BMW X5 Subwoofer System by BSW Installation Guide: x108 for BMW X5 ‘00-‘06 (E53) – Standard Audio

Tools Required:

- **7, 8, 10, & 13mm socket wrench**
- **Wire Crimpers**
- **Drill**
- **Duct Tape (securing power wire routing)**
- **Small, flat head screwdriver (amplifier tuning)**

The Process:

We’re going to proceed as follows:

1. **Deciding on amplifier mounting location**
2. **Locate factory amplifier**
3. **Remove the spare tire and gain access to battery for power wire connections**
4. **Decide wire routing paths**
5. **Grounding the Amplifier**
6. **Remote Turn On Connections**
7. **Line Level Adapter Connections**
8. **Speaker Wire Connections**
9. **Subwoofer Enclosure Installation**
10. **Testing/Tuning Procedures**

Amplifier Mounting Location:

You’ll want to start by first deciding exactly where you want to mount your new amplifier. We mount the amplifier in one of two places: On the outside of the carpeted panel if you want to “show” the amplifier or if you have factory Navigation and/or CD changer, or behind it if you want it more of a stealthy type of install. If your X5 doesn’t have a CD changer or navigation, there’s plenty of room behind the panel for your new amplifier to be installed. Here are a couple of examples:

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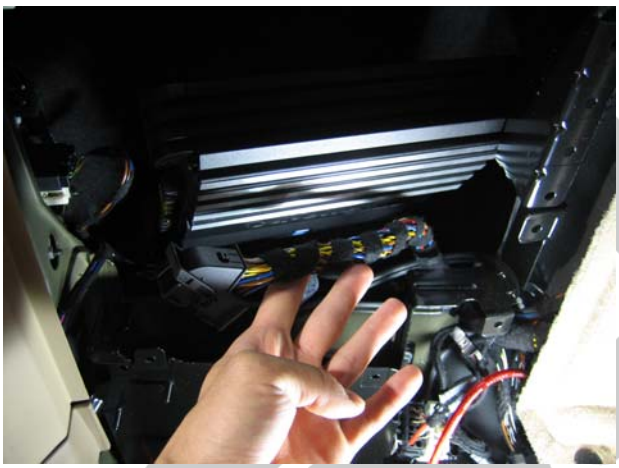
Factory Amplifier Location:

Now, you'll need to locate your factory amplifier and its harness. It resides behind the fold down panel on the driver's side of the hatch. It's below the CD Changer (if equipped), and has one large plug going into the top of it. It's typically black in color, but can be silver as well.
Several of our connections will be made on this harness, so familiarize yourself with it.

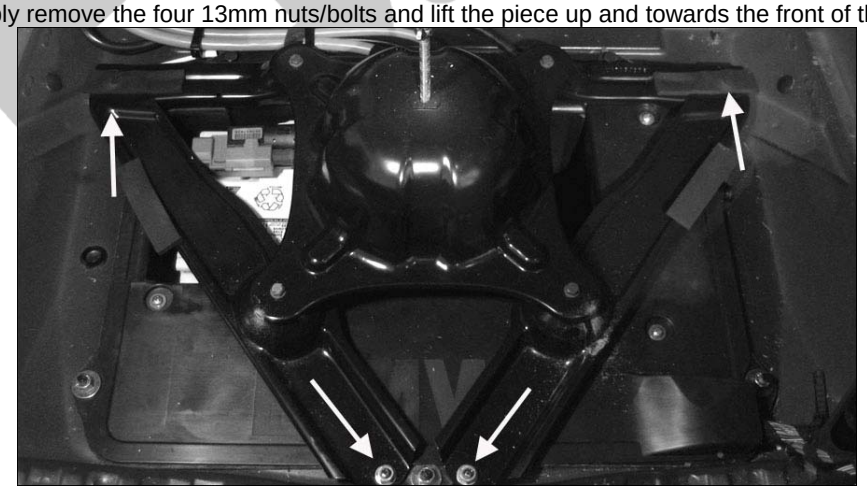


Harness has been unplugged from amplifier for illustrative purposes

Amplifier Wiring Connections:

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.
Let's go ahead and remove the spare tire at this point. Once removed, we'll need to gain access to the battery for our new power connections. Here's how:

To access the battery, you'll need to remove the spare tire and the large metal orb that hovers above the battery. Simply remove the four 13mm nuts/bolts and lift the piece up and towards the front of the car.



Power Wire (Large Red Wire)

- You'll want to run 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. This wire will be connected to the +12 terminal on the amplifier. Tuck the fuseholder safely under the factory wiring.

- Do **NOT** put the fuse into the fuseholder until you have connected the other end of the wire to the amplifier. Once you've made this connection, it is safe to install the included fuse into the fuseholder.

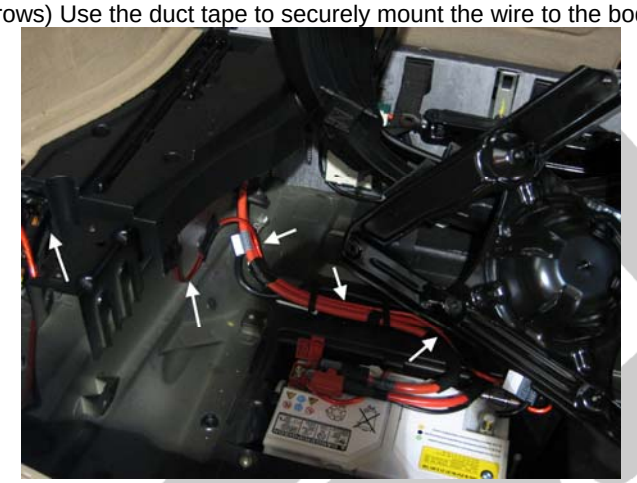
Ground Wire (Black Wire)

- The large black wire goes to a chassis ground. This essentially means metal. Ideally we'll use a factory grounding bolt, like the one shown below. Simply unbolt the factory 10mm nut, slide the ring terminal over the bolt, and tighten the nut back down.

- This wire will connect to the GND terminal on the amplifier.

Wiring Paths: (Power wire and speaker wire to subwoofer enclosure)

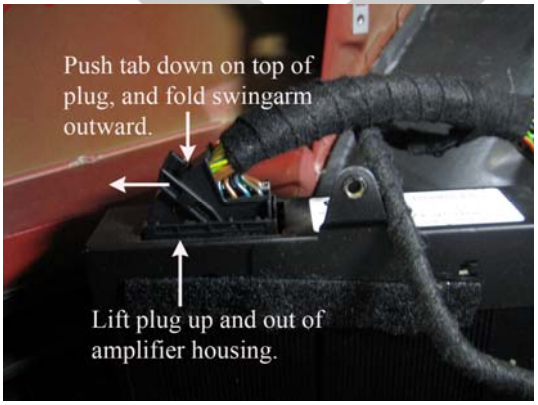
Don't do anything permanently until you have figured out where you're going to run the wiring. This is the most time consuming part of the installation. The actual wiring shouldn't take more than half an hour. The important thing to remember is that all wiring needs to be safely routed away from any objects that may cut or crush the wires. It's best to follow factory wire paths when possible. Here's how we run the power wire up from the battery (see arrows) Use the duct tape to securely mount the wire to the body.

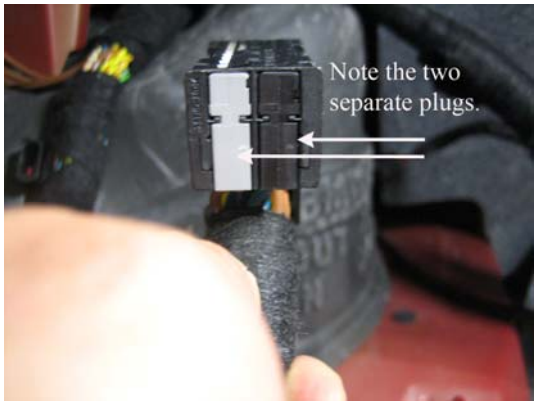


Remote Turn-On Wire (Smaller gauge Blue Wire in Amplifier Kit):

