

INSTALLATION INSTRUCTIONS FOR OPTIMA® SYSTEMS SENSOR ACTIVATED SLOAN® and REGAL® CONCEALED and EXPOSED URINAL FLUSHOMETERS

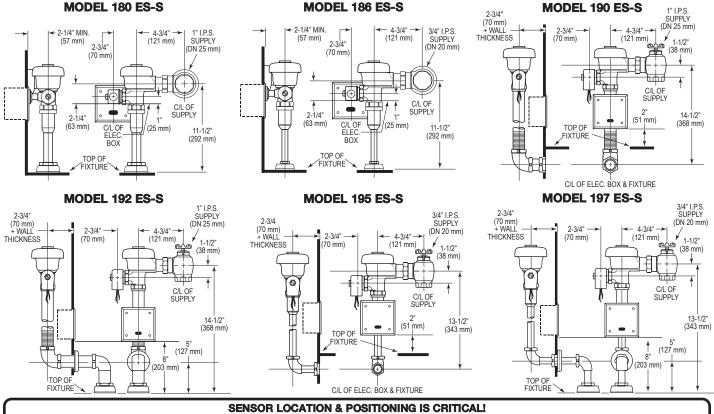


LIMITED WARRANTY

Sloan Valve Company warrants its ES-S Sensor Activated Sloan® and Regal® 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 warrantly. 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



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 Sloan OPTIMA equipped Flushometer, install the items listed below. Refer to Rough-ins on Page 1 and illustrations on this page.

- 2-gang electrical box 4" x 4" x 2-1/2" (102 mm x 102 mm x 64 mm) for sensor; see paragraph entitled "Sensor Location"
- 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)
- Urinal fixture
- Drain line
- Water supply line

Important:

- ALL ELECTRICAL WIRING IS TO BE INSTALLED IN ACCORDANCE WITH NATIONAL/LOCAL CODES AND REGULATIONS.
- 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.
- 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.

Sloan[®] and Regal[®] 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

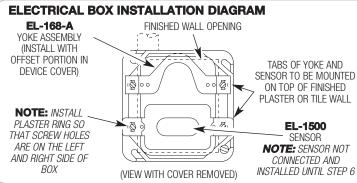
Install Transformer (EL-154) on a 2-Gang Electrical Box, 4" x 4" x 2-1/2" (102 mm x 102 mm x 64 mm) in a convenient location; refer to the illustration at upper right side of this page.

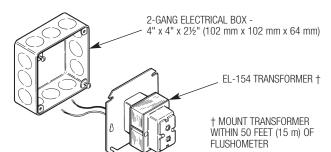
Note: One Sloan EL-154 transformer can operate up to ten OPTIMA equipped Flushometers. Run 18-gauge wire from transformer to Flushometer(s). Wire supplied by others. **DO NOT supply power to transformer until installation of Flushometer is complete.**

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 Location

Urinal models employ one (1) electrical box. Refer to rough-in illustrations for locations.





ELECTRICAL BOX LOCATION 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 sensor activated flushometer must be familiar with the requirements of its installation. Improper installation may void the manufacturer's warranty.

Note: A template is packaged with Models 180 ES-S and 186 ES-S valves to properly position electrical boxes. Refer to rough-in illustrations for installation of electrical boxes.

Note: Use Appleton #4SD1 Electrical Box and #8470 Plaster Ring or equivalent.

Note: Install plaster ring so screw holes are on left and right side of box.

Note: Break tiles to allow screw holes in plaster to show.

Tools Required for Installation

- Slotted screwdriver
- 5/64" hex wrench (supplied)
- Wire stripper/crimping tool
- 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 !!!

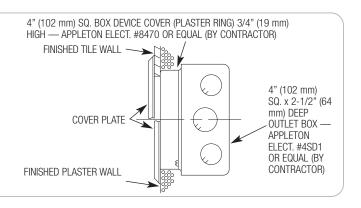
Protect the chrome or special finish of Sloan Flushometers — DO NOT USE toothed tools to install or service these valves. Use a Sloan A-50 Super-Wrench[™], Sloan A-109 Plier Wrench or smooth jawed spud wrench to secure all couplings. Also see "Care and Cleaning" section of this manual.

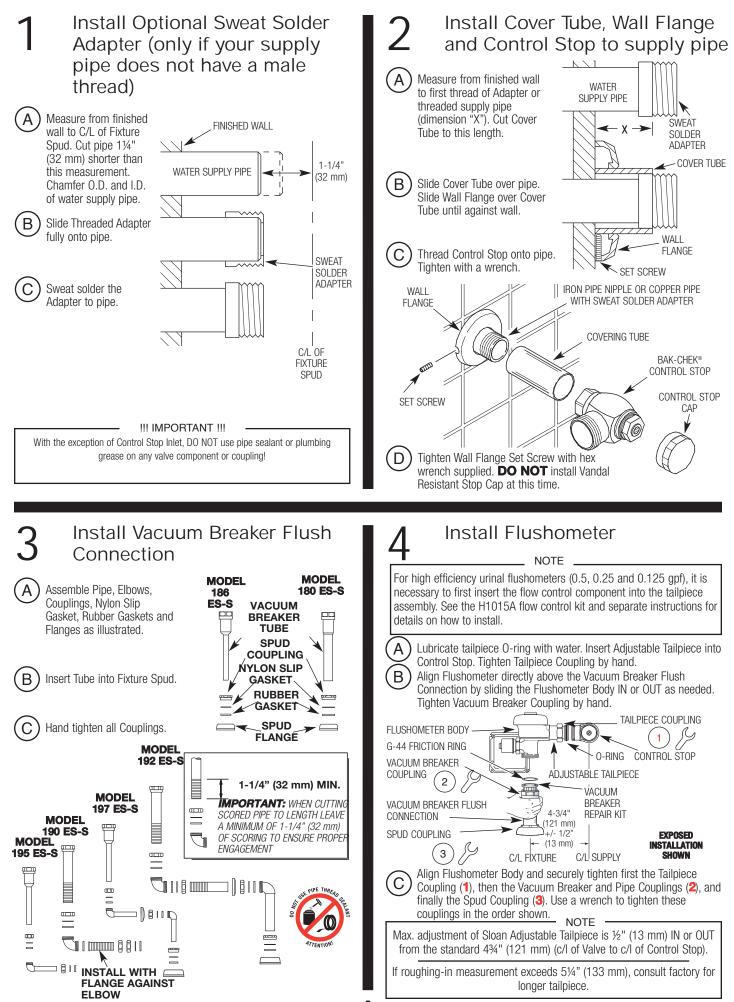
!!! IMPORTANT !!!

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.

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





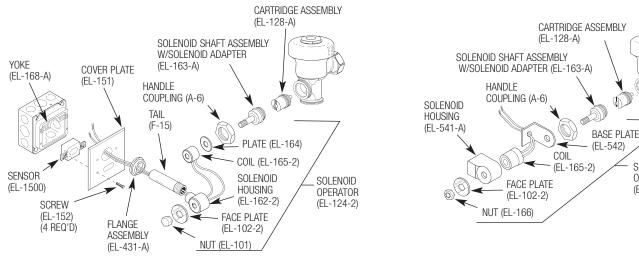
Connect Solenoid Operator

To ease installation, remove the Solenoid Operator from the Flushometer; however, prior to removal, read and adhere to the following precautions.

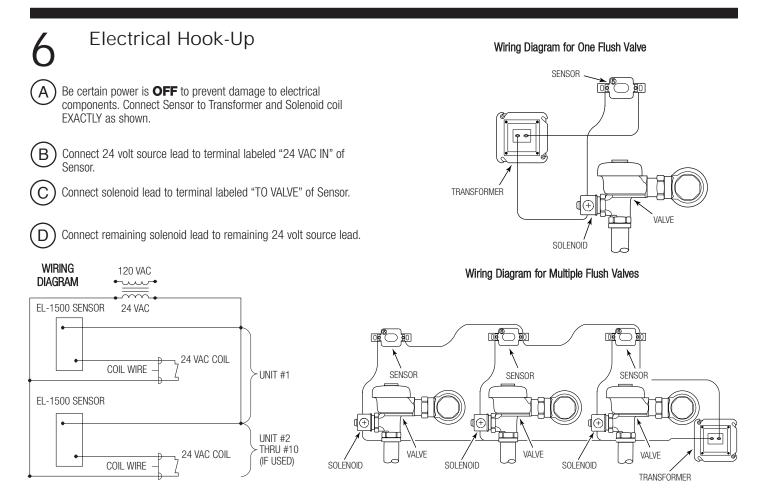
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- When removing the Coil from the Solenoid Plunger Guide, do so only with the power **OFF**. Failure to turn power off can result in damage to the Sensor, Solenoid Coil and Transformer.
- When removing the Solenoid Operator from the Valve, take care not to damage the O-ring seal on the Operator Assembly.

EXPOSED FLUSHOMETER



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



and screw Tail into Solenoid Housing (EL-162-2).

Exposed models only — Slide Coil wires through Tail (F-15)



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

CONCEALED FLUSHOMETER

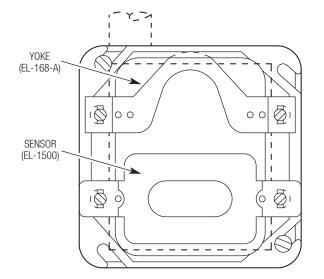
SOLENOID

OPERATOR

(EL-138-2)

Install Sensor and Yoke

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.

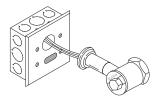


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Install Sensor Cover Plate and Secure Solenoid Housing and Coil Assembly



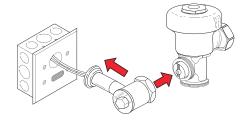
Install Sensor Cover Plate (EL-151, Exposed; EL-161, Concealed) and secure with Tamper-Proof Screws (EL-152), provided.





Models 180 ES-S and 186 ES-S — Carefully install Solenoid Operator to Flushometer while aligning Tail Assembly to Cover Plate. Wet O-Ring seal of Solenoid Operator with water to lubricate. Secure Solenoid Operator to Flushometer by tightening Solenoid Coupling. Slide Solenoid Flange Assembly (EL-431-A) against Sensor Cover Plate (EL-151) and tighten Setscrew to Tail (F-15).

Note: Hex key wrench services Tamper-Proof Screws and Setscrew. Tighten solenoid Nut (EL-101).

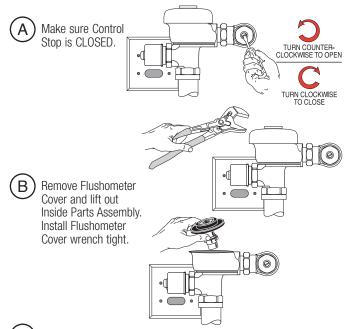


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D

Flush Out Supply Line



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

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

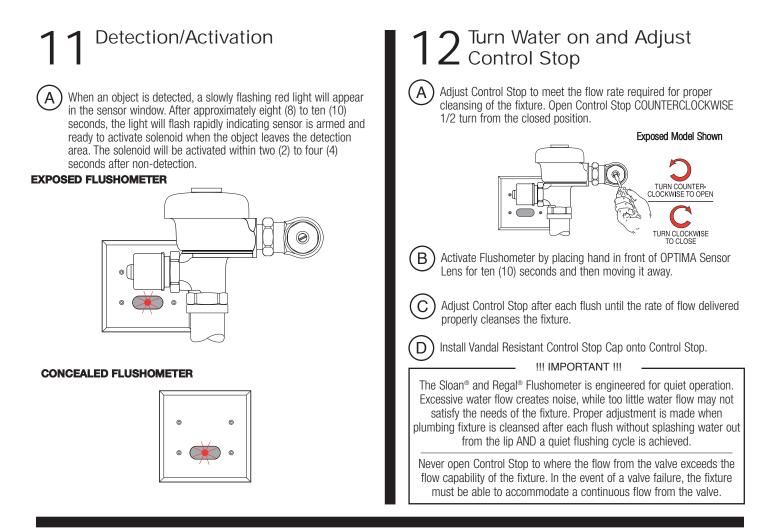
10 Power and Start-up Mode

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.

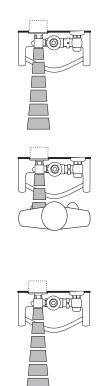
Note: If 24 volt power supply is interrupted at any time for more than fifteen (15) seconds, the start-up mode automatically repeats itself when power is restored.

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.



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 tensecond 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.



Care and Cleaning

DO NOT use abrasive or chemical cleaners (including chlorine bleach) 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.



TROUBLESHOOTING GUIDE

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).
	<i>CAUSE:</i> SOLUTION:	<i>No power is being supplied to sensor.</i> 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.

SOLUTION: Reinstall or replace Coil as necessary.

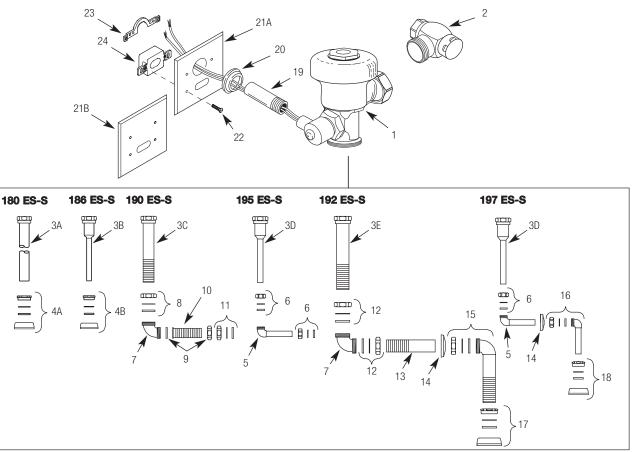
3.	PROBLEM:	Volume of water is insufficient to adequately siphon fixture.
	CAUSE:	Control Stop is not open wide enough.
	SOLUTION:	Adjust Control Stop for desired water delivery.
	CAUSE:	Low Consumption unit is installed on Water Saver or Conventional fixture.
	SOLUTION:	Replace Diaphragm component parts 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 Diaphragm component parts of valve with kit that corresponds to appropriate flush volume of fixture.
	CAUSE:	Relief valve in Diaphragm is not seated properly or bypass hole in Diaphragm is clogged.
	SOLUTION:	Disassemble inside Diaphragm 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 Diaphragm component parts with proper urinal kit (Inside Diaphragm Assembly or Inside Parts Kit).

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 capability of the fixture. In the event of a valve failure, the fixture must be able to accommodate a continuous flow from the valve.



Item Part No. No.		Description	
1	±	Solenoid Operated Valve Assembly	
2	H-700-A ‡	1" (25 mm) Bak-Chek [®] Control Stop	
_	H-700-A ‡		
ЗA	V-600-AA	1-1/4" (32 mm) x 9" (229 mm) Vacuum Breaker Assembly	
		CP (Model 180 ES-S)	
3B	V-600-AA	3/4" (20 mm) x 9" (229 mm) Vacuum Breaker Assembly CP (Model 186 ES-S)	
3C	V-500-AA	1-1/2" (38 mm) x 11-1/2" (292 mm) Vacuum Breaker	
		Assembly RB (Model 190 ES-S)	
3D	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)	
3E	V-500-AA	1-1/2" (38 mm) x 7-1/2" (191 mm) Vacuum Breaker	
4A	F-5-A	Assembly RB (Model 192 ES-S)	
4A	F-D-A	1-1/4" (32 mm) Spud Coupling Assembly (Model 180 ES-S)	
4B	F-5-A	3/4" (19 mm) Spud Coupling Assembly (Model 186 ES-S)	
5	F-15-A	ELL with 3/4" (19 mm) Tail	
0	1 10 //	(Models 195 ES-S and 197 ES-S)	
6	F-2-AW	3/4" (19 mm) Slip Joint Coupling	
		(Models 195 ES-S and 197 ES-S)	
7	F-21	Double Slip Elbow (Models 190 ES-S and 192 ES-S)	
8	F-2A	1-1/2" (38 mm) Slip Joint Coupling (Model 190 ES-S)	
9	F-2A	Coupling with S-21 Gasket	
10	F-110	1-1/4" (32 mm) O.D. Outlet	
11	F-2-A-U	1-1/4" (32 mm) Slip Joint Coupling	
12	F-2-AA	1-1/2" (38 mm) Slip Joint Coupling (Set of Two)	
10	E 400	(Model 192 ES-S)	
13	F-102	1-1/2" Outlet Tube CP	
14 15	F-7	Flange	
15 16	F-25-A F-15-A	1-1/4" Elbow Assembly ELL with 3/4" Tail CP (Model 197 ES-S)	
10	F-10-A	ELL WILL 5/4 TAIL OF (WOULD 197 E3-3)	

ltem No.	Part No.	Description
17	F-5-A	1-1/4" Spud Coupling Assembly CP
18	F-5-A	3/4" Spud Coupling Assembly CP
19	F-15	Tail Assembly
20	EL-431-A	Flange Assembly
21A	EL-151	Cover Plate (Models 180 ES-S and 186 ES-S)
21B	EL-161	Cover Plate (Models 190 ES-S, 192 ES-S, 195 ES-S and 197 ES-S)
22	EL-152	Screw (4 Required)
23	EL-168-A	Yoke Assembly
24	EL-1500	Urinal Sensor

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

INSTALLATION TEMPLATE For Models 180/186 ES-S: Code # 0816156

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

Sloan and Regal Detailed Parts Breakdown

For a detailed parts breakdown of Regal Optima ES-S Flushometers, see Maintenance Guide 0816510.

For a detailed parts breakdown of Sloan Optima ES-S Flushometers, see Maintenance Guide 0816725.



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