

Unofficial Installation Guide for ZhiFang ZF-1301X Touchscreen Radio 100 Series Landcruiser / LX470



The author(s) of this document make no claim for compatibility, fitment or warranty. Use at your own risk.

Release Notes:

V0.0 (11/05/2019):	<i>Initial Release.</i> Incomplete but has the bulk of the installation covered. Released for other user feedback and improvements.

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1. Introduction

If you're reading this document you have either just purchased a radio to upgrade your 100 series Landcruiser or you are on the fence about buying one. These units have great prospects for replacing the nearly 20 year old touchscreen radios that came factory with Toyota Landcruisers and Lexus LX470s. The main issue that arises with the factory radios for easy aftermarket replacements is the climate controls (AC & Heat) are embedded into the factory navigation touchscreens. This means that these vehicles DO NOT have a dedicated climate control center with mechanical knobs and buttons.

The ZhiFang 12.1" touchscreen is purpose built for the 100 series vehicles and includes four front buttons for original 100 series operations and replaces the factory touch screen radios (NAV screens) and cassette decks. Here is a before and after for an older model:



The six core units (PX6) are the latest batch out as a release of this document's creation. Part # for the LC version is ZF-1301X. These are not showing up on the ZhiFang website yet, but they have ZhiFang's name on them. They look to have the same cables as the original quad core units but have worked through most of the wiring issues. Interfaces are crisp and fast with the only general complaint is the amount of time it takes to start up once you turn your key on. This is typically around 15-20 seconds. AC controls work great and utilize existing Toyota circuit boards as part of your original radio.

I'd like to send out BIG thanks to [mistered123](#), [LX470MK](#), [Swainbuilt](#), [Wetwillie](#), [revoked](#), [loeky](#), [Eli Ex](#) & all the others that have contributed so far with testing and Q&A.

These units are sold by a variety of online resellers, but they seem to be made by one manufacturer in China. They don't come with assembly or operations instructions...AND the technical support is lacking. The only thing I can tell different between the LX and LC versions is the additional side trim for the air vents as the LX trim tends to be in three pieces (one running the full width of the cassette deck) and the LC already has the appropriate vents.

The 2004 and newer seem to be plug and play for cables (once you figure out where they all go). There seem to still be a few extra plugs left over (3 in my case) that may have been part of the factory test.

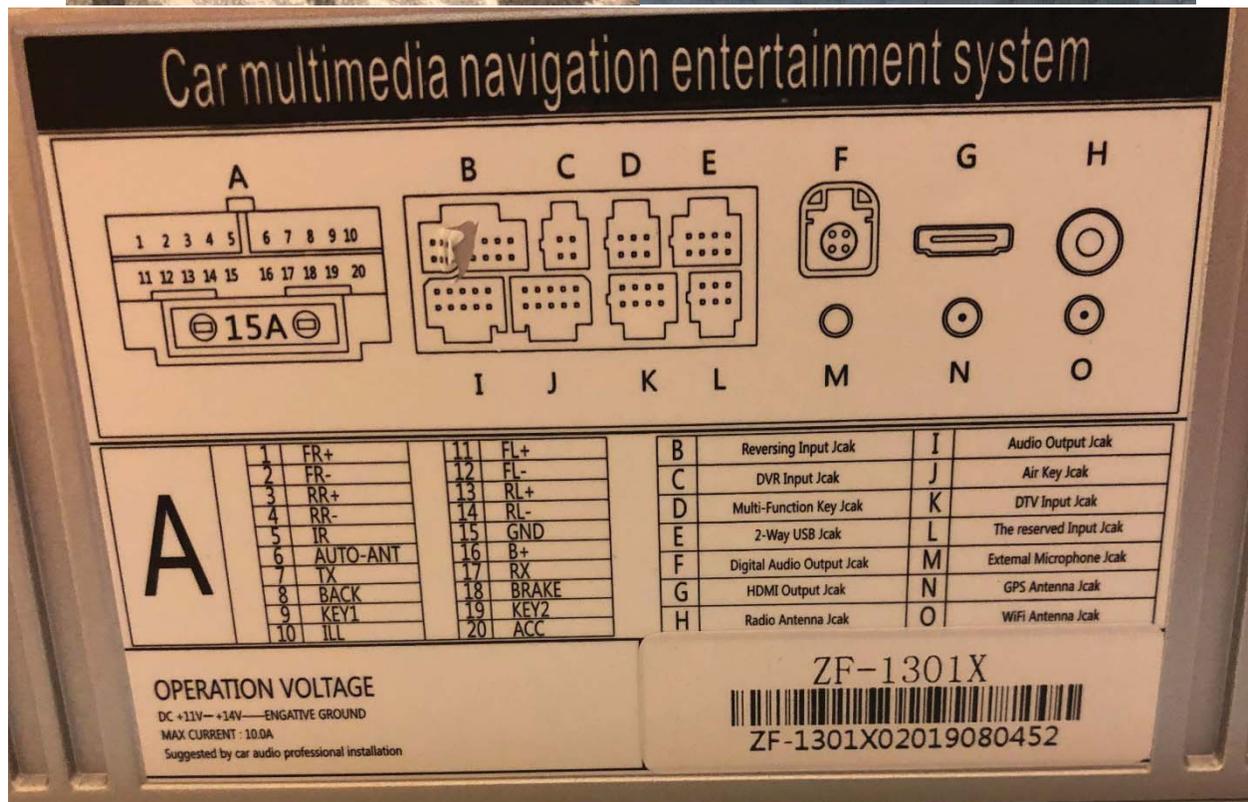
The 2003 and older units are needing either another harness from the manufacturer or a few wire splices to work. There was a request for the "Top Model" wire harness for these trucks to avoid splicing, but I cannot confirm its the final solution.

No confirmations I can find yet for getting the factory backup camera working. I'm looking at installing a new HD camera now to replace the 16 year old factory one. One in the back and one up front hopefully.

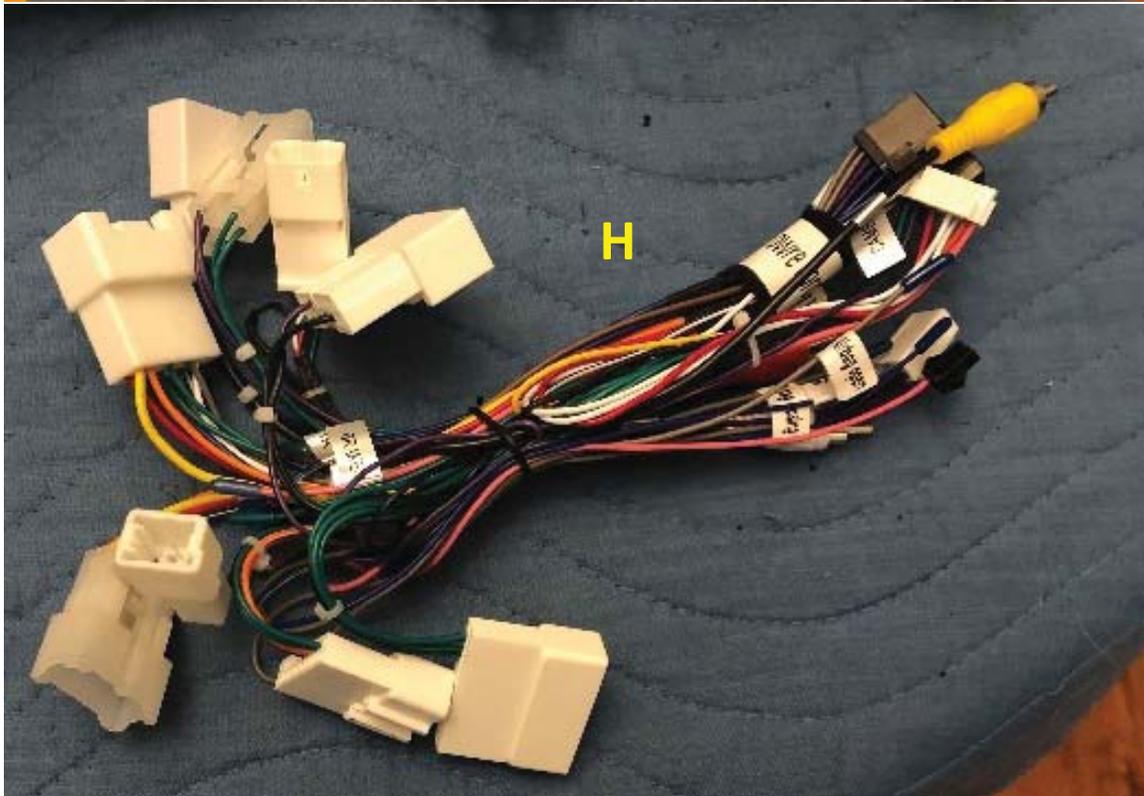
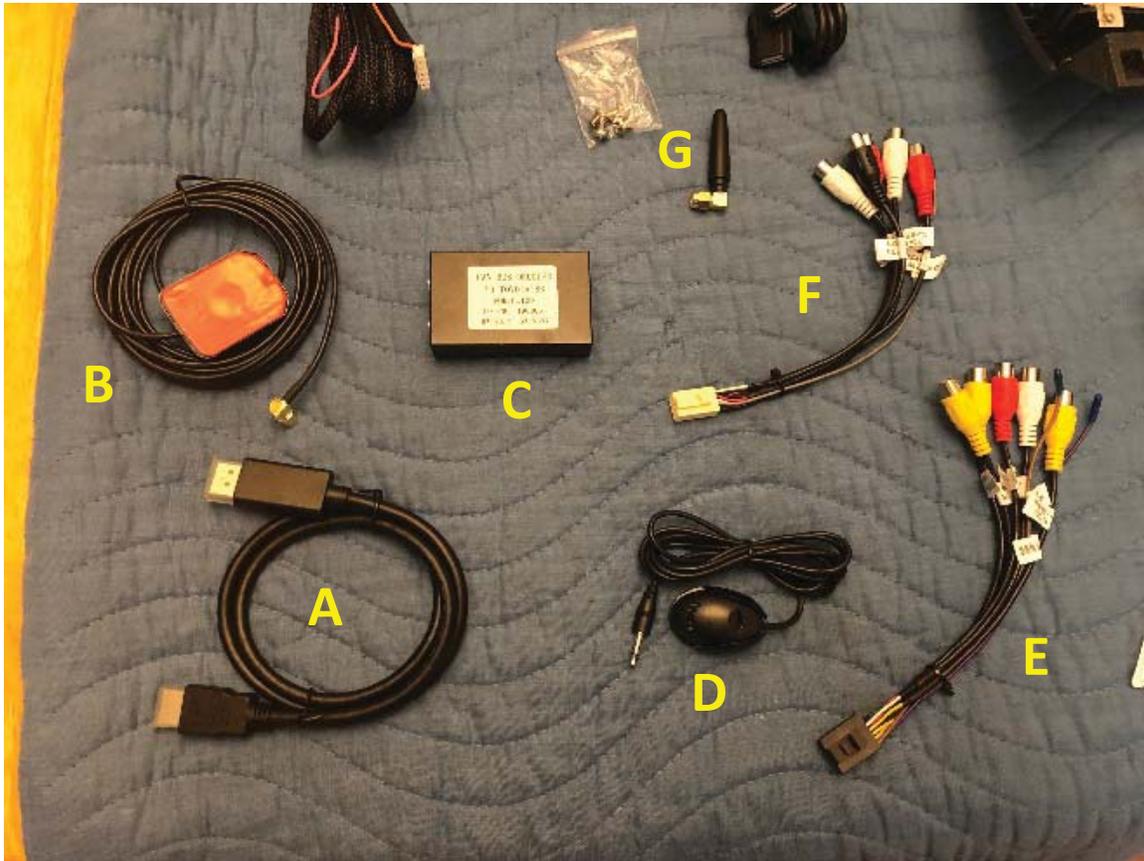
2. What You Get with Your Order

