

AFTERMARKET HEAD UNIT INSTALL ON PORSCHE 997.1



Executive summary

There are a few ways to install an aftermarket stereo into a 997.1 with factory Bose stereo. This document outlines the ‘cheap’ method, using the least expensive components available. I made no provision for steering wheel controls, as my car does not have those.

Thanks to fellow Rennlisters bhvrdr for initially posting about the affordable MOST adaptors, and for shyamvenky for his assistance in figuring out the details of the wiring.

bhvrdr’s thread has most of the details of the parts required, but the details are spread out throughout the thread, which is quite lengthy. So my intention is to consolidate the information I used, as much as possible, into a single post/thread.

I suspect most of these instructions will be similar for 987 cars with Bose. Indeed, the reasoning behind the wiring should be suitable for other cars with MOST fibre optic audio. In fact, I have installed almost exactly the same set up in my 2005 C55 AMG.

As ever, this document details what I did. Open up your own car at your own risk, I take no responsibility for work you may do on your own car. Please feel free to share this document, but only in unaltered format, and with attribution to me.

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Objective:

1. install aftermarket head unit with wired Apple CarPlay capability and back up camera;
2. remove factory navigation DVD drive to free up precious frunk real estate, and replace with something aesthetically pleasing.

Overview:

1. a MOST (Media Oriented System Transport) adaptor is needed to convert the factory fibre optic signals to traditional RCA connectors, which aftermarket stereos use;
2. factory headunit has to be removed;
3. in my case, aftermarket mObridge Bluetooth and wired iPod module also removed;
4. all new components have to be wired properly;
5. new headunit must be mounted;
6. new headunit’s microphone wiring must be routed and mounted;
7. USB port needs to be installed/located for wired CarPlay;
8. back up camera wiring must be routed;
9. back up camera has to be mounted;
10. factory navigation DVD drive removed;
11. vent tube cut; and
12. new OE ‘amp only’ plastic cover installed.

Parts (description and comments; source; approximate cost in Canadian dollars):

1. wiring harness adaptor; Metra 70-1787 VW/Audi stereo adaptor; though 70-1784 should work as well. The 70-1787 includes an additional, separate CAN bus harness (the thinner, red one) which I never used, I THINK you could simplify even more by just getting a single

ISO adaptor but have not verified; local stereo shop; C\$25 (but readily available from Amazon too);

2. MOST adaptor; Avinusa (they do not list the 997 specifically, get the one meant for Cayennes or some Mercedes-Benzes); US\$100; <https://avinusa.com/most-fiber-optic-amp-interface-for-porsche-cayenne-cayman-boxster.html>

3. fakra antenna adaptor; Amazon; C\$10-12;



4. stereo fascia kit, bought one off eBay because it has a Porsche logo; Metra ones are much cheaper, p/n 999606G for 997.1 grey (999606B for 997.2 black); Scosche also makes one, which is probably the nicest one, though I have not used it, p/n PE8002GB for 997.1 grey (PE8002B for 997.2 black), C\$100-200 depending on source;

5. MOST loop bypass; Amazon; C\$10-12.



6. aftermarket head unit – personal preference; I chose a Sony because of the rear accessible USB ports so that I could route them where I wanted;

7. back up camera – also personal preference; I ended up with a \$40 unit off Amazon because the dimensions and angle worked for me:

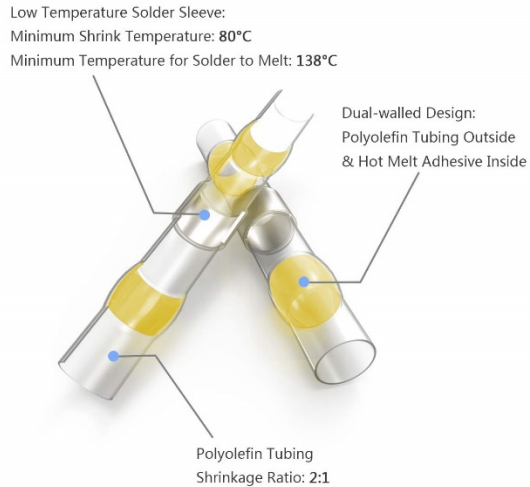


The image is a product image by CSDOUND™
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8. amp only cover (“trim amplifiers black”) Porsche p/n 997 551 108 00 02A; dealer; C\$50;

9. plastic clip that holds amp only cover in (“adaptors amplifier”), Porsche p/n 997 551 704 00; dealer; C\$38.

