

§572.130(a)(1)), the titles of which are listed in Table A;

(2) Parts List and Drawings, Part 572 Subpart O Hybrid III Fifth Percentile Small Adult Female Crash Test Dummy (H-III5F, Alpha Version) (January 2000) (refer to §572.130(a)(1)(ix)).

TABLE A

Component assembly	Drawing No.
Head Assembly	880105-100X
Neck Assembly	880105-250
Upper Torso Assembly	880105-300
Lower Torso Assembly	880105-450
Complete Leg Assembly—left	880105-560-1
Complete Leg Assembly—right	880105-560-2
Complete Arm Assembly—left	880105-728-1
Complete Arm Assembly—right	880105-728-2

(b) Adjacent segments are joined in a manner such that, except for contacts existing under static conditions, there is no contact between metallic elements throughout the range of motion or under simulated crash impact conditions.

(c) 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 those specified in Standard 208, Occupant Crash Protection.

§572.132 Head assembly and test procedure.

(a) The head assembly (refer to §572.130(a)(1)(i)) for this test consists of the complete head (drawing 880105-100X), a six-axis neck transducer (drawing SA572-S11) or its structural replacement (drawing 78051-383X), and 3 accelerometers (drawing SA572-S4).

(b) When the head assembly is dropped from a height of 376.0±1.0 mm (14.8±0.04 in) in accordance with subsection (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 tempera-

ture 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 19 of 49 CFR 572. 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 (2.0 in) thick and 610 mm (24.0 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.

§572.133 Neck assembly and test procedure.

(a) The neck assembly (refer to §572.130(a)(1)(ii)) for the purposes of this test consists of the assembly of components shown in drawing 880105-250.

(b) When the head-neck assembly consisting of the head (drawing 880105-100X), neck (drawing 880105-250), bib simulator (drawing 880105-371), upper neck adjusting bracket (drawing 880105-207), lower neck adjusting bracket (drawing 880105-208), six-axis neck transducer (drawing SA572-S11), and either three accelerometers (drawing SA572-S4) or their mass equivalent installed in the head assembly as specified in drawing 880105-100X, is tested according to the test procedure in subsection (c) of this section, it shall have the following characteristics:

(1) *Flexion.* (i) Plane D, referenced in Figure O1, shall rotate in the direction of preimpact flight with respect to the

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pendulum's longitudinal centerline between 77 degrees and 91 degrees. During the time interval while the rotation is within the specified corridor, the peak moment, measured by the neck transducer (drawing SA5572-311), about the occipital condyles may not be less than 69 N-m (51 ft-lbf) and not more than 83 N-m (61 ft-lbf). The positive moment shall decay for the first time to 10 N-m (7.4 ft-lbf) between 80 ms and 100 ms after time zero.

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

(iii) M_y is the moment about the y-axis, F_x is the shear force measured by the neck transducer (drawing SA572-S11), and 0.01778m is the distance from force to occipital condyle.

(2) *Extension.* (i) Plane D, referenced in Figure O2, shall rotate in the direction of preimpact flight with respect to the pendulum's longitudinal centerline between 99 degrees and 114 degrees. During the time interval while the rotation is within the specified corridor, the peak moment, measured by the neck transducer (drawing SA5572-S11), about the occipital condyles shall be not more than -53 N-m (-39 ft-lbf) and not less than -65 N-m (-48 ft-lbf). The negative moment shall decay for the first time to -10 N-m (-7.4 ft-lbf) between 94 ms and 114 ms after time zero.

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

(iii) M_y is the moment about the y-axis, F_x is the shear force measured by the neck transducer (drawing SA572-S11), and 0.01778 m is the distance from force to 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 jam nut (drawing 9000018) on the neck cable (drawing 880105-206) to 1.4 ± 0.2 N-m (12.0 ± 2.0 in-lb).

(3) Mount the head-neck assembly, defined in subsection (b) of this section, on the pendulum described in Figure 22 of 49 CFR 572 so that the midsagittal plane of the head is vertical and coincides with the plane of motion of the pendulum as shown in Figure O1 for flexion tests and Figure O2 for extension tests.

(4)(i) Release the pendulum and allow it to fall freely from a height to achieve an impact velocity of 7.01 ± 0.12 m/s (23.0 ± 0.4 ft/s) for flexion tests and 6.07 ± 0.12 m/s (19.9 ± 0.40 ft/s) for extension tests, measured by an accelerometer mounted on the pendulum as shown in Figure 22 of 49 CFR 572 at the instant of contact with the honey comb.

(ii) Stop the pendulum from the initial velocity with an acceleration vs. time pulse which 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	Extension		Flexion	
	m/s	ft/s	m/s	ft/s
10	2.1-2.5	6.9-8.2	1.5-1.9	4.9-6.2
20	4.0-5.0	13.1-16.4	3.1-3.9	10.2-12.8
30	5.8-7.0	19.5-23.0	4.6-5.6	15.1-18.4

§572.134 Thorax assembly and test procedure.

(a) Thorax (Upper Torso) Assembly (refer to §572.130(a)(1)(iii)). The thorax

consists of the part of the torso assembly shown in drawing 880105-300.

(b) When the anterior surface of the thorax of a completely assembled