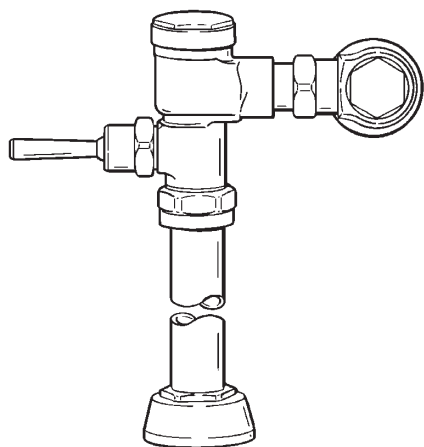




## INSTALLATION INSTRUCTIONS GEM • 2<sup>®</sup> PISTON TYPE FLUSHOMETERS FOR EXPOSED CLOSET AND URINAL INSTALLATIONS

Made in the U.S.A.



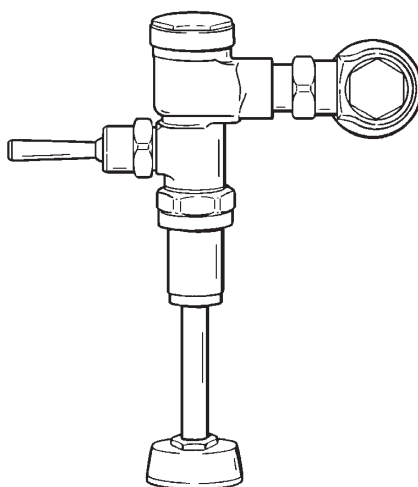
### Exposed Closet Flushometer —

#### 1-1/2" Top Spud

GEM • 2 110/111

GEM • 2 115

GEM • 2 136



### Exposed Urinal Flushometer —

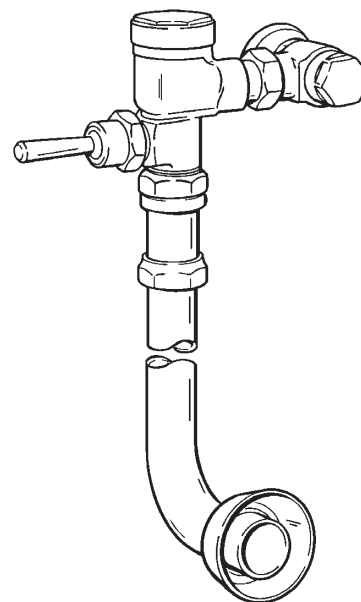
#### 1-1/4" Top Spud

GEM • 2 180

### Exposed Urinal Flushometer —

#### 3/4" Top Spud

GEM • 2 186



### Exposed Closet Flushometer —

#### 1-1/2" Back Spud

GEM • 2 120

GEM • 2 121

GEM • 2 122

GEM • 2 137

The Sloan GEM • 2<sup>®</sup> is a piston type Flushometer which incorporates many of the same quality features found in Sloan Diaphragm Flushometers. The GEM • 2 provides outstanding water saving capabilities by precisely metering every flush. Additionally, the GEM • 2 incorporates a filtered by-pass which ensures consistent flushing even under severe water conditions.

The GEM • 2 Flushometer is designed for easy installation and maintenance and comes complete with an ADA compliant metal oscillating Non-Hold-Open lever

actuator, Bak-Chek<sup>®</sup> control stop, adjustable tailpiece, vacuum breaker flush connection, spud coupling, and wall and spud flanges.

The following instructions will serve as a guide when installing the Sloan GEM • 2 Flushometer. As always, good safety practices and care are recommended when installing your new Flushometer. If further assistance is required, contact your nearest Sloan Representative office.

### LIMITED WARRANTY

Sloan Valve Company warrants its GEM Flushometers 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 (1 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.

