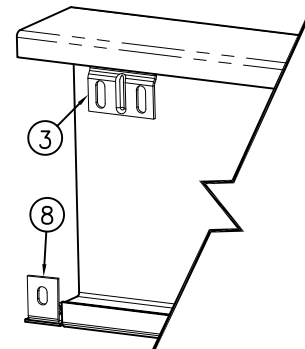
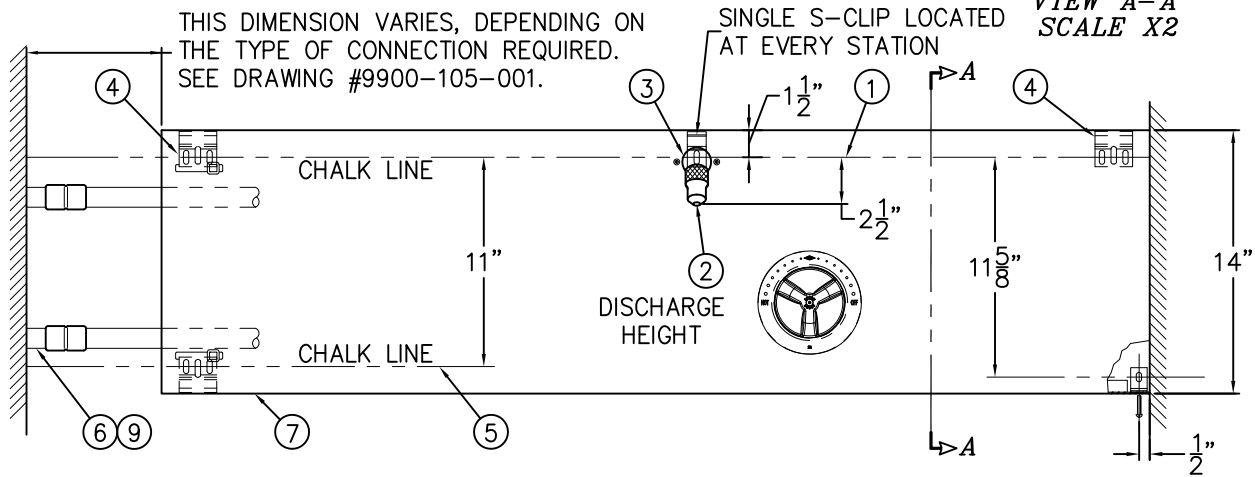


REFERENCE DRAWINGS			
ASSEMBLIES	NUMBER	ASSEMBLIES	NUMBER
SHOWERHEAD	9970-120-003	VALVE BODY	9975-090-001
T/P VALVE	9975-005-002	METERING SERVOMOTOR	9955-000-003
FLO-CLOZ	9975-000-001	CHECK STOP/STRAINER	9956-040-003
METER-MATIC	9975-020-003	PUSHBUTTON/ESCUTCHEON	9957-300-001
MTG. HARDWARE	9951-007-001	T/P VALVE TEMP ADJUST	9900-007-001
		T/P VALVES PRIOR TO JUNE 2014	9900-007-001



**VIEW A-A  
SCALE X2**



**INSTALLATION INSTRUCTIONS:**

- A- STRIKE A CHALK LINE (1) ON THE WALL 2-1/2" ABOVE SHOWER HEAD DISCHARGE HEIGHT (2).
- B- MARK, DRILL AND INSTALL WALL ANCHORS ON CHALK LINE AT CENTERLINE OF EACH SHOWER HEAD (3) & AT OUTSIDE CORNERS OF EACH ACME SHOWER MODULE (4). ATTACH S-CLIPS TO WALL ANCHORS.
- C- STRIKE ANOTHER PARALLEL CHALK LINE 11-1/8" BELOW THE 1st CHALK LINE (5).
- D- MARK, DRILL AND INSTALL WALL ANCHORS AT BOTTOM CORNERS OF UNIT. DO NOT INSTALL S-CLIPS YET.

- IF SHOWER UNIT BUTTS UP TO AN ADJACENT WALL, INSTALL AN L-BRACKET AT THAT BOTTOM CORNER 9/16" FROM ADJACENT WALL, AND 11-5/8" BELOW UPPER CHALK LINE.
- E- MEASURE AND CUT SUPPLY TUBING (6) BEFORE HANGING UNIT ON THE WALL.
- F- LIFT UNIT AND POSITION ONTO UPPER S-CLIPS. INSTALL S-CLIPS AT LOWER ENDS OF UNIT (7). FASTEN SHOWER TO L-BRACKET IF USED (8).
- G- SOLDER SUPPLY CONNECTIONS (9). ALL SUPPLY COUPLINGS AND FITTINGS, FURNISHED BY OTHERS.

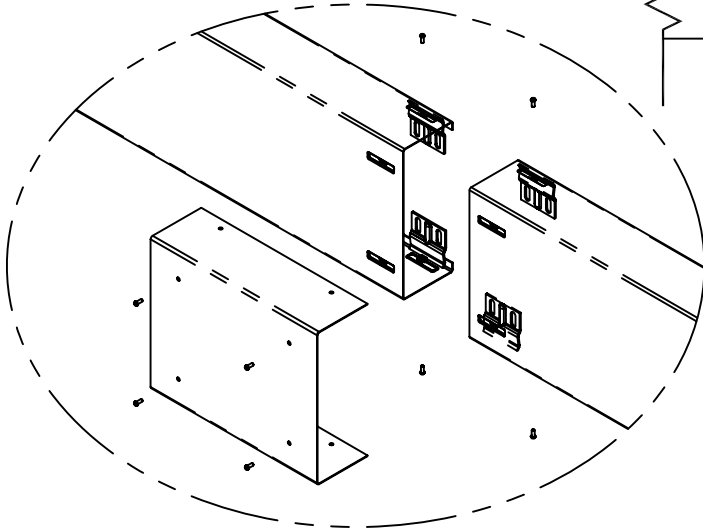
<p>ACORN ENGINEERING COMPANY P.O. BOX 3527 Industry, CA 91744 15125 Proctor Ave Industry, CA 91746 (626) 336-4561 FAX (626) 961-2200</p>	<p>TITLE <b>ACME WALL MOUNTED SHOWERS - 110 SERIES</b></p>		
	<p>MANUFACTURE DATE</p> <p><b>MARCH 1982 TO PRESENT</b></p>	<p>DATE ISSUED</p> <p><b>12/01/89</b></p> <p>DATE REVISED</p> <p><b>06/01/14 K</b></p>	<p>DRAWING NUMBER</p> <p><b>9900-100-001</b></p>



