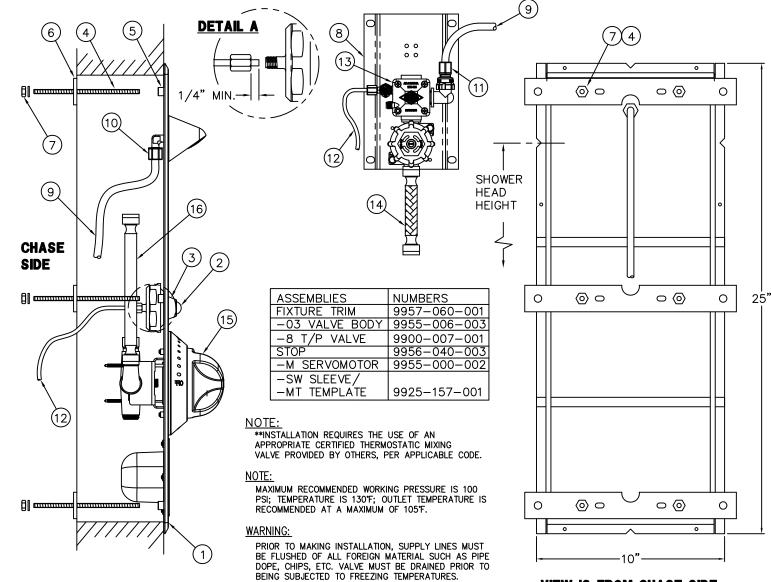
LIGATURE-RESISTANT FIXTURES

INSTALLATION INSTRUCTIONS





MAXIMUM RECOMMENDED OUTLET WATER TEMPERATURE

INSTALLATION INSTRUCTIONS:

A- PRIOR TO INSTALLATION OF THE SHOWER PANEL (1), MOUNT PUSHBUTTON (2) & ESCUTCHEON (3) TO THE PANEL.

IS 105°F.

- B- HAND TIGHTEN (6) MOUNTING STUDS (4) INTO NUTS
 (5) ON BACK OF SHOWER PANEL (1). PLACE SHOWER PANEL AGAINST WALL OPENING. FROM CHASE SIDE, MOUNT BACK PLATES (6) ONTO STUDS; ATTACH WITH NUTS AND WASHERS (7). NOTE: DO NOT EXCEED 6.5 FT/LBS MAXIMUM TORQUE ON MOUNTING NUTS (7).
- C- MOUNT AIR-CONTROL VALVE ASSEMBLY (8) AS REQUIRED WITHIN 10 FEET OF THE PUSHBUTTON.
- D- INSTALL RISER TUBING (9). ATTACH TO SHOWER HEAD
 (10) AND VALVE COMPRESSION FITTING (11) USING FERRULE NUTS PROVIDED. TIGHTEN WATERTIGHT.

VIEW IS FROM CHASE SIDE

(SHOWN WITH OPTIONAL WALL SLEEVE)

- E- CONNECT 1/8" O.D. AIR TUBING 12 FROM PUSHBUTTON
 (2) TO AIR-CONTROL SERVOMOTOR (13) USING FERRULE NUTS PROVIDED. HAND TIGHTEN.SEE DETAIL "A
- F- CONNECT FLEX CONNECTOR HOSE (14) FROM AIR-CONTROL SERVOMOTOR TO T/P TEMPERATURE-PRESSURE BALANCING MIXING VALVE (15).
- G- AFTER THOROUGHLY FLUSHING THE SUPPLY LINES, MAKE-UP SUPPLY CONNECTIONS (1/2" NPS FEMALE). THREAD FLEX CONNECTOR HOSE (16) FROM T/P VALVE INLET TO SUPPLY STUBOUTS. (NOTE: SUPPLY INLET CONNECTION WILL ACCOMMODATE 1/2" NPT MALE ADAPTER)
- H- SEE APPROPRIATE SERVOMOTOR REFERENCE DRAWINGS FOR DETAILS AND TIMING INSTRUCTIONS.

ACORN ENGINEERING COMPANY P.O. BOX 3527 Industry, CA 91744 15125 Proctor Ave Industry, CA 91746 (626) 336-4561 FAX (626) 961-2200	LIGATURE-RESISTANT WALL SHOWERS w/ AIR-CONTROL VALVE, LR1748-3		
	MANUFACTURE DATE	DATE ISSUED	DRAWING NUMBER
	JULY 2017	07/19/17	
œ	TO PRESENT	DATE REVISED	9925-156-001
7			

FOR HORIZONTAL NOTCHES ON TEMPLATE.

FOR VERTICAL NOTCHES ON TEMPLATE.

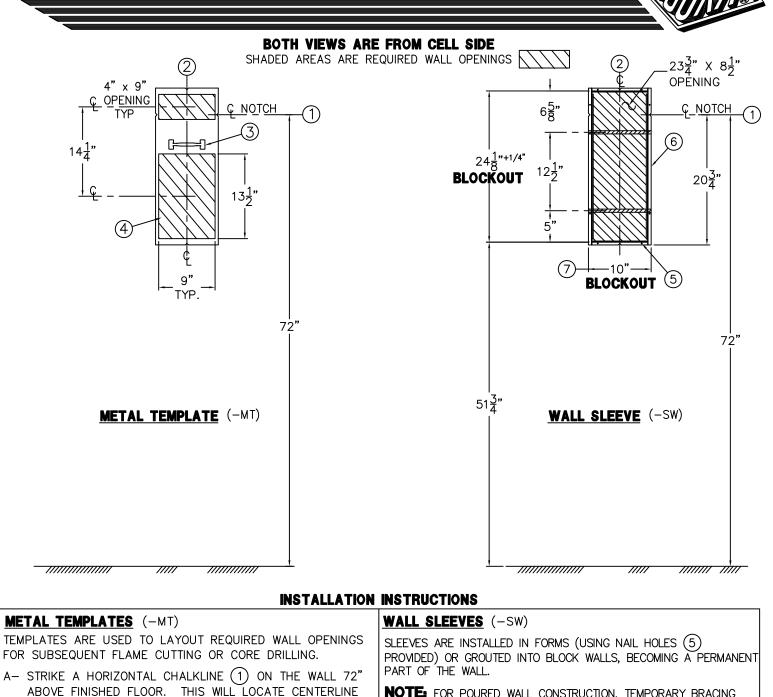
MARK FOR WALL OPENINGS.

B- STRIKE A VERTICAL CHALKLINE (2) ON THE WALL TO

INDICATE CENTERLINE OF FIXTURE. THIS WILL LOCATE

C- USING HANDLE (3) ON TEMPLATE (4), PLACE TEMPLATE

AGAINST THE WALL, LOCATING NOTCHES AT CHALKLINES.

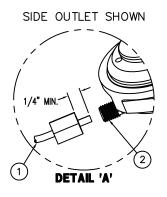


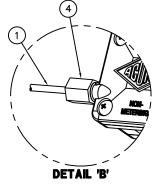
NOTE: FOR POURED WALL CONSTRUCTION, TEMPORARY BRACING SHOULD BE INSTALLED WITHIN SLEEVE OPENING TO PREVENT DEFORMATION TO SLEEVE WHICH MAY OCCUR DURING POUR. DO NOT POUR CONCRETE DIRECTLY ON TOP OF WALL SLEEVE.

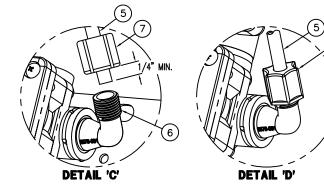
- A- INSTALL SLEEVE WITH FLANGE (6) ON CHASE CENTERLINE (2) OF SLEEVE.
- B- TOP AND BOTTOM NOTCHES TO BE LOCATED AT VERTICAL CENTERLINE (2) OF SLEEVE.
- C- SIDE NOTCHES (1) TO BE LOCATED AT 72" ABOVE THE FINISHED CELL SIDE FLOOR (SHOWER HEAD DISCHARGE HEIGHT).
- D- WHEN SLEEVES ARE NOT AVAILABLE USE BLOCKOUT DIMENSIONS SHOWN (7).

