

Specification for

Seat belt booster cushions

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- Department of the Environment (Transport and Road Research Laboratory)
- Department of Transport
- Institute of Housing
- Man-made Fibres Producers' Committee
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- Royal Automobile Club
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- Society of Motor Manufacturers and Traders Limited
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- University of Birmingham

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Foreword

This British Standard has been prepared under the direction of the Automobile Standards Committee at the request of the Department of Transport.

Whilst it is permissible for seat belt booster cushions to be used with a lap belt in the centre front seat, in vehicles where these are fitted, or in the rear seats, it should be noted that the amount of protection provided by such devices is not as great as when they are used with a lap and diagonal seat belt. For a child, the greatest protection is provided by an approved harness or safety seat.

A British Standard does not purport to include all the necessary provisions of a contract. Users of British Standards are responsible for their correct application.

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Summary of pages

This document comprises a front cover, an inside front cover, pages i and ii, pages 1 to 22, an inside back cover and a back cover.

This standard has been updated (see copyright date) and may have had amendments incorporated. This will be indicated in the amendment table on the inside front cover.

1 Scope

This British Standard specifies requirements for seat belt booster cushions that are for use with a lap seat belt, a lap and diagonal seat belt or a child safety harness which carries a BSI Kitemark, an “E” Mark or an “e” Mark. These cushions are intended for use by persons of small stature (of mass 15 kg or more) occupying forward facing seats of motor vehicles for the purpose of improving the fit of the seat belt and therefore the protection against injury.

NOTE The titles of the publications referred to in this standard are listed on the inside back cover.

2 Definition

For the purposes of this standard the following definition applies.

booster cushion

a firm cushion that can include an integral back above the seating plane, designed for a person of small stature to sit on to improve the fit of an approved¹⁾ lap seat belt, lap and diagonal seat belt or a child safety harness. It is restrained by either the seat belt or child safety harness or by a separate means. It may also, as appropriate, incorporate design features to improve the lie of the seat belt

3 Performance

3.1 General

3.1.1 The booster cushion shall be so designed and constructed that, when correctly installed and properly used by an occupant, the seat belt will operate satisfactorily and reduce the risk of bodily injury in the event of an accident. The booster cushion shall be restrained against forward movement directly by the adult seat belt or a separate restraining device, and not by the occupant except where a back is provided. In this case the total mass of the device shall not exceed 2 kg and the height of the back shall be not less than 600 mm above a horizontal surface when the device is resting on that surface with the back vertical and without load.

3.1.2 The booster cushion shall not have any sharp edges or other features liable to cause injury to the person seated on it or other occupants of the vehicle or to damage the seat belt.

3.1.3 The booster cushion shall be so designed and constructed that the occupant is released solely by release of the seat belt and that this is not prevented by the booster cushion trapping any part of the seat belt assembly.

3.2 Dynamic test

3.2.1 The booster cushion shall be tested in accordance with Appendix A and shall comply with **3.2.2** to **3.2.4**.

3.2.2 At no time during the test described in Appendix A shall the forward movement of the hip pivot of the manikin exceed 150 mm. The maximum forward movement of the manikin at the chest level shall exceed the maximum forward movement of the hip pivot, but shall not exceed 300 mm.

3.2.3 In side elevation, the lap belt, where it passes over the manikin installed as described in Appendix A, shall be at an angle greater than 45° to the horizontal.

3.2.4 The booster cushion shall remain substantially in position during the test.

4 Instructions and information

Each booster cushion shall be accompanied by the following instructions and information:

- a) the statement that “when used in accordance with these instructions the booster cushion allows an approved adult seat belt or child safety harness to be used by a person of small stature”;
- b) the mass range for which it is intended;
- c) the correct method of installing the booster cushion; and the seating positions for which it is intended;
- d) the importance of ensuring that the lap strap is worn immediately below the stomach and across the tops of the thighs and also the desirability of wearing the straps tightly;
- e) the method recommended for cleaning the booster cushion;
- f) a general warning to the user of the danger of making any alterations to the booster cushion without the approval of the manufacturer;
- g) a warning that the booster cushion should not be used if it is damaged or if it has been subjected to accident loads even if damage is not obvious;
- h) a warning that an ordinary loose cushion should not be substituted for, or used with, a booster cushion.

¹⁾ An approved seat belt is one that carries a BSI Kitemark, an “E” Mark or an “e” Mark (see clause 1).

5 Marking

Each booster cushion complying with this British Standard shall be permanently and indelibly marked with the following:

- a) the number of this British Standard, i.e. BS AU 185²⁾;
- b) the name, trade mark or other means of identification of the responsible manufacturer;
- c) the mass range for which it is intended.

²⁾ Marking BS AU 185 on or in relation to a product is a claim by the manufacturer that the product has been manufactured to the requirements of the standard. The accuracy of such a claim is therefore solely the manufacturer's responsibility. Enquiries as to the availability of third party certification to support such claims should be addressed to the Director, Quality Assurance Division, BSI, Maylands Avenue, Hemel Hempstead, Herts HP2 4SQ for certification marks administered by BSI or to the appropriate authority for other certification marks.

Appendix A Dynamic test

A.1 Mount the booster cushion in accordance with the manufacturer's instructions on a trolley equipped with the seat and seat belt anchorages described in Appendix B. Fit a reference seat belt as described in Appendix C to the seat belt anchorages. Use a new seat belt for each test.

A.2 Seat the dressed manikin specified in Appendix D on the booster cushion and fit the seat belt to the manikin as follows.

Remove the upper anchor plate of the seat belt from the test anchorage C and fit it to setting anchorage D. Firmly adjust the seat belt to the manikin but in such a way that the compression of the test seat cushion is not more than 10 mm. Without further adjustment of the seat belt, refit the upper anchorage plate to the test anchorage position.

A.3 Propel the trolley in such a way that the velocity change is $50 + 0, - 2$ km/h and the manikin remains stable. Decelerate the trolley using either the apparatus described in Appendix E or any other device giving equivalent results. This apparatus shall meet the performance requirements specified in Appendix F.

A.4 Check that the booster cushion has not damaged the seat belt or the manikin.

A.5 Check that release of the seat belt is not prevented by the booster cushion trapping any part of the seat belt assembly.

Table 1 — Characteristics of polyurethane foam filling

Characteristic	Value
Density (in kg/m ³)	35 to 45
Compression stiffness Pressure, p , in N/cm ² , to produce a deflection of 25 % 50 % 65 %	0.25 ± 0.05 0.37 ± 0.05 0.50 ± 0.05
Compression stiffness factor Measured values of p at 65 %/ p at 25 %	< 2.5
Compression set (in %)	< 15
Tear strength (N/cm)	≥ 5
Breaking strength (in N/cm ²)	≥ 10
Elongation at rupture (in %)	≥ 100

Appendix B Description of the test seat and anchorages

B.1 Test seat

B.1.1 The seat shall comprise a fixed rigid back and a seat cushion as specified in B.1.2 to B.1.5. The dimension shall be in accordance with Figure 1.

B.1.2 The fixed rigid back shall be 500 mm high and tilted 20° rearwards and shall be covered with polyurethane foam of 70 mm thickness, whose characteristics are given in Table 1. The lower part of the back shall be made of a 20 mm diameter tube.

B.1.3 The seat cushion shall be made from the material described in Table 1. The rear part of the seat cushion shall be made from a rigid sheet metal, which has its upper edge constructed from a 20 mm diameter tube. For the tests, the seat cushion shall be covered with a light cloth not liable to change the rigidity.

B.1.4 An opening shall be made between the back and the seat cushion as shown in Figure 1.

B.1.5 The width of the seat shall be 800 mm.

B.2 Anchorages

B.2.1 The anchorages shall be positioned as shown in Figure 2.

B.2.2 The anchorages A, B and C shall comply with ECE Regulation No. 14 and shall be used for the dynamic test.

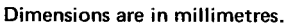


Figure 1 — Dimensions of seat trolley