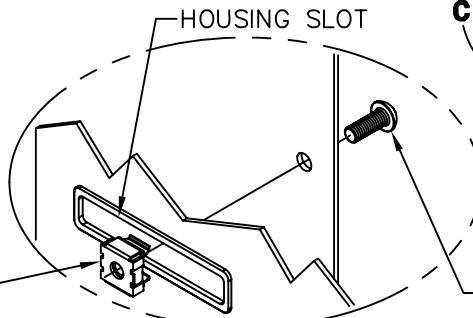
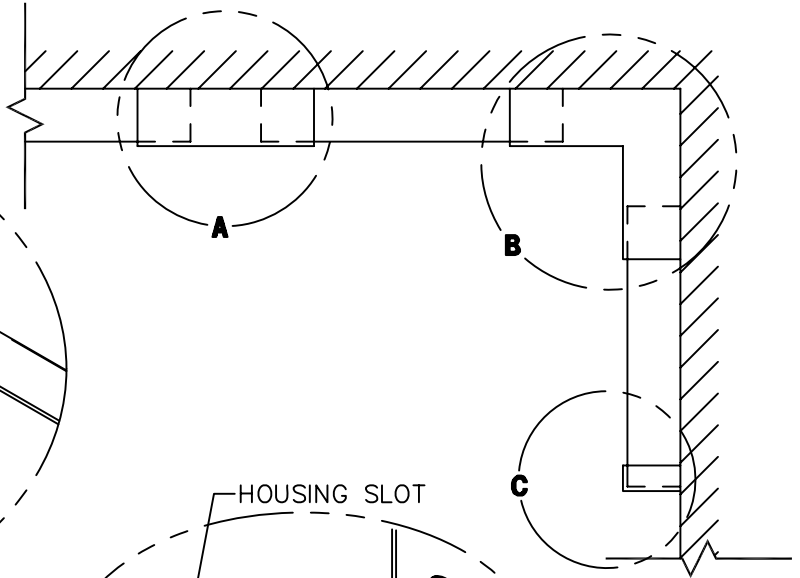
**INSTALLATION INSTRUCTIONS:**

AFTER INSTALLING SHOWER MODULES AND MAKING ALL SOLDER CONNECTIONS, INSTALL COUPLERS, TERMINALS AND COVERS WITH #10-32 UNF x 1/2" LONG VANDAL RESISTANT FASTENERS PROVIDED. SEE DETAILS A THROUGH C.

<b>REFERENCE DRAWINGS</b>	
HARDWARE	NUMBER
FASTENERS	9951-005-001
MOUNTING HARDWARE	9951-007-001



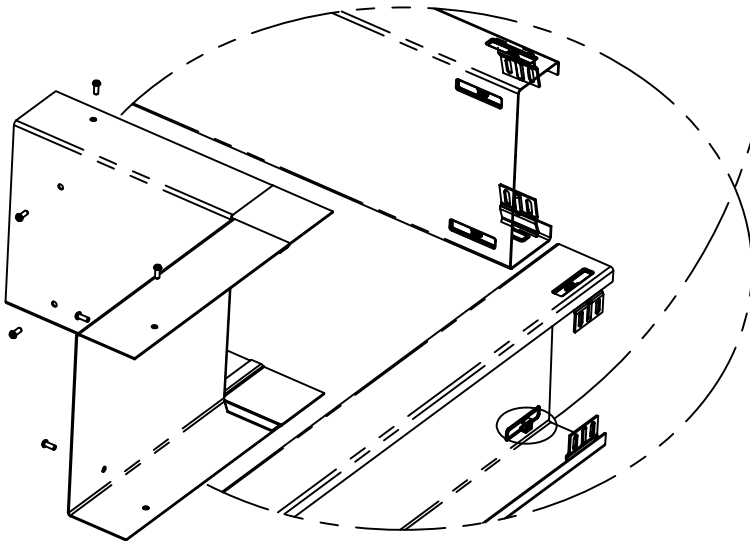
**INTERMEDIATE SECTION DETAIL "A"**



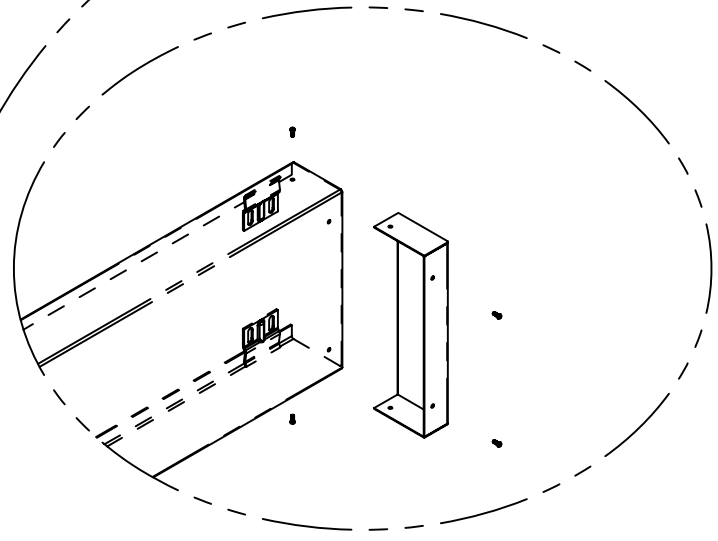
TINNERMAN NUT

INSTALL TINNERMAN NUT FROM BACKSIDE OF HOUSING.

#10-32 x 1/2" HEX SOCKET BUTTON HEAD SCREW w/CENTER REJECT



**CORNER SECTION DETAIL "B"**



**CAPPED END SECTION DETAIL "C"**



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TITLE <b>ACME WALL MOUNTED SHOWERS</b>		
MANUFACTURE DATE <b>JUNE 2009 TO PRESENT</b>	DATE ISSUED <b>07/22/11</b>	DRAWING NUMBER <b>9900-105-002</b>
	DATE REVISED	



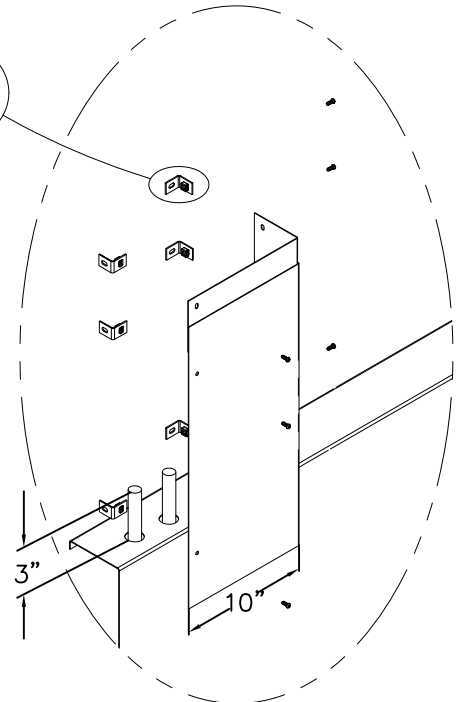
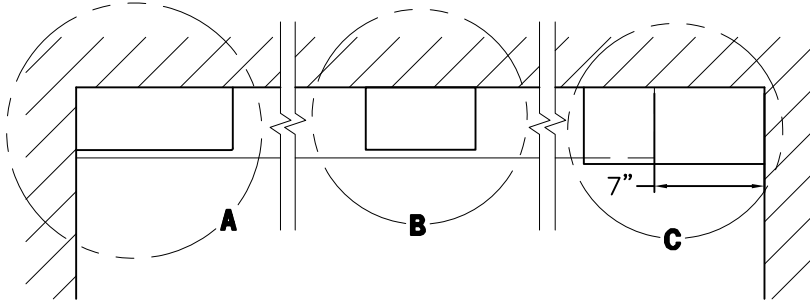
**INSTALLATION INSTRUCTIONS:**

AFTER INSTALLING SHOWER MODULES AND MAKING ALL SOLDER CONNECTIONS, INSTALL COUPLERS, TERMINALS AND COVERS WITH #10-32 UNF x 1/2" LONG VANDAL RESISTANT FASTENERS PROVIDED. SEE DETAILS A THROUGH C.

