
Flush Mounting Loudspeakers

Revision 1.2

October, 2011

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Abstract: Flush mounting any loudspeaker requires special design consideration and self-powered loudspeakers require extra planning for adequate cooling. This application note discusses those design considerations and makes recommendations for flush mounting the Iconyx series of steerable line arrays.

Even though the Iconyx series of steerable column arrays are very low-profile and can be installed in many applications where conventional loudspeakers would be visually unacceptable, there are still some venues where even the very slender Iconyx arrays need to be hidden. Renkus-Heinz engineering has developed this application note as a guideline for mounting Iconyx arrays in a recess or niche in a wall.

General Recommendations

It's always best when mounting any loudspeaker in a recess or niche to make the front baffle of the loudspeaker flush with the wall in which you are mounting the loudspeaker. Having the loudspeaker protrude a bit from the wall is also okay, acoustically. You or your customer may not find it okay visually. You do want to avoid having the loudspeaker behind the surface of the wall any more than 1/4 inch, as the edges of the recess will have a very negative effect on the sound quality of the loudspeaker and if it's deep enough, the recess will also affect the dispersion.

The interior of the recess should be treated with acoustically absorptive material. Any sound that is in the recess will be highly colored and you want as little of it as possible to radiate back out into the room. You must not completely stuff the recess with fiberglass, as this will result in the amplifier overheating. See the drawing for our recommended treatment.

Amplifier Cooling

The Iconyx series are self-powered loudspeakers so cooling for the internal amplifiers must be addressed. The amplifiers used in the Iconyx are all Class D, Class D amplifiers run very efficiently and thus relatively cool, but you must provide for some cooling airflow. The hinge kit mounting brackets will space the loudspeaker far enough off the mounting surface to allow airflow, you must allow enough space around the loudspeaker for the cooling air to circulate. In addition you must allow the hot air to exit the recess and cool air to enter. It is best to do this by extending the opening for the loudspeaker several inches or centimeters above and below the array. Please see the drawing for minimum recommended sizes of these openings.

These guidelines assume the loudspeaker and its recess are exposed to temperatures not exceeding normal indoor temperatures. Indoor installations should avoid sources of heat such as heating ducts and radiators, lighting fixtures, etc. If the loudspeaker is installed outdoors, you need to allow more air-flow around the loudspeaker, substantially more if the installation will be exposed to full sunlight.

The cooling provided by the ventilation suggested should be sufficient for any normal operation of the loudspeakers. If, however, the loudspeakers are continuously run very close to or even into their protection limiting, the power amplifiers may eventually "thermal off." If this happens, you'll need to install fans or some other method of positive cooling, or reduce the level of the loudspeakers.

Grill Material

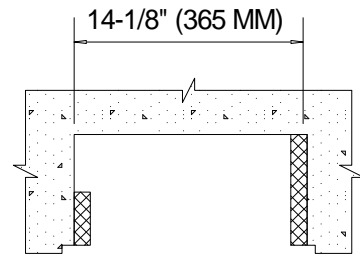
For the grill material, Renkus-Heinz recommends acoustically transparent fabric specifically designed for loudspeaker use. This is available from companies such as Acoustone and Mellotone. The fabric

used to cover fiberglass acoustic panels is often not particularly transparent at high frequencies and is not recommended.

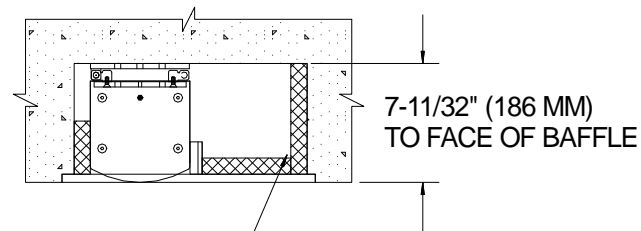
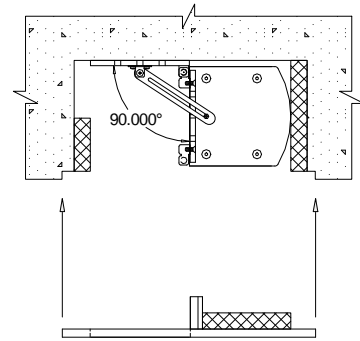
If you are covering the recess with perforated metal, use a perforation pattern that is at least 50% open. You may leave the grill in place on the Iconyx arrays if you feel it is necessary for impact resistance behind a cloth grill. If you use a metal grill, we recommend you remove the factory grill.

