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update

Buyer's Guide to

# Child restraints



Airbags and child restraints on page 13



Roads and Traffic  
Authority



NRMA Limited  
ACN 000 010 506



**RACV**

Product Code 4343 CON

# The child restraint PROGRAM

# Preferred BUY RATING

## What We Did

The NSW Roads and Traffic Authority (RTA) joined with NRMA Limited and the Royal Automobile Club of Victoria (RACV) to conduct a joint program to assess the relative performance of child restraints available in Australia. The program covered crash testing (which was more rigorous than the Australian Standard), installation, use, and compatibility with a range of cars. The child restraints that performed the best were given a *preferred buy* rating. The tests and evaluations are described inside the back cover.

## Preferred BUYS at a glance

### Rearward-Facing Infant Restraints

- \* SAFE-N-SOUND Baby Safety Capsule

### Forward-Facing Child Seats

- \* CENTURY Carrera (2100)#
- \* SAFE-N-SOUND Cosi Rider (25 B/1/95)
- \* SAFE-N-SOUND Discovery plus (7000/B/5/95)

### Convertible Child Restraints

- \* SAFE-N-SOUND Galaxy
- \* SAFE-N-SOUND Guardian Retractor

### Booster Seats and Cushions

- \* IGC Advance

\* These were the models actually tested. Additional restraints represented by the tested restraints are indicated in the relevant sections.

# This restraint is no longer available.

For other Standards Approved devices and comments on each preferred buy see pages 4 - 12.

The *preferred buy* rating identifies those restraints that performed best in our crash test program and were easier to use correctly.

A child restraint was given a *preferred buy* rating if it:-

- ⇒ performed well in those crash tests that were tougher than the Australian Standard, and
- ⇒ performed well for ease of correct installation, and for ease of use.

A child restraint was not given a *preferred buy* rating if it:

- ⇒ did not meet the Standard's criteria at crash speeds higher than that required by the Standard,
- ⇒ did not restrain the test dummy,
- ⇒ broke a load bearing component or rigid component, or
- ⇒ allowed the test dummy's head to contact the test seat or side door structure.

The *preferred buy* rating is intended to be a guide for those buying a new restraint. The child restraints not given a *preferred buy* rating still meet the Australian Standard. This is recognised internationally as the most stringent child restraint standard in the world.



Children in Australian Standards approved child restraints have survived crashes previously thought to be unsurvivable by overseas experts. All child restraints currently sold in Australia carry the Australian StandardsMark. Therefore, parents and child carers should remain confident in the overall protection offered by the restraints we tested. If correctly installed and used they should generally provide protection for your child well beyond what a seat belt will provide.

AS 1754 Lic xxxx  
Standards Australia

# The restraint test RESULTS

## Rearward-Facing INFANT RESTRAINTS

The SAFE-N-SOUND Baby Safety Capsule is the only dedicated rearward-facing restraint available. It has had a history of strong performance. As an infant restraint for babies up to six months old this is still the best performing restraint overall.

SAFE-N-SOUND Baby Safety Capsule Preferred Buy

The motion of the SAFE-N-SOUND Baby Safety Capsule was well controlled in the head-on crash tests. The SAFE-N-SOUND Baby Safety Capsule did not allow the test dummy's head to come into contact with the test rig in any of the tests and managed the crash forces.

The SAFE-N-SOUND Baby Safety Capsule rated highly for correct installation in a car. It could also be installed easily in all the vehicles in the vehicle compatibility trials, though the bassinet was difficult to manoeuvre into the base in the small and medium-sized hatchbacks.

Preferred Buy

## SAFE-N-SOUND Baby Safety Capsule

### Good Points

- Its motion was well-controlled in head-on crash tests.
- Overall, it was the outstanding performer.
- The baby can be removed from the vehicle without being disturbed in the crib.
- There were no significant vehicle compatibility problems. It was relatively compact and readily compatible with most types of vehicles.



