



Installation Instructions

Date: November 2004

Order No.: **PRELIMINARY DRAFT**

Supersedes:

Group: 82

**SUBJECT: MODEL 230.474/475/476/479
MODEL YEAR 2005
CELLULAR TELEPHONE/VOICE CONTROL SYSTEM INSTALLATION**

We are interested in your comments and/or suggestions regarding these installation instructions—please e-mail them to technicalinformation@mbusa.com

⚠ WARNING

Do not disconnect the negative battery cable. Extensive reprogramming requirements will otherwise be necessary. Wiring harnesses will be electrically active. It is therefore necessary to exercise extreme caution while executing these installation instructions. Failure to do so could result in severe vehicle damage, personal injury, or death from electrical shock. Keep the ignition and radio powered OFF through the final test.

MOST Notes:

- Fibers easily damage—handle fibers with care to prevent cuts, nicks, abrasions, kinks, and crushing.
- Minimum bend radius for fibers is 25 mm.
- Fiber optics “ring configurations” must form a closed loop to function (i.e. couple the input of a component with the output of the preceding component).
- Identify MOST cables by their orange, semi-rigid insulation.
- Electromagnetic interference (EMI) from bundled vehicle electrical harnesses does not affect fibers.

This bulletin has been created and maintained in accordance with MBUSA-SLP S423QH001, Document and Data Control, and MBUSA-SLP S424HH001, Control of Records.

2018 DIY GENERAL NOTES

- This DIY has been done on a 2006 SL500. I am not sure how many MY share the same systems. MY 2005 is also covered, other MY's are possible. Sometime during the previous decade antenna connectors changed from threaded metal to plastic FAKRA and audio systems with or without MOST optical rings. This DYI is only for systems with FAKRA connectors and optical ring.
- There are 3 electrical systems that need to be modified in order to adapt the MB original Bluetooth: The Antenna system, the optical audio MOST ring and the microphone circuit.
- The Antenna system will require the Antenna Amplifier for the Bluetooth adapter. However, since the Tele-Aid system is obsolete there is no need for the antenna splitter (for some reason also called booster). The Tele-Aid antenna connection can be abandoned, and the entire Tele-Aid module removed. DAS may be needed to set the Tele-Aid to "Not Present" to avoid error messages.
- The MOST optical ring is a serial type electrical system. Components can be inserted in the ring and through DAS their presence acknowledged and function enabled. The Voice Control module has been omitted. I didn't find much use for an almost 20 years old voice recognition system (mounted it on my W211 and used it twice in 8 years). This simplifies the optical ring modification and it eliminates the optical extension indicated in the original document.
- MY 06 has an array of 4 microphones in the rearview mirror. I found that for the option 359 – Low Cost Tele-Aid (without VCS option), the microphones are wired to the Voice Control Module. The microphone signal is sent from there (maybe conditioned or processed) to the Tele-Aid module and the M/UHI phone module via the MOST ring or hardwires.
- The original document has some errors with respect to the antenna connectors gender. I realized this after studying the schematic and comparing it to the gender of the connectors on the antenna amplifier.
- Corrections and additions are done in red and different font, deletions are highlighted in grey.
- The bracket holding the MHI unit is almost impossible to source. I mounted the unit on top of the TeleAid unit where the VCS unit would have been mounted. For any other MHI location, 2 optical cable extensions of proper length and a coupler would be needed.
- You will have to buy a used phone/communications/MHI module (eBay is a good source). Several models shared that module. The connector side must look like in Figure I (yellow circle) and not Figure II (red circles).



Figure I

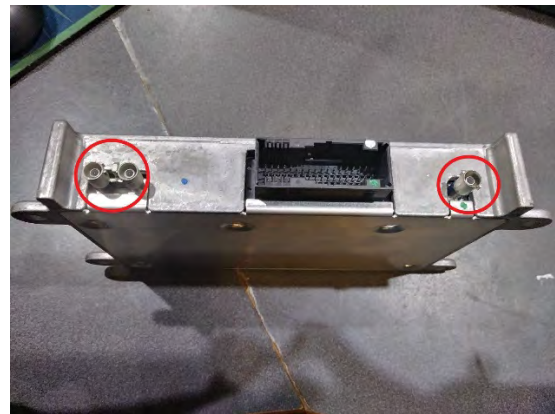


Figure II

- You will have to buy a antenna amplifier/compensator (eBay again). Again, yellow circles, GOOD, red circles NOT GOOD, Figure III, IV and V.



Figure III

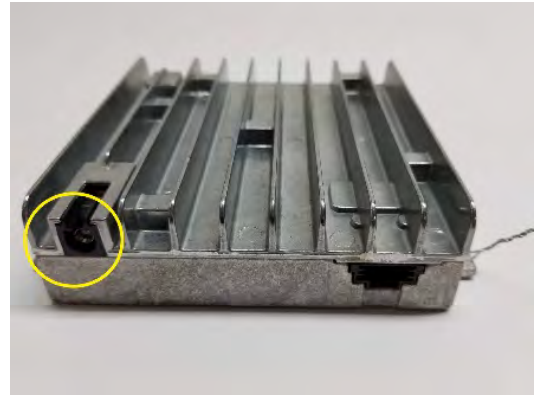


Figure IV



Figure V

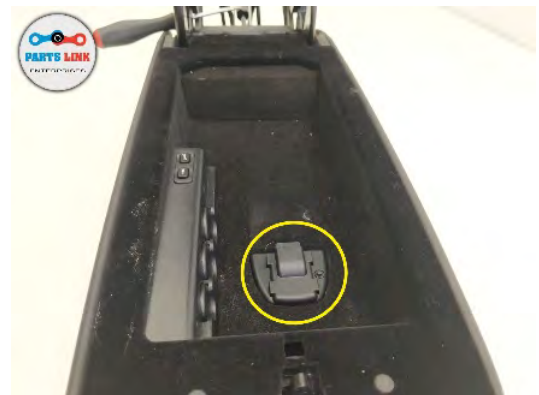


Figure VI

- You will have to buy the armrest puck connector plate (harder to find), Figure 6.
- Beware, other models may have shorter leads that will cause problems.
- And finally, you will need a puck.
- Don't venture outside of North America on the module and amplifier. There are different bands and frequencies in other countries.
- There are risks in doing this and I cannot guarantee success in every application. I assumed these risks because the investment was relatively small. I purchased the most expensive component (the puck) after I verified function with another puck.

A. Preparing for the installation

1. Read these installation instructions in their entirety before beginning.
2. Unpack and compare the installation kit contents against the Parts Information list—Section K.
3. Place the operating guides and customer accessories in the glove box or appropriate stowage compartment.
4. Remove the stowage box for the center console.
 - Refer to *W/S* document AR68.20-P-2320R, “Remove/install stowage box”
5. Behind the seats, remove the right and left side paneling and right and left stowage box.
 - Refer to *W/S* document AR68.30-P-4780R, “Remove/install side paneling in rear”

B. Locating and identifying the cables

1. In the exposed area behind the passenger seat, find the cloth sock containing the cables and connectors (Figure 1).



Figure 1

P82.70-xxxx-71

2. Remove the cloth sock to expose the cables and connectors (Figure 2).



Figure 2

P82.70-xxxx-71

3. Among the cable connectors removed from the cloth sock, find the:
 - **NOT USED** Female, black FAKRA antenna lead (A, Figure 3)
 - Male, black FAKRA **TELEPHONE** antenna lead (B, Figure 3)
 - Linear compensator power supply connector (C, Figure 3)

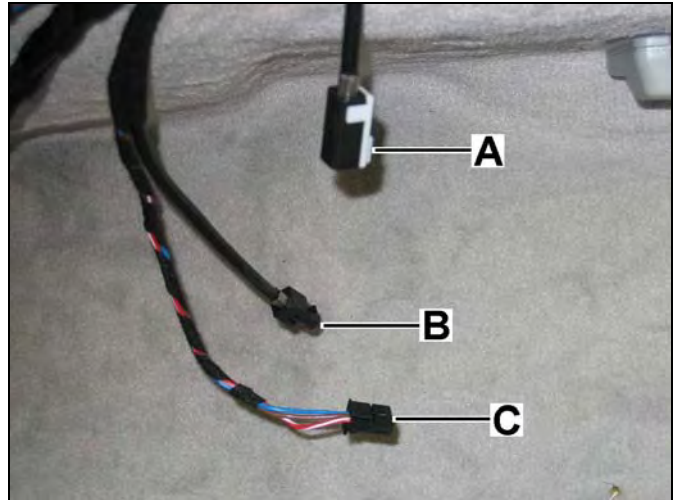


Figure 3

P82.70-xxxx-71

4. Find the coupled Tele Aid leads among the cable connectors removed from the cloth sock and disconnect them (Figure 4).

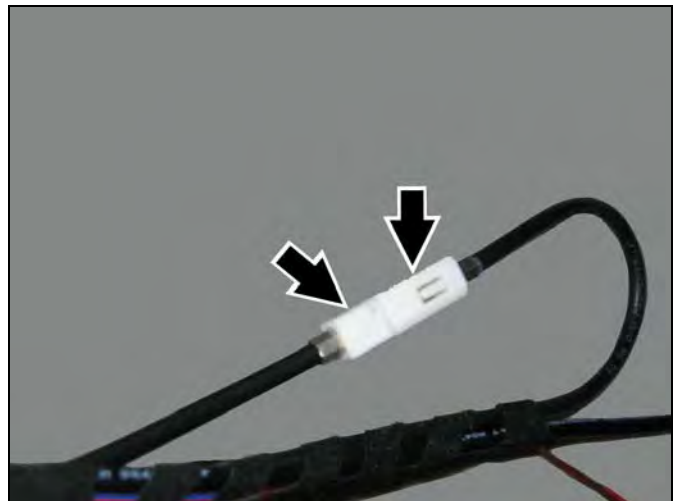


Figure 4

P82.70-xxxx-71

5. Among the cable connectors removed from the cloth sock, find the:
 - **NOT USED** Male, white FAKRA main antenna lead (disconnected in step 4) (A, Figure 5)
 - Female, white FAKRA **ANTENNA** Tele Aid lead (disconnected in step 4) (B, Figure 5)
 - **NOT USED** Female, black FAKRA telephone lead (C, Figure 5)
 - **NOT USED** Antenna switch 2-pin power supply connector (D, Figure 5)

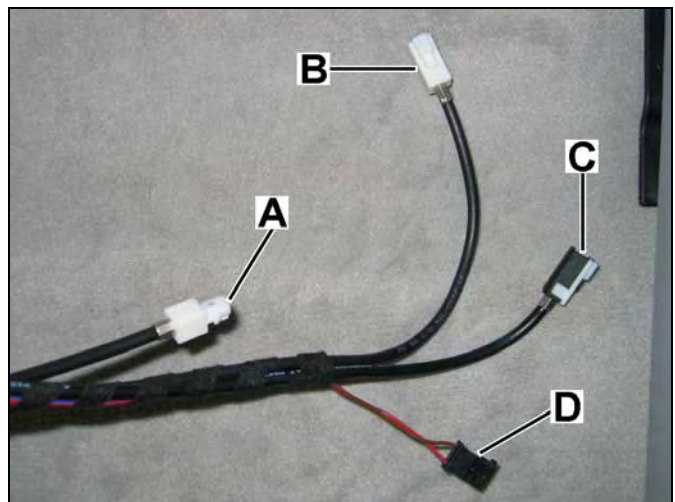


Figure 5

P82.70-xxxx-71

6. Find, loose in the exposed area around the passenger side (not in the bundle removed from the cloth sock), the:

- **NOT USED** VCS power supply connector

(A, Figure 6)

7. Among the cable connectors removed from the cloth sock, find the:

- MHI power supply connector (B, Figure 6)
- Remove the locking tab by sliding it and pull connector out (Figure 6.A and 6.B)
- Check pin locations 11, 12, 29, 30, 31 and 32. If they have wires of color Black (thick), Grey, Pink, Violet, Green, Orange, in this order, then go to paragraph C.