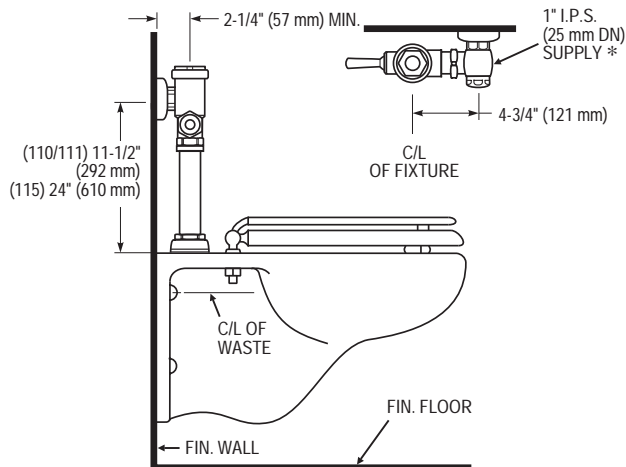
**THERE ARE NO WARRANTIES WHICH EXTEND BEYOND THE DESCRIPTION ON THE FACE HEREOF. IN NO EVENT IS SLOAN VALVE COMPANY RESPONSIBLE FOR ANY CONSEQUENTIAL DAMAGES OF ANY MEASURE WHATSOEVER.**

## VALVE ROUGH-IN — Figure 1

GEM 110 & 115 — Water Saver, 3.5 gpf (13.2 Lpf)

GEM 110-2.4 & 115-2.4 — 2.4 gpf (9.0 Lpf)

GEM 111 & 115-1.6 — Low Consumption, 1.6 gpf (6.0 Lpf)



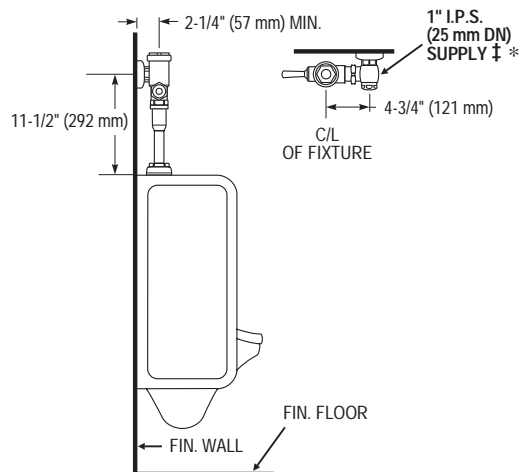
\* 1" CONTROL STOP IS AVAILABLE WITH WHITWORTH THREAD

GEM 180 — Standard, 3.5 gpf (13.2 Lpf)

GEM 180-1.5 — Water Saver, 1.5 gpf (5.7 Lpf)

GEM 180-1 — Low Consumption, 1 gpf (3.8 Lpf)

NOTE: Requires 1" I.P.S. (25 mm DN) SUPPLY ‡

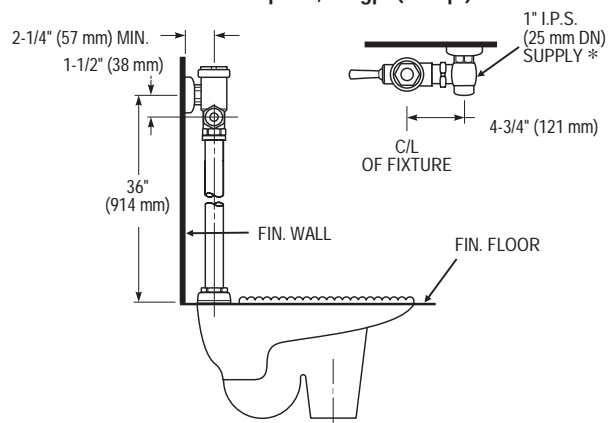


\* 1" CONTROL STOP IS AVAILABLE WITH WHITWORTH THREAD

GEM 136 — Water Saver, 3.5 gpf (13.2 Lpf)

GEM 136-2.4 — 2.4 gpf (9.0 Lpf)

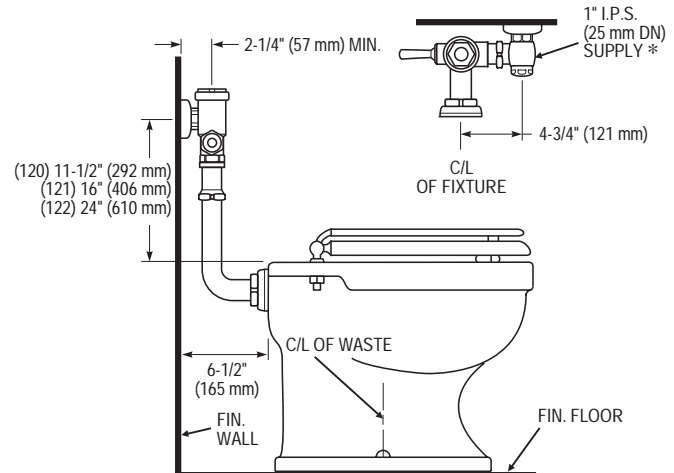
GEM 136-1.6 — Low Consumption, 1.6 gpf (6.0 Lpf)



