



**COMMONWEALTH OF AUSTRALIA**

**AUSTRALIAN DESIGN RULE 5B**

**FOR  
SEAT BELT ANCHORAGES**

As Endorsed by the  
Australian Transport Advisory Council

The intention of this Australian Design Rule is to define standards for seat belt anchorage points so that seat belt assemblies may be adequately secured to the vehicle structure and will meet comfort requirements in use.

The Australian Transport Advisory Council has recommended to Commonwealth, State and Territory Governments that all motor vehicles specified below be equipped with seat belt anchorages complying with Australian Design Rule 5B - Seat Belt Anchorages.

VEHICLE CATEGORY	RULE		AMENDMENT
	MANUFACTURED ON OR AFTER		
	5B		
Passenger Cars			
Forward Control Passenger Vehicles up to 8 seats	1 Jan 1985+		1 Jan 1987%
9 seats	1 Jan 1985#	1 Jan 1986@	1 Jan 1987%
Other Passenger Cars	1 Jan 1975&		1 Jan 1982+*
Passenger Car Derivatives	1 Jan 1975&		1 Jan 1982+*
Multi-Purpose Passenger Cars	1 Jan 1975&		1 Jan 1982+*
Omnibuses up to 3.5 tonnes GVM			
up to 12 seats	1 July 1983#	1 Jan 1987@	1 Jan 1988%
over 12 seats	1 July 1983#		
up to 4.5 tonnes GVM	N/A		N/A
over 4.5 tonnes GVM	N/A		N/A
Motorcycles	N/A		N/A
Mopeds	N/A		N/A
Specially Constructed Vehicles	N/A		N/A
Other Vehicles not listed above			
up to 4.5 tonnes GVM	1 July 1975&		1 July 1982+*
over 4.5 tonnes GVM	N/A		N/A

- # Front Seats only (including driver's seating position); the requirements of Clause 5B.2.4.1.1 shall not apply
- @ Front seats (including driver's seating position) and the row of seats immediately to the rear thereof; the requirements of Clause 5B.2.4.1.1 shall not apply.
- + The requirements of Clauses 5B.2.4.1.1 and 5B.2.4.3.2 shall not apply.
- % All seats; the requirements of Clauses 5B.2.4.1.1 and 5B.2.4.3.1 shall not apply
- & The requirements of Clause 5B.2.4.1.2 shall not apply.

N/A - Not Applicable

GROSS VEHICLE MASS - Abbreviated to 'GVM'

\*Amended March 1985

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5B.1 Definitions

- 5B.1.1 Anchorage - That part of a vehicle designed to transfer loads from a seat belt assembly to the vehicle or seat and includes bolts, spacers and other hardware designed for the attachment of a seat belt assembly.
- 5B.1.2 Lap Anchorages - An anchorage provided to facilitate pelvic restraint.
- 5B.1.3 Final Torso Anchorage - An anchorage located in the vehicle to receive the anchor fitting of the upper torso strap of a lap-sash belt.
- 5B.1.4 Harness Torso Anchorage - An anchorage designed to facilitate upper torso restraint using a harness assembly.
- 5B.1.5 Anchor Fitting - The terminal part of a seat belt assembly designed to be attached to the vehicle or seat.
- 5B.1.6 Seat Belt Assembly - An arrangement of straps, anchor fittings, securing buckle and adjusting devices designed to restrain a motor vehicle occupant in the event of an impact. Devices for absorbing energy or for retracting the strap shall be considered as part of the seat belt assembly.
- 5B.1.7 Strap - A part of a seat belt assembly designed with flexure to facilitate correct and comfortable wearing.
- 5B.1.8 Lap-Sash Belt - A seat belt assembly combining a lap strap designed to provide pelvic restraint and a torso strap designed to provide upper torso restraint.
- 5B.1.9 Lap-Belt - A seat belt assembly designed to provide pelvic restraint only.
- 5B.1.10 Harness Belt - A seat belt assembly consisting of at least one strap designed to provide pelvic restraint and two or more torso straps designed to provide upper torso restraint.
- 5B.1.11 Sash Guide - A system of one or more devices which locates the torso strap of a lap-sash belt. Any device which alters the direction of the strap between the upper torso reference point and the final anchorage is a sash guide device. The anchor fitting at the final torso anchorage is always a sash guide device and may be the only sash guide device in the system.

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- 5B.1.12 Anchor Point - The point where the centreline of the strap passes into the anchor fitting or changes direction at the anchor fitting except that in the case of anchor fittings which are designed to pivot or are attached by a single bolt, the anchor point shall be regarded as the intersection of the axis of rotation, or the centreline of the bolt, with the surface of the vehicle structure.
- 5B.1.13 Sash Location Point - The point where the centreline of the strap first changes direction after leaving the upper torso reference point.
- 5B.1.14 Upper Torso Reference Point - An arbitrary point representing the last point of contact of a sash strap on a torso when the seat back is adjusted to the design seat back angle. It is located at a height of 530 mm above the seating reference point measured along the torso reference line 60 mm forward of the torso reference line when measured normal to the torso reference line and 120 mm from the seating reference plane when measured normal to the seating reference plane and towards the sash guide.
- 5B.1.15 Torso Reference Line - A line parallel to the small of the two dimensional manikin's back and extending through the seating reference point when the seat back is adjusted to a required seat back angle. The two dimensional manikin is as specified in SAE J826b - 'Devices for Use in Defining and Measuring Vehicle Seating Accommodation,' September 1974.
- 5B.1.16 Seat Back Angle - The angle between the torso reference line and the vertical line through the seating reference point.
- 5B.1.17 Pelvis Reference Point - A point used in simulating the correct position of a lap strap or the lap strap of a lap-sash belt. It is the point which is located at a height of 95 mm above and 70 mm forward of the seating reference point.
- 5B.1.18 Pelvis Reference Locus - The locus of a point fixed relative to the seat, coincident with the pelvis reference point when the seat is in the rearmost design position and extending over the design driving or riding range of seat travel.
- 5B.1.19 Forward, Rearward (when referenced to a seat or seating reference point) - means the direction relative to that which an occupant faces when seated.

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- 5B.1.20 Seating Reference Plane - The plane as established by the conditions specified in Clause 5B.8.
- 5B.1.21 Transverse Distance S - The shortest transverse distance in mm from the seating reference plane to the point under consideration.
- 5B.1.22 Area A and Area B - Areas defined in Clause 5B.9.
- 5B.1.23 ECE R14.01 - Regulation No 14, incorporating the 01 series of amendments, to be annexed to the Agreement Concerning the Adopting of Uniform Conditions of Approval and Reciprocal Recognition of Approval for Motor Vehicle Equipment and Parts \*
- 5B.2 Anchorage Requirements
- 5B.2.1 General
- 5B.2.1.1 Seat Belt anchorages shall be provided for all seating positions except for the following vehicles where front anchorages only are required:
- (a) 9 seat Forward Control Passenger Vehicles manufactured before 1 January 1986
  - (b) Omnibus up to 3.5 tonnes GVM and up to 12 seats manufactured before 1 January 1987
  - (c) Omnibuses up to 3.5 tonnes GVM and over 12 seats. \*
- and except for the following vehicles where anchorages are only required for the front seating positions and the row of seat immediately to the rear thereof:
- (d) 9 seat Forward Control Passenger Vehicles manufactured before 1 January 1987
  - (e) Omnibuses up to 3.5 tonnes GVM and up to 12 seats manufactured before 1 January 1988
- 5B.2.1.2 Seating capacity shall be determined by the requirements of Clause 5.7.
- 5B.2.1.3 Except as provided in Clause 5B.2.1.4. all the requirements of this rule shall be met. \*
- 5B.2.1.4 For Forward Control Passenger Vehicles and Omnibuses, the location and strength requirements for anchorages except for the front seating positions may be in accordance with the requirements of ECE R14.01.
- 5B.2.2 Design of Anchorages - All anchorages shall be designed so that seat belt assemblies may be replaced readily. Any anchorage may be designed to receive more than one anchor fitting.