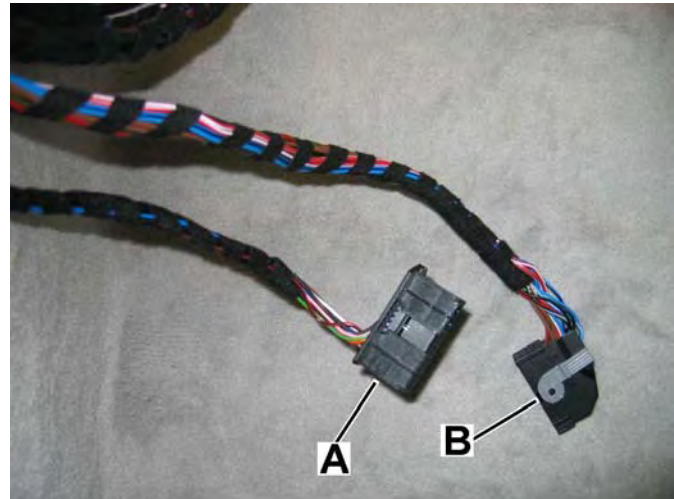


Figure 6

P82.70-xxxx-71

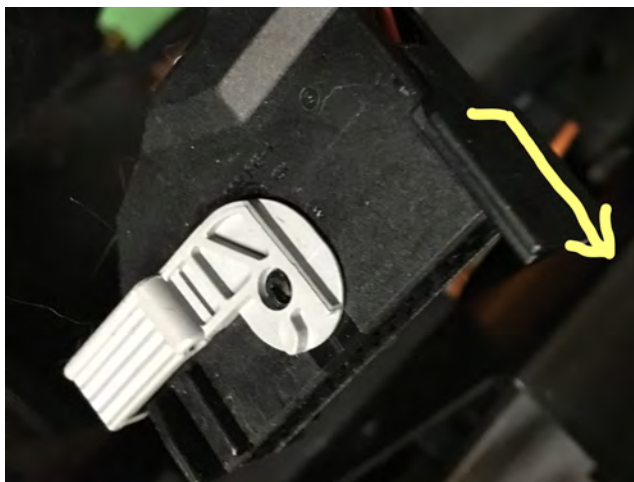


Figure 6.A

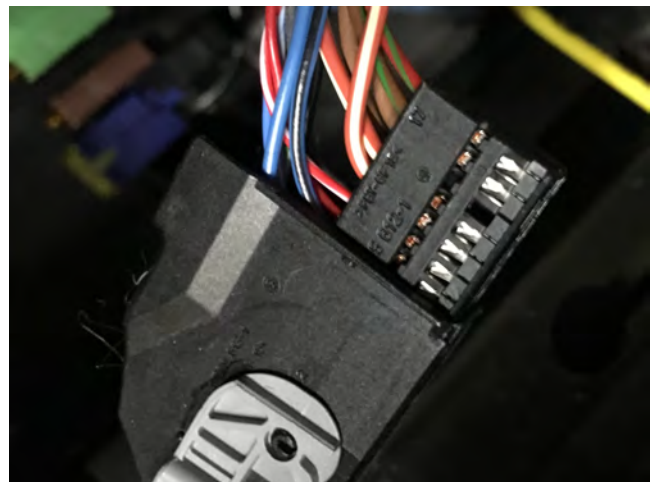


Figure 6.B

- These wires are in the VCS connector (Figure 6.C)
- Lift the locking latch on the side and slide the connector out from the shell (Figure 6.D and 6.E).
- To remove the wires from connector, press the triangle in Figure 6.F while pulling the wire. It may need to be pressed again as it moves to the next opening (Figure 6.G).
- Remove about 1 ft. of the cloth electrical tape from the VCS cable, separate the shielded cable containing the released wires and bundle it with the M/UHI cable using the removed cloth tape.
- push the wires into the empty locations in the M/UHI connector per below (Figure 6.H):

COLOR	FROM VCS LOCATION	TO M/UHI LOCATION
BLACK (THICK)	16	11
GREY	14	12
ORANGE	6	32
GREEN	5	31
VIOLET	15	30
PINK	4	29

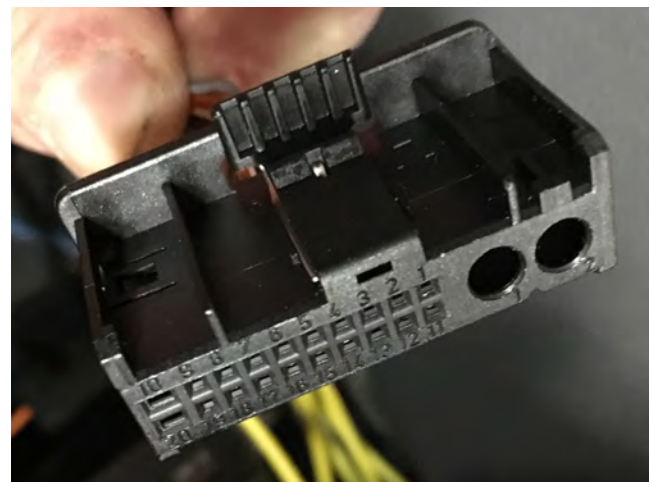


Figure 6.C

- place the M/UHI connector back in the shell and lock it with the tab.

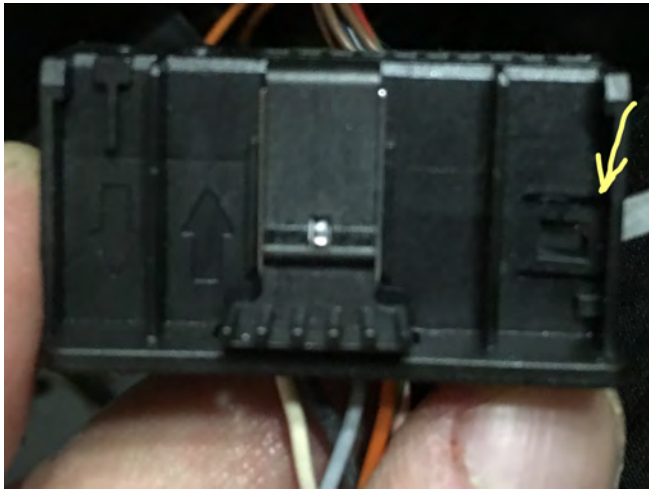


Figure 6.D

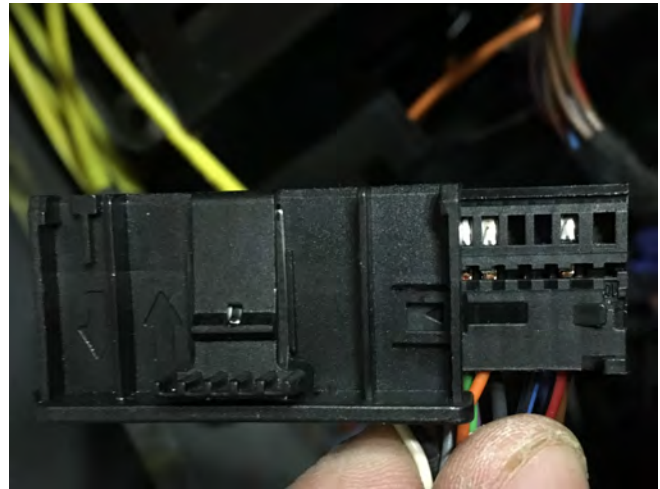


Figure 6.E

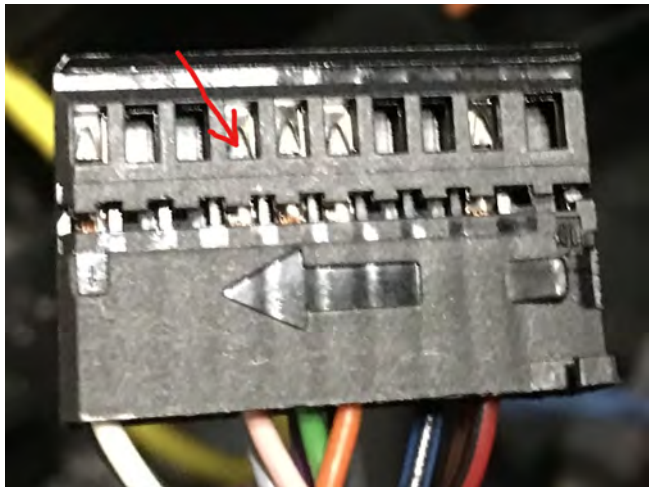


Figure 6.F



Figure 6.G

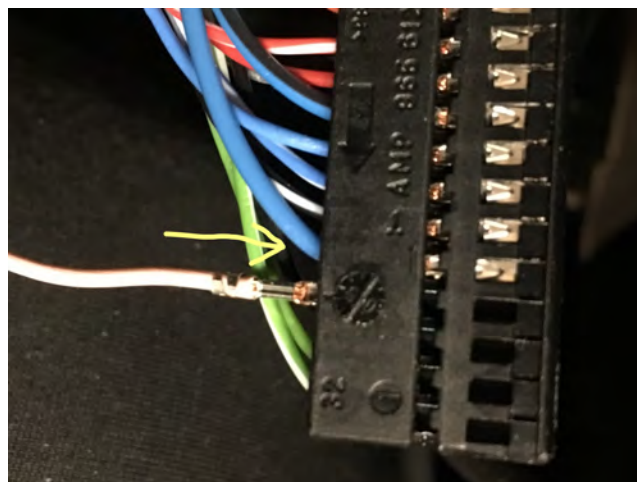


Figure 6.H

C. Installing the voice control module (VCM) and configuring the MOST ring

1. Find the MOST fiber, and coupling, taped and wire tied together in the exposed center console area (Figure 7).

NOTICE!

Improper handling of optical fibers can damage the fibers.

Damaged optical fibers can cause component malfunction.

Do not kink optical fibers, route them over sharp edges, or bend them in radii smaller than 25 mm.

2. Cut the wire tie (A, Figure 7), and remove the tape bundling the MOST fiber and coupler.
3. Disassemble the MOST coupler and carefully remove the fiber ends (Arrow, Figure 7).
4. **INSERT THE FIBER ENDS INTO THE PURCHASED MALE CONNECTOR.** Install the kit-included MOST adapter cable (Arrows, Figure 8).
 - a. Connect the fiber end of the MOST adapter cable to the MOST coupler disassembled in step 3 and then reassemble the coupler.
 - b. Connect the fiber end removed from the MOST coupler disassembled in step 3 to the coupler of the MOST adapter cable.

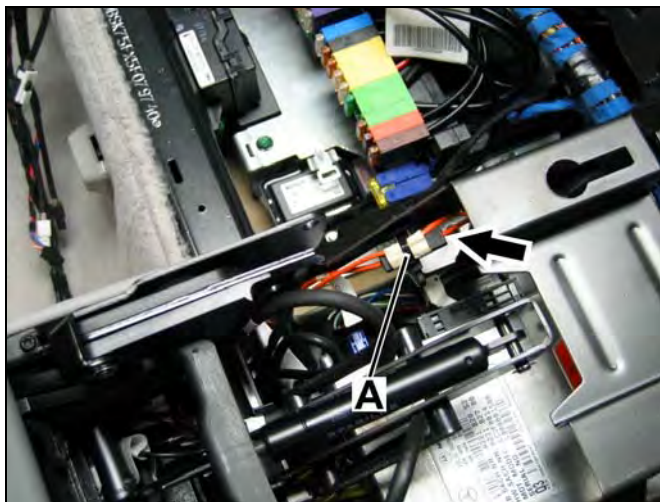


Figure 7

P82.70-xxxx-71

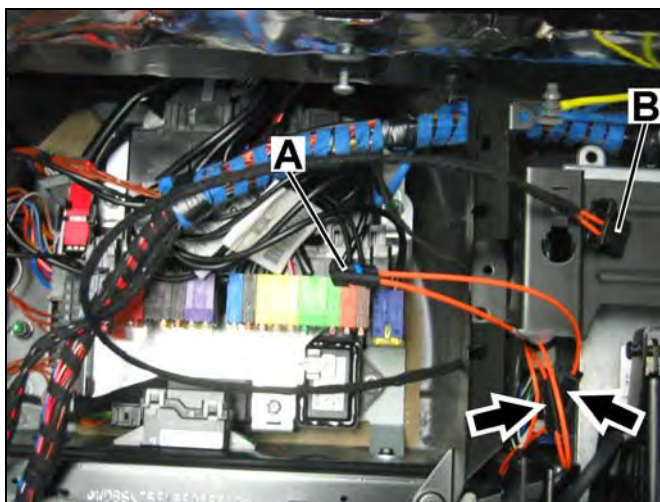


Figure 8

P82.70-xxxx-71

5. Insert the smaller connector (A, Figure 8) of the MOST adapter cable into the back of the VCS power supply connector (A, Figure 9).

Note: The MOST connector inserts into the VCS power supply connector only one way (i.e. It will not inset incorrectly).

6. Feed the VCS power supply/MOST connector under and through to the backside of the center console bracket (B, Figure 9).

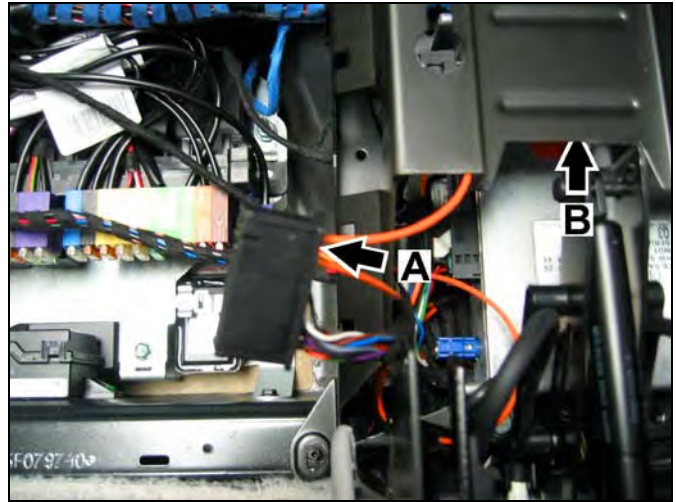


Figure 9

P82.70-xxxx-71

7. At the backside of the center console bracket, connect the VCS power supply/MOST connector to the VCS control module (Figure 10).

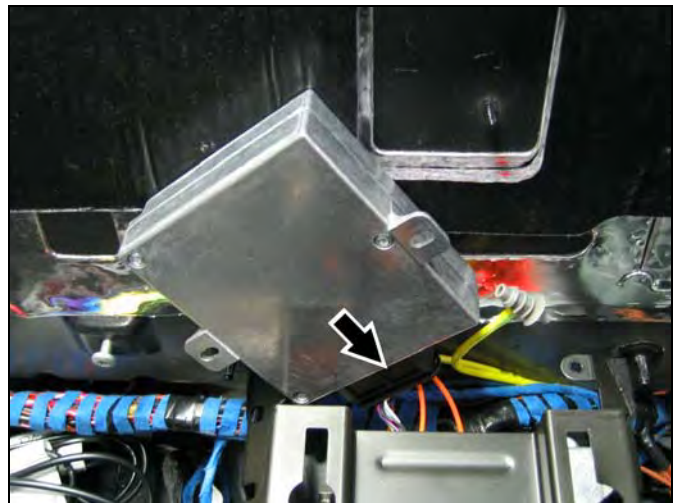


Figure 10

P82.70-xxxx-71

8. With **MHI** VCS power supply/MOST connector **TO THE RIGHT** facing front and mounting tabs facing up, carefully slide the **MHI** VCS control module under the console bracket and **CONNECT THE OPTICAL AND POWER CONNECTORS**. fasten its mounting tabs to the bracket with two kit-included T15 Torx self-tapping screws and washers (Figure 11).