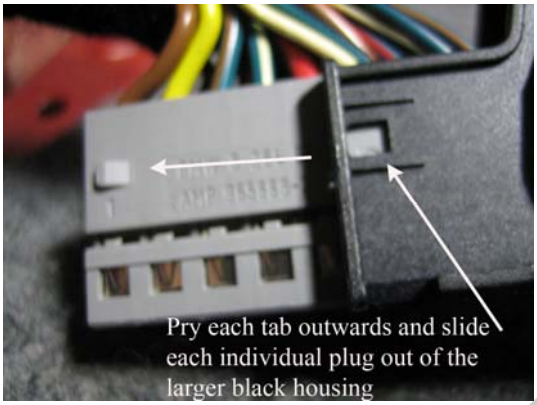
- **It is important to remember here that we are essentially "T'ing" into the factory wires**. It is important that the factory signal flow be allowed to continue back into the factory amplifier.
- **For connection instructions, both written and visual, please the next section "Audio Input Connections". Both the remote turn on and audio input connections are made in the same manner.**

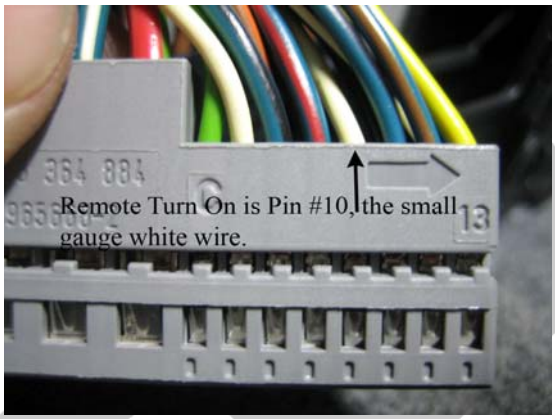
In the large plug going into the factory amplifier, we'll need to find the remote turn on wire. You'll notice a large black housing around the plug, with two separate plugs inside of this black housing.
The wire we'll be looking for is in the GREY plug. It's a small gauge **White wire**.
NOTE: Visually inspect the wires going into your factory amplifier before you take the plug apart. Not all X5's have two white wires in this harness. If you only see ONE white wire, it is indeed the remote turn on wire, and you needn't worry about disassembling the plug.





Once you've identified these two plugs, we need to remove them from the outer black housing. Once removed, **the remote turn on wire is in the grey connector, Pin #10.**

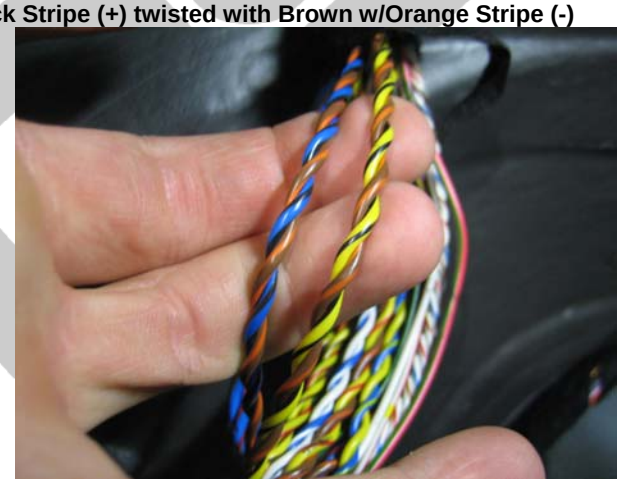




Getting the music to your new amplifier (Audio Input Connections)

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.

