

INSTALLATION INSTRUCTIONS FOR ELECTRONIC SENSOR ACTIVATED LAVATORY FAUCETS



ETF-660

Sensor Activated Electronic Lavatory Faucet for tempered or hot/cold water operation.



ETF-770

Sensor Activated Electronic Gooseneck Faucet for tempered or hot/cold water operation.



**Compliant to:
ASME A112.18.1 and CSA B125.1**

LIMITED WARRANTY

Sloan Valve Company warrants its ETF-660 and ETF-770 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 special finishes) from date of purchase. During this period, Sloan Valve Company will, at its option, repair or replace any part or parts which prove to be thus defective if returned to Sloan Valve Company, at customer's cost, and this shall be the sole remedy available under this warranty. No claims will be allowed for labor, transportation or other incidental costs. This warranty extends only to persons or organizations who purchase Sloan Valve Company's products directly from Sloan Valve Company for purpose of resale.

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

PRIOR TO INSTALLATION

Prior to installing the Sloan ETF-660 or ETF-770 Faucet, install the items listed below. Also, refer to the Rough-In.

- **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 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 — Install Transformer" for further information.

Mixing Valve

When installing the faucet with a Sloan mixing valve, these Installation Instructions AND the Installation Instructions packaged with the mixing valve MUST be followed.

Important:

- *INSTALL ALL ELECTRICAL WIRING IN ACCORDANCE WITH NATIONAL/LOCAL CODES AND REGULATIONS.*
- *INSTALL ALL PLUMBING 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.

- *KEEP THREAD SEALANT OUT OF YOUR WATERWAY TO PREVENT COMPONENT PART DAMAGE! DO NOT USE ANY SEALANT ON COMPRESSION FITTINGS. FOR THREADED PIPE FITTINGS, DO NOT APPLY SEALANT TO THE FIRST TWO "STARTER" THREADS.*
- *FLUSH ALL WATER LINES UNTIL WATER IS CLEAR BEFORE CONNECTING SOLENOID TO SUPPLY STOPS.*

TOOLS REQUIRED FOR INSTALLATION

- Open end wrenches for hex sizes: 15/16", 13/16", 11/16", 7/8" & 5/8"
- Basin wrench
- Slotted screwdriver, 3/16"
- Slotted screwdriver (supplied)
- Phillips head screwdriver, #2
- Pliers
- Wire stripper/crimping tool

INSTALLATION OF ETF-660 AND ETF-770 FAUCETS

Bak-Chek® Tee Usage

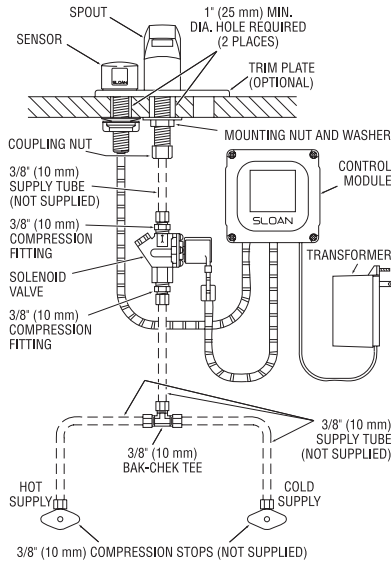
When connecting the Sloan ETF-660 or ETF-770 Faucet to both hot and cold water supplies, a Bak-Chek® Tee is provided and required. Water temperature can be controlled by adjusting the supply stops. Refer to Rough-in illustrations on Page 2.

When connecting the faucet to a single line water supply or a pre-tempered water supply, a Bak-Chek® Tee is not required.

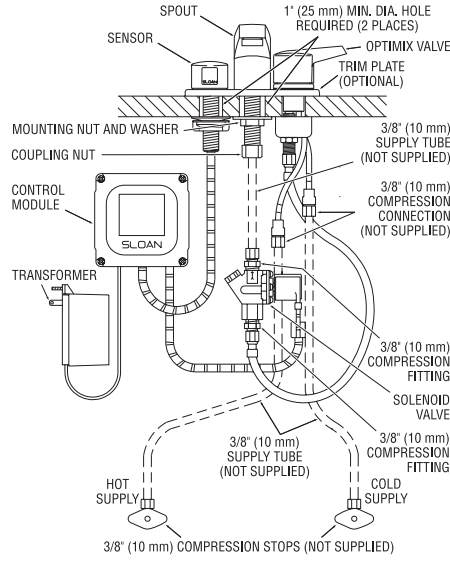
A Bak-Chek® Tee is not required or provided when a Temperature Mixing Valve is included with the faucet.

