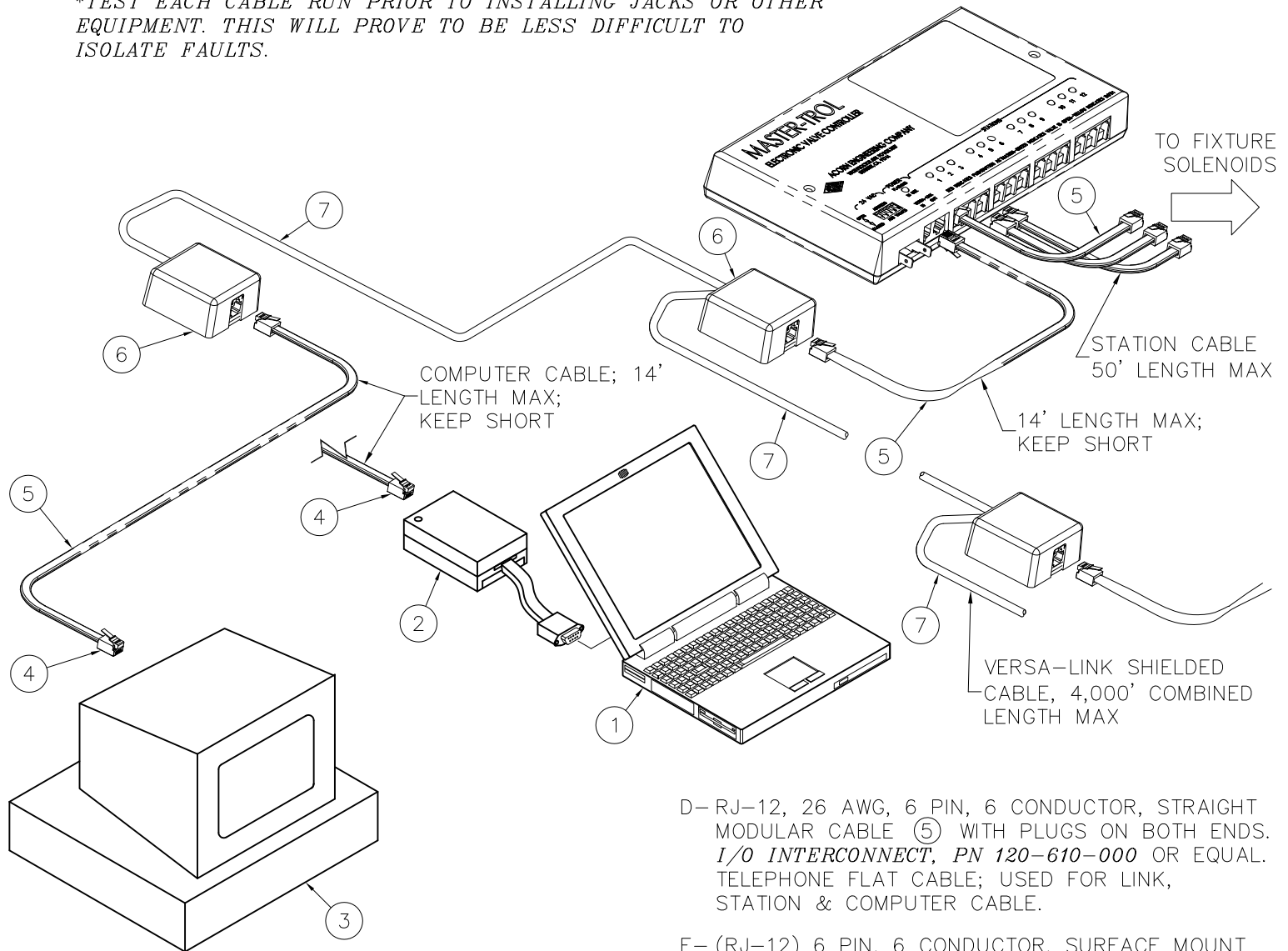




**TEST EACH CABLE RUN PRIOR TO INSTALLING JACKS OR OTHER EQUIPMENT. THIS WILL PROVE TO BE LESS DIFFICULT TO ISOLATE FAULTS.*



MANUFACTURER'S NAMES AND MODEL NUMBERS ARE PROVIDED FOR REFERENCE ONLY.

HARDWARE (COMPUTER ONLY)

A- OPTION -CLT LAPTOP COMPUTER (1) IS ONLY AVAILABLE WITH A *WINDOWS 7* OPERATING SYSTEM FOR SINGLE-LINK SYSTEMS ONLY. RS-232 TO RS-485 CONVERTER (2), COM1 TO TO VERSA-LINK (VIA RJ-12 SOCKET) PROVIDED.

B- OPTION -CDT DESKTOP COMPUTER (3) IS PROVIDED WITH A *WINDOWS 7* OPERATING SYSTEM FOR SINGLE-LINK OR MULTIPLE-LINK (UP TO 8 LINKS) SYSTEMS.

MISCELLANEOUS HARDWARE

C- 6 PIN, 6 WIRE, RJ-12 PHONE PLUGS (4).
AMP INC. P/N #5-555042-3 OR EQUAL
BY OTHERS.

D- RJ-12, 26 AWG, 6 PIN, 6 CONDUCTOR, STRAIGHT MODULAR CABLE (5) WITH PLUGS ON BOTH ENDS. I/O INTERCONNECT, PN 120-610-000 OR EQUAL. TELEPHONE FLAT CABLE; USED FOR LINK, STATION & COMPUTER CABLE.

E- (RJ-12) 6 PIN, 6 CONDUCTOR, SURFACE MOUNT MODULAR JACK (6) BY OTHERS. NOTE: JACK MAY INCLUDE A SNAP ON COVER AND/OR DOUBLE SIDED ADHESIVE TAPE TO BE USED WHEN SCREW MOUNTING IS NOT DESIRED.

F- VERSAL-LINK CABLE (7), 24 AWG SHIELDED TWISTED PAIR CABLE. BELDON, PART NUMBER #9501 OR EQUAL. 4,000' COMBINED MAX PER RUN.

COMPUTER CABLE: (5) CONNECTS COMPUTER TO VERSA-LINK MODULAR JACK. SEE 'D' ABOVE.

LINK CABLE: (5) CONNECTS MODULAR JACK TO VALVE CONTROLLER. SEE 'D' ABOVE.

