

SLOAN[®]

FLUSHOMETERS

Maintenance Guide

• SENSOR OPERATED VALVES



FOR USE WITH SLOAN'S ORIGINAL OPTIMA[®] PLUS FLUSHOMETER PRODUCED FROM 1992 - 2003 AND REGAL PRO[®] OPTIMA PLUS PRODUCED AFTER MAY, 2003

The Sloan Valve Company introduced its OPTIMA Plus Battery Operated 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.

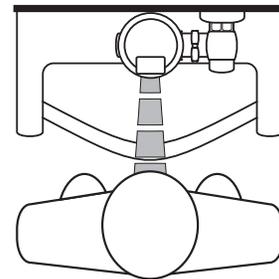
The Sloan OPTIMA Plus automatic battery powered Flushometer relies on an infrared sensor to detect a user and activate a flushing cycle. No physical contact with the Flushometer surface is necessary, assuring sanitary protection. OPTIMA Plus Flushometers are ADA compliant devices and are available in both Royal[®] and Regal[®] Flushometer models.



ORIGINAL
OPTIMA PLUS
FLUSHOMETER
AND REGAL PRO[®]
OPTIMA PLUS



G2[®] OPTIMA PLUS
FLUSHOMETER



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 operated 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 conditions.

The G2 OPTIMA Plus replaces the original OPTIMA Plus product, which was phased out of production in mid 2003. Regal Pro OPTIMA Plus Valves produced after May, 2003 include G2 Interior Components with the old style OPTIMA Plus Cover.

Many of the new technologies developed for the G2 have been integrated into the repair parts available for the older OPTIMA Plus product. This Maintenance & Repair Guide reflects these new components and includes crossover information for the old components.

Use this Maintenance & Repair Guide for OPTIMA Plus Valves produced from 1992 - 2003 and Regal Pro Optima Plus Valves produced after May, 2003 only.

For the G2 OPTIMA Plus, use Maintenance & Repair Guide #0816456.

If further assistance is required, please contact the Sloan Valve Company Installation Engineering Department at:

Phone: 1-888-SLOAN-14 (1-888-756-2614)

Email: productsupport@sloanvalve.com

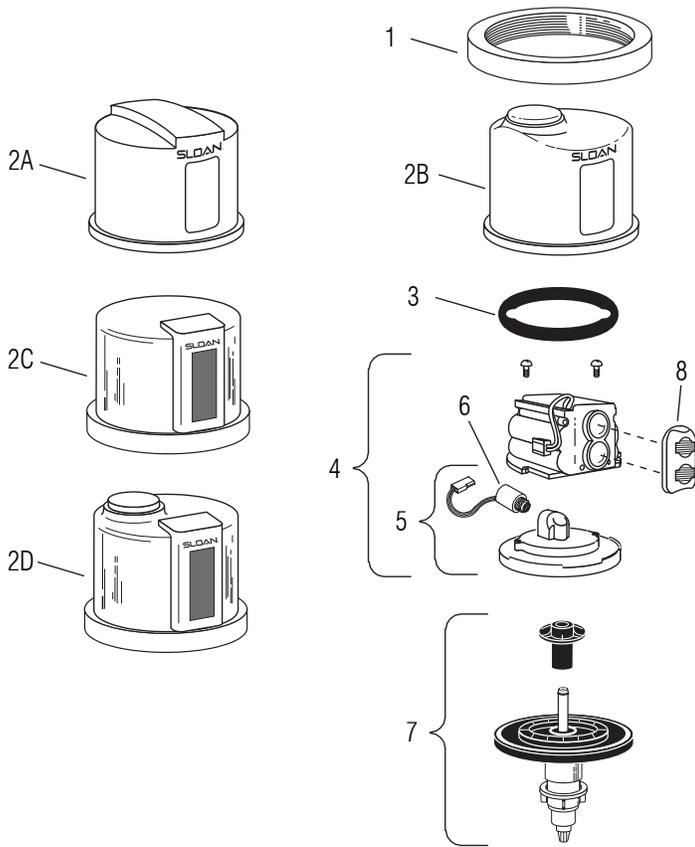
The Flushometer is triggered by means of an active infrared Sensor. The OPTIMA Plus Sensor emits a continuous invisible light beam. When a user enters the beam's effective range, the beam is reflected into the OPTIMA Plus Scanner Window. The user is now detected. After the user moves out of the effective 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.

LIMITED WARRANTY

Sloan Valve Company warrants its Flushometer Products to be made of first class materials, free from defects of material or workmanship under normal use and to perform the service for which they are intended in a thoroughly reliable and efficient manner when properly installed and serviced, for a period of three years (one year for special finishes) from date of purchase. During this period, Sloan Valve Company will, at its option, repair or replace any part or parts which prove to be thus defective if returned to Sloan Valve Company, at customer's cost, and this shall be the sole remedy available under this warranty. No claims will be allowed for labor, transportation or other incidental costs. This warranty extends only to persons or organizations who purchase Sloan Valve Company's products directly from Sloan Valve Company for purpose of resale.

THERE ARE NO WARRANTIES WHICH EXTEND BEYOND THE DESCRIPTION ON THE FACE HEREOF. IN NO EVENT IS SLOAN VALVE COMPANY RESPONSIBLE FOR ANY CONSEQUENTIAL DAMAGES OF ANY MEASURE WHATSOEVER.

**For all Optima Plus produced from 1992 - 2003
And Regal Pro Optima Plus produced after May, 2003**



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
2A.	0325806	EBV-11	Cover (Urinal)
2B.	3325538	EBV-38-A	Cover w/Override Button (Water Closet)
2C.	3325012	EBV-55-A	Metal Cover Assembly (Urinal)
	3325017	EBV-1034-A	Metal Cover Assembly for Zurn Valve Body (Urinal)
2D.	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)
3.	5325011	EBV-67	Cover Gasket — 12 per package
4.	SEE CHART BELOW		ELECTRONIC MODULE
5.	0325814	EBV-21-A	Inside Cover Assembly (Includes Solenoid)
6.	3325462	EBV-144-A	Isolated Solenoid Operator †
7.	SEE CHART on PAGE 3		Flex Tube Diaphragm Kit
8.	3325537	EBV-46-A	Beam Deflector ‡

† The new EBV-144-A Isolated Solenoid replaces the Solenoid used with the old style Black EBV-26-A Modules only.

For Blue EBV-146-A G2 Modules, use the EBV-136-A (code #3325453) Isolated Solenoid Operator.

Refer to Page 4 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.

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 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 EBV-146-A Modules include the Isolated Solenoid, Inner Cover and Electronic Module.

These Modules are for use with older OPTIMA Plus and Regal Pro OPTIMA Plus Valves only. Consult Maintenance & Repair Guide #0816456 for G2 OPTIMA Plus Electronic Modules.

Description	USE		TO REPLACE	
	New Part No.	Code No.	Old Part No.	Code No.
Electronic Module — 0.5 gpf/1.9 Lpf Urinal	EBV-146-A-U	0325177	EBV-26-A-U-0.5	3325039
Electronic Module — 1.0 gpf/3.8 Lpf Urinal			EBV-26-A-U-1.0	3325540
Electronic Module — 1.5 gpf/5.7 Lpf Urinal			EBV-26-A-U-1.5	3325541
Electronic Module — 3.5 gpf/13.2 Lpf Urinal			EBV-26-A-U-3.5	3325543
Electronic Module — 1.6 gpf/6.0 Lpf Closet	EBV-146-A-C	0325176	EBV-26-A-C-1.6	3325542
Electronic Module — 2.4 gpf/9.0 Lpf Closet			EBV-26-A-C-2.4	3325643
Electronic Module — 3.5 gpf/13.2 Lpf Closet			EBV-26-A-C-3.5	3325544
Electronic Module — 4.5 gpf/17.0 Lpf Closet			EBV-26-A-C-4.5	3325545

Note: EBV-26-A Modules are no longer available. Use the EBV-146-A Module shown.

