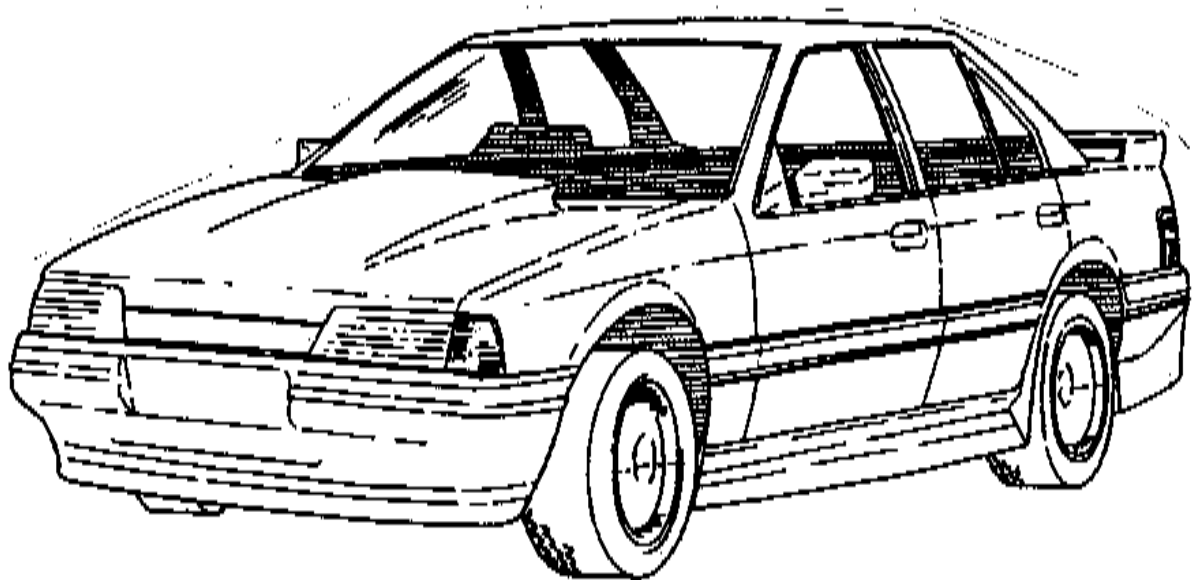


Queensland Department of Transport

CODE OF PRACTICE

LIGHT VEHICLES



CODE OF PRACTICE

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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.

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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

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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

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- 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**

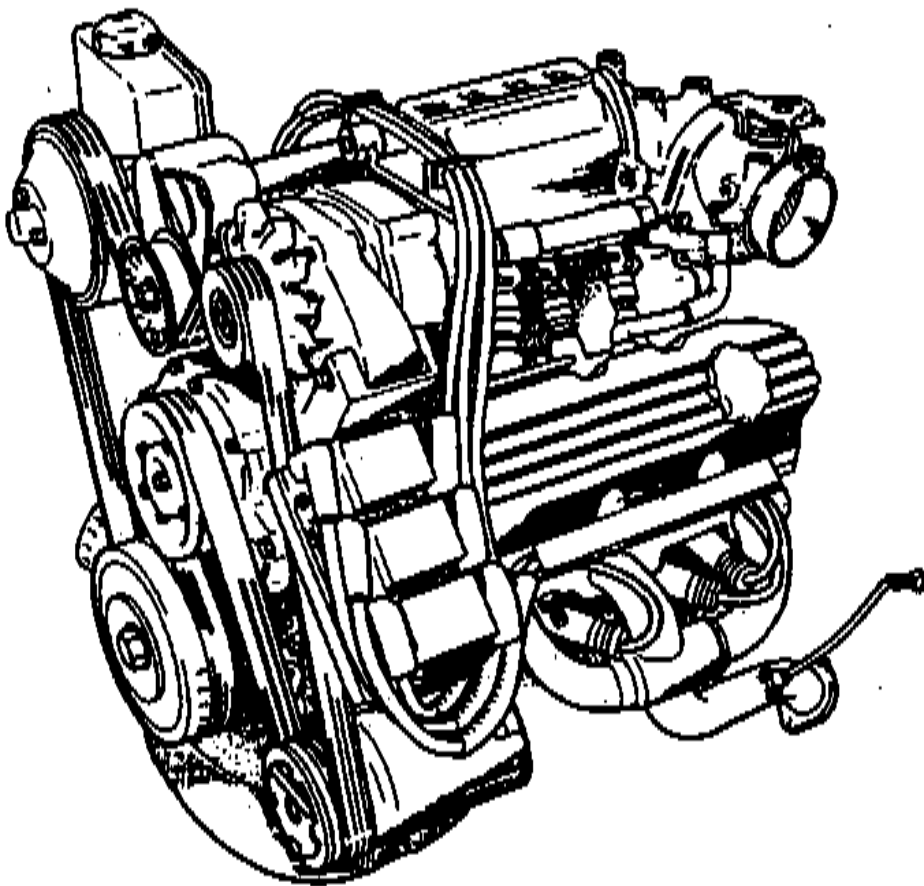
- LS1** **Steering Conversion (Design)**

- LS2** **Steering Conversion (Modification)**

- LT1** **Bearing and Torsional Testing**

LA

ENGINE



ENGINE

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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		1.88	1.88			
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.

ENGINE

SECTION LA

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) (<200kg)	
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

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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

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- 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.