1. 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 (-)



Visual Representation of Tapping into the Factory Wires:

Here 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 6" away from the factory plug.**

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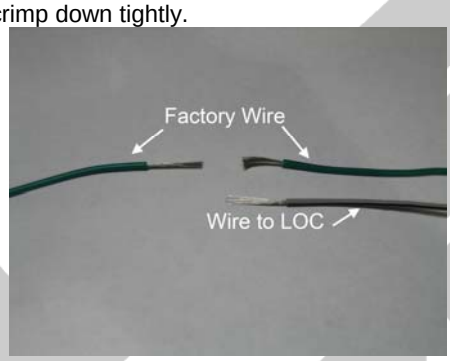
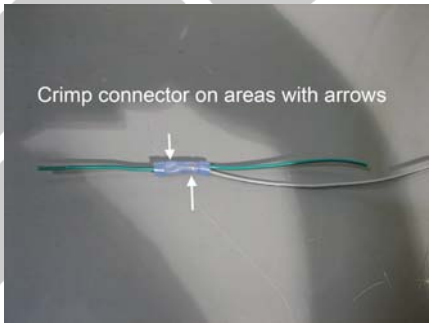
First, orient yourself with the **Line Output Converter** that you received with your order. There are four individual wires coming out of the unit along with female RCA cables. The wires are outlined in the chart below.
Connect the wires from the LOC to the appropriate wire in the BMW amplifier harness using the included **blue** butt connectors.

Wire Color on Input Harness or LOC	Wire Color at Factory Amplifier
Purple (+) or Grey	**Blue w/Black Stripe**
Purple/Black Stripe (-) or Grey w/Black Stripe	**Brown w/Orange Stripe**
Green (+) or White	**Yellow w/Black Stripe**
Green/Black Stripe (-) or White w/Black Stripe	**Brown w/Orange Stripe**

1. After stripping back approximately ¼' 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.

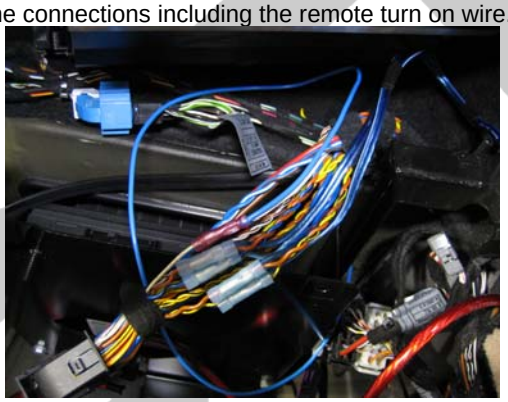




Subwoofer Wire Routing:

For this we'll follow the harness that runs along the rearmost part of the X5 and over into the area where the new enclosure will live:

Here's a completed photo of the connections including the remote turn on wire.



Speaker Wiring Connections:

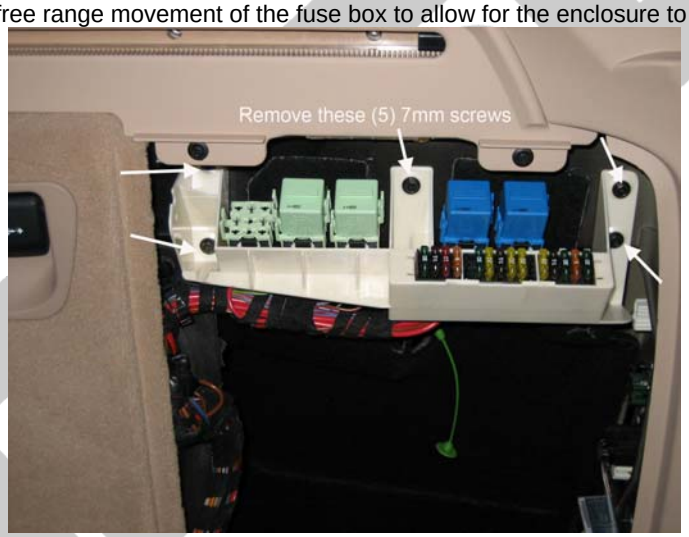
Now, we need to get the amplified audio signal from the amplifier to the subwoofer. Connect the provided large gauge black speaker wire (approx. 10 foot section) between the amplifier and subwoofer enclosure as follows (follow the directions below the chart for the specific process):