The radios ship from China (in surprisingly quick time usually) in a nondescript brown box. There is a small amount of Chinese wiring on it, but that's about it. The radios are packed well and look to hold up good during shipping around the world.

1. Touchscreen Radio



2. Wiring





Key

A= HDMI cable

B= GPS Antenna

C= CanBus Converter

D= Mic

E= Video/Aux input RCA Harness

F= Amplifier RCA Outputs (4 channel + sub)

G= WiFi Antenna

H= Main Radio Harness (Power Cord)

I= ZF-1301S Agreement Tie Line Harness

J= ZF-1301S Low and Medium Configuration Air Conditioning Tie Line *(Unused on the 2004 LX install)*

K= USB Cable

More details below

3. Mounting Brackets (AC Circuit Board & to Dash)



Also includes 1 bag of machine screws for installing mounting brackets to the radio.

4. Getting Familiar with the Installation

The short install guide is as follows:

1. Disconnect battery
2. Remove side AC panels and trim around existing radio.
3. Remove the old touchscreen radio from the dashboard
4. Disconnect existing plugs from touchscreen, cassette radio AC boards, & side trim.
5. Install mounting brackets on the new radio.
6. Remove and install the black AC board box (with 3 plugs) and install into the new radio's brackets.
7. Connect the radio's plugs to the radio. (Refer to diagram of the back of the radio.)
8. Connect the factory harness plugs to the radio harnesses and 3 plugs on the AC boards.
9. Fit all the cables into the dashboard. Route as needed for access.
10. Install the new radio to the dash using the original 4 mounting screws.
11. Test the radio. (Reconnect battery)
12. Install trim and trim cables/plugs once radio is tested fully functional.

The following sections will outline the extended version of the installation.

5. Old vs New

The new touchscreen radio takes the place of several items on the dashboard. There are new buttons on the touchscreen lower trim for mirror heaters, climate control OFF & rear climate control ON/OFF. As mentioned above the black AC board box (with 3 plugs) is reused for climate control integration into the touchscreen.

You lose the following items as standalone features:

- Clock (Touchscreen needs to be on to see the integrated clock)
- Security light
- Outside temperature reading (Have not found this on the touchscreen yet but assume it's in there somewhere.)

Additional items lost:

- Maintenance screen and reminders
- Trip details and fuel economy/miles till empty.
- CD Changer controls have been reported by users trying to keep the factory 6 disc CD changer.

These may be available in the new touchscreen radio, but as of release of this guide they have not been found as fully functional.

Below are a few reference pictures of the old and new units side by side.



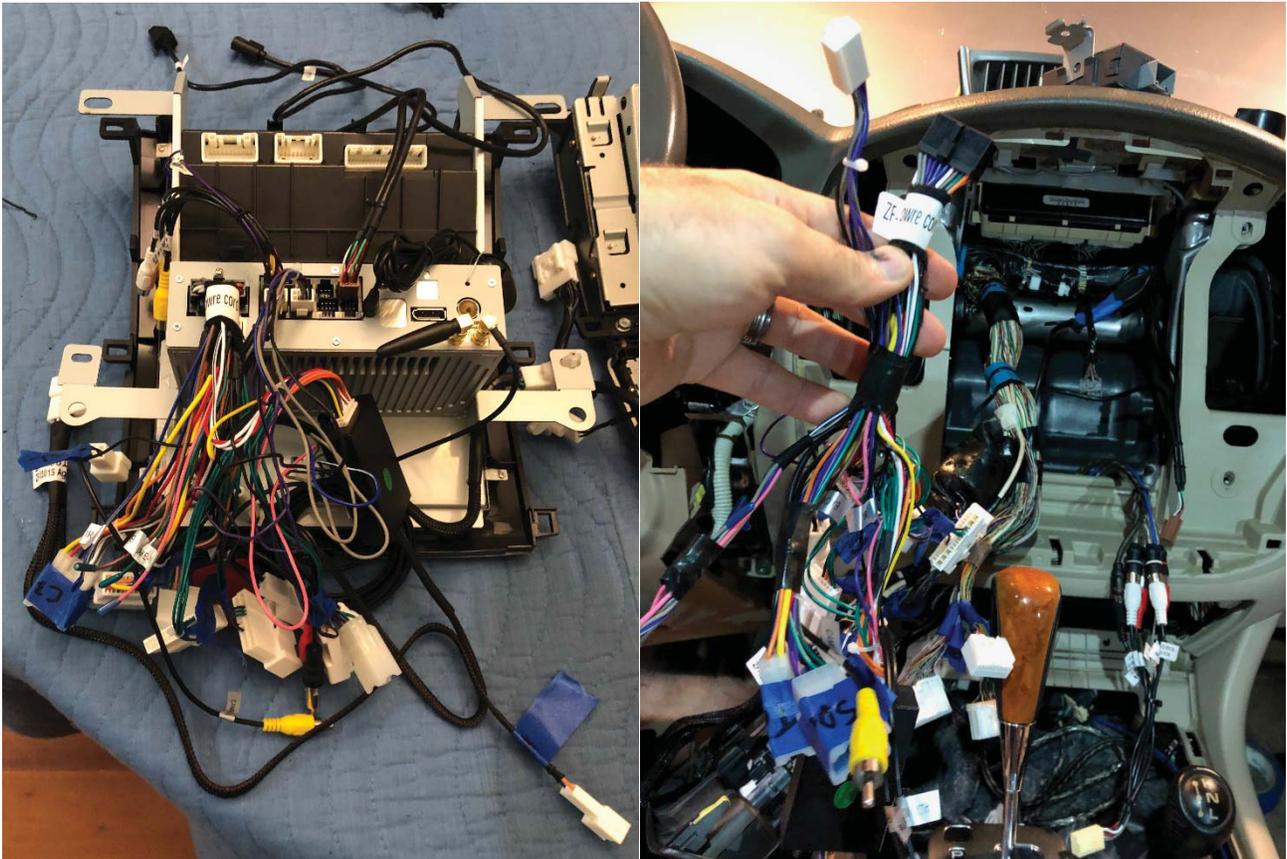
6. Removing the Original Radio

Removing the UZJ100 touchscreen navigation radio is fairly quick and easy.

1. If you have an LX470 and didn't buy the new side trim you will need to modify the lower cassette trim. If you have a LC skip to step 3.
2. Mark the lower cassette trim for cutting. **The trim modification will be explained later.**
3. Remove lower wood trim in the LX case. For the LC its just air vents on either side. It is recommended to use a plastic trim removal tool for this (basically a plastic prybar).
4. Remove air vents. Unplug the cables from the trim.
5. Remove four 10 mm head screws from steel brackets.
6. Gently pull the radio away from the top of the dashboard. Followed by the bottom. It may be easiest to unplug the antenna and GPS cable for more room.
7. Unplug all cables and bring inside for removal of the AC board.

7. Cable Details

Installing the cabling is possibly the most confusing/intimidating part of the process.



The labelling is quite poor and there are no instructions. Through careful analysis (and some trial and error) the following guide has been produced to help with installation. There are references to cables in this document such as TS1 or C3. This map can be found in section 9.5 of this guide.

