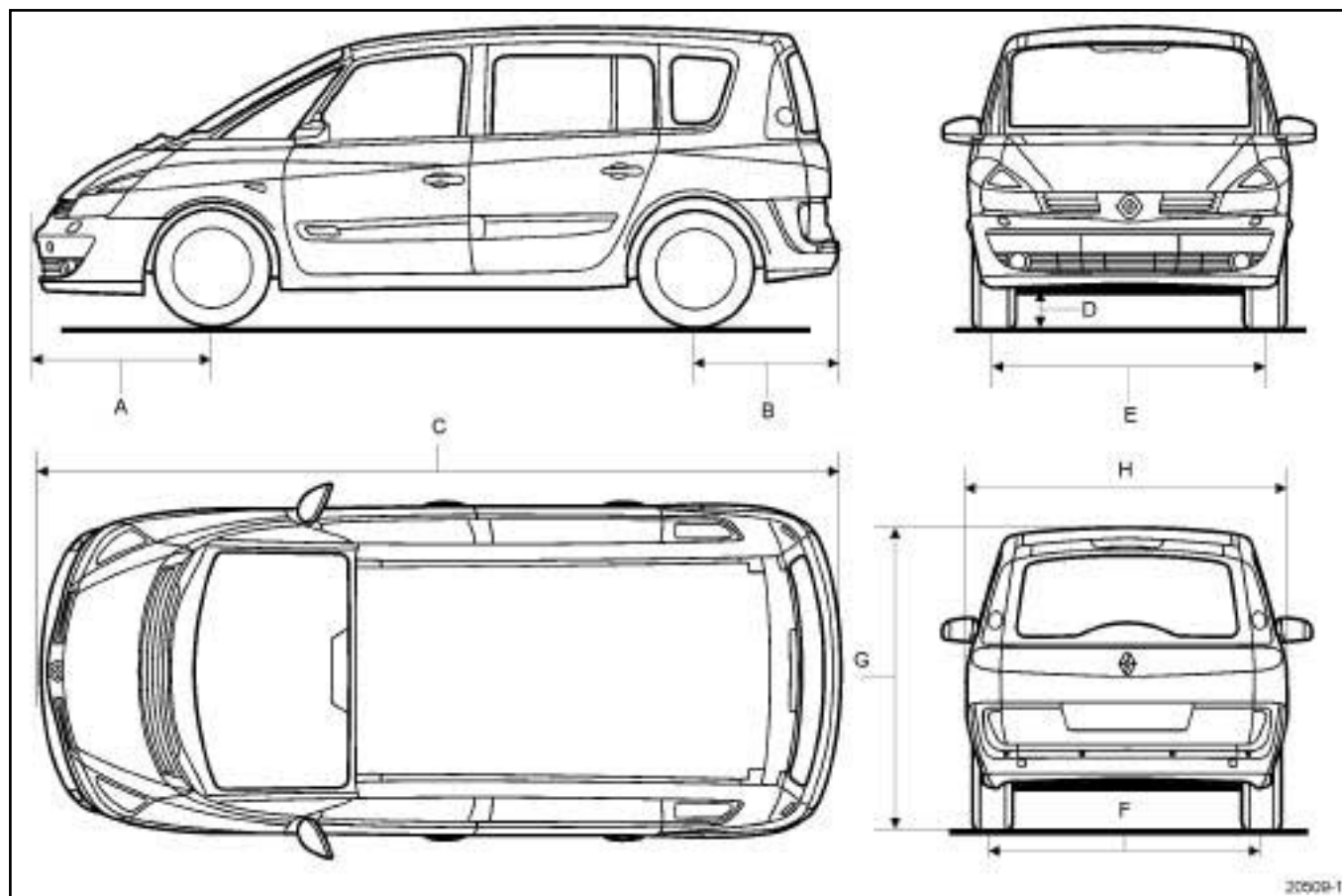


DOCUMENTATION PHASE 2



30509-1

20509-1

### Dimensions in metres

Dimensions	Short vehicle	Long vehicle
(A)	1.026	1.026
(B)	0.832	0.967
(C)	4.661	4.861
(D)	0.175	0.175
(E)	1.574	1.574
(F)	1.556	1.556
(G) (unladen)	1.728	1.746
(H)	1.894	1.894

### GENERAL INFORMATION

All information contained in these manuals is intended exclusively for automotive industry professionals.

The documentation is intended to cover all vehicles in the **RENAULT** range throughout the world, but may not cover equipment designed for use in specific countries.

The procedures and fault finding procedures recommended and described in this manual have been designed by automotive industry repair professionals.

#### 1 - General recommendations

Observe basic principles of vehicle repair.

The quality of repair depends first and foremost on the care exercised by the person in carrying it out.

To ensure good repair:

- protect the sensitive areas of the vehicle (seats, steering wheel, wings, etc.),
- unless otherwise indicated, all repairs must be done with the ignition off,
- when welding on the vehicle, it is advisable to remove or disconnect components near the repair area that could be affected by the heat,
- use recommended professional products and original parts,
- observe the tightening torques,
- replace roll pins, self-locking or bonded nuts or bolts every time they are removed,
- take care with electrical and electronic components which cannot withstand excess voltage and improper handling; replace any electrical and electronic components which have experienced a voltage drop,
- make sure that the connectors are correctly clipped,
- do not pull on the wiring,
- check for the sealing plugs on the connectors,
- do not splash any liquid on the electrical and electronic components (computers, sensors, etc.),
- do not just replace parts one after the other, carry out detailed fault finding beforehand,
- carry out a final check before returning the vehicle to the customer (set the clock, check the alarm operation, check the lights and indicators etc.),
- clean and degrease the sections to be bonded (threads, stub axle splines) to ensure proper adherence,

- protect the accessories and timing belts, the electrical accessories (starter, blanking cover, electric power assisted steering pump) and the mating face to prevent diesel fuel spilling onto the clutch friction plate.

The design quality of our vehicles demands that nothing is left to chance in making a good repair, and it is essential to refit parts or components exactly as they were originally (for instance: heat shields, wiring routing, pipe routing, particularly in the area of the exhaust pipe).

Do not blow away asbestos particles or dust (brakes, clutch, etc.), vacuum them up or clean the component with a cleaning agent (such as a brake cleaning product).

Use professional products and apply them with care, for example do not apply too much sealing paste to the sealing surface.

Exhaust gases (petrol and diesel) are pollutants. Operate engines with care and always use exhaust gas extractors.

Ensure that there is no risk of a short circuit occurring when the electrical connections are reconnected (e.g. starter, alternator, etc.). Some points need greasing, others do not, therefore particular attention should be paid during refitting operations to ensure that they work properly under all conditions.

#### 2 - Special tooling - ease of use

The repair procedures have been designed using special tools; they must therefore be carried out using these tools to ensure a high degree of working safety and quality of repair.

The equipment we have approved has undergone careful research and testing, and must be used and maintained with care.

#### 3 - Reliability - updating

New repair procedures are constantly being developed in the interests of repair quality, either with new products (emission control, injection, electronics, etc.), or in fault finding. Be sure to consult the Workshop Repair Manuals or Technical Notes or fault finding summaries before any servicing operation.

Since vehicle specifications are subject to change during their commercial life, it is essential to check whether there are any updated Technical Notes when seeking information.

# ENGINE AND CYLINDER BLOCK ASSEMBLY

## Oil-coolant heat exchanger: Removal - Refitting

# 10A

P9X, and DOCUMENTATION PHASE 2

### Special tooling required

**Mot. 1448** Remote operation pliers for hose clips.

### Tightening torques

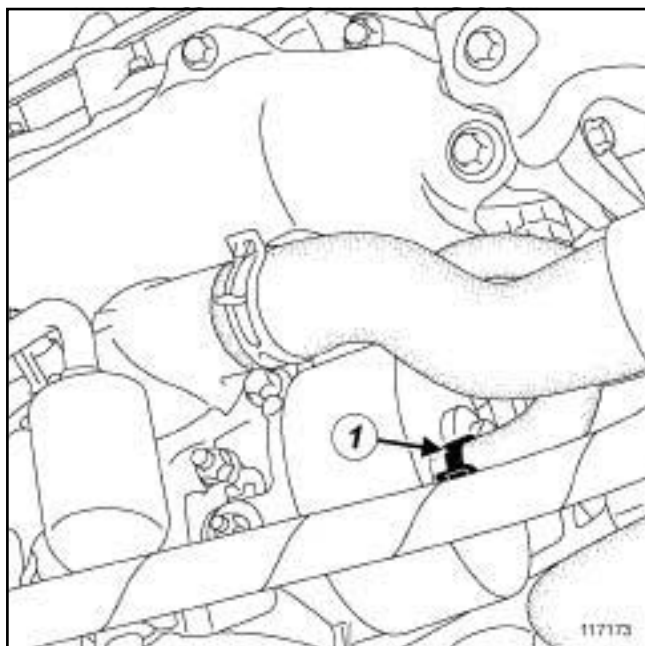
oil-coolant heat exchanger bolt **39 Nm**

## REMOVAL

### I - REMOVAL PREPARATION OPERATION

- Position the vehicle on a two-post lift (see **Vehicle: Towing and lifting**) (MR 405, 02A, Lifting equipment).
- Remove:
  - the engine undertray bolts,
  - the engine undertray.
- Drain the cooling system (see **19A, Cooling, Cooling system: Draining - Refilling**, page 19A-17) .
- Clean the cooling system (see **19A, Cooling, Cooling system: Draining - Refilling**, page 19A-17) .

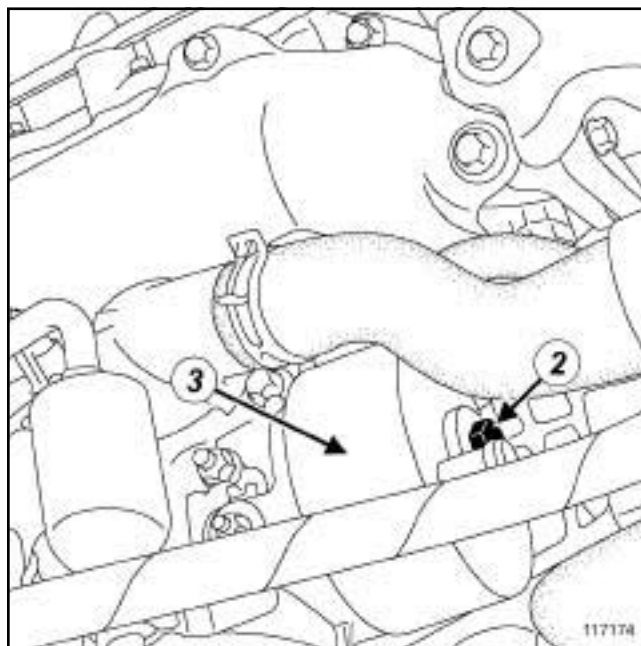
### II - OPERATION FOR REMOVAL OF PART CONCERNED



117173

- Remove the clip (1) from the oil-coolant heat exchanger hose using the (**Mot. 1448**).

- Disconnect the oil-coolant heat exchanger hose.



117174

- Remove:
  - the bolt (2) from the oil cooler,
  - the coolant-oil heat exchanger (3) ,
  - the oil-coolant heat exchanger seals.

## REFITTING

### I - REFITTING PREPARATIONS OPERATION

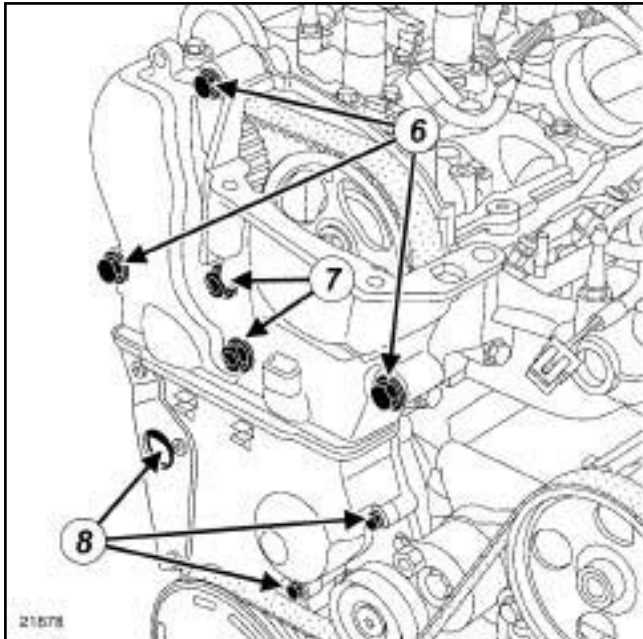
- Always replace the oil-coolant heat exchanger seals.

# TOP AND FRONT OF ENGINE

## Timing belt: Removal - Refitting

# 11A

F4R, and 797 or 896, and DOCUMENTATION PHASE 2

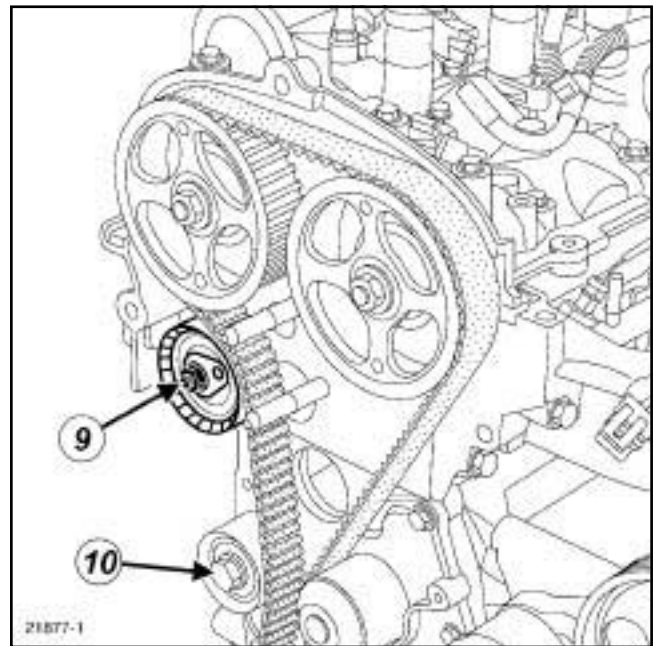


21878

### ❑ Remove:

- the bolts (6) from the upper timing cover,
- the upper timing cover nuts (7) ,
- the upper timing cover,
- the bolts (8) on the lower timing cover,
- the lower timing cover.

### II - REMOVAL OPERATION FOR PART CONCERNED



21877-1

- ❑ Relax the timing belt by loosening the tensioning roller nut (9) .

### ❑ Remove:

- the fixed roller bolt (10) ,
- the fixed roller,
- the timing belt.

### REFITTING

❑

#### WARNING

When replacing a timing belt, the timing belt, fixed roller, tensioning roller and crankshaft accessories pulley bolts must be replaced.

### I - REFITTING PREPARATIONS OPERATION

- ❑ Check that the (Mot. 1054) and (Mot. 1496) are still in place and correctly positioned.


# TOP AND FRONT OF ENGINE

## Timing belt: Removal - Refitting

# 11A

G9T, and DOCUMENTATION PHASE 2

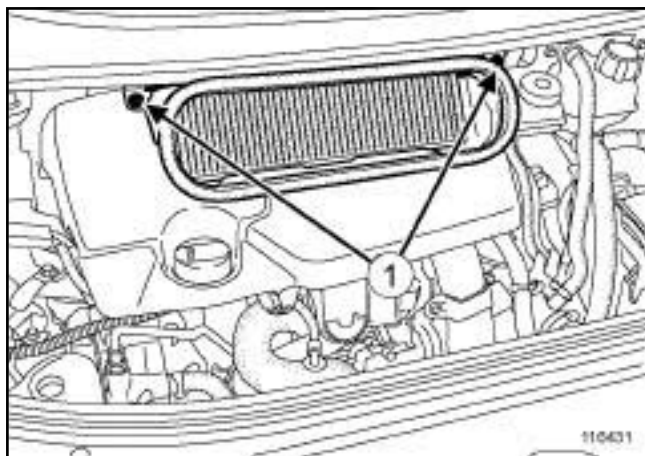
Special tooling required	
<b>Mot. 1536</b>	TDC locating pin.
<b>Mot. 1534</b>	Tool for adjusting the inlet camshaft.
<b>Mot. 1537</b>	Tool for adjusting the exhaust camshaft.

Tightening torques 	
fixed roller bolt	<b>30 Nm</b>
tensioning roller bolt	<b>25 Nm</b>
camshaft pulley bolts	<b>9 Nm</b>
TDC pin plug	<b>22 Nm</b>
lower timing cover bolts	<b>10 Nm</b>
upper timing cover bolts	<b>25 Nm</b>
lifting eye bolt	<b>21 Nm</b>

## REMOVAL

### I - REMOVAL PREPARATION OPERATION

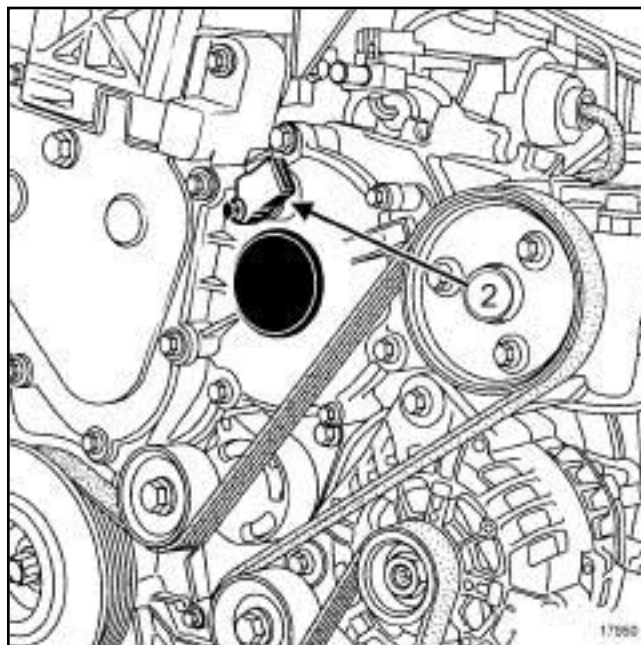
- Position the vehicle on a two-post lift ( (see **Vehicle: Towing and lifting**) ).
- Disconnect the battery ( (see **Battery: Removal - Refitting**) ).



116431

- Remove:
  - the air intake unit bolts (1) ,
  - the air intake unit,
  - the engine cover,

- the engine undertray,
- the front right-hand wheel ( (see **Wheel: Removal - Refitting**) ),
- the front right-hand wheel arch liner ( (see **Front wheel arch liner: Removal - Refitting**) ),
- the right-hand side protection,
- the accessories belt (see 11A, **Top and front of engine, Accessories belt: Removal - Refitting**, page 11A-9) ,
- the rear suspended engine mounting (see 19D, **Engine mounting, Lower engine tie-bar: Removal - Refitting**, page 19D-32) ,
- the right-hand suspended engine mounting (see 19D, **Engine mounting, Right-hand suspended engine mounting: Removal - Refitting**, page 19D-19) ,
- the diesel filter> (see 13A, **Fuel supply, Diesel filter: Removal - Refitting**, page 13A-5) ,
- the engine cooling fan assembly (see 19A, **Cooling, Engine cooling fan assembly: Removal - Refitting**, page 19A-98) .



17950

- Disconnect the cylinder marking sensor connector (2) .

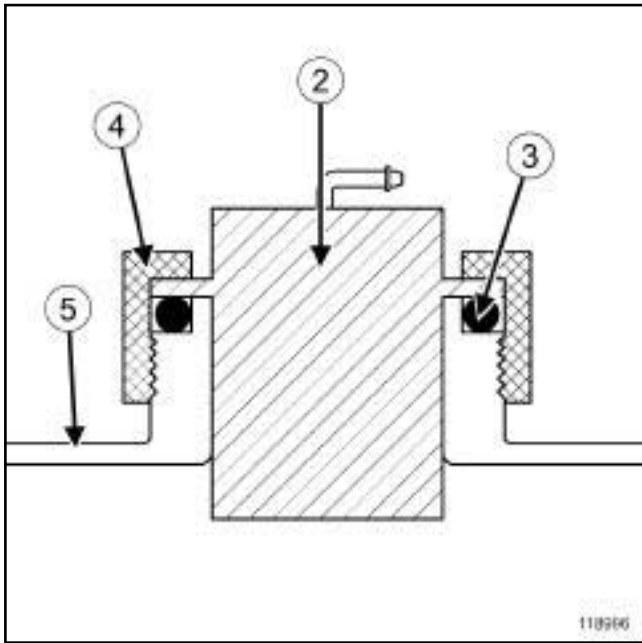
# TANK

## Sender: Removal - Refitting

# 19C

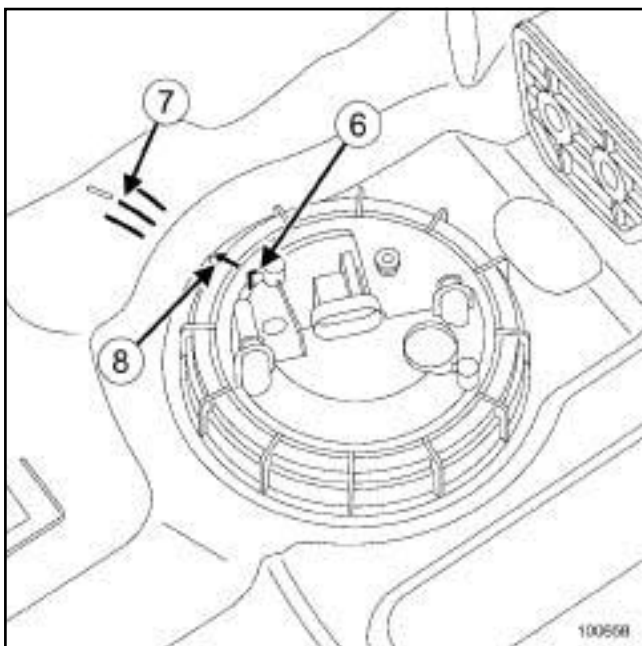
F9Q or G9T or M9R or P9X, and DOCUMENTATION PHASE 2

### II - REFITTING OPERATION FOR PART CONCERNED



118996

- Correctly position the seal (3) in the neck.
- Position the fuel sender module (2) on the tank (5) ; a lug on the fuel sender module and a recess in the tank ensure correct fitting in the tank.
- Manually press on the fuel sender module to grip the seal, manually pretighten the fuel sender module mounting nut (4) on the tank.



100658

- Tighten the fuel sender module nut using the (**Mot. 1397**) until the index (8) corresponds with the tank index (7) and the fuel sender module index (6) .

### III - FINAL OPERATION.

- Refit:
  - the fuel tank (see **19C, Tank, Fuel tank: Removal - Refitting**, page 19C-4)
- Connect the battery ( (see **Battery: Removal - Refitting**) ).

<b>DF213 STORED</b>	<u>FLYWHEEL SIGNAL INFORMATION INCONSISTENCY</u> 1.DEF: Overspeed detected
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<b>NOTES</b>	<p><b>Conditions for applying the fault finding procedure to stored faults:</b>  The fault reappears after:</p> <ul style="list-style-type: none"> <li>- clearing the fault from the memory,</li> <li>- the engine is started,</li> <li>- engine speed exceeding ~ 3500 rpm.</li> </ul> <hr/> <p><b>Special notes:</b>  This fault appears if the computer detects that the engine speed has exceeded the maximum.  This could be linked to an incorrect manoeuvre, for example: abrupt downshifting from 5<sup>th</sup> to 2<sup>nd</sup> gear.  Use the <b>Elé. 1681</b> or <b>Elé. 1590</b> bornier for all operations on the engine management computer connectors.</p>
--------------	---

<p>Measure <b>the resistance</b> of the engine speed sensor between <b>tracks A and B</b> on <b>F9Q engines</b>.  Replace the sensor if its resistance is not: <b>800 Ω ± 80 at + 20 °C</b>  Check <b>the resistance</b> of the engine speed sensor between <b>tracks 1 and 2</b>:  Replace the sensor if its resistance is not: <b>235 Ω ± 35 at 23 °C</b>  If the fault is still present, replace the engine speed sensor.</p>	
<p>Check the conformity of the charge circuit (correct charging voltage and no interference).  Check that the engine and computer earths are correct (tightness, oxidation, etc.).  Check the <b>insulation</b> against the <b>+ 12 V</b> feed and <b>the earth</b> of the following connections <b>on F9Q engines</b>:</p> <p style="padding-left: 40px;">engine management computer, <b>connector B</b>      —————&gt; <b>track A</b> of the engine speed sensor  <span style="padding-left: 150px;"><b>track D1</b></span></p> <p style="padding-left: 40px;">engine management computer, <b>connector B</b>      —————&gt; <b>track B</b> of the engine speed sensor  <span style="padding-left: 150px;"><b>track C1</b></span></p> <p>Check <b>the insulation</b> against <b>+ 12 V</b> and <b>earth</b> of the following connections <b>on G9T engines</b>:</p> <p style="padding-left: 40px;">engine management computer, <b>connector B</b>      —————&gt; <b>track 1</b> of the engine speed sensor  <span style="padding-left: 150px;"><b>track D1</b></span></p> <p style="padding-left: 40px;">engine management computer, <b>connector B</b>      —————&gt; <b>track 2</b> of the engine speed sensor  <span style="padding-left: 150px;"><b>track C1</b></span></p>	

<b>AFTER REPAIR</b>	Deal with any other faults. Clear the fault memory. Switch off the ignition and carry out a road test followed by a test with the diagnostic tool.
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<b>DF200 PRESENT OR STORED</b>	<u>ATMOSPHERIC PRESSURE SENSOR</u> 1.DEF: Above maximum threshold 2.DEF: Below minimum threshold
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<b>NOTES</b>	<b>Conditions for applying the fault finding procedure to a stored fault:</b> The fault is declared <b>present</b> after: – the ignition is switched on. – the engine is started, – a road test.
	<b>Special notes:</b> The <b>EOBD (European On Board Diagnostic)</b> warning light is lit. The atmospheric pressure sensor is integrated in the injection computer, and cannot be separated.
	If the fault is <b>present</b> : – there is light smoke, – the atmospheric pressure value changes to safe mode, <b>PR035 Atmospheric pressure = 0.75 bar</b> . Use bornier <b>Elé. 1681</b> for any work on the computer connectors.
	Use the <b>Wiring Diagram Technical Note, Laguna II ph2, Vel Satis ph2, Espace IV ph2, Mégane II ph2, Scénic II ph2</b> .

Disconnect the injection computer and check the condition of the engine management computer connector (see **Wiring Diagram Technical Note, Laguna II ph2, Vel Satis ph2, Espace IV ph2, Mégane II ph2, Scénic II ph2, component code 120**).

If the connector or connectors are faulty and there is a repair procedure (see **Technical Note 6015A, Electrical wiring repair, Wiring: Precautions for repair**), repair the connector, otherwise replace the wiring.

Check the value of **PR035 Atmospheric pressure** by comparing it with the reading on a conforming vehicle in the workshop.

If the value of **PR035** is not correct (difference greater than **0.1 bar** between the 2 vehicles), contact the Techline.

<b>AFTER REPAIR</b>	Deal with any other faults. Clear the fault memory. Switch off the ignition until the end of the power-latch phase, and carry out a road test followed by a check with the <b>diagnostic tool</b> .
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EDC16CP33\_V18\_DF200 / EDC16CP33\_V1C\_DF200 / EDC16CP33\_V54\_DF200 / EDC16CP33\_V20\_DF200 / EDC16CP33\_V58\_DF200 /  
 EDC16CP33\_V5C\_DF200 / EDC16CP33\_V24\_DF200 / EDC16CP33\_V04\_DF200 / EDC16CP33\_V08\_DF200 / EDC16CP33\_V44\_DF200 /  
 EDC16CP33\_V4C\_DF200 / EDC16CP33\_V34\_DF200 / EDC16CP33\_V38\_DF200 / EDC16CP33\_V74\_DF200 / EDC16CP33\_V28\_DF200 /  
 EDC16CP33\_V62\_DF200 / EDC16CP33\_V26\_DF200 / EDC16CP33\_V60\_DF200



DF082 PRESENT OR STORED	<u>UPSTREAM OXYGEN SENSOR HEATING CIRCUIT</u> CO: open circuit CC.0: short circuit to earth CC.1: short circuit to + 12 V 1.DEF: non-compliance with emission control standards
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NOTES	<b>Priority when dealing with a number of faults:</b> Deal with faults <b>DF084 Actuator relay control circuit</b> or <b>DF046 Battery voltage</b> first if they are present or stored.
	<b>Conditions for applying the fault finding procedure to stored faults:</b> The fault is declared present after the engine has been running for a timed period of <b>10 seconds</b> .
	<b>Special note:</b> – <b>OBD warning light</b> illuminated.

Check the <b>cleanliness</b> and <b>condition</b> of the upstream oxygen sensor connections. Repair if necessary.
With the ignition on, check for <b>+ 12 V</b> on <b>track A</b> of the upstream oxygen sensor connector. Use the "Universal bornier" to check the <b>insulation</b> and <b>continuity</b> on the following connection: Computer, connector <b>B</b> , <b>track M2</b> → <b>track A</b> of the upstream oxygen sensor Repair if necessary.
Disconnect the battery and the injection computer. Check the <b>cleanliness</b> and <b>condition</b> of the connections. Use the "Universal bornier" to check the <b>insulation</b> and <b>continuity</b> on the following connection: Computer, connector <b>C</b> , <b>track L2</b> → <b>track B</b> of the upstream oxygen sensor Repair if necessary.
Measure the heating <b>resistance</b> between <b>tracks A</b> and <b>B</b> of the upstream oxygen sensor. Replace the upstream oxygen sensor if the <b>resistance</b> is not <b>9 Ω ± 0.5 Ω at 20°C</b> .
<b>If the fault is still present, deal with the other faults then proceed with the conformity check.</b>

AFTER REPAIR	Follow the instructions to confirm repair. Deal with any other faults. Clear the stored faults.
--------------	---

### 1. SCOPE OF THIS DOCUMENT

This document presents the fault finding procedure applicable to all computers with the following specifications:

<p><i>Vehicle(s):</i> <b>Vel Satis phase 1</b>  <b>Vel Satis phase 2</b>  <b>Laguna II Phase 2</b>  <b>Scénic II Phase 1</b>  <b>Scénic II Phase 2</b>  <b>Espace IV phase 1</b>  <b>Espace IV phase 2</b>  <b>Espace IV phase 3</b></p> <p><i>Function concerned:</i> <b>Electronic parking brake</b></p>
--

<p><i>Name of computer:</i> <b>FPA</b></p> <p><i>Vdiag No.:</i> <b>0C, 04, 08, 0D</b></p>
---

### 2. PREREQUISITES FOR FAULT FINDING

#### Documentation type

- Fault finding procedures** (this document):
  - Assisted fault finding (integrated into the diagnostic tool), Dialogys.
- Wiring Diagrams:**
  - Visu-Schéma (CD-ROM), paper.

#### Type of diagnostic tools

- CLIP

#### Special tooling required

Special tooling required	
Multimeter	
Elé. 1681	Universal bornier

### 3. REMINDERS

#### Procedure

To save power, the UCH on the Laguna II Phase 2, Espace IV phase 1, phase 2, phase 3 and Vel Satis phase 1 and 2 interrupts the **+ after ignition feed** supply after **3 minutes**.

To run fault finding on a computer, it is possible to force the **+ after ignition feed** for **1 hour** by applying the following procedure:

- Press the card unlocking button,
- Insert the card into the reader,
- press the start button (interrupting the **timed + after ignition feed** mode),
- press the start button for more than **5 seconds**, until the immobiliser warning light flashes rapidly (**4 Hz**).

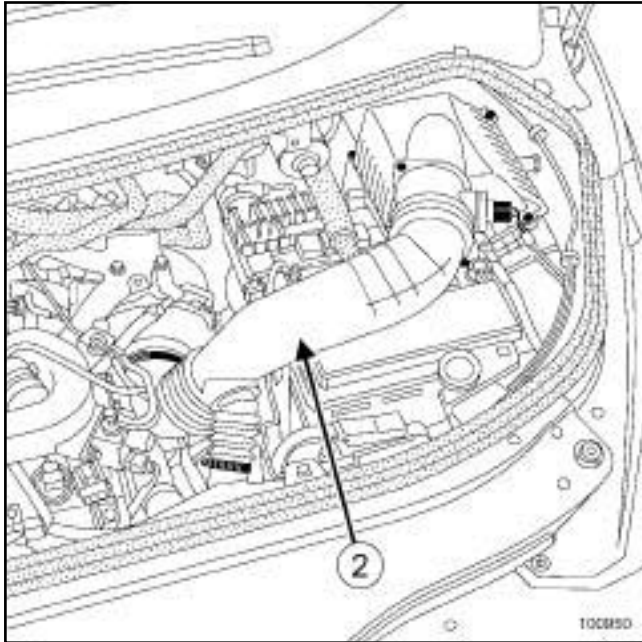
This **forced + after ignition feed** mode remains active for **1 hour**.

Pressing the start button or removing the card from the card reader interrupts the forced **+ after ignition feed**, but does not interrupt the time period for the forced **+ after ignition feed**. Until one hour has elapsed, activating the **+ after ignition feed** will restart forced **+ after ignition feed** for the remaining time.

### REMOVAL

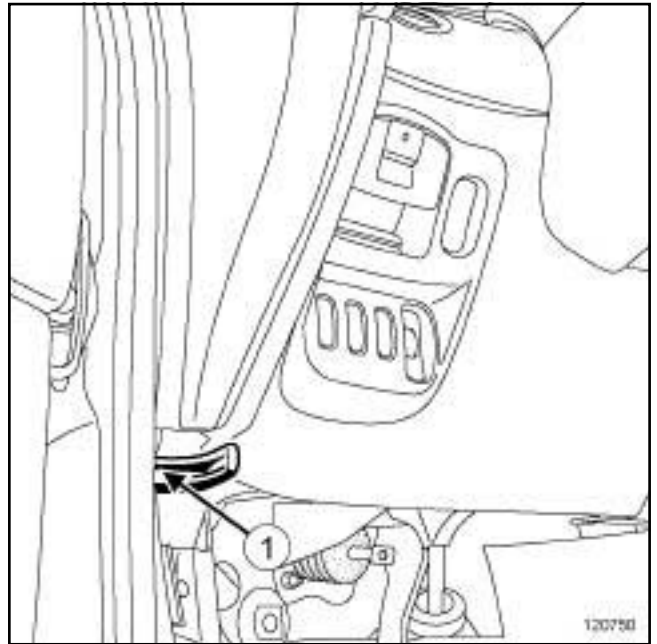
#### I - REMOVAL PREPARATION OPERATION

- Remove the bonnet catch (see 52A, Non-side opening element mechanisms, Bonnet lock: Removal - Refitting, page 52A-1).
- Partially remove the centre floor front carpet ( ( see Centre floor front carpet: Removal - Refitting) ).



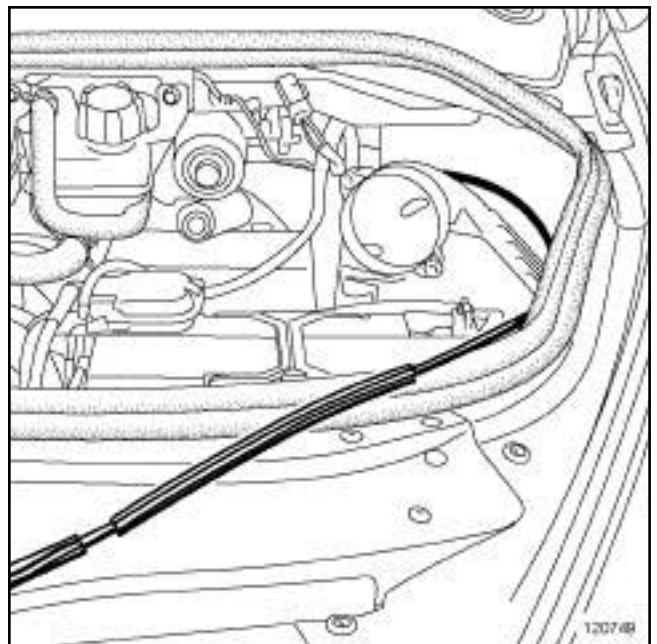
- Remove the air inlet manifold (2) (depending on the engine).

#### II - OPERATION FOR REMOVAL OF PART CONCERNED



120750

- Remove:
  - the bolt (1),
  - the bonnet release catch.



120749

- Note the route of the bonnet release cable.
- Remove the bonnet release cable through the inside of the vehicle.

<b>AC020</b>	<u>HEATED REAR SCREEN</u>
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<b>NOTES</b>	<b>Note:</b> For purposes of electrical consumption, check that the battery is properly charged before running this command.
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This command actuates the heated rear screen relay (you should be able to hear the relay working).

If the command does not operate as indicated or if the customer complaint concerns de-icing efficiency, consult **ALP6 Inefficient de-icing/demisting of the rear screen.**

<b>AFTER REPAIR</b>	Check that the air conditioning function operates correctly.
---------------------	--

# ON-BOARD TELEMATICS SYSTEM

## Navigation computer: Removal - Refitting

# 83C

NAVIGATION AID 4

### Special tooling required

**Ms. 1373** Tool for removing radios or chronotachographs.

### Equipment required

Diagnostic tool

## REMOVAL

### I - REMOVAL PREPARATION OPERATION

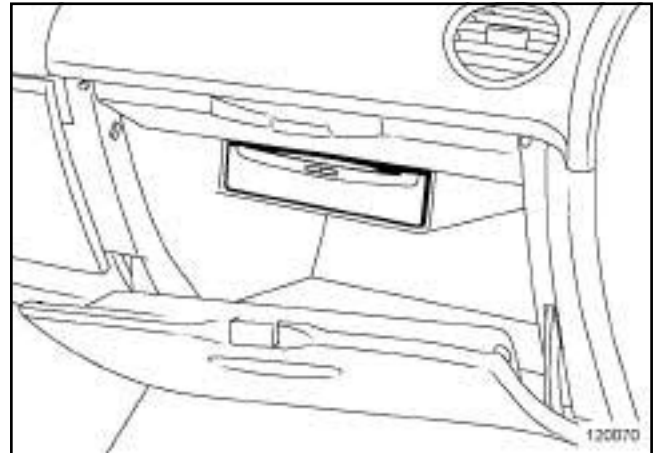
- Switch off the ignition.
- Switch off all the electrical consumers.

#### Note:

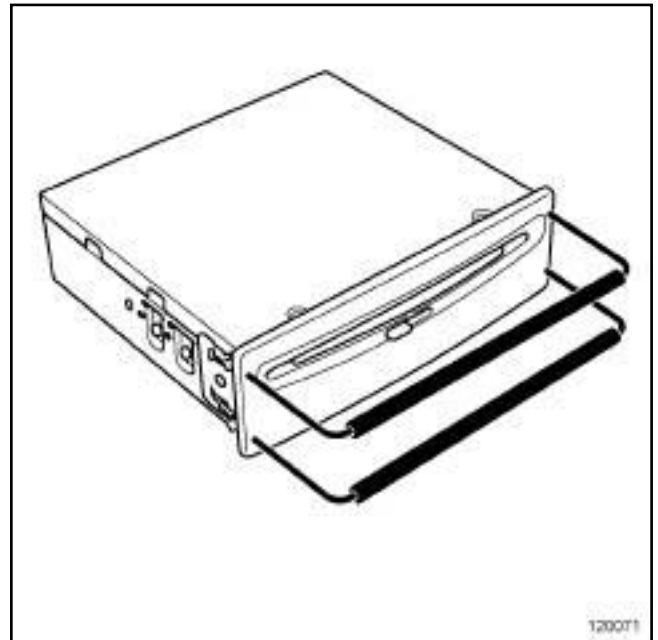
After cutting the + after ignition feed, wait for the navigation system to shut down (approximately 1 minute).

- When replacing the navigation computer, carry out the necessary operations using the **Diagnostic tool** (see **MR 407 Fault finding, 86C, Multimedia, Fault finding - Replacement of components**).

### II - OPERATION FOR REMOVAL OF PART CONCERNED



120070



120071

- Remove the navigation computer using the two (**Ms. 1373**).

#### WARNING

The aerial cable is very fragile, do not bend or pinch it.

- Disconnect the navigation computer connectors.

## REFITTING

### I - REFITTING OPERATION FOR PART CONCERNED

- Connect the navigation computer connectors.

## Fault finding – Interpretation of faults

<b>DF029 PRESENT OR STORED</b>	<u>COMPUTER</u> 1.DEF: Radio internal overheating
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<b>NOTES</b>	Switch on the radio.
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Switch off the system in order to lower the temperature. Wait for the system to cool, then check that the system operates normally.
Explain the fault to the customer.
If the fault persists, contact your Techline.

<b>AFTER REPAIR</b>	Carry out another fault finding check on the system. Clear the stored faults using command <b>RZ003 Fault memory</b> . Deal with any other faults.
---------------------	--

<b>ET141</b> <b>ET196</b> <b>ET199</b> <b>ET204</b>	<u>SLIGHT OVER-INFLATION</u> <u>SLIGHT UNDER-INFLATION</u> <u>PUNCTURE WARNING LIGHT LIT BY SYSTEM</u> <u>TYRE PRESSURE MONITOR WARNING LIGHT</u>
--	--

<b>NOTES</b>	Switch on the ignition. Signal can be interpreted if the vehicle is configured <b>WITH</b> Tyre pressure monitor system. Slightly under-inflate or over-inflate a tyre. Status <b>ET141</b> should be <b>YES</b> . Status <b>ET196</b> should be <b>YES</b> .
--------------	---

If statuses <b>ET141</b> and <b>ET196</b> are <b>NO</b> :
Refer to the interpretation of fault <b>DF052 Valve signal receiver</b> .
Consult the interpretation of faults: – <b>DF006 Front left-hand wheel valve sensor</b> . – <b>DF007 Front right-hand wheel valve sensor</b> . – <b>DF008 Rear right-hand wheel valve sensor</b> . – <b>DF009 Rear left-hand wheel valve sensor</b> .
If statuses <b>ET141</b> and <b>ET196</b> become <b>NO</b> :
Test the tyre pressure monitor network (see <b>35B, Tyre pressure monitor</b> ). Test the multiplex network (see <b>88B, Multiplexing</b> ).

<b>AFTER REPAIR</b>	Carry out a fault finding procedure on the system. Clear the stored faults. Deal with any other faults.
---------------------	---