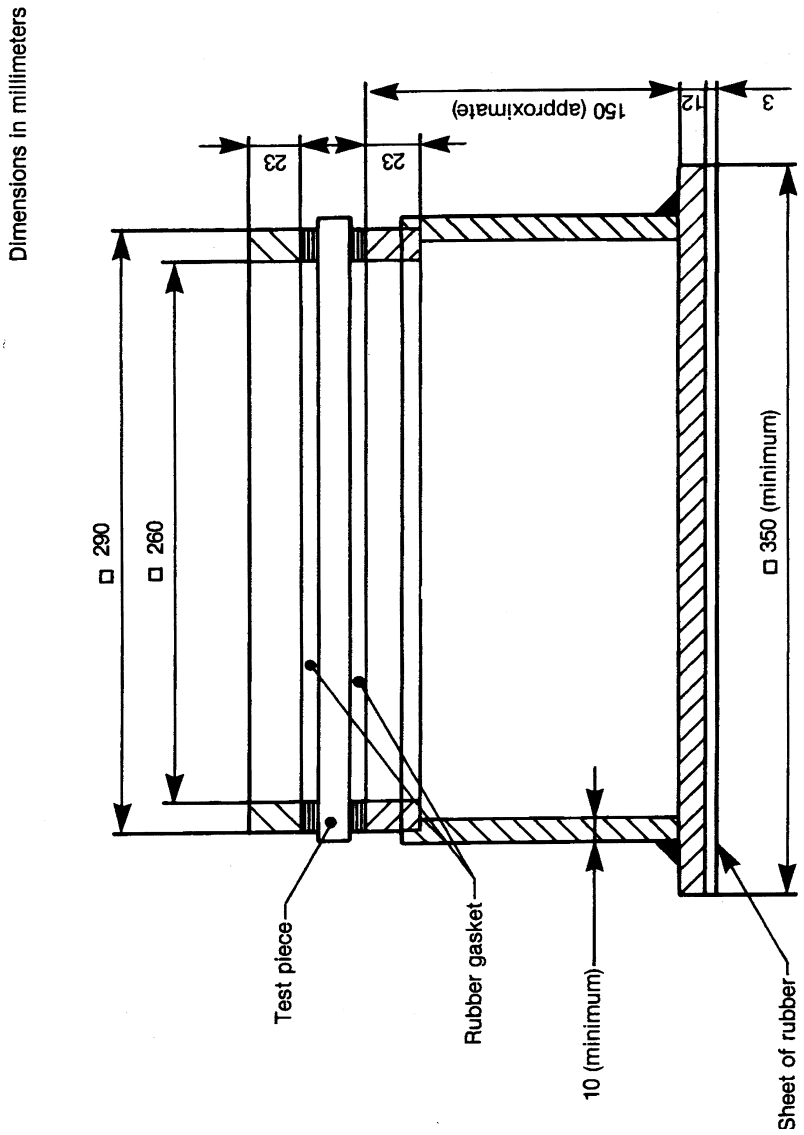


Figure 1 — Test Fixture For Clamped Specimens

[70 FR 39966, July 12, 2005]

§571.206 Standard No. 206; Door locks and door retention components.

S1. *Purpose and Scope.* This standard specifies requirements for door locks and door retention components including latches, hinges, and other supporting means, to minimize the likelihood of occupants being thrown from the vehicle as a result of impact.

S2. *Application.* This standard applies to passenger cars, multipurpose passenger vehicles, and trucks.

S3. *Definitions.*

Auxiliary door latch means a latch or latches, other than the primary latch or latches, fitted to a back door or

back door system that is equipped with more than one latch.

Back door means a door or door system on the back end of a motor vehicle through which passengers can enter or depart the vehicle, or cargo can be loaded or unloaded; but does not include:

(a) A trunk lid; or

(b) A door or window that is composed entirely of glazing material and whose latches and/or hinges are attached directly onto the glazing material.

Cargo-Type Door means a door designed primarily to accommodate cargo loading including, but not limited to, a two-part door that latches to itself.

Fork-bolt means the part of the door latch that engages the striker when in a latched position.

Fork-bolt opening means the direction opposite to that in which the striker enters to engage the fork-bolt.

Primary door latch means, with respect to a back door or back door system, the latch or latches equipped with both the fully latched position and the secondary latched position.

Side front door means a door that in a side view, has 50 percent or more of its opening area forward of the rearmost point on the driver's seatback, when the driver's seat is adjusted to its most vertical and rearward position.

Side rear door means a door that, in a side view, has more than 50 percent of its opening area to the rear of the rearmost point on the driver's seatback, when the driver's seat is adjusted to its most vertical and rearward position.

Trunk lid means a movable body panel that provides access from outside the vehicle to a space wholly partitioned from the occupant compartment by a permanently attached partition or a fixed or fold-down seat back.

S4. *Requirments.*

(a) *Components on side doors.* Components on any side door that leads directly into a compartment that contains one or more seating accommodations shall conform to this standard.

(b) *Components on back doors.* Components on any back door of a passenger car or multipurpose passenger vehicle with a gross vehicle weight rating (GVWR) of 4,536 kilograms (10,000 pounds) or less that leads directly into a compartment that contains one or more seating accommodations shall conform to this standard, subject to the following compliance schedule:

(1)(i) For those affected passenger cars and multipurpose passenger vehicles manufactured on or after September 1, 1997, and before September 1, 1998, the amount of such vehicles complying with this standard shall be not less than 60 percent of the combined total production of passenger cars and multipurpose passenger vehicles, based on:

(A) The manufacturer's average annual production of such vehicles manufactured on or after September 1, 1996 and before September 1, 1998; or

(B) The manufacturer's production of such vehicles on or after September 1, 1997 and before September 1, 1998.

(ii) For calculating average annual production of affected passenger cars and multipurpose passenger vehicles for each manufacturer and the number of such vehicles manufactured by each manufacturer, a vehicle produced by more than one manufacturer shall be attributed to a single manufacturer as follows:

(A) A vehicle that is imported shall be attributed to the importer;

(B) A vehicle manufactured in the United States by more than one manufacturer, one of which also markets the vehicle, shall be attributed to the manufacturer that markets the vehicle.

(C) A vehicle produced by more than one manufacturer shall be attributed to any one of the vehicle's manufacturers specified by an express written contract between the manufacturer so specified and the manufacturer to which the vehicle would otherwise be attributed under paragraph (b)(1)(ii)(A) or (B) of this section.

(2) Components on the back doors of affected passenger cars and multipurpose passenger vehicles manufactured on and after September 1, 1998 shall conform to all applicable requirements of this standard.

(c) Components on folding doors, roll-up doors, doors that are designed to be easily attached to or detached from motor vehicles manufactured for operation without doors, and doors that are equipped with the wheelchair lifts and

that are linked to an alarm system consisting of either a flashing visible signal located in the driver's compartment or an alarm audible to the driver that is activated when the door is open, need not conform to this standard.

(d) A particular latch or hinge assembly utilized as a test specimen need not meet further requirements after having been subjected to and having met any one of the requirements of S4 or S5.1 through S5.4.

S4.1 *Hinged Side Doors, Except Cargo-Type Doors.*

S4.1.1 *Door Latches.* Each door latch and striker assembly shall be provided with two positions consisting of—

(a) A fully latched position; and

(b) A secondary latched position.

S4.1.1.1 *Longitudinal Load.* The door latch and striker assembly, when in the fully latched position, shall not separate when a longitudinal load of 11,000 Newtons (2,500 pounds) is applied. When in the secondary latched position, the door latch and striker assembly shall not separate when a longitudinal load of 4,450 Newtons (1,000 pounds) is applied.

S4.1.1.2 *Transverse Load.* The door latch and striker assembly, when in the fully latched position, shall not separate when a transverse load of 8,900 Newtons (2,000 pounds) is applied. When in the secondary latched position, the door latch and striker assembly shall not separate when a transverse load of 4,450 Newtons (1,000 pounds) is applied.

S4.1.1.3 *Inertia Load.* The door latch shall not disengage from the fully latched position when a longitudinal or transverse inertia load of 30g is applied to the door latch system (including the latch and its actuating mechanism with the locking mechanism disengaged).

S4.1.2 *Door Hinges.* Each door hinge system shall support the door and shall not separate when a longitudinal load of 11,000 Newtons (2,500 pounds) is applied. Similarly, each door hinge system shall not separate when a transverse load of 8,900 Newtons (2,000 pounds) is applied.

S4.1.3 *Door Locks.* Each door shall be equipped with a locking mechanism with an operating means in the interior of the vehicle.

S4.1.3.1 *Side Front Door Locks.* When the locking mechanism is engaged, the outside door handle or other outside latch release control shall be inoperative.

S4.1.3.2 *Side Rear Door Locks.* In passenger cars and multipurpose passenger vehicles, when the locking mechanism is engaged both the outside and inside door handles or other latch release controls shall be inoperative.

S4.2 *Hinged Cargo-Type Side Doors.*

S4.2.1 *Door Latches.*

S4.2.1.1 *Longitudinal Load.* Each latch system, when in the latched position, shall not separate when a longitudinal load of 11,000 Newtons (2,500 pounds) is applied.

S4.2.1.2 *Transverse Load.* Each latch system, when in the latched position, shall not separate when a transverse load of 8,900 Newtons (2,000 pounds) is applied. When more than one latch system is used on a single door, the load requirement may be divided among the total number of latch systems.

