



Seat Rear Impact Sled Test - Belted Occupant

1 Introduction

Note: Nothing in this standard supercedes applicable laws and regulations.

Note: In the event of conflict between the English and domestic language, the English language shall take precedence.

1.1 Purpose. This procedure evaluates the ability of the seat system to absorb a rear impact pulse as described in the Seat Global Subsystem Technical Specifications (GSSTS) and retain a 3-point safety belt restrained Seat GSSTS defined Anthropomorphic Test Device (ATD).

1.2 Applicability. This test shall be applied to all free-standing front and rear seats and all rear seats that are attached to outboard strikers only, in all General Motors passengers cars, multipurpose passenger vehicles, trucks and busses with a Gross Vehicle Weight Rating (GVWR) < 4536 kg (10 000 lb).

1.3 Remarks. Not applicable.

2 References

Note: Only the latest approved standards are applicable unless otherwise specified.

2.1 External Standards/Specifications.

49 CFR Part 572 FMVSS 208

2.2 GM Standards/Specifications.

None

2.3 Additional References.

Global Subsystem Technical Specification (GSSTS)

3 Resources

3.1 Facilities. An International Organization for Standardization/Quality System (ISO/QS) certified test lab with an acceleration test sled.

3.1.1 Calibration. The test facilities and equipment shall be in good working order and shall have a valid calibration label.

3.1.2 Alternatives. Alternative test facilities and equipment may also be used. However, all measuring variables as specified in this standard shall be determined correctly with respect to their physical definition.

3.2 Equipment.

3.2.1 Mounting Blocks. Rigid mounting blocks that simulate the floor attachment points and mount the seat subsystem in the body position on a bedplate or equivalent work surface.

3.2.2 Load Cell. The load cell's capability and positions are to be applied per the GM responsible engineer's direction.

3.2.3 Anthropomorphic Test Device. An ATD that meets the specifications for a 49 CFR Part 572 Hybrid III, non-instrumented.

3.2.4 Test Fixture. An acceleration test sled with a bedplate.

3.2.5 Video Imaging Equipment. Onboard image recording devices capable of recording 1000 frames per second (fps), for a duration of 500 ms (approximately 50 ms pretest, 450 ms posttest initiation).

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3.2.6 Photographic Equipment. Photographic equipment capable of producing the still prints described in 4.3.1 and 4.3.5.

3.3 Test Vehicle/Test Piece.

3.3.1 Complete Trimmed Seat Subsystem. A seat subsystem consisting of all the components necessary to qualify as complete for the model and trim level specified with the "H" Point Data provided by the Design Release Engineer/Design Engineer (DRE/DE).

3.4 Test Time.

Calendar time: 2 days
Test time: 4 hours
Coordination time: 8 hours

3.5 Test Required Information. Not applicable.

3.6 Personnel/Skills. The following individuals are necessary to complete this test procedure:

3.6.1 Design Release Engineer (DRE).

3.6.2 Validation Engineer (VE).

3.6.3 Testing Organization's Test Engineer.

3.6.4 Testing Organization's Test Technician.

4 Procedure

4.1 Preparation.

4.1.1 Mounting. Mount the seat subsystem on the appropriate rigid mounting blocks. Mount the seat belt to simulate vehicle conditions.

4.1.2 Position ATD. Set the seat adjusters as described in preparation for the placement of the various ATDs.

Note: Front and rear seat tests can be run simultaneously if desired.

4.1.2.1 Positioning for the 95MH3 ATD. Set the up/down seat adjuster to full down, the fore/aft seat adjuster to full rear first notch from hard stop and the head restraint to full up.

4.1.2.2 Positioning for the 50MH3 ATD. Set the up/down seat adjuster to midposition, the fore/aft seat adjuster to midposition and the head restraint to midposition.

4.1.2.3 Positioning for the 5MH3 ATD. Set the up/down seat adjuster to full up, the fore/aft seat adjuster to full forward first notch from hard stop and the head restraint to full down.

4.1.3 Position Seat. Position the seat back and adjuster tilt to the design position. If the seat is equipped with a 4-way head restraint, position the head restraint in full rear. Position all other adjustable features (e.g., lumbar, bolsters) to the fully retracted position.

4.1.4 Position Targets. Place a minimum of four (4) targets along the sides of the seat back for measuring the inboard and outboard seat back angles during the tests. One (1) target must be placed at the pivot point of the recliner and, if applicable, at the fold flat pivot. The minimum distance between the targets should be 300 mm.

4.1.5 Place the ATD. Place the ATD on the seat per FMVSS 208. Use the 3-point safety belt to buckle in the ATD, see Figure 1.

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