GEM 120, 121 & 122 — Water Saver, 3.5 gpf (13.2 Lpf)

GEM 120-2.4, 121-2.4 & 122-2.4 — 2.4 gpf (9.0 Lpf)

GEM 120-1.6, 121-1.6 & 122-1.6 — Low Consumption, 1.6 gpf (6.0 Lpf)

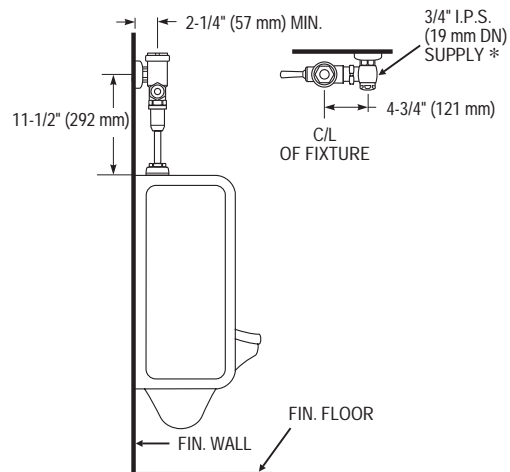


\* 1" CONTROL STOP IS AVAILABLE WITH WHITWORTH THREAD

GEM 186 — Water Saver, 1.5 gpf (5.7 Lpf)

GEM 186-1 — Low Consumption, 1 gpf (3.8 Lpf)

GEM 186-0.5 — 0.5 gpf (1.9 Lpf)



\* 1" CONTROL STOP IS AVAILABLE WITH WHITWORTH THREAD

GEM 137 — Water Saver, 3.5 gpf (13.2 Lpf)

GEM 137-2.4 — 2.4 gpf (9.0 Lpf)

GEM 137-1.6 — Low Consumption, 1.6 gpf (6.0 Lpf)

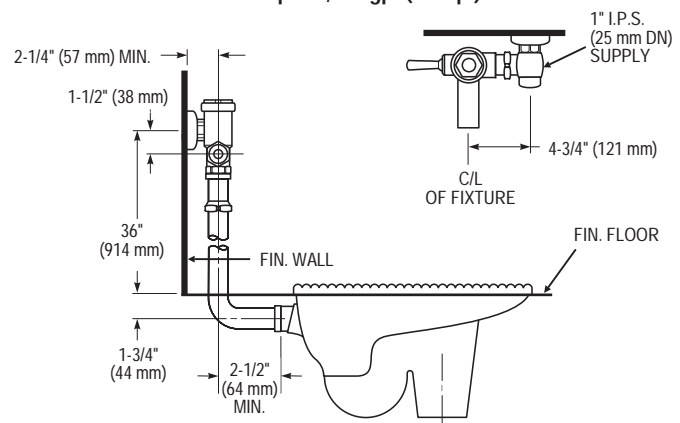


Figure 1

## PRIOR TO INSTALLATION

Prior to installing the Sloan GEM • 2 Flushometer, install the items listed below as illustrated in Figure 1.

- Closet/urinal fixture
- Drain line
- Water supply line

### Important:

- **ALL PLUMBING IS TO BE INSTALLED IN ACCORDANCE WITH APPLICABLE CODES AND REGULATIONS.**
- **WATER SUPPLY LINES MUST BE SIZED TO PROVIDE AN ADEQUATE VOLUME OF WATER FOR EACH FIXTURE.**
- **FLUSH ALL WATER LINES PRIOR TO MAKING CONNECTIONS.**

The Sloan GEM • 2® is designed to operate with 10 to 100 psi (69 to 689 kPa) of water pressure. THE MINIMUM PRESSURE REQUIRED TO THE VALVE IS DETERMINED BY THE TYPE OF FIXTURE SELECTED. Consult fixture manufacturer for minimum pressure requirements.

Most Low Consumption water closets (1.6 gallon/6 liter) require a minimum flowing pressure of 25 psi (172 kPa).

Protect the Chrome or Special finish of this Flushometer — DO NOT USE TOOTHED TOOLS TO INSTALL OR SERVICE THE VALVE. Also, see "Care and Cleaning" section of this manual.

**IMPORTANT: WITH THE EXCEPTION OF CONTROL STOP INLET, DO NOT USE PIPE SEALANT OR PLUMBING GREASE ON ANY VALVE COMPONENT OR COUPLING!**

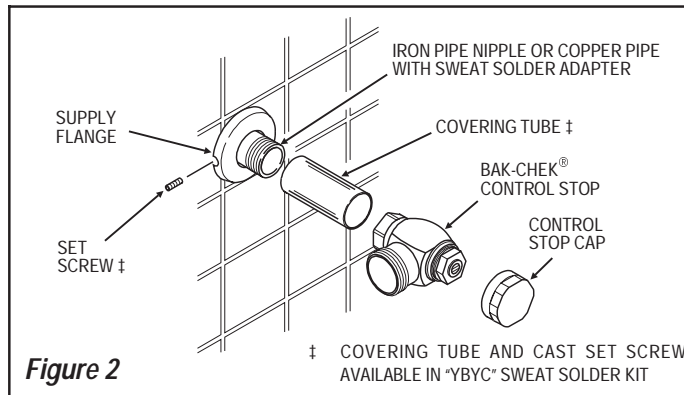
## TOOLS REQUIRED FOR INSTALLATION

- Slotted screwdriver
- Sloan A-50 "Super-Wrench™" or smooth jawed spud wrench

## INSTALLATION

### Step 1 - Control Stop Installation (Figure 2)

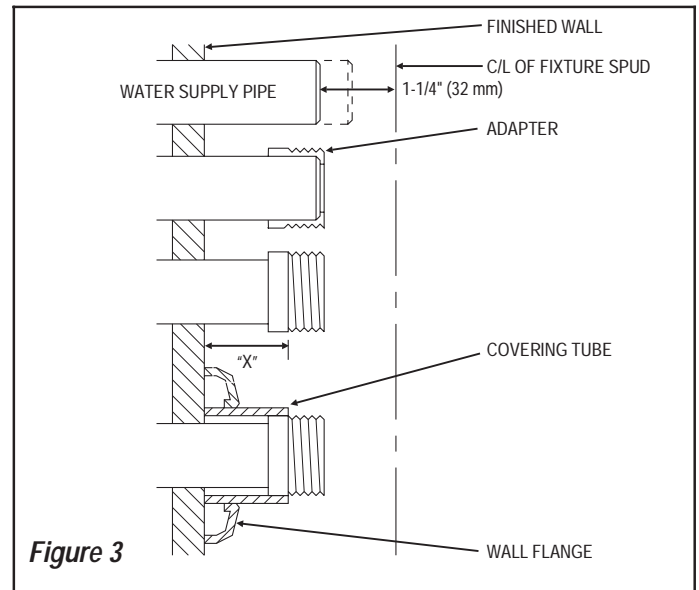
Install the Sloan Bak-Chek® Control Stop and Supply Flange to the water supply



line with the outlet positioned as required.

**For Sweat Solder applications, refer to the following instructions and Figure 3:**

- Measure distance from finished wall to centerline of Fixture Spud. Cut water supply pipe 1-1/4" (32 mm) shorter than this measurement. Chamfer O.D. and I.D. of water supply pipe.
- Slide Threaded Adapter onto water supply pipe until end of pipe rests against shoulder of Adapter. Sweat solder Adapter to water supply pipe.
- Determine length of Covering Tube by measuring distance from finished wall to the first thread of Adapter (dimension "X" in Figure 3). Cut Covering Tube to this length.
- Slide Covering Tube onto water supply pipe. Slide Wall Flange over Covering Tube until it rests against the finished wall.

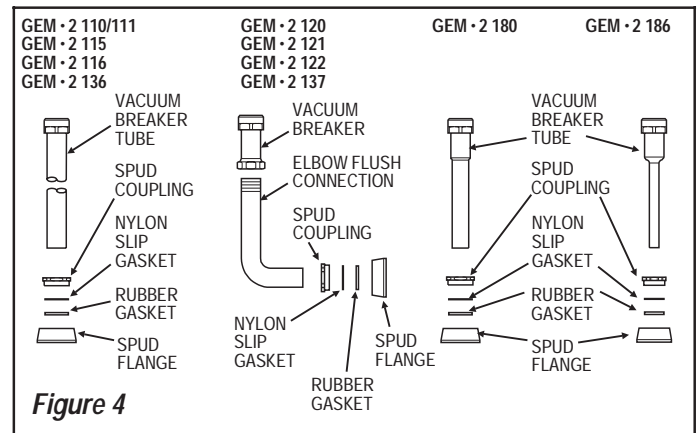


**Figure 3**

- Install the Sloan Bak-Chek® Control Stop to the water supply line with the outlet positioned as required.

### Step 2 - Install Vacuum Breaker Flush Connection (Figure 4)

Slide the Spud Coupling, Nylon Slip Gasket, Rubber Gasket and Spud Flange over the Vacuum Breaker Tube and insert tube into Fixture Spud. Hand tighten



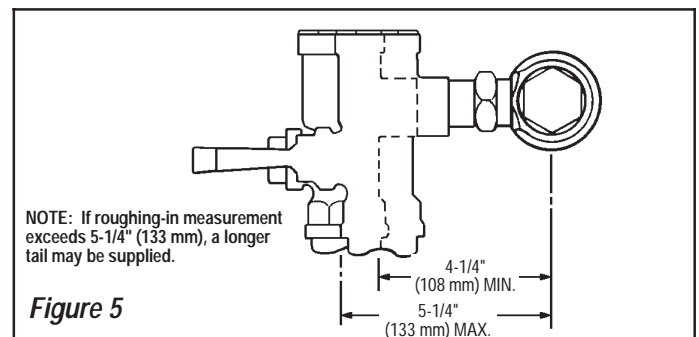
**Figure 4**

Spud Coupling onto Fixture Spud.

On valves furnished less vacuum breaker (xyv variation), connect flush tube to the bottom of the valve using the Slip Gasket supplied.

### Step 3 - Install Flushometer SLOAN ADJUSTABLE TAILPIECE (Figure 5)

The Sloan Adjustable Tailpiece compensates for "off-center" roughing-in on the



**Figure 5**

job. Maximum adjustment is 1/2" (13 mm) IN or 1/2" (13 mm) OUT from the standard 4-3/4" (121 mm) (centerline of Flushometer to centerline of Control Stop).

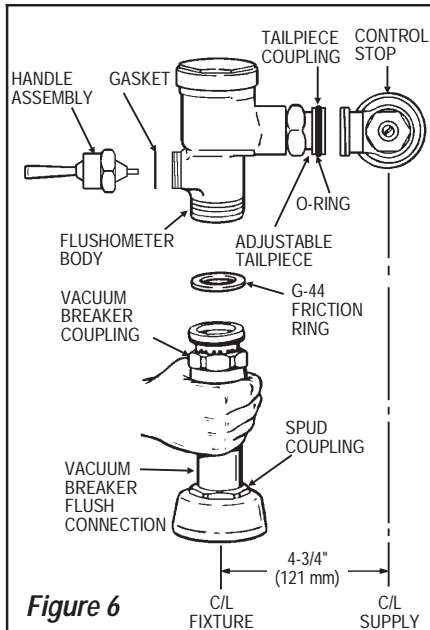
**IMPORTANT: WITH THE EXCEPTION OF CONTROL STOP INLET, DO NOT USE PIPE SEALANT OR PLUMBING GREASE ON ANY VALVE COMPONENT OR COUPLING!**

Insert Adjustable Tailpiece into Control Stop. Wet O-ring seal with water to lubricate. Secure by hand tightening Tailpiece Coupling.

Align Flushometer on top of Vacuum Breaker Flush Connection and secure by hand tightening Vacuum Breaker Coupling.

Align Flushometer Body and securely tighten Tailpiece Coupling, Vacuum Breaker Coupling and Spud Coupling, respectively.

