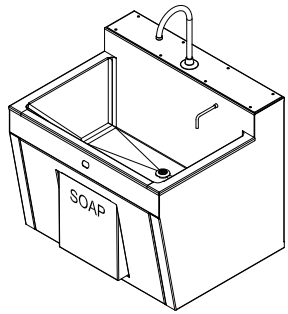


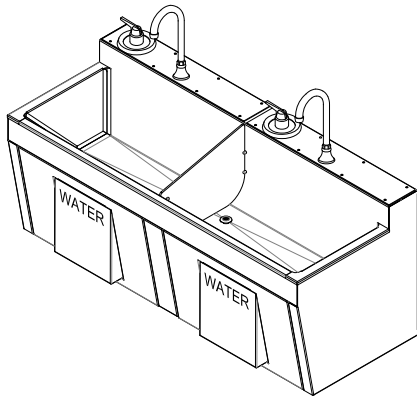
# Installation & Operation Manual

## EWSSS Series

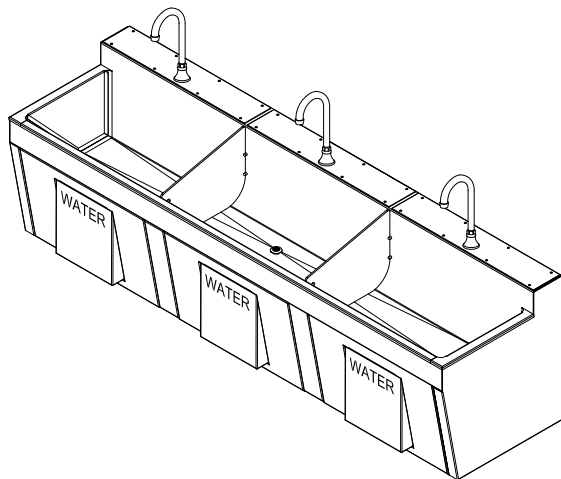
### One-, Two-, and Three-station Stainless Steel Scrub Sink (IR), (KA), (BBO) Models



**EWSSS-1**



**EWSSS-2**



**EWSSS-3**

(SOME OPTIONS MAY BE SHOWN)

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**Willoughby Industries, Inc.**

5105 West 78th Street  
 Indianapolis, IN 46268  
 Toll Free: (800) 428-4065  
 Local: (317) 875-0830  
 Fax: (317) 875-0837  
[www.willoughby-ind.com](http://www.willoughby-ind.com)

**WILLOUGHBY**

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## Pre-Installation Information

# Installation notice!

Check Rough-In location **PRIOR** to installation

Flush lines thoroughly **PRIOR** to hook-up

When installing the **Willoughby Industries' EWSSS Series** scrub sink system:

Before Step 1 of the installation instructions, ensure that rough-ins are in the correct location.

The valve assembly, including the spray head, **MUST NOT BE** connected until *after* all lines have been flushed to remove the small particles of debris that are inherent with new construction projects and all chemicals that are used in flushing are purged from the system.

Chemicals used in flushing plumbing systems can attack the internal components of the valve and spray head and severely damage them, so any flushing of the system must be followed by a full flushing with pure water to clear any harsh chemicals remaining in the system. Debris in the system if allowed to enter the valve assembly and spray head can cause poor performance or outright failure.

Again **DO NOT** attempt to connect the valve assembly and spray head until *after* all flushing is complete and pure water is the only media that will be passing through the system. Damage to the valve assembly or spray head caused by harsh chemicals or debris will not be covered by the manufacturer's warranty.

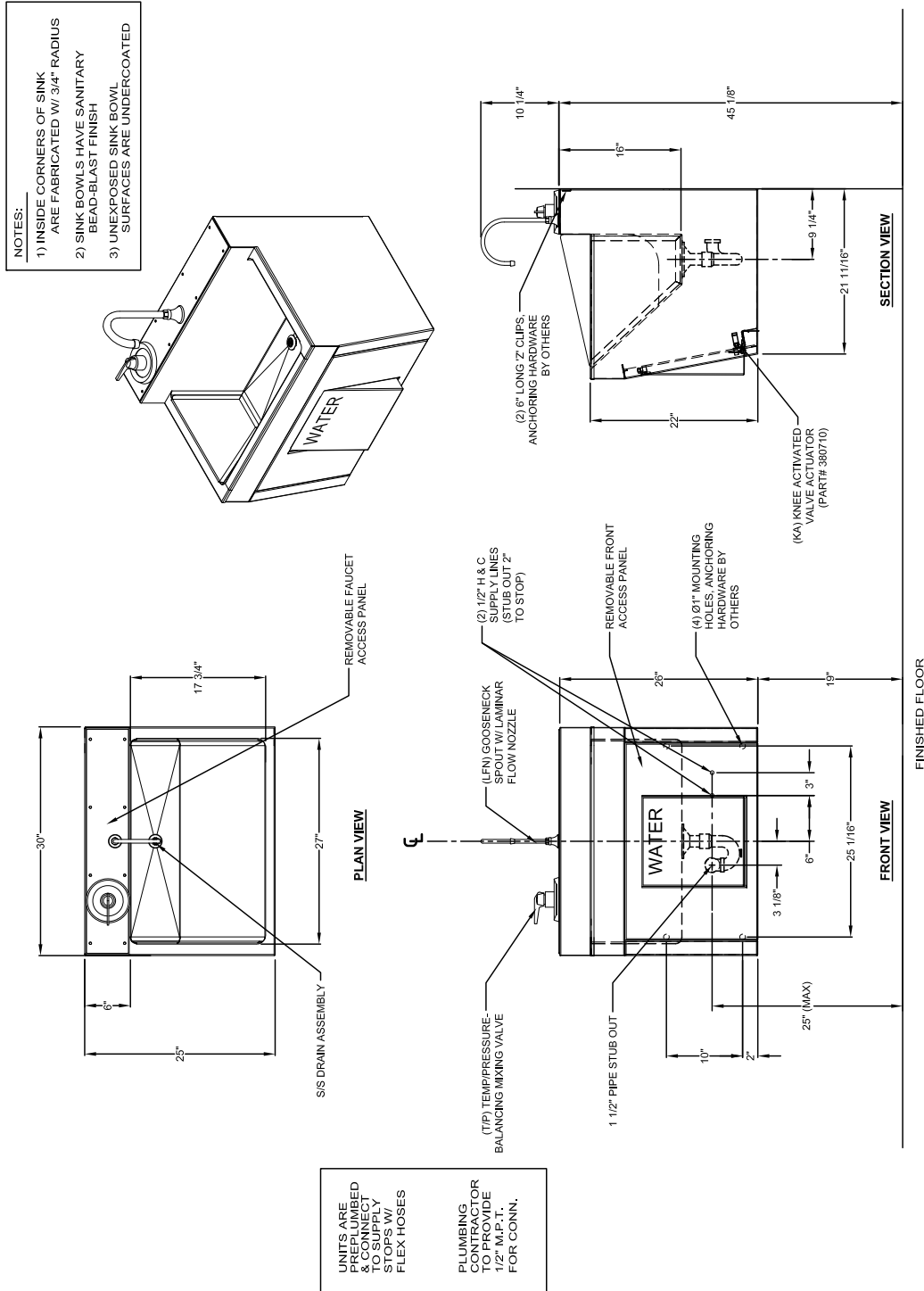
# Installation notice!

Check Rough-In location **PRIOR** to installation

Flush lines thoroughly **PRIOR** to hook-up

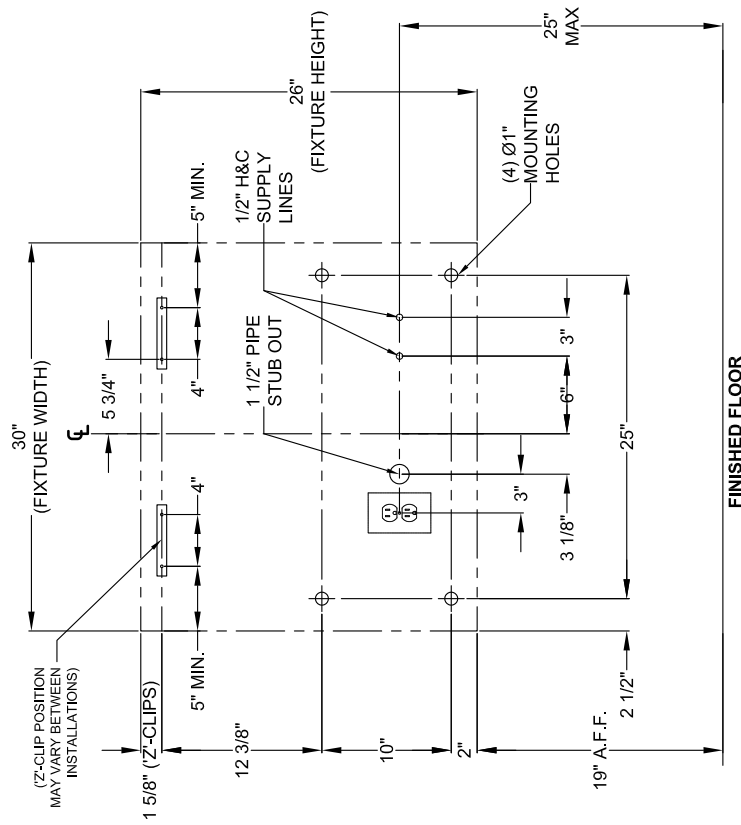
# Physical Dimensions- EWSSS-1\*

\*Shown with optional knee-activated water valves and deck-mounted thermostatic mixing valves