V	ACORN ENGINEERING COMPANY P.O. BOX 3527 Industry, CA 91744 15125 Proctor Ave Industry, CA 91746 (526) 336-4561 FAX (626) 961-2200	SLEEVES AND	TEMPLATES (LR1748)	
	(, (,	MANUFACTURE DATE	DATE ISSUED	DRAWING NUMBER
		JULY 2017	07/24/17	
		TO PRESENT	DATE REVISED	9925-157-001
1/16				

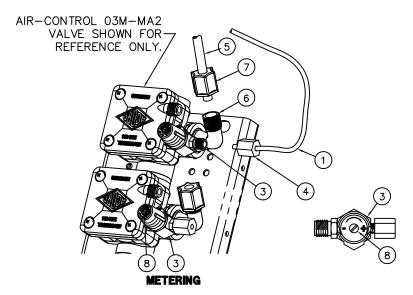








NOTE: PENAL-WARE & ECO-RAIN SHOWER FIXTURES USE 1/4" O.D. RISER TUBING WHILE OTHER SHOWER-WARE FIXTURES USE 3/8" O.D. TUBING.



TIMING IS ADJUSTABLE FROM 5 TO 60 SECONDS AND IS ACCOMPLISHED BY ROTATING TIMING SCREW (8). TURING THE TIMING SCREW CLOCKWISE INCREASES METERING TIME WHILE TURNING THE SCREW COUNTERCLOCKWISE DECREASES METERING TIME.

INSTALLATION INSTRUCTIONS:

- A- MOUNT FIXTURE IN ACCORDANCE TO MANUFACTURER'S INSTALLATION INSTRUCTIONS.
- B- ASSEMBLE PUSHBUTTONS AND OR SHOWER NOZZLES TO FIXTURE IF REQUIRED.
- C- CONNECT 1/8" O.D. POLYETHYLENE AIR LINE (1) TO PUSHBUTTON ② AND VALVE TIMER ASSEMBLY ③. SEE DETAILS 'A' & 'B'. HAND TIGHTEN FERRULE NUT ④ PROVIDED.

REFERENCE DRAWINGS		
REPAIR PARTS	DRAWING	
VALVE BODY	9955-006-003	
CHECKSTOP	9956-040-003	
PUSHBUTTON/ESCUTCHEON	9957-300-001	
METERING SERVOMOTOR	9955-000-003	

NOTE:

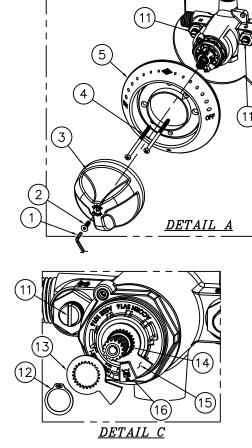
- 1. ALL TUBING SHOULD BE CUT SQUARE AND BE FREE OF BURRS OR DEFORMITIES TO ENSURE A WATER TIGHT CONNECTION.
- 2. EXTEND TUBING AT LEAST 1/4" BEYOND FERRULE NUT AND INSERT TUBING INTO CONNECTION OPENING BEFORE TIGHTENING.
- 3. TUBING SHOULD BE FREE OF KINKS TO ENSURE PROPER OPERATION.
- 4. MAXIMUM RECOMMENDED WORKING WATER PRESSURE IS 100 PSI; TEMPERATURE IS 130° F; OUTLET TEMPERATURE IS RECOMMENDED AT A MAXIMUM OF 105° F. WARNING:

PRIOR TO MAKING INSTALLATION, SUPPLY LINES MUST BE FLUSHED OF ALL FOREIGN MATERIAL SUCH AS PIPE DOPE, CHIPS, SOLDER, ETC. VALVE MUST BE DRAINED PRIOR TO BEING SUBJECTED TO FREEZING TEMPERATURES. MAXIMUM RECOMMENDED OUTLET WATER TEMPERATURE IS 105° F.

