

TWINGO

6 Heating and air conditioning system

61A HEATING

Fault finding - Introduction	61A - 2
Fault finding - List and location of components	61A - 5
Fault finding - Role of components	61A - 6
Fault finding - Function	61A - 8
Fault finding - Conformity check	61A - 11
Fault finding - Customer complaints	61A - 18
Fault finding - Fault finding charts	61A - 19

V1

Edition Anglaise

"The repair procedures given by the manufacturer in this document are based on the technical specifications current when it was prepared.

The procedures may be modified as a result of changes introduced by the manufacturer in the production of the various component units and accessories from which his vehicles are constructed."

All rights reserved by Renault s.a.s.

Copying or translating, in part or in full, of this document or use of the service part reference numbering system is forbidden without the prior written authority of Renault s.a.s.

© Renault s.a.s.

1. SCOPE OF THIS DOCUMENT

This document presents the fault finding procedure applicable to the heating function with the following specifications:

<i>Vehicle(s):</i> New Twingo <i>Function concerned:</i> Heating

2. PREREQUISITES FOR FAULT FINDING

Documentation type

Fault finding procedures (this manual):

- Assisted fault finding (integrated into the CLIP diagnostic tool),

Wiring Diagrams:

- Visu-Schéma (CD-ROM), paper.

Special tooling required

Special tooling required
Multimeter and current clamp

3. REMINDERS

This heating system does not have a computer and therefore fault finding cannot be carried out on the system using the **diagnostic tool**.

In this section, the fault finding procedure is dealt with by **Customer complaints - Fault finding charts**.

4. FAULT FINDING PROCEDURE

Wiring check

Note:

Carry out each requested check visually. Do not remove a connector if it is not required.

Note:

Repeated connections and disconnections alter the functionality of the connectors and increase the risk of poor electrical contact. Limit the number of connections/disconnections as much as possible.

Note:

The check is carried out on the 2 parts of the connection. There may be two types of connections:

- Connector / Connector
- Connector / Device

Fault finding problems

Disconnecting the connectors and/or manipulating the wiring harness may temporarily remove the cause of a fault. Electrical measurements of voltage, resistance and insulation are generally correct, especially if the fault is not present when the analysis is made (stored fault).

Visual inspection of the connection:

- Check that the connector is connected correctly and that the male and female parts of the connection are correctly coupled.

Visual inspection of the area around the connection:

- Check the condition of the mounting (pin, strap, adhesive tape, etc.) if the connectors are attached to the vehicle.
- Check that there is no damage to the wiring trim (sheath, foam, adhesive tape, etc.) near the wiring.
- Check that there is no damage to the electrical wires at the connector outputs, in particular on the insulating material (wear, cuts, burns, etc.).

Disconnect the connector to continue the checks.

Visual inspection of the plastic casing:

- Check that there is no mechanical damage (casing crushed, cracked, broken, etc.), in particular to the fragile components (lever, lock, openings, etc.).
- Check that there is no heat damage (casing melted, darker, deformed, etc.).
- Check that there are no stains (grease, mud, liquid, etc.).

Visual inspection of the metal contacts:

(The female contact is called CLIP. The male contact is called TAB.)

- Check that there are no bent contacts (the contact is not inserted correctly and can come out of the back of the connector). The spring contact of the connector when the wire is gently pulled.
- Check that there is no damage (folded tabs, clips open too wide, blackened or melted contact, etc.).
- Check that there is no oxidation on the metal contacts.

Visual inspection of the sealing:

(Only for watertight connectors)

- Check for the seal on the connection (between the 2 parts of the connection).
- Check the seal at the back of the connectors:
 - For *unit* joints (1 for each wire), check that the unit joints are present on each electrical wire and that they are correctly positioned in the opening (level with the housing). Check that plugs are present on openings which are not used.
 - For a *grommet* seal (one seal which covers the entire internal surface of the connector), check that the seal is present.
 - For *gel* seals, check for gel in all of the openings without removing the excess or any protruding sections (it does not matter if there is gel on the contacts).
 - For *hotmelt* sealing (heat-shrink sheath with glue), check that the sheath has contracted correctly on the rear of the connectors and electrical wires, and that the hardened glue comes out of the side of the wire.
- Check that there is no damage to any of the seals (cuts, burns, significant deformation, etc.).

If a fault is detected, repair or replace the wiring (see **Technical Note 6015A, Repairing electrical wiring, Wiring: Precautions for repair**).

5. FAULT FINDING LOG



IMPORTANT

IMPORTANT

Any fault on a complex system requires thorough fault finding with the appropriate tools. The **FAULT FINDING LOG**, which should be completed during the procedure, enables you to keep track of the procedure which is carried out. It is an essential document when consulting the manufacturer.

IT IS THEREFORE MANDATORY TO FILL OUT A FAULT FINDING LOG EACH TIME FAULT FINDING IS CARRIED OUT

You will always be asked for this log:

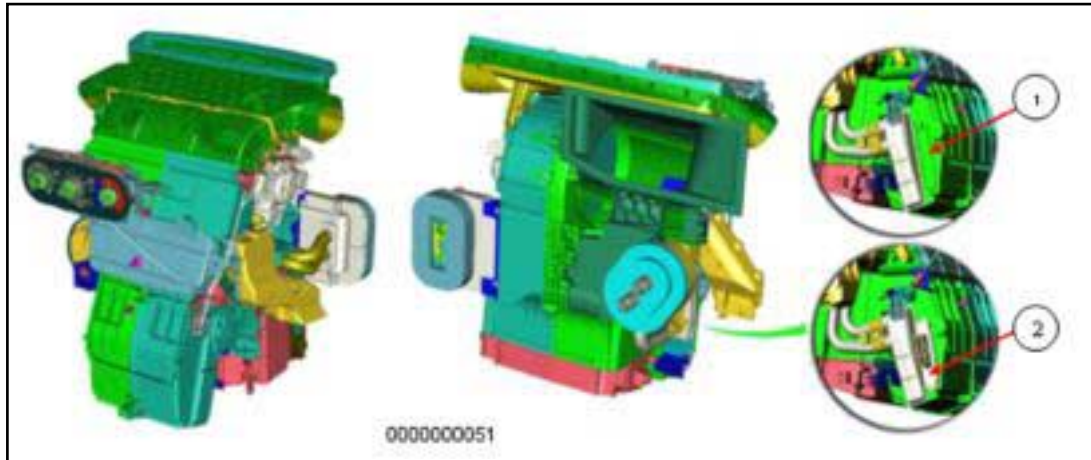
- when requesting technical assistance from Techline,
- for approval requests when replacing parts for which approval is mandatory,
- to be attached to monitored parts for which reimbursement is requested. The log is needed for warranty reimbursement, and enables better analysis of the parts removed.

6. SAFETY INSTRUCTIONS

Safety rules must be observed during any work on a component to prevent any damage or injury:

- check the battery voltage to avoid incorrect operation of computer functions,
- do not smoke,
- use the proper tools.

Passenger Compartment Heating Resistor (RCH) location



- 1 Without Passenger Compartment Heating Resistors (RCH)
2 With Passenger Compartment Heating Resistors (RCH)

Passenger compartment fan unit

● HEATING COMPONENTS

- **Heater matrix:** This is located at the bottom of the heating and air conditioning unit.
- **Passenger compartment heating resistors:** These are located at the bottom of the heater matrix on the driver's side (depending on the equipment).

● ACTUATORS

- **Air distribution flap:** This is located in the heating and air conditioning unit.
- **Air mixing flap:** This is located in the heating and air conditioning unit.
- **Recirculation flap:** This is located behind the dashboard.

● OTHERS

- **Passenger compartment blower unit:** This is located in the heating and air conditioning unit.
- **Air pipes:** These are located under the dashboard.

HEATING COMPONENTS

– Heater matrix:

The external air entering the heating and air conditioning device (**HVAC**) is heated by the **heater matrix**.

– Passenger Compartment Heating Resistors (depending on version):

The passenger compartment heating resistors are an electric heating system located in the passenger compartment ventilation heating unit. This system acts as an additional heater which operates when the engine is cold (when starting).



Passenger Compartment Heating Resistors (RCH)

● ACTUATORS

– Air distribution flap:

This flap enables the air flowing into the passenger compartment to be directed.

– Air mixing flap:

This flap enables the temperature requirements of the occupants to be met.

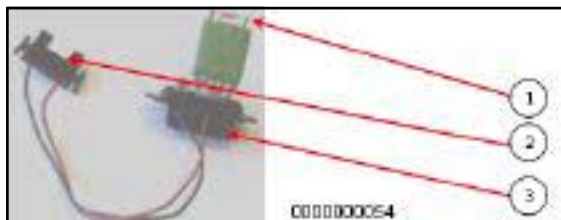
– Recirculation flap:

This flap prevents the entry of exterior air. In this case, the passenger compartment is isolated from the exterior and air is blown in the passenger compartment in a closed circuit.

● OTHERS

– Passenger compartment blower unit:

The passenger compartment blower unit is controlled by the MVPR (Resistive Blower Dimmer Module).

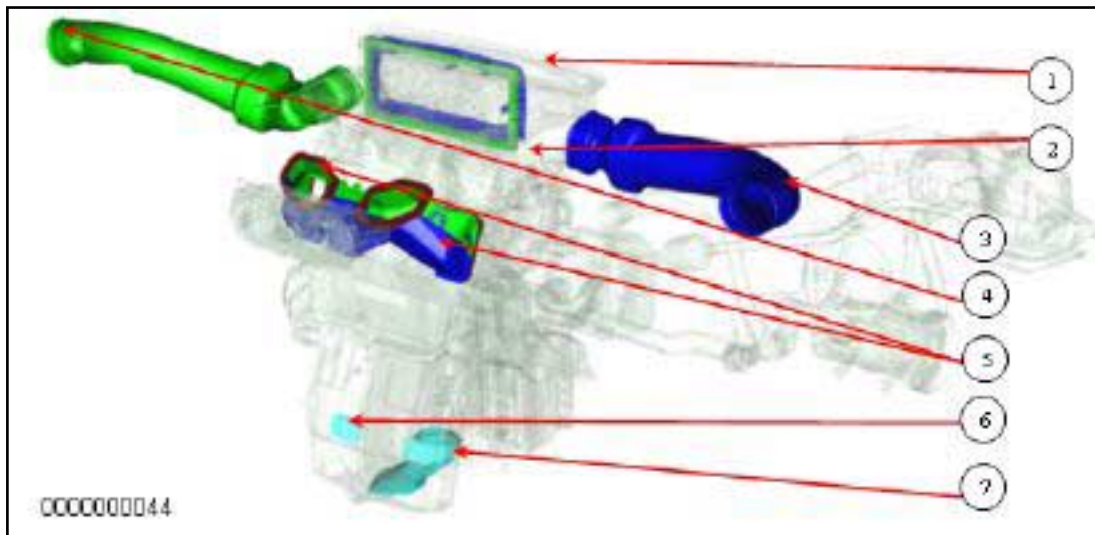


Resistive Blower Dimmer Module (MVPR)

- 1 Thermal fuse
- 2 Fan assembly connector
- 3 Connector to Control panel

– Air pipes:

The air flows into an open air inlet scoop towards the exterior. There must be enough air flow for it to be channelled into the passenger compartment. This flow can be created by the vehicle speed (in non-recirculation mode) or by activating the blower. The air flowing into the passenger compartment is protected by a grille and a rain shield in order to prevent foreign bodies and water from entering. The air is then distributed inside the passenger compartment.



Passenger compartment air pipes

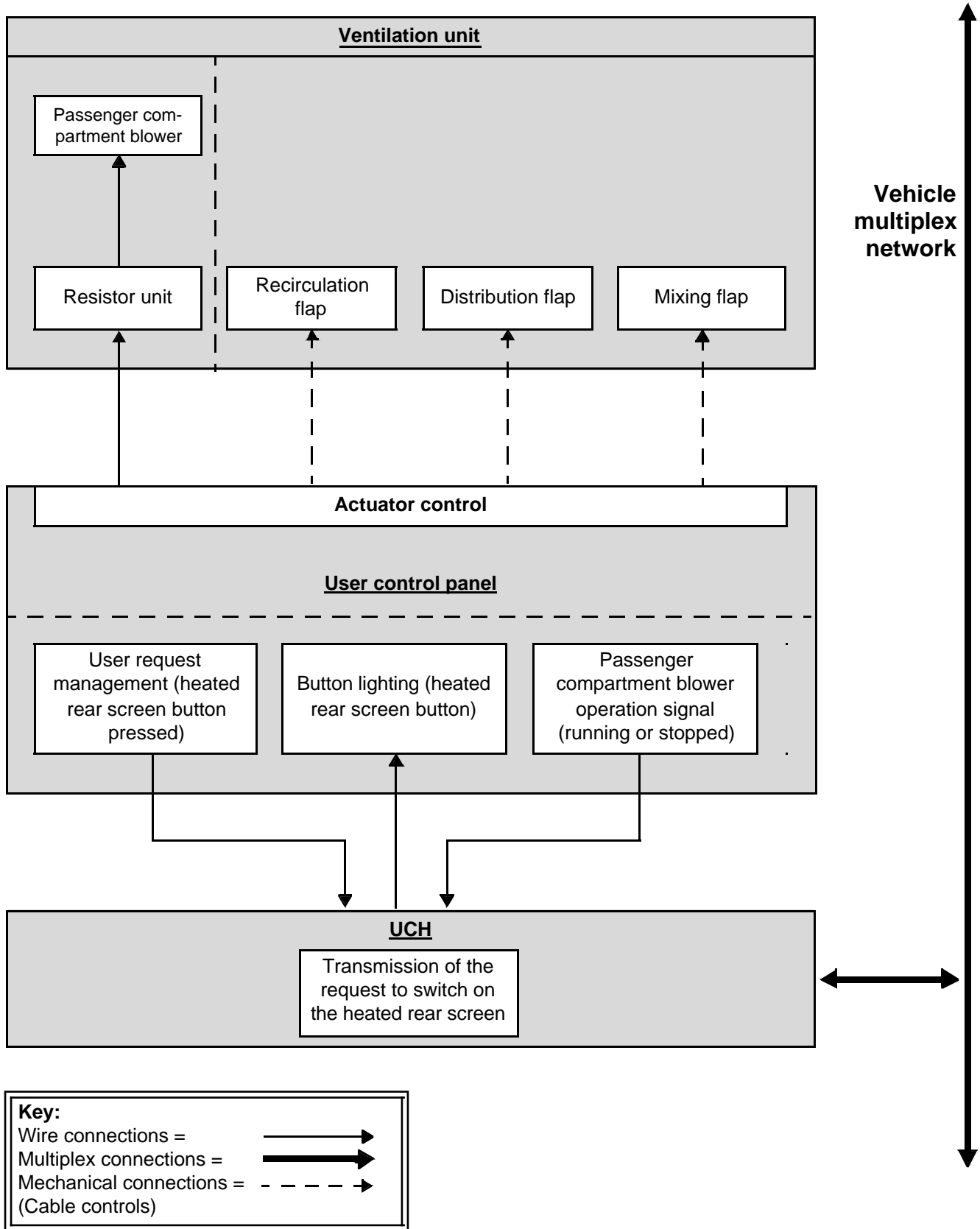
- 1 Air inlet
- 2 De-icing
- 3 Right-hand air vent
- 4 Left-hand air vent
- 5 Centre air vents
- 6 Left-hand footwell vent
- 7 Right-hand footwell vent