FAUCET ROUGH-IN

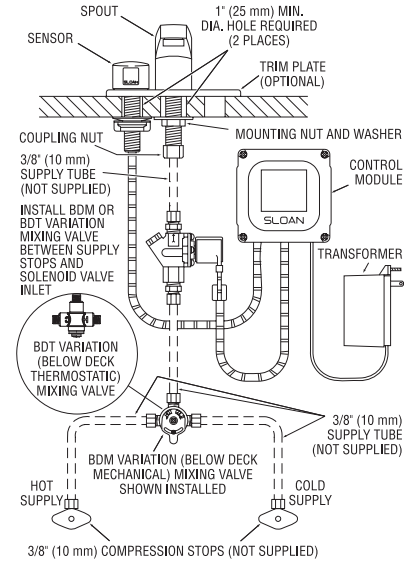
ETF-660 Faucet with Bak-Chek® Tee for Hot and Cold Water Supply (shown with 4" trim plate)



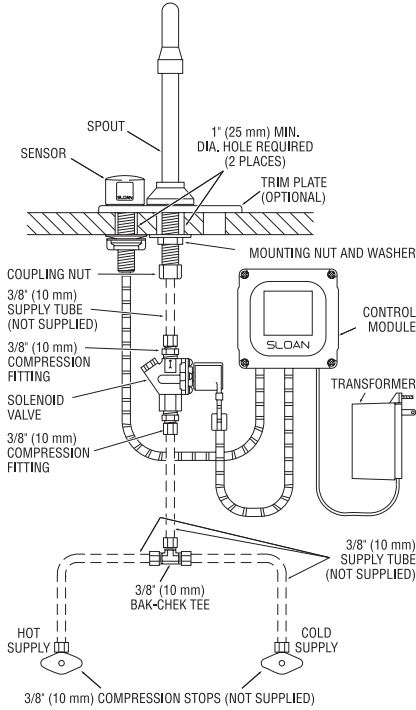
ETF-660 Faucet with ADM Variation Mixing Valve for Hot and Cold Water Supply (shown with 4" trim plate)



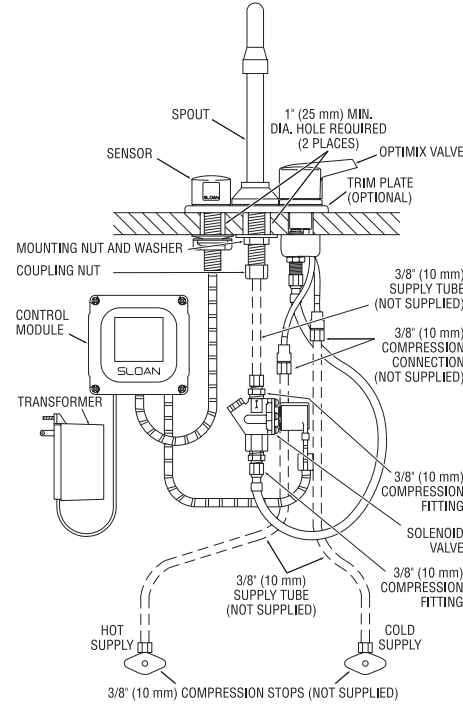
ETF-660 Faucet with BDM and BDT Variation Mixing Valves for Hot and Cold Water Supply (shown with 4" trim plate)



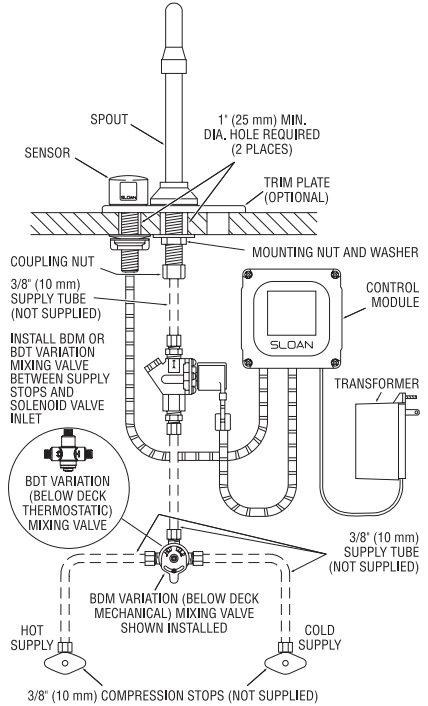
ETF-770 Faucet with Bak-Chek® Tee for Hot and Cold Water Supply (shown with 4" trim plate)



