Vehicle Standard (Australian Design Rule 68/00 – Occupant Protection in Buses) 2006

I, JAMES ERIC LLOYD, Minister for Local Government, Territories and Roads, determine this vehicle standard under subsection 7 (1) of the *Motor Vehicle Standards Act 1989*.

Dated 26 April 2006

[SIGNED]

James Eric Lloyd

Minister for Local Government, Territories and Roads

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0. LEGISLATIVE PROVISIONS

0.1. NAME OF STANDARD

0.1.1. This Standard is the Vehicle Standard (Australian Design Rule 68/00 – Occupant Protection in Buses) 2006.

0.1.2. This Standard may also be cited as Australian Design Rule 68/00 — Occupant Protection in Buses.

0.2. COMMENCEMENT

0.2.1. This Standard commences on the day after it is registered.

0.3. REPEAL

0.3.1. This Standard repeals each vehicle standard with the name Australian Design Rule 68/00 — Occupant Protection in Buses that is:

(a) made under section 7 of the Motor Vehicles Standard Act 1989; and

(b) in force at the commencement of this Standard.

0.3.2. This Standard also repeals each instrument made under section 7 of the Motor Vehicles Standard Act 1989 that creates a vehicle standard with the name Australian Design Rule 68/00 — Occupant Protection in Buses, if there are no other vehicle standards created by that instrument, or amendments to vehicle standards made by that instrument, that are still in force at the commencement of this Standard.

1. SCOPE

1.1. The function of this ADR is to specify, for certain omnibuses, requirements for seatbelts, the strength of *'Seats'*, seat-anchorages, seatbelt *'Anchorages'* and *'Child Restraint Anchorages'*, and provisions for protecting occupants from impact with *'Seat'* backs and accessories on *'Seats'* and armrests.

1.2. The rule includes requirements both for *'Seats'* and for vehicles fitted with *'Seats'*.

2. APPLICABILITY AND IMPLEMENTATION

2.1. Subject to the following clause, this ADR applies to the design and construction of vehicles as set out in the table below.

2.2. This ADR does not apply to *'Route Service Omnibuses'*, or omnibuses with less than 17 *'Seats'* including the driver and crew, or vehicles in which all passenger *'Seats'* have a *'Reference Height'* of less than 1.0 metre.

2.3. Vehicles certified to the requirements of an acceptable prior rule, as shown below in the Applicability Table for a particular category, are deemed to comply with this rule.

3. APPLICABILITY TABLE

Vehicle Category	ADR Category Code	UNECE Category Code	Manufactured on or After	Acceptable Prior Rules
Moped 2 wheels	LA	L1	N/A	
Moped 3 wheels	LB	L2	N/A	
Motor cycle	LC	L3	N/A	
Motor cycle and sidecar	LD	L4	N/A	
Motor tricycle	LE	L5	N/A	
Passenger car	MA	M1	N/A	
Forward-control passenger vehicle	MB	M1	N/A	
Off-road passenger vehicle	MC	M1	N/A	
Light omnibus	MD	M2		
up to 3.5 tonnes *'GVM'* and up to 12 seats	MD1		N/A	
up to 3.5 tonnes *'GVM'* and more than 12 seats	MD2		N/A	
over 3.5 tonnes and up to 4.5 tonnes *'GVM'*	MD3		1 July 1995	nil
over 4.5 tonnes and up to 5 tonnes *'GVM'*	MD4		1 July 1995	nil
Heavy omnibus	ME	M3	1 July 1994	nil
Light goods vehicle	NA	N1	N/A	
Medium goods vehicle	NB	N2	N/A	
Heavy goods vehicle	NC	N3	N/A	
Very light trailer	TA	O1	N/A	
Light trailer	TB	O2	N/A	
Medium trailer	TC	O3	N/A	
Heavy trailer	TD	O4	N/A	

4. DEFINITIONS

4.1. Refer to Vehicle Standard (Australian Design Rule Definitions and Vehicle Categories) 2005.

5. REQUIREMENTS

5.1. All 'Seats' with a 'Reference Height' greater than 1.0 metre, other than driver's 'Seat', must meet the requirements set out in this rule.

5.2. Seat Strength

5.2.1. Each *'Seat'* must, when tested according to the requirements in clause 7 or Appendixes 1 and 2, protect restrained occupants from injury by impacting the *'Seat'* back or other structure forward of the *'Seat'* .

5.2.2. In the case of dynamic tests conducted in accordance with the requirements of clause 7 and the injury criteria determined in accordance with clause 9:

5.2.2.1. the head injury criterion must be less than 1000; and

5.2.2.2. the thorax injury criterion must be less than 590 m/s^2; and

5.2.2.3. the femur injury criterion must be less than 10 kN; and

5.2.2.4. the compression deflection of the sternum relative to the spine must not exceed 76 mm; and

5.2.2.5. no part of the trunk or the head of the dummy in the rearmost *'Seat'* is to pass beyond the transverse vertical plane situated at 1.6 m from *'H-Point'* of the rearmost *'Seat'* in the test.

5.2.2.6. there must be no failure of any component of the *'Seat'*.

5.2.3. In the case of static tests conducted in accordance with the requirements of Appendixes 1 and 2:

5.2.3.1. the maximum displacement of the central point of application of each force prescribed in Appendix 1 measured in the horizontal plane and in the longitudinal median plane of the relevant seating position must not exceed 150 mm; and

5.2.3.2. the headform deceleration determined by tests conducted in accordance with Appendix 2 must not exceed 785 m/s2 continuously for more than 3 milliseconds.

5.2.4. Where the horizontal plane on which a *'Seat'* is installed differs in height by more than 200 mm from that of the *'Seat'* immediately in front of it, the tests required in clause 7 or Appendix 2 must be conducted with *'Seats'* arranged to give that difference in height.

5.3. Seat-Anchorage Strength

5.3.1. The seat-anchorages for every *'Seat'* installed in the vehicle must withstand the forces which result from the tests specified in clauses 7 or Appendix 1.

5.3.2. The seat-anchorage strength can be tested as specified in clause 8, by applying a force simulating that measured during a test as specified in clause 7 or Appendix 1 on that *'Seat Type'* as specified in clause 7 or Appendix 1.

5.3.3. One test conducted as specified in clause 7 or Appendix 1 may be used to determine simultaneously the adequacy of the seat anchorage strength of a *'Seat Type'* and of a vehicle.

5.4. Seatbelt Assemblies

5.4.1. Each *'Seat'* must be equipped with a *'Seatbelt Assembly'*.

5.4.2. The *'Seatbelt Assembly'* of front-facing *'Seats'* must be a *'Lap-Sash Belt'* equipped with an *'Emergency Locking Retractor'* as specified in ADR 4/....

5.4.3. The *'Seatbelt Assembly'* of a rear-facing *'Seat'* must be:

5.4.3.1. a *'Lap Belt'* equipped with an *'Emergency Locking Retractor'* as specified in ADR 4/... or

5.4.3.2. a *'Lap-Sash Belt'* equipped with an *'Emergency Locking Retractor'* as specified in ADR 4/... .

5.5. Seatbelt Anchorages

5.5.1. *'Seats'* must be equipped with seatbelt *'Anchorages'* which for:

5.5.1.1. all front-facing *'Seats'* must have anchorages for pelvic and upper torso restraint, as specified in clause 11, and

5.5.1.2. all rear-facing *'Seats'* must have anchorages for pelvic restraint and, if fitted with a *'Lap-sash'* seatbelt, upper torso restraint as specified in clause 11.

5.5.2. All *'Anchorages'*, whether on front-facing or rear-facing *'Seats'*, must be able to withstand the forces resulting from the tests specified in clause 7 or Appendix 1.

5.5.3. All *'Anchorages'*, including the *'Final Torso Anchorage'*, must be mounted on the *'Seat'*, except where the *'Seat'* does not form the head impact zone of another *'Seat'* behind it as determined by clause 1 of Appendix 2.

5.6. Provision for Child Restraints

5.6.1. At least six *'Seats'* in the vehicle must be provided with '*Child Restraint Anchor Fittings'* or, at the *'Manufacturer's'* option, *'Child Restraint Anchorages'* and *'Child Restraint Anchor Fittings'* meeting the requirements specified in ADR 34/... .

5.6.2. Each '*Seat'* provided with a *'Child Restraint Anchor Fitting'* must be provided with a means of preventing the '*Child Restraint Anchorage'* tether strap from moving sideways.

5.6.3. Each *'Child Restraint Anchor Fitting'* must be either integral with the *'Seat'* or mounted in a permanent structure immediately behind the *'Seat'*.

5.6.4. Each *'Child Restraint Anchor Fitting'* applicable to a *'Seat'* tested according to clause 7 or Appendix 2 must be present during those tests with any closure plugs removed and with a *'Child Restraint Attaching Clip'* attached.

5.6.5. A *'Child Restraint Anchor Fitting'*, with any closure plugs removed and with a *'Child Restraint Attaching Clip'* attached must be treated as an accessory and must meet the requirements of clause 6.

5.7. Other Requirements

5.7.1. Where tests are conducted to clause 7 and a *'Seat'* is installed without strikeable structure on a *'Seat'* in front of it (as determined by Appendix 2 clause 1) but with any other strikeable structure (modesty panel, hand rail etc) in front of it (as determined by Appendix 2 clause 1), additional tests must be conducted according to the procedure in clause 7 with:

5.7.1.1. in the case of three rows of *'Seats'* the rear row of *'Seats'* omitted and the front row of *'Seats'* replaced by the structure in front of the *'Seat';* or

5.7.1.2. in the case of two rows of *'Seats'* the front row of *'Seats'* replaced by the structure in front of the *'Seat'*.

5.7.2. Side facing *'Seats'* are not permitted.

5.7.3. Any accessories fitted to the *'Seat'* must meet the requirements specified in clause 6.

5.7.4. Any *'Seat'* which has provision for vertical or longitudinal adjustment must demonstrate compliance with these requirements in both foremost and highest position and rearmost and lowest position.

5.7.5. *'Seat'* travel stops must not take any part of any test forces.

5.7.6. Any *'Head Restraint'* proposed to be used must be included in the *'Seat'*.

5.7.7. All seatbelt *'Anchorages'* must be designed so that *'Seatbelt Assemblies'* can be replaced readily.

5.7.8. Any seatbelt *'Anchorage'* may be designed to receive more than one *'Anchor Fitting'*.

5.7.9. Adjustable Upper Torso Seatbelt *'Anchorages'* - In the case where one or more *'Anchorages'* are adjustable, the *'Anchorages'* shall be capable of meeting the relevant strength requirements of clause 7 or Appendix 1 with the *'Anchorages'* in any position of adjustment

5.7.10. Adjustable *'Sash Location Point'* - In cases where a seatbelt *'Anchorage'* is fitted with a *'Sash Location Guide'* system incorporating an adjustable *'Sash Location Point'*, the seatbelt *'Anchorage'* shall be capable of meeting the relevant strength requirements of clause 7 or Appendix 1 with the *'Sash Location Point'* in any position of adjustment.

6. ACCESSORIES ON SEAT

6.1. General Accessories

6.1.1. Fittings such as ashtrays, hand-grips, switches, folding trays, etc. above a horizontal plane 400 mm above the *'Reference Plane'* must be so made that when a horizontal longitudinal force of 375 N, using a sphere of 165 mm diameter and directed *'Forward'*, is applied:

6.1.1.1. the fitting must not project, in the most unfavourable position, more than 25 mm from the rear surface of the 'Seat'; or

6.1.1.2. the fitting must break off or bend so that no projections or edges are exposed as to be contactable by a sphere of 70 mm diameter.

6.2. Armrests

6.2.1. Armrests must be tested in the directions shown in Figure 1, using the forces specified below, applied using a semi-cylindrical form of 50 mm radius and a length of 200 mm.

6.2.2. Each location must be loaded separately.

6.2.3. A vertical force (i) of 1,000 N must be applied to the armrest at locations within 30 mm of each end and at the centre of the armrest, with the loading form horizontal and transversely across the armrest.

6.2.4. A horizontal longitudinal force (ii) of 2,000 N must be applied to the rear upper 30 mm of each armrest, with the loading form vertical.

6.2.5. A horizontal force (iii) of 1,000 N must be applied to locations within 30 mm of the ends of the armrest, with the loading form vertical.

6.2.6. These forces must be applied in both directions to the *'Forward'* end of the armrest and towards the *'Seat'* at the rear end of the armrest, and outwards from the *'Seat'* at the rear end of the armrest if that part of the armrest is exposed in any position of the *'Seat'*.

6.2.7. After the forces specified have been applied, no projections or edges may be exposed as a consequence of the application of these forces so as to be contactable by a sphere of 70 mm diameter.

6.2.8. All radii contactable by a sphere 165 mm in diameter must present a radius of curvature of at least 5 mm.

6.2.9. If any part of the fittings and accessories is made of a material of hardness less than 50 shore A on a rigid backing, the requirements set out in clause 6 apply only to the rigid backing.

7. DYNAMIC TEST PROCEDURES FOR SEATS AND SEAT-ANCHORAGES

7.1. Preparation of Seats to be Tested

7.1.1. *'Seats'* to be tested must be mounted:

7.1.1.1. on a testing platform representative of the body of a vehicle; or

7.1.1.2. on a rigid testing platform.

7.1.2. The seat-anchorage on the testing platform provided for the test *'Seat(s)'* must be identical to, or have the same characteristics as, that used in vehicle(s) in which the *'Seat'* is intended to be used.

