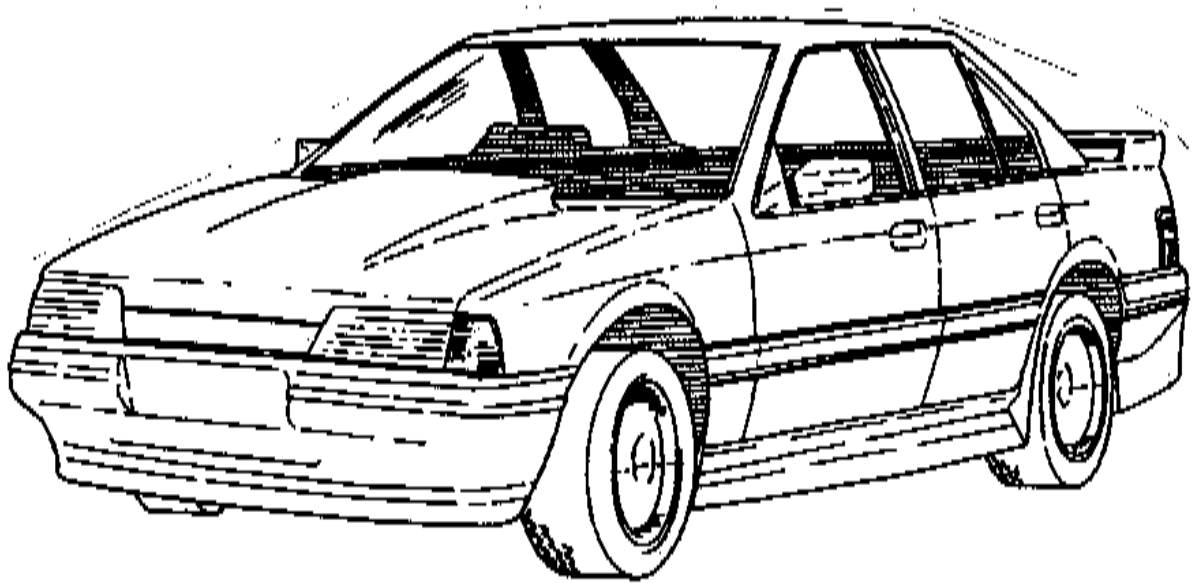


Queensland Department of Transport

CODE OF PRACTICE

LIGHT VEHICLES



CODE OF PRACTICE

TABLE OF CONTENTS

SECTION	SUBJECT	ISSUE DATE
1.0	Introduction	August 1998
2.0	Modification Codes for Authorised Officers	September 1992
LA	Engine	August 1998
LB	Transmission	January 1992
LD	Rear Axle	January 1992
LG	Brakes	October 1993
LH	Body / Chassis	October 1993
LK	Cabin	January 1992
LM	Fuel Systems	October 1993
LO	Vehicle Standards Compliance	January 1992
LS	Steering Conversion	August 1998
LT	Beaming and Torsional Testing	January 1992
	Authorised Officer Handbook	October 1993

CODE OF PRACTICE

1.0 INTRODUCTION

This Code of Practice contains detailed standards for a wide range of modifications commonly performed on light vehicles.

The Light Vehicle Scheme covers modification and certification of the following classes of vehicles:

VEHICLE TYPE	3RD EDITION ADR VEHICLE CATEGORY
Mopeds and Motor Cycles	LA, LB, LC, LD, LE
Passenger Vehicles (Sedans Station Wagons Forward Control Passenger Vehicles)	MA, MB
Passenger Vehicle Derivatives without chassis (Utes, panels vans)	NA
Light Commercial Vehicles up to 4.5 tonnes GVM (Light trucks, vans)	NA, NB (up to 4.5 tonnes GVM)
4WD Vehicles up to 4.5 tonnes GVM	MC

Note that some of the above vehicles can be certified for modifications under the Commercial Motor Vehicle Modification Scheme.

For MB, MC, NA and NB category vehicles, modifications covering additional rear axles, suspension, brakes, cabin modifications, crane mounting and loading devices can be certified by Authorised Officers with Codes D1, F1, G1, G2, G4, G6, G7, K5, Q1, R1 and R2. Chassis modifications to MB, MC, NA and NB category vehicles with a separate chassis only (eg Landcruiser, Hilux) may be certified by Authorised Officers with Codes H1, H2, H3 and H4 Codes in the Commercial Motor Vehicle Modification Scheme.

The Code of Practice is based on accepted vehicle engineering practices and the requirements of the Australian Design Rules for Motor Vehicle Safety. This Code is intended to supplement the recommendations of the original vehicle manufacturer in relation to vehicle modification techniques or standards and to provide guidelines where manufacturer's standards do not exist.

It is important to note that the requirements of the Australian Design Rules and the original vehicle manufacturer's modification guidelines take precedence over the Code of Practice. Authorised Officers must ensure at all times that modifications approved under the Scheme comply with all applicable Australian Design Rules and the original vehicle manufacturer's recommendations when available.

CODE OF PRACTICE

For information or administrative details of the Authorised Officer Scheme such as, how to become an authorised officer, what qualifications are needed etc., please refer to the "Authorised Officer Handbook".

This Code of Practice will be periodically reviewed, amended and new material will be provided.

Any person who wishes to contribute to improving or adding to this Code of Practice should write to:

Manager (Vehicle Safety and Operations)
Queensland Transport
PO Box 673
FORTITUDE VALLEY QLD 4006

CODE OF PRACTICE

2.0 MODIFICATION CODES FOR AUTHORISED OFFICERS

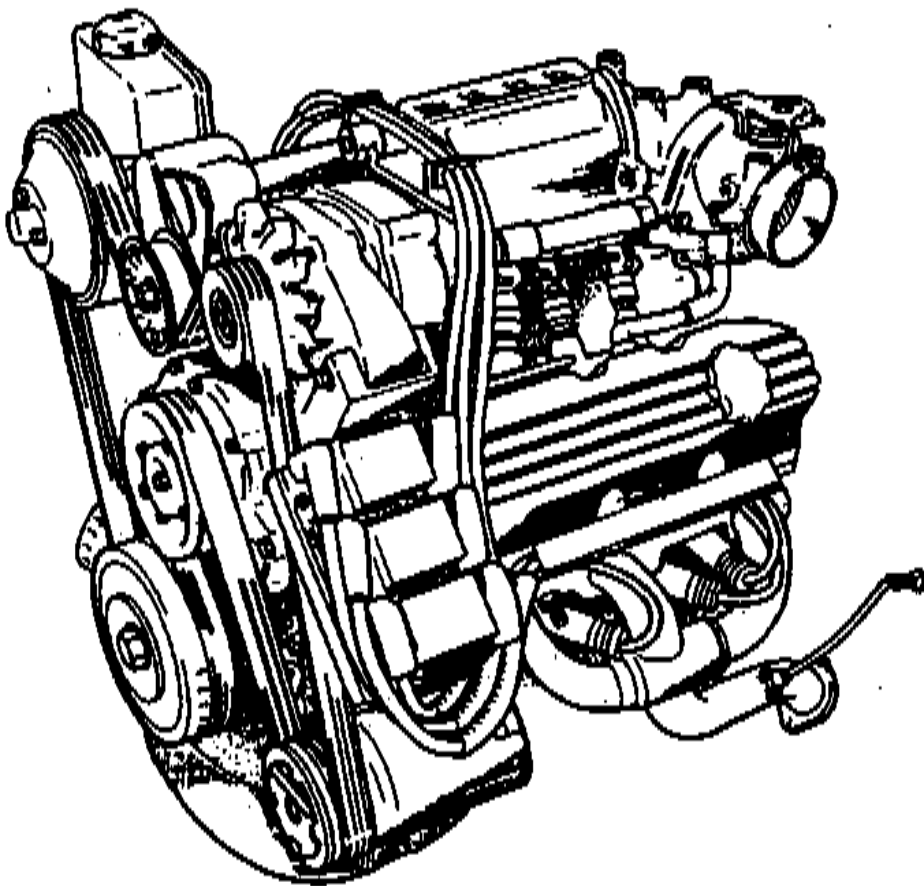
<i>CODE</i>	<i>MODIFICATION</i>
LA1	Engine Substitution
LA3	Turbocharger and Supercharger Installation
LB1	Transmission Substitution
LD1	Rear Axle Replacement
LD2	Differential Substitution
LG1	Brake System Substitution (Design)
LG2	Brake System Substitution (Modification)
LH1	Convertible and Cabriolet Conversion (Design)
LH2	Convertible and Cabriolet Conversion (Modification)
LH3	Passenger Vehicle Extended Wheelbase Conversion (Design)
LH4	Passenger Vehicle Extended Wheelbase Conversion (Modification)
LH5	Individual and Low Volume Vehicles (Design)
LH6	Individual and Low Volume Vehicles (Construction)
LH7	Panel Van to Utility Conversion
LH8	Roll Bar and Roll Cage Installation
LH9	Street Rod Certification
LH10	Street Rod Certification
LK1	Seating Capacity Alteration and Seat Belt Installation

CODE OF PRACTICE

LK2	Seat, Seat Anchorage and Seat Belt Anchorage Certification
LK6	Child Restraint Anchorage Installation
LK7	Motorcycle Seating Capacity Alteration
LM1	Fuel Tank Alteration
LO1	Australian Design Rule (ADR) Certification
LO2	Pre 1972 Imported Vehicle Safety Compliance
LO3	Personally Imported Vehicle Compliance
LS1	Steering Conversion (Design)
LS2	Steering Conversion (Modification)
LT1	Bearing and Torsional Testing

LA

ENGINE



ENGINE

	Page
1.0 Scope	3
2.0 General Requirements	4
3.0 Australian Design Rules	5
4.0 Modifications Codes and Checklists	10
LA1 Engine Substitution	11
LA1 Checklist	30
LA3 Turbocharger and Supercharger Installation	33
LA3 Checklist	38

1.0 SCOPE

This section outlines the minimum installation and performance requirements for light vehicle engine replacement, and offers three (3) options.

- Option 1. Fitting of a replacement engine with not more than 10% greater mass and/or power output than engines offered by the first manufacturer as a standard or optional engine.
- Option 2. Fitting of a replacement engine as specified for the particular model vehicle in Schedule A attached to this section of the Code.
- Option 3. Fitting of a replacement engine as specified for the particular model vehicle in Schedule B attached to this section of the Code.

Replacement or fitting of engine ancillary equipment, such as turbochargers and superchargers, are also covered in this code and may be installed in compliance with Schedule B or Section LA3 of this Code.

2.0 GENERAL REQUIREMENTS

This section applies to all light vehicles and should be read in conjunction with other sections which are specific for the type of modification which is being performed.

1.0 ADR Requirements

1.1 The modified vehicle must continue to comply with the Australian Design Rules to which it was originally constructed. (see Section 3.0)

2.0 Installation

2.1 All work must be performed in accordance with recognised engineering standards and to the satisfaction of the inspecting officer.

2.2 All components used must be within manufacturer's ratings.

2.3 The fitting of replacement engines, turbochargers, exhaust systems etc. must not require removal or weakening of subframes, chassis, crossmembers or body members. Modified crossmembers must be reinforced to maintain the strength and integrity of the original design.

2.4 The steering mechanism of the vehicle must not be altered in any way from the original manufacturer's specifications unless otherwise certified in accordance with LS1 and LS2 Codes. Note that the fitting of a manufacturer's optional power steering system in accordance with the manufacturer's specifications is an approved modification.

2.5 Fuel lines must be well clear of the exhaust system and turbochargers, where fitted.

2.6 Adequate protection from excessive heat should be provided for all hoses, electrical harnesses, rubber or plastic components.

2.7 It is recommended that a clearance of at least 20mm should be maintained between engine and chassis/body components to accommodate engine movement.

2.8 In the interests of reliability, it is important to ensure the correct selection of engine cooling system components ie. radiator, fan assembly etc.

3.0 AUSTRALIAN DESIGN RULES

1.0 Exhaust Emissions General

The majority of light vehicles manufactured after January 1974 have engines designed to meet the Australian Design Rule requirements for exhaust and engine emissions. Replacement engines for these vehicles are required to comply with the applicable ADR's as listed in Table 1.

The replacement engine must be from a vehicle manufactured to an equivalent or more stringent emission standard.

To determine which replacement engine is acceptable, follow these steps.

- In Table 1, choose the column which shows the correct vehicle category eg. passenger car.
- Choose the ADR which was introduced most recently prior to the date of manufacture of the vehicle.
- From Table 2, find suitable alternative standards for Australian manufactured vehicles.

Note that:

- Emission standards in each vehicle category get more stringent for later models.
- ADR numbers are usually stamped into the compliance plate of a vehicle manufactured prior to 1988.
- Vehicles built prior to the introduction of ADR emission standards may be fitted with engines of any year of manufacture.
- Vehicles built after 1 January 1972 must have engines fitted with a positive crank case ventilation system (PCV) which prevents crank case gases escaping into the atmosphere.
- Where a replacement engine was originally designed to operate exclusively on unleaded fuel, the fuel filler neck is to be modified so that it will only accept the small nozzle used on unleaded fuel bowsers. A permanent notice "Unleaded Fuel Only" is to be fitted adjacent to the fuel filler. All of the emission control equipment originally fitted to the replacement engine must be fitted and operational. An appropriate catalytic converter must be fitted in the vehicle's exhaust system if the engine was originally designed to operate with one.

1.1 Diesel Engines

- Engines complying with ADR 30 can be identified by a label which the Design Rule required the manufacturer to fit indicating compliance with ADR 30 and the month and year of engine manufacture. Alternatively, acceptable imported diesel engine standards are described in Clause 30.5 of ADR 30/00. Imported engines must be labelled in accordance with these standards to be an acceptable replacement for an ADR 30 engine.

- A locking type diesel stop control must be fitted to all replacement diesel engines, which will prevent the engine from being started by any accidental or inadvertent means.
- The replacement engine vacuum pump must have sufficient capacity to supply the vehicle's service braking system.

1.2 Liquefied Petroleum Gas (LPG)

- Replacement engines which do not meet the emission requirements for the vehicle to which it will be fitted, may be fitted provided it operates "exclusively" on LPG. The installation must be carried out by a licenced LPG installer.
- The engine's fuel lines and fuel pump must be removed. All remaining fuel connections must be properly sealed.

1.3 Imported Used Petrol Engines

Used imported engines are being offered for sale as an alternative to reconditioning existing engines.

To ensure that the vehicle's safety is not adversely affected and to ensure that vehicle emission standards are complied with, imported replacement engines should only be fitted in accordance with guidelines in this section.

1.3.1 Equivalent Engines

Imported "equivalent" engines are engines of the same make and series, and which have the same basic specifications as engines fitted to vehicles manufactured specifically for the Australian market.

Is approval required to fit these engines?

1.3.1.1 Type A

If the replacement engine is equivalent to the engine which it replaces then no approval is necessary.

Example: Toyota Hilux 2 litre, carburettor, push rod engine replaced with the equivalent Japanese market Toyota 2 litre, carburettor, push rod engine.

Conditions

All Australian emission control equipment including ignition system, carburettor or fuel injection must be fitted from the engine which it replaces. The vehicle's registration details must be amended to show the replacement engine number.

1.3.1.2 Type B

If the replacement engine is not the same as the engine it replaces but is equivalent to the engine fitted to another model of vehicle sold in Australia, approval must be obtained from an authorised officer holding Code LA1.

Example: Toyota Hilux 2 litre, carburettor, push rod engine replaced with imported 2.4 litre fuel injected OHC (Overhead Cam) Toyota engine the same as those fitted to the Australian Toyota Corona.

Conditions

In this case, the ignition system, carburettor (or fuel injection equipment) and all emission control equipment must be fitted from an equivalent Australian engine. The Australian engine from which this equipment is obtained must be from a vehicle which complies with the same or later emission requirements as the vehicle which will receive the replacement engine. The engine must also comply with the power, capacity and mass restrictions explained in this Code for the particular vehicle to which it will be fitted.

1.3.3 Non Equivalent Engines

"Non equivalent" engines are those which are not equivalent to any engine used in the Australian market.

Example: Toyota Hilux 2 litre carburettor push rod engine replace with Japanese market 1.8 litre twin cam fuel injected engine.

Non equivalent engines may be acceptable providing :

- The engine is designed to run on unleaded fuel and to use the catalytic converter. (All Japanese automotive engines manufactured since 1980 would meet this requirement).
- The ignition system and carburettor (or fuel injection equipment) and all pollution control equipment originally fitted to the engine are retained. Note, a suitable catalytic converter must be fitted in the exhaust system.
- The fuel filler neck of the vehicle must be modified so that the vehicle may only operate on unleaded fuel, that is, a smaller filler neck which will only accept the nozzle of an unleaded petrol pump must be fitted.

Conditions

Approval must be obtained from an authorised officer holding Code LA1 for the fitting of non equivalent engines. The engine must also comply with the power, capacity and mass restrictions explained in this Code for the particular vehicle to which it will be fitted.

1.3.3 Other Engines

An imported used engine which does not meet any of the above sets of conditions may only be used if it can be shown by other means to meet the emission standards applicable to the vehicle to which it is to be fitted.

This may involve complex testing which, because of the nature of the equipment needed, can be relatively expensive.

Before contemplating the purchase or fitting of such engines, you are advised to contact Queensland Transport on telephone number (07) 3253 4851.

Table 1 – Application Dates for Australian Design Rules

Application Dates for Australian Design Rules	Pass Car	Pass Car Derivative	Multi-Purpose Pass. Car	Motor Vehicle up to 4.5 t GVM	Forward Control Pass. Vehicles		Omnibus 3.5t GVM		Omnibus from 3.5 t to 4.5 t GVM	
					Seats		Seats			
					Up to 8	Up to 9	Up to 12	Over 12		
ADR TITLE	DATE OF MANUFACTURE									
27 Engine Emission Control	1.74									
27 A Engine Emission Control	7.76	7.76								
27 B Engine Emission Control	1.82	1.82								
27 C Engine Emission Control	1.83	1.83								
30 Diesel Engine Smoke Emissions	7.76	7.76	7.76	7.76	1.85	1.85	7.76	7.76	7.76	
30/00 Diesel Engine Exhaust Smoke Emissions	7.88	7.88	7.88	7.88	7.88	7.88	7.88	7.88	7.88	
36 Exhaust Emission Control			1.79	7.78	1.85	1.85	7.78	7.78	7.78	
36 A Exhaust Emission Control (Over 2.7 t GVM)			1.86		1.86	1.86				
36/00 Exhaust Emission Control for Heavy Duty Vehicles (Over 2.7 t GVM)			7.88	7.88	7.88	7.88	7.88	7.88	7.88	
37 Vehicle Emission Control	1.86	1.86								
37/00 Exhaust Emission Control for Light Vehicles (Under 2.7 t GVM)	7.88	7.88	7.88	7.88	7.88	7.88	7.88	7.88		
37/01 Exhaust Emission Control for Light Vehicles (under 2.7 t GVM)	1.97*	1.97*	1.98**	7.98**	1.98*		7.98*			
40 Light Duty Vehicle Emission Control (Up to 2.7t GVM)			1.88	1.88	1.88	1.88	1.88	1.88		
70/00 Exhaust Emission Control for Diesel Engined Vehicles	1.95**		1.95***		1.95**		7.95***			

* This rule is binding on all new model vehicles from 1 January 1997 and on all models from 1 January 1999

** Under 2.7 tonnes GVM

*** This rule is binding on all new model vehicles from 1 January 1995

**** This rule is binding on all new model vehicles from 1 July 1995

TABLE 2 - Equivalent Emission Standards

ADR	Acceptable Alternative ADR Emission Standard
27	27, 27A, 27B, 27C, 36, 36A, 36/00, 37, 37/00, 37/01, 40
27A	27A, 27B, 27C, 36, 36A, 36/00, 37, 37/00, 37/01, 40
27B	27B, 27C, 37, 37/00, 37/01, 40
27C	27C, 37, 37/00, 37/01, 40
30	30, 30/00, 70/00
30/00	30, 30/00, 70/00
36	27A, 27B, 27C, 36, 36A, 36/00, 37, 37/00, 37/01, 40
37	37, 37/00, 37/01
37/00	37/00, 37/01
37/01	37/01
40	37, 37/00, 37/01, 40
70/00	70/00

4.0 MODIFICATION CODES

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

ENGINE SUBSTITUTION - LA1

MODIFICATION TYPES

The following is a summary of the modifications that may be approved by officers authorised with modification Code LA1 - Engine Substitution.

Refer also to Section LA - Engine for general technical guidelines for modifications performed under this Code.

Modifications which are allowed under this Code are:

- Option 1.** Fitting of a replacement engine with not more than 10% greater mass and/or power output than engines offered by the first manufacturer as a standard or optional engine in Australia.
- Option 2.** Fitting of a replacement engine as specified in Schedule A attached to this section of the Code.
- Option 3.** Fitting of a replacement engine as specified in Schedule B attached to this section of the Code.

Modifications, which are not allowed under this Code, are:

- 1. Fitting of a replacement engine which does not comply with applicable ADR's.
- 2. Fitting of a replacement engine whose power, torque or mass is not compatible with the existing components of the vehicle.
- 3. Fitting of a replacement engine that necessitates substantial modification to the vehicle's structure (eg. firewall, chassis modifications)

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 rectification, testing, and/or data to show compliance for the modified vehicle.

DETAIL	REQUIREMENTS
Engine Mountings	Good Engineering Practice
Radiator Mounting	Good Engineering Practice
Brake System - Vacuum Recharge	ADR 31/00, 35, 35A, 35/00, 35/01
Exhaust/Noise	ADR 28, 28A, 28/00, 28/01
Emissions	ADR 27, 27A, 27B, 27C, 30, 30/00, 36, 36A 36/00, 37, 37/00, 37/01, 40, 70/00

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

SPECIFIC REQUIREMENTS**ENGINE SUBSTITUTION - LA1****1.0 MANUFACTURER'S OPTIONAL ENGINES**

- 1.1 No approval is required for the fitting of an engine which is offered by the manufacturer as an option for a particular vehicle providing the engine is installed in accordance with the manufacturer's specifications.
- 1.2 The braking and suspension etc of the vehicle must be upgraded to the level specified by the vehicle manufacturer for the model, fitted with that optional engine.

2.0 REPLACEMENT ENGINES OTHER THAN MANUFACTURER'S OPTIONS**2.1 Option 1 - Equivalent Engines**

- 2.1.1 Replacement engine shall have a mass and or power output not more than 10% greater than that of an engine fitted by the original vehicle manufacturer as standard or optional equipment.
- 2.1.2 When the replacement engine is equivalent to an engine offered by the vehicle manufacturer as optional equipment, the vehicle must be equipped with any necessary upgrading of equipment, eg. brakes, front or rear axle capacity, suspension capacity etc. that was fitted by the manufacturer when that optional engine was fitted.
- 2.1.3 The power and torque of the replacement engine should not exceed the capacity of the vehicle driveline.

2.2 Option 2 - Non Equivalent Engines

- 2.2.1 Certain engines which are not equivalent in mass and power to the manufacturer's standard or optional engine/s have been assessed as being suitable for installation into particular models of vehicles.

Details of acceptable non equivalent replacement engines for particular models are published in Schedule A attached to this Section of the Code of Practice.

- 2.2.2 Approval may only be issued for the fitting of non equivalent engines to the particular models nominated in Schedule A strictly in accordance with the conditions described.

Particular care must be taken to ensure that any necessary upgrading of vehicle specifications eg. braking or suspension has been completed to ensure the safe operation of the modified vehicle.

- 2.2.3 Any replacement engine mountings should be designed to withstand the torsional loads transmitted by the replacement engine, and have the ability to restrict excess engine movement, thus preventing damage to other components ie. cooling fan, radiator etc.

2.2.4 SCHEDULE A - Acceptable Non Equivalent Engines

The following schedule provides details of acceptable replacement engines for particular vehicles which are not necessarily equivalent in power output and mass to an engine offered by the original manufacturer for that vehicle model.

Approval may be granted for the fitting of engines to particular models shown in the Schedule A provided:

- That any nominated upgrading of the vehicle eg. in the area of brakes or suspension, is completed.
- That the completed installation complies with the specifications prescribed in Section LA1 of the Code.
- The completed vehicle continues to comply with the ADR's to which it was originally manufactured (see Section 3.0).

SECTION LA

ENGINE

MAKE/MODEL	YEAR OF MANUFACTURE	ORIGINAL CAPACITY cc (CID)	MAX. SIZE REPLACEMENT ENGINES	VEHICLE UPGRADING REQUIRED
<u>Austin</u> - A30		948	1000	
Freeway		2433	2850	
Healey Sprite	1958 on	948-1098	1300	Disc brakes (front).
<u>Bedford</u> - CF		2838-3300 (173-202)	4200 (253) 5000 (308)	Standard brakes. DOT approved front disc brake conversion required.
<u>Chrysler</u> - Valiant RV1, SV1, AP5, AP6, VC, VE, VF		3687-5211 (225-318)	5211 (318)	Upgrade to relevant standards for Chrysler V8.
VG, VH, VJ, VK, CL, CM		3523-5900 (215-360)	5900 (360)	Upgrade to relevant standards for Chrysler V8.
Galant GA, GB, GC, GD		1289-1597	2000	Chrysler front disc brakes to be fitted.
Lancer LA, LB, LC		1439-1597	2000	Chrysler front disc brakes to be fitted.
Centura KB, KC		1981-4014	4300	6 Cylinder front disc brakes to be fitted.
Sigma GE, GH, GJ, GK, .GN		1597-2555	2600	Upgrade to relevant Chrysler standards for 2555 engine.
<u>Daihatsu</u> - F10	1974-1976	958-1587	1600 (DOHC) 2000 (SOHC)	
F20, F50	1977-1984	958-2765	1600 (DOHC) 2000 (SOHC) 2765 (diesel)	
Rocky		1998 (petrol) 2765 (diesel)	2600 (petrol) 3000 (diesel)	

MAKE/MODEL	YEAR OF MANUFACTURE	ORIGINAL CAPACITY cc (CID)	MAX. SIZE REPLACEMENT ENGINES	VEHICLE UPGRADING REQUIRED
Datsun- 1000		998	1200 (SOHC)	
1200 (120Y)		1171	1400 (SOHC)	
1500 Utility		1483	1600 (DOHC) 2000 (SOHC)	
1600		1598	2000 (DOHC)	
180B		1770	2000 (DOHC)	
200B		1952	2000 (DOHC)	
240C/260C/280C		2393-2753	4400	
240Z/260Z		2393-2960	4400	
280Z/300Z		2392-2960	4400	
Skyline		2393	4400	
Patrol 4x4		2753-4169	5800 (351) (<270kg)	Brakes must have power assisted dual master cylinder for engines greater than 308CID
E20 Van		1483-1982	3500 (<200kg)	
Ford- Falcon XK, XL, XM, XP		2336-3277 (144-200)	3300 (202)	
Falcon XR, XT, Fairlane ZA		2785-4948 (170-302)	4948 (302)	
Falcon XW, XY, XA, XB, XC, XD	Up to Sept 1982	3080-5751 (188-351)	5751 (351)	4 wheel disc brakes for engines above 4900 (302) in XC, XD XE models.
Falcon XE, XF	From Sept 1982	3310-5751 (200-351)	5751 (351)	4 wheel disc brakes for engines above 4900 (302)
Fairlane & LTD ZB, ZC, ZD, ZF, ZG ZH, ZI, ZK	Up to Sept 1982	3621-5751 (221-351)	5751 (351)	Upgrade brakes to equivalent specifications for optional engine.
Fairlane & LTD ZK, ZL	From Sept 1982	4096-5751 (250-351)	5751 (351)	4 wheel disc brakes for engines above 4900 (302)
Capri		1600	2000	
Capri		3000	4735 (289)	

SECTION LA

ENGINE

MAKE/MODEL	YEAR OF MANUFACTURE	ORIGINAL CAPACITY cc (CID)	MAX. SIZE REPLACEMENT ENGINES	VEHICLE UPGRADING REQUIRED
Cortina TC, TD, TE, TF		1600-4100	4100 (250)	Subject to 6 cylinder model suspension and braking being used.
Cortina Mk 1 and 2		1200-1500	1600 (DOHC) 2000 (SOHC)	Upgrade brakes to 2.0 litre TD Cortina or Escort Specifications
Escort	1970-1980	1100-2000	2000	Brakes, wheels and tyres upgraded to MK2 (1976 on) models.
Transit	Up to 1977 1977 on	1700-3300 4100	3300 (200) 5044 (308)	Upgrade to front disc brakes.
Zephyr		2553-3000	4100 (250)	Power assisted front brakes.
F100, F150, F250 F350			7540 (460) (<330kg)	
<u>Holden</u> Commodore		1892-5044 (115-308)	5044 (308)	Upgrade brakes, suspension, rear axle, wheels and tyres to relevant model standards. Double diaphragm booster with 8 cylinder engine.
48/215 to FC	1948-1959	2171 (132)	2261 (138)	Pushrod Holden Engines – no upgrading required.
48/215 to EK	1948-1962	2171-2261	3300 (202)	An HR model disc braked front suspension must be correctly fitted in conjunction with an HR model cross member which has been modified to maintain the correct steering caster angle in a manner approved by DOT. Only approved modified cross members are to be used. A complete HR front disc and rear drum brake system, including booster, must be installed. Rear wheel cylinders must be 14mm (9/16") diameter. An EH, EJ or HR model rear axle assembly must be correctly installed using all existing manufacturer's mounting points. Suitable anti-sway bars must be fitted to the front and rear of the vehicle.

MAKE/MODEL	YEAR OF MANUFACTURE	ORIGINAL CAPACITY cc (CID)	MAX. SIZE REPLACEMENT ENGINES	VEHICLE UPGRADING REQUIRED
EJ-EH	1962-1965	2261-2933 (138-179)	3048 (186) 3300 (202)	Pushrod Holden engines - no upgrading required. An HR model disc braked front suspension assembly must be correctly fitted in conjunction with an HR model front cross member. A complete HR front disc and rear drum brake system, including booster, must be installed. Rear wheel cylinders must be 14mm (9/16") diameter. Suitable anti-sway bars must be fitted to the front and rear of the vehicle.
HD-HR	1965-1968	2442-3048 (149-186)	3300 (202)	
HK, HT, HG, HQ, HJ, HX, HZ		2638-5800 (161-350)	3300 (202) 5800 (350)	No upgrading required. Brakes and suspension upgraded to V8 specs.
Torana HB-LC LC 1600-1760 LC 2250-3000 LJ (4 cylinder) LJ (6 cylinder) TA LH-LX-UC		1159 1600-1760 2250-3000 1159-1760 2250-3300 1256-1759 1900-3000	1400 (85) 1760 (107) 3300 (202) 1760 (107) 3300 (202) 2000 (SOHC) 5000 (308)	Upgrade brakes, suspension, rear axle, wheels and tyres to relevant model standards.
Jackaroo		1949-2254	3800 (petrol) 2800 (diesel) (<200 kg)	
Gemini		1584-1817	1800 (DOHC) 2000 (SOHC)	
Rodeo		1584-2254	3800	
Drover		1324	1600 (SOHC)	
<u>Honda</u> S600		606	1300	
S800		791	1600	

SECTION LA

ENGINE

MAKE/MODEL	YEAR OF MANUFACTURE	ORIGINAL CAPACITY cc (CID)	MAX. SIZE REPLACEMENT ENGINES	VEHICLE UPGRADING REQUIRED
<u>International-</u> Scout	Pre June 1978		2800	Brakes upgrade to Series III specifications for engines greater than 3300 (202).
	Post June 1978	5655	5900	
<u>Isuzu-</u> KB Utility		1584-1950	3800	
<u>Jaguar-</u> XJ6/12, XJS	1969 on	2792-5343	5800 (351)	
	1959-1971	3781-4235	5800 (351)	
<u>Jeep-</u> Renegade CJ5, CJ6CJ7.CJ8		4227-4981	5000	
	Cherokee	4227-5900	5900	
	Wagoneer	5900	5900	
J10-J20		4227-5900	5900	
<u>Leyland-</u> Land Rover Series I		1997-2052	3300 (petrol) 2800 (diesel)	
	Series II SWB	2052-2625	3300 (petrol) 2800 (diesel)	
	LWB		4400 (petrol) 3200 (diesel)	
	Series III SWB	2286-2625	3300 (petrol) 3200 (diesel)	
	Series III LWB	2286-2625	4400 (petrol) 4000 (diesel)	
	Series 110	2286-3856	5000 (petrol) 4000 (diesel)	
	Range Rover	3528	5800 (351)	
	MGB	1800	3800 (<200kg)	
	<u>Mazda-</u> 1000 1300 1500 323 808	1967 - 1973	1000	1300
			1272	1600
1490			2000	
1272 - 1415			1600	
1272 - 1586			2600	
12A Rotary			13B Rotary	

MAKE/MODEL	YEAR OF MANUFACTURE	ORIGINAL CAPACITY cc (CID)	MAX. SIZE REPLACEMENT ENGINES	VEHICLE UPGRADING REQUIRED
626		1970 - 2954	2600	
929		12A Rotary 1970 - 2954	13B Rotary 3500	
121		12A Rotary 1769 - 1970	13B Rotary 2600	
R100	1969 - 1972	13B Rotary 10A Rotary	13B Rotary 1600 (SOHC)	
RX2 - RX7	1970 on	12A - 13B Rotary	2600 13B Rotary	
Capella	1970 - 1978	1586	2600 13B Rotary	
<u>Mercedes Benz-</u> 220. 230. 240		2200-2376	5000 (308)	
250. 280		2500-2778	5400 (327)	
<u>Mitsubishi-</u> L300		1597-2346	2600	
Pajero		2345-2555	3800	
<u>Morris-</u> Minor		800-1098	1400	Brakes upgraded to 1500cc Morris Major
<u>Nissan-</u> Urvan		1952-2664	3800	
720 Utility		1770-2489	3800	
Navara		1952-2663	3800	
<u>Suzuki-</u> LJ50/80		539-797	1400	
Carry	1976-1988	446-970	1400	
Sierra		970-1324	1600	
Vitara		1590	2000	
<u>Toyota-</u> Landcruiser		2977-4230	5000 (308) 5800 (351) (<270kg)	Upgrade brakes to post 1974 specifications. Landcruiser front disc brakes and dual circuit master cylinder for engines over 5000 (308)

MAKE/MODEL	YEAR OF MANUFACTURE	ORIGINAL CAPACITY cc (CID)	MAX. SIZE REPLACEMENT ENGINES	VEHICLE UPGRADING REQUIRED
Hilux		1490-2800	4200 (253) 4x2 5000 (308) 4x4	
Dyna		1812-2779 1994-3576	3800 5000 (308)	Single rear wheels Dual rear wheels and front drums up to 4100cc Dual rear wheels and front discs up to 4900cc
Coaster		Various	4100 (250) 5000 (308)	Front drum models Front disc models
Hi-Acc		1490-2446	3300 (202)	
Lite-Acc		1290-1998	2000	
Crown		1897-2759	4100	
Corolla		1077-1290	1600 (DOHC)	Brake upgrading to 1600 model specifications.
Corolla		1587 1587 (DOHC)	2000 (SOHC) 1600 (DOHC)	
Corona	Pre 8/73	1490-1968	1600 (DOHC) 2000 (SOHC)	
	Post 8/73	1587-1968	2000 (DOHC)	
Corona MKII		2253-2563	3300 (202)	
Celica TA22 or TA23	1971-6/1976	1588	1600 (DOHC)	
Celica RA23, RA28 onwards	Post 6/1976	1968-2366	2000 (DOHC) 2600 (SOHC)	
Supra	1984	2759	5000 (308)	
<u>Triumph</u> Stag		2977	5000 (308)	
2.5 PI		2498	4400	
TR7		1998	3800	Upgrade to TR8 brake specifications for 3528 V8 engine.

ENGINE**SECTION LA**

MAKE/MODEL	YEAR OF MANUFACTURE	ORIGINAL CAPACITY cc (CID)	MAX. SIZE REPLACEMENT ENGINES	VEHICLE UPGRADING REQUIRED
<i>Volkswagen-</i> Beetle and Type 3	Pre 1968 Post 1968	1192-1600 1192-1600	1600 push rod 2000 SOHC	Volkswagen front end disc brakes required
Kombi		1584-1970	2600 13B Rotary	Volkswagen front disc brakes required
<i>Volvo-</i> 240/242/244/264/ 265/740/760/164		2127-2849	4500	
144			2600 13B Rotary	

2.3. Option 3 - Replacement Engines with " Safety Up - Grade"

2.3.1 Engine Size

- 2.3.1.1 The capacity limits with "safety up-grade" for a passenger car, passenger car derivative or forward control passenger car are set out in the table below. The Authorised Officer should at all times ensure that the replacement engine or engine modification does not overload other systems on the vehicle that are critical to its safety and handling.

Schedule B - Engine capacity limits for modified passenger cars, passenger car derivatives and forward control passenger cars with "Safety Up-Grade"

		Engine	
		Normally Aspirated	Supercharged or Turbocharged
All vehicles originally having a 4 cylinder engine or a rotary engine as the largest optional engine and weighing less than 1100kg.		In cubic inches Original weight (kg) x 0.183	In cubic inches Original weight (kg) x 0.153
		In millilitres (cc) Original weight (kg) x 3.0	In millilitres (cc) Original weight (kg) x 2.5
OTHER VEHICLES (4 cylinders & rotaries over 1100kg, 8 cylinders, 8 cylinders & 12 cylinder cars)	Mono Constructed	In cubic inches Original weight (kg) x 0.294	In cubic inches Original weight (kg) x 0.244
		In millilitres Original weight (kg) x 4.82	In millilitres Original weight (kg) x 4.0
	Vehicles with a separate chassis construction (as original construction)	In cubic inches Original weight (kg) x 0.333	In cubic inches Original weight (kg) x 0.286
		In millilitres Original weight (kg) x 5.48	In millilitres Original weight (kg) x 4.68

Note: The engine capacity to be used for rotary engines is the displacement of all rotors x 2.

NOTES

- 2.3.1.2 The capacity limits apply to passenger cars (MA category), forward control passenger cars (MB category) and passenger car derivatives (such as Holden, Ford and Valiant utilities and panel vans based on the front portion of passenger cars) only. They do not apply to commercial vehicles (NA and NB category, excluding the derivatives mentioned above) or four wheel drive (MC category) vehicles.

2.3.1.3 The Schedule B lists the maximum capacity of engines fitted as part of a vehicle modification.

Vehicles with engines of greater capacity than that provided in Schedule B will not be acceptable for registration as a modified production vehicle. In addition, even within the limits specified, it remains the responsibility of the Authorised Officer to ensure that the engine is suitable for the vehicle. An engine may not be a suitable replacement even though its capacity falls within the specified limits, for example its mass may be excessive.

2.3.1.4 The "original weight" of the vehicle referred to in Schedule B is the original (unmodified) "tare" mass of the model vehicle fitted with the largest engine available for the model but without optional accessories (air conditioning, tow bars etc). The mass of the vehicle should be based on the heaviest sedan version of the model (not station wagon version).

2.3.1.5 Table 3 lists the original mass for various vehicles. If the vehicle to be modified appears in table 3, the mass in table 3 must be used.

2.3.1.6 Fitting of chassis reinforcing frames does not constitute classification of the vehicle as a vehicle with a separate chassis for the purpose of fitting a larger engine than that allowed for mono construction.

2.3.2 Upgraded Safety Equipment

The following vehicle safety systems must be upgraded in order to provide for the increase in vehicle performance. These are the minimum standards required but where any ADR applies, the ADR takes precedence.

2.3.2.1 Brakes :- The brakes may be required to be upgraded and must be certified to comply with Australian Design Rule 31 (Hydraulic Braking Systems introduced 1 January 1977). This may require upgrading and certification in accordance with Section 4.0 of the Code LG1 (Brake System Substitution - Design) and the Code LG2 (Brake System Substitution - Modification) of this Code of Practice. The certification requirements are as follows:

- Brakes must be a dual circuit system.
- Vehicles manufactured prior to 1 January 1977, unmodified brakes - certified to comply with the test requirements of Section 4.0 of the Code LG1.
- Vehicles manufactured prior to 1 January 1977, modified brakes - certified to comply with the test requirements of Section 4.0 of the Code LG1 and all other requirements of Code LG1
- Vehicles manufactured after 1 January 1977, unmodified brakes - no test, only continue to meet all requirements of Australian Design Rule 31.
- Vehicles manufactured after 1 January 1977, modified brakes - certified to comply with the test requirements of Section 4.0 of the Code LG1 and all other requirements of Code LG1.

2.3.2.2 Seat belts : Seat Belts must be installed for all seating positions. Emergency locking lap/sash retractable seat belts are required for all front outboard seating positions

and at least static lap /sash belts for the outboard rear seating positions. Lap/sash or lap belts shall be fitted to inboard seating positions. Modifications are to be certified to Code LK1.

- 2.3.2.3 Windscreen washers must be fitted.
- 2.3.2.4 Windscreen Wipers : Two speed windscreen wipers with a fast speed of at least 45 cycles per minute and a slow speed of at least 20 cycles per minute must be fitted. (Single speed wipers are acceptable if the speed is 45 cycles per minute or more).
- 2.3.2.5 Demister :- a windscreen demister must be fitted.
- 2.3.2.6 Mirrors : There must be an external mirror on the driver's side (and on the passengers side if there is no effective internal rear view mirror).
- 2.3.2.7 Steering Column : If the replacement engine has a capacity more than 45% above that of the largest optional engine for the vehicle and the vehicle is "pre ADR 10", then a collapsible steering column is to be fitted and certified to comply with Code LS1 / LS2.
- 2.3.2.8 Indicators: Flashing turn indicator lights to be fitted at the front and rear of the vehicle.
- 2.3.2.9 Glass: Automotive safety glass (marked accordingly) shall be fitted to the windscreen and other windows in the vehicle.

TABLE 3

Chevrolet

1934	Chevrolet	"DA master"	1486kg	Sedan
1934	Chevrolet Tourer	"DA master"	1378kg	Roadster
1934	Chevrolet	"DA master"	1441kg	Coupe
1950	Chevrolet Styline	(216.5 cu in 6cyl):	1472kg	Sedan
1951	Chevrolet Styline	(216.5 cu in 6cyl):	1478kg	Sedan
1953	Chevrolet Styline	(235.5 cu in 8cyl):	1507kg	Sedan
1954	Chevrolet Styline	(235.5 cu in 8cyl):	1524kg	Sedan
1955	Chevrolet	(235.5 cu in 8cyl):	1499kg	Sedan
1956	Chevrolet	(235.5 cu in 8cyl):	1505kg	Sedan
1957	Chevrolet	(235.5 cu in 8cyl):	1534kg	Sedan
1958	Chevrolet Biscayne	(235.5 cu in 6cyl):	1578kg	Sedan
1959	Chevrolet Bel Air	(235.5 cu in 6cyl):	1727kg	Sedan
1960	Chevrolet Bel Air	(238 cu in V8):	1705kg	Sedan
1961	Chevrolet Impala	(238 cu in V8):	1670kg	Sedan
1961	Chevrolet Bel Air	(238 cu in V8):	1676kg	Sedan
1962	Chevrolet Bel Air	(238 cu in V8):	1664kg	Sedan
1963	Chevrolet Bel Air	(238 cu in V8):	1645kg	Sedan
1964	Chevrolet Bel Air	(238 cu in V8):	1646kg	Sedan
1965	Chevrolet Bel Air	(238 cu in V8):	1727kg	Sedan
1966	Chevrolet Impala	(238 cu in V8):	1720kg	Sedan
1967	Chevrolet Impala	(238 cu in V8):	1756kg	Sedan

Chrysler

1962	Valiant SV1	(225 6 cyl):	1222kg	Auto/sed
1963	Valiant AP5 Regal	(225 cu in 6 cyl):	1251kg	Auto/sed
1965	Valiant AP6 Regal	(225 cu in 6 cyl):	1353kg	Auto/sed
1967	Valiant VE VIP	(273 cu in V8):	1400kg	Auto/sed
1969	Valiant VF Regal 770	(318 cu in V8):	1378kg	Auto/sed
1970	Valiant VG VIP	(5212 ml V8):	1460kg	Auto/sed
1971	Valiant VH	(5212 ml V8):	1520kg	Auto/sed
1971	Galant GA 4 door	(1289 ml 4cyl):	870kg	Auto/sed
1971	Dodge Pheonix 4 dr	(5215 ml V8):	1816kg	Auto/sed
1971	CH 4 door	(4343 ml 6 cyl):	1488kg	Auto/sed
1972	Galant GB 4 door	(1439 ml 4 cyl):	905kg	Auto/sed
1973	Valiant VJ Regal 4 dr	(4015 ml 6 cyl):	1353kg	Auto/sed
1974	Galant GC 4 dr	(1597 ml 4 cyl):	924kg	Auto/sed
1974	Lancer LA 4 door	(1439 ml 4 cyl):	876kg	Auto/sed
1975	Centura KB	(4000 ml 6 cyl):	1194kg	Auto/sed
1975	Valiant Regal VK	(5211 ml V8):	1441kg	Auto/sed
1976	Valiant Regal CL	(5211 ml V8):	1575kg	Auto/sed
1977	Lancer LB 3 door hatch	(1597 ml 4 cyl):	950kg	
1977	Centura KC	(4015 ml 6 cyl):	1230kg	Sedan
1977	Sigma GE 4 door	(1995 ml 5 cyl):	1050kg	Auto/sed
1978	Sigma GE Scorpion	(1995 ml 4 cyl):	1110kg	Auto/sed
1976	Valiant CM Regal 4 dr	(5215 ml V8):	1580kg	Auto
1979	Lancer LC 3 door	(1597 ml 4 cyl):	960kg	
1979	Sigma GE	(2555 ml 4 cyl):	1110kg	Auto/sed
1980	Sigma GH	(1995 ml 4 cyl):	1110kg	Sedan
1980	Sigma Scorpion GJ 2 dr	(2555 ml 4 cyl):	1171kg	Auto
1981	Mitsubishi colt 5 door	(1411 ml 4 cyl):	870kg	

Datsun

1967	1000 VB 10 2 door	(988 ml 4 cyl):	660kg	Sedan
1970	1600 P510	(1595 ml 4 cyl):	952kg	Auto/sed
1970	1200 B110	(1171 ml 4 cyl):	730kg	Auto/sed
1970	240Z 2 door	(2393 ml 6 cyl):	1041kg	Sedan
1971	240 C 4 door	(2393 ml 6 cyl):	1333kg	Sedan
1972	160B 4 door	(1770 ml 4 cyl):	1016kg	Sedan
1972	160B P610 SSS 2 door	(1770 ml 4 cyl):	1041kg	Fst/back
1973	240K GL 2 door	(2393 ml 6 cyl):	1244kg	Auto/sed
1973	260C 4 door	(2565 ml 6 cyl):	1340kg	Auto/sed
1974	120Y	(1171 ml 4 cyl):	816kg	Auto/sed
1974	260Z 2 door	(2565 ml 6 cyl):	1190kg	Sedan
1974	180B GX 4 door	(1770 ml 4 cyl):	1064kg	Auto/sed
1974	180B SSS 2 door	(1770 ml 4 cyl):	1060kg	Auto/sed
1975	260C 4 door	(2562 ml 6 cyl):	1451kg	Auto/sed
1976	120Y	(1171 ml 4 cyl):	841kg	Auto/sed
1977	260Z 2 door	(2565 ml 6 cyl):	1250kg	Sedan
1977	220B 4 door	(1952 ml 4 cyl):	1090kg	Auto/sed
1977	280C 4 door	(2753 ml 6 cyl):	1420 kg	Auto/sed
1978	Skyline 2 door	(2393 ml 6 cyl):	1250 kg	Auto/sed
1978	Stanza	(1595 ml 4 cyl):	950 kg	Sedan
1979	280 ZX coupe	(2753 ml 6 cyl):	1290 kg	Manual
1981	Bluebird	(1952 ml 4 cyl):	1070 kg	Sedan

Ford

A Model	(204 cu in 4 cyl)	1003 kg	Tourer
A Model	(204 cu in 4 cyl)	1077 kg	2 door
A Model	(204 cu in 4 cyl)	1107 kg	4 door
A Model	(204 cu in 4 cyl)	977 kg	Roadster
1934 Roadster	(4 cylinder):	1111 kg	
1934 Roadster	(8 cylinder):	1206 kg	
1949 Anglia	(4 cylinder):	840 kg	Sedan
		736 kg	Tourer
1949 Prefect	(4 cylinder):	840 kg	
1958 Customline	(8 cylinder):	1813 kg	
1958 Anglia 100E	(4 cylinder):	762 kg	
1958 Prefect	(4 cylinder):	787 kg	
1953 Customline	(8 cylinder):	1548 kg	
1962 Anglia 105E	(4 cylinder):	730 kg	
1962 Fairlane 500	(8 cylinder):	1416 kg	Auto/sed
1964 Falcon XM Futura	(200 cu in 6 cyl):	1188 kg	Auto/sed
1965 Cortina GT (122E)	(1498cc 4 cyl):	880 kg	
1965 Falcon XP Fairmont	(200 cu in 6 cyl):	1219 kg	Auto/sed
1968 Falcon XR Fairmont	(289 cu in V8):	1388 kg	Auto/sed
1967 Fairlane ZA	(289 cu in V8):	1435 kg	Auto/sed
1967 Cortina 440	(1499 cc 4 cyl):	898 kg	Auto/sed
1968 Falcon XT GT	(4949 cc V8):	1410kg	Auto/sed
1969 Fairlane ZC	(5766 cc V8):	1549 kg	Auto/sed
1969 Falcon XW GT	(5766 cc V8):	1535 kg	Auto/sed
1970 Escort Twin Cam	(1560 cc 4 cyl):	860 kg	
1970 Capri V8 2 door	(2994 cc 6 cyl):	1067 kg	Auto/sed
1970 Falcon XY GT	(5766cc V8):	1534 kg	
1972 Falcon XA GT	(5766 cc V8):	1575 kg	
1972 Escort 1300 XL 4 door	(1297 cc 4 cyl):	878 kg	Auto/sed
1972 Cortina TC XLE	(250 cu in 6 cyl):	1159 kg	Auto/sed
1973 Falcon XB GT	(5766 cc V8):	1557 kg	
1974 Cortina TD XLE	(250 cu in 6 cyl)	1155kg	
1975 Escort Ghia	(1598 4 cyl):	909 kg	
1977 Cortina TE	(4089cc 6 cyl):	1221 kg	Auto/sed

Holden

1849 48/215	(2171 cc 6 cyl):	1008 kg	
1953 FJ	(2171 cc 6 cyl):	1024 kg	Sedan
1956 FE	(2171 cc 6 cyl):	1050 kg	Sedan
1958 FC	(2171 cc 6 cyl)	1070 kg	Sedan
1960 FB	(2262 cc 6 cyl):	1099 kg	Sedan
1961 EK	(2262 cc 6 cyl):	1120 kg	Auto/sed
1962 EJ Premier	(136 cu in 6 cyl):	1149 kg	Auto/sed
1963 EH Premier	(179 cu in 6 cyl):	1162 kg	Auto/sed
1965 HD Premier	(179 cu in 6 cyl):	1207 kg	Auto/sed
1966 HR Premier	(186 cu in 6 cyl):	1194 kg	Auto/sed
1968 HK Premier	(307 cu in V8):	1362 kg	Auto/sed
1968 HK Monaro GTS 2 door	(327 cu in V8):	1457 kg	Sedan
1968 Brougham 4 door	(307 cu in V8):	1448 kg	Auto/sed
1969 HT Brougham 4 door	(308 cu in V8):	1384 kg	Auto/sed
1969 HT Monaro GTS 2 door	(307 cu in V8):	1422 kg	Auto/sed
1969 HT Premier 4 door	(253 cu in V8):	1320 kg	Sedan

1969	Torana LC GTR XU1 2 dr	(186 cu in 6 cyl):	1067 kg	Sedan
1970	HG Monaro GTS 2 door	(308 cu in V8):	1422 kg	Sedan
1970	HG Brougham 4 door	(308 cu in V8):	1384 kg	Sedan
1970	HG Premier 4 door	(253 cu in V8):	1320 kg	Sedan
1971	HQ Monaro GTS 2 door	(350 cu in V8):	1457 kg	Sedan
1972	LJ XU1 2 door	(202 cu in 6 cyl):	1064 kg	Sedan
1974	LH Torana SLR 5000	(308 cu in V8):	1205 kg	Sedan
1974	Monaro GTS 2 door	(253 cu in V8):	1526 kg	Sedan
1974	Premier HJ 4 door	(308 cu in V8):	1413 kg	Auto/sed
1974	Statesman Deville 4 dr	(308 cu in V8):	1495 kg	Sedan
1975	Gemini 4 door	(1594 cc 4 cyl):	873 kg	Sedan

Mazda

1970	RX2 2 door	(2292 rotary) :	965 kg	Sedan
1970	Capella	(1587 ml 4 cyl):	953 kg	Auto/sed
1972	808	(1272 ml 4 cyl):	819 kg	Sedan
1972	RX3	(1964ml rotary):	890 kg	Auto/sed
1972	1300	(1272 ml 4 cyl):	826 kg	Auto/sed
1972	RX2 Capella	(2292 nom cap):	975kg	Auto/sed
1973	RX4	(2292 nom cap):	1051 kg	Auto/sed
1973	929	(1769 ml 4cyl):	1019 kg	Auto/sed
1974	RX4 2 door	(2616ml rotary):	1127 kg	Auto/sed
1974	RX3	(2292ml rotary):	965 kg	Auto/sed
1975	Capella RX2	(2292ml rotary):	1035 kg	Auto/sed
1975	929	(1969 4 cyl) :	1069 kg	Auto/sed
1978	RX5 2 door	(2616ml rotary):	1177 kg	Sedan
1978	121 2 door	(1769 ml 4 cyl):	1104 kg	Sedan
1977	323	(1272 ml 4 cyl):	854 kg	Auto/sed
1977	808	(1586 ml 4 cyl):	889 kg	Auto/sed
1978	121 2 door	(1970 ml 4 cyl):	1120 kg	Auto/sed
1979	626 4 door	(1970 ml 4 cyl):	1060 kg	Auto/sed
1978	929	(1970 ml 4 cyl):	1140 kg	Auto/sed
1979	RX7 2 door	(2292ml rotary):	1030 kg	Coupe

Toyota

1970	Corolla 2 door (4 cyl)	1200 KE11(1166 ml)	746 kg	Auto/sed
1970	Crown MS55	(2253 ml 6 cyl):	1280 kg	Auto/sed
1970	Corona RT80	(1490 ml 4 cyl):	978 kg	Auto/sed
1970	Corolla KE20 2 door	(1166 ml 4 cyl):	778 kg	Auto
1971	Corolla KE25 2 door	(1166 ml 4 cyl):	756 kg	Coupe
1971	Corona RT81SE	(1587 ml 4 cyl):	945kg	Sedan
1971	Corona RT72 2 door	(1858 ml 4 cyl):	1032 kg	Auto/sed
1971	Crown MS65 4 door	(2563 ml 6 cyl):	1337 kg	Sedan
1971	Celica TA22 2 door	(1588 ml 4 cyl):	953 kg	Auto/sed
1972	Corona MK11 MX10	(1988 ml 4 cyl):	1149 kg	Auto/sed
1974	Corona RT104SE	(1968 ml 4 cyl):	1086 kg	Sedan
1974	Corolla KE 38	(1166 ml 4 cyl):	841 kg	P/Var
1974	Corolla KE 35 2 door	(1166 ml 4 cyl):	864 kg	Auto/cpe
1976	Corolla KE30	(1166 ml 4 cyl):	891 kg	Auto/sed
1975	Crown MS85 4 door	(2563 ml 6 cyl):	1422 kg	Auto/sed
1976	Celica TA23 2 door	(1588 ml 4 cyl):	967 kg	Auto
1976	Celica RA23 2 door	(1968 ml 4cyl) :	1044 kg	Manual
1977	Celica RA28 2 door	(1968 ml 4 cyl):	1067 kg	Auto

SECTION LA**ENGINE**

1977	Corolla KE50 2 door	(1160 ml 4 cyl):	883 kg	Sedan
1977	Cressida MX 32 4 door	(2563 ml 6 cyl):	1140kg	Sedan
1977	Celica RA40 2 door	(1968 ml 4 cyl):	1030 kg	Sedan
1978	Crown MS85 4 door	(2563 ml 6 cyl):	1480 kg	Auto/sed
1978	Corolla KE55 2 door	(1290 ml 4 cyl):	920 kg	Auto/sed
1979	Celica RA40 3 door	(1968 ml 4 cyl):	1100 kg	Auto
1980	Crown MS111	(2563 ml 6 cyl):	1430 kg	Sedan

CERTIFICATE OF MODIFICATION NO.

