

Annex 6

DISPLACEMENT, BACKSET RETENTION, AND STRENGTH TEST PROCEDURE

1. PURPOSE

Demonstrate compliance with the displacement requirements of paragraph 5.2.3.3. of this regulation with paragraph 2. of this Annex.

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Demonstrate compliance with the displacement and backset retention requirements of paragraph 5.2.3.2. of this regulation with paragraph 3. of this Annex.

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Demonstrate compliance with the strength requirements of paragraph 5.2.4 of this regulation with paragraph 4. of this Annex.

2. PROCEDURE FOR DISPLACEMENT

The load vectors that generate moment on the head restraint are initially contained in a vertical plane parallel to the vehicle longitudinal centreline.

2.1 Seat set-up

If the seat back is adjustable, it is adjusted to a position specified by the vehicle manufacturer. If there is more than one inclination position closest to the position specified by the manufacturer, set the seat back inclination to the position closest to and rearward of the manufacturer specified position. If the head restraint position is independent of the seat back inclination position, compliance is determined at a seat back inclination position specified by the manufacturer. Adjust the head restraint to the highest position of vertical adjustment intended for occupant use. Adjust the head restraint to the rearmost (relative to the seat) position of horizontal adjustment backset position.

2.2 In the seat, place a test device having, when viewed laterally, the back pan dimensions and torso line (vertical centre line) of the three dimensional H-point

machine, as specified in Annex 13, with the head room probe in the full back position.

2.3 Establish the displaced torso line by creating a rearward moment of 373 ± 7.5 Nm about the R-point by applying a force to the seat back through the back pan at the rate of 2.5 Nm/second to 37.3 Nm/second. The initial location on the back pan of the moment generating force vector has a height of 290 mm \pm 13 mm. Apply the force vector normal to the torso line and maintain it within 2 degrees of a vertical plane parallel to the vehicle longitudinal centreline. Constrain the back pan to rotate about the R-point. Rotate the force vector direction with the back pan.

2.4 Maintain the position of the back pan as established in paragraph 2.3. of this Annex. Using a 165 ± 2 mm diameter spherical head form, establish the head form initial reference position by applying, perpendicular to the displaced torso line, a rearward initial load at the seat centreline at a height 65 ± 3 mm below the top of the head restraint that will produce a $37. \pm 0.5$ Nm moment about the R-point. After maintaining this moment for 5 seconds, measure the rearward displacement of the head form during the application of the load.

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2.4.1 When determining the rearward displacement for head restraints at a gap greater than 60 mm in accordance with paragraph 5.1.3 of this regulation, the load of paragraph 2.4 is applied through the centre of gravity if the smallest of the sections of the gap, along transversal planes parallel to the torso line.

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2.4.2 If the presence of gaps prevents the application of the force, as described in paragraph 2.4 of this Annex at 65 ± 3 mm from the top of the head restraint, the distance may be reduced so that the axis of the force passes through the centre line of the frame element nearest to the gap.

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3. PROCEDURES FOR BACKSET RETENTION AND DISPLACEMENT

3.1 If the seat back is adjustable, it is adjusted to a position specified by the vehicle manufacturer. If there is more than one inclination position closest to the position specified by the manufacturer, set the seat back inclination to the position closest to and rearward of the manufacturer specified position. If the head restraint position is independent of the seat back inclination position, compliance is determined at a seat back inclination position specified by the manufacturer. Adjust the head restraint to the highest position of vertical adjustment intended for occupant use.

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<#>Increase the initial load at the rate between 2.5 Nm/second and 37.3 Nm/second until a 373 ± 7.5 Nm moment about the R-point is produced. Maintain the load level producing that moment for not less than 5 seconds and then measure the rearward displacement of the head form relative to the displaced torso line.¶

3.2 Adjust the head restraint to any backset position.

3.3 In the seat, place a test device having the back pan dimensions and torso line (vertical centre line), when viewed laterally, with the head room probe in the full back position, of the three dimensional H-point machine;

3.4 Establish the displaced torso line by creating a posterior moment of 373 ± 7.5 Nm about the R-point by applying a force to the seat back through the back pan at the rate between 2.5 Nm/second and 37.3 Nm/second. The initial location on the back pan of the moment generating force vector has a height of 290 mm \pm 13 mm. Apply the force vector normal to the torso line and maintain it within 2 degrees of a vertical plane parallel to the vehicle longitudinal centreline. Constrain the back pan to rotate about the R-point. Rotate the force vector direction with the back pan.

3.5 Maintain the position of the back pan as established in paragraph 3.4. of this Annex. Using a 165 ± 2 mm diameter spherical head form, establish the head form initial reference position by applying, perpendicular to the displaced torso line, a rearward initial load at the seat centreline at a height 65 ± 3 mm below the top of the head restraint that will produce a 37 ± 0.5 Nm moment about the R-point. Measure the rearward displacement of the head form during the application of the load.

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3.5 If the presence of gaps prevents the application of the force, as described in paragraph 3.5. of this Annex at 65 ± 3 mm from the top of the head restraint, the distance may be reduced so that the axis of the force passes through the centre line of the frame element nearest to the gap.

3.6 Increase the initial load at the rate of 2.5 Nm/second to 37.3 Nm/second until a 373 ± 7.5 Nm moment about the R-point is produced. Maintain the load level producing that moment for not less than 5 seconds and then measure the rearward displacement of the head form relative to the displaced torso line.

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3.7 Reduce the load at the rate of 2.5 Nm/second to 37.3 Nm/second until 0 Nm. Wait 10 minutes. Re-load to 37 ± 0.7 Nm about the R-point. While maintaining the load level producing that moment, measure the rearward displacement of the head form position with respect to its initial reference position.

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4. STRENGTH

Increase the load specified in paragraph 2.6. or paragraph 3.8. of this Annex at the rate between 5 N/second and 200 N/second to 890 N \pm 5 N and maintain the applied load for not less than 5 seconds.

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Annex 9, Footnote 2:

The H-point of the dummy shall coincide within 12.7 mm (1/2 inch) in the vertical dimension and 12.7 mm (1/2 inch) in the horizontal dimension of a point 6.4 mm (1/4) inch below the position of the H-point determined by using the equipment and procedures specified in Annex 12 and Annex 13 except that the length of the lower leg and thigh segments of the H-point machine shall be adjusted to 414 mm and 401 inches.