A= HDMI cable (Not required for typical installations)



B= GPS Antenna (Adhesive backed and right angled gold plated screw connector)



C= CanBus Converter



D= Mic



E= Video/Aux input RCA Harness



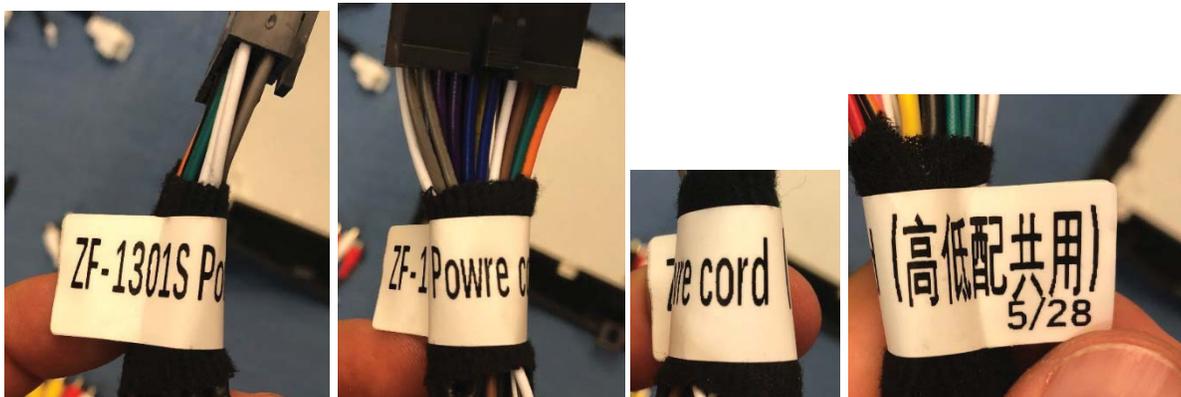
F= Amplifier RCA Outputs (4 channel + sub)



G= WiFi Antenna

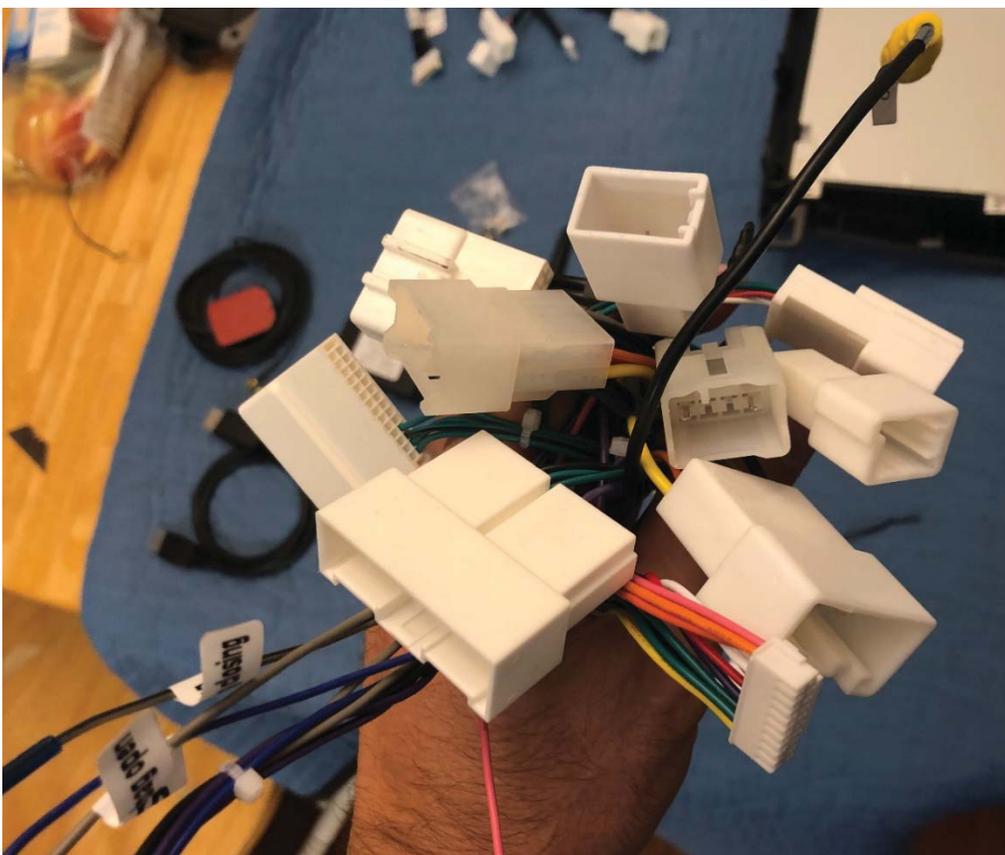
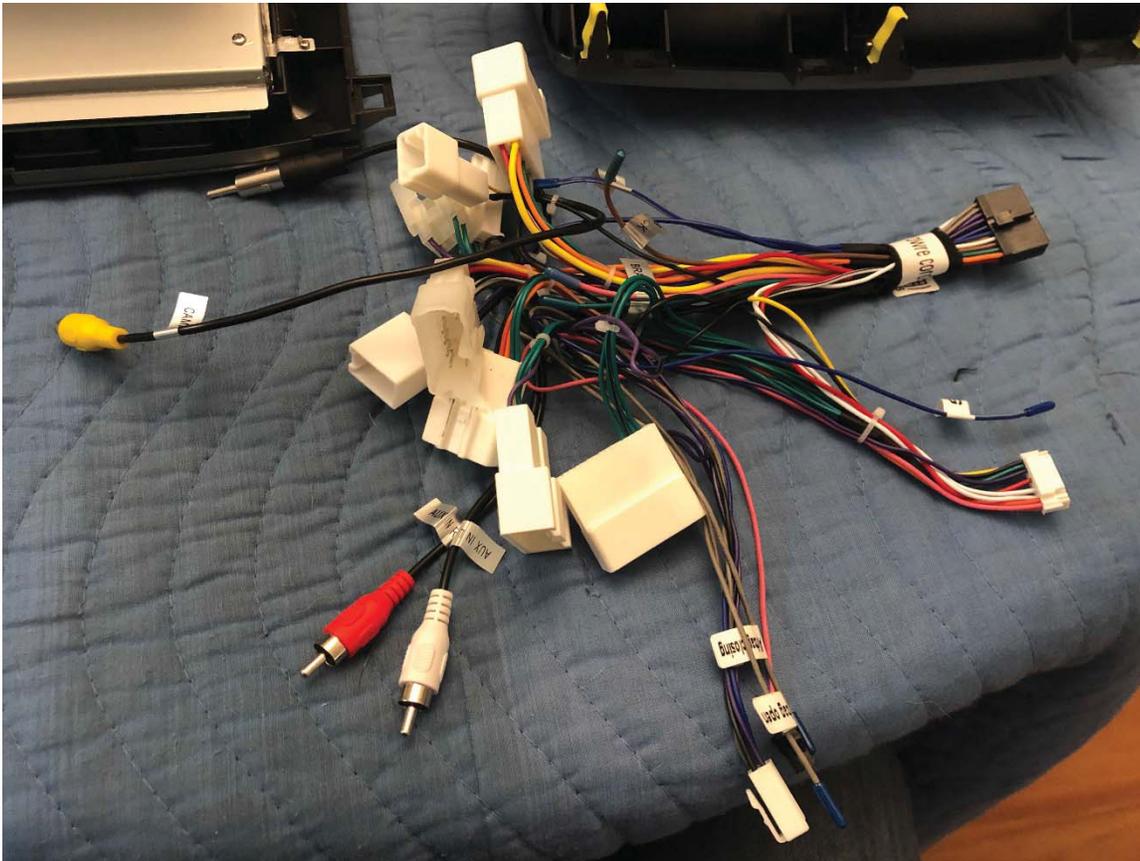


H= Main Radio Harness (Power Cord)

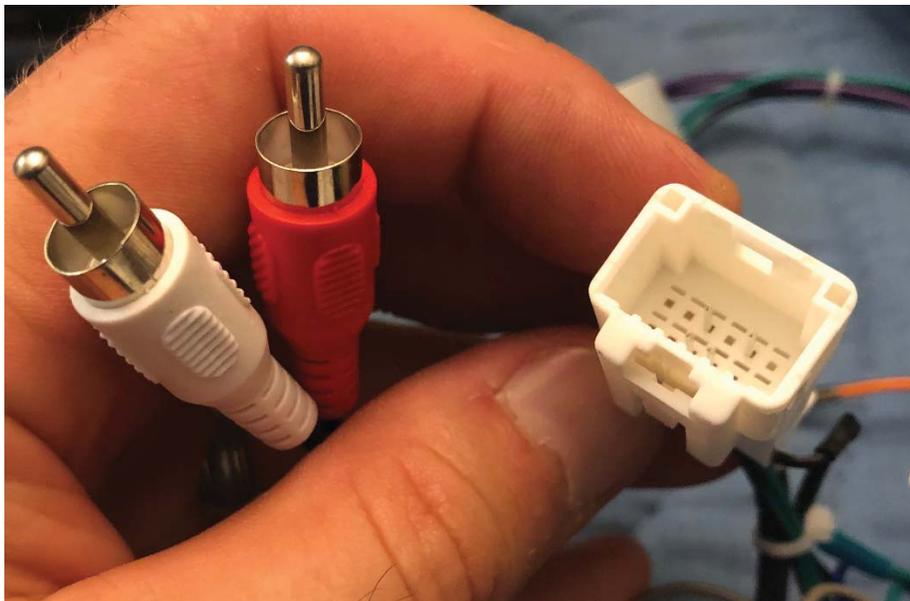


H= Main Radio Harness (Power Cord) OVERVIEW

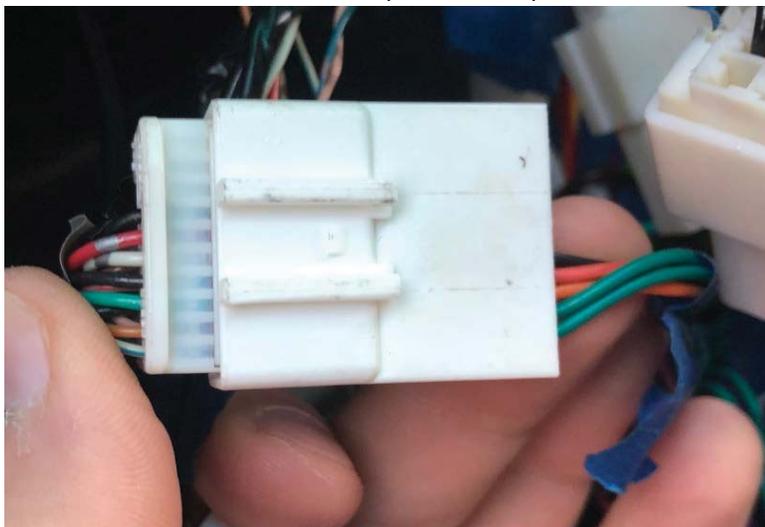
C1, C2, C3, TS1, TS2, & TS3 all come from this cable bundle



