

each knee pivot and each ankle pivot is within 2 degrees of the vertical.

(2) If necessary, reposition the dummy so that at the level one inch below the seating surface, the rearmost point of the dummy's lower legs remains not less than 3 inches and not more than 6 inches forward of the forward edge of the seat.

(3) Align the test probe specified in § 572.77(a) with the longitudinal center line of the femur force gauge, so that at impact, the probe's longitudinal center line coincides with the sensor's longitudinal center line within ± 2 degrees.

(4) Impact the knee with the test probe moving horizontally and parallel to the midsagittal plane at the specified velocity.

(5) Guide the test probe during impact so that there is no significant lateral, vertical, or rotational movement.

§ 572.77 Instrumentation.

(a)(1) *Test probe.* For the head, thorax, and knee impact test, use a test probe that is rigid, of uniform density and weighs 10 pounds and 6 ounces, with a diameter of 3 inches; a length of 13.8 inches; and an impacting end that has a rigid flat right face and edge radius of 0.5 inches.

(2) The head and thorax assembly may be instrumented either with a Type A or Type B accelerometer.

(i) Type A accelerometer is defined in drawing SA 572 S1.

(ii) Type B accelerometer is defined in drawing SA 572 S2.

(b) *Head accelerometers.* (1) Install accelerometers in the head as shown in drawing SA 106C 001 sheet 1 using suitable spacers or adaptors as needed to affix them to the horizontal transverse bulkhead so that the sensitive axes of the three accelerometers intersect at the point in the midsagittal plane located 0.4 inches below the intersection of a line connecting the longitudinal center lines of the roll pins in either side of the dummy's head with the head's midsagittal plane.

(2) The head has three orthogonally mounted accelerometers aligned as follows:

(i) Align one accelerometer so that its sensitive axis is perpendicular to the horizontal bulkhead in the midsagittal plane.

(ii) Align the second accelerometer so that its sensitive axis is parallel to the horizontal bulkhead, and perpendicular to the midsagittal plane.

(iii) Align the third accelerometer so that its sensitive axis is parallel to the horizontal bulkhead in the midsagittal plane.

(iv) The seismic mass center for any of these accelerometers may be at any distance up to 0.4 inches from the axial intersection point.

(c) *Thoracic accelerometers.* (1) Install accelerometers in the thoracic assembly as shown in drawing SA 106C 001, sheet 1, using suitable spacers and adaptors to affix them to the frontal surface of the spine assembly so that the sensitive axes of the three accelerometers intersect at a point in the midsagittal plane located 0.95 inches posterior of the spine mounting surface, and 0.55 inches below the horizontal centerline of the two upper accelerometer mount attachment hole centers.

(2) The sternum-thoracic assembly has three orthogonally mounted accelerometers aligned as follows:

(i) Align one accelerometer so that its sensitive axis is parallel to the attachment surface in the midsagittal plane.

(ii) Align the second accelerometer so that its sensitive axis is parallel to the attachment surface, and perpendicular to the midsagittal plane.

(iii) Align the third accelerometer so that its sensitive axis is perpendicular to the attachment surface in the midsagittal plane.

(iv) The seismic mass center for any of these accelerometers may be at any distance up to 0.4 inches of the axial intersection point.

(d) *Femur-sensing device.* Install a force-sensing device SA 572-S10 axially in each femur shaft as shown in drawing SA 106C 072 and secure it to the femur assembly so that the distance measured between the center lines of two attachment bolts is 3.00 inches.

(e) *Limb joints.* Set the limb joints at 1g, barely restraining the limb's weight when the limb is extended horizontally, and ensure that the force required to move the limb segment does not exceed 2g throughout the limb's range of motion.

§ 572.78

49 CFR Ch. V (10–1–06 Edition)

(f) *Recording outputs.* Record the outputs of acceleration and force-sensing devices installed in the dummy and in the test apparatus specified in this part, in individual channels that conform to the requirements of SAE Recommended Practice J211, October 1988, with channel classes as set out in the following table C.

TABLE C

Device	Channel
Head acceleration	Class 1000
Pendulum acceleration	Class 60
Thorax acceleration	Class 180
Femur-force	Class 600

The mountings for sensing devices shall have no resonance frequency within a range of 3 times the frequency range of the applicable channel class.

§ 572.78 Performance test conditions.

(a) Conduct performance tests at any temperature from 66 °F to 78 °F, and at any relative humidity from 10 percent to 70 percent, but only after having first exposed the dummy to these conditions for a period of not less than 4 hours.

(b) For the performance tests specified in § 572.72 (head), § 572.74 (thorax), § 572.75 (lumbar spine, abdomen, and pelvis), and § 572.76 (limbs), position the dummy as set out in paragraph (c) of this section.

(c) Place the dummy on a horizontal seating surface covered by teflon sheeting so that the dummy's midsagittal plane is vertical and centered on the test surface.

(1) The seating surface is flat, rigid, clean, and dry, with a smoothness not

exceeding 40 microinches, a length of at least 16 inches, and a width of at least 16 inches.

(2) For head impact tests, the seating surface has a vertical back support whose top is 12.4 ±0.2 inches above the horizontal surface, and the rear surfaces of the dummy's back and buttocks touch the back support as shown in Figure 40.

(3) For the thorax, lumbar spine, and knee tests, the horizontal surface is without a back support as shown in Figure 41 (for the thorax); Figure 42 (for the lumbar spine); and Figure 43 (for the knee).

(4) Position the dummy's arms and legs so that their center lines are in planes parallel to the midsagittal plane.

(5) Adjust each shoulder yoke so that with its upper surface horizontal, a yoke is at the midpoint of its anterior-posterior travel.

(6) Adjust the dummy for head and knee impact tests so that the rear surfaces of the shoulders and buttocks are tangent to a transverse vertical plane.

(d) The dummy's dimensions are specified in drawings SA 106C 001, sheet 3, Revision A, July 11, 1997, and sheets 4 through 6.

(e) Unless otherwise specified in this regulation, performance tests of the same component, segment, assembly or fully assembled dummy are separated in time by a period of not less than 20 minutes.

(f) Unless otherwise specified in this regulation, the surfaces of the dummy components are not painted.

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FIGURES TO SUBPART I OF PART 572