

# Operating a Child Car Restraint Fitting Service in Perth Western Australia

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## **Biography**

Sue Wicks (BA, P/Grad Dip Education, P/Grad Dip Health Promotion) is the Executive Officer of Kidsafe WA. Sue represents Kidsafe WA on the WA Office of Road Safety's Child Restraint Advisory Group (formerly the Child Restraint Sub-Committee of the Occupant Restraint Taskforce), is a qualified Type 1 child restraint fitter, has a Certificate IV Assessment and Workplace Training and is the spokesperson for Kidsafe WA on child restraint and child safety issues. Sue is currently working toward her Master of Public Health.

## **Abstract**

Child Car Restraint checking was first piloted in WA in 1998 by Kidsafe WA and had similar findings to services conducted in other states. The BankWest Rural Child Restraint Program and Free Child Car Restraint Checking Stations conducted by Roadwise committees developed from these pilots.

In 1999, the Injury Control Program, Health Department of WA prepared the document; Child Car Restraints in Western Australia, A Framework for Action which outlined 5 objectives to achieve the vision of reducing the number of deaths and injuries to WA child motor vehicle occupants aged 0–14 years involved in motor vehicle crashes.

Establishment of accredited training for Type 1 fitters and the development of a network of fitting stations have taken a long time to finalise. When periodic free checking stations ceased in 2001, public appeal to Kidsafe WA resulted in the development of a Centre based child car restraint fitting and checking service, which is currently the only formalised child car restraint fitting service in WA.

Since the service was established, about 1100 restraints have been installed or checked. The installation / checking process documents all aspects and variables involved from the vehicle, the restraint, the anchorage point and bracket, actual installation, including seatbelts and discussion and demonstration of proper fit and adjustment for the child who is to use the restraint.

Typical issues seen are improperly installed or used anchor brackets, inappropriate use of upper tether straps & inappropriate seatbelt use and harness adjustment. Less frequently, but of greater significance are damage to straps and seat belts, damage to or missing parts from the restraint body.

The implications for a state-wide network of authorised fitting stations are that there is a need for appropriate training of fitters, quality assurance of authorised fitting services and overall co-ordination by a body that holds knowledge, expertise and skills in the content area.

## **Keywords**

Child car restraint, fitting service,

## **Rationale**

Occupant protection is a key component of overall road safety strategies in all states. The special requirements of children for appropriate restraint as passengers in cars are often minimised. Proper fitting and use of child car restraints has been shown to reduce their risk of injury and death in car crashes. This paper describes putting the theory and policy related to child car restraint fitting into practice in one service, operated by a non-government, not-for-profit organisation in WA.

## **Background**

Michael Henderson's 1994 report, *Children in Car Crashes, An in-depth study of car crashes in which child occupants were injured* found that children who were properly restrained in a properly fitted and used child restraint were more likely to survive car crashes with little or no injury. The study also highlighted significant poor installation and misuse of child restraints in the study crashes. Subsequent to this report, a number of Kidsafe State Divisions conducted In 1998, Kidsafe WA piloted Free Child Car Restraint Checking Services in Perth WA to trial the effectiveness and feasibility of child restraint checking in the Perth metropolitan area and assess whether children in four areas of the Perth Metropolitan area were being transported correctly in motor vehicles.

Child car restraints were checked and assessed for criteria ranging from suitability of the restraint for the child, compliance with Australian Standard AS 1754, correct harness adjustment for the child using the restraint, correct fitting of the restraint with the seatbelt and upper tether, correct anchorage to the vehicle and whether any required accessories are used correctly. Checkers also had the option to record other concerns.

Each child restraint check was recorded on a checklist, the original of which was given to the parent / carer while the duplicate was kept for evaluation purposes. Where possible, problems were rectified at the time of checking and adjustments made by the fitter were recorded on the checklist form. Kidsafe WA employees who had successfully completed a Child Restraint Fitters Course conducted the child car restraint checking, assisted by volunteers who had completed a Child Restraint Seminar.

Almost 2 out of 3 restraints checked had one or more faults with the fitting of the restraint in the vehicle or usage faults. These findings were consistent with findings of similar surveys conducted by Kidsafe ACT and others.

