



Mercedes-Benz



Technical Assistance for Proper Casualty Rescue from the Mercedes-Benz CL-Class (Model 215)

Training information

DaimlerChrysler AG
May 2005



Mercedes-Benz

Proper Casualty Rescue
Mercedes-Benz CL-Class (Model 215)

Vehicle overview





Vehicle design

◆ Crash test





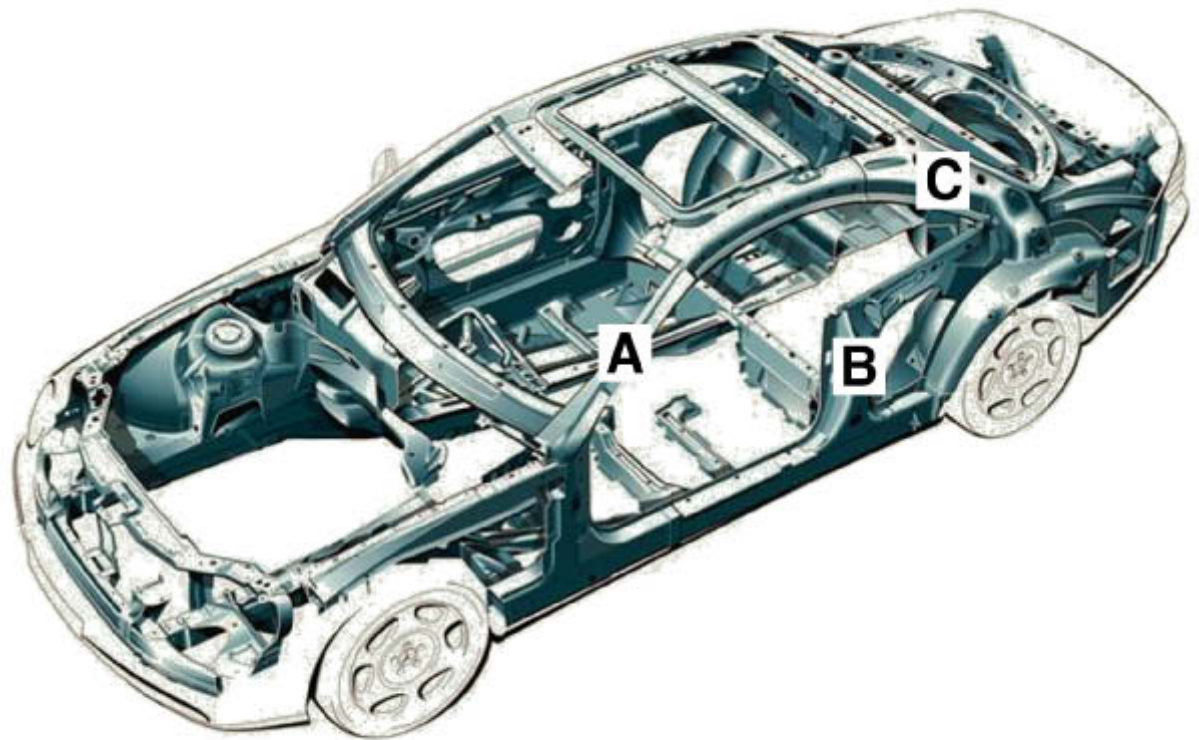
Vehicle design

◆ Body structure

A A-pillar

B B-pillar

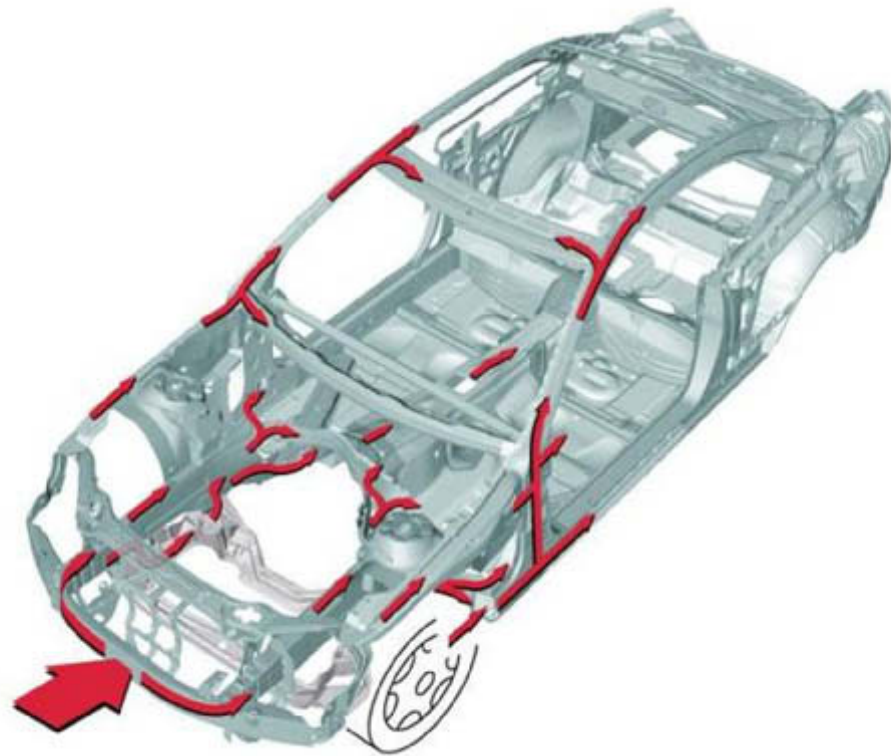
C C-pillar





Vehicle design

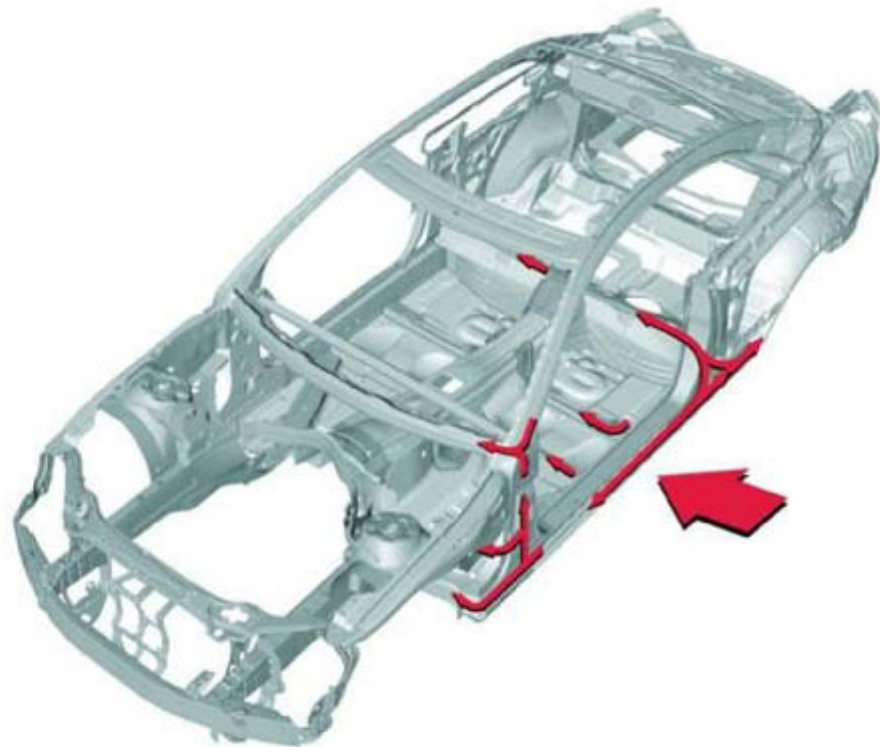
- ◆ Application of force, front





Vehicle design

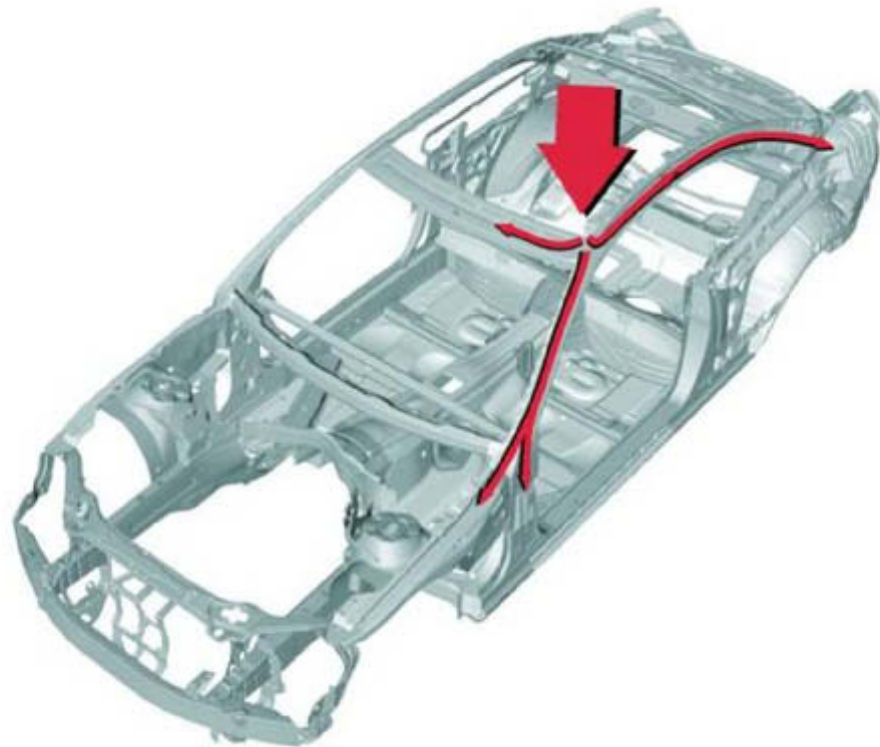
◆ Application of force, side





Vehicle design

- ◆ Application of force, roof





Vehicle design

◆ Body





Vehicle design

◆ Driver seat

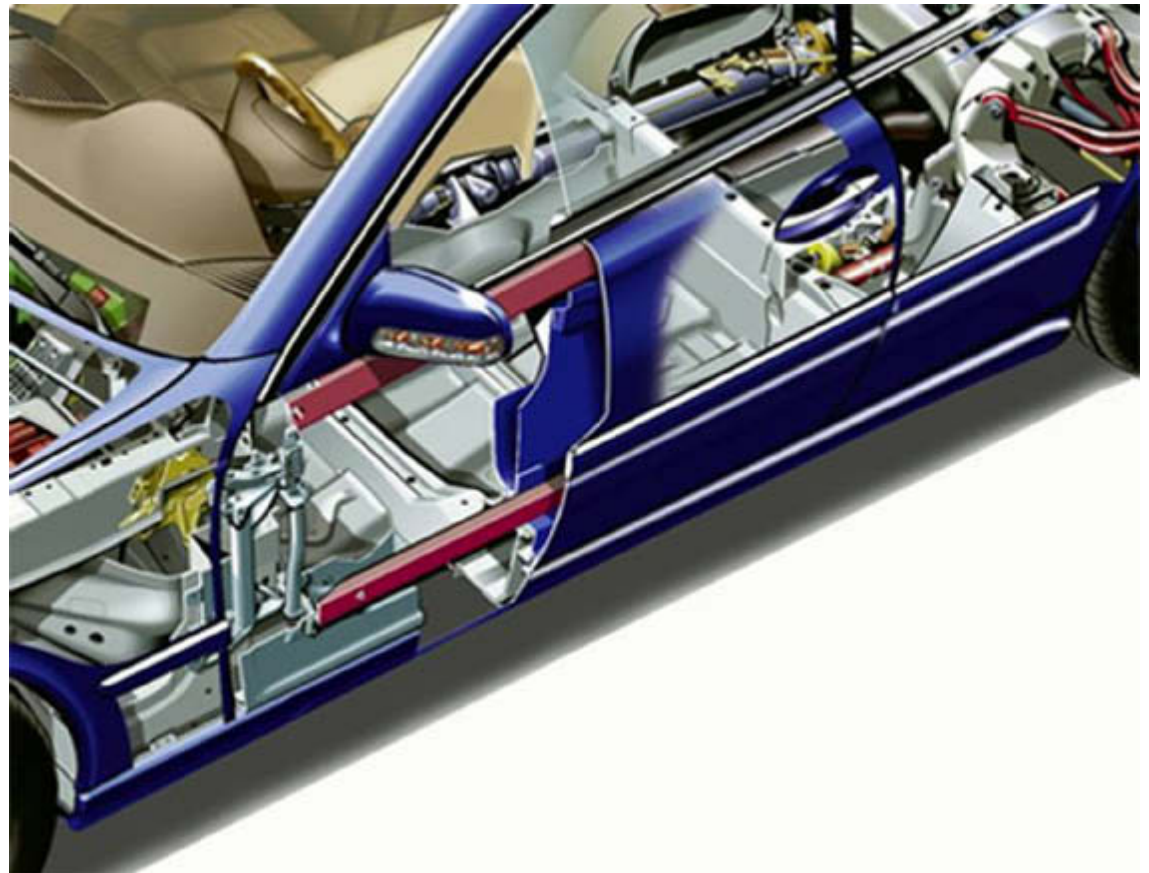




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Vehicle design

◆ Door hinge assembly





Vehicle design

◆ Door hinge assembly

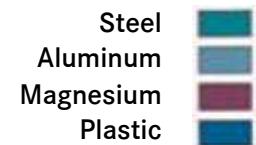
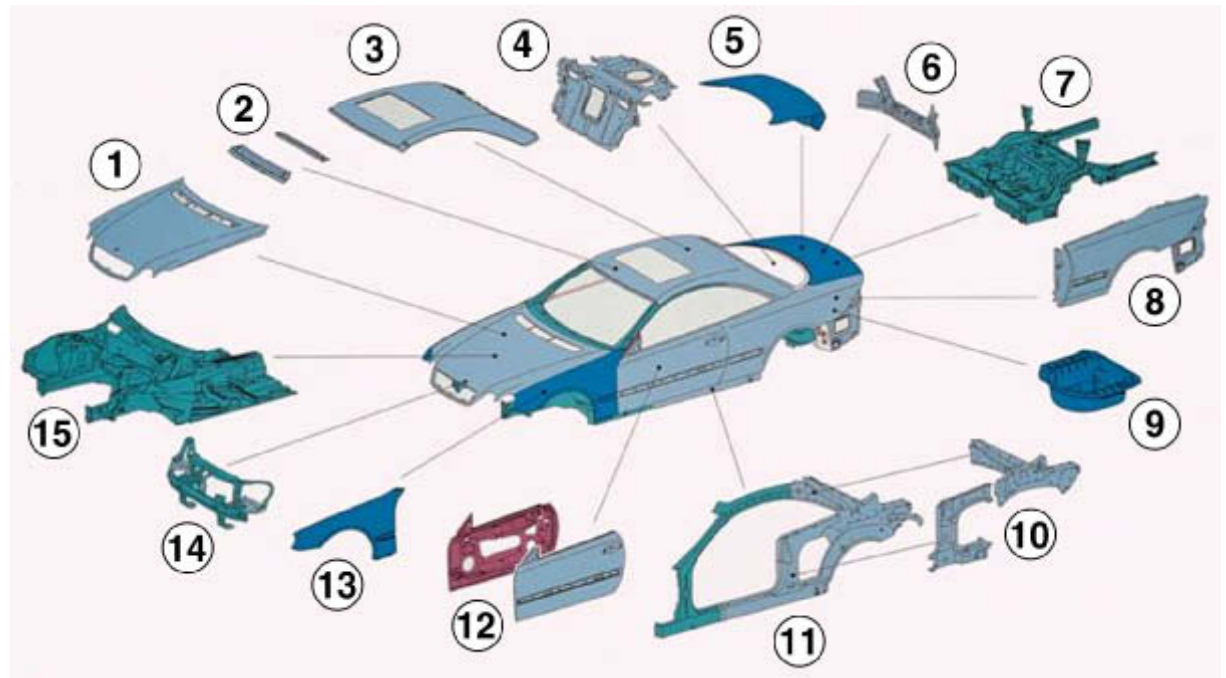




