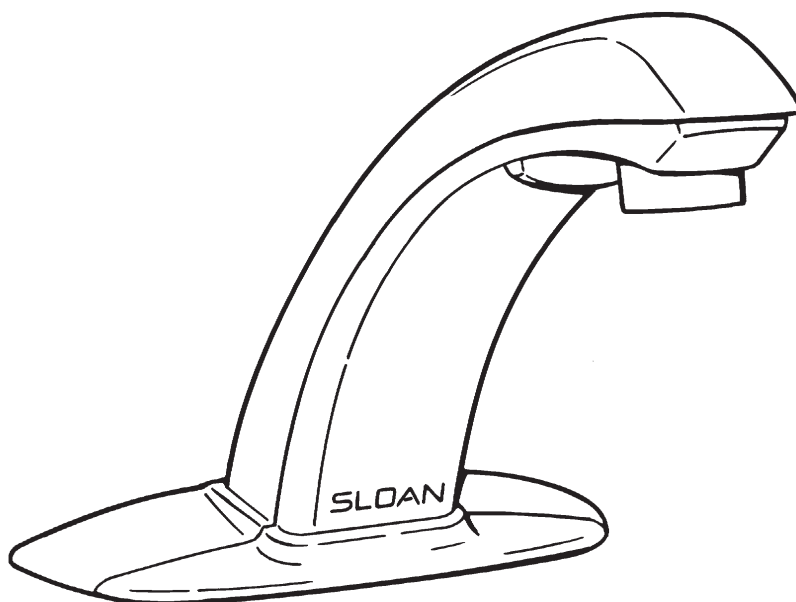


# SLOAN®

## INSTALLATION INSTRUCTIONS OPTIMA™ SYSTEMS SENSOR OPERATED LAVATORY FAUCET



### ETF-80 Sensor Operated Lavatory Faucet

Includes Instructions for  
Installation of Optional Back  
Checks

Made in the U.S.A.

 Certified

 Listed

A112.18.1M

Installation of the Sloan OPTIMA™ ETF-80 Faucet makes wash-up totally "hands-free" providing the ultimate in sanitary protection and automatic operation. The OPTIMA ETF-80 faucet uses infrared technology to sense the user's presence and turn on a water supply that has been pre-mixed to the desired water temperature. When the user's hands are removed from the invisible beam of light, the water supply automatically turns off.

The unique modular plug-in system is designed for ease of installation on new as well as retrofit applications. Sloan ETF-80 sensor operated faucets come complete with an integral faucet and sensor assembly, trim plate, 24 VAC

transformer, solenoid valve, plug-in connection box (control module) and all mounting hardware. Also available are back checks, a grid strainer and a mixing valve which can be supplied as optional equipment. 3/8 inch copper supply tube to be supplied by the installer.

The following instructions will serve as a guide when installing the Sloan OPTIMA ETF-80 sensor operated faucet. As always, good safety practices and care are recommended when installing your new faucet. If further assistance is required, contact your nearest Sloan Representative office.

### LIMITED WARRANTY

Sloan Valve Company warrants its ETF-80 Faucets 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 decorative finishes) from date of purchase. During this period, Sloan Valve Company will, at its option, repair or replace any part or parts which prove to be thus defective if returned to Sloan Valve Company, at customer's cost, and this shall be the sole remedy available under this warranty. No claims will be allowed for labor, transportation or other incidental costs. This warranty extends only to persons or organizations who purchase Sloan Valve Company's products directly from Sloan Valve Company for purpose of resale.

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

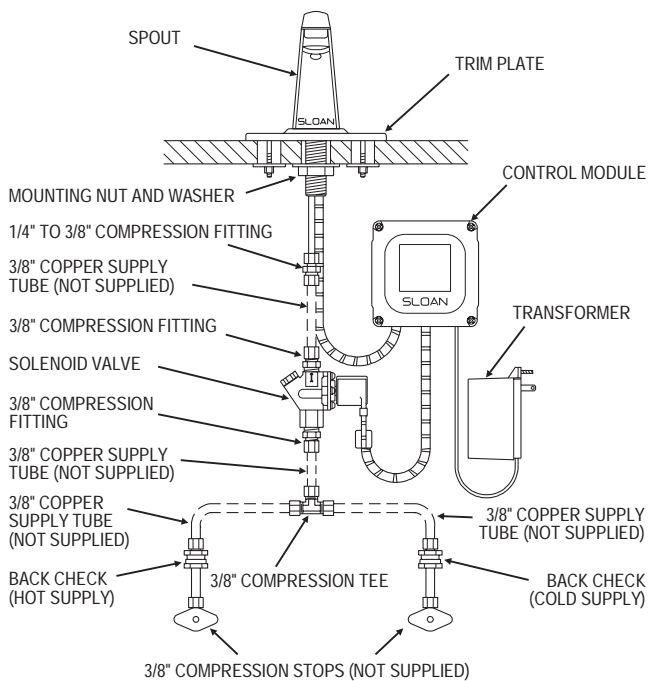
## FAUCET ROUGH-IN — Figure 1

### ETF-80 FAUCET WITH HOT AND COLD WATER SUPPLY

MODEL ETF-80-A — .5 gpm (1.9 Lpm)

