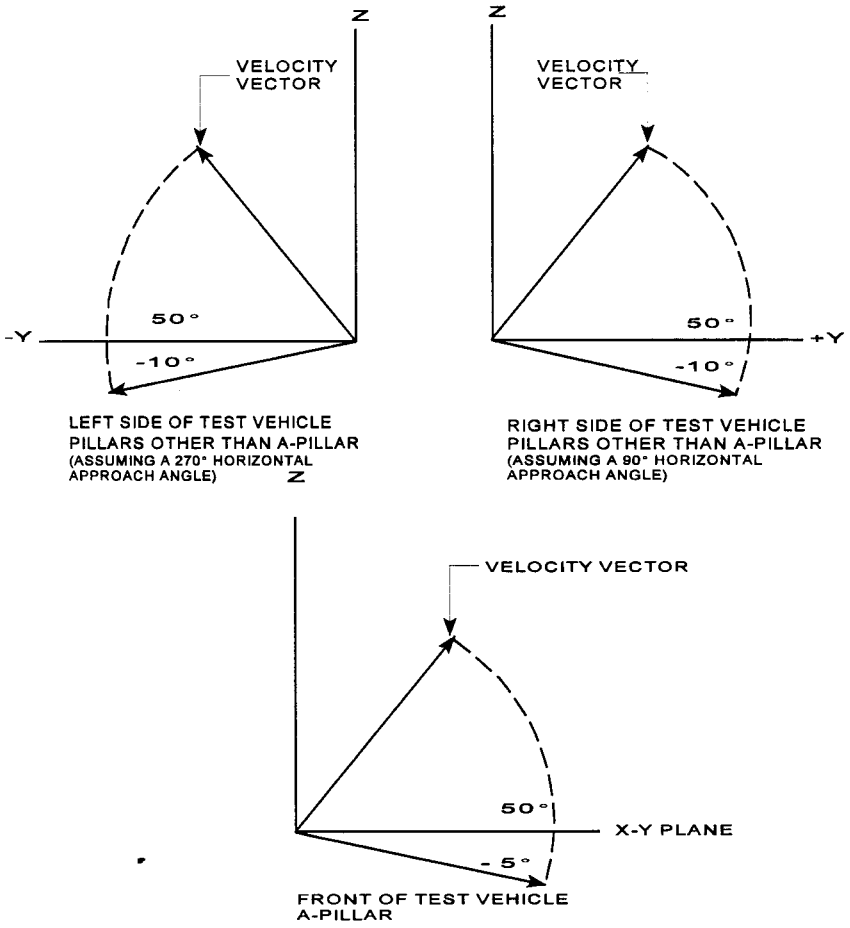

VERTICAL AND HORIZONTAL APPROACH ANGLE PLANE
FIGURE 2

[62 FR 16725, Apr. 8, 1997; 63 FR 28, Jan. 2, 1998; 63 FR 41464, Aug. 4, 1998; 63 FR 45965, Aug. 28, 1998; 64 FR 7140, Feb. 12, 1999; 64 FR 69671, Dec. 14, 1999; 67 FR 41354, June 18, 2002]

§571.202 Standard No. 202; Head restraints.

S1. *Purpose and scope.* This standard specifies requirements for head restraints to reduce the frequency and severity of neck injury in rear-end and other collisions.

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

S3. *Definitions. Head restraint* means a device that limits rearward angular displacement of the occupant's head relative to his torso line.

S4. *Requirements.*

S4.1 Each passenger car shall comply with S4.3.

S4.2 Each truck, multipurpose passenger vehicle and bus with a GVWR of 4,536 kg or less, shall comply with S4.3.

S4.3 *Performance levels.* Except for school buses, a head restraint that conforms to either (a) or (b) shall be provided at each outboard front designated seating position. For school buses, a head restraint that conforms to either (a) or (b) shall be provided for the driver's seating position.

(a) It shall, when tested in accordance with S5.1, during a forward acceleration of at least 78 m/s^2 on the seat supporting structure, limit rearward angular displacement of the head reference line to 45° from the torso reference line; or

(b) It shall, when adjusted to its fully extended design position, conform to each of the following—

(1) When measured parallel to torso line, the top of the head restraint shall not be less than 700 mm above the seating reference point;

(2) When measured either 64 mm below the top of the head restraint or 635 mm above the seating reference point, the lateral width of the head restraint shall be not less than—

(i) 254 mm for use with bench-type seats; and

(ii) 171 mm for use with individual seats:

(3) When tested in accordance with S5.2, the rearmost portion of the head form shall not be displaced to more than 102 mm perpendicularly rearward of the displaced extended torso reference line during the application of the load specified in S5.2(c); and

(4) When tested in accordance with S5.2, the head restraint shall withstand an increasing load until one of the following occurs:

(i) Failure of the seat or seat back; or

(ii) Application of a load of 890 N.

