

farther forward, at a level halfway between the top and bottom of the windshield on the vehicle centerline.

[36 FR 22902, Dec. 2, 1971, as amended at 40 FR 12992, Mar. 24, 1975; 40 FR 32336, Aug. 1, 1975; 50 FR 48775, Nov. 27, 1985; 59 FR 11006, Mar. 9, 1994; 60 FR 13642, Mar. 14, 1995]

§571.104 Standard No. 104; Windshield wiping and washing systems.

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

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

S3. *Definitions.* The term *seating reference point* is substituted for the terms *manikin H point*, *manikin H point with seat in rearmost position* and *H point* wherever any of these terms appear in any SAE Standard or SAE Recommended Practice referred to in this standard.

Daylight opening means the maximum unobstructed opening through the glazing surface, as defined in paragraph 2.3.12 of section E, Ground Vehicle Practice, SAE Aerospace-Automotive Drawing Standards, September 1963.

Glazing surface reference line means the line resulting from the intersection of the glazing surface and a horizontal plane 635 millimeters above the seating reference point, as shown in Figure 1 of SAE Recommended Practice J903a, "Passenger Car Windshield Wiper Systems," May 1966.

Overall width means the maximum overall body width dimension "W116", as defined in section E, Ground Vehicle Practice, SAE Aerospace-Automotive Drawing Standards, September 1963.

Plan view reference line means—

(a) For vehicles with bench-type seats, a line parallel to the vehicle longitudinal centerline outboard of the steering wheel centerline 0.15 times the difference between one-half of the shoulder room dimension and the steering wheel centerline-to-car-centerline dimension as shown in Figure 2 of SAE Recommended Practice J903a, May 1966; or

(b) For vehicles with individual-type seats, either—

(i) A line parallel to the vehicle longitudinal centerline which passes

through the center of the driver's designated seating position; or

(ii) A line parallel to the vehicle longitudinal centerline located so that the geometric center of the 95 percent eye range contour is positioned on the longitudinal centerline of the driver's designated seating position.

Shoulder room dimension means the front shoulder room dimension "W3" as defined in section E, Ground Vehicle Practice, SAE Aerospace-Automotive Drawing Standards, September 1963.

95 percent eye range contour means the 95th percentile tangential cutoff specified in SAE Recommended Practice J941, "Passenger Car Driver's Eye Range," November 1965.

S4. *Requirements.*

S4.1 *Windshield wiping system.* Each vehicle shall have a power-driven windshield wiping system that meets the requirements of S4.1.1.

S4.1.1 *Frequency.*

S4.1.1.1 Each windshield wiping system shall have at least two frequencies or speeds.

S4.1.1.2 One frequency or speed shall be at least 45 cycles per minute regardless of engine load and engine speed.

S4.1.1.3 Regardless of engine speed and engine load, the highest and one lower frequency or speed shall differ by at least 15 cycles per minute. Such lower frequency or speed shall be at least 20 cycles per minute regardless of engine speed and engine load.

S4.1.1.4 Compliance with subparagraphs S4.1.1.2 and S4.1.1.3 may be demonstrated by testing under the conditions specified in sections 4.1.1 and 4.1.2 of SAE Recommended Practice J903a, May 1966.

S4.1.2 *Wiped area.* When tested wet in accordance with SAE Recommended Practice J903a, May 1966, each passenger car windshield wiping system shall wipe the percentage of Areas A, B, and C of the windshield (established in accordance with S4.1.2.1) that (1) is specified in column 2 of the applicable table following subparagraph S4.1.2.1 and (2) is within the area bounded by a perimeter line on the glazing surface 25 millimeters from the edge of the daylight opening.

S4.1.2.1 Areas A, B, and C shall be established as shown in Figures 1 and 2 of SAE Recommended Practice J903a,

May 1966, using the angles specified in Columns 3 through 6 of Table I, II, III, or IV, as applicable.

TABLE I—PASSENGER CARS OF LESS THAN 1520 MILLIMETERS IN OVERALL WIDTH

Column 1—Area	Column 2—Minimum percent to be wiped	Angles in degrees			
		Column 3—Left	Column 4—Right	Column 5—Up	Column 6—Down
A	80	16	49	7	5
B	94	13	46	4	3
C	99	7	15	3	1

TABLE II—PASSENGER CARS OF 1520 OR MORE BUT LESS THAN 1630 MILLIMETERS IN OVERALL WIDTH

Column 1—Area	Column 2—Minimum percent to be wiped	Angles in degrees			
		Column 3—Left	Column 4—Right	Column 5—Up	Column 6—Down
A	80	17	51	8	5
B	94	13	49	4	3
C	99	7	15	3	1

TABLE III—PASSENGER CARS OF 1630 OR MORE BUT LESS THAN 1730 MILLIMETERS IN OVERALL WIDTH

Column 1—Area	Column 2—Minimum percent to be wiped	Angles in degrees			
		Column 3—Left	Column 4—Right	Column 5—Up	Column 6—Down
A	80	17	53	9	5
B	94	14	51	5	3
C	99	8	15	4	1

TABLE IV—PASSENGER CARS OF 1730 OR MORE MILLIMETERS IN OVERALL WIDTH

Column 1—Area	Column 2—Minimum percent to be wiped	Angles in degrees			
		Column 3—Left	Column 4—Right	Column 5—Up	Column 6—Down
A	80	18	56	10	5
B	94	14	53	5	3
C	99	10	15	5	1

S4.2 Windshield washing system.

S4.2.1 Each passenger car shall have a windshield washing system that

meets the requirements of SAE Recommended Practice J942, "Passenger Car Windshield Washer Systems," November 1965, except that the reference to "the effective wipe pattern defined in SAE J903, paragraph 3.1.2" in paragraph 3.1 of SAE Recommended Practice J942 shall be deleted and "the areas established in accordance with subparagraph S4.1.2.1 of Motor Vehicle Safety Standard No. 104" shall be inserted in lieu thereof.

S4.2.2 Each multipurpose passenger vehicle truck, and bus shall have a windshield washing system that meets the requirements of SAE Recommended Practice J942, November 1965, except that the reference to "the effective wipe pattern defined in SAE J903, paragraph 3.1.2" in paragraph 3.1 of SAE Recommended Practice J942 shall be deleted and "the pattern designed by the manufacturer for the windshield wiping system on the exterior surface of the windshield glazing" shall be inserted in lieu thereof.

[36 FR 22902, Dec. 2, 1971, as amended at 58 FR 13023, Mar. 9, 1993; 60 FR 13643, Mar. 14, 1995; 63 FR 51000, Sept. 24, 1998]

§ 571.105 Standard No. 105; Hydraulic and electric brake systems.

S1. Scope. This standard specifies requirements for hydraulic and electric service brake systems, and associated parking brake systems.

S2. Purpose. The purpose of this standard is to insure safe braking performance under normal and emergency conditions.

S3. Application. This standard applies to multi-purpose passenger vehicles, trucks, and buses with a GVWR greater than 3,500 kilograms (7,716 pounds) that are equipped with hydraulic or electric brake systems.

S4. Definitions.

Antilock brake system or ABS means a portion of a service brake system that automatically controls the degree of rotational wheel slip during braking by:

- (1) Sensing the rate of angular rotation of the wheels;
- (2) Transmitting signals regarding the rate of wheel angular rotation to one or more controlling devices which