L-BRACKET ASSEMBLY

TINNERMAN NUT

REFERENCE DRAWINGS	
HARDWARE	NUMBER
FASTENERS	9951-005-001
MOUNTING HARDWARE	9951-007-001

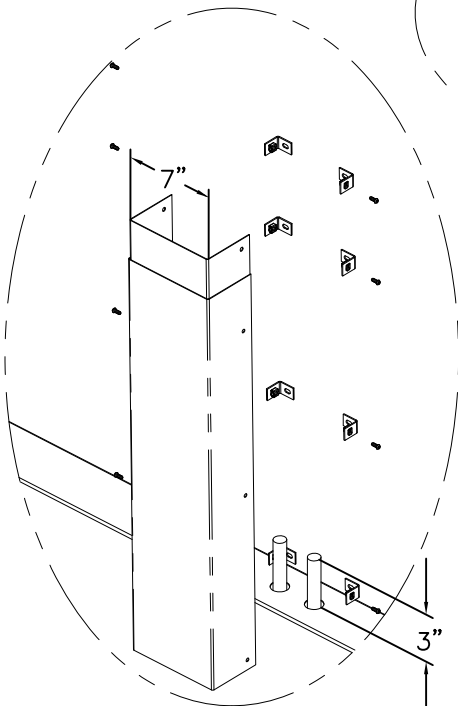
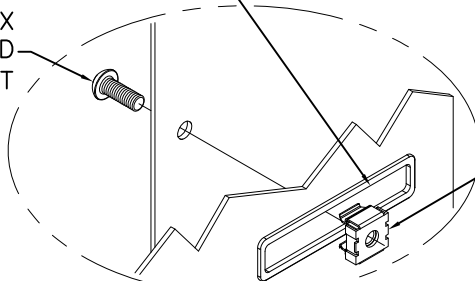


**TOP SUPPLY CORNER COVER SECTION DETAIL "A"**

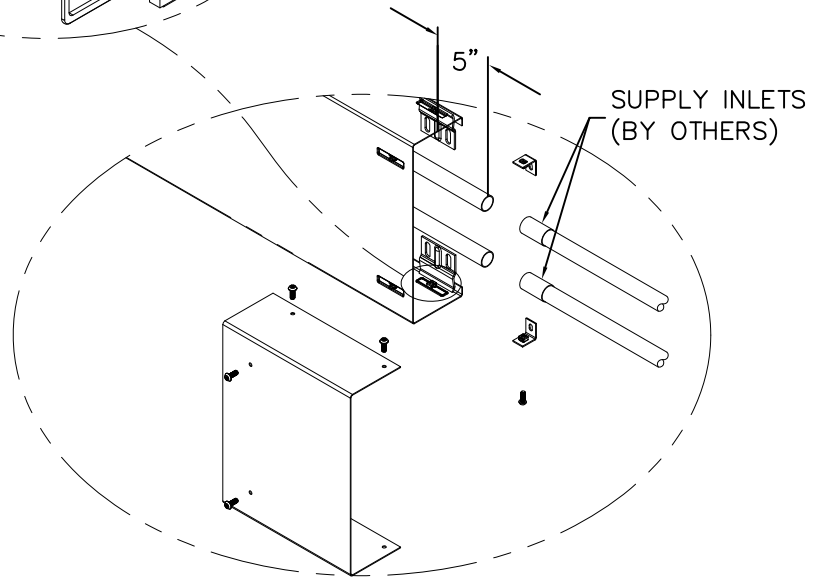
TINNERMAN NUT  
INSTALL TINNERMAN NUT FROM BACKSIDE OF HOUSING.

#10-32 x 1/2" HEX SOCKET BUTTON HEAD SCREW w/CENTER REJECT

HOUSING SLOT



**TOP SUPPLY COVER SECTION DETAIL "B"**



**WALL SUPPLY COVER IN CORNER SECTION DETAIL "C"**



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TITLE

**ACME WALL MOUNTED SHOWER SUPPLY COVERS**

MANUFACTURE DATE

**JUNE 2009  
TO PRESENT**

DATE ISSUED

**07/19/11**

DATE REVISED

**08/22/12**

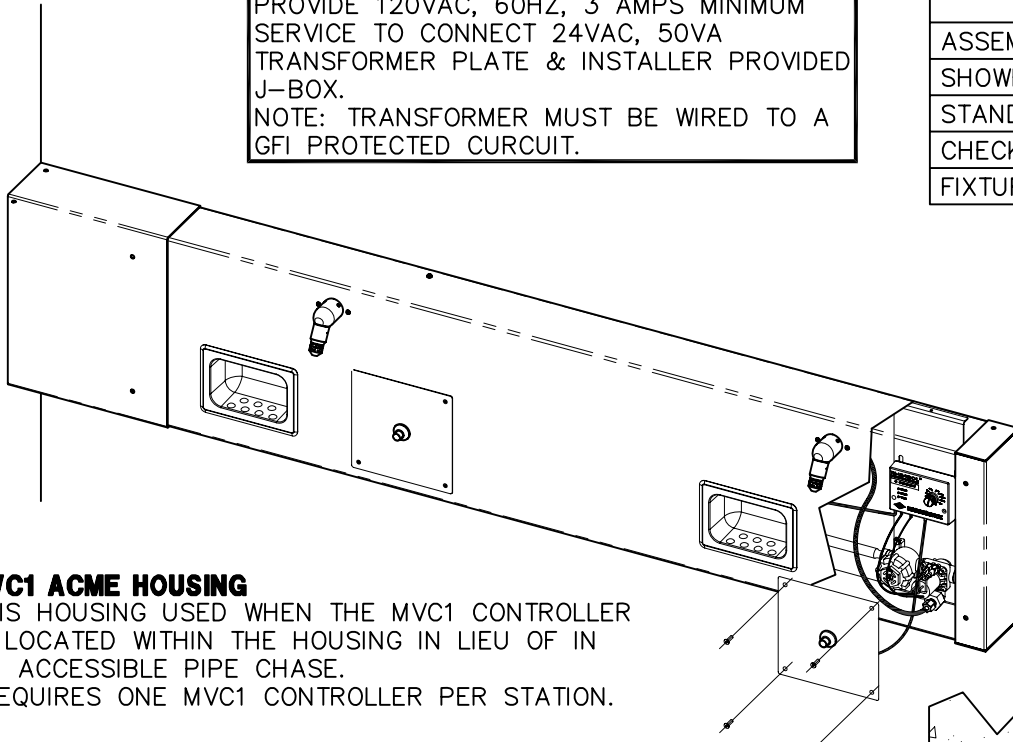
DRAWING NUMBER

**9900-106-001**



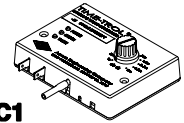
PROVIDE 120VAC, 60HZ, 3 AMPS MINIMUM SERVICE TO CONNECT 24VAC, 50VA TRANSFORMER PLATE & INSTALLER PROVIDED J-BOX.  
 NOTE: TRANSFORMER MUST BE WIRED TO A GFI PROTECTED CURCUIT.

REFERENCE DRAWINGS	
ASSEMBLIES	DRAWING
SHOWERHEAD	9970-120-003
STANDARD NOZZLE	9970-101-004
CHECKSTOPS	9956-040-003
FIXTURE TRIM	9957-300-001

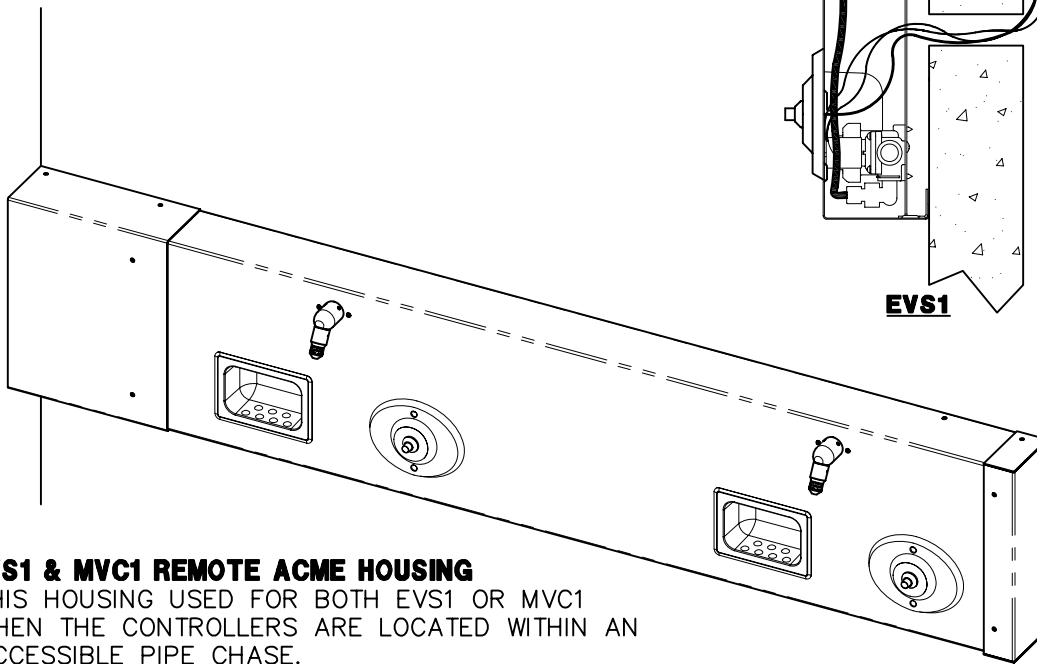


**MVC1 ACME HOUSING**

THIS HOUSING USED WHEN THE MVC1 CONTROLLER IS LOCATED WITHIN THE HOUSING IN LIEU OF IN AN ACCESSIBLE PIPE CHASE.  
 \*REQUIRES ONE MVC1 CONTROLLER PER STATION.

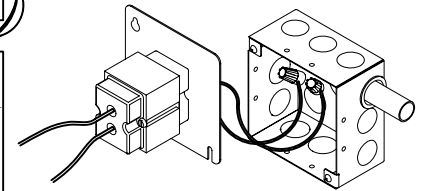


**MVC1**  
 REFER TO DRAWING 9905-001-004 FOR DETAILS

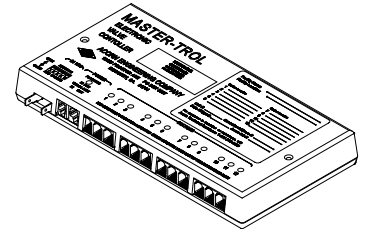


**EVS1 & MVC1 REMOTE ACME HOUSING**

THIS HOUSING USED FOR BOTH EVS1 OR MVC1 WHEN THE CONTROLLERS ARE LOCATED WITHIN AN ACCESSIBLE PIPE CHASE.  
 \*MVC1 REQUIRES ONE CONTROLLER PER STATION  
 \*EVS1 REQUIRES ONE CONTROLLER PER 12 STATIONS.



**TRANSFORMER**



**EVS1**  
 REFER TO DRAWING 9905-330-004 FOR DETAILS

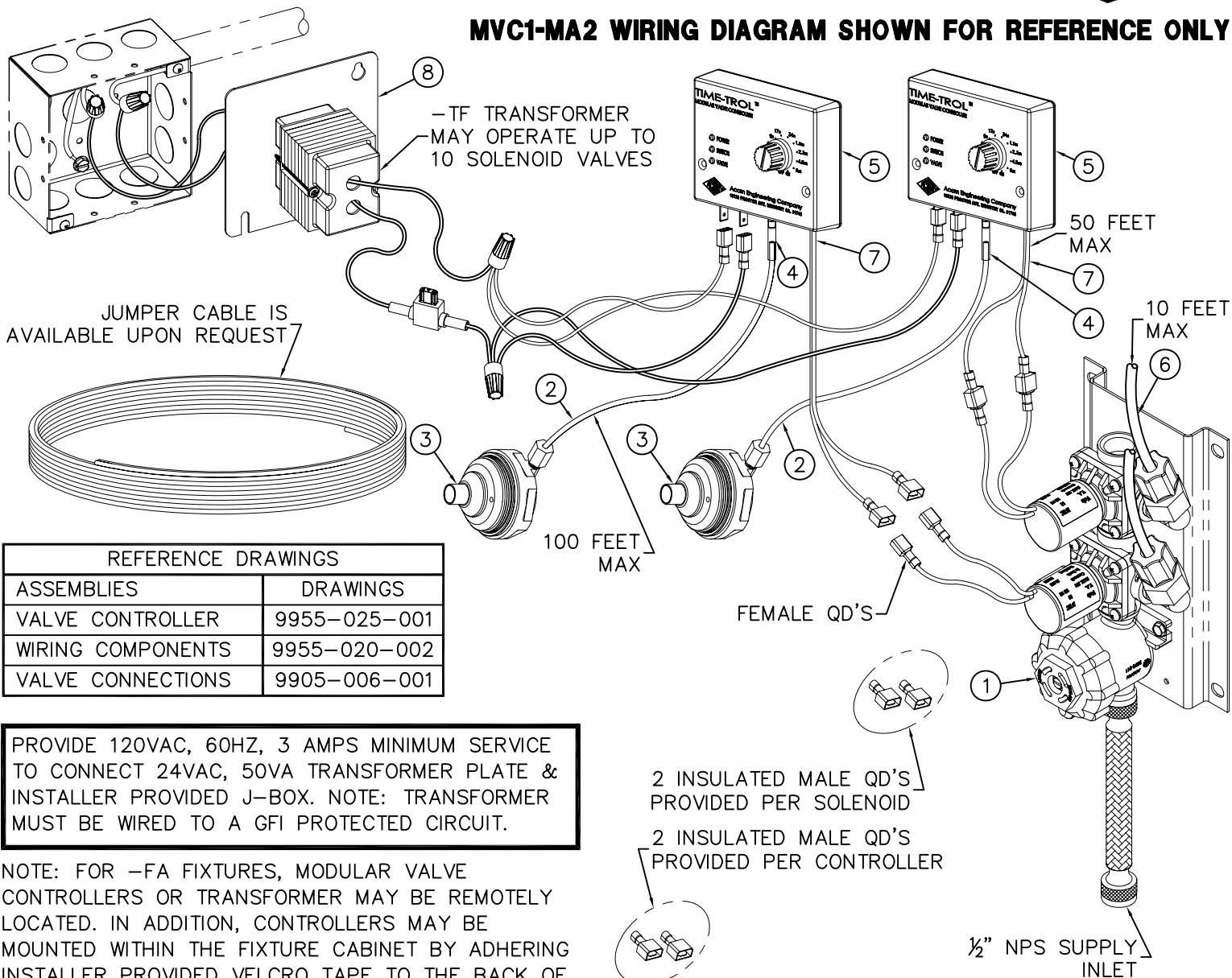


ACORN ENGINEERING COMPANY  
 P.O. BOX 3527 INDUSTRY, CA. 91744  
 (626) 336-4561 FAX (626) 961-2200

TITLE <b>ACME WALL MOUNTED SHOWERS - ELECTRONIC VALVES</b>		
MANUFACTURE DATE <b>SEPTEMBER 1995 TO PRESENT</b>	DATE ISSUED <b>04/27/98</b>	DRAWING NUMBER <b>9900-130-002</b>
	DATE REVISED <b>02/01/11</b>	



**MVC1-MA2 WIRING DIAGRAM SHOWN FOR REFERENCE ONLY**



REFERENCE DRAWINGS	
ASSEMBLIES	DRAWINGS
VALVE CONTROLLER	9955-025-001
WIRING COMPONENTS	9955-020-002
VALVE CONNECTIONS	9905-006-001

PROVIDE 120VAC, 60HZ, 3 AMPS MINIMUM SERVICE TO CONNECT 24VAC, 50VA TRANSFORMER PLATE & INSTALLER PROVIDED J-BOX. NOTE: TRANSFORMER MUST BE WIRED TO A GFI PROTECTED CIRCUIT.

NOTE: FOR -FA FIXTURES, MODULAR VALVE CONTROLLERS OR TRANSFORMER MAY BE REMOTELY LOCATED. IN ADDITION, CONTROLLERS MAY BE MOUNTED WITHIN THE FIXTURE CABINET BY ADHERING INSTALLER PROVIDED VELCRO TAPE TO THE BACK OF THE CONTROLLER AND ONTO FIXTURE CABINET.

**INSTALLATION INSTRUCTIONS:**

- A- ROUGH-IN & INSTALL FIXTURE PER MANUFACTURER'S INSTRUCTIONS.
- B- MOUNT SOLENOID VALVE ASSEMBLY (1) WITHIN THE CHASE OR FIXTURE FRAME / CABINET AS REQUIRED A MAXIMUM OF 10 FEET FROM THE FIXTURE.
- C- CONNECT AIR TUBING (2) TO MOUNTED PUSHBUTTON ASSEMBLY (3) AND HAND TIGHTEN FERRULE NUT. CONNECT THE TAG END OF THE AIR TUBING (2) TO THE VALVE CONTROLLER TUBE (4) AT THE POSITION MARKED "ACTUATOR" ON THE CONTROLLER (5). AIR TUBING FITS INSIDE THE CONTROLLER TUBE (4).

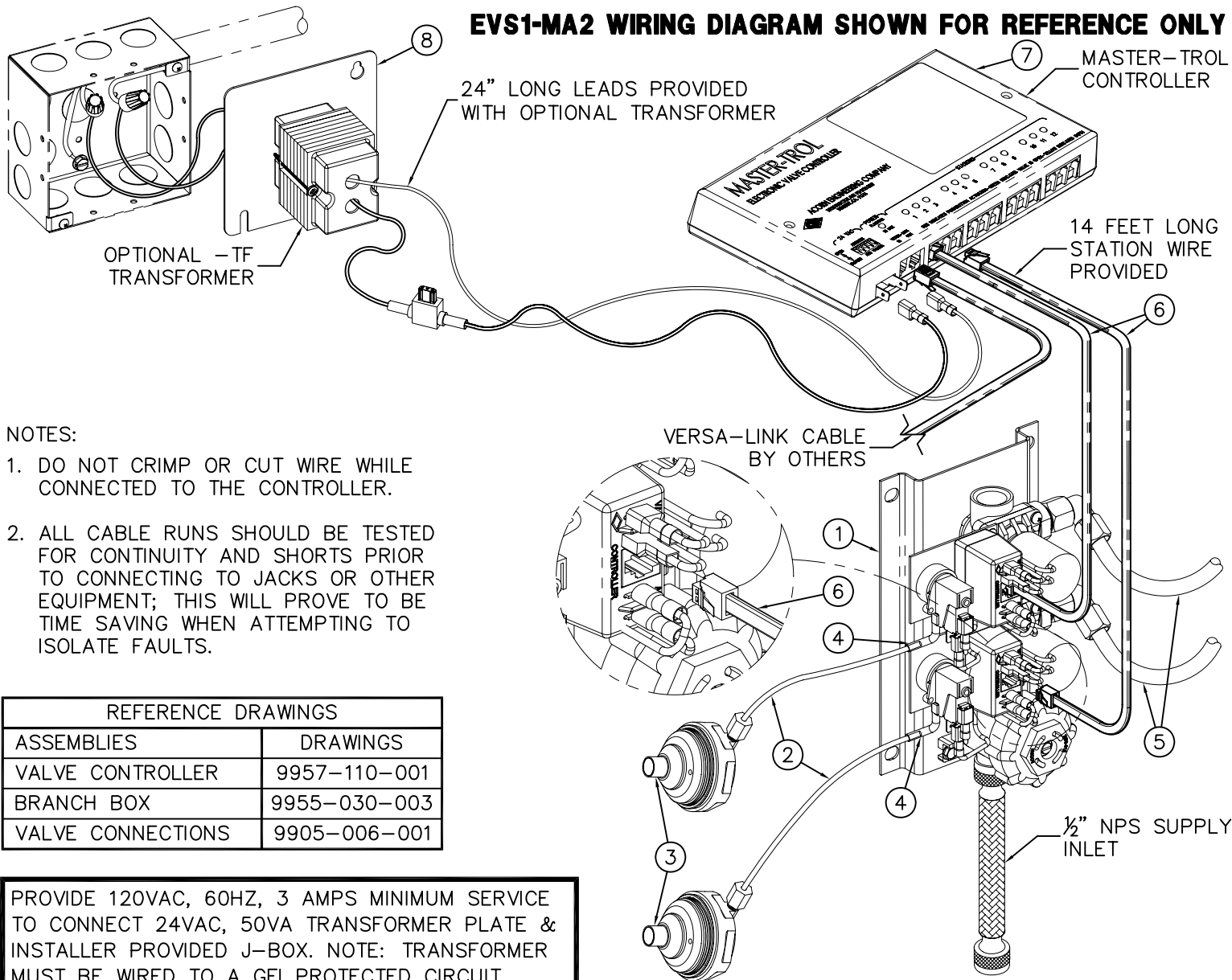
2 INSULATED MALE QD'S PROVIDED PER SOLENOID  
 2 INSULATED MALE QD'S PROVIDED PER CONTROLLER

- D- CONNECT RISER TUBING (6) TO VALVE ASSEMBLY AND FIXTURE DISCHARGE CONNECTOR. HAND TIGHTEN USING FERRULE NUTS PROVIDED.
- E- CONNECT CONTROLLER WIRES (7) (INDICATED AS "VALVE" ON THE CONTROLLER) FROM VALVE CONTROLLER (2) TO SOLENOID VALVE (1).
- F- MAKE UP CONNECTIONS FROM TRANSFORMER (8) TO CONTROLLERS IN PARALLEL AS SHOWN.
- G- AFTER THOROUGHLY FLUSHING SUPPLY LINES MAKE UP SUPPLY CONNECTIONS.
- H- SET TIMING ON VALVE CONTROLLER (5) TO DESIRED FLOW DURATION.

ACORN ENGINEERING COMPANY P.O. BOX 3527 INDUSTRY, CA. 91744 (626) 336-4561 FAX (626) 961-2200	TITLE <b>MVC1 TIME-TROL SINGLE TEMP VALVE INSTALLATION</b>		
	MANUFACTURE DATE <b>MAY 1990</b> <b>TO PRESENT</b>	DATE ISSUED <b>08/05/10</b>	DRAWING NUMBER <b>9900-001-004</b>
	DATE REVISED	DATE REVISED	DRAWING NUMBER



**EVS1-MA2 WIRING DIAGRAM SHOWN FOR REFERENCE ONLY**



**NOTES:**

1. DO NOT CRIMP OR CUT WIRE WHILE CONNECTED TO THE CONTROLLER.
2. ALL CABLE RUNS SHOULD BE TESTED FOR CONTINUITY AND SHORTS PRIOR TO CONNECTING TO JACKS OR OTHER EQUIPMENT; THIS WILL PROVE TO BE TIME SAVING WHEN ATTEMPTING TO ISOLATE FAULTS.

REFERENCE DRAWINGS	
ASSEMBLIES	DRAWINGS
VALVE CONTROLLER	9957-110-001
BRANCH BOX	9955-030-003
VALVE CONNECTIONS	9905-006-001

PROVIDE 120VAC, 60HZ, 3 AMPS MINIMUM SERVICE TO CONNECT 24VAC, 50VA TRANSFORMER PLATE & INSTALLER PROVIDED J-BOX. NOTE: TRANSFORMER MUST BE WIRED TO A GFI PROTECTED CIRCUIT.

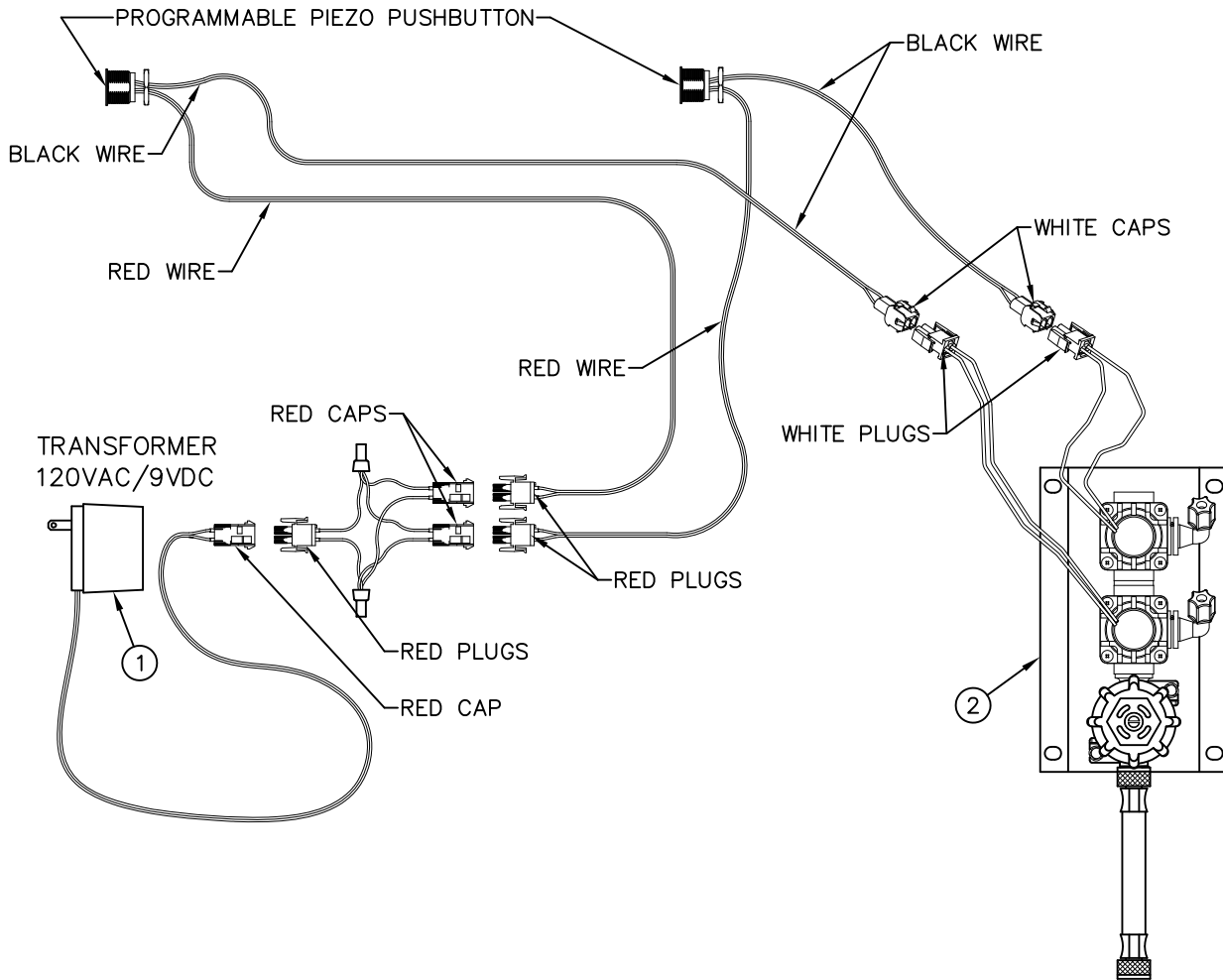
**INSTALLATION INSTRUCTIONS:**

- A. ROUGH-IN & INSTALL FIXTURE PER MANUFACTURER'S INSTRUCTIONS.
- B. MOUNT SOLENOID VALVE ASSEMBLY (1) WITHIN THE CHASE OR FIXTURE FRAME / CABINET AS REQUIRED A MAXIMUM OF 10 FEET FROM THE FIXTURE.
- C. CONNECT AIR TUBING (2) TO MOUNTED PUSHBUTTON ASSEMBLY (3) AND HAND TIGHTEN FERRULE NUT. CONNECT THE TAG END OF THE AIR TUBING (2) TO THE BRANCH BOX PRESSURE SWITCH 3/16" OD TUBE (4). AIR TUBING (2) FITS INSIDE THE PRESSURE SWITCH 3/16" OD TUBE (4).
- D. CONNECT RISER TUBING (5) TO VALVE ASSEMBLY AND FIXTURE DISCHARGE CONNECTOR. HAND TIGHTEN USING FERRULE NUTS PROVIDED.
- E. CONNECT STATION WIRE (6) TO BRANCH BOX AND APPROPRIATE LOCATION ON CONTROLLER.
- F. MAKE UP CONNECTIONS FROM TRANSFORMER (8) TO CONTROLLER AS SHOWN.
- G. AFTER THOROUGHLY FLUSHING SUPPLY LINES MAKE UP SUPPLY CONNECTIONS.

ACORN ENGINEERING COMPANY P.O. BOX 3527 INDUSTRY, CA. 91744 (626) 336-4561 FAX (626) 961-2200	<b>TITLE</b> <b>EVS1 MASTER-TROL SINGLE TEMP VALVE INSTALLATION</b>		
	<b>MANUFACTURE DATE</b> <b>MAY 1998</b> <b>TO PRESENT</b>	<b>DATE ISSUED</b> <b>12/09/10</b>	<b>DRAWING NUMBER</b> <b>9905-330-004</b>
		<b>DATE REVISED</b>	



**TWO STATION AND ADA WIRING DIAGRAM SHOWN**



REFERENCE DRAWINGS	
9VDC SENSOR & PARTS	9955-019-002
PIEZO PB PROGRAMMING	9940-009-001

**INSTALLATION INSTRUCTIONS:**

A- USING APPROPRIATE INSTALLATION INSTRUCTIONS, MOUNT FIXTURE TO WALL AND MAKE-UP SUPPLY CONNECTIONS. ELECTRONIC PUSHBUTTON ARE FACTORY INSTALLED. POWER SUPPLY ① AND VALVE ② SHIPPED LOOSE.

B- INSTALL SOLENOID VALVE ASSEMBLY ② ON THE WALL (FASTENERS AND WALL ANCHORS BY OTHERS), MAKING SURE THAT THE VALVE WILL BE WITHIN HOUSING OR BLOCKOUT AREA.

C- CONNECT WATER SUPPLY (AFTER FLUSHING LINES) TO VALVE, AND VALVE RISER TO SHOWERHEAD AS PER UNIT INSTALLATION INSTRUCTIONS.

D- CONNECT SOLENOID VALVE, POWER SUPPLY AND SENSOR WIRING AS SHOWN ON DETAIL.

E- COMPLETE THE INSTALLATION OF THE UNIT ACCORDING ACORDING TO THE UNITS INSTALLATION INSTRUCTIONS.

**NOTE:**

1- PLUG-IN TRANSFORMER INCLUDES BUILT-IN SECONDARY FUSE. IN THE EVENT OF POWER SURGE TRANSFORMER MAY REQUIRE REPLACEMENT.

2- ELECTRICAL RECEPTACLE MUST BE WIRED TO A GFI PROTECTED CIRCUIT. FIXTURE MUST BE EARTH GROUNDED PER N.E.C. (NATIONAL ELECTRICAL CODE).



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P.O. BOX 3527 Industry, CA 91744  
15125 Proctor Ave Industry, CA 91746  
(626) 336-4561 FAX (626) 961-2200

TITLE <b>-PPZ PIEZO ELECTRONIC PUSHBUTTON INSTALLATION</b>		
MANUFACTURE DATE <b>OCTOBER 2013 TO PRESENT</b>	DATE ISSUED <b>10/11/13</b>	DRAWING NUMBER <b>9927-223-001</b>
	DATE REVISED	



## Programable Piezo Pushbutton Programming Instructions (Flow Time Adjustment)

The Button is factory set an 8 sec. timing cycle, if an 8 sec. cycle is adequate, then **no** programming adjustment is required.



**NOTE:** Read the entire document before trying to program the piezo pushbutton.

### **THE TIME SETTINGS PROGRAM USES 3 DIFFERENT TIMING MODES:**

- **1 second timing mode:** Each push of the button adds 1 second to the total timing cycle.
- **5 second timing mode:** Each push of the button adds 5 seconds to the total timing cycle.
- **20 second timing mode:** Each push of the button adds 20 seconds to the total timing cycle.

To program the piezo pushbutton, you will need to be able to see the back of the piezo pushbutton.

Prevision must be made to access the back of the piezo pushbutton. There is an LED on the back of the piezo pushbutton under a layer of transparent epoxy, used as a programming indicator light.



**NOTE:** This programming procedure moves along rapidly, there is only about 2 or 3 seconds between programming operations.

In order to start the programming the piezo pushbutton, the button must be powered down. Disconnect the red power cable and wait 20 seconds, then reconnect the red power cable.

As soon as the cable is reconnected the LED will start flashing, it will flash 4 times, then stays on for 3 seconds. During the 3 second period, push the piezo button once, the LED will go out, now you are in the **1 sec timing mode** and each time the button is pushed the LED will flash, adding 1 sec to the total timing cycle.

To move on to the **5 sec timing mode**, pause and wait for the LED to flash 2 times, now you are in the 5 sec timing mode. Each time the button is pushed the LED will flash, adding 5 sec to the total timing cycle.

To move on to the **20 sec timing mode**, pause and wait for the LED to flash 3 times, now you are in the 20 sec timing mode and each time the button is pushed the LED will flash, adding 20 sec to the total timing cycle. After programing is complete, pause and wait for the LED to flash 4 times and then 5 times, which completes the programming.

- When a **timing mode is not required** then **do not** push the button and wait for the next timing mode.
- Each timing mode (1 sec, 5 sec or 20 sec timing mode) can be sequenced up to 100 times, that is the number of times, the button can be pushed, to increase the total timing cycle in each timing mode.





Please visit [www.acorneng.com](http://www.acorneng.com) for most current specifications.

# Programmable Piezo Pushbutton Programming Instructions (Flow Time Adjustment)

## WORKSHEET

**(FILL IN ALL BOXES, WHICH WILL SIMPLIFY THE PROGRAMMING PROCEDURE)**

Fill in all the Boxes below  
↓ ↓

Determine the number of seconds per timing cycle

1 Push = 1 Second  
 x 1 =  sec

- PROGRAMING STEPS:**
- Power down piezo button for 10 seconds.
  - Reconnect power.
  - LED flashes, then stay on.
  - While the LED is steady on, push button.
  - LED turns off.
- ↔
- You are in the 1 sec timing mode, immediately push the button, 1 push equals 1 sec added to the total timing cycle.
  - Pause and wait for the LED to flash 2 times.

**ADD** ↑ ↓

1 Push = 5 Seconds  
 x 5 =  sec

- ↔
- You are in the 5 sec timing mode, immediately push the button, 1 push equals 5 sec added to the total timing cycle.
  - Pause and wait for the LED to flash 3 times.

**ADD** ↑ ↓

1 Push = 20 Seconds  
 x 20 =  sec

- ↔
- You are in the 20 sec timing mode, immediately push the button, 1 push equals 20 sec added to the total timing cycle.

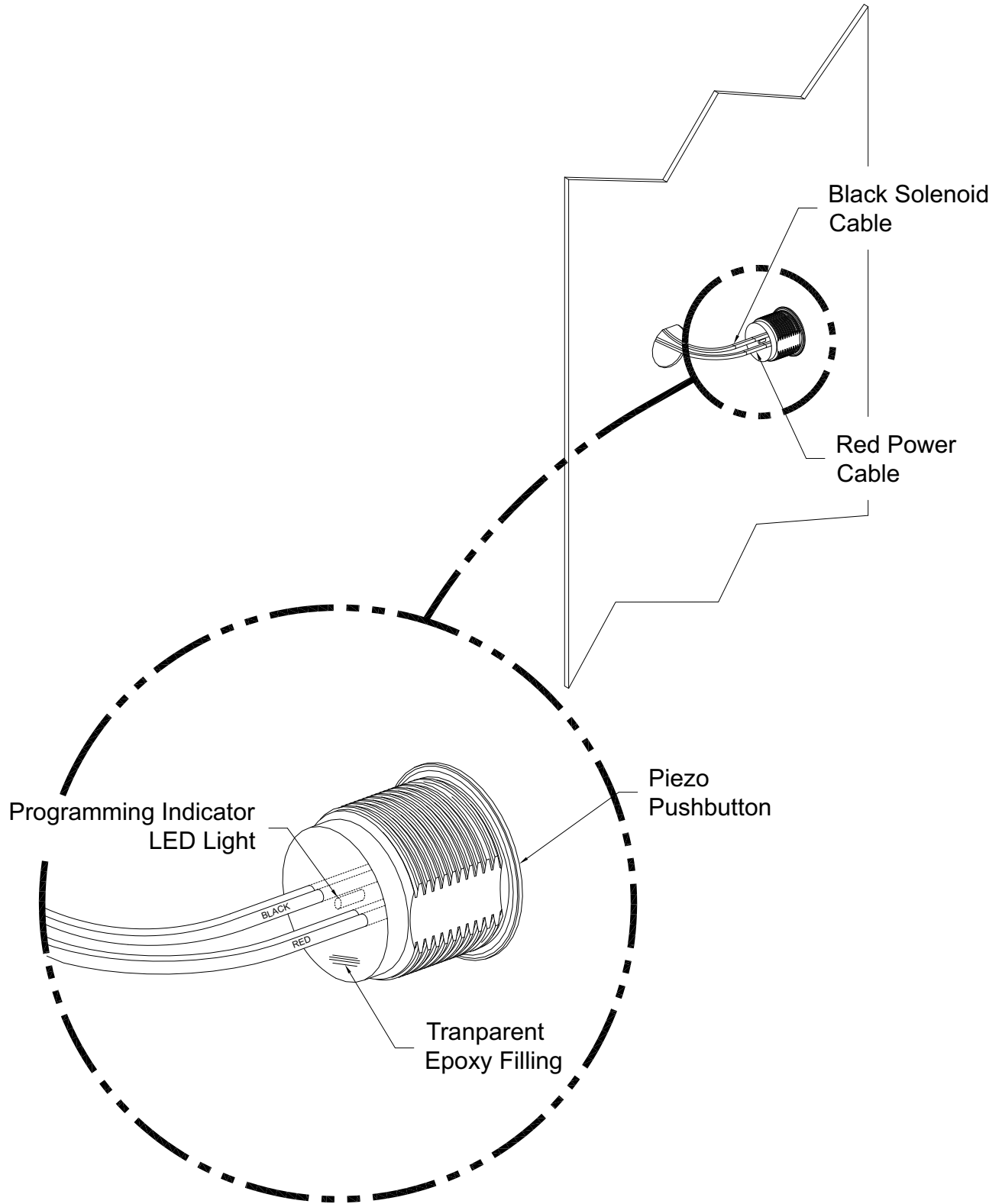
**EQUALS** ↓

Total timing cycle equals  
 seconds



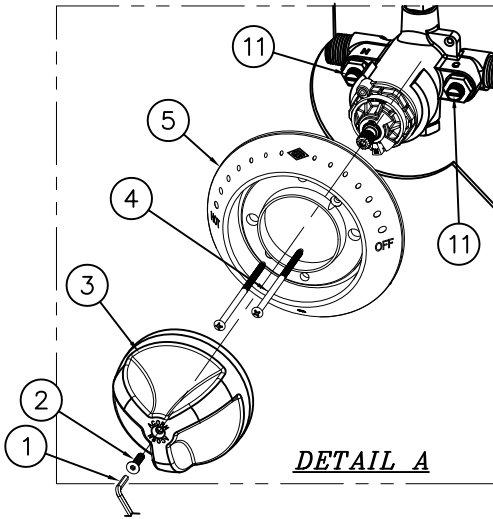
# INSTALLATION, OPERATIONS & MAINTENANCE MANUAL

Please visit [www.acorneng.com](http://www.acorneng.com) for most current specifications.

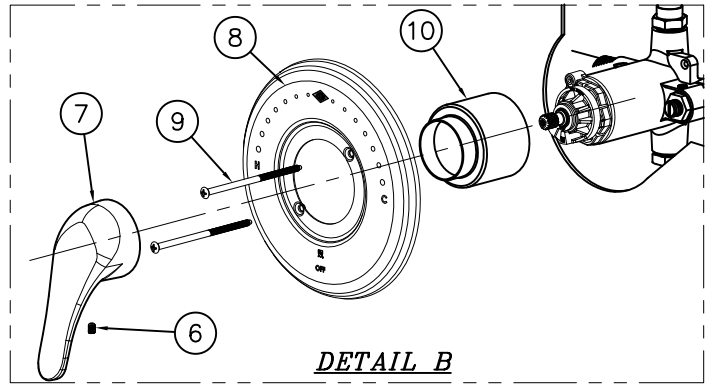




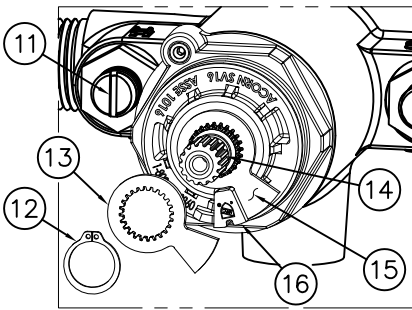
REFERENCE DRAWINGS	
ASSEMBLIES	NUMBER
T/P VALVE	9975-005-002



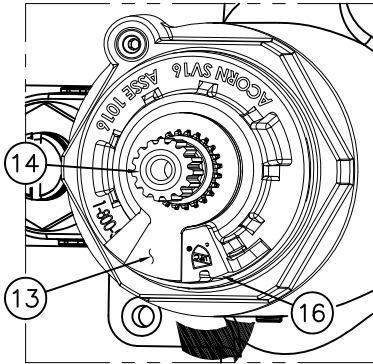
DETAIL A



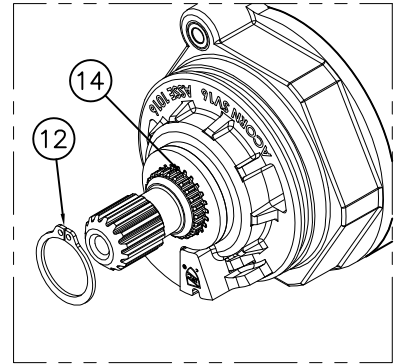
DETAIL B



DETAIL C



DETAIL D



DETAIL E

**INSTRUCTIONS:**

A-REMOVE TRI-LEVER HANDLE TRIM: SEE DETAIL A

a- USING CENTER REJECT ALLEN WRENCH (1) REMOVE HANDLE SCREW (2) AND REMOVE HANDLE (3).

b- REMOVE ESCUTCHEON (4) BY REMOVING SCREWS (5).

FOR OPTIONAL -LVR LEVER HANDLE TRIM: SEE DETAIL B

a- REMOVE SET SCREW (6) AND HANDLE (7).

b- REMOVE ESCUTCHEON (8) BY REMOVING SCREWS (9).

c- PULL OFF VALVE SLEEVE (10).

**TEMPERATURE ADJUSTMENT:**

B-ENSURE MAIN WATER SUPPLY IS ON.

C-ENSURE CHECK STOPS (11) ARE OPEN.

D-ENSURE VALVE IS IN THE OFF POSTION.

E-USING SNAP RING PLIERS REMOVE RETAINING RING (12) AND THE FIRST TEMPERATURE LIMIT WASHER (13) ONLY FROM VALVE STEM (14). SEE DETAIL C.

NOTE: IF SECOND TEMPERATURE LIMIT WASHER (15) COMES OFF, RESETTING OF THE OFF STOP MAY BE REQUIRED, KEY AS CLOSE AS POSSIBLE ON THE COUNTER-CLOCKWISE SIDE OF BONNET STOP (16). USING HANDLE (3) OR (7) SLIGHTLY OPEN AND CLOSE VALVE TO ENSURE WATER WILL SHUT OFF. DETAIL C.

**TEMPERATURE ADJUSTMENT: CONTINUED:**

F- USING HANDLE (3) OR (7) TURN VALVE STEM (14) COUNTER-CLOCKWISE TO INCREASE HOT, CHECKING OUTLET TEMPERATURE UNTIL DESIRED TEMPERATURE IS REACHED (RECOMMENDED 105° TO 110°). SLIDE FIRST TEMPERATURE LIMIT WASHER (9) OVER VALVE STEM (13) AND ENSURE SIDE OF WASHER RESTS AS CLOSE AS POSSIBLE TO CLOCKWISE SIDE OF BONNET LIMIT STOP (16). DETAIL D.

G- WITH VALVE IN THE "ON" POSTION AND WATER RUNNING, USING SNAP RING PLIERS INSTALL RETAINING RING (12). ENSURE RETAINING RING (12) IS INSERTED PROPERLY INTO GROOVE ON VALVE STEM (14). DETAIL E.

H- REINSTALL TRIM IN REVERSE ORDER.



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15125 Proctor Ave Industry, CA 91746  
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TITLE **-8 T/P TEMP/PRESS BALANCING MIXING VALVE - TEMPERATURE ADJUSTMENT**

MANUFACTURE DATE

**APRIL 2014**  
**PRESENT**

DATE ISSUED

**05/01/14**

DATE REVISED

**09/01/16 B**

DRAWING NUMBER

**9900-007-001**