

Transmitted by the expert from Japan

PROPOSAL FOR DRAFT CORRIGENDUM TO REGULATION No. 12
(STEERING MECHANISM)

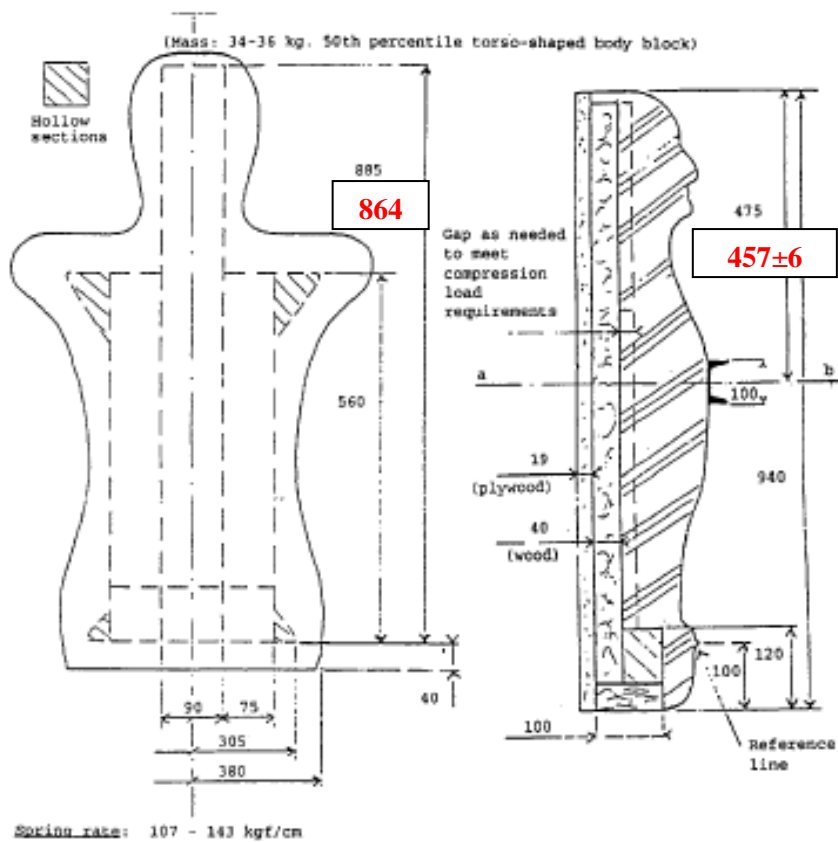
The modifications to the existing text of Regulation No. 12 are marked in bold or strikethrough characters.

A PROPOSAL

Annex 4-Appendix, amend to read

475 **457±6**

885 **864**



B JUSTIFICATION

The dimension of Body Block is internationally based on the SAE standard J944 JUN80 (See attached document). However, the dimensions for the above two parts specified in SAE J944 JUN80 are different between “inch” and “centimeter” units. These are clerical errors in unit conversion from “inch” to “centimeters”, and these dimensions should be read as $18\pm 0.25\text{inch} = 47.5\pm 0.63\text{cm}$ **457±6mm** and $34\text{inch} = 88.4\text{cm}$ **864mm** respectively. Since ECE R12 incorporates the dimensions misconverted in SAE standard, therefore those errors should be corrected.

ATTACHMENT

Excerpt from SAE J944 JUN80.

**STEERING CONTROL SYSTEM—
PASSENGER CAR—LABORATORY
TEST PROCEDURE—SAE J944 JUN80**

SAE Recommended Practice

Report of the Automotive Safety Committee, approved December 1965, last revised November 1968, reaffirmed without change June 1980.

1. Scope—This SAE Recommended Practice describes a laboratory test procedure for evaluating the characteristics of steering control systems under simulated driver impact conditions. The test procedure employs a torso-shaped body block which is impacted against the steering control system.