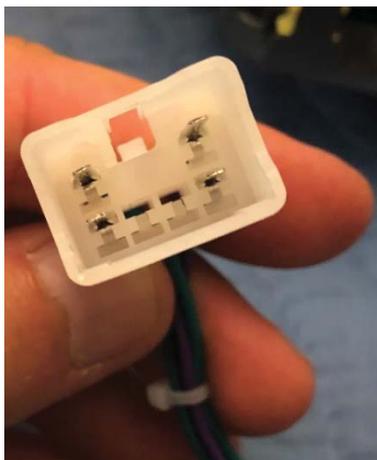
H= Main Radio Harness (Power Cord): C1 & Aux Audio In



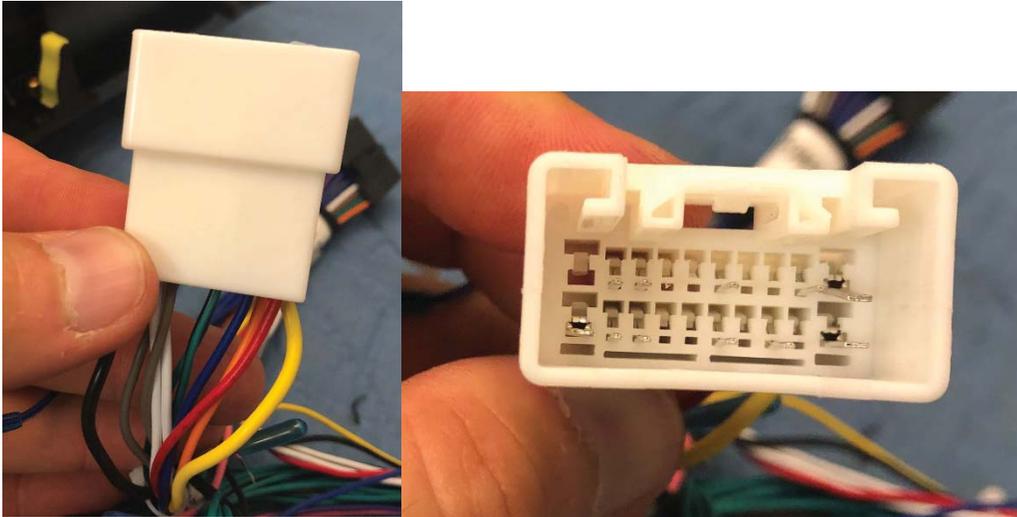
H= Main Radio Harness (Power Cord): C2 Connector



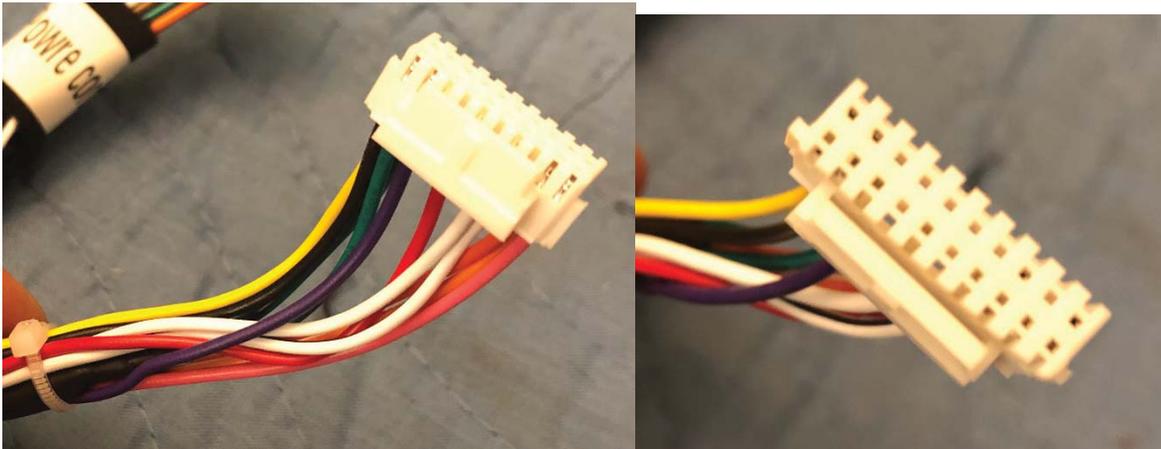
H= Main Radio Harness (Power Cord): Test Connector (UNUSED)



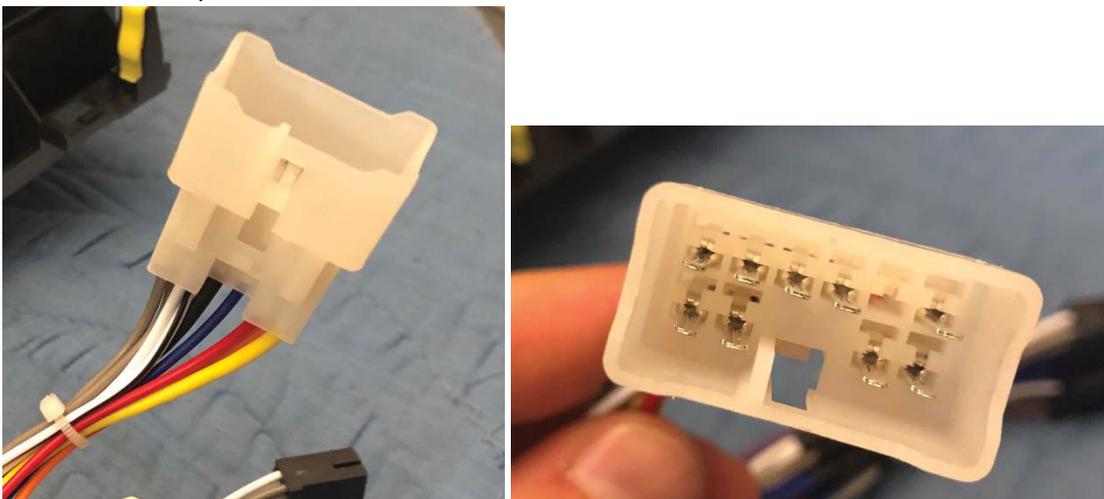
H= Main Radio Harness (Power Cord): C3



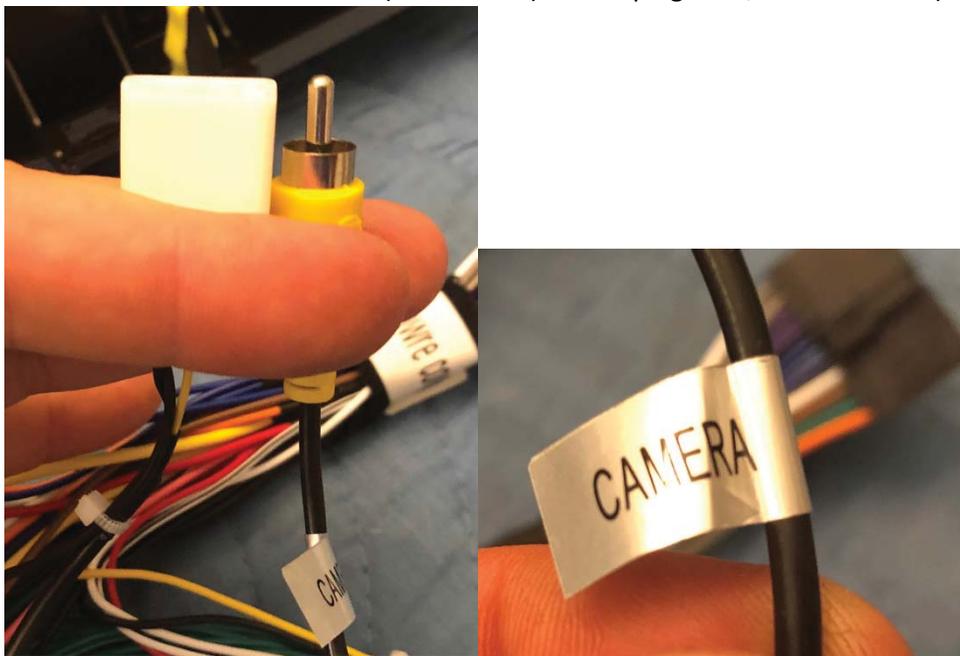
H= Main Radio Harness (Power Cord): CANBUS Connector, Left Side