### Disadvantages

- Its deep design can reduce air circulation. It is suggested that you direct fresh air vents to ensure there is a good airflow in the back seat around your baby.

- It's difficult to see the baby in the restraint from the front seats of the car.
- A weaker person may have difficulty manoeuvring the crib into the shell, particularly as the infant grows.
- Although it is a compact restraint, there may be some reduction of comfort for front seat occupants when used in smaller sedans and some 4 wheel drives, because the front seat needs to be moved forward to clear the restraint.

## Forward-Facing CHILD SEATS

What we tested (in alphabetical order):

CENTURY Carrera (2100)	Preferred Buy#
CENTURY Breverra (4700)	**Standards Approved
SAFE-N-SOUND Series 3 Economy (3/C/95)	Standards Approved
SAFE-N-SOUND Cosi Rider (25B/1/95)	Preferred Buy
SAFE-N-SOUND Discovery Plus (7000/B/5/95)	Preferred Buy*
SAFE-N-SOUND Maxi Rider (10/95)	**Standards Approved

#No longer available

\*\*These are child restraints that can also be used as booster seats.

\*It is important to minimise the distance the head moves in forward facing seats so as to minimise the risk of head contact with rigid objects in a crash. In this respect, the SAFE-N-SOUND Discovery Plus did not do as well as the other models although it was still within acceptable limits.

Overall, the CENTURY Carrera, the SAFE-N-SOUND Cosi Rider and the SAFE-N-SOUND Discovery Plus were the best on crash test criteria.

The CENTURY Carrera was easy to install in a car and the child was readily secured in the seat. This restraint, however, is no longer available.

The SAFE-N-SOUND Series 3 has previously been a *preferred buy*. In this series of tests it allowed some slip of the adjuster during the high speed test. It otherwise performed as well as previously.

A good range of adjustment heights for harness straps helps to ensure children won't grow out of the harness before they reach 18 kg. Parents are reporting that children are outgrowing some restraints well before they reach the maximum weight stated by the manufacturer. The

SAFE-N-SOUND Cosi Rider has less shoulder height adjustment than the other restraints.

Before buying a child seat, check that the back seats of your car aren't deeply contoured. This can make it difficult to correctly position some reclining restraints which have recliner bars. It may be difficult in some small hatchback cars to reach over the seat to attach or adjust the tether strap on many restraints.

The CENTURY Breverra and SAFE-N-SOUND Maxi Rider are both designed to be used with the multi-point harness supplied when in the child restraint mode, or with a seatbelt when used as a booster seat for a larger child. Both of these restraints let the dummy's head strike the door in side testing for both the small and larger dummy. For the three year old dummy there was effectively no protection in side impacts.

## Preferred Buy

### SAFE-N-SOUND Cosi Rider

The Cosi Rider is a compact restraint.

#### Good Points

- ⇒ Performed well in crash testing.

#### Disadvantages

- ⇒ Limit in adjustment height for larger children.
- ⇒ Top tether strap difficult to adjust.



## Preferred Buy

### CENTURY Carrera (2100)

No longer available.

#### Good Points

- ⇒ Performed well in crash tests.
- ⇒ Easy to install and use.

#### Disadvantages

- ⇒ Low tether anchorage allowed forward movement of the top of the restraint.



## Preferred Buy

### SAFE-N-SOUND Discovery

#### Good Points

- ⇒ Easy to install and use.
- ⇒ Good range of harness adjustments.

#### Disadvantages

- ⇒ Did not limit forward head movement in the frontal crash tests as well as other models.
- ⇒ Allowed sideways movement of the restraint when installed in the vehicle.



## Convertible child RESTRAINTS

What we tested (in alphabetical order):

CENTURY Contour (5500)	Standards Approved
CENTURY Smart Move (5600) Also sold as: 1450A 3-Way Convertible 1450A Ultima Convertible	Standards Approved
CENTURY Ovation (16500C)	Standards Approved
CENTURY Infinity (F1-304) Also sold as: "My Bodyguard" and "Enduro"	Standards Approved
IGC Gosafe Also sold as: "Mothers Choice" and "Fisher Price"	Standards Approved
INFA PRODUCTS Espace Cocoon (CS8 & CS9)	Standards Approved
SAFE-N-SOUND Compaq Recliner (25/a/95)	Standards Approved
SAFE-N-SOUND Galaxy (7000/j/95)	Preferred Buy**
SAFE-N-SOUND Guardian Retractor (7000/g/95)	Preferred Buy**
SAFE-N-SOUND King Recliner (7400/95)	Standards Approved

\*\*Testing of the SAFE-N-SOUND Guardian Retractor and the SAFE-N-SOUND Galaxy addressed a number of variations in the SAFE-N-SOUND range of child restraints. These included: Galaxy Classic, Sleep 'N' Recline, Omega, Galaxy Ultra, Guardian, Royale, Royale Retractor and Jupiter Ultra.

These variations have not been tested, but appeared to have similar safety features.

The convertibles' performance was assessed as both rearward-facing infant restraints and forward-facing child seats. The restraints had to achieve a *preferred buy* in each mode to achieve a *preferred buy* rating overall.

In the rearward-facing tests, all the restraints tended to lift off the seat and rotate rearwards. When testing the Compaq Recliner, Espace Cocoon, Gosafe and King Recliner the dummy's head only marginally stayed within the requirements. The Espace Cocoon also allowed the dummy's head to strike the 3 bar buckle on the tether strap in both the 49 km/h and 59 km/h tests.

The CENTURY Contour, CENTURY Ovation, IGC Gosafe, INFA PRODUCTS Espace Cocoon, and SAFE-N-SOUND King Recliner all failed to ensure that the major direction of the loading on the infant dummy was through the back and the back of the head, with significant loadings being along the direction of the body.

This was the first time that restraints designed to carry children more than 6 months old (i.e.: more than 9kg in mass or 700mm in length) in the rearward-facing direction have been available.

Three of the restraints tested were Standards Approved for rearward-facing infants up to twelve kilograms (12kg) rather than the required 9kg. This allows children to be rearward-facing for a longer period which is important for infants whose size is above average but who may not be able to support their own head in a forward-facing restraint.

These restraints were all tested for infants and a young child (3 year old, 15kg) in the rearward-facing mode. The tests showed that these restraints should not be used with a child above the specified size (12kg). In these tests the dummy's movement was excessive. The restraints that performed adequately in the other series of tests were also tested with a smaller dummy (1½ year old, 11kg) in rearward-facing direction for both the rearward and frontal impacts to examine the dummy movement. In these tests the movements were within the limits of the Standard.

When tested beyond the Standard's requirements as forward-facing seats in the 56km/h head-on test:

- The harness adjuster broke in the CENTURY Infinity and
- The CENTURY Smart Move exceeded the excursion limits.

A *preferred buy* rating has not been given to either restraint because of these failures.

CENTURY Smart Move also bent the rebound bar in the 56km/h head-on test as a rearward-facing restraint.

## Preferred Buy

### SAFE-N-SOUND Galaxy

#### Good Points

- ⇒ Provides acceptable crash protection for larger infants in the rearward -facing mode.
- ⇒ Easily converts between infant and child mode.

#### Disadvantages

- ⇒ Its performance as an infant restraint is not as good as a dedicated infant restraint.
- ⇒ It may not fit in some vehicles as a rearward-facing restraint.



## Preferred Buy

### SAFE-N-SOUND Guardian Retractor

#### Good Points

- ⇒ Provides acceptable crash protection for larger infants in the rearward -facing mode.
- ⇒ Easily converts between infant and child mode.
- ⇒ Easy adjustment of harness.

#### Disadvantages

- ⇒ Its performance as an infant restraint is not as good as a dedicated infant restraint.
- ⇒ It may not fit in some vehicles as a rearward-facing restraint.



The SAFE-N-SOUND Galaxy and SAFE-N-SOUND Guardian Retractor were easy to change between rearward-facing and forward-facing restraints. They are, however, fairly long as rearward-facing infant restraints. This may reduce the comfort of front seat occupants in some vehicles. The SAFE-N-SOUND Compaq Recliner performed reasonably

well in crash tests. It has not been included in a *preferred buys* list because it was difficult to change between a rearward-facing and forward facing restraint. This difficulty would also be observed when trying to remove the cover for washing. It is, however, compact in size, which means that it is more likely to be compatible with smaller cars than other convertibles.

## A Compromise

A number of convertible restraints did not achieve a *preferred buy* rating. This may be because they are a compromise.

The overall level of crash protection offered by convertibles appears to be a compromise, perhaps because they have to operate in two totally different modes.

When their poorer crash test and user performances are considered, convertibles can be poor value for money. A convertible is not that much cheaper than the combined price of a rearward-facing and a forward-facing restraint.

If a car has one of each restraint type, the older child can occupy the forward-facing child seat and the younger child the infant restraint. Both then have the protection of a restraint system specifically designed for the purpose, rather than a compromise for one child.

Convertibles are very large, especially when they are being used as rearward-facing restraints. Fitting a convertible into a small car can mean that the front passenger seat is virtually unusable for an average size person.

## Useful for

Convertibles can be useful for occasional child carers, such as grandparents and taxis or rental cars when there is a need to keep a restraint on hand in the car for those occasional trips with children, and when you have to be able to cope with a wider range of ages in a single restraint.

## Booster SEATS AND CUSHIONS

Booster cushions without seat backs were not tested in this series of tests. These were tested previously and were not able to provide side impact protection. There was no expectation that this would be different and they therefore would not be given a *preferred buy* status. It is not recommended that you use this type of booster. If you must use these boosters ensure that the seat belt follows the appropriate path to hold the cushion in place and preferably use the booster in the centre seating position with a lap/sash belt or a child harness with a lap belt. What we tested (in alphabetical order):

CENTURY Breverra (4700)	**Standards Approved
CENTURY Graduate (808)	Standards Approved
IGC Advance	Preferred Buy
SAFE-N-SOUND Celebrity (4800/95) Also sold as Observer, Tourer and Voyager	Standards Approved
SAFE-N-SOUND Maxi Rider (10/95)	**Standards Approved
VITA PACIFIC Kiddysafe Mk.II	Standards Approved

\*\*These are child restraints that can also be used as booster seats.

All the restraints performed adequately in frontal tests.

The IGC Advance was the only booster seat in these tests to prevent the head striking the door structure in side impact testing. The large side wings on the Advance resulted in increased distance between the dummy and the seat belt, which resulted in greater movement of the dummy in the side 45° tests. However, the movement was not sufficient to fail the test.

The CENTURY Graduate, SAFE-N-SOUND Celebrity and VITA PACIFIC Kiddysafe Mk.II all provided some side impact protection with the head being cushioned by the restraint before striking the door. The SAFE-N-SOUND Celebrity, Observer, Tourer and Voyager are identical except for their covers.

Children often fall asleep on journeys and without side support, a sleeping child's upper body may easily slide sideways out of the restraint. When this happens, the restraint is unlikely to work well in a crash.

Booster seats or cushions shouldn't be used at all if they raise the child's eye height beyond the top edge of the car seat back or the booster seat back, because of the risk of neck injury in a rear end crash.

It was found that the eye height of a 6-year-old dummy was often well above the booster seat or car seat back in vehicles without head

rests on their rear seats. This was a problem with all the booster seats and cushions in the large family sedan, the large station wagon, people mover, four wheel drive and the small hatchback. (Refer to “Choosing a Restraint and a car to fit it” Page 14).

The CENTURY Breverra and SAFE-N-SOUND Maxi Rider are both designed to be used with the multi-point harness supplied when in the child restraint mode, or with a seatbelt when used as a booster seat for a larger child. Both of these restraints let the dummy's head strike the door in side testing for both the small and larger dummy.

