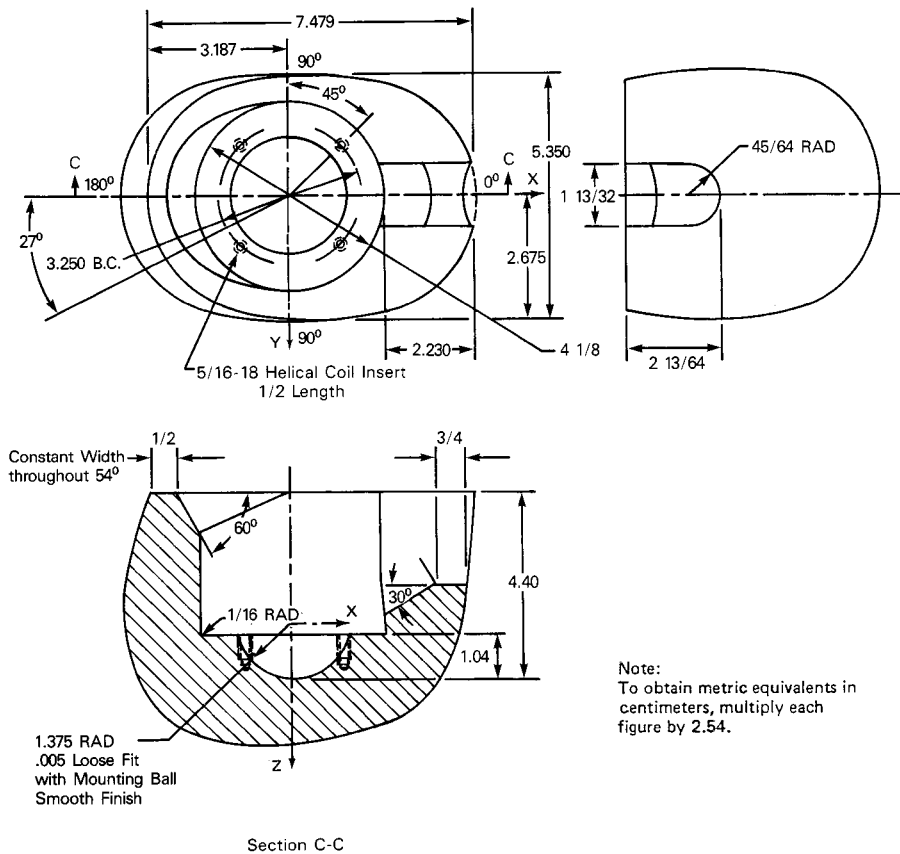


Figure 8
Large Headform – Interior Design



[38 FR 22391, Aug. 20, 1973, as amended at 39 FR 3554, Jan. 28, 1974; 45 FR 15181, Mar. 10, 1980; 53 FR 11288, Apr. 6, 1988; 53 FR 12529, Apr. 15, 1988]

§ 571.219 Standard No. 219; Windshield zone intrusion.

S1. *Scope.* This standard specifies limits for the displacement into the windshield area of motor vehicle components during a crash.

S2. *Purpose.* The purpose of this standard is to reduce crash injuries and fatalities that result from occupants

contacting vehicle components displaced near or through the windshield.

S3. *Application.* This standard applies to passenger cars and to multipurpose passenger vehicles, trucks and buses of 4,536 kilograms or less gross vehicle weight rating. However, it does not apply to forward control vehicles, walk-in van-type vehicles, or to open-

body-type vehicles with fold-down or removable windshields.

S4. *Definitions. Daylight Opening (DLO)* means the maximum unobstructed opening through the glazing surface, including reveal or garnish moldings adjoining the surface, as measured parallel to the outer surface of the glazing material.

S5. *Requirement.* When the vehicle travelling longitudinally forward at any speed up to and including 48 km/h impacts a fixed collision barrier that is perpendicular to the line of travel of the vehicle, under the conditions of S7, no part of the vehicle outside the occupant compartment, except windshield molding and other components designed to be normally in contact with the windshield, shall penetrate the protected zone template, affixed according to S6, to a depth of more than 6 mm, and no such part of a vehicle shall penetrate the inner surface of that portion of the windshield, within the DLO, below the protected zone defined in S6.

S6. *Protected zone template.*

S6.1 The lower edge of the protected zone is determined by the following procedure (See Figure 1).

(a) Place a 165 mm diameter rigid sphere, with a mass of 6.8 kg in a position such that it simultaneously contacts the inner surface of the windshield glazing and the surface of the instrument panel, including padding. If any accessories or equipment such as the steering control system obstruct positioning of the sphere, remove them for the purposes of this procedure.

(b) Draw the locus of points on the inner surface of the windshield contactable by the sphere across the width of the instrument panel. From the outermost contactable points, extend the locus line horizontally to the edges of the glazing material.

(c) Draw a line on the inner surface of the windshield below and 13 mm distant from the locus line.

(d) The lower edge of the protected zone is the longitudinal projection onto the outer surface of the windshield of the line determined in S6.1(c).

S6.2 The protected zone is the space enclosed by the following surfaces, as shown in Figure 1:

(a) The outer surface of the windshield in its precrash configuration.

