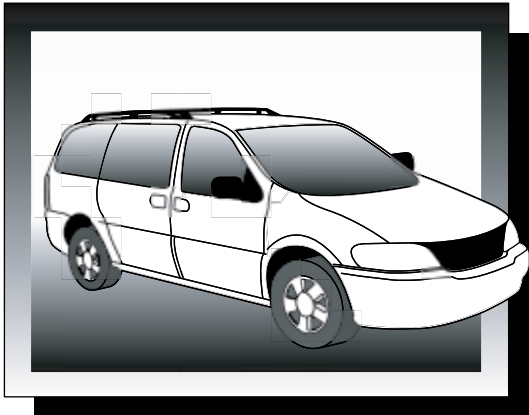


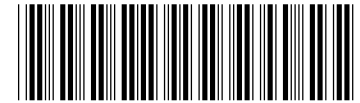
CRUTCHFIELD®

Component Speakers Installation Guide



IMPORTANT

Before starting, compare items on your invoice with items received. Carefully check through packaging material. If any item is missing, please call: **Crutchfield Customer Support at 1-800-955-9091**



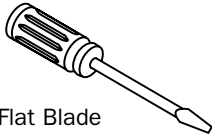
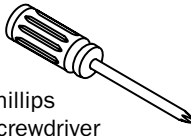
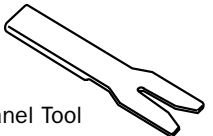
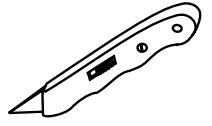
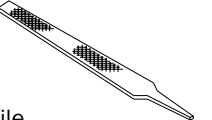
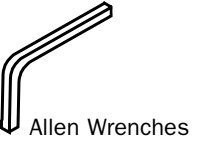


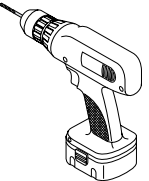

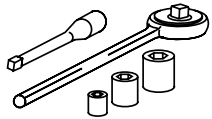
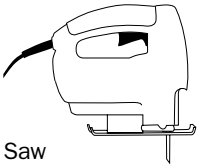
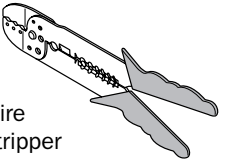



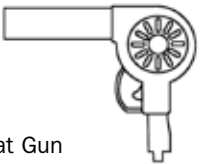
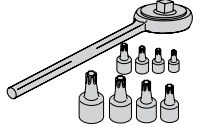

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Although reasonable attempts are made to verify the accuracy of the information contained in this guide, it is presented without warranties or guarantees of any type due to the constantly changing nature of this type of information and running changes in vehicle production. Any person or entity using this information does so at his, her, or its own risk. If you find that our instructions don't apply to your vehicle, or if you have questions, do not continue with your installation. Contact our toll-free technical support for assistance (tech support phone number is on your invoice).

Tools Needed: (depending upon vehicle)



As with any car audio/video installation, your first step is to disconnect the negative terminal of your car battery to prevent short circuits. Check your Crutchfield MasterSheet™ (available for most vehicles) or vehicle owner's manual for specific directions. In some vehicles, disconnecting the battery requires you to re-enter a security code or have the dealer reset the internal computer.

 Flat Blade Screwdriver	 Phillips Screwdriver	 Panel Tool	 Utility Knife	 File	 Allen Wrenches	 Wire Ties
 Needle Nose Pliers	 Drill & Bit Set	 Soldering Iron	 Socket	 Jig Saw	 Wire Stripper	
 Shop Rag	 Heat Shrink Tubing	 Electrical Tape	 Heat Gun	 Torx Drivers + Bits	 Wire Cutters	

Finding the right location

Woofers placement

When installing a component speaker system, you have to decide where to place three separate elements: the woofers, the tweeters, and the crossovers. In many cases you'll be able to mount the woofers in the factory speaker locations with little to no changes. This is the "easy fit" option. At most, you will have to drill extra screw holes, cut a small area of metal or pressboard, or file the door panel. "Modify fit" speakers require a greater degree of cutting and drilling. Along with finding the best placement to enhance sound imaging, you must make sure that any changes you make will not interfere with any other mechanisms, and that the speakers will fit securely. Then you can do the actual cutting. Though any speaker, whether "easy" or "modify" fit, can be relocated, it can be complicated and time-consuming process. Common woofer locations are on the dash, in the door, and in the kick panel.

! **CAUTION:**

Always be careful when drilling or cutting in a vehicle. Be aware of things such as wiring, windows, fuel lines and safety devices. Check drilling/cutting depth and location to avoid damage to vehicle appearance.

