SID–IIsD Side Impact Crash Test Dummy, July 1, 2008,'' and,

(5) Sign convention for signal outputs reference document SAE J1733 Information Report, titled ''Sign Convention for Vehicle Crash Testing,'' dated July 12, 1994, incorporated by reference in §572.200(k).

(b) Exterior dimensions of the SID–IIsD Small Adult Female Side Impact Crash Test Dummy are shown in drawing 180–0000 sheet 3 of 5, dated July 1, 2008.

(c) Weights and center of gravity locations of body segments are shown in drawing 180–0000 sheet 4 of 5, dated July 1, 2008.

(d) Adjacent segments are joined in a manner such that, except for contacts existing under static conditions, there is no additional contact between metallic elements of adjacent body segments throughout the range of motion.

(e) The structural properties of the dummy are such that the dummy conforms to this Subpart in every respect before use in any test similar to that set forth in Standard 214, Side Impact Protection (49 CFR 571.214).

[71 FR 75370, Dec. 14, 2006, as amended at 74 FR 29895, June 23, 2009]

§572.192 Head assembly.

(a) The head assembly consists of the head (180–1000) and a set of three (3) accelerometers in conformance with specifications in 49 CFR 572.200(d) and mounted as shown in drawing 180–0000 sheet 2 of 5. When tested to the procedure specified in paragraph (b) of this section, the head assembly shall meet performance requirements specified in paragraph (c) of this section.

(b) *Test procedure.* The head shall be tested according to the procedure specified in 49 CFR 572.112(a).

(c) *Performance criteria.*

(1) When the head assembly is dropped from either the right or left lateral incline orientations in accordance with procedure in §572.112(a), the measured peak resultant acceleration shall be between 115 g and 137 g;

(2) The resultant acceleration-time curve shall be unimodal to the extent that oscillations occurring after the main acceleration pulse shall not exceed 15% (zero to peak) of the main pulse;

(3) The longitudinal acceleration vector (anterior-posterior direction) shall not exceed 15 g.

§572.193 Neck assembly.

(a) The neck assembly consists of parts shown in drawing 180–2000. For purposes of this test, the neck assembly is mounted within the headform assembly (180–9000) as shown in Figure V1 in appendix A to this subpart. When subjected to the test procedure specified in paragraph (b) of this section, the neck-headform assembly shall meet the performance requirements specified in paragraph (c) of this section.

(b) *Test procedure.*

(1) Soak the assembly in a test environment as specified in 49 CFR 572.200(j);

(2) Attach the neck-headform assembly, as shown in Figure V2–A or V2–B in appendix A to this subpart, to the 49 CFR Part 572 pendulum test fixture (Figure 22, 49 CFR 572.33) in either the left or right lateral impact orientations, respectively, so that the midsagittal plane of the neck-headform assembly is vertical and at right angle (90 ±1 degrees) to the plane of motion of the pendulum longitudinal centerline;

(3) Release the pendulum from a height sufficient to achieve a velocity of 5.57 ±0.06 m/s measured at the center of the pendulum accelerometer, as shown in 49 CFR Part 572 Figure 15, at the instant the pendulum makes contact with the decelerating mechanism;

(4) The neck flexes without the neck-headform assembly making contact with any object;

(5) Time zero is defined as the time of initial contact between the pendulum mounted striker plate and the pendulum deceleration mechanism;

(6) Allow a period of at least thirty (30) minutes between successive tests on the same neck assembly.

(c) *Performance Criteria.*

(1) The pendulum deceleration pulse is characterized in terms of decrease in velocity as obtained by integrating the pendulum acceleration output from time zero:

Time(ms)	Peakpendulumdelta-V(m/s)
10.0	−2.20 to −2.80
15.0	−3.30 to −4.10

Time(ms)	Peakpendulumdelta-V(m/s)
20.0	−4.40 to −5.40
25.0	−5.40 to −6.10
>25.0 <100	−5.50 to −6.20

(2) The maximum translation-rotation of the midsagittal plane of the headform disk (180–9061 or 9062) in the lateral direction measured, with the rotation transducers specified in 49 CFR 572.200(e) shall be 71 to 81 degrees with respect to the longitudinal axis of the pendulum (see Figure V2–C in appendix A to this subpart) occurring between 50 and 70 ms from time zero;

(3) Peak occipital condyle moment shall not be higher than −36 Nm and not lower than −44 Nm. The moment measured by the upper neck load cell (Mx) shall be adjusted by the following formula: Mx(oc)[1]= Mx+0.01778Fy;

(4) The decaying moment shall cross the 0 Nm line after peak moment between 102 ms-126 ms after time zero.

[71 FR 75370, Dec. 14, 2006, as amended at 74 FR 29895, June 23, 2009]

§ 572.194 Shoulder.

(a) The shoulder structure is part of the upper torso assembly shown in drawing 180–3000. For the shoulder impact test, the dummy is tested as a complete assembly (drawing 180–0000). The dummy is equipped with T1 laterally oriented accelerometer as specified in 49 CFR 572.200(d), and deflection potentiometer as specified in 180–3881 configured for shoulder and installed as shown in drawing 180–0000 sheet 2 of 5. When subjected to the test procedure as specified in paragraph (b) of this section, the shoulder shall meet the 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 certification bench, specified in Figure V3 in appendix A to this subpart, 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 V4–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 ±2.0 degrees relative to horizontal, as shown in Figure V4–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) Orient the arm to point forward at 90 ±2 degrees relative to the inferior-superior orientation of the upper torso spine box incline.

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

(9) The impactor is guided, if needed, so that at contact with the dummy's arm rotation centerline (ref. item 23 in drawing 180–3000) the impactor's longitudinal axis is within ±1 degree of a horizontal plane and perpendicular to the midsagittal plane of the dummy. The centerpoint of the impactor face at contact is within 2 mm of the shoulder yoke assembly rotation centerline (drawing 180–3327), as shown in Figure V4–A in appendix A to this subpart.

(10) The dummy's arm-shoulder is impacted at 4.3 ±0.1 m/s with the impactor meeting the alignment and contact point requirements of paragraph (b)(9) of this section.

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

[1] Mx(oc) is the moment at occipital condyle (Newton-meters) and Fy is the lateral shear force (Newtons) measured by the load cell.