GM WORLDWIDE ENGINEERING STANDARDS	Test Procedure	GMW14307

Retractor – Frame Distortion

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 retractor's performance is adversely affected by variations in the mounting surfaces that may be encountered in production.

1.2 Applicability. This procedure applies to all safety belt retractors.

1.3 Remarks. The frame of the retractor should be designed such that variations or warpage of the mounting surface does not affect the performance of the retractor. This test simulates a variety of conditions and surfaces that may be encountered during production installation. The applicability of each test must be considered with respect to the retractor frame, the mounting surface and vehicle installation.

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. The following equipment or equivalent is required.

3.2.1 Retractors to be tested and mounting bolts.

3.2.2 Rigid fixture to mount retractor in body position.

3.2.3 Two (2) flat washers: 25 mm outer diameter x 3.17 mm ± 0.25 mm thick with a 8 mm inner diameter (hole).

3.2.4 Two (2) tapered washers: 25 mm outside diameter with an 8 mm inner diameter (hole) x 3.17 mm ± 0.25 mm thick at the thickest edge and a face tapered by 3 degrees.

3.2.5 Torque wrench with a 100 N·m (or 75 ft·lb) capacity.

3.2.6 Three (3) mm diameter rod of sufficient length to extend the entire length of the retractor base.

3.3 Test Vehicle/Test Piece. Not applicable.

3.4 Test Time. Not applicable.

3.5 Test Required Information. Not applicable.

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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. Any deviation 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 Retractors with Two Mounting Bolts.

4.3.1.1 Install the retractor to a rigid fixture with a flat washer on one of the mounting bolts (between the retractor frame and mounting surface). Tighten both bolts to the Maximum Specified Torque (MST). Note the fixture must provide clearance for the retractor's anti-rotation tab(s) or other extrusions if applicable.

4.3.1.2 Check that the retractor functions properly. Retractors must meet the locking requirements (found in GMW14831), retract and extract properly. Vehicle sensitive retractors with deformation that may affect the locking/sensing mechanism, must be tested under the deformed state for static tilt angle and sensitivity lock-up characteristics per GMW14300.

4.3.1.3 Remove the washer and place it on the opposite bolt (between the retractor frame and mounting surface). Tighten both bolts to the MST.

4.3.1.4 Check the retractor per 4.3.1.2.

4.3.1.5 Install the retractor to a rigid fixture with a tapered washer on each mounting bolt (between the retractor frame and mounting surface). Position the washers such that each tapered surface is sloping 3 degrees inboard. Tighten both bolts to the MST.

4.3.1.6 Check the retractor per 4.3.1.2.

4.3.1.7 Loosen the bolts of the retractor and rotate both washers 180 degrees such that the tapered surface is sloping 3 degrees outboard. Tighten both bolts to the MST.

4.3.1.8 Check the retractor per 4.3.1.2.

Note: It is permissible to use a new retractor for each test condition.

4.3.2 Retractors Mounted with One Mounting Bolt.

4.3.2.1 Install the retractor to the rigid fixture with a 3 mm interference rod placed under the centerline of the retractor spool. Tighten the bolt(s) to the MST.

4.3.2.2 Check that the retractor functions properly. Retractors must meet the locking requirements, retract and extract properly. Vehicle Sensitive Retractors (VSR) with deformation that may affect the locking/sensing mechanism, must be tested under the deformed state for static tilt angle and sensitivity lock-up characteristics per the most recent version of procedure GMW14300, Retractor – VSR Tilt Angle and Sensitivity.

4.3.2.3 Loosen the retractor and rotate the interference rod 30 degree. Retighten the bolts to the MST

4.3.2.4 Check the retractor per 4.3.2.2.

4.3.2.5 Repeat 4.3.2.2 and 4.3.2.3 until a minimum of six positions have been checked.

4.3.2.6 Check any other interference location that may affect the operation of the retractor.

Note: It is permissible to use a new retractor for each test condition.

5 Data

5.1 Calculations. Not applicable.

5.2 Interpretation of Results. Not applicable.

5.3 Test Documentation. Not applicable.

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