10. solder seal connectors – I have recently discovered this product, and they make soldering wires very easy, without the potential mess inside your lovely Porsche interior



Special tools:

I acquired a set of electrical connector pin removal tools for this project, but you could probably get away with small screwdrivers, some wire or paperclips. Search for ‘terminal release kit’ on Amazon if you want something similar to what I got:



I have lately been very fond of my ¼” drive Dewalt impact driver. Initially I acquired it only for use around the house, but now found it very useful to remove and (gently) install automotive fasteners too. One extra accessory that is very helpful is the 90* adaptor:



You should, of course, also have an assortment of torx drivers (T20 and T30 if I remember right); plastic, non-marring trim removal tools; soldering iron; small screwdrivers; and a headlamp would be great too.

Remove PCM

First, zero out your fader and balance. The MOST adaptor does not permit adjustment. Then remove the factory PCM. I will not go into detail here because this subject has been covered elsewhere. This process is supposed to be relatively straightforward, though mine was a bit more difficult due to the press clips on the head unit not cooperating. CAI has a nice write up; YouTube has some good info too.

Video on head unit and glovebox removal:

<https://youtu.be/QT6M0SZ7k8c>

Prepare wiring harness

This step was the most time consuming for me, and I relied a lot on the help of others. Essentially, the head unit wiring harness has to be married to the Metra harness. The Metra harness then plugs into the harness off the chassis (to which the PCM was connected). bhvdr (and others who piped up in the thread) bought a pre-made harness adaptor from Crutchfield. CAI will also supply you with one. That said, being cheap, I felt I could do it myself.

Here are CAI's instructions on 9x7 stereo installation, with locations to source 12v switched, parking brake and dimmer wires:

<https://cai-store.com/pages/997-boxster-cayman-radio-installation>

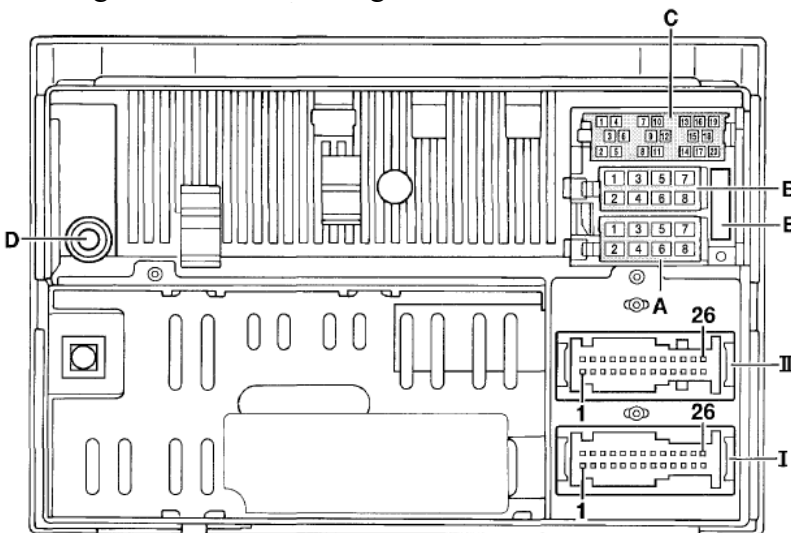
The 'two guys' video with an overview of some of the wiring:

https://youtu.be/H9M5A_JorTM

I did not find a definitive wiring diagram despite searching through the factory repair manual and several hours of Googling. The best I could find is here:

<https://www.tehnomagazin.com/Auto-radio-car-connector/PORSCHE-Car-Radio-Wiring-Connector.htm>

The image from the Tehnomagazine site is here:



...but I believe the image is from a 9x6 though (despite what the website says), so is missing the MOST fibre optic connector, and the fakra connector for the GPS antenna.

