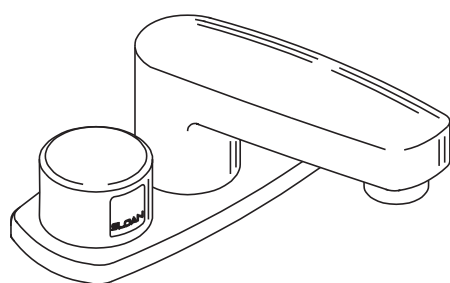
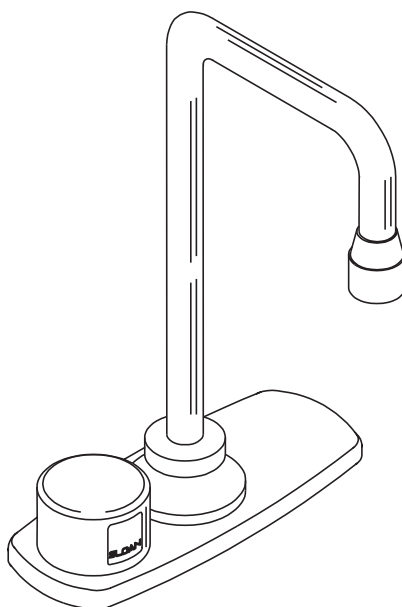




INSTALLATION INSTRUCTIONS OPTIMA™ SYSTEMS ON-Q™ SENSOR OPERATED LAVATORY AND SINK FAUCETS



ETF-660



ETF-770

ETF-660
Sensor Operated
Lavatory Faucet

ETF-770
Deck-Mounted
Sensor Operated
Gooseneck Faucet

Includes Instructions for
Installation of Optional Back
Checks

Made in the U.S.A.

 **SP® Certified**

 **UL Listed**

A112.18.1M

Installation of the Sloan OPTIMA™ ON-Q™ Series Faucets makes wash-up totally "hands-free" providing the ultimate in sanitary protection and automatic operation. The OPTIMA Series 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 sensor operated faucets come complete with faucet spout, "ON-Q" sensor, 24 VAC transformer, solenoid valve, plug-in

connection box (control module) and all mounting hardware. Also available are 4" and 8" trim plates, 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 Series faucets. 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-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 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.

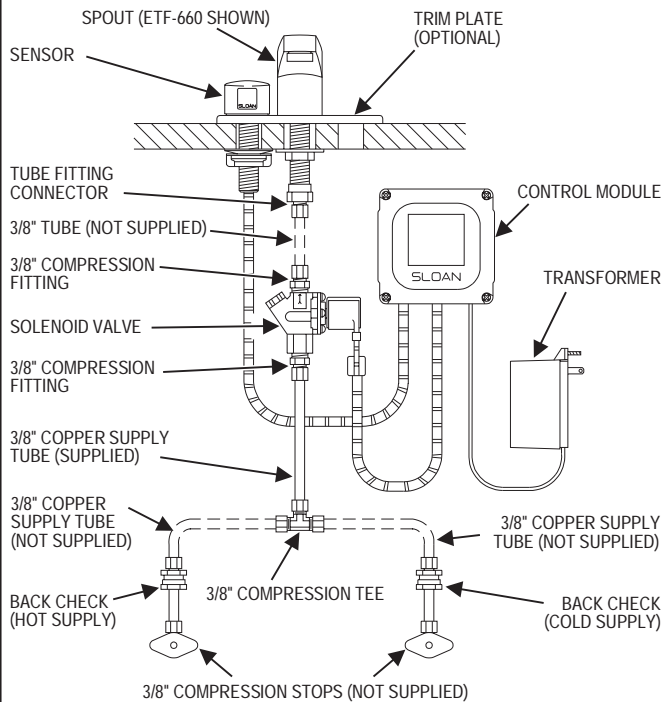
FAUCET ROUGH-IN — Figure 1

ETF-660/770 FAUCET WITH HOT AND COLD WATER SUPPLY

MODEL ETF-660/770 — .5 gpm (1.9 Lpm)