Materials

◆ Hybrid design

- 1 Engine hood made of aluminum sheet, diecast aluminum
- 2 Roof frame made of extruded aluminum sections
- 3 Roof made of aluminum
- 4 Rear wall made of aluminum
- 5 Trunk lid made of plastic
- 6 Bottom of rear center section made of aluminum
- 7 Rear floor assembly
- 8 Fenders made of aluminum
- 9 Spare wheel well made of plastic
- 10 Inside of B- and C-pillars made of diecast aluminum
- 11 Side wall made of extruded aluminum sections, aluminum sheet, sheet steel
- 12 Inner door panel made of pressure-diecast magnesium, outer panel made of aluminum sheet
- 13 Fenders made of plastic
- 14 Front module made of steel and aluminum sheet
- 15 Front section





Materials

◆ Hybrid design





Materials

◆ Windows

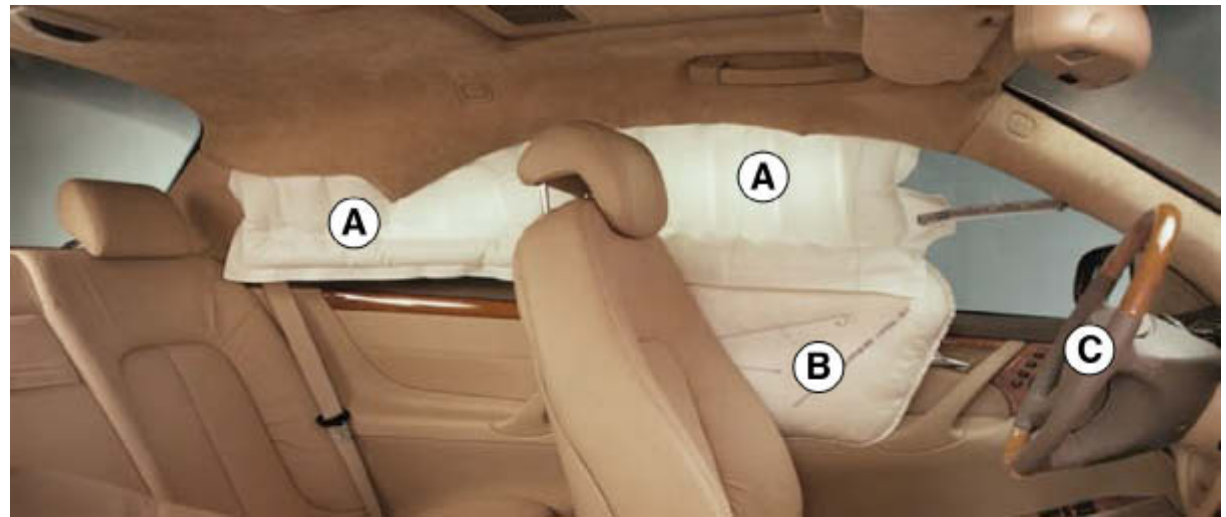



- Laminated safety glass in all windows
- Windshield and rear window bonded in
- The type of glass can be identified from the inscription printed on the window!



Safety systems

◆ Airbags



- A Windowbags
- B Sidebags in the doors
- C Multistage driver/front passenger airbag
-  Compressed gas generators in the C-pillar



Vehicle electrical/electronic systems

◆ Nothing works without electricity

The following control and comfort functions are operated electrically:

- Power windows
- Seat adjustment
- Steering column adjustment
- Easy entry/exit feature
- Outside mirror adjustment
- Sliding roof

i Use the electrical systems as necessary to aid the rescue before disconnecting the battery





Vehicle electrical/electronic systems

◆ Vehicle access and engine start via KEYLESS GO

Access and drive authorization is issued via a transmitter card which is recognized by the KEYLESS GO antennas in the vehicle.





