

**These instructions cover the installation of Wenger's VAE® (Virtual Acoustic Environments) electronics package in previously installed "V-Ready" installations where the room panels were manufactured without internal electronic components (Speakers, microphones and VAE control panel).**

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## ***Required Tools***

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The following tools are required for installation:

- Cordless Drill
- Phillips Drive Bit
- Phillips Screwdriver
- Blind Rivet Tool
- 1/8" Drill Bit
- RH and LH Metal Shears

## ***Speaker Installation (4 x 6 Speaker)***

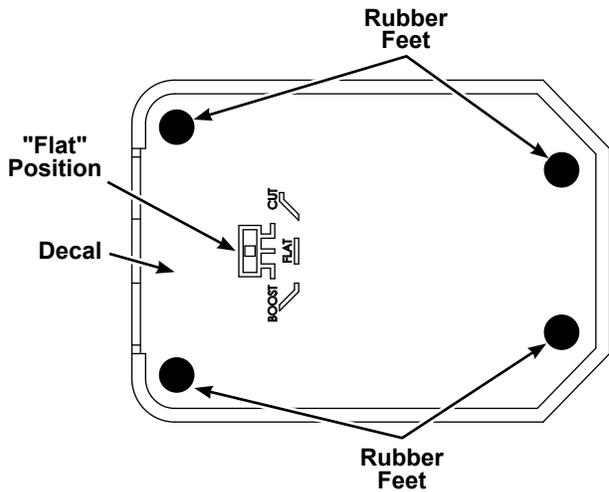
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1. Remove all speaker covers by carefully drilling through the four rivets in each speaker cover with drill bit included in the upgrade kit. There are eight speaker covers to be removed (two in each corner). Clean up all of the metal shavings from around the speakers. Metal shavings may cause distortion or premature speaker failure.
2. Locate the two wires inside of each speaker box.
3. Carefully pull the two wires out of the speaker hole.
4. Place speaker gasket over bottom side of the speaker frame.
5. Connect the wires to the speakers. Note that one terminal is larger than the other. The wires must be connected accordingly to maintain correct speaker polarity.
6. Make sure the terminals are firmly attached to each speaker.
7. Place speaker with gasket into speaker box. **Be VERY CAREFUL not to pinch the wires between the speaker and the speaker box.** Also make sure that the wires do not touch the back of the speaker.
8. **Carefully** attach the speaker and gasket to the speaker box with speaker mounting screws. It is **easy** to slip off the screw and puncture the speaker. Place the 4x6 speaker mounting tool from installers' repair kit over speaker to protect it during installation.
9. Leave speaker covers OFF for now.

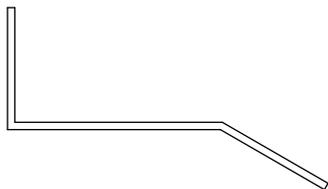
## Microphone Installation

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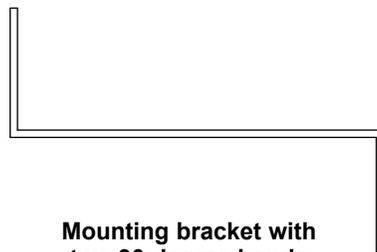
1. Drill out the pop rivets along both sides of the microphone panel with a drill bit no larger than 0.125".
2. Remove the perforated panel from the wall.
3. Set the switch on the bottom of the microphone housing to the "Flat" position on the decal.
4. Remove both the decal and the rubber feet from the bottom of the microphone housing.



5. Locate the microphone cable connector behind the fiberglass insulation. Plug the microphone's cable into this connector. Connect the other end of the microphone cable to the microphone body. Make sure both connections are secure by gently trying to separate the two connections.
6. Inspect the microphone mounting bracket. There are two types of mounting brackets:



**Mounting bracket with one 90 degree bend and one 30 degree bend**



**Mounting bracket with two 90 degree bends**

## ***Microphone Installation (continued)***

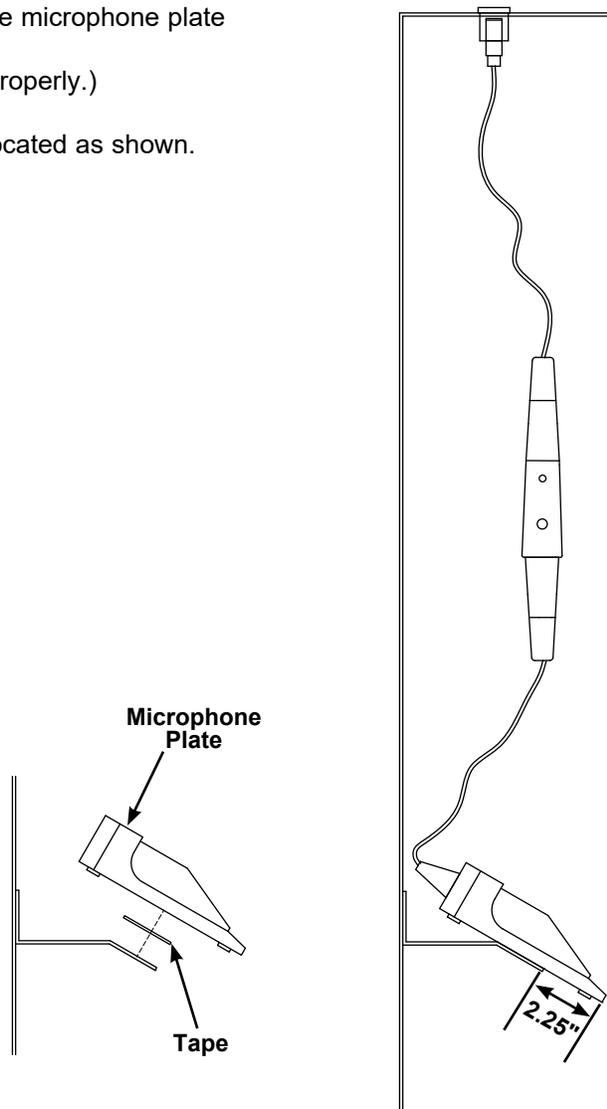
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7a. If the bracket has one 90 degree bend and one 30 degree bend.

Clean the mounting bracket and the back of the microphone plate (in the mounting area) with the alcohol pad.  
(This **must** be done or the tape will **not** stick properly.)

Attach mounting tape to microphone bracket located as shown.

Continue to Step 8.



## **Microphone Installation (continued)**

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7b. If the bracket has two 90 degree bends.

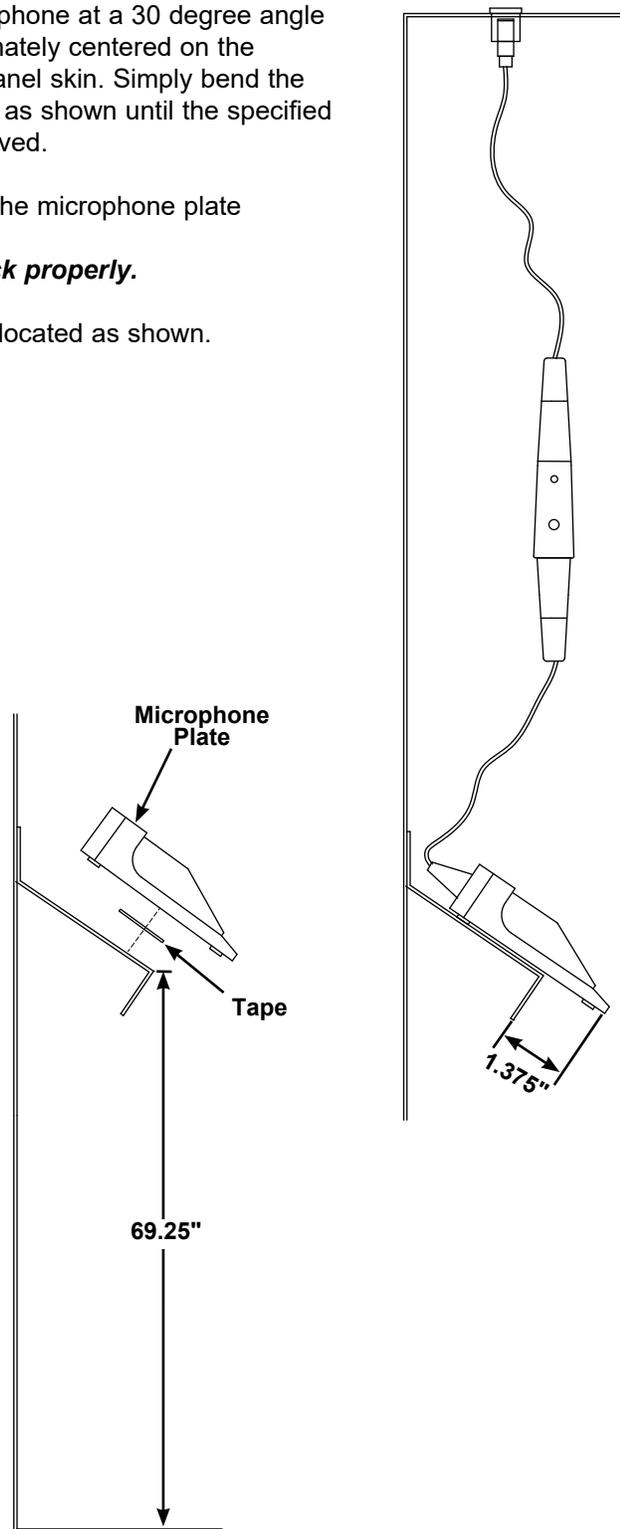
the bracket must be altered to hold the microphone at a 30 degree angle with the microphone's forward edge approximately centered on the diamond pattern perforations in the interior panel skin. Simply bend the bracket downward approximately 30 degrees as shown until the specified dimension to the bottom of the panel is achieved.

Clean the mounting bracket and the back of the microphone plate (in the mounting area) with the alcohol pad.

***This must be done or the tape will not stick properly.***

Attach mounting tape to microphone bracket located as shown.

Continue to Step 8.



## ***Microphone Installation (continued)***

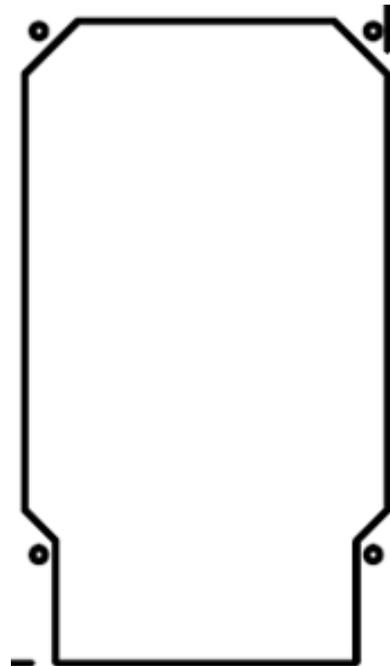
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- z8. Place the excess microphone cable behind the fiberglass so it is not visible through the perforations in the interior skin.
9. Position the fiberglass batting around the microphone so as not to be between the end of the microphone and the diamond perforation pattern in the interior skin. Also, position or trim the insulation to prevent it from contacting the microphone anywhere on its screened area.
10. Position the interior panel on the wall panel. Verify that the panel is not in direct contact with the microphone body by looking through the perforations with a flashlight or carefully probing with a pin. Fasten the interior skin to the panel with the pop rivets provided.
11. Repeat this process with the other microphone panel.

## ***Control Panel Installation***

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1. Remove the blank cover plate from the inside surface of the power panel by drilling out the rivets in the four corners to reveal the control panel access hole.
2. Remove the 4" wide strip of insulation found directly behind the cover plate that runs from the switch electrical box up about 2 feet. Locate the control cable inside the panel.
3. Depending on the revision level, this access hole may be rectangular in shape or look like the diagram shown here.



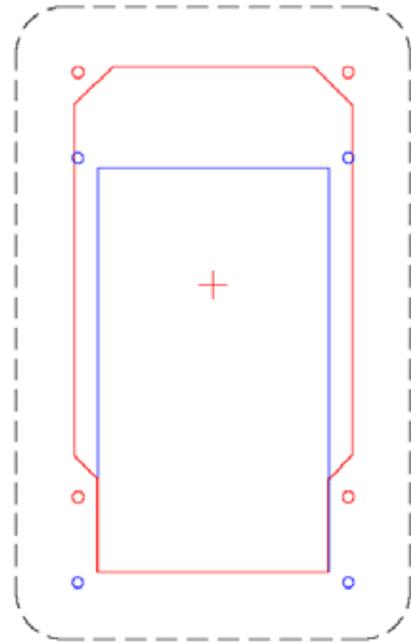
## Control Panel Installation (continued)

4. To accommodate the VAE control panel, the smaller rectangular opening must be enlarged to this new shape. When enlarging the opening, it is important that the bottom edge of both the old and new shapes be in the same place.

The blue shape is the pre-Revision H access hole.

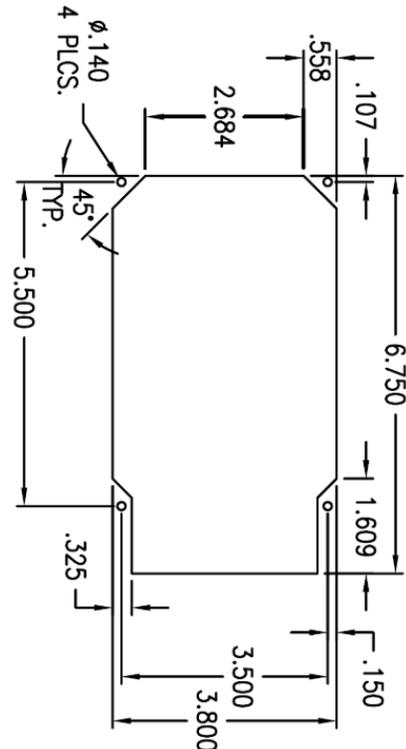
The red shape is the Revision H and forward access hole.

The dashed black line indicates the position of periphery of the Revision H control panel.



5. If the panel to be upgraded is the Revision H or beyond with the larger, non-rectangular opening, proceed to Step 12.
6. If the panel to be upgraded is the pre Revision H rectangular shape, use appropriate tools and techniques to enlarge the access hole to this new shape. Be careful not to bend the panel or scratch the surface outside of the control panel periphery.

The existing lower mounting holes, now unused, will be covered by the new control panel.



## ***Control Panel Installation (continued)***

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7. Inside the panel, locate the cable assembly behind the insulation. It will not be used for this installation. It will, however, be used for fishing the new control cable through the power panel and then discarded.
8. Locate the end of the new VAE control cable that has a cable tie positioned about 4-feet from the end. From inside the room, tie and/or tape the OPPOSITE end of the control cable to the existing cable assembly.
9. From above the room, break the old cable connector out of the hole in the top of the power panel. Use the existing cable attached to it to carefully pull the new control cable through the panel and out through the hole in the top of the power panel and ceiling rail. Continue pulling until the cable tie on the control cable is flush with the top of the power panel. About 12 feet of cable should be above the room.
10. Position the two halves of the strain-relief grommet just above the cable tie on the new control cable. Squeeze the grommet halves together and then push the grommet and the cable down until the grommet snaps into the hole in the top of the power panel.
11. Inside the room, make sure that any metal shavings created by enlarging the hole have been removed from the control panel area.
12. Replace the previously removed strip of insulation back into the panel.
13. Attach the control cable to the control panel making sure the locking tab engages the socket.
14. Insert the control panel into the opening. It may be necessary to split the insulation to fit around the control panel circuit board.
15. Secure the control panel to the face of the power panel using the countersunk blind rivets provided.
16. Remove the nut and washer from the footswitch jack on the face of the control panel.
17. Clean the control panel and install the outer decal (packaged with the control panel) to cover the rivets.
18. Replace the nut and washer on the footswitch jack and lightly tighten.
19. Remove the protective film overlay (if installed) from the LED display.

## ***Black Box Preparation***

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"Black box" is the term used throughout this manual to describe the assembled black electronics rack containing the VAE processor and related cables and components.

1. Install the flash memory card (connector end first) into the slot in the back of the VAE processor labeled COMPACT FLASH. It will fit into this slot in only one orientation. The contacts will engage during the last 0.125" of insertion. When properly installed, only about 0.125" of the card will protrude beyond the socket.



2. Install four clip nuts into the four available holes in the front panel of the black box. (The electrical outlet is near the back side). Install them with the "nut" portion inside the black box. Using these clip nuts, install the processor into the black box with the four screws and washers provided with the VAE processor.



3. Connect the two speaker cables found inside the black box to the VEA processor. Connect the 4-pin connector marked "1-2" to the jack in the VAE processor marked "1-2". Similarly, connect the 4-pin connector marked "3-4" to the jack in the VAE processor marked "3-4".



## ***Black Box Preparation (continued)***

4. Connect the power cable provided with the VAE processor. It installs between the IEC connector on the back of the VAE processor and the receptacle inside the black box. Bundle and position the excess cable out of the way above the VAE processor.



5. Push the power switch on the VAE unit to the "ON" position (depressed).



## ***Black Box Preparation (continued)***

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Please note before continuing:

6. Most installations will allow the black box to be located in its preferred position on the top of the room. In applications where that space is not available or desirable, the black box can be hung from wall on the side of the room. For those applications, install the two hanger brackets as shown using the hardware provided. The preferred orientation positions the black box with its open ends toward the side providing the best dust protection.



## ***Black Box Installation***

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1. Position the black box on the room's roof or sidewall near it's planned final position.

2. Connect the control cable. This is the cable that extends from the top of the power panel. Insert the connector at the end of this cable into the socket labeled REMOTE KEYPAD on the back of the VAE processor inside the black box. The locking tab on the connector should be positioned upward.



3. Connect the four speaker cables. These cables connect each corner panel (containing the speakers) to the black box. Locate the room corner panel directly to the left of the door as you enter the room. Connect one end of the first cable to the mating connector at the top of this corner panel where it protrudes through the ceiling rail. Connect the other end to the left-most speaker connector on the black box.

Move to the next corner in a clockwise direction and connect a speaker cable between that corner and the next speaker connector on the black box.

Continue around the top of the room in a clockwise direction connecting the remaining two speaker cables between the corner panels and their respective connectors in the black box.



4. Connect the microphone cables. Locate the microphone panel located toward the left-hand side as entering the room. Connect a microphone cable between the connector on the top of this panel and the jack labeled "MICROPHONE 1" on the back of the VAE processor inside the black box. Repeat for the other microphone panel using the jack labeled "MICROPHONE 2".



5. Make sure the VAE system power switch on the power panel is in the OFF position. Plug the main black box power cable into the mating connector on the room's Power Panel. Secure this cable to the back of the power panel using a cable clip and self-drilling screw positioned within 6-inches of the plug on the Power Panel end.
6. Position and secure all other cables to the ceiling panels as necessary using cable clips and self drilling screws as appropriate.