DIAPHRAGM INSIDE PARTS KITS

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.

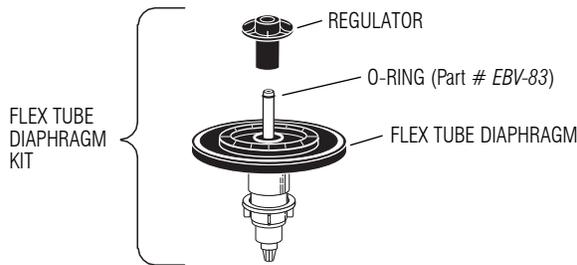
The Flex Tube Diaphragm Kit also features Sloan's exclusive Dual Filter Diaphragm. The Dual Filter Diaphragm helps to protect the valve from water worn sediment that can cause the valve to stick open and run on. The Dual Filter diaphragm is also made from Sloan's Permax Synthetic Rubber material for resistance against chloramines and other water treatment chemicals.



FLEX TUBE DIAPHRAGM INSIDE PARTS KIT (INTRODUCED FEB., 2003)

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.

FLEX TUBE DIAPHRAGM KITS



5325056 EBV-83 O-ring — 6 per package

APPLICATION	USE			TO REPLACE	
	FLEX TUBE DIAPHRAGM KIT †			DIAPHRAGM KIT W/ QUAD RING (OBSOLETE)	
	KIT NO.	COLOR ♦	CODE NO.	KIT NO.	CODE NO.
URINAL-0.5 gpf/1.9 Lpf	EBV-1023-A	GREEN	3325003	EBV-32-A-U-0.5	3325038
URINAL-1.0 gpf/3.8 Lpf ‡	EBV-1022-A	GREEN	3325000	EBV-32-A-U-1.0	3325851
URINAL-1.5 gpf/5.7 Lpf	EBV-1022-A	BLACK	3325000	EBV-32-A-U-1.5	3325818
URINAL-3.5 gpf/13.2 Lpf	EBV-1020-A	WHITE	3325001	EBV-10-A-U-3.5	3325841
CLOSET-1.6 gpf/6.0 Lpf	EBV-1020-A	GREEN	3325001	EBV-10-A-C-1.6	3325850
CLOSET-2.4 gpf/9.0 Lpf	EBV-1021-A	BLUE	3325014	EBV-10-A-C-2.4	3325033
CLOSET-3.5 gpf/13.2 Lpf	EBV-1020-A	WHITE	3325001	EBV-10-A-C-3.5	3325841
CLOSET-4.5 gpf/17.0 Lpf §	EBV-1020-A	WHITE	3325001	EBV-10-A-C-4.5	3325842

† The EBV-1020-A and EBV-1022-A Kits are supplied with multiple Regulators.

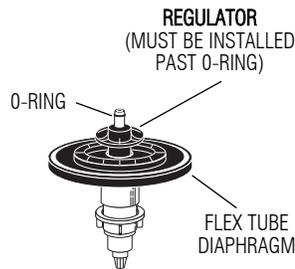
‡ A 0.5 gpf (1.9 Lpf) Urinal kit can be converted to a 1.0 gpf (3.8 Lpf) by cutting and removing the smooth A-164 Flow Ring from the Guide.

§ 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 control 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)

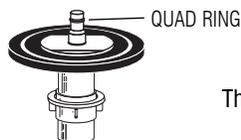
FLUSH VOLUME AND FIXTURE	REGULATOR COLOR	PART NO.	CODE NO
URINAL-0.5 gpf/1.9 Lpf	GREEN	EBV-95	5325122
URINAL-1.0 gpf/3.8 Lpf	GREEN	EBV-95	5325122
URINAL-1.5 gpf/5.7 Lpf	BLACK	EBV-102-2	5325129
URINAL-3.5 gpf/13.2 Lpf	WHITE	EBV-102-1	5325130
CLOSET-1.6 gpf/6.0 Lpf	GREEN	EBV-95	5325122
CLOSET-3.5 gpf/13.2 Lpf	WHITE	EBV-102-1	5325130
CLOSET-2.4 gpf/9.0 Lpf	BLUE	EBV-101	5325128

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



OLD STYLE KITS ARE OBSOLETE. SEE CHART FOR REPLACEMENT.



