



Under Seat Storage Box Strength and Durability Test

1 Scope

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 strength and durability of the seat storage box which is installed to the seat or body.

1.2 Foreword. Not applicable.

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

2 References

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

2.1 External Standards/Specifications.

None

2.2 GM Standards/Specifications.

None

2.3 Additional References.

Global Subsystem Technical Specification (GSSTS)

GM Approved Test Report Form

3 Resources

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

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. The means to support the seat storage box including rigid mounting blocks, or equivalent, simulating the attachment points to mount the seat storage box in body or seat on a bed plate.

3.2.2 Temperature Controlling Device. A chamber shall be capable of setting the temperature from -30 °C to 70 °C.

3.2.3 Load and Length Measuring Device. A device which is capable of measuring loads with accuracy not exceeding 10 N and length not exceeding 0.1 mm.

3.2.4 Loading Device. A device shall be capable of applying 500 N.

3.2.5 Weight. A weight of 500 g.

3.2.6 Recorder. A device capable to record load, displacement and plotting a load to displacement graph.

Note: Calibrate all instrumentation as required.

3.3 Test Vehicle/Test Piece.

3.3.1 Seat Storage Box. An appropriate seat storage box must include all components necessary to mount in the seat or body.

3.4 Test Time. Not applicable.

3.5 Test Required Information. The following information shall be provided to the testing organization: seat fore/aft design position, seat back design position, and Global Subsystem Technical Specification (GSSTS) specified weight.

3.6 Personnel/Skills.

3.6.1 General Motors Design Release Engineer/Designing Engineer (DRE/DE).

3.6.2 General Motors Validation Engineer.

3.6.3 Testing Organization's Test Engineer.

3.6.4 Testing Organization's Test Technician.

4 Procedure

4.1 Preparation.

4.1.1. Visual Inspection. The DRE/DE will visually inspect the test 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 storage box on the appropriate mounting blocks. Include mounting spacers if specified for installation.

4.1.3 Weights. If specified in the GSSTS, introduce a weight in the box for the durability test.

4.2 Conditions.

4.2.1 Environmental Conditions. The durability test may be performed at room temperature or temperatures representative of vehicle profile. Validation Engineer to use engineering judgment based on materials used.

Durability test shall be conducted in temperature of -30 °C and 70 °C respectively.

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 Storage Box Durability Test.

4.3.1.1 Using the load measuring device, e.g., push-pull gauge, measure the opening, closing and lever operating effort before durability test.

4.3.1.2 Adjust the storage box from the foremost to rearmost position at a speed of 4 CPM and then from the rearmost to foremost points until the stopper is touched in parallel with the guide. Continue until it reaches 3000 cycles at room temperature, 500 cycles at 70 °C, and another 500 cycles at -30 °C respectively. Before starting a low and high temperature test, the test piece should be soaked for four hours at the test temperature.

4.3.1.3 Using the load measuring device, measure the opening, closing and lever operating effort after durability test in the temperature ranges specified in the GSSTS. Operational noises before, during and after the durability test shall be monitored and documented.

4.3.2 Storage Box Inside Strength Test (Drop Opening Test).

4.3.2.1 Fix the storage box vertically at the same attachment points as in vehicle, as shown in Figure 1 so that the front side faces down.

4.3.2.2 Put the weight of 500 g into the tray and fix it as shown in Figure 1 so that it cannot move during free falling.

4.3.2.3 After exposing the tray to -30 °C for 4 h, unlock it inside the -30 °C chamber to drop to the full stroke (see Figure 1).

4.3.3 Storage Box Stopper Strength Test.

4.3.3.1 With the tray full open, apply the load specified in the GSSTS at the position agreed with the Design Release Engineer (DRE) (usually the center of the storage box).

4.3.3.2 Measure the load and displacement and plot the load to displacement graph.