INSTALLING YOUR OWN AMP

AN AMPLIFIER IS ONE OF THE BEST WAYS TO IMPROVE YOUR AUDIO SYSTEM'S PERFORMANCE, AND IT IS ESSENTIAL IF YOU WANT TO RUN A SUBWOOFER. WITH NOTHING MORE THAN SOME BASIC TOOLS, YOU CAN EASILY INSTALL ONE YOURSELF

STORY BY SC SOUND GUY PICS BY CHRIS SORGSEPP

Choosing the required list of cables and connectors is governed by the size, power, output potential and system arrangement of your car. So, you will likely need the assistance of a salesperson to help pick the appropriate bits and pieces to get the job done.

For single amplifier systems of under 500WRMS total power, you will get everything you need for as little as $50. For larger systems with multiple amplifiers, you could spend $100 or more for the associated terminal and distribution blocks.

The main power and earth cable sizes ultimately govern the ability of the amplifier to produce its rated power. The overall length of the cable run from the battery to the amplifier's mounting location also has an effect.

As a general guide, for amplifiers placed under front seats that make less than around 300WRMS of total power, a single 8awg power and earth cable will be fine. For amplifier systems up to 600WRMS or placed at the rear of the car, you will need thicker 4awg cables.

For more power than this, you may need to step up to beefy 2awg cables. A great idea is to run the largest power and earth cables you can afford from the get go. You will invariably add more powerful amplifiers later on, and this will save you time and money in the future. Let's get to it, shall we? SC

PARTS LIST:

Main power wire
Earth wire
Trigger wire
Speaker wire
Fuse holder and fuse
RCA leads
Ring terminals

TOOLS REQUIRED:

Spanner and socket set
Screwdriver set
Side cutters
Cordless drill
Wire brush, drill bit or sandpaper

INSTALLATION TIME:

90 minutes

STEP 1

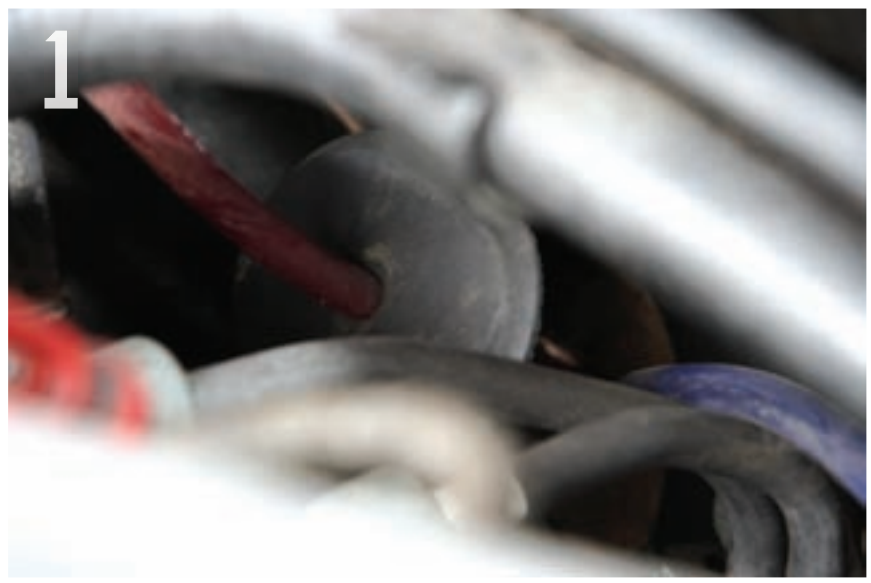
FINDING A HOLE IN THE FIREWALL

Usually the most troublesome part of an amplifier wiring project is to find an appropriate hole through the firewall, which is used for the main power cable.

You want the quickest path between the firewall and the positive terminal of the battery to keep the cable run as short as possible. It also must offer a path that avoids any hot engine components or moving parts.

If an unused hole is not provided, you can drill a new one. This can be tricky and could potentially damage stuff like heater components behind the dash. Alternatively, you can cut a small hole in an existing rubber grommet like on this particular car.

The cable must run through a grommet so that it is insulated from the sharp metal edges that could pierce the shielding and short the wire.



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STEP 2

MOUNTING THE FUSE

The main fuse needs to be placed as close as possible to the positive terminal of the battery to offer the best protection for the car. It also pays to cover the power cable in worm tubing for the run through the engine bay for an extra layer of protection.

The fuse location should also be easily accessible so that you can disconnect power quickly in an emergency. For this car, we simply cable tied the fuse holder to the battery clamp as no other good location was provided.

