

## 1.0 SCOPE

This section outlines the minimum installation and performance requirements for light vehicle cabin alterations. This includes the fitting of additional seats and seat belts and the installation of child restraint anchorages. Also included are requirements for seating capacity changes for motorcycles.

## **2.0 GENERAL REQUIREMENTS**

- 1.0 This section applies to light vehicles and should be used in conjunction with other sections which are specific for the type of modification which is being performed.
- 1.1 In modifying the vehicle the modifier, if feasible, should duplicate an optional specification offered by the vehicle manufacturer.
- 1.2 All work performed must be in accordance with recognised engineering standards.

**3.0 AUSTRALIAN DESIGN RULES AND STANDARDS**

1.0 Australian Design Rules which may be applicable are:-

ADR 3, 3A, 3/00,3/01 - Seat Anchorages

ADR 4A, 4B, 4C, 4D, 4/00, 4/01 - Seat Belts

ADR 5/00, 5/01, 5/02 - Anchorages for Seat Belts and Child Restraints

ADR 5A, 5B - Seat Belt Anchorages

ADR 22, 22A, 22/00 - Head Restraints.

ADR 34, 34A, - Child Restraint Anchorages

2.0 Australian Standards which may be applicable are:-

AS 2596-1983 - Seat Belt Assemblies for Motor Vehicles

## **4.0 MODIFICATION CODES**

The following sections give particular details and limitations on approvals carried out under individual Codes.

## **SEATING CAPACITY ALTERATION AND SEAT BELT INSTALLATION - LK1**

### **MODIFICATION TYPES**

The following is a summary of the modifications which may be approved by officers authorised with modification Code LK1 - Seating Capacity Alteration and Seat Belt Installation.

Refer also to Section LK - Cabin for general technical guidelines for modifications performed under this Code.

Modifications which are allowed under this Code are:

1. Installation of approved seats to approved anchorage points.
2. Installation of approved seat anchorages.
3. Installation of seat belts conforming to AS 2596 to approved anchorage points.
4. Installation of approved seat belt anchorages.

Modifications which are not allowed under this Code are:

1. Installation of non-approved seats.
2. Installation of seat belts that do not conform to AS 2596.

**NOTE:** The modified vehicle must continue to comply with all applicable ADR's and Regulations/Acts.

Outlined below are areas of the vehicle which may have been affected by the modifications and which may require recertification, testing and/or data to show compliance for the modified vehicle.

### **DETAIL**

Installation of Seats and Anchorages

Installation of Seat Belts and Anchorages

### **REQUIREMENTS**

ADR 3, 3A, 3/00 National Code of Practice- Manufacture of Additional Seats

ADR 4A, 4B, 4C, 4D, 4/00, 4/01 ADR 5A, 5B, 5/00, 5/01, 5/02 National Code of Practice- Manufacture of Additional Seats

If any of the areas listed above have been affected by the modifications they must comply with the prescribed standards and where necessary must be approved by an authorised officer holding the appropriate modification code.

## SPECIFIC REQUIREMENTS SEATING CAPACITY ALTERATION AND SEAT BELT INSTALLATION -LK1

### 1.0 Seat Requirements

- 1.1 Additional or replacement seats must be installed in accordance with the current issue of the Federal Office of Road Safety "Vehicle Standards Bulletin No.5- National Code of Practice - Manufacture of Additional Seats" (copy to be kept inserted in this Section of the Code).
- 1.2 Conversion of bench seats to bucket seats, and vice versa, may also be approved in accordance with this Code and applicable Australian Design Rules.

### 2.0 Seat Anchorage Construction

- 2.1 Single seats may be adequately anchored to sheet steel floors by using not less than four 6mm fine threaded ISO Grade 10.9 (5/16 inch UNF SAE Grade 8) bolts with a mild steel reinforcement backing plate of an area not less than 3750mm<sup>2</sup> in contact with the mounting surface and a thickness not less than 3mm at each anchorage point. For double and triple seats, the number/size of anchorage points should be increased accordingly.
- 2.2 The shape of the backing plates must match the contour of the floor material. The corners of the reinforcement plates must have a minimum radius of 5mm and the edges adjacent to the floor material must be chamfered.
- 2.3 The anchor bolts must be tightened to the correct tension and fully engage all the thread of the nut.
- 2.4 In cases where seat belt anchorages are fixed to the seat assembly, the seat anchorages must be certified in accordance with the requirements of Code LK2.
- 2.5 Anchorages must not be fitted through wood, fibreglass, sheet aluminium or plastic or where wood or other non-metal material is sandwiched between steel unless certified in accordance with the requirements of Code LK2.
- 2.6 Seats located over wooden floors must be anchored to the vehicle structure via steel members (eg. 'C' - section, channel section or rectangular hollow section) of adequate strength to meet the strength requirements of the National Code of Practice - Manufacture of Additional Seats.

### 3.0 Seat Anchorage Location

- 3.1 Seats should be located in a position which places the longitudinal centre line of the seat in the manufacturer's standard position.

- 3.2 Seats should be located so as to allow freedom of adjustment throughout the complete range of travel.
- 3.3 Front seats must face forward and be parallel to, and equally spaced from, the longitudinal centreline of the vehicle.
- 4.0 **Seat Belt Requirements**
- 4.1 Additional seats must be fitted with seat belts in accordance with the specifications described in the National Code of Practice - Manufacture of Additional Seats.
- 4.2 When converting a vehicle's front bench seats to bucket seat, and vice versa seat belts must be fitted in accordance with the Australian Design Rules for that particular vehicle applicable at the date of it's original manufacture.
- 5.0 **Seat Belt Anchorage Strength**
- Seat belt anchorages must be able to meet the applicable strength requirements given in the National Code of Practice - Manufacture of Additional Seats.
- 5.1 **Seat Belt Anchorage Construction**
- 5.2 Seat belts may be adequately anchored to a steel floorpan, upperbody or pillar by 7/16 inch UNF SAE Grade 8 bolts with a mild steel reinforcement backing plate. The reinforcement backing plate must have an area not less than 3750mm<sup>2</sup> in contact with the mounting surface and a thickness of 3 - 4.5mm (1/8 - 3/16 inch).
- 5.3 The reinforcement backing plate and anchor bolt should be positioned so that the backing plate is loaded approximately centrally. Edge loading is most undesirable.
- 5.4 The ductility of low carbon steel is beneficial in allowing redistribution and sharing of loads, and plastic deformation helps to absorb impact energy.
- 5.5 The shape of the backing plates must match the contour of the floorpan/pillar material in the region of the anchorage. The corners of the reinforcement plates must have a minimum radius of 5mm and the edges adjacent to the body must be chamfered. The anchor bolts must be tightened to the correct tension and fully engage all the thread of the nut. A typical assembly of a seat belt anchorage is shown in Figure 1.