Wire	Amplifier Output	Connects to:	Subwoofer Enclosure
L (+)	+ (Gold)		Red Connector (+)
R (-)	- (Silver)		Black Connector (-)

Subwoofer Enclosure Installation:

We'll first need to remove the black plastic floor piece on the passenger side of the X5 by removing the two 10mm nuts that secure it to the floor:

We'll now need to remove the fuse box by removing the (5) 7mm bolts that secure it into place. Once removed, you'll have free range movement of the fuse box to allow for the enclosure to slide into place.



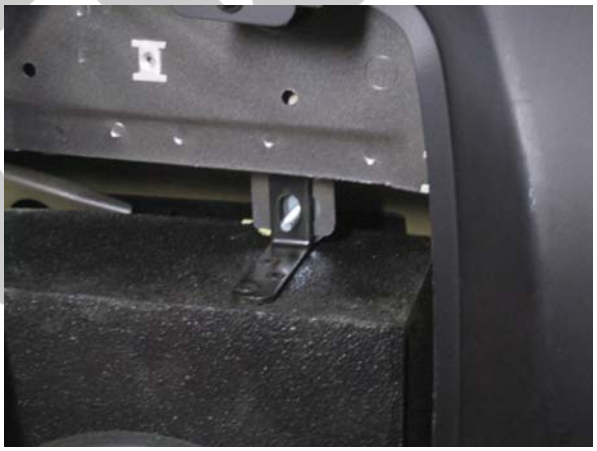
Next, let's remove the black padded foam insert that lines the rear of the compartment. You'll need to lift up the wiring harnesses on the bottom part and remove the fastener on the top part:

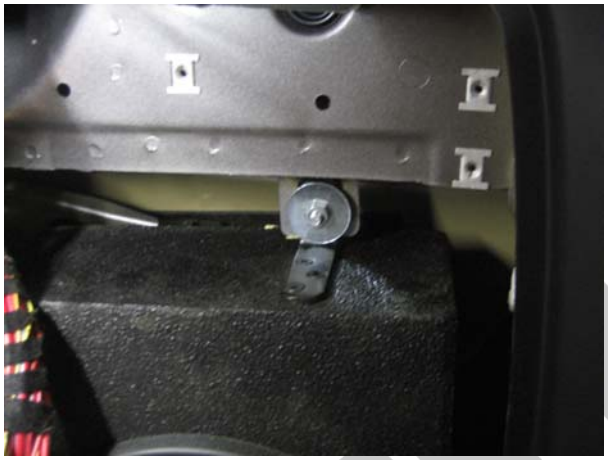
Now, make sure all wiring harnesses are clear, and we're ready to drop the new enclosure into its new house.

It's going to be a tight fit, as we needed every available square inch for the enclosure. It is supposed to be very snug in there. You'll see that it is in place by the top bracket lining up with the hole in the above photo.

Simply slide the bolt/washer combination through the existing factory bracket and through the xh108 bracket and tighten down the washer/nut combination from the front side.

Here's what it should look like with the enclosure in place: (Next Page)





Now reinstall the floor panel and fuse box and we're ready to start tuning the system. Go ahead and put the flooring all the way back together. Have everything assembled except for the two carpeted removable side panels.

Here's what you should see when you're all done:

Tuning your new amplifier:

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

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.

Amplifier Settings:

1. Preliminarily set the gains, crossovers, and crossover frequencies as follows:
   Gains: ¼ of a turn, or roughly 9 o'clock.
   Crossover Frequency: Start with 100hz.
   Bass Boost: Start at 3db

2. Make sure the new amplifier is turning off and on as it should be with the vehicle's ignition. If not, verify your connections and make sure everything is as it should be.

3. Now, we'll want to start the actual tuning process. Grab your favorite CD, and put in the CD player.

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 are ideal, you shouldn't ever need to adjust the amplifier again.

Make any installation notes here:

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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.

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