

COMAND 2.0 Retrofit into a 2002 W203 Coupe:
An overview of my installation and my reference material.



This document is my experiences and some of the reference material I used for retrofitting the COMAND 2.0 into my 2002 C-Class Coupe. It should be generally the same for other similar models up through the 2004 ½ model year when Mercedes did the facelift. Just for reference, my 2002 C-Class had the telephone integration, voice control, TeleAid and Bose System.

Although there are many individuals who are willing to do these kinds of installs, including Steve Krabbenborg at <http://www.mbenznl.com>, I wanted to perform the install myself.

I used several references that were incredibly valuable:

The first was Paul Dicks' information. He wrote up a great installation document of his COMAND retrofit into a 2001 C320. He also posted a PDF copy of the Mercedes WIS (Workshop Integrated System) and Service Bulletins needed for the retrofit specific to the W203. That information, along with lots of other valuable information is available on his website at <http://home.earthlink.net/~phdwebsite/>. Just click on the COMAND 2.0 Install link and download or print the file from there.

The second major source of information I used was Richard's articles at <http://www.mercupgrades.com/>. This site is incredibly useful for both COMAND 2.0 information and a wealth of information on newer models also. They also can provide many parts you may need for various projects. The specific COMAND 2.0 section I used was <http://www.mercupgrades.com/COMAND+Retrofit-article-1.html>. However, don't limit yourself to this article, there is an incredible amount of information on COMAND in various places on the site. This article helps narrow down specific part numbers that are used for particular models and gives pin-out charts, covers install in different vehicles, and covers differences in U.S. and Euro spec COMAND units.

Entering into the project I imposed several limitations on myself. The first was that I wanted to find a U.S. Spec COMAND unit, so that looking at the vehicle visually; it would be what would have come in the dash if I had gotten that option on day one. The second was that I wanted to use the factory GPS antenna, instead of a retrofit antenna that fits under the dash. And the third, my minor variation from the Factory install, I wanted to make an adapter harness so that I could return to the original radio if I wished.

The factory install of COMAND in the W203 (pre-2004 ½) used a completely different wiring harness for the radio for the COMAND unit. Honestly, I liked the looks of the original radio and the small storage bin under it, but the COMAND is growing on me.



I decided while I was doing this, I would add the digital Climatronic controls. The Climatronic controls were not strictly a factory option for the vehicle, and because the car was not equipped with it, some options for it will not function. However, I decided to swap it for fun. Because the car did not come with the digital controls originally it does not have dual blowers and does not have the charcoal filter. The blower unit is also missing a couple of stepper motors.

I found lots of information relating to U.S. Spec cars having the GPS antenna and wiring pre-installed, even if the vehicle did not have COMAND. The best information I could determine was that vehicles that are equipped with, or pre-wired for TeleAid have the GPS antenna installed. Other U.S. vehicles do not seem to have the antenna installed. My vehicle still needed the factory GPS splitter and the GPS cable that runs from the splitter to the dash.

I also decided to install the Auxillary input 3.5mm jack so that I could listen to an iPod on trips. This was the primary reason for this retrofit, as the navigation technology at this point is 10 years old.

After determining what I wanted to do, I obtained a U.S. Spec COMAND unit. The specific unit I found was from a 2003 vehicle, and had previously had the blank

button enabled for TV and Video In Motion (which might become a future project to enable iPod video).



I also obtained the cabin harness for the COMAND unit. The part number for this harness is A203 540 0909 and it sells for about \$45. The part number for the GPS antenna cable is A203 540 7006 and the part number for the GPS antenna splitter is A210 820 2489.

I also purchased the auxiliary input harness that allows the connection of a 3.5mm earphone type jack from an iPod or other device to the COMAND. The part number for that is A203 540 6107. This would not have come in the car originally, but the COMAND unit supports it, and the factory cabin wiring harness (above) has the connector for the auxiliary harness to plug into.

I neglected to photograph the parts, however Paul's write up carefully shows each of these.