# Rough-in Dimensions- EWSSS-1\*\*

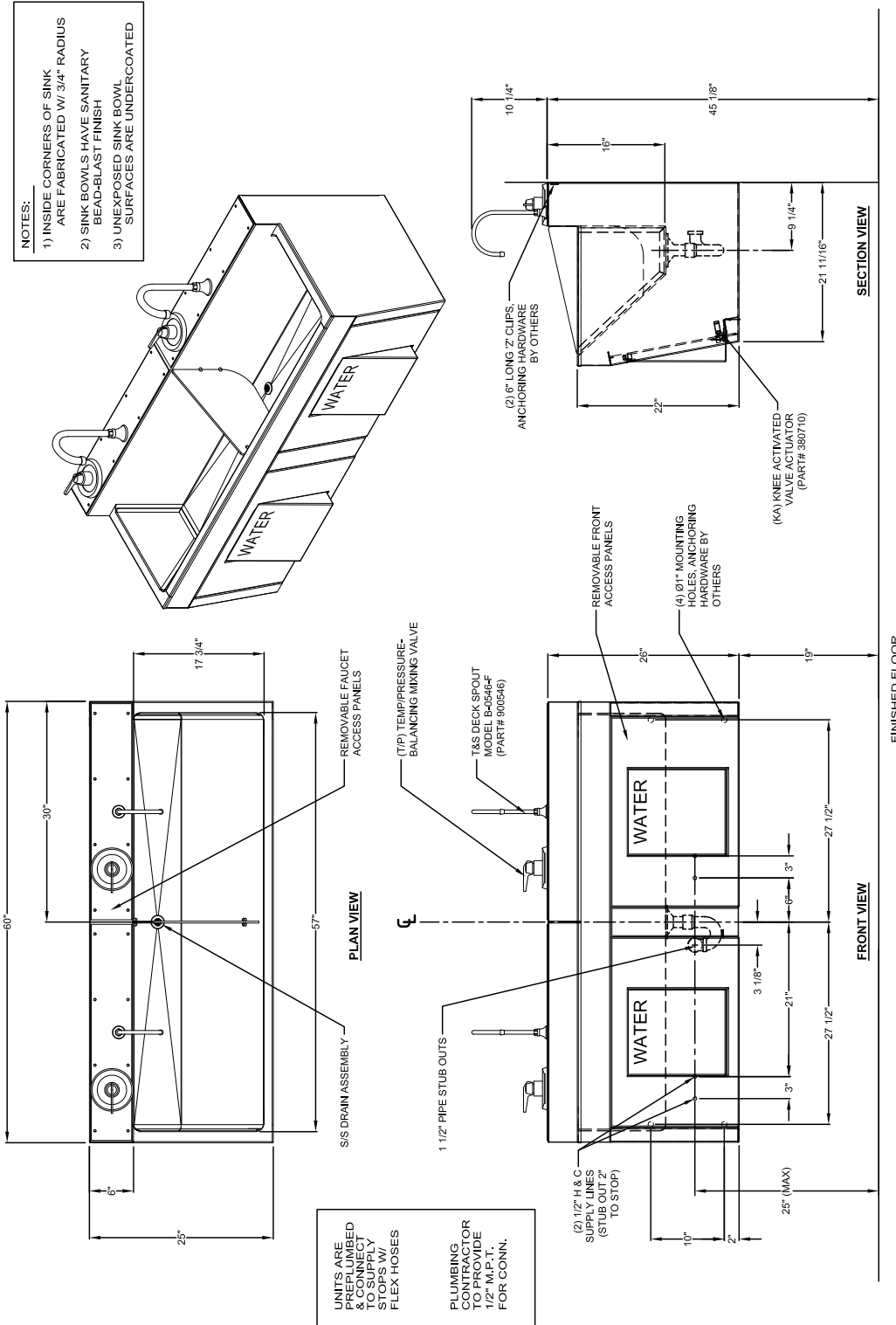
## ONE-STATION



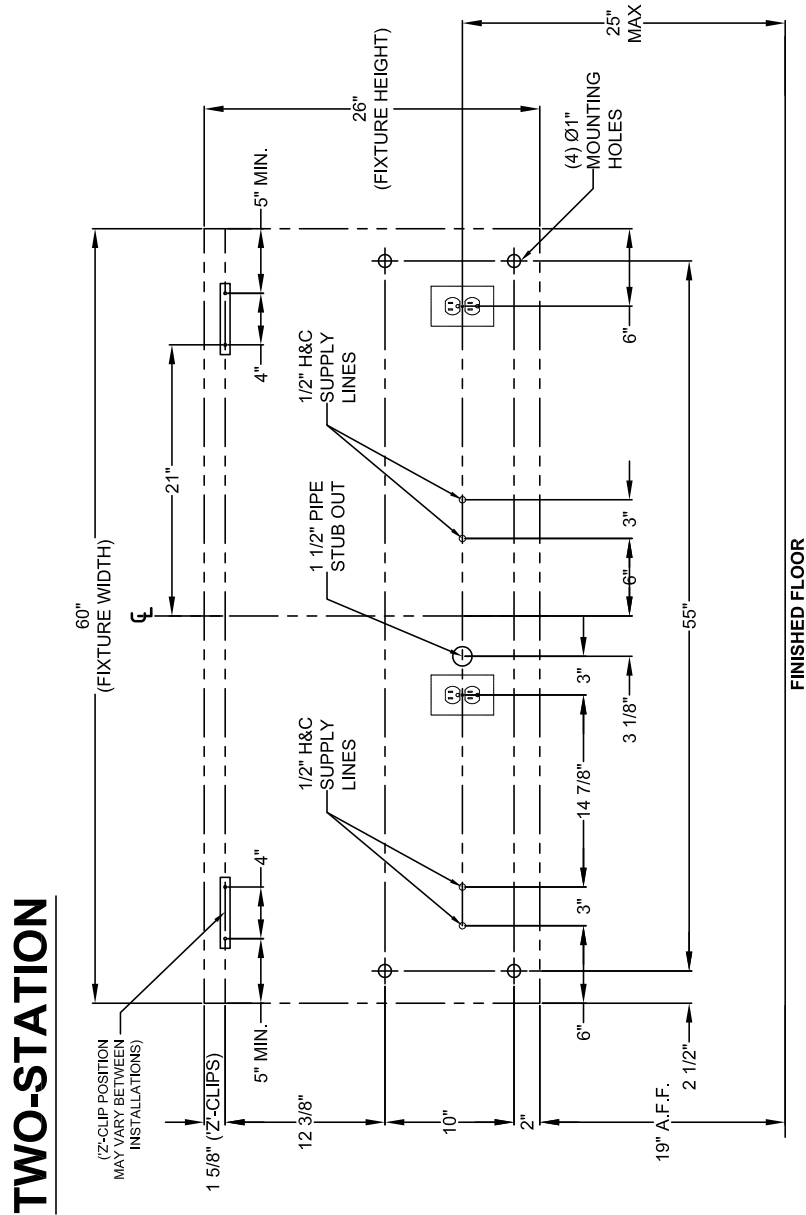
**\*\*GFCI power receptacles are shown for positioning. Depending on options and factory wiring installation, fixture may not require all GFCI receptacles shown here. Consult factory on fixture-specific power needs, if necessary.**

# Physical Dimensions- EWSSS-2\*

\*Shown with optional knee-activated water valves and deck-mounted thermostatic mixing valves



# Rough-in Dimensions- EWSSS-2\*\*



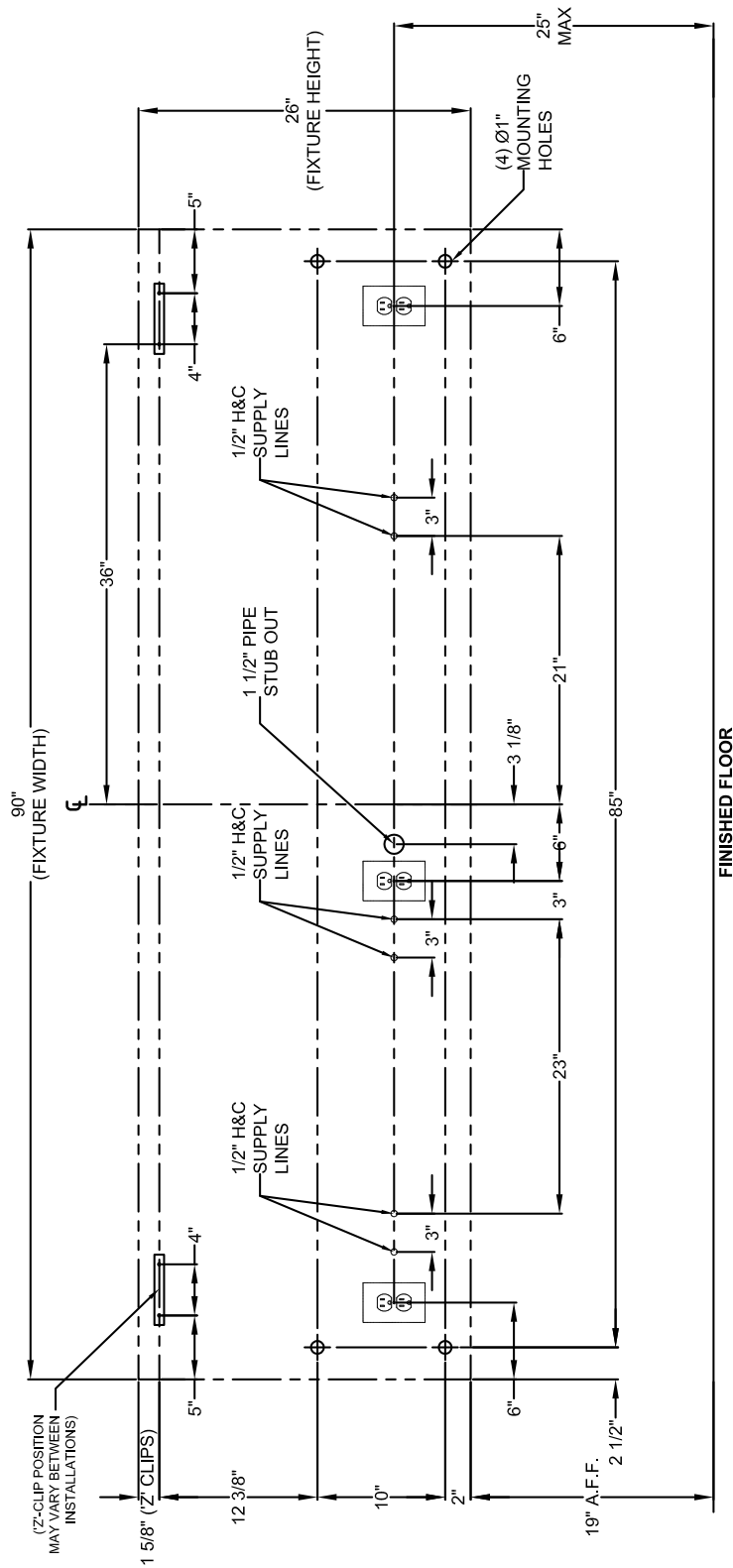
**\*\*GFCI power receptacles are shown for positioning. Depending on options and factory wiring installation, fixture may not require all GFCI receptacles shown here. Consult factory on fixture-specific power needs, if necessary.**





# Rough-in Dimensions- EWSSS-3\*\*

## THREE-STATION



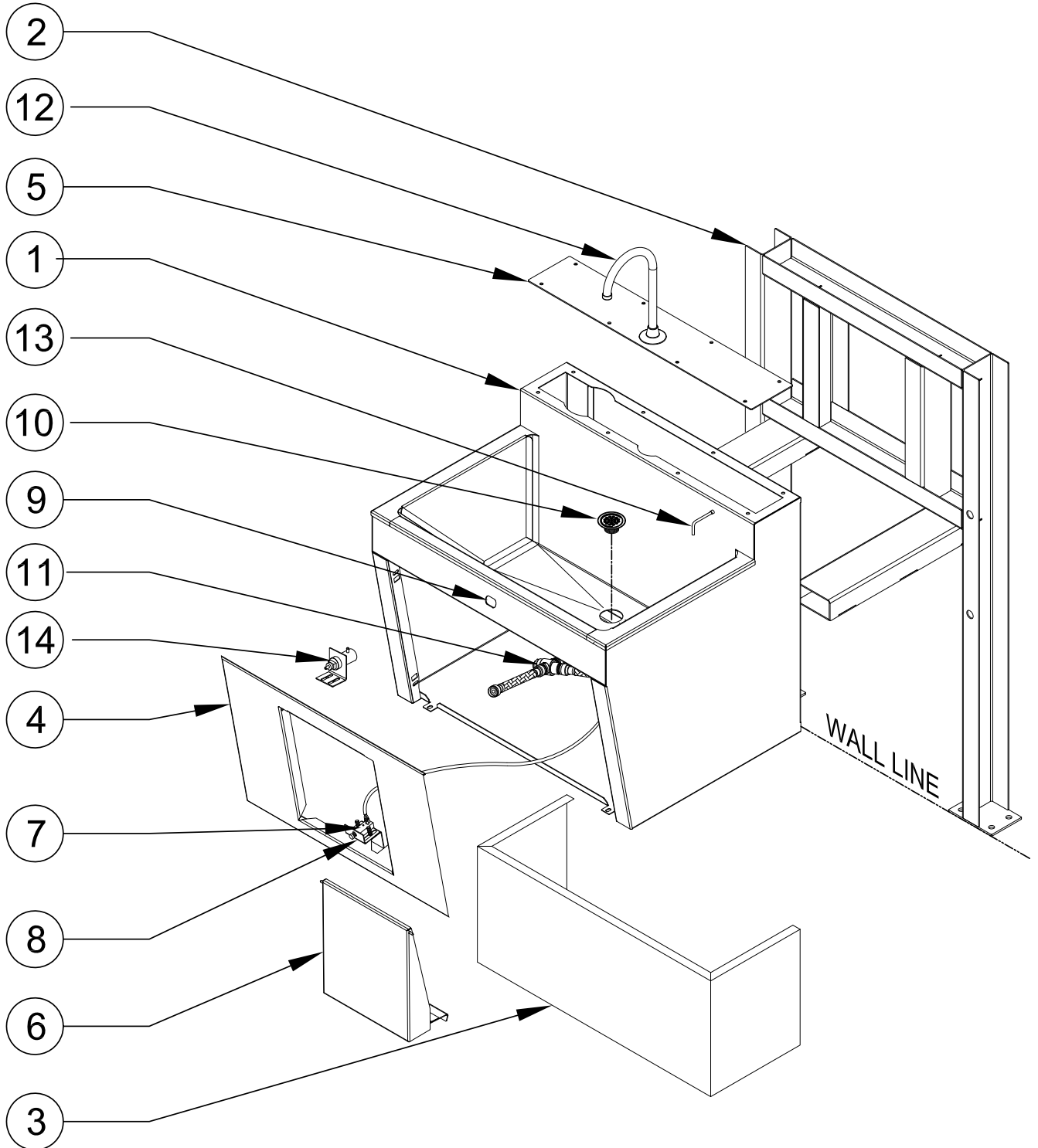
**\*\*GFCI power receptacles are shown for positioning. Depending on options and factory wiring installation, fixture may not require all GFCI receptacles shown here. Consult factory on fixture-specific power needs, if necessary.**

# Parts List

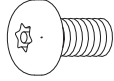
#	DESCRIPTION	WILLOUGHBY PART #s BY MODEL		
		EWSSS-1	EWSSS-2	EWSSS-3
1	SCRUB SINK FIXTURE ASSEMBLY	S700159	S700141	S700165
2	(MC) WALL CARRIER ASSEMBLY	S700200	S700219	S700220
3	(MB) MOUNTING BASE ASSEMBLY	S700475	S700301	N/A
4	FRONT ACCESS PANEL- (KA) (SHOWN)	S700156		
	FRONT ACCESS PANEL- DUAL (KA)	S700325		
	FRONT ACCESS PANEL	S700157		
5	FAUCET ACCESS PANEL (SHOWN)	S700227		
	FAUCET ACCESS PANEL W/ (T/P)	S700299		
6	(KA) KNEE-ACTIVATED DOOR ASMB. (SHOWN)	S700182 (SPECIFY "WATER")		
	(LSD) KNEE-ACTIVATED DOOR ASMB.	S700182 (SPECIFY "SOAP")		
	DUAL KNEE-ACTIVATED DOOR ASMB.	S700326 (SPECIFY "WATER" OR "SOAP")		
7	(KA) TAPMASTER INLINE VALVE ACTUATOR	380710		
8	(KA) VALVE ACTUATOR MOUNTING BRACKET	S700170		
9	(IR) INFRARED SENSOR ASSEMBLY	701341		
10	S/S DRAIN ASSEMBLY	380283		
11	ADJUSTABLE MIXING VALVE	700480ELF (SPECIFY USE, IE: "FAUCET SUPPLY")		
12	GOOSENECK FAUCET, SCRUB SINK	320421		
	W/ (LFN) LAMINAR FLOW NOZZLE, FAUCET	900202		
13	(LSD) LIQUID SOAP DISPENSER- SPIGOT	600302		
14	(LSD) LIQUID SOAP DISPENSER- PUMP			
NOT SHOWN	(LSD) LIQUID SOAP DISPENSER- BOTTLE	800603		
	(BBO) BODY BAR ACTUATOR ASSEMBLY	S700144		
	VALVE ASSEMBLY, ELECTRONIC	600957		
	(T/P) THERMOSTATIC MIXING VALVE	700720		
	(PB) PRESSURE-BALANCING MIXING VALVE	P902G		
	P-TRAP W/ EXTENSION TUBE	380287		
	'Z' CLIPS, 6"	800005		

# Exploded-view Drawing

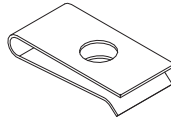
\*EWSSS-1 shown, EWSSS-2 and EWSSS-3 are similar in configuration. See Parts List for model Part # variations.