A recommendation from the pilot project was that individuals checking or fitting child car restraints needed to have a comprehensive knowledge of child restraints.

In May 1999, Kidsafe WA received once off funding to conduct a Type 1 child restraint checking training course for Regional Injury Prevention Officers and Roadwise personnel in order to enable child restraint checking to be conducted in other parts of Western Australia. After completing this training course, local government Roadwise groups and Regional Injury Prevention Officers were able to conduct periodic free child restraint checking services throughout the state. From calls to Kidsafe WA, it soon became apparent that a once off training course with no post training support or updating was not an effective means of skilling individuals with the necessary competencies to correctly and confidently check or fit child car restraints.

## **Policy**

The Road Safety Council of WA has a number of taskforces to address different areas and issues in Road Safety in Western Australia. Membership of the taskforces is cross-sectoral. A small group focusing on child car restraints was a sub-committee of the Vehicle Occupant Restraint Taskforce.

Two documents developed out of the Child Car Restraints Sub-Committee. The first, *Child Restraint Fitting Station Scheme – Business Rules* by the Department of Transport, outlined a vision for a network of child restraint fitting stations throughout the state and described proposed roles and responsibilities of both Type 1 and Type 2 authorised fitting stations.

The second, *Child Car Restraints in Western Australia; A Framework For Action*, (September 1999) published by the Injury Control Program, Health Department of WA outlined five objectives to achieve the vision of reducing the number of deaths and injuries to WA child motor vehicle occupants aged 0 – 14 years involved in motor vehicle crashes. The Objectives described were:

1. Improved co-ordination
2. Increase the community's perception of the importance of child car restraints

3. Increase the community's knowledge of age-appropriate restraints
4. Increase the correct installation of child car restraints
5. Increase the compliance with the use of appropriate child car restraints

Three members of the Child Car Restraint Sub-committee, Kidsafe WA, Roadwise and Coastal and Wheatbelt Public Health Unit recommended that before either of these documents could be implemented the training of Type 1 fitters needed to be formalised and accredited using a competency based training model, to ensure that there was accuracy and consistency in the standard of child restraint fitting and checking being undertaken.

### **Training**

The tender to develop the training course ready for accreditation was advertised and awarded in 2001. By July 2003, the course had not been submitted to the WA Training Accreditation Council for accreditation and information received at that point indicated that it was unlikely to gain accreditation in its current structure and format. Issues related to how the quality, integrity and consistency of the training will be maintained are, at the time of writing, still being addressed.

### **Community Based Services**

Agencies delivering community based free child restraint checking services were being inundated with requests for services that they were finding it increasingly difficult to meet. These agencies decided upon a cessation of services while the accreditation of the child restraint fitter training course was being worked on,

By mid 2001, there was a situation where a demand for services in relation to child car restraint fitting and checking had been created in the community but the community based free services had ceased and private enterprises offering fee for service child restraint fitting were not being monitored or updated. Consequently Kidsafe WA received numerous calls from members of the community requesting assistance in fitting or checking the installation of child restraints or expressions of concern about the quality of fitting that had been received from private enterprise. As the leading child safety body in WA, with the necessary knowledge and skills in the area of child restraint fitting, Kidsafe WA commenced a centre based, fee for service fitting and checking service in late 2001 to fill the gap.

### **Kidsafe WA Fitting Service Processes**

Each vehicle and child restraint that comes to Kidsafe WA for fitting or for checking of an installed restraint is documented on an installation checklist. The client gets the original copy and the duplicate is kept for the Fitting Service records and is later entered onto a database. The installation and checking process documents all aspects and variables involved from the vehicle, the restraint, the anchorage point and bracket, actual installation, including seatbelts and discussion and demonstration of proper fit and adjustment for the child who is to use the restraint. The checklist also records the location of the fitting service (sometimes it is other than Kidsafe WA Centre based), date and whether the service provided is a fitting, a check or a check & re-fit. A copy of the checklist proforma is included at the end of this paper.