S5. *Demonstration procedures.*

S5.1 Compliance with S4.3(a) shall be demonstrated in accordance with the following with the head restraint in its fully extended design position:

(a) On the exterior profile of the head and torso of a dummy having the weight and seated height of a 95th percentile adult male with an approved representation of a human, articulated neck structure, or an approved equivalent test device, establish reference lines by the following method:

(1) Position the dummy's back on a horizontal flat surface with the lumbar joints in a straight line.

(2) Rotate the head of the dummy rearward until the back of the head contacts the same flat horizontal surface in paragraph (1).

(3) Position the SAE J–826 two-dimensional manikin's back against the flat surface in S5.1(a)(1), alongside the dummy with the h-point of the manikin aligned with the h-point of the dummy.

(4) Establish the torso line of the manikin as defined in SAE Aerospace-Automotive Drawing Standards, sec. 2.3.6, P.E1.01, September 1963.

(5) Establish the dummy torso reference line by superimposing the torso line of the manikin on the torso of the dummy.

(6) Establish the head reference line by extending the dummy torso reference line onto the head.

(b) At each designated seating position having a head restraint, place the dummy, snugly restrained by a Type 1 seat belt, in the manufacturer's recommended design seated position.

(c) During forward acceleration applied to the structure supporting the seat as described in this paragraph, measure the maximum rearward angular displacement between the dummy torso reference line and head reference line. When graphically depicted, the magnitude of the acceleration curve shall not be less than that of a half-sine wave having the amplitude of 78 m/s^2 and a duration of 80 milliseconds and not more than that of a half-sine wave curve having an amplitude of 94 m/s^2 and a duration of 96 milliseconds.

S5.2 Compliance with S4.3(b) shall be demonstrated in accordance with the following with the head restraint in its fully extended design position:

(a) Place a test device, having the back plan dimensions and torso line (centerline of the head room probe in full back position), of the three dimensional SAE J826 manikin, at the manufacturer's recommended design seated position.

(b) Establish the displaced torso reference line by applying a rearward moment of 373 Nm moment about the

seating reference point to the seat back through the test device back pan located in (a).

(c) After removing the back pan, using a 165 mm diameter spherical head form or cylindrical head form having a 165 mm diameter in plan view and a 152 mm height in profile view, apply, perpendicular to the displaced torso reference line, a rearward initial load 64 mm below the top of the head restraint that will produce a 373 Nm moment about the seating reference point.

(d) Gradually increase this initial load to 890 N or until the seat or seat back fails, whichever occurs first.

[36 FR 22902, Dec. 2, 1971, as amended at 54 FR 39187, Sept. 25, 1989; 61 FR 27025, May 30, 1996; 63 FR 28935, May 27, 1998]

§ 571.203 Standard No. 203; Impact protection for the driver from the steering control system.

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 and to multipurpose passenger vehicles, trucks and buses with a gross vehicle weight rating of 4,536 kg or less. However, it does not apply to vehicles that conform to the frontal barrier crash requirements (S5.1) of Standard No. 208 (49 CFR 571.208) by means of other than seat belt assemblies. It also does not apply to walk-in vans.

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.* Each passenger car and each multipurpose passenger vehicle, truck and bus with a gross vehicle weight rating of 4,536 kg or less manufactured on or after September 1, 1981 shall meet the requirements of S5.1 and S5.2.

S5. *Impact protection requirements.*

S5.1 Except as provided in this paragraph, the steering control system of any vehicle to which this standard applies shall be impacted in accordance with S5.1(a). However, the steering control system of any such vehicle manufactured on or before August 31, 1996, may be impacted in accordance with S5.1(b).

(a) When the steering control system is impacted by a body block in accordance with SAE Recommended Practice J944 JUN80 Steering Control System—Passenger Car—Laboratory Test Procedure, at a relative velocity of 24 km/h, the impact force developed on the chest of the body block transmitted to the steering control system shall not exceed 11,120 N, except for intervals whose cumulative duration is not more than 3 milliseconds.

(b) When the steering control system is impacted in accordance with Society of Automotive Engineers Recommended Practice J944, ''Steering Wheel Assembly Laboratory Test Procedure,'' December 1965, or an approved equivalent, at a relative velocity of 24 km/h, the impact force developed on the chest of the body block transmitted to the steering control system shall not exceed 11,120 N, except for intervals whose cumulative duration is not more than 3 milliseconds.

S5.2 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.

NOTE: The term jewelry refers to watches, rings, and bracelets without loosely attached or dangling members.

[36 FR 22902, Dec. 2, 1971, as amended at 44 FR 68475, Nov. 29, 1979; 47 FR 47842, Oct. 28, 1982; 58 FR 26527, May 4, 1993; 58 FR 63304, Dec. 1, 1993; 63 FR 28935, May 27, 1998; 63 FR 51003, Sept. 24, 1998]

§ 571.204 Standard No. 204; Steering control rearward displacement.

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 chest, neck, or head injury.

S2. *Application.* This standard applies to passenger cars and to multipurpose passenger vehicles, trucks, and buses. However, it does not apply to walk-in vans.

S3. *Definitions.*