



Composite Pickup Box/Ultimate Load Capacity

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 test is to determine vehicle Pickup Box (PUBX) or rear cargo area assembly strength when being statically loaded.

1.2 Applicability. This procedure applies to all trucks with a rear cargo area or a PUBX (composite only).

1.2.1 The localized load may be applied to the following areas of the PUBX/rear cargo area.

1.2.1.1 Cargo bed surface.

1.3 Remarks. This test is intended to determine the strength of specified sections of a PUBX or rear cargo area of a vehicle by applying a static, localized load.

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.

- CG190 GM Evaluation Report Template

3 Resources

3.1 Facilities. An approved GM certified test laboratory with an adequate bedplate or equivalent work surface necessary for mounting test samples and associated fixtures.

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 list(s) include fixturing and instrumentation typically used by the GMNA Body Test Lab to perform this test. Other equipment may be substituted at the discretion of the testing facility as long as it provides the same data and/or data record with equivalent accuracy as specified herein or by the requestor.

3.2.1 Fixturing.

3.2.1.1 Stone bags to apply the specified load to the PUBX platform.

3.2.2 Instrumentation. Note: All instrumentation is to be calibrated as required; record instrumentation details and date of calibration on Data Sheet A2 unless the information is otherwise preserved in the testing laboratory records.

3.2.2.1 Dial indicators, dividers, displacement transducers, or other equipment to measure deflection.

3.2.2.2 A data recorder.

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3.3 Test Vehicle/Test Piece. Complete PUBX or Body-in-White (BIW) with all hardware, including an operational end gate.

3.4 Test Time.

Calendar time: 1 d

Test hours: 4 h

Coordination hours: 4 h

3.5 Test Required Information.

3.5.1 The requesting engineer should provide specifications appropriate for the PUBX or rear cargo area being evaluated.

3.5.1.1 If possible, analysis techniques should be used to identify areas with the weakest structure, in order to reduce the number of required evaluations.

3.5.2 The following specifications may be needed:

3.5.2.1 Locations of the PUBX or rear cargo area to be loaded.

3.5.2.1.1 Maximum applied load.

3.5.2.1.2 Load apply direction.

3.5.2.1.3 Maximum displacement and permanent set. See Figure A1 example of PUBX platform loading.

3.6 Personnel/Skills. Prior experience in setting up and running similar tests, and experience in the use of the referenced test equipment is critical to achieving the estimated times shown in 3.4.

4 Procedure

4.1 Preparation.

4.1.1 The Release and Test engineer should inspect the PUBX assembly or rear cargo area to ensure that all material listed in 3.3 is present and assembled properly. Observe and note all areas of damage or scratches in areas to be loaded.

4.1.2 Isolate the PUBX or vehicle body from the suspension so that the vehicle or box will not move when the loads are applied.

4.1.3 If deflection readings are requested by the Design or Test Engineer, locate and mark the measuring points on the body/box.

4.1.4 Install the displacement measurement devices support fixtures with minimal alterations to the test sample.

4.2 Conditions.

4.2.1 Environmental Conditions. Unless otherwise specified in this document's text by the requesting engineer, the typical environmental conditions for this test are the temperature, humidity, and pressure at the major test facility. Unless otherwise noted, these conditions are typically $22\text{ }^{\circ}\text{C} \pm 3\text{ }^{\circ}\text{C}$ ($72\text{ }^{\circ}\text{F} \pm 5\text{ }^{\circ}\text{F}$) relative humidity of $40\% \pm 20\%$, and atmospheric pressure equivalent to the local barometric pressure (which is variable during any given day and from day to day).

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 Strength of Pickup box platform.

4.3.1.1 Zero the displacement measuring device. Use Data Sheet A1 to record and displacement values. Refer to Data Sheet A1 for an example for completion.

4.3.1.2 Distribute the load uniformly over the pickup box platform.

4.3.1.3 Measure the pickup box platform assembly point's final displacement in the pre-determined points (Platform and Sills).

4.3.1.4 Remove pickup box Load.

4.3.1.5 Record permanent set in the pickup box platform assembly pre-determined points (Platform and Sills).

4.3.1.6 Note and photograph any permanent marks of loaded surface.

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