



Trim Panel for Rear Compartment Lid - Notchback and Tailgate - Hatchback and Wagon

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 general specification determines the tests and requirements for the tailgate trim panel.

1.2 Applicability. Testing of trim panel for tailgate/rear compartment lid according to various performance criteria.

- Hatchback (HB)
- Notchback (NB)
- Wagon (KF)

1.3 Remarks. Not applicable.

2 References

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

2.1 External Standards/Specifications.

None

2.2 GM Standards/Specifications.

GMW3059 GMW14264

2.3 Additional References.

None

3 Test Preparation and Evaluation

3.1 Resources.

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.

3.1.3 Facilities.

3.1.3.1 Dudenhofen test center (Belgian block wave road, Rheinstraße) or equivalent proving grounds road.

3.1.3.2 Climatic chamber.

3.1.3.3 Tensile/compression gauge (measuring range 0 N to 500 N with piston diameter 10 mm and hook 50 mm wide).

3.1.4 Equipment. (See Appendix A: Data Sheet A1, to list measuring devices).

3.1.4.1 Thermometer.

3.1.4.2 Dial gauge(s).

3.1.4.3 Finished size(s).

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December 2014

Page 1 of 18



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3.1.4.4 Base frame for the attachment of a dial gauge.

3.1.4.5 Caliper gauge with depth gauge.

3.1.4.6 Steel ruler.

3.1.4.7 Device for performing clip/retainer tear-off tests.

3.1.4.8 Contour pen and attachment.

3.1.5 Test Vehicle/Test Piece. Before the test, the trim panels shall be tested for conformance to the current development, drawing and release status.

The correct assembly shall be tested.

All deviations shall be noted and, if possible, corrected. Any modifications shall be noted.

The test shall determine whether all fasteners shall be present, undamaged and correctly installed. If this is not the case, the fasteners should be supplemented or corrected. Any modifications shall be noted.

3.1.6 Test Time. Not applicable.

Calendar time: days

Test hours: hours

Coordination hours: hours

3.1.7 Test Required Information. Not applicable.

3.1.8 Personnel/Skills. Not applicable.

3.2 Preparation. Not applicable.

3.3 Conditions.

3.3.1 Environmental Conditions.

3.3.2 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.

3.4 Instructions. Not applicable.

3.5 Data. Not applicable.

3.6 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.

3.7 Documentation. Samples of components or material released to this standard shall be tested for conformity with the requirements of this standard and approved by the responsible GM Department prior to the start of delivery of production level components or materials.

Any change to the component or material, e.g., design, function, properties, manufacturing process and/or location of manufacture requires a new release of the product. It is the sole responsibility of the supplier to provide the customer, unsolicited, with documentation of any change or modification to the product/process, and to apply for a new release.

If not otherwise agreed to, the entire verification test shall be repeated and documented by the supplier prior to start of delivery of the modified or changed product. In some cases, a shorter test can be agreed to between the responsible GM department and the supplier.

3.7.1 Test Results. The results shall be entered into the relevant data sheets (see Appendix B).

3.7.2 Deviations from this Standard. Deviations from the requirements of this standard shall have been agreed upon. Such requirements shall be specified on component drawings, test certificates, reports, etc.

3.7.2.1 If not otherwise specified, all performance requirements shall be fulfilled within a temperature range of -30 °C to +80 °C.

For testing the requirements, the following three test temperatures shall be selected:

- -30 °C ± 5 °C
- +23 °C ± 5 °C
- +80 °C ± 5 °C

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December 2014

Page 2 of 18

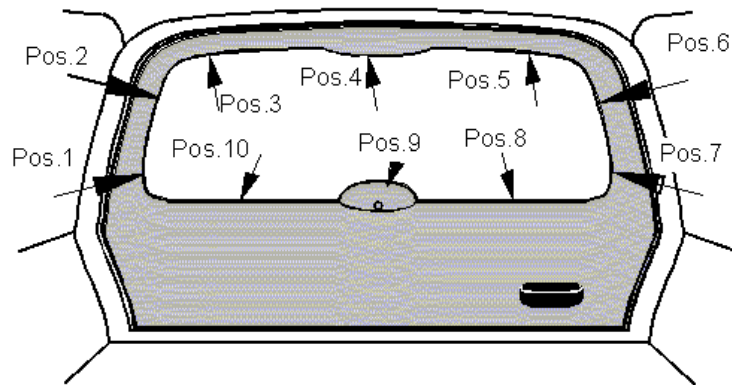
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4 Requirements and Procedure

4.1 General. Subjective evaluations shall comply with GM-Rating System according to GMW14264.

4.2 Appearance.

4.2.1 Gap Dimensions to the Window (HB, KF). The gap dimensions from trim panel to rear window shall be measured at the specified measuring points (see Figure 1).



Note: Pos = Position

Figure 1: Measuring Points

4.2.2 Surface Condition. The surfaces of trim panel and handle recess shall be subjectively tested for.

- Sunk Spots
- Flashes
- Uniform Surface Structure

4.2.2.1 Requirement. Plastic parts shall not show any sunken spots or flashes.

Laminated components shall have a uniform surface structure.

Overall evaluation shall attain Rating 8 minimum.

4.3 Testing the Dimensional Stability of the Trim Panel (Upper, Center and Lower).

4.3.1 Testing the Dimensional Stability by Applying Force. Test component either as an individual part in the test support/fixture or in the vehicle.

An example of approximate positions for the force application is shown in Figure 2. To determine the actual test locations, select the most unstable point(s). The exact positions of the measuring points shall be documented, e.g., in relation to the lower edge of the window and the edge of the component.

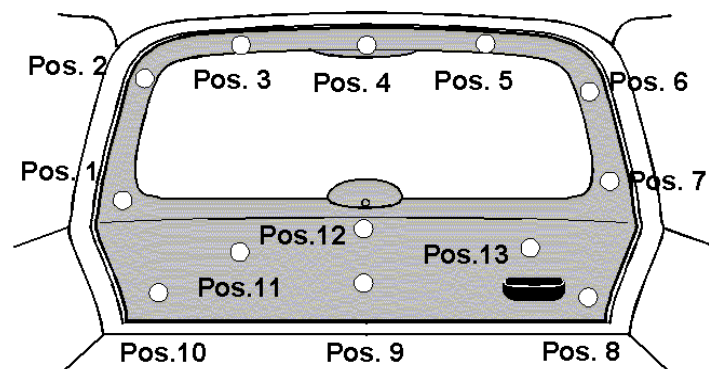
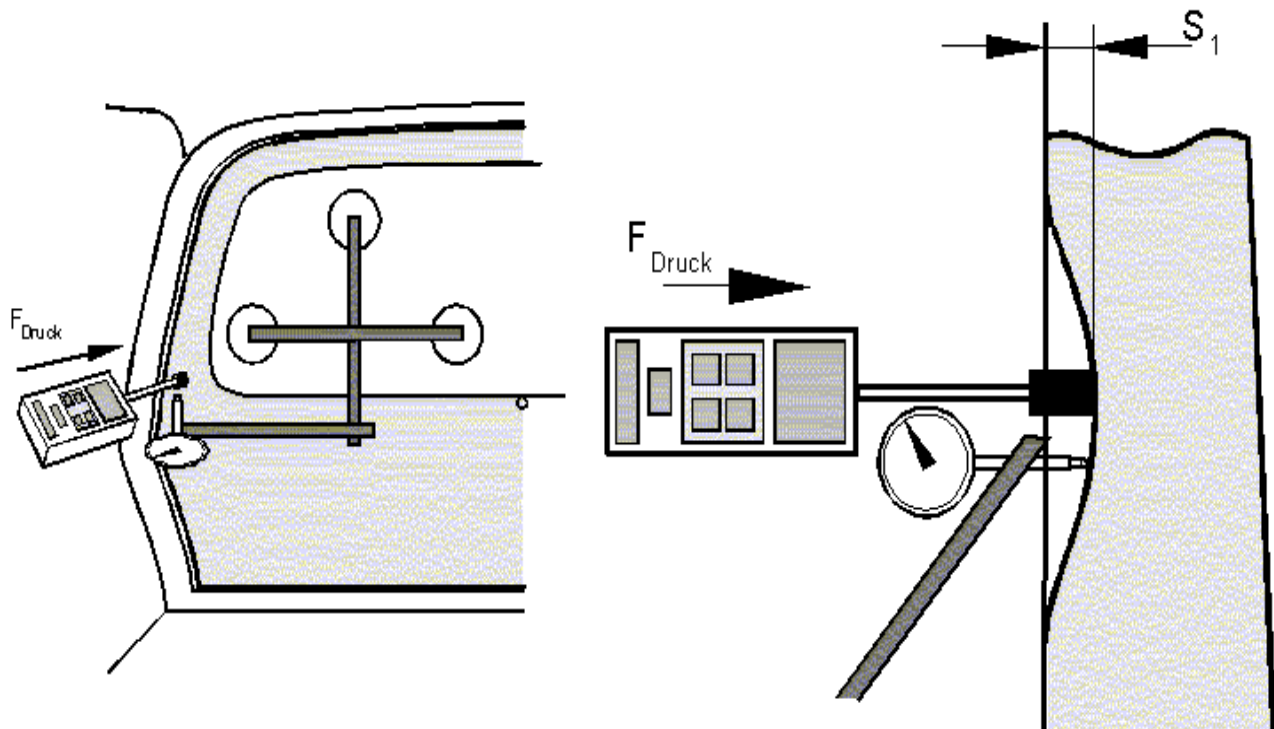


Figure 2: Positions of Force Application

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A dial gauge shall be used to measure the deformation distance at each documented location. The dial gauge shall be attached to a tripod on the lid/trim side (see Figure 3). When testing in the test support, a tripod on the floor can also be used. The tripod with the dial gauge shall then be aligned in turn with the measuring points.



Note: F_{Druck} = Push Force

Figure 3: Deformation Distance

The tensile/compression gauge with a 1 cm wide piston is then pressed perpendicular against the trim panel, 10 mm next to the mark. It shall be made certain that the direction of force application and the direction of the distance measurement are parallel. The force shall be increased in steps of 50 N from 0 N to 100 N. The deformation of the trim panel at each step shall be noted.

After a 10 minute relief period, the permanent plastic deformation s_1 shall be measured.

After the load, function and appearance shall be tested and subjectively evaluated per GMW14264.

4.3.1.1 Requirement. The maximum permissible deformations s_1 and the permanent deformations s_{1pl} shall be taken from the drawing.

4.3.2 Testing the Dimensional Stability by Applying Temperature Load.

4.3.2.1 Trim Panels that are Close to Windows. For trim panels that are close to windows.

Change the gap dimensions by finished sizes.

Deformation parallel to the plane of the window via the contour mounting shall be determined.

The measuring positions are shown in Figure 1. At the measuring positions, the gap dimension is measured by finished size(s).

It is to be made certain that the finished sizes fit into the gap without pressure. The values are noted and the trim panel is then heated to a temperature of $+80\text{ }^{\circ}\text{C} \pm 5\text{ }^{\circ}\text{C}$ and the temperature is to be kept for approximately 30 minutes. As previously described, the gap dimensions of the heated part are to be recorded. After cooling to $+23\text{ }^{\circ}\text{C} \pm 5\text{ }^{\circ}\text{C}$ the gaps shall be measured again (see Figure 4).

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December 2014

Page 4 of 18

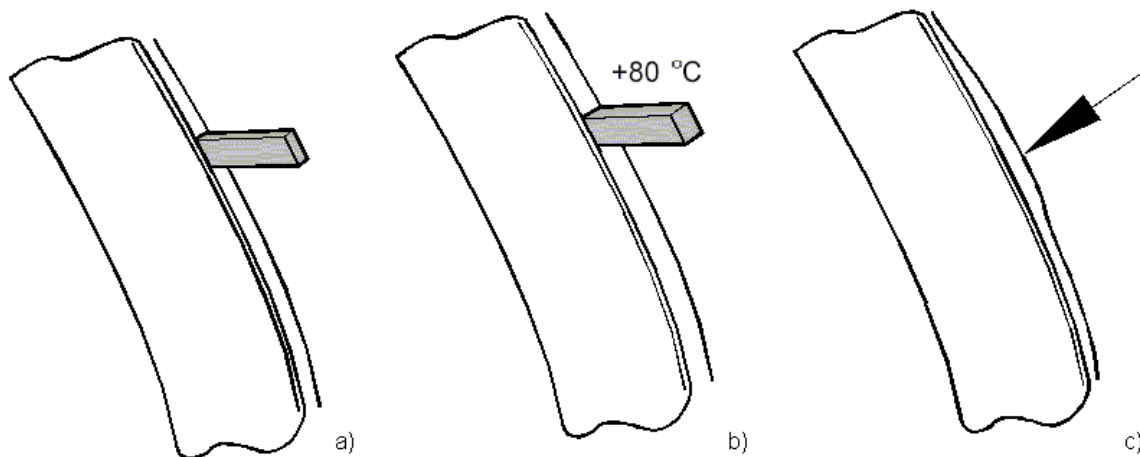


Figure 4: Determining the Gap Dimensions of the Heated Part

Note: Additional Information for Figure 4 (b): For this measurement, a pen is joined to a rectangular wooden block. As shown in Figure 5 (a), the contour of the trim panel (Y and/or Z dimension) is then transferred to the adjacent rear window at $+23\text{ °C} \pm 5\text{ °C}$. In the area of the line, an adhesive film shall be first applied to the window.

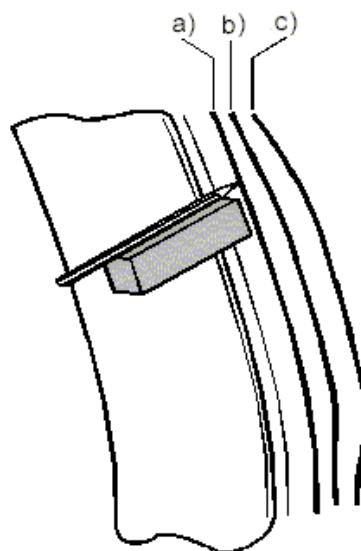


Figure 5: Deformation Parallel to the Plane of the Window

The area of the trim panel is then heated to a temperature of $+80\text{ °C} \pm 5\text{ °C}$ and the temperature is to be kept for approximately 30 minutes. As described in preceding note, the contour of the heated part is to be transferred to the window, see Figure 5 (b). After cooling to a temperature of $+23\text{ °C} \pm 5\text{ °C}$, the contour shall be transferred to the window again, see Figure 5 (c).

The maximum distance between first and second and first and third contour line shall be measured and documented.

Positive sign for curvature outwards (towards the glass); negative sign for opposite curvature.

It shall also be tested as to whether any possible deformation during and after the test has a negative influence to the appearance.

4.3.2.2 Requirement. The permissible deformation s_2 for a temperature increase to $+80\text{ °C} \pm 5\text{ °C}$ is $\pm 2\text{ mm}$.

The permissible permanent deformation is $\pm 1\text{ mm}$.

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December 2014

Page 5 of 18

4.4 Testing the Handle Recess.

4.4.1 Ergonomics. The ergonomics characteristics of the handle recess shall be tested and subjectively evaluated per GMW14264.

The following points shall be noted:

- Position of the handle recess with regard to accessibility.
- Width and depth, and depth of grip.
- Handhold perceived when pulling on the handle.

4.4.1.1 Requirement. The handle recess shall be designed to permit ergonomically beneficial closing of the lid or tailgate.

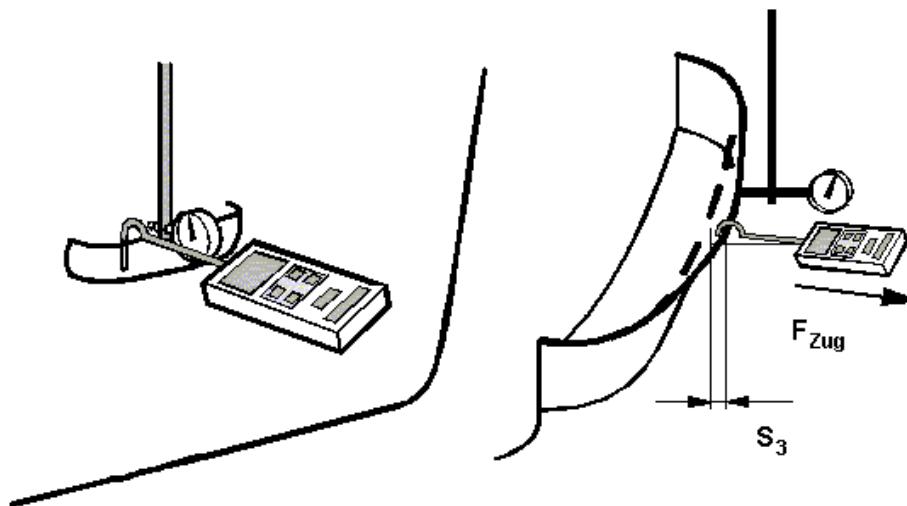
The following points shall attain Rating 7 minimum:

- Accessibility of the handle recess for 5th percentile woman and 95th percentile man.
- Width, depth, and depth of grip shall be measured with the steel ruler and entered into the relevant data sheet (see Appendix B: Data Sheet B4).
- Handhold perceived when pulling on the handle.

4.4.2 Sliding Closed Test. Test procedure with the tailgate/rear compartment lid closed.

Using the tensile/compression gauge with hook is pulled on the handle recess at a tangent to the rotary movement with a force of 200 N.

The deformation is recorded with the dial gauge fastened to the tripod and parallel to the balance (see Figure 6). The test shall be performed three times.



Note: F_{Zug} = Pull Force

Figure 6: Sliding Closed Test on Handle Recess

After relief, the permanent plastic deformation s_3 shall be measured, and function and appearance shall be verified. The results shall be documented.

4.4.2.1 Requirement. The permissible deformation values s_3 for tensile load and s_{pl3} shall be taken from the drawing.

Function and appearance may not be affected by any plastic deformation.

4.5 Misuse Tests.

4.5.1 Pull-off Force of Trim Panel Retainer. To test the retainer/trim panel joint of a new trim panel, the load cell with a suitable hook is suspended to the retainer and pulled until breaking point. The maximum forces reached shall be noted (see Figure 7).

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December 2014

Page 6 of 18

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