Mégane

Laguna

N.T. 3266A

XA0N - X56J

Special features of F9Q 710 and 736 engines

This note cancels and replaces Technical Note N.T. 3181A

For parts which are not described in this note refer to Workshop Repair Manual M.R. 312 or to Workshop Repair Manual M.R. 307 and to Technical Notes 2887A (Mégane) or 2938A (Laguna)

77 11 205 712 **JUNE 1999** **Edition Anglaise**

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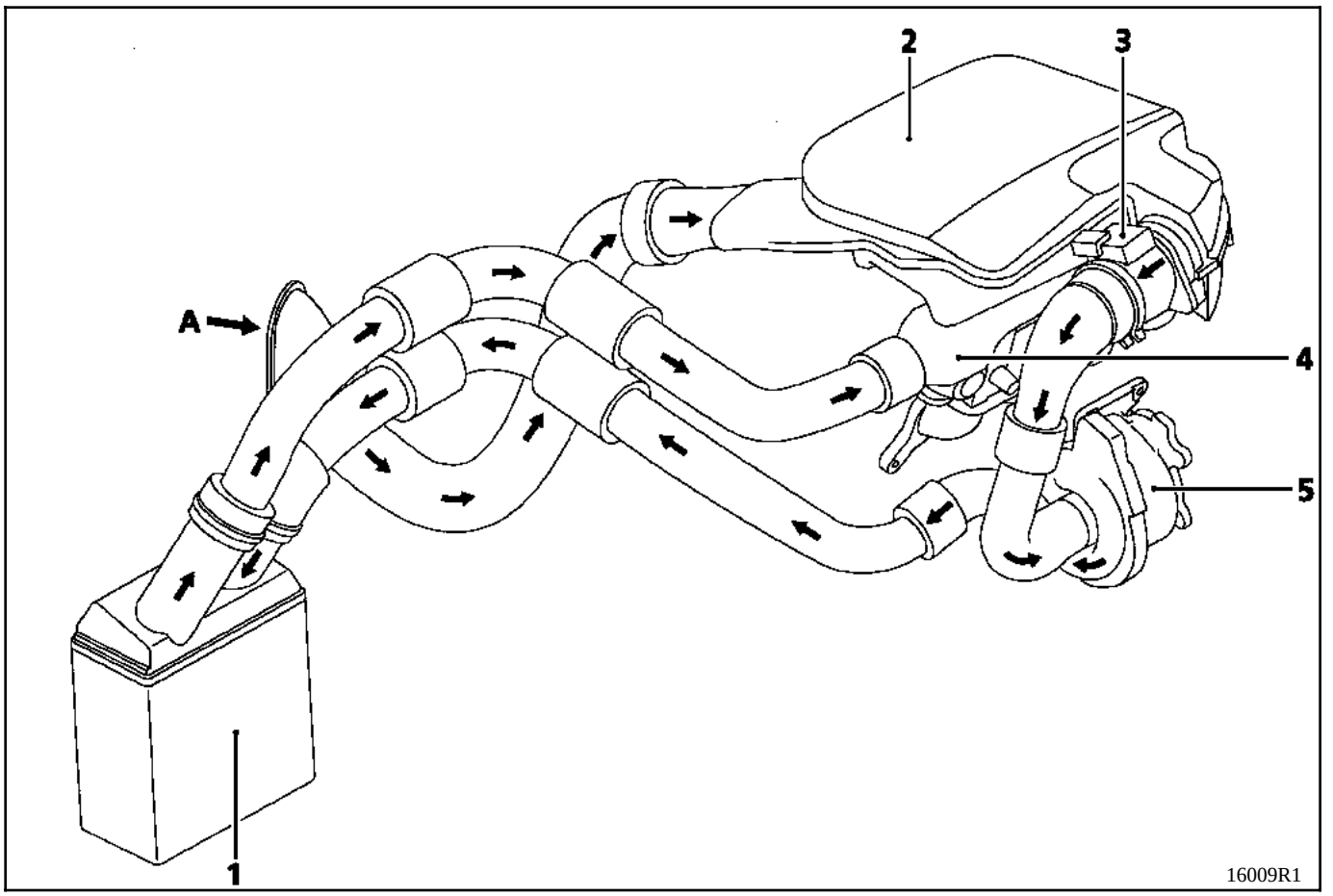
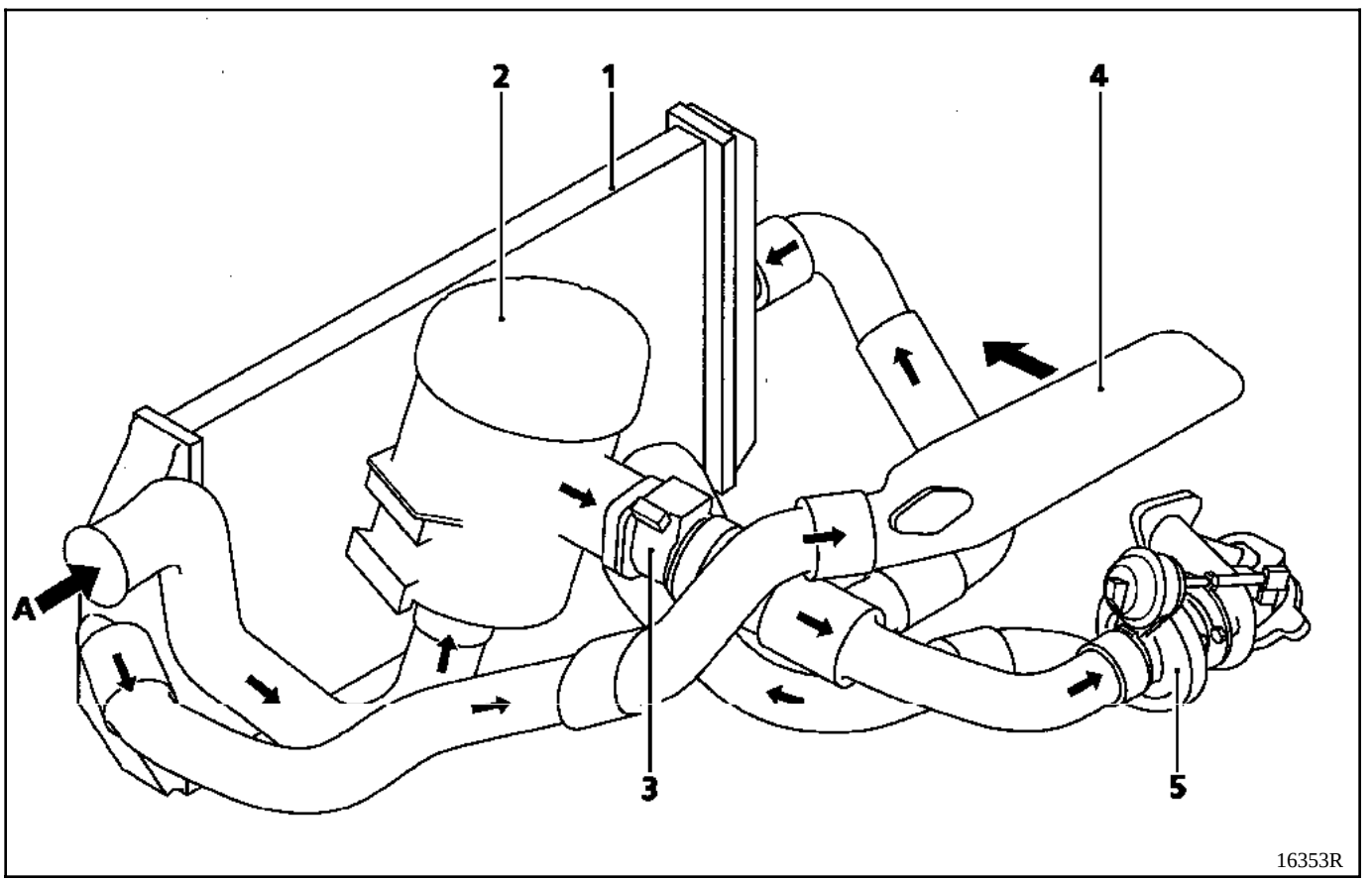
AIR INTAKE CIRCUIT DIAGRAM (MEGANE)



1 Air-air exchanger
2 Air filter
3 Flowmeter
4 Inlet manifold
5 Turbocharger
A Air inlet

AIR INTAKE CIRCUIT DIAGRAM (LAGUNA)



1 Air-air exchanger
2 Air filter
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4 Inlet manifold
5 Turbocharger
A Air inlet

Vehicle	Gearbox	Engine							Emission control standard
		Type	Index	Bore (mm)	Stroke (mm)	Cubic capacity (cm^3)	Compression ratio	Catalytic converter	
XA0N X56J	JB3 JC5	F9Q	736 710	80	93	1870	18.3 / 1	◊ C58	EU 96

ENGINE SPEED (rpm)			OPACITY OF SMOKE	
Idle speed	**Max. unladen**	**Max. loaded**	**Approval value**	**Legal maximum**
850 ± 25	4800 ± 250	4750 ± 250	1.4 m^{-1} (43.5 %)	3 m^{-1} (71 %)

DESCRIPTION	BRAND/TYPE	SPECIAL NOTES
Injection pump	BOSCH VE 4 / 11 E2125 R803-1	Rotary pump associated with a computer which controls: - the pump (advance and flow), - the cold start system, - the EGR.
Pump setting, obtaining of Top Dead Centre by means of an 8 mm ∅ pin (**Mot. 1054**)		Pump piston lift: **0.32 ± 0.02 mm**
Nozzle holder	BOSCH KBEL 58 P147 (cylinders 1-2-3) KBEL 58 P146 (cylinder 4)	Resistance of calibrated injector: **100 ± 10 Ω to 20 °C**
Injectors	DSLA 145 P619	Calibration pressure: **200 ± 12 bars**
Fuel filter	BOSCH	The filter is fitted with an electric diesel heater.
EGR solenoid valve	SIEMENS	Voltage: **12 Volts** Resistance: **16.5 ± 0.5 Ω**
Delivery tubes	-	Internal diameter: **1.8 mm** Length: **360 mm**
Pre-heating unit	NAGARES BRE 6 / 12	With pre-post heating function controlled by injection computer
Heater plugs	BERU	Tightening torque: **1.5 daN.m** Voltage: **12 Volts** Resistance: **0.6 ± 0.1 Ω** - Heater plug disconnected
Fuel shut-off	-	Resistance:**0.8 Ω**