MODEL ETF-660/770-B — 2.0 gpm (7.6 Lpm)

MODEL ETF-660/770-C — 2.0 gpm (7.6 Lpm) Laminar Flow



ETF-660/770 FAUCET WITH SINGLE LINE WATER SUPPLY

MODEL ETF-660/770 — .5 gpm (1.9 Lpm)

MODEL ETF-660/770-B — 2.0 gpm (7.6 Lpm)

MODEL ETF-660/770-C — 2.0 gpm (7.6 Lpm) Laminar Flow

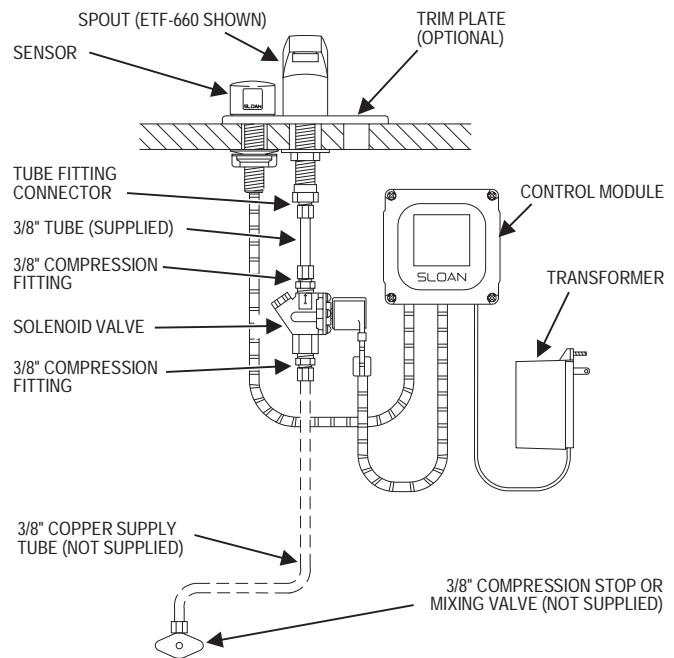


Figure 1

PRIOR TO INSTALLATION

Prior to installing the Sloan OPTIMA Series 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 6 — 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 FAUCETS

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

INSTALLATION OF ETF-660/770 FAUCET

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.

Step 2 — Install Faucet Spout (Figure 3)

Note: If installing with the MIX-25-A or MIX-30-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.

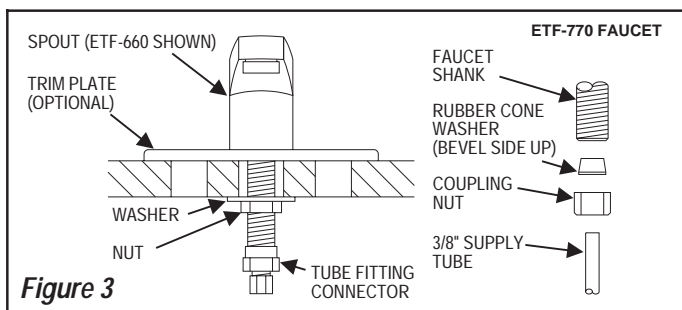
If Trim Plate is used, place spacers between deck and Trim Plate making certain that spacers are aligned with holes in Trim Plate and holes in deck.

Apply plumbers putty to underside of Faucet (& Trim Plate if used). For ETF-770, install Rubber Washer onto Faucet Shank. Insert Faucet Shank through the center deck hole and secure using the Washer and Nut supplied. Apply thread sealant to Faucet Shank and install Tube Fitting Connector onto shank of Faucet.

If Trim Plate is not used, install Cock Hole Cover in deck hole to right of Faucet.

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.

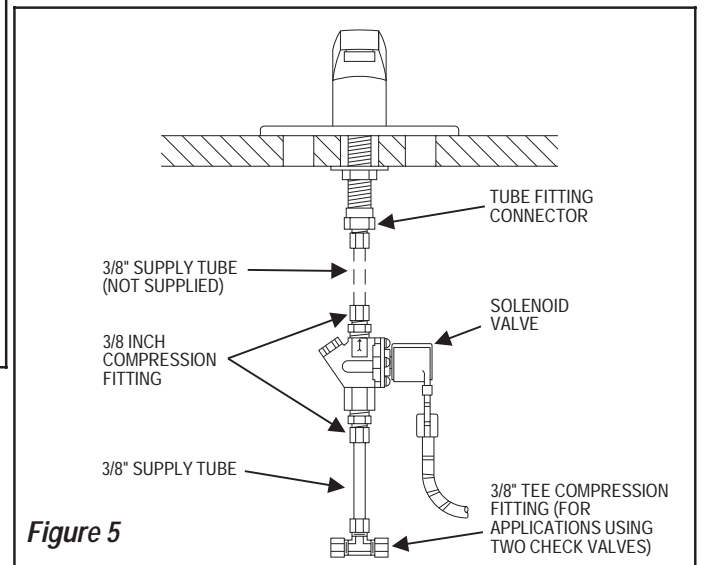
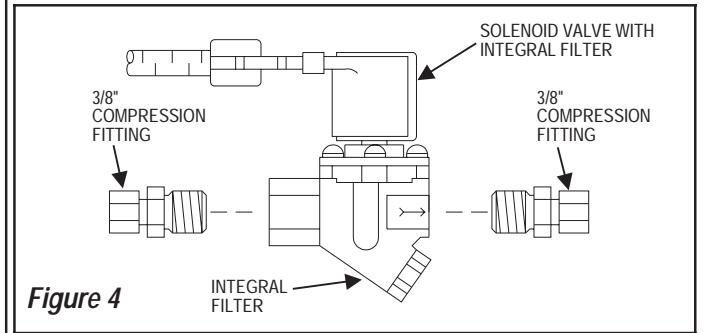
Important: When applying any form of sealant to fitting threads, leave the first

two starter threads free of sealant to prevent the possibility of sealant entering into the waterway and damaging system components.

Connect 3/8 inch O.D. supply tube (supplied) between Compression Fitting on Solenoid Valve and Tube Fitting Connector on the Faucet Shank.

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.

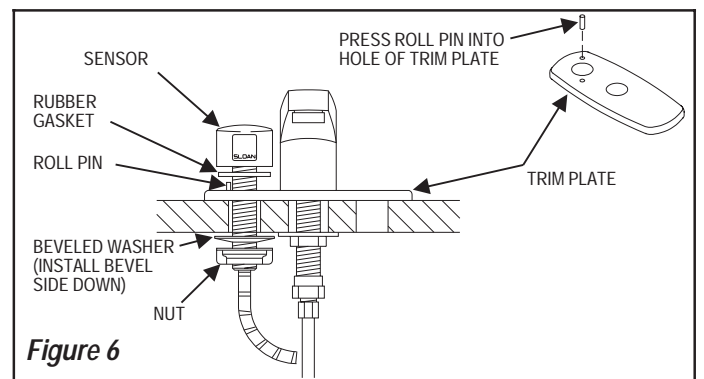
Step 4 — Mount "ON-Q" OPTIMA Sensor (Figure 6)



If installing the optional Trim Plate, press Roll Pin into hole of Trim Plate as shown in Figure 6 (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. **NOTE:** Trim Plate has two holes so that Sensor can be mounted either to the left or right of the Spout.

Slide Rubber Gasket 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 Bevel Washer (bevel side down) and Nut onto shaft of Sensor. DO NOT tighten Nut at this time.

Step 5 — 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 6 — 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 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-660/770 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	120 VAC	100 VA
Box Mount	EL-342	240 VAC	50 VA

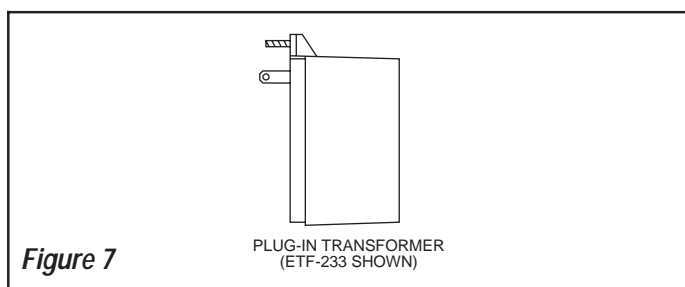
All Sloan transformers are 50/60 Hz.

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

PLUG-IN TRANSFORMER (Figures 7, 8 and 9)

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

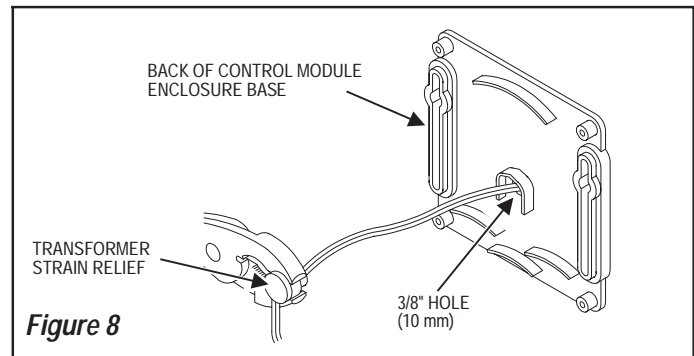
This type of Transformer is designed to be plugged into a 120 VAC wall



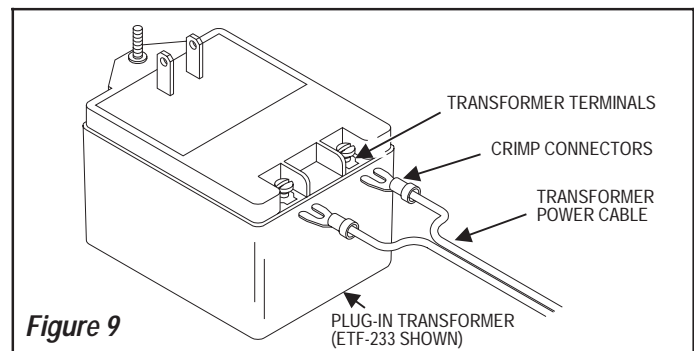
receptacle. The Transformer is supplied with a 10 foot Cable; however, this Cable can and should be shortened to meet installation requirements.

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 8. 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 11.

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 9.

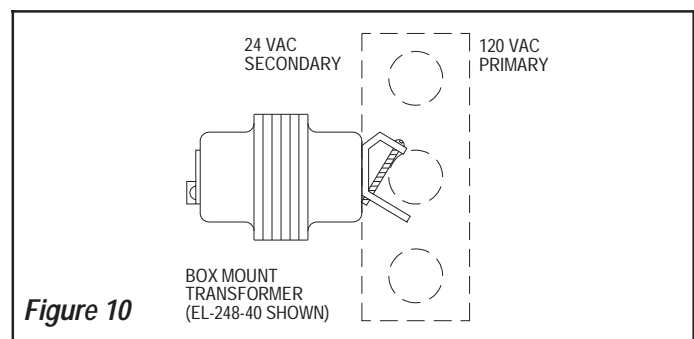


BOX MOUNT TRANSFORMER (Figure 10)

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 inserted through hole in back of Control Module Enclosure.



Step 7 — Mount Control Module to Wall (Figures 1 and 11)

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 Sensor 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 Sensor 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 8 — Control Module Connection (Figures 11 thru 13)

Route Cables from Solenoid Valve and Sensor to the location where Control Module is mounted (usually centered between Sensor 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 Sensor 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.

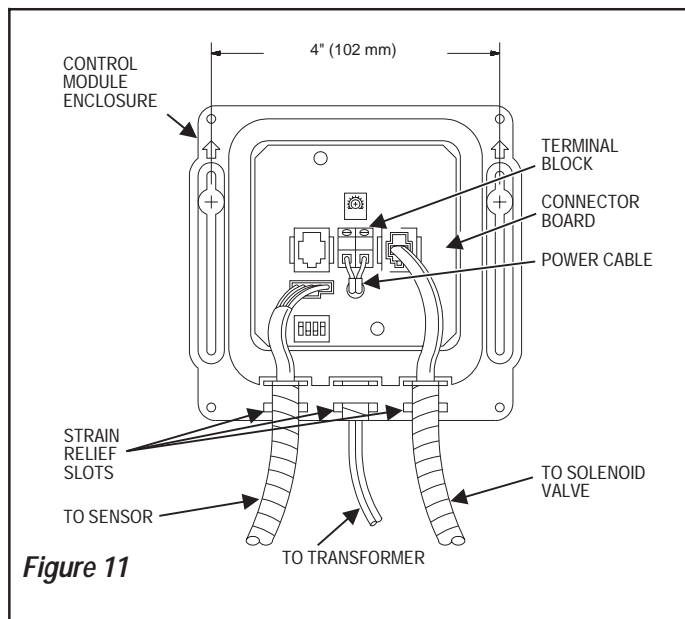


Figure 11

Step 9 — 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 12.

Open Supply Stops. With Aerator removed, activate Faucet for 30 seconds by placing hands in front of 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.

Close Supply Stops and install Aerator in Spout using the Key provided. Reopen Supply Stops, activate Faucet and check for leaks.

Step 10 — Position “ON-Q” OPTIMA Sensor

Direct Sensor lens just to the left of the Faucet discharge. Check positioning by moving hands in and out of the path of the lens while noting flow of water.

Step 11 — Range Adjustment

The OPTIMA Series Faucet is factory set to operate at a range of 8 to 10 inches (203 to 254 mm). 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 12.

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. Using the small screwdriver provided, turn the potentiometer a few degrees:

 Clockwise to INCREASE range

 Counterclockwise to DECREASE range

Place hand in front of Sensor and move toward Sensor until “click” from Solenoid Valve is heard and water turns on.

Determine range by backing hand away from Sensor until water turns off.

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

Repeat adjustment procedure until desired range is obtained.

Note: Sensitivity can be reduced by switching Dip Switch number 4 to the ON (UP) position.

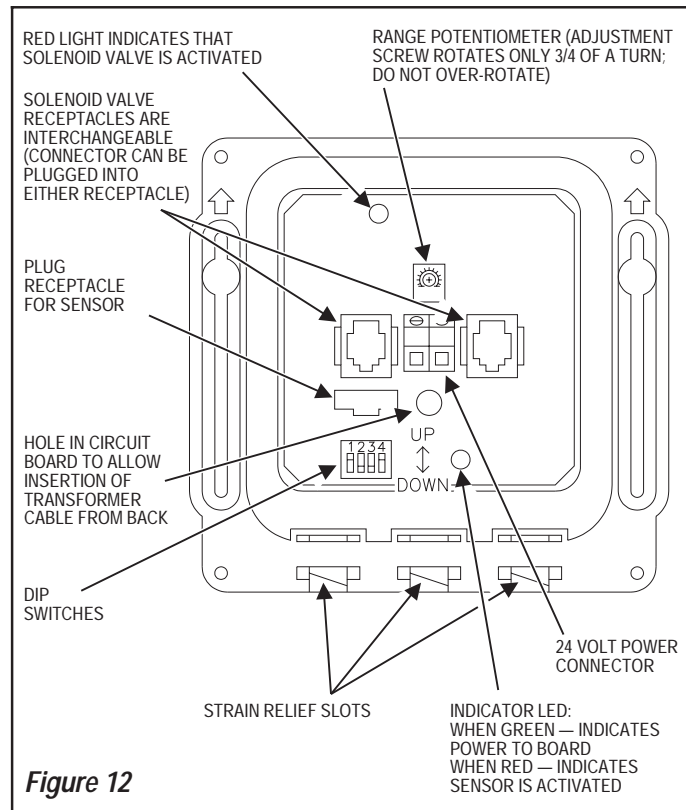


Figure 12

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 12.

