

Queensland Code of Practice: Vehicle Modifications (QCOP)

Code LG5: Fitting of Auxiliary and Endurance Brakes

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CODE LG5

Light Vehicle Modifications for Fitting of Auxiliary and Endurance Brakes

1.0 Scope

The LG5 modification code specifies requirements for certifying modifications for the fitting of auxiliary and endurance brakes, independent of the primary braking system, to light vehicles, that being vehicles having a Gross Vehicle Manufacturer (GVM) rating that does not exceed 4,500 kg.

This code covers modifications to eligible light vehicles under the following Australian Design Rule (ADR) categories: MB, MC, MD1, MD2, MD3, NA and NB1. This code does not cover the modifications related to light vehicles not specified and to alterations to the primary braking system.

The original vehicle manufacturer (OVM) refers to the entity holding the first stage Identification Plate Approval (IPA). An entity holding the Second Stage Manufacture (SSM) Approval or Registered Automotive Workshop Scheme (RAWS) Approval is not deemed as the OVM.

In cases where the OVM has not specified a GVM rating, the maximum laden mass at which the OVM has shown compliance with ADRs is to be taken as the original GVM rating. This information must be obtained from a reliable and traceable source.

This code is not to be used for certifying modifications to new light vehicles before being provided to market in Australia. To certify modifications to heavy vehicles, that being vehicle that exceed 4,500 kg GVM or Aggregate Trailer Mass (ATM), refer to the *National Code of Practice for Heavy Vehicle Modifications* (VSB 6).

1.1 Modifications permitted under Code LG5

Modifications that may be certified under LG5 code are:

- Fitting of auxiliary and endurance braking devices, independent of the primary braking system.

1.2 Modifications not permitted under Code LG5

Modifications that must not be certified under LG5 code are:

- Modifications other than those described in Section 1.1.
- Modifications to vehicles that are not mentioned in Section 1.3.
- Any alterations to the primary braking system.

1.3 Vehicle categories permitted to be certified under Code LG5

Modifications that may be permitted as described in Section 1.1 must be in one of the vehicle categories as specified by Table LG5-1.

Table LG5-1 List of permitted vehicles for LG5 modification

Vehicle Category	Category Code
Forward-control passenger vehicle	MB
Off-road passenger vehicle	MC
Light omnibus up to 3.5 tonnes GVM and up to 12 seats up to 3.5 tonnes GVM and more than 12 seats over 3.5 tonnes and up to 4.5 tonnes GVM	MD1 MD2 MD3
Light goods vehicle	NA
Medium goods vehicle over 3.5 tonnes and up to 4.5 tonnes GVM	NB1

2.0 General Requirements

All work must also comply with the requirements contained in sub-section 2 *General Requirements* of Section LG of the *National Code of Practice (NCOP) – Light vehicle modifications* (VSB 14). Specific requirements in this code take precedence over any general instructions in VSB 14.

Extensive modifications to a vehicle may affect the warranty provided by the OVM. It is the responsibility of the certifying Approved Person (AP) to consider the effect of the modification on warranty and clarify this point to the modifier and vehicle operator prior to modification, if affected. Consideration of the effect this modification may have on product warranty is outside the scope of this code.

Sufficient documentary and photographic evidence of the modification must be retained by the certifying AP for audit purposes.

2.1 Compliance with applicable vehicle standards

- 2.1.1** The modified vehicle must continue to comply with the applicable ADRs.
- 2.1.2** If different or additional ADRs apply to the modified vehicle due to the modifications, the vehicle must comply with those ADRs that apply to it after modification.
- 2.1.3** A modified vehicle must comply with the applicable in-service requirements of the *Transport Operations (Road Use Management—Vehicle Standards and Safety) Regulation 2021* (the VSS regulation).
- 2.1.4** A pre-ADR modified vehicle must continue to comply with the VSS regulation.
- 2.1.5** Outlined in Table LG5-2 are areas of the vehicle that may be affected by the modifications and may require re-certification, testing and/or data to show compliance of the modified vehicle.

Table LG5-2 List of items and likely affected ADRs

DETAIL	REQUIREMENTS
Brake Hoses	ADR 7/.., 42/..
Brake System	ADR 31/.., 35/..
Exhaust	ADR 30/.., 80/..
General Safety Requirements	ADR 42/..
Brake Performance	<i>Transport Operations (Road Use Management—Vehicle Standards and Safety) Regulation 2021</i>

Note: This is not an exhaustive list and compliance to other ADRs may also be affected.

