SLOAN®

INSTALLATION INSTRUCTIONS FOR OPTIMA® SYSTEMS
SENSOR ACTIVATED CROWN® CONCEALED CLOSET and URINAL FLUSHOMETERS

Concealed Closet Flushometers
1-1/2" Back Spud
- Model 140 ES-S

1-1/2" Back Spud
- Model 152 ES-S

1-1/2" Back Spud
- Model 153 ES-S

Concealed Urinal Flushometers
1-1/4" Back Spud
- Model 190 ES-S

1-1/4" Top Spud
- Model 192 ES-S
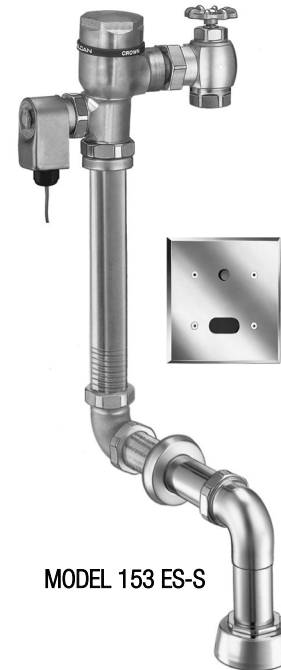
3/4" Back Spud
- Model 195 ES-S

3/4" Top Spud
- Model 197 ES-S

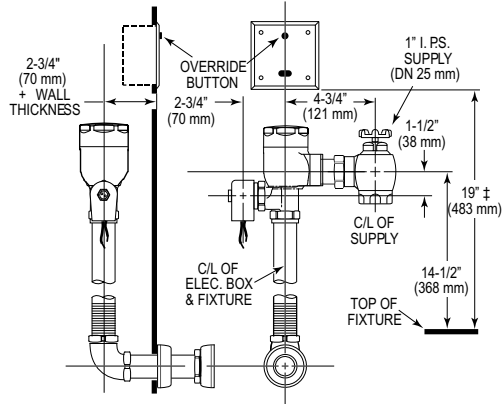MODEL 190 ES-S   MODEL 195 ES-S   MODEL 197 ES-S

MODEL 192 ES-S   MODEL 140 ES-S   MODEL 152 ES-S   MODEL 153 ES-S

WATERCLOSET MODEL 140 ES-S

2-3/4"
(70 mm)
+ WALL
THICKNESS

OVERRIDE BUTTON

2-3/4"
(70 mm)

4-3/4"
(121 mm)

1" I. PS. SUPPLY
(DN 25 mm)

1-1/2"
(38 mm)

19" ‡
(483 mm)

C/L OF SUPPLY

C/L OF ELEC. BOX & FIXTURE

14-1/2"
(368 mm)

TOP OF FIXTURE

WATER CLOSET MODEL 152 ES-S

2-3/4"
(70 mm)
+ WALL
THICKNESS

OVERRIDE BUTTON

2-3/4"
(70 mm)

4-3/4"
(121 mm)

1" I. PS. SUPPLY
(DN 25 mm)

1-1/2"
(38 mm)

19" ‡
(483 mm)

C/L OF SUPPLY

14-1/2"
(368 mm)

C/L OF ELEC. BOX & FIXTURE

TOP OF FIXTURE

WATER CLOSET MODEL 153 ES-S

2-3/4"
(70 mm)
+ WALL
THICKNESS

OVERRIDE BUTTON

2-3/4"
(70 mm)

4-3/4"
(121 mm)

1" I. PS. SUPPLY
(DN 25 mm)

1-1/2"
(38 mm)

19" ‡
(483 mm)

C/L OF SUPPLY

C/L OF ELEC. BOX & FIXTURE

9"
(229 mm)

TOP OF FIXTURE

5"
(127 mm)

URINAL MODEL 190 ES-S

2-3/4"
(70 mm)
+ WALL
THICKNESS

2-3/4"
(70 mm)

4-3/4"
(121 mm)

1" I.P.S. SUPPLY
(DN 25 mm)

1-1/2"
(38 mm)

C/L OF SUPPLY

14-1/2"
(368 mm)

5"
(127 mm)

8"
(203 mm)

TOP OF FIXTURE

Model 190
WATER CLOSET MODEL 192 ES-S

2-3/4"
(70 mm)
+ WALL
THICKNESS

2-3/4"
(70 mm)

4-3/4"
(121 mm)

1" I.P.S. SUPPLY
(DN 25 mm)

1-1/2"
(38 mm)

C/L OF SUPPLY

TOP OF FIXTURE

2"
(51 mm)

14-1/2"
(368 mm)

C/L OF ELEC. BOX & FIXTURE

URINAL MODEL 195 ES-S

2-3/4
(70 mm)
+ WALL
THICKNESS

2-3/4"
(70 mm)

4-3/4"
(121 mm)

3/4" I.P.S. SUPPLY
(DN 20 mm)

1-1/2"
(38 mm)

C/L OF SUPPLY

TOP OF FIXTURE

2"
(51 mm)

13-1/2"
(343 mm)

C/L OF ELEC. BOX & FIXTURE

URINAL MODEL 197 ES-S

2-3/4"
(70 mm)
+ WALL
THICKNESS

2-3/4"
(70 mm)

4-3/4"
(121 mm)

3/4" I.P.S. SUPPLY
(DN 20 mm)

1-1/2"
(38 mm)

C/L OF SUPPLY

13-1/2"
(343 mm)

5"
(127 mm)

8"
(203 mm)

