

Subaru Legacy / Liberty / Outback

Third Generation Model (00-04 North America, 99-03 elsewhere)

Audio Installation Guide version 0.1 DRAFT

 **SUBARU** **LEGACY**



 **SUBARU** **OUTBACK**



Note: this guide was produced by knowledgeable Subaru enthusiasts and not Subaru Inc. Use this guide at your own risk.

Radio Installation

Tools required



One short length #2 Phillips screwdriver

One medium length #2 Phillips screwdriver

One long length #2 Phillips screwdriver (must be magnetic) (I use a magnetic screwdriver extension on my medium screwdriver)

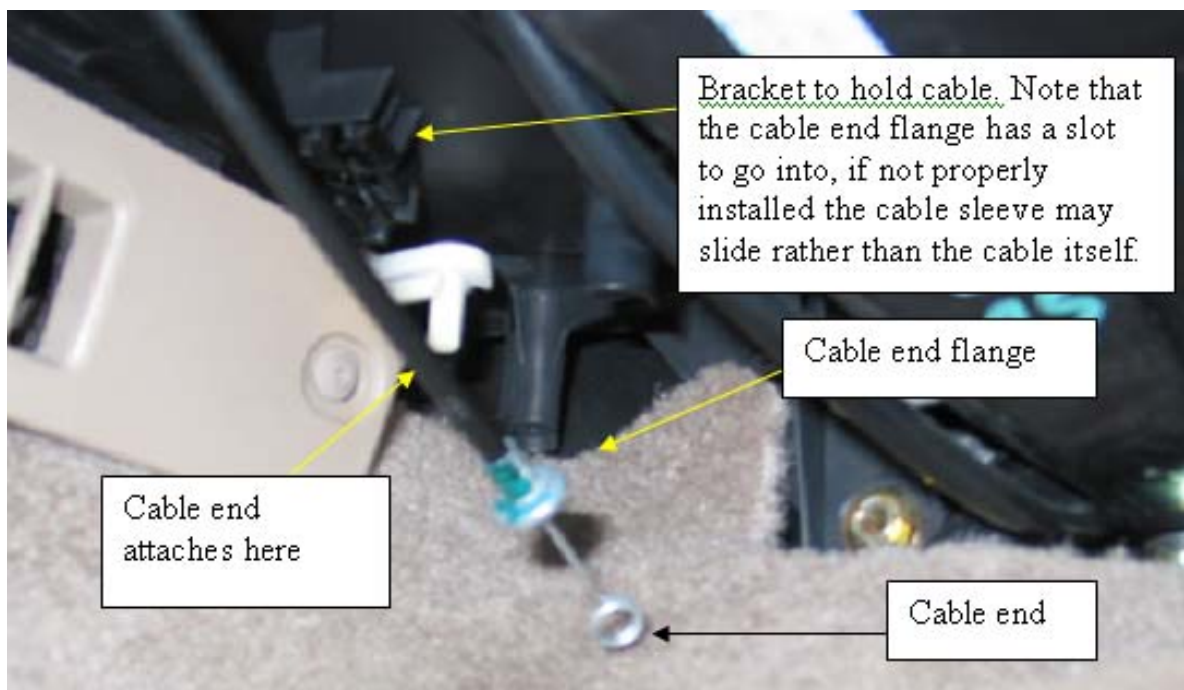
Helpful tool: 1/4 inch ratchet driver with 1/4" socket to accept a 1/4" #2 Phillips screwdriver bit. Allows for more torque than the short #2 Phillips screwdriver.

Step 1: disconnect negative battery cable and wait 10 minutes.

Why do this? Because we will be working directly over the airbag control module, one static discharge could inflate an airbag. In practice I have never heard of an incidental airbag inflation, but it is better to be safe than sorry.

Step 2: disconnect the climate control cable from the heater duct. **???? Climate control models ?????**

Below the passenger's side of the dash a cable from the temperature dial is connected to the heating duct. If this cable is not disconnected it is more difficult to pull the radio which is attached to a bracket which also holds the climate control dials. Damage to the cable (kinks) may also result if this step is skipped.



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Step 3: Remove transmission trim

Manual Transmission Vehicles



Step 3a: Loosen the shift lever knob.

Rotate the shifter knob counter clockwise until it is free. It is attached to the leather boot, so don't yank it completely out.



Step 3b: remove the shifter control panel.

Pull gently, do not force or twist.

Automatic Transmission Vehicles

????????????? Need photos and steps for 4EAT models here ???????????????

Step 4: remove ashtray



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Step 5: remove "lower bin".



Two screws hold the bin in place, once the screws are removed, the bin lifts easily out.



Step 6: remove ashtray frame.

Two hidden screws hold the frame in place. For this you need your short screwdriver or the 1/4" socket and screwdriver bit combination. If the screws are too tight for the screwdriver, use the ratchet method, it works!!



Step 8: loosen the dash face.

The dash face is simply held into place by friction. It can be difficult to remove, and you can break the tabs easily. Pull away at the bottom of the face plate and then work your way around pulling the tabs out. What often helps is pulling the dash cover away from the dash face at the upper right.



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Step 9: remove the dash face



Pull the dash face out and disconnect the lighter socket electrical connectors (2).

Step 10: remove the 6 radio frame screws.

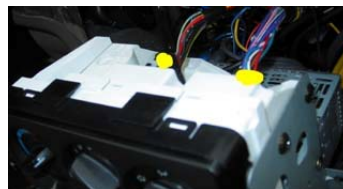


There are two screws on each side and two more screws below. The side screws will require a long magnetic screwdriver. Why magnetic? If you drop a screw in the dash it's usually forever lost.

Step 11: Pull the radio frame gently out.



Step 12: remove the two electrical connectors from the climate control system.



???? Climate control models????

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Now you can install the radio of your choice.

Rather than cutting the factory radio harness, simply purchase an adapter from your local mobile audio shop, there only \$10-\$15.



Factory plug on left, OEM adapter plug on right.



Metra part number 70-8901 for Subaru's



Crutchfield.com Crutchfield part number 120708901 for Subaru's

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Radio Installation notes:

- The Subaru factory harness supports 15 amps constant power, which in most cases is enough, but some newer head units have high power amplifiers which require a fused wire connection to the positive battery terminal. In these cases I suggest routing this wire through the air conditioning condensation drain, which is located in the passenger side foot well. Just be sure not to block the drain. Also when connecting to the battery it is imperative that the wire be fused within a few inches of the battery terminal and the wire between the fuse and battery be well protected to avoid a fire or battery explosion.
- When wiring an amplifier, it is recommended that the power wire for the amplifier be run down the side of the vehicle and the signal wires down the center. If the signal wires are run down the right side of the vehicle they will pick up electrical noise from the fuel pump. Typically the power wire is run through the A/C drain hole in the firewall and along the passenger side under the carpet. Remove the plastic door sill plates and lower B pillar cover. When the carpet is peeled back the carpet you will locate the brake lines. Run the power cable along the brake lines, often there are additional snaps that can hold up to a eight gauge wire. For the ground I often use the spare tire tie down as it is large, strong and also unpainted thus providing good electrical contact. There are many alternative grounding locations, but be aware that brake lines, fuel lines, the fuel tank and evaporative emissions system are not far beneath the floor. Do not drill into the wheel well or exterior body panel for a grounding screw; find one of the many interior metal panels.
- Some Subaru's have double DIN radio's while others have single DIN radios. Upgrading from a single DIN to a double DIN radio requires removal of either of the DIN size storage boxes below the radio. Downgrading from a double DIN radio to a single DIN radio requires an extra DIN storage box to cover the hole, these DIN storage boxes can be obtained at a scrap yard or your local Subaru dealer.

Speaker Installation Instructions

These steps apply for speaker installation in all four doors (unless otherwise noted).

Tools required

- size #2 Phillips screwdriver
- medium sized flat head screwdriver

Step 1: Remove the door sail cover (front doors only)



The door sail is the triangular shaped item to which the mirror attaches on doors frameless windows.

Carefully pry with a flathead screw driver until you can pull it off.

Some Subaru's have an optional tweeter kit installed in place of the door sail cover; the removal process is the same with the simple additional step of disconnecting the tweeter's electrical connector.

Step 2: Remove the door handle trim ring



Carefully pry the door handle trim ring off. The best method is to use the opened door handle as leverage for a flathead screwdriver to push the bottom edge of the trim ring downward to free it. Once the bottom edge is free, you can work around the trim ring pulling outward to free the other sides.

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The door handle trim ring removed.

There is a screw (behind a cover) on the door handle assembly. You DO NOT need to remove this screw.

Step 3: Remove the window/door lock panel



Carefully pry the inside edge of the door switch panel with a flathead screwdriver. Once the edge of this panel is loose, use the flathead screwdriver to pop the panel clips loose at the top and bottom. Verify that these two clips are properly installed on the door switch assembly prior to reinstallation.

Driver's door shown, the other doors have smaller door switch panels that remove in the same fashion.

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The removed door switch panel

Disconnect the electrical connectors, and safely stow the switch assembly until reinstallation.

Step 4: Remove the hidden screw



Remove the screw that was previously hidden by the door switch assembly with a #2 Phillips screwdriver.

Step 5: Remove the armrest screw



With a flat head screwdriver, carefully remove the screw cover. Using a Phillips #2 screwdriver, remove the screw that is behind the now removed cover.

Step 6: Remove the door Panel

The door panel is now free. Begin by pulling firmly but carefully on the lower edge of the door to pop the door clips loose. Once the lower edge is free, working from the bottom pull the sides of the door panel free. Once all of the door clips are loose, lift the door panel so it comes loose from the window sill. Store the panel safely until reinstallation.

Speaker Sizes

All four doors accept six and a half inch (6.5") speakers of a top mount depth of up to two and a half inches (2.5"). Speakers with greater top mount depths will contact the window glass, and can not be used in the stock locations. Most 6.5" speakers are well under 2.5" deep, so this should not be an issue.

Speaker Retainer Ring

The factory plastic speaker retainer rings have a splash shield that will not fit most aftermarket speakers with their larger magnets. In fact only the original speakers will likely fit, but it is easy to modify the factory speaker retainers so they will fit any aftermarket 6.5" speaker.



Here is the factory plastic speaker retainer. Note the trimmed splash shield. Prior to the modification it was much larger and my aftermarket speakers would not fit. Simply use a Dremel, hack saw, or tinsnips to cut the splash shield so it will not interfere with your aftermarket speaker's magnet.

The factory speaker retainer is designed to angle the speaker upward and towards the listener, and do provide more than adequate speaker imaging. The retainer is marked left and right, do not reverse them, or speaker imaging will be poor.

Reassembly is simple a reversal of the above steps.

Speaker Installation notes:

- When installing component speakers it is always recommended that the tweeter be installed low in the door and close to the woofer component. Separating the woofer and tweeter by distance greater than a few inches leads to imaging problems because there will be two very distinct sound sources. The recommended tweeter location is low on the door near the woofer and aimed towards the dome light, rather than on the door sail (mirror), high on the door, dash or any other location. If the tweeters are mounted too high the driver's side tweeter will be very close to the driver's ear and will be much louder and the time alignment for the sound waves will be biased to the left side as well. By mounting the tweeters low on the door panel (or on the kick panel) the driver's side tweeter will not be overwhelming, and the distance between the driver's ears and the left and right tweeters will be more equal reducing time alignment issues. Experiment with various tweeter locations using double sided tape before deciding on a permanent location and drilling a hole (or holes) for it.
- For speakers with external crossovers, mount the crossover using double sided tape and cable ties in a location that does not interfere with the window and door lock mechanisms, and also a location that does not interfere with the reinstallation of the door panel. The 00-04 Subaru Legacy/Outback has a foam block on the outer lower edge of the door panel (left of the map pocket on the left door, and right of the map pocket on the right door). You can cut out part of this foam to make room for the crossover. Also with external crossovers it is important that their wires be secured so that they do not rattle or become caught in the door lock or window mechanism.
- Because the water shield of the factory speaker retainer must be cut to install aftermarket speakers I recommend the installation of foam speaker baffles to protect the speakers from moisture and rust proofing agents. Use the short depth (two and three/eighths inch 2-3/8") foam baffles and install them to the door under the speaker retainer (so the foam baffle is sandwiched between the door and speaker retainer).
- If using a foam baffle I recommend that you add some Dacron poly fill to the baffle. Dacron poly fill is available at Wal-Mart for \$5; it comes in a pillow sized bag. This poly fill will fool the speaker into thinking it has a larger air space than it actually has and it will sound better. This fill does wonders for subwoofer boxes and home speakers too. Experiment with various amounts of poly fill until satisfactory sound quality is obtained. Be sure that the poly fill does not interfere with the movement of the speaker cone.
- I recommend the usage of rope caulk, or plumber's putty to seal the speaker retainer to the door, and the speaker to the speaker retainer. This is a very effective way to seal the front and rear air spaces of the speaker from each other. When the front and rear airspaces of the speaker are not sealed from each other there will be a significant loss in bass response. DO NOT use a silicone or other adhesive sealant. Rope caulk / plumber's putty is like play-doh, and it will not harden or become permanent like the adhesive sealants do. Use of rope caulk is required when installing subwoofers in sealed enclosures, since sealed enclosures must be perfectly air tight.