Fire brigade procedure

- The "6 phases" of proper casualty rescue
 1. **Securing the area**
 2. **Assessing the situation**
 3. **Initial opening**
 4. **Treatment opening**
 5. **Rescue opening**
 6. **All necessary follow-up work**



Fire brigade procedure

- Further rescue principles
- The internal rescuer checks the interior compartment for airbags (SRS/SPS) and reports which airbags have deployed and which have not
- Know the safe distances (30-60-90); 30 cm from sidebags/kneebags, 60 cm from the driver's front airbag, 90 cm from the front passenger's front airbag
- According to the manufacturer there is no longer any danger of an airbag deploying after the battery is disconnected, because the time until which the entire system is without power is significantly less than 1 minute.
- The vehicle is left standing or lying where it is.
- The internal rescuer (person reporting the accident or rescue crewman) is responsible for tending to any casualties until they are rescued from the vehicle.
- Rescue tools: Kendrick Extrication Device or spineboard; scoop stretcher/vacuum mattress



Fire brigade procedure

1. Securing of the area by the fire brigade or the police





Fire brigade procedure

2. Assessment/securing the vehicle

- **Wedging the vehicle**





Fire brigade procedure

2. Assessment/condition and location of casualties





Fire brigade procedure

3. Initial opening/glass handling

- The rear window is sawn out to gain initial access





Fire brigade procedure

3. Initial opening/initial access

 **Maintaining the casualty's vital functions**

- **Access to the vehicle interior via the rear window**





Fire brigade procedure

3. Initial opening/battery handling

- The hazard warning system is switched on
- Electrical systems are used as necessary to aid the rescue
- The seat belts are cut
- The ignition is switched off

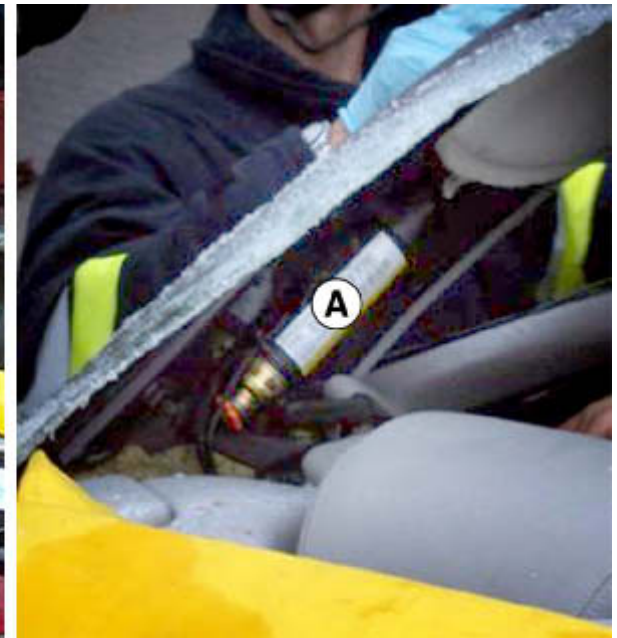




Fire brigade procedure

3. Initial opening/scanning for airbags

- The inner paneling is removed
- The cutting line is determined



A  Compressed gas generator in the C-pillar!



Fire brigade procedure

4. Treatment opening





Fire brigade procedure

4. Treatment opening

- The door is spread open and destroyed
- Working forward to the hinges and the door lock is extremely difficult
- Alternating use of the spreader and cutting gear is necessary
- The door is removed at this attempt, starting at the hinge side





Fire brigade procedure

5. Rescue opening

- The casualty can now be rescued from the vehicle

i Cutting through the roof pillars with the cutting gear was straightforward





Fire brigade procedure

6. All necessary follow-up work

- Clean the site of any leaked perating fluids
- Render assistance to the vehicle recovery crew
- Hand over the accident site to the police
- Remove the equipment used to secure the accident site





Fire brigade procedure

▶ Characteristics of modern materials

- **Plastic fenders**
Material broken when crushed with the spreader
- **Aluminum door panel**
Material torn when spreading





Epilogue

The information above is based on the current state of the art.

The pictures of the car under a truck were taken during the training course „Technical Assistance: Proper Casualty Rescue“ at the Düsseldorf Fire Brigade in cooperation with the Fire Brigade of Mainz-Finthen.

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