



## Vehicle Safety Branch Circular to Industry

# Major Body Modifications to Light Vehicles Guidelines for Engineers

### *Introduction*

In the past all major body modifications such as convertible conversions and limousine stretches had been approved by the Department of Transport (DoT) Vehicle Safety Branch (VSB). This included officers from Vehicle Safety attending and assessing torsion tests and vehicle modifications. Under new arrangements, the design and physical execution of these modifications will need to be certified by a Consulting Engineer. In most cases consulting engineers will need to assess the vehicle's initial suitability for conversion, the proposed conversion design and also witness and assess all necessary testing.

### *New Vehicle Compliance*

Within Australia, the Vehicle Safety Standards Branch (VSSB) of the Commonwealth Department of Transport and Regional Services (DOTARS) (formerly known as FORS) is responsible for the administration of the Motor Vehicle Standards Act, which requires manufacturers to build vehicles to the Australian Design Rules (ADRs). The ADRs cover most aspects of vehicle safety features.

### *Subsequent Modifications*

The Road Traffic (Vehicle Standards) Rules 2002 (Rules-2002) require vehicles to continue to comply with the ADRs together with the general requirements of the Rules-2002. When vehicles undergo major body modifications, such as a stretched limousine conversion, there is a considerable risk that continued compliance with the applicable ADRs and the structural integrity of the vehicle in question may be adversely affected. As a result, in the past, VSB has required the submission of a written application seeking approval for these kinds of modifications prior to the commencement of any work. Also because of the major nature of this work the Vehicle Safety Branch was intimately involved at all levels of the testing and approval process.

As a result of a revision to the current administrative procedures, the Vehicle Safety Branch has reduced its direct involvement in the assessment and testing process and will mainly concern itself with the final approval process. Consulting Engineers will perform all other assessments and testing procedures.



### *Engagement of Consulting Engineer*

It is the owner's responsibility to engage a Consulting Engineer with appropriate automotive experience and having eligibility for Corporate Membership of the Institution of Engineers, Australia. The consultant will be required to firstly assess the feasibility of the intended modifications and secondly to prepare a comprehensive report attesting to the safety of the modified vehicle upon completion.

The overall design of the proposed modifications/conversion will need to be approved by a Consulting Engineer, in accordance with the Code of Practice CP-105A *Major Body Modifications to Light Vehicles - Including Stretched Limousine & Convertible Conversions*, before any modifications are commenced. A Consulting Engineer must then inspect the work in progress and certify that the execution of the modifications/conversion is also in accordance with the requirements of the Code of Practice.

Upon receiving a satisfactory Engineer's Report together with the Consulting Engineer's Certificate for the modifications, VSB will give final approval in order for the vehicle to be examined and issued with a modification permit.

### *Engineer's Assessment Requirements*

When first approached, a Consulting Engineer will need to make an initial assessment as to the suitability of the original vehicle for the intended modifications. Areas of assessment shall include:

- original vehicle body type e.g. full chassis, monocoque body and the effect of the proposed modifications upon general body strength
- ADR compliance requirements based on date of original manufacture
- general condition of vehicle, especially any weakening due to structural rust.

If the original vehicle is able to be modified as proposed, the Consulting Engineer shall then make a more detailed assessment of the proposed design. Areas of assessment shall include:

- requirements of the Code of Practice
- continued compliance with applicable ADRs
- continued compliance with the Western Australian Road Traffic (Vehicle Standards) Rules 2002
- roadworthiness, including requiring that the vehicle pass specific tests that are not required by the Code of Practice, such as the ISO Lane-Change Manoeuvre Test Procedure, where such tests are justified.
- general safety issues.



If any aspects of the proposed modifications need redesign in order to be certified, the Consulting Engineer may assist the client in this regard. Once satisfied as to the overall safety and legality of the proposed modifications in principle, the Consulting Engineer may advise the owner to proceed with the modifications.

### *Inspection of Modifications*

The Consulting Engineer must ensure that a suitably qualified person inspects the vehicle throughout the modification process. Inspection of major structural modification work shall be performed at appropriate stages of the work and continuing compliance with affected ADRs shall be substantiated. The Code of Practice gives details on the necessary inspections.

Similarly, the Consulting Engineer must ensure that a suitably qualified person attends any final chassis/body torsion test, verifying the results and also performs a final inspection of the completed vehicle.

The Consulting Engineer must consider the general roadworthiness of the subject vehicle as part of his/her assessment, and in particular any effect that the modifications under review have upon the vehicle's roadworthiness. Whilst the Consulting Engineer has this responsibility he/she is not obliged to assess the vehicle's roadworthiness in detail. The Consulting Engineer shall indicate to the Owner any items that may compromise the completed vehicle's roadworthiness. The Consulting Engineer shall request the Owner to attend to these matters before presenting the completed vehicle for inspection by a DoT Vehicle Examiner.