\* Amended July 1984

- 5B.2.3      Pelvic Restraint - For each seating position two lap anchorages shall be available.
- 5B.2.4      Upper Torso Restraint
- 5B.2.4.1.1    For all front outboard forward facing seating positions, provision shall be made for upper torso restraint provided that there is permanent structure other than the seat above a horizontal plane located 350 mm above the seating reference point and rearward of a vertical transverse plane through the upper torso reference point.
- 5B.2.4.1.2    For all front outboard forward facing seating positions, provision shall be made for upper torso restraint.
- 5B.2.4.2      For all outboard forward and rearward facing seating positions specified in Clause 5B.2.1.1, other than specified in Clause 5B.2.4.1.1 and Clause 5B.2.4.1.2 and Clause 5B.2.4.3; provision shall be made for upper torso restraint provided that there is permanent structure other than the seat above a horizontal plane located 350 mm above the seating reference point and rearward of a vertical transverse plane through the upper torso reference point. If the design provides for a harness belt, one or two harness torso anchorages shall be provided. Upper torso restraint shall not be provided for side facing seating positions. | \*
- 5B.2.4.3      Optional Anchorages
- 5B.2.4.3.1    Provision of upper torso restraint shall be optional in the case of outboard seating positions where the seat is designed to provide adjustment for of occupant conversion space to luggage or goods space and such seating positions are not the driver's or front passenger seating positions or the seating positions immediately to the rear thereof. | \*
- 5B.2.4.3.2    Except for Forward Control Passenger Vehicles and for Omnibuses up to 3.5 tonnes GVM which have 12 seats or less, provision of upper torso restraint shall be optional in the case of outboard seating positions where the seat is designed to provide adjustment for conversion of occupant space to luggage or goods space and such seating positions are not the driver's or front seat passenger seating positions or the seating positions immediately to the rear thereof.
- 5B.2.5      Location of Anchorages - The location of anchorages shall be such that the location of their appropriate anchor points meet the requirements of Clause 5B.4.

\* Amended March 1985

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5B.2.6 Strength of Anchorages

- 5B.2.6.1 Testing of anchorages shall be in accordance with the requirements of Clause 5B.5.
- 5B.2.6.2 Each anchorage shall be capable of supporting, for not less than one second, the load imposed on it by a body block subjected to the appropriate load as specified in Clause 5B.2.6.4, the body block being attached to the anchorage under test and another anchorage as specified in Clause 5B.5.4.1.
- 5B.2.6.3 An anchorage may be tested in a test relevant to that anchorage only or in combination with tests on other anchorages.
- 5B.2.6.4 The loads to be applied to body blocks for testing of anchorages shall be as specified in the following table.

Anchorage under test	Minimum total load to be applied to body block or blocks
Lap anchorages provided for lap belt system only. 9.0 kN for rear facing seating positions.	22.0 kN for front and side facing seating positions.
Anchorage common to both pelvic and upper torso restraint in a lap-sash belt or harness belt system.	22.0 kN for front facing seating positions. 9.0 kN for rear facing seating positions.
Lap anchorages provided for pelvic restraint only in a lap-sash belt system positions.	13.3 kN for front facing seating positions. 5B.3 kN for rear facing seating positions.
Final torso anchorages and harness torso anchorages. 7.0 kN for rear facing seating positions.	17.7 kN for front facing seating positions.

- 5B.2.7 Symmetrical Anchorages - Except where the requirements of Clause 5B.2.8 apply, in cases where two anchorages are identical in design and symmetrically located relative to the vertical longitudinal plane through the geometric centre of the vehicle, a test on one anchorage shall be considered also as a test on the other.

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5B.2.8 Adjacent and Multiple Anchorages

5B.2.8.1 For the purposes of this Clause, a single anchorage which provides for two seating positions shall be regarded as two anchorages.

5B.2.8.2 All anchorages which are provided for different seating positions and which are separated by not more than 200 mm shall be tested simultaneously, except that:

- (i) if one seating position faces forward and the other rearward, the anchorages shall be tested independently; and
- (ii) notwithstanding the requirements of Clause 5B.2.6, the minimum total load to be applied to the body block or blocks for testing one anchorage common to both pelvic and upper torso restraint may be limited to 17.7 kN.

5B.2.9 Anchorages on Pillars - In cases where a lap anchorage and either a final torso anchorage or a sash guide which is a load bearing sash guide as described in Clause 5B.3.1.2, are both located on a pillar which is in the vicinity of the front seat back and which joins the roof to the under body structure, the pillar shall be capable of supporting, for not less than one second, the loads imposed on it by body blocks subjected to loads totalling 26.6 kN such that:

- (i) not less than 13.3 kN is applied to the body block attached to the final torso anchorage or sash guide as appropriate and another anchorage as specified in Clause 5B.5.4.1; and
- (ii) the balance of the load is applied to a body block attached to the lap anchorage and another anchorage as specified in Clause 5B.5.4.1.

Testing to the requirements of this Clause may be incorporated in a test conducted in accordance with the provisions of Clause 5B.2.6.

5B.2.10 Adjustable Upper Torso Anchorages - In cases where one or more anchorages are adjustable, the anchorages shall be capable of meeting the relevant strength requirements of Clauses 5B.2.6, 5B.2.8 and 5B.2.9 with the anchorages in any position of adjustment.

5B.2.11 Adjustable Sash Location Points - In cases where an anchorage is fitted with a sash guide system incorporating an adjustable sash location point, the anchorage shall be capable of meeting the relevant strength requirements of Clauses 5B.2.6, 5B.2.8 and 5B.2.9 with the sash location point set in any position of adjustment.

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- 5B.3            Sash Guide Requirements
- 5B.3.1        General
- 5B.3.1.1      The sash guide shall be nominated by the vehicle manufacturer as being either:
- (i)            a component of a seat belt assembly; or
  - (ii)           not a component of a seat belt assembly. This latter category shall include those sash guides which are not intended to be replaced when the seat belt assembly is replaced.
- 5B.3.1.2      For the purpose of this Design Rule, a load bearing sash guide means a sash guide which remains integral with its supporting structure and retains the strap under the following loading conditions:
- (i)            the anchorage test loads specified in Clause 5B.2.6; or
  - (ii)           in the case where the sash guide is a component of a seat belt assembly, both the Dynamic Testing Procedure of Australian Design Rule No. 4C - Seat Belts, and the Static Strength of Assembly Test of Australian Standard, E35-1970, Seat Belt Assemblies for Motor Vehicles as specified in Australian Design Rule No. 4C - Seat Belts.
- 5B.3.1.3      In the case where the sash guide is not a component of a seat belt assembly (as nominated in Clause 5B.3.1.1(ii)), then the sash guide shall comply with the following Clauses of Australian Design Rule No. 4C (where applicable) as if the sash guide were part of the seat belt assembly: 4C.2.7 (but also excluding Clauses 3,7, and 11 from AS E35 Pt. 1-1970), 4C.3.3, 4C.5.1 & 5B.3.8 Deflection of Sash Guides.
- 5B.3.2        Provision - A sash guide shall be provided for each seating position to be fitted with a lap-sash belt.
- 5B.3.3        Strength - Except in cases where the anchor fitting at the final torso anchorage is the sash guide, the sash guide shall, when tested in accordance with the requirements of Clause 5B.6.1, withstand the loads in such a way that after application and removal of the loads there is no substantial deformation and the sash guide remains integral with its supporting structure and continues to retain the strap.



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- 5B.3.4 Seat Backs - In cases where the seat back is a sash guide device the design of the seat back shall be such that it is not possible for the strap to fall below the lower boundary of Area A at any point not greater than 300 mm from the seating reference plane. If this requirement is met by the use of a positive restraining device incorporated with or attached to the seat back then the device shall be designed to withstand a load of 50 N applied in a horizontal transverse direction away from the seating reference plane.
- 5B.3.5 Design of Sash Guide Devices - In cases where the sash guide which includes the sash location point is a load bearing sash guide, it shall retain the strap so that either:
- (i) the strap cannot be removed from the sash guide without the use of tools, or
  - (ii) the strap may be removed but returns to its design position when loads are applied.
- 5B.3.6 Sash Location Point - The sash guide shall be so designed that the sash location point meets the location requirements of Clause 5B.4.2.
- 5B.3.7 Failure of Sash Guide Devices - In cases where one or more sash guides in the sash guide system are not load bearing sash guides, the design of the system shall be such that in the installed design position:
- (i) the point of the first load bearing sash guide where the centreline of the strap first changes direction after leaving the preceding sash guide shall be in Area A or Area B; and
  - (ii) the maximum length of strap required to pass from that point to the upper torso reference point via the sash guide system, shall not exceed by more than 60 mm, the true distance between those points.
- 5B.3.8 Deflection of Sash Guides
- 5B.3.8.1 In the case of a sash guide system where the sash guide which includes the sash location point is a load bearing sash guide, and is not a component of a seat belt assembly (as nominated in Clause 5B.3.1) the design shall be such that:
- (i) in the case of a sash guide system with a non-adjustable sash location point, the sash guide system shall comply with Clauses 5B.3.8.2 and 5B.3.8.3, and

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- (ii) in the case of a sash guide system with an adjustable sash location point, the sash guide system shall comply with Clauses 5B.3.8.2 and 5B.3.8.4 with the sash location point set in any position of adjustment.
- 5B.3.8.2 When a load is applied as specified in Clause 5B.6.2, sash guide deflection shall not reduce, by more than 60 mm, the actual length of strap measured along the strap centreline between the upper torso reference point and the final anchor point.
- 5B.3.8.3 When a load is applied as specified in Clause 5B.6.2, the displaced sash location point shall lie in Area A or Area B.
- 5B.3.8.4 When a load is applied as specified in Clause 5B.6.2 the displaced sash location point shall not lie below horizontal transverse plan D J of Area 'A' or horizontal Plane C E of Area 'B' whichever is the lower.
- 5B.3.9 Effect of Seat Back Adjustment - In cases where the seat back is provided with at least one point of adjustment between the design seat back angle and 30° inclusive, the requirements of Clause 5B.3.7(ii) and 5B.3.8(i) shall be met when the upper torso reference point is determined with the seat back adjusted not to the design seat back angle but to the greatest available seat back angle up to and including 30°.
- 5B.4 Location of Anchor Points and Sash Guides
- 5B.4.1 Lap Anchor Points
- 5B.4.1.1 The two lap anchor points provided for a particular seating position shall lie on opposite sides of the seating reference plane in such a way that the sum of distances measured normal to the seating reference plane is not less than 165 mm.
- 5B.4.1.2 The lines joining the lap anchor point to the extreme points on the pelvis reference locus shall be inclined to the horizontal at angles of not less than 25° nor more than 80° when viewed normal to the seating reference plane.
- 5B.4.1.3 In cases where the line representing the centreline of the strap is not a straight line when viewed normal to the seating reference plane then:
- (i) with the seat in its most forward driving or riding position the line passing through the most forward point on the pelvis reference locus and extending rearward to the first point of contact with the seat or other device shall be inclined to the horizontal at an angle of not less than 25° and

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- (ii) with the seat in the most rearward driving or riding position the distance from the pelvis reference point to the lap anchor point measured along the centreline of the strap shall not exceed by more than 60 mm the distance from the pelvis reference point to the lap anchor point, except in the cases where the system is so designed that when tested in accordance with the load requirements of Clause 5B.2.6 the components of the vehicle or seat which cause the centreline of the strap between the lap anchor and the pelvis reference point to vary from a straight line, do not deflect or fail in such a manner that the effective length of the strap measured along the centreline between the lap anchor and the pelvis reference point is reduced by more than 60 mm.

5B.4.2 Sash Location Point

5B.4.2.1 For both conditions of load specified in Clause 5B.6.1 the following requirements shall be met.

5B.4.2.1.1 The sash location point shall be at least 140 mm from the seating reference plane.

5B.4.2.1.2 The sash location point shall lie in Area A.

5B.4.2.2 Notwithstanding the requirements of Clause 5B.4.2.1, the sash location point may be adjustable for comfort providing that:

- (i) at least one point in the range of adjustment shall permit the sash location point to comply with the requirements of Clause 5B.4.2.1.
- (ii) no point of adjustment shall cause the sash location point to lie below horizontal transverse plane DJ of Area 'A' for both conditions of load specified in Clause 5B.6.1, and
- (iii) the sash location point shall be adjustable without the use of tools.

5B.4.3 Harness Anchor Points

5B.4.3.1 In cases where only one harness anchorage is provided for a particular seating position, the harness anchor point shall be located:

- (i) rearwards of transverse plane inclined at the same angle as the torso reference line and 500 mm horizontally rearward from the seating reference point,
- (ii) not more than 50 mm from the seating reference plane, and
- (iii) within Area B but without the transverse location requirements of Clause 5B.9.2.1.

5B.4.3.2 In cases where two harness anchorages are provided for a particular seating position, the two anchor points shall be located

- (i) rearwards of a transverse plane inclined at the same angle as the torso reference line and 75 mm horizontally rearward from the seating reference point,
- (ii) either side of the seating reference plane in such a way that the distances from the seating reference plane do not differ by more than 100 mm,
- (iii) such that the transverse separation does not exceed 300 mm, and is either greater than 250 mm or is less than 250 mm by not more than half the horizontal distance from either anchor point to the transverse plane through the torso reference line, and
- (iv) within Area B but without the transverse location requirements of Clause 5B.9.2.1.

## 5B.5 Testing of Anchorages

5B.5.1 Installation of Doors - Except in cases where the vehicle complies with the appropriate Australian Design Rule requirements for door latches and hinges, testing shall be carried out with the vehicle doors open or removed.

5B.5.2 Installation of Seats - The appropriate seats shall be installed for the tests and located in their rearmost driving or riding position and with the seat back adjusted to the design seat back angle except that in cases where the line of pull could not contact a particular portion of the seat then that portion may be removed.

5B.5.3 Body Blocks - Loads shall be transmitted by the use of body blocks.

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5B.5.4 Loading of Body Blocks

5B.5.4.1 Each body block shall be restrained by attachments which are representative of a seat belt passing around the body block and connected to the anchorage under test and another appropriate anchorage as described in the following table, by fittings that are representative of the actual anchor fittings designed for each anchorage.

Anchorage under test	Other appropriate anchorage
Lap anchorage provided for lap belt system.	The other lap anchorage for that seating position.
Anchorage common to both pelvic and upper torso restraint in a lap sash belt.	Final torso anchorage and/or the lap anchorage for that seating position.
Lap anchorage provided for pelvic restraint only in a lap sash system.	Anchorage common to both pelvic and upper torso restraint in a lap sash belt system.
Final torso anchorage.	Anchorage common to both pelvic and upper torso restraint in a lap sash belt system.
Anchorage common to both pelvic and upper torso restraint in a harness belt system.	The other anchorage common to both pelvic and upper torso restraint and/or the harness torso anchorage.
Harness torso anchorage.	One or both anchorages common to both pelvic and upper torso restraint in a harness belt system.

5B.5.4.2 In cases where one anchorage is a final torso anchorage, the attachment restraining the body block shall pass through the sash guide system except that:

- (i) It may by-pass any sash guide which is not a load bearing sash guide,
- (ii) a load bearing sash guide which is a component of a seat belt assembly (as nominated in Clause 5B.3.1) may be replaced by a representative component of sufficient strength to withstand the load requirements of Clause 5B.2.6.

#### 5B.5.5 Direction of Loading

5B.5.5.1 In the case of forward and rearward facing seats, the direction of load to the body blocks shall be:

- (i) forward of the seating position,
- (ii) parallel to the seating reference plane,
- (iii) in the case of pelvic restraint, at an angle above the horizontal of not less than 5 degrees nor more than 50 degrees, and
- (iv) in the case of upper torso restraint, at an angle above the horizontal of not less than 0 degrees nor more than 20 degrees.

5B.5.5.2 In the case of sideways facing seats, the direction of load to the body block attached to the lap anchorages shall be:

- (i) in a forward direction relative to the vehicle,
- (ii) in a vertical plane inclined inboard to a vertical longitudinal plane relative to the vehicle by not more than 20 degrees, and
- (iii) at an angle to the horizontal of not less than 5 degrees nor more than 50 degrees.

#### 5B.6 Test of Sash Guide

5B.6.1 With the upper torso strap installed in the vehicle, tensile loads of 5N and 900N shall be applied to it in a direction from the appropriate sash location point towards the upper torso reference point.

5B.6.2 With the upper torso strap installed in the vehicle, a tensile load of not less than 8.5 kN shall be applied to the strap in a direction from the appropriate sash location point towards the upper torso reference point.

- 5B.7            Seating Capacity
- 5B.7.1        Single Seats - A seat shall be regarded as providing for one seating position only if the effective cushion width is less than 820 mm.
- 5B.7.2        Multiple Seats - If the effective cushion width is 820 mm or more the number of seating positions shall be the number of complete multiples of 410 mm unless the nature of obstructions or peculiarities of design results in the seat being approved for a lesser number of seating positions.
- 5B.7.3        Effective Cushion Width - This is the width of the seating area measured horizontally on a transverse plane through the torso reference line. It is determined by an analysis of seat, seat back and vehicle structure sections on the transverse plane as follows:
- (i)            If a cushion is separated from another cushion by less than 100 mm the two cushions shall be regarded as continuous;
  - (ii)           If an end of the cushion is separated from adjoining structure by less than 100 mm it shall be regarded as extending to the adjoining structure; and
  - (iii)          Should the cushion widths determined by (i) and (ii) above exceed the internal width of the vehicle measured through a point located 562 mm from the seating reference point when measured along the torso reference line, then the effective cushion width shall be the internal width of the vehicle determined.
- 5B.8           Seating Reference Planes
- 5B.8.1        Driver's Position - the vertical longitudinal plane through the geometric centre of the eye ellipse defined and positioned as in Recommended Practices - SAE J941b (February 1969), SAE J941c (June 1972); SAE J941d (February 1975); SAE J941e (March 1977); SAE J941 (March 1981) - Motor Vehicle Driver's Eye Range or in ISO 4513 - 1978 (E) - Road Vehicles - Visibility - Method for establishment of eye ellipses for driver's eye location, suitably handed for right hand steering, except that in case of seats designed for one seating position only, the reference plane may be the longitudinal plane through the geometric centre of the seat.

\* Amended February 1984

- 5B.8.2 Front outboard passenger position on a seat which also provides for the driver's seating position - the vertical plane parallel to the seating reference plane of the driver's seating position and equidistant from the centre of the vehicle.
- 5B.8.3 Seats designed for one seating position only - the vertical plane through the geometric centre of the seat, except that in the case of the front outboard passenger's position, the seating reference plane may be the vertical plane parallel to the seating reference plane of the driver's seating position and equidistant from the centre of the vehicle.
- 5B.8.4 Other seating positions - the plane nominated by the manufacturer, provided that in the case of an outboard position on a transverse seat which is designed for two occupants only, the seating reference plane shall be at least 200 mm from the vertical longitudinal plane through the centre of the vehicle and at least 200 mm from the inner panel (or the line of the inner panel) when measured horizontally on a transverse line through the seating reference point.
- 5B.9 Areas A and B
- 5B.9.1 Area A - Area A is dependent on the seat back angle and on its transverse distance S from the seating reference plane. The seat back angle shall be taken as the design seat back angle.
- 5B.9.1.1 For a particular value of S and subject to Clause 5B.9.1.2, Area A is located as follows: (refer Fig. 1)
- (i) above a horizontal transverse plane DJ located 450 mm above the seating reference point R;
  - (ii) to the rear of a transverse plane FK inclined downward at the rear 120° to the torso reference line and passing through a point B on the torso reference line and located 260 mm + S from the seating reference point;
  - (iii) below a transverse plane FN inclined upward at the rear 65° to the torso reference line and passing through a point C along the torso reference line located 315 mm + 1.6S from the seating reference point R; and
  - (iv) forward of a vertical transverse plane NJ located 1.3S rearward of point M on the torso reference line.



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5B.9.1.2 In cases where S is less than 200 mm, Area A as defined in Clause 5B.9.1.1 is extended by the addition of an area KPQT constructed as follows:

- (i) Extend DJ to point P so that  $MP = 250\text{mm}$ ;
- (ii) Draw line DQ so that angle PDQ is  $20^\circ$  and angle DPQ is  $90^\circ$ ;
- (iii) Extend FK to intersect DQ at point T.

5B.9.2 Area B

5B.9.2.1 Transverse Location - Area B extends transversely from a plan 140 mm from and parallel to the seating reference plane and on the same side as the sash guide.

5B.9.2.2 Longitudinal Location - In side evaluation relative to the seating reference plane, Area B is established as follows:

- (i) To the rear of a transverse vertical plane CD located 100 mm rearward of the seating reference point R;
- (ii) Above a horizontal plane CE located 400 mm above the seating reference point R; and
- (iii) Below a horizontal DF located 710 mm above the seating reference point R.

Notwithstanding the requirements of (i), (ii) and (iii) above the location in side elevation may be as follows:

- (iv) To the rear of a point G located 555 mm above and 120 mm rearward of the seating reference point R;
- (v) Below a transverse plane GF inclined  $40^\circ$  above the horizontal; and
- (vi) Above a transverse plane GE inclined  $40^\circ$  below the horizontal.

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FIG.1  
LOCATION OF AREA A  
CONSTRUCTION DETAIL

CR = 315 + 1.6s                      MJ = 1.3s  
RB = 260 + s                          MP = 250

(Dimensions in mm)

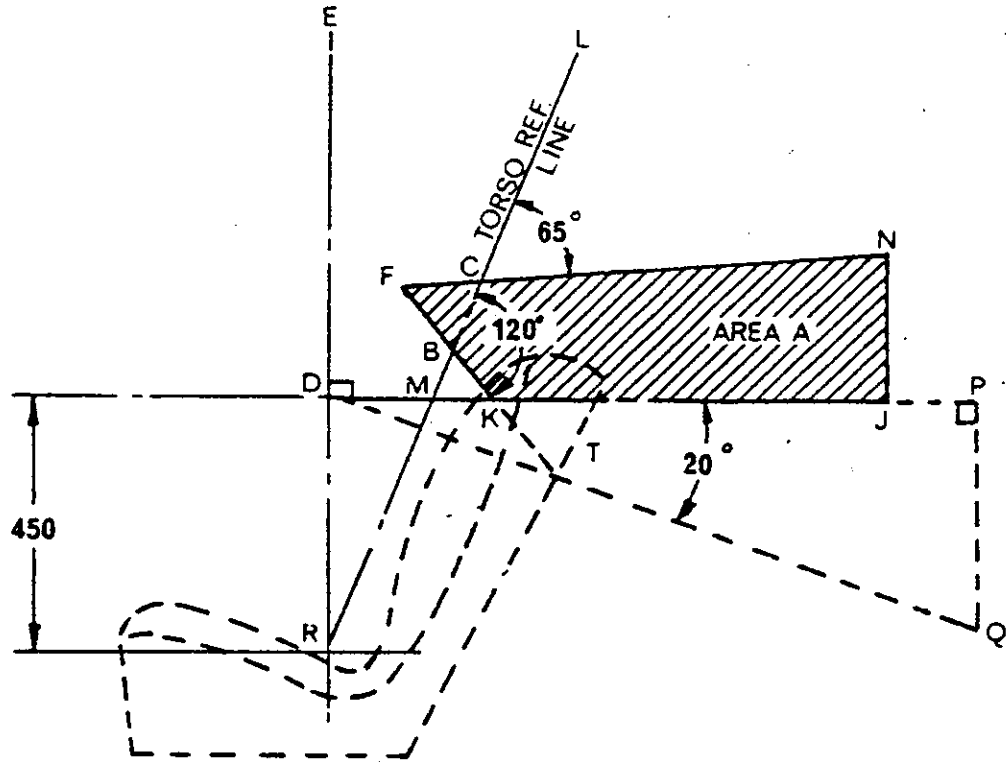


FIG.2  
LOCATION OF AREA B

