

# Exhaust

11-1 Exhaust system

11-2 Exhaust emissions



## Exhaust 11-1 Exhaust system

### Summary of legislation

#### Applicable legislation

- Land Transport Rule: Vehicle Equipment 2004
- Land Transport Act 1998, section 115

#### Mandatory equipment

1. A vehicle with an internal combustion engine must be fitted with an exhaust system (**Notes 1 and 6**).
2. A vehicle that is presented for a WoF or CoF because it has been ordered off the road by an enforcement officer for non-compliant exhaust noise must pass an LVVTA objective noise test before the vehicle may be issued with a WoF or CoF (**Note 4**).

#### Condition

3. An exhaust system must not be constructed or modified in a way that allows a person to interfere readily with its operation or reduce its effectiveness.
4. An exhaust system must be designed, constructed, positioned and maintained in a way that minimises the risk of heat or fumes emitted from the system harming the vehicle's occupants.

#### Performance

5. An exhaust system must be effective and in good working order.
6. The noise output from the exhaust system of a class LE, MA, MB, MC, MD1, MD2 or NA vehicle (other than a class MA or MC motorsport vehicle with a valid motorsport authority card):
  - a) must be less than or similar to the noise output from the vehicle's original exhaust system at the time of the vehicle's manufacture, or
  - b) must not, if the noise output of the vehicle's original exhaust system at the time of the vehicle's manufacture is not known, exceed the applicable maximum decibel level when tested and certified by an LVV specialist certifier in accordance with the LVVTA objective noise test.

#### Modification

7. A class LE, MA, MB, MC, MD1, MD2 or NA vehicle that has been modified so as to increase its exhaust noise output must have the exhaust system inspected, tested and certified by an LVV specialist certifier as having passed the LVVTA objective noise test, unless:
  - a) the increased noise output is clearly below (**Note 3**) the applicable noise limits, and
  - b) the vehicle has been inspected in accordance with the requirements in this manual, including those for equipment, condition and performance.

### Reasons for rejection

#### Mandatory equipment

1. A vehicle is not fitted with an exhaust system that includes a means of sound reduction (**Notes 1 and 6**).
2. A light vehicle is presented for a WoF or CoF because it has been ordered off the road (pink- or green-stickered) by an enforcement officer for non-compliant exhaust noise, and there is no evidence that the vehicle has passed an LVVTA objective noise test since the vehicle was ordered off the road (**Note 4**), ie:
  - a) the owner cannot produce a valid objective exhaust noise emissions test certificate (**Figure 11-1-1**) issued after the vehicle was ordered off the road (**Note 5**), and
  - b) the exhaust system tail pipe is not fitted with a valid LVVTA noise test label (**Figure 11-1-2**).

#### Condition

3. An exhaust system is not securely mounted.
4. The exhaust system is so constructed or modified that its operation or effectiveness can be readily interfered with, eg the driver is able to interfere with the exhaust system by operating a manual switch, or the exhaust is fitted with a flame thrower kit.
5. The exhaust system is so constructed that emitted heat or fumes are likely to harm vehicle occupants, eg the exhaust gases are not directed away from the perimeter of the vehicle's passenger compartment (**Note 6**).

#### Performance

6. There is a leak of exhaust fumes from the exhaust system.
7. The exhaust noise output from a class LE, MA, MB, MC, MD1, MD2 or NA vehicle (other than a class MA or MC motorsport vehicle with a valid motorsport authority card) is not less than or similar to the noise output the vehicle (or a vehicle of a similar type – see **Note 2**) would have had when it was manufactured with its original exhaust system, and:
  - a) the increased noise output exceeds the relevant noise limit in **Table 11-1-1** when assessed by the vehicle inspector:

## Exhaust

### 11-1 Exhaust system (cont.)

8. When a vehicle has been certified by an LVV specialist certifier as having passed the LVVTA objective noise test:
- a) the owner must produce a valid objective exhaust noise emissions test certificate (**Figure 11-1-1**), and
  - b) the exhaust system tailpipe must be fitted with a valid LVVTA noise test label (**Figure 11-1-2**).