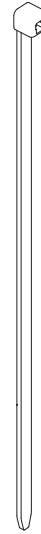
# **Hardware Identification**



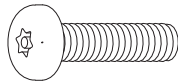
1/4-20 x 1/2"  
SECURITY SCREW  
4500NSS



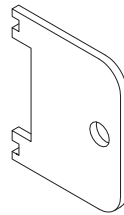
1/4-20  
TINNERMAN NUT  
800113



4" WIRE TIE  
800117



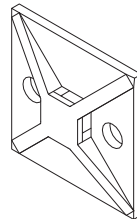
1/4-20 x 1"  
SECURITY SCREW  
800114



SECURITY  
SPANNER TOOL  
800116



T27  
1/4" PINNED TORX BIT  
800115



4-WAY  
WIRE TIE BASE  
701206

## **Required Installation Supplies**

- Proper mounting hardware
- Hardware for waste outlet connections
- Gasket for waste outlet connection
- Shims (for installation if necessary)
- Supply piping
- Silicone caulk
- Plumbers putty

**WARNING: Willoughby Industries does not assume any responsibility for personal injury or damage to equipment due to an improperly installed EWSSS Series Scrub Sink.**

# **Installation Instructions**

## **Step 1: Unpacking the Fixture**

### **Parts supplied:**

- Scrub Sink fixture (partially assembled)
  
- Wall carrier assembly (MC, pre-assembled)  
or
- Mounting base assembly (MB, pre-assembled with fixture)

- 1.) Fixtures will be typically be shipped partially assembled for installation. Upon receiving the fixture, remove the packing material from the assembly and inspect all parts for damage.
  
- 2.) If you have a wall carrier assembly, separate the fixture from the wall carrier assembly, and set the fixture aside.
  
- 3.) Position the wall carrier assembly or mounting base assembly within the fixture's specified location:

**If installing a wall carrier assembly (MC), go to Step 2.**

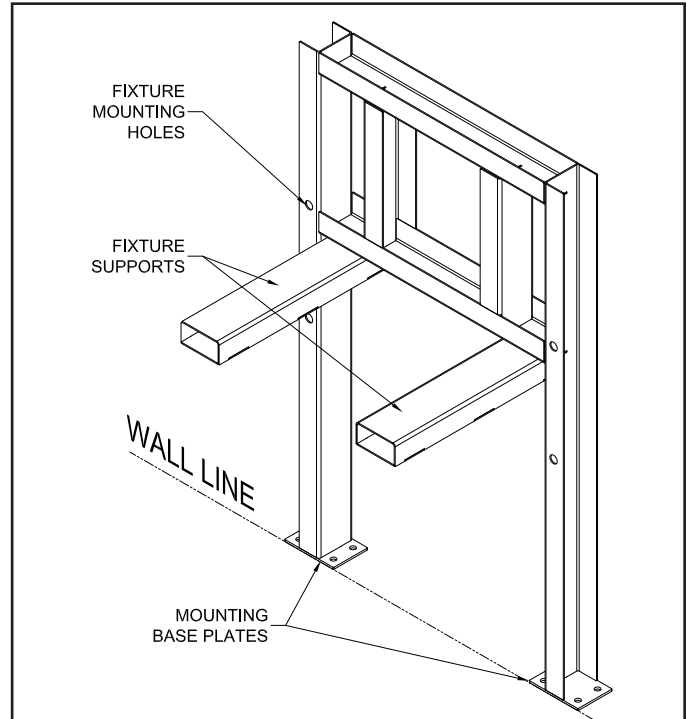
**If installing a floor mounting base assembly (MB), go to Step 3.**

# Installation Instructions

## Step 2: Installing the Wall Carrier Assembly (MC)

### Parts supplied:

- Wall carrier assembly (pre-assembled)



- 1.) Position the wall carrier assembly within the fixtures specified location.  
*Make sure that the intended location will provide adequate support to enable the carrier to safely support the installed fixture within the wall structure. If adequate backing does not exist where the carrier assembly's base plates are located, install appropriate support or relocate unit before proceeding with installation* (adequate backing for carrier mounting by others).
- 2.) Install the carrier assembly through the mounting base plates using anchors that are adequate for the floor type (anchors by others). Carrier can also be welded in place depending on installation parameters. (Suitable weld installation is the responsibility of the installer; it is the manufacturer's recommendation that the carrier assembly is anchored through the base plates in all instances to ensure assembly performs as designed.)

**NOTE: Be sure the carrier assembly fixture supports are level to ensure proper draining.**

**NOTE: If finishing the wall at this time (i.e. drywall, sheathing, etc.), make sure to keep the mounting holes on the carrier assembly uncovered. Holes are threaded and could be damaged if drilled.**

- 3.) Once wall carrier assembly is properly installed, go to Step 3.

# **Installation Instructions**

## **Step 3: Installing the Fixture 'Z' Clips and Anchors**

### **Parts supplied:**

- Scrub Sink fixture 'Z' clips
- 'Z' clip anchors (by others)

***NOTE: The included 'Z' clips are meant to be installed on a finished wall (i.e. drywall, sheathing, etc.) or the surface that the fixture back will be in contact with after installation. Make sure that the intended location will provide adequate support to enable the 'Z' clips anchors to safely support the installed fixture. (anchors and adequate backing by others)***

- 1.) Locate the 'Z' clip positions using rough-in details specific to the installed fixture (see *Physical / Rough-in Dimensions on Pages 4-9*).
- 2.) Install 'Z' clips using appropriate wall anchors (wall anchors by others).

***NOTE: Be sure the 'Z' clips are level to ensure proper fixture draining.***

- 3.) If installing a floor mounting base fixture (MB) locate the (4) 1" Dia. mounting holes for the fixture using rough-in details specific to the installed fixture (see *Physical / Rough-in Dimensions on Pages 4-9*).
- 4.) Install appropriate wall anchors to securely mount the fixture (wall anchors by others).

***NOTE: Be sure the anchor locations are level to ensure proper fixture draining once fixture is mounted.***



# Installation Instructions (cont.)

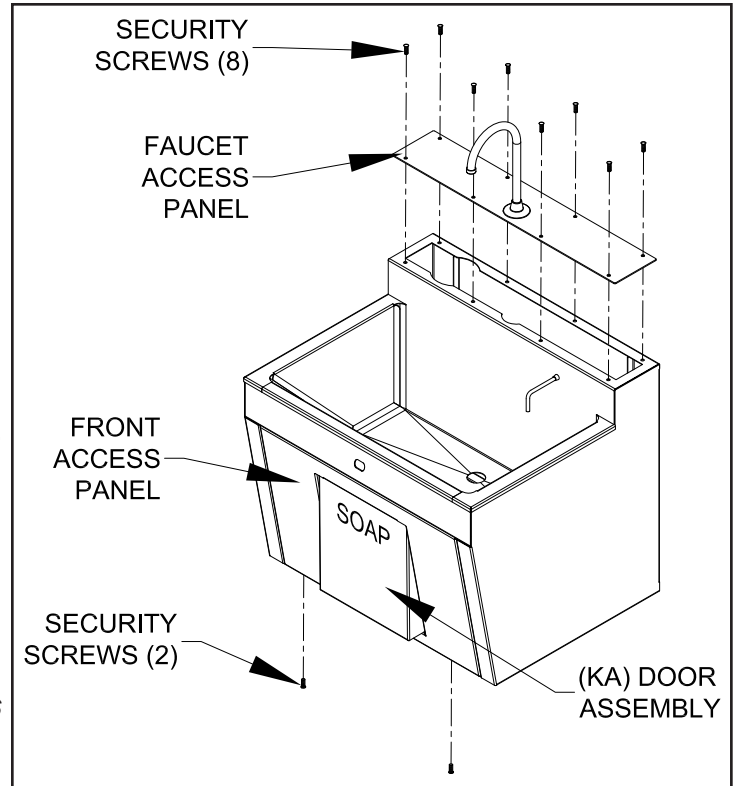
## Step 4: Fixture Preparation

### Parts supplied:

- Scrub Sink fixture (partially assembled)

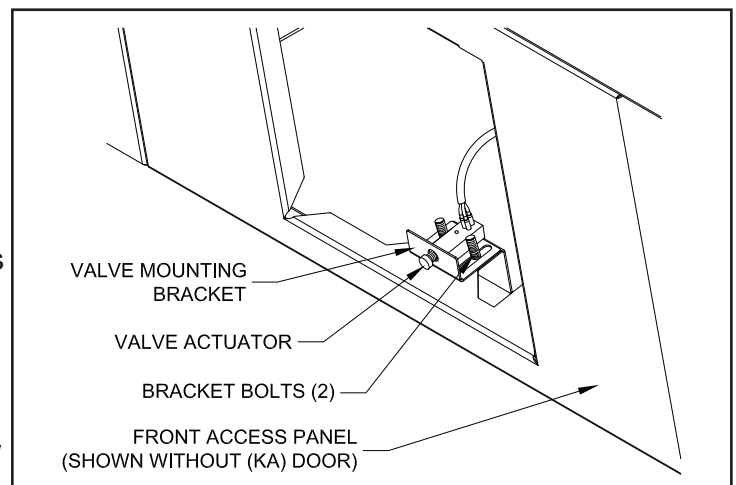
- 1.) With the fixture placed on level ground, unscrew the security screws for the front access panel. Screws are located on the bottom of the fixture (see upper diagram).
- 2.) If you have a Knee-Activated (KA) or Liquid Soap Dispenser-optional (LSD) sink, you will have to remove the valve actuator/soap pump located behind the Door Assembly; unbolt the valve and/or pump mounting bracket(s) from the bottom of the access panel before removing the panel entirely (see lower diagram).

**NOTE: (BBO) Body Bar actuated fixtures will NOT need the valve actuator and mounting bracket removed for installation.**



**One-station fixture shown**

- 3.) Once the panel is free, slide it down to remove and set aside. Make sure to retain the screws and tinnerman nuts for reassembly.
- 4.) If you have a two- or three-station sink, repeat steps 1-3 to remove the front access panels at each station.
- 5.) Remove the faucet access panel(s) located on the top of the fixture, making sure to disconnect the faucet from the water supply line. Set aside for later reassembly.



**(KA) valve actuator shown. (LSD) soap pump similar.  
(KA) models only**

## Installation Instructions (cont.)

### Step 5: Drain Assembly

**Parts supplied:**

- Scrub Sink Tub fixture
- Drain assembly (see diagram)

**NOTE: If installing a two- or three-station sink, remove the divider panel(s) before drain assembly installation.**

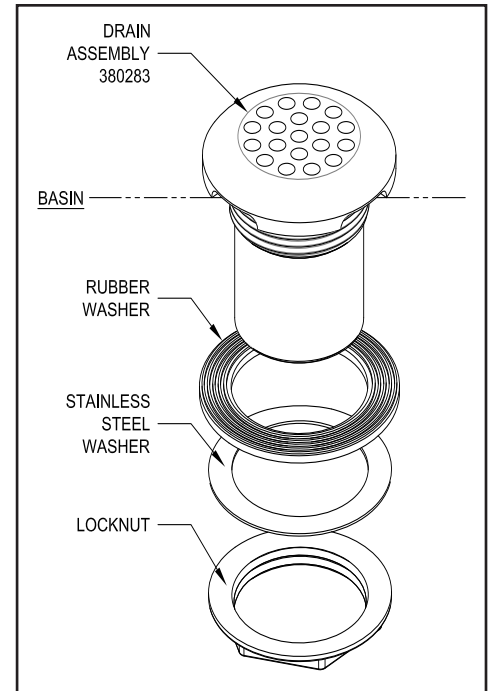
- 1.) Insert the drain assembly down through the sink drain hole.
- 2.) Secure in place by fitting the rubber washer onto the drain assembly from the underside of the sink and tightening the locknut onto the drain assembly, sandwiching the washer between the sink and locknut.

**Note: Over-tightening can damage the basin and/or drain assembly components**

- 3.) The fixture is ready for plumbing and electrical installation:

**If you have (IR) infrared actuated faucet(s), go to Step 4A.**

**If you have (KA) knee-activated or (BBO) body bar actuated faucet(s), go to Step 4B.**



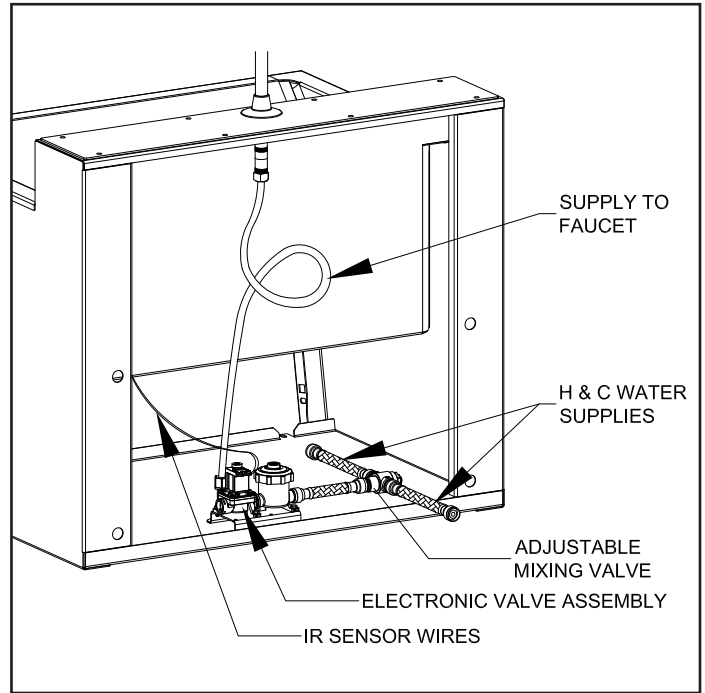
## Installation Instructions (cont.)

