§ 572.19  Lumbar spine, abdomen and pelvis.

(a) The lumbar spine, abdomen, and pelvis consist of the part of the torso shown in assembly drawing SA 103C 001 by number SA 103C 030 and conforms to each of the applicable drawings listed under this number on drawing SA 103C 002, sheets 10 and 11.

(b) When subjected to continuously applied force in accordance with paragraph (c) of this section, the lumbar spine assembly shall flex by an amount that permits the rigid thoracic spine to rotate from its initial position in accordance with Figure 18 of this subpart by 40 degrees at a force level of not less than 34 pounds and not more than 47 pounds, and straighten upon removal of the force to within 5 degrees of its initial position.

(c) Test procedure.

(1) The dummy with lower legs removed is positioned in an upright seated position on a seat as indicated in Figure 18, ensuring that all dummy component surfaces are clean, dry and untreated unless otherwise specified.

(2) Attach the pelvis to the seating surface by a bolt C/328, modified as shown in Figure 18, and the upper legs at the knee axial rotation joints by the attachments shown in Figure 18. Tighten the mountings so that the pelvis-lumbar joining surface is horizontal and adjust the femur ball-flange screws at each hip socket joint to 50 inch pounds torque. Remove the head and
§ 572.20 Limbs.

The limbs consist of the assemblies shown on drawing SA 103C 001 as Nos. SA 103C 041, SA 103C 042, SA 103C 051, SA 103C 052, SA 103C 061, SA 103C 062, SA 103C 071, SA 103C 072, SA 103C 081, SA 103C 082, and conform to each of the applicable drawings listed under their respective numbers of the drawing SA 103C 002, sheets 12 through 21.

§ 572.21 Test conditions and instrumentation.

(a)(1) The test probe used for head and thoracic impact tests is a cylinder 3 inches in diameter, 13.8 inches long, and weighing 10 lbs., 6 ozs. Its impacting end has a flat right face that is rigid and that has an edge radius of 0.5 inches.

(2) The head and thorax assembly may be instrumented with a Type A or Type C accelerometer.

(i) Type A accelerometer is defined in drawing SA–572 S1.

(ii) Type C accelerometer is defined in drawing SA–572 S2.

(b) Head accelerometers. Install one of the triaxial accelerometers specified in § 572.21(a)(2) on a mounting block located on the horizontal transverse bulkhead as shown in the drawings sub-referenced under assembly SA 103C 010 so that the seismic mass centers of each sensing element are positioned as specified in this paragraph, relative to the head accelerometer reference point located at the intersection of a line connecting the longitudinal centerlines of the transfer pins in the side of the dummy head with the midsagittal plane of the dummy head.

(i) The sensing elements of the Type C triaxial accelerometer are aligned as follows:

(1) Align one sensitive axis parallel to the vertical bulkhead and coincident with the midsagittal plane, with the seismic mass center located 0.2 inches dorsal to, and 0.1 inches inferior to the head accelerometer reference point.

(ii) Align the second sensitive axis with the horizontal plane, perpendicular to the midsagittal plane, with the seismic mass center located 0.1 inches inferior, 0.4 inches to the right of, and 0.9 inches dorsal to the head accelerometer reference point.

(iii) Align the third sensitive axis so that it is parallel to the midsagittal and horizontal planes, with the seismic mass center located 0.1 inches inferior to, 0.6 inches dorsal to, and 0.4 inches to the right of the head accelerometer reference point.

(iv) All seismic mass centers are positioned with ± 0.05 inches of the specified locations.

(2) The sensing elements of the Type A triaxial accelerometer are aligned as follows:

(i) Align one sensitive axis parallel to the vertical bulkhead and coincident with midsagittal planes, with the seismic mass center located from 0.2 to 0.47 inches dorsal to, from 0.01 inches inferior to 0.21 inches superior, and from 0.0 to 0.17 inches left of the head accelerometer reference point.

(ii) Align the second sensitive axis with the horizontal plane, perpendicular to the midsagittal plane, with the seismic mass center located 0.1 to 0.13 inches inferior to, 0.17 to 0.4 inches to the right of, and 0.47 to 0.9 inches dorsal of the head accelerometer reference point.

(iii) Align the third sensitive axis so that it is parallel to the midsagittal and horizontal planes, with the seismic mass center located 0.1 to 0.13 inches inferior to, 0.6 to 0.81 inches dorsal to, and from 0.17 inches left to 0.4 inches dorsal of the head accelerometer reference point.

(2) Head accelerometers. Install one of the triaxial accelerometers specified in § 572.21(a)(2) on a mounting block located on the horizontal transverse bulkhead as shown in the drawings sub-referenced under assembly SA 103C 010 so that the seismic mass centers of each sensing element are positioned as specified in this paragraph, relative to the head accelerometer reference point located at the intersection of a line connecting the longitudinal centerlines of the transfer pins in the side of the dummy head with the midsagittal plane of the dummy head.

(i) The sensing elements of the Type C triaxial accelerometer are aligned as follows:

(1) Align one sensitive axis parallel to the vertical bulkhead and coincident with the midsagittal plane, with the seismic mass center located 0.2 inches dorsal to, and 0.1 inches inferior to the head accelerometer reference point.

(ii) Align the second sensitive axis with the horizontal plane, perpendicular to the midsagittal plane, with the seismic mass center located 0.1 inches inferior, 0.4 inches to the right of, and 0.9 inches dorsal to the head accelerometer reference point.

(iii) Align the third sensitive axis so that it is parallel to the midsagittal and horizontal planes, with the seismic mass center located 0.1 inches inferior to, 0.6 inches dorsal to, and 0.4 inches to the right of the head accelerometer reference point.

(2) The sensing elements of the Type A triaxial accelerometer are aligned as follows:

(i) Align one sensitive axis parallel to the vertical bulkhead and coincident with midsagittal planes, with the seismic mass center located from 0.2 to 0.47 inches dorsal to, from 0.01 inches inferior to 0.21 inches superior, and from 0.0 to 0.17 inches left of the head accelerometer reference point.

(ii) Align the second sensitive axis with the horizontal plane, perpendicular to the midsagittal plane, with the seismic mass center located 0.1 to 0.13 inches inferior to, 0.17 to 0.4 inches to the right of, and 0.47 to 0.9 inches dorsal of the head accelerometer reference point.

(iii) Align the third sensitive axis so that it is parallel to the midsagittal and horizontal planes, with the seismic mass center located 0.1 to 0.13 inches inferior to, 0.6 to 0.81 inches dorsal to, and from 0.17 inches left to 0.4 inches.