MODEL ETF-80-B — 2.2 gpm (8.3 Lpm)

MODEL ETF-80-C — 2.2 gpm (8.3 Lpm) Laminar Flow



### ETF-80 FAUCET WITH SINGLE LINE WATER SUPPLY

MODEL ETF-80-A — .5 gpm (1.9 Lpm)

MODEL ETF-80-B — 2.2 gpm (8.3 Lpm)

MODEL ETF-80-C — 2.2 gpm (8.3 Lpm) Laminar Flow

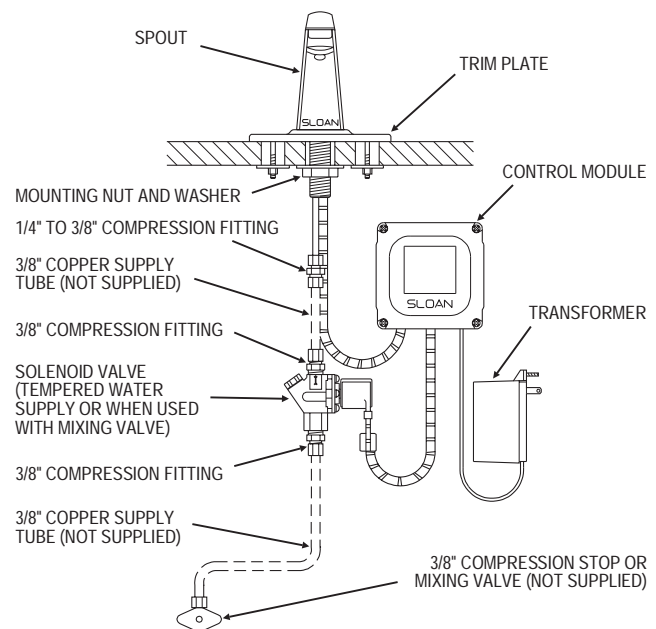


Figure 1

## PRIOR TO INSTALLATION

Prior to installing the Sloan ETF-80 Faucet, install the items listed below. Also, refer to Figure 1.

- **When Using Plug-In Transformer** — Install electrical receptacle for plug-in transformer — 120 VAC, 2 amp service for each ETF-233 (24 VAC, 35 VA) plug-in transformer used.
- **When Using Box Mount Transformer** — Install electrical wiring to the transformer location — 120 VAC, 2 amp service for each EL-248-40 (24 VAC, 40 VA) transformer used.
- Lavatory/sink
- Drain line
- Hot and cold water supply lines or tempered water supply line

### Multiple Faucets

Multiple faucets can be powered by a single transformer, provided that the transformer has been properly sized. Allow a minimum of 15 VA of current rating for each solenoid valve used. Refer to "Step 5 — Transformer" for further information.

### Mixing Valve

When installing the faucet with the Sloan MIX-25-A or MIX-30-A mixing valve, these Installation Instructions AND the Installation Instructions packaged with the mixing valve MUST be followed.

### 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.
- A 24 VAC STEP-DOWN TRANSFORMER MUST BE USED.
- USE APPROPRIATE PRECAUTIONS WHILE CONNECTING TRANSFORMER TO 120 VAC POWER SOURCE.
- DO NOT PLUG TRANSFORMER INTO POWER SOURCE (RECEPTACLE) UNTIL ALL WIRING IS COMPLETED. ALLOWING 24 VAC TRANSFORMER WIRES TO TOUCH OR SHORT WHILE POWER IS BEING SUPPLIED WILL CAUSE PERMANENT DAMAGE TO THE TRANSFORMER AND CIRCUIT CONTROL MODULE.
- FLUSH ALL WATER LINES UNTIL WATER IS CLEAR BEFORE CONNECTING SOLENOID TO SUPPLY STOPS.

## TOOLS REQUIRED FOR INSTALLATION OF ETF-80 FAUCET

- Open end wrenches for the following hex sizes (inches): 1, 5/8, 9/16 and 1/2
- Basin wrench
- Slotted screwdriver
- Phillips head screwdriver
- Pliers
- Wire stripper/crimping tool

## INSTALLATION OF ETF-80 FAUCET

The Sloan ETF-80 sensor operated faucet can be supplied with two back checks. When connecting the faucet to a hot and cold water supply, two back checks are required as shown in Figure 1. Water temperature can be controlled by adjusting the supply stops if the optional Sloan mixing valve is not purchased. When connecting the faucet to a single line water supply or a pre-tempered water supply, a back check is not required.

Back Checks are required if the faucet is being installed with a Sloan MIX-25-A or MIX-30-A mixing valve.

### Step 1 — Install Back Checks (Option) (Figure 2)

The Sloan Back Check is designed to install on a 3/8" Compression Stop. If the existing Stop is different, the Stop may require replacement or additional fittings, not supplied by Sloan, to connect the Back Checks to the hot and cold water supply lines.

After flushing the water supply lines through the Stops, use a compression nut and compression sleeve to connect inlet end of Back Check to the Supply Stop. Tighten Securely.

