GM WORLDWIDE ENGINEERING STANDARDS	Test Procedure	GMW14317

Retractor/Escutcheon – Webbing Abrasion

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 strength of the safety belt webbing after exposure to abrasion from the webbing cycling across the retractor opening, escutcheon, intermediate guide, and guideloop.

1.2 Applicability. To all safety belt assemblies with webbing that may come in contact with the retractor opening, escutcheon, intermediate guide, or guideloop. Note that if the direction of retraction/extraction of the webbing is controlled by an intermediate guide or guideloop, and the webbing cannot contact the retractor opening or escutcheon, the test for the retractor opening and escutcheon does not apply.

1.3 Remarks. The extraction or retraction of the safety belt webbing across the retractor opening, escutcheon, intermediate guide, or guideloop may cause the belt to become abraded. The intent of this test is to cycle the webbing across the retractor opening, escutcheon, intermediate guide, or guideloop and then measure the strength of the abraded webbing.

2 References

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

2.1 External Standards/Specifications.

FMVSS 209

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 Math File Log

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 Safety belt assemblies to be tested.

3.2.2 Device to extend and retract 200 mm of webbing from the retractor.

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. Applicable webbing.

3.4 Test Time. Determined as needed.

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3.5 Test Required Information. Measured strength.

3.6 Personnel/Skills. A test technician or engineer capable of running the required extraction or retraction of the safety belt and measure strength.

4 Procedure

4.1 Preparation. See GMW14831.

4.2 Conditions. See GMW14831.

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 Retractor Opening and Escutcheon.

4.3.1.1 Select a center point on the webbing free of stitching and labels for a minimum distance of 200 mm in either direction. From this point, measure and mark lines 100 mm in either direction. This 200 mm of webbing will be tested for resistance to abrasion.

4.3.1.2 Review the installation of the belt assembly in the vehicle. Note which edge(s) or flat(s) of the webbing are exposed to abrasion from the retractor opening or escutcheon. During this evaluation, extract and retract the webbing in different directions that would simulate customer usage.

4.3.1.3 Mount the retractor (and escutcheon) to the cycling equipment such that the retractor opening or escutcheon contacts an edge or flat of the webbing as determined in 4.3.1.2. The direction of extraction/retraction is to be 30 degrees from the direction that is perpendicular to the retractor opening or escutcheon (Appendix A, Figure A1). Note that the actuator of a vehicle sensitive retractor may need to be "blocked out" to accommodate cycling on a fixture in a non-body mount angle.

4.3.1.4 Set the cycling equipment to extract and retract 200 mm of webbing as marked in step 4.3.1.

4.3.1.5 Complete the specified cycles at a rate not to exceed 20 cycles per minute and determine the strength of the webbing per FMVSS 209 S5.1(b). Also note any wear to the retractor opening or escutcheon and if wear occurs, review the samples with the release engineer for acceptability.

4.3.1.6 Repeat this test for each edge or flat of the webbing that is exposed to abrasion per 4.3.1.2. Tests shall include retractor samples for both webbing construction orientations (i.e., right side up/upside down).

4.3.2 Guideloop.

4.3.2.1 Mount the belt assembly to the cycling equipment such that the webbing exits the guideloop at 30 degrees inboard and 30 degrees forward of the webbing between the retractor and guideloop. Note that the actuator of a vehicle sensitive retractor may need to be "blocked out" to accommodate cycling on a fixture in a non-body mount angle.

4.3.2.2 Set the cycling equipment to extract and retract 200 mm of webbing as marked in 4.3.1.

4.3.2.3 Complete the specified cycles at a rate not to exceed 20 cycles per minute and determine the strength of the webbing per FMVSS 209 S5.1(b). Also note any wear to the guideloop and if wear occurs, review the samples with the release engineer for acceptability.

Note: This test may be combined with retractor escutcheon test. Tests shall include retractor samples for both webbing construction orientations (i.e., right side up/upside down).

4.3.3 Intermediate Guide.

4.3.3.1 Mount the belt assembly to the cycling equipment such that the intermediate guide is positioned 150 mm out of plane with the webbing. Note that the actuator of a vehicle sensitive retractor may need to be "blocked out" to accommodate cycling on a fixture in a non-body mount angle.

4.3.3.2 Set the cycling equipment to extract and retract 200 mm of webbing as marked in 4.3.1.

4.3.3.3 Complete the specified cycles at a rate not to exceed 20 cycles per minute and determine the strength of the webbing per FMVSS 209 S5.1(b). Also note any wear to the intermediate guide, and if wear occurs, review the samples with the release engineer for acceptability.

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