### *Determination of Continuing Compliance*

Ongoing compliance with the ADRs applicable to the vehicle shall be determined. Compliance can be substantiated through a range of methods including the following:

- calculation
- testing of actual or identical component or structure
- comparative analysis
- Alternative Procedures made available to manufacturers of Low Volume Vehicles (up to 25 per annum) by the Commonwealth Vehicle Safety Standards Branch, for the demonstration of compliance.

### *Engineer's Report Requirements*

Following the completion of the modifications and any required final chassis/body test, the Consulting Engineer shall prepare a comprehensive report containing the following:



- executive summary and Engineer's Declaration
- vehicle details/data (The VIN must always be quoted. In the case of older vehicles with no VIN, the chassis number should be used. If no VIN or chassis number exists a VIN can only be obtained from DoT's NEVDIS Unit, Telephone 9216 8592)
- Engineer's Certificate for the modifications (similar to the appended example)
- report on affected ADR compliance, in consecutive numerical order
- report on all parts of the vehicle requiring attention as detailed in the Code of Practice, including standard of workmanship. (Engineers shall obtain a copy of the Code of Practice.)
- assessment of body/chassis torsional/bending test results and overall strength
- assessment of any significantly increased loading of original vehicle componentry
- report on other areas of the vehicle that have been significantly modified as part of the overall conversion, ie engine, drive-line, brake system, suspension.

Note: The report should address all of the applicable ADRs that are likely to be affected by the modifications. The report should also consider any other areas of the vehicle where there is a likelihood that safety may be compromised by the modifications.

### *Engineer's Declaration*

The Consulting Engineer shall include a Declaration in the Engineer's Report, which covers the following areas:

- the inspection of the modifications by a suitably qualified person
- the effect of the modifications upon the roadworthiness of the vehicle
- the engineering soundness of the design and construction of the modifications
- the continued compliance with applicable ADRs, or their intent following modification
- the requirements of the Western Australian Road Traffic (Vehicle Standards) Regulations 2002 and the Road Traffic (Vehicle Standards) Rules 2002 .

In support of the above declaration, the Consulting Engineer shall report on all aspects of the vehicle as may be necessary and not limit investigations to only those areas detailed in the Code of Practice - Major Body Modifications.



### *Audit*

The Consulting Engineer should ensure that sufficient information including calculations, drawings, checklists and test results are retained to allow an audit on any particular modification to be performed. The Code of Practice contains references to these requirements.

### *Dispute Resolution*

Where a dispute arises over a technical matter, which cannot be resolved by the parties concerned, the Vehicle Safety Branch can be approached for adjudication. The Vehicle Safety Branch will concern itself with the Code of Practice and regulations relating to the design and construction of modified vehicles. Issues such as consultancy fee payments and other commercial considerations will need to be resolved elsewhere.

### *Engineer Approval*

After compiling a satisfactory Engineer's Report on the modified vehicle, the Consulting Engineer shall issue a "Consulting Engineer's Certificate" (see attached) and attach this to the report. Depending on the arrangements made with the owner, the Engineer shall submit the report and certificate, either directly or via the vehicle owner, to the Manager Vehicle Standards. The Vehicle Safety Branch will then issue the final approval for the modifications in order for a modification permit to be issued upon the vehicle passing a full roadworthiness inspection by a DoT Vehicle Examiner.

### *Issuing of Modification Plate (Optional)*

Once satisfied that a vehicle's conversion or construction meets the requirements of the Code of Practice and that the modifications have been fully and properly carried out, the Consulting Engineer can issue a Modification Plate. Consulting Engineers who wish to issue Modification Plates need to become Authorised Officers. Application to become an Authorised Officer should be made to the Engineer, Policy - Vehicle Safety Branch.

To identify the vehicle and its modifications, and as evidence that they have been carried out in accordance with the Code of Practice, a metal identification plate shall be stamped with the appropriate particulars and affixed to the vehicle. The location shall be in a conspicuous position near the vehicle's Compliance Plate, usually in the engine bay.

The plate shall have the layout, dimensions and, as a minimum, the information shown below.

The plate must be of durable, non-corrosive metal and permanently affixed with pop-rivets, hammer drive screws or welding. Adhesives are not acceptable. The relevant particulars must be legible and can be embossed, indented, etched or engraved. All lettering shall be in upper case and all characters shall be at least 2.5mm in size.



The following information is required in all cases:

AUTH OFFICER - Consulting Engineer's surname and initials, or business name

AUTH CODE - Consulting Engineer's Code identifier as authorised by VSB

MODIFIER – the principal business or person that performed the modifications

VIN – Vehicle identification number

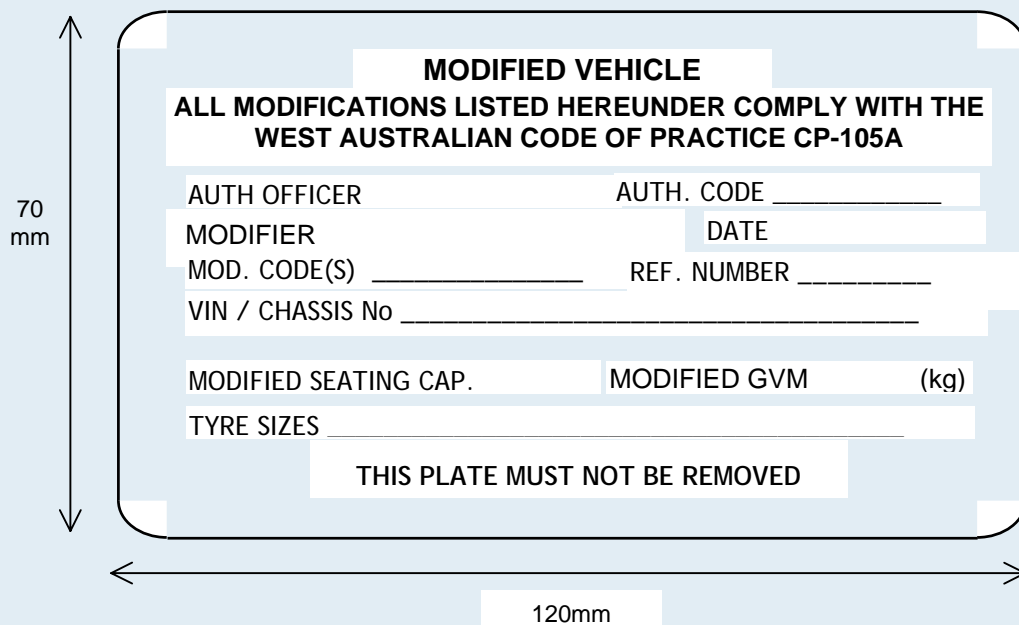
DATE: - The date at which the plate is affixed

MOD. CODE(S) – the Modification Codes applicable to the type/s of conversion/ construction, as outlined in the Code of Practice CP-105A. An end symbol "XX" must be imprinted into the plate immediately after the Modification Codes, in order to prevent unauthorised codes being added

REF. NUMBER – Consulting Engineer's corresponding report number

The following information is required only where the individual item specifications have been modified away from the vehicles original specifications:

MODIFIED GVM, MODIFIED SEATING CAPACITY, TYRE SIZES



**NOTE:** This is an interim plate and may be used until the National Code of Practice for Light Vehicle Modifications comes into effect. Thereafter, the nationally accepted plate developed as part of the National Code will need to be affixed.



### *Other Related Documents*

The following documents also relate to these modifications. The Code of Practice contains the technical and performance standards. Information documents are also available specifically for Prospective Owners and Modifiers. Copies are available from the Vehicle Safety Branch.

- CP-105A                                    *Major Body Modifications to Light Vehicles –  
Code of Practice                                Including Stretched Limousine and Convertible Conversions*
- IB-105A                                    *Major Body Modifications to Light Vehicles  
Information Bulletin                            Information for Prospective Owners*
- CI-106A                                    *Major Body Modifications to Light Vehicles  
Circular to Industry                            Guidelines for Modifiers*

### *Stolen Vehicles*

To combat vehicle theft and the illegal creation of vehicles from wrecks, DoT is compiling a wrecks register. As the modifications covered by the Code of Practice have the potential to involve the creation of new vehicles and the use of parts from wrecks, Consulting Engineers should contact DoT immediately upon encountering any suspicious activity of this nature.

### *Correspondence*

Correspondence should be forwarded to the following address:

Manager Vehicle Standards  
Vehicle Safety Branch  
Department of Transport  
21 Murray Road South  
WELSHPOOL WA 6106



## **CONSULTING ENGINEER'S CERTIFICATE** (TYPICAL EXAMPLE)

### VEHICLE DETAILS

1. MAKE: .....
2. MODEL: .....
3. REGISTRATION: .....
4. VEHICLE TYPE: .....
5. ODOMETER READING: .....
6. V.I.N.:

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or

- CHASSIS NUMBER: .....
7. ENGINE NUMBER: .....
  8. DATE OF ORIGINAL MANUFACTURE: .....
  9. COUNTRY OF ORIGINAL MANUFACTURE: .....  
(imported vehicles with no compliance plate only)
  10. VEHICLE OWNER: .....
  11. MODIFIER: .....

### ENGINEER'S REPORT DETAILS

1. REPORT NUMBER: .....
2. REPORT DATE: .....

WITH RESPECT TO THE ABOVE VEHICLE, I HEREBY RECOMMEND FOR APPROVAL THE MODIFICATIONS DESCRIBED IN THE TABLE BELOW:

SIGNED ..... DATE .....

NAME ..... TITLE .....

MIE Aust .....  
(MEMBERSHIP NUMBER)

COMPANY ..... TELEPHONE ( ) .....

.....

ADDRESS .....



LIST OF CERTIFIED MODIFICATIONS

ADR No: (If applicable)	DESCRIPTION OF MODIFICATION

\* The brief description of a modification shall be sufficient to enable the modification to be identified upon inspection of the vehicle.

ENGINEER'S COMMENTS:

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