# DEVICES TO REDUCE THE RISK TO YOUNG PEDESTRIANS FROM REVERSING MOTOR VEHICLES

# SUPPLEMENTARY REPORT

# METHODS OF ISSUING A PERFORMANCE SPECIFICATION

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# Contents

| INTRODUCTION   | 1 |
|--|---|
| INVESTIGATIONS   | 1 |
| International developments   | 1 |
| Avenues for publishing specifications/standards in Australia                           | 2 |
| CONCLUSIONS  | 2 |
| RECOMMENDATIONS  | 2 |
| REFERENCES   | 3 |
| APPENDIX A - Examples of product promotion   | 4 |
| APPENDIX B - Methods of defining the performance of equipment fitted to motor vehicles | 5 |
| Australian Design Rules for Motor Vehicles and Vehicle Standards                       | 5 |
| Australian Standards   | 5 |
| National Codes of Practice   | 6 |
| Specifications issued by the Roads and Traffic Authority of NSW                        | 6 |
| Other government authorities   | 7 |
| Non-government bodies  | 7 |

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# INTRODUCTION

Earlier work identified possible technical solutions to reduce the risk of young children being run over by reversing motor vehicles. The countermeasures fall into two broad categories:

- Proximity sensors that alert the driver when an object is sensed within a certain distance of the rear of the vehicle.
- Visual aids to give the driver an improved rearward field of view.

The main report for this project included a draft performance specification covering proximity sensors and video systems Paine and Henderson 2001). A revised specification was prepared for a subsequent supplementary report on the evaluation of video systems.

During the past few months there has been increased public interest in the issue of driveway safety. This included the release of a Federal report on the issue that supported the conclusions of work in NSW (Neeman and others, 2002). Several companies now market "parking aids" (proximity sensors) but unfortunately some are promoting them as a child safety device. Our previous research found that these sensors alone cannot provide sufficient warning in order to prevent many driveway accidents and that visual aids were also needed to cover most situations (Paine and Henderson 2001). Video camera systems for cars are now coming onto the market (Paine 2001 - see figures in Appendix A for examples). It is considered important that consumers be informed about the suitability of these systems for driveway safety. One way would be to finalise and publish the performance specifications and to require companies marketing these products to state compliance with the specification.

This supplementary report describes investigations of ways to publish a proposed specification that sets out performance requirements for these devices.

## INVESTIGATIONS

#### International developments

ISO Technical Report TR 12155 "Commercial vehicles - obstacle detection device during reversing - requirements and tests" is relevant to this project. In effect it is an international "standard" but it is confined to proximity sensors and vehicle speeds up to 5km/h. It is therefore unsuitable for cars reversing on driveways.

Advice was received that ISO was working on a standard for cars. Kiichi Yamada san, the convener of Working Group 14 of Technical Committee TC204, kindly provided a copy of Standardization Working Draft N308.1 "Extended Range Backing Aid Systems". He also provided contact details for the ERBA leader, Mr Bob Kwiecinski of Ford Motor Company, USA. Mr Kwiecinski subsequently indicated an interest in developments in Australia.

In brief, the draft ISO standard does not fulfil our needs. Firstly it states that "Visibility enhancement systems, such as video camera aids without distance warning, are not covered by this standard." Secondly, although it allows for proximity sensors extending out to 5m and reversing speeds up to about 10km/h it is not at all certain that any proximity sensors will be able to reliably perform at this range without too many false alarms. In other words, the draft seems to be providing for technology that does not exist yet and might not be feasible for some years. None of the proximity sensors evaluated to date would comply with the draft standard.

It is concluded that the ISO developments, while useful for some technical issues, will not provide a mechanism for providing consumers with advice about suitable systems based on existing technology. It appears necessary to publish a specification in Australia.

### Avenues for publishing specifications/standards in Australia

Discussions were held with representatives of government and non-government organisations to determine opportunities to publish a specification or standard in Australia. The Appendix contains a review of the results.

In summary:

- There is considerable uncertainty as to whether a unique Australian standard or regulation on this matter could be justified and, even if it went ahead, the timeframes involved would be unacceptable. Similar concerns exist with a National Code of Practice.
- Non-government organisations such as the Australian Consumers Association and the NRMA usually treat any test specifications as in-house documents. The Society of Automotive Engineers Australasia might be able to issue a recommended procedure but this has not been done for several decades and could involve substantial delays.
- There are precedents in NSW for the Roads and Traffic Authority to issue technical specifications relating to vehicle construction. These can be developed and published quickly to address pressing road safety issues.

# CONCLUSIONS

It is important that any controls on the performance of reversing devices be brought in swiftly. Inadequate devices are already being promoted as driveway safety devices and more can be expected to enter the uncontrolled Australian market. Consumers need some assurance that the systems meet minimum requirements. Experience with national vehicle standards suggests that it would be years before requirements were in place and by that time unsuitable systems are likely to be in widespread use. Similar concerns apply to an Australian Standard. On the other hand, Federal Minister Boswell recently made announcements about driveway safety and his office might be prepared to push DOTARS into swift action, such as a National Code of Practice.

A draft international standard for proximity sensors will not adequately cover the systems necessary for reducing the risk to children in driveways since it does not encompass video systems and is based on leading edge (or non-existent) sensor technology.

It is considered that the mechanisms for dealing with bus door safety systems provide a good example of how performance specifications can be implemented quickly and effectively to address a pressing road safety need. Although each of the mechanisms described above should be pursued it is considered that the RTA provides the best option for ensuring that satisfactory requirements are published within a reasonable timeframe.

## RECOMMENDATIONS

It is recommended that:

- 1. The RTA be requested to publish the performance requirements for reversing devices as a Technical Specification
- 2. The current draft specification be reviewed to take into account relevant requirements of the draft ISO standard

- 3. The revised draft specification be widely circulated to stakeholders for comment
- 4. Publicity be given to the existence of the specification and the need for consumers to check that products meet the specification.

## REFERENCES

Neeman T., Wylie J., Attewell R., Glase K. and Wallace A. (2002) *Driveway deaths: fatalities of young children in Australia as a result oif low-speed motor vehicle impacts*, Australian Transport Safety Bureau Report CR208, April 2002.

Paine M. and Henderson M. (2001) *Devices to reduce the risk to young pedestrians from reversing motor vehicles*, Report prepared for Motor Accidents Authority of NSW, March 2001.

Paine M. (2001), Devices to reduce the risk to young pedestrians from reversing motor vehicles supplementary report, evaluation of video systems, Report prepared for Motor Accidents Authority of NSW, October 2001.

# **APPENDIX A - Examples of product promotion**







# **APPENDIX B** - Methods of defining the performance of equipment fitted to motor vehicles

This appendix presents an overview of methods of controlling the performance of equipment fitted to motor vehicles, with emphasis on safe operation of the modified vehicle. The review was conducted to identify possible ways to implement one of the recommendations of a report on devices to reduce the risk to young pedestrians from reversing motor vehicles ("reversing devices"): that a draft performance specification be finalised and adopted at a national level for application to optional accessories on motor vehicles.

#### Australian Design Rules for Motor Vehicles and Vehicle Standards

These are mandatory construction requirements that apply to new motor vehicles. Generally the ADRs set out performance tests requiring specialised test facilities and cover items that cannot be readily checked by inspection alone.

The ADRs are administered by the Federal Department of Transport and Regional Services (DOTAS). An extensive, and time consuming, consultation process is usually involved in the introduction of new or amended ADRs. A Regulation Impact Statement must be prepared, setting out the costs and benefits of the item. There is also a strong push for international harmonisation so it is rare for a uniquely Australian requirement to be introduced. In addition there is generally a long lead time to give manufacturers the opportunity to make their products comply. The Australian Vehicle Standards are similar to the ADRs. They are currently administered by the National Road Transport Commission and apply to in-service vehicles (for example, these standards require continued compliance with ADRs).

Neither is considered appropriate for controlling reversing devices, mainly because it is unlikely that there would be swift progress of the issue, given the relatively small number of casualties and the poor cost effectiveness.

#### Australian Standards

Australian Standards cover a very wide range of products and procedures. Generally a stakeholder, such as a government department or a manufacturer, establishes a need for a new Australian Standard. If justified, Standards Australia forms a committee to develop the standard. If the committee produces a workable document then it is published by Standards Australia. Manufacturers then have the options of obtaining Standards Australia approval for their products (usually via an independent testing organisation) or conducting (it is hoped) in-house testing and claiming their product complies with the standard, but not formally having it approved.