## Preferred Buys

### IGC Advance

#### Good Points

- ⇒ Easy to install and use.
- ⇒ Provides good protection in side impacts.
- ⇒ Provides support for the head of a sleepy child.

#### Disadvantages

- ⇒ Did not limit forward head movement in the 45° crash tests as well as other models.



# AIRBAGS

## and Child Restraints

Airbags have a well proven record of saving lives. In the US, where they are much more common, they are estimated to save over 500 lives each year. However, more recently there has been some media attention to children reportedly killed by airbags. In most cases a rearward-facing infant restraint was being used, the child seat wasn't attached properly to the car, or the child wasn't wearing a seat belt.

So, if your car has an airbag on the passenger side, how do you safely restrain a child? Here are our recommendations:

- ⇒ Never use a rearward-facing infant restraint in the front passenger seat.
- ⇒ Preferably fit all child restraints in the rear seat.
- ⇒ If you do not have a rear seat and have to use a forward-facing child seat or booster in the front passenger seat:
  - position the adult seat at its rearmost setting on the seat slide.
  - make sure the top tether is attached firmly if provided.
  - discourage the child from leaning forward.

Currently in NSW, it is illegal to use a child restraint in a front passenger seat if there is an airbag for the passenger.



# CHOOSING

## a restraint and a car to fit it

### WHICH TYPE of restraint for what age?

#### Infants (up to 9kg, about 6 months)

Always use an approved infant restraint. Keep your child in a rearward-facing restraint until he or she physically won't fit. Don't carry your child in your arms. In a crash you won't be able to hold onto your child. He or she will be thrown around the vehicle interior or thrown out of the vehicle. Before moving to a forward-facing child seat, your child must be able to sit and easily hold his or her head upright.

#### Young children (9kg up to 18kg, 6 months to approximately 5 years)

Always use an approved child seat. You may be tempted to move your child onto a booster seat when a new brother or sister comes along. This is not recommended. Nothing else offers the same level of crash protection for young children as a child seat. Our advice is to continue putting your child in the seat until he or she is too big for it. This is usually when a child simply will not fit in the seat because of shoulder width.

#### Older children (up to 26 kg, about 6 years)

A booster seat may be needed to improve seat belt fit or to enable your child to see out of the vehicle. As a general guide, buy a rigid booster seat (with a back), side wings and a sash guide to keep the seat belt in place - all the preferred booster seats are like this. Use an adult lap/sash seat belt or a child harness in conjunction with the centre rear lap belt. When using a harness, remember to tightly adjust the lap belt first, and then the harness, just removing the slack. The lap belt should always be much tighter than the shoulder harness.

Never use a booster seat or cushion with just a lap only seat belt.

### Advice on installing a restraint safely

To ensure a child restraint gives your child the highest possible level of protection in a crash:

- ⇒ Read and follow all instructions carefully when installing the restraint and securing your child. Note references to common dangerous mistakes and useful travelling safety tips. If the instructions have been lost, most manufacturers will mail out a copy upon request.
- ⇒ Where possible, install your child restraint in the centre position of your car's back seat, except in the case of a booster seat with a lap only seat belt.
- ⇒ Ensure the top tether strap and the adult seat belt that keeps the restraint in position are properly adjusted - they shouldn't have any slack. When tightening the seat belt, push the child seat firmly into the car seat with your body weight, so that the car seat cushions are compressed. This helps ensure a very tight fit, and minimises subsequent movement in a crash.
- ⇒ Use the minimum number of tether extension straps.
- ⇒ If you have any problems fitting a child restraint, use the advisory phone numbers on the back of this brochure or arrange to have the installation done by an authorised fitting station.

Surveys carried out have indicated that a number of restraints are not installed correctly. Getting a professional trained fitter to install the child restraint can provide additional assurance of the safety of your child.

### Advice on using a restraint safely

- ⇒ Read the instructions carefully before starting. Don't make the mistake of ignoring the instructions until after all else has failed.
- ⇒ Ensure the harness shoulder straps are correctly positioned. When using a rearward-facing infant restraint, the shoulder straps should be located at shoulder height or just above the baby's shoulders.
- ⇒ The shoulder straps in forward-facing restraints can be located up to 25mm below the child's shoulders.
- ⇒ Adjust the harness firmly. A loose harness won't perform well in a crash, and can lead to other problems, such as the child freeing his or her arms. There should be no twists in the harness. When using a child harness with a lap belt, tighten the lap belt first, then adjust the harness.

- ⇒ Children, especially young babies, can suffer badly because of exposure to the sun. Special window screens are the most effective countermeasure to over exposure. These are designed to block out the sun, but allow you to easily see out of the car.
- ⇒ Poor air circulation is another problem for young infants. They can become very hot and dehydrate very quickly. Don't put too many clothes on your baby in warm weather. Make sure you direct ventilation to the rear seat where your children are seated. Of course, never leave your child alone in the vehicle.

## Advice on getting a second-hand child restraint

A second-hand child restraint can be an economical way to protect your child, but some precautions should be taken. Unless you are getting the restraint from someone you know, it may be difficult to check its history.

- ⇒ Do not take it if there are obvious signs of wear on the harness or if the plastic shell or buckle is cracked or broken.
- ⇒ Test out the buckle and adjusters to be certain they are in working order.
- ⇒ Only use restraints that carry the Australian Standards Mark and ensure you get and use the installation manual.
- ⇒ In NSW, an authorised fitting station will also be able to check a restraint to confirm it is in working order.
- ⇒ Do not use a restraint that has been in a collision.

## Advice on hiring a child restraint

Hiring a child restraint is an option to be considered. This option can save in purchase costs and also solves the problem of where to store the restraint when it is no longer needed. It also allows the best available restraint to be used for each child as they arrive.

Organisations that hire restraints often provide a fitting service and delivery to maternity hospitals. Information should be available through your local maternity hospital or community health service.

## Advice on buying a car

When you buy a car, follow these tips for compatibility.

- ⇒ If possible, consider buying a car with a centre lap/sash seat belt. You can also have the centre rear lap only belt replaced with a lap/sash belt in some cars.
- ⇒ Make sure there is a centre rear anchorage point if you want to use that seating position for a child.

- ⇒ Make sure the anchorage points aren't too close to the seat back for the tether strap to be adjusted properly - some cars have this problem.
- ⇒ Ensure seat belts are long enough to thread through the restraint when in its most extended (reclined) position.
- ⇒ If buying a station wagon, fit a cargo barrier complying with the Australian Standards, if one is available.
- ⇒ If buying a hatchback, check there is a clear path between the back seat and the rear anchorage point so that the parcel shelf doesn't interfere with adjustment of the tether strap. Luggage etc. carried in the back often obstructs top tether straps. Some hatchbacks can also be fitted with cargo barriers or cargo nets.
- ⇒ The use of a child restraint may reduce the seating capacity of some people movers. Check that the number of people you want to carry is not reduced by fitting a child restraint. Also, people movers do not necessarily have anchorages for each seating position. It is important to check this first, especially if you are going to carry a number of children in restraints.
- ⇒ Two-door cars make fitting and using restraints particularly difficult. It can be awkward getting children in and out and can lead to back strain problems.
- ⇒ Choose a car that will carry the number of restraints you need. Not all cars have big enough back seats to carry three restraints at once.
- ⇒ A small car may not have enough room to comfortably fit a convertible restraint and a front passenger at the same time.



# WHAT WE DID

(continued from inside front cover)

## The Tests

To simulate what could happen in various types of car crashes, a crash sled was used. The sled subjected test dummies secured in restraints to forward, rearward, sideways and upside down tests.

## Frontal Tests

Each child restraint was subjected to two frontal tests, one at 49km/h and the other at 56km/h. The 49km/h test is the normal level of testing for determining compliance with the Australian Child Restraint Standard. The 56km/h test is at the top end of the allowable limits prescribed by the Standard.

