



## License Applique Component Retention Test

### 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.** This standard provides a procedure to validate the retention of components assembled to the license plate applique (LPA) as shown in Figure 1. This test is required to ensure the components retained to the applique meet the requirements within the SSTs.

**1.2 Applicability.** This standard is used for all vehicles that have a license plate applique with component parts that are not retained by fasteners. Retention is evaluated at ambient temperature.



Figure 1: Example of License Applique Component

### 2 References

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

#### 2.1 External Standards/Specifications.

None

#### 2.2 GM Standards/Specifications.

GMW16061                      GMW16766

#### 2.3 Additional References.

- Exterior Trim SSTS

### 3 Resources

#### 3.1 Facilities.

**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** Tension/compression force gauges (200 N).

**3.2.2** Force gauge application pads (2 cm<sup>2</sup>, 4 cm<sup>2</sup> and 30 cm<sup>2</sup>).

**3.2.3** Drill motor and 8 mm drill bit.

### 3.3 Test Vehicle/Test Piece.

**3.3.1** Production intent LPA assemblies including all attached components. All LPA components must be assembled using the production process, assembly equipment and fixtures. All fasteners must be torqued to the proper value.

A fixture is required to properly support the LPA during testing. Ensure the LPA is supported at all vehicle attachment locations. If the LPA is not properly supported, retention values may be affected.

Component level tests are the responsibility of the Tier 1 supplier/manufacturing source. See Table 1 for component level designations.

**Table 1: Typical Components within a License Plate Applique**

| Point | Retention Force                   | Requirement |
|-------|-----------------------------------|-------------|
| 1     | License Plate Lights              | See SSTs    |
| 2     | Rear Camera                       |             |
| 3     | Touch Pad                         |             |
| 4     | Electrical Wire Harness Retention |             |
| 5     | Isolator                          |             |
| 6     | Washer Nozzle                     |             |
| 7     | Emblem Wet out                    |             |
| 8     | Emblem Pluck                      |             |
| 9     | Emblem Peel                       |             |

### 3.4 Test Time.

Calendar time: 1 d

Test time: 8 h

Coordination time: 1 h

**3.5 Test Required Information.** Not applicable.

**3.6 Personnel/Skills.** The test facility shall have sufficient personnel having the necessary education, training, technical knowledge, and experience for performing the required tests.

## 4 Procedure

### 4.1 Preparation.

**4.1.1** Before the test, verify all of the assembly and component part release levels or change levels. Record this information on Data Sheet A1 in Appendix A. The supplier shall work with the GM Design Responsible Engineer to comprehend these requirements.

**4.1.2** Inspect all of the fasteners and joints for correct installation and absence of damage. Correct any discrepancies or note on Data Sheet A1. The supplier shall work with the GM Design Responsible Engineer to comprehend these requirements.

## 4.2 Conditions.

**4.2.1 Environmental Conditions.** Perform measurements at  $23\text{ }^{\circ}\text{C} \pm 5\text{ }^{\circ}\text{C}$ .

**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.

## 4.3 Instructions.

**4.3.1 Retention Measurement Locations.** The GM DRE and the GM VE shall determine the location of retention locations based on part size, styling geometry and component content. Suggested locations are shown in Figure 2 through Figure 21. Pictures are required for all test setups and pull locations.

### 4.3.2 Retention Force Measurement.

**4.3.2.1** Record force measurements in Appendix A, Data Sheet A1. The supplier shall work with the GM Design Responsible Engineer to comprehend these requirements.

**4.3.2.2** Using a tension/compression gauge with a suitable end device (e.g., a circular pad or hook), measure the retention forces at the locations shown in Table 1. The requirements for each retention force can be found in the Exterior Trim SSTs. Photograph the locations where the forces are applied.

**4.3.2.3** Rate of application of force should be approximately 1 cm/s.

**4.3.2.4 Rear Camera (Figure 2).** Using a force gauge with a push adaptor, push the camera from inside the LPA as shown in Figure 3. Push perpendicular to the LPA surface. If necessary, cut away the applique to gain access to the camera. Push until the requirement in SSTs is reached. Review program SSTs for retention values.

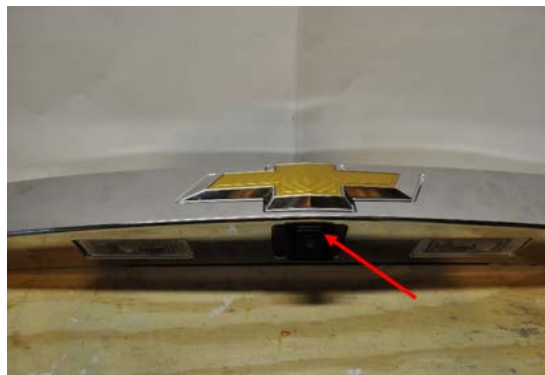


Figure 2: Rear Camera



Figure 3: Force Direction

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**4.3.2.4.1 Optional method is to Pull the Camera Using a Tie Strap.** Using a force gauge with a hook adaptor, pull the camera from the outside as shown in Figure 4. If necessary, drill a hole through the camera body and attach a cable tie as shown in Figure 5. Pull perpendicular to the LPA surface. Pull until the requirement in SSTS is reached. Review program SSTS for retention values.

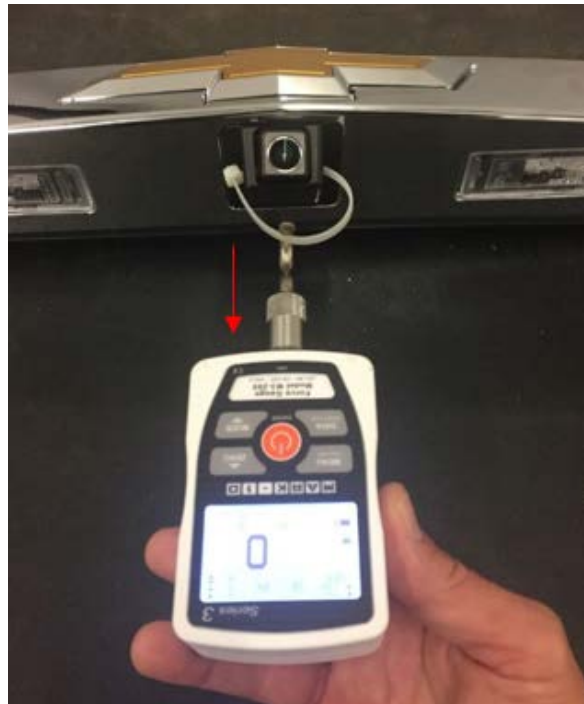


Figure 4: Cable Tie Pull Method

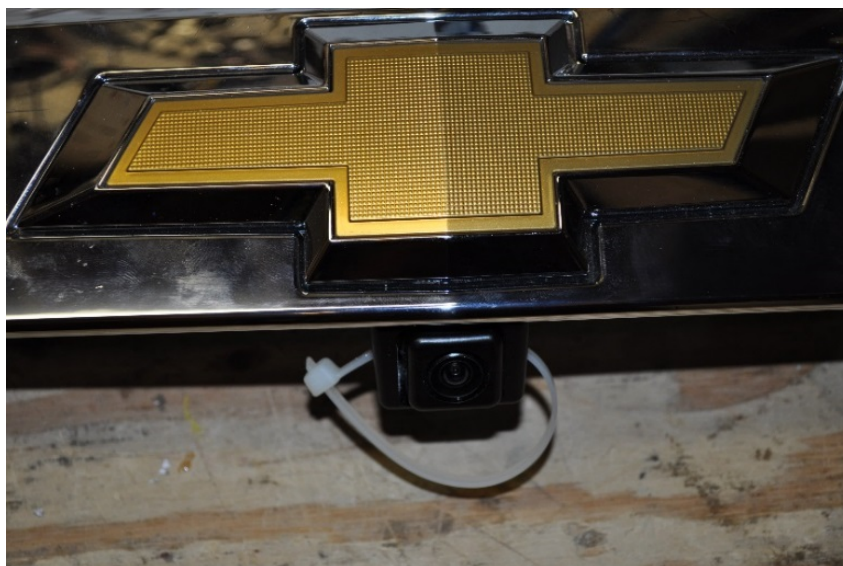


Figure 5: Cable Tie

**4.3.2.5 Rear Camera Push (Figure 6).** Using a force gauge with a push adaptor, push the camera towards the LPA from the outside as shown in Figure 6. Push perpendicular to the LPA surface. Push until the requirement in SSTS is reached. Review program SSTS for retention values.



Figure 6: Push Direction

**4.3.2.6 Camera Twist (Figure 7 through Figure 9).** Install a clamp to the camera body as shown in Figure 7. Position a force gauge with a hook adaptor to the clamp as shown in Figure 8. Measure the distance from the center of the camera to the center of the force gauge hook. Apply a torque to the camera by pulling down with a force gauge until the requirement in SSTS is reached (as shown in Figure 9). Torque can be calculated using the equation:  $T = \text{Force} \times \text{Distance}$ . Review program SSTS for torque value.



Figure 7: Camera with Clamp Installed