

# Improving Center Imaging

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## JL AUDIO | Help Center

Often when building a high-end audio system in a vehicle the goal is to replicate the performance of a home audio system. This means fantastic sound quality and more importantly, precise imaging. This means the singers voice should be centered on the dash (or desired listening position) and the instruments being played from their appropriate positions to the left or right of the singer. This can be difficult in a vehicle since the speakers on the driver side are considerably closer than the passenger side (vice versa if sitting in the passenger seat), creating an unequal path length of sound. This often results in the vocals being pushed to the far left and the other instruments being out of place as well.

Solutions to help combat this are to place the speakers in custom positions such as kick panels or A-pillars to create more equal path lengths. If looking for a driver optimized location, using a DSP such as the TwK™ 88 or TwK™ D8 to delay the driver's side speakers will ensure that the speakers all arrive at the listening position at the same time. If using time delay, it's advised to adjust level trim on the speakers as well, either boosting the furthest speakers, or attenuating the closer speakers. The amplitude of the closer speakers will be stronger since they have less distance to travel.

One trick that we often use when limited to factory locations and/or a DSP is not an option is to reverse the polarity (positive and negative wires) of the speakers on one side of the vehicle. Since you are not positioned in the center of the vehicle like you would be in a home system, reversing the polarity on one side will change the phase, or timing of that side. This often shifts the imaging for the both the driver and passenger to the center of the vehicle. If you are using an amplifier you can reverse the polarity at the outputs to either the left or right side right at the amplifier. If you are using an aftermarket head unit and speakers you can switch the positive and negative right at the speaker itself since changing at the radio may be more difficult.

**(Note: In systems that are not using a subwoofer you can sometimes experience a slight loss in the lower frequencies if you are playing your speakers full range. For a system with a subwoofer system this should not be a factor since the subwoofer will fill in the lower frequencies)**

This is a quick and easy trick that can be used that often improves center imaging. If flipping the polarity doesn't help or makes things worse, simply go back to correct polarity.

Have more questions? Submit a request