(b) The locus of points 76 mm outward along perpendiculars drawn to each point on the outer surface of the windshield.

(c) The locus of lines forming a 45° angle with the outer surface of the windshield at each point along the top and side edges of the outer surface of the windshield and the lower edge of the protected zone determined in S6.1, in the plane perpendicular to the edge at that point.

S6.3 A template is cut or formed from Styrofoam, type DB, cut cell, to the dimensions of the zone as determined in S6.2. The template is affixed to the windshield so that it delineates the protected zone and remains affixed throughout the crash test.

S7. *Test conditions.* The requirement of S5 shall be met under the following conditions:

S7.1 The protected zone template is affixed to the windshield in the manner described in S6.

S7.2 The hood, hood latches, and any other hood retention components are engaged prior to the barrier crash.

S7.3 Adjustable cowl tops or other adjustable panels in front of the windshield are in the position used under normal operating conditions when windshield wiping systems are not in use.

S7.4 The parking brake is disengaged and the transmission is in neutral.

S7.5 Tires are inflated to the vehicle manufacturer's specifications.

S7.6 The fuel tank is filled to any level from 90 to 95 per cent of capacity.

S7.7 The vehicle, including test devices and instrumentation, is loaded as follows:

(a) Except as specified in S7.6, a passenger car is loaded to its unloaded vehicle weight plus its rated cargo and luggage capacity weight, secured in the luggage area, plus a 50th-percentile test dummy as specified in part 572 of this chapter at each front outboard designated seating position and at any other position whose protection system is required to be tested by a dummy under the provisions of Standard No. 208. Each dummy is restrained only by means that are installed for protection at its seating position.

(b) Except as specified in S7.6, a multipurpose passenger vehicle, truck or bus is loaded to its unloaded vehicle weight, plus 136 kg or its rated cargo and luggage capacity, whichever is less, secured to the vehicle, plus a 50th-percentile test dummy as specified in part 572 of this chapter at each front outboard designated seating position and at any other position whose protection system is required to be tested by a dummy under the provisions of Standard No. 208. Each dummy is restrained only by means that are installed for protection at its seating po-

sition. The load is distributed so that the mass on each axle as measured at the tire-ground interface is in proportion to its GAWR. If the mass on any axle when the vehicle is loaded to its unloaded vehicle weight plus dummy mass exceeds the axle's proportional share of the test mass, the remaining mass is placed so that the mass on that axle remains the same. For the purposes of this section, unloaded vehicle weight does not include the mass of work-performing accessories. Vehicles are tested to a maximum unloaded vehicle weight of 2,495 kg.

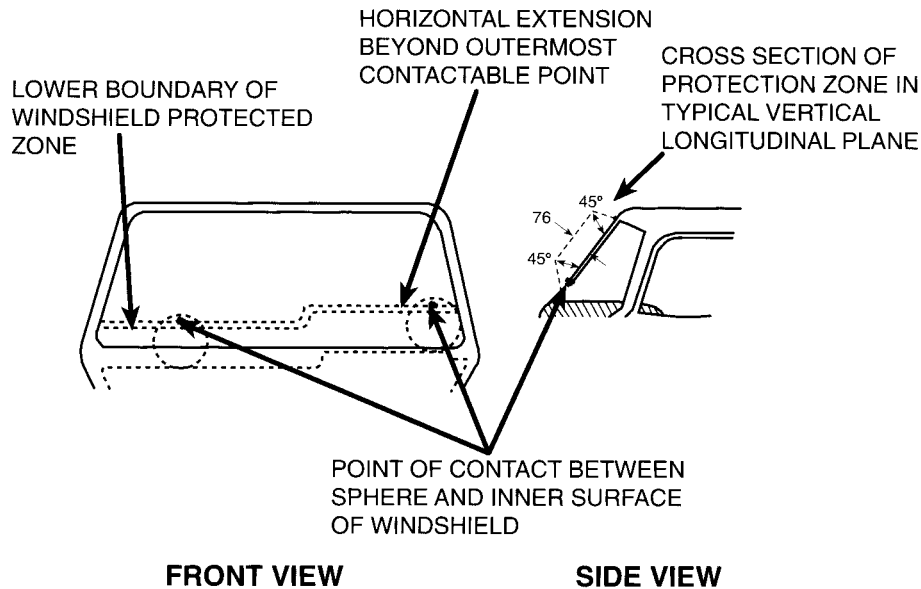


Figure 1.—WINDSHIELD PROTECTION ZONE
All dimensions in millimeters (mm)

[40 FR 25462, June 16, 1975, as amended at 40 FR 53033, Nov. 14, 1975; 41 FR 54946, Dec. 16, 1976; 45 FR 22046, Apr. 3, 1980; 63 FR 28946, May 27, 1998]

§ 571.220 Standard No. 220; School bus rollover protection.

S1. *Scope.* This standard establishes performance requirements for school bus rollover protection.

S2. *Purpose.* The purpose of this standard is to reduce the number of

deaths and the severity of injuries that result from failure of the school bus body structure to withstand forces encountered in rollover crashes.

S3. *Applicability.* This standard applies to school buses.