SETTING UP A DIALOGUE BETWEEN THE XR25 AND THE COMPUTER

- Connect the test kit to the diagnostic socket.
- Ignition on.
- ISO selector on S8
- Type **D13**

9.INJ

COMPUTER IDENTIFICATION

The computer is not identified by reading a fault code but by reading the Part Number directly from the computer. After having set up a dialogue with the computer:

ENTER **G70***

7700
XXX
XXX

The Part Number will then appear on the central display in three sequences..

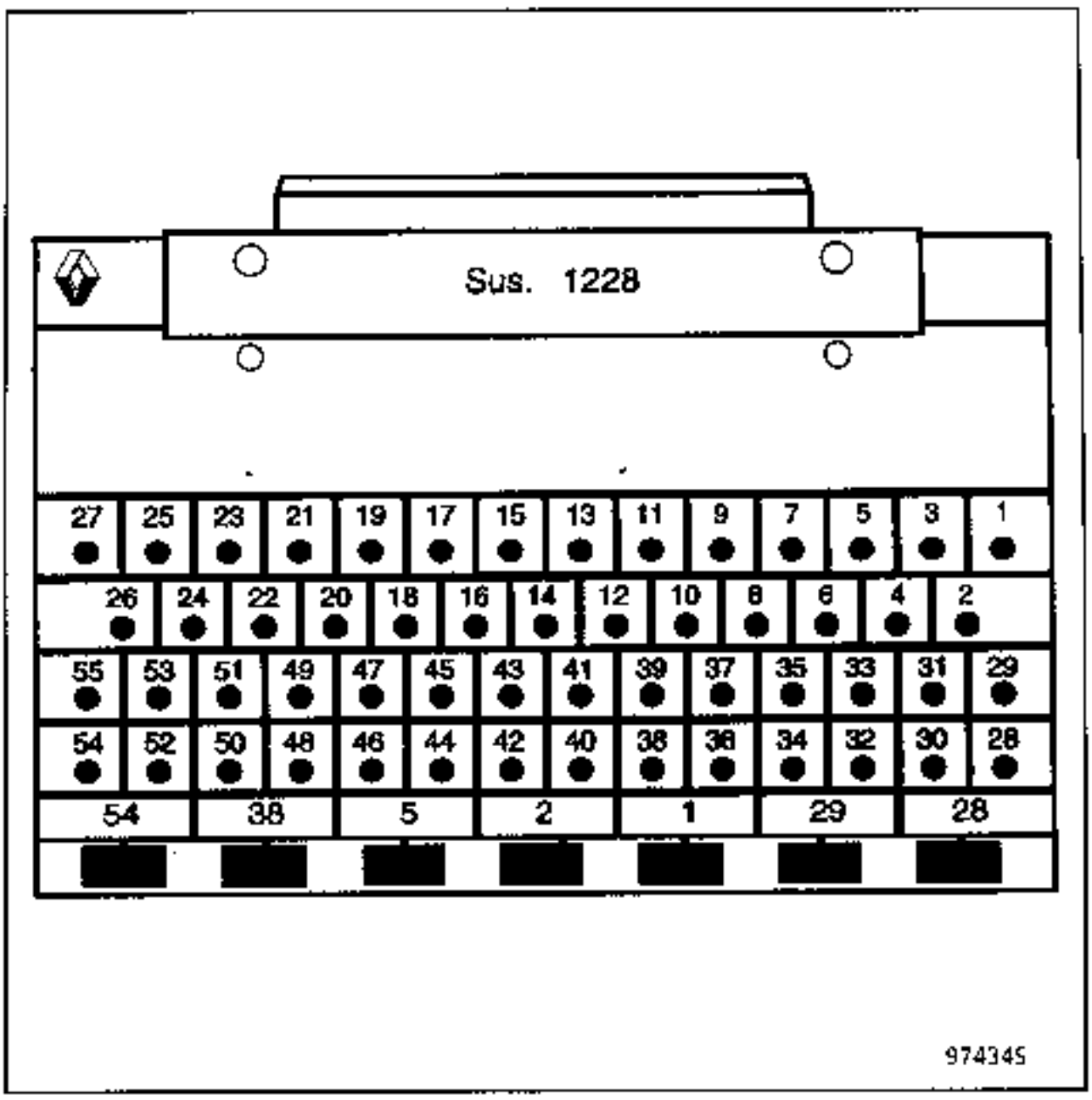
Each sequence is displayed for approximately two seconds. Each sequence is repeated twice. (To find the number, refer to the Workshop Repair Manual, section 12).

ERASING THE MEMORY (engine off, ignition on)

After the injection system has been worked on, the computer's memory can be erased by using the code G0** (Erasing memorised faults in diagnostic mode D13, ISO selector in position S8, enter G0**).

The memories of other components on the vehicle are not erased when this operation is used.

If information obtained from the XR25 means that electrical continuities have to be checked, connect the bornier **Sus. 1228.**



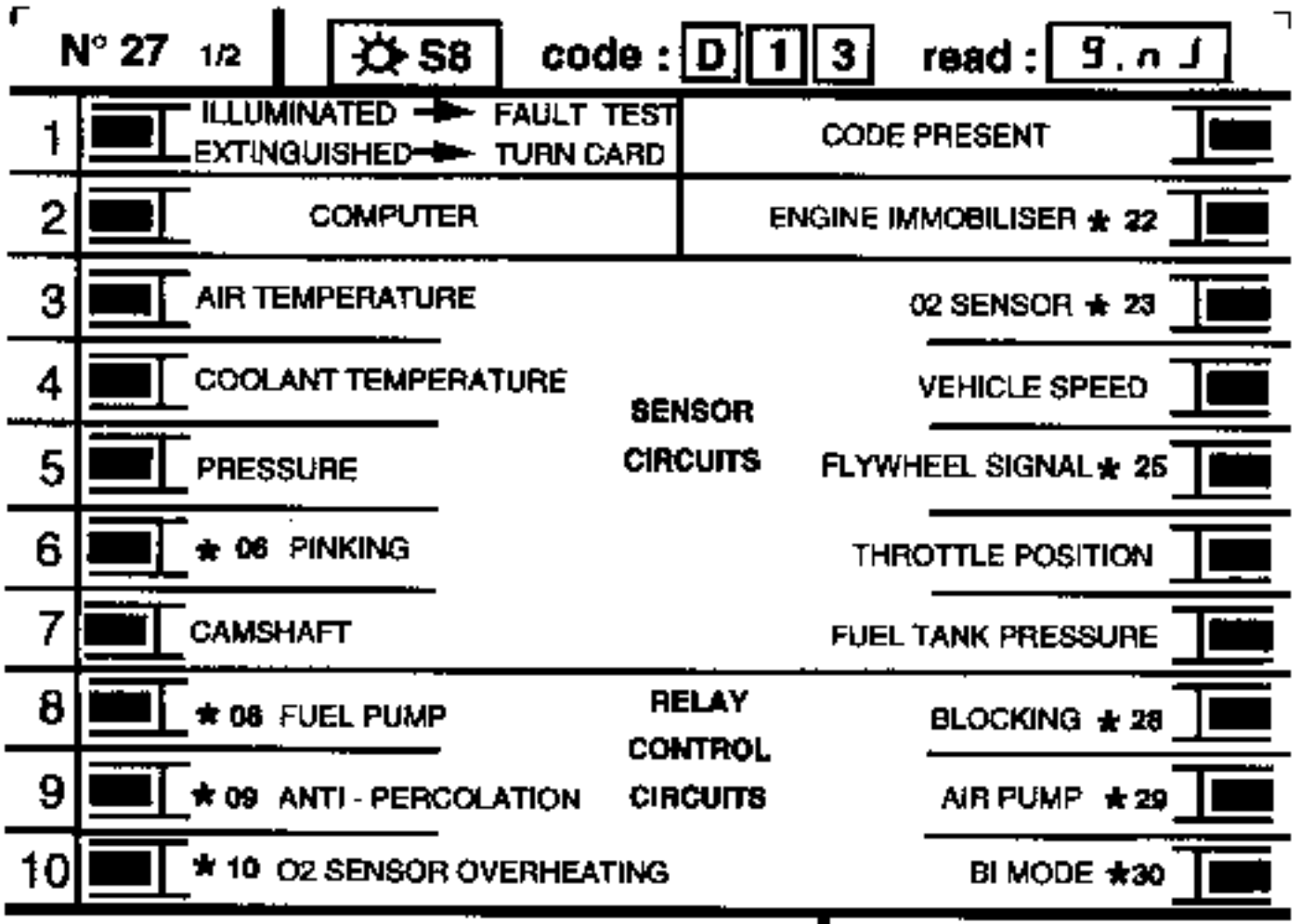
(The **Sus. 1228** consists of a 55 track base unit which has an integral printed circuit comprising 55 copper coated areas, numbered from 1 to 55).

Using the wiring diagrams, the tracks connecting the component or components can easily be checked.

IMPORTANT:

- All checks with the bornier **Sus. 1228** should only be performed with the battery disconnected.
- The bornier is designed to work with an ohmmeter only. Under no circumstances should a 12 volts supply be connected to the control points.

PRESENTATION OF FICHE N° 27 SIDE 1/2 WITH FAULT BARGRAPHS



FI21527-1

PRESENTATION OF FICHE N° 27 SIDE 2/2 WITH STATUS BARGRAPHS

N° 27 2/2 — **read : 10.n J**

1	ILLUMINATED → STATUS TEST EXTINGUISHED → TURN CARD	
2	Full Load ← THROTTLE POSITIONS → No load	
3	FLYWHEEL SIGNAL	ACTIVE ENGINE IMMOBILISER
4	PARK/NEUTRAL POSITION	+ APC COMPUTER
5	TORQUE ADJUSTMENT	RELAY CONTROL LOCKING
6	RICHNESS REGULATION	IDLING REGULATION
7	FUEL PUMP CONTROL	CANISTER PURGE AUTHORIZED
8	ANTI-PERCOLATION CONTROL	ELECT. WINDSCREEN CONTROL
9	SELECTION	ACCELERATED IDLE SPEED
	↓ AIR CONDITIONING	
10	REQUEST →	AUTHORIZATION

(IMPORTANT : monitor bar graph 20 left)

INJECTION (status)

Memory del. : G 0 ★ ★
Request fault test : G 0 2 ★

11	SIGNAL CAMSHAFT	BLEED CANISTER + ACTIVE SOL. VALVES
12	EGR SOLENOID CONTROL	ERASE MEMORISED FAULTS
13	AIR PUMP CONTROL	POWER STEERING PRESSOSTAT
14	BI-MODE INLET CONTROL	COLD START INJECTORS
15		
16		
17		
18		
19	Veh. with AT — **COMPUTER CONFIGURATION** — Veh. with Man. gbox	
20	FAULT PRESENT	XR25 MEMORY

CODE PRESENT

CONTROL MODES : G •• ★
(If engine stationary)
10 Fuel pump relay
11 Blocking relay
12 A/C compressor
14 Idle speed reg. valve
16 Canister purge valve
17 Anti percolation relay
21 Warning lamp fault
22 Air pump relay
23 EGR valve
24 Bi-mode inlet valve

COMPUTER CONFIGURATION
(Vehicle with AT or MAN. GEARBOX)
See procedure in Workshop Manual

ADDITIONAL CHECKS : # ••

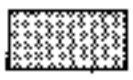
01	Pressure	mb
02	Coolant temp.	°C
03	Air temp.	°C
04	Computer feed	V
05	02 sensor	V
06	Engine speed	rpm
12	Idling RCO	%
13	Pinking signal	
14	Speed difference	rpm
15	Pinking correct.	d°
16	Atmos. pressure	mb
17	Throttle pot.	
18	Vehicle speed	km per h
21	Auto. correct. of RCO idle speed	%
23	Canister purge RCO	%
24	RCO EGR	%
30	Auto. correct. of richness under high loads	
31	Auto. correct. of richness under low loads	
35	Mixture regulation	

END OF TEST: G 1 3 ★
Part No. : G 7 0 ★

Diagnosed faults :
Press V and 9
Return to diagnostic mode : D

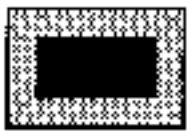
15 ANG

REPRESENTATION OF THE BARGRAPHS

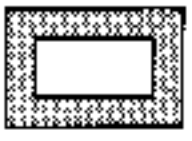


Illuminates when a dialogue has been established with the product computer. If it remains extinguished:
- the code does not exist,
- there is a fault in the tool, the computer or the line.

REPRESENTATION OF THE FAULTS (always on a coloured background)



If illuminated, indicates a fault on the tested product, the associated text defines the fault.

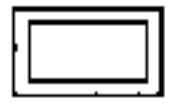
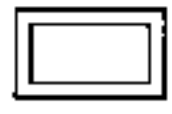


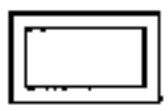
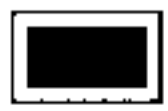
If extinguished, indicates that the fault has not been found on the tested product.

REPRESENTATION OF THE STATUSES (always on a white background)

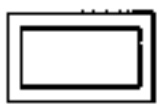
Engine off, ignition on, no operator action

The status bargraphs on the fiche are represented as the status which they should have when the engine is off, the ignition is on and there is no operator action

- If on the fiche the bargraph is represented as  the test kit should give as information 
- If on the fiche the bargraph is represented as  the test kit should give as information 
- If on the fiche the bargraph is represented as  the test kit should give as information

either  or 

Engine running



Extinguishes when the function or condition given on the fiche can no longer be performed.

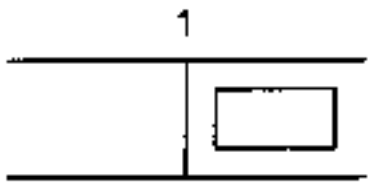
Illuminates when the function or condition given on the fiche is performed.

FUNCTION V9

Fiche n° 27 side 1/2 and side 2/2 is a generic fiche used for several engines.
The different engines do not use all the bargraphs. To find out the bargraphs dealt with by the injection computer, after having set up a dialogue with the computer, press the V and 9 buttons simultaneously. The bargraphs dealt with will:

- illuminate permanently for non memorisable fault bargraphs or status bargraphs,
- flash for memorisable fault bargraphs.

To return to fault finding mode, press button D.



Bargraph 1 RH extinguished

Fiche n° 27 side 1/2

XR25 CIRCUIT

XR25 assistance : no connection, CO, CC EARTH, CC + 12

NOTES

For fault finding, this bargraph should be illuminated

Check:
- all the injection fuses,
- the connection between the XR25 and the diagnostic socket,
- the position of the dial (S8),
- the conformity of the cassette.

Repair if necessary.

Check:
- the presence of + 12 V on track 16 and the earth on track 4 on the diagnostic socket.
- the connection between the XR25 and the diagnostic socket.

Diagnostic socket	15 →	4	XR25 socket
	7 →	8	

Repair if necessary.

Connect the bornier **Sus. 1228** instead of the computer and check the insulation and continuity between the tracks:

Bornier	38 →	15	Diagnostic socket
	11 →	7	Diagnostic socket
	2 →	earth	Earth MH
	3 →	earth	Earth MH
	24 →	fuse	Engine – after ignition feed fuse
	28 →	3	Coil 1-4
	29 →	3	Coil 2-3
	54 →	2	Idle solenoid valve

Repair

AFTER REPAIR

Carry out a conformity check

Bargraph 2 LH illuminated

Fiche n° 27 side 1/2

COMPUTER CIRCUIT

XR25 assistance: Computer fault if bargraph 2LH illuminated

NOTES

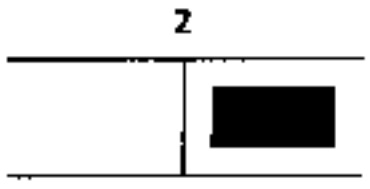
None

Computer is not correct or is faulty.

Replace the injection computer.

AFTER REPAIR

Carry out a conformity check



Bargraph 2 RH illuminated

Fiche n° 27 side 1/2

ENGINE IMMOBILISER CIRCUIT

XR25 assistance : CO or CC + 12 V line 35 of the computer

NOTES

None

Connect the **bornier Sus. 1228** instead of the computer and check the insulation and continuity of line:

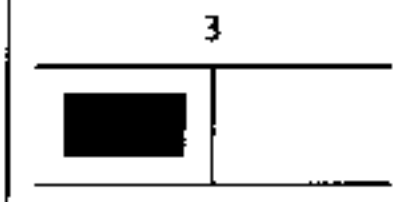
Bornier 35 ⟶ 5 Decoder unit

Repair if necessary.

If the fault persists, refer to status bargraph 3 RH side.

AFTER REPAIR

Carry out a conformity check



Bargraph 3 LH illuminated

Fiche n° 27 side 1/2

AIR TEMPERATURE SENSOR CIRCUIT

XR25 assistance : #03 = -40 CO LINE 20 OR 46 ; CC — 5V LINE 20
#03 = 119 CC EARTH LINE 20 ; CC LINE 46/20

NOTES

If BG3RH ; BG4LH ; BG6RH ; BG12RH are illuminated, refer to BG6RH
If BG6RH is illuminated, refer to BG6RH

Check the resistance of the air temperature sensor.

If the resistance is not correct, replace the air temperature sensor and erase the computer memory using G0**.

Connect the bornier **Sus. 1228** instead of the computer and check the insulation and continuity of the electrical wiring between tracks:

1 sensor connector 46 bornier
2 sensor connector 20 bornier

If the electrical wiring is correct, replace the computer.

AFTER REPAIR

Carry out a conformity check

Bargraph 3 RH illuminated

Fiche n° 27 side 1/2

OXYGEN SENSOR CIRCUIT

XR25 assistance : #35 = 128 CO LINE 17 or 18 ; CC - LINE 17 ; CC + 12V LINE 17
#05 > 1V CC + 12V LINE 17 ; #05 = 0.390 CO LINE 17 or 18
#05 = 0V CC EARTH LINE 17

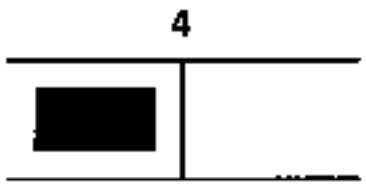
NOTES

If BG3LH ; BG4LH ; BG6RH ; BG12RH are illuminated, refer to BG6RH

Check the connection and condition of the oxygen sensor connector.
Engine running, check for − 12V between tracks A and B on the oxygen sensor connector.
If there is not + 12V, repair the wiring for the sensor heating circuit.
Ignition off, connect bornier **Sus. 1228** in place of the computer and check the continuity and insulation of the wiring between tracks : C/17 and C/18 (sensor connector /bornier)
If necessary, repair the wiring.
The fault persists ! Replace the oxygen sensor
The fault persists ! Replace the computer.

AFTER REPAIR

Carry out a conformity check



Bargraph 4 LH illuminated

Fiche n° 27 side 1/2

COOLANT TEMPERATURE SENSOR CIRCUIT

XR25 assistance: #02 = -40°C CC = 5V LINE 15 ; CO LINE 15 or 44
#02 = 119°C CC EARTH LINE 15 ; CC LINE 15/44 or 45/15

NOTES

If BG5LH is illuminated, refer to BG4RH
If BG3LH ; BG3RH ; BG6RH ; BG12RH are illuminated, refer to BG6RH

Check the resistance of the coolant temperature sensor.

The resistance is not correct, replace the sensor.

Connect the bornier **Sus. 1228** instead of the computer and check the continuity and the insulation of the electrical wiring between the tracks:

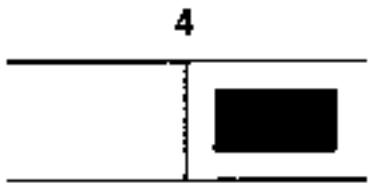
1 coolant temperature sensor	44 bornier
2 coolant temperature sensor	15 bornier
C pressure sensor	45 bornier
B throttle potentiometer	45 bornier

Repair if necessary.

The fault persists! Replace the computer.

AFTER REPAIR

Carry out a conformity check



Bargraph 4 RH illuminated

Fiche n° 27 side 1/2

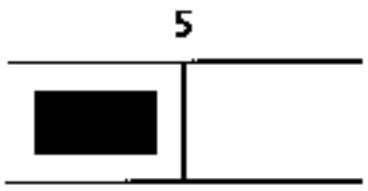
VEHICLE SPEED SENSOR CIRCUIT

XR25 assistance : CO or CC LINE 12

NOTES	None

Carry out a road test and check the speed on the speedometer .
If the speed is zero, repair the wiring of track 12 of the computer and B of the sensor.
Check the connection and the feed of the speed sensor: + 12V on track A earth on track C
Repair if necessary.
The fault persists! Replace the speed sensor.

AFTER REPAIR	Erase the computer memory using G0** Carry out a road test Carry out a conformity check



Bargraph 5 LH illuminated

Fiche n° 27 side 1/2

ABSOLUTE PRESSURE SENSOR CIRCUIT

XR25 assistance: #01 = 103 mb CO LINE 16 or LINE 44 or LINE 45;
CC EARTH LINE 16
#01 = 928 mb CO LINE 44

NOTES

If BG4LH is illuminated, refer to BG4LH
If BG6RH is illuminated, refer to BG6RH

Check the pressure sensor is electrically and pneumatically connected .

Ignition on, check that there is + 5V between track C and earth on track A.

There is not + 5V between track C and track A

Connect the bornier **5us. 1228** instead of the computer and check the insulation and continuity between the tracks:
A sensor connector 44 bornier
C sensor connector 45 bornier

Repair if necessary.

There is not + 5V ! The fault persists! Replace the computer.

There is + 5V between track C and track A

Ignition on, check the return voltage (0.2 to 5 V) on track B of the sensor.
Note: For this measurement, a vacuum pump can be used to check the voltage variation.

If the voltage does not vary, replace the sensor.

The voltage varies

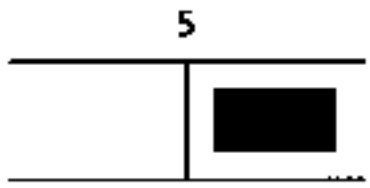
Connect the bornier **Sus. 1228** instead of the computer and check the insulation and the continuity between track B of the sensor and 16 of the bornier.

Repair if necessary.

The fault persists! Replace the computer.

AFTER REPAIR

Erase the computer memory using G0**
Carry out a conformity check



Bargraph 5 RH illuminated

Fiche n° 27 side 1/2

FLYWHEEL SIGNAL CIRCUIT

XR25 assistance :

	*25 = CO	CO or CC EARTH LINE 33 or 34
	*25 = CC.O	INTERFERENCE
	*25 = In	SENSOR WIRE INVERTED

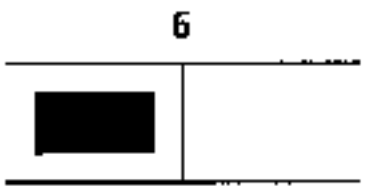
NOTES

None

Disconnect the sensor connector and check the resistance of the sensor between terminals A and B.
The resistance is not 200 ± 50 ohms. Replace the sensor.
The resistance is 200 ohms.
Connect the bornier **Sus. 1228** instead of the computer and check the continuity and the insulation of the wiring between the tracks: A sensor 34 bornier B sensor 33 bornier
Repair if necessary.
The fault persists! Replace the computer.

AFTER REPAIR

Erase the computer memory using G0**
Carry out a conformity check



Bargraph 6 LH illuminated Fiche n° 27 side 1/2

PINKING SENSOR CIRCUIT

XR25 assistance : #13 = 0 CC EARTH LINE 8 or CO LINE 8 and 44

NOTES	None

Check the wiring of the faulty sensor.

Repair if necessary.

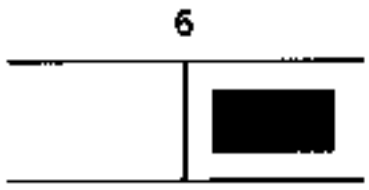
Connect the bornier **Sus. 1228** instead of the computer and check the insulation and the continuity of the electrical wiring between the tracks:

1 sensor	44 bornier
2 sensor	8 bornier

Repair if necessary.

The fault persists! Replace the pinking sensor.

AFTER REPAIR	Erase the computer memory using G0** Carry out a conformity check



Bargraph 6 RH illuminated

Fiche n° 27 side 1/2

THROTTLE POTENTIOMETER CIRCUIT

XR25 assistance: #17 − 0 CO LINE 45 or 19 or CC EARTH LINE 19 or 45
#17 = 255 CO LINE 46 or CC LINE 19/45

NOTES

If BG3LH is illuminated, refer to BG6RH If BG20RH is illuminated, refer to BG6RH
If BG5LH is illuminated, refer to BG6RH
If BG3LH ; BG3RH ; BG4LH ; BG12RH are illuminated, refer to BG6RH

Check the resistance of the throttle potentiometer between tracks A and B (R > 4000 ohms).

Check the variation of the throttle potentiometer between tracks B and C.

A-B < 4000 ohms or B-C does not vary. Replace the throttle potentiometer.

A-B > 4000 ohms and B-C varies.

Connect the bornier **Sus. 1228** instead of the computer and check the insulation and the continuity between tracks:

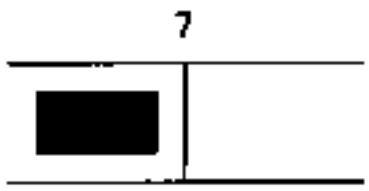
A potentiometer	46 bornier
B potentiometer	45 bornier
C potentiometer	19 bornier

Repair if necessary.

The fault persists! Replace the computer.

AFTER REPAIR

Erase the computer memory using G0**
Carry out a conformity check



Bargraph 7 LH illuminated

Fiche n° 27 side 1/2

CAMSHAFT SENSOR CIRCUIT

XR25 assistance: CO or CC EARTH LINE 42
CC + 12V LINE 48
CC LINE 52/2

NOTES

If BG8LH is illuminated, refer to BG8LH
If the vehicle does not start, refer to BG8LH

Engine running, check for the presence of 12V on terminal 3 of the sensor and the earth on terminal 1 of the sensor.

Repair if necessary.

Exit fault finding.
Connect a cable to terminal Vin and enter G on the XR25.

Engine running, check for the presence of a frequency by connecting to terminal 2 of the camshaft sensor connector which is still connected.

Enter V on the XR25 to measure the voltage.

There is no frequency or voltage at terminal 2. Replace the sensor.

There is a frequency or voltage at terminal 2.

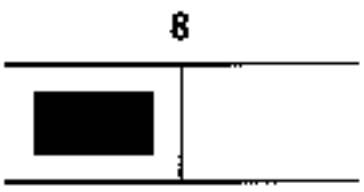
Connect the bornier **Sus. 122B** instead of the computer and check the continuity of line 42 bornier / 2 sensor and the insulation of this line from terminal 52 on the computer, earth and + 12 Volts.

Repair if necessary.

The fault persists! Replace the computer.

AFTER REPAIR

Erase the computer memory using G0**
Carry out a conformity check



Bargraph 8 LH illuminated

Fiche n° 27 side 1/2

FUEL PUMP RELAY COMMAND CIRCUIT

XR25 assistance:

*08 = CO.0 CO or CC EARTH LINE 48
*08 = CC.1 CC + 12V LINE 48
*08 = Def MEMORISED FAULT

NOTES

If BG7LH is illuminated, refer to BG8LH

Check the impact sensor is correctly clipped in.

On the fuel pump relay, check for + 12V between tracks 1 and 2, during the timed phase when the ignition is turned on.

If there is − 12V between 1 and 2, replace the relay.

If there is not − 12V between 1 and 2, ignition on, check for + 12V on track 1 of the fuel pump relay.

If there is not + 12V on track 1, check the line of track 1 to the fuse.

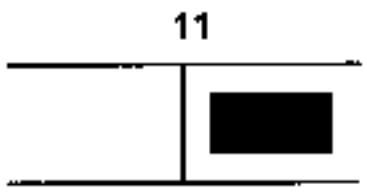
If there is + 12V on track 1, connect bornier Sus. 1228 instead of the computer and check the continuity and insulation between track 2 of the relay and track 48 of the bornier.

Repair if necessary.

The fault persists! Replace the injection computer.

AFTER REPAIR

Erase the computer memory using G0**
Carry out a conformity check



Bargraph 11 RH illuminated

Fiche n° 27 side 1/2

AUTOMATIC TRANSMISSION ---> INJECTION COMPUTER CONNECTION

XR25 assistance: BG 11RH illuminated if there is a connection fault with the automatic transmission

NOTES

Only if automatic transmission

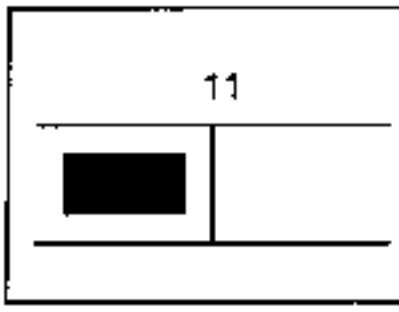
Connect the bornier **5us. 1228** in place of the injection computer, and check the insulation and continuity of computer line 7 .

Repair.

If the fault persists, refer to automatic transmission fault finding section.

AFTER REPAIR

Erase the computer memory using G0**
Carry out a conformity check



Bargraph 11 LH illuminated

Fiche n° 27 side 1/2

INJECTION CIRCUIT

XR25 assistance: *11 = X.CO.O CO or CC EARTH LINE 53 or 25 or 4 or 30
*11 = X.CC.1 CC + 12V LINE 53 or 25 or 4 or 30
*11 = Def MEMORISED FAULT

NOTES

X represents the cylinder N°.

Starter motor operating, bargraph illuminates for 10 seconds.

Check the resistance of each injector.

The resistance is not correct
Replace the faulty injector(s).

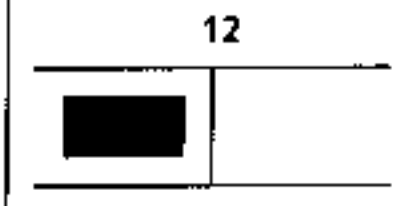
The resistance is correct
Connect the bornier **Sus. 1228** instead of the computer and check the continuity and insulation between the injector connectors on track 2 and tracks 53, 25, 4 and 30.

Repair the wiring if necessary.

The fault persists! Replace the computer.

AFTER REPAIR

Erase the computer memory using G0**
Carry out a conformity check



Bargraph 12 LH illuminated

Fiche n° 27 side 1/2

FAULT WARNING LIGHT CIRCUIT

XR25 assistance:	*12 = CO.O	CO or CC EARTH LINE 26
	*12 = CC.1	CC + 12V LINE 26

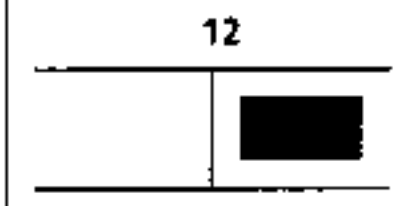
NOTES

BG12LH only illuminates when there is a fault on the warning light circuit and another fault simultaneously *(which normally illuminates the warning light).*

Turn on the ignition and check that the fault warning light illuminates for 3 seconds.
If it does not illuminate, check the bulb.
Connect the bornier **Sus. 1228** instead of the computer and check the insulation and continuity of line 26 / warning light bulb via R34.
Repair if necessary.
The fault persists! Replace the computer.

AFTER REPAIR

Erase the computer memory using G0**
Disconnect the pressure sensor and check the bargraphs with the XR25
Erase the computer memory and carry out a conformity check



Bargraph 12 RH illuminated

Fiche n° 27 side 1/2

FUEL PUMP INFORMATION CIRCUIT

XR25 assistance: CO LINE 52

NOTES

If BG3LH ; BG3RH ; BG4LH ; BG6RH are illuminated, refer to BG6RH

Check for the presence of + 12V on track 3 of the fuel pump relay.

Repair if necessary.

During the timed phase when the ignition is turned on, check for the presence of + 12V on track 5 of the relay.

There is no + 12V on track 5 of the relay
Replace the fuel pump relay.

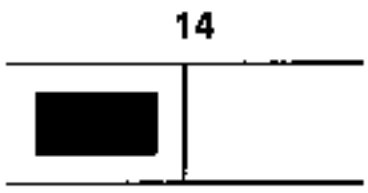
There is + 12V on track 5 of the relay
Connect the bornier Sus. 1228 instead of the computer and check the continuity between track 5 of the fuel pump relay and track 52 of the computer.

Repair if necessary.

The fault persists! Replace the computer.

AFTER REPAIR

Erase the computer memory using G0**
Carry out a conformity check



Bargraph 14 LH illuminated

Fiche n° 27 side 1/2

IDLE REGULATION VALVE CIRCUIT

XR25 assistance:		
	*14 – CO.O	CO or CC EARTH LINE 54
	*14 = CC.1	CC + 12V LINE 54
	*14 = Def	MEMORISED FAULT

NOTES

With no fault, #12 should vary.

Check the resistance of the winding between tracks 1 and 2 of the idle speed valve.

If the resistance is not correct, replace the idle speed regulation valve.

When the ignition is turned on, check during the timed phase for the presence of 12V on track 1 of the idle speed regulation valve.

There is not + 12V on track 1
Check the continuity between track 1 of the idle speed regulation valve connector and wire joint A1 in the engine wiring.

Repair if necessary.

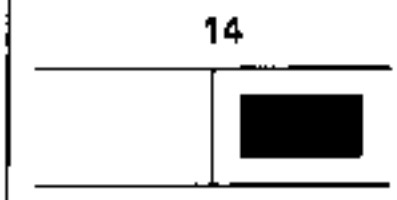
There is + 12V on track 1
Connect the bornier **Sus. 1228** instead of the computer.
Check the insulation and the continuity of the wiring between track 2 of the idle speed regulation valve connector and track 54 of the bornier.

Repair if necessary.

The fault persists! Replace the computer.

AFTER REPAIR

Erase the computer memory using G0**
Carry out a conformity check



Bargraph 14 RH illuminated

Fiche n° 27 side 1/2

CANISTER BLEED CIRCUIT

XR25 assistance:		
	*34 = CO.O	CO or CC EARTH LINE 50
	*34 = CC.1	CC + 12V LINE 50
	*34 = Def	MEMORISED FAULT

NOTES

#23 variable

Check the resistance of the canister bleed valve between tracks A and B.

The resistance is not correct.
Replace the canister bleed valve.

The resistance is correct.
Engine idling, check for the presence of + 12V on track A of the canister bleed valve.

There is not − 12V on track A
Repair the wiring between track A of the canister bleed valve and wire joint A1 in the engine wiring.

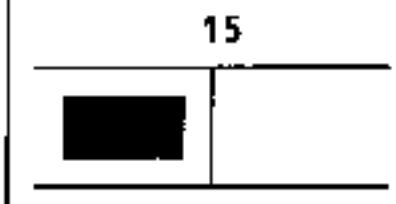
There is + 12V on track A
Connect the bornier **Sus. 1228** instead of the computer and check the insulation and the continuity of the electrical wiring between track B of the canister bleed valve and 50 of the bornier.

Repair if necessary.

The fault persists! Replace the injection computer.

AFTER REPAIR

Erase the computer memory using G0**
Carry out a conformity check



Bargraph 15 LH illuminated

Fiche n° 27 side 1/2

AIR CONDITIONING INJECTION CONNECTION CIRCUIT

XR25 assistance: CC + 12 V of line 51 of the computer

NOTES

Check that the vehicle has air conditioning and if not, examine the other bargraphs

Connect the bornier **Sus. 1228** instead of the computer and check the insulation and continuity of line:

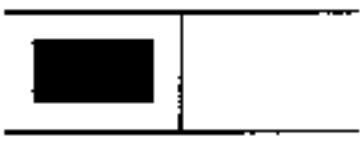
Bornier 51 ⟶ B5 Air conditioning control panel

Repair if necessary.

The fault persists, refer to checking the status bargraphs 9LH, 10LH, 10RH.

AFTER REPAIR

Carry out a conformity check



Bargraph 16 LH illuminated

Fiche n° 27 side 1/2

IGNITION COIL CIRCUIT

XR25 assistance: *16 = 1.4 CC CO LINE 28
*16 = 2.3 CC CO LINE 29

NOTES

If there is CC EARTH, the fuse has blown and there is no dialogue with the XR25

Check the resistance of the faulty coil.

The resistance is not correct
Replace the faulty coil.

The resistance is correct

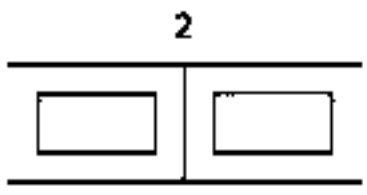
Connect the bornier **Sus. 1228** instead of the computer and check the insulation and continuity of line 28/3 for coil 1 or 29/3 for coil 2 (bornier / coil).

Repair the faulty line.

The fault persists! Replace the computer.

AFTER REPAIR

Erase the computer memory using G0**
Carry out a conformity check



Bargraph 2 LH, 2 RH, incorrect illumination

Fiche n° 27 side 2/2

THROTTLE POSITION CIRCUIT

XR25 assistance:

BG 2LH illuminated if full load
BG 2RH illuminated if no load
BG 2LH and BG 2RH extinguished if middle position.

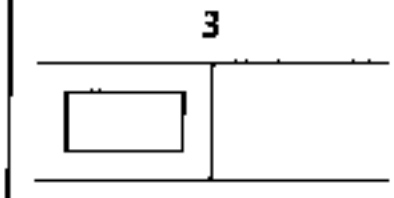
NOTES

No fault bargraph should be illuminated

The fault is not electrical.
Check the mechanics of the accelerator circuit (cable, accelerator pedal, ...).

AFTER REPAIR

Carry out a conformity check



Bargraph 3 LH, incorrect illumination

Fiche n° 27 side 2/2

FLYWHEEL SIGNAL CIRCUIT

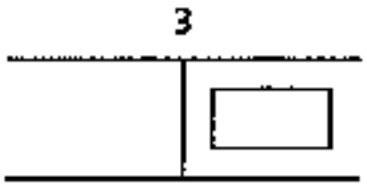
XR25 assistance: BG 3LH illuminated engine running

NOTES

Dealt with in the fault bargraphs.

AFTER REPAIR

None



Bargraph 3 RH incorrect illumination

Fiche n° 27 side 2/2

ENGINE IMMOBILISER CIRCUIT

XR25 assistance: BG 3LH illuminated, engine immobiliser active

NOTES

Check the use of the correct PLIP if no fault bargraph is illuminated.

XR25 as a pulse detector, G and Vin.

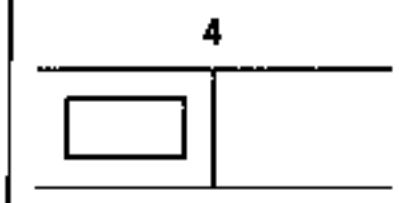
Check for pulses on track 35 of the bornier when the PLIP is pressed

If pulses are noted, replace the injection computer.

If no pulses are noted, refer to the immobiliser fault finding section.

AFTER REPAIR

Carry out a conformity check



Bargraph 4 LH incorrect illumination

Fiche n° 27 side 2/2

PARK/NEUTRAL POSITION CIRCUIT

XR25 assistance: Illuminated if Park/Neutral position

NOTES

Only with automatic transmission

XR25 on voltmeter [V] and Vin.

Connect a wire to Vin and track 7 of the injection computer.

Ignition on, engage and release the gear lever in the P/N position, the voltage should change from 0 V to 5 V.

If correct, replace the injection computer.

If there is not 0 V / 5 V, check the insulation and continuity of the line:

Injection computer 7 ⟶ 35 Automatic transmission computer

Repair if necessary.

The fault persists! Refer to the automatic transmission fault finding section

AFTER REPAIR

Carry out a conformity check

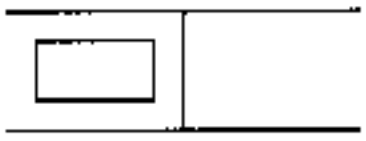
Bargraph 4 RH incorrect illumination Fiche n° 27 side 2/2

+ AFTER IGNITION CIRCUIT

XR25 assistance: BG 4RH illuminated if + after ignition

NOTES	Dealt with in the fault bargraphs.

AFTER REPAIR	None



Bargraph 5 LH incorrect illumination

Fiche n° 27 side 2/2

TORQUE REDUCTION CIRCUIT

XR25 assistance: Illuminated every time a gear is changed with automatic transmission

NOTES

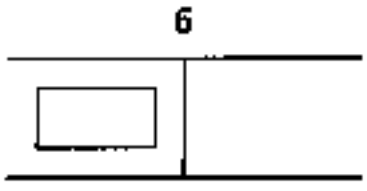
Only with automatic transmission
Status bargraph 4 LH is correctly illuminated.

Since status bargraph 4 LH is correctly illuminated, the injection computer is not faulty.

Refer to the automatic transmission fault finding section

AFTER REPAIR

Carry out automatic transmission fault finding if status bargraph 4 LH is correctly illuminated

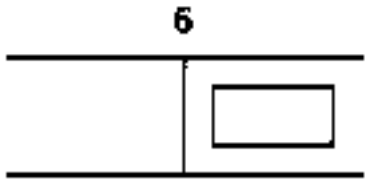


Bargraph 6 LH incorrect illumination Fiche n° 27 side 2/2

RICHNESS REGULATION CIRCUIT

XR25 assistance: BG 6LH illuminated when the richness is regulated (Engine running)

NOTES Dealt with in the fault bargraphs.

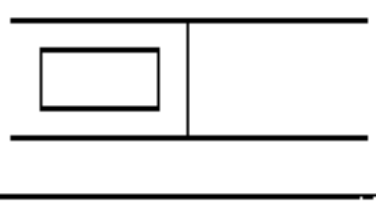


Bargraph 6 RH incorrect illumination Fiche n° 27 side 2/2

IDLE REGULATION CIRCUIT

XR25 assistance: BG 6RH illuminated engine running

NOTES Dealt with in the fault bargraphs.

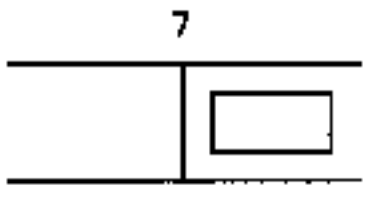


Bargraph 7 LH incorrect illumination Fiche n° 27 side 2/2

FUEL PUMP COMMAND CIRCUIT

XR25 assistance: BG 7LH illuminated ignition on

NOTES Dealt with in the fault bargraphs.



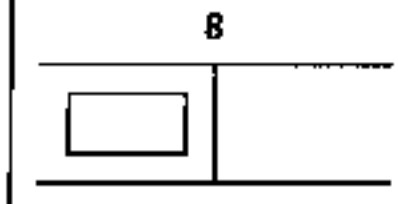
Bargraph 7 RH incorrect illumination Fiche n° 27 side 2/2

CANISTER BLEED CIRCUIT

XR25 assistance: BG 7RH illuminated when canister bleed authorised.

NOTES Dealt with in the fault bargraphs.

AFTER REPAIR None



Bargraph 8 LH incorrect illumination Fiche n° 27 side 2/2

ANTIPERCOLATION COMMAND CIRCUIT

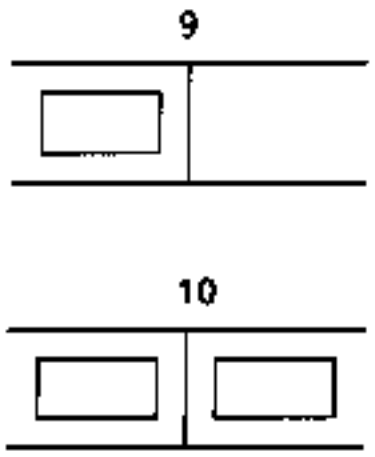
XR25 assistance: BG 8LH illuminated when antipercolation active

NOTES

Dealt with in the fault bargraphs.

AFTER REPAIR

None



Bargraphs 9LH, 10LH, 10RH incorrect illumination

Fiche n° 27 side 2/2

AIR CONDITIONING CIRCUIT

XR25 assistance:

9LH illuminated if air conditioning selected
10LH illuminated if air conditioning requested
10RH illuminated if air conditioning authorised

NOTES

All fault bargraphs must be dealt with, air conditioning must be fitted on the vehicle and selected

Connect the bornier **Sus. 1228** instead of the computer and check the insulation and the continuity between track:

Injection computer	6 ⟶	B4	Air conditioning control panel
	51 ⟶	B5	

Repair if necessary.

XR25 on voltmeter [V], check on track 6 of the bornier for the presence of 12 V.

There is not 12 V, refer to the air conditioning fault finding section.

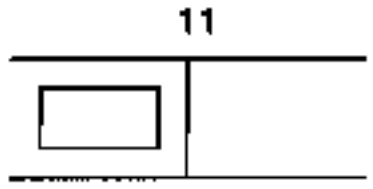
XR25 on voltmeter [V], injection computer connected, check for the presence of 12 V on track 85 of the air conditioning control panel.

There is not 12 V, replace the injection computer.

There is 12 V, refer to the air conditioning fault finding section.

AFTER REPAIR

Carry out a conformity check



Bargraph 11 LH incorrect illumination

Fiche n° 27 side 2/2

CAMSHAFT SIGNAL CIRCUIT

XR25 assistance: BG 11LH illuminated engine running

NOTES

Dealt with in the fault bargraphs.

AFTER REPAIR

None

NOTES

Only refer to these customer complaints after having performed a complete test using the XR25.

STARTING PROBLEMS

Does not start	**Chart 1**
Starts but stalls	**Chart 2**
Starting is too long	**Chart 3**

IDLE PROBLEMS

Too fast	**Chart 4**
Too slow	**Chart 5**
Engine unstable	**Chart 6**
Hunting	**Chart 7**

BEHAVIOUR WHEN DRIVING

Lacks performance	**Chart 8**
Misfiring and hesitation	**Chart 9**

SMOKE - POLLUTION

Gas analysis not correct	**Chart 10**
Testing the oxygen sensor	**Chart 11**

HIGH PETROL CONSUMPTION — **Chart 12**

ENGINE NOISE

Pinking	**Chart 13**

Chart 1	STARTING PROBLEMS Does not start

NOTES	Only refer to this customer complaint after having performed a complete test using the XR25.

Check the impact sensor is clipped in correctly.Check all the (injection) passenger compartment connection unit and engine fuses . Repair if necessary.
Does the fault persist?

— no → End of fault finding

yes ↓

Does the fuel pump make a noise when the ignition is turned on?

— yes → See Chart 1A

no ↓

When the ignition is switched on, does the fuel pump relay make a noise?

— no → Check for the presence of − 12 V on H1 of this relay. Repair.

Connect the bornier instead of the injection computer and check the insulation and the continuity of bornier line 6 relay H2. Repair.

The fault persists, replace the relay.

yes ↓

Check for the presence of 12 V on track H3 of this relay.
Repair if necessary.
If the fault persists

During the timed phase, check for the presence of 12 V on track H5 of this relay. is it correct?

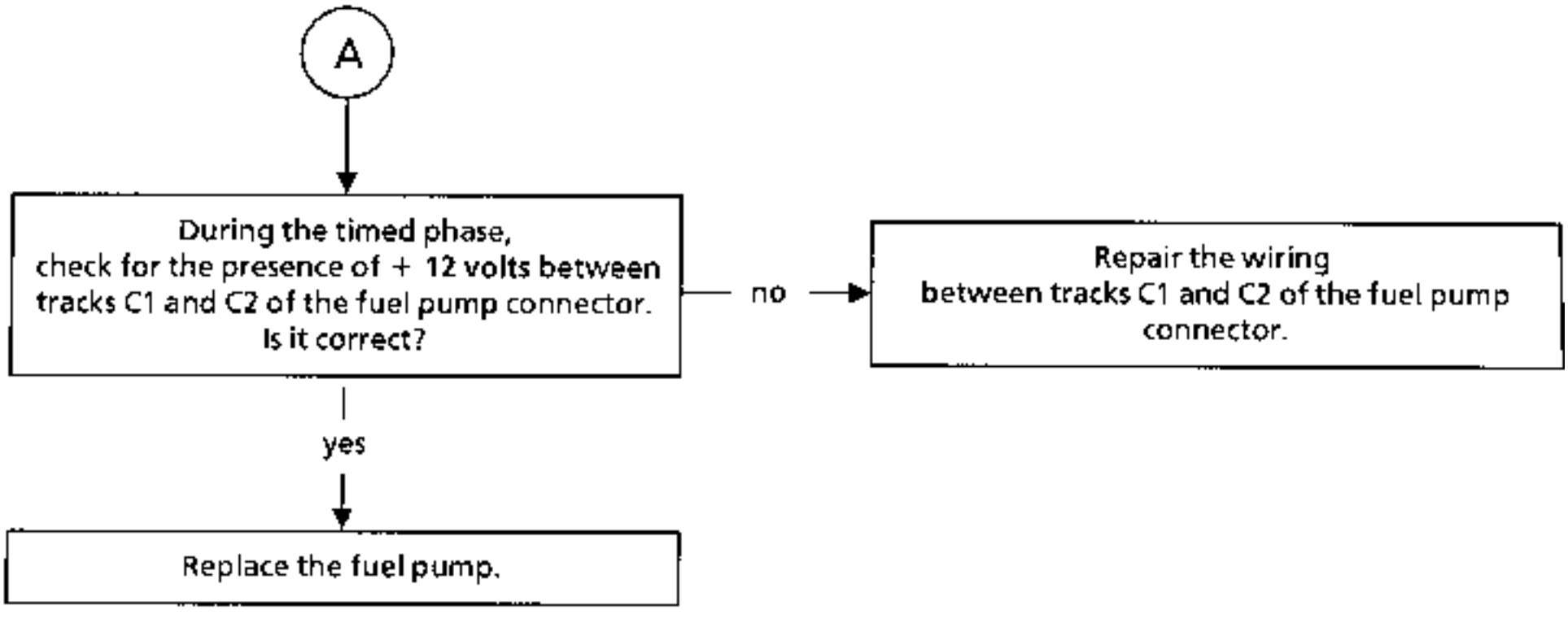
— no → Replace the relay

yes ↓

(A)

AFTER REPAIR	Check the sensors disconnected during the operation are correctly reconnected Erase the computer memory using G0** Carry out a conformity check

Chart 1
CONT



AFTER REPAIR

Check the sensors disconnected during the operation are correctly reconnected
Erase the computer memory using G0**
Carry out a conformity check

Chart 1A — STARTING PROBLEMS
Does not start

NOTES

Only refer to this customer complaint after having performed a complete test using the XR25.

Connect the OPTIMA 5800 diagnostic station and perform a starting test.
Does the station detect a fault?

no →

Check the fuel flow and pressure (refer to vehicle Workshop Repair Manual).
Repair the fuel circuit if necessary (pump, filter, pipes, regulator, injectors...).
If the fault persists

yes ↓

Repair if necessary.
If the fault persists

Connect the OPTIMA 5800 diagnostic station and carry out an engine compression test.
Is it normal?

yes ←

no ↓

Check the exhaust pipe is not blocked. Repair if necessary.
If the fault persists

There is a problem with the engine

Replace the injection computer.

AFTER REPAIR

Check the sensors disconnected during the operation are correctly reconnected
Erase the computer memory using G0**
Carry out a conformity check

Chart 2	STARTING PROBLEMS The engine starts but stalls

NOTES	Only refer to this customer complaint after having performed a complete test using the XR25.

Ignition on,
on the XR25 , check the value of
#12 and 21.
Are these values coherent?

no → Refer to bargraph 14 LH fault chart.

yes ↓

Check the air inlet circuit and the exhaust pipe.
Repair if necessary.
If the fault persists

↓

Check the fuel flow and pressure.
Repair if necessary [pump, filter, regulator, pipes, injectors (seals) ...]
If the fault persists

↓

There is a problem with the engine and the injection is not faulty.

AFTER REPAIR	Check the sensors disconnected during the operation are correctly reconnected Erase the computer memory using G0** Carry out a conformity check

Chart 3	STARTING PROBLEMS Starting is too long

NOTES	Only refer to this customer complaint after having performed a complete test using the XR25.

Connect the OPTIMA 5800 diagnostic station and perform a starting test. Does the station detect a fault?

yes → Follow the instructions.

no ↓

Perform a test on the station with the engine running.
Does the station detect a fault?

yes → Follow the instructions.

no ↓

Check the fuel flow and pressure
(Refer to vehicle Workshop Repair Manual.
Repair the fuel circuit if necessary (pump, filter, pipes, regulator, injectors...).
If the fault persists

↓

Check the injectors are correctly sealed.
If they are not correctly sealed, replace the faulty injector or injectors.
If the fault persists

↓

There is a problem with the engine and the injection is not faulty.

AFTER REPAIR	Check the sensors disconnected during the operation are correctly reconnected Erase the computer memory using G0** Carry out a conformity check

Chart 4	IDLE PROBLEMS Idle too fast

NOTES	Only refer to this customer complaint after having performed a complete test using the XR25.. R > theoretical idle speed or #12 < theoretical value especially power assisted steering pressostat, #02 (coolant temperature)

Check no air is leaking into the manifold (seals, take-off points on the inlet manifold, plugs, ...).
Repair if necessary.
If the fault persists

↓

Check on the throttle body that it is up against the lower mechanical stop (#17 < theoretical value). Also check the accelerator control. Repair if necessary.
If the fault persists

↓

Check the fuel pressure is not too high.
Repair if necessary
(injectors, pump, pressure regulation, pipes, ...).
If the fault persists

↓

The injection is not faulty.
Check the engine.

AFTER REPAIR	Check the sensors disconnected during the operation are correctly reconnected Erase the computer memory using G0** Carry out a conformity check

Chart 5	IDLE PROBLEMS Idle too slow

NOTES	Only refer to this customer complaint after having performed a complete test using the XR25. R < theoretical idle speed or #12 > theoretical value

Connect the OPTIMA 5800 diagnostic station and and perform and ignition test with the engine running.
Does the station detect a fault?

yes → Follow the instructions.

no ↓

Check the fuel flow and pressure (refer to vehicle Workshop Repair Manual).
Repair the fuel circuit if necessary (pump, filter, pipes, regulator, injectors, ...).
If the fault persists

↓

The injection is not faulty.
Check the engine.

AFTER REPAIR	Check the sensors disconnected during the operation are correctly reconnected Erase the computer memory using G0** Carry out a conformity check

Chart 6	IDLE PROBLEMS Engine unstable

NOTES	Only refer to this customer complaint after having performed a complete test using the XR25.

Perform a gas analysis
(Refer to fault chart 10 - smoke/pollution).
If the fault persists

Connect the OPTIMA 5800 diagnostic station and perform an ignition test with the engine running.
Does the station detect a fault?

yes → Follow the instructions.

no

Check the operation of the oxygen sensor
(Refer to fault chart 11 - smoke/pollution).
If the fault persists

Engine idling, check the coherence of #01 (the value read should be less than 500 mbar).
Is it correct?

no → Check the absolute pressure sensor and its wiring loom. Repair,
and if necessary replace the sensor.

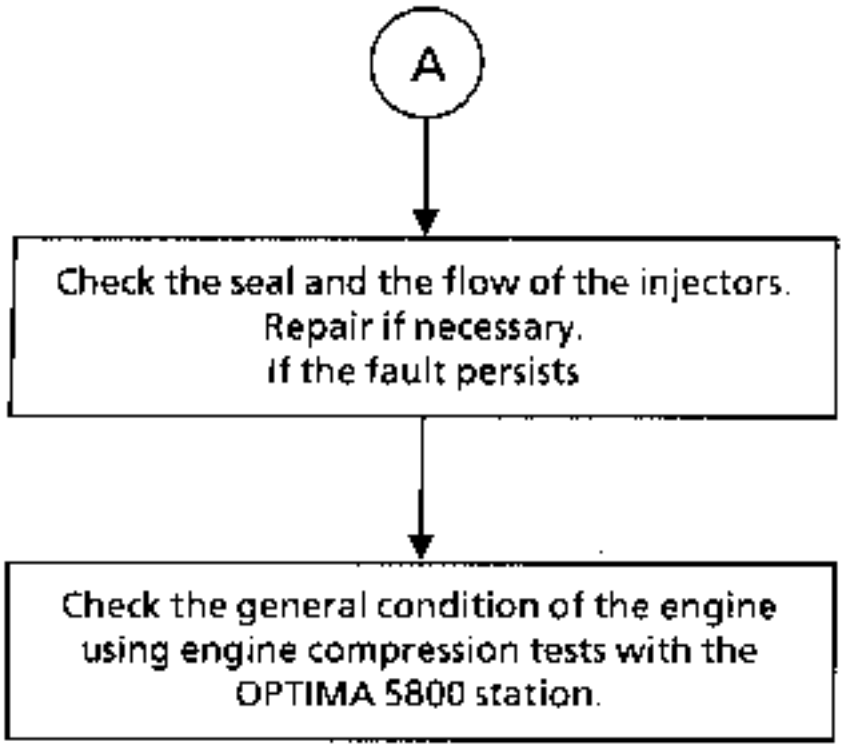
yes

Check the fuel flow and pressure
(refer to vehicle Workshop Repair Manual).
Repair the fuel circuit if necessary (pump, filter, pipes, regulator, injectors, ...).
If the fault persists

A

AFTER REPAIR	Check the sensors disconnected during the operation are correctly reconnected Erase the computer memory using G0** Carry out a conformity check

Chart 6
CONT



AFTER REPAIR

Check the sensors disconnected during the operation are correctly reconnected
Erase the computer memory using G0**
Carry out a conformity check

Chart 7	IDLE PROBLEMS Hunting

NOTES	Only refer to this customer complaint after having performed a complete test using the XR25.

Perform a gas analysis
(Refer to fault chart 10 - smoke/pollution)
If the fault persists

↓

Connect the OPTIMA 5800 diagnostic station and perform an ignition test with the engine running.
Does the station detect a fault?

yes → Follow the instructions.

no

↓

Check the operation of the oxygen sensor
(Refer to fault chart 11 - Smoke/pollution).
If the fault persists

↓

Check there is no air leak on the inlet manifold and check the operation of the injectors (seizing...).

AFTER REPAIR	Check the sensors disconnected during the operation are correctly reconnected Erase the computer memory using G0** Carry out a conformity check

Chart 8	BEHAVIOUR WHEN DRIVING Lacks performance

NOTES	Only refer to this customer complaint after having performed a complete test using the XR25.

Check the throttle opens fully (full load bargraph illuminated).
Check the adjustment of the accelerator control. Repair if necessary.
If the fault persists

↓

Check the air filter: dirty, deformed. Repair if necessary.
If the fault persists

↓

Connect the OPTIMA 5800 diagnostic station and perform an ignition test with the engine running.
Does the station detect a fault?

yes → Follow the instructions.

no

↓

Perform a gas analysis (Refer to fault chart 10 - Smoke/pollution).
If the fault persists

↓

Connect the OPTIMA 5800 diagnostic station and perform an engine compression test
Is it normal?

no → There is a problem with the engine.

yes

↓

(A)

AFTER REPAIR	Check the sensors disconnected during the operation are correctly reconnected Erase the computer memory using G0** Carry out a conformity check

Chart 8 CONT

A

Check the exhaust pipe (obstruction ...). Is it correct?

yes

With the XR25, check #15. Does #15 = 0 ?

yes

Perform a road test, driving in 4th or 5th full load and listen to the engine (pinking). Does bargraph 6LH illuminate?

no

There is a problem with the engine and the injection is not faulty.

yes

Refer to bargraph 6LH fault chart pinking sensor.

no

Refer to fault chart 12 pinking.

AFTER REPAIR

Check the sensors disconnected during the operation are correctly reconnected
Erase the computer memory using G0**
Carry out a conformity check

Chart 9	BEHAVIOUR WHEN DRIVING Misfiring and hesitation

NOTES	Only refer to this customer complaint after having performed a complete test using the XR25.

Perform a road test if possible to highlight the fault.
If the fault is reproduced

Connect the OPTIMA 5800 diagnostic station and perform an ignition test with the engine running.
Does the station detect a fault?

yes → Follow the instructions.

no

Perform a gas analysis
(Refer to fault chart 10 - Smoke/pollution).
If the fault persists

Check the oxygen sensor
(Refer to fault chart 11 - Smoke/pollution).
If the fault persists

Check for the presence and the cleanliness of the restriction in the absolute pressure sensor pipe.
Repair if necessary.
If the fault persists

Check the seal of the injectors, and the fuel flow and pressure (refer to Workshop Repair Manual). Repair if necessary.
If the fault persists

A

AFTER REPAIR	Check the sensors disconnected during the operation are correctly reconnected Erase the computer memory using G0** Carry out a conformity check

Chart 9
CONT

A

Check the condition of the flywheel target.
This is done by using the engine speed sensor signal display function on the OPTIMA 5800 station.
Repair if necessary.
If the fault persists

Check the valves are not clogged.
Clean the valves if necessary.
After cleaning, does the fault persist?

yes

There is a problem with the engine, the injection is not faulty.

AFTER REPAIR

Check the sensors disconnected during the operation are correctly reconnected
Erase the computer memory using G0**
Carry out a conformity check

Chart 10	SMOKE - POLLUTION Gas analysis not correct

NOTES	Only refer to this customer complaint after having performed a complete test using the XR25.

Connect the OPTIMA 5800 diagnostic station and connect it to a 4040, 5040 or AGM 1500 type 4 gas analyser. Perform an anti-pollution/ gas analysis test.
Does the station detect a fault?

no → End of fault finding using fault chart 10
NOTE: a correct gas analysis indicates that the catalytic converter is working correctly.

yes

Is the CO too high (CO > 0.5 when idling or CO > 0.3 at 2500 rpm.) ?

yes → Check the oxygen sensor
(Refer to fault chart 11 - Smoke/pollution).
If the fault persists.

Check there is not a problem with the engine by performing a compression test (OPTIMA 5800 diagnostic station).

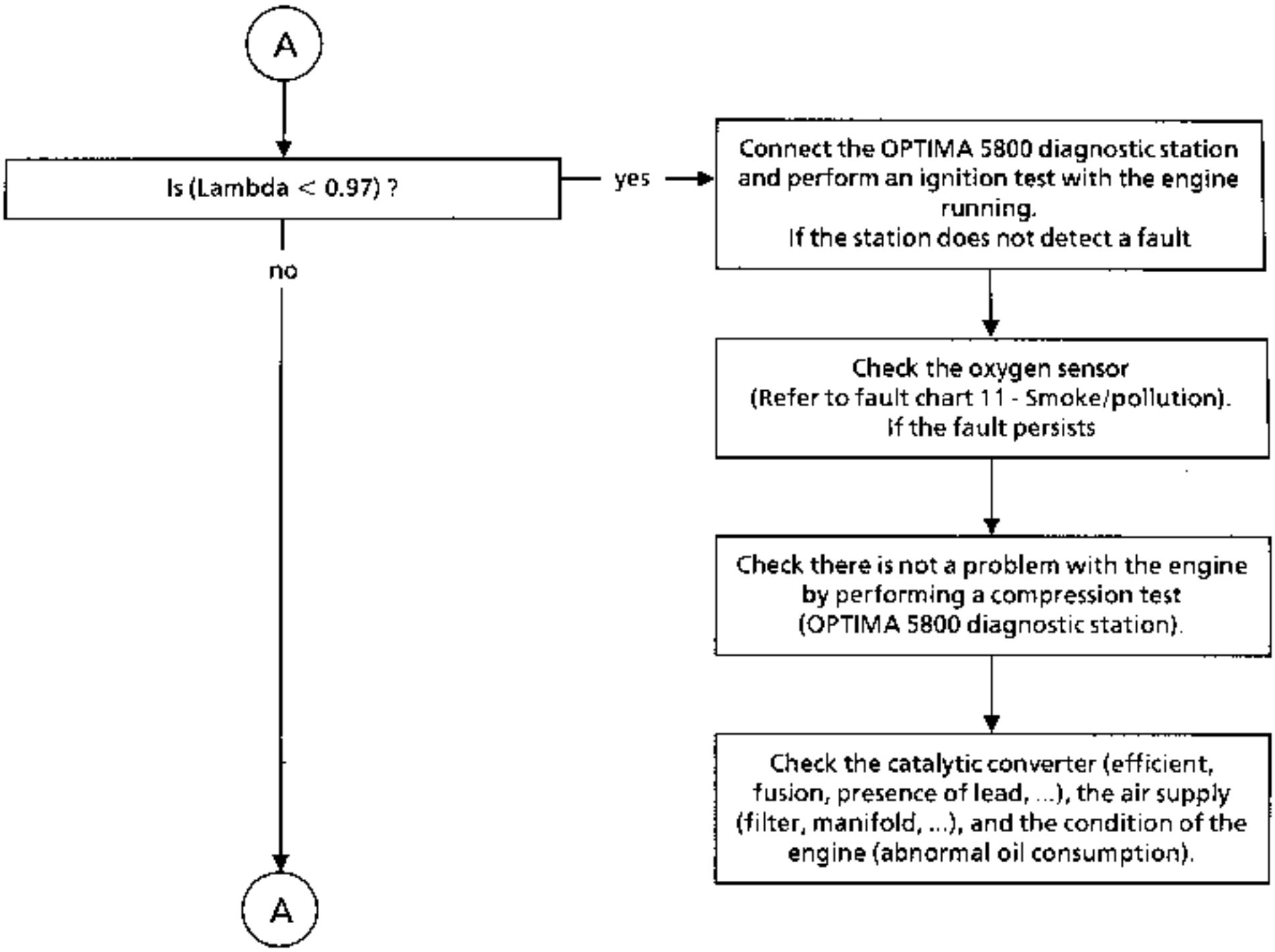
Check the catalytic converter (efficient, fusion, presence of lead, ...), the air supply (filter, manifold, ...), and the condition of the engine (abnormal oil consumption).

no

A

AFTER REPAIR	Check the sensors disconnected during the operation are correctly reconnected Erase the computer memory using G0** Carry out a conformity check

Chart 10
CONT 1



AFTER REPAIR	Check the sensors disconnected during the operation are correctly reconnected Erase the computer memory using G0** Carry out a conformity check

Chart 10
CONT 2

A

Lambda > 1.03

yes → Check the sealing of the exhaust pipe after the catalytic converter (air leak). Repair if necessary. If the fault persists

Connect the OPTIMA 5800 diagnostic station and perform an ignition test with the engine running. If the station does not detect a fault

Check the oxygen sensor (Refer to fault chart 11 - Smoke/pollution). If the fault persists

Check there is not a problem with the engine by performing a compression test (OPTIMA 5800 diagnostic station).

Check the fuel supply (injectors, pressure regulator,...) and the efficiency of the catalytic converter (fusion, lead,...)

no

Is the HC level too high? (HC > 100 ppm)

yes → Connect the OPTIMA 5800 diagnostic station and perform an ignition test with the engine running. If the station does not detect a fault

Check the anti-evaporation circuit (canister), the inlet manifold heating function and the efficiency of the catalytic converter.

no

A

AFTER REPAIR

Check the sensors disconnected during the operation are correctly reconnected
Erase the computer memory using G0**
Carry out a conformity check

Chart 10
CONT 3

A

Is the oxygen level too high (O_2 > 0.8 %)

yes → Connect the OPTIMA 5800 diagnostic station and perform an ignition test with the engine running.
If the station does not detect a fault

→ Check there is no air leak on the inlet manifold and check the operation of the injectors (seizing...).

no

CO_2 too low.

yes → Check the sealing of the exhaust pipe after the catalytic converter and check the operation of the injectors (seizing...).

AFTER REPAIR	Check the sensors disconnected during the operation are correctly reconnected Erase the computer memory using G0** Carry out a conformity check

Chart 11 — SMOKE - POLLUTION
Testing the oxygen sensor

NOTES

Only refer to this customer complaint after having performed a complete test using the XR25, especially the following parameters:
- #35 (richness correction): this should oscillate around 128
- #30 and #31 (adaptative richness): under no circumstances should they be at their limits.

Connect the OPTIMA 5800 diagnostic station and perform an anti-pollution / oxygen sensor test.
Does the station detect a fault?

no → End of fault finding using fault chart 11.
The oxygen sensor is not faulty.

yes ↓

Check the sensor heating:
- presence of + 12 V at the connector with the engine running,
- the sensor heating resistor is not in an open circuit or short circuited to earth.

If the heating is correct

Is the minimum voltage too high?
(Umin > 300 mV: signal offset towards richness).

yes → Connect the OPTIMA 5800 diagnostic station and perform an ignition test with the engine running.
If the station does not detect a fault

Check the fuel pressure (regulator), the injectors (seal,...) the anti-evaporation circuit (canister) and the fuel grade.
Repair if necessary.
If the fault persists

Replace the sensor.

no ↓

(A)

AFTER REPAIR

Check the sensors disconnected during the operation are correctly reconnected
Erase the computer memory using G0**
Carry out a conformity check

Chart 11
CONT 1

A

Is the maximum voltage too low?
(Umax < 600 mV: signal offset towards a lean mixture).

yes → Check there is no air leak before the oxygen sensor (exhaust manifold leak,...) and the fuel pressure
Repair if necessary.
If the fault persists

→ Replace the sensor.

no

Is the difference between maximum and minimum too low (< 500 mV)?

yes → The sensor is probably clogged.
Perform a road test to unclog it and redo the test on the station.
If the test is not correct

→ Connect the OPTIMA 5800 diagnostic station and perform an ignition test with the engine running.
If the station does not detect a fault

→ Check there is no air leak on the inlet manifold and check the operation of the injectors (seizing, ...).
Repair if necessary.
If the fault persists.

→ Replace the sensor.

no

A

AFTER REPAIR

Check the sensors disconnected during the operation are correctly reconnected
Erase the computer memory using G0**
Carry out a conformity check

Chart 11
CONT 2

A

Sensor period incorrect (> 1 second). — yes →

The sensor may become clogged or polluted (silicon) if the sensor is open for a long time. An additional fault finding operation is possible using a 4 gas analyser (SOURIAU 4040-5040 or SAGEM AGM 1500) since, in this case, Lambda > 1.03 and O_2 > 1 %. Perform a road test to unclog the sensor. Does it open correctly?

no ↓

Replace the sensor.

AFTER REPAIR

Check the sensors disconnected during the operation are correctly reconnected
Erase the computer memory using G0**
Carry out a conformity check

Chart 12	HIGH FUEL CONSUMPTION

NOTES	Only refer to this customer complaint after having performed a complete test using the XR25.

Check there are no fuel leaks.
Repair if necessary.
If the fault persists

↓

Check the idle speed
(#06 on XR25).
Is it correct?

— no → Refer to fault chart 4 or 5, idle problems
(idle speed too fast or too slow).

yes

↓

Check the vehicle complies with its definition
and is in good condition.
Repair if necessary.
If the fault persists

↓

Perform a gas analysis
(Refer to fault chart 10 - Smoke/pollution).
If the fault persists

↓

Check the operation of the O_2 sensor
(Refer to fault chart 11 - Smoke/pollution).
If the fault persists

↓

(A)

AFTER REPAIR	Check the sensors disconnected during the operation are correctly reconnected Erase the computer memory using G0** Carry out a conformity check

Chart 12 CONT

(A)

Connect the OPTIMA 5800 diagnostic station and perform an engine compression test.
Is it normal?

no → There is a problem with the engine.

yes

Check the petrol flow and pressure (methods, refer to vehicle Workshop Repair Manual) and the canister bleed circuit.
Repair if necessary (regulator, pump, filter, pipes).
Does the fault persist?

yes

This is not an injection problem, there is a problem with the engine.

Check:
- engine oil level
- coolant
- axle assemblies
- the general condition of the engine.

If necessary, perform a consumption test with the ECONOTEST consumption device.

AFTER REPAIR	Check the sensors disconnected during the operation are correctly reconnected Erase the computer memory using G0** Carry out a conformity check

Chart 13	ENGINE NOISE Pinking

NOTES	Only refer to this customer complaint after having performed a complete test using the XR25.

Perform a road test with the XR25 and check # 13, 15.
Is the fault reproduced?

no → The customer must use his vehicle under specific conditions, check with the customer.

yes ↓

Perform a gas analysis
(Refer to fault chart 10 -Smoke/pollution).
If the fault persists ↓

Check the operation of the O_2 sensor
(Refer to fault chart 11 - Smoke/pollution).
If the fault persists ↓

Ask the customer what type of fuel he uses.
Is it suitable?

no → Remind the customer what type of fuel he should use.

yes ↓

Check the condition and the conformity of the spark plugs.
Replace the spark plugs if necessary.
Does the fault persist?

yes ↓

(A)

AFTER REPAIR	Check the sensors disconnected during the operation are correctly reconnected Erase the computer memory using G0** Carry out a conformity check

Chart 13 CONT

A

Check the conformity: of the routing of the inlet air pipes and the air filter.
Repair if necessary.
Does the fault persist?

yes

Using a stroboscopic light and the XR25, #51, check the ignition advance
Are the values the same?

no → Refer to bargraph 5 RH fault chart.

yes

This is not an injection problem.
Also check the engine cooling. The combustion chambers may have to be cleaned.

AFTER REPAIR

Check the sensors disconnected during the operation are correctly reconnected
Erase the computer memory using G0**
Carry out a conformity check

NOTES Only refer to these customer complaints after having performed a complete test using the XR25

STARTING PROBLEMS

Does not start	Chart 1
Starts but stalls	Chart 2
Starting is too long	Chart 3

IDLE PROBLEMS

Too fast	Chart 4
Too slow	Chart 5
Engine unstable	Chart 6
Hunting	Chart 7

BEHAVIOUR WHEN DRIVING

Lacks performance	Chart 8
Misfiring and hesitation	Chart 9

SMOKE - POLLUTION

CO and/or HC too high	Chart 10

HIGH PETROL CONSUMPTION Chart 11

ENGINE NOISE

Pinking	Chart 12

The method without the OPTIMA station does not comply with a sufficient quality criterion.
Use the method with the OPTIMA station to obtain this quality criterion.

Chart 1	STARTING PROBLEMS Does not start

NOTES	Only refer to this customer complaint after having performed a complete test using the XR25

Check the impact sensor is correctly engaged.
Check fuses F12, F30, F60 :

F31 = 15 A } On passenger compartment
F41 5 A } connection unit

30 A fuse On engine compartment connection unit

Repair if necessary.
Does the fault persist?

no → End of fault finding

yes

Does the fuel pump make a noise when the ignition is turned on?

yes → See Chart 1A

no

Perform control mode G10*
and check if the relay makes a noise (several clicking noises). Is it correct?

no → Replace the relay.

yes

Check for the presence of 12 V on track 3 of this relay.
Repair if necessary.
If the fault persists

During the timed phase, check for the presence of 12 V on track 5 of this relay.
Is it correct?

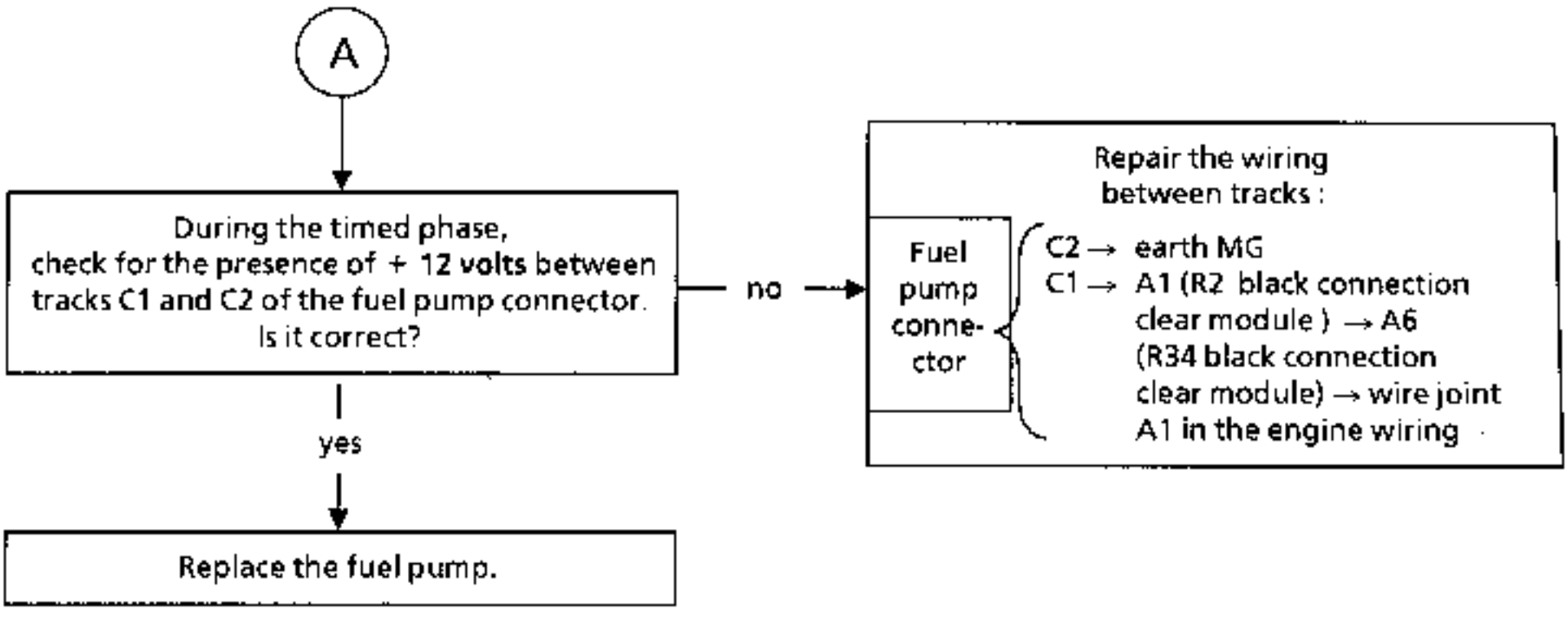
no → Replace the relay.

yes

(A)

AFTER REPAIR	Check the sensors disconnected during the operation are correctly reconnected Erase the computer memory using G0** Carry out a conformity check

Chart 1
CONT



AFTER REPAIR

Check the sensors disconnected during the operation are correctly reconnected
Erase the computer memory using G0**
Carry out a conformity check

Chart 1A	STARTING PROBLEMS Does not start

NOTES	Only refer to this customer complaint after having performed a complete test using the XR25.

Connect the diagnostic station and check for the presence of a high voltage under the action of the starter motor on the spark plug leads . Is there a high voltage?

yes → Check the petrol flow and pressure (refer to vehicle Workshop Repair Manual). Repair the fuel circuit if necessary (pump, filter, pipes, regulator, injectors...). If the fault persists

This is an engine problem and the injection is not faulty.

no

Check the HT circuit. Repair if necessary. If the fault persists

Ignition on, check on the coils for the presence of + 12 V on track 2. Is there + 12 V ?

no → Check the continuity of the wiring between track 2 (coils) and the + after ignition fuse in the engine connection unit. Repair.

yes

Ignition on, check the resistance between tracks 2 and 3 on the coils. Is it correct?

no → Replace the faulty coil or coils.

yes

Check the continuity of the 1/1 connection (coil 1 and coil 2). Repair if necessary. Does the fault persist?

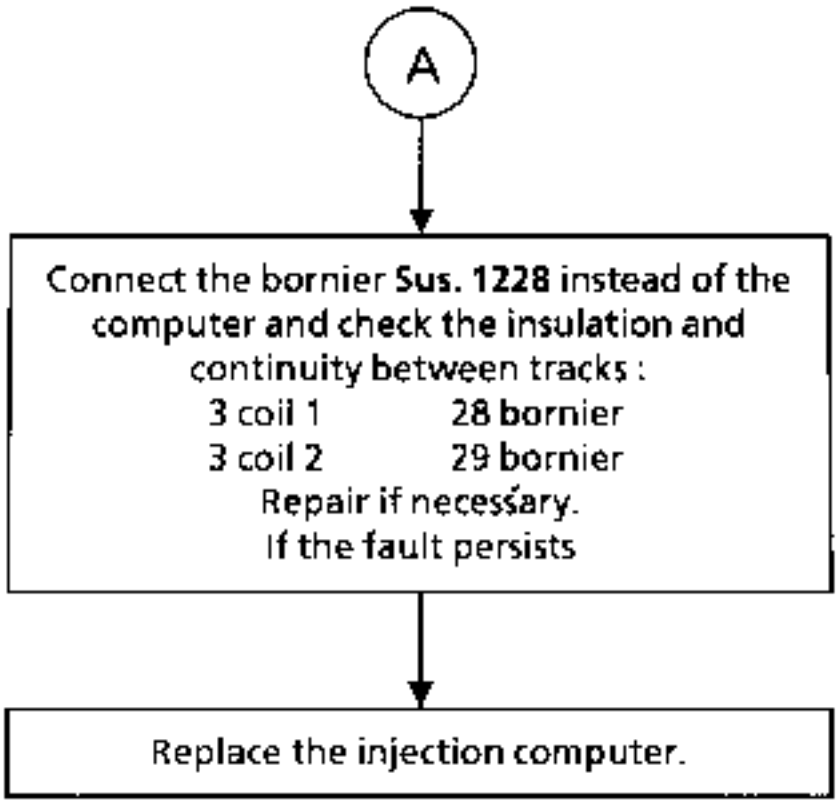
no → End of fault finding.

yes

A

AFTER REPAIR	Check the sensors disconnected during the operation are correctly reconnected Erase the computer memory using G0** Carry out a conformity check

Chart 1A CONT

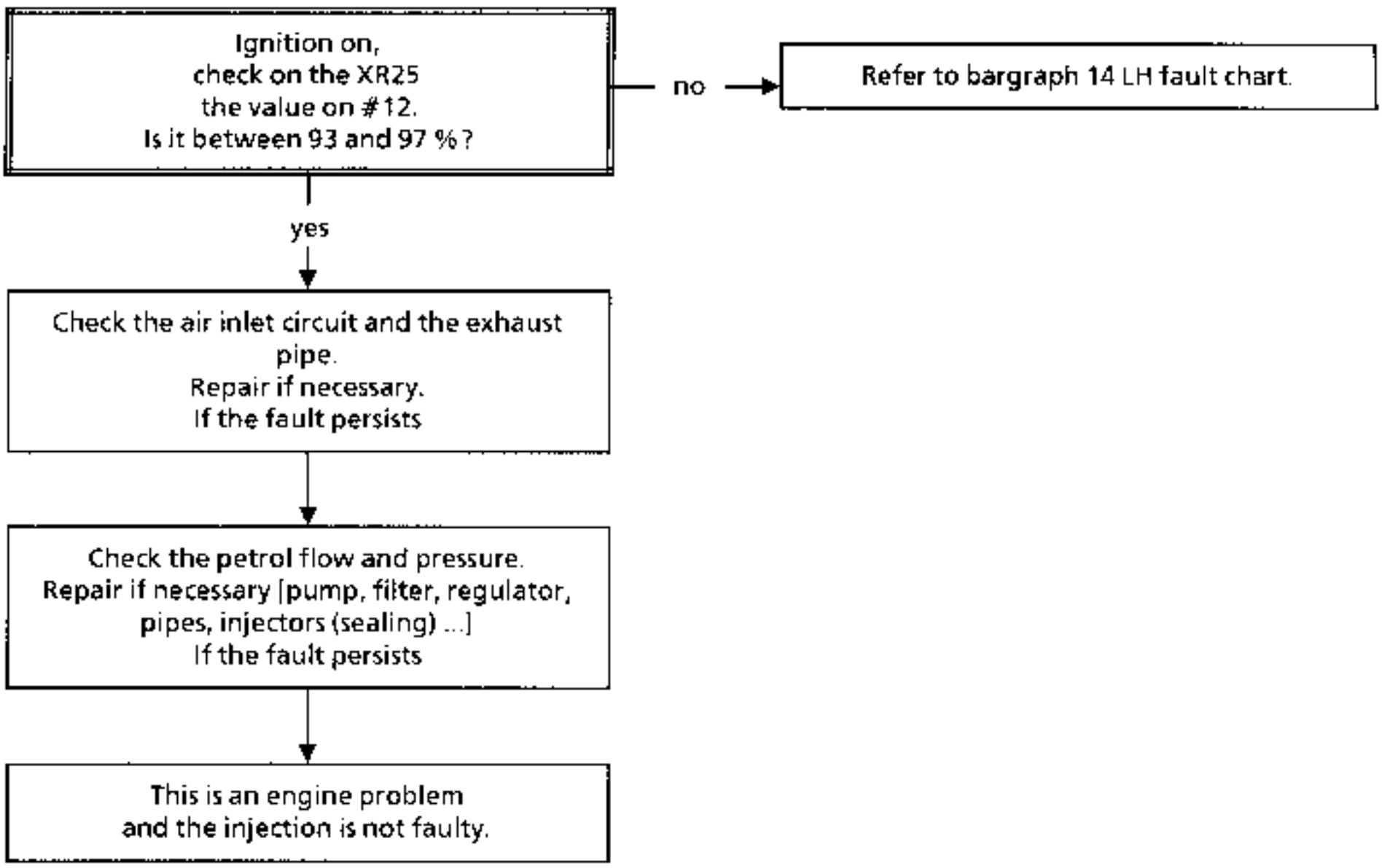


AFTER REPAIR

Check the sensors disconnected during the operation are correctly reconnected
Erase the computer memory using G0**
Carry out a conformity check

Chart 2	STARTING PROBLEMS The engine starts but stalls

NOTES	Only refer to this customer complaint after having performed a complete test using the XR25



AFTER REPAIR	Check the sensors disconnected during the operation are correctly reconnected Erase the computer memory using G0** Carry out a conformity check

Chart 3	STARTING PROBLEMS Starting is too long

NOTES	Only refer to this customer complaint after having performed a complete test using the XR25

Check the ignition,
high voltage circuit and spark plugs.
Repair if necessary.
If the fault persists

↓

Check the fuel flow and pressure,
(method: refer to vehicle Workshop Repair Manual).
Replace the faulty parts if necessary
(regulator, filter, pump, pipes, ...).
If the fault persists

↓

Check the seal of the injectors.
If the seal is not correct,
replace the faulty injector or injectors.
The fault persists!

↓

This is an engine problem
and the injection is not faulty.

AFTER REPAIR	Check the sensors disconnected during the operation are correctly reconnected Erase the computer memory using G0** Carry out a conformity check

Chart 4	IDLE PROBLEMS Idle too fast

NOTES	Only refer to this customer complaint after having performed a complete test using the XR25. R > 750 rpm or #12 < 27 %

Check there is no air leak on the inlet (seals, take-off points on the inlet manifold, plugs, ...).
Repair if necessary.
If the fault persists

↓

Check on the throttle body that it is up against the lower mechanical stop (#17 < 47). Also check the accelerator control.
Repair if necessary.
If the fault persists

↓

Check the fuel pressure is not too high.
Repair if necessary
(injectors, pump, pressure regulator, pipes, ...).
The fault persists!

↓

The injection is not faulty.
Check the engine.

AFTER REPAIR	Check the sensors disconnected during the operation are correctly reconnected Erase the computer memory using G0** Carry out a conformity check

Chart 5	IDLE PROBLEMS Idle too slow

NOTES	Only refer to this customer complaint after having performed a complete test using the XR25 R < 650 rpm or #12 > 37 %

Check the ignition, high voltage leads, spark plugs and power stages.
Repair if necessary.
If the fault persists

↓

Check the fuel pressure is not too low.
Repair if necessary
(injectors, pump, regulator, pipes, ...).
The fault persists!

↓

The injection is not faulty.
Check the engine.

AFTER REPAIR	Check the sensors disconnected during the operation are correctly reconnected Erase the computer memory using G0** Carry out a conformity check

Chart 6 — IDLE PROBLEMS
Engine unstable

NOTES

Only refer to this customer complaint after having performed a complete test using the XR25

Engine idling,
check the coherence of #01.
The value read should be < 500 mbar.
Is it correct?

no → Check the absolute pressure sensor and its wiring loom
Repair, if necessary,
replace the sensor.

yes ↓

Check the value of the pollutants and Lambda.
- CO < 0.3 %
- HC ≤ 100 ppm
- CO2 ≥ 14.5 %
- 0.97 ≤ Lambda ≤ 1.03

Is it correct?

no → Check:
- the catalytic converter (melted, blocked, ...).
- the oxygen sensor (polluted, heating faulty, ...).
- air leak upstream of the oxygen sensor.
- the seal of the exhaust pipe.
- the type of fuel used.
- the ignition (spark plugs, high voltage leads, coils).
- the general condition of the engine (timing, ...).

yes ↓

Disconnect the oxygen sensor and wait for #35 to stabilise at 128 and #05 = 0.402, and for bargraph 3 RH to illuminate.
Does the fault persist?

no → Before replacing the oxygen sensor, check there is no lead in the exhaust outlet.

yes ↓

Check the petrol flow and pressure (methods, refer to vehicle Workshop Repair Manual).
Repair if necessary (regulator, pump, filter, pipes, injectors).
Does the fault persist?

no → End of fault finding.

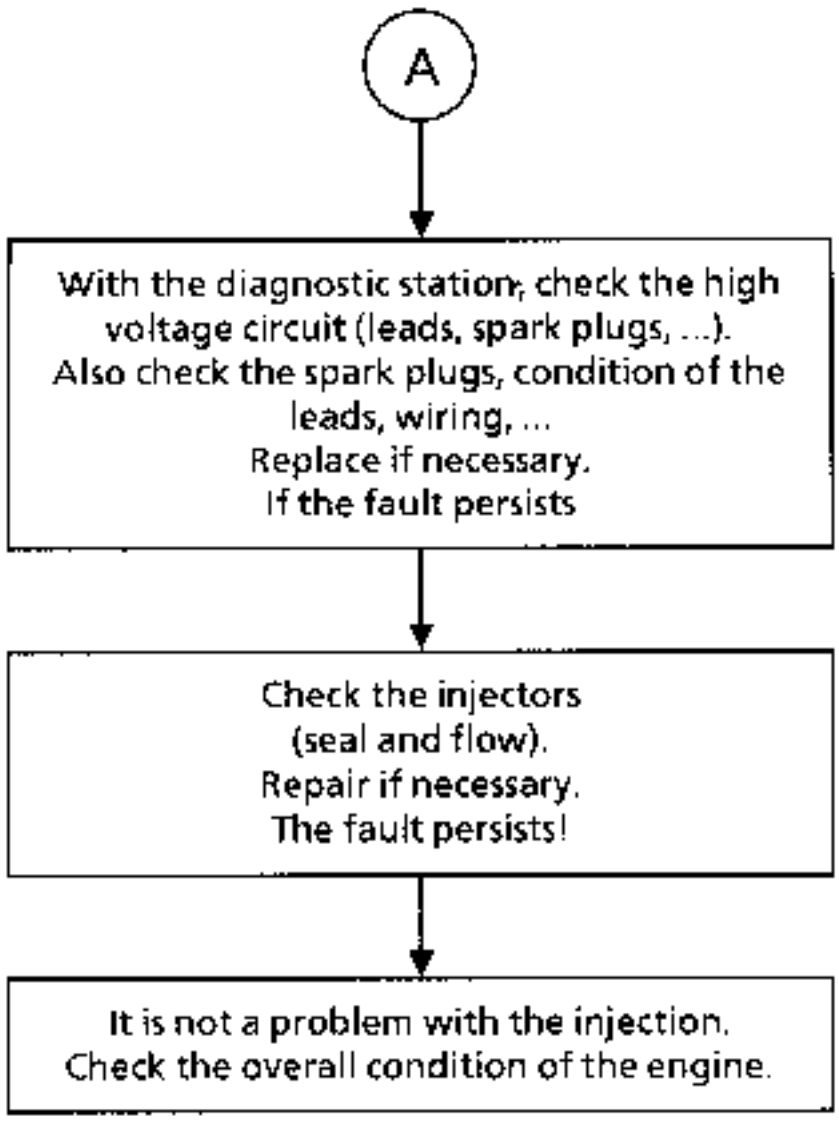
yes ↓

(A)

AFTER REPAIR

Check the sensors disconnected during the operation are correctly reconnected
Erase the computer memory using G0**
Carry out a conformity check

Chart 6 CONT



AFTER REPAIR

Check the sensors disconnected during the operation are correctly reconnected
Erase the computer memory using G0**
Carry out a conformity check

Chart 7	IDLE PROBLEMS Hunting

NOTES	Only refer to this customer complaint after having performed a complete test using the XR25

With the XR25 check if no load bargraph (2 RH) is illuminated. Is it illuminated?

— no → If no load bargraph is extinguished or flashing but does not illuminate bargraph 6 RH, there may be a short circuit to + 5 V on line 46 of the computer (#17 = variable). Check the insulation of the wiring and repair.

yes ↓

Check the value of the pollutants and Lambda.
- CO ≤ 0.3 %
- HC ≤ 100 ppm
- CO2 ≥ 14.5 %
- 0.97 ≤ Lambda ≤ 1.03

Is it correct?

— no → Check:
- the catalytic converter (melted, blocked, ...).
- the oxygen sensor (polluted, heating faulty, ...).
- air leak upstream of the oxygen sensor.
- the seal of the exhaust pipe.
- the type of fuel used.
- the ignition (spark plugs, high voltage leads, coils).
- the general condition of the engine (timing, ...).

yes ↓

Disconnect the oxygen sensor and wait for #35 to stabilise at 128 and #05 = 0.402, and for bargraph 3 RH to illuminate. Is the engine stable ?

— no → Check there is no air leak on the inlet manifold (plugs, seals, take-off points,...) Repair if necessary.

yes ↓

Replace the oxygen sensor.

AFTER REPAIR	Check the sensors disconnected during the operation are correctly reconnected Erase the computer memory using G0** Carry out a conformity check

Chart 8	BEHAVIOUR WHEN DRIVING Lacks performance
NOTES	Only refer to this customer complaint after having performed a complete test using the XR25

Check the throttle opens fully
(full load bargraph illuminated).
Check the adjustment of the accelerator control.
Repair if necessary.
Does the fault persist?

no → End of fault finding.

yes ↓

Check the conformity of the spark plugs and their condition.
Repair if necessary.
Does the fault persist?

no → End of fault finding.

yes ↓

Check the values of the pollutants and Lambda.
- CO < 0.3 %
- HC ≤ 100 ppm
- CO2 ≥ 14.5 %
- 0.97 ≤ Lambda ≤ 1.03

Is it correct?

no → Check:
- the catalytic converter (melted, blocked, ...).
- the oxygen sensor (polluted, heating faulty, ...).
- air leak upstream of the oxygen sensor.
- the seal of the exhaust pipe.
- the type of fuel used.
- the ignition (spark plugs, high voltage leads, coils).
- the general condition of the engine (timing, ...).

yes ↓

Check the air inlet circuit (air filter,...) and the exhaust pipe.
Repair if necessary.
Does the fault persist?

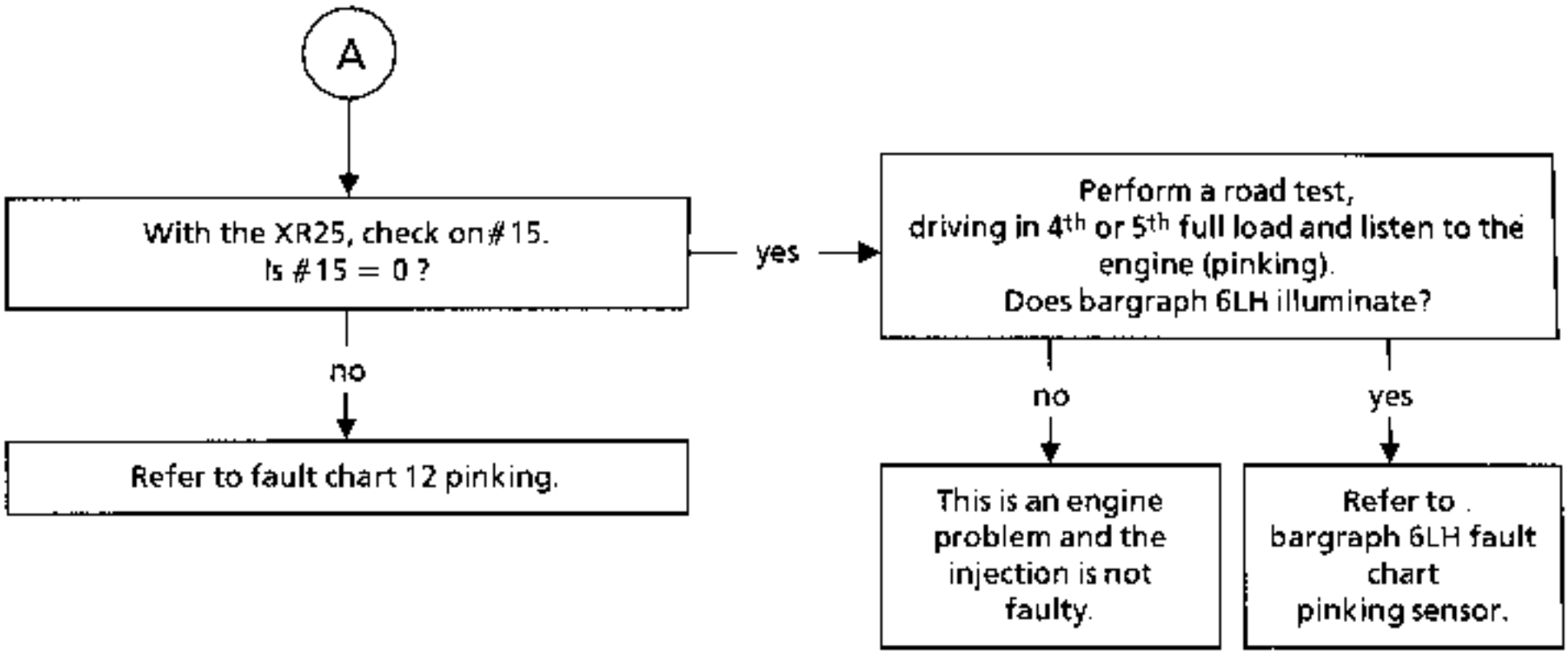
no → End of fault finding.

yes ↓

(A)

AFTER REPAIR	Check the sensors disconnected during the operation are correctly reconnected Erase the computer memory using G0** Carry out a conformity check

Chart 8 CONT



AFTER REPAIR	Check the sensors disconnected during the operation are correctly reconnected Erase the computer memory using G0** Carry out a conformity check

Chart 9	BEHAVIOUR WHEN DRIVING Misfiring and hesitation

NOTES	Only refer to this customer complaint after having performed a complete test using the XR25

Perform a road test with the customer if possible to confirm the fault.
Is the fault reproduced

no → Before returning the vehicle to the customer, check with the XR25 that everything is correct, especially the oxygen sensor (# 05-35).

yes ↓

Check the value of the pollutants and Lambda.
- CO < 0.3 %
- HC ≤ 100 ppm
- CO2 ≥ 14.5 %
- 0.97 ≤ Lambda ≤ 1.03

Is it correct?

no → Check:
- the catalytic converter (melted, blocked, ...).
- the oxygen sensor (polluted, heating faulty, ...).
- air leak upstream of the oxygen sensor.
- the seal of the exhaust pipe.
- the type of fuel used.
- the ignition (spark plugs, high voltage leads, coils).
- the general condition of the engine (timing, ...).

yes ↓

Check the condition of the high voltage wiring, the spark plugs and wiring, the coils and the TDC sensor (possible cause may be interference), injectors.
Replace the faulty parts if necessary.
If the fault persists

↓

Check for the presence and the cleanliness of the restriction in the absolute pressure sensor pipe.
Repair if necessary.
If the customer complaint persists

↓

(A)

AFTER REPAIR	Check the sensors disconnected during the operation are correctly reconnected Erase the computer memory using GD** Carry out a conformity check

Chart 9
CONT

A

Disconnect the oxygen sensor and wait for #35 to stabilise at 128 and #05 = 0.402, and for bargraph 3 RH to illuminate.
Perform a road test.
Does the fault persist?

no → Replace the oxygen sensor.

yes

Check the condition of the flywheel target.
Repair if necessary.
If the fault persists

Check the petrol flow and pressure (methods, refer to vehicle Workshop Repair Manual).
Replace the faulty parts (fuel pump, regulator, filter, pipes ...).
If the fault persists

Clean the injectors
If the fault persists

Check the valves are not clogged.
Clean the valves if necessary.
After cleaning, does the fault persist?

no → End of fault finding.

yes

This is an engine problem, the injection is not faulty.

AFTER REPAIR

Check the sensors disconnected during the operation are correctly reconnected
Erase the computer memory using G0**
Carry out a conformity check

Chart 10 — SMOKE - POLLUTION
CO and/or HC too high

NOTES

Only refer to this customer complaint after having performed a complete test using the XR25. CO and / or HC too high
CO > 0.3 % - HC > 100 ppm

With the XR25, check on #05, 35.
Checking, refer to Workshop Repair Manual.
Is it correct?

no → Test for the presence of lead
(refer to Workshop Repair Manual).
Is there lead?

yes → Check the type of fuel used.
If the customer has used leaded petrol and before changing the catalytic converter and the oxygen sensor, drive the vehicle using several tanks of unleaded petrol.

no → (B)

yes →

Check the high voltage circuit,
(spark plugs, spark plug leads).
Repair if necessary.
If the fault persists

Check the air supply,
the air filter, the pipes ...
After repairing,
does the fault persist?

no → End of fault finding.

yes →

Check the conformity of the restriction and the condition of the pipe for the absolute pressure sensor.
Repair if necessary.
If the fault persists

Check the seal of the injectors.
(especially the O-rings).
Repair if necessary.
Does the fault persist?

no → End of fault finding.

yes →

(A)

AFTER REPAIR

Check the sensors disconnected during the operation are correctly reconnected
Erase the computer memory using G0**
Carry out a conformity check

Chart 10 CONT

A

Check the fuel flow and pressure (methods, refer to Workshop Repair Manual). Repair or replace the faulty parts (fuel pump, pressure regulator, pipes).
If the fault persists

Ask the customer if he has experienced an ignition or starting problem.
Has he experienced a problem?

yes

Replace the catalytic converter.

no

This is an engine problem and the injection is not faulty.

B

Check the oxygen sensor heating (+ 12 volts between A and B).
Is it correct?

no

Repair the electrical circuit.

yes

Check:
- the catalytic converter (melted, blocked, ...).
- the oxygen sensor (polluted, heating faulty, ...).
- air leak upstream of the oxygen sensor.
- the seal of the exhaust pipe.
- the type of fuel used.
- the ignition (spark plugs, high voltage leads, coils).
- the general condition of the engine (timing, ...).

AFTER REPAIR

Check the sensors disconnected during the operation are correctly reconnected
Erase the computer memory using G0**
Carry out a conformity check

Chart 11 — HIGH PETROL CONSUMPTION

NOTES

Only refer to this customer complaint after having performed a complete test using the XR25

Check there are no fuel leaks.
Repair if necessary.
Does the fault persist?

- no → End of fault finding.
- yes ↓

Check the idle speed
(# 06 on the XR25).
Is it correct?

- no → Refer to fault chart 4 or 5, idle problems (Idle speed too fast or too slow).
- yes ↓

Check the vehicle complies with its definition and is in good condition.
Repair if necessary.
Does the fault persist?

- no → End of fault finding.
- yes ↓

Check the value of the pollutants and Lambda.
- CO ≤ 0.3 %
- HC ≤ 100 ppm
- CO2 ≥ 14.5 %
- 0.97 ≤ Lambda ≤ 1.03

Is it correct?

- no → Check:
  - the catalytic converter (melted, blocked, ...).
  - the oxygen sensor (polluted, heating faulty, ...).
  - air leak upstream of the oxygen sensor.
  - the seal of the exhaust pipe.
  - the type of fuel used.
  - the ignition (spark plugs, high voltage leads, coils).
  - the general condition of the engine (timing, ...).
- yes ↓

(A)

AFTER REPAIR

Check the sensors disconnected during the operation are correctly reconnected
Erase the computer memory using G0**
Carry out a conformity check

Chart 11 CONT

A

Check the petrol flow and pressure (methods, refer to vehicle Workshop Repair Manual) and the canister bleed circuit. Repair if necessary (regulator, pump, filter, pipes). Does the fault persist?

no → End of fault finding.

yes

This is not an injection problem, this is an engine problem,

check :
- the engine oil level
- engine cooling
- axle assemblies
- the general condition of the engine.

If necessary, perform a consumption test with the ECONOTEST consumption device.

AFTER REPAIR

Check the sensors disconnected during the operation are correctly reconnected
Erase the computer memory using G0**
Carry out a conformity check

Chart 12 — ENGINE NOISE
Pinking

NOTES

Only refer to this customer complaint after having performed a complete test using the XR25

Perform a road test with the XR25 and check # 13, 15.
Is the fault reproduced?

- no → The customer must use his vehicle under specific conditions, check with the customer.
- yes ↓

Check the value of the pollutants and Lambda.
- CO < 0.3 %
- HC ≤ 100 ppm
- CO2 ≥ 14.5 %
- 0.97 ≤ Lambda ≤ 1.03

Is it correct?

- no → Check:
  - the catalytic converter (melted, blocked, ...).
  - the oxygen sensor (polluted, heating faulty, ...).
  - air leak upstream of the oxygen sensor.
  - the seal of the exhaust pipe.
  - the type of fuel used.
  - the ignition (spark plugs, high voltage leads, coils).
  - the general condition of the engine (timing, ...).
- yes ↓

Ask the customer what type of fuel he uses.
Is it suitable?

- no → Remind the customer what type of fuel he should use.
- yes ↓

Check the condition and the conformity of the spark plugs.
Replace the spark plugs if necessary.
Does the fault persist?

- no → End of fault finding.
- yes ↓

(A)

AFTER REPAIR

Check the sensors disconnected during the operation are correctly reconnected
Erase the computer memory using G0**
Carry out a conformity check

Chart 12 CONT

A

Check the conformity of the routing of the inlet air pipes.
Repair if necessary.
Does the fault persist?

no → End of fault finding.

yes

Using a stroboscopic light and the XR25, #51, check the ignition advance
Are the values the same?

no → Refer to bargraph 5 RH fault chart.

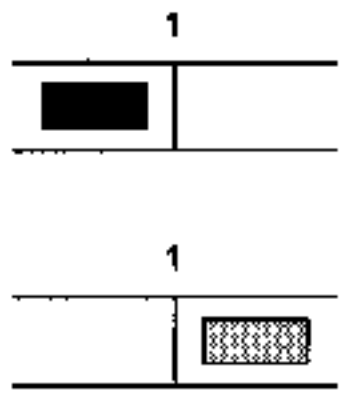
yes

This is not an injection problem.
Also check the engine cooling. The combustion chambers may have to be cleaned.

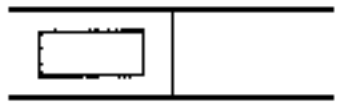
AFTER REPAIR

Check the sensors disconnected during the operation are correctly reconnected
Erase the computer memory using G0**
Carry out a conformity check

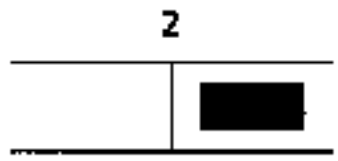
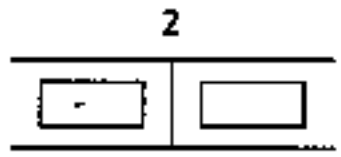
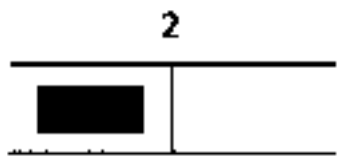
NOTES	Engine cold, ignition on

Order of operations	Function to be checked	Action	Bargraph	Display and Notes
1	Dialogue with XR25	D13 (selector on S8)		9.NJ Use fiche n° 27 fault test side
2	Interpretation of normally illuminated bargraphs			Fault test Code present
3	Conformity of computer	G70*		XXXX Part Number number displayed in three sequences (refer to section 12)
4	Switching to status test	G01*		10.NJ Use fiche n° 27 status test side

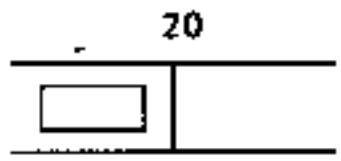
NOTES	Engine cold, ignition on

Order of operations	Function to be checked	Action	Bargraph	Display and Notes
5	Interpretation of normally illuminated bargraphs		1 	Code present
			2 	No load recognition
			4 	Receiving + after ignition information
			4 	Illuminated for automatic transmission whatever the position of the gear lever
			5 	Locking relay command effective **(Do not take this information into account)**
			11 	Camshaft sensor information not effective **(Do not take this information into account)**
			19 	Computer configured to work with: Manual gearbox (G60*)
			19 	Automatic transmission (G50*)

NOTES	Engine cold, ignition on

Order of operations	Function to be checked	Action	Bargraph	Display and Notes
6	Throttle position potentiometer	No load # 17		8 < X < 38
		Accelerator pedal lightly pressed		
		Full load # 17		188 < X < 246
7	Absolute pressure sensor	# 01		X = Local atmospheric pressure
8	Coolant temperature sensor	# 02		X = Ambient temperature ± 5°C
9	Air temperature sensor	# 03		X = Ambient temperature ± 5°C
10	Idle regulation solenoid valve	# 12		The value read is fixed and between 17 % < X < 99.9 %
11	Engine speed	# 06		X = 0 rpm
12	Canister bleed	# 23		X = 0.7 %

NOTES	Engine warm, at idle speed after the fan unit has operated at least once (air conditioning and heated windscreen not selected, automatic transmission in Park or Neutral position)

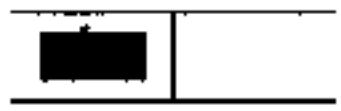
Order of operations	Function to be checked	Action	Bargraph	Display and Notes
1	Switching to status test	G01*		10.NJ Use fiche n° 27 status test side
2	No fault			Check this bargraph is not flashing; otherwise type G02* and turn the fiche over. Repair the faulty component then erase the fault memory (G0**) and return to status test (G01*)
3	Battery voltage	# 04 if in # 04 otherwise in # 06		13 volts < X < 14.5 volts X < 12.7 volts Nominal engine speed < X < 910 rpm.

NOTES

Engine warm, at idle speed after the fan unit has operated at least once (air conditioning and heated windscreen not selected, automatic transmission in Park or Neutral position)

Order of operations	Function to be checked	Action	Bargraph	Display and Notes
4	Interpretation of the normally illuminated bargraphs	—	1	Code present
			2	No load recognition
			3	Receiving engine speed information
			4	Receiving + after ignition information
			4	Illuminated in Park or Neutral position
			5	Locking relay command effective **(Do not take this information into account)**
			6	Idle regulation active
			6	Richness regulation active

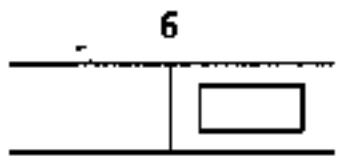
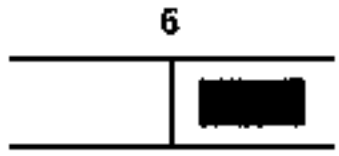
NOTES Engine warm, at idle speed after the fan unit has operated at least once (air conditioning and heated windscreen not selected, automatic transmission in Park or Neutral position)

Order of operations	Function to be checked	Action	Bargraph	Display and Notes
4 *(cont)*	Interpretation of normally illuminated bargraphs *(cont)*	—	7 	Fuel pump active
			11  flashing	Camshaft sensor information **(Do not take this information into account)**
			19 	Computer configured to work with: Manual gearbox (G60*)
			19 	Automatic transmission (G50*)

NOTES Engine warm, at idle speed after the fan unit has operated at least once (air conditioning and heated windscreen not selected, automatic transmission in Park or Neutral position)

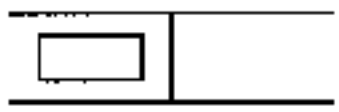
Order of operations	Function to be checked	Action	Bargraph	Display and Notes
5	Idle speed	Without air conditioning # 06 # 12	6	X − 770 ± 50 rpm 20 % < X < 40 % (F3R 750) 18 % < X < 38 % (F3R 751)
		Air conditioning selected # 06	9 10	Illuminated depending on the status of the air conditioning X − 900 ± 50 rpm
		Heated windscreen selected. Air conditioning not selected # 06	8 9	If coolant temperature > 60°C when X = 770 ± 50 rpm If coolant temperature < 60°C when X − 1000 ± 50 rpm
6	Anti-pinking noise measurement	# 13 (3500 rpm, no load)		X variable and not zero

NOTES	Engine warm, at idle speed after the fan unit has operated at least once (air conditioning and heated windscreen not selected, automatic transmission in Park or Neutral position)

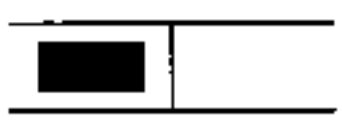
Order of operations	Function to be checked	Action	Bargraph	Display and Notes
7	Manifold pressure	# 01 without consumer		X is variable and is around 360 ± 60 mbars (this pressure varies as a function of the altitude)
8	Richness regulation	With stable engine speed of 2500 rpm. then at idle speed # 05 # 35	6  6 	X varies in a range of 50 to 900 mV approximately X is around and varies slightly about 128 with a maximum of 255 and a minimum of 0
9	Adaptive idle correction	# 21		− 8.6 % < X < 6.2 % (average value after erasing memory: 0)
10	Canister bleed	# 23	7 	Canister bleed is forbidden. The solenoid valve remains closed X = 0.7 %

(1) This value is from definitive calibration. The first vehicles marketed have a minimum threshold of - 6.2 %.

NOTES	Test to be performed during a road test

Order of operations	Function to be checked	Action	Bargraph	Display and Notes
1	Switching to status test	G01*		10.NJ Use fiche n° 27 status test side
2	No fault			Check this bargraph is not flashing; otherwise type G02* and turn the fiche over. Repair the faulty component then erase the fault memory (G0**) and return to status test (G01*)
3	Canister bleed	# 23		Canister bleed is authorised X = variable
4	Vehicle speed information	# 18		X = vehicle speed read on the speedometer
5	Pinking sensor	Vehicle loaded and engine speed of 2000 rpm. # 13 # 15		X = variable and not zero 0 ≤ X < 6 (if the sensor is faulty, the advance is systematically retarded by 4° which is not visible on # 15)

NOTES	Test to be performed during a road test

Order of operations	Function to be checked	Action	Bargraph	Display and Notes
6	Adaptive richness	After programming phase # 30 # 31		 82 ≤ X ≤ 224 (average value after erasing memory: 128) 32 ≤ X ≤ 224 (average value after erasing memory: 128)
7	Torque reduction (Automatic transmission)		5 	Illuminated when gear is changed if speed is greater than 6 mph (10 km/h)

SPECIAL TOOLING REQUIRED
OPTIMA 5800 diagnostic station

CHECKING THE IGNITION USING THE DIAGNOSTIC STATION

The OPTIMA 5800 diagnostic station allows the ignition to be checked in two ways:

- STARTING TEST: If the vehicle does not start. When no fault finding operations can be performed with the XR25, this operation checks for the presence and the quality of the ignition under the action of the starter motor.

- TEST WITH ENGINE RUNNING: These measurements are in addition to those from the XR25 for customer complaints such as: hesitation, misfiring, incorrect gas analysis, unstable idle ...

In addition, the station's measuring module allows static ignition to be checked using two high voltage clamps, where the coils are dual output (when a firing order is given, two sparks are produced simultaneously: one in the cylinder at the combustion phase and the other in the cylinder at the exhaust phase). During the measurements, the two clamps have to be moved from one coil to the other.

Their power is controlled directly by the computer (the amplifier module is integral with the computer): the station is therefore connected directly to the coil inputs.

CONNECTIONS:

- F3R engine: Connect to the two coils (blue cable on coil n° 1, located on the left hand side).

MEASUREMENTS:

The ignition is characterised by the following values:

Engine running:

- Spark duration.
- Arcing voltage (or ionising voltage).
- Arcing voltage during the exhaust phase (static ignition).

Starting test:

- Ignition feed voltage.
- TDC sensor signal.
- Command signal (MPA).
- Spark duration.
- Arcing voltage (or ionising voltage).
- Arcing voltage during the exhaust phase (static ignition).

The station checks the coherence of the values obtained for each cylinder, and compares the measurements with a database for each engine type.

SPECIAL TOOLING REQUIRED
OPTIMA 5800 diagnostic station

CHECKING THE OXYGEN SENSOR WITH THE DIAGNOSTIC STATION

Obvious faults relating to the oxygen sensor are detected by the XR25:

- Open circuit.
- Short circuit to earth.
- Short circuit to+ 12 V.

The diagnostic station allows operating faults to be highlighted which could not be detected with the XR25. The sensor can be checked for the following customer complaints:

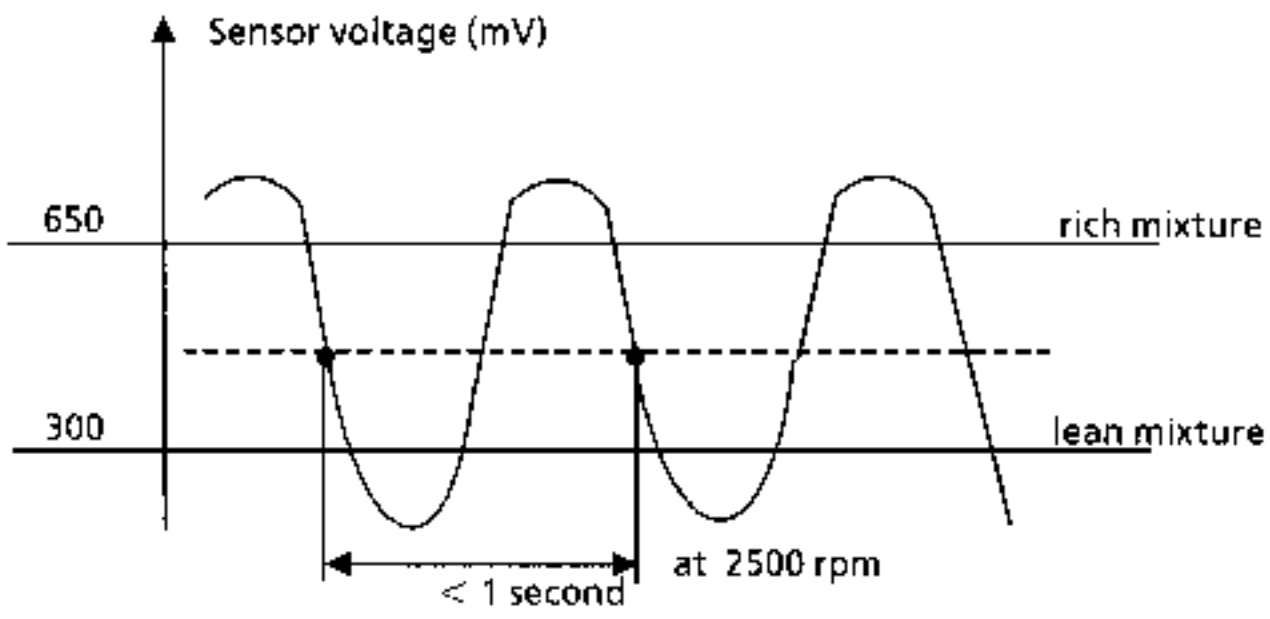
- Excess fuel consumption.
- Irregular idle, hunting.
- Hesitation.
- Incorrect gas analysis.

The station performs the check by being connected in parallel to the signal emitted by the oxygen sensor. This sensor is analysed at a stable engine speed (2 500 rpm), when the richness regulation conditions are concurring (engine warm ...).

CONNECTION:

The 4 track connector of the sensor is located under the vehicle.

During normal operation, the signal is in the form of a sine wave:



The characteristic parameters of this signal are the maximum voltage, the minimum voltage and the period. For all engine types, the correct values are:

- Maximum voltage > 600 mV.
- Minimum voltage < 200 mV.
- Difference (Maximum voltage - minimum voltage) > 500 mV.
- Period < 1 second.

SPECIAL TOOLING REQUIRED
OPTIMA 5800 diagnostic station 4040-5040 or AGM 1500 4 gas analyser

ANALYSING EXHAUST GASES USING THE DIAGNOSTIC STATION

The OPTIMA 5800 diagnostic station connected to an analyser (SOURIAU 4040-5040 or SAGEM AGM 1500) allows the gases to be checked in accordance with the legislation relating to vehicles with catalytic converters. This test is performed at mid-load and at idle speed with the following limits.

Idle speed	2 500 rpm
CO < 0.5 %	CO < 0.3 %
HC < 100 ppm	HC < 100 ppm

Independently to the legislation, other measurements supplied by the analyser fall within certain tolerances:

Idle speed	2 500 rpm
CO_2 > 13.5 %	CO_2 > 13.5 %
O_2 < 0.8 %	O_2 < 0.8 %
0.97 < Lambda < 1.03	0.97 < Lambda < 1.03

NOTE: Lambda = 1 / Richness

- Lambda > 1 → Lean mixture
- Lambda < 1 → Rich mixture

The condition Lambda = 1 is essential to ensure the catalytic converter functions correctly.

The station causes the following phases:

- Warming up the engine (oil temperature greater than 60°C).
- Holding for one minute at 2 500 rpm. to activate richness regulation and simultaneous gas measurements.
- If the gas analysis at 2 500 rpm is correct, a measurement at idle speed is taken.

If the analysis is deemed to be incorrect by the station, diagnostic messages appear where the priority of the gases is

1) CO 2) Lambda 3) HC 4) O_2 5) CO_2

NOTE : The report for the whole anti-pollution test can be printed.

SETTING UP A DIALOGUE BETWEEN THE XR25 AND THE COMPUTER

- Connect the test kit to the diagnostic socket.
- Ignition on.
- ISO selector on S6
- Type **D03**

8.INJ

COMPUTER IDENTIFICATION

The computer is identified by reading the Part Number directly from the computer.
After having set up a dialogue with the computer:

ENTER **G70***

7700

XXX

XXX

The Part Number will then appear on the central display in three sequences.

Each sequence is displayed for approximately two seconds. Each sequence is repeated twice. (To find the number, refer to the Workshop Repair Manual, section 12).

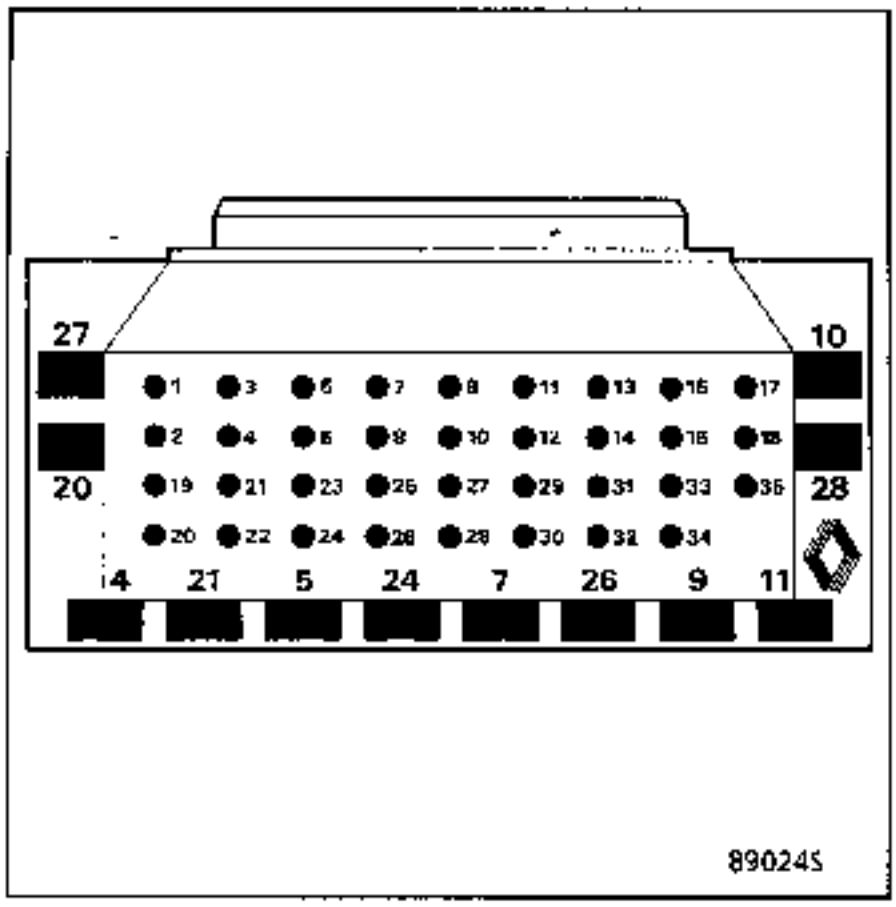
ERASING THE MEMORY (engine off, ignition on)

After the injection system has been worked on, the computer's memory can be erased by using the code G0** (Erasing memorised faults in diagnostic mode D03, ISO selector in position S6, enter G0**).

The memories of other components on the vehicle are not erased when this operation is used.

If information obtained from the XR25 means that electrical continuities have to be checked, connect the bornier **M.S. 1048** in place of the injection computer connector to give easy access to the measuring points for the various contacts.

Bornier **M.S. 1048**



(The **M.S. 1048** consists of a 35 track base unit which has an integral printed circuit comprising 35 copper coated areas, numbered from 1 to 35).

Using the wiring diagrams, the tracks connecting the component or components can easily be checked.

IMPORTANT:

- All checks with the bornier **M.S. 1048** should only be performed with the battery disconnected.
- The bornier is designed to work with an ohmmeter only. Under no circumstances should a 12 volts supply be connected to the control points.

N°28 | S8 | code : D 0 3 | read : 1 8.nJ

1	■	COMPUTER	CODE PRESENT	■
2	■	CONNECTION FAULT COMP. → MPA	ENGINE IMMOBILISER * 22	■
3	■	REVERSE FLYWHEEL DATA	FLYWHEEL SIGNAL DEF.	■
4			INJECTOR SHORT CIRCUIT	■
5	■	IDLING REG. CIRCUIT ⚠	AIR TEMPERATURE CIRCUIT	■
6			COOLANT TEMPERATURE CIRCUIT	■
7	■	IGNITION KEY DATA		
8	■	02 SENSOR CIRCUIT	PRESSURE SENSOR CIRCUIT	■
9	■	COMP. CONNECTION A.T. → INJ	VEHICLE SPEED CIRCUIT	■
10	■	THROTTLE POT. CIRCUIT	PINKING SENSOR CIRC.	■

INJECTION

1 nJ Erase memory : disconnect battery
8. nJ Erase memory : G 0 * *

11	□	Full load ← THROTTLE POSITION → No load		■
12	◪	Illuminates if A.T. select. on P/N	TORQUE ADJUSTEMENT	□
13	◪	ACTIVE ENGINE IMMOBILISER	PAS PRESSOSTAT ACTIVE	□
14	■	FLYWHEEL SIGNAL □ Engine running		
15	□	PUMP ACTIVE		
16	□	IDLING REG. ACTIVE	CANISTER PURGE AUTHORIZED	□
17	◪	SELECTION ↓	AIR CONDITIONING	
18	□	REQUEST →	AUTHORIZATION	□
19	■	+ After IGN. PRESENT If Eng. Immobiliser	RICHNESS REG. ACTIVE	□
20	□	THROTTLE VALVE HEATER	XR25 MEMORY 0	□

⚠ SEE REPAIR MANUAL

ADDITIONAL CHECKS : # - -

01	Pressure	mb
02	Coolant temp.	°C
03	Air temp.	°C
04	Computer feed	V
05	02 sensor	V
06	Engine speed	rpm
12	Idle difference	
13	Pinking signal	
14	Speed difference	rpm
15	Pinking correct.	d°
16	Atmos. pressure	mb
17	Throttle pot.	
18	Vehicle speed	km per h
30	Auto. correct. of richness under high loads	
31	Auto. correct. of richness under low loads	
35	Mixture regulation	

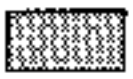
Help : V 9
Return to diag. mode : D
Part No. : G 7 0 *

15 ANG

FI21528

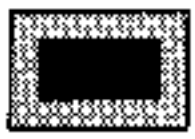
JF3011.1

REPRESENTATION OF THE BARGRAPHS

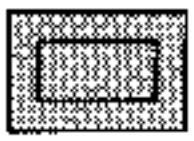


Illuminates when a dialogue has been established with the product computer. If it remains extinguished:
- the code does not exist,
- there is a fault in the tool, the computer or the line.

REPRESENTATION OF THE FAULTS (always on a coloured background)



If illuminated, indicates a fault on the tested product, the associated text defines the fault.

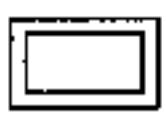
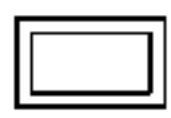


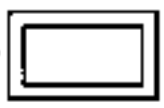
If extinguished, indicates that the fault has not been found on the tested product.

REPRESENTATION OF THE STATUSES (always on a white background)

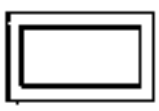
Engine off, ignition on, no operator action

The status bargraphs on the fiche are represented as the status which they should have when the engine is off, the ignition is on and there is no operator action

- If on the fiche the bargraph is represented as  the test kit should give as information 
- If on the fiche the bargraph is represented as  the test kit should give as information 
- If on the fiche the bargraph is represented as  the test kit should give as information

either  or 

Engine running



Extinguishes when the function or condition given on the fiche can no longer be performed.

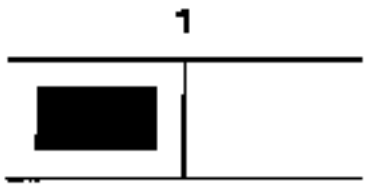
Illuminates when the function or condition given on the fiche is performed.

FUNCTION V9

Fiche n° 28 is a generic fiche used for several engines.
The different engines do not use all the bargraphs. To find out the bargraphs dealt with by the injection computer, after having set up a dialogue with the computer, press the V and 9 buttons simultaneously. The bargraphs dealt with will:

- illuminate permanently for non memorisable fault bargraphs or status bargraphs,
- flash for memorisable fault bargraphs.

To return to fault finding mode, press button D.



Bargraph 1 LH illuminated

Fiche n° 28

COMPUTER CIRCUIT

XR25 assistance: Internal computer fault

NOTES

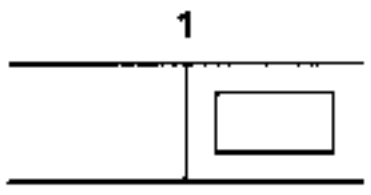
None

Computer is not correct or is faulty.

Replace the injection computer.

AFTER REPAIR

Carry out a conformity check



Bargraph 1 RH extinguished

Fiche n° 28

XR25 CIRCUIT

XR25 assistance: no communication, CO, CC EARTH, CC + 12 V

NOTES

For fault finding, this bargraph should be illuminated after the ignition is turned on

Check:
- all the injection fuses,
- the connection between the XR25 and the diagnostic socket,
- the position of the dial (S6),
- the conformity of the cassette.

Repair if necessary.

Check:
- the presence of + 12 V on track 16 and the earth on track 4 on the diagnostic socket.
- the connection between the XR25 and the diagnostic socket.

Diagnostic socket	11	→	7	XR25 socket
	3	→	3	

Repair if necessary.

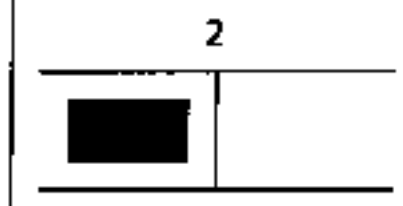
Connect bornier **M.S. 1048** instead of the computer and check the insulation and continuity between the tracks:

Bornier	8	→	11	Diagnostic socket
	18	→	3	Diagnostic socket
	2	→	earth	Earth MH on cylinder head
	3	→	earth	Earth MH between starter and alternator
	30	→	fuse	Engine + after ignition feed fuse
	32	→	fuse	Engine + after ignition feed fuse

Repair.

AFTER REPAIR

Carry out a conformity check



Bargraph 2 LH illuminated

Fiche n° 28

MPA CIRCUIT

XR25 assistance:

CO	LINE 27
CC + 12	LINE 27
CC −	LINE 27

NOTES

Bargraph illuminated only when starter activated

Check the connections on the MPA.

Repair if necessary.

XR25 as a pulse detector, G and Vin.

Check that when the starter is activated, there are pulses on track B of the MPA.

There are pulses

Replace the MPA.

There are no pulses

Connect bornier **MS 1048** in place of the computer and check the insulation and continuity of the line :

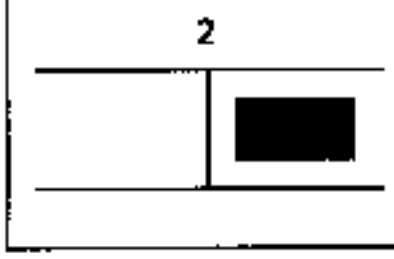
27 computer ⟶ B MPA 2 track connector

Repair.

The fault persists! Replace the computer.

AFTER REPAIR

Erase the computer memory using G0**.
Carry out a conformity check



Bargraph 2 RH illuminated

Fiche n° 28

ENGINE IMMOBILISER CIRCUIT

XR25 assistance: CO or CC EARTH or CC + 12 V LINE 29 OF COMPUTER

#22 = 1def → fault
#22 = 2 def → code not programmed
#22 = 3 def → 1 def + 2 def

NOTES

None

Connect bornier **M5 1048** in place of the computer and check the insulation and continuity of the line :

Bornier 29 → 5 Decoder unit

Repair if necessary.

If the fault persists, refer to status bargraph 13 LH side.

AFTER REPAIR

Erase the computer memory using G0**.
Carry out a conformity check

	**Bargraph 3 LH illuminated** Fiche n° 28 FLYWHEEL SENSOR INFORMATION CIRCUIT INCORRECTLY CONNECTED **XR25 assistance:** Wires incorrectly connected
NOTES	None

Check the sensor is correctly connected - wires inverted.

AFTER REPAIR	Erase the computer memory using G0**. Carry out a conformity check

Bargraph 3 RH illuminated

Fiche n° 28

FLYWHEEL SIGNAL FAULT CIRCUIT

XR25 assistance: CO or CC EARTH LINES 28 and 11
or INTERFERENCE ON THE LINES

NOTES

None

Check the resistance of the TDC sensor between terminals A and B → R = 227 Ω

Replace the sensor if necessary.

Connect bornier MS 1048 in place of the computer and check the insulation and continuity of the line :

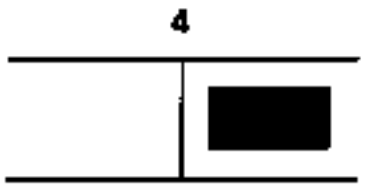
Computer	11	B	TDC sensor
Computer	28	A	TDC sensor

Repair if necessary.

If the fault persists, replace the computer.

AFTER REPAIR

Erase the computer memory using G0**.
Carry out a conformity check



Bargraph 4 RH illuminated

Fiche n° 28

INJECTOR CIRCUIT

XR25 assistance: CC + 12 ON LINE 21

NOTES

Bargraph illuminates when starter activated (≈ 10 seconds)
Fault not memorised

Disconnect the connector and check the injector resistance → R = 2 Ω

Replace the injector if necessary.

Connect bornier **MS 1048** in place of the computer and check the insulation and continuity of the line :

Bornier 21 ⟶ 2 Injector

Repair if necessary.

If the fault persists, replace the computer.

AFTER REPAIR

Erase the computer memory using G0**.
Carry out a conformity check

Bargraph 5 LH illuminated

Fiche n° 28

IDLE SPEED REGULATION CIRCUIT

XR25 assistance: BG 5LH not active

NOTES

This bargraph does not illuminate, see bargraph 16 LH side, incorrect illumination.

AFTER REPAIR

None

Bargraph 5 RH illuminated

Fiche n° 28

AIR TEMPERATURE CIRCUIT

XR25 assistance:	CO LINE 14 or CC EARTH LINE 14	#03 = − 40
	CC + 12 LINE 14	#03 = −119
	CO LINE 17	#03 = − 40 (see reference)

NOTES

If BG 6RH is illuminated and BG 11RH is incorrectly illuminated, there is an open circuit on line 17. Refer to BG 5RH

Check the resistance of the air temperature sensor (see section 12 "Specifications").

Replace it if necessary.

Connect bornier **M5 1048** in place of the computer and check the insulation and continuity of the line :

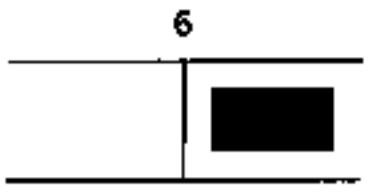
Bornier	14	→ 1	Sensor
Bornier	17	→ 4	Sensor

Repair if necessary.

If the fault persists, replace the computer.

AFTER REPAIR

Erase the computer memory using G0**.
Carry out a conformity check



Bargraph 5 RH illuminated

Fiche n° 28

COOLANT TEMPERATURE SENSOR

XR25 assistance: CO LINE 14 or CC EARTH LINE 14 #03 = − 40
CC + 12 LINE 14 #03 = − 119

NOTES

If BG 5RH is illuminated and BG 11RH is incorrectly illuminated. Refer to BG 5RH

Check the resistance of the coolant temperature sensor (see section 12 "Specifications").

Replace it if necessary.

Connect bornier **MS 1048** in place of the computer and check the insulation and continuity of the line :

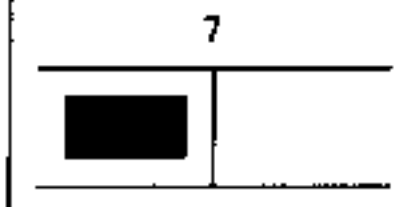
Bornier	14 →	2	Sensor
Bornier	17 →	1	Sensor

Repair if necessary.

If the fault persists, replace the computer.

AFTER REPAIR

Erase the computer memory using G0**.
Carry out a conformity check



Bargraph 7 LH illuminated

Fiche n° 28

IGNITION KEY INFORMATION CIRCUIT

XR25 assistance: CO LINE 30

NOTES

Bargraph illuminated when ignition is on.

Check the engine connection unit fuse.

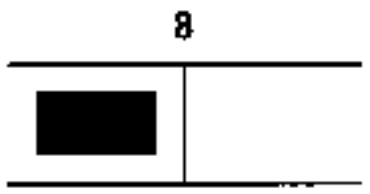
Connect bornier **MS 1048** in place of the computer and check the insulation and continuity of line 30 on the computer.

Repair the fuse and the wiring if necessary.

If the fault persists, replace the computer.

AFTER REPAIR

Erase the computer memory using G0**.
Carry out a conformity check



Bargraph 8 LH illuminated

Fiche n° 28

OXYGEN SENSOR CIRCUIT

XR25 assistance: CO LINE 35 or CC EARTH LINE 35 #05 = 0000 #35 = 128
CC + 12 LINE 35 #05 = 1.530 #35 = 128

NOTES

If BG 10LH is illuminated, refer to BG 10LH.

Check the resistance of the oxygen sensor track A and earth → R ≈ 1.5 Ω
tracks B and C → R ≈ ∞

Replace the sensor if necessary.

Engine running, check for ÷ 12 V between tracks A and B on the sensor connector.

Repair the wiring if necessary.

Connect bornier **MS 1048** in place of the computer and check the insulation and continuity of the line :

Bornier 35 ⟶ C Oxygen sensor connector

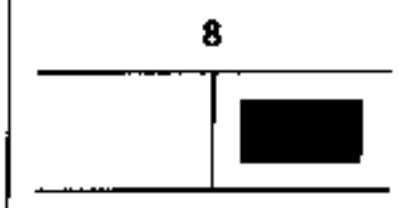
Repair the wiring if necessary.

If the fault persists, replace the oxygen sensor.

If the fault persists, replace the computer.

AFTER REPAIR

Erase the computer memory using G0**.
Carry out a conformity check



Bargraph 8 RH illuminated Fiche n° 28

PRESSURE SENSOR CIRCUIT

XR25 assistance: CO LINE 33
CC EARTH LINE 33 } #01 = 1021 IGNITION ON

NOTES None

Check the sensor is connected electrically and pneumatically.

Repair if necessary.

Ignition on, check for 5 V between tracks C and A on the sensor.

There is not 5 V.

Connect bornier **MS 1048** in place of the computer and check the insulation and continuity of the line :

Sensor A → 17 Bornier
Sensor C → 16 Bornier

If the fault persists, replace the computer.

There is + 5 V.

Connect bornier **MS 1048** in place of the computer and check the insulation and continuity of the line :

Sensor B → 33 Bornier

Repair if necessary.

If the fault persists, replace the sensor.

If the fault persists, replace the computer.

AFTER REPAIR Erase the computer memory using G0**.
Carry out a conformity check

Bargraph 9 RH illuminated Fiche n° 28

VEHICLE SPEED SENSOR CIRCUIT

XR25 assistance: CO or CC LINE 3

NOTES None

Carry out a road test and check the speed on the speedometer .

If the speed is zero, repair the wiring of track 3 of the computer and B1 of the sensor.

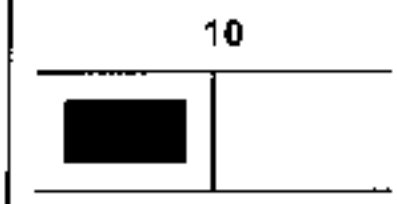
Check the connection and the feed of the speed sensor:
+ 12V on track A
earth on track B2

Repair if necessary.

If the fault persists, replace the speed sensor.

AFTER REPAIR

Erase the computer memory using G0**.
Carry out a road test.
Carry out a conformity check.



Bargraph 10 LH illuminated Fiche n° 28

THROTTLE POSITION CIRCUIT

XR25 assistance : CO LINE 9 or CC EARTH LINE 9 #17 = 128
CO LINE 16 #01 = 1021 and #17 = 128

NOTES

If BG 8LH is illuminated, there is an open circuit on line 16, refer to BG 10LH

Use an ohmmeter to check the resistance of the potentiometer between tracks:
1 and 2 ≈ 4 400 Ω
1 and 4 ≈ 1 870 Ω for no load and 4 380 for full load

Replace it if necessary.

Connect bornier **MS 1048** in place of the computer and check the insulation and continuity of the line :

Bornier	17	→ 1	Sensor
Bornier	16	→ 2	Sensor
Bornier	9	→ 4	Sensor

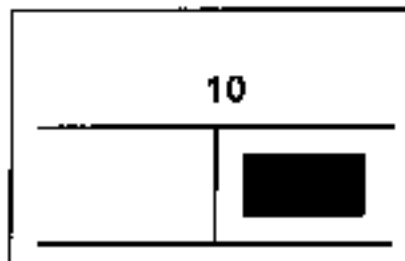
Repair the wiring if necessary.

If the fault persists, replace the computer.

AFTER REPAIR

Erase the computer memory using G0**

Carry out a conformity check



Bargraph 10 RH illuminated

Fiche n° 28

PINKING SENSOR CIRCUIT

XR25 assistance : CO LINE 31 or CC EARTH LINE 31 #13 = 0 # 15 = 0

NOTES

The fault is not taken note of at idle speed

Check the sensor connections.

Repair if necessary.

Connect bornier **MS 1048** in place of the computer and check the insulation and continuity of the line :

Sensor	1	⟶	17	Bornier
Sensor	2	⟶	31	Bornier

Repair the wiring if necessary.

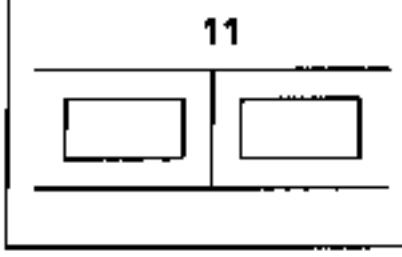
If the fault persists, replace the sensor.

If the fault persists, replace the computer.

AFTER REPAIR

Erase the computer memory using G0**

Carry out a conformity check



Bargraph 11 LH, 11 RH, incorrect illumination

Fiche n° 28

THROTTLE POSITION CIRCUIT

XR25 assistance : BG 11LH illuminated for full load
BG 11RH illuminated for no load
BG 11LH and BG 11RH extinguished for intermediate position

NOTES

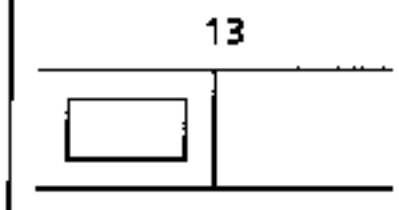
No fault bargraph should be illuminated.
If BG 16LH is incorrectly illuminated, refer to BG 16LH.

The fault is not electrical.

Check the mechanical components of the accelerator circuit (cable, accelerator pedal , ...).

AFTER REPAIR

Carry out a conformity check



Bargraph 13 LH incorrect illumination

Fiche n° 28

ENGINE IMMOBILISER CIRCUIT

XR25 assistance : BG 13LH illuminated, engine immobiliser active

NOTES

Check the use of the correct PLIP if no fault bargraph is illuminated.

Connect bornier **MS 1048** in place of the injection computer.

XR25 as a pulse detector, G and Vin.

Check for pulses on track 29 of the bornier when the PLIP is pressed

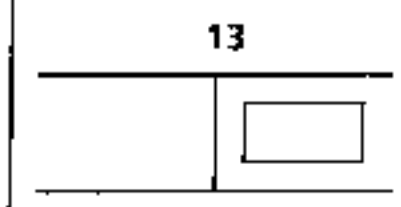
If pulses are noted, replace the injection computer.

If no pulses are noted, refer to the immobiliser fault finding section.

AFTER REPAIR

Erase the computer memory using G0**

Carry out a conformity check



Bargraph 3 RH incorrect illumination

Fiche n° 28

POWER ASSISTED STEERING PRESSOSTAT ACTIVE CIRCUIT

XR25 assistance : BG 13RH illuminated if PAS pressostat active

NOTES

The power assisted steering must be operational for this fault finding

PAS pressostat normally active position, check the continuity between terminals 1 and 2 on the pressostat.
PAS pressostat normally not active position, check the non-continuity between terminals 1 and 2 on the pressostat.

Replace the pressostat if necessary.

Connect bornier **MS 1048** in place of the computer and check the insulation and continuity of the line :

Earth	MH	⟶	2	Pressostat
Computer	8	⟶	1	Pressostat

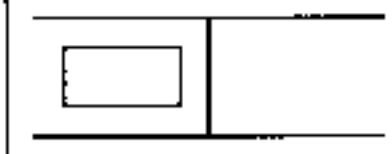
Repair if necessary.

If the fault persists, replace the computer.

AFTER REPAIR

Erase the computer memory using G0**

Carry out a conformity check

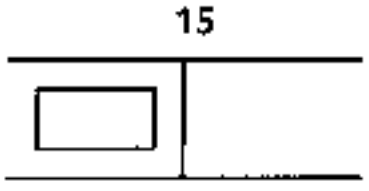


Bargraph 14 LH incorrect illumination Fiche n° 28

FLYWHEEL SIGNAL CIRCUIT

XR25 assistance : BG 14LH illuminated when ignition is turned on
BG 14LH extinguished during starting phase

NOTES Dealt with in fault bargraphs section



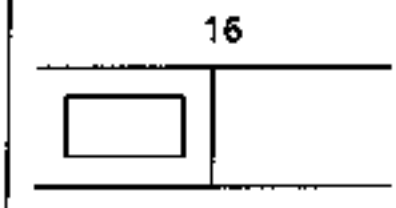
Bargraph 15 LH incorrect illumination Fiche n° 28

FUEL PUMP CONTROL CIRCUIT

XR25 assistance : BG 15LH illuminated when fuel pump relay operated

NOTES Dealt with in fault bargraphs section

AFTER REPAIR None



Bargraph 16 LH incorrect illumination

Fiche n° 28

IDLE SPEED REGULATION CIRCUIT

XR25 assistance : BG 16LH illuminated during idle speed regulation phase

NOTES

If BG 16RH is incorrectly illuminated, there is an open circuit on line 25, refer to BG 16RH.
This bargraph is used instead of BG 5LH which does not illuminate.

Check the direct current motor is correctly connected.

Repair if necessary.

Use an ohmmeter to check the continuity of the motor winding between tracks 1 and 2 -> R ≈ 8 Ω

Replace the motor if necessary.

Connect bornier **MS 1048** in place of the computer and check the insulation and continuity of the line :

Motor	1 ⟶	23	Bornier
Motor	2 ⟶	24	Bornier

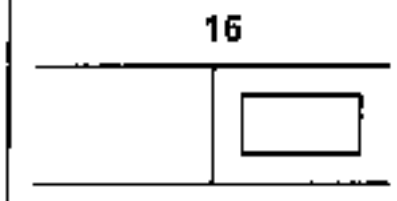
Repair if necessary.

If the fault persists, replace the computer.

AFTER REPAIR

Erase the computer memory using G0**

Carry out a conformity check



Bargraph 16 RH incorrect illumination

Fiche n° 28

CANISTER BLEED CIRCUIT

XR25 assistance : BG 16RH illuminated when canister bleed authorised
incorrect illumination CO LINE 25

NOTES

If BG 16LH illuminates incorrectly, refer to BG 16RH

Check the direct current motor is correctly connected.

Repair if necessary.

Connect bornier **MS 1048** in place of the computer and check the insulation and continuity of the line :

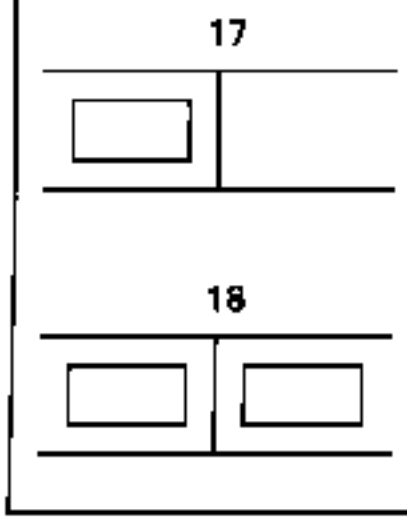
Bornier	25	⟶	3	Direct current motor
Bornier	1	⟶	4	Direct current motor.

Repair.

AFTER REPAIR

Erase the computer memory using G0**

Carry out a conformity check



Bargraph 17LH, 18LH, 18RH incorrect illumination

Fiche n° 28

AIR CONDITIONING CIRCUIT

XR25 assistance :

17LH illuminated if air conditioning selected
18LH illuminated if air conditioning requested
18RH illuminated if air conditioning authorised

NOTES

All fault bargraphs must be dealt with, air conditioning must be fitted on the vehicle and selected

Connect bornier **MS 1048** instead of the computer and check the insulation and the continuity between tracks :

Injection computer	34 ⟶	B4	Air conditioning control panel
	20 ⟶	B5	

Repair if necessary.

XR25 on voltmeter [V], check on track 34 of the bornier for 12 V.

If there is not 12 V, refer to the air conditioning fault finding section.

XR25 on voltmeter [V], injection computer connected, check for the presence of 12 V on track B5 of the air conditioning control panel

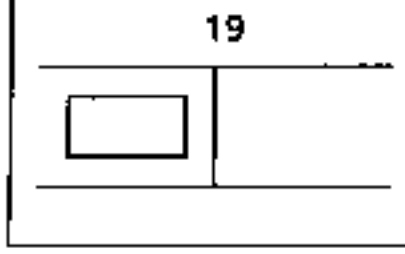
If there is not 12 V, replace the injection computer.

If there is 12 V, refer to the air conditioning fault finding section.

AFTER REPAIR

Erase the computer memory using G0**

Carry out a conformity check



Bargraph 19 LH incorrect illumination

Fiche n° 28

+ AFTER IGNITION CIRCUIT

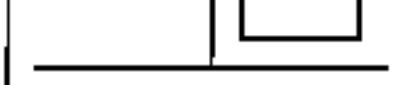
XR25 assistance : BG 19LH illuminated when ignition turned on

NOTES

Dealt with in fault bargraphs section

AFTER REPAIR

None



Bargraph 19 RH incorrect illumination Fiche n° 28

RICHNESS REGULATION CIRCUIT

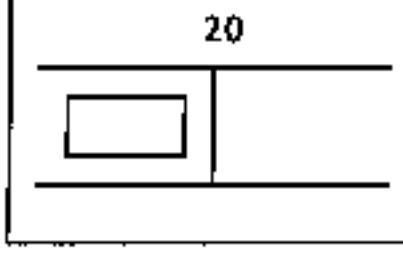
XR25 assistance : BG 19RH illuminated when the loop mode is entered
incorrect illumination if CO LINE 24

NOTES

If BG 19RH illuminates incorrectly, refer to BG 16LH.

AFTER REPAIR

None



Bargraph 20 LH incorrect illumination

Fiche n° 28

THROTTLE BODY HEATING CIRCUIT

XR25 assistance : BG 20LH illuminated if throttle body heating is active

NOTES

All fault bargraphs must be dealt with.
The engine must be cold
Ignition on (unless otherwise specified).

Check for 12 V on 1 of the throttle body heater.

Replace the heater if you find 12 V.

Check for 12 V on D5 of the PTC relay.

Repair the wiring if you find 12 V.

Check on the PTC relay for :

12 V after ignition ⟶ D1
12 V before ignition ⟶ D3

Repair the wiring if necessary.

Check for an earth on D2, of this relay.

Replace the relay if you find an earth.

Connect bornier **MS 1048** in place of the computer and check the insulation and continuity of the line :

Computer 10 ⟶ D2 PTC relay

Repair the line if necessary.

If the fault persists, replace the computer.

AFTER REPAIR

Erase the computer memory using G0**

Carry out a conformity check

NOTES

Only refer to these customer complaint charts after having performed a complete test using the XR25.

STARTING PROBLEMS

Does not start	Chart 1
Starts but stalls	Chart 2
Starting is too long	Chart 3

IDLE PROBLEMS

Too fast	Chart 4
Too slow	Chart 5
Engine unstable	Chart 6
Hunting	Chart 7

BEHAVIOUR WHEN DRIVING

Lacks performance	Chart 8
Misfiring and hesitation	Chart 9

SMOKE - POLLUTION

Gas analysis not correct	Chart 10
Testing the oxygen sensor	Chart 11

HIGH PETROL CONSUMPTION — Chart 12

ENGINE NOISE

Pinking	Chart 13

Chart 1	STARTING PROBLEMS Does not start

NOTES	Only refer to this customer complaint after having performed a complete test using the XR25.

Check the impact sensor is clipped in correctly.Check all the (injection) passenger compartment connection unit and engine fuses . Repair if necessary.
Does the fault persist?

— no → End of fault finding

yes ↓

Does the fuel pump make a noise when the ignition is turned on?

— yes → See Chart 1A

no ↓

When the ignition is switched on, does the fuel pump relay make a noise?

— no → Check for the presence of + 12 V on H1 of this relay.

Connect the bornier instead of the injection computer and check the insulation and the continuity of bornier line 6 relay H2.
Repair.

The fault persists, replace the relay.

yes ↓

Check for the presence of 12 V on track H3 of this relay.
Repair if necessary.
If the fault persists

During the timed phase, check for the presence of 12 V on track H5 of this relay.
Is it correct?

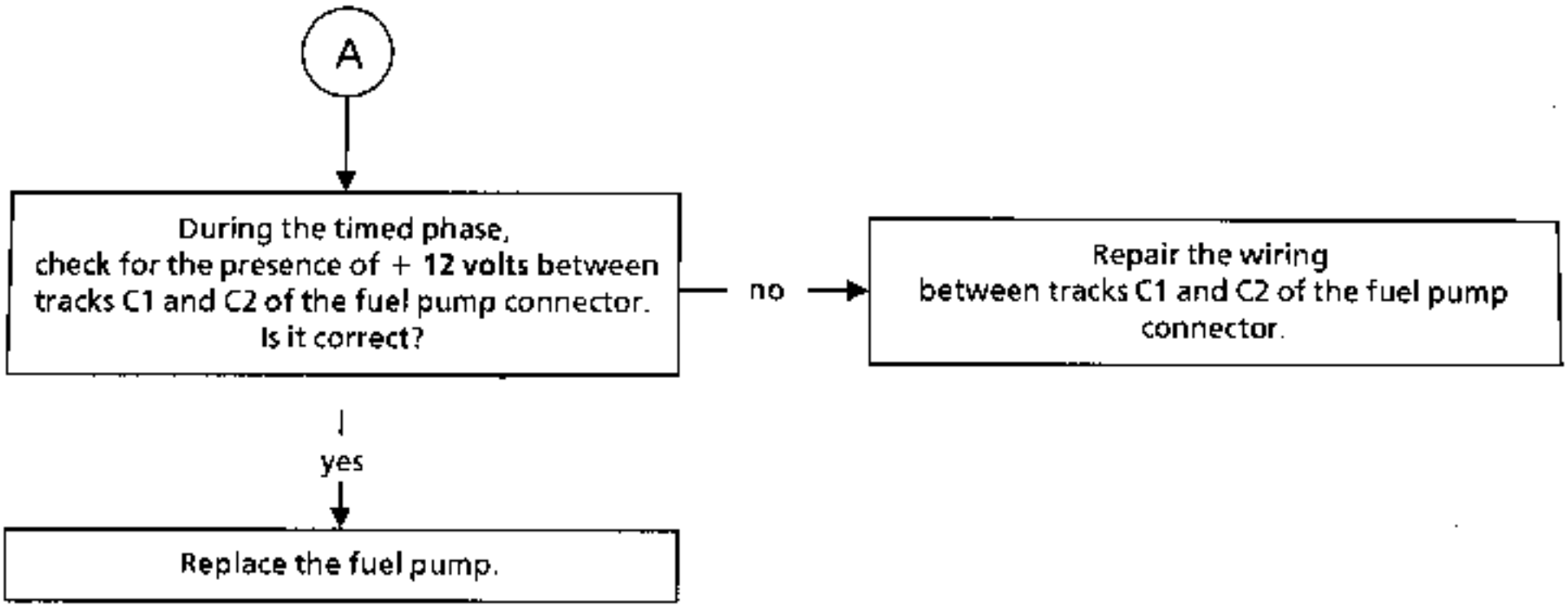
— no → Replace the relay

yes ↓

(A)

AFTER REPAIR	Check the sensors disconnected during the operation are correctly reconnected Erase the computer memory using G0** Carry out a conformity check

Chart 1
CONT



AFTER REPAIR

Check the sensors disconnected during the operation are correctly reconnected
Erase the computer memory using G0**
Carry out a conformity check

Chart 1A	STARTING PROBLEMS Does not start

NOTES	Only refer to this customer complaint after having performed a complete test using the XR25.

Connect the OPTIMA 5800 diagnostic station and perform a starting test.
Does the station detect a fault?

no → Check the fuel flow and pressure (refer to vehicle Workshop Repair Manual). Repair the fuel circuit if necessary (pump, filter, pipes, regulator, injector...).
If the fault persists

yes

Repair if necessary.
If the fault persists

Connect the OPTIMA 5800 diagnostic station and carry out an engine compression test.
Is it normal?

yes

Check the exhaust pipe is not blocked. Repair if necessary.
If the fault persists

no

There is a problem with the engine

Replace the injection computer.

AFTER REPAIR	Check the sensors disconnected during the operation are correctly reconnected Erase the computer memory using G0** Carry out a conformity check

Chart 2	STARTING PROBLEMS The engine starts but stalls

NOTES	Only refer to this customer complaint after having performed a complete test using the XR25.

Ignition on,
on the XR25 , check the value of
#12 and 21.
Are these values coherent?

no → Refer to bargraph 14 LH fault chart.

yes ↓

Check the air inlet circuit and the exhaust pipe.
Repair if necessary.
If the fault persists

↓

Check the fuel flow and pressure.
Repair if necessary [pump, filter, regulator, pipes, injector (seals) ...]
If the fault persists

↓

There is a problem with the engine and the injection is not faulty.

AFTER REPAIR	Check the sensors disconnected during the operation are correctly reconnected Erase the computer memory using G0** Carry out a conformity check

Chart 3	STARTING PROBLEMS Starting is too long

NOTES	Only refer to this customer complaint after having performed a complete test using the XR25.

Connect the OPTIMA 5800 diagnostic station and perform a starting test. Does the station detect a fault?

yes → Follow the instructions.

no ↓

Perform a test on the station with the engine running.
Does the station detect a fault?

yes → Follow the instructions.

no ↓

Check the fuel flow and pressure
(Refer to vehicle Workshop Repair Manual.
Repair the fuel circuit if necessary (pump, filter, pipes, regulator, injector...).
If the fault persists

↓

Check the injector is correctly sealed.
If it is not correctly sealed,
replace the faulty injector.
If the fault persists

↓

There is a problem with the engine and the injection is not faulty.

AFTER REPAIR	Check the sensors disconnected during the operation are correctly reconnected Erase the computer memory using G0** Carry out a conformity check

Chart 4	IDLE PROBLEMS Idle too fast

NOTES	Only refer to this customer complaint after having performed a complete test using the XR25. R > theoretical idle speed or #12 < theoretical value especially power assisted steering pressostat, #02 (coolant temperature)

Check no air is leaking into the manifold (seals, take-off points on the inlet manifold, plugs, ...).
Repair if necessary.
If the fault persists

↓

Check on the throttle body that it is up against the lower mechanical stop (#17 < theoretical value). Also check the accelerator control. Repair if necessary.
If the fault persists

↓

Check the fuel pressure is not too high.
Repair if necessary
(injector, pump, pressure regulation, pipes, ...).
If the fault persists

↓

The injection is not faulty.
Check the engine.

AFTER REPAIR	Check the sensors disconnected during the operation are correctly reconnected Erase the computer memory using G0** Carry out a conformity check

Chart 5	IDLE PROBLEMS Idle too slow

NOTES	Only refer to this customer complaint after having performed a complete test using the XR25. R < theoretical idle speed or #12 > theoretical value

Connect the OPTIMA 5800 diagnostic station and and perform and ignition test with the engine running.
Does the station detect a fault?

yes → Follow the instructions.

no ↓

Check the fuel flow and pressure (refer to vehicle Workshop Repair Manual).
Repair the fuel circuit if necessary (pump, filter, pipes, regulator, injector, ...).
If the fault persists

The injection is not faulty.
Check thè engine.

AFTER REPAIR	Check the sensors disconnected during the operation are correctly reconnected Erase the computer memory using G0** Carry out a conformity check

Chart 6	IDLE PROBLEMS Engine unstable

NOTES	Only refer to this customer complaint after having performed a complete test using the XR25.

Perform a gas analysis
(Refer to fault chart 10 - smoke/pollution).
If the fault persists

↓

Connect the OPTIMA 5800 diagnostic station and perform an ignition test with the engine running.
Does the station detect a fault?

yes → Follow the instructions.

no

↓

Check the operation of the oxygen sensor
(Refer to fault chart 11 - smoke/pollution).
If the fault persists

↓

Engine idling, check the coherence of #01 (the value read should be less than 500 mbar).
Is it correct?

no → Check the absolute pressure sensor and its wiring loom. Repair,
and if necessary replace the sensor.

yes

↓

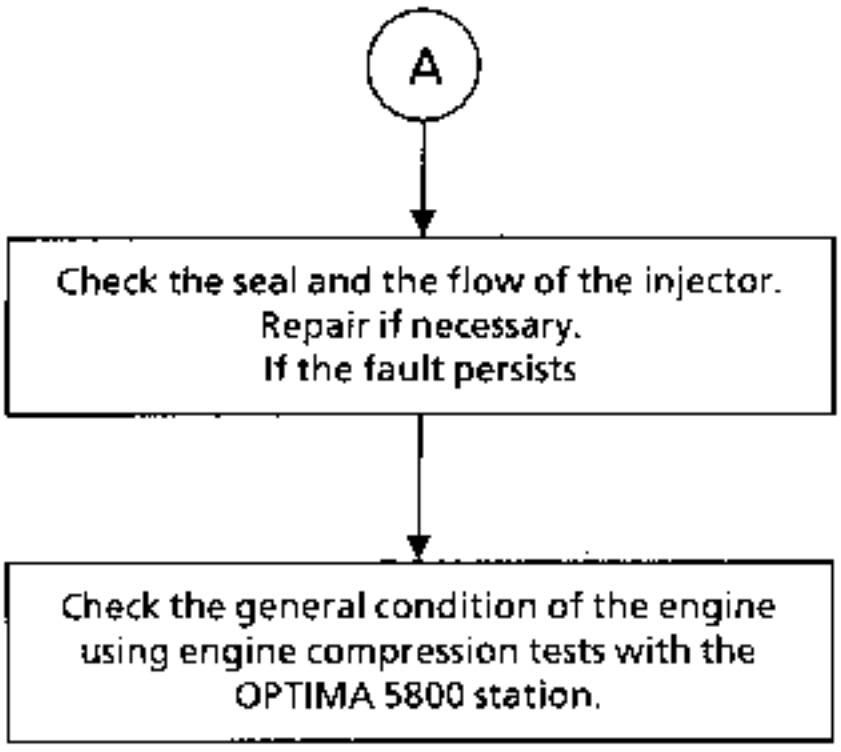
Check the fuel flow and pressure
(refer to vehicle Workshop Repair Manual).
Repair the fuel circuit if necessary (pump, filter, pipes, regulator, injector, ...).
If the fault persists

↓

(A)

AFTER REPAIR	Check the sensors disconnected during the operation are correctly reconnected Erase the computer memory using G0** Carry out a conformity check

Chart 6
CONT



AFTER REPAIR

Check the sensors disconnected during the operation are correctly reconnected
Erase the computer memory using G0**
Carry out a conformity check

Chart 7	IDLE PROBLEMS Hunting

NOTES	Only refer to this customer complaint after having performed a complete test using the XR25.

Perform a gas analysis
(Refer to fault chart 10 - smoke/pollution)
If the fault persists

↓

Connect the OPTIMA 5800 diagnostic station and perform an ignition test with the engine running.
Does the station detect a fault?

yes → Follow the instructions.

no

↓

Check the operation of the oxygen sensor
(Refer to fault chart 11 - Smoke/pollution).
If the fault persists

↓

Check there is no air leak on the inlet manifold and check the operation of the injector (seizing...).

AFTER REPAIR	Check the sensors disconnected during the operation are correctly reconnected Erase the computer memory using G0** Carry out a conformity check

Chart 8	BEHAVIOUR WHEN DRIVING Lacks performance

NOTES	Only refer to this customer complaint after having performed a complete test using the XR25.

Check the throttle opens fully
(full load bargraph illuminated).
Check the adjustment of the accelerator control. Repair if necessary.
If the fault persists

↓

Check the air filter: dirty, deformed. Repair if necessary.
If the fault persists

↓

Connect the OPTIMA 5800 diagnostic station and perform an ignition test with the engine running.
Does the station detect a fault?

yes → Follow the instructions.

no

↓

Perform a gas analysis
(Refer to fault chart 10 - Smoke/pollution).
If the fault persists

↓

Connect the OPTIMA 5800 diagnostic station and perform an engine compression test
Is it normal?

no → There is a problem with the engine.

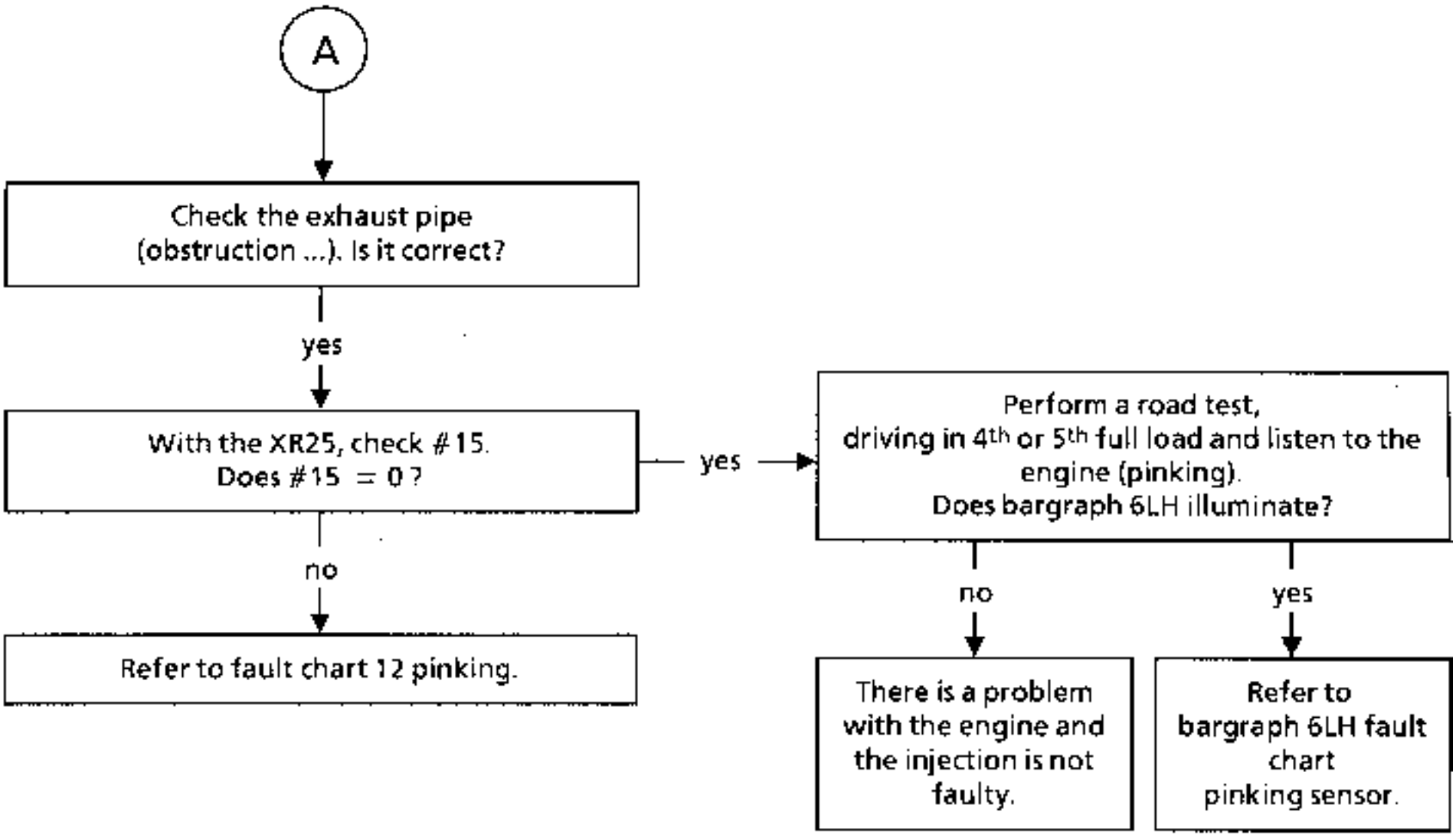
yes

↓

(A)

AFTER REPAIR	Check the sensors disconnected during the operation are correctly reconnected Erase the computer memory using G0** Carry out a conformity check

Chart 8 CONT



AFTER REPAIR	Check the sensors disconnected during the operation are correctly reconnected Erase the computer memory using G0** Carry out a conformity check

Chart 9	BEHAVIOUR WHEN DRIVING Misfiring and hesitation

NOTES	Only refer to this customer complaint after having performed a complete test using the XR25.

Perform a road test if possible to highlight the fault.
If the fault is reproduced

Connect the OPTIMA 5800 diagnostic station and perform an ignition test with the engine running.
Does the station detect a fault?

yes → Follow the instructions.

no

Perform a gas analysis
(Refer to fault chart 10 - smoke/pollution).
If the fault persists

Check the oxygen sensor
(Refer to fault chart 11 - Smoke/pollution).
If the fault persists

Check for the presence and the cleanliness of the restriction in the absolute pressure sensor pipe.
Repair if necessary.
If the fault persists

Check the seal of the injector, and the fuel flow and pressure (refer to Workshop Repair Manual). Repair if necessary.
If the fault persists

A

AFTER REPAIR	Check the sensors disconnected during the operation are correctly reconnected Erase the computer memory using G0** Carry out a conformity check

Chart 9
CONT

A

Check the condition of the flywheel target.
This is done by using the engine speed sensor signal display function on the OPTIMA 5800 station.
Repair if necessary.
If the fault persists

Check the valves are not clogged.
Clean the valves if necessary.
After cleaning, does the fault persist?

yes

There is a problem with the engine, the injection is not faulty.

AFTER REPAIR

Check the sensors disconnected during the operation are correctly reconnected
Erase the computer memory using G0**
Carry out a conformity check

Chart 10	SMOKE - POLLUTION Gas analysis not correct

NOTES	Only refer to this customer complaint after having performed a complete test using the XR25.

Connect the OPTIMA 5800 diagnostic station and connect it to a 4040, 5040 or AGM 1500 type 4 gas analyser. Perform an anti-pollution/ gas analysis test.
Does the station detect a fault?

no → End of fault finding using fault chart 10
NOTE: a correct gas analysis indicates that the catalytic converter is working correctly.

yes ↓

Is the CO too high (CO > 0.5 when idling or CO > 0.3 at 2500 rpm.) ?

yes → Check the oxygen sensor
(Refer to fault chart 11 - Smoke/pollution).
If the fault persists.

no ↓

Check there is not a problem with the engine by performing a compression test (OPTIMA 5800 diagnostic station).

↓

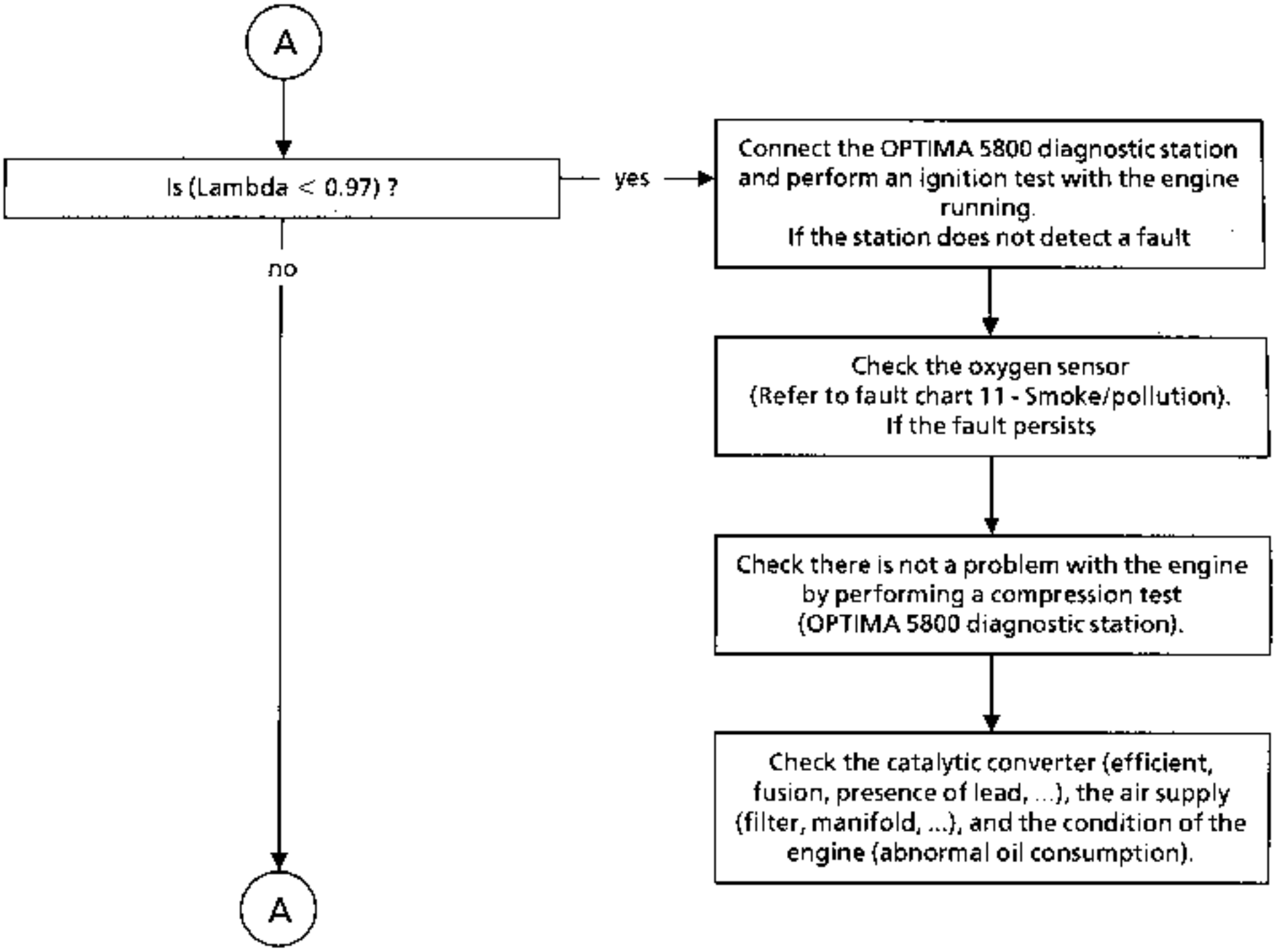
Check the catalytic converter (efficient, fusion, presence of lead, ...), the air supply (filter, manifold, ...), and the condition of the engine (abnormal oil consumption).

↓

(A)

AFTER REPAIR	Check the sensors disconnected during the operation are correctly reconnected Erase the computer memory using G0** Carry out a conformity check

Chart 10
CONT 1



AFTER REPAIR	Check the sensors disconnected during the operation are correctly reconnected Erase the computer memory using G0** Carry out a conformity check

Chart 10
CONT 2

A

Lambda > 1.03

yes → Check the sealing of the exhaust pipe after the catalytic converter (air leak). Repair if necessary. If the fault persists

Connect the OPTIMA 5800 diagnostic station and perform an ignition test with the engine running. If the station does not detect a fault

Check the oxygen sensor (Refer to fault chart 11 - Smoke/pollution). If the fault persists

Check there is not a problem with the engine by performing a compression test (OPTIMA 5800 diagnostic station).

Check the fuel supply (injector, pressure regulator,...) and the efficiency of the catalytic converter (fusion, lead,...)

no

Is the HC level too high? (HC > 100 ppm)

yes → Connect the OPTIMA 5800 diagnostic station and perform an ignition test with the engine running. If the station does not detect a fault

Check the anti-evaporation circuit (canister), the inlet manifold heating function and the efficiency of the catalytic converter.

no

A

AFTER REPAIR

Check the sensors disconnected during the operation are correctly reconnected
Erase the computer memory using G0**
Carry out a conformity check

Chart 10
CONT 3

A

Is the oxygen level too high (O_2 > 0.8 %)

yes → Connect the OPTIMA 5800 diagnostic station and perform an ignition test with the engine running.
If the station does not detect a fault

Check there is no air leak on the inlet manifold and check the operation of the injector (seizing...).

no

CO_2 too low.

yes → Check the sealing of the exhaust pipe after the catalytic converter and check the operation of the injector (seizing...).

AFTER REPAIR	Check the sensors disconnected during the operation are correctly reconnected Erase the computer memory using G0** Carry out a conformity check

Chart 11	SMOKE - POLLUTION Testing the oxygen sensor

NOTES	Only refer to this customer complaint after having performed a complete test using the XR25, especially the following parameters: - #35 (richness correction): this should oscillate around 128 - #30 and #31 (adaptive richness): under no circumstances should they be at their limits.

Connect the OPTIMA 5800 diagnostic station and perform an anti-pollution / oxygen sensor test.
Does the station detect a fault?

no → End of fault finding using fault chart 11.
The oxygen sensor is not faulty.

yes ↓

Check the sensor heating:
- presence of + 12 V at the connector with the engine running,
- the sensor heating resistor is not in an open circuit or short circuited to earth.

If the heating is correct

Is the minimum voltage too high?
(Umin > 300 mV: signal offset towards richness).

yes → Connect the OPTIMA 5800 diagnostic station and perform an ignition test with the engine running.
If the station does not detect a fault

Check the fuel pressure (regulator), the injector (seal,...) the anti-evaporation circuit (canister) and the fuel grade.
Repair if necessary.
If the fault persists

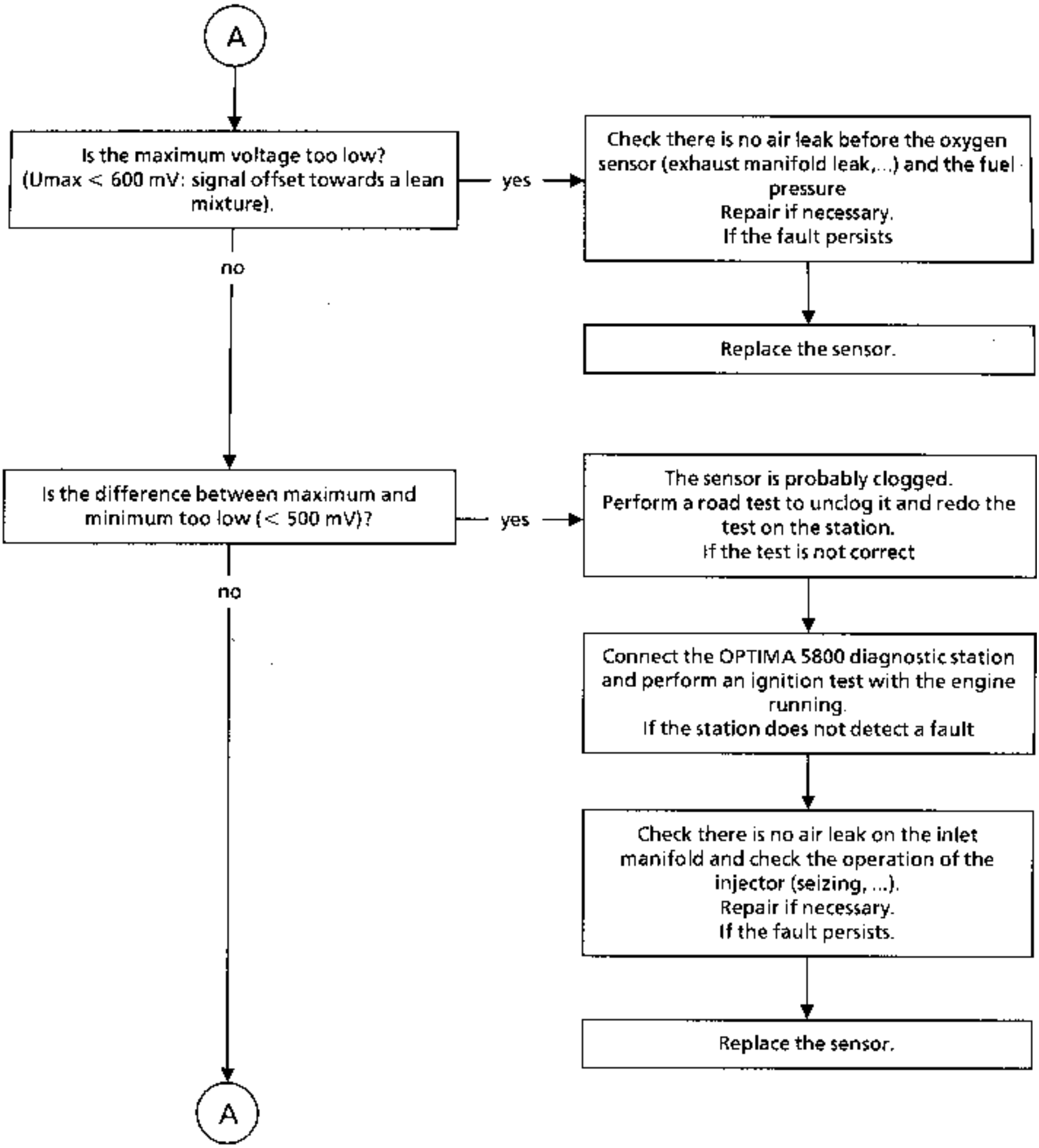
Replace the sensor.

no ↓

(A)

AFTER REPAIR	Check the sensors disconnected during the operation are correctly reconnected Erase the computer memory using G0** Carry out a conformity check

Chart 11
CONT 1



AFTER REPAIR	Check the sensors disconnected during the operation are correctly reconnected Erase the computer memory using G0** Carry out a conformity check

Chart 11
CONT 2

A

Sensor period incorrect (> 1 second).

yes →

The sensor may become clogged or polluted (silicon) if the sensor is open for a long time. An additional fault finding operation is possible using a 4 gas analyser (SOURIAU 4040-5040 or SAGEM AGM 1500) since, in this case, Lambda > 1.03 and O_2 > 1 %. Perform a road test to unclog the sensor. Does it open correctly?

no

Replace the sensor.

AFTER REPAIR

Check the sensors disconnected during the operation are correctly reconnected
Erase the computer memory using G0**
Carry out a conformity check

Chart 12	HIGH FUEL CONSUMPTION

NOTES	Only refer to this customer complaint after having performed a complete test using the XR25.

Check there are no fuel leaks.
Repair if necessary.
If the fault persists

↓

Check the idle speed
(#06 on XR25).
Is it correct?

no → Refer to fault chart 4 or 5, idle problems
(idle speed too fast or too slow).

yes

↓

Check the vehicle complies with its definition
and is in good condition.
Repair if necessary.
If the fault persists

↓

Perform a gas analysis
(Refer to fault chart 10 - smoke/pollution).
If the fault persists

↓

Check the operation of the O_2 sensor
(Refer to fault chart 11 - Smoke/pollution).
If the fault persists

↓

(A)

AFTER REPAIR	Check the sensors disconnected during the operation are correctly reconnected Erase the computer memory using G0** Carry out a conformity check

Chart 12 CONT

A

Connect the OPTIMA 5800 diagnostic station and perform an engine compression test.
Is it normal?

no → There is a problem with the engine.

yes

Check the petrol flow and pressure (methods, refer to vehicle Workshop Repair Manual) and the canister bleed circuit.
Repair if necessary (regulator, pump, filter, pipes).
Does the fault persist?

yes

This is not an injection problem, there is a problem with the engine.

Check:
- engine oil level
- coolant
- axle assemblies
- the general condition of the engine.

If necessary, perform a consumption test with the ECONOTEST consumption device.

AFTER REPAIR	Check the sensors disconnected during the operation are correctly reconnected Erase the computer memory using G0** Carry out a conformity check

Chart 13	ENGINE NOISE Pinking

NOTES	Only refer to this customer complaint after having performed a complete test using the XR25.

Perform a road test with the XR25 and check # 13, 15.
Is the fault reproduced?

no → The customer must use his vehicle under specific conditions, check with the customer.

yes ↓

Perform a gas analysis
(Refer to fault chart 10 -Smoke/pollution).
If the fault persists ↓

Check the operation of the O_2 sensor
(Refer to fault chart 11 - Smoke/pollution).
If the fault persists ↓

Ask the customer what type of fuel he uses.
Is it suitable?

no → Remind the customer what type of fuel he should use.

yes ↓

Check the condition and the conformity of the spark plugs.
Replace the spark plugs if necessary.
Does the fault persist?

yes ↓

(A)

AFTER REPAIR	Check the sensors disconnected during the operation are correctly reconnected Erase the computer memory using G0** Carry out a conformity check

Chart 13 CONT

A

Check the conformity: of the routing of the inlet air pipes and the air filter.
Repair if necessary.
Does the fault persist?

yes

Using a stroboscopic light and the XR25, #51, check the ignition advance
Are the values the same?

no → Refer to bargraph 5 RH fault chart.

yes

This is not an injection problem.
Also check the engine cooling. The combustion chambers may have to be cleaned.

AFTER REPAIR	Check the sensors disconnected during the operation are correctly reconnected Erase the computer memory using G0** Carry out a conformity check

NOTES

Only refer to these customer complaints after having performed a complete test using the XR25

STARTING PROBLEMS

Does not start	Chart 1
Starts but stalls	Chart 2
Starting is too long	Chart 3

IDLE PROBLEMS

Too fast	Chart 4
Too slow	Chart 5
Engine unstable	Chart 6
Hunting	Chart 7

BEHAVIOUR WHEN DRIVING

Lacks performance	Chart 8
Misfiring and hesitation	Chart 9

SMOKE - POLLUTION

CO and/or HC too high	Chart 10

HIGH PETROL CONSUMPTION — Chart 11

ENGINE NOISE

Pinking	Chart 12

The method without the OPTIMA station does not comply with a sufficient quality criterion.
Use the method with the OPTIMA station to obtain this quality criterion.

Chart 1	STARTING PROBLEMS Does not start

NOTES	Only refer to this customer complaint after having performed a complete test using the XR25

Check all the injection fuses in the passenger compartment and engine connection units.
Repair if necessary.
Does the fault persist?

— no → End of fault finding

yes ↓

Does the fuel pump make a noise when the ignition is turned on?

— yes → See Chart 1A

no ↓

Does the fuel pump relay make a noise when the ignition is turned on?

— no → Check for − 12 V on H1 of this relay.
Repair.

Connect bornier **MS 1048** in place of the injection computer and check the insulation and continuity of the line 6 bornier H2 relay.
Repair.

The fault persists, replace the relay.

yes ↓

Check for the presence of 12 V on track H3 of this relay.
Repair if necessary.
If the fault persists

During the timed phase, check for the presence of 12 V on track H5 of this relay.
Is it correct?

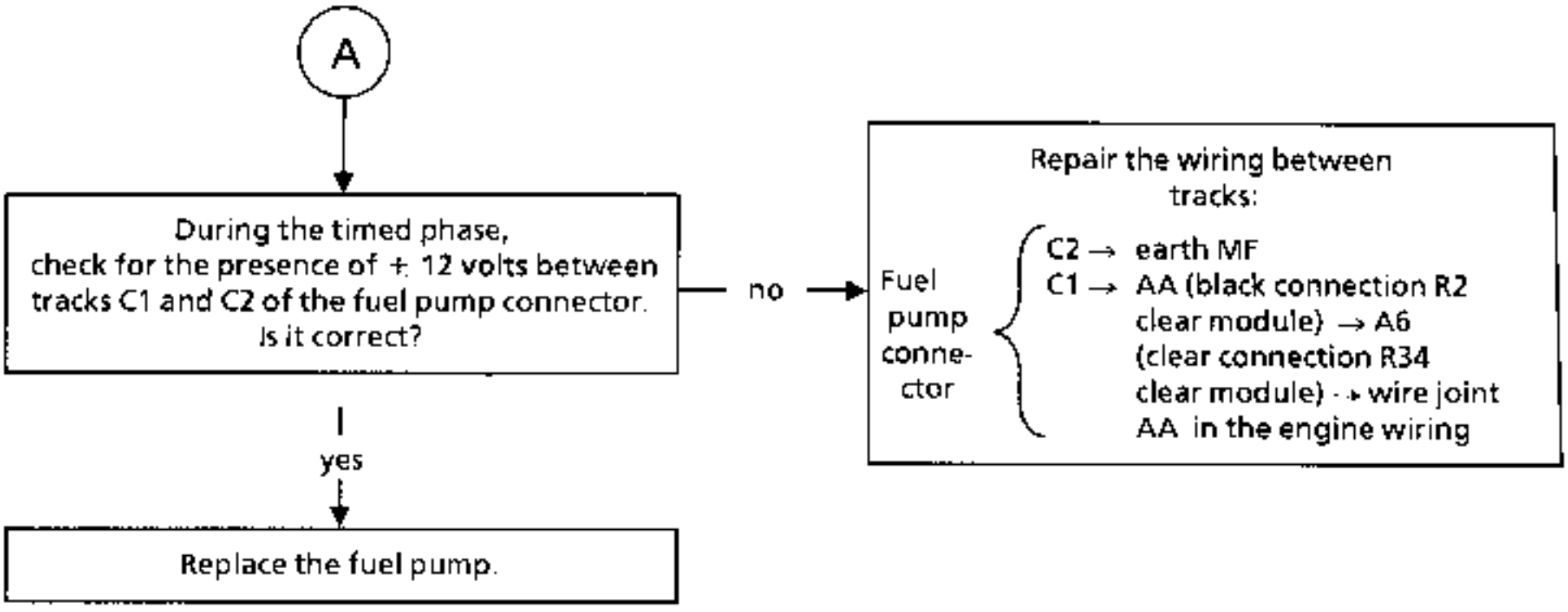
— no → Replace the relay.

yes ↓

(A)

AFTER REPAIR	Check the sensors disconnected during the operation are correctly reconnected Erase the computer memory using G0** Carry out a conformity check

Chart 1
CONT



AFTER REPAIR	Check the sensors disconnected during the operation are correctly reconnected Erase the computer memory using G0** Carry out a conformity check

Chart 1A — STARTING PROBLEMS
Does not start

NOTES Only refer to this customer complaint after having performed a complete test using the XR25.

Check for the presence of a high voltage under the action of the starter motor on the spark plug leads. Is there a high voltage?

yes → Check the petrol flow and pressure (refer to vehicle Workshop Repair Manual). Repair the fuel circuit if necessary (pump, filter, pipes, regulator, injector...). Does the fault persist?

yes → This is an engine problem and the injection is not faulty.

no → Check the HT circuit. Repair if necessary. If the fault persists

Ignition on, check on the coil for the presence of + 12 V on track A. Is there + 12 V ?

no → Check the insulation and continuity of the wiring between track A (coil) and the − after ignition fuse in the engine connection unit. Repair.

yes → Ignition on, check the resistance between tracks A and B on the coil. Is it correct?

no → Replace the faulty coil .

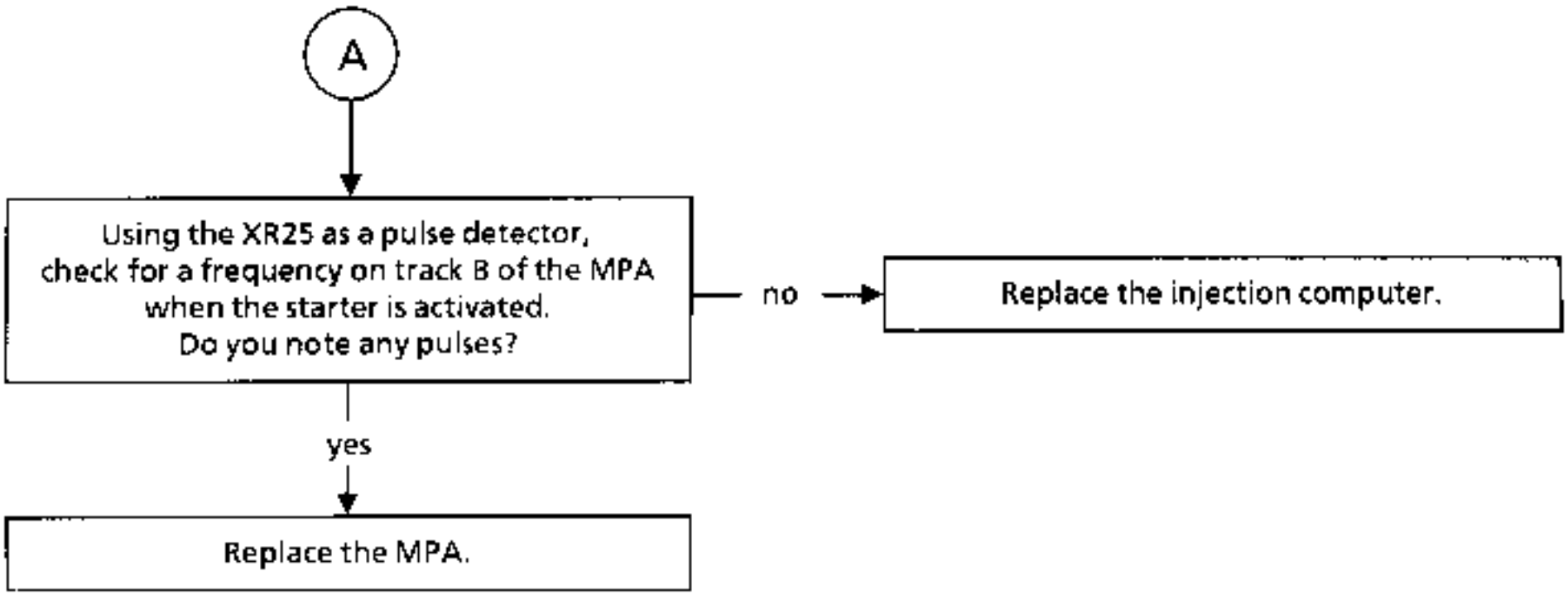
yes → Connect bornier **MS 1048** in place of the injection computer and check the insulation and continuity between track 27 bornier and B on the MPA (2 track connector). Repair if necessary. Does the engine start?

yes → End of fault finding.

no → (A)

AFTER REPAIR Check the sensors disconnected during the operation are correctly reconnected
Erase the computer memory using G0**

Chart 1A CONT



AFTER REPAIR

Check the sensors disconnected during the operation are correctly reconnected
Erase the computer memory using G0**

Chart 2	STARTING PROBLEMS The engine starts but stalls

NOTES	Only refer to this customer complaint after having performed a complete test using the XR25

Ignition on,
check on the XR25
the value on #12.
Does it correspond to the theoretical value?

no → Refer to bargraph 5LH fault chart.

yes

Check the air inlet circuit and the exhaust pipe.
Repair if necessary.
If the engine stalls

Check the petrol flow and pressure.
Repair if necessary [pump, filter, regulator, pipes, injector (sealing) ...]
Does the engine stall?

no → End of fault finding

yes

This is an engine problem
and the injection is not faulty.

AFTER REPAIR	Check the sensors disconnected during the operation are correctly reconnected Erase the computer memory using G0** Carry out a conformity check

Chart 3	STARTING PROBLEMS Starting is too long

NOTES	Only refer to this customer complaint after having performed a complete test using the XR25

Check the ignition,
high voltage circuit and spark plugs.
Repair if necessary.
Does starting still take too long?

no → End of fault finding.

yes ↓

Check the fuel flow and pressure,
(method: refer to vehicle Workshop Repair Manual).
Replace the faulty parts if necessary
(regulator, filter, pump, pipes, ...).
If the fault persists

↓

Check the seal of the injector.
If the seal is not correct,
replace the faulty injector.
The fault persists!

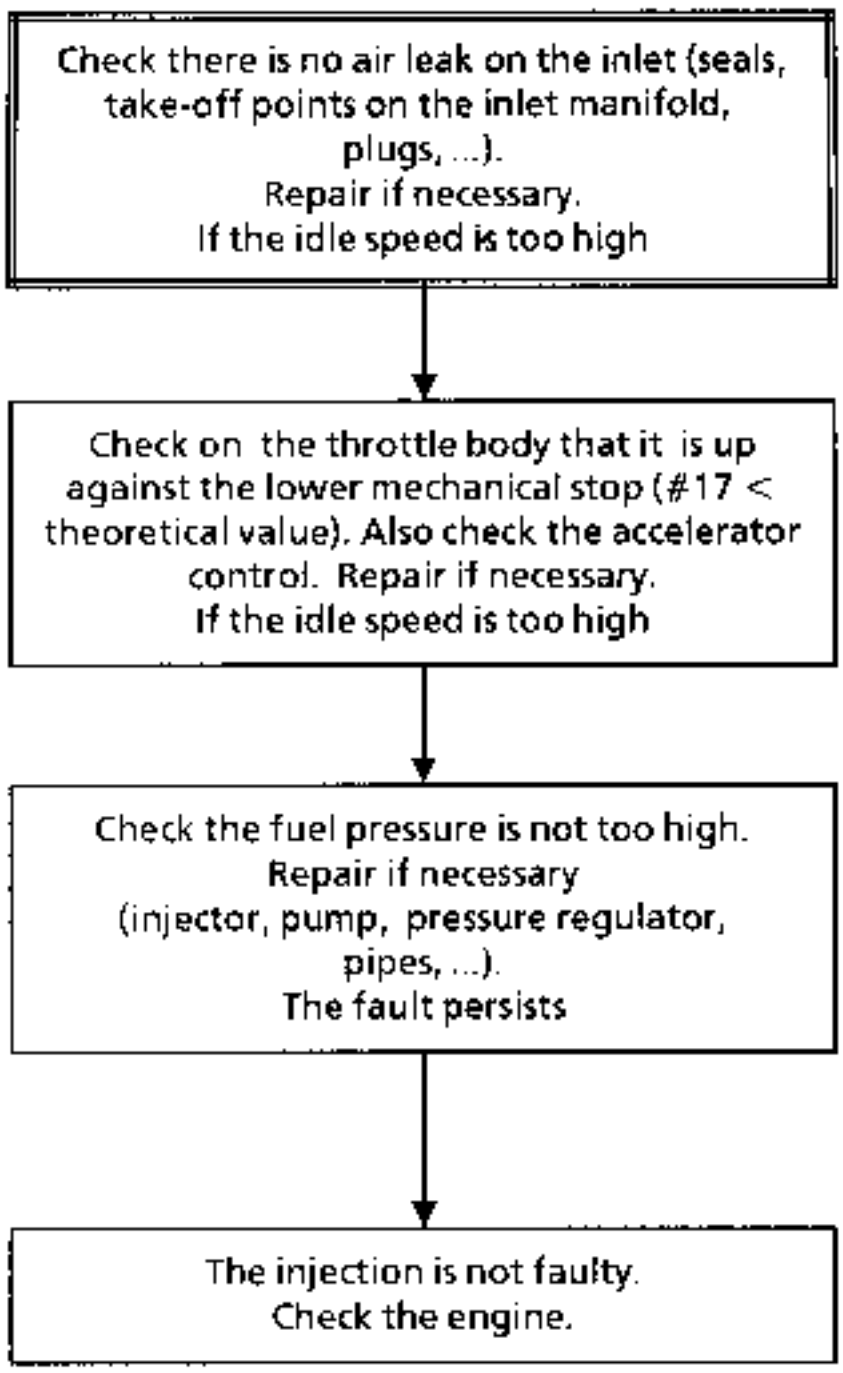
↓

This is an engine problem
and the injection is not faulty.

AFTER REPAIR	Check the sensors disconnected during the operation are correctly reconnected Erase the computer memory using G0** Carry out a conformity check

Chart 4	IDLE PROBLEMS Idle too fast

NOTES	Only refer to this customer complaint after having performed a complete test using the XR25. R > theoretical idle speed or #12 < theoretical value



AFTER REPAIR	Check the sensors disconnected during the operation are correctly reconnected Erase the computer memory using G0** Carry out a conformity check

Chart 5	IDLE PROBLEMS Idle too slow

NOTES	Only refer to this customer complaint after having performed a complete test using the XR25 R > theoretical idle speed or #12 < theoretical value

Check the ignition, high voltage leads, spark plugs and power stages.
Repair if necessary.
If the idle speed is too low

↓

Check the fuel pressure is not too low.
Repair if necessary
(injector, pump, regulator, pipes, ...).
The fault persists!

↓

The injection is not faulty.
Check the engine.

AFTER REPAIR	Check the sensors disconnected during the operation are correctly reconnected Erase the computer memory using G0** Carry out a conformity check

Chart 6	IDLE PROBLEMS Engine unstable

NOTES	Only refer to this customer complaint after having performed a complete test using the XR25

Engine idling,
check the coherence of #01.
The value read should be < 500 mbar.
Is it correct?

no → Check the absolute pressure sensor and its wiring loom
Repair, if necessary,
replace the sensor.

yes

Check the value of the pollutants and Lambda.
- CO < 0.3 %
- HC ≤ 100 ppm
- CO2 ≥ 14.5 %
- 0.97 ≤ Lambda ≤ 1.03

Is it correct?

no → Check:
-the catalytic converter (melted, blocked, ...).
-the oxygen sensor (polluted, heating faulty, ...).
-air leak upstream of the oxygen sensor.
-the seal of the exhaust pipe.
-the type of fuel used.
-the ignition (spark plugs, high voltage leads, coils).
-the general condition of the engine (timing, ...).

yes

Disconnect the oxygen sensor and wait for #35 to stabilise at 128 and #05 = 0.402, and for bargraph 8 LH to illuminate.
Does the fault persist?

no → Before replacing the oxygen sensor, check there is no lead in the exhaust outlet.

yes

Check the petrol flow and pressure (methods, refer to vehicle Workshop Repair Manual).
Repair if necessary (regulator, pump, filter, pipes, injector).
Does the fault persist?

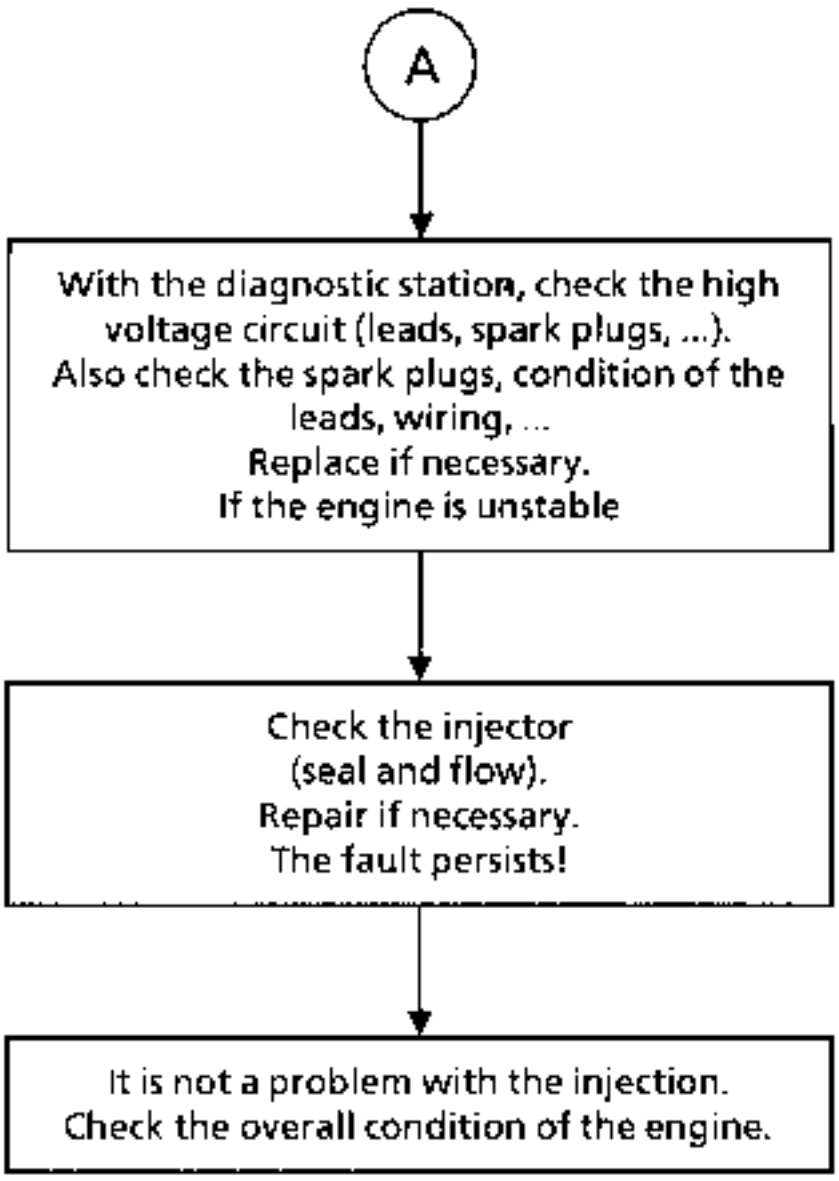
no → End of fault finding.

yes

(A)

AFTER REPAIR	Check the sensors disconnected during the operation are correctly reconnected Erase the computer memory using G0** Carry out a conformity check

Chart 6 CONT	



AFTER REPAIR	Check the sensors disconnected during the operation are correctly reconnected Erase the computer memory using G0** Carry out a conformity check

Chart 7	IDLE PROBLEMS Hunting

NOTES	Only refer to this customer complaint after having performed a complete test using the XR25

With the XR25 check if no load bargraph (11 RH) is illuminated. Is it illuminated?

— no → If no load bargraph is extinguished or flashing but does not illuminate bargraph 10 LH, there may be a short circuit to + 5 V on line 17 of the computer (#17 = variable). Check the insulation of the wiring and repair.

yes ↓

Check the value of the pollutants and Lambda.
- CO ≤ 0.3 %
- HC ≤ 100 ppm
- CO2 ≥ 14.5 %
- 0.97 ≤ Lambda ≤ 1.03

Is it correct?

— no → Check:
-the catalytic converter (melted, blocked, ...).
-the oxygen sensor (polluted, heating faulty, ...).
-air leak upstream of the oxygen sensor.
-the seal of the exhaust pipe.
-the type of fuel used.
-the ignition (spark plugs, high voltage leads, coils).
-the general condition of the engine (timing, ...).

yes ↓

Disconnect the oxygen sensor and wait for #35 to stabilise at 128 and #05 = 0.402, and for bargraph 8 LH to illuminate. Is the engine stable ?

— yes → Replace the oxygen sensor.

no ↓

Check there is no air leak on the inlet manifold (plugs, seals, take-off points,...) Repair if necessary.

AFTER REPAIR	Check the sensors disconnected during the operation are correctly reconnected Erase the computer memory using G0** Carry out a conformity check

Chart 8	BEHAVIOUR WHEN DRIVING Lacks performance

NOTES	Only refer to this customer complaint after having performed a complete test using the XR25

Check the throttle opens fully
(full load bargraph illuminated).
Check the adjustment of the accelerator control.
Repair if necessary.
Is there a lack of performance?

— no → End of fault finding.

yes ↓

Check the conformity of the spark plugs and their condition.
Repair if necessary.
Is there a lack of performance?

— no → End of fault finding.

yes ↓

Check the value of the pollutants and Lambda.
- CO < 0.3 %
- HC ≤ 100 ppm
- CO2 ≥ 14.5 %
- 0.97 ≤ Lambda ≤ 1.03

Is it correct?

— no → Check:
-the catalytic converter (melted, blocked, ...).
-the oxygen sensor (polluted, heating faulty, ...).
-air leak upstream of the oxygen sensor.
-the seal of the exhaust pipe.
-the type of fuel used.
-the ignition (spark plugs, high voltage leads, coils).
-the general condition of the engine (timing, ...).

yes ↓

Check the air inlet circuit (air filter,...) and the exhaust pipe.
Repair if necessary.
Is there a lack of performance?

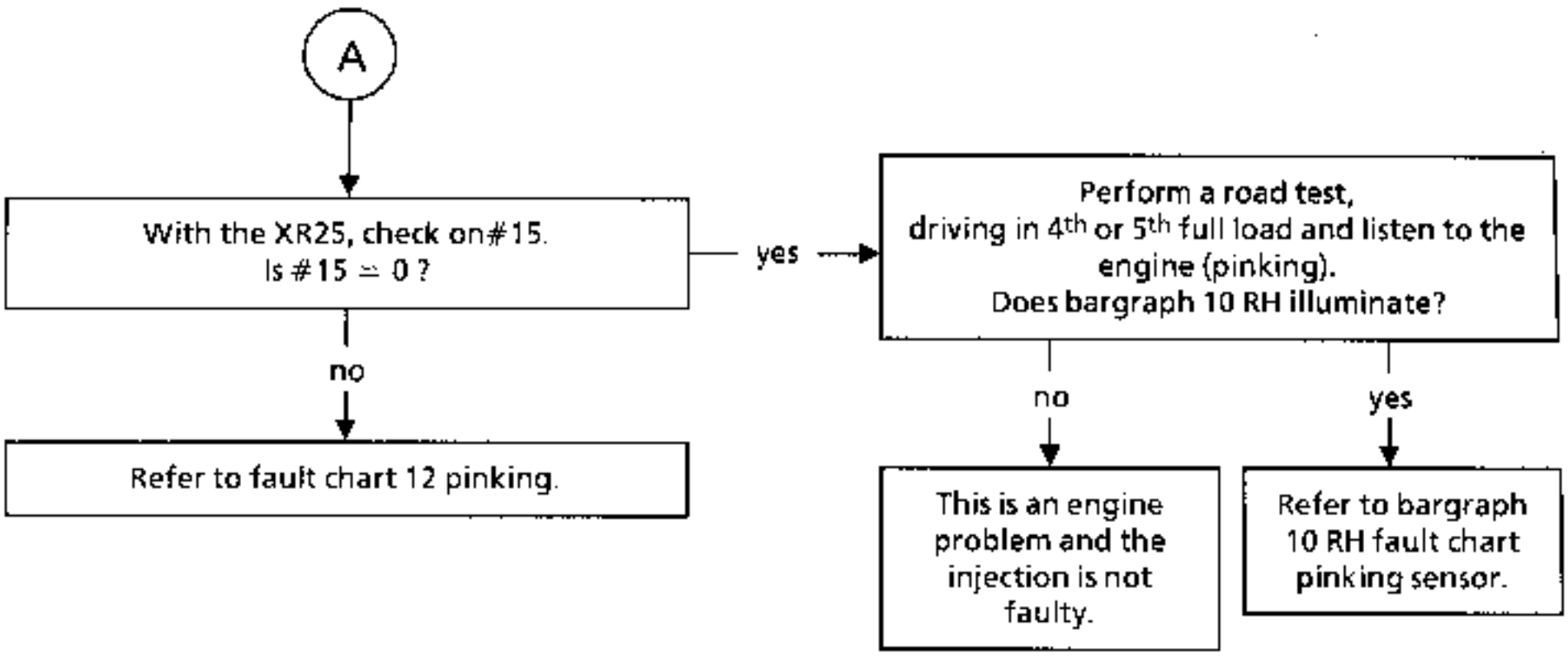
— no → End of fault finding.

yes ↓

(A)

AFTER REPAIR	Check the sensors disconnected during the operation are correctly reconnected Erase the computer memory using G0** Carry out a conformity check

Chart 8 CONT



AFTER REPAIR	Check the sensors disconnected during the operation are correctly reconnected Erase the computer memory using G0** Carry out a conformity check

Chart 9 — BEHAVIOUR WHEN DRIVING
Misfiring and hesitation

NOTES

Only refer to this customer complaint after having performed a complete test using the XR25

Perform a road test with the customer if possible to confirm the fault.
Is the fault reproduced

no → Before returning the vehicle to the customer, check with the XR25 that everything is correct, especially the oxygen sensor (# 05-35).

yes ↓

Check the value of the pollutants and Lambda.
- CO < 0.3 %
- HC ≤ 100 ppm
- CO2 ≥ 14.5 %
- 0.97 ≤ Lambda ≤ 1.03

Is it correct?

no → Check:
- the catalytic converter (melted, blocked, ...).
- the oxygen sensor (polluted, heating faulty, ...).
- air leak upstream of the oxygen sensor.
- the seal of the exhaust pipe.
- the type of fuel used.
- the ignition (spark plugs, high voltage leads, coils).
- the general condition of the engine (timing, ...).

yes ↓

Check the condition of the high voltage wiring, the spark plugs and wiring, the coils and the TDC sensor (possible cause may be interference), injector.
Replace the faulty parts if necessary.
Does the engine misfire and hesitate?

no → End of fault finding.

yes ↓

Check for the presence and the cleanliness of the restriction in the absolute pressure sensor pipe.
Repair if necessary.
Does the engine misfire and hesitate?

no → End of fault finding.

yes ↓

(A)

AFTER REPAIR

Check the sensors disconnected during the operation are correctly reconnected
Erase the computer memory using G0**
Carry out a conformity check

Chart 9 CONT

A

Disconnect the oxygen sensor and wait for #35 to stabilise at 128 and #05 = 0.402, and for bargraph 8 LH to illuminate.
Perform a road test.
Does the engine misfire and hesitate?

no → Replace the oxygen sensor.

yes

Check the condition of the flywheel target.
Repair if necessary.
Does the engine misfire and hesitate?

no → End of fault finding.

yes

Check the petrol flow and pressure (methods, refer to vehicle Workshop Repair Manual).
Replace the faulty parts (fuel pump, regulator, filter, pipes ...).
Does the engine misfire and hesitate?

no → End of fault finding.

yes

Clean the injector.
Does the engine misfire and hesitate?

no → End of fault finding.

yes

Check the valves are not clogged.
Clean the valves if necessary.
After cleaning, does the fault persist?

no → End of fault finding.

yes

This is an engine problem, the injection is not faulty.

AFTER REPAIR	Check the sensors disconnected during the operation are correctly reconnected Erase the computer memory using G0** Carry out a conformity check

Chart 10 — SMOKE - POLLUTION
CO and/or HC too high

NOTES

Only refer to this customer complaint after having performed a complete test using the XR25. CO and / or HC too high
CO > 0.3 % - HC > 100 ppm

With the XR25, check on #05, 35.
Checking, refer to Workshop Repair Manual.
Is it correct?

no → Test for the presence of lead (refer to Workshop Repair Manual). Is there lead?

yes → Check the type of fuel used. If the customer has used leaded petrol and before changing the catalytic converter and the oxygen sensor, drive the vehicle using several tanks of unleaded petrol.

no → B

yes

Check the high voltage circuit, (spark plugs, spark plug leads).
Repair if necessary.
If the pollution persists

Check the air supply, the air filter, the pipes ...
After repairing, does the pollution persist?

Check the conformity of the restriction and the condition of the pipe for the absolute pressure sensor. Repair if necessary.
Does the pollution persist?

no → End of fault finding.

yes

Check the seal of the injector. (especially the O-rings).
Repair if necessary.
Does the pollution persist?

no → End of fault finding.

yes → A

AFTER REPAIR

Check the sensors disconnected during the operation are correctly reconnected
Erase the computer memory using G0**
Carry out a conformity check

Chart 10 CONT

A

Check the fuel flow and pressure (methods, refer to Workshop Repair Manual). Repair or replace the faulty parts (fuel pump, pressure regulator, pipes).
If the pollution persists

Ask the customer if he has experienced an ignition or starting problem.
Has he experienced a problem?

yes → Replace the catalytic converter.

no → This is an engine problem and the injection is not faulty.

B

Check the oxygen sensor heating (+ 12 volts between A and B).
Is it correct?

no → Repair the electrical circuit.

yes → Check:
- the catalytic converter (melted, blocked, ...).
- the oxygen sensor (polluted, heating faulty, ...).
- air leak upstream of the oxygen sensor.
- the seal of the exhaust pipe.
- the type of fuel used.
- the ignition (spark plugs, high voltage leads, coils).
- the general condition of the engine (timing, ...).

AFTER REPAIR

Check the sensors disconnected during the operation are correctly reconnected
Erase the computer memory using G0**
Carry out a conformity check

Chart 11	HIGH PETROL CONSUMPTION

NOTES	Only refer to this customer complaint after having performed a complete test using the XR25

Check there are no fuel leaks.
Repair if necessary.
Is the fuel consumption still high?

no → End of fault finding.

yes ↓

Check the idle speed
(# 06 on the XR25).
Is it correct?

no → Refer to fault chart 4 or 5, idle problems (Idle speed too fast or too slow).

yes ↓

Check the vehicle complies with its definition and is in good condition.
Repair if necessary.
Is the fuel consumption still high?

no → End of fault finding.

yes ↓

Check the value of the pollutants and Lambda.
- CO $<$ 0.3 %
- HC $\leq$ 100 ppm
- CO2 $\geq$ 14.5 %
- 0.97 $\leq$ Lambda $\leq$ 1.03

Is it correct?

no → Check:
- the catalytic converter (melted, blocked, ...).
- the oxygen sensor (polluted, heating faulty, ...).
- air leak upstream of the oxygen sensor.
- the seal of the exhaust pipe.
- the type of fuel used.
- the ignition (spark plugs, high voltage leads, coils).
- the general condition of the engine (timing, ...).

yes ↓

(A)

AFTER REPAIR	Check the sensors disconnected during the operation are correctly reconnected Erase the computer memory using G0** Carry out a conformity check

Chart 11 CONT

A

Check the petrol flow and pressure (methods, refer to vehicle Workshop Repair Manual) and the canister bleed circuit.
Repair if necessary (regulator, pump, filter, pipes).
Does the fault persist?

no → End of fault finding.

yes

This is not an injection problem, this is an engine problem,
check :
- the engine oil level
- engine cooling
- axle assemblies
- the general condition of the engine.

If necessary, perform a consumption test with the ECONOTEST consumption device.

AFTER REPAIR

Check the sensors disconnected during the operation are correctly reconnected
Erase the computer memory using G0**
Carry out a conformity check

Chart 12 — ENGINE NOISE
Pinking

NOTES

Only refer to this customer complaint after having performed a complete test using the XR25

Perform a road test with the XR25 and check # 13, 15.
Is the fault reproduced?

- no → The customer must use his vehicle under specific conditions, check with the customer.
- yes ↓

Check the value of the pollutants and Lambda.
- CO < 0.3 %
- HC ≤ 100 ppm
- CO2 ≥ 14.5 %
- 0.97 ≤ Lambda ≤ 1.03

Is it correct?

- no → Check:
  - the catalytic converter (melted, blocked, ...).
  - the oxygen sensor (polluted, heating faulty, ...).
  - air leak upstream of the oxygen sensor.
  - the seal of the exhaust pipe.
  - the type of fuel used.
  - the ignition (spark plugs, high voltage leads, coils).
  - the general condition of the engine (timing, ...).
- yes ↓

Ask the customer what type of fuel he uses.
Is it suitable?

- no → Remind the customer what type of fuel he should use.
- yes ↓

Check the condition and the conformity of the spark plugs.
Replace the spark plugs if necessary.
Does the pinking persist?

- no → End of fault finding.
- yes ↓

(A)

AFTER REPAIR

Check the sensors disconnected during the operation are correctly reconnected
Erase the computer memory using G0**
Carry out a conformity check

Chart 12 CONT

A

Check the conformity of the routing of the inlet air pipes.
Repair if necessary.
Does the pinking persist?

no → End of fault finding.

yes

Using a stroboscopic light and the XR25, #51, check the ignition advance
Are the values the same?

no → Refer to bargraph 3 RH fault chart.

yes

This is not an injection problem.
Also check the engine cooling. The combustion chambers may have to be cleaned.

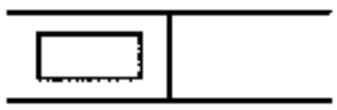
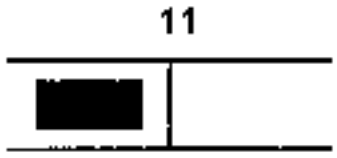
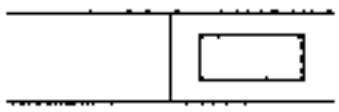
AFTER REPAIR

Check the sensors disconnected during the operation are correctly reconnected
Erase the computer memory using G0**
Carry out a conformity check

NOTES	Before checking conformity, check the fault bargraphs are not illuminated. Engine cold, ignition on.

Order of operations	Function to be checked	Action	Bargraph	Display and Notes
1	Dialogue with XR25	D03 (selector on S6)		8.NJ Use fiche n° 28
2	Conformity of computer	G70*		XXXX Part Number number displayed in three sequences (refer to section 12)
3	Interpretation of normally illuminated bargraphs		1	Code present
			11	No load recognition
			14	No flywheel signal
			15	Illuminated during timed period when ignition turned on
			19	Presence of + 12 Volts after ignition on the track. Should be illuminated as soon as ignition is turned on and remains self-fed after ignition turned off.

NOTES	Before checking conformity, check the fault bargraphs are not illuminated. Engine cold, ignition on.

Order of operations	Function to be checked	Action	Bargraph	Display and Notes
4	Throttle position potentiometer	# 17	10  11 	XXXX X > 45 (maximum 56) This value is given by the position of the idle speed micromotor and depends on local atmospheric pressure
		Full load # 17 (1)	11 	192 < X < 210
5	Absolute pressure sensor	# 01	8 	XXXX X = local atmospheric pressure
6	Coolant temperature sensor	# 02	6 	XXXX X – ambient temperature + 5°C
7	Air temperature sensor	# 03	5 	XXXX X = ambient temperature ± 5°C

(1) Verification of full load recognition by accelerator pedal.

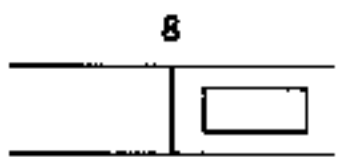
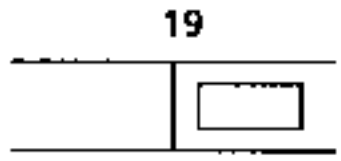
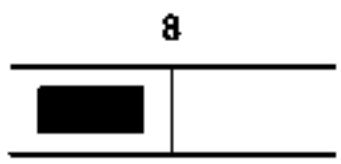
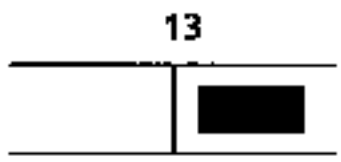
NOTES

Before checking conformity, check the fault bargraphs are not illuminated. **Engine warm, at idle speed, after at least one operation of the engine cooling fan assembly.**

Order of operations	Function to be checked	Action	Bargraph	Display and Notes
8	Idle speed Reading taken with no consumers	# 06 # 17 Air conditioning on # 06	16  17  18 	XXXX 700 < XXX < 800 rpm 15 < XX < 32 900 ± 50 rpm
9	Battery voltage	# 04		XXXX 12 < XX < 14 Volts
10	Pinking sensor	Accelerate with no load to 3500 rpm approximately # 13	10 	XXXX XX = value read is not zero and is variable
11	Canister bleed	At idle speed At no load and / or stable speed	16  16 	

NOTES

Before checking conformity, check the fault bargraphs are not illuminated. Engine warm, at idle speed, after at least one operation of the engine cooling fan assembly.

Order of operations	Function to be checked	Action	Bargraph	Display and Notes
12	Absolute pressure sensor	At idle speed, no consumers # 01		XXXX X = value read is approximately 370 ± 50 mbar. (Reduces depending on altitude).
13	Oxygen sensor	Check at 2500 rpm stable speed then at idle speed # 05 # 35 If fault # 05 # 35	  	XXXX X = value read varies approximately between 50 and 900 mV X = value read varies regularly around 128 with a maximum of 255 and a minimum of 64 X = value read remains fixed X = 128
14	Power assisted steering pressostat	Turn steering wheel # 06		825 ± 25 rpm

NOTES

Before checking conformity, check the fault bargraphs are not illuminated.
Check during road test.

Order of operations	Function to be checked	Action	Bargraph	Display and Notes
14	Vehicle speed	# 18	9	XXXX X = vehicle speed read on speedometer
15	Pinking sensor	Engine speed > 2000 rpm. # 13	10	XXXX X = value read is not zero and is variable
		# 15		X = maximum advance retard value of 6°
		If fault # 15	10	X = 0 (1)
16	Richness regulation (adaptive control)	After driving, engine warm # 05	19	XXXX X = the value varies regularly between 50 and 900 mV
		# 35		X = the value varies regularly around 128
		# 30		112 < XX < 160 (average value after erasing the memory X = 128)
		# 31		104 < XX < 160 (average value after erasing the memory X = 128)

(1) In defect mode, the advance is retarded by 3 degrees over the complete pinking range (not visible for # 15).

SPECIAL TOOLING REQUIRED
OPTIMA 5800 diagnostic station

CHECKING THE IGNITION USING THE DIAGNOSTIC STATION

The OPTIMA 5800 diagnostic station allows the ignition to be checked in two ways:

- STARTING TEST: If the vehicle does not start. When no fault finding operations can be performed with the XR25, this operation checks for the presence and the quality of the ignition under the action of the starter motor.

- TEST WITH ENGINE RUNNING: These measurements are in addition to those from the XR25 for customer complaints such as: hesitation, misfiring, incorrect gas analysis, unstable idle ...

CONNECTIONS :

- E7J engine : Directly on to the amplification module (MPA).

MEASUREMENTS:

The ignition is characterised by the following values:

Engine running:

- Spark duration.
- Arcing voltage (or ionising voltage).
- Arcing voltage during the exhaust phase (static ignition).

Starting test:

- Ignition feed voltage.
- TDC sensor signal.
- Command signal (MPA).
- Spark duration.
- Arcing voltage (or ionising voltage).
- Arcing voltage during the exhaust phase (static ignition).

The station checks the coherence of the values obtained for each cylinder, and compares the measurements with a database for each engine type.

SPECIAL TOOLING REQUIRED
OPTIMA 5800 diagnostic station

CHECKING THE OXYGEN SENSOR WITH THE DIAGNOSTIC STATION

Obvious faults relating to the oxygen sensor are detected by the XR25:

- Open circuit.
- Short circuit to earth.
- Short circuit to + 12 V.

The diagnostic station allows operating faults to be highlighted which could not be detected with the XR25. The sensor can be checked for the following customer complaints:

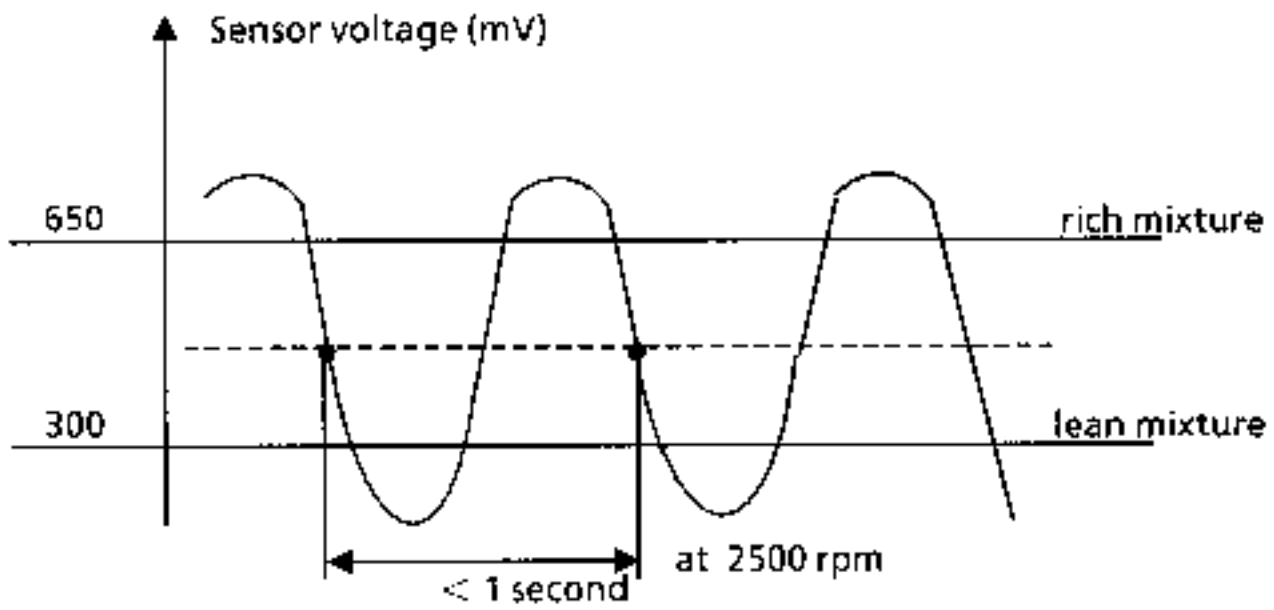
- Excess fuel consumption.
- Irregular idle, hunting.
- Hesitation.
- Incorrect gas analysis.

The station performs the check by being connected in parallel to the signal emitted by the oxygen sensor. This sensor is analysed at a stable engine speed (2 500 rpm), when the richness regulation conditions are concurring (engine warm ...).

CONNECTION:

The 3 track connector of the sensor is located on the clutch bellhousing.

During normal operation, the signal is in the form of a sine wave:



The characteristic parameters of this signal are the maximum voltage, the minimum voltage and the period. For all engine types, the correct values are:

- Maximum voltage > 600 mV.
- Minimum voltage < 200 mV.
- Difference (Maximum voltage - minimum voltage) > 500 mV.
- Period < 1 second.

SPECIAL TOOLING REQUIRED
OPTIMA 5800 diagnostic station 4040-5040 or AGM 1500 4 gas analyser

ANALYSING EXHAUST GASES USING THE DIAGNOSTIC STATION

The OPTIMA 5800 diagnostic station connected to an analyser (SOURIAU 4040-5040 or SAGEM AGM 1500) allows the gases to be checked in accordance with the legislation relating to vehicles with catalytic converters. This test is performed at mid-load and at idle speed with the following limits.

Idle speed	2 500 rpm
CO < 0.5 %	CO < 0.3 %
HC < 100 ppm	HC < 100 ppm

Independently to the legislation, other measurements supplied by the analyser fall within certain tolerances:

Idle speed	2 500 rpm
CO_2 > 13.5 %	CO_2 > 13.5 %
O_2 < 0.8 %	O_2 < 0.8 %
0.97 < Lambda < 1.03	0.97 < Lambda < 1.03

NOTE: Lambda = 1 / Richness

- Lambda > 1 → Lean mixture
- Lambda < 1 → Rich mixture

The condition Lambda = 1 is essential to ensure the catalytic converter functions correctly.

The station causes the following phases:

- Warming up the engine (oil temperature greater than 60°C).
- Holding for one minute at 2 500 rpm. to activate richness regulation and simultaneous gas measurements.
- If the gas analysis at 2 500 rpm is correct, a measurement at idle speed is taken.

If the analysis is deemed to be incorrect by the station, diagnostic messages appear where the priority of the gases is

1) CO 2) Lambda 3) HC 4) O_2 5) CO_2

NOTE : The report for the whole anti-pollution test can be printed.

SETTING UP A DIALOGUE BETWEEN THE XR25 AND THE COMPUTER

- Connect the test kit to the diagnostic socket.
- Ignition on.
- ISO selector on S8
- Type **D13**

9.INJ

COMPUTER IDENTIFICATION

The computer is not identified by reading a fault code but by reading the Part Number directly from the computer. After having set up a dialogue with the computer:

ENTER **G70*** **7700**

XXX

XXX

The Part Number will then appear on the central display in three sequences..

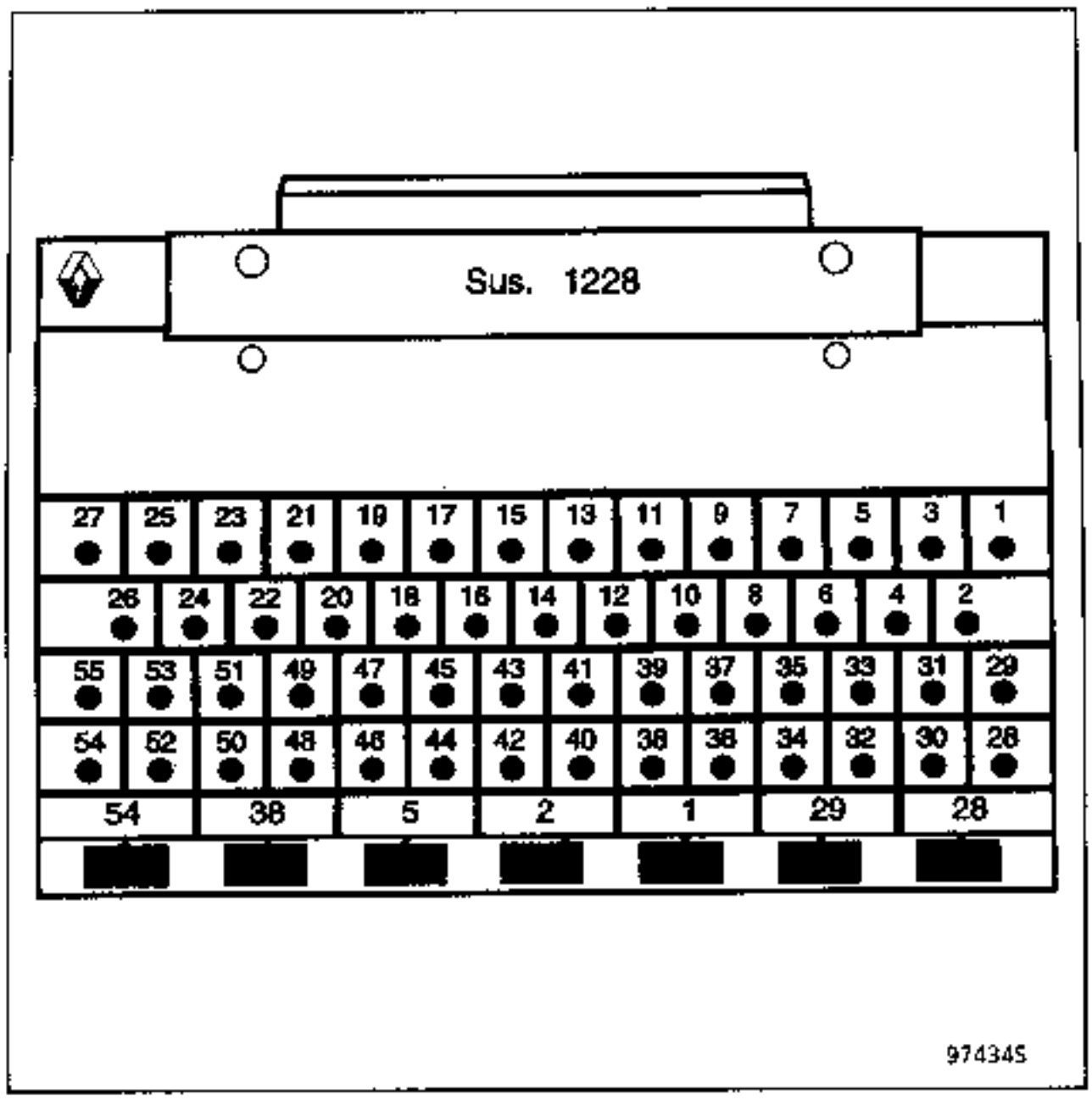
Each sequence is displayed for approximately two seconds. Each sequence is repeated twice. (To find the number, refer to the Workshop Repair Manual, section 12).

ERASING THE MEMORY (engine off, ignition on)

After the injection system has been worked on, the computer's memory can be erased by using the code G0** (Erasing memorised faults in diagnostic mode D13, ISO selector in position S8, enter G0**).

The memories of other components on the vehicle are not erased when this operation is used.

If information obtained from the XR25 means that electrical continuities have to be checked, connect the bornier **Sus. 1228.**



(The **Sus. 1228** consists of a 55 track base unit which has an integral printed circuit comprising 55 copper coated areas, numbered from 1 to 55).

Using the wiring diagrams, the tracks connecting the component or components can easily be checked.

IMPORTANT:

- All checks with the bornier **Sus. 1228** should only be performed with the battery disconnected.
- The bornier is designed to work with an ohmmeter only. Under no circumstances should a 12 volts supply be connected to the control points.

PRESENTATION OF FICHE N° 27 SIDE 1/2 WITH FAULT BARGRAPHS

N° 27 1/2 | S8 | code : D 1 3 | read : 9.n J

1	ILLUMINATED → FAULT TEST EXTINGUISHED → TURN CARD			CODE PRESENT
2	COMPUTER			ENGINE IMMOBILISER ★ 22
3	AIR TEMPERATURE			02 SENSOR ★ 23
4	COOLANT TEMPERATURE		SENSOR CIRCUITS	VEHICLE SPEED
5	PRESSURE			FLYWHEEL SIGNAL ★ 25
6	★ 06 PINKING			THROTTLE POSITION
7	CAMSHAFT			FUEL TANK PRESSURE
8	★ 08 FUEL PUMP		RELAY CONTROL CIRCUITS	BLOCKING ★ 28
9	★ 09 ANTI - PERCOLATION			AIR PUMP ★ 29
10	★ 10 O2 SENSOR OVERHEATING			BI MODE ★30

INJECTION (faults)

Memory del. : G 0 ★★
Status check request : G 0 1 ★

11	★11 INJECTOR CIRCUIT	CONNECTION A.T. → INJ.
12	★12 WARN. LAMP CIRCUIT FAULT	DATA + FUEL PUMP
13	SAVE DATA IN MEMORY	
14	IDLE SPEED REG. ★14 CIRCUIT	CANISTER PURGE CIRCUIT ★ 34
15	CONNECTION INJ. → A /C	EGR CIRCUIT ★35
16	★16 IGNITION COILS	COLD START INJECTORS ★36
17	★17 MIL WARNING LIGHT	
18		
19		
20	★20 COMPUTER CONFIGURATION	XR25 MEMORY 0

ADDITIONAL CHECKS : # --

01	Pressure	mb
02	Coolant temp.	°C
03	Air temp.	°C
04	Computer feed	V
05	02 sensor	V
06	Engine speed	rpm
12	Idling RCO	%
13	Pinking signal	
14	Speed difference	rpm
15	Pinking correct.	d°
16	Atmos. pressure	mb
17	Throttle pot.	
18	Vehicle speed	km per h
21	Auto. correct. of RCO idle speed	%
23	Canister purge RCO	%
24	RCO EGR	%
30	Auto. correct. of richness under high loads	
31	Auto. correct. of richness under low loads	
35	Mixture regulation	

END OF TEST: G 1 3 ★
Part No. : G 7 0 ★

Diagnostic faults :
Press V and 0
Return to diagnostic mode : D

15 ANG

FI21527-1

PRESENTATION OF FICHE N° 27 SIDE 2/2 WITH STATUS BARGRAPHS

N° 27 2/2 — **read : 10.nJ**

1	ILLUMINATED → STATUS TEST EXTINGUISHED → TURN CARD	CODE PRESENT
2	Full Load ← THROTTLE POSITIONS → No load	
3	FLYWHEEL SIGNAL	ACTIVE ENGINE IMMOBILISER
4	PARK/NEUTRAL POSITION	+ APC COMPUTER
5	TORQUE ADJUSTMENT	RELAY CONTROL LOCKING
6	RICHNESS REGULATION	IDLING REGULATION
7	FUEL PUMP CONTROL	CANISTER PURGE AUTHORIZED
8	ANTI-PERCOLATION CONTROL	ELECT. WINDSCREEN CONTROL
9	SELECTION	ACCELERATED IDLE SPEED
	AIR CONDITIONING	
10	REQUEST →	AUTHORIZATION

CONTROL MODES : G ·· ★
(If engine stationary)
10 Fuel pump relay
11 Blocking relay
12 A/C compressor
14 Idle speed reg. valve
16 Canister purge valve
17 Anti percolation relay
21 Warning lamp fault
22 Air pump relay
23 EGR valve
24 Bi-mode inlet valve

COMPUTER CONFIGURATION
(Vehicle with AT or MAN. GEARBOX)
See procedure in Workshop Manual

(IMPORTANT : monitor bar graph 20 left)

INJECTION (status)

Memory del. : G 0 ★ ★
Request fault test : G 0 2 ★

11	SIGNAL CAMSHAFT	BLEED CANISTER + ACTIVE SOL. VALVES
12	EGR SOLENOID CONTROL	ERASE MEMORISED FAULTS
13	AIR PUMP CONTROL	POWER STEERING PRESSOSTAT
14	BI-MODE INLET CONTROL	COLD START INJECTORS
15		
16		
17		
18		
19	Veh. with AT — COMPUTER CONFIGURATION — Veh. with Man. g/box	
20	FAULT PRESENT	XR25 MEMORY

ADDITIONAL CHECKS : # ··

01	Pressure	mb
02	Coolant temp.	°C
03	Air temp.	°C
04	Computer feed	V
05	02 sensor	V
06	Engine speed	rpm
12	Idling RCO	%
13	Pinking signal	
14	Speed difference	rpm
15	Pinking correct.	d°
16	Atmos. pressure	mb
17	Throttle pot.	
18	Vehicle speed	km per h
21	Auto. correct. of RCO idle speed	%
23	Canister purge RCO	%
24	RCO EGR	%
30	Auto. correct. of richness under high loads	
31	Auto. correct. of richness under low loads	
35	Mixture regulation	

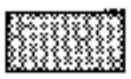
END OF TEST: G 1 3 ★
Part No. : G 7 0 ★

Diagnosed faults :
Press **V** and **9**
Return to diagnostic mode : D

15 ANG

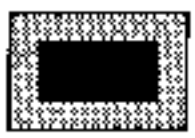
FI21527-2

REPRESENTATION OF THE BARGRAPHS

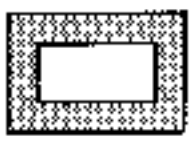


Illuminates when a dialogue has been established with the product computer. If it remains extinguished:
- the code does not exist,
- there is a fault in the tool, the computer or the line.

REPRESENTATION OF THE FAULTS (always on a coloured background)



If illuminated, indicates a fault on the tested product, the associated text defines the fault.

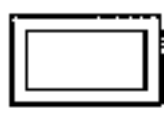
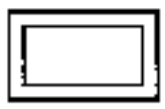
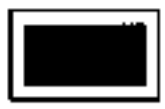


If extinguished, indicates that the fault has not been found on the tested product.

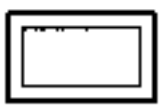
REPRESENTATION OF THE STATUSES (always on a white background)

Engine off, ignition on, no operator action

The status bargraphs on the fiche are represented as the status which they should have when the engine is off, the ignition is on and there is no operator action

- If on the fiche the bargraph is represented as  the test kit should give as information 
- If on the fiche the bargraph is represented as  the test kit should give as information
- either  or 

Engine running



Extinguishes when the function or condition given on the fiche can no longer be performed.

Illuminates when the function or condition given on the fiche is performed.

FUNCTION V9

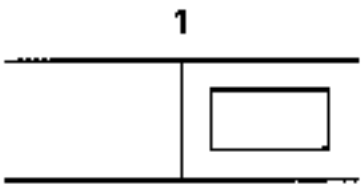
Fiche n° 27 side 1/2 and side 2/2 is a generic fiche used for several engines.
The different engines do not use all the bargraphs. To find out the bargraphs dealt with by the injection computer, after having set up a dialogue with the computer, press the V and 9 buttons simultaneously. The bargraphs dealt with will:

- illuminate permanently for non memorisable fault bargraphs or status bargraphs,
- flash for memorisable fault bargraphs.

To return to fault finding mode, press button D.

GENERAL NOTES	If several bargraphs are illuminated, check the insulation of line 48 on the computer from + 12 V. If the insulation is correct, deal with each of the bargraphs.

AFTER REPAIR	Erase the computer memory using G0**. Carry out a conformity check



Bargraph 1 RH extinguished

Fiche n° 27 side 1/2

XR25 CIRCUIT

XR25 assistance : no connection, CO, CC EARTH, CC + 12

NOTES

For fault finding, this bargraph should be illuminated

Check:
- all the fuses,
- the connection between the XR25 and the diagnostic socket,
- the presence of + 12 V on track 16 and earth on track 4 of the diagnostic socket.

Repair if necessary.

Check:
- the position of the selector (S8),
- the conformity of the cassette,
- the connection between the XR25 and the diagnostic socket.

Diagnostic socket	15	→	4	XR25 socket
	7	→	8	

Repair if necessary.

Connect bornier **Sus. 1228** instead of the computer and check the insulation and continuity between the tracks:

Bornier	38	→ 15	Diagnostic socket
	11	→ 7	Diagnostic socket
	2	→ earth	Earth MH
	3	→ earth	Earth MH
	24	→ fuse	Engine + after ignition feed fuse
	28	→ 3	Coil 1-4
	29	→ 3	Coil 2-3

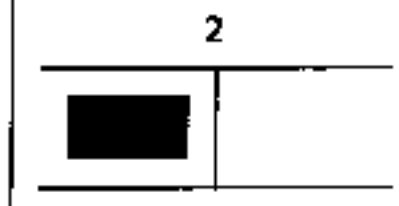
Repair.

Check for + 12 V before ignition on track 32 of the bornier **Sus. 1228.**

Repair.

AFTER REPAIR

Carry out a conformity check



Bargraph 2 LH illuminated

Fiche n° 27 side 1/2

COMPUTER CIRCUIT

XR25 assistance: Computer fault if bargraph 2LH illuminated

NOTES

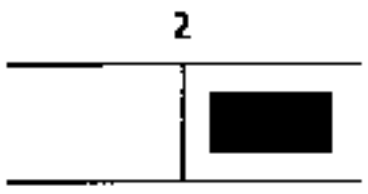
None

Computer is not correct or is faulty.

Replace the injection computer.

AFTER REPAIR

Carry out a conformity check



Bargraph 2 RH illuminated

Fiche n° 27 side 1/2

ENGINE IMMOBILISER CIRCUIT

XR25 assistance : CO or CC + 12 V line 35 of the computer

NOTES

None

Connect the bornier **Sus. 1228** instead of the computer and check the insulation and continuity of line:

Bornier 35 ⟶ 5 Connector P16 on engine connection unit

Repair if necessary.

If the fault persists, refer to status bargraph 3 RH side.

AFTER REPAIR

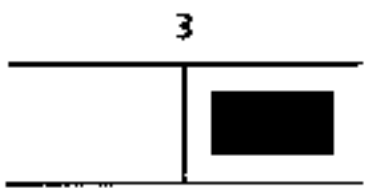
Erase the computer memory using G0**.
Carry out a conformity check

3	**Bargraph 3 LH illuminated** Fiche n° 27 side 1/2 AIR TEMPERATURE SENSOR CIRCUIT **XR25 assistance :** #03 = -40 CO LINE 20 OR 46 ; CC = 5V LINE 20 #03 = 119 CC LINE 46/20

NOTES	None

Check the resistance of the air temperature sensor.
If the resistance is not correct, replace the air temperature sensor .
Connect the bornier **Sus. 1228** instead of the computer and check the insulation and continuity of the electrical wiring between tracks: 1 sensor connector 46 bornier 2 sensor connector 20 bornier
If the electrical wiring is correct, replace the computer.

AFTER REPAIR	Erase the computer memory using G0**. Carry out a conformity check



Bargraph 3 RH illuminated Fiche n° 27 side 1/2

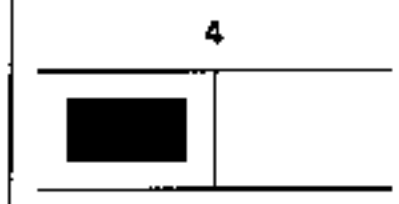
OXYGEN SENSOR CIRCUIT

XR25 assistance : #35 = 128 #05 = 0.408 CO LINE 17

NOTES	None

Check the connection and condition of the oxygen sensor connector.
Engine running, check for + 12V between tracks A and B on the oxygen sensor connector.
If there is not ~ 12V, repair the wiring for the sensor heating circuit.
Ignition off, connect bornier Sus. 1228 in place of the computer and check the continuity and insulation of the wiring between tracks : C/17 and B/18 (sensor connector /bornier) If necessary, repair the wiring.
The fault persists ! Replace the oxygen sensor
The fault persists ! Replace the computer.

AFTER REPAIR	Erase the computer memory using G0**. Carry out a conformity check



Bargraph 4 LH illuminated

Fiche n° 27 side 1/2

COOLANT TEMPERATURE SENSOR CIRCUIT

XR25 assistance: #02 = -40°C CC = 5V LINE 15 ; CO LINE 15 or 44
#02 = 119°C CC EARTH LINE 15 ; CC LINE 15/44

NOTES

If BG5LH is illuminated, refer to BG4RH
If BG3LH ; BG3RH ; BG6RH ; BG12RH are illuminated, refer to BG6RH

Check the resistance of the coolant temperature sensor.

The resistance is not correct, replace the sensor.

Connect the bornier **Sus. 1228** instead of the computer and check the continuity and the insulation of the electrical wiring between the tracks:

1 coolant temperature sensor	44 bornier
2 coolant temperature sensor	15 bornier
C pressure sensor	45 bornier
3 throttle potentiometer	45 bornier

Repair if necessary.

The fault persists! Replace the computer.

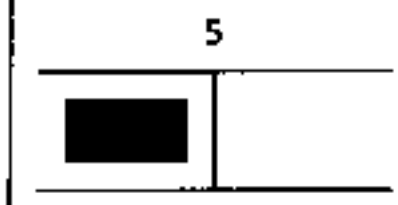
AFTER REPAIR

Erase the computer memory using G0**.
Carry out a conformity check

	**Bargraph 4 RH illuminated** Fiche n° 27 side 1/2 VEHICLE SPEED SENSOR CIRCUIT **XR25 assistance** : CO or CC LINE 12
NOTES	None

Carry out a road test and check the speed on the speedometer .
If the speed is zero, repair the wiring of track 12 of the computer and B1 of the sensor.
Check the connection and the feed of the speed sensor: + 12V on track A earth on track B2
Repair if necessary.
The fault persists! Replace the speed sensor.

AFTER REPAIR	Erase the computer memory using G0**. Carry out a road test. Carry out a conformity check



Bargraph 5 LH illuminated

Fiche n° 27 side 1/2

ABSOLUTE PRESSURE SENSOR CIRCUIT

XR25 assistance: #01 = 103 mb CO LINE 16 or LINE 44 or LINE 45; CC EARTH LINE 16
#01 = 1046 mb CO LINE 44; CC LINE 16 - 45

NOTES

If BG4LH is illuminated, refer to BG5 LH first
If BG6RH is illuminated, refer to BG5 LH first

Check the pressure sensor is electrically and pneumatically connected .

Ignition on, check that there is + 5V between track C and earth on track A.

There is not +5V between track C and track A

Connect the bornier **Sus. 1228** instead of the computer and check the insulation and continuity between the tracks:
A sensor connector **44** bornier
C sensor connector **45** bornier
B sensor connector **16** bornier

Repair if necessary.

There is not − 5V ! The fault persists! Replace the computer.

There is +5V between track C and track A

Ignition on, check the return voltage (0.2 to 5 V) on track B of the sensor.
Note: For this measurement, a vacuum pump can be used to check the voltage variation.

If the voltage does not vary, replace the sensor.

The voltage varies

Connect the bornier **Sus. 1228** instead of the computer and check the insulation and the continuity between track B of the sensor and 16 of the bornier.

Repair if necessary.

The fault persists! Replace the computer.

AFTER REPAIR

Erase the computer memory using G0**.
Carry out a conformity check

Bargraph 5 RH illuminated

Fiche n° 27 side 1/2

FLYWHEEL SENSOR CIRCUIT

XR25 assistance : *25 = CO CO LINE 33 or 34
*25 = CC.O INTERFERENCE
*25 = In SENSOR WIRE INVERTED

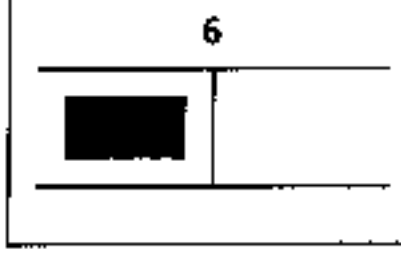
NOTES

None

Disconnect the sensor connector and check the resistance of the sensor between terminals A and B.
The resistance is not correct. Replace the sensor.
The resistance is correct.
Connect the bornier **Sus. 1228** instead of the computer and check the continuity and the insulation of the wiring between the tracks: A sensor 34 bornier B sensor 33 bornier
Repair if necessary.
The fault persists! Replace the computer.

AFTER REPAIR

Erase the computer memory using G0**.
Carry out a conformity check



Bargraph 6 LH illuminated Fiche n° 27 side 1/2

PINKING SENSOR CIRCUIT

XR25 assistance : #15 = 0 CO LINE 8
#15 = 0 and #13 = 0 CC LINE 8
} *06 - def

NOTES	None

Check the wiring of the faulty sensor.
Repair if necessary.
Connect the bornier **Sus. 1228** instead of the computer and check the insulation and the continuity of the line: 1 sensor 44 bornier 2 sensor 8 bornier
Repair if necessary.
The fault persists! Replace the pinking sensor.

AFTER REPAIR	Erase the computer memory using G0**. Carry out a conformity check

Bargraph 6 RH illuminated

Fiche n° 27 side 1/2

THROTTLE POTENTIOMETER CIRCUIT

XR25 assistance: #17 = 0 CO LINE 45 or 19 or CC EARTH LINE 19 or 45 or CC LINE 19- 46

NOTES

If BG5LH is illuminated, refer to BG6RH

Check the resistance of the throttle potentiometer between tracks 1 and 3 (R > 4000 ohms).

Check the variation of the throttle potentiometer between tracks 1 and 2.

1-3 < 4000 ohms or 1-2 does not vary. Replace the throttle potentiometer.

1-3 > 4000 ohms and 1-2 varies.

Connect the bornier **Sus. 1228** instead of the computer and check the insulation and the continuity between tracks:

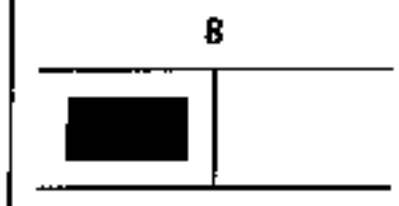
1 potentiometer	46 bornier
3 potentiometer	45 bornier
2 potentiometer	19 bornier

Repair if necessary.

The fault persists! Replace the computer.

AFTER REPAIR

Erase the computer memory using G0**.
Carry out a conformity check



Bargraph 8 LH illuminated Fiche n° 27 side 1/2

FUEL PUMP RELAY COMMAND CIRCUIT

XR25 assistance: *08 = CO.O CO or CC EARTH LINE 48 or 52
*08 = CC.1 CC + 12V LINE 48

NOTES

None

Check the injection fuses.

Check the impact sensor is correctly clipped in.
If it cannot be correctly re-engaged, replace it.

Check for + 12 V on tracks H1 and H3 on the fuel pump relay.
Repair the lines if necessary.

During the timed phase, check on the fuel pump relay for an earth on H2.

There is no earth on H2.

Check the insulation and continuity of the line H2 → 48 using bornier **Sus. 1228** instead of the computer.
Repair if necessary.

The fault persists! Replace the injection computer.

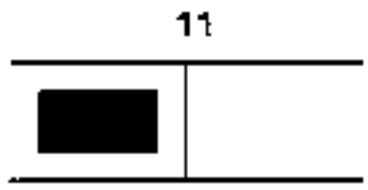
On this relay, check for + 12 V on H5.
Replace the relay if there is not + 12 V.

Connect bornier **Sus. 1228** in place of the computer and check the insulation and continuity of the line :
H5 relay 52 computer
Repair if necessary.

The fault persists! Replace the injection computer.

AFTER REPAIR

Erase the computer memory using G0**.
Carry out a conformity check



Bargraph 11 LH illuminated

Fiche n° 27 side 1/2

INJECTION CIRCUIT

XR25 assistance:	*11 = XX.CO.O	CO or CC EARTH LINE 4 or 30
	*11 = XX.CC	CC + 12V LINE 4 or 30
	*11 = Def	MEMORISED FAULT

NOTES

XX represents the cylinder N°.

Starter motor operating, bargraph illuminates for 10 seconds.

Check the resistance of each injector.

The resistance is not correct

Replace the faulty injector(s).

The resistance is correct

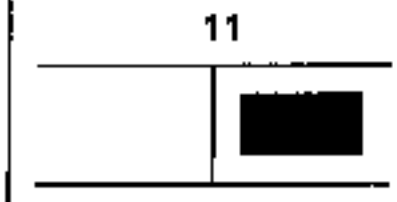
Connect the bornier **Sus. 1228** instead of the computer and check the continuity and insulation between the injector connectors on track 2 and tracks 4 and 30.

Repair the wiring if necessary.

The fault persists! Replace the computer.

AFTER REPAIR

Erase the computer memory using G0**.
Carry out a conformity check



Bargraph 11 RH illuminated

Fiche n° 27 side 1/2

AUTOMATIC TRANSMISSION ---> INJECTION COMPUTER CONNECTION

XR25 assistance: BG 11LH illuminated if there is a connection fault with the automatic transmission

NOTES

Only if automatic transmission

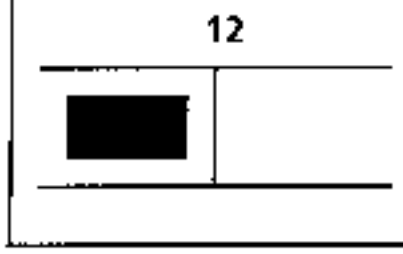
Connect the bornier **Sus. 1228** in place of the injection computer, and check the insulation and continuity of computer line 7 .

Repair.

The fault persists! Refer to automatic transmission fault finding section.

AFTER REPAIR

Erase the computer memory using G0**.
Carry out a conformity check



Bargraph 12 LH illuminated

Fiche n° 27 side 1/2

FAULT WARNING LIGHT CIRCUIT

XR25 assistance:	*12 = CO.O	CO or CC EARTH LINE 43
	*12 = CC.1	CC + 12V LINE 43

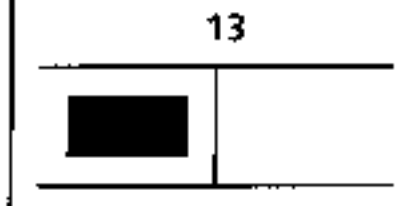
NOTES

BG12LH only illuminates when there is a fault on the warning light circuit and another fault simultaneously *(which normally illuminates the warning light)*.

Turn on the ignition and check that the fault warning light illuminates for 3 seconds.
If it does not illuminate, check the bulb.
Connect the bornier **Sus. 1228** instead of the computer and check the insulation and continuity of line 43 / warning light bulb via R34.
Repair if necessary.
The fault persists! Replace the computer.

AFTER REPAIR

Erase the computer memory using G0**.
Disconnect the pressure sensor and check the bargraphs on the XR25.
Erase the computer memory and carry out a conformity check



Bargraph 13 LH illuminated

Fiche n° 27 side 1/2

MEMORY CIRCUIT

XR25 assistance: Battery cut

NOTES

Ask if the battery has been removed

Check:
- the battery charge,
- the injection fuses,
- the battery leads.

Repair.

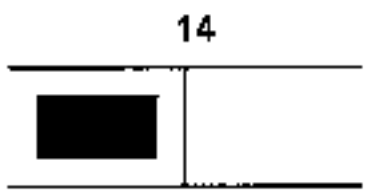
Turn the ignition on for 5 seconds, then start the engine.

Erase the computer memory using G0**.

The fault persists! Replace the computer.

AFTER REPAIR

Erase the computer memory using G0**.
Carry out a conformity check



Bargraph 14 LH illuminated

Fiche n° 27 side 1/2

IDLE SPEED REGULATION CIRCUIT

XR25 assistance: *14 = def #12 ≈ 10 #21 = 0.0 #31 = 1280

CO LINE 9, 35, 36, 40

*14 = def #12 ≈ 10 #21 = -0.3 #31 = 128

CC EARTH LINE 9, 35, 36, 40

NOTES

With no fault #12 should be variable

Check the resistance of the stepping motor coils between :

A and B
C and D

If the resistance is not correct, replace the stepping motor.

Connect bornier Sus. 1228 in place of the computer and check the insulation and continuity of the line :

bornier 35 → A stepping motor
bornier 40 → B stepping motor
bornier 36 → C stepping motor
bornier 9 → D stepping motor

Repair the wiring if necessary.

The fault persists! Replace the computer.

AFTER REPAIR

Erase the computer memory using G0**.
Carry out a conformity check

14

Bargraph 14 RH illuminated

Fiche n° 27 side 1/2

CANISTER BLEED CIRCUIT

XR25 assistance:		
	*34 = CC.0	#23 = 0.7 CO or CC EARTH LINE 42
	*34 = CC.1	#23 = 0.7 CC – 12V LINE 42
	*34 = Def	MEMORISED FAULT

NOTES

Check the resistance of the canister bleed valve between tracks A and B.

The resistance is not correct.
Replace the canister bleed valve.

The resistance is correct.
Engine idling, check for the presence of + 12V on track A of the canister bleed valve.

There is not – 12V on track A

Repair the wiring between track A of the canister bleed valve and wire joint AB in the engine wiring.

There is + 12V on track A

Connect bornier Sus. 1228 instead of the computer and check the insulation and the continuity of the electrical wiring between track B of the canister bleed valve and 42 of the bornier.

Repair if necessary.

The fault persists! Replace the injection computer.

AFTER REPAIR

Erase the computer memory using G0**.
Carry out a conformity check

Bargraph 15 LH illuminated Fiche n° 27 side 1/2

AIR CONDITIONING INJECTION CONNECTION CIRCUIT

XR25 assistance: CC + 12 V on line 51 of the computer

NOTES

Check that the vehicle has air conditioning and if not, examine the other bargraphs

Connect bornier **Sus. 1228** in place of the computer and check the insulation and continuity of the line :

Bornier 51 ⟶ B5 Air conditioning control panel

Repair if necessary.

The fault persists, refer to checking the status bargraphs 9LH, 10LH, 10RH.

AFTER REPAIR

Erase the computer memory using G0**.
Carry out a conformity check

Bargraph 15 RH illuminated

Fiche n° 27 side 1/2

EGR CIRCUIT

XR25 assistance:

*35 = CO. 0	CO OR CC EARTH LINE 10
*35 = CC. 1	CC + 12 V LINE 10

NOTES

None

Set the system up to control the EGR.

Check for :

+ 12 V	on terminal 2 of the EGR
earth	on terminal 1 of the EGR

Repair the wiring.

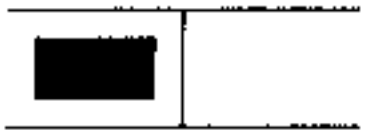
If the fault persists, replace the EGR.

The fault persists, replace the injection computer.

AFTER REPAIR

Erase the computer memory using G0**.
Carry out a conformity check

16



Bargraph 16 LH illuminated

Fiche n° 27 side 1/2

IGNITION COIL CIRCUIT

XR25 assistance:

*16 = 1.4 CC CO ON LINE 28
*16 = 2.3 CC CO ON LINE 29

NOTES

If there is CC EARTH, the fuse has blown and there is no dialogue with the XR25

Check the resistance of the faulty coil.

The resistance is not correct

Replace the faulty coil.

The resistance is correct

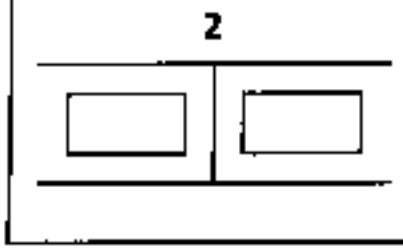
Connect bornier **Sus. 1228** instead of the computer and check the insulation and continuity of line 28/3 for coil 1 or 29/3 for coil 2 (bornier / coil).

Repair the faulty line.

The fault persists! Replace the computer.

AFTER REPAIR

Erase the computer memory using G0**.
Carry out a conformity check



Bargraph 2 LH, 2 RH, incorrect illumination

Fiche n° 27 side 2/2

THROTTLE POSITION CIRCUIT

XR25 assistance:

BG 2LH illuminated if full load
BG 2RH illuminated if no load
BG 2LH and BG 2RH extinguished if middle position.

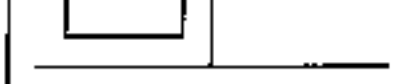
NOTES

No fault bargraph should be illuminated

The fault is not electrical.
Check the mechanics of the accelerator circuit (cable, accelerator pedal, ...).

AFTER REPAIR

Carry out a conformity check



Bargraph 3 LH, incorrect illumination Fiche n° 27 side 2/2

FLYWHEEL SIGNAL CIRCUIT

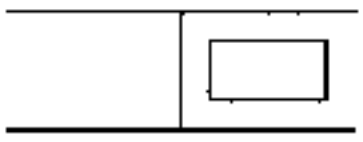
XR25 assistance: BG 3LH illuminated engine running

NOTES

Dealt with in the fault bargraphs.

AFTER REPAIR

None



Bargraph 3 RH incorrect illumination

Fiche n° 27 side 2/2

ENGINE IMMOBILISER CIRCUIT

XR25 assistance: BG 3LH illuminated, engine immobiliser active

NOTES

Check the use of the correct PLIP if no fault bargraph is illuminated.

XR25 as a pulse detector, G and Vin.

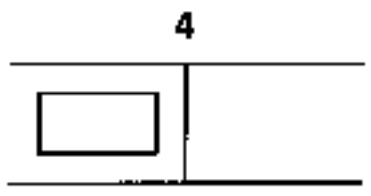
Check for pulses on track 37 of the bornier when the PLIP is pressed

If pulses are noted, replace the injection computer.

If no pulses are noted, refer to the immobiliser fault finding section.

AFTER REPAIR

Carry out a conformity check



Bargraph 4 LH incorrect illumination

Fiche n° 27 side 2/2

PARK/NEUTRAL POSITION CIRCUIT

XR25 assistance: Illuminated if Park/Neutral position

NOTES

Only with automatic transmission

XR25 on voltmeter [V].

Connect a wire to Vin and track 7 of the injection computer.

Ignition on, engage and release the gear lever in the P/N position, the voltage should change from 0 V to 5 V.

If correct, replace the injection computer.

If there is not 0 V / 5 V, check the insulation and continuity of the line:

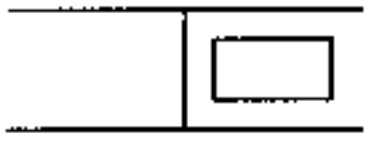
Injection computer 7 ⟶ 37 Automatic transmission computer

Repair if necessary.

The fault persists! Refer to the automatic transmission fault finding section

AFTER REPAIR

Carry out a conformity check



Bargraph 4 RH incorrect illumination

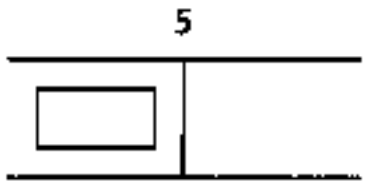
Fiche n° 27 side 2/2

+ AFTER IGNITION CIRCUIT

XR25 assistance: BG 4RH illuminated if + after ignition

NOTES	Dealt with in the fault bargraphs.

AFTER REPAIR	None



Bargraph 5 LH incorrect illumination

Fiche n° 27 side 2/2

TORQUE REDUCTION CIRCUIT

XR25 assistance: Illuminated every time a gear is changed with automatic transmission

NOTES

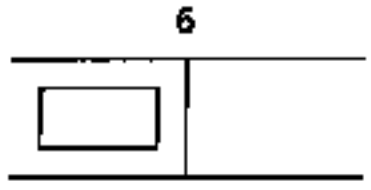
Only with automatic transmission
Status bargraph 4 LH is correctly illuminated.

Since status bargraph 4 LH is correctly illuminated, the injection computer is not faulty.

Refer to the automatic transmission fault finding section

AFTER REPAIR

Carry out automatic transmission fault finding if status bargraph 4 LH is correctly illuminated



Bargraph 6 LH incorrect illumination

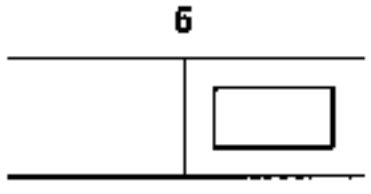
Fiche n° 27 side 2/2

RICHNESS REGULATION CIRCUIT

XR25 assistance: BG 6LH illuminated when the richness is regulated (Engine running)

NOTES

Dealt with in the fault bargraphs.



Bargraph 6 RH incorrect illumination

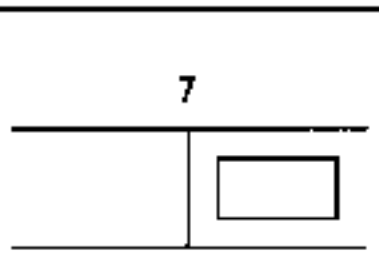
Fiche n° 27 side 2/2

IDLE REGULATION CIRCUIT

XR25 assistance: BG 6RH illuminated engine running

NOTES

Dealt with in the fault bargraphs.



Bargraph 7 RH incorrect illumination

Fiche n° 27 side 2/2

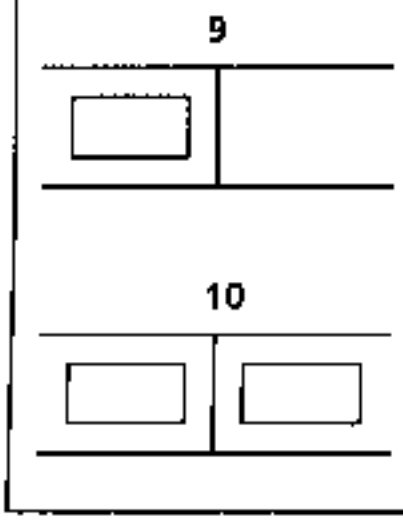
CANISTER BLEED CIRCUIT

XR25 assistance: BG 7RH illuminated when canister bleed authorised.

NOTES

Dealt with in the fault bargraphs.

AFTER REPAIR



Bargraphs 9LH, 10LH, 10RH incorrect illumination

Fiche n° 27 side 2/2

AIR CONDITIONING CIRCUIT

XR25 assistance:

9LH illuminated if air conditioning selected
10LH illuminated if air conditioning requested
10RH illuminated if air conditioning authorised

NOTES

All fault bargraphs must be dealt with, air conditioning must be fitted on the vehicle and selected

Connect the bornier **Sus. 1228** instead of the computer and check the insulation and the continuity between track:

Injection computer	5 →	B4	Air conditioning control panel
	51 →	B5	

Repair if necessary.

XR25 on voltmeter [V], check on track 5 of the bornier for the presence of 12 V.

There is not 12 V, refer to the air conditioning fault finding section.

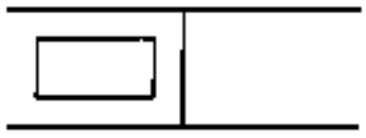
XR25 on voltmeter [V] injection computer connected, check for the presence of 12 V on track B5 of the air conditioning control panel.

There is not 12 V, replace the injection computer.

There is 12 V, refer to the air conditioning fault finding section.

AFTER REPAIR

Carry out a conformity check



Bargraph 12 LH incorrect illumination

Fiche n° 27 side 2/2

EGR CONTROL CIRCUIT

XR25 assistance: BG 12LH illuminated when the EGR is operated (engine running)

NOTES	Dealt with in the fault bargraphs.

AFTER REPAIR	None

NOTES

Only refer to these customer complaints after having performed a complete test using the XR25.

STARTING PROBLEMS

Does not start	Chart 1
Starts but stalls	Chart 2
Starting is too long	Chart 3

IDLE PROBLEMS

Too fast	Chart 4
Too slow	Chart 5
Engine unstable	Chart 6
Hunting	Chart 7

BEHAVIOUR WHEN DRIVING

Lacks performance	Chart 8
Misfiring and hesitation	Chart 9

SMOKE - POLLUTION

Gas analysis not correct	Chart 10
Testing the oxygen sensor	Chart 11

HIGH PETROL CONSUMPTION — Chart 12

ENGINE NOISE

Pinking	Chart 13

Chart 1 — STARTING PROBLEMS
Does not start

NOTES

Only refer to this customer complaint after having performed a complete test using the XR25.

Check the impact sensor is clipped in correctly.Check all the (injection) passenger compartment connection unit and engine fuses . Repair if necessary.
Does the fault persist?

— no → End of fault finding

yes ↓

Does the fuel pump make a noise when the ignition is turned on?

— yes → See Chart 1A

no ↓

When the ignition is switched on, does the fuel pump relay make a noise?

— no → Check for the presence of + 12 V on H1 of this relay. Repair.

Connect the bornier instead of the injection computer and check the insulation and the continuity of bornier line 6 relay H2.
Repair.

The fault persists, replace the relay.

yes ↓

Check for the presence of 12 V on track H3 of this relay.
Repair if necessary.
If the fault persists

During the timed phase, check for the presence of 12 V on track H5 of this relay.
Is it correct?

— no → Replace the relay

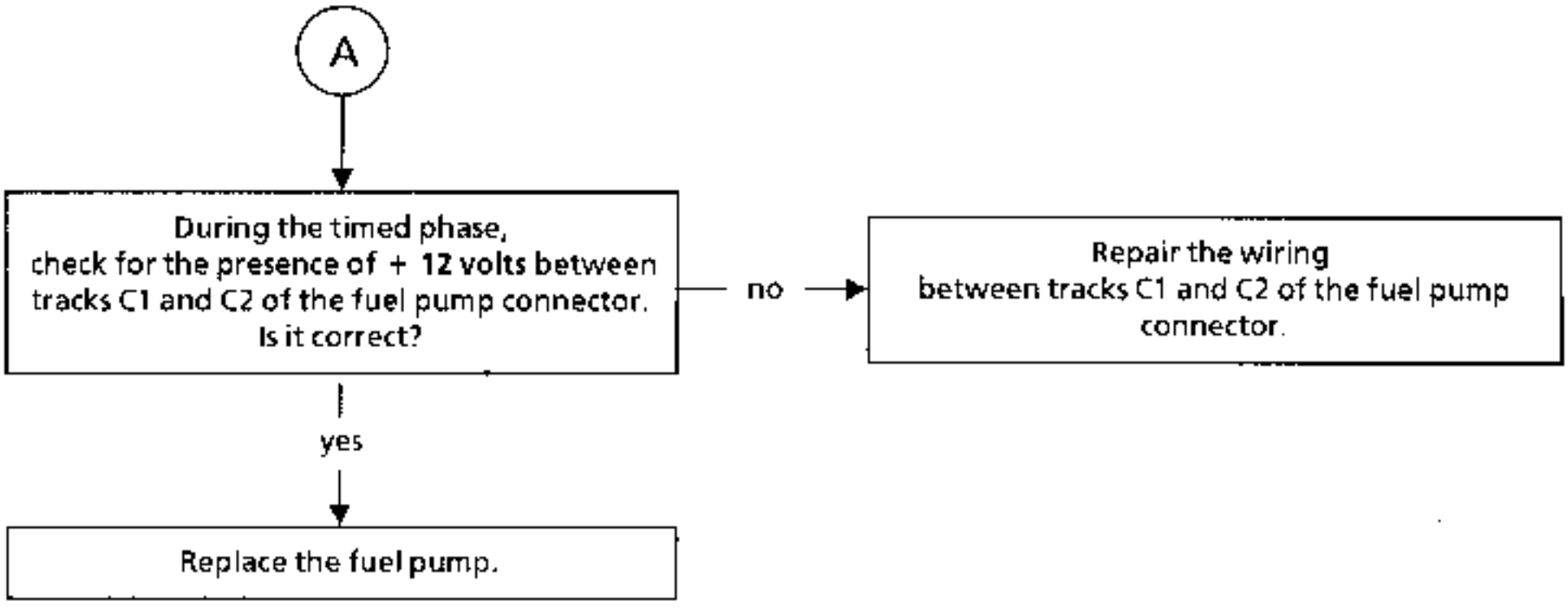
yes ↓

(A)

AFTER REPAIR

Check the sensors disconnected during the operation are correctly reconnected
Erase the computer memory using G0**
Carry out a conformity check

Chart 1
CONT



AFTER REPAIR

Check the sensors disconnected during the operation are correctly reconnected
Erase the computer memory using G0**
Carry out a conformity check

Chart 1A — STARTING PROBLEMS
Does not start

NOTES

Only refer to this customer complaint after having performed a complete test using the XR25.

Connect the OPTIMA 5800 diagnostic station and perform a starting test.
Does the station detect a fault?

no →

Check the fuel flow and pressure (refer to vehicle Workshop Repair Manual).
Repair the fuel circuit if necessary (pump, filter, pipes, regulator, injectors...).
If the fault persists

yes ↓

Repair if necessary.
If the fault persists

Connect the OPTIMA 5800 diagnostic station and carry out an engine compression test.
Is it normal?

yes ←

no ↓

There is a problem with the engine

Check the exhaust pipe is not blocked. Repair if necessary.
If the fault persists

Replace the injection computer.

AFTER REPAIR

Check the sensors disconnected during the operation are correctly reconnected
Erase the computer memory using G0**
Carry out a conformity check

Chart 2	STARTING PROBLEMS The engine starts but stalls

NOTES	Only refer to this customer complaint after having performed a complete test using the XR25.

Ignition on,
on the XR25 , check the value of
#12 and 21.
Are these values coherent?

no → Refer to bargraph 14 LH fault chart.

yes ↓

Check the air inlet circuit and the exhaust pipe.
Repair if necessary.
If the fault persists

↓

Check the fuel flow and pressure.
Repair if necessary [pump, filter, regulator, pipes, injectors (seals) ...]
If the fault persists

↓

There is a problem with the engine and the injection is not faulty.

AFTER REPAIR	Check the sensors disconnected during the operation are correctly reconnected Erase the computer memory using G0** Carry out a conformity check

Chart 3	STARTING PROBLEMS Starting is too long

NOTES	Only refer to this customer complaint after having performed a complete test using the XR25.

Connect the OPTIMA 5800 diagnostic station and perform a starting test. Does the station detect a fault?

yes → Follow the instructions.

no ↓

Perform a test on the station with the engine running.
Does the station detect a fault?

yes → Follow the instructions.

no ↓

Check the fuel flow and pressure
(Refer to vehicle Workshop Repair Manual.
Repair the fuel circuit if necessary (pump, filter, pipes, regulator, injectors...).
If the fault persists

↓

Check the injectors are correctly sealed.
If they are not correctly sealed,
replace the faulty injector or injectors.
If the fault persists

↓

There is a problem with the engine and the injection is not faulty.

AFTER REPAIR	Check the sensors disconnected during the operation are correctly reconnected Erase the computer memory using G0** Carry out a conformity check

Chart 4	IDLE PROBLEMS Idle too fast

NOTES	Only refer to this customer complaint after having performed a complete test using the XR25. R > theoretical idle speed or #12 < theoretical value especially power assisted steering pressostat, #02 (coolant temperature)

Check no air is leaking into the manifold (seals, take-off points on the inlet manifold, plugs, ...).
Repair if necessary.
If the fault persists

↓

Check on the throttle body that it is up against the lower mechanical stop (#17 < theoretical value). Also check the accelerator control. Repair if necessary.
If the fault persists

↓

Check the fuel pressure is not too high.
Repair if necessary
(injectors, pump, pressure regulation, pipes, ...).
If the fault persists

↓

The injection is not faulty.
Check the engine.

AFTER REPAIR	Check the sensors disconnected during the operation are correctly reconnected Erase the computer memory using G0** Carry out a conformity check

Chart 5	IDLE PROBLEMS Idle too slow

NOTES	Only refer to this customer complaint after having performed a complete test using the XR25. R < theoretical idle speed or #12 > theoretical value

Connect the OPTIMA 5800 diagnostic station and and perform and ignition test with the engine running.
Does the station detect a fault?

yes → Follow the instructions.

no ↓

Check the fuel flow and pressure (refer to vehicle Workshop Repair Manual).
Repair the fuel circuit if necessary (pump, filter, pipes, regulator, injectors, ...).
If the fault persists

↓

The injection is not faulty.
Check the engine.

AFTER REPAIR	Check the sensors disconnected during the operation are correctly reconnected Erase the computer memory using G0** Carry out a conformity check

Chart 6	IDLE PROBLEMS Engine unstable

NOTES	Only refer to this customer complaint after having performed a complete test using the XR25.

Perform a gas analysis
(Refer to fault chart 10 - smoke/pollution).
If the fault persists

Connect the OPTIMA 5800 diagnostic station and perform an ignition test with the engine running.
Does the station detect a fault?

yes → Follow the instructions.

no

Check the operation of the oxygen sensor
(Refer to fault chart 11 - smoke/pollution).
If the fault persists

Engine idling, check the coherence of #01 (the value read should be less than 500 mbar).
Is it correct?

no → Check the absolute pressure sensor and its wiring loom. Repair,
and if necessary replace the sensor.

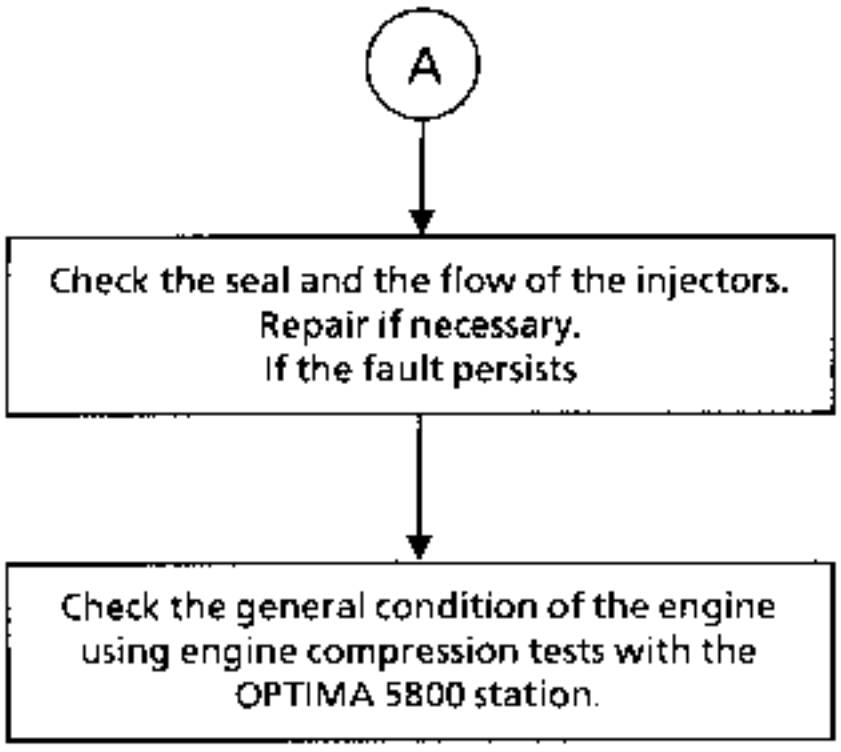
yes

Check the fuel flow and pressure
(refer to vehicle Workshop Repair Manual).
Repair the fuel circuit if necessary (pump, filter, pipes, regulator, injector, ...).
If the fault persists

A

AFTER REPAIR	Check the sensors disconnected during the operation are correctly reconnected Erase the computer memory using G0** Carry out a conformity check

Chart 6
CONT

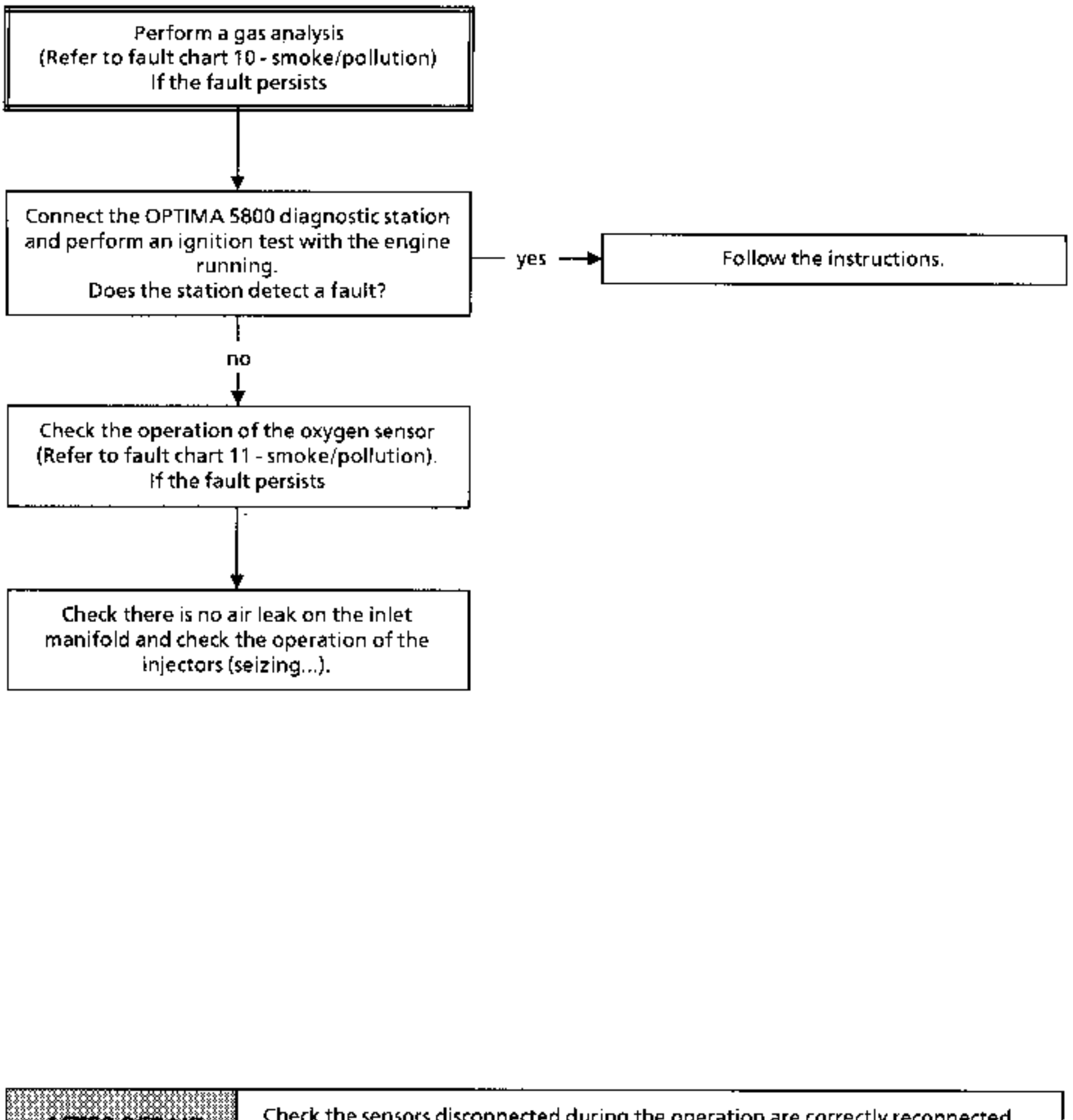


AFTER REPAIR

Check the sensors disconnected during the operation are correctly reconnected
Erase the computer memory using G0**
Carry out a conformity check

Chart 7	IDLE PROBLEMS Hunting

NOTES	Only refer to this customer complaint after having performed a complete test using the XR25.



AFTER REPAIR	Check the sensors disconnected during the operation are correctly reconnected Erase the computer memory using G0** Carry out a conformity check

Chart 8	BEHAVIOUR WHEN DRIVING Lacks performance

NOTES	Only refer to this customer complaint after having performed a complete test using the XR25.

Check the throttle opens fully
(full load bargraph illuminated).
Check the adjustment of the accelerator control. Repair if necessary.
If the fault persists

↓

Check the air filter: dirty, deformed. Repair if necessary.
If the fault persists

↓

Connect the OPTIMA 5800 diagnostic station and perform an ignition test with the engine running.
Does the station detect a fault?

yes → Follow the instructions.

no

↓

Perform a gas analysis
(Refer to fault chart 10 - Smoke/pollution).
If the fault persists

↓

Connect the OPTIMA 5800 diagnostic station and perform an engine compression test
Is it normal?

no → There is a problem with the engine.

yes

↓

(A)

AFTER REPAIR	Check the sensors disconnected during the operation are correctly reconnected Erase the computer memory using G0** Carry out a conformity check

Chart 8 CONT

A

Check the exhaust pipe (obstruction ...). Is it correct?

yes

With the XR25, check #15.
Does #15 ≠ 0 ?

yes → Perform a road test, driving in 4th or 5th full load and listen to the engine (pinking).
Does bargraph 6LH illuminate?

no

Refer to fault chart 12 pinking.

no

There is a problem with the engine and the injection is not faulty.

yes

Refer to bargraph 6LH fault chart pinking sensor.

AFTER REPAIR	Check the sensors disconnected during the operation are correctly reconnected Erase the computer memory using G0** Carry out a conformity check

Chart 9	BEHAVIOUR WHEN DRIVING Misfiring and hesitation

NOTES	Only refer to this customer complaint after having performed a complete test using the XR25.

Perform a road test if possible to highlight the fault.
If the fault is reproduced

Connect the OPTIMA 5800 diagnostic station and perform an ignition test with the engine running.
Does the station detect a fault?

yes → Follow the instructions.

no

Perform a gas analysis
(Refer to fault chart 10 - Smoke/pollution).
If the fault persists

Check the oxygen sensor
(Refer to fault chart 11 - Smoke/pollution).
If the fault persists

Check for the presence and the cleanliness of the restriction in the absolute pressure sensor pipe.
Repair if necessary.
If the fault persists

Check the seal of the injections, and the fuel flow and pressure (refer to Workshop Repair Manual). Repair if necessary.
If the fault persists

A

AFTER REPAIR	Check the sensors disconnected during the operation are correctly reconnected Erase the computer memory using G0** Carry out a conformity check

Chart 9
CONT

A

Check the condition of the flywheel target.
This is done by using the engine speed sensor signal display function on the OPTIMA 5800 station.
Repair if necessary.
If the fault persists

Check the valves are not clogged.
Clean the valves if necessary.
After cleaning, does the fault persist?

yes

There is a problem with the engine, the injection is not faulty.

AFTER REPAIR

Check the sensors disconnected during the operation are correctly reconnected
Erase the computer memory using G0**
Carry out a conformity check

Chart 10	SMOKE - POLLUTION Gas analysis not correct

NOTES	Only refer to this customer complaint after having performed a complete test using the XR25.

Connect the OPTIMA 5800 diagnostic station and connect it to a 4040, 5040 or AGM 1500 type 4 gas analyser. Perform an anti-pollution/ gas analysis test.
Does the station detect a fault?

no → End of fault finding using fault chart 10
NOTE: a correct gas analysis indicates that the catalytic converter is working correctly.

yes ↓

Is the CO too high (CO > 0.5 when idling or CO > 0.3 at 2500 rpm.) ?

yes → Check the oxygen sensor (Refer to fault chart 11 - Smoke/pollution). If the fault persists.

Check there is not a problem with the engine by performing a compression test (OPTIMA 5800 diagnostic station).

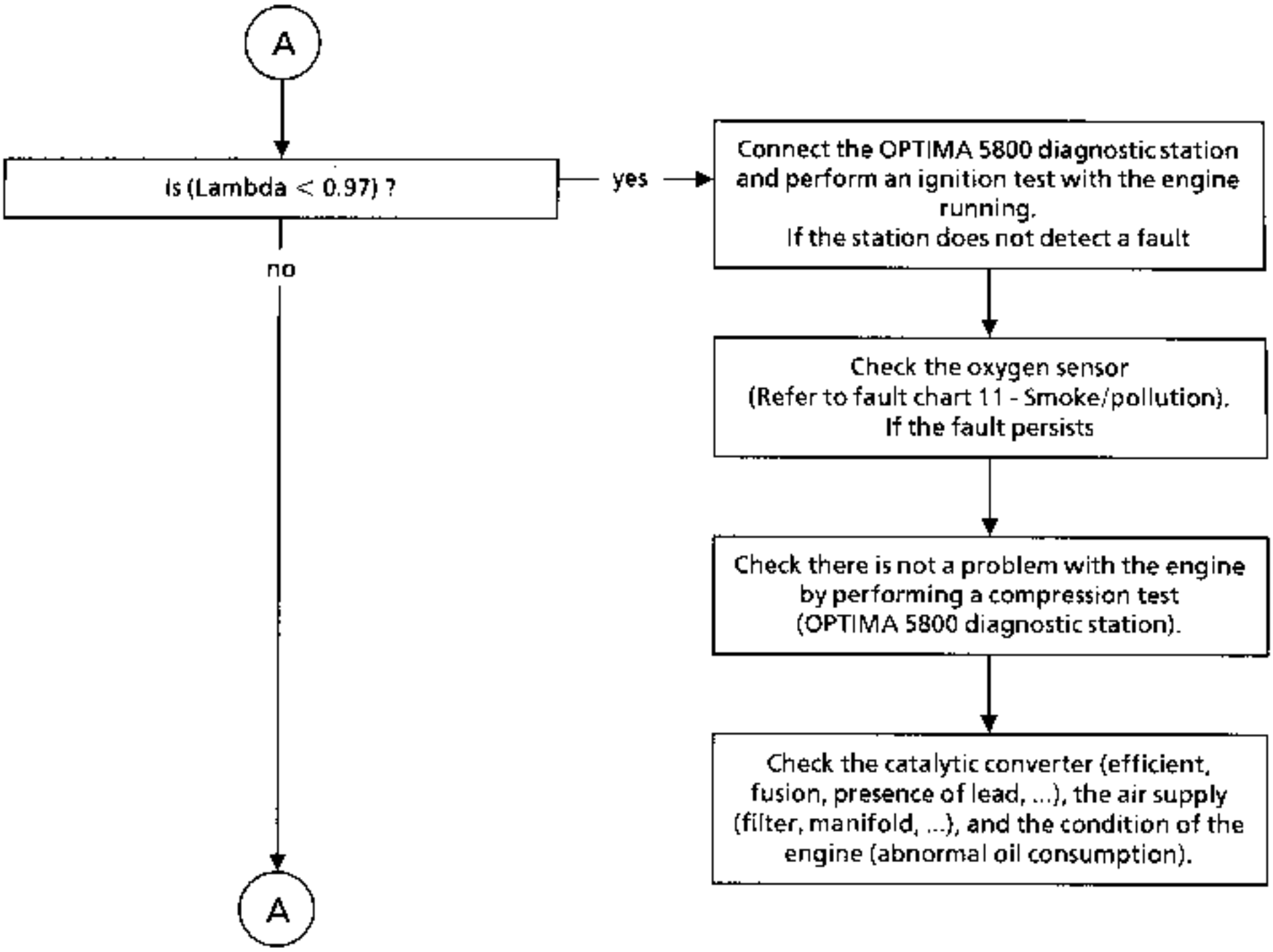
Check the catalytic converter (efficient, fusion, presence of lead, ...), the air supply (filter, manifold, ...), and the condition of the engine (abnormal oil consumption).

no ↓

A

AFTER REPAIR	Check the sensors disconnected during the operation are correctly reconnected Erase the computer memory using G0** Carry out a conformity check

Chart 10
CONT 1



AFTER REPAIR	Check the sensors disconnected during the operation are correctly reconnected Erase the computer memory using G0** Carry out a conformity check

Chart 10
CONT 2

A

Lambda > 1.03

yes → Check the sealing of the exhaust pipe after the catalytic converter (air leak). Repair if necessary. If the fault persists

Connect the OPTIMA 5800 diagnostic station and perform an ignition test with the engine running. If the station does not detect a fault

Check the oxygen sensor (Refer to fault chart 11 - Smoke/pollution). If the fault persists

Check there is not a problem with the engine by performing a compression test (OPTIMA 5800 diagnostic station).

Check the fuel supply (injectors, pressure regulator,...) and the efficiency of the catalytic converter (fusion, lead,...)

no

Is the HC level too high? (HC > 100 ppm)

yes → Connect the OPTIMA 5800 diagnostic station and perform an ignition test with the engine running. If the station does not detect a fault

Check the anti-evaporation circuit (canister), the inlet manifold heating function and the efficiency of the catalytic converter.

no

A

AFTER REPAIR

Check the sensors disconnected during the operation are correctly reconnected
Erase the computer memory using G0**
Carry out a conformity check

JF5Q31.1

Chart 10
CONT 3

A

Is the oxygen level too high (O_2 > 0.8 %)

yes → Connect the OPTIMA 5800 diagnostic station and perform an ignition test with the engine running.
If the station does not detect a fault

Check there is no air leak on the inlet manifold and check the operation of the injectors (seizing...).

no

CO_2 too low.

yes → Check the sealing of the exhaust pipe after the catalytic converter and check the operation of the injectors (seizing...).

AFTER REPAIR

Check the sensors disconnected during the operation are correctly reconnected
Erase the computer memory using G0**
Carry out a conformity check

Chart 11 — SMOKE - POLLUTION
Testing the oxygen sensor

NOTES

Only refer to this customer complaint after having performed a complete test using the XR25, especially the following parameters:
- #35 (richness correction): this should oscillate around 128
- #30 and #31 (adaptive richness): under no circumstances should they be at their limits.

Connect the OPTIMA 5800 diagnostic station and perform an anti-pollution / oxygen sensor test.
Does the station detect a fault?

no → End of fault finding using fault chart 11.
The oxygen sensor is not faulty.

yes ↓

Check the sensor heating:
- presence of − 12 V at the connector with the engine running,
- the sensor heating resistor is not in an open circuit or short circuited to earth.

If the heating is correct

Is the minimum voltage too high?
(Umin > 300 mV: signal offset towards richness).

yes → Connect the OPTIMA 5800 diagnostic station and perform an ignition test with the engine running.
If the station does not detect a fault

↓ Check the fuel pressure (regulator), the injectors (seal,...) the anti-evaporation circuit (canister) and the fuel grade.
Repair if necessary.
If the fault persists

↓ Replace the sensor.

no ↓

(A)

AFTER REPAIR

Check the sensors disconnected during the operation are correctly reconnected
Erase the computer memory using G0**
Carry out a conformity check

Chart 11
CONT 1

A

Is the maximum voltage too low?
(Umax < 600 mV: signal offset towards a lean mixture).

yes →

Check there is no air leak before the oxygen sensor (exhaust manifold leak,...) and the fuel pressure
Repair if necessary.
If the fault persists

Replace the sensor.

no

Is the difference between maximum and minimum too low (< 500 mV)?

yes →

The sensor is probably clogged.
Perform a road test to unclog it and redo the test on the station.
If the test is not correct

Connect the OPTIMA 5800 diagnostic station and perform an ignition test with the engine running.
If the station does not detect a fault

Check there is no air leak on the inlet manifold and check the operation of the injectors (seizing, ...).
Repair if necessary.
If the fault persists.

Replace the sensor.

no

A

AFTER REPAIR

Check the sensors disconnected during the operation are correctly reconnected
Erase the computer memory using G0**
Carry out a conformity check

Chart 11
CONT 2

A

Sensor period incorrect (> 1 second).

yes →

The sensor may become clogged or polluted (silicon) if the sensor is open for a long time.
An additional fault finding operation is possible using a 4 gas analyser (SOURIAU 4040-5040 or SAGEM AGM 1500) since, in this case, Lambda > 1.03 and O_2 > 1 %.
Perform a road test to unclog the sensor.
Does it open correctly?

no ↓

Replace the sensor.

AFTER REPAIR

Check the sensors disconnected during the operation are correctly reconnected
Erase the computer memory using G0**
Carry out a conformity check

Chart 12	HIGH FUEL CONSUMPTION

NOTES	Only refer to this customer complaint after having performed a complete test using the XR25.

Check there are no fuel leaks.
Repair if necessary.
If the fault persists

↓

Check the idle speed
(#06 on XR25).
Is it correct?

— no → Refer to fault chart 4 or 5, idle problems
(idle speed too fast or too slow).

yes

↓

Check the vehicle complies with its definition
and is in good condition.
Repair if necessary.
If the fault persists

↓

Perform a gas analysis
(Refer to fault chart 10 - Smoke/pollution).
If the fault persists

↓

Check the operation of the O_2 sensor
(Refer to fault chart 11 - Smoke/pollution).
If the fault persists

↓

(A)

AFTER REPAIR	Check the sensors disconnected during the operation are correctly reconnected Erase the computer memory using G0** Carry out a conformity check

Chart 12
CONT

A

Connect the OPTIMA 5800 diagnostic station and perform an engine compression test.
Is it normal?

no → There is a problem with the engine.

yes

Check the petrol flow and pressure (methods, refer to vehicle Workshop Repair Manual) and the canister bleed circuit.
Repair if necessary (regulator, pump, filter, pipes).
Does the fault persist?

yes

This is not an injection problem, there is a problem with the engine.

Check:
- engine oil level
- coolant
- axle assemblies
- the general condition of the engine.

If necessary, perform a consumption test with the ECONOTEST consumption device.

AFTER REPAIR

Check the sensors disconnected during the operation are correctly reconnected
Erase the computer memory using G0**
Carry out a conformity check

Chart 13	ENGINE NOISE Pinking

NOTES	Only refer to this customer complaint after having performed a complete test using the XR25.

Perform a road test with the XR25 and check # 13, 15.
Is the fault reproduced?

no → The customer must use his vehicle under specific conditions, check with the customer.

yes ↓

Perform a gas analysis
(Refer to fault chart 10 -Smoke/pollution).
If the fault persists

↓

Check the operation of the O_2 sensor
(Refer to fault chart 11 - Smoke/pollution).
If the fault persists

↓

Ask the customer what type of fuel he uses.
Is it suitable?

no → Remind the customer what type of fuel he should use.

yes ↓

Check the condition and the conformity of the spark plugs.
Replace the spark plugs if necessary.
Does the fault persist?

yes ↓

(A)

AFTER REPAIR	Check the sensors disconnected during the operation are correctly reconnected Erase the computer memory using G0** Carry out a conformity check

Chart 13 CONT

A

Check the conformity: of the routing of the inlet air pipes and the air filter.
Repair if necessary.
Does the fault persist?

yes

Using a stroboscopic light and the XR25, #51, check the ignition advance
Are the values the same?

no → Refer to bargraph 5 RH fault chart.

yes

This is not an injection problem.
Also check the engine cooling. The combustion chambers may have to be cleaned.

AFTER REPAIR	Check the sensors disconnected during the operation are correctly reconnected Erase the computer memory using G0** Carry out a conformity check

NOTES

Only refer to these customer complaints after having performed a complete test using the XR25

STARTING PROBLEMS

Does not start	Chart 1
Starts but stalls	Chart 2
Starting is too long	Chart 3

IDLE PROBLEMS

Too fast	Chart 4
Too slow	Chart 5
Engine unstable	Chart 6
Hunting	Chart 7

BEHAVIOUR WHEN DRIVING

Lacks performance	Chart 8
Misfiring and hesitation	Chart 9

SMOKE - POLLUTION

CO and/or HC too high	Chart 10

HIGH PETROL CONSUMPTION — Chart 11

ENGINE NOISE

Pinking	Chart 12

The method without the OPTIMA station does not comply with a sufficient quality criterion.
Use the method with the OPTIMA station to obtain this quality criterion.

Chart 1	STARTING PROBLEMS Does not start

NOTES	Only refer to this customer complaint after having performed a complete test using the XR25

Check the impact sensor is correctly engaged.
Check all the injection fuses
- Passenger compartment connection unit
- Engine connection unit

Repair if necessary. If the fault persists

↓

Does the fuel pump make a noise when the ignition is turned on?

yes → See Chart 1A

no

↓

Perform control mode G10*
and check if the relay makes a noise (several clicking noises). Is it correct?

no → Replace the relay

yes

↓

Check for the presence of 12 V on track H3 of this relay.
Repair if necessary.
If the fault persists

↓

During the timed phase, check for the presence of 12 V on track H5 of this relay.
Is it correct?

no → Replace the relay

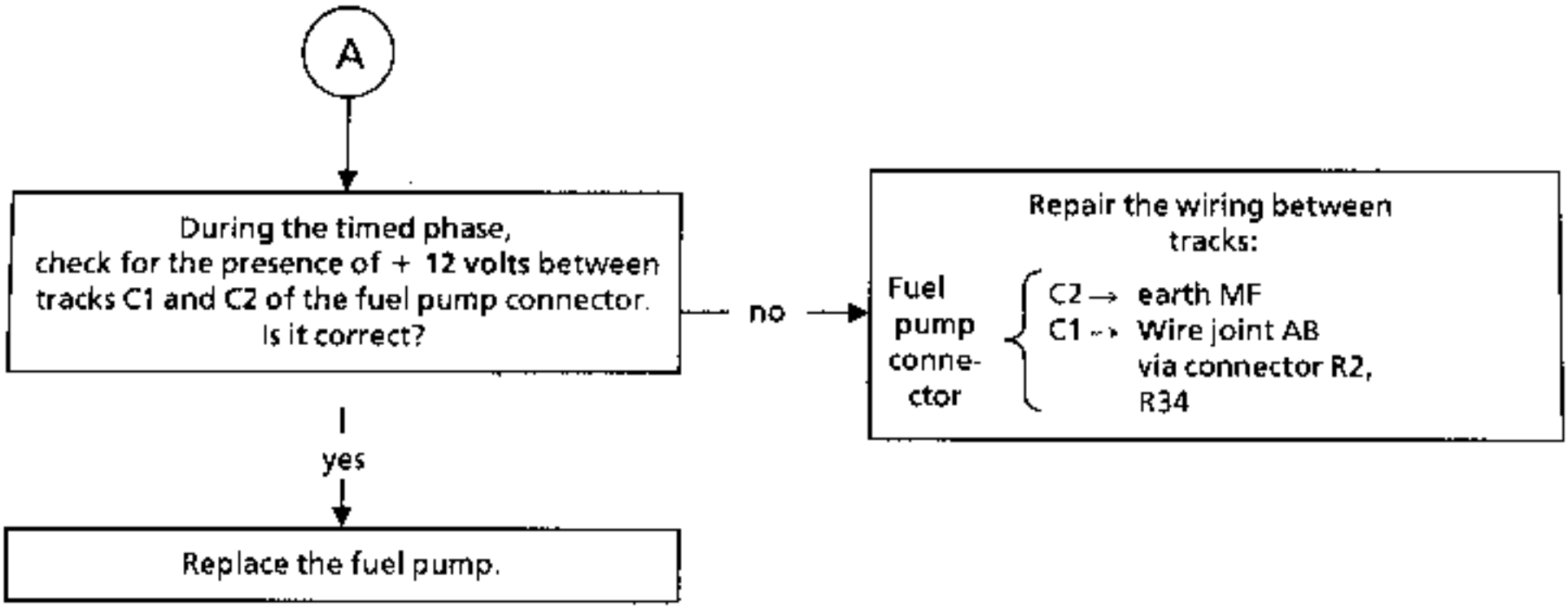
yes

↓

(A)

AFTER REPAIR	Check the sensors disconnected during the operation are correctly reconnected Erase the computer memory using G0** Carry out a conformity check

Chart 1
CONT



AFTER REPAIR	Check the sensors disconnected during the operation are correctly reconnected Erase the computer memory using G0** Carry out a conformity check

Chart 1A — STARTING PROBLEMS
Does not start

NOTES

Only refer to this customer complaint after having performed a complete test using the XR25.

Check for the presence of a high voltage under the action of the starter motor on the spark plug leads . Is there a high voltage?

yes → Check the petrol flow and pressure (refer to vehicle Workshop Repair Manual). Repair the fuel circuit if necessary (pump, filter, pipes, regulator, injectors...). If the fault persists

yes → This is an engine problem and the injection is not faulty.

no → Check the HT circuit. Repair if necessary. If the customer complaint persists

Ignition on, check on the coils for the presence of + 12 V on track 1. Is there + 12 V ?

no → Check the continuity of the wiring between track 1 (coils) and wire joint AD. Repair.

yes

Ignition on, check the resistance between tracks 1 and 3 on the coils. Is it correct?

no → Replace the faulty coil

yes

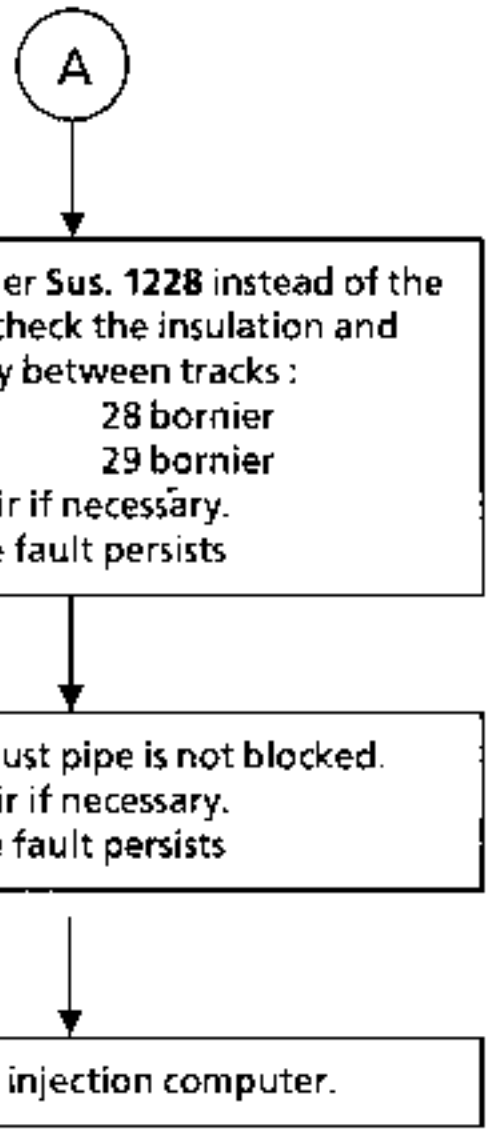
Check the continuity of the 2/2 connection (coil 1 and coil 2). Repair if necessary. If the fault persists

A

AFTER REPAIR

Check the sensors disconnected during the operation are correctly reconnected
Erase the computer memory using G0**

Chart 1A CONT



AFTER REPAIR	Check the sensors disconnected during the operation are correctly reconnected Erase the computer memory using G0**

Chart 2	STARTING PROBLEMS The engine starts but stalls

NOTES	Only refer to this customer complaint after having performed a complete test using the XR25

Ignition on,
check on the XR25
the value of #12 and 21.
Are these values coherent?

no → Refer to bargraph 14 LH fault chart.

yes ↓

Check the air inlet circuit and the exhaust pipe.
Repair if necessary.
If the fault persists

↓

Check the petrol flow and pressure.
Repair if necessary [pump, filter, regulator, pipes, injectors (sealing) ...]
If the fault persists

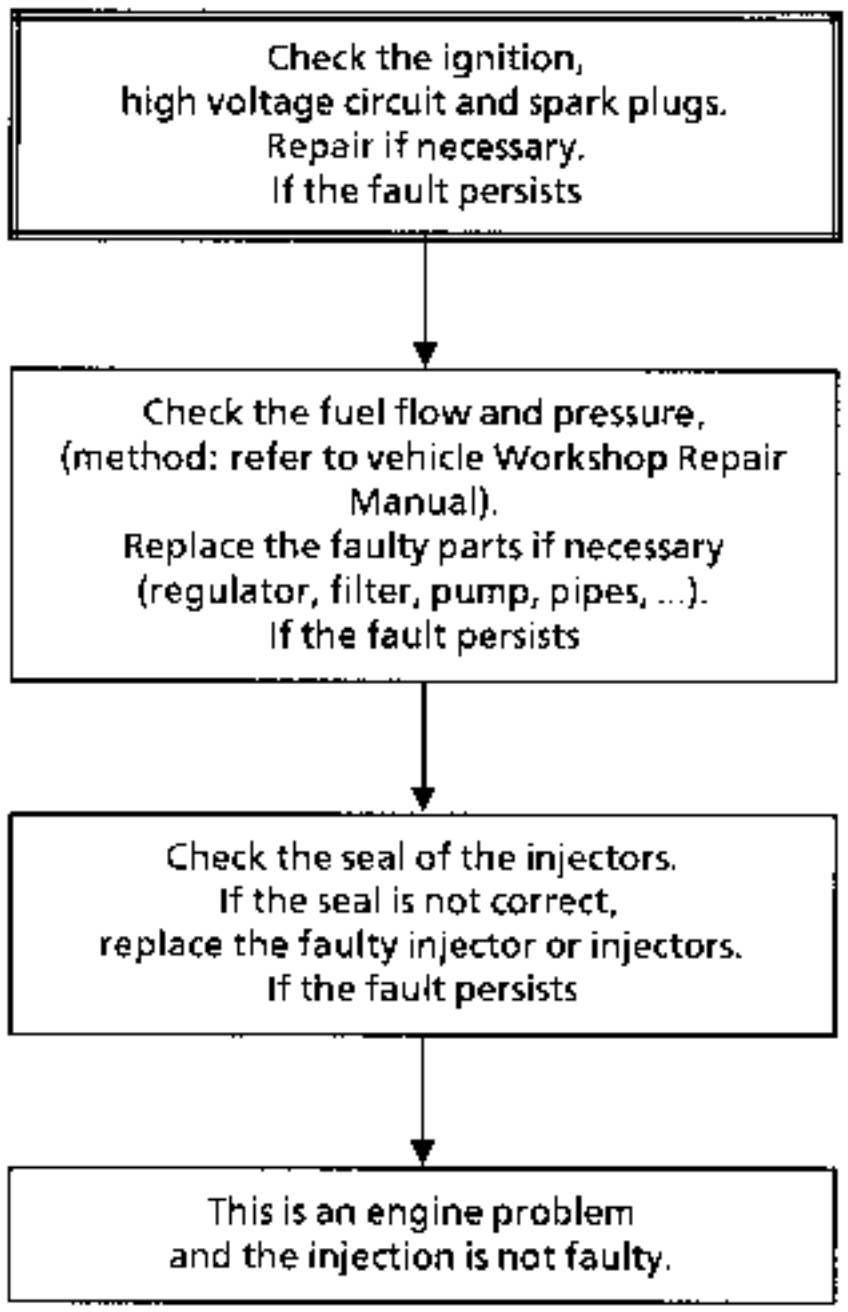
↓

This is an engine problem
and the injection is not faulty.

AFTER REPAIR	Check the sensors disconnected during the operation are correctly reconnected Erase the computer memory using G0** Carry out a conformity check

Chart 3	STARTING PROBLEMS Starting is too long

NOTES	Only refer to this customer complaint after having performed a complete test using the XR25



AFTER REPAIR	Check the sensors disconnected during the operation are correctly reconnected Erase the computer memory using G0** Carry out a conformity check

Chart 4	IDLE PROBLEMS Idle too fast

NOTES	Only refer to this customer complaint after having performed a complete test using the XR25. *R* > theoretical value or #12 < theoretical value

Check there is no air leak on the inlet (seals, take-off points on the inlet manifold, plugs, ...).
Repair if necessary.
If the fault persists

↓

Check on the throttle body that it is up against the lower mechanical stop (#17 < theoretical value). Also check the accelerator control.
Repair if necessary.
If the fault persists

↓

Check the fuel pressure is not too high.
Repair if necessary
(injectors, pump, pressure regulator, pipes, ...).
If the fault persists

↓

The injection is not faulty.
Check the engine.

AFTER REPAIR	Check the sensors disconnected during the operation are correctly reconnected Erase the computer memory using G0** Carry out a conformity check

Chart 5	IDLE PROBLEMS Idle too slow

NOTES	Only refer to this customer complaint after having performed a complete test using the XR25 R < theoretical value or #12 > theoretical value

Check the ignition, high voltage leads, spark plugs and power stages.
Repair if necessary.
If the fault persists

↓

Check the fuel pressure is not too low.
Repair if necessary
(injectors, pump, regulator, pipes, ...).
If the fault persists

↓

The injection is not faulty.
Check the engine.

AFTER REPAIR	Check the sensors disconnected during the operation are correctly reconnected Erase the computer memory using G0** Carry out a conformity check

Chart 6 — IDLE PROBLEMS
Engine unstable

NOTES

Only refer to this customer complaint after having performed a complete test using the XR25

Engine idling,
check the coherence of #01.
The value read should be < 500 mbar.
Is it correct?

no → Check the absolute pressure sensor and its wiring loom
Repair, if necessary,
replace the sensor.

yes

Check the value of the pollutants and Lambda.
- CO < 0.3 %
- HC ≤ 100 ppm
- CO2 ≥ 14.5 %
- 0.97 ≤ Lambda ≤ 1.03

Is it correct?

no → Check:
- the catalytic converter (melted, blocked, ...).
- the oxygen sensor (polluted, heating faulty, ...).
- air leak upstream of the oxygen sensor.
- the seal of the exhaust pipe.
- the type of fuel used.
- the ignition (spark plugs, high voltage leads, coils).
- the general condition of the engine (timing, ...).

yes

Disconnect the oxygen sensor and wait for #35 to stabilise at 128 and #05 = 0.402, and for bargraph 3 RH to illuminate.
Does the fault persist?

no → Before replacing the oxygen sensor, check there is no lead in the exhaust outlet.

yes

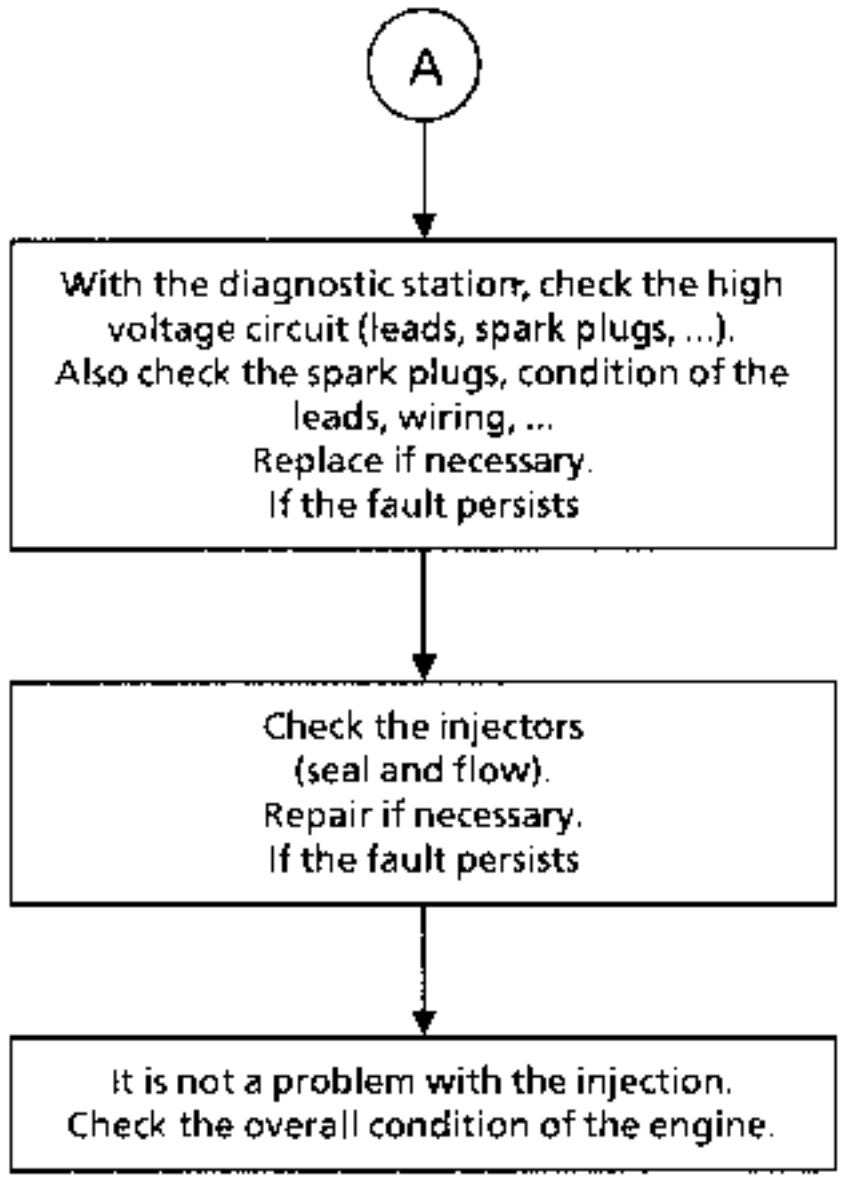
Check the petrol flow and pressure (methods, refer to vehicle Workshop Repair Manual).
Repair if necessary (regulator, pump, filter, pipes, injectors).
If the fault persists

(A)

AFTER REPAIR

Check the sensors disconnected during the operation are correctly reconnected
Erase the computer memory using G0**
Carry out a conformity check

Chart 6 CONT	



AFTER REPAIR	Check the sensors disconnected during the operation are correctly reconnected Erase the computer memory using G0** Carry out a conformity check

Chart 7 — IDLE PROBLEMS
Hunting

NOTES

Only refer to this customer complaint after having performed a complete test using the XR25

Check the value of the pollutants and Lambda.
- CO < 0.3 %
- HC ≤ 100 ppm
- CO2 ≥ 14.5 %
- 0.97 ≤ Lambda ≤ 1.03

Is it correct?

no →

Check:
- the catalytic converter (melted, blocked, ...).
- the oxygen sensor (polluted, heating faulty, ...).
- air leak upstream of the oxygen sensor.
- the seal of the exhaust pipe.
- the type of fuel used.
- the ignition (spark plugs, high voltage leads, coils).
- the general condition of the engine (timing, ...).

yes ↓

Disconnect the oxygen sensor and wait for #35 to stabilise at 128 and #05 = 0.402, and for bargraph 3 RH to illuminate.
Is the engine stable ?

no →

Check there is no air leak on the inlet manifold (plugs, seals, take-off points,...)
Repair if necessary.

yes ↓

Replace the oxygen sensor.

AFTER REPAIR

Check the sensors disconnected during the operation are correctly reconnected
Erase the computer memory using G0**
Carry out a conformity check

Chart 8	BEHAVIOUR WHEN DRIVING Lacks performance

NOTES	Only refer to this customer complaint after having performed a complete test using the XR25

Check the throttle opens fully
(full load bargraph illuminated).
Check the adjustment of the accelerator control.
Repair if necessary.
If the fault persists

↓

Check the conformity of the spark plugs and their condition.
Repair if necessary.
If the fault persists

↓

Check the values of the pollutants and Lambda.
- CO < 0.3 %
- HC ≤ 100 ppm
- CO2 ≥ 14.5 %
- 0.97 ≤ Lambda ≤ 1.03

Is it correct?

no →

Check:
- the catalytic converter (melted, blocked, ...).
- the oxygen sensor (polluted, heating faulty, ...).
- air leak upstream of the oxygen sensor.
- the seal of the exhaust pipe.
- the type of fuel used.
- the ignition (spark plugs, high voltage leads, coils).
- the general condition of the engine (timing, ...).

yes

↓

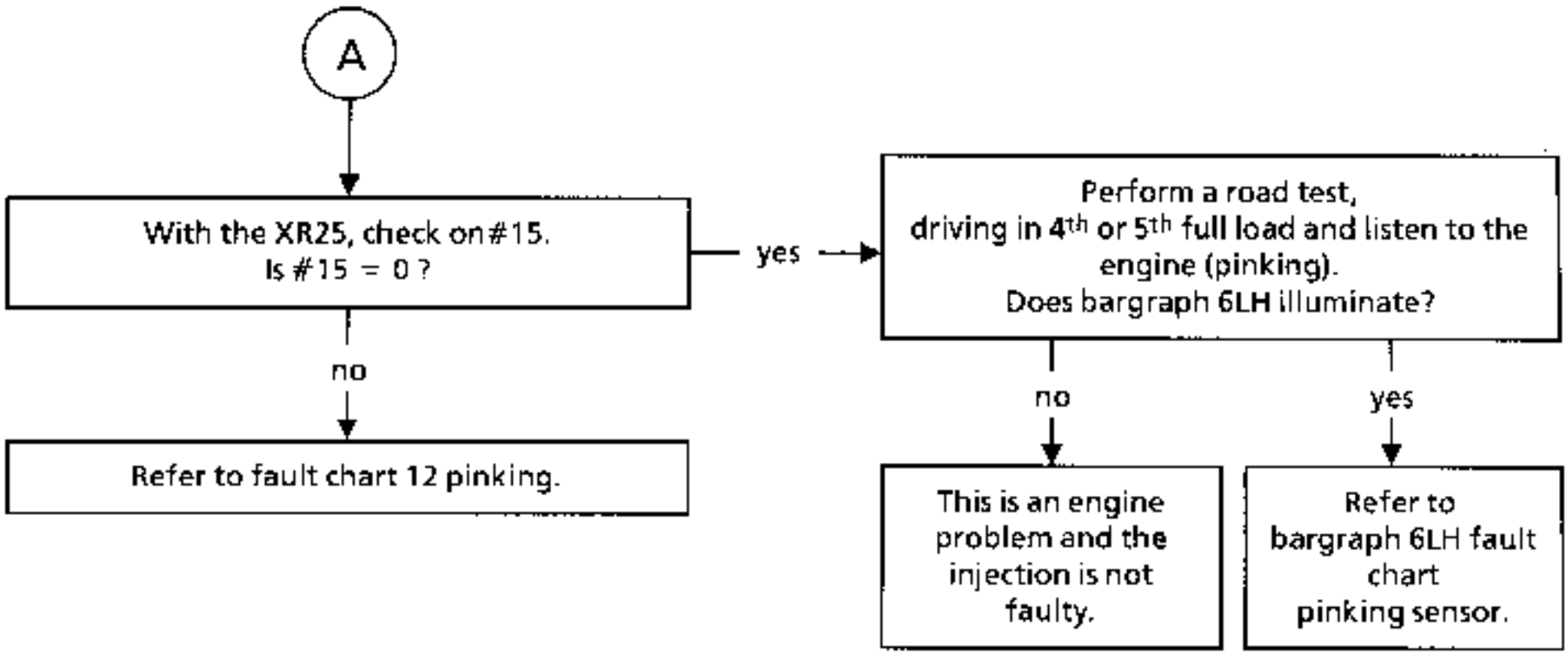
Check the air inlet circuit (air filter,...) and the exhaust pipe.
Repair if necessary.
Does the fault persist?

↓

(A)

AFTER REPAIR	Check the sensors disconnected during the operation are correctly reconnected Erase the computer memory using G0** Carry out a conformity check

Chart 8 CONT



AFTER REPAIR

Check the sensors disconnected during the operation are correctly reconnected
Erase the computer memory using G0**
Carry out a conformity check

Chart 9	BEHAVIOUR WHEN DRIVING Misfiring and hesitation

NOTES	Only refer to this customer complaint after having performed a complete test using the XR25

Perform a road test with the customer if possible to confirm the fault.
Is the fault reproduced

no → Before returning the vehicle to the customer, check with the XR25 that everything is correct, especially the oxygen sensor (# 05-35).

yes ↓

Check the value of the pollutants and Lambda.
- CO < 0.3 %
- HC ≤ 100 ppm
- CO2 ≥ 14.5 %
- 0.97 ≤ Lambda ≤ 1.03

Is it correct?

no → Check:
- the catalytic converter (melted, blocked, ...).
- the oxygen sensor (polluted, heating faulty, ...).
- air leak upstream of the oxygen sensor.
- the seal of the exhaust pipe.
- the type of fuel used.
- the ignition (spark plugs, high voltage leads, coils).
- the general condition of the engine (timing, ...).

yes ↓

Check the condition of the high voltage wiring, the spark plugs and wiring, the coils and the TDC sensor (possible cause may be interference), injectors.
Replace the faulty parts if necessary.
If the customer complaint persists

↓

Check for the presence and the cleanliness of the restriction in the absolute pressure sensor pipe.
Repair if necessary.
If the customer complaint persists

↓

(A)

AFTER REPAIR	Check the sensors disconnected during the operation are correctly reconnected Erase the computer memory using G0** Carry out a conformity check

Chart 9 CONT

A

Disconnect the oxygen sensor and wait for #35 to stabilise at 128 and #05 ≃ 0.402, and for bargraph 3 RH to illuminate.
Perform a road test.
Does the fault persist?

no → Replace the oxygen sensor.

yes

Check the condition of the flywheel target.
Repair if necessary.
If the fault persists

Check the petrol flow and pressure (methods, refer to vehicle Workshop Repair Manual).
Replace the faulty parts (fuel pump, regulator, filter, pipes ...).
If the fault persists

Clean the injectors
If the fault persists

Check the valves are not clogged.
Clean the valves if necessary.
After cleaning, does the fault persist?

no → End of fault finding.

yes

This is an engine problem, the injection is not faulty.

AFTER REPAIR	Check the sensors disconnected during the operation are correctly reconnected Erase the computer memory using G0** Carry out a conformity check

Chart 10	SMOKE - POLLUTION CO and/or HC too high

NOTES	Only refer to this customer complaint after having performed a complete test using the XR25. CO and / or HC too high CO > 0.3 % - HC > 100 ppm

With the XR25, check on #05, 35.
Checking, refer to Workshop Repair Manual.
Is it correct?

no →

Test for the presence of lead
(refer to Workshop Repair Manual).
Is there lead?

yes

no

B

yes

Check the type of fuel used.
If the customer has used leaded petrol and before changing the catalytic converter and the oxygen sensor, drive the vehicle using several tanks of unleaded petrol.

Check the high voltage circuit,
(spark plugs, spark plug leads).
Repair if necessary.
If the fault persists

Check the air supply,
the air filter, the pipes ...
If the fault persists

Check the conformity of the restriction and the condition of the pipe for the absolute pressure sensor.
Repair if necessary.
If the fault persists

Check the seal of the injectors.
(especially the O-rings).
Repair if necessary.
Does the fault persist?

A

AFTER REPAIR	Check the sensors disconnected during the operation are correctly reconnected Erase the computer memory using G0** Carry out a conformity check

Chart 10 CONT

A

Check the fuel flow and pressure (methods, refer to Workshop Repair Manual). Repair or replace the faulty parts (fuel pump, pressure regulator, pipes).
If the fault persists

Ask the customer if he has experienced an ignition or starting problem.
Has he experienced a problem?

yes

Replace the catalytic converter.

no

This is an engine problem and the injection is not faulty.

B

Check the oxygen sensor heating (+ 12 volts between A and B).
Is it correct?

no

Repair the electrical circuit

yes

Check:
- the catalytic converter (melted, blocked, ...).
- the oxygen sensor (polluted, heating faulty, ...).
- air leak upstream of the oxygen sensor.
- the seal of the exhaust pipe.
- the type of fuel used.
- the ignition (spark plugs, high voltage leads, coils).
- the general condition of the engine (timing, ...).

AFTER REPAIR

Check the sensors disconnected during the operation are correctly reconnected
Erase the computer memory using G0**
Carry out a conformity check

Chart 11 — HIGH PETROL CONSUMPTION

NOTES

Only refer to this customer complaint after having performed a complete test using the XR25

Check there are no fuel leaks.
Repair if necessary.
If the fault persists

↓

Check the idle speed
(# 06 on the XR25).
Is it correct?

— no → Refer to fault chart 4 or 5, idle problems
(Idle speed too fast or too slow).

yes

↓

Check the vehicle complies with its definition
and is in good condition.
Repair if necessary.
If the fault persists

↓

Check the value of the pollutants and Lambda.

- CO $<$ 0.3 %
- HC $\leq$ 100 ppm
- CO2 $\geq$ 14.5 %
- 0.97 $\leq$ Lambda $\leq$ 1.03

Is it correct?

— no → Check:

- the catalytic converter (melted, blocked, ...).
- the oxygen sensor (polluted, heating faulty, ...).
- air leak upstream of the oxygen sensor.
- the seal of the exhaust pipe.
- the type of fuel used.
- the ignition (spark plugs, high voltage leads, coils).
- the general condition of the engine (timing, ...).

yes

↓

(A)

AFTER REPAIR

Check the sensors disconnected during the operation are correctly reconnected
Erase the computer memory using G0**
Carry out a conformity check

Chart 11 CONT

A

Check the petrol flow and pressure (methods, refer to vehicle Workshop Repair Manual) and the canister bleed circuit.
Repair if necessary (regulator, pump, filter, pipes).
If the fault persists

This is not an injection problem, this is an engine problem,
check :
- the engine oil level
- engine cooling
- axle assemblies
- the general condition of the engine.

If necessary, perform a consumption test with the ECONOTEST consumption device.

AFTER REPAIR

Check the sensors disconnected during the operation are correctly reconnected
Erase the computer memory using G0**
Carry out a conformity check

Chart 12 — ENGINE NOISE
Pinking

NOTES

Only refer to this customer complaint after having performed a complete test using the XR25

Perform a road test with the XR25 and check # 13, 15.
Is the fault reproduced?

— no → The customer must use his vehicle under specific conditions, check with the customer.

yes ↓

Check the value of the pollutants and Lambda.
- CO < 0.3 %
- HC ≤ 100 ppm
- CO2 ≥ 14.5 %
- 0.97 ≤ Lambda ≤ 1.03

Is it correct?

— no → Check:
- the catalytic converter (melted, blocked, ...).
- the oxygen sensor (polluted, heating faulty, ...).
- air leak upstream of the oxygen sensor.
- the seal of the exhaust pipe.
- the type of fuel used.
- the ignition (spark plugs, high voltage leads, coils).
- the general condition of the engine (timing, ...).

yes ↓

Ask the customer what type of fuel he uses.
Is it suitable?

— no → Remind the customer what type of fuel he should use.

yes ↓

Check the condition and the conformity of the spark plugs.
Replace the spark plugs if necessary.
Does the fault persist?

↓ A

AFTER REPAIR

Check the sensors disconnected during the operation are correctly reconnected
Erase the computer memory using G0**
Carry out a conformity check

Chart 12 CONT

A

Check the conformity of the routing of the inlet air pipes.
Repair if necessary.
If the fault persists

Using a stroboscopic light and the XR25, #51, check the ignition advance
Are the values the same?

no → Refer to bargraph 5 RH fault chart.

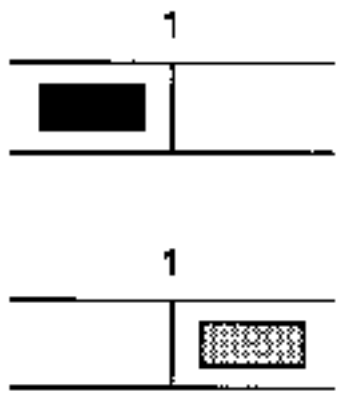
yes

This is not an injection problem.
Also check the engine cooling. The combustion chambers may have to be cleaned.

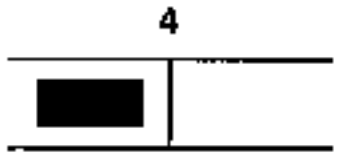
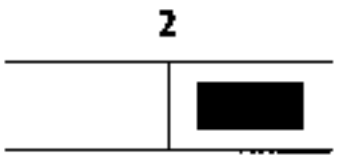
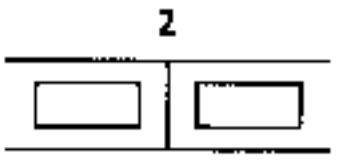
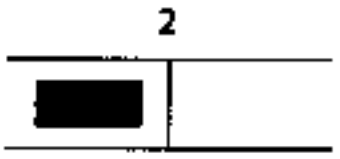
AFTER REPAIR

Check the sensors disconnected during the operation are correctly reconnected
Erase the computer memory using G0**
Carry out a conformity check

NOTES	Engine cold, ignition on

Order of operations	Function to be checked	Action	Bargraph	Display and Notes
1	Dialogue with XR25	D13 (selector on S8)		9.NJ Use fiche n° 27 fault test side
2	Interpretation of normally illuminated bargraphs			Fault test Code present
3	Conformity of computer	G70*		XXXX Part Number number displayed in three sequences (refer to section 12)
4	Switching to status test	G01*		10.NJ Use fiche n° 27 status test side

NOTES	Engine cold, ignition on

Order of operations	Function to be checked	Action	Bargraph	Display and Notes
5	Interpretation of normally illuminated bargraphs		1 	Code present
			2 	No load recognition
			4 	Receiving + after ignition information
			4 	Illuminated for automatic transmission, Park or Neutral positions
6	Throttle position potentiometer	No load # 17	2 	5 < X < 47
		Accelerator pedal lightly pressed	2 	
		Full load # 17	2 	164 < X < 253

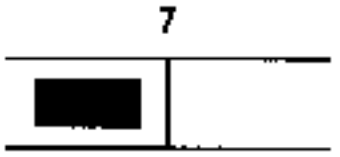
NOTES	Engine cold, ignition on

Order of operations	Function to be checked	Action	Bargraph	Display and Notes
7	Absolute pressure sensor	# 01		X = local atmospheric pressure
8	Coolant temperature sensor	# 02		X = ambient temperature ± 5°C
9	Air temperature sensor	# 03		X = ambient temperature ± 5°C
10	Idle regulation solenoid valve	# 12		The value is variable depending on coolant temperature
11	Engine speed	# 06		X = 0 rpm.
12	Canister bleed	# 23		X = 0.7 %

NOTES	Engine warm, at idle speed after the fan unit has operated at least once (air conditioning and heated windscreen not selected, automatic transmission in Park or Neutral position)

Order of operations	Function to be checked	Action	Bargraph	Display and Notes
1	Switching to status test	G01*		10.NJ Use fiche n° 27 status test side
2	No fault		20	Check this bargraph is not flashing; otherwise type G02* and turn the fiche over. Repair the faulty component then erase the fault memory (G0**) and return to status test (G01*)
3	Battery voltage	# 04		13 volts < X < 14.5 volts

NOTES Engine warm, at idle speed after the fan unit has operated at least once (air conditioning and heated windscreen not selected, automatic transmission in Park or Neutral position)

Order of operations	Function to be checked	Action	Bargraph	Display and Notes
4	Interpretation of normally illuminated bargraphs	—	1 	Code present
			2 	No load recognition
			3 	Receiving engine speed information
			4 	Receiving + after ignition information
			4 	Illuminated in Park or Neutral position
			6 	Idle regulation active
			6 	Richness regulation active
			7 	Fuel pump active

NOTES Engine warm, at idle speed after the fan unit has operated at least once (air conditioning and heated windscreen not selected, automatic transmission in Park or Neutral position)

Order of operations	Function to be checked	Action	Bargraph	Display and Notes
5	Idle speed	Without air conditioning # 06	6	X = 720 ± 50 rpm. (K7M 702-720) X = 750 ± 50 rpm. in P and N (K7M 703)
		# 12		6 % < X < 15 % (K7M 702 / 703 in N and P) 10 % < X < 20 % (K7M 703 in D) 4 % < X < 14 % (K7M 720)
		Air conditioning selected # 06	9 10	Illuminated depending on the status of the air conditioning
				X = 850 ± 50 rpm.
		Heated windscreen selected. Air conditioning not selected # 06	8 9	If coolant temperature > 60°C then X = Basic speed (see above) If coolant temperature < 60°C then X = 850 ± 50 rpm.
6	Anti-pinking noise measurement	# 13 (3500 rpm no load)		X variable and not zero

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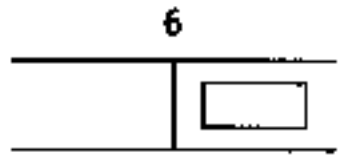
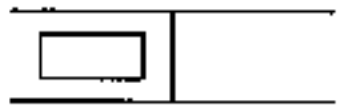
NOTES	Engine warm, at idle speed after the fan unit has operated at least once (air conditioning and heated windscreen not selected, automatic transmission in Park or Neutral position)

Order of operations	Function to be checked	Action	Bargraph	Display and Notes
7	Manifold pressure	# 01 without consumer		X is variable and is around 330 ± 50 mbars (this pressure varies as a function of the altitude)
8	Richness regulation	With stable engine speed of 2500 rpm. then at idle speed	6  6 	X varies in a range of 50 to 900 mV approximately
		# 05		
		# 35		X is around and varies slightly about 128 with a maximum of 255 and a minimum of 0
9	Adaptive idle correction	# 21		− 2.4 % < X < 6.2 % (average value after erasing memory: 0)
10	Canister bleed	# 23	7 	Canister bleed is forbidden. The solenoid valve remains closed X = 0.7 %
11	EGR	# 24	12 	X − 1.9
12	Power assisted steering pressostat	# 06	13 	X − 820 rpm

NOTES	Test to be performed during a road test

Order of operations	Function to be checked	Action	Bargraph	Display and Notes
1	Switching to status test	G01*		10.NJ Use fiche n° 27 status test side
2	No fault		20	Check this bargraph is not flashing; otherwise type G02* and turn the fiche over. . Repair the faulty component then erase the fault memory (G0**) and return to status test (G01*)
3	Canister bleed	# 23	7	Canister bleed is authorised X = variable
4	Vehicle speed information	# 18		X = vehicle speed read on the speedometer
5	Pinking sensor	Vehicle loaded and engine speed of 2000 rpm. # 13 # 15		 X = variable and not zero 0 ≤ X ≤ 6 (if the sensor is faulty, the advance is systematically retarded by 4° which is not visible on # 15)
6	EGR	# 24	12	X — variable

NOTES	Test to be performed during a road test

Order of operations	Function to be checked	Action	Bargraph	Display and Notes
7	Adaptive richness	After programming phase		
		# 30		0 ≤ X ≤ 208 (average value after erasing memory: 128)
		# 31		104 ≤ X ≤ 255 (K7M 702-703) 100 ≤ X ≤ 255 (K7M 720) (average value after erasing memory: 128)
8	Torque reduction (Automatic transmission)		5 	Illuminated when gear is changed if speed is greater than 6 mph (10 km/h)

SPECIAL TOOLING REQUIRED
OPTIMA 5800 diagnostic station

CHECKING THE IGNITION USING THE DIAGNOSTIC STATION

The OPTIMA 5800 diagnostic station allows the ignition to be checked in two ways:

- STARTING TEST: If the vehicle does not start. When no fault finding operations can be performed with the XR25, this operation checks for the presence and the quality of the ignition under the action of the starter motor.

- TEST WITH ENGINE RUNNING: These measurements are in addition to those from the XR25 for customer complaints such as: hesitation, misfiring, incorrect gas analysis, unstable idle ...

In addition, the station's measuring module allows static ignition to be checked using two high voltage clamps, where the coils are dual output (when a firing order is given, two sparks are produced simultaneously: one in the cylinder at the combustion phase and the other in the cylinder at the exhaust phase). During the measurements, the two clamps have to be moved from one coil to the other.

Their power is controlled directly by the computer (the amplifier module is integral with the computer): the station is therefore connected directly to the coil inputs.

CONNECTIONS:

- K7M engine : Connect to the two coils after removing the connector cover (blue coloured lead on coil n° 1, right hand side).

MEASUREMENTS:

The ignition is characterised by the following values:

Engine running:

- Spark duration.
- Arcing voltage (or ionising voltage).
- Arcing voltage during the exhaust phase (static ignition).

Starting test:

- Ignition feed voltage.
- TDC sensor signal.
- Command signal (MPA).
- Spark duration.
- Arcing voltage (or ionising voltage).
- Arcing voltage during the exhaust phase (static ignition).

The station checks the coherence of the values obtained for each cylinder, and compares the measurements with a database for each engine type.

SPECIAL TOOLING REQUIRED
OPTIMA 5800 diagnostic station

CHECKING THE OXYGEN SENSOR WITH THE DIAGNOSTIC STATION

Obvious faults relating to the oxygen sensor are detected by the XR25:

- Open circuit.
- Short circuit to earth.
- Short circuit to+ 12 V.

The diagnostic station allows operating faults to be highlighted which could not be detected with the XR25. The sensor can be checked for the following customer complaints:

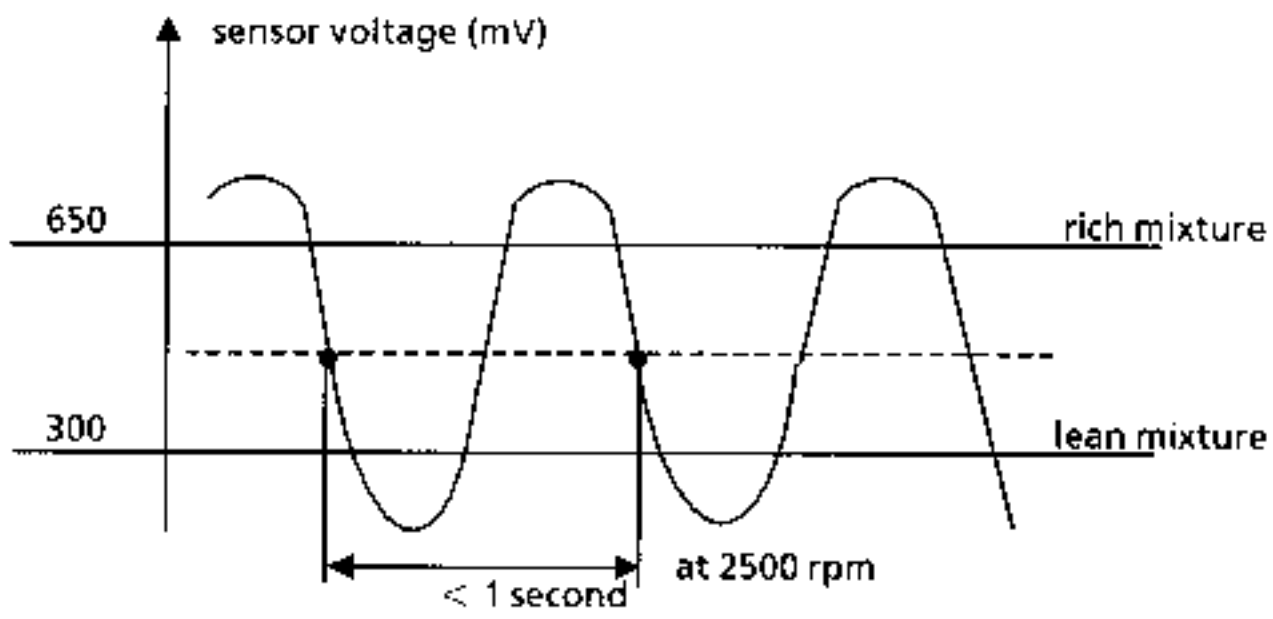
- Excess fuel consumption.
- Irregular idle, hunting.
- Hesitation.
- Incorrect gas analysis.

The station performs the check by being connected in parallel to the signal emitted by the oxygen sensor. This sensor is analysed at a stable engine speed (2 500 rpm), when the richness regulation conditions are concurring (engine warm ...).

CONNECTION:

The 3 track connector of the sensor is located on the clutch bellhousing.

During normal operation, the signal is in the form of a sine wave:



The characteristic parameters of this signal are the maximum voltage, the minimum voltage and the period. For all engine types, the correct values are:

- Maximum voltage > 600 mV.
- Minimum voltage < 200 mV.
- Difference (Maximum voltage - minimum voltage) > 500 mV.
- Period < 1 second.

SPECIAL TOOLING REQUIRED
OPTIMA 5800 diagnostic station 4040-5040 or AGM 1500 4 gas analyser

ANALYSING EXHAUST GASES USING THE DIAGNOSTIC STATION

The OPTIMA 5800 diagnostic station connected to an analyser (SOURIAU 4040-5040 or SAGEM AGM 1500) allows the gases to be checked in accordance with the legislation relating to vehicles with catalytic converters. This test is performed at mid-load and at idle speed with the following limits.

Idle speed	2 500 rpm
CO < 0.5 %	CO < 0.3 %
HC < 100 ppm	HC < 100 ppm

Independently to the legislation, other measurements supplied by the analyser fall within certain tolerances;

Idle speed	2 500 rpm
CO_2 > 13.5 %	CO_2 > 13.5 %
O_2 < 0.8 %	O_2 < 0.8 %
0.97 < Lambda < 1.03	0.97 < Lambda < 1.03

:**NOTE**: Lambda = 1 / Richness

- Lambda > 1 → Lean mixture
- Lambda < 1 → Rich mixture

The condition Lambda = 1 is essential to ensure the catalytic converter functions correctly.

The station causes the following phases:

- Warming up the engine (oil temperature greater than 60°C).
- Holding for one minute at 2 500 rpm. to activate richness regulation and simultaneous gas measurements.
- If the gas analysis at 2 500 rpm is correct, a measurement at idle speed is taken.

If the analysis is deemed to be incorrect by the station, diagnostic messages appear where the priority of the gases is

1) CO 2) Lambda 3) HC 4) O_2 5) CO_2

NOTE : The report for the whole anti-pollution test can be printed.