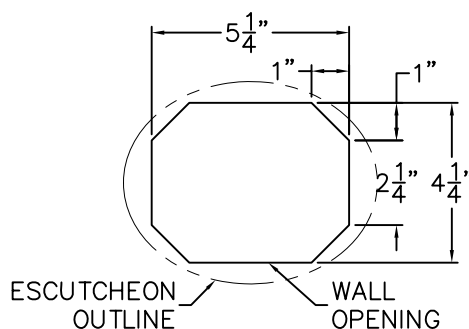
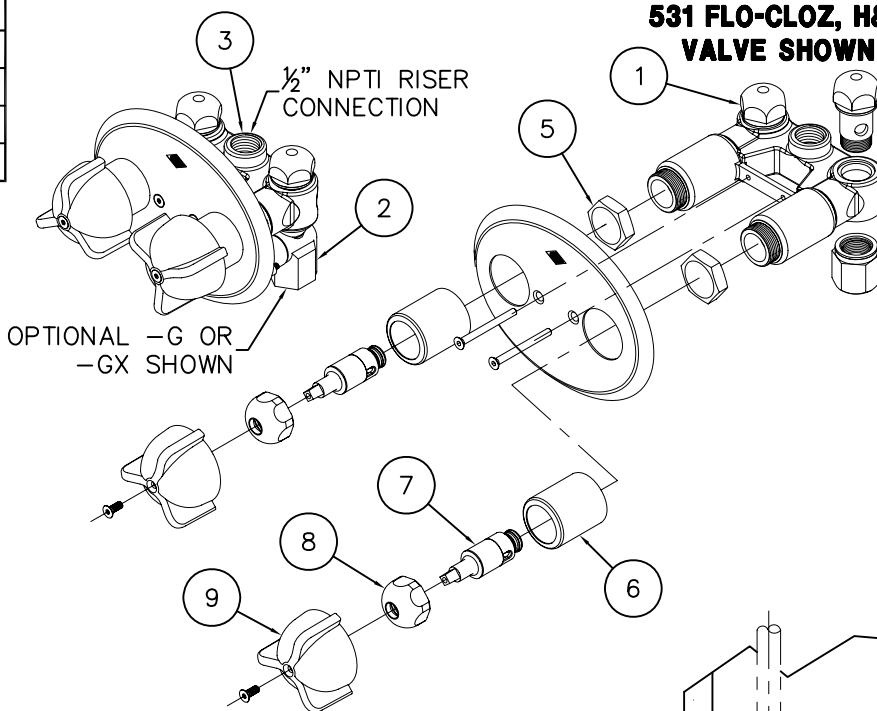
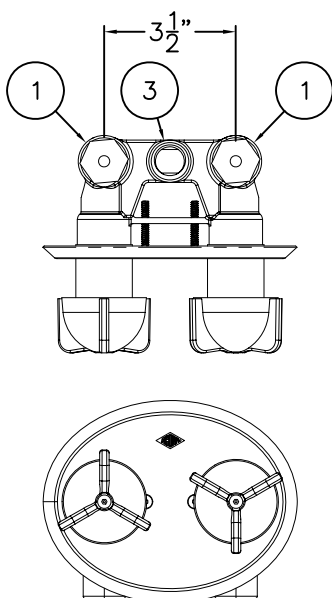




REFERENCE DRAWINGS

FLO-CLOZ CARTRIDGE	9975-000-001
HOT & COLD VALVE	9975-050-001
METERING VALVE	9900-302-002
AIR-CONTROL CONNECT	9900-006-003

531 FLO-CLOZ, H&C
VALVE SHOWN1 3/4" MIN. TO 2 1/4" MAX.
RECOMMENDEDOPTIONAL -G OR
-GX SHOWN1/2" NPTI SUPPLY
CONNECTIONS

INSTALLATION INSTRUCTIONS.

A-DETERMINE LOCATION OF VALVE AND INSTALL SUPPORT FRAMING IF REQUIRED.

B-FLUSH HOT & COLD SUPPLY LINES.

C-POSITION VALVE AND MAKE UP CONNECTIONS TO 1/2" NPTI VALVE INLET (1) CONNECTIONS. ASSEMBLE OPTIONAL STOPS OR CHECKSTOPS (2) IF REQUIRED.

D-MAKE UP RISER CONNECTIONS TO 1/2" NPTI VALVE OUTLET (3) & SHOWER HEAD STUB OUT.

E-FOR VALVE & ESCUTCHEON (4) PROTECTION DURING WALL CONSTRUCTION INSTALL TEST CAPS (5) AND PRE-INSTALLATION SCREWS BY OTHERS (#10-32) TO PREVENT PLASTER OR OTHER FOREIGN MATERIAL OUT OF VALVE AND ESCUTCHEON MOUNTING HOLES.

E-AFTER WALL CONSTRUCTION IS COMPLETE, REMOVE TEST CAPS (5) AND PRE-INSTALLATION SCREWS AND FLUSH SYSTEM THOROUGHLY.

F-INSTALL ESCUTCHEON (4), COVERS (6) AND CARTRIDGE (7). SEAL ESCUTCHEON AND WALL WITH INSTALLER PROVIDED SEALANT.

G-TIGHTEN BONNET (8) TO 30 LBS TORQUE AND FASTEN (9) HANDLE TO COMPLETE INSTALLATION.



