Retractor/Buckle - Drop Impact

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 the susceptibility of a safety belt assembly being damaged from potential assembly plant abuse.

1.2 Applicability. To all safety belt assemblies.

1.3 Remarks. During the manufacturing, shipping and installation of the belt assembly into the vehicle there is a potential to drop the belt assembly. This procedure subjects the belt assembly to an impact that a belt may receive and yet still be installed into the vehicle. The major concern is that the impact may cause internal damage to the belt assembly that is not readily apparent. For this reason the retractor must be checked for locking characteristics after being drop tested. The buckle and adjustable guide loop mechanism must meet all functional requirements after being drop tested.

2 References

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

2.1 External Standards/Specifications.

None

2.2 GM Standards/Specifications.

GMW14300 GMW14831

2.3 Additional References.

GM Math File Log

3 Resources

3.1 Facilities. General Motors 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 Safety belt assemblies to be tested (retractor, buckle side, and adjustable guideloop mechanism).

3.2.2 One (1) meter scale.

3.2.3 Impact surface. Concrete floor.

3.3 Test Vehicle/Test Piece. Not applicable.

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 Sample Preparation. Buckles and retractors must be assembled into the components as the assembly plant would receive (i.e., belt assemblies, center units).

4.2 Conditions.

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 Hold the retractor, buckle, or adjustable guide loop mechanism 1 m above the drop surface.

4.3.2 Drop the retractor, buckle, or adjustable guide loop mechanism onto the drop surface.

4.3.3 Using a new sample each time, drop the sample from a different orientation until a retractor, buckle, and adjustable guide loop mechanism is dropped from six different orientations.

4.3.4 Check that the samples meet all functional and safety requirements of GMW14831. For example, but not limited to; vehicle sensitive retractors must be tested for static tilt angle and sensitivity lock-up characteristics per procedure GMW14300. Retractors and buckles that exhibit deformation must be tested for ultimate strength (per GMW14831). The buckle switch must meet all functional requirements after being dropped. Retractors must be saved for inspection by GM engineering.

5 Data

5.1 Calculations. Not applicable.

5.2 Interpretation of Results. Not applicable.

5.3 Test Documentation. Not applicable.

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. Not applicable.

7.2 Acronyms, Abbreviations, and Symbols.

GSSLT Global Subsystem Leadership Team

8 Coding System

This standard shall be referenced in other documents, drawings, etc., as follows:

Test to GMW14309

This standard is categorized as: Lab, Interior Center, Restraints.

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