

Disclaimer: Bavarian Soundwerks highly recommends professional installation of the products we sell. We provide these installation instructions free of charge as a guide to assist those customers who choose to perform the installation themselves. Additionally, they may serve as a guide to assist a professional installer in order to expedite the installation of the customer's new products. However, Bavarian Soundwerks makes no guarantee, implied or expressed, as to the accuracy or safety of these instructions. Use of these instructions constitutes a waiver of all liability including, but not limited to, damage that may occur to the reader's, users, or customer's vehicle, its components, and/or the reader, customer, or installer.

Amplifier Installation and Tuning Guide for the E90/92 BMW 3 Series Coupe/Sedan with Standard Audio

Tools Required: We highly recommend the purchase of the Bavarian Soundwerks Tool Kit, which contains some of the more difficult tools to acquire than what you may have already in your garage.

<ul style="list-style-type: none">• Panel Removal Tool• Flat Head screwdriver• Crimping Tool / Wire Cutters• Right Angle Pick• 10mm Socket or Nutdriver• Brain	<ul style="list-style-type: none">• Torx T40
--	--

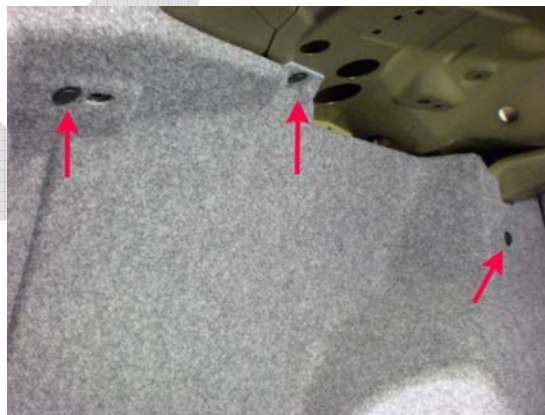
We're going to proceed as follows:

1. **Disassembling the trunk – locating factory amplifier**
2. **Deciding on mounting location for the new amplifier**
3. **Power/ground wire connections**
4. **Making appropriate wiring connections for audio inputs and remote turn on connections**
5. **Wiring and Installing the subwoofer enclosure**
6. **Tuning/testing the system**

Disassembling the Trunk Panels:

We are only removing the driver side of the carpeted paneling in the trunk. Lift the floor panel out of the trunk, exposing the bottom edge of the passenger side panel. There is no need for further disassembly.

1. Locate the three (3) fasteners that secure the driver side carpeted panel to the frame of the vehicle.



2. Using your BSW Metal panel removal tool, slide the fork of the tool between the smaller head of the plastic fastener and the larger base, carefully prying outward to slide the center fastener out of its outer casing. Repeat this process on all three (3) fasteners.



3. With the fasteners removed and placed to the side, we now need to remove the metal tie down that is located toward the rear of the trunk, closest to the back seat. It is attached to the chassis using a Torx T40 bolt. This needs to be removed as well as the plastic housing that surrounds the bolt.



4. With the tie-down removed, we now need to look to the center plastic piece that sits along the edge of the trunk. It is attached by two (2) Philips head screws on the top portion, and four (4) plastic fasteners along its bottom rear-facing panel.



5. Now, let's first remove the two Philips head screws that attach the top portion of the panel. We need to use our BSW right angle pick tool to remove the plastic covers on either side of the panel. Once removed, using a Philips head screwdriver, remove the screws from either side of the panel.



6. With the screws removed, we now need to use our metal BSW panel removal tool to remove the four (4) plastic fasteners across the lower portion of the panel.
Take note: These fasteners can be **VERY** tight. Be patient here. Use the same methodology as when removing the trunk carpet liner fasteners.
7. Now, with all of the fasteners removed, we can remove the plastic trunk lip panel by lifting upward and toward the front of the vehicle simultaneously. Note the metal trunk tie-downs that you will have to maneuver around when lifting the panel upwards.
You may elect to remove the rubber gasket from the rear-most edge of the panel at this point, as it will allow easier removal of the panel. Simply slide the gasket toward you by firmly pulling on it using your hands.

8. It's time to remove the driver side carpeted panel at this point. Using your hands, free the panel from the edge of the trunk as shown in the photo, and pull the panel inward toward the center of the vehicle. Once you're at this point, pull the trunk liner outward towards the exit of the trunk.



