



# TECHNICAL NOTE - DIAGNOSTICS

Standard	23500	Date	02-2011	<b>EN</b>	<b>G0023/10</b>
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Supersedes & replaces  
G0023/9 dated 08/2010

Modifications to the  
previous versions are  
highlighted by two  
vertical lines

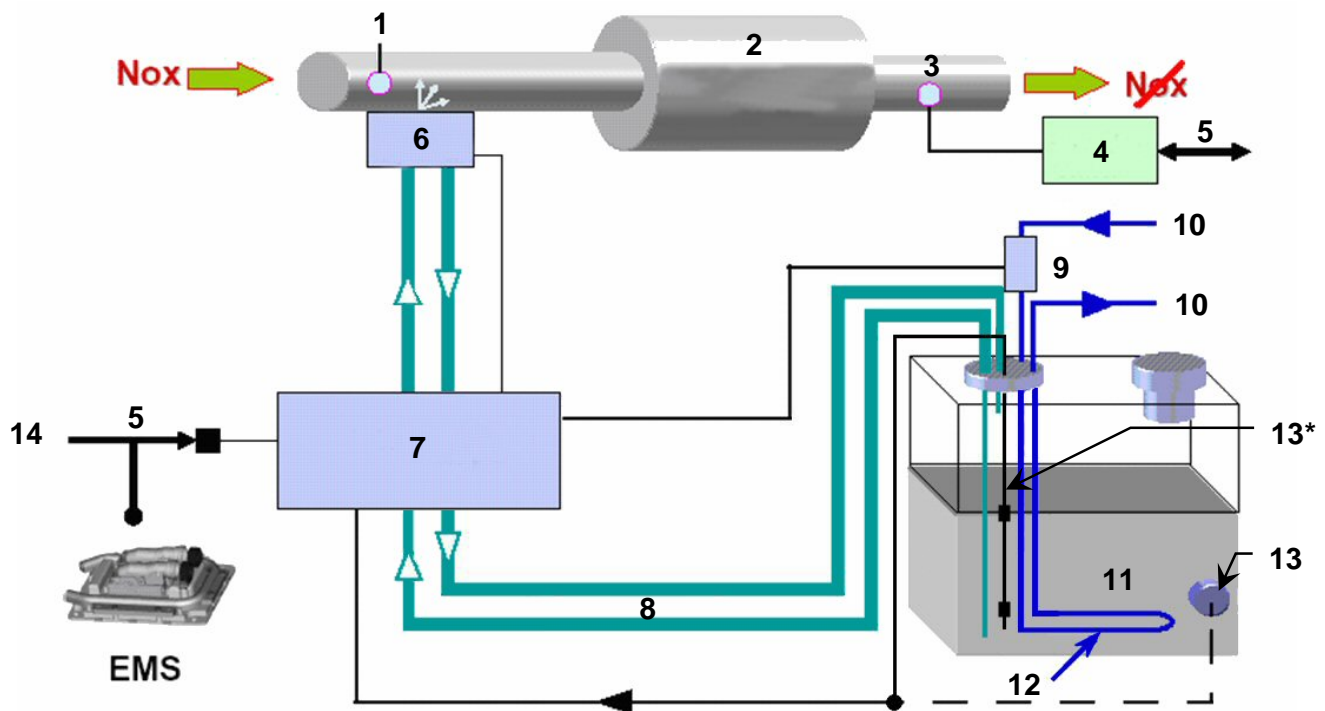
**MAGNUM DXi – PREMIUM DXi**  
**KERAX DXi – MIDLUM DXi**  
**Euro 4 and Euro 5**  
**POLLUTION CONTROL CIRCUIT**  
**Concerns: Workshop – Reception – Stores**

## I – SUBJECT: SCR SYSTEM DIAGNOSTIC AID (SELECTIVE CATALYST REDUCTION)

I – SUBJECT: SCR SYSTEM DIAGNOSTIC AID (SELECTIVE CATALYST REDUCTION) .....	1
II – BLOCK DIAGRAMS .....	2
II – 1. General principle of the "AdBlue"pollution control system .....	2
II – 2. Electro-pneumatic principle of the "AdBlue"pollution control system .....	3
II – 3. Electrical block diagram .....	5
III – TROUBLESHOOTING .....	6
III – 1. Preliminary inspections .....	6
III – 2. Checks with the diagnostic tool .....	7
IV – TROUBLESHOOTING .....	8
IV – 1. Catalytic converter blocked .....	8
IV – 2. Cooling Valve (CCV) previous generation .....	8
IV – 3. Cooling valve integrated in the injector (number 2 printed on the injector) .....	9
IV – 4. Fault on the SCR system .....	9
IV – 5. Increase in pressure and consumption problem .....	10
IV – 6. Pump motor fault .....	12
IV – 7. Sensor test readings .....	12
V – ROAD TEST CONDITIONS .....	20
VI – SPECIFIC POINTS FOR Euro 4 PHASE 2/Euro 5 incentive/Euro 5 .....	21
VI – 1. How to recognise a Euro 4 Phase 2/Euro 5 Incentive/Euro 5 vehicle .....	21
VI – 2. Faults specific to Euro 4 phase 2/Euro 5 Incentive/Euro 5 .....	22

## II – BLOCK DIAGRAMS

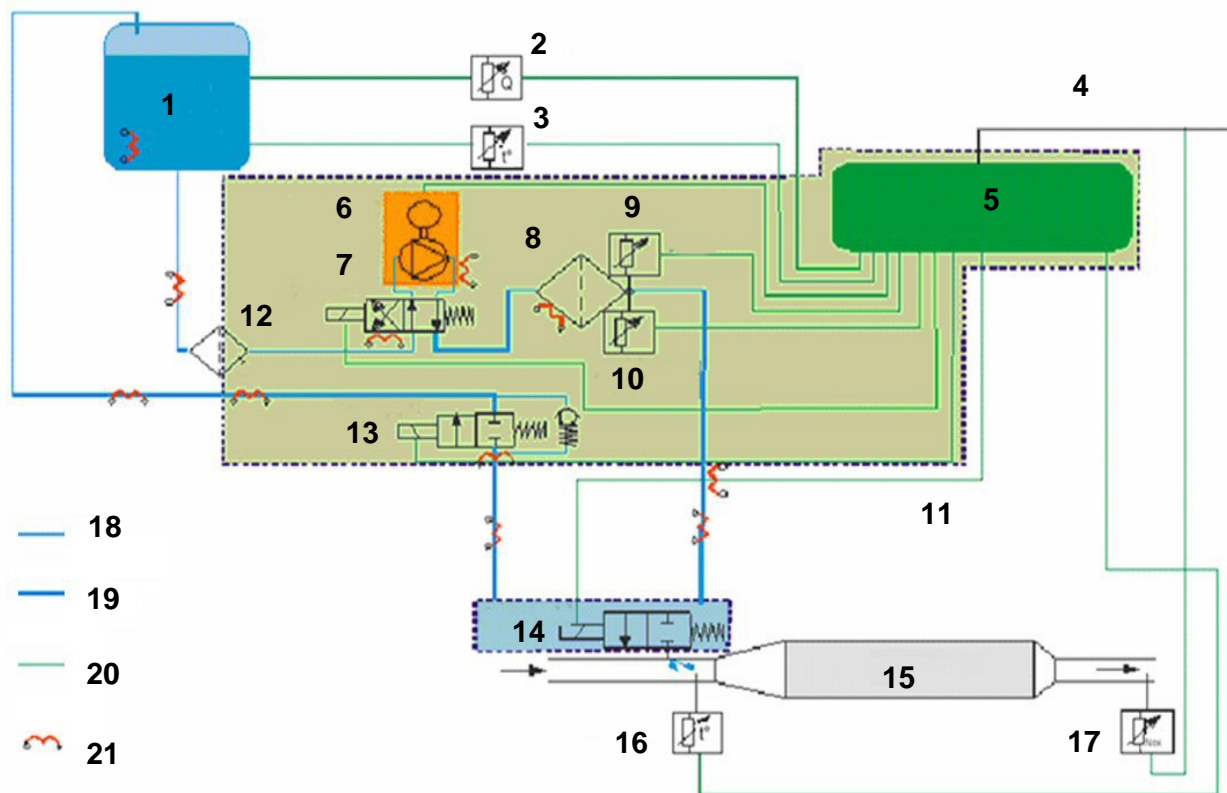
### II – 1. General principle of the "AdBlue" pollution control system