The ADR applicability is according to the vehicle’s category and date of manufacture. It is the responsibility of the certifying AP verify compliance to the applicable ADRs. The certification must include the vehicle date of manufacture in addition to the date of modification.

Sections 2.2 to 2.5 relate to the general requirements applying to different areas of the modifications under LG5 code.

2.2 Modification criteria

2.2.1 The modification must be performed in accordance with the manufacturer's guidelines if applicable.

2.3 Exhaust

2.3.1 The engine exhaust back pressure must meet the requirements of ADR 30/.. and ADR 80/.. as applicable.

2.3.2 The installation of an auxiliary or endurance brake should not cause the exhaust back pressure to exceed the vehicle manufacturer's specification.

2.4 Transmission

2.4.1 For auxiliary or endurance brakes that act on drivelines or transmissions, ensure that the effects on the driveline and transmissions are considered and thus the requirements of VSB 14 and relevant ADRs are consulted as applicable. VSB 6 Section C can be used as a guide for tail shaft modifications.

2.5 Engine cooling system

2.5.1 If the installed auxiliary or endurance brake utilises the engine cooling system, ensure that the vehicle is supplied with a radiator of sufficient capacity to accommodate for the additional heat generated by the retarder.

3.0 Limitations

Section 1.2 of this code provides information about which types of modifications are not permitted to be certified under the LG5 code. In addition, the following limitations apply.

3.1 Electronic Stability Control

If the vehicle is fitted with Electronic Stability Control (ESC) by the OVM, the following conditions must be met:

- 3.1.1** The ESC system must not be disabled.
- 3.1.2** It must be ensured that the modifications being certified do not reduce the effectiveness of the ESC system.
- 3.1.3** The effect of the modification on the ESC system should be considered and recertified if deemed required.

4.0 Additional Modifications and Changes to Vehicle Category

- 4.1** If additional modifications are made that may or may not be essential for any modification to the brake system, all such modifications must be assessed separately and certified using appropriate codes or specific approvals. For example, modifications to the rear axle assembly would require certification under the LB2 modification code.
- 4.2** If the vehicle's ADR category has changed due to a change in seating capacity or GVM, the vehicle must comply with the vehicle standards that apply to it in its new category. Certification under such compliance using the appropriate additional code(s) must be provided, for example, certification to the LO1 code, unless specific exemption has been granted for this purpose.

Checklist LG5

CODE LG5: Modification for Fitting of Auxiliary and Endurance Brakes

Form No: LG5

Provide an answer to each of the following (N/A=Not Applicable, Y=Yes, N=No)

Modification Certificate Number:		
1	Auxiliary and endurance brakes	
1.1	What is the maximum acceptable exhaust back pressure?	
1.2	What exhaust back pressure was measured?	
1.3	Is the result within the allowable exhaust back pressure?	<input type="checkbox"/> Y <input type="checkbox"/> N
1.4	Does the engine exhaust back pressure meet the requirements of ADR 30/.. and ADR 80/.. as applicable?	<input type="checkbox"/> Y <input type="checkbox"/> N
2	Electronic Stability Control (ESC) system	
2.1	If fitted, is it ensured that the ESC system is not disabled?	<input type="checkbox"/> Y <input type="checkbox"/> N <input type="checkbox"/> N/A
2.2	If fitted, is it ensured that the ESC system is not made less effective due to modifications carried out under this code?	<input type="checkbox"/> Y <input type="checkbox"/> N <input type="checkbox"/> N/A
3	Modification details	
3.1	Has the modification been performed in accordance with the manufacture's guidelines?	<input type="checkbox"/> Y <input type="checkbox"/> N
4	ADR compliance	
4.1	Does the modified vehicle continue to comply with all affected Australian Design Rules (ADRs)?	<input type="checkbox"/> Y <input type="checkbox"/> N
5	Workmanship	
5.1	Is the quality of the workmanship to a satisfactory industry standard?	<input type="checkbox"/> Y <input type="checkbox"/> N

Note: If the answer to any question is **N (No)**, other than 3: Modification details, the design cannot be certified under LG5 code.

[Continued on the following page]

CERTIFICATION DETAILS																
Make						Model						Year of Manufacture				
VIN																
Chassis Number (If applicable)																
Brief Description of Modification/s																
Vehicle Modified By																
Certificate Number (If applicable)																
Vehicle Certified By (<i>Print</i>)																
Signatory's Employer (If applicable)																
Signatory's Signature											Date					