- D- CONNECT SHOWER RISER (5) TO VALVE ASSEMBLY ELBOW (6). SEE DETAIL 'C' AND 'D'. HAND TIGHTEN FERRULE NUT (7) PROVIDED.
- E- AFTER THOROUGHLY FLUSHING SUPPLY LINES. MAKE UP CONNECTIONS TO VALVE ASSEMBLY INLET(S) 1/2" NPTE OR 1/2" NPS FLEX HOSE AS REQUIRÉD.

RA	ACORN ENGINEERING COMPANY P.O. BOX 3527 Industry, CA 91744 15125 Proctor Ave Industry, CA 91746 (626) 336-4561 FAX (626) 961-2200	HAND OPERATED, AIR-CONTR	ROL VALVE SHOWER C	ONNECTIONS
		MANUFACTURE DATE	DATE ISSUED	DRAWING NUMBER
		OCTOBER 2010	10/28/10	
		TO PRESENT	DATE REVISED	9900-006-003



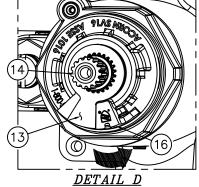


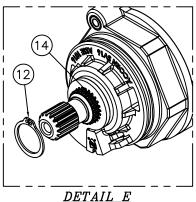
 REFERENCE DRAWINGS

 ASSEMBLIES
 NUMBER

 T/P
 VALVE
 9975-005-002

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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.

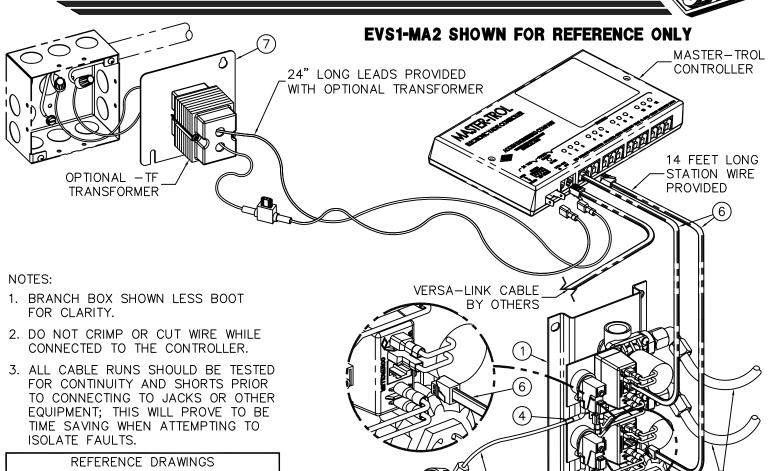
NOTE: IF SECOND TEMPERATURE LIMIT WASHER (15) COMES OFF, RESETTING OF THE OFF STOP MAY BE REQUIRED, KEY AS CLOSE AS POSSIBLE ON THE COUNTER-CLOCKWISE SIDE OF BONNET STOP (6). USING HANDLE (3) OR (7) SLIGHTLY OPEN AND CLOSE VALVE TO ENSURE WATER WILL SHUT OFF. DETAIL C.

TEMPERATURE ADJUSTMENT: CONTINUED:

- F-USING HANDLE ③ OR ⑦ TURN VALVE STEM ④
 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
 ① AND ENSURE SIDE OF WASHER RESTS AS CLOSE
 AS POSSIBLE TO CLOCKWISE SIDE OF BONNET LIMIT
 STOP ⑥. 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.

ACORN ENGINEERING COMPANY P.O. BOX 3527 Industry, CA 91744 15125 Proctor Ave Industry, CA 91746 (626) 336-4561 FAX (626) 961-2200	TITLE -8	T/P TEMP/PRESS BALANC	ING MIXING VALVE - 1	EMPERATURE ADJUSTMENT
	MANUFACTUR	RE DATE	DATE ISSUED	DRAWING NUMBER
	APRIL	2014	05/01/14	
	PRESI	ENT	DATE REVISED	9900-007-001
	FRESI		09/01/16 B	



REFERENCE DRAWINGS		
ASSEMBLIES DRAWINGS		
VALVE CONTROLLER	9957-110-001	
BRANCH BOX	9955-030-003	
VALVE CONNECTIONS 9905-006-00		

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.