The **EBF-18** Quad Ring is still available.

5325813 EBV-18 Quad Ring — 12 per package

ADJUSTING THE OLD STYLE INSIDE DIAPHRAGM ASSEMBLY

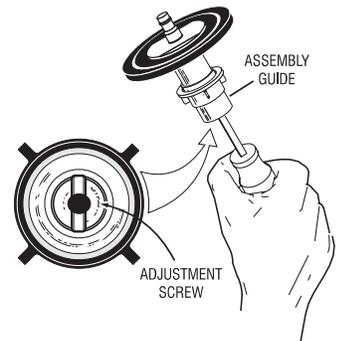
The Inside Diaphragm Assembly was set at the factory to ensure an accurate flush cycle over a range of water pressures.

If adjustment is required, remove the Inside Diaphragm Assembly and turn it upside down. Inside the Assembly Guide is an Adjustment Screw. Insert a slotted screwdriver and turn the Adjustment Screw according to the Conversion Guidelines.

Turning the Adjustment Screw clockwise \curvearrowright **DECREASES** the flush volume.

Turning the Adjustment Screw counterclockwise \curvearrowleft **INCREASES** the flush volume.

For full adjustment procedures, see OPTIMA Plus Conversion Guide #0816511.



SOLENOID REPLACEMENT



EBV-144-A

CODE #3325462

ISOLATED 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

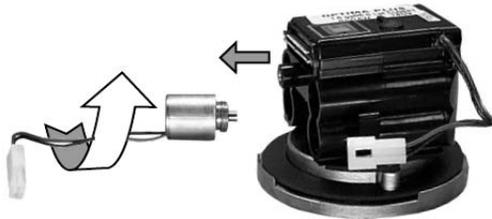
- 1** Remove Battery Cover and Batteries from existing Sensor Module.



- 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.



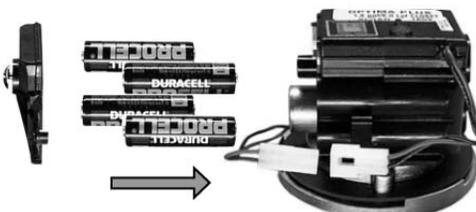
- 5** Remove Clear Plastic Housing from the threaded end of new Isolated Operator by unscrewing (counterclockwise). It is normal to find water inside this housing.



- 6** Make sure O-ring is installed on the Black Housing of the new Isolated 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.



**For all Optima Plus produced from 1992 - 2003
And Regal Pro Optima Plus produced after May, 2003**

OTHER VALVE COMPONENT PARTS

Item No.	Code No.	Part No.	Description
9.	3325814	EBV-1017-A	Handle Cap — Metal
10.	3325815	EBV-1018-A	Handle Cap — Decorative
11.	3323182	V-651-A	Vacuum Breaker Repair Kit
12.	0393004	V-600-A	¾" (19 mm) x 9" (229 mm) CP Vacuum Breaker
	0393006	V-600-A	1¼" (32 mm) x 9" (229 mm) CP Vacuum Breaker
	0393007	V-600-A	1½" (38 mm) x 9" (229 mm) CP Vacuum Breaker
13.	0306125	F-5-A	¾" (19 mm) CP Spud Coupling
	0306140	F-5-A	1¼" (32 mm) CP Spud Coupling
	0306146	F-5-A	1½" (38 mm) CP Spud Coupling
14.	0308676	H-550	CP Stop Coupling
15.	0308801	H-551-A	CP Adjustable Tailpiece 2-1/16" (52 mm) long
16.	5308696	H-553	O-ring — 24 per package
17.	3308386	H-700-A	1" (25 mm) Screwdriver Bak-Chek® Stop CP — complete
	3308384	H-700-A	¾" (19 mm) Screwdriver Bak-Chek® Stop CP — complete
18.	3308853	H-541-A	Control Stop Repair Kit †
	3308856	H-543-A	Control Stop Repair Kit ‡
19.	0308612	H-622	CP Bonnet †
	0308843	H-577	CP Bonnet ‡
20.	3308791	H-1010-A	Vandal Resistant Control Stop Cap Assembly †
	3308790	H-1009-A	Vandal Resistant Control Stop Cap Assembly ‡
21.	3325816	EBV-1019-A	¾" (19 mm) Decorative Stop Cap
	3308866	H-574	1" (25 mm) Decorative Stop Cap

Accessories

22.	0325107	EBV-91	Trimpot Adjustment Screwdriver
23.	0325823	EBV-22	Disposable Strap Wrench

† For use w/H-700-A 1" & ¾" and H-600-A 1" Screwdriver Bak-Chek® Control Stops.

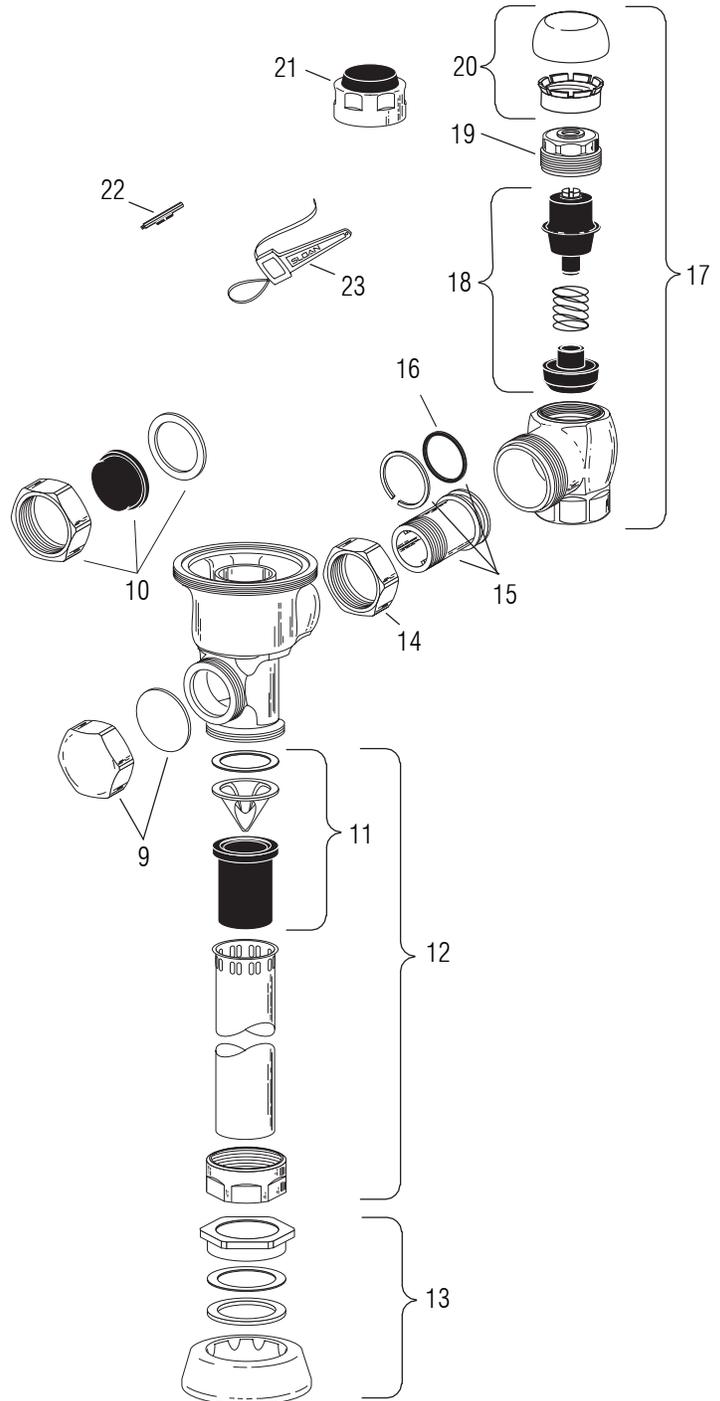
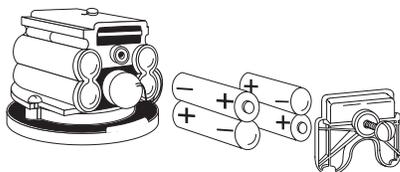
‡ For use w/H-600-A ¾" Screwdriver Bak-Chek® Control Stops.

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.

Separate Locking Ring, Cover and Flex Tube 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.



FOR USE WITH SLOAN'S ORIGINAL OPTIMA PLUS FLUSHOMETER PRODUCED FROM 1992 - 2003

Troubleshooting and Maintaining the Sloan OPTIMA Plus Flushometer

I. Sensor Flashes Continuously Only When User Steps Within Range.

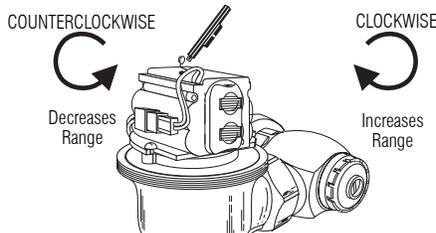
- A. Unit in Start-Up mode; no problem. This feature is active for the first 10 minutes of operation.

II. 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 Sloan EBV-46-A Beam Deflector (black modules only).

III. 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.

IV. 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.

V. Unit Flashes 4 Quick Times When User Steps Within Range.

- A. Batteries low; replace batteries.

VI. 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 Bypass 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. Problem with Solenoid. If cleaning does not correct the problem, replace with new Isolated Solenoid Operator.

VII. 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 Bypass 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.

VIII. 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 Bypass. Clean under running water or replace with new Flex Tube Diaphragm.

IX. Men's Room Closet Bowls Unflushed.

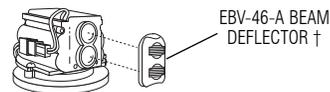
- A. Closet being used as urinal. Angle Sensor slightly off fixture centerline to detect standing person in front of fixture.

X. High Vacuum Breaker Installation (Model 8115/8116) — Unit Not Flushing.

- A. EBV-46-A Beam Deflector not installed. Install EBV-46-A Beam Deflector (black modules only) to divert Sensor beams.

XI. Elementary School Urinals Not Flushing.

- A. Unusually short users not being detected. Install EBV-46-A Beam Deflector (black modules only) to divert Sensor beams.



† **Note:** Use on Black Modules Only.

BATTERIES

When required, replace batteries with four (4) Alkaline Type AA batteries.

For information and instructions on field converting OPTIMA Plus Module settings or to activate the Stadium Flush™ Feature in urinal models, see the Sloan OPTIMA Plus Conversion Guide (0816511).

This manual and the OPTIMA Plus Repair and Maintenance Guide are available at www.sloanvalve.com

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.

Refer to the OPTIMA Plus Flushometer Maintenance Guide for additional Troubleshooting and Repair Part information.

If further assistance is required, please contact the Sloan Valve Company Installation Engineering Department at 1-888-SLOAN-14 (1-888-756-2614).

Manufactured in the U.S.A. by Sloan Valve Company under one or more of the following patents: U.S. Patents: 4,893,039; 5,169,118; 5,244,179; 5,295,655; Des. 345,113; Des. 355,478. Other Patents Pending. BAK-CHEK®, PARA-FLO®, PERMEX®, TURBO-FLO®.

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