

is represented by two ribs (180-3368) and two linear deflection potentiometers (180-3881). The abdomen test is conducted on the complete dummy assembly (180-0000) with the arm (180-6000) on the impacted side removed. The dummy is equipped with a lower spine laterally oriented accelerometer as specified in 49 CFR 572.200(d) and deflection potentiometers specified in drawing 180-3881, installed as shown in sheet 2 of drawing 180-0000. When subjected to the test procedure as specified in paragraph (b) of this section, the abdomen shall meet performance requirements of paragraph (c) of this section.

(b) *Test procedure.* (1) Soak the dummy assembly (180-0000) in a test environment as specified in 49 CFR 572.200(j).

(2) Seat the dummy, outfitted with the torso jacket (180-3450) and cotton underwear pants on a calibration bench, specified in Figure V3, the seat pan and the seatback surfaces of which are covered with a 2 mm thick PTFE (Teflon) sheet.

(3) Align the outermost portion of the pelvis flesh of the impacted side of the seated dummy tangent to a vertical plane located within 10 mm of the side edge of the bench as shown in Figure V7-A in Appendix A to this subpart, while the midsagittal plane of the dummy is in vertical orientation.

(4) Push the dummy at the knees and at mid-sternum of the upper torso with just sufficient horizontally oriented force towards the seat back until the back of the upper torso is in contact with the seat back.

(5) While maintaining the dummy's position as specified in paragraph (b)(3) and (4) of this section, the top of the shoulder rib mount (drawing 180-3352) orientation in the fore-and-aft direction is  $24.6 \pm 2.0$  degrees relative to horizontal, as shown in Figure V7-B in appendix A to this subpart);

(6) Adjust orientation of the legs such that they are symmetrical about the mid-sagittal plane, the thighs touch the seat pan, the inner part of the right and left legs at the knees are as close as possible to each other, the heels touch the designated foot support surface and the feet are vertical and as close together as possible;

(7) The impactor is specified in 49 CFR 572.200(b);

(8) The impactor is guided, if needed, so that at contact with the abdomen, its longitudinal axis is within  $\pm 1$  degree of a horizontal plane and perpendicular to the midsagittal plane of the dummy and the centerpoint of the impactor's face is within 2 mm of the vertical midpoint between the two abdominal ribs and coincident with a line parallel to the seat back incline passing through the center of the shoulder yoke assembly arm rotation pivot (drawing 180-3327), as shown in Figure V7-A in appendix A to this subpart;

(9) The dummy's abdomen is impacted at  $4.3 \pm 0.1$  m/s.

(10) Allow a period of at least thirty (30) minutes between successive tests of the same abdomen assembly.

(c) *Performance criteria.* (1) While the impact probe is in contact with the dummy's abdomen, the deflection of the upper abdominal rib shall be not less than 36 mm and not more than 47 mm, and the lower abdominal rib not less than 33 mm and not more than 44 mm.

(2) Peak acceleration of the lower spine (T12) laterally oriented accelerometer shall be not less than 9 g and not more than 14 g;

(3) Peak impactor acceleration shall be not less than 12 g and not more than 16 g.

[71 FR 75370, Dec. 14, 2006, as amended at 74 FR 29896, June 23, 2009]

#### § 572.198 Pelvis acetabulum.

(a) The acetabulum is part of the lower torso assembly shown in drawing 180-4000. The acetabulum test is conducted by impacting the side of the lower torso of the assembled dummy (drawing 180-0000). The dummy is equipped with a laterally oriented pelvis accelerometer as specified in 49 CFR 572.200(d), acetabulum load cell SA572-S68, mounted as shown in sheet 2 of 5 of drawing 180-0000, and an unused and certified pelvis plug (180-4450). When subjected to the test procedure as specified in paragraph (b) of this section, the pelvis shall meet performance requirements of paragraph (c) of this section.