**Note:** Failure to install the Back Checks can result in a cross flow connection when the faucet is in the off position and the supply stops are open. This can cause a migration of hot water into the cold water supply, or cold water into the hot water supply, if the pressure between the two lines is slightly different. Most plumbing codes require that the Back Checks be used to prevent this occurrence.

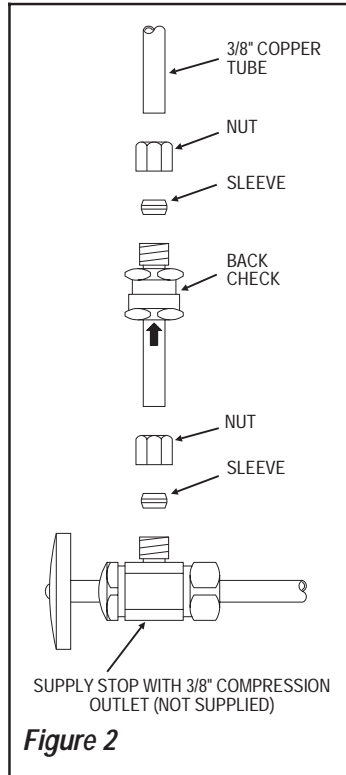


Figure 2

### Step 2 — Install Faucet Spout and Trim Plate (Figure 3)

**Note:** If installing with the MIX-25-A Mixing Valve, install Mixing Valve and Trim Plate prior to installing Faucet. Refer to the "Installation Instructions for MIX-25-A and MIX-30-A Mixing Valves" supplied with the Sloan mixing valve.

Using a pliers, insert Roll Pin into base of Faucet.

Slide Rubber Faucet Gasket onto faucet shank making certain that hole in Gasket is positioned over Roll Pin in base of Faucet.

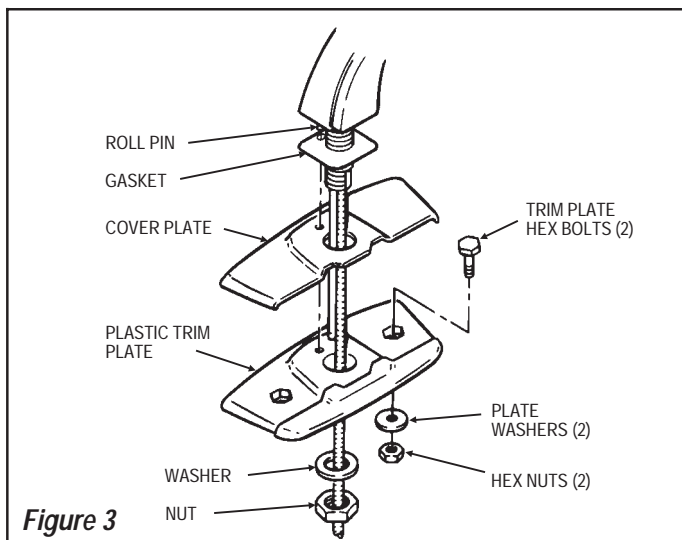


Figure 3

Insert Hex Bolts into black plastic Trim Plate (when installing on sink with a center hole only, see note following). Place chrome Cover Plate over black Trim Plate. Slide Trim Plate assembly onto Faucet Shank aligning Roll Pin with hole of Trim Plate assembly. Apply plumber's putty to underside of Trim Plate.

Insert Faucet Shank and Trim Plate Bolts through the 4 inch (102 mm) spread deck holes. Secure with large Plate Washers and Nuts supplied. Secure Faucet to deck using the Washer and Nut supplied.

**Note:** If the Trim Plate is used on a sink with a center hole only, the Trim Plate Bolts are not used. Apply plumber's putty to underside of Trim Plate to prevent Faucet from rotating.

### Step 3 — Install Solenoid Valve (Figures 4 and 5)

Apply thread sealant or Teflon tape to threads of 3/8 inch Compression Fittings. Install 3/8 inch Compression Fitting to inlet and outlet side of Solenoid Valve.

**Note:** Flow direction of Solenoid Valve is indicated by an arrow on the Valve Body.

**Important:** When applying any form of sealant to fitting threads, leave the first two starter threads free of sealant to prevent the possibility of sealant entering into the waterway and damaging system components.

Install the 1/4 inch end of the 1/4 to 3/8 inch Compression Fitting onto the Spout's copper Supply Tube (refer to Figure 5).

Connect 3/8 inch O.D. supply tube (furnished by installer) between Compression Fitting on Solenoid Valve and Compression Fitting on the Faucet Supply Tube.

**Important:** DO NOT install solenoid valve so that the solenoid coil is facing down. The solenoid valve may be oriented so that the solenoid coil faces sideways (vertically); however, optimum performance is obtained when solenoid valve is in the horizontal position with the solenoid coil facing up as shown in Figure 4.

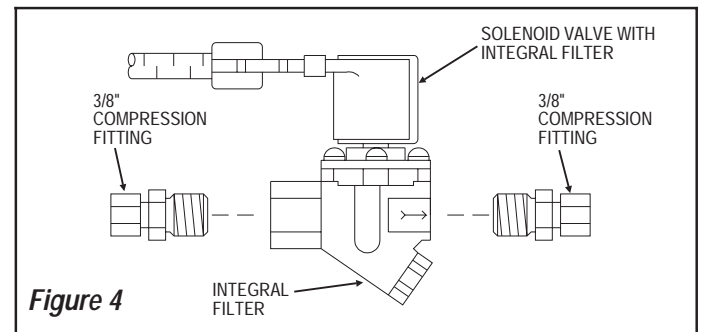


Figure 4

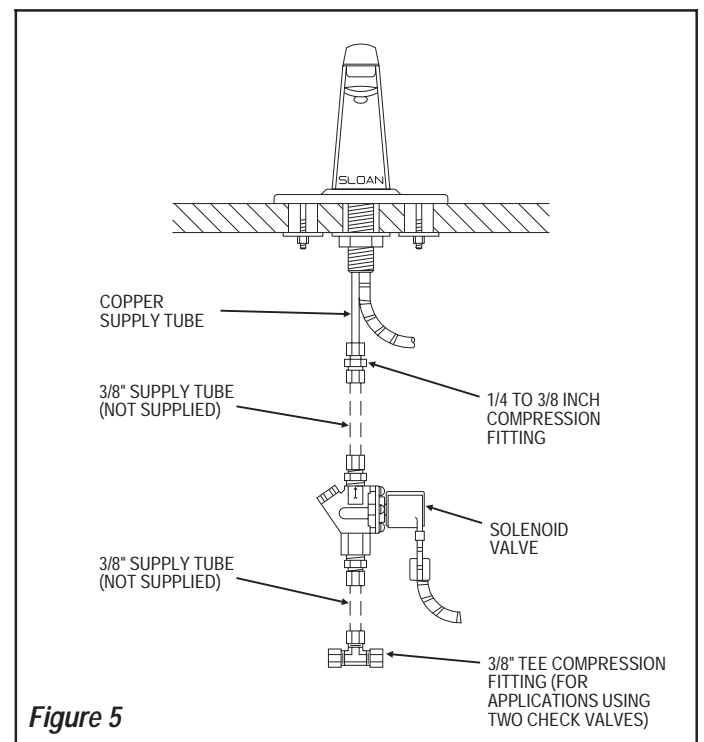


Figure 5

## Step 4 — Connect Supply Line(s) (Figure 1)

*Note: If installing the Sloan mixing valve, refer to the "Installation Instructions for MIX-25-A and MIX-30-A Mixing Valves" supplied with the Sloan mixing valve.*

Flush supply line(s) of any debris.

### FOR HOT AND COLD WATER SUPPLY APPLICATIONS

When connecting the Faucet to a hot and cold water supply, two Back Checks are required as shown in Figure 1.

Insert tube end of Back Checks into 3/8 inch Compression Fitting of hot and cold Supply Stops. (Supply Stops furnished by installer.) Tighten Compression Fittings securely.

Install a 3/8 inch copper Supply Tube between each Back Check and the Compression Tee Fitting supplied (refer to Figure 1).

Install a 3/8 inch copper Supply Tube between Compression Tee Fitting and inlet side of Solenoid Valve.

### FOR SINGLE LINE WATER SUPPLY APPLICATIONS

When connecting the Faucet to a single line water supply or a pre-tempered water supply, a Back Check is not required.

Install a 3/8" copper Supply Tube between the Supply Stop and inlet side of Solenoid Valve. (Supply Stops furnished by installer.)

Refer to Figure 1 — Faucet Rough-In for Additional Information.

## Step 5 — Transformer

### Multiple Faucets

Multiple faucets can be powered by a single transformer, provided that the transformer has been properly sized. Allow a minimum of 15 VA of current rating for each solenoid valve used. Refer to the following example to determine the required current rating for 3 single solenoid OPTIMA faucets.

**Example:**

Total number of OPTIMA faucets	3
Total number of solenoid valves	3
Multiply by current rating	15 VA
Minimum current rating of required transformer	45 VA

### Transformers Supplied with the ETF-80 Faucet

Standard Plug-In *	ETF-233	120 VAC	35 VA
Standard Box Mount	EL-248-40	120 VAC	40 VA

\* In Canada, use ETF-416 (120 VAC, 35 VA).

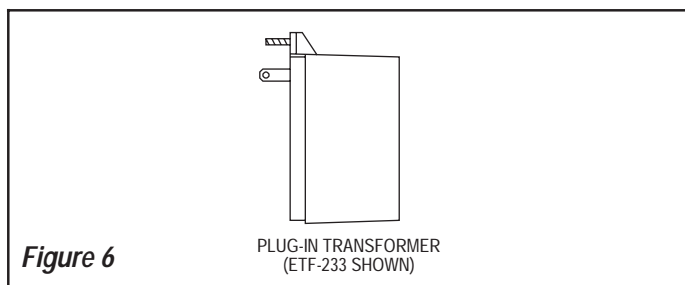
### Optional Transformers Available from Sloan

Box Mount	EL-154	120 VAC	50 VA
Foot Mount	EL-208	120 VAC	100 VA
Box Mount	EL-342	240 VAC	50 VA

All Sloan transformers are 50/60 Hz.