S4.2.2 *Door Hinges.* Each door hinge system shall support the door and shall not separate when a longitudinal load of 11,000 Newtons (2,500 pounds) is applied, and when a transverse load of 8,900 Newtons (2,000 pounds) is applied.

S4.3 *Sliding Side Doors.* The track and slide combination or other supporting means for each sliding door shall not separate when a total transverse load of 17,800 Newtons (4,000 pounds) is applied, with the door in the closed position.

S4.4. *Hinged Back Doors.*

S4.4.1 *Door Latches.* Each back door system shall be equipped with at least one primary latch and striker assembly.

S4.4.1.1 *Load Test One.* The primary door latch and striker assembly, when in the fully latched position, shall not separate when a load of 11,000 Newtons (2,500 pounds) is applied in the direction perpendicular to the face of the latch (corresponding to the longitudinal load test for side door latches) such that the latch and the striker anchorage are not compressed against each other. When in the secondary latched position, the primary latch and striker assembly shall not separate when a load of 4,450 Newtons (1,000

pounds) is applied in the same direction.

S4.4.1.2 *Load Test Two.* The primary door latch and striker assembly, when in the fully latched position, shall not separate when a load of 8,900 Newtons (2,000 pounds) is applied in the direction of the fork-bolt opening and parallel to the face of the latch (corresponding to the transverse load test). Figure 1 depicts the loading direction for this test. When in the secondary latched position, the primary latch and striker assembly shall not separate when a load of 4,450 Newtons (1,000 pounds) is applied in the same direction.

S4.4.1.3 *Load Test Three.* The primary door latch and striker assembly on back doors equipped with a latch and striker assembly at the bottom of the door and that open upward shall not disengage from the fully latched position when a load of 8,900 Newtons (2,000 pounds) is applied in a direction orthogonal to the directions specified in S4.4.1.1 and S4.4.1.2 above.

S4.4.1.4 *Inertia Load.* The primary door latch shall not disengage from the fully latched position when an inertia load of 30g is applied to the door latch system, including the latch and its activation mechanism with the locking mechanism disengaged, in the directions specified in S4.4.1.1, S4.4.1.2, and S4.4.1.3.

S4.4.1.5 *Auxiliary Door Latches.* Each auxiliary back door latch and striker assembly shall be provided with a fully latched position and shall comply with the requirements specified in S4.4.1.1, S4.4.1.2, and S4.4.1.4.

S4.4.2 *Door Locks.* Each back door system equipped with interior door handles or that leads directly into a compartment that contains one or more seating accommodations shall be equipped with a locking mechanism with operating means in both the interior and exterior of the vehicle. When the locking mechanism is engaged, both the inside and outside door handles or other latch release controls shall be inoperative.

S4.4.3 *Door Hinges.*

S4.4.3.1 *Load Test One.* Each back door hinge system shall support the door and shall not separate when a load of 11,000 Newtons (2,500 pounds) is applied perpendicular to the hinge face plate (longitudinal load test) such that the hinge plates are not compressed against each other.

S4.4.3.2 *Load Test Two.* Each back door hinge system shall not separate when a load of 8,900 Newtons (2,000 pounds) is applied perpendicular to the axis of the hinge pin and parallel to the hinge face plate (transverse load test) such that the hinge plates are not compressed against each other.

S4.4.3.3 *Load Test Three.* Each hinge system on back doors that open upward shall not separate when a load of 8,900 Newtons (2,000 pounds) is applied in the direction of the axis of the hinge pin.

S4.5 *Sliding Back Doors.* The track and slide combination or other supporting means for each sliding door shall not separate when a total longitudinal load of 17,800 Newtons (4,000 pounds) is applied, with the door in the closed position.

S5.1 *Hinged Side Doors, Except Cargo-Type Doors.*

S5.1.1 *Door Latches.*

S5.1.1.1 *Longitudinal and Transverse Loads.* Compliance with paragraphs S4.1.1.1 and S4.1.1.2 shall be demonstrated in accordance with paragraph 5 of Society of Automotive Engineers Recommended Practice J839, *Passenger Car Side Door Latch Systems,* June 1991.

S5.1.1.2 *Inertia Load.* Compliance with S4.1.1.3 shall be demonstrated by approved tests or in accordance with paragraph 6 of Society of Automotive Engineers Recommended Practice J839, *Passenger Car Side Door Latch Systems,* June 1991.

S5.1.2 *Door Hinges.* Compliance with S4.1.2 shall be demonstrated in accordance with paragraph 4 or 5, as appropriate, of Society of Automotive Engineers Recommended Practice J934, *Vehicle Passenger Door Hinge Systems,* July 1982. For piano-type hinges, the hinge spacing requirements of SAE J934 shall not be applicable and arrangement of the test fixture shall be altered as required so that the test load will be applied to the complete hinge.

S5.2 *Hinged Cargo-Type Side Doors.*

S5.2.1 *Door Latches.* Compliance with S4.2.1 shall be demonstrated in accordance with paragraphs 5.1 and 5.3,

SAE Recommended Practice J839, *Passenger Car Side Door Latch Systems*, June 1991. An equivalent static test fixture may be substituted for that shown in Figure 2 of SAE J839, if required.

S5.2.2 *Door Hinges.* Compliance with S4.2.2 shall be demonstrated in accordance with paragraph 4 or 5, as appropriate, of SAE Recommended Practice J934, *Vehicle Passenger Door Hinge Systems*, July 1982. For piano-type hinges, the hinge spacing requirement of SAE J934 shall not be applicable and arrangement of the test fixture shall be altered as required so that the test load will be applied to the complete hinge.

S5.3 *Sliding Side Doors.* Compliance with S4.3 shall be demonstrated by applying an outward transverse load of 8,900 Newtons (2,000 pounds) to the load-bearing members at the opposite edges of the door (17,800 Newtons (4,000 pounds) total). The demonstration may be performed either in the vehicle or with the door retention components in a bench test fixture.

S5.4 *Hinged Back Doors.*

S5.4.1.1 *Load Tests One, Two, and Three.* Compliance with S4.4.1.1, S4.4.1.2, and S4.4.1.3 shall be demonstrated in the same manner as specified in S5.1.1.1, except that the loads shall be in the directions specified in S4.4.1.1, S4.4.1.2, and S4.4.1.3. The same test device may be used for Load Tests Two and Three.

S5.4.1.2 *Inertia Load.* Compliance with S4.4.1.4 shall be demonstrated in the same manner as specified in S5.1.1.2.

S5.4.2 *Door Hinges.* Compliance with S4.4.3.1, S4.4.3.2, and S4.4.3.3 shall be demonstrated in the same manner as specified in S5.1.2, except that the loads shall be in the directions specified in S4.4.3.1, S4.4.3.2, and S4.4.3.3. The same test device may be used for Load Tests Two and Three.

S5.5 *Sliding Back Doors.* Compliance with S4.5 shall be demonstrated by applying an outward longitudinal load of 8,900 Newtons (2,000 pounds) to the load bearing members at the opposite edges of the door (17,000 Newtons (4,000 pounds) total). The demonstration may be performed either in the vehicle or with the door retention components in a bench test fixture.

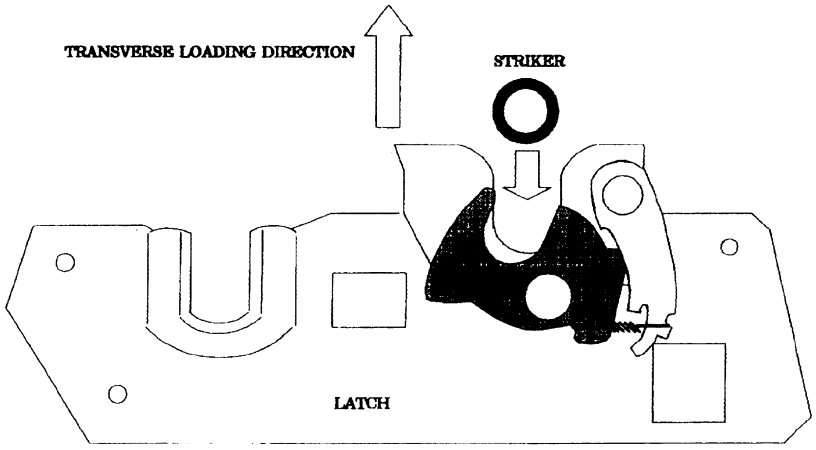


Figure 1.- Top View of a Typical Back Door Latch

[36 FR 22902, Dec. 2, 1971, as amended at 37 FR 284, Jan. 8, 1972; 50 FR 12031, Mar. 27, 1985; 60 FR 13646, Mar. 14, 1995; 60 FR 50134, Sept. 28, 1995; 61 FR 39907, July 31, 1996]

EFFECTIVE DATE NOTE: At 72 FR 5399, Feb. 6, 2007, § 571.206 was amended by revising S1; S2; the definitions of ''auxiliary door latch,'' ''back door,'' ''fork-bolt,'' ''primary door latch,'' ''side front door,'' ''side rear door,'' and ''trunk lid'' in S3; S4 through S4.1.1.3;

S4.1.2; S4.2 through S4.2.1.2; S4.2.2; S4.3; S5.1 through S5.1.1.2; S5.1.2; S5.2; S5.2.1; S5.2.2; Figure 1;, adding ''auxiliary door latch system,'' ''body member,'' ''door closure warning system,'' ''door hinge system,'' ''door latch system,'' ''door member,'' ''door system,'' ''double door,'' ''folding door,'' ''fork-bolt opening direction,'' ''fully-latched position,'' ''hinge,'' ''hinge pin,'' ''latch,'' ''primary door latch system,'' ''secondary latched position,'' ''striker,'' to the definitions in S3; S4.1.1.4; S4.1.2.1 through S4.1.2.3; S4.2.1.3; S4.2.2.1; S4.2.2.2; S4.3.1; S4.3.2; S5; S5.1.1.3; S5.1.1.4; S5.1.2.1 through S5.1.2.4; S5.2.1.1 through S5.2.1.4; S5.2.2.1 through S5.2.2.4; S5.3; Figures 2 through 4; Table 1; Figures 5 through 9; and removing ''cargo-type door'' and ''fork-bolt opening'' from the definitions in S3, S4.1.3, S4.1.3.1, S4.4 through S4.5, and S5.4 through S5.5. For the convenience of the user, the added and revised text is set forth as follows:

§ 571.206 Standard 206; Door locks and door retention components.

S1. *Scope and Purpose.* This standard specifies requirements for vehicle door locks and door retention components, including latches, hinges, and other supporting means, to minimize the likelihood of occupants being ejected from a vehicle as a result of impact.

S2. *Application.* This standard applies to passenger cars, multipurpose passenger vehicles, and trucks, and buses with a gross vehicle weight rating (GVWR) of 4,536 kg or less.

S3. *Definitions.*

Auxiliary Door Latch is a latch equipped with a fully latched position, with or without a secondary latched position, and fitted to a door or door system equipped with a primary door latch system.

Auxiliary Door Latch System consists of door latches and strikers other than those associated with the primary door latch system.

Back Door is a door or door system on the back end of a motor vehicle through which passengers can enter or depart the vehicle or cargo can be loaded or unloaded. It does not include:

(a) A trunk lid; or

(b) A door or window composed entirely of glazing material and whose latches and/or hinge systems are attached directly to the glazing material.

Body Member is that portion of the hinge normally affixed to the body structure.

Door Closure Warning System is a system that will activate a visual signal when a door latch system is not in its fully latched position and the vehicle ignition is activated.

Door Hinge System is one or more hinges used to support a door.

Door Latch System consists of latches and strikers installed on a door system.

Door Member is that portion of the hinge normally affixed to the door structure and constituting the swinging member.

Door System is the door, latch, striker, hinges, sliding track combinations and other door retention components on a door and its surrounding doorframe. The door system of a double door includes both doors.

Double Door is a system of two doors where the front door or wing door opens first and connects to the rear door or bolted door, which opens second.

Folding Door is a movable barrier, which will close off an entranceway to a bus, multipurpose passenger vehicle or truck, consisting of two or more hinge panels that swing, slide, or rotate; does not have a striker and latch assembly.

Fork-bolt is the part of the latch that engages and retains the striker when in a latched position.

Fork-bolt Opening Direction is the direction opposite to that in which the striker enters the latch to engage the fork-bolt.

Fully Latched Position is the coupling condition of the latch that retains the door in a completely closed position.

Hinge is a device system used to position the door relative to the body structure and control the path of the door swing for passenger ingress and egress.

Hinge Pin is that portion of the hinge normally interconnecting the body and door members and establishing the swing axis.

Latch is a device employed to maintain the door in a closed position relative to the vehicle body with provisions for deliberate release (or operation).

Primary Door Latch is a latch equipped with both a fully latched position and a secondary latched position and is designated as a ''primary door latch'' by the manufacturer.

Primary Door Latch System consists of a primary door latch(s) and a striker(s).

Secondary Latched Position refers to the coupling condition of the latch that retains the door in a partially closed position.

Side Front Door is a door that, in a side view, has 50 percent or more of its opening area forward of the rearmost point on the driver's seat back, when the seat back is adjusted to its most vertical and rearward position.

Side Rear Door is a door that, in a side view, has 50 percent or more of its opening area to the rear of the rearmost point on the driver's seat back, when the driver's seat is adjusted to its most vertical and rearward position.

Striker is a device with which the latch engages to maintain the door in the fully latched or secondary latched position.

Trunk Lid is a movable body panel that provides access from outside the vehicle to a space wholly partitioned from the occupant compartment by a permanently attached partition or fixed or fold-down seat back.

S4. *Requirements.* The requirements apply to all side and back doors, that lead directly into a compartment that contains one or more seating accommodations and the associated door components, except for those on folding doors, roll-up doors, detachable doors, and on bus doors used only for emergency egress purposes and labeled accordingly.

S4.1 *Hinged Doors*

S4.1.1 *Primary and Auxiliary Door Latch Systems.* Each hinged door system shall be equipped with at least one primary door latch system. By the time a vehicle is certified a manufacturer shall designate the door latch system(s) that is the ''primary door latch system(s).'' Upon certification, a manufacturer may not thereafter alter the designation of a primary door latch system. Each manufacturer shall, upon request from the National Highway Traffic Safety Administration, provide information regarding such designation.

S4.1.1.1 *Load Test One.*

(a) Each primary door latch system and auxiliary door latch system, when in the fully latched position, shall not separate when a load of 11,000 N is applied in the direction perpendicular to the face of the latch such that the latch and the striker anchorage are not compressed against each other, when tested in accordance with S5.1.1.1.

(b) When in the secondary latched position, the primary door latch system shall not separate when a load of 4,500 N is applied in the same direction specified in paragraph (a) of this section when tested in accordance with S5.1.1.1.

S4.1.1.2 *Load Test Two.*

(a) Each primary door latch system and auxiliary door latch system, when in the fully latched position, shall not separate when a load of 9,000 N is applied in the forkbolt opening direction and parallel to the face of the latch, when tested in accordance with S5.1.1.2.

(b) When in the secondary latched position, the primary door latch system shall not separate when a load of 4,500 N is applied in the same direction specified in paragraph (a) of this section when tested in accordance with S5.1.1.2.

S4.1.1.3 *Load Test Three.* (Applicable only to back doors that open in a vertical direction). Each primary door latch system on back doors, when in the fully latched position, shall not separate when a load of 9,000 N is applied in a direction orthogonal to the directions specified in S4.1.1.1 and S4.1.1.2 when tested in accordance with S5.1.1.3.

S4.1.1.4 *Inertial Load.* Each primary door latch system and auxiliary door latch system shall meet either the dynamic requirements specified in paragraphs (a) and (b) of S4.1.1.4 or the calculation of inertial load resistance specified in paragraph (c) of S4.1.1.4.

(a) Each primary door latch and auxiliary door latch on each hinged door shall not disengage from the fully latched position when an inertia load is applied to the door latch system, including the latch and its activation device, in the directions parallel to the vehicle's longitudinal and transverse axes with the locking device disengaged, when tested as specified in S5.1.1.4(b).

(b) Each primary door latch and auxiliary door latch on each hinged back door shall also not disengage from the fully latched position when an inertia load is applied to the door latch system, including the latch and its activation device, in the direction parallel to the vehicle's vertical axis with the locking device disengaged, when tested as specified in S5.1.1.4(b).

(c) Each component or subassembly is calculated for its minimum inertial load resistance in a particular direction. The combined resistance to the unlatching operation must assure that the door latch system, when properly assembled in the vehicle door, will remain latched when subjected to an inertial load of 30 g in the vehicle directions specified in paragraph (a) of this section or paragraph (b) of this section, as applicable, when calculated in accordance with S5.1.1.4 (a).

S4.1.2 *Door Hinges.*

S4.1.2.1 When tested in accordance with S5.1.2, each door hinge system shall:

(a) Support the door,

(b) Not separate when a longitudinal load of 11,000 N is applied,

(c) Not separate when a transverse load of 9,000 N is applied, and

(d) For back doors,

(1) Not separate when a load of 11,000 N is applied perpendicular to the hinge face plate (longitudinal load test) such that the hinge plates are not compressed against each other (Load Test One).

(2) Not separate when a load of 9,000 N is applied perpendicular to the axis of the hinge pin and parallel to the hinge face plate (transverse load test) such that the hinge plates are not compressed against each other (Load Test Two).

(3) Not separate when a load of 9,000 N is applied in the direction of the axis of the hinge pin (Load Test Three—only for back doors that open in a vertical direction).

S4.1.2.2 If a single hinge within the hinge system is tested instead of the entire hinge system, the hinge must bear a load proportional to the total number of hinges in the hinge system. (For example, an individual hinge in a two-hinge system must be capable of withstanding 50% of the load requirements of the total system.)

S4.1.2.3 On side doors with rear mounted hinges that can be operated independently of other doors,

(a) The interior door handle shall be inoperative when the speed of the vehicle is greater than or equal to 4 km/h, and

(b) A door closure warning system shall be provided for those doors. The door closure warning system shall be located where it can be clearly seen by the driver.

S4.2 *Sliding Side Doors.*

S4.2.1 *Latch System.* Each sliding door system shall be equipped with either:

(a) At least one primary door latch system, or

(b) A door latch system with a fully latched position and a door closure warning system. The door closure warning system shall be located where it can be clearly seen by the driver. Upon certification a manufacturer may not thereafter alter the designation of a primary latch. Each manufacturer shall, upon request from the National Highway Traffic Safety Administration, provide information regarding such designation.

S4.2.1.1 *Load Test One.*

(a) At least one door latch system, when in the fully latched position, shall not separate when a load of 11,000 N is applied in the direction perpendicular to the face of the latch such that the latch and the striker anchorage are not compressed against each other, when tested in accordance with S5.2.1.1.

(b) In the case of a primary door latch system, when in the secondary latched position, the door latch system shall not separate when a load of 4,500 N is applied in the same direction specified in paragraph (a) of this section when tested in accordance with S5.2.1.1.

