



Protection Shield-Engine Compartment

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 method for testing the Protection Shield-Engine Compartment for stiffness, stability against permanent deformation under static load.

1.2 Applicability. For all Protection Shield-Engine Compartment or any similar underbody shield or skid plate.

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.

None

2.3 Additional References. None.

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 The testing machine shall be capable to stress the test piece at a uniform speed of 10 mm/minute to 20 mm/minute. The maximum force of the machine depends on the requirements of this procedure.

3.2 Equipment.

3.2.1 X-Y-recorder to record force-deflection characteristics of the test piece.

3.3 Test Vehicle/Test Piece. This is a component test, three (3) parts shall be tested.

3.4 Test Time. Not applicable.

3.5 Test Required Information. Not applicable.

3.6 Personnel/Skills. Prior experience in setting up and running similar tests and experience in the use of the referenced test equipment is required for a successful evaluation.

4 Procedure

4.1 Preparation.

4.1.1 Test Setup. Attach shield to fixturing as shown to represent the vehicle installation (see Figure 1). The geometry of the test stamp, the location of the point of force application, and the size and location of fixed attachment points shall be determined by the design responsible engineer and specified on product drawing.

Figure 1: Test Setup



4.2 Conditions.

4.2.1 Environmental Conditions. The test shall be performed at ambient temperatures of $23\text{ }^{\circ}\text{C} \pm 5\text{ }^{\circ}\text{C}$.

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. Subject the protection shield to load (maximum F1, specified on product drawing) at a uniform speed of 10 mm/minute to 20 mm/minute up to deflection S (specified on product drawing), then remove the load, for initial stress relief. Test to be performed subsequently on the same test piece.

5 Data

5.1 Calculations. Not applicable.

5.2 Interpretation of Results.

5.2.1 After one (1) force application and subsequent release permanent distortion Δ_s shall be less than the value specified on the product drawing.

After repeating the force application, the permanent distortion Δ_s shall be less than the product drawing specification, relative to the first application (see Figure 2 as an example).

Figure 2: Force Application Example