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(b) *Test procedure.* (1) Soak the dummy assembly (180-0000) in a test environment as specified in 49 CFR 572.200(j).

(2) Seat the dummy, without the torso jacket (180-3450) and without cotton underwear pants, as shown in Figure V8-A in appendix A to this subpart, on a calibration bench, specified in Figure V3 in appendix A to this subpart, with the seatpan and the seatback surfaces covered with a 2-mm-thick PTFE (Teflon) sheet;

(3) Align the outermost portion of the pelvis flesh of the impacted side of the seated dummy tangent to a vertical plane located within 10 mm of the side edge of the bench as shown in Figure V8-A in appendix A to this subpart, while the midsagittal plane of the dummy is in vertical orientation.

(4) Push the dummy at the knees and at mid-sternum of the upper torso with just sufficient horizontally oriented force towards the seat back until the back of the upper torso is in contact with the seat back.

(5) While maintaining the dummy's position as specified in paragraphs (b)(3) and (4) of this section, the top of the shoulder rib mount (drawing 180-3352) orientation in the fore-and-aft direction is  $24.6 \pm 1.0$  degrees relative to horizontal, as shown in Figure V8-B in appendix A to this subpart;

(6) Adjust orientation of the legs such that they are symmetrical about the mid-sagittal plane, the thighs touch the seat pan, the inner part of the right and left legs at the knees are as close as possible to each other, the heels touch the designated foot support surface and the feet are vertical and as close together as possible.

(7) Rotate the arm downward to the lowest detent such that the longitudinal centerline of the arm is parallel to the inferior-superior orientation of the spine box.

(8) The impactor is specified in 49 CFR 572.200(a).

(9) The impactor is guided, if needed, so that at contact with the pelvis, its longitudinal axis is within  $\pm 1$  degree of a horizontal plane and perpendicular to the midsagittal plane of the dummy. The centerpoint of the impactor's face is in line within 2 mm of the longitudinal centerline of the  $\frac{1}{4}$ -20x $\frac{1}{2}$  flat

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head cap screw through the center of the acetabulum load cell (SA572-S68), as shown in Figure V8-A in appendix A to this subpart;

(11) Time zero is defined as the time of contact between the impact probe and the pelvis plug.

(12) Allow a period of at least 120 minutes between successive tests of the same pelvis assembly.

(c) *Performance criteria.* While the impactor is in contact with the pelvis:

(1) Peak acceleration of the impactor is not less than 38 g and not more than 47 g;

(2) Peak lateral acceleration of the pelvis after 6 ms after time zero is not less than 34 g and not more than 42 g;

(3) Peak acetabulum force is not less than 3.60 kN and not more than 4.30 kN.

[71 FR 75370, Dec. 14, 2006, as amended at 74 FR 29896, June 23, 2009]

### § 572.199 Pelvis iliac.

(a) The iliac is part of the lower torso assembly shown in drawing 180-4000. The iliac test is conducted by impacting the side of the lower torso of the assembled dummy (drawing 180-0000). The dummy is equipped with a laterally oriented pelvis accelerometer as specified in 49 CFR 572.200(d), and iliac wing load cell SA572-S66, mounted as shown in sheet 2 of 5 of drawing 180-0000. When subjected to the test procedure as specified in paragraph (b) of this section, the pelvis shall meet performance requirements of paragraph (c) of this section.

(b) *Test procedure.* (1) Soak the dummy assembly (180-0000) in a test environment as specified in 49 CFR 572.200(j).

(2) Seat the dummy, without the torso jacket and without cotton underwear pants, as shown in Figure V9-A in appendix A to this subpart, on a flat, rigid, horizontal surface covered with a 2-mm-thick PTFE (Teflon) sheet.

(3) The legs are outstretched in front of the dummy such that they are symmetrical about the midsagittal plane, the thighs touch the seated surface, the inner part of the right and left legs at the knees are as close as possible to each other, and the feet are in full dorsiflexion and as close together as possible.