We then connected the power cable to the positive terminal using a larger gold-insert-style terminal. Note that the main fuse must be removed while doing this, and it will not be placed into the fuse holder until the wiring job is complete.

STEP 3

RUNNING THE MAIN POWER CABLE THROUGH THE CAR

The main power cable will either be hanging down under the dashboard or rolled under the carpet or insulation somewhere for you to dig out. Take your time and be careful not to disturb any of the existing wiring under the dash that may be in the way.

Once pulled gently through, you should find the shortest path from here to the amplifier's location (under the passenger's seat in our case). Keep the cable away from things like the car's computers or other wiring – the main power cable is very prone to induced noise caused by these items.

Cable tie the cable in place every 20cm to ensure is stays in place. Where possible, run it through existing holes in the chassis so that it doesn't cause lumps in the carpet. If the holes are small, use rubber grommets to insulate the wires.

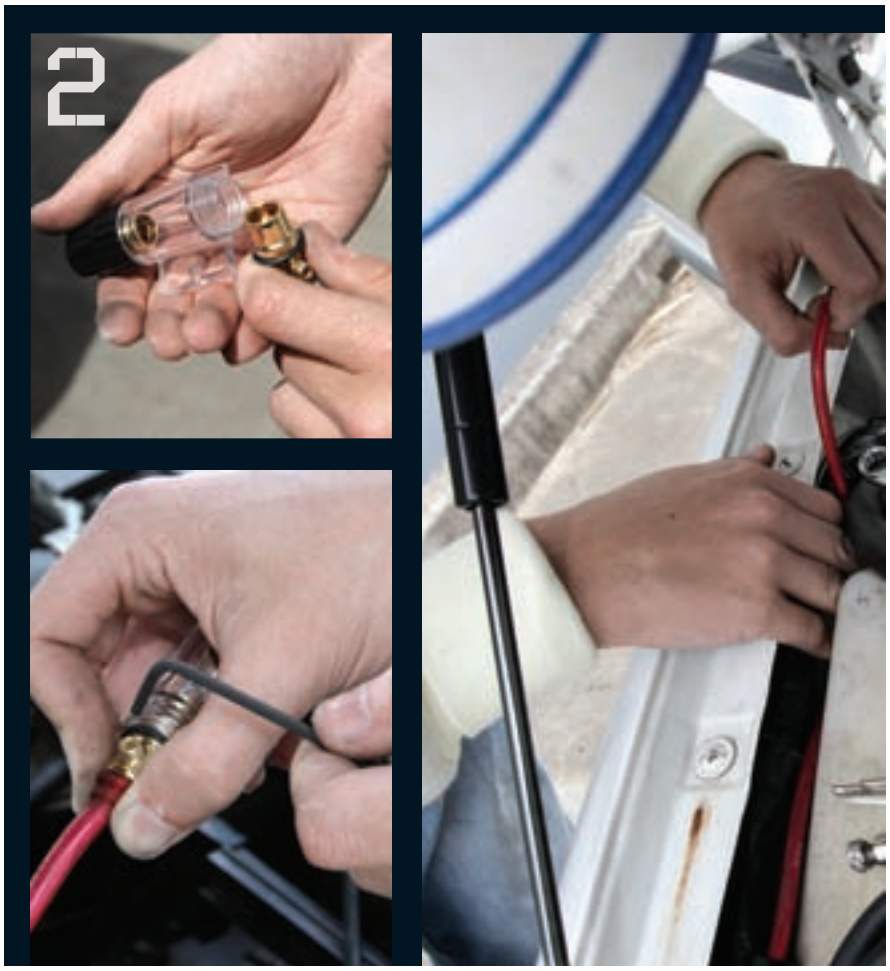
STEP 4

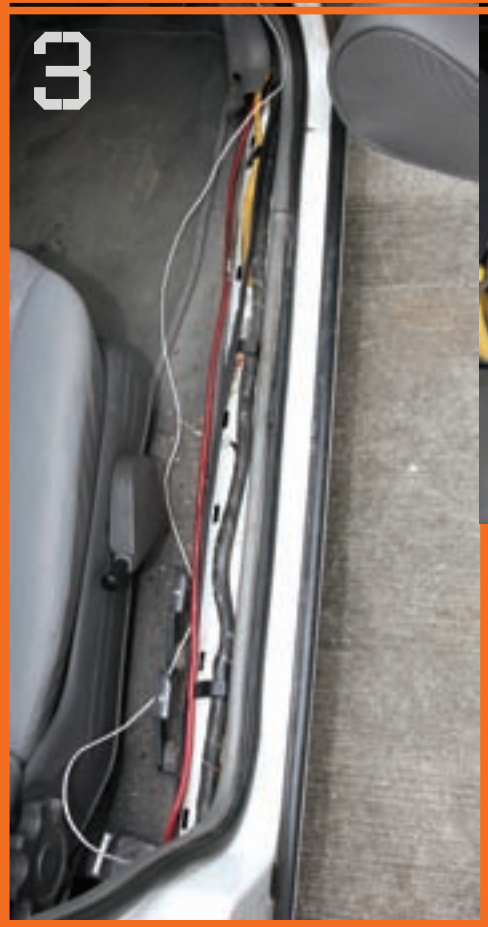
FINDING A GOOD EARTH MOUNT

The earth cable is every bit as important as the main power cable, and needs to be exactly the same gauge thickness. The earth point should be a place on or very close to a chassis rail, but don't use an existing bolt already in use for seat mounting or anything else.

If your car does not offer an existing suitable earth mount close to your amplifier, you can simply drill an appropriately sized hole like the one we have here. The surface area that the earth lead's terminal will contact needs to be stripped of paint, and then a simple nut and bolt can be secured in place.

Place the terminal over this, and secure a second nut over the top to offer a better mount. Once this is done, you can apply a layer of paint over the whole terminal to avoid corrosion of the exposed metal.





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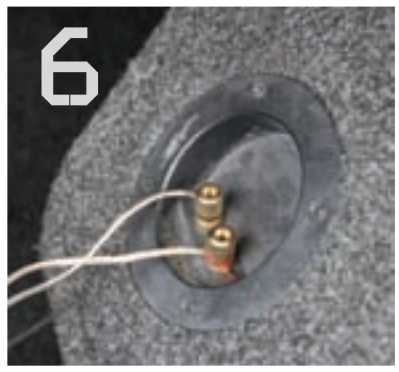

STEP 5
RUNNING RCAS AND TRIGGER

The amplifier requires a music signal from your source, plus a trigger wire that connects to a blue wire on the back of the source. This tells the amplifier to turn on and off.

We decided to use a slightly different style of RCA for front, rear and subwoofer outputs to help with identifying wiring when it came time for connection.

All three pairs of RCAs and the trigger can be bundled together. Run them down a path that is kept as far away from the main power and earth cables as possible to avoid induced noises.

