GM WORLDWIDE ENGINEERING STANDARDS	Test Procedure	GMW14518

Manual Seat Length Adjuster - 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.

Note: All stated values are valid unless otherwise specified, for example in the Subsystem Technical Specification (SSTS) for seats.

1.1 Purpose. This is a test for the durability of the manual seat length adjuster.

1.2 Applicability. For all seats equipped with a seat length adjuster (front and rear seats).

1.3 Remarks. The verification of the manual seat length adjuster is a durability test to simulate lifetime usage. Any damage occurring shall be assessed individually on the basis of relevance. If damage occurs in newly developed seats, correlations shall be ascertained between the durability test and the field (determine collective loading in vehicle).

2 References

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

2.1 External Standards/Specifications.

SAE J726

2.2 GM Standards/Specifications.

GMW14264

2.3 Additional References.

Subsystem Technical Specification (SSTS) for Seats.

3 Resources

3.1 Facilities.

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.

3.1.3 Climatic chamber.

3.1.4 Seat length adjuster durability test rig (refer to 4.1).

3.2 Equipment.

3.2.1 Force measuring device with recorder (maximum 500 N, accuracy 0.1%).

3.2.2 Dust according to SAE J726b.

3.3 Test Vehicle/Test Piece. Seat assembly.

3.4 Test Time. Not applicable.

3.5 Test Required Information. Not applicable.

3.6 Personnel/Skills. Not applicable.

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4 Procedure

4.1 Preparation.

4.1.1 The complete seat shall be mounted on the durability test rig using a vehicle specific adaptation using the slide angle found in the target vehicle. If the seat is not the heaviest complete seat version additional loads have to be added to simulate the heaviest version with a correct weight distribution.

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.

All the other adjusters are in design position. Adjust backrest to design position or corresponding to 25 degrees torso line angle.

4.1.2 The seat is subjected to load using a test dummy shaped similar to an H point dummy using only the bottom panel. The applied load is 105 kg ± 0.5 kg for a single or split (60/40) seat and 150 kg ± 0.5 kg for full width seats. Seventy-five percent (75%) of the load shall be in the rear, 25% on the front area of the seat. The test dummy should be secured with a load strap to prevent it from falling off. A force application connection in the H point position has to be fitted.

4.2 Conditions.

4.2.1 Environmental Conditions. The test shall be performed mostly at room conditions +23 °C ± 3 °C, 50% ± 5% Relative Humidity (RH). Some cycles shall be done at +60 °C ± 3 °C, 80% ± 5% RH and -15 °C ± 3 °C. For the number of cycles at each temperature, refer to 4.3.2. With engineering judgment based on the materials used, the test may be done completely at room conditions.

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 Pre/Post Testing. Before and after test, the release and operating efforts of the seat length adjuster are to be measured at room conditions, refer to 4.2.1, but also at +80 °C ± 3 °C, 50% ± 5% RH and -35 °C ± 3 °C. The release effort is to be measured in the center of the area where the user handles the release lever. Further, the operating effort has to be measured at the front slides connection tube from end stop to end stop keeping 20 mm distance to the actual stop with a load of 105 kg ± 0.5 kg for a single or split (60/40) seat and 150 kg ± 0.5 kg for full width seats applied and without load. The minimum and maximum efforts are to be noted and rated with the efforts table in the Subsystem Technical Specification, Control and Operation Efforts.

4.3.2 Durability Testing. For the total number of cycles, see Table 1. Three of the nine cycle schedules are tested over 100% of the adjustment range. Three of the nine of the cycle schedules are tested over 90% of the adjustment range, stopping 5% short of the full adjustment range in each direction. Another Three of the nine of the cycle schedules are tested over 75% of the adjustment range, stopping 12.5% short of the full adjustment range in each direction.

One (1) cycle consists of unlocking, sliding, locking, then a short pull/push of ≤ 100 N in the opposite direction to ensure locking occurs. During backward motion, the locking shall be released in a distance of 30% in front of the rear end stop. Additionally, for the 100% adjustment range cycles, the locking mechanism shall be loaded with 200 N ± 10 N on the end stop for at least 1 s in the backward direction. This locking test is to be repeated during forward motion. The locking mechanism during backward and forward motion has to be released always at the same position (1 mm accuracy). Adjustment speed is 30 cm/minute at room temperature.

Distribute a total of 4.5 g of dust (SAE J726b in 1.5 g increments) on the lower slides at the cycle counts identified in Table 1. If decided according to 4.2, all cycles may be done at room conditions.

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