FORM NO. LA1

CHECKLIST

ENGINE SUBSTITUTION - LA1

(Strike out any item that is not applicable)

(Y = Yes) (N = No)

- 1.0 General
- 1.1 Does the replacement engine installation comply with all of the requirements of Section 2.0 (general requirements) of this Code? Y N
- 1.2 Does the engine installation comply with all applicable ADR's (ie. smoke, gaseous emissions and noise)? Y N
- 1.3 Has the vehicle's steering system been retained unmodified, or modified in accordance with LS1 and LS2 approved procedures? Y N
- 1.4 Has the engine been fitted without the removal or weakening of subframes, chassis, crossmembers or body members? Y N
- 1.5 Has adequate protection been provided for all hoses, electrical harnesses, rubber or plastic components? Y N
- 1.6 Are fuel lines secure and clear of exhaust system and turbocharger (if fitted)? Y N
- 1.7 Are the engine mountings designed to withstand the torsional loads transmitted by the replacement engine? Y N
- 1.8 Is the quality of workmanship to a satisfactory standard? Y N
- 2.0 Diesel Engines
- 2.1 Is a diesel engine stop control fitted which will prevent accidental or inadvertent starting? Y N
- 2.2 Is the replacement diesel engine, when fitted with vacuum boosted brakes, fitted with a vacuum pump of adequate capacity to comply with the original vehicle's ADR braking requirements? Y N
- 3.0 Option 3 only
- 3.1 Does the replacement engine comply with the requirements of the formula contained in Schedule B of this Code? Y N
- 3.2 Braking System
- 3.2.1 Are the brakes a dual circuit system? Y N
- 3.2.2 For vehicles manufactured prior to 1 January 1977, with unmodified brakes, has the vehicle been certified to the requirements of Section 4.0 of the Code LG1? Y N

SECTION LA**ENGINE**

- 3.2.3 For vehicles manufactured prior to 1 January 1977, with modified brakes, has a test, as required in Section 4.0 of the Code LG1, been passed and does the vehicle comply with all of the requirements of LG1? Y N
- 3.2.4 For vehicles manufactured after 1 January 1977, with unmodified brakes, does the vehicle continue to comply with ADR 31? Y N
- 3.2.5 For vehicles manufactured after 1 January 1977, with modified brakes, has a test, as required in Section 4.0 of the Code LG1, been passed and does the vehicle meet all the requirements of LG1? Y N
- 3.3 If modified, has the vehicle's braking system been certified to comply with Section 4 of the Code LG1? Y N
- AO Number of authorised officer holding the LG1 Code who certified the specifications
- 3.4 If modified, has the vehicles braking system been certified to comply with the Code LG2? Y N
- AO Number of authorised officer holding the LG2 Code who certified the specifications
- 3.5 Has the vehicle been upgraded to comply with section 2.3.2 (Specific Requirements) of this Code? Y N
- 3.6 If modified, has the steering system been certified to comply with Codes LS1 and LS 2? Y N
- AO Number of authorised officer holding the LS1 Code who has certified the design for the modifications
- AO Number of authorised officer holding the LS2 Code who has certified the modifications

NOTE:

If the answer to any question is "NO" the modification is not acceptable. Strike out those sections N/A which are Not Applicable.

VEHICLE

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

Chassis No. or VIN.....

REPLACEMENT ENGINE

Make.....

No. of Cylinders..... Engine No.

Displacement..... litres or cu.in.

Maximum Power OutputKW or BHP.....

Vehicle Modified By.....

Examined and Approved By.....

Company (if applicable).....

Certificate of Modification No.....

Authorised Officer No.....

Signed Date

TURBOCHARGER AND SUPERCHARGER INSTALLATION - LA3

MODIFICATION TYPES

The following is a summary of the modifications which may be approved by officers authorised with modification Code LA3 - Turbocharger and Supercharger Installation.

Refer also to Section LA - Engine for general technical guidelines for modifications performed under this Code.

Modifications which are allowed under this Code are:

1. Fitting of turbo/superchargers to MC, NA and NB category vehicles (both petrol and diesel).
2. Fitting of turbo/superchargers to diesel engines.
3. Fitting of turbo/superchargers to vehicles which are fitted with turbo/superchargers as optional equipment by the manufacturer. Note: This may necessitate the upgrading of braking system, rims, tyres and suspension to manufacturer's optional standard.

Modifications which are not allowed under this Code are:

1. Fitting of turbo/supercharger to engine which results in the power/torque output of the engine not being compatible with the original vehicle driveline.
2. Fitting of turbo/superchargers to MA and MB category vehicles such as Subaru, Toyota Tercel, Alfa 33 Quattro and sedan car type derivatives. Refer to Code LA1 for allowable modifications.

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	REQUIREMENTS
Substitute Manifolds	Good Engineering Practice
Fit Oil Lines	Good Engineering Practice
Fit Turbo/Supercharger	Good Engineering Practice
Adjust Fuel Pump	ADR 30, 30/00 Good Engineering Practice
Replace Injectors	ADR 30, 30/00 Good Engineering Practice

DETAIL**REQUIREMENTS**

Substitute Exhaust/Noise

ADR 28, 28A, 28/00

Emissions

ADR 27, 27A, 27B,
27C, 30, 30/00 36,
36A, 36/00, 37,
37/00, 40

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**TURBOCHARGER AND SUPERCHARGER
INSTALLATION - LA3**

- 1.0 FOUR WHEEL DRIVE VEHICLES**
- 1.1 Engine Types**
- 1.1.1 Turbo/superchargers may be fitted only to the vehicle manufacturer's original or optional engine for the vehicle.
- 1.2 Associated Modifications**
- 1.2.1 All fuel, brake and electrical components which are located in close proximity to the turbo/supercharger, must be shielded to prevent excessive heat affecting performance or safety of these components.
- 1.2.2 Changes to the manufacturer's original final drive ratio is NOT permitted.
- 1.3 Tyres**
- 1.3.1 Tyres fitted must have a speed rating equal to or in excess of the maximum speed capacity of the vehicle. The load rating of replacement tyres must be equal to or in excess of the rating of the original tyres fitted by the manufacturer. This information is available from the tyre placard fitted to all vehicles manufactured after 1 January 1975.
- 1.4 ADR Requirements**
- 1.4.1 Petrol Engined Vehicles**
The engine must be operated exclusively on unleaded fuel. To prevent misfueling, the fuel filler neck is to be modified so it will only accept the small nozzle used on unleaded fuel bowsers. A permanent notice "Unleaded Fuel Only" is to be fitted adjacent to the fuel filler.
All of the emission control equipment originally fitted to the replacement engine must be fitted and operational. An appropriate catalytic converter must be fitted in the vehicle's exhaust system.
- 1.4.2 Diesel Engined Vehicles**
Diesel engined vehicles manufactured after 1 July 1976 must comply with Australian Design Rule 30 which limits emission of smoke. Correct fitting of a turbo/supercharger to a diesel engine will normally reduce smoke emissions.
- 1.4.3 Noise**
ADR 28 "Vehicle Noise" may be affected by the proposed modifications, unless the vehicle is fitted with the standard manufacturer's exhaust system. When a standard manufacturer's exhaust system is not used, the sound level emitted must be within the limits specified by ADR 28. To ensure this is so, the sound level should be equivalent to, or less than, that emitted prior to modification.

2.0 DIESEL ENGINES

Turbo/superchargers may be fitted to all diesel engined light motor vehicles if the following conditions are met:

2.1 Engine Types

2.1.1 Turbo/superchargers may be fitted only to the manufacturer's original or optional engine for the vehicle.

2.2 Associated Modifications

2.2.1 All fuel, brake and electrical components which are located in close proximity to the turbo/supercharger, must be shielded to prevent excessive heat affecting performance or safety of these components.

2.3 ADR Requirements

2.3.1 Diesel engined vehicles manufactured after 1 July, 1976 must comply with Australian Design Rule 30 which limits emission of smoke. Correct fitting of a turbo/supercharger to a diesel engine will normally reduce smoke emissions.

2.3.2 **Noise**
As per 1.4.3.

3.0 MANUFACTURER'S ORIGINAL EQUIPMENT

Vehicles which were offered by the original manufacturer with an optional turbo/supercharged engine may be fitted with a turbo/supercharger provided the following conditions are met:

3.1 Engine

3.1.1 The engine to be fitted with the turbo/supercharger must be of identical specification to the turbo/supercharged engine originally offered by the manufacturer. This may involve modification of engine compression, valve timing etc.

3.1.2 The carburation or fuel injection system and all emission control equipment must be of identical specification to the original manufacturer's specification for the turbo/supercharged engine.

3.2 Vehicle Upgrading

3.2.1 The vehicle must be upgraded to similar mechanical specifications to that of the vehicle offered by the manufacturer with the turbo/supercharged engine. This will normally involve an upgrading of -

- . brakes
- . suspension
- . rims

tyres

3.3

Noise
As per 1.4.3.

CERTIFICATE OF MODIFICATION NO.

FORM NO. LA3

CHECKLIST**TURBOCHARGER AND SUPERCHARGER
INSTALLATION - LA3**

(Y = Yes N = No)

- | | | | |
|------------|--|---|---|
| 1.0 | Four Wheel Drive Petrol Vehicles | | |
| 1.1 | Is the turbo/supercharger fitted to the manufacturer's original or optional engine? | Y | N |
| 1.2 | Is final drive ratio unaltered? | Y | N |
| 1.3 | Is the engine run on unleaded fuel with an appropriate catalytic converter fitted to the exhaust system? | Y | N |
| 2.0 | Diesel Engined Vehicles | | |
| 2.1 | Is the turbo/supercharger fitted to the manufacturer's original or optional engine? | Y | N |
| 3.0 | Manufacturer's Original Equipment | | |
| 3.1 | Was the vehicle model available with a turbo/supercharged engine? | Y | N |
| 3.2 | Is the engine built to identical specifications to the turbo/supercharged engine produced by the vehicle manufacturer? | Y | N |
| 3.3 | Is the fuel delivery and emission control systems fitted to the manufacturer's specifications? | Y | N |
| 3.4 | Has the vehicle's brakes and suspension been upgraded to the manufacturer's specifications for the turbo/supercharged model? | Y | N |
| 4.0 | General | | |
| 4.1 | Are all fuel, brake and electrical components protected from excessive heat? | Y | N |
| 4.2 | Is the noise level equivalent to, or less than, that prior to modification? | Y | N |
| 4.3 | 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)

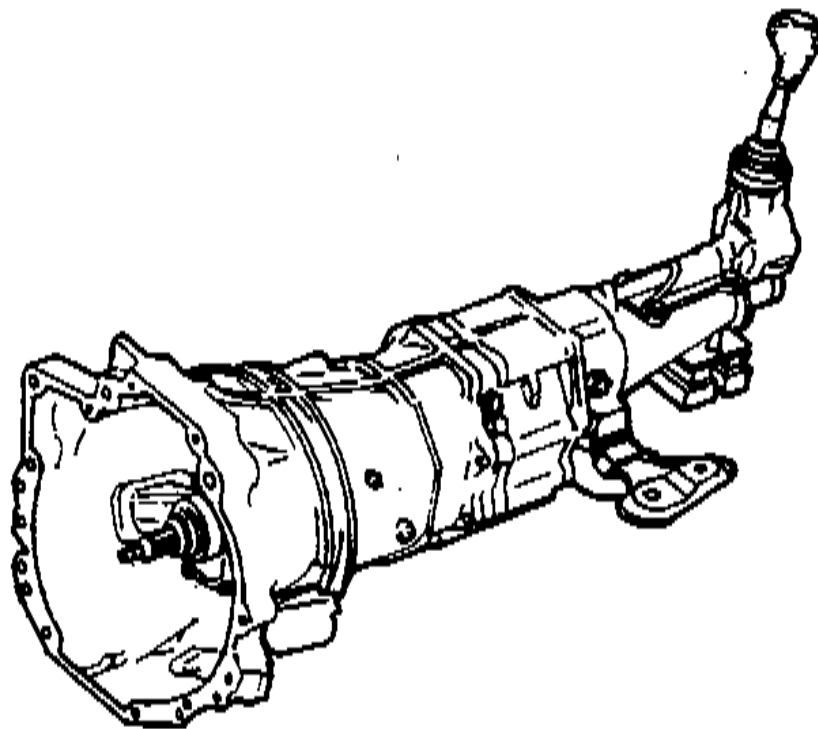
Certificate of Modification No.

Authorised Officer No.

Signed Date

LB

TRANSMISSION



TRANSMISSION		Page
1.0	Scope	3
2.0	General Requirements	4
3.0	Australian Design Rules	5
4.0	Modification Codes and Checklists	6
	LB1 Transmission Substitution	7
	LB1 Checklist	9

1.0 SCOPE

This section outlines the minimum installation and performance requirements for light vehicle gearbox replacement.

2.0 GENERAL REQUIREMENTS

This section applies to all vehicles and should be used in conjunction with other sections which are specific for the type of modification which is being performed.

1.0 General

- 1.1 Replacement gearboxes must have adequate torque capacity for the output of the vehicle's engine.
- 1.2 The fitting of the replacement gearbox must not require removal or weakening of subframes, chassis, crossmembers or body members. Modified crossmembers must be reinforced to maintain the strength and integrity of the original design.
- 1.3 Any openings into the cab necessary for the gear shift control must be adequately sealed to prevent ingress of exhaust gases into the vehicle cabin.
- 1.4 It is the authorised officer's responsibility to ensure that the accuracy of the vehicle's speedometer is maintained within plus or minus ten percent (+/- 10%) of the vehicle's actual speed.
- 1.5 Automotive type gearbox mountings must be used on suitably fabricated brackets.
- 1.6 All work must be performed in accordance with recognised engineering standards and to the satisfaction of the authorised officer.

3.0 AUSTRALIAN DESIGN RULES

Australian Design Rules which may be applicable to light vehicle transmissions:

ADR 9 - Standard Controls for Automatic Transmission

ADR 42/00, 42/01 - General Safety Requirements

The intention of these rules is to standardise the control movements required to select forward and reverse gears and to provide safeguard against inadvertent movement of the vehicle when starting the engine.

ADR 1, 1/00 - Reversing Lamps

Provision must be made for automatic switching of reversing lamps.

ADR 18, 18/00 - Instrumentation

Speedometer accuracy must be maintained.

ADR 24, 24A, 24/00 - Tyre and Rim Selection

Tyres fitted must have a speed rating equal to or in excess of the maximum speed capacity of the vehicle.

4.0 MODIFICATION CODES

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

SPECIFIC REQUIREMENTS**TRANSMISSION SUBSTITUTION - LB1**

- 1.0 **Automatic Transmissions**
- 1.1 The transmission control lever mechanism shall have a neutral position located between the reverse drive position and forward drive position.
- 1.2 A park position shall be located adjacent to the reverse drive position.
- 1.3 Reverse selection movement shall be upward, forward or to the left side.
- 1.4 The engine starter shall be inoperative when the transmission control lever mechanism is in a forward or reverse drive position.
- 2.0 **Driveshafts**
- 2.1 To ensure reliability and safety all tail shaft and gearbox flanges must be mated correctly and driveline items must be correctly balanced. To comply with these requirements and to ensure the driveline is correctly designed regarding torque capacity, rotational speed and driveline angles, the services offered by recognised driveline specialist should be utilised.
- 3.0 **Tyres**
- 3.1 Tyres fitted must have a speed rating equal to or in excess of the maximum speed capacity of the vehicle. The load rating of replacement tyres must be equal to or in excess of the rating of the original tyres fitted by the manufacturer. This information is available from the tyre placard fitted to all vehicles manufactured after 1st January, 1975.

TRANSMISSION SUBSTITUTION - LB1**MODIFICATION TYPES**

The following is a summary of the modifications which may be approved by officers authorised with modification Code LB1 - Transmission Substitution.

Refer also to Section LB - Transmission for general technical guidelines for modifications performed under this Code.

Modifications which are allowed under this Code are:

1. Fitting of alternative transmission.
2. Changing gearbox ratios.
3. Conversion from manual to automatic and vice versa.

Special Note - Manufacturer's Optional Gearboxes

No approval is required for the fitting of gearboxes offered by the manufacturer as optional equipment for a particular vehicle provided it is installed in accordance with the manufacturer's specifications.

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	REQUIREMENTS
Reversing Lights	ADR 1, 1/00.
Tyre and Rim Selection	ADR 24, 24A, 24/00
Transmission Mountings	Good engineering practice
Tail Shaft	Good engineering practice
Fitting of Automatic Transmission	ADR 9, 42/00, 42/01
Change Speedometer Ratio to obtain accurate speedometer reading	Queensland Traffic Act and Regulations ADR 18, 18/00

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.

CHECKLIST**TRANSMISSION SUBSTITUTION - LB1**

(Y = Yes N = No)

- | | | | |
|-----|---|---|---|
| 1.0 | GENERAL | | |
| 1.1 | Does the replacement gearbox have adequate torque capacity for the output of the vehicle's engine? | Y | N |
| 1.2 | Has the replacement gearbox been fitted without the removal or weakening of subframes, chassis, crossmembers or body members? | Y | N |
| 1.3 | Are any openings into the vehicle necessary for the gearshift control adequately sealed to prevent ingress of exhaust and road fumes? | Y | N |
| 1.4 | Has the accuracy of the vehicle's speedometer been maintained? | Y | N |
| 1.5 | Are automotive type gearbox mountings used on suitably fabricated brackets? | Y | N |
| 1.6 | Do the reversing lights (if fitted) operate when reverse gear position is selected? | Y | N |
| 1.7 | Is all work performed in accordance with recognised engineering standards and to the satisfaction of the authorised officer? | Y | N |
| 2.0 | AUTOMATIC TRANSMISSIONS (if applicable) | | |
| 2.1 | Does the transmission control lever mechanism have a neutral position located between the reverse and forward drive positions? | Y | N |
| 2.2 | Is a park position located adjacent to the reverse drive position? | Y | N |
| 2.3 | Is the reverse selection movement upward, forward or to the left side? | Y | N |
| 2.4 | Is the engine starter inoperative when the transmission control lever mechanism is in a forward or reverse drive position? | Y | N |
| 2.5 | Is the transmission control lever position permanently displayed and illuminated within the driver compartment of the vehicle? | Y | N |
| 3.0 | DRIVESHAFT | | |
| 3.1 | Have any changes to the tailshaft been carried out in accordance with manufacturers recommendations or in accordance with recognised engineering standards? | Y | N |

4.0 TYRES

4.1 Do the tyres fitted to the vehicle have a speed rating equal to or in excess of the maximum speed capacity of the vehicle? Y N

NOTE:

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

Vehicle

Make Model Year of Manufacture

Chassis No. or VIN

Replacement Gearbox

Make Model

Vehicle Modified By

Examined and Approved By

Company (if applicable)

Certificate of Modification No.

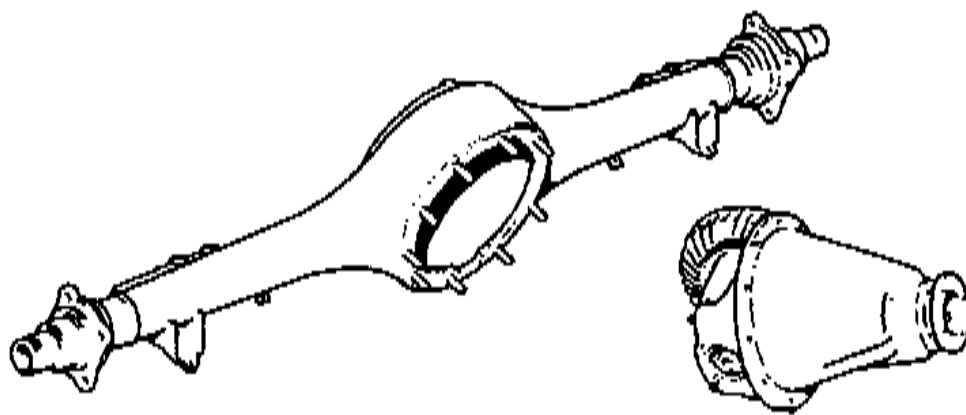
Authorised Officer No.

Signed Date



LD

REAR AXLE



REAR AXLE

Page

1.0	Scope	3
2.0	General Requirements	4
3.0	Australian Design Rules	5
4.0	Modification Codes and Checklists	6
	LD1 Rear Axle Replacement	7
	LD1 Checklist	9
	LD2 Differential Substitution	11
	LD2 Checklist	13

1.0 SCOPE

This section outlines minimum installation and performance requirements for the replacement or modification of rear axle assemblies of light vehicles.

2.0 GENERAL REQUIREMENTS

- 1.1 If changes to the rear suspension or tailshaft are required, the manufacturer's recommendations or the appropriate sections of the Code of Practice should be followed.
- 1.2 To ensure the correct rear wheel track is maintained, the width between the axle flange faces of the replacement or modified axle must be the same as the dimension on the original axle fitted to the vehicle being modified.
- 1.3 The vehicle's original wheel stud pattern must be retained.
- 1.4 Axle flanges may have existing stud holes plug welded and new stud holes drilled for the correct stud pattern. The distance from the edge of any stud hole to the edge of the flange shall not be less than the diameter of the hole.
- 1.5 All welding performed must be in accordance with Australian Standard 1554 Part 1-1985 "Welding of Steel Structures" SP (Structural Purpose) category.

3.0 AUSTRALIAN DESIGN RULES

Australian Design Rules which may be applicable to light vehicle rear axles:

ADR 18, 18/00 - Instrumentation

Speedometer accuracy must be maintained.

ADR 24, 24A, 24/00 - Tyre and Rim Selection

Tyres fitted must have a speed rating equal to or in excess of the maximum speed capacity of the vehicle.

4.0 MODIFICATION CODES

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

REAR AXLE REPLACEMENT - LD1**MODIFICATION TYPES**

The following is a summary of the modifications which may be approved by officers authorised with modification Code LD1 - Rear Axle Replacement.

Refer also to Section LD - Rear Axle for general technical guidelines for modifications performed under this Code.

Modifications which are allowed under this Code are:

1. Fitting of alternative rear axle assembly.
2. Fitting of suspension brackets to axle housing; providing that welding and installation is in accordance with the axle manufacturer's recommendation.

Modifications which are not allowed under this Code:

1. Fitting of axle assemblies which are not compatible with the original vehicle's componentry.
2. Modifications to axle housings - other than that allowed by the axle manufacturer for fitting of suspension brackets.
3. Alteration to vehicle's braking system.

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

Speedometer Accuracy

REQUIREMENTS

Change of
speedometer ratio
to obtain accurate
speedometer
reading
ADR 18, 18/00
ADR 24, 24A, 24/00

If any of the areas listed above have been effected 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**REAR AXLE REPLACEMENT - LD1**

- 1.1 If a rear axle is being replaced, the replacement axle must have a carrying capacity and gear ratio which are suitable for the mass ratings of the vehicle.
- 1.2 All welding on the axle housings (for spring seats, torque rod brackets, etc) must be performed in accordance with the axle manufacturer's recommended procedure or, if this is not available, in accordance with the requirements of Australian Standard 1554 Part 1 1985 "Welding of Steel Structures" SP (Structural Purpose) category. The axle must be installed at the axle manufacturer's recommended installation angle.
- 1.3 The brakes on any replacement axle must be either transferred from the original axle or be identical to those fitted on the original axle.

CHECKLIST

REAR AXLE REPLACEMENT - LD1

(Y = Yes N = No)

1.0	REAR AXLE REPLACEMENT		
1.1	Is the replacement rear axle installed to suit the original manufacturer's mounting points and installation angle?	Y	N
1.2	Are hi-tensile bolts with suitable locking devices used at all attachment points?	Y	N
1.3	Are the brakes fitted to the replacement rear axle transferred from the original axle or identical to those fitted on the original axle?	Y	N
1.4	Is all welding of the axle housing (if applicable) performed in accordance with Australian Standard 1554 Part 1 - 1985 "Welding of Steel Structures" SP (Structural Purpose) category?	Y	N
1.5	Has the replacement rear axle been fitted without the heating or welding of the axle shafts?	Y	N
1.6	Has the width between the axle flange faces remained unaltered from the vehicle manufacturer's specifications to ensure the correct rear track is maintained?	Y	N
1.7	Has the vehicles original wheel stud pattern been retained?	Y	N
1.8	Have any changes to the tailshaft been carried out in accordance with manufacturers recommendations or in accordance with recognised engineering standards?	Y	N
1.9	Is the carrying capacity and gear ratio of the replacement rear axle suitable for the mass ratings of the vehicle?	Y	N
1.10	Has the vehicle's speedometer accuracy been maintained?	Y	N
1.11	Is all work performed in accordance with recognised engineering standards and to the satisfaction of the authorised officer?	Y	N

NOTE:

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

Vehicle

Make Model Year of Manufacture.....

Chassis No. or VIN

Replacement Axle

Make Model

Wheel Track

Original mm Modified mm

Vehicle Modified By

Examined and Approved By

Company (if applicable)

Certificate of Modification No.

Authorised Officer No.

Signed Date

DIFFERENTIAL SUBSTITUTION - LD2**MODIFICATION TYPES**

The following is a summary of the modifications which may be approved by officers authorised with modification Code LD2 - Differential Substitution.

Refer also to Section LD - Rear Axle for general technical guidelines for modifications performed under this Code.

The limitations of modifications which are allowed under this Code are:

1. Fitting of alternative differential in existing axle housing.
2. Modifications to the differential, axles or axle housings to allow installation of differential or differential components.

Modifications which are not allowed under this Code are:

1. Alterations to the vehicle's braking system.

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 effected by the modifications and which may require recertification, testing and/or data to show compliance for the modified vehicle.

DETAIL

Speedometer Accuracy

REQUIREMENTS

Change
speedometer ratio
to obtain accurate
speedometer
reading ADR 18,
18/00 ADR 24, 24A,
24/00

If any of the areas listed above have been effected 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**DIFFERENTIAL SUBSTITUTION - LD2**

- 1.1 The modifier should ensure that a suitable ratio is selected for road speed and startability, and that speedometer accuracy is maintained.
- 1.2 The differential housing must only be modified in accordance with recognised engineering standards.
- 1.3 Axle shafts must not be heated or welded.

CHECKLIST**DIFFERENTIAL SUBSTITUTION - LD2**

(Y = Yes N = No)

- | | | | |
|-----|--|---|---|
| 1.1 | If applicable, has all welding on the axle housing been performed in accordance with the manufacturer's recommended procedures or available in accordance with AS 1554 Part 1 - 1985 "Welding of Steel Structures" SP (Structural Purpose) category? | Y | N |
| 1.2 | Is the vehicle's original braking system maintained? | Y | N |
| 1.3 | Have any changes to the tailshaft been carried out in accordance with the manufacturer's recommendations or in accordance with recognised engineering standards? | Y | N |
| 1.4 | Has the vehicle's speedometer accuracy been maintained? | Y | N |
| 1.5 | Has the manufacturer's original wheel track measurement not been exceeded by more than 26mm? | Y | N |
| 1.6 | Has the manufacturer's original wheel stud pattern been retained? | Y | N |
| 1.7 | Has no heating or welding been carried out on the axle shafts? | Y | N |
| 1.8 | Is all work performed in accordance with recognised engineering standards and to the satisfaction of the authorised officer? | 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

Wheel Track - Original mm Modified mm

Vehicle Modified By

Examined and Approved By

Company (if applicable)

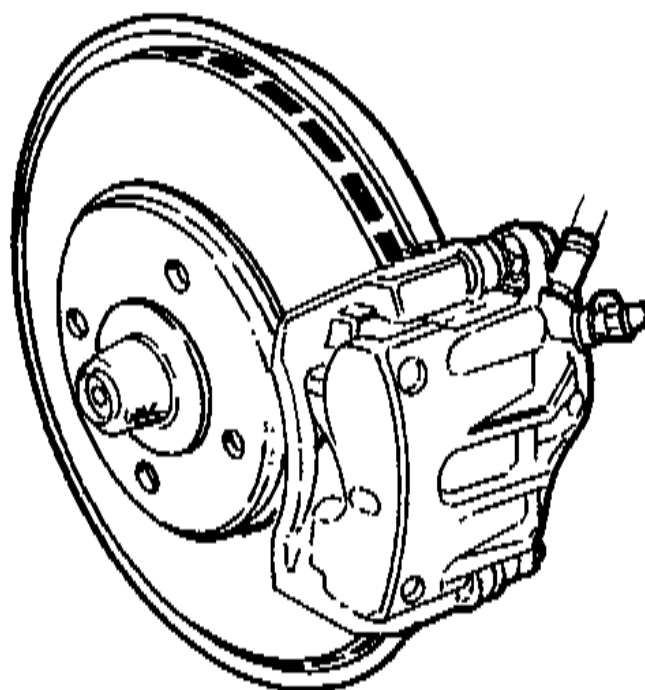
Certificate of Modification No.

Authorised Officer No.

Signed Date

LG

BRAKES



BRAKES

	Page	
1.0	Scope	3
2.0	General Requirements	4
3.0	Australian Design Rules	6
4.0	Modification Codes	7
	LG1 Brake System Substitution (Design)	8
	LG1 Checklist	14
	LG2 Brake System Substitution (Modification)	15
	LG2 Checklist	17

1.0 SCOPE

This section outlines the minimum installation and performance requirements for the replacement or modification of light vehicle braking systems.

For vehicles which are built to ADR 35 Commercial Vehicle Brake Systems, or for vehicles which are in a category to which ADR 35 applies, brake system modifications must be certified in accordance with the Commercial Motor Vehicles Modification Code of Practice Commercial Vehicle Brake Systems "G" Codes.

2.0 GENERAL REQUIREMENTS

This section applies to all light vehicles and should be read in conjunction with other sections which are specific to the type of modification which is being performed.

1.0 COMPONENTS AND EQUIPMENT

- 1.1 All components and devices in the 'Brake System' shall meet or exceed at least one appropriate and recognised international, national or association standard, where such standards exist, or the relevant parts thereof. ("Recognised" can be taken as meaning SAA, SAE, BS, JIS, ISO and DIN standards).

For example:

Air Brake Piping should be manufactured to SAE J844 or equivalent.

Air Brake Hoses should be manufactured to SAE J1402 or equivalent.

Hydraulic Brake Tubing should be manufactured to SAE J1047 or equivalent.

Hydraulic Brake Hoses should be manufactured to SAE J1401 or equivalent.

Flares for Tubing should be in accordance with SAE J5336 or equivalent.

- 1.2 All additional braking equipment must be either new or fully reconditioned.
- 1.3 All components must be used within the manufacturer's ratings.
- 1.4 All pipe and tube adaptors, fittings and connectors should be of the correct size, type and compatible thread form.
- 1.5 All fasteners used in braking systems or in highly stressed locations must be high tensile grade 8.8 or equivalent as a minimum specification. All other fasteners are to be at least of similar strength and number to those in the original installation. Self-locking nuts should be used in preference to spring washers. "Nylock" nuts must not be used in high temperature applications such as brake caliper mountings.

2.0 INSTALLATION

- 2.1 All work must be performed in accordance with recognised engineering standards and to the satisfaction of the authorised officer.
- 2.2 All air and hydraulic lines must be installed in a manner which prevents excessive movement and stress, and such that they are protected from excessive heat, abrasion, impact and other damage.
- 2.3 All components and equipment must be securely fastened to the vehicle.
- 2.4 All joints and components must be free from leakage.
- 2.5 All steel welding performed must be in accordance with Australian Standard 1554 Part 1 - 1985 "Welding of Steel Structures" Category SP.

3.0 ADR/TRAFFIC REGULATION REQUIREMENTS

- 3.1 A modified vehicle must continue to comply with the Australian Design Rules to which it was originally constructed (see Section 3.0)
- 3.2 Any alteration to a vehicle must not result in a reduction of service or emergency brake performance and must not impair the correct functioning of the secondary braking system and the original equipment failure warning systems.

3.0 AUSTRALIAN DESIGN RULES

1.0 Australian Design Rules which may be applicable are:

ADR 7, 7/00 - Hydraulic Brake Hoses

ADR 31, 31/00 - Hydraulic Braking Systems

4.0 MODIFICATION CODES

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

BRAKE SYSTEM SUBSTITUTION (DESIGN) - LG1

MODIFICATION TYPES

The following is a summary of the modifications whose designs may be approved by officers authorised with modification Code LG1 - Brake System Substitution (Design).

Modification design approvals allowed under this Code are:

1. Fitting Substitute Brake Disc or Drum Assemblies.
2. Fitting Substitute Brake Master Cylinders.
3. Fitting Substitute or Additional Brake Boosters.
4. Fitting Brake Balance and Pressure Limiting Devices.

Modification design approvals not allowed under this Code are:

1. The actual physical modification of braking systems (this is covered by Code LG2).
2. Fitting substitute steering knuckle, McPherson strut, or rear axle assemblies.
3. Brake system modifications to motorcycles and mopeds ("L Group" vehicles), trailers and commercial vehicles (ADR 35 applies).

Special Notes

Manufacturer's Optional Braking Systems

No approval is required for the fitting of braking systems offered by the manufacturer as optional equipment for that model vehicle or fitted by the manufacturer as a substitute later in a model range, provided that it is installed in accordance with the manufacturer's specifications.

Fitting Brake Boosters to pre-ADR 31 Vehicles

No approval is required for the fitting of additional or substitute in-line brake boosters to pre-ADR 31 vehicles, provided that they are installed in accordance with requirements of the manufacturer of the replacement brake booster.

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**REQUIREMENTS**

Hydraulic Brake Hoses

ADR 7, 7/00

Brake performance and safety

ADR 31, 31/00. Queensland Traffic Regulations

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**BRAKE SYSTEM SUBSTITUTION
(DESIGN) - LG1**

The following are specific requirements for the design of brake system substitutions which can be approved by authorised officers under modification Code LG1.

The conversions must also comply with the general guidelines contained in Section LG 2.0 "General Requirements".

1.0 DRUM OR DISC BRAKE ASSEMBLY SUBSTITUTION**1.1 Steering Knuckles/Struts**

1.1.1 Steering knuckles or McPherson struts with integral stub axles must not be modified to enable the fitting of hubs, disc rotors or caliper brackets.

1.2 Caliper Brackets

1.2.1 Caliper brackets shall be designed to take into account all of the forces imposed during braking, including the bending resulting from the offset between the centreline of the disc and the plane of the caliper bracket mounting.

1.2.2 Caliper brackets must be mounted using all of the original drum brake backing plate or caliper bracket mounting points.

1.2.3 Tapped holes must have a depth at least equal to the diameter of the screw thread.

1.3 Wheel Rim Stud/Bolt Pattern

1.3.1 The number and size of fasteners, their pitch circle diameter and any nut/bolt taper angles must be the same for the attachment of all wheels on the vehicle, except where specified differently by the vehicle manufacturer.

1.4 Wheel Track

1.4.1 Where the vehicle has driven front wheels, outboard brakes and negative offset steering geometry, no track change is permissible. Wheel track on other vehicles must not be increased by more than 25 mm.

- 2.0 MASTER CYLINDER SUBSTITUTION**
- 2.1 If other components of the braking system are also modified, the replacement master cylinder must be selected to ensure continued compliance with the requirements of ADR 31 where applicable, including reservoir capacity and minimum pedal effort.
- 2.2 Master Cylinder Bore**
- 2.2.1 If all other components in the braking system are unmodified, the replacement master cylinder must have a bore diameter as near as possible to that of the original master cylinder.
- 2.3 Master Cylinder Stroke**
- 2.3.1 If all other components in the braking system are unmodified, the replacement master cylinder must have an effective stroke which enables an equivalent displacement of fluid in one stroke to that of the original master cylinder.
- 2.3.2 The replacement master cylinder must have a stroke which gives full travel of the master cylinder piston(s) on full application of the brake pedal.
- 2.4 Master Cylinder Mounting**
- 2.4.1 Mountings must be designed to provide sufficient strength and rigidity to withstand a brake pedal force of not less than 1800 N.
- 2.5 Pedals**
- 2.5.1 If a brake pedal is modified, any welding must be subjected to non-destructive testing by a N.A.T.A. approved materials testing authority and a certificate issued to verify the correct standard of workmanship.
- 3.0 COMPLIANCE OF PRE-ADR 31 PASSENGER VEHICLES**
- 3.1 Modified pre-ADR 31 vehicles must continue to comply with the Queensland Traffic Regulation Requirements. Testing of the vehicle fully laden must be conducted and the stopping distances and decelerations specified in the Regulations must not be exceeded.
- 3.2 Service Brake Stopping Distances and Decelerations**
- 3.2.1 The brakes must be capable of stopping the vehicle with one sustained application from a speed of 32 kilometres per hour in the distances listed below in Table 1. The brakes must also be capable of stopping the vehicle with one sustained application from a speed of 100 kilometres per hour or from the vehicle's maximum operating speed (whichever is the lesser) at the deceleration listed below in Table 1.

TYPE OF BRAKES	ORIGINAL VEHICLE BRAKING SYSTEM	STOPPING DISTANCE from 32 km/hr (metres)	AVERAGE DECELERATION from 100 km/hr (metres/sec/sec)
SERVICE BRAKES	Brakes on all wheels	9.2	4.27
	Brakes not fitted on all wheels	13.7	2.90
EMERGENCY BRAKE		22.9	

TABLE 1

3.3 Emergency Brake Performance

3.3.1 The emergency brake must be capable of holding the vehicle on any gradient in its fully laden condition. This performance must be verified on the steepest slope available to the authorised officer.

3.3.2 A dynamic test of the emergency brake must also be performed except where the brake is transmission mounted. The fully laden vehicle must stop from 32 kilometres per hour within 22.9 metres.

4.0 COMPLIANCE OF ADR 31 PASSENGER VEHICLES

4.1 Vehicles originally manufactured to comply with ADR 31 must continue to comply with its requirements. To certify compliance of the service and emergency brake performance, an acceptable alternative to fully testing the vehicle to ADR 31 is to conduct a Brake System Test outlined below:

4.2 Brake System Test

4.2.1 The brake system test comprises a Fade Test, an Effectiveness Test and an Emergency Brake Test. The brake balance front to rear must be evaluated and adjusted accordingly, before conducting this test. The vehicle must decelerate in a straight line without excessive sideways pull and without premature lock up of front or rear axle brakes.

4.3 Fade Test Procedure

4.3.1 With the vehicle unladen, fifteen deceleration modes must be conducted as per item 16 of ADR 31/00 Clause 31.3.2 but from an initial speed of 60 km/h such that the sustained deceleration is not less than 4.5 metres per second squared for each mode and the distance between successive brake applications is not more than 250 metres and the maximum interval between successive applications is not more than 25 seconds. The pedal effort as per ADR 31/00 must not be exceeded.

4.4 Effectiveness Test Procedure

4.4.1 Two effectiveness tests must be conducted as per item 7 of ADR 31/00 Clause 31.3.2 (ie Third Effectiveness Test). An average deceleration of not less than 0.6 g must be achieved for each stop. Testing with cold brakes is permitted.

If the above test requirements are met with a pedal effort of less than 150 Newtons, the Minimum Pedal Effort Test as per ADR 31/00 Clause 31.5.7.1 must be conducted.

4.5 Emergency Brake Test Procedure

The vehicle must be subjected to the test and performance requirements of the Queensland Traffic Regulations as outlined above in Clause 3.3 of this section.

5.0 DESIGN APPROVALS

5.1 Authorised officers holding the LG1 Code may issue approvals for the design of brake system substitutions.

5.2 Such approvals must be conditional on the design meeting all of the general and specific requirements described in Section LG - Brake Systems.

5.3 The design must be fully documented. Drawings, calculations, procedural details, test results and any other data necessary to fully describe the vehicle modifications must be retained by the authorised officer.

5.4 The authorised officer must issue a unique design approval number prefixed by the authorised officer's AO number for each approval.

5.5 With each design approval, the authorised officer shall issue design approval documents for use by the vehicle modifier and the authorised officer certifying the physical modification of the vehicle under the LG2 Code.

5.6 The design approval document must contain:

- Details of all drawings needed to fully describe the full extent of the modification. The drawings should include:
 - component specifications - part/model numbers;
 - material and machining details;
 - mounting details.
- Details of any special modification techniques, procedures or adjustments.
- Details of any testing of components, performance (eg. braking tests) and of acceptance criteria.

DESIGN APPROVAL NO.

FORM NO. LG1

CHECKLIST**BRAKE SYSTEM SUBSTITUTION
(DESIGN) - LG1**

(Y = Yes N = No)

- | | | | |
|-----|--|---|---|
| 1.0 | Components and equipment in the brake system specified to meet or exceed at least one appropriate and recognised international, national or association standard, or the relevant parts thereof, where such standards exist? | Y | N |
| 1.1 | Wheel track and bolt/stud pattern comply with requirements? | Y | N |
| 1.2 | Steering knuckles or McPherson struts unmodified? | Y | N |
| 1.3 | Caliper brackets correctly designed and mounted? | Y | N |
| 1.4 | Master cylinder correctly selected, specified and mounted? | Y | N |
| 1.5 | Pedals modified by welding require N.A.T.A. welding certificate? | Y | N |
| 1.6 | Workmanship, welding and fasteners specified as required? | Y | N |
| 1.7 | Design approval drawings and details in accordance with Queensland Transport requirements have been prepared and unique design approval number issued? | Y | N |
| 1.8 | Required testing completed and results attached? | Y | N |

NOTE:

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

Approved By

Company (if applicable)

Authorised Officer No.

Signed Date

BRAKE SYSTEM SUBSTITUTION (MODIFICATION) - LG2

MODIFICATION TYPES

The following is a summary of the modifications which may be approved by officers authorised with modification Code LG2 - Brake System Substitution (Modification).

Modifications which are allowed under this Code are:

1. Fitting Substitute Brake Disc or Drum Assemblies.
2. Fitting Substitute Brake Master Cylinders.
3. Fitting Substitute or Additional Brake Boosters.
4. Fitting Brake Balance and Pressure Limiting Devices.

Modifications which are not allowed under this Code are:

1. Design of Brake System Substitutions.
2. Fitting substitute steering knuckle, McPherson strut or rear axle assemblies.
3. Brake system modifications to motorcycles and mopeds ("L Group" vehicles), trailers and commercial vehicles (ADR 35 applies).

Special Notes

Manufacturer's Optional Braking Systems

No approval is required for the fitting of braking systems offered by the manufacturer as optional equipment for that model vehicle or fitted by the manufacturer as a substitute later in a model range, provided that it is installed in accordance with the manufacturer's specifications.

Fitting Brake Boosters to pre-ADR 31 Vehicles

No approval is required for the fitting of additional or substitute in-line brake boosters to pre-ADR 31 vehicles, provided that they are installed in accordance with requirements of the manufacturer of the replacement brake booster.

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

SPECIFIC REQUIREMENTS**BRAKE SYSTEM SUBSTITUTION
(MODIFICATION) - LG2**

The following are specific requirements for brake system substitutions which can be approved by authorised officers under modification Code LG2.

The conversions must also comply with the general guidelines contained in Section LG 2.0 "General Requirements".

1.0 DESIGN

1.1 The modification must be carried out in accordance with the requirements of the design approved under Code LG1 and as outlined in the design specification and drawings.

2.0 WORKMANSHIP

2.1 The workmanship must be in accordance with the requirements of the design approved under Code LG1 including Section LG 2.0 "General Requirements".

3.0 INSPECTION

3.1 A thorough inspection is to be carried out on the completed modification.

3.2 Where such inspections cannot be carried out on completion of the modifications, the authorised officer must also conduct interim inspections of the vehicle or modified components or assemblies.

3.3 A functional test of the braking system must be carried out to ensure compliance with the requirements of the Motor Vehicles Safety Act.

4.0 RECORDS

4.1 The authorised officer must hold a copy of the design approval, including all plans, procedures and specifications referred to in the approval.

CERTIFICATE OF MODIFICATION NO.

FORM NO. LG2

CHECKLIST**BRAKE SYSTEM SUBSTITUTION
(MODIFICATION) - LG2**

(Y = Yes N = No)

1.0	DESIGN		
1.1	Has the vehicle been modified exactly in accordance with the plans and specifications issued under the Design Approval detailed below?	Y	N
2.0	WORKMANSHIP		
2.1	Is all work performed in accordance with recognised engineering standards and to the satisfaction of the authorised officer?	Y	N
2.2	Fittings of the correct type, size and compatible thread form?	Y	N
2.3	All joints free from leaks?	Y	N
2.4	Brake system equipment new or fully reconditioned?	Y	N
2.5	Brakes function correctly?	Y	N
3.0	WELDING		
3.1	All welding carried out by qualified tradesman?	Y	N
3.2	All welding complies with relevant Australian Standards?	Y	N
4.0	FASTENERS		
4.1	High tensile bolts used on all new critical joints and mountings?	Y	N
4.2	Self locking nuts used on all new critical joints and mountings?	Y	N
4.3	All replacement fasteners equivalent or better than original in strength and quality?	Y	N

CERTIFICATE OF MODIFICATION NO.

FORM NO. LG2

5.0 INSPECTION

5.1 Inspections carried out on modifications as required? Y N

6.0 RECORDS

6.1 Record of conversion and vehicle details showing all modification details in accordance with Queensland Transport requirements has been prepared and attached? Y N

7.0 DESIGN APPROVAL

7.1 AO number of authorised officer holding LG1 Code who certified the specifications and plans for the conversion.

AO No.

7.2 Design Approval Number issued by authorised officer.

Design No.

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

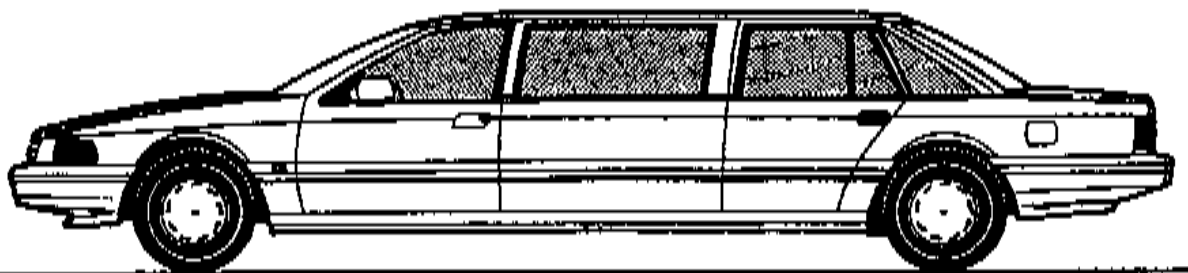
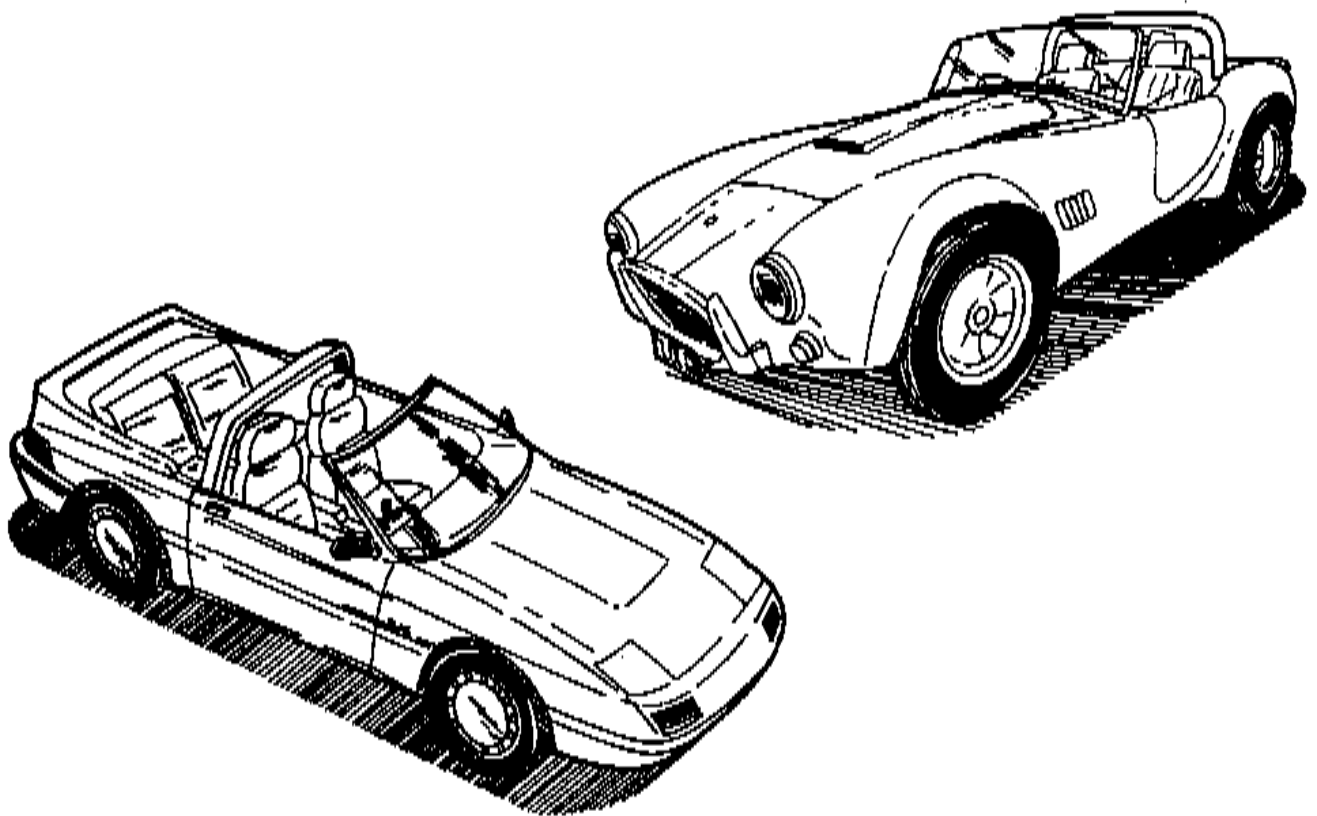
Company (if applicable)

Authorised Officer No.

Signed Date

LH

BODY / CHASSIS



BODY / CHASSIS

	Page	
1.0	Scope	3
2.0	General Requirements	4
3.0	Australian Design Rules	6
4.0	Modification Codes	7
	LH1 Convertible and Cabriolet Conversion (Design)	8
	LH1 Checklist	16
	LH2 Convertible and Cabriolet Conversion (Modification)	18
	LH2 Checklist	20
	LH3 Passenger Vehicle Extended Wheelbase Conversion (Design)	22
	LH3 Checklist	30
	LH4 Passenger Vehicle Extended Wheelbase Conversion (Modification)	32
	LH4 Checklist	34
	LH5 Individual and Low Volume Vehicles (Design)	36
	LH5 Checklist	46
	LH6 Individual and Low Volume Vehicles (Construction)	48
	LH6 Checklist	50
	LH7 Panel Van to Utility Conversion	52
	LH6 Checklist	55
	LH8 Roll Bar and Roll Cage Installation	57
	LH8 Checklist	64
	LH9 Street Rod Certification	66
	LH9 Checklist	69

1.0 SCOPE

- 1.0 This section outlines the minimum design, construction, installation and performance requirements for the following:
- 1.0.1 The conversion of passenger vehicles to convertibles or cabriolets.
- 1.0.2 The conversion of passenger vehicles to extended wheelbase configurations.
- 1.0.3 The construction of individual and low volume vehicles.
- 1.0.4 The conversion of panel vans to utilities.
- 1.0.5 The installation of roll bars and roll cages.
- 1.0.6 The certification of vehicles for concessional Street Rod registration.

2.0 GENERAL REQUIREMENTS

This section applies to all light vehicles and should be read in conjunction with other sections which are specific to the type of modification which is being performed.

1.0 ADR REQUIREMENTS

1.1 A modified vehicle must continue to comply with the Australian Design Rules to which it was originally constructed (see Section 3.0).

2.0 CERTIFICATION

2.1 The certification of compliance of vehicles with the ADR's under Code LO1 - Australian Design Rule (ADR) Compliance, is required where specifically nominated in the individual Codes in this section.

3.0 COMPLIANCE PLATES

3.1 All vehicles originally manufactured on or after January 1 1972 require a Compliance Plate issued by the Australian Motor Vehicle Certification Board or an Exemption Permit, to enable registration in Queensland.

3.2 "Low Volume" Compliance plates issued by the Australian Motor Vehicle Certification Board are required where specifically nominated in the individual Codes in this section.

4.0 FABRICATION

4.1 All work must be performed in accordance with recognised engineering standards and to the satisfaction of the authorised officer.

4.2 All steel welding performed must be in accordance with Australian Standard 1554 Part 1 - 1985 "Welding of Steel Structures" Category SP.

4.3 All fasteners on safety related systems (brakes, steering, etc), or in highly stressed locations must be high tensile grade 8.8 or equivalent as a minimum specification. All other fasteners are to be at least of similar strength and number to those in the original installation. Self-locking nuts should be used in preference to spring washers.

5.0 FIBREGLASS**5.1 Strength and Thickness**

5.1.1 The minimum thickness (with gel coat removed) of non-intrusion panels, e.g. bonnets and guards, should be 3.5 mm.

5.1.2 The strength and thickness of structural components such as floor pans and bodies that incorporate seat belt anchorages, door hinges and latches etc., must be determined by a registered professional engineer.

5.1.3 The fixings for replacement fibreglass panels should have the same positions and strength as the fixings used for the original panels. A combination of steel and neoprene washers of a minimum 20 mm diameter should be used with all fixings.

5.2 Testing

5.2.1 All fibreglass components or replacement panels must comply with and be tested in accordance with the requirements of British Standard 2782 Part III, methods 320E and 335A. The test panels must reach minimum acceptance levels of 85MPa in tension and 152MPa in flexure. The Barcol hardness value must be greater than 25 and the minimum fibre to weight ratio must be 0.29.