Check with the local fire marshal or other authority having jurisdiction, your grill fabric may have to be certified as fire resistant.

If you follow these guidelines we believe you'll have a great sounding "invisible" loudspeaker system that will remain trouble free for many years.

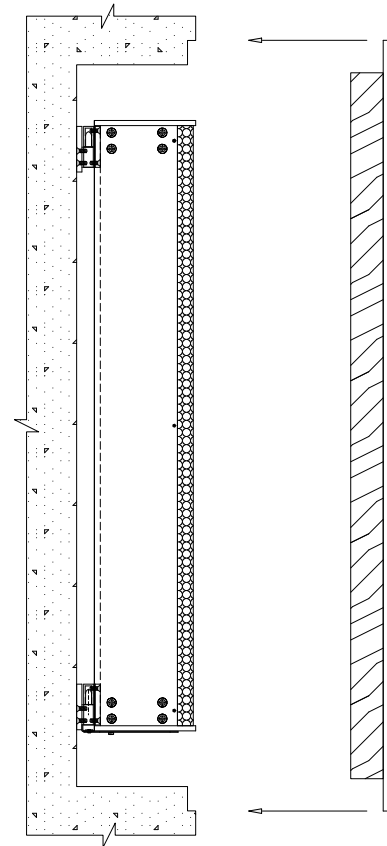


SEE NOTE 1

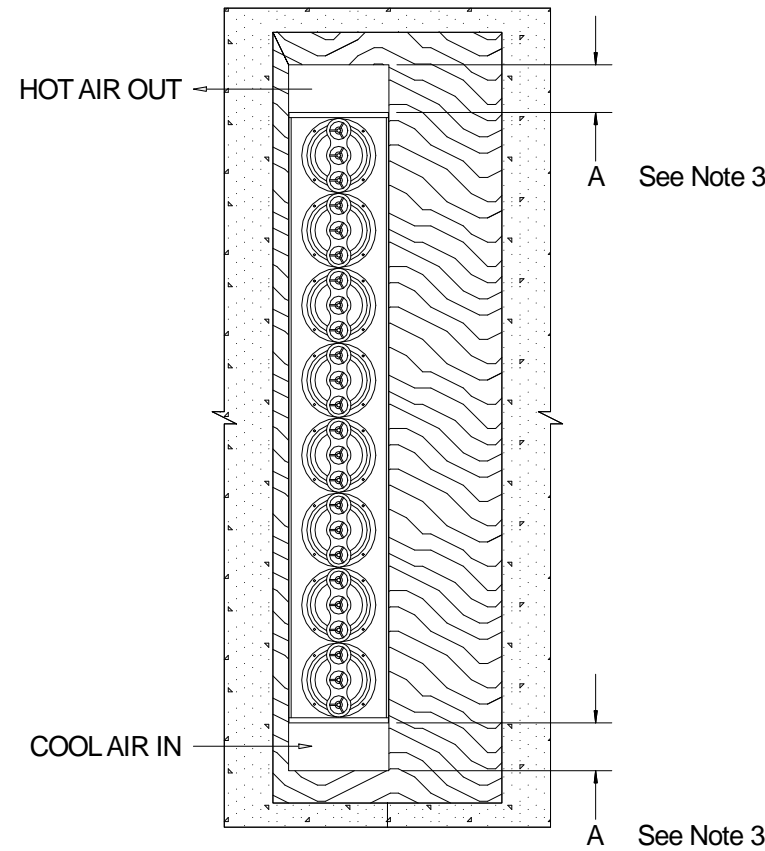


ABSORPTIVE MATERIAL

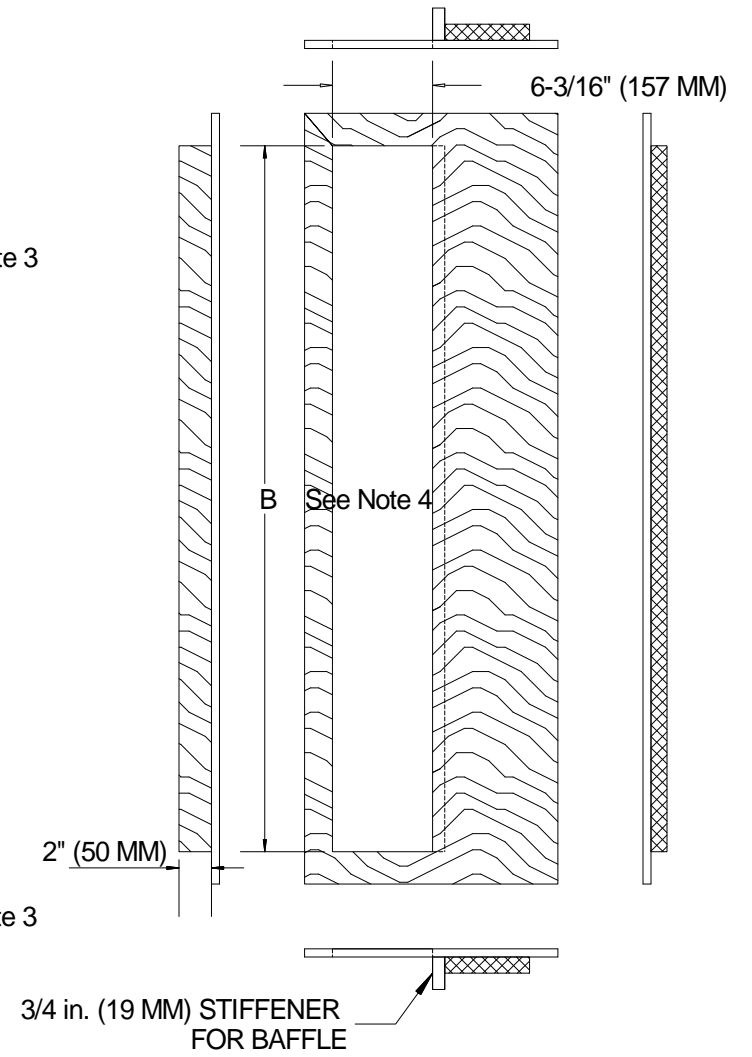
HORIZONTAL SECTION



VERTICAL SECTION



FRONT VIEW W/BAFFLE
NO GRILL



BAFFLE DIMENSIONS

NOTES:

- 1) MINIMUM CAVITY WIDTH FOR ADEQUATE COOLING = 9 in. (230 MM).
- 2) LOUDSPEAKER WILL HAVE TO BE LIFTED FROM CAVITY FOR SERVICE IF CAVITY IS LESS THAN 14-3/8 in. (365 MM)
- 3) DIMENSION "A"
MINIMUM 3 in. (75 MM) IC8 & IC16, 4 in. (100 MM) IC24 & 32
- 4) DIMENSION "B" MINIMUM:
IC8 = 43-9/16 in. (1110 MM)
IC16 = 80-9/16 in. (2050 MM)
IC24 = 119-11/16 in. (3040 MM)
IC32 = 156-11/16 in. (3980 MM)
- 5) ABSORPTIVE MATERIAL = Owens Corning Fiberglas Duct Liner Board, 1 in. (25 mm) thick or equal.

THE MATERIAL CONTAINED HEREIN IS PROPRIETARY TO RENKUS-HEINZ AND SHALL NOT BE REPRODUCED DISCLOSED OR USED FOR ANY OTHER PURPOSE WITHOUT THE WRITTEN APPROVAL OF RENKUS-HEINZ.

PART NUMBER LIST			
REV	DESCRIPTION	DATE	BY

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES TOLERANCES ARE: DECIMALS .01 .XXX±.005	INTL JM	DATE 10-2011	 RENKUS-HEINZ, inc.
DRAWN CHECK DESIGN ENG APPROV APPROV REF DWG	TITLE: FLUSH MOUNTING ICR-II	SIZE B	
NEXT ASSY.	USED ON	DO NOT SCALE DRAWING	SCALE NONE
APPLICATION	DEBURR AND REMOVE SHARP EDGES	SCALE NONE	WEIGHT