DESCRIPTION	BRAND/TYPE	SPECIAL NOTES
Turbocharger	GARRETT	Calibration: **1300 ± 10 mbars** for a pin travel of **2.4 ± 0.02 mm**
Computer	BOSCH / MSA 15.5	68 tracks with pressure sensor incorporated
Injection	-	Direct
Flowmeter	SIEMENS	Air flow meter Air sensor incorporated 1. Air temperature 2. Common earth 3. 5 V reference 4. + Battery 5. Flow signal 6. Earth
Top Dead Centre sensor	MGI	Resistance ≈ **760 Ω at 20 °C**
Flow slide valve	BOSCH (incorporated in the pump)	Resistance between tracks 4 and 7 of the pump connector between **0.4 and 1 Ω at 20 °C**
Flow slide valve position sensor	BOSCH (incorporated in the pump)	Resistance between tracks: - 1 and 3 of the pump connector between **4.9 and 6.5 Ω at 20 °C**, - 3 and 2 of the pump connector between **4.9 and 6.5 Ω at 20 °C**.
Advance solenoid valve	BOSCH (incorporated in the pump)	Resistance between tracks 1 and 2 of the solenoid valve connector between **14.3 and 17.3 Ω at 20 °C**.
Accelerator pedal potentiometer	CTS	Single track potentiometer+ no-load switch
Immersion heater	-	Resistance: **0.6 ± 0.1 Ω at 20 °C** - Connector disconnected
Diagnostics	Diagnostic equipment (except XR25)	

Temperature in °C (± 1°)	**0**	**20**	**40**	**80**
Coolant temperature sensor (Resistance in Ohms)	5290 to 6490	2400 to 2600	1070 to 1270	300 to 450
Diesel temperature sensor (Resistance in Ohms)	5290 to 6490	2200 to 2600	1020 to 1270	300 to 450

This vehicle is fitted with an engine immobiliser system which is controlled by a random rolling code key recognition system.

REPLACEMENT OF AN INJECTION COMPUTER

The injection computers are supplied without a code but they can all be programmed with one.

When a computer is replaced, it must be programmed with the code of the vehicle and the correct operation of the engine immobiliser function must be checked.

To do this, simply switch on the ignition for a few seconds without starting the engine then switch it off. With the ignition off, the engine immobiliser function comes into operation after approximately 10 seconds (the red engine immobiliser warning light flashes).

WARNING:

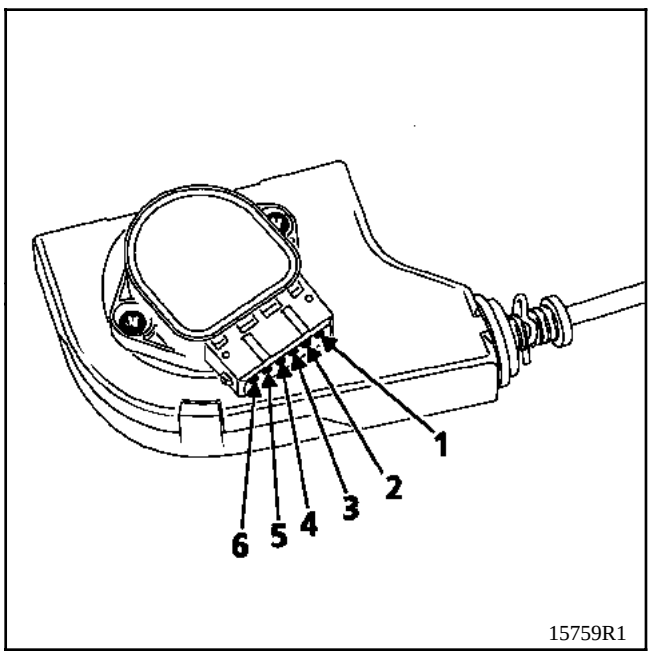
In the case of this engine immobiliser system, the computer retains the engine immobiliser code for life.

Furthermore, this system does not have a security code.

Consequently, it is prohibited to carry out tests using computers borrowed from the warehouse or another vehicle which must then be returned.

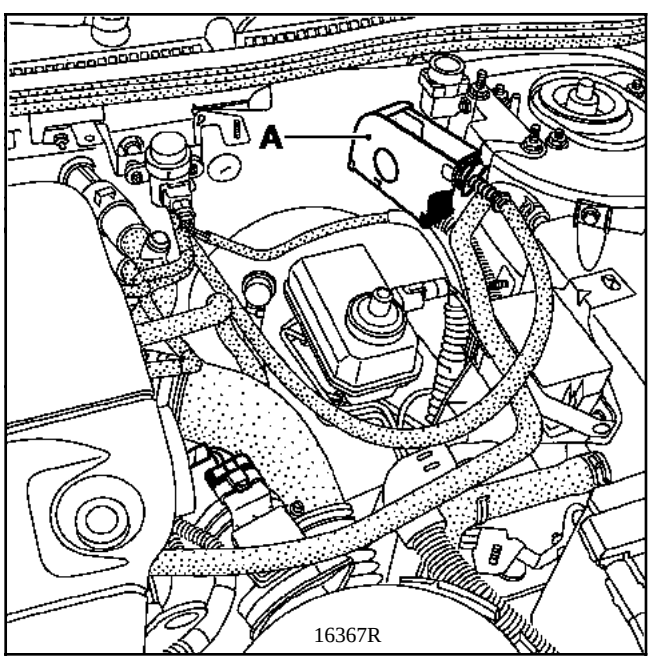
It will not be possible to erase the code.

Allocation of tracks:
1 No-load switch
2 Not used
3 Track signal
4 Earth
5 5 V supply
6 No-load switch



15759R1

No-load value= 0 %
Full-load value= 100 %



16367R

REMOVAL OF THE POTENTIOMETER (A)

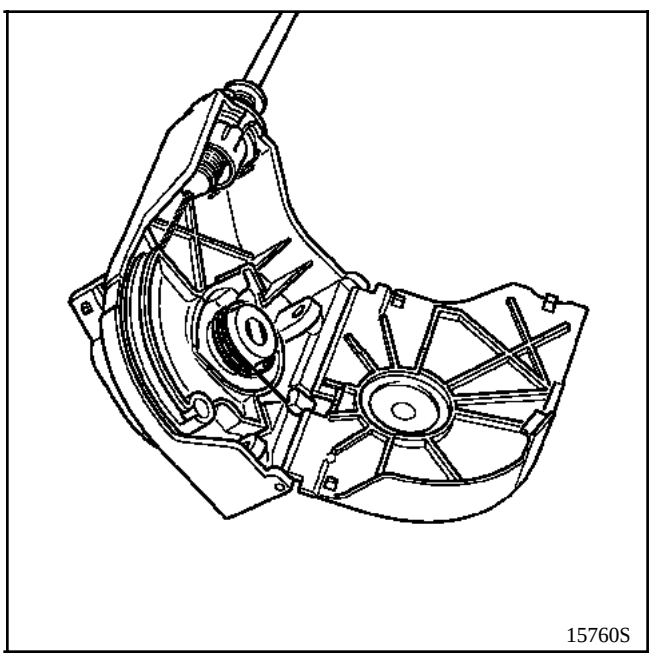
Remove the unit located under the master cylinder (Mégane).

Unhook the accelerator cable from the unit. The potentiometer is distributed at the Parts Department with the unit.

REFITTING

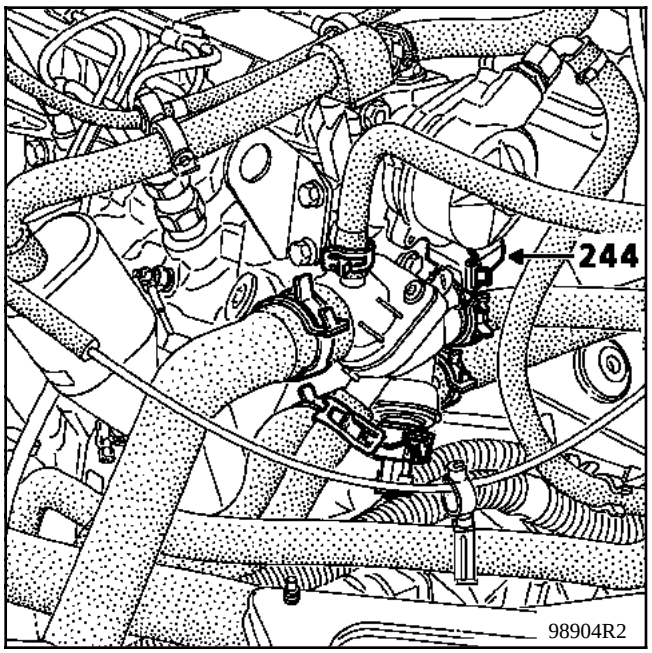
Proceed in the reverse order to removal.

It is essential to validate the repair using the diagnostic equipment.


15760S

NOTE: an accelerator pedal position potentiometer fault results in a modified idle or operating speed.

CCTM



244 Coolant temperature sensor (injection and coolant temperature indication on the instrument panel).
3-way sensor, 2 for the coolant temperature information and 1 for the indication on the instrument panel.

This system enables the cooling fan to be controlled by the injection computer. It consists of a single coolant temperature sensor which is used by the injection, the fan, the temperature indicator and the temperature warning light on the instrument panel.

OPERATION

Sensor 244 enables:
- the coolant temperature to be indicated on the instrument panel,
- the injection computer to be informed of the engine coolant temperature.

Depending on the coolant temperature, the injection computer controls:
- the injection system,
- the fan relay:
  - the fan assembly is controlled at low speed if the coolant temperature exceeds **99 °C** and stops when the temperature falls below **96 °C**,
  - the fan assembly is controlled at high speed if the coolant temperature exceeds **102 °C** and stops when the temperature falls below **99 °C**,
  - the fan assembly may be controlled for the AC and in the event of a temperature sensor failure.

Only the fan low speed is operational on vehicles which are not fitted with AC.

COOLANT TEMPERATURE WARNING LIGHT

The warning light is controlled by the computer.