5.2.2 Fibreglass panels presented for testing should be laid up under supervision in order to verify the consistency of lay up when referenced to the vehicle components being constructed. These test panels should measure approximately 600 mm x 600 mm and be free of gel coat. Flat (planar) test panels are needed to comply with test procedures.

5.2.3 Testing must be carried out by a N.A.T.A. certified testing laboratory.

3.0 AUSTRALIAN DESIGN RULES

1.0 All Australian Design Rules may be applicable to some sections of this Code, however the following particular ADR's are applicable to most sections:

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

ADR 4C, 4D, 4/00 - Seat Belts

ADR 5A, 5B, 5/00 - Anchorages for Seat Belts and Child Restraints

ADR 8, 8/00 - Safety Glazing Material

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

ADR 29, 29/00 - Side Door Strength

ADR 34/00 - Child Restraint Anchorages

ADR 42/00 - General Safety Requirements

ADR 60/00 - Centre High-Mounted Stop Light

4.0 MODIFICATION CODES

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

CONVERTIBLE AND CABRIOLET CONVERSION (DESIGN) - LH1

MODIFICATION TYPES

The following is a summary of the modifications whose designs may be approved by officers authorised with modification Code LH1 - Convertible and Cabriolet Conversion (Design).

Modification design approvals allowed under this Code are:

1. Conversion of vehicles of monocoque construction to convertible or cabriolet configurations.
2. Conversion of vehicles with a separate chassis to convertible or cabriolet configurations.

Modification approvals not allowed under this Code are:

1. Design of a complete new body on an existing chassis.
2. The actual physical modification of vehicles (this is covered by Code LH2).

NOTE: The modified vehicle 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	REQUIREMENTS
Installation of Seat Belts and Anchorages	ADR 4A, 4B, 4C, 4/00, 4/01 ADR 5A, 5B, 5/00, 5/01, 5/02
Child Restraint Anchorages	ADR 34/00

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

CONVERTIBLE AND CABRIOLET CONVERSION (DESIGN) - LH1

The following are specific requirements for convertible and cabriolet conversions which can be approved by authorised officers under modification Code LH1.

The conversions must also comply with the general guidelines contained in Section LH 2.0 "General Requirements".

1.0 STRENGTH AND SAFETY

1.1 Modification of a passenger vehicle to convertible configuration involves removal of the roof, roof support beams and cant rails. This modification can drastically reduce the strength and the safety of the vehicle. Most modern motor vehicles are constructed without a separate chassis and the majority of body panels and some glass areas are stressed to achieve the vehicle's required strength and stiffness.

2.0 BODY FLEXING

2.1 If a vehicle is modified in a way which drastically reduces its stiffness, its durability and driveability are reduced. With reduced stiffness, the body will flex and eventually crack. The increased flexibility will reduce the vehicle's handling and make it unpleasant to drive. Road shocks will be absorbed more in the flexing of the body and less in the suspension. The windscreen, dashboard and steering wheel will shake more than usual.

3.1 SEDAN VARIANTS

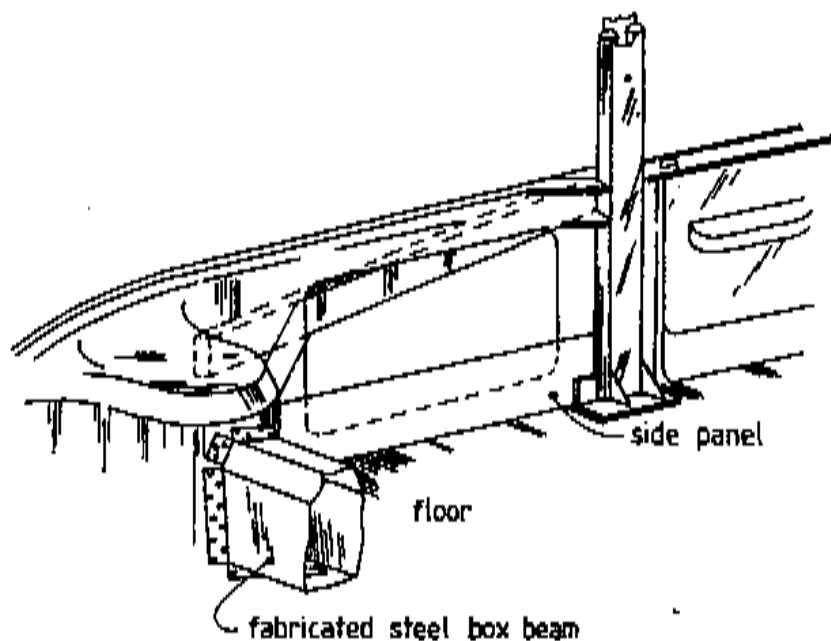
3.1 Many convertibles produced by manufacturers which may be superficially similar to their sedan variants have totally different body structures. It is generally impractical for a modifier to exactly duplicate the body structure of a convertible by modifying the sedan variant.

4.0 CONVERTING FROM FOUR DOOR TO TWO DOOR

4.1 Converting a four door vehicle to a two door configuration generally involves major reconstruction of the vehicle. Adequate access must be provided to rear seating positions. To achieve this, vehicles must be modified to incorporate the features of vehicles originally manufactured in two door configuration. This normally requires the front doors to be extended in length, the "B" pillars moved rearwards and the front seats to tilt forward.

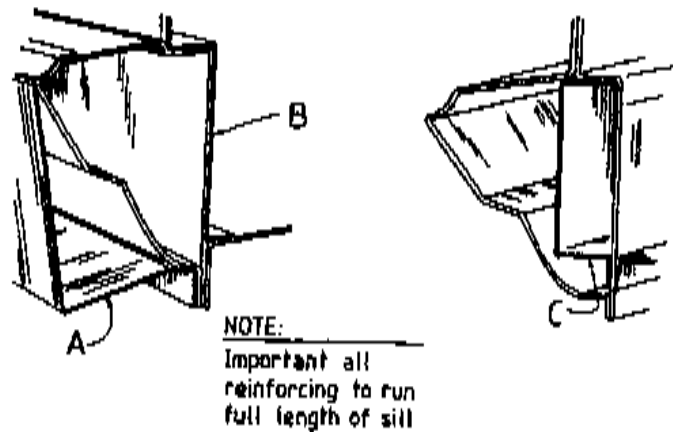
5.0 REINFORCING

- 5.1 To produce a safe, durable vehicle, reinforcing must be compatible with the vehicle's structure. Strengthening should consist of material of similar thickness to that of the vehicle's original structure. In no case should the reinforcing material exceed twice the original thickness. The ends of reinforcing should be tapered to eliminate abrupt changes in section which produce stress concentrations.
- 5.2 Convertibles and cabriolets of monocoque construction normally require extensive strengthening, with the addition of extra structural members and gussets (refer Fig. 1).



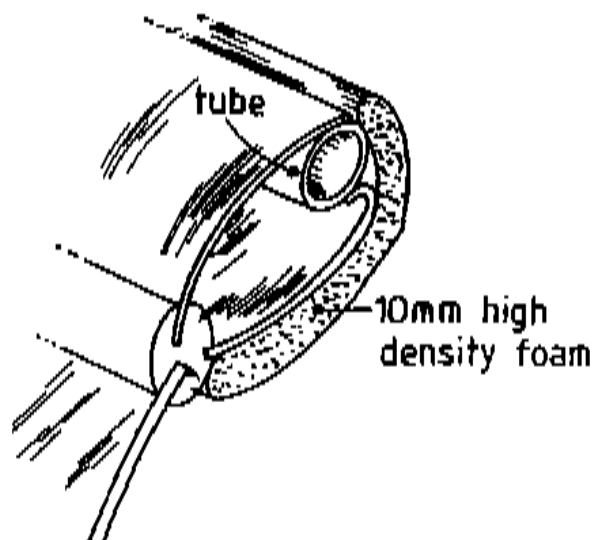
CONVERTIBLE STRUCTURE
Figure 1

- 5.3 Convertibles and cabriolets with a separate floorpan structure, such as a Type 1 Volkswagen, normally require strengthening of the body and floorpan structure.
- 5.4 Convertibles and cabriolets with a separate chassis, such as a Toyota Crown, normally require strengthening of the body only.
- 5.5 The following Figure 2 illustrates three possible methods of reinforcing sill sections, an exterior skirt (A), an internal member (B) or an interior sill section (C). The reinforcing section should be attached to the original sill along its length.



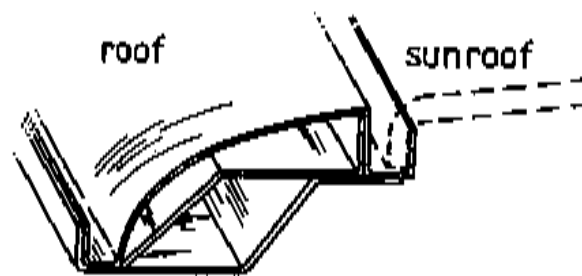
ALTERNATIVE SILL DETAILS
Figure 2

- 5.6 Consideration should be given to increasing the strength of the windscreen pillars of convertibles. Modifications may also be required to ensure correct operation of the windows in the doors if the upper support frame is removed. The windscreen header should be reinforced and closed to form a rigid section (refer Fig. 3). The inside of the header should be padded with a 10 mm minimum thickness high density foam.



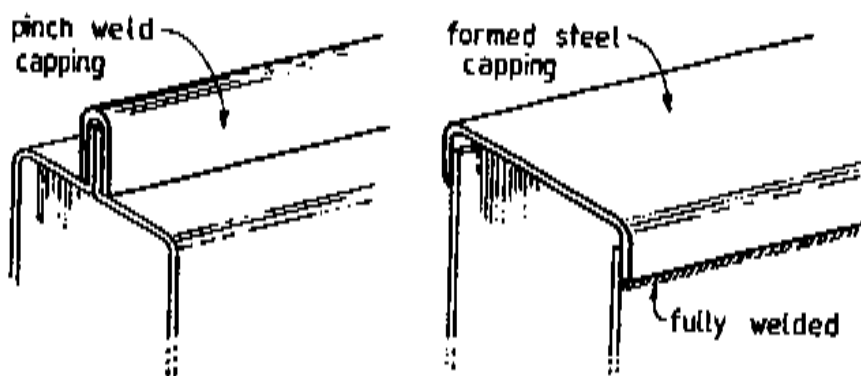
WINDSCREEN HEADER
Figure 3

- 5.7 The cant rails should be reinforced and closed to form a rigid section when incorporating a sunroof frame (refer Fig. 6). The sunroof frame should have large corner radii to reduce stress concentrations.



CANT RAILS AND SUNROOF FRAME
Figure 6

- 5.8 Where sharp edges exist, often as a result of cutting hollow sections, such as door frames, cant rails and door pillars, they should be capped with fully welded steel covers or with "pinch weld" or equivalent (refer Fig. 4).



SHARP EDGES CAPPED
Figure 4

6.0 BEAMING AND TORSIONAL TESTS

6.1 Convertibles and cabriolets of monocoque construction must undergo beaming and torsional testing to determine their relevant stiffness, in accordance with the requirements of Code LT1 - Beaming and Torsional Testing.

6.2 Convertibles and cabriolets with separate floor pans or separate chassis must undergo beaming and torsional testing to determine their relevant stiffness, in accordance with the requirements of Code LT1 - Beaming and Torsional Testing, except in the following cases:

6.2.1 Convertibles and cabriolets with separate chassis, which can be defined as a "MC" Category vehicle, do not require Beaming and Torsional Testing.

6.2.2 Convertibles and cabriolets with separate chassis, which can be defined as a "NA" Category vehicle, do not require Beaming and Torsional Testing.

7.0 CRASH PROTECTION

7.1 All modern vehicles are produced to comply with ADR 10. To prove compliance, a vehicle from the model range is crashed into a barrier. The vehicle must crumple in a manner so as to prevent the dashboard and steering wheel being forced back on to the driver. In a vehicle without a separate chassis, the roof structure plays a vital role in supporting the front of the vehicle in such an accident. Removal of the roof and the upper section of the vehicle's side door support panels can also have a detrimental effect on the vehicle's ability to withstand a side impact and therefore its compliance with ADR 29 (Side Door Strength). The authorised officer must satisfy himself that the modified vehicle's structure has sufficient strength and stiffness to ensure that the vehicle continues to comply with ADR 10 and ADR 29.

8.0 ROLL BAR

8.1 A roll bar complying with the requirements of Code LH8 - Roll Bar and Roll Cage Installation, must be fitted.

9.0 SEAT BELTS AND CHILD RESTRAINT ANCHORAGES

9.1 Seat belts complying with the requirements of ADR 4 must be fitted to all seating positions, regardless of the age of the vehicle.

9.2 All outboard seating positions in pre 1971 vehicles must be fitted with lap/sash belts. Vehicles built after 1970 must continue to comply with the seat belt and anchorage ADRs applicable at their date of manufacture.

- 9.3 The upper torso anchorages for the front lap/sash belt and all other anchorages must comply with the requirements of ADR 5. Anchorage points installed in accordance with the requirements of Code LK1 - Seating Capacity Alteration and Seat Belt Installation, are considered to meet this requirement.
- 9.4 Child restraint anchorage points must be fitted to vehicles with provision for rear passengers. The anchorages must comply with the requirements of ADR 34. Code LK6 provides details on how this should be done.
- 10.0 **COMPLIANCE PLATES FOR CONVERTIBLE AND CABRIOLET CONVERSIONS**
- 10.1 All vehicles originally manufactured on or after January 1 1972 (post-1971) require a Compliance Plate issued by the Australian Motor Vehicle Certification Board or an Exemption Permit, to enable registration in Queensland.
- 10.2 **Low Volume Vehicle Conversions**
- 10.2.1 A "low volume" Compliance Plate issued by the Australian Motor Vehicle Certification Board must be fitted to all post-1971 low volume vehicles (except those previously registered in Australia for at least one year), to enable registration in Queensland.
- 10.2.2 Post-1971 vehicles previously registered in Australia for at least one year must have certification of compliance under Code LO1 - Australian Design Rule (ADR) Compliance and an Exemption Permit to enable registration in Queensland.
- 10.2.3 The production of between 2 and 99 vehicles per year by an individual, business or company is considered to be "low volume" production.
- 10.3 **Individually Converted Vehicles**
- 10.3.1 Post 1971 individually converted vehicles do not require a low volume Compliance Plate, but must have certification of compliance under Code LO1 - Australian Design Rule (ADR) Compliance and an Exemption Permit to enable registration in Queensland.
- 10.3.2 The conversion of one vehicle per year by an individual, business or company is considered to be on an "individual" basis.
- 10.4 **Exemption Permits**
- 10.4.1 Detailed requirements for obtaining permits exempting the owner from the Compliance Plate provisions of the Queensland Traffic Act are contained in "Specific Requirements" of Code LO1.

11.0 DESIGN APPROVALS

11.1 Authorised officers holding the LH1 Code may issue approvals for the design of convertible and cabriolet conversions.

11.2 Such approvals must be conditional on the design meeting all of the requirements described in Section LH - Body/Chassis.

11.3 The design must be fully documented. Drawings, calculations, procedural details, test results and any other data necessary to fully describe the vehicle modifications must be retained by the authorised officer.

11.4 The authorised officer must issue a unique design approval number prefixed by the authorised officer's AO number for each approval.

11.5 With each design approval, the authorised officer shall issue design approval documents for use by the vehicle modifier and the authorised officer certifying the physical modification of the vehicle under the LH2 Code.

11.6 The design approval document must contain:

- Details of all drawings needed to fully describe the full extent of the modification. The drawings should include:
 - . body structure details - reinforcing, finishing etc;
 - . roll bar details;
 - . seat belt anchorages.

- Details of any special modification techniques, procedures or adjustments.

- Details of any testing of components, performance (eg. beaming and torsional tests) and of acceptance criteria.

DESIGN APPROVAL NO.

FORM NO. LH1

CHECKLIST**CONVERTIBLE AND CABRIOLET
CONVERSION (DESIGN) - LH1**

(Y = Yes N = No)

1.0	STRUCTURAL REINFORCEMENT		
1.1	Reinforcing material thickness no more than twice original section thickness?	Y	N
1.2	Stress concentrations avoided at ends of reinforcing sections?	Y	N
1.3	Sharp edges capped or covered?	Y	N
2.0	BEAMING AND TORSIONAL TESTS		
2.1	Where required, body design complies with Code LT1 requirements?	Y	N
3.0	ROLL BAR		
3.1	Roll bar design complies with Code LH8 requirements?	Y	N
4.0	COMPLIANCE WITH ADR'S		
4.1	Low Volume Conversions		
4.1.1	Low volume Compliance Plate issued by A.M.V.C.B. for low volume conversion of post-1971 vehicle (except previously registered in Australia for 12 months)? Approval No.	Y	N
4.1.2	Certification of Compliance under Code LO1 for low volume conversion of vehicle previously registered in Australia for more than 12 months?	Y	N
4.2	Individual Conversions		
4.2.1	Certification of Compliance under Code LO1 for individual conversion of post- 1971 vehicle?	Y	N

DESIGN APPROVAL NO.

FORM NO. LH1

5.0 FABRICATION

5.1 Workmanship, welding and fasteners specified as required? Y N

6.0 DESIGN APPROVAL

6.1 Design approval drawings and details in accordance with Queensland Transport requirements have been prepared and unique design approval number issued? Y N

NOTE:

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

Approved By

Company (if applicable)

Authorised Officer No.

Signed Date

CONVERTIBLE AND CABRIOLET CONVERSION (MODIFICATION) - LH2

MODIFICATION TYPES

The following is a summary of the modifications which may be approved by officers authorised with modification Code LH2 - Convertible and Cabriolet Conversion (Modification).

Modifications which are allowed under this Code are:

1. Conversion of vehicles of monocoque construction to convertible or cabriolet configuration.
2. Conversion of vehicles with separate chassis to convertible or cabriolet configuration.

Modifications which are not allowed under this Code are:

1. Conversions which do not have Code LH1 design approval.

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

SPECIFIC REQUIRMENTS**CONVERTIBLE AND CABRIOLET CONVERSION
(MODIFICATION) - LH2**

The following are specific requirements for convertible and cabriolet conversions which can be approved by authorised officers under modification Code LH2.

The conversions must also comply with the general guidelines contained in Section LH 2.0 "General Requirements".

1.0 DESIGN

1.1 The modification must be carried out in accordance with the requirements of the design approved under Code LH1 and as outlined in the design specification and drawings.

2.0 WORKMANSHIP

2.1 The workmanship must be in accordance with the requirements of the design approved under Code LH1 including Section LH 2.0 "General Requirements".

3.0 INSPECTION

3.1 The authorised officer must conduct at least two inspections of the vehicle. The first, an interim inspection is to be arranged for the structurally completed vehicle. The inspection is to be carried out prior to painting and trimming the modified areas. This may be carried out in several stages, depending on how the vehicle is modified.

3.2 Previously modified vehicles which are being assessed must have all trim etc. removed to allow a thorough inspection of all modified areas.

3.3 A final inspection is to be carried out on the completed vehicle when it is in a condition suitable for registration.

4.0 RECORDS

4.1 The authorised officer must hold a copy of the design approval, including all plans, procedures and specifications referred to in the approval.

CERTIFICATE OF MODIFICATION NO.

FORM NO. LH2

CHECKLIST**CONVERTIBLE AND CABRIOLET CONVERSION
(MODIFICATION) - LH2**

(Y = Yes N = No)

- | | | | |
|-----|--|---|---|
| 1.0 | DESIGN | | |
| 1.1 | Has the vehicle been modified exactly in accordance with the plans and specifications issued under the Design Approval detailed below? | Y | N |
| 2.0 | WORKMANSHIP | | |
| 2.1 | Is all work performed in accordance with recognised engineering standards and to the satisfaction of the authorised officer? | Y | N |
| 3.0 | WELDING | | |
| 3.1 | All welding carried out by qualified tradesman? | Y | N |
| 3.2 | All welding complies with relevant Australian Standards? | Y | N |
| 4.0 | FASTENERS | | |
| 4.1 | High tensile bolts used on all new critical joints and mountings? | Y | N |
| 4.2 | Self locking nuts used on all new critical joints and mountings? | Y | N |
| 4.3 | All replacement fasteners equivalent or better than original in strength and quality? | Y | N |
| 5.0 | ADR COMPLIANCE (POST 1971 VEHICLES) | | |
| 5.1 | Converted vehicle has a Certificate of Modification under Code LO1 or low volume Compliance Plate as applicable? | Y | N |

CERTIFICATE OF MODIFICATION NO.

FORM NO. LH2

6.0 INSPECTION

6.1 Interim inspection(s) carried out on all modified areas of the vehicle structure and found to be satisfactory? Y N

6.2 Final inspection carried out on all modified areas of the vehicle structure and found to be satisfactory? Y N

7.0 RECORDS

7.1 Record of conversion and vehicle details showing all modification details in accordance with Queensland Transport requirements has been prepared and attached? Y N

8.0 DESIGN APPROVAL

8.1 AO number of authorised officer holding LH1 Code who certified the specifications and plans for the conversion.

AO No.

8.2 Design Approval Number issued by authorised officer.

Design No.

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

Dates of Inspection

Company (if applicable)

Authorised Officer No.

Signed Date

PASSENGER VEHICLE EXTENDED WHEELBASE CONVERSION (DESIGN) - LH3

MODIFICATION TYPES

The following is a summary of the modifications whose designs may be approved by officers authorised with modification Code LH3 - Passenger Vehicle Extended Wheelbase Conversion (Design).

Modification design approvals which are allowed under this Code are:

1. Extended wheelbase conversion of passenger vehicles and passenger vehicle derivatives.

Modification approvals which are not allowed under this Code are:

1. Design of extended wheelbase conversion of off-road passenger vehicles.
2. Design of extended wheelbase conversion of goods vehicles which are not passenger vehicle derivatives.
3. The actual physical modification of particular vehicles (this is covered by Code LH4).

NOTE: The modified vehicle 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	REQUIREMENTS
Additional Seats	ADR 3, 3A, 3/00
Installation of Seat Belts and Anchorages	ADR 4A, 4B, 4C, 4/00, 4/01 ADR 5A, 5B, 5/00, 5/01, 5/02 National Code of Practice - Manufacture of Additional Seats
Additional windows	ADR 8, 8/00
Head Restraints	ADR 22, 22A, 22/00
Side Impact protection	ADR 29, 29/00
Braking System	ADR 31, 31/00

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

PASSENGER VEHICLE EXTENDED WHEELBASE CONVERSION (DESIGN) - LH3

The following are specific requirements for extended wheelbase passenger vehicle conversions which can be approved by authorised officers under modification Code LH3.

The conversions must also comply with the general guidelines contained in Section LH 2.0 "General Requirements".

1.0 STRENGTH AND SAFETY

1.1 Modification of a passenger vehicle by extending its wheelbase without additional reinforcing, can significantly reduce the strength and the safety of the vehicle.

2.0 BODY FLEXING

2.1 If a vehicle is modified in a way which drastically reduces its stiffness, its durability and driveability are reduced. With reduced stiffness, the body will flex and eventually crack. The increased flexibility will reduce the vehicle's handling and make it unpleasant to drive.

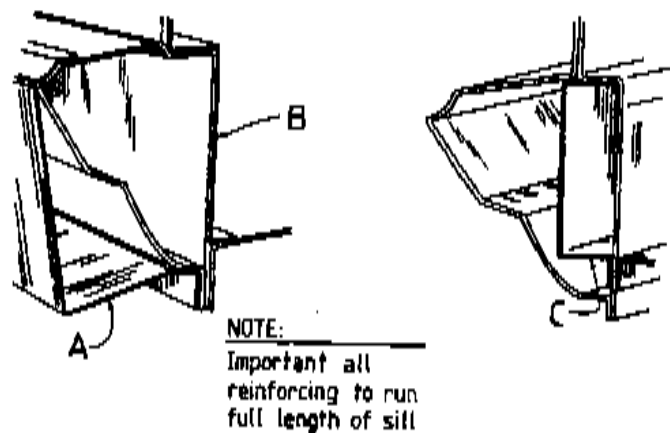
3.0 REINFORCING

3.1 To produce a safe, durable vehicle, reinforcing must be compatible with the vehicle's structure. Strengthening should consist of material of similar thickness to that of the vehicle's original structure. In no case should the reinforcing material exceed twice the original thickness. The ends of reinforcing should be tapered to eliminate abrupt changes in section which produce stress concentrations.

3.2 Extended wheelbase passenger vehicles of monocoque construction normally require strengthening, with the addition of extra structural members in the sill and cant rail areas. Extended wheelbase passenger vehicles with a separate chassis usually require sill and cant rail reinforcing and chassis reinforcing.

3.3 Sill Reinforcement

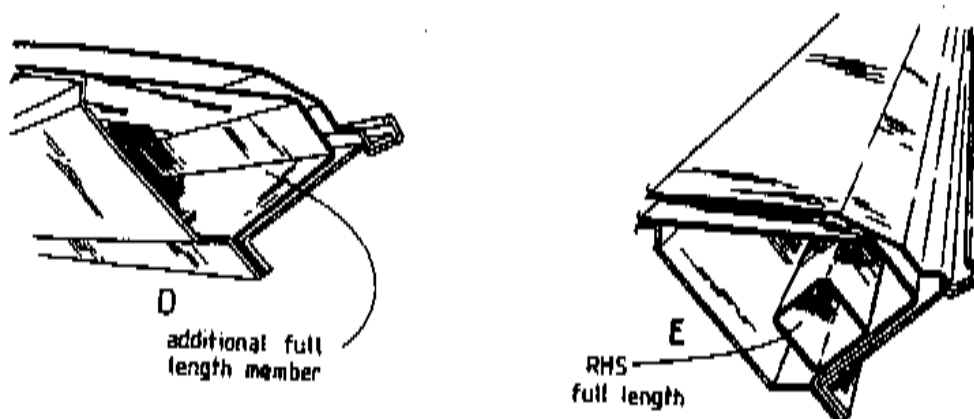
- 3.3.1 The following Figure 1 illustrates three possible methods of reinforcing sill sections, an exterior skirt (A), an internal member (B) or an interior sill section (C). The additional strengthening section should be attached to the original sill along its length.



SILL REINFORCEMENT DETAILS
Figure 1

3.4 Cant Rail Reinforcement

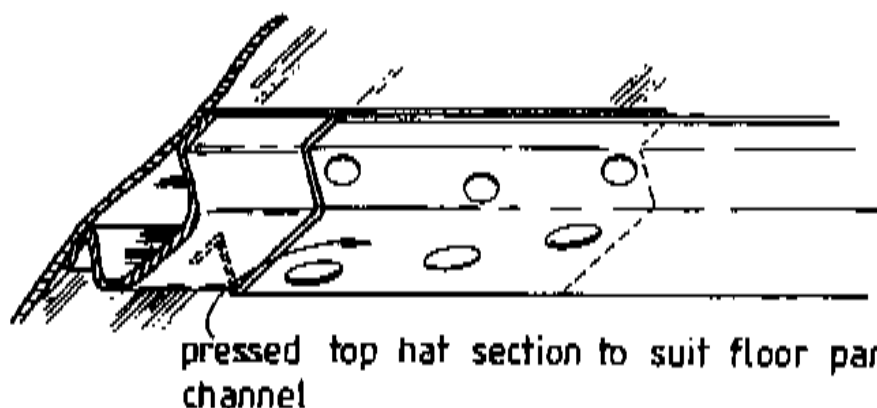
- 3.4.1 The following Figure 2 illustrates two possible methods of reinforcing cant rail sections, an internal pressed steel section (D) or a rectangular hollow section (E). The additional section should be attached to the original cant rail along its length.



CANT RAIL REINFORCEMENT DETAILS
Figure 2

3.5 Floor Channel Reinforcement

- 3.5.1 The following illustrates a method of reinforcing the joints of floor pan main channel sections. In this case, a pressed "top hat" steel section overlaps the original floor pan channel by at least twice its width and is plug welded (refer Fig. 3). The new channel section should be attached to the floor pan at regular intervals along its length. Its material thickness should be no greater than twice the original floor channel material thickness.



FLOOR CHANNEL REINFORCEMENT

Figure 3

4.0 BEAMING AND TORSIONAL TESTS

- 4.1 Extended wheelbase passenger vehicles of monocoque construction must undergo beaming and torsional testing to determine their relevant stiffness, in accordance with the requirements of Code LT1 - Beaming and Torsional Testing.
- 4.2 Extended wheelbase passenger vehicles with separate chassis (eg. Cadillac, Lincoln) should not undergo beaming and torsional testing to determine their relevant stiffness. These vehicles must be shown to be within the limits for beaming deflection by calculation. The modified vehicle's beaming deflection must be no greater than the beaming deflection of the original vehicle, multiplied by the ratio of the modified wheelbase to the original wheelbase. This can be calculated as follows:

4.2.1 Loads

4.2.1.1 A uniformly distributed load should be determined for the original vehicle (without passengers) between the centre lines of the front and rear axles. Point loads of 68 kg per passenger are then to be added.

4.2.1.2 A uniformly distributed load should then be determined for the modified vehicle in the same manner ensuring that all extra equipment now fitted (eg. seats, TV, driver partition) are included. All passenger point loads are then included at their relative positions in the vehicle.

4.2.1.3 Bending moment diagrams are then to be produced from the above loads and the relative dimensions of the original and modified vehicles.

4.2.2 Calculation

4.2.2.1 The vehicle, viewed side on, is treated as a set of separate beams simply supported at the centre lines of the front and rear axles. The vehicle body forward of the front axle centre line and rear of the rear axle centre line is to be ignored for the purposes of these calculations.

4.2.2.2 The moment of inertia of the original and modified vehicle can be calculated by assuming that only the cant rails, sills and chassis provide the structural support to the vehicle and that they are separate members in bending each adding to the bending stiffness of the vehicle. If the original and modified vehicle's moment of inertia are both calculated in this manner, a direct comparison can be made without having to determine the exact values.

4.2.2.3 With the bending moment diagrams and the moment of inertias of the cant rails, sills and chassis determined, the deflection of the original and modified vehicles can be compared. If the modified vehicle has a deflection no greater than the original vehicle's deflection multiplied by the percentage increase in wheelbase, the vehicle has satisfactory stiffness.

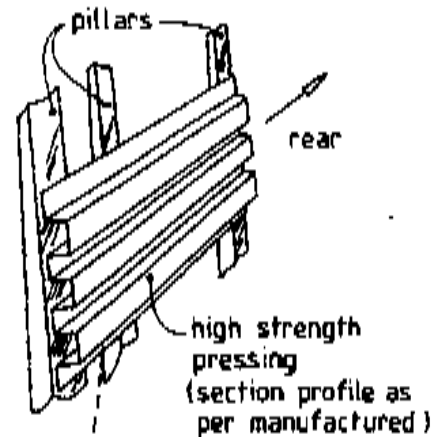
5.0 TAIL SHAFTS

5.1 To ensure reliability and safety, all tailshaft flanges must be mated correctly and all driveline components must be correctly balanced. The services of a driveline specialist should be utilised to ensure compliance with these requirements.

6.0 CRASH PROTECTION

6.1 The vehicle's ability to withstand a side impact must not be reduced. Anti-intrusion rails (refer Fig. 4) must be fitted along the full length of the cabin. These rails must meet the strength requirements of ADR 29 (Side Door Strength).

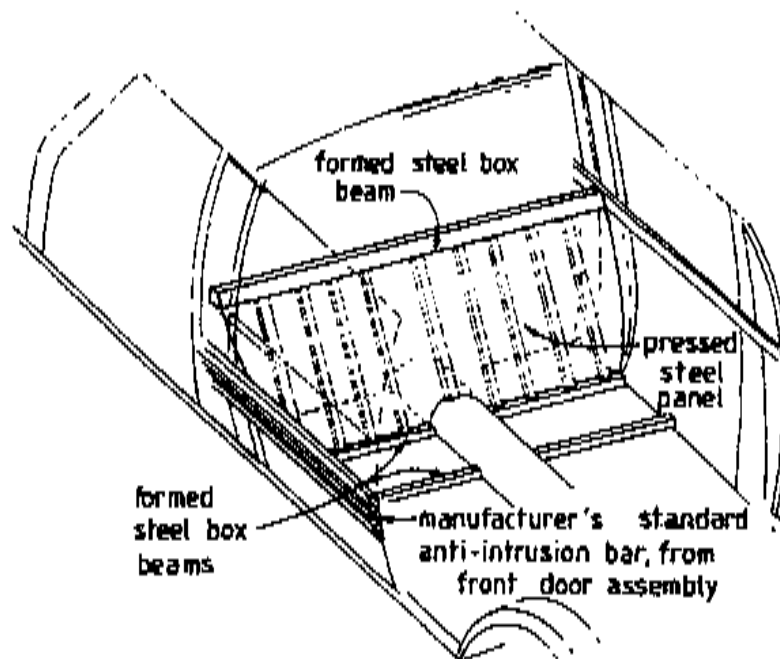
ANTI-INTRUSION RAIL
Figure 4



7.0 REARWARD FACING SEAT

7.1 Head restraints complying with the requirements of ADR 22 must be fitted to each rearward facing seat position.

7.2 The seat support frame must withstand the occupant forces normally restrained by seat belts on a forward facing seat in a frontal impact. The support structure must therefore be capable of withstanding a 20 "g" deceleration of the rearward facing seat containing an adult in each seating position (refer Fig. 5).



REARWARD FACING SEAT SUPPORT FRAME
Figure 5

- 8.0 SEAT BELTS AND CHILD RESTRAINT ANCHORAGES**
- 8.1 Seat belts complying with the requirements of ADR 4 must be fitted to all seating positions, regardless of the age of the vehicle.
- 8.2 All outboard seating positions in pre 1971 vehicles must be fitted with lap/sash belts. Vehicles built after 1970 must continue to comply with the seat belt and anchorage ADRs applicable at their date of manufacture.
- 8.3 The upper torso anchorages for the front lap/sash belt and all other anchorages must comply with the requirements of ADR 5. Anchorage points installed in accordance with the requirements of Section LK1 - Seating Capacity Alteration and Seat Belt Installation, are considered to meet this requirement.
- 8.4 Child restraint anchorage points must be fitted and must comply with the requirements of ADR 34.
- 9.0 COMPLIANCE PLATES FOR PASSENGER VEHICLE EXTENDED WHEELBASE CONVERSIONS**
- 9.1 All vehicles originally manufactured on or after January 1 1972 (post-1971) require a Compliance Plate issued by the Australian Motor Vehicle Certification Board or an Exemption Permit, to enable registration in Queensland.
- 9.2 Low Volume Vehicle Conversions**
- 9.2.1 A "low volume" Compliance Plate issued by the Australian Motor Vehicle Certification Board must be fitted to all post-1971 low volume vehicles (except those previously registered in Australia for at least one year), to enable registration in Queensland.
- 9.2.2 Post-1971 vehicles previously registered in Australia for at least one year must have certification of compliance under Code LO1 - Australian Design Rule (ADR) Compliance and an Exemption Permit to enable registration in Queensland.
- 9.2.3 The production of between 2 and 99 vehicles per year by an individual, business or company is considered to be "low volume" production.
- 9.3 Individually Converted Vehicles**
- 9.3.1 Post 1971 individually converted vehicles do not require a low volume Compliance Plate, but must have certification of compliance under Code LO1 - Australian Design Rule (ADR) Compliance and an Exemption Permit to enable registration in Queensland.
- 9.3.2 The conversion of one vehicle per year by an individual, business or company is considered to be on an "individual" basis.

9.4 Exemption Permits

9.4.1 Detailed requirements for obtaining permits exempting the owner from the Compliance Plate provisions of the Traffic Act are contained in "Specific Requirements" Section LO1.

10.0 DESIGN APPROVALS

10.1 Authorised officers holding the LH3 Code may issue approvals for the design of extended wheelbase conversions for passenger vehicles.

10.2 Such approvals must be conditional on the design meeting all of the requirements described in Section LH - Body/Chassis.

10.3 The design must be fully documented. Drawings, calculations, procedural details, test results and any other data necessary to fully describe the vehicle modifications must be retained by the authorised officer.

10.4 The authorised officer must issue a unique design approval number prefixed by the authorised officer's AO number for each approval.

10.5 With each design approval, the authorised officer shall issue design approval documents for use by the vehicle modifier and the authorised officer certifying the physical modification of the vehicle under the LH4 Code.

10.6 The design approval document must contain:

- Details of all drawings needed to fully describe the full extent of the modification. The drawings should include:
 - . body structure details - reinforcing, finishing etc;
 - . rearward facing seat details;
 - . seat and seat belt anchorage details.
- Details of any special modification techniques, procedures or adjustments.
- Details of any testing of components, performance (eg. beaming and torsional tests) and of acceptance criteria.

DESIGN APPROVAL NO.

FORM NO. LH3

CHECKLIST**PASSENGER VEHICLE EXTENDED WHEELBASE
CONVERSION (DESIGN) - LH3**

(Y = Yes N = No)

1.0	STRUCTURAL REINFORCEMENT		
1.1	Reinforcing material thickness no more than twice original section thickness?	Y	N
1.2	Stress concentrations avoided at ends of reinforcing sections?	Y	N
1.3	Floor channel rail sections and joints meet specification requirements?	Y	N
1.4	Sharp edges capped or covered?	Y	N
2.0	BEAMING AND TORSIONAL TESTS		
2.1	Body design complies with Code LT1 requirements?	Y	N
3.0	COMPLIANCE WITH ADR'S		
3.1	Low Volume Conversions		
3.1.1	Low volume Compliance Plate issued by A.M.V.C.B. for low volume conversion of post-1971 vehicle (except previously registered in Australia for 12 months)? Approval No.	Y	N
3.1.2	Certification of Compliance under Code LO1 for low volume conversion of vehicle previously registered in Australia for more than 12 months?	Y	N
3.2	Individual Conversions		
3.2.1	Certification of Compliance under Code LO1 for individual conversion of post- 1971 vehicle?	Y	N

DESIGN APPROVAL NO.

FORM NO. LH3

4.0 FABRICATION

4.1 Workmanship, welding and fasteners specified as required? Y N

5.0 DESIGN APPROVAL

5.1 Design approval drawings and details in accordance with Queensland Transport requirements have been prepared and unique design approval number issued? Y N

NOTE:

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

Approved By

Company (if applicable)

Authorised Officer No.

Signed Date

PASSENGER VEHICLE EXTENDED WHEELBASE CONVERSION (MODIFICATION) - LH4

MODIFICATION TYPES

The following is a summary of the modifications which may be approved by officers authorised with modification Code LH4 - Passenger Vehicle Extended Wheelbase Conversion (Modification).

Modifications which are allowed under this Code are:

1. Extended wheelbase conversion of passenger vehicles and passenger vehicle derivatives.

Modifications which are not allowed under this Code are:

1. Conversions which do not have Code LH3 design approval.

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

SPECIFIC REQUIREMENTS

PASSENGER VEHICLE EXTENDED WHEELBASE CONVERSION (MODIFICATION) - LH4

The following are specific requirements for extended wheelbase passenger vehicle conversions which can be approved by authorised officers under modification Code LH4.

The conversions must also comply with the general guidelines contained in Section LH 2.0 "General Requirements".

1.0 DESIGN

1.1 The modification must be carried out in accordance with the requirements of the design approved under Code LH3 and as outlined in the design specification and drawings.

2.0 WORKMANSHIP

2.1 The workmanship must be in accordance with the requirements of the design approved under Code LH3 including Section LH 2.0 "General Requirements".

3.0 INSPECTION

3.1 The authorised officer must conduct at least two inspections of the vehicle. The first, an interim inspection is to be arranged for the structurally completed vehicle. The inspection is to be carried out prior to painting and trimming the modified areas. This may be carried out in several stages, depending on how the vehicle is modified.

3.2 Previously modified vehicles which are being assessed must have all trim etc. removed to allow a thorough inspection of all modified areas.

3.3 A final inspection is to be carried out on the completed vehicle when it is in a condition suitable for registration.

4.0 RECORDS

4.1 The authorised officer must hold a copy of the design approval, including all plans, procedures and specifications referred to in the approval.

CHECKLIST**PASSENGER VEHICLE EXTENDED WHEELBASE
CONVERSION (MODIFICATION) - LH4**

(Y = Yes N = No)

1.0	DESIGN		
1.1	Has the vehicle been modified exactly in accordance with the plans and specifications issued under the Design Approval detailed below?	Y	N
2.0	WORKMANSHIP		
2.1	Is all work performed in accordance with recognised engineering standards and to the satisfaction of the authorised officer?	Y	N
3.0	WELDING		
3.1	All welding carried out by qualified tradesman?	Y	N
3.2	All welding complies with relevant Australian Standards?	Y	N
4.0	FASTENERS		
4.1	High tensile bolts used on all new critical joints and mountings?	Y	N
4.2	Self locking nuts used on all new critical joints and mountings?	Y	N
4.3	All replacement fasteners equivalent or better than original in strength and quality?	Y	N
5.0	ADR COMPLIANCE (POST 1971 VEHICLES)		
5.1	Converted vehicles have a Certificate of Modification under Code LO1 or low volume Compliance Plate?	Y	N

CERTIFICATE OF MODIFICATION NO.

FORM NO. LH4

6.0 INSPECTION

6.1 Interim inspection(s) carried out on all modified areas of the vehicle structure and found to be satisfactory? Y N

6.2 Final inspection carried out on all modified areas of the vehicle structure and found to be satisfactory? Y N

7.0 RECORDS

7.1 Record of conversion and vehicle details showing all modification details in accordance with Queensland Transport requirements has been prepared and attached? Y N

8.0 DESIGN APPROVAL

8.1 AO number of authorised officer holding LH3 Code who certified the specifications and plans for the conversion.

AO No.

8.2 Design Approval Number issued by authorised officer.

Design No.

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

Dates of Inspection

Company (if applicable)

Authorised Officer No.

Signed Date

INDIVIDUAL AND LOW VOLUME VEHICLES (DESIGN) - LH5

MODIFICATION TYPES

The following is a summary of the modifications whose designs may be approved by officers authorised with modification Code LH5 - Individual and Low Volume Vehicles (Design).

Modification design approvals are allowed under this Code for:

1. Vehicle construction, on an individual or low volume production basis, utilising an unmodified production vehicle chassis, brakes and suspension.
2. Vehicle construction, on an individual or low volume production basis, utilising a modified production vehicle chassis or an individually built chassis.

Approvals are not allowed under this Code for:

1. The actual physical construction of vehicles (this is covered by Code LH6).

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

SPECIFIC REQUIREMENTS

INDIVIDUAL AND LOW VOLUME VEHICLES (DESIGN) - LH5

The following are specific requirements for the design of individual and low volume vehicles which can be approved by authorised officers under modification Code LH5.

The designs must also comply with the general guidelines contained in Section LH 2.0 "General Requirements".

1.0 STRENGTH AND STIFFNESS

- 1.1 The vehicle's structure must have adequate strength and stiffness to provide protection for the occupants and to ensure safe handling. If a vehicle is constructed with low stiffness, its durability and driveability are reduced. The body will flex and eventually crack. The flexing will make it unpleasant to drive.

2.0 BEAMING AND TORSIONAL TESTS

- 2.1 Individual and low volume vehicles must undergo beaming and torsional testing to determine their relevant stiffness, in accordance with the requirements of Code LT1 - Beaming and Torsional Testing.

3.0 STEERING AND SUSPENSION

- 3.1 Steering and suspension systems must be designed to ensure adequate strength and to ensure safe vehicle handling.
- 3.2 Steering and suspension systems can comprise components from standard production vehicles with an identical physical layout. However many systems comprise a combination of suspension and steering components from various vehicles.
- 3.3 The components must be selected to ensure that they have adequate strength for the loads imposed and will not be subject to fatigue failure.
- 3.4 **Geometry**
- 3.4.1 Vehicles must have appropriate steering and suspension geometry to ensure safe vehicle handling.

- 3.4.2 Steering racks and drag links must be selected and positioned to minimise bump or roll steer.
- 3.4.3 Front and rear suspension roll centres and roll stiffness must be selected to prevent excessive vehicle oversteer or understeer characteristics. Additional or modified sway bars may be required to achieve appropriate handling characteristics.
- 3.5 **Bump Steer**
- 3.5.1 The bump steer characteristics of "non-standard" steering and suspension systems must be verified. This is normally done by producing a graph of toe-in/toe-out plotted against suspension travel, from the full bump to the full rebound positions. Steering and suspension systems are considered to be non-standard if all of the components are not from the one vehicle model or their relative mounting positions do not comply with the manufacturers specifications. Standard suspension and steering systems may include replacement springs, sway bars, dampers, adjustment devices, pivot bushes, bearings and joints which do not comply with the manufacturers specifications.
- 3.5.2 In the range of suspension travel up to two thirds of the maximum travel from the static position, the maximum acceptable toe-in/toe-out in both the bump and rebound directions, shall be 20 mm toe-in or toe-out measured at the maximum tyre diameter.
- 3.6 **Handling Test**
- 3.6.1 All vehicles with non-standard steering and suspension or vehicles with standard steering and suspension which are fitted with wheel rims which increase the original track by more than 50 mm, must be successfully complete a lane change manoeuvre test in accordance with the test procedure in Appendix A.
- 3.7 **Welding of Steering and Suspension Components**
- 3.7.1 Welding of steering and suspension components should be avoided. When welding is required, the design must be in accordance with the requirements of Code LS1.
- 3.7.2 Material specifications, weld preparation, weld procedures, heat treatment and material hardness across the heat affected zone must be evaluated and approved by the authorised officer.
- 3.7.3 **Radiographic Testing**
- 3.7.3.1 A radiographic test certificate is required for welded steering and suspension components. Each tested component is to be stamped with an identification number.

4.0 BUMPER BARS

- 4.1 Full width bumper bars must be fitted to the front and rear of the vehicle. Bumpers may be fitted behind bodywork.

5.0 ROLL BAR

- 5.1 A roll bar complying with the requirements of Code LH8 - Roll Bar and Roll Cage Installation, must be fitted.

6.0 SEAT BELTS AND CHILD RESTRAINT ANCHORAGES

- 6.1 Seat belts complying with the current ADR 4 requirements must be fitted to all seating positions, regardless of the age of the vehicle.
- 6.2 All seat belt anchorages must comply with the current ADR 5 requirements. Anchorage points installed in accordance with the requirements of Code LK1 - Seating Capacity Alteration and Seat Belt Installation, are considered to meet this requirement.
- 6.3 Child restraint anchorage points must be fitted to vehicles with provision for rear passengers. The anchorages must comply with the current ADR 34 requirements.

7.0 COMPLIANCE PLATES FOR INDIVIDUAL AND LOW VOLUME VEHICLES

- 7.1 All vehicles originally manufactured on or after January 1 1972 (post-1971) require a Compliance Plate issued by the Australian Motor Vehicle Certification Board or an Exemption Permit, to enable registration in Queensland.
- 7.2 **Low Volume Vehicles**
- 7.2.1 A "low volume" Compliance Plate issued by the Australian Motor Vehicle Certification Board must be fitted to all post-1971 low volume vehicles (except those previously registered in Australia for at least one year), to enable registration in Queensland.
- 7.2.2 The production of between 2 and 99 vehicles per year by an individual, business or company can be carried out on a "low volume" basis.
- 7.3 **Previously Registered Vehicles**
- 7.3.1 Post-1971 vehicles previously registered in Australia for at least one year must have certification of compliance under Code LO1 - Australian Design Rule (ADR) Compliance and an Exemption Permit to enable registration in Queensland.

7.4 Individually Constructed Vehicles

7.4.1 Post 1971 individually constructed vehicles do not require a Compliance Plate, but must have certification of compliance under Code LO1 - Australian Design Rule (ADR) Compliance and an Exemption Permit to enable registration in Queensland.

7.4.2 The production of one vehicle per year by an individual, business or company can be carried out on an "individual" basis.

7.4.3 For the purposes of assessing compliance with Australian Design Rules, individually constructed vehicles are deemed to consist of three major components, the chassis, engine and body which are considered separately.

7.4.4 Chassis (including suspension and braking system)

7.4.4.1 If the new vehicle uses an unmodified chassis, suspension and braking system from a production motor vehicle, and if the vehicle is similar in mass and mass distribution to that of the donor vehicle, the chassis is considered to be unmodified. The chassis must comply only with the ADR's applicable at the time of its original manufacture and no additional certification is required.

7.4.4.2 If the chassis is modified (shortened or lengthened), or the suspension or brakes are modified (other than changes to spring or shock absorber rates), the chassis is regarded as newly manufactured and must comply with current ADR requirements.

7.4.4.3 If the new vehicle is substantially heavier or different in mass distribution from that of the chassis donor vehicle, the chassis is regarded as newly manufactured and must comply with current ADR requirements.

7.4.5 Engine

7.4.5.1 The engine is considered in conjunction with the chassis when determining the applicability of ADR's.

7.4.5.2 If the chassis is considered to be newly manufactured, both the engine and chassis must comply with current ADR requirements.

7.4.5.3 If the chassis is considered to be unmodified, the engine need only comply with the ADR's in force at the time of manufacture of the chassis.

7.4.5.4 If the engine fitted to an unmodified chassis is manufactured later than the unmodified chassis, the engine must comply with the ADR's applicable at the date of manufacture of the engine.

- 7.4.6 **Body**
- 7.4.6.1 The body must comply with all relevant ADR's applicable at the date of manufacture of the new vehicle.
- 7.5 **Exemption Permits**
- 7.5.1 Detailed requirements for obtaining permits exempting the owner from the Compliance Plate provisions of the Traffic Act are contained in "Specific Requirements" of Code LO1.
- 8.0 **DESIGN APPROVALS**
- 8.1 Authorised officers holding the LH5 Code may issue approvals for the design of individual or low volume vehicles.
- 8.2 Such approvals must be conditional on the design meeting all of the requirements described in Section LH - Body/Chassis.
- 8.3 The design must be fully documented. Drawings, calculations, procedural details, test results and any other data necessary to fully describe the vehicle construction must be retained by the authorised officer.
- 8.4 The authorised officer must issue a unique design approval number prefixed by the authorised officer's AO number for each approval.
- 8.5 With each design approval, the authorised officer shall issue design approval documents for use by the vehicle constructor and the authorised officer certifying the physical construction of the vehicle under the LH6 Code.
- 8.6 The design approval document must contain:
- Details of all drawings needed to fully describe the full extent of the construction. The drawings should include:
 - . body structure details - reinforcing, finishing etc;
 - . roll bar details;
 - . seat and seat belt anchorage details;
 - . steering and suspension details.
 - Details of any special modification techniques, procedures or adjustments.
 - Details of any testing of components, performance (eg. beaming and torsional tests) and of acceptance criteria.

APPENDIX A

INDIVIDUAL AND LOW VOLUME VEHICLES
(DESIGN) - LH5

LANE CHANGE MANOEUVRE TEST PROCEDURE

1.0 SCOPE AND FIELD OF APPLICATION

- 1.1 This test procedure is an abridged version of *ISO Technical Report 3888 - Road Vehicles - Test Procedure for a Severe Lane-Change Manoeuvre*.
- 1.2 The intent of this testing procedure is to objectively determine the road holding ability and handling characteristics of vehicles. It is applicable only to vehicles with a GVM up to 3.5t.
- 1.3 The procedure consists of driving a vehicle through a set track which simulates a lane change procedure. The vehicle is driven from its initial lane to another lane (parallel to the initial lane), then returning to the initial lane. The length of the track sections is constant, and the width is a function of vehicle width.
- 1.4 The lane change testing must be conducted under the guidance of the officer authorised under Code LH5 or a registered professional engineer with proven experience in the automotive area. The lane-change track must be driven by skilled drivers with automotive road testing experience.

2.0 TESTING CONDITIONS

2.1 Lane-change track dimensions

Section 1:	Length	=	15 m	
	Width	=	1.1 x vehicle width ⁽¹⁾	+ 0.25 m
Section 2:	Length	=	30 m	
Section 3:	Length	=	25 m	
	Width	=	1.2 x vehicle width ⁽¹⁾	+ 0.25 m
Section 4:	Length	=	25 m	
Section 5:	Length	=	15 m	
	Width	=	1.3 x vehicle width ⁽¹⁾	+ 0.25 m
Section 6:	Length	=	15 m	
	Width	=	1.3 x vehicle width ⁽¹⁾	+ 0.25 m

Lane Offset: 3.5 m (1) "Width" means the overall width of the vehicle without rear-view mirrors.

2.2 Marking of the lane-change track

2.2.1 The lane-change track shall be marked with cones complying with figure 1 or similar equivalent, placed at points specified by figure 2. The track limits shall be tangential to the base circles of the cones.

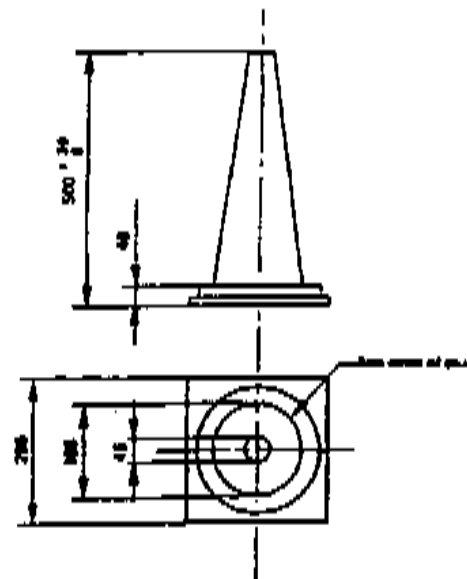


FIGURE 1 CONE USED FOR LANE CHANGE TRACK DELINEATION

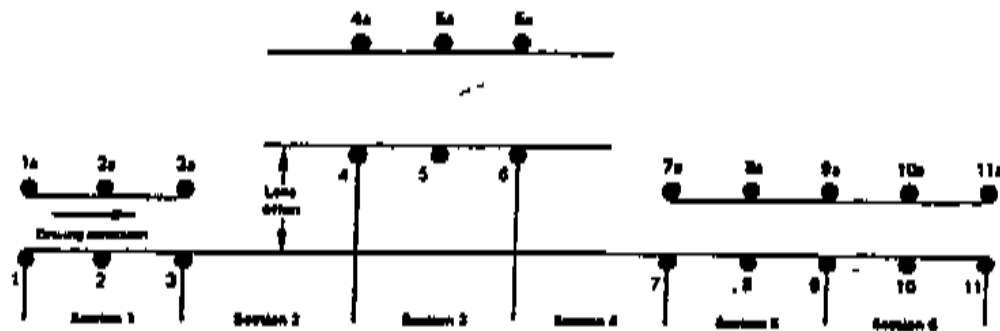


FIGURE 2 PLACING OF CONES FOR MARKING THE LANE CHANGE TRACK

2.3 Measuring distance

2.3.1 The measuring distance starts at the beginning of section 1 and finishes at the end of section 5.

2.4 Track surface

2.4.1 The surface shall be sealed, dry and as hard and as plane as possible.

2.4.2 Longitudinal deviation from horizontal shall not be more than 1 degree.

2.4.3 Transverse deviation from horizontal shall not be more than 2 degrees.

2.5 Ambient conditions

2.5.1 Wind speed shall not exceed 3 m/s.

2.6 Vehicle weight

2.6.1 The test vehicle must be equipped with all optional equipment that is likely to increase the weight of the vehicle. The vehicle must also have full complements of:

- lubricants
- coolant (if needed)
- washer fluid
- fuel (tank to be filled to at least 90% of the capacity specified by the manufacturer).