ACORN ENGINEERING COMPANY
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TITLE

ZENITH H & C FLO-CLOZ, #531

MANUFACTURE DATE

JULY 1971

TO PRESENT

DATE ISSUED

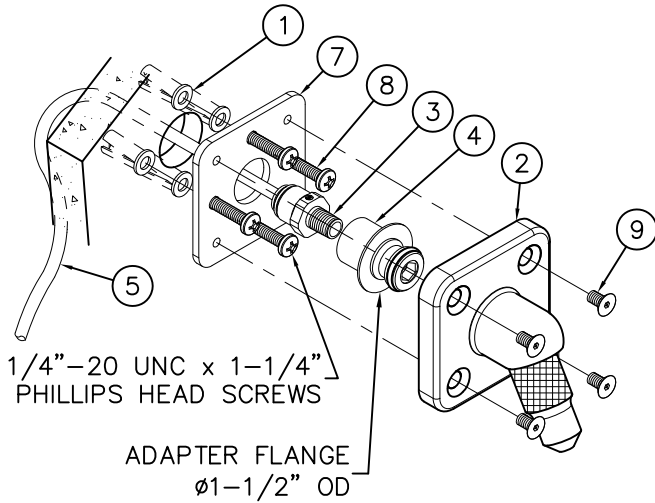
06/27/97

DATE REVISED

05/10/12

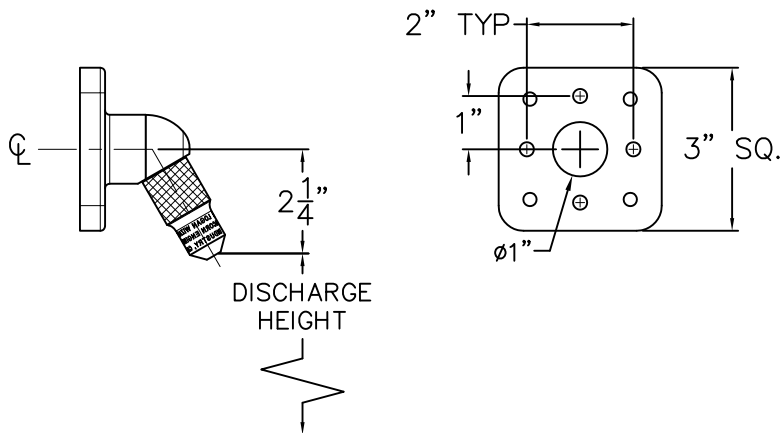
DRAWING NUMBER

9900-301-001



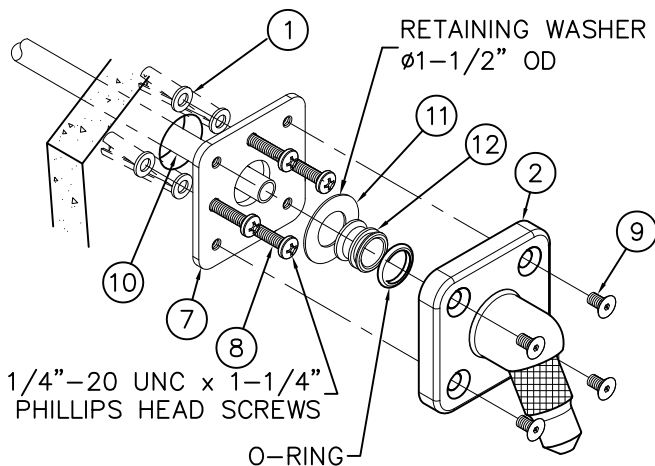
SHOWERHEAD HAVING -A ANCHOR PLATE OPTION FOR ZENITH WITH 3/8" PE TUBING RISER CONNECTION

PRIOR TO MAKING UP CONNECTIONS TO VALVE ASSEMBLY, FLUSH SUPPLY LINES THOROUGHLY. INSTALL WALL ANCHORS ① BY OTHERS USING -A ANCHOR PLATE ⑦ AS A TEMPLATE. ASSEMBLE 3/8" O.D. x 1/4" NPT PUSH-IN FITTING ③ TO O-RING ADAPTER ④. AFTER PULLING 3/8" OD PE TUBING ⑤ THRU WALL AND ANCHOR PLATE ⑦ OPENINGS, PUSH INTO FITTING ③ AND PULL TO LOCK. SECURE ANCHOR PLATE ⑦ TO WALL WITH SCREWS ⑧ PROVIDED. PUSH O-RING ADAPTER ASSEMBLY INTO SHOWERHEAD ②. INSTALL ASSEMBLY TO ANCHOR PLATE ⑦ USING SCREWS ⑨ PROVIDED.



REFERENCE DRAWINGS

ASSEMBLIES	NUMBER
SHOWERHEAD	9970-105-004
NOZZLE	9970-101-004
ANCHOR PLATE	9970-150-003



SHOWERHEAD HAVING -A ANCHOR PLATE OPTION FOR ZENITH WITH 1/2" NCT RISER CONNECTION

PRIOR TO MAKING UP CONNECTIONS TO VALVE ASSEMBLY, FLUSH SUPPLY LINES THOROUGHLY. USE ANCHOR PLATE ⑦ AS A TEMPLATE AND INSTALL WALL ANCHORS ① BY OTHERS. INSTALL 1/2" NCT SHOWER RISER ⑩ BY OTHERS THRU WALL, ANCHOR PLATE ⑦ AND STUB-OUT EXTENDED 1" FROM BEYOND WALL. PLACE RETAINING WASHER ⑪ AND O-RING ADAPTER ⑫ OVER STUB-OUT ⑩ AND POSITION AGAINST ANCHOR PLATE ⑦. REMOVE O-RING BEFORE SOLDERING O-RING ADAPTER ⑫ TO STUB-OUT ⑩. REINSTALL O-RING AND INSTALL SHOWERHEAD ② TO ANCHOR PLATE ⑦ USING SCREWS ⑨ PROVIDED.



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TITLE

INSTALLATION OF FLANGED BRACKET SHOWERHEADS w/ -A ANCHOR PLATE

MANUFACTURE DATE

JULY 1975

TO PRESENT

DATE ISSUED

09/29/04

DATE REVISED

01/27/14

DRAWING NUMBER

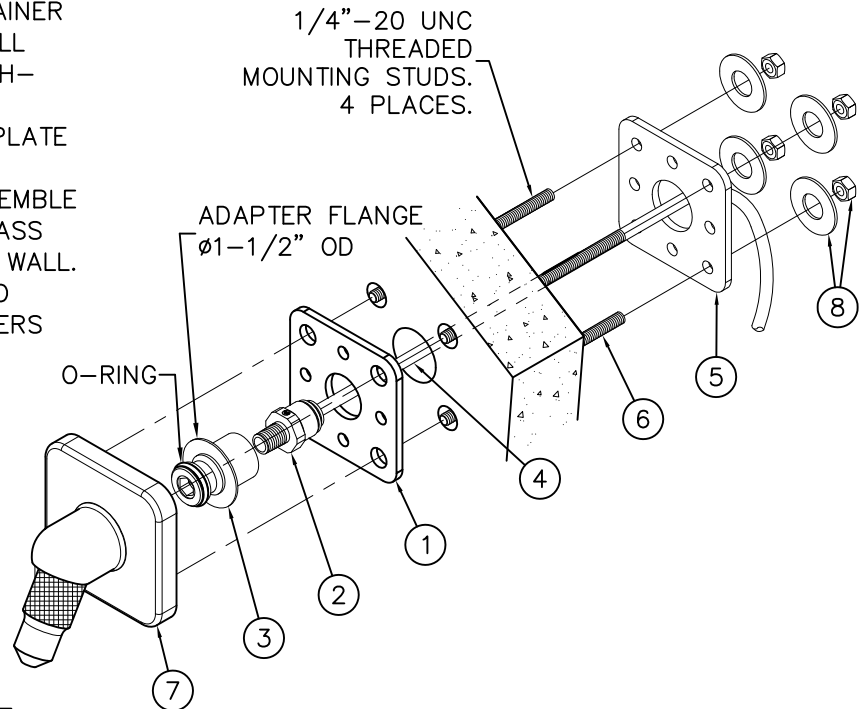
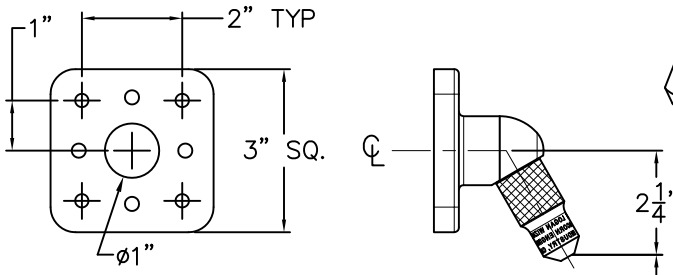
9900-320-003



SHOWERHEAD HAVING -B BACK PLATE OPTION FOR ZENITH WITH 3/8" PE TUBING RISER CONNECTION

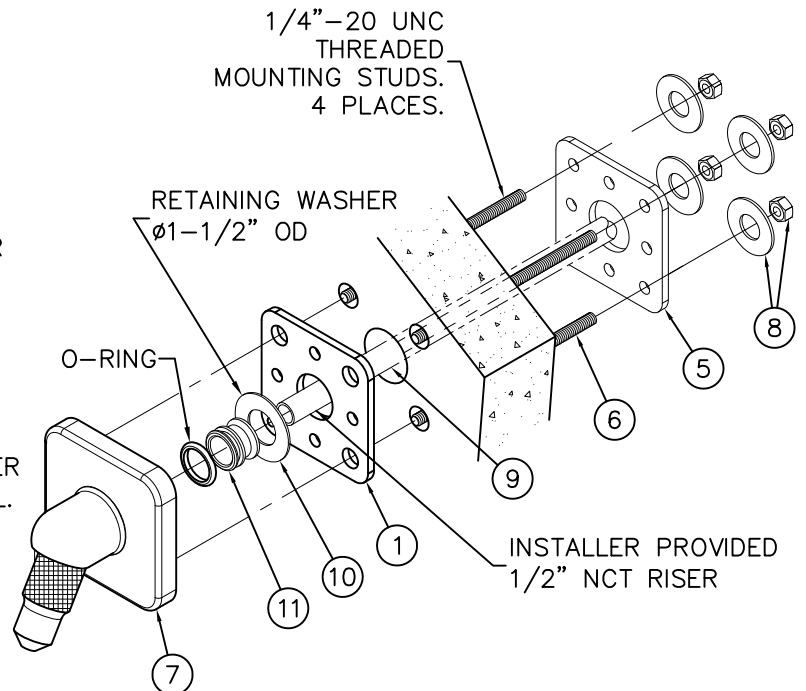
FLUSH SUPPLY LINES THOROUGHLY PRIOR TO MAKING UP CONNECTIONS TO VALVE ASSEMBLY. USE RETAINER PLATE ① AS A TEMPLATE TO CREATE THRU WALL OPENINGS. ASSEMBLE 3/8" O.D. x 1/4" NPT PUSH-IN FITTING ② TO O-RING ADAPTER ③. AFTER PASSING 3/8" O.D. PE TUBING ④ THRU BACK PLATE ⑤, WALL AND RETAINER PLATE ① OPENINGS, PUSH INTO FITTING ② AND PULL TO LOCK. ASSEMBLE MOUNTING STUDS ⑥ TO SHOWERHEAD ⑦ & PASS THRU RETAINER PLATE ① AND THEN THRU THE WALL. FROM CHASE SIDE, INSTALL BACK PLATE ⑤ AND SECURE WHOLE ASSEMBLY WITH NUTS AND WASHERS ⑧.

REFERENCE DRAWINGS	
ASSEMBLIES	NUMBER
NOZZLE	9970-101-004
WALL PLATES	9970-151-003



SHOWERHEAD HAVING -B BACK PLATE OPTION FOR ZENITH WITH 1/2" NCT RISER CONNECTION

FLUSH SUPPLY LINES THOROUGHLY PRIOR TO MAKING UP CONNECTIONS TO VALVE ASSEMBLY. USE RETAINER PLATE ① AS A TEMPLATE TO CREATE THRU WALL OPENINGS. PASS 1/2" NCT RISER ⑨ THRU BACK PLATE ⑤, WALL & RETAINER PLATE ① EXTENDING 1" BEYOND THE RETAINER PLATE. PASS RETAINING WASHER ⑩ THRU RISER STUB OUT. SLIDE O-RING ADAPTER ⑪ ONTO STUB OUT AND AGAINST RETAINING WASHER ⑩. REMOVE O-RING AND SOLDER ADAPTER ⑪ TO RISER. INSTALL O-RING WHEN COOL. ASSEMBLE MOUNTING STUDS ⑥ TO SHOWER HEAD ⑦ & PASS THRU RETAINER PLATE ① AND THEN THRU WALL. FROM CHASE SIDE, INSTALL BACK PLATE ⑤ AND SECURE ASSEMBLY WITH NUTS AND WASHERS ⑧ PROVIDED.



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TITLE

INSTALLATION OF FLANGED BRACKET SHOWERHEADS w/ -B BACK PLATE

MANUFACTURE DATE

JULY 1977

TO PRESENT

DATE ISSUED

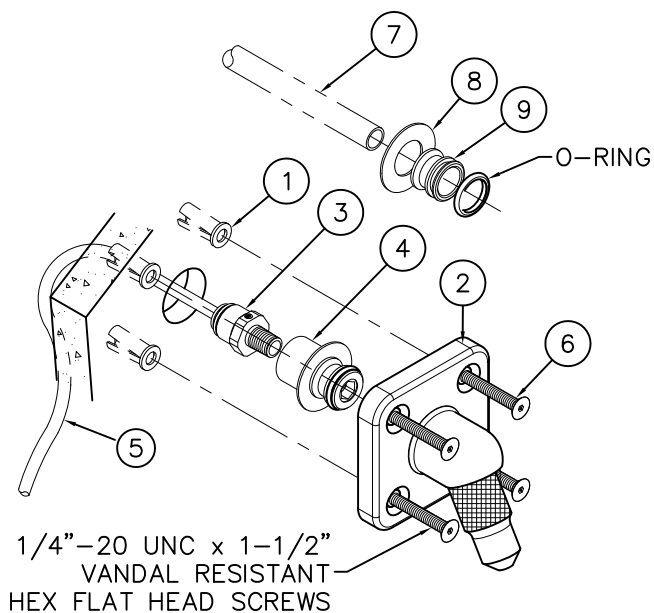
09/29/04

DATE REVISED

01/27/14

DRAWING NUMBER

9900-321-002



1/4"-20 UNC x 1-1/2"
VANDAL RESISTANT
HEX FLAT HEAD SCREWS

NOTE: Use Of Teflon Tape On All
Threaded Connections Is Recommended.

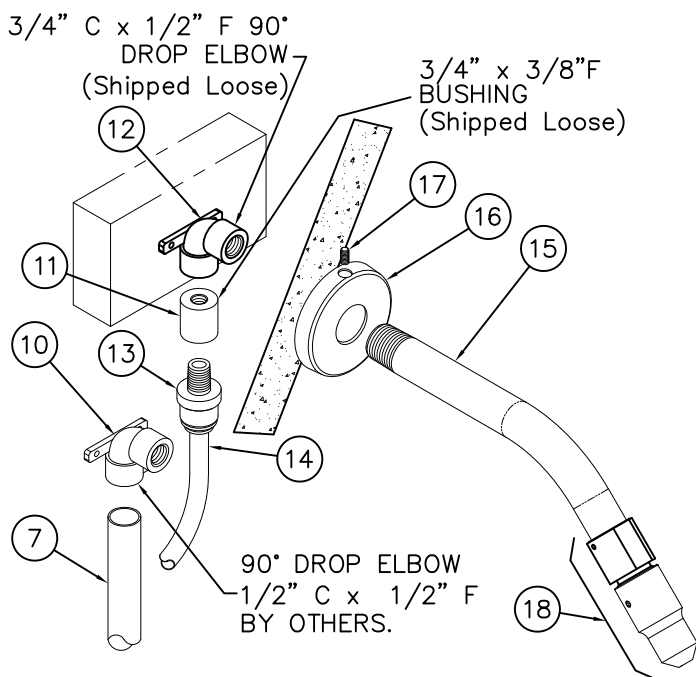
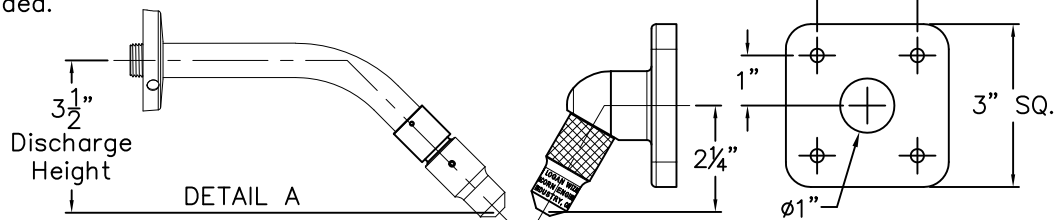
ZENITH SHOWERHEAD w/ 3/8" PE TUBING OR 1/2" NCT RISER BY OTHERS

PRIOR TO MAKING UP CONNECTIONS TO VALVE ASSEMBLY, FLUSH SUPPLY LINES THOROUGHLY. INSTALL WALL ANCHORS ① BY OTHERS USING SHOWERHEAD BASE ② AS A TEMPLATE.

FOR 3/8" PE TUBING RISER: ASSEMBLE 3/8" OD x 1/4" NPT PUSH-IN FITTING ③ TO O-RING ADAPTER ④. AFTER PULLING 3/8" OD PE TUBING ⑤ THRU WALL OPENING PUSH INTO FITTING ③ AND PULL TO LOCK. PUSH O-RING ADAPTER ASSEMBLY INTO SHOWERHEAD ②. INSTALL ASSEMBLY TO WALL USING SCREWS ⑥ PROVIDED.

FOR 1/2" NCT RISER: STUB-OUT 1/2" NCT RISER ⑦ BY OTHERS EXTENDED 1" BEYOND WALL. INSTALL RETAINING WASHER ⑧ AND O-RING ADAPTER ⑨ OVER STUB-OUT ⑦ AND POSITION AGAINST WALL. REMOVE O-RING BEFORE SOLDERING O-RING ADAPTER ⑨ TO STUB-OUT ⑦. REINSTALL O-RING AND POSITION SHOWERHEAD ② OVER ADAPTER ASSEMBLY. SECURE USING SCREWS ⑥ PROVIDED.

REFERENCE DRAWINGS	
ASSEMBLIES	NUMBER
NOZZLE	9970-101-004
SHOWERHEAD	9970-105-004
BENT ARM	9970-100-003



ZENITH -BA BENT ARM OPTION w/ 3/8" OD PE TUBING OR w/ 1/2" NCT RISER BY OTHERS

PRIOR TO MAKING UP CONNECTIONS TO VALVE ASSEMBLY, FLUSH SUPPLY LINES THOROUGHLY.

FOR 1/2" NCT RISER: BRING UP 1/2" NCT RISER ⑦ BY OTHERS, FROM VALVE AND CONNECT TO 1/2" C x 1/2" F ELBOW ⑩ BY OTHERS. SECURE ELBOW ⑩ AT DERIVED HEIGHT (SEE DETAIL A).

FOR 3/8" PE TUBING: SWEAT 3/4" x 3/8" F BUSHING ⑪ TO 3/4" C x 3/8" F ELBOW ⑫. LET COOL PRIOR TO CONNECTING 3/8" OD x 3/8" NPT PUSH-IN FITTING ⑬. BRING UP 3/8" OD TUBING RISER ⑭ FROM VALVE AND PUSH INTO FITTING ⑬ AND PULL TO LOCK. SECURE ELBOW ASSEMBLY ⑫ AT THE DERIVED HEIGHT (SEE DETAIL A).

BOTH RISER TYPES: PASS THREADED END OF BENT ARM ⑮ ASSEMBLY THRU LOOSE ESCUTCHEON ⑯ AND CONNECT TO THE FIXED ELBOW ASSEMBLY ⑫. POSITION ESCUTCHEON ⑯ AGAINST FINISHED WALL AND SECURE USING THE SET SCREW ⑰ PROVIDED. CONNECT THE NOZZLE ASSEMBLY ⑱.



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TITLE

FLANGED BRACKET SHOWERHEAD & -BA BENT ARM

MANUFACTURE DATE

JULY 1977

TO PRESENT

DATE ISSUED

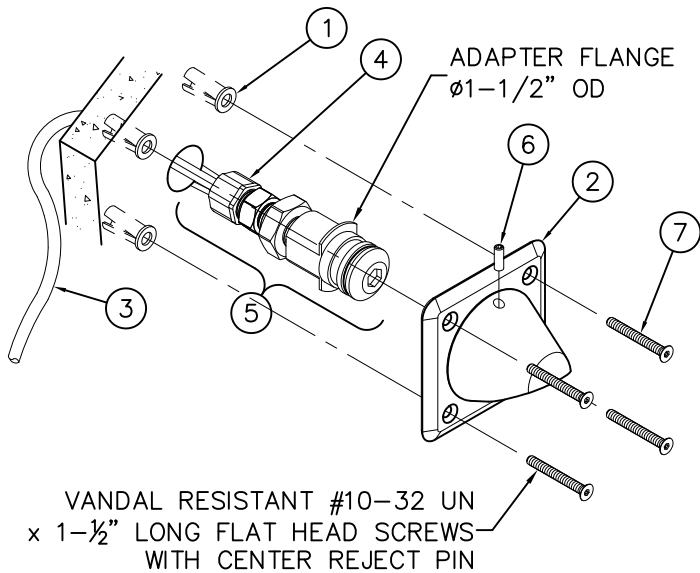
11/01/06

DATE REVISED

01/28/14

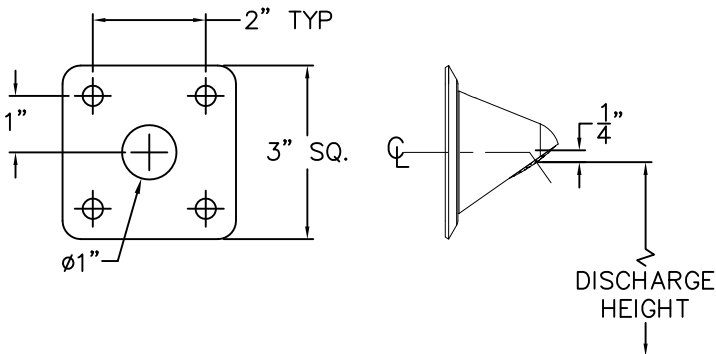
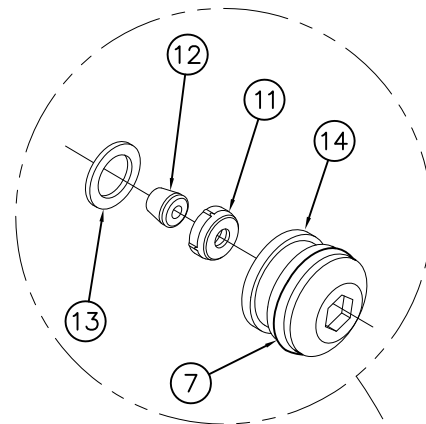
DRAWING NUMBER

9900-322-001



-CSH CONICAL SHOWERHEAD OPTION FOR ZENITH w/ 3/8" PE TUBING RISER CONNECTION

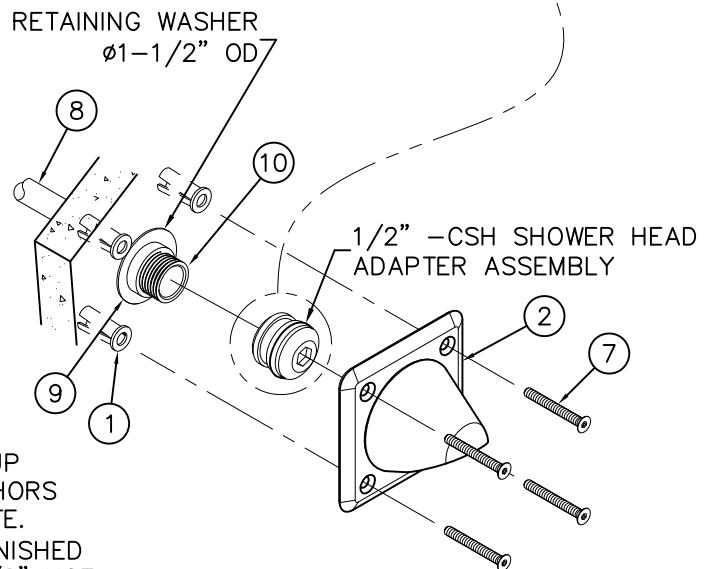
PRIOR TO MAKING UP CONNECTIONS TO VALVE ASSEMBLY, FLUSH SUPPLY LINES THOROUGHLY. INSTALL WALL ANCHORS ① BY OTHERS USING -CSH PLATE ② AS A TEMPLATE. AFTER PASSING 3/8" PE TUBING ③ THRU WALL OPENING MAKE UP CONNECTION TO 3/8" TUBE x 3/8" NPT COMPRESSION FITTING ④ AND PUSH ADAPTER ASSEMBLY ⑤ INTO CSH ASSEMBLY. TIGHTEN SET SCREW ⑥ ON -CSH. SECURE MOUNTING PLATE TO WALL USING SCREWS ⑦ PROVIDED.



REFERENCE DRAWINGS	
ASSEMBLIES	NUMBER
SHOWERHEAD	9970-009-001

-CSH CONICAL SHOWERHEAD OPTION FOR ZENITH WITH 1/2" NCT RISER CONNECTION

FLUSH SUPPLY LINES THOROUGHLY, PRIOR TO MAKING UP CONNECTIONS TO VALVE ASSEMBLY. INSTALL WALL ANCHORS ① BY OTHERS USING -CSH PLATE ② AS A TEMPLATE. EXTEND 1/2" NCT RISER ⑧ BY OTHERS 1" BEYOND FINISHED WALL. THREAD RETAINING WASHER ⑨, AND SOLDER 1/2" NCT x BSP ADAPTER ⑩ ONTO RISER. ASSEMBLE FLOW CONTROL RETAINER ⑪, FLOW CONTROL ⑫ AND NEOPRENE WASHER ⑬ ONTO SHOWER HEAD ADAPTER ⑭. TIGHTEN ASSEMBLY ONTO ADAPTER ⑩ & SECURE -CSH USING SCREWS ⑦ PROVIDED.



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TITLE

ZENITH CONICAL SHOWER HEAD

MANUFACTURE DATE

JULY 1998**TO PRESENT**

DATE ISSUED

03/16/11

DATE REVISED

01/27/14

DRAWING NUMBER

9900-323-001

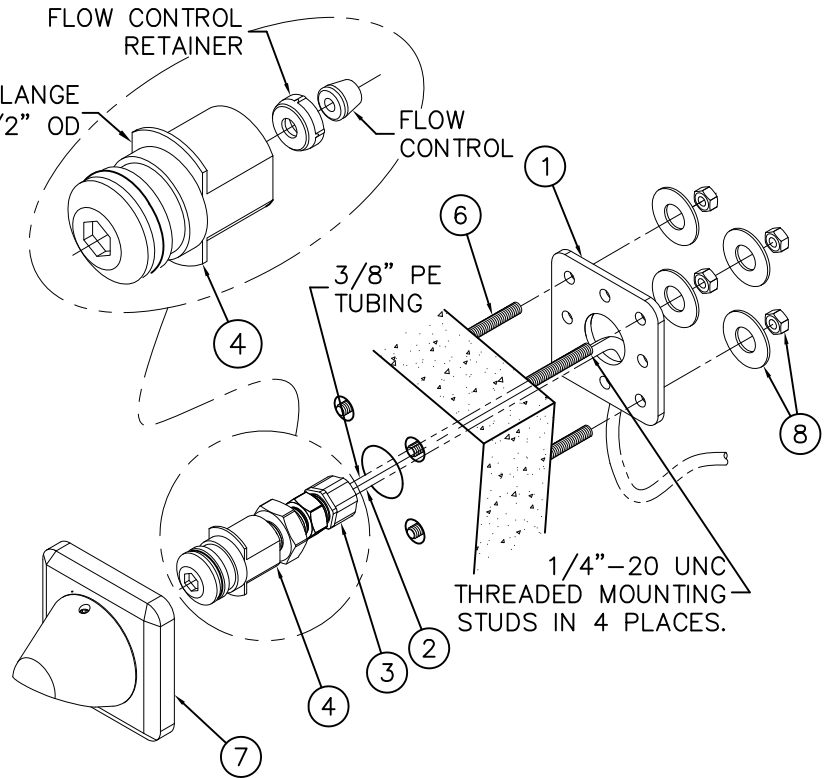


REFERENCE DRAWINGS

ASSEMBLIES	NUMBER
SHOWERHEAD	9970-009-001

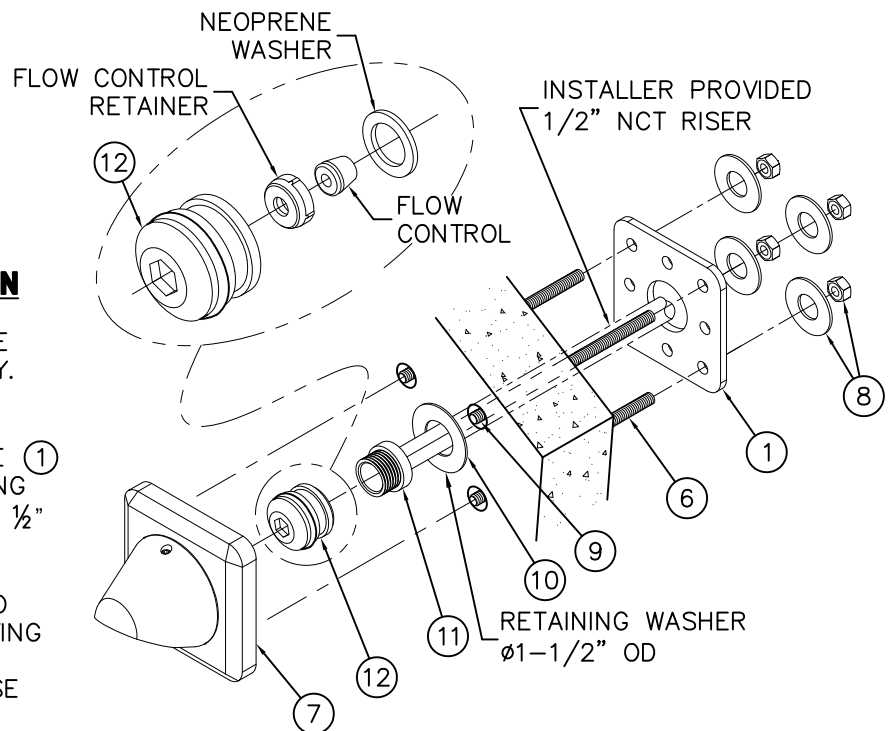
-CSH CONICAL SHOWERHEAD OPTION WITH -B BACK PLATE OPTION FOR ZENITH WITH 3/8" PE TUBE RISER CONNECTION

PRIOR TO MAKING UP CONNECTIONS TO VALVE ASSEMBLY, FLUSH SUPPLY LINES THOROUGHLY. USE BACK PLATE ① AS A TEMPLATE TO CREATE THRU WALL OPENINGS. PASS 3/8" PE TUBING ② THRU BACK PLATE ① AND MAKE UP CONNECTION TO 3/8" NPT COMPRESSION FITTING ③. PUSH ADAPTER ASSEMBLY ④ INTO -CSH ASSEMBLY. TIGHTEN SET SCREW ⑤ ON -CSH. ASSEMBLE MOUNTING STUDS ⑥ TO SHOWER FLANGE ⑦ AND SLIDE THRU THE WALL OPENINGS. FROM CHASE SIDE, SECURE ASSEMBLY WITH NUTS AND WASHERS ⑧ PROVIDED.



-CSH CONICAL SHOWERHEAD OPTION WITH -B BACK PLATE OPTION FOR ZENITH WITH 1/2" NCT RISER CONNECTION

PRIOR TO MAKING UP CONNECTIONS TO VALVE ASSEMBLY, FLUSH SUPPLY LINES THOROUGHLY. USE BACK PLATE ① AS A TEMPLATE TO CREATE THRU WALL OPENINGS. PASS 1/2" NCT SHOWER HEAD RISER ⑨ THRU BACK PLATE ① AND EXTEND 1" BEYOND WALL. PASS RETAINING WASHER ⑩ ONTO RISER STUB OUT. SLIDE 1/2" BSP X 1/2" NCT BRASS ADAPTER ⑪ ONTO RISER AND SOLDER. ASSEMBLE THE O-RING ADAPTER ⑫ AS SHOWN AND TIGHTEN ONTO THE BRASS ADAPTER ⑪. ASSEMBLE MOUNTING STUDS ⑥ TO THE SHOWER FLANGE ⑦ AND SLIDE THRU THE WALL OPENINGS. FROM CHASE SIDE, SECURE ASSEMBLY WITH NUTS AND WASHERS ⑧ PROVIDED.



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TITLE

ZENITH CONICAL SHOWER HEAD W/-B BACK PLATE

MANUFACTURE DATE

JULY 1998

TO PRESENT

DATE ISSUED

09/15/11

DATE REVISED

01/28/14

DRAWING NUMBER

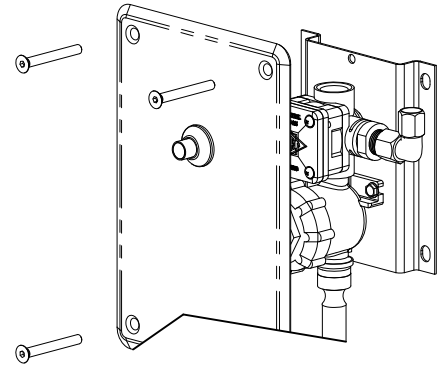
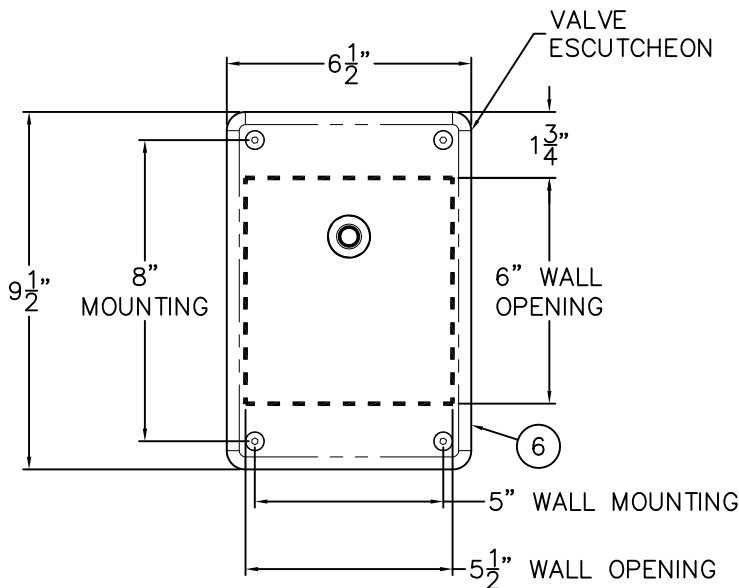
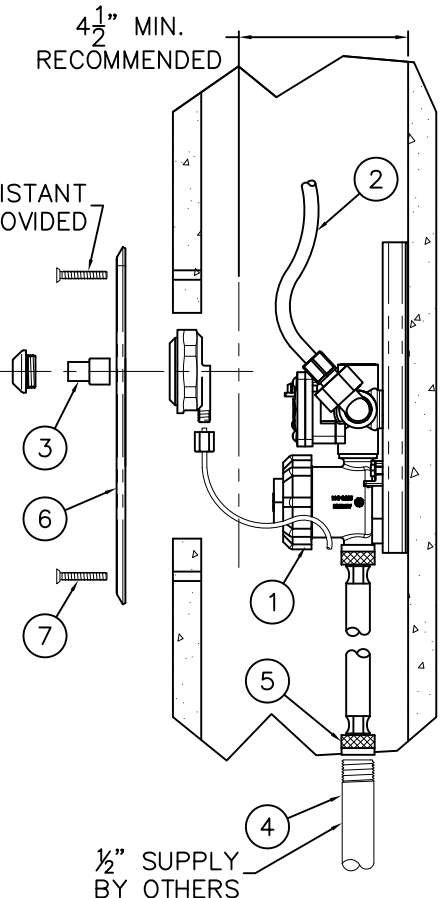
9900-324-001

**REFERENCE DRAWINGS**

AIR-CONTROL CONNECT 9900-006-003

NOTE:

- 1- AIR-CONTROL VALVE IS INTENDED TO BE SUPPLIED WITH WATER FROM A CERTIFIED TEMPERING VALVE PROVIDED BY OTHERS.
- 2- FOR -MV METERING VALVE IN RISER OPTION, METERING VALVE INLET IS TO BE SUPPLIED FROM THE CONTROL VALVE.

