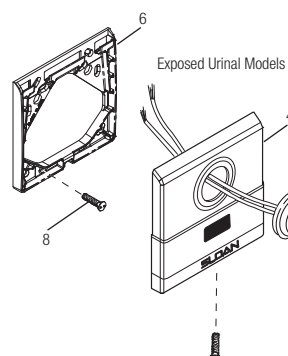
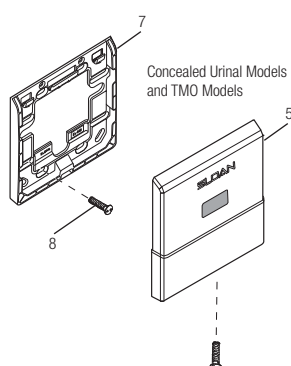


**Optima® Flushometers**

Current style Royal® (after 09/26/10)

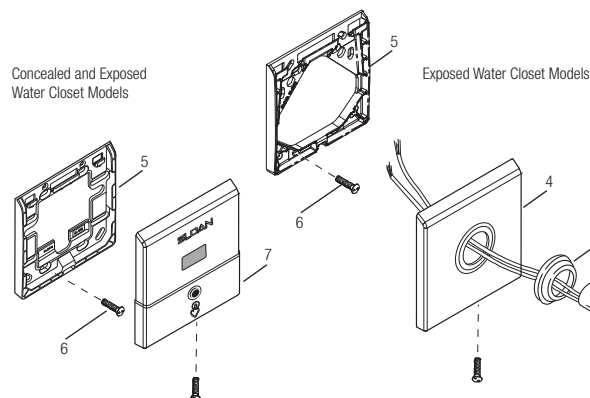
**OPTIMA®**Click Product  
Code No. to  
Purchase PartRoyal flushometer parts, solenoid  
parts and assemblies, see page  
46 and 47**CURRENT COVER AND MOUNTING PLATE PARTS FOR ROYAL® URINAL FLUSHOMETER**

| Item No. | Code No.       | Part No. | Description                                                                                                     |
|----------|----------------|----------|-----------------------------------------------------------------------------------------------------------------|
| 1.       | ‡              |          | Solenoid Activated Valve Assembly                                                                               |
| 2.       | <b>0306249</b> | F-15     | Tail Assembly†                                                                                                  |
| 3.       | <b>0345150</b> | EL-431-A | Flange Assembly                                                                                                 |
| 4.       | <b>3305100</b> | EL-640-A | CP Cover Plate with Sensor and Mounting Hardware Assembled (Exposed Models)<br>(includes EL-549 mounting plate) |

| Item No. | Code No.       | Part No. | Description                                                         |
|----------|----------------|----------|---------------------------------------------------------------------|
| 5.       | <b>3305101</b> | EL-645-A | CP Cover Plate with Sensor Assembled (Concealed Models)             |
| 6.       | —              | EL-549   | Mounting Plate (Exposed Models)                                     |
| 7.       | —              | EL-592   | Mounting Plate                                                      |
| 8.       | —              | EL-177   | Screws (requires four (4) screws per mounting plate)                |
| —        | <b>3305620</b> | EL-1500  | Urinal Sensor Replacement (Exposed and Concealed Models, not shown) |

† NOTE: For exposed &amp; concealed solenoids manufactured before 2003 or not shown here, consult factory for individual part assembly.

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

**OPTIMA®**Royal flushometer parts, solenoid  
parts and assemblies, see page  
46 and 47**CURRENT COVER AND MOUNTING PLATE PARTS FOR ROYAL® CLOSET FLUSHOMETER**

| Item No. | Code No.       | Part No. | Description                                                                                    |
|----------|----------------|----------|------------------------------------------------------------------------------------------------|
| 1.       | ‡              |          | Solenoid Activated Valve Assembly                                                              |
| 2.       | <b>0306249</b> | F-15     | Tail Assembly†                                                                                 |
| 3.       | <b>0345150</b> | EL-431-A | Flange Assembly                                                                                |
| 4.       | <b>3305105</b> | EL-625-A | CP Cover Plate with Mounting Hardware Assembled (Closet only) (includes EL-543 mounting plate) |
| 5.       | —              | EL-549   | Mounting Plate                                                                                 |

| Item No. | Code No.       | Part No.  | Description                                                            |
|----------|----------------|-----------|------------------------------------------------------------------------|
| 6.       | —              | EL-177    | Screws (requires four screws per mounting bracket)                     |
| 7.       | <b>3305104</b> | EL-595-A  | CP Cover Plate with Sensor and Override Switch Assembled (Closet only) |
|          | <b>3305621</b> | EL-1500-L | Closet Sensor Replacement Kit (Closet only, not shown)                 |

† NOTE: For exposed &amp; concealed solenoids manufactured before 2003 or not shown here, consult factory for individual part assembly.

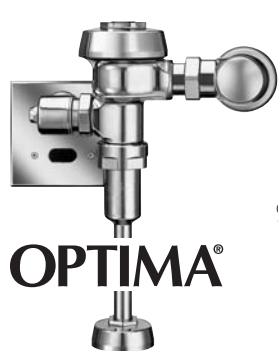
‡ Part number varies with valve model variation; consult factory.

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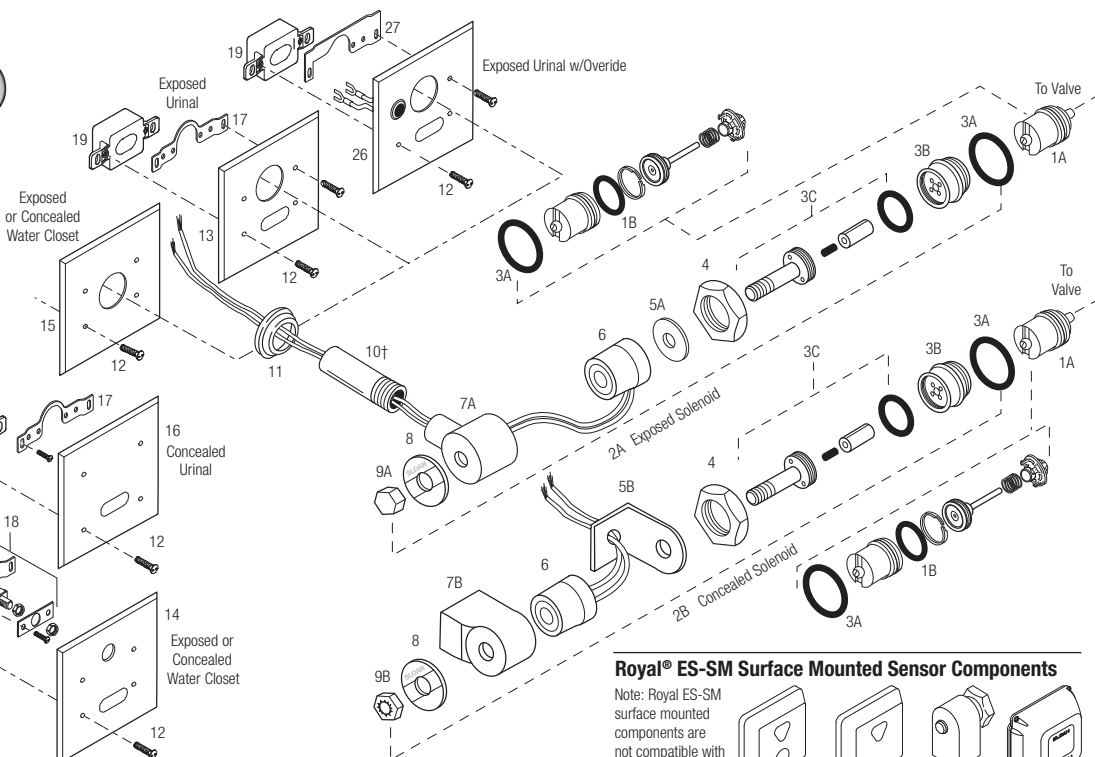
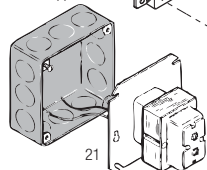
**Optima® Flushometers**

