## Diagnosis – Function Test

1. Prior to performing the Function Test, please review the following pages as well as the following Service Informations:
   **For Models 129, 170, 202, 208, 210**: P-SI-MBNA 82/112 (Sept 1998),
   **For Model 220:** P-SI-MBNA 82.64/116 (March 1999)

**Connection between the components:**
The D2B ring (ring or closed loop) connects the COMAND (monitor) with the CD changer (CDC), the telelphone or Handy. The audio amplifier remains wired as before on models 129, 170, 202, 208, 210. The radio or COMAND take over the master function as Head Unit (HU) and realize as well the serial interface to the interior CAN bus ( model 220 with Multifunction Steering Wheel only), also see 11/2 as well.

**Acronyms:**
HU = Head Unit (radio or COMAND)
CDC = CD changer
SBS = Voice activation system (VAS)

**Ring-Loop sequence of vehicle/model/interface:**

| | |
|---|---|
| Model 129 | HU – telephone (or TeleAid) – CDC – HU |
| Model 170 | HU – telephone (or TeleAid) – HU |
| Model 202/208 | HU – telephone (or TeleAid) – SBS – HU |
| Model 210 | HU – CDC – SBS – telephone (or TeleAid) – HU |
| Model 220 | HU – Sound – CDC – telephone (or TeleAid) – SBS – optional Handy Interface – HU |

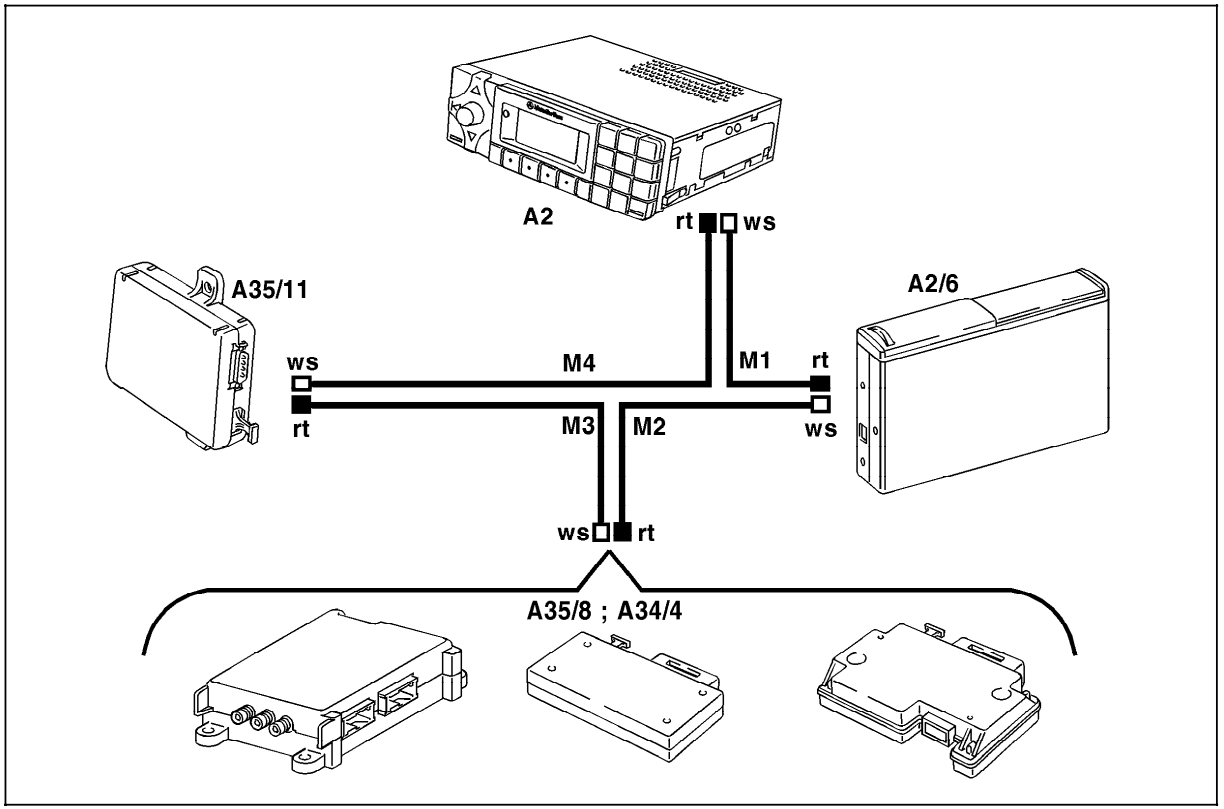
The above Ring-Loop sequence displays the maximum component connections based on options. If one of the options is not supplied, then the component is removed from the ring-loop and a new ring-loop sequence is established.