### Reasons for rejection

- i. using their own experience, or
  - ii. using the Noise Quick Check specified in **Technical bulletin 1**, or
- b) there is no evidence that the vehicle has passed an LVVTA objective noise test, ie:
- i. the owner cannot produce a valid objective exhaust noise emission test certificate (**Figure 11-1-1**), and
  - ii. the exhaust system tailpipe is not fitted with a valid LVVTA noise test label (**Figure 11-1-2**).

**Table 11-1-1. Noise limits for the Noise Quick Check**

Vehicle	Noise limit (decibels) (Note 3)
Class LE with an engine capacity of 125 cc or less	93 dBA
Class LE with an engine capacity of more than 125 cc	97 dBA
Class MA, MB, MC, MD1, MD2, NA first registered in New Zealand before 1 June 2008	92 dBA
Class MA, MB, MC, MD1, MD2, NA first registered in New Zealand on or after 1 June 2008 and:	
- manufactured before 1 January 1985	92 dBA
- manufactured on or after 1 January 1985	87 dBA

**Note 1 Exhaust system** means a pipe assembly through which the engine exhaust gases pass to the atmosphere and includes some means of sound reduction such as a silencer or resonator.

**Note 2** For the purpose of Reason for rejection, a vehicle of a similar type means a vehicle of similar age, vehicle size, body type, engine size and power output, and may be of a different make and model.

**Note 3** The noise limits in **Table 11-1-1** are lower than the noise limits specified in legislation, and considered to be 'clearly below' the legal noise limits. Vehicles with an exhaust noise output clearly below the legal limits do not require an Objective Noise Test.


**Note 4** A new objective noise test is required every time the vehicle is ordered off the road for non-compliant exhaust noise, even if the vehicle is presented for WoF or CoF with a quieter or original exhaust system.

**Note 5** Sight the ordering off the road notice or phone the NZ Police to find out when the ordering off the notice was issued.

**Note 6** Externally venting wastegates (screamer pipes) are not permitted as they are not adequately muffled and the exhaust gases passing through the wastegate are not directed through the vehicle's exhaust system. However, wastegates that have their own exhaust system or exhaust pipe exiting behind the passenger compartment are permitted.

**Note 7** LVV certification is always required for the fitting of a turbocharger as a modification, or the upgrading of a turbo or wastegate.

**LOW VOLUME VEHICLE TECHNICAL ASSOCIATION Inc**   
**Objective Exhaust Noise Emission Test Certificate**

<i>(white copy for vehicle owner)</i>			
<b>Owner:</b> (Name)		(Contact Ph #) ( )	
<b>Vehicle:</b> (Make)	(Model)	(Sub-model)	
(Year)	(Colour)	(VIN)	
<b>Engine:</b> (Make)		(Code if known)	(Modified?)
(Cylinder configuration & #)		(Camshaft & valve arrangement)	
<b>Exhaust system description &amp; details:</b>			
(a) Exhaust manifold(s): (make/type)			
(b) Front pipe(s): (OD/material/length)			
(c) Muffler(s)/resonator(s) #1: (make/material/length/OD)			
(d) Intermediate pipe(s): (OD/material/length)			
(e) Muffler(s)/resonator(s) #2: (make/material/length/OD)			
(f) Tail-pipe(s): (OD/material/length)			
(g) Other exhaust system details: (catalytic convertor(s)/balance pipe/additional mufflers/other)			
<b>Low Volume Vehicle Certifier's declaration:</b>			
<b>LVV Certifier:</b> (Name)		(ID)	(Contact Ph #) ( )
<input type="checkbox"/> <b>PASS:</b>	<b>Approval label:</b> (Number)		(Location of label)
I, the above-named Low Volume Vehicle Certifier appointed by the Low Volume Vehicle Technical Association (Inc) for the purpose of Objective Exhaust Noise Emission Testing, declare that I carried out an objective-exhaust noise emission test on the above-described vehicle in accordance with the procedures specified by Low Volume Vehicle Standard 90-20, and confirm that at the time of testing the vehicle complied with all requirements of, and emitted exhaust noise emissions not exceeding that specified by, Low Volume Vehicle Standard 90-20. (Signed) _____ (Date) _____			LVV certifiers authentication (only if pass is recorded): <b>[Authenticity sticker with hologram security feature]</b>
<input type="checkbox"/> <b>FAIL:</b> Recommendations to vehicle owner on bringing the exhaust system into compliance (expert advice is offered without any guarantees of a pass as a result of the advice given or implied).			
<b>Vehicle exhaust system schematic:</b>			
			

