



Seat Structure Fatigue Durability

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 test procedure evaluates the structural durability characteristics of the seat by simulating the load generated from traveling a road with a heavy person sitting on the seat.

1.2 Applicability. This procedure applies to all GM passenger cars, light duty and medium duty trucks.

1.3 Remarks. The intent of the test is to assess the fatigue durability of the seat structure. Damage to individual components other than the main structure (i.e., cushion suspension, lumbar, cushion length adjuster, etc.) should not be considered in the overall structure fatigue assessment.

2 References

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

2.1 External Standards/Specifications.

SAE J826

2.2 GM Standards/Specifications.

None

2.3 Additional References.

- Subsystem Technical Specification (STS).

3 Resources

3.1 Facilities. An approved GM certified test lab with an adequate bed plate or equivalent work surface necessary for mounting the test sample and associated test fixtures appropriate for the procedure to be run.

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.

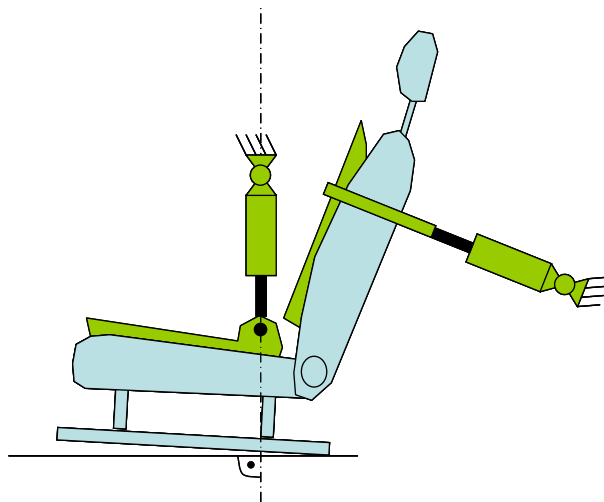
3.2.1 Mounting Fixture. A means to support the seat system including rigid mounting blocks, or equivalent, simulating the floor attachment points to mount the seat system in body position on a bed plate.

3.2.2 Load Application Device. Actuators with a load capacity of 3000 N each and connections to the seat and back pan so that seat and backrest can be loaded simultaneously.

3.2.3 Load Cell. A load cell with 3000 N capacity or equivalent for measuring applied load to seat and back.

3.2.4 Loading Device. A loading device simulating an occupant on the seat, similar to the H-point dummy seat pan (as described by the currently approved SAE J826 Three Dimensional (3D) form). The actuator is connected to the seat pan using a pivot bearing around the y axis lying in the H-point, its axis perpendicular to the bedplate. A second loading device for the backrest, using a backrest pan (SAE J826) and a bracket to connect the pan to the actuator located behind the backrest (may also be located above the seat in front of the backrest). Here the pivot point is located at the connection of bracket and pan, as close to the pan as possible. The actuator axis is perpendicular to the backrest at half of its travel during the test (see Figure 1).

Figure 1: Test Setup



The loading and unloading movements of both actuators always start approximately simultaneously. Their velocities have to be adjusted, so that they both reach full load at approximately the same time. Now the next movement (unloading after loading and loading after unloading) starts simultaneously on both actuators after they have reached maximum load.

Based on engineering judgment (i.e., for the testing of improvements) seat and backrest loading may be tested separately.

Note: Calibrate all instrumentation as required.

3.3 Test Vehicle/Test Piece. Complete Trimmed Seat Subsystem. An appropriate seat subsystem consisting of all components necessary to qualify as complete for the model and trim level specified by the Design Release Engineer (DRE).

3.4 Test Time.

Calendar time:	10 days
Test hours:	204 h
Coordination hours:	8 h

3.5 Test Required Information. Not applicable.

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

- General Motors Design Release Engineer.
- General Motors Validation Engineer.
- Testing Organization's Test Engineer.
- Testing Organization's Test Technician.

4 Procedure

4.1 Preparation.

4.1.1 Visual Inspection. The Design Release Engineer shall visually inspect the seat assembly for correct part numbers, quality of frame welds, proper fit and assembly and the presence of all required parts.

4.1.2 Mounting. Mount the seat subsystem on the appropriate model mounting blocks. Include mounting spacers if specified for installation.

The slide angle on the adaptation has to be within 0.25 degrees difference to the specified angle. The seat anchorage points of the adaptation are to be within 0.2 mm deviance to the specified points.

4.1.3 Adjustment Setting. If so equipped, set all adjustments of the seat as follows: