TECHNICAL NOTE
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All Types

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14 ANTI-POLLUTION TEST - PETROL ENGINES

- Engine : **XXX**
- Gearbox : **XXX** **Basic manual** : **XXX**

This technical note provides details of :

- the anti-pollution standards,
- the test equipment approved by **RENAULT**,
- the test conditions to be observed prior to performing an anti-pollution test,
- the method to use to carry out an anti-pollution test,
- the fault-finding procedure to be carried out if a petrol engine does not meet the anti-pollution standard,
- the list of vehicles with special points to be observed when carrying out an anti-pollution test.

Contents

1 - Anti-pollution standard

The standard described below relates to private vehicles and light commercial vehicles fitted with an injection system and an oxygen sensor fitted on the exhaust manifold or on the catalytic converter intake.

The accepted values for the anti-pollution test for petrol vehicles fitted with a catalytic converter are as follows :

	Nominal idle speed	**Accelerated idle speed**
CO	≤ 0.5 %	≤ 0.3 %
Fuel mixture	-	$0.97 \leq \lambda \leq 1.03$

NOTE : The level of hydrocarbon emissions (**HC**) depends on the current legislation applicable within the country.

2 - Test equipment

RENAULT test equipment approved for carrying out the anti-pollution test is as follows :
- "**OPTIMA**" **4040 ROF** 4 gas analyser (*),
- "**GREEN**" **5043 ROF** 4 gas analyser (*),
- 4 gas **5840** module which can be integrated in the "**OPTIMA**" **5800** diagnostic station.

(*) For equipment ordered prior to **01/01/97**, there is an adjustment kit which includes an operator guide (contact your local **SAGEM** distributor for further information). For UK, contact Mark Allnutt in Network Standards Department on Swindon 01793-507211.

3 - Test conditions to be observed prior to carrying out the anti-pollution test

- Before carrying out any anti-pollution test, check to see whether there is a specific procedure relating to the vehicle(see section **7** entitled "**List of vehicle specifications for petrol vehicles fitted with a catalytic converter**").

- If there are no special instructions (see section 7), no accessory or vehicle optional equipment which may have a direct influence on the idle speed must be activated.

- Check the oil level and the condition of the oil.

- Check the exhaust system : place the vehicle on a lift.

  1. Check that the components which make up the exhaust system are present (catalytic converter, etc...).

  2. With the engine at idle, block the end of the exhaust and check for any possible leaks.

- Dual fuel vehicles should be treated in petrol mode.

- For vehicles with automatic transmission, place the selector lever in "**P**" or "**N**".

- The engine oil temperature should be greater than **80°C**.

- The idle speed should be correct to specification and stable.

  ATTENTION : If this point is not observed, the vehicle will not pass the tests.

  An unstable idle speed may be due to :
  - a problem with the **EGR** valve (poor sealing),
  - incorrect timing adjustment (stalling or valve clearances),
  - a problem with the idle speed regulation solenoid valve,
  - an ignition problem (fault-finding carried out using the **OPTIMA 5800** diagnostic station),
  - contaminated oxygen sensor (see **Technical Note 2381A**).

- Use an exhaust gas extractor when carrying out the anti-pollution test.

- Carry out the test as soon as the conditions described above are fulfilled.

NOTE : If the vehicle has remained at idle speed for too long, it may produce :
1. fouling of the oxygen sensor,
2. cooling of the catalytic converter and the oxygen sensor.

This is why it is advisable to maintain the engine speed at approximately **3,000 rpm** for a period of **1 minute** prior to carrying out any measurements.

4 - Carrying out the anti-pollution test

To carry out the anti-pollution test these phases are to be observed in the following order :

With the engine hot,

- Insert the gas analyser sensor into the exhaust **a minimum of 30 cm**.
- Bring the engine up to accelerated idle speed.

  In France, this is between **2 500** and **2 800 rpm.** For other countries this depends on the current legislation in force (see section **7** for the list of **RENAULT** vehicle specifications).
- Stabilise the engine speed for a period of **60 seconds**.
- At the end of the stable speed period, check that **0.97** ≤ λ ≤ **1.03** and that the **CO** ≤ **0.3 %** and print out the result.

  NOTE : You may wait a maximum of **2 minutes*** to print out the result.
- Bring the engine speed to nominal idle speed by releasing the accelerator.
- Leave the engine to stabilise for a period of **20 seconds**.
- Check that the **CO** ≤ **0.5 %** and print out the result.

  NOTE : You may wait a maximum of **15 seconds*** to print out the result.

(*) If the validation is not carried out before the maximum time delay allowed, recommence the test.

5 - Pre-fault finding (to be carried out if the result of the anti-pollution test is negative)

Following the points described below, if you have resolved a problem, carry out the anti-pollution test again.

Check for faults using the XR 25 / NXR :

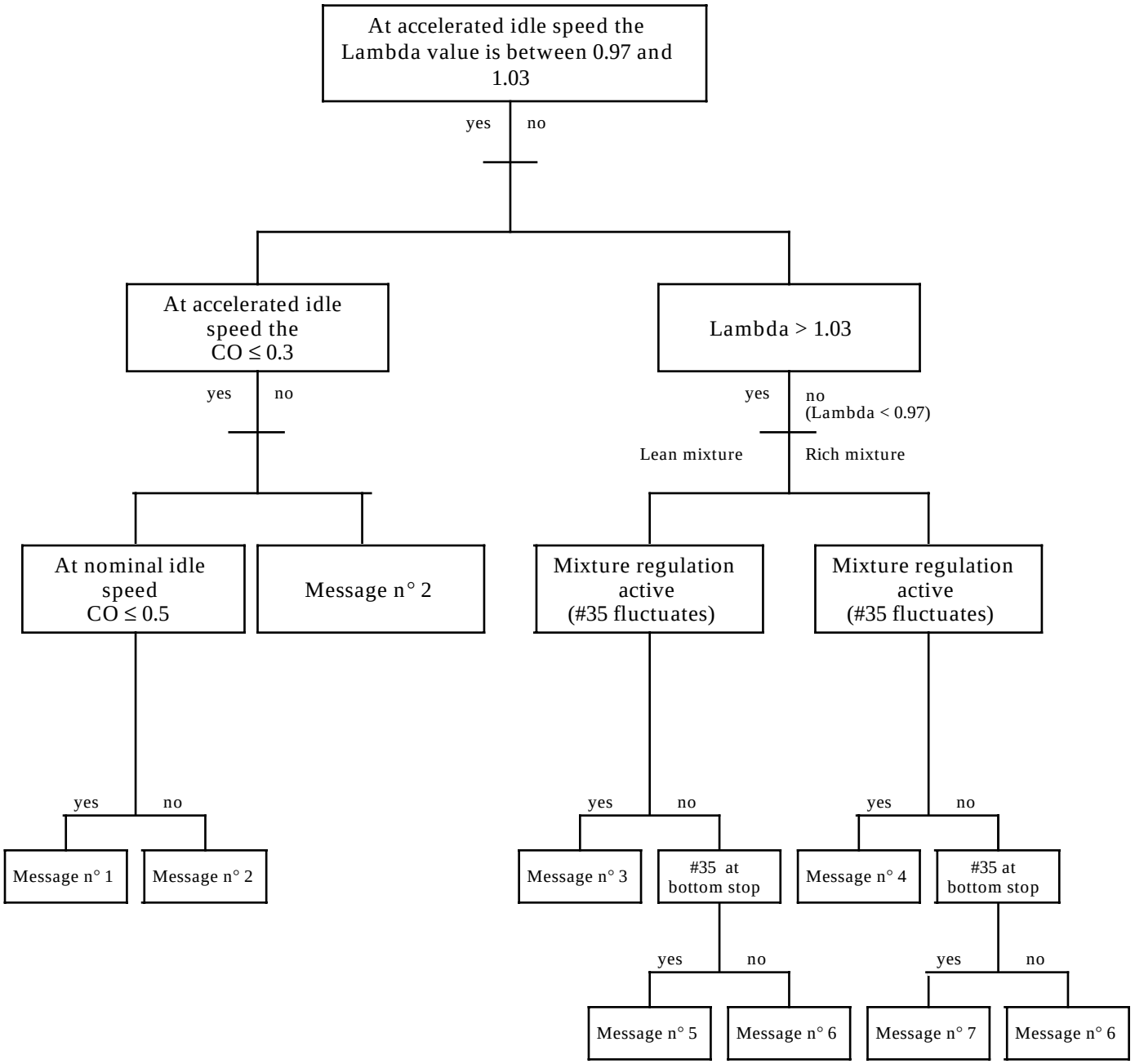
If an oxygen sensor fault is present, refer to **Technical Note 2381A**.

NOTE : A fault with the oxygen sensor may result from :
- the oxygen sensor itself,
- an element of the engine (fuel pressure, injector, oxygen sensor being earthed by the exhaust...), BUT NOT FROM THE CATALYTIC CONVERTER.

6 - Fault-finding

If no fault is present when using the XR 25 / NXR at both nominal idle speed and accelerated idle speed, note down the values obtained from **#35** (fuel mixture correction).

These values are needed for the fault-finding procedures on the next page.


At accelerated idle speed the Lambda value is between 0.97 and 1.03
yes
no
At accelerated idle speed the CO ≤ 0.3
Lambda > 1.03
yes
no
yes
no (Lambda < 0.97)
Lean mixture
Rich mixture
At nominal idle speed CO ≤ 0.5
Message n° 2
Mixture regulation active (#35 fluctuates)
Mixture regulation active (#35 fluctuates)
yes
no
yes
no
yes
no
Message n° 1
Message n° 2
Message n° 3
#35 at bottom stop
Message n° 4
#35 at bottom stop
yes
no
yes
no
Message n° 5
Message n° 6
Message n° 7
Message n° 6

- **Message n° 1 :**
  No fault detected.

- **Message n° 2 :**
  - Ignition fault (fault-finding carried out using **OPTIMA 5800**).
  - Incorrect timing adjustment (stalling or valve clearances).
  - Check the condition of the catalytic for signs of any mechanical damage : remove the catalytic converter and check the appearance : melted, broken parts, check for presence of small pieces...
    Causes which may lead to destruction of the catalytic converter :
    1. Impacts or vibrations : casing or mountings broken, internal element broken (check the condition of the mountings on the exhaust line).
    2. Engine problem (misfiring, fuel fault...) : internal element overheating and / or melted.

    It is **ESSENTIAL** to eliminate the cause of the damage to the catalytic converter before fitting a new one.

- **Message n° 3 :**
  - Exhaust leakage after the oxygen sensor.
  - Ignition fault (fault-finding carried out using **OPTIMA 5800**).
  - Oxygen sensor problem : securing, oxygen sensor being earthed by the exhaust, sensor overheating (use an amp meter).
  - Refer to **Technical Note 2381A** for full details of fault-finding on the oxygen sensor.

- **Message n° 4 :**
  - Oxygen sensor problem : securing, oxygen sensor being earthed by the exhaust, sensor overheating (use an amp meter).
  - Refer to **Technical Note 2381A** for full details of fault-finding on the oxygen sensor.

- **Message n° 5 :**
  - Check the fuel supply circuit (fuel pressure too low...).
  - check the control circuit for the injectors (harness / connectors).
  - Check the injectors (use tool **Mot. 845** to carry out this check).

- **Message n° 6 :**
  - Check the vehicle specifications (see section **7**).

- **Message n° 7 :**
  - Fuel flow too high : injector leakage, increased fuel pressure.
  - Oxygen sensor problem : securing, oxygen sensor being earthed by the exhaust, sensor overheating (use an amp meter).
  - Check the pressure sensor (pneumatic and electrical connections).
  - Ignition fault (fault-finding carried out using **OPTIMA 5800**).
  - Check the fuel vapour rebreathing circuit (clamp the pipe to the inlet manifold: if the value **#35** moves from its end stop, the rebreathing system is at fault).
  - Check the oil vapour rebreathing circuit (clamp the pipe to the inlet manifold : if the value **#35** moves from its end stop, the rebreathing system is at fault).

NOTE : An increased level of hydrocarbons (**HC**) may be as a result of :
- an ignition fault (fault-finding carried out using **OPTIMA 5800**),
- a rebreathing fault (oil and fuel vapours),
- incorrect oil level or poor condition oil,
- an injector problem,
- a timing problem (stalling or valve clearances).

7 - List of specifications for petrol vehicles fitted with a catalytic converter

The only special specifications relate to the accelerated idle phase.

There are two categories :

Category A

The accelerated idle speed is between **2 500** and **2 800 rpm** and the test is carried out **WITH the electrical accessories ON (rear screen demister and headlights on).**

CLIO 1.8 RT	X57U X57C X57C	F3P A 714 F3P F 710 F3P L 710
RENAULT 19 1.8 RT	X53A X53A X53Y X53Y	F3P N 706 F3P H 706 F3P B 704 F3P E 704
RENAULT 19 Cabriolet 1.8	853A 853A D53Y D53Y	F3P N 706 F3P H 706 F3P B 704 F3P E 704

Category B

The accelerated idle speed is between **2 900** and **3 200 rpm** (**WITHOUT the electrical accessories on**).

SAFRANE 2.0 12V	B542 B542	J7R 4 734 J7R Z 735
SAFRANE 2.2 12V	B543 B543	J7T R 760 J7T S 761