Set the Time Out by configuring the number 1, 2 and 3 Dip Switches as follows:

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-660/770 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 13).

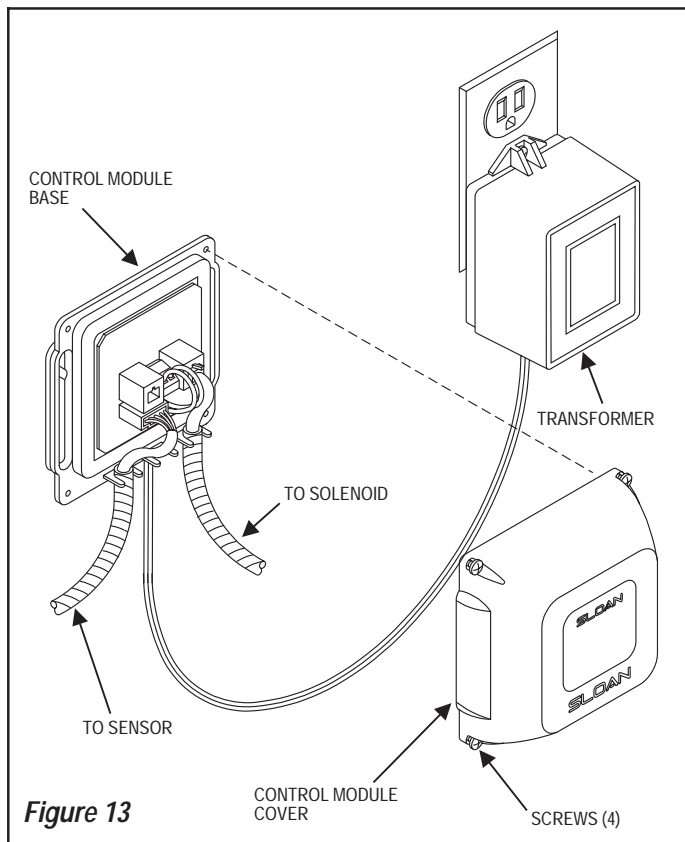


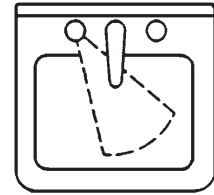
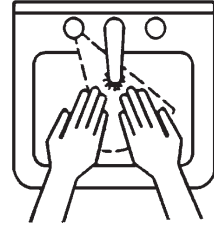
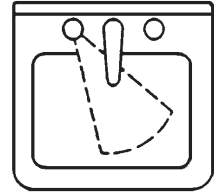
Figure 13

Step 12 — Secure “ON-Q” OPTIMA Sensor

With Sensor positioned properly, tighten Nut securely to prevent Sensor from rotating.

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 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.