It may also help to use twisted-pair RCA cables as these resist induced noise better than common shielded-type RCAs.

STEP 6
RUNNING SPEAKER WIRES

Depending on your speaker arrangement, you will also need to run various wires to the speaker locations in your car. These are not prone to induced noises like the power and RCA cables and can be run pretty much anywhere you need.

Although, again, they should be surrounded by a grommet when run through small holes, such as those in door jams. They should be cable tied neatly in place to keep the wiring neat and secure.

STEP 7
CONNECTING THE AMPLIFIER

With all the wires neatly run to the amplifier location (and the fuse still removed from the fuse holder), it is time to connect everything up. With the CD source turned off, begin by connecting the main earth cable (to ground the amplifier).

Then, follow with the power and trigger, then the speaker wires and then the RCA cables. When connecting multi-channel amplifiers, be sure to double check the correct channels are receiving the correct left and right music inputs from the RCAs.

To mount the amplifier will depend on your chosen location. In an under-seat position like this, it will be fine to use some velcro to hold the amp in place.

If you are securing it with screws, you want to avoid screwing into steel directly. This will ground the amp's chassis to the car directly, which can cause a 'ground loop' issue.

Instead, I suggest mounting the amp to an MDF board that is mounted to the chassis. This will isolate the amp's chassis from that of the car.

STEP 8
SETTING INPUT LEVELS,

Place the main fuse into the fuse holder. Before powering up the amplifier, run through the various high-pass and low-pass filter controls to make sure that the appropriate speakers are receiving the correct bands of frequencies.

For subwoofers, you will need a low pass at around 80–100Hz. The main speakers will need a high pass of approximately the same values. Set the input sensitivity controls of the amp at minimum and turn off any bass-boost circuits, and then you can power up the amplifier.

As a basic level-setting regime, simply increase the volume on the source to two thirds of maximum output. Then, slowly adjust the various input sensitivity controls until the speakers are playing to the amplifier's full output without distortion.

For the subwoofer, apply some bass boost tuning prior to increasing the input level. Once all channels are playing at their maximum undistorted output, you can then vary relative levels using the source's fader and subwoofer level controls accordingly.

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