Tweeter placement

Installing the tweeters will require some panel modifications, as very few vehicles have existing tweeter mounts. The degree of modification depends on how you mount your tweeters. Just like it sounds, surface-mounting places the entire tweeter on top of a surface. Surface-mounting tweeters requires less modification to your interior than flush-mounting, but will leave you with a more noticeable installation. In a flush-mount, a hole is cut into the door panel that is large enough to accommodate the tweeter, and the speaker is installed level with the interior panel. Whichever you decide, most manufacturers recommend that you mount your tweeters within 12" of the woofers. Otherwise, a sonic wave cancellation, or "phase interference" could occur, caused by the frequencies reaching your ears at different times. Some good places to surface-mount your tweeters are on the door, the sail panel, the kick panel, or the dash.

Crossover placement

Placing the crossover usually requires some extra care to make sure that it does not interfere with any moving parts, is secure against vibration, and stays dry. While some like to permanently mount them under the seats or on display, it's often just as easy to find a convenient spot to stash them behind the mounting panel near the speakers. The closer the crossover is to the speakers, the better, as the proximity will reduce noise. Two good places are in the door and behind the kick panel.



Install your woofer in your door or in your kick panel (shown above right in a Q-Logic kick panel pod).



Place your tweeters in the sail panel, the door, even the dash (not pictured).



Crossover placement is just as important as speaker placement.

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Woofers installation in factory location

Remember, as with any electronic installation job, disconnect the negative cable on your battery before doing anything else. Also, make sure you have the tools handy that are listed on the first page. Many factory speakers are built into the door, and often your new woofer will easily fit into that factory speaker hole. You may still have to dismantle part of your door to get it in. Here's how:

Removing the door panel

You may have to remove the door panel to get to the factory speaker, or to custom install your speakers. In this case, you will need to start by removing the window crank (if you have one). While some cranks are secured by a screw at the pivot, most are anchored by a spring clip. You can use a window-crank removal tool (available from Crutchfield) or a flathead screwdriver to remove the clip. To do this, depress the door panel until you can see behind the crank, then turn the lever until you see the prongs of the clip, and gently push the crank off with the screwdriver. The clip will pop off, so be careful.



SAFETY CHECK

- ✓ Check that wires do not interfere with window operation.
- ✓ Test window and door lock operation.

Removing the arm rest and rest of panel

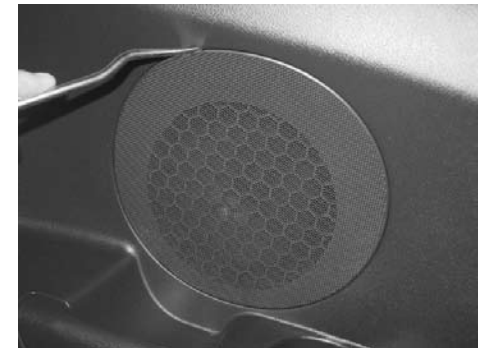
The next step is removing the arm rest. These are usually secured by a few Phillips-head screws and some trim fittings around the handle. Once the armrest is unattached, the door panel is ready to be removed. For most cars, you will find the panel fastened by a few screws and friction fittings. With the screws removed, you'll want to begin prying off the door panel at the bottom corner. You may use a panel tool (available from Crutchfield), or two putty knives may do the trick. Once the bottom and sides are clear, the panel hangs from some trim that stems from the window well. Simply lift up the trim and the panel should come free.

Removing the old speaker

Carefully lift out the old speaker, as it will be attached to the wiring harness. Some manufacturers also use a sealant foam when mounting the original speakers that you may need to cut through with a utility knife.



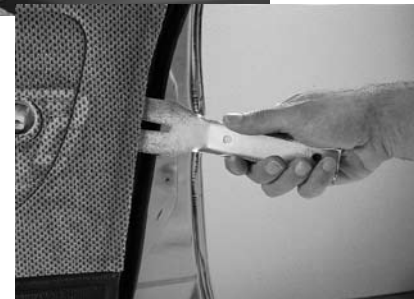
Disconnect your battery before any installation job.



Simply pop off the speaker grille.



As the first step of removing the door panel, unclip or unscrew the window crank.



Use a panel tool or a couple of putty knives to pry off the door panel

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Tweeter installation

Surface-mounting

You should surface-mount your tweeters if you want to minimize labor time and modifications, or if you don't have the depth to flush-mount. Surface-mounting may also offer greater angle range than flush-mounting. With a surface-mount, the tweeter is held in place by a cup secured with a screw. You will need to drill a small hole in the panel to secure the mounting cup and run the speaker leads to the tweeter, but that is the only necessary modification (see previous page for instructions on removing the door panel).