1. Exhaust gas temperature sensor
2. SCR silencer
3. NOx sensor or temperature sensor
4. NOx ECU sensor
5. CAN Eng. (Engine) – OBD system fault
6. Injector
7. Pump (UDS/ADS)
8. Heated AdBlue pipes
9. Tank re-heater solenoid
10. Engine water circuit
11. AdBlue Tank
12. Heater and/or gauge for stainless steel tank
13. AdBlue level and temperature sensors on plastic tank
- 13\*. New assembly: gauge with float
14. OBD socket

## II – 2. Electro-pneumatic principle of the "AdBlue" pollution control system

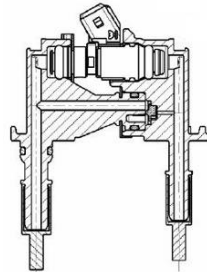
### II – 2.1 With the old pump and the old injector



Key:

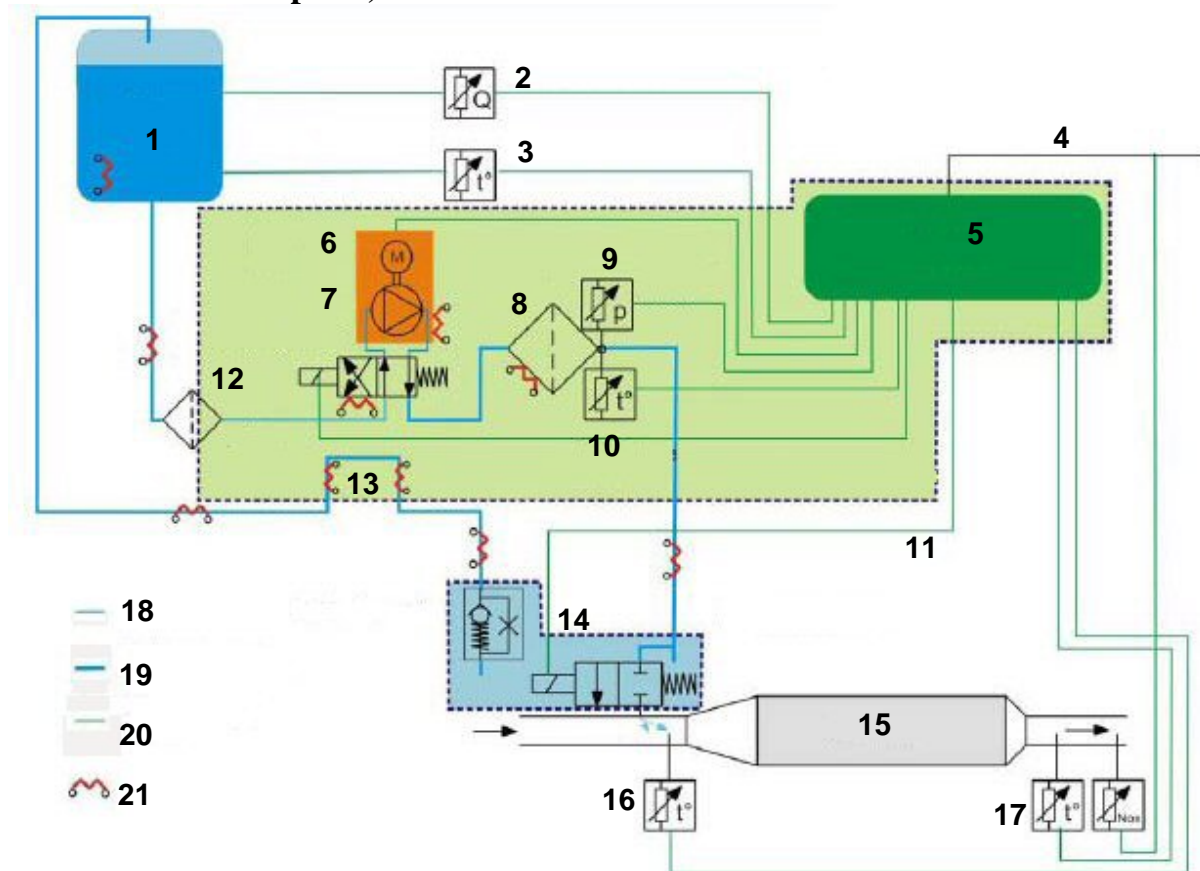
- 1. AdBlue Tank
- 2. AdBlue level sensor
- 3. AdBlue temperature sensor
- 4. Engine CAN
- 5. AdBlue ECU
- 6. Pump
- 7. Inversion solenoid
- 8. Filter
- 9. AdBlue pressure sensor
- 10. AdBlue temperature sensor
- 11. Pump module
- 12. Prefilter

- 13. Cooling circuit control valve



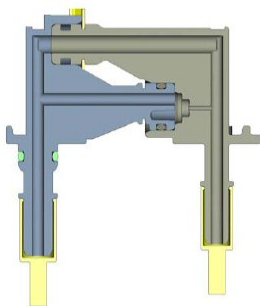
- 14. Dosage module, injector or dosage solenoid
- 15. Catalytic converter
- 16. Exhaust gas temperature sensor upstream from the catalytic converter
- 17. Temperature sensor or NOx sensor
- 18. AdBlue inlet pipes
- 19. AdBlue outlet pipes
- 20. Electrical connectors
- 21. Heater

## II – 2.2 With the new pump and the new injector (identified by "2" printed on the parts)

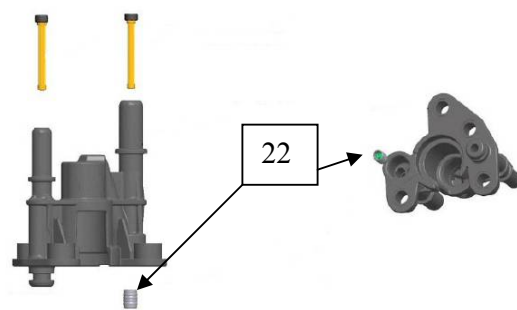


Key:

1. AdBlue Tank
2. AdBlue level sensor
3. AdBlue temperature sensor
4. Engine CAN
5. AdBlue ECU
6. Pump
7. Inversion solenoid
8. Filter
9. AdBlue pressure sensor
10. AdBlue temperature sensor
11. Pump module
12. Prefilter
13. Distribution module



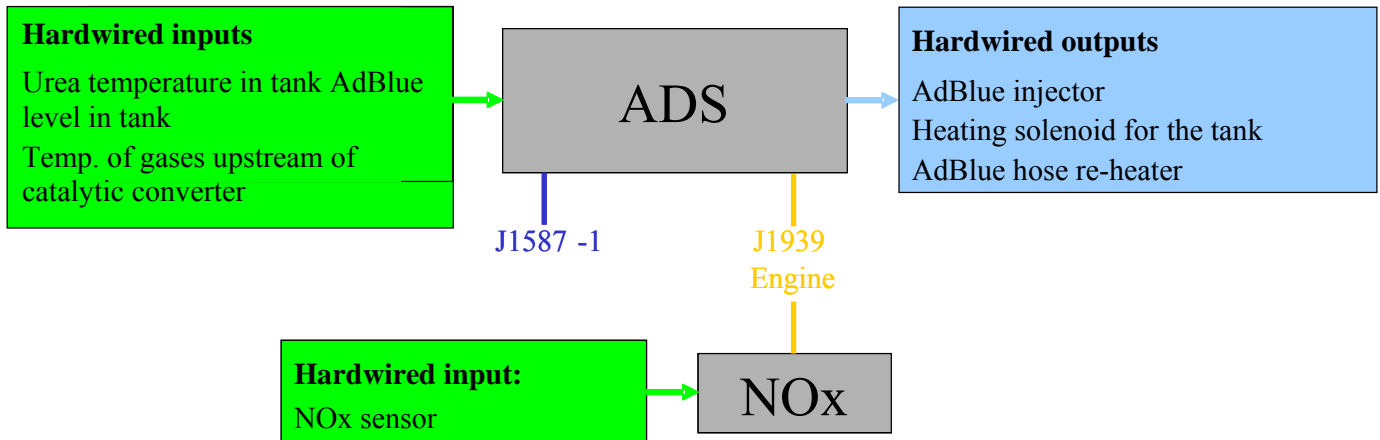
14. Injector with pressure limitation valve (22)



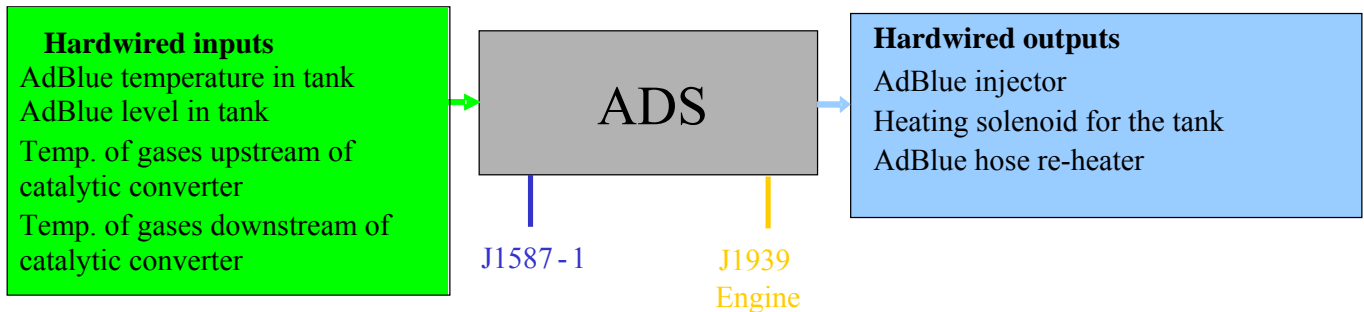
15. Catalytic converter
16. Exhaust gas temperature sensor upstream from the catalytic converter
17. Temperature sensor or NOx sensor
18. AdBlue inlet pipes
19. AdBlue outlet pipes
20. Electrical connectors
21. Heater

## II – 3. Electrical block diagram

With NOx nitrogen oxide sensor



With exhaust gas temperature sensor downstream from the catalytic converter



## III – TROUBLESHOOTING

### III – 1. Preliminary inspections



**Fill in Form F0008. Attach it, with the Jobcard, to the Techline file or Warranty Claim.**

#### III – 1.1 General Issues

- In very cold weather, before starting the repair, place the truck in a warm place inside the workshop for at least 2 hours. AdBlue freezes at -11°C.
- Ask the customer if he has observed significant differences in his AdBlue consumption.
- Check that the AdBlue pump or tank have not been moved during bodywork operations.
- Check the coolant level: it can pass into the AdBlue system via the heating system.
- Check the exterior temperature sensor by checking on the dashboard that the value indicated is coherent with the ambient temperature.
- Check the fuses on the chassis and inside the cab.
- Check for the presence of a fault on the display and look up the exact designation in the submenus.

#### III – 1.2 Tank

- Check that there is AdBlue in the tank. Top up if necessary.
- Check for any impact damage on the system: tank, pump unit, etc.
- Check the quality of the AdBlue: the tank should smell of ammonia. If in doubt or in case of any obvious inversion (coolant, windscreen washer liquid, etc.):
  - Drain the tank.
  - Check that no pollutants are present using the test strips, in the presence of the customer if possible. Use these test strips on the filter (see Technical Note G0032).
  - Fill up the tank.



When draining the AdBlue circuit:

- Drain into an appropriate container, respecting applicable standards.
- Fill the tank exclusively with new AdBlue.

Any oil, diesel fuel, etc., will cause damage to the AdBlue pump (0.1% of diesel in the AdBlue is sufficient to damage the pump).

The warranty does not cover AdBlue pumps that have been subjected to any form of oil contamination. (See Network Information W0018).

If there is any doubt about the quality of the AdBlue used, refer to Network Information K0022.

- Check that the venting of the system is fully operational.
- Check the consistency between what the gauge indicates on the display and the level in the tank. In the event of a problem, refer to Technical Note B0243.
- Check that all hoses are correctly connected.
- Check that the hoses and wiring harnesses are not clamped, worn, torn off, etc.
- Check that there are no visible leaks.
- Check that there are no leaks around the injector.

### III – 1.3 Pump

- Check the operation of the pump: Switch the ignition on then off. The pump should carry out an "after run" cycle of 1 minute 30 seconds, which should be audible.
- Check the state of the cable connectors (broken, melted, oxidised, etc.) around the pump and injector.
- II – Check that the filter has been fully serviced in accordance with the maintenance intervals.

### III – 1.4 The exhaust

- Check for the presence of smoke in the exhaust gas:
  - White smoke during cold weather = normal.
  - Any other smoke = abnormal.
- Check that there are no leaks at the exhaust (clamp loose, cut in hose , etc.).
- Visually inspect the NOx sensor and clean it if necessary.
- Visually inspect the temperature sensor.
- Check the sealing at the injector: open the tube upstream and check that there is no AdBlue crystallisation on the nozzle.

## III – 2. Checks with the diagnostic tool

- Open a **Jobcard**.



This is **obligatory for all Warranty Claims** involving the replacement of the AdBlue pump (See Network Information W0018).

- Recover the time-stamped fault codes (fault duration) recorded by the vehicle and read off the fixed values (if present).
- Record the fault codes in the Warranty Claim.
- If there are any faults on the MID 233, reprogram the ECU.
- Check that the ECU software (MID 128) and ADS software (MID 233) are up to date (all technical campaigns completed).
- Use the key on the left of the screen, especially created to help diagnose each fault code recorded.
- In the engine menu, carry out the various tests available on the SCR system.



## IV – TROUBLESHOOTING

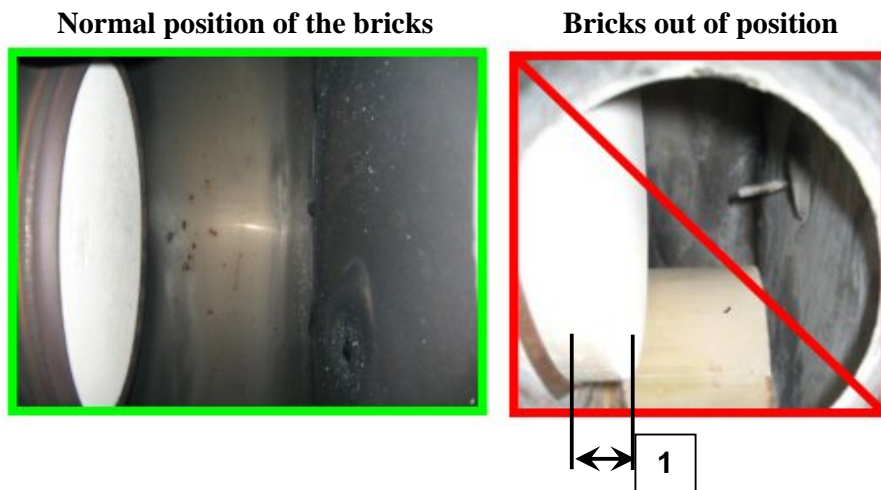
### IV – 1. Catalytic converter blocked

CUSTOMER EFFECT: Loss of performance, abnormal noise.

FAULT CODES: Fault MID 128 PSID 98 FMI 1.

ACTIONS:

- Check the catalytic converter input either visually or with an endoscope. Then put your hand (wearing protective gloves) into the input or output to check that the bricks will not move or have not moved **(1)**.



- During operation, check the temperature at the exhaust inlet (580°C maximum)
- Check that performance is normal: carry out operation "2500-08-03-03: test drive, response" with the diagnostic tool.
- In the event of crystallisation at the catalytic converter inlet, refer to Technical Note B0262.
- If the bricks have moved **(1)**, owing to the use of non-compliant AdBlue (sodium and/or potassium content too high), or because of a faulty catalytic converter, replace the catalytic converter.

### IV – 2. Cooling Valve (CCV) previous generation

FAULT CODES: Fault PSID 101 FMI 7.

ACTIONS:

- Check that the maintenance interval has been observed for the pump filter.
- Blow into the pump orifices at 0.5 bar.
- Check the hose connections.
- If the fault persists and the pump is no longer under warranty, you can replace the valve (see Technical Note R0039).



This only applies to pumps which do not have the number 2 printed on them.



### IV – 3. Cooling valve integrated in the injector (number 2 printed on the injector)

FAULT CODES: Fault PSID 101 FMI 7.

ACTIONS:

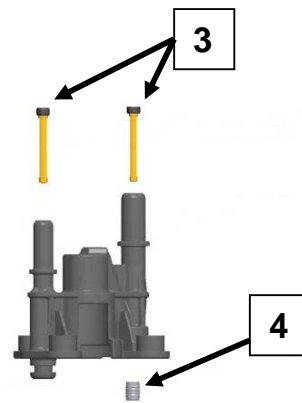
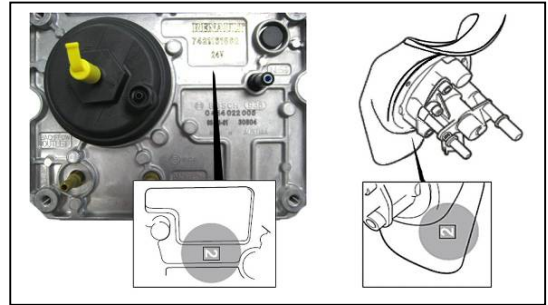
- Check that the maintenance interval has been observed for the pump filter.
- Blow into the injector orifices at 0.5 Bar.
- Check the hose connections.
- Check the routing of the pipes (avoid turning too sharply, clamping too tightly etc.).
- Bleed the AdBlue system.
- Delete the fault.

If the fault persists:

- Remove the two prefilters (3) and clean the injector with lukewarm water.

If the fault still persists:

- If the vehicle is under warranty, replace the injector.
- Otherwise, remove the injector, ensuring you mark the mounting direction. Check that the valve (4) is not stuck: to extract it, remove the filter and tap gently with a drift punch. Clean the valve with lukewarm water.



### IV – 4. Fault on the SCR system

FAULT CODES: Fault PSID 229 all FMI.

ACTION:

- Test the ENG Bus 60  $\Omega$  resistor.



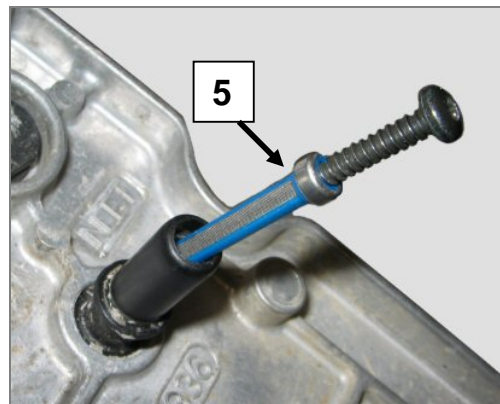
On some vehicles with the Optidriver + automated gearbox, it is possible that the resistance will be only 40  $\Omega$ .

