

## Stage 1 Audio Upgrade (BMW Speakers) Installation Instructions for BMW 5 Series, M5 Sedan '97-'03 (E39)

### Tools Required:

(All the below are readily available at your local auto parts store)

- Small Phillips Head Screwdriver
- Panel Removal Tool
- Torx T20 screwdriver
- Torx T30 screwdriver
- 8mm socket wrench
- 10mm socket wrench
- 13mm socket wrench
- 4mm Allen Driver/Socket (if no fold down seats)
- Small, Straight Pick Tool
- Small, Flat Head Screwdriver
- Hot Glue Gun w/Glue Sticks

### Before you Begin

- **Please review and familiarize yourself completely with these instructions before starting work on your vehicle!**
- **Insure that your bass and treble settings are set to their default middle positions before installing your new speaker upgrade.** Once you've installed your Stage 1, you can reset the bass and treble settings to taste. Keep in mind that we generally recommend keeping them both very close to center as large adjustments introduce distortion into the audio signal and will lower performance of your system.
- **Perform the installation one door at a time.** Since there are many small parts that you'll remove when completing the project, limiting the work you're doing to one door will prevent you from confusing which parts go with what door.
- Variations do occur from car to car and year to year, but they aren't going to drastically affect any of the below instructions. **If you have an M-Audio System in your 5 Series, please see the attached addendum to these instructions.** The panel removal process is identical to what you see below, however, the speaker installation is somewhat different.

### The Process

As each customer's installation is unique, it is important to remember that installation is essentially the reverse of the removal process outlined below, though you will need a certain level of personal ingenuity and

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certain tools outlined above. Variations occasionally occur, so if anything seems out of line with what is contained in the pages that follow, don't hesitate to contact us.

**If you experience any issues with your installation, please consult the troubleshooting guide located at the rear of this installation packet.**

## Notes:

-**Keep** in mind that the larger terminal is positive and the smaller terminal is negative on all speakers. Alternatively, your speakers may have screw terminals on them, in which case the picture below will illustrate which terminal is positive and which is negative.

**If your speakers have the screw down terminals**, we will need to cut the factory spade terminals off and strip back  $\frac{1}{4}$ " of the wiring insulation to insert it into the screw down terminals.



**We'll proceed as follows:**

1. **Front Door Speakers**
2. **Rear Door Tweeters**
3. **Rear Deck Speakers**

## Front Doors:

1. There are only two screws holding the entire front door panel to the door. The first screw is tucked away inside the upper vent on the front of the door panel. Open the vent and you'll see a small Phillips head screw hiding back there. Remove it.



2. Next, look behind the chrome door handle and you'll see a small, round plastic cover. Remove this using either your small flat head screwdriver or straight pick. This will reveal either a Philips head screw or a Torx T20 screw. It depends what BMW had lying around that particular day. 😊 Remove this screw.



3. You'll want to remove the window switch next. This can be done in one of two ways; Start by carefully prying at the bottom edge (closest to the window lockout button) with your small flat head screwdriver or panel removal tool. Work your way around the inside edge while remaining very careful not to crack the plastic edge. The switch will ultimately free itself from the panel, and you'll unplug the three plugs from the switch.
4. Two of the plugs are removed by pressing the release tab on top and sliding the plastic lever downward, freeing the plug. The other plug is removed by sliding the lock tab away from the plug body and lifting upward, freeing the plug.



The passenger side window switch is slightly easier to remove, but still use extreme caution when prying it out.

5. As we mentioned, the above can be done in one of two ways. The second way is by simply removing the entire panel and popping the switches upward using your fingers once the panel is removed. This will reduce the likelihood of cracking the edges of the switches. Your call, but we recommend the second way. Some of us like to have options. 😊
6. Lastly, we need to remove the light on the underside of the door panel. Using your panel removal tool, pop the light out by prying on the rear edge of the light. It will just pop out and you'll unplug the light.



7. You're now ready to remove the door panel. The outer edges of the perimeter of the door are secured by plastic tabs that need to be removed. We've found it easiest to start the process by pulling firmly from inside of the hole from where the light was removed. This will free up the bottom front corner of the panel.
8. Now, **very carefully** use your hands to free up the rest of the clips around the perimeter of the door. It typically gets pretty tight around the pockets toward the rear of the panel, but keep firm

pressure and you'll get the two sides and bottom of the door free easily enough.

9. The removal of the top portion can be scary, but if you've made it this far, you've nothing to worry about. With the rest of the panel free, **carefully** pull outward on the top of the door panel from the front of the panel, underneath the tweeter.
10. Work rearward by continuing to pull firmly outward along the top edge of the panel. There are five contact points along the top edge that will pop loose.
11. Once the top is free, you will lift the door panel upward and toward the front of the car by twisting the panel in a counter clockwise direction.
12. Before you pull the panel outward and ultimately free, you'll need to slide the door handle assembly through the hole in the door panel.
13. Unplug the midrange and other various plugs (seat memory controls, lights), and you're done.

### **Midbass (5.25" Driver) Removal and Installation:**

1. Carefully remove the foam from around the outer edges of the speaker. You may want to reuse it when you get the new speaker installed.
2. Remove the four (4) Torx T10 screws from the speaker, and unplug the driver. Note that you may also encounter two sets of wires in the speaker enclosure. While it's not often the case, we just wanted to make you aware of it. The longer of the two sets was for the factory phone to communicate with the speaker. Simply tape off the longer leads individually, and use the shorter set of wires to attach to your new speakers as outlined below.
3. **With Dream Line Front Speakers**  
Clip the original spade terminals off the factory wires (leave enough room to reconnect in the future if you want), and strip back 1/3" of the insulation on the wires. Insert the now exposed wiring underneath the corresponding screw terminals on the new speakers (you'll see the + and - markings embossed on the plastic of the terminals).

- Green/Black stripe is positive (+)
- Solid Green is negative (-)

#### **With IQ Line Front Speakers**

Simply slide the original spade terminals onto the new midbass drivers. On your new speakers, the larger terminal is positive (+) and the smaller terminal is negative (-).

- Green/Black stripe is positive (+)
  - Solid Green is negative (-)
4. Prior to reinstalling the speaker, place the supplied gasket tape around the opening for the speaker to ensure an airtight fit. Plug the terminals onto the speaker, and simply attach the speaker back into its enclosure using the new screw/washer combination. Make sure you get a nice seal around the speaker.



5. Reattach the foam surround back over the speaker, and you're finished. This may or may not work. Sometimes the foam tears and it just won't reattach. It's best to put it back on if you can, but if you've torn the foam beyond repair, it's certainly not necessary.

#### **Tweeter Removal:**

This part is relatively easy compared to the door panel removal.

1. Notice a small black plastic anchor on the previously covered lower portion of the black tweeter/window trim panel. Remove this using your panel removal tool.



2. **Carefully** pry outward on the cover surrounding the tweeter, noting the attachment points around the rear lip of the tweeter grille. You're essentially unwrapping the tweeter. Pull outward just far enough to allow you to access the tweeter.
3. Unbolt the tweeter using your Torx T30 screwdriver. Unplug it from its juncture located atop the midbass assembly.



4. Unplug the tweeter from vehicle.

### **Tweeter Reinstallation:**

#### **If you have the IQ Line front speakers:**

1. **If you have the Dream Line front speakers:**

Bolt the new tweeter/bracket assembly to the lower bolt. You will use the very last hole in the bracket.

#### **If you have the IQ Line front speakers:**

Bolt your new tweeter/bracket assembly to the upper bolt hole that you removed the factory tweeter from. You will use the very last hole in the bracket.



Rainbow IQ Line Shown For reference

2. You'll want to angle the new tweeter assembly to fit perfectly behind the grille without impeding on the grille going back into place properly. Reinstall the foam back around the tweeter.



3. Lastly, plug the tweeter back into the blue factory plug atop the midbass enclosure.

#### Re-Assembly Tips:

- Toward the center of each door, you'll see a brass looking tab that will undoubtedly have a black plastic clip attached around it. This clip was attached to the door panel to the metal assembly bolted to each panel. Remove this by compressing the brass tab and sliding the black clip toward you. Reattach this clip to the door panel's metal assembly. This will ensure a snug fit when you reattach the door.
- Don't forget to plug in the midrange. It's easy to overlook it. Trust us, we know. 😊
- When you reattach the door, start at the top. Don't forget to pop the door handle back through the panel before you get too far.
- Make sure that each plastic clip on the panel lines up with its corresponding hole on the door itself. You don't want to break those little guys if you can help it.
- Give the door a solid once over using your hands. By this we mean pushing firmly around the outer edges with your hands, ensuring that everything is back together as it should be.

### Rear Door Removal and Tweeter Installation

The removal of the rear doors is exactly the same as the front except there is no small screw located in the upper door vent, as there is not a vent there.

**Note-** Your E39 may have rear window shades. If it does, you'll proceed as follows:

#### Vertical Shade on Largest Window:

Remove the trim carefully using your panel removal tool. You will see two small holes behind the wood grain trim. There will be a Philips head screw in each one. Remove them.



