

"Service brake" means a foot-operated, primary mechanism for stopping a vehicle.

"Torso line" means a line hinged at the "H" point that establishes the back angle.

"Trailer" means a vehicle with or without motive power, other than a pole trailer, designed for carrying persons or property and for being drawn by a motor vehicle.

"Trailer converter dolly" means a trailer chassis consisting of an auxiliary axle assembly equipped with a lower half of a fifth wheel and a drawbar.

"Truck" means a motor vehicle designed, used, or maintained primarily for the transportation of property.

"Truck tractor" means a truck designed and used primarily for drawing other vehicles and not so constructed as to carry a load other than a part of the weight of the vehicle and load so drawn.

"Unrestrained child impact area" means all nonglazed surfaces of the interior of a vehicle that are between the head impact area and the knee and leg impact area.

§ 245.5 Separability.

If any standard established in this part or its application to any person or circumstance is held invalid, the remainder of the part and the application of that standard to other persons or circumstances is not affected thereby.

Subpart B—Standards

§ 245.11 Federal Motor Vehicle Safety Standards.

The Federal Motor Vehicle Safety Standards are set forth in this subpart.

Motor vehicle safety standard numbers and titles

- 101 Control Location and Identification—Passenger Cars.
- 102 Transmission Shift Lever Sequence, Starter Interlock, and Transmission Braking Effect—Passenger Cars, Trucks, and Buses.
- 103 Windshield Defrosting and Defogging—Passenger Cars.
- 104 Windshield Wiping and Washing Systems—Passenger Cars.
- 105 Hydraulic Service Brake and Parking Brake Systems—Passenger Cars.
- 106 Hydraulic Brake Hoses—Passenger Cars.
- 107 Reflecting Surfaces—Passenger Cars, Trucks, and Buses.
- 108 Lamps, Reflective Devices, and Associated Equipment—Passenger Cars, Motorcycles, Trucks, Trailers, and Buses.
- 109 New Pneumatic Tires—Passenger Cars.
- 110 Tire Selection and Rims—Passenger Cars.
- 111 Rearview Mirrors—Passenger Cars.
- 201 Occupant Protection in Interior Impact—Passenger Cars.
- 202 Head Restraints—Passenger Cars.
- 203 Impact Protection for the Driver from the Steering Control System—Passenger Cars.
- 204 Steering Control Rearward Displacement—Passenger Cars.
- 205 Glazing Materials—Passenger Cars, Motorcycles, Trucks, and Buses.
- 206 Door Latches and Door Supports—Passenger Cars.
- 207 Anchorage of Seats—Passenger Cars.
- 208 Seat Belt Installations—Passenger Cars.

- 209 Seat Belt Assemblies—Passenger Cars, Trucks, and Buses.
- 210 Seat Belt Assembly Anchorages—Passenger Cars.
- 211 Wheel Nuts, Wheel Discs, and Hub Caps—Passenger Cars.
- 301 Fuel Tanks, Fuel Tank Filler Pipes, and Fuel Tank Connections—Passenger Cars.

MOTOR VEHICLE SAFETY STANDARD NO. 101
CONTROL LOCATION AND IDENTIFICATION—
PASSENGER CARS

S1. *Purpose and scope.* This standard specifies the requirements for location and identification of certain controls used in passenger cars to facilitate selection of these controls and ensure their accessibility to a restrained driver.

S2. *Application.* This standard applies to passenger cars.

S3. *Requirements.*

S3.1 *Location.* Control of the following shall be provided within operational reach of the 5th percentile female adult driver restrained by a Type 2 seat belt system adjusted to permit a 5-inch forward movement of her chest with the seat adjusted to the most forward position—

- (a) Steering;
- (b) Horn;
- (c) Transmission;
- (d) Ignition;
- (e) Headlamps;
- (f) Turn signal;
- (g) Windshield wiping system;
- (h) Windshield washing system;
- (i) Choke (if manual);
- (j) Sun visors; and
- (k) Windshield defrosting and defogging.

S3.2 *Identification.* The following controls shall be identified to permit recognition—

- (a) Headlamps;
- (b) Windshield wiping system;
- (c) Windshield washing system;
- (d) Windshield defrosting and defogging system; and
- (e) Choke (if manual).

MOTOR VEHICLE SAFETY STANDARD NO. 102
TRANSMISSION SHIFT LEVER SEQUENCE,
STARTER INTERLOCK, AND TRANSMISSION
BRAKING EFFECT—PASSENGER CARS,
TRUCKS, AND BUSES

S1. *Purpose and scope.* This standard specifies the requirements for the transmission shift lever sequence, a starter interlock, and for a braking effect of automatic transmissions, to reduce the likelihood of shifting errors, starter engagement with vehicle in drive position, and to provide supplemental braking at speeds below 25 miles per hour.

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

S3. *Requirements.*

S3.1 *Automatic transmissions.*

S3.1.1 *Location of transmission shift lever positions on passenger cars.* A neutral position shall be located between forward drive and reverse drive positions. If a steering-column-mounted transmission shift lever is used, movement from neutral position to forward drive position shall be clockwise. If the transmission shift lever sequence includes a park position, it shall be located at the end, adjacent to the reverse drive position.

S3.1.2 *Transmission braking effect.* One forward drive position shall provide a greater degree of engine braking than the highest speed transmission ratio at vehicle speeds below 25 miles per hour.

S3.1.3 *Starter interlock.* The engine starter shall be inoperative when the transmission shift lever is in a forward or reverse drive position.

S3.2 *Manual and automatic transmissions.* Identification of shift lever positions on automatic and manual transmissions, except three forward speed manual transmissions having the standard "H" pattern, shall be permanently displayed in view of the driver.

MOTOR VEHICLE SAFETY STANDARD NO. 103
WINDSHIELD DEFROSTING AND DEFOGGING—
PASSENGER CARS

S1. *Purpose and scope.* This standard specifies requirements for providing reasonable vision through the windshield during frosting and fogging conditions.

S2. *Application.* This standard applies to passenger cars.

S3. *Requirement.* A windshield defrosting and defogging system shall be installed that meets the requirements of Society of Automotive Engineers Recommended Practice J902, "Passenger Car Windshield Defrosting System," August 1964, except that the critical area shall be that established as Area C in accordance with Motor Vehicle Safety Standard No. 104.

MOTOR VEHICLE SAFETY STANDARD NO. 104
WINDSHIELD WIPING AND WASHING
SYSTEMS—PASSENGER CARS

S1. *Purpose and scope.* This standard specifies requirements for windshield wiping and washing systems.

S2. *Application.* This standard applies to passenger cars.

S3. *Definitions.*

"Glazing surface reference line" means the line of intersection of the glazing surface and a horizontal plane 25 inches above the driver's "H" point as indicated on Figure 1 of SAE Recommended Practice J903a.

"Plan view reference line" means a line outboard of the steering wheel centerline that is parallel to the vehicle centerline at a distance 0.15 times the difference between one half of the shoulder room dimension indicated on Figure 2 of SAE Recommended Practice J903a and the distance from steering wheel centerline to car centerline.

S4. *Requirements.*

S4.1 *Windshield wiping system.*

S4.1.1 *General characteristics.* A motor-driven windshield wiping system shall be provided that—

- (a) Meets the performance requirements of S4.1.2;
- (b) Provides at least two frequencies or speeds at least one of which exceeds 45 cycles per minute; and,
- (c) Operates at a substantially constant speed regardless of engine load.

S4.1.2 *Wiped area.* When tested wet in accordance with Society of Automotive Engineers Recommended Practice J903a, "Passenger Car Windshield Wiper Systems," May 1966, the windshield wiping

anikin described in Society of Automotive Engineers Standard J826, "Manikins for Use in Defining Vehicle Seating Accommodations," November 1962.

S4.1.2 The forward surface of the head restraint shall be no less than 1 inch rearward of the torso line measured on a perpendicular to that line.

S4.1.3 The head restraint—

(a) Shall be capable of withstanding the force of a 15 pound head under a 20g acceleration rearward;

(b) Shall not fall before the seat back or its attachment to the seat or floor; and

(c) Shall not deflect to an extent that would permit the head to tilt rearward to an angle of more than 20° aft of the torso line.

MOTOR VEHICLE SAFETY STANDARD NO. 203
IMPACT PROTECTION FOR THE DRIVER FROM
THE STEERING CONTROL SYSTEM—PASSENGER CARS

S1. *Purpose and scope.* This standard specifies requirements for steering control systems that will minimize chest, neck, and facial injuries to the driver as a result of impact.

S2. *Application.* This standard applies to passenger cars.

S3. *Definitions.* "Steering control system" means the basic steering mechanism and its associated trim hardware, including any portion of a steering column assembly that provides energy absorption upon impact.