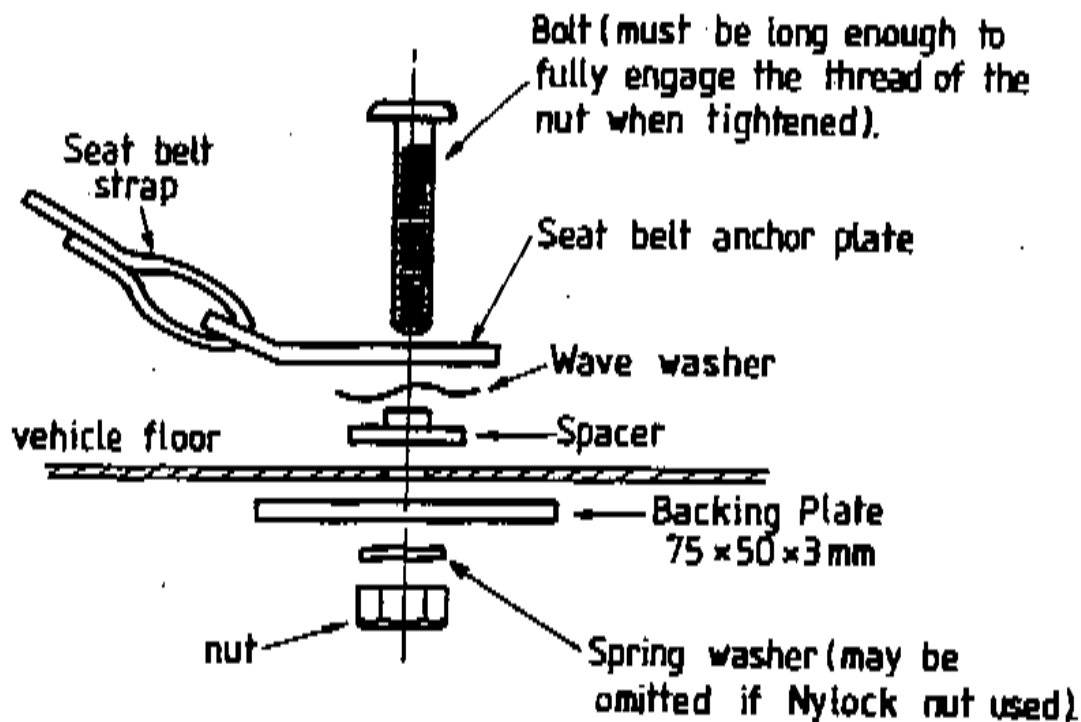
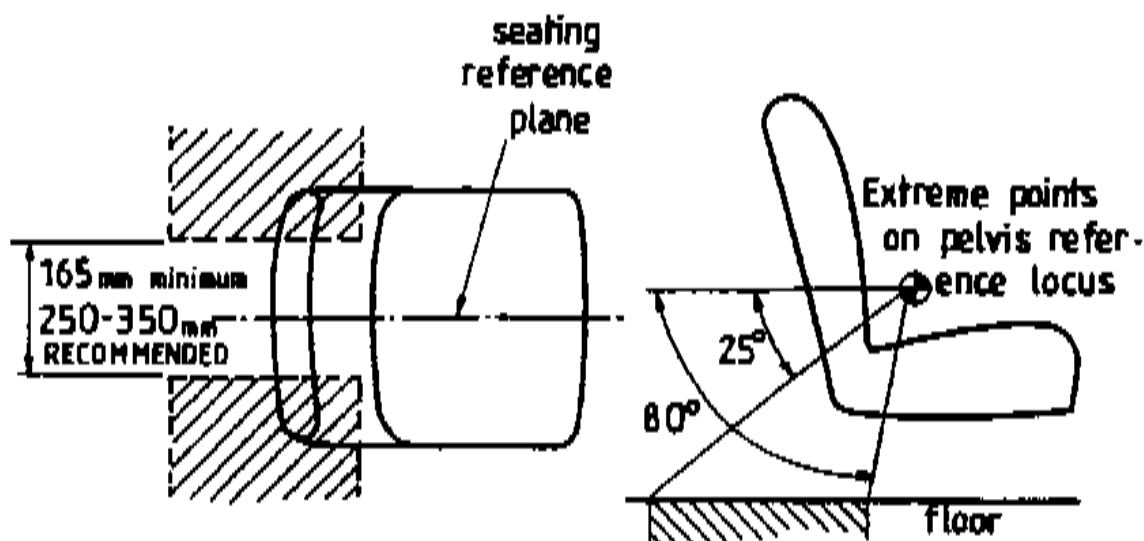


Figure 1

- 5.6 Anchorages must not be fitted through wood or where wood or other non-metal material is sandwiched between steel.
- 5.7 Anchorages must not be fitted to any part of the vehicle which is not free of rust.
- 5.8 Anchorages must not be fitted to wooden, aluminium, plastic or fibreglass panels unless the anchorages have been physically tested and certified in accordance with Code LK2.
- 6.0 **Locations of Anchorages**
- Only seat belt anchorages of a type determined by ADR 5/..... "Anchorages for Seat Belts and Child Restraints" may be installed.
- 6.1 **Lap Anchorages**
- 6.1.1 The two lap anchor points for a particular seating position must be located on opposite sides of the Seating Reference Plane (longitudinal centreline of the seat) a minimum distance of 165mm apart. A distance of 250mm to 350mm between the anchorages is desirable. See Figure 2.





LAP ANCHORAGES MUST BE LOCATED WITHIN SHADED REGIONS.

Figure 2.

- 6.1.2 The lower seat belt anchorages must not be superimposed, ie. each seat belt must be anchored by separate bolts. The anchorages provided for different seating positions must be separated by at least 200mm.
- 6.1.3 In cases where the lap strap is not in a straight line when viewed from the side, the positioning of the anchorage points should be such that the requirements of Clause 5.4.1.3 of ADR 5/.... must be met.
- 6.1.4 Since most seat belts are made to a standard length, it is not good practice to have the anchorage points too far behind the seat. The buckle strap should be of such length that the buckle is accessible and at the side of the hip of the seat occupant, but not so long that the buckle rests on the seated person's abdomen.
- 6.1.5 In the case of a suspension seat, the two pelvic restraint anchorages must be mounted on the seat to maintain the positional relationship between the retractor assembly and the Seating Reference Point.
- 6.2 **Sash Location Point**
- 6.2.1 A sash guide must be fitted for each seating position fitted with a lap sash belt.
- 6.2.2 Upper torso restraints are not permitted on side facing seats. Such seats may be fitted with lap belts only.



- 6.3.2.3 such that the transverse separation is either 250-300mm or less than 250mm by not more than half the horizontal distance from either anchor point to the transverse plane through the Torso Reference Line and
- 6.3.2.4 within Area B (see Figure 4).

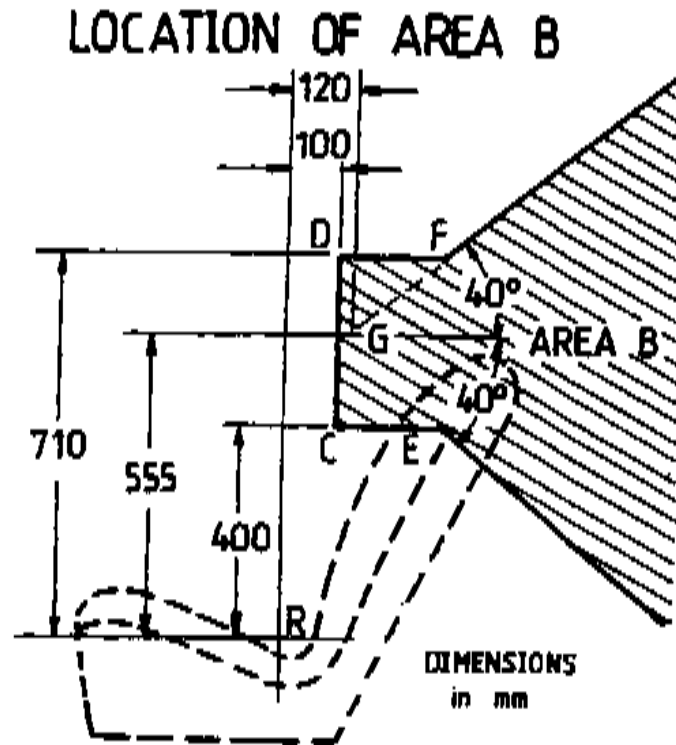


Figure 4

## 7.0 Definitions

The following terms are defined in Part 2 of the ADR Definitions and in ADR 5/..... "Anchorages for Seat Belts and Child Restraints". If a more detailed definition of a term is required, refer to the appropriate section in the ADRs.

- 7.1 *Seating Reference Plane*: the vertical longitudinal plane through the geometric centre of the seat.
- 7.2 *Seating Reference Point*: simulates the position of the pivot centre of human torso and thigh in the rearmost normal seating position of the centre of a 100mm diameter disc placed in the Seating Reference Plane at the join of the seat and backrest. See Figure 5.
- 7.3 *Pelvis Reference Point*: simulates the correct position of a lap strap when worn by the seat occupant. It is located at a height of 95mm above and 70mm forward of the Seating Reference Point. See Figure 5.

- 7.4 *Pelvis Reference Locus*: the locus of a point fixed relative to the seat, coincident with the Pelvis Reference Point when the seat is in the rearmost normal seating position and extending over the range of seat travel.
- 7.5 *Torso Reference Line*: a line passing through the Seating Reference Point and parallel to the back rest. For seat with an adjustable backrest, it is a line passing through the Seating Reference Point at an angle of  $\theta^\circ$  from the vertical. See Figure 5.

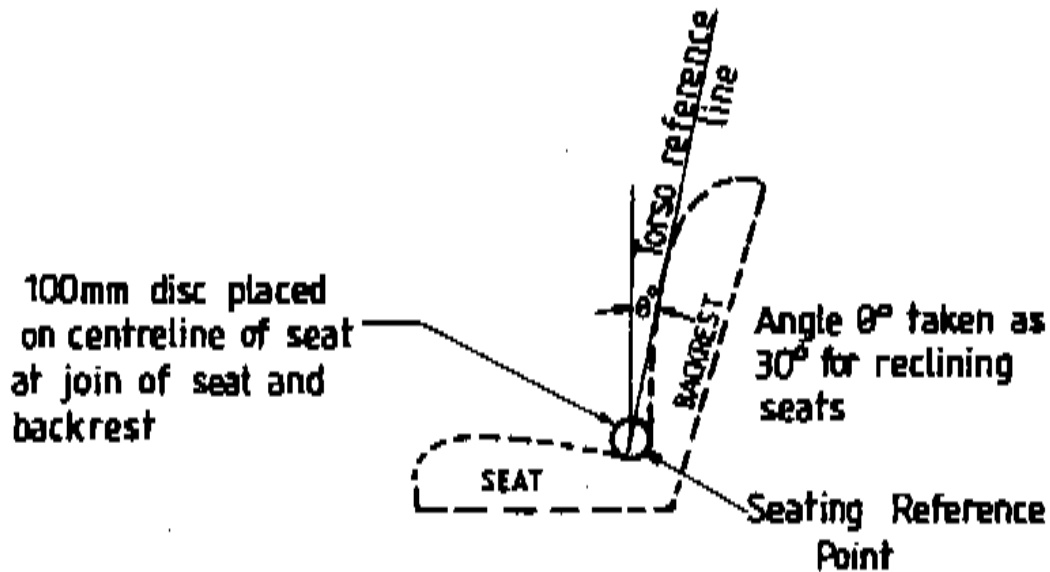


Figure 5

**NATIONAL CODE OF PRACTICE -  
MANUFACTURE OF ADDITIONAL SEATS  
VSB NO.5**

## CHECKLIST SEATING CAPACITY ALTERATION AND SEAT BELT INSTALLATION -LK1

(Y = Yes N = No)

1.0	<b>Seats</b>		
1.1	Have all <u>additional</u> seats been certified to Code LK2 in accordance with the requirements of the National Code of Practice-Manufacture of Additional Seats? (Design Approval No. ....)	Y	N
1.2	Do all <u>replacement</u> seats meet the strength requirements given in Clause 3.2 of ADR 3/... for the date of manufacture of the vehicle?	Y	N
1.3	Are the seats mounted on existing anchorage points or anchorage points fitted in accordance with Sections 1, 2 and 3 of this Code?	Y	N
1.4	If the additional or replacement seats are hinged, or have hinged backs, do they meet the requirements for these seats given in Clause 3.2.3 of ADR 3/.....?	Y	N
1.5	Are the head and leg space requirements satisfied?	Y	N
1.6	Are the occupants of seats installed in the trays of utilities or frucks provided with adequate rollover protection?	Y	N
1.7	Are the additional seat(s) positioned away from areas where there would be a high probability of injury to the occupant(s) in an accident?	Y	N
1.8	Is access to additional seats unimpeded?	Y	N
1.9	With the installation of any additional seats, is access to exits, access aisles, doors, door latches, folding seat controls, etc. unobstructed?	Y	N
1.10	Are seat backs, arm rests and other fittings padded to minimise injury to occupants in an accident?	Y	N
1.11	Is adequate rear vision for the driver maintained?	Y	N

CERTIFICATE OF MODIFICATION NO. ....

FORM NO. LK1

- |            |  |   |   |
|------------|--|---|---|
| 1.12       | Are all rearward facing seats fitted with irremovable head restraints?   | Y | N |
| 1.13       | Are category 2 and category 3 seats labelled or plated in accordance with this Code and VSB 5 ?  | Y | N |
| <b>2.0</b> | <b>Seat Belts</b>  |   |   |
| 2.1        | Is the type of seat belt fitted in accordance with that determined by the anchorage system specified for the particular application by ADR 5/..... "Anchorages for Seat Belts and Child Restraints"? | Y | N |
| 2.2        | Are the seat belts fitted to existing approved anchorage points or to anchorage points fitted in accordance with Sections 5 and 6 of this Code?  | Y | N |
| 2.3        | Are the seat belts fitted <u>new</u> seat belts complying with the requirements of the current revision of ADR 4?  | Y | N |
| <b>3.0</b> | <b>General</b>   |   |   |
| 3.1        | Is the quality of workmanship of a satisfactory standard?  | Y | N |

**NOTE:**

If answer to any question is "NO", the modification is not acceptable.

Make ..... Model ..... Year of Manufacture .....

Chassis No. or VIN .....

Vehicle Modified By .....

Examined and Approved By .....

Company (if applicable) .....

Certificate of Modification No. ....

Authorised Officer No. ....

Signed ..... Date .....

---

---

**SEAT, SEAT ANCHORAGE AND  
SEAT BELT ANCHORAGE CERTIFICATION - LK2**

---

---

**CERTIFICATION TYPES**

The following is a summary of the certification that may be given by officers authorised with Code LK2 - Seat, Seat Anchorage and Seat Belt Anchorage Certification.

Refer also to Section LK - Cabin for general technical guidelines for modifications performed under this Code.

Certifications which are allowed under this Code are:

1. Certification of seat design.
2. Certification of seat anchorages.
3. Certification of seat belt anchorages.

Modifications which are not allowed under this Code are:

1. Seat and seat anchorage installation.
2. Seat belt and seat belt anchorage installation.
3. Child restraint anchorage installation.

**NOTE:** Certifications must comply with all applicable ADR's and Regulations/Acts.

Outlined below are areas of the vehicle which may have been affected by the modifications and which may require recertification, testing and/or data to show compliance for the modified vehicle.

**DETAIL**

Certification of anchorage system (by either calculation or physical testing)

**REQUIREMENTS**

ADR 3, 3A, 3/00 5A, 5B, 5/00, 5/01, 5/02  
AS 2596  
National Code of Practice-  
Manufacture of Additional Seats

If any of the areas listed above have been affected by the modifications they must comply with the prescribed standards and where necessary must be approved by an authorised officer holding the appropriate modification code.



---

**SPECIFIC REQUIREMENTS  
SEAT, SEAT ANCHORAGE AND  
SEAT BELT ANCHORAGE CERTIFICATION - LK2**

---

- 1.0            Seat and Seat Anchorages**
- 1.1            Seats and seat anchorages must be able to withstand the load requirements specified in the National Code of Practice - Manufacture of Additional Seats.
- 1.2            In cases where seat belt anchorages are fixed to the seat assembly, the seat anchorages must satisfy the load requirements in addition to the seat belt anchorage loads.
- 1.3            Seats located over wooden floors must be anchored to the vehicle structure via steel members (eg. 'C' - section, channel section or rectangular hollow section) of adequate design to meet the strength requirements.
- 1.4            Seats and seat anchorages must be physically tested or fully certified by engineering calculations in accordance with the National Code of Practice-Manufacture of Additional Seats requirements.
- 2.0            Seat Belt Anchorages**
- 2.1            Seat belt anchorages must be able to meet the applicable strength requirements specified in the National Code of Practice - Manufacture of Additional Seats.
- 2.2            Seat belt anchorages located in wooden floors must be anchored to the vehicle structure via steel members (eg 'C' section, channel section or rectangular or hollow section) of adequate design to meet the strength requirements.
- 2.3            Seat belt anchorages must be physically tested or fully certified by engineering calculations in accordance with the National Code of Practice - Manufacture of Additional Seats requirements.

## CHECKLIST

### SEAT, SEAT ANCHORAGE CERTIFICATION AND SEAT BELT ANCHORAGE CERTIFICATION- LK2

(Y = Yes N = No)

<b>1.0</b>	<b>Seat and Seat Anchorage Certification</b>		
1.1	Do the seat anchorages meet the strength requirements given in the National Code of Practice - Manufacture of Additional Seats?	Y	N
1.2	Does the seat and head restraint meet the strength and deflection requirements of the Code?	Y	N
1.3	Are seat anchorages located over wooden floors adequately attached to the vehicle structure (ie. with 'C' section, channel section or RHS steel members)	Y	N
1.4	Are comprehensive and easily understood installation instructions for the seat installation attached?	Y	N
1.5	Are detailed plans and specifications of the seat, head restraints and all associated modifications attached?	Y	N
1.6	Is a detailed report on the testing of the seat and head restraints attached?	Y	N
	OR		
1.7	Are detailed calculations demonstrating compliance with the strength and deflection requirements attached?	Y	N
<b>2.0</b>	<b>Seat Belt Anchorage Installation</b>		
2.1	Do the seat belt anchorages meet the strength requirements given in the National Code of Practice - Manufacture of Additional Seats?	Y	N
2.2	Are all anchorage bolts 7/16 inch UNF SAE Grade 8?	Y	N
2.3	Are the seat belt anchor points for each particular seating position located in accordance with the specifications in Section 5.4 of ADR 5/01?	Y	N
2.4	Are all side-facing positions fitted with lap seat belts only?	Y	N
2.5	Are all seat belt anchorages located to allow the seat belt to be worn in a comfortable and safe position?	Y	N

**CABIN****SECTION LK**

DESIGN APPROVAL NO. ....

