

Vehicle Standards Guide 28 (VSG-28)

In-Service Emission Testing - Portable Emissions Measuring System

Revised December 2024

This guide provides advice to vehicle owners and modifiers about an alternative method of checking gaseous emission and ensuring compliance after modifying or substituting a vehicle's engine.

Introduction

When modifying a heavy vehicle's engine under Section A of [Vehicle Standards Bulletin 6 \(VSB6\)](#) or a [Section 87 complex modification](#), an Approved Vehicle Examiner (AVE) is required to ensure that the vehicle as modified continues to comply with the applicable emission requirements.

Where a modification is carried out to a manufacturer's specification, such as switching to an alternate engine option or electric control unit (ECU) mapping, the AVE can rely on the OEM's evidence of compliance to demonstrate compliance for the modification.

For modifications that are not to a manufacturer's specification, physical testing of the modified vehicle to verify emission levels is required.

Testing methods

For vehicles that were built prior to ADR 80, access to simplified testing methods such as DT80 are available and provide a practical and economical avenue to verify a vehicles emissions performance.

However, for engine or emissions impacted by modifications which require certification, the only option available is a full ADR emissions test, which involves removing a vehicle's engine and performing emission testing in a controlled laboratory environment. Undertaking this testing is an arduous and expensive process.

Alternative method

In recent years, significant advancements have been made to develop and refine reliable and economical portable emissions measurements systems (PEMS). These systems now offer a possible alternate to full ADR testing for ADR 80 compliant vehicles.

Following a detailed consideration of the advancements in PEMS technology by the NHVR and key industry representatives, the NHVR will permit the use of PEMS to test the emissions of modified in-service vehicles.

This alternative provides a realistic approach to emissions testing which significantly reduces the time and cost associated with this type of testing. This simplified in-service testing method will prompt innovation while still ensuring vehicle emissions continue to meet the intent of the ADRs.

PEMS testing for modifications

Heavy Vehicle Modifications involving Section A of VSB6 and Section 87 complex modification applications will allow the use of PEMS testing, as an alternate to full ADR 80/.. testing, to verify a vehicle's emissions as part of an engine modification.

PEMS testing for vehicle modifications must be carried out in accordance with the [Simplified Emissions Test Procedure—Portable Emissions Measurement System](#) published by the NHVR.

Selection of a PEMS testing facility

Selection of a PEMS testing facility for the purposes of emissions testing, must be conducted in accordance with the above stated testing procedure.

Note: The NHVR does not provide details of eligible PEMS testing facilities.

Other requirements

While this alternative testing procedure is acceptable to the NHVR for certifying a vehicle modified in accordance with VSB6, other governing bodies may have additional requirements which must be met. For example, the conversion of a heavy vehicle to operate on an alternative fuel type, such as natural gas, may be subject to requirements of the relevant state or territory gas authority.

Where this occurs, the modifier must comply with both the requirements of VSB6 and the requirements of the gas authority. Where there may be an inconsistency between the requirements of the NHVR and the other regulatory body, the more stringent requirement is to be applied.

Complying with the Heavy Vehicle National Law

The operator of a heavy vehicle must ensure that their vehicle complies with the relevant *Australian Design Rules* (ADRs) and the National Regulation. Using or permitting another person to use a defective heavy vehicle on a road is an offence.

A defective heavy vehicle is a vehicle that:

- does not comply with the heavy vehicle safety standards; or
- has a part that does not perform its intended function; or
- has deteriorated to an extent that it cannot be reasonably relied on to perform its intended function.

Penalties can include on-the-spot fines or prosecution. Formal warnings or a defect notice may also be issued. More information can be found at [Heavy vehicle defects - https://www.nhvr.gov.au/hv-defects](https://www.nhvr.gov.au/hv-defects).

For more information:

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