TABLE A

Component assembly	Drawing No.
(i) Head Assembly	420–1000
(ii) Neck Assembly	420–2000
(iii) Upper Torso Assembly	420–3000
(iv) Lower Torso Assembly	420–4000
(v) Complete Leg Assembly—left	420–5000–1
(vi) Complete Leg Assembly—right	420–5000–2
(vii) Complete Arm Assembly—left	420–7000–1
(viii) Complete Arm Assembly—right	420–7000–2

(b) The structural properties of the dummy are such that the dummy conforms to this Subpart in every respect before use in any test.

§ 572.172 Head assembly and test procedure.

(a) The head assembly for this test consists of the complete head (drawing 420–1000), a six-axis neck transducer (drawing SA572–S11, included in drawing 420–0000), or its structural replacement (drawing 420–383X), and 3 accelerometers (drawing SA572–S4, included in drawing 420–0000) (all incorporated by reference, see § 572.170).

(b) When the head assembly is dropped from a height of 376.0 ±1.0 mm (14.8 ±0.04 in) in accordance with paragraph (c) of this section, the peak resultant acceleration at the location of the accelerometers at the head CG may not be less than 250 G or more than 300 G. The resultant acceleration vs. time history curve shall be unimodal; oscillations occurring after the main pulse must be less than 10 percent of the peak resultant acceleration. The lateral acceleration shall not exceed 15 G (zero to peak).

(c) Head test procedure. The test procedure for the head is as follows:

(1) Soak the head assembly in a controlled environment at any temperature between 18.9 and 25.6 °C (66 and 78 °F) and a relative humidity from 10 to 70 percent for at least four hours prior to a test.

(2) Prior to the test, clean the impact surface of the skin and the impact plate surface with isopropyl alcohol, trichloroethane, or an equivalent. The skin of the head must be clean and dry for testing.

(3) Suspend and orient the head assembly as shown in Figure T1. The lowest point on the forehead must be 376.0 ±1.0 mm (14.8 ±0.04 in) from the impact surface. The 1.57 mm (0.062 in) diameter holes located on either side of the dummy's head shall be used to ensure that the head is level with respect to the impact surface.

(4) Drop the head assembly from the specified height by means that ensure a smooth, instant release onto a rigidly supported flat horizontal steel plate which is 50.8 mm (2 in) thick and 610 mm (24 in) square. The impact surface shall be clean, dry and have a micro finish of not less than 203.2×10^{-6} mm (8 micro inches) (RMS) and not more than 2032.0×10^{-6} mm (80 micro inches) (RMS).

(5) Allow at least 2 hours between successive tests on the same head.

§ 572.173 Neck assembly and test procedure.

(a) The neck assembly for the purposes of this test consists of the assembly of components shown in drawing 420–2000 (incorporated by reference, see § 572.170).

(b) When the head-neck assembly consisting of the head (drawing 420–1000), neck (drawing 420–2000), six-channel neck transducer (SA572–S11, included in drawing 420–0000), lower neck bracket assembly (drawing 420–2070), and either three uniaxial accelerometers (drawing SA572–S4, included in drawing 420–0000) or their mass equivalent installed in the head assembly as specified in drawing 420–1000 (all incorporated by reference, see § 572.170), is tested according to the test procedure in paragraph (c) of this section, it shall have the following characteristics:

(1) *Flexion*. (i) Plane D, referenced in Figure T2, shall rotate in the direction of preimpact flight with respect to the

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pendulum's longitudinal centerline between 76 degrees and 90 degrees. During the time interval while the rotation is within the specified corridor, the peak moment, measured by the neck transducer (drawing SA572–S11, included in drawing 420–0000) (incorporated by reference, see §572.170), about the occipital condyles may not be less than 50 N-m (36.9 ft-lbf) and not more than 62 N-m (45.7 ft-lbf). The positive moment shall decay for the first time to 10 N-m (7.4 ft-lbf) between 86 ms and 105 ms after time zero.

(ii) The moment shall be calculated by the following formula: Moment (N-m) = $M_y - (0.01778) \times (F_X)$.

(iii) M_y is the moment about the y-axis in Newton-meters, F_X is the shear force measured by the neck transducer (drawing SA572–S11) in Newtons, and 0.01778 is the distance in meters from the load center of the neck transducer to the occipital condyle.

(2) *Extension.* (i) Plane D, referenced in Figure T3, shall rotate in the direction of preimpact flight with respect to the pendulum's longitudinal centerline between 96 degrees and 115 degrees. During the time interval while the rotation is within the specified corridor, the peak moment, measured by the neck transducer (drawing SA572–S11, included in drawing 420–0000) (incorporated by reference, see §572.170), about the occipital condyles may not be more than −37 N-m (−27.3 ft-lbf) and not less than −46 N-m (−33.9 ft-lbf). The positive moment shall decay for the first time to −10 N-m (−7.4 ft-lbf) between 100 ms and 116 ms after time zero.

(ii) The moment shall be calculated by the following formula: Moment (N-m) = $M_y - (0.01778) \times (F_X)$.

(iii) M_y is the moment about the y-axis in Newton-meters, F_X is the shear force measured by the neck transducer (drawing SA572–S11, included in draw-

ing 420–0000) (incorporated by reference, see §572.170) in Newtons, and 0.01778 is the distance in meters from the load center of the neck transducer to the occipital condyle.

(3) Time zero is defined as the time of initial contact between the pendulum striker plate and the honeycomb material. All data channels shall be at the zero level at this time.

(c) *Test procedure.* The test procedure for the neck assembly is as follows:

(1) Soak the neck assembly in a controlled environment at any temperature between 20.6 and 22.2 °C (69 and 72 °F) and a relative humidity between 10 and 70 percent for at least four hours prior to a test.

(2) Torque the hex nut (drawing 420–2000, part 9000130) on the neck cable (drawing 420–2060) (both incorporated by reference, see §572.170) to 0.9 ±0.2 N-m (8 ±2 in-lbf) before each test on the same neck.

(3) Mount the head-neck assembly, defined in paragraph (b) of this section, on the pendulum described in Figure 22 of 49 CFR part 572 so that the leading edge of the lower neck bracket coincides with the leading edge of the pendulum as shown in Figure T2 for flexion tests and Figure T3 for extension tests.

(4)(i) Release the pendulum and allow it to fall freely from a height to achieve an impact velocity of 6.1 ±0.12 m/s (20.0 ±0.4 ft/s) for flexion tests and 5.03 ±0.12 m/s (16.50 ±0.40 ft/s) for extension tests, measured by an accelerometer mounted on the pendulum as shown in Figure T2 at the instant of contact with the honeycomb.

(ii) Stop the pendulum from the initial velocity with an acceleration vs. time pulse that meets the velocity change as specified below. Integrate the pendulum acceleration data channel to obtain the velocity vs. time curve:

TABLE B—PENDULUM PULSE

Time (ms)	Flexion		Extension	
	M/s	ft/s	m/s	ft/s
10	1.64–2.04	5.38–6.69	1.49–1.89	4.89–6.20
20	3.04–4.04	9.97–13.25	2.88–3.68	9.45–12.07
30	4.45–5.65	14.60–18.53	4.20–5.20	13.78–17.06