



Technical Report Preprint

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J787b

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MOTOR VEHICLE SEAT BELT ANCHORAGE - SAE J787b

SAE Standard

Report of Body Engineering and Motor Vehicle Seat Belt Committee approved November 1961 and last revised September 1966.

1. SCOPE

1.1 This SAE Standard applies to the anchorage or attachment of seat belt assemblies, as described in the current version of SAE J4, to the seat assembly or other suitable structure of passenger cars. It specifies performance requirements, test procedures, and location of anchorages for seat belt assemblies when anchorages are provided, and the provisions for identification and location of attachment points for seat belt assemblies when anchorages are not provided.

2. DEFINITIONS

2.1 Anchorage - A provision in the seat assembly or other suitable vehicle structure to receive the seat belt assembly attachment hardware.

2.2 Attachment Point - A dimple or other suitable means to identify the vehicle structure locations at which seat belt attachment hardware may be installed.

2.3 Attachment Hardware - Any or all hardware designed for securing the webbing of a seat belt assembly to a motor vehicle.

2.4 Seat Belt Assembly - Any strap, webbing, or similar device designed to secure a person in a motor vehicle with the intention of mitigating the results of a traffic accident, including all buckles or other fasteners and all hardware designed for installing the assembly in a motor vehicle. This SAE Standard covers the following types of assemblies:

Type 1 - Lap belt for pelvic restraint.

Type 2 - Combination of pelvic and upper torso restraints.

Type 2a - Shoulder belt - An upper torso restraint for use only in conjunction with a lap belt as a Type 2 seat belt assembly.

3. GENERAL

3.1 Installation and Replacement - Anchorages shall be such as to permit seat belt assemblies to be readily installed or replaced, and shall comply with the strength requirements indicated in paragraph 5.

3.2 Common Anchorages - A common anchorage or attachment point may be used for more than one belt end, provided it meets the pertinent requirements of paragraphs 4 and 5.

4. LOCATION OF ANCHORAGES OR ATTACHMENT POINTS

4.1 Seat Position - The location of the anchorages or attachment points shall be determined with the seat in its lowest and rearmost limit of travel and with the seat back in the nominal design position.

4.2 Pelvic Restraint - The location of anchorages or attachment points should be such that a line from the anchorage or attachment point to the passenger's hip point will form an angle from the horizontal as near as practical to 45 deg, as shown in Figs. 1-3. All anchorages or attachment points shall be spaced laterally so that the assembly essentially forms a U-shaped loop when in use. The outboard anchorages or attachment points for seat belt assemblies for a multi-occupant seat, or the outboard and inboard anchorages or attachment points for a single occupant seat, may be located to permit the assembly to pass around the outside of the seat.

NOTE: The "hip" point is the point on the manikin defined as the "H" point in SAE J826. The "H" point simulates the actual pivot center of the human torso and thigh.

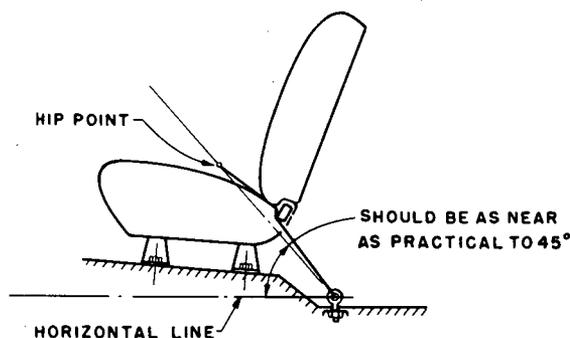


Fig. 1 - Belt outside seat or through seat springs

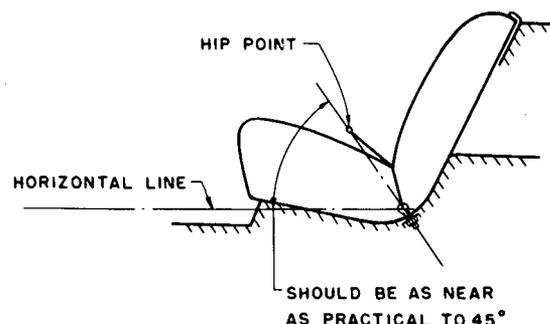


Fig. 2 - Rear seat belt installation

4.3 Upper Torso Restraint - The location of the lower anchorage (s) or attachment point (s) may be common with the pelvic restraint anchorages or attachment points and must meet the requirements in paragraph 5. With the seat positioned as specified in paragraph 4.1, the upper anchorage (s) or attachment point (s) shall be longitudinally in line with, or rearward of, a line extending 6 in. vertically above the shoulder reference point and then extending rearward at an angle of 80deg above the horizontal. (See Fig. 4.) If there is a downward angle of the webbing, passing from the shoulder reference point to an anchorage or over suitable structure to an anchorage, this angle shall not be more than 40deg from the horizontal. (See Fig. 4.)

NOTE: The shoulder reference point is defined as a point 22.16 in. above the "H" point along the torso centerline of the 2-dimensional SAE manikin described in SAEJ826. This dimension added to the dimension of 3.84 in. from the "H" point to the buttocks fleshline and an angular relationship of 90deg between the torso and thigh segment of the 2-dimensional manikin has been indicated to represent 99% of the male driver population.

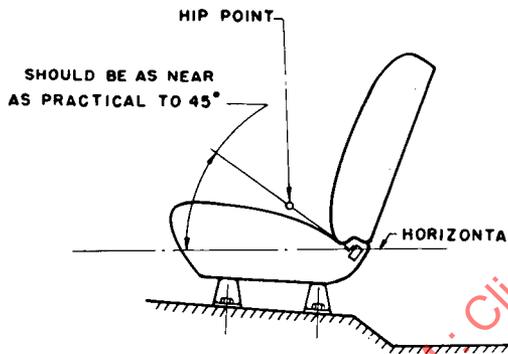


Fig. 3 - Belt attached to seat frame

4.4 Seat Belt Over Seat Frame Rear Bar - Anchorages or attachment points in the floor for belts that will be installed over the seat bottom frame rear bar shall be in line with or rearward of a vertical line through the point where the seat belt assembly will enter the seat, as shown in Fig. 5.

5. STRENGTH REQUIREMENTS

5.1 Anchorages or Attachment Points for Seat Belt Assemblies Attached to the Vehicle Structure - The vehicle structure and the seat belt assembly anchorages or attachment points shall sustain simultaneous application of test loads, as specified in paragraph 5.3, on the original equipment seat belt assemblies or the equivalent* for each passenger for which the seat (front, rear, etc.) is designed when tested in accordance with paragraph 6. The upper anchorages or attachment points of Type 2 or 2a assemblies may be tested separately, providing these anchorages or attach-

*For example, original equipment attachment hardware affixed to cable or other connecting members.

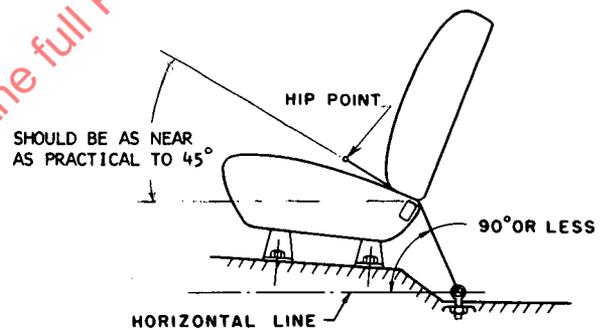


Fig. 5 - Belt over seat cross bar

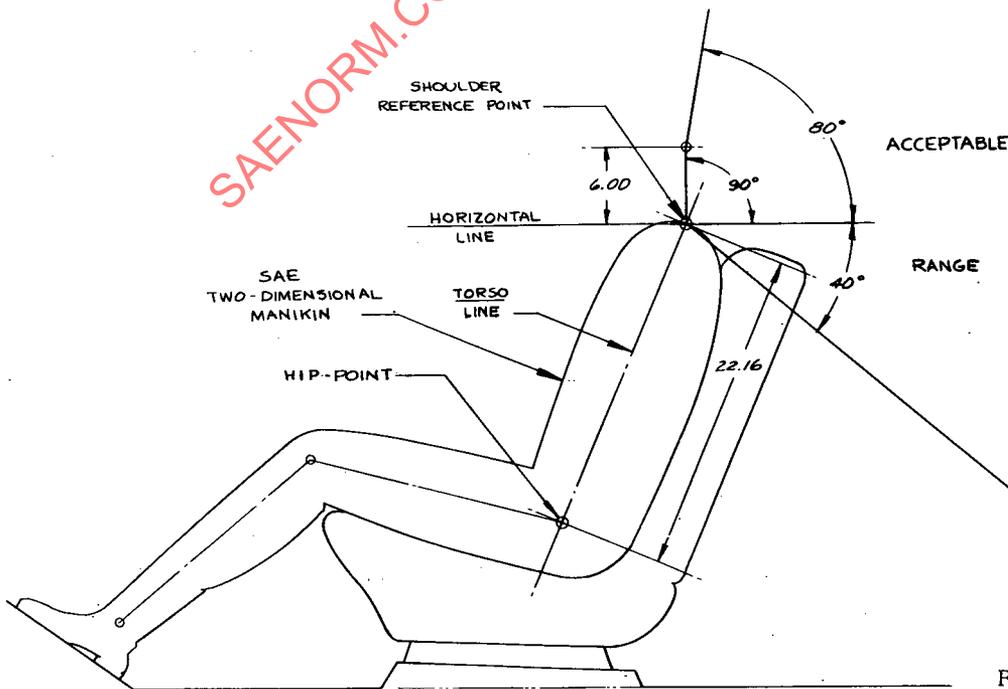


Fig. 4 - Upper torso restraint