

BUMPER LOCATION — SAE J681a

SAE Recommended Practice

Report of Parts and Fittings Division approved August 1922 and last revised by Bumper Committee June 1968.

1. Scope—The scope of this SAE Recommended Practice is to establish uniform bumper height and projection requirements for passenger cars so that bumper contact surface is provided when the vehicle is in any attitude between curb and design height. The purpose in providing bumper contact is to minimize damage to sheet metal, lamps, or ornamentation during parking maneuvers.

2. Definitions

2.1 Curb Height—The height above ground of the vehicle or vehicle component when the vehicle is not loaded. The unloaded vehicle is filled to capacity with fuel, lubricants, and coolants, and includes factory installed options (if the vehicle is so equipped).

2.2 Design Height—The height above ground of the vehicle or vehicle component when the vehicle is loaded. The loaded vehicle is filled to capacity with fuel, lubricants, and coolants, and includes factory installed options (if the vehicle is so equipped) plus the addition of 150 lb for each passenger, distributed as two passengers in the front and one passenger in the rear seat. In the case of a two-passenger vehicle, 300 lb shall be distributed equally in the driver and the passenger seats only. In vehicles having hydropneumatic, hydraulic, or air pressure suspension, or automatic load leveling devices, the height requirements shall apply when such devices are operating.

2.3 Bumper Corner—The point on the bumper established by a vertical plane which is tangent to the bumper and at an angle of 60 deg to the vehicle centerline (Fig. 1).

2.4 Primary Edge—The outermost part of vehicle front or rear bumper between the bumper corners.

2.5 Bumper Contact Area—The bumper surface between points 20.00 in. above ground at design height and 20.00 in. above ground at curb height.

3. Requirements—Horizontal measurements must be taken parallel to centerline of vehicle.

3.1 A primary edge must be provided throughout the entire width to the bumper corners.

3.2 Bumper offset from the primary edge to any point in the

bumper contact area must not exceed 1.25 in., except in the area of license plate mounting. (See Figs. 2 and 3.)

3.3 Bumper contact area, sheet metal protection, and lamp protection must be held across the entire width to the bumper corners, except for the area of the license plate mounting and bumper mounted lamps.

3.4 Lamps located in the bumper shall be recessed for protection.

3.5 The following requirements apply if the bumper primary edge is on or above a line 20.00 in. above ground at design height:

3.5.1 Horizontal distance between the primary edge of the bumper

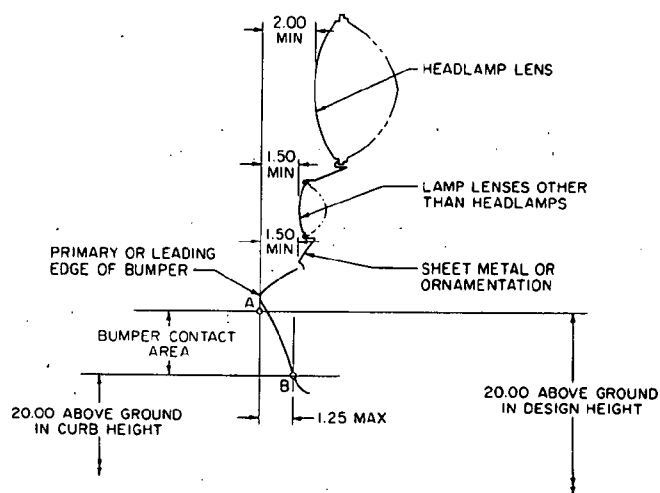


FIG. 2—HEIGHT CHECKING PROCEDURE—POINT SYSTEM WITH BUMPER LEADING EDGE AT OR ABOVE THE 20.00 IN. TO GROUND DESIGN HEIGHT

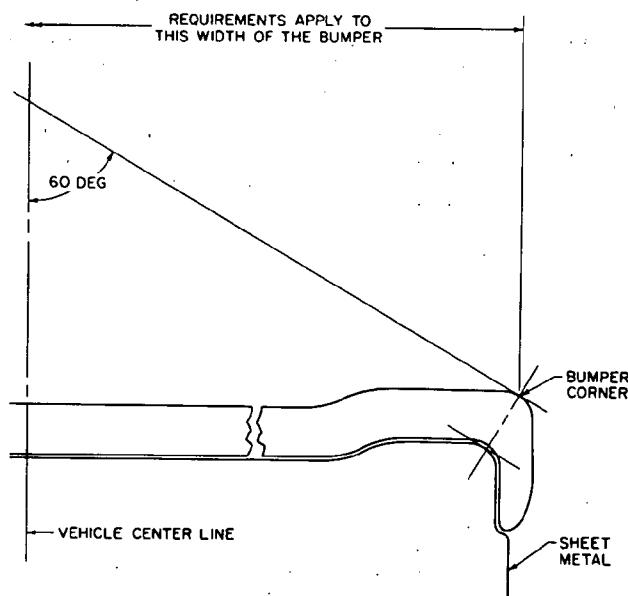


FIG. 1—BUMPER CORNER—FRONT AND REAR BUMPER

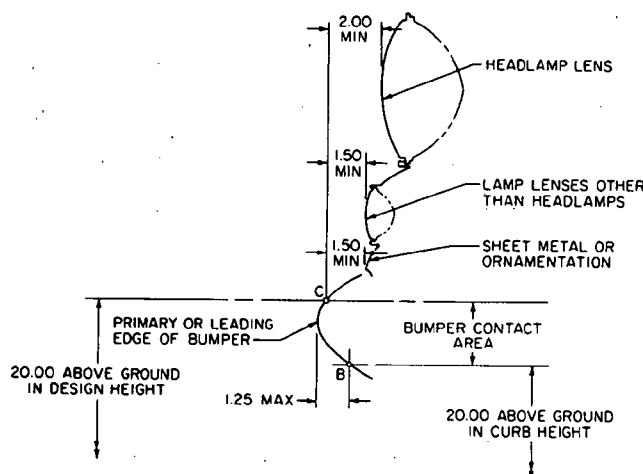


FIG. 3—HEIGHT CHECKING PROCEDURE—POINT SYSTEM WITH BUMPER LEADING EDGE BELOW 20.00 IN. TO GROUND DESIGN HEIGHT

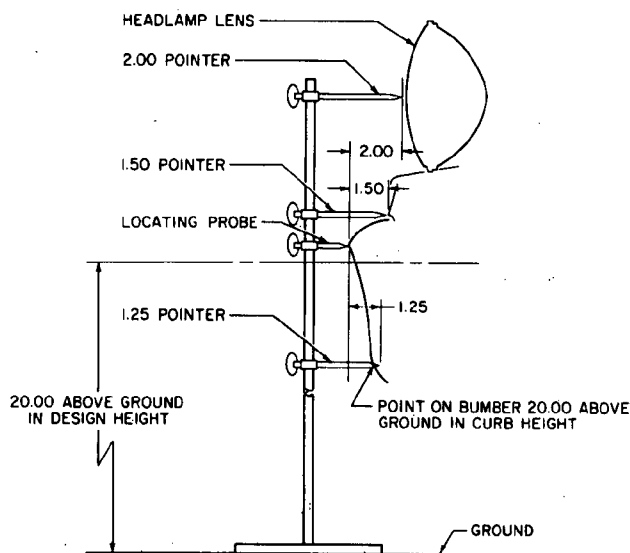


FIG. 4—CHECKING DEVICE WITH BUMPER LEADING EDGE AT OR ABOVE 20.00 IN. TO GROUND DESIGN HEIGHT

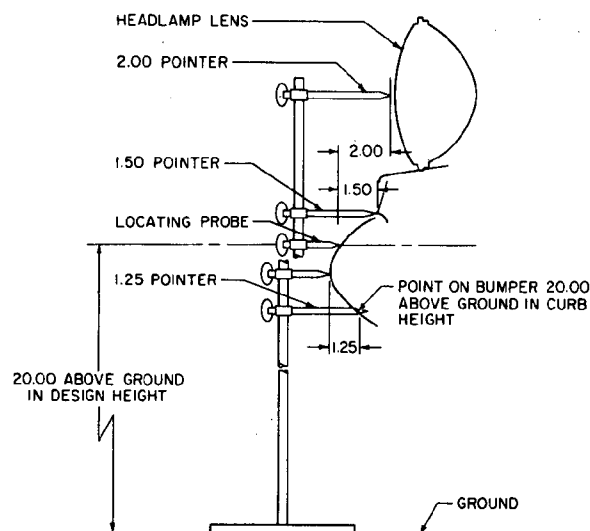


FIG. 5—CHECKING DEVICE WITH BUMPER LEADING EDGE BELOW 20.00 IN. TO GROUND DESIGN HEIGHT

and sheet metal components must be a minimum of 1.50 in.

3.5.2 Horizontal distance between the primary edge of the bumper and headlamp lenses must be a minimum of 2.00 in. and a minimum of 1.50 in. to other lamp lenses.

3.6 If the bumper primary edge falls below the 20.00 in. above ground design height line, clearance requirements must be measured from the point the 20.00 in. above ground design height line intersects the bumper surface (point C in Fig. 3).

3.6.1 Horizontal distance between point C and sheet metal components must be a minimum of 1.50 in.

3.6.2 Horizontal distance between point C and headlamp lenses must be a minimum of 2.00 in. and a minimum of 1.50 in. to other lamp lenses.

4. Height Checking Procedure—Point System

4.1 Establish two horizontal lines. One will represent a line 20.00 in. above the ground in design height. The other will be 20.00 in. above the ground in curb height (Fig. 2).

4.2 Establish a vertical line tangent to the primary edge of bumper. Where this line intersects the 20.00 in. above ground design line, establish point A. The primary edge of the bumper should be at or above point A (Fig. 2). If not, refer to paragraph 4.6.

4.3 Plot another vertical line 1.50 in. behind point A. This will be the minimum offset from the leading edge to the sheet metal and lamp lenses other than headlamps (Fig. 2).