STATION CABLE: (5) CONNECTS ELECTRONIC VALVE CONTROLLER TO FIXTURE SOLENOID VALVE. SEE 'D' ABOVE. ONE CABLE, 14 FEET LONG PER SOLENOID PROVIDED. 50 FEET MAX.



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

TITLE

MASTER-TROL HARDWARE SPECIFICATIONS AND REQUIREMENTS

MANUFACTURE DATE

**JANUARY 1994
TO PRESENT**

DATE ISSUED

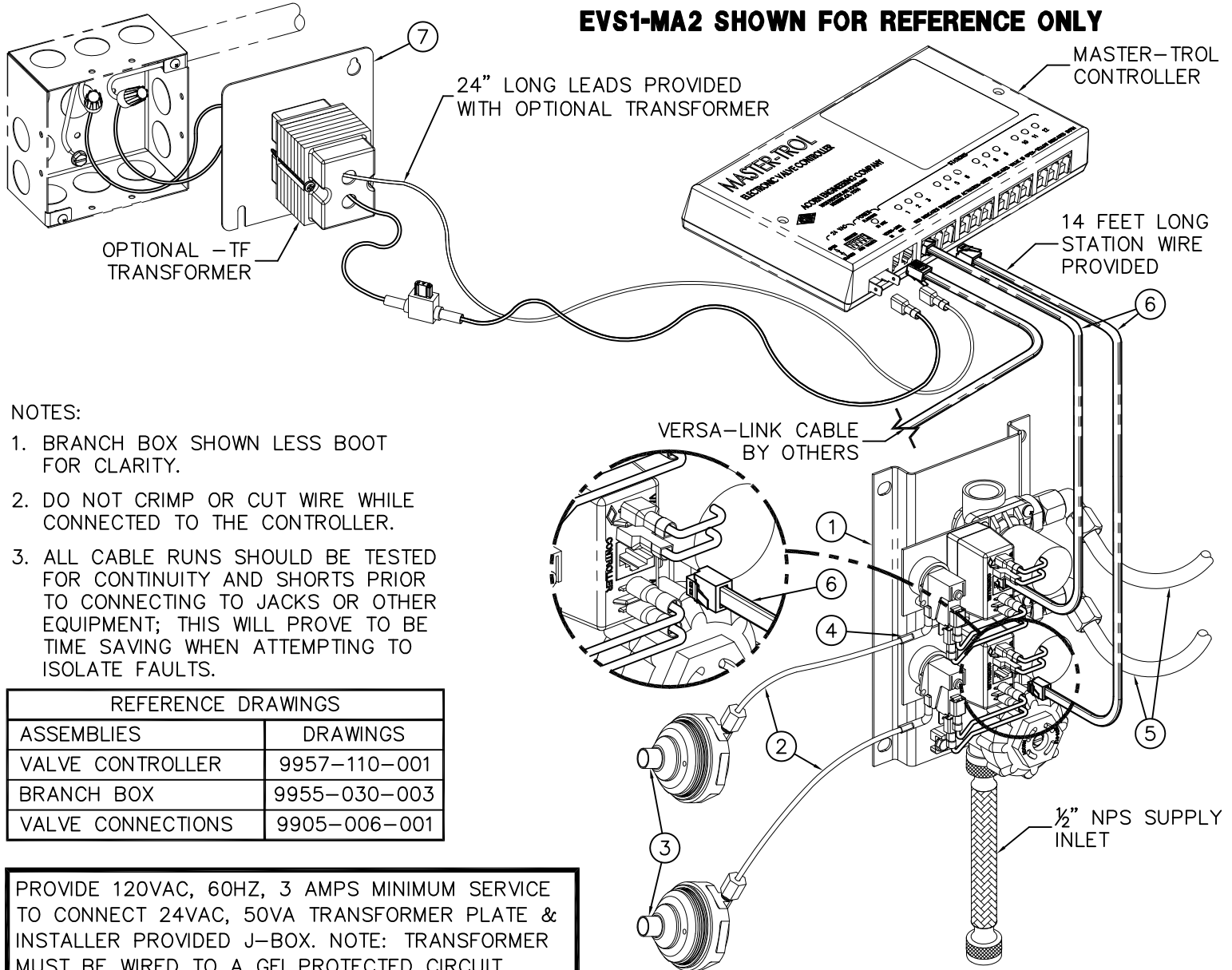
11/09/95

DATE REVISED

05/13/15 F

DRAWING NUMBER

9905-304-001



INSTALLATION INSTRUCTIONS:

- ROUGH-IN & INSTALL FIXTURE PER MANUFACTURER'S INSTRUCTIONS.
- MOUNT SOLENOID VALVE ASSEMBLY (1) WITHIN THE CHASE OR FIXTURE FRAME / CABINET AS REQUIRED A MAXIMUM OF 10 FEET FROM THE FIXTURE.
- 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).
- CONNECT RISER TUBING (5) TO VALVE ASSEMBLY AND FIXTURE DISCHARGE CONNECTOR. HAND TIGHTEN USING FERRULE NUTS PROVIDED.
- CONNECT STATION WIRE (6) TO BRANCH BOX AND APPROPRIATE LOCATION ON CONTROLLER.
- MAKE UP CONNECTIONS FROM TRANSFORMER (8) TO CONTROLLER AS SHOWN.
- AFTER THOROUGHLY FLUSHING SUPPLY LINES MAKE UP SUPPLY CONNECTIONS.