ETF-770 Faucet with ADM Variation Mixing Valve for Hot and Cold Water Supply (shown with 4" trim plate)

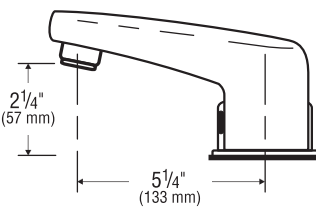


ETF-770 Faucet with BDM and BDT Variation Mixing Valves for Hot and Cold Water Supply (shown with 4" trim plate)

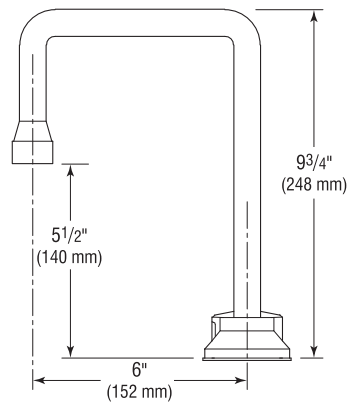


FAUCET SPOUT DIMENSIONS

ETF-660 Lavatory Faucet



ETF-770 Gooseneck Faucet

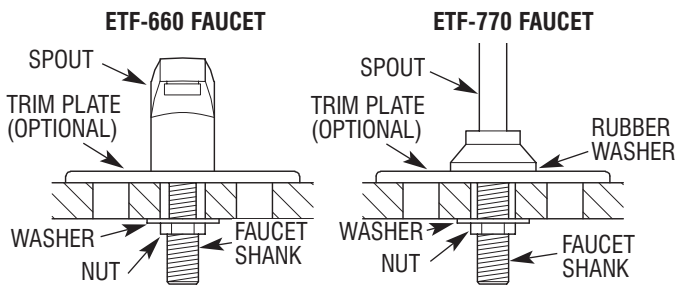


1 Install Faucet

Note: When installing with a Sloan MIX-110-AA Mixing Valve, install Mixing Valve and Trim Plate before installing Faucet. For complete guidelines, refer to the installation instructions supplied with the Sloan Mixing Valve.

A If using a Trim Plate, place spacers between deck and Trim Plate making certain that spacers are aligned with holes in Trim Plate and holes in deck.

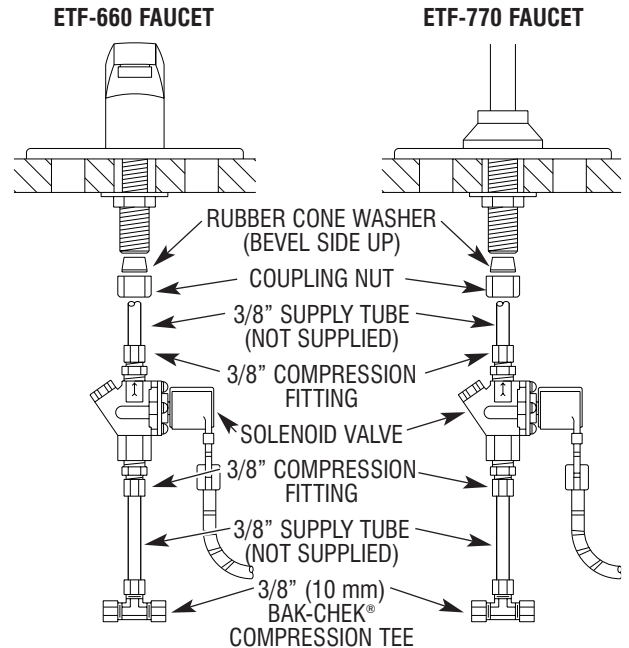
B Apply plumbers putty to underside of Faucet and Trim Plate when used. (For ETF-770 Faucet only, install Rubber Washer onto Faucet Shank.) Insert Faucet Shank through the center deck hole and secure using the Washer and Nut supplied.



2 Install Solenoid Valve

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

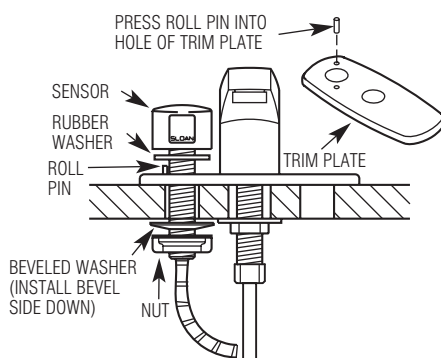
A Connect 3/8 inch O.D. supply tube between Compression Connection on Solenoid Valve and Compression Fitting on Faucet Shank.