An example is AS1754 for Child Restraints. All child restraints sold in Australia must be approved to this standard.

It appears that Australian Standards are developed where there is already a strong commercial market for a type of product but there are concerns (usually by one or more manufacturers) that inferior products are on offer.

Although it would be desirable for reversing devices to be covered by an Australian Standard, it could take considerable time to achieve this.

### National Codes of Practice

In recent years some vehicle construction requirements have been covered in national (or state) codes of practice (NCOP). Examples are

- "Voluntary modification of existing buses and coaches: guidelines for improving occupant protection" issued by NRTC, Federal Office of Road Safety and the Australian Bus and Coach Association in the mid-1990s. This sets out recommended methods of upgrading seats on buses and providing seat belts for all seats.
- "National Code of Practice for Light Vehicle Modifications" being prepared for national implementation by Transport South Australia (contact Rickman Smith, 08 83432336). This covers items such as fitting larger engines in production vehicles.

NCOP tend to cover complete systems rather than individual items of equipment. Nevertheless, it may be possible to incorporate requirements for reversing devices in the NCOP for Light Vehicle Modifications". There may however be considerable delays in achieving this.

#### Specifications issued by the Roads and Traffic Authority of NSW

The RTA (and formerly the Department of Motor Transport) has been issuing "Engineering Specifications", "Vehicle Engineering Specifications" and "Technical Specification" since the mid 1970s. These documents usually cover a specific item of equipment on a motor vehicle and often address a perceived deficiency affecting road safety. Examples that the author involved with are:

- Engineering Specification 12 "Stability of Three Wheeled Vehicles", issued in 1979. This addressed concerns about motorised three wheel vehicles ("trikes") tipping over. This was eventually (more than ten years later) incorporated into ADR42 "General Safety Requirements" and so became a national requirement. The delay before it became a national requirement is instructive for the present project.
- Vehicle Engineering Specification 34 "Vehicle Monitoring Devices", issued in 1990. This was developed to enable vehicle monitoring devices, such a tachographs, to be used as alternatives to manually completed Driver's Log Books. The NSW regulations were amended to recognise devices where the manufacturer claimed compliance with the Specification. The Specification was developed in consultation with the transport industry and equipment manufacturers.
- Technical Specification 146 "Bus Door Safety Systems", issued in 1996. This resulted from an investigation into bus door safety by Dr Michael Henderson. I assisted by consulting with bus operators, bus manufacturers and door system manufacturers. The Specification was issued by the RTA and the Department of Transport (NSW) made it a condition of bus service licensing that buses had to comply with the Specification. In 1998 a strong effort was made to incorporate the requirements in National Vehicle Standards but the accident rates were deemed insufficient to justify it as a mandatory requirement. It was disappointing that it was not adopted as an optional requirement but there was a reluctance to deal with optional items at that time. Again, the difficulty in adopting unique requirements at a national level is instructive for the present project.

These three cases illustrate how a specialised performance requirement can be developed and implemented quickly at a state level, with the agreement of stakeholders. Other states have adopted several of the RTA's specifications and they have become defacto national standards (albeit after a considerable delay).

#### Other government authorities

There is nothing to prevent other government authorities from issuing specifications or standards for the performance of equipment fitted to motor vehicles. However, a mechanism for doing this would need to exist or be set up. Also potential suppliers and purchasers of equipment would need to be alerted to the existence of the specification.

#### Non-government bodies

In the USA the Society of Automotive Engineers issues "Recommended Procedures" that are used by vehicle manufacturers when designing components and systems. Society of Automotive Engineers, Australasia has informally advised that there are currently no equivalent arrangements in Australia, although it is understood that a few decades ago SAE-A did issue some local equipment standards. First the SAE-A would need to be convinced of the need for a standard.

The Australian Consumers Association conducts reviews of consumer products using in-house assessment procedures. ACA informally advised that it does not publish equipment specifications but it would be interested in commenting on the draft specification.

The NRMA is currently assessing the rearward field of view of popular vehicles and has used some of the MAA research findings in that work. It is understood that so far they have not considered in detail the requirements for assessing proximity sensors and video aids.