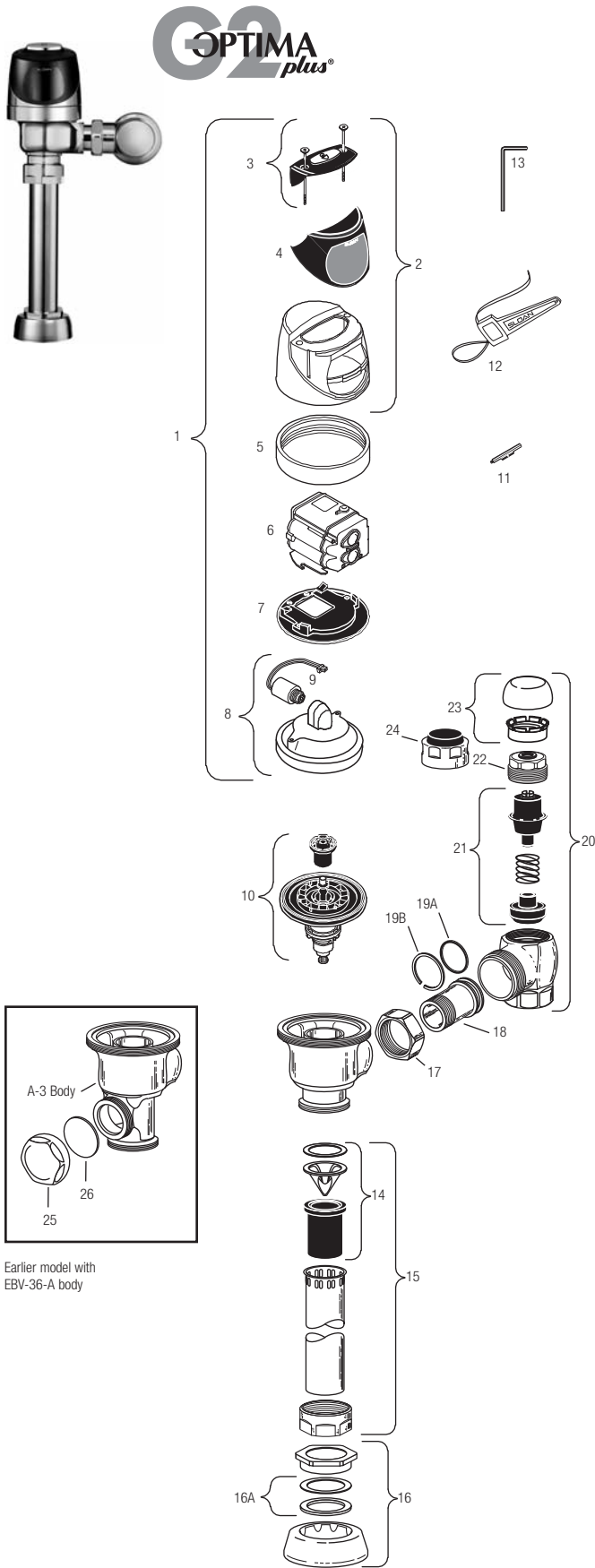


G2 Optima Plus® Flushometer

For use with Sloan's G2 Optima Plus® flushometer introduced May, 2003.
 For older Optima Plus® flushometers (produced from 1992 – 2003) and Regal Pro® Optima Plus® flushometers see pages 66 thru 71.



SENSOR MODULE COMPONENT PARTS

Item No.	Code No.	Part No.	Description
1.	0325160	EBV-138-A	G2 Cover/Ring/Sensor Assembly – Water Closet
	0325161	EBV-139-A	G2 Cover/Ring/Sensor Assembly – Urinal
	0325166	EBV-149-A	G2 Cover/Ring/Sensor Assembly – Water Closet w/Zurn Ring
	0325167	EBV-150-A	G2 Cover/Ring/Sensor Assembly – Urinal w/Zurn Ring
2.	0325168	EBV-142-A	Cover Assembly
3.	0325172	EBV-130-A	Override Button Assembly includes screws & hex wrench
	0325170	EBV-132-A	Screws (2) and Allen Wrench Only
4.	0325169	EBV-131	Lens Window Cover
5.	0325804	EBV-14	Locking Ring CP
	0325210	EBV-168	Locking Ring CP
6.	3325524	EBV-31-A	Locking Ring – for Zurn Valves
	3325450	EBV-129-A-C	G2 Electronic Module – Water Closet
	3325451	EBV-129-A-U	G2 Electronic Module – Urinal
7.	0325171	EBV-134	Cover Rest Plate
8.	3325456	EBV-145-A	Inside Cover Assembly (includes solenoid EBV-136-A)
	3325089	EBV-1010-A	Inside Cover Assembly (excludes solenoid)
9.	3325453	EBV-136-A	Solenoid (For G2 Modules only)*
10.	SEE CHART NEXT PAGE		Flex Tube Diaphragm Kit

* Refer to Page 58 for instructions regarding solenoid replacement.

ACCESSORIES

11.	0325107	EBV-91	Trimpot Adjustment Screwdriver
12.	0305823	EBV-22	Strap Wrench
13.	0325170	EBV-132-A	Allen Wrench

VALVE COMPONENT PARTS

14.	3323182	V-651-A	Vacuum Breaker Repair Kit
15.	0393004	V-600-AA	3/4" x 9" CP Vacuum Breaker
	0393006	V-600-AA	1-1/4" x 9" CP Vacuum Breaker
	3393007	V-600-AA	1-1/2" x 9" CP Vacuum Breaker
16.	0306125	F-5-AW	3/4" CP Spud Coupling
	0306140	F-5-AU	1-1/4" CP Spud Coupling
	0306146	F-5-AT	1-1/2" CP Spud Coupling
16A.	SEE SLIP JOINT GASKETS AND RINGS TABLE ON NEXT PAGE		
17.	0308676	H-550	CP Stop Coupling
18.	0308801	H-551-A	CP Adjustable Tailpiece 2-1/16" long
19A.	5308696	H-553	O-ring – 24 per package
19B.	5308381	H-552	Locking ring – 12 per package
20.	3308386	H-700-A	1" Screwdriver Bak-Chek® Stop CP – complete
	3308384	H-700-A	3/4" Screwdriver Bak-Chek® Stop CP – complete
21.	3308853	H-541-A	Control Stop Repair Kit †
	3308856	H-543-A	Control Stop Repair Kit † 3/4" H-540/H-600 only
22.	0308612	H-622	CP Bonnet †
	0308843	H-577	CP Bonnet † – OBSOLETE
23.	3308772	H-1010-A	Vandal Resistant Control Stop Cap Assembly †
	3308790	H-1009-A	Vandal Resistant Control Stop Cap Assembly †
24.	3325816	EBV-1019-A	3/4" Decorative Stop Cap
	3308866	H-574	1" Decorative Stop Cap
25.	3325814	EBV-1017-A	Handle Cap — Metal
26.	0311042	K-46	Blind Nut Gasket

† For use with 1" and 3/4" H-700-A and 1" H-600-A Bak-Chek® screwdriver control stop
 ‡ For use with H-600-A 3/4" screwdriver Bak-Chek® control stops

Sensor Flushometers

G2 Optima Plus® Flushometer

Sloan introduced its Optima Plus® battery powered sensor flushometer in 1992, revolutionizing the flushing of water closets and urinals. In both new construction and retrofit applications, the use of the Optima Plus has become the standard method for many facilities to improve restroom hygiene and ensure handicap accessibility compliance.

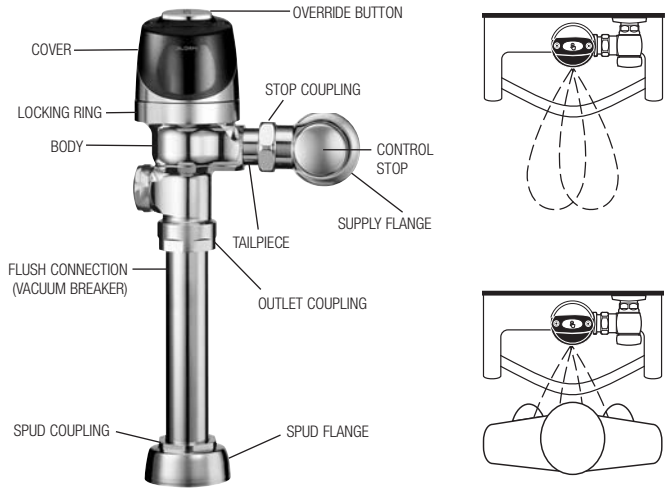
In May, 2003 Sloan introduced the G2 Optima Plus.

The G2 Optima Plus builds on the success of the original product and offers many technological advancements to further improve on performance and reliability expected of sensor activated plumbing. In addition to a new aesthetic design, the G2 Optima Plus features a new state-of-the-art electronic and optical package and a unique solenoid operator that keeps the moving components of the solenoid completely isolated from the water supply. This ensures long life and low maintenance regardless of local water condition.

The G2 Optima Plus replaces the original Optima Plus product, which was phased out of production in mid-2003.

