

SPEAKER ISOLATION PRACTICES

PLEASE READ BEFORE USING OUR PRODUCTS!

ACOUSTIC ISOLATION

Acoustical isolation solutions for loudspeakers are specific, as the acceptable level of isolation and associated construction varies by the job requirements. Location of the speakers is an important decision in eliminating unwanted sound transmission. While Stealth Acoustics cannot indemnify specific isolation results for a given installation, here are some “rules of thumb” to follow:

1. Place speakers on outside walls, non-party walls or adjacent to interstitial spaces (attics, closets, laundry rooms, etc.) whenever possible. This is especially true for our subwoofers.
2. *Always use a sealed enclosure loosely filled with insulation* behind any Stealth speaker (Rockwool or other insulation helps the sound quality of the speaker and absorbs some high-frequencies – the enclosure “loads” the speaker). The enclosure can be a Stealth back box (MBX, MBA, MBC or BX series), or custom made for the project. In installations with just an enclosure and insulation, unwanted sound transmission can still occur.
3. Sound isolation is a combination of mechanical and acoustical properties; Stealth speakers have little vibration at the attachment points, so the primary isolation issues with Stealth speakers are acoustical and the secondary mechanical coupling of acoustical energy. Walls or ceilings near Stealth speakers need to be free of structural rattles and firmly constructed.
4. It takes mass to attenuate sound, especially low frequencies. The lower the frequency, the more mass it takes. You can add mass to wall or ceiling structures around the back box using additional barriers, like gypsum wallboard.
5. Varying layers of different dampening materials around the speaker box improves sound isolation dramatically: Attach a layer of *Dynil™ acoustical material to the inside the metal or MDF back box, then place insulation inside the box, then add a layer of Dynil™ on the outside of the back box. This creates multiple layers through which the sound must pass creating a reasonably substantial acoustical barrier. Adding more layers, if there is space, helps.
6. *Any air-gap will allow sound through and greatly reduces isolation.* Sealing the seams of isolation elements (box, walls, etc.) as well as using caulking on the wall or ceiling studs where wallboard attaches helps seal things up. Stud, header and bottom plate penetrations should be sealed with caulk or expanding foam.
7. Know the expectations of the job – a single family home might be different from a “zero-interference” metric of a luxury condominium.
8. Test your solution to ensure you are meeting the objectives. Involve an Acoustical Consultant to confirm your solution if the job requirements are critical.

*Dynil™ :

Isolation between rooms can be improved by using a visco-elastic acoustic barrier, such as Dynil™ by Dynamic Control www.dynamat.com (also available from Stealth Acoustics). This material is ultra pliable and only 0.09” thick, allowing it to fit within and around back boxes. The material can be cut with scissors or knife and is easy to work with.

Dynil™ offers a Sound Transmission Class (STC) of 28 meaning that it attenuates signals an average of 28dB, but keep in mind that the STC rating is measured only between 125Hz and 4kHz, which makes the numbers less meaningful for subwoofers. Note that ½” sheetrock has an average STC of 34; 5/8” rock has an STC of about 35.

If you have questions, please do not hesitate to contact us at (888) 865-6800.