9. With the panel removed, you will see the factory amplifier and all of the associated wiring harnesses. The factory amplifier is black in color and mounted directly to the floor of the vehicle in the photo on the above right.

Mounting Location for New Amplifier

1. With everything removed, we now need to decide on a location to mount our new amplifier. Most vehicles have ample room beneath the center floor piece, as shown in the photo below:



2. The vehicle shown has a factory installed component present on the passenger side, but as you can see there is nothing mounted on the driver's side. Here is where we will mount our new amplifier.

3. Place the amplifier in its location without mounting it, as we'll now decide on the appropriate paths for the wiring entering/exiting the amplifier. Ultimately we will simply Velcro the amplifier to the chassis.

Power/Ground Connections for the new Amplifier:

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

Power Wire (Red Wire)

- You'll want to run the large red wire to the positive terminal of the battery. We need to first remove the 10mm bolts that attach the metal battery bracket that covers the top portion of the battery.
- Once removed, loosen the 10mm nut on top of the positive terminal itself.



- Place 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 fuse-holder until you have connected the other end of the wire to the amplifier. Once you've made this connection at the new amplifier, it is safe to install the included fuse into the fuse-holder.



Ground Wire (Black (Brown) Wire)

This wire is connected to the factory grounding connector located on the passenger side of the vehicle in the photo shown below.

To attach the ground wire, simply:

- remove the factory 10mm nut using your socket wrench or nutdriver,
- slide the ring terminal attached to the ground wire over the factory bolt
- Reattach the 10mm nut, being careful to firmly secure the nut.



Factory Grounding Point



Photo for reference of Ground Location

Audio Input Connections (Made at factory amplifier)

In order to safely and properly make our input connections, we must insist that you watch the comprehensive video coverage prior to beginning this portion of the installation. Please see our website at www.bavsound.com and proceed to the product listing for the E90/92 Subwoofer System. Here you will find a video link as well as the ability to view any other relevant information to the installation of our subwoofer system into your BMW.

Below, we'll go over the wires that we will be working with, and how we're going to go about making sure that all of your connections are correct.

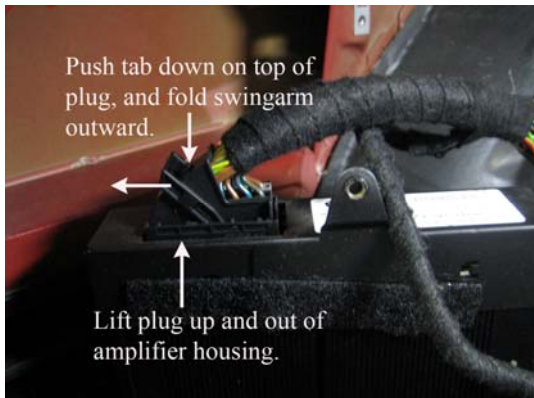
1. First, we need to isolate the 4 wires that we're going to be working with. They are twisted together in pairs, and are found in the main wiring harness that plugs directly into the factory amplifier.



We'll be working with the following wires:

- **Yellow w/Black Stripe twisted with Brown w/Orange Stripe**
- **Blue w/Black Stripe twisted with Brown w/Orange Stripe**

2. Once we've identified our wiring, we need to unplug the factory amplifier harness. To do this, we'll simply un-hinge the lever that attaches the plug to the amplifier. Depress the small plastic "button" on top of the plug, and fold the hinge toward the amplifier chassis. For a more complete visual representation, please see our installation video. Below is a photographic representation:



3. Looking at the photo above on the right, we will make our input connections approximately 6" away from the factory amplifier plug, so as we will not have to worry about cutting any wires too short. **Keep in mind that we are essentially "T'ing" into the wires.**
4. At this point, we will cut the factory wires in half, one at a time. We recommend making your connections one side at a time, so as to avoid to any mistakes. Strip back 1/4" of the insulation from each half of the wire, as shown below right:



Now, let's look at the Line Output converter that you were sent with your order. It has 4 wires coming out of it that we'll be working with. If you see any other wires on the LOC, please disregard them. Tape them off, as we will not be using them.

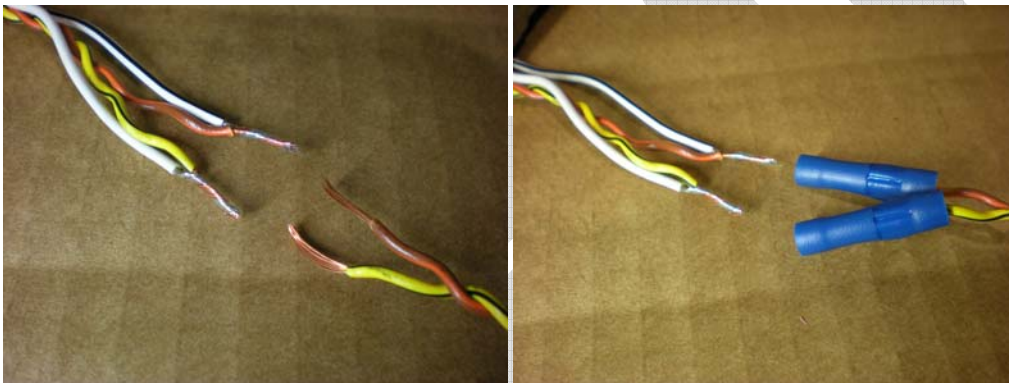
Left
White (+)
White w/Black Stripe (-)

Right
Grey (+)
Grey w/Black Stripe (-)

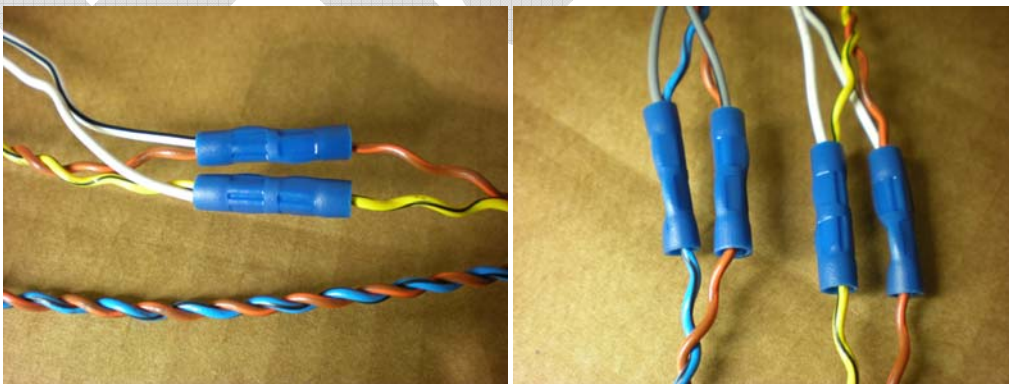
Tapping into the factory wires using the **blue** butt connectors, the connections will essentially be as follows:

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

We're going to twist the leads coming off of the LOC together with the ends of the factory wire that is leading back out towards the car, not towards the amplifier.



Crimp the blue butt connector to the side of wires without the LOC attached, and then insert the other end of the wires into the unused side of the butt connector. Crimp these tightly, so the connections will not come loose.



Repeat the process for the both the left and right inputs, and when you're finished, your wiring will look like the above right photo.

Once your LOC is wired properly, and you've cleaned up your connections with the included wire ties, go ahead and loosely route the RCA Cables over to the amplifier mounting location, along with the remote turn on connections listed below.

Remote Turn-On Connections:

You will notice that there is a small box attached to your amplifier harness that has (3) twisted wires coming off of it. The wires are black, red, and blue. These wires must be connected at the new amplifier terminals as highlighted below.

Here we will very simply make the following connections.

Blue	Connects to:	REM terminal of new amplifier
Red		B+ terminal of new amplifier
Black		GND terminal of new amplifier

Now, the Red and Black wires above must be twisted around the larger gauge power and ground wires as you insert them into the amplifier terminals. See photo below for a visual. The blue remote turn on wire goes directly to the REM terminal of the amplifier, all by itself.



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

Installing the Subwoofer Enclosure

As you can see, the enclosure simply drops into the tub in the floor of your 3 Series. Remove the carpeted insert before installing the enclosure.

Be sure to securely route the speaker wire away from the subwoofer itself, so as not to have the wire tapping on the speaker as it moves.



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: $\frac{1}{2}$ of a full turn, or roughly 12 o'clock.
Crossovers: Set the crossover to **LP**.
Crossover Frequency: Approximately 100hz.
Punch EQ: $\frac{1}{8}$ of a 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 may 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 **LP** crossover a bit, somewhere slightly above 100hz. If you don't hear distortion, this may be 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.

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.

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.