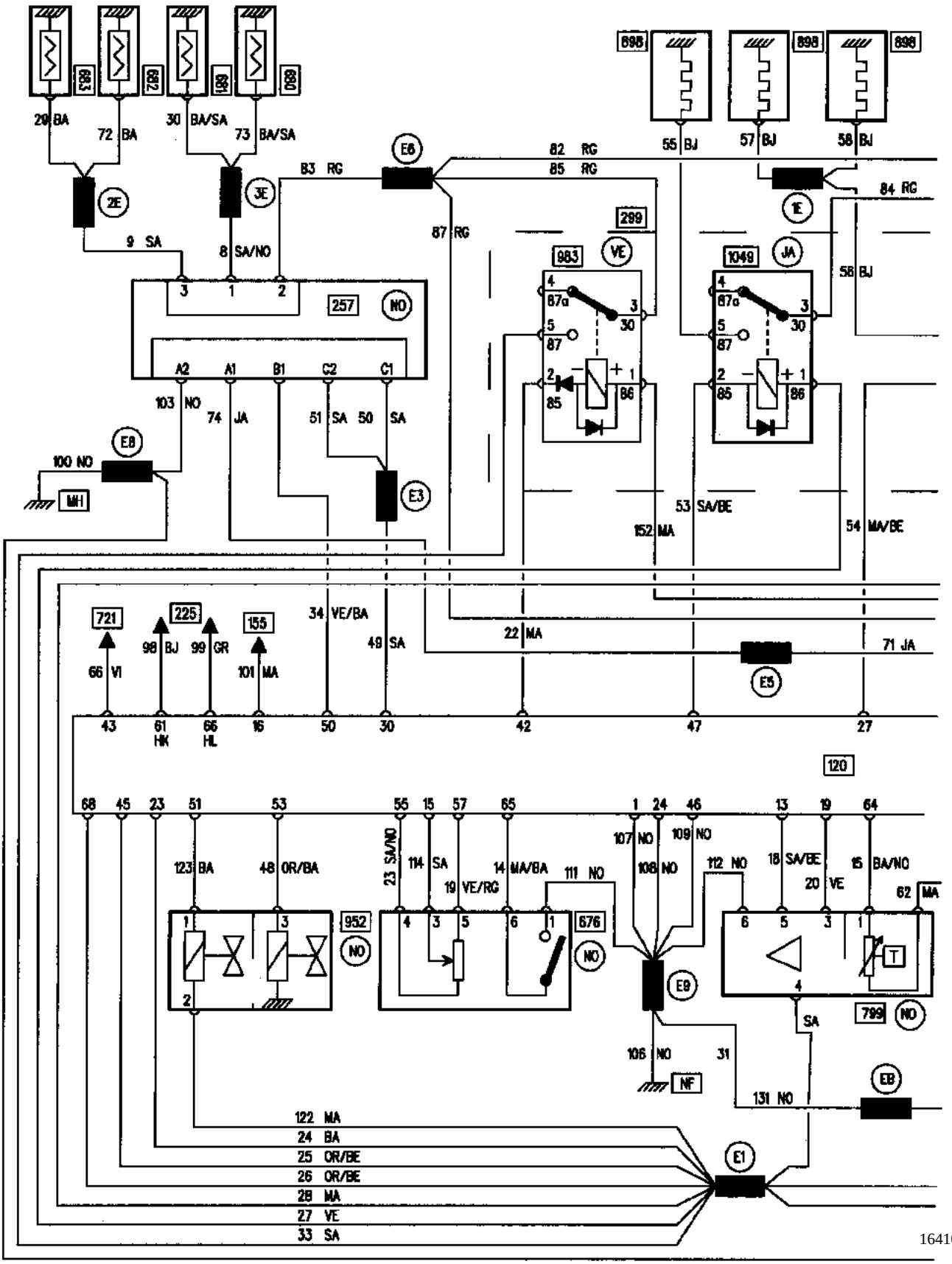
It is controlled when the temperature exceeds **105° C.**

Track	Description
1	Earth
2	TDC signal output
3	Fan assembly low speed command
4	Flow actuator command
5	Flow actuator command
6	Fan assembly high speed command
7	Flow slide valve position sensor input
8	TDC sensor signal input
9	Not used
10	Not used
11	Needle lift sensor earth
12	Needle lift signal input
13	Air flow signal input
14	Coolant temperature signal input
15	Pedal position sensor signal input
16	Reverse gear switch (depending on version)
17	Clutch switch signal input (Laguna)
18	Not used
19	5 Volts flowmeter supply
20	Brake switch signal input (track 1)
21	Sensors earth
22	Not used
23	+ before ignition
24	Earth
25	EGR valve command
26	Fault warning light command
27	Immersion heaters command (relay 1)
28	AC authorisation output
29	Flow sensor energising
30	Pre-heating relay diagnostic connection
31	Not used
32	Fuel consumption information
33	Sensors earth
34	Not used

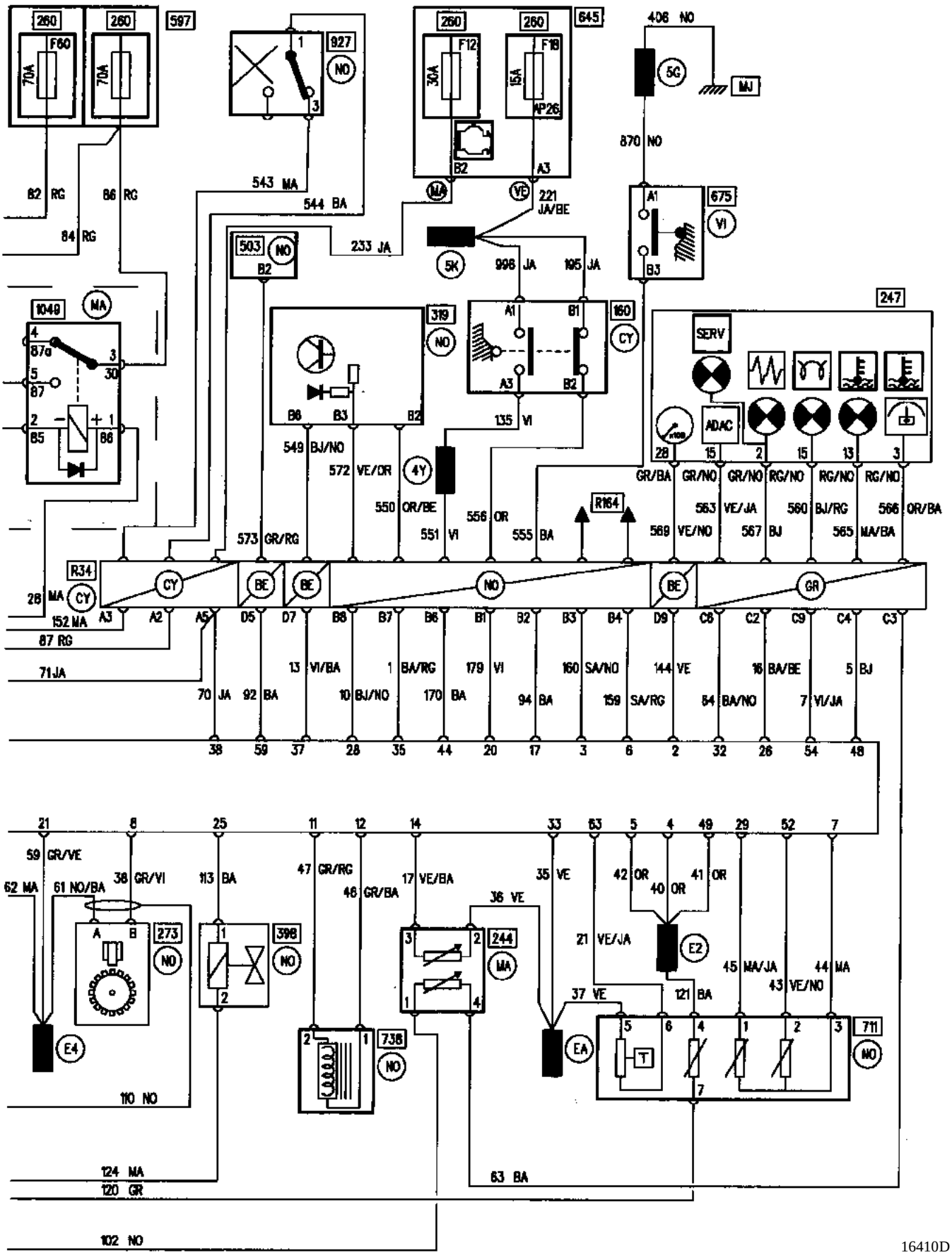
Track	Description
35	Heated windscreen signal
36	Not used
37	AC information
38	+ after ignition
39	Not used
40	Not used
41	Not used
42	Main relay command output
43	Vehicle speed signal input
44	Brake switch signal input (track 2)
45	+ before ignition
46	Earth
47	Immersion heaters command (relay 2)
48	Coolant temperature warning light output
49	Flow actuator command
50	Pre-heating relay command
51	Advance solenoid valve control
52	Flow slide valve position sensor
53	Fuel shut-off command
54	Pre-heating warning light output
55	Pedal position sensor
56	Not used
57	Pedal position sensor
58	Not used
59	Engine immobiliser
60	Not used
61	Diagnostics
62	Not used
63	Fuel temperature signal
64	Intake air temperature signal
65	No-load switch signal
66	Diagnostics
67	Not used
68	+ before ignition

PARTS LIST

120 Injection computer
149 Top Dead Centre sensor
155 Reverse gear switch
160 Brake switch
163 Starter
225 Diagnostic socket
234 Fan assembly high speed relay
244 Coolant temperature sensor
247 Instrument panel
257 Pre-heating unit
273 Top Dead Centre sensor
299 Relay accessory fuse board
319 AC control panel
335 Fan assembly low speed relay
398 EGR valve
419 AC control panel
450 Diesel heater relay
503 Engine immobiliser
597 Engine compartment fuse box
645 Passenger compartment connection unit
647 Heated windscreen
675 Clutch pedal switch
676 Accelerator potentiometer
680, 681, 682, 683 Pre-heating heater plugs
711 Diesel pump
721 ABS ECU transponder
738 Needle lift sensor
756 ECU transponder
777 Fuse board
799 Air flowmeter with air temperature sensor
898 Immersion heaters
921 Accelerator potentiometer
927 Shock sensor
952 Fuel shut-off and advance actuator electronics
983 Injection ECU transponder supply relay
1016 Passenger compartment fuse box
1047 Injection relay
1049 Immersion heaters relay


683
682
681
680
29 BA
72 BA
30 BA/SA
73 BA/SA
2E
3E
E6
B3 RG
82 RG
85 RG
87 RG
9 SA
8 SA/NO
3 1 2
257
NO
A2 A1 B1 C2 C1
103 NO
74 JA
51 SA
50 SA
E8
100 NO
MH
E3
695
698
696
55 BJ
57 BJ
58 BJ
1E
84 RG
289
983
VE
1049
JA
58 BJ
4 87a 3 30 5 87 2 85 1 86
53 SA/BE
152 MA
54 MA/BE
721
225
155
66 VI
98 BJ
99 GR
101 MA
34 VE/BA
49 SA
22 MA
71 JA
E5
43 61 HK 66 HL 16 50 30 42 47 27
120
68 45 23 51 53 55 15 57 65 1 24 46 13 19 64
123 BA
48 OR/BA
23 SA/NO
114 SA
19 VE/RG
14 MA/BA
111 NO
107 NO
109 NO
108 NO
112 NO
18 SA/BE
20 VE
15 BA/NO
62 MA
952
NO
676
NO
E9
799
NO
T
SA
106 NO
31
NF
131 NO
E8
E1
122 MA
24 BA
25 OR/BE
26 OR/BE
28 MA
27 VE
33 SA

16410G


260
F60
70A
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70A
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927
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F12
30A
260
F18
15A
AP26
645
B2
A3
MA
VE
221 JA/BE
406 NO
5G
MJ
870 NO
A1
675
VI
B3
82 RG
86 RG
84 RG
503
NO
B2
233 JA
5K
998 JA
195 JA
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4
87a
3
5
30
87
2
1
85
86
319
NO
B6
B3
B2
549 BJ/NO
572 VE/OR
4Y
550 OR/BE
551 VI
135 VI
A1
B1
160
CY
A3
B2
247
SERV
ADAC
28
15
2
15
13
3
GR/BA
GR/NO
GR/NO
RG/NO
RG/NO
RG/NO
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560 BJ/RG
566 OR/BA
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567 BJ
565 MA/BA
556 OR
555 BA
R164
573 GR/RG
R34
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BE
BE
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152 MA
87 RG
71 JA
A3
A2
A5
D5
D7
B8
B7
B6
B1
B2
B3
B4
D9
C8
C2
C9
C4
C3
70 JA
92 BA
13 VI/BA
10 BJ/NO
1 BA/RG
170 BA
179 VI
94 BA
160 SA/NO
159 SA/RG
144 VE
84 BA/NO
16 BA/BE
7 VI/JA
5 BJ
38
59
37
28
35
44
20
17
3
6
2
32
26
54
48
21
8
25
11
12
14
33
63
5
4
49
29
52
7
59 GR/VE
62 MA
61 NO/BA
38 GR/VI
113 BA
47 GR/RG
46 GR/BA
17 VE/BA
35 VE
36 VE
42 OR
40 OR
41 OR
A
B
273
NO
1
2
398
NO
3
2
1
4
244
MA
21 VE/JA
E2
45 MA/JA
44 MA
43 VE/NO
37 VE
121 BA
E4
EA
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6
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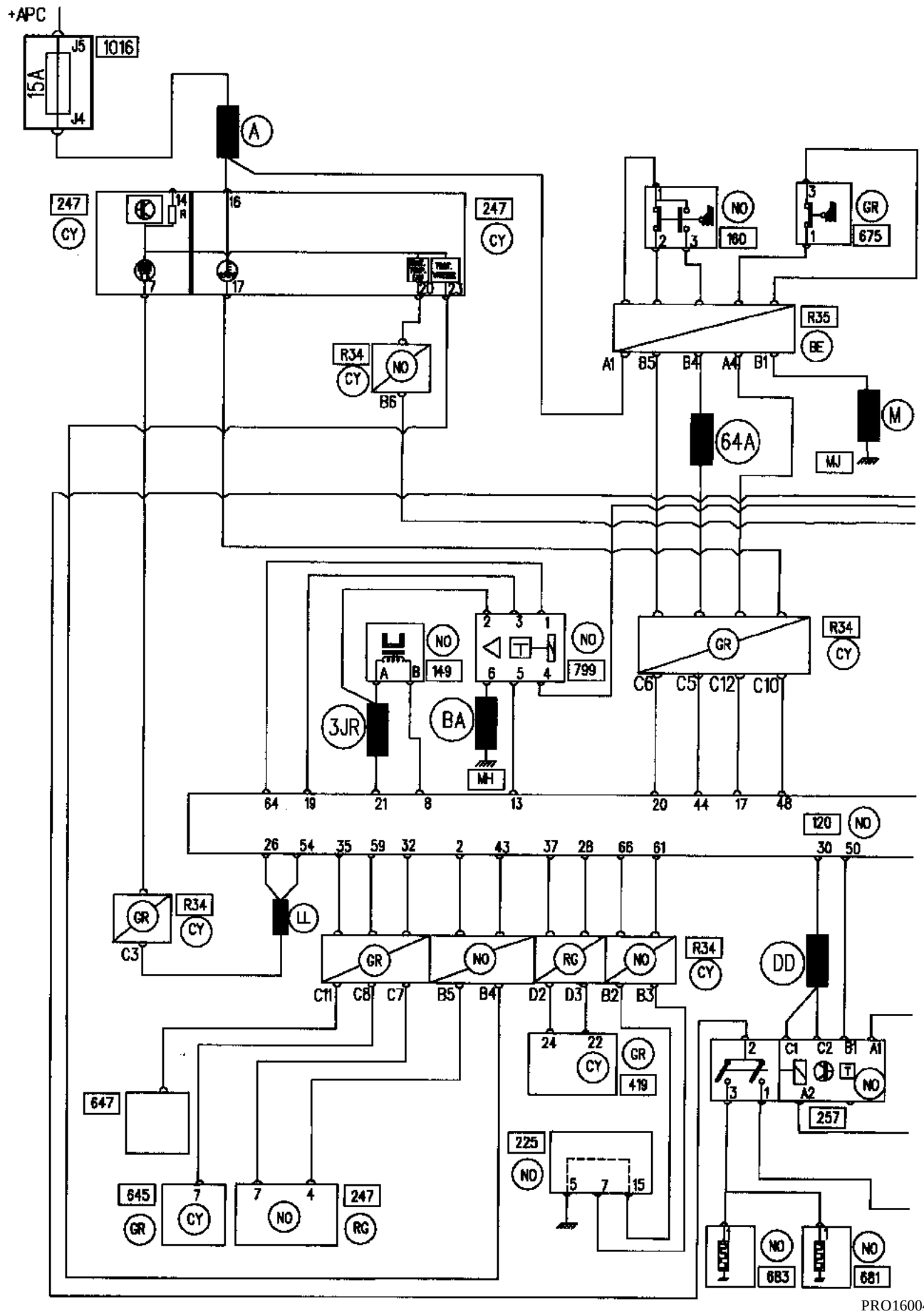
16410D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C11
C8
C7
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B4
D2
D3
B2
B3
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CY
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CY
7
4
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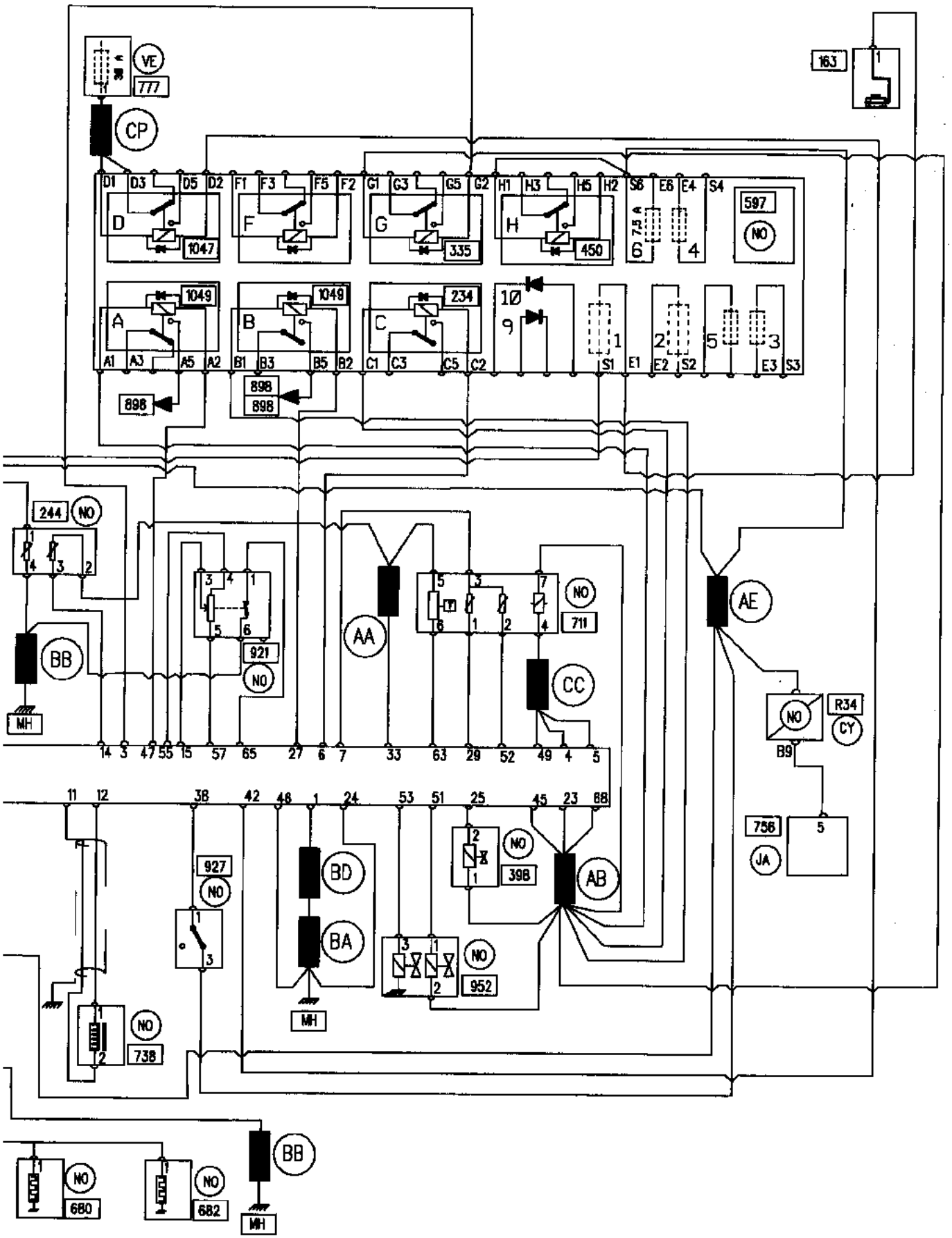
PRO16004G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777
CP
163
D1 D3 D5 D2 F1 F3 F5 F2 G1 G3 G5 G2 H1 H3 H5 H2 S6 E6 E4 S4
D
1047
F
G
335
H
450
7,5 A
6
4
597
NO
A
1049
B
1049
C
234
10
9
1
2
5
3
A1 A3 A5 A2 B1 B3 B5 B2 C1 C3 C5 C2 S1 E1 E2 S2 E3 S3
898
898
898
244
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BB
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NO
AA
711
CC
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R34
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11 12 38 42 48 1 24 53 51 25 45 23 68
927
NO
BD
BA
MH
398
AB
952
738
756
5
JA
680
682

PRO16004D

CONDITIONS FOR THE APPLICATION OF THE CHECKS DEFINED IN THIS FAULT FINDING SECTION

In this fault finding section, each fault is interpreted for a particular type of storing (fault present, fault stored, fault present or stored).
The checks defined for dealing with each fault therefore are to be applied to the vehicle only if the fault is interpreted for the type of fault indicated by the diagnostic equipment.

If a fault is interpreted in this fault finding section only if it is shown to be "present", the application of the fault finding procedure when the fault is only "stored" will not enable the origin of the storing of this fault to be located. In this case, only a check of the wiring and the connections of the component in question should be carried out.

If a fault is interpreted when it is shown to be "stored", the conditions for confirming the actual presence of the fault (and the necessity of applying the fault finding procedure) will be given in the "Notes" box or at the beginning of the interpretation of the fault.

NOTE : The ignition must be switched off before the diagnostic equipment is switched on.
The characterisation of a stored fault is always limited to dEF even if the failure is present but the conditions under which it is taken into account are not met (it is not possible to obtain a 1.dEF or a co.0 stored).

ESSENTIAL EQUIPMENT FOR CARRYING OUT WORK ON THE BOSCH ELECTRONIC INJECTION SYSTEM

- Diagnostic equipment (except XR25).

DF001 present or stored	Computer fault

NOTES	None

If the fault is only stored, erase the computer memory. Switch off the ignition then switch it on again to reinitialise the computer.
Change the computer if the fault occurs again.

If the fault is present, change the computer.

AFTER REPAIR	Erase the computer memory, switch off the ignition and then carry out a road test. Complete the operation by carrying out a test using the diagnostic equipment.

DF002 present or stored	Coolant temperature sensor circuit dEF : Fault stored co.1 : Open circuit or short circuit to 12 volts cc.0 : Short circuit to earth 1.dEF : Operating temperature consistency

NOTES	None

dEF

NOTES	None

Start the engine and warm it up to try to confirm the presence of a fault.
If the bargraph shows that a fault is present, apply the fault finding procedure associated with the type of fault indicated.

If it is not possible to confirm the presence of a fault on the vehicle, check the coolant temperature sensor circuits as a precaution.

Investigate the cause of a possible increase in the engine coolant temperature above the normal operating range (cooling circuit fault, conformity of the temperature sensor, engine compartment cooling, ...).

co.1

NOTES	If fault DF021 co.1 is also indicated, look for an open circuit of the sensors earth (track 33 of the computer connector). Also check the condition and securing of the engine earth strap and the MH engine earth.

Ensure the continuity and insulation from **+ 12 volts** of the connection between **track 14** of the computer connector and **track 3** of the coolant temperature sensor connector.

Ensure the continuity of the connection between **track 33** of the computer connector and **track 2** of the coolant temperature sensor connector.

Check the connections on both connectors of the connection.

If the fault persists following these checks, change the coolant temperature sensor.

AFTER REPAIR	Erase the computer memory, switch off the ignition and then carry out a road test. Complete the operation by carrying out a test using the diagnostic equipment.

DF002 CONT	

cc.0	***NOTES***	None

Ensure the insulation from earth of the connection between **track 14** of the computer connector and **track 3** of the coolant temperature sensor connector.

Check whether there is a short circuit on the sensor circuit (or the sensor) (resistance approximately 300 to 450 ohms at 80 °C / 2400 to 2600 ohms at 20 °C).

Check the connections on both connectors of the connection.

If the fault persists following these checks, change the coolant temperature sensor.

1.dEF	***NOTES***	None

Measure the line resistances of the following connections:
- Between **track 14** of the computer connector and **track 3** of the coolant temperature sensor connector.
- Between **track 33** of the computer connector and **track 2** of the coolant temperature sensor connector.

Carry out the operations necessary if there is an abnormally high resistance.

If the fault persists following these checks, change the coolant temperature sensor.

AFTER REPAIR	Erase the computer memory, switch off the ignition and then carry out a road test. Complete the operation by carrying out a test using the diagnostic equipment.

DF003 present or stored	Load potentiometer circuit dEF : Fault stored 1.dEF : General consistency 1.cc.1 : CC to 12 volts of the 5 volt supply 1.co.0 : CO or CC to earth of the 5 volt supply 2.cc.1 : CC sensor or CC to 12 volts of the signal

NOTES	None

dEF

NOTES	None

Press the accelerator pedal to the full-load position to try to confirm the presence of a fault.
If the fault is shown to be present, apply the fault finding procedure associated with the type of fault indicated.

If it is not possible to confirm the presence of a fault on the vehicle, check the load potentiometer circuits as a precaution.

1.dEF

NOTES	None

Ensure that the "pedal not pressed" position recognition switch is operating correctly by means of status **ET016** "No-load switch information" (Open switch between **tracks 1 and 6** of the load potentiometer connector). Ensure that earth is present on **track 1 (F9Q 710)**, and on **track 6 (F9Q 736)**.

Ensure the continuity and insulation from earth of the connection between **track 65** of the computer connector and **track 6 (F9Q 710)**, **track 1 (F9Q 736)** of the load potentiometer connector.

Check the connections on both connectors of the connection.

If the fault persists following these checks, change the load potentiometer.

1.cc.1 / 1.co.0

NOTES	None

Ensure the continuity and insulation from earth of the connection between **track 15** of the computer connector and **track 3** of the load potentiometer connector.
Ensure the continuity and insulation from **+12 volts** of the connection between **track 57** of the computer connector and **track 5** of the load potentiometer connector.
Check the connections on both connectors of the connection.

If the fault persists following these checks, change the load potentiometer.

AFTER REPAIR	Erase the computer memory, switch off the ignition and then carry out a road test. Complete the operation by carrying out a test using the diagnostic equipment.

DF003 CONT	

2.cc.1	NOTES	None

Ensure the continuity of the connection between **track 55** of the computer connector and **track 4** of the load potentiometer connector.

Ensure the insulation from **12 volts** of the connection between **track 15** of the computer connector and **track 3** of the load potentiometer connector. Also ensure the insulation of this connection from the connection between **track 57** of the computer connector and **track 5** of the load potentiometer connector (+5 volts potentiometer).

Check for a possible potentiometer short circuit (between tracks 4 and 5 of the 6-way connector) or a short circuit of its supply.

Check the connections on both connectors of the connection.

If the fault persists following these checks, change the load potentiometer.

2.co.0	NOTES	None

Ensure the continuity and insulation from earth of the connection between **track 57** of the computer connector and **track 5** of the load potentiometer connector.

Check the connections on both connectors of the connection.

If the fault persists following these checks, change the load potentiometer.

AFTER REPAIR	Erase the computer memory, switch off the ignition and then carry out a road test. Complete the operation by carrying out a test using the diagnostic equipment.

DF004 stored	Vehicle speed sensor circuit dEF : Fault stored 1.dEF : Signal frequency too high 2.dEF : Maximum speed exceeded 3.dEF : Consistency between flow and vehicle speed
NOTES	None

dEF	***NOTES***	None

Carry out a road test to try to confirm the presence of a fault.
If the fault is shown to be present, apply the fault finding procedure associated with the type of fault indicated.

If it is not possible to confirm the presence of a fault on the vehicle, check the vehicle speed sensor circuits as a precaution (signal interference).

1.dEF / 2.dEF 3.dEF	***NOTES***	None

Is the vehicle speed information present on the instrument panel?

YES

Check the engine management computer connections.
Ensure the continuity between **track 43** of the engine management computer connector and the source of the vehicle speed information (tachometer sensor or ABS computer).

NO

A : **Vehicle speed information via ABS computer.**
Check the ABS computer connector connections.
Ensure the continuity of the connection between **track 43** of the engine management computer connector and the ABS computer connector.
Ensure the insulation of all the connections relating to vehicle speed information reception.

B : **Vehicle speed information via tachometer sensor.**
Check the vehicle speed sensor connections.
Ensure that the speed sensor is supplied correctly.
Ensure the continuity and insulation of the connection between **track 43** of the engine management computer connector and **track B1** of the sensor connector.
If the fault persists following these checks, change the vehicle speed sensor.

AFTER REPAIR	Erase the computer memory, switch off the ignition and then carry out a road test. Complete the operation by carrying out a test using the diagnostic equipment.

DF005 **Present** **or stored**	Needle lift sensor circuit DEF : Stored fault 1.dEF : Open circuit or short circuit to 12 volts 2.dEF : Short circuit to earth 3.dEF : Static consistency 4.dEF : Dynamic consistency 5.dEF : Over-revving

NOTES	None

dEF

NOTES	None

Start the engine to try to confirm the presence of a fault.
If the bargraph shows that a fault is present, apply the fault finding procedure associated with the type of fault indicated.
If it is not possible to confirm the presence of a fault with the engine running, carry out a road test to confirm a possible signal consistency fault.

If it is not possible to confirm the presence of a fault on the vehicle, check the needle lift sensor circuits as a precaution (signal interference).

1.*dEF* / 2.*dEF*

NOTES	None

Measure the resistance of the needle lift sensor at its connector.

Change the calibrated injector if the resistance is not **100 ± 10 ohms at 20°C**.

Ensure the continuity of the following connections:
- Between **track 12** of the computer connector and **track 1** of the needle lift sensor connector.
- Between **track 11** of the computer connector and **track 2** of the needle lift sensor connector.

Check the connections on both connectors of the connection.

Ensure the insulation of the connection between **track 12** of the computer connector and **track 1** of the needle lift sensor connector.

Ensure the insulation between the 2 lines of the needle lift sensor.

Also check the condition of the wiring between the sensor connector and the sensor.

If the fault persists following these checks, change the calibrated injector.

AFTER REPAIR	Erase the computer memory, switch off the ignition and then carry out a road test. Complete the operation by carrying out a test using the diagnostic equipment.

DF005 CONT	

3.dEF	***NOTES***	None

Check the condition of the injector and its fuel supply (injector seized, pipe kinked,...).

If the fault persists following these checks, change the calibrated injector (sensor faulty).

4.dEF / *5.dEF*	***NOTES***	None

These faults are taken into account in the event of needle lift sensor signal interference.

Check the condition of the sensor wiring and look for a circuit insulation fault (earthing of the shielding,...).

If the fault persists following these checks, change the calibrated injector.

AFTER REPAIR	Erase the computer memory, switch off the ignition and then carry out a road test. Complete the operation by carrying out a test using the diagnostic equipment.

DF006 present or stored	Advance solenoid valve circuit DEF : Fault stored co.0 : Open circuit or short circuit to earth cc.1 : Short circuit to 12 volts 1.dEF : Advance regulation deviation
NOTES	None

dEF

NOTES	None

Start the engine to try to confirm the presence of a fault.
If the fault is shown to be present, apply the fault finding procedure associated with the type of fault indicated.
If it is not possible to confirm the presence of a fault with the engine running, carry out a road test (1.dEF indicated only if the engine speed > 1500 rpm).

If it is not possible to confirm the presence of a fault on the vehicle, check the advance solenoid valve circuits as a precaution.

co.0

NOTES	None

Measure the resistance of the advance solenoid valve at its connector.
Change the advance solenoid valve if the resistance is not approximately **15 ohms** (14.3 to 17.3 ohms at 20°C).

Ensure the continuity and insulation from earth of the connection between **track 51** of the computer connector and **track 1** of the advance solenoid valve connector.

Ensure that there is a **+ after relay supply on track 2** of the corrector connector, wiring end.

Check the connections on both connectors.

If the fault persists following these checks, change the advance solenoid valve.

AFTER REPAIR	Erase the computer memory, switch off the ignition and then carry out a road test. Complete the operation by carrying out a test using the diagnostic equipment.

DF006 CONT	

cc.1	***NOTES***	None

Measure the resistance of the advance solenoid valve at its connector.
Change the advance solenoid valve if the resistance is not approximately **15 ohms** (short circuit).

Ensure the insulation from **+ 12 volts** of the connection between **track 51** of the computer connector and **track 1** of the advance solenoid valve connector.

Ensure the insulation between the advance solenoid valve control line and its + after relay supply.

If the fault persists following these checks, change the advance solenoid valve.

1.dEF	***NOTES***	Deal with DF005 first if this is indicated as well.

This fault indicates seizing of the advance solenoid valve, incorrect setting of the injection pump or a fuel supply problem.

It is taken into account when the advance controlled by the needle lift sensor deviates from the advance reference value requested by the computer by **more than 3**°.

- Check the condition of the needle lift sensor wire and connections.
- Check the condition of the fuel supply (filter clogged, pipe kinked, incorrect diesel in winter, ...).
- Check the pump setting and the securing of the pump pulley.

If the checks are correct, change the advance corrector.

AFTER REPAIR	Erase the computer memory, switch off the ignition and then carry out a road test. Complete the operation by carrying out a test using the diagnostic equipment.

DF014 present or stored	Fuel shut-off circuit dEF : Fault stored 1.dEF : Operating consistency 2.dEF : Circuit fault

NOTES	None

dEF

NOTES	Ensure that the engine immobiliser is released.

Place a multimeter in voltmeter mode on the fuel shut-off supply terminal and start the "fuel shut-off" actuator command.
- If the multimeter indicates a permanent voltage of **12 volts** during the command, look for a short circuit to **12 volts** of the connection between **track 53** of the computer connector and the fuel shut-off (the command provides an alternating on / off control).

Start the engine. Switch off the ignition monitoring the diagnostic equipment display.
- If the display indicates **1.dEF** during the computer supply maintaining phase, change the fuel shut-off.

If it is not possible to obtain this display, there is no fault present on the vehicle.

Check the fuel shut-off circuits as a precaution.

2.dEF

NOTES	None

Measure the resistance of the fuel shut-off at its connector.
Change the fuel shut-off if the resistance is not approximately **7.5 ohms**.

Ensure the continuity and insulation from earth of the connection between **track 53** of the computer connector and the fuel shut-off.

Check the computer connections and that the fuel shut shut-off supply terminal is secured correctly.

If the fault persists following these checks, change the fuel shut-off.

AFTER REPAIR	Erase the computer memory, switch off the ignition and then carry out a road test. Complete the operation by carrying out a test using the diagnostic equipment.

DF015 present	Engine immobiliser 1.dEF : Engine immobiliser line fault 2.dEF : Code not programmed
NOTES	None

Check the engine immobiliser function.
Check the programming of both keys or programme them.

If the fault persists, ensure the continuity and insulation of the connection between **track 59** of the computer connector and the decoder unit (UCBIC or equivalent).

AFTER REPAIR	Erase the computer memory, switch off the ignition and then carry out a road test. Complete the operation by carrying out a test using the diagnostic equipment.

DF016 stored	Clutch switch circuit dEF : Stored fault 1.dEF : Signal not consistent
NOTES	The fault is signalled if the status of the clutch switch has not changed before reaching a speed of 60 mph (100 km / h).

Monitor status **ET012 clutch switch information** with the pedal pressed and released.

Are the clutch pedal "pedal pressed" and "pedal not pressed" statuses recognised correctly?

YES	There is no clutch switch fault. Carry out a simple preventive check of the fitting of the switch and the connection of its connector.
NO	Check the condition and the setting of the clutch switch. Disconnect the clutch switch then check / ensure the earthing of **track 3** of the connector, wiring end. Check the operation of the clutch switch contact: loss of continuity between **tracks 1 and 3** when the pedal is pressed. Check and ensure the continuity and insulation from earth of the connection between **track 1** of the clutch switch connector and **track 17** of the computer connector.

AFTER REPAIR	Erase the computer memory, switch off the ignition and then carry out a road test. Complete the operation by carrying out a test using the diagnostic equipment.

DF017 present	Main relay circuit dEF : Fault stored 1.dEF : Relay cuts off too late 2.dEF : Relay cuts off too early
NOTES	Main relay: Position D on the engine compartment board and coil resistance approximately 65 ohms.

1.dEF	***NOTES***	The relay cuts off too late or not at all

Check the connections at the main relay support. Repair if necessary.
Try another relay (note the faults stored, change the relay, erase the fault memory, switch off the ignition and wait 10 seconds, read the faults).

Check the connections at the main relay support. Repair if necessary.
Ensure the insulation from earth of the connection between the relay support (coil earth) and **track 42** of the computer connector.
Ensure the insulation from **+Battery** of the connection between the relay support (power output) and **tracks 23, 45 and 68** of the computer connector.

If the fault persists following these checks, change the computer (refer to the "assistance" section for this operation).

2.dEF	***NOTES***	The relay cuts off too early

Check the connections at the main relay support. Repair if necessary.
Try another relay (note the faults stored, change the relay, erase the fault memory, switch off the ignition and wait 10 seconds, read the faults).

Check the connections at the main relay support. Repair if necessary.
Ensure the continuity of the connection between the relay support (power output) and **tracks 23, 45 and 68** of the computer connector (wiring condition check).
Ensure the continuity of the connection between the relay support (coil earth) and **track 42** of the computer connector (wiring condition check).

If the fault persists following these checks, change the computer (refer to the "assistance" section for this operation).

AFTER REPAIR	Erase the computer memory, switch off the ignition and then carry out a road test. Complete the operation by carrying out a test using the diagnostic equipment.

DF019 present or stored	Air flow sensor circuit dEF : Fault stored 1.cc.1 : Short circuit to 12 volts of the sensor engine running 2.cc.1 : Short circuit to 12 volts of the sensor engine not running 1.co.0 : Open circuit or short circuit to earth of the sensor engine running 2.co.0 : Open circuit or short circuit to earth of the sensor engine not running 3.cc.1 : Short circuit to 12 volts of the sensor supply 3.co.0 : Open circuit or short circuit to earth of the sensor supply 1.dEF : Consistency
NOTES	None

dEF	***NOTES***	None

Start the engine to try to confirm the presence of a fault.
- If the bargraph shows that a fault is present, apply the fault finding procedure associated with the type of fault indicated.
- If it is not possible to confirm the presence of a fault with the engine running at idle, accelerate the engine speed to more than **2000 rpm** to confirm a possible information consistency fault.

If it is not possible to confirm the presence of a fault on the vehicle, check the air flow sensor circuits as a precaution.

1.*cc.1 / 2.cc.1*	***NOTES***	If fault DF022 co.1 is indicated as well, look for an open circuit of the sensors earth (track 21 of the computer connector).

Ensure the insulation from **12 volts** of the connection between **track 13** of the computer connector and **track 5** of the air flow sensor connector.

Ensure the continuity of the connection between **track 21** of the computer connector and **track 2** of the sensor connector and ensure that **-Bat** is present on **track 6** of the sensor connector (presence of a voltage > 10.5 volts after ignition between tracks 4 and 6 of the connector).

If the fault persists following these checks, change the air flow sensor.

AFTER REPAIR	Erase the computer memory, switch off the ignition and then carry out a road test. Complete the operation by carrying out a test using the diagnostic equipment.

DF019 CONT	

1.*co.0 / 2.co.0*	***NOTES***	None

Ensure the continuity and insulation from earth of the connection between **track 13** of the computer connector and **track 5** of the sensor connector and ensure that + after relay is present on **track 4** of the sensor connector (presence of a voltage >10.5 volts between tracks 4 and 6 of the connector).

Check the connections on both connectors of the connection.

If the fault persists following these checks, change the air flow sensor.

3.cc.1 / *3.co.0*	***NOTES***	None

Ensure the continuity and insulation of the connection between **track 19** of the computer connector and **track 3** of the sensor connector.

Ensure that there is a voltage **> 10.5 volts** between **tracks 4 and 6** of the sensor connector.

Check the connections on both connectors of the connection.

If the fault persists following these checks, change the air flow sensor.

1.dEF	***NOTES***	None

Check the conformity of the air intake circuit.

Check the connections on both connectors of the connection.

If the fault persists following these checks, change the air flow sensor.

AFTER REPAIR	Erase the computer memory, switch off the ignition and then carry out a road test. Complete the operation by carrying out a test using the diagnostic equipment.

DF021 present	Fuel temperature sensor circuit co.1 : Open circuit or short circuit to 12 volts cc.0 : Short circuit to earth
NOTES	None

co.1

NOTES	If fault DF042 5.dEF is present also, check that the pump 7-way round connector is secured correctly. If fault DF002 co.1 is indicated as well, look for an open circuit of the sensors earth (track 33 of the computer connector). Also check the condition and securing of the engine earth strap and the MH engine earth.

Ensure the continuity and insulation from **+ 12 volts** of the connection between **track 63** of the computer connector and **track 6** of the pump connector.

Ensure the continuity of the connection between **track 33** of the computer connector and **track 5** of the pump connector.

Check the connections on both connectors of the connection.

If the fault persists following these checks, change the fuel temperature sensor.

cc.0

NOTES	None

Ensure the insulation from earth of the connection between **track 63** of the computer connector and **track 6** of the pump connector.

Check whether there is a short circuit on the sensor circuit (or sensor) (resistance approximately 2.2 Kohms at 20 °C).

Check the connections on both connectors of the connection.

If the fault persists following these checks, change the fuel temperature sensor.

AFTER REPAIR	Erase the computer memory, switch off the ignition and then carry out a road test. Complete the operation by carrying out a test using the diagnostic equipment.

DF022 present	Air temperature sensor circuit co.1 : Open circuit or short circuit to 12 volts cc.0 : Short circuit to earth
NOTES	The air temperature sensor is incorporated in the air flowmeter

co.1

NOTES	If fault DF019 2.cc.1 in indicated as well, look for an open circuit of the sensors earth (track 21 of the computer connector).

Ensure the continuity and insulation from **+12 volts** of the connection between **track 64** of the computer connector and **track 1** of the air temperature sensor connector.

Ensure the continuity of the connection between **track 21** of the computer connector and **track 2** of the air temperature sensor connector.

Check the connections on both connectors of the connection.

If the fault persists following these checks, change the air temperature sensor.

cc.0

NOTES	None

Ensure the insulation from earth of the connection between **track 64** of the computer connector and **track 1** of the air temperature sensor connector.

Check whether there is a short circuit on the sensor circuit (or the sensor) (resistance between 1070 and 1270 ohms at 40°C / 2400 and 2600 ohms at 20 °C).

Check the connections on both connectors of the connection.

If the fault persists following these checks, change the air temperature sensor.

AFTER REPAIR	Erase the computer memory, switch off the ignition and then carry out a road test. Complete the operation by carrying out a test using the diagnostic equipment.

DF023 stored	Flywheel signal sensor circuit dEF : Fault stored 1.dEF : Static consistency 2.dEF : Dynamic consistency 3.dEF : Over-revving detection
NOTES	None

dEF

NOTES	None

Start the engine to try to confirm the presence of a fault (or carry out a starting test).
If the fault is shown to be present, apply the fault finding procedure associated with the type of fault indicated.
If it is not possible to obtain an indication that the fault is present, erase the computer memory then start the engine again. Apply the fault finding procedure below if the bargraph indicates a stored fault again (dEF).

If the fault does not occur again, check the flywheel signal sensor circuit as a precaution.

1.dEF / 2.dEF 3.dEF

NOTES	None

Measure the resistance of the flywheel signal sensor at its connector. Change the sensor if the resistance is not **760 ohms at 20°C**.

Ensure the continuity and insulation of the following connections:
- Between **track 8** of the computer connector and **track B** of the flywheel signal sensor connector.
- Between **track 21** of the computer connector and **track A** of the flywheel signal sensor connector.

Check the insulation between these 2 connections again.

Check the connections on both connectors of the connection.

Visually check the general condition of the wiring and the wiring passage for risks of interference.

Check the positioning and condition of the sensor.
Check the condition of the target (deformation, securing, ...).
Check the conformity of the target: 4 slots at 90°.

If the fault persists following these checks, change the flywheel signal sensor.

AFTER REPAIR	Erase the computer memory, switch off the ignition and then carry out a road test. Complete the operation by carrying out a test using the diagnostic equipment.

DF024 present	Atmospheric pressure sensor circuit 1.dEF : Above upper limit 2.dEF : Below lower limit
NOTES	None

Change the computer.

AFTER REPAIR	Erase the computer memory, switch off the ignition and then carry out a road test. Complete the operation by carrying out a test using the diagnostic equipment.

DF027 present	EGR solenoid valve circuit co.0 : Open circuit or short circuit to earth cc.1 : Short circuit to 12 volts
NOTES	None

co.0	***NOTES***	None

Measure the resistance of the EGR solenoid valve at its connector.
Change the EGR solenoid valve if the resistance is not approximately **16.5 ohms**.

Ensure the continuity and insulation from earth of the connection between **track 25** of the computer connector and **track 2** of the EGR solenoid valve connector.

Ensure that **+ after relay** is present on **track 1** of the EGR solenoid valve connector, wiring end.

Check the connections on both connectors.

If the fault persists following these checks, change the EGR solenoid valve.

cc.1	***NOTES***	None

Measure the resistance of the EGR solenoid valve at its connector.
Change the EGR solenoid valve if the resistance is not approximately **16.5 ohms** (short circuit).

Ensure the insulation from **+ 12 volts** of the connection between **track 25** of the computer connector and **track 2** of the EGR solenoid valve connector.

If the fault persists following these checks, change the EGR solenoid valve.

AFTER REPAIR	Erase the computer memory, switch off the ignition and then carry out a road test. Complete the operation by carrying out a test using the diagnostic equipment.

DF038 present or stored	Immersion heater relays circuit dEF : Fault stored 1.co.0 : Open circuit or short circuit to earth relay 1 circuit 1.cc.1 : Short circuit to 12 volts relay 1 circuit 2.co.0 : Open circuit or short circuit to earth relay 2 circuit 2.cc.1 : Short circuit to 12 volts relay 2 circuit

NOTES	If the vehicle is not fitted with immersion heaters, change the configuration of the computer using the "Computer configuration without immersion heaters" command.

dEF

NOTES	None

Use the "**Group 1 immersion heaters relay**" then "**Group 2 immersion heaters relay**" commands to try to confirm the presence of a fault.
If the fault is shown to be present on completion of the command, apply the fault finding procedure associated with the type of fault indicated.

If it is not possible to obtain an indication that a fault is present, check the immersion heater relays wiring as a precaution.

1.co.0 / 2.co.0

NOTES	None

Measure the resistance of the coil of the relay concerned between **terminals 1 and 2**.
Change the relay if the resistance is not approximately **65 ohms**.
Ensure the continuity and insulation from earth of the connection between **track 27** (relay 1) or **track 47** (relay 2) of the computer connector and **track 2** of the support of the immersion heater relay concerned.
Ensure that + after relay is present on **track 1** of the support of the immersion heater relay concerned.
Check the connection on the computer connector and on the support.

If the fault persists following these checks, change the immersion heater relay concerned.

1.cc.1 / 2.cc.1

NOTES	None

Measure the resistance of the coil of the relay concerned between **terminals 1 and 2.**
Change the relay if the resistance is not approximately **65 ohms**.
Ensure the insulation from **+ 12 volts** of the connection between **track 27** (relay 1) or **track 47** (relay 2) of the computer connector **track 2** of the support of the immersion heater concerned.

If the fault persists following these checks, change the immersion heater relay concerned.

AFTER REPAIR	Erase the computer memory, switch off the ignition and then carry out a road test. Complete the operation by carrying out a test using the diagnostic equipment.

DF042 present or stored	Fuel flow circuit dEF : Fault stored 1.dEF : Drift when cold 2.dEF : Drift when warm 3.dEF : "Stop" limit not reached 4.dEF : "Starting" limit not reached 5.dEF : Open circuit or short circuit to 12 volts 6.dEF : Short circuit to earth
NOTES	If fault DF021 co.1 is also present, check the securing of the pump 7-way round connector.

dEF	***NOTES***	None

Carry out a road test to try to confirm the presence of a fault.
If the bargraph shows that a fault is present, apply the fault finding procedure associated with the type of fault indicated.

If it is not possible to obtain an indication that a fault is present, switch off the ignition monitoring the diagnostic equipment display during the computer supply maintaining phase.

If it is not possible to obtain a display other than"dEF", there is no fault present on the vehicle. Check the pump wiring and the connections on the 7-way round connector as a precaution.

1.*dEF* / 2.*dEF*	***NOTES***	None

Measure the resistance of the flow actuator between **tracks 4 and 7** of the pump connector.
Change the pump if the resistance is not between **0.4 and 1 ohm at 20°C**.

Ensure the continuity between **tracks 4 / 5 / 49** of the computer connector and **track 4** of the pump connector.
Ensure the insulation from **earth** and from **12 volts** of this connection.
Check that **+after ignition** is present on **track 7** of the pump connector.

Check the connections on both connectors of the connection.

If all the checks are positive, reconnect the computer and pump connectors, then erase the computer memory.
Exit diagnostic mode and carry out a road test. Change the pump if the fault occurs again.

AFTER REPAIR	Erase the computer memory, switch off the ignition and then carry out a road test. Complete the operation by carrying out a test using the diagnostic equipment.

DF042 CONT	

3.dEF / 4.dEF	NOTES	None

Every time the ignition is switched off, the computer controls the flow actuator to check that the flow regulation slide valve is operating correctly. If the slide valve does not move in line with the request, fault **3.dEF** or **4.dEF** is stored.

Change the diesel injection pump.

5.dEF / 6.dEF	NOTES	None

Ensure the continuity and insulation of the following connections:
- Between **track 7** of the computer connector and **track 3** of the pump connector.
- Between **track 52** of the computer connector and **track 2** of the pump connector.
- Between **track 29** of the computer connector and **track 1** of the pump connector.

Ensure the insulation between these 3 connections.

Check the connections on both connectors of the connection.

If all the checks are positive, reconnect the computer and pump connectors, then erase the computer memory.

Exit diagnostic mode and carry out a road test. Change the pump if the fault occurs again.

AFTER REPAIR	Erase the computer memory, switch off the ignition and then carry out a road test. Complete the operation by carrying out a test using the diagnostic equipment.

DF045 present or stored	Pre-heating relay circuit dEF : Fault stored co.0 : Open circuit or short circuit to earth cc.1 : Short circuit to 12 volts 1.dEF : Consistency with diagnostic line return
NOTES	Check the condition of the 70A fuse in the engine compartment connection unit first.

dEF

NOTES	None

Use the "**Pre-heating relay**" command to try to confirm the presence of a fault.
If the fault is shown to be present on completion of the command, apply the fault finding procedure associated with the type of fault indicated.
If it is not possible to obtain an indication that a fault is present, erase the computer memory then switch the ignition off and then on again. Apply fault finding procedure **1.dEF** below if the fault is shown to be stored again (dEF).

If it is not possible to obtain an indication that a fault is present, check the heater plugs wiring and the connections on the relay unit as a precaution.

co.0 / cc.1

NOTES	None

Ensure the continuity and insulation of the connection between **track 50** of the computer connector and **track B1** of the relay unit connector.

Check the connections on both connectors of the connection.

If the fault persists following these checks, change the relay unit.

AFTER REPAIR	Erase the computer memory, switch off the ignition and then carry out a road test. Complete the operation by carrying out a test using the diagnostic equipment.

DF045 cont	

1.dEF	***NOTES***	None

Ensure that the 2 connectors on the relay unit are connected. Ensure that all the pre-heating heater plugs are connected.
Ensure the continuity and insulation of the connection between **track 30** of the computer connector and **tracks C1 and C2** of the relay unit 6-way connector. Ensure that **+after ignition** is present on **track A1** of the relay unit 6-way connector. Ensure that **earth** is present on **track A2** of the relay unit 6-way connector. Ensure that **+before ignition** is present on **track 2** of the relay unit 3-way connector (70 A fuse). Check the connections on the relay unit and the computer.
Disconnect the pre-heating heater plugs and check / ensure the insulation from earth of the wiring between the relay unit and the pre-heating heater plugs. Check the condition of the heater plugs wiring. Check and change the faulty heater plugs (short circuit).
If the fault persists following these checks, change the relay unit.

AFTER REPAIR	Erase the computer memory, switch off the ignition and then carry out a road test. Complete the operation by carrying out a test using the diagnostic equipment.

DF047 present or stored	Supply dEF : Fault stored 1.dEF : Excess battery voltage 2.dEF : Battery voltage low

NOTES	If appropriate, carry out a complete check of the charging circuit using the Optima 5800 diagnostic equipment.

Carry out the operations necessary to obtain a correct computer supply voltage:
6 volts < operating voltage < 16.5 volts.

- Battery charge check.
- Charging circuit check.
- Check of the securing and condition of the battery terminals.
- Computer earth check.

AFTER REPAIR	Erase the computer memory, switch off the ignition and then carry out a road test. Complete the operation by carrying out a test using the diagnostic equipment.

DF051 present or stored	Brake pedal switch circuit dEF : Fault stored 1.dEF : Consistency between the two items of brake information 2.dEF : Consistency of the brake signal after starting
NOTES	None

Monitor statuses **ET013 Brake switch n° 1 information** and **ET014 Brake switch n° 2 information** with the pedal pressed and released.
During normal operation, both statuses are "not validated" when the pedal is not pressed. They are validated when the pedal is pressed.

Are the "pedal pressed" and "pedal not pressed" statuses of the brake pedal recognised correctly?

YES	There is no brake switch fault. Carry out a simple preventive check of the fitting of the switch and the connection of its connector.
NO	Check the condition and setting of the brake switch. Disconnect the brake switch then check / ensure that **+after ignition** is present on **track 1** of the connector, wiring end. Check the operation of the brake switch contacts (opening of the contact between **tracks 1 and 2** and closing of the contact between **tracks 1 and 3** when the pedal is pressed). Check and ensure the continuity of the following connections: - between **track 2** of the brake switch connector and **track 20** of the computer connector. - between **track 3** of the brake switch connector and **track 44** of the computer connector.

AFTER REPAIR	Erase the computer memory, switch off the ignition and then carry out a road test. Complete the operation by carrying out a test using the diagnostic equipment.

REPLACEMENT OF THE COMPUTER

The LAGUNA is fitted with additional immersion heaters as standard.

Depending on the country, this equipment is present on vehicles in the MEGANE range which are fitted with the F9Q 736 engine. When a computer is changed on a MÉGANE vehicle, it may be necessary to alter the configuration of the computer using the configuration command "Without immersion heaters" for vehicles which are not provided with immersion heaters (computer pre-configured "With immersion heaters").

The configuration commands with / without Air Conditioning, with / without Variable Power Steering cannot be used on these vehicles (computer configured "with AC" by default, power steering electropump assembly not fitted on these applications).

NOTES	Only carry out this conformity check following a check using the NXR equipment. Engine stopped, ignition on

Order	Function	Parameter / Status checked or action	Display /Notes	Diag.
1		ET 001 + after ignition computer PR 004 Computer supply voltage	Status confirmed 11.8 < X < 13. 2	
2	Warning light on instrument panel	ET 004 Fault warning light ET 008 Over-heating warning light	Status not confirmed Status not confirmed. Illuminated on the instrument panel for a few seconds when the ignition is switched on	
3	Load potentiometer	ET 016 No-load switch PR017 load potentiometer position	Status confirmed at no-load = 0 % at full-load = 100 %	
4	Pre-post heating function	Pre-heating / fault warning light	Illuminated on the instrument panel for a few seconds when the ignition is switched on	
5	Immersion heaters operation	ET 031 immersion heaters group 1 relay command ET 032 immersion heaters group 2 relay command	Statuses confirmed in line with operation	
6	Fuel shut-off	ET 033 fuel shut-off relay command	Status not confirmed engine stopped	
	Brake switch	ET 013 brake switch n° 1 information ET 014 brake switch n° 2 information	Statuses confirmed if the brake pedal is pressed	

NOTES	Only carry out this conformity check following a check using the NXR equipment. Engine stopped, ignition on

Order	Function	Parameter / Status checked or action	Display / Notes	Diag.
7	Diesel temperature sensor	PR 001 Fuel temperature	- 40°C < X < 140°C	
	Coolant temperature sensor	PR 002 Coolant temperature	- 32°C < X < 140°C	
	Air temperature sensor	PR 003 Air temperature	- 32°C < X < 140°C	
	Atmospheric temperature sensor	PR 016 Atmospheric pressure	420 mbar < X < 1070 mbar	
8		PR 007 intake air flow	X = 450±50 kg / h	
		PR 011 Idle regulation reference PR035 idle speed correction	X = 850 rpm if X = 0 rpm	
		PR 012 engine speed seen by the needle lift	X = 0 rpm	
9	EGR function	PR 024 EGR solenoid valve OCR	X = 95 %	
10	Computer configuration (F9Q 736)	Command: reading of immersion heaters option	Only configuration possible	
11	Fan assembly	Command: fan assembly low speed	The fan assembly should be heard running at low speed	
		Command: fan assembly high speed	The fan assembly should be heard running at high speed	
12	Advance solenoid valve	Command: Advance actuator	The actuator should be heard to knock	

NOTES	Only carry out this conformity check following a check using the NXR equipment. Engine warm, at idle, with no power consuming equipment operating

Order	Function	Parameter / Status checked or action	Display / Notes	Diag.
13	Fuel shut-off	Fuel shut-off command	The actuator should be heard to knock lightly	
14	Fuel shut-off	ET 033 Fuel shut-off relay command	Confirmed	
15	Engine speed sensor	PR 006 Engine speed PR 004 Computer supply voltage	Idle speed 850 rpm 12.5 < X < 15	
16		ET 033 Fuel shut-off command PR 007 Intake air flow PR 011 Idle regulation reference PR 012 Engine speed seen by the needle lift PR 020 Fuel flow reference	Status confirmed X = 50 ±20 kg / h X = 850 rpm X = 850 rpm X = 7 mg / stroke at idle	
17	EGR function	PR 024 EGR solenoid valve OCR	X = 5 % in line with operation of the EGR	
18	AC function	ET 006 Air conditioning request ET 007 Air conditioning authorisation PR 006 Engine speed ET 037 Fan assembly low speed relay command	Statuses confirmed in line with operation of the AC X = 875 rpm Status confirmed	

NOTES	Only carry out this conformity check following a check using the NXR equipment. Engine warm, at idle, with no power consuming equipment operating

Order	Function	Parameter / Status checked or action	Display / Notes	Diag.
19	Heated windscreen function	ET 015 Heated windscreen information PR 006 Engine speed	Status confirmed X = 875 rpm	
20	Fan assembly operation	PR 037 Fan assembly low speed relay command PR 038 Fan assembly high speed relay command	Status confirmed in line with the operating temperature	

NOTES	Only refer to these customer complaints after carrying out a complete check using the diagnostic equipment

CHART 1	NO DIALOGUE WITH THE ENGINE MANAGEMENT COMPUTER

NOTES	None

Ensure that the diagnostic equipment is not the cause of the fault by trying to communicate with a computer on another vehicle. If the equipment is not faulty and dialogue is not established with any other on the same vehicle, it is possible that a faulty computer is causing interference on diagnostic lines **K** and **L**. Locate this computer by disconnecting the computers one by one.

Check the battery voltage and carry out the operations necessary to obtain a specification voltage (6.5 volts < U battery < 16.5 volts).

Check the **+ after ignition supply fuse** on the interconnection unit.

Check the connection and the condition of the computer connection connections and of the **R34** engine/instrument panel connection.

Check that the computer is supplied correctly:
- **Earth on tracks 1, 24 and 46** of the computer connector (check the condition and the securing of the engine earth strap and the MH engine earth).
- **+ after ignition on track 38** of the computer connector.

Check that the diagnostic socket is supplied correctly:
- **Earth on track 5**.
- **+ before ignition on track 16**.

Check and ensure the continuity and insulation of the diagnostic socket / computer connection lines:
- Between **track 66** of the computer connector and **track 15** of the diagnostic socket.
- Between **track 61** of the computer connector and **track 7** of the diagnostic socket.

If dialogue is still not established following these checks, check the operation of the main relay:
- Check / ensure that **+before ignition** is present on **terminals 30 and 86** of the main relay support (fuse).
- Remove the relay and check with the ignition on that the computer supplies an earth to **terminal 85** of the relay support (continuity between track 42 of the computer connector and terminal 85).
- Reconnect the relay and check that + after relay is present on **terminal 87**.

If the relay operates correctly, check the continuity between **terminal 87** of the relay support and **tracks 23, 45 and 68** of the computer connector.

If the dialogue is still not established, change the computer.

AFTER REPAIR	When communication is established, deal with any faults which are indicated.

CHART 2	STARTING PROBLEM (engine does not start or starting is difficult)

NOTES	Only refer to this customer complaint after carrying out a complete check using the diagnostic equipment.

If no faults are indicated by the diagnostic equipment, ensure that the problem is not the result of an engine immobiliser fault.

Check the operation of the pre-heating:
Use the "**Pre-heating relays**" command and check that there is a voltage on the pre-heating heater plugs.
- If none of the heater plugs are supplied, check the connection of the intermediate 2-way connector and the 3-way connector on the relay unit. Also check the condition of the **70 Amp fuse** on the engine connection unit.
- If only one group of heater plugs is not supplied, check the wiring.

If the fault persists, change the relay unit.

If the problem persists, check the fuel supply circuit (of the pump and the injectors).
If necessary, carry out a complete check of the engine (starter drive speed, pump setting, condition of the injectors, valve clearances, compressions, ...).

AFTER REPAIR	Carry out a road test then a check using the diagnostic equipment. Deal with any faults indicated.

CHART 3	PASSENGER COMPARTMENT HEATING PROBLEM WHEN COLD (engine temperature increase difficulty)

NOTES	Only refer to this customer complaint if the vehicle is fitted with immersion heaters and following a complete check using the diagnostic equipment.

Check the operation of the engine cooling circuit immersion heaters:

Use the "**Group 1 immersion heaters relay**" then "**Group 2 immersion heaters relay**" commands and check that there is a voltage on the 3 immersion heaters.

If there is a fault, check the immersion heaters supply wiring and the operation of the relays.
If the 3 immersion heaters are supplied correctly, check the condition of the immersion heaters (resistance= 0.6 ± 0.1 ohm at 20°C).

AFTER REPAIR	Carry out a road test then a check using the diagnostic equipment. Deal with any faults indicated.

CHART 4	FLASHING OF THE INJECTION FAULT WARNING LIGHT

NOTES	Only refer to this customer complaint following a complete check using the diagnostic equipment. The flashing of the warning light may be the result of a computer with an engine immobiliser code programmed on another vehicle (the computers are not interchangeable).

If no fault is indicated by the diagnostic equipment, the problem is certainly linked to a fault on the coded line which permits operation of the engine immobiliser system.

Ensure the continuity and insulation of the connection between **track 59** of the computer connector and the passenger compartment connection unit.

If the problem persists, refer to the fault finding information in the F9Q engine engine immobiliser information database.

AFTER REPAIR	Carry out a road test then a check using the diagnostic equipment. Deal with any faults indicated.