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Figure 11-1-1. Objective exhaust noise emission test certificate



Figure 11-1-2. Objective noise test label



**Exhaust****11-1 Exhaust system****Summary of legislation****Applicable legislation**

- Land Transport Rule: Vehicle Equipment 2004

**Mandatory equipment**

1. A motor vehicle with an internal combustion engine must be fitted with an exhaust system.

**Condition**

2. An exhaust system must not be constructed or modified in a way that allows a person to interfere readily with its operation or reduce its effectiveness.
3. An exhaust system must be designed, constructed, positioned and maintained in a way that minimises the risk of heat or fumes emitted from the system harming the vehicle's occupants.

**Performance**

4. An exhaust system must be effective and in good working order.
5. The noise output from the exhaust system of a heavy vehicle must not be noticeably and significantly louder than the noise output from the vehicle's original exhaust system at the time of the vehicle's manufacture.

**Modification**

6. An exhaust system that is affected by a modification must meet the requirements in this manual, including those for equipment, condition and performance.

**Reasons for rejection****Mandatory equipment**

1. A vehicle is not fitted with an exhaust system that includes a means of sound reduction (**Note 1**).

**Condition**

2. An exhaust system is not securely mounted.
3. The exhaust system is so constructed or modified that its operation or effectiveness can be readily interfered with, eg the driver is able to interfere with the exhaust system by operating a manual switch.
4. The exhaust system is so constructed that emitted heat or fumes are likely to harm vehicle occupants, eg the exhaust gases are not directed away from the perimeter of the passenger compartment.

**Performance**

5. There is a leak of exhaust fumes from the exhaust system.
6. The exhaust noise output from a heavy vehicle is noticeably and significantly louder than it would have been when the vehicle was manufactured with its original exhaust system

**Note 1 Exhaust system** means a pipe assembly through which the engine exhaust gases pass to the atmosphere and includes some means of sound reduction such as a silencer or resonator.



**Exhaust****11-1 Exhaust system (cont.)****Summary of legislation****Applicable legislation**

- Land Transport Rule: Passenger Service Vehicles 1999

**Mandatory equipment**

1. Refer to general vehicle pages.

**Condition and performance**

2. Refer to general vehicle pages.
3. The exhaust system, including any turbochargers, must be installed, located, shielded and ventilated so that:
  - a) no ignitable or heat-sensitive materials could fall on the exhaust system, and
  - b) material adjacent to any hot surface forming part of, or connected to, the exhaust system must not, under any operating condition, be heated sufficiently to cause degradation.
4. The design, construction and maintenance of the exhaust system must ensure that:
  - a) emitted heat or fumes cannot harm the occupants of the PSV, and
  - b) the outlet pipe is shielded or located in a position where other road users, or passengers entering or exiting the vehicle, cannot be burned by the exhaust, and
  - c) the outlet pipe does not discharge on the left-hand side of the vehicle.

**Reasons for rejection****Mandatory equipment**

1. Refer to general vehicle pages.

**Condition and performance**

2. Refer to general vehicle pages.
3. Part of the exhaust system or turbocharger is located where:
  - a) ignitable or heat-sensitive materials could fall on it, or
  - b) adjacent material has been degraded by heat.
4. Exhaust system heat shielding has been removed or does not perform as intended.
5. Ventilation designed to cool part of the exhaust system does not perform as intended.
6. Exhaust heat or fumes can harm occupants.
7. The outlet pipe is not located or shielded to avoid injury to passengers entering or exiting, or to other road users.
8. The outlet pipe discharges on the left-hand side of the vehicle.



