

Improving Mid Bass Response

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Tech Tip – Improving Mid Bass response

One of the main reasons to replace factory-installed speakers is to improve the clarity and accuracy of our audio system. In addition to much improved high frequency response, aftermarket speakers can make a dramatic difference in the midrange and midbass region.

Very often you will find that when we upgrade the door speakers in our vehicles, we forget that these new speakers will usually be driven with more power, have more excursion capability and generate a lot more energy than the original factory speakers.

If no steps are taken to account for this additional capability, much of the performance advantages will be lost due to excessive vibration and less-than-ideal mounting conditions. Most door panels use thin sheet metal for the outer “skin” as well as for the inner structure. The thin metal has a tendency to vibrate and this vibration will work against the output of the speaker. Additionally, the inner sheet metal often will have large holes that allow access to certain mechanisms. These openings will allow the energy from the rearward motion of the speaker to cancel the outward motion. Both of these issues will dramatically reduce performance.

Here are six things that you can do to help improve the performance of your upgraded speakers:

1. Deaden the outer sheet metal of the doors:

Use a high quality sound deadening (damping) material and place it inside the outer sheet metal layer of each door or quarter panel. Usually it is easier to cut the mat into strips so that it can be easily slipped through the stamped holes on the inner sheet metal. First prep the area with window cleaner or isopropyl alcohol so that the material adheres properly and then place it from top to bottom on the inside of the outer sheet metal. There are many companies that offer quality damping materials. Among the more popular brands are Hushmat and Dynamat, but there are many others.

2. Seal up the inner sheet metal of the doors:

Use a thin but ridged material such as aluminum sheeting, plastic sheeting or Masonite™ (thin press board) to make cover plates that will plug all the holes that are stamped into the inner sheet metal of each door or quarter panel. Use either foam tape or silicon along with stainless steel self-tapping screws to hold the plates in place securely. If the opening is to be used as an access panel for internal mechanisms, make sure you can remove them without too much effort.

3. Deaden the inner sheet metal of the doors:

This is similar to Step 1, except now use one large sheet of sound deadening material and cover the entire inner sheet metal and the cover plates that were installed in Step 2.

4. Cover sound deadened inner sheet metal with closed cell foam:

Closed cell foam is a thin layer of foam that you can use between the sound deadened sheet metal and the outer plastic factory door panel. Even though we have stopped a great deal of extra vibration with the sound deadening mat, this step will ensure that there is little to no chance of the plastic panel vibrating against the sheet metal. Second Skin and RAAM Audio are good sources for closed cell foam.

5. Gasket each speaker:

This last step is to use foam tape around the flange of the speaker before installing it. This will ensure a good seal between the speaker and door panel.





6. Decouple the speaker from your vehicle:

To ensure that all of your speaker's energy is forced into the cabin of your vehicle and not lost inside the door panel use a foam ring around the front of the speaker after it's mounted to the door. This foam should firmly make contact with the door panel. This will also help prevent unwanted vibrations in the door panel. You can make your own ring using a thick foam tape or find specialty products for this application.



If you are looking to upgrade your doors speakers, it makes a lot of sense to plan on doing these steps when you have the installation completed. When considering the price of your new speakers you should make sure you get as much as you can from your purchase. Even if it means scaling back to a slightly less expensive product and addressing the concerns listed above, your overall experience will be better.

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