2. Definition—For the purposes of this recommended practice, the steering control system is defined as that portion of the vehicle steering mechanism that may affect the occupant impact characteristics.

3. Reference—SAE J977.

4. Items to be Determined

4.1 Impact velocity of the body block.

4.2 Peak resultant force of the impact.

5. Test Equipment and Instrumentation

5.1 Body Block—The complete body block shall have the following characteristics:

5.1.1 SPRING RATE—107–143 kg/cm, when the chest is loaded by

in wide by 15 in long (10.0 by 38.0 cm) beam, 90 deg to the longitudinal axis of the body block, and parallel to the backing plate (Fig. 1). The center of the beam is placed 18.0 ± 0.25 in (45.7 ± 0.63 cm) from the top of the head, centered laterally, and preloaded to 5 lb (2.26 kg) including the weight of the beam, to establish baseline penetration. Test speed is 10 ± 2 in/minute (25.0 ± 5 cm/minute). The load is measured when the beam has moved 0.50 in (12.7 cm) into the body block from the baseline and the spring rate is obtained by doubling this load.

5.1.2 WEIGHT—The body block shall weigh $75 + 5 - 0$ lb ($33.97 + 2.26 - 0$ kg).

5.1.3 BODY BLOCK CENTER OF GRAVITY—The center of gravity of the complete body block shall be 21.7 ± 0.25 in (55.12 ± 0.63 cm) from the top of the head.

5.1.4 MOMENT OF INERTIA—The moment of inertia around the lateral axis through the center of gravity of the complete body block shall be 90 ± 2 in-lb sec² (23 ± 2.3 cm-kg sec²).

5.1.5 Configuration of the body block is shown in Figs. 2-4.

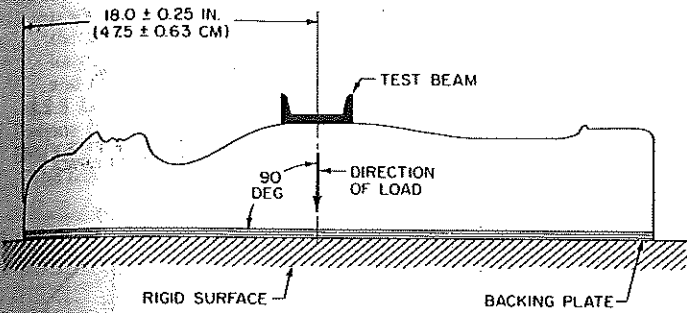


FIG. 1—TEST BEAM LOCATION

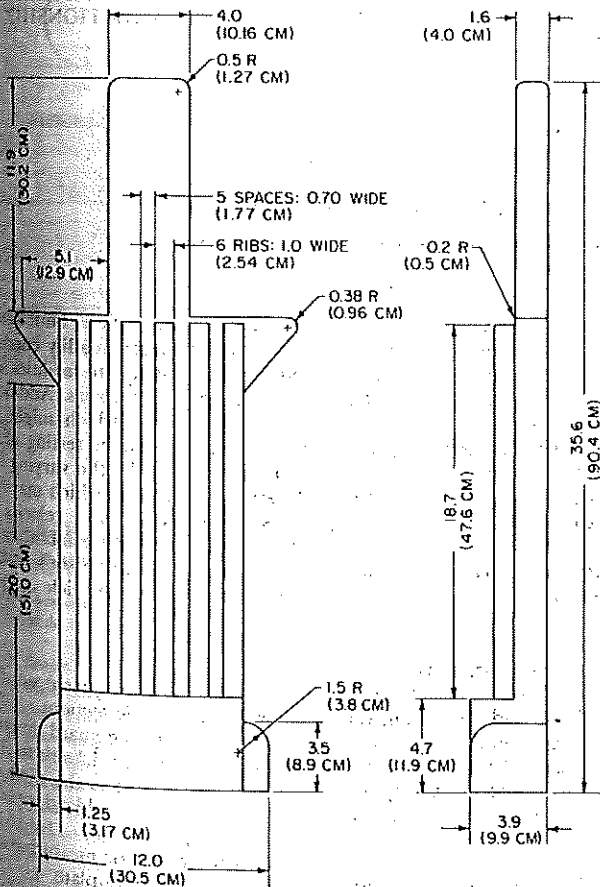


FIG. 2—MOLD INSERT

5.2 Instrumentation—Any system of instrumentation that will provide data from which the items in paragraph 4 can be determined and meet the performance requirements of SAE J977 is acceptable, with the following exception:

5.2.1 The force measuring channels shall have a frequency response flat to within $\pm 5\%$ from 0.1 Hz to 500 Hz and shall be at least 3 db down at a maximum of 1500 Hz.

5.3 Any test equipment is satisfactory which can produce the desired body block-to-steering control system impact velocity and which insures that the body block is moving parallel to the vehicle horizontal reference, with translational (not rotational) motion, in side view at impact. (See Fig. 5.) The direction of impact velocity, in the plan view, is parallel to the longitudinal vehicle axis.

5.4 The steering control system shall be mounted in the actual vehicle, vehicle buck, or on a fixture that is at least as rigid as the actual vehicle mounting.

5.5 If a load cell is used, it must be mounted between the column and the steering wheel (or equivalent).

6. Test Procedure

6.1 Vertical relationship between steering wheel and body block shall be established in the following manner:

6.1.1 Using the package drawing of the particular vehicle in which the steering system is to be used, determine the vertical dimension between the lower edge of the wheel rim and a point 0.75 in (1.90 cm) vertically above the seating reference point¹ of the driver.

¹ Seating reference point means the manufacturer's design reference point which:

1. Establishes the rearmost normal design driving or riding position of each designated seating position in a vehicle.
2. Has coordinates established relative to the designed vehicle structure.
3. Simulates the position of the pivot center of the human torso and thigh.
4. Is the reference point employed to position the two-dimensional templates described in SAE J826.