4 1/2" MIN.
RECOMMENDED1/4-20 VANDAL RESISTANT
FASTENERS PROVIDEDADA: 38" MIN. TO
48" MAX. AFF**INSTALLATION INSTRUCTIONS:**

A-DETERMINE LOCATION OF VALVE (1) AND INSTALL SUPPORT FRAMING IF REQUIRED.

B-MOUNT AIR-CONTROL VALVE (1) AND MAKE UP CONNECTIONS TO VALVE RISER (2) OUTLET AND SHOWER HEAD. NOTE: VALVE MAY BE REMOTELY LOCATED UP TO 10 FEET FROM PUSHBUTTON (3) OR SHOWER HEAD.

D-AFTER THOROUGHLY FLUSHING SUPPLY LINE (4), CONNECT SUPPLY TO 1/2" NPS FLEX HOSE VALVE INLET (5). NOTE: SUPPLY INLET WILL ACCOMMODATE 1/2" NPT MALE ADAPTER.

E-MOUNT PUSHBUTTON TO VALVE ESCUCHEON (6) AND MAKE UP CONNECTIONS TO 1/8" OD AIR LINE AND VALVE METERING MOTOR.

F-MOUNT VALVE ESCUTCHEON (6) OVER OPENING WITH INSTALLER PROVIDED WALL ANCHORS & FASTENERS PROVIDED (7). SEAL VALVE ESCUTCHEON AND WALL WITH INSTALLER PROVIDED SEALANT.

REFER TO ADA GUIDELINES FOR COMPLETE
INSTALLATION REQUIREMENTS.



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TITLE

ZENITH SINGLE TEMP AIR-CONTROL METERING VALVE, *516, *536 / -MV

MANUFACTURE DATE

SEPTEMBER 1995
TO PRESENT

DATE ISSUED

06/20/97

DATE REVISED

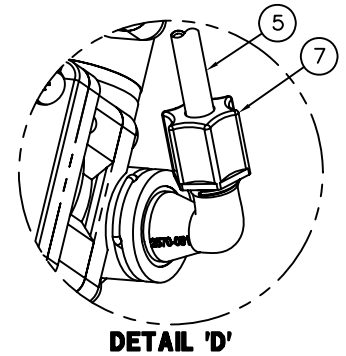
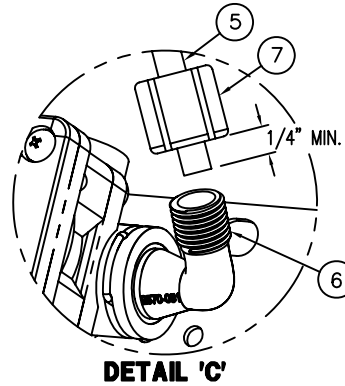
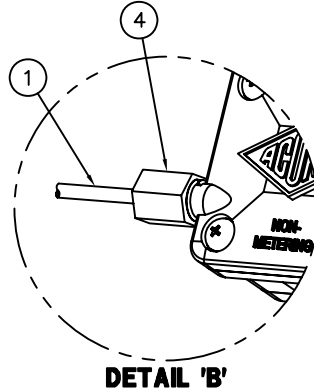
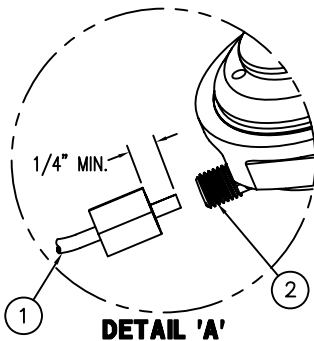
02/20/14

DRAWING NUMBER

9900-302-002

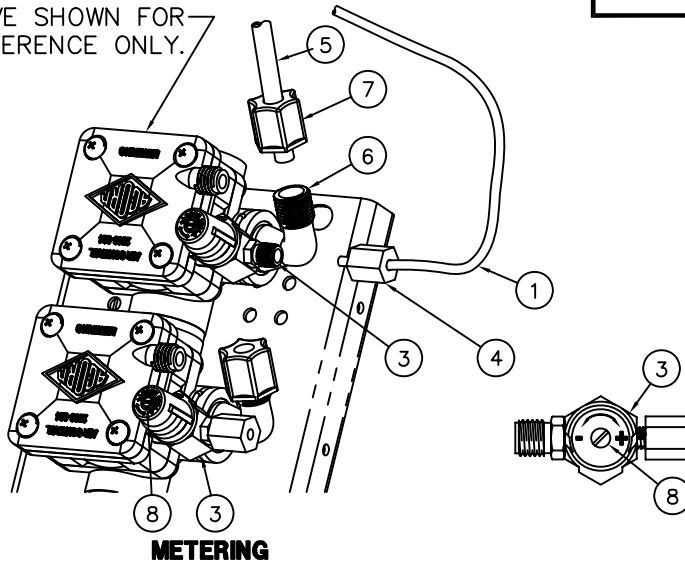


SIDE OUTLET SHOWN



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.

AIR-CONTROL 03M-MA2 VALVE SHOWN FOR REFERENCE ONLY.



METERING

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:

- ALL TUBING SHOULD BE CUT SQUARE AND BE FREE OF BURRS OR DEFORMITIES TO ENSURE A WATER TIGHT CONNECTION.
- EXTEND TUBING AT LEAST 1/4" BEYOND FERRULE NUT AND INSERT TUBING INTO CONNECTION OPENING BEFORE TIGHTENING.
- TUBING SHOULD BE FREE OF KINKS TO ENSURE PROPER OPERATION.
- 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.

TIMING IS ADJUSTABLE FROM 5 TO 60 SECONDS AND IS ACCOMPLISHED BY ROTATING TIMING SCREW (8). TURNING 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.

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" NPT OR 1/2" NPS FLEX HOSE AS REQUIRED.



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TITLE

HAND OPERATED, AIR-CONTROL VALVE SHOWER CONNECTIONS

MANUFACTURE DATE

**OCTOBER 2010
TO PRESENT**

DATE ISSUED

10/28/10

DATE REVISED

DRAWING NUMBER

9900-006-003