GM WORLDWIDE ENGINEERING STANDARDS	Test Procedure	GMW14308

Retractor - Power Spring and Comfort Covers Retention

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 measure the retention of the power spring cover to the frame of the retractor. This procedure also may be used to test the retention of any protective or functional cover.

1.2 Applicability. To all safety belt retractor assemblies.

1.3 Remarks. The intent of this test is to evaluate the potential of the power spring cover to come off the retractor frame through either being "worked off" from the force of the power spring or handling of the retractor. The retention of the power spring cover may be measured either by pushing or pulling the cover off of the frame. Testing to failure for statistical purposes may require the use of a tensile test machine. Production Audit Tests (GP8) may be modified or eliminated based on an engineering analysis of the test data, the design as well as an agreement with Engineering, Quality Assurance and the Supplier.

Alter this procedure as necessary to test the retention of various spring covers, comfort feature covers or any other protective/functional cover.

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 Math File Log
- Production Audit Tests (GP8)

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. The following equipment or equivalent may be required based on the test method chosen.

3.2.1 Retractors to be tested (complete retractor assemblies are not necessary).

3.2.2 Force gauge with 500 N (or 100 lb) minimum capacity.

3.2.3 Fixture to grasp spring cover during pull off test such as a three (3) point cylindrical loading tool (Figure 1).

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3.2.4 Tensile test machine (if necessary).

3.2.5 Metal disc with a diameter that is slightly smaller than the inside diameter of the spring cover being tested (for push off test).

3.2.6 Bench Vise.

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. Not applicable.

3.4 Test Time. Not applicable.

3.5 Test Required Information. Not applicable.

3.6 Personnel/Skills. Not applicable.

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.

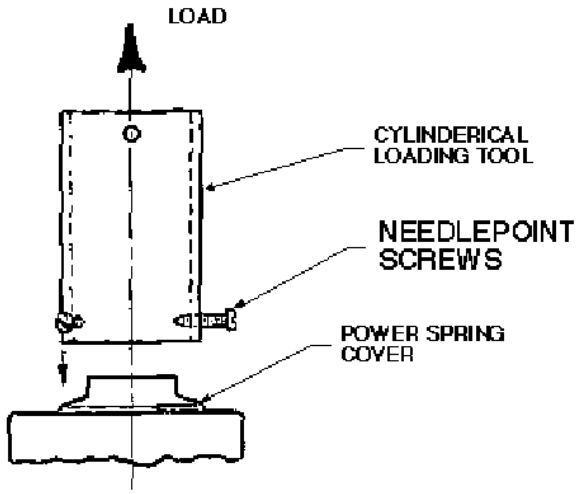
4.3 Instructions.

Caution: When testing the retention of the power spring cover, precautions must be taken to avoid injury from the power spring unwinding.

4.3.1 Cover Retention By Pull Off Force.

4.3.1.1 Clamp the retractor in the vise.

4.3.1.2 Position the cylindrical loading tool over the spring cover with the screws over the lugs of the spring cover. Tighten the three retaining screws in the loading tool sufficiently to securely grasp the cover without causing excessive distortion (Figure 1). (The use of another appropriate loading tool is permissible, when approved by GM engineering).



COVER RETENTION BY "PULL OFF" FORCE

Figure 1: Test Setup

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