



Belt Assembly - Temperature Operation

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. To determine if the safety belt assembly will function at environmental temperature extremes.

1.2 Applicability. To all safety belt assemblies.

1.3 Remarks. Safety belt assemblies in the vehicle may be subjected to temperature extremes of -40 °C to 100 °C. Exposure to these temperatures may be infrequent but it is necessary that the safety belt assembly functions at these extreme temperatures. Refer to the Safety Belt Assembly Drawing for exemptions or additional requirements.

2 References

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

2.1 External Standards/Specifications.

None

2.2 GM Standards/Specifications.

GMW14831

2.3 Additional References.

- American National Standard for Calibration, Calibration Laboratories and Measuring and Test Equipment – General Requirements
- GM Master Math File
- GM Math File Log
- Safety Belt Assembly Drawing

3 Resources

3.1 Facilities. GM certified test lab.

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 Belt assemblies to be tested.

3.2.2 Environmental chamber capable of maintaining a temperature of -40 °C.

3.2.3 Environmental chamber capable of maintaining a temperature of 100 °C.

3.2.4 Static tilt angle fixture.

Note: All equipment must be calibrated in accordance with American National Standard for Calibration, Calibration Laboratories and Measuring and Test Equipment – General Requirements.

3.3 Test Vehicle/Test Piece. Belt assemblies.

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3.4 Test Time. Allow for temperature requirements, actual test and notes.

3.5 Test Required Information. Note results.

3.6 Personnel/Skills. Test engineer.

4 Procedure

4.1 Preparation. See GMW14831, section Appendix G; Analysis, Design Verification Plan and Report (ADVP&R) Outline.

4.2 Conditions. See GMW14831, section Appendix G; Analysis, Design Verification Plan and Report (ADVP&R) Outline.

4.2.1 Environmental Conditions. Not applicable.

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. Deviations from the requirements of this standard shall be approved by GM engineering and documented in the GM Math File Log.

4.3 Instructions.

4.3.1 Place the safety belt assemblies (including the adjustable upper guide mechanism) with latch-plates "unbuckled" and retractors in body position, as defined by the GM Master Math File, in the test chamber and allow the belt assembly to condition at the specified temperature (-40 °C) for a minimum of 6 h. All the evaluations are to be performed in the environmental chambers or within 2 minutes after removal from the chamber.

4.3.1.1 Latch and unlatch the buckle and latch plate ten (10) times and check for normal operation.

4.3.1.2 Check for normal operation of the retractor as applicable.

a. **Automatic Locking Retractors.** Fully extract the webbing then retract webbing 25% of nominal stowage length and check for a lock. Release the lock by retracting the webbing fully then fully extend and retract the webbing. Repeat this sequence for a total of ten (10) cycles.

b. **Vehicle Sensitive Retractors.** Fully extend and retract the webbing ten (10) times. Check for the proper operation of the comfort feature (set and release) and web lock ten (10) times if applicable. Check the tilt angle lock-up characteristics at the specified lock and no-lock angles.

4.3.1.3 With the adjustable upper guide mechanism assembly in the test chamber, cycle the mechanism ten (10) times and check release effort, adjust effort.

4.3.1.4 Remove the assemblies from the test chamber and allow the test sample's temperature to stabilize to room temperature.

4.3.2 Repeat step 4.3.1 at 100 °C and check for proper operation per steps 4.3.1.1 through 4.3.1.4.

5 Data

5.1 Calculations. Not applicable.

5.2 Interpretation of Results. Not applicable.

5.3 Test Documentation. Note results.

6 Safety

This standard may involve hazardous materials, operations, and equipment. This standard does not propose to address all the safety problems associated with its use. It is the responsibility of the user of this standard to establish appropriate safety and health practices and determine the applicability of regulatory limitations prior to use.

7 Notes

7.1 Glossary. None.

7.2 Acronyms, Abbreviations, and Symbols.

ADVP&R Analysis, Design Verification Plan and Report

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