

## § 572.198

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  $4.4 \pm 0.1$  m/s.

(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 39 mm and not more than 47 mm, and the lower abdominal rib not less than 37 mm and not more than 46 mm.

(2) Peak acceleration of the lower spine (T12) laterally oriented accelerometer shall be not less than 11 g and not more than 14 g;

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

## 49 CFR Ch. V (10-1-06 Edition)

### § 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.

(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.

(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 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;

(10) The dummy's pelvis is impacted at the acetabulum at  $6.7 \pm 0.1$  m/s.

(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 is not less than 41 g and not more than 50 g;

(3) Peak acetabulum force is not less than 3.8 kN and not more than 4.6 kN.

**§ 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 acetabulum load cell SA572-S68, 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.

(4) The midsagittal plane of the dummy is vertical and superior surface of the lower half neck assembly load cell replacement (180-3815) in the lateral direction is within  $\pm 1$  degree relative to the horizontal as shown in Figure V9-A.

(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 (180-3352) orientation in the fore-and-aft direction is within  $\pm 1.0$  degrees relative to horizontal as shown in Figure V9-B in Appendix A to this subpart.

(6) The pelvis impactor is specified in 49 CFR 572.200(c).

(7) The dummy is positioned with respect to the impactor such that the longitudinal centerline of the impact probe is in line with the longitudinal centerline of the iliac load cell access hole and the 88.9 mm dimension of the probe's impact surface is aligned horizontally.

(8) The impactor is guided, if needed, so that at contact with the pelvis, the longitudinal axis of the impactor is within  $\pm 1$  degree of a horizontal plane and perpendicular to the midsagittal plane of the dummy.

(9) The dummy's pelvis is impacted at the iliac location at  $4.3 \pm 0.1$  m/s.

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

(1) Peak lateral acceleration of the impactor is not less than 34 g and not more than 40 g;

(2) Peak lateral acceleration of the pelvis is not less than 27 g and not more than 33 g;

(3) Peak iliac force is not less than 3.7 kN and not more than 4.5 kN.

**§ 572.200 Instrumentation and test conditions.**

(a) The test probe for shoulder, lateral thorax, and pelvis-acetabulum impact tests is the same as that specified