

and an Operation and Maintenance Manual, dated May 28, 1976. The drawings and specifications are grouped by component assemblies under the following thirteen headings:

SA 103C 010 Head Assembly  
 SA 103C 020 Neck Assembly  
 SA 103C 030 Torso Assembly  
 SA 103C 041 Upper Arm Assembly Left  
 SA 103C 042 Upper Arm Assembly Right  
 SA 103C 051 Forearm Hand Assembly Left  
 SA 103C 052 Forearm Hand Assembly Right  
 SA 103C 061 Upper Leg Assembly Left  
 SA 103C 062 Upper Leg Assembly Right  
 SA 103C 071 Lower Leg Assembly Left  
 SA 103C 072 Lower Leg Assembly Right  
 SA 103C 081 Foot Assembly left  
 SA 103C 082 Foot Assembly Right.

(b) The drawings, specifications, and operation and maintenance manual referred to in this regulation that are not set forth in full are hereby incorporated in this part by reference. These materials are thereby made part of this regulation. The Director of the Federal Register has approved the materials incorporated by reference. For materials subject to change, only the specific version approved by the Director of the Federal Register and specified in the regulation are incorporated. A notice of any change will be published in the FEDERAL REGISTER. As a convenience to the reader, the materials incorporated by reference are listed in the Finding Aid Table found at the end of this volume of the Code of Federal Regulations.

(c) The materials incorporated by reference are available for examination in Docket 78-09, Room 5109, Docket Section, National Highway Traffic Safety Administration, 400 Seventh Street SW., Washington, DC 20590. Copies may be obtained from Rowley-Scher Reprographics, Inc., 1216 K Street NW., Washington, DC 20005 ((202) 628-6667). The materials are also on file in the reference library of the Office of the Federal Register, National Archives and Records Administration, Washington, DC.

(d) Adjacent segments are joined in a manner such that throughout the range of motion and also under simulated crash-impact conditions there is no contact between metallic elements except for contacts that exist under static conditions.

(e) The structural properties of the dummy are such that the dummy conforms to this part in every respect both before and after being used in vehicle tests specified in Standard No. 213 of this chapter (§ 571.213).

(f) The patterns of all cast and molded parts for reproduction of the molds needed in manufacturing of the dummies can be obtained on a loan basis by manufacturers of the testes dummies, or others if need is shown, from: Office of Vehicle Safety Standards, National Highway Traffic Safety Administration, 400 Seventh Street SW., Washington, DC 20590.

[50 FR 25423, June 19, 1985]

#### § 572.16 Head.

(a) The head consists of the assembly designated as SA 103C 010 on drawing No. SA 103C 001, and conforms to either—

(1) Each item specified on drawing SA 103C 002(B), sheet 8; or

(2) Each item specified on drawing SA 103C 002, sheet 8.

(b) When the head is impacted by a test probe specified in § 572.21(a)(1) at 7 fps, then the peak resultant acceleration measured at the location of the accelerometer mounted in the headform according to § 572.21(b) is not less than 95g and not more than 118g.

(1) The recorded acceleration-time curve for this test is unimodal at or above the 50g level, and lies at or above that level for intervals:

(i) In the case of the head assembly specified in paragraph (a)(1) of this section, not less than 1.3 milliseconds and not more than 2.0 milliseconds;

(ii) In the case of the head assembly specified in paragraph (a)(2) of this section, not less than 2.0 milliseconds and not more than 3.0 milliseconds.

(2) The lateral acceleration vector does not exceed 7g.

(c) *Test procedure.* (1) Seat the dummy on a seating surface having a back support as specified in § 572.21(h) and orient the dummy in accordance with § 572.21(h) and adjust the joints of the limbs at any setting between 1g and 2g, which just supports the limbs' weight when the limbs are extended horizontally forward.

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(2) Adjust the test probe so that its longitudinal centerline is at the forehead at the point of orthogonal intersection of the head midsagittal plane and the transverse plane which is perpendicular to the "Z" axis of the head (longitudinal centerline of the skull anchor) and is located 0.6 ±0.1 inches above the centers of the head center of gravity reference pins and coincides within 2 degrees with the line made by the intersection of horizontal and midsagittal planes passing through this point.

(3) Adjust the dummy so that the surface area on the forehead immediately adjacent to the projected longitudinal centerline of the test probe is vertical.

(4) Impact the head with the test probe so that at the moment of impact the probe's longitudinal centerline falls within 2 degrees of a horizontal line in the dummy's midsagittal plane.

(5) Guide the probe during impact so that it moves with no significant lateral, vertical, or rotational movement.

(6) Allow a time period of at least 20 minutes between successive tests of the head.

[44 FR 76530, Dec. 27, 1979; 45 FR 43353, June 26, 1980, as amended at 45 FR 82267, Dec. 15, 1980; 55 FR 30468, July 26, 1990]

**§572.17 Neck.**

(a)(1) The neck for use with the head assembly described in §572.16(a)(1) consists of the assembly designated as SA 103C 020 on drawing No. SA 103C 001, conforms to each item specified on drawing No. SA 103C 002(B), sheet 9.

(2) The neck for use with the head assembly described in §572.16(a)(2) consists of the assembly designated as SA 103C 020 on drawing No. SA 103C 001, and conforms to each item specified on drawing No. SA 103C 002, sheet 9.

(b) When the head-neck assembly is tested in accordance with paragraph (c) of this section, the head shall rotate in reference to the pendulum's longitudinal centerline a total of 84 degrees ±8 degrees about its center of gravity, rotating to the extent specified in the following table at each indicated point in time, measured from impact, with the chordal displacement measured at its center of gravity. The chordal displacement at time T is defined as the straight line distance between (1) the

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position relative to the pendulum arm of the head center of gravity at time zero, and (2) the position relative to the pendulum arm of the head center of gravity at time T as illustrated by figure 3. The peak resultant acceleration recorded at the location of the accelerometers mounted in the headform in accordance with §572.21(b) shall not exceed 30g. The pendulum shall not reverse direction until the head's center of gravity returns to the original zero time position relative to the pendulum arm.

Rotation (degrees)	Time (ms) ±(2+.08T)	Chordal displacement (inches ±0.8)
0 .....	0	0
30 .....	21	2.2
60 .....	36	4.3
Maximum .....	62	5.8
60 .....	91	4.3
30 .....	108	2.2
0 .....	123	0

(c) *Test procedure.* (1) Mount the head and neck on a rigid pendulum as specified in Figure 4, so that the head's midsagittal plane is vertical and coincides with the plane of motion of the pendulum's longitudinal centerline. Mount the neck directly to the pendulum as shown in Figure 15.

(2) Release the pendulum and allow it to fall freely from a height such that the velocity at impact is 17.00 ±1.0 feet per second (fps), measured at the center of the accelerometer specified in figure 4.

(3) Decelerate the pendulum to a stop with an acceleration-time pulse described as follows:

(i) Establish 5g and 20g levels on the a-t curve.

(ii) Establish  $t_1$  at the point where the a-t curve first crosses the 5g level,  $t_2$  at the point where the rising a-t curve first crosses the 20g level,  $t_3$  at the point where the decaying a-t curve last crosses the 20g level, and  $t_4$  at the point where the decaying a-t curve first crosses the 5g level.

(iii)  $t_2-t_1$ , shall be not more than 4 milliseconds.

(iv)  $t_3-t_2$ , shall be not less than 18 and not more than 21 milliseconds.

(v)  $t_4-t_3$ , shall be not more than 5 milliseconds.