### **Vehicle Details**

The vehicle make, model, body type, year of manufacture, registration number and, if an after market anchor point installation has been made, whether a modification permit has been sighted, are all recorded along with an assessment of any existing anchor bolt installation in the vehicle. Since 2001, Kidsafe WA have fitted or checked child car restraints in almost every make of passenger vehicle, from Audi through the major manufacturers Holden, Ford, Mitsubishi to Porsche and Volvo, every body type from standard sedans, to sports cars to 4WD's and utilities. Dates of manufacture range from 1965 to 2003. The greatest proportion of vehicles presenting at the fitting service are from the major manufacturers and have been manufactured in the last ten to twelve years.

## **The Restraints**

Our process records detail about the child restraints that includes: Manufacturer, restraint type and configuration, model and date of manufacture (if not a new restraint). The restraint is also checked to confirm Australian Standards, and weight and age / size appropriateness for the child who is to use it.

Where second hand restraints are brought in, our procedure is to recommend that restraints over ten years of age not be used. Fortunately, the percentage of restraints that are over ten years of age coming to Kidsafe WA for fitting is very small and in many cases, the client is only too happy to have a reason to not use the restraint.

The greatest proportion of child restraint new installations is for a rearward-facing configuration, with forward facing and conversion to forward facing being the next highest proportion of fittings. Fitting of booster seats and child safety harnesses are a very small proportion of the fittings that are done through Kidsafe WA.

In terms of checking an already installed restraint, again the highest proportion of attendances at Kidsafe WA is for a child restraint in a rearward-facing configuration, with forward-facing restraints being the next highest proportion, followed by capsules, then booster seats.

## **Anchorage Installations**

The process and practice for Kidsafe WA fitters is to verify anchorage requirements against the Vehicle Owner's Handbook. For vehicles manufactured in the last five years, where the majority have at least one manufacturer installed anchor bolt and bracket, this practice simply confirms what the fitter observes. This practice is still important for recent model vehicles which are starting to have three manufacturer installed anchor brackets, sometimes in different locations than is common, eg seat backs, or welded D ring type anchorage systems.

Where the fitters have the most difficulty in following this practice is with vehicles that were purchased as used vehicles. Often the Vehicle Owners Handbook was not supplied with the vehicle; in some cases the manufacturer installed anchor bolts have been moved from their original location or removed altogether and where the manufacturer specifies or supplies anchor assembly components that are different from the standard kits, these parts are no longer with the vehicle. For the majority of vehicles that use the standard anchor bolt kit, this does not pose a major problem but in vehicles where the manufacturer specifies a non-standard bolt length (standard length is 30mm) and more than the 15mm of spacers provided with a standard kit, it means that the anchor bolt and bracket often cannot be installed until the manufacturer specified parts are obtained, sometimes at exorbitant cost to the vehicle owner. The Kidsafe WA fitting service practice and recommendation is to leave manufacturer fitted anchor bolts where they are and install another bolt in the required location, if an alternate seating position is to be used for the child restraint.

The main issues related to anchorage installations that Kidsafe WA fitters observe in checking installed child restraints are: incorrect location, incorrect assembly and incorrect bolt type. Examples of incorrect location of anchor bolts includes:

- Anchor brackets sharing the seat mounting bolts
- Anchor brackets attached to rear door-mounting bolts
- Holes drilled into vehicle bodywork where manufactured anchor points exist
- Luggage tie-down clips identified as anchorage systems
- Anchor bolts fitted into the trim plug holes



Examples of incorrect anchor assembly and incorrect anchor bolt type include:

- No spacers used where they should be
- Too many spacers used when only a 5mm or 10mm spacer is required. These are often assembled as one spacer directly under the bolt head and one under the bracket and sometimes as one under the bolt head and one on the lower end of the bolt, held in place by a nut.
- No lock washer or split washer used
- Lock washer / split washer incorrectly located i.e. at lower end of bolt, held in place with a spacer and a nut
- Anchor bracket facing wrong direction
- Keyhole anchor components mixed with hook type anchor components

### **Restraint Installation**

When installing or checking child restraints, Kidsafe WA fitters examine the vehicle seatbelt, ensure that the correct seatbelt pathway for the restraint configuration has been used, assess the usage of the upper tether strap, determine if an extension strap or gated buckle is required and if they have been used correctly.

Common issues observed in related to seatbelts included:

- Twists in the seatbelt. These are particularly difficult to eliminate where the twist appears to have occurred at the time of vehicle assembly.
- Seatbelt buckle turned to the wrong side of the seatbelt. This is observed in about 1 in 5 vehicles.
- Broken seatbelt retaining clips on the buckle tongue
- Broken or malfunctioning buckles
- Fraying or tears in the seatbelt webbing.
- Buckles with exceptionally long lengths of webbing leading back to the vehicle attachment point. These often mean the seatbelt cannot be tightened properly through the restraint pathway because the buckle runs up against the restraint body, preventing the seat belt from tightening any further.
- Auto locking on seatbelts not engaged where it is a feature of the vehicle seatbelt.

Commonly observed issues related to seatbelt configuration and seatbelt pathway include:

- Wrong seatbelt for the seating position threaded through the restraint.
- No seatbelt used
- Incorrect pathway for restraint configuration used.

Common upper tether strap, extension strap and gated buckle issues observed:

- Upper tether strap too tight. If too tight, it pulls a rearward facing restraint toward the back of the vehicle.
- Upper tether strap not used at all.
- Upper tether strap used incorrectly to reach the anchor bracket
- Upper tethers attached to something other than an anchor bracket
- Upper tether badly twisted or obstructed by vehicle headrest
- No extension strap used when required

- Too long an extension strap used, resulting in the clip locating forward of the vehicle seat back
- Keyhole extension straps used with hook tethers and vice versa.
- Gated buckles are frequently fitted upside down or with the seatbelt threaded in such a way that it is not actually secured in place.



Upper tether attached to seatbelt



Twisted Upper Tether



Upper tether used incorrectly to reach the anchor point



No Upper tether visible



Extension strap clip forward of vehicle seat back

### Suitability of the restraint for the child

Fitters also assess variables such as the suitability of the harness shoulder height for the child who is to use the restraint, the firmness of fit of the harness and whether the harness buckle is operating correctly. A high proportion of child restraint fittings are for expectant parents, so there is often not a baby or child to assess the fit of the harness on. In these instances, the process for Kidsafe WA fitters is to demonstrate and discuss the harness adjustment and correct fitting guidelines with the client and answer any questions they may have related to the use of the restraint.

Fitters will also show clients where the restraint instruction book is located and recommend that the instruction book be left with the restraint for future reference. Where second hand restraints have been used and there is no instruction book, Kidsafe WA will supply a photocopy of the relevant instruction book if available or advise the client to contact the restraint manufacturer to obtain a copy of the instruction book. Contact numbers for any referrals are written on the checklist so the client has a copy to take away.

Second hand or used restraints are about ten percent of fittings or checks coming to Kidsafe WA. Extra care is taken with second hand restraints to inspect the restraint for any visible signs of wear and tear of the harnessing and tethering, visible signs of stress in the restraint shell and missing or damaged parts. Clients are advised that this is only a visual assessment and that there is the chance that deterioration or stressing may be present that does not have visible evidence. During this examination of the restraint, the fitter will also re-thread the harness to suit the child who is to use it. Often the scenario is that the restraint was last used by a 2 – 3 year old child and is now to be used for a newborn, resulting in the harness having to be adjusted down one or more shoulder levels for the newborn. For some older restraint makes, the harness threading is so complex that they are

never threaded correctly when they present at the fitting service and consequently take significant amounts of fitter time to untangle and re-thread correctly.



### **Other considerations**

In many instances, convertible restraints that are in a rearward-facing configuration often sit at a steep angle once installed in the vehicle. This usually happens where the vehicle has very sloped or contoured seats. Kidsafe WA fitters assess the angle of the restraint against manufacturer recommendations and where necessary, will place one folded towel under the restraint base to level off and adjust for the slope of the vehicle seat. This practice is according to manufacturer recommendations.

A recently emerging issue related to vehicle seats is the narrow spacing between seatbelt and seatbelt buckle positions in some vehicles, resulting in the restraint base not fitting properly in the seating position.