S4.2.1.2 *Load Test Two.*

(a) At least one door latch system, when in the fully latched position, shall not separate when a load of 9,000 N is applied in the forkbolt opening direction and parallel to the face of the latch when tested in accordance with S5.2.1.2.

(b) In the case of a primary door latch system, when in the secondary latched position, the door latch system shall not separate when a load of 4,500 N is applied in the same direction specified in paragraph (a) of this section when tested in accordance with S5.2.1.2.

S4.2.1.3 *Inertial Load.* Each door latch system certified as meeting the requirements of S4.2.1.1 and S4.2.1.2 shall meet either the dynamic requirements specified in paragraph (a) of this section or the calculation of inertial load resistance specified in paragraph (b) of this section.

(a) The door latch system shall not disengage from the fully latched position when an inertial load is applied to the door latch system, including the latch and its activation mechanism, in the directions parallel to the vehicle's longitudinal and transversal axes with the locking mechanism disengaged, and when tested in accordance with S5.1.1.4(b).

(b) The minimum inertial load resistance can be calculated for each component or subassembly. Their combined resistance to the unlatching operation must assure that the door latch system, when properly assembled in the vehicle door, will remain latched when subjected to an inertia load of 30 g in the vehicle directions specified in paragraph (a) of this section, when calculated in accordance with S5.1.1.4(a).

S4.2.2 *Door System.*

S4.2.2.1 The track and slide combination or other supporting means for each sliding door, while in the closed fully latched position, shall not separate from the door frame when a total force of 18,000 N along the vehicle transverse axis is applied to the door as specified in S5.2.2.

S4.2.2.2 When a sliding door system is tested in accordance with S5.2.2, the following conditions shall not occur:

(a) A separation which permits a sphere with a diameter of 100 mm to pass unobstructed between the exterior of the vehicle to the interior of the vehicle, while the required force is maintained as shown in Figure 1.

(b) Either force application device reaches a total displacement of 300 mm.

S4.3 *Door Locks.* Each door shall be equipped with at least one locking device which, when engaged, shall prevent operation of the exterior door handle or other exterior latch release control and which has an operating means and a lock release/engagement device located within the interior of the vehicle.

S4.3.1 *Rear side doors.* Each rear side door shall be equipped with at least one locking device which has a lock release/engagement mechanism located within the interior of the vehicle and readily accessible to the driver of the vehicle or an occupant seated adjacent to the door, and which, when engaged, prevents operation of the interior door handle or other interior latch release control and requires separate actions to unlock the door and operate the interior door handle or other interior latch release control.

S4.3.2 *Back doors.* Each back door equipped with an interior door handle or other interior latch release control, shall be equipped with at least one locking device that meets the requirements of S4.3.1.

S5 *Test Procedures.*

S5.1 *Hinged Doors.*

S5.1.1 *Primary and Auxiliary Door Latches.*

S5.1.1.1 *Load Test One Force Application.* The test procedures for S4.1.1.1 and S4.2.1.1 are as follows:

(a) *Fully latched position.*

(1) Attach the test fixture shown in Figure 2 to the mounting provisions of the latch and striker. Align the direction of engagement parallel to the linkage of the fixture. Mount the fixture with latch and striker in the fully latched position in the test machine so as to apply a load perpendicular to the face of the latch.

(2) Locate weights so as to apply a 900 N load tending to separate the latch and striker in the direction of the latch opening.

(3) Apply the test load, in the direction specified in S4.1.1.1 and Figure 5, at a rate not to exceed 5 mm/min until the required load has been achieved. Record the maximum load achieved.

(b) *Secondary Latched Position.*

(1) Attach the test fixture shown in Figure 2 to the mounting provisions of the latch and striker. Align the direction of engagement parallel to the linkage of the fixture. Mount the fixture with latch and striker in the secondary position in the test machine so as to apply a load perpendicular to the face of the latch.

(2) Locate weights so as to apply a 900 N load tending to separate the latch and striker in the direction of the latch opening.

(3) Apply the test load, in the direction specified in S4.1.1.1 and Figure 5, at a rate not to exceed 5 mm/min until the required load has been achieved. Record maximum load achieved.

(4) The test plate to which the door latch is mounted will have a striker cut-out configuration similar to the environment in which the door latch will be mounted on normal vehicle doors.

S5.1.1.2 *Load Test Two Force Application.* The test procedures for S4.1.1.2 and S4.2.1.2 are as follows:

(a) *Fully Latched Position.*

(1) Adapt the test fixture shown in Figure 3 to the mounting provisions of the latch and striker. Mount the fixture with latch and striker in the fully latched position in the test machine so to apply a load in the direction of latch opening.

(2) Apply the test load, in the direction specified in S4.1.1.2 and Figure 5, at a rate not to exceed 5 mm/min until the required load has been achieved. Record the maximum load achieved.

(b) *Secondary Latched Position.*

(1) Adapt the test fixture shown in Figure 3 to the mounting provisions of the latch and striker. Mount the fixture with latch and striker in the secondary latched position in the test machine so as to apply a load in the direction of latch opening.

(2) Apply the test load, in the direction specified in S4.1.1.2 and Figure 5, at a rate not to exceed 5 mm/min until the required load has been achieved. Record the maximum load achieved.

S5.1.1.3 *Load Test Three Force Application.* The test procedures for S4.1.1.3 are as follows:

(a) Adapt the test fixture shown in Figure 4 to the mounting provisions of the latch and striker. Mount the fixture with latch and striker in the fully latched position in the test machine so as to apply a load in the direction specified in S4.1.1.3 and Figure 5.

(b) Apply the test load, in the direction specified in S4.1.1.3 and Figure 5, at a rate not to exceed 5 mm/min until the required load has been achieved. Record the maximum load required.

S5.1.1.4 *Inertial Force Application.* The test procedures for S4.1.1.4 and S4.2.1.3 are as follows:

(a) *Calculation.* The calculation is performed in accordance with paragraph 6 of Society of Automotive Engineers Recommended Practice J839, *Passenger Car Side Door Latch Systems,* June 1991.

(b) *Dynamic Test.* The dynamic inertial force application is tested according to the setup specified in paragraph (1) or (2) of this section.

(1) *Test Setup and Directions for Full Vehicle Test.*

(i) Test Setup.

(A) Rigidly secure the full vehicle to an acceleration device that, when accelerated together, will assure that all points on the crash pulse curve are within the corridor defined in Table 1 and Figure 6.

(B) Install the equipment used to record door opening (doors may be tethered to avoid damaging the recording equipment).

(C) Close the door(s) to be tested and ensure that the door latch(es) is in the fully-latched position, that the door(s) is unlocked, and that all windows, if provided, on the door(s) are closed.

(ii) Test Directions. (See Figure 7)

(A) Longitudinal Setup 1. Orient the vehicle so that its longitudinal axis is aligned with the axis of the acceleration device, simulating a frontal impact.

(B) Longitudinal Setup 2. Orient the vehicle so that its longitudinal axis is aligned with the axis of the acceleration device, simulating a rear impact.

(C) Transverse Setup 1. Orient the vehicle so that its transverse axis is aligned with the axis of the acceleration device, simulating a driver-side impact.

(D) Transverse Setup 2. (Only for vehicles having different door arrangements on each side.) Orient the vehicle so that its transverse axis is aligned with the axis of the acceleration device, simulating a side impact in the direction opposite to that described in b(1)(ii)(C) of this paragraph.

(2) *Test Setup and Directions for Door Test.*

(i) Test Setup.

(A) Mount the door assemblies, consisting of at least the door latch(es), exterior door handle(s) with mechanical latch operation, interior door opening lever(s), and locking device(s), either separately or combined to a test fixture. Each door and striker is mounted to the test fixture to correspond to its orientation on the vehicle and to the directions specified in b(1)(ii) of this paragraph.

(B) Mount the test fixture to the acceleration device, and install the equipment used to record door opening.

(C) Ensure that the door latch is in the fully-latched position, that the door is tethered and unlocked, and that any windows are closed.

(ii) Test Directions. (See Figure 7)

(A) Longitudinal Setup 1. Orient the door subsystem(s) on the acceleration device in the direction of a frontal impact.

(B) Longitudinal Setup 2. Orient the door subsystem(s) on the acceleration device in the direction of a rear impact.

(C) Transverse Setup 1. Orient the door subsystem(s) on the acceleration device in the direction of a driver-side impact.

(D) Transverse Setup 2. Orient the door subsystem(s) on the acceleration device in the direction opposite to that described in (b)(2)(ii)(C) of this paragraph.

(E) Vertical Setup 1 (applicable only to back doors that open in a vertical direction). Orient the door subsystem(s) on the acceleration device so that its vertical axis (when mounted in the vehicle) is aligned with the axis of the acceleration device, simulating a rollover impact where the force is applied in the direction from the top to the bottom of the door (when mounted in a vehicle).

(F) Vertical Setup 2 (applicable only to back doors that open in a vertical direction). Orient the door subsystem(s) on the acceleration device so that its vertical axis (when mounted in the vehicle) is aligned with the axis of the acceleration device, simulating a rollover impact where the force is applied in the direction opposite to that described in (b)(2)(ii)(E) of this paragraph.

(3) *Test Operation.*

(i) The acceleration device platform shall be instrumented with an accelerometer and data processing system that conforms to the requirements specified in Society of Automotive Engineers (SAE) Recommended Practice J211 December 2003, ''Instrumentation for Impact Test—Part 1—Electronic Instrumentation'', Channel Class 60. The accelerometer sensitive axis is parallel to the direction of test platform travel.

(ii) Maintaining a minimum acceleration level of 30 g for a period of at least 30 ms, while keeping the recorded acceleration within the pulse corridor defined in Table 1 and Figure 6, accelerate the acceleration device in the following directions:

(A) For Full Vehicle Tests, in the directions specified in S5.1.1.4(b)(1)(ii)(A) through S5.1.1.4(b)(1)(ii)(D).

(B) For Door Tests, in the directions specified in S5.1.1.4(b)(2)(ii)(A) through S5.1.1.4(b)(2)(ii)(F).

(iii) Check recording device for door opening and/or closure during the test.

(iv) If at any point in time, the pulse exceeds 36 g and the test specifications are met, the test shall be considered valid.

S5.1.2 *Door Hinges.* The test procedures for S4.1.2 are as follows:

S5.1.2.1 Multiple Hinge Evaluation;

S5.1.2.1.1 *Longitudinal Load Test.*

(a) Attach the test fixture illustrated in Figure 8 to the mounting provisions of the hinge system. Hinge attitude is configured to simulate vehicle position (door fully closed) relative to the hinge centerline. For test purposes, the distance between the extreme end of one hinge in the system to the extreme end of another hinge in the system is to be set at 406 mm ±4 mm. The load is to be applied equidistant between the linear center of the engaged portions of the hinge pins and through the centerline of the hinge pin in the longitudinal vehicle direction (see Figure 8).

(b) Apply the test load at a rate not to exceed 5 mm/min until the required load has been achieved. Record maximum load achieved.

S5.1.2.1.2 *Transverse Load Test*

(a) Attach the test fixture shown in Figure 8 to the mounting provisions of the hinge system. Hinge attitude is configured to simulate vehicle position (door fully closed) relative to the hinge centerline. For test purposes, the distance between the extreme end of one hinge in the system to the extreme opposite end of another hinge in the system is to be set at 406 mm ±4 mm. The load is to be applied equidistant between the linear center of the engaged portions of the hinge pins and through the centerline of the hinge pin in the transverse vehicle direction (see Figure 8).

(b) Apply the test load at a rate not to exceed 5 mm/min until the required load has been achieved. Record maximum load achieved.

S5.1.2.2 *Back Door Hinge Load Test*

(a) Load Test One

(1) Attach the test fixture illustrated in Figure 8 to the mounting provisions of the hinge system. Hinge attitude is configured to simulate vehicle position (door fully closed) relative to the hinge centerline. For test purposes, the distance between the extreme end of one hinge system in the system to the extreme opposite end of another hinge system is to be set at 406 ±4 mm. The load is to be applied equidistant between the linear center of the engaged portions of the hinge pins and through the centerline of the hinge pin, and as specified in S4.1.2.1(d)(1). (See Figure 9).

(2) Apply the test load at a rate not to exceed 5 mm/min until the required load has been achieved. Failure consists of a separation of either hinge. Record the maximum load achieved.

(b) Load Test Two

(1) Attach the test fixture illustrated in Figure 8 to the mounting provisions of the hinge system. Hinge attitude is configured to simulate vehicle position (door fully closed) relative to the hinge centerline. For test purposes, the distance between the extreme end of one hinge system in the system to the

extreme opposite end of another hinge system is to be set at 406 ±4 mm. The load is to be applied equidistant between the linear center of the engaged portions of the hinge pins and through the centerline of the hinge pin, and as specified in S4.1.2.1(d)(2). (See Figure 9).

(2) Apply the test load at a rate not to exceed 5 mm/min until the required load has been achieved. Failure consists of a separation of either hinge. Record the maximum load achieved.

(c) Load Test Three

(1) Attach the test fixture illustrated in Figure 8 to the mounting provisions of the hinge system. Hinge attitude is configured to simulate vehicle position (door fully closed) relative to the hinge centerline. For test purposes, the distance between the extreme end of one hinge system in the system to the extreme opposite end of another hinge system is to be set at 406 ±4 mm. The load is to be applied through the centerline of the hinge pin, and as specified in S4.1.2.1(d)(3). (See Figure 9).

(2) Apply the test load at a rate not to exceed 5 mm/min until the required load has been achieved. Failure consists of a separation of either hinge. Record the maximum load achieved.

S5.1.2.3 *Single Hinge Evaluation.* Individual hinges of a hinge system are tested in accordance with the procedures below:

(a) *Longitudinal Load.* Attach the test fixture illustrated in Figure 8 to the mounting provisions of the hinge. Hinge attitude is configured to simulate the vehicle position (door fully closed) relative to the hinge centerline. For test purposes, the load is to be applied equidistant between the linear center of the engaged portions of the hinge pin and through the centerline of the hinge pin in the longitudinal vehicle direction. Apply the test load at a rate not to exceed 5 mm/min until the required load has been achieved. Failure consists of a separation of either hinge. Record maximum load achieved.

(b) *Transverse Load.* Attach the test fixture illustrated in Figure 8 to the mounting provisions of the hinge. Hinge attitude is configured to simulate the vehicle position (door fully closed) relative to the hinge centerline. For test purposes, the load is to be applied equidistant between the linear center of the engaged portions of the hinge pin and through the centerline of the hinge pin in the transverse vehicle direction. Apply the test load at a rate not to exceed 5 mm/min until the required load has been achieved. Failure consists of a separation of either hinge. Record maximum load achieved.

(c) *Back Door Hinge Load Tests.*

(1) Load Test One. Attach the test fixture illustrated in Figure 8 to the mounting provisions of the hinge. Hinge attitude is configured to simulate the vehicle position (door fully closed) relative to the hinge centerline. For test purposes, the load is to be applied equidistant between the linear center of the engaged portions of the hinge pin and through the centerline of the hinge pin, and as specified in S4.1.2.1(d)(1). (See Figure 9). Apply the test load at a rate not to exceed 5 mm/min until the required load has been achieved. Failure consists of a separation of either hinge. Record maximum load achieved.

(2) Load Test Two. Attach the test fixture illustrated in Figure 8 to the mounting provisions of the hinge. Hinge attitude is configured to simulate the vehicle position (door fully closed) relative to the hinge centerline. For test purposes, the load is to be applied equidistant between the linear center of the engaged portions of the hinge pin and through the centerline of the hinge pin, and as specified in S4.1.2.1(d)(2). (See Figure 9). Apply the test load at a rate not to exceed 5 mm/min until the required load has been achieved. Failure consists of a separation of either hinge. Record maximum load achieved.

(3) Load Test Three. Attach the test fixture illustrated in Figure 8 to the mounting provisions of the hinge. Hinge attitude is configured to simulate the vehicle position (door fully closed) relative to the hinge centerline. For test purposes, the load is to be applied through the centerline of the hinge pin, and as specified in S4.1.2.1(d)(3). (See Figure 9). Apply the test load at a rate not to exceed 5 mm/min until the required load has been achieved. Failure consists of a separation of either hinge. Record maximum load achieved.

S5.1.2.4 For piano-type hinges, the hinge spacing requirements are not applicable and arrangement of the test fixture is altered so that the test forces are applied to the complete hinge.

S5.2 *Sliding Side Doors.*

S5.2.1 *Door Latches.*

S5.2.1.1 *Load Test One Force Application.* The requirements of S4.2.1.1 are tested in accordance with the procedures specified in S5.1.1.1.

S5.2.1.2 *Load Test Two Force Application.* The requirements of S4.2.1.2 are tested in accordance with the procedures specified in S5.1.1.2.

S5.2.1.3 [Reserved]

S5.2.1.4 [Reserved]

S5.2.2 *Door System.* The test procedures for S4.2.2 are as follows:

S5.2.2.1 Tests are conducted using a full vehicle with the sliding door and its retention components.

S5.2.2.2 The test is conducted using two force application devices capable of applying the outward transverse forces specified in S5.2.2.4. The test setup is shown in Figure 10. The force application system shall include the following:

(a) Two force application plates, (b) Two force application devices capable of applying the outward transverse load requirements for a minimum displacement of 300 mm.

(c) Two load cells of sufficient capacity to measure the applied loads specified in S5.2.2.4.

(d) Two linear displacement measurement devices required for measuring force application device displacement during the test.

(e) Equipment to measure for a 100 mm separation as specified in S4.2.2.2(a), while respecting all relevant safety and health requirements.

S5.2.2.3 *Test Setup.*

(a) Remove all interior trim and decorative components from the sliding door assembly.

(b) Remove seats and any interior components that may interfere with the mounting and operation of the test equipment and all pillar trim and any non-structural components that overlap the door and cause improper placement of the force application plates.

(c) Each force application device and associated support structure is rigidly fixed on a horizontal surface on the vehicle floor, while applying the loads.

(d) Determine the forward and aft edge of the sliding door, or its adjoining vehicle structure, that contains a latch/striker.

(e) Close the sliding door, ensuring that all door retention components are fully engaged.

(f) For any tested door edge that contains one latch/striker, the following set-up procedures are used:

(1)(i) The force application plate is 150 mm in length, 50 mm in width, and at least 15 mm in thickness. The plate edges are rounded to a radius of 6 mm ± 1 mm.

(ii) The plates are rigidly fixed perpendicular to the force application devices to maintain the displacement of the force application plate in the transverse direction. The plates allow for longitudinal rotation with respect to the vehicle's centerline axis. The plates do not allow for rotation in the vehicle's transverse direction.

(2) Place the force application device and force application plate against the door so that the applied force is perpendicular to the vertical longitudinal plane that passes through the vehicle's longitudinal centerline, and vertically centered on the door-mounted portion of the latch/striker.

(3) The force application plate is positioned such that the long edge of the plate is as close to the edge of the interior edge of the door as possible, but not such that the forward edge of plate is more than 12.5 mm from the interior edge.

(g) For any tested door edge that contains more than one latch/striker, the following setup procedures are used:

(1)(i) The force application plate is 300 mm in length, 50 mm in width, and at least 15 mm in thickness. The plate edges are rounded to a radius of 6 mm ±1 mm.

(ii) The plates are rigidly fixed perpendicular to the force application devices to maintain the displacement of the force application plate in the transverse direction. The plates allow for longitudinal rotation with respect to the vehicle's centerline axis. The plates do not allow for rotation in the vehicle's transverse direction.

(2) Place the force application device and force application plate against the door so that the applied force is perpendicular to the vertical longitudinal plane that passes through the vehicle's longitudinal centerline, and vertically centered on a point midway between the outermost edges of the latch/striker assemblies.

(3) The force application plate is positioned such that the long edge of the plate is as close to the edge of the interior edge of the door as possible, but not such that the forward edge of plate is more than 12.5 mm from the interior edge.

(h) For any tested door edge that does not contain at least one latch/striker, the following set-up procedures are used:

(1)(i) The force application plate is 300 mm in length, 50 mm in width, and at least 15 mm in thickness. The plate edges are rounded to a radius of 6 mm ± 1 mm.

(ii) The plates are rigidly fixed perpendicular to the force application devices to maintain the displacement of the force application plate in the transverse direction. The plates allow for longitudinal rotation with respect to the vehicle's centerline axis. The plates do not allow for rotation in the vehicle's transverse direction.

(2) Place the force application device and force application plate against the door so that the applied force is perpendicular to the vertical longitudinal plane that passes through the vehicle's longitudinal centerline, and vertically centered on a point midway along the length of the door edge ensuring that the loading device avoids contact with the window glazing.

(3) The force application plate is positioned such that the long edge of the plate is as close to the edge of the interior edge of the door as possible, but not such that the forward edge of plate is more than 12.5 mm from the interior edge.

(i) The door is unlocked. No extra fixtures or components may be welded or affixed to the sliding door or any of its components.

(j) Place the load application structure so that the force application plates are in contact with the interior of the sliding door.

(k) Apply a preload of 500 N to each actuator and ''zero'' the displacement measuring device.

S5.2.2.4 *Test Procedure.*

(a) Move each force application device at any rate up to 2000 N per minute until a force

of 9,000 N is achieved on each force application device or until either force application device reaches a total displacement of 300 mm.

(b) If one of the force application devices reaches the target force of 9,000 N prior to the other, maintain the 9,000 N force with that force application device until the second force application device reaches the 9,000 N force.

(c) Once both force application devices have achieved 9,000 N each hold the resulting load.

(d) Maintain each force application device load as specified in paragraph (c) and within 30 seconds measure the separation between the exterior edge of the doorframe and the interior of the door along the perimeter of the door.

S5.3 [Reserved]

FIGURE 1. EVALUATION OF SLIDING DOOR GAP SEPARATION

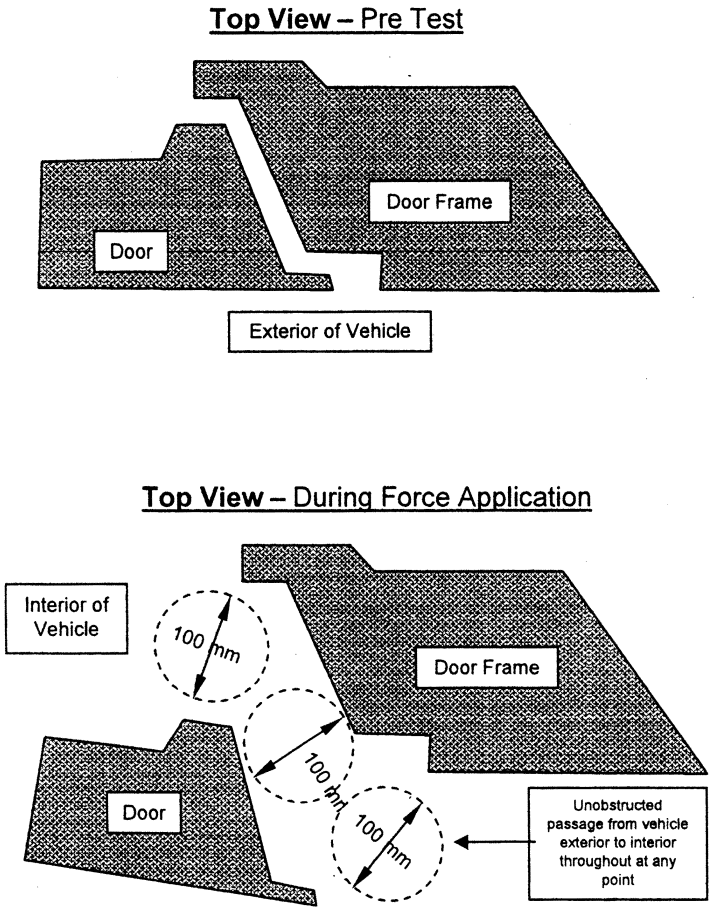


FIGURE 2 - DOOR LATCH – TENSILE TESTING FIXTURE FOR LOAD TEST 1

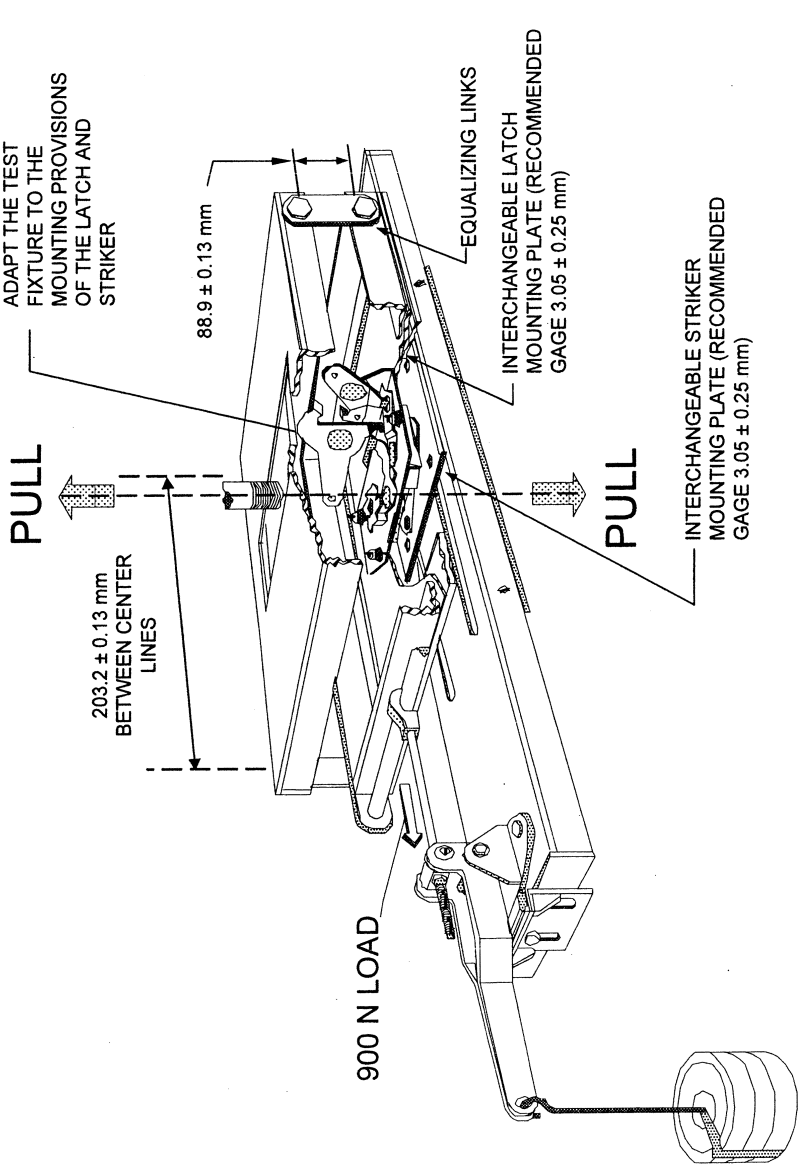


FIGURE 3 – DOOR LATCH – TENSILE TESTING FIXTURE FOR LOAD TEST 2

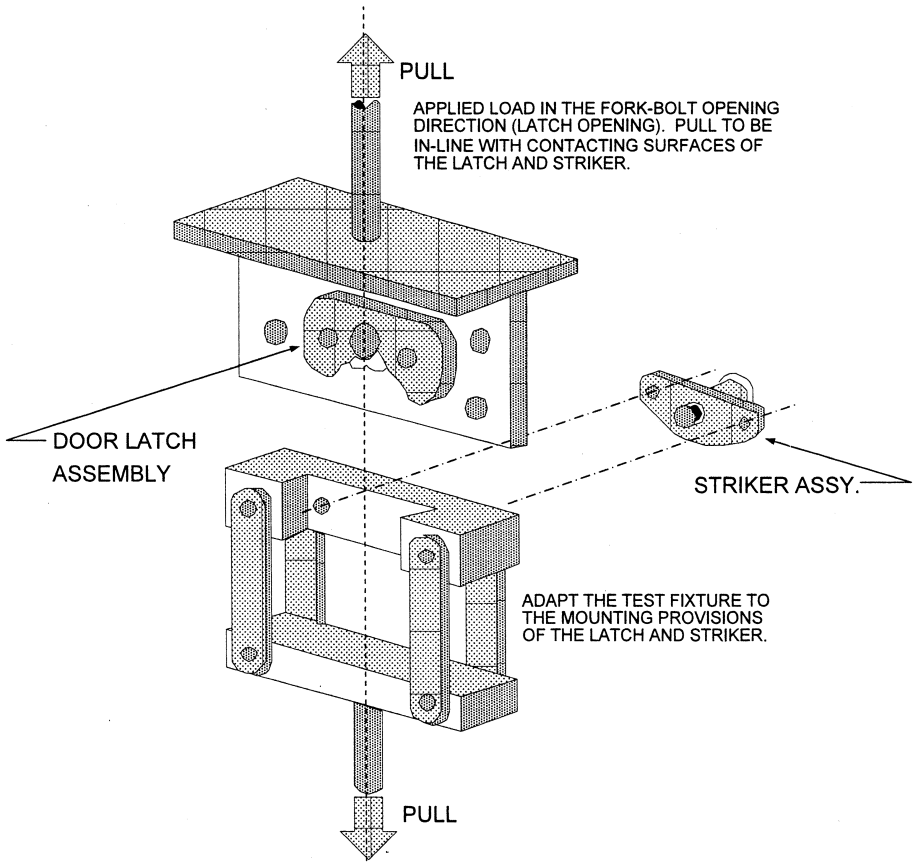
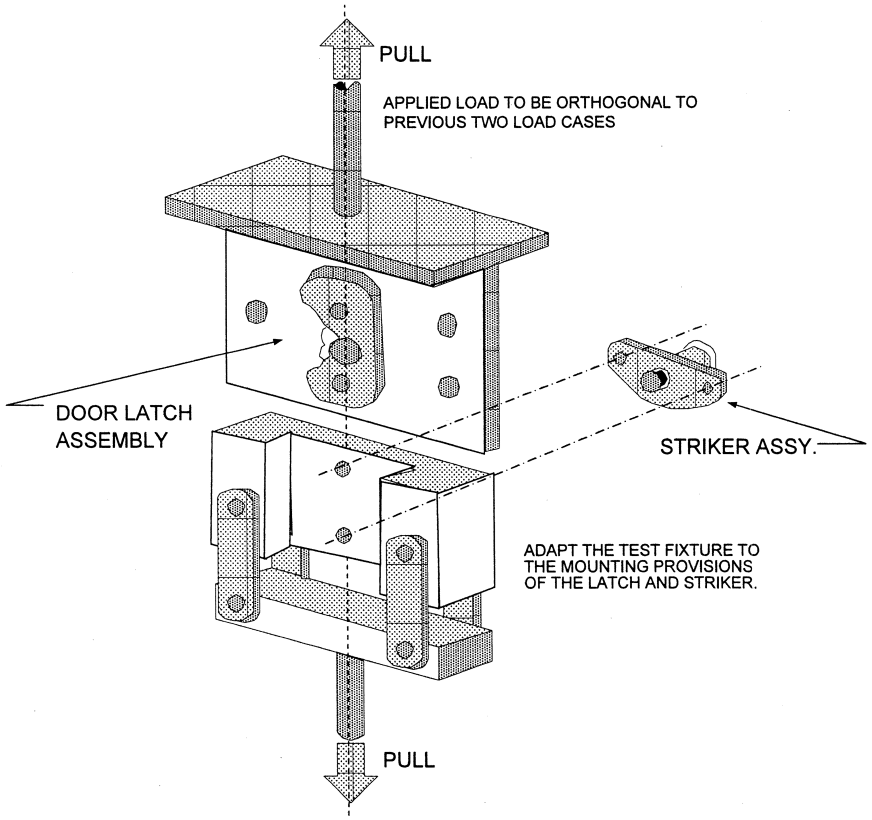


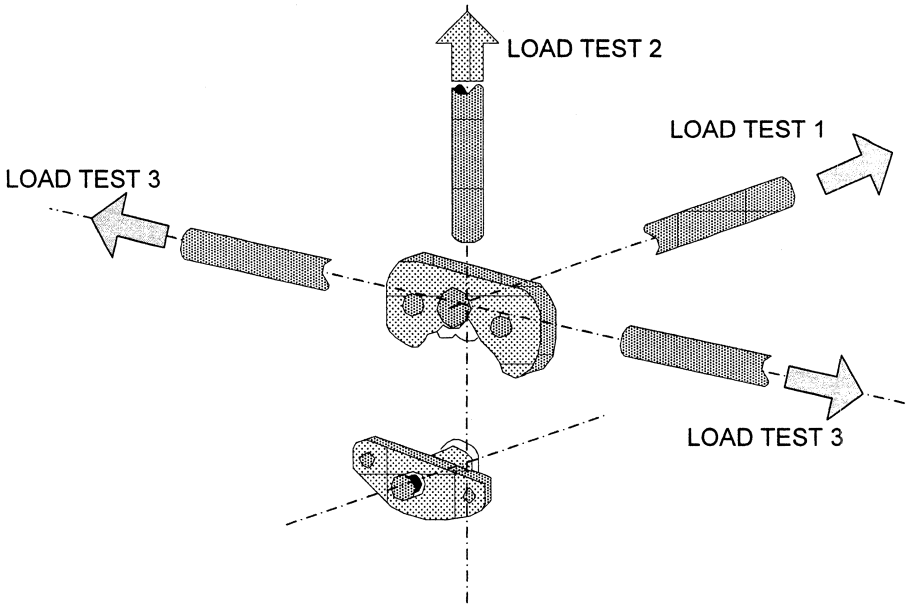
FIGURE 4 – DOOR LATCH – TENSILE TESTING FIXTURE FOR LOAD TEST 3 (BACK DOORS ONLY)



Upper Bound			Lower Bound		
Point	Time (ms)	Acceleration (g)	Point	Time (ms)	Acceleration (g)
A	0	6	E	5	0
B	20	36	F	25	30
C	60	36	G	55	30
D	100	0	H	70	0

ACCELERATION PULSE CORRIDOR TABLE 1

FIGURE 5 – DOOR LATCH STATIC LOAD TEST DIRECTIONS



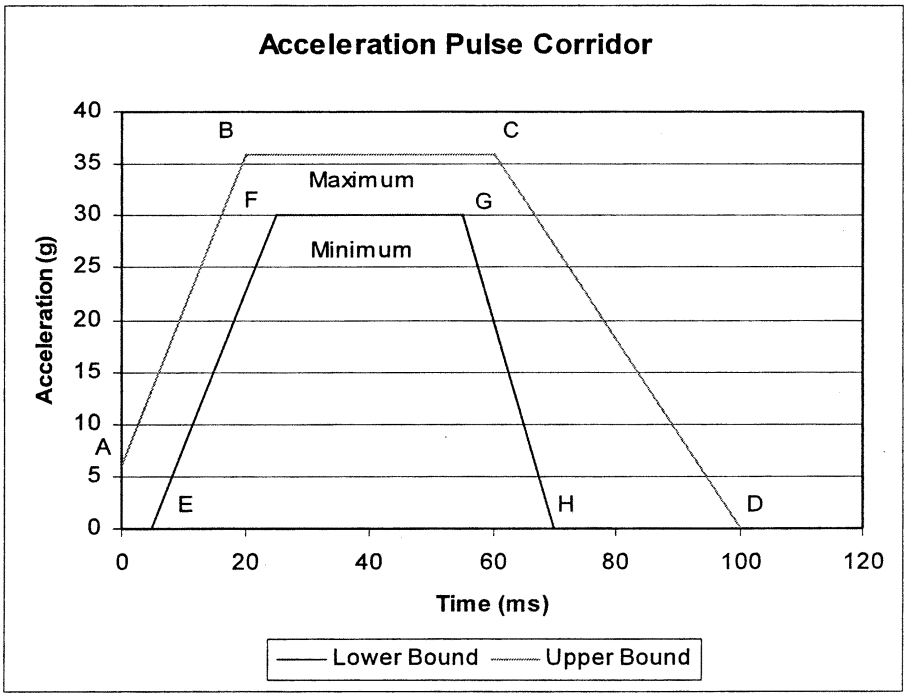
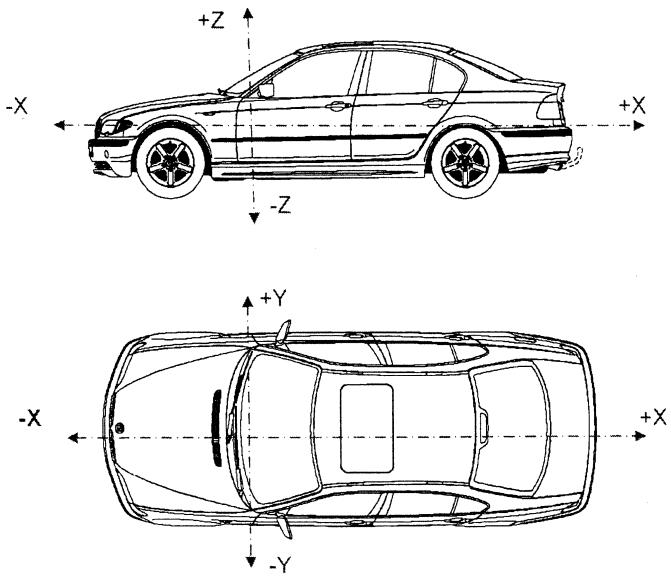


FIGURE 6 – ACCELERATION PULSE

FIGURE 7 - VEHICLE COORDINATE REFERENCE SYSTEM FOR INERTIAL TESTING



X = longitudinal direction
Y = transverse direction
Z = vertical direction

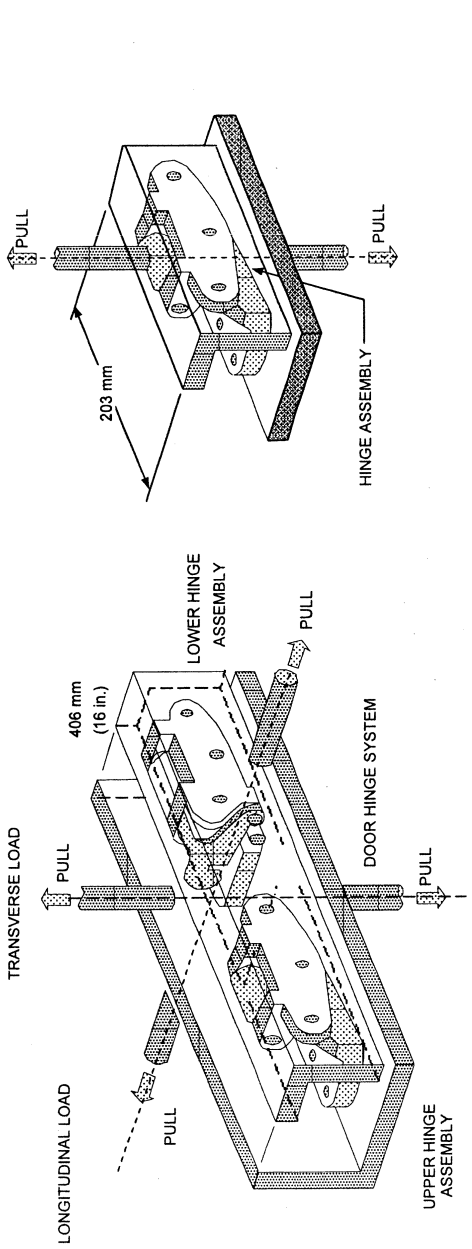


FIGURE 8 – HINGE STATIC TEST FIXTURES

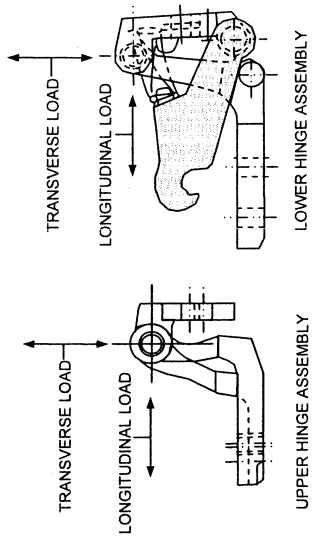
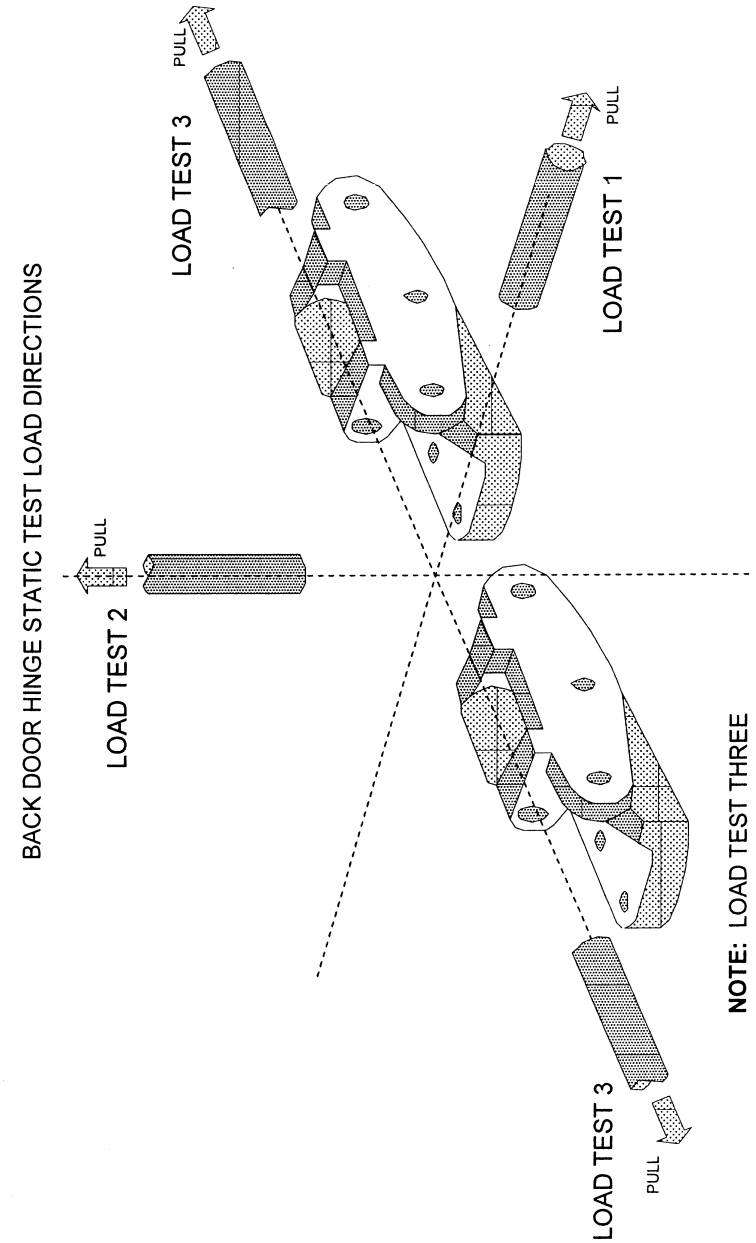


FIGURE 9 – HINGE STATIC TEST LOAD DIRECTIONS FOR BACK DOORS



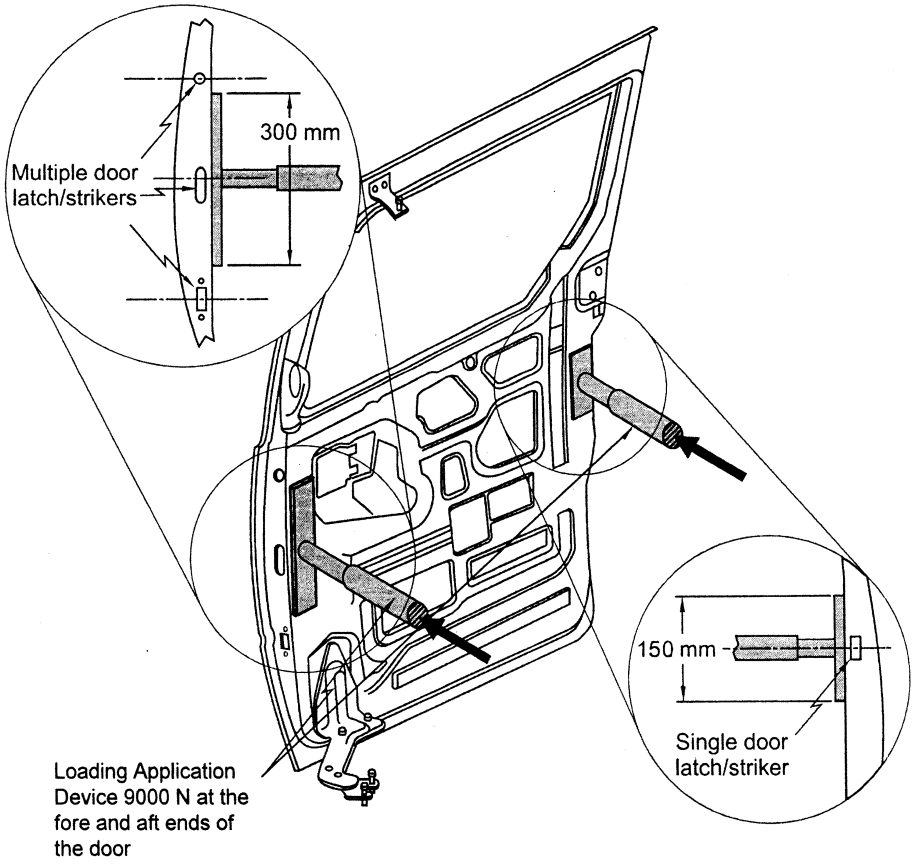


FIGURE 10 – Sliding Door Full Vehicle Test Procedure
(Note: Sliding door is shown separated from the vehicle)

§571.207 Standard No. 207; Seating systems.

S1. *Purpose and scope.* This standard establishes requirements for seats, their attachment assemblies, and their installation to minimize the possibility of their failure by forces acting on them as a result of vehicle impact.

S2. *Application.* This standard applies to passenger cars, multipurpose passenger vehicles, trucks and buses.

S3. *Definitions. Occupant seat* means a seat that provides at least one designated seating position.

Seat adjuster means the part of the seat that provides forward and rearward positioning of the seat bench and back, and/or rotation around a vertical axis, including any fixed portion, such as a seat track. In the case of a seat equipped with seat adjusters at different levels, the term means the uppermost seat adjuster.

S4. *Requirements.*

S4.1 *Driver's seat.* Each vehicle shall have an occupant seat for the driver.

S.4.2 *General performance requirements.* When tested in accordance with S5., each occupant seat, other than a side-facing seat or a passenger seat on a bus, shall withstand the following forces, in newtons.