## Diagnosis – Function Test

**Connection between Components**
**Model 202 Shown**

| | |
|---|---|
| A2 | Radio (HU) |
| A2/6 | CD changer (in trunk) |
| A34/4 | CTEL interface |
| A35/8 | Emergency-Call control module |
| A35/11 | Voice activation control module |
| M1 | Fiber optic control module 1 |
| M2 | Fiber optic control module 2 |
| M3 | Fiber optic control module 3 |
| M4 | Fiber optic control module 4 |
| ws | white insert (lens end) |
| rt | red insert (lens end) |

Do not knick or lay fiber optic cables over sharp edges, or bend in a radius of less then 25mm (1 inch). Do not apply more 25 N force on Inserts.
Do not expose fiber optic cables to temperatures beyond 185°F or to – 40 °F
Do not pinch fiber optic cables, therefore do not use hose clamps or cable ties to secure fiber optic cables.




P82.70-2189-06

Figure 1

## Diagnosis – Function Test

**Position of the Fiber Optic Control module Identification Tag:**
The identification tag for the models 170, 202, 208, 210, 220 is located behind the radio on the end of the fiber optic cable (Figure 2). Noted on the tag are the installed fiber optic control modules (M1 – M4) including the exact length (for that model).
On model 129,this identification tag is located in the trunk at the CD changer.

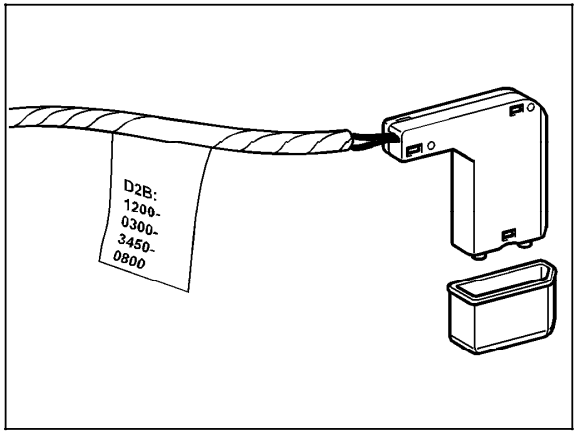



Figure 2 P82.70-2190-01

In case of required repair, the idividual fiber optic control modules (M1 – M4) can be ordered via the PDC (see Spare Parts Microfiche).

**Routing of the Fiber Optic Cables:**
The fiber optic cables are to be routed using the same routing as before (i.e. production lay-out). When routing the fiber optic cables, be sure to apply protective end cap (3, Figure 3) on end of each fiber optic cable end.

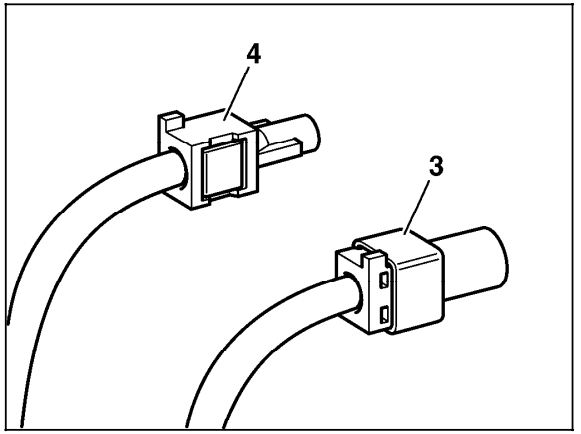



Figure 3 P82.70-2227-01

**For each individual model a sequence for the component connection is to be followed within the Ring-loop (see 11/1). The connection of the components is to be acomplished using the fiber optic controll modules (M1 – M4) only. They are secured to the wiring harness via an orange colored sleeve.**

## Diagnosis – Function Test

**In order to minimize the loss of light within/around the D2B components and its connectors, use these following cautions when handling/working with these same components:**

- Never remove the protective caps on the connectors or inserts before starting the work, likewise when disconnecting the connectors or removing the Inserts always cap the ends. Soiled/scratched/damged surfaces of the connectors/inserts result in "dampened" light transmission
- Do not knick or lay fiber optic cables over sharp edges, or bend in a radius of less then 25mm (1 inch), otherwise the fiber optic cable interior will yellow and then break. Yellowed or broken fiber optic cables will "dampen" the transmitted light.
- If the proper tools are not available to install the inserts onto the fiber optic ends, then use only the ready made idividual fiber optic control modules (M1 – M4).

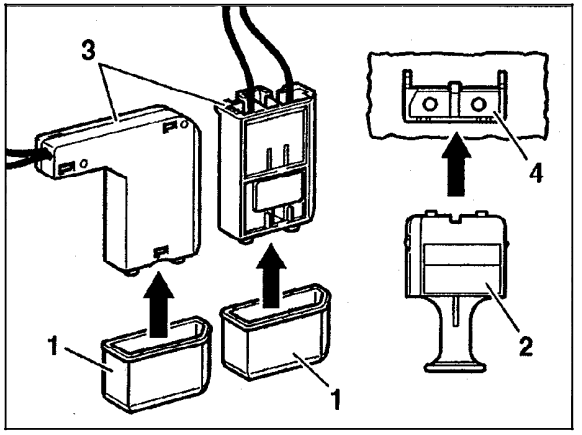



Figure 4 P82.70-2048-01

1 Use caution when pulling off the connector (3, figure 4) from the control module (4, Figure 4).
2 Cap-off connector end using a protective cap (3, Figure 4), and on component (4, Figure 4) using protective plug (2, Figurer 4).

## Diagnosis – Function Test

**Position Determination within D2B Ring-Loop**

In order to determine component position, the number of components must be known within the D2B Ring-Loop. This can be determined via the readout of the D2B Ring-Loop via the HHT or via Star Diagnosis System (Model 220).

In order to determine the component position, the following procedure must be observed:

- Readout DTC fault memory
- Readout via DTC memory indicates: No data transfer between radio (or COMAND) and the control module in position 3 (3, Figure 5).
- The CD changer (A2/6, Figure 5) is located in position 3 of the D2B Ring-Loop, see below. Thus the fault may lie either at the receiver unit for the CD changer or in the fiber optic cable to the CD changer itself.

The counting method for determining the position location during the fault finding diagnosis occurs in a **counter-clock wise direction (see arrows, Figure 5)** , which **is opposite** of the **information flow** (which flows clock-wise) within an intact D2B Ring-Loop.

| | |
|---|---|
| A2 | Radio |
| A2/6 | CD changer (in trunk) |
| A2/13 | Audio amplifier (Model 220 only) |
| A59 | D2B fiber optic interface |
| A59/1 | D2B interface/handy |
| A35/11 | Voice activation control module |

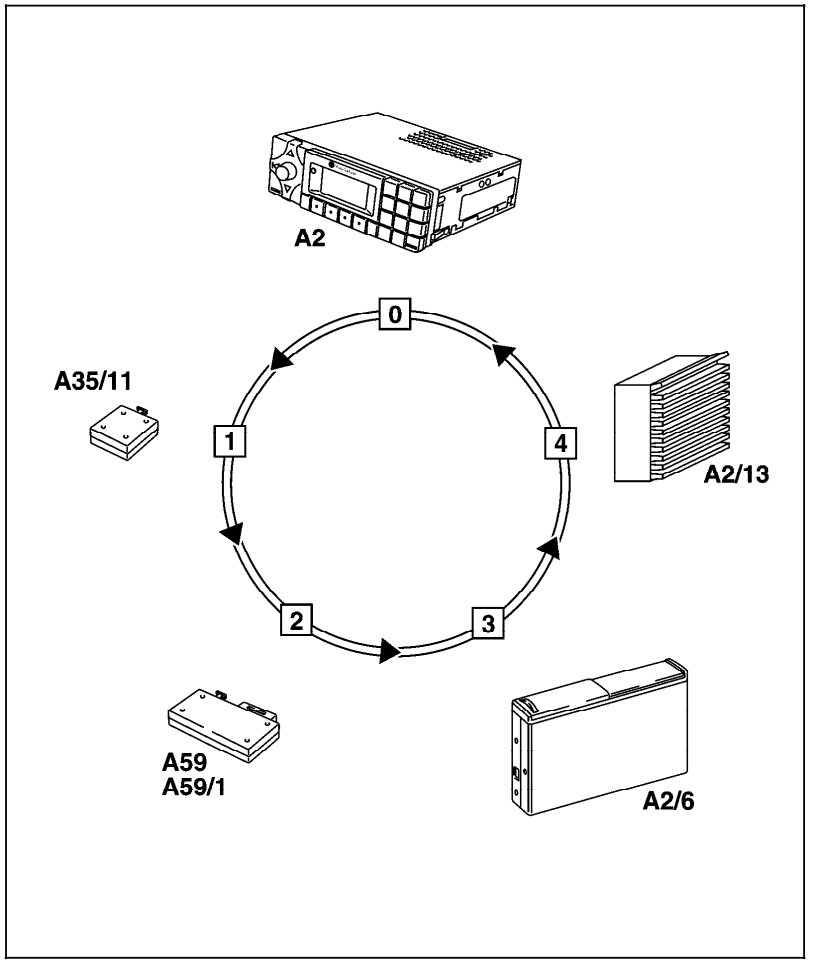



Figure 5 P00.00-2573-12

## Diagnosis – Function Test

**Preparation for Test:**

1. Review pages: 11/1 – 11/4,
2. Battery voltage: 11 – 14 V,
3. All fuses OK,
4. Determine Ring-Loop sequence (see 11/1) and activate only one of the components,
5. Review vehicle Data Card (see owners portfolio) to determine factory installed options (may not be same for each vehicle) as installed on vehicle.

| Test step/Test sequence | Test condition | Nominal value | Possible cause/Remedy |
|---|---|---|---|
| Activate D2B Ring-Loop<br>(CD changer, Code 819)<br><br>**OR**<br><br>Activate D2B Ring-Loop<br>(Voice activation system [VAS],<br>Code 813b).<br><br>**OR**<br><br>Activate D2B Ring-Loop<br>(Telephone Code 316, 317)<br><br>**OR**<br><br>Activate D2B Ring-Loop<br>(Sound amplifier, code 810)<br>(Model 220 only) | Radio/COMAND: **ON**<br>Play a CD in CD changer<br><br><br><br>Radio/COMAND: **ON**<br>Press button/switch on push button control module<br><br><br><br>Telephone: **ON**<br><br><br><br>Radio/COMAND: **ON** | Digital Data Bus is activated, volume, tone and indications must be without interference.<br><br>Digital Data Bus is activated,<br>Peep tone is heard.<br><br><br><br>Digital Data Bus is activated.<br><br><br><br>Digital Data Bus is activated, volume, tone and indications must be without interference. | see 12 |