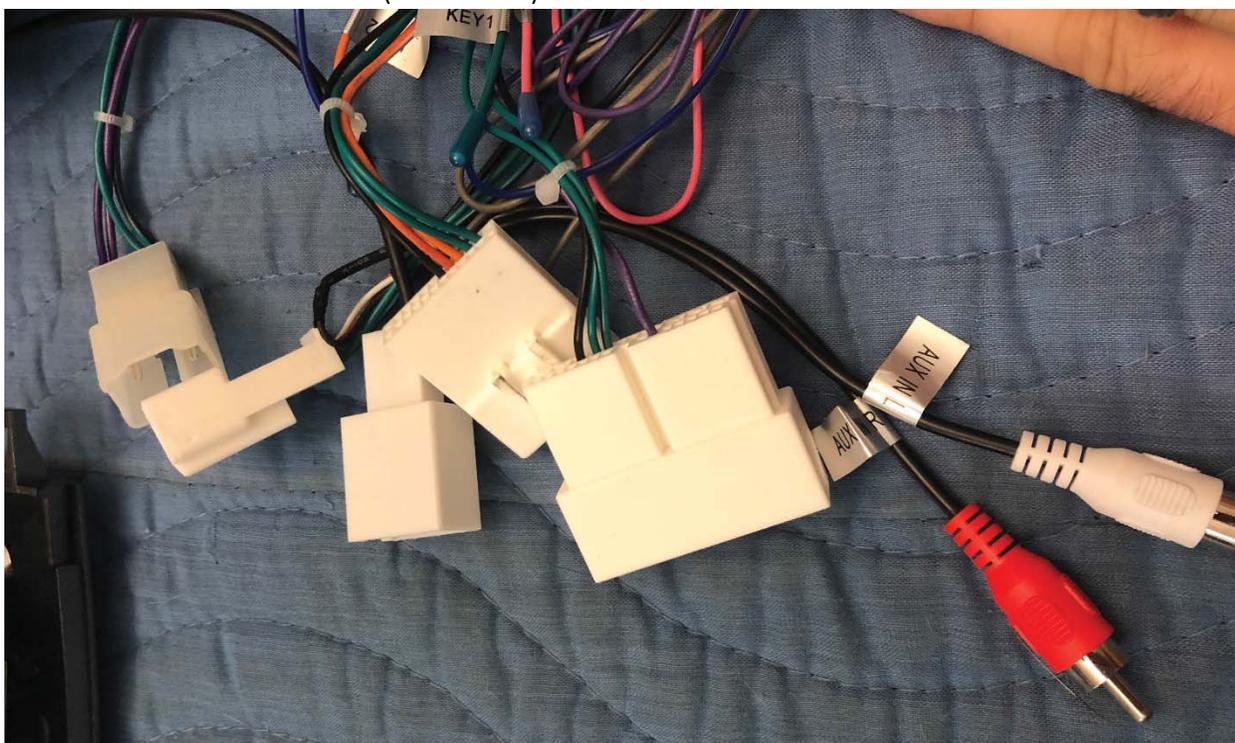
H= Main Radio Harness (Power Cord): Test Fitting (*Appears to be part of the factory testing harness, UNUSED*)



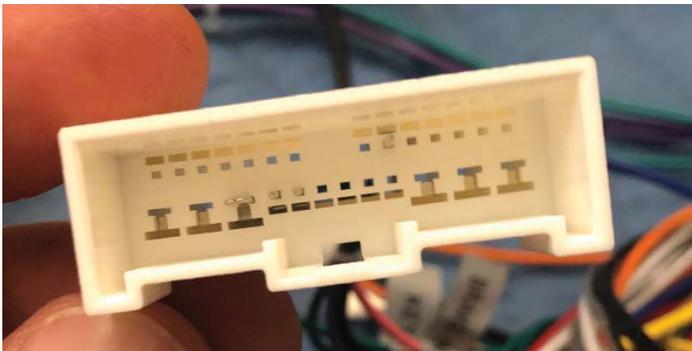
H= Main Radio Harness (Power Cord): White plug= TS3, Camera Cable (No idea what this does)



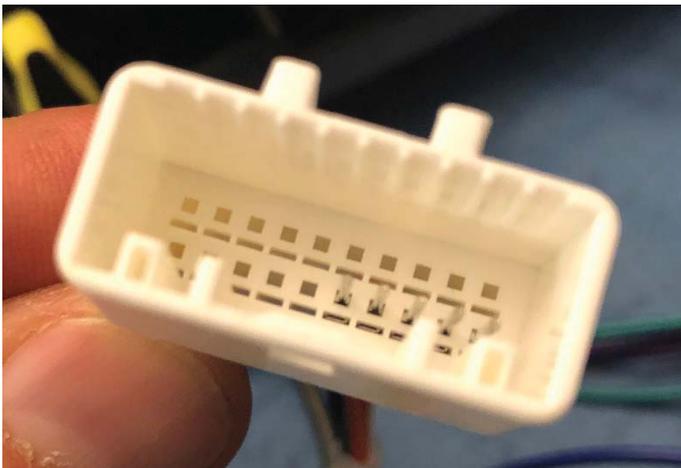
H= Main Radio Harness (Power Cord) OVERVIEW



H= Main Radio Harness (Power Cord): referred to as TS1 connector



H= Main Radio Harness (Power Cord): referred to as TS2 connector

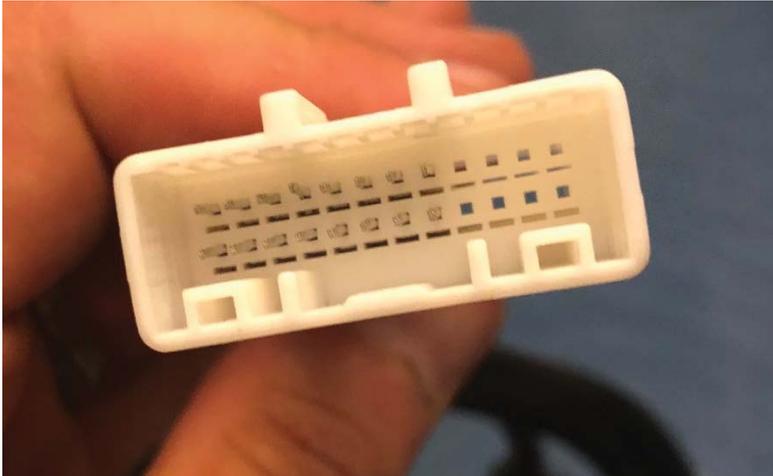


H= Main Radio Harness (Power Cord): Aux Antenna? (UNUSED, actually cut this off to save space.)





I= ZF-1301S Agreement Tie Line Harness: Side Frame Cable Connector



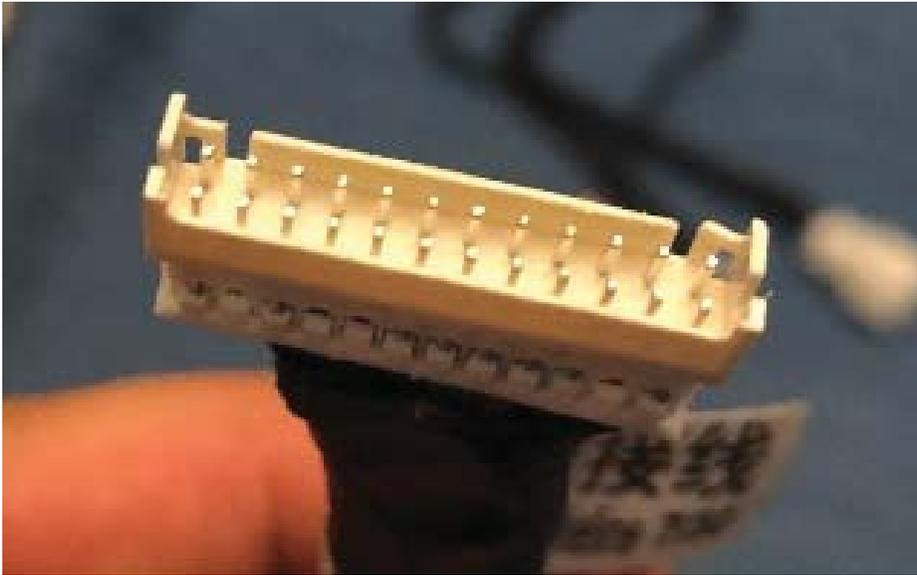
I= ZF-1301S Agreement Tie Line Harness: Side vent transfer case lock and airbag light. Flat 6 connector goes to CanBus module



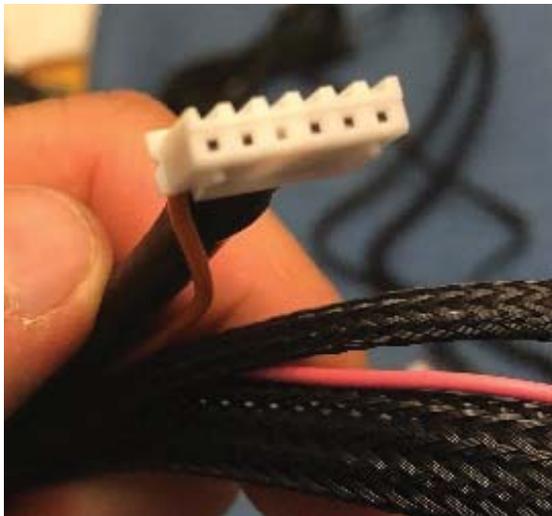
J= ZF-1301S Low and Medium Configuration Air Conditioning Tie Line *(Unused)*



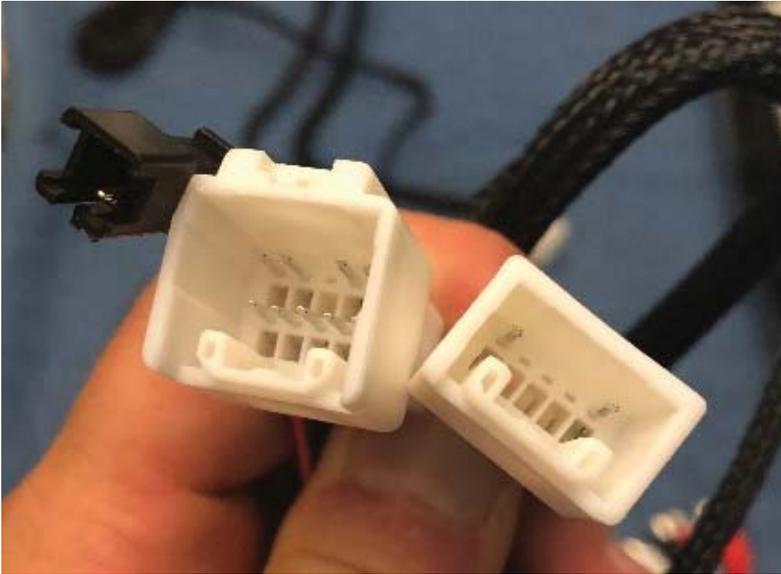
J= ZF-1301S Low and Medium Configuration Air Conditioning Tie Line: *(Unused)* TBD with different models



J= ZF-1301S Low and Medium Configuration Air Conditioning Tie Line: *(Unused)* CanBus (Right Side)



J= ZF-1301S Low and Medium Configuration Air Conditioning Tie Line: *(Unused)* Side vent transfer case lock and airbag light



Black plug with single wire was unused. Maybe to CanBus in different model year?