Other transformers may be used (not supplied by Sloan) provided they meet UL requirements for Class 2 transformers.

### PLUG-IN TRANSFORMER (Figures 6, 7 and 8)

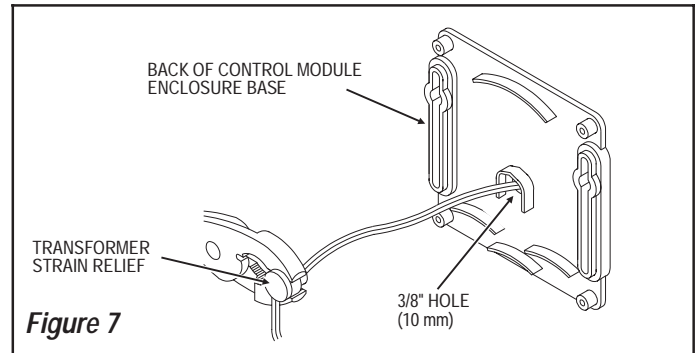


**Important: DO NOT plug Transformer into receptacle until all wiring has been completed.**

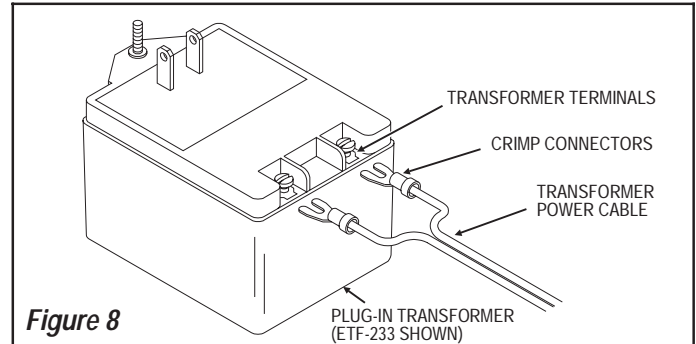
This type of Transformer is designed to be plugged into a 120 VAC wall receptacle. The Transformer is supplied with a 10 foot Cable; however, this Cable can and should be shortened to meet installation requirements.

Separate and strip one end of Transformer Power Cable approximately 3/16 to 1/4 inch (5 to 6 mm). Install Transformer Strain Relief 3 inches (76 mm) from stripped end of Power Cable. Squeeze Strain Relief with a pliers and insert Power Cable and Strain Relief into 3/8 inch (10 mm) hole at back of Control Module as shown in Figure 7. Always install right angle Strain Relief so that Power Cable enters the Control Module from the bottom. Connect Power Cable to Terminal Block on Connector Board as shown in Figure 10.

**Important: Twist stranded ends of Power Cable before inserting into Terminal Block. Fraying of Stranded Power Cable Wire can cause a short and damage the Control Module and Transformer when powered.**



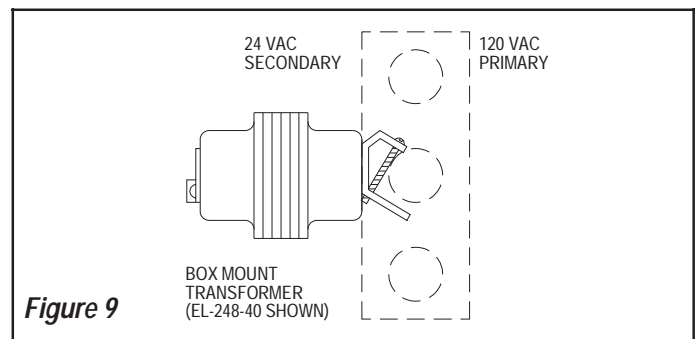
Install Crimp Connectors to opposite end of Transformer Power Cable and connect Power Cable ends to Transformer Terminals as shown in Figure 8.



### BOX MOUNT TRANSFORMER (Figure 9)

**Important: DO NOT supply power to primary side of Transformer until all wiring has been completed.**

This type of Transformer is designed to be mounted on a metal electrical junction box (supplied by others). ("J" box should be mounted inside chase wall or above ceiling.) Install Transformer within 50 feet (15.24 meters) of Faucet. 18 gauge wire is recommended.



Run wires from secondary side of Transformer to 3/8 inch (10 mm) hole at back of Control Module Enclosure. If necessary, wires can be run through wall and then inserted through hole in back of Control Module Enclosure.

**Step 6 — Mount Control Module to Wall (Figures 1 and 10)**

Install the Control Module in an appropriate location as shown in Figure 1. Control Module must be installed so that all cables enter from the bottom of the unit. When installed, Cables from the Spout and Solenoid Valve to the Control Module should have some slack.

Mount Control Module to wall using Mounting Screws and Plastic Anchors.

**EXTENSION CABLES**

Extension Cables are available as an option from Sloan to allow for installing the Control Module remote from the Faucet Spout and Solenoid Valve. Cables can be supplied in 3 foot (.9 meter), 6 foot (1.8 meter) and 9 foot (2.7 meter) lengths.

**Step 7 — Control Module Connection (Figures 10 thru 12)**

Route Cables from Solenoid Valve and Spout to the location where Control Module is mounted (usually centered between Spout and Solenoid Valve to ensure enough slack in all Cables).

