

2004 REQUIREMENTS FOR FMVSS/CMVSR COMPLIANCE

A. INTRODUCTION

Front Seats

Front seats have been designed to comply with FMVSS/CMVSR 201, 202, 207, 208, 210 and 302. **Any modifications to the front seats require recertification by the modifier.**

In the dynamic tests for restraint system performance of FMVSS/CMVSR 207, 208 and 210; 50th Percentile Male Hybrid III dummies are placed in the front outboard seats of the vehicle and restrained by the system with which compliance was determined for that seating position. Compliance to the barrier crash requirements of FMVSS/CMVSR 208 are achieved with the lap/shoulder belt and the next generation multistage airbags (steering wheel mounted driver's airbag and instrument panel mounted front passenger airbag). The lap/shoulder belt system includes constant force retractors (CFRs) and pretensioners for both the driver and front passenger seating positions. The seats are positioned at the midpoint of their fore-and-aft adjustment position, and reclining seatbacks are at the design attitude. Seat vertical position, if adjustable, is at the lowest position. The actual H-Point of each front outboard seat (see below) is first determined through the use of the SAE J1100 and the SAE J826 Three Dimensional Mannequin. The test dummies are then positioned relative to the measured H-Point of the particular seat.

Any change in the seat H-Point location, design seatback attitude, or lap/shoulder belt could jeopardize compliance with FMVSS/CMVSR 207, 208 and/or 210.

OCS (OCCUPANT CLASSIFICATION SYSTEM)

Front Passenger Seat

The OCS requires extensive development, certification testing, and calibration testing to meet FMVSS 208 requirements. Any and all changes/modifications: to seat profile including trim cover, foam, cushion position, OCS mat, OCS pressure tube, OCS module; and to materials including trim cover, foam, cushion pan, seat riser and to seat position to I.P and door; and to position of OCS mat, OCS pressure tube would require a new calibration and certification of the system.

DaimlerChrysler used the patented Delphi Corporation bladder system in this vehicle

B. Definition of Terms

We strongly urge alterers to become familiar with these regulations, specifications and definitions to ensure altered vehicles continue to comply with applicable requirements.

FMVSS Federal Motor Vehicle Safety Standard

CMVSR Canada Motor Vehicle Safety Regulation

FMVSS 201 Occupant Protection in Interior Impact

CMVSR 201 Occupant Protection in Interior Impact

FMVSS 202 Head Restraints

CMVSR 202 Head Restraints

FMVSS 207 Seating Systems

CMVSR 207 Seating Systems

FMVSS 208 Occupant Crash Protection

CMVSR 208 Occupant Crash Protection

FMVSS 210 Seatbelt Assembly Anchorage's

CMVSR 210 Seatbelt Assembly Anchorage's

CMVSR 210.1 Tether Anchorage's for Child Restraints

FMVSS 225 Child Restraint Anchorage System

FMVSS 302 Flammability of Interior Materials

CMVSR 302 Flammability of Interior Materials

H-Point Per SAE J1100—The H-Point is the pivot center of the torso and thigh on the two- or three-dimensional devices used in defining and measuring vehicle seating accommodation.

Design H-Point Per SAE J1100—The design H-Point is located on a drawing by the H-Point of the two dimensional drafting template placed in any designated seating position. If the designated seating position can be adjusted, the path of the design H-Point through the full seat adjustment range establishes the design H-Point travel line, and can be dimensionally described by coordinates relative to the three-dimensional reference system.

Midposition H-Point The measured H-Point of the front outboard seat when the seat is at the midpoint of its fore-and-aft adjustment positions. If an adjustment position does not exist midway between the forwardmost and rearmost positions, the closest adjustment position to the rear of the midpoint is used.