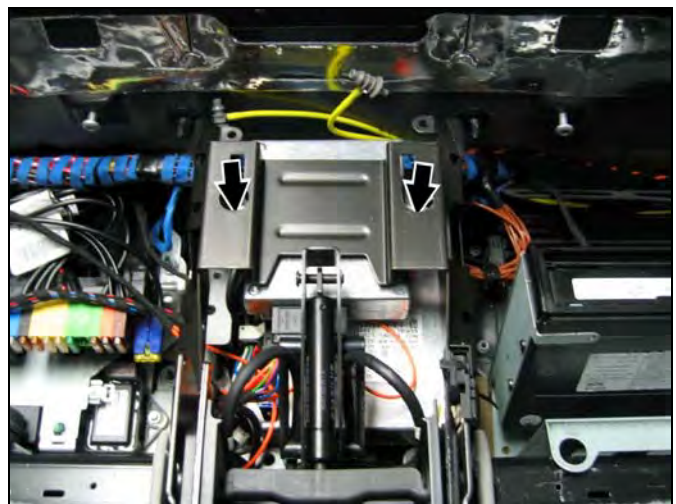


Figure 11

P82.70-xxxx-71

D. Fastening the linear compensator, MHI control module, and antenna switch to the bracket and mounting the bracket assembly

1. Fasten the MHI control module to the threaded studs on the bracket front with four M5 nuts (Figure 12).

Note: The keyed mounting tabs on the MHI control module fit the threaded studs on the bracket only one way (i.e. there is no way to mount the MHI control module to the bracket incorrectly).

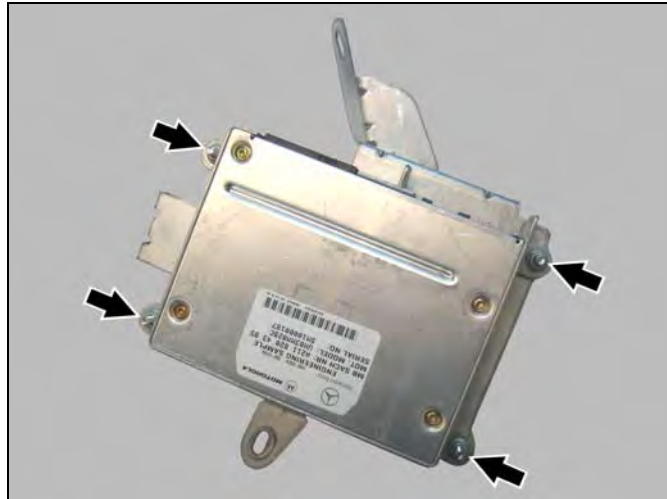


Figure 12

P82.70-xxxx-71

2. Fasten the linear compensator to the **IN A SUITABLE LOCATION USING TIE WRAPS.** threaded studs on the bracket backside with three M3 nuts (Figure 13).

Note: Position the linear compensator receptacles facing the longer arm of the bracket (Figure 13).

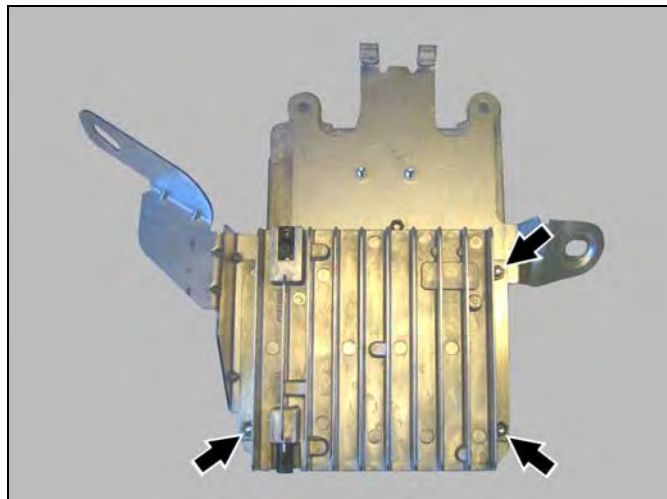


Figure 13

P82.70-xxxx-71

3. Fasten the antenna switch to the threaded studs on the bracket backside—above the linear compensator—with two M3 nuts (Figure 14).

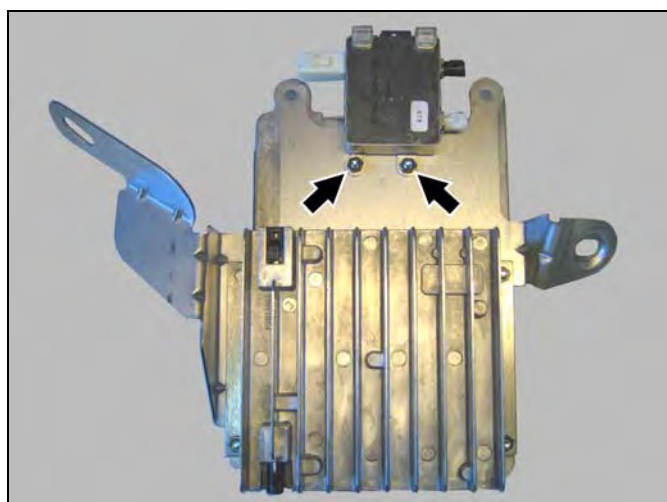


Figure 14

P82.70-xxxx-71

4. Place the bracket assembly within reach of the cable connectors for the attached components (Figure 15).
5. Connect the telephone FAKRA female, black connector to the antenna switch jack labeled "BOOSTER" (A, Figure 15).
6. Connect the Tele Aid FAKRA female, white connector to the antenna switch jack labeled "LCT" (B, Figure 15).
7. Connect the main antenna FAKRA male, white connector to the antenna switch jack labeled "ANTENNA" (C, Figure 15).
8. Connect the 2-pin power supply connector to the antenna switch (D, Figure 15).