**Exhaust****11-1 Exhaust system****Summary of legislation****Applicable legislation**

- Land Transport Rule: Passenger Service Vehicles 1999

**Mandatory equipment**

1. Refer to heavy vehicle pages.

**Condition and performance**

2. Refer to heavy vehicle pages.
3. The exhaust system, including any turbochargers, must be installed, located, shielded and ventilated so that:
  - a) no ignitable or heat-sensitive materials could fall on the exhaust system, and
  - b) material adjacent to any hot surface forming part of, or connected to, the exhaust system must not, under any operating condition, be heated sufficiently to cause degradation.
4. The design, construction and maintenance of the exhaust system must ensure that:
  - a) emitted heat or fumes cannot harm the occupants of the PSV, and
  - b) the outlet pipe is shielded or located in a position where other road users, or passengers entering or exiting the vehicle, cannot be burned by the exhaust, and
  - c) the outlet pipe does not discharge on the left-hand side of the vehicle.

**Reasons for rejection****Mandatory equipment**

1. Refer to heavy vehicle pages.

**Condition and performance**

2. Refer to heavy vehicle pages.
3. Part of the exhaust system or turbocharger is located where:
  - a) ignitable or heat-sensitive materials could fall on it, or
  - b) adjacent material has been degraded by heat.
4. Exhaust system heat shielding has been removed or modified so as not to perform as intended.
5. Ventilation designed to cool part of the exhaust system does not function.
6. Exhaust heat or fumes can harm occupants.
7. The outlet pipe is not located or shielded to avoid injury to passengers entering or exiting, or to other road users.
8. The outlet pipe discharges on the left-hand side of the vehicle.



## Exhaust

## 11-2 Exhaust emissions

### Summary of legislation

#### Applicable legislation

- Land Transport Rule: Vehicle Exhaust Emissions 2007

#### Performance

- A motor vehicle must not emit clearly visible smoke (**Note 2**) when the vehicle's engine is running at its normal operating temperature, under either of the following conditions:
  - for a continuous period of five seconds when the engine is idling
  - as the engine is being accelerated rapidly to approximately 2500 revolutions per minute or approximately half the maximum engine speed (whichever is lower).
- Requirement 1 above does not apply if the driver of the vehicle produces documentation that proves that the engine is original equipment for the vehicle and the engine's design means the vehicle cannot reasonably comply (**Note 3**).
- The exhaust emissions system or exhaust control equipment of a vehicle (other than a group L vehicle or a class MA or MC motorsport vehicle) first certified for entry into service on or after 1 May 2008 and manufactured on or after 1 January 1990 must not be modified so as to prevent the vehicle from being able to pass a prescribed metered emissions test.

### Reasons for rejection

#### Performance

- A vehicle with the engine at normal operating temperature (**Note 1**) emits clearly visible smoke (**Technical bulletin 8**) from the exhaust tailpipe (**Note 2**):
  - for a continuous period of five seconds when the engine is idling and does not meet the additional requirements in **Table 11-2-1**, or
  - as the engine is being rapidly accelerated to approximately 2500 rpm or approximately half the maximum engine speed (whichever is lower) and does not meet the additional requirements in **Table 11-2-1**.
- A vehicle (other than group L vehicle or a class MA or MC motorsport vehicle with a valid motorsport authority card) that was first registered in New Zealand on or after 1 May 2010 and manufactured from 1 January 1990 has a catalytic converter removed where there is evidence that one was originally fitted, and there is no written evidence issued by a TSDA that the vehicle passed a prescribed metered emissions test in this condition (**Notes 5 and 6, Figure 11-2-1**).

**Table 11-2-1. Additional requirements**

Type of vehicle	Additional requirements
First registered on or after 1 January 1960 with four-stroke engine, or First registered before 1 January 1960 with four-stroke engine manufactured on or after 1 January 1960.	<ol style="list-style-type: none"> <li>Document produced by the vehicle operator that proves that (<b>Note 3</b>):               <ol style="list-style-type: none"> <li>the engine is original equipment for the vehicle, and</li> <li>its design means that the vehicle cannot reasonably comply with the visible smoke emission requirements.</li> </ol> </li> </ol> <p><b>Note</b> No evidence is required if, during the acceleration test, a diesel-powered vehicle emits moderate smoke caused by turbo lag.</p> <ol style="list-style-type: none"> <li>The smoke produced is not noticeably and significantly more visible than it would have been when the vehicle was manufactured and supplied with the fuel recommended by the manufacturer.</li> </ol>
First registered before 1 January 1960 with four-stroke engine manufactured before 1 January 1960, or Vehicle with two-stroke engine or rotary engine.	The smoke produced is not noticeably and significantly more visible than it would have been when the vehicle was manufactured and supplied with the fuel recommended by the manufacturer ( <b>Note 4</b> ).

# Exhaust

## 11-2 Exhaust emissions (cont.)

**Note 1** Test procedure:

- a) Carry out the idling and acceleration tests in Reason for rejection 1. A vehicle that passes both tests with the engine below normal operating temperature is deemed to have passed with the engine at normal operating temperature.
- b) If the vehicle has failed either test, ensure the engine is at normal operating temperature. Then purge the system by increasing the engine speed to 2500 rpm (or half the maximum engine speed if this is lower) and holding it there for about 5 seconds. Repeat the idling and acceleration tests in Reasons for rejection 1.

**Note 2** Visible emissions caused by the condensation of water vapour do not count as smoke.


**Note 3** Acceptable evidence is:

- a) a letter on the letterhead of the manufacturer or manufacturer’s representative, or
- b) a letter on the letterhead of an appropriate automobile club, or
- c) evidence of equal authority to (a) or (b) above, eg from an appropriate expert.

**Note 4** The vehicle inspector may need to take into account further information about unusual or older vehicles, eg from an appropriate expert such as an office holder in a vintage car club.

**Note 5** This reason for rejection does not apply if the vehicle operator can provide evidence that the vehicle was first certified for entry before 1 May 2008.

**Note 6** The metered emissions test can only be carried out at TSDA sites (VTNZ, VINZ, AA, Safer Vehicle Testing) where entry inspections are carried out. The TSDAs will issue a document (**Figure 11-2-1**) that identifies the vehicle, whether or not the vehicle has passed the test, and whether or not the vehicle was tested with any OE catalytic converters removed. A metered emissions test is not required if a catalytic converter is refitted, or if there is evidence that the vehicle was not originally fitted with a catalytic converter.



**NZ TRANSPORT AGENCY**  
WAKA KOTAHU

### Metered exhaust emissions test

**Vehicle details**

Make/model	
VIN/chassis number	
Registration plate number	

**Metered emissions test results**

Engine/fuel type	Permitted maximum	Test result	
Petrol 4-stroke or rotary	1% CO	% CO	ppm HC
	300ppm HC		
Petrol 2-stroke	4.5% CO	% CO	ppm HC
	7800ppm HC		
Diesel	0.64 OAC or	OAC value	Tick if OAC average value <input type="checkbox"/>
	0.8 OAC average		

Test result printout attached: **YES / NO** (please circle)

Was the vehicle tested with the catalytic converter(s) fitted? **YES / NO** (please circle)

Test result: **PASS / FAIL** (please circle)

*I confirm that I have tested the above vehicle in accordance with the NZTA-prescribed metered emissions test.*

Location	Site ID	TSDA stamp
Inspector ID	Date	
Inspector's signature		

**Note to the vehicle operator:** This document, or a copy of this document, must be kept in the vehicle and produced to a vehicle inspector or enforcement officer on request.

**Figure 11-2-1. Exhaust emissions test certificate**