K= USB Cable



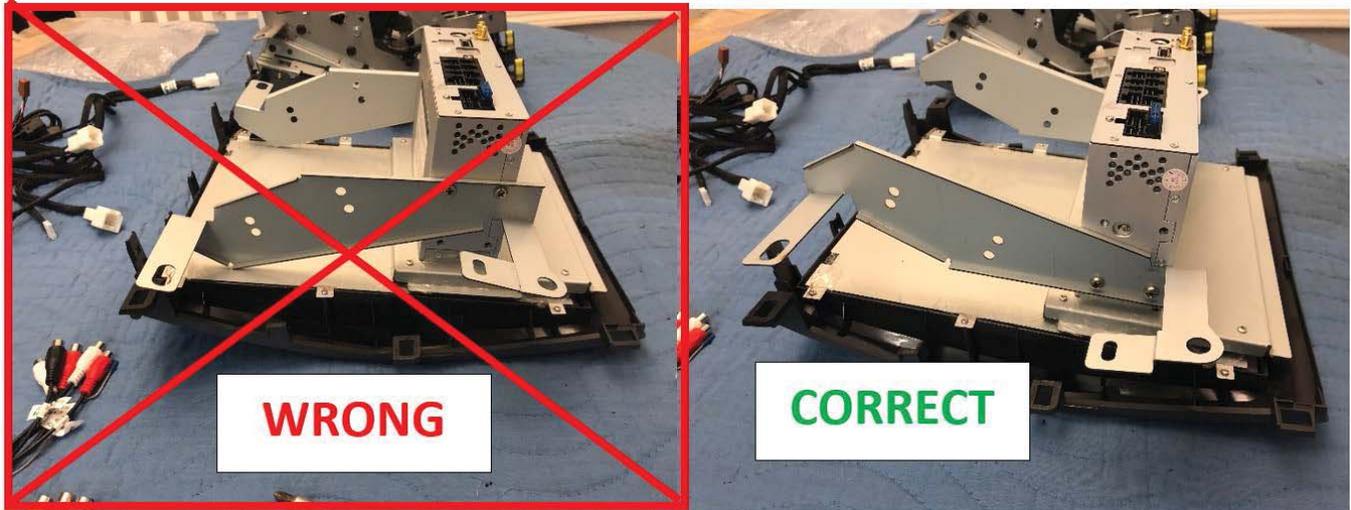
There are also capped wires that come out of the main harness and A/V harnesses for various trigger/aux functions. These include:

- Amplifier on
- Rear Camera Trigger
- Airbag (unknown what these do)
- Brake
- IR
- Various functions in Chinese

8. Prepping the New Radio

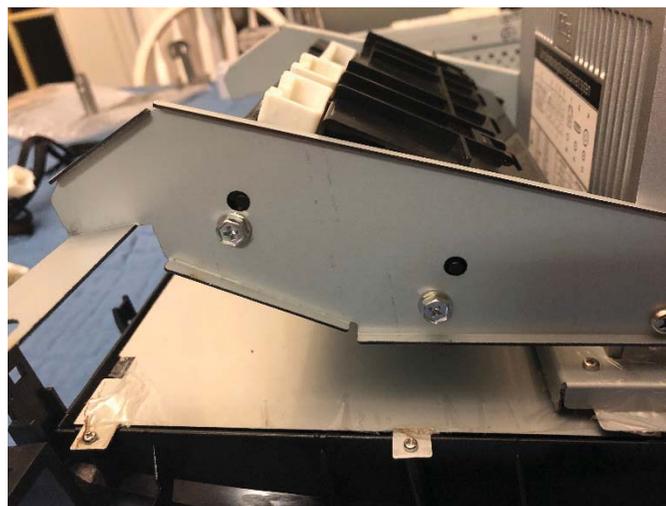
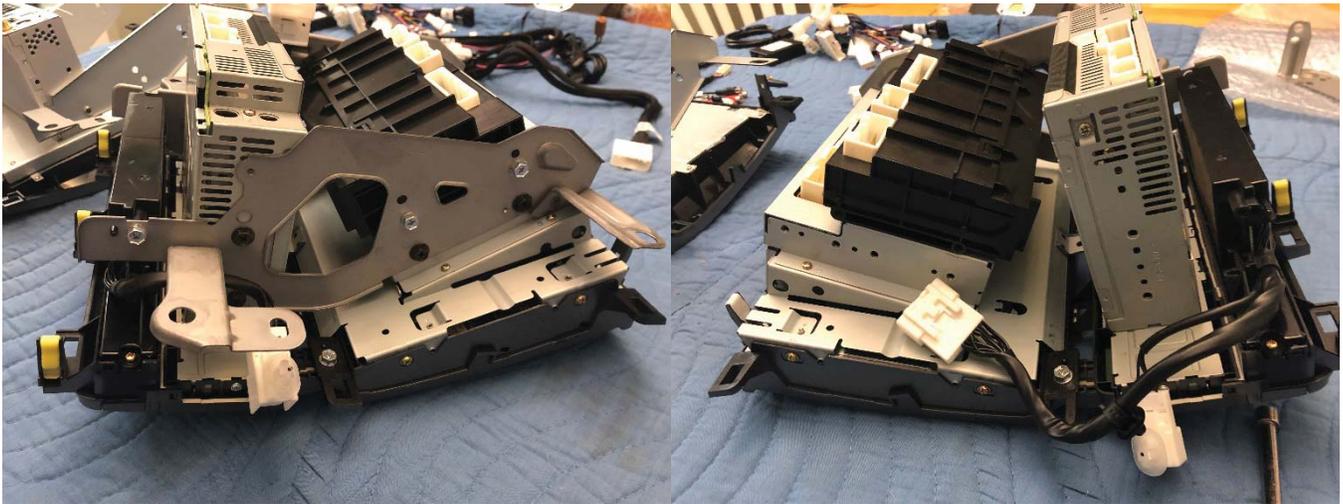
8.1. Installing the side brackets

Remove hardware from old radio and install on new touchscreen brackets. Phillips head and 8mm head screws.



8.2. Installing the factory air conditioning board (Black Box)

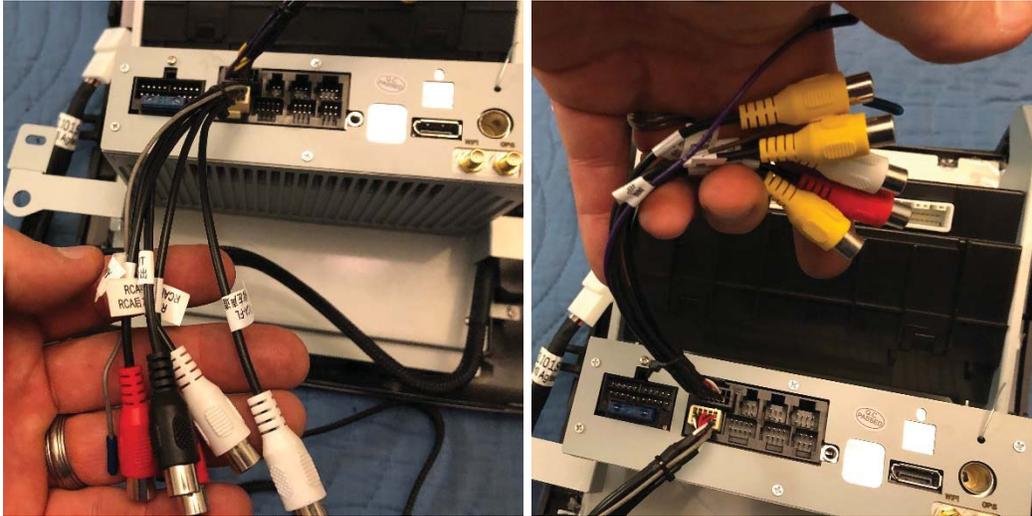
Remove black air-conditioning box from old radio and install in new brackets. Make sure to align the tabs in the top two holes and the screws go in the holes closest to the touchscreen.



