



Australian Government

Department of Infrastructure and Transport

Regulation Impact Statement for
Amendments to Vehicle Standard (Australian
Design Rule 4/04 – Seatbelts) 2006

- Seatbelt Reminder Systems
- Seatbelts for Folding Seats

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1. Introduction

The Australian Government provides protection for new vehicle consumers through the *Motor Vehicle Standards Act 1989 (C'th)* (MVSA).

The MVSA provides mandatory vehicle safety, emission and anti-theft standards which apply when new vehicles are supplied to the Australian market. These are national standards and are known as the Australian Design Rules (ADRs).

ADR 4/04 – Seatbelts specifies requirements for seatbelts to restrain vehicle occupants under impact conditions, facilitate fastening and correct adjustment, assist the driver to remain in the driver's seat and thus maintain control of the vehicle in an emergency situation, and provide protection against ejection in an accident.

This Regulation Impact Statement (RIS) examines the case for amending ADR 4/04 to re-align it with the latest version of the international standard United Nations Economic Commission for Europe (UNECE) Regulation 16.

2. Background

2.1. The Problem

Historically, ADR 4 set unique Australian requirements for seatbelts until 2006. Following a comprehensive review at that time, it was aligned (or “harmonised”) with UNECE Regulation 16, series 04. This was done by adopting the text of UNECE R 16/04 for the Australian requirements and also by listing the regulation as an acceptable alternative standard within the ADR.

In February 2008, the United Nations updated UNECE R 16/04 to the 05 series. The main change was to require the fitting of seatbelt reminders (safety-belt reminders) for the driver's position of passenger cars and Sports Utility Vehicles (SUVs). It was then updated to the 06 series in July 2009. This included requiring any folding seats to be fitted with seatbelts, and for every seatbelt, whether mandated by the regulation or fitted at the manufacturer's discretion, to meet the prescribed performance tests. In addition, there were a number of other minor adjustments made to the testing procedures. A summary of the 05 and 06 series of amendments is included at Appendix 2.

As a result of these amendments, ADR 4/04 has now moved out of alignment with UNECE R 16. The problem is that new vehicles manufactured to meet the latest UNECE standard may be unable to be certified for supply to the Australian market without administrative concessions having to be given. The problem is also that new vehicles supplied to Australia may not meet the latest internationally agreed levels of safety performance.

2.2. Objectives

One objective is to ensure that the ADR provisions do not present a technical barrier to vehicle manufacturers wishing to supply Australia with new vehicles meeting a higher level of safety.

Another objective is to reduce the road trauma arising from unrestrained vehicle occupants.

3. Options

3.1. Option 1: Take No Action

Under this option, vehicles would be required to continue to comply with the current ADR 4/04 requirements. This option would not permit the updating of the ADR provisions and would result in the ADR becoming a technical barrier to trade with regard to vehicles meeting a higher level of safety.

3.2. Option 2: Adopt the Proposed Minor Amendments

This option would bring the ADR up to date with international regulations and ensure that vehicles complying with these standards will be accepted into the Australian market. ADR 4 is based on the following international standard as adopted by the UNECE:

Regulation No. 16 - UNIFORM PROVISIONS CONCERNING THE APPROVAL OF: I. SAFETY-BELTS, RESTRAINT SYSTEMS, CHILD RESTRAINT SYSTEMS AND ISOFIX CHILD RESTRAINT SYSTEMS FOR OCCUPANTS OF POWER-DRIVEN VEHICLES and II. VEHICLES EQUIPPED WITH SAFETY-BELTS, SAFETY-BELT REMINDER, RESTRAINT SYSTEMS, CHILD RESTRAINT SYSTEMS AND ISOFIX CHILD RESTRAINT SYSTEMS.

The adoption of the latest version of UNECE R 16 would also provide an opportunity to better address the issue of unrestrained vehicle occupant trauma.

Although not central to this RIS, adoption of the latest version of UNECE R 16 would also allow for amendments relating to child restraints and ADR 34. In addition, it may be an opportunity to include previously agreed amendments relating to providing an exemption from having to meet certain requirements of the dynamic test in ADR 4 for any front seating positions that are subject to ADR 69/00 – Full Frontal Impact Occupant Protection.

3.3. Option 3: Delete the ADR

Under this option, vehicles would no longer be required to comply with ADR 4/04 requirements.

The ADRs are subject to a review every ten years to ensure that they remain relevant, cost effective and do not become a barrier to the importation of safer vehicles and vehicle components. ADR 4/03 was reviewed in 2006, and the issue of whether to retain or delete the ADR was considered and rejected. Therefore, this option has not been considered further in the RIS.

3.4. Option 4: Non-regulatory Option

Under this option, non-regulatory options such as suasion (publicity, social pressure etc), pure market approaches (property rights) and economic approaches (taxes, charges, fees, or subsidies) would be considered that would have the same effect as

the proposal for this amendment. As with Option 3, non-regulatory options were considered and rejected as part of the full review of ADR 4/03 in 2006.

Therefore, this option has not been considered any further in the RIS.

4. Analysis

4.1. Option 1: Take No Action

This option would involve maintaining ADR 4/04 in its current form. By not updating the ADR provisions to the latest UNECE version, this option would perpetuate what are now unique Australian requirements. This prevents new vehicles designed and tested to the latest international standard from complying with the ADR. For example, the ADR 4/04 dynamic test requirements for seatbelt assemblies and restraint systems currently require that a deceleration test be conducted. The corresponding requirements in UNECE R 16 were amended in 2008 to allow for an acceleration test to be conducted as an alternative to the deceleration test. Therefore, vehicles tested according to the acceleration test in the latest international standard would not comply with the ADR in its current form. In addition, by not mandating the latest version of UNECE R 16, vehicles supplied to Australia may not meet the latest internationally agreed levels of safety performance including for seatbelt reminders or for folding seats.

This option would be disadvantageous to manufacturers who are currently designing to the latest international standard.

This option would not meet the objective of this statement.

4.2. Option 2: Adopt the Proposed Minor Amendments

This option would involve aligning ADR 4/04 with the latest revision of UNECE R 16. Under this option, vehicles designed and tested to the latest international standard would comply with the ADR.

UNECE R 16 has been amended by the United Nations a number of times since it was last reviewed in Australia in 2006. It has now moved from the 04 series to the 06 series. The adoption of the 05 and 06 series of amendments within ADR 4 in particular could provide an opportunity to further address the problem of unrestrained vehicle occupant trauma, which is the main purpose of any seatbelt standard. The issue of non-wearing of seatbelts was specifically looked at in 2004, when a consultation RIS by the then Department of Transport and Regional Services examined the need for Australian Government intervention for the provision of seatbelt reminders for passenger cars and SUVs. Seatbelt reminders are systems that alert the vehicle occupant should they begin to operate a vehicle without first fastening their seatbelt.

The RIS did find a positive case for fitting a simple low cost seatbelt reminder to the driver position, but at the time did not support a regulatory approach. The primary reason for this was that industry surveys and Department of Transport and Regional Services forecasts indicated that 95 per cent of passenger vehicles would be fitted with these devices by 2007. It was also highly significant that at the time there was no international regulation in place that covered seatbelt reminders. This would have

made any Australian requirement unique and so costly for industry to implement. The RIS recommended a voluntary approach, with a recommendation to follow-up on the effectiveness of this at a future date (unspecified but post 2007) and reconsider the case for regulation if a voluntary fitment rate of 95 per cent was not achieved.

A follow-up survey in 2010 indicated that a voluntary fitment rate of 95 per cent had not been achieved and is still not being achieved, reaching approximately 89 per cent. The voluntary approach included seatbelt reminders being a prerequisite to gaining a five star vehicle rating under the Australasian New Car Assessment Program (ANCAP). This, coupled with UNECE R 16 mandating seatbelt reminder systems with a phase-in period starting from 2009, now delivers a compelling case in 2011 to also mandate the same requirements in Australia.

In terms of safety, this option would provide vehicle owners with the benefit of reduced trauma from unrestrained vehicle occupants as a result of the mandating of seatbelt reminders for the driver's position of passenger cars and SUVs.

This option would also require folding seats to be equipped with seatbelts or restraint systems. This requirement was previously contained in ADR 4 but was removed when it was harmonised with UNECE R 16/04 as part of the 2006 review. Although it had been a long standing requirement in the ADR, it was recognised at the time that the international standard setting body did not deem it necessary to regulate on the topic. In these circumstances it had to be accepted that folding seats are for occasional use only and that the world market appears to be addressing seatbelt safety for these seats. However, the international standard setting body has now introduced regulations for folding seats. This has been in an effort to reinforce consistency between the UNECE regulations and the current European regulations and in general recognition of the safety benefits of seatbelts. This means that the original Australian position can now be accommodated within the international standards framework.

Finally, the proposed amendments would offer an opportunity for (expected) upcoming amendments to ADR 34/01 to allow for ISOFIX based child restraint systems in addition to the current Australian child restraint systems to be reflected in ADR 4 (but mostly in ADR 5). ADR 4 and 5 contain ISOFIX requirements, as they are both aligned with UNECE regulations and this is where the UNECE place their child restraint anchorage requirements, but the requirements are currently exempted out. This amendment would provide an opportunity to re-introduce the ISOFIX requirements into ADR 4 (and 5) to allow manufacturers the option of providing and testing ISOFIX anchorages in their vehicles. The detailed case for these amendments is currently the subject of another RIS. They are only mentioned here because of the overlap of ADRs 4, 5, 34 and UNECE R 14 and R 16.

The detailed form of the above amendments would be determined in consultation with industry. The principle used would be that they would be modelled as closely as possible on the corresponding requirements within UNECE R 16. There would be a change of the ADR revision from 4/04 to 4/05.

This option would meet all of the objectives of this statement.

5. Impacts

5.1. Cost to business/consumers

The new vehicle certification system administered by the Department of Infrastructure and Transport imposes costs on industry. Before a new vehicle can be issued an identification plate (allowing it to be supplied to the market) test evidence must be provided to show that the vehicle meets all relevant ADRs. This evidence consists primarily of summaries of tests performed on various components or the whole vehicle.

Option 1, taking no action, would preserve the status quo and not impose any additional cost on vehicle manufacturers.

Option 2, adopt the proposed minor amendments, would make little change to the certification cost for the majority of manufacturers, as the certification process will have already been carried out for other international markets. For manufacturers who do not already certify vehicles for other markets, there would be some increase in certification costs, however, this would be negligible. This is because the testing procedure for seatbelt reminders is straightforward, requiring minimal time and resources. There would be an increase in costs other than those related to certification, associated with the components and wiring to be fitted. The costs for two different types of seatbelt reminder systems are provided in Table 1. UNECE R 16 mandates the simple type.

Table 1 Cost of seatbelt reminders

| Seating position | Type of System | |
|------------------|----------------|--------------|
| | Simple | Semi-complex |
| Driver | \$18 | \$61 |
| Front passenger | \$43 | \$92 |
| Rear occupants | \$104 | \$195 |

Source: Department of Transport and Regional Services, 2004 - updated to 2010 prices

There would be a cost imposed on the target audience of the regulation, that is, drivers who do not fasten their seatbelt, associated with the intrusive nature of the audible signal. However, the intention of the regulation is to encourage seatbelt use and the audible signal is one of the mechanisms through which this is achieved. There would be no cost imposed on drivers who occasionally have their seatbelt unfastened for a valid reason, for instance when reversing out of a car park. According to the latest version of UNECE R 16, the audible warning signal to the driver need only be activated when a vehicle is normal operation, that is, travelling forward at a speed greater than 10 km/h, and when at least one of the following conditions has been satisfied: the vehicle has travelled a minimum distance; exceeded a certain speed; or the engine has been running for a minimum length of time (excluding the time the vehicle is not in normal operation).

Regarding seatbelts for folding seats, there would again be little change in the cost in certification or for the installation of the seatbelts. All other seatbelts in the vehicle are already subject to the regulated requirements for which manufacturers have established test and installation procedures that could simply be extended to include these seatbelts as well.

5.2. Benefits

Option 2, adopt the proposed minor amendments, would align ADR 4 with the latest international standard, thereby assisting manufacturers to supply to both the Australian and international markets.

It would have the additional benefit of reducing road trauma resulting from unrestrained vehicle occupants. The 2004 RIS included a cost-benefit analysis of mandating seatbelt reminder systems for various seating positions. The annual net benefits presented in the 2004 RIS are shown in Tables 3 to 10 at Appendix 3.

The method of analysis used in 2004 is still valid today, although adjustments have had to be made in regard to monetary values and the effectiveness of modern reminder systems. The method used in 2004 involved firstly developing an injury base for fatal, serious and minor injuries and assuming a number of effectiveness rates for seatbelt reminders to arrive at the expected benefits from seatbelt reminders. The expected benefits were then adjusted for likelihood of accidents and quantified in monetary terms. The 2004 cost-benefit analysis used costs of injury calculated according to the human capital approach. The Office of Best Practice Regulation (OBPR) has since determined that willingness to pay is the appropriate method to estimate the value of life. Therefore, the cost-benefit analysis was updated to use a cost of a fatality based on the willingness to pay method. All costs of injury and costs of fitting seatbelt reminders were updated to 2010 values using the change in Consumer Price Index (ABS, 2010).

The cost-benefit analysis was also updated to account for the current voluntary fitment rate of 89 per cent, as well as the latest effectiveness of seatbelt reminders of approximately 7 per cent. This effectiveness estimate was sourced from research used towards the development of the amendments to UNECE R 16 (United Nations Economic Commission for Europe, 2007). Although Australian research has previously estimated an effectiveness of 10 per cent for a simple reminder system (Fildes et al, 2002), the lower value of 7 per cent was chosen as a conservative value. In accordance with the *Best Practice Regulation Handbook* published by OBPR, the net benefits were calculated using a discount rate of 7 per cent, with sensitivity tests conducted at 3 per cent and 10 per cent. Table 2 shows a summary of the updated annual net benefits and Benefit-Cost Ratios calculated for various fleet life periods. In general, 25 years is considered the most accurate period over which to calculate the benefits. This is because historical crash data has shown that nearly all crashes involve vehicles that are 25 years old or less (Fildes et al, 2002). However, given that the voluntary fitment rate of seatbelt reminders is already relatively high, in this case, a shorter period of 15 years is considered to be more appropriate. Detailed results are shown in Tables 11 to 18 at Appendix 3.

Table 2 Summary of Net Benefits and Benefit-Cost Ratios from the provision of seatbelt reminders to the driver position of passenger cars and Sports Utility Vehicles based on an effectiveness of 7%

| Time Period | Net Benefits (\$) | | | Benefit-Cost Ratio | | |
|-------------|-------------------|---------|---------|--------------------|------|------|
| | Discount Rate | | | Discount Rate | | |
| | 3% | 7% | 10% | 3% | 7% | 10% |
| 15 years | 686,231 | 276,219 | 59,155 | 1.63 | 1.25 | 1.05 |
| 20 years | 966,702 | 419,762 | 147,725 | 1.89 | 1.39 | 1.14 |
| 25 years | 1,050,839 | 455,648 | 167,020 | 1.97 | 1.42 | 1.15 |

Table 2 shows that fitting seatbelt reminders to the driver position of passenger cars and SUVs would result in annual net benefits of \$276,219, based on a 15 year period of vehicle crash life, 7 per cent effectiveness and 7 per cent discount rate.

Regarding seatbelts for folding seats, the substantial safety benefits of seatbelts are well established. While it is assumed that manufacturers would as a matter of course include seatbelts on folding seats and design and test them accordingly, there would be a benefit from the amendment in guaranteeing that this is the case at all times.

6. Consultation

Development of the Australian Design Rules (ADRs) under the *Motor Vehicle Standards Act 1989 (C'th)* (MVSA) is the responsibility of the Vehicle Safety Standards Branch of the Department of Infrastructure and Transport. It is carried out in consultation with representatives of the Australian Government, state and territory governments, manufacturing and operating industries, road user groups and experts in the field of road safety.

The Department undertakes public consultation on significant proposals. Under Part 2, section 8 of the MVSA the Minister may consult with state and territory agencies responsible for road safety, organizations and persons involved in the road vehicle industry and organizations representing road vehicle users before determining a design rule.

The Technical Liaison Group (TLG) has for a number of years been the consultative committee for advising on ADR developments. It includes members of the Australian, state and territory governments, the vehicle manufacturing and operating industries and consumer groups. Although the TLG has now been reconstituted under a higher level Strategic Vehicle Safety and Environment Group (SVSEG), its role in ADR development will continue in a similar way to before. The full membership of TLG is shown at Appendix 1.

The proposed amendments were discussed with industry in March 2010. Industry indicated that it was comfortable with mandating seatbelt reminders and seatbelts for folding seats through the harmonisation of ADR 4/04 with the latest version of UNECE R 16. However, industry also stated that it would still need to comment on the detailed form of the amendments.

A draft RIS, together with the draft ADR, was provided to SVSEG/TLG members in August 2011 and no objections were raised. Suitable lead times for implementing the ADR were subsequently agreed with industry. Some minor changes were also made to the draft ADR to better reflect the transitional arrangements of UNECE R 16.

As the amendment is considered minor in nature, SVSEG members agreed that further consultation through the public comment process was not necessary. The state and territory members represented the views of their jurisdictions and so there was no need for further consultation through the Transport and Infrastructure Senior Officials' Committee (TISOC) or the Standing Council on Transport and Infrastructure (SCOTI).

7. Conclusions and Recommendations

Option 2, adopt the proposed amendments, was regarded as the most effective solution in terms of achieving the objectives established earlier. Under this option ADR 4/04 would be amended to become ADR 4/05 and would accommodate the latest revision of UNECE R 16.

Option 1, taking no action, does not meet any of the objectives previously outlined and continues to perpetuate the inadequacies of the current ADR. As such it was not regarded as a viable solution.

As Option 2, adopt the proposed amendments, is supported by industry and would provide a net benefit to consumers and the wider community, it is the recommended option.

8. Implementation and Review

Amendments to the ADRs are determined by the Parliamentary Secretary for Infrastructure and Transport under section 7 of the *Motor Vehicle Standards Act 1989*. At the time that the amendment is signed by the Parliamentary Secretary, registered subscribers to the ADRs are e-mailed directly notifying them of the amendment to the ADR. Registered subscribers to the ADRs include but are not limited to; various industry groups such as vehicle manufacturers, designers and test facilities, and vehicle user organisations.

As Australian Government regulations, ADRs are subject to review every ten years. This ensures that they remain relevant, cost effective and do not become a barrier to the importation of safer vehicles and vehicle components. ADR 4 will be scheduled for a full review on an ongoing basis and in accordance with the Australian Government's Business Review Agenda. The timing for review is to be determined.

9. References

Australian Bureau of Statistics (2010). *Consumer Price Index, Australia, Jun 2010*. Report No. 6401.0. Retrieved from <http://www.abs.gov.au/AUSSTATS/abs@.nsf/DetailsPage/6401.0Jun%202010?OpenDocument>

Department of Transport and Regional Services (2004). *Regulation Impact Statement*

Seatbelt Reminders.

Fildes, B., Fitzharris, M., Koppel, S., & Vulcan, A.P. (2002). *Benefits of seatbelt reminder systems*. (Report No. CR211a). Canberra: Australian Transport Safety Bureau. Retrieved July 10, 2008 from <http://www.monash.edu.au/muarc/reports/atsb211a.pdf>

United Nations Economic Commission for Europe (UNECE) (2007). *Report of the Working Party on Passive Safety (GRSP) on its fortieth session (12-15 December 2006)*. Available from <http://www.unece.org/trans/doc/2007/wp29grsp/ECE-TRANS-WP29-GRSP-40e.pdf>

Australian Design Rules are available from http://www.Infrastructure.gov.au/roads/motor/design/adr_online.aspx
Vehicle Standard (Australian Design Rule 4/04 – Seatbelts) 2006

UNECE regulation documents are available from <http://www.unece.org/trans/main/wp29/wp29regs.html>
Regulation No. 16 - UNIFORM PROVISIONS CONCERNING THE APPROVAL OF VEHICLES WITH REGARD TO THE INSTALLATION OF LIGHTING AND LIGHT SIGNALLING DEVICES.

Appendix 1

Membership of the Technical Liaison Group (TLG)*

Organisation

Manufacturer Representatives

Australian Road Transport Suppliers Association
Commercial Vehicle Industry Association
Federal Chamber of Automotive Industries
Federation of Automotive Product Manufacturers
Truck Industry Council
Bus Industry Federation

Consumer Representatives

Australian Automobile Association
Australian Trucking Association
Australian Motorcycle Council

Government Representatives

Department of Infrastructure and Transport, Australian Government
Department of Transport, Energy and Infrastructure, South Australia
Queensland Transport
Roads and Traffic Authority, New South Wales
VicRoads, Victoria
Department of Planning and Infrastructure, Western Australia
Office of Transport, Australian Capital Territory
Department of Infrastructure, Energy and Resources, Tasmania
Department of Planning and Infrastructure, Northern Territory
Land Transport Safety Authority of New Zealand

Inter Governmental Agency

National Transport Commission

* In 2010 this was reconstituted as the Strategic Vehicle Safety and Environment Group (SVSEG)

Appendix 2

| Document reference | Status of document | Paragraph | Summary of amendment |
|-----------------------|--------------------------|--|---|
| Add.15/Rev.5/Corr.4 | Corr.5 to Suppl.15 to 04 | 8.3.5 15.1.3 Annex 17, 1.1 (c) | Corrected wording. Changed transitional arrangement to allow vehicles other than M1 category which are not affected by Supplement 15 to the 04 series of amendments with an existing approval to remain valid beyond the 7 year transitional period. Replaced "ISOFIX child restraint systems" with "child restraint systems". |
| Add.15/Rev.5/Corr.5 | Corr.2 to Suppl.16 to 04 | 2.38 15.2.4 | Expanded reference for dimensions to include an additional figure (figures 1 to 7). Added extra reference to supplement 14 as well as 16. Changed numbers of following paragraphs. |
| Add.15/Rev.5/Corr.6 | Corr.1 to Rev.5 | 7.7.1.1 7.7.1.4 | Allowed an alternative mounting of the belt assembly as described by 7.7.1. Changed "the seats" to "the seats of the vehicle". |
| Add.15/Rev.5/Amend.2 | Suppl.18 to 04 | 1 8.1.1 8.2.2.5 8.2.2.5.2 Annex 17 app 4 | Changed scope of the standard to include the class of applicable vehicles, updated reference in footnote. Removed reference to annex 7 of the consolidated resolution from text, added as a footnote. Removed the requirement for there to be no occupant in the seat when ensuring child restraint install-ability. Added test specifics for testing of seatbelt tensions. Added new appendix to describe the installation of 10-year manikin for seatbelt testing, as referred to by new 8.2.2.5.2. |
| Add. 15/Rev.5/Amend.3 | Suppl.19 to 04 | Contents 7.7.4 7.7.5 7.7.7 7.10.1 | Changed annex 8 to include acceleration as well as deceleration. Added an alternative option to deceleration test device, with specifications, as 7.7.4.2. Changed test description to include instructions for the above mentioned alternative to the deceleration test device. Added an additional paragraph, allowing for a test performed at worse than the specified conditions to allow approval. Changed wording of paragraph - added dot points instead of long paragraph. |

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| | | Annex 1B Annex 1B Annex 8 | Added a new item to indicate whether deceleration or acceleration test device. Changed following numbers. Changed annex to include alternative acceleration test. |
| Add.15/Rev.5/Amend.3/Corr.1 | Corr.1 to Suppl.19 to 04 | Annex 8 | Made minor correction to figure. |
| Add. 15/Rev.5/Amend.4 | 05 series | Title 1.4 2.39 5.2.2 8.1 8.4 15.2 15.2.10-16 Annex 1B Annex 1A Annex 2 Annex 16, table Annex 18 | Added part II to include safety-belt reminder. Added reference to safety-belt reminder. Added new item to define safety-belt reminder, and subsequent definitions. Updated reference from 04 to 05. Changed "vehicle equipment" to "safety-belt and restraint systems equipment". Added new item to describe requirements for safety-belt reminder equipment, subsequent items to describe intricately the requirements of the safety-belt reminder system. Added reference to safety-belt reminder. Added transitional arrangements for new regulations. Added yes/no for safety-belt reminder. Added space for test information - date, number, person responsible for test. Changed references to 04 to 05. Changed minimum requirements for safety belts and retractors (removed A, B). Added new annex to describe testing regime for safety-belt reminder system. |
| Add. 15/Rev.5/Amend.4 | Corr.1 to 05 | Annex 1A | Added new items to indicate technical service responsible for carrying out the test as well as the date and number of the test report. |
| Add.15/Rev.5/Amend.4/Corr.1 | Corr.2 to 05 | 1.4 | Added footnote to scope to allow Japan to continue requiring N1 vehicles to meet its national requirements for seatbelt reminders. |
| Add.15/Rev.6 | Suppl.1 to 05 | 6.3.1.2 7.4.1.1 | Added footnote to specify requirements for the width without load of woven straps in twill construction with high-tenacity polyester yarns. Amended the temperature-conditioning requirements for straps to include a reference to ISO 139 (2005). |

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| | | 7.4.1.2.1 | Replaced reference to ISO 105-B02 (1978) in the light-conditioning requirements with reference to ISO 105-B02 (2002). |
| | | 7.4.2.3 | Deleted para 7.4.2.3 relating to the measurement of the strap width from the breaking strength of strap test (moved to separate para 7.4.3). |
| | | 7.4.2.4 | Renumbered as 7.4.2.3. |
| | | 7.4.2.5 | Renumbered as 7.4.2.4. |
| | | 7.4.3-7.4.3.3 | Added new section for the testing and measurement of strap width under load. |
| | | 7.6.2.2 | Renumbered footnote 4 to footnote 5. |
| Add.15/Rev.6/Amend.1 | Suppl. 2 to 05 | 1.5 | Added new para to extend scope of reg (at request of manufacturer) to the installation of child restraint systems and ISOFIX child restraint systems for M2 and M3 vehicles. |
| | | 7.4.1 | Replaced reference to para 3.2.4 with reference to para 3.2.3. |
| | | 8.3.5 | Added M2 and M3 vehicles to the list to of vehicles required to meet the information requirements of Annex 17. |
| Add.15/Rev.6/Amend.2 | 06 series | 5.2.2 | Updated reference from 05 to 06. |
| | | 8.1.1 | Amended to require folding seats to be fitted with seatbelts or restraint systems. Added requirement for seatbelts and/or restraint systems in light and heavy buses of class I, II or A (those designed to allow carriage of standing passengers) to comply with the regulation if they are fitted in these vehicles. Added text to provide Contracting Parties with the right to demand the installation of seatbelts in Class II buses. |
| | | 15.2.17-22 Annex 2 | Added transitional arrangements for the 06 series of amendments. Changed references to 05 to 06. |
| Add.15/Rev.6/Amend.2 | Corr.1 to 06 | 15.2.20 | Amended transitional arrangement for 06 series of amendments. |
| Add.15/Rev.6/Corr.1 | Corr.1 to Rev.6 | 6.3.1.2 | Changed 980 daN + 100 daN to 980 daN + 100 - 0 daN to clarify tolerance. |
| | | 7.4.1.1 | Amended the temperature-conditioning requirements for straps to allow for conditioning using the standard atmosphere or the standard alternative atmosphere. |
| | | 7.4.1.2.1 | Replaced reference to ISO 105-B02 (2002) in the light-conditioning requirements with reference to ISO 105-B02 (1994 / Amd2:2000). |

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| | | 7.4.1.2.2 7.4.1.3.1 7.4.1.6.2 7.4.3.3 7.6.2.2 | Removed conditioning requirements and added reference to conditioning requirements in para 7.4.1.1. As for 7.4.1.2.2. As for 7.4.1.2.2. Changed 980 daN + 100 daN to 980 daN + 100 - 0 daN to clarify tolerance. Changed the average rate of increase of acceleration from between 25-150 g/s to between 55-150 g/s when testing retractors for sensitivity to strap movement. |
| Add.15/Rev.6/Amend.2/Corr.2 | Corr.2 to 06 | 8.1.1 | Removed the requirement for Contracting Parties to notify the Secretary-General of the UN should they require the installation of seatbelts in Class II buses. |
| Add.15/Rev.6/Amend.3 | Suppl.1 to 06 | 5.3.2 6.2.2.2 15.2.23 | Changed references to 04 series to references to 06 series to align the series of amendments for safety-belt type and vehicle type. Amended to permit to installation of red warning lights into the buckle. Added para to transitional provisions so that seatbelts intended to be installed in vehicles approved before a new series of amendments came into force can be approved under a preceding series of amendments. |

Appendix 3

Table 3 Net Benefits from the provision of seatbelt reminders over a 10 year period – 2004 RIS values

| Device effectiveness | Seating Position | Net Benefits | | |
|----------------------|---------------------|---------------|---------------|---------------|
| | | Discount rate | | |
| | | 4% | 5% | 7% |
| 5% | Driver | -\$4,147,535 | -\$4,326,927 | -\$4,648,888 |
| | 10 years Front seat | -\$13,805,310 | -\$14,036,715 | -\$14,452,026 |
| | All occupants | -\$40,068,232 | -\$40,333,605 | -\$40,809,879 |
| 10% | Driver | -\$191,469 | -\$550,253 | -\$1,194,176 |
| | 10 years Front seat | -\$8,702,220 | -\$9,165,030 | -\$9,995,652 |
| | All occupants | -\$34,216,065 | -\$34,746,810 | -\$35,699,359 |
| 15% | Driver | \$3,764,596 | \$3,226,420 | \$2,260,536 |
| | 10 years Front seat | -\$3,599,129 | -\$4,293,345 | -\$5,539,278 |
| | All occupants | -\$28,363,897 | -\$29,160,015 | -\$30,588,838 |
| 20% | Driver | \$7,720,661 | \$7,003,093 | \$5,715,248 |
| | 10 years Front seat | \$1,503,961 | \$578,341 | -\$1,082,904 |
| | All occupants | -\$22,511,729 | -\$23,573,220 | -\$25,478,317 |

Table 4 Benefit-Cost Ratio of seatbelt reminders over a 10 year period – 2004 RIS values

| Device effectiveness | Seating position | Benefit-Cost Ratio | | |
|----------------------|---------------------|--------------------|------|------|
| | | Discount rate | | |
| | | 4% | 5% | 7% |
| 5% | Driver | 0.49 | 0.47 | 0.43 |
| | 10 years Front seat | 0.27 | 0.26 | 0.24 |
| | All occupants | 0.13 | 0.12 | 0.11 |
| 10% | Driver | 0.98 | 0.93 | 0.85 |
| | 10 years Front seat | 0.54 | 0.52 | 0.47 |
| | All occupants | 0.25 | 0.24 | 0.22 |
| 15% | Driver | 1.46 | 1.40 | 1.28 |
| | 10 years Front seat | 0.81 | 0.77 | 0.71 |
| | All occupants | 0.38 | 0.36 | 0.33 |
| 20% | Driver | 1.95 | 1.86 | 1.71 |
| | 10 years Front seat | 1.08 | 1.03 | 0.94 |
| | All occupants | 0.51 | 0.49 | 0.45 |

Table 5 Net Benefits from the provision of seatbelt reminders over a 15 year period – 2004 RIS values

| Device effectiveness | Seating position | Net Benefits | | |
|----------------------|------------------|---------------|---------------|---------------|
| | | Discount rate | | |
| | | 4% | 5% | 7% |
| 5% | Driver | -\$2,656,693 | -\$3,008,868 | -\$3,614,080 |
| 15 years | Front seat | -\$11,882,212 | -\$12,336,497 | -\$13,117,184 |
| | All occupants | -\$37,862,845 | -\$38,383,814 | -\$39,279,098 |
| 10% | Driver | \$2,790,214 | \$2,085,865 | \$875,441 |
| 15 years | Front seat | -\$4,856,024 | -\$5,764,593 | -\$7,325,969 |
| | All occupants | -\$29,805,290 | -\$30,847,227 | -\$32,637,795 |
| 15% | Driver | \$8,237,121 | \$7,180,597 | \$5,364,961 |
| 15 years | Front seat | \$2,170,164 | \$807,310 | -\$1,534,753 |
| | All occupants | -\$21,747,735 | -\$23,310,641 | -\$25,996,493 |
| 20% | Driver | \$13,684,029 | \$12,275,329 | \$9,854,482 |
| 15 years | Front seat | \$9,196,352 | \$7,379,213 | \$4,256,463 |
| | All occupants | -\$13,690,180 | -\$15,774,055 | -\$19,355,190 |

Table 6 Benefit-Cost Ratio of seatbelt reminders over a 15 year period – 2004 RIS values

| Device effectiveness | Seating position | Benefit-Cost Ratio | | |
|----------------------|------------------|--------------------|------|------|
| | | Discount rate | | |
| | | 4% | 5% | 7% |
| 5% | Driver | 0.67 | 0.63 | 0.55 |
| 15 years | Front seat | 0.37 | 0.35 | 0.31 |
| | All occupants | 0.18 | 0.16 | 0.14 |
| 10% | Driver | 1.34 | 1.26 | 1.11 |
| 15 years | Front seat | 0.74 | 0.70 | 0.61 |
| | All occupants | 0.35 | 0.33 | 0.29 |
| 15% | Driver | 2.02 | 1.89 | 1.66 |
| 15 years | Front seat | 1.11 | 1.04 | 0.92 |
| | All occupants | 0.53 | 0.49 | 0.43 |
| 20% | Driver | 2.69 | 2.51 | 2.22 |
| 15 years | Front seat | 1.49 | 1.39 | 1.23 |
| | All occupants | 0.70 | 0.66 | 0.58 |

Table 7 Net Benefits from the provision of seatbelt reminders over a 20 year period – 2004 RIS values

| Device effectiveness | Seating position | Net Benefits | | |
|----------------------|------------------|----------------|---------------|---------------|
| | | Discount rate | | |
| | | 4% | 5% | 7% |
| 5% 20 years | Driver | -\$1,878,698 | -\$2,350,782 | -\$3,141,995 |
| | Front seat | -\$10,878,645 | -\$11,487,606 | -\$12,508,224 |
| | All occupants | -\$36,711,965 | -\$37,410,315 | -\$38,580,748 |
| 10% 20 years | Driver | \$4,346,204 | \$3,402,035 | \$1,819,609 |
| | Front seat | -\$2,848,890 | -\$4,066,811 | -\$6,108,047 |
| | All occupants | -\$27,503,531 | -\$28,900,229 | -\$31,241,096 |
| 15% 20 years | Driver | \$10,571,106* | \$9,154,853 | \$6,781,214 |
| | Front seat | \$5,180,865* | \$3,353,983 | \$292,129 |
| | All occupants | -\$18,295,096* | -\$20,390,144 | -\$23,901,445 |
| 20% 20 years | Driver | \$16,796,007 | \$14,907,671 | \$11,742,818 |
| | Front seat | \$13,210,620 | \$10,774,778 | \$6,692,305 |
| | All occupants | -\$9,086,661 | -\$11,880,059 | -\$16,561,793 |

* Values vary slightly from those presented in the 2004 RIS due to an error in the original calculations

Table 8 Benefit-Cost Ratio of seatbelt reminders over a 20 year period – 2004 RIS values

| Device effectiveness | Seating position | Benefit-Cost Ratio | | |
|----------------------|------------------|--------------------|------|------|
| | | Discount rate | | |
| | | 4% | 5% | 7% |
| 5% 20 years | Driver | 0.77 | 0.71 | 0.61 |
| | Front seat | 0.42 | 0.39 | 0.34 |
| | All occupants | 0.20 | 0.19 | 0.16 |
| 10% 20 years | Driver | 1.54 | 1.42 | 1.22 |
| | Front seat | 0.85 | 0.78 | 0.68 |
| | All occupants | 0.40 | 0.37 | 0.32 |
| 15% 20 years | Driver | 2.30* | 2.13 | 1.84 |
| | Front seat | 1.27* | 1.18 | 1.02 |
| | All occupants | 0.60* | 0.56 | 0.48 |
| 20% 20 years | Driver | 3.07 | 2.84 | 2.45 |
| | Front seat | 1.70 | 1.57 | 1.35 |
| | All occupants | 0.80 | 0.74 | 0.64 |

* Values vary slightly from those presented in the 2004 RIS due to an error in the original calculations

Table 9 Net Benefits from the provision of seatbelt reminders over a 25 year period – 2004 RIS values

| Device effectiveness | Seating position | Net Benefits | | |
|----------------------|------------------|----------------|----------------|----------------|
| | | Discount rate | | |
| | | 4% | 5% | 7% |
| 5% 25 years | Driver | -\$1,655,874 | -\$2,171,390 | -\$3,023,974 |
| | Front seat | -\$10,591,216 | -\$11,256,201 | -\$12,355,983 |
| | All occupants | -\$36,382,344 | -\$37,144,942 | -\$38,406,161 |
| 10% 25 years | Driver | \$4,791,851 | \$3,760,819* | \$2,055,651* |
| | Front seat | -\$2,274,031 | -\$3,604,001* | -\$5,803,567* |
| | All occupants | -\$26,844,289 | -\$28,369,484* | -\$30,891,922* |
| 15% 25 years | Driver | \$11,239,577* | \$9,693,029 | \$7,135,277 |
| | Front seat | \$6,043,153* | \$4,048,198 | \$748,850 |
| | All occupants | -\$17,306,233* | -\$19,594,026 | -\$23,377,683 |
| 20% 25 years | Driver | \$17,687,302 | \$15,625,239 | \$12,214,903 |
| | Front seat | \$14,360,338 | \$11,700,398 | \$7,301,266 |
| | All occupants | -\$7,768,178 | -\$10,818,568 | -\$15,863,443 |

* Values vary slightly from those presented in the 2004 RIS due to an error in the original calculations

Table 10 Benefit-Cost Ratio of seatbelt reminders over a 25 year period – 2004 RIS values

| Device effectiveness | Seating position | Benefit-Cost Ratio | | |
|----------------------|------------------|--------------------|-------|-------|
| | | Discount rate | | |
| | | 4% | 5% | 7% |
| 5% 25 years | Driver | 0.80 | 0.73 | 0.63 |
| | Front seat | 0.44 | 0.40 | 0.35 |
| | All occupants | 0.21 | 0.19 | 0.16 |
| 10% 25 years | Driver | 1.59 | 1.46* | 1.25* |
| | Front seat | 0.88 | 0.81* | 0.69* |
| | All occupants | 0.42 | 0.38* | 0.33* |
| 15% 25 years | Driver | 2.39* | 2.20 | 1.88 |
| | Front seat | 1.32* | 1.21 | 1.04 |
| | All occupants | 0.62* | 0.57 | 0.49 |
| 20% 25 years | Driver | 3.18 | 2.93 | 2.51 |
| | Front seat | 1.76 | 1.62 | 1.39 |
| | All occupants | 0.83 | 0.76 | 0.65 |

* Values vary slightly from those presented in the 2004 RIS due to an error in the original calculations

Table 11 Net Benefits from the provision of seatbelt reminders over a 10 year period – updated costs, latest effectiveness and latest voluntary fitment rate

| Device effectiveness | Seating position | Net Benefits | | |
|----------------------|------------------|---------------|--------------|--------------|
| | | Discount rate | | |
| | | 3% | 7% | 10% |
| 7% 10 years | Driver | \$172,671 | -\$38,428 | -\$161,690 |
| | Front seat | -\$913,390 | -\$1,185,694 | -\$1,344,695 |
| | All occupants | -\$4,304,103 | -\$4,616,378 | -\$4,798,719 |
| 10% 10 years | Driver | \$713,333 | \$411,764 | \$235,676 |
| | Front seat | -\$215,967 | -\$604,973 | -\$832,117 |
| | All occupants | -\$3,504,306 | -\$3,950,414 | -\$4,210,900 |
| 15% 10 years | Driver | \$1,614,438 | \$1,162,084 | \$897,952 |
| | Front seat | \$946,405 | \$362,895 | \$22,180 |
| | All occupants | -\$2,171,311 | -\$2,840,473 | -\$3,231,202 |
| 20% 10 years | Driver | \$2,515,543 | \$1,912,405 | \$1,560,227 |
| | Front seat | \$2,108,776 | \$1,330,764 | \$876,476 |
| | All occupants | -\$838,316 | -\$1,730,532 | -\$2,251,504 |

Table 12 Benefit-Cost Ratio of seatbelt reminders over a 10 year period – updated costs, latest effectiveness and latest voluntary fitment rate

| Device effectiveness | Seating position | Benefit-Cost Ratio | | |
|----------------------|------------------|--------------------|------|------|
| | | Discount rate | | |
| | | 3% | 7% | 10% |
| 7% 10 years | Driver | 1.16 | 0.96 | 0.85 |
| | Front seat | 0.64 | 0.53 | 0.47 |
| | All occupants | 0.30 | 0.25 | 0.22 |
| 10% 10 years | Driver | 1.66 | 1.38 | 1.22 |
| | Front seat | 0.91 | 0.76 | 0.67 |
| | All occupants | 0.43 | 0.36 | 0.32 |
| 15% 10 years | Driver | 2.48 | 2.07 | 1.82 |
| | Front seat | 1.37 | 1.14 | 1.01 |
| | All occupants | 0.65 | 0.54 | 0.48 |
| 20% 10 years | Driver | 3.31 | 2.76 | 2.43 |
| | Front seat | 1.83 | 1.52 | 1.34 |
| | All occupants | 0.86 | 0.72 | 0.64 |

Table 13 Net Benefits from the provision of seatbelt reminders over a 15 year period – updated costs, latest effectiveness and latest voluntary fitment rate

| Device effectiveness | Seating position | Net Benefits | | |
|----------------------|------------------|---------------|--------------|--------------|
| | | Discount rate | | |
| | | 3% | 7% | 10% |
| 7% 15 years | Driver | \$686,231 | \$276,219 | \$59,155 |
| | Front seat | -\$250,928 | -\$779,819 | -\$1,059,819 |
| | All occupants | -\$3,544,398 | -\$4,150,925 | -\$4,472,026 |
| 10% 15 years | Driver | \$1,446,991 | \$861,259 | \$551,168 |
| | Front seat | \$730,408 | -\$25,151 | -\$425,151 |
| | All occupants | -\$2,419,014 | -\$3,285,481 | -\$3,744,196 |
| 15% 15 years | Driver | \$2,714,924 | \$1,836,327 | \$1,371,190 |
| | Front seat | \$2,365,967 | \$1,232,628 | \$632,629 |
| | All occupants | -\$543,373 | -\$1,843,073 | -\$2,531,146 |
| 20% 15 years | Driver | \$3,982,857 | \$2,811,394 | \$2,191,212 |
| | Front seat | \$4,001,525 | \$2,490,407 | \$1,690,408 |
| | All occupants | \$1,332,268 | -\$400,666 | -\$1,318,096 |

Table 14 Benefit-Cost Ratio of seatbelt reminders over a 15 year period – updated costs, latest effectiveness and latest voluntary fitment rate

| Device effectiveness | Seating position | Benefit-Cost Ratio | | |
|----------------------|------------------|--------------------|------|------|
| | | Discount rate | | |
| | | 3% | 7% | 10% |
| 7% 15 years | Driver | 1.63 | 1.25 | 1.05 |
| | Front seat | 0.90 | 0.69 | 0.58 |
| | All occupants | 0.43 | 0.33 | 0.28 |
| 10% 15 years | Driver | 2.33 | 1.79 | 1.51 |
| | Front seat | 1.29 | 0.99 | 0.83 |
| | All occupants | 0.61 | 0.47 | 0.39 |
| 15% 15 years | Driver | 3.49 | 2.69 | 2.26 |
| | Front seat | 1.93 | 1.49 | 1.25 |
| | All occupants | 0.91 | 0.70 | 0.59 |
| 20% 15 years | Driver | 4.66 | 3.58 | 3.01 |
| | Front seat | 2.57 | 1.98 | 1.67 |
| | All occupants | 1.22 | 0.94 | 0.79 |

Table 15 Net Benefits from the provision of seatbelt reminders over a 20 year period – updated costs, latest effectiveness and latest voluntary fitment rate

| Device effectiveness | Seating position | Net Benefits | | |
|----------------------|------------------|---------------|--------------|--------------|
| | | Discount rate | | |
| | | 3% | 7% | 10% |
| 7% 20 years | Driver | \$966,702 | \$419,762 | \$147,725 |
| | Front seat | \$110,864 | -\$594,657 | -\$945,568 |
| | All occupants | -\$3,129,500 | -\$3,938,583 | -\$4,341,005 |
| 10% 20 years | Driver | \$1,847,664 | \$1,066,321 | \$677,697 |
| | Front seat | \$1,247,253 | \$239,366 | -\$261,936 |
| | All occupants | -\$1,826,302 | -\$2,982,135 | -\$3,557,023 |
| 15% 20 years | Driver | \$3,315,934 | \$2,143,919 | \$1,560,983 |
| | Front seat | \$3,141,234 | \$1,629,404 | \$877,451 |
| | All occupants | \$345,696 | -\$1,388,055 | -\$2,250,387 |
| 20% 20 years | Driver | \$4,784,204 | \$3,221,517 | \$2,444,269 |
| | Front seat | \$5,035,216 | \$3,019,442 | \$2,016,838 |
| | All occupants | \$2,517,693 | \$206,025 | -\$943,750 |

Table 16 Benefit-Cost Ratio of seatbelt reminders over a 20 year period – updated costs, latest effectiveness and latest voluntary fitment rate

| Device effectiveness | Seating position | Benefit-Cost Ratio | | |
|----------------------|------------------|--------------------|------|------|
| | | Discount rate | | |
| | | 3% | 7% | 10% |
| 7% 20 years | Driver | 1.89 | 1.39 | 1.14 |
| | Front seat | 1.04 | 0.77 | 0.63 |
| | All occupants | 0.49 | 0.36 | 0.30 |
| 10% 20 years | Driver | 2.70 | 1.98 | 1.62 |
| | Front seat | 1.49 | 1.09 | 0.90 |
| | All occupants | 0.70 | 0.52 | 0.42 |
| 15% 20 years | Driver | 4.05 | 2.97 | 2.43 |
| | Front seat | 2.24 | 1.64 | 1.35 |
| | All occupants | 1.06 | 0.78 | 0.64 |
| 20% 20 years | Driver | 5.39 | 3.96 | 3.24 |
| | Front seat | 2.98 | 2.19 | 1.79 |
| | All occupants | 1.41 | 1.03 | 0.85 |

Table 17 Net Benefits from the provision of seatbelt reminders over a 25 year period – updated costs, latest effectiveness and latest voluntary fitment rate

| Device effectiveness | Seating position | Net Benefits | | |
|----------------------|------------------|---------------|--------------|--------------|
| | | Discount rate | | |
| | | 3% | 7% | 10% |
| 7% 25 years | Driver | \$1,050,839 | \$455,648 | \$167,020 |
| | Front seat | \$219,396 | -\$548,366 | -\$920,679 |
| | All occupants | -\$3,005,037 | -\$3,885,498 | -\$4,312,462 |
| 10% 25 years | Driver | \$1,967,860 | \$1,117,586 | \$705,261 |
| | Front seat | \$1,402,298 | \$305,495 | -\$226,380 |
| | All occupants | -\$1,648,497 | -\$2,906,299 | -\$3,516,247 |
| 15% 25 years | Driver | \$3,496,228 | \$2,220,817 | \$1,602,330 |
| | Front seat | \$3,373,802 | \$1,728,598 | \$930,786 |
| | All occupants | \$612,402 | -\$1,274,300 | -\$2,189,223 |
| 20% 25 years | Driver | \$5,024,595 | \$3,324,048 | \$2,499,398 |
| | Front seat | \$5,345,306 | \$3,151,700 | \$2,087,951 |
| | All occupants | \$2,873,301 | \$357,698 | -\$862,198 |

Table 18 Benefit-Cost Ratio of seatbelt reminders over a 25 year period – updated costs, latest effectiveness and latest voluntary fitment rate

| Device effectiveness | Seating position | Benefit-Cost Ratio | | |
|----------------------|------------------|--------------------|------|------|
| | | Discount rate | | |
| | | 3% | 7% | 10% |
| 7% 25 years | Driver | 1.97 | 1.42 | 1.15 |
| | Front seat | 1.09 | 0.78 | 0.64 |
| | All occupants | 0.51 | 0.37 | 0.30 |
| 10% 25 years | Driver | 2.81 | 2.03 | 1.65 |
| | Front seat | 1.55 | 1.12 | 0.91 |
| | All occupants | 0.73 | 0.53 | 0.43 |
| 15% 25 years | Driver | 4.21 | 3.04 | 2.47 |
| | Front seat | 2.33 | 1.68 | 1.37 |
| | All occupants | 1.10 | 0.79 | 0.65 |
| 20% 25 years | Driver | 5.61 | 4.05 | 3.30 |
| | Front seat | 3.10 | 2.24 | 1.82 |
| | All occupants | 1.47 | 1.06 | 0.86 |