SGRP Seating Reference Point - (as defined in the Federal Register, 9/13/90) - means the unique design H-point, as defined in SAE J1100 JUN 1984, which: (1) Establishes the rearmost normal design driving or riding position of each designated seating position, which includes consideration of all modes of adjustment, horizontal, vertical and tilt in a vehicle; (2) Has X, Y, and Z coordinates, as defined in SAE J1100 JUN 1993, established relative to the designed vehicle structure; (3) Simulates the position of the pivot center of the human torso and thigh; and (4) Is the reference point employed to position the two-dimensional drafting template with the 95th percentile leg described in SAE J826 JUN 1993, or if the drafting template with the 95th percentile leg cannot be positioned in the seating position, is the most rearward adjustment position of the seating position.

OEM Original Equipment Manufacturer

FMVSS/CMVSR COMPLIANCE

SABIC Side Air Bag Inflatable Curtain

SgRP

To assure compliance with FMVSS/CMVSR for occupant protection, the following criteria must be satisfied.

1. Seat Assembly

If either the driver or front passenger seat assembly is modified or replaced, it will be necessary to use the SAE J826 two-dimensional seating mannequin during replacement seat design layout, and the three-dimensional manikin (H-Point machine) with the actual seat assembly to confirm that it meets the following requirements:

* The midposition H-Point and Seating Reference Point (SRP) must be the same as the original in all three planes (within 0.5 inches in any direction). (Reference - Figures 1, 2 and 3)

* The following H-Point machine angles as measured at the SRP must be the same as the original (within $\pm 2^\circ$)

(Reference - Figure 3):

- seatback
- thigh
- knee
- foot

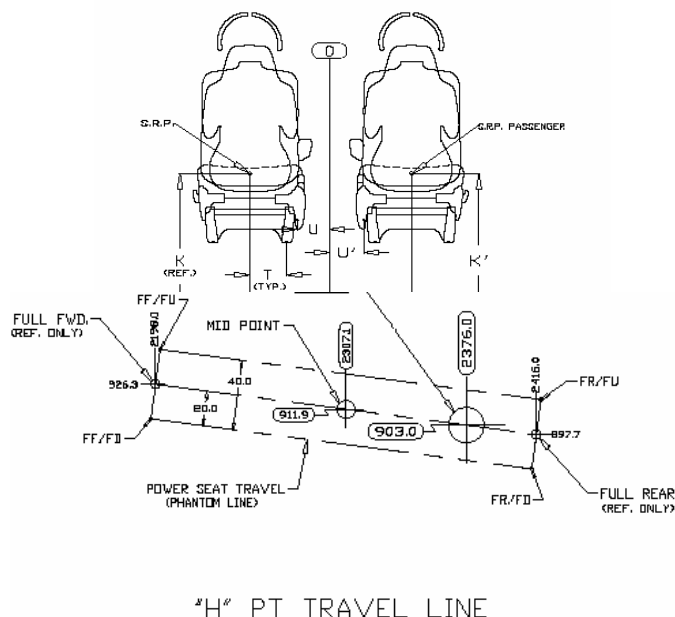


Figure 2

Seat cushion width (underpressed) must be the same as the original design adjacent to the seat belts in order to minimize belt slack (Reference - Figure 1).

Seatback minimum height must be as specified (Reference - Figure 3).

Seat cover material made of cloth, vinyl or leather is acceptable;

"H" POINT COORDINATES			
	X	Y	Z
DRIVER'S S.G.R.P.	2376.0	-413.0	903.0
DRIVER'S FULL FWD	2198.0	-413.0	926.3
DRIVER'S MID POINT	2307.0	-413.0	911.9
DRIVER'S FULL REAR	2416.0	-413.0	897.7
PASSENGER'S S.G.R.P.	2376.0	425.0	903.0

DIMENSIONS IN MM.

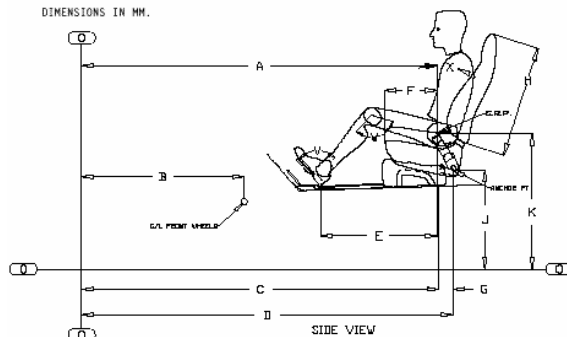


Figure 3

able; however, it must meet the flammability requirements of FMVSS/CMVSR 302 - Flammability of Interior Materials.

Seat and seat track strength must meet the requirements of FMVSS/CMVSR 207 - Seating Systems and FMVSS/CMVSR 210 - Seat Belt Assembly Anchorage's.

The locations of the midposition H-Point and the SRP must be maintained. (Reference - Figure 2)

* Because seat cushion stiffness can strongly influence seat belt performance in impact, replacement seat cushion deflection when loaded by the H-Point machine must be the same as in the original. A test to assure appropriate seat cushion stiffness is described in Figure 4.

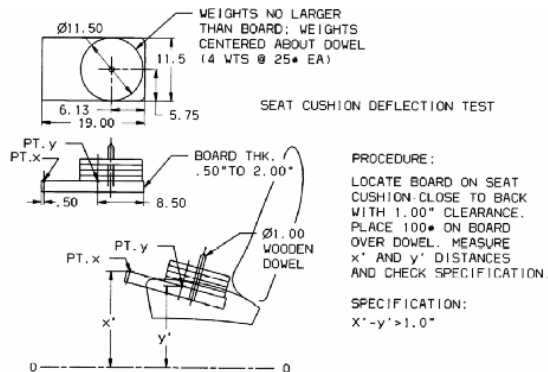


Figure 4

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* To maintain occupant restraint performance of the original front seats, modification of the seat structure is not recommended. Anti-submarine seat pan behavior must be retained. Any modifications to the front seats require recertification by the modifier.

2. Seat Risers and Seat Belt Anchorage's Front Seat Risers and Belt Anchorage's

If either of the front-seat risers is modified or replaced, the modified or replacement risers must accommodate the original seat belt assemblies and use the original anchor bolts. Anchorage locations and buckle orientation must be as original. (Reference - Figures 1, 3 and 5)

In addition, modified or replacement risers incorporating the original or replacement anchorages must simultaneously meet the requirements of FMVSS/CMVSR 210 - Seat Belt Assembly Anchorage's, and FMVSS/CMVSR 207 - Seating Systems.

The following design criteria also apply (Reference - Figure 4):

- * Attachment to the floor pan must be at the original locations using original or equivalent fasteners
- * The "footprint" on the floor pan must be equal to or greater than the original
- * Riser material strength and gauge must be equal to or greater than the original

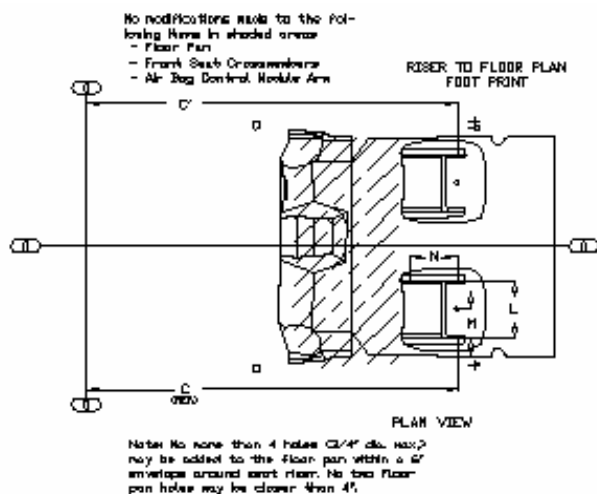
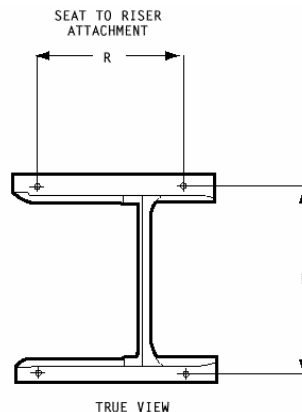


Figure 5



NOTE: Compliance of seat belt anchorages with FMVSS/CMVSR 210 - Seat Belt Assembly Anchorages, and of seats with FMVSS/CMVSR 207 - Seating Systems, remains the responsibility of the converter.