Here is a photo taken from the LA Dismantler website showing the back of a navigation PCM from a 9x7:



Note the presence of MOST connector next to Plug A (the black rectangle with two prongs inside) and the two fakra connectors on the left, compared to the diagram on the previous page. Also, there are no Plugs I and II, and Plug B is empty on the chassis side if the car has Bose audio (because all of the audio signals go through the fibre optics).

In any event, the only pins I worried about are as follows:

Plug A

- 4 - Terminal 30 (German automotive speak for 12v power)
- 5 - Terminal 30 for windscreen antenna
- 8 - Terminal 31 (German automotive speak for ground)

Plug D – this one is obvious when you plug in the antenna adaptor.

Those ‘terminal’ listings really threw me for a loop, but they are standardized DIN designations for automotive terminals: https://en.wikipedia.org/wiki/DIN_72552

I had quite a bit of difficulty figuring out the wiring, and shyamvenky was very helpful to explain. I think if I knew the theory behind it better, I would have understood it better.

So in brief:

1. aftermarket head unit needs 12v constant and 12v switched power; constant to keep memory, switched power to turn it on with the ignition;
2. there is no switched 12v power off the OE stereo harness on the chassis side (unless off the CAN bus, but that is outside the scope of this document) so a switched 12v source needs to be located; Plug A only has 12v constant and ground (plus the antenna power wire);

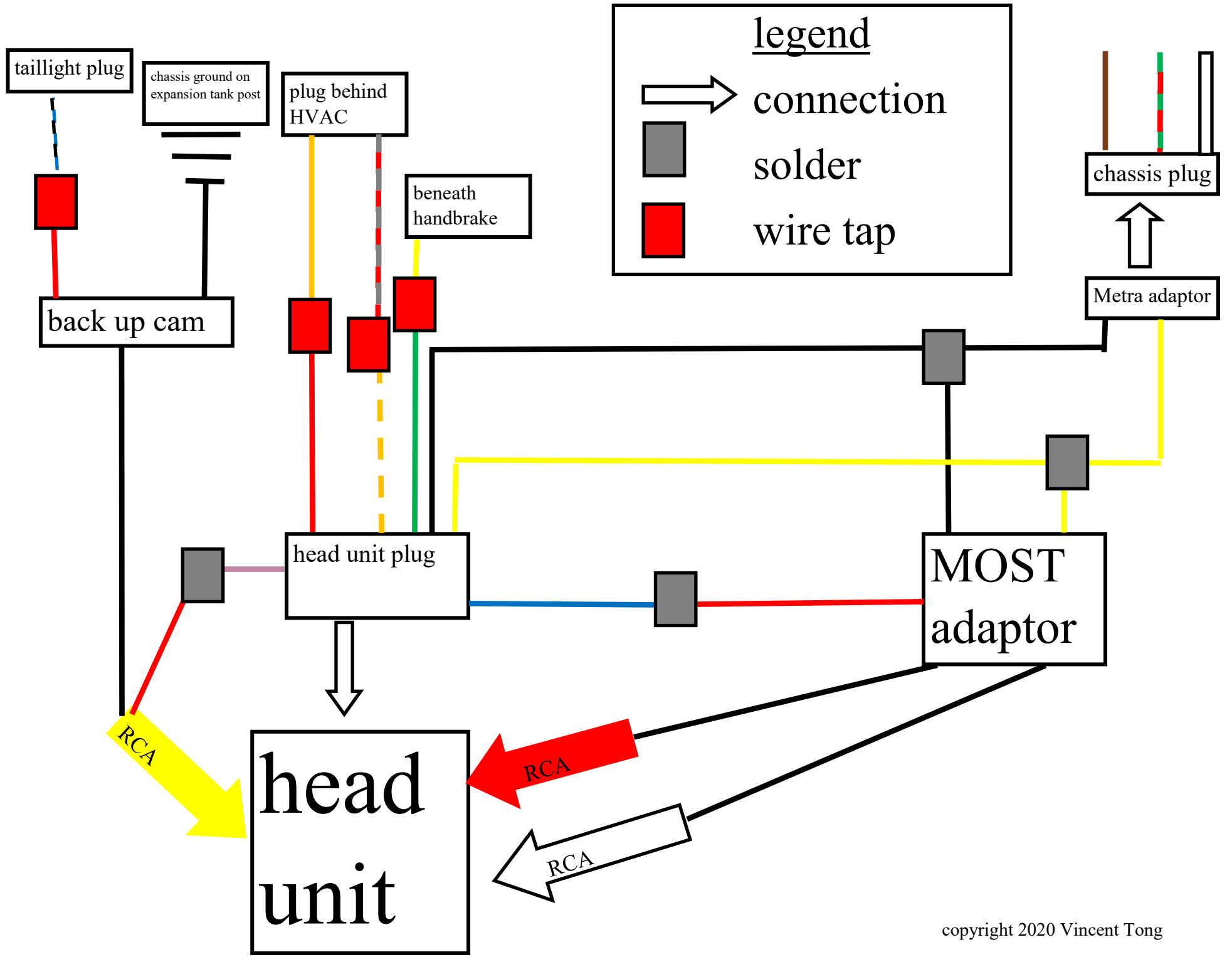
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3. the MOST adaptor is triggered by the amp turn on wire from the aftermarket head unit;
 4. the OE Bose system 'feeds' the speakers through the MOST fibre optics, and not the traditional wiring to speakers (which is how we used to install car stereos back in the day!!);
 5. generally, for aftermarket components, black is ground, yellow is 12v constant, and red is 12v switched; and
 6. that colour convention does not extend to factory, where they have so many more wires and circuits to consider so they have multiple colour combinations;

Here is what I did very specifically:

1. removed all of the speaker positive and negative wires from the Metra harness (optional, but nice to tidy up the wiring; the terminal removal tools are useful here);
2. cut and capped off the corresponding speaker wires off the head unit harness;
3. note that two of the pins on the Metra harness may need to be swapped to ensure the colour coding convention is retained;
4. from the big orange wire behind the HVAC controls (for switched power, per the CAI instructions), to red on the head unit harness;
5. from pin 4 on the chassis harness (red/green wire), to yellow on the Metra harness, to yellow on the head unit harness;
6. from pin 8 on the chassis harness (big brown wire), to black on the Metra harness, to black on the head unit harness;
7. blue/white, or sometimes just blue, off the head unit harness is connected to the red wire on the MOST adaptor (this 'triggers' the MOST adaptor and turns on the amp);
8. yellow on the MOST adaptor is connected to yellow on the Metra;
9. black on the MOST adaptor is connected to black on the Metra.
10. purple on the head unit harness goes to the red wire off the backup camera's yellow RCA connector (optional, only required if installing back up cam);
11. green off the head unit harness goes to the yellow wire under the handbrake per the CAI instructions (optional);
12. orange/white (dimmer) off the head unit harness goes to the grey/orange behind the HVAC controls, per the CAI instructions (optional);
13. connect fakra antenna adaptor to chassis antenna wire, then to the back of the head unit; and
14. disconnect and ignore all other connectors not mentioned, ie. GPS, CAN bus connectors (respectively, the yellow fakra connector and Plug C in the diagram/picture above).

Also, at the time I did not connect the white wire (pin 5 on Plug A) to 12v switched power, but that can be done easily to power up the antenna for better radio reception. This point is not shown NOT in the diagram on the next page.

If that description is not very good, please see the diagram in the next page.



At this point, everything **should** work once ignition is turned on! Test it all out before installing the head unit back into the cavity. Note that if using the Metra dash fascia plate, it is apparently nearly impossible to remove once installed, so be careful. So many folks have snapped off the retaining prongs on one side of the plastic side pieces (typically the driver's side) to allow the head unit to come in and out more easily.