The Sloan G2 Optima Plus automatic battery powered flushometer relies on an infrared sensor to detect a user and activate a flushing cycle. No physical contact with the flushometer surface is necessary, assuring sanitary protection. G2 Optima Plus flushometers are ADA compliant devices.

The flushometer is triggered by means of an active infrared sensor. The Optima Plus sensor emits a continuous invisible light beam. When a user enters the beam's effective range, the beam is reflected into the Optima Plus scanner window. The user is now detected. After the user moves out of the effective range of the sensor, a signal is sent to the flushometer solenoid and, after appropriate arming and/or flush delays, the flush cycle is initiated.



Sensor Flushometers

ITEM 10. FLEX TUBE DIAPHRAGM KIT

Code No.	Part No.	Description	Regulator Color *
3325090	EBV-1025-A	Urinal-0.25 gpf/1.0 Lpf	GREEN
3325003	EBV-1023-A	Urinal-0.5 gpf/1.9 Lpf [†]	GREEN
3325000	EBV-1022-A	Urinal-1.0 gpf/3.8 Lpf	GREEN
3325000	EBV-1022-A	Urinal-1.5 gpf/5.7 Lpf [†]	BLACK
3325001	EBV-1020-A	Urinal-3.5 gpf/13.2 Lpf [†]	WHITE
3325031	EBV-1024-A	Closet-1.28 gpf/4.8 Lpf	GREEN
3325001	EBV-1020-A	Closet-1.6 gpf/6.0 Lpf [†]	GREEN
3325014	EBV-1021-A	Closet-2.4 gpf/9.0 Lpf	BLUE
3325001	EBV-1020-A	Closet-3.5 gpf/13.2 Lpf	WHITE
3325001	EBV-1020-A	Closet-4.5 gpf/17.0 Lpf [§]	WHITE

[†] EBV-1020-A and EBV-1022-A are supplied with multiple regulators.

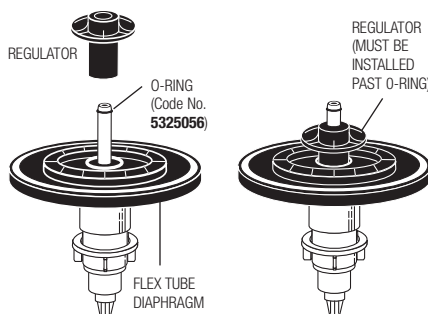
[‡] A 0.5 gpf (1.9 Lpf) urinal kit can be converted to a 1.0 gpf (3.8 Lpf) by cutting and removing the smooth A-164 flow ring from the guide.

[§] For a 4.5 gpf (17 Lpf) water closet flush use EBV-1020-A with the white regulator, and cut and remove the A-164 flow ring from the guide.

* Color of regulator to be used with flex tube diaphragm to obtain the listed flush volume.

O-RING

Code No.	Part No.	Description
5325056	EBV-83	O-ring – 6 per package



REGULATORS

The flush volume of the flex tube diaphragm kit is controlled by the regulator. Regulators are identified by color. Some flex tube diaphragm kits are supplied with multiple regulators. The installer must make sure the proper regulator is used when installing the flex tube diaphragm kit.

REGULATOR (SOLD 6 PER PACKAGE)

Code No.	Part No.	Description	Regulator Color
5325122	EBV-95	Urinal-0.25 gpf/1.0 Lpf	GREEN
5325122	EBV-95	Urinal-0.5 gpf/1.9 Lpf	GREEN
5325122	EBV-95	Urinal-1.0 gpf/3.8 Lpf	GREEN
5325129	EBV-102-2	Urinal-1.5 gpf/5.7 Lpf	BLACK
5325130	EBV-102-1	Urinal-3.5 gpf/13.2 Lpf	WHITE
5325122	EBV-95	Closet-1.28 gpf/4.8 Lpf	GREEN
5325122	EBV-95	Closet-1.6 gpf/6.0 Lpf	GREEN
5325130	EBV-102-1	Closet-3.5 gpf/13.2 Lpf	WHITE
5325128	EBV-101	Closet-2.4 gpf/9.0 Lpf	BLUE

EBV-1020-A and EBV-1022-A are supplied with multiple flush volume regulators. The installer must use the correct regulator when installing the kit.

ITEM 16A. SLIP JOINT GASKETS AND RINGS

Size	Code No.	Part No.	Description
1-1/2"	5306058	F-3	Red Friction Ring
	5322001	VBF-5	Black Slip Joint Gasket
	0319086/5319086	S-30	Flexible Seat
1-1/2" x 1-1/4"	0319079	S-21	Rigid Seat (rubber over brass)
	0396062	F-105	Slip Joint Gasket – Rigid
1-1/4"	5306057	F-3	Red Friction Ring
	5322176	VBF-5	Black Slip Joint Gasket
	0307052/5307052	G-21	Rigid Seat (rubber over brass)
1"	5306056	F-3	Red Friction Ring
	5306115	F-5	Black Slip Joint Gasket
3/4"	5306055	F-3	Red Friction Ring
	5306113	F-5	Black Slip Joint Gasket

G2 Optima Plus® Flushometer

SOLENOID REPLACEMENT



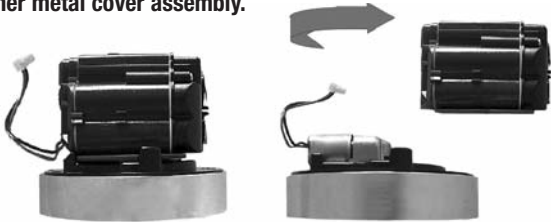
Code No.	Part No.	Description
3325453	EBV-136-A	Solenoid operator

For G2 Optima Plus® modules (identified by a blue module).

1. Turn off water and relieve pressure by loosening Tailpiece coupling and re-tighten. Loosen and remove top screws along with the outer cover assembly.



2. Disconnect wire clip from battery door and remove module from inner metal cover assembly.



3. Remove Solenoid by turning counter clockwise. Remove any remaining O-rings or parts in orifice.



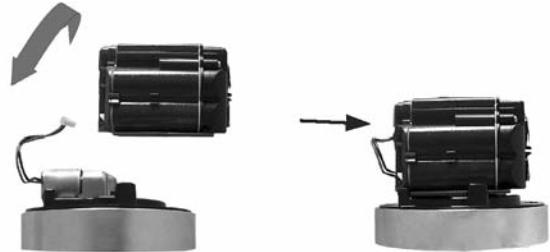
4. Remove black plastic Housing from the threaded end of new Isolated Operator by unscrewing (counterclockwise). It is normal to find fluid inside this housing.



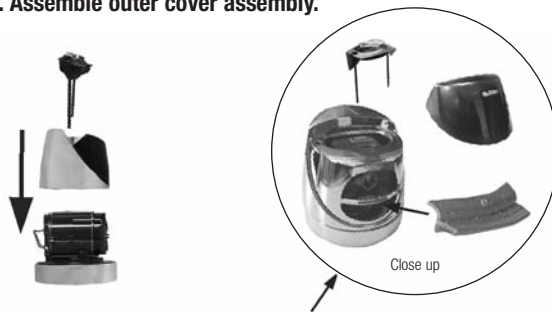
5. Make sure all O-rings (2) are installed on the grey End cap of the new Isolated Operator. Install Isolated Operator by threading it (clockwise) into the Housing. Tighten with fingers beyond just snug.



6. Mount module on inner cover assembly. Reconnect the plastic clip on the battery door.



7. Assemble outer cover assembly.



Note. Verify that rubber insert is installed

8. Turn on water at control stop. Installation complete.



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G2 Optima Plus® Flushometer

BATTERY REPLACEMENT

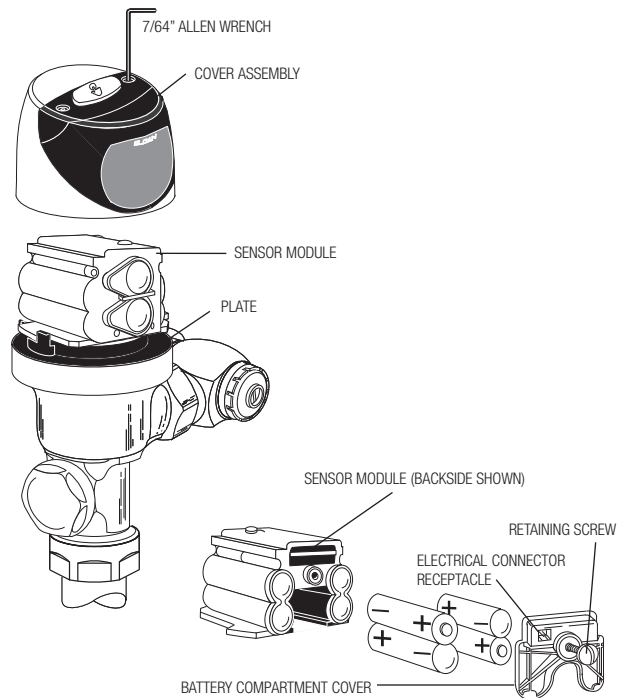
When G2 Optima Plus® has approximately 4,000 flushes left, the same red light that appears at start-up will flash four (4) times quickly whenever an object is detected. When this occurs, we recommend changing the batteries as follows:

When required, replace batteries with four (4) alkaline type AA batteries.