S4. *Requirements.*

S4.1 Except as provided in S4.2, when the steering control system is impacted by a body block in accordance with Society of Automotive Engineers Recommended Practice J944, "Steering Wheel Assembly Laboratory Test Procedure," February 1966, or an approved equivalent, at a relative velocity of 15 miles per hour—

(a) The force developed on the chest of the body block shall not exceed 1,800 pounds;

(b) The pressure in the area of contact shall not exceed 50 p.s.i.; and,

(c) Peakload shall not be reached within 10 milliseconds after impact.

S4.2 A Type 2 seat belt assembly that conforms to Motor Vehicle Safety Standard No. 209 shall be installed for the driver of any vehicle with forward control configuration that does not meet the requirements of S4.1.

S4.3 The steering control system shall be so constructed that no components or attachments, including horn actuating mechanisms and trim hardware, can catch the driver's clothing or jewelry during normal driving maneuvers.

MOTOR VEHICLE SAFETY STANDARD NO. 204
STEERING CONTROL REARWARD DISPLACEMENT—PASSENGER CARS

S1. *Purpose and scope.* This standard specifies requirements limiting the rearward displacement of the steering control into the passenger compartment to reduce the likelihood of impaling the driver.

S2. *Application.* This standard applies to passenger cars.

S3. *Definitions.*

"Steering column" means a structural housing that surrounds a steering shaft.

"Steering shaft" means a component that transmits steering torque from the steering wheel to the steering gear.

S4. *Requirements.*

S4.1 Except as provided in S4.2, the upper end of the steering column and shaft shall not be displaced horizontally rearward parallel to the longitudinal axis of the vehicle relative to an undisturbed point on the vehicle more than 3 inches, determined by dynamic measurement, in a barrier collision test at 30 miles per hour conducted in accordance with Society of Automotive Engineers Recommended Practice J850, "Barrier Collision Tests," February 1963. During this test a driver dummy shall not be used unless it is restrained by a lap belt only and the resulting loads on the dummy's chest do not exceed the values specified in Motor Vehicle Safety Standard No. 203.

S4.2 A Type 2 seat belt assembly that conforms to Motor Vehicle Safety Standard No. 209 shall be installed for the driver of any vehicle with forward control configuration that does not meet the requirements of S4.1.

MOTOR VEHICLE SAFETY STANDARD NO. 205
GLAZING MATERIALS—PASSENGER CARS,
MOTORCYCLES, TRUCKS, AND BUSES

S1. *Purpose and scope.* This standard specifies requirements for glazing materials to reduce superficial and deep lacerations to the face, scalp, and neck, and to prevent occupants from being thrown through the vehicle windows in collisions.

S2. *Application.* This standard applies to glazing materials for use in passenger cars, motorcycles, trucks, and buses.

S3. *Requirements.*

S3.1 *Materials.* Glazing materials used in windshields, windows, and interior partitions shall conform to United States of America Standards Institute "American Standard Safety Code for Safety Glazing Materials for Glazing Motor Vehicles Operating on Land Highways," USA Standard Z26.1-1966, July 15, 1966.

S3.2 *Edges.* In vehicles, except school buses, exposed edges shall be treated in accordance with Society of Automotive Engineers Recommended Practice SAE J673, "Automotive Glazing," June 1960. In school buses, exposed edges shall be banded.

MOTOR VEHICLE SAFETY STANDARD NO. 206
DOOR LATCHES AND DOOR SUPPORTS—
PASSENGER CARS

S1. *Purpose and scope.* This standard specifies load requirements for door latches and supports to prevent occupants from being thrown from the vehicle in a collision, which greatly increases the risk of serious injury and death.

S2. *Application.* This standard applies to latches and supports for side doors used for occupant ingress or egress on passenger cars.

S3. *Requirements.*

S3.1 *Door locks.* Each door shall be equipped with a locking device with an operating means in the interior of the vehicle. When engaged, the locking mechanism shall prevent opening of the door latch by operation of either the inside or an outside latch release handle.

S3.2 *Door hinges.* Each door hinge system shall support the door and withstand an ultimate longitudinal load of 2,500 pounds and an ultimate transverse load of 2,000 pounds. Each hinge shall be capable of withstanding that proportion of the total load corresponding to the load distribution that will exist with the system installed on the vehicle.

S3.3 *Door latches.*

S3.3.1 *Longitudinal load.* The door latch and striker assembly shall withstand a longitudinal load of 2,500 pounds in the fully latched position and 1,000 pounds in the secondary latched position.

S3.3.2 *Transverse load.* The door latch and striker assembly of hinged doors shall withstand a transverse load of 2,000 pounds in the fully latched position and 1,000 pounds in the secondary latched position.

S3.3.3 *Inertia load.* The door latch shall not move 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).

S4. *Demonstration procedures.*

S4.1 *Door hinges.* Door hinges shall be tested in accordance with section 4 of Society of Automotive Engineers Recommended Practice J934, "Vehicle Passenger Door Hinge Systems," July 1965.

S4.2 *Door latches.* Door latches shall be tested in accordance with section 4 of SAE Recommended Practice J839b, "Passenger Car Side Door Latch Systems," May 1965.

S4.3 *Inertia load.* Ability of the latch system to meet the requirements for inertia load shall be demonstrated by approved tests or in accordance with section 5 of SAE Recommended Practice J839b, May 1965.

MOTOR VEHICLE SAFETY STANDARD NO. 207
ANCHORAGE OF SEATS—PASSENGER CARS

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

S2. *Application.* This standard applies to passenger cars.

S3. *Requirements.*

S3.1 *General.* Except for folding auxiliary jump seats, and side-facing seats, each occupant seat installation shall withstand the loads specified in S3.1.1 and S3.1.2.

S3.1.1 The following loads shall be applied simultaneously in a forward longitudinal direction—

(a) 30 times the weight of the entire seat;

(b) The total load imposed on the seat by simultaneous application of maximum loads required by Motor Vehicle Safety Standard No. 209 for occupant restraint

systems at all designated seat positions, including the loads directly transferred to the seat by the restraint system either from direct attachment or from a change in direction over the seat, and the horizontal friction force resulting from the vertical downward component of the maximum design load of the restraint system and a coefficient of friction of 0.40; and,

(c) The loads imposed by all parts of the 95th percentile adult male occupant restrained by a Type 1 seat belt in a designated seat position to the rear of the seat being tested when a forward longitudinal deceleration of 30g is applied.

S3.1.2 A load equal to 30 times the weight of the entire seat shall be applied in a rearward longitudinal direction.

S3.2 *Folding and hinged seats.* A hinged or folding seat or seat back shall be equipped with a self-locking, restraining device and a control for releasing the restraining device.

S3.2.1 The release control shall be readily accessible to the occupant of that seat and to the occupant of any seat immediately behind that seat, and shall be constructed to preclude inadvertent release, or inertial release when loaded longitudinally or transversely to 30g.

S3.2.2 The restraining device shall not release or fail when the loads specified in S3.1.1 and S3.1.2 are applied.

S3.2.3 After the loads specified in S3.1.1 and S3.1.2 have been applied and removed, the restraining device shall release upon application of a force not greater than 40 pounds to the release control.

S4. Demonstration procedures.

S4.1 Dynamic or static testing techniques may be used.

S4.2 Static testing of seats shall be in accordance with Society of Automotive Engineers Recommended Practice J879a, "Passenger Car Front Seat and Seat Adjuster," November 1963.

S4.3 Distributed loads may be replaced by concentrated loads at the load-ing centroid.

**MOTOR VEHICLE SAFETY STANDARD NO. 208
SEAT BELT INSTALLATIONS—PASSENGER CARS**

S1. *Purpose and scope.* This standard establishes requirements for seat belt installation.

S2. *Application.* This standard applies to passenger cars.

S3. Requirements.

S3.1 Except as provided in S3.1.1 and S3.1.2, a Type 1 or Type 2 seat belt assembly that conforms to Motor Vehicle Safety Standard No. 209 shall be installed in each passenger car seat position.

S3.1.1 A Type 2 seat belt assembly that conforms to Motor Vehicle Safety Standard No. 209 shall be installed in each outboard passenger car seat position that includes the windshield header within the head impact area.

S3.1.2 The requirements of S3.1 do not apply to folding auxiliary jump seats, side-facing seats, and rear-facing seats.

S3.2 Seat belt assembly anchorages shall conform to Motor Vehicle Safety Standard No. 210.

**MOTOR VEHICLE SAFETY STANDARD NO. 209
SEAT BELT ASSEMBLIES—PASSENGER CARS, TRUCKS, AND BUSES**

S1. *Purpose and scope.* This standard specifies requirements for seat belt assemblies.

S2. *Application.* This standard applies to seat belt assemblies for use in passenger cars, trucks, and buses.

S3. *Requirements.* Seat belt assemblies shall meet the requirements of Department of Commerce, Standards for Seat Belts for Use in Motor Vehicles (15 CFR 9) (31 F.R. 11528).

**MOTOR VEHICLE SAFETY STANDARD NO. 210
SEAT BELT ASSEMBLY ANCHORAGES—PASSENGER CARS**

S1. *Purpose and scope.* This standard specifies the requirements for seat belt assembly anchorages to ensure proper location for effective occupant restraint and reduce the likelihood of failure in collisions.

S2. *Application.* This standard applies to passenger cars.

S3. *Definitions.* "Seat belt anchorage" means the provision for transferring seat belt assembly loads to the vehicle structure.

S4. Requirements.

S4.1 *Type.* Anchorages for a Type 1 or Type 2 seat belt assembly, as applicable, shall be provided for each designated seating position in accordance with Table I.

TABLE I

Seating position	Seat belt assembly required
Forward-facing seat.....	(Outboard..... Type 2. Inboard..... Type 1.
Rearward-facing seat.....	(Outboard and Type 1. Inboard.....
Side-facing seat.....	None.
Folding, auxiliary jump seat.....	None.

S4.2 Strength.

S4.2.1 When tested in accordance with S5.1 or an equivalent dynamic test, no anchorage shall fail when a 6,000 pound load is applied to the body block.

S4.2.2 When tested in accordance with S5.2 or an equivalent dynamic test, no anchorage shall fail when a 5,000 pound load is applied to the pelvic body block together with a 4,000 pound load on the upper torso body block.

S4.2.3 Permanent deformation, including rupture or breakage, of any anchorage or surrounding area shall not constitute failure if the required load is attained.

S4.2.4 Except as provided in S4.2.5, belt assemblies having a common anchorage shall be tested simultaneously.

S4.2.5 Common anchorages for forward and rearward facing seating positions shall not be tested simultaneously.

S4.3 Location.

S4.3.1 *Type 1 and pelvic portion of Type 2 seat belt assembly anchorages.*

S4.3.1.1 For installations in which the belt passes around the outside of the seat, a line from the anchorage to the occupant's "H" point shall make an angle with the horizontal of not less than 40° nor more than 60° with the seat in any position within its adjustment range.

S4.3.1.2 For installations in which the belt passes through the springs or over the anchorage shall be aft of the rearmost position of the springs or seat bottom frame rear bar and the angle between the horizontal and the line of the belt from the occupant's "H" point with the belt snug, but not loaded, shall be not less than 40° nor more than 60°.

S4.3.1.3 Anchorages for an individual seat belt assembly shall be located at least 15 inches apart laterally.

S4.3.2 Type 2 upper torso seat belt assembly anchorages.

S4.3.2.1 With the seat in its rearmost position, and the seat back in its rearmost driving position, the anchorage for the upper end of the upper torso restraint shall be to the rear of the extension of the torso line of the two-dimensional manikin described in Society of Automotive Engineers Standard J826, "Manikins for Use in Defining Vehicle Seating Accommodation," November 1962. If the angle of the upper torso restraint passing from the shoulder of a seated 95th percentile adult male to the anchorage, or to a structure between the shoulder point and the anchorage is downward from the horizontal, it shall be not more than 20°.

S4.3.2.2 Provisions for stowing the upper torso restraint portion of a Type 2 seat belt when not in use shall retain the stowed belt during a 30g deceleration of the vehicle in any horizontal direction and prevent belt hardware from striking an occupant.

S5. Demonstration procedures.

S5.1 *Seats with Type 1 or Type 2 seat belt anchorages.* With the seat in its rearmost position in that portion of the vehicle structure that contributes to anchorage strength, the load specified in S4.2.1 shall be applied at an angle of 5° or more, but less than 15° above the horizontal to an appropriate body block restrained by a Type 1 or pelvic portions of a Type 2 seat belt assembly, as applicable.

S5.2 *Seats with Type 2 seat belt anchorages.* After testing in accordance with S5.1, with the seat in its rearmost position in that portion of the vehicle structure that contributes to anchorage strength, the load specified in S4.2.2 shall be applied at an angle of 5° or more but less than 15° above the horizontal to an appropriate body block restrained by a Type 1 or Type 2 seat belt assembly, as applicable.

**MOTOR VEHICLE SAFETY STANDARD NO. 211
WHEEL NUTS, WHEEL DISKS, AND HUB CAPS—PASSENGER CARS**

S1. *Purpose and scope.* This standard precludes the use of wheel nuts, wheel disks, and hub caps that constitute a hazard to pedestrians and cyclists.