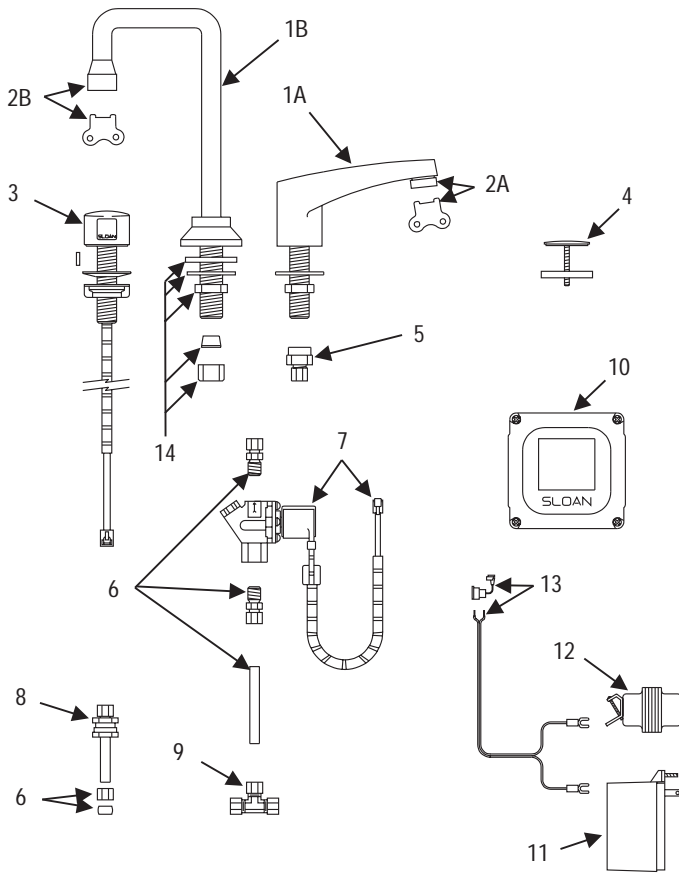
TROUBLESHOOTING GUIDE

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

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

PARTS LIST

COMPONENTS SUPPLIED WITH FAUCET

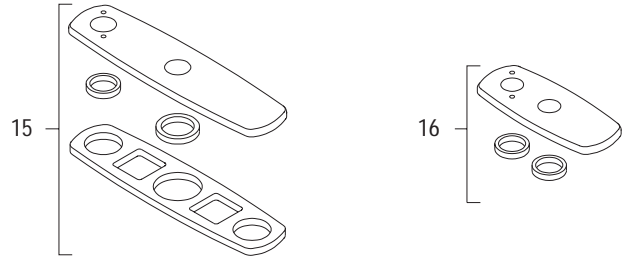


Item No.	Part No.	Description
----------	----------	-------------

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	F-174	Spray Head (ETF-660), .5 gpm (1.9 Lpm), with Key
	F-179	Spray Head (ETF-660), 2.0 gpm (7.6 Lpm), with Key
	F-175	Spray Head (ETF-660), 2.5 gpm (9.5 Lpm), with Key
	F-175-L	Spray Head (ETF-660), 2.5 gpm (9.5 Lpm), Laminar Flow
2B	ETF-234	Spray Head (ETF-770), .5 gpm (1.9 Lpm), with Key
	ETF-235	Spray Head (ETF-770), 2.0 gpm (7.6 Lpm), with Key
	ETF-236	Spray Head (ETF-770), 2.5 gpm (9.5 Lpm), with Key
	ETF-237	Spray Head (ETF-770), 2.5 gpm (9.5 Lpm), Laminar Flow
3	EL-3500-A	"ON-Q" OPTIMA™ Sensor Assembly
4	ETF-199	Cock Hole Cover
5	ETF-271	Tube Fitting Connector
6	ETF-437-A	Assembly Kit, Includes: Supply Tube (1), Compression Fittings (2), Compression Nut (2), Compression Sleeve (2)
7	ETF-370-A	Solenoid Valve, 24 VAC, Includes Wire Harness
8	ETF-470-A	Back Check (2 Supplied When Specified with Faucet)
9	ETF-259	Tee Compression Fitting
10	ETF-450-A	Control Module Assembly
11	ETF-233	Plug-In Transformer
12	EL-248-40	Box Mount Transformer
13	ETF-458-A	Power Cable with Strain Relief and Crimp Connectors (Transformer to Control Module)
14	EL-310-A	Spout Mounting Kit (ETF-770 Only), Kit Includes: Rubber Washer, Steel Washer, Lock Nut, Rubber Cone Washer and Coupling Nut

OPTIONAL TRIM PLATES



Item No.	Part No.	Description
----------	----------	-------------

OPTIONAL TRIM PLATES

15	ETF-432-A	8" (203 mm) Trim Plate
16	ETF-313-A	4" (102 mm) Trim Plate

FAUCET CABLE EXTENSION CORDS

Sensor 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.