2.6.2 If offered as standard equipment, the following equipment must also be included in the vehicle:

- spare wheel
- fire extinguisher
- wheel chocks
- standard tool-kit.

2.6.3 The vehicle shall be tested under two loading conditions:

2.6.3.1 Vehicle weight 1

Empty weight according to 2.6 above, to which the driver weight is to be added.

2.6.3.2 Vehicle weight 2

Empty weight according to 2.6 above, plus:

- 68 kg x number of seats in passenger compartment, and
- 7 kg x number of seats, regularly distributed over the baggage compartments.

2.6.4 Loading of the passenger compartment shall be such that wheel loads obtained correspond to wheel loads obtained with loading each seat with 68 kg at its "H" point. Weights used for loading may be placed on the passenger compartment floor.

2.6.5 In no case must the permissible axle loads be exceeded.

2.6.6 Weights must be placed in such a way as not to substantially alter the vehicle's moment of inertia around the vertical axis.

3.0 TESTING

3.1 The vehicle shall be driven through the lane-change track subject to the following conditions:

3.1.1 The speed of entry into section 1 shall be at least 110 ± 3 km/h and the exit speed shall be stated in the test report.

3.1.2 Over the test course the throttle position shall be held as steady as possible and the gear position engaged during the test shall be stated in the test report.

3.2 A successful pass through the lane-change track requires that none of the cones be displaced during the traverse.

4.0 SUBJECTIVE ASSESSMENT

4.1 Further to the above test, a subjective report must be prepared by the driver of the vehicle assessing the overall handling characteristics of the subject vehicle. The assessment shall cover the general handling of the vehicle up to legal speed limits.

DESIGN APPROVAL NO.

FORM NO. LH5

CHECKLIST**INDIVIDUAL AND LOW VOLUME VEHICLES
(DESIGN) - LH5**

(Y = Yes N = No)

1.0	STRUCTURAL DESIGN		
1.1	Reinforcing material thickness no more than twice original section thickness?	Y	N
1.2	Stress concentrations avoided at ends of reinforcing sections?	Y	N
1.3	Sharp edges capped or covered?	Y	N
1.4	Bumper bars included?	Y	N
1.5	Roll bar design complies with Code LH8 requirements?	Y	N
1.6	Fibreglass tested and complies with Standard requirements?	Y	N
2.0	BEAMING AND TORSIONAL TESTS		
2.1	Body design complies with Code LT1 requirements?	Y	N
3.0	STEERING AND SUSPENSION		
3.1	Components have adequate strength?	Y	N
3.2	Weld procedure and radiographic non-destructive testing specified for modified welded components?	Y	N
3.3	Bump steer checked and complies with requirements?	Y	N
3.4	Vehicle complies with requirements of the lane change manoeuvre test and report attached where applicable?	Y	N
4.0	COMPLIANCE WITH ADR'S		
4.1	Low Volume Conversions		
4.1.1	Low volume Compliance Plate issued by A.M.V.C.B. for low volume conversion?	Y	N

DESIGN APPROVAL NO.

FORM NO. LH5

4.2 Individual Conversions

4.2.1 Certification of Compliance under Code LO1 for individual conversion? Y N

5.0 FABRICATION

5.1 Workmanship, welding and fasteners specified as required? Y N

6.0 DESIGN APPROVAL

6.1 Design approval drawings and details in accordance with Queensland Transport requirements have been prepared and unique design approval number issued? Y N

NOTE:

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

Approved By

Company (if applicable)

Authorised Officer No.

Signed Date

INDIVIDUAL AND LOW VOLUME VEHICLES (CONSTRUCTION) - LH6

MODIFICATION TYPES

The following is a summary of the modifications which may be approved by officers authorised with modification Code LH6 - Individual and Low Volume Vehicles (Construction).

Modifications which are allowed under this Code are:

1. Vehicle construction utilising an unmodified production vehicle chassis, brakes and suspension
2. Vehicle construction utilising a modified production vehicle chassis or an individually built chassis.

Modifications which are not allowed under this Code are:

1. Conversions which do not have Code LH5 design approval.

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

SPECIFIC REQUIREMENTS

INDIVIDUAL AND LOW VOLUME VEHICLES (CONSTRUCTION) - LH6

The following are specific requirements for construction of individual and low volume vehicles which can be approved by authorised officers under modification Code LH6.

The vehicles must also comply with the general guidelines contained in Section LH 2.0 "General Requirements".

1.0 DESIGN

- 1.1 The modification must be carried out in accordance with the requirements of the design approved under Code LH5 and as outlined in the design specification and drawings.

2.0 WORKMANSHIP

- 2.1 The workmanship must be in accordance with the requirements of the design approved under Code LH5 including Section LH 2.0 "General Requirements".

3.0 INSPECTION

- 3.1 The authorised officer must conduct at least two inspections of the vehicle. The first, an interim inspection, is to be arranged for the structurally completed vehicle. The inspection is to be carried out prior to painting and trimming the modified areas. This may be carried out in several stages, depending on how the vehicle is modified.

- 3.2 Previously modified vehicles which are being assessed must have all trim etc. removed to allow a thorough inspection of all modified areas.

- 3.3 A final inspection is to be carried out on the completed vehicle when it is in a condition suitable for registration.

4.0 RECORDS

- 4.1 The authorised officer must hold a copy of the design approval, including all plans, procedures and specifications referred to in the approval.

CERTIFICATE OF MODIFICATION NO.

FORM NO. LH6

CHECKLIST**INDIVIDUAL AND LOW VOLUME VEHICLES
(CONSTRUCTION) - LH6**

(Y = Yes N = No)

1.0	DESIGN		
1.1	Has the vehicle been modified exactly in accordance with the plans and specifications issued under the Design Approval detailed below?	Y	N
2.0	WORKMANSHIP		
2.1	Is all work performed in accordance with recognised engineering standards and to the satisfaction of the authorised officer?	Y	N
3.0	WELDING		
3.1	All welding carried by qualified tradesman?	Y	N
3.2	All welding complies with relevant Australian Standards?	Y	N
4.0	FASTENERS		
4.1	High tensile bolts used on all new critical joints and mountings?	Y	N
4.2	Self locking nuts used on all new critical joints and mountings?	Y	N
4.3	All replacement fasteners equivalent or better than original in strength and quality?	Y	N
5.0	ADR COMPLIANCE (POST 1971 VEHICLES)		
5.1	Vehicles have a Certificate of Modification under Code LO1 or low volume Compliance Plate?	Y	N

CERTIFICATE OF MODIFICATION NO.

FORM NO. LH6

6.0 INSPECTION

6.1 Interim inspection(s) carried out on all modified areas of the vehicle structure and found to be satisfactory? Y N

6.2 Final inspection carried out on the complete vehicle and found to be satisfactory? Y N

7.0 RECORDS

7.1 Record of conversion and vehicle details showing all modification details in accordance with Queensland Transport requirements has been prepared and attached? Y N

8.0 DESIGN APPROVAL

8.1 AO number of authorised officer holding LH5 Code who certified the specifications and plans for the conversion.
AO No.

8.2 Design Approval Number issued by authorised officer.
Design No.

NOTE:

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

Make Model Year of Manufacture.....

Chassis No. or VIN

Vehicle Constructed By

Examined and Approved By

Dates of Inspection

Company (if applicable)

Authorised Officer No.

Signed Date

PANEL VAN TO UTILITY CONVERSION - LH7

MODIFICATION TYPES

The following is a summary of the modifications which may be approved by officers authorised with modification Code LH7 - Panel Van to Utility Conversion.

Modifications which are allowed under this Code are:

1. Conversion of a panel van to a manufacturer's utility variant.
2. Conversion of a panel van which has a manufacturer's utility variant, to a non-standard utility configuration (eg. cab/chassis with tray body).

Modifications which are not allowed under this Code are:

1. Conversion of panel van which has no manufacturer's utility variant, to a non-standard utility configuration.
2. Conversion of a sedan or station wagon to a utility.

NOTE: The modified vehicle 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

REQUIREMENTS

Installation of Seat Belts and Anchorages

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

Replacement windows

ADR 8, 8/00

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

PANEL VAN TO UTILITY CONVERSION - LH7

The following are specific requirements for panel vans to utility conversions which can be approved by authorised officers under modification Code LH7.

The conversions must also comply with the general guidelines contained in Section LH 2.0 "General Requirements".

1.0 STANDARD UTILITY VARIANT

1.1 Standard utility body components must be used for all replacement panels.

2.0 NON-STANDARD UTILITY CONFIGURATION

2.1 Replacement panels and reinforcing sections must be from material of at least equivalent thickness, strength and configuration to the corresponding original panel or reinforcing section.

2.2 Where sharp edges exist, they should be capped with fully welded steel covers or "pinch weld" or equivalent.

3.0 GENERAL

3.1 Replacement panels must be attached with at least the same number and size of welds as on the standard utility variant.

3.2 Where panels are intermittently welded, they must be fully sealed to prevent the ingress of exhaust gases into the cabin.

3.3 Glazing must comply with the requirements of ADR 8 - Safety Glazing Material and must have the appropriate Standards marking.

3.4 The structural integrity of existing seat belt mountings must be maintained by ensuring that all original mounting and reinforcing sections are retained or replaced. New seat belt anchorages must be approved by an authorised officer under Code LK1.

4.0 INSPECTION

4.1 The authorised officer must conduct at least two inspections of the vehicle. The first, an interim inspection is to be arranged for the structurally completed vehicle. The inspection is to be carried out prior to painting and trimming the modified areas. This may be carried out in several stages, depending on how the vehicle is modified.

4.2 Previously modified vehicles which are being assessed must have all trim etc. removed to allow a thorough inspection of all modified areas.

4.3 A final inspection is to be carried out on the converted vehicle when it is in a condition suitable for registration.

5.0 RECORDS

5.1 The authorised officer must hold a copy of all drawings and data necessary to fully describe the vehicle modifications.

CERTIFICATE OF MODIFICATION NO.

FORM NO. LH7

CHECKLIST**PANEL VAN TO UTILITY CONVERSION - LH7**

(Y = Yes N = No)

1.0	DESIGN		
1.1	Standard Utility Variant		
1.1.1	Has the vehicle been modified exactly in accordance with the standard utility variant, using standard components?	Y	N
1.2	Non-Standard Utility Configuration		
1.2.1	Replacement panels and reinforcing equivalent in thickness and strength?	Y	N
1.2.2	Sharp edges capped or covered?	Y	N
1.2.3	Replacement panels attachment equivalent to original?	Y	N
1.2.4	Replacement panels fully sealed to prevent ingress of exhaust gases?	Y	N
2.0	FASTENERS		
2.1	High tensile bolts used on all new critical joints and mountings?	Y	N
2.2	Self locking nuts used on all new critical joints and mountings?	Y	N
2.3	All replacement fasteners equivalent or better than original in strength and quality?	Y	N
3.0	WORKMANSHIP		
3.1	Is all work performed in accordance with recognised engineering standards and to the satisfaction of the authorised officer?	Y	N

CERTIFICATE OF MODIFICATION NO.

FORM NO. LH7

4.0 WELDING

4.1 All welding carried by qualified tradesman? Y N

4.2 All welding complies with relevant Australian Standards? Y N

5.0 ADR COMPLIANCE

5.1 Replacement glass complies with ADR 8? Y N

5.2 New seat belt anchorages approved under Code LK1? Y N

6.0 INSPECTION

6.1 Interim inspection(s) carried out on all modified areas of the vehicle structure and found to be satisfactory? Y N

6.2 Final inspection carried out on all modified areas of the vehicle structure and found to be satisfactory? Y N

7.0 RECORDS

7.1 Record of conversion and vehicle details showing all modification details in accordance with Queensland Transport requirements has been prepared and attached? 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

Dates of Inspection

Company (if applicable)

Authorised Officer No.

Signed Date

ROLL BAR AND ROLL CAGE INSTALLATION - LH8

MODIFICATION TYPES

The following is a summary of the modifications which may be approved by officers authorised with modification Code LH8 - Roll Bar and Roll Cage Installation.

Modifications which are allowed under this Code are:

1. Installation of four point roll bars.
2. Installation of six point roll cages.
3. Installation of single tube hoops, twin tube hoops and alternative designs.

NOTE: The modified vehicle 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

Installation of Seat Belts and Anchorages

Child Restraint Anchorages

REQUIREMENTS

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

ADR 34/00

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

ROLL BAR AND ROLL CAGE INSTALLATION - LH8

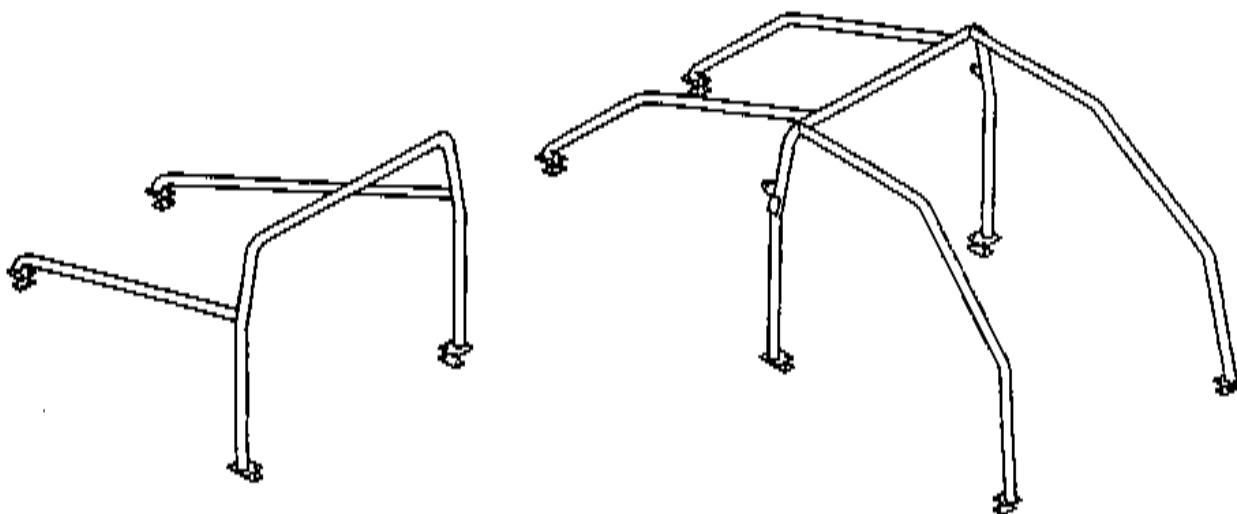
The following are specific requirements for roll bar and roll cage installations which can be approved by authorised officers under modification Code LH8.

The installations must also comply with the general guidelines contained in Section LH 2.0 "General Requirements".

1.0 CONFIGURATION

1.1 Roll Over Protection Structures

- 1.1.1 Roll over protection can be provided by roll bars which have four mounting points and roll cages which have six mounting points (refer Fig. 1).



4 POINT ROLL BAR

6 POINT ROLL CAGE

Figure 1

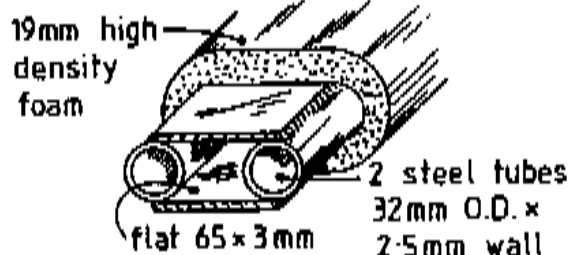
1.2 Passenger Space

- 1.2.1 The roll over protection structure must not obstruct front seat access nor encroach upon the area occupied by the driver or front seat passenger. Horizontal braces alongside front seats are not acceptable.
- 1.2.2 The roll over protection structure may encroach upon the rear passenger space, but must not obstruct passenger access.

1.3 Central Hoop

1.3.1 Roll bars and roll cages have a central hoop which must be placed rearward of the front seat occupants' heads to a maximum distance of 150 mm. The hoop can comprise a single tube or twin tubes (refer Fig. 2) and must extend from one side of the vehicle to the other.

1.3.2 In closed vehicles, the hoop must be placed as near as possible to the roof in order to limit crushing in the event of a vehicle roll over.



1.3.3 In vehicles converted to convertible/cabriolet body styles, the hoop must be placed no lower than 50 mm below the original roof line.

**TWIN TUBE HOOP
Figure 2**

1.3.4 In open vehicles, the occupants' profile, including shoulders, must be within the hoop when viewed from the front or rear.

1.4 Bracing

1.4.1 Rear braces should be straight where possible. Where bent bracing is necessary, tubing equivalent in section to the main hoop must be used.

1.4.2 Rear braces should be attached to the upper vertical sections of the hoop. On twin bar hoops, the braces may be attached to the vertical section of the hoop at the level of the vehicle's "waist line".

1.4.3 Rear braces should extend towards the rear on each side of the vehicle as far as practicable, and be mounted onto the vehicle structure.

1.4.4 Forward braces (on six point roll cages) should be placed adjacent to and parallel with the windscreen pillar in order to minimise any reduction in the driver's vision. There is no requirement for the minimum size of forward bracing, however the cross section of the bracing must be less than the cross section of the "A" pillar and door frame combined, as viewed from the driver's seat.

1.4.5 The right hand brace must be mounted in such a manner that it does not obscure the driver's vision past the "A" pillar and door frame combined.

1.4.6 The left hand brace must be mounted in a similar manner to the right hand side. It therefore may partially obscure the driver's view past the left hand "A" pillar.

1.4.7 Where there are no rear passenger seats, a diagonal brace in the plane of the hoop is recommended.

2.0 ROLL BAR AND ROLL CAGE MOUNTINGS**2.1 Type of Mounting**

2.1.1 Mountings should comprise an upper mounting plate attached to the roll bar/cage and a lower mounting plate, sandwiching a section of the vehicle's structure between them. The following requirements outline minimum sizes for mounting plates. Smaller width plates (minimum 45 mm wide) may be used provided that the overall area is not reduced.

2.2 Mounting Plates

2.2.2 The mounting plates must be either aluminium or steel and must have a minimum thickness of 6 mm.

2.2.3 The upper main hoop mounting plates must be at least:

- . 100 mm x 75 mm for vehicles less than 1150 kg or
- . 100 mm x 100 mm for vehicles greater than 1150 kg

2.2.4 The lower mounting plates must be at least 100 mm x 45 mm.

2.3 Mounting Bolts

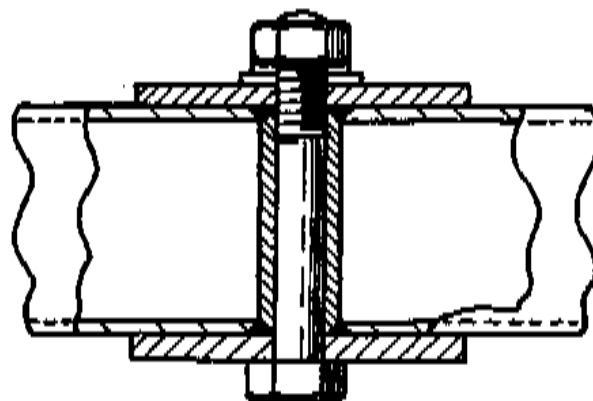
2.3.1 At least two Grade 8.8 high tensile bolts of a minimum 10 mm diameter are required at each mounting point.

2.4 Hollow Section Reinforcement

2.4.1 Where roll bar/cage mounting bolts pass through a hollow section of the vehicle's structure, the section must be locally reinforced to prevent crushing (refer Fig. 3).

REINFORCING
A HOLLOW SECTION

Figure 3



2.5 Twin Tube Roll Bar Mounting

2.5.1 A typical mounting detail for twin tube roll bars is illustrated in Figure 4.

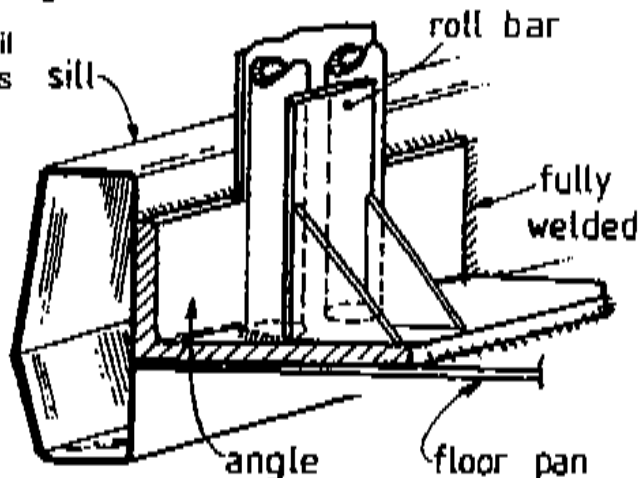
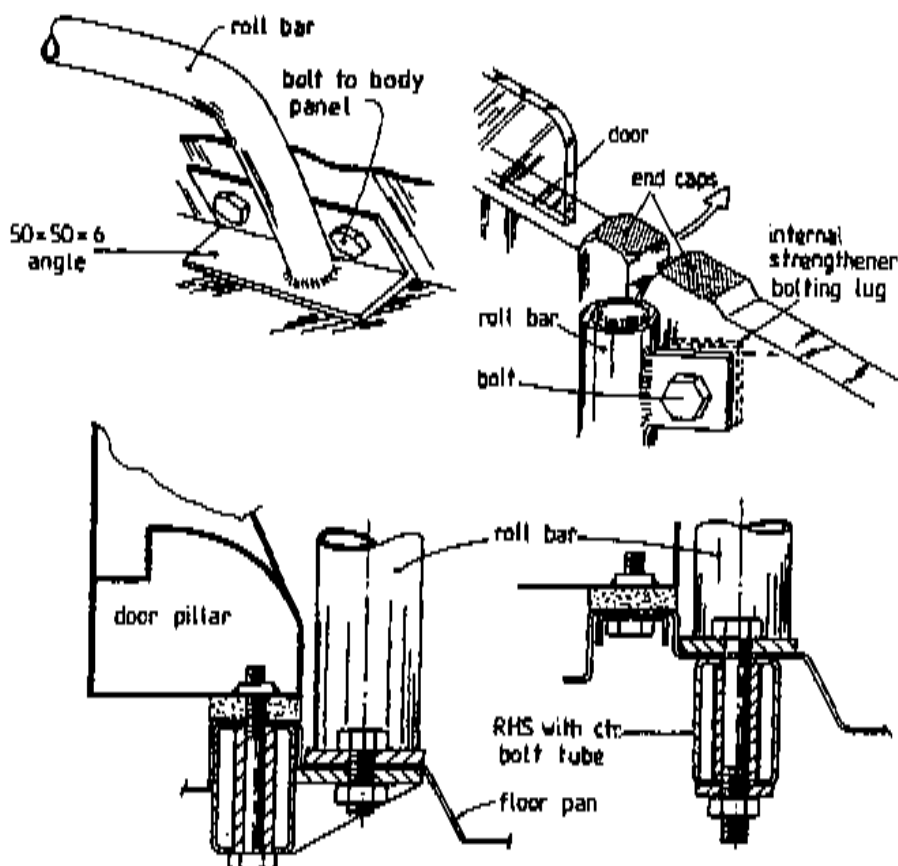


Figure 4

2.6 Volkswagen Convertible Roll Bar Mountings

2.6.1 Figure 5 illustrates typical mounting details which have been approved for roll bars fitted to Volkswagen convertibles.



VOLKSWAGEN CONVERTIBLE ROLL BAR MOUNTINGS
Figure 5

3.0 TUBING MATERIAL

3.1 Tubing material used in the manufacture of hoops and braces shall be round in section, as specified below, or rectangular hollow section of equivalent section modulus.

3.2 Steel tubes shall comply with the requirements of Australian Standard 1163 1981 - "Circular and Non-Circular Steel Tubes for Mechanical and General Engineering Purposes".

3.3 Aluminium alloy tubes shall be either alloy B6351T5 or B6061T6 and shall comply with the requirements of Australian Standard 1867 1976 - "Alloy Drawn Tubes".

4.0 TUBING SIZES**4.1 Single Tube Hoops - Minimum Tubing Sizes**

4.1.1	Steel	Hoops	45 mm diameter 2.5 mm wall thickness
		Rear Braces (straight)	30 mm diameter 1.5 mm wall thickness
		Rear Braces (bent)	45 mm diameter 1.5 mm wall thickness
4.1.2	Aluminium	Hoops	45 mm diameter 3.0 mm wall thickness
		Rear Braces (straight)	38 mm diameter 2.5 mm wall thickness

4.2 Twin Tube Hoops - Minimum Tubing Sizes

4.2.1	Steel	Hoops	33 mm diameter 2.5 mm wall thickness
		Rear Braces (straight)	33 mm diameter 2.5 mm wall thickness

5.0 FABRICATION

- 5.1 Welds attaching mounting plates and bracing to the main hoop should be full penetration butt welds.
- 5.2 All welding shall comply with the requirements of either Australian Standard 1554 Part 1 1985 - Structural Steel Welding Code Category SP, or AS 1685 1978 - Aluminium Welding Code.
- 5.3 Continuous lengths of tubing shall be used for the main structure, with smooth continuous bends and no evidence of crimping, wall failure or significant section weakening.

6.0 PROTECTION

- 6.1 The upper sections of the roll bar, roll cage or bracing must be fully protected with padding of high density foam or equivalent, of at least 19 mm thickness. Hollow cylindrical pipe insulation may be utilised for this purpose.

7.0 SEAT BELT ANCHORAGES

- 7.1 Upper torso seat belt anchorages may be incorporated in the vertical sections of the main hoop. Where the anchorage bolt passes through a hollow section it must be locally reinforced as detailed in Figure 3. Approval of new anchorages by an authorised officer under Code LK1 is required. If anchorages are fitted to the main hoop in accordance with the method shown in Figure 3, Code LK2 certification is not required. Alternative anchorages designs require Code LK2 certification.

8.0 INSPECTION

- 8.1 The authorised officer must conduct at least two inspections of the vehicle. The first, an interim inspection is to be arranged for the structurally completed installation. The inspection is to be carried out prior to trimming the modified areas.
- 8.2 A final inspection is to be carried out on the completed installation.

9.0 RECORDS

- 9.1 The authorised officer must hold a copy of all drawings, specifications, test results and any other data necessary to fully describe the vehicle modifications.

CHECKLIST**ROLL BAR AND ROLL CAGE INSTALLATION - LH8**

(Y = Yes N = No)

1.0	DESIGN		
1.1	Configuration		
1.1.1	Front seat access not obstructed and driver or passenger space not encroached upon?	Y	N
1.1.2	Central hoop correctly shaped and positioned?	Y	N
1.1.3	Bent rearward braces correct diameter?	Y	N
1.1.4	Forward braces placed close to windscreen pillar to minimise reduction in driver's vision?	Y	N
1.2	Mountings		
1.2.1	Mounting plates correct size and thickness?	Y	N
1.2.2	Correct number, size and strength of mounting bolts?	Y	N
1.2.3	Hollow body sections correctly reinforced at mounting points?	Y	N
1.3	Tubing		
1.3.1	Tubing correct size and material?	Y	N
1.3.2	Tubing correctly padded?	Y	N
2.0	WORKMANSHIP		
2.1	Is all work performed in accordance with recognised engineering standards and to the satisfaction of the authorised officer?	Y	N
3.0	WELDING		
3.1	All welding carried by qualified tradesman?	Y	N
3.2	All welding complies with relevant Australian Standards?	Y	N

CERTIFICATE OF MODIFICATION NO.

FORM NO. LH8

4.0 FASTENERS

4.1 High tensile bolts used on all new critical joints and mountings? Y N

4.2 Self locking nuts used on all new critical joints and mountings? Y N

5.0 ADR COMPLIANCE

5.1 New seat belt anchorages approved under Code LK1? Y N

6.0 RECORDS

6.1 Record of conversion and vehicle details showing all modification details in accordance with Queensland Transport requirements has been prepared and attached? 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

Dates of Inspection

Company (if applicable)

Authorised Officer No.

Signed Date

STREET ROD CERTIFICATION - LH9

MODIFICATION TYPES

The following is a summary of the modifications which may be approved by officers authorised with modification Code LH9 - Street Rod Certification.

Certifications which are allowed under this Code are:

1. Conversion of a pre 1949 passenger car, passenger car derivative or light goods vehicle (up to 4.5 tonnes GVM) to a Street Rod configuration.
2. Construction of a Street Rod.

Certifications which are not allowed under this Code are:

1. Conversion of a vehicle built after 1948.
2. Construction of a vehicle not in accordance with the Australian Street Rod Federation Queensland Street Rod Guidelines.

SPECIFIC REQUIREMENTS

STREET ROD CERTIFICATION - LH9

The following are specific requirements for certification of Street Rod vehicles which can be approved by authorised officers under modification Code LH9.

The modifications must also comply with the general guidelines contained in Section LH 2.0 "General Requirements".

1.0 CONVERSION OF A PRE 1949 VEHICLE

- 1.1 Any passenger car, passenger car derivative or light goods vehicle (up to 4.5 tonnes GVM) may be converted to a Street Rod configuration.
- 1.2 The vehicle must comply with all the requirements specified in the Australian Street Rod Federation Queensland Street Rod Guidelines.
- 1.3 The vehicle is not required to comply with the Traffic Regulation 1962 or the Australian Design Rules unless specified in the Australian Street Rod Federation Queensland Street Rod Guidelines.

2.0 CONSTRUCTION OF A NEW VEHICLE

- 2.1 A vehicle newly constructed as a passenger car, passenger car derivative or light goods vehicle (up to 4.5 tonnes GVM) may be approved as a Street Rod.
- 2.2 The vehicle must comply with all the requirements specified in the Australian Street Rod Federation Queensland Street Rod Guidelines.
- 2.3 The vehicle is not required to comply with the Traffic Regulation 1962 or the Australian Design Rules unless specified in the Australian Street Rod Federation Queensland Street Rod Guidelines.

3.0 INSPECTION

- 3.1 The authorised officer must conduct at least three inspections of the vehicle as described in the Australian Street Rod Federation Queensland Street Rod Guidelines.
- 3.2 A previously modified vehicle must be inspected thoroughly to ensure that it complies with all the requirements of the Australian Street Rod Federation Queensland Street Rod Guidelines. It would normally be necessary to remove trim, carpets etc. to allow a thorough inspection.

4.0 RECORDS

4.1 The authorised officer must hold a completed copy of each of the following:

- Proposal to build or modify a Street Rod; and
- Technical Advisory Committee Inspection Certificate; and
- Inspection Report; and
- Checklist Street Rod Certification - LH9.

CERTIFICATE OF MODIFICATION NO.

FORM NO. LH9

CHECKLIST**STREET ROD CERTIFICATION - LH9**

(Y = Yes N = No)

- | | | | |
|-----|---|---|---|
| 1.0 | ASRF CLASSIFICATION | | |
| 1.1 | Does the vehicle comply with the definition of a Street Rod specified in the Introduction to the Australian Street Rod Federation Queensland Street Rod Guidelines? | Y | N |
| 2.0 | DESIGN | | |
| 2.1 | Has the vehicle been built to comply with all technical specifications of the Australian Street Rod Federation Queensland Street Rod Guidelines? | Y | N |
| 3.0 | WELDING | | |
| 3.1 | All welding by qualified tradespersons? | Y | N |
| 4.0 | WORKMANSHIP | | |
| 4.1 | Is all work performed in accordance with recognised engineering standards and to the satisfaction of the authorised officer? | Y | N |
| 5.0 | INSPECTION | | |
| 5.1 | Has the vehicle undergone all inspections specified in the Introduction to the Australian Street Rod Federation Queensland Street Rod Guidelines? | Y | N |

CERTIFICATE OF MODIFICATION NO.

FORM NO. LH9

6.0 RECORDS

6.1 Are copies of the Proposal to build or modify a Street Rod form, Technical Advisory Committee Inspection Certificate and Inspection Report attached? 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

Dates of Inspection

Company (if applicable)

Authorised Officer No

Signed Date

STREET ROD CERTIFICATION - LH10

MODIFICATION TYPES

The following is a summary of the modifications which may be approved by officers authorised with modification Code LH10 - Street Rod Certification.

Certifications which are allowed under this Code are:

1. Conversion of a pre 1949 passenger car, passenger car derivative or light goods vehicle (up to 4.5 tonnes GVM) to a Street Rod configuration.
2. Construction of a Street Rod.

Certifications which are not allowed under this Code are:

1. Conversion of a vehicle built after 1948.
2. Construction of a vehicle not in accordance with the Australian Street Rod Federation Queensland Street Rod LH10 Guidelines.

SPECIFIC REQUIREMENTS

STREET ROD CERTIFICATION - LH10

The following are specific requirements for certification of Street Rod vehicles which can be approved by authorised officers under modification Code LH10.

The modifications must also comply with the general guidelines contained in Section LH 2.0 "General Requirements".

1.0 CONVERSION OF A PRE 1949 VEHICLE

- 1.1 Any passenger car, passenger car derivative or light goods vehicle (up to 4.5 tonnes GVM) may be converted to a Street Rod LH10 configuration.
- 1.2 The vehicle must comply with all the requirements specified in the Australian Street Rod Federation Queensland Street Rod LH10 Guidelines.
- 1.3 The vehicle is not required to comply with the Traffic Regulation 1962 or the Australian Design Rules unless specified in the Australian Street Rod Federation Queensland Street Rod LH10 Guidelines.

2.0 CONSTRUCTION OF A NEW VEHICLE

- 2.1 A vehicle newly constructed as a passenger car, passenger car derivative or light goods vehicle (up to 4.5 tonnes GVM) may be approved as a Street Rod.
- 2.2 The vehicle must comply with all the requirements specified in the Australian Street Rod Federation Queensland Street Rod LH10 Guidelines.
- 2.3 The vehicle is not required to comply with the Traffic Regulation 1962 or the Australian Design Rules unless specified in the Australian Street Rod Federation Queensland Street Rod LH10 Guidelines.

3.0 INSPECTION

- 3.1 The authorised officer must conduct at least three inspections of the vehicle as described in the Australian Street Rod Federation Queensland Street Rod LH10 Guidelines.
- 3.2 A previously modified vehicle must be inspected thoroughly to ensure that it complies with all the requirements of the Australian Street Rod Federation Queensland Street Rod LH10 Guidelines. It would normally be necessary to remove trim, carpets etc. to allow a thorough inspection.

4.0 RECORDS

4.1 The authorised officer must hold a completed copy of each of the following:

- Proposal to build or modify a Street Rod; and
- Technical Advisory Committee Inspection Certificate; and
- Inspection Report; and
- Checklist Street Rod Certification - LH10.

CERTIFICATE OF MODIFICATION NO.

FORM NO. LH10

CHECKLIST**STREET ROD CERTIFICATION - LH10**

(Y = Yes N = No)

1.0 ASRF CLASSIFICATION

1.1	Does the vehicle comply with the definition of a Street Rod specified in the Introduction to the Australian Street Rod Federation Queensland Street Rod LH10 Guidelines?	Y	N
-----	--	---	---

2.0 DESIGN

2.1	Has the vehicle been built to comply with all technical specifications of the Australian Street Rod Federation Queensland Street Rod LH10 Guidelines?	Y	N
-----	---	---	---

3.0 WELDING

3.1	All welding by qualified tradespersons?	Y	N
-----	---	---	---

4.0 WORKMANSHIP

4.1	Is all work performed in accordance with recognised engineering standards and to the satisfaction of the authorised officer?	Y	N
-----	--	---	---

5.0 INSPECTION

5.1	Has the vehicle undergone all inspections specified in the Introduction to the Australian Street Rod Federation Queensland Street Rod LH10 Guidelines?	Y	N
-----	--	---	---

CERTIFICATE OF MODIFICATION NO.

FORM NO. LH10

6.0 RECORDS

6.1 Are copies of the Proposal to build or modify a Street Rod form, Technical Advisory Committee Inspection Certificate and Inspection Report attached? 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

Dates of Inspection

Company (if applicable)

Authorised Officer No

Signed Date

LK

CABIN

CABIN

		Page
1.0	Scope	3
2.0	General Requirements	4
3.0	Australian Design Rules and Standards	5
4.0	Modifications Codes and Checklists	6
LK1	Seating Capacity Alteration and Seat Belt Installation	7
LK1	Checklist	16
LK2	Seat, Seat Anchorage and Seat Belt Anchorage Certification	18
LK2	Checklist	20
LK6	Child Restraint Anchorage Installation	22
	- Positioning of Anchorage in Parcel Shelf (Sedan)	24
	- Child Restraint Anchorage Bar (CRAB)	25
	- Techsafe (Vertical)Post	28
	- Universal Frame	30
	- Twin Cab Device	32
	- Seat Belt Requirements for Child Restraints	34
LK6	Checklist	36
LK7	Motorcycle Seating Capacity Alteration	37
LK7	Checklist	40

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 3750mm² 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 3750mm² 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.

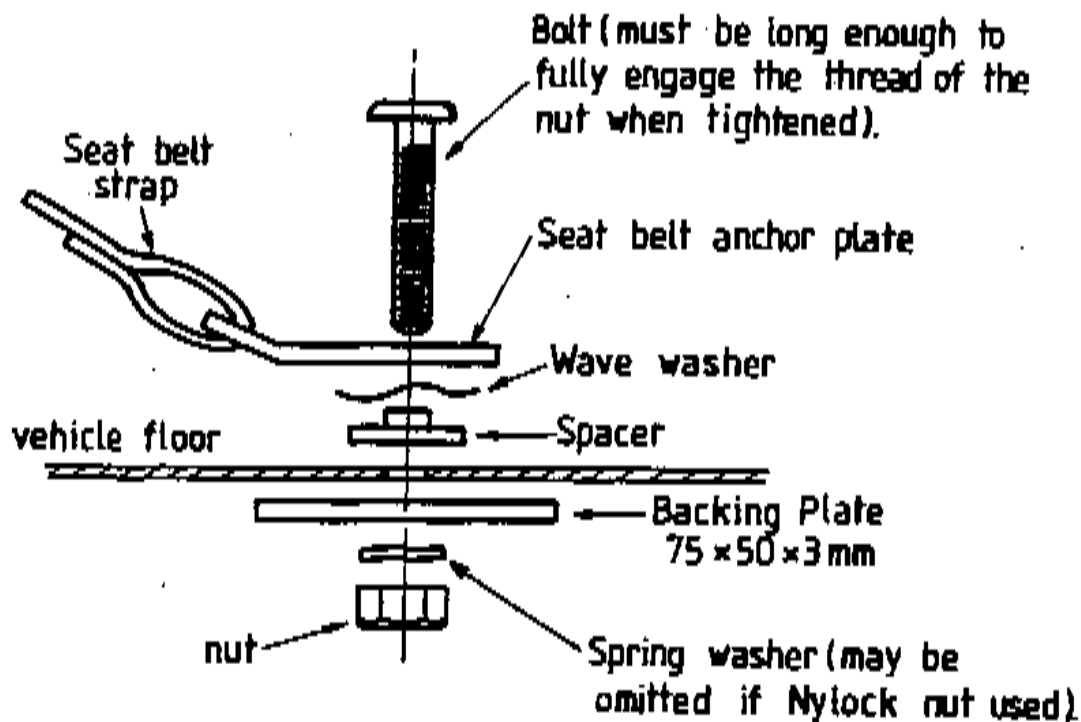
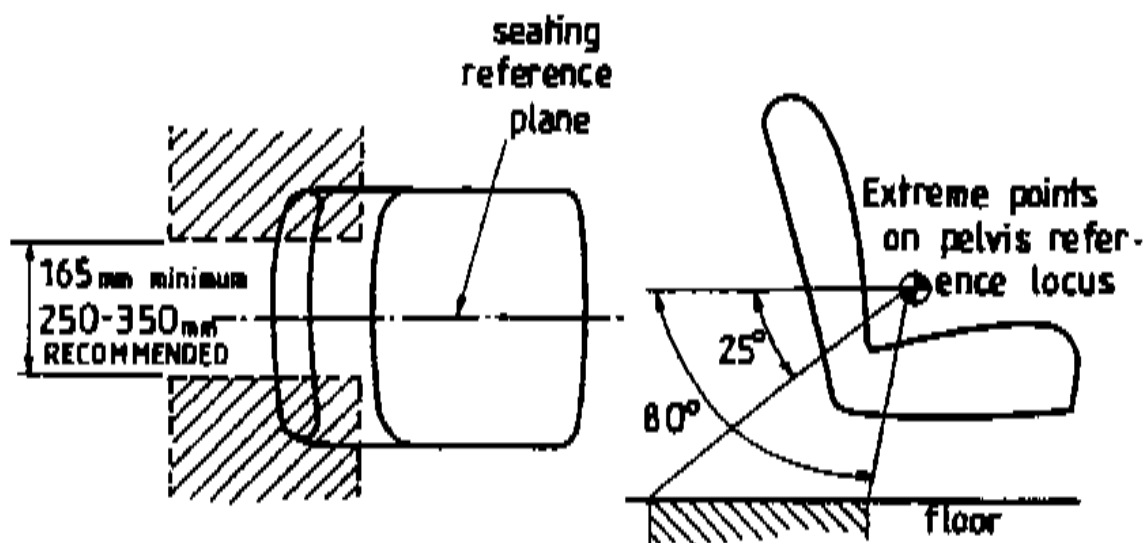


Figure 1

- 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 Harness Anchor Point

6.3.1 In cases where only one harness anchorage is provided, the anchor point must be located:

6.3.1.1 rearward of a transverse plane inclined at the same angle as the Torso Reference Line and 500mm horizontally rearward of the Seating Reference Point (see Figure 3);

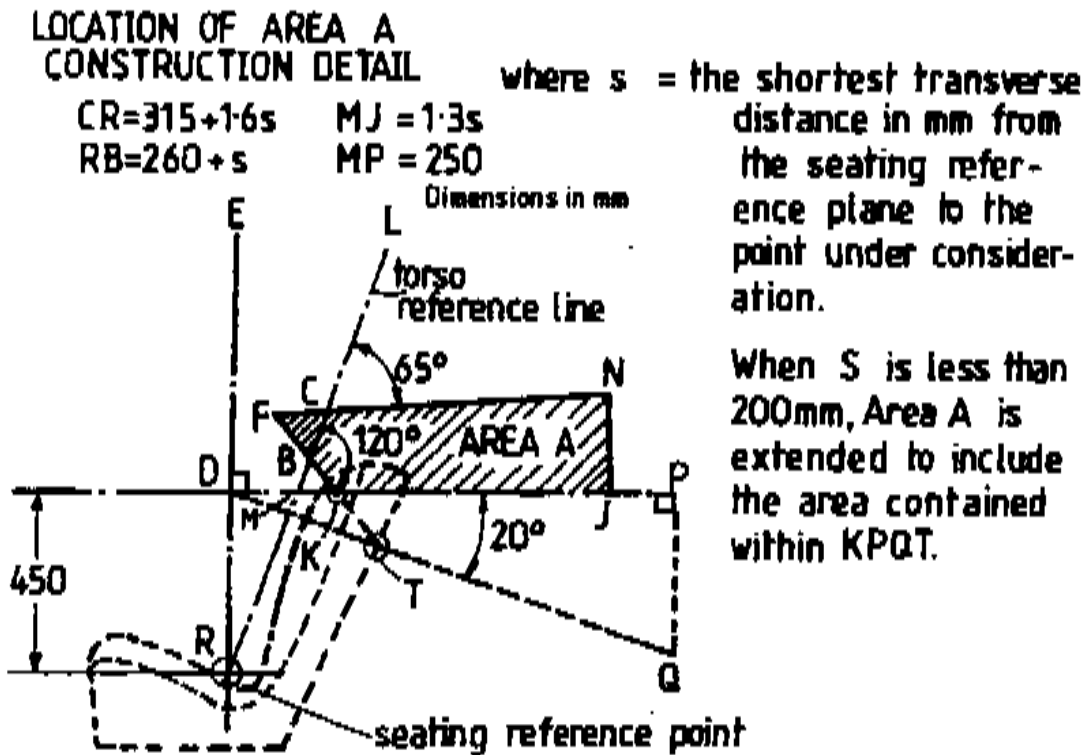


Figure 3

6.3.1.2 not more than 50mm from the seating reference plane; and

6.3.1.3 within Area B (see Figure 4).

6.3.2 In cases where two harness anchorages are provided for a particular seating location, the anchor points must be located:

6.3.2.1 rearward of a transverse plane inclined at the same angle as the Torso Reference Line and 75mm horizontally rearward of the Seating Reference Point;

6.3.2.2 either side of the Seating Reference Plane in such a way that the distance from the Seating Reference Plane does not differ by more than 100mm;

- 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).

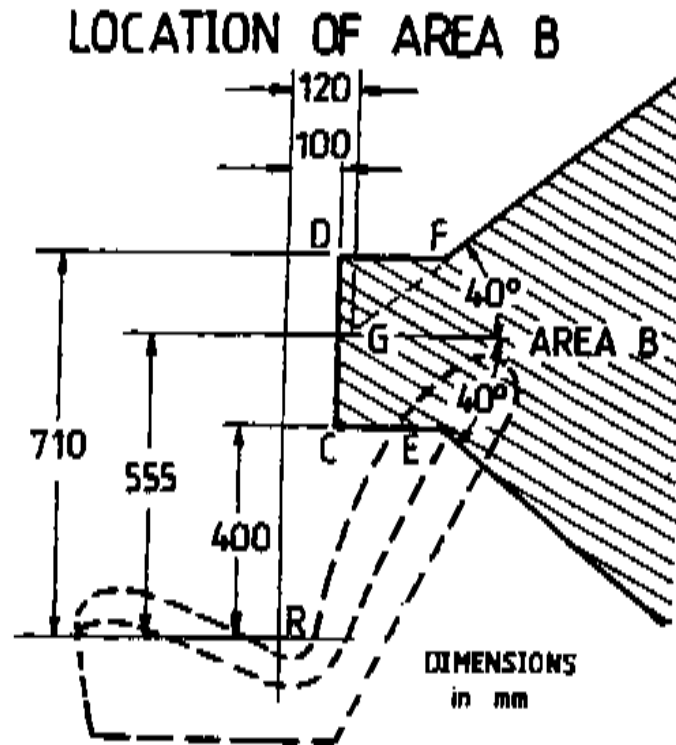


Figure 4

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 θ° from the vertical. See Figure 5.

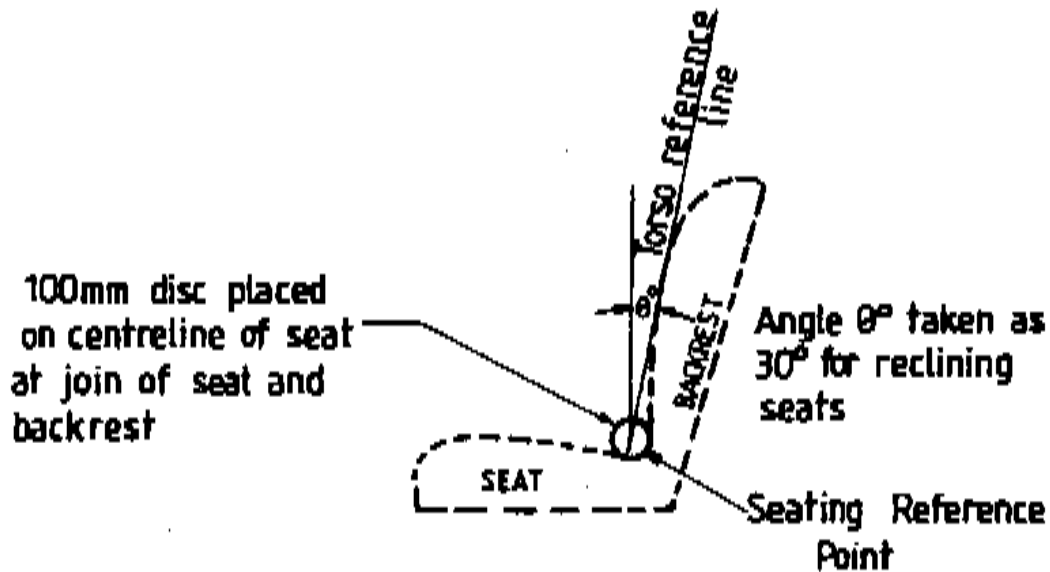


Figure 5

**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	Seats		
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 |
| 2.0 | Seat Belts | | |
| 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 |
| 3.0 | General | | |
| 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)

1.0	Seat and Seat Anchorage Certification		
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
2.0	Seat Belt Anchorage Installation		
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 |
| 3.0 | General | | |
| 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.

DETAIL	REQUIREMENTS
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.

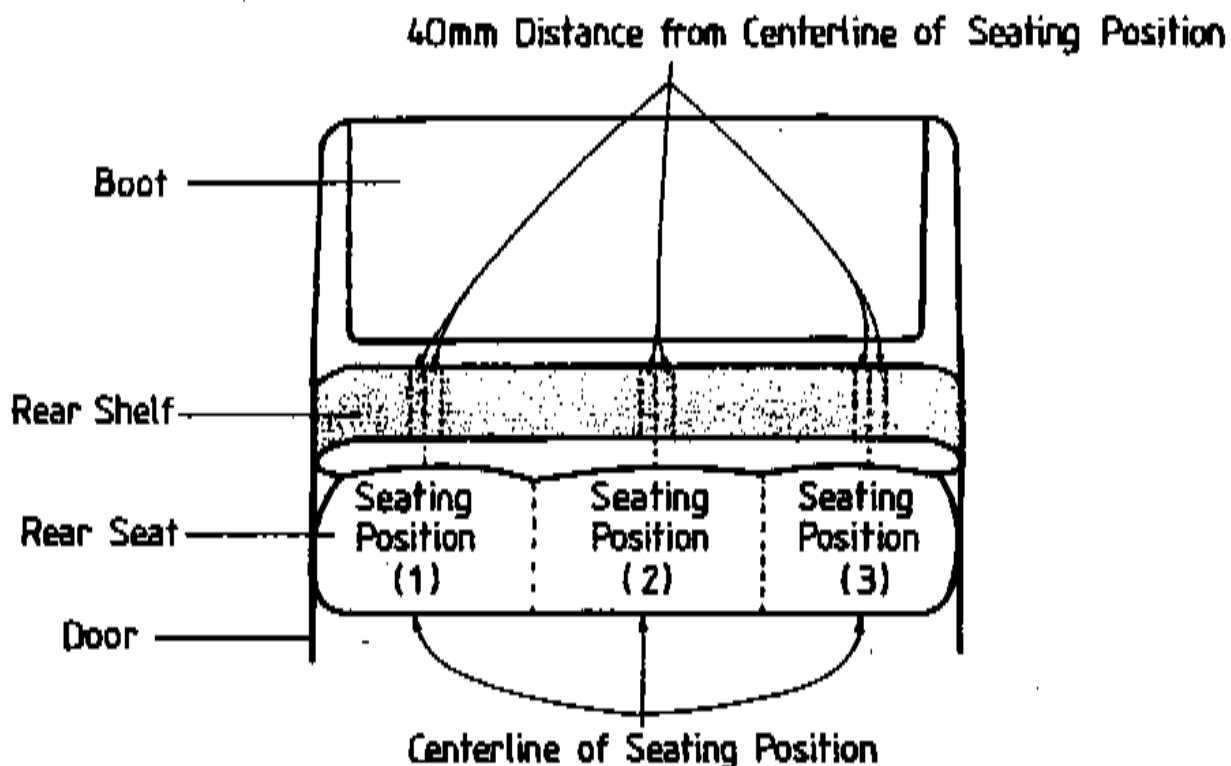


Figure 1

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.

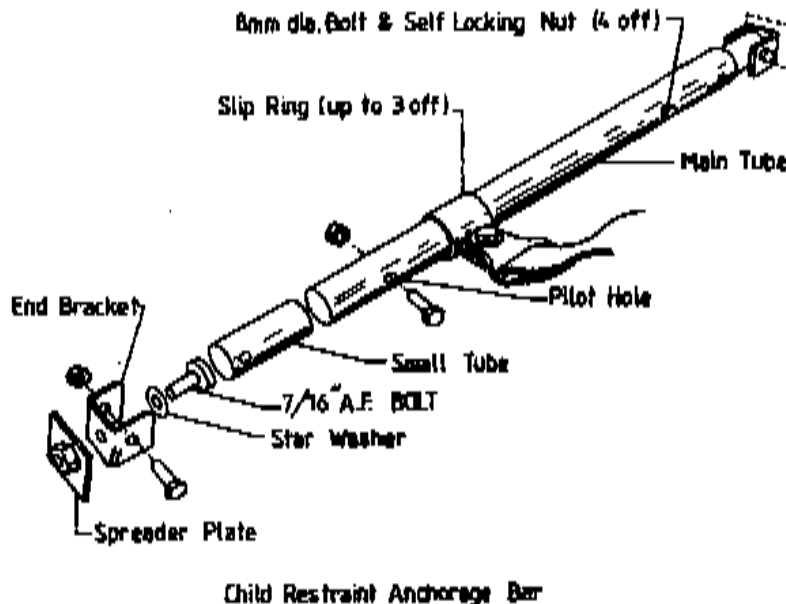


Figure 2

- 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).

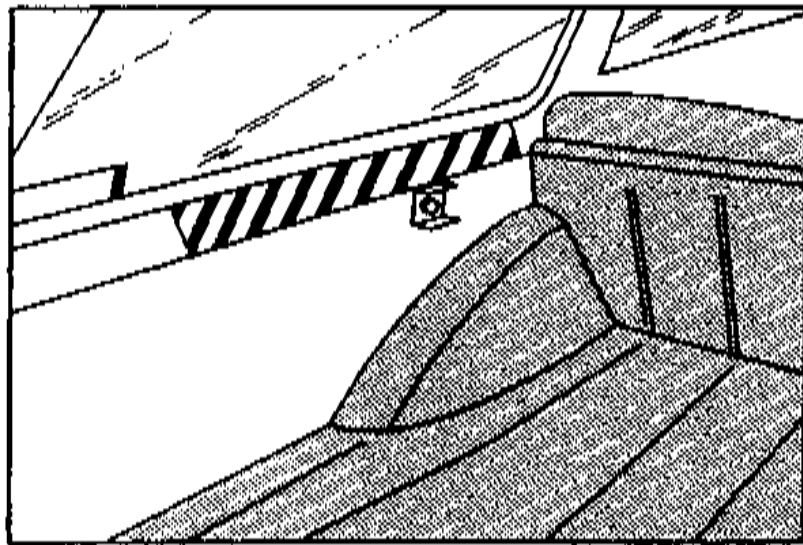


Figure 3

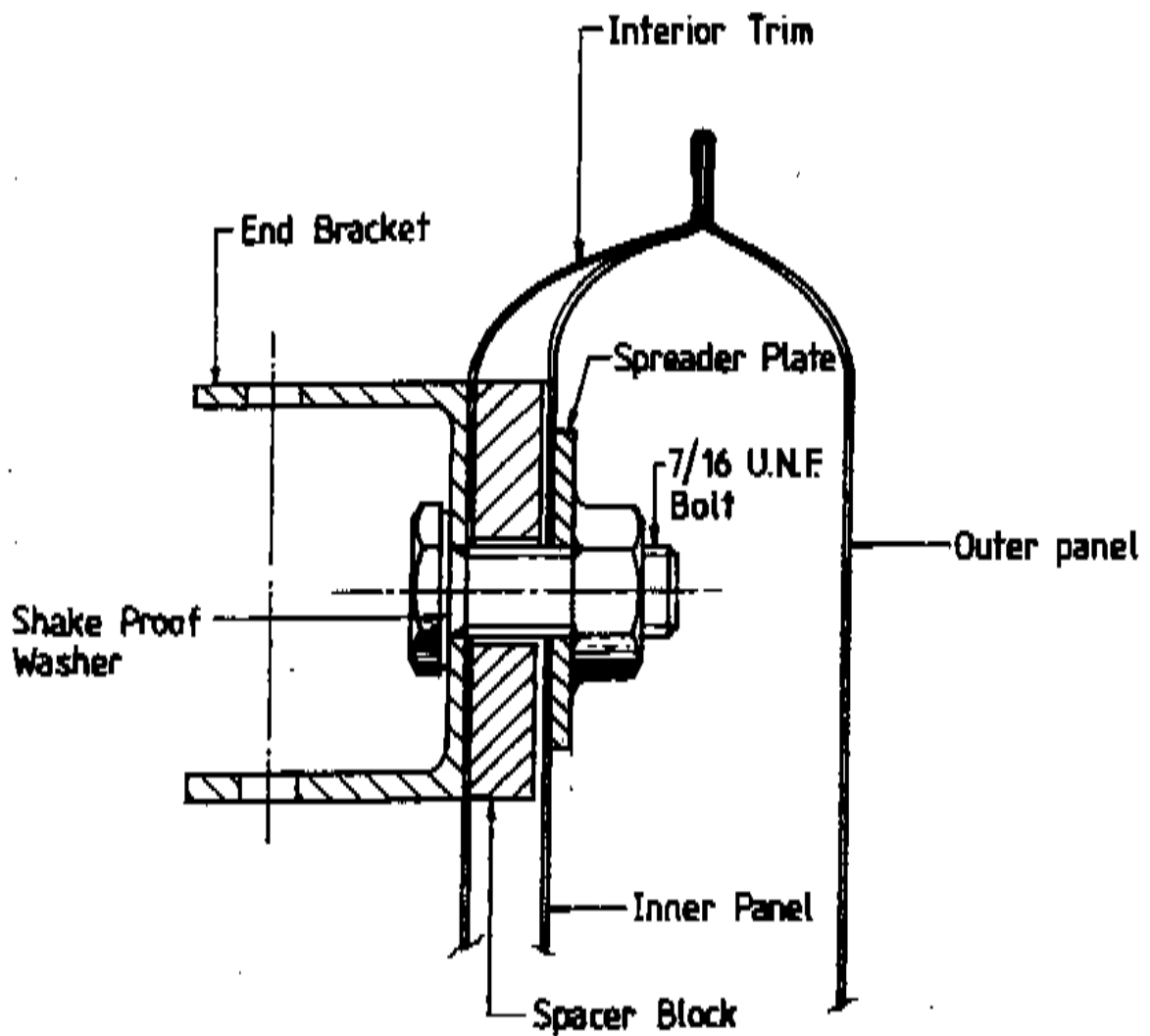


Figure 4

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.

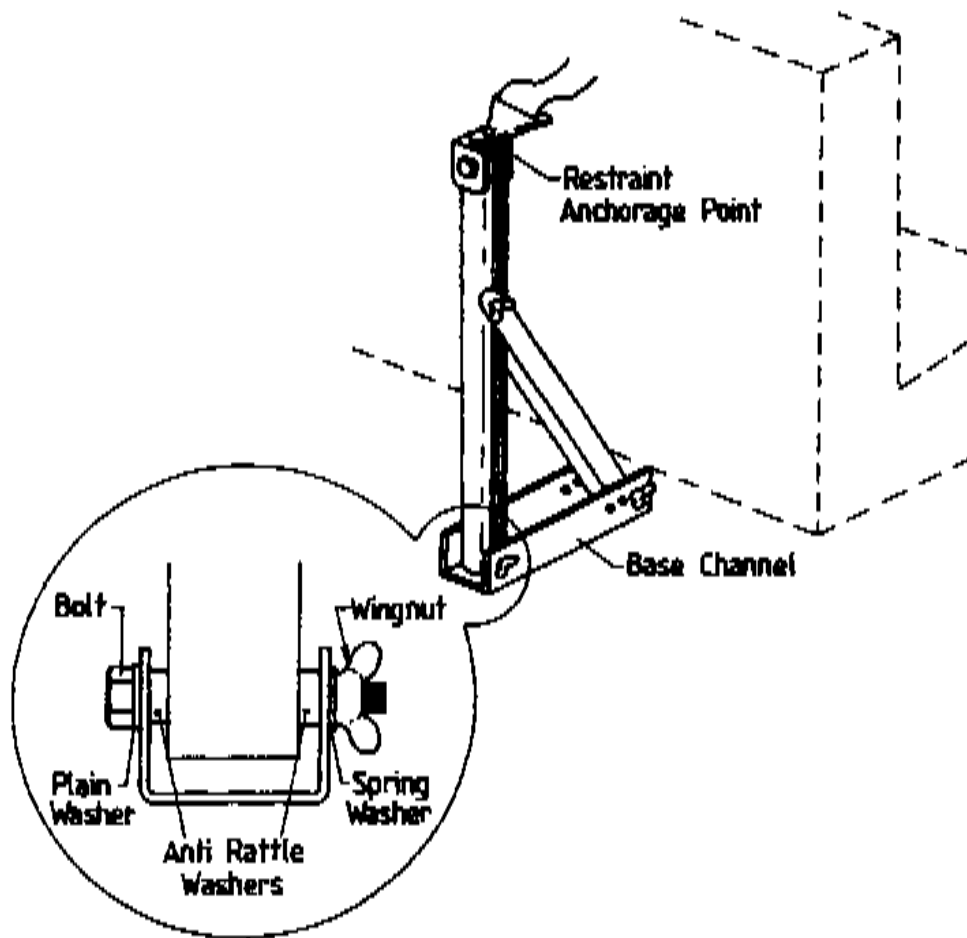


Figure 5

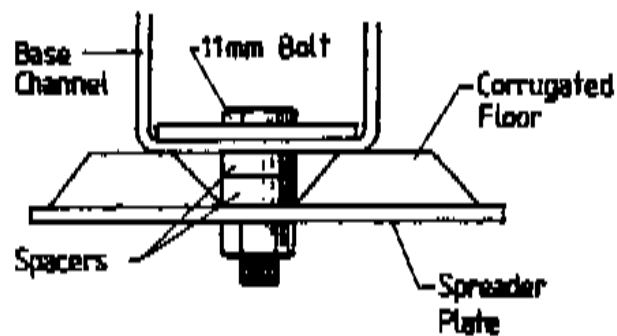


Figure 6

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.

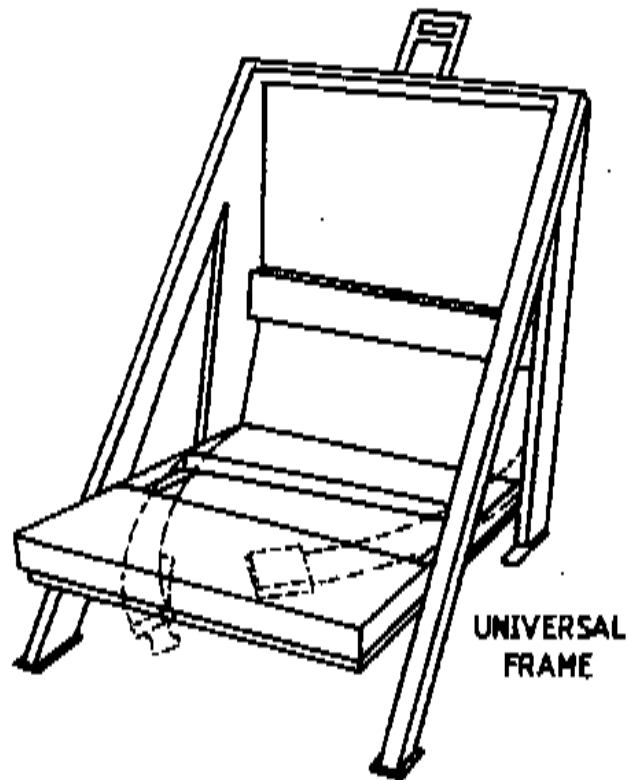


Figure 7

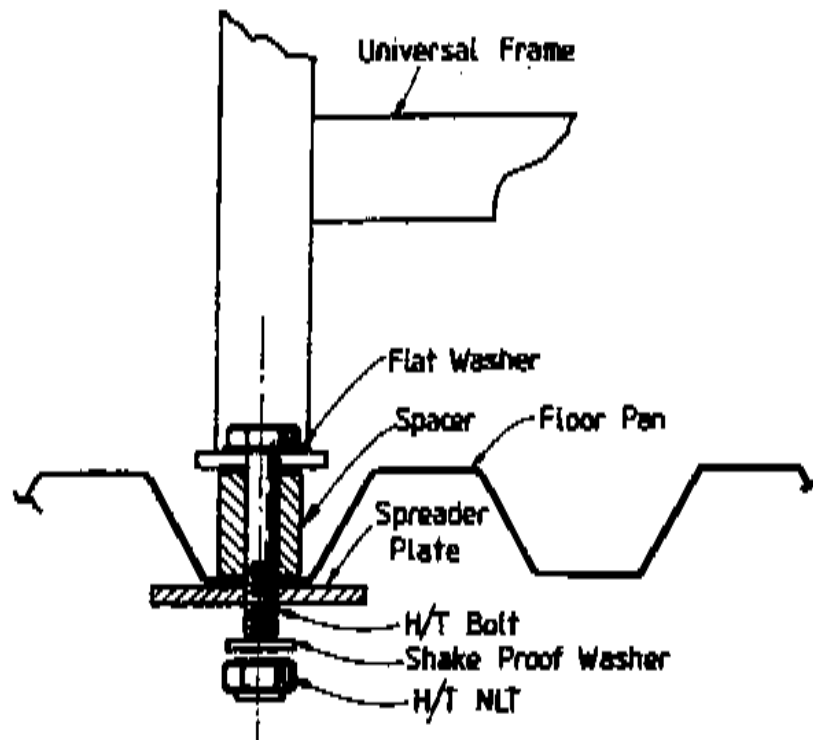


Figure 8

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.

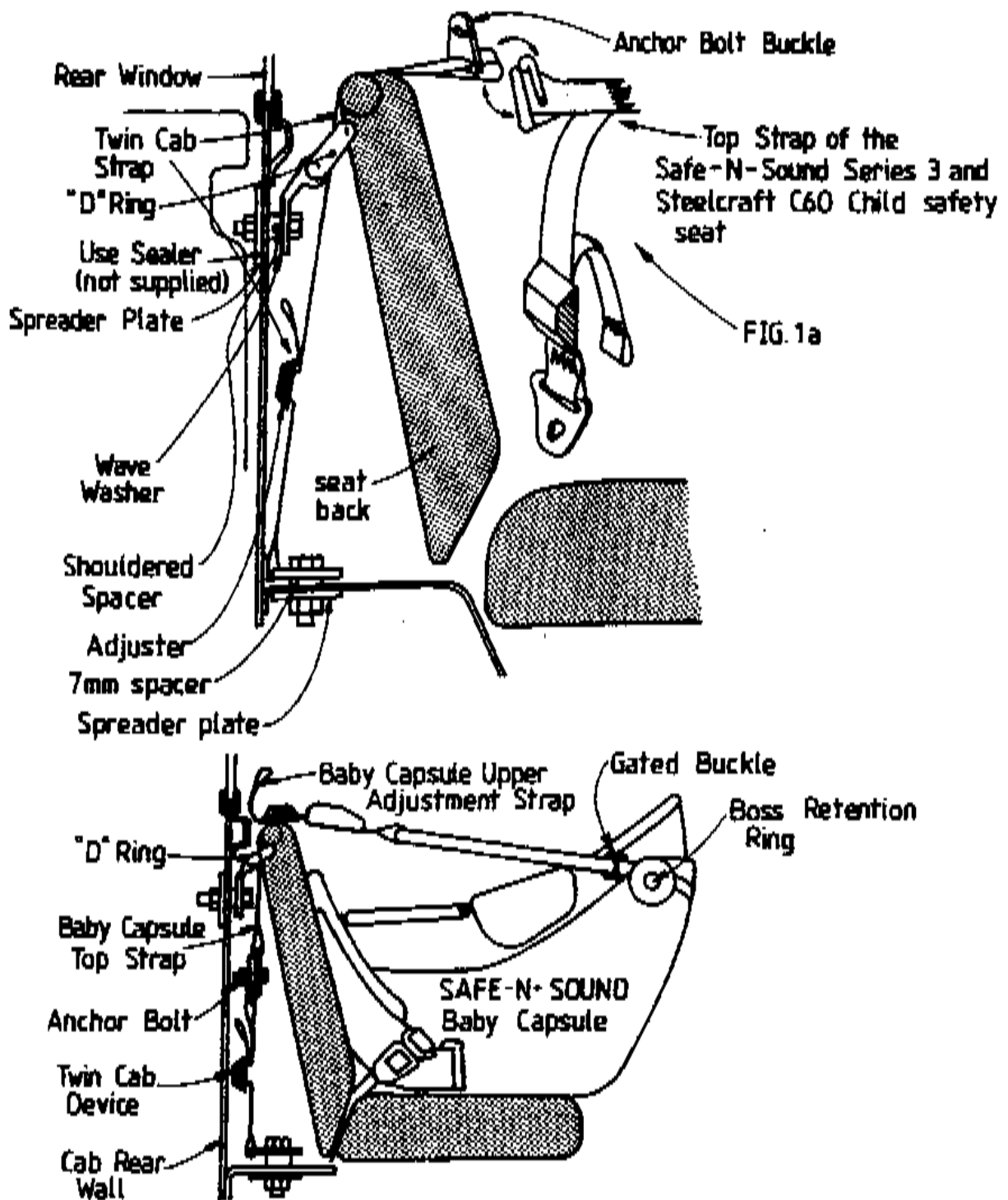


Figure 9

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)

- | | | | |
|------------|---|---|---|
| 1.0 | Two Seater to Single Seater | | |
| 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 |
| 2.0 | Single Seater to Two Seater | | |
| 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 |
| 3.0 | General | | |
| 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)

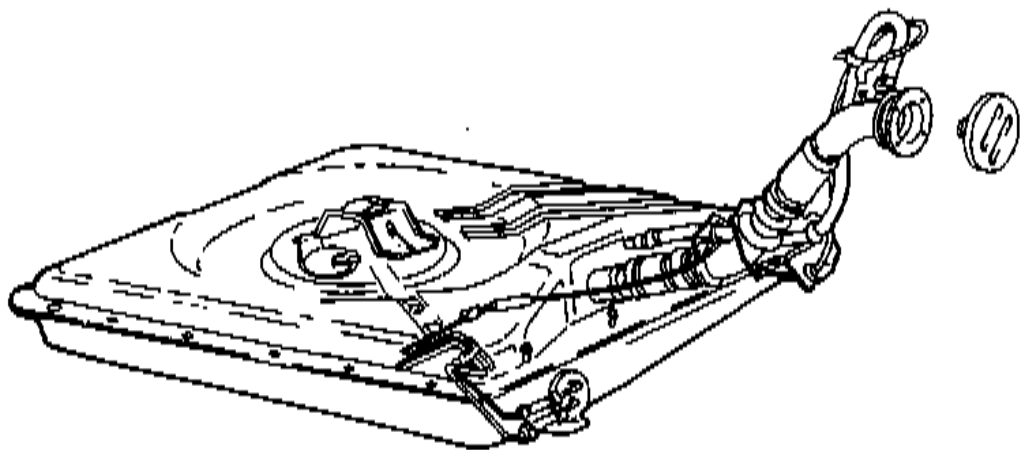
Authorised Officer No.

Signed Date



LM

FUEL SYSTEMS



FUEL SYSTEMS

	Page	
1.0	Scope	3
2.0	General Requirements	4
3.0	Australian Design Rules	5
4.0	Modification Codes	6
	LM1 Fuel Tank Alteration	7
	LM1 Checklist	9

1.0 SCOPE

This section outlines the minimum installation and performance requirements for light vehicle fuel system alterations.

This includes the modification of existing fuel tank/s and the fitting of additional or replacement fuel tank/s.

2.0 GENERAL REQUIREMENTS

This section applies to all light vehicles and should be read in conjunction with other sections which are specific to the type of modification which is being performed.

1.0 ADR REQUIREMENTS

- 1.1 The modified vehicle must continue to comply with the Australian Design Rules to which it was originally constructed (see Section 3.0)

2.0 INSTALLATION

- 2.1 All work must be performed in accordance with recognised engineering standards and to the satisfaction of the authorised officer.
- 2.2 Adequate protection from excessive heat should be provided for all hoses, electrical harnesses, rubber or plastic components.
- 2.3 Fuel lines must be well clear of the exhaust system.
- 2.4 All fuel lines and hoses must be automotive components or equivalent and connectors should have compatible thread forms.
- 2.5 The fuel system must be free of leaks.
- 2.6 Fuel lines and hoses must be secured to the vehicle at regular intervals. They must be protected from physical damage by the use of grommets and other devices where they contact sharp edges and loose cables.
- 2.7 Any openings into the cabin of the vehicle which are created for fuel system installations must be adequately sealed to prevent entry of exhaust gases or petrol vapour.

3.0 AUSTRALIAN DESIGN RULES

1.0 Australian Design Rules which may be applicable are:

ADR 26, 27, 27A, 27B, 27C - Vehicle Engine Emission Control

ADR 37, 37/00 - Emission Control for Light Vehicles

ADR 40 - Light Duty Vehicle Emissions Control

ADR 41, 41/00 - Mandatory Operation on Unleaded Petrol

Evaporative emission controls must be maintained.

Fuel tank filler necks designed only for unleaded fuel pump nozzles must be used where vehicles are required to operate on unleaded fuel.

ADR 42/00 - General Safety Requirements

The requirements for positioning of exhaust outlets continue to comply.

ADR 44/00 - Specific Purpose Vehicle Requirements

LPG installation requirements continue to comply.

4.0 MODIFICATION CODES

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

FUEL TANK ALTERATION - LM1**MODIFICATION TYPES**

The following is a summary of the modifications which may be approved by officers authorised under modification Code LM1 - Fuel Tank Alteration.

Modifications which are allowed under this Code are:

1. Modification of existing fuel tank/s.
2. Fitting additional fuel tank/s.
3. Fitting replacement fuel tank/s.

Modifications which are not allowed under this Code are:

1. Certification of LPG installations.
2. Installations that require substantial structural modification to the vehicle.

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	REQUIREMENTS
Fuel filler neck	ADR 37, 37/00, 40, 41, 41/00
Unleaded fuel label	ADR 37, 37/00, 40, 41, 41/00
Exhaust system	ADR 42/00, Queensland Traffic Act and Regulations
Ground clearance	ADR 43/00, Queensland Traffic Act and Regulations
LPG installation	ADR 44/00, Queensland Gas Act and Regulations

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**FUEL TANK ALTERATION - LM1**

The following are specific technical requirements for fuel tank alterations which can be approved by officers authorised under modification Code LM1.

The alterations must also comply with general technical guidelines contained in Section LM 2.0 "General Requirements".

1.0 FUEL TANK CONSTRUCTION

- 1.1 All seams must be welded in accordance with the requirements of Australian Standard 1554 Part 1 - 1985 "Welding of Steel Structures" Category SP.
- 1.2 Modified fuel tanks must be at least as strong as the unmodified tank.
- 1.3 Modified or fabricated fuel tanks must be tested and found to be free of fuel and vapour leaks.
- 1.4 Baffles must be fitted to prevent fuel surge in long narrow fabricated fuel tanks and in modified tanks originally containing baffles.
- 1.5 Where vehicles are required to operate on unleaded fuel, fuel tank filler necks designed only for unleaded fuel pump nozzles must be used.

2.0 INSTALLATION

- 2.1 Fuel tanks should be installed where possible using the manufacturer's designed mountings and equipment.
- 2.2 The ground clearance of vehicles built to comply with the Third Edition ADR's must continue to comply with ADR 43. The ground clearance of vehicles built prior to the Third Edition ADR's may also comply with ADR 43 or the original manufacturer's specifications.
- 2.3 The vehicle's departure angle must not be reduced by the fuel tank alteration or installation.
- 2.4 The fuel filler inlet and the end of any breather or overflow pipes must be located outside of the vehicle's cabin.
- 2.5 The fuel tank and filler shall be so arranged that any overflow or leakage of fuel cannot accumulate or contact the exhaust system.

CERTIFICATE OF MODIFICATION NO.

FORM NO. LM1

CHECKLIST**FUEL TANK ALTERATION - LM1**

(Y = Yes N = No)

- 1.0 FUEL TANK CONSTRUCTION**
- 1.1 Does all welding of the fuel tank/s (if applicable) comply with the requirements of Australian Standard 1554 Part 1 1985 "Welding of Steel Structures" Category SP? Y N
- 1.2 Is the strength of each modified or fabricated fuel tank and its mountings at least equivalent to that of the original fuel tank? Y N
- 1.3 Has the modified or fabricated fuel tank been tested and found to free of leaks? Y N
- 1.4 Have baffles been fitted where necessary to each modified or fabricated fuel tank? Y N
- 1.5 Does each unleaded fuel tank have the correct size filler neck? Y N
- 2.0 FUEL TANK INSTALLATION**
- 2.1 Are all fuel lines, hoses, electrical harnesses, rubber and plastic components protected from excessive heat? Y N
- 2.2 Are all fuel lines and hoses adequately supported and protected from physical damage? Y N
- 2.3 Are all openings into the cabin adequately sealed to prevent the entry of exhaust gases and petrol vapour? Y N
- 2.4 Does the vehicle have the required ground clearance and departure angle? Y N
- 2.5 Is the fuel filler inlet and cap located outside the vehicle and are the fuel tank and filler arranged so that no overflow or leakage of fuel can accumulate or contact the exhaust system? Y N
- 2.6 Does the vehicle, if fitted with an LPG installation, have a current Gas Fittings Installation or Inspection Certificate? Y N

CERTIFICATE OF MODIFICATION NO.

FORM NO. LM1

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)

Authorised Officer No.

Signed Date

LO

VEHICLE STANDARDS COMPLIANCE

VEHICLE STANDARDS COMPLIANCE

	Page	
1.0	Scope	3
2.0	General Requirements	4
3.0	Australian Design Rules	5
4.0	Certification Codes and Checklists	6
	LO1 Australian Design Rule (ADR) Compliance	7
	LO1 Checklist	12
	LO2 Pre 1972 Imported Vehicle Safety Compliance	43
	LO2 Checklist	45
	LO3 Personally Imported Vehicle Compliance	47
	LO3 Checklist	50

1.0 SCOPE

- 1.0 This section is intended to be used to determine whether a vehicle:-
- 1.0.1 has been upgraded to an ADR standard required for registration after importation into Australia;
 - 1.0.2 maintains compliance with Australian Design Rules (ADRs) applicable after modification;
 - 1.0.3 meets Australian Design Rules (ADR's) applicable to an individually constructed vehicle;
 - 1.0.4 meets the registration requirements for safety upgrading for pre 1972 imported vehicles;
 - 1.0.5 meets the requirements for a Personally Imported Vehicle.

2.0 GENERAL REQUIREMENTS

- 1.0 This section applies to all light vehicles in the following categories and should be read in conjunction with other sections which are specific for any modifications to be performed.
- 2.0 **Imported Vehicles**
- 2.1 All light vehicles imported into Australia which are exempt from the Federal Motor Vehicle Standards Act requirement to fit either a compliance plate or personal import plate can be certified under the Codes LO1 and LO2 depending on their date of manufacture.
- 2.2. Vehicles built prior to 1972 must be certified to Code LO2 prior to first registration.
- 2.3. Vehicles built 1972 onwards must be certified to Code LO1 for all ADR s applicable to that vehicle at the date of its manufacture.
- 3.0 **Modified and Individually Constructed Vehicles**
- 3.1 Where modifications to a vehicle affect its compliance with the ADRs (eg. convertble conversion) certification under this Code or the fitting of a compliance plate is required prior to registration. Construction of a vehicle on an individual basis also requires certification or the fitting of a compliance plate.
- 3.2 The Body/Chassis Codes in Section LH describe these vehicle modifications and explain when ADR certification (and therefore the use of this Code) is required.

3.0 AUSTRALIAN DESIGN RULES

Depending on the vehicle and its date of manufacture, any Second or Third Edition Australian Design Rules may be applicable.

Individual requirements for each vehicle category are dealt with separately in each section.

4.0 CERTIFICATION CODES

The following sections give particular details on the inspection of vehicles to determine their compliance with applicable Australian Design Rules and Queensland Traffic Regulation/Act requirements.

AUSTRALIAN DESIGN RULE (ADR) COMPLIANCE LO1

CERTIFICATION TYPES

The following is a summary of the certification which may be given by officers authorised with Code LO1 Australian Design Rule (ADR) Compliance.

Refer also to Section LO Vehicle Standards Compliance for general inspection guidelines.

Certification permitted under this Code is:

1. Visual inspection of a light vehicle to determine its compliance with applicable ADRs.

Certification not permitted under this Code is:

1. Certification of a vehicle which requires a compliance plate or personal import plate for registration purposes.
2. Certification of a vehicle built prior to 1972.

NOTE: Modifications must comply with all applicable ADRs and Regulations/Acts.

Some areas of the vehicle which may have been affected by the modifications may require recertification, testing and/or data to show compliance.

Comparison with alternative overseas standards is acceptable where those standards have been accepted by the Australian Motor Vehicle Certification Board for Low Volume Assessment procedures.

SPECIFIC REQUIREMENTS**AUSTRALIAN DESIGN RULE (ADR)
COMPLIANCE LO1**

- 1.0 General**
- 1.1 This section outlines the procedures and requirements for assessing and certifying a vehicle's compliance with the Australian Design Rules for Motor Vehicle Safety (Second Edition) or Australian Design Rules for Motor Vehicles and Trailers (Third Edition).
- 1.2 This certification is intended for imported, modified or individually constructed vehicles where proof of compliance with the ADRs applicable to that vehicle is required for registration purposes. This certification is not to be used instead of fitting a compliance plate issued by the Australian Motor Vehicle Certification Board where these plates are required.
- 2.0 Imported Post 1971 Vehicles**
- 2.1 In general, motor vehicles registered in Queensland which were manufactured after 1 January 1972 must be fitted with a compliance plate issued by the Australian Motor Vehicle Certification Board.
- 2.2 However, this date has been extended to allow vehicles more than 15 years old to be exempt from the requirements of the Federal Motor Vehicle Standards Act.
- 2.3 Where a vehicle is manufactured on or after 1 January 1972 and is more than 15 years old, it can be issued with a permit by the Department of Transport exempting the vehicle from the Traffic Act requirements that a compliance plate be fitted. This exemption also applies to vehicles imported prior to 1 August 1989 into Australia which have been exempted from the requirements of the Federal Motor Vehicle Standards Act. The Federal Office of Road Safety issues a letter for all exempt vehicles which allows them to be imported into Australia.
- 2.4 These vehicles must comply with all Australian Design Rules (ADRs) applicable at their date of manufacture.
- 2.5 Where compliance with overseas standards is to be used to demonstrate ADR compliance, the following details are required:
- 2.5.1 The standards to which the vehicle has been manufactured.
 - 2.5.2 The date of manufacture.
 - 2.5.3 How the vehicle is identified as complying with these standards.

- 2.5.4 A submission supporting the claim of being equivalent to ADR requirements.
- 2.5.5 Certification that the vehicle has not been modified from its original specification in any way likely to affect compliance with the standard to which it was originally manufactured.
- 2.6 Normal service replacement items such as flexible brake lines should be replaced with new parts clearly marked to the appropriate standards. If the vehicle meets these requirements, an application may then be made to the Department of Transport for a permit exempting the vehicle from the Traffic Act requirement that a compliance plate be fitted.
- 3.0 **Modified Vehicles**
- 3.1 Previously registered vehicles that under go major modifications which affect their original compliance with ADR requirements (such as converting sedans to convertibles and extended wheelbase limousines) can be certified under this Code.
- 3.2 This Code is only to be used for those vehicles approved under another section of this Code of Practice or approved on an individual basis by the Department of Transport where a condition of that approval requires this certification.
- 3.3 Only those ADRs affected by the modifications and any new ADRs applicable to the modified vehicle require certification.
- 4.0 **Individually Constructed Vehicles**
- 4.1 Individually constructed vehicles range from a vehicle constructed from all new components produced uniquely for that vehicle to existing vehicles on which cosmetic body styling kits replace the external panels.
- 4.2 This Code is only to be used for those vehicles approved under another section of this Code of Practice or approved on an individual basis by the Department of Transport where a condition of that approval requires this certification.
- 4.3 All ADRs applicable to the vehicle require certification.

- 5.0 Exemptions from Fitting a Compliance Plate**
- 5.1** The following must be submitted to the Department of Transport when making an application for exemption as above.
- 5.1.1** A copy of the Authorised Officer's Certificate of Modification for Code LO1.
- 5.1.2** A copy of the letter from the Federal Office of Road Safety which exempts the vehicle, if built after 1972 and imported into Australia, from the requirements of the Motor Vehicle Standards Act.
- 5.1.3** A copy of the Certificate of Modification for the modifications (eg. Steering Conversion LS2) or a copy of the letter of approval for the modifications signed and endorsed at the time of final inspection where applicable.
- 5.1.4** A request for the issue of the permit with the owner's name and address to:
- Senior Technical Advisor
Technical Services Unit
Compliance Standards Branch
Floor 2 Transport House
230 Brunswick Street
FORTITUDE VALLEY QLD 4006
- 6.0 Checklist Procedure**
- 6.1** The questions have been so presented that, in most cases, a tick () only in the Y (Yes), N (No) or N/A (Not applicable) box in the Assessment column will indicate the result of assessment. Y or N is to be written in the box in the Compliance column to indicate compliance with a specific requirement or not.
- 6.2** Where an ADR is applicable to the vehicle category and date of manufacture, every relevant question pertaining to these must be addressed by the authorised officer and answered as per instruction in the preceding paragraph.
- 6.3** Where the answer to a performance or test requirement is Yes, proof of compliance must be provided in the space provided for Additional Information/Comments or, if there is insufficient space, attached to the end of the Checklist.
- 6.4** In case of a modification affecting only a specific aspect of a vehicle's performance as related to an ADR requirement, the questions in respect of the other design and performance requirements for that ADR need not be answered and N/A must be written across the section covering those questions.

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CERTIFICATE OF MODIFICATION NO.

FORM NO. LO1

CHECKLIST AUSTRALIAN DESIGN RULE (ADR) COMPLIANCE - LO1

ADR No.	Clause No.	Feature	Assessment	Compl
1 & 1/00 Reversing Signal Lamps	6 (3rd Ed) 1.1 (2nd Ed)	Photometric requirements satisfactory? If YES, provide proof of compliance	N/A... Y... N...	
	8 (3rd Ed) 1.2 (2nd Ed)	Colour of emitted light?		
	1.3.1 (2nd Ed)	a) Steady light?	N/A... Y... N...	
		b) with the gear selector in the reverse position is the lamp only lighted when the ignition or the master switch is on or the engine is running?	N/A... Y... N...	
Alternative standard approval Mark				
Additional Information/Comments				

2 & 2/00 Door Latches and Hinges	2.2.1.1	Two latch positions?	N/A... Y... N...	
	2.2.1.1.1 2.2.1.1.2	Longitudinal and transverse restraints?	N/A... Y... N...	
	2.2.1.3	Locks on all side doors?	N/A... Y... N...	
	2.2.1.3.1	Do front door locks prevent their opening from outside?	N/A... Y... N...	
	2.2.1.3.2	Do rear door locks prevent their opening from inside and outside?	N/A... Y... N...	
	2.3.1.1	Strength requirements of door latches provided? If YES, attach proof of compliance.	N/A... Y... N...	
	2.3.1.2	Strength of door hinges provided? If YES, attach proof of compliance.	N/A... Y... N...	
	Additional Information/Comments			

NOTE: Y = Yes N = No N/A = Not Applicable. In Compliance column Indicate 'Y' or 'N'.

* Refer this

CERTIFICATE OF MODIFICATION NO.

FORM NO. LO1

ADR No. Clause No. Feature Assessment Compl

3.3A & 3/00 Seat Anchorages	3.2.1.1 3.2.1.2	Seat anchorage meets strength requirements? If YES, attach proof of compliance.	N/A... Y... N...	
	3.2.3.0 (3rd Ed) 3.2.3 (2nd Ed)	Self locking restraining device and release control on all folding or hinged seats or seatbacks?	N/A... Y... N...	
	3.2.3.1	Release control readily accessible to the occupant of that seat and one immediately behind where applicable?	N/A... Y... N...	
Additional Information/Comments				

4C, 4D, 4/00 & (SAA) Seat Belts	4.2.6	Type of belt on each seating position				
		Typically for two seating positions, identify				
		a) Location	Front	Rear		
		b) Mfr name/trade mark		
		c) Date of manufacture		
		d) Identification code		
		Standard				
		Do all belts comply?	N/A... Y... N...			
	4.2.7	Are all seat belts built to AS 2596 or AS E36 as applicable?	N/A... Y... N...			
	4.3.3	Is free end of any strap prevented from passing through adjuster? and				
		a) Restrained against another strap? b) 25mm available grip when strap fully extended?	N/A... Y... N... N/A... Y... N...			
	4.4.4	Buckle component of the retracting strap accessible?	N/A... Y... N...			
	4.4.7	Positive design features to restrain outboard buckles?	N/A... Y... N...			
Additional Information/Comments						

NOTE: Y = Yes N = No N/A = Not Applicable. In Compliance column indicate 'Y' or 'N'.
* Refer this

SECTION LO

VEHICLE STANDARDS COMPLIANCE

CERTIFICATE OF MODIFICATION NO.

FORM NO. LO1

ADR No. Clause No. Feature Assessment Compl

5A, 5B & 5/00 Anchor- ages for seat belts and child restraints	5.2.6.4	Proof of strength of anchorages? If YES, attach proof of compliance.	N/A... Y... N...	
	5.4.1	Lap anchorage points correctly located?	N/A... Y... N...	
	5.4.2	Shoulder location points lie in Area A?	N/A... Y... N...	
	5.4.3	Harness location points lie in Area B?	N/A... Y... N...	
	5.11	Child anchorage fitting satisfactory?	N/A... Y... N...	
Additional Information/Comments				

6, 6A & 6/00 Direction Turn Signal Lamps	6.2.1 (3rd Ed) 6.2.4 (2nd Ed)	Optional turn signal lamp fitted and complies?	N/A... Y... N...	
	Annex 1 (3rd Ed) 6.2 (2nd Ed)	Light distribution approx. 45° inboard and 80° outboard for front and rear indicators?	N/A... Y... N...	
	8 (3rd Ed) 6.2.5 (2nd Ed)	Photometric requirement satisfactory? If YES, attach proof of compliance. Colour of light? Alternative standard approval mark	N/A... Y... N...	
Additional Information/Comments				

NOTE: Y = Yes N = No N/A = Not Applicable. In Compliance column indicate 'Y' or 'N'.
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VEHICLE STANDARDS COMPLIANCE

SECTION LO

CERTIFICATE OF MODIFICATION NO.

FORM NO. LO1

ADR No. Clause No. Feature Assessment Compl

7 & 7/00 Hydraulic Brake Hoses	7.4	Typically for two brake hoses, identify Front Rear a) Location b) Markings		
	7.6.8 (3rd Ed) 7.3.1 (2nd Ed)	End connections protected against corrosion?	N/A... Y... N...	
	Additional Information/Comments			

8 & 8/00 Safety Glazing Material	8.1.4 (3rd Ed)	Is transparent material other than glass used in the vehicle? If yes provide location and material.	N/A... Y... N...	
	8.2.1	All glazing material suitably marked?	N/A... Y... N...	
	8.2.3	If toughened windscreen, modified zone indicated?	N/A... Y... N...	
	8.1 (2nd Ed) 8.4.1 (3rd Ed)	Glazing Material Standard a) Windscreen b) Driver's side window c) Rear screen		
	8.3.2.3	Optical transmission correct?	N/A... Y... N...	
Additional Information/Comments				

NOTE: Y = Yes N = No N/A = Not Applicable. In Compliance column indicate 'Y' or 'N'.
* Refer this

SECTION LO

VEHICLE STANDARDS COMPLIANCE

CERTIFICATE OF MODIFICATION NO.

FORM NO. LO1

ADR No. Clause No. Feature Assessment Compl

9 Standard Controls for Automatic Transmissions	9.1	Lever positions and movement correct?*	N/A... Y... N...	
	9.2	Transmission braking available?	N/A... Y... N...	
	9.3	Engine starter inoperative when control lever is in a forward or reverse gear?	N/A... Y... N...	
	Additional Information/Comments			

10B, 10/00 and 10/01 Steering Column	10B.2.1 10.2.2 (3rd Ed)	Steering system energy absorbing?	N/A... Y... N...	
	10B.2.2 10.2.2 (3rd Ed)	Steering column displacement satisfactory? If YES, attach proof of compliance	N/A... Y... N...	
	Additional Information/Comments			

NOTE: Y = Yes N = No N/A = Not Applicable. In Compliance column indicate 'Y' or 'N'.
 * Refer this

CERTIFICATE OF MODIFICATION NO.

FORM NO. LO1

ADR No. Clause No. Feature Assessment Compl

11 & 11/00 Internal Sun Visors	11.2.2	If mirror fitted, thickness of energy absorbing material around edge at least 1.5mm?	N/A... Y... N...	
	11.3.2	Is sun visor padded (if fitted)?	N/A... Y... N...	
	Additional Information/Comments			

12 & 12/00 Glare Reduction in Field of View	12.2	No specular gloss in field of view?	N/A... Y... N...	
	Additional Information/Comments			

NOTE: Y = Yes N = No N/A = Not Applicable. In Compliance column indicate 'Y' or 'N'.

* Refer this

SECTION LO

VEHICLE STANDARDS COMPLIANCE

CERTIFICATE OF MODIFICATION NO.

FORM NO. LO1

ADR No. Clause No. Feature Assessment Compl

(1) Description	(2)	Height (s)		(5) Apart (t)	(6) Edge (v)	(7) (g)	(8) (c)	(9) R (r)	Assessment	Compl
		(3) Max	(4) Min							
13/00 Installation of Lighting & L/S devices	For clause No. see ADR 13/00	If any item in column 1 is 'E' marked, indicate 'E' in column 2		Except for 1A/D of 6/00 and if not 'E' marked are all performance requirements satisfactory? N/A, Y, N. If YES provide proof of compliance.						
Main beam					Dipped beam (*)	P		Aa B Da	N/A, Y, N.	
Dipped beam		1200	500	600	(*) 400	P		Aa C	N/A, Y, N.	
Front fog lamp (+)		(dip beam)	250 (s)		400	P		Da E	N/A, Y, N.	
Reversing lamp		1200	250 (s)			Q			N/A, Y, N.	
Direction indicator front		1500/ 2100b	350	600	400	P S	K		N/A, Y, N.	
Direction indicator rear		1500/ 2100b	350	600	400	Q	L		N/A, Y, N.	
Direction indicator side		(s) 1500/ 2300b	500 (s)			FP ST	KL	Y G	N/A, Y, N.	
Stop lamp		1500/ 2100b	350	(s) 600/ 400c		Q	d	H	N/A, Y, N.	
Rear Registration plate lamp						Q	M		N/A, Y, N.	
Front position (side) lamp (front marker)		(s) 1500/ 2100b	(s) 350	600	400	P R		B C E	N/A, Y, N.	
All dimensions in mm (*) = No current requirement. But mandatory on and after 1.10.91. (s) = Height - To highest (max) and lowest (min) points on illuminating surface Apart - Distance between innermost edges of illuminating surface Edge - Maximum distance from outer edge of vehicle of illuminating surface (+) = if applicable In column 7 to 9 lamps indicated by the same characters may be grouped (G) combined (C) or reciprocally incorporated (R). a = Permitted unless main beam swivels with steering b = If bodywork prevents lower figure being met c = If overall width less than 1300mm d = Permitted if rear position lamp is (R) with stop lamps and (C) with rear registration plate lamp e = Permitted with main beams not swivelling with steering when there are 4 head lamps										
Additional Information/Comments										

NOTE: Y = Yes N = No N/A = Not Applicable. In Compliance column Indicate 'Y' or 'N'.

* Refer this

VEHICLE STANDARDS COMPLIANCE

SECTION LO

CERTIFICATE OF MODIFICATION NO.

FORM NO. LO1

ADR No. Clause No. Feature Assessment Compl

13/00 Installation of Lighting & L/S devices continued		For clause Nos. see ADR 13/00		If any item in column 1 is 'E' marked, indicate 'E' in column 2		Except for 1/00 of 6/00 and if not 'E' marked are all performance requirements satisfactory? N/A... Y... N... If YES provide proof of compliance.				
1) Description	(2) E	Height (+)		(3) Apart (*)	(4) Edge (*)	(5) G	(6) C	(7) R	Assessment	Compl
		3 Max	4 Min							
Rear position (side) lamp (tail lamp)		1500/ 2100b	350	(*) 600/ 400c	400	Q	M	H I	N/A.. Y.. N..	
Rear fog lamp (+)		1000	250			Q		I J	N/A.. Y.. N..	
Parking Front		(*) 1500/ 2100b	(*) 350		400(*)	P		B C E	N/A.. Y.. N..	
Rear	400(*)				Q		H J			
Side					S		Y			
Passenger Front car side marker lamps (+) Rear		(*) 1500	(*) 350			F		G	N/A.. Y.. N..	
Reflex Rear reflector (non-triangular)		900	350	600/ 400c (*)	400	Q			N/A.. Y.. N..	
Front (+)		(*) 900/ 1500b	(*) 350	(*) 600/ 400c	(*) 400	R			N/A.. Y.. N..	
Side (+)		900/ 1500b	3500			S T			N/A.. Y.. N..	
Day running lamp (+)		(*) 1500	(*) 500	600	400	P		B E	N/A.. Y.. N..	
Additional Information/Comments										

NOTE: Y = Yes N = No N/A = Not Applicable. In Compliance column indicate 'Y' or 'N'.
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SECTION LO

VEHICLE STANDARDS COMPLIANCE

CERTIFICATE OF MODIFICATION NO.

FORM NO. LO1

ADR No.	Clause No.	Feature	Assessment	Compl
13/00 Installation of lighting and L/S Devices continued	A.2.11	VISIBILITY Is any part of apparent surface of any lamp hidden by parts of the vehicle (including options eg. bullbar)?	N/A... Y... N...	
	A.5 A.5.5.1	GENERAL Are all lamps constituting a pair symmetrical?	N/A... Y... N...	
	A.5.10	Any red light visible from the front or any white light (except reversing light) visible from the rear of the vehicle?	N/A... Y... N...	
	A.5.11 13.5.11	Can all front and rear position (side) lamps, the rear registration plate lamp, and the passenger car side lamps (if fitted) be only switched on and off together?	N/A... Y... N...	
	A.5.12	Is it not possible to switch on the main beam, dipped beam and front and rear fog lamps without first switching on the lamps referred to in clause A.5.11?	N/A... Y... N...	
	A.5.14.1 A.5.14.3	Are any lamps other than driving, passing or front fog lamps concealed? Is it possible to move a concealed lighting device into the position of use, without the aid of tools, in the event of a defect?	N/A... Y... N... N/A... Y... N...	
	13.6.1 A.6.1.6.	MAIN-BEAM HEADLAMPS Main-beam headlamps swivel with steering (if not reciprocally incorporated with lamps as specified)?	N/A... Y... N...	
	A.6.1.10.1	Are all main beams switched off when changing over from main beam to dipped beam?	N/A... Y... N...	
	13.6.1.11	Circuit closed tell-tale colour blue and operating? If operational tell-tale fitted, is it either red or yellow and non-flashing?	N/A... Y... N... N/A... Y... N...	
	13.6.2 13.6.2.10	DIPPED-BEAM HEADLAMPS Control within easy reach of driver? If operational tell-tale fitted, is it either red or yellow and non-flashing?	N/A... Y... N... N/A... Y... N...	
Additional Information/Comments				

NOTE: Y = Yes N = No N/A = Not Applicable. In Compliance column indicate 'Y' or 'N'.
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CERTIFICATE OF MODIFICATION NO.

FORM NO. LO1

ADR No.	Clause No.	Feature	Assessment	Compl
13/00 Installation of lighting and L/S Devices continued	13.6.3 A.6.3.10	FRONT FOG LAMP (OPTIONAL) Independent switch?	N/A... Y... N...	
	13.6.4 13.6.4.10	REVERSING LAMPS Is the lamp always lit when reverse gear engaged and: (1) The device controlling starting and stopping engine is in a position where engine can operate? (2) The engine is running?	N/A... Y... N... N/A... Y... N...	
	A.6.5.10	DIRECTION INDICATOR LAMPS Independent switch and flash in phase?	N/A... Y... N...	
	A.6.5.11	(1) Is a visible and/or audible tell-tale fitted? (2) Tell-tale behaviour on turn signal malfunction?	N/A... Y... N... N/A... Y... N...	
	A.6.5.12	(A) - Marked frequency change (B) - Continuously on or (C) - Continuously off (Indicate A,B,C) (1) Lights up in 1 sec and flashes 60 to 120 per min? (2) Extinguishers within one and one half seconds? (3) If one lamp fails (other than due to a short-circuit) do other lamps flash when actuated?	..... N/A... Y... N... N/A... Y... N... N/A... Y... N...	
	13.6.6 A.6.6.2	HAZARD WARNING LAMP All direction indicator lamps flash in phase?	N/A... Y... N...	
	A.6.6.10	Independent switch?	N/A... Y... N...	
	A.6.6.11	Flashing tell-tale fitted?	N/A... Y... N...	
	A.6.6.12	Can Hazard Warning be activated with engine off?	N/A... Y... N...	
	13.6.7 A.6.7.10	STOP LAMP Lighted with service brake application with ignition on?	N/A... Y... N...	
A.6.7.11	If fitted, is tell-tale non-flashing operational type?	N/A... Y... N...		
13.6.8 A.6.9.11	REAR REGISTRATION PLATE LAMP Illuminates the registration plate area?	N/A... Y... N...		
Additional Information/Comments				

NOTE: Y = Yes N = No N/A = Not Applicable. In Compliance column indicate 'Y' or 'N'.
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CERTIFICATE OF MODIFICATION NO.

FORM NO. LO1

ADR No.	Clause No.	Feature	Assessment	Compl
13/00 Installation of lighting and L/S Devices continued	13.6.9 A.6.5.4.1	FRONT POSITION (SIDE) LAMPS Instrument light as tell-tale? If no, is a non-flashing tell-tale fitted?	N/A... Y... N... N/A... Y... N...	
	13.6.10 A.6.5.4.1	REAR POSITION (SIDE) LAMP (RPL) If vertical distance from Rear Direction Indicator (RDI) is less than 300mm is EDGE distance of RPL not more than 50mm (that for the RDI)?	N/A... Y... N...	
	A.6.10.11	Common tell-tale with front position (side) lamp?	N/A... Y... N...	
	13.6.11 A.6.11.4.4 A.11.12 A.6.11.10 A.6.11.11	REAR FOG LAMPS (OPTIONAL) If fitted is distance between illuminated surface of the rear fog lamp and each stop lamp greater than 100mm? (1) Can rear fog lamp operate only when dipped beam or main beam lamps and/or the front fog lamp is on? (2) When rear fog lamp is switched on, does operating the main beam or dipped beam control extinguish it? (3) Can rear fog lamp be extinguished independently of the front lamps (if fitted)? Independent, non-flashing, circuit closed tell-tale fitted and operational?	N/A... Y... N... N/A... Y... N...	
	13.6.12 A.6.12.10	PARKING LAMP (OPTIONAL) If fitted: (1) Switch to permit parking lamps on the same side to be lit independently of any other lamps? (2) Able to operate with the ignition switch in 'OFF' position?	N/A... Y... N... N/A... Y... N...	
A.6.12.11	Independent, impossible to confuse tell-tale with that for the front and rear position (side) lamps?	N/A... Y... N...		
Additional Information/Comments				

NOTE: Y = Yes N = No N/A = Not Applicable. In Compliance column indicate 'Y' or 'N'.
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CERTIFICATE OF MODIFICATION NO.

FORM NO. LO1

ADR No.	Clause No.	Feature	Assessment	Compl
13/00 Installation of lighting and L/S Devices continued	13.6.103	PASSENGER CAR SIDE MARKER LAMP (OPTIONAL) If fitted, are there 2 amber lamps to the front and 2 red lamps to the rear? If tell-tale fitted, is it the same as that for the front and rear position (side) lamps?	N/A... Y... N...	
	13.6.103.2		N/A... Y... N...	
	13.6.103.11		N/A... Y... N...	
	13.6.107	DAYTIME RUNNING LAMP (OPTIONAL) If fitted, operates with rear registration plate lamps and rear position (side) lamps and (1) Illuminates when ignition in "Engine On" position with the front position (side) lamp switch "OFF"? (2) Extinguishes when the front position (side) lamps "ON"?	N/A... Y... N...	
13.6.107.10	N/A... Y... N...			
Additional Information/Comments				

14, 14/00 & 14/01 Rear Vision Mirror	14.2	Driver's side and internal reflecting surfaces flat?	N/A... Y... N...	
	14.2.3.1.2	RHS external mirror adjustable from driver's position?	N/A... Y... N...	
		RHS external mirror not obscured by the unwiped portion of the windscreen?	N/A... Y... N...	
Additional Information/Comments				

NOTE: Y = Yes N = No N/A = Not Applicable. In Compliance column indicate 'Y' or 'N'.
* Refer this

SECTION LO

VEHICLE STANDARDS COMPLIANCE

CERTIFICATE OF MODIFICATION NO.

FORM NO. LO1

ADR No.	Clause No.	Feature	Assessment	Compl
15 & 15/00 Demisting of Wind-screen	15.2	Provision made for effective demisting?	N/A... Y... N...	
	Additional Information/Comments			

16 & 16/00 Wind-screen Wipers & Washers	16.2.0 (3rd Ed) 16.2 (2nd Ed)	Wipers power operated?	N/A... Y... N...	
	16.2.1 (3rd Ed)	Corresponding areas in front of the driver and the front seat passenger wiped?	N/A... Y... N...	
	16.2.2 & 16.5.1.6 (3rd Ed)	Wiper and washer controls readily accessible to driver?	N/A... Y... N...	
	16.2.3 (3rd Ed)	If operated by engine manifold vacuum, is a vacuum reservoir or pump provided?	N/A... Y... N...	
	16.3.1 16.3.2 16.3.3	Number of frequencies? Frequency of highest speed Frequency of lowest speed	N/A... Y... N... cpm cpm	
	16.4	Are wiped areas satisfactory? If YES, attach proof of compliance.	N/A... Y... N...	
	16.5.1	Windscreen washing system operates?	N/A... Y... N...	
	16.5.1.7 (3rd Ed)	Washer bottle capacity at least 1 litre?	N/A... Y... N...	
	Additional Information/Comments			

NOTE: Y = Yes N = No N/A = Not Applicable. In Compliance column indicate 'Y' or 'N'.
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CERTIFICATE OF MODIFICATION NO.

FORM NO. LO1

ADR No. Clause No. Feature Assessment Compl

18, 18A & 18/00 Instrument-ation	18.3	Speedometer, fuel gauge etc. on driver's side?	N/A... Y... N...	
	18.4.2 (3rd Ed) 18.4.2 18A.4.2 (2nd Ed)	Speed indicating element colour and background contrast?	N/A... Y... N...	
	18.4.3 (3rd Ed) 18.4.3 18A.4.3 (2nd Ed)	All essential gauges and indicators other than warning lamps provided with variable intensity illumination?	N/A... Y... N...	
	18.5.1.1.1 (3rd Ed)	Vehicle speed indicated in km/h?	N/A... Y... N...	
	18.5.1.2 (3rd Ed)	Speedometer readily visible to driver?	N/A... Y... N...	
	18.5.2.1.1 (3rd Ed)	Distance travelled indicated in at least 1km units from 1 to 999999km?	N/A... Y... N...	
	Additional Information/Comments			

20 & 20/00 Safety Rims	20.1	Safety rims fitted? (Designate below)	N/A... Y... N...	
	Additional Information/Comments			

NOTE: Y = Yes N = No N/A = Not Applicable. In Compliance column indicate 'Y' or 'N'.
* Refer this

SECTION LO

VEHICLE STANDARDS COMPLIANCE

CERTIFICATE OF MODIFICATION NO.

FORM NO. LO1

ADR No. Clause No. Feature Assessment Compl

21 & 21/00 Instrument Panel	21.2.1	Panel left of steering wheel padded?	N/A... Y... N...	
	21.3.1	Interior compartment door latches operate?	N/A... Y... N...	
	Additional Information/Comments			

22, 22A & 22/00 Head Restraints	22.2.1	Head restraints fitted to front outboard seats?	N/A... Y... N...	
	22.2.2.1 (3rd Ed)	Distance between upper and lower edges not less than 115mm?	N/A... Y... N...	
	22.2.2 (2nd Ed)			
	22.2.2.2 (3rd Ed)	Minimum height of upper boundary above intersection of seat cushion and seat back at centreline of seat.	.....
	22.2.2 (2nd Ed)			
	22.2.3	Width not less than 170mm for individual seat and 250mm for bench seat at approx 700mm?	N/A... Y... N...	
22.3	Displacement requirements satisfactory? If YES, attach proof of compliance If head restraint non-solid, provide sketch and details below.	N/A... Y... N...		
Additional Information/Comments				

NOTE: Y = Yes N = No N/A = Not Applicable. In Compliance column indicate 'Y' or 'N'.
* Refer this

SECTION LO

VEHICLE STANDARDS COMPLIANCE

CERTIFICATE OF MODIFICATION NO.

FORM NO. LO1

ADR No. Clause No. Feature Assessment Compl

25, 25A, 25/00 & 25/01 Anti-theft Lock	25.2.3 (3rd Ed) 25A.2.3 (2nd Ed)	Switch position "Engine Off" to anti-theft through "Engine Off"?	N/A... Y... N...	
	25.2.4 (3rd Ed) 25A.2.4 (2nd Ed)	Key removal only in Anti-theft position?	N/A... Y... N...	
	25.2.5 (3rd Ed) 25A.2.5 (2nd Ed)	With key in Anti-theft position, is one of the following impossible? Steer vehicle/engage forward drive gears/release a brake (delete as appropriate)	N/A... Y... N...	
	25.2.6.1 (3rd Ed) 25A.2.6.1 (2nd Ed)	"Engine Off" position Anti-theft position by more than a single rotary or linear motion of the key?	N/A... Y... N...	
Additional Information/Comments				

25 Vehicle Engine Emission Control	26.3	Vehicle meets emission requirements of ADR 26 or equivalent? If YES, attach proof of compliance.	N/A... Y... N...	
	Additional Information/Comments			

NOTE: Y = Yes N = No N/A = Not Applicable. In Compliance column indicate 'Y' or 'N'.
* Refer this

VEHICLE STANDARDS COMPLIANCE

SECTION LO

CERTIFICATE OF MODIFICATION NO.

FORM NO. LO1

ADR No. Clause No. Feature Assessment Compl

27, 27A 27B & 27C Vehicle Emission Control	27A.2.2 27B.2.2 27C.2.1.3	Label in engine compartment?	N/A... Y... N...	
	27A.2 27B.2 27C.2	Vehicle meets emission requirements? If YES, attach proof of compliance	N/A... Y... N...	
	Additional Information/Comments			

28,28A & 28/00 Motor Vehicle Noise	28.2 (3rd Ed) 28.2 28A.2 (2nd Ed)	Complete manufacturer's exhaust system tested to ADR 28 fitted? OR Noise level - ADR test	N/A... Y... N... dBA	
	Additional Information/Comments			

29 & 29/00 Side Door Strength	29.1	Proof of strength of side intrusion bars provided? If YES, provide details of compliance	N/A... Y... N...	
	Additional Information/Comments			

NOTE: Y = Yes N = No N/A = Not Applicable. In Compliance column indicate 'Y' or 'N'.
* Refer this

SECTION LO

VEHICLE STANDARDS COMPLIANCE

CERTIFICATE OF MODIFICATION NO.

FORM NO. LO1

ADR No. Clause No. Feature Assessment Compl

30 & 30/00 Diesel Engine Exhaust Smoke	30.23 30.23.1 30.5.1 (3rd Ed) 30.2.2.1 30.2.2.2 (2nd Ed)	Engine label and its location satisfactory? Regulation and Mark	N/A... Y... N...	
	Additional Information/Comments			

31 & 31/00 Hydraulic Brake Systems for Pass- enger Cars	31.2.1	Service brake, split system?	N/A... Y... N...	
	31.2.2	Park brake mechanical only?	N/A... Y... N...	
	31.2.3	Service brake failure warning lamp fitted?	N/A... Y... N...	
	31.2.3.3	Activation check satisfactory?	N/A... Y... N...	
	31.2.3.4.1 (3rd Ed) 31.2.3.4.(f) (2nd Ed)	Labelling satisfactory?	N/A... Y... N...	
	31.2.4.1	a) Park brake indicator a separate lamp or a combination unit (c) with service brake failure lamps? b) Labelling satisfactory?	N/A... Y... N... N/A... Y... N...	
	31.2.5	a) Combined reservoir for split system? b) If yes, is there a divider fitted?	N/A... Y... N... N/A... Y... N...	
	31.2.5.4	Label on or near master cylinder cap?	N/A... Y... N...	
	31.3	Vehicle meets deceleration and fade test requirements? If YES, attach proof of compliance	N/A... Y... N...	
	Additional Information/Comments			

NOTE: Y = Yes N = No N/A = Not Applicable. In Compliance column indicate 'Y' or 'N'.
* Refer this

CERTIFICATE OF MODIFICATION NO.

FORM NO. LO1

ADR No. Clause No. Feature Assessment Compl

34 Child Restraint Anchor- ages	34.2	Child anchorage fitting satisfactory?	N/A... Y... N...	
	Additional Information/Comments			

35, 35A & 35/00 Comm- ercial Vehicle Brake Systems	35.2.1.1	Service brake on all wheels?	N/A... Y... N...	
	35.2.3.1	Secondary brake system provided?	N/A... Y... N...	
	35.2.5.5	For system with brake power units, is a separate gauge provided for each reservoir?	N/A... Y... N...	
	35.3	Vehicle meets deceleration and fade test requirements? If YES, attach proof of compliance	N/A... Y... N...	
	Additional Information/Comments			

NOTE: Y = Yes N = No N/A = Not Applicable. In Compliance column indicate 'Y' or 'N'.
* Refer this

SECTION LO

VEHICLE STANDARDS COMPLIANCE

CERTIFICATE OF MODIFICATION NO.

FORM NO. LO1

ADR No. Clause No. Feature Assessment Compl

36, 36A & 36/00 Exhaust Emission Control For Heavy Duty Vehicles	36.2.1	Engine built to comply with ADR 36 or equivalent? If YES, attach proof of compliance	N/A... Y... N...	
	36.2.2	Satisfactory label fitted to engine?	N/A... Y... N...	
	Additional Information/Comments			

37 & 37/00 Emission Control for Light Vehicles	37.3.1	Vehicle meets emission requirements? If YES, attach proof of compliance	N/A... Y... N...	
	37.3.5.2	Satisfactory label fitted in engine compartment?	N/A... Y... N...	
	37.3.6	Readily visible unleaded fuel label affixed near petrol filler inlet(s)?	N/A... Y... N...	
	37.3.7	Filler neck internal diameter more than 21.30mm and less than 23.6mm (for unleaded petrol nozzle only)?	N/A... Y... N...	
	37.3.8	Access prevented to idle air/fuel mixture screw?	N/A... Y... N...	
Additional Information/Comments				

NOTE: Y = Yes N = No N/A = Not Applicable. In Compliance column indicate 'Y' or 'N'.
* Refer this

CERTIFICATE OF MODIFICATION NO.

FORM NO. LO1

ADR No. Clause No. Feature Assessment Compl

39, 39A & 39/00 External Noise of Motor Cycles	39.5.2 (3rd Ed) 39.2 39A.5.2 (2nd Ed)	Complete manufacturer's exhaust system tested to the ADR fitted? OR Noise level - Drive By - Stationary	N/A... Y... N... dBA dBA	
	39.2 39.3 (3rd Ed) 39A.2 39A.3 (2nd Ed)	Marking and labelling fitted as specified*?	N/A... Y... N...	
Additional Information/Comments				

40 Light Duty Vehicle Emissions Control	40.3.6	Unleaded fuel label affixed near petrol filler inlet(s)?	N/A... Y... N...	
	40.3.7	Filler neck internal diameter more than 21.34mm and less than 23.6mm (for unleaded petrol nozzle only)?	N/A... Y... N...	
	40.3.8	Access prevented to idle air/fuel mixture screw?	N/A... Y... N...	
Additional Information/Comments				

NOTE: Y = Yes N = No N/A = Not Applicable. In Compliance column indicate 'Y' or 'N'.

* Refer this

SECTION LO

VEHICLE STANDARDS COMPLIANCE

CERTIFICATE OF MODIFICATION NO.

FORM NO. LO1

ADR No. Clause No. Feature Assessment Compl

41 & 41/00 Mandatory Operation on Unleaded Petrol	41.2.2	Satisfactory unleaded fuel label affixed near petrol filler inlet(s)?	N/A... Y... N...	
	41.2.3	Filler neck internal diameter more than 21.30mm and less than 23.60mm (for unleaded petrol nozzle only)?	N/A... Y... N...	
	Additional Information/Comments			

42/00 General Safety Require- ments	42.2	Bonnet Latching If bonnet front opening, is a second latching position provided?	N/A... Y... N...	
	42.4	Diesel Engines Is device fitted to prevent inadvertent starting of engine?	N/A... Y... N...	
	42.5.1 42.5.1.2	Steering System Are components essential to steering designed to transmit energy by mechanical means only?	N/A... Y... N...	
	Additional Information/Comments			

NOTE: Y = Yes N = No N/A = Not Applicable. In Compliance column indicate 'Y' or 'N'.
* Refer this

CERTIFICATE OF MODIFICATION NO.

FORM NO. LO1

ADR No.	Clause No.	Feature	Assessment	Compl
42/00 General Safety Require- ments continued	42.5.2	Automatic Transmission Fitted with automatic transmission? If YES	N/A... Y... N...	
	42.5.2.1	Lever position permanently displayed?	N/A... Y... N...	
	42.5.2.2.1		N/A... Y... N...	
	42.5.2.2.2	Neutral between forward and reverse?	N/A... Y... N...	
	42.5.2.5	Park located at end and adjacent to reverse?	N/A... Y... N...	
	42.5.2.3	Starter inoperative in forward or reverse?	N/A... Y... N...	
		For Vehicle Category MA Only is operation correct when lever is steering column mounted?	N/A... Y... N...	
	42.7	Electrical Wiring		
	42.7.1.1	Supported at not more than 600mm intervals?	N/A... Y... N...	
	42.7.1.2/3/4	Properly insulated, located and protected from chafing?	N/A... Y... N...	
	42.8	Exhaust Outlets		
	42.8.1.1	(1) Exhaust pipe extends at least 40mm beyond rearmost unsealed joint of floorpan? (2) Exhaust outlet within vehicle perimeter in plan?	N/A... Y... N... N/A... Y... N...	
	42.8.1.2	If exhaust discharges to the side of vehicle is it to the right side and downwards between 15 deg and 45 deg to the horizontal?	N/A... Y... N...	
42.8.1.3	If the exhaust discharge to the rear of the vehicle, is it between 10 deg above and 45 deg below horizontal?	N/A... Y... N...		
42.9	External or Internal Protrusions			
42.9.1	Devoid of external or internal projections or sharp or pointed flanges?	N/A... Y... N...		
42.9.1.4	Bumper bar ends turned back?	N/A... Y... N...		
42.10	Field of View Driver's view on either side and in all directions in front of the vehicle unobstructed?	N/A... Y... N...		
42.12	Wheel Guards (Mudguards)			
42.12.1.2.1	Provides cover at least as shown in fig 1 or 2 of ADR 42/00 as applicable? (Fig 1 for category MA, Fig 2 for MB and MC)	N/A... Y... N...		
Additional Information/Comments				

NOTE: Y = Yes N = No N/A = Not Applicable. In Compliance column indicate 'Y' or 'N'.*
Refer this

SECTION LO

VEHICLE STANDARDS COMPLIANCE

CERTIFICATE OF MODIFICATION NO.

FORM NO. LO1

ADR No.	Clause No.	Feature	Assessment	Compl
42/00 General Safety Require- ments continued	42.17 42.17.1	Windows and Ventilation (1) Can at least half of the windows be opened? If no	N/A... Y... N...	
	42.17.3	(2) Is alternative ventilation adequate?	N/A... Y... N...	
	42.18	Power for power windows available only through use of key?	N/A... Y... N...	
	42.18.2	Warning Device - Audible Fitted with at least one horn with constant amplitude and frequency characteristics?	N/A... Y... N...	
Additional Information/Comments				

43/00 & 43/01 Vehicle Config- uration and Marking	43.3.2	Engine Number Is engine number stamped or cast, legible and satisfactory located?	N/A... Y... N...		
	43.3.4.1	Registration Plates			
	43.3.4.1.1.1	Are all parts of front and rear number plate (made as per fig 1 of ADR 43/00) below 1300mm from ground?	N/A... Y... N...		
	43.3.4.1.1.2	43.3.4.1.1.3	No part of front and rear number plate obscured by any part of or equipment on the vehicle?	N/A... Y... N...	
	43.4.4	43.5	43.5.1	Ground clearance? Projection of Equipment All front and rear projections of equipment (if any) less than 1200mm?	N/A... Y... N...
Additional Information/Comments					

NOTE: Y = Yes N = No N/A = Not Applicable. In Compliance column indicate 'Y' or 'N'.
* Refer this

SECTION LO

VEHICLE STANDARDS COMPLIANCE

CERTIFICATE OF MODIFICATION NO.

FORM NO. LO1

ADR No. Clause No. Feature Assessment Compl

57/00 Special Require- ments for L-Group Vehicles	57.2.1 57.2.1.1 57.2.1.2	SIDE CARS Side car securely attached to left hand side?	N/A... Y... N...	
	57.2.2 57.2.2.1	STEERING GEAR Handlebars extend not less than 250mm and not more than 450mm on each side of the centreline?	N/A... Y... N...	
	57.2.2.2	Height of lowest part of handgrip above lowest part of upper surface of driver's seat 380mm max?	N/A... Y... N...	
	57.2.2.3	Steering gear designed to prevent overlocking?	N/A... Y... N...	
	57.2.2.4	Horizontal distance from mid-point between head stem bearings to centre of front wheel 550mm max?	N/A... Y... N...	
	57.2.2.5	Handlebars symmetrical and located centrally?	N/A... Y... N...	
	57.2.3.1.2	OPERATION REQUIREMENTS Without removal of the operator's right hand from the throttle, are the following operations possible? (1) Hand lever control of front brake? (2) Turn signal control (if on right handlebar)? (3) Supplemental engine stop?	N/A... Y... N... N/A... Y... N... N/A... Y... N...	
	57.2.3.1.3	Without removal of the operator's left hand from the handgrip, are the following operations possible? (1) Hand lever control of clutch and push horn button? (2) Turn signal control (if on left handlebar)? (3) Headlamp beam control (except for LA)?	N/A... Y... N... N/A... Y... N... N/A... Y... N...	
	57.2.3.2	VISUAL INDICATORS Following visible in daylight and function correctly? (1) Speedometer illuminated whenever headlamp is 'on'? (2) Green neutral indicator (optional)? (3) Blue main beam indicator (except for LA)?	N/A... Y... N... N/A... Y... N... N/A... Y... N...	
	Additional Information/Comments			

NOTE: Y = Yes N = No N/A = Not Applicable. In Compliance column indicate 'Y' or 'N'.
* Refer this

CERTIFICATE OF MODIFICATION NO.

FORM NO. LO1

ADR No.	Clause No.	Feature	Assessment	Compl
57/00 Special Requirements for L-Group Vehicles continued	57.2.3	OPERATION AND LOCATION OF CONTROLS		
	Control	Location	Operation	
	Manual clutch (*)	Left HB? (#)	Squeeze to disengage?	N/A... Y... N...
	Gear change (Opt)	Left foot?	Up from first gear to select other gears?	N/A... Y... N...
	Head lamp (**)	Left HB?	Up - main beam, down - dipped and 'off-guard' provided if combined with on-off switch?	N/A... Y... N...
	Horn	Left HB?	Push to activate?	N/A... Y... N...
	Direction indicator	Either HB?		N/A... Y... N...
	Ignition (Opt)		Anti-clockwise to 'off' from other positions?	N/A... Y... N...
	Manual only fuel shut-off (Opt)		Off-forward, on-downwards, reverse (if provided) - on-upwards? OR as per FMVSS 123?	N/A... Y... N...
	Twist grip throttle	Right HB?	Self-closing in clockwise direction to idle?	N/A... Y... N...
	Supplemental engine stop	Right HB?	Thumb operated?	N/A... Y... N...
	Front brake	Right HB?	Squeeze to activate?	N/A... Y... N...
	Rear brakes - For LC - If auto trans - for LA, LB	Right Foot? RFoot/LHB? ? Left HB?	Depress to activate? Squeeze to activate? Squeeze to activate?	N/A... Y... N... N/A... Y... N... N/A... Y... N...
(*) - Hand lever or combined with gear change (**) - Only dipped beam permitted for LA category vehicles (#) - HB = Handle Bar				
Additional Information/Comments				

NOTE: Y = Yes N = No N/A = Not Applicable. In Compliance column indicate 'Y' or 'N'.
* Refer this

SECTION LO

VEHICLE STANDARDS COMPLIANCE

CERTIFICATE OF MODIFICATION NO.

FORM NO. LO1

ADR No. Clause No. Feature Assessment Compl

57/00 Special Requirements for L-Group Vehicles continued	57.2.3.3	CONTROL AND VISUAL INDICATOR DISPLAY IDENTIFICATION If an item of equipment listed below is provided, is it and its control positions identified at least as specified (*).			
	Item	Identification & Visibility	Position Identification		
	Ignition switch #		Off?	N/A... Y... N...	
	Supplemental engine stop	Engine stop?	Off, Run?	N/A... Y... N...	
	Manual choke #	Choke?		N/A... Y... N...	
	Electric starter		Start?	N/A... Y... N...	
	Headlamp beam control	Lights?	Hi, Lo?	N/A... Y... N...	
	Horn	Horn?		N/A... Y... N...	
	Direction indicator	Turn?	L, R?	N/A... Y... N...	
	Main beam indicator	Main Beam?		N/A... Y... N...	
	Tachometer	r/min, rpm, RPM or min ⁻¹ ?		N/A... Y... N...	
	Fuel tank shut-off control #	Fuel?	Off, On, Res.?	N/A... Y... N...	
	Neutral indicator	Neutral?		N/A... Y... N...	
	Speedometer	km/h?	Major graduations at 10km/h intervals?	N/A... Y... N...	
# - Visibility to seated driver not required. * - The equivalent ISO is an acceptable alternative.					
Additional Information/Comments					

NOTE: Y = Yes N = No N/A = Not Applicable. In Compliance column indicate 'Y' or 'N'.
 * Refer this

VEHICLE STANDARDS COMPLIANCE

SECTION LO

CERTIFICATE OF MODIFICATION NO.

FORM NO. LO1

ADR No. Clause No. Feature Assessment Compl

57/00 Special Requirements for L-Group Vehicles continued	57.2.4	TRANSMISSION REQUIREMENTS (If Transmission Manual) Is disengagement possible at any engine speed?	N/A... Y... N...	
	57.2.5	ELECTRICAL GENERATOR Fitted with a generator?	N/A... Y... N...	
	57.2.6	FOOTRESTS Footrests fitted for each seating position?	N/A... Y... N...	
	57.2.7	STANDS (For LA and LC Vehicles Only) Stand holds vehicle upright and device keeps stand off road?	N/A... Y... N...	
	57.2.8	CHAIN GUARDS (if vehicle chain driven) Front sprocket and upper free run of chain covered to > 300mm rear of rear most footrests or rear sprocket?	N/A... Y... N...	
Additional Information/Comments				

60/00 Centre High-Mounted Stop Lamp	60.2.1	Colour correct*?	N/A... Y... N...	
	60.2.2/3	Light intensity and distribution tested*?	N/A... Y... N...	
	60.2.4.1	Area not less than 29cm ² ?	N/A... Y... N...	
	60.2.4.2	No symbols or letters?	N/A... Y... N...	
	60.2.4.3	Easily accessible globe?	N/A... Y... N...	
	60.2.4.4	Steady light?	N/A... Y... N...	
	60.4.4	Located central and not more than 77mm (152mm for convertibles) below the bottom edge of the rear window?	N/A... Y... N...	
Additional Information/Comments				

NOTE: Y = Yes N = No N/A = Not Applicable. In Compliance column indicate 'Y' or 'N'.
* Refer this

SECTION LO

VEHICLE STANDARDS COMPLIANCE

NOTE:

If the answer to any question is "NO" the certification 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

**PRE 1972 IMPORTED VEHICLE SAFETY
COMPLIANCE L02****CERTIFICATION TYPES**

The following is a summary of the certification which may be given by officers authorised with Code L02 Pre 1972 Imported Vehicle Safety Compliance.

Refer also to Section L0 Vehicle Standards Compliance for general inspection guidelines.

Certification allowed under this code is:

1. Visual inspection of a pre 1972 manufactured imported vehicle to determine its compliance with the requirements for registration as listed in the Specific Requirements.

Certification not permitted under this code is:

1. Certification of vehicles built after 1 January 1972.
2. Certification of Personally Imported Vehicles

NOTE: Modifications must comply with all applicable ADRs 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 continuing compliance for the modified vehicle.

DETAIL	REQUIREMENTS
Seat Belts	ADR 4/00
Seat Belt Mounting	ADR 5/01
Child Restraint Anchorages	ADR 5/01, 3/01
Lighting and Signalling Devices	Queensland Traffic Regulations/Acts

SPECIFIC REQUIREMENTS PRE 1972 IMPORTED VEHICLE SAFETY COMPLIANCE L02

- 1.0 PRE 1960 Vehicles**
- 1.1** Vehicles manufactured prior to 1960 which were previously in a left hand drive configuration must be modified to meet all applicable requirements of the Queensland Traffic Regulations 1962, Schedule to Part 13 Construction, Equipment and Loading of Vehicles.
- 1.2** This usually requires upgrading of the vehicle's lighting and signalling devices. The checklist L02 provides an inspection list of the most common areas of upgrading. Note that this is not a comprehensive list and the vehicle must comply fully with the Queensland Traffic Regulations/Acts requirements.
- 2.0 1960 - 1972 Vehicles**
- 2.1** Vehicles manufactured between 1 January 1960 and 1 January 1972 which were previously in a left hand drive configuration must be modified to meet all applicable requirements of the Queensland Traffic Regulations 1962, Schedule to Part 13 Construction, Equipment and Loading of Vehicles.
- 2.2** This usually requires upgrading of the vehicle's lighting and signalling devices. The checklist L02 provides an inspection list of the most common areas of upgrading. Note that this is not a comprehensive list and the vehicle must comply fully with the Traffic Regulation requirements.
- 2.3** New seat belts complying with Australian Standard 2596 1983 must also be fitted to all seating positions. All outboard seating positions must be fitted with lap/sash belts. Automatic retractor types are required for front outboard seating positions. Child restraint anchorage points must be fitted in accordance with ADR 3/00 and 5/00 requirements.
- 2.4** All seat belt anchorage points must comply with the requirements of ADR 5/00. Anchorage points installed in accordance with the requirements detailed in Information Bulletin 6/VES "Seat Belt Anchorages" are considered to meet these requirements.

CERTIFICATE OF MODIFICATION NO.

FORM NO. L02

**CHECKLIST
PRE 1972 IMPORTED VEHICLE
SAFETY COMPLIANCE L02**

(Y = Yes)(N = No)

1.0	All Vehicles		
1.1	Do the headlamps dip to the left?	Y	N
1.2	Are parking lamps fitted (post 1/1/66 vehicles)?	Y	N
1.3	Are red lamp/s fitted to the rear?	Y	N
1.4	Are red brake lamp/s fitted?	Y	N
1.5	Is a white rear registration plate light fitted?	Y	N
1.6	Are rear reflectors fitted?	Y	N
1.7	Are white or amber front indicators fitted?	Y	N
1.8	Are amber rear indicators fitted?	Y	N
1.9	Do the rims and tyres fitted comply?	Y	N
2.0	1960 - 1972 on Vehicles		
2.1	Are new seat belts complying with AS2596 1983 fitted to each seating position?	Y	N
2.2	Are all outboard seat belts lap/sash, with retractors fitted to front seats?	Y	N
2.3	Do all seat belt anchorages meet the position and strength requirements of ADR 5/00?	Y	N
2.4	Are child restraint anchorages fitted to each rear seating position?	Y	N
3.0	General		
3.1	Is the quality of workmanship to a satisfactory standard?	Y	N

NOTE:

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

Make Model Year of Manufacture

Vehicle Chassis No. or VIN

Vehicle Modified By

Examined and Approved By

Company (if applicable)

Certificate of Modification No.

Authorised Officer No.

Signed Date

PERSONALLY IMPORTED VEHICLE COMPLIANCE L03

CERTIFICATION TYPES

The following is a summary of the certification which may be given by officers authorised with Code L03 Personally Imported Vehicle Compliance.

Refer also to Section L0 Vehicle Standards Compliance for general inspection guidelines.

Certification allowed under this code is:

1. Visual inspection of a vehicle to determine its compliance with the requirements for a Personally Imported Vehicle.

Certification not allowed under this code is:

1. Inspection of a vehicle which does not have authorisation from the Administrator of the Motor Vehicle Standards Act as a Personally Imported Vehicle.

NOTE: Modifications must comply with all applicable ADRs 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 continuing compliance for the modified vehicle.

DETAIL	REQUIREMENTS
Seat Belt Mounting	ADR 5/00
Seat Belts	ADR 4/00
Child Restraint Anchorages	ADR 3/00, 5/00
Safety Glass	ADR 8/00
Head Restraints	ADR 22/00

SPECIFIC REQUIREMENTS**PERSONALLY IMPORTED VEHICLE
COMPLIANCE L03**

- 1.0 Introduction**
- 1.1 Personally imported vehicles must be upgraded to meet minimum safety requirements as specified by the Administrator of the Motor Vehicle Standards Act.
- 1.2 The following safety requirements apply to passenger cars and similar vehicles, such as station wagons.
- 1.3 Contact the Administrator of Motor Vehicle Standards for information on requirements for other types of vehicles.
- 2.0 Seat Belts and Seat Belt Anchorages**
- 2.1 Seat belts and anchorages must be provided for each seating position in a vehicle other than an omnibus or motor cycle. The number of seating positions will be that number nominated by the vehicle manufacturer in the vehicle owner's handbook. Where seat belt anchorage points are not provided in the vehicle as manufactured, additional points shall be provided in accordance with Code LK1 requirements. In the case of each outboard seating position, seat belts shall be a combination lap and sash belt. The simple lap belt will be acceptable only in the case of a centre seating position.
- 2.2 Acceptable types of seat belts are those bearing:
- 2.2.1 the certification mark of the British Standards Institution; or
- 2.2.2 the approved mark granted in accordance with ECE Regulation No. 16; or
- 2.2.3 the approved mark granted in accordance with EEC Directive 77/541.
- 3.0 Child Restraint Anchorages**
- 3.1 Passenger cars with rear seating positions must be provided with a child restraint anchorage for each of these positions.
- 4.0 Windscreens**
- 4.1 Windscreens must be approved safety glass.
- 4.2 Tinted windscreens must comply with ADR 8/00 Clause 8.3.2.3.1. and 8.5.2.3.2 or equivalent.

- 4.3 Windscreens with heat treated glass must carry an appropriate identifying mark (usually including the letters TP, TS or TF), and have a modified zone in the front of the driver.
- 4.4 Laminated windscreens should carry a mark incorporating the symbol WHP or ASI.
- 5.0 **Windows and Other Glazing**
- 5.1 All glazing used in windows and interior partitions must also be approved safety glass.
- 5.2 It may be tinted, but must carry an identifying mark which, for heat treated glass, usually includes the letters TP, TS or TF and, for laminated glass, the symbol LP, LS, LF or AS2.
- 6.0 **Head Restraints**
- 6.1 Head restraints must be provided for the driver and the front seat passenger nearest the door.
- 6.2 Head restraints may be adjustable.
- 6.3 Headrests that clip onto the seat back are not acceptable.
- 7.0 **Headlights**
- 7.1 Vehicles must have at least two white headlamps.
- 7.2 Headlamps must have a dipping device which deflects the beam downwards and to the left (kerbside).
- 8.0 **Parking Lights**
- 8.1 Vehicles must have at least two white side position (parking) lamps.
- 9.0 **Turning Indicators**
- 9.1 Vehicles must have two front and two rear direction turn signal lamps.
- 9.2 Lamps must be an amber colour.
- 10.0 **Rear Lights**
- 10.1 Vehicles must have at least two red rear lamps.
- 11.0 **Stop Lights**
- 11.1 Vehicles must have two red rear stop lamps.
- 11.2 These lamps may be incorporated in the rear lights.

CERTIFICATE OF MODIFICATION NO.

FORM NO. L03

CHECKLIST**PERSONALLY IMPORTED VEHICLE
COMPLIANCE L03**

(Y = Yes)(N = No)

1.0	Authority		
1.1	Has the vehicle been classified as a personal import by the Administrator of the Motor Vehicle Standards Act?	Y	N
2.0	Seat Belts and Child Restraints		
2.1	Are all required seating positions fitted with seat belts in accordance with Clause 2.1?	Y	N
2.2	Do seat belts have the correct standards marking?	Y	N
2.3	Do all new seat belt anchorages meet the position and strength requirements of Code LK1?	Y	N
2.4	Are child restraint anchorages fitted to each rear seating position?	Y	N
3.0	Windscreen and Windows		
3.1	Is windscreen made of safety or laminated glass with an acceptable marking?	Y	N
3.2	Does the windscreen meet tinting requirements?	Y	N
3.3	Is all other glazing of approval safety glass?	Y	N
4.0	Head Restraints		
4.1	Are permanent head restraints fitted to front outboard seating positions?	Y	N
5.0	Lighting		
5.1	Do headlamps dip to the left?	Y	N
5.2	Are parking lamps fitted?	Y	N
5.3	Are front and rear amber indicators fitted?	Y	N

5.4	Are rear red stop and brake lamps fitted?	Y	N
6.0	General		
6.1	Is the quality of workmanship to a satisfactory standard?	Y	N

NOTE:

If the answer to any question is "NO", the certification 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.

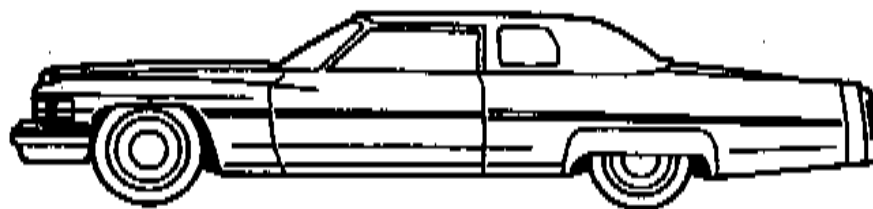
Authorised Officer No.

Signed Date



LS

STEERING CONVERSION



STEERING CONVERSION

	Page	
1.0	Scope	3
2.0	General Requirements	4
3.0	Australian Design Rules	5
4.0	Modifications Codes and Checklists	6
	LS1 Steering Conversion (Design)	7
	LS1 Checklist	9
	LS2 Steering Conversion (Modification)	13
	LS2 Checklist	16

1.0 SCOPE

This section outlines the minimum modification and performance requirements for light vehicle steering conversions of left hand drive vehicles and modification of right hand drive vehicles. It includes both steering conversions using the vehicle manufacturer's parts from the right hand drive version of that vehicle and non standard steering conversions.

It is recommended that any steering conversion should, where possible, utilise the manufacturer's right hand drive steering assembly.

Replacement or fitting of ancillary equipment eg. brake components, air conditioning, electrical wiring, etc. is also covered.

2.0 GENERAL REQUIREMENTS

Steering conversions and modifications must be carried out strictly in accordance with the issue of the Federal Office of Road Safety National Code of Practice - Steering Conversions for Left Hand Drive Vehicles (Vehicle Standards. Bulletin No.4)

A copy of this Code is to be inserted after this page.

3.0 AUSTRALIAN DESIGN RULES

Australian Design Rules which may be applicable to light vehicle steering conversions are -

ADR 10A, 10B, 10/00, 10/01 - Steering Columns

ADR 12, 12/00 - Glare Reduction in Field of View

ADR 15, 15/00 - Demisting of Windscreen

ADR 18, 18/00 - Instrumentation

ADR 21, 21/00 - Instrument Panel

ADR 31, 31/00 - Hydraulic Braking Systems.

4.0 MODIFICATION CODES

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

STEERING CONVERSION (DESIGN) - LS1**MODIFICATION TYPES**

The following is a summary of the modifications which may be approved by officers authorised with modification Code LS1 - Steering Conversion (Design).

Refer also to Section LS - Steering Conversion for general technical guidelines for modifications performed under this Code.

Scope of approval allowed under this Code is:

1. Design of steering and braking controls and associated components for motor vehicles being converted from left hand to right hand drive configuration.
2. Design of steering and braking controls and associated components for motor vehicles being modified from the manufacturer's original or optional right hand drive steering configuration.

Approval not permitted under this code is:

1. Approval of the actual physical modification of particular vehicles (this is covered by Code LS2).

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

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

DETAIL	REQUIREMENTS
Steering Column	ADR 10A, 10B, 10/00, 10/01
Dashboard	ADR 12, 12/00 ADR 21, 21/00
Demisting of Windscreen	ADR 15, 15/00
Instrumentation	ADR 18, 18/00
Braking System	ADR 31, 31/00

SPECIFIC REQUIREMENTS**STEERING CONVERSION (DESIGN) - LS1****1.0 General**

A vehicle's steering configuration may only be modified in accordance with an approved design.

Approved designs are:

- Conversions using the original vehicle manufacturer's steering and braking system parts exactly as specified for the right hand drive variant of the vehicle being modified.
- Conversions undertaken exactly in accordance with a design approved by an authorised officer holding the LS1 Code or as approved by the Queensland Department of Transport.

2.0 Design Approvals

Authorised officers holding the S1 code may issue approvals for the design of steering conversions.

Such approvals must be conditional on the design meeting all of the requirements described in Section LS - Steering Conversion.

The design must be fully documented. Drawings, calculations, procedural details, test results and any other data necessary to fully describe the vehicle modifications must be retained by the authorised officer.

The authorised officer must issue a unique design approval number prefixed by the authorised officer's AO number for each approval.

With each design approval, the authorised officer shall issue a design approval document for use by the vehicle modifier and/or the authorised officer certifying the physical modification of a vehicle under the LS2 code.

The design approval document must contain:

- Details of all drawings needed to fully describe the full extent of the modification.
- Details of any special modification techniques, procedures or adjustments.
- Details of any testing of components (eg. X-rays of modified drag links) performance (eg. bump steer plots) and of acceptance criteria.

CHECKLIST

STEERING CONVERSION - LS1

(STRIKE OUT SECTIONS IF NOT APPLICABLE)

(Y = Yes N = No)

1.0	BRAKE SYSTEM		
1.1	Brake System - Relocating Master Cylinder to Right Hand Side		
1.1.1	Firewall Modifications		
	Firewall profile reproduced on right hand side?	Y	N
	Similar gauge material used?	Y	N
	Reinforcement equivalent or better than original?	Y	N
	All firewall openings sealed?	Y	N
1.1.2	Mountings		
	Booster/master cylinder and linkages mounted as original?	Y	N
	Modified pedal bracket retains original strength?	Y	N
	Identical fixings used to secure booster/master cylinder?	Y	N
1.1.3	Brake Pedal		
	Original pedal used unmodified?	Y	N
	New pedal fabricated of equivalent strength?	Y	N
1.1.4	Brake System Operation		
	Full stroke of master cylinder possible?	Y	N
	Pedal ratio same as original?	Y	N
	Pedal location replicated?	Y	N
1.2	Brake System - Cross Shaft System		
1.2.1	System Strength		
	System capable of transferring design brake loads?	Y	N
	Deflection of cross shaft acceptable at maximum load?	Y	N
	Supporting calculations kept with records?	Y	N
1.2.2	Bearings		
	Self aligning bearings/bushes installed?	Y	N
	Self lubricated bearings/bushes installed?	Y	N
	Shaft positively located with collars and/or spacers?	Y	N
1.2.3	Pedal and Levers		
	Pedal and lever drilled to fit cross shaft and full circumferential weld used?	Y	N
1.2.4	Bearing mounting		
	Mountings adequately secured?	Y	N
	Mountings have adequate stiffness?	Y	N

DESIGN APPROVAL NO.

FORM NO. LS1

1.2.5.	Pivots		
	Original pivot pins used?	Y	N
	All new pins hardened steel or in self lube bushes?	Y	N
	Suitable retaining devices on all pivot pins?	Y	N
1.2.6.	Operation		
	Full stroke of master cylinder possible?	Y	N
	Geometry allows full pedal pressure at full travel?	Y	N
	Pedal ratio is similar to original left hand drive system?	Y	N
2.0	Steering		
2.1	Steering - Right Hand Drive Box/Rack		
2.1.1	Steering Box/Rack Selection		
	Right hand drive steering box/rack used of similar capacity to original?	Y	N
	Pitman arm size/length similar to original and matches steering box spline?	Y	N
	The drag link attachment laper identical?	Y	N
	Arc of travel is similar?	Y	N
2.1.2	Steering Box/Rack Mounting		
	Location and angle of steering box/rack replicates original?	Y	N
	Chassis rail reinforced and fitted with steel sleeves?	Y	N
	Mounting of equivalent strength to original?	Y	N
2.1.3.	Steering Box/Rack coupling		
	Original column coupling used?	Y	N
	Original steering box/rack coupling used?	Y	N
	Modified coupling half used?	Y	N
	Evidence of modified coupling strength (attach)?	Y	N
2.1.4.	Idler arm		
	Mounting bracket adequately secured to chassis rail?	Y	N
	Idler arm location and angle replicates original?	Y	N
	Mounting bolts to be replaceable?	Y	N
2.1.5.	Drag link		
	Original left hand drive drag link used without modification?	Y	N
	Right hand drive drag link used without modification?	Y	N
	Modified drag link used that replicates original?	Y	N
	Modification as per Queensland Transport guidelines?	Y	N

DESIGN APPROVAL NO.

FORM NO. LS1

2.1.6.	Steering geometry		
	Turning circle in both directions retained?	Y	N
	Original steering geometry replicated in right hand drive form?	Y	N
	OR		
	Original steering geometry altered?	Y	N
	Bump steer equal or less than original?	Y	N
2.2	Steering - Cross Shaft		
2.2.1.	Right angle gearboxes		
	Boxes designed for automotive steering (attach specifications)?	Y	N
	Splined input and output shafts?	Y	N
2.2.2.	Couplings		
	Couplings correctly mated with gearboxes?	Y	N
2.2.3.	Cross Shafts		
	Cross shaft articulated?	Y	N
	Cross shaft correctly mated with couplings?	Y	N
2.2.4.	Design Loadings		
	All components have adequate strength?	Y	N
2.2.5.	Gearbox Mountings		
	Gearboxes securely mounted?	Y	N
	Gearboxes correctly aligned?	Y	N
	Provision made to accommodate misalignment on assembly?	Y	N
2.3	Steering - Chain Drive		
2.3.1	Unit Design		
	Chain drive unit fully enclosed?	Y	N
	Unit designed for automotive steering and fully enclosed (note make and model below)?	Y	N
	Duplex chain minimum with adjustment?	Y	N
	Designed to withstand 200Nm input torque?	Y	N
	Shaft connections to vehicle specifications or splines and cotter bolts used?	Y	N
	Lubrication provided?	Y	N
2.3.2	Installation		
	Unit and column properly supported?	Y	N
3.0	STEERING COLUMN		
3.1	Mounting		
	Steering column location replicated in right hand drive?	Y	N
	Support brackets equivalent strength to original?	Y	N

DESIGN APPROVAL NO.

FORM NO. LS1

3.2 Collapse Operation

Column installation retains design collapse system?	Y	N
Original telescopic sections unmodified?	Y	N

4.0 WINDSCREEN WIPERS

Does the wiper design meet the requirements of VSB 47 (Note that specifications must be clearly described in the design records)	Y	N
--	---	---

5.0 GENERAL

High tensile bolts used on all new critical mountings?	Y	N
Self locking nuts used on new critical mountings?	Y	N
All fasteners equivalent or better than original in strength and quantity?	Y	N

6.0 WELDING

All welding detailed specified?	Y	N
---------------------------------	---	---

7.0 DESIGN

Strength of all components modified or effected by modification verified as equivalent to original manufacturer's specifications?	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

STEERING CONVERSION (MODIFICATION) - LS2**MODIFICATION TYPES**

The following is a summary of the modifications which may be approved by officers authorised with modification Code LS2 - Steering Conversion (Modification).

Refer also to Section LS - Steering Conversion for general technical guidelines for modifications performed under this Code.

Modifications which are allowed under this Code are:

Modification of the steering and braking control and associated components of motor vehicles by means of:

- The use of the original vehicle manufacturers components and specifications for equivalent vehicles manufactured in right hand drive configuration

OR

- The modification of the vehicle exactly in accordance with the design approval issued by an authorised officer holding the LS1 Code.

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 affected by the modifications and which may require re-certification testing, and/or data to show continuing compliance for the modified vehicle.

DETAIL	REQUIREMENTS
Steering Column	ADR 10A, 10B, 10/00, 10/01
Dashboard	ADR 12, 12/00 ADR 21, 21/00
Demisting of Windscreen	ADR 15, 15/00
Instrumentation	ADR 18, 18/00
Braking System	ADR 31, 31/00

SPECIFIC REQUIREMENTS**STEERING CONVERSION (MODIFICATION) - LS2****1.0 General**

A vehicle's steering configuration may only be modified in accordance with an approved design.

Approved designs are:

- Conversions using the original vehicle manufacturer's steering and braking system parts exactly as specified for the right hand drive variant of the vehicle being modified.
- Conversions undertaken exactly in accordance with a design approved by an authorised officer holding the LS1 Code or as approved by the Queensland Department of Transport.

2.0 Modification Approvals

Authorised officers holding the LS2 Code may issue approvals for modification to vehicles that comply in all respects with the requirements of Section LS of the Code of Practice and have been completed exactly in accordance with an approved design.

2.1 Conversions Using Manufacturer's Right Hand Drive Components

In the case of vehicles modified using the original manufacturer's right hand drive components the authorised officer must ensure that:

- The components used are correctly specified right hand drive components for the model being modified.
- The components used are installed in accordance with the manufacturer's specifications.

2.2 Locally Designed Steering Conversions

In the case of modifications performed in accordance with a design approved by an authorised officer holding the Code LS1, authorised officers must:

- Hold a copy of the design approval including all plans, procedures and specifications referred to in the approval.
- Ensure that the modifications are completed in accordance with the relevant approval.
- Check that any components tests (eg. X-rays of modified drag links) or system tests (eg. bump steer plots) are performed and that the results meet the acceptance criteria specified in the

approval.

3.0 Inspection

The authorised officer must conduct two inspections of the vehicle. The first, an interim inspection, is to be arranged for the structurally completed vehicle. The steering column, box and linkages must be installed and operable. The brake pedal and master cylinder assembly is to be installed with the brake lines disconnected. This inspection is to be carried out prior to painting and sealing of modified areas and prior to refitting the air conditioning/heater, dashboard etc. to allow all areas effected by the modifications to be clearly seen.

All areas of the checklist (Form No. LS2) which are completed at this stage are to be verified.

A final inspection is to be carried out on the completed vehicle when it is in a condition suitable for registration. Form No. LS2 can then be completed for all outstanding areas of inspection.

CERTIFICATE OF MODIFICATION NO.

FORM NO. LS2

CHECKLIST

STEERING CONVERSION - LS2

(Y = Yes N = No)

(STRIKE OUT SECTIONS IF NOT APPLICABLE)

1.0	BRAKE SYSTEM		
1.1	Brake System - Relocating Master Cylinder to Right Hand Side		
1.1.1	Firewall Modifications		
	Firewall profile reproduced on right hand side?	Y	N
	Similar gauge material used?	Y	N
	Reinforcement equivalent or better than original?	Y	N
	All firewall openings sealed?	Y	N
1.1.2	Mountings		
	Booster/master cylinder and linkages mounted as original?	Y	N
	Modified pedal bracket retains original strength?	Y	N
	Identical fixings used to secure booster/master cylinder?	Y	N
1.1.3	Brake Pedal		
	Original pedal used unmodified?	Y	N
	New pedal fabricated or equivalent strength?	Y	N
	Non-destructive testing of welded pedal satisfactory and copy of certificate attached?	Y	N
1.1.4	Brake Pipes		
	Brake pipe fixings identical to original?	Y	N
	All new brake lines one piece?	Y	N
	Bundy tubing used for brake lines?	Y	N
	Brake tube bore similar to original?	Y	N
	Correct flares, tapers and threads used?	Y	N
	Pipework adequately supported?	Y	N
1.1.5	Brake System Electrical Connections		
	Circuits correctly connected and secured?	Y	N
	Brake failure/fluid level operate correctly?	Y	N
1.1.6	Brake System Operation		
	Full stroke of master cylinder possible?	Y	N
	Pedal ratio same as original?	Y	N
	Pedal location replicated?	Y	N

CERTIFICATE OF MODIFICATION NO.

FORM NO. LS2

1.2	Brake System - Cross Shaft System		
1.2.1	Bearings		
	Self aligning bearings/bushes installed?	Y	N
	Self lubricated bearings/bushes installed?	Y	N
	Shaft positively located with collars and/or spacers?	Y	N
1.2.2	Pedal and Levers		
	Pedal and lever drilled to fit cross shaft and full circumferential weld used?	Y	N
1.2.3	Bearing mounting		
	Mountings adequately secured?	Y	N
	Mountings have adequate stiffness?	Y	N
1.2.4	Pivots		
	Original pivot pins used?	Y	N
	All new pins hardened steel or in self lube bushes?	Y	N
	Suitable retaining devices on all pivot pins?	Y	N
1.2.5	Operation		
	Full stroke of master cylinder available?	Y	N
2.0	STEERING		
2.1	Steering - Right Hand Drive Box/Rack		
2.1.1	Steering Box Mounting		
	Location & angle of steering box/rack replicates original?	Y	N
	Chassis rail reinforced and fitted with steel sleeves?	Y	N
	Mounling of equivalent strength to original?	Y	N
2.1.2	Steering box coupling		
	Original column coupling used?	Y	N
	Original steering box/rack coupling used?	Y	N
	Modified coupling half used?	Y	N
	Evidence of modified coupling strength?	Y	N
2.1.3	Idler arm		
	Mounting bracket adequately secured to chassis rail?	Y	N
	Idler arm location and angle replicates original?	Y	N
	Mounting bolts to be replaceable?	Y	N
2.1.4	Drag link		
	Original left hand drive drag link used without modification?	Y	N
	Right hand drive drag link used without modification?	Y	N
	Modified drag link used that replicates original?	Y	N
	Modification as per Queensland Transport guidelines?	Y	N
	Weld X-ray certificate/procedure/hardness plot OK?	Y	N
	Copies of certificates etc attached?	Y	N
	Drag link identification number		

CERTIFICATE OF MODIFICATION NO.

FORM NO. LS2

2.1.5	Steering geometry		
	Turning circle in both directions retained?	Y	N
	Original steering geometry replicated in right hand drive form?	Y	N
	OR		
	Original steering geometry altered?	Y	N
	Bump steer equal or less than original (attach report)?	Y	N
2.2	Steering - Cross Shaft/Chain Drive		
2.2.1	Couplings		
	Couplings correctly mated with gearboxes?	Y	N
2.2.2	Cross Shafts		
	Cross shaft articulated?	Y	N
	Cross shaft correctly mated with couplings?	Y	N
2.2.3	Gearbox Mountings		
	Gearboxes securely mounted?	Y	N
	Gearboxes correctly aligned?	Y	N
	Provision made to accommodate misalignment on assembly?	Y	N
3.0	STEERING COLUMN		
3.1	Mounting		
	Steering column location replicated in right hand drive?	Y	N
	Support brackets equivalent strength to original?	Y	N
3.2	Collapse Operation		
	Column installation retains design collapse system?	Y	N
	Original telescopic sections unmodified?	Y	N
4.0	AIR-CONDITIONING AND VENTILATION		
	Demisters retain effectiveness?	Y	N
	Ventilation system operates similar to original system?	Y	N
	Air-conditioner system securely mounted?	Y	N
	Hoses and pipes correctly routed and secured?	Y	N
5.0	DASH PANELS AND CONTROLS		
	Crash pad is original or equivalent?	Y	N
	Instruments and controls correctly positioned for driver?	Y	N
	Modified panels as strong as original?	Y	N
6.0	ELECTRICAL WIRING		
	Connections, size, insulation, support and protection are at least equivalent to original?	Y	N

CERTIFICATE OF MODIFICATION NO.

FORM NO. LS2

NOTE:

If answer to any question is "NO" the modification is not acceptable. Where questions do not apply, answers are to be left blank.

VEHICLE DETAILS

Make Model

Body Type Year of Manufacture

Chassis No. or VIN

Engine No. Registration No.

OWNER DETAILS

Name

Address

VEHICLE MODIFIER

Name

Address

This is to certify that I have inspected the motor vehicle described below on the date stated and I am satisfied that the modification complies with Code LS2.

INSPECTION

Examined and Approved By

Company (if applicable)

Authorised Officer No.

Signed Date

LT

BEAMING AND TORSIONAL TESTING



BEAMING AND TORSIONAL TESTING

		Page
1.0	Scope	3
2.0	General Requirements	4
3.0	Certification Codes and Checklists	9
	LT1 Beaming and Torsional Testing	10
	LT1 Checklist	15

1.0 SCOPE

This section outlines minimum performance requirements for beaming and torsional testing of motor vehicles.

The information is intended as a guide for those who wish to structurally modify motor vehicles.

2.0 GENERAL REQUIREMENTS

This section applies to all light vehicles except those with a separate complete chassis and should be used in conjunction with other sections which are specific for the type of modification which is being performed.

Modifications to motor vehicles that involve extensions of the wheelbase or removal of the roof can dramatically reduce the strength of the vehicle structure. Subsequent strengthening may result in extra stiffness in certain areas of the chassis but overstressing in others. Consequently, it becomes necessary to demonstrate that the modified vehicle's beaming and torsional strengths are adequate when compared to the original vehicle.

This specification contains a very simplified test procedure in terms of vehicle structural analysis and, as such, the result of testing may be taken only as a guide to the structural integrity of the vehicle. For this reason, absolute values should not be derived from the results.

As this is a testing procedure and does not require modifications to the vehicle, a certificate of modification and modification plate should not be issued.

The vehicle in its final form will be fitted with modification plate and issued with a certificate of modification relevant to the actual conversion eg. LR2 - Convertibles (Modification).

The authorised officer must issue a unique test number prefixed by the authorised officer's AO number for each test.

The signed copy of form LT1 is to be given to the modifier to be kept with his/her records. This form must be sighted by the authorised officer who is authorising the modification.

1.0 TEST PROCEDURES

1.1 Loading

The unmodified vehicle shall be weighed prior to testing to determine its unladen mass.

The Gross Vehicle Mass (GVM) is to be determined by adding the unladen mass to the payload capacity of the vehicle.

In the case of a passenger carrying vehicle, the payload shall be 68kgs for each seating position.

1.2 Jig

The vehicle to be tested shall be safely supported for loading up to the specified values and mounted through the hubs with its springs and dampers made incompressible or replaced by spacers. Figure 2 and 3 indicates the preferred mounting of the vehicle for beaming and torsional tests. Rear supports must be able to resist the up-thrust for the torsional test. Other methods of supporting the vehicle will be considered provided that the support points are not located within the wheelbase.

1.3 Measurements

The deflections are to be measured at the points shown in Figures 1 and 2. Front and rear points are to be measured on the body member as close as possible to the suspension attachment points - approximately on the axle centreline. Measurements of the outside of the mudguard are not acceptable. Positions 2 and 5 shall be at the extreme ends of the rocker panels. Positions 3 and 4 shall be approximately equally spaced between points 2 and 5.

1.4 BEAMING TEST PROCEDURE

- Step 1 - With the unmodified vehicle mounted securely, load the vehicle in accordance with Step 3 to settle the apparatus and check that it functions correctly. No readings of deflection need be taken for this preload.
- Step 2 - Remove loading required in Step 1 and "zero" all gauges.
- Step 3 - A load equivalent to twice the payload (ie. 68kg x 2) shall be applied at each seating position.
- Step 4 - Record deflections.
- Step 5 - Remove load.
- Step 6 - Record deflections again.

1.5 TORSIONAL TEST PROCEDURE

- Step 1 - Preload the unmodified vehicle, as per Step 1 of Beaming Test Procedure. (If this test follows immediately after the Beaming Test, the preload will not be necessary.)
- Step 2 - "Zero" all gauges.
- Step 3 - Apply a turning moment of 25% of GVM x wheel track.
- Step 4 - Record deflections.
- Step 5 - Remove loading.
- Step 6 - Record deflections.

1.6 MODIFIED VEHICLE TEST PROCEDURE

The modified vehicle is to be tested in the same manner, and with the same loads used above. Where vehicles have changes to the number of seating positions (such as limousines) the original beaming load must be evenly distributed over each seating position. The turning moment applied in the original torsion test is to be reapplied to the modified vehicle.

Note

- All hinged panels are to be ajar at all times.
- Fuel tank to be filled to 75% capacity.

2.0 DATA RECORDING

Test data, loadings, etc. are to be recorded on the standard test reporting form no. LT1. A graphical plot of the average of the deflection of the left and right hand sides at each measuring location along the wheelbase with the applied load, and again with the load removed, shall be provided for each vehicle. A plot of the vehicle's angular deflection at each measuring location along the wheelbase with the load applied, and after the load has been removed, shall also be provided.

Beaming deflection plots are to be reduced to a zero datum line through points 'R' and 'F' to eliminate the contribution of jig movement etc. in absolute values.

Angular deflections are to be similarly reduced by subtracting the rotation measured in the plane 'RR-LR' from each absolute rotation value.

3.0 ACCEPTABLE CRITERIA**3.1 Convertible and Cabriolet Vehicles****3.1.1 — Beaming strength criteria**

The average deflection of left and right hand sides from the datum line 'RF' (under the maximum applied load) at any measuring position for the modified vehicle shall not be greater than 1.5 times the deflection recorded for the unmodified vehicle.

3.1.2 — Torsional strength criteria

The reduced angular deflections (under the maximum applied load) at any measuring position for the modified vehicle shall not be greater than 1.5 times the angular deflection recorded for the unmodified vehicle at the same measuring position.

3.2 Extended Wheelbase Sedans

The beaming and torsional deflection of the modified vehicle should increase approximately in proportion to the increase in wheelbase.

3.3 Individually Constructed Vehicles

Where an individually constructed vehicle utilizes a chassis from a standard vehicle without any major modification (eg. unshortened Volkswagen Beetle floorpan) the beaming and torsional deflection of modified vehicle should be approximately equal to the original vehicle from which the chassis was obtained.

If a newly constructed or structurally altered chassis is used, the following beaming and torsional criteria are to be used:-

- | | | |
|--------------------|---|---|
| Beaming Strength | - | Maximum average deflection = 1.25mm. |
| Torsional Strength | - | Four cylinder/rotary engined vehicle under 1000 kg tare mass, 4Nm/degree for each kg tare mass minimum. |
| | - | Four cylinder/rotary engined vehicle 1000 kg or more tare mass, 4000Nm/degree minimum. |
| | - | Vehicle with an engine of more than four cylinders, 6000Nm/degree minimum. |

Figure 1

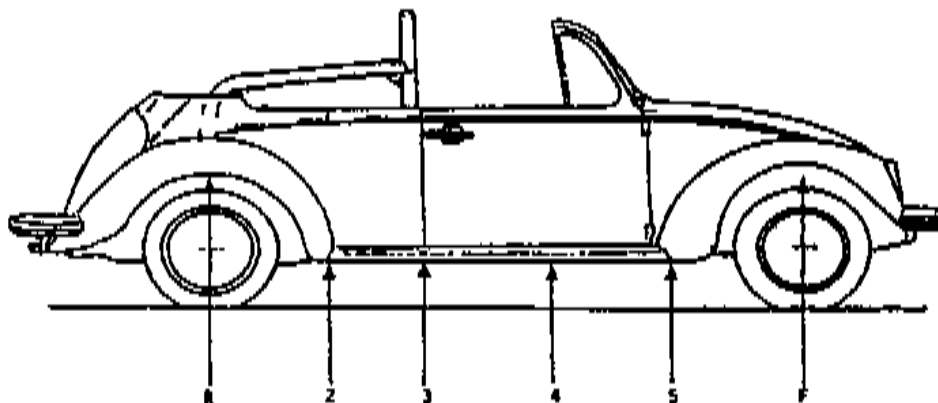


Figure 2

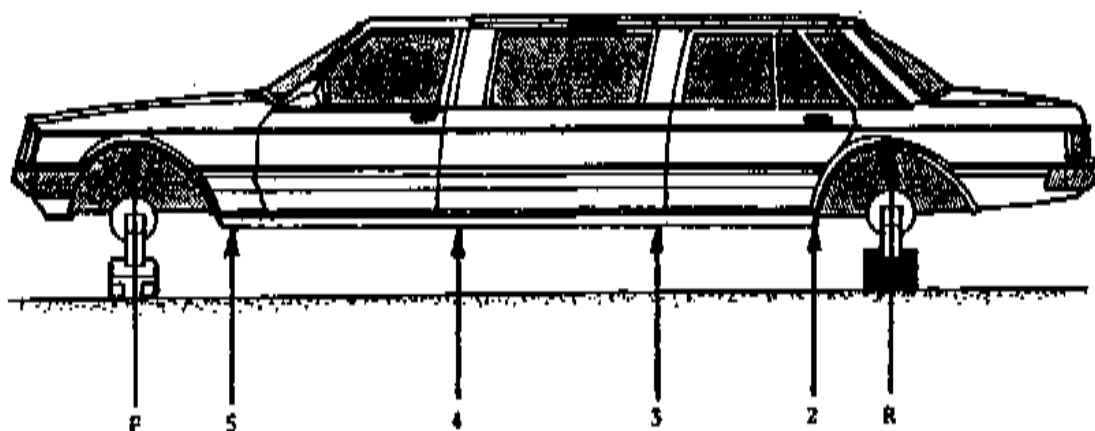
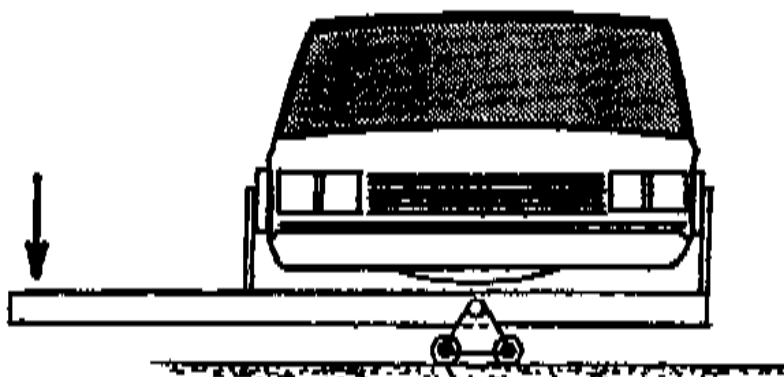


Figure 3



* Rollers or similar to allow transverse movement of hinge point as vehicle rotates.

Note: All hinged panels ajar during test

3.0 CERTIFICATION CODES

The following sections give particular details and limitations on certifications which may be carried out under individual codes.

BEAMING AND TORSIONAL TESTING - LT1**CERTIFICATION TYPES**

The following is a summary of the certification which may be given by officers authorised with Code LT1 - Beaming and Torsional Testing.

Refer also to Section LT - Beaming and Torsional Testing for general technical guidelines.

Scope of work permitted under this Code is:

1. Testing of motor vehicles to determine their structural performance.

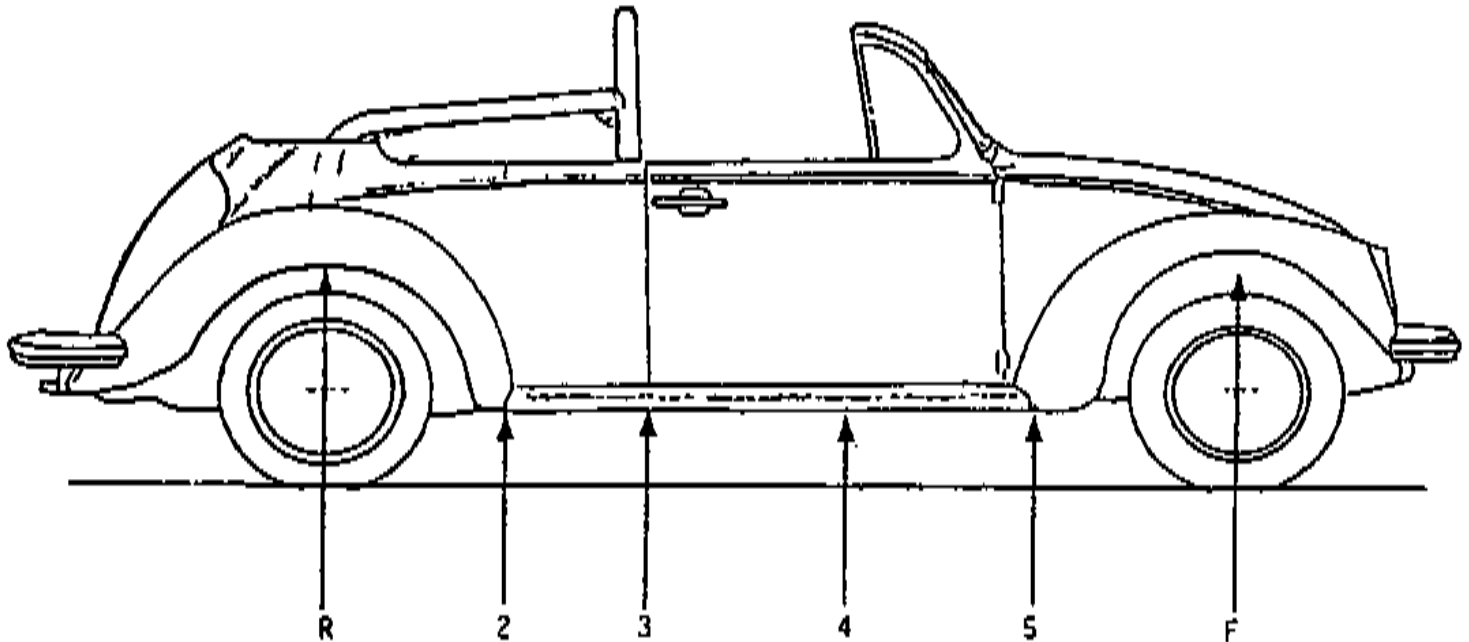
Work not permitted under this Code is:

1. Testing of vehicles with a separate complete chassis.

TEST NO.

FORM NO. LT1

**REPORTING FORM
BEAMING AND TORSIONAL TESTING - LT1**



Gauge Positions

Longitudinal Dimensions

- R - 2 (mm)
- R - 3 (mm)
- R - 4 (mm)
- R - 5 (mm)
- R - F (mm)

Transverse Dimensions

- RR - LR (mm)
- R2 - L2 (mm)
- R3 - L3 (mm)
- R4 - L4 (mm)
- R5 - L5 (mm)
- RF - LF (mm)

BEAMING TEST

Gauge Position	Deflection-Load applied (mm)					Deflection-Load removed (mm)				
	Left	Right	Left red*	Right red*	Average red*	Left	Right	Left red*	Right red*	Average red*
R0..	..0..	..0..	.....	.....	..0..	..0..	..0..
2
3
4
5
F0..	..0..	..0..	.....	.....	..0..	..0..	..0..

* Deflections reduced to datum line through points 'R' and 'F'.

TEST NO.

FORM NO. LT1

TORSIONAL TEST

Gauge Position	Load applied (mm)			Load removed (mm)		
	Deflection		Rotation	Deflection		Rotation
	Left (mm)	Right (mm)	Rotation (°)	Left (mm)	Right (mm)	Rotation (°)
R
2
3
4
5
F

* Rotations reduced by subtracting rotation in rear plane LR-RR.

Load Details

Deflection

Vehicle Mass kg

Number of Seating Positions

Total Load Applied kg

GVM (Load + Vehicle Mass) kg

Torsion

Vehicle Track - Front

- Rear

Load Applied kg

Moment Arm (from vehicle centre line)

Make Model Year of Manufacture

Chassis No. or VIN

Vehicle Modifications

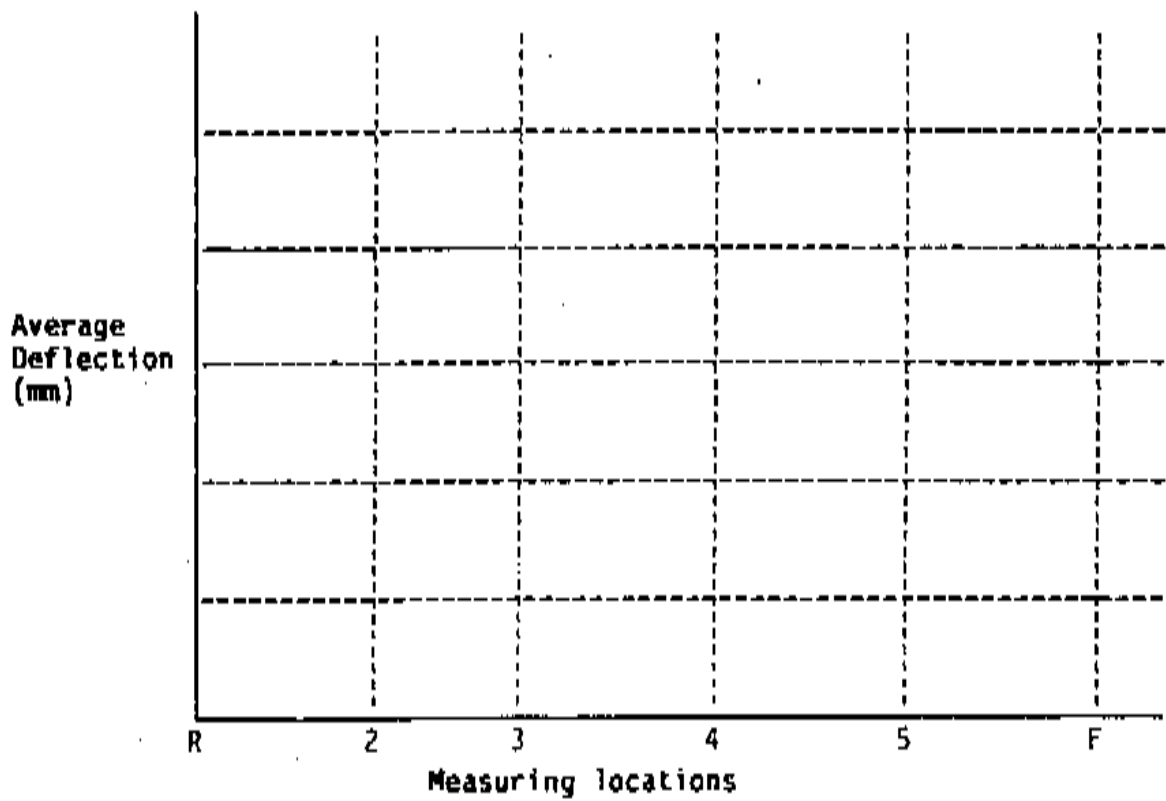
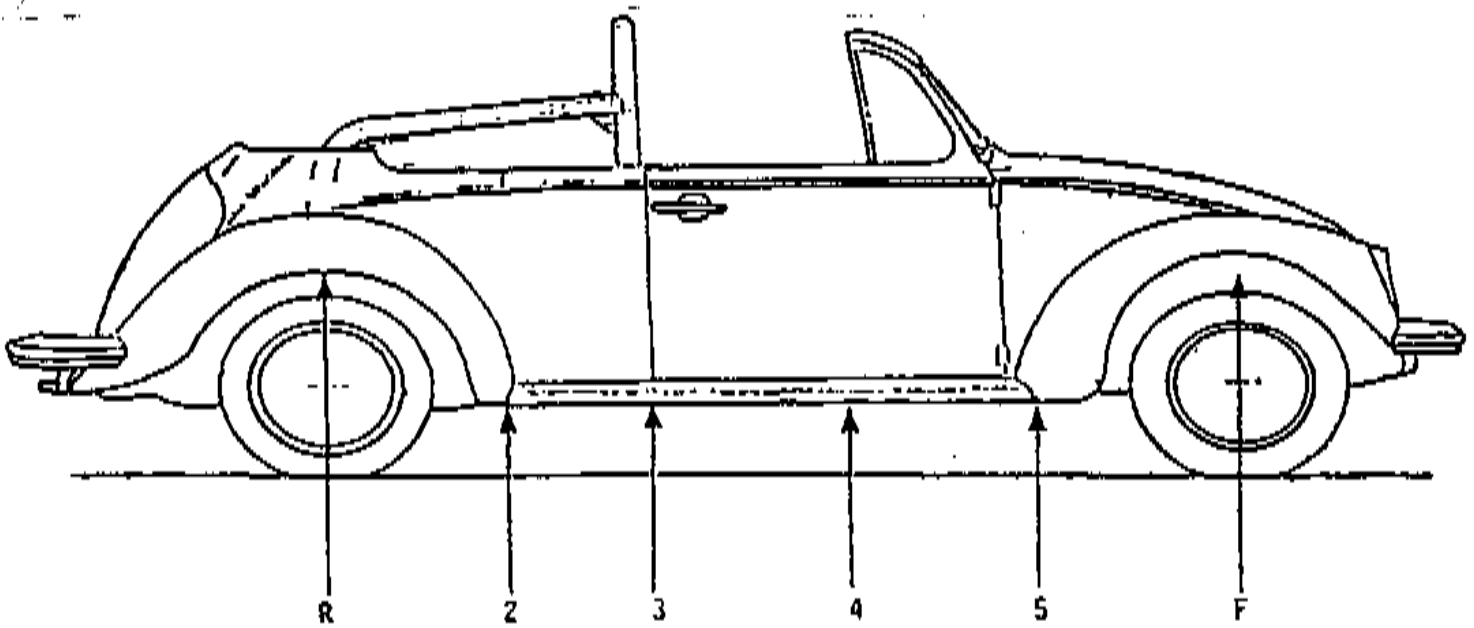
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TEST NO.

FORM NO. LT1

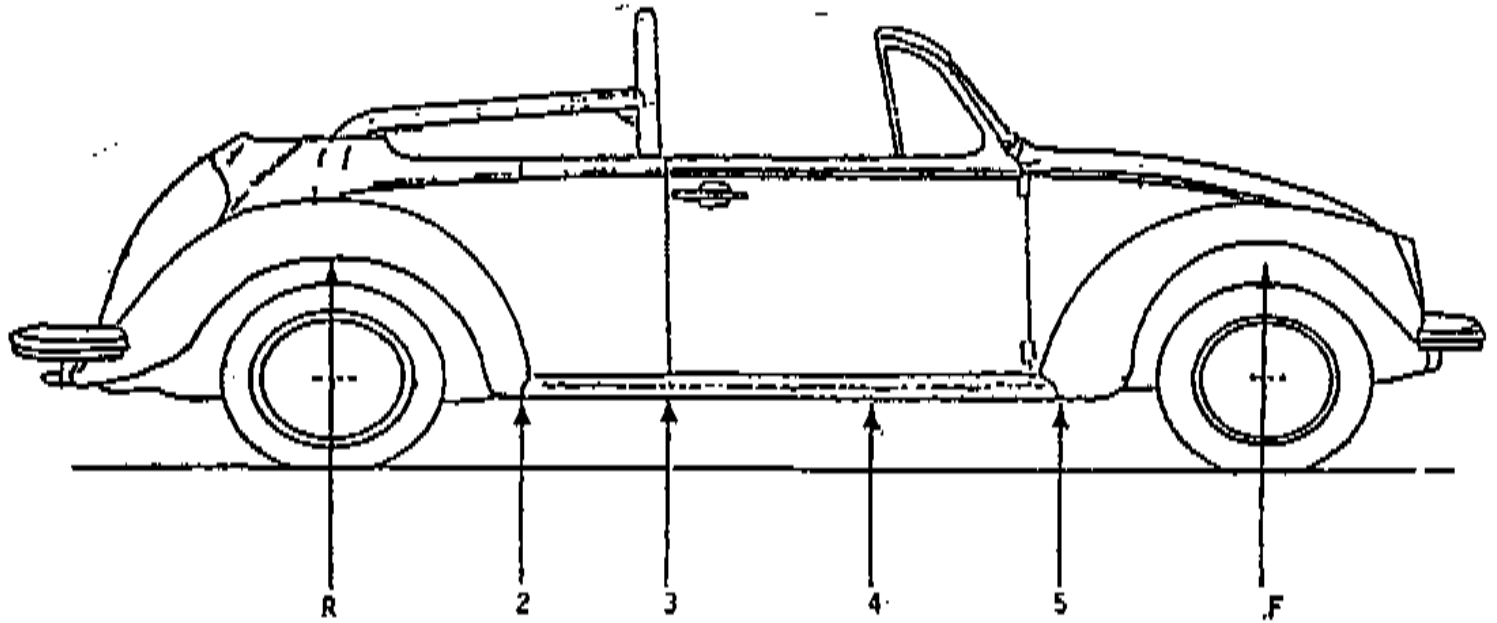


NOTES

.....
.....
.....

TEST NO.

FORM NO. LT1



Torsional
Deflection
(Degrees)

	R	2	3	4	5	F

Measuring locations

NOTES

.....
.....
.....

Test conducted by: Signature:

Authorised Officer No: Date:

TEST NO.

FORM NO. LT1

CHECKLIST**BEAMING AND TORSIONAL TESTING - LT1**

(Y = Yes)(N = No)

- 1.0 TEST PROCEDURES
- 1.1 Has the Gross Vehicle Mass (GVM) been determined by adding the unladen mass to the payload capacity of the vehicle?
(In the case of a passenger carrying vehicle, the payload shall be 68kgs for each seating position) Y N
- 2.0 JIG MEASUREMENTS
- 2.1 Is the vehicle to be tested mounted through the hubs with springs or dampers etc. made incompressible or replaced by spacers? Y N
- 2.2 Are the deflections to be measured at the points shown in Figures 1 and 2? Y N
- 3.0 BEAMING AND TORSIONAL TEST PROCEDURE
- 3.1 Has the unmodified vehicle been tested in accordance with the details outlined in the "General Requirements" section? Y N
- 3.2 Has the modified vehicle been tested in the same manner as the unmodified vehicle? Y N
- NOTE: All hinged panels are to be ajar at all times and fuel tank filled to 75% capacity.
- 4.0 DATA RECORDING
- 4.1 Has all test data, loadings etc. been recorded on the standard testing reporting forms? Y N

TEST NO.

FORM NO. LT1

Vehicle Modified By

Examined and Approved By

Company (if applicable)

Authorised Officer No.

Signed Date

✓

✓

HANDBOOK

AUTHORISED OFFICER HANDBOOK

LIGHT VEHICLES

SER NO.

QUEENSLAND TRANSPORT	MODIFICATION PLATE
	A/OFFICER No:
DATE:	REF. No:
MODIFICATION BY:	
MOD CODES:	
VIN/CHASSIS No:	
TYRE SIZES:	
MOD SEATING CAPACITY:	
MOD G.V.M.:	kg MOD G.C.M.:
	kg

THIS PLATE NOT TO BE REMOVED

AUTHORISED OFFICER HANDBOOK

CONTENTS

SUBJECT	SECTION
INTRODUCTION	1
CODE OF PRACTICE	2
CERTIFICATION PROCEDURES	3
MODIFICATION CODES	4
APPLICATION TO BECOME AN AUTHORISED OFFICER	5
QUALIFICATIONS REQUIRED FOR AUTHORISED OFFICER	6
CERTIFICATES AND MODIFICATION PLATES	7
PRESCRIBED FORMS	8

INTRODUCTION

All vehicles modified in Queensland must receive approval for the modifications from the Queensland Department of Transport. This process ensures that the modifications have been completed to an acceptable standard ensuring that the modified vehicle will continue to operate safely.

To streamline the approval process for vehicle modification approvals, the Authorised Officer Scheme was introduced.

Authorised officers are suitably qualified and experienced persons from private industry who are authorised by the Minister for Transport to issue approvals for certain types of vehicle modifications and to perform certain vehicle certification procedures on behalf of the Queensland Department of Transport.

There are two Authorised Officer Schemes, the Commercial Vehicle Modification Scheme and the Light Vehicle Modification Scheme.

The Light Vehicle Modification Scheme covers modification to the following classes of vehicles:

VEHICLE TYPE	3RD EDITION ADR VEHICLE CATEGORY
Mopeds and Motor Cycles	LA, LB, LC, LD, LE
Passenger Vehicles (Sedans Station Wagons Forward Control Passenger Vehicles)	MA, MB
Passenger Vehicle Derivatives without chassis (Utes, panel vans)	NA
Light Commercial Vehicles up to 4.5 tonnes GVM (Light trucks, vans)	NA, NB (up to 4.5 tonnes GVM)
4WD Vehicles and Light Omnibuses up to 4.5 tonnes GVM	MC, MD (up to 4.5 tonnes GVM)

The Authorised Officer Scheme provides expedient and convenient evaluation and approval of vehicle modifications or vehicle certification at a wide range of locations throughout Queensland.

An important feature of the Authorised Officer Scheme is that it is not necessary for the Authorised Officer to actually perform the vehicle modification. Authorised Officers may inspect modifications performed by another person or organisation and will issue Certificates of Modification if these modifications meet the prescribed Standards.

Authorised Officers may only approve modifications or issue certifications for which they have been authorised with the appropriate codes. Complex modifications may require certification by two or more Authorised Officers with authority covering different types of modifications.

Certain types of complex or unusual modifications are outside the scope of the authorised officer scheme. Approval for modification types or method of modification not described in the Code of Practice may be sought by making written application to the Vehicle Safety Standards Section of the Queensland Department of Transport.

To ensure a uniform approval standard is adopted throughout Queensland, the Queensland Department of Transport has produced a "Code of Practice - Light Vehicles". This Code provides detailed standards for a wide range of modifications and certification procedures for light vehicles.

The Code of Practice is based on accepted vehicle engineering practices and the requirements of the Australian Design Rules for Motor Vehicle Safety. This Code is intended to supplement the recommendations of the original vehicle manufacturer in relation to vehicle modification techniques or standards and to provide guidelines where manufacturer's standards do not exist.

It is important to note that the requirements of the Australian Design Rules and the original vehicle manufacturer's modification guidelines take precedence over the Code of Practice. Authorised Officers must ensure at all times that modifications approved under the Scheme comply with all applicable Australian Design Rules and the original vehicle manufacturer's recommendations when available.

CODE OF PRACTICE

The function of the "Code of Practice" is to outline the guidelines for a number of modifications or certification procedures commonly performed on light vehicles.

Authorised officers appointed under one or a number of Codes are required to ensure that all vehicles presented for modification approval or certification meet either the manufacturer's specified requirements, or where these are not available, those requirements specified in the appropriate section of the Code.

The following policy will apply in respect to all alterations, modifications or certification procedures.

- A vehicle may only be modified in a manner which will ensure that the vehicle maintains compliance with the applicable Australian Design Rules.
- The vehicle manufacturer's recommendations must be followed whenever available. These recommendations should be applicable to those vehicles which are supplied to the Australian market.
- In the absence of the above, Australian Standards are to be followed when applicable.
- In the absence of both of the above, the prescribed "Code of Practice - Light Vehicles" should be utilised.
- It is the responsibility of the authorised officer to obtain the vehicle manufacturer's recommendations, Codes of Practice and all other necessary Australian Standards and Australian Design Rules.
- Records must be kept of all vehicles approved by the authorised officer. Drawings, calculations, procedural details, test results and any other data necessary to fully describe the vehicle modifications or features certified are required to be retained by the authorised officer for a period not less than seven (7) years, for future reference and viewing by Queensland Department of Transport Officers where necessary.
- Drawings and tests completed for one vehicle, will not be required for any identical modifications/alterations, which are undertaken to other vehicles of the same make and model.

CERTIFICATION PROCEDURES

When an Authorised Officer is requested to approve modifications which have been performed on a light vehicle, the following procedure is to be followed:-

STEP 1

a) **Modified Vehicles**

The vehicle is to be inspected to ensure that the modifications have been completed in accordance with the original vehicle manufacturer's recommendations or the Code of Practice. The authorised officer must also be satisfied that the vehicle when modified still complies with all Australian Design Rules to which it was originally manufactured.

OR

a) **Vehicle Certification**

Where any certification procedures are to be performed the authorised officer must satisfy himself that the vehicle meets all of the requirements outlined in the relevant section of the Code of Practice.

b) **The relevant Code of Practice checklist is to be completed to ensure these requirements are met.**

If the vehicle meets the requirements:-

STEP 2

A Certificate of Modification is to be completed.

- One copy of a Certificate of Modification is to be issued to the vehicle owner.
- One copy of the Certificate of Modification is to be retained by the Authorised Officer. **NOTE:** Authorised Officers are required to keep records of all modifications approved, ie. certificates, checklists and any other data used in assessing the compliance of the modifications, for a period of seven (7) years from the date of issue of the certificate.
- One copy of the Certificate of Modification is to be forwarded to:-

Light Vehicle Modifications
Road Use Management & Safety Branch
PO BOX 673
FORTITUDE VALLEY QLD 4006

STEP 3

A Modification Plate issued by the Queensland Department of Transport is to be stamped or engraved with all relevant details. The plate is then affixed in a conspicuous position either adjacent to the vehicle's Compliance Plate, or in the case of a vehicle manufactured prior to 1 January 1972, adjacent to the manufacturer's plate.

PLEASE NOTE

- Under no circumstances, irrespective of the 'modification' or 'de-modification' of a vehicle are modification plates to be removed from a vehicle once affixed by an authorised officer.

If the owner of a vehicle which has been modified requires the vehicle to be returned to an original or previous build standard, (e.g. return to original seating capacity) on completion of the work, there should be at least two modification plates affixed to the vehicle including:

• the plate certifying the original modification and,

• the more recently dated plate reverting the vehicle to the earlier build standard.

- Vehicles should be presented for inspection in a roadworthy condition. An Authorised Officer is not obliged to approve a modification to any vehicle if it is not in a roadworthy condition.

**MODIFICATIONS CODES FOR
AUTHORISED OFFICERS**

<i>CODE</i>	<i>MODIFICATION</i>
LA1	Engine Substitution
LA3	Turbocharger and Supercharger Installation
LB1	Transmission Substitution
LD1	Rear Axle Replacement
LD2	Differential Substitution
LG1	Brake System Substitution (Design)
LG2	Brake System Substitution (Modification)
LH1	Convertible and Cabriolet Conversion (Design)
LH2	Convertible and Cabriolet Conversion (Modification)
LH3	Passenger Vehicle Extended Wheelbase Conversion (Design)
LH4	Passenger Vehicle Extended Wheelbase Conversion (Modification)
LH5	Individual and Low Volume Vehicles (Design)
LH6	Individual and Low Volume Vehicles (Construction)
LH7	Panel Van to Utility Conversion
LH8	Roll Bar and Roll Cage Installation
LH9	Street Rod Certification
LH10	Street Rod Certification
LK1	Seating Capacity Alteration and Seat Belt Installation
LK2	Seat, Seat Anchorage and Seat Belt Anchorage Certification
LK6	Child Restraint Anchorage Installation
LK7	Motorcycle Seating Capacity Alteration
LM1	Fuel Tank Alteration
LO1	Australian Design Rule (ADR) Compliance
LO2	Pre 1972 Imported Vehicle Safety Compliance
LO3	Personally Imported Vehicle Compliance
LS1	Steering Conversion (Design)
LS2	Steering Conversion (Modification)
LT1	Beaming and Torsional Testing

APPLICATION TO BECOME AN AUTHORISED OFFICER

Any company or firm throughout Queensland, which is actively engaged in the construction, modification or alteration of light vehicles, may nominate a person or persons for appointment as authorised officer/s.

The nomination should be made on the prescribed application form - F1855. Applicants should supply accurate details of:-

- A. personal particulars
- B. employer's particulars
- C. codes covering the modification or certification types which the applicant wishes to be authorised to approve (see section 4)
- D. details of the applicant's qualifications and experience relevant to the codes for which authorisation is sought (see section 6)

If necessary more than one person may be nominated for the purpose of certifying different types of modification or alteration.

NOTE:

Nominee applications must be supported by photocopied credentials acceptable to the Queensland Department of Transport. It is the Department's right to reject applications or to request further evidence. Applicants are required to attend a short training course and may be required to submit to a practical examination.

QUALIFICATIONS TO BECOME AN AUTHORISED OFFICER

This section outlines the minimum qualification and equipment requirements necessary to be eligible for nomination for each of the available Authorised Officer Codes.

Persons who do not meet the qualification criteria prescribed for particular Codes, but can provide evidence of competence relevant to that Code, will be considered for authorisation. Full details of relevant experience and any qualifications should be forwarded with the application for consideration.

ENGINE SUBSTITUTION - LA1

For details of the modifications which may be approved under this Code and their technical requirements please refer to Section LA of the Code of Practice - Light Vehicles.

To be eligible for appointment as an Authorised Officer for the Code LA1, all applicants must be able to satisfy the following minimum requirements for qualifications and experience:

Qualifications

Either:

- (a) An "Approved Examiner" appointed under the provisions of the Motor Vehicles Safety Act 1980-1985

Or

- (b) Tradesman's Certificate or Tradesman's Rights for at least one of the following:

- "A" Grade Motor Mechanic
- Diesel Fitter

Or

- (c) A member of the Institution of Engineers Australia or a Registered Professional Engineer as defined by the Professional Engineers Act 1988.

Experience

At least 10 years experience in light vehicle manufacture and/or maintenance and/or modifications.

Equipment

The applicant must demonstrate that he/she owns all of the following:

1. Code of Practice - Light Vehicles.

The applicant must demonstrate that he/she has ready access to all of the following:

1. Queensland Traffic Act and Regulations.
2. Queensland Motor Vehicle Safety Act and Regulations.

TURBOCHARGER AND SUPERCHARGER INSTALLATION - LA3

For details of the modifications which may be approved under this Code and their technical requirements please refer to Section LA of the Code of Practice - Light Vehicles.

To be eligible for appointment as an Authorised Officer for the Code LA3, all applicants must be able to satisfy the following minimum requirements for qualifications and experience:

Qualifications

Either:

- (a) An "Approved Examiner" appointed under the provisions of the Motor Vehicles Safety Act 1980-1985

Or

- (b) Tradesman's Certificate or Tradesman's Rights for at least one of the following:

- "A" Grade Motor Mechanic
- Diesel Fitter

Or

- (c) A member of the Institution of Engineers Australia or a Registered Professional Engineer as defined by the Professional Engineers Act 1988.

Experience

At least 10 years experience in light vehicle manufacture and/or maintenance and/or modifications.

Equipment

The applicant must demonstrate that he/she owns all of the following:

1. Code of Practice - Light Vehicles.

The applicant must demonstrate that he/she has ready access to all of the following:

1. Queensland Traffic Act and Regulations.
2. Queensland Motor Vehicle Safety Act and Regulations.

TRANSMISSION SUBSTITUTION - LB1

For details of the modifications which may be approved under this Code and their technical requirements please refer to Section LB of the Code of Practice - Light Vehicles.

To be eligible for appointment as an Authorised Officer for the Code LB1, all applicants must be able to satisfy the following minimum requirements for qualifications and experience:

Qualifications

Either:

- (a) An "Approved Examiner" appointed under the provisions of the Motor Vehicles Safety Act 1980-1985

Or

- (b) Tradesman's Certificate or Tradesman's Rights for at least one of the following:

- "A" Grade Motor Mechanic
- Diesel Fitter

Or

- (c) A member of the Institution of Engineers Australia or a Registered Professional Engineer as defined by the Professional Engineers Act 1988.

Experience

At least 10 years experience in light vehicle manufacture and/or maintenance and/or modifications.

Equipment

The applicant must demonstrate that he/she owns all of the following:

1. Code of Practice - Light Vehicles.

The applicant must demonstrate that he/she has ready access to all of the following:

1. Queensland Traffic Act and Regulations.
2. Queensland Motor Vehicle Safety Act and Regulations.

REAR AXLE REPLACEMENT - LD1

For details of the modifications which may be approved under this Code and their technical requirements please refer to Section LD of the Code of Practice - Light Vehicles.

To be eligible for appointment as an Authorised Officer for the LD1 code, all applicants must be able to satisfy the following minimum requirements for qualifications and experience:

Qualifications

Either:

- (a) An "Approved Examiner" appointed under the provisions of the Motor Vehicles Safety Act 1980-1985

Or

- (b) Tradesman's Certificate or Tradesman's Rights for at least one of the following:

- "A" Grade Motor Mechanic
- Diesel Fitter

Or

- (c) A member of the Institution of Engineers Australia or a Registered Professional Engineer as defined by the Professional Engineers Act 1988.

Experience

At least 10 years experience in light vehicle manufacture and/or maintenance and/or modifications.

Equipment

The applicant must demonstrate that he/she owns all of the following:

1. Code of Practice - Light Vehicles.

The applicant must demonstrate that he/she has ready access to all of the following:

1. Queensland Traffic Act and Regulations.
2. Queensland Motor Vehicle Safety Act and Regulations.

DIFFERENTIAL SUBSTITUTION - LD2

For details of the modifications which may be approved under this Code and their technical requirements please refer to Section LD of the Code of Practice - Light Vehicles.

To be eligible for appointment as an Authorised Officer for the LD2 code, all applicants must be able to satisfy the following minimum requirements for qualifications and experience:

Qualifications

Either:

- (a) An "Approved Examiner" appointed under the provisions of the Motor Vehicles Safety Act 1980-1985

Or

- (b) Tradesman's Certificate or Tradesman's Rights for at least one of the following:

- "A" Grade Motor Mechanic
- Diesel Fitter

Or

- (c) A member of the Institution of Engineers Australia or a Registered Professional Engineer as defined by the Professional Engineers Act 1988.

Experience

At least 10 years experience in light vehicle manufacture and/or maintenance and/or modifications.

Equipment

The applicant must demonstrate that he/she owns all of the following:

1. Code of Practice - Light Vehicles.

The applicant must demonstrate that he/she has ready access to all of the following:

1. Queensland Traffic Act and Regulations.
2. Queensland Motor Vehicle Safety Act and Regulations.

BRAKE SYSTEM SUBSTITUTION (DESIGN) - LG1

For details of the modifications which may be approved under this Code and their technical requirements, please refer to Section LG of the Code of Practice - Light Vehicles.

To be eligible for appointment as an Authorised Officer for the Code LG1, all applicants must be able to satisfy the following minimum requirements for qualifications and experience:

Qualifications

A member of the Institution of Engineers Australia or a Registered Professional Engineer as defined by the Professional Engineers Act 1988.

Experience

At least 10 years experience in light vehicle manufacture and/or maintenance and/or modifications.

Equipment

The applicant must demonstrate that he/she owns all of the following:

1. Code of Practice - Light Vehicles.

The applicant must demonstrate that he/she has ready access to all of the following:

1. Australian Design Rules for Motor Vehicle Safety - 2nd Edition.
2. Australian Design Rules for Motor Vehicles and Trailers - 3rd Edition.
3. Queensland Traffic Act and Regulations.
4. Queensland Motor Vehicles Safety Act and Regulations.

Automotive Engineering Consultants

The Professional Engineers Act of 1988 stipulates that only a Registered Professional engineer or engineering company may undertake professional engineering services. The modification of motor vehicles which involves major structural and/or component modifications must be carefully designed to safely withstand the imposed loadings. Only registered professional engineers or engineering companies can therefore be authorised to certify the design of this type of modification.

BRAKE SYSTEM SUBSTITUTION (MODIFICATION) - LG2

For details of the modifications which may be approved under this Code and their technical requirements, please refer to Section LG of the Code of Practice - Light Vehicles.

To be eligible for appointment as an Authorised Officer for the Code LG2, all applicants must be able to satisfy the following minimum requirements for qualifications and experience:

Qualifications

Either:

- (a) An "Approved Examiner" appointed under the provisions of the Motor Vehicles Safety Act 1980- 1985

Or

- (b) Tradesman's Certificate or Tradesmans Rights for at least one of the following:
 - "A" Grade Motor Mechanic
 - Diesel Fitter

Or

- (c) Certificate/Diploma/Degree in mechanical/automotive engineering.

Experience

At least 10 years experience in light vehicle manufacture and/or maintenance and/or modifications.

Equipment

The applicant must demonstrate that he/she owns all of the following:

1. Code of Practice - Light Vehicles.

The applicant must demonstrate that he/she has ready access to all of the following:

1. Queensland Traffic Act and Regulations.
2. Queensland Motor Vehicles Safety Act and Regulations.

CONVERTIBLE AND CABRIOLET CONVERSION (DESIGN) - LH1

For details of the modifications which may be approved under this Code and their technical requirements, please refer to Section LH of the Code of Practice - Light Vehicles.

To be eligible for appointment as an Authorised Officer for the Code LH1, all applicants must be able to satisfy the following minimum requirements for qualifications and experience:

Qualifications

A member of the Institution of Engineers Australia or a Registered Professional Engineer as defined by the Professional Engineers Act 1988.

Experience

At least 10 years experience in light vehicle manufacture and/or maintenance and/or modifications.

Equipment

The applicant must demonstrate that he/she owns all of the following:

1. Code of Practice - Light Vehicles.

The applicant must demonstrate that he/she has ready access to all of the following:

1. Australian Design Rules for Motor Vehicle Safety - 2nd Edition.
2. Australian Design Rules for Motor Vehicles and Trailers - 3rd Edition.
3. Queensland Traffic Act and Regulations.
4. Queensland Motor Vehicles Safety Act and Regulations.

Automotive Engineering Consultants

The Professional Engineers Act of 1988 stipulates that only a Registered Professional engineer or engineering company may undertake professional engineering services. The modification of motor vehicles which involves major structural and/or component modifications must be carefully designed to safely withstand the imposed loadings. Only registered professional engineers or engineering companies can therefore be authorised to certify the design of this type of modification.

CONVERTIBLE AND CABRIOLET CONVERSION (MODIFICATION) - LH2

For details of the modifications which may be approved under this Code and their technical requirements, please refer to Section LH of the Code of Practice - Light Vehicles.

To be eligible for appointment as an Authorised Officer for the Code LH2, all applicants must be able to satisfy the following minimum requirements for qualifications and experience:

Qualifications

Either:

- (a) An "Approved Examiner" appointed under the provisions of the Motor Vehicles Safety Act 1980- 1985

Or

- (b) Tradesman's Certificate or Tradesmans Rights for at least one of the following:

- "A" Grade Motor Mechanic
- Fitter Welder
- Body Builder

Or

- (c) Certificate/Diploma/Degree in mechanical/automotive engineering.

Experience

At least 10 years experience in light vehicle manufacture and/or maintenance and/or modifications.

Equipment

The applicant must demonstrate that he/she owns all of the following:

1. Code of Practice - Light Vehicles.

The applicant must demonstrate that he/she has ready access to all of the following:

1. Queensland Traffic Act and Regulations.
2. Queensland Motor Vehicles Safety Act and Regulations.

PASSENGER VEHICLE EXTENDED WHEELBASE CONVERSION (DESIGN) - LH3

For details of the modifications which may be approved under this Code and their technical requirements, please refer to Section LH of the Code of Practice - Light Vehicles.

To be eligible for appointment as an Authorised Officer for the Code LH3, all applicants must be able to satisfy the following minimum requirements for qualifications and experience:

Qualifications

A member of the Institution of Engineers Australia or a Registered Professional Engineer as defined by the Professional Engineers Act 1988.

Experience

At least 10 years experience in light vehicle manufacture and/or maintenance and/or modifications.

Equipment

The applicant must demonstrate that he/she owns all of the following:

1. Code of Practice - Light Vehicles.

The applicant must demonstrate that he/she has ready access to all of the following:

1. Australian Design Rules for Motor Vehicle Safety - 2nd Edition.
2. Australian Design Rules for Motor Vehicles and Trailers - 3rd Edition.
3. Queensland Traffic Act and Regulations.
4. Queensland Motor Vehicles Safety Act and Regulations.

Automotive Engineering Consultants

The Professional Engineers Act of 1988 stipulates that only a Registered Professional engineer or engineering company may undertake professional engineering services. The modification of motor vehicles which involves major structural and/or component modifications must be carefully designed to safely withstand the imposed loadings. Only registered professional engineers or engineering companies can therefore be authorised to certify the design of this type of modification.

PASSENGER VEHICLE EXTENDED WHEELBASE CONVERSION (MODIFICATION) - LH4

For details of the modifications which may be approved under this Code and their technical requirements, please refer to Section LH of the Code of Practice - Light Vehicles.

To be eligible for appointment as an Authorised Officer for the Code LH4, all applicants must be able to satisfy the following minimum requirements for qualifications and experience:

Qualifications

Either:

- (a) An "Approved Examiner" appointed under the provisions of the Motor Vehicles Safety Act 1980- 1985

Or

- (b) Tradesman's Certificate or Tradesmans Rights for at least one of the following:

- "A" Grade Motor Mechanic
- Fitter Welder
- Panel Beater
- Body Builder

Or

- (c) Certificate/Diploma/Degree in mechanical/automotive engineering.

Experience

At least 10 years experience in light vehicle manufacture and/or maintenance and/or modifications.

Equipment

The applicant must demonstrate that he/she owns all of the following:

1. Code of Practice - Light Vehicles.

The applicant must demonstrate that he/she has ready access to all of the following:

1. Queensland Traffic Act and Regulations.
2. Queensland Motor Vehicles Safety Act and Regulations.

INDIVIDUAL AND LOW VOLUME VEHICLES (DESIGN) - LH5

For details of the modifications which may be approved under this Code and their technical requirements, please refer to Section LH of the Code of Practice - Light Vehicles.

To be eligible for appointment as an Authorised Officer for the Code LH5, all applicants must be able to satisfy the following minimum requirements for qualifications and experience:

Qualifications

A member of the Institution of Engineers Australia or a Registered Professional Engineer as defined by the Professional Engineers Act 1988.

Experience

At least 10 years experience in light vehicle manufacture and/or maintenance and/or modifications.

Equipment

The applicant must demonstrate that he/she owns all of the following:

1. Code of Practice - Light Vehicles.

The applicant must demonstrate that he/she has ready access to all of the following:

1. Australian Design Rules for Motor Vehicle Safety - 2nd Edition.
2. Australian Design Rules for Motor Vehicles and Trailers - 3rd Edition.
3. Queensland Traffic Act and Regulations.
4. Queensland Motor Vehicles Safety Act and Regulations.

Automotive Engineering Consultants

The Professional Engineers Act of 1988 stipulates that only a Registered Professional engineer or engineering company may undertake professional engineering services. The modification of motor vehicles which involves major structural and/or component modifications must be carefully designed to safely withstand the imposed loadings. Only registered professional engineers or engineering companies can therefore be authorised to certify the design of this type of modification.

INDIVIDUAL AND LOW VOLUME VEHICLES (CONSTRUCTION) - LH6

For details of the modifications which may be approved under this Code and their technical requirements, please refer to Section LH of the Code of Practice - Light Vehicles.

To be eligible for appointment as an Authorised Officer for the Code LH6, all applicants must be able to satisfy the following minimum requirements for qualifications and experience:

Qualifications

Either:

- (a) An "Approved Examiner" appointed under the provisions of the Motor Vehicles Safety Act 1980- 1985

Or

- (b) Tradesman's Certificate or Tradesmans Rights for at least one of the following:

- "A" Grade Motor Mechanic
- Fitter Welder
- Diesel Fitter

Or

- (c) Certificate/Diploma/Degree in mechanical/automotive engineering.

Experience

At least 10 years experience in light vehicle manufacture and/or maintenance and/or modifications.

Equipment

The applicant must demonstrate that he/she owns all of the following:

1. Code of Practice - Light Vehicles.

The applicant must demonstrate that he/she has ready access to all of the following:

1. Queensland Traffic Act and Regulations.
2. Queensland Motor Vehicles Safety Act and Regulations.

PANEL VAN TO UTILITY CONVERSION - LH7

For details of the modifications which may be approved under this Code and their technical requirements, please refer to Section LH of the Code of Practice - Light Vehicles.

To be eligible for appointment as an Authorised Officer for the Code LH7, all applicants must be able to satisfy the following minimum requirements for qualifications and experience:

Qualifications

Either:

- (a) An "Approved Examiner" appointed under the provisions of the Motor Vehicles Safety Act 1980- 1985

Or

- (b) Tradesman's Certificate or Tradesmans Rights for at least one of the following:

- "A" Grade Motor Mechanic
- Fitter Welder
- Panel Beater
- Body Builder

Or

- (c) Certificate/Diploma/Degree in mechanical/automotive engineering.

Experience

At least 10 years experience in light vehicle manufacture and/or maintenance and/or modifications.

Equipment

The applicant must demonstrate that he/she owns all of the following:

1. Code of Practice - Light Vehicles.

The applicant must demonstrate that he/she has ready access to all of the following:

1. Queensland Traffic Act and Regulations.
2. Queensland Motor Vehicles Safety Act and Regulations.

ROLL BAR AND ROLL CAGE INSTALLATION - LH8

For details of the modifications which may be approved under this Code and their technical requirements, please refer to Section LH of the Code of Practice - Light Vehicles.

To be eligible for appointment as an Authorised Officer for the Code LH8, all applicants must be able to satisfy the following minimum requirements for qualifications and experience:

Qualifications

Either:

- (a) An "Approved Examiner" appointed under the provisions of the Motor Vehicles Safety Act 1980- 1985

Or

- (b) Tradesman's Certificate or Tradesmans Rights for at least one of the following:

- "A" Grade Motor Mechanic
- Fitter Welder
- Panel Beater
- Body Builder

Or

- (c) Certificate/Diploma/Degree in mechanical/automotive engineering.

Experience

At least 10 years experience in light vehicle manufacture and/or maintenance and/or modifications.

Equipment

The applicant must demonstrate that he/she owns all of the following:

1. Code of Practice - Light Vehicles.

The applicant must demonstrate that he/she has ready access to all of the following:

1. Queensland Traffic Act and Regulations.
2. Queensland Motor Vehicles Safety Act and Regulations.

STREET ROD CERTIFICATION - LH9

For details of the modifications which may be approved under this Code and their technical requirements, please refer to Section LH of the Code of Practice - Light Vehicles.

To be eligible for appointment as an Authorised Officer for the Code LH9, all applicants must be able to satisfy the following minimum requirements for qualifications and experience:

Qualifications

Either:

- (a) An "Approved Examiner" appointed under the provisions of the Motor Vehicles Safety Act 1980-1985

Or

- (b) Tradesman's Certificate or Tradesman's Rights for at least one of the following:

- Motor Mechanic
- Fitter Welder
- Diesel Fitter

Or

- (c) Certificate/Diploma/Degree in mechanical/automotive engineering.

Experience

At least 5 years experience in light vehicle manufacture and/or maintenance and/or modifications plus additional experience relevant to Street Rod vehicles sufficient to satisfy the Australian Street Rod Federation Queensland Technical Advisory Committee.

Equipment

The applicant must demonstrate that he/she owns all of the following:

1. Code of Practice - Light Vehicles.
2. Australian Street Rod Federation Queensland Street Rod Guidelines.

The applicant must demonstrate that he/she has ready access to all of the following:

1. Queensland Traffic Act and Regulations.
2. Queensland Motor Vehicles Safety Act and Regulations.

STREET ROD CERTIFICATION - LH10

For details of the modifications which may be approved under this Code and their technical requirements, please refer to Section LH of the Code of Practice - Light Vehicles.

To be eligible for appointment as an Authorised Officer for the Code LH10, all applicants must be able to satisfy the following minimum requirements for qualifications and experience:

Qualifications

Either:

- (a) An "Approved Examiner" appointed under the provisions of the Motor Vehicles Safety Act 1980-1985

Or

- (b) Tradesman's Certificate or Tradesman's Rights for at least one of the following:

- Motor Mechanic
- Fitter Welder
- Diesel Fitter

Or

- (c) Certificate/Diploma/Degree in mechanical/automotive engineering.

Experience

At least 5 years experience in light vehicle manufacture and/or maintenance and/or modifications plus additional experience relevant to Street Rod vehicles sufficient to satisfy the Australian Street Rod Federation Queensland Technical Advisory Committee.

Equipment

The applicant must demonstrate that he/she owns all of the following:

1. Code of Practice - Light Vehicles.
2. Australian Street Rod Federation Queensland Street Rod LH10 Guidelines.

The applicant must demonstrate that he/she has ready access to all of the following:

1. Queensland Traffic Act and Regulations.
2. Queensland Motor Vehicles Safety Act and Regulations.

SEATING CAPACITY ALTERATION AND SEAT BELT INSTALLATION - LK1

For details of the modifications which may be approved under this Code and their technical requirements please refer to Section LK of the Code of Practice - Light Vehicles.

To be eligible for appointment as an Authorised Officer for the Code LK1, all applicants must be able to satisfy the following minimum requirements for qualifications and experience:

Qualifications

Either:

- (a) An "Approved Examiner" appointed under the provisions of the Motor Vehicles Safety Act 1980-1985

Or

- (b) Tradesman's Certificate or Tradesman's Rights for at least one of the following:

- "A" Grade Motor Mechanic
- Fitter Welder
- Panel Beater
- Body Builder

Or

- (c) Certificate/Diploma/Degree in mechanical/automotive engineering.

Experience

At least 10 years experience in light vehicle manufacture and/or maintenance and/or modifications.

Equipment

The applicant must demonstrate that he/she owns all of the following:

1. Code of Practice - Light Vehicles.

The applicant must demonstrate that he/she has ready access to all of the following:

1. Australian Design Rules for Motor Vehicle Safety - 2nd Edition.
2. Australian Design Rules for Motor Vehicles and Trailers - 3rd Edition.
3. Queensland Traffic Act and Regulations.
4. Queensland Motor Vehicle Safety Act and Regulations.

SEAT, SEAT ANCHORAGE AND SEAT BELT ANCHORAGE CERTIFICATION - LK2

For details of the modifications which may be approved under this Code and their technical requirements please refer to Section LK of the Code of Practice - Light Vehicles.

To be eligible for appointment as an Authorised Officer for the Code LK2, all applicants must be able to satisfy the following minimum requirements for qualifications and experience:

Qualifications

A member of the Institution of Engineers Australia or a Registered Professional Engineer as defined by the Professional Engineers Act 1988.

Experience

At least 10 years experience in light vehicle manufacture and/or maintenance and/or modifications.

Equipment

The applicant must demonstrate that he/she owns all of the following:

1. Code of Practice - Light Vehicles.

The applicant must demonstrate that he/she has ready access to all of the following:

1. Australian Design Rules for Motor Vehicle Safety - 2nd Edition.
2. Australian Design Rules for Motor Vehicles and Trailers - 3rd Edition.
3. Queensland Traffic Act and Regulations.
4. Queensland Motor Vehicle Safety Act and Regulations.

Automotive Engineering Consultants

The Professional Engineers Act of 1988 stipulates that only a registered professional engineer or engineering company may undertake professional engineering services. The modification of motor vehicles which involves major structural and/or component modifications must be carefully designed to safely withstand the imposed loadings. Only registered professional engineers or engineering companies can therefore be authorised to certify the design of this type of modification.

CHILD RESTRAINT ANCHORAGE INSTALLATION - LK6

For details of the modifications which may be approved under this Code and their technical requirements please refer to Section LK of the Code of Practice - Light Vehicles.

To be eligible for appointment as an *Authorised Officer* for the Code LK6, all applicants must be able to satisfy the following minimum requirements for qualifications and experience:

Qualifications

Either:

- (a) An "Approved Examiner" appointed under the provisions of the Motor Vehicles Safety Act 1980-1985

Or

- (b) Tradesman's Certificate or Tradesman's Rights for at least one of the following:

- "A" Grade Motor Mechanic
- Fitter Welder
- Panel Beater
- Body Builder

Or

- (c) Certificate/Diploma/Degree in mechanical/automotive engineering.

Experience

At least 10 years experience in light vehicle manufacture and/or maintenance and/or modifications.

Equipment

The applicant must demonstrate that he/she owns all of the following:

1. Code of Practice - Light Vehicles.

The applicant must demonstrate that he/she has ready access to all of the following:

1. Australian Design Rules for Motor Vehicle Safety - 2nd Edition.
2. Australian Design Rules for Motor Vehicles and Trailers - 3rd Edition.
3. Queensland Traffic Act and Regulations.
4. Queensland Motor Vehicle Safety Act and Regulations.

MOTORCYCLE SEATING CAPACITY ALTERATION - LK7

For details of the modifications which may be approved under this Code and their technical requirements please refer to Section LK of the Code of Practice - Light Vehicles.

To be eligible for appointment as an Authorised Officer for the Code LK7, all applicants must be able to satisfy the following minimum requirements for qualifications and experience:

Qualifications

Either:

- (a) An "Approved Examiner" appointed under the provisions of the Motor Vehicles Safety Act 1980- 1985

Or

- (b) Tradesman's Certificate or Tradesman's Rights for:

- Motorcycle Mechanic
- "A" Grade Motor Mechanic
- Diesel Fitter

Or

- (c) Certificate/Diploma/Degree in mechanical/automotive engineering.

Experience

At least 10 years experience in motorcycle or light vehicle manufacture and/or maintenance and/or modifications.

Equipment

The applicant must demonstrate that he/she owns all of the following:

1. Code of Practice - Light Vehicles.

FUEL TANK ALTERATION - LM1

For details of the modifications which may be approved under this Code and their technical requirements, please refer to Section LM of the Code of Practice - Light Vehicles.

To be eligible for appointment as an Authorised Officer for the Code LM1, all applicants must be able to satisfy the following minimum requirements for qualifications and experience:

Qualifications

Either:

- (a) An "Approved Examiner" appointed under the provisions of the Motor Vehicles Safety Act 1980- 1985

Or

- (b) Tradesman's Certificate or Tradesmans Rights for at least one of the following:

- "A" Grade Motor Mechanic
- Diesel Fitter

Or

- (c) Certificate/Diploma/Degree in mechanical/automotive engineering.

Experience

At least 10 years experience in light vehicle manufacture and/or maintenance and/or modifications.

Equipment

The applicant must demonstrate that he/she owns all of the following:

1. Code of Practice - Light Vehicles.

The applicant must demonstrate that he/she has ready access to all of the following:

1. Queensland Traffic Act and Regulations.
2. Queensland Motor Vehicles Safety Act and Regulations.

AUSTRALIAN DESIGN RULE (ADR) COMPLIANCE - LO1

For details of the certifications which may be approved under this Code and their technical requirements please refer to Section LO of the Code of Practice - Light Vehicles.

To be eligible for appointment as an Authorised Officer for the Code LO1, all applicants must be able to satisfy the following minimum requirements for qualifications and experience:

Qualifications

A member of the Institution of Engineers Australia or a Registered Professional Engineer as defined by the Professional Engineers Act 1988.

Experience

At least 10 years experience in light vehicle manufacture and/or maintenance and/or modifications.

Equipment

The applicant must demonstrate that he/she owns all of the following:

1. Code of Practice - Light Vehicles.

The applicant must demonstrate that he/she has ready access to all of the following:

1. Australian Design Rules for Motor Vehicle Safety - 2nd Edition.
2. Australian Design Rules for Motor Vehicles and Trailers - 3rd Edition.
3. Queensland Traffic Act and Regulations.
4. Queensland Motor Vehicle Safety Act and Regulations.

Automotive Engineering Consultants

The Professional Engineers Act of 1988 stipulates that only a registered professional engineer or engineering company may undertake professional engineering services. The modification of motor vehicles which involves major structural and/or component modifications must be carefully designed to safely withstand the imposed loadings. Only registered professional engineers or engineering companies can therefore be authorised to certify the design of this type of modification.

PRE 1972 IMPORTED VEHICLE SAFETY COMPLIANCE - L02

For details of the certifications which may be approved under this Code and their technical requirements please refer to Section LO of the Code of Practice - Light Vehicles.

To be eligible for appointment as an Authorised Officer for the Code LO2, all applicants must be able to satisfy the following minimum requirements for qualifications and experience:

Qualifications

A member of the Institution of Engineers Australia or a Registered Professional Engineer as defined by the Professional Engineers Act 1988.

Experience

At least 10 years experience in light vehicle manufacture and/or maintenance and/or modifications.

Equipment

The applicant must demonstrate that he/she owns all of the following:

1. Code of Practice - Light Vehicles.

The applicant must demonstrate that he/she has ready access to all of the following:

1. Australian Design Rules for Motor Vehicle Safety - 2nd Edition.
2. Australian Design Rules for Motor Vehicles and Trailers - 3rd Edition.
3. Queensland Traffic Act and Regulations.
4. Queensland Motor Vehicle Safety Act and Regulations.

Automotive Engineering Consultants

The Professional Engineers Act of 1988 stipulates that only a registered professional engineer or engineering company may undertake professional engineering services. The modification of motor vehicles which involves major structural and/or component modifications must be carefully designed to safely withstand the imposed loadings. Only registered professional engineers or engineering companies can therefore be authorised to certify the design of this type of modification.

PERSONALLY IMPORTED VEHICLE SAFETY COMPLIANCE - L03

For details of the certifications which may be approved under this Code and their technical requirements please refer to Section LO of the Code of Practice - Light Vehicles.

To be eligible for appointment as an Authorised Officer for the Code L03, all applicants must be able to satisfy the following minimum requirements for qualifications and experience:

Qualifications

A member of the Institution of Engineers Australia or a Registered Professional Engineer as defined by the Professional Engineers Act 1988.

Experience

At least 10 years experience in light vehicle manufacture and/or maintenance and/or modifications.

Equipment

The applicant must demonstrate that he/she owns all of the following:

1. Code of Practice - Light Vehicles.

The applicant must demonstrate that he/she has ready access to all of the following:

1. Australian Design Rules for Motor Vehicle Safety - 2nd Edition.
2. Australian Design Rules for Motor Vehicles and Trailers - 3rd Edition.
3. Queensland Traffic Act and Regulations.
4. Queensland Motor Vehicle Safety Act and Regulations.

Automotive Engineering Consultants

The Professional Engineers Act of 1988 stipulates that only a registered professional engineer or engineering company may undertake professional engineering services. The modification of motor vehicles which involves major structural and/or component modifications must be carefully designed to safely withstand the imposed loadings. Only registered professional engineers or engineering companies can therefore be authorised to certify the design of this type of modification.

STEERING CONVERSION (DESIGN) - LS1

For details of the modifications which may be approved under this Code and their technical requirements please refer to Section LS of the Code of Practice - Light Vehicles.

To be eligible for appointment as an Authorised Officer for the Code LS1, all applicants must be able to satisfy the following minimum requirements for qualifications and experience:

Qualifications

A member of the Institution of Engineers Australia or a Registered Professional Engineer as defined by the Professional Engineers Act 1988.

Experience

At least 10 years experience in light vehicle manufacture and/or maintenance and/or modifications.

Equipment

The applicant must demonstrate that he/she owns all of the following:

1. Code of Practice - Light Vehicles.

The applicant must demonstrate that he/she has ready access to all of the following:

1. Australian Design Rules for Motor Vehicle Safety - 2nd Edition.
2. Australian Design Rules for Motor Vehicles and Trailers - 3rd Edition.
3. Queensland Traffic Act and Regulations.
4. Queensland Motor Vehicle Safety Act and Regulations.

Automotive Engineering Consultants

The Professional Engineers Act of 1988 stipulates that only a registered professional engineer or engineering company may undertake professional engineering services. The modification of motor vehicles from left hand to right hand drive generally involves major structural and/or component modifications which must be carefully designed to safely withstand the imposed loadings. Only registered professional engineers or engineering companies can therefore be authorised to certify the design of this type of modification.

STEERING CONVERSION (MODIFICATION) - LS2

For details of the modifications which may be approved under this Code and their technical requirements please refer to Section LS of the Code of Practice - Light Vehicles.

To be eligible for appointment as an Authorised Officer for the Code LS2, all applicants must be able to satisfy the following minimum requirements for qualifications and experience:

Qualifications

Either:

- (a) An "Approved Examiner" appointed under the provisions of the Motor Vehicles Safety Act 1980-1985

Or

- (b) Tradesman's Certificate or Tradesman's Rights for at least one of the following:

- "A" Grade Motor Mechanic
- Fitter Welder
- Panel Beater
- Body Builder

Or

- (c) Certificate/Diploma/Degree in mechanical/automotive engineering.

Experience

At least 10 years experience in light vehicle manufacture and/or maintenance and/or modifications.

Equipment

The applicant must demonstrate that he/she owns all of the following:

1. Code of Practice - Light Vehicles.

The applicant must demonstrate that he/she has ready access to all of the following:

1. Queensland Traffic Act and Regulations.
2. Queensland Motor Vehicle Safety Act and Regulations.

BEAMING AND TORSIONAL TESTING - LT1

For details of the modifications which may be approved under this Code and their technical requirements please refer to Section LT of the Code of Practice - Light Vehicles.

To be eligible for appointment as an Authorised Officer for the Code LT1, all applicants must be able to satisfy the following minimum requirements for qualifications and experience:

Qualifications

A member of the Institution of Engineers Australia or a Registered Professional Engineer as defined by the Professional Engineers Act 1988.

Experience

At least 10 years experience in light vehicle manufacture and/or maintenance and/or modifications.

Equipment

The applicant must demonstrate that he/she owns all of the following:

1. Code of Practice - Light Vehicles.

The applicant must demonstrate that he/she has ready access to all of the following:

1. Australian Design Rules for Motor Vehicle Safety - 2nd Edition.
2. Australian Design Rules for Motor Vehicles and Trailers - 3rd Edition.
3. Queensland Traffic Act and Regulations.
4. Queensland Motor Vehicle Safety Act and Regulations.

Automotive Engineering Consultants

The Professional Engineers Act of 1988 stipulates that only a registered professional engineer or engineering company may undertake professional engineering services. The modification of motor vehicles which require beaming and torsional testing generally involves major structural and/or component modifications which must be carefully designed to safely withstand the imposed loadings. Only registered professional engineers or engineering companies can therefore be authorised to certify this type of testing.

CERTIFICATES AND MODIFICATION PLATES

Modification plates and books of certificate of modification forms may be purchased from any Department of Transport Motor Vehicle Inspection Centre.

Note: It is necessary to complete an application form and produce an Authorised Officer's certificate for sighting at the time of purchase.

PRESCRIBED FORMS

- Form F1855
Authorised Officer Application

Authorised Officer Application



This application is a requirement of the *Motor Vehicles Safety Act 1980-1985* (Old)

Personal Details

Family name _____ Given name/s _____ Male Female

Postal address _____
Postcode _____ Telephone _____

Place of birth _____ Date of birth ____/____/____ Height _____ Complexion _____
Natural hair colour _____ Eye colour _____ Driver's Licence Number _____

Employer Details

Name _____
Address _____
Postcode _____ Telephone _____

Other Details (If more space is required please use the back of this form)

Qualifications (Copies of qualifications must be attached) _____

Experience (Copies of work references certifying experience must be attached) _____

Codes Sought _____

Declaration

I hereby certify that the above information is true and correct in every particular.

Signed on ____/____/____ at _____ City / Town

Applicant's signature _____ Employer's endorsement _____

Applicant's signature (sample)

Form F1855 Jan 81

Category:	National Code of Practice
Title:	Manufacture of Additional Seats
Initiated by:	Australian Motor Vehicle Certification Board
Date of issue:	October 1991
Date of effect:	Immediate

Bulletin No.

5

Vehicle Standards Bulletin

National Code of Practice

Manufacture of Additional Seats

THIS CODE DOES NOT COVER ADMINISTRATIVE REQUIREMENTS WHICH ARE IMPOSED BY STATE, TERRITORY AND FEDERAL JURISDICTIONS

Many vehicles are fitted with additional seats.

This Code of Practice is intended as a guide for manufacturers and installers of additional seats.

The Vehicle Standards Bulletin provides information for those associated with the design, manufacture, sale, maintenance or repair of motor vehicles and trailers.

The series is a major channel for communication from the Federal Office of Road Safety in the case of matters relating to new vehicles, and from the Australian Transport Advisory Council and its committees in the case of vehicles in service.

The series:

- gives advance notice of matters of concern;
- sets out codes and other standards which supplement the ADRs and AIRs; and
- provides advice concerning vehicle design, safety and operation.



Federal Office of Road Safety

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An information series supplementing the Australian design rules for motor vehicles and trailers (ADRs) and the Australian in-service rules for motor vehicles and trailers (AIRs)

V E H I C L E S T A N D A R D S B U L L E T I N S

A complete list of Vehicle Standards Bulletins (VSBs) is as follows:

- VSB 1 **Building Small Trailers (issued February 1990)**
- Revision 1 (issued July 1991)
- Amendment 1 (issued September 1991)
- VSB 2 **Maximum Road Speed Limiting for Heavy Trucks and Buses**
(issued October 1990)
- VSB 3 **Vehicle Safety Recalls Update (Information Bulletin - first**
issued October 1991)
- VSB 4 **Steering Conversions for Left Hand Drive Vehicles (Code of**
Practice - issued October 1991)
- VSB 5 **Manufacture of Additional Seats (Code of Practice - issued**
October 1991)
- VSB 6 **National Standards Warning List (Periodical - first issue**
under preparation)

Issued by the
Administrator, Motor Vehicle Standards
in consultation with the
Australian Motor Vehicle Certification Board
comprising Commonwealth, State and Territory representatives



NATIONAL CODE OF PRACTICE

MANUFACTURE OF ADDITIONAL SEATS

This Code does not cover administrative requirements which are imposed by State, Territory and Federal jurisdictions

Many vehicles are fitted with additional seats.

This Code of Practice is intended as a guide for manufacturers and installers of additional seats.

CONTENTS

SCOPE	1
CAUTION	1
APPLICABILITY	1
GENERAL	1
SEAT LOCATION REQUIREMENTS	2
SIDE FACING SEATS	2
CHILD RESTRAINT ANCHOR POINTS	2
RELOCATION OF SPARE WHEEL	2
INTERFERENCE WITH EXISTING SAFETY EQUIPMENT	2
LABELLING OF SEATS	3
SEAT CONSTRUCTION	3
SUBMISSION OF EVIDENCE	3
INSTALLATION KIT	3
Installation Instructions	3
Installation Hardware	4
Seat Label	4
SPACE REQUIREMENTS	4
Head Space	4
Leg Space	4
Seat Width	5
SEAT STRENGTH	5
Forward Facing Seats	5
Rearward Facing Seats	5
SEAT BELTS	5
SEAT BELT ANCHORAGES	6
HEAD RESTRAINTS	6
Forward Facing Seats	6
Rear Facing Seats	7
PADDING	7
FIGURE 1-HEAD AND LEG SPACE	8
FIGURE 2-TEMPLATE FOR DETERMINING HEAD AND LEG SPACE	9
FIGURE 3-DIMENSIONS OF HEAD RESTRAINTS	10

SCOPE

This Code of Practice provides guidelines for vehicle modifiers, seat manufacturers and seat suppliers to assist them in ensuring that the additional seats constructed, supplied and/or installed by them comply with an acceptable level of occupant protection.

CAUTION

Seats and seat belts play a critical role in occupant protection and personal comfort. The seat and seat belt can be subjected to substantial forces in an accident so they must be carefully designed, constructed and installed to ensure that they provide adequate protection.

Where additional seats result in a change of vehicle category from a goods carrying vehicle (Category N series) to a passenger carrying vehicle (Category MA, MB and MC) the modified vehicle must be certified as a vehicle which has undergone a second stage of manufacture and be affixed with a second stage of manufacture compliance plate.

APPLICABILITY

This Code of Practice is applicable to additional seats for cars, station wagons, vans, utilities, campervans, small buses and light trucks. (ADR Vehicle Categories : MA - passenger cars, MB - forward control passenger vehicles, MC - off-road passenger vehicles, MD - light omnibus, NA - light goods vehicles and NB1 - medium goods vehicles up to 4.5 tonnes GVM).

GENERAL

For the purpose of this Code of Practice, additional seats are divided into three categories to allow seats to be designed for occupants of different size and mass. The seat categories are:

- Category 1 - Seats intended for use by adults;
- Category 2 - Seats restricted to use by children up to 12 years of age; and
- Category 3 - Seats restricted to use by children up to 8 years of age.

Category 2 and 3 seats may only be installed when the seat manufacturer or installer can demonstrate that the head space and leg space available are only sufficient to accommodate a child up to a 50 percentile 12 year old male child in the case of a Category 2 seat or a child up to a 50 percentile 8 year old male child in the case of a Category 3 seat.

This is aimed at ensuring that the possibility of a seat being occupied by a person larger or heavier than the seat is designed to accommodate is reduced to a minimum.

Although this Code of Practice uses a template to determine head and leg space and for positioning the torso reference line to enable head restraint position and size to be determined; head space, leg space and head restraint position and size data obtained by using an H-Point Machine, as defined in SAE J826 November 1962 or SAE J826 APR 80 will be accepted

SEAT LOCATION REQUIREMENTS

Careful consideration should be given to the suitability of the vehicle before additional seat/s are installed. Aspects that should be considered when assessing the suitability of a vehicle for the installation of additional seats are:

- the space available in the vehicle shall be sufficient to accommodate the additional seats and occupants. Specifications regarding the space required for additional seats and occupants are set out in Figure 1;
- additional seats shall not be installed in the trays of utilities or trucks unless adequate roll-over protection is provided. Fibreglass, plastic and light steel canopies do not provide adequate roll-over protection;
- additional seats shall not be installed in the vehicle in a location where there is a high probability that the occupants will be injured in an accident. For example there is a high probability that an occupant in a rear facing seat in the rear of a small station wagon would suffer leg injuries in a rear end collision, because the occupant's legs are located in an area that will crumple as a result of the impact forces;
- access to and from the additional seats shall be sufficient to allow a person to enter and exit the vehicle, operate door latches, folding seat controls, etc. without assistance;
- the installation of seats in a vehicle's load space where the only access can be obstructed by the load is not acceptable;
- where existing seats are modified to improve access e.g. by installing a folding mechanism, it shall be necessary for the modifier to demonstrate that the modified seats continue to comply with the latest edition of ADR 3;
- where fittings such as seat backs intrude into the head space (Refer Figure 1), they shall be padded to prevent injury
- an assessment of the effect of the additional seats, head restraints (if fitted), and occupants on rearward visibility should be made. Additional rear vision mirrors may be required in cases where rearward vision is restricted.

SIDE FACING SEATS

Although side facing seats may be fitted, forward and rearward facing seats are preferred because they provide a higher level of safety.

CHILD RESTRAINT ANCHOR POINTS

Child restraint anchorages shall not be installed to permit restraining devices such as baby capsules and child seats to be used on rearward or side facing seats.

RELOCATION OF SPARE WHEEL

Where additional seats are installed in the spare wheel well of the vehicle, provision shall be made for relocating and securing the spare wheel. If the spare wheel is relocated within the vehicle, the spare wheel mounting shall be of sufficient strength to withstand a deceleration of 20 times the weight of the spare wheel and its mounting in the forward, rearward or sideways direction and the spare wheel and its mounting shall not cause a hazardous projection for the vehicle's occupants.

INTERFERENCE WITH EXISTING SAFETY EQUIPMENT

The additional seats, relocated spare wheel, etc., shall not prevent or restrict the use of existing safety devices such as seat belts and child restraint anchorages.

LABELLING OF SEATS

A plate or label made of durable material shall be fitted in a conspicuous place near the additional seat. The plate or label shall be made of a material which is not easily removed or defaced in normal use. The plate or label shall display the following:

All seats:

The name of the manufacturer/installer; and the statement:

"This seat has been manufactured and installed to comply with Code of Practice Ref No.".

Category 2 seats:

The following warning with letters not less than 5 mm high:

**WARNING
THIS SEAT MUST NOT BE USED BY A PERSON
HEAVIER THAN 38 KGS OR WITH A
SEATED HEIGHT GREATER THAN 780 MM.**

Category 3 seats:

The following warning with letters not less than 5 mm high:

**WARNING
THIS SEAT MUST NOT BE USED BY A PERSON
HEAVIER THAN 28 KGS OR WITH A
SEATED HEIGHT GREATER THAN 700 MM.**

Note: The seated height is the vertical distance between flat surface on which the person is seated and the top of the person's head.

SEAT CONSTRUCTION

Seat frames shall be constructed so that there are no sharp edges or projections which can cause injury to occupants in an impact. Seat padding and upholstery shall be securely attached to the seat frame to prevent movement during impact. Loose cushions shall not be used. Refer also to Padding (page 7).

SUBMISSION OF EVIDENCE

Where a State or Territory Registering Authority requires evidence to demonstrate that an additional seat installation complies with the requirements of this Code of Practice, the evidence shall be submitted in the form of engineering calculations or test results certified by an engineer with experience in structural design.

INSTALLATION KIT

Seats supplied by seat manufacturers or suppliers for installation by others shall be supplied with an installation kit which includes the following:

Installation Instructions

Comprehensive and easily understood installation instructions which cover all of the makes and models of vehicles that the seat is intended to fit. The installation instructions shall be such that when correctly followed, the seat installation will comply with all the requirements of this Code of Practice.

Installation Hardware

Installation hardware such as bolts, nuts, lock washers, spacers and backing plates sufficient to allow the seat, seat belts, etc. to be installed correctly.

Seat Label

The seat label or plate as required by the section on Labelling of Seats.

SPACE REQUIREMENTS

Head Space

No part of the vehicle body or component of the roof installation may project below the shaded zone shown in Figure 1.

The head space requirement shall apply to each additional seating position.

The head space is to be determined using the template as shown in Figure 2. The template is to be positioned on the centreline of the seat with the point D located at the contact point of the template and the seat back. The centre of the radius A is to be located at the point C. Dimension A is shown in Figure 1 for the particular seat category.

The head space is limited by 45 degrees forward and 25 degrees rearward from the vertical, relative to the direction that the seat is facing.

If the seat back angle is adjustable, it is to be set at no more than 25 degrees rearward from the vertical, relative to the direction that the seat is facing.

If the seat height is adjustable, it is to be set in the lowest position when the above measurement is taken.

Leg Space

No part of the vehicle body, vehicle equipment or another seat may project into the shaded leg room zone shown in Figure 1.

The leg space zone shall extend not less than 35% of the seat width on either side of the centre line of each seating position.

The leg space is to be determined using the template as shown in Figure 2. The template is to be positioned on the centreline of the seat with the point D located at the contact point of the template and the seat back. The centre of the radius B is to be located at the point C. Dimension B is shown in Figure 1 for the particular seat category.

The leg room zone is limited by:

- (a) a line 45 degrees above the horizontal and passing through the point C and
- (b) a line 15 degrees rearward of the vertical, (relative to the direction that the seat is facing), and tangential to the radius B and extending down to the floor.

If the seat back angle is adjustable, it is to be set at no more than 25 degrees rearward from the vertical, relative to the direction that the seat is facing.

If the seat's position is adjustable, it is to be set in the rearmost position, relative to the direction the seat is facing, when the measurement is taken.

Seat Width

The minimum seat width per occupant shall be:

Category 1 Seats:	410 mm
Category 2 Seats:	300 mm
Category 3 Seats:	250 mm

SEAT STRENGTH

Forward Facing Seats

Forward facing Category 1 seats and their anchorages shall comply with the requirements of the latest edition of ADR 3.

Forward facing Category 2 and 3 seats and their anchorages shall comply with the requirements of the latest edition of ADR 3 with the exception that the 370 Nm moment about the seating reference point for each seating position shall be reduced to:

Category 2 Seats:	210 Nm
Category 3 Seats:	145 Nm

Rearward Facing Seats

Rearward facing seats and their anchorages shall comply with the requirements of the latest edition of ADR 3.

In addition a rearward facing seat shall withstand, without imposing any load on any other seat in the vehicle, a load equivalent to twenty times the weight of the seat and its occupant(s) applied in the forward direction relative to the vehicle.

Seats intended to accommodate more than one occupant shall withstand the loads applied by all occupants simultaneously. This requirement shall be demonstrated with the occupant test loads uniformly distributed over the backrest and head restraint of the seat.

The occupant mass to be used to determine the test loads shall be:

Category 1 Seats:	68 kgs
Category 2 Seats:	38 kgs
Category 3 Seats:	26 kgs

SEAT BELTS

Seat belts shall be fitted to all additional seating positions to restrain the occupants under impact conditions.

All outboard seating positions shall be fitted with lap sash or harness seat belts except where there is no permanent structure for mounting the upper sash or anchorages point as set out in the latest edition of ADR 5, in which event lap sash belts shall be fitted

All inboard seating positions shall be fitted with either a lap belt or a harness belt.

All side facing seats shall be fitted with lap belts only.

Seat belts shall comply with the latest edition of ADR 4.

SEAT BELT ANCHORAGES

Seat belt anchorages shall comply with the latest edition of ADR 5 with the exception that the anchorage test loads for Category 2 and 3 seats may be reduced to:

Category 2 seats: 50% of test load nominated in the latest edition of ADR 5

Category 3 seats: 35% of test load nominated in the latest edition of ADR 5

HEAD RESTRAINTS

Forward Facing Seats

The fitting of head restraints to forward facing seats is optional, however, it is recommended that head restraints be fitted as they reduce whiplash injuries in rear end collisions.

Head restraints on forward facing Category 1 seats shall comply with the latest edition of ADR 22.

Head restraints on Category 2 and 3 seats shall meet the following requirements:

- head restraints may be provided with vertical and fore-and-aft adjustment and they may be removable without the use of tools;

- head restraints shall provide an impact surface which meets the dimensional requirements as shown in Figure 3 for the particular Category of seat;

- head restraints shall be constructed and contoured to decelerate horizontal movements of the occupant's head without concentrations of load on it;

- all solid structural members of the head restraint shall be padded with high density foam of sufficient thickness to prevent injury to the occupant's head. Refer to Padding (page 7) for the specification of a suitable high density foam;

- the strength of the head restraints on Category 2 and 3 seats shall be tested using the test requirements for head restraints as set out in the latest edition of ADR 22 for static test conditions with the following exceptions:

- the 370 Nm moment about the seating reference point shall be reduced to:

Category 2 Seats 210 Nm

Category 3 Seats 145 Nm

- to establish the displaced torso reference line the moment about the seating reference point may be applied directly to the seat back frame i.e. a 3-dimensional manikin does not have to be used;

- the maximum load of 890 N applied to the head form at a point 635 mm along the torso reference line from the seating reference point shall be reduced to:

Category 2 Seats	-	A maximum load of 590N applied to the head form at a point 535 mm along the torso reference line from the seating reference point.
------------------	---	--

Category 3 Seats	-	A maximum load of 470N applied to the head form at a point 460 mm along the torso reference line from the seating reference point.
------------------	---	--

the displacement of the rearmost point of the head form, of not more than 102 mm perpendicularly rearward of the displaced torso reference line, shall be reduced to:

Category 2 Seats: 86 mm

Category 3 Seats: 74 mm

Note: The seat reference point is to be determined using the template as shown in Figure 2. The template is to be positioned on the centreline of the seat with the point D located at the contact point of the template and the seat back. The seating reference point is located at point C.

The torso reference line is a line passing through the seat reference point and parallel to the seat back. For fully adjustable seat backs, it is a line passing through the seat reference point and at a maximum angle of 30 degrees to the vertical.

Rear Facing Seats

All rearward facing seats shall be fitted with head restraints which provide an impact surface which meets the dimensional requirements as shown in Figure 3 for the particular Category of Seat.

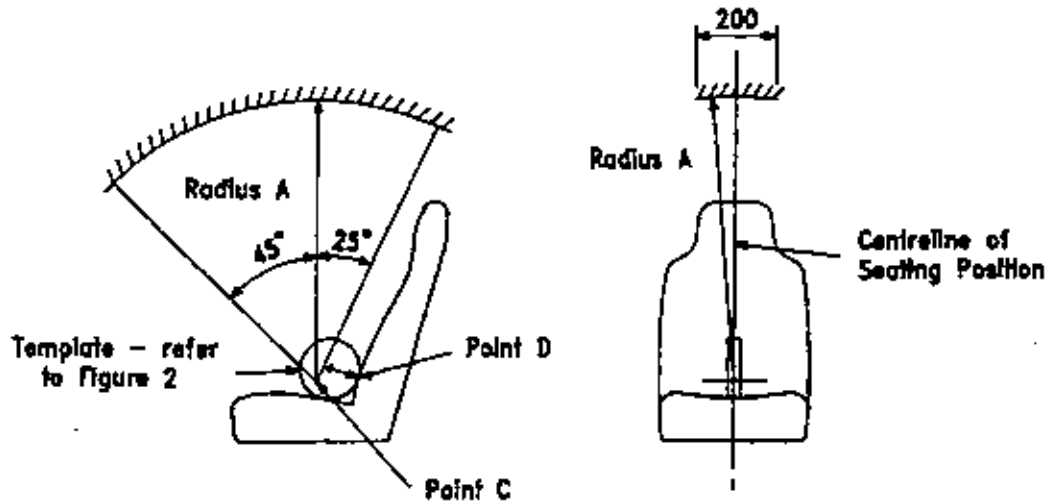
Head restraints on rearward facing seats may be provided with vertical and fore-and-aft adjustment, however, they cannot be removable.

The testing of the strength of head restraints on rearward facing seats is included in the test to determine the strength of the seat. Refer to the section on Seat Strength.

PADDING

The specification of a high density foam, suitable for padding head restraints, seat backs, etc. is: Olympic Industries Evaflex Unifoam 220 or equivalent.

FIGURE 1
HEAD AND LEG SPACE



DIMENSION	CATEGORY OF SEAT		
	1	2	3
A	710 Min.	710 Max. 630 Min.	630 Max.
B	460 Min.	370 Min.	300 Min.

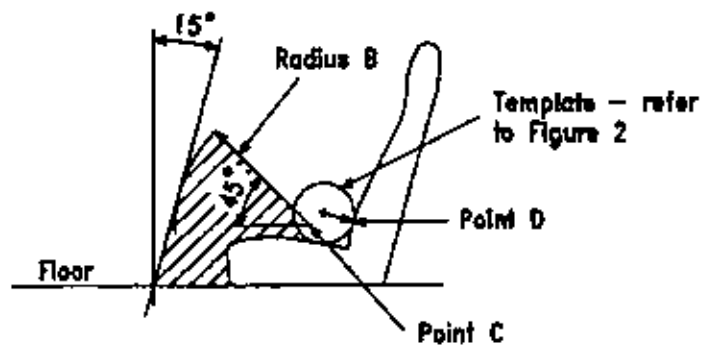


FIGURE 2
TEMPLATE FOR DETERMINING HEAD AND LEG SPACE

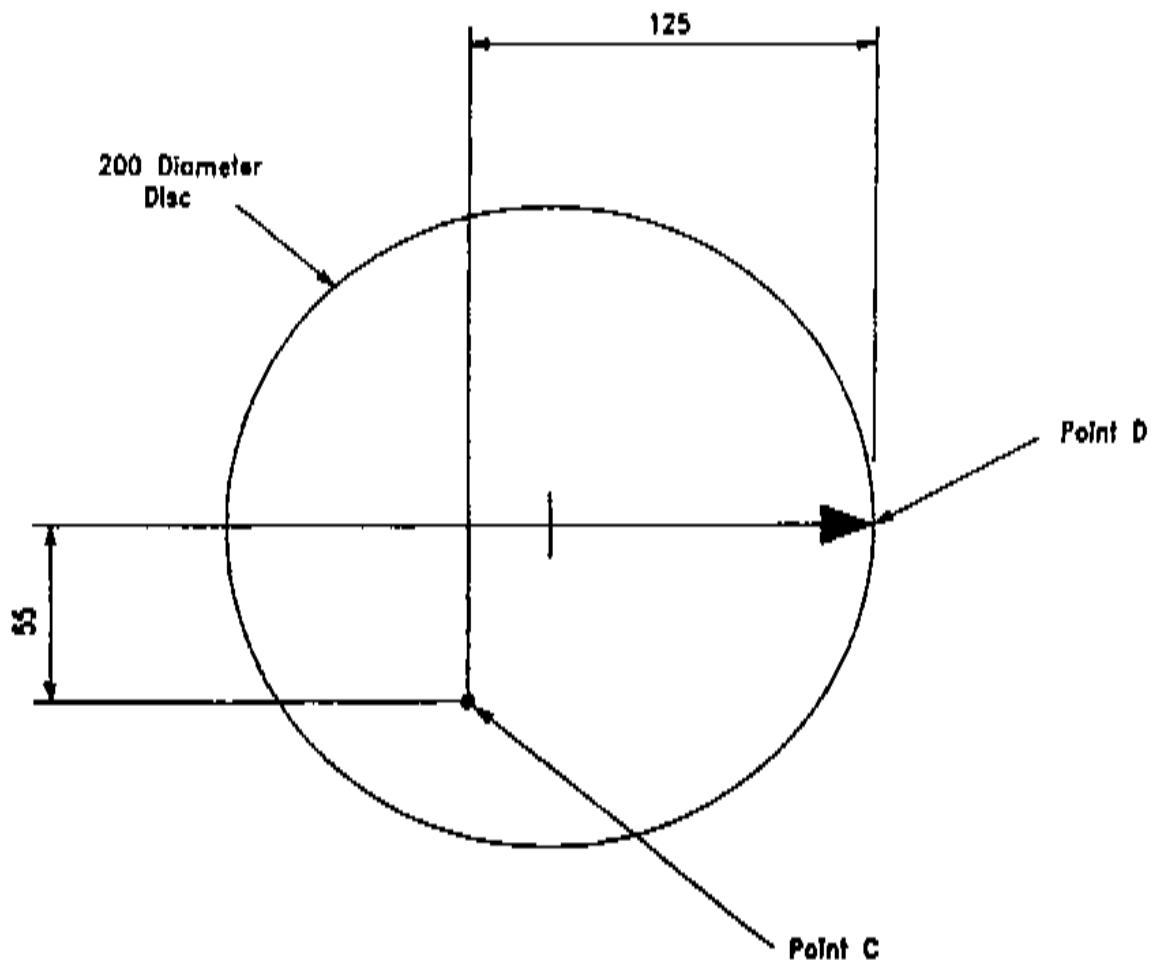
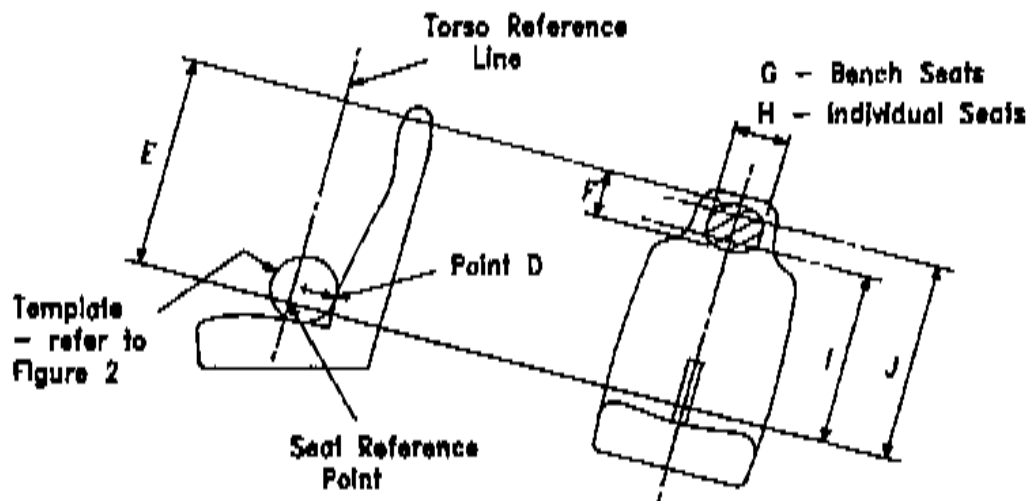


FIGURE 3
DIMENSIONS OF HEAD RESTRAINTS



DIMENSION	CATEGORY OF SEAT		
	* 1	2	3
E	700 Min.	600 Min.	525 Min.
F	115 Min.	115 Min.	115 Min.
G	250 Min.	250 Min.	250 Min.
H	170 Min.	170 Min.	170 Min.
I	585 Min.	485 Min.	410 Min.
J	635 Min.	535 Min.	460 Min.

* Applies to Rearward Facing Seats

SEAT REFERENCE POINT - Point C on the template shown in Figure 2 with the template positioned on the centreline of the seat with point D located at the contact point of the template and the seat back.

TORSO REFERENCE LINE - A line passing through the Seat Reference Point and parallel to the seat back. For fully adjustable seat backs, a line passing through the Seat Reference Point and at a maximum angle of 30 degrees to the vertical.

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4

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National Code of Practice

Steering Conversions for Left Hand Drive Vehicles

THIS CODE DOES NOT COVER ADMINISTRATIVE REQUIREMENTS WHICH ARE IMPOSED BY STATE, TERRITORY AND FEDERAL JURISDICTIONS

Left hand drive vehicles are not generally registerable in Australia and must be converted to right hand drive.

This Code of Practice is intended as a guide for anyone wishing to convert a vehicle from left hand to right hand drive.

The Vehicle Standards Bulletin provides information for those associated with the design, manufacture, sale, modification, maintenance or repair of motor vehicles and trailers.

The series is a major channel for communication from the Federal Office of Road Safety on matters relating to road vehicles and components. Where appropriate, matters dealt with in VSBs will have been considered as well by the National Road Transport Commission and the Australian Transport Council and its committees.

The series:

- gives advance notice of matters of concern;
- sets out codes and other standards which supplement the ADRs and AIRs; and
- provides advice concerning vehicle design, safety and operation.

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An information series supplementing the Australian design rules for motor vehicles and trailers (ADRs) and the Australian in-service rules for motor vehicles and trailers (AIRs)

Vehicle Standards Bulletin

**Other publications issued as Vehicle Standards Bulletins (VSBs)
as at September 1993.**

- VSB 1 Building Small Trailers**
- VSB 2 Maximum Road Speed Limiting for Heavy Trucks and Buses**
- VSB 3 Vehicle Safety Recalls Update**
- VSB 4 National Code of Practice - Steering Conversions for
Left Hand Drive Vehicles**
- VSB 5 National Code of Practice - Manufacture of Additional Seats**
- VSB 6 National Code of Practice - Heavy Vehicle Modifications**
- VSB 7 National Code of Practice - Design Parameters Necessary
for Compliance with ADR 59/00 - Omnibus Rollover Strength**
- VSB 8 Compliance Plate Approval Holders.**

Other publications will be issued as VSBs from time to time.

Issued by the
Administrator of Vehicle Standards
in consultation with the
Australian Motor Vehicle Certification Board
comprising Commonwealth, State and Territory representatives



NATIONAL CODE OF PRACTICE

STEERING CONVERSIONS

FOR

LEFT HAND DRIVE VEHICLES

This Code does not cover administrative requirements which are imposed by State, Territory and Federal jurisdictions

Left hand drive vehicles are not generally registerable in Australia and must be converted to right hand drive.

This Code of Practice is intended as a guide for anyone wishing to convert a vehicle from left hand to right hand drive.

CONTENTS

SCOPE	1
CAUTION	1
Reduced Component Strength	1
Susceptibility to Fatigue Failure	1
Reduced Primary Safety	1
MODIFICATION REQUIREMENTS	2
GENERAL	
Heating or Welding of Steering Components	2
Fasteners	2
SPECIFIC AREAS OF CONVERSION	3
CONVERSIONS USING STANDARD RIGHT HAND DRIVE COMPONENTS	3
Steering Geometry	3
STEERING BOX	3
STEERING - RIGHT HAND DRIVE STEERING BOX	3
Steering Box Selection	3
Steering Box Mounting	4
Steering Box Coupling	4
Steering Idler	4
Drag Links	4
Substitute Drag Links	4
Modified Drag Links	4
STEERING - CROSS SHAFT	5
Right Angle Gearboxes	5
Couplings	5
Cross Shafts	5
Design Loadings	5
Gearbox Mounting	5
STEERING - FULLY ENCLOSED CHAIN DRIVE UNIT	5
Enclosure	5
Drive Chain	5
Design Loadings	5
Input and Output Shafts	6
STEERING COLUMN	6
Mounting	6
Collapse Operation	6
BRAKES - GENERAL	7

CONTENTS

BRAKES - MASTER CYLINDER TRANSFERRED TO THE RIGHT HAND SIDE OF THE VEHICLE	7
Firewall	7
Mountings	7
Brake Pedal	7
Brake Pipes	7
Electrical Connections	7
Operation	8
BRAKES - CROSS SHAFT OPERATION	8
Loadings	8
Cross Shaft Bearings	8
Brake Pedals and Operating Levers	8
Mountings	8
Pivots	8
Operation	8
AIR-CONDITIONERS AND VENTILATION	9
DASH PANEL AND CONTROLS	9
WINDSCREEN WIPERS	9
ELECTRICAL WIRING	8
HEADLAMPS - MAIN AND DIPPED BEAMS	9
EXTERNAL MIRRORS	9

SCOPE

This Code of Practice applies to cars, car derivatives and other light vehicles which need to be converted to right hand drive for registration in Australia. While it is generally applicable to trucks and other heavy vehicles, there is a separate Code of Practice for steering modifications to these vehicles.

CAUTION

Conversion of a vehicle from left hand to right hand drive configuration involves modification of the vehicle's brake and steering systems.

This has the potential to seriously affect the safe operation of the vehicle in the following ways:

Reduced Component Strength

Loads applied in an emergency situation, e.g. panic stop or loss of power assist to steering, can be very high.

A component which is modified and does not retain the strength of the original design may operate satisfactorily under everyday driving loads. However, under high loads it may fail catastrophically.

Susceptibility to Fatigue Failure

Poor design can lead to fatigue failure.

Vehicle manufacturers invest a great deal of time and money in producing components which will not be affected by fatigue failures. They do this through design, material selection, manufacturing controls and endurance testing using manufacturing techniques not readily adaptable to low volume modification procedures.

Fatigue can lead to the catastrophic failure of a component which performed satisfactorily for many years after modification.

Reduced Primary Safety

Modifications to steering can radically alter a vehicle's handling by introducing undesirable traits such as increased bump steer and poor self centering.

Even minor alterations to braking components can reduce the system's effectiveness.

MODIFICATION REQUIREMENTS

Steering conversions for left hand drive vehicles can produce safe, driveable vehicles with no degradation of handling or braking performance if appropriate principles are observed.

The following guidelines apply:

- . unmodified original manufacturers' components should be used wherever possible;
- . original manufacturers' specifications should be replicated, e.g. steering geometry;
- . components which must be manufactured, or modifications to original components, should be designed conservatively;
- . satisfactory provision must be made for lubrication and adjustment of play at all wear points;
- . energy absorbing features of the original steering wheel and column system and front body must not be downgraded;
- . no system or component may be used if it causes a reduction relative to the strength of the original system;
- . welding, heating, bending, or deforming of components should be avoided if at all possible. Non-destructive testing is required if these processes are used;
- . the overall finish should be compatible with the original vehicle, i.e. the conversion must not introduce potential injury-causing projections such as protruding bolts, sharp edges, etc.

GENERAL

Heating or Welding of Steering Components

While heating or welding of steering components such as steering connecting link, tie rods, pitman or idler arms, etc is not recommended it may be acceptable subject to an engineering report being submitted which includes comment on the following:

- . material specifications of the component to be modified;
- . specifications on weld material and compatibility with the parent material;
- . description and/or diagrams of the preparation of the component if welding is involved;
- . details of preheating if required prior to modification;
- . details of heat treatment procedure after modifications;
- . hardness testing before and after modification of the modified zone;
- . results of non destructive testing.

All welding must be in accordance with Australian Standard AS 1554 Part 1 1985 "Welding of Steel Structures" SP (Structural Purpose) category unless a higher standard is specified.

Fasteners

All fasteners on safety related systems (brakes, steering, etc) or in highly stressed locations must be high tensile grade 8.8 or equivalent as a minimum specification. All other fasteners are to be at least of similar strength and number to those in the original installation. Self-locking nuts (nyloc) should be used in preference to spring washers.

SPECIFIC AREAS OF CONVERSION

In the following sections, recommended procedures are outlined for specific areas of the conversion.

CONVERSIONS USING STANDARD RIGHT HAND DRIVE COMPONENTS

If a vehicle is produced in a right hand drive model, the steering conversion should make use of the right hand drive components installed to the manufacturer's specifications. Caution should be exercised to ensure that the right hand drive configuration is replicated as certain components may have subtle differences.

All components must be mounted in accordance with the manufacturer's specifications in terms of positioning, number, grade and size of fixings, etc.

Steering Geometry

The vehicle's original steering geometry should be replicated as any variation may produce undesirable handling characteristics.

If the geometry is altered or the tie rod pick-up point locations are changed, a check on the vehicle's bump steer characteristics must be made. A plot of bump steer against suspension travel limits should be produced.

This should be compared with data for the unmodified vehicle to verify that the modified vehicle's bump steer characteristics are of equivalent standard to that of the original vehicle.

STEERING BOX

A common type of conversion utilises a replacement steering box sourced for a right hand drive vehicle. If this is impractical, the use of left hand drive steering boxes or racks, retained in their original left hand location and operated through gearboxes, may be used.

Left hand drive steering boxes transferred to the right hand side and inserted in the chassis rail may only be used if prior approval is obtained. This method of modification is generally inferior to other methods and is not recommended.

Use of substitute right hand drive steering racks requires prior approval.

STEERING - RIGHT HAND DRIVE STEERING BOX

This is the preferred method of conversion. A suitable right hand drive steering box is mounted on the right hand chassis rail and the idler is transferred to the left hand side. In effect, a mirror image of the original steering installation is created.

Steering Box Selection

When selecting a substitute steering box, the following guidelines should be observed:

- the box should be sourced from a vehicle of approximate mass and specification to the vehicle being converted. Pitman arm length and arc of travel should be similar;
- taper for attachment of the drag link ball joint must match.

Steering Box Mounting

The steering box must be correctly located to replicate the original orientation of the steering box input shaft to the steering column and the pitman arm to the drag link.

The chassis rail may require modification to provide a suitable mounting face. Any reinforcing of the chassis rail on the left hand mounting area must be replicated on the right hand rail.

Suitable reinforcing tubes must be fitted through the chassis rail at each mounting point to prevent the retaining bolts crushing the box section.

Any modifications to the rail must not reduce its strength or cause stress concentrations. Allowance should be made in the design for the high torques from the steering box during operation.

Steering Box Coupling

As the input shaft on replacement right hand drive steering boxes is often different from that of the original installation, it may be necessary to modify or replace the coupling.

It is acceptable for the lower half of "Rag" type couplings to be removed and replaced with a machined component which mates with the steering box and coupling. Modified couplings must be of similar design and must have a torque capacity not less than that of the original. This can best be demonstrated by torque testing the original and fabricated couplings.

The use of "Rag" type couplings is limited to where the relative angle of the shafts to be coupled is minimal.

Welding of replacement couplings to steering columns is not recommended and will not be accepted without prior approval.

Steering Idler

The preferred method of mounting the steering idler is to fabricate a mounting bracket which is attached to the original left hand steering box mountings.

This bracket must be designed to provide the correct location and angle of the idler in relation to the drag link.

The bolts attaching the idler arm to the fabricated bracket must be replaceable. This can be done by simply providing access holes in the backing plate.

Suitable reinforcing tubes must be fitted through the chassis at any additional mounting points.

Drag Links

Original right hand drive drag links should be used in preference to substitute or modified links.

Where drag links are asymmetrical, replacement or modification may be required to replicate the original geometry.

Substitute Drag Links

Substitute drag links obtained from standard production vehicles must not alter the original steering geometry. Any variation in steering geometry may result in inferior handling of the vehicle.

Replacement drag links which have been forged and machined to similar specifications to those of the original component are available. These should be used in preference to modified drag links.

Modified Drag Links

Modified drag links may be used providing the manufacturer of the component has obtained prior approval for the modification procedures from the registering Authority.

STEERING - CROSS SHAFT

With this method of conversion, the steering box and all steering linkages remain unaltered. The upper section of the steering column is transferred to the right hand side and is connected to the lower section of the column by means of two right angle gearboxes and an interconnecting cross shaft.

Right Angle Gearboxes

Only gearboxes specifically designed for motor vehicle steering applications may be used. These gearboxes are designed to withstand high torques at very low or zero rotational speed. They are also designed to eliminate backlash which would produce free play in a steering application. Industrial or aeronautical gearboxes are not suitable as they are normally designed to transmit lower torque at medium to high rotational speeds.

Input and output shafts of gearboxes must have a spline and cotter bolt recess.

Couplings

All connections to the gearboxes must be by means of correctly mating splines with clamping cotter bolts.

Cross Shafts

Cross shafts must be articulated at both ends by means of universal joints or fail-safe flexible couplings.

Design Loadings

All components, i.e. gearboxes, couplings, cross shafts and steering column connections, must be designed to withstand a torque of 200Nm.

Gearbox Mounting

The cross shaft gearboxes must be securely mounted to substantial mounting brackets to correctly align with steering column and cross shafts.

STEERING - FULLY ENCLOSED CHAIN DRIVE UNIT

With this method of conversion, the steering box and all steering linkages remain unaltered. The upper section of the steering column is transferred to the right hand side and is connected to the lower section of the column by a chain drive unit.

Enclosure

The chain drive and sprockets must be fully enclosed.

Drive Chain

The drive chain shall be at least a duplex chain. Some method of adjustment to eliminate freeplay must be provided.

Design Loadings

All components i.e. the chain, input and output shafts, bearings and steering column connections, must be designed to withstand a minimum torque of 200 Nm.

Input and Output Shafts

Input and output shafts of the unit are to be provided with a suitable means of connection to the respective shafts.

STEERING COLUMN

The steering column must be transposed to the right hand side and correctly aligned with the steering box and driver's position.

Mounting

The original upper column mounting is normally removed from the left hand side and remounted to the right hand side of the firewall. The mounting of this bracket must provide similar strength and rigidity to that of the original installation as it must resist the steering column load in a frontal collision.

Attachments must replicate those of the original installation. The column's mounting to the firewall must also replicate the original installation. (See section on brakes for details on firewall modifications.)

Collapse Operation

The features designed into most steering columns which allow a controlled collapse if the vehicle is involved in a frontal collision must not be affected. It is therefore necessary to ensure that mounting strength and geometry are replicated. Telescopic sections must not be extended or contracted from their manufactured specification.

BRAKES - GENERAL

The preferred method is for the master cylinder and all associated equipment and connections to be transferred from the left hand to right hand side of the vehicle.

Operation of the braking system may be transferred to the right hand side by installing a cross shaft to transmit the movement of the brake pedal which is mounted on the right hand side to the brake booster/master cylinder which is kept in its original position on the left hand side. This method is to be used only if it is impractical to reposition the brake cylinder on the right hand side.

All components must be securely mounted and correct operation must be maintained.

BRAKES - MASTER CYLINDER TRANSFERRED TO THE RIGHT HAND SIDE OF THE VEHICLE

Firewall

The section of the firewall on the right hand side of the vehicle onto which the brake master cylinder is to be mounted often has large openings originally used for airconditioning ducting. It is also commonly a different profile to the left hand side where the master cylinder was originally mounted. The firewall must therefore be modified to replicate the left hand side mounting profile. This may be done by inserting a suitable section removed from the left hand firewall of a similar vehicle or by fabricating a suitable section.

All fabricated sections should be of at least the same gauge material and incorporate similar reinforcing to that used in the original installation. They must be fully welded to the original firewall with an overlap of at least 10 mm.

All openings in the firewall must be permanently sealed to prevent entry of engine fumes into the vehicle cabin.

Mountings

The master cylinder and support brackets and the brake pedal support brackets must be remounted on the right hand side in a similar manner to the original installation, utilising similar fixing methods, i.e. number, grade and size of attachment bolts to be replicated.

The brake pedal support bracket may be modified to give the opposite offset for right hand drive provided it retains or exceeds its original strength.

Brake Pedal

The original left hand drive brake pedal is to be used if possible. Alternatively, a new pedal may be fabricated having similar cross-section and dimensions to those of the original pedal.

While a one piece pedal is preferred, if the pedal must be cut and welded, non-destructive testing must be performed and a certificate issued by a NATA approved materials testing authority to verify the standard of workmanship.

Brake Pipes

Brake pipes are not to be extended. New steel bundy tube brake lines of the correct bore must be fitted as necessary. All flares, tapers and threads must correctly mate with the original equipment. All brakepipe work must be adequately supported throughout its length and protected from abrasion.

Electrical Connections

Electrical circuits to brake fluid level sensors and circuit failure switches must be extended and systems must operate correctly.

Operation

Correct operation of the pedal, operating linkages, booster and master cylinder must be maintained. The full stroke of the master cylinder must be available and the pedal ratio must not be altered.

BRAKES - CROSS SHAFT OPERATION

Loadings

The cross shaft and all associated mountings, levers, pivots, bearings, push rods, etc must be designed to withstand loads imposed under an emergency situation, i.e. an application force at the pedal pad of not less than 1800 N.

Deflection of the shaft at maximum loading must not be of such magnitude that it prevents the full stroke of the master cylinder being used.

Cross Shaft Bearings

The cross shaft must be mounted on suitable selfaligning and selflubricating bearings and bushes. Retaining collars or spacers must be fitted as necessary to locate the shaft longitudinally. Location by means of grub screws or similar is acceptable provided collars and/or spacers prevent axial movement should these screws fail.

Brake Pedals and Operating Levers

Brake pedals and operating levers must be drilled to allow the full diameter of the cross shaft to pass through. Full circumferential fillet welds should then be used to attach the pedal or lever to the cross shaft.

Mountings

The mountings for the cross shaft bearings must be securely attached to the vehicle's structure and must be sufficiently rigid to prevent binding of the shaft in its bearings at the maximum design loads.

Pivots

The pivot pins in the linkages must be manufactured from hardened material unless selflubricating bushes are fitted. The pins must be retained by means of suitable clips or split pins and washers.

Bolts as pins, with self-locking nuts as retainers, are not acceptable.

Operation

The design of the cross shaft and linkages must provide similar mechanical advantage between pedal and master cylinder to that provided by the vehicle manufacturer.

Full travel of the master cylinder stroke must be provided.

AIR-CONDITIONING AND VENTILATION

Effective windscreen demisting must be maintained for the modified vehicle.

Repositioning of the ventilation/air-conditioning system to the left hand side of the vehicle and any other necessary modifications must not lead to a reduction in effectiveness.

DASH PANEL AND CONTROLS

The original or an equally effective crash pad must be used. All instruments and controls must be repositioned on the right hand side in a similar location with respect to the driver as in the original vehicle.

Joints in any panels must not result in any weak points.

WINDSCREEN WIPERS

All vehicles must show proof that Area C is 99% wiped when measured by a method that meets the intent of SAE J903c *"Passenger Car Windshield Wiper Systems"* (Refer Figure 1).

As an alternative, it is acceptable practice to mirror image the pivots and wiper arms of a left hand drive wiper sweep pattern when converting a vehicle to right hand drive.

ELECTRICAL WIRING

Wiring must be at least equivalent to the original vehicle in terms of connections, wire size, insulation, support and protection from abrasion, etc.

HEADLAMPS - MAIN AND DIPPED BEAMS

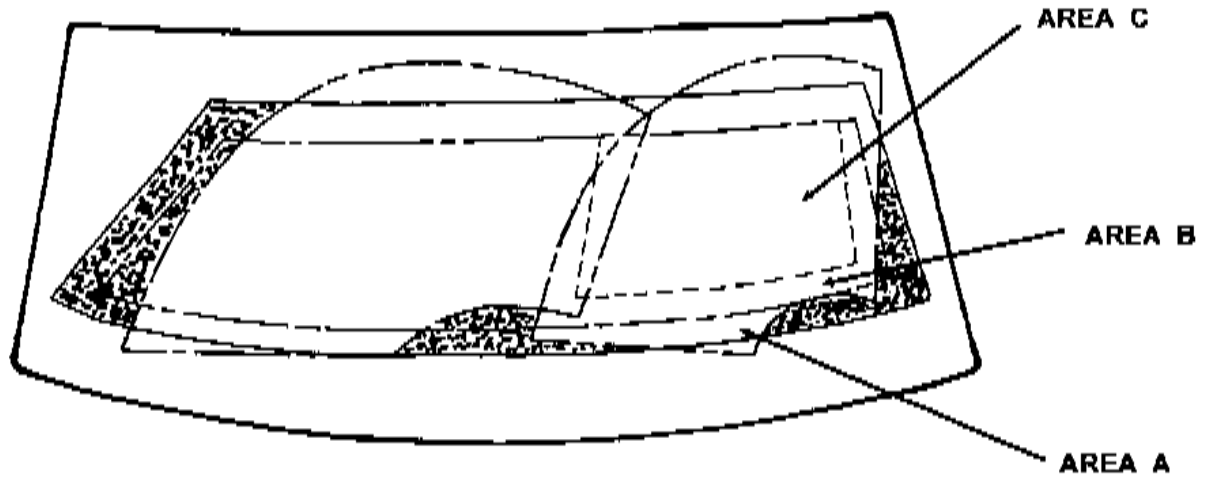
Main (driving) and dipped (passing) beams must be directed to meet the requirements of driving on the left hand side of the road.

EXTERNAL MIRRORS

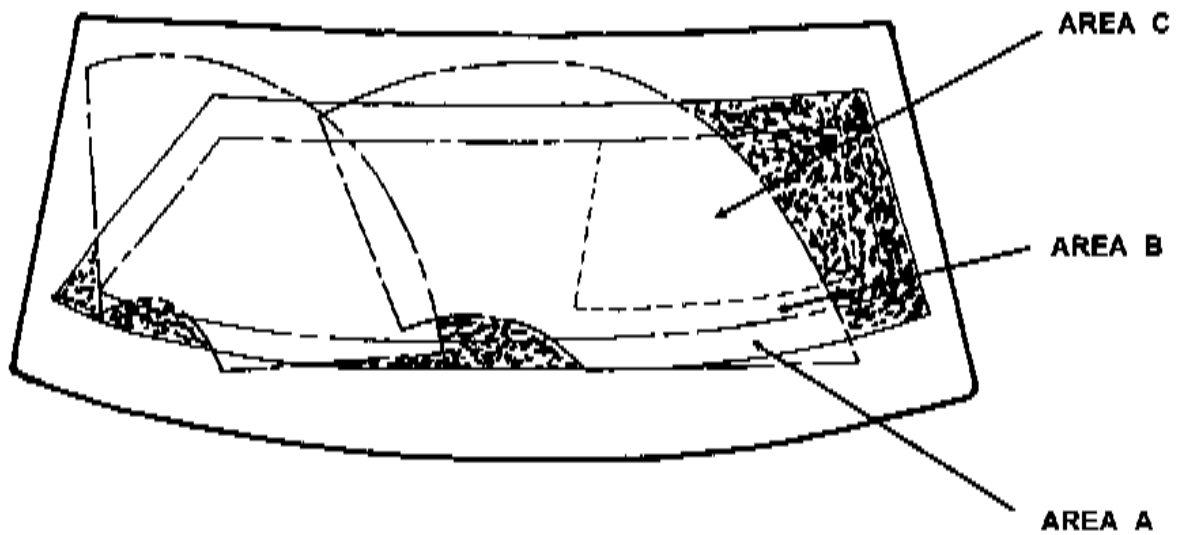
Where not originally provided, an external flat mirror shall be fitted to the right hand side of the vehicle. Original right hand mirrors must have sufficient adjustment to allow for adequate rear vision.

FIGURE 1

VIEW FROM DRIVERS SEAT LOOKING FORWARD



ACCEPTABLE



UNACCEPTABLE