



Seat Back Recliner Durability Cycle

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 cycle durability of manual and power seat back recliners.

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

1.3 Remarks. Not applicable.

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.

GMW14610

2.3 Additional References.

- GM approved test report form provided at sourcing in the Statement of Requirements.
- Seating arrangement drawing.
- Statement of Requirements.
- Subsystem Technical Specification (STS).
- Thermotron Inc. (thermotron.com)

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 Temperature Controlling Device. Thermotron environmental chamber or equivalent.

3.2.3 Cycling Device.

3.2.3.1 Lever Type Recliners. The device shall consist of actuators with the required stroke capacity to release the seat back recliner lock and recline the seat back. It shall also consist of electronic programming unit, timer, limit switches and any other necessary controls.

3.2.3.2 Rotary Type Recliners. Cycling device driven by an electric or pneumatic motor with reverse control of the rotation direction. This device should have a clutch between motor, actuator and hand wheel for the seat back adjuster. Two (2) actuation switches to determine the testing angle range.

3.2.3.3 Power Recliners. The device shall consist of actuators with the required stroke capacity to actuate the recliner power switch to recline the seat back and also consisting of electronic programming unit, and timer and any other necessary controls.

3.2.4 Back Form. An SAE J826 Back Form modified to pivot about the seat's Seat Reference Point (SRP) and to receive added weights when testing power recliners.

3.2.5 Weights. Weights as required in the Subsystem Technical Specification (SSTS) to be added to the Back Form when testing power recliners. For rotary type recliners, weight of 5 kg with a steel cable and deflection pulley is needed as shown in Appendix A, Figure A1.

3.2.6 Angle Measuring Device. The device shall be capable of measuring an angle with a capacity of 0.1°.

3.2.7 Counter. A counter set to track cycles completed.

3.2.8. Torque and Rotation.

3.2.8.1 Measuring device for torque and rotation angle.

3.2.8.2 Recording equipment to plot torque-angle diagrams.

Note: Calibrate all instrumentation as required.

3.3 Test Vehicle/Test Piece. Completed 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. For complete recliner evaluation, including potential trim wear, the seat bottom should be fully trimmed and the seat back should be fully trimmed to the heaviest seat back design. However, for preliminary recliner evaluation, a bare frame may be used with weights added at the seat back center of gravity to equal the weight of the heaviest seat back design.

3.4 Test Time.

Calendar time: 7 days

Test hours: 6 days

Coordination hours: 1 day

3.5 Test Required Information. The part number of the seat as well as the level of the part should be provided with the seat. Obtain from the seating arrangement drawing or from the Design Release Engineer, the design position of the seat (seat back angle, cushion frame angle, H-point location, track position, and height adjust position).

3.6 Personnel/Skills.

3.6.1 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 Manual Reclining Systems.

4.1.1.1 Lever Type Recliners.

4.1.1.1.1 Mount the seat subsystem on the mounting fixture to the work surface and place the cushion adjuster to the design position, and the seat back at the design back angle.

4.1.1.1.2 Locate the cycling device so as to recline the seat back without binding or undue forces to the seat back.

4.1.1.1.3 Adjust the load form of the cycling device so the load application point is at the upper structure of the seat back.

4.1.1.1.4 Adjust the recliner handle release mechanism on the fixture to completely release the mechanism without having to apply excessive force to the handle at the release stop.

4.1.1.2 Rotary Type Recliners.

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