BMW E39 Subwoofer System Installation Guide: d110.e39 for BMW 5 Series, M5 ’97-’03 – Standard Audio

Tools Required:

- **Panel Removal Tool**
- **Metric Wrench / Socket Set**
- **Small, Flat Head Screwdriver**
- **Philips Head Screwdriver**
- **Wire stripper / crimper tool**
- **Drill (for amplifier mounting)**
- **Roll of black electrical tape**

We’re going to proceed as follows:

- **Locating the factory amplifier**
- **Mounting the new amplifier**
- **Power connections for the new amplifier**
- **Audio inputs for the new amplifier**
- **Connecting the new amplifier to the new subwoofer enclosure**
- **Installing the new subwoofer enclosure**
- **Tuning/testing the new amplifier**

Accessing the factory amplifier:

Simply fold down the compartment on the driver’s side of the trunk, and you’ll see the factory amplifier. Here’s where we’ll be making our audio input connections:

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Mounting your new Amplifier

You'll want to start by first deciding exactly where you want to mount your new amplifier. From there, you'll decide on appropriate paths to run your wiring.

The ideal location for the amplifier in our subwoofer system is directly in front of the factory amplifier, where the CD Changer is located above. Most vehicles do not have CD Changers, and if you do, well then it's time for an iPod integration system! ☺

We secure the new amplifier to the factory amplifier by Velcro strips. There are of course several other ways to do this, but we want to be as minimally invasive as possible.

Since the majority of our wiring connections take place in this same area, the install is a breeze!

Power Connections to your New Amplifier:

Before you make any connections, we recommend disconnecting the negative battery terminal from the battery. This will eliminate any chance electrical damage to the vehicle.

You will want to strip back approximately ½" of insulation from the end of the power wire, the ground wire, and the remote turn on wire to allow for solid connections into the new amplifier. The set screw terminals on the new amplifier MUST make a solid connection with the copper wiring and NOT the insulation of the wires.

Power Wire (Red Wire)

- You'll want to run the large red wire to the **positive** terminal of the battery. The battery is located on the passenger side of the trunk behind the down panel. 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. This wire will be connected to the +12 terminal on the amplifier. Do **NOT** put the fuse into the fuseholder until you have connected the other end of the wire to the

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amplifier. Once you've made this connection, it is safe to install the included fuse into the fuseholder.

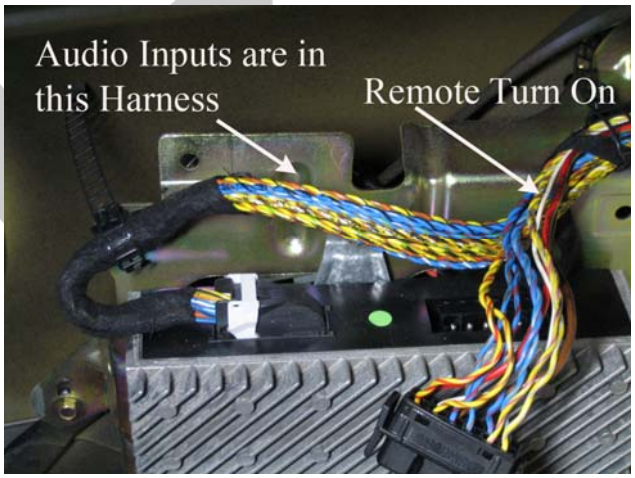
Ground Wire (Black Wire)

- The large black wire goes to a chassis ground. This essentially means metal.
  Ideally, the ground needs to be on the battery side of the vehicle, securely mounted to the chassis on a paint-free surface.
- Ideally, we'll want to use an existing factory grounding point, which will look something like this:

- Once connected at the location above, the ground wire will connect to the GND terminal on the amplifier.

Remote Turn-On Wire and Audio Inputs: Connections made at factory BMW amplifier

Locate the small gauge white wire going into the factory amplifier in the largest plug.



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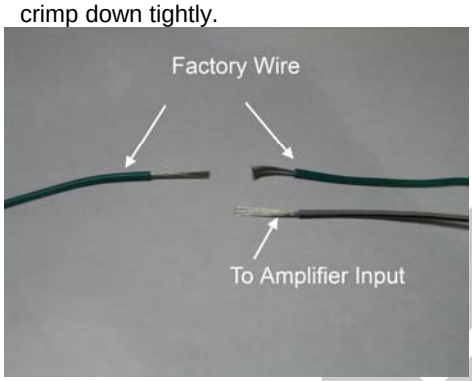
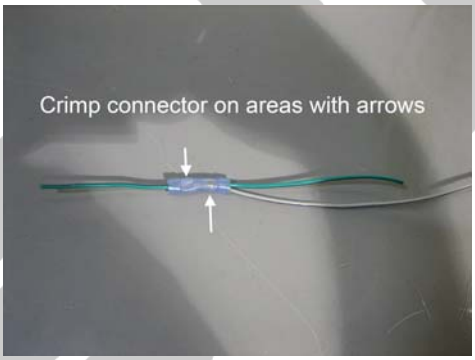
Tap into the remote turn on wire with the included blue wire and **red** butt connector. Run this to the REM input terminal of your new amplifier.

Below is a visual of how we'll make the connections. Basically, we're just "T'ing" into the factory wire, so you'll want to cut the wire directly in half, at a minimum of 3" away from the factory plug.

1. After stripping back approximately ¼' of the insulation from the wires, exposing the copper wiring itself, twist one side of the white wire that you cut in half together with the included blue remote turn on wire.
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.





Getting the Audio Signal to your New Amplifier

Again, 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.

This part of the installation is the most time consuming. Use the supplied blue butt connectors to make the connections. **Make the connections at least 6" away from the factory amplifier plugs**. After making the below connections, you can route the RCA Cables to the approximate amplifier location.
See photos on next page for a visual representation of the proper way to make your connections.

1. Carefully observe the factory amplifier harness. (See photo previous page) You will see a large bundle of wires going into the harness. The harness contains several wires, but don't be overwhelmed. We will be using only four of them, and they are easy to locate. The wires will be twisted together, and each twisted pair represents an input.

2. You'll need to isolate the following four (4) wires. They will be twisted together in pairs, as they enter the factory amplifier.
   -Blue w/Black Stripe (+) twisted with Brown w/Orange Stripe(-)
   -Yellow w/Black Stripe (+) twisted with Brown w/Orange Stripe (-)

3. Now, orient yourself with the Line Output Converter that you received with your order. There are four individual wires coming out of the unit. **If there are Brown wires on your LOC, disregard them. They will not be used.**
   Grey (+) **White (+)**
   Grey/Black (-) **White/Black (-)**

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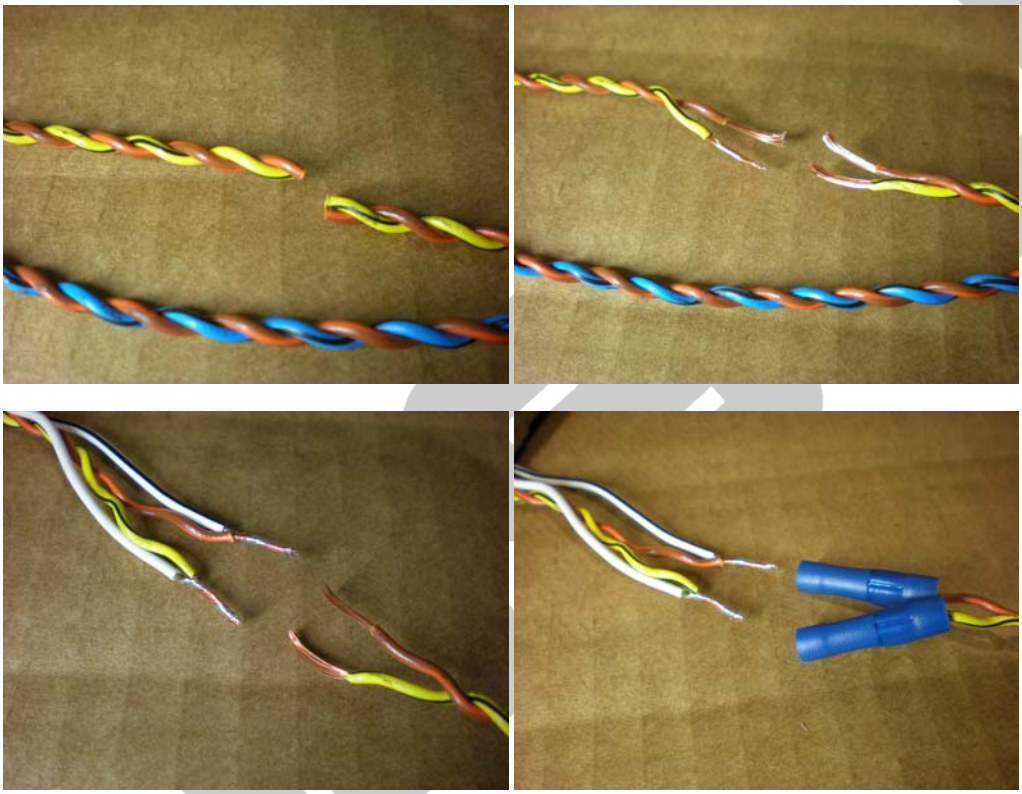
Wire Color at LOC	Wire Color at Factory Amplifier
Grey (+)	**Blue w/Black Stripe**
Grey/Black (-)	**Brown w/Orange Stripe**
White (+)	**Yellow w/Black Stripe**
White/Black (-)	**Brown w/Orange Stripe**



Here's what the completed connections will look like:

Photos next page.