3 Mount "ON-Q" OPTIMA Sensor

NOTE: Trim Plate has two Roll Pin holes so that Sensor can be mounted to left or right of Spout.

A When installing the optional Trim Plate, press Roll Pin into hole of Trim Plate as shown below (DO NOT install Roll Pin into the sensor housing). When installing Sensor through deck hole, align mating hole on bottom of Sensor with Roll Pin.



B Slide Rubber Washer onto shaft of Sensor (DO NOT use putty under Sensor). Insert shaft end of Sensor through deck hole at left side of faucet. From underneath deck, install Beveled Washer (bevel side down) and Nut onto shaft of Sensor.

4 Connect Supply Line(s)

Note: If installation includes a Sloan mixing valve, refer to the Installation Instructions supplied with the Sloan mixing valve.

Flush dirt, debris and sediment from the supply line(s).

FOR DUAL LINE HOT AND COLD WATER SUPPLY APPLICATIONS

When connecting the Faucet to a hot and cold water supply, Bak-Chek® Compression Tee is required.

Install a 3/8 inch (10 mm) copper supply tube between Bak-Chek® Compression Tee and hot and cold supply stops. (Supply stops and copper supply tube furnished by installer.) Install a 3/8 inch (10 mm) copper supply tube between Bak-Chek® Compression Tee and inlet side of Solenoid Valve. Tighten Compression Fittings securely.

Note: Failure to install the Bak-Chek® Compression Tee can result in a cross flow connection when the faucet is off and the supply stops are open. If pressure of the hot and cold water supply differ, hot water can migrate into the cold water supply or vice-versa. Most plumbing codes require that the Bak-Chek® be used to prevent this.

FOR SINGLE LINE WATER SUPPLY APPLICATIONS

When connecting the faucet to a single line water supply or per-tempered water supply, a Bak-Chek® Compression Tee is not required.

Install a 3/8 inch (10 mm) copper supply tube between the supply stop and inlet side of Solenoid Valve. (Supply Stop and copper supply tube furnished by installer.) Tighten Compression Fittings securely.

5 Install Transformer

Multiple Faucets

Multiple faucets can be powered by a single transformer that 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 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-600 and ETF-610 Faucets

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-208-40	120 VAC	100 VA
Box Mount	EL-342	240 VAC	50 VA

All Sloan transformers are 50/60 Hz.

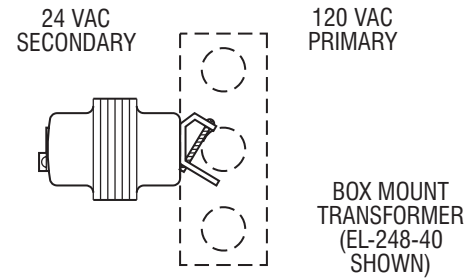
Other transformers (not supplied by Sloan) may be used, provided they meet UL requirements for Class 2 transformers.

Box Mount Transformers

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

Mount Transformer 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.

- A** 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.



Plug-in Transformers

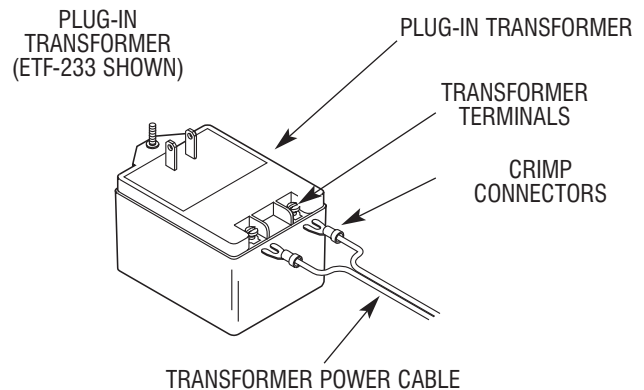
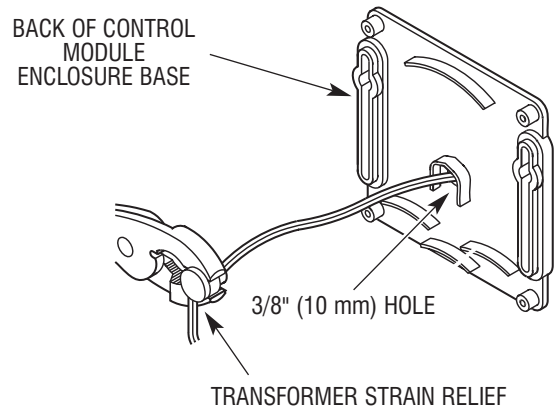
Important: DO NOT plug Transformer into receptacle until all wiring has been completed.