### Step 6A: Connections for (IR) Infrared Actuators

#### Parts supplied:

- Valve assembly (pre-installed)
- (IR) infrared sensor
- Wiring harnesses
- 24V transformer
- Security screws
- Faucet water supply lines
- H&C water supply flex hoses
- Adjustable mixing valve
- Security screws

**Note: Use wire tie mounts and wire ties to route and secure wiring. Wires are long enough to accommodate various routing paths. Longer tubes may need to be bundled with wire ties so they do not come in contact with sharp corners.**



**(IR) sink station setup, non-PB, shown from wall-side**

- 1.) Locate the infrared sensor and feed the black and red colored wires coming from the sensor down through the hole on the front of the fixture. Attach the sensor to the block plate and attach the block plate to the front of the sink assembly using security screws.
- 2.) Plug the colored wires coming from the infrared sensor onto the like colored secondary wire harnesses as shown on the [Infrared Sensor Installation Instructions page](#) (black wire with black wire, red wire with red wire).
- 3.) Attach the black wire harness plugs to the contacts on the blue solenoid on the electronic valve assembly (pre-installed in the fixture. Attach the red wire harness contacts to the 24V transformer; do not plug-in transformer at this time.
- 4.) If installing a model with an adjustable mixing valve or a pressure-balancing valve, connect the hot and cold water supply flex hoses to the mixing or pressure-balancing valve, then connect the valve outlet to the valve assembly inlet with an additional flex hose.
- 5.) Connect the faucet supply line to the valve assembly outlet using the nylon tubing elbow: loosen the plastic nut on the elbow and firmly push the water line through the plastic nut into the fitting. Retighten the nut to secure the water line in the elbow. Secure the elbow to the outlet using the collar pin and set the supply line aside.
- 6.) If installing a two- or three-station fixture, repeat steps 1-5 for each remaining station.

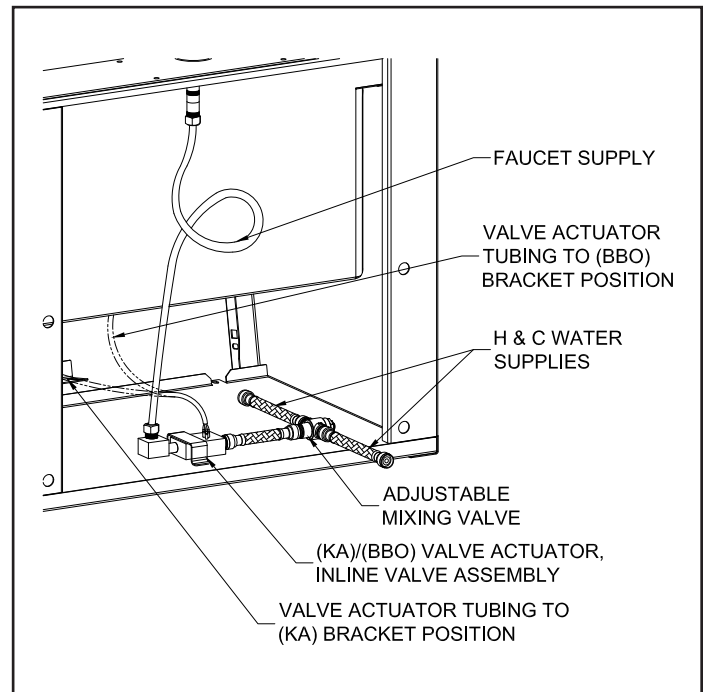
## Installation Instructions (cont.)

### Step 6B: Connections for (KA) Knee-activated and (BBO) Body Bar Activated Actuators

#### Parts supplied:

- Valve assembly (pre-installed)
- Hydraulic valve actuator
- Security screws
- Faucet water supply lines
- H&C water supply flex hoses
- Adjustable mixing valve
- Security screws

**Note: Use wire tie mounts and wire ties to route and secure tubing. Tubes and supply lines are long enough to accommodate various routing paths. Longer tubes may need to be bundled with wire ties so they do not come in contact with sharp corners.**

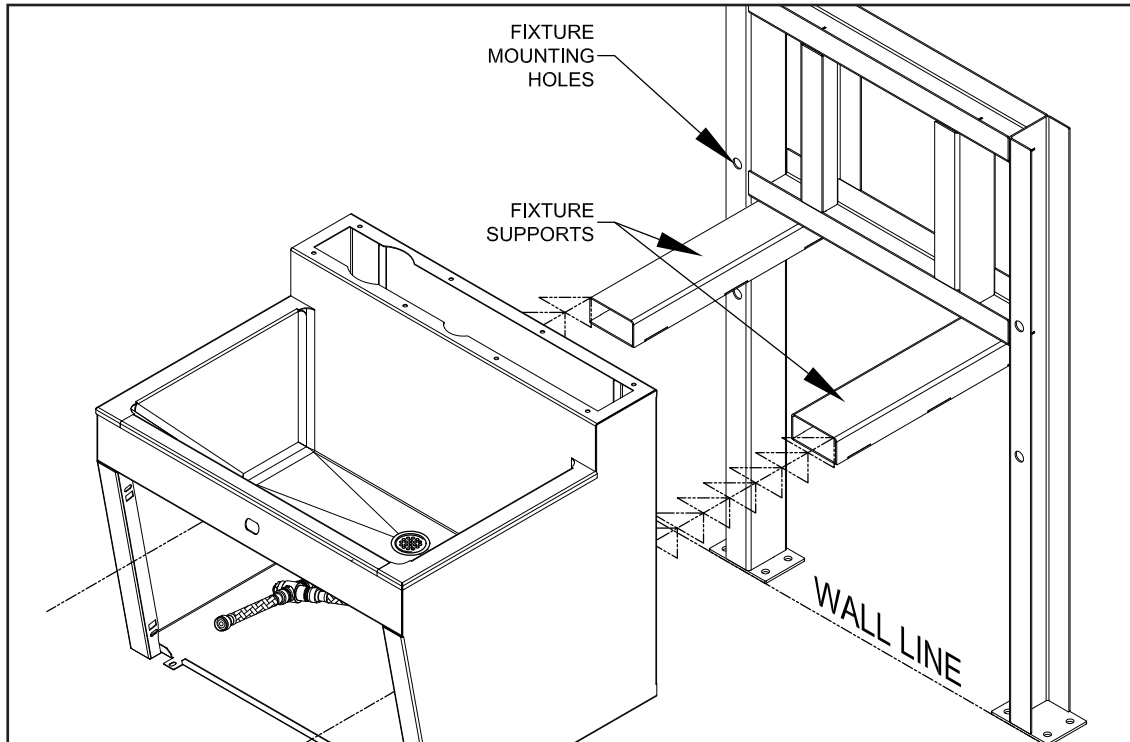


**(KA) sink station setup, non-PB, shown from wall-side**

- 1.) Locate the (KA)/(BBO) self-contained hydraulic valve actuator removed from the front access panel in Step 2.
- 2.) If installing a model with an adjustable mixing valve or a pressure-balancing valve, connect the hot and cold water supply flex hoses to the mixing or pressure-balancing valve, then connect the valve outlet to the valve actuator inlet with an additional flex hose.
- 3.) Connect the faucet supply line to the valve actuator outlet using elbow fitting. Use the included valve actuator installation instructions for reference (*see the **Manufacturers Appendix** at the end of this manual for instructions*).
- 4.) Secure the inline valve actuator assembly and adjustable mixing valve to the fixture.
- 5.) If installing a two- or three-station fixture, repeat steps 1-4 for each remaining station.

## Installation Instructions (cont.)

### Step 7: Mounting the Fixture Assembly



#### Parts supplied:

- Fixture assembly (prepared in Steps 4, 5,& 6A / 6B)
- Wall carrier assembly (if installed)
- Mounting bolts

**Caution: Do not leave the fixture unsupported while mounting, as it may fall and cause damage or personal injury.**

- 1.) With the help of an assistant, lift the fixture and slide it up and over the 'Z' clips, and wall carrier fixture supports if needed, making sure to align the holes in the back of the fixture with the wall anchor holes or mounting holes in the wall carrier.
- 2.) While an assistant supports the fixture, bolt the fixture to the wall anchor holes or mounting holes in the wall carrier depending on the installation. Use the openings on the front and top of the fixture to access the hole locations. **Do not fully tighten bolts yet.**
- 3.) Check to make sure fixture is level front-to-back and side-to-side to ensure proper drainage. Fully tighten bolts to secure the fixture once in-place and level.

## **Installation Instructions (cont.)**

### **Step 8: Final Assembly**

#### **Parts supplied:**

- Faucet access panel
- Front access panel (with knee-activated door assembly on (KA) model)

**NOTE: BEFORE MAKING FINAL CONNECTIONS, MAKE SURE THAT THE SYSTEM HAS BEEN PROPERLY FLUSHED AS DETAILED IN THE PRE-INSTALLATION INSTRUCTIONS.**

- 1.) Feed the faucet water supply tube up through the top access in the fixture, and connect to the faucet. Reattach the faucet to the faucet access panel (if needed).
- 2.) If you have an optional liquid soap dispenser system, install the unit at this time per liquid soap pump manufacturers' reference diagram (see the ***Manufacturers Appendix at the end of this manual***). If not already, install the factory supplied soap spigot on the fixture at this time.
- 3.) Replace the faucet access panel and secure using the included security screws.
- 4.) Make all final plumbing connections to valve inlets using supplied flex hoses (flex hoses have shut-off valves attached that should be connected to the supply inlets).
- 5.) If installing an (IR) fixture, plug-in the transformer. Infrared sensor is self-calibrating; see **Infrared Sensor Installation Instructions page** for further details.

**NOTE: PLUG-IN TRANSFORMER (IF NEEDED) MUST BE USED WITH A GROUND FAULT INTERRUPT (GFCI) RECEPTACLE TO HELP PREVENT POSSIBLE ELECTRICAL SHOCK.**

- 6.) If you have a Knee-Activated (KA) sink, reinstall the valve actuator(s) at this time behind the Door Assembly. Bolt the valve mounting bracket to the bottom of the access panel and adjust its position to ensure that the (KA) door effectively activates the actuator with the least amount of travel. Use the included valve actuator installation instructions for reference.
- 7.) Make final adjustments to valves and supply lines as needed and replace the front access cover using the included security screws and tinnerman nuts.
- 8.) Replace the divider panel(s) in the sink, if necessary.

# (T/P) Temp./Pressure Mixing Valve Installation

Ile700CR

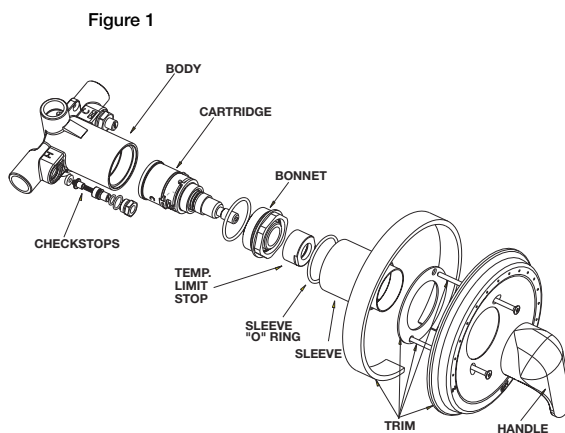
**POWERS™**

**HydroGuard® T/P**  
Series e700

## INSTALLATION INSTRUCTIONS Cartridge Replacement

### e700 CARTRIDGE REPLACEMENT INSTRUCTIONS

The following instructions explain how to replace the cartridge to your Series e700 valves:



#### Disassembly:

1. Turn off hot & cold water supply-stops.
2. Remove the handle and trim plate.
3. Remove bonnet.
4. Remove all internal components from the valve body.
5. At this point you should have an empty valve body.

You are now ready to put the new cartridge into your existing valve.

#### CALIFORNIA PROPOSITION 65 WARNING

**WARNING:** This product contains chemicals known to the State of California to cause cancer and birth defects or other reproductive harm. (California law requires this warning to be given to customers in the State of California.)

For more information: [www.watts.com/prop65](http://www.watts.com/prop65)

#### Reassembly:

1. Ensure the inside of the valve body is free of deposits and debris. Clean as necessary.
2. Place the cartridge into the body ensuring following:
  - a) "C" on the cartridge should be on the cold inlet side.
  - b) Align tab on the back of the cartridge to the groove in the body.
3. While holding cartridge firmly, screw bonnet into body; tighten to 100 + 20/-0 in-lbs.
4. Turn the hot and cold water supplies back on and verify there is no leakage.

#### Maximum Temperature Setting/Handle Rotation Stop

The handle rotation setting must be adjusted to limit the distance the user can rotate the handle towards the full hot water position.

**CAUTION:** Any repair or modification of the valve may affect the high temperature setting. The maximum temperature setting must be checked by the installer before use.

5. Adjust the valve to the desired maximum outlet temperature [110°F (43°C) max]. Screw on the high temp. limit stop until it touches the stem shoulder.
  6. Turn the stem clockwise until the water stops. Open valve to full hot position and verify max outlet temperature setting.
  7. (a) For e707
    1. Install the trim plate.
    2. Snap-on the indicator plate. Guide on the back of the plate goes into the locator hole.
    3. Install O-ring on the bonnet, slide sleeve on the bonnet.
    4. Install handle and tighten the set screw.
- CAUTION:** Indicator plate must be installed before sleeve.
7. (b) For e705 & e710  
Place sleeve O-ring on the bonnet shoulder. Slide sleeve over the O-ring until it stops and replace trim plate and handle.

If you have any problems, comments, or suggestions, please contact your Powers representative. We are interested in feedback from the field.

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Ile700CR 0632

EDP# 6511200

# (TMV) Thermostatic Mixing Valve Installation

**POWERS™**

IS-P-e480

**HydroGuard® T/P Series e480  
Lavatory Combination Valve**

## Installation Instructions

### To Install ■

**NOTE:** Installation should be in accordance with accepted plumbing practices. Flush all piping thoroughly before installation.

1. Locate a suitable place for the tempering valve. Valve should be accessible for service and adjustment and as close to the point-of-use as possible.
2. Connect hot and cold water to the supply valve using 1/2" NPT or 3/8" compression connections.
3. Connect outlet of tempering valve to fixture(s) using 1/2" NPT or 3/8" compression connections.
4. Turn on hot and cold water supplies. If any leaks are observed, tighten connections as necessary to stop leaks before proceeding.
5. Turn on fixture and allow water to flow for 2 minutes. Measure water temperature at outlet. If water is not at desired temperature, adjust as necessary.

### Specifications ■

e480-00	.....1/2" NPT (Rough Bronze)
e480-01	.....1/2" NPT (Rough Chrome)
e480-10	.....3/8" Compression (Rough Bronze)
e480-11	.....3/8" Compression (Rough Chrome)
Capacity:	..... 4.0 gpm (15.0 l/m)
Approach Temperature:	.....5°F (2.8°C) above set pt.
Max. Operating Pressure:	..... 125psi (862 kpa)
Max. Static Pressure:	..... 125psi (862 kpa)
Max. Hot Water Temperature:	..... 180°F (82°C)
Temp. Adjustment Range:	
.....	ASSE Type T/P: 95 – 110°F (43-48°C)
.....	ASSE Type T: 80 – 120°F (27-49°C)
Minimum Flow:	..... 0.5 gpm (2.2 l/m)
Checks:	..... Integral
Construction:	..... Cast Brass Body
Certified:	..... CSA B125
Listing	..... ASSE 1016-1996 (Type T/P)
.....	..... ASSE 1070

#### CALIFORNIA PROPOSITION 65 WARNING

**WARNING:** This product contains chemicals known to the State of California to cause cancer and birth defects or other reproductive harm. (California law requires this warning to be given to customers in the State of California.)

For more information: [www.watts.com/prop65](http://www.watts.com/prop65)

Figure 1

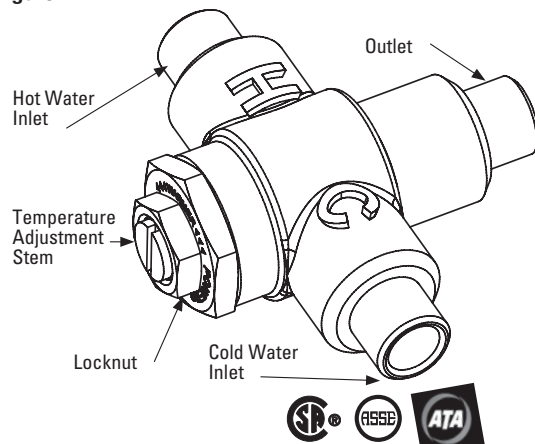
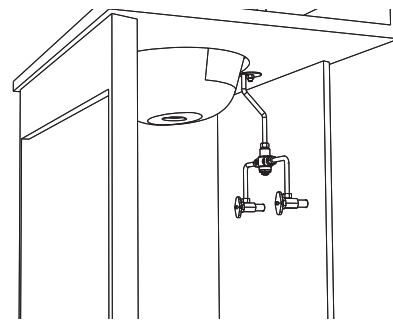


Figure 2: Typical Installation



### To Adjust Temperature ■

1. Loosen locknut.
2. Turn on fixture and run water for at least two (2) minutes to allow supply temperature to stabilize.
3. Turn temperature stem counter-clockwise for hotter or clockwise for colder outlet temperature.
4. Tighten locknut to prevent accidental or unauthorized temperature adjustment.
5. Re-check outlet temperature.

### Repair Kit ■

Motor Repair Kit.....480-270

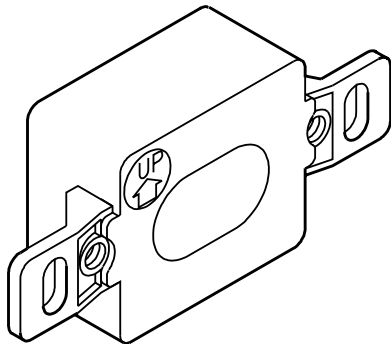


# (IR) Infrared Sensor Installation Instructions

# SLOAN®

Code No. 0816196  
Rev. 2 (11/11)

## OPTIMA® SENSOR REPLACEMENT KIT INSTALLATION INSTRUCTIONS



**EL-1500-LL  
Lavatory Sensor**

### Lavatories (EL-1500-LL Sensor)

When the sensor detects a user, a slow flashing red light appears in the sensor window. After one (1) second, the light flashes rapidly and the sensor immediately activates the solenoid valve to begin water flow.

The solenoid valve remains open as long as the user is detected. The solenoid valve turns off after the user is no longer detected for two (2) seconds.

### INSTALLATION AND REPLACEMENT

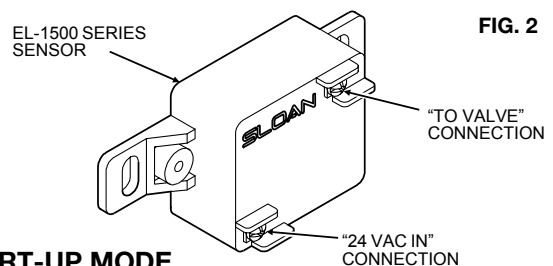
1. Disconnect 24 VAC power supply at the transformer or fuse box.
2. Remove the cover plate and old sensor from the wall installation. Use a hex wrench to remove the cover plate.
3. Connect one 24 VAC lead to the sensor terminal labeled "24 VAC IN." (See Fig. 2)
4. Connect one solenoid lead to the sensor terminal labeled "TO VALVE." (See Fig. 1)
5. Connect the remaining 24 VAC lead to the remaining solenoid lead.
6. On water closet installations ONLY, connect the override button (shown as Override Switch in Fig. 1 Wiring Diagram) parallel to the EL-1500-L sensor.
7. The illustration of the sensor on the front cover of these installation instructions shows an orientation arrow on the lens side of the sensor. Reinstall the sensor with the arrow pointing UP. Replace the cover plate and tighten the cover plate to the wall.
8. Reconnect the 24 VAC power supply at the transformer or the fuse box.

### SLOAN EL-1500 SERIES SELF-ADAPTIVE OPTIMA SENSOR

The EL-1500 Series Optima Sensor represents the most advanced technology used in any sensor activated plumbing product available today.

### ABOUT SLOAN EL-1500 SERIES OPTIMA SENSORS

The EL-1500 Series Optima Sensor is the first sensor used with a plumbing product that "thinks." An EL-1500 sensor adapts itself to its environment. The sensor self adjusts its own range setting based on what it "sees" in front of it, and therefore needs no manual range adjustment. It automatically compensates for the depth and reflectivity of the opposite wall or stall door and for the ambient lighting conditions of the restroom.



**FIG. 2**

### 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.

**When further assistance is required, please contact your  
local Sloan Representative or Sloan Technical Support at:  
1-888-SLOAN-14 (1-888-756-2614)  
or visit us online at [www.sloanvalve.com](http://www.sloanvalve.com)**

# **Care and Maintenance**

## **STAINLESS STEEL CARE**

Stainless Steels are basically alloys of iron and chromium and are corrosion resistant. Stainless steel has a bright surface that is easy to clean and is free from oxides. Therefore, cleaning of stainless steel is relatively simple and easy if done on a regular basis.

Frequency of cleaning should depend on the rate at which the fixture becomes dirty. Remember that fresh (soft) deposits of all kinds are relatively easy to remove, while removing older (hard) deposits are much more difficult. Establish a cleaning SCHEDULE.

Routine cleaning should involve ordinary soap or detergent and water, applied with a sponge, brush or cloth. Baking soda, borax or any of several non-abrasive commercial cleansing agents can help hasten the cleaning action. after scrubbing, rinse THOROUGHLY and wipe dry.

DO NOT use common steel wool, scouring pads, scrapers, wire brushes, files or other steel tools to clean stainless steel. Such items will scratch the surface or leave small particles of iron imbedded in the surface, which will eventually rust and stain the surface - even appearing as if the stainless itself was rusting.

Certain chemical compounds, if used on stainless steel, can give the appearance of rust and if allowed to stand for long periods of time, can pit the surface of stainless steel. Products containing hydrochloric acid, muriatic acid or potassium hydrochloride can ruin the surface.

## **Troubleshooting - Infrared Sensors**


- I. Faucet does not function (red light does not appear when user steps in front of sensor)
  - A. No power to sensor. Make certain that power is on. Check transformer leads and connections. Repair or replace as necessary.
  - B. IR Sensor not operating. Replace IR Sensor.
  
- II. Faucet does not function (red light appears when user steps in front of sensor and solenoid does not click)
  - A. Debris in solenoid; disassemble, clean, and flush.
  - B. Solenoid not wired correctly; check solenoid connections.
  - C. Solenoid problem; replace solenoid.
  
- III. No water when activated (valve clicks)
  - A. Make certain that water is turned on.
  - B. Valve clogged. Clean or replace filter.
  
- IV. Very low flow or slow dribble
  - A. Check supply stop(s); open if closed.
  - B. Debris in filter; remove, clean, and reinstall.
  - C. Debris in aerator or spray head; remove, clean and reinstall.
  - D. Disassemble solenoid; clean and flush.
  
- V. Continues to run (with power on and red light flashing)
  - A. Non-permanent target in range after user leaves. Remove non-permanent target. If this target is a new permanent target (i.e., a new wall or partition), turn off 24 volt power for twenty (20) seconds. Turn power back on and let the sensor complete start-up mode.
  - B. Sensor failure; replace sensor.
  
- VI. Continues to run (even with power disconnected)
  - A. Solenoid valve installed backwards.
  - B. Debris in solenoid, won't close properly; remove operator and clean. Reassemble in the same manner.

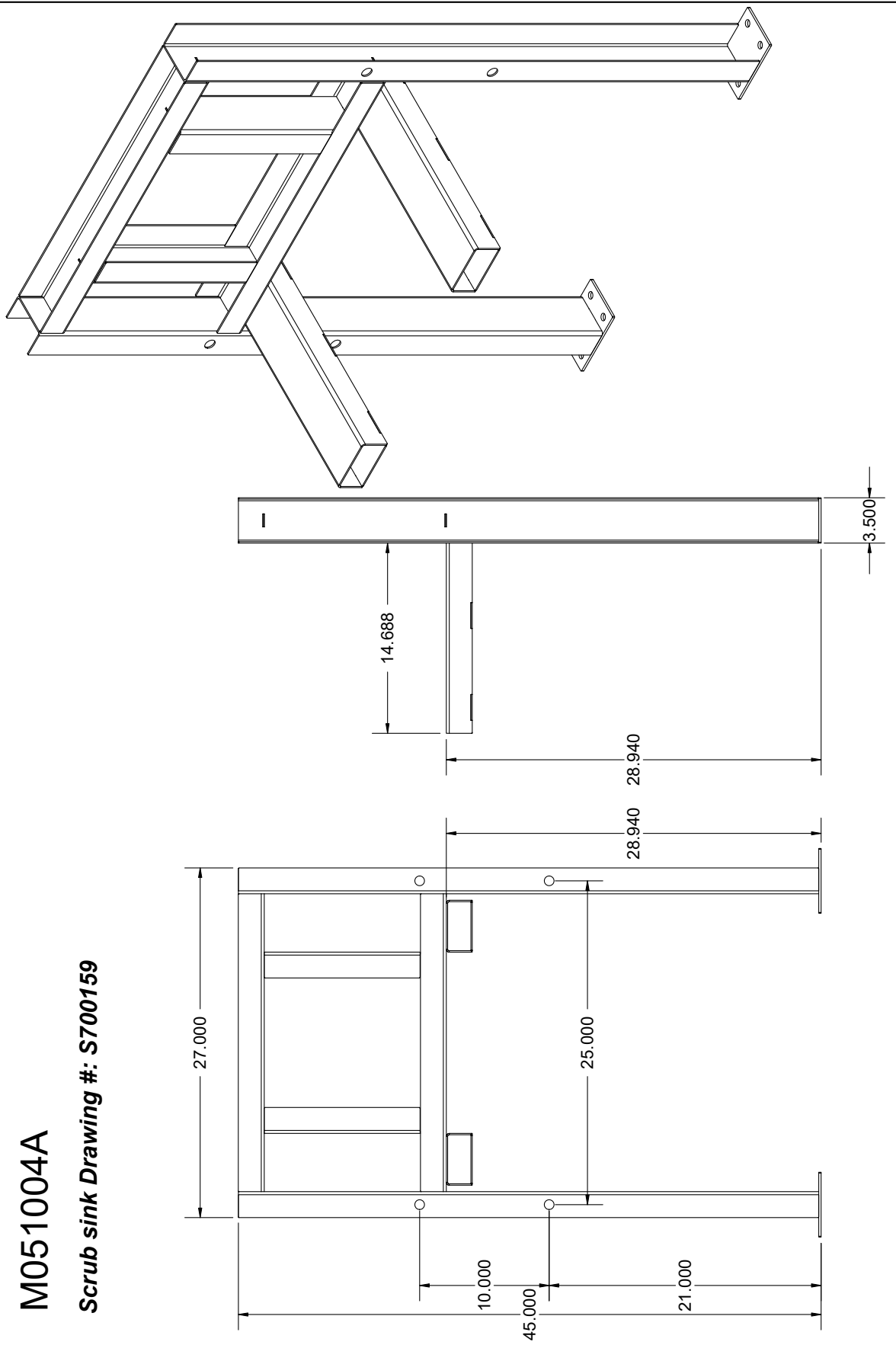
## **Troubleshooting - Electronic Valves**

The two most common reasons an electronic valve does not operate properly are: (1) lack of power or (2) lack of water pressure. The following steps should be used as a guide in identifying the problem of a malfunctioning electronic valve.

- I. Lack of power
  - A. Verify that the 110V GFCI outlet has power
  - B. Check all connections to ensure they have been made correctly:
    1. Cable connecting the valve coil and the timer or IR sensor
    2. Cable connecting the timer and the pushbutton (Piezo only)
    3. Cable connecting the timing device and the 24VAC transformer
    4. The 24VAC transformer and the 110V GFCI outlet
  - C. If the valve is wired correctly, the solenoid will make a “click” sound indicating that the valve has been actuated. The electronic valve is actuated by either the piezo pushbutton or the triggering of the infrared sensor (see the Start-Up Instructions for Infrared Sensors in this manual).
  
- II. Lack of water pressure
  - A. Check the supply to the rough-ins
  - B. Make sure the screwdriver stops are in the open position
  - C. Water pressure needs to be above 35psi to operate the valve
    1. If the water supply pressure is above 35psi but not exiting the valve:
      - a. Clean any debris from the screen on the inlet side of the solenoid valve body
      - b. Remove the screws on the valve body and clean any debris from the diaphragm

After all of the above steps have been followed, if there is still no water coming out of the spray head, there may be a damaged or defective part (see installation notice in the beginning of this

	<b>Willoughby Industries Inc.</b> Indianapolis, Indiana		Title or Part Description: <b>Scrub Sink- Single Station- Carrier Mounting Assembly</b>		Drawing #: <b>S700200</b>	
	Unless otherwise specified dimensions are +/- 1/16"		Material: 12 GA. 2B 304 SS	Drawn By: BC	Date: 03/21/07	Qty:
		Ref. Drawing:	Scale: 1:7	Job Number:	Revision #: B	Approved By:
					06/24/08	Sheet: 2 Of 2

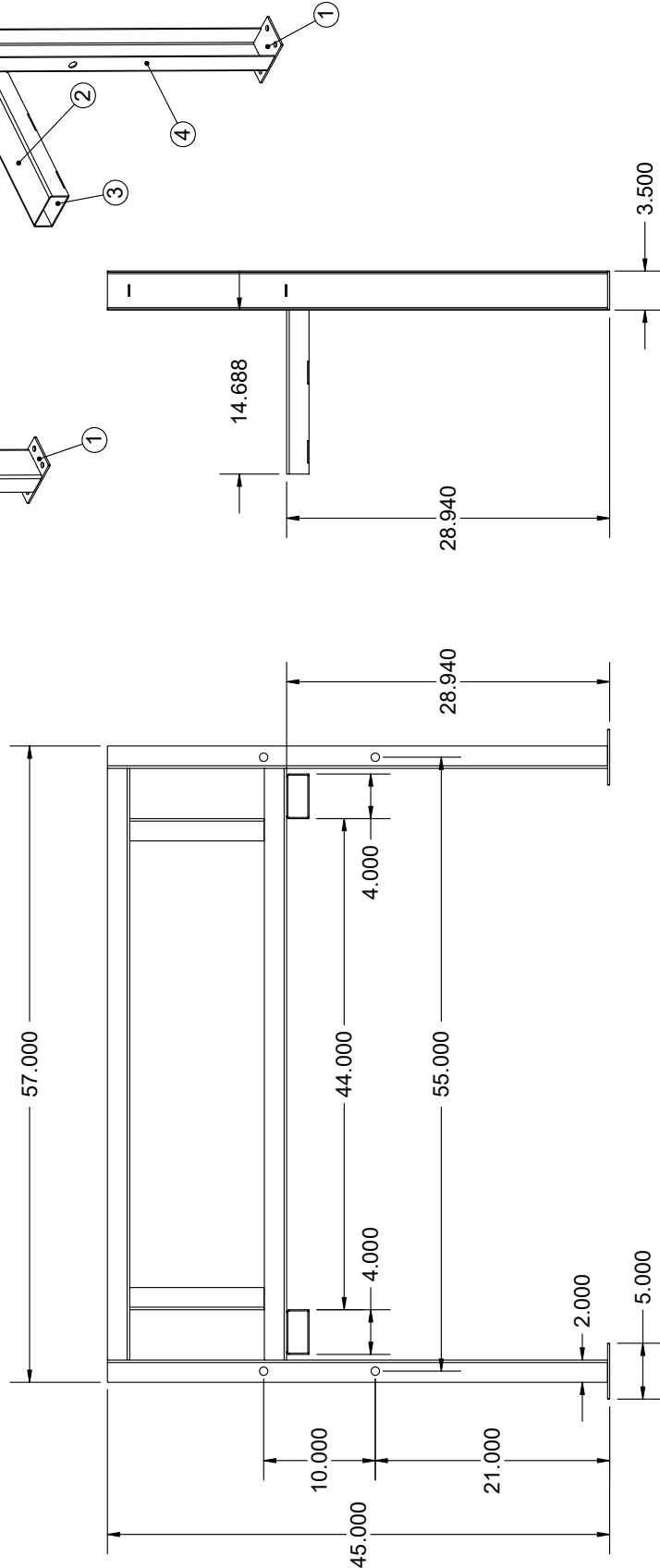


**DRAWING: EWSSS-1 Wall Carrier Detail**


**DRAWING: EWSSS-2 Wall Carrier Detail**

ITEM #	PART #	DESCRIPTION	QTY.
1	S700085	Carrier Mounting Base Plate	2
2	S700090	Carrier Mounting Main Horizontal Support	2
3	S700091	Carrier Mounting Inner Horizontal Support	2
4	S700201	Carrier Mounting Main Vertical Support - Right Hand	1
5	S700202	Carrier Mounting Main Vertical Support - Left Hand	1
6	S700203	Carrier Mounting Inner Vertical Support	2
7	S700221	Carrier Mounting Horizontal Support - 2 Station	2

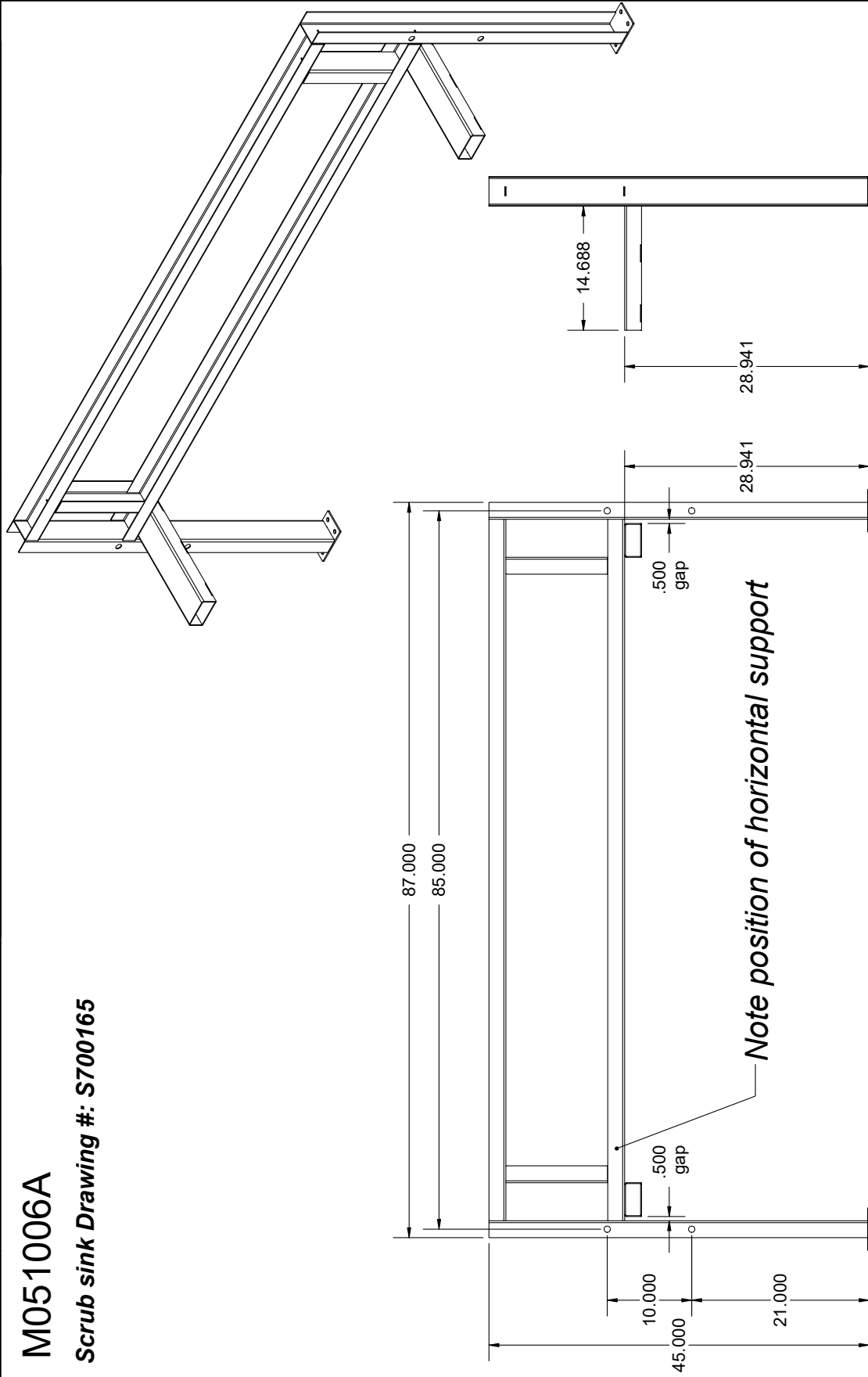
**M051005A  
Scrub sink Drawing #: S700141**



<b>Willoughby Industries, Inc.</b> Indianapolis, Indiana		PART # S700219	
TOLERANCES EXPRESSED AS NOTED		REVISION CRG: BC 02/01/08	
FRACTIONS: 1/32" SCALE: 1:12		REV: TRB 11/24/14 SHEET: 1 OF 1	
MATERIAL: 12 GA. 2B 304 SS		TITLE/DESC: EWSSS-2 Scrub Sink- Two Station- Carrier Mounting Assembly	
WILLOUGHBY		D	

	<b>Willoughby Industries Inc.</b> Indianapolis, Indiana	Title or Part Description: <b>EWSSS-3                  Scrub Sink- Three Station- Carrier Mounting Assembly</b>				Drawing #: <b>S700220</b>
	Unless otherwise specified dimensions are +/- 1/16"	Material: 12 GA. 2B 304 SS Ref. Drawing:	Drawn By: BC Scale: 1:15 Job Number:	Date: 02/01/08 Qty:	Revision #: <b>B</b> 06/24/08	Approved By: Sheet: 2 Of 2

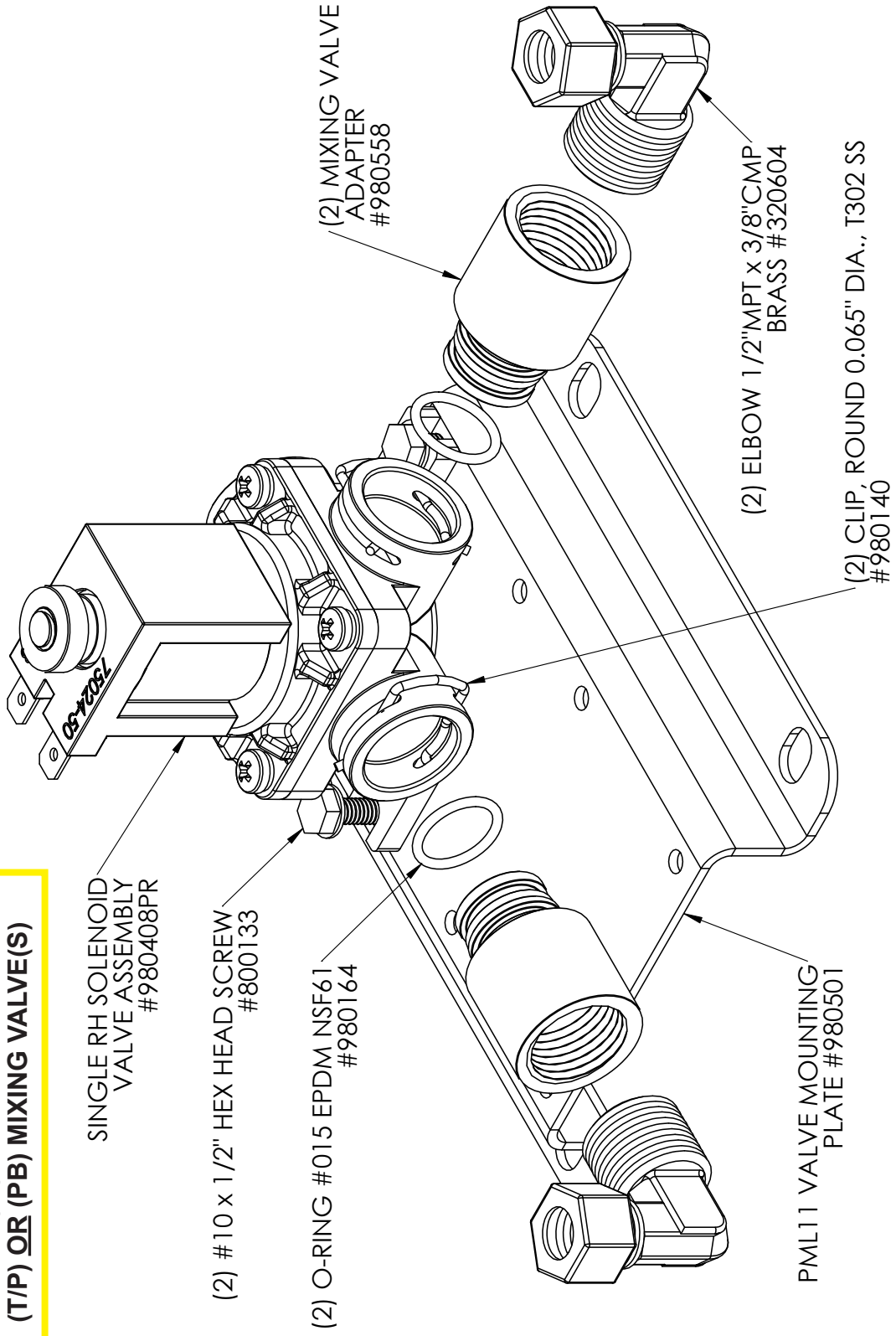
**M051006A**  
**Scrub sink Drawing #: S700165**



**DRAWING: EWSSS-3 Wall Carrier Detail**

**DRAWING: Electronic Valve Detail**

**FOR USE ON FIXTURES EQUIPPED WITH (IR) ACTUATION AND (T/P) OR (PB) MIXING VALVE(S)**



SINGLE RH SOLENOID VALVE ASSEMBLY #980408PR

(2) #10 x 1/2" HEX HEAD SCREW #800133

(2) O-RING #015 EPDM NSF61 #980164

(2) MIXING VALVE ADAPTER #980558


(2) ELBOW 1/2" MPT x 3/8" CMP BRASS #320604

(2) CLIP, ROUND 0.065" DIA., T302 SS #980140

PML11 VALVE MOUNTING PLATE #980501

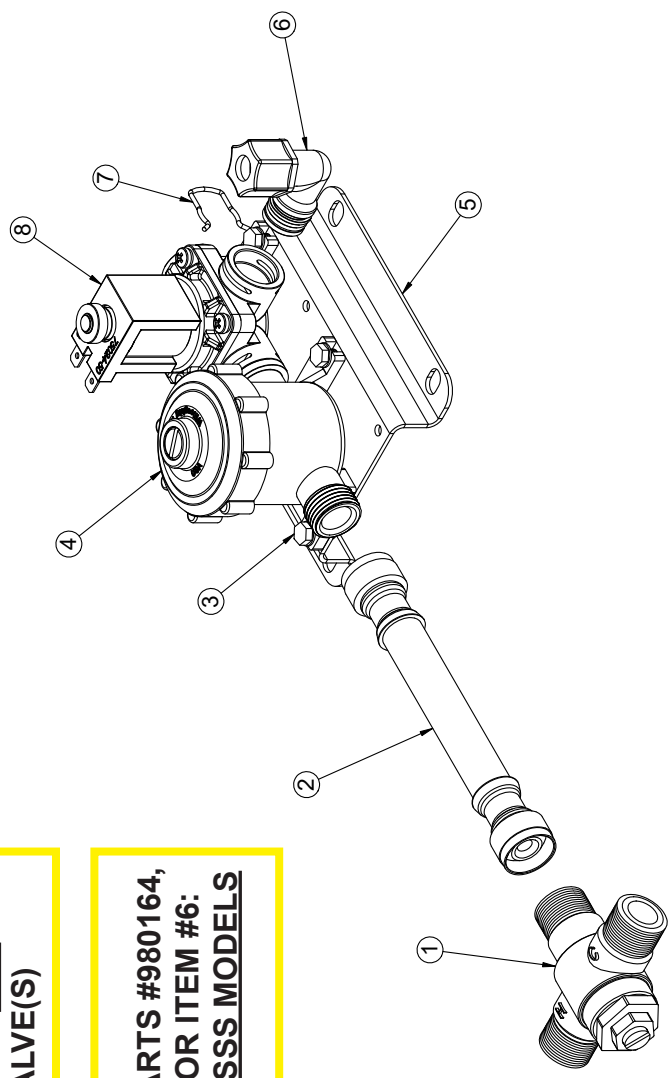
 <p>Willoughby Industries Inc. Indianapolis, Indiana</p>	TITLE / DESC: SOLENOID FOR IADTV SCRUB SINKS		PART #: 600957
	TOLERANCES EXCEPT AS NOTED 2 PLCS ±0.03 3 PLCS ±0.015 FINISH: 125 SCALE: 1:4		REVISION ORG: MCL 6/2/14 REV: A STANDARD SHEET: 1 OF 1



 WILLOUGHBY	<b>Willoughby Industries Inc.</b> Indianapolis, Indiana		Title or Part Description: <b>VALVE ASSY, WASHFOUNT 1-STATION (EL)</b>		Drawing #: <b>803105-1EW</b>	
	Tolerances Except as Noted	2 Places +/- .03 3 Places +/- .015 Fractions +/- 1/32" Angle +/- 1°	Drawn By: TRB	Scale: 1:4	Date: 11/7/11	Qty: N/A
Material: Job Name: N/A		Part Number:		Approved By:		Sheet: 1 Of 1

**FOR USE ON FIXTURES EQUIPPED WITH (IR) ACTUATION AND (TMV) MIXING VALVE(S)**

**NOTE: SUBSTITUTE PARTS #980164, #980558, & #320604 FOR ITEM #6: PART#980600A ON EWSSS MODELS**

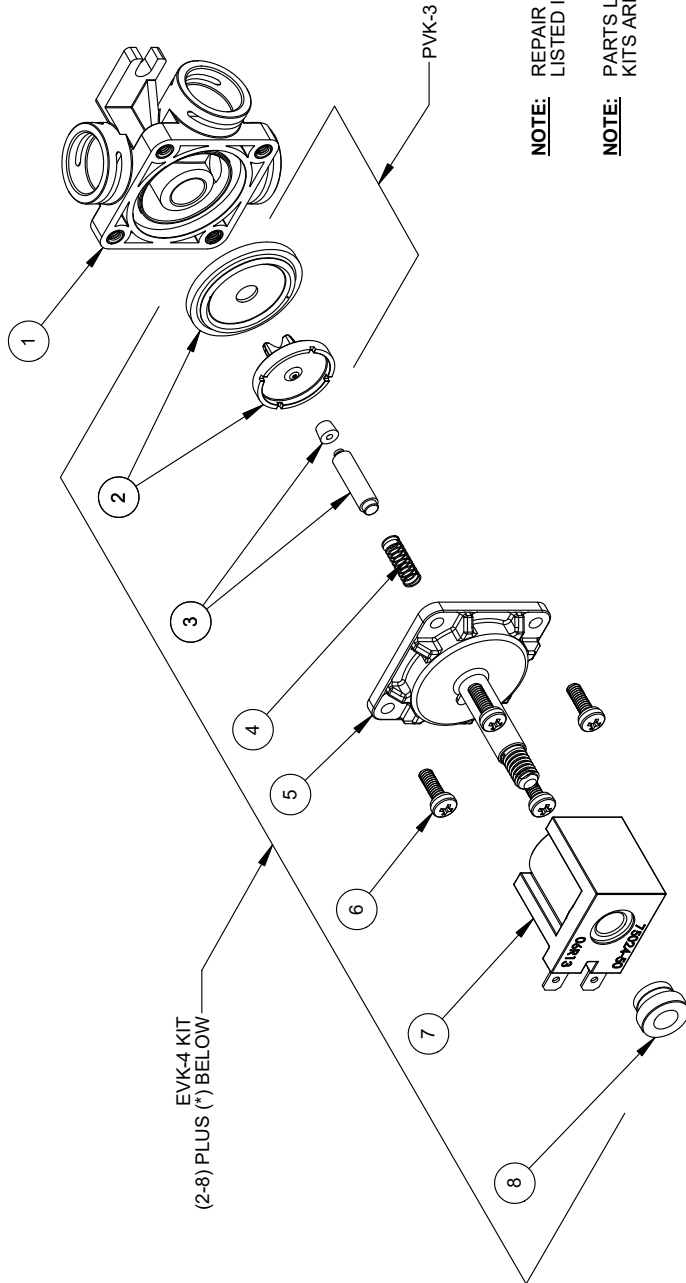


ITEM #	PART #	DESCRIPTION	QTY.
1	700480E	Powers 480E Mixing Valve	1
2	980506	FLEXHOSE, 6"	1
3	800133	#10-16 SELF TAP TYPE B HEX HEAD SCREW	4
4	980183	CHECKSTOP ASSEMBLY	1
5	980501	PM1 VALVE BRACKET	1
6	980600A	VALVE FITTING ASSEMBLY, 3/8" ELBOW	1
7	980140	SPRING CLIP	2
8	980408PR	E1L VALVE ASSEMBLY, RIGHT - PLUGGED PORT	1
9	980520	FLEXHOSE, 20" (NOT SHOWN)	2

NOTE:  
PART#9 - FLEXHOSE, 20" NOT SHOWN

**DRAWING: Electronic Valve Detail**

**DRAWING: Electronic Valve Detail**



**NOTE:** REPAIR KIT ORDERING #'S ARE LISTED IN THE EXPLODED VIEW.

**NOTE:** PARTS LISTED IN THE PVK REPAIR KITS ARE NOT SOLD INDIVIDUALLY

\* EVK-4 KIT INCLUDES 380897 VALVE SEAT W/ O-RING (NOT SHOWN)

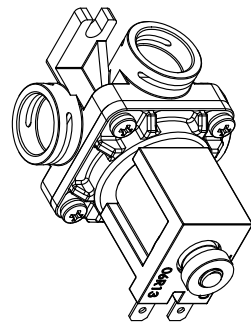
ITEM #	PART #	DESCRIPTION	QTY.
1	980420R	SINGLE TEMP BASE w/INSERTS - PLUGGED PORT	1
2	980305	WATER SIDE DIAPHRAGM/ADAPTOR ASSY.	1
3	980565	ARMATURE BUMPER ASSEMBLY, EL VALVE	1
4	980533	SPRING, 5/8 24v VALVE	1
5	980530	ARMATURE CAP, 24v VALVE	1
6	980170A	#8-32 x 1/2 " SCREW	4
7	980532	COIL, 24V DC	1
8	980534	NYLON NUT, 5/16-18	1

**Willoughby Industries, Inc.**  
Indianapolis, Indiana

TOLERANCES UNLESS OTHERWISE NOTED  
FRACTIONS 1/32" SCALE  
DECIMALS .0005  
ANGLES 1°

DATE: 10/18/12  
REV: A  
SHEET: 1 OF 1

WILLOUGHBY



ASSEMBLED VIEW

# **Warranty**

Willoughby Industries, Inc. warrants to commercial and institutional purchasers only that each unit will be free from defects in workmanship and materials under normal use and service upon the following terms and conditions for a period of one (1) year from date of shipment.

This warranty does not cover installation or any other labor charges and does not apply to any components damaged by accident, abuse, improper installation or improper maintenance. This warranty does not cover any installation that did not comply with national, state and local building, plumbing or electrical codes. The warranty is limited to replacing or repairing at manufacturer's option, transportation charges prepaid by the purchaser, any component or part which upon our inspection shall be deemed as defective within the limitations of this warranty. The replacement or repair of defective units as stated in this warranty shall constitute the sole remedy of the purchaser and the sole liability of Willoughby Industries, Inc. Willoughby Industries, Inc. shall not otherwise be liable under any indirect damages caused by defects in the repair or replacement thereof.

This warranty only extends to commercial and industrial purchasers and does not extend to any others, including consumer customers of commercial institutional purchasers. This warranty is in lieu of all other warranties, expressed or implied, including implied warranty of merchantability or fitness for a particular purpose or otherwise.

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## **Manufacturers Appendix**

### **TAPMASTER Models 1720, 1722, &1710**

Inline Self-contained Hydraulic Valve Actuator

Rev. 7/2015 \_\_\_\_\_ Pg. 38-41

### **HIGHLAND LABS Model 470**

Thigh-Operated Soap Dispenser

Rev. 8/2015 \_\_\_\_\_ Pg. 42-43



CSA – B125  
ASME – A112.18.1  
NSF – 61-9



PATENT NUMBERS  
U.S. 5,505,227, 6,254,057, 6,382,585  
Canadian 2,109,684  
European 0654628  
International & Other Patents Pending

## INSTALLATION INSTRUCTIONS: Models 1720, 1722 & 1710

### NOTICE & WARNING TO INSTALLER

**\*\*WARNING: Water lines MUST be flushed prior to installation\*\***

Neither Tapmaster Incorporated nor its distributors will be held responsible for any repairs associated with improper installation.

The plastic control tube bundles connecting the valves are pressurized with water after installation. Take care not to kink or damage the control tubes or tube fittings when installing the valves. It is assumed the person who intends to install the *Tapmaster Hands Free Faucet Controller* has a basic working knowledge of tools and plumbing. Tapmaster Incorporated will not assume any responsibility or liability for damages resulting from the improper installation of this product. It is recommended that a plumber or other person skilled in the art be consulted if you are unsure of the proper procedure to install the Tapmaster.

### GENERAL



This illustration shows a typical installation for the Model 1720 Tapmaster. The valve blocks are connected in-line on the hot and cold water supplies with 3/8" O.D. compression fittings. The pilot/actuator valve is mounted about knee height on the inside wall of the cabinet opposite the door hinge. The control tubing is routed in between the valves. Water flow to the faucet is activated by pressing with the knee or leg against the cabinet door.

Installation for the 1722 and 1710 models is essentially identical. The Model 1722 comes with two pilot/actuator valves and is generally used on island cabinets required control from either side. The Model 1710 comes with one valve block attached to a pilot/actuator valve and is typically used on mixed or single line water

supplies. Installations will vary according to the design of the cabinet, type of faucet and plumbing hardware. In some cases it may be simpler to connect the valve blocks at some convenient mid-point along the 3/8" supply tubing. In this case it will be necessary to obtain a 3/8" x 3/8" compression connector (*available at most hardware stores*) to connect the inlet fitting into the water lines. Other plumbing arrangements may be encountered where larger than 3/8" O.D. tube sizes are used. In these situations reducing adapters (*available at most hardware stores*) must be obtained to permit installation of the Tapmaster.

Although the Tapmaster will work with virtually any faucet, faucets with handles that give a visual reference for flow and temperature are recommended. Cabinet doors will also vary in design and construction. Doors with spring loaded hinges are recommended. However, mechanical and magnetic latches will work equally well as long as there is some play in the mechanism to accommodate the 1/32" stroke of the pilot/actuator valve.

### OPERATION

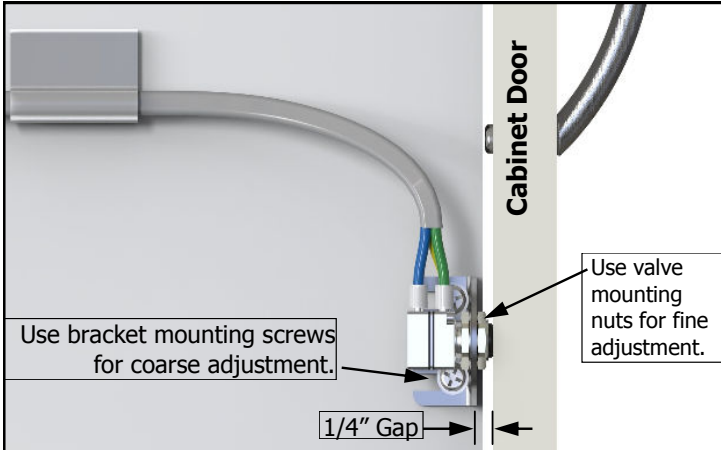
To operate the Tapmaster simply press against the cabinet door with your knee or leg and set the faucet open to the desired flow and temperature. By releasing the door, the Tapmaster shuts off the water flow to the faucet. Once the faucet has been adjusted it should be left open.

The Tapmaster does not alter the appearance of the faucet, therefore a *removable decal* is provided which may be located on any hard smooth surface near the faucet to alert people to its method of operation. Alternately, simply attaching a piece of tape, string or an elastic band to the faucet handle will remind the end-user the faucet is Tapmaster equipped.



Press knee  
against  
cabinet door  
to activate  
water flow

**INSTALLING THE PILOT/ACTUATOR VALVE**



First determine a height location where the pilot/actuator valve is to be mounted on the inside of the cabinet opposite the door hinge, preferably about knee height or higher. The objective is to mount the pilot/actuator valve so that the inside face of the cabinet rests against the button of the pilot/actuator valve. This will set the door ajar very slightly, about 1/32".

**STEP #1** - Fasten the mounting bracket with the wood screws and washers provided, ensuring that there is approximately 1/4" gap between the inside of the door and the face of the mounting bracket (see illustration).

**STEP #2** - Mount the pilot/actuator valve onto the mounting bracket ensuring the inside of the

door rests against the button of the pilot/actuator valve. To adjust the position of the pilot/actuator valve relative to the door, use the screw slots on the mounting bracket as a coarse adjustment and the 15/32-32 hex nuts on the pilot/actuator valve body as a fine adjustment. The pilot/actuator should be positioned to assure full travel of the button of the pilot/actuator valve while minimizing how far the door is set ajar or offset (Hint: Set the first nut on the pilot/actuator valve all the way down on the stem and adjust second nut until the valve is properly adjusted then tighten the first nut to secure the valve).

**STEP #3** - Route the control tubing with the self-adhesive plastic clips provided. The control tubing is pressurized, be sure it is properly secured to prevent accidental damage by cabinet doors, hinges or objects being transferred in and out of the cabinet.

**INSTALLING THE PILOT/ACTUATOR VALVE IN VARIOUS CABINETS**

These cutaway views of various cabinet styles provide illustrations for some of the many possibilities of positioning the pilot/actuator valve using the door as an activator. The activator does not necessarily have to be a door. The possibilities are only limited by the hardware available and the imagination of the installer. Any surface or panel where a slight movement (approximately 1/32") can be created which can be pressed by the knee, leg or hip has the potential to be a hands free activator.



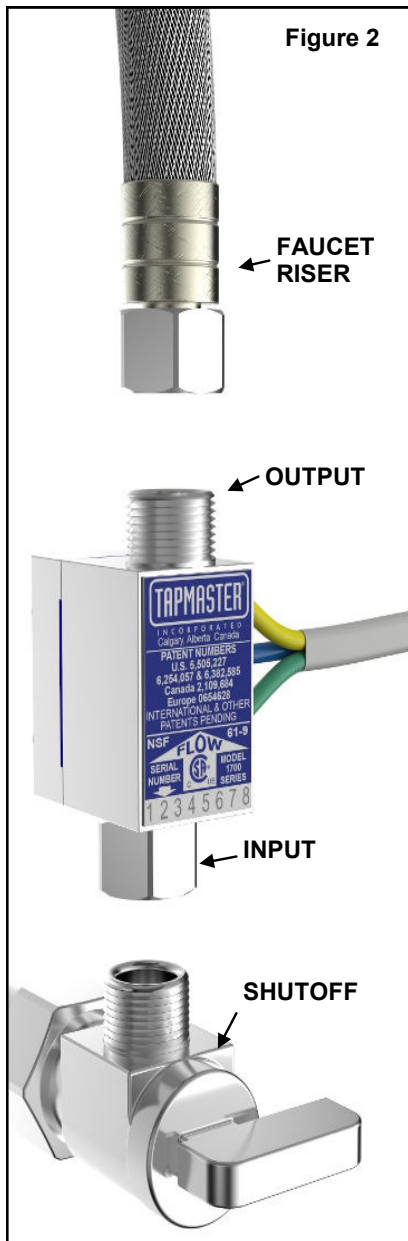
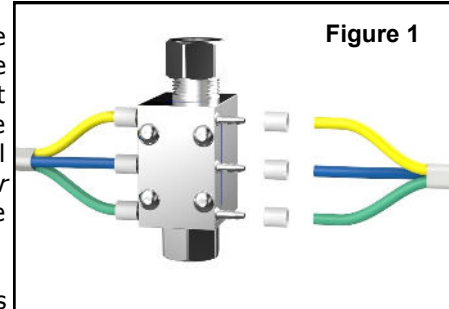
As an example, in the public washroom drop-in counter sinks below, the Tapmaster actuator valve rests against a hinged panel with a towel or grab bar mounted on it. Simply a light push of the bar with the upper knee or lower thigh area activates the water flow releasing the bar stops it.



**INSTALLING THE VALVE BLOCKS**

The Tapmaster valve blocks are connected in-line between the hot and cold shut off valves and the faucet tubes as shown in **Figure 2**. (Note: The valve blocks are identical in function and may be used on either hot or cold water lines. Position them according to how the control tubing will be routed). (Small leaks may take several minutes to show up).

**STEP #1** - Hook up the control tubing from the pilot/actuator to the valve block with the plastic sleeves provided as per **Figure 1**. (Note: To facilitate the installation of the tubing and sleeves, dip the ends of the tubing into hot soapy water and using a pair of needle nose pliers push the tubing on to the barb fittings. An adjustable wrench opened to the diameter of the tubing will assist in pushing on the sleeves. *Take care not to damage the barb fittings or crush the tubes.* If a tube must be removed from a barb fitting, split the tube along its length with a sharp knife (*Do not pull as this may damage the barb*).



**STEP #2** - Turn off the water supplies and place a bucket underneath the shut off valves to catch water that may run out of the plumbing. (*Hint: Closing the faucet handles will minimize leakage*). Loosen the compression nuts on the connecting 3/8" O.D. supply tubes, at the shut off valves. If the faucet utilizes copper tube risers, bend and reposition the tubes in such a manner as to create a 1-1/2" gap (*Do not kink*). To simplify the installation, replace the copper risers with flex risers (*available at most hardware stores*). If this cannot be readily accomplished the tubes will have to be shortened approximately 1-1/2". Cut the tubes with a tube cutter. If a tube cutter is not available a hacksaw may be used, however be sure to de-bur and square the ends. Extra compression nuts and sleeves are provided should the tubes need to be cut.

**STEP #3** - Prior to installing the valve blocks, open the shut-off valves momentarily to flush out any debris in the water lines. Large pieces of water borne debris will be trapped by the filter/screen in the valve blocks and may reduce water flow or cause noisy operation. As shown in **Figure 2** connect the valve block(s) with the integrated nut (input) to the shutoff fitting and the faucet riser to the compression thread (output). Finger tighten only until both valve blocks are in position. Be sure the plastic control tubing and fittings are not damaged in any manner.

**STEP #4** - Proceed to tighten the compression nuts using a 5/8" wrench on the nut and a 7/8" wrench on the valve block body. Do not over tighten 3/8" compression fittings with O-ring seals such as the valve block input fitting. Hand tighten plus 1/2 turn with wrench.

**STEP #5** - Verify that all connections are tight. Turn on the water supply(s) and inspect **all** connections for leaks. Set the faucet, both hot and cold, completely open and push the cabinet door to activate the water flow. Operate the Tapmaster on and off rapidly to clear air from the valves. The valves may experience some noise during on or off operation until the air is cleared. Allow significant time to pass and then re-inspect all connections for leaks (*Small leaks may take several minutes to show up*).

APPENDIX: TAPMASTER



**TROUBLE SHOOTING**

<b>Symptom</b>	<b>Possible Cause</b>	<b>Remedy</b>
The hot or cold water is very slow to turn on or will not turn on	Pinched tubing	Check control tubing (yellow and blue)
The hot or cold water is very slow to shutoff or will not shutoff	Pinched tubing	Check control tubing (green and blue)
Noise from the Valve Blocks while the water is running	The Valve Block may have excessive debris trapped under its Filter-screen	Service the Valve Blocks
Noise from the Valve Blocks when turning water on and off	Air in the system	Operate the pedal on and off rapidly to clear air from the valves.

Further information: [www.tapmaster.ca](http://www.tapmaster.ca) or call 800-791-8117

**FIVE YEAR LIMITED WARRANTY**

***Congratulations on your purchase of TAPMASTER Hands Free Faucet Controller.***

TAPMASTER products are thoroughly tested before shipment and are warranted to be free of defects in material and workmanship for five years from the date of original purchase. The sole obligation of Tapmaster Incorporated under the warranty is to provide replacement parts or at its option to repair the defective product or to provide the replacement product. Replacement parts furnished in fulfillment of this warranty are warranted only for the unused portion of the original warranty. Labor and shipping charges are not included.

*Warranty conditions* - The five year warranty is subject to exclusions and limitations as stated below:

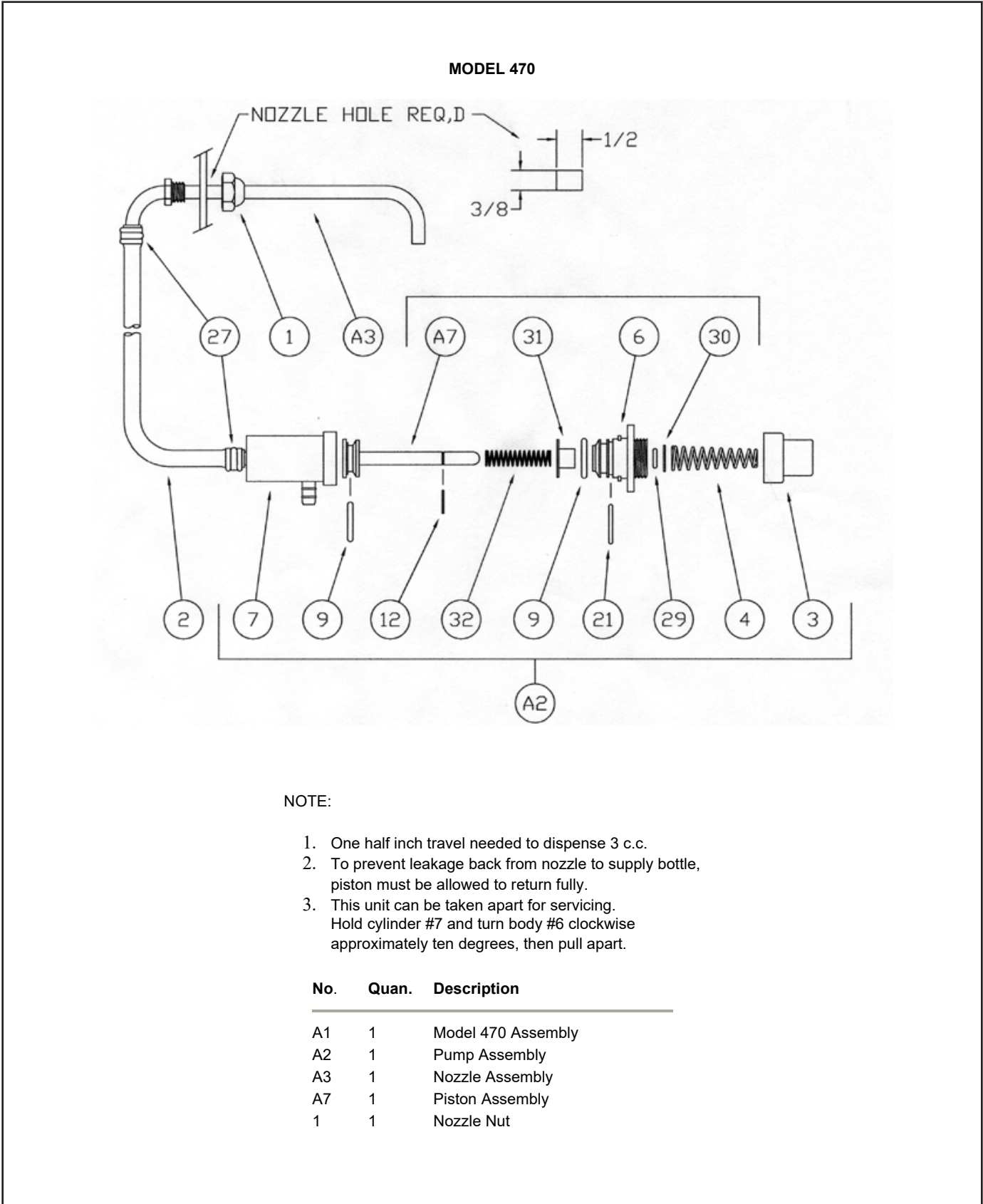
Warranty extends only to defects which occur during normal use and intended applications and does not extend to damage to products or parts resulting from alteration, repair, modification or faulty installation. This warranty does not cover damage resulting from water borne debris or from media other than clean potable water. Tapmaster Incorporated makes no other express warranty on this product, all implied warranties including any implied warranty of merchantability and fitness for a particular purpose are hereby disclaimed and excluded. In no event shall Tapmaster Incorporated be liable for special, incidental or consequential damages resulting from the use of this product or arising from breach of warranty or contract, negligence, loss of time, inconvenience or loss of use of equipment.

Tapmaster Incorporated  
20175 Township Rd 262  
Calgary, AB Canada  
T3P 1A3

Rev 3.0

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PH: 800-791-8117  
FAX: 403-275-5928  
Web: [www.tapmaster.ca](http://www.tapmaster.ca)  
E-mail: [info@tapmaster.ca](mailto:info@tapmaster.ca)



2	1	Tubing 6 FT
3	1	Pump Nut
4	1	Spring
6	1	Pump Body
7	1	Cylinder
9	1	"O" Ring 9/16 x 3/4 x 3/32
12	1	"E" Ring
21	1	"O" Ring 5/8 x 3/4 x 1/16
27	1	Clamp
29	1	"O" Ring 1/4 x 3/8 x 1/16
30	1	"O" Ring Retainer
31	1	Inlet Spider
32	1	Inlet Spring
R1	4	"O" Ring Repair Kit
R1 V	4	"O" Ring Repair Kit (Viton Rubber)

**HIGHLAND LABS, INC.**  
163 Woodland Street  
Holliston, MA 01746  
508-429-2918 Fax 508-429-6283

**APPENDIX: HIGHLAND LABS**