Flush-mounting

The advantage of a flush-mount lies in the smooth-looking install, since the tweeter does not protrude out from the panel, leaving a sleek, factory look. Many manufacturers also include angle-mounts that allow you to aim the tweeters slightly, even when mounted within the panel. When flush- or angle-mounting your tweeters, you'll need to drill or cut a hole in your panel that is large enough to accommodate the entire tweeter.

Installing flush-mount tweeters

First, trace the tweeter cup on the panel or dash. Use a drill with a serrated circular blade to cut the hole. You may want to use a sharp knife to trim the hole. Then, mount the tweeter (your tweeter will have specific instructions for this step).



SAFETY CHECK

- ✓ Check that wires do not interfere with window operation.
- ✓ Test window and door lock operation.



CAUTION:

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A surface-mount tweeter (shown here in door sail panel) is an easy way to improve your system's sound.



Drilling and trimming a flush-mount tweeter hole takes more work, but the end result is less protrusive than a surface-mount.



Crossovers and wiring

Protecting the crossover

It is important to keep the crossover dry. Mounting it in a space behind the plastic door panel is ideal. If you must mount it on the door metal, it's wise to wrap the crossover in a plastic bag and tape the openings. Another consideration is vibration. Merely placing the crossover in the door or kickpanel will cause it to be tossed around. Also, as with the speaker installation, you'll want to make sure the crossover will not impede or be damaged by any moving parts.

Wiring networks

Component speakers usually have external crossovers, so the wires coming from the receiver must be routed first to the crossover, then to the individual woofers and tweeters. If connecting to an amplifier, the amp should be wired between the receiver and the crossover.

Wiring through existing door boot

If your new component system is in the car door, you'll need to route speaker wires to the door. Fortunately, most cars have a rubber boot that connects between the door and the car body. Using this boot as a conduit, run your speaker wires out of the door, behind the kick panels, and then to your receiver or external amplifier. An easy way to do this is to tape the wire to a straightened coat hanger and fish it through the interior panels.

Cutting a wire hole

If there is no rubber boot, drill a hole. Before drilling, make sure the hole will have access to the desired speaker location, as structural steel may block it. Protect the wiring from the sharp edges of the hole with a rubber grommet, electrical tape, or some flexible tubing. Once all metal drilling and cutting is complete, vacuum all metal debris to prevent rattling or shorts.



Find a safe place to stow your crossover.



The rubber boot that protects your door wires' journey to the dash is a great place to house your speaker wires.

How your system should connect: stereo to crossovers, crossovers to speakers.



IMPORTANT

If you're connecting an amp, make sure you connect it to the stereo first and then to the crossover.



SAFETY CHECK

- ✓ Check that wires do not interfere with window operation.
- ✓ Test window and door lock operation.

Custom woofer installation

Custom woofer installation

Nothing should stop you from placing your speakers in the location that gives you the best possible sound. If you're going for an all-out custom installation, you may want to put your woofers in locations that don't already have speaker openings. In that case, you need to create your own mounting locations. Here's what you need to know.

Kick panels

Installing your components in a Q-Logic custom kick panel pod allows you to aim and position the speakers for the best possible sound — as close to equidistant from your ears as possible. A kick panel pod also eliminates the need to run wires through your door. Your Q-form comes with detailed installation instructions. If a Q-Form kick panel is available for your vehicle, you can mount both the woofer and tweeter in this custom-fit enclosure.

Creating a custom speaker hole

First, remove the speaker template from the box and make certain that the surface you will be cutting is big enough for the speaker, and that there are no obstructions behind the door panel. For instance, will the window still move freely? Will the door open and swing out without interference? Is the locking mechanism unimpeded? You should double check before cutting a hole.