Note: Water does not have to be turned off to replace batteries.

Loosen the two (2) screws on top of unit. Remove the complete cover assembly. Lift the sensor module from its plate. Unplug the electrical connector from battery compartment cover. Loosen the retaining screw on battery compartment cover and remove battery compartment cover. Install four (4) alkaline type AA batteries exactly as illustrated at right.

Install battery compartment cover and secure with retaining screw. Make certain that battery compartment cover is fully compressed against gasket to provide a seal; Do not overtighten. Plug the electrical connector into the battery compartment cover. Reinstall the sensor module onto the plate. Reinstall the complete cover assembly onto the plate. Tighten the two (2) screws on top of the unit.



RANGE ADJUSTMENT (ADJUST ONLY IF NECESSARY)

The G2 Optima Plus has a factory set sensing range:

Water closet models – 22" to 42" (559 mm to 1067 mm)

Urinal models – 15" to 30" (381 mm to 762 mm)

The Factory setting should be satisfactory for most installations.

If the range is too short (i.e., not picking up users) or too long (i.e., picking up opposite wall or stall door) the range can be adjusted.

Note: Water does not have to be turned off to adjust range.

Loosen the two screws on top of the unit. Remove the override button. Remove the rubber plug from top of electronic sensor module to uncover the potentiometer.

RANGE ADJUSTMENT PROCEDURE

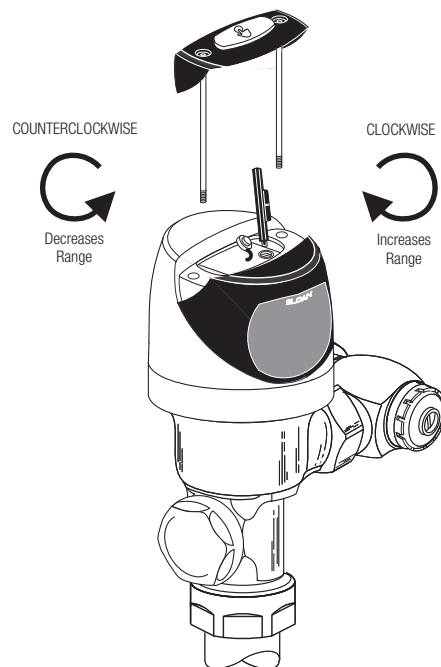
For the first ten (10) minutes of operation, a visible red light flashes in the sensing window of the G2 Optima Plus flushometer when a user is detected. This visible red light feature can be reactivated after ten (10) minutes by opening and closing the battery compartment door or holding the override button for (1) minute.

Check the range by stepping toward the unit until the red light flashes, indicating the sensor's detection of a user. Adjust the range potentiometer screw located on top of the sensor module a few degrees CLOCKWISE to increase the range or a few degrees COUNTERCLOCKWISE to decrease the range. Repeat this adjustment until the desired range is achieved.

Always determine the sensing range with metal cover and lens window on top of the unit.

Important: Adjust in small increments only! Range potentiometer adjustment screw rotates only 3/4 of a turn; DO NOT over-rotate.

When range adjustment is satisfactory, replace the rubber plug. Reinstall override button and tighten the two screws on top of the unit.



G2 Optima Plus® Flushometer

TROUBLESHOOTING AND MAINTAINING THE SLOAN G2 OPTIMA PLUS® FLUSHOMETER

IMPORTANT: This product contains mechanical and/or electrical components that are subject to normal wear. These components should be checked on a regular basis and replaced as needed to maintain the valve's performance.

Never open Control Stop to where the flow from the valve exceeds the flow capability of the fixture. In the event of a valve failure, the fixture must be able to accommodate a continuous flow from the valve.

ATTENTION INSTALLERS: With the exception of the control stop inlet, DO NOT USE pipe sealant or plumbing grease on any valve component or coupling! To protect the chrome or special finish of Sloan flushometers, DO NOT USE toothed tools to install or service these valves. Use our A-50 Super-Wrench™ or other smooth-jawed wrench to secure couplings. Regulations for low consumption fixtures (1.6 gpf/6.0 Lpf closets and 1.0 gpf/3.8 Lpf urinals) prohibit use of higher flush volumes.

1. Sensor flashes continuously only when user steps within range.

- A. Unit in start-up mode; no problem. This feature is active for the first ten (10) minutes of operation.

2. Valve does not flush; sensor not picking up user.

- A. Range too short; increase the range.

3. Valve does not flush; sensor picking up opposite wall or surface, or only flushes when someone walks by. Red light flashes continuously for first 10 minutes even with no one in front of the sensor.

- A. Range too long; shorten range.

4. Valve does not flush even after adjustment.

- A. Range adjustment potentiometer set at full "max" or full "min" setting. Readjust potentiometer away from full "max" or "min" setting.
- B. Batteries completely used up; replace batteries.
- C. Problem with electronic sensor module; replace electronic sensor module.

5. Unit flashes 4 quick times when user steps within range.

- A. Batteries low; replace batteries.

6. Valve does not shut off.

- A. By-pass orifice in diaphragm is clogged with dirt or debris, or by-pass is clogged by an invisible gelatinous film due to "over-treated" water. Remove flex tube diaphragm and wash under running water.

Note: Size of orifice in the by-pass is of utmost importance for the proper metering of water by the valve. **DO NOT ENLARGE OR DAMAGE THIS ORIFICE.** Replace flex tube diaphragm if cleaning does not correct the problem.

- B. Dirt or debris fouling stem or flex tube diaphragm. Remove flex tube diaphragm and wash under running water.
- C. O-ring on stem of flex tube diaphragm is damaged or worn. Replace O-ring if necessary.
- D. Problem with solenoid. If cleaning does not correct problem, replace with new solenoid operator.

7. Not enough water to fixture.

- A. Wrong flush volume regulator installed in flex tube diaphragm kit. Install the correct regulator.
- B. Wrong Optima Plus® model installed; i.e., 1.0 gpf urinal installed on 3.5 gpf closet fixture. Replace with proper Optima Plus model.
- C. Enlarged by-pass in diaphragm. Replace flex tube diaphragm.
- D. Control stop not adjusted properly. Readjust control stop.
- E. Inadequate volume or pressure at supply. Increase water pressure or supply (flow) to valve. Consult factory for assistance.

8. Too much water to fixture.

- A. Wrong flush volume regulator installed in flex tube diaphragm kit. Install the correct regulator.
- B. Control stop not adjusted properly. Readjust control stop.
- C. Wrong Optima Plus model installed; i.e., 3 gpf model installed on 1.0 or 1.5 gpf urinal fixture.
- D. Dirt in diaphragm by-pass. Clean under running water or replace flex tube diaphragm.

Note: The EBV-46-A beam deflector is no longer required or available for the G2 Optima Plus.

CARE AND CLEANING INSTRUCTIONS

DO NOT use abrasive or chemical cleaners to clean the G2 Optima Plus, they may dull the luster and attack the plastic cover and the chrome finish of the flushometer. Use **ONLY** mild soap and water, then wipe dry with clean cloth or towel. While cleaning the bathroom tile, the Optima Plus should be protected from any splattering of cleaner. Acids and cleaning fluids can discolor or remove chrome plating.

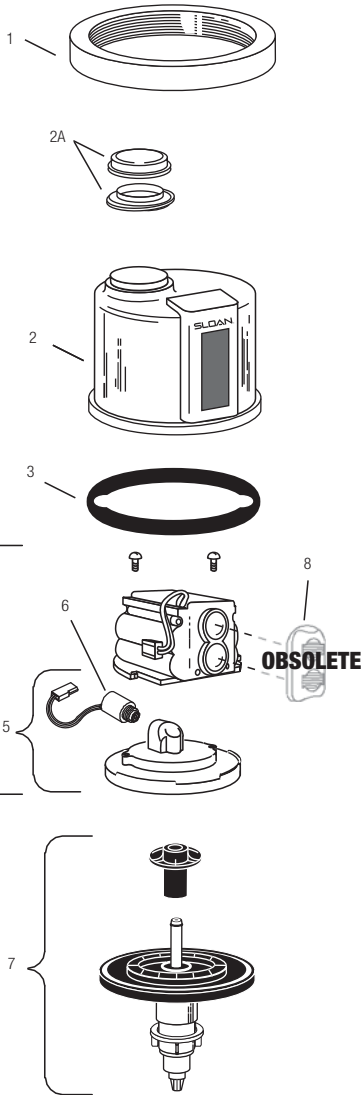
When assistance is required, please contact Sloan Technical Support at: 1-888-SLOAN-14 (1-888-756-2614).

Optima Plus® Flushometers



OPTIMA
plus®

Sensor
Flushometers



For all Optima Plus® produced from 1992 – 2003 and Regal Pro® Optima Plus® produced after May, 2003.