HEATING

Fault finding - Function

61A

Summary of components controlled by the heating control panel and passenger compartment fan:

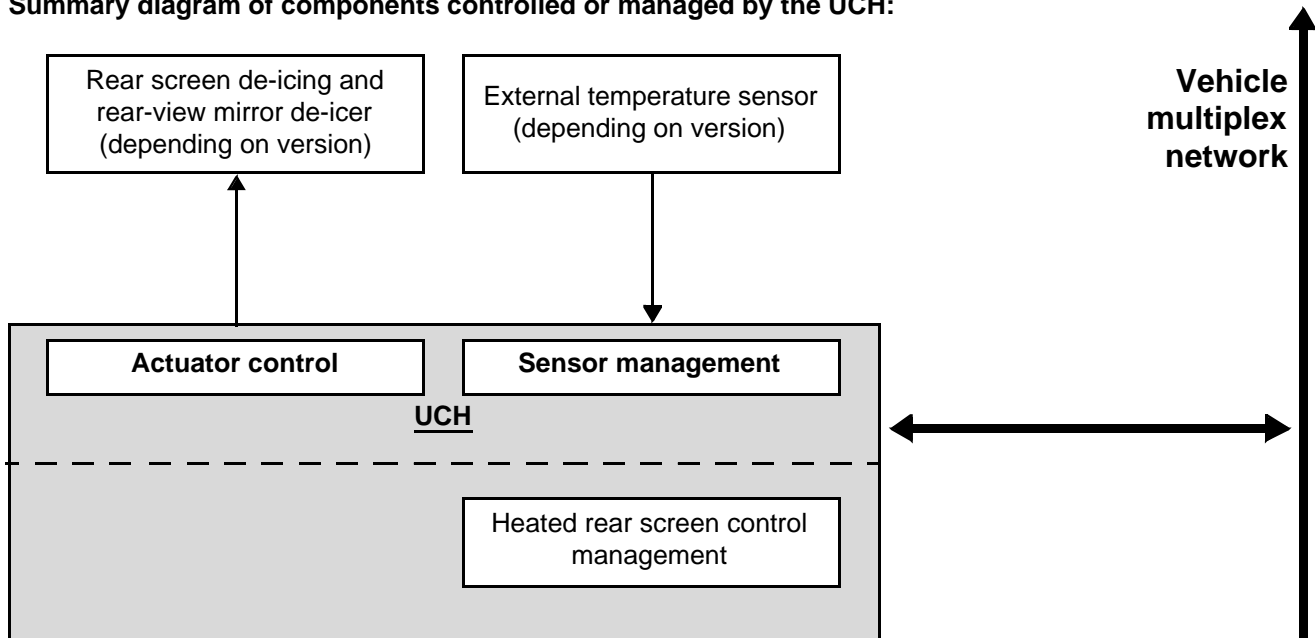


HEATING

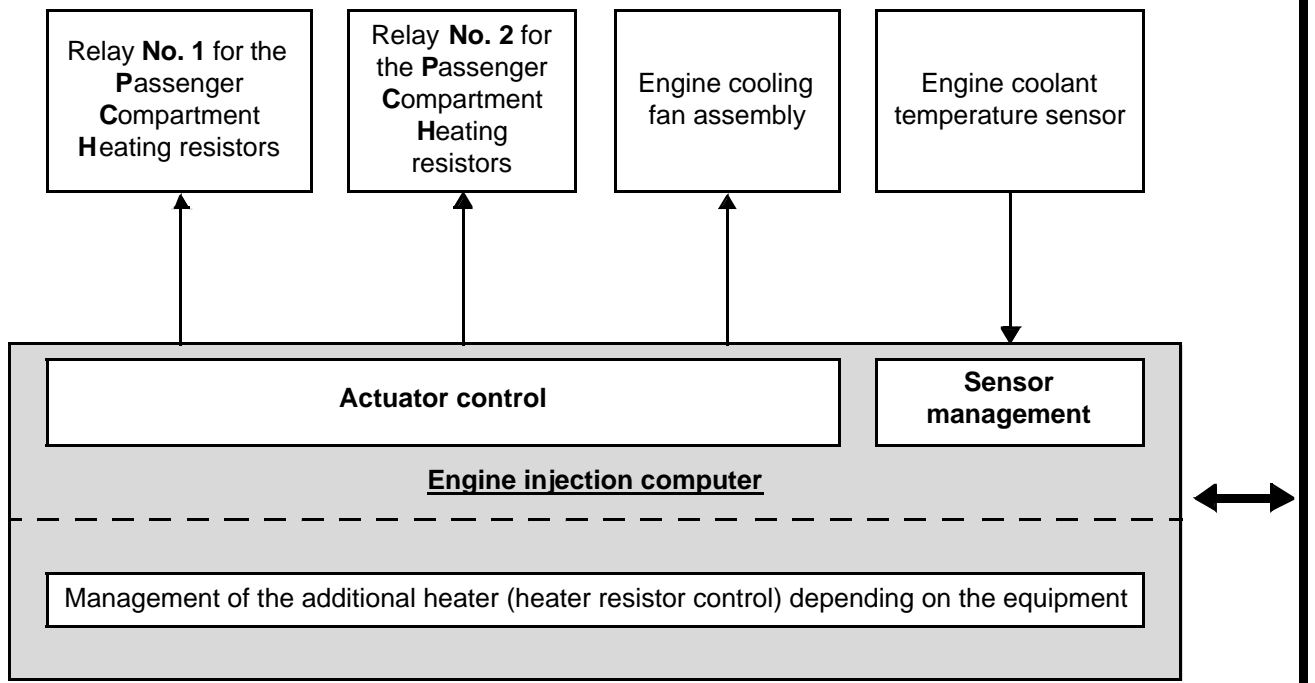
Fault finding - Function

61A

Summary diagram of components controlled or managed by the UCH:



Summary diagram of components controlled or managed by the injection computer:



Key:
 Wire connections =
 Multiplex connections =

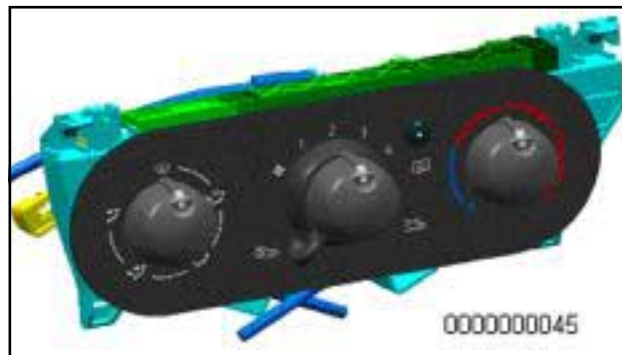
Layout of the heating function:

The passenger compartment ventilation heating panel enables:

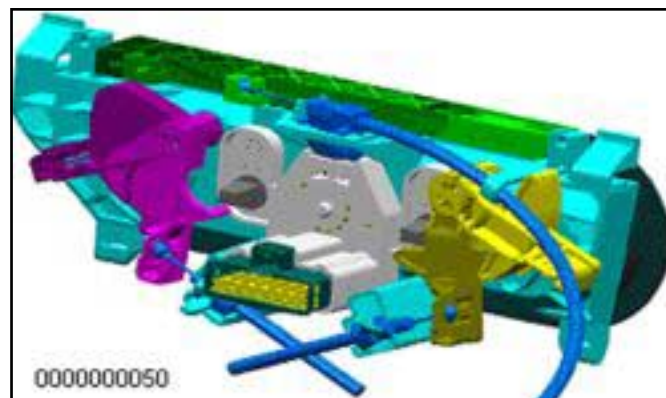
- the passenger compartment blower unit to be activated,
- the rear de-icing to be activated by the UCH.

The passenger compartment ventilation heating panel controls the air distribution, mixing and recirculation flaps by cables. It controls the blower unit speed via a wire connection and a resistor unit (MVPR).

The injection computer controls the passenger compartment heating resistors (depending on the equipment). The injection computer authorises or denies compressor activation depending on the vehicle operation and refrigerant pressure.



Passenger compartment ventilation and heating control front panel



Passenger compartment ventilation and heating control rear panel

HEATING

Fault finding - Conformity check

61A

NOTES	<p>Only carry out this conformity check after a complete check with the diagnostic tool (fault reading and configuration checks).</p> <p>Test conditions: engine stopped, ignition on.</p>
--------------	---

SUB-FUNCTION: HEATING

Computer	Parameter or Status checked or Action	Display and notes	Fault finding
UCH (see 87B, Passenger compartment connection unit)	ET015: Passenger compartment blower	INACTIVE (according to test conditions: see Notes).	In the event of a fault, refer to the interpretation of this status . Note: This status only operates for manual air conditioning and heating versions.
	PR001: Battery voltage	10.5 V < X < 14.4 V	If there is a fault, refer to the interpretation of this parameter If the fault is still present, carry out fault finding on the charging circuit (see MR 411 Mechanical, 16A, Starting - charging circuit).
	PR002: Exterior temperature (depending on equipment)	X = exterior temperature ± 5 °C (invalid value: 215 °C)	If there is a fault, refer to the interpretation of this parameter
	PR024: Engine coolant temperature	X = engine coolant temperature in °C	In the event of a fault, see the interpretation of this parameter .
	ET239: Ignition switch position	+ after ignition feed	In the event of a fault, refer to the interpretation of this status .
	PR025: Engine speed	0 rpm	If there is a fault, refer to the interpretation of this parameter

HEATING

Fault finding - Conformity check

61A

NOTES

Only carry out this conformity check after a **complete check** with the **diagnostic tool** (fault reading and configuration checks).
Application conditions: engine stopped, ignition on.

SUB-FUNCTION: HEATING (CONTINUED)

Computer	Parameter or Status checked or Action	Display and notes	Fault finding
Injection (see 13B, Diesel injection or 17B, Petrol injection)	PR064: Coolant temperature	X = engine coolant temperature	If there is a fault, refer to the interpretation of this parameter
	ET111: RCH number set	NO Note: Depending on the requirements of the injection system (power requirement, torque reduction, etc.), the injection computer sets the controlled passenger compartment heating resistor stage number (no more, no less)	In the event of a fault, refer to the interpretation of this status .
	ET112: Passenger compartment heating resistor cut-off	YES	In the event of a fault, refer to the interpretation of this status .

HEATING

Fault finding - Conformity check

61A

NOTES

Only carry out this conformity check after a **complete check** with the **diagnostic tool** (fault reading and configuration checks).
Test conditions: engine stopped, ignition on.

SUB-FUNCTION: USER SELECTION

Computer	Parameter or Status checked or Action	Display and Notes	Fault finding
UCH (see 87B, Passenger compartment connection unit)	ET028: Heated rear screen button	PRESSED if the heated rear screen key on the air conditioning control panel is pressed. RELEASED otherwise.	In the event of a fault, refer to the interpretation of this status . Note: This status only operates for manual air conditioning and heating versions.
	ET015: Passenger compartment blower	INACTIVE (according to test conditions: see Notes).	In the event of a fault, refer to the interpretation of this status . Note: This status only operates for manual air conditioning and heating versions.

HEATING

Fault finding - Conformity check

61A

NOTES

Only carry out this conformity check after a **complete check** with the **diagnostic tool** (fault reading and configuration checks).
Application conditions: engine at idle speed, vehicle speed zero.

SUB-FUNCTION: HEATING

Computer	Parameter or Status checked or Action	Display and Notes	Fault finding
UCH (continued) (see 87B , Passenger compartment connection unit)	ET239: Ignition switch position	+ after ignition feed	In the event of a fault, refer to the interpretation of this status .
	PR025: Engine speed	800 rpm ± 50 rpm	In the event of a fault, see the interpretation of this parameter .
	PR024: Engine coolant temperature	X = engine coolant temperature	In the event of a fault, see the interpretation of this parameter .
	ET015: Passenger compartment blower	ACTIVE (according to test conditions: see Notes).	In the event of a fault, refer to the interpretation of this status . Note: This status only operates for manual air conditioning and heating versions.
	PR001: Battery voltage	12.5 V < X < 14.4 V	In the event of a fault, see the interpretation of this parameter . If the fault is still present, carry out fault finding on the charging circuit (see MR 411 Mechanical, 16A, Starting - charging circuit).
	PR002: Exterior temperature (depending on equipment)	X = exterior temperature: 5 °C (invalid value: 215 °C)	In the event of a fault, see the interpretation of this parameter .

HEATING

Fault finding - Conformity check

61A

NOTES	<p>Only carry out this conformity check after a complete check with the diagnostic tool (fault reading and configuration checks).</p> <p>Application conditions: engine at idle speed, vehicle speed zero.</p>
--------------	---

SUB-FUNCTION: HEATING

Computer	Parameter or Status checked or Action	Display and notes	Fault finding
Injection (see 13B, Diesel injection or 17B, Petrol injection)	PR064: Coolant temperature	X = engine coolant temperature	In the event of a fault, see the interpretation of this parameter.
	ET111: RCH number set	<p>YES or NO</p> <p>Note: Depending on the requirements of the injection system (power requirement, torque reduction, etc.), the injection computer sets the controlled passenger compartment heating resistor stage number (no more, no less).</p>	In the event of a fault, refer to the interpretation of this status.
	ET112: RCH cut-off	<p>YES or NO</p> <p>Note: Depending on the requirements of the injection system (power requirement, torque reduction, etc.), the injection computer sets the controlled passenger compartment heating resistor stage number (no more, no less).</p>	In the event of a fault, refer to the interpretation of this status.

HEATING

Fault finding - Conformity check

61A

NOTES

Only carry out this conformity check after a **complete check** with the **diagnostic tool** (fault reading and configuration checks).

Application conditions: engine at idle speed, vehicle speed zero.

SUB-FUNCTION: USER SELECTION

Computer	Parameter or Status checked or Action	Display and notes	Fault finding
UCH (see 87B, Passenger compartment connection unit)	ET028: Heated rear screen button	PRESSED if the heated rear screen key on the air conditioning control panel is pressed. RELEASED otherwise.	In the event of a fault, refer to the interpretation of this status .
	ET015: Passenger compartment blower	ACTIVE (according to test conditions: see Notes).	In the event of a fault, refer to the interpretation of this status .

HEATING

Fault finding - Conformity check

61A

SUMMARY TABLE OF THE VARIOUS AIR CONDITIONING COMPUTER COMMANDS

Name of sub-function	Name of computer	Command name	Fault finding
HEATING	UCH (see 87B, Passenger compartment connection unit)	AC060 Rear screen de-icer	In the event of a fault, refer to the interpretation of this command .
	Injection (see 13B, Diesel injection or 17B, Petrol injection)	AC250 Heating resistor relay 1 (depending on version)	In the event of a fault, refer to the interpretation of this command .
		AC251 Heating resistor relay 2 (depending on version)	In the event of a fault, refer to the interpretation of this command .
USER SELECTION	UCH (see 87B, Passenger compartment connection unit)	AC019 Heated rear screen indicator light	In the event of a fault, refer to the interpretation of this command .

NOTES

Special notes:

This section gives the list of possible customer complaints (Fault finding charts can be found in sections 61A, 62B and 62C: see below).

AIR DISTRIBUTION FAULT (SECTION 62C)

AIR DISTRIBUTION PROBLEM	ALP 2
AIR FLOW FAULT	ALP 3
INEFFICIENT WINDSCREEN DEMISTING	ALP 4
NO PASSENGER COMPARTMENT VENTILATION	ALP 5

HEATING FAULT

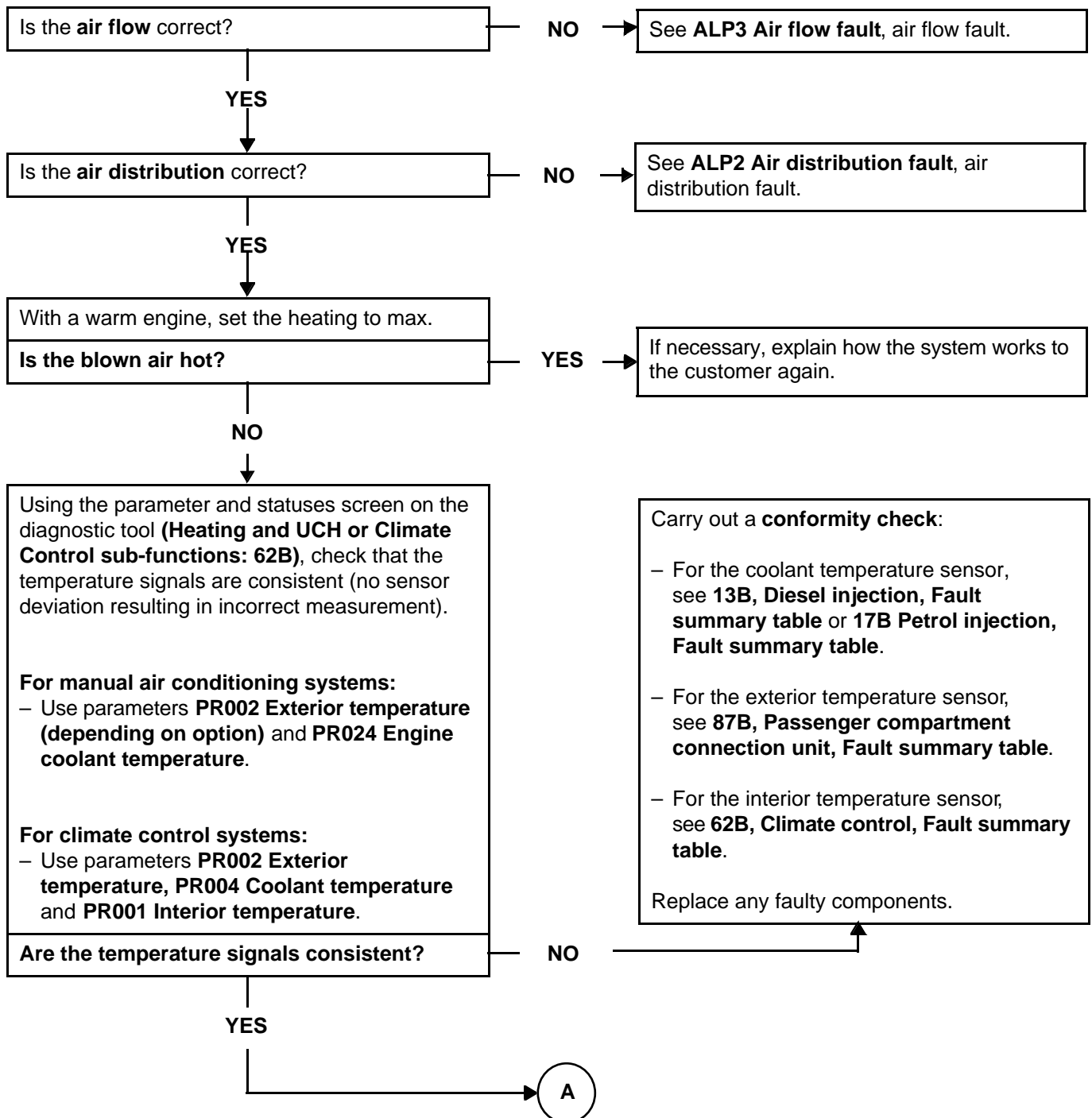
NO HEATING OR INADEQUATE HEATING	ALP 6
EXCESSIVE HEATING	ALP 7
INEFFICIENT REAR SCREEN DE-ICING/DEMISTING (SECTION 62C)	ALP 10
WATER PRESENT IN THE PASSENGER COMPARTMENT (SECTION 62C OR 62B)	ALP 12

CONTROL PANEL FAULT (SECTION 62C)

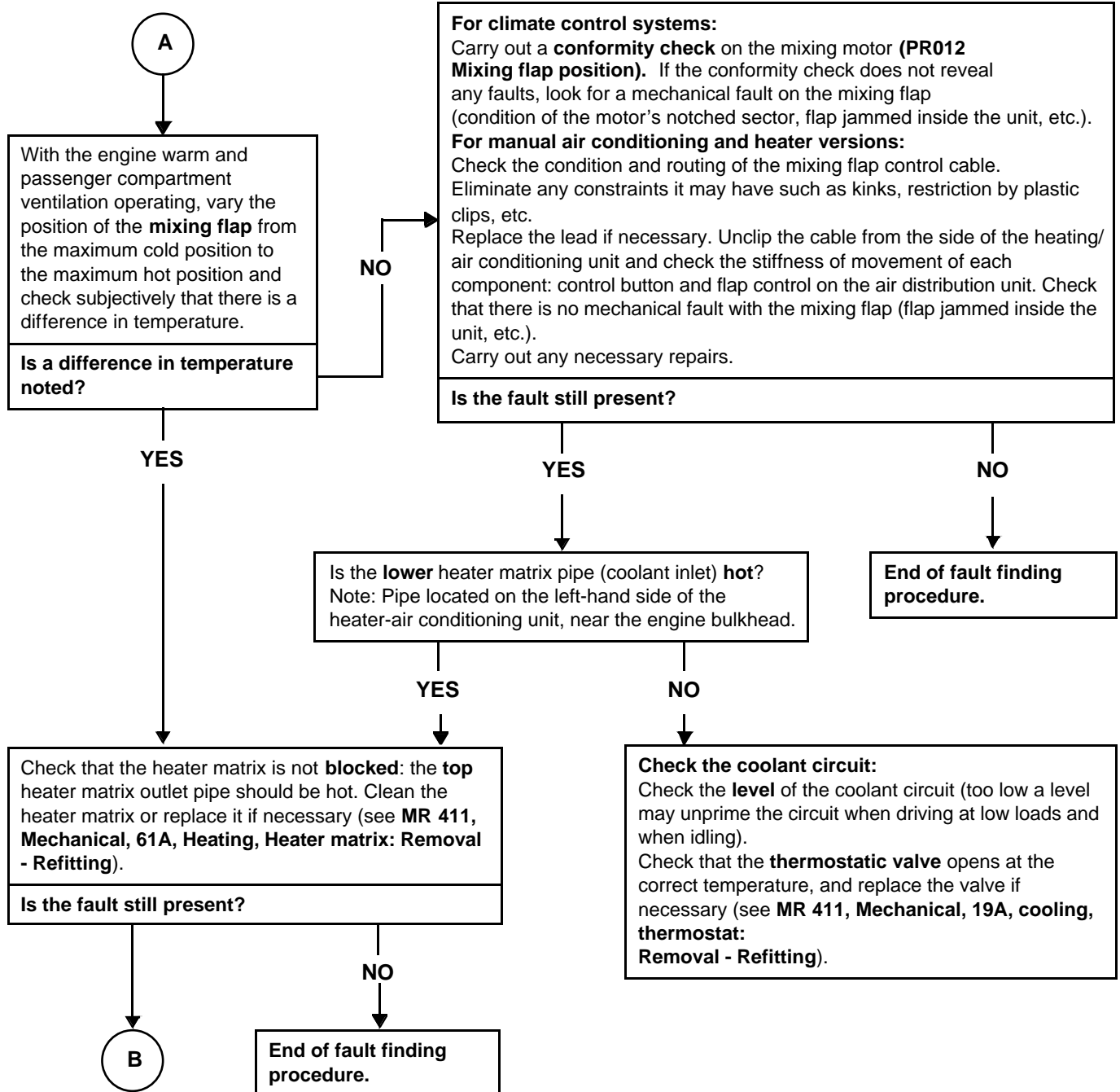
NO CONTROL PANEL LIGHTING	ALP 13
---------------------------	--------

ALP 6	No heating or inadequate heating
--------------	---

NOTES	<p>Carry out these checks after a full check using the diagnostic tool (fault reading and configuration checks).</p> <p>Check that the fuses are sound.</p> <p>Use a multimeter, current clamp and 21 W test light.</p> <p>Use the Wiring Diagrams Technical Note, NEW TWINGO.</p>
--------------	---



ALP 6 CONTINUED 1	
------------------------------	--



**ALP 6
CONTINUED 2**

Note:
Fault finding procedure performed using a current clamp.

B

For diesel vehicles equipped with **Passenger compartment heating resistors** and **climate control**, check that the climate control computer is correctly configured by reading the following configuration (reconfigure the computer if necessary):

- For the climate control computer, parameter **LC044 Heating resistor type** should display **900 W**.

With the passenger compartment fan activated, fit a current clamp to the connection of **earth** between the battery and chassis earth point, and use the CLIP tool to run command **AC250 Heating resistor relay 1**.

Does the current measured increase by at least 20 A when the command is run?

YES

C

NO

Disconnect the passenger compartment heating resistor connector (component **1113**) and connect a test light between connections **38LL** and **MAK** and run command **AC250 Heating resistor relay 1**.

Does the test light illuminate?

NO

YES

Connect a test light between connection **38LL** of component **1113** and the chassis **earth** and run command **AC250 Heating resistor relay 1**.

Does the test light illuminate?

NO

D

YES

Replace the passenger compartment heating resistor unit (component **1113**) (see **MR 411, Mechanical, 61A, Heating, Heating resistors: Removal - Refitting**).

Earth fault on component 1113. If there is a repair method (see **Technical Note 6015A, Repairing electrical wiring, Wiring: Precautions for repair**), repair or replace the wiring.

HEATING

Fault finding - Fault finding charts

61A

**ALP 6
CONTINUED 3**

Note:

Fault finding procedure performed using a current clamp.

C

With the passenger compartment fan activated, fit a current clamp to the connection of **earth** between the battery and chassis earth point, and use the CLIP tool to run command **AC251 Heating resistor relay 2**.

Does the current measured increase by at least 40 A when the command is run?

YES

With the passenger compartment heating resistors operating, carry out a conformity check on the injection, heating sub-function (see **13B, Diesel injection, Conformity check**).

Check the continuity of the 2 connections **38LM** between components **1113** and **1068**.

Is the continuity correct?

NO

Continuity fault on connection **38LM**. If there is a repair method (see **Technical Note 6015A, Repairing electrical wiring, Wiring: Precautions for repair**), repair or replace the wiring.

YES

Re-run command **AC251 Heating resistor relay 2**. Check for + 12 V supply on connections **3FB** and **BP9** of component **1068**.

Are the supplies correct?

YES

Run fault finding on the injection computer for the heating element resistor **2** command (see **13B, Diesel injection, Conformity check**).

NO

Disconnect the passenger compartment heating resistor connector (component **1113**) and connect a test light between each of the connections **38LM** and **MAK** and run command **AC251 Heating resistor relay 2**.

Does the test light illuminate?

NO

Replace the passenger compartment heating resistor unit (component **1113**) (see **MR 411, Mechanical, 61A, Heating, Heating resistors: Removal - Refitting**).

