

than 5100 N and not greater than 6200 N.

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§ 572.186 Abdomen assembly.

(a) The abdomen assembly (175-5000) is part of the dummy assembly shown in drawing 175-0000 including load sensors specified in §572.189(e). When subjected to tests procedures specified in paragraph (b) of this section, the abdomen assembly shall meet performance requirements specified in paragraph (c) of this section.

(b) *Test procedure.*

(1) Soak the dummy assembly (175-0000), without suit (175-8000) and shoulder foam pad (175-3010), as specified in §572.189(n);

(2) The dummy is seated as shown in Figure U5 in appendix A to this subpart;

(3) The abdomen impactor is the same as specified in §572.189(a) except that on its rectangular impact surface is affixed a special purpose block whose weight is 1.0 ±0.01 kg. The block is 70 mm high, 150 mm wide and 60 to 80 mm deep. The impact surface is flat, has a minimum Rockwell hardness of M85, and an edge radius of 4 to 5 mm. The block's wide surface is horizontally oriented and centered on the longitudinal axis of the probe's impact face as shown in Figure U5-A in appendix A to this subpart;

(4) The impactor is guided, if needed, so that at contact with the abdomen its longitudinal axis is within ±0.5 degrees of a horizontal plane and perpendicular ±0.5 degrees to the midsagittal plane of the dummy and the centerpoint on the impactor's face is aligned within 5 mm of the center point of the middle load measuring sensor in the abdomen as shown in Figure U5;

(5) The impactor impacts the dummy's abdomen at 4.0 m/s ±0.1 m/s;

(6) Time zero is defined in §572.189(k).

(c) Performance criteria.

(1) The maximum sum of the forces of the three abdominal load sensors, specified in 572.189(e), shall be not less than 2200 N and not more than 2700 N and shall occur between 10 ms and 12.3 ms from time zero. The calculated sum of

the three load cell forces must be concurrent in time.

(2) Maximum impactor force (impact probe acceleration multiplied by its mass) is not less than 4000 N and not more than 4800 N occurring between 10.6 ms and 13.0 ms from time zero.

§ 572.187 Lumbar spine.

(a) The lumbar spine assembly consists of parts shown in drawing 175-5500. For purposes of this test, the lumbar spine is mounted within the headform assembly 175-9000 as shown in Figure U1 in appendix A to this subpart. When subjected to tests procedures specified in paragraph (b) of this section, the lumbar spine-headform assembly shall meet performance requirements specified in paragraph (c) of this section.

(b) *Test procedure.* (1) Soak the lumbar spine-headform assembly in a test environment as specified in §572.189(n);

(2) Attach the lumbar spine-headform assembly to the Part 572 pendulum test fixture per procedure in §572.183(b)(2) and as shown in Figure U2-A in appendix A to this subpart. Torque the lumbar hex nut (p/n 9000057) on to the lumbar cable assembly (175-5506) to 50 ±5 in-lb;

(3) Release the pendulum from a height sufficient to allow it to fall freely to achieve an impact velocity of 6.05 ±0.1 m/s measured at the center of the pendulum accelerometer (Figure 22) at the time the pendulum makes contact with its decelerating mechanism. The velocity-time history of the pendulum falls inside the corridor determined by the upper and lower boundaries specified in Table 1 to paragraph (b) of this section;

(4) Allow the lumbar spine to flex without the lumbar spine or the headform making contact with any object;

(5) Time zero is defined in §572.189(j).

TABLE 1 TO PARAGRAPH (b)—ES-2RE LUMBAR SPINE CERTIFICATION PENDULUM VELOCITY CORRIDOR

Upper boundary		Lower boundary	
Time (ms)	Velocity (m/s)	Time (ms)	Velocity (m/s)
1.0	0.00	0.0	-0.05
3.7	-0.24	2.7	-0.425
27.0	-5.80	24.5	-6.50