**Important Note:** Use a Sloan A-50 "Super-Wrench™" or smooth jawed spud wrench to secure all couplings. This will eliminate damage to chrome or special finish that normally occurs when slip-joint pliers, pipe wrenches or other "toothed" tools are used.



**Figure 6**

#### Step 4 - Install Handle (Figure 6)

Install Handle Assembly to Valve Body and tighten securely.

#### Step 5 - Flush Out Supply Line (Figure 7)

Shut off Control Stop and remove Flushometer Cover. Lift out the Piston Assembly. Install Flushometer Cover wrench tight and open Control Stop. Turn on water supply to flush line of any debris or sediment.

After completion, shut off Control Stop, remove Flushometer Cover and reinstall

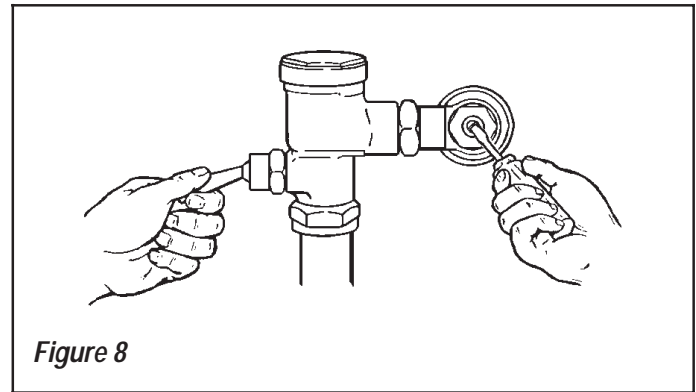
Piston Assembly. Install Flushometer Cover wrench tight. Open Control Stop and activate Flushometer Valve.

#### Step 6 - Adjust Control Stop (Figure 8)

Adjust Control Stop to meet the flow rate required for the proper cleansing of the fixture. Open Control Stop COUNTERCLOCKWISE 1/2 turn from the closed position. Activate Flushometer. Adjust Control Stop after each flush until the rate of flow delivered properly cleanses the fixture.

**Important:** The Sloan GEM • 2® 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:

1. The plumbing fixture is cleansed after each flush without splashing water out from the lip.
2. A quiet flushing cycle is achieved.



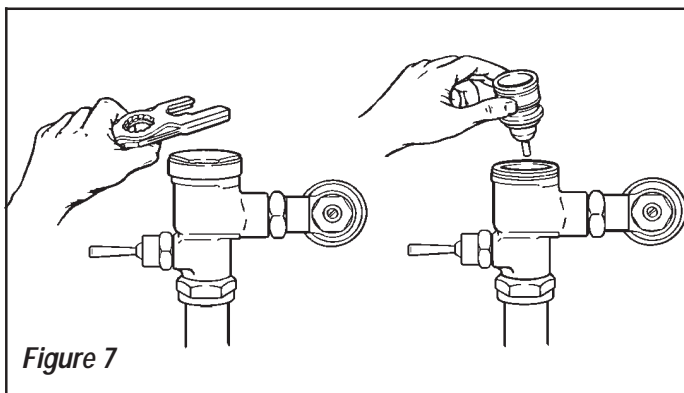
**Figure 8**

After adjustment: Wrench Tighten Control Stop to Eliminate Vandalism.

#### 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.



**Figure 7**

## TROUBLESHOOTING GUIDE

### I. Flushometer does not function.

- A. Control Stop or Main Valve is Closed. Open Control Stop or Main Valve.
- B. Handle Assembly is worn. Install Sloan Handle Repair Kit (G-50-A) or replace handle.
- C. Relief Valve is worn and sticking in UP position. Replace Piston.

### II. Insufficient volume of water to adequately siphon fixture.

- A. Control Stop not open enough. Adjust Control Stop for desired delivery of water.
- B. Urinal Piston Parts inside a Closet Flushometer. Replace Piston Parts with proper Closet Piston.
- C. Low Consumption Flushometer installed on a non-Low Consumption fixture. Replace with proper Piston Kit.
- D. Inadequate volume or pressure at supply. Increase water pressure or supply (flow) to Flushometer. Consult Factory for assistance.

### III. Length of flush is too short (Short Flushing) or Flushometer closes off immediately.

- A. Piston Assembly is not hand-tight. Screw the assembly hand-tight.
- B. Enlarged By-pass orifice from corrosion or damage. Install NEW Inside Piston Kit to correct problem and update Flushometer.
- C. Urinal Piston in Closet Flushometer. Replace Piston with proper Closet Piston.
- D. Low Consumption Piston installed in non-Low Consumption fixture. Replace Piston with proper Closet Piston.
- E. Handle Assembly is worn. Install Handle Repair Kit G-50-A.

### IV. Length of flush is too long (Long Flushing) or fails to close off.

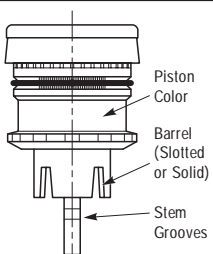
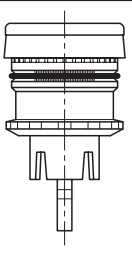
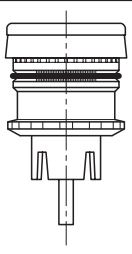
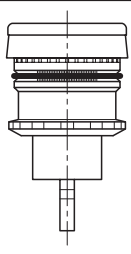
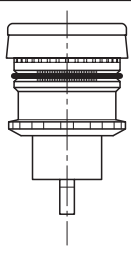
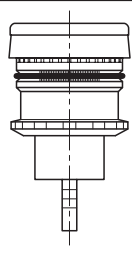
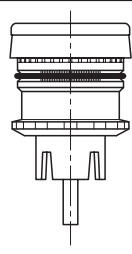
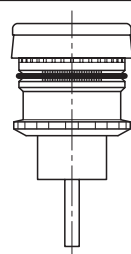
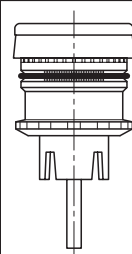
- A. Piston is not seating properly or By-pass orifice is clogged because of foreign material, or By-pass orifice is closed by an invisible gelatinous film from "over-treated" water.  
Disassemble the working parts and wash thoroughly. NOTE: SIZE OF THE ORIFICE IN THE BY-PASS IS OF UTMOST IMPORTANCE FOR THE PROPER METERING OF WATER INTO THE UPPER CHAMBER OF THE FLUSHOMETER. DO NOT ENLARGE OR DAMAGE THIS ORIFICE. REPLACE PISTON IF CLEANING DOES NOT CORRECT PROBLEM.
- B. Line pressure has dropped and is not sufficient to force Relief Valve to seat. Shut off all control stops until pressure has been restored, then open them again.
- C. 3.5 gpf Closet Piston has been used in a 1 or 1.5 gpf Urinal or on a 1.6 gpf Toilet. Replace with proper Piston.
- D. G-21 Main Seat is fouled with debris or is worn. Clean or replace G-21 Main Seat.

### V. Leaking at Handle Assembly.

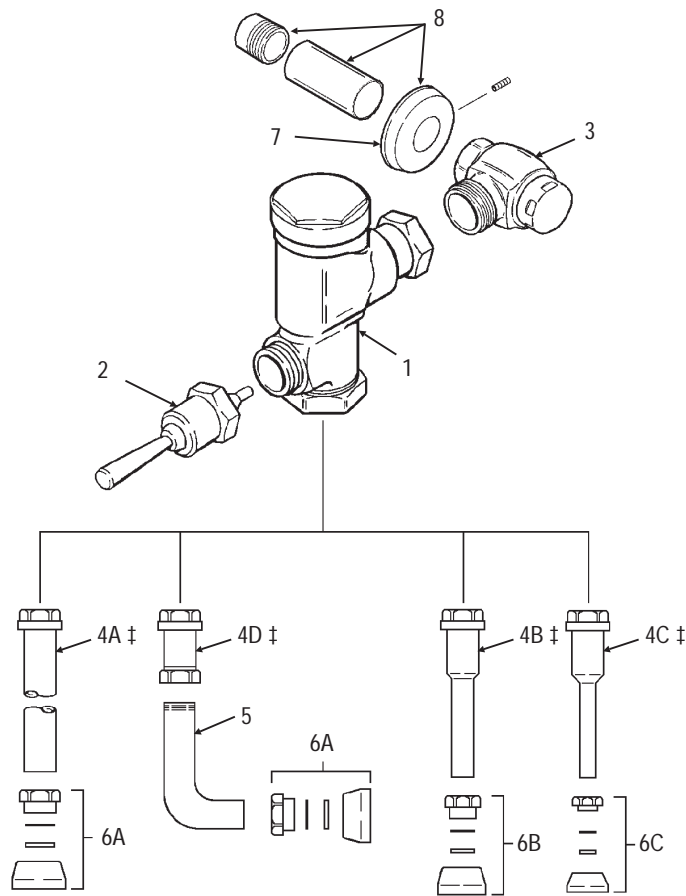
- A. The B-39 Seal is worn or deteriorated. Install new B-39 Seal. NOTE: The B-39 Seal will easily slide onto the Bushing if it is wet.
- B. Handle gasket has been omitted. Install G-35 Handle Gasket or Sloan Handle Repair Kit (G-50-A).
- C. Valve Handle Bushing is worn. Install Sloan Handle Repair Kit (G-50-A).