### Horizontal Shade on Smaller Window:

1. Make sure your rear windows are rolled down. You'll need to locate the small pinhole at the top of the sunshade that covers the smaller window in the door. It's on the inside toward the front of the car.
2. Using a small straight pick, you'll feel around in the hole for a metal clip. This needs to be lifted upward. This part can take some time, but you'll quickly realize the methodology necessary to get this thing off.
3. Once you've lifted the metal clip upward, the sunshade will just fall toward you and you'll simply lift it slightly upward to remove it.



4. This will reveal a Philips head screw on the top of the door panel, which will need to be removed.



With the door panel removed, we only have one task at hand, replacing the tweeter. We'll need to remove it, and here's how:

### Vehicles with rear Sunshades:

We'll first need to remove the sunshade before removing the tweeter. Here's how:

1. Remove the two screws from the front of the door panel that secure the sunshade to the door panel.



2. Now, flip the door panel over and locate the small brass screw on the front edge of the sunshade. Remove this.



3. Now carefully lift the sunshade off of the door panel and set it aside. Proceed as indicated below.

### All Vehicles:

1. Pry the factory tweeter from it's housing using a small straight pick. This can take a few minutes. Remove the tweeter and its wiring harness from the vehicle.



2. Attach the new tweeter by simply placing it over the factory hole and attaching it by using your hot glue gun.



Here's a completed install with the sunshade installed back into place:



3. Now simply plug the tweeter back into its factory location.

### Rear Deck Speaker Disassembly/Assembly Instructions

Keep in mind this takes an experienced installer about half an hour. It should take you between 1-2 hours, depending on your experience with vehicle disassembly.

## Models without Fold down Rear Seats:

1. First remove the bottom of the rear seat by pulling upward on the front of the cushion. There are two hooks on either side that need to be disengaged. This is super easy to remove.
2. You'll next want to remove the back portion of the backseat. First remove the three headrests from the seat cushion. Do this by lifting upward on each headrest. You may find it easier to pull up on one side at a time. This seems to work best if you don't want bust a vein in your forehead while trying to remove those headrests.
3. Now locate the 10mm bolts that line the underside of the seat which secure the cushion to the rear firewall. There are bolts on either outer side of the cushions where the cushion meets the sides of the car. Two nuts will also secure the arm rest portion toward the center of the seat. Once all of the nuts and bolts are removed, simply lift upward and outward. The seatbelts can be removed as well, but aren't necessary unless you have some extra time to waste. 😊
4. You'll now remove the center headrest assembly from the car. There are four 4mm Allen bolts here. Remove them.



## Models with Fold down Seats

1. First remove the bottom of the rear seat by pulling upward on the front of the cushion. There are two hooks on either side that need to be disengaged. This is super easy to remove.
2. Fold down the rear seats. Make sure to cover the two metal attachment points of the bottom of the backseat with something soft, so when you fold down the rear seats you won't leave a mark in the leather. We use a piece of carpet, but you can use your old college sweatshirts or that ugly sweater your Grandma gave you. Notice the two outer cushions remaining once you've folded down the seats.
3. There is a single 10mm bolt on the outer edge where the cushion meets the side of the car. Remove it from each side. Now, tuck your hand behind the cushion toward the top from the outside. Lift outward toward you firmly, freeing up the top of the cushion. Now lift upward and the cushion will be free.

4. One last step though, and it's easy enough. There is a plastic trim piece running along the width of the bottom edge of the rear deck. There are six plastic anchors that need to be removed using your panel removal tools or flat head screw driver. You'll unhinge the bottom edge and pry the plastic piece out of the car. This can be tricky, but the plastic is very flexible and shouldn't break.

## On the rest of the process

You'll also need to remove the C-Pillars on either side of the rear windshield.

1. Using a panel removal tool or flathead screwdriver, carefully pry outward on the top of the lighting assembly, freeing the top portion. The bottom will simply fold out toward you once the top is free.



2. Unplug the harness going into the light by gently pulling it outward from the assembly.
3. Two 8mm bolts will be revealed. Remove these.
4. Pull the C-Pillar outward and toward the front of the car, being careful not to scratch your rear window tint if present.

Before you get much further, go ahead and pop out the speaker grilles located on either side of the rear deck. You can use your fingers here. Be careful and don't force anything.

1. Work your way around from the front of the grille (side closest to you) and around to the sides, being careful not to break the grille.
2. Lift upward, and then toward you. The rear of the grille is simply slid underneath the deck.

Now, some E39's are equipped with baby seat tie downs on the rear deck. There will be three of them across the rear deck.

1. To remove these, you'll first pop off the plastic cover that sits atop the circular rear portion of the hook. Simply use your panel removal tool or your fingers if you're really tough.
2. 13mm bolts will be revealed, and you'll need to remove them using a ratchet or wrench.

Now, again, some E39's are equipped with rear sunshades, primarily 540's and M5's. If your E39 has the sunshade, of course make sure it is closed and disconnected before you attempt to remove it.

1. Make your way into the trunk and observe the underside of the rear deck. You'll see three nuts spaced equidistant across the line of the rear sunshade. They are 10mm nuts, which you'll of course be removing. Now the sunshade is physically free.
2. Head back into the car, as you'll also want to unplug the sunshade. Its plug is located on the passenger side wire harness running up into the trunk along the outer edge of the car. It's purple or darkish red. Unplug it. Now the fun begins...

## Rear Deck Removal

The trick to removing the rear deck is patience. Do not force anything, as it isn't necessary. The car is built like a tank, and we want to preserve that integrity when reassembling the car.

1. You'll pull the deck upward and outward simultaneously. The seatbelts are attached through the rear deck but as mentioned above, don't worry about it. They're easy to work around.
2. You'll need to lift slightly higher and be slightly firmer in your outward pull if your E39 has the rear sunshade. Its additional weight makes for a slightly more difficult removal. Again, patience is the key.
3. Once the deck is out, just rest its front edge where the bottom of the backseat was. Pull the seatbelts out so there is enough slack for you to get in and remove the speakers.

## Speaker removal / reinstallation

This is the easiest and most fun part. The speakers are each in their own individual housing.

6. Unplug each speaker.
7. Remove the two gold Philips head screws from the front of each enclosure, and slide the housing toward you and upward.
8. Now head over to your workspace. Remove each speaker using a Torx T10 screwdriver (star bit).
9. Clip the original spade terminals off the factory wires (leave enough room to reconnect in the future if you want), and strip back 1/3" of the insulation on the wires.
10. Seal the area where the new speaker will seat with included gasket tape.



11. Insert the now exposed wiring underneath the corresponding screw terminals on the new speakers (you'll see the + and – markings embossed on the plastic of the terminals).

- Green/Black stripe is positive (+)
- Solid Green is negative (-)

Obviously the reassembly of the vehicle is the reverse of the above, but there are a few things we'd like you to keep in mind.

- When reinstalling the rear deck, take extra caution not to puncture the speakers you just installed. We wouldn't mention it if we hadn't seen it.
- Make sure to get those baby seat bolts tightened down securely on top of the rear deck.
- Put the speaker grilles on lastly. Make sure nothing is on top of the speakers before you install the grilles. In fact, **take a good listen** before you put the deck completely back together.
- Don't hesitate to give us a call. You should be just fine, but if you need us, we can help. If we don't answer immediately, we'll get back to you as soon as we're available. We're a small company, so there are times when we're completely covered up and it may be a bit before we're able to get back with you. This is a good time to have a cold beer and catch up on what you're supposed to be doing. ☺

## Stage 1 Speaker Upgrade Troubleshooting Guide:

If you're experiencing an issue with your new speakers, please carefully read through this guide, as it covers almost any issue that you are likely to encounter.

If the issue cannot be resolved, please call us at (404) 963.8857 for further support.

Here are the most common issues we've experienced:

- **No sound from speaker (s)**
- **Distorted sound from speaker (s)**
- **Lack of Bass response**
- **Too much Treble (harshness, brightness, etc.)**
- **Physically defective speaker (broken or damaged during shipping, no sound)**
- **Missing product**

Let's address each bullet point:

- **No Sound from Speaker:**

One of three things is most likely happening, and they are listed in order of most common occurrence:

  1. Wiring on plug-n-play connector is misaligned.  
Here we want to check for alignment of wires from their factory plug through the BSW connector.  
**Do they line up?** If so, was the factory speaker working prior to replacing the speaker? Go ahead and plug the factory speaker back in to confirm operation. If the factory speaker works, and the wires in the plug are aligned, the speaker is defective. We need to get you a new speaker!  
**If not, let us guide you to the proper connections.** Remember, on our wires, the Red Stripe is positive, while the solid black is negative, while on the BMW side of the plug that following holds true:
    - Black Stripes, Red Stripes, White Stripes, Purple Stripes are Positive.
    - Solid wires are negative, as are wires with Brown Stripes or Grey Stripes.
  2. Check to make sure that no speaker terminal is touching metal. This can cause the speaker to not function, as it is effectively grounded (shorted) out. This is very common, especially in IQ tweeter installations and in E46 vehicles with front and rear mid bass installations.  
If you find that this was the case, place electrical tape over the terminals to prevent future mishaps. If the entire system has no sound after the installation of new speakers, we almost know for sure that there is a speaker whose terminals are grounded out. Let's check the most likely culprits, (IQ tweeters, E46 mid bass drivers) by disconnecting each speaker until the music comes back on and we've isolated the problem speaker.
  3. The Factory Speaker did not work either. If this was the case, and you were trying to fix the problem by purchasing new speakers, we may need to look at the factory amplifier, as it is most likely the culprit. Is the entire side (left front, right

rear, right front, left rear) not working, or is it a particular speaker that was not working. Most likely it was a single speaker. If an entire side is not working, make sure, especially on the tweeters that you just installed, that neither the positive or negative terminals are touching metal. This can contribute to an entire side (channel) not working properly.

- **Distorted Sound coming from new Speaker**

Again, a few things come to mind:

1. Where are the bass/treble settings on the radio/EQ? Flatten out the settings to ensure no pre-amp distortion is the cause of the problem. If you're using the radio to test the speakers, go ahead and use a CD or directly connected iPod instead.
2. Speaker terminals may be touching ground (metal). Where is the distortion coming from? A single speaker, an entire side (channel), or the entire system? Its best at this point to go back and disconnect each speaker until the distortion goes away. The most likely culprits are the front IQ tweeters and E46 front and rear mid bass connections.
3. The factory speaker was distorted as well. If a single speaker was distorting, the most likely culprit is the amplifier. We may need to explore replacing/repairing your factory amplifier.

- **Lack of Bass Response:**

A common occurrence when a mid bass speaker is wired "out of phase". This means that the positive (+) and negative (-) are backwards on the plug and play connections. Here we'll want to check alignment of the connectors as they come together between the speaker and the factory plugs. The lack of bass response generally is due to one speaker being out of phase and the other speaker (s) being in phase. The easy fix is checking these connections to make sure that positives go to positive and negatives go to negatives. Basically, double check your wiring on each speaker. If one speaker is out of phase, the bass response of the entire vehicle can be compromised.

- **Too Much Treble, Harshness, or Brightness:**

There are a couple of things here we'll need to consider:

1. Where are the bass/treble settings on the radio/EQ? Go ahead and flatten out the settings to ensure no pre-amp distortion is the cause of the problem. If you're using the radio to test the speakers, try using a CD or directly connected iPod instead.
2. What type of factory audio system did the car have in it from the factory? Was it a Harmon Kardon or a DSP equipped car? We then need to assess whether or not you were sent the right speakers.  
**-If the car is a Harmon Kardon 3 Series**, and you are experiencing brightness, we most likely left the capacitors out of the tweeter wiring. We need to send you the corresponding capacitors for a 3 Series with Harmon Kardon.  
**-If the car is a non Harmon Kardon equipped 3 Series**, the most likely culprit is that we forgot to install the 8 ohm resistors inline with the midranges



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and tweeters. Do you recall seeing a black heat shrink wrapped piece (2" long) inline with the tweeters and midranges? If you don't, you were most likely sent the wrong speakers, and we need to get the appropriate resistors to you.

**-If the car is DSP equipped**, the most likely culprit is that we forgot to install the 8 ohm resistors inline with the midranges and tweeters. Do you recall seeing a black heat shrink wrapped piece (2" long) inline with the tweeters and midranges? If you don't, you were most likely sent the wrong speakers, and we need to get the appropriate resistors to you.

- **A speaker is physically defective, as in defective from shipping or directly from the manufacturer.**

There is only one solution here:

1. We will be happy to get a replacement speaker out to you. We'll need to bill you for the replacement speaker, and once the defective speaker arrives back to us, we will gladly issue a refund. Once you get the new speaker, please keep us posted on the results, as want to make sure that everything is sounding as it should.

- **Missing Product(s)**

If you feel that a product or accessory is missing, let's check a few things before we send out replacements. It'll save everyone a lot of time!

1. Please check to make sure that nothing has gone unnoticed in the packaging. If you're calling from your office and don't have access to the package, please bring the package to the office the next day so that we can go over with you exactly what was supposed to be in the packages that we shipped out to you. Sometimes our shipping department uses filler boxes in packages to ensure that your products aren't damaged in shipping, and often times those boxes are mistaken for missing products.
2. If indeed a product is missing, firstly please accept our apologies. We try our best to ensure that all orders are filled as they should be, but we're only human! ☺ Please notify us immediately of the missing product, and we will the appropriate pieces out to you that same business day, provided FedEx hasn't already come for the day. We want you to get your new equipment installed as quickly as possible, so we'll make sure you have it in an expedited fashion once we've been made aware of the problem.