Photo here of the prongs that are removed:

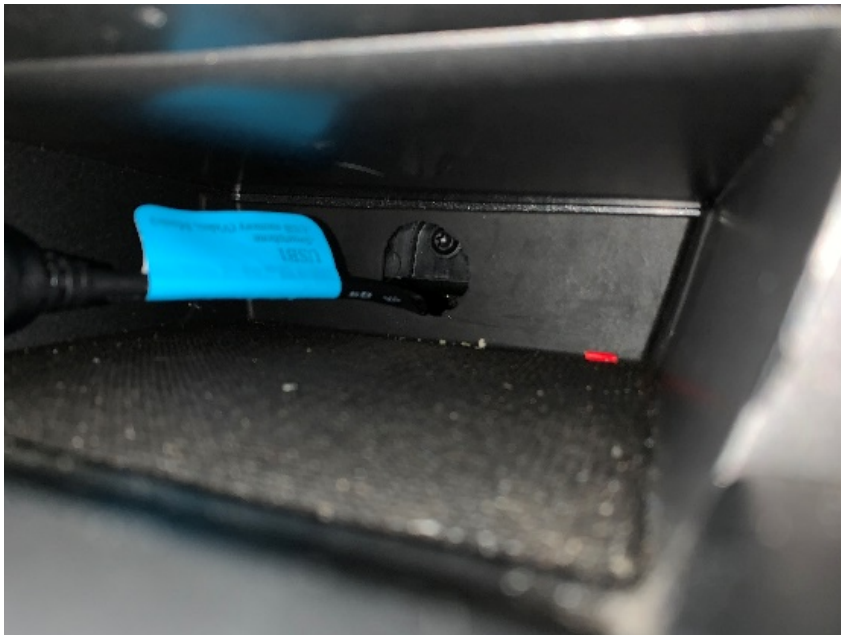


Install in progress and the finished situation:



USB port install

Originally, I planned to install a dual USB port at the back of the cubbyhole beneath the HVAC controls. I wanted a dual because the Sony head unit I selected has two rear USB ports, though generally I would only likely ever use one (for wired CarPlay). However, there is insufficient clearance behind the cubbyhole for the dual USB port, so I just ran the USB wire from the back of the head unit through a hole in the back of the cubbyhole. If I can find a single USB port that will fit, then I will do up a nicer install. Here is what I have at the moment:



Running mic and back up camera wiring

Here are CAI's instructions on back up camera install and wiring:

<https://cai-store.com/pages/911-backup-camera-installation-overview>

Unfortunately, I do not have photos of the car apart here, but there are many YouTube videos with many images. Once the interior pieces are removed, it is pretty straightforward how and where to run the wiring. I generally followed the separate CAI instructions for the back up cam installation.

As my car had a mObridge Bluetooth and wired iPod unit installed, I removed these components. The iPod connector was routed underneath the centre console and up into the centre console box. That was simple enough to pull out.

The mObridge unit itself was tucked behind the passenger footwell area, under the glovebox. Removal necessitated removing the glovebox (here's where the Dewalt 90* adaptor would come in handy) as there are about a dozen torx screws that need to be removed. The video I linked earlier is pretty comprehensive regarding glovebox removal.

With the glovebox removed, you can easily run the mic wiring over to the passenger side a-pillar, then up the a-pillar, then under the headliner, then down by the rearview mirror. If you want to

add another 12v accessory such as a radar detector or dashcam, now would be the time to also route that wiring from the orange 12v source behind the HVAC controls.

For the back up camera wiring, I went across the driver's side footwell, down past the fuse box, and then under the sill, then towards the back of the car.

I then removed the driver's side rear interior panel to help route the camera wiring. To remove that panel, the little trim piece around the cavity for the seatbelt pops off, then the torx screw there removed. Then the whole panel can come right out of the car, allowing easier access to the grommet behind the left taillight. The CAI back up camera instructions start from the back and go forwards, but for the life of me I am not sure how one could route the wiring behind the rear interior panel without removing that panel, though I know folks have done it.