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TITLE

EVS1 MASTER-TROL SINGLE TEMP VALVE INSTALLATION

MANUFACTURE DATE

MAY 1998

TO PRESENT

DATE ISSUED

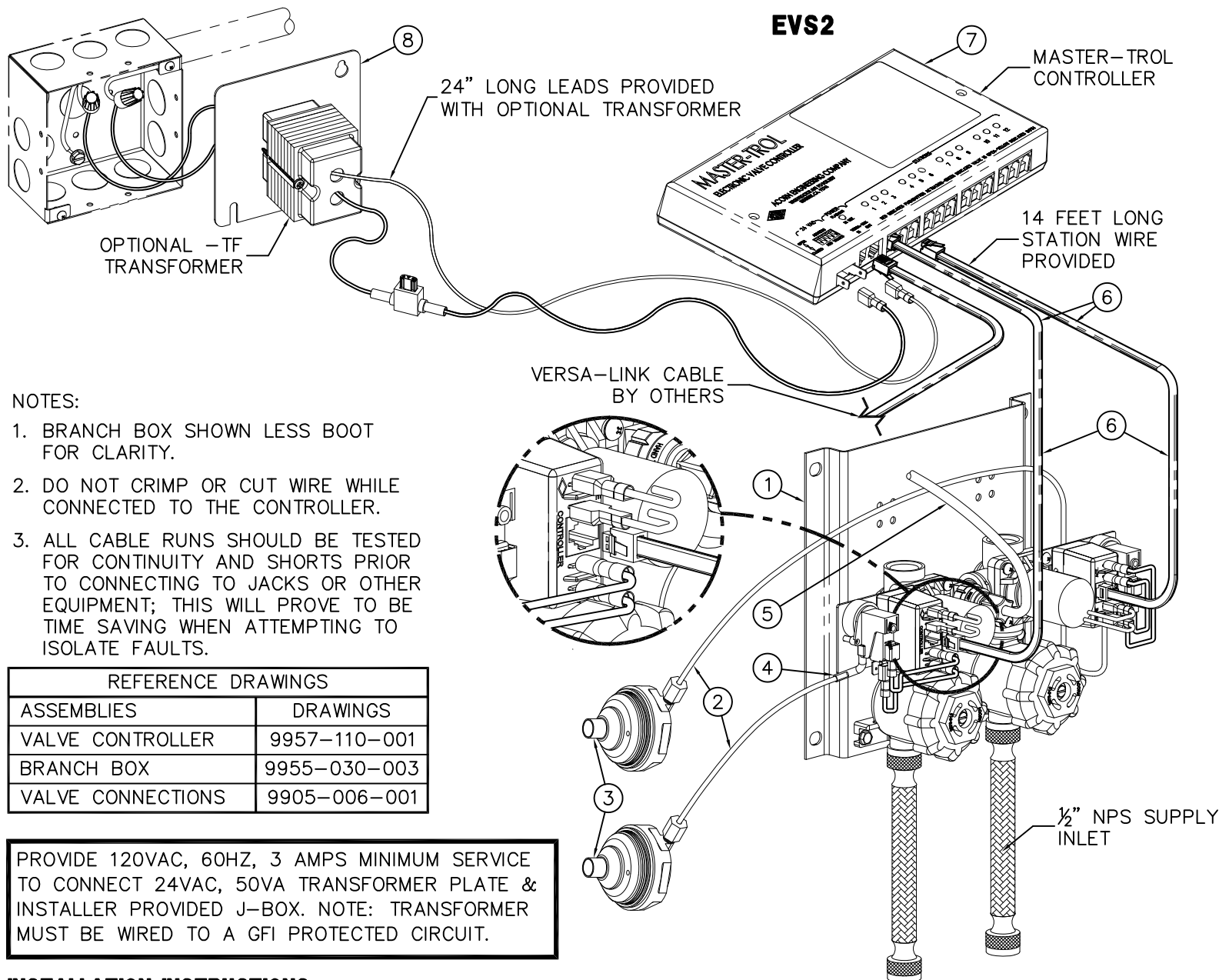
12/09/10

DATE REVISED

05/14/13

DRAWING NUMBER

9905-330-004



INSTALLATION INSTRUCTIONS:

- ROUGH-IN & INSTALL FIXTURE PER MANUFACTURER'S INSTRUCTIONS.
- MOUNT SOLENOID VALVE ASSEMBLY ① WITHIN THE CHASE OR FIXTURE FRAME / CABINET AS REQUIRED A MAXIMUM OF 10 FEET FROM THE FIXTURE.
- 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.
- CONNECT RISER TUBING ⑤ TO VALVE ASSEMBLY AND FIXTURE DISCHARGE CONNECTOR. HAND TIGHTEN USING FERRULE NUTS PROVIDED.
- CONNECT STATION WIRE ⑥ TO BRANCH BOX AND APPROPRIATE LOCATION ON CONTROLLER ⑦.
- MAKE UP CONNECTIONS FROM TRANSFORMER ⑧ TO CONTROLLER AS SHOWN.
- AFTER THOROUGHLY FLUSHING SUPPLY LINES MAKE UP SUPPLY CONNECTIONS.