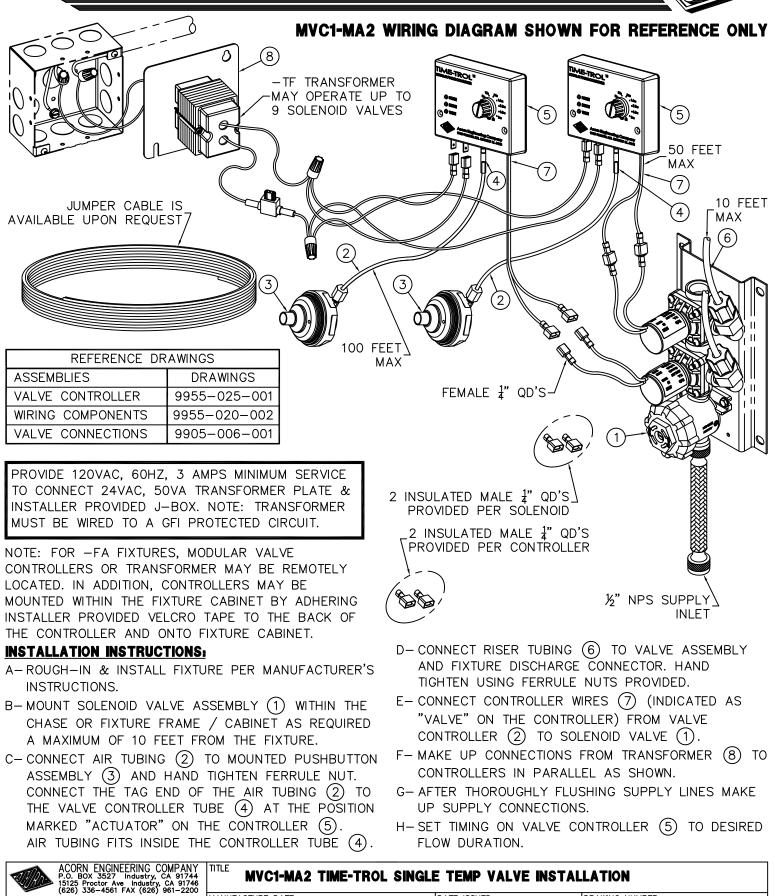
½" NPS SUPPLY

INLET

- 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 15125 Proctor Ave Industry, CA 91746 (626) 336-4561 FAX (626) 961-2200	EVS1 MASTER-TROL SINGLE TEMP VALVE INSTALLATION		
	MANUFACTURE DATE	DATE ISSUED	DRAWING NUMBER
	MAY 1998	12/09/10	
	TO PRESENT	DATE REVISED	9905-330-004
	IV PRESENT	05/14/13	





DATE ISSUED

DATE REVISED

08/05/10

01/11/13

DRAWING NUMBER

9900-001-004

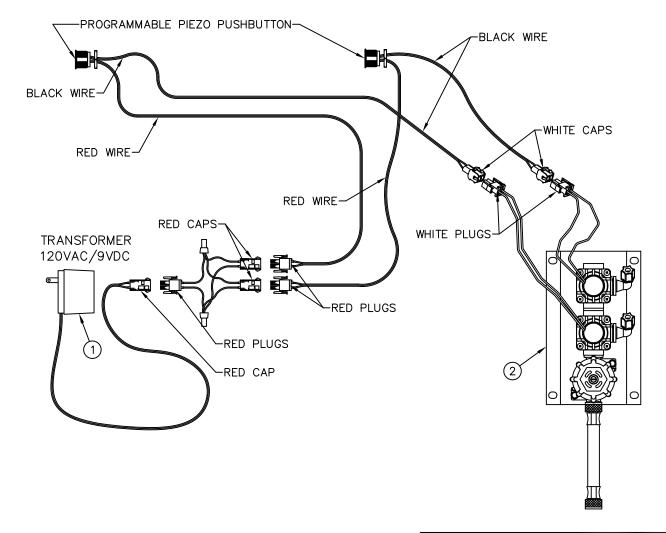
MANUFACTURE DATE

MAY 1990

TO PRESENT



TWO STATION AND ADA WIRING DIAGRAM SHOWN



	91
	PIE

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.

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

- 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.

<u>NOTE:</u>

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).

VIA	ACORN ENGINEERING COMPANY P.O. BOX 3527 Industry, CA 91744 15125 Proctor Ave Industry, CA 91746 (626) 336-4561 FAX (626) 961-2200	-PPZ PIEZO ELECTRONIC PUSHBUTTON INSTALLATION		
		MANUFACTURE DATE	DATE ISSUED	DRAWING NUMBER
		OCTOBER 2013	10/11/13	
		TO PRESENT	DATE REVISED	9927-223-001

INSTALLATION, OPERATIONS & MAINTENANCE MANUAL



Please visit **www.acorneng.com** for most current specifications.

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. This will provide less than 1/4 gallon (1 liter) per run cycle. If is noted that the valves are running longer than this maximum recommended cycle time please follow these instructions to correct the cycle time. When properly set the faucet should not produce more than 1/4 gallon (1 liter) per cycle. Pushing button during the timing cycle will stop the cycle (Cycle Interrupt).

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

THE TIME SETTINGS PROGRAM USES 3 DIFFERENT TIMING MODES:

- <u>**1 second timing mode:**</u> Each push of the button adds 1 second to the total timing cycle.
- <u>5 second timing mode</u>: Each push of the button adds 5 seconds to the total timing cycle.
- **<u>20 second timing mode:</u>** 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 (see page 3).

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.

GENERAL NOTES:

YE

- 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.

*See work sheet on page 2 which will simplify the programming procedure.

Part #: 9940-009-001	Page 1 of 3	Rev: 11/20/15
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INSTALLATION, OPERATIONS & MAINTENANCE MANUAL

Please visit **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

PROGRAMING STEPS:

- Power down piezo button for 20 seconds.
- Reconnect power.
- LED flashes, then stays 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.

You are in the 5 sec timing mode, immediately push the button, 1 push equals 5 sec added to the total timing cycle.

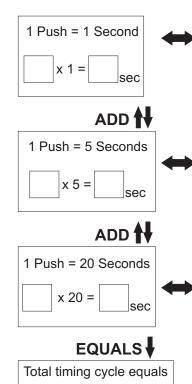
Pause and wait for the LED to flash 3 times.

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

NOTE: if you miss a step in the programming procedure, just power down the button and start again from the first step.

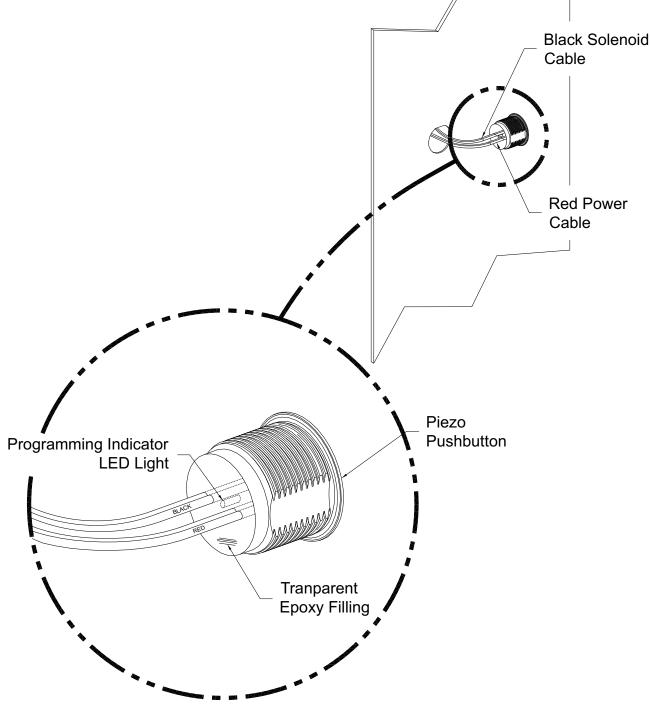
Part #: 9940-009-001	Page 2 of 3	Rev: 11/20/15
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Determine the number of seconds per timing cycle



seconds





 Part #: 9940-009-001
 Page 3 of 3
 Rev: 11/20/15

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