FORM NO. LK2

- |            |  |   |   |
|------------|--|---|---|
| 2.6        | Are comprehensive and easily understood installation instructions for the seat belt anchorage attached?      | Y | N |
| 2.7        | Are detailed plans and specifications of the seat belt anchorages and all associated modifications attached? | Y | N |
| 2.8        | Is a detailed report of the testing of the anchorages attached?  | Y | N |
|            | OR   |   |   |
| 2.9        | Are detailed calculations demonstrating compliance with the strength requirements attached?                  | Y | N |
| <b>3.0</b> | <b>General</b>   |   |   |
| 3.1        | Is the quality of workmanship of a satisfactory standard?  | Y | N |

**NOTE:**

If answer to any question is "NO", the design is not acceptable.

Approved By .....

Company (if applicable) .....

Authorised Officer No. ....

Signed ..... Date .....

## CHILD RESTRAINT ANCHORAGE INSTALLATION - LK6

### MODIFICATION TYPES

The following is a summary of the modifications which may be approved by officers authorised with modification Code LK6 - Child Restraint Anchorage Installation.

Refer also to Section LK - Cabin for general technical guidelines for modifications performed under this Code.

Modifications which are allowed under this Code are:

1. The location and drilling of an anchor hole into sedans.
2. The installation of a "Child Restraint Anchor Bar" (CRAB).
3. The installation of a "Techsafe (Vertical) Post".
4. The installation of a "Universal Frame".
5. The installation of a "Twin Cab Device".
6. The installation of seat belts for use with child restraints.

Modifications which are not allowed under this code are:

1. The installation of restraints which have not been tested or approved.
2. The installation of additional seat belts which do not comply with Australian Standard AS 2596.
3. The installation of seat belts not for use with child restraints.

**NOTE:** The modified vehicle must continue to comply with all applicable ADRs and Regulations/Acts.

Outlined below are areas of the vehicle which may have been effected by the modifications and which may require recertification, testing and/or data to show compliance for the modified vehicle.

<b>DETAIL</b>	<b>REQUIREMENTS</b>
Seat Mountings	ADR 3, 3A, 3/00
Seat Belt Anchorages and Child Restraint Anchorages	ADR 34, 34A, 5A, 5B, 5/00, 5/01, 5/02
Seat Belts	ADR 4, 4A, 4B, 4C, 4D, 4/00, 4/01

If any of the areas listed above have been affected by the modifications they must comply with the prescribed standards and where necessary must be approved by an authorised officer holding the appropriate modification code.

## SPECIFIC REQUIREMENTS

### CHILD RESTRAINT ANCHORAGE INSTALLATION - LK6

#### 1.0 INTRODUCTION

1.1 Vehicles which do not have child restraint anchorage points (that is, do not comply with the Australian Design Rules 34, 34A, 5/00 etc) can easily be modified to provide one or more child restraint anchorages. Most, however need to be modified to ensure that the vehicle's rear seat is not unduly loaded by child restraints in the event of a vehicle crash situation.

1.2 The installation of a:

1.2.1 Child Restraint Anchor Bar (approved manufacturer Stratos Industries or Brisbane Mobile Accessories)

1.2.2 Vertical Post (approved manufacturer Stratos and Techsafe)

1.2.3 Universal Frame (approved manufacturer Stratos and Pearce Engineering Qld)

1.2.4 Twin Cab Device (approved manufacturer K Pearce NSW)

1.2.5 Hole in the parcel shelf of a sedan

is a safe and easy way in which this can be done. The following sections outline the minimum requirements for the installation of each of these restraint mechanisms.

#### 2.0 GENERAL

2.1 The drilling and location of anchor points in pre ADR 34 sedans (July 1976) must be in accordance with section 3.0 of this Code.

2.2 The installation of specialised restraint anchorage equipment eg. CRAB, Universal Frame, Twin Cab Device, must be in accordance with sections 4.0, 5.0, 6.0, and 7.0 of this Code.

2.3 The installation and requirements for seat belts must be in accordance with section 8.0 of this Code and in accordance with the Department of Transport's Information Bulletin No. 6/VES "Seat Belt Anchorages"

2.4 Seat belts used in conjunction with child restraints must be in a serviceable condition.

2.5 Only approved child restraints and restraint anchorage systems may be used.

2.6 All work performed must be in accordance with recognised engineering standards.

**3.0 POSITIONING OF ANCHORAGE IN PARCEL SHELF (SEDAN)****3.1 INTRODUCTION**

Child restraint anchorages can be provided in Pre ADR 34 (July 1976) sedans by drilling a 9mm hole through the rear parcel shelf and utilising the standard Safe-N-Sound anchor bolt.

**3.2 PROCEDURE**

**3.2.1** The 9mm hole must be drilled through a structurally sound, rust free section of metal which is substantially flat.

**3.2.2** Any hole must be positioned at least 50mm from any other hole in the metal and must be positioned within 40mm of the centreline of the seating position into which the restraint is to be installed (Figure 1).

**3.2.3.** The hole must be located a distance from the rear edge of the seat back, enough to ensure the tether strap of the restraint can be correctly adjusted and be clear of any obstruction to ensure engagement and disengagement of the restraint is not impeded.

**3.2.4** All components of the Safe-N-Sound anchor bolt must be used, the spreader plate washer must be brought to bear on a flat surface on the underside of the parcel shelf.

**3.2.5** Note that some vehicles (ie. VW beetle) may not have a rear parcel shelf. Information relative to these vehicles can be obtained from the Vehicle Safety Standards Section of the Department of Transport.

**3.2.6** Note also that the location of the anchorages in the rear floor of pre ADR 34 (1 January 1977) station wagons, is not permissible. Under impact conditions rear seat back failure may occur. A Child Restraint Anchor Bar or Techsafe Post is the permissible alternative as outlined in Section 4.0 and 5.0 of this Code.

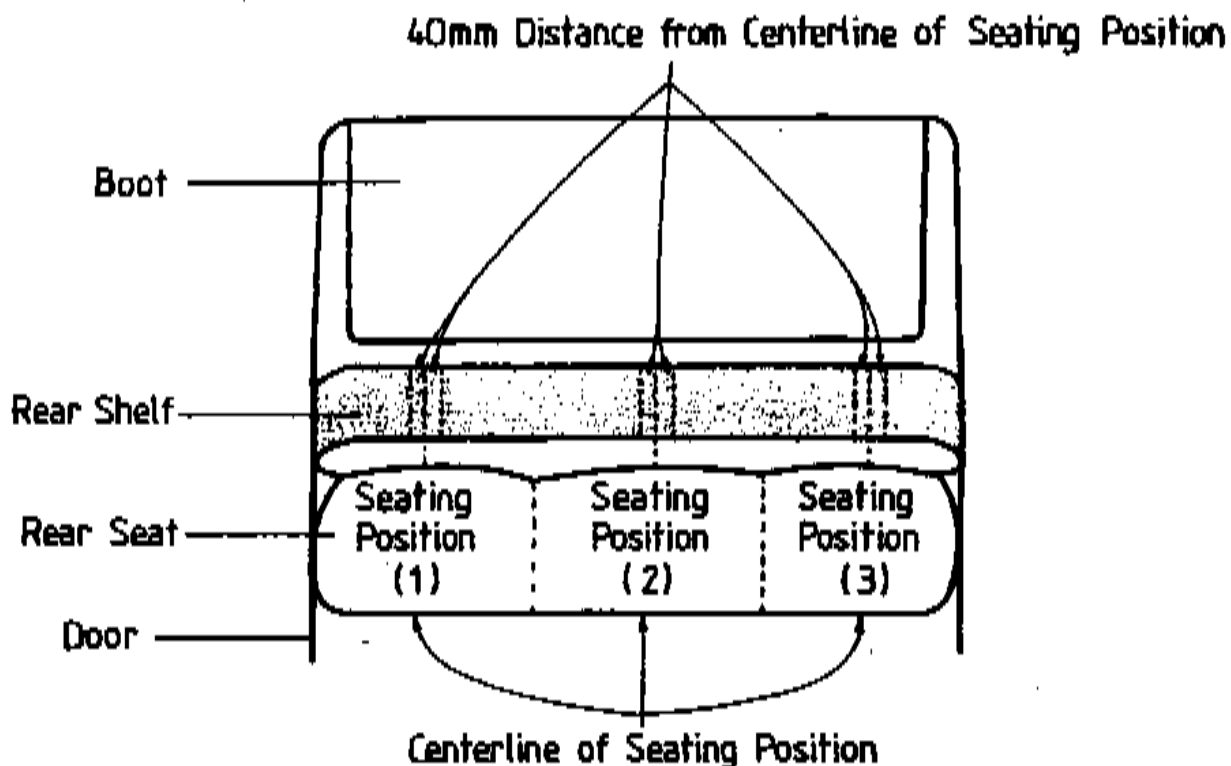


Figure 1

#### 4.0 CHILD RESTRAINT ANCHORAGE BAR

##### 4.1 INTRODUCTION

4.1.1 Anchorages can also be provided on station wagons, four wheel drive vehicles and forward control passenger vehicles. The installation of a "Child Restraint Anchorage Bar" is a safe and convenient way in which this can be done.

4.1.2 Child Restraint Anchorage Bars have been developed and tested to provide anchorage points for up to three children, who, individually do not have a combined body plus restraint mass exceeding 32.5kg. It is suitable for the installation of all presently available child seats, Safe-N-Sound CT2000 "Baby Safety Capsule", "Baby Commuter" and also the Safe-N-Sound safety harness.

##### 4.2 PROCEDURE

4.2.1 The anchor bar (Figure 2) must be installed in accordance with manufacturer's instructions.

- 4.2.2 The anchorage bar must be fitted not less than 150mm behind the top rear edge of the seat squab and it is recommended that it be installed at waist rail height (Figure 3 shaded area). Alternatively, it may be installed in the nearest most practical area in a position similar to that shown in Figure 3.

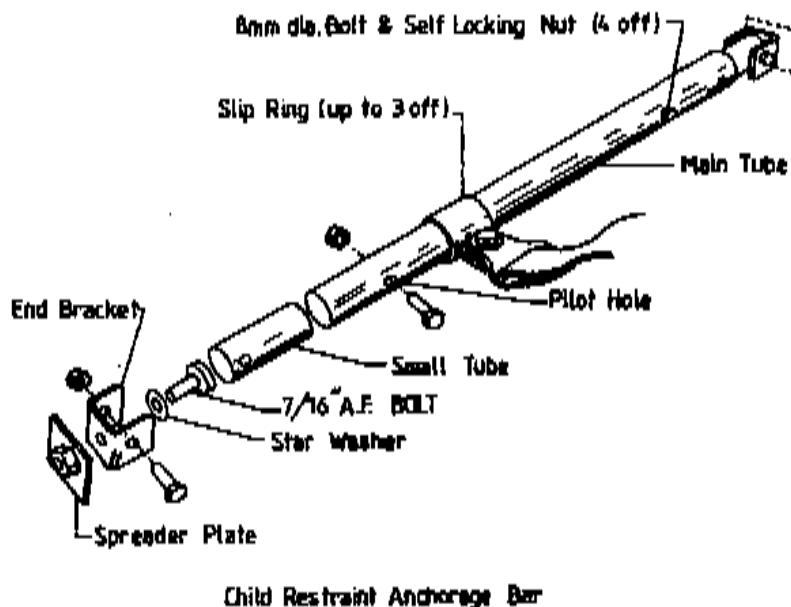


Figure 2

- 4.2.3 Should there be insufficient room in the waist rail to accommodate the mounting bracket then it may be mounted on the side panel just below the waist rail (Figure 3).
- 4.2.4 Sufficient clearance must exist between the inner and outer body panels to accommodate the 7/16" UNF mounting bolt without it fouling the outer panels.
- 4.2.5 The spreader plate must have a flat surface on which to bear when positioned behind the panel. Failure to do this will result in distortion of the panel, which may lead to failure of the anchorage system in the event of a crash.
- 4.2.6 Mark holes using a spreader plate as a template. Remove necessary minimum amount of trim material. Drill a 12mm hole through inner body panel. Care should be exercised to avoid damage to outer panels.
- 4.2.7 Install end bracket and spacer (if required) and spreader plate using 7/16" UNF bolt (Figure 4).
- 4.2.8 Note that the child restraint anchorage bar is not suitable for use in Range Rover four wheel drive vehicles as they have aluminium body panels. For these vehicles, use a "Techsafe Post" (see Section 5.0).



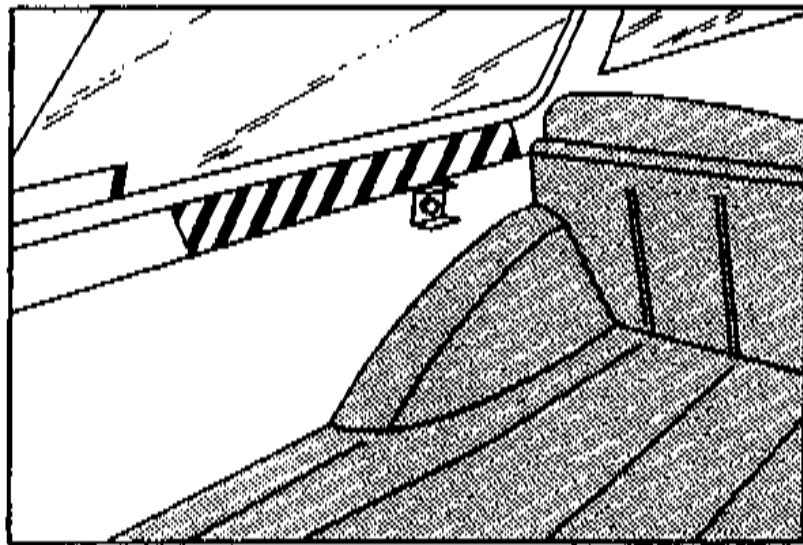


Figure 3

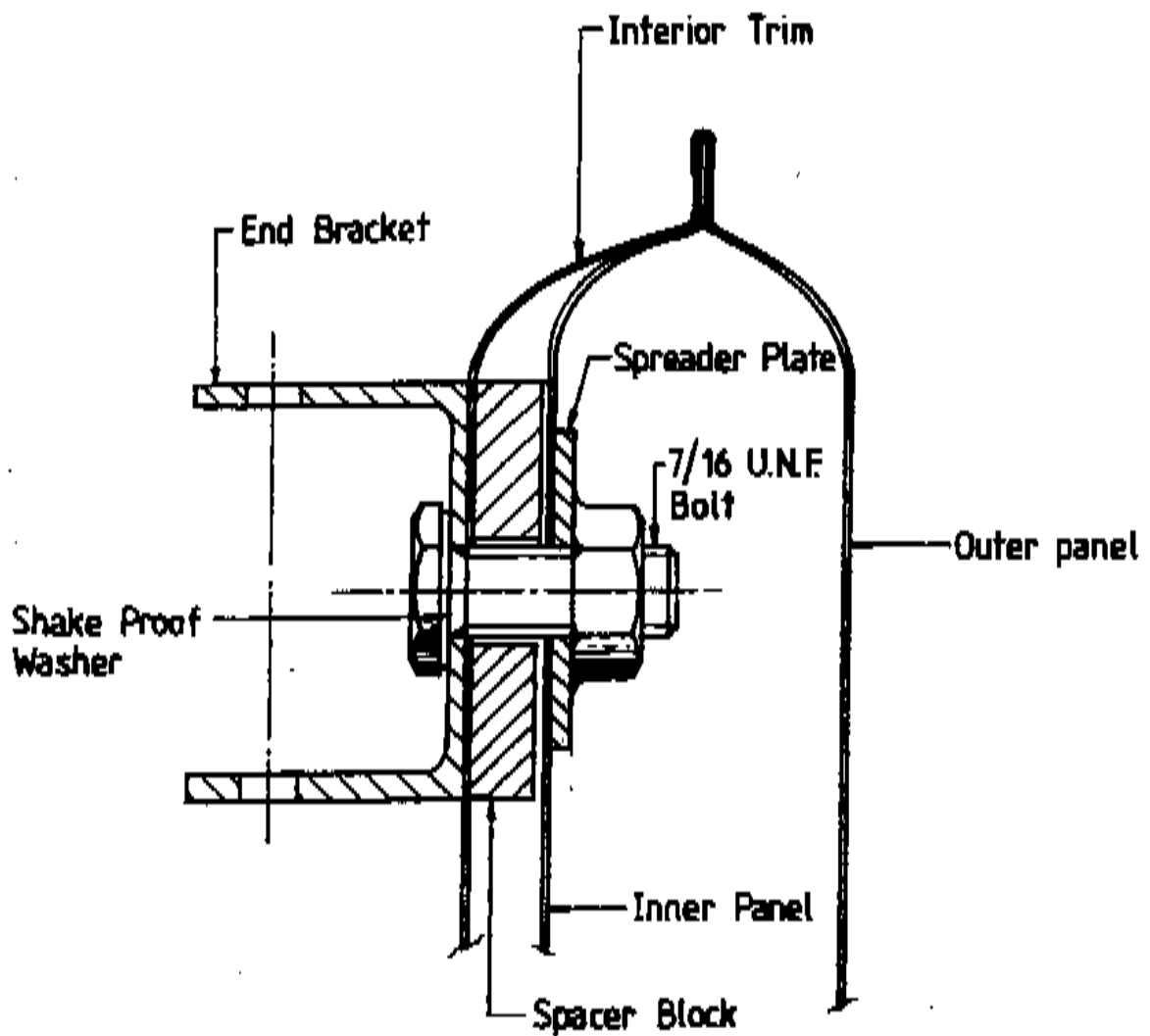


Figure 4

**5.0 TECHSAFE (VERTICAL) POST****5.1 INTRODUCTION**

5.1.1 An alternative to the "child restraint anchorage bar" is the 'Techsafe' or vertical post installation. This device (Figure 5) is also suitable for provision of a single child restraint anchorage in station wagons, four wheel drive vehicles and forward control passenger vehicles.

5.1.2 The installation of a 'Techsafe' or vertical post is a safe and convenient way to install a single anchorage point, and is suitable for any height of seat back up to 640mm. The device can be used for all presently available child seats, Safe-N-Sound "Baby Safety Capsule" and Baby Commuter, also safety harness.

**5.2 PROCEDURE**

5.2.1 The post must be installed exactly in accordance with the manufacturer's fitting instructions.

5.2.2 Centreline of post must lie within 40mm of centreline of child restraint when installed in the required seating position.

5.2.3 Load spreader plates must be utilised.

5.2.4 For corrugated floors, base channel must be positioned so that holes are drilled through the middle of the "vee". Spacers must be used to fill the depth of "vee" (Figure 6).

5.2.5 Vertical tube may be reduced in height to suit seat back heights less than 640mm. Under no circumstances must anchorage point be more than 100mm below top of seat back.

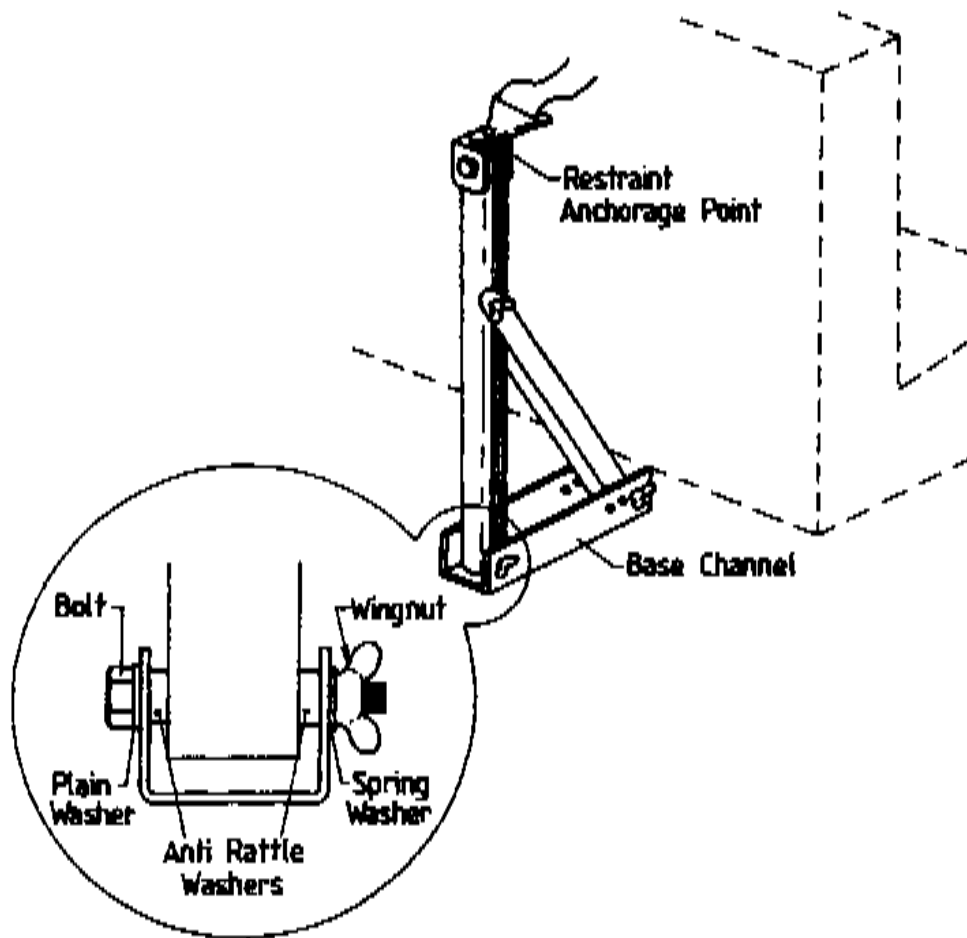


Figure 5

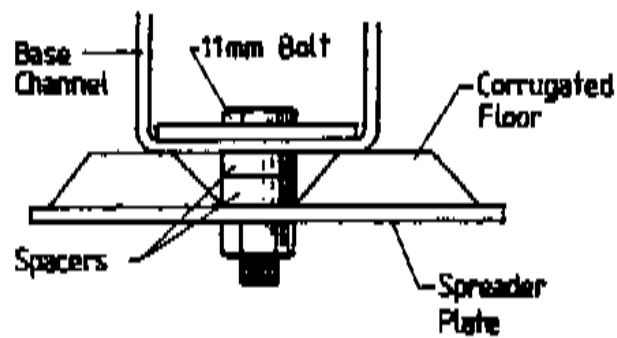


Figure 6

**6.0 UNIVERSAL FRAME****6.1 INTRODUCTION**

6.1.1 A "Universal Frame" (Figure 7) has been developed by the Traffic Authority of New South Wales for use in panel vans and station wagons to accommodate all of the presently available child seats, the Safe-N-Sound CT2000 "Baby Safety Capsule" and the Safe-N-Sound "Baby Commuter".

6.1.2 While it has been designed for installation in the rear of vehicles with a single steel floor pan, it may be possible to install it on vehicles with raised false floors, provided the cavity between the false floor and floor pan can be accessed. Under no circumstances is the frame to be installed in vans with timber or composite floors.

8.1.3. The "Universal Frame" is not to be used for any other purpose than that for which it is designed.

**6.2 PROCEDURE**

6.2.1 The universal frame must be installed exactly in accordance with the manufacturer's fitting instructions.

6.2.2 The frame may only be used for child seats, Safe-N-Sound CT2000 "Baby Safety Capsule" and "Baby Commuter".

6.2.3 The frame must not be modified in any way.

6.2.4 The frame must be installed onto an all steel floor pan.

6.2.5 The frame should be positioned close up behind the front seats to ensure good access to the child restraint and the occupant, while ensuring sufficient space between the vehicle seats and the frame, for the child's legs and feet.

6.2.6 The frame must be installed in the normal forward facing position.

6.2.7 The frame must be secured by using high tensile bolts and nuts with a suitable locking device (shake proof washer).

6.2.8 Spreader plates and spacers (to fill in the depth of 'vee' in corrugated floors) must be utilised (Figure 8).

6.2.9 Child restraints must be installed using the approved Safe-N-Sound anchor bolt and located with the safety lap seat belt supplied with the frame.

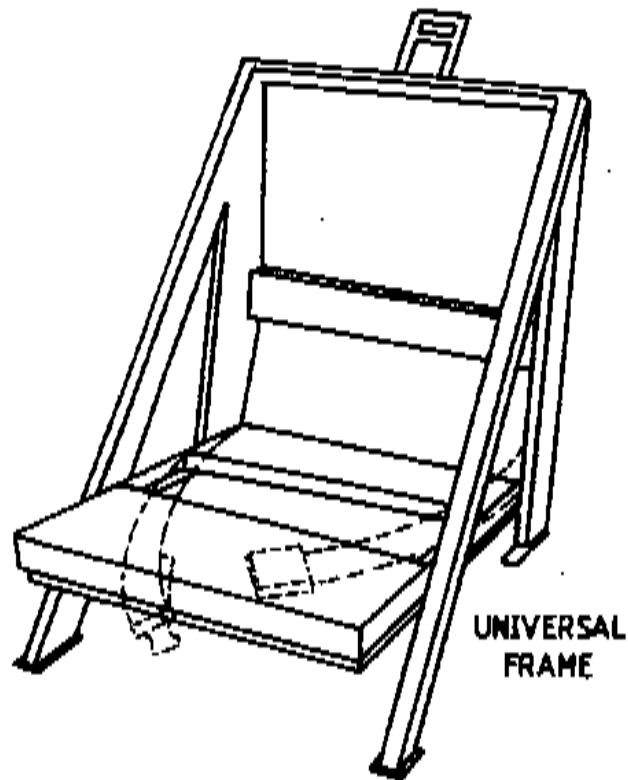


Figure 7

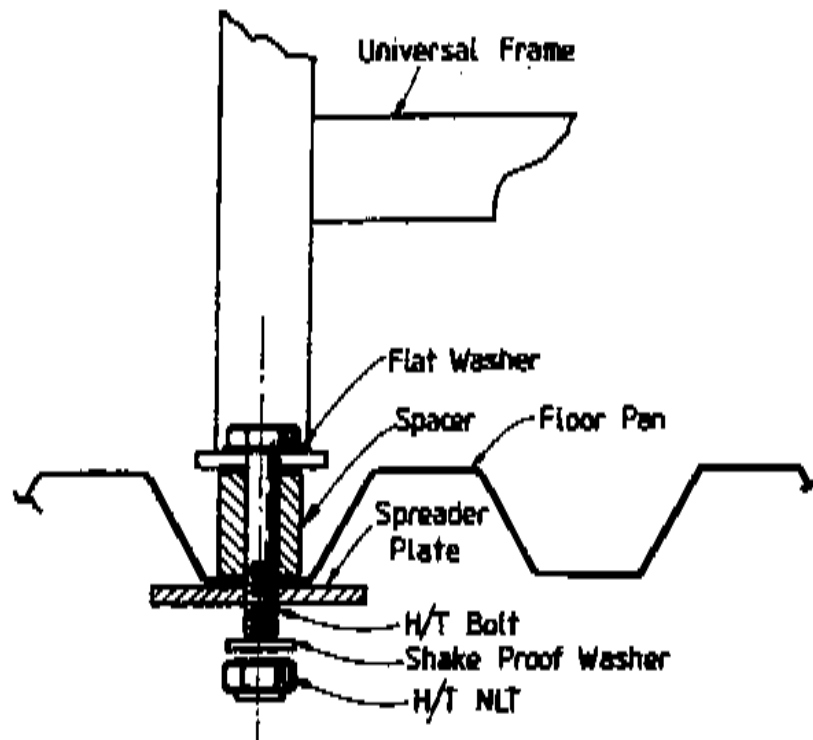


Figure 8

**7.0 TWIN CAB DEVICE****7.1 INTRODUCTION**

7.1.1 Anchorages can be provided in "Twin Cab or Dual Cab" vehicles. Using an approved "twin cab device" (Figure 9) is a safe and convenient way in which this can be done.

7.1.2 The device can be fitted to any of the rear seat positions providing there is nothing in the way of any spreader plate positions (eg. fuel tank, lines, chassis rails, etc).

7.1.3 The seat catch may interfere with the central seating position however any anchorage point may be located no more than 40mm either side of the seating position centreline.

7.1.4 The device is suitable for the installation of all presently available child seats, the Safe-N-Sound CT2000 "Baby Safety Capsule", "Baby Commuter" and also the Safe-N-Sound safety harness.

**7.2 PROCEDURE**

7.2.1 The twin cab device must be installed exactly in accordance with the manufacturer's instructions.

7.2.2 The centreline of the device must lie within 40mm of centreline of child restraint when installed in the required seating position.

7.2.3 Load spreader plates must be utilised.

7.2.4 Before drilling any holes, check for fuel tank, fuel or electrical lines.

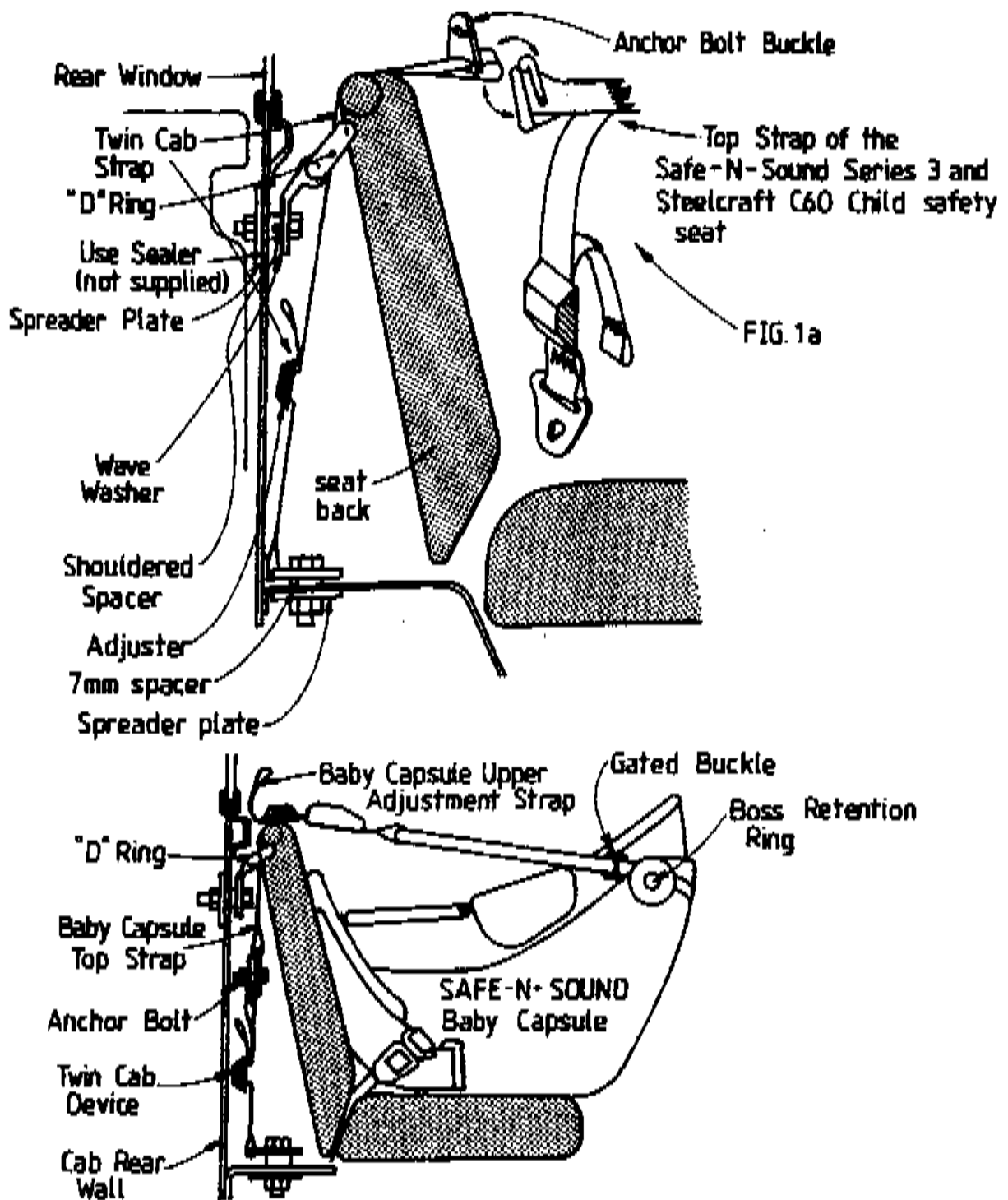


Figure 9

**8.0 SEAT BELT REQUIREMENTS FOR CHILD RESTRAINTS****8.1 INTRODUCTION**

8.1.1 All child restraints rely to a great extent on the vehicle's rear seat belts, either lap sash or lap, to restrain the lower portion of the restraint. It is therefore important to ensure that all belts are installed correctly, are free of twists and are tensioned correctly. Failure to abide by these basic requirements may have either a detrimental effect on the device or cause occupant injury.

**8.2 HARNESS LOCATION AND ADJUSTMENT**

8.2.1 Always ensure that the restraining harness is adjusted firmly and in the case of a child seat that the shoulder straps are located in the appropriate set of slots in the rear of the shell. A common concern is the ability of some children to free their arms from the shoulder straps of child seats. In some cases it has been found that had the harness been correctly adjusted the problem may not have arisen. Some parents think a firmly adjusted harness is an unwarranted imposition on the child's freedom. The answer to this and the justification for correctly using child restraints, is simply that without them children can be killed in a crash or left with permanently disabling injuries. Within reason, the more firmly adjusted the child restraint, the better it will work. A firmly adjusted restraint is one where the child cannot lean forward. When the child is sitting back relaxed in the restraint it should be possible to just insert a flat hand between the harness straps and the child's body.

**8.3 WEBBING**

8.3.1 Always ensure that all webbing remains twist free. Twists in webbing lead to "roping" when the webbing is loaded. This reduces the surface area of webbing in contact with the wearer and increases the possibility of seat belt induced injury.

8.3.2 Always ensure that webbing straps are free from tears and abrasion and that they have not been contaminated by foreign matter. Tears and abrasions weaken straps and may cause premature failure. Contaminated webbing may also fail prematurely. Webbing which is in any way damaged must be replaced and if other components show similar signs of wear and tear, it is strongly recommended that the device be replaced.

8.3.3 Spillages on webbing such as milk etc. may be cleaned off with water and a mild soap or detergent. Under no circumstances are chemicals to be used for this purpose.



- 8.4 TOP TETHER STRAPS
- 8.4.1 The effective installation of child seats using only a static lap/sash belt depends on the seat belt top anchorage point being well to the rear of the device. In vehicles in which this is not the case, correct seat belt adjustment is generally not possible. This allows the device a degree of movement which in some vehicles is considered excessive. Thus, for all child seat installations the use of a tether strap is strongly recommended.
- 8.4.2 Over tightening of the top tether strap may have a long term detrimental effect on the safety of a child restraint. To correctly adjust the top tether strap, the device should be pushed firmly against the seat squab and the strap shortened to just remove the slack.
- 8.5 PROCEDURE
- 8.5.1 Seat belts must be installed either in accordance with the original vehicle manufacturer's specifications or in accordance with the Department of Transport Information Bulletin No. 6/VES "Seat Belt Anchorages" and in accordance with Code LK2 of this Code of Practice.
- 8.5.2 Seat belts must be in a serviceable condition free of twists, cuts, burns and fraying.
- 8.5.3 Existing seat belt anchor points should not be used for the installation of additional seat belts.
- 8.5.4 The use of second hand seat belts is not permitted.
- 8.5.5 Child restraint anchorage bars must not be installed using existing waist rail seat belt mounting points.
- 8.5.6 A single seat belt must not be used to restrain more than one person.

**CHECKLIST  
CHILD RESTRAINT ANCHORAGE INSTALLATION -  
LK6**

(Y = Yes)(N = No)

- 1.0 Installation**
- 1.1 Is the device approved for use by the Department of Transport?      Y      N
- 1.2 Does the installation comply with the relevant section of this Code?      Y      N
- 1.3 Does the vehicle have approved seat belts as specified in Section 8.0 of this Code of Practice?      Y      N
- 1.4 Are the correct backing plates, nuts, bolts and locking devices used?      Y      N
- 2.0 General**
- 2.1 Is the quality of workmanship to a satisfactory standard?      Y      N

**NOTE:**

If the answer to any question is "NO" the modification is not acceptable.

Make ..... Model ..... Year of Manufacture .....

Chassis No. or VIN .....

Vehicle Modified By .....

Examined and Approved By .....

Company (if applicable) .....

Certificate of Modification No. ....

Authorised Officer No. ....

Signed ..... Date .....

## **MOTORCYCLE SEATING CAPACITY ALTERATION - LK7**

### **MODIFICATION TYPES**

The following is a summary of the modifications which may be approved by officers authorised under modification Code LK7 - Motorcycle Seating Capacity Alteration.

Refer also to Section LK - Cabin for general technical guidelines for modifications performed under this Code.

Modifications which are allowed under this Code are:

1. Conversion of a two seat motorcycle to a single seater.
2. Conversion of a modified motorcycle to original seating configuration.

Modifications which are not allowed under this Code are:

1. Conversion of a single seat motorcycle to a two seater where that model motorcycle was only manufactured as a single seater.

**NOTE:** The modified vehicle must continue to comply with all applicable ADR's and Regulations/Acts.

**SPECIFIC REQUIREMENTS****MOTORCYCLE SEATING CAPACITY ALTERATION -  
LK7**

- 1.0 Introduction**
- 1.0.1 Compulsory third party insurance premiums payable by motorcyclists are determined on whether or not provision exists on the motorcycle for the carriage of pillion passengers. Conversion and approval of a motorcycle from a two seater to a single seater, and vice versa, is explained in this Code LK7.
- 2.0 Two Seater to Single Seater**
- 2.0.1 For a two seater motorcycle to be converted to a single seater, it is necessary to shorten the seat and remove the pillion foot pegs/mounting brackets. For a motorcycle to be classified as a single seater, it is necessary for the motorcycle to be fitted with only:
- one seat which has a length less than 500 mm; and
  - one pair of foot pegs and mountings.
- 2.1 Reduction in seat length**
- 2.1.1 Only the upholstered section of the seat needs to be shortened.
- 2.1.2 The maximum length of the upholstered section of the seat is 500 mm.
- 2.1.3 The seat support frame and mountings should not normally be modified.
- 2.1.4 The shortened seat must have no sharp edges or protrusions.
- 2.1.5 Any equipment or fittings exposed by the seat modifications must be protected if likely to cause injury.
- 2.2 Removal of foot pegs and mounting brackets**
- 2.2.1 The foot pegs must be removed by cutting the mounting brackets flush with the frame.
- 2.2.2 When foot pegs are mounted in threaded holes, the attaching holes must be enlarged to remove all traces of thread.
- 2.2.3 No sharp edges or damage to the frame/trailing arms is permitted.
- 2.2.4 No oxy-cutting or application of heat is permitted for these modifications.

- 3.0 Single Seater to Two Seater**
- 3.0.1 When converting a motorcycle (which has been previously modified to a single seater) back to a two seater, it should be restored as close as possible to original manufacturer's specification.
- 3.1 Increase in seat length**
- 3.1.1 The seat must be returned to original manufacturer's specification or equivalent.
- 3.1.2 The seat support frame and mountings should not normally be modified.
- 3.1.3 The lengthened seat must have no sharp edges or protrusions.
- 3.1.4 Any equipment or fittings exposed by the seat modifications must be protected if likely to cause injury.
- 3.2 Fitting of foot pegs and mounting brackets**
- 3.2.1 Pillion passenger foot pegs must be fitted as close to the manufacturer's original position as possible.
- 3.2.2 The foot pegs are to be mounted in accordance with good automotive practice.
- 3.2.3 No sharp edges, weakening of, or damage to the frame/trailing arms is permitted.
- 3.2.4 No oxy-cutting or application of heat is permitted for these modifications.
- 4.0 Change of registration details and insurance premium**
- 4.0.1 It is the responsibility of the registered owner to forward a copy of the Certificate of Modification to the Queensland Department of Transport along with a request to have the insurance category changed.
- 4.0.2 The Queensland Department of Transport, having altered the category of insurance, will arrange an appropriate refund, or increase in insurance fee, as the case may be. The refund/notice of increase will be sent to the person who was the registered owner at the date of issue of the Certificate of Modification.

**CHECKLIST****MOTORCYCLE SEATING CAPACITY  
ALTERATION - LK7**

(Y = Yes N = No)

<b>1.0</b>	<b>Two Seater to Single Seater</b>		
1.1	Is the upholstered section of the seat less than 500 mm long?	Y	N
1.2	Is the modified portion of the motorcycle free of sharp edges, protrusions or fittings likely to cause injury?	Y	N
1.3	Have the foot pegs been removed and mounting brackets cut off or threaded holes enlarged?	Y	N
<b>2.0</b>	<b>Single Seater to Two Seater</b>		
2.1	Has the seat been returned to original manufacturer's specification or equivalent?	Y	N
2.2	Is the modified portion of the motorcycle free of sharp edges, protrusions or fittings likely to cause injury?	Y	N
2.3	Are pillion passenger foot pegs installed in the original position in accordance with good automotive practice?	Y	N
<b>3.0</b>	<b>General</b>		
3.1	Does the frame remain undamaged after modification?	Y	N
3.2	Is the quality of workmanship of a satisfactory standard?	Y	N

**NOTE:**

If the answer to any question is "NO", the modification is not acceptable.

Make ..... Model ..... Year of Manufacture .....

Frame No. or VIN .....

CERTIFICATE OF MODIFICATION NO. ....

FORM NO.LK7

Vehicle Modified By .....

Examined and Approved By .....

Company (if applicable) .....

Authorised Officer No. ....

Signed ..... Date .....





**LM**



**FUEL SYSTEMS**