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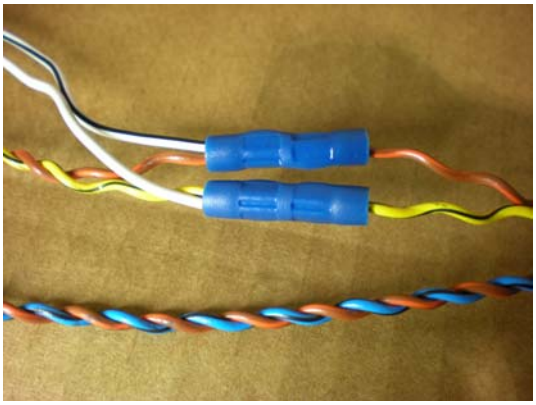

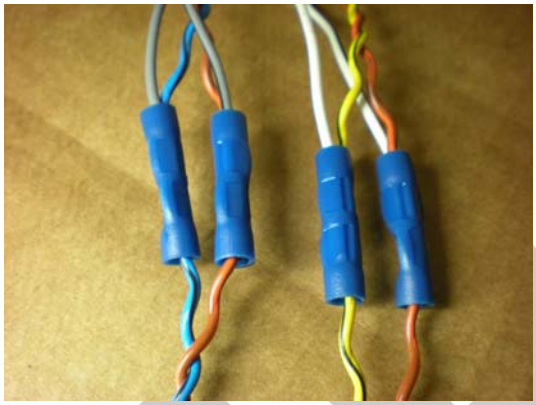

PLEASE NOTE: When making these connections, please keep in mind that the wires at the original BMW harness are twisted in pairs. These pairs MUST remain together when making your connections since there may be multiple instances of the same wire color and there would be no way to identify which wire 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 tires. This will not only make your install look nice, but ensure that all connections remain solid over time.

Speaker Wiring Connections (connecting the amplifier to the subwoofer enclosure)

From the new amplifier we'll need to route the included 12 gauge speaker wire to the subwoofer enclosure. We'll use the following guide to highlight your connections.

Subwoofer Terminal	Connects to:	Connection at Amplifier
Red		L (+) Output
Black		R (-) Output

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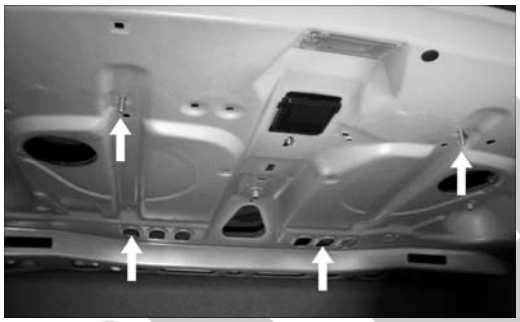
Deck Mounted Enclosure Installation:

1. With the factory subwoofer removed and your wiring completed, you now need to drop the supplied washer/bolt combo down through the small centrally located holes closest toward the trunk opening.



On the next page you will see a photo highlighting the exact holes and slots we'll be using to mount the new enclosure.

2. Next, you'll want to install the sound deadening material on the top side of the enclosure as shown. This just makes sure that the enclosure stays snug against the rear deck.

3. You'll first slide the enclosure into the rear slots located closest to the back seat. Note the arrows above, and that we aren't using the same slots on either side. We're using the outer slot on the driver's side, and the middle slot on the passenger's side.

4. Now, lift the enclosure upward onto the bolts that were dropped down through the rear deck. Here's where it may help to have a friend around, but it isn't necessary.

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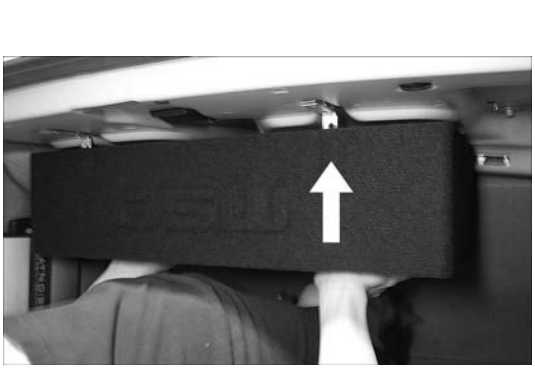

Slide the remaining two washer combinations up onto each bolt, and then tighten the quick release knobs down on each side until they're nice and snug. That's it!

When you're completed, it should look like this:

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.

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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.
   Crossovers: Set the crossover to **LPF.**
   Crossover Frequency: Start with 80hz.
   Punch EQ – Start at ¼ turn clockwise

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.

The tuning is the most important aspect of the installation. Don't rush any aspect of the tuning. You may ride around a few days and find that you need to make some adjustments. Don't worry, this is perfectly normal.
Crossover Adjustments:
This can be tricky, but if you keep your ears open, it shouldn't take long at all.
Here are some tricks to finding that sweet spot.
Try turning up the crossover a bit to around 100hz. If you don't hear distortion, this may a good spot for you. Keep your ears open!
-You can also readjust the bass on the radio down a notch or two to compensate for the distortion, but again, **keep your ears open.**

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.

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.

Continued on Next Page

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.

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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.

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