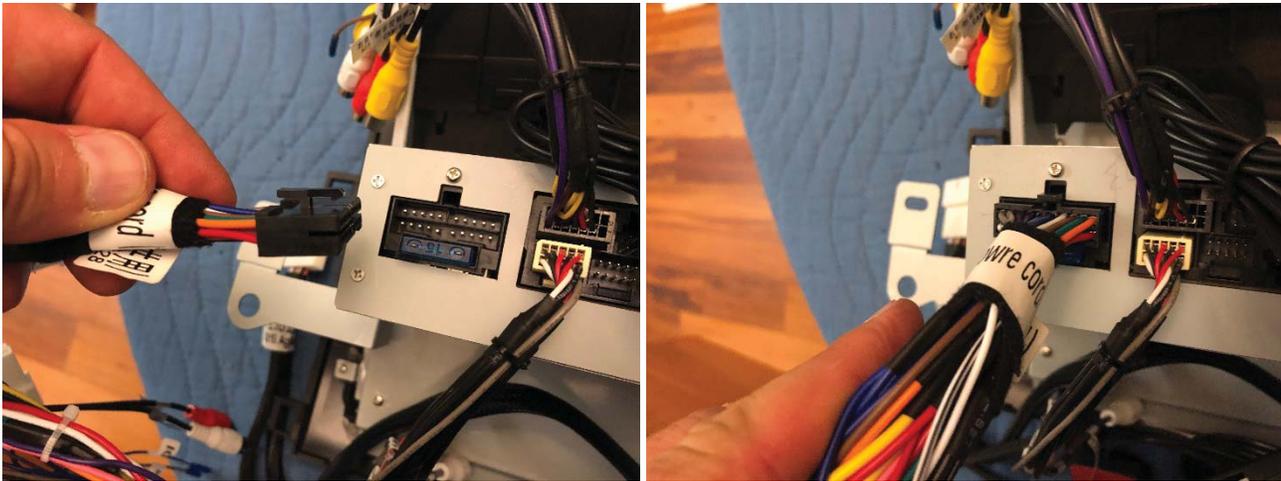
9. Connecting Cables and Installing into the Dash