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TITLE

EVS2 MASTER-TROL HOT & COLD VALVE INSTALLATION

MANUFACTURE DATE

MAY 1998

TO PRESENT

DATE ISSUED

09/27/13

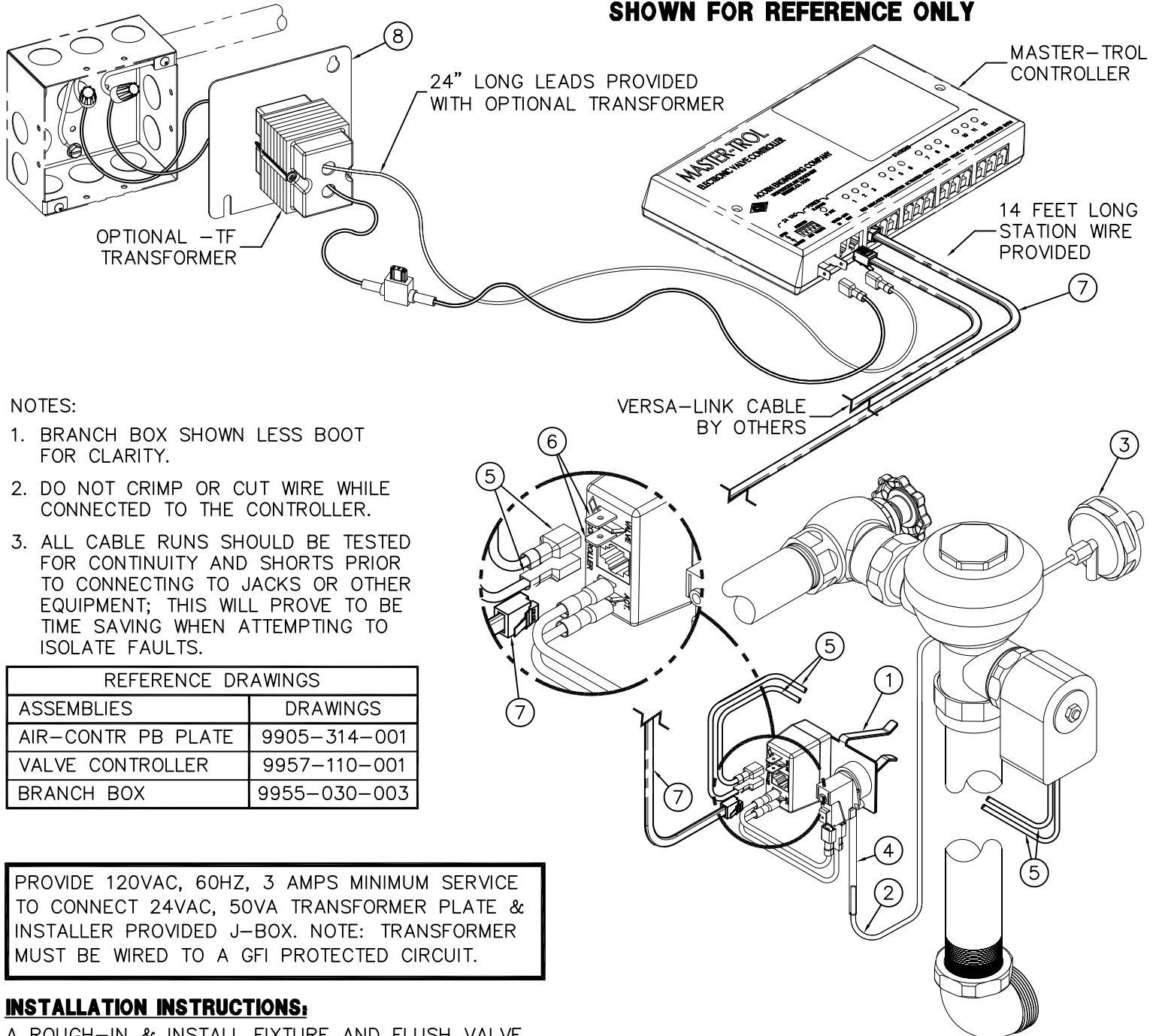
DATE REVISED

DRAWING NUMBER

9905-333-001



SHOWN FOR REFERENCE ONLY

**INSTALLATION INSTRUCTIONS:**

- ROUGH-IN & INSTALL FIXTURE AND FLUSH VALVE PER MANUFACTURER'S INSTRUCTIONS.
- CLIP BRANCH BOX ASSEMBLY (1) TO FLUSH VALVE HORIZONTAL PIPING AS SHOWN.
- 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).
- CONNECT SOLENOID VALVE WIRES (5) TO EVS BRANCH BOX TERMINALS (6) MARKED "VALVE".
- CONNECT STATION WIRE (7) TO BRANCH BOX AND APPROPRIATE LOCATION ON CONTROLLER.
- MAKE UP CONNECTIONS FROM TRANSFORMER (8) TO CONTROLLER AS SHOWN.



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TITLE

EVSFV MASTER-TROL FLUSH VALVE

MANUFACTURE DATE

APRIL, 1998**TO PRESENT**

DATE ISSUED

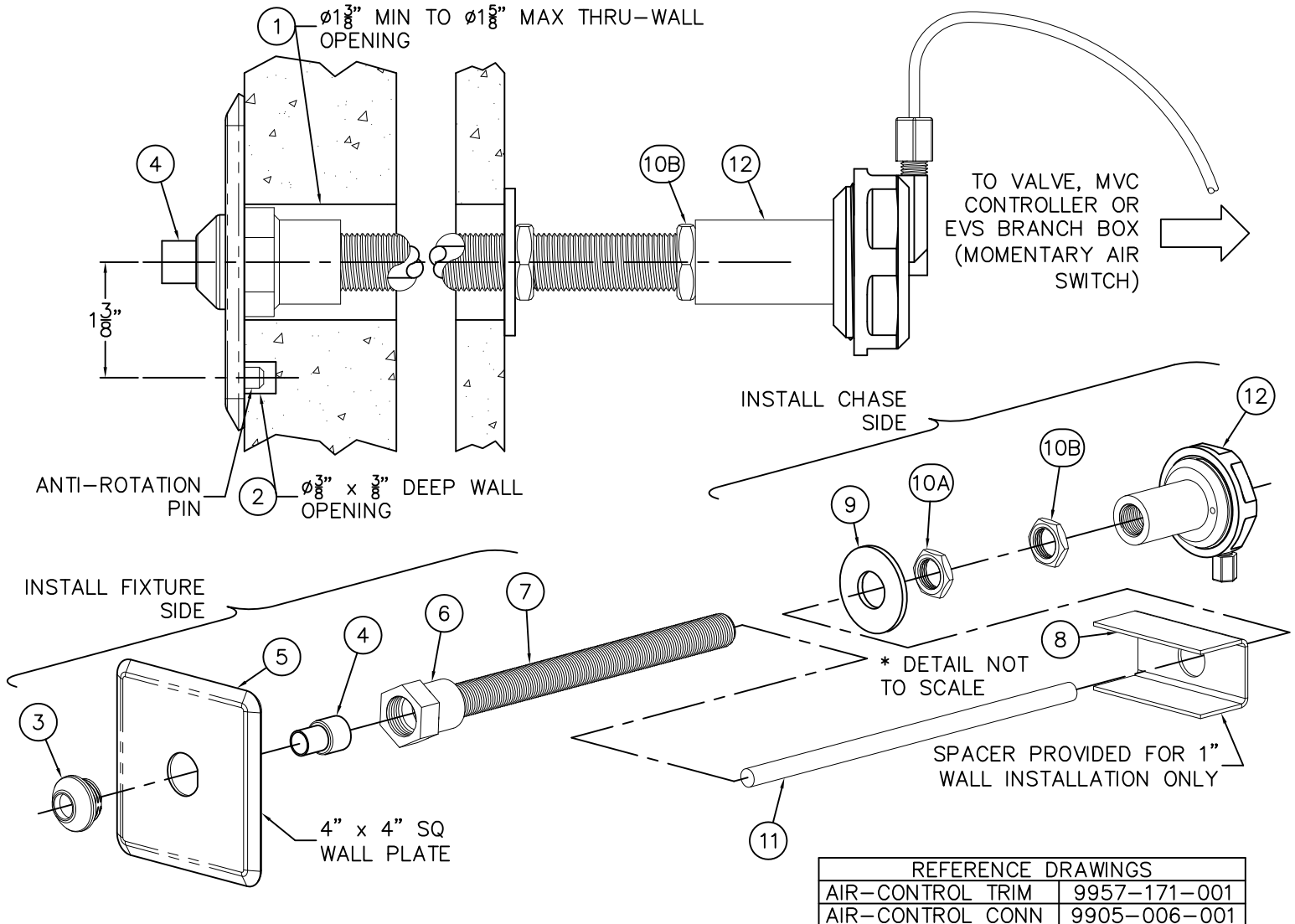
05/08/98

DATE REVISED

05/17/13

DRAWING NUMBER

9905-315-002



INSTALLATION INSTRUCTIONS:

A. INSTALL THE FIXTURE PER INSTALLATION INSTRUCTIONS PROVIDED.

B. LOCATE & ROUGH-IN FOR REMOTE PUSHBUTTON ASSEMBLY. NOTE: LOCATE PUSHBUTTON USING TUBING PROVIDED. FOR LONGER DISTANCES, CONTACT FACTORY.

- $\phi 1\frac{3}{8}$ " THROUGH WALL OPENING (1) FOR PUSHROD ASSEMBLY.
- $\phi 3/8$ " x $3/8$ " DEEP MIN. WALL OPENING (2) FOR PLATE ANTI-ROTATION PIN.
- BEFORE INSTALLING, DISASSEMBLE PUSHROD ACTUATOR ASSEMBLY AS SHOWN ABOVE.

C. FROM FIXTURE SIDE: ASSEMBLE PUSHBUTTON ESCUTCHEON (3) AND PUSHBUTTON (4) TO PLATE (5) SECURING WITH HEX BUSHING ADAPTER (6) AND THREADED CONDUIT (7). ALIGN ASSEMBLED CONDUIT (7) AND ANTI-ROTATION PIN WITH WALL OPENINGS AND SLIDE THROUGH WALL.

D. FROM CHASE SIDE: THREAD SPACER (8) IF REQ, FLAT WASHER (9) AND SECURE ASSEMBLY WITH LOCKNUT (10A). INSTALL PUSHROD (11) BEFORE ADDING LOCKNUT (10B) AND ADJUSTING SLEEVE ASSEMBLY (12) TO THREADED CONDUIT.

E. TO COMPLETE INSTALLATION, ADJUST PUSHBUTTON (4) BY LOOSENING LOCKNUT (10B) AND ROTATE THE ADJUSTING SLEEVE (12) AS REQUIRED. WHEN PROPERLY ADJUSTED THERE SHOULD BE NO PLAY AND ONLY MINOR TENSION AT THE BUTTON (4).

REFERENCE DRAWINGS	
AIR-CONTROL TRIM	9957-171-001
AIR-CONTROL CONN	9905-006-001



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TITLE

AIR-CONTROL PUSHBUTTON PLATE INSTALLATION

MANUFACTURE DATE

APRIL 1998

TO PRESENT

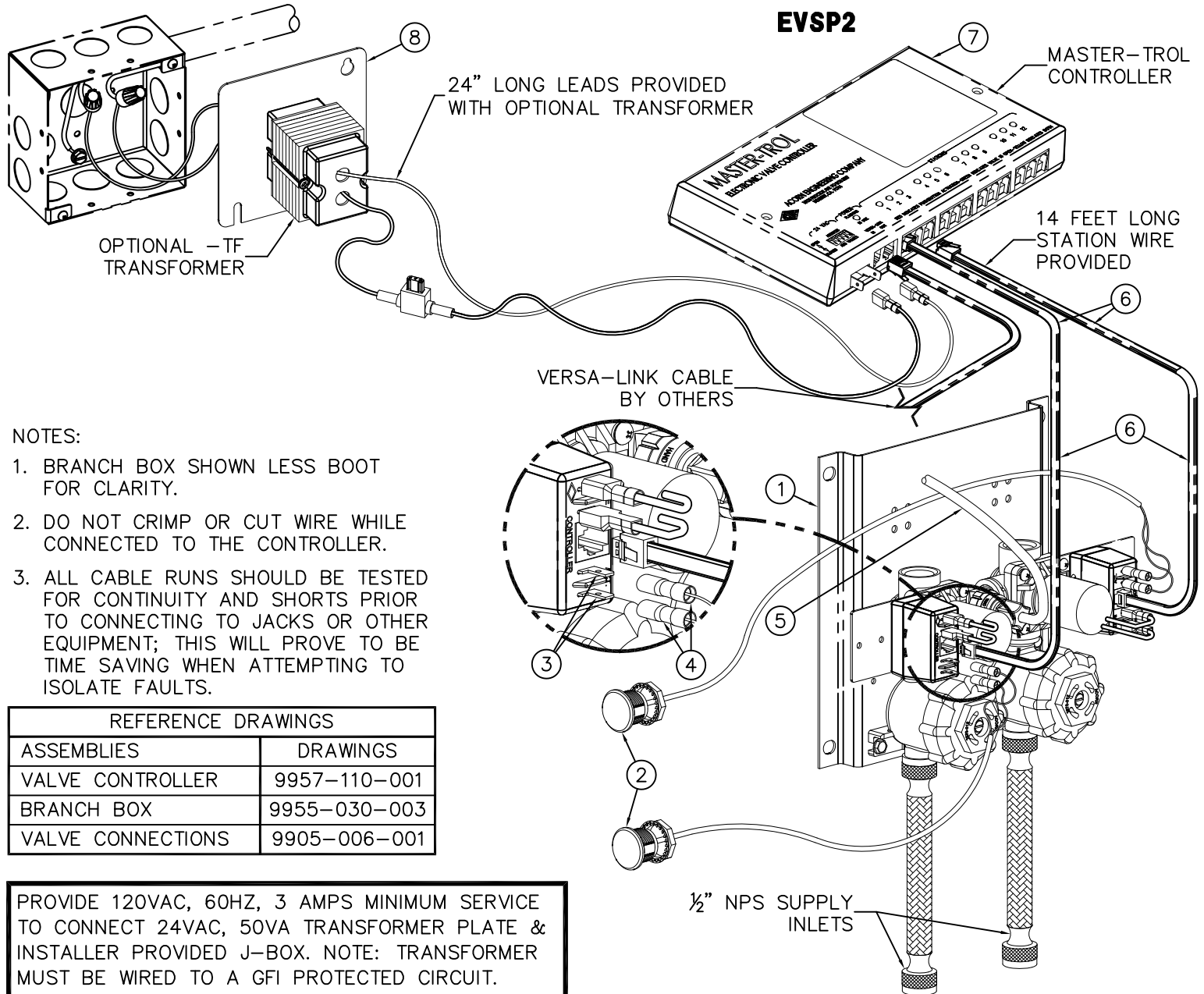
DATE ISSUED

03/01/13

DATE REVISED

DRAWING NUMBER

9905-314-001



NOTES:

1. BRANCH BOX SHOWN LESS BOOT FOR CLARITY.
2. DO NOT CRIMP OR CUT WIRE WHILE CONNECTED TO THE CONTROLLER.
3. 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:

- ROUGH-IN & INSTALL FIXTURE PER MANUFACTURER'S INSTRUCTIONS.
- MOUNT SOLENOID VALVE ASSEMBLY (1) WITHIN THE CHASE OR FIXTURE FRAME / CABINET AS REQUIRED A MAXIMUM OF 10 FEET FROM THE FIXTURE.
- CONNECT MOUNTED PIEZO SWITCH (2) WIRE LEADS WITH INSULATED FEMALE QUICK DISCONNECT ENDS (3) TO BRANCH BOX ACTUATOR MALE CONTACTS (4) AS SHOWN.
- CONNECT RISER TUBING (5) TO VALVE ASSEMBLY AND FIXTURE DISCHARGE CONNECTOR. HAND TIGHTEN USING FERRULE NUTS PROVIDED.
- CONNECT STATION WIRE (6) TO BRANCH BOX AND APPROPRIATE LOCATION ON CONTROLLER (7).
- MAKE UP CONNECTIONS FROM TRANSFORMER (8) TO CONTROLLER AS SHOWN.
- AFTER THOROUGHLY FLUSHING SUPPLY LINES MAKE UP SUPPLY CONNECTIONS.



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TITLE

EVSP2 MASTER-TROL HOT & COLD VALVE INSTALLATION

MANUFACTURE DATE

MAY 1998**TO PRESENT**

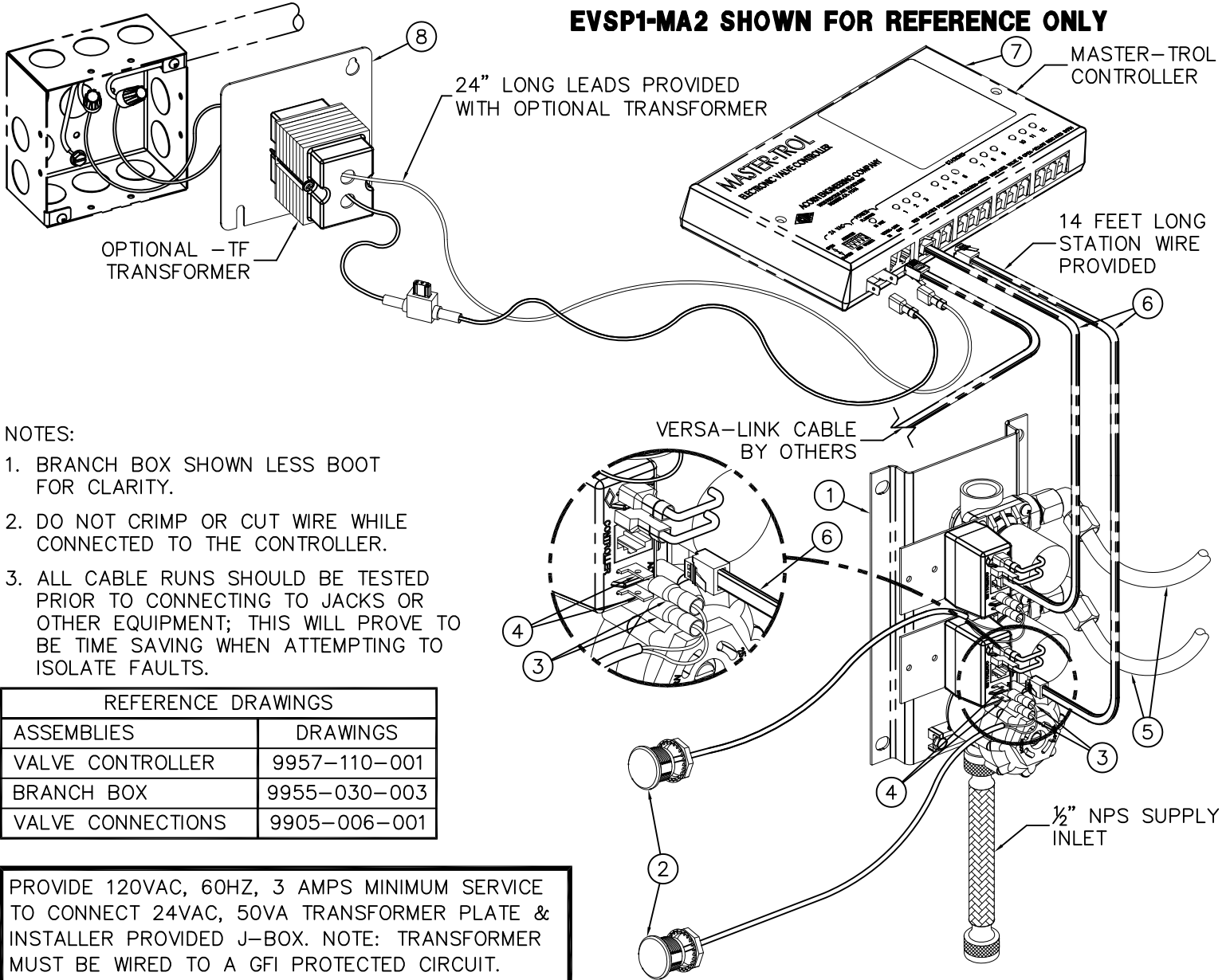
DATE ISSUED

09/27/13

DATE REVISED

DRAWING NUMBER

9905-334-001



INSTALLATION INSTRUCTIONS:

- ROUGH-IN & INSTALL FIXTURE PER MANUFACTURER'S INSTRUCTIONS.
- MOUNT SOLENOID VALVE ASSEMBLY (1) WITHIN THE CHASE OR FIXTURE FRAME / CABINET AS REQUIRED A MAXIMUM OF 10 FEET FROM THE FIXTURE.
- CONNECT MOUNTED PIEZO SWITCH (2) WIRE LEADS WITH INSULATED FEMALE QUICK DISCONNECT ENDS (3) TO BRANCH BOX ACTUATOR MALE CONTACTS (4) AS SHOWN.
- CONNECT RISER TUBING (5) TO VALVE ASSEMBLY AND FIXTURE DISCHARGE CONNECTOR. HAND TIGHTEN USING FERRULE NUTS PROVIDED.
- CONNECT STATION WIRE (6) TO BRANCH BOX AND APPROPRIATE LOCATION ON CONTROLLER (7).
- MAKE UP CONNECTIONS FROM TRANSFORMER (8) TO CONTROLLER AS SHOWN.
- AFTER THOROUGHLY FLUSHING SUPPLY LINES MAKE UP SUPPLY CONNECTIONS.

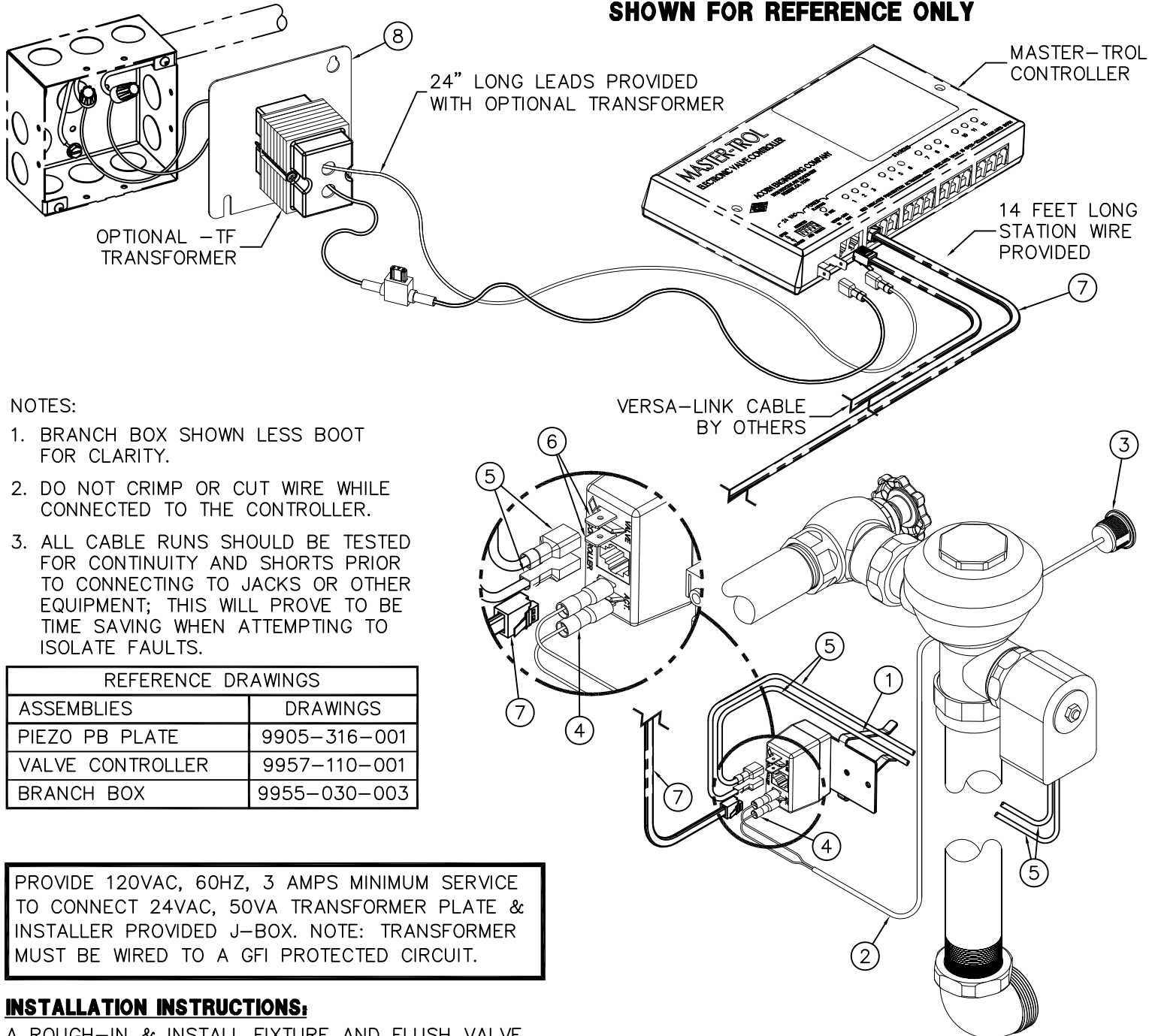


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TITLE EVSP1 MASTER-TROL SINGLE TEMP VALVE w/ PIEZO SWITCH		
MANUFACTURE DATE JANUARY 2011 TO PRESENT	DATE ISSUED 02/15/11	DRAWING NUMBER 9905-332-001
	DATE REVISED 05/14/13	



SHOWN FOR REFERENCE ONLY

**INSTALLATION INSTRUCTIONS:**

- ROUGH-IN & INSTALL FIXTURE AND FLUSH VALVE PER MANUFACTURER'S INSTRUCTIONS.
- CLIP BRANCH BOX ASSEMBLY (1) TO FLUSH VALVE HORIZONTAL PIPING AS SHOWN.
- CONNECT PIEZO WIRE LEADS (2) FROM MOUNTED PUSHBUTTON ASSEMBLY (3) USING QUICK DISCONNECT TERMINALS (4) PROVIDED.
- CONNECT SOLENOID VALVE WIRES (5) TO EVS BRANCH BOX TERMINALS (6) MARKED "VALVE".
- CONNECT STATION WIRE (7) TO BRANCH BOX AND APPROPRIATE LOCATION ON CONTROLLER.
- MAKE UP CONNECTIONS FROM TRANSFORMER (8) TO CONTROLLER AS SHOWN.



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TITLE

EVSPFV MASTER-TROL FLUSH VALVE

MANUFACTURE DATE

APRIL, 1998**TO PRESENT**

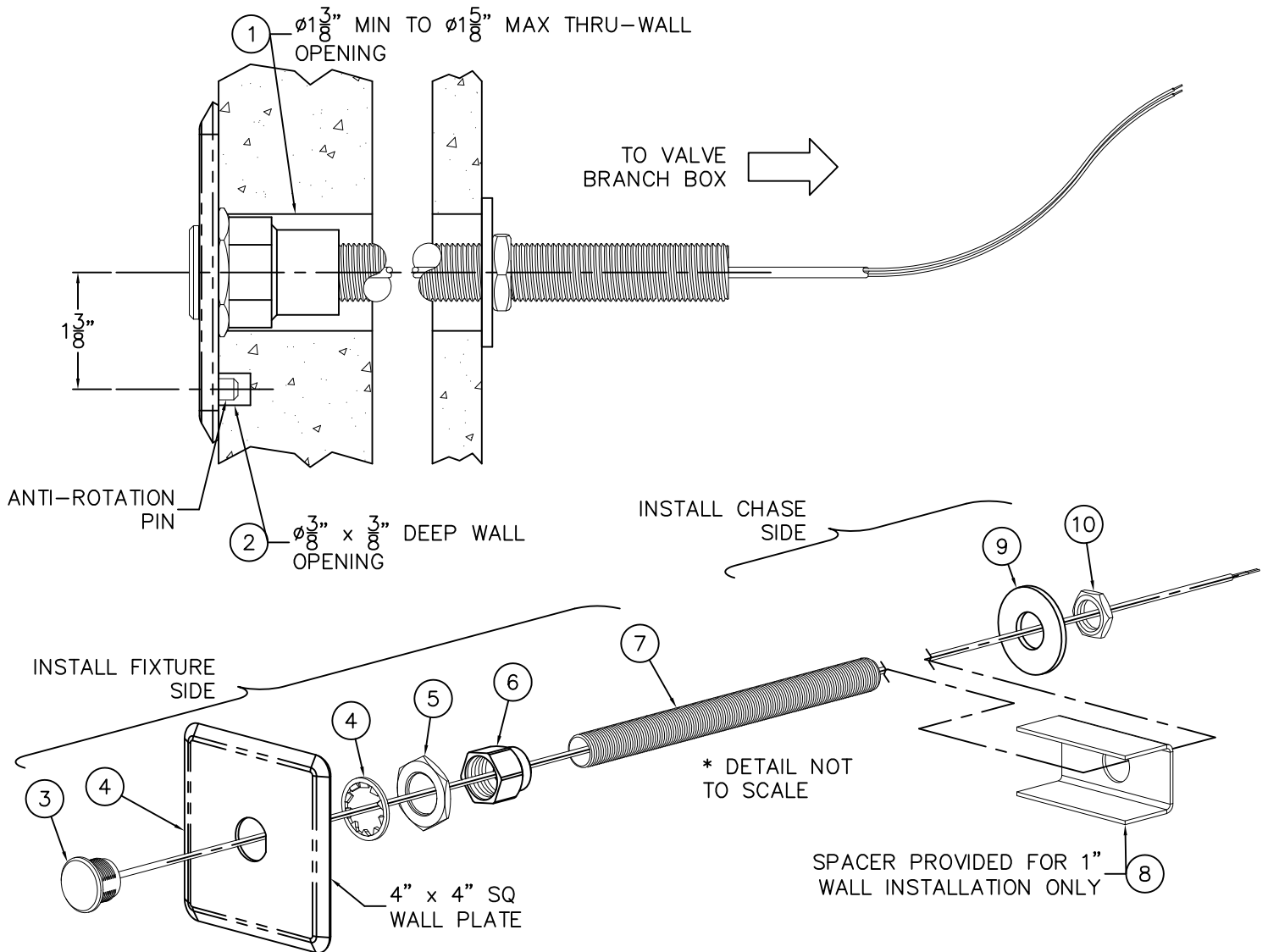
DATE ISSUED

06/20/13

DATE REVISED

DRAWING NUMBER

9905-318-001



REFERENCE DRAWINGS	
PIEZO TRIM	9957-006-001

INSTALLATION INSTRUCTIONS:

A. INSTALL THE FIXTURE PER INSTALLATION INSTRUCTIONS PROVIDED.

B. LOCATE & ROUGH-IN FOR REMOTE PIEZO PUSHBUTTON ASSEMBLY. NOTE: LOCATE PUSHBUTTON USING WIRING PROVIDED. FOR LONGER DISTANCES CONTACT FACTORY.

- $\phi 1\frac{3}{8}$ " THROUGH WALL OPENING (1) FOR CONDUIT ASSEMBLY.
- $\phi 3\frac{3}{8}$ " x $\frac{3}{8}$ " DEEP WALL OPENING (2) FOR PLATE ANTI-ROTATION PIN.
- BEFORE INSTALLING, DISASSEMBLE CONDUIT ASSEMBLY AS SHOWN ABOVE.

C. FROM FIXTURE SIDE: ASSEMBLE PIEZO PUSHBUTTON (3) TO PLATE (4), PASSING WIRES THROUGH LOCKWASHER (4) AND LOCKNUT (5) AND SECURE. ASSEMBLE HEX BUSHING ADAPTER (6) AND CONDUIT (7) AND TIGHTEN TO SECURE TO PLATE (4). THREAD WIRE THROUGH WALL AND ALIGN ASSEMBLED CONDUIT (7) AND ANTI-ROTATION PIN WITH WALL OPENINGS AND SLIDE THROUGH WALL.

D. FROM CHASE SIDE: PASS WIRE THROUGH SPACER (8) IF REQUIRED; FLAT WASHER (9) AND SECURE ASSEMBLY WITH LOCKNUT (10).

E. TO COMPLETE INSTALLATION REFER TO VALVE INSTALLATION INSTRUCTIONS.



ACORN ENGINEERING COMPANY
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TITLE

REMOTE PIEZO PUSHBUTTON PLATE INSTALLATION

MANUFACTURE DATE

APRIL 1998

TO PRESENT

DATE ISSUED

03/01/13

DATE REVISED

DRAWING NUMBER

9905-316-001