3. Seat Belt Assemblies Front Outboard Seating Positions

Original equipment seat belt assemblies, including constant force retractors, seat belt pretensioners, seat belt buckle switches, and fasteners, must be used without modification or substitution. This includes:

- B-Pillar interior trim panel
- Turning loop cover
- Buckle cover and scabbard
- System readiness lamp wiring and switch
- Adjustable turning loop

If another riser is used, the buckle-end belt anchorage location, by design, must be the same as that in the original seat riser in all three dimensions. Further, a 7/16-20 threaded hole must be provided at the anchorage for belt attachment. (See "Seat Riser and Seat Belt Anchorage's.")

The B-Pillar interior trim panel must not be removed or altered.

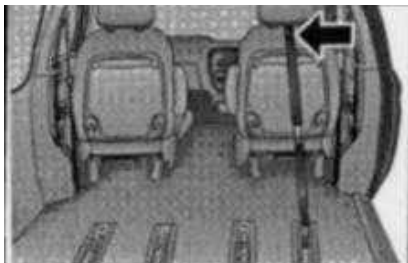
The belt must be routed so that it is free of friction or interference with other vehicle components. The seat belt must fully retract.

The buckle release button must be in design position/location and accessible for release of the belt with any inboard seat armrest in any position.

The turning loop must be free to rotate as the belt is put on, is in use by the occupant, or when it is stowed.

4. Tether Anchorage's for Child Restraint

*The front passenger seating position is equipped with a child restraint anchor tether. It is attached to the rear outboard seat anchor located just behind the front passenger seat. See below



*The rear seat anchor, child restraint anchor tether and the passenger seat have been tested as a system to meet the requirements of FMVSS 225 and CMVSR 210.1. Modification of any part of the system is not recommended.

*It is recommended that any modification to the vehicle does not interrupt the routing or position of the child restraint anchor tether. The tether must be free of friction or interference with other vehicle components.

Rear Seat Positions

It is the responsibility of the modifier to assure that seatbelt assemblies, seat anchorage's and seats provided for any rear seating position comply with the requirements of FMVSS/CMVSR 207, 209, 210.

4. Floor Pan

No structural changes may be made in the front floor pan or underbody structure in the vicinity of the front seat riser or forward of the front seat.

Referring to Figure 5:

- Front-seat riser attachment locations must be same as original.
- Front-seat riser attachment studs/bolts must be same as original.
- Holes added in the floor pan for the attachment of accessories are restricted in the area inside the six-inch envelope around the front seat riser. A maximum of four holes, 3/8- inch diameter or smaller, is permitted. No two floor pan holes may be closer than four inches to one another.

5. Front Seat Crossmembers

- No modifications are permitted to the front seat structural crossmembers, which are located under the floor pan laterally spanning the distance between the front rails
- The integrity of these structural crossmembers is vital for proper driver and passenger restraint in a crash situation
- Modifications to the crossmembers could potentially compromise the restraintsystem performance

DIMENSION CHART

DIM.	MM
A	2376.0
B	1084.4
C	2387.3
C'	2387.3
D	2478.0
E	281.0
F	354.8
G	90.7
H	745.1
J	661.8
K	903.0
K'	903.0
L	380.0
M	190.0
N	314.5
P	400.0
R	315.5
S	413.0
S'	425.0
T	190.0
U	166.3
U'	178.3
V	87.0 deg
W	116.3 deg
X	18.0 deg

This chart provides dimensions for all of the diagrams.

6. Instrument Panel

To assure continued compliance with FMVSS/CMVSR 208 Occupant Crash Protection and FMVSS/CMVSR 201 –Occupant Protection in Interior Impact, no changes except for appearance appliques are allowed in any instrument panel feature, including but not limited to:

- All instrument panel attachment points
- Lower steering column valance panel
- Instrument panel surface - both top and vertical portions
- Glove box door
- Center of Instrument Panel

7. Steering System

No changes are allowed in any steering system feature, including but not limited to:

- Steering column
- Steering wheel

- Driver air bag module
- Clockspring
- Shrouds
- Steering column cover

8. Interior Compartment

The interior compartment as originally manufactured by DaimlerChrysler Corporation, is designed to comply with FMVSS/CMVSR 201, Occupant Protection in Interior Impact. Some of the components include: interior trim panels, garnish moldings, headliner assembly, sunvisors, grab handles, and seat belt turning loops. **Modifications to the headliner / roof side rail / pillar ENVIRONMENT ABOVE THE BELTLINE will require recertification by the modifier.**

9. Next Generation Multi-Stage Driver and Front Passenger Airbag* System

Please refer to the Minivan Occupant Restraint System Section and the Minivan FMVSS/CMVSR Compliance Section for detailed information on the restraint system prior to ANY modifications to the vehicle.

10. Brake System

Compliance with FMVSS/CMVSR 135/105 - Hydraulic Brake systems will be maintained if:

- * No alterations are made to the service and parking brake systems.
- * The GVWRs and GAWRs are not exceeded.
- * NO alterations or disabling of the ABS system is allowed due to the potential for deterioration of the brake system performance. Sensor circuits or brake system components must not be modified in any way.
- * Hose / tube clearances must be maintained to components, such as heat sources and moving components, as per original dimensions to maintain durability and functional performance of the vehicle.
- * DO NOT block air flow to the brakes. If air flow is blocked or reduced, the brake performance will be diminished and lining life will be reduced.

11. Windshield System

The following windshield system components, related structural components and hardware as installed by DaimlerChrysler Corporation are not to be removed, relocated, or modified in any way:

- * Windshield and windshield mounting system
- * Body structure components including the pillars, roof, roof side rails, and headers
- * Doors, hood and liftgate assemblies and the mounting, hinging and latching systems

Any modification made to the vehicle as originally manufactured by DaimlerChrysler Corporation, including components or structure installed by the modifier must not result in loss of windshield retention (as defined in FMVSS/CMVSR 212), or any penetration of the inner surface of the windshield or intrusion in to the protected zone (as

defined in FMVSS/CMVSR 219), when the vehicle is impacted in any manner specified by applicable provisions of FMVSS/CMVSR 212 or FMVSS/CMVSR 219.

12. Fuel System

DO NOT remove, replace, relocate or modify ANY fuel system components

This includes, but is not limited to:

- * Fuel tank assembly and attachment hardware, including sending unit and vapor valve
- * Fuel lines, routing and attachments, including fuel filler cap, filler pipe assembly, filler hose, and filler system attachment hardware
- * Vapor line and carbon canister
- * Fuel pump
- * Natural Vacuum Leak Detection system/NVLD Filter
- * Fuel filter and attachment
- * purge device and purge line
- * Exhaust heat shields
- * Ground straps (filler tube and fuel filter)
- * Spring retainer bracket
- * Throttle body
- * Air cleaner assembly

No additional fuel tanks or connections may be added.

Any modification made to the vehicle as originally manufactured by DaimlerChrysler Corporation, including components or structure installed by the vehicle modifier, must not result in penetration, separation, or other damage to the fuel system or any portion thereof when the vehicle is tested in any manner specified by the applicable provisions of FMVSS/CMVSR 301, Fuel System Integrity.

* Certified to the Federal Regulations that allow less forceful front airbags. Always use seat belts. Children 12 and under should always be in a back seat correctly using an infant or child restraint system, or a seatbelt that is right for their age and size.