The Transformer is supplied with a 10 foot Cable; however, this Cable can and should be shortened to meet installation requirements.

- A** Strip ends of Transformer Power Cable approximately 3/16 to 1/4 inch (5 to 6 mm).
- B** Install Strain Relief 3 inches (76 mm) from one end of Power Cable.
- C** Insert Power Cable and Strain Relief into hole at back of Control Module. Install right angle Strain Relief so that Power Cable enters the Control Module from the bottom.

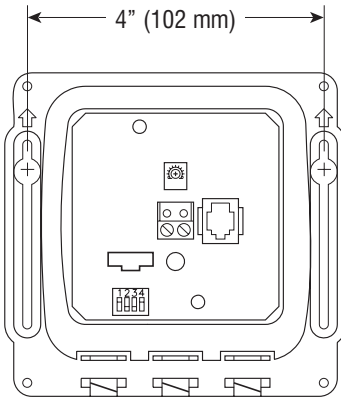
Important: Twist stranded ends of Power Cable before inserting into Terminal Block. Fraying of Stranded Power Cable Wire can cause a short and damage the Control Module and Transformer when powered.

- D** Connect Power Cable to Terminal Block on Connector Board. See Step 6.
- E** Install Crimp Connectors and connect Power Cable ends to Transformer Terminals.



6 Mount Control Module to Wall

- A** Install the Control Module in an appropriate location as shown in Rough-in. 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.
- B** Mount Control Module to wall using Mounting Screws and Plastic Anchors

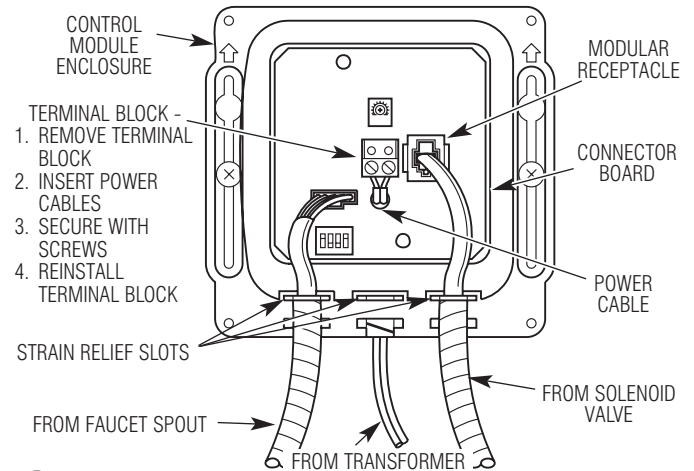


EXTENSION CABLES

Extension Cables are available as an option from Sloan to allow for installing the Control Module remote from the Faucet Spout and Solenoid Valve. Refer to the Parts List on Page 8 for available lengths.

7 Control Module Connection

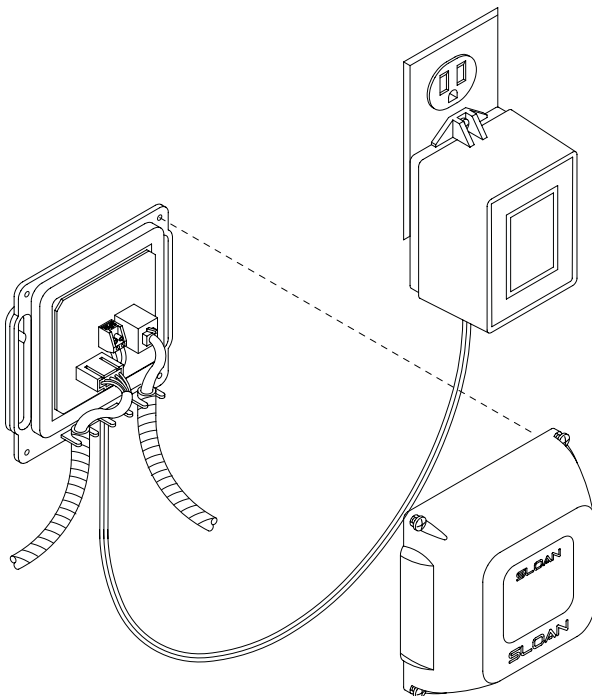
- A** Route Cables from Solenoid Valve and Spout to the Control Module.
- B** Insert Solenoid Valve Connector into the Modular Receptacle on Connector Board.



- C** 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.
- D** Insert each Conduit Cable into a strain relief slot in the Control Module.

8 Plug In Transformer

- A** Plug Transformer into 120 VAC Receptacle.

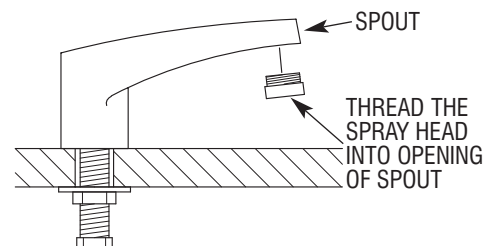


9 Start-up

- A** Supply power to Transformer.

Note: The Control Module is equipped with two LED lights. When power is supplied by the Transformer, one LED will illuminate green. When Sensor is activated, this LED will change to red. A second red LED illuminates when Solenoid Valve is activated.

- B** Open Supply Stops. With Spray Head removed, 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 instructions.



- C** Close Supply Stop(s) and install Spray Head in Spout using the Key provided. Reopen Supply Stop(s), activate Faucet and check for leaks.

9 Range Adjustment

The OPTIMA ETF-660 and ETF-770 Faucets are factory set to operate when hands are placed 8 to 10 inches (203 to 254 mm) from Sensor. 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 Control Module. Refer to illustration in Step 6.

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 UP position. Using the small screwdriver provided, 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.

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" (25 mm)).

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 Table 1 or 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.

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

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-660/ETF-770 Faucets leave the factory set with a 30 second Time Out.

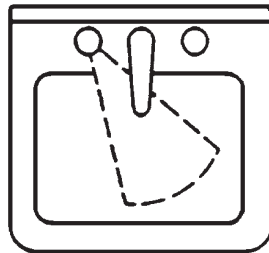
Note: The position of Dip Switch # 4 (range enhancer setting) does not affect Faucet Time Outs.

Push Cables into slots at the bottom of the Control Module.

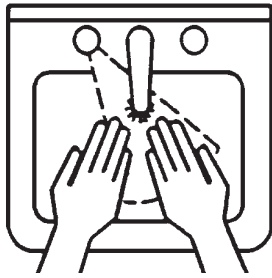
Install Control Module cover using Screws provided. Refer to illustration in Step 7.

Test Faucet Operation

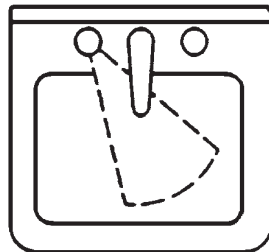
1. A continuous invisible beam of infrared light is emitted from the OPTIMA sensor



2. As the user's hands enter the beam's effective range, 8 to 10 inches (203 to 254 mm), 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 ON-Q® 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 that 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.

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

Troubleshooting Guide

Note: Remove Cover from Control Module to check diagnostic lights.

1. PROBLEM: No water is delivered when Faucet is activated.

INDICATOR: If no LED lights illuminate:

CAUSE: No electricity is being supplied to Faucet.

SOLUTION: Ensure that the main power is turned "ON." Check all Transformer, Sensor, Solenoid and Cable Connections. Make sure that Transformer is supplying 24 VAC (Volts AC). If no voltage is detected, replace Transformer.

CAUSE: There is an electrical system malfunction.

SOLUTION: Reset electrical system. Unplug Sensor Connection. Disconnect power to circuit for ten (10) seconds. Reconnect.

INDICATOR: If the GREEN LED does NOT illuminate when power is reconnected:

CAUSE: There is an electrical system malfunction.

SOLUTION: Reset electrical system. Unplug Sensor Connection. Disconnect power to circuit for ten (10) seconds. Reconnect.

CAUSE: The Control Module circuit is "dead."

SOLUTION: Replace ETF-450-A Control Module.

INDICATOR: If GREEN LED illuminates AND changes to RED when hands are in the Sensor's detection zone AND the RED Solenoid LED illuminates:

CAUSE: Water supply stop(s) may be partially closed.

SOLUTION: Open supply stop(s) completely.

CAUSE: Debris is clogging Solenoid Filter.

SOLUTION: Shut off water supply. Remove, clean and reinstall Solenoid Filter.

INDICATOR: If GREEN LED illuminates AND changes to RED when hands are placed in the Sensor's detection zone AND the RED Solenoid LED flickers with a vibrating/clicking noise heard inside the module:

CAUSE: There is a direct short in the Solenoid or Solenoid Cable.

SOLUTION: Replace with ETF-370-A Solenoid.

INDICATOR: If GREEN/RED LED illuminates AND changes to RED when hands are NOT located in the Sensor's detection zone BUT the RED Solenoid LED (in upper left corner of circuit) does NOT illuminate:

CAUSE: Sensor range is set too long and is detecting the sink.