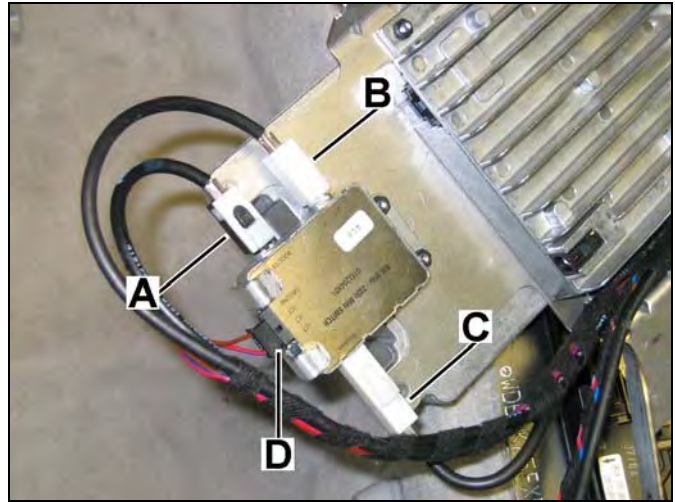


Figure 15

P82.70-xxxx-71

9. Connect the FAKRA antenna male, black connector to the linear compensator jack labeled "PORTABLE" (A, Figure 16).
10. Connect the FAKRA antenna female, **WHITE** black connector to the linear compensator jack labeled "ANTENNA" (B, Figure 16).
11. Connect the power supply connector to the linear compensator (C, Figure 16).

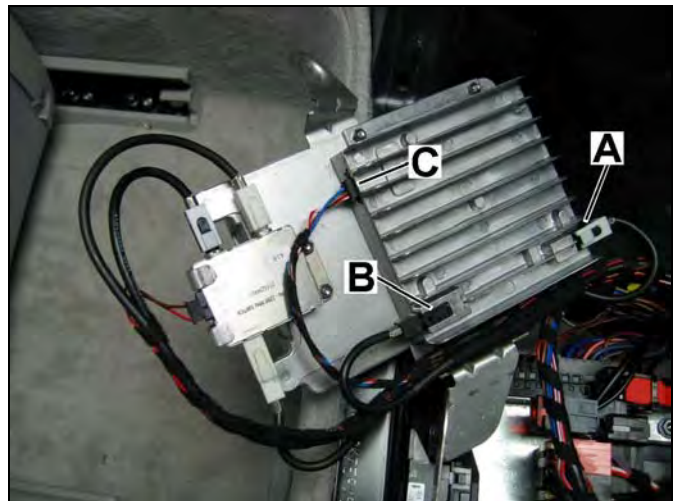


Figure 16

P82.70-xxxx-71

12. With the MHI control module facing out and the antenna switch up (Figure 17), mount the bracket assembly:
 - a. Remove the existing M6 flange nut from the threaded stud on the exposed body behind the passenger seat and use it to fasten the long arm (A, Figure 17) of the bracket.
 - b. Fasten the short arm (B, Figure 17) of the bracket to the threaded stud on the exposed body behind the passenger seat with the kit-included M6 flange nut.

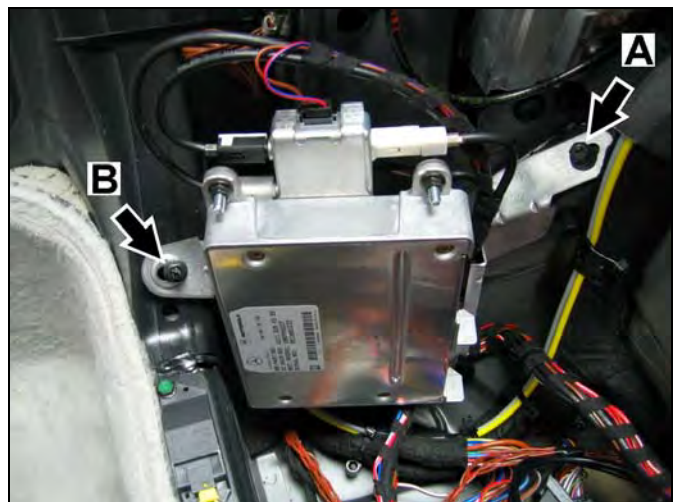


Figure 17

P82.70-xxxx-71

13. Connect the MHI power supply connector to the MHI control module (A, Figure 18).
14. Connect the larger connector (B, Figure 8) of the MOST adapter cable to the MHI control module (B, Figure 18).

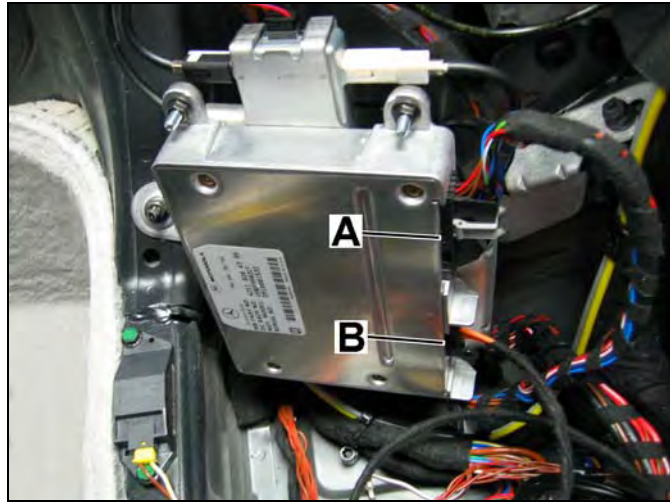


Figure 18

P82.70-xxxx-71

E. Locating, identifying, and connecting the microphone array connectors

1. Fold back the floor covering (Figure 19) at the left, front to expose the area under the emergency brake pedal.
2. Remove the two plastic panels to expose the wiring harness (Arrows, Figure 19).



Figure 19

P82.70-xxxx-71

3. In the wiring harness, locate and identify the:
 - Tele Aid microphone array female connector (A, Figure 20) and connected male jumper (B, Figure 20) with black and white looped wires
 - Telephone/VCS microphone array male connector (C, Figure 20)
4. Disconnect the male jumper (B, Figure 20) from the Tele Aid microphone array female connector (A, Figure 20)

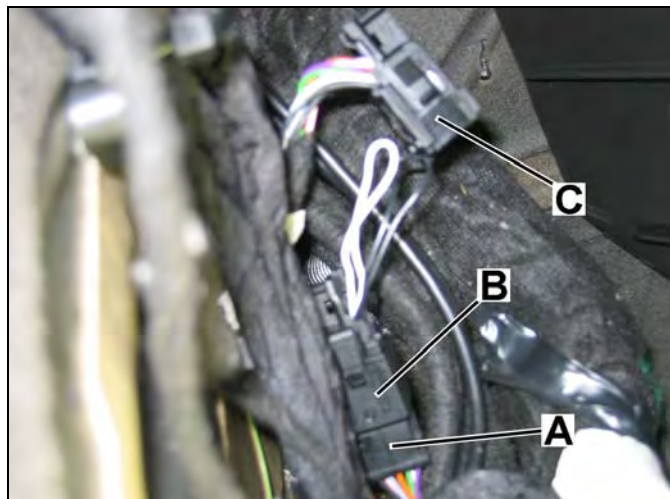


Figure 20

P82.70-xxxx-71

5. Connect the Telephone/VCS microphone array male connector (A Figure 21) to the Tele Aid microphone array female connector (B, Figure 21).

Note: Listen for an audible click when connecting the microphone array connectors.

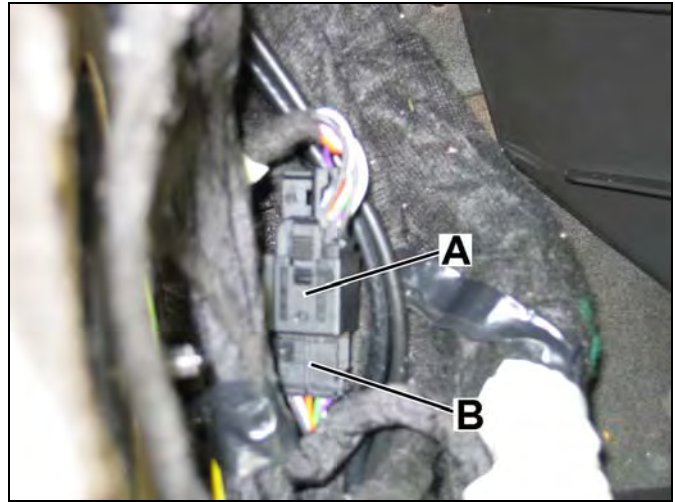


Figure 21

P82.70-xxxx-71

F. Installing the contact plate and cradle

1. Open the lower compartment of the center console and remove the six T10 Torx screws (Figure 22) on the upper compartment underside securing the false floor.
2. Close the lower compartment and open the upper compartment of the center console.

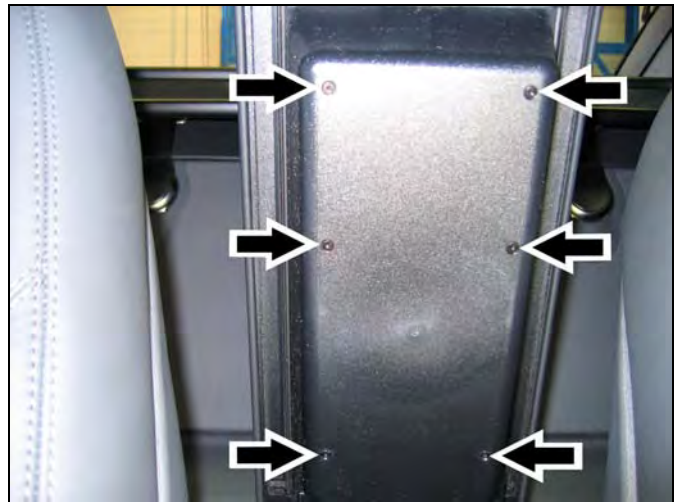


Figure 22

P82.70-xxxx-71

3. Remove the coin holder/Tele Aid button assembly and disconnect the Tele Aid button assembly.
4. Lift out, turn over the false floor, and remove the knockout (Figure 23) by pressing it out from the underside.

NOTICE!

Excessive force will crack or break plastic.

Applying excessive force while removing the knockout can crack or break the plastic mounting tray.

Do not apply excessive force when removing the knockout from the mounting tray for the contact plate.

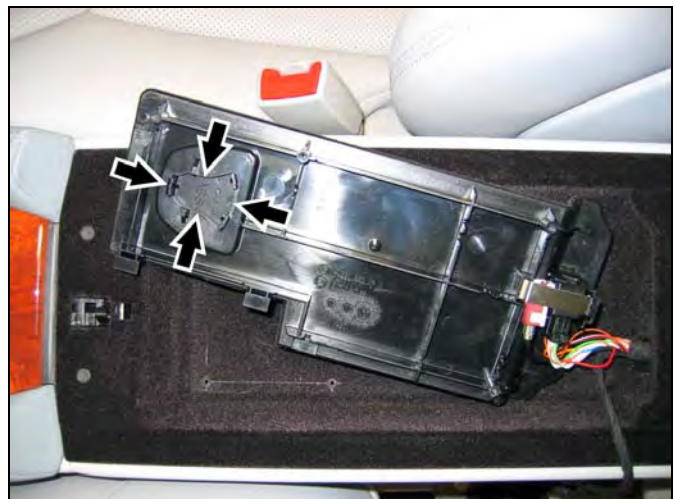


Figure 23

P82.70-xxxx-71

- Find the kit-included contact plate (A, Figure 24) and identify the FAKRA antenna male connector (B, Figure 24) and the power supply male connector (C, Figure 24).

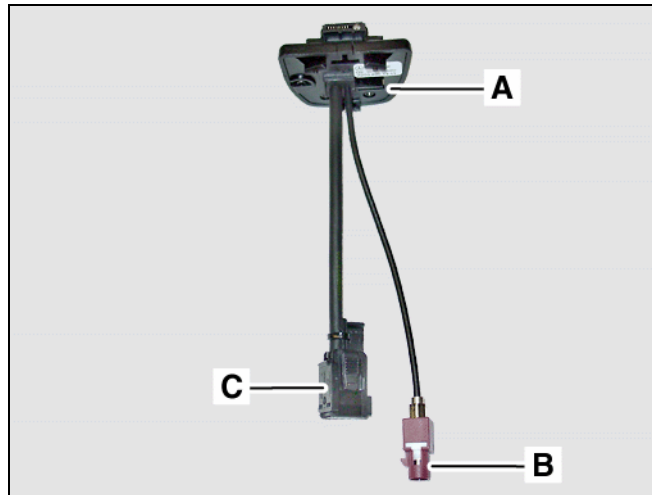


Figure 24

P82.70-5426-71

- Feed the power supply cable and FAKRA cable of the contact plate through the knockout hole from the top side of the false floor (Figure 25).



Figure 25

P82.70-xxxx-71

- Connect the FAKRA antenna male connector of the contact plate to the FAKRA female connector of the center console harness (A, Figure 26).
- Connect the power supply male connector of the contact plate to the power supply female connector of the center console harness (B, Figure 26).
- Route the FAKRA antenna and power supply cables through the cable manager (Arrows, Figure 26) on the false floor underside.

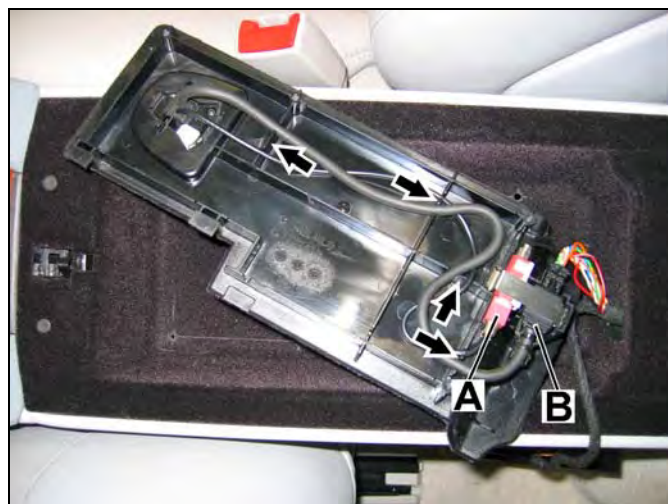


Figure 26

P82.70-xxxx-71

10. Reconnect the Tele Aid button assembly.
11. Reinstall the false floor with mounted contact plate (Figure 27) and coin holder/Tele Aid button assembly with the previously removed six T10 Torx screws.

NOTICE!

Crimped and crushed cables can cause component malfunction or failure. Do not crimp or crush the power supply and FAKRA antenna cables while reinstalling the false floor.

12. Attach the cradle—according to telephone type—to the contact plate by placing it atop and slightly behind the contact plate and then sliding it forward until an audible click sounds
13. Insert the telephone into the cradle.



Figure 27

P82.70-xxxx-71

G. Installing the push-to-talk (PTT) lever

1. Remove the plastic plug in the mounting hole for the PTT lever on the right side of the steering column (Figure 28) by carefully inserting a small flathead screwdriver into the slot in the plug and prying it out.
2. Insert the PTT lever into the mounting hole (Figure 28) rotating it until its grooves interlock with the teeth in the mounting hole and then push the lever completely into the mounting hole.



Figure 28

P82.70-xxxx-71

H. Version coding

1. Connect Star Diagnosis to the vehicle and perform the following version coding.
2. Set the MOST ring configuration to match that of Figure 29 via path:
Control units > Information and communication > Audio, video, navigation and telematics > AGW - Audio Gateway > Retrofitting of MOST components > F2: Restart of optical ring > F2: Actual configuration > Verify that “Telecommunications” and “VCS” is listed under Actual Value and configuration of the MOST components matches that of Figure 29 > F2: To continue > F3: Yes, to write the current actual configuration to MOST master > F2: Erase fault memory
3. **IF OPTICAL RING SHOWS ERROR/INTERRUPTION CHANGE THE LOCATION OF THE 2 FIBER ENDS INTO THE MALE CONNECTOR AT STEP C4**
Note: The MOST ring configuration in Figure 29 is an example of a configuration including every component. Some installations will not include all the components shown in the example. If a component is not present, connect the preceding component to the component following the one not present.
NOTICE!
DO NOT alter the configuration in Figure 29 to match the vehicle configuration. Failure to have the configuration match Figure 29 will result in erroneous system operation and/or intermittent malfunctioning of some or all components.
4. Set the Tele Aid control module to recognize the presence of the telephone via path:
Control units > Information and communication > Audio, video, navigation and telematics > TELE-AID > Control unit adaptations > Model series, telephone adapter for portable CTEL (UHI) > Set “Model series” to R230, Set “Telephone adapter” to FITTED, press F5 > F3: Yes/Coding > F2 to confirm the coding has been carried out
5. Set the instrument cluster to recognize the presence of the cellular telephone, Voice Control System, and Tele Aid via path:
Control units > Information and communication > ICM > Control unit adaptations > Version coding > Optional equipment > Select “CTEL cellular telephone” > Set “CTEL cellular telephone” to PRESENT, then press F3 > F5: To save changes > F3: To transfer coding to control unit
6. Check the DTC memory of all installed components and the head unit. Investigate and identify any present DTC(s). Once identified, correct the source of the DTC(s) and clear the DTC memory.
Note: Powering up the newly installed system prior to version coding will set errors in the MOST ring configuration. Ignore these errors during the initial DTC check. If, after clearing the DTC(s), they return in the next step, a configuration error is present. Locate and correct the error.
7. Confirm no new DTC(s) are present in the MOST system group.

I. MOST Ring Configuration

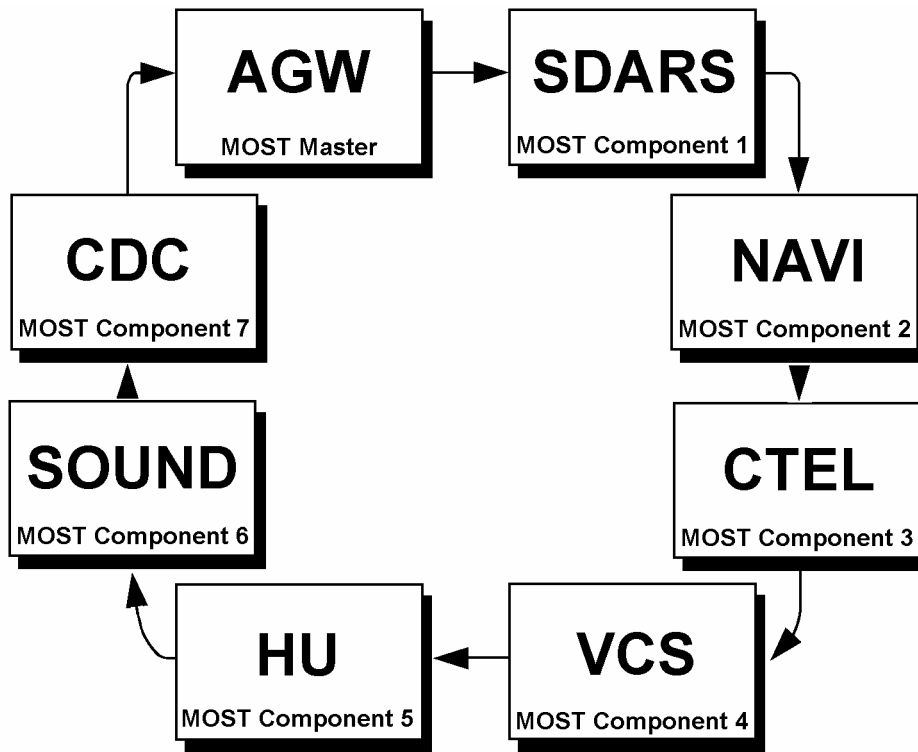


Figure 29

P82.70-xxxx-11

J. Final assembly and function test

1. Verify proper telephone operation per the following checklist:
 - ✓ Handset dialing is functioning
 - ✓ Head unit dialing is functioning
 - ✓ Handset incoming/outgoing call audio is clear
 - ✓ Hands-free incoming/outgoing audio is clear
 - ✓ Automatic memory download is functioning¹⁾
 - ¹⁾ It may be necessary to store a test number in the telephone handset for this feature to operate. Stored numbers should be available for dialing from the head unit after automatic download.
2. Reinstall the right and left side paneling and right and left stowage box.
 - Refer to *WIS* document AR68.30-P-4780R, "Remove/install side paneling in rear"
3. Reinstall the stowage box for the center console.
 - Refer to *WIS* document AR68.20-P-2320R, "Remove/install stowage box"

K. Parts Information

Qty.	Part Name	Part Number/Exchange
1	Vehicle core installation kit	BQ 682 0955
1	SL-Class vehicle completer kit	BQ 682 0916

Note: This installation cannot be claimed under warranty.