7.1.3. The *'Seats'* to be tested must be complete with all upholstery and accessories.

7.1.4. If a *'Seat'* is fitted with a table, the table must be in the stowed position.

7.1.5. If adjustable laterally, the *'Seat'* must be positioned at the position furthest from its anchorages.

7.1.6. If adjustable, the *'Seat'* back must be adjusted to the most upright position of the *'Seat'* back.

7.1.7. If the *'Seat'* back is equipped with a *'Head Restraint'* adjustable for height, it must be in its lowest position.

7.1.8. *'Seat Types'* designed to be installed facing toward the front must be mounted on the testing platform facing toward the front.

7.1.9. *'Seat Types'* designed to be installed facing toward the rear must be mounted on the testing platform facing toward the rear.

7.2. Dynamic Tests - Seat Preparation

7.2.1. The *'Seats'* to be tested must be prepared as specified in the following clauses.

7.2.2. For *'Seat Types'* designed to have a *'Seat'* installed behind them, either:

7.2.2.1. Two *'Seats'* of that *'Seat Type'* must be mounted onto the testing platform with:

7.2.2.1.1. the rear *'Seat'* located in line with, and directly behind, the *'Seat'* in front;

7.2.2.1.2. all *'Seats'* at the same height (except as specified in clause 5.2.4), adjusted identically and on a seat pitch of 800 mm; and

7.2.2.1.3. notwithstanding the requirements of clause 7.2.2.1.2 if *'Seats'* are designed to be installed at a pitch of less than 800 mm, then tests are to be conducted at not more than the minimum design installation pitch; or

7.2.2.2. 3 *'Seats'* of that *'Seat Type'* must be mounted onto the testing platform with:

7.2.2.2.1. the two rearmost *'Seats'* must be located in line with, and directly behind, the *'Seat'* in front;

7.2.2.2.2. all *'Seats'* at the same height (except as specified in clause 5.2.4), adjusted identically and on a seat pitch of 800 mm; and

7.2.2.2.3. notwithstanding the requirements of clause 7.2.2.2.2 if *'Seats'* are designed to be installed at a pitch of less than 800 mm, then tests are to be conducted at not more than the minimum design installation pitch.

7.2.3. For *'Seat Types'* designed not to have a *'Seat'* installed within strikeable distance behind them (as determined by clause 1 of Appendix 2), two *'Seats'* must be mounted onto the testing platform with:

7.2.3.1. the rear *'Seat'* must be of a *'Seat Type'* designed not to have a *'Seat'* behind; and

7.2.3.2. the front *'Seat'* must be of a *'Seat Type'* intended for installation in the vehicle immediately in front of the '*Seat Type'* under test:

7.2.3.3. all *'Seats'* must be at the same height (except as specified in clause 5.2.4), adjusted identically and on a seat pitch of 800 mm; and

7.2.3.4. notwithstanding the requirements of clause 7.2.3.3 if *'Seats'* are designed to be installed at a pitch of less than 800 mm, then tests are to be conducted at not more than the minimum design installation pitch.

7.2.4. Where the *'Seat Type'* consists of two or more *'Seats'*, or where the number of seating positions as determined by clause 12 is greater than 1, each row of '*Seats*' referred to in clauses 7.2.2 or 7.2.3 must contain the number of *'Seats*' or seating positions provided by the *'Seat Type'*.

7.2.5. Notwithstanding the above, where a *'Seat Type'* is designed to be installed facing toward the rear, only one row of *'Seat(s)'* is required to be tested and a '*Hybrid III*' restrained by the seatbelt must be installed in each seating position.

7.2.6. If non-self-locking auxiliary latches are provided they must be unlatched during all testing so that only the restraining device and hinges are taking the test forces.

7.2.7. Where *'Seats'* are mounted on hinged covers, e.g. engine covers, and the *'Seat'* assembly can withstand the test forces without tilting of the hinged cover and without any latches being latched, then the latches need not be self-locking.

7.3. Dynamic Tests - Dummy Preparation

7.3.1. A '*Hybrid III*' or dummy must be installed in each seating position of the *'Seat Type'* as specified in the following clauses.

7.3.1.1. Where two rows of seats are used a *'Hybrid III'* must be installed in each rear row seating position.

7.3.1.2. Where three rows of *'Seats'* are used, a *'Hybrid III'* must be installed in each centre row seating position

7.3.1.3. Where three rows of *'Seats'* are used, each seating position of the rear *'Seats'* must contain an unrestrained test dummy.

7.3.1.3.1. Any dummy representative of the 50th percentile adult male may be used. For example, this may be a *'Hybrid II', 'Hybrid III'* or a *'TNO 10 Dummy'*.

7.3.2. Each *'Hybrid III'* must be restrained by the seatbelt supplied with the *'Seat'*.

7.3.3. Each '*Hybrid III*' must be set up and positioned on a *'Seat'* in accordance with the procedure set out in Clauses 7 and 8 of ADR 69/... except that:

7.3.3.1. The knees must be set 269 mm apart as measured between the outer knee clevis flange surfaces unless the legroom prevents this, in which case the knees must be set 298 mm apart.

7.3.3.2. The upper arms must be contacting the side of the torso.

7.3.3.3. The palms must be placed on top of the laps.

7.3.3.4. The feet must be placed flat on the floor.

7.4. Impact Simulation

7.4.1. The test rig, when subjected to a velocity change of not less than 49 km/h, must achieve within 30 milliseconds a *'Forward'* deceleration of at least 196 m/s^2 measured in the vicinity of the corresponding *'Lap Anchorage*' and must maintain that deceleration, except for periods of less than one millisecond, for not less than 20 milliseconds.

7.5. Measurements to be made - General

7.5.1. All measurements necessary must be made with measurement systems corresponding to ISO 6487 "Technique of measurement in impact tests: Instrumentation" published in 1980.

7.5.2. The characteristics of the deceleration of the test rig must be determined from the accelerations measured on the rigid frame of the testing platform using a measurement system with a CFC of 60.

7.5.3. The readings of the measuring devices in the '*Hybrid III*' must be recorded through the independent data channels of the CFC specified in clauses 7.6.1 to 7.6.4.

7.5.4. After the test any structural part of the *'Seat'* or accessories above a horizontal plane 400 mm above the *'Reference Plane'* which has any fracture or sharp or pointed edges or corners which is contactable by a sphere 165 mm in diameter must present a radius of curvature of at least 5 mm.

7.5.5. *'Seat'* adjustment and locking systems are not required to be in full working order after the test.

7.6. Measurements to be made - Specific

7.6.1. In the case of measurements in the head of the 'Hybrid III', the resultant tri-axial acceleration referring to the centre of gravity (γr) must be measured in accordance with the following clauses.

7.6.1.1. The acceleration must be measured with a CFC of 600.

7.6.1.2. The acceleration must be expressed in g ($g = 9.81\ m/s^2$).

7.6.1.3. The scalar value of γ must be calculated according to the formula:

$$\gamma r^2 = \gamma 1^2 + \gamma v^2 + \gamma t^2$$

where:

$\gamma 1$ = value of instant longitudinal acceleration

γv = value of instant vertical acceleration

γt = value of instant transversal acceleration.

7.6.2. In the case of measurements in the thorax of the '*Hybrid III*', the resultant acceleration at the centre of gravity must be measured with a CFC of 180.

7.6.3. In the case of measurements in the femur of the '*Hybrid III*', the axial compression force must be measured with a CFC of 600.

7.6.4. Measurements in the sternum of the '*Hybrid III*' must be measured according to the requirements of Part 572, Subclause E referred to in FMVSS 208 Issue 4 December 1989.

7.7. Dynamic Tests - unrestrained Occupant Loading

7.7.1. This test must be conducted to demonstrate that the *'Seat'* is capable of withstanding the loads imposed by unrestrained occupants in the *'Seat'* behind, in addition to the restrained occupant loading.

7.7.2. *'Seat Types'* tested to clause 7.2.2.2 or as specified in clause 7.2.3 are not required to meet this test.

7.7.3. This test does not require the injury criteria of Clause 9 to be measured.

7.7.4. The *'Seats'* to be tested must be prepared in accordance with clause 7.2.

7.7.5. Any dummy representative of the 50th percentile adult male may be used. For example, this may be a *'Hybrid II'*, *'Hybrid III'* or a *'TNO 10 Dummy'*.

7.7.6. One dummy must be placed in each seating position in the rear *'Seat'* and must not be restrained.

7.7.7. One dummy must be placed in each seating position in the front *'Seat'* and must be restrained.

7.7.8. The impact simulation specified in clause 7.4 must be used.

8. ALTERNATIVE TEST PROCEDURE FOR VEHICLE SEAT-ANCHORAGES

8.1. Fixing of Test Structure

8.1.1. A rigid structure sufficiently representative of the pedestal of the *'Seat Type'* must be fixed to the seat-anchorage and sufficient of the vehicle structure by means of fixation (bolts, screws, etc.) provided by the manufacturer.

8.1.2. If several *'Seat Types'* differing from one another in respect of the distance between the front and back ends of their feet can be mounted on the same seat-anchorage, the test must be carried out with the shortest footing.

8.2. Application of Force

8.2.1. A force F must be applied, in the manner described in the following clauses.

8.2.2. The force F must be applied at a height of 750 mm above the reference plane.

8.2.3. The force F must be applied on the vertical line containing the geometrical centre of the surface bounded by the polygon having the extreme seat-anchorage points as apexes, by the rigid structure described in clause 8.1.1, in the horizontal direction and directed to the front of the vehicle.

8.2.4. The Force F must:

8.2.4.1. have a force/time graph which entirely encompasses the corresponding force/time graph determined from a test on the *'Seat Type'* according to clause 7; or

8.2.4.2. be that force arising from the tests conducted according to Appendix 1.

9. DETERMINATION OF INJURY CRITERIA

9.1. Head Injury Criterion (HIC)

9.1.1. This injury criterion (HIC) is calculated on the basis of the resultant tri-axial acceleration measured according to clause 7.6.1 by the equation:

$$HIC = (t_2 - t_1)\left[\frac{1}{t_2 - t_1}\int_{t_1}^{t_2} \gamma r \, dt\right]^{2.5}$$

9.1.2. For the purposes of this equation, t_1 and t_2 are any values of time during the test which are not separated by more than a 36 milliseconds time interval, HIC being maximum value for an interval t_1, t_2. The value of t_1 and t_2 are expressed in seconds.

9.2. Thorax Injury Criterion (ThIC)

9.2.1. This criterion is determined by the absolute value of the resultant acceleration, expressed in m/s^2.

9.2.2. The criterion is measured according to clause 7.6.2 and by the acceleration period, expressed in ms.

9.3. Femur Injury Criterion (FIC)

9.3.1. This criterion is determined by the compression force, expressed in kN, transmitted axially on each femur of the '*Hybrid III*'.

9.3.2. The criterion is measured according to clause 7.6.3 and by the duration of the compression force, expressed in ms.

9.4. Sternum Injury Criterion (SIC)

9.4.1. This criterion is determined by the compression deflection of the sternum relative to the spine.

9.4.2. The criterion is measured in accordance with clause 7.6.4, expressed in mm.

10. SEAT BACK AND SEAT RESTRAINING DEVICE STRENGTH

10.1. Requirements

10.1.1. A 530 Nm moment about the *'Seating Reference Point'* for each occupant position for which the *'Seat'* is designed must be applied to the

upper cross member in a *'Rearward'* longitudinal direction, unless it is demonstrated that *'Seat'* assemblies such as rear *'Seat'* backs are supported by a vehicle body member capable of withstanding the nominated force.

10.2. Testing

10.2.1. Testing to ensure *'Seat'* backs meet the 530 N.m requirement must be undertaken by:

10.2.1.1. a force applied horizontally; or

10.2.1.2. a force applied normal to the *'Seat'* back; or

10.2.1.3. a force applied longitudinally and '*Rearward'* to the upper part of the *'Seat'* back frame through a component simulating the back of a '*Manikin*'.

10.2.2. If deflection of the *'Seat'* back causes the moment arm to change, the force should be adjusted to ensure that the moment value of 530 Nm is achieved.

10.2.3. Except as provided in clause 10.2.4, hinged *'Seats'* or *'Seat'* backs must be equipped with a self-locking device for restraining the hinged *'Seat'* or *'Seat'* back and a release control for releasing that restraining device to preclude the possibility of impact forces acting on unrestrained hinged *'Seats'* or *'Seat'* backs.

10.2.4. The requirements set out in clause 10.2.3 do not apply to a *'Seat*' having a back that is adjustable only for the comfort of its occupants.

10.2.5. If non-self-locking auxiliary latches are provided they must be unlatched during all testing so that only the restraining device and hinges are taking the test forces.

10.2.6. Where *'Seats'* are mounted on hinged covers, e.g. engine covers, and the *'Seat'* assembly can withstand the test forces without tilting of the hinged cover and without any latches being latched, then the latches need not be self-locking.

11. ANCHORAGES AND SASH GUIDES

11.1. Provision and Location

11.1.1. A *'Sash Guide'* must be provided for each seating position to be fitted with a *'Lap-Sash Belt'*.

11.1.2. The location of seatbelt *'Anchorages'* must be 7such that the locations of their appropriate *'Anchor Points'* and *'Sash Guides'* meet the requirements of this section.

11.2. 'Sash Guide' Requirements - General

11.2.1. The *'Sash Guide'* must be nominated by the vehicle *'Manufacturer'* as being either a component of a *'Seatbelt Assembly'* or not a component of a *'Seatbelt Assembly'*.

11.2.2. The *'Sash Guides'* nominated by *'Manufacturers'* as not a component of the *'Seatbelt' Assembly'* must include those *'Sash Guides'* which are not intended to be replaced when the *'Seatbelt Assembly'* is replaced.

11.2.3. For the purpose of this 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:

11.2.3.1. the *'Anchorage'* test loads resulting from the tests specified in clause 7 or Appendix 1; and

11.2.3.2. where the *'Sash Guide'* is a component of a *'Seatbelt Assembly'*, both the Dynamic Testing Procedure of ADR 4/... , "Seat Belts", and the static strength of assembly test of Australian Standard AS 2597.10 - 1983, "Determination of Static Strength and Dummy Displacement" as specified in ADR 4/... ; and

11.2.3.3. where the *'Sash Guide'* is not a component of a *'Seatbelt Assembly'* (as nominated in clause 11.2.2), then the *'Sash Guide'* must comply with clause 11.4 as well as with the following clauses of ADR for "Seat Belts" (where applicable) as if the *'Sash Guide'* were part of the *'Seatbelt Assembly'*: clause 4.2.7 (but also excluding clauses 5, 9 and 14 of Australian Standard 2596-1983, "Seat Belt Assemblies for Motor Vehicles").

11.3. ' Sash Guide' Requirements - Other

11.3.1. Strength - Except in cases where the *'Anchor Fitting'* at the *'Final Torso Anchorage'* is the *'Sash Guide'*, the *'Sash Guide'* must, when tested in accordance with the requirements of clause 7 or Appendix 1, withstand the forces in such a way that after application and removal of the forces there is no substantial deformation and the *'Sash Guide'* remains integral with its supporting structure and continues to retain the *'Strap'*.

11.3.2. *'Seat'* Backs - In cases where the *'Seat'* back is a *'Sash Guide'* device the design of the *'Seat'* back must be such that it is not possible for the *'Strap'* to fall below the lower boundary of *'Area A'* (see Figure 2) at any point not greater than 300 mm from the *'Seating Reference Plane'*.

11.3.2.1. If this requirement is met by the use of a positive restraining device incorporated with or attached to the *'Seat'* back then the device must be designed to withstand a force of 50 N applied in a horizontal transverse direction away from the *'Seating Reference Plane'*.

11.3.3. Design of *'Sash Guide'* Devices - In cases where the *'Sash Guide'* which includes the *'Sash Location Point'* is a load-bearing *'Sash Guide'*, it must retain the *'Strap'* by either:

11.3.3.1. the *'Strap'* cannot be removed from the *'Sash Guide'* without the use of tools; or

11.3.3.2. the *'Strap'* may be removed but returns to its design position when forces are applied.

11.3.4. *'Sash Location Point'* - The *'Sash Guide'* must be so designed that the *'Sash Location Point'* meets the location requirements of clause 11.7.

11.3.5. 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 must be such that in the installed design position:

11.3.5.1. the point of the first load-bearing *'Sash Guide'* where the centreline of the strap first changes direction after leaving the preceding *'Sash Guide'* must be in *'Area A'* ; and

11.3.5.2. the maximum length of *'Strap'* required to pass from the point referred to in clause 11.3.5.1 to the *'Upper Torso Reference Point'* via the *'Sash Guide'* system must not exceed by more than 60 mm the true distance between those points.

11.4. Deflection of 'Sash Guides'

11.4.1. 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 *'Seatbelt Assembly'* (as nominated in clause 11.2.2) the design must be such that:

11.4.1.1. a *'Sash Guide'* system with a non-adjustable *'Sash Location Point'* must comply with clauses 11.4.2 and 11.4.3; and

11.4.1.2. a *'Sash Guide'* system with an adjustable *'Sash Location Point'* must comply with clauses 11.4.2 and 11.4.4 with the *'Sash Location Point'* set in any position of adjustment.

11.4.2. When a force is applied as specified in clause 11.8.1.2, *'Sash Guide'* deflection must 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'*.

11.4.3. When a force is applied as specified in clause 11.8.1.2, the displaced *'Sash Location Point'* must lie in 'Area A' .

11.4.4. When a force is applied as specified in clause 11.8.1.2 the displaced *'Sash Location Point'* must not lie below horizontal transverse plane DJ of *'Area A'*.

11.5. Effect of 'Seat' Back Adjustment

11.5.1. In cases where the *'Seat'* back is provided with at least one point of adjustment between the design *'Seat Back Angle'* and 30^o inclusive, the requirements of clauses 11.3.5.2 and 11.4.1 must 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^o.

11.6. Location of Lap 'Anchor Points'

11.6.1. The two lap *'Anchor Points'* provided for a particular seating position must 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.

11.6.2. The lines joining the lap *'Anchor Point'* to the extreme points on the *'Pelvis Reference Locus*' must be inclined to the horizontal at angles of not less than 25^o nor more than 80^o when viewed normal to the *'Seating Reference Plane'*.

11.6.3. In cases where the line representing the centreline of the *'Strap'* is not a straight line when viewed normal to the *'Seating Reference Plane'*:

11.6.3.1. with the *'Seat'* in its foremost riding position the line passing through the foremost point on the *'Pelvis Reference Locus'* and extending *'Rearward'* to the first point of contact with the *'Seat'* or other device must be inclined to the horizontal at an angle of not less than 25^o ; and

11.6.3.2. subject to the exception in the following clause, with the *'Seat*' in the rearmost riding position the distance from the *'Pelvis Reference Point'* to the lap *'Anchor Point'* measured along the centreline of the *'Strap'* must not exceed by more than 60 mm the true distance from the *'Pelvis Reference Point*' to the lap *'Anchor Point'*; and

11.6.3.3. compliance with the preceding clause is not required where the system is so designed that when tested in accordance with the load requirements of either clause 7 or Appendix 1 the components of the vehicle or *'Seat'* which cause the centreline of the *'Strap'* between the lap *'Anchor Point'* 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 Point'* and the *'Pelvis Reference Point'* is reduced by more than 60 mm.

11.7. Location of 'Sash Location Point'

11.7.1. For both conditions of force specified in clause 11.8.1.1:

11.7.1.1. the *'Sash Location Point'* must be at least 140 mm from the *'Seating Reference Plane'*; and

11.7.1.2. the *'Sash Location Point'* must lie in *'Area A'*.

11.7.2. Notwithstanding the requirements of clause 11.7.1, the *'Sash Location Point'* may be adjustable for comfort provided:

11.7.2.1. at least one point in the range of adjustment must permit the *'Sash Location Point'* to comply with the requirements of clause 11.7.1; and

11.7.2.2. no point of adjustment must cause the *'Sash Location Point'* to lie below horizontal transverse plane DJ of *'Area A'* for both conditions of force referred to in clause 11.8.1.1; and

11.7.2.3. the *'Sash Location Point'* must be adjustable without the use of tools.

11.8. Test of 'Sash Guide' Deflection

11.8.1. Tests must be performed with the upper torso *'Strap'* installed in the vehicle by applying:

11.8.1.1. tensile forces of 5 N and 900 N to the *'Strap'* in a direction from the appropriate *'Sash Location Point'* towards the *'Upper Torso Reference Point'*; and

11.8.1.2. a tensile force of not less than 8.5 kN to the *'Strap'* in a direction from the appropriate *'Sash Location Point'* towards the *'Upper Torso Reference Point'*.

12. DETERMINATION OF NUMBER OF SEATING POSITIONS

12.1. Single 'Seats'

If the effective cushion width as determined by clause 12.3 is less than 800 mm, a *'Seat'* must be regarded as providing for one seating position only.

12.2. Multiple 'Seats'

12.2.1. If the effective cushion width as determined by clause 12.3 is 800 mm or more, the number of seating positions must be the number of complete multiples of 400 mm unless the nature of obstructions or peculiarities of design results in the *'Seat'* being *'Approved'* for a lesser number of seating positions.

12.2.2. Where a *'Seat'* with an effective cushion width, as determined by clause 12.3.2, of 1,200 mm or more has its *'Seat'* cushion and *'Seat'* back so

contoured as to provide one or two clearly identifiable seating positions, the *'Seat'* will be considered as providing for two seating positions only if:

12.2.2.1. the *'Seat'* consists of two separate *'Seats'* with an intervening gap, which may be filled with an insert; or

12.2.2.2. there are two contoured seating positions and the lateral distance between their centrelines is less than 800 mm; or

12.2.2.3. there is one contoured seating position and the lateral distance from its centreline to the far end of the adjacent *'Seat'* cushion, or to its side wall if this is less than 100 mm from the end of the cushion, is less than 1000 mm.

12.3. Effective Cushion Width

12.3.1. The effective cushion width is the width of the *'Seat'* cushion measured horizontally at the intersection of the *'Seat'* cushion with the transverse plane through the *'Torso Reference Line'*.

12.3.2. The effective cushion width is determined by an analysis of *'Seat'*, *'Seat'* back and vehicle structure sections on the transverse plane:

12.3.2.1. if a cushion is separated from another cushion by less than 100 mm the two cushions must be regarded as continuous; and

12.3.2.2. if an end of the cushion is separated from adjoining structure by less than 100 mm it must be regarded as extending to the adjoining structure.

12.3.3. Should the cushion widths determined by clause 12.3.2 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 is the internal width of the vehicle determined at this height.

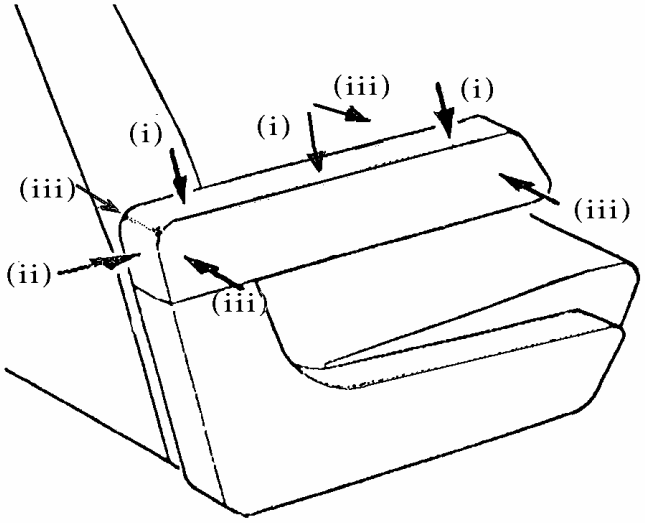


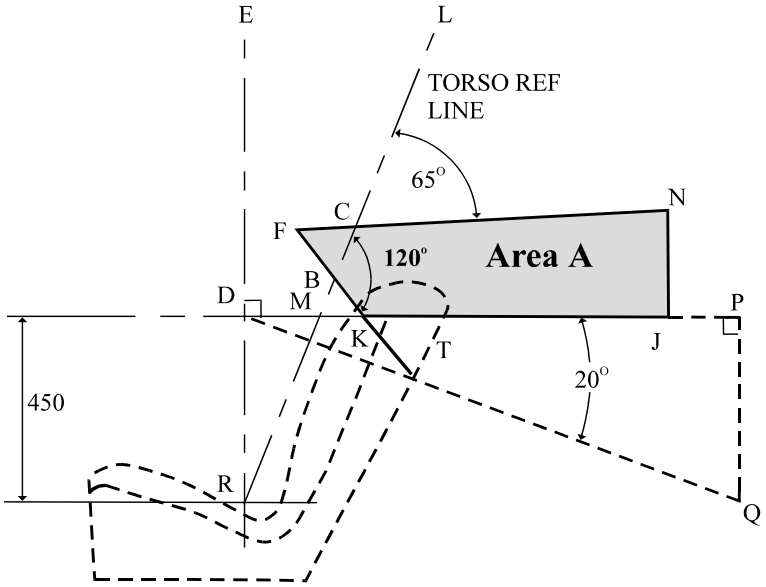
Figure 1: Armrest Load Diagram

Figure 2 - LOCATION OF AREA A
LOCATION OF *'AREA A'* CONSTRUCTION DETAIL

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

(S - *'Transverse Distance S'*)

Dimensions in mm



APPENDIX 1
STATIC TEST PROCEDURE FOR OCCUPANT PROTECTION IN BUSES

1. TEST PROCEDURES FOR SEATS AND ANCHORAGES

1.1. Preparation of 'Seats' to be Tested

1.1.1. The *'Seat(s)'* to be tested must be mounted:

1.1.1.1. on a testing platform representative of the body of a vehicle; or

1.1.1.2. on a rigid testing platform.

1.1.2. The seat-anchorage on the testing platform provided for the test *'Seat(s)'* must be identical to, or have the same characteristics as, that used in vehicle(s) in which the *'Seat'* is intended to be used.

1.1.3. The *'Seat(s)'* to be tested must be complete with all upholstery and accessories.

1.1.4. If the *'Seat'* is fitted with a table, the table must be in the stowed position.

1.1.5. If adjustable laterally, the *'Seat'* must be positioned for maximum extension.

1.1.6. If adjustable, the *'Seat'* back must be adjusted to the most upright position.

1.1.7. If the *'Seat'* back is equipped with a *'Head Restraint'* adjustable for height, it must be in its lowest position.

2. STATIC TESTS

2.1. Application of Test Loads

2.1.1. Test load requirements must be applied simultaneously:

2.1.1.1. for forward facing *'Seats'* the forces as per clauses 2.3, 2.4 and 2.6 of this Appendix; and

2.1.1.2. For *'Seat Types'* designed not to have a *'Seat'* installed within strikeable distance behind them (as determined by clause 1 of Appendix 2) the loads as per clauses 2.4 and 2.6 of this Appendix; and

2.1.1.3. For rearward facing *'Seats'* the loads as per clause 2.6.2 of this Appendix only needs to be applied.

2.2. 'Seat' Back Loads - Test Apparatus

2.2.1. The test apparatus consists of cylindrical surfaces with a radius of curvature equal to 82 ± 3 mm and a width

2.2.2.1 at least equal to the width of the *'Seat'* back of each seating position of the *'Seat'* to be tested for the upper form; and

2.2.2.2 be from 320 to 330 mm for the lower form as shown in Figure 3; and

2.2.2.3 The surface resting against the parts of the *'Seat'* must be made of a material the hardness of which is not less than 80 Shore A; and

2.2.2.4 Each cylindrical surface must be equipped with at least one force transducer able to measure the forces applied in the direction defined in clause 2.3 of this Appendix.

2.3. 'Seat' Back Loads - Test Procedure

2.3.1. A test force of at least 1000/H1 N must be applied using a device, conforming to clause 2.2 of this Appendix, to the rear part of the *'Seat'* corresponding to each seating position of the *'Seat'*.

2.3.2. The direction of application of the force must be situated in the vertical median plane of the seating position concerned, it must be horizontal and from the rear towards the front of the *'Seat'*.

2.3.3. This direction must be situated at the height H1 which must be between 0.7 metre and 0.8 metre above the reference plane. The exact height must be determined by the manufacturer.

2.3.4. A test force of at least 2000/H2 N must be applied to the rear part of the *'Seat'* corresponding to each seating position of the *'Seat'* in the same vertical plane and in the same direction at the height H2 which must be between 0.45 metre and 0.55 metre above the reference plane, with a device conforming to clause 2.2 of this Appendix. The exact height must be determined by the manufacturer.

2.3.5. The test forms must be maintained as far as possible in contact with the rear of the *'Seat'* during the application of the forces specified in clauses 2.3.1, 2.3.4 and 2.4 of this Appendix. They must be able to pivot in a horizontal plane.

2.3.6. Where a *'Seat'* consists of more than one seating position, the forces corresponding to each seating position must be applied simultaneously and there must be as many upper and lower forms as seating positions.

2.3.7. The initial position of each seating position of each of the forms must be determined by bringing the test devices into contact with the *'Seat'* with a force equal to at least 20 N.

2.3.8. The forces indicated in clauses 2.3.1 and 2.3.4 of this Appendix must be applied as rapidly as possible and must be maintained together at the specified value, whatever the deformation, for at least 0.2 seconds.

2.4. Body Block Loads

2.4.1. Loads must be transmitted by the use of two body blocks per *'Seat'*.

2.4.2. Each body block must be restrained by attachments which are representative of a seatbelt passing around the body block and connected to the *'Anchorages'* under test by fittings that are representative of the actual *'Anchor Fittings'* designed for each *'Anchorage.'*

2.4.3. The body blocks must apply a total force of 17.7 kN to the upper torso body block and 8.9 kN to the lap body block.

2.4.4. In cases where one *'Anchorage'* is a *'Final Torso Anchorage'*, the attachment restraining the body block must pass through the *'Sash Guide'* system in all cases other than those specified in the following clauses.

2.4.5. An attachment restraining the body block may by-pass any *'Sash Guide'* which is not a load bearing *'Sash Guide'*.

2.4.6. A load bearing *'Sash Guide'* which is a component of a *'Seatbelt Assembly*' (as nominated in clause 11.2.1) may be replaced by a representative component of sufficient strength to withstand the force requirements of clause 2.4.3 of this Appendix.

2.5. Direction of Loading

2.5.1. In the case of front and rear-facing *'Seats'*, the direction of load to the body blocks must be:

2.5.2. *'Forward'* of the seating position; and

2.5.3. parallel to the *'Seating Reference Plane'*; and

2.5.4. In the case of pelvic restraint, the direction of load must be at an angle above the horizontal of not less than 0 nor more than 20 degrees; and

2.5.5. In the case of upper torso restraint, the direction of load must be at an angle above the horizontal of not less than 0 nor more than 20 degrees.

2.6. 'Seat' Load

2.6.1. A test load at least equal to 20 times the weight of the *'Seat'* must be applied by:

2.6.1.1. adding this load to the lap body block load as specified in clause 2.4.3 of this Appendix; or

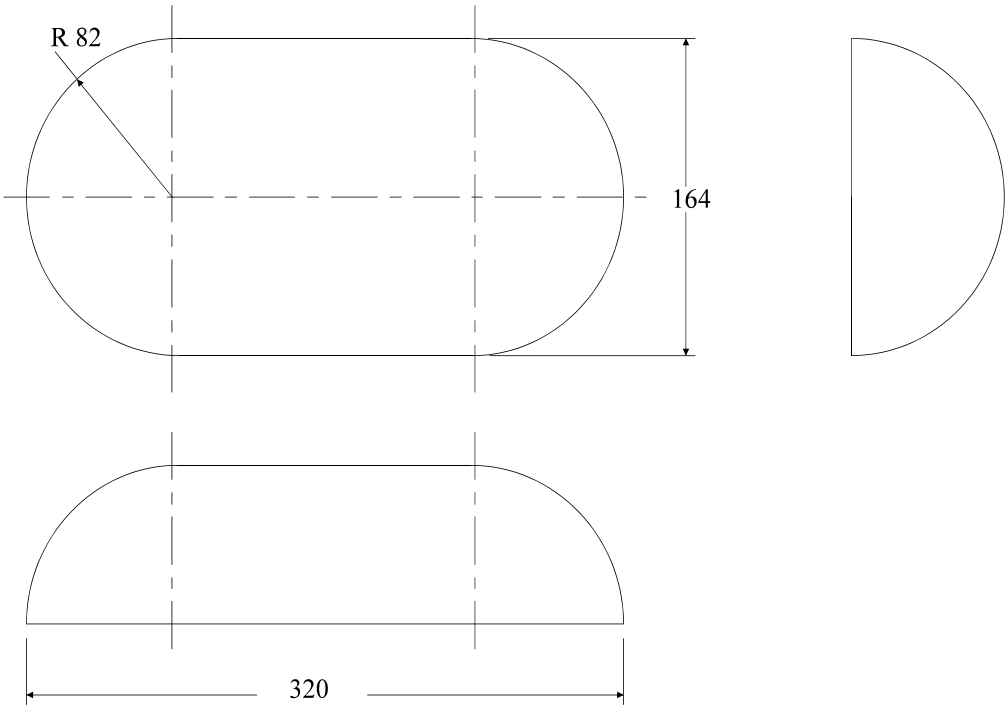
2.6.1.2. applying this load in a forward horizontal direction through the centre of gravity of the *'Seat'*.

2.6.2. For rear facing *'Seats'* distributed load must be applied over the height of the *'Seat'* back in the forward horizontal longitudinal direction such that:

2.6.2.1. a distributed load of twenty times the weight of the entire *'Seat'* applied simultaneously with 13 kN by the number of seating positions for the *'Seat'* under test; or

2.6.2.2. a concentrated load at the loading centroid of the same size may be used in place of the distributed loads.

Figure 3
'Seat' Back Loads - Test Apparatus



APPENDIX 2
SEAT BACK ENERGY-DISSIPATING TEST

1. DETERMINATION OF HEAD IMPACT ZONE

1.1. Headform Procedure - General

1.1.1. Any surface which is contactable by the headform using the procedure as follows is part of the head impact zone.

1.1.2. The headform to be used must be a spherical headform 165 mm in diameter pivoted about the *'H-Point'* such that the distance from the *'H-Point'* to the top of the headform is continuously adjustable between 736 mm and 840 mm.

1.1.3. The headform must be moved through all arcs of the vertical plane down to a position of 25.4 mm above the *'H-Point'* and as far as 20 degrees on either side of the longitudinal vertical plane which passes through the *'H-Point'*.

1.1.4. Each excursion must start from vertical and the length of the arm must not be changed during any given excursion.

1.2. Points of Contact

1.2.1. All points of contact must be established as specified in the following clauses.

1.2.2. Areas where the energy dissipating properties are uniform over a range of points of contact can be treated as one point of contact located at the position which would give the worst result in the test specified in clause 5.1 of this Appendix.

1.2.3. Areas where the energy-dissipating property varies by virtue of varying padding thickness alone can be treated as one point of contact located at the position of minimum thickness of padding or which would give the worst result in the test specified in clause 5.1 of this Appendix, whichever is the more stringent.

1.2.4. For determining the head-impact zone the *'Seats'* must, if they are adjustable, be in the rearmost position with their backs inclined as near as possible to 25^{o} unless indicated otherwise by the manufacturer.

2. REAR PARTS OF SEATS

2.1. Requirements

2.1.1. The surface of rear parts of *'Seats'* must not exhibit dangerous roughness or sharp edges likely to increase the risk or severity of injury to the occupants.

2.1.2. That part of the back of the *'Seat'* which is in the head-impact zone defined in clause 1 of this Appendix must be energy-dissipating, as prescribed in clause 5 of this Appendix.

2.1.2.1. In the case of *'Seats'* fitted with *'Head Restraints'*, each test must be carried out with the *'Head Restraint'* in the lowest position.

2.1.2.2. In the case of a *'Seat'* which is designed to be fitted in several types of vehicle, the impact zone must be determined with the *'Seats'* installed at 750 mm pitch.

2.1.2.3. Where this is done, the resultant impact zone will be deemed adequate for the other types of vehicles.

2.1.3. The requirements of clause 2 of this Appendix must be considered to be satisfied in the case of *'Head Restraints'* that either are part of a vehicle type approved under ECE Regulation No. 17(03) or are approved under ECE Regulation No. 25(02).

3. OTHER FITTINGS

3.1. The requirements of clause 2 of this Appendix apply to such fittings within the head impact zone not mentioned in previous clauses as, according to their location, are capable of being contacted by the occupants in accordance with the procedure prescribed in clause 1 of this Appendix.

3.2. If the contactable members of such fittings are made of material of less than 50 Shore A hardness but are mounted on a rigid support, the requirements apply only to the rigid support.

4. TEST PREPARATION

4.1. Setting up

4.1.1. A component made of energy-dissipating material must be mounted and tested on the structural supporting member on which it is to be installed on the vehicle.

4.1.2. The test must be carried out:

4.1.2.1. directly on the vehicle body; or

4.1.2.2. the component may be mounted on a fitting simulating installation on the vehicle.

4.1.3. Where a test is carried out directly on the vehicle body the structural member or the vehicle body must be firmly attached to the test bench so that it does not move under impact.

4.1.4. Where the component is mounted on a fitting simulating installation on the vehicle, the assembly comprising the component and the fitting must have the same geometrical arrangement as, and a degree of rigidity not lower and an energy-dissipating capacity not higher than those of, the real assembly comprising the component and the structural supporting member.

4.2. Test Apparatus

4.2.1. The test apparatus is to consist of a pendulum where the pivot is supported by ball-bearings and with a reduced mass M_R of 6.8 kg at its centre of percussion.

4.2.1.1. The relationship of M_R of the pendulum to the total mass "m" of the pendulum at a distance "a" between the centre of the percussion and the axis of rotation and a distance "L" between the centre of gravity and the axis of the rotation is given by the formula:

$$M_R = \frac{mL}{a}$$

4.2.2. The lower extremity of the pendulum is to consist of a rigid headform 165 mm in diameter whose centre is identical with the centre of percussion of the pendulum.

4.2.3. The headform must be fitted with two accelerometers and a speed transducer, all capable of measuring values in the direction of impact.

4.3. Recording Instruments

4.3.1. The recording instruments used must be such that measurements can be made with the degrees of accuracy specified below.

4.3.2. In the case of acceleration, requirements are:

4.3.2.1. accuracy $\pm$ 5% of the real value;

4.3.2.2. frequency response up to 1,000 Hz;

4.3.2.3. cross-axis sensitivity > 5% of the lowest point on the scale.

4.3.3. In the case of speed, requirements are:

4.3.3.1. accuracy $\pm$ 2.5% of real value;

4.3.3.2. sensitivity = 0.14 m/s.

4.3.4. In the case of time recording, the instrumentation must enable the action to be recorded throughout its duration and readings to be made to within one thousandth of a second.

4.3.5. The beginning of the impact at the moment of first contact between the headform and the test component must be noted on the recordings used for analysing the test.

5. TEST PROCEDURE AND RESULTS

5.1. Test Procedure

5.1.1. At every point of impact on the surface to be tested the direction of impact is the tangent to the trajectory of the headform of the measuring apparatus defined in clause 1 of this Appendix.

5.1.2. Where the angle between the direction of impact and the perpendicular to the surface at the point of impact is 5^o or less, the test must be carried out in such a way that the tangent to the trajectory of the centre of percussion of the pendulum coincides with the direction of impact. The headform must strike the test component at a speed of 6.69 m/s.

5.1.3. Where the angle between the direction of impact and the perpendicular to the surface at the point of impact is more than 5^o , the test may be carried out in such a way that the tangent to the trajectory of the centre of percussion of the pendulum coincides with the perpendicular to the point of impact. The test speed must then be reduced to the value of the normal component of the speed prescribed in clause 5.1.2 of this Appendix.

5.2. Determination of Results

5.2.1. The deceleration rate taken must be the average of the readings of the two decelerometers.