9.1. Head Unit Cable Connections

9.1.1 Audio & Video Cables



9.1.2 Main Harness

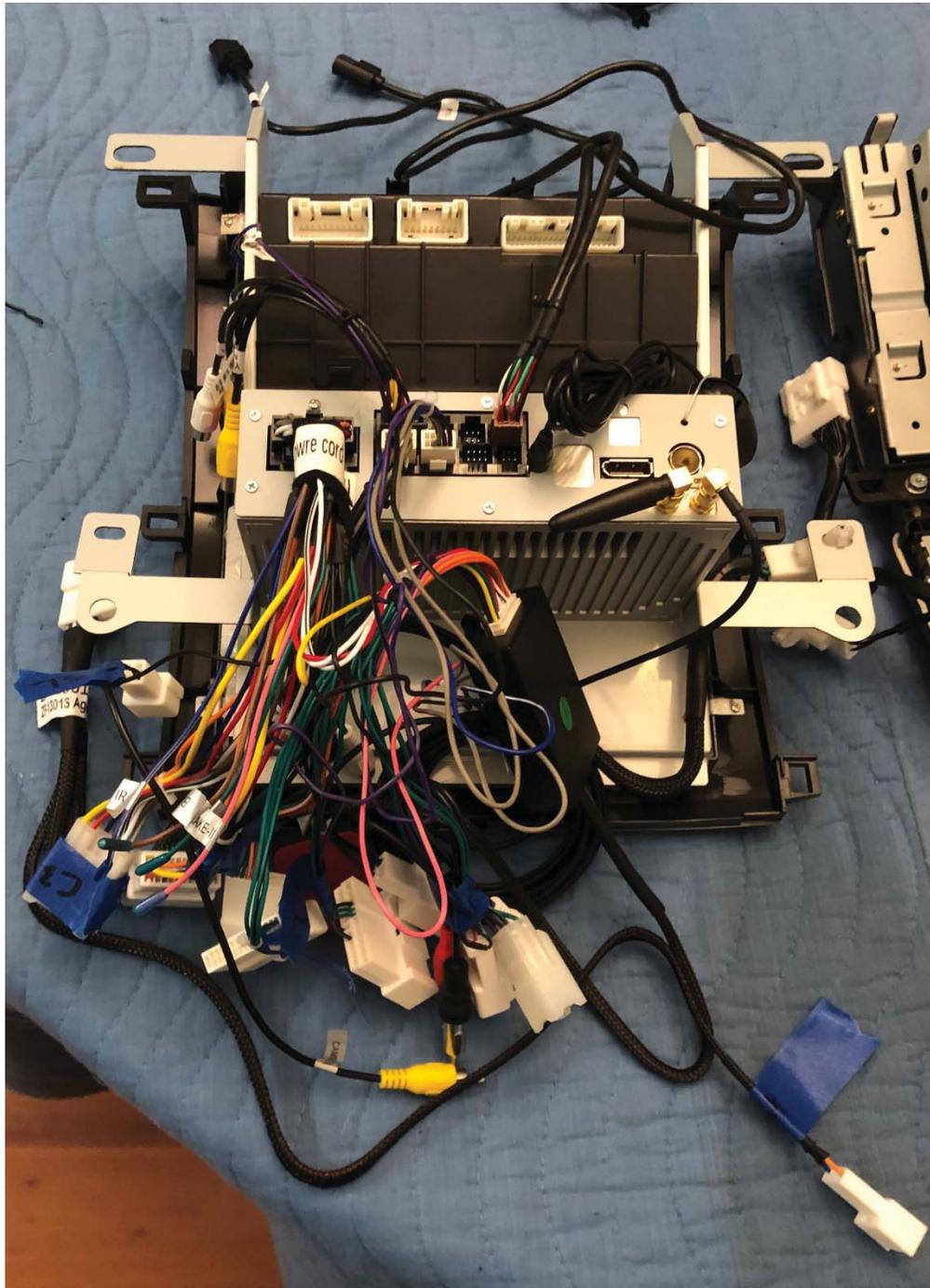


9.1.3 USB

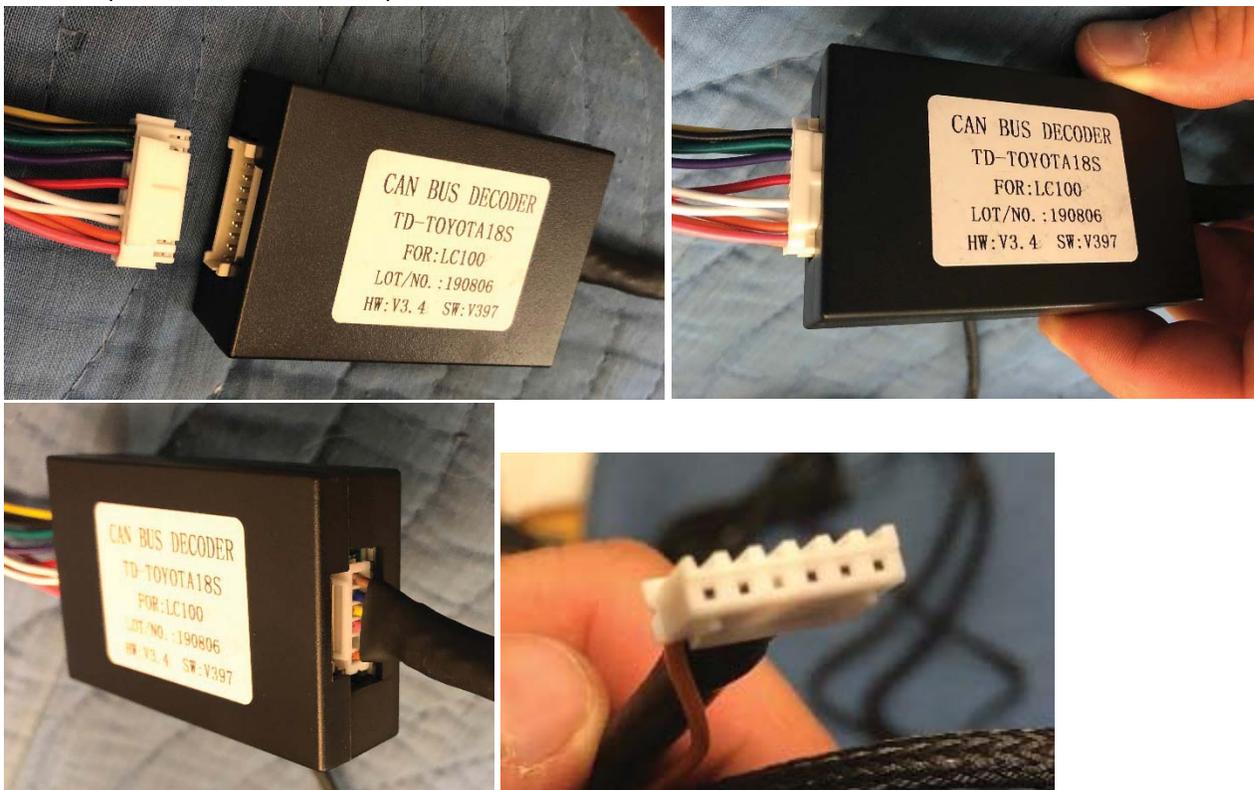


9.1.4 All other head unit connections

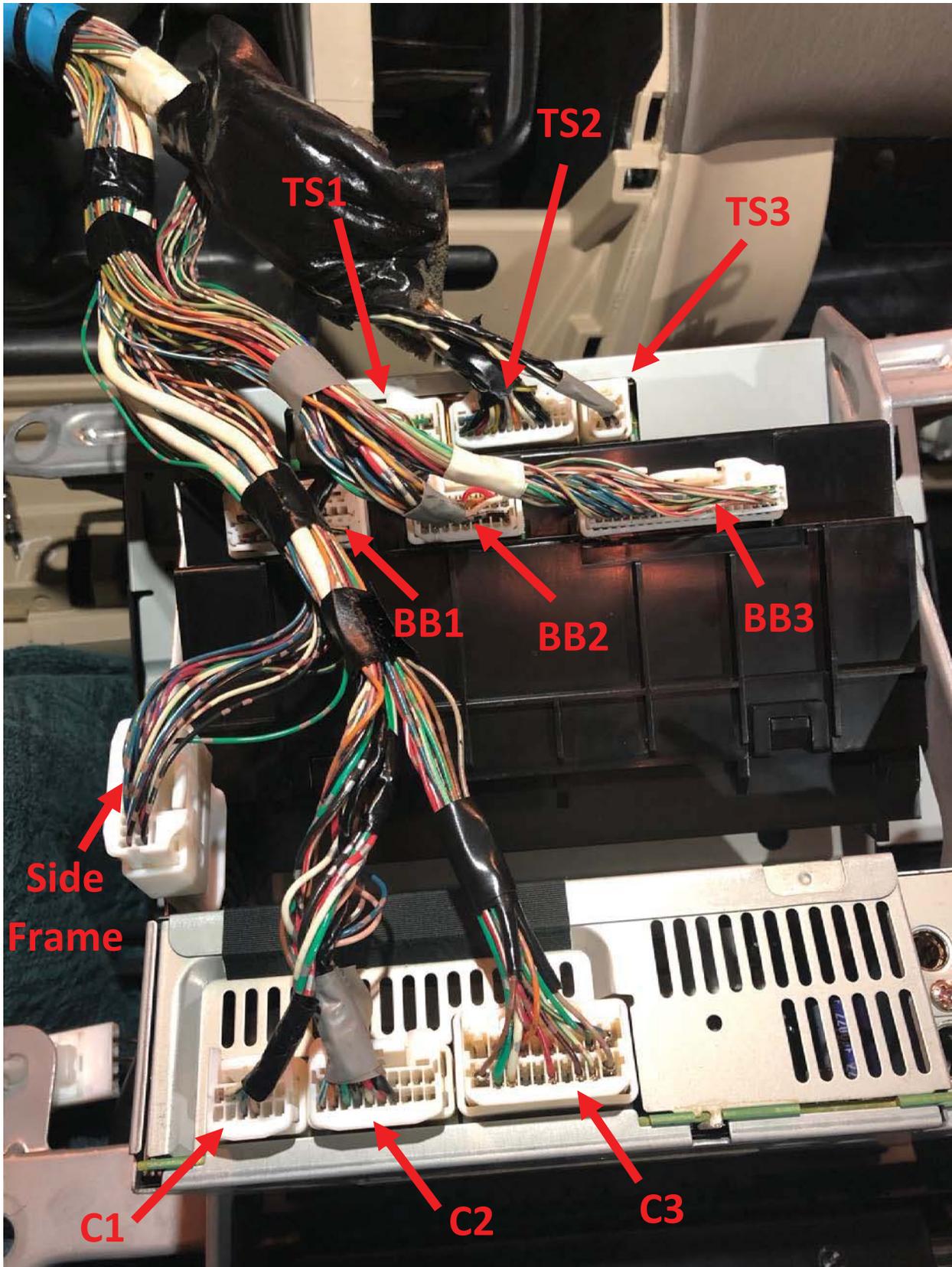
- There is a 10pin plug on the main power harness that connects to port J on the back of the head unit. This plug has some grey, blue and purple wires that are looped.
- Wifi antenna
- GPS antenna
- Microphone



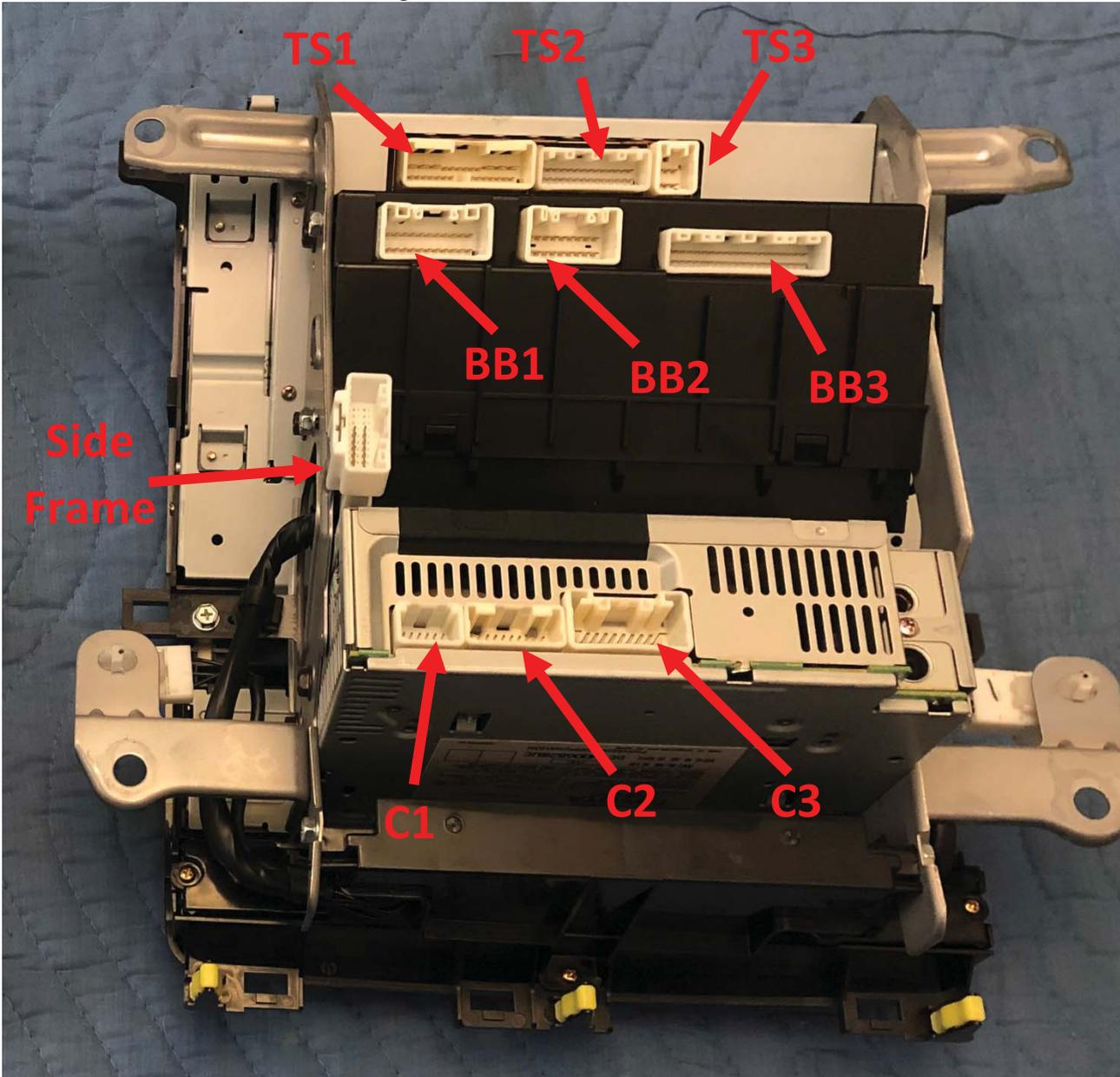
9.2. CanBus (From AC Tie Line Cable)



9.3. For aftermarket amplifier installation see appendix **A(?)**. *To be added at a later date*



Here is the map I created for the cable references.



Connection Table

Connection ID	Pin Count	Where?	Defined Location	Notes	Signals
C1	12	Main Radio Harness	Cassette 1 (from L to R)		
C2	20	Main Radio Harness	Cassette 2 (from L to R)		
C3	20	Main Radio Harness	Cassette 3 (from L to R)	larger plug than C2	
BB1		Factory connection, just reconnect after moving the black box	Black Box 1 (from L to R)		
BB2		Factory connection, just reconnect after moving the black box	Black Box 2 (from L to R)		
BB3		Factory connection, just reconnect after moving the black box	Black Box 3 (from L to R)		
SIDE FRAME	24	Tie line Cable			
TS1	26	Main Radio Harness	Touch Screen 1 (from L to R)	6 larger pins at top row	
TS2	28	Main Radio Harness	Touch Screen 2 (from L to R)		
TS3	6	Main Radio Harness	Touch Screen 3 (from L to R)		Video?

9.5. Dash Install

In the author's opinion, the biggest headaches of the entire installation were planning and routing the back up camera cabling and camera installation location as well as physically getting all the cables behind the touchscreen radio into the dash.

For the dashboard installation I needed to relocate the Gray plastic gateway box from the back of the open area to just under the top of the dash.





Additionally, I took part of the main wiring harness and squeezed it between the dash and the bulk of the dashboard cables to provide more room to fit all the cables in the open space.

Because I was installing a new amplifier as well I had RCA cables and amplifier trigger cables coming up from the ashtray and cigarette lighter accessory area below the radio and had to make sure there was clearance for installing the radio and good cable routes.

The best way I've found to install the radio was once all the cables were routed to the correct locations was to hold the radio up with my right hand and grab all the cables with the left-hand and pull them up as high as possible. Start with aligning the bottom of the radio first.

Make sure that you have your radio antenna cable plugged in as this is typically the shortest cable and gets pulled out often during handling. Also make sure your GPS cable and Wi-Fi antenna are tightened to the back of the radio. I found mine flopping around twice during installs and removals. One last small note, make sure that your mic is plugged in to the back of the radio. I found during one installation I left it hanging inside the dashboard and had to pull it all back apart.

After I got the radio mostly situated on the bottom, I routed the CanBus module and the RCA cable connectors into open spaces between the radio and the dashboard.

Take care when trying to get the radio into the opening to not push too hard on the screen and crack it. I tried to keep my hands on the trim and push primarily on the bottom of the radio where the bulk of the mechanical strength sits.

Slide the radio in with the alignment clips top and bottom and secure the metal frame to the dash with the original four 10 mm head screws

Prior to connecting any of the airbag cables or 4x4 (transfercase) interlock switch on the side vents make sure the radio powers up and works properly before buttoning up the last bit of the dashboard.

10. User Interfaces

To be populated later

11. Recommended Apps

To be populated later

12. Customizations

To be populated later

13. General Notes

Jack's C D K and L appear to be unused on the back of the head unit.

There are four plugs that do not appear to have a home. Here is what they sound like they are for

- C3 factory test plug. Spliced in with C3 cables
- Auxiliary antenna
- Rear speakers
- Can bus audio

C1 is possibly the CanBus audio plug

C2 looks like CanBus

The C3 test plug looks to splice in at a few points the yellow wire coming to Pin 16 on the radio. Looks like positive and the black wire on Pin 15 would be negative

C3 plug appears to bring in the power as well as original front speakers connections. Also looks like antenna trigger (amp trigger) and illumination.

TS1 appears to be more CanBus and has a purple wire going back to connector J.

TS2 plug appears to be all CanBus

TS3 plug appears to be for the backup camera as it has the yellow RCA cable labeled camera that connects back to the radio at port B

There's a pink wire with a tiny black connector that comes from the CanBus. No idea where this goes. Possibly to the unused Tie Line cable?