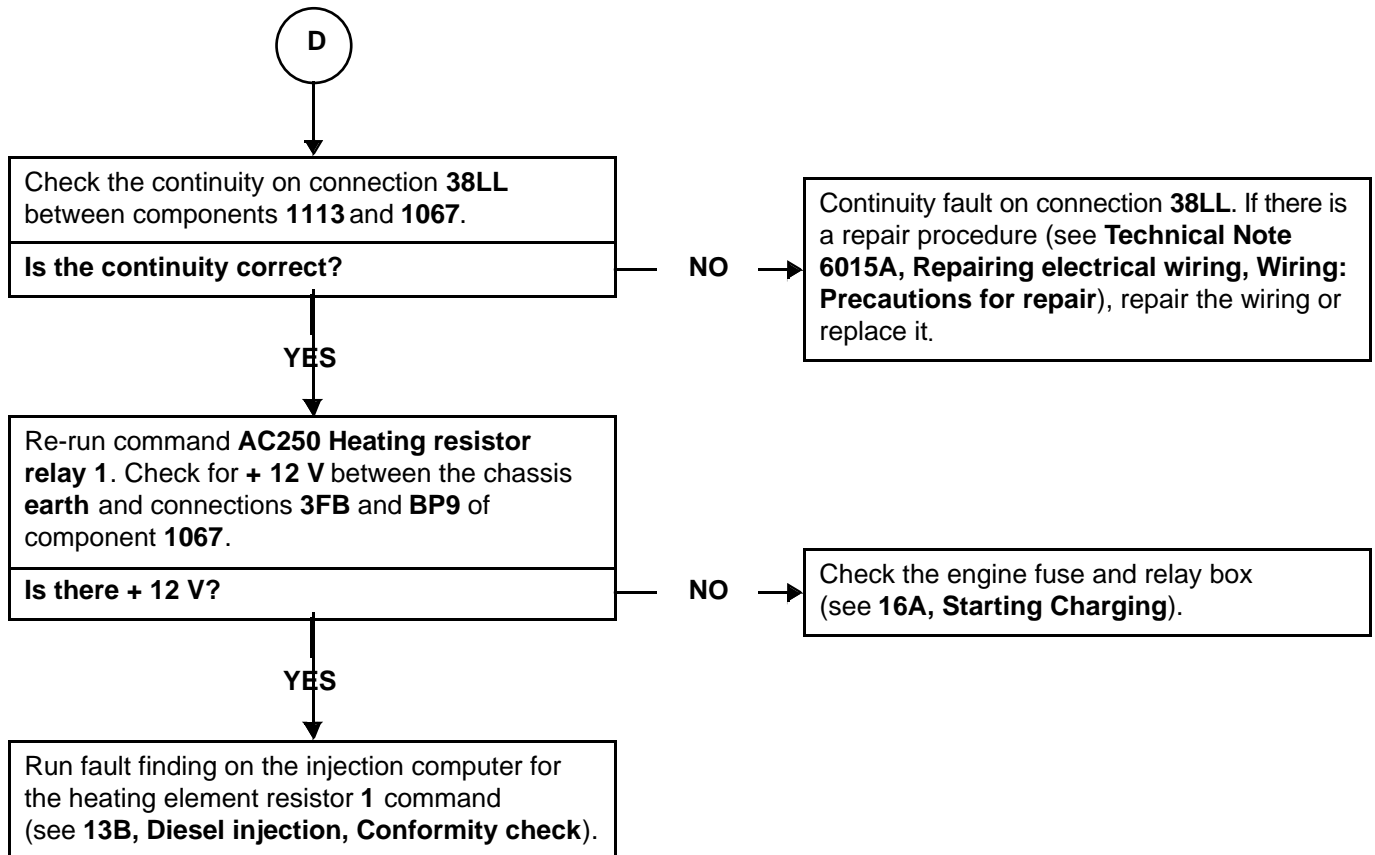
YES

NO

Check the engine fuse and relay box (see **16A, Starting Charging**).

**ALP 6
CONTINUED 4**

Note:
Fault finding procedure performed using a current clamp.



**ALP 6
CONTINUED 5**

Note:
Fault finding procedure without using a current clamp.

B

For vehicles equipped with **Passenger compartment heating resistors** and **climate control**, check that the climate control computer is correctly configured by reading the following configurations (reconfigure the computer if necessary):

- For the climate control computer, parameter **LC044 Heating resistor type** should display **900 W**.

Disconnect the passenger compartment heating resistor connector (component **1113**) and connect a test light between connections **38LL** and **MAK** and run command **AC250 Heating resistor relay 1**.

Does the test light illuminate?

YES

Replace the passenger compartment heating resistor unit if, at ambient temperature, the resistance value between connections **38LL** and **MAK** of component **1113**, is not between: **0.55** and **0.75 Ω** (see **MR 411, Mechanical, 61A, Heating, Heating resistors: Removal - Refitting**).

C

NO

Connect a test light between connections **38LL** of component **1113** and the chassis **earth** and run command **AC250 Heating resistor relay 1**.

Does the test bulb illuminate?

NO

Check the continuity on connection **38LL** between components **1113** and **1067**.

Is the continuity correct?

NO

Continuity fault on connection **38LL**. If there is a repair method (see **Technical Note 6015A, Repairing electrical wiring, Wiring: Precautions for repair**), repair or replace the wiring.

YES

D

YES

Earth fault on component **1113**. If there is a repair method (see **Technical Note 6015A, Repairing electrical wiring, Wiring: Precautions for repair**), repair or replace the wiring.

**ALP 6
CONTINUED 6**

Note:
Fault finding procedure without using a current clamp.

C

Disconnect the passenger compartment heating resistor connector (component **1113**) and connect a test light between each of the connections **38LM** and **MAK** and run command **AC251 Heating resistor relay 2**.

Does the test light illuminate?

YES

Replace the passenger compartment heating resistor unit if, at ambient temperature, the resistance value between each of connections **38LM** and **MAK** of component **1113**, is not between:

0.55 and **0.75 Ω**

(see **MR 411, Mechanical, 61A, Heating, Heating resistors: Removal - Refitting**).

The passenger compartment heating resistors are correct, if the fault is still present carry out a conformity check on the injection, heating sub-function (see **13B, Diesel injection, Conformity check**).

Carry out fault finding on the injection computer for heating resistor relay **2** control (see **13B, Diesel injection, Conformity check**).

NO

Check the continuity of the 2 connections **38LM** between components **1113** and **1068**.

Is the continuity correct?

YES

Check for **+ 12 V** supply on connections **3FB** and **BP9** of component **1068**.

Are the supplies correct?

YES

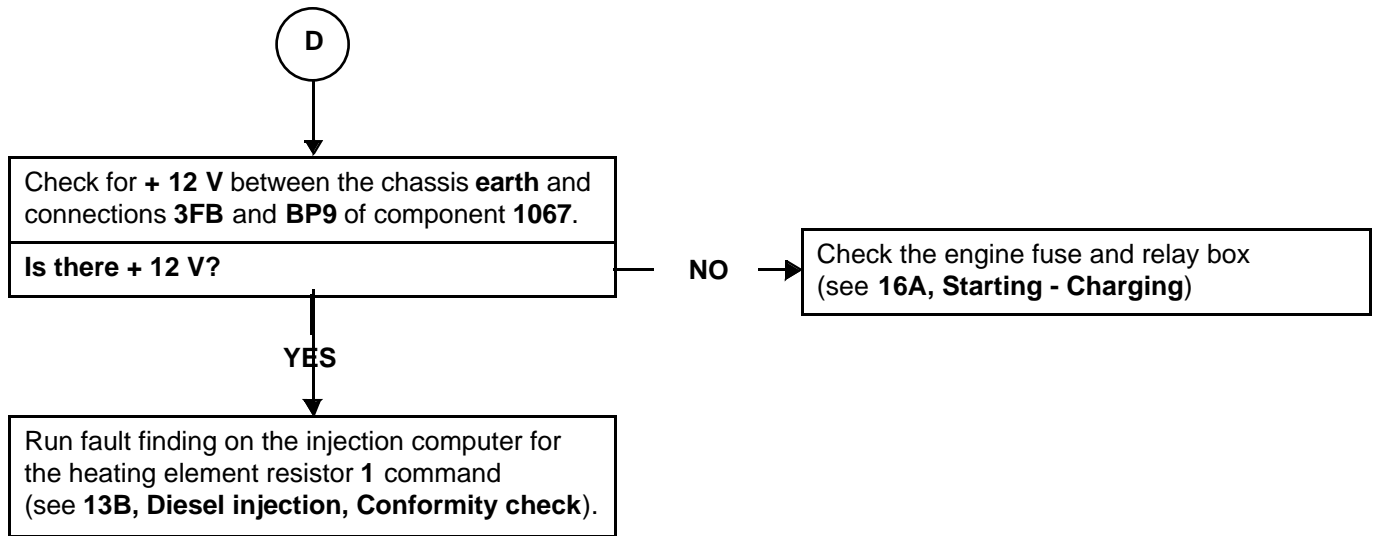
NO

Check the engine fuse and relay box (see **16A, Starting Charging**).

Continuity fault on connection **38LM**. If there is a repair method (see **Technical Note 6015A, Repairing electrical wiring, Wiring: Precautions for repair**), repair or replace the wiring.