Insert Solenoid Valve Connector into a Modular Receptacle on Connector Board. Solenoid Receptacles are interchangeable allowing Connectors to be inserted into either Receptacle. Insert Locking Connector from Faucet Spout into mating Receptacle on Connector Board. Allow 3 to 4 inches (76 to 102 mm) of Cable to extend into the Control Module.

Insert each Conduit Cable into a strain relief slot in the Control Module.

Refer to Figure 1 – Faucet Rough-In for additional information.

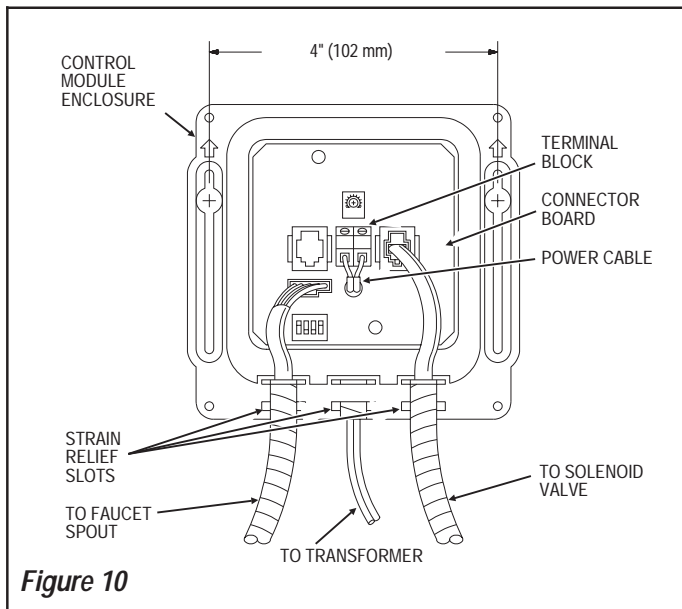


Figure 10

**Step 8 — Start-Up**

Supply power to transformer.

**Note:** The Control Module is equipped with two LED lights. When the Board is being powered by the Transformer, one LED will illuminate green. When the Sensor is activated, this LED will change to red. A second red LED illuminates when the Solenoid Valve is activated. Refer to Figure 11.

Open Supply Stops. Activate Faucet for 30 seconds by placing hands under Sensor. The Solenoid Valve should “click” and water should flow from the Spout. If this does not occur, refer to the Troubleshooting section of this instruction manual.

**Step 9 – Range Adjustment**

The OPTIMA ETF-80 Faucet is factory set to operate when hands are placed 4

to 5 inches (102 to 127 mm) below the spray head. This range should be satisfactory for most installations.

If range adjustment is required, refer to the following range adjustment procedures.

**TO MAKE A RANGE ADJUSTMENT**

The Range Potentiometer and Dip Switches are located in the Control Module as shown in Figure 11.

**Important:** Range Potentiometer adjustment screw rotates only 3/4 of a turn; DO NOT over-rotate.

Make certain that Dip Switch number 4 is in the DOWN position. Adjust Range Potentiometer clockwise until green (power ON) indicator LED turns red (Faucet is now picking up sink). Adjust Range Potentiometer back counterclockwise until red LED returns to green. Range is now at maximum.

In the event the LED remains red with the adjustment at minimum (counterclockwise) setting, the sensitivity can be further reduced by switching Dip Switch number 4 to the ON (UP) position.

Cycle Faucet several times to assure that range as adjusted will not inadvertently pick up IR reflection in lavatory. If IR reflection occurs (green LED will flicker red), adjust Range Potentiometer counterclockwise very slightly and again cycle Faucet.

Repeat range adjustment counterclockwise until length of range is at bowl rim of lavatory (plus or minus 1 inch (25 mm)).

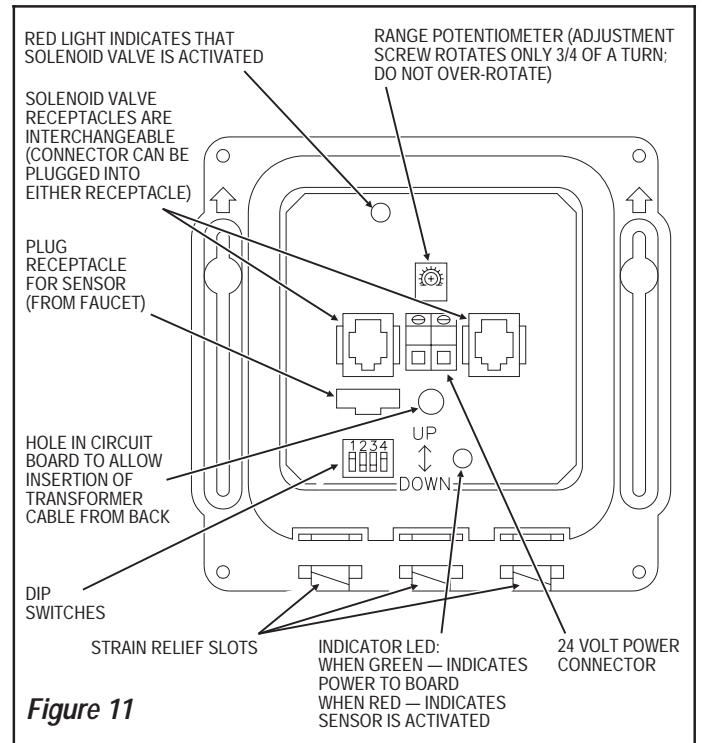


Figure 11

**Time Out Adjustment**

The Faucet Time Out Setting determines the maximum time the Faucet will run upon continuous activation. This timing can be changed to meet individual application requirements.

Refer to label on cover of Control Module along with the following instructions to set the desired Time Out. The Dip Switches used to set the Time Out are located in the Control Module as shown in Figure 11.

Set the Time Out by configuring the number 1, 2 and 3 Dip Switches as shown in Table 1 on the following page.

**Table 1 — Time Out Settings**

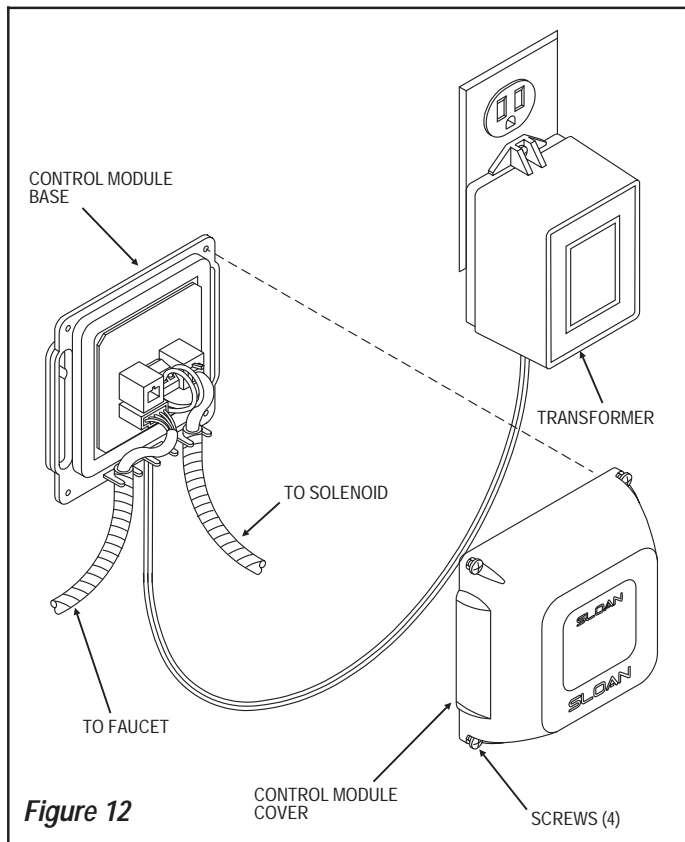
Time Out	Dip Switch Setting		
	Switch # 1	Switch # 2	Switch # 3
3 SECONDS	UP	UP	DOWN
6 SECONDS	DOWN	DOWN	UP
12 SECONDS	UP	DOWN	UP
30 SECONDS	UP	DOWN	DOWN
45 SECONDS	UP	UP	UP
1 MINUTE	DOWN	UP	UP
3 MINUTES	DOWN	DOWN	DOWN
20 MINUTES	DOWN	UP	DOWN

Unless otherwise specified, all ETF-80 Faucets leave the factory set with a 30 second Time Out.

**Note:** The position of Dip Switch number 4 (range enhancer setting) does not affect Faucet Time Outs.

Push Cables into slots at the bottom of the Circuit Box.

Install Control Module cover using Screws provided (Figure 12).



**Figure 12**

**OPERATION**

1. A continuous invisible beam of infrared light is emitted from the OPTIMA sensor located on the throat of the lavatory faucet.



2. As the user's hands enter the beam's effective range (beneath the spray head), the beam is reflected back into the sensor receiver and activates the solenoid valve allowing tempered water to flow from the faucet into the sink. Water will flow until the hands are removed or until the faucet reaches its automatic time out limit setting.



3. When hands are moved away from the OPTIMA sensor, the loss of reflected light initiates an electrical signal that deactivates the solenoid valve, shutting off the water flow. The circuit then automatically resets and is ready for the next user.



**CARE AND CLEANING OF CHROME AND SPECIAL FINISHES**

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

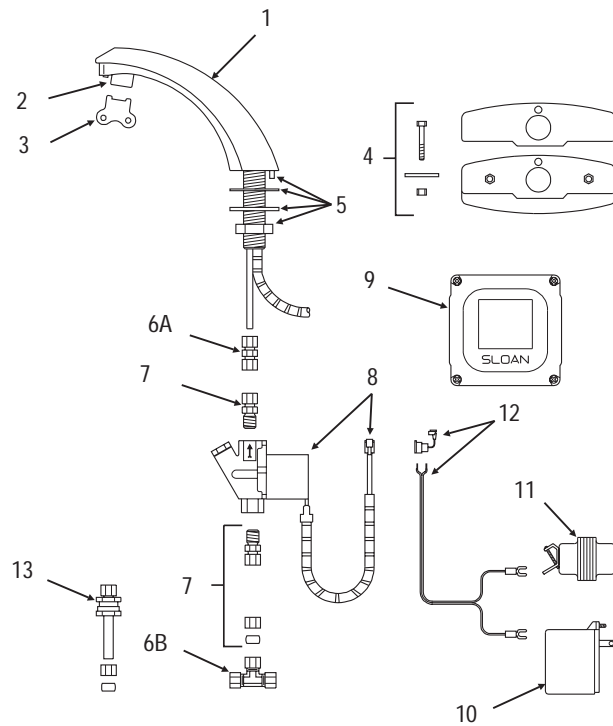
While cleaning the bathroom tile, the faucet should be protected from any splattering of cleaner. Acids and cleaning fluids will discolor or remove chrome plating.

## TROUBLESHOOTING GUIDE

PROBLEM	POSSIBLE CAUSE/SOLUTION
<b>No Water when Activated</b> Open control module and check diagnostic lights.	<ul style="list-style-type: none"><li>• <b>If no lights are illuminated:</b><ol style="list-style-type: none"><li>1. Make certain that main power is on. Check receptacle, transformer, solenoid, leads and connections.</li><li>2. Control module circuit board is faulty; replace.</li></ol></li><li>• <b>If green LED is illuminated and turns red when hands are placed under faucet:</b><ol style="list-style-type: none"><li>1. Check supply stop(s); open if closed.</li><li>2. Debris in filter; remove, clean and reinstall.</li></ol></li><li>• <b>If green/red LED is red and red LED does not illuminate:</b><ol style="list-style-type: none"><li>1. Sensor range too long; picking up bottom of sink. Reduce range.</li><li>2. Sensor is faulty; replace sensor module.</li></ol></li><li>• <b>If green LED is illuminated and does not turn red when hands are placed under faucet:</b><ol style="list-style-type: none"><li>1. Range too short; increase range.</li><li>2. Sensor is faulty; replace sensor module.</li></ol></li></ul>
<b>Very Low Flow or Slow Dribble</b>	<ul style="list-style-type: none"><li>• Check supply stop(s); open if closed.</li><li>• Disassemble solenoid; clean and flush.</li><li>• Debris in filter; remove, clean and reinstall.</li><li>• Debris in spray head; remove, clean and reinstall.</li></ul>
<b>False Triggering (Unit Goes On by Itself)</b>	<ul style="list-style-type: none"><li>• Range too long; decrease detection zone (factory set 4 inches). Check surroundings for factors that can contribute to the range; for example, bright lights, highly reflective surfaces, sunlight, etc.</li></ul>
<b>Continues to Run (Even After Power to Faucet Has Been Disconnected)</b>	<ul style="list-style-type: none"><li>• Solenoid valve installed backwards.</li><li>• Debris in solenoid, won't close properly; remove operator and clean. Reassemble in the same manner.</li></ul>

If further assistance is required, please contact the Sloan Valve Company Installation/Engineering Department at 847/671-4300.

## PARTS LIST



Item No.	Part No.	Description
1	ETF-250-A	Faucet/Sensor Assembly (ETF-80)
	ETF-398-A	Sensor Module Only
2	ETF-234	Spray Head, 1/2 gpm (1.9 Lpm)
	ETF-236	Spray Head, 2.2 gpm (8.3 Lpm)
	ETF-237	Spray Head, 2.2 gpm (8.3 Lpm), Laminar Flow
3	ETF-435	Key (Not Required for ETF-237)
4	ETF-295-A	Trim Plate Kit
5	ETF-290	Faucet Mounting Kit, Includes Roll Pin, Rubber Washer, Mounting Washer and Mounting Nut
6A	ETF-297	Straight Compression Fitting Connector
6B	ETF-259	Tee Compression Fitting
7	ETF-437-A	Assembly Kit, Includes: Compression Fittings (2), Compression Nut (1), Compression Sleeve (1)
8	ETF-370-A	Solenoid Valve, 24 VAC, Includes Wire Harness
9	ETF-450-A	Control Module Assembly
10	ETF-233	Plug-In Transformer
11	EL-248-40	Box Mount Transformer
12	ETF-458-A	Power Cable with Strain Relief and Crimp Connectors (Transformer to Control Module)
13	ETF-470-A	Back Check (2 Supplied When Specified with Faucet)

### FAUCET CABLE EXTENSION CORDS

#### Faucet to Control Module

ETF-1005-1	3 Foot (.9 meter) Length
ETF-1005-2	6 Foot (1.8 meter) Length
ETF-1005-3	9 Foot (2.7 meter) Length

#### Solenoid to Control Module

ETF-1003-1	3 Foot (.9 meter) Length
ETF-1003-2	6 Foot (1.8 meter) Length
ETF-1003-3	9 Foot (2.7 meter) Length

### SOLENOID VALVE REPAIR KIT

(Includes Replacement Filter)

ETF-1009-A

### NOTICE

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

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SLOAN VALVE COMPANY • 10500 Seymour Avenue • Franklin Park, IL 60131 • Ph: 847/671-4300 • Fax: 847/671-4380  
<http://www.sloanvalve.com>

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