

BMW E46 Subwoofer System by BSW Installation Guide: d110.e46s for BMW 3 Series Sedan '99-'05 (E46)

Tools Required:

- Panel Removal Tool
- Flat Head screwdriver
- Crimping Tool / Wire Cutters
- Metric Socket Set
- Brain

We're going to proceed as follows:

1. Disassembling the trunk
2. Power/ground wire connections
3. Making appropriate wiring connections for audio inputs
4. Installing the subwoofer enclosure
5. Tuning/testing the system

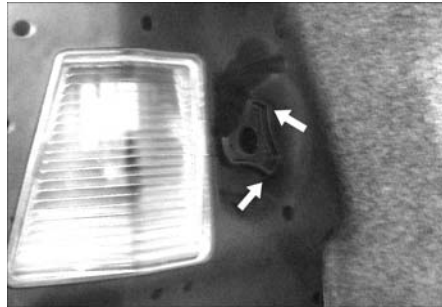
Disassembling the Trunk Panels:

If your Sedan has fold down seats, we will only need to remove the carpeting from the Driver's Side of the trunk. If it does not, it's easiest to remove the entire trunk lining.

If your vehicle is HK equipped, you'll need to remove your factory subwoofers prior to installing the D110 enclosure. Simply remove the four 8mm bolts that secure each enclosure to the rear deck and tuck the wiring harnesses back into the rear deck.



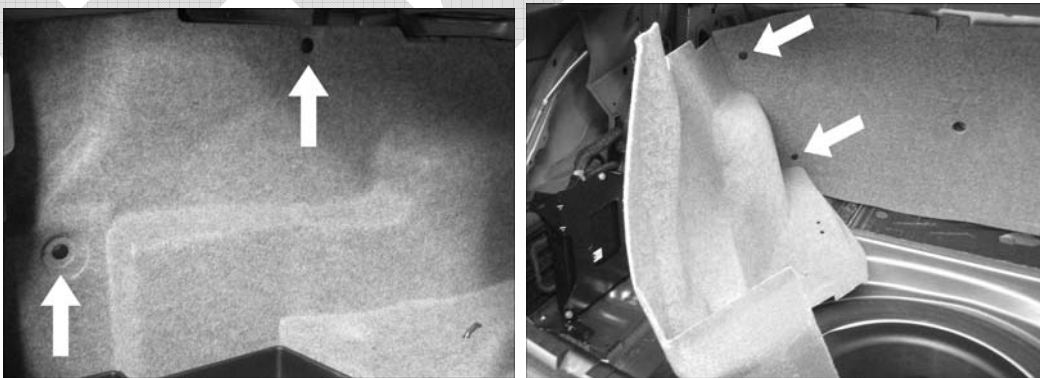
1. Begin by removing all items from the trunk of the vehicle. Make sure that all tail lights are in working order. If not, now is a good time to replace them. Also remove the carpet that covers the floor of the trunk, as it will reveal several fasteners that will need removing.
2. Start by removing the taillight covers on both sides of the vehicle. Turn the knob on each taillight counter clock-wise until the cover becomes loose (Figure 1).



3. Now, look to the floor of the trunk. You will see that the two plastic casings on either side of the trunk are secured by plastic screws on the passenger side and fasteners on the drivers' side. The plastic screws on the passenger side can be removed using a flat head screwdriver.



4. Remove these panels and place them aside. Keep all of the fasteners here so as not to lose them.
5. Now, look to the carpeted drivers' side of the trunk, and you will see two fasteners securing the side panel. Remove these using your panel removal tool.



6. DO NOT Remove the two fasteners on either side of the rear of the carpeted panels where the three panels seemingly come together. You **will** need to remove the large, circular plastic insert in the center of the rear of the trunk however.



7. Notice the green manual gas tank release on the passenger side (photo above). Disconnect this as shown.
8. You can now start removing the entire trunk lining from the drivers' side. Just be patient, and it will come right out. Your trunk should look like this with the paneling removed. The factory amplifier is the black box below, and is where we'll be making several of our connections.



Installation of the trunk panels will of course be the reverse of the above process. You'll want to make sure and put the trunk lining back in **before** you install your subwoofer enclosure. However, make sure that you have all wiring connections completed before you re-install the trunk liner!



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Power/Ground Connections for the new Amplifier:

IMPORTANT: Before you make any connections, disconnect the negative battery terminal from the battery. This will reduce the chance of electrical damage to the vehicle.

Power Wire (Large Gauge Red Wire): Route the large red wire to the positive terminal of the battery. Loosen and remove the 10mm nut on top of the terminal that secures the actual terminal to the battery. Put the amplifier power wire ring over the bolt, and tighten the nut back down with the terminal on the battery. This is the primary power supply for your new amplifier. Connect the other side of the power wire to the **+12V** terminal on the amplifier. **ONLY** when both sides of the wire are connected should you install the included fuse into the in-line.

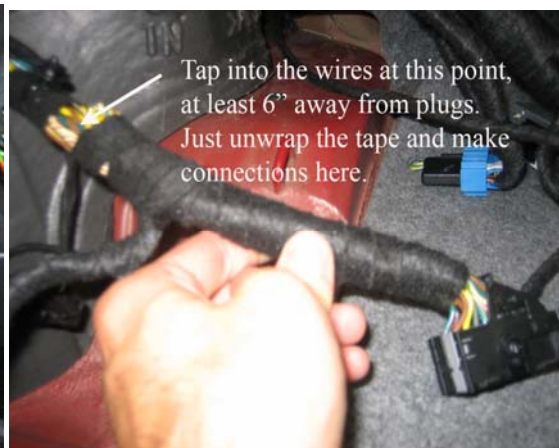
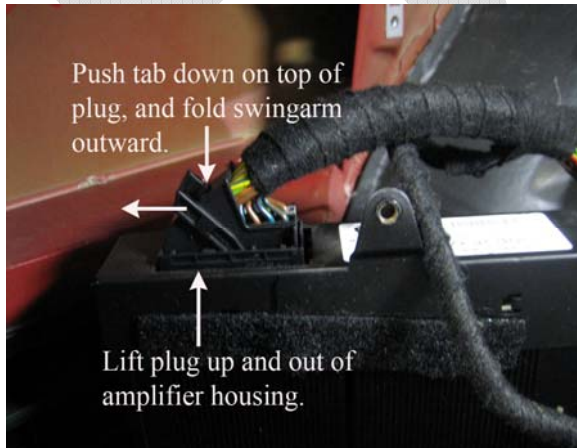


Ground Wire (Large Gauge Black Wire):

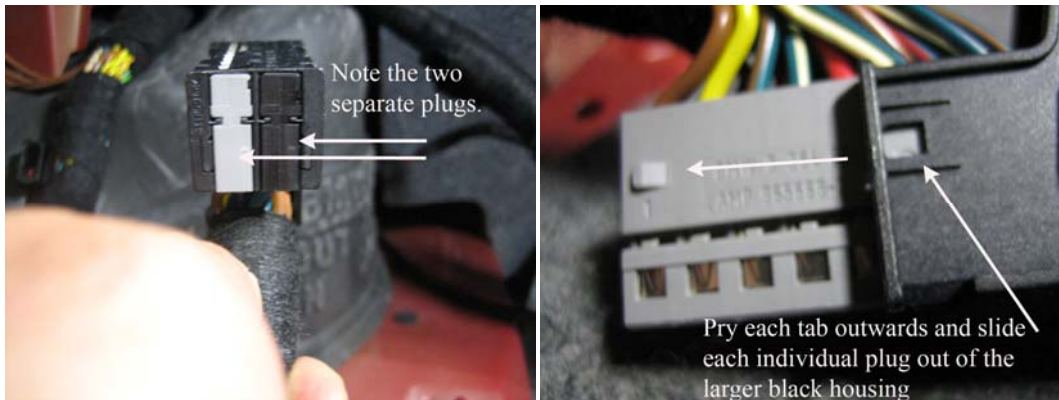
We recommend using the factory grounding point shown above right, on the outer wall on the driver's side of the vehicle.

Remote Turn-On Connection (Small gauge Blue Wire)

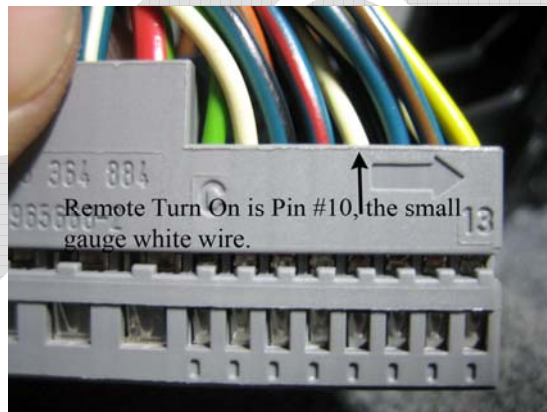
Let's first disconnect the harness from the amplifier as shown below:



With the harness removed, take a close look and note that there are two plugs inside of the main housing:



The wire we'll be looking for is in the GREY plug. It's a small gauge White wire. The remote turn on wire is in the grey connector, Pin #10. **Note: There are often times two white wires in the amplifier harness. It is imperative that the correct wire be identified in this step.**



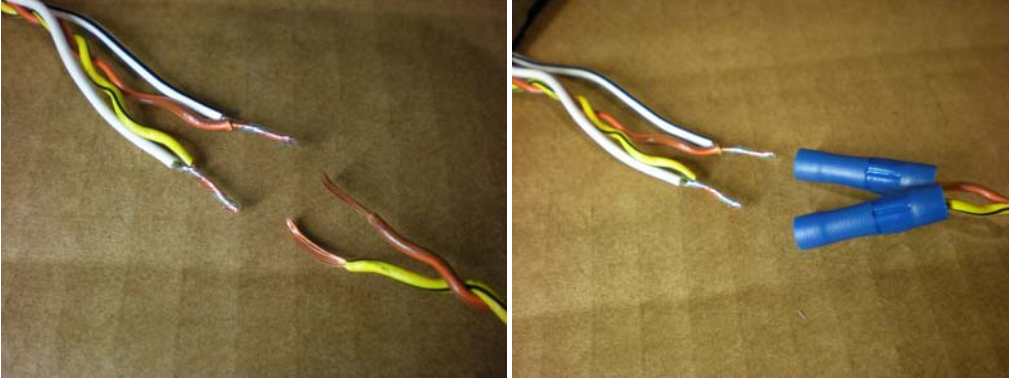
Making the connections between your factory wire and the remote turn-on wire:

It is important to remember here that we are essentially "T'ing" into the factory wires. It is important that the factory signal flow be allowed to continue back into the factory amplifier.

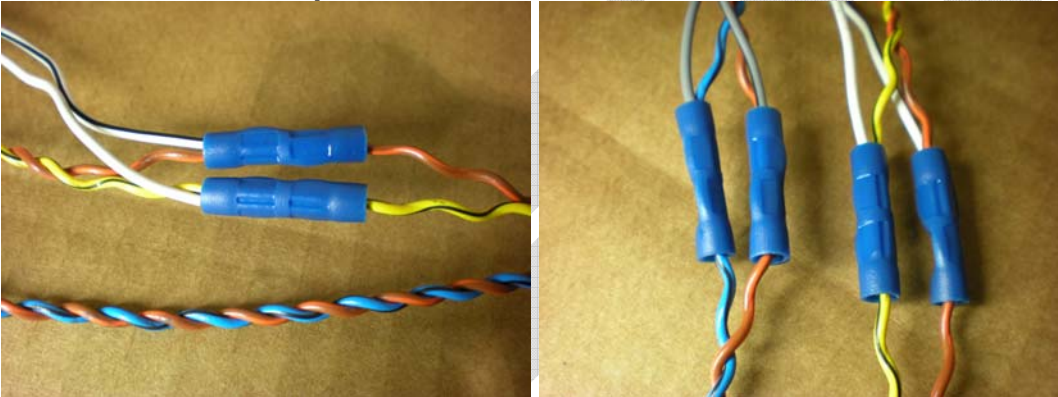
A Quality set of wire crimpers is required for the next two sections.

For a pictorial of the process outlined below, see photos on the following pages.

1. After stripping back approximately $\frac{1}{4}$ ' of the insulation from the wires, exposing the copper wiring itself, twist one side of the factory wire that you cut in half together with either the included blue remote turn on wire or one of the LOC leads, of course depending on your connection.
2. Insert these two wires into one side of the butt connector, and crimp tightly.
3. Insert the remaining half of the white wire into the unused side of the butt connector and again crimp down tightly.



Here's what the completed connections will look like:



PLEASE NOTE: When making these connections, please keep in mind that the wires at the original BMW harness are twisted in pairs. These pairs **MUST** remain together when making your connections since there may be multiple instances of the same wire color and there would be no way to identify which wire is appropriate for which connection if the wires are separated.

- 4. Double-check your connections!** With the variety of wire colors and the number of wires present in this area of the trunk, it's easy to make a mistake. Before going any further, it's absolutely worth your time to insure that you've made the right connections. Go over the connections you've made one more time being sure to verify colors are correctly matched and correct any mistakes, if present.
- 5.** Go ahead and plug in your RCA cables into the LOC, and then clean up your work with a couple of the supplied wire ties. This will not only make your install look nice, but ensure that all connections remain solid over time.



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Preparing the trunk for the enclosure installation

You'll notice that we've sent two sets of enclosure mounting hardware, one set for fold down seats and the other set for non fold down seats.



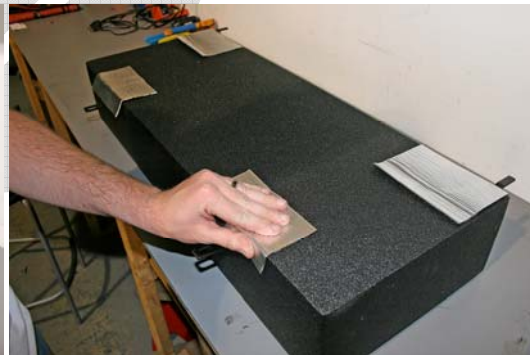
Fold Down Seats



Non Fold-Down Seats

Applying Sound Deadening to Enclosure

Your enclosure came with 4 sound deadening pieces which will need to be installed on the top of the enclosure. Simply heat the sound deadening sheets using a heat gun or a hair dryer, and apply them as shown. Be careful not to get the pieces too hot, as you can easily burn your hands.



Vehicles with Fold-Down Seats

First, open your trunk and locate the seat release latches. Remove the latch bolts with an 8mm nut driver. Carefully pry the latch from its clips in the rear deck. This will reveal the front mounting holes for the new D110 enclosure. Also, fold down the rear seats at this point.



1. Next, lie down in the trunk with your head facing upward. You will see the two gold bolts that attach each seat release mechanism. We will be using the inner bolt on each seat release mechanism.
2. Remove the two inner bolts using a 13mm socket wrench, and place these in a secure location.
3. At this point it helps to have a friend here, but it's not completely necessary. Have the quick-release knobs handy (near your head) because while lying in the trunk, you'll have the enclosure resting on top of you. Insert the front brackets (Side with BSW logo) into the holes that were occupied by your seat release latches as shown above.
4. Now push the enclosure towards the rear of the car as much as you can, and lift the rear of the enclosure up towards the rear deck.
5. Make sure your included washers have been placed over each knob/bolt combo (bolt through the washer). Place one of the quick-release knob/bolt combos into one of the exposed seat release mechanism holes.



6. With the enclosure secured, you can now thread the remaining quick-release knob/bolt combo into the remaining hole.
7. As far as relocation of the seat latches, simply use only a *small* screw (5/8" -3/4" in length) to attach the latches to your D110.E46 enclosure, or relocate as needed. We also will use Velcro strips to

either attach the brackets directly to the enclosure, or the sides of the trunk directly attached to the grey carpeted panels.

Models without Fold-Down Seats

It is easiest to have the trunk lining out at this point of the installation. You'll be dropping two bolts through the holes where the seat latches would be if your model had fold down rear seats, shown below as the two "inner" bolt holes.



8. At this point it helps to have a friend here, but it's not completely necessary. Have the quick-release knobs handy (near your head) because while lying in the trunk, you'll have the enclosure resting on top of you. Insert the front brackets (Side with BSW logo) into the holes shown below:



Now push the enclosure towards the rear of the car (opening of the trunk) as far as you can, and lift the rear (side closest to cabin of vehicle) of the enclosure up towards the rear deck, **making sure the bolts**

dropped down into the holes in the vehicle slide through the brackets on the enclosure.



9. Tighten down one of the quick-release knobs over either one of the two bolts that have been dropped through the hole in the enclosure bracket. Be sure and install the lock washer before you tighten down the quick release knob.
10. With the enclosure secured, you can now thread the remaining quick-release knob onto the remaining bolt, securing the enclosure to the vehicle.

At this point, we recommend removing the ski-pass that effectively seals the trunk from the cabin. This will allow more sound pressure into the cabin, enhancing the overall listening experience. To do this, simply knock out the metal rectangle shown below using either your fists (be careful!) or some sort of blunt object (rubber mallet, etc)
There is a very distinct perforation in the metal, which outlines the portion of the metal that we will be removing. Make sure that if you have a fold-down armrest inside the cabin to fold it down so as not to damage it.



With the enclosure installed, you can now re-install the carpeted paneling of the trunk. Be sure and leave the amplifier wiring harness exposed approximately 10" from the top portion of the driver's side carpet when you reinstall the carpet.

This re-installation process can be a bit tricky, as the enclosure now impedes some of your ability to effortlessly insert the carpeted panels back into the trunk. Being careful not to damage the subwoofer, maneuver the paneling back into the trunk and reconnect all wiring and fasteners as they were originally found.

Amplifier Tuning

Testing the Actual Installation Prior to Tuning

First things first, after physically completing the installation, make sure your amplifier is powered up properly. It needs to turn off and on with the key. The power light should turn off when you take the key out of the ignition. Test this out a couple of times to make sure. If it does not, and you are having trouble figuring out why, give us a call or drop us a line. Trust us, it won't be anything major. Go back over the above connections, and you'll undoubtedly find a small, silly mistake.

Now, go to the front of the car, and turn on the stereo. Put in your favorite CD (not a burned CD, but one that was professionally mastered and recorded), and tune in to your favorite track. We recommend using a very dynamic type of music, with many types of musical variations within the CD. Make sure that your bass settings on your radio are set in the middle or slightly lower. This will decrease distortion and increase the overall sound quality in the vehicle.

Make sure all bass and treble settings on your radio or EQ are flat, or in the middle.

1. Preliminarily set the gains, crossovers, and crossover frequencies as follows:

Gains: ¼ of a turn, or roughly 9 o'clock.

Phase: 0 Degrees

Gain Adjustments:

-Begin turning up the volume until you hear the music at a reasonable level and increase the volume slightly up to the point that you begin to hear distortion coming from your interior speakers. Now, back down the volume until the distortion disappears and stop there. Head back to the trunk and slowly begin adjusting the gain(s) of the amplifier until you are content with the amount of bass being produced by the subwoofer without any audible distortion of the woofer. Make sure that this blends in with the rest of the music, and you're on your way to a rich, full sound.

When adjusting the amplifier gains, do everything in very small increments.

We recommend 1/8th turn adjustments of the gain to find that sweet spot where there is no distortion and plenty of volume.

Everyone listens to music differently, so the tuning process make take some of us days, while others can do it in a matter of minutes, whether they're a beginner or not.

Keep a fine ear out for any distortion, and once you've found that sweet spot where the volume and the fullness you desire is ideal, you shouldn't ever need to adjust the amplifier again.

Make any installation notes here

Troubleshooting Guide

Invariably you'll come across one or two things in your install that didn't quite match up or weren't perfectly clear to you. We've put together several common things that may come up during an install, and how to isolate and troubleshoot them if they do. It is very advantageous to have a digital multi-meter on hand to troubleshoot anything electrical in your BMW. They can be found at any hardware store for around \$20-\$30.

No Sound from subwoofer(s):

- The fuse wasn't installed inline on the red 8 gauge power wire at the battery. This is very often overlooked. Pop in the fuse, and you'll be good to go.
- There isn't a connection between the amplifier and the subwoofer. Did you route the included speaker wire from the amplifier to the subwoofer enclosure?
- Amplifier isn't turning on properly. See next section.

Amplifier isn't Powering Up:

- The fuse wasn't installed inline on the red 8 gauge power wire at the battery. This is very often overlooked. Pop in the fuse, and you'll be good to go.

- Check to make sure you've found the correct remote turn-on wire. This is a very common oversight. Set your DMM to direct current and place one lead on the ground terminal of your amplifier and one on the remote turn on terminal. Turn the car and the radio on. If you don't have 12-14 volts on the remote turn on terminal, your connection may be the issue.
- Make sure your power and ground connections are correct. Using your DMM, again check each terminal to make sure that a connection has been established.
 - Ground Connection:** Set the DMM to its continuity section. Place one lead of the DMM on the amplifiers ground location where you screwed into the chassis, and the other lead on the negative battery terminal. If you don't see any continuity, move your ground wire until you do.
 - Power Connection:** Set the DMM to direct current again, and place one lead on the amplifiers power terminal and the other on the amplifiers ground terminal. You should see 12-14 volts. If not, check your inline fuse.

Subwoofers sound muffled or quiet:

- Check to make sure your phasing is correct between the amplifier and the subwoofer. Positive should go to positive, and negative to negative.
- Your input signals are out of phase. Check to make sure that your input connections are exactly as outlined in the guide. An easy test is to simply cut one of the input wires and see if the sound output increases exponentially.