Generally, I then followed the CAI back up camera instructions by poking a hole in the grommet. However, to more easily mount the back up camera, I removed the rear bumper (which is not too bad of a job actually).

Note that I actually split the whole job up into two parts over the course of a few days. First completing the stereo installation, then finishing the back up camera wiring another time.

The camera needs to be fed power and ground. For the ground, I soldered an eyelet onto the end of the wire, and secured that to the bolt holding the expansion tank in place. For power, I tapped into the backup light wire, so that it is only on when reverse is selected. See the CAI instructions for details.

Some photos of the camera wiring:



Removing the navigation DVD drive

As my car is an AWD, there is less frunk space than a 2WD car already, so I wanted to maximize the frunk space. That meant I could remove the clunky navigation DVD drive which at the time of writing is essentially ~20 year old tech.

I found this thread on 6speedonline discussing mounting a spare in the frunk, with relevant information and part numbers for my purposes:

<https://www.6speedonline.com/forums/997/243162-diy-997-oem-trunk-mounted-collapsible-spare-tire-c4s.html>

To gain that space, one needs to install the 'amp only' plastic cover. The 6speedonline thread does not mention installing the shorter guide into which the cover snaps.

The drive itself is held in quite firmly with metal clips. Those clips need to be disengaged, the wiring disconnected, and the drive lifted up and out. It is easier to do all of this with the other trunk interior plastic removed.

A couple photos of the 'amp plus DVD drive' plastic cover removed and the DVD drive about to be removed. Note the rectangular shaped vent tube on top of the components, the longer clip that must be replaced with the shorter clip, and the orange fibre optic cable still connected:



With the DVD drive removed, the trunk carpet has a bare section. Acquiring this piece of carpet new is possible (at least it was in spring 2020), but I was not willing to fork over C\$500 for it. Certainly a wrecker can supply the carpet at a much cheaper rate, and I suspect I will do that one day.

In the meantime, I had a piece of carbon fibre kicking around (acquired online from an RC racing supply shop for another project), so I measured numerous times, carefully drilled into the metal onto which the DVD drive was clipped, installed some speed nuts, and fastened the carbon fibre sheet onto it. Read through the 6speedonline thread for more discussion on the sheet metal behind the DVD drive – use drill bit collars / depth stops to ensure you do not punch through the metal and fuel tank behind.

Once the DVD drive is removed, install the fibre optic loop/bypass to ensure continuity of the MOST loop, otherwise there will be no sound.

The horizontal portion of the vent tube must be cut down, and then the L-shaped piece re-inserted. Some more photos of the amp, DVD drive and the original vent tube, and the exposed part of the bulkhead once the DVD drive is removed:



Photos of the portion of the vent tube cut out, and the final end result, with tangibly more frunk real estate available:



Miscellaneous comments

I initially purchased a MOST adaptor from Seicane, but after nearly three months, it had not arrived. Their customer service was pretty horrific, and I needed to commence a PayPal dispute to get my refund. On the other hand, AvinUSA was excellent in communication, and even replaced one of the adaptors I bought when the optical connector broke.

I would like to hear/see direct input from folks who may have used the Scosche fascia as to fitment, security and ease of removal. I only have the prongs remaining on the passenger side, and the head unit feels sufficiently secure that I am not hugely worried. At the same time, the Sony head unit I have has a double DIN screen, but the innards behind it are just single DIN, so it is not heavy.

Axxess/Metra also has a MOST adaptor set up, as do other outfits like Connects2 and Incartec. However, these set ups are substantially more expensive than the AvinUSA or similar MOST adaptors – but then they may include steering wheel control interfaces and are perhaps a bit more known for warranty and tech assistance.

Finally, in case anyone is wondering about the various bits and pieces in my car: the little module next to the steering column is a Pedalbox.com throttle module. The shift knob is a Function First item that I had custom anodized orange locally, and the stuffie passenger is Doraemon!

If you have read this far, thanks for doing so, and I hope you enjoyed reading my write-up.