TOP OF FIXTURE
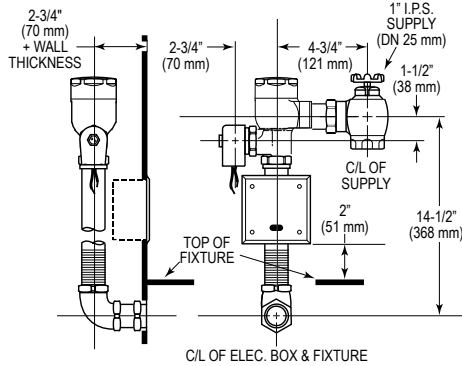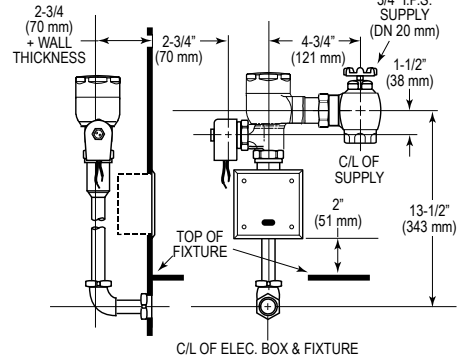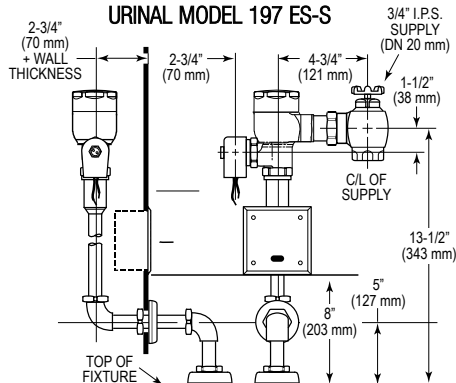
‡ POSITION OF SENSOR BOX CAN BE RAISED OR LOWERED 1" (25 mm)
IF IN CONFLICT WITH HANDICAP GRAB BARS.

SENSOR LOCATION & POSITIONING IS CRITICAL!
Failure to properly position the electrical boxes to the plumbing rough-in
will result in improper installation and impair product performance.
All tradesmen (plumbers, electricians, tile setters, etc.) involved with
the installation of this product must coordinate their work to assure
proper product installation.

PRIOR TO FLUSHOMETER INSTALLATION

Prior to installing the OPTIMA equipped Crown® Flushometer, install the items listed below. Refer to Rough-ins on Page 2 and illustration on this page.

- 2-gang electrical box — 4" x 4" x 2-1/2" (102 mm x 102 mm x 64 mm) for transformer; see paragraph entitled "Transformer Installation" (mount in a convenient location)
- Electrical wiring to the transformer box (120 VAC, 2 amp service required for each EL-154, 24 VAC, 50 VA transformer used)
- Closet/urinal fixture
- Drain line
- Water supply line

Important:

- *INSTALL ALL ELECTRICAL WIRING IN ACCORDANCE WITH NATIONAL/LOCAL CODES AND REGULATIONS.*
- *INSTALL ALL PLUMBING IN ACCORDANCE WITH APPLICABLE CODES AND REGULATIONS.*
- *WATER SUPPLY LINES MUST BE SIZED TO PROVIDE AN ADEQUATE VOLUME OF WATER FOR EACH FIXTURE.*
- *A 24 VAC STEP-DOWN TRANSFORMER MUST BE USED.*
- *USE APPROPRIATE PRECAUTIONS WHILE CONNECTING TRANSFORMER TO 120 VAC POWER SOURCE.*

- *FLUSH ALL WATER LINES PRIOR TO MAKING CONNECTIONS.*

Royal® and Sloan® Flushometers are designed to operate with 15 to 100 psi (104 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/6.0 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: EXCEPT FOR CONTROL STOP INLET, DO NOT USE PIPE SEALANT OR PLUMBING GREASE ON ANY VALVE COMPONENT OR COUPLING!

TRANSFORMER INSTALLATION AND SENSOR BOX LOCATION
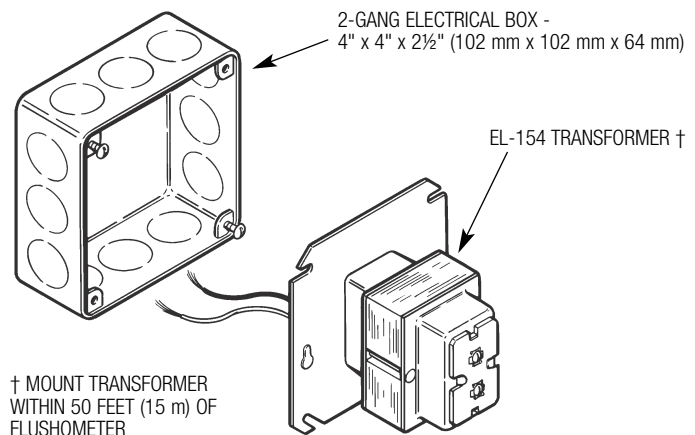
Transformer Installation

Install Transformer (EL-154) on a 2-Gang Electrical Box, 4" x 4" x 2-1/2" (102 mm x 102 mm x 64 mm) in a convenient location; refer to the illustration at upper right side of this page.

Note: One Sloan EL-154 transformer can operate up to ten OPTIMA equipped Flushometers. Run 18-gauge wire from transformer to Flushometer(s). Wire supplied by others. **DO NOT supply power to transformer until installation of Flushometer is complete.**

Note: A maximum of ten (10) Flushometer units can operate from one (1) Sloan EL-154 Transformer, Class 2, UL Listed, 50 VA (min.) at 24 VAC, plate mounted.

Sensor Box Location

Failure to properly position the sensor to the plumbing rough-in will result in improper installation and impair product performance. All tradesmen (plumbers, electricians, tile setters, etc.) involved with the installation of this product must coordinate their work to assure proper product installation.

2-GANG ELECTRICAL BOX -
4" x 4" x 2½" (102 mm x 102 mm x 64 mm)

EL-154 TRANSFORMER †

† MOUNT TRANSFORMER WITHIN 50 FEET (15 m) OF FLUSHOMETER

TOOLS REQUIRED FOR INSTALLATION

- *Phillips screwdriver*
- *Drill – 1/16" and 1" drill bit*
- *Wire stripper*
- *Sloan A-50 Super-Wrench™, Sloan A-109 Plier Wrench or smooth jawed spud wrench*

!!! IMPORTANT !!!

With the exception of Control Stop Inlet, DO NOT use pipe sealant or plumbing grease on any valve component or coupling!

!!! IMPORTANT !!!

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.

!!! 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.
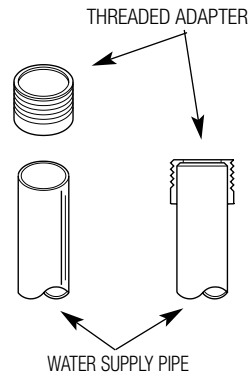
!!! IMPORTANT !!!

Protect the chrome or special finish of Crown® Flushometers — DO NOT USE toothed tools to install or service these valves. Use a Sloan A-50 Super-Wrench™, Sloan A-109 Plier Wrench or smooth jawed spud wrench to secure all couplings. Also see "Care and Cleaning" section of this manual.

If you have questions about how to install your Sloan Flushometer, consult your local Sloan Representative or call Sloan Installation Engineering Department at:
1-888-SLOAN-14 (1-888-756-2614) OR 1-847-233-2016

1 - INSTALL OPTIONAL SWEAT SOLDER ADAPTER (ONLY IF YOUR SUPPLY PIPE DOES NOT HAVE A MALE THREAD)

A Slide Threaded Adapter fully onto pipe.

B Sweat solder the Adapter to pipe.

THREADED ADAPTER

WATER SUPPLY PIPE

2 - INSTALL CONTROL STOP ONTO SUPPLY PIPE

A Install the Sloan Bak-Chek® Control Stop onto the water supply line with the outlet positioned as required.
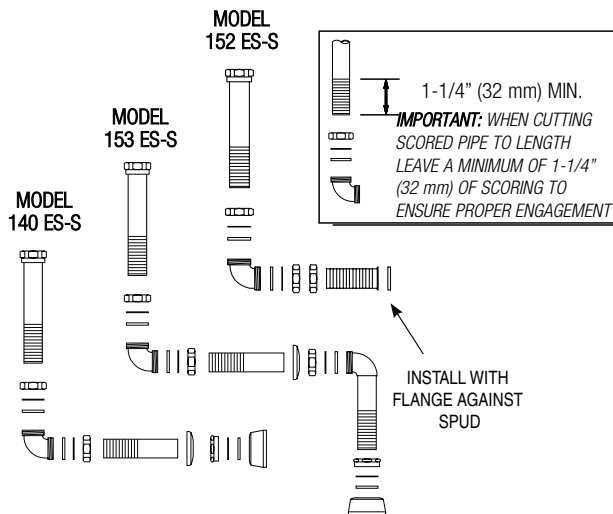
!!! IMPORTANT !!!

With the exception of Control Stop Inlet, DO NOT use pipe sealant or plumbing grease on any valve component or coupling!

BAK-CHEK®
CONTROL STOP

IRON PIPE NIPPLE OR
COPPER PIPE WITH
SWEAT SOLDER ADAPTER
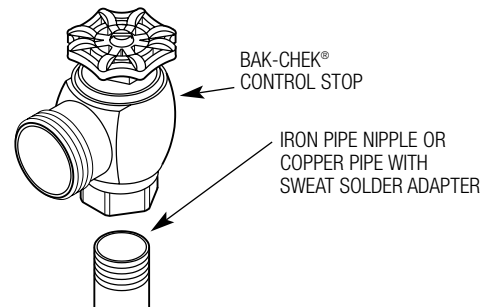
3 - INSTALL VACUUM BREAKER FLUSH CONNECTION

A Assemble Pipe, Elbows, Couplings, Nylon Slip Gasket, Rubber Gaskets and Flanges as illustrated on parts page.

B Insert Tube into Fixture Spud.

C Hand tighten all Couplings.

WATER CLOSET MODELS

MODEL
152 ES-S

MODEL
153 ES-S

MODEL
140 ES-S

1-1/4" (32 mm) MIN.
IMPORTANT: *WHEN CUTTING SCORED PIPE TO LENGTH LEAVE A MINIMUM OF 1-1/4" (32 mm) OF SCORING TO ENSURE PROPER ENGAGEMENT*

INSTALL WITH
FLANGE AGAINST
SPUD

URINAL MODELS

MODEL
192 ES-S

MODEL
197 ES-S

MODEL
190 ES-S

MODEL
195 ES-S

1-1/4" (32 mm) MIN.
IMPORTANT: *WHEN CUTTING SCORED PIPE TO LENGTH LEAVE A MINIMUM OF 1-1/4" (32 mm) OF SCORING TO ENSURE PROPER ENGAGEMENT*

INSTALL WITH FLANGE
AGAINST ELBOW

4 - INSTALL FLUSHOMETER

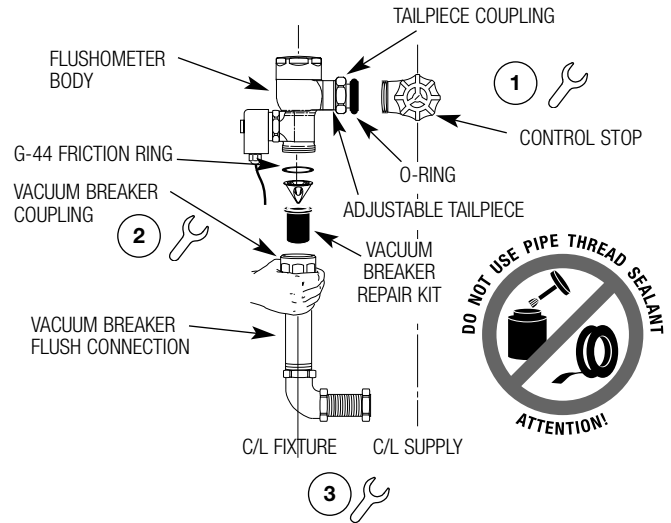**A** Lubricate tailpiece O-ring with water. Insert Adjustable Tailpiece into Control Stop. Tighten Tailpiece Coupling by hand.

B Align Flushometer directly above the Vacuum Breaker Flush Connection by sliding the Flushometer Body IN or OUT as needed. Tighten Vacuum Breaker Coupling by hand.

C Align Flushometer Body and securely tighten first the Tailpiece Coupling (**1**), then the Vacuum Breaker and Pipe Couplings (**2**), and finally the Spud Coupling (**3**). Use a wrench to tighten these couplings in the order shown.

NOTE

Max. adjustment of Sloan Adjustable Tailpiece is ½" (13 mm) IN or OUT from the standard 4¾" (121 mm) (c/l of Valve to c/l of Control Stop).

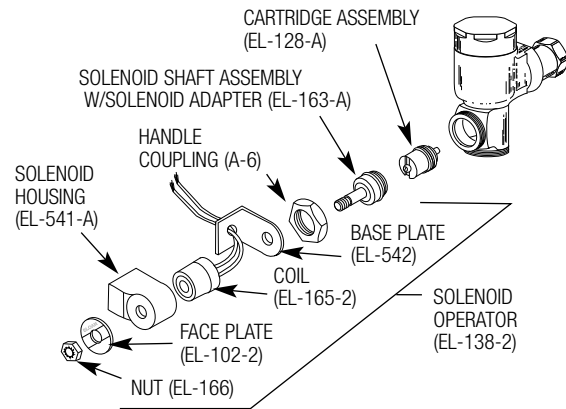If roughing-in measurement exceeds 5¼" (133 mm), consult factory for longer tailpiece.

TAILPIECE COUPLING

FLUSHOMETER BODY

CONTROL STOP

G-44 FRICTION RING

O-RING

VACUUM BREAKER COUPLING

ADJUSTABLE TAILPIECE

VACUUM BREAKER REPAIR KIT

VACUUM BREAKER FLUSH CONNECTION

C/L FIXTURE   C/L SUPPLY

DO NOT USE PIPE THREAD SEALANT ATTENTION!

5 - CONNECT SOLENOID OPERATOR

A To ease installation, remove the Solenoid Operator from the Flushometer; however, prior to removal, read and adhere to the following precautions.
- When removing the Coil from the Solenoid Plunger Guide, do so only with the power **OFF**. Failure to turn power off can result in damage to the Sensor, Solenoid Coil and Transformer.
- When removing the Solenoid Operator from the Valve, take care not to damage the O-ring seal on the Operator Assembly.

B **Exposed models only** — Slide Coil wires through Tail (F-15) and screw Tail into Solenoid Housing (EL-162-2).

C **Exposed models only** — Slide Flange Assembly (EL-431-A) and Cover Plate (EL-151) over Tail, respectively.

CONCEALED FLUSHOMETER

CARTRIDGE ASSEMBLY (EL-128-A)

SOLENOID SHAFT ASSEMBLY W/SOLENOID ADAPTER (EL-163-A)

HANDLE COUPLING (A-6)

SOLENOID HOUSING (EL-541-A)

BASE PLATE (EL-542)

COIL (EL-165-2)

SOLENOID OPERATOR (EL-138-2)

FACE PLATE (EL-102-2)

NUT (EL-166)

*Important: Do not remove coil from solenoid plunger guide unless power has been disconnected. Failure to do so may damage sensor, coil and transformer.*

6 - INSTALL SENSOR COMPONENTS

A Install OPTIMA Sensor (EL-1500) into the 2-gang Electrical Box using two (2) long screws provided. Ensure that Sensor Lens faces outward and horizontally from finished wall. Mount Yoke (EL-168-A) using two (2) long screws provided.
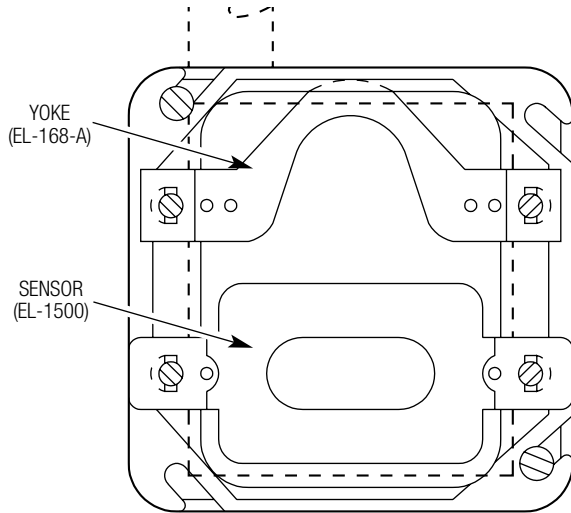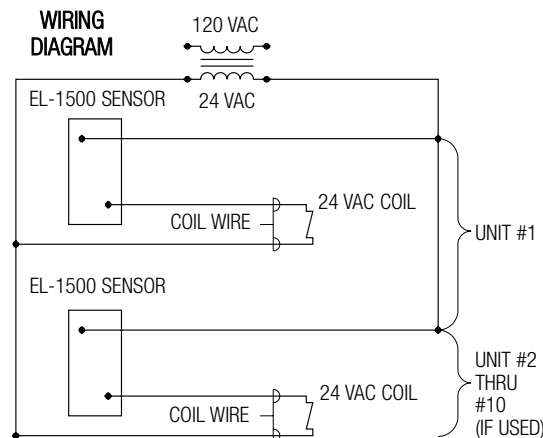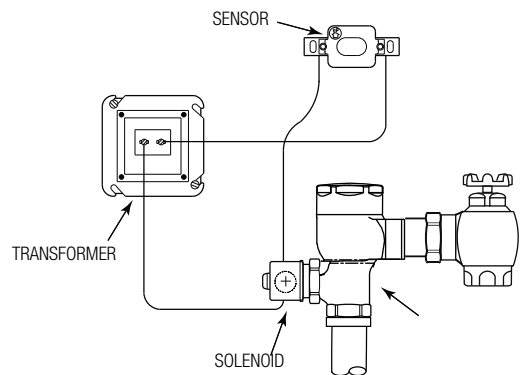
B Install inner nut, bracket and outer nut on threaded shaft of override button. Mount bracket to yoke.

C Adjust distance that override button will protrude through wall plate using nut on each side of bracket. Threaded shaft end of override button should be flush with wall plate. Override button should be connected parallel to the EL-1500_L Sensor

D Mount assembled yoke to electrical box. Install sensor cover plate and secure with tamper-proof screws (EL-152)
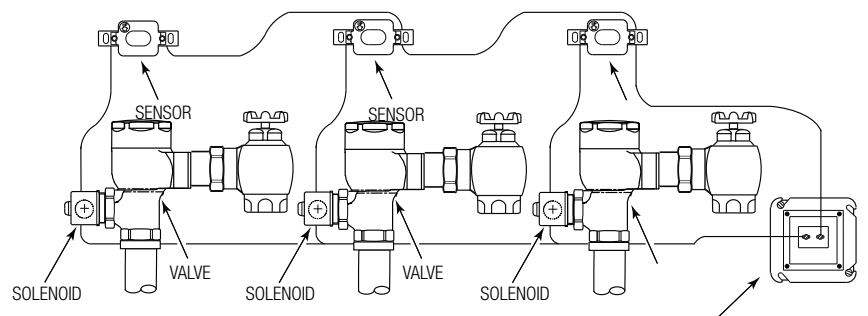
YOKE
(EL-168-A)

SENSOR
(EL-1500)

YOKE

INNER NUT

OUTER NUT

COVER PLATE

ELECTRICAL BOX

EL-1500-L SENSOR

OVERRIDE BUTTON

BRACKET
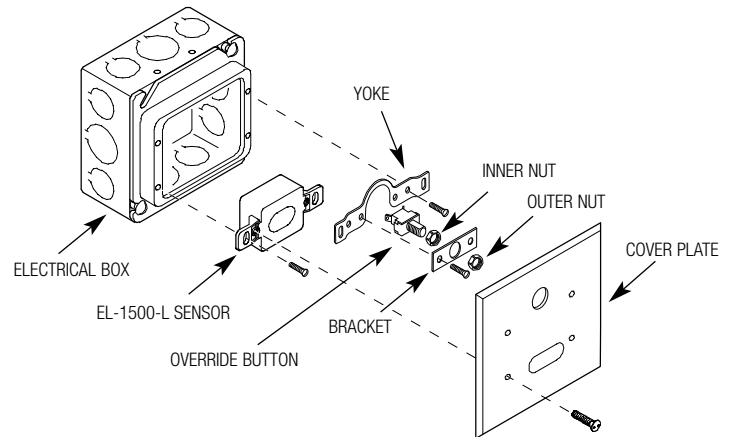
7 - ELECTRICAL HOOK-UP

A Be certain power is **OFF** to prevent damage to electrical components. Connect Sensor to Transformer and Solenoid coil EXACTLY as shown.

B Connect 24 volt source lead to terminal labeled "24 VAC IN" of Sensor.

C Connect solenoid lead to terminal labeled "TO VALVE" of Sensor.

D Connect remaining solenoid lead to remaining 24 volt source lead.

Wiring Diagram for One Flush Valve

SENSOR

TRANSFORMER

SOLENOID

Wiring Diagram for Multiple Flush Valves

WIRING
DIAGRAM

120 VAC

EL-1500 SENSOR   24 VAC

COIL WIRE   24 VAC COIL

UNIT #1

EL-1500 SENSOR

COIL WIRE   24 VAC COIL

UNIT #2
THRU
#10
(IF USED)

SENSOR

SENSOR

SOLENOID   VALVE   SOLENOID   VALVE   SOLENOID

8 - FLUSH OUT SUPPLY LINE

(A) Make sure Control Stop is CLOSED.

(B) Remove Flushometer Cover and lift out Inside Parts Assembly. Install Flushometer Cover wrench tight.

(C) Open Control Stop. Turn on water supply to flush line of any debris or sediment.

(D) Shut off Control Stop, remove Cover and reinstall Inside Parts Assembly. Install Flushometer Cover wrench tight. Do Not open Control Stop until Step 12.

TURN COUNTER-
CLOCKWISE TO OPEN

TURN CLOCKWISE
TO CLOSE
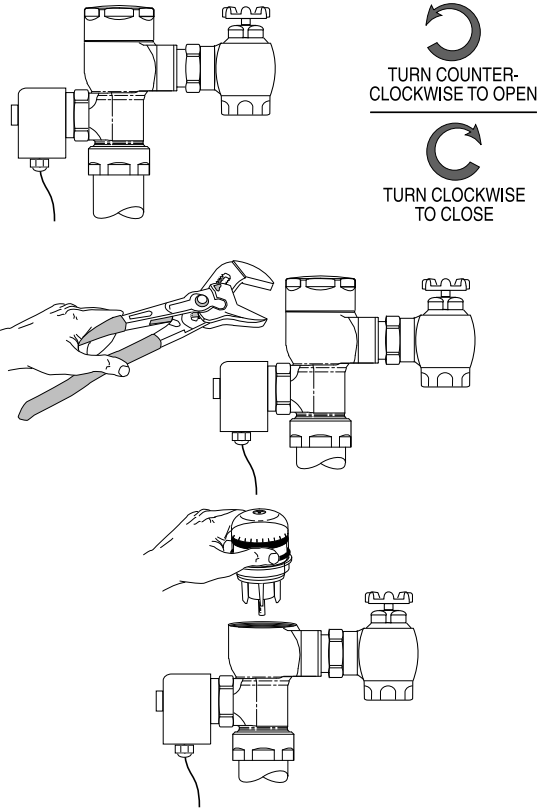
9 - POWER AND START-UP MODE

Note: It is recommended that all electronic connections be tested with the water supply OFF.

(A) Turn Power ON. The self adaptive sensor automatically adapts to the surrounding environment when 24 volt supply is activated. No manual adjustments are required.

(B) Start-up mode will take approximately five (5) minutes to complete its cycle and is important that no non-permanent target is present at this time. A continuous red light visible in sensor window indicates sensor is in the start-up mode. If the red light is flashing, this indicates that the sensor is picking up a target. Unless this target is a permanent fixture in the sensor's environment (i.e., a wall or stall door), it must be removed from the view of the sensor. If this target is permanent, the sensor will adapt itself around this target. In this case, the start-up mode may take up to ten (10) minutes. When the start-up cycle is completed, no light is visible in sensor window.

Note: If 24 volt power supply is interrupted at any time for more than fifteen (15) seconds, the start-up mode automatically repeats itself when power is restored.

(C) If indicator light flashes three (3) times slowly, three (3) times rapidly and again three (3) times slowly and continually repeats this signal, this indicates incorrect wiring or a short in the 24 volt supply.
The EL-1500 self-adaptive sensor is equipped with the sentinel flush feature (automatically flushes every twenty-four (24) hours after last use).

10 - DETECTION/ACTIVATION

A When an object is detected, a slowly flashing red light will appear in the sensor window. After approximately eight (8) to ten (10) seconds, the light will flash rapidly indicating sensor is armed and ready to activate solenoid when the object leaves the detection area. The solenoid will be activated within two (2) to four (4) seconds after non-detection.

WALL PLATE
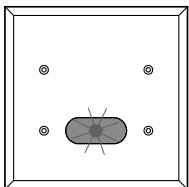
11 - TURN WATER ON AND ADJUST CONTROL STOP

A Adjust Control Stop to meet the flow rate required for proper cleansing of the fixture. Open Control Stop COUNTERCLOCKWISE 1/2 turn from the closed position.

B Activate Flushometer by placing hand in front of OPTIMA Sensor Lens for ten (10) seconds and then moving it away.

C Adjust Control Stop after each flush until the rate of flow delivered properly cleanses the fixture.

**D** Install Vandal Resistant Control Stop Cap onto Control Stop.

!!! IMPORTANT !!!

The Sloan Crown® 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.

12 - OPERATION

1. A continuous, invisible light beam is emitted from the OPTIMA Sensor.

2. When a user enters the beam's effective range, 15 to 30 inches (381 mm to 762 mm), the beam is reflected into the OPTIMA's scanning window and transformed into a low voltage electrical signal that activates a ten-second time delay circuit. The time delay circuit eliminates false operation from passers-by in the rest room. Once the time delay is completed, the output circuit is alerted and continues in a "hold" mode for as long as the user remains within the effective range of the sensor.

3. When the user steps away from the OPTIMA Sensor, the loss of reflected light initiates an electrical "one-time" signal that energizes the Solenoid Operator, and activates the Flushometer to flush the fixture. The circuit then automatically resets and is ready for the next user.
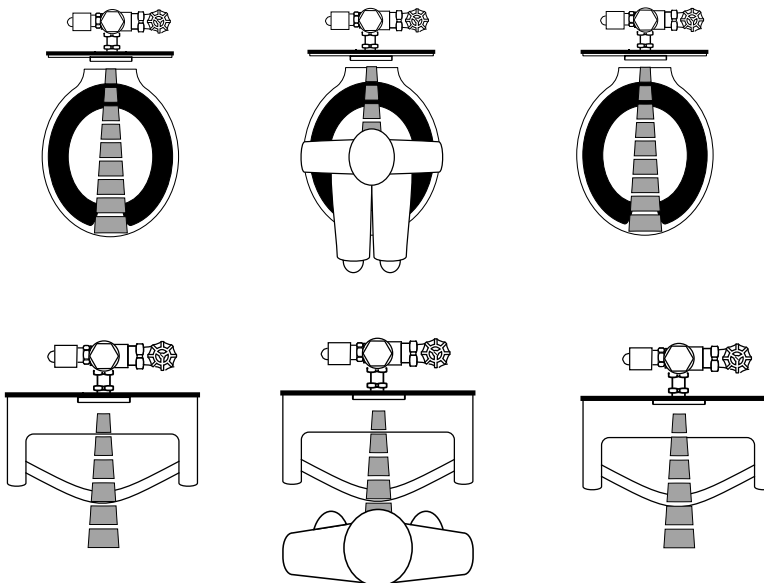
13 - CARE AND CLEANING

DO NOT use abrasive or chemical cleaners (including chlorine bleach) to clean the exposed components of the 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 exposed wall plate should be protected from any splattering of cleaner. Acids and cleaning fluids can discolor or remove chrome plating.
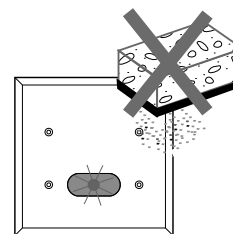
NOTE: Upon detection of the user, the red indicator light flashes **slowly** for a period of eight seconds. When the user leaves the detection range, the indicator light flashes **rapidly** and the Sensor initiates the flush sequence. Then the indicator light **stops** flashing and the valve flushes.

1. **PROBLEM:** Valve does not function (red light does not flash when user steps in front of sensor).

   CAUSE: No power is being supplied to sensor.

   SOLUTION: Ensure that the main power is turned "ON." Check Transformer, leads and connections. Repair or replace as necessary.

   CAUSE: EL-1500 Sensor is not operating.

   SOLUTION: Replace EL-1500 Sensor.

2. **PROBLEM:** Valve does not function (red light flashes when user steps in front of Sensor).

   INDICATOR: Red light stops flashing when user steps away and valve makes a "clicking" sound but does not flush.

   CAUSE: No water is being supplied to the valve.

   SOLUTION: Make certain that water supply is turned "ON" and the Control Stop is open.

   CAUSE: EL-128-A Cartridge is fouled or jammed.

   SOLUTION: Turn electronic power to valve "OFF" (failure to do so could result in damage to the solenoid coil). Remove the solenoid operator from the valve and remove the EL-128-A cartridge. Clean and/or repair as necessary.

   INDICATOR: The red light stops flashing when user steps away but the valve does NOT make a "clicking" sound and does NOT flush.

   CAUSE: EL-163-A Solenoid Shaft assembly is fouled or jammed.

   SOLUTION: Turn electronic power to valve "OFF" (failure to do so could result in damage to the Solenoid Coil). Remove EL-101 or EL-166 nut from the Solenoid Operator. Remove the coil from the solenoid operator. Use a spanner wrench or pliers to remove the EL-163-A Solenoid Shaft assembly from valve. Clean and/or replace as necessary. Be sure to replace Plunger Spring when reassembling Solenoid Shaft Assembly.

   INDICATOR: The red light flashes three (3) short flashes, three (3) long flashes then three (3) short flashes ("S-O-S") and continues to repeat this cycle even when user steps out of the sensor's detection range.

   CAUSE: EL-1500 Sensor wiring connections are incorrect.

   SOLUTION: Rewire Sensor to valve. One solenoid lead connects to the "TO VALVE" connection on Sensor. One transformer lead connects to the "24 VAC IN" connection on Sensor. Second solenoid lead and second transformer lead connect together.

   CAUSE: Wiring to Sensor is ground shorted.

   SOLUTION: Find short in wiring circuit and correct.

   CAUSE: EL-165-2 Solenoid Coil is burnt out or Coil is not connected to Solenoid Plunger shaft.

   SOLUTION: Reinstall or replace Coil as necessary.

3. **PROBLEM:** Volume of water is insufficient to adequately siphon fixture.

   CAUSE: Control Stop is not open wide enough.

   SOLUTION: Adjust Control Stop for desired water delivery.

   CAUSE: Low Consumption unit is installed on Water Saver or Conventional fixture.

   SOLUTION: Replace Piston component parts of valve with kit that corresponds to appropriate flush volume of fixture.

   CAUSE: Inadequate water volume or pressure available from supply.

   SOLUTION: Increase pressure or supply (flow rate) to the valve. Consult factory for assistance.

4. **PROBLEM:** Length of flush is too long (long flushing) or valve fails to shut off.

   CAUSE: Water Saver Valve is installed on Low Consumption fixture.

   SOLUTION: Replace Piston component parts of valve with kit that corresponds to appropriate flush volume of fixture.

   CAUSE: Piston is not seated properly or bypass hole in Diaphragm is clogged.

   SOLUTION: Disassemble inside Piston component parts and wash parts thoroughly. Replace worn parts if necessary.

5. **PROBLEM:** Water splashes from fixture.

   CAUSE: Supply flow rate is more than necessary.

   SOLUTION: Adjust Control Stop to meet flow rate required for proper cleansing of the fixture.

   CAUSE: Closet valve is installed on urinal fixture.

   SOLUTION: Replace closet Piston component parts with proper urinal kit (Inside Piston Assembly).

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

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

_____ **!!! IMPORTANT — Control Stop Setting !!!** _____

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

Gang Box
Not
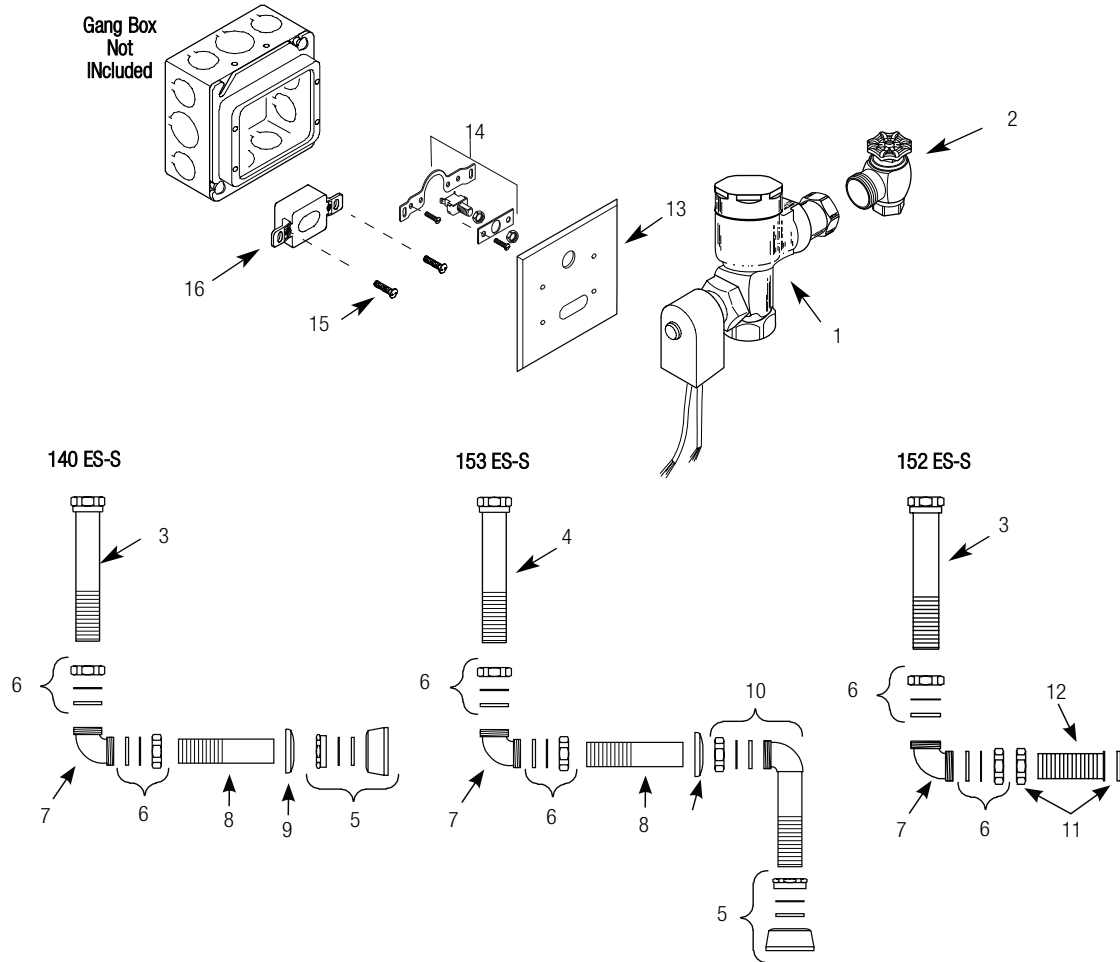INcluded

190 ES-S 195 ES-S 192 ES-S 197 ES-S
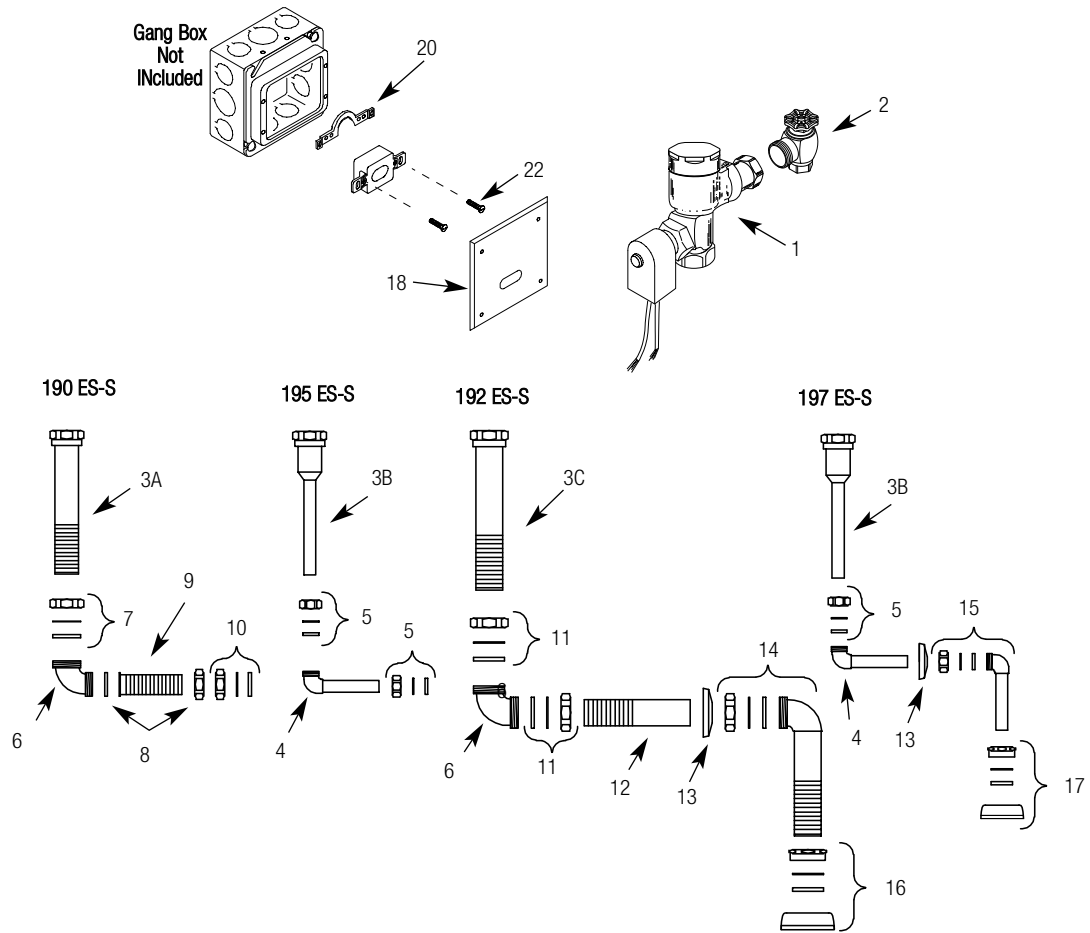
Item No.	Part No.	Description
1	‡	Solenoid Operated Valve Assembly
2	H-700-A ‡	1" (25 mm) Bak-Chek® Control Stop
	H-700-A ‡	3/4" (20 mm) Bak-Chek® Control Stop
3A	V-500-AA	1-1/2" (38 mm) x 11-1/2" (292 mm) Vacuum Breaker Assembly RB (Model 190 ES-S)
3B	V-500-AA	3/4" (19 mm) x 10-1/2" (267 mm) Vacuum Breaker Assembly RB (Models 195 ES-S and 197 ES-S)
3C	V-500-AA	1-1/2" (38 mm) x 7-1/2" (191 mm) Vacuum Breaker Assembly RB (Model 192 ES-S)
4	F-15-A	ELL with 3/4" (19 mm) Tail (Models 195 ES-S and 197 ES-S)
5	F-2-AW	3/4" (19 mm) Slip Joint Coupling (Models 195 ES-S and 197 ES-S)
6	F-21	Double Slip Elbow (Models 190 ES-S and 192 ES-S)
7	F-2A	1-1/2" (38 mm) Slip Joint Coupling (Model 190 ES-S)
8	F-2A	Coupling with S-21 Gasket
9	F-110	1-1/4" (32 mm) O.D. Outlet
10	F-2-A-U	1-1/4" (32 mm) Slip Joint Coupling
11	F-2-AA	1-1/2" (38 mm) Slip Joint Coupling (Set of Two) (Model 192 ES-S)
12	F-102	1-1/2" Outlet Tube CP
13	F-7	Flange
14	F-25-A	1-1/4" Elbow Assembly
15	F-15-A	ELL with 3/4" Tail CP (Model 197 ES-S)

Item No.	Part No.	Description
16	F-5-A	1-1/4" Spud Coupling Assembly CP
17	F-5-A	3/4" Spud Coupling Assembly CP
18	EL-161	Sensor Cover Plate
19	EL-152	Screw (4 required)
20	EL-168	Yoke Assembly
21	EL-1500	Urinal Sensor

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

WATER CLOSET PARTS LIST

Gang Box
Not
INcluded

140 ES-S

153 ES-S

152 ES-S

Item No.	Part No.	Description
1	‡	Solenoid Operated Valve Assembly
2	H-730-A ‡	1" (25 mm) Conc. Wheel Handle Bak-Chek® Control Stop
3	V-500-A	1½" (38 mm) x 11½" (292 mm) Vacuum Breaker Assembly RB (Models 140 ES-S & 152 ES-S)
4	V-500-A	1½" (38 mm) x 6" (152 mm) Vacuum Breaker Assembly RB (Model 153 ES-S)
5	F-5-A	1½" (38 mm) Spud Coupling Assembly CP
6	F-2-AA	1½" (38 mm) Slip Joint Coupling (Set of Two)
7	F-21	1½" (38 mm) Double Slip Elbow
8	F-102	1½" (38 mm) Outlet Tube CP
9	F-7	Flange
10	F-25-A	1½" (38 mm) Elbow Assembly
11	F-2-A	Coupling with S-21 Gasket
12	F-102	1½" (38 mm) Outlet Tube CP
13	EL-201	CP Cover Plate for Sensor and Override Button (Closet only)
14	EL-141-A	Override Switch and Yoke Assembly (Closet only)
15	EL-152	Screws (requires four screws per mounting bracket)
16	EL-1500-L	Closet Sensor Replacement Kit (Closet only)

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

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