Top-mount vs. bottom-mount

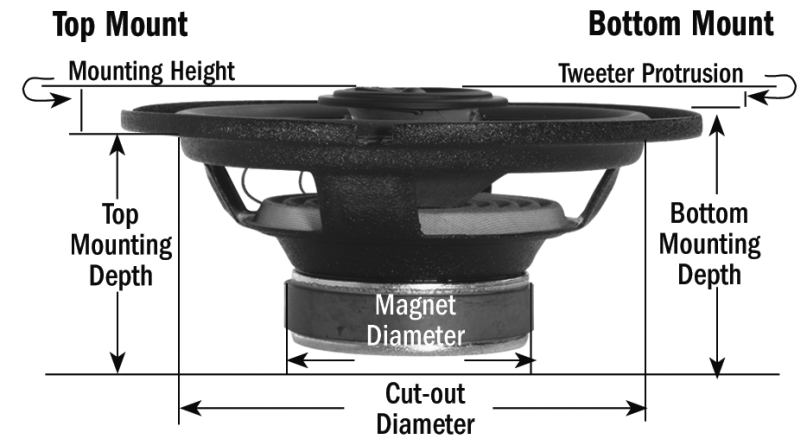
Once you have determined the location for your custom-mount, decide whether you will top-mount or bottom-mount the speakers. In top-mounting, the lip of the speaker rests over the edge of the hole. This method usually requires less mounting depth and a little less labor. Bottom-mounting means recessing the entire speaker into the hole so that no part protrudes — perfect for creating clean lines. If your system allows you to mount the tweeter on the woofer (and you decide to do so) the tweeter may stick out slightly from the woofer plane. Since you will need to fit the grille over the speaker, make sure the speaker protrusion does not exceed the grille height.

Measure twice, cut once

Take out the speaker template from the speaker's packing box and place it flush against the mounting surface. Be sure that the hole you will be cutting is big enough for the speaker, and that there are no obstructions behind the door panel. Use the template as a guide to cut your hole. A bottom-mount hole may need to be larger than a top-mount hole. If bottom-mounting, see if a mounting ring is needed and if the instructions suggest cutting a specific hole size.

On cutting metal

If you are creating a new mount in your door, you will need to drill a starter hole for a jigsaw blade. If cutting a small area, you may use a hacksaw instead. When drilling or cutting, always wear eye protection. Do not cut the panel and the metal at the same time; you may rip the panel covering. Wrapping the base of the saw with electrical tape may prevent scratching of the surface metal as well. Keep the blade from touching the car's exterior panel, as pock marks may appear.



Top-mount your speakers for ease of installation. Bottom mount them for a stealthy look.



Double check to make sure you're not interfering with a major door function (like window mobility) before you cut!



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Troubleshooting and system advice

Got noise?

If you're experiencing a rattle or buzz from your speakers, it may be due to some debris or a loose mount. Remove your speaker, shake it out. Re-secure it, making sure the screws are tight. If you still hear rattling, your speaker might be defective.

Dynamat

For the optimum in noise damping, try a speaker baffle or a Dynamat kit. Dynamat's noise-reducing technology stifles speaker rattle, engine rumble, road noise, and any other noises that might emanate from the vehicle's metal environment. Kits are available for door, trunk, speaker, license frame, or bulk matting.

Speaker Distortion

Are your speakers distorting? Check the RMS power ratings given for your speakers, amp, or receiver. They should match, or the amp or receiver should have a lower rating than the speakers (but not too low that they're distorting due to lack of power). If you have larger speakers or a sub in your car, one option you have for reducing strain on your component speakers is to install a set of Bass Blockers. These filter out low frequencies that the speakers may not be able to handle well.

Out of phase

If your bass sounds weak, you may have attached a set of speaker wires to the wrong set of terminals. Simply reverse the leads on one set of terminals on the weak speaker. As long as you're consistent, it does not matter which terminal you designate positive or negative.

Environmental damage

A vehicle is subject to all weather conditions, and that means your speakers are, too. Moisture is a common cause of speaker damage. Use a set of speaker baffles (soft foam surrounds) to keep out moisture and protect the speaker against dust and filaments. Even if your speakers aren't showing signs of weather damage, speaker baffles are a great idea since they tend to reinforce bass response.

Shorting out

Baffles will also help if your speakers are shorting out. Mounting your speakers close to metal could result in inadvertent contact between the speaker and the metal, causing a short. Speaker baffles create a barrier between the speaker and the metal. Another solution is to wrap the speaker terminals with electrical tape.



A kick panel pod, like this model in a 1992-94 Chevrolet truck, positions your speakers for great stereo imaging. Plus, they match your interior



Bass Blockers can help relieve strain on small speakers.



Use speaker baffles or a Dynamat kit to reduce extraneous noise.



Be consistent with how you attach wires to your speaker terminals, to avoid phase distortions.



Speaker baffles help minimize damage to a speaker resulting from dust or moisture.

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Tech Tips

- Avoid mounting crossovers with exposed screw terminals in the door.
- Do not pry off the factory grill. Consult the Crutchfield Master Sheet. Most factory grills do not pry off.
- Check polarity on select crossover boxes. Ensure that the tweeter and woofer are connected to correct outputs on the crossover box.
- Most aftermarket tweeters will not fit in the factory location without modification. Check the recommended mounting methods supplied with the speaker instructions.