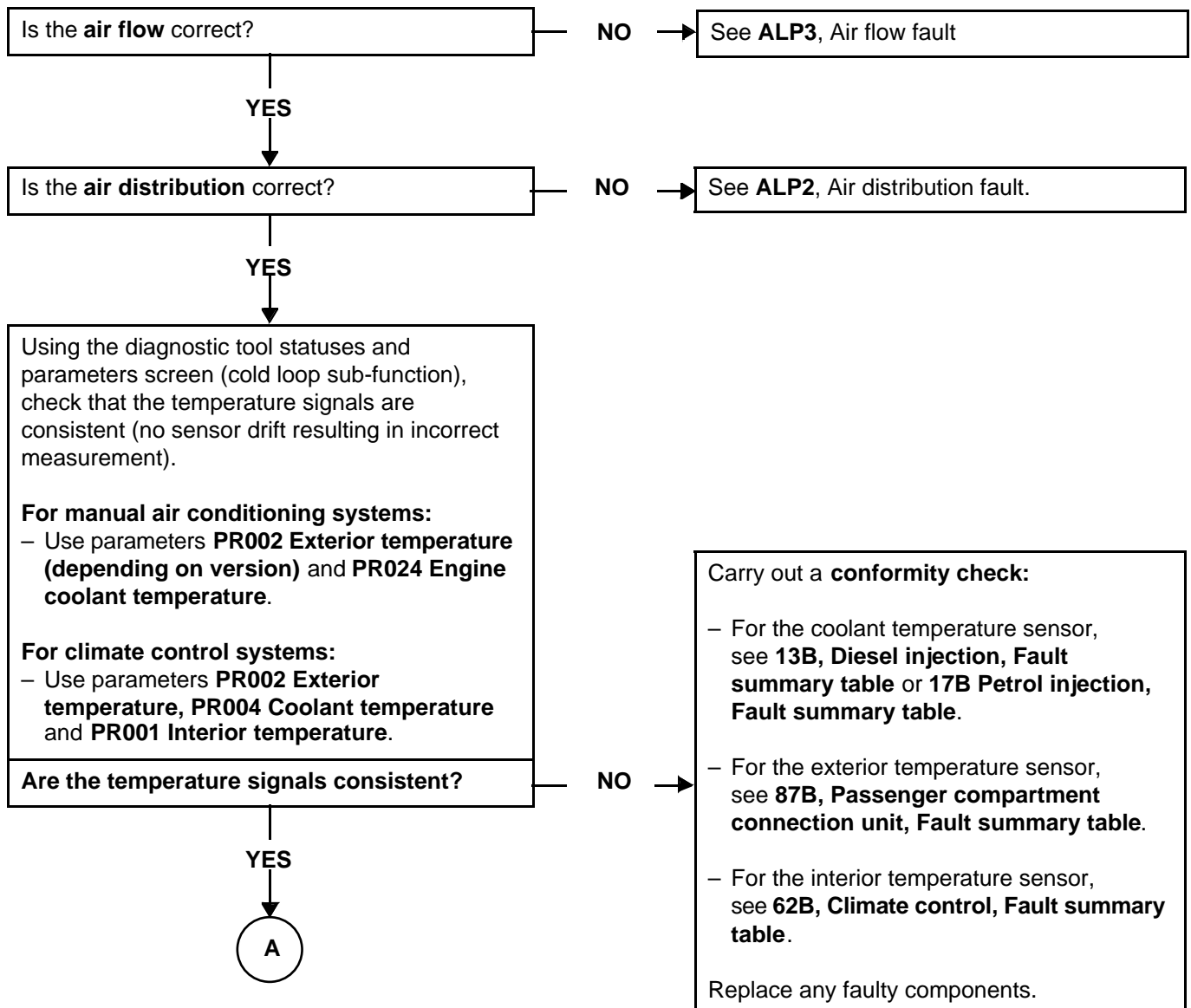
**ALP 6
CONTINUED 7**

Note:
Fault finding procedure without using a current clamp.

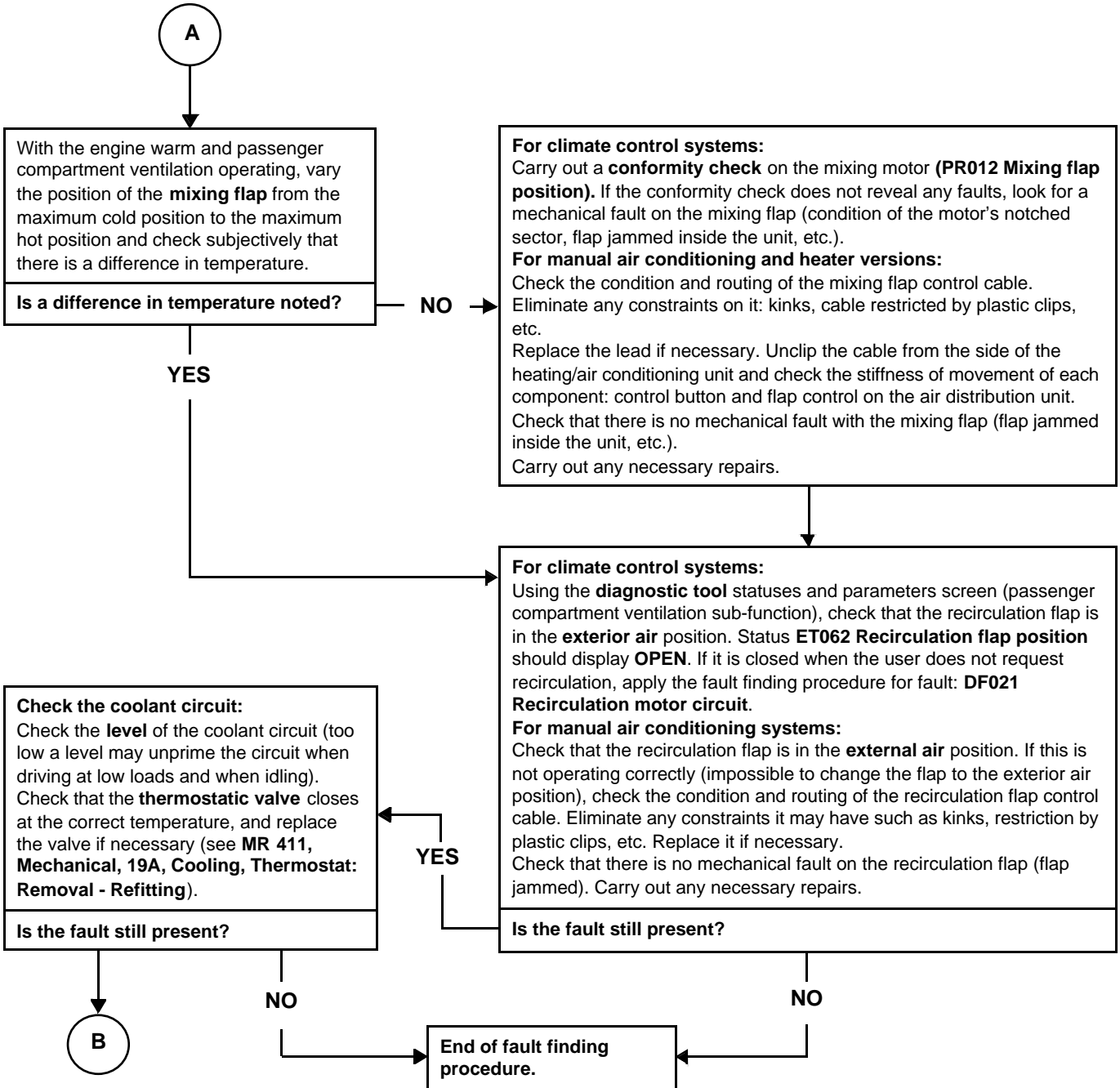


ALP 7	Too much hot air
--------------	-------------------------

NOTES	<p>Carry out this conformity check after a full check using the diagnostic tool (fault reading and configuration checks). Check that the fuses are sound. Use a multimeter and a 21 W test light. Use the Wiring Diagrams Technical Note, NEW TWINGO.</p>
--------------	---



ALP 7 CONTINUED 1	
------------------------------	--



ALP 7 CONTINUED 2	
------------------------------	--