I also ordered the COMAND test CD (W220 589 01 22 00) from my local Dealer. Because my COMAND unit was a 2003, I did not need to do a software update. According to Richard's website (<http://www.mercupgrades.com/COMAND+FAQ-faq-1.html#11>) the last update was in 2001 (update CD Part Number W230 589 00 22 00).

The only problem I had was that the knobs on my COMAND were showing some wear. I found the following web site that walked me through replacing the volume control knobs. It is for a G class, but the COMAND unit is essentially the same. The knobs are available from Audiocomp (www.audiocomp.de) in Germany. http://web.mac.com/rgrussell/Geezer/Command_2.0_Volume_Control_Knob.html

Replacing the knob was simple, and the knobs were inexpensive. If your knobs are in bad shape, and you don't mind pulling your COMAND unit out of the dash, then swapping the knobs is pretty straightforward.

I gathered all my toys for a quick picture. In the picture below, you can see the COMAND (with the original Mercedes box), the replacement knobs just below it, then update CD, the four screws used to hold the COMAND in (yes I bought those too – the factory radio only uses two, and they were cheap). You can also see the red and black ends on the GPS splitter, the factory cabin radio harness, the auxiliary connector cable, the GPS coaxial cable and the Navigation CDs that I got with the COMAND unit.



Richard at <http://www.mercupgrades.com/COMAND+Retrofit-article-1.html> has the part numbers for the C-connector (male) end, but notes that it is hard to obtain. I could not find one, nor could I obtain the pins for it; however, reading about the ML install on his site, I noticed that apparently in the ML Mercedes uses a single wiring harness ending in a C connector, and then use an adapter harness on the vehicles built with COMAND. This adapter has the male C-connector that I needed. The part number for this adapter is A163 540 12 09. Unfortunately, this part is over 100.00 from Mercedes, and still is one wire short meaning two adapters would be needed. They are available from salvage yards that have removed a COMAND unit, if they will get it for you. I was lucky and found two almost for free.

I stripped these adapters for the C connector I needed and then clipped the cabin harness I had purchased to about 3 inches long, and carefully removed the wire from the pins for the male C-connector. I soldered the wires and reinserted the pins in the connector using the pin-outs that I got from Richard's site (<http://www.mercupgrades.com/COMAND+Retrofit-article-1.html>).

You have to make the following connections :-

| From | To | Colour | Note | Usage |
|---------|-----------|------------|------|--------------|
| C pin 1 | C2 pin 9 | Brown/Red | A | CANbus high |
| C pin 2 | C2 pin 8 | Brown | A | CANBus low |
| C pin 5 | C1 pin 6 | Red/Black | | CD Changer + |
| C pin 6 | C1 pin 5 | Brown | | CD Changer - |
| C pin 4 | C2 pin 10 | Blue/Black | | D2B Wakeup |

A = These two cables must be twisted pair (to prevent signal interference). If these are the wrong way round, all sort of electrical things may misbehave. It has been reported that some cars are wired the other way round, so it may be worth comparing the cable colours.

Note, the colours shown above are those found in the C (203) class. On CLK (208) (for instance) CANbus high is black/white and CANbus low is Black, sometimes CD+ is black.

If you are connecting the Aux input and not using the factory COMAND harness, you will also need to make the following connections (again from Richard's site):

The input connections are on the C2 connector and are as follows: -

| | | |
|--------------|----|---|
| Right Signal | 4 | |
| Right Ground | | 5 |
| Left Signal | 13 | |
| Left Ground | 14 | |

If you are using the factory harness, all the connections to the C2 connector will already be made, and you will just have to make your connections to the C-connector.

If you are using Paul's approach, you can clip the factory (installed in the car) harness behind the existing C-connector, but the connections are essentially the same.

Now that I had everything ready to go, and had bench tested I just had to wait for a good weather and a good time to install everything.

The GPS antenna was on the right rear C-pillar, just below the headliner. Very near where it apparently is on the sedans. You can see it with the red end on the cable in this picture, just above the seatbelt reel.



Below you can see a close up of the connector. The cable with the red continues to the TeleAid unit. The GPS splitter will fit in this connection and clip under the black plastic clip. There are holes for it to snap into.



Here you can see the GPS splitter in place with the TeleAid lead attached and lead to the existing antenna attached. In the next picture you can see it with the TeleAid lead attached and with the coaxial cable that goes to the dash attached.



And here you can see the GPS splitter attached to the bracket.



Then you need to feed the coaxial cable to the front, along the passenger side door-sill. Feed it into the wiring channel that already exists and up the passenger side foot well, and across to the dash.



While I was at this point, I installed the Auxiliary input jack in the glove compartment. There is a punch out on the right side of the glove compartment that will accept the plug.



Pop out the circle, slide the plug in (there is a front piece that snaps back around the plug to hold it in place, it makes sense when you look close at it); it is pretty simple.



The most difficult part for me was the removal of the air vents. I followed the WIS, but it also took Paul's document pointing out that there are two additional tabs near the center that need to be pulled downward. I ended up working one side loose at a

time, and taking my time. I kept visioning breaking something and not being able to get a replacement part in the interior color. 😊

Once the dash vent is removed, you still have to remove the console trim around the gear shifter and the ashtray before you can get the trim around the radio loose. This is when it starts to look scary.



This is the adapter harness I put together, and it plugged into the C-connector. The long cord with the white plug is the plug the Auxiliary input cable plugs in to.



Plugging in the C1 and C2 Connectors, along with the bottom connector (which does not require an adapter) , the DB2 (fiber optic) connector, the antenna connections and the auxiliary input cable and I was ready to power it up for the first time in the car. Still looking pretty scary here....



I added the digital climate controls and was ready for the first road check. Not quite as scary, but still not how you want your car to look.



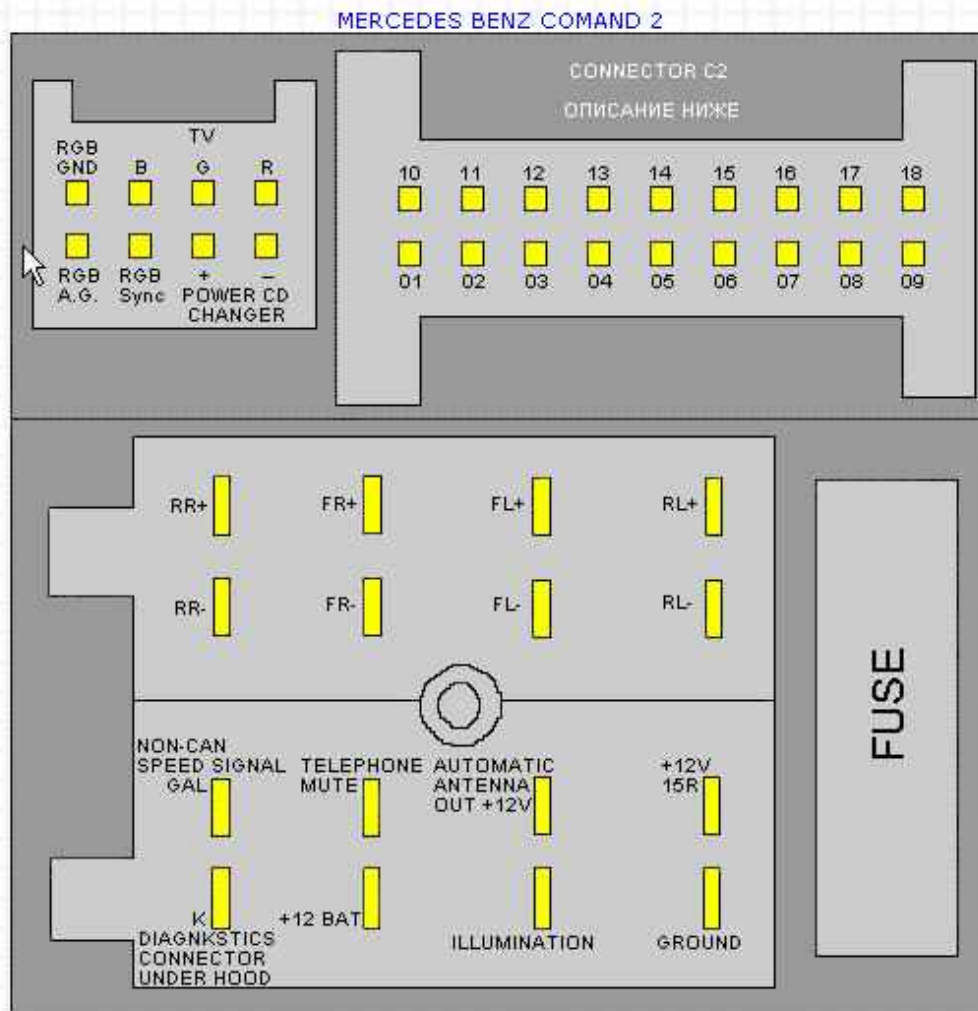
Unfortunately, this is where I ran into a problem. With the COMAND unit not mounted in the dash, just partway out, it would recognize the CD changer and Voice Control. Pushed back in the dash it would not recognize either one. I also learned that it was not getting the speed or direction (gear) signal. My car got driven like this for a day or so.

NOTE: As I learned the hard way, if you unplug the upper switch row and then turn the ignition on, you will throw the SRS Error, which can't be cleared without plugging the car up to the computer at the dealer, etc. I accidentally did this, and just had it cleared when I had the version coding done to tell the car that the COMAND was present. That does not mean it is a good feeling when the error first appears.

After a day of fiddling, I was sure that the COMAND was not getting the CAN signal, but checking my connections on the adapter harness just showed everything was working fine. I almost gave up and decided that the COMAND unit was bad, but after sleeping on it for another night (and driving it like this for another day) I plugged the C-2 Connector in without the outer shell attached. I didn't take pictures of this,

but essentially what I did was connect each pin connector without the connector at all, and everything worked, so then I put the connector back together part at a time. I finally figured out that the C2 connector was not seated well when it clicked in place, so after making sure it was seated well, I tried it again and everything worked find. Moral of the story: Make sure the connections are good. ☺

Below is a nice picture of the pin-outs for the W203 COMAND 2.0 units. I am pretty sure that some of the others are different, so check with someone like www.Audiocomp.de to make sure of the pin-outs for units for other cars. I am not sure who originally did this nice drawing, but someone emailed to me quite a while back.



Описание коннектора C2

- | | |
|---|---|
| 01 - Wake up (Robert-Bosch CAN) | 10 - D2B Wake up |
| 02 - Sound TV Right | 11 - Sound TV Left |
| 03 - Sound TV GND | 12 - Sound TV Shield |
| 04 - Aux in Right | 13 - Aux in Left |
| 05 - Aux in GND (Right) | 14 - Aux in Shield (Or aux in Gnd Left) |
| 06 - Speed sensor (Non - CAN) | 15 - Reverse signal |
| 07 - Interior CAN shield | 16 - Robert Bosch CAN Shield |
| 08 - Interior CAN Lo (Buttons on steering wheel, ETC) | 17 - Robert Bosch CAN Lo |
| 09 - Interior CAN Hi (Buttons on steering wheel, ETC) | 18 - Robert Bosch CAN Hi |

Finally I put everything back together, and had no unexpected parts left over. I had version coding was done by a guy in Atlanta that does a lot of Mercedes electronics and Navigation type retrofits.

After a week or so of living with it I really like the system. I don't think it is a cost effective retrofit if you really want Navigation. I will spend more money on the new navigation CDs from Mercedes than I did on my Garmin GPS. (Just in case anyone cares, the new versions come out every February/March) However, I enjoyed the entire project.



I have to say a quick Thank You to both my wife (for putting up with my projects) and to the Parts Department for Mercedes Benz of South Atlanta (especially Joe). Although they are not my "home" dealer, they are close to work, so they see most of my parts orders and overall are a great bunch of guys.