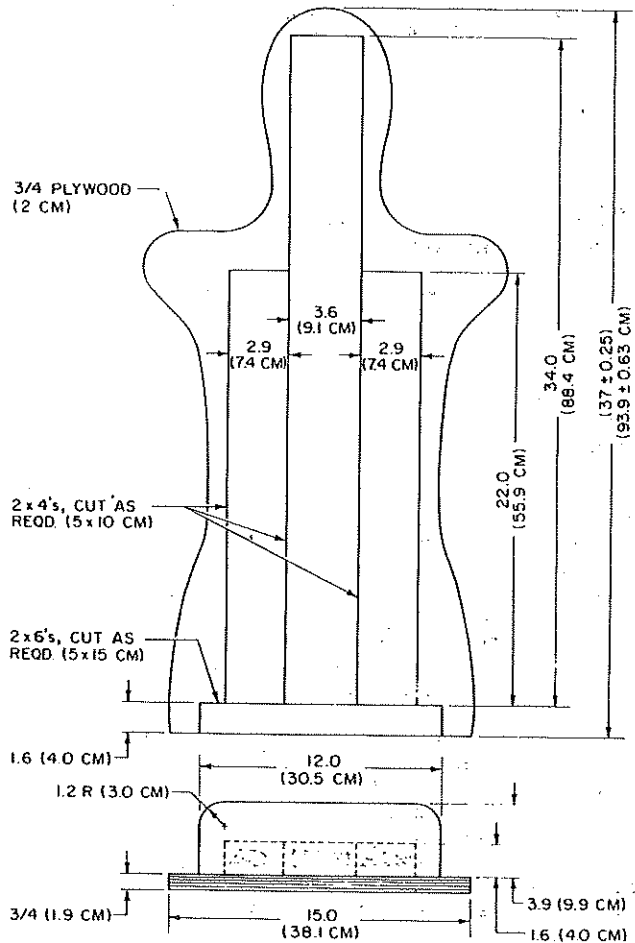


FIG. 3—BACKBOARD AND BASE

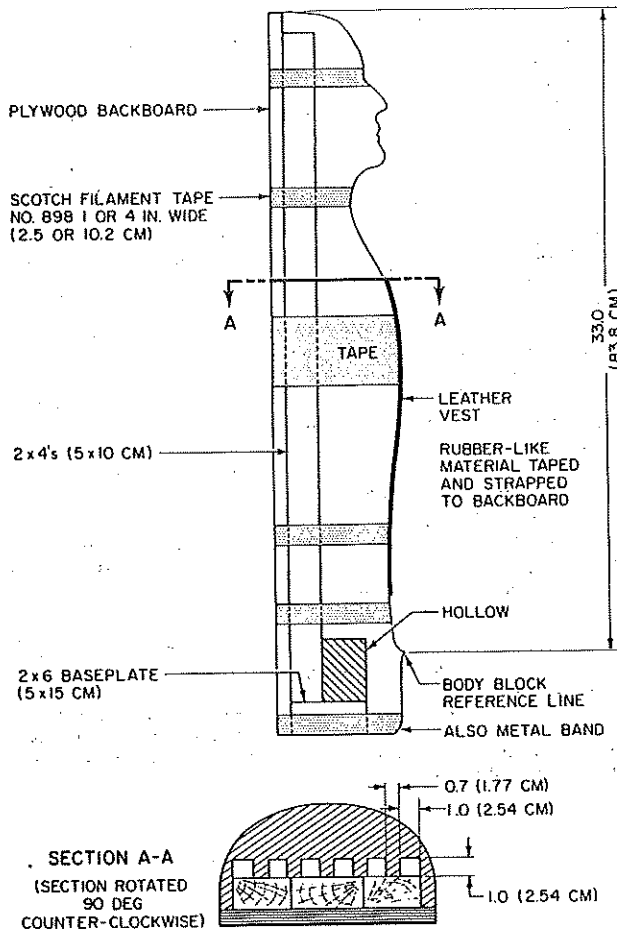


FIG. 4—BODY BLOCK PROFILE

6.1.2 The body block at impact is positioned as shown in Fig. 5. The body block is centered laterally in relation to the plane of the steering wheel rim. The vertical dimension, as defined in paragraph 6.1.1, is the relationship between the lower edge of the steering wheel and the reference line on the body block.

6.2 The steering wheel or steering wheel and column assembly to be tested is mounted at an angle within ± 1 deg in side and plan view.

6.3 All parts under test shall be installed using the design attachment points and production parts or simulations thereof torqued to the proper value.

6.4 All samples, and the body block, shall be stabilized at an ambient temperature ranging between 70–85 F for 4 hr immediately prior to testing.

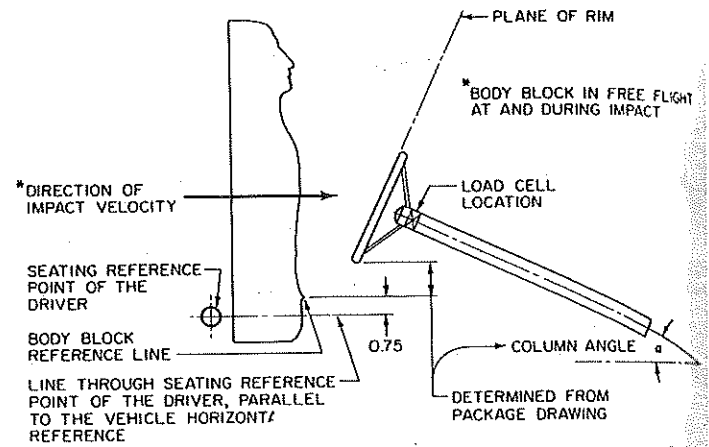


FIG. 5—STEERING WHEEL—BODY BLOCK RELATIONSHIP