



Sliding Side Door 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. To determine if the sliding side door system meets the requirements of paragraph S4.2.2 of Federal Motor Vehicle Safety Standard (FMVSS) 206.

1.2 Applicability. This standard applies to passenger cars, multipurpose passenger vehicles and trucks, and buses with a gross vehicle weight rating (GVWR) of 4536 kg or less, and having a sliding side door system.

2 References

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

2.1 External Standards/Specifications.

FMVSS 206

2.2 GM Standards/Specifications.

None

3 Resources

3.1 Facilities. Use facilities that have the test equipment described in 3.2, provide the conditions listed in 4.2, and are able to support servo-hydraulic testing.

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 Still camera to take before and after photographs of the test.

3.2.2 Video cameras to record the test.

3.2.3 Two appropriate force application plates, as described in sections S5.2.2.3 (f) (1) (i) and S5.2.2.3 (g) (1) (i) of FMVSS 206.

3.2.4 Two load application devices (servo-hydraulic actuators) capable of at least 350 mm of travel and 12 000 N each. Actuator travel and load capabilities over and above the specified test required amount are necessary due to typical test running conditions such as preloads. They should have servo-valves sized to meet the required loads in the specified time. See Figures A1 and A2 in Appendix A.

3.2.5 Two load cells capable of measuring the applied loads. See Figure A1 in Appendix A.

3.2.6 Two linear displacement measuring devices for measuring the actuator displacement during the test. See Figure A2 in Appendix A.

3.2.7 Fixturing to anchor and constrain the load application devices in the vehicle per the requirements of FMVSS 206. See Figures A1 and A3 in Appendix A.

3.2.8 Servo-hydraulic controller and command generator to control the test.

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3.2.9 Data acquisition system to record the applied load, actuator movement and any additional data required by the test requestor.

3.2.10 Both 80 mm and 100 mm spheres mounted on handles to be used to measure the gap between the door and door frame. The handles should be long enough to keep the operator at a safe distance from the loaded structure. See Figure A4 in Appendix A.

3.3 Test Vehicle/Test Piece. Body in White (BIW) (painted) with all closures (including weatherstrips, strikers, and locks) and all fixed glass. All moveable glass should be installed and in the closed position. Door glass located opposite the side to be tested may be placed in the down position to facilitate video coverage.

3.4 Test Time.

Calendar time: 7 d
Test hours: 1 h
Coordination hours: 16 h

3.5 Test Required Information. The requesting engineer is responsible for providing specifications appropriate to the particular vehicle line being tested, and any requirements for data above that listed in 5.3.

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.

4 Procedure

4.1 Preparation.

4.1.1 Remove all interior trim and decorative components from the sliding side door assembly.

4.1.2 Remove seats, carpet, and any other interior components that may interfere with the mounting or operation of the test equipment. Remove all pillar trim and any non-structural components that overlap the door and cause improper placement of the force application plates.

4.1.3 Determine the forward and aft edges of the sliding door or its adjoining vehicle structure that contains a latch/striker.

4.1.4 Determine the location of the latches and strikers and how many latch/strikers there are on each edge of the door. Mark these locations on the inside of the vehicle, such that the marks can be seen when the door to be tested is fully closed.

4.1.5 Determine which force application plate is to be used for each edge of the door. If the tested door edge contains only one latch/striker, use a force application plate that is 150 mm in length, 50 mm in width, and at least 15 mm thick. The plate edges are to be rounded to a radius of $6\text{ mm} \pm 1\text{ mm}$. If the tested door edge contains more than one latch/striker or no latch/striker, use a force application plate that is 300 mm in length, 50 mm in width, and at least 15 mm thick. The plate edges are to be rounded to a radius of $6\text{ mm} \pm 1\text{ mm}$. Reference sections S5.2.2.3 (f), and S5.2.2.3 (g), and S5.2.2.3 (h) of FMVSS 206.

4.1.6 Mount the force application plates on the force application devices. Reference sections S5.2.2.3 (f) (1) (ii), and S5.2.2.3 (g) (1) (ii), and S5.2.2.3 (h) (1) (ii) of FMVSS 206

4.1.7 Install the force applications devices in the vehicle and position them such that (Reference sections S5.2.2.3 of FMVSS 206):

4.1.7.1 One of the long edges of each force application plate is as close to the fore/aft edge of the door as possible without contacting the body structure that forms the door opening. The long edge of the force application plates should be within 12.5 mm of the fore/aft edge of the door opening.

4.1.7.2 For a door edge containing only one latch/striker, position the load application device such that the applied force is perpendicular to the vertical longitudinal plane that passes through the vehicle's centerline, and vertically centered on the door mounted portion of the latch/striker.

4.1.7.3 For a door edge containing more than one latch/striker, position the load application device such that the applied force is perpendicular to the vertical longitudinal plane that passes through the vehicle's centerline, and vertically centered on a point midway between the outermost edges of the latch/striker assemblies.

4.1.7.4 For a door edge containing no latch/striker, position the load application device such that the applied force is perpendicular to the vertical longitudinal plane that passes through the vehicle's centerline, and vertically

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