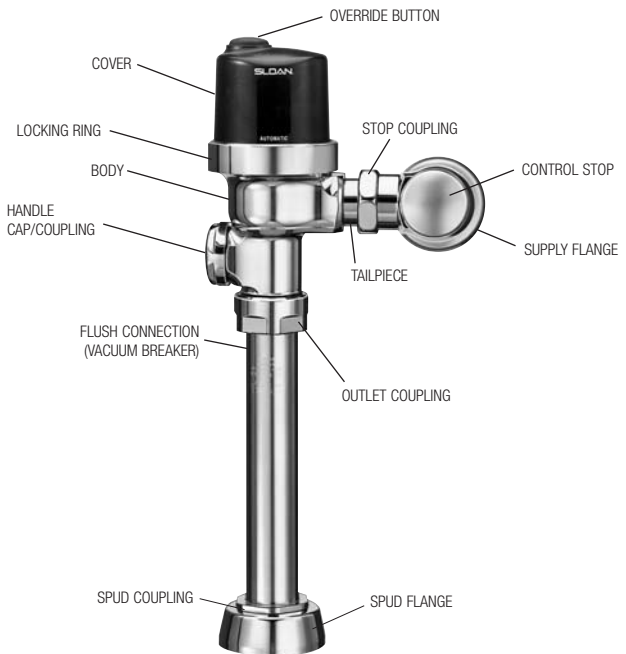
The Optima Plus® is currently being phased out and will become obsolete at some point in the future. Some repair parts may not be available. See the G2 Optima Plus® flushometer page 61 for current parts.

SENSOR MODULE COMPONENT PARTS

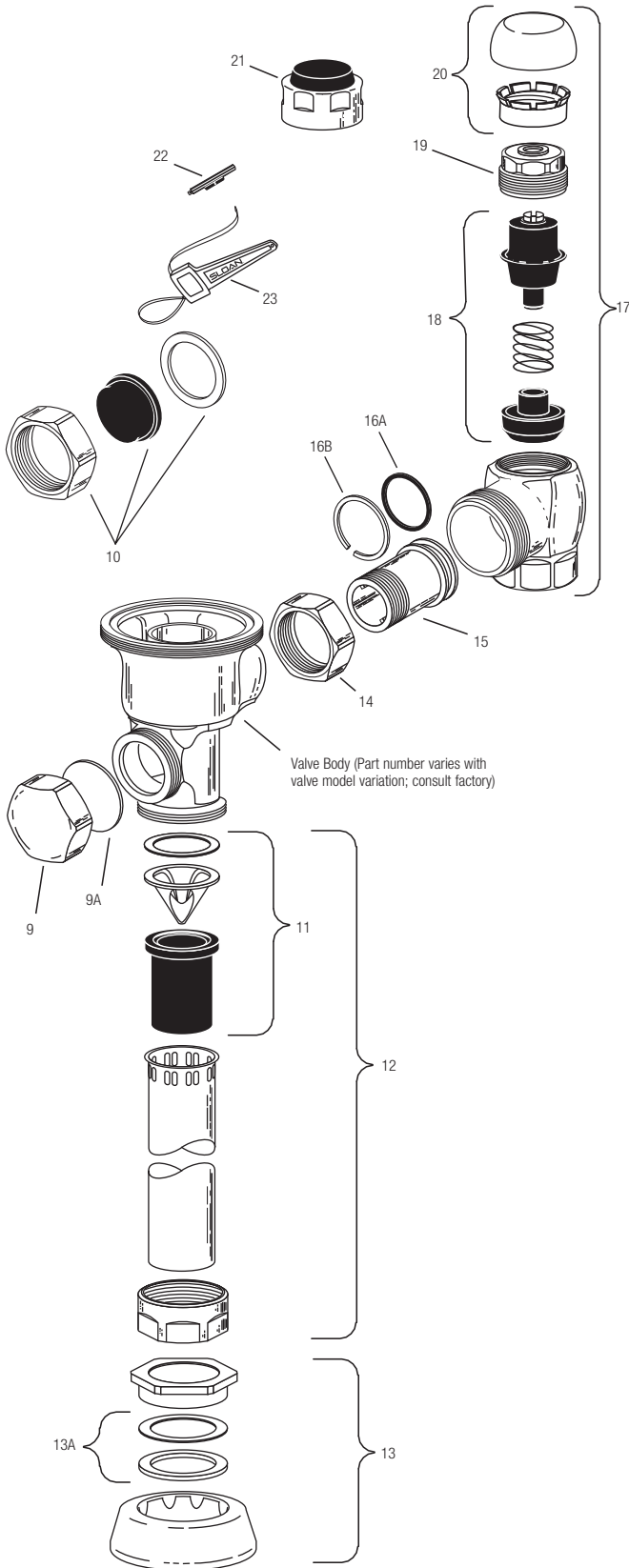
Item No.	Code No.	Part No.	Description
1.	0325804	EBV-14	Locking Ring
	3325524	EBV-31-A	Locking Ring for Zurn Valve Bodies
2.	3325013	EBV-60-A	Metal Cover Assembly with Override Button (Water Closet)
	3325016	EBV-1033-A	Metal Cover Assembly w/Override Button for Zurn Valve Body (Water Closet)
2A.	3325055	EBV-1042-A	Replacement Override Button Kit for plastic covers (Old Style)
3.	5325011	EBV-67	Cover Gasket — 12 per package
4.	SEE CHART PAGE 63 — ELECTRONIC MODULE		
5.	0325814	EBV-21-A	Inside Cover Assembly (Includes Solenoid)
6.	3325462	EBV-144-A	Isolated Solenoid Operator †
7.	SEE CHART PAGE 64 — Flex Tube Diaphragm Kit		
8.	3325537	EBV-46-A	Beam Deflector ‡ — OBSOLETE

† The new EBV-144-A solenoid replaces the solenoid used with the old style black EBV-26-A modules only. For blue EBV-146-A-U or EBV-146-A-C G2 modules, use the EBV-136-A solenoid operator. Refer to Page 65 for instructions regarding solenoid replacement.

‡ Beam deflectors are for use on black, old style modules. They are not required (and will not work) on Blue G2 modules.



Optima Plus® Flushometers



OTHER VALVE COMPONENT PARTS

Item No.	Code No.	Part No.	Description
9.	3325814	EBV-1017-A	Handle Cap — Metal
9A.	0311042	K-46	Blind Nut Gasket
10.	3325815	EBV-1018-A	Handle Cap — Metal Coupling/Plastic Hole Cap
11.	3323182	V-651-A	Vacuum Breaker Repair Kit
12.	3393004	V-600-AA	3/4" (19 mm) x 9" (229 mm) CP Vacuum Breaker
	3393006	V-600-AA	1-1/4" (32 mm) x 9" (229 mm) CP Vacuum Breaker
	3393007	V-600-AA	1-1/2" (38 mm) x 9" (229 mm) CP Vacuum Breaker
13.	0306125	F-5-AW	3/4" (19 mm) CP Spud Coupling
	0306140	F-5-AU	1-1/4" (32 mm) CP Spud Coupling
	0306146	F-5-AT	1-1/2" (38 mm) CP Spud Coupling
13A.	SEE SLIP JOINT GASKETS AND RINGS TABLE BELOW		
14.	0308676	H-550	CP Stop Coupling
15.	0308801	H-551-A	CP Adjustable Tailpiece 2-1/16" (52 mm) long
16A.	5308696	H-553	O-ring — 24 per package
16B.	5308381	H-552	Locking ring — 12 per package
17.	3308386	H-700-A	1" (25 mm) Screwdriver Bak-Chek® Stop CP — complete
	3308384	H-700-A	3/4" (19 mm) Screwdriver Bak-Chek® Stop CP — complete
18.	3308853	H-541-A	Control Stop Repair Kit † 3/4" H-600/H-540 only
	3308856	H-543-A	Control Stop Repair Kit †
19.	0308612	H-622	CP Bonnet †
	0308843	H-577	CP Bonnet 3/4" H-600/H-540 only — OBsolete!
20.	3308772	H-1010-A	Vandal Resistant Control Stop Cap Assembly†
	3308790	H-1009-A	Vandal Resistant Control Stop Cap Assembly†
21.	3325816	EBV-1019-A	3/4" (19 mm) Decorative Stop Cap
	3308866	H-574	1" (25 mm) Decorative Stop Cap

ACCESSORIES

22.	0325107	EBV-91	Trimpot Adjustment Screwdriver
23.	0305823	EBV-22	Disposable Strap Wrench

† For use w/H-700-A 1" & 3/4" and H-600-A 1" screwdriver Bak-Chek® control stops, also marked with Quiet Stop II

‡ For use w/H-600-A 3/4" urinal screwdriver Bak-Chek® control stops, also marked with Quiet Stop II

ITEM 13A. SLIP JOINT GASKETS AND RINGS

Size	Code No.	Part No.	Description
1-1/2"	5306058	F-3	Red Friction Ring
	5322001	VBF-5	Black Slip Joint Gasket
	0319086/5319086	S-30	Flexible Seat
	0319079	S-21	Rigid Seat (rubber over brass)
1-1/2" x 1-1/4"	0396062	F-105	Slip Joint Gasket — Rigid
1-1/4"	5306057	F-3	Red Friction Ring
	5322176	VBF-5	Black Slip Joint Gasket
	0307052/5307052	G-21	Rigid Seat (rubber over brass)
1"	5306056	F-3	Red Friction Ring
	5306115	F-5	Black Slip Joint Gasket
3/4"	5306055	F-3	Red Friction Ring
	5306113	F-5	Black Slip Joint Gasket

Optima Plus® Flushometers

ELECTRONIC MODULE ASSEMBLY CHART

The electronic and optical improvements of the G2 Optima Plus® have been incorporated into the electronic modules for use with older Optima Plus products.

Optima Plus® modules can be identified by color.

Old style modules are black and have a wire that runs along the side of the unit.

G2 modules are blue and have a wire only on the back of the unit.

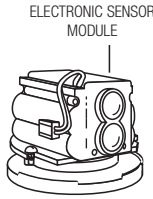
There are now only two electronic module assembly variations for use with older Optima Plus valves:

EBV-146-A-U Urinal
EBV-146-A-C Water closet

This chart cross references the part numbers and code numbers of our new electronic modules over from our old module numbers.

The modules include the solenoid, inner cover and electronic module.

These modules are for use with older Optima Plus and Regal Pro® Optima Plus® valves only.



Code No.	Use Part No.	Description	To Replace Old Part No.
0325177	EBV-146-A-U	Electronic — 0.5 gpf/1.9 Lpf Urinal Module	EBV-26-A-U-0.5
0325177	EBV-146-A-U	Electronic — 1.0 gpf/3.8 Lpf Urinal Module	EBV-26-A-U-1.0
0325177	EBV-146-A-U	Electronic — 1.5 gpf/5.7 Lpf Urinal Module	EBV-26-A-U-1.5
0325177	EBV-146-A-U	Electronic — 3.5 gpf/13.2 Lpf Urinal Module	EBV-26-A-U-3.5
0325176	EBV-146-A-C	Electronic — 1.6 gpf/6.0 Lpf Closet Module	EBV-26-A-C-1.6
0325176	EBV-146-A-C	Electronic — 2.4 gpf/9.0 Lpf Closet Module	EBV-26-A-C-2.4
0325176	EBV-146-A-C	Electronic — 3.5 gpf/13.2 Lpf Closet Module	EBV-26-A-C-3.5
0325176	EBV-146-A-C	Electronic — 4.5 gpf/17.0 Lpf Closet Module	EBV-26-A-C-4.5

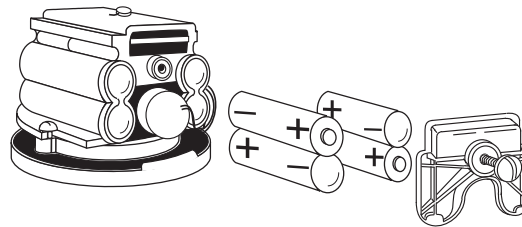
Note: EBV-26-A modules are no longer available. Use the EBV-146-A-U or EBV-146-A-C module shown.

BATTERY REPLACEMENT

When Optima Plus has approximately 4,000 flushes left, the same red light that appears at start-up will flash four (4) times quickly whenever an object is detected. When this occurs, we recommend changing the batteries. On Optima Plus, shut off water and relieve pressure.

Separate locking ring, cover and diaphragm from electronic sensor module.

Loosen retaining screw on battery compartment door and remove battery compartment door. Install four (4) alkaline, AA batteries exactly as illustrated. Install battery compartment door and secure with retaining screw. Make certain that battery compartment door is fully compressed against gasket to provide a seal; do not overtighten.



FLEX TUBE DIAPHRAGM ASSEMBLY

In early 2003 Sloan introduced the flex tube diaphragm kit into the Optima Plus. This design completely replaced the old Optima Plus diaphragm kit that featured the metal shaft with the quad Ring. This change further improved the reliability of the Optima Plus as it replaced a wearable dynamic seal (the Quad Ring) with a non-moving static O-ring seal.

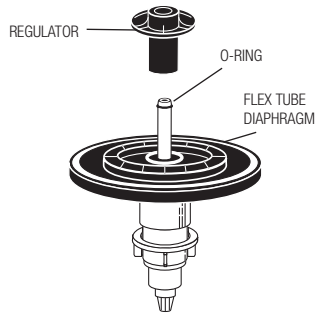
The flex tube diaphragm kit also features Sloan's exclusive dual-filter diaphragm. The dual-filter diaphragm helps to protect the valve from water-borne sediment that can cause the valve to stick open and run on. The dual-filter diaphragm is also made from Sloan's Permex® synthetic rubber material for resistance against chloramines and other water treatment chemicals.

The flex tube diaphragm can be used to replace all generations of Sloan Optima Plus® diaphragm kits. The same flex tube diaphragm kits are used in the G2 Optima Plus® valve.



Optima Plus® Flushometers

FLEX TUBE DIAPHRAGM KITS

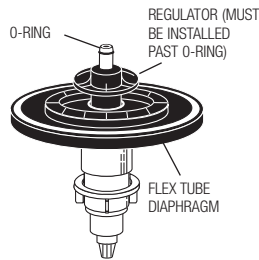


Code No.	Description
5325056	O-ring – 6 per package

Code No.	Use Part No.	Description	Color*	To Replace Old Part No.
3325003	EBV-1023-A	URINAL 0.5 gpf/1.9 Lpf†	GREEN	EBV-32-A-U-0.5
3325000	EBV-1022-A	URINAL 1.0 gpf/3.8 Lpf†	GREEN	EBV-32-A-U-1.0
3325000	EBV-1022-A	URINAL 1.5 gpf/5.7 Lpf†	BLACK	EBV-32-A-U-1.5
3325001	EBV-1020-A	URINAL 3.5 gpf/13.2 Lpf†	WHITE	EBV-20-A-U-3.5
3325031	EBV-1024-A	CLOSET 1.28 gpf/4.8 Lpf	GREEN	—
3325001	EBV-1020-A	CLOSET 1.6 gpf/6.0 Lpf†	GREEN	EBV-10-A-C-1.6
3325014	EBV-1021-A	CLOSET 2.4 gpf/9.0 Lpf	BLUE	EBV-10-A-C-2.4
3325001	EBV-1020-A	CLOSET 3.5 gpf/13.2 Lpf†	WHITE	EBV-10-A-C-3.5
3325001	EBV-1020-A	CLOSET 4.5 gpf/17.0 Lpf §	WHITE	EBV-10-A-C-4.5

† The EBV-1020-A and EBV-1022-A kits are supplied with multiple regulators.
 ‡ A 0.5 gpf (1.9 Lpf) urinal kit can be converted to a 1.0 gpf (3.8 Lpf) by cutting and removing the smooth A-164 flow ring from the guide.
 § For a 4.5 gpf (17.0 Lpf) water closet flush, use the EBV-1020-A kit with the white regulator, and cut and remove the A-164 flow ring from the guide.
 * Color of regulator to be used with flex tube diaphragm to obtain the listed flush volume.

REGULATORS



The flush volume of the flex tube diaphragm kit is controlled by the regulator. Regulators are identified by color. Some flex tube diaphragm kits are supplied with multiple regulators. The installer must make sure the proper regulator is used when installing the flex tube diaphragm kit.

REGULATOR (Sold 6 per package)

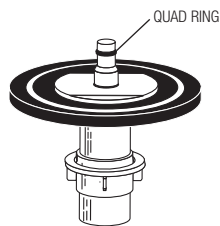
Code No.	Part No.	Description	Regulator Color
5325122	EBV-95	Urinal-0.5 gpf/1.9 Lpf	GREEN
5325122	EBV-95	Urinal-1.0 gpf/3.8 Lpf	GREEN
5325129	EBV-102-2	Urinal-1.5 gpf/5.7 Lpf	BLACK
5325130	EBV-102-1	Urinal-3.5 gpf/13.2 Lpf	WHITE
5325122	EBV-95	Closet-1.28 gpf/4.8 Lpf	GREEN
5325122	EBV-95	Closet-1.6 gpf/6.0 Lpf	GREEN
5325130	EBV-102-1	Closet-3.5 gpf/13.2 Lpf	WHITE
5325128	EBV-101	Closet-2.4 gpf/9.0 Lpf	BLUE

The EBV-1020-A and EBV-1022-A kits are supplied with multiple flush volume regulators. The installer must use the correct regulator when installing the kit.

OLD STYLE DIAPHRAGM INSIDE PARTS



The 5325813 Quad Ring is still available.



OLD STYLE KITS ABOVE ARE OBSOLETE. SEE CHART FOR REPLACEMENT.

Code No.	Part No.	Description
5325813	EBV-18	Quad Ring – 12 per package

Optima Plus® Flushometers

(All Optima products manufactured prior to May, 2003)

SOLENOID REPLACEMENT



Code No.	Part No.	Description
3325462	EBV-144-A	Solenoid operator

For use with black Optima Plus® EBV-26-A modules only (produced 1992-2003).
For G2 Optima Plus® modules (identified by a blue module) use the EBV-136-A solenoid.

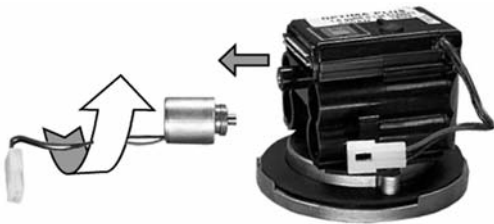
1. Remove battery cover and batteries from existing sensor module.



2. Disconnect the white plastic connector that connects the black and red wires on the side of the module.



3. Unscrew (counterclockwise) the existing solenoid valve from the base plate.



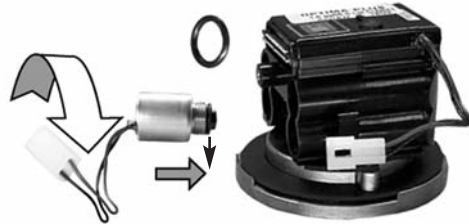
4. Remove white plastic seat and O-rings that are located inside the housing.



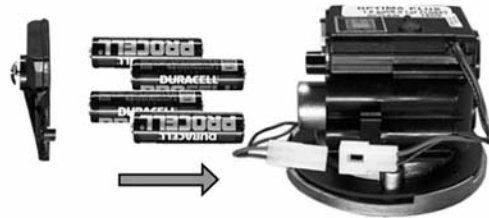
5. Remove clear plastic housing from the threaded end of new operator by unscrewing (counterclockwise). It is normal to find water inside this housing.



6. Make sure O-ring is installed on the gray housing of the new operator. Install isolated operator by threading it (clockwise) into the housing. Tighten with fingers beyond just snug.



7. Reinstall batteries in the correct position and reattach battery door.



8. Reconnect the white plastic connectors on the side of the module. Slide the white connector into the clip to secure. Tuck wiring in close to module. If valve runs, tighten solenoid further.



Sensor Flushometers

Optima Plus® Flushometers

TROUBLESHOOTING GUIDE

IMPORTANT: The OPTIMA PLUS® flushometer is engineered for quiet operation. Excessive water flow creates noise, while too little water flow may not satisfy the needs of the fixture. Proper adjustment is made when plumbing fixture is cleansed after each flush without splashing water out from the lip AND a quiet flushing cycle is achieved.

Never open Control Stop to where the flow from the valve exceeds the flow capability of the fixture. In the event of a valve failure, the fixture must be able to accommodate a continuous flow from the valve.

ATTENTION INSTALLERS: With the exception of the control stop inlet, DO NOT USE pipe sealant or plumbing grease on any valve component or coupling! To protect the chrome or special finish of Sloan flushometers, DO NOT USE toothed tools to install or service these valves. Use our A-50 Super-Wrench™ or other smooth-jawed wrench to secure couplings. Regulations for low consumption fixtures (1.6 gpf/6.0 Lpf closets and 1.0 gpf/3.8 Lpf urinals) prohibit use of higher flush volumes.

1. Sensor flashes continuously only when user steps within range.

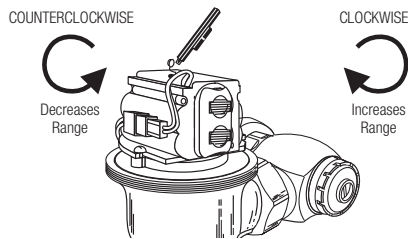
- A. Unit in start-up mode; no problem. This feature is active for the first 10 minutes of operation.

2. Valve does not flush; sensor not picking up user.

- A. Range too short; increase the range.
B. Optima Plus installed on a high rough-in fixture (beam is shooting over the user's head). Install the EBV-46-A beam deflector (black modules only).

3. Valve does not flush; sensor picking up opposite wall or surface, or only flushes when someone walks by. Red light flashes continuously for first 10 minutes even with no one in front of the sensor.

- A. Range too long; shorten range.



- B. Sensor is picking up mirror or highly reflective wall or surface in front of fixture. Install Optima Plus® slightly "off-center" (2 to 5 degrees) to eliminate direct reflection off of mirror or opposite wall or surface.

4. Valve does not flush even after adjustment.

- A. Range adjustment potentiometer set at full "max" or full "min" setting. Readjust potentiometer away from full "max" or "min" setting.
B. Batteries completely used up; replace batteries.
C. Problem with electronic sensor module; replace electronic sensor module.

5. Unit flashes 4 quick times when user steps within range.

- A. Batteries low; replace batteries.

6. Valve does not shut off.

- A. By-pass orifice in diaphragm is clogged with dirt or debris, or by-pass is clogged by an invisible gelatinous film due to "over-treated" water. Remove diaphragm and wash under running water. Replace with new diaphragm if cleaning does not correct the problem.
B. Dirt or debris fouling stem or flex tube diaphragm. Remove flex tube diaphragm and wash under running water.
C. Problem with solenoid. If cleaning does not correct the problem, replace with new isolated solenoid operator.

7. Not enough water to fixture.

- A. Wrong Optima Plus flex tube diaphragm installed; i.e., 1.0 gpf urinal installed on 3.5 gpf closet fixture. Replace with proper diaphragm assembly.
B. Enlarged by-pass in diaphragm. Replace with flex tube diaphragm kit.
C. Control stop not adjusted properly. Readjust control stop.
D. Inadequate volume or pressure at supply. Increase water pressure or supply (flow) to valve. Consult factory for assistance.

8. Too much water to fixture.

- A. Control stop not adjusted properly. Readjust control stop.
B. Wrong Optima Plus flex tube diaphragm installed; i.e., 3.0 gpf model installed on 1.0 or 1.5 gpf urinal fixture. Replace with proper Optima Plus diaphragm assembly.
C. Dirt in diaphragm by-pass. Clean under running water or replace with new flex tube diaphragm.

9. Men's room closet bowls unflushed.

- A. Closet being used as urinal. Angle sensor slightly off fixture centerline to detect standing person in front of fixture.

BATTERIES

When required, replace batteries with four (4) alkaline type AA batteries.

CARE AND CLEANING OF CHROME AND SPECIAL FINISHES

DO NOT use abrasive or chemical cleaners to clean flushometers as they may dull the luster and attack the chrome or special decorative finishes. Use **ONLY** mild soap and water, then wipe dry with clean cloth or towel.

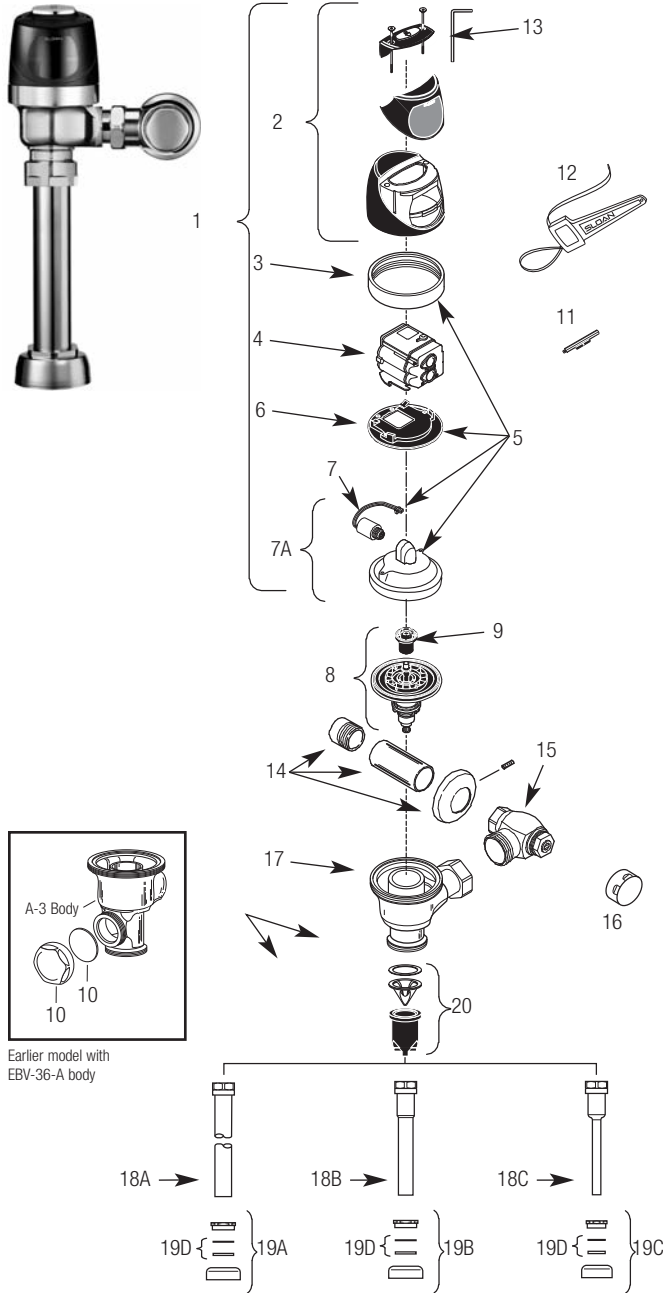
While cleaning the bathroom tile, the flushometer should be protected from any splattering of cleaner. Acids and cleaning fluids can discolor or remove chrome plating.

When assistance is required, please contact

Sloan Technical Support at: 1-888-SLOAN-14 (1-888-756-2614).

Optima Plus® Sloan Flushometer™

Sensor
Flushometers

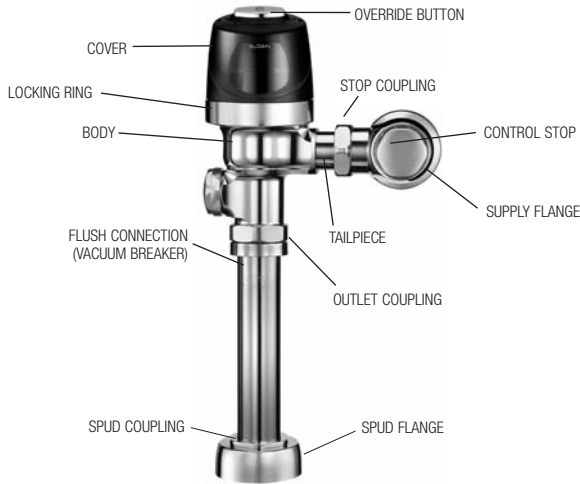


PARTS LIST

Item No.	Code No.	Part No.	Description
1.	0325298	EBV-189-A	Cover/Ring/Sensor Assembly - Water Closet
	0325299	EBV-190-A	Cover/Ring/Sensor Assembly - Urinal
	0325239	EBV-198-A	Cover/Ring/Sensor Assembly - Water Closet w/ Zurn ring
	0325240	EBV-199-A	Cover/Ring/Sensor Assembly - Urinal w/Zurn ring
2.	0325241	EBV-192-A	Cover Assembly
3.	N/A	EBV-168	Locking Ring - Plastic inner cover only – Use 3325089 , EBV-1010-A
	0305843	EBV-14	Locking Ring - Metal inner cover only
	0305843	EBV-30-A	Locking Ring - for Zurn valves
4.	3325450	EBV-129-A-C	Electronic Module - Water Closet
	3325451	EBV-129-A-U	Electronic Module - Urinal
5.	3325089	EBV-1010-A	Metal Inner Cover Repair Kit Includes Items Nos. 3, 5, 6 and 7
6.	0325171	EBV-134	Cover Rest Plate
7.	3325453	EBV-136-A	Solenoid
7A.	3325456	EBV-145-A	Inside Cover Assembly (includes solenoid EBV-136-A) Does not replace Plastic Inner Cover. Use Item No. 5
8.	SEE CHART NEXT PAGE		Flex Tube Diaphragm Assembly
9.	SEE CHART NEXT PAGE		Flush Volume Regulator
10.	0325286	EBV-186	Handle Cap Kit
11.	0325107	EBV-91	Range Adjustment Tool
12.	0305823	EBV-22	Strap Wrench
13.	0325159	EBV-137	7/64" Hex Wrench
14.	3308785	H-634-AA	1" (25 mm) Sweat Solder Kit
	3308788	H-636-AA	3/4" (19 mm) Sweat Solder Kit
15.	3308386	H-700-A	1" (25 mm) Bak-Chek® Control Stop
	3308384	H-700-A	3/4" (19 mm) Bak-Chek® Control Stop
16.	3308840	H-573-A	Stop Cap
17.	0305381PK	A-3-A	Valve Body *
18A.	5323007	V-500-AA	1-1/2" (38 mm) x 9" (229 mm) Vacuum Breaker (Model 8110/8111)
	0323014	V-500-AA	1-1/2" (38 mm) x 13 1/2" (343 mm) Vacuum Breaker (Model 8113)
	0323019	V-500-AA	1-1/2" (38 mm) x 23" (584 mm) Vacuum Breaker (Model 8115)
	0323021	V-500-AA	1-1/2" (38 mm) x 26" (660 mm) Vacuum Breaker (Model 8116)
18B.	5323006	V-500-AA	1-1/4" (32 mm) x 9" (229 mm) Vacuum Breaker (Model 8180)
18C.	5323005	V-500-AA	3/4" (19 mm) x 9" (229 mm) Vacuum Breaker (Model 8186)
19A.	0306145	F-56-A	1-1/2" Spud Coupling Assembly (Models 8110, 8115 & 8116)
19B.	0306142	F-55-A	1-1/4" Spud Coupling Assembly (Model 8180)
19C.	0306102	F-54-A	3/4" Spud Coupling Assembly (Model 8186)
19D.	SEE SLIP JOINT GASKETS AND RINGS TABLE ON NEXT PAGE		
20.	3323192	V-551-A	Vacuum Breaker Repair Kit

* Part number varies with valve model variation; consult factory.

Optima Plus® Sloan Flushometer™

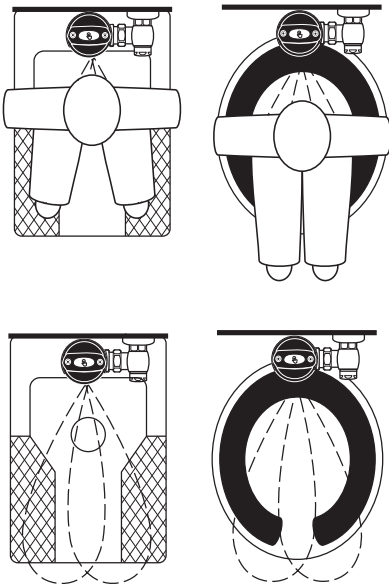


OPERATION

A continuous, INVISIBLE light beam is emitted from the Optima Plus® Sensor.

As the user enters the beam's effective range, 22 to 42 inches (559 mm to 1067 mm) for closet installations and 15 to 30 inches (381 mm to 762 mm) for urinal installations, the beam is reflected into the Scanner Window to activate the Output Circuit. Once activated, the Output Circuit continues in a "hold" mode for as long as the user remains within the effective range of the sensor.

When the user steps away, the loss of reflected light initiates an electrical "one-time" signal that activates the flushing cycle to flush the fixture. The Circuit automatically resets and is ready for the next user.



ITEM 8. FLEX TUBE DIAPHRAGM KIT

Code No.	Part No.	Description	Regulator Color *
3325150	EBV-1050-A	Urinal-0.5 gpf/1.9 Lpf	GREEN
3325151	EBV-1051-A	Urinal-1.0 gpf/3.8 Lpf †	GREEN
3325153	EBV-1053-A	Closet-1.6 gpf/6.0 Lpf †	GREEN
3325152	EBV-1052-A	Closet-2.4 gpf/9.0 Lpf	BLUE

† The EBV-1051-A and EBV-1053-A Kits are supplied with multiple Regulators.

* Color of regulator to be used with flex tube diaphragm to obtain the listed flush volume.

A 1.0 gpf (3.8 Lpf) Urinal kit can be converted to a 1.5 gpf (5.7 Lpf) Urinal by replacing the Green Regulator with the supplied Black Regulator.

A 1.6 gpf (6.0 Lpf) Closet kit can be converted to a 3.5 gpf (13.2 Lpf) Closet by replacing the Green Regulator with the supplied White Regulator.

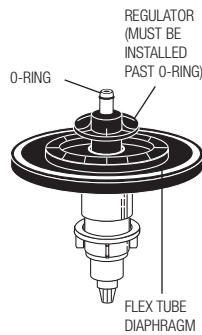
ITEM 9. REGULATORS

The flush volume of the flex tube diaphragm kit is controlled by the regulator. Regulators are identified by color. Some flex tube diaphragm kits are supplied with multiple regulators. The installer must make sure the proper regulator is used when installing the flex tube diaphragm kit.

REGULATOR (SOLD 6 PER PACKAGE)

Code No.	Part No.	Description	Regulator Color
5325122	EBV-95	Urinal-0.5 gpf/1.9 Lpf	GREEN
5325122	EBV-95	Urinal-1.0 gpf/3.8 Lpf	GREEN
5325122	EBV-95	Closet-1.6 gpf/6.0 Lpf	GREEN
5325128	EBV-101	Closet-2.4 gpf/9.0 Lpf	BLUE

FLEX TUBE DIAPHRAGM ASSEMBLY



Optima Plus Valve Models Feature Sloan's Exclusive Flex Tube Diaphragm™ for the ultimate in valve performance, reliability and Chloramine resistance.

ITEM 19D. SLIP JOINT GASKETS AND RINGS

Size	Code No.	Part No.	Description
1-1/2"	5306058	F-3	Red Friction Ring
	5322001	VBF-5	Black Slip Joint Gasket
	0319086/5319086	S-30	Flexible Seat
	0319079	S-21	Rigid Seat (rubber over brass)
1-1/2" x 1-1/4"	0396062	F-105	Slip Joint Gasket - Rigid
1-1/4"	5306057	F-3	Red Friction Ring
	5322176	VBF-5	Black Slip Joint Gasket
	0307052/5307052	G-21	Rigid Seat (rubber over brass)
1"	5306056	F-3	Red Friction Ring
	5306115	F-5	Black Slip Joint Gasket
3/4"	5306055	F-3	Red Friction Ring
	5306113	F-5	Black Slip Joint Gasket

Optima Plus® Sloan Flushometer™

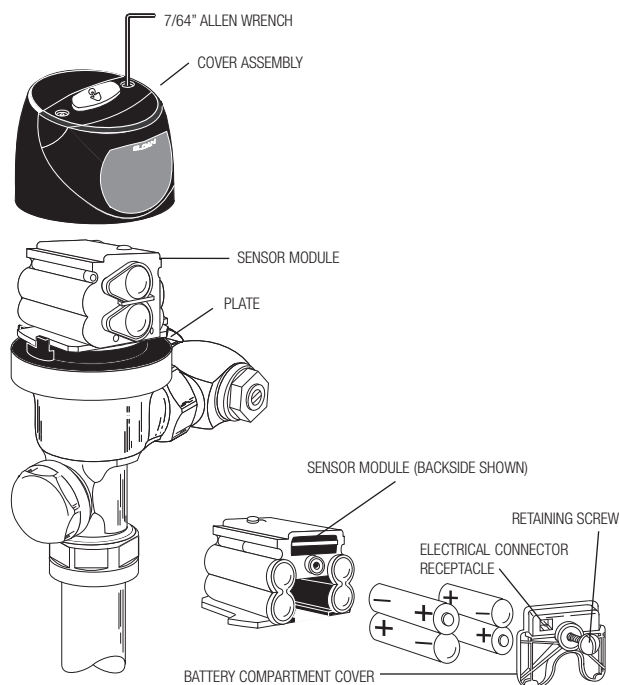
BATTERY REPLACEMENT

When required, replace batteries with four (4) Alkaline AA-Size Batteries.

Note: Water does not have to be turned off to replace batteries.

Loosen the two (2) Screws on top of unit. Remove the complete Cover Assembly. Lift the Sensor Module from its Plate. Unplug the Electrical Connector from Battery Compartment Cover. Loosen the Retaining Screw on Battery Compartment Cover and remove Battery Compartment Cover. Install four (4) Alkaline AA-Size Batteries **exactly** as illustrated.

Install Battery Compartment Cover and secure with Retaining Screw. Make certain that Battery Compartment Cover is fully compressed against Gasket to provide a seal; **Do Not** over-tighten. Plug the Electrical Connector into the Battery Compartment Cover. Reinstall the Sensor Module onto the Plate. Tighten the two (2) Screws on top of the unit.



RANGE ADJUSTMENT (ADJUST ONLY IF NECESSARY)

The Optima Plus® has a factory set sensing range:

Water Closet Models - 22" to 42" (559 mm to 1067 mm)

Urinal Models - 15" to 30" (381 mm to 762 mm)

The Factory setting should be satisfactory for most installations.

If the range is too short (i.e., not picking up users) or too long (i.e., picking up opposite wall or stall door) the range can be adjusted.

Note: Water does not have to be turned off to adjust range.

Refer to Illustration on at right.

Loosen the two Screws on top of the unit. Remove the Override Button. Remove the Rubber Plug from top of Electronic Sensor Module to uncover the Potentiometer.

RANGE ADJUSTMENT PROCEDURE

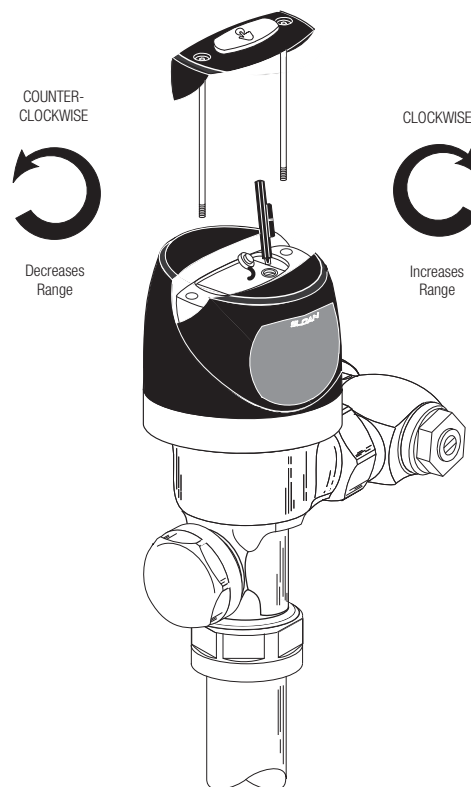
For the first ten (10) minutes of operation, a Visible Red Light flashes in the Sensing Window of the Optima Plus flushometer when a user is detected. This Visible Red Light feature can be reactivated after ten (10) minutes by opening and closing the Battery Compartment Door.

Check the range by stepping toward the unit until the Red Light flashes, indicating the Sensor's maximum detection limit. Adjust the Range Potentiometer Screw located on top of the Sensor Module a few degrees **CLOCKWISE** to increase the range or a few degrees **COUNTERCLOCKWISE** to decrease the range. Repeat this adjustment until the desired range is achieved.

Always Determine the Sensing Range with Plastic Cover and Lens Window On Top of the Unit.

Important: Adjust in small increments only! Range Potentiometer Adjustment Screw rotates only 3/4 of a turn; DO NOT over-rotate.

When range adjustment is satisfactory, replace the Rubber Plug. Reinstall Override Button and tighten the two Screws on top of the unit.



Optima Plus® Sloan Flushometer™

TROUBLESHOOTING AND MAINTAINING THE SLOAN OPTIMA PLUS® FLUSHOMETER

IMPORTANT: This product contains mechanical and/or electrical components that are subject to normal wear. These components should be checked on a regular basis and replaced as needed to maintain the valve's performance.

Never open Control Stop to where the flow from the valve exceeds the flow capability of the fixture. In the event of a valve failure, the fixture must be able to accommodate a continuous flow from the valve.

ATTENTION INSTALLERS: With the exception of the control stop inlet, DO NOT USE pipe sealant or plumbing grease on any valve component or coupling! To protect the chrome or special finish of Sloan flushometers, DO NOT USE toothed tools to install or service these valves. Use our A-50 Super-Wrench™ or other smooth-jawed wrench to secure couplings. Regulations for low consumption fixtures (1.6 gpf/6.0 Lpf closets and 1.0 gpf/3.8 Lpf urinals) prohibit use of higher flush volumes.

1. Sensor flashes continuously only when user steps within range.

- A. Unit in Start-Up mode; no problem. This feature is active for the first ten (10) minutes of operation.

2. Valve does not flush; sensor not picking up user.

- A. Range too short; increase the range.

3. Valve does not flush; sensor picking up opposite wall or surface, or only flushes when someone walks by. Red light flashes continuously for first 10 minutes even with no one in front of the sensor.

- A. Range too long; shorten range.

4. Valve does not flush even after adjustment.

- A. Range Adjustment Potentiometer set at full "max" or full "min" setting. Readjust Potentiometer away from full "max" or "min" setting.
- B. Batteries completely used up; replace batteries.
- C. Problem with Electronic Sensor Module; replace Electronic Sensor Module.

5. Unit flashes four (4) quick times when user steps within range.

- A. Batteries low; replace batteries.

6. Valve does not shut off.

- A. Bypass Orifice in Diaphragm is clogged with dirt or debris, or Bypass is clogged by an invisible gelatinous film due to "over-treated" water. Remove Flex Tube Diaphragm and wash under running water.

Note: Size of orifice in the by-pass is of utmost importance for the proper metering of water by the valve. **DO NOT ENLARGE OR DAMAGE THIS ORIFICE.** Replace flex tube diaphragm if cleaning does not correct the problem.

- B. Dirt or debris fouling Stem or Flex Tube Diaphragm. Remove Flex Tube Diaphragm and wash under running water.
- C. O-ring on Stem of Flex Tube Diaphragm is damaged or worn. Replace O-ring if necessary.
- D. Problem with Electronic Sensor Module; replace Sensor Module.

7. Not enough water to fixture.

- A. Wrong Flush Volume Regulator installed in Flex Tube Diaphragm Kit. Install the correct Regulator (see Step 6 of these instructions).
- B. Wrong Optima Plus® Diaphragm kit installed; i.e., 1 gpf. urinal installed on 3.5 gal. closet fixture. Replace with proper Optima Plus diaphragm kit.
- C. Enlarged Bypass in Diaphragm. Replace Flex Tube Diaphragm.
- D. Control Stop not adjusted properly. Readjust Control Stop.
- E. Inadequate volume or pressure at supply. Increase water pressure or supply (flow) to valve. Consult factory for assistance.

8. Too much water to fixture.

- A. Wrong Flush Volume Regulator installed in Flex Tube Diaphragm Kit. Install the correct Regulator (see Step 6 of these instructions).
- B. Control Stop not adjusted properly. Readjust Control Stop.
- C. Wrong Optima Plus Diaphragm kit installed; i.e., 3.5 gpf. closet installed on 0.5 gal. urinal fixture. Replace with proper Optima Plus Diaphragm kit.
- D. Dirt in Diaphragm Bypass. Clean under running water or replace Flex Tube Diaphragm.

CARE AND CLEANING OF CHROME AND SPECIAL FINISHES

DO NOT use abrasive or chemical cleaners to clean flushometers as they may dull the luster and attack the chrome or special decorative finishes. Use ONLY soap and water, then wipe dry with clean cloth or towel.

While cleaning the bathroom tile, the flushometer should be protected from any splattering of cleaner. Acids and cleaning fluids can discolor or remove chrome plating.

When assistance is required, please contact Sloan Technical Support at: 1-888-SLOAN-14 (1-888-756-2614).