



Side Impact - Seat Structure

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. The purpose of this test procedure is to ensure that the seat system is suitable for side barrier and sled testing in a vehicle or rigid buck and an assessment of the European New Car Assessment Program side impact test as well as other test parameters.

1.2 Applicability. Applies to each designated seating position.

1.3 Remarks. In conducting dynamic testing European Side-Impact II Dummy (EuroSID II (ES2)) is utilized. The intent of the test is to determine whether the seat structure is capable of maintaining the required loads for dynamic testing in accessing occupant performance. This procedure describes the method for testing the seat outside of the vehicle, however, in some instances the vehicle body or portions of it may be required. The procedure also evaluates the static requirements for integrity and stiffness required to meet multiple side impact requirements.

All values given in this test procedure were valid at the date of issue. For the actual values, refer to the newest editions of the standards mentioned in 2.1.

2 References

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

2.1 External Standards/Specifications.

CMVSS 208

Euro-NCAP

FMVSS 208

SAE J826

2.2 GM Standards/Specifications.

None

2.3 Additional References.

- Global Subsystem Technical Specification (GSSTS)
- Appendix B from sourcing package

3 Resources

3.1 Facilities. International Organization for Standardization (ISO) certified lab facility.

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. Safety belts required with activation times of pretensioning as described in Appendix B of the sourcing package.

3.2.1 Equipment for Dynamic Testing.

3.2.1.1 Test stand and fixture setup to retain test plate or vehicle and other equipment needed to conduct test. Sled facility and rigid plate that is capable of reproducing velocities provided from Euro-NCAP and other side impact pulses.

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3.2.1.2 Test fixture to attach Type II Safety Belt in vehicle B pillar geometry.

3.2.1.3 EuroSID II (ES2).

3.2.1.4 Additional equipment information for dynamic testing.

- Two (2) high speed cameras stationary on the left and right side of the sled (right angled, total view).
- Acceleration sensor fixed on the sled.
- Seat belt load cell at shoulder belt and at left and right side of pelvis belt; load cell placed in a way that there is no interaction with surrounding parts during the dynamic event.

3.2.2 Equipment for Static Testing.

3.2.2.1 An Instron or similar equipment or load actuator capable of producing loads in excess of 12 kN.

3.2.2.2 A data recorder capable of transmitting load versus displacement and recording the plot.

3.2.2.3 A test stamp for applying the load with dimensions of 50 mm in height with length to correspond with the length of the entire side member. The center of the height of the test stamp should be equivalent to the center height of the seat side member.

3.3 Test Vehicle/Test Piece. Testing may be conducted on bedplate. Vehicle or buck may be required to fixture the seat if part of the seat is attached to the body for dynamic testing. For the dynamic testing, the seat should be adequately trimmed in order to provide proper interaction of the ES2. For the static testing, representative seat structure is required with limited trim if required to properly apply the loads.

3.4 Test Time.

Calendar time: 5 days

Test hours: 8 hours

Coordination hours: 8 hours

3.5 Test Required Information.

3.5.1 Weight of seat and H-point to be provided with each test ready seat.

3.5.2 Sled pulse provided by General Motors Responsible Engineer as specified in Seat – Global Subsystem Technical Specification (GSSTS).

3.5.3 Orientation angle of tested seat should be 90 degrees for dynamic testing

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

3.6.1 General Motors Responsible Engineer.

3.6.2 Testing Organization's Test Engineer.

3.6.3 Testing Organization's Test Technician.

4 Procedure

4.1 Preparation. Test plate or vehicle buck and equipment to rigidly affix the seat.

4.2 Conditions.

4.2.1 Environmental Conditions. Test to be conducted at ambient.

4.2.2 Test Conditions. Deviations from the requirements of this standard shall have been agreed upon. Such requirements shall be specified on component drawings, test certificates, reports, etc.

4.3 Instructions.

4.3.1 Dynamic Testing.

4.3.1.1 Rigidly affix the seat to represent method for attachment to the bed plate as shown in Figure 1.

- Seat Height Adjustment: Mid Position.
- Seat Tilt Adjustment: Mid Position.
- Back Angle: Design Position.
- Headrest: Mid Position.

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