SOUND dBATE™

*Up-To-Date Technical Information from* Dynamic Control of North America, Inc.

# *Get Better Sound™ with Dramatic Distortion Reduction*

Adding a new pair of speakers is the most common car audio upgrade because the speakers are perceived to be the weakest link in sound quality. Unlike home audio speakers, car speakers have to be installed. The craftsmanship and techniques used in the installation can greatly affect sound quality. Automobile doors are not the best place to mount a speaker, therefore, they provide the greatest opportunity to make significant sonic improvements.

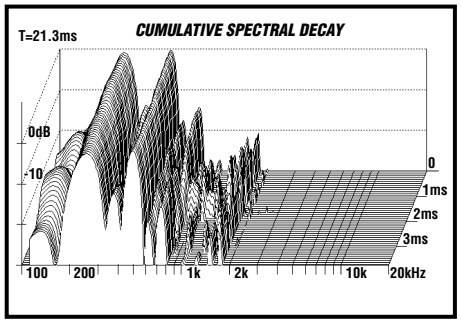
To sound its very best, a speaker needs to be mounted in a solid, non-resonant baffle or panel. At the store, car speakers are mounted in solid wooden displays where they will always sound superior to the same speakers mounted in flimsy sheet metal doors.

Speaker panel distortion occurs when a speaker panel resonates or vibrates due to the speaker's energy. This distortion discolors the desired sound and always results in reduced sound quality. Does this mean that reducing the door panel's tendency to resonate will result in a reduction of distortion? Is the door panel actually the weakest link?

## *The Test*

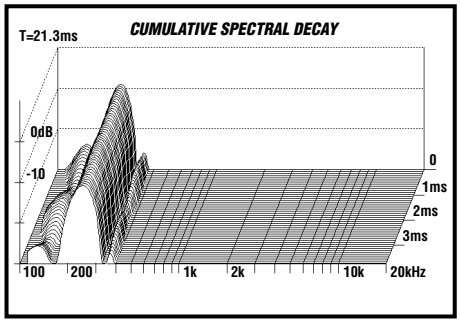
We selected an automotive door made from 22-gauge sheet metal with a four inch coaxial speaker mounted in a lower corner. A 10 watt test tone at 250 hertz (cycles per second) was delivered to the test speaker. Vibration from the speaker panel was then measured by an accelerometer placed in the center of the panel approximately 10" from the speaker.

### *Without Dynamat*




The waterfall plot *(Time Energy Frequency or TEF)* illustrates the distortion of the speaker panel from 100 hertz to 20 kilohertz in 4 millisecond intervals. Since this was the reference measurement, the peak reading was set to the top of the graph. The vibration at the 250 hertz test tone is referred to as sympathetic distortion. Vibrations at other frequencies are harmonic distortion. In this graph, the peak speaker panel distortion was observed at 250 hertz (sympathetic) and at 500 hertz (harmonic).

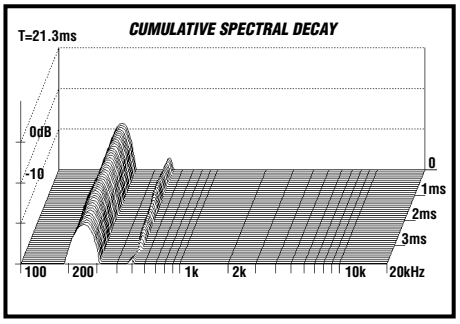
### *The Original Solution*




A 10" x 10" sheet of Dynamat Original from a ***Dynamat Original Speaker Kit*** was applied to the mounting surface of the test enclosure. The panel distortion test was then repeated.

The Dynamat Original resulted in a massive reduction in speaker panel distortion. Sympathetic distortion was reduced by nearly 10 dB while most harmonic distortion was greatly reduced. A 10 dB decrease in speaker panel distortion is a 50% audible reduction.

### *Xtreme Measures Taken*




After removing the Original material, a 10" x 10" sheet of Dynamat Xtreme from a ***Dynamat Xtreme Speaker Kit*** was applied to the speaker area, and the panel distortion test was repeated. The results were even more dramatic. Harmonic distortion was almost completely eliminated. Dynamat Xtreme eliminated 75% of sympathetic speaker panel distortion, a reduction of nearly 20 dB.

## *Strengthen the Weakest Audio Link*

No other component, accessory or device can stop this level of audible distortion. The improvement in sound far exceeds the improvement gained by upgrading the speaker wire. Better speakers don't stop speaker panel distortion, ***Dynamat Speaker Kits*** do. The weakest link is the flimsy door that makes a very poor speaker mounting panel. Install a ***Dynamat Speaker Kit*** with your speakers and ***Get Better Sound!***

DYNAMIC CONTROL
3042 Symmes Road • Hamilton, Ohio 45015
*phone:* **1-800-225-8133** • *fax:* **1-800-873-2423** • **www.dynamat.com**

Part No. 2602