Refer to the GEM • 2 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 847/671-4300.

Piston Identification Chart	Water Closet	Water Closet	Urinal	Urinal	Urinal	Water Closet	Urinal	Water Closet
	G-1007-A	G-1016-A	G-1009-A	G-1017-A	G-1018-A	G-1019-A	G-1002-A	G-1003-A
	3.5 gpf (13.2 Lpf)	1.6 gpf (6.0 Lpf)	1.5 gpf (5.7 Lpf)	1.0 gpf (3.8 Lpf)	0.5 gpf (1.8 Lpf)	2.4 gpf (9.0 Lpf)	For Old Style Adjustable Gem Valves	
								
Piston Color	Gray	Black	Black	Black	Black	Gray	Black	Black
Barrel	Slotted	Slotted	Solid	Solid	Solid	Slotted	Solid	Slotted
Grooves	2	0	2	1	3	0	0	0
Old Piston Number	G-111-A & G-112-A	-	G-101-A	-	-	-	G-75-AU	G-75-AC

## PARTS LIST



Item No.	Part No.	Description
1	†	Valve Assembly
2	G-32-A	Handle Assembly
3	H-710-A	Bak-Chek® Control Stop
4A	V-500-AA	1-1/2" (38 mm) x 9" (229 mm) Vacuum Breaker Assembly CP (Model 110) ‡
	V-500-AA	1-1/2" (38 mm) x 21-1/2" (546 mm) Vacuum Breaker Assembly CP (Model 115) ‡
4B	V-500-AA	1-1/4" (32 mm) x 9" (229 mm) Vacuum Breaker Assembly CP (Model 180) ‡
4C	V-500-AA	3/4" (19 mm) x 9" (229 mm) Vacuum Breaker Assembly CP (Model 186) ‡
4D	V-500-A	1-1/2" (38 mm) Vacuum Breaker Assembly CP ‡
5	F-109	1-1/2" (38 mm) Elbow Flush Connection
6A	F-5-A	1-1/2" (38 mm) Spud Coupling Assembly (Models 110, 115, 120, 121 & 122)
6B	F-5-A	1-1/4" (32 mm) Spud Coupling Assembly (Model 180)
6C	F-5-A	3/4" (19 mm) Spud Coupling Assembly (Model 186)
7	F-7	Supply Flange (Supplied when Valve is Not Ordered with Sweat Solder Kit)
8	H-633-AA	1" (25 mm) Sweat Solder Kit with Cast Set Screw Flange (YBYC Variation)
	H-636-AA	3/4" (19 mm) Sweat Solder Kit with Cast Set Screw Flange (YBYC Variation)

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

‡ If valve was specified less vacuum breaker (xyv variation), a straight flush tube is supplied in place of the vacuum breaker assembly. Consult Factory for part number.

For a complete listing of GEM • 2 Flushometer Valve Components and Repair Kits, refer to the Maintenance Guide or consult your nearest plumbing wholesaler.

For optimum water conservation and Flushometer performance, use only Genuine Sloan Parts.

### NOTICE

The information contained in this document is subject to change without notice.