4.4 Plot another vertical line 2.00 in. behind point A. This will be the minimum offset from the primary edge to the headlamp lenses (Fig. 2).

4.5 Establish another vertical line 1.25 in. behind point A. Where this vertical line intersects the lower horizontal line established in paragraph 4.1, plot point B. Bumper surface must pass through or ahead of point B (Fig. 2).

4.6 If the primary edge falls below the 20.00 in. to ground design

height line, the bumper surface must intersect this line and will establish point C. Clearances for lamps and sheet metal are to be measured from point C (Fig. 3).

5. Height Checking Procedure—Device System (Vehicle at Design Height)

5.1 If the primary edge is 20.00 in. or more above ground in design height, proceed in the following manner (Fig. 4):

5.1.1 Position the 1.25 in. pointer on the device down the shaft from the 20.00 in. design height the amount the vehicle would travel to curb position.

5.1.2 Move the device toward the bumper until the locating probe makes contact with the primary edge of the bumper. The bumper must contact or interfere with the 1.25 in. pointer. The 1.50 in. pointer is then moved up and down to check clearance to sheet metal and lamp lenses other than headlamps. The 2.00 in. pointer is moved to check clearance to the headlamp lens.

5.2 If the primary edge is below 20.00 in. to the ground in design height, proceed as follows (Fig. 5):

5.2.1 Set the locating probe at the 20.00 in. to ground in design height.

5.2.2 Move the device toward the bumper until the locating probe makes contact with the bumper surface. The 1.50 in. pointer and the 2.00 in. pointer are moved up and down to assure compliance to requirements.

5.2.3 Set the locating probe at the primary or leading edge height.

5.2.4 Position the 1.25 in. pointer on the device down the shaft from the line which is 20.00 in. above ground in design height the amount the vehicle would travel to curb position.

5.2.5 Move the device toward the bumper until the locating probe makes contact. The bumper must contact or interfere with the 1.25 in. pointer.

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