## IV – 5. Increase in pressure and consumption problem

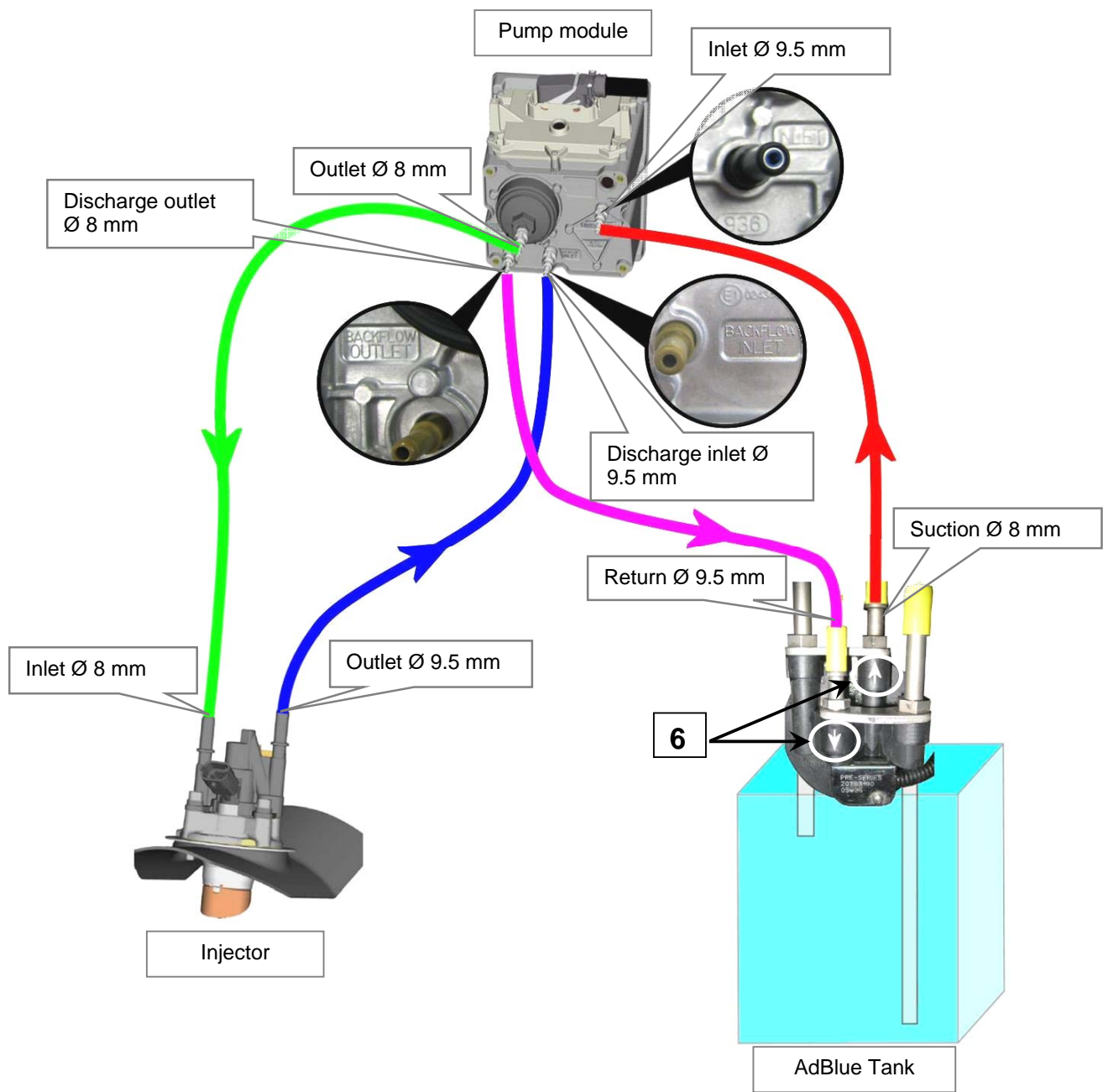
FAULT CODES: Fault PPID 273 FMI 7.

ACTIONS :

- Check that the injector and the pump are from the same generation (see Network Information K0138).
- Perform test "2589-08-03-09 - Pressure rise test" with the diagnostic tool.
- Check the AdBlue tank filler cap (vent)
- Clean the filler cap with hot water.
- If the tank has just been filled, ensure the liquid does not reach the spout and thus block the vent.
- Check the AdBlue level between the instrument panel display and the actual level then ensure that there is at least a third in the tank.
- Check the routing of the hoses in order to ensure that they have not been clamped, cut, etc.
- Check the condition of the main filter under the pump and the pre-filter (5).
- Blow into the pipes, gauge input and gauge output.
- Repeat test "2589-08-03-09 - Pressure rise test".
- If the test is good, do a road test (see §V).



- Ensure conformity of the hoses assembly in accordance with the diagram below:



- Check that the nozzles **(6)** have not been inverted.
- Disconnect the pipes from the tank.
- Put the suction pipe into a container attached to the tank. Put **the vent return pipe into the same container, taking care not to immerse it.**

Specific to the new pumps and new injectors (marked with number 2):

- Turn the pump and block the tank return hose with a finger. If the pressure increases, change the injector.

If all these checks are correct:

- Disconnect the suction and discharge pipes between the pump and the tank.
- Rinse these pipes with water.
- Remove the suction rod from the tank and clean it, checking that the filter is in good condition.
- Drain the tank and check that there are no foreign bodies inside it.
- Repeat the test.

## **IV – 6. Pump motor fault**

FAULT CODES: PSID 87 FMI 1.

1. **Update the AdBlue ECU software** (operation VCADS 2589-22-03-01-MID 233 Control unit, programming).
2. Check the condition and operation of the pump.
3. If necessary, replace the ADS pump.



Updating the ADS deletes the derating linked to this fault code but it should be repaired.

Application in standard production of the new Software: CAM 25KA (25/10/2010).

## **IV – 7. Sensor test readings**

**Carry out tests on the equipment terminals and the module terminals.**

### **IV – 7.1 Re-heater faults**

FAULT CODES N° 1: Fault PSID 84 / 102 / 103 / 104 all FMI.

ACTION:

- Test the resistance of the AdBlue heater hoses:
  - below 24V, 2A or 3A will be necessary in each of the resistors; the total for all 4 must be less than 10 A.
  - with an ohmmeter, check that:  $9.5 < R < 38 \Omega$  (difference = lengths + variants).

FAULT CODES N° 2: Fault PSID 107 FMI 3, 4 and 5.

ACTION: With an ohmmeter test the resistance value on the sub-filter heater. Check that  $45 < R < 55 \Omega$ .

### **IV – 7.2 Pump - internal fault with the pressure sensor**

FAULT CODE: Fault PPID 273 FMI 13.

ACTION: If the pump is no longer under warranty, you can replace just the sensor (see Technical Note R0039).

## IV – 7.3 Pump - internal fault with the temperature sensor

FAULT CODE: Fault PPID 275.

ACTION: If the pump is no longer under warranty, you can replace just the sensor (see Technical Note R0039).

## IV – 7.4 Faults with AdBlue temperature and level sensors

FAULT CODES N°1: Fault MID128 – PPID386, FMI 0, 1, 2, 4, 5 and 10.

CUSTOMER EFFECT: No injection, no AdBlue consumption.

ACTION: Check the **upstream exhaust gas temperature sensor**.

SENSOR TYPE: Resistive - positive temperature coefficient.

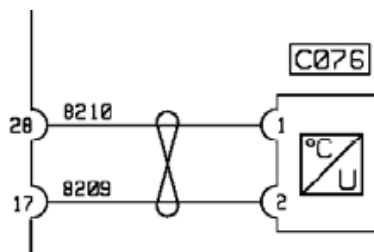
FUNCTION: This sensor authorises AdBlue injection from 250°C, the temperature from which AdBlue hydrolysis produces ammonia (gas).

MEASUREMENTS: Diagnostic DXi Test: value of the ADS system sensors, multimeter in ohmmeter position, terminals 17 and 28:

UPSTREAM EXHAUST GAS TEMPERATURE SENSOR			
TEMPERATURE	MINIMUM	RESISTANCE READING	MAXIMUM
$\Omega$			
-40°C	168	<R>	171
-20°C	183	<R>	187
0°C	199	<R>	202
25°C	218	<R>	221
50°C	237	<R>	240
100°C	274	<R>	277
150°C	311	<R>	314
200°C	348	<R>	350
250°C	383	<R>	386
300°C	418	<R>	421
350°C	453	<R>	456
400°C	485	<R>	491
450°C	519	<R>	524
500°C	552	<R>	557
600°C	615	<R>	621
700°C	676	<R>	682
800°C	735	<R>	741



WIRING DIAGRAM:



FAULT CODES N°2: Fault MID128 - PPID387, FMI 0,1, 2, 4, 5 and 10.

ACTION: Check the **downstream exhaust gas temperature sensor**.

SENSOR TYPE: Resistive - positive temperature coefficient.

FUNCTION: This sensor uses the difference in temperature to estimate whether the vehicle's pollution level remains below the Euro 4 Standard, and displays an alert message to the driver above a certain threshold.

MEASUREMENTS: Multimeter in ohmmeter position.

DOWNSTREAM EXHAUST GAS TEMPERATURE SENSOR			
TEMPERATURE	MINIMUM	RESISTANCE READING	MAXIMUM
$\Omega$			
-40°C	168	<R<	171
-20°C	183	<R<	187
0°C	199	<R<	202
25°C	218	<R<	221
50°C	237	<R<	240
100°C	274	<R<	277
150°C	311	<R<	314
200°C	348	<R<	350
250°C	383	<R<	386
300°C	418	<R<	421
350°C	453	<R<	456
400°C	485	<R<	491
450°C	519	<R<	524
500°C	552	<R<	557
600°C	615	<R<	621
700°C	676	<R<	682
800°C	735	<R<	741

FAULT CODES N°3: Fault MID128 - PPID274, FMI 0, 4 and 5.

CUSTOMER EFFECT: Injection stops, fault code displayed and yellow service light comes on with FMI 1.

ACTION: Check the **AdBlue tank temperature sensor**.

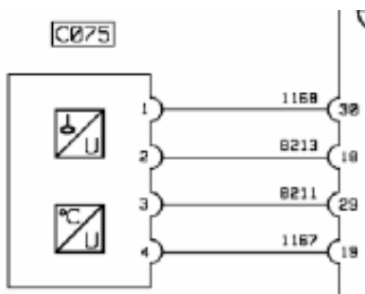
SENSOR TYPE: Resistive – negative temperature coefficient.

FUNCTION: This sensor measures the AdBlue temperature in order to stop injection below the solidification threshold.

MEASUREMENTS: Multimeter in ohmmeter position.

TEMPERATURE SENSOR IN ADBLUE TANK			
TEMPERATURE	MINIMUM	RESISTANCE READING	MAXIMUM
kΩ			
-40°C	150	<R<	156
-30°C	79	<R<	82
-20°C	43	<R<	45
-10°C	25	<R<	26
0°C	14.7	<R<	15.3
10°C	9	<R<	9.4
20°C	5.7	<R<	6
25°C	4.6	<R<	4.8
30°C	3.7	<R<	3.9
40°C	2.5	<R<	2.6
50°C	1.7	<R<	1.8
60°C	1.2	<R<	1.25
70°C	0.85	<R<	0.89
80°C	0.62	<R<	0.65
90°C	0.46	<R<	0.48
100°C	0.35	<R<	0.36
110°C	0.265	<R<	0.275
120°C	0.205	<R<	0.215
130°C	0.16	<R<	0.168

WIRING DIAGRAM:



FAULT CODES N°4: Fault MID128 - PPID278.

ACTION: Check the **AdBlue tank level sensor**.



Do not touch the sensor membrane and make sure the ventilation is pointed upwards.

SENSOR TYPE: - Float gauge for stainless steel tanks.

- Piezo-resistive pressure sensor located at the base of plastic tanks.

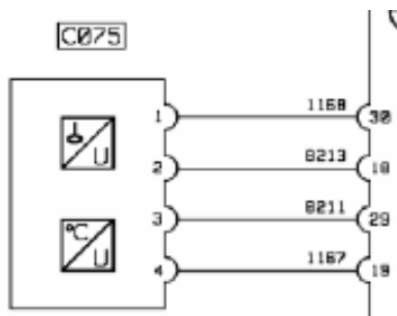
FUNCTION: This sensor displays the level in a display unit menu, illuminates the warning light for a level below the reserve (16%), illuminates the information warning light and the "tank empty" message (non-injectable level reached).



MEASUREMENTS: Diagnostic DXi: test of the value of the AdBlue system sensors, multimeter in the DC voltage measurement position.

- power supply by wire 1168, 5 V (float gauge and piezo).
- signal by wire 8213: tank empty; 0.3V (piezo) / 0.5 V (float).
- signal by wire 8213: tank full; 4.5V (piezo) /4.75 V (float).

WIRING DIAGRAM:



If the fault persists on a piezo-resistive pressure sensor, refer to Technical Note B0243.

- Check the gauges: the volume of AdBlue in the tank should be consistent with the output value.
  - Output values on Piezo-resistive plastic AdBlue tank:

Tank 60 L		Tank 40 L	
Output value (V)	AdBlue volume (L)	Output value (V)	AdBlue volume (L)
0.499	0	0.484	0
0.94	10	0.886	10
1.558	20	1.491	20
2.118	30	2.065	30
2.688	40	2.631	40
3.255	50		
3.907	60		

- Output values on stainless steel AdBlue tank with float gauge:

Tank 15 L		Tank 20 L		Tank 36 L	
Output value (V)	AdBlue volume (L)	Output value (V)	AdBlue volume (L)	Output value (V)	AdBlue volume (L)
0.50	0	0.50	0	0.50	0
2.73	7.5	2.26	10	3.17	18
4.55	15	4.55	20	4.55	36

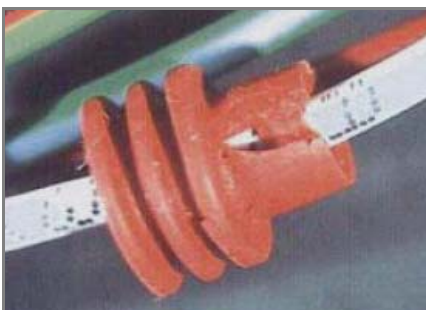
Tank 40 L		Tank 50 L		Tank 60 L	
Output value (V)	AdBlue volume (L)	Output value (V)	AdBlue volume (L)	Output value (V)	AdBlue volume (L)
0.50	0	0.50	0	0.50	0
2.96	20	2.49	25	3.10	30
4.55	40	4.55	50	4.55	60

Tank 70 L		Tank 80 L	
Output value (V)	AdBlue volume (L)	Output value (V)	AdBlue volume (L)
0.50	0	0.50	0
2.30	35	3.26	40
4.50	70	4.55	80

- Check the state of the **wiring loom connection** between the gauge and the vehicle's wiring loom. (See examples of possible deterioration below).



Damaged wires



Insulation damage



Missing insulation

## IV – 7.5 AdBlue injector fault

FAULT CODE: Fault PSID 89.

Fault on the dosage valve This fault concerns the AdBlue injector and not the cooling valve.

ACTIONS:

- Test the electrical circuit and perform the injector tests with the diagnostic tool.

## IV – 7.6 Instrument panel pollution control fault

**II** FAULT CODES: Fault PSID 90, FMI 1, 11 and 14 and/or PPID 270 FMI 2.

ACTIONS:

1. Check if the vehicle is running exclusively on diesel fuel or with biofuel. If it is running with biofuel, ask for the percentage and call Techline.
2. Check the vehicle history for turbocharger damage and/or valve damage. If there is such damage, check that there is no oil in the exhaust line and most particularly at the catalytic converter inlet. If oil is found, replace the catalytic converter.
3. There should be no other faults. If there are, correct all the other faults before correcting this fault.

4. Check the AdBlue with the refractometer (see Technical Note G0032). If the measurements are not correct, ask the customer if anything has been mixed in with the AdBlue and where he obtains his supplies. If in doubt, see Technical Note K0022.
5. Test the exhaust line → check that there are no cracks or leaks at the clamps, hoses etc.
6. Check that the NOx sensor is mounted correctly on the catalytic converter (tightness, sealing etc.).
7. Check the exhaust inlet for the presence of crystals.
8. Carry out the injector dosing test with the diagnostic tool: in Diagnostic DXi, operation "2589–08-03–07 Dosing Test".



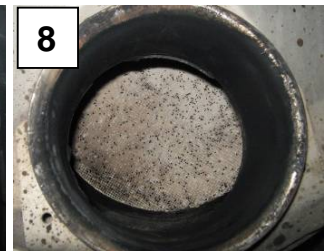
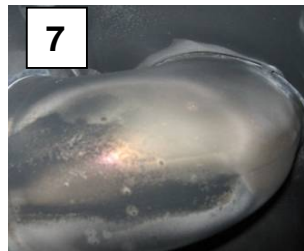
The vehicle values should be as follows for **EURO 4/5 incentive**:

- For DXi 5 and 7: injector 3 kg/h under 120 s: 100 g or 84 - 99 ml.
- For DXi 11: injector 6 kg/h under 120 s: 200 g or 170 - 197 ml.
- For DXi 13: injector 9 kg/h under 120 s: 300 g or 260 - 290 ml.

The values should be as follows for **EURO 5**:

- For DXi 5/7/11: injector 6 kg/h under 120 s: 200 g or 170 - 197 ml.
- For DXi 13: injector 9 kg/h under 120s.: 300 g or 260 – 290 ml.

9. For Magnum, Premium and Kerax: check the tube exhaust gas inlet tube (7) via the outlet port (8). If AdBlue flows directly to the outlet or if there is a crack, replace the catalytic converter.



10. For Midlum 220/190 and DXi 5, see Technical Note B0318. For other Midlum models, contact your Techline.

11. To check the repair of the system, see Technical Note B0298.
12. If the fault persists, call your Techline.

## IV – 7.7 NOx sensor fault

**FAULT CODES:** Fault PPID 270 FMI 9, 3, 5, 12 and fault PSID 46 FMI 2 (limp-home mode in 50 h.).

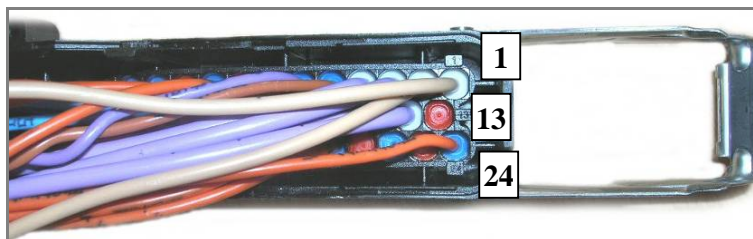
### ACTIONS:

- Test the Engine CAN voltage and resistance:
  - At the sensor terminals.
  - At the ADS module terminals.
  - At the EMS terminals.
- Check the NOx sensor + and - supply, then + for the earth.
  - If everything is correct, provide a direct + and – feed to the sensor then delete the faults and do a road test (see § V and § VI – Euro 4 phase II specific features). Program the EMS module. Do a road test (see § V).
  - If the checks are not satisfactory, replace the NOx sensor then do a road test (see § V) and start operation 1700-21-03-05 which will check the repair of the system (see Technical Note B0298).

## IV – 7.8 Other continuity tests on the module

For the other continuity tests on the module, see the connector allocations below.

### CONNECTOR ALLOCATIONS



TERMI -NAL	WIRE	DESIGNATION	ASSOCIATED FAULT CODE
1	23	supply, 2 $\Omega$ reheater and tank heating	
2	21	supply to 3 re-heater resistors	
3	2328	supply and battery	PPID 385/PSID 85
4	2328	supply and battery	PPID 385/PSID 85
5	0462	Engine CAN +	PPID 270/PSID232
6	0463	Engine CAN -	PPID 270/PSID232
7			
8			
9			
10			
11	8208	injector	PSID 89
12	8207	injector	PSID 89
13			
14	1	earth	PPID 385/PSID 85
15	1	earth	PPID 385/PSID 85
16			
17	8209	exhaust gas temperature sensor	PPID 386
18	8213	tank level sensor signal	PPID 278
19	1167	tank temperature sensor earth	PPID 274
20	0010	J1587	
21			
22	14	reheater resistor earth 1/2	PSID 103
23	13	engine coolant solenoid earth	PSID 75
24	2329	power relay supply	PSID 75
25	8214	downstream exhaust gas temperature sensor	PPID 387
26	8212	downstream exhaust gas temperature sensor	PPID 387
27			
28	8210	exhaust gas temperature sensor	PPID 386
29	8211	tank temperature sensor signal	PPID 274
30	1168	tank level sensor supply	PPID 278
31	0011	J1587	
32	15	reheater resistor earth 2/2	PSID 84
33	19	reheater resistor earth 1/3	PSID 107
34	16	reheater resistor earth 2/3	PSID 102
35	17	reheater resistor earth 3/3	PSID 104

## V – ROAD TEST CONDITIONS

To treat an OBD fault you must treat the original fault. An OBD fault appears for 400 days and cannot be erased. The count starts again at 400 days as soon as there is a new OBD fault.

- To deal with the original fault, the road test procedures below must be observed. They allow the vehicle to be in operation phases facilitating fault feedback and allowing a repair to be "validated".




These conditions do not apply in the case of an empty AdBlue tank.

- IMPERATIVE: load the vehicle and start the road test when the engine temperature is  $> 70^{\circ}\text{C}$ .
- The exterior temperature should be between  $-7^{\circ}\text{C}$  and  $+35^{\circ}\text{C}$ .
- Altitude  $< 1600\text{m}$ .
- If there is a heavy load, drive on a slight uphill gradient ( $\approx 2\text{km}$ ).
- If there is a light load, drive on a steep slope ( $\approx 2\text{km}$ ).
- Drive at the most stable speed possible between 1200 rpm and 1500 rpm with a maximum variation of  $\pm 50$  rpm. Stay in these phases as long as possible. If the distance is too short, start the road test again to achieve a cumulative time of 2 minutes.
- For all NOx rate faults (PPID 270, PSID 90), after these loaded phases, drive downhill at an engine speed between 1200 rpm and 1500 rpm without using the accelerator pedal or the transmission retarder. The braking system can be used without affecting the test. This phase must last as long as possible (1 minute minimum).
- Stop the engine.
- Restart the engine and drive a few metres.
- Stop the engine.
- Restart the engine.
- Check whether the faults have disappeared.



See also Note B0298 for checking SCR system repairs.

## VI – SPECIFIC POINTS FOR EURO 4 PHASE 2/EURO 5 INCENTIVE/EURO 5

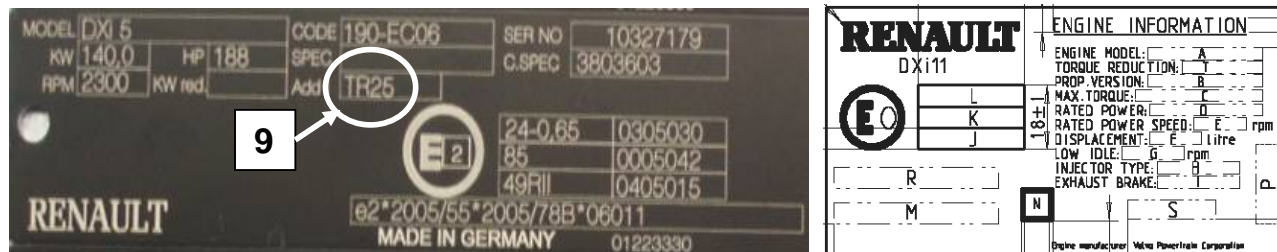
A derated Euro 4 phase 2/Euro 5i/Euro 5 vehicle or with the MIL light  shining does not necessarily have a failure linked to the SCR system (limp-home mode on engine, gearbox, etc.).



A Euro 4 phase 1 vehicle does not have a limp-home mode following an SCR system problem.

### VI – 1. How to recognise a Euro 4 Phase 2/Euro 5 Incentive/Euro 5 vehicle

- On the vehicle, examine the engine plate and look at (9): you will see an exclusive code TR25, TR40 or TR0



For information, date of 1st entry into service of Euro 4 Phase 2 vehicles: **01/10/2007** (some vehicles may have been manufactured before this date). In all cases, refer to the vehicle's engine plate).

- In the fleet file, based on the variants:

VARIANTS	DESIGNATION	
1MR01	Euro 3 (Exports outside Europe)	Euro 3
1MR02	Euro 4 phase 1	Euro 4 Phase 1
1MR03	40% torque reduction, GVW > 16 tonnes	<b>Euro 4 Phase 2/ Euro 5i/Euro 5</b>
1MR04	25% torque reduction, GVW ≤ 16 tonnes	<b>Euro 4 Phase 2/ Euro 5i/Euro 5</b>
1MR05	No torque reduction (fire trucks, ambulances, army vehicles, etc.)	<b>Euro 4 Phase 2/ Euro 5i/Euro 5</b>

## VI – 2. Faults specific to Euro 4 phase 2/Euro 5 Incentive/Euro 5

OBD FAULT CODE	FMI	MEANING	ORIGINAL FAULT CODE
PSID 41	14	AdBlue consumption less than calculated	PSID 91 - FMI 1
PSID 42	14	Interruption of AdBlue dosing	PPID 273/274/275/278/385 PSID 87/89/101/105 PSID 229
PSID 45	0	NOx > 7g/kWh - no cause detected	PSID90 FMI14
PSID 45	14	NOx above standard - no cause detected	PSID 90 - FMI 1
PSID46	2	Monitoring fault - NOx rate	Ambient air temperature: PID171 FMI2 NOx sensor: PPID270 FMI2/FMI9
PSID 46	14	Electrical fault - NOx rate monitoring	Atmospheric pressure: PID108 FMI3/4 NOx sensor: PPID270 FMI3/5/12/13/14
PSID 115	1	AdBlue tank empty	AdBlue level: PPID278 FMI1/14

FAULT TABLE WITH DERATING CONDITIONS

SITUATIONS	OBD CODE (permanent fault)	MIL LIGHT FLASHING	400 DAY RECORD	DERATING	SERVICE/STOP WARNING LIGHT
TANK EMPTY	PSID 115 - FMI 1	immediate	immediate	V = 0	Service
Std < NOx level < 7g/kWh	PSID 45 - FMI 14	2nd driving cycle	2nd driving cycle	without	Service
AdBlue consumption too low	PSID 41 - FMI 14				
No AdBlue injection, ADS fault	PSID 42 - FMI 14	2nd driving cycle	2nd driving cycle	V = 0	Service
Pollution - no detected cause	PSID 45 - FMI 0				
Electrical fault - NOx level monitoring	PSID 46 - FMI 14	2nd driving cycle	during active fault code	after 50 hours + V = 0	Service
Other fault with NOx level monitoring	PSID 46 - FMI 2	2nd driving cycle	2nd driving cycle	after 50 hours + V = 0	Service