Old Royal® until 05/09, current Sloan/Regal®

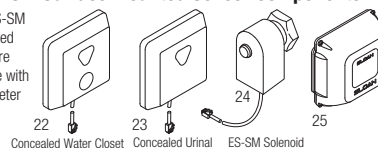


ABBREVIATIONS:  
CP - Chrome Plated  
RB - Rough Brass  
gpf - gallons per flush  
Lpf - Liters per flush

NOTE: Gang box is not supplied.

**Royal® ES-SM Surface Mounted Sensor Components**

Note: Royal ES-SM surface mounted components are not compatible with ES-S flushometer components.

**SOLENOID/SENSOR PARTS AND ASSEMBLIES LIST**

Click Product  
Code No. to  
Purchase Part

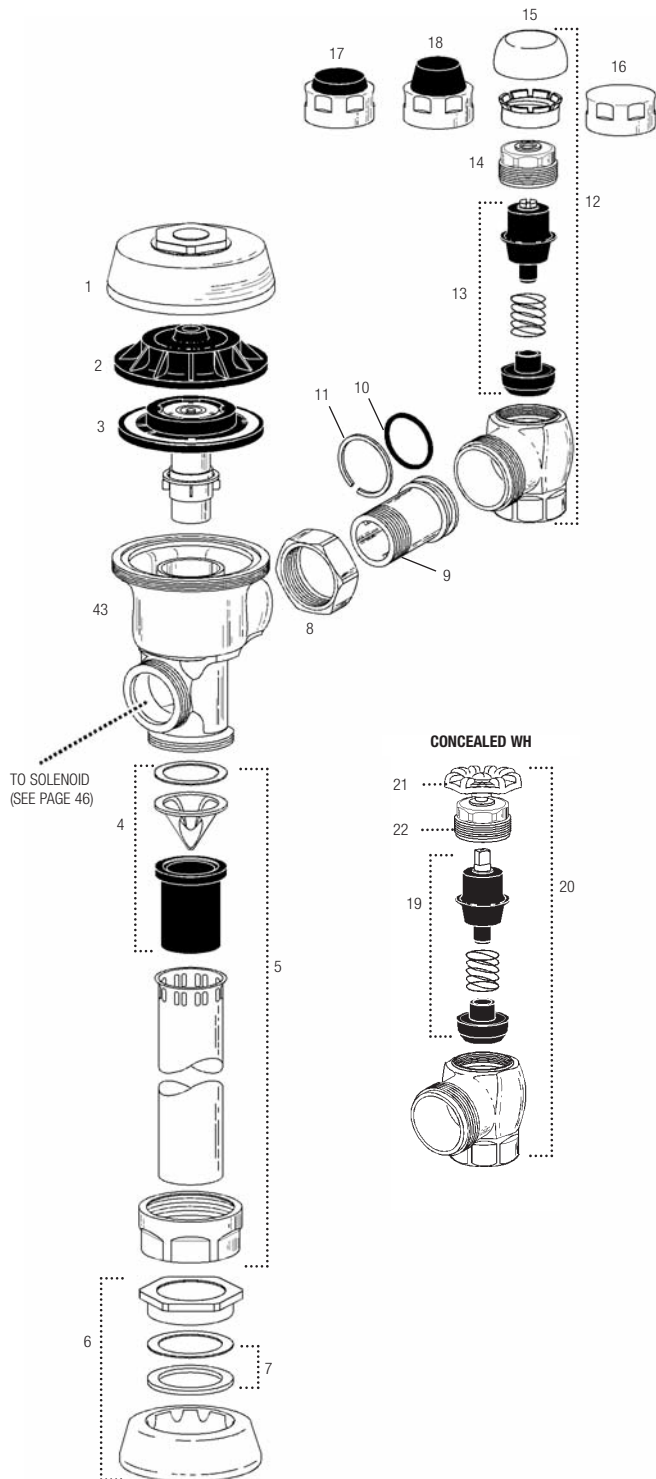
| Item No. | Code No.                | Part No.  | Description                                                                                                                                                                                                                           |
|----------|-------------------------|-----------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1A.      | <a href="#">3305043</a> | EL-128-A  | Actuator Cartridge Assembly Repair Kit Includes Spring, Plunger Guide, Solenoid Valve Seat, Valve Piston Assembly, and O-Ring (also available for ES-SM flushometers)                                                                 |
| 1B.      | <a href="#">0305135</a> | EL-110    | O-Ring                                                                                                                                                                                                                                |
| 2A.      | <a href="#">0305328</a> | EL-124-1  | 120V only (no sensor)                                                                                                                                                                                                                 |
|          | <a href="#">3305044</a> | EL-1029-A | CP Cartridge/Solenoid Kit EL-124-1 (120V) and EL128-A                                                                                                                                                                                 |
|          | <a href="#">0305329</a> | EL-124-2  | 24 VAC Solenoid Assembly (exposed installation) Includes Handle Coupling, 24 VAC Coil, Face Plate for 24 VAC Solenoid, Solenoid Adapter, Solenoid Shaft Assembly, Nut for Solenoid, Solenoid Housing, Solenoid Flux Plate, and O-Ring |
|          | <a href="#">3305045</a> | EL-1028-A | CP Cartridge/Solenoid Kit EL-124-2 (24V) and EL128-A                                                                                                                                                                                  |
| 2B.      | <a href="#">0305330</a> | EL-138-1  | 120V only (no sensor)                                                                                                                                                                                                                 |
|          | <a href="#">0305331</a> | EL-138-2  | 24 VAC Solenoid Assembly (concealed installation) Includes Handle Coupling, 24 VAC Coil, Face Plate for 24 VAC Solenoid, Solenoid Adapter, Solenoid Shaft Assembly, Nut for Solenoid, Solenoid Base Plate and Solenoid Cover Assembly |
| 3A.      | <a href="#">0337086</a> | DO-22     | O-Ring                                                                                                                                                                                                                                |
| 3B.      | <a href="#">0305132</a> | EL-104    | RB Adapter for Solenoid                                                                                                                                                                                                               |
| 3C.      | <a href="#">0305165</a> | EL-163-A  | Solenoid Shaft Assembly Includes Gasket, Plunger, Plunger Spring, and Solenoid Shaft                                                                                                                                                  |
| 4.       | <a href="#">0301082</a> | A-6       | CP Handle Coupling (exposed installation)                                                                                                                                                                                             |
| 5A.      | <a href="#">0305166</a> | EL-164    | Solenoid Flux Plate (exposed installation) fine thread                                                                                                                                                                                |
| 5B.      | —                       | EL-542    | N/A Separately                                                                                                                                                                                                                        |
| 6.       | <a href="#">0305119</a> | EL-165-1  | 120 V Coil                                                                                                                                                                                                                            |
|          | <a href="#">0305118</a> | EL-165-2  | 24 VAC Coil                                                                                                                                                                                                                           |
| 7A.      | <a href="#">0345120</a> | EL-162-2  | CP Solenoid Housing (exposed installation) fine thread                                                                                                                                                                                |
|          | <a href="#">0305164</a> | EL-162-1  | CP Solenoid Housing (120V) course thread also used on pre-2001 24 V                                                                                                                                                                   |
| 7B.      | <a href="#">0305336</a> | EL-541-A  | Solenoid Cover Assembly (Includes Flux Plate)                                                                                                                                                                                         |
| 8.       | <a href="#">0305127</a> | EL-102-2  | Face Plate for 24 VAC Solenoid (exposed installation)                                                                                                                                                                                 |

| Item No. | Code No.                  | Part No.  | Description                                                                     |
|----------|---------------------------|-----------|---------------------------------------------------------------------------------|
| 9A.      | <a href="#">0305125</a>   | EL-101    | CP Nut for Solenoid (exposed installation)                                      |
| 9B.      | <a href="#">0305167</a>   | EL-166    | Housing Nut for Solenoid (concealed installation)                               |
| 10.      | <a href="#">0306249</a>   | F-15      | Tail †                                                                          |
|          | <a href="#">0305145</a>   | EL-123-A  | Old Style ESS 24V course thread (120V also)                                     |
|          | <a href="#">0305337PK</a> | EL-226    | 1-1/4" Extension for EL-123-A course thread                                     |
| 11.      | <a href="#">0345150</a>   | EL-431-A  | CP Flange Assembly (exposed installation)                                       |
|          | <a href="#">0305139</a>   | EL-176-A  | Old Style ESS 24V course thread (120V also)                                     |
| 12.      | <a href="#">0305152</a>   | EL-152    | CP Screws (requires four screws per cover plate)                                |
| 13.      | <a href="#">0305151</a>   | EL-151    | CP Cover Plate for Sensor and Solenoid Operator (Urinal only)                   |
| 14.      | <a href="#">0305219</a>   | EL-201    | CP Cover Plate for Sensor and Override Button (Closet only)                     |
| 15.      | <a href="#">0318066</a>   | HY-66     | CP Cover Plate for Solenoid Operator (Closet only)                              |
| 16.      | <a href="#">0305161</a>   | EL-161    | CP Cover Plate for Sensor                                                       |
| 17.      | <a href="#">0305323</a>   | EL-168-A  | Yoke Assembly (Urinal only)                                                     |
| 18.      | <a href="#">0305324</a>   | EL-141-A  | Override Switch and Yoke Assembly (Closet only)                                 |
| 19.      | <a href="#">3305620</a>   | EL-1500   | Urinal Sensor Replacement Kit (Urinal only)                                     |
| 20.      | <a href="#">3305621</a>   | EL-1500-L | Closet Sensor Replacement Kit (Closet only)                                     |
| 21.      | <a href="#">0345154</a>   | EL-154    | Transformer (120 VAC) (also available for ES-SM flushometers) 50 VA plate mount |
|          | <a href="#">0345999</a>   | EL-342    | Transformer (240 VAC) (also available for ES-SM flushometers) 50 VA plate mount |
| 22.      | <a href="#">3345047</a>   | EL-461    | Surface Mounted Sensor and Override Button Assembly (closet only)               |
| 23.      | <a href="#">3345048</a>   | EL-497    | Surface Mounted Sensor Assembly (urinal only)                                   |
| 24.      | <a href="#">3345048</a>   | EL-297    | Solenoid Assembly                                                               |
| 25.      | <a href="#">3365003</a>   | ETF-492-A | Control Module                                                                  |
| 26.      | <a href="#">0345266</a>   | EL-566-A  | Exposed Plate with Override Button (Urinal only)                                |
| 27.      | <a href="#">0345267</a>   | EL-567-A  | Yoke Assembly for EL-566-A                                                      |
| —        | <a href="#">0305148</a>   | EL-227    | Repair Tool Kit for EL-163-A Repair Kit                                         |
| —        | <a href="#">0345016</a>   | EL-387-A  | Override Button Replacement for EL-566-A                                        |

† NOTE: For exposed & concealed solenoids manufactured before 2001 or not shown here, consult factory for individual part assembly.

# Optima® Royal® Flushometers

Click Product  
Code No. to  
Purchase Part



## ABBREVIATIONS:

|     |                   |
|-----|-------------------|
| CP  | Chrome Plated     |
| RB  | Rough Brass       |
| SD  | Screwdriver       |
| WH  | Wheel Handle      |
| gpf | gallons per flush |
| Lpf | Liters per flush  |

## OPTIMA® ROYAL® FLUSHOMETER PARTS LIST

| Item No. | Code No.                                                               | Part No.   | Description                                                                                                                                                           |
|----------|------------------------------------------------------------------------|------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1.       | <a href="#">0301172</a>                                                | A-72       | CP Cover                                                                                                                                                              |
| 2.       | <a href="#">0301168</a>                                                | A-71       | Inside Cover                                                                                                                                                          |
| 3.       | <b>SEE DIAPHRAGM ASSEMBLY CHART ON PAGE 42</b>                         |            |                                                                                                                                                                       |
| 4.       | <a href="#">3323182</a>                                                | V-651-A    | Vacuum Breaker Repair Kit                                                                                                                                             |
| 5.       | <a href="#">3393004</a>                                                | V-600-AA   | 3/4" (19 mm) x 9" (229 mm) CP Vacuum Breaker                                                                                                                          |
|          | <a href="#">3393006</a>                                                | V-600-AA   | 1-1/4" (32 mm) x 9" (229 mm) CP Vacuum Breaker                                                                                                                        |
|          | <a href="#">3393007</a>                                                | V-600-AA   | 1-1/2" (38 mm) x 9" (229 mm) CP Vacuum Breaker                                                                                                                        |
| 6.       | <a href="#">0306125</a>                                                | F-5-AW     | 3/4" (19 mm) CP Spud Coupling Assembly                                                                                                                                |
|          | <a href="#">0306140</a>                                                | F-5-AU     | 1-1/4" (32 mm) CP Spud Coupling Assembly                                                                                                                              |
|          | <a href="#">0306146</a>                                                | F-5-AT     | 1-1/2" (38 mm) CP Spud Coupling Assembly                                                                                                                              |
| 7.       | <b>SEE SLIP JOINT GASKETS AND RINGS TABLE ON ITEM 31A ON NEXT PAGE</b> |            |                                                                                                                                                                       |
| 8.       | <a href="#">0308676</a>                                                | H-550      | CP Stop Coupling                                                                                                                                                      |
| 9.       | <a href="#">0308801</a>                                                | H-551-A    | CP Adjustable Tail 2-1/16" (52 mm) long                                                                                                                               |
| 10.      | <a href="#">5308696</a>                                                | H-553      | O-Ring – 24 per package                                                                                                                                               |
| 11.      | <a href="#">5308381</a>                                                | H-552      | Locking ring – 12 per package                                                                                                                                         |
| 12.      | <a href="#">3308386</a>                                                | H-700-A    | 1" (25 mm) Screwdriver Bak-Chek® Angle Stop CP – complete                                                                                                             |
|          | <a href="#">3308384</a>                                                | H-700-A    | 3/4" (19 mm) Screwdriver Bak-Chek® Angle Stop CP – complete                                                                                                           |
| 13.      | <a href="#">3308853</a>                                                | H-541-A-SD | Control Stop Repair Kit for use with 1" (25 mm) H-700-A & 3/4" (19 mm) H-700-A, 1" (25 mm) H-600-A, 1" (25 mm) & 3/4" (19 mm) H-700-A and 1" (25 mm) H-540-A SD Stops |
|          | <a href="#">3308856</a>                                                | H-543-A-SD | Control Stop Repair Kit for use with 3/4" (19 mm) H-600-A and H-540-A SD Stops                                                                                        |
| 14.      | <a href="#">0308612</a>                                                | H-622 CP   | Bonnet for use with 1" (25 mm) & 3/4" (19 mm) H-700-A and 1" (25 mm) H-600-A SD Stops                                                                                 |
|          | <a href="#">0308843</a>                                                | H-577      | CP Bonnet for use with 3/4" (19 mm) H-600-A SD Stops – <b>OBSOLETE</b>                                                                                                |
| 15.      | <a href="#">3308772</a>                                                | H-1010-A   | 1" (25 mm) Vandal Resistant Control Stop Cap Assembly for use with 1" (25 mm) & 3/4" (19 mm) H-700-A and 1" (25 mm) H-600-A SD Stops                                  |
|          | <a href="#">3308790</a>                                                | H-1009-A   | 3/4" (19 mm) Vandal Resistant Control Stop Cap Assembly for use with 3/4" (19 mm) H-600-A SD Stops                                                                    |
| 16.      | <a href="#">0308840</a>                                                | H-573      | 1" (25 mm) Control Stop Cap CP for use with 1" (25 mm) & 3/4" (19 mm) H-700-A and 1" (25 mm) H-600-A SD Stops                                                         |
|          | <a href="#">0308848</a>                                                | H-582      | 3/4" (19 mm) Control Stop Cap CP for use with 3/4" (19 mm) H-600-A SD Stops                                                                                           |
| 17.      | <a href="#">3308866</a>                                                | H-574      | 1" (25 mm) Control Stop Cap with Bumper for use with 1" (25 mm) & 3/4" (19 mm) H-700-A and 1" (25 mm) H-600-A SD Stops                                                |
| 18.      | <a href="#">3308867</a>                                                | H-576      | 1" (25 mm) Control Stop Cap with Extended Bumper for use with 1" (25 mm) & 3/4" (19 mm) H-700-A and 1" (25 mm) H-600-A SD Stops                                       |
| 19.      | <a href="#">3308860</a>                                                | H-1006-A   | Repair Kit for 1" (25 mm) Stops with Concealed WH for use with 1" (25 mm) H-700-A, H-600-A, and H-543-AWH WH Series Stops                                             |
|          | <a href="#">3308859</a>                                                | H-1007-A   | Repair Kit 3/4" (19 mm) Stops with Concealed WH for use with 3/4" (19 mm) H-700-A WH Series Stops                                                                     |
| 20.      | <a href="#">0388010</a>                                                | H-730-A    | 1" (25 mm) Concealed WH Bak-Chek® Angle Stop RB                                                                                                                       |
|          | <a href="#">0388011</a>                                                | H-730-A    | 3/4" (19 mm) Concealed WH Bak-Chek® Angle Stop RB                                                                                                                     |
| 21.      | <a href="#">3308872</a>                                                | H-1011-A   | Repair Kit (for Concealed WH only; does not include bonnet)                                                                                                           |
| 42.      | <a href="#">0208083</a>                                                | H-623      | Bonnet                                                                                                                                                                |
|          | <a href="#">0308705</a>                                                | H-561      | Bonnet – <b>OBSOLETE</b>                                                                                                                                              |
| 43.      | <a href="#">0301048</a>                                                | A-143-A    | CP Valve Body                                                                                                                                                         |
|          | <a href="#">0301050</a>                                                | A-143-A    | RB Valve Body                                                                                                                                                         |

# Optima® Regal® Flushometers

NOTE: Also for use with Regal® XL  
(Since mid-2010)

Click Product  
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Purchase Part

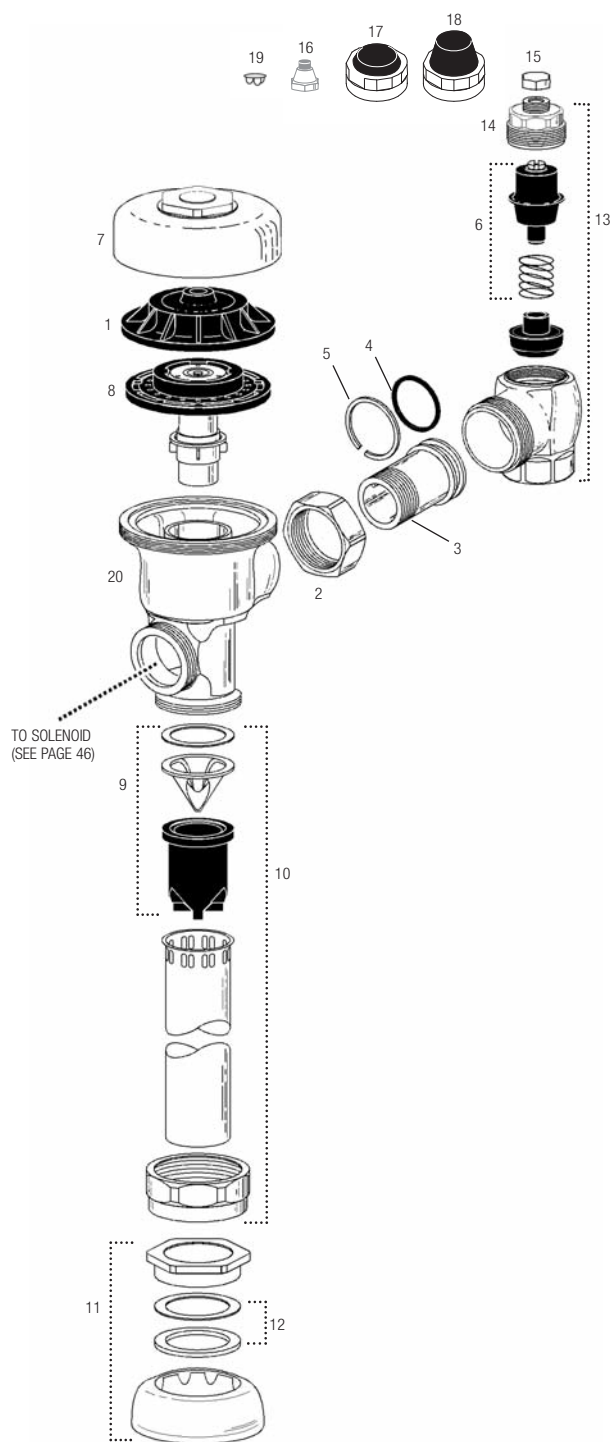
## OPTIMA® REGAL® FLUSHOMETER PARTS LIST

| Item No. | Code No.                                            | Part No.   | Description                                                                                                                                                           |
|----------|-----------------------------------------------------|------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1.       | <a href="#">0301168</a>                             | A-71       | Inside Cover                                                                                                                                                          |
| 2.       | <a href="#">0308676</a>                             | H-550      | CP Stop Coupling                                                                                                                                                      |
| 3.       | <a href="#">0308801</a>                             | H-551-A    | CP Adjustable Tail 2-1/16" (52 mm) long                                                                                                                               |
| 4.       | <a href="#">5308696</a>                             | H-553      | O-Ring – 24 per package                                                                                                                                               |
| 5.       | <a href="#">5308381</a>                             | H-552      | Locking ring – 12 per package                                                                                                                                         |
| 6.       | <a href="#">3308853</a>                             | H-541-A-SD | Control Stop Repair Kit for use with 1" (25 mm) H-700-A & 3/4" (19 mm) H-700-A, 1" (25 mm) H-600-A, 1" (25 mm) & 3/4" (19 mm) H-700-A and 1" (25 mm) H-540-A SD Stops |
|          | <a href="#">3308856</a>                             | H-543-A-SD | Control Stop Repair Kit for use with 3/4" (19 mm) H-600-A                                                                                                             |
| 7.       | <a href="#">0317004</a>                             | R-10       | CP Cover                                                                                                                                                              |
| 8.       | <b>SEE INSIDE PARTS ASSEMBLY CHART ON PAGE 42</b>   |            |                                                                                                                                                                       |
| 9.       | <a href="#">3323192</a>                             | V-551-A    | Vacuum Breaker Repair Kit                                                                                                                                             |
| 10.      | <a href="#">5323005</a>                             | V-500-AA   | 3/4" (19 mm) x 9" (229 mm) CP Vacuum Breaker                                                                                                                          |
|          | <a href="#">5323006</a>                             | V-500-AA   | 1-1/4" (32 mm) x 9" (229 mm) CP Vacuum Breaker                                                                                                                        |
|          | <a href="#">5323007</a>                             | V-500-AA   | 1-1/2" (38 mm) x 9" (229 mm) CP Vacuum Breaker                                                                                                                        |
| 11.      | <a href="#">0306102</a>                             | F-54-A     | 3/4" (19 mm) CP Spud Coupling Assembly                                                                                                                                |
|          | <a href="#">0306142</a>                             | F-55-A     | 1-1/4" (32 mm) CP Spud Coupling Assembly                                                                                                                              |
|          | <a href="#">0306145</a>                             | F-56-A     | 1-1/2" (38 mm) CP Spud Coupling Assembly                                                                                                                              |
| 12.      | <b>SEE SLIP JOINT GASKETS AND RINGS TABLE BELOW</b> |            |                                                                                                                                                                       |
| 13.      | <a href="#">0388065</a>                             | H-790-A    | 1" Screwdriver Stop Adjustable                                                                                                                                        |
|          | <a href="#">0388064</a>                             | H-790-A    | 3/4" Screwdriver Stop Adjustable                                                                                                                                      |
|          | <a href="#">0388029</a>                             | H-740-A    | 1" (25 mm) SD Bak-Chek® Stop CP – complete                                                                                                                            |
|          |                                                     |            | <b>OBSOLETE</b>                                                                                                                                                       |
|          | <a href="#">0388031</a>                             | H-740-A    | 3/4" (19 mm) SD Bak-Chek® Stop CP – complete                                                                                                                          |
|          |                                                     |            | <b>OBSOLETE</b>                                                                                                                                                       |
| 14.      | <a href="#">0308612</a>                             | H-622      | CP Bonnet (Current Regal®)                                                                                                                                            |
|          | <a href="#">0308991</a>                             | H-639      | CP Bonnet for use with 1" (25 mm) & 3/4" (19 mm) H-700-A and 1" (25 mm) H-540-A SD Stops – Pre 2010 Regal® Stops                                                      |
|          | <a href="#">0308601</a>                             | H-538      | CP Bonnet for use with H-700-A 3/4" (19 mm) SD Stop – <b>OBSOLETE</b>                                                                                                 |
| 15.      | <a href="#">5388001</a>                             | H-1012-A   | CP Cap – 6 per package VP                                                                                                                                             |
| 16.      | <a href="#">5310034</a>                             | J-2/J-7    | Bumper Assembly – 6 per package – <b>OBSOLETE</b>                                                                                                                     |
| 17.      | <a href="#">3308866</a>                             | H-574      | Stop Cap, chrome plated with Seat Bumper (-YO)                                                                                                                        |
| 18.      | <a href="#">3308867</a>                             | H-576      | Stop Cap, chrome plated with Extended Seat Bumper (-YG)                                                                                                               |
| 19.      | <a href="#">5388002</a>                             | H-528      | Hole Plug                                                                                                                                                             |
| 20.      | <a href="#">0301048</a>                             | A-143-A    | CP Valve Body                                                                                                                                                         |
|          | <a href="#">0301050</a>                             | A-143-A    | RB Valve Body                                                                                                                                                         |

NOTE: Also refer to the Royal®, Regal®, control stop and flush connection sections.

## ITEM 31A. SLIP JOINT GASKETS AND RINGS

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



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## ROYAL® ESS (ITEM 24) REPAIR KIT

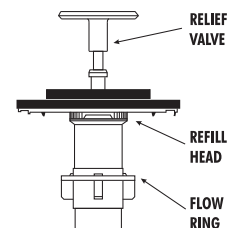
| Code No.                | Part No.  | Description                                      | Relief Valve | Refill Head* | Flow Ring |
|-------------------------|-----------|--------------------------------------------------|--------------|--------------|-----------|
| <a href="#">3345013</a> | EL-1101-A | Low Consumption Water Closets-1.6 gpf (6.0 Lpf)  | Green        | Gray         | Smooth    |
| <a href="#">3345014</a> | EL-1102-A | Water Saver Water Closets-3.5 gpf (13.2 Lpf)     | White        | Gray         | Smooth    |
| <a href="#">3345015</a> | EL-1103-A | 9 Liter European Water Closets-2.4 gpf (9.0 Lpf) | Blue         | Gray         | Smooth    |
| <a href="#">3345016</a> | EL-1106-A | Wash Down Urinals-0.5 gpf (1.9 Lpf)              | Green        | Black        | Smooth    |
| <a href="#">3345017</a> | EL-1107-A | Low Consumption Urinals-1.0 gpf (3.8 Lpf)        | Green        | Black        | Slotted   |
| <a href="#">3345018</a> | EL-1108-A | Water Saver Urinals-1.5 gpf (5.7 Lpf)            | Black        | Black        | Smooth    |

## DIAPHRAGM ONLY KIT

| Code No.                | Part No. | Description                                                    | Relief Valve | Refill Head* | Flow Ring |
|-------------------------|----------|----------------------------------------------------------------|--------------|--------------|-----------|
| <a href="#">3301502</a> | A-1041-A | Low Consumption Water Closets-1.6 gpf (6.0 Lpf)                | Green        | Gray         | Smooth    |
| <a href="#">3301501</a> | A-1038-A | Water Saver Water Closets-3.5 gpf (13.2 Lpf)                   | White        | Gray         | Smooth    |
| <a href="#">3301506</a> | A-1045-A | High Efficiency Water Closets-1.28 gpf (4.8 Lpf)               | Blue         | Gray         | Smooth    |
| <a href="#">3301505</a> | A-1044-A | 9 Liter European Water Closets-2.4 gpf (9.0 Lpf)               | Blue         | Gray         | Smooth    |
| <a href="#">3301504</a> | A-1043-A | Wash Down Urinals-0.5 gpf (1.9 Lpf)                            | Green        | Black        | Smooth    |
| <a href="#">3321503</a> | A-1042-A | Low Consumption Urinals-1.0 gpf (3.8 Lpf)                      | Green        | Black        | Slotted   |
| <a href="#">3301500</a> | A-1037-A | Water Saver Urinals-1.5 gpf (5.7 Lpf)                          | Black        | Black        | Smooth    |
| <a href="#">3301142</a> | A-1047-A | High Efficiency Urinals-0.25 gpf (1.0 Lpf) with White Inserts  | White        | HEU Black    | Smooth    |
| <a href="#">3301143</a> | A-1050-A | High Efficiency Urinals-0.125 gpf (0.5 Lpf) with Green Inserts | White        | HEU Black    | Smooth    |

\*NOTE: Water closet refill heads (gray) have larger slots than urinal refill heads (black).

To identify the Flush Volume of a DUAL FILTERED DIAPHRAGM ASSEMBLY, look at the color of the relief valve, the refill head and the shape of flow ring.



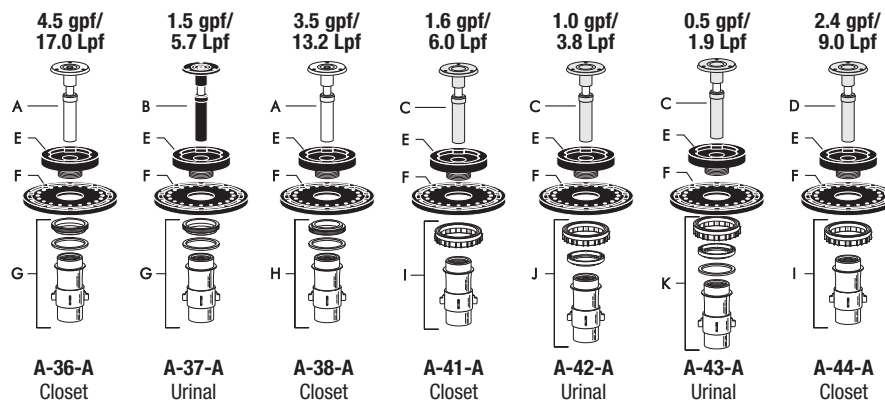
\*NOTE: Water closet refill heads (gray) have larger slots than urinal refill heads (black).

Sensor  
Flushometers

REGAL® ESS (ITEM 28)  
INSIDE PARTS KITS ASSEMBLY

NOTE: Also for use with Regal® XL (Since mid-2010)

| Code No.                | Part No. | Description             |
|-------------------------|----------|-------------------------|
| <a href="#">3301036</a> | A-36-A   | 4.5 gpf/17.0 Lpf-Closet |
| <a href="#">3301037</a> | A-37-A   | 1.5 gpf/5.7 Lpf-Urinal  |
| <a href="#">3301038</a> | A-38-A   | 3.5 gpf/13.2 Lpf-Closet |
| <a href="#">3301041</a> | A-41-A   | 1.6 gpf/6.0 Lpf-Closet  |
| <a href="#">3301044</a> | A-42-A   | 1.0 gpf/3.8 Lpf-Urinal  |
| <a href="#">3301081</a> | A-43-A   | 0.5 gpf/1.9 Lpf-Urinal  |
| <a href="#">3301024</a> | A-44-A   | 2.4 gpf/9.0 Lpf-Closet  |



## REGAL® INSIDE PARTS LIST\*\* NOTE: Also for use with Regal® XL (Since mid-2010)

| Item No. | Code No.                | Part No. | Description                                                       |
|----------|-------------------------|----------|-------------------------------------------------------------------|
| A.       | <a href="#">5301058</a> | A-19-AC  | Relief Valve, White (Closet)                                      |
| B.       | <a href="#">5301059</a> | A-19-AU  | Relief Valve, Black (Urinal)                                      |
| C.       | <a href="#">5301211</a> | A-19-ALC | Relief Valve, Green (Closet/Urinal-Low Consumption)               |
| D.       | <a href="#">0301143</a> | A-19-AL  | Relief Valve, Blue (9 Liter Closet)                               |
| E.       | <a href="#">5301111</a> | A-15-A   | Disc                                                              |
| F.       | <a href="#">5301188</a> | A-156-A  | Diaphragm                                                         |
| G.       | <a href="#">5301236</a> | A-163-A  | Guide Assembly 4.5 gpf/17.0 Lpf Closet and 1.5 gpf/5.7 Lpf Urinal |
| H.       | <a href="#">5301032</a> | A-152-A  | Guide Assembly 3.5 gpf/13.2 Lpf Closet                            |
| I.       | <a href="#">5301031</a> | A-151-A  | Guide Assembly 1.6 gpf/6.0 Lpf Closet                             |
| J.       | <a href="#">5301155</a> | A-155-A  | Guide Assembly 1.0 gpf/3.8 Lpf Urinal                             |
| K.       | <a href="#">5301157</a> | A-157-A  | Guide Assembly 0.5 gpf/1.9 Lpf Urinal                             |

\*\*NOTE: All Regal® inside part items are supplied in 12 per package.

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### SOLENOID/SENSOR KITS LIST

| Code No.       | Part No.  | Description                                                                                                                                                                                                                                                        |
|----------------|-----------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>3305045</b> | EL-124-2  | CP 24 VAC Solenoid Assembly for exposed applications. Includes 24 VAC solenoid assembly and actuator cartridge assembly repair kit.                                                                                                                                |
| <b>3305154</b> | EL-1001-A | Closet flushometer Electronic Accessories Kit with Override. Includes screws, hex wrench, plate for 2-gang electrical box, mounting plate, override switch, yoke assembly, closet sensor replacement kit, an Optima® sticker and sensor Installation Instructions. |
| <b>3305170</b> | EL-1005-A | Exposed Urinal flushometer Electronic Accessories Kit. Includes plate for 2-gang electrical box, four screws, yoke, hex wrench, washer, urinal sensor replacement kit, an Optima® sticker and sensor Installation Instructions.                                    |
| <b>3305172</b> | EL-1007-A | Concealed Urinal flushometer Accessories Kit. Includes screws, yoke, plate for 2-gang electrical box, hex wrench, washer, urinal sensor replacement kit, an Optima® sticker and sensor Installation Instructions.                                                  |

### WALL BOX KITS CLOSET MODELS

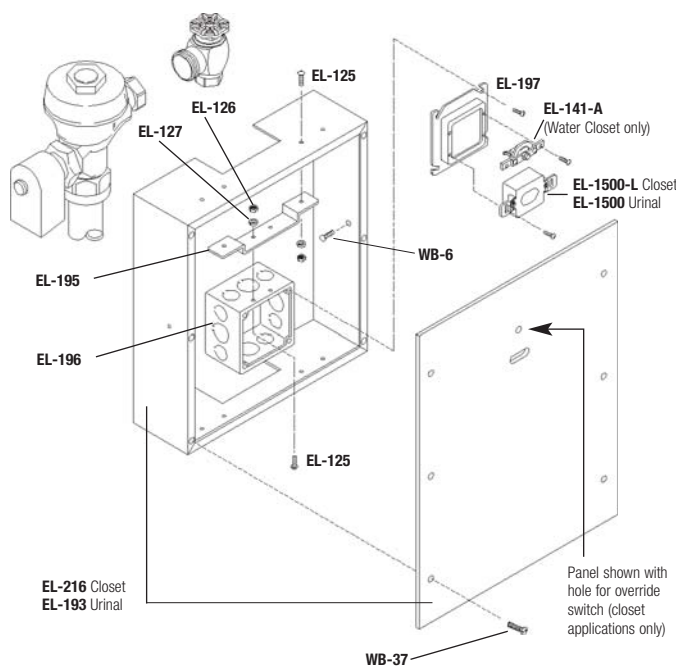
| Code No.       | Part No.   | Description                                                                                                                                                                                                                                                                                                                                                                         |
|----------------|------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>3305180</b> | EL-192-A   | Closet Wall Box Kit – Stainless Steel. Includes four Mounting Screws, four Hex Nuts, four Lock Washers, Mounting Bracket, Electrical Box, Electrical Box Cover, Override Switch Subassembly, Wall Box 13" x 17" (330 mm x 432 mm) with 14.5" x 18.5" (368 mm x 470 mm) Stainless Steel Wall Box Cover with hole for override switch, Spanner Bit and Closet Sensor Replacement Kit. |
| <b>3305160</b> | EL-192-ALS | Same as EL-192-A. Sensor NOT included.                                                                                                                                                                                                                                                                                                                                              |

### WALL BOX KITS URINAL MODELS

| Code No.       | Part No.   | Description                                                                                                                                                                                                                                                                                            |
|----------------|------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>3305178</b> | EL-191-A   | Urinal Wall Box Kit – Stainless Steel. Includes Mounting Screws, Hex Nuts, Lock Washers, Wall Box 13" x 17" (330 mm x 432 mm) with 14.5" x 18.5" (368 mm x 470 mm) Stainless Steel Wall Box Cover, Mounting Bracket, Electrical Box, Electrical Box Cover, Spanner Bit, Urinal Sensor Replacement Kit. |
| <b>3305158</b> | EL-191-ALS | Same as EL-191-A. Sensor NOT included.                                                                                                                                                                                                                                                                 |

### WALL BOX PARTS

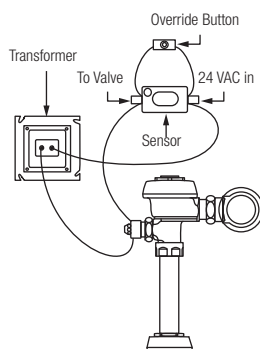
| Code No.       | Part No.  | Description                                                                                                    |
|----------------|-----------|----------------------------------------------------------------------------------------------------------------|
| <b>0305845</b> | EL-318    | #8 Spanner Bit for WB-37 Spanner Screws (#8)                                                                   |
| <b>0334021</b> | WB-37     | Spanner Head Screws for ESS WB                                                                                 |
| <b>5334000</b> | WB-1000-A | 6 Pack of WB-37 Screws                                                                                         |
| —              | EL-216    | Wall Box Frame and Stainless Steel Wall Box Cover for Water Closet. Mounting Hardware and Sensor NOT Included. |
| —              | EL-193    | Wall Box Frame and Stainless Steel Wall Box Cover for Urinal. Mounting Hardware and Sensor NOT Included.       |



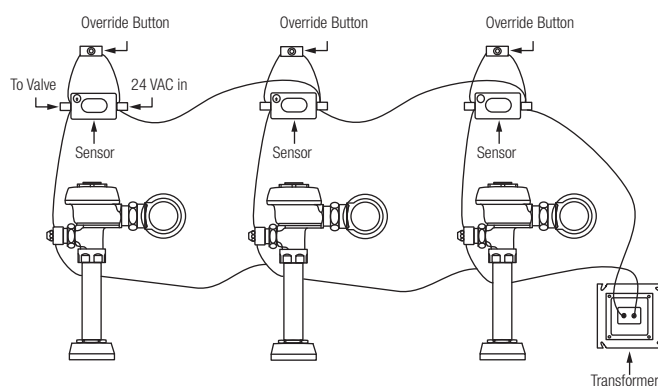
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### TYPICAL WIRING DIAGRAM FOR ONE FLUSH VALVE



### TYPICAL WIRING DIAGRAM FOR ONE OR MORE FLUSH VALVE(S)



## Optima® Flushometers

### SENSOR REPLACEMENT

**NOTE:** The EL-1500 series Optima sensor (a two-wire unit) replaces the older EL-150 series sensors (either three-wire or four-wire units). Refer to the wiring history shown below.

#### IMPORTANT

- Be certain to disconnect the 24 VAC power supply either at the transformer or the fuse box. Failure to disable the power supply can result in damage to the EL-1500 series sensor.
  - The solenoid activated must be removed from the valve on exposed urinal installations. Do not damage the O-ring seal on the operator assembly.
- Remove the cover plate (for wall box installation, remove cover panel) and old sensor from the wall installation. Use a 5/64" hex wrench to remove the cover plate screws (or #8 drilled spanner head screwdriver EL-318 to remove the vandal-resistant screws from the wall box cover panel.)

FIGURE 1A

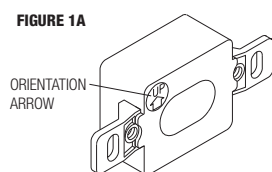
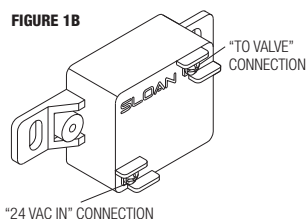


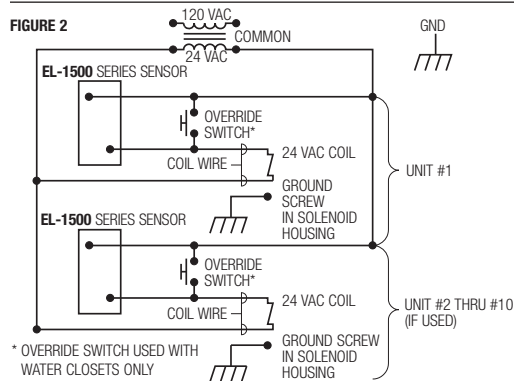
FIGURE 1B



- Connect one 24 VAC lead to the sensor terminal labeled "24 VAC IN" (see Figure 1B).
  - On an old three-wire series EL-150 sensor, this wire was connected to the BLACK sensor lead.
  - On an old four-wire series EL-150 sensor, this wire was connected to the BROWN sensor lead.
- Connect one solenoid lead to the sensor terminal labeled "TO VALVE" (see Figure 1B).
  - On an old three-wire or four-wire EL-150 series sensor, this wire was connected to the RED sensor lead.
- Connect the remaining 24 VAC lead to the remaining solenoid lead.
  - On an old three-wire series EL-150 sensor, these wires were connected to the WHITE sensor leads.
  - On an old four-wire EL-150 series sensor, these wires were connected to the YELLOW and BLUE (or in very early models, the inner BROWN) sensor leads.
- On Water Closet installations only, connect the override button (shown as the override switch in wiring diagram) parallel to the EL-1500-L sensor.
- Reinstall the sensor with the orientation arrow on the lens side of the sensor pointing UP (see Figure 1A). Replace the cover plate (or wall box panel) and tighten the cover plate (or wall box panel) screws.
- Reconnect the 24 VAC power supply at the transformer or the fuse box.

### WIRING DIAGRAM

FIGURE 2



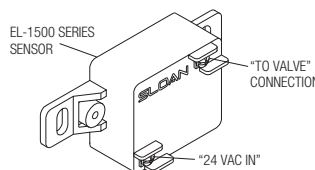
**NOTE:** A MAXIMUM OF TEN (10) SENSOR FLUSHOMETER UNITS CAN ACTIVATE FROM ONE (1) SLOAN EL-154 TRANSFORMER. CLASS 2 UL LISTED, 48 VA (MIN.) AT 24 VAC, PLATE MOUNTED.

### START-UP MODE

The self-adaptive sensor automatically adapts to the surrounding environment when 24 volt supply is activated. No manual adjustments are required. Start-up mode will take approximately one (1) minute 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., wall or stall door), it must be removed from the view of the sensor. Then, either disconnect the 24 volt supply for twenty (20) seconds or more, or push the manual override button for more than twenty (20) seconds in closet set-up. Reconnect the 24 VAC power supply at the transformer or the fuse box. When the start-up cycle is complete, there will be no light visible in the sensor window.

**NOTE:** If the 24 volt power supply is ever interrupted for longer than twenty (20) seconds, the start-up mode automatically begins when power is restored.

Incorrect wiring or a short in the 24 volt power supply is indicated by a continuous warning signal seen in the sensor window. The visible red light flashes an "SOS" signal: three (3) slow, three (3) fast, three (3) slow flashes.



### START-UP MODE (FOR PREVIOUS SENSOR)

**NOTE:** It is important that only permanent targets are present at this time.

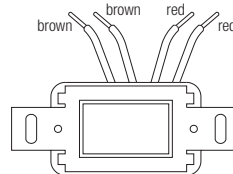
The self-adaptive sensor automatically adjusts to the surrounding environment when the 24 volt supply is activated. No manual adjustment is required. The start-up cycle completes in approximately five (5) minutes. A continuous red light visible in the sensor window indicates the start-up mode. If the red light flashes, the sensor detects 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 a 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 complete, the red light will no longer be visible in the sensor window.

**NOTE:** If the 24 volt power supply is ever interrupted for longer than fifteen (15) seconds, the start-up mode begins automatically when power is restored.

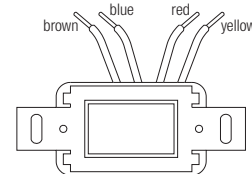
Incorrect wiring or a short in the 24 volt power supply will initiate a warning signal in the sensor window. The visible light flashes a continuous "S-O-S" signal: three (3) fast, three (3) slow, and three (3) fast flashes.

### EL-150 Wiring History for 4-wire and 3-wire sensors

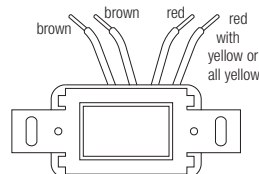
Release date 03/09/78



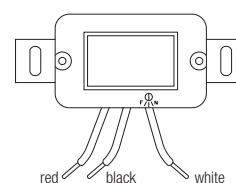
Release date 02/02/87



Release date 08/11/83



Release date 12/12/90



## Optima® Flushometers

### TROUBLESHOOTING GUIDE

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

#### Urinals (EL-1500 Sensor)

When the sensor detects a user, a slow flashing red light appears in the sensor window. After eight (8) to ten (10) seconds, the light flashes rapidly to indicate that the sensor is armed. When the sensor no longer detects a user, the sensor immediately activates the solenoid valve after a 0.5 second delay.

#### Water Closets (EL-1500-L Sensor)

Detection and activation are the same as for the urinal EL-1500 sensor (ABOVE) except when the sensor no longer detects an user, the sensor activates the solenoid valve after a three (3) second delay.

The EL-1500 urinal and EL-1500-L closet self-adaptive sensors are equipped with a "Sentinel Flush" feature. These units automatically activate the solenoid every twenty-four (24) hours after the last user.

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

- No power is being supplied to sensor. Ensure that the main power is turned "ON". Check transformer, leads and connections. Repair or replace as necessary.
- EL-1500/EL-1500-L sensor is not operating. Replace sensor.

#### 2. Valve does not function (red light flashes when user steps in front of sensor).

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

- No water is being supplied to the valve. Make certain that water supply is turned "ON" and the control stop is open.
- EL-128-A cartridge is fouled or jammed. 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.**

- EL-163-A solenoid shaft assembly is fouled or jammed. 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) fast flashes, three (3) slow flashes then three (3) fast flashes ("S-O-S") and continues to repeat this cycle even when user steps out of the sensor's detection range.**

- EL-1500/EL-1500-L sensor wiring connections are incorrect. 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.
- Wiring to sensor is ground shorted. Find short in wiring circuit and correct.
- EL-165-2 solenoid coil is burnt out or coil is not connected to solenoid plunger shaft. Reinstall or replace coil as necessary.

#### 3. Range too short.

- Power down unit for 30 seconds. Power up. Wait six minutes for calibration.
- If reset does not work, replace.

#### 4. Volume of water is insufficient to adequately siphon fixture.

- Control stop is not open wide enough. Adjust control stop for desired water delivery.
- Low consumption unit is installed on water saver or conventional fixture. Replace diaphragm component parts of valve with kit that corresponds to appropriate flush volume of fixture.
- Inadequate water volume or pressure available from supply. Increase pressure or supply (flow rate) to the valve. Consult factory for assistance.

#### 5. Length of flush is too long (long flushing) or valve fails to shut off.

- Water saver valve is installed on low consumption fixture. Replace diaphragm component parts of valve with kit that corresponds to appropriate flush volume of fixture.
- Relief valve in diaphragm is not seated properly or by-pass hole in diaphragm is clogged. Disassemble inside diaphragm component parts and wash parts thoroughly. Replace worn parts if necessary.

#### 6. Water splashes from fixture.

- Supply flow rate is more than necessary. Adjust control stop to meet flow rate required for proper cleansing of the fixture.
- Closet valve is installed on urinal fixture. Replace closet diaphragm component parts with proper urinal kit (inside diaphragm assembly or inside parts kit).

### CARE AND CLEANING INSTRUCTIONS

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

When cleaning the bathroom tile, protect the flushometer from any splattering of cleaner. Acids and cleaning fluids can discolor or remove chrome plating.

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

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