## Side and Rear Tests

The sideways and rearward tests were conducted at 32km/h.

Two sideways tests were conducted, one with the child restraint and car seat at 90° to the direction of impact and the other with the child restraint and car seat at 45° to the direction of impact. The 45° test applies a frontal as well as sideways force. The frontal force tests the ability of the sidewings and harness to keep the child's head within the protected area of the restraint.

The test crash is the same speed as that in the Australian Standard, with the addition of a side door structure.

The rearward-facing infant restraints and the convertibles, in infant mode, were subjected to an upside down crash test at 16km/h. The upside down test simulates one aspect of roll-over.

## Additional Tests

A number of convertible child restraints are available to carry infants up to 12kg in the rearward-facing mode. These restraints were tested in the same way as other restraints and additionally as rearward-facing restraints with a three year old child dummy (15kg). These tests were performed using the same dummies as required for Australian Standards testing.

In these tests the restraints did not meet the *preferred buy* criteria as the head movement limits were exceeded in the high speed tests. Additional testing with a recently available 1½ year old (11kg) child dummy was

carried out to determine if these child restraints were suitable for a lighter child. These tests included a high speed frontal test and a rearward-facing test on those restraints that met the *preferred buy* criteria for all other tests.

The additional test indicated that these child restraints in the rearward-facing mode were satisfactory for the 1½ year old (11kg) child dummy.

## Crash Test Performance

The NSW RTA conducted the crash test component of the program. The crash testing and performance criteria were more rigorous than the current Child Restraint Standard so that child restraints could be compared with one another at the upper end of their performance.

The child restraints were assessed for:

- ⇒ retention of the child restraint on the test rig,
- ⇒ retention of the test dummy in the child restraint,
- ⇒ integrity of load bearing components,
- ⇒ rigid components staying intact,
- ⇒ slip in webbing length adjusters,
- ⇒ forces on the test dummy's head,
- ⇒ correct distribution of crash forces in the frontal tests on the test dummy in rearward-facing infant restraints and convertibles in infant mode,
- ⇒ head movement of the test dummy in the frontal tests on forward-facing seats, infant restraints and convertibles,
- ⇒ head contact with the test rig in frontal and side impact tests.

## Vehicle Compatibility.

NRMA Limited assessed whether the restraints were compatible with vehicles by fitting each restraint in both the centre and left outside positions of the back seat. Each of the test vehicles was one of the top-selling models in the following six categories: large sedan, large station wagon, small hatchback, medium hatchback, multi-purpose vehicle ('people mover') and large four-wheel drive.

## Ease of Correct Installation and Use

NRMA Limited conducted tests on the rearward-facing infant restraints and forward-facing child seats to evaluate how easy they were to install in cars and how easily children could be secured in them.

## Where to get help

If you need hands-on help or special fittings, there are RTA authorised fitting stations throughout NSW and the RACV / VicRoads Restraint Fitting Stations throughout Victoria. If you have any problems fitting or using a child restraint:

### IN NSW PHONE

Roads and Traffic Authority

1800 042 865 or

NRMA Limited 02 9292 9632

### IN VICTORIA PHONE

RACV 03 9790 2190

The recommendations in this report are based on a series of crash tests conducted by the RTA and ease of use and compatibility tests assessed by NRMA Limited. Child restraint manufacturers were given the opportunity to examine the results of the tests. It is assumed that the child restraints purchased for the test program were typical of those available to new child restraint purchasers. The tests indicated the relative protection provided to occupants of child restraints and the relative compatibility and ease of use. A more detailed explanation of results and technical summaries is available on request.



**Roads and Traffic  
Authority**

[www.rta.nsw.gov.au](http://www.rta.nsw.gov.au)  
ABN 64 480 155 255



NRMA Limited  
ACN 000 010 506



**RACV**

Royal Automobile Club of  
Victoria (RACV) Limited  
ACN 004 060 833