



Rear Bumper Static Load and Cycle Durability 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. The purpose of this standard is to determine if a rear bumper or fascia assembly with a horizontal surface that the customer can use as a step meets the static load and cycle durability requirements of the Bumper, Fascia, and Grille Subsystem Technical Specification (SSTS).

1.2 Applicability. All rear bumper or fascia assemblies with a step surface. A step surface is defined as follows:

- The entire surface of a 100 mm x 150 mm plate with 10 mm external radii can be applied to the horizontal surface of the rear bumper assembly. See Figure 1.

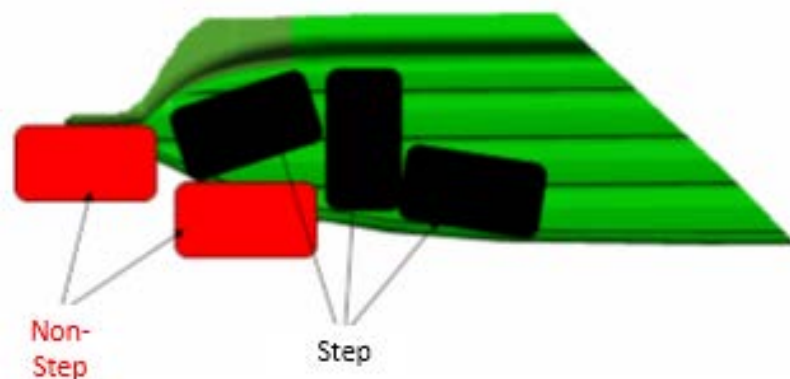


Figure 1: Step versus Non-Step Surface

- The tested horizontal surface shall have an average across its surface of no more than a 25 degree decline parallel to the ground line of the vehicle.

2 References

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

2.1 External Standards/Specifications.

None

2.2 GM Standards/Specifications.

None

2.3 Additional References.

The supplier shall work with the GM Design Responsible Engineer to comprehend these requirements.

- Bumper, Fascia, and Grille Subsystem Technical Specifications (SSTS)
- CG583 Development/Validation Test and Vehicle Review

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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.

3.1.3 Environmental Chambers. Environmental chambers capable of maintaining temperatures from -30 °C to 80 °C, humidity from 0% to 100%, and large enough to test one assembly at a time.

3.2 Equipment.

3.2.1 Load Transducer. A load transducer to measure and document the load applied to the rear bumper assembly. The load transducer must have the capability of measuring loads up to a minimum of 2222 N (500 lb).

3.2.2 Load Actuator. A load actuator (mechanical, hydraulic, or pneumatic) such that a controlled force can be applied in the desired locations on the rear bumper assembly.

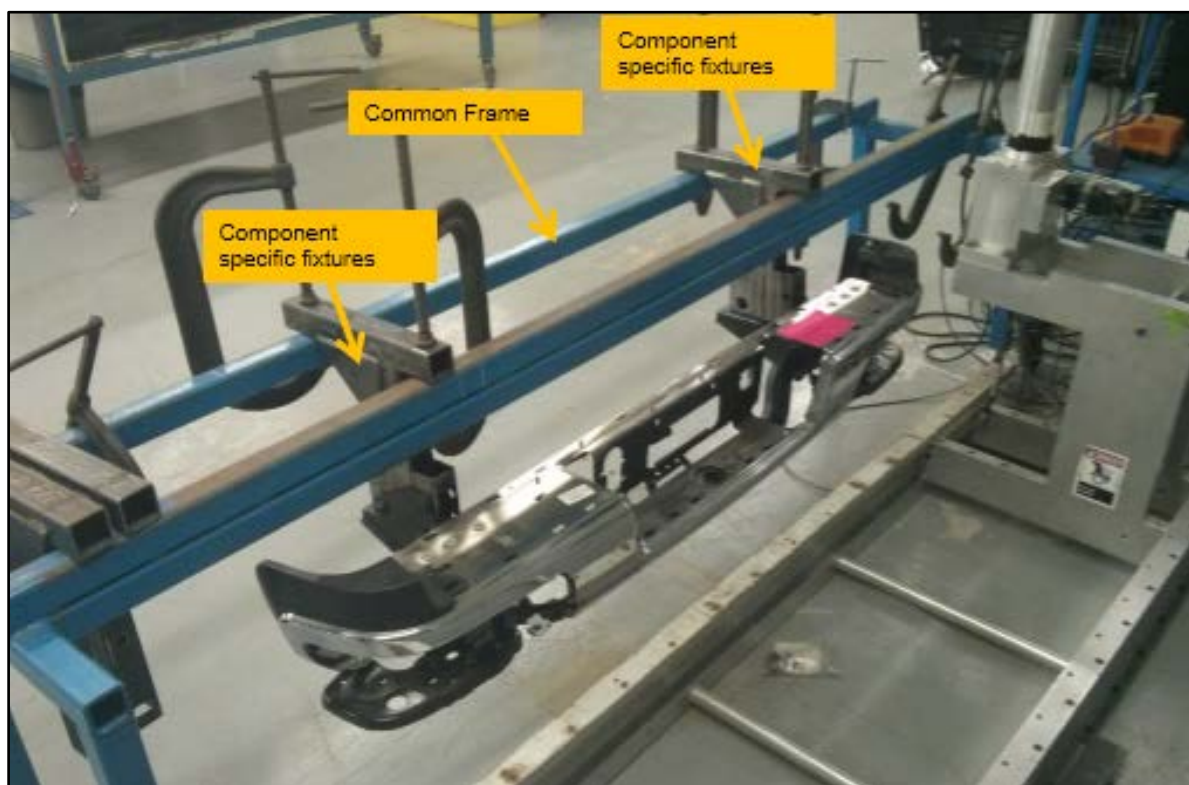
3.2.3 Load Plate. A load plate measuring 150 mm x 100 mm x 20 mm constructed of steel, aluminum, of other suitable material to transfer load from the load actuator to the rear bumper assembly test locations.

3.2.4 Displacement Measuring Device(s). Suitable measuring devices that can measure the deflection of the rear bumper assembly at the location(s) required to the nearest 0.1 mm. The measurement range of these devices shall be sufficient to capture all movement of the test piece. Range of measurement is to be a minimum of 40 mm.

3.3 Test Vehicle/Test Piece.

3.3.1 Test Vehicle.

3.3.1.1 Rigid Mounting Fixture. A rigid mounting fixture which represents rear bumper assembly attachment to the vehicle. See pictures in Figure 2 for example of a rigid mounting fixture test setup.



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Figure 2: Rigid Mounting Fixture Test Example

3.3.1.2 Vehicle Level Test Option 1 – Full Vehicle. A full vehicle using jack stands to support the vehicle and isolate suspension and tire deflection. See pictures in Figure 3 for example of full vehicle test setup.

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