SOLUTION: Reduce Sensor detection range.

CAUSE: Sensor is faulty.

SOLUTION: Replace Sensor.

INDICATOR: If GREEN LED illuminates BUT does NOT change to RED when hands are placed in the Sensor's detection zone:

CAUSE: Sensor range is set too short.

SOLUTION: Increase Sensor detection range.

CAUSE: Sensor is faulty.

SOLUTION: Replace Sensor.

2. PROBLEM: Sensing Range is too short.

CAUSE: Extended Range Sensitivity is required.

SOLUTION: Dip Switch number 4 should be in the "DOWN" (Extended Range Sensitivity) position. Increase range by adjusting Range Potentiometer clockwise (yellow phillips screw in blue base).

CAUSE: Faucet has Surgical Bend Gooseneck Spout.

SOLUTION: For Long Range use (recommended for Surgical Bend Gooseneck Spout Faucet models), remove Range Jumper from upper right hand corner of Circuit Board. Adjust Range Potentiometer.

3. PROBLEM: Faucet activates by itself (false triggers).

CAUSE: Sensor range is set too long.

SOLUTION: Decrease range by adjusting Range Potentiometer counterclockwise. If necessary, flip Dip Switch number 4 to the "UP" (Reduced Range Sensitivity) position. Check surroundings for factors that contribute to Sensor range detection problems (bright lights, highly reflective surfaces, sunlight, etc.).

4. PROBLEM: Faucet delivers very low flow or just a dribble.

CAUSE: Water supply stop(s) may be partially closed.

SOLUTION: Open supply stop(s) completely.

CAUSE: Debris is clogging Solenoid Filter.

SOLUTION: Shut off water. Remove, clean, and reinstall Solenoid Filter.

CAUSE: Solenoid is worn or faulty.

SOLUTION: Rebuild with ETF-1009-A Solenoid Repair Kit or replace ETF-370-A Solenoid.

CAUSE: Debris is clogging Faucet Aerator or Spray Head.

SOLUTION: Shut off water. Remove Aerator or Spray Head (use Key if required). Clean and reinstall Aerator or Spray Head.

5. PROBLEM: Faucet does not stop delivering water or continues to drip after user is no longer detected (even after power to the Module has been disconnected).

CAUSE: Solenoid Valve is installed backward.

SOLUTION: Disconnect Solenoid. Reconnect Solenoid with water flow toward the Faucet (see arrow on Solenoid).

CAUSE: Debris is clogging Solenoid.

SOLUTION: Remove and clean Solenoid Operator. If necessary, rebuild with ETF-1009-A Repair Kit.

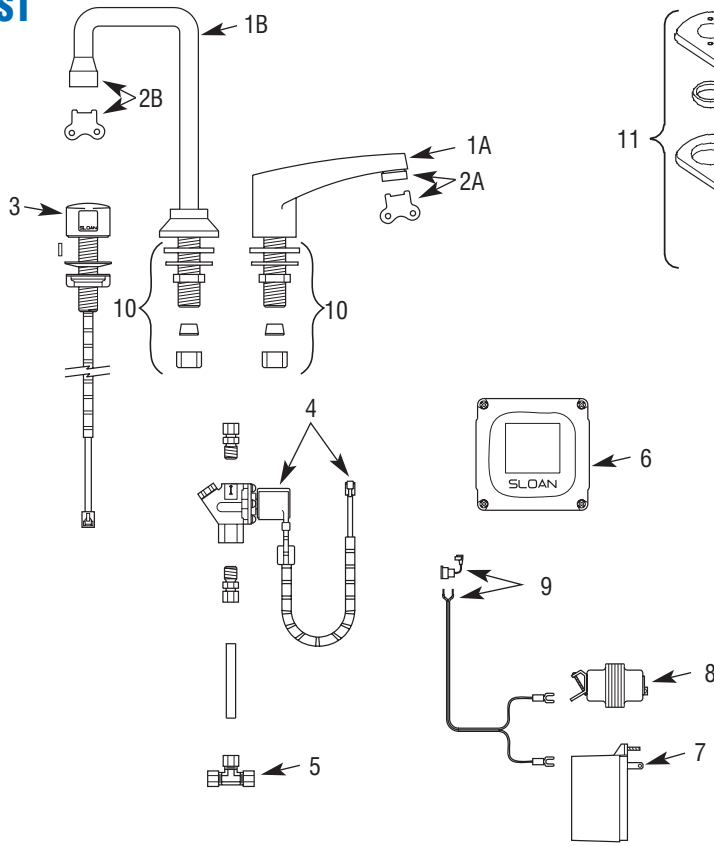
CAUSE: Seat in Solenoid Valve body is damaged or pitted.

SOLUTION: Replace with ETF-370-A Solenoid.

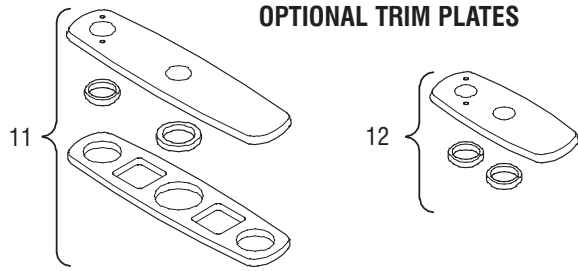
When assistance is required, please contact Sloan Valve Company Installation Engineering Department at:

1-888-SLOAN-14 (1-888-756-2614) OR 1-847-233-2016

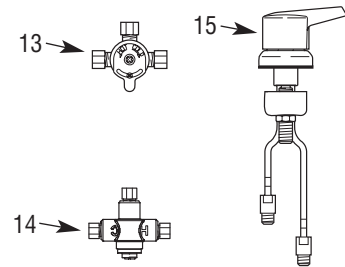
PARTS LIST



OPTIONAL TRIM PLATES



OPTIONAL MIXING VALVES



Item No.	Part No.	Description
COMPONENTS SUPPLIED WITH FAUCET		
1A	ETF-195-A	Lavatory Faucet Assembly (ETF-660)
1B	ETF-261-A	Deck-Mounted Gooseneck Faucet Assembly (ETF-770)
2A	ETF-1023-A	Spray Head (ETF-660), 0.5 gpm (1.9 Lpm), with Key
	ETF-1024-A	Aerator Spray Head (ETF-660), 2.2 gpm (8.3 Lpm), with Key
	ETF-1029-A	Spray Head (ETF-660), 2.2 gpm (8.3 Lpm), Laminar Flow
2B	ETF-1021-A	Spray Head (ETF-770), 0.5 gpm (1.9 Lpm), with Key
	ETF-1022-A	Aerator Spray Head (ETF-770), 2.2 gpm (8.3 Lpm), with Key
	ETF-1027-A	Spray Head (ETF-770), 2.2 gpm (8.3 Lpm), Laminar Flow
3	EL-3500-A	"ON-Q" OPTIMA Sensor Assembly
4	ETF-370-A	Solenoid Valve, 24 VAC, Includes Wire Harness
5	ETF-617-A	3/8" Bak-Chek Tee Compression Fitting
6	ETF-450-A	Control Module Assembly
7	ETF-233	Plug-In Transformer
8	EL-248-40	Box Mount Transformer
9	ETF-458-A	Power Cable w/Strain Relief & Crimp Connectors (Transformer to Control Module)
10	EL-310-A	Spout Mounting Kit Includes: Rubber Washer, Steel Washer, Lock Nut, Rubber Cone Washer and Coupling Nut.

OPTIONAL TRIM PLATES		
11	ETF-432-A	8" (203 mm) Trim Plate
12	ETF-313-A	4" (102 mm) Trim Plate
—	ETF-433-A	8" (203 mm) Trim Plate for Faucet with Optional Mixing Valve (not shown)
—	ETF-314-A	4" (102 mm) Trim Plate for Faucet with Optional Mixing Valve (not shown)

Item No.	Part No.	Description
OPTIONAL MIXING VALVES		
13	MIX-60-A	Below Deck Mechanical Water Mixing Valve (BDM Variation)
14	MIX-135-A	Below Deck Thermostatic Water Mixing Valve (BDT Variation)
15	MIX-110-AA	Optimix Deck Mounted Water Mixing Valve
FAUCET CABLE EXTENSION CORDS		
Faucet to Control Module		Solenoid to Control Module
ETF-1005-26	26" (0.7 meter) Length	ETF-1003-36 36" (0.9 meter) Length
ETF-1005-36	36" (0.9 meter) Length	ETF-1003-48 48" (1.2 meter) Length
ETF-1005-72	72" (1.8 meter) Length	ETF-1003-72 72" (1.8 meter) Length
ETF-1005-108	108" (2.7 meter) Length	ETF-1003-108 108" (2.7 meter) Length
SOLENOID VALVE REPAIR KIT		
—	ETF-1009-A	Solenoid Repair Kit

For additional information about Sloan Mixing Valves or Trim Plates, consult our Installation Instructions and Maintenance Guides.

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

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

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