Another observation is the need for different length extension straps. The standard lengths currently available are 300mm and 600mm. These lengths have not changed for as long as they have been available, yet in that time cars have changed and the location of anchor points have changed. Our fitting service has observed that for the extension strap clip to site behind the vehicle seat back, a range of extension strap sizes from as short as 150mm though to 400mm would often better suit modern vehicles.

### **Conclusion**

What the Kidsafe WA Child Restraint Fitting and Checking Service demonstrates is that for a state-wide network of fitting services to be effective, there needs to be quality training and updating of the fitters, the Fitting Services need to put in place quality assurance measures, such as detailed recording of the work they perform and the overall scheme needs to be co-ordinated by a body that holds the necessary knowledge, expertise and skills in the content area. There are too many variables that come into play for child restraint fitting or checking to be conducted on an occasional basis, expertise is built from hands on day-to-day practice.

### **References**

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# CHILD CAR RESTRAINT FITTING SERVICE

## INSTALLATION CHECKLIST

Inspection site: \_\_\_\_\_ Date: \_\_\_\_\_  Check  Fit  Check & Re-fit

Vehicle Details (Tick which applies)			
<input type="checkbox"/> Sedan	<input type="checkbox"/> Hatchback	<input type="checkbox"/> Dual Cab	<input type="checkbox"/> Utility
<input type="checkbox"/> Station Wagon	<input type="checkbox"/> Light passenger van	<input type="checkbox"/> 4WD	<input type="checkbox"/> Other
Make of Vehicle: _____	Year of Vehicle: _____		
Model of Vehicle: _____	Registration Number: _____		
Modification Permit / Plate Sighted	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> N/A

TYPE OF RESTRAINT (Tick which applies)	
<input type="checkbox"/> Baby Safety Capsule (0-9kg)	<input type="checkbox"/> Booster Seat
<input type="checkbox"/> Convertible Seat	<input type="checkbox"/> With back <input type="checkbox"/> Without back
<input type="checkbox"/> Rear Facing <input type="checkbox"/> Forward Facing	<input type="checkbox"/> Used with harness
<input type="checkbox"/> Toddler Seat (8-18kg)	<input type="checkbox"/> Child Harness

Restraint Make (Tick which applies)	Seating Position of restraint
<input type="checkbox"/> Safe-N-Sound	
<input type="checkbox"/> IGC/Fisher Price/ Mothers Choice	
<input type="checkbox"/> Other _____	
<input type="checkbox"/> Baby Love <input type="checkbox"/> Secure Model _____	

(Tick which applies)	YES	NO	N/A	ACTIONS / RECOMMENDATIONS
<b>ANCHORAGE</b>				
Correct anchorage bolt used				
Correct anchorage assembly				
Correct anchorage point (behind and central)				
Mounting kit used to attach keyhole attachment to post '93 anchor point				
<b>INSTALLATION</b>				
Seat belt strapping is not twisted				
Seat belt configuration correct				
Top tether is used correctly				
Extension strap clip is behind the seat				
Gated Buckle used on seat belt				
<b>FITTING</b>				
Harness straps are firm to fit baby				
Buckle on the harness is done up correctly				
Shoulder harness at the correct level				
<b>OTHER</b>				
Restraint complies with Australian Standard AS1754				
Restraint is suitable for the weight / age of the child				
Restraint is under ten years old				

SPECIAL CONSIDERATIONS FOR TYPE OF CHILD RESTRAINT (Tick which applies)					
<b>BABY RESTRAINT</b>		<b>BOOSTER SEAT</b>		<b>CHILD SAFETY HARNESS</b>	
Capsule is 50mm from the front driver/passenger seat		Correct sash location		Gated buckle used on lap/sash	
<input type="checkbox"/> YES	<input type="checkbox"/> NO	Lap Belt only	<input type="checkbox"/> YES <input type="checkbox"/> NO	<input type="checkbox"/> YES	<input type="checkbox"/> NO
			<input type="checkbox"/> YES <input type="checkbox"/> NO		

OTHER NOTES: