



6 Heating and ventilation

62 AIR CONDITIONING

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This document contains generic fault-finding procedures that apply to all manual climate control computers fitted to the Clio II from June 2001 (Europe version).

To undertake fault finding on this system, it is essential to have the following items available:

- This section of the Fault-finding Workshop Repair Manual,
- The wiring diagram of the function for the vehicle concerned,
- A multimeter.

GENERAL APPROACH TO FAULT FINDING

- Locate the Fault finding documents corresponding to the system identified.
- Take note of information contained in the introductory sections.

SPECIAL FEATURES OF THE MANUAL CLIMATE CONTROL SYSTEM

The **cold loop** is controlled by the injection computer and the heating and ventilation mixing and distribution are manually controlled, therefore the climate control computer **does not record any faults that can be processed by the diagnostic tool**.

All faults related to the **cold loop**, compressor, pressure switch, fan assembly, charge circuit, **are diagnosed by the injection computer**, to which air conditioning circuit operation requests are transmitted on behalf of the climate control computer. See **injection computer fault finding** for a complete fault finding operation on the cold loop.

This note covers only looking for faults as a result of **customer complaints**.

DEALING WITH CUSTOMER COMPLAINTS

This section has fault finding charts, which suggest a series of possible causes of problems. These lines of research are only to be used when the climate control system **is not functioning correctly** and after a **complete fault finding procedure on the cold loop by means of the injection diagnostic has been performed**.

COMPUTER CONNECTOR CORRESPONDENCES:

- **Green** computer 15-track connector: **connector A**
- **Black** computer 10-track connector: **connector B**

NOTES	Before working on the vehicle, check that the client is using the heating and ventilation system correctly.
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FAULTY AIR DISTRIBUTION

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FUMES IN PASSENGER COMPARTMENT

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WATER IN PASSENGER COMPARTMENT

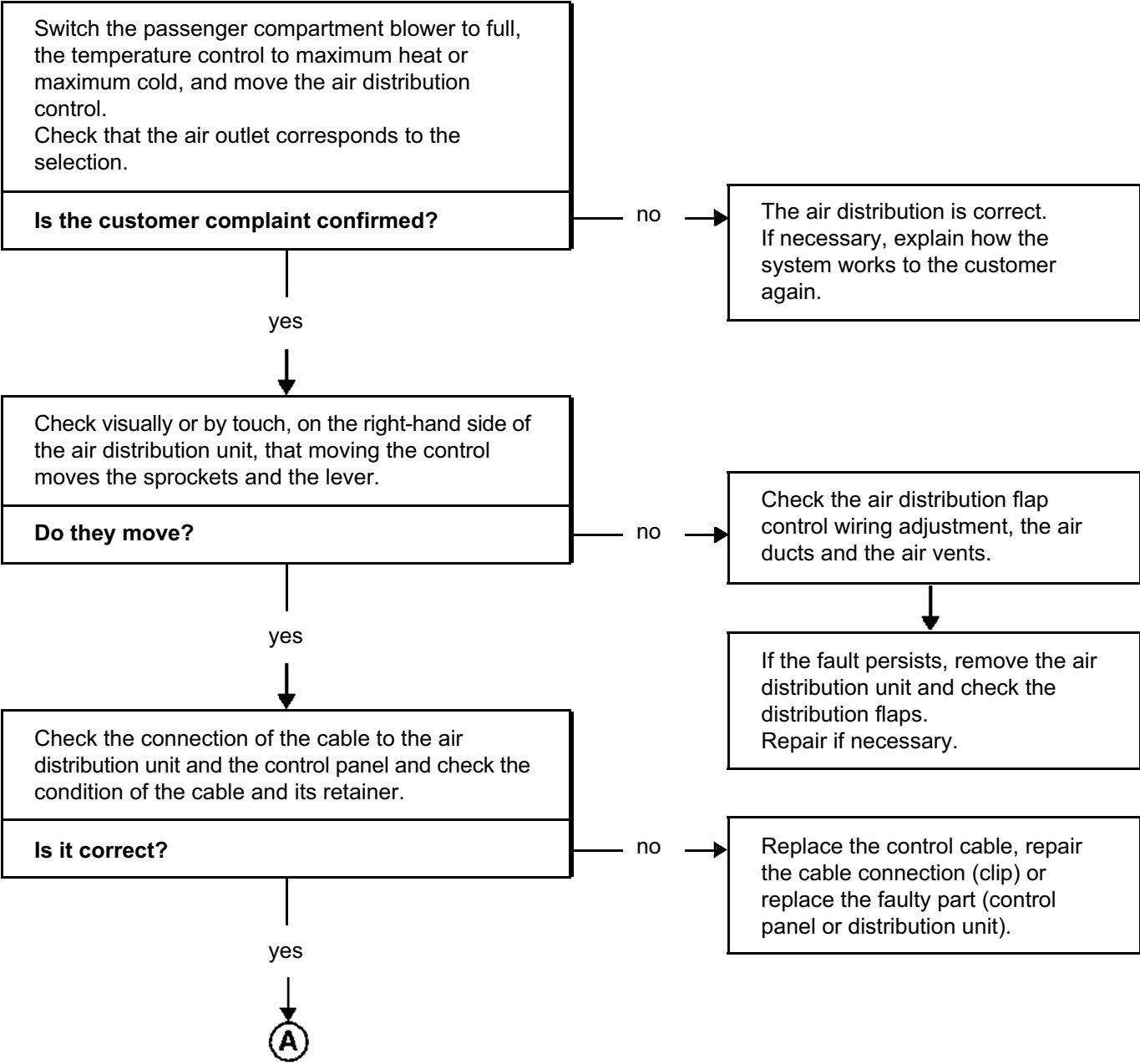
WATER IS PRESENT IN PASSENGER COMPARTMENT	CHART 14
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FAULTY CONTROL PANEL

CONTROL PANEL LIGHTING FAILURE	CHART 15
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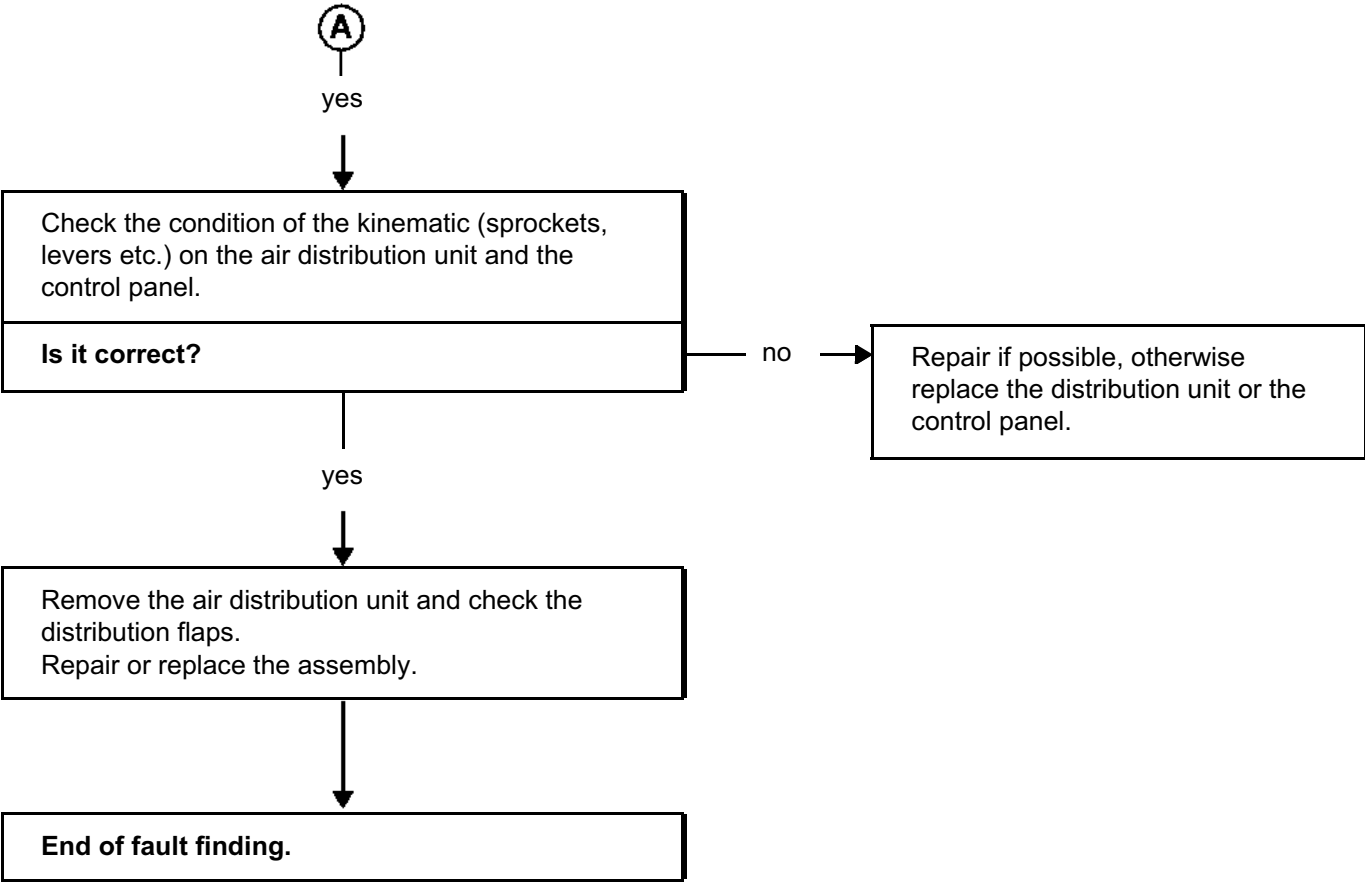
CHART 1	FAULTY AIR DISTRIBUTION
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NOTES	Before working on the vehicle, check that the client is using the heating and ventilation system correctly.
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AFTER REPAIR	Check that the system is operating correctly.
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CHART 1 CONTINUED	
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AFTER REPAIR	Check that the system is operating correctly.
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CHART 2

AIR FLOW PROBLEM

NOTES

Before working on the vehicle, check that the client is using the heating and ventilation system correctly.

Special note:

– the resistor unit and the blower are located under the windscreen aperture on the passenger side.

Is the passenger compartment blower functioning?

no

Repair, see **CHART 5**.

yes

Check that the air circuit (particle filter, scuttle panel grille, air vents and extractors etc.) is not blocked. Check that the blower casing is in good condition and is fixed in its position. Repair, clean or replace the particle filter if necessary.

Ensure that the blower unit is properly airtight. Repair if necessary.

Check that the air recirculation flap is not stuck in air recirculation position using **CHART 6**.

Does the problem disappear when the air distribution is changed?

yes

Ensure that all the air vents are open. If the problem persists, refer to **CHART 1**.

no

Check the condition of the resistor unit black 15-track connector. If necessary, repair or replace the connector.

Check the after ignition feeds in track 11 of connector A and in tracks A4 and A5 of connector B of the climate control computer, as well as the earths in track 9 of connector A of the climate control computer and in tracks 14 and 15 of the resistor unit.



AFTER REPAIR

Check that the system is operating correctly.

CHART 2
CONTINUED



Check that the speed selector on the control panel is in correct working order, making sure that there is an after ignition feed on tracks B5, B4, B1 and A1, A2 of connector B of the climate control computer respectively for speeds 1, 2, 3 and 4.



Disconnect the connector from the climate control computer and check the **insulation, continuity and absence of interference resistance** on the connections:

computer connector B track B5	————→	track 3	resistor unit black 15-track connector
computer connector B track B4	————→	track 4	resistor unit black 15-track connector
computer connector B track B1	————→	track 5	resistor unit black 15-track connector
computer connector B track A1	————→	track 12	resistor unit black 15-track connector
computer connector B track A2	————→	track 13	resistor unit black 15-track connector

Repair if necessary.



Replace the resistor unit if the resistance is not approximately:
speed 1 (track 3 and 12): $3.2 \pm 0.2 \, \Omega$
speed 2 (track 4 and 12): $1.5 \pm 0.2 \, \Omega$
speed 3 (track 5 and 12): $0.6 \pm 0.2 \, \Omega$



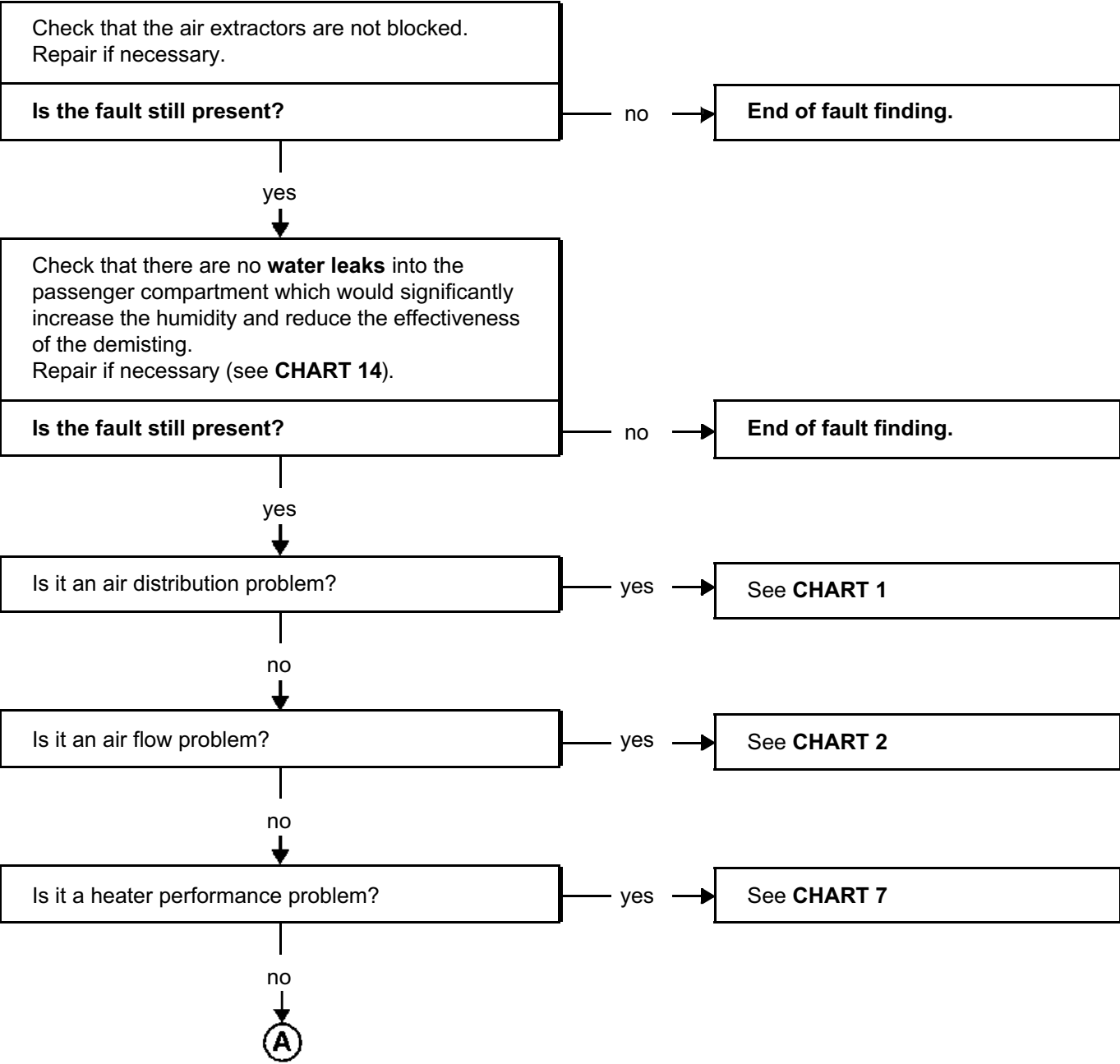
End of fault finding.

AFTER REPAIR

Check that the system is operating correctly.

CHART 3	INEFFICIENT WINDSCREEN DEMISTING
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NOTES	Special notes: Check that the inside of the windows are not dirty, as this lowers the efficiency of the demister.
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AFTER REPAIR	Check that the system is operating correctly.
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CHART 3 CONTINUED	
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Check that the water condenser outlet is not blocked.
Repair if necessary.



Check that the recirculation flap is not blocked (see **CHART 6**).
Repair if necessary.

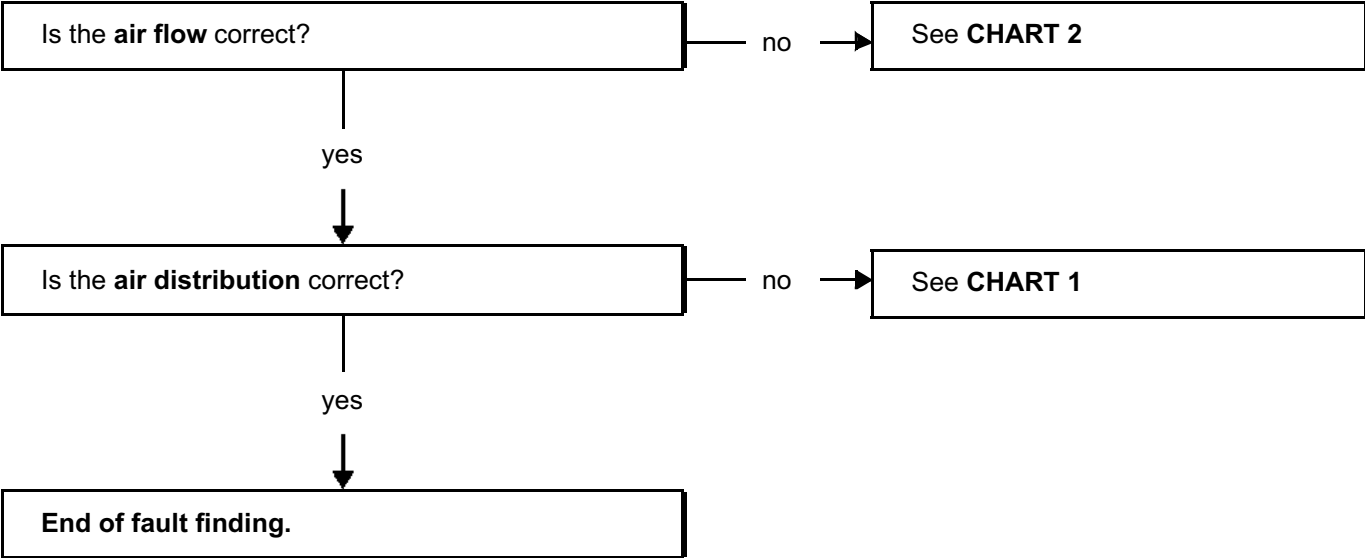


End of fault finding.

AFTER REPAIR	Check that the system is operating correctly.
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CHART 4	POOR VENTILATION PERFORMANCE
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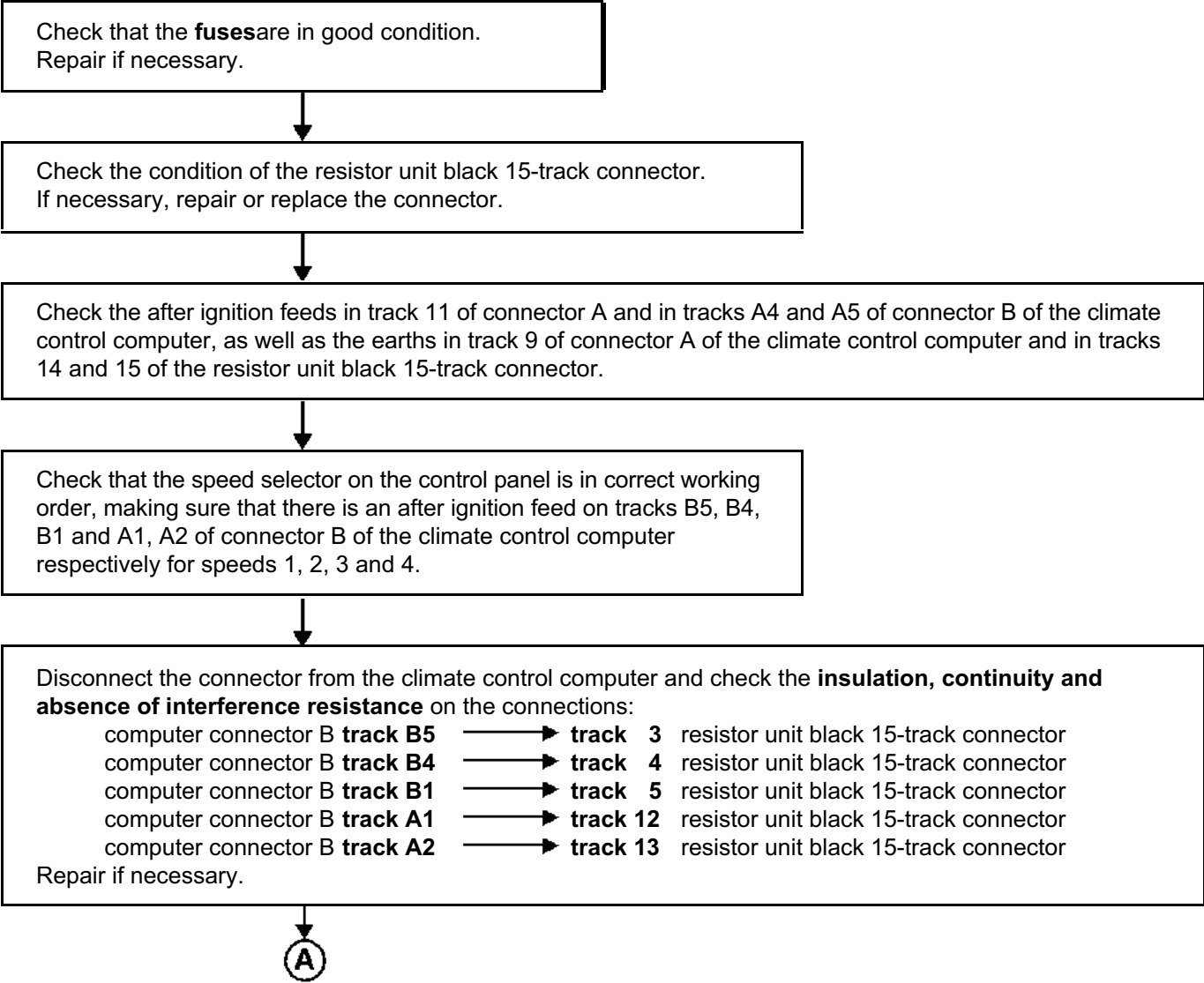
NOTES	Before working on the vehicle, check that the client is using the heating and ventilation system correctly.
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AFTER REPAIR	Check that the system is operating correctly.
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CHART 5	NO PASSENGER COMPARTMENT VENTILATION
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NOTES	Before working on the vehicle, check that the client is using the heating and ventilation system correctly. Special notes: – the resistor unit and the blower are located under the windscreen aperture on the passenger side.
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AFTER REPAIR	Check that the system is operating correctly.
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CHART 5 CONTINUED	
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Replace the resistor unit if the resistance is not approximately:
speed 1 (track 3 and 12): $3.2 \pm 0.2 \Omega$
speed 2 (track 4 and 12): $1.5 \pm 0.2 \Omega$
speed 3 (track 5 and 12): $0.6 \pm 0.2 \Omega$



Check the condition of the engine cooling fan black 2-track connector.
If necessary, repair or replace the connector.



Disconnect the connector from the resistor unit and check the **insulation, continuity and absence of interference resistance** on the connections:

resistor unit black 15-track connector tracks 12 and 13	→	track 1 of the passenger compartment blower connector
resistor unit black 15-track connector tracks 14 and 15	→	track 2 of the passenger compartment blower connector

Repair if necessary.



Take the engine cooling fan apart and check its resistance.
Replace the engine cooling fan if the resistance is not approximately:
 $0.2 < R > 0.5 \Omega$



Ensure that the fan assembly casing is not **broken or slipped** out of position.
Replace the fan assembly if necessary.

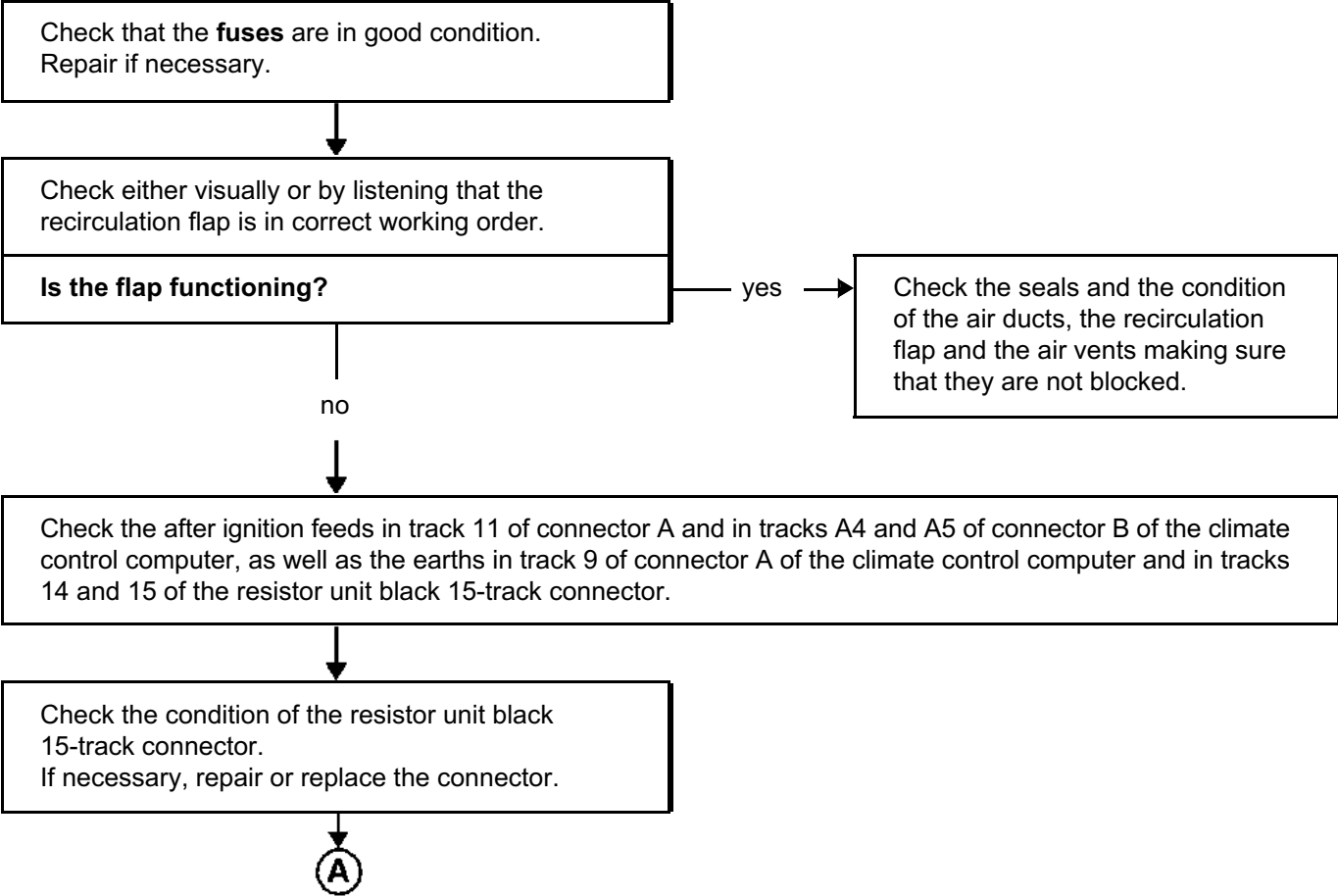


End of fault finding.

AFTER REPAIR	Check that the system is operating correctly.
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CHART 6	NO AIR RECIRCULATION
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NOTES	<p>Before working on the vehicle, check that the client is using the heating and ventilation system correctly.</p> <p>Special notes:</p> <ul style="list-style-type: none">– the resistor unit, the blower and the recirculation flap are located under the windscreen aperture on the passenger side.
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AFTER REPAIR	Check that the system is operating correctly.
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CHART 6 CONTINUED	
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Disconnect the connector from the climate control computer and check the **insulation, continuity and absence of interference resistance** on the connections:

computer connector A track 10	————→ track 2	resistor unit black 15-track connector
computer connector A track 14	————→ track 1	resistor unit black 15-track connector

Repair if necessary.



Check **the resistance** between tracks C and B of the resistor unit black 2-track connector.
If the resistance is not approximately $38\ \Omega \pm 0.2\ \Omega$ take the fan assembly apart to gain access to the air recirculation motor.



Check the condition of the recirculation motor, and its supply group.

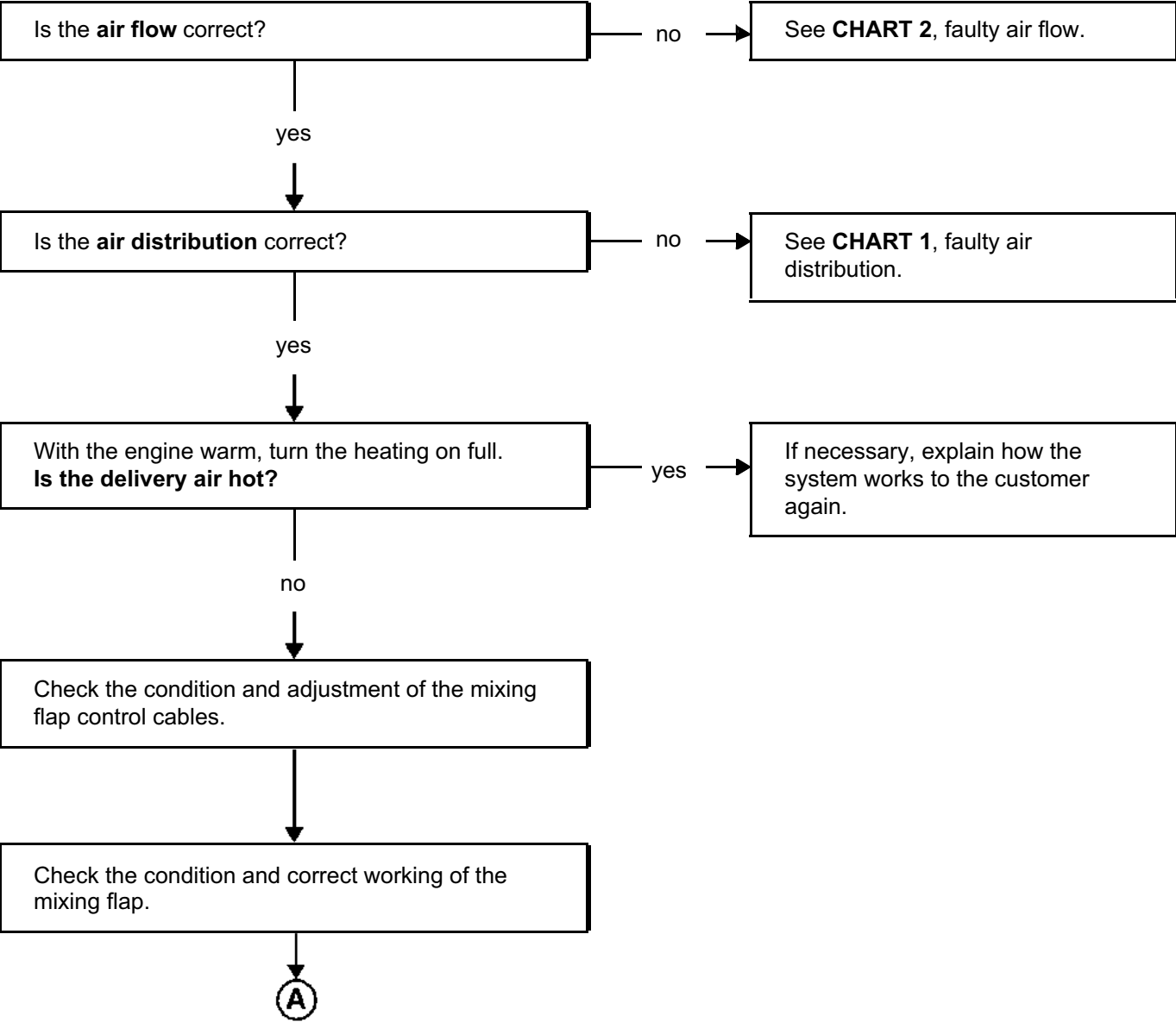


End of fault finding.

AFTER REPAIR	Check that the system is operating correctly.
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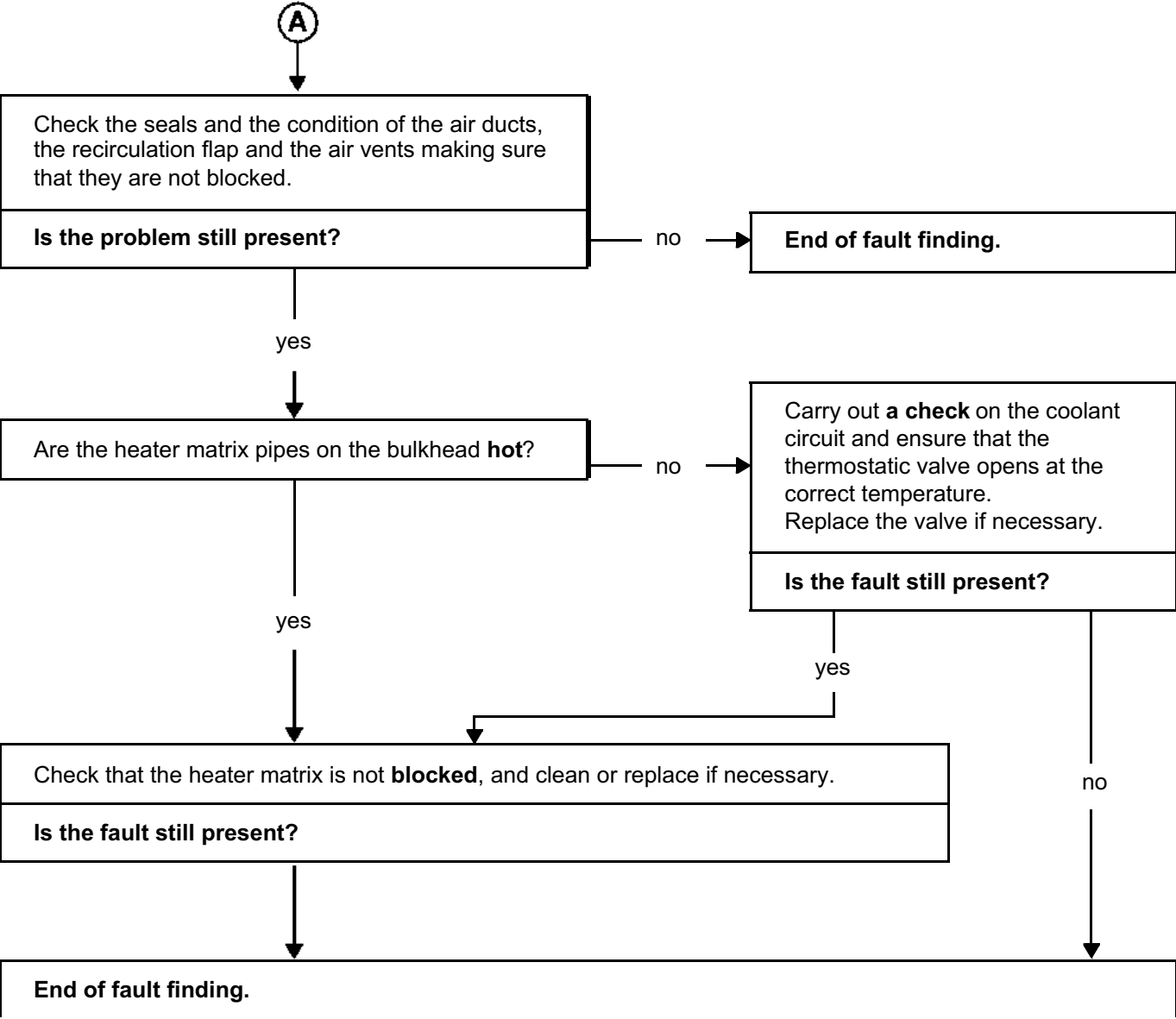
CHART 7	NO HEATING OR INADEQUATE HEATING
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NOTES	Before working on the vehicle, check that the client is using the heating and ventilation system correctly.
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AFTER REPAIR	Check that the system is operating correctly.
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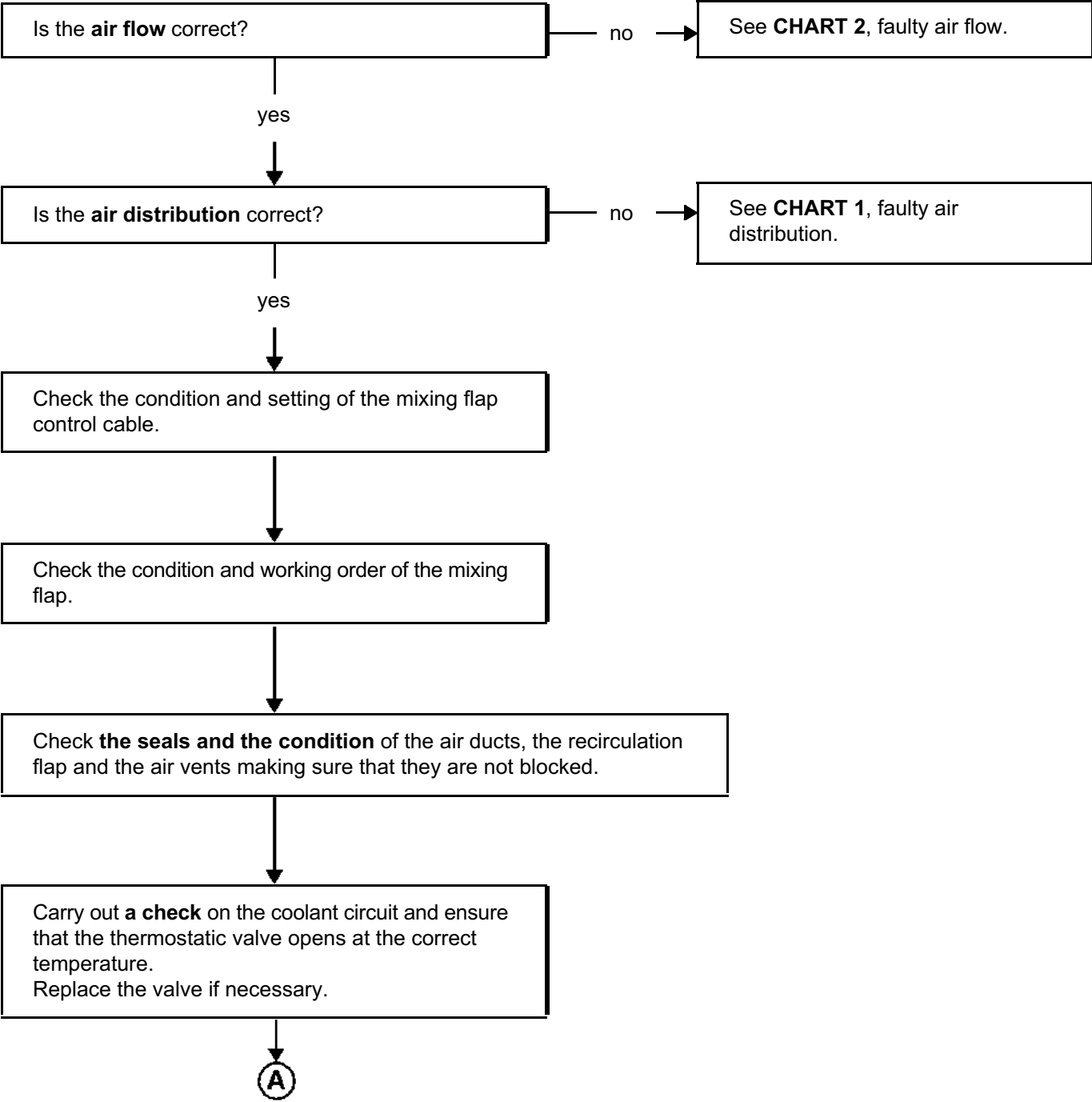
CHART 7 CONTINUED	
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AFTER REPAIR	Check that the system is operating correctly.
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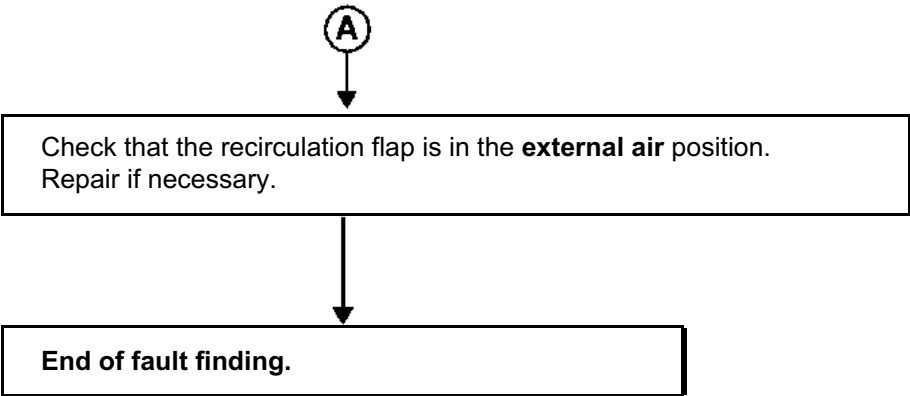
CHART 8	EXCESS HEATING
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NOTES	Before working on the vehicle, check that the client is using the heating and ventilation system correctly.
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AFTER REPAIR	Check that the system is operating correctly.
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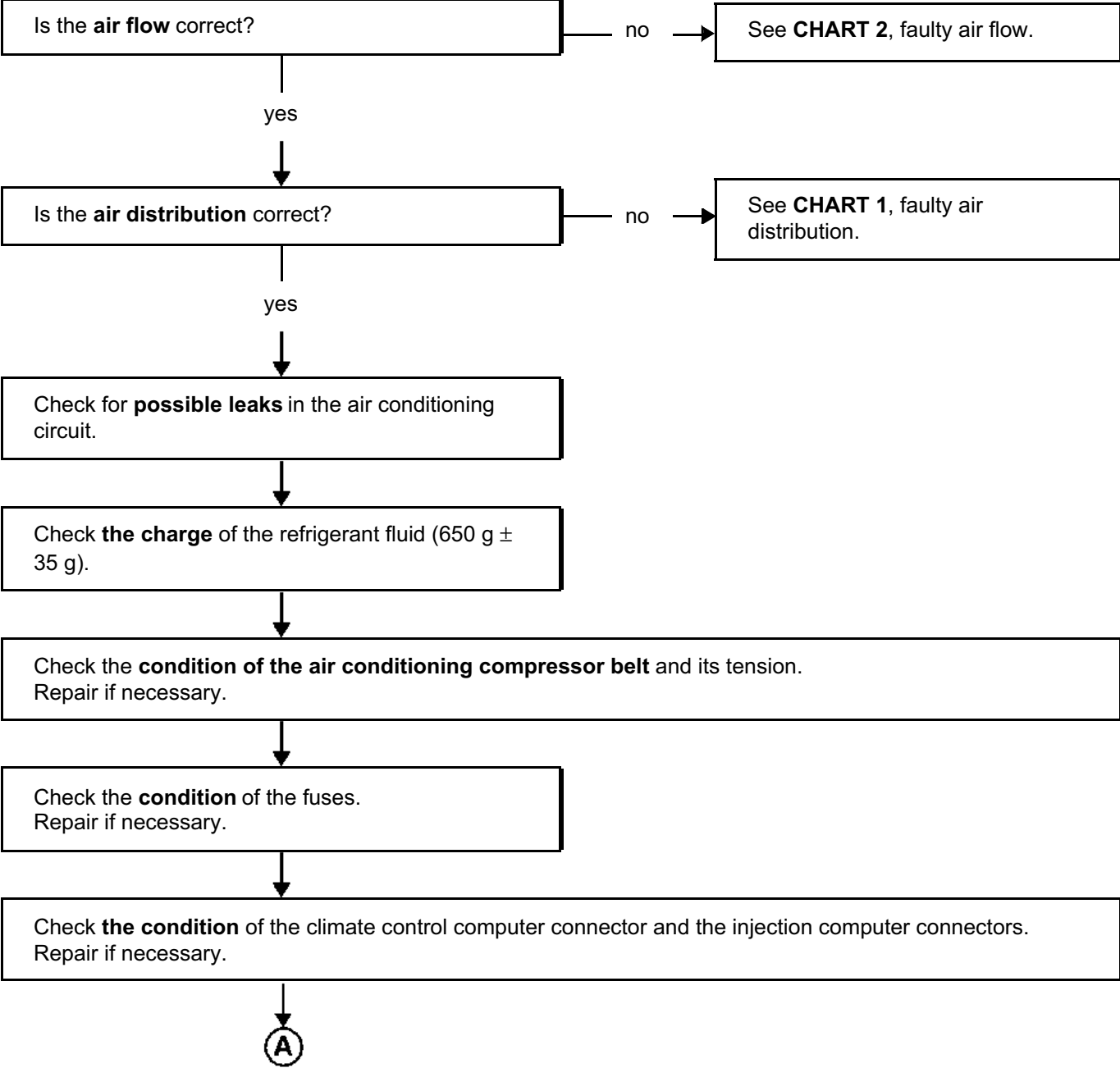
CHART 8 CONTINUED	
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AFTER REPAIR	Check that the system is operating correctly.
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CHART 9	NO COLD AIR
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NOTES	Before working on the vehicle, check that the client is using the heating and ventilation system correctly.
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AFTER REPAIR	Check that the system is operating correctly.
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CHART 9 CONTINUED	
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Disconnect the connectors from the computers and check the **insulation, continuity and absence of interference resistance** on the connection:
climate control computer connector A track 12 → injection computer (refer to the diagrams for the model year and vehicle concerned).



With the engine and heating and ventilation system running, check a there is a 12-volt feed in track 12 of connector A of the climate control computer to ensure that heating and ventilation requests are being sent from the climate control computer to the injection computer.
Is there a feed?

yes → **Test fully** the cold loop using the injection fault finding procedure.



Check the after ignition feeds in track 11 of connector A and in tracks A4 and A5 of connector B of the climate control computer, as well as the earth in track 9 connector A of the climate control computer. If the fault persists, replace the climate control computer.



End of fault finding.

AFTER REPAIR	Check that the system is operating correctly.
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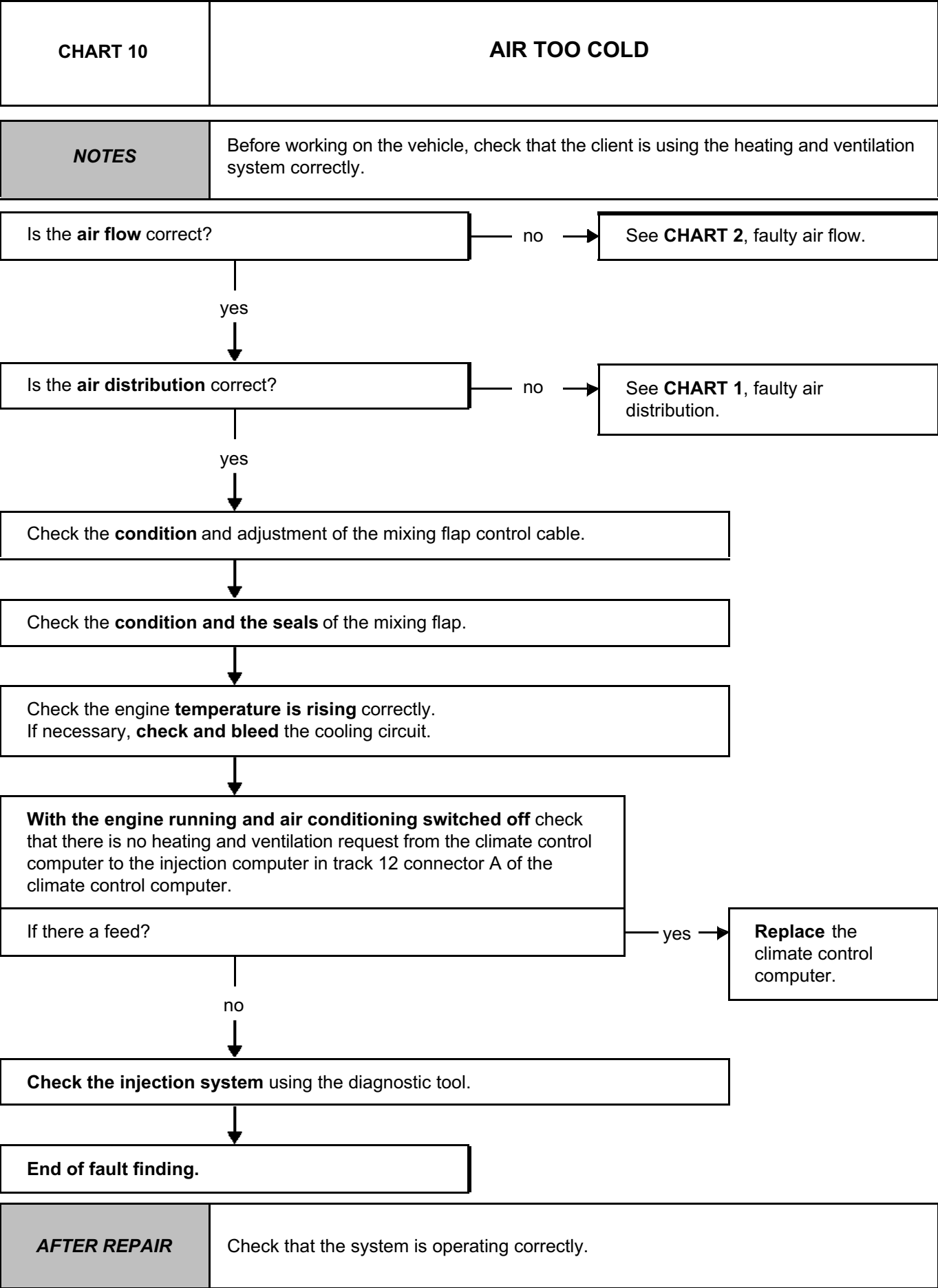


CHART 11

POOR HEATING AND VENTILATION PERFORMANCE

NOTES

Before working on the vehicle, check that the client is using the heating and ventilation system correctly.

Is the **air flow** correct?

no

See **CHART 2**, faulty air flow.

yes

Is the **air distribution** correct?

no

See **CHART 1**, faulty air distribution.

yes

Check the **condition and tension** of the air conditioning compressor belt.
Repair if necessary.

Is the fault still present?

no

End of fault finding.

yes

Check for **possible leaks** in the air conditioning system.

Check **the charge** of the refrigerant fluid (650 g \pm 35 g).

Check that the recirculation flap is in correct working order.
Check the **condition and adjustment** of the control cable and replace it if necessary.

Check that the mixing flap is in correct working order.

If the fault persists **check** the injection system using the diagnostic tool.

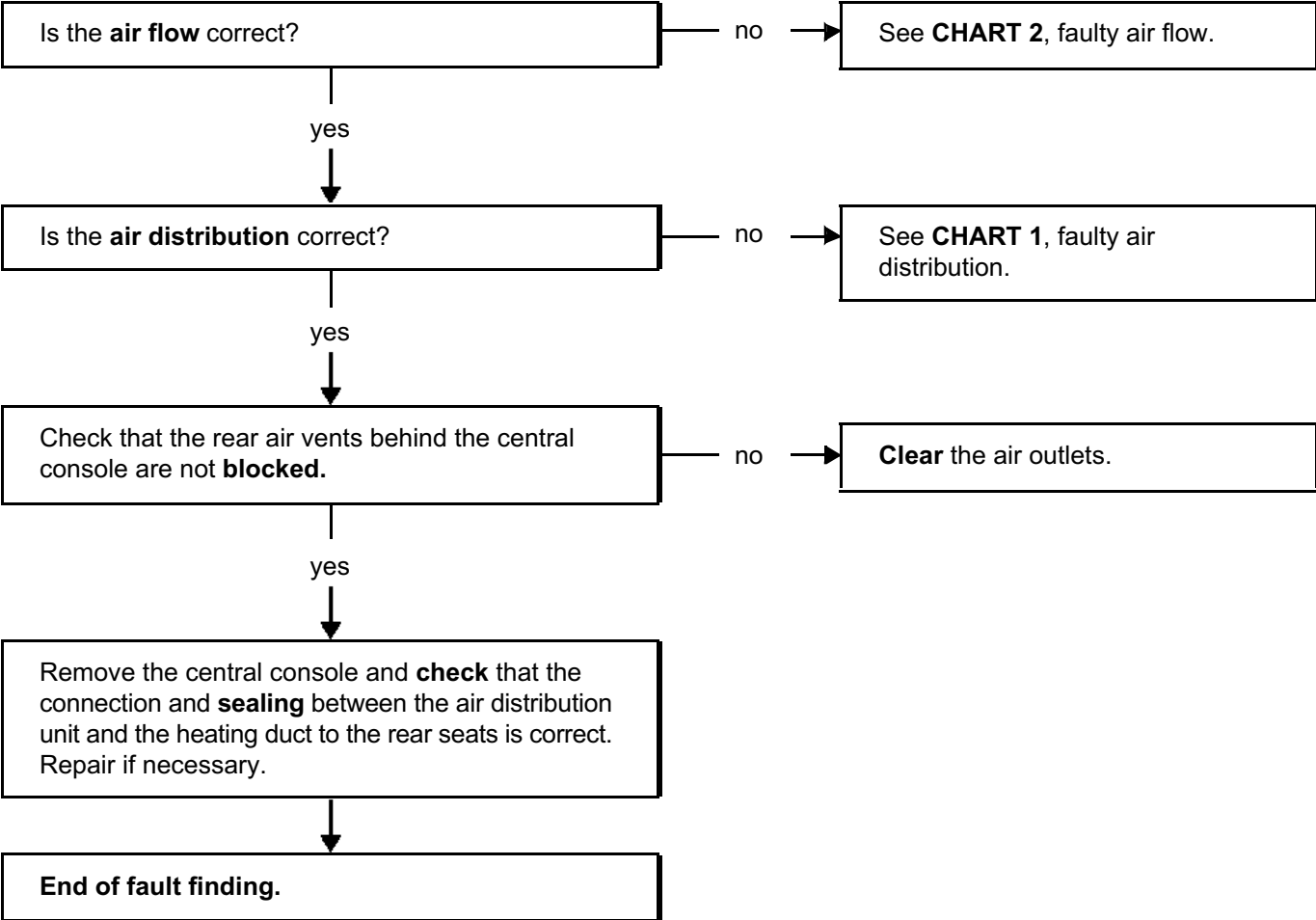
End of fault finding.

AFTER REPAIR

Check that the system is operating correctly.

CHART 12	HEATING INADEQUATE IN THE REAR
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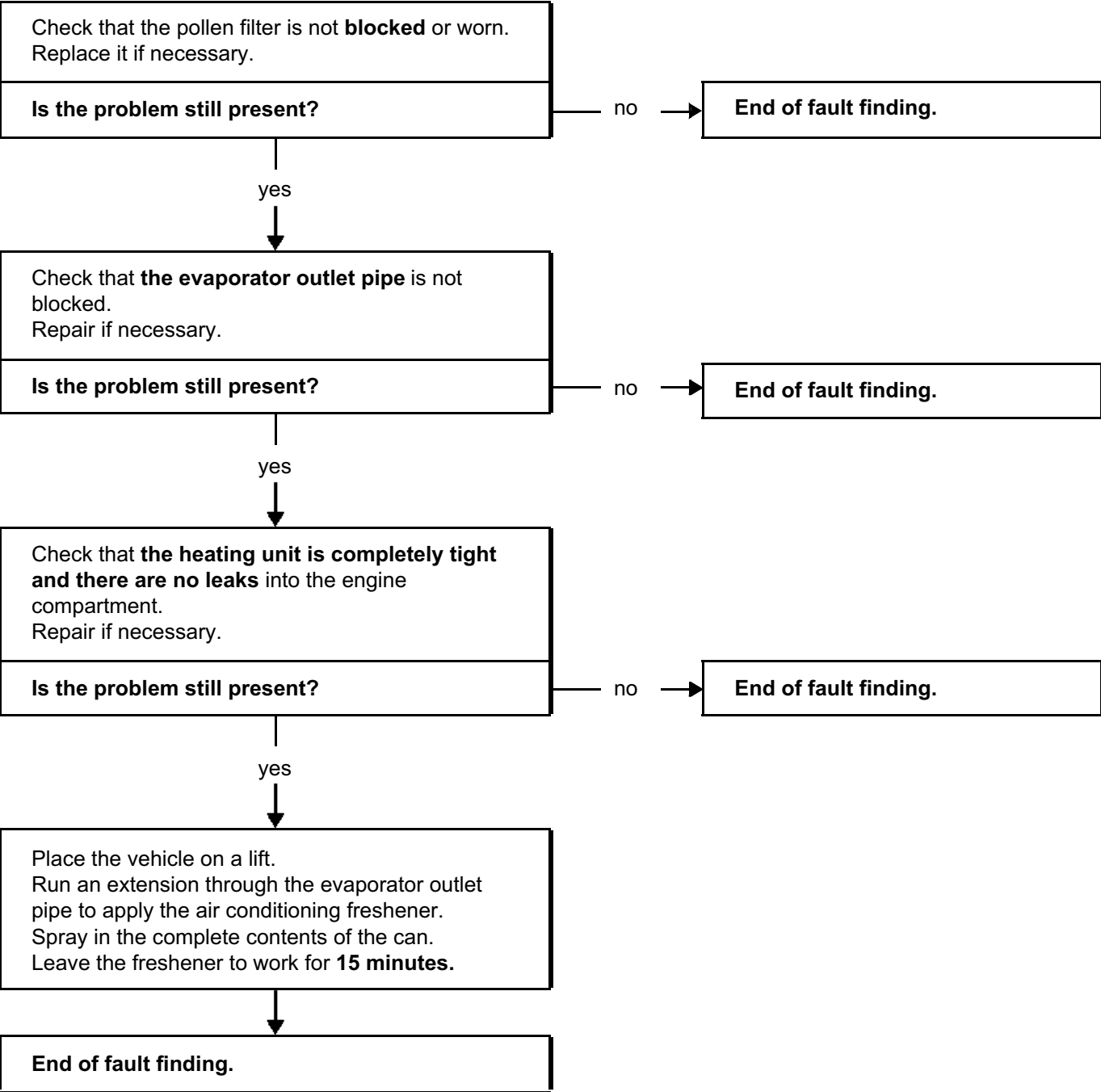
NOTES	None.
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AFTER REPAIR	Check that the system is operating correctly.
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CHART 13	UNPLEASANT ODOURS IN PASSENGER COMPARTMENT
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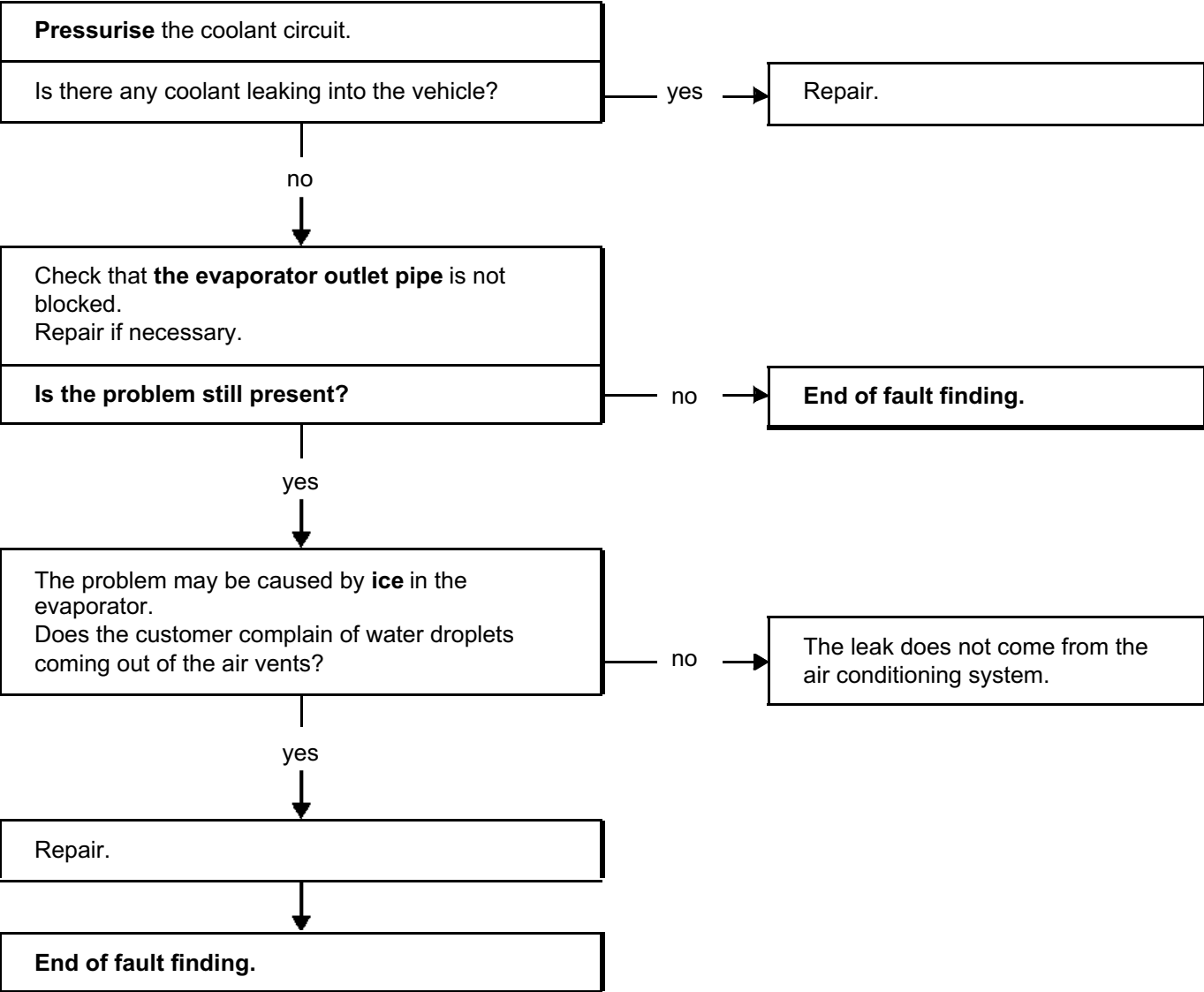
NOTES	None.
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AFTER REPAIR	Check that the system is operating correctly.
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CHART 14	WATER IS PRESENT IN PASSENGER COMPARTMENT
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NOTES	None.
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AFTER REPAIR	Check that the system is operating correctly.
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CHART 15

CONTROL PANEL LIGHTING FAILURE

NOTES**Special notes:**

The control panel only lights up when the side lights are operated.
There is a shunt in place of the dimmer on models with manual heating and ventilation systems.

Check the condition of the fuses.
Repair if necessary.

Check the **connection and condition** of the computer output connectors.
Disconnect the connector from the computer and check the **insulation, continuity and absence of interference resistance** on the connections:
computer connector A **track 15** —→ **track 3** of the lighting shunt
earth —→ **track 1** of the lighting shunt

Is the problem still present?

no

End of fault finding.

yes

When the ignition is on, check that there is **a feed** on track 13 connector A of the climate control computer.
Repair if necessary.

Disconnect the connector from the computer and check the insulation, **continuity and absence of interference resistance** on the connection:
computer connector A **track 13** —→ **+ side lights**
(refer to diagrams for the vehicle and year of make in question).
Repair if necessary.

Is the problem still present?

no

End of fault finding.

yes

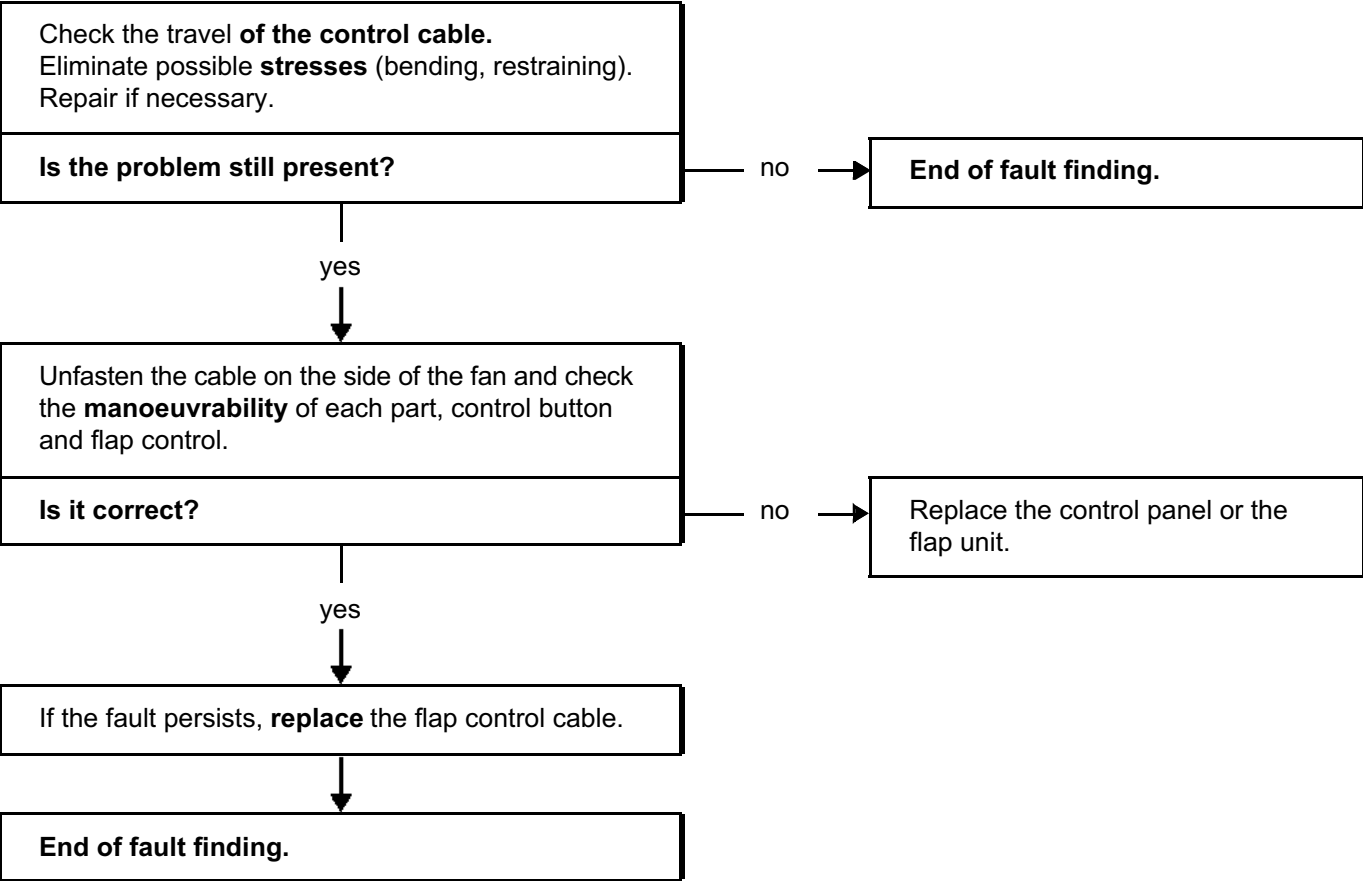
Replace the computer (control panel).

AFTER REPAIR

Check that the system is operating correctly.

CHART 16	CONTROLS STIFF
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NOTES	This customer complaint applies to both manual controls, the air distribution control and the mixing control.
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This document contains the special fault finding procedures applicable to all automatic climate control computers fitted on the CLIO II.

To undertake fault finding on this system, it is essential to have the following items available:

- This section of the Workshop Repair Manual,
- The wiring diagram of the function on the vehicle concerned,
- The CLIP or NXR diagnostic tool,
- A control bornier.

GENERAL APPROACH TO FAULT FINDING

- Use one of the diagnostic tools to identify the heating and ventilation system equipping the vehicle (to read the computer family, the program number, the Vdiag, etc.).
- Locate the Fault finding documents corresponding to the system identified.
- Take note of information contained in the introductory sections.

DESCRIPTION OF THE FAULT FINDING PHASES

1 - CHECKING THE FAULTS

It is essential to start with this phase before any work is done on the vehicle.

- Read the faults stored in the computer memory and use the Fault interpretation section of the documents.
Reminder: Each fault is interpreted for a particular type of storage (fault present, fault stored in memory, fault present or stored). The checks defined for handling each fault are therefore only to be performed if the fault shown by the diagnostic tool is interpreted in the document for its type of storage. The storage type should be considered when using the diagnostic tool after the ignition has been switched off and switched back on.
If a fault is interpreted when it is declared stored, the conditions for application of the fault finding procedure appear in the NOTES box. When these conditions are not satisfied, use the fault finding procedure to check the circuit of the faulty part since the fault is no longer present on the vehicle. Follow the same procedure when a fault is declared stored by the diagnostic tool but is only interpreted in the documentation for a present fault.

2 - CONFORMITY CHECK

The conformity check is designed to check the statuses and parameters which do not display any faults on the diagnostic tool when they are outside the permitted tolerance values. This phase:

- Diagnoses faults that are not displayed which may correspond to a customer complaint.
- Checks the reliability of the heating and ventilation system and ensures that a fault will not reappear after repair.

This chapter gives the diagnostic procedures for statuses and parameters and the conditions for checking them. If a status is not operating normally or a parameter is outside permitted tolerance values, you should consult the corresponding diagnostic page.

3 - RECTIFYING THE CUSTOMER COMPLAINT

If the diagnostic tool check is correct, but the customer complaint is still present, the problem should be dealt with according to the customer complaint.

This chapter includes fault finding charts, which give possible causes of the problem. These lines of research should only be followed under the following circumstances:

- No fault observed on diagnostic tool.
- No anomaly detected during conformity check.
- The heating and ventilation system is not working correctly.

4 - SPECIAL FEATURES:

The heating and ventilation system cold loop is controlled by the injection computer (compressor control, control of the refrigerant pressure sensor and the engine cooling fan).
The climate control computer controls the compressor by means of a wire connection between the two computers.



If a fault is detected during the heating and ventilation diagnostic procedure but the compressor is not engaged, a diagnostic procedure should be performed on the injection (refer to customer complaints).

- **NO SPECIAL PROGRAMMING IS REQUIRED** (mixing and distribution motors programme their stops automatically on ignition, after they are replaced or the battery has been disconnected).
NOTE: when the distribution and mixing motors are at the minimum or maximum limit, they undergo dynamic adjustment (programming travel). This programming operation causes **a slight noise** that may lead customers to complain.
If the customer complains about the noise, explain that it is normal and necessary for automatic air conditioning control **in order to maintain optimum levels of performance**.

- **THE CLIMATE CONTROL COMPUTER HAS NO CONFIGURATION SERVICE.**

5 - COMPUTER CONNECTOR DESIGNATIONS:

The automatic climate control computer has two connectors:

- a grey 30-track connector  connector A
- a red 15-track connector  connector B

DF001 PRESENT OR STORED	<u>COMPUTER</u>
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NOTES	None.
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<p>The computer fault indicates an internal memory fault. Try to erase the fault and run the heating and ventilation system.</p>
<p>If the fault reappears, check the connection and condition of the heating and ventilation system control panel connectors. Repair if necessary.</p>
<p>Connect the bornier in place of the computer and check the insulation, continuity and absence of interference resistance of the connections:</p> <div><div>computer connector B track 15</div><div>computer connector A track 7</div><div>computer connector A track 3</div><div>computer connector A track 29</div></div> <div><div>—————></div><div>—————></div><div>—————></div><div>—————></div></div> <div><div>+ before ignition</div><div>earth</div><div>+ accessories</div><div>+ after ignition</div></div> <p>Repair if necessary (see the vehicle diagrams).</p>
<p>If the fault persists, replace the climate control computer (control panel).</p>

AFTER REPAIR	Clear the fault memory. Deal with any other possible faults.
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DF007 PRESENT OR STORED	<u>INTERIOR TEMPERATURE SENSOR CIRCUIT</u> CO : Open circuit CC : Short circuit
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NOTES	Special features: The interior temperature sensor (linked to a small ventilation fan) is located above the roof in the interior lighting unit.
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Check the connection and status of the interior temperature sensor connector. Replace the connector if necessary.
With the ignition on, check that the temperature sensor blower is in correct working order . If not, check for the presence of +12 volts on track 1 of the temperature sensor connector and an earth on track 3 . If the blower supply is correct and the blower is not working, replace the component: sensors/blower (the blower is not available separately).
Connect the bornier in place of the computer and check the insulation, continuity and absence of interference resistance of the connections: <div>computer connector A track 4  track 4 of the temperature sensor</div> <div>computer connector A track 21  track 6 of the temperature sensor</div> Repair if necessary.
Check the resistance value of the sensor: Track 4 and track 5 of the interior temperature sensor connector, replace the sensor if the resistance is not approximately: 10 kΩ ± 500 Ω at 25°C (for greater precision, refer to the HELP section on sensor electrical specifications according to temperature).
If the fault persists, replace the interior temperature sensor.

AFTER REPAIR	Clear the fault memory. Deal with any other possible faults.
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DF010 PRESENT OR STORED	<u>MIXING MOTOR CIRCUIT</u>
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NOTES	Conditions for applying the fault finding procedure to stored faults: The fault is declared present when the air conditioning control panel is lit and the temperature control activated (minimum or maximum temperature request).
	Special features: There is no specific programming operation for the mixing motor, however, after it has been replaced, the motor needs to programme its limits (minimum and maximum). This operation only occurs when the battery has been turned off. Therefore the battery must be disconnected then reconnected before restarting the ignition and starting up the air conditioning.





Check the connection and status of the mixing motor connector. Replace the connector if necessary.
Connect the bornier in place of the computer and check the insulation, continuity and absence of interference resistance of the connections: computer connector B track 5 —————> track 4 of the mixing motor computer connector B track 6 —————> track 1 of the mixing motor computer connector B track 7 —————> track 6 of the mixing motor computer connector B track 8 —————> track 3 of the mixing motor Repair if necessary.
With the ignition on, check for the presence of 12 volts supply on track 2 of the mixing motor connector. Repair if necessary.

AFTER REPAIR	Follow the instructions to confirm repair. Clear the fault memory. Deal with any other possible faults.
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<div>DF010</div> <div>CONTINUED</div>	
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<p>With the connector disconnected, check the resistance value of the mixing motor by measuring between:</p> <p>track 2 and track 1 of the mixing motor connector,</p> <p>track 2 and track 3 of the mixing motor connector,</p> <p>track 2 and track 4 of the mixing motor connector,</p> <p>track 2 and track 6 of the mixing motor connector,</p> <p>The results on the four controls should be 84 Ω ± 4 Ω at 20°C, if this is not the case, replace the mixing motor.</p>
<p>Take the mixing motor apart,connect its connector and, using the diagnostic tool, activate the controls: AC004 then AC005. The motor should switch from one direction to the other.</p> <p>If the connections matched when tested but the motor does not switch during the commands: replace the mixing motor.</p>
<p>If the commands have been performed correctly, check that the mixing motor flap is not blocked by trying to move the gears.</p> <p>Repair if necessary.</p>
<p>If the fault persists, replace the mixing motor.</p>

<div>AFTER REPAIR</div>	<p>Follow the instructions to confirm repair.</p> <p>Clear the fault memory.</p> <p>Deal with any other possible faults.</p>
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DF012 PRESENT OR STORED	<u>DISTRIBUTION MOTOR CIRCUIT</u>
NOTES	Conditions for carrying out a fault finding test on the fault stored: The fault is declared present after: the air conditioning control panel is lit and the air distribution control is operated (air vent, footwell, de-icing).
	Special features: There is no specific programming operation for the distribution motor, however, after it has been replaced the motor needs to programme its limits (minimum and maximum). This operation only occurs when the battery has been turned off. Therefore the battery must be disconnected then reconnected before restarting the ignition and starting up the air conditioning.
<div>Check the connection and status of the distribution motor connector. Replace the connector if necessary.</div> <div>Connect the bornier in place of the computer and check the insulation, continuity and absence of interference resistance of the connections: <div>computer connector B track 1  track 4 of the distribution motor computer connector B track 2  track 3 of the distribution motor computer connector B track 3  track 6 of the distribution motor computer connector B track 4  track 1 of the distribution motor</div> Repair if necessary.</div> <div>With the ignition on, check for the presence of 12 volts supply on track 2 of the distribution motor connector. Repair if necessary.</div>	
AFTER REPAIR	Follow the instructions to confirm repair. Clear the fault memory. Deal with any other possible faults.

DF012 CONTINUED	
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<p>With the connector disconnected, check the resistance value of the distribution motor by measuring between:</p> <p>track 2 and track 1 of the distribution motor connector,</p> <p>track 2 and track 3 of the distribution motor connector,</p> <p>track 2 and track 4 of the distribution motor connector,</p> <p>track 2 and track 6 of the distribution motor connector,</p> <p>The results on the four controls should be 84 Ω ± 4 Ω at 20°C, if this is not the case, replace the distribution motor.</p>
<p>Take the distribution motor apart, connect its connector and, using the diagnostic tool, activate the commands: AC006 then AC007. The motor should switch from one direction to the other.</p> <p>If the connections tested earlier match but the motor does not switch during the commands: replace the distribution motor.</p>
<p>If the commands have been performed correctly, check that the distribution motor flap is not blocked by trying to move the gears.</p> <p>Repair if necessary.</p>
<p>If the fault persists, replace the distribution motor.</p>

AFTER REPAIR	<p>Follow the instructions to confirm repair.</p> <p>Clear the fault memory.</p> <p>Deal with any other possible faults.</p>
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DF021 PRESENT OR STORED	<u>AIR RECIRCULATION MOTOR CIRCUIT</u>
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NOTES	Conditions for applying the fault finding procedure to stored faults: The fault is declared present when the air conditioning control panel is lit and the air recirculation control activated.
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Take apart the right hand scuttle panel grille and check the connection and condition of the black 15-track connector and the connection and condition of the 3-track recirculation motor connector (next to the black 15-track connector). Replace the connector(s) if necessary.		
Connect the bornier in place of the computer and check the insulation, continuity and absence of interference resistance of the connections:		
<u>ECU connector A</u>	<u>black 15-track yoke connector</u>	<u>3-track connector of the recirculation motor</u>
track 25	→ track 1	→ track C of the air recirculation motor
track 26	→ track 2	→ track B of the air recirculation motor
Repair if necessary.		
Check the resistance of the air recirculation motor across: track C and track B of the air recirculation motor connector and replace the motor if the resistance is not approximately: 40 Ω ± 10 Ω at 20°C.		
Take apart the right hand scuttle panel and using the diagnostic tool, activate the command: AC003 . It is possible to see the flap close by looking above the heating unit (it moves towards the front of the vehicle). During the command, check that the recirculation motor flap is closed without point of resistance or blockage . Repair if necessary.		
If the fault persists, replace the air recirculation motor.		

AFTER REPAIR	Follow the instructions to confirm repair. Clear the fault memory. Deal with any other possible faults.
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DF096 PRESENT OR STORED	<u>AIR BLOWER TEMPERATURE SENSOR CIRCUIT</u> CO : Open circuit CC : Short circuit
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NOTES	None.
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Check the connection and condition of the delivery air temperature sensor connector. Replace the connector if necessary.
Check that the air blower temperature sensor has not slipped from its housing (mounted by quarter turns). Replace the sensor in its housing if necessary.
Connect the bornier in place of the computer and check the insulation, continuity and absence of interference resistance of the connections: <div>computer connector B track 13  track 1 of the temperature sensor</div> <div>computer connector B track 10  track 2 of the temperature sensor</div> Repair if necessary.
Check the resistance value of the delivery air temperature sensor by measuring across: Track 1 and track 2 of the temperature sensor connector, replace the sensor if the resistance is not approximately: 10 kΩ ± 500 Ω at 25°C (for greater precision, refer to the HELP section on sensor electrical specifications according to temperature).
If the fault persists, replace the delivery air temperature sensor.

AFTER REPAIR	Clear the fault memory. Deal with any other possible faults.
--------------	---

NOTES

Only run a conformity check after a **complete check** with the diagnostic tool.

Test conditions: engine off, ignition on, **heating and ventilation off**.

NOTE: read the parameters when the vehicle is cold (in the morning) to check the conformity of the temperature parameters (without thermometer). The three temperatures should be about equal.

Order	Function	Parameter or status Check or action	Display and notes	Fault finding
1	Computer voltage supply	ET001: + 12V accessories ET002: + 12V lights PR014: computer supply voltage	ACTIVE INACTIVE (ACTIVE when the side lights are activated) 10 V < x < 12.5 V.	In the event of a problem occurring with the statuses and the parameter, check the insulation, continuity and absence of resistance interference of the computer earths and supplies (see electronic diagrams). If the problem persists, carry out a fault finding test on the charging circuit .
2	Interior temperature.	PR001: interior temperature	X = interior temperature $\pm 5^{\circ}\text{C}$ (substitution value: 128°)	In the event of a problem occurring carry out a fault finding test on fault: DF007 interior temperature sensor circuit.
3	External temperature.	PR002: external temperature	X = external temperature $\pm 5^{\circ}\text{C}$ (substitution value: 128°)	In the event of a problem, consult the fault finding procedure for parameter PR002
4	Delivery air temperature.	PR115: delivery air temperature.	X = delivery air temperature $\pm 5^{\circ}\text{C}$ (the temperature varies depending on whether the mixing motor is open) (substitution value: 128°)	In the event of a problem perform the fault finding procedure: DF096 delivery air temperature sensor circuit.

NOTES	Only check the conformity after a complete check with the diagnostic tool. Test conditions: engine off, ignition on, heating and ventilation system off .
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Order	Function	Parameter or status Check or action	Display and notes	Fault finding
5	Passenger compartment blower assembly	PR116: passenger compartment blower assembly speed	0% at minimum speed. 100% at maximum speed.	For greater precision, refer to fault finding parameter PR116.
6	Position of distribution and mixing flaps.	PR011: position of distribution flap	0% air vents at 100%: de-icing	For greater precision, refer to fault finding parameter PR011. In the event of a problem occurring carry out a fault finding test on fault: DF012 distribution motor circuit.
		PR012: Position of mixing flap	0% maximum cold to 100% maximum heat	In the event of a problem occurring carry out a fault finding test on fault: DF010 mixing motor circuit.
7	Air recirculation.	ET021: air recirculation motor command ET079: recirculation request	STATUS 1 recirculation motor: recirculation STATUS 2 recirculation motor: external air YES or NO according to the request	In the event of a problem occurring carry out a fault finding test on fault: DF021 air recirculation motor circuit.
8	Air conditioning request	ET078: air conditioning request	NO	None.

NOTES	<p>Only check the conformity after a complete check with the diagnostic tool. Running the actuator commands is a way of reporting faults when stored, or of checking the reliability of the actuators. Test conditions: engine off, ignition on, heating and ventilation off.</p>
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Order	Function	Parameter or status Check or action	Display and notes	Fault finding
Command window				
9	Recirculation	<p>AC002: Recirculation motor: external air</p> <p>AC003: Recirculation motor: recirculation</p>	<p>The recirculation flap should be in the external air position.</p> <p>The recirculation flap should be in the recirculation position.</p>	<p>In the event of a problem occurring carry out a fault finding test: DF021 air recirculation motor circuit.</p>
10	Mixing.	<p>AC004: Mixing motor: maximum cold</p> <p>AC005: Mixing motor: maximum heat</p>	<p>The recirculation flap should be in the maximum cold position.</p> <p>The recirculation flap should be in the hot position.</p>	<p>In the event of a problem occurring carry out a fault finding test: DF010 mixing motor circuit.</p>
11	Air distribution.	<p>AC006: Distribution motor: air vents</p> <p>AC007: Distribution motor: de-icing</p>	<p>The distribution flap should be in air vent mode.</p> <p>The distribution flap should be in de-icing mode.</p>	<p>In the event of a problem occurring carry out a fault finding test: DF012 distribution motor circuit.</p>

NOTES	Only check the conformity after a complete check with the diagnostic tool. Running the actuator commands is a way of reporting faults when stored, or of checking the reliability of the actuators . Test conditions: engine off, ignition on, heating and ventilation off.
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Order	Function	Parameter or status Check or action	Display and notes	Fault finding
Command window				
12	Compressor control.	AC021: Compressor clutch	The compressor clutch should cut in. Special features: since the compressor clutch command is controlled by the injection computer, it is necessary to start the engine before starting the command (injection can only be authorised when the engine is running).	If there is a problem, refer to the chart No. 8 , or perform an injection fault finding procedure.
13	Indicators.	AC026: Control panel indicators	The control panel indicators should light up.	If there is a problem, refer to the chart No. 12 .
14	Passenger compartment ventilation.	AC001: Passenger compartment blower assembly	It should be possible to hear the passenger compartment blower running.	If there is a problem, refer to the chart No. 5 .

NOTES	Only check the conformity after a complete check with the diagnostic tool. Test conditions: engine at idle speed, heating and ventilation on.
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Order	Function	Parameter or status Check or action	Display and notes	Fault finding
1	Computer voltage supply	ET001: + 12V accessories ET002: + 12V lights PR014: computer supply voltage	ACTIVE ACTIVE 12.5 V < x < 14.4 V.	In the event of a problem occurring with the statuses and the parameter, check the insulation, continuity and resistance interference of the computer earths and supplies (see electronic diagrams). If the problem persists, carry out a fault finding test on the charging circuit.
2	Heating and ventilation system request	ET078: heating and ventilation system request	YES	None.
3	Passenger compartment blower assembly	PR116: passenger compartment blower assembly speed	0% at minimum speed. 100% at maximum speed.	For greater precision, refer to fault finding parameter PR116 .
4	Position of distribution and mixing flaps.	PR011: position of distribution flap	0%: air vents to 100%: de-icing	In the event of a problem occurring carry out a fault finding test on fault: DF012 distribution motor circuit.
		PR012: position of mixing flap	0% maximum cold to 100 % maximum heat	In the event of a problem occurring carry out a fault finding test: DF010 mixing motor circuit.

NOTES	<p>Only check the conformity after a complete check with the diagnostic tool.</p> <p>Test conditions: engine at idle speed, heating and ventilation on.</p> <p>NOTE: it is difficult to test the validity of temperature information when the heating and ventilation is operating (particularly the delivery air temperature which varies more rapidly than the other two). It is preferable to check the validity of temperature information when the heating and ventilation is off (refer to the NOTE on checking conformity, when the heating and ventilation is off).</p>
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Order	Function	Parameter or status Check or action	Display and notes	Fault finding
5	Air recirculation.	<p>ET021: air recirculation motor command</p> <p>ET079: recirculation request</p>	<p>STATUS 1 recirculation motor: recirculation</p> <p>STATUS 2 recirculation motor: external air</p> <p>YES or NO depending on the request</p>	In the event of a problem occurring carry out a fault finding test on fault: DF021 air recirculation motor circuit.
6	Temperatures.	<p>PR001: interior temperature</p>	<p>X = external temperature $\pm 5^{\circ}\text{C}$ (substitution value: 128°C)</p>	In the event of a problem, perform the fault finding procedure: DF007 interior temperature sensor circuit.
		<p>PR002: external temperature</p>	<p>X = external temperature $\pm 5^{\circ}\text{C}$ (substitution value: 128°C)</p>	In the event of a problem, consult the fault finding procedure for status PR002
		<p>PR115: delivery air temperature.</p>	<p>X = delivery air temperature $\pm 5^{\circ}\text{C}$ (the temperature varies depending on whether the mixing motor is open) (substitution value: 128°C)</p>	In the event of a problem, perform the fault finding procedure: DF096 delivery air temperature sensor unit.

PR002	<u>EXTERNAL TEMPERATURE</u>
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NOTES	Special note: The external temperature sensor is located in the right-hand side rear-view mirror.
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Vehicles fitted with a central communication unit:

Look at the temperature shown on the multifunction display. Is it consistent?
--

<p><u>If the temperature shown on the multifunction display is consistent:</u> connect the bornier in place of the climate control computer and check the insulation, continuity and resistance interference of the connection:</p> <p><u>climate control computer</u> <u>central communication unit</u> connector A track 28  track 21 of connector C</p> <p>Repair if necessary.</p>	
<p>If the connection matched when tested but the fault persists, measure the voltage of the temperature signal between track 28 (connector A) of the climate control computer and the earth:</p> <ul style="list-style-type: none">– Between 5 and 7 volts should be measured with the voltmeter set to AC voltage measuring.– A square wave signal should appear on the oscilloscope (top status at 12 volts). <p>If the central communication unit emits no voltage and the display shows a consistent temperature: replace the central communication unit.</p> <p>If the central communication unit emits voltage and the display shows a consistent temperature: replace the climate control computer.</p>	

<p><u>If the temperature shown on the multifunction display is not consistent:</u> ensure that the display is not faulty by running its fault finding procedure (refer to the multifunction display technical note).</p>

AFTER REPAIR	Restart the conformity check from the beginning.
--------------	--

<div>PR002</div> <div>CONTINUED 1</div>	
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Using the diagnostic tool, test the multiplex network to check the conformity of the connection between the central communication unit and the display. If the connection is faulty, connect the bornier in place of the central communication unit computer and check the **insulation, continuity and resistance interference** of the connections:

<u>multipfunction display</u>		<u>central communication unit</u>
connector B track 15	————→	track 4 of connector C
connector B track 14	————→	track 3 of connector C
connector B track 12	————→	track 7 of connector C

Repair if necessary.

If the connections are correct, **perform a fault finding procedure on the central communication unit** to check that the external temperature sensor is in correct working order (refer to the central communication unit fault finding note).

Replace the external temperature sensor if necessary.

If the external temperature sensor is not faulty, connect the bornier in place of the central communication unit computer and check the **insulation, continuity and resistance interference** of the connections:

central communication unit C track 16	————→	track 4 of the external temperature sensor.
central communication unit C track 17	————→	track 3 of the external temperature sensor.

Repair if necessary.

If the above tests have not solved the problem, connect the bornier in place of the climate control computer and check the insulation, continuity and resistance interference of the connections:

<u>climate control computer</u>		<u>central communication unit</u>
connector A track 28	————→	track 21 of connector C

Repair if necessary.

<div>AFTER REPAIR</div>	<div>Restart the conformity check from the beginning.</div>
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<div>PR002</div> <div>CONTINUED 2</div>	
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<p>If the connections matched when tested but the fault persists, measure the voltage of the temperature signal between track 28 (connector A) of the climate control computer and the earth:</p> <ul style="list-style-type: none">– Between 5 and 7 volts should be measured with the voltmeter set to AC voltage measuring.– A square wave signal should appear on the oscilloscope (top status at 12 volts). <p>If the central communication unit emits no voltage but the display shows a consistent temperature: replace the central communication unit.</p> <p>If the central communication unit emits voltage and the display shows a consistent temperature: replace the climate control computer.</p>
--

Vehicles not fitted with a central communication unit:

Look at the temperature shown on the multifunction display. Is it consistent?
--

<p><u>If the temperature shown on the multifunction display is consistent</u> connect the bornier in place of the multifunction display and check the insulation, continuity and resistance interference of the connections:</p> <div><div>Multifunction display connector B track 2</div><div>—————></div><div>track 3 of the external temperature sensor.</div></div> <div><div>Multifunction display connector B track 1</div><div>—————></div><div>track 4 of the external temperature sensor.</div></div> <p>Repair if necessary.</p>
<p>If the connections are correct, perform a multifunction display fault finding procedure to ensure that it is not faulty and that the external temperature sensor is in correct working order (refer to the multifunction display fault finding note).</p>
<p>If the connections matched when tested and the external temperature sensor is not faulty but the fault persists, connect the bornier in place of the climate control computer and check the insulation, continuity and resistance interference of the connection:</p> <div><div><u>climate control computer</u></div><div>connector A track 28</div><div>—————></div><div><u>multifunction display</u></div><div>track 10 of connector B</div></div> <p>Repair if necessary.</p>

AFTER REPAIR	Restart the conformity check from the beginning.
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<div>PR002</div> <div>CONTINUED 3</div>	
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If the connections matched when tested but the fault persists, **measure the voltage of the temperature signal** between track 28 (connector A) of the climate control computer and the earth:

- Between **5 and 7 volts** should be measured with the **voltmeter** set to AC voltage measuring.
- A square wave signal should appear on the **oscilloscope** (top status at 12 volts).

If the multifunction display **emits no voltage** but it shows a consistent temperature: replace the multifunction display.

If the multifunction display **emits voltage** and it shows a consistent temperature: replace the climate control computer.

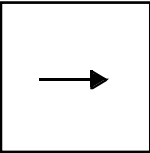
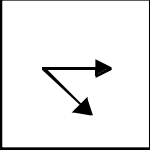
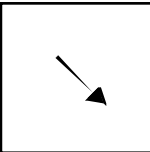
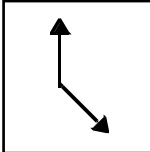
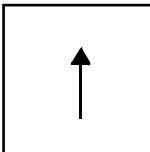
<p>If the temperature shown on the multifunction display is consistent: connect the bornier in place of the climate control computer and check the I insulation, continuity and resistance interference of the connection:</p> <div><div><u>climate control computer</u> connector A track 28</div><div>→</div><div><u>multifunction display</u> track 10 of connector B</div></div> <p>Repair if necessary.</p>	
<p>If the connection matched when tested, measure the voltage of the temperature signal between track 28 (connector A) of the climate control computer and the earth:</p> <ul style="list-style-type: none">– Between 5 and 7 volts should be measured with the voltmeter set to AC voltage measuring.– A square wave signal should appear on the oscilloscope (high status at 12 volts). <p>If the multifunction display emits no voltage but it shows a consistent temperature: replace the multifunction display.</p> <p>If the multifunction display emits voltage and it shows a consistent temperature: replace the climate control computer.</p>	

<div>AFTER REPAIR</div>	<div>Restart the conformity check from the beginning.</div>
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PR011	<u>POSITION OF DISTRIBUTION FLAP</u>
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NOTES	The values listed are an example only, (they vary depending on the position of the flap control).
-------	---

Controlled values for engine halted and engine running with heating and ventilation in manual mode (tolerance $\pm 5\%$).

Air distribution request		Position of distribution flap
Air vents		0%
Air vent + footwells		14%
Footwell ventilation		50 %
Footwells + demisting		82%
Demisting		100 %

AFTER REPAIR	Restart the conformity check from the beginning.
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PR116	<u>PASSENGER COMPARTMENT BLOWER ASSEMBLY SPEED</u>
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NOTES	The values listed below are examples only.
-------	--

Controlled values for engine halted and engine running (tolerance \pm 5%).

Passenger compartment blower assembly speed specification	SPEED 0	SPEED 1	SPEED 2	SPEED 3	SPEED 4	SPEED 5	SPEED 6	SPEED 7	SPEED 8
Passenger compartment blower assembly speed display.	0%	20 %	30%	40 %	50 %	62%	74%	85%	92%

AFTER REPAIR	Restart the conformity check from the beginning.
--------------	--

**MEASURING THE CONTROL VOLTAGE OF THE
PASSENGER COMPARTMENT BLOWER ASSEMBLY POWER MODULE**

There are two ways to measure the control voltage of the passenger compartment blower assembly power module:

1 / Measuring on a multimeter (in Voltmeter position):

With the power module connector connected, measure across **track 2** of the module and the earth.

At speed 0 the voltage measured should be equal to the battery voltage.

At maximum speed (8) the voltage should be negligible (± 0.5 volts).

For the 7 speeds in between the voltage varies between 0 and 12 volts.

**Examples of measurements taken
with the Voltmeter with the engine at
idling speed (for information only):**

speed 0	13.94 volts
speed 1	11.36 volts
speed 2	10.17 volts
speed 3	8.93 Volts
speed 4	7.69 Volts

speed 5	6.34 volts
speed 6	5.13 volts
speed 7	3.80 volts
speed 8	0.14 volts

2 / Measuring using an oscilloscope (Optima 5800, Clip technique or NXR):

The blower assembly power module is controlled by a modulated control voltage (PWM).

This control voltage is always 12 volts, the control signal (square wave signal) varies: the range and frequency do not move, the **high status (12 Volts)** varies in relation to the **low status (0 Volts)**.

To measure, connect the oscilloscope earth lead to the battery earth and the oscilloscope measuring lead to **track 2** of the power module (connected module connector). Adjust the time base on the oscilloscope to **500 μ /s** divisions with a gauge of **5-Volt** divisions.

The signals obtained should be: a straight line at 14 Volts for speed 0, a straight line at 0 Volts for speed 8.

Example of measurements for the seven speeds in between (for information only):

Blower assembly speed	duration of high status	duration of low status
speed 1	450 μ /s	50 μ /s
speed 2	400 μ /s	100 μ /s
speed 3	350 μ /s	150 μ /s
speed 4	300 μ /s	200 μ /s

Blower assembly speed	duration of high status	duration of low status
speed 5	250 μ /s	250 μ /s
speed 6	200 μ /s	300 μ /s
speed 7	150 μ /s	350 μ /s

Electrical specifications of the temperature sensors according to temperature (tolerance: $\pm 5\%$).

Inside temperature sensor

Temperatures	Sensor resistance
- 30°C	175200 Ω
- 25°C	129300 Ω
- 20°C	96360 Ω
- 15°C	72500 Ω
- 10°C	55050 Ω
- 5°C	42160 Ω
0°C	32560 Ω
5°C	25340 Ω
10°C	19870 Ω
15°C	15700 Ω
20°C	12490 Ω
25°C	10000 Ω
30°C	8059 Ω
35°C	6535 Ω
40°C	5330 Ω
45°C	4372 Ω
50°C	3606 Ω
55°C	2989 Ω
60°C	2490 Ω

Delivery air temperature sensor

Temperatures	Sensor resistance
- 20°C	96358 Ω
- 15°C	72500 Ω
- 10°C	55046 Ω
- 5°C	42157 Ω
0°C	32554 Ω
5°C	25339 Ω
10°C	19872 Ω
15°C	15698 Ω
20°C	12487 Ω
25°C	10000 Ω
30°C	8059 Ω
35°C	6534 Ω
40°C	5329 Ω
45°C	4371 Ω
50°C	3605 Ω
55°C	2988 Ω
60°C	2490 Ω

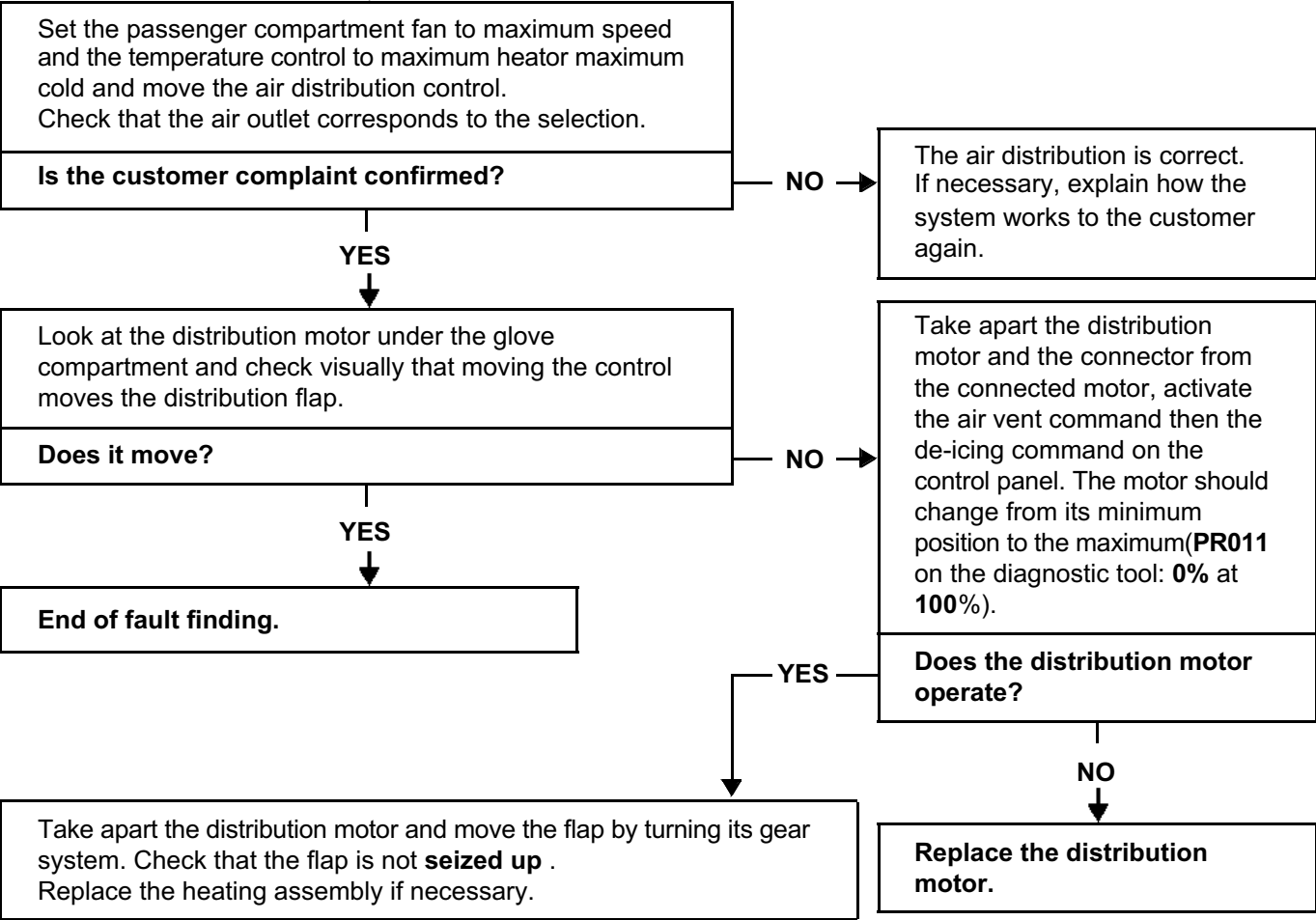
NOTES	Only refer to this customer complaint after a complete check using the diagnostic tool
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FAULTY AIR DISTRIBUTION	
FAULTY AIR DISTRIBUTION	CHART 1
AIR FLOW PROBLEM	CHART 2
INEFFICIENT WINDSCREEN DEMISTING	CHART 3
POOR VENTILATION PERFORMANCE	CHART 4
NO PASSENGER COMPARTMENT VENTILATION	CHART 5
FAULTY HEATING	
NO HEATING OR INADEQUATE HEATING	CHART 6
TOO HOT	CHART 7
NO COLD AIR	CHART 8
AIR TOO COLD	CHART 9
ODOUR PROBLEM IN PASSENGER COMPARTMENT	
UNPLEASANT ODOURS IN PASSENGER COMPARTMENT	CHART 10
WATER IN PASSENGER COMPARTMENT	
WATER IS PRESENT IN PASSENGER COMPARTMENT	CHART 11
FAULTY CONTROL PANEL	
CONTROL PANEL LIGHTING FAILURE	CHART 12
COMPRESSOR NOISES	
NOISY COMPRESSOR	CHART 13

CHART 1	FAULTY AIR DISTRIBUTION
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NOTES	Only refer to this customer complaint after a complete check using the diagnostic tool
	Special notes: Switching on the air distribution or ventilation functions automatically switches off the heating and ventilation automatic mode.

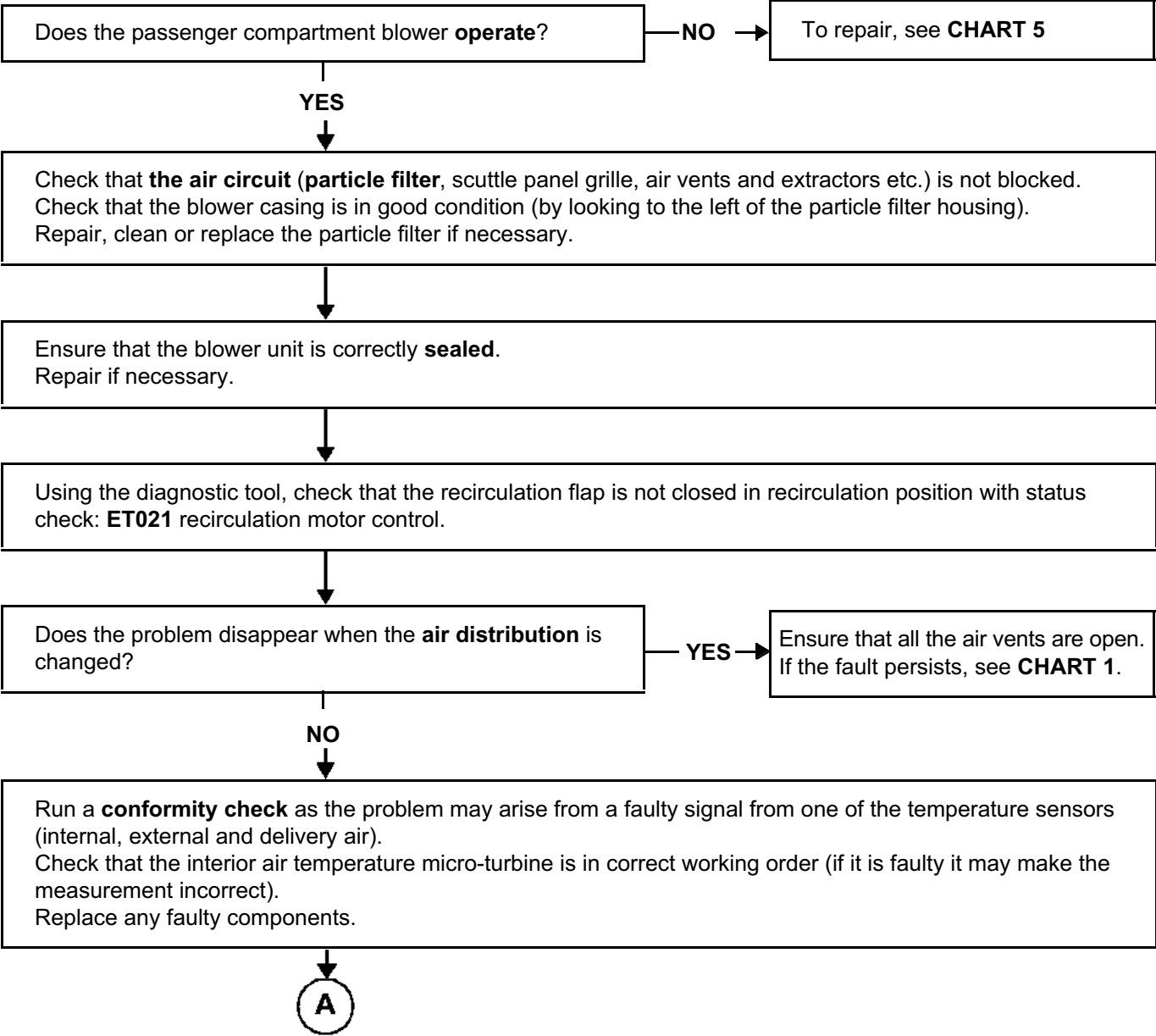
Check that the air circuit (particle filter , scuttle panel grille, air vents etc.) is not blocked. Repair, clean or replace the particle filter if necessary.
Ensure that the blower unit is properly airtight . Repair if necessary.



AFTER REPAIR	Check that the system is operating correctly.
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CHART 2	AIR FLOW PROBLEM
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NOTES	Only refer to this customer complaint after a complete check using the diagnostic tool Check that the customer knows how to work the heating and ventilation properly.
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AFTER REPAIR	Check that the system is operating correctly.
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CHART 2
CONTINUED

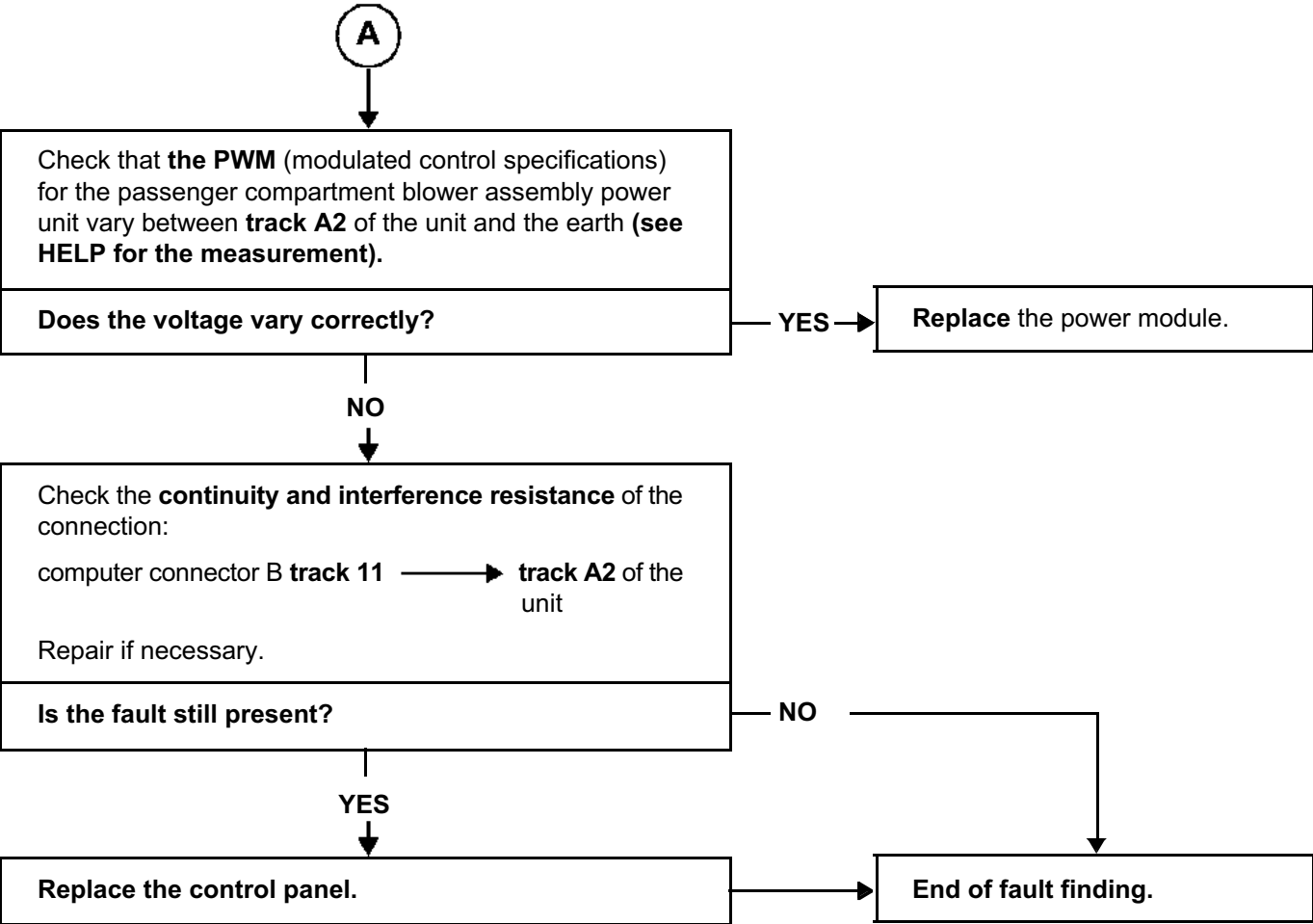


CHART 3	INEFFICIENT WINDSCREEN DEMISTING
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NOTES	Only refer to this customer complaint after a complete check using the diagnostic tool
	Special notes: Check that the inside of the windows are not dirty, as this lowers the efficiency of the demister.

Check that the distribution motor is in de-icing position by viewing the **PR011** parameter using the diagnostic tool in distribution flap position, it should be at **100%**.

Check that the air extractors are not blocked.
Repair if necessary.

Is the fault still present?

NO → End of fault finding.

YES
↓

Using the diagnostic tool, check that the air recirculation flap is in the **external air** position by checking status **ET021** air recirculation motor command.
Repair if necessary.

Is the fault still present?

YES
↓

Run a **conformity check** as the problem may arise from a faulty signal from the temperature sensors (internal, external and delivery air). Check that the interior air temperature micro-turbine is in correct working order (if it is faulty it may make the measurement incorrect).
Replace any faulty components.

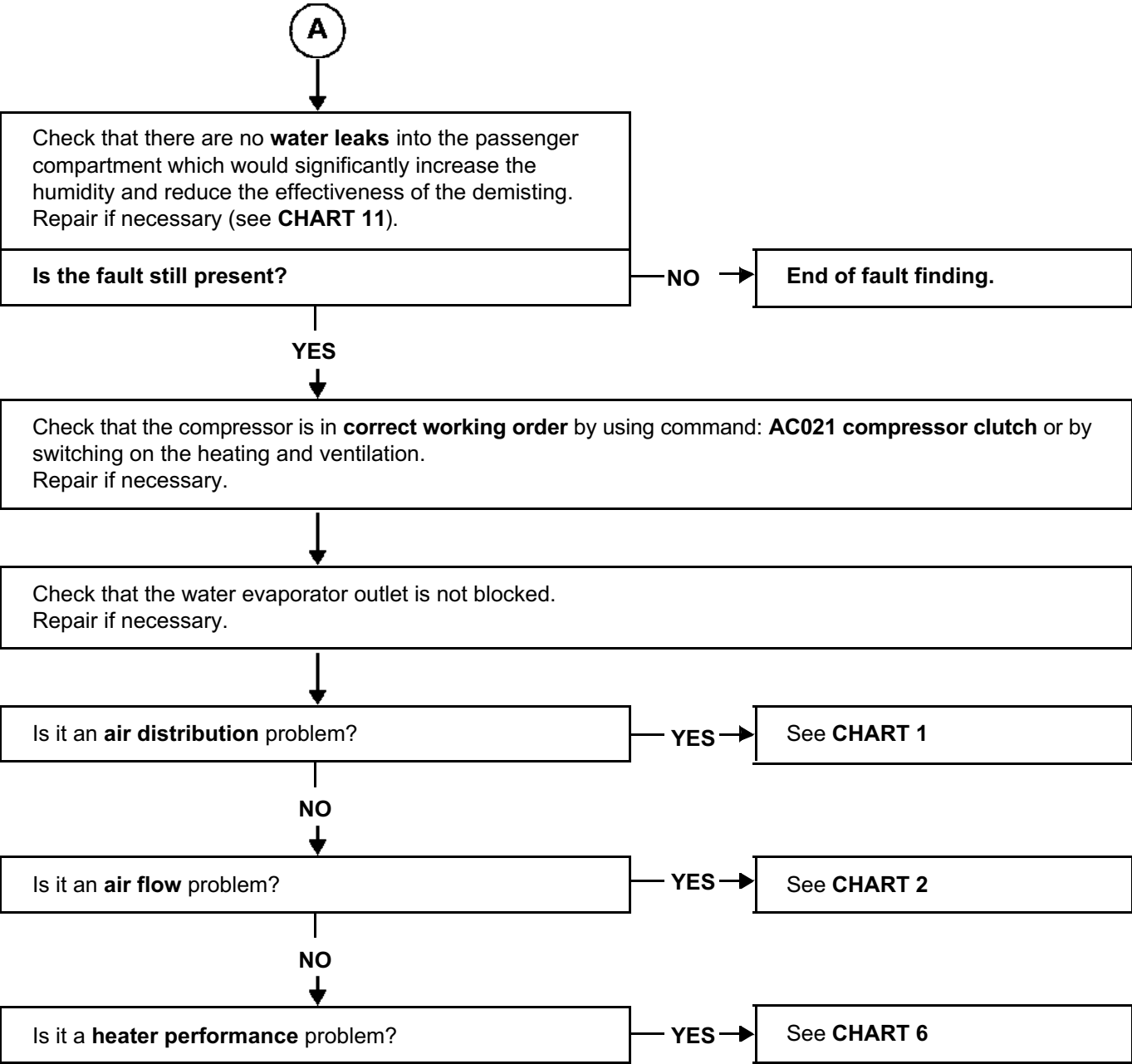
Is the fault still present?

NO → End of fault finding.

YES
↓
A

AFTER REPAIR	Check that the system is operating correctly.
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CHART 3
CONTINUED

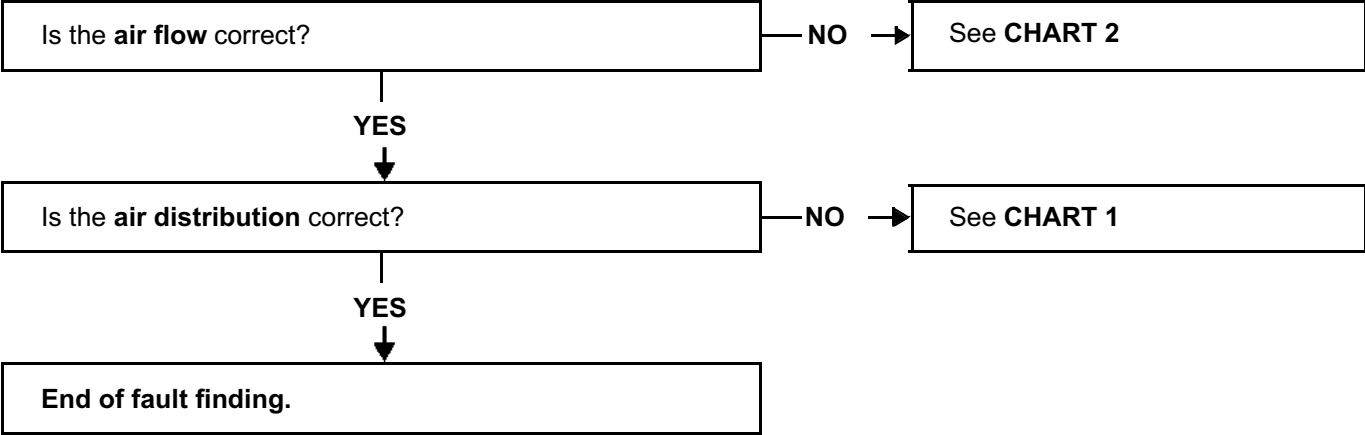


AFTER REPAIR

Check that the system is operating correctly.

CHART 4	POOR VENTILATION PERFORMANCE
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NOTES	Only refer to this customer complaint after a complete check using the diagnostic tool
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AFTER REPAIR	Check that the system is operating correctly.
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NO PASSENGER COMPARTMENT VENTILATION

Only refer to this customer complaint after a complete check using the diagnostic tool

Repair if necessary.

Is there a supply?

- YES

NO

Repair if necessary.

Check that the system is operating correctly.

CHART 5
CONTINUED



Check for the presence of an **earth** on **track 5** of the passenger compartment blower power module.
Repair if necessary.

Check the **insulation, continuity and absence of interference resistance** of the connection:
power module **track 1** —————> **track 2** of the passenger compartment blower motor
Repair if necessary.

Take apart the particle filter (under the right hand scuttle panel grille) and check that the passenger compartment blower casing has not **broken or slipped** out of position
Replace the passenger compartment blower if necessary.

Disconnect the connector from the power module (under the right hand scuttle panel grille) and, with the ignition on, shunt **tracks 1 and 5**. The blower should run at maximum speed.
If the blower is not running: Replace the passenger compartment blower.

Check that **the PWM** (modulated control specifications) for the passenger compartment blower power vary by measuring between **unit control track A2** of the unit and the earth
(see HELP for the measurement).

Does the voltage vary correctly?

NO → Replace the climate control computer.



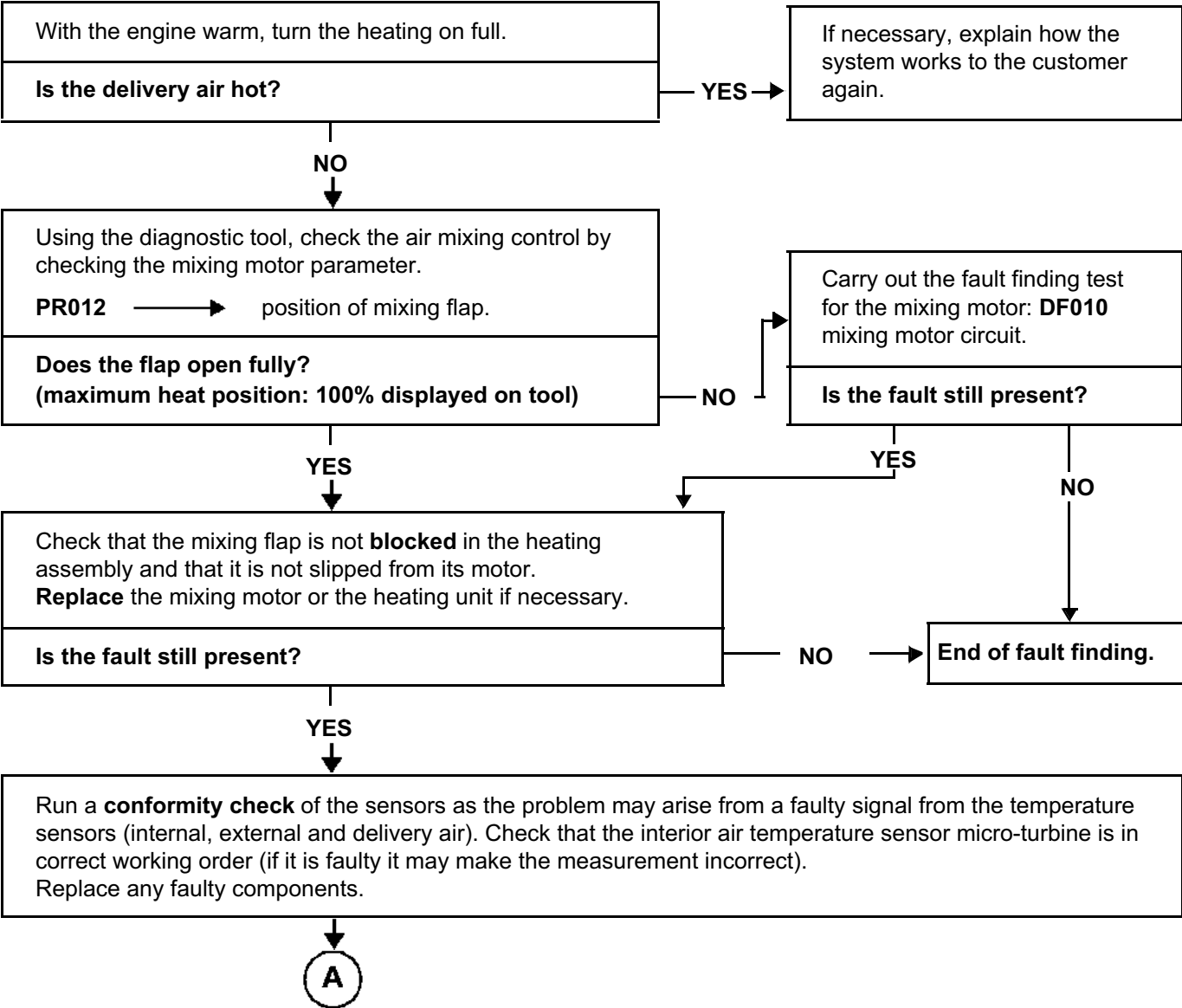
Replace the power module.

AFTER REPAIR

Check that the system is operating correctly.

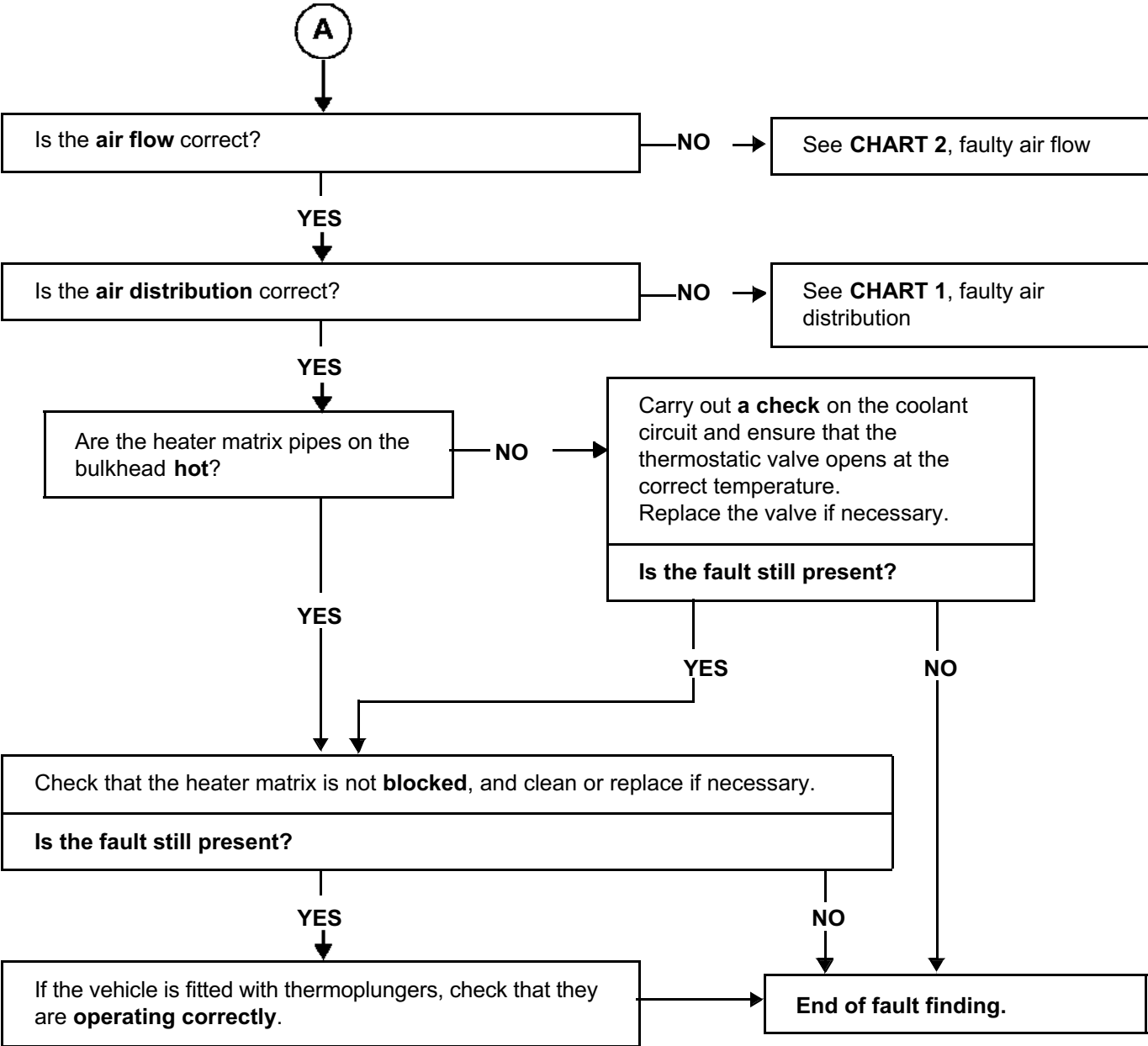
CHART 6	NO HEATING OR INADEQUATE HEATING
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NOTES	Only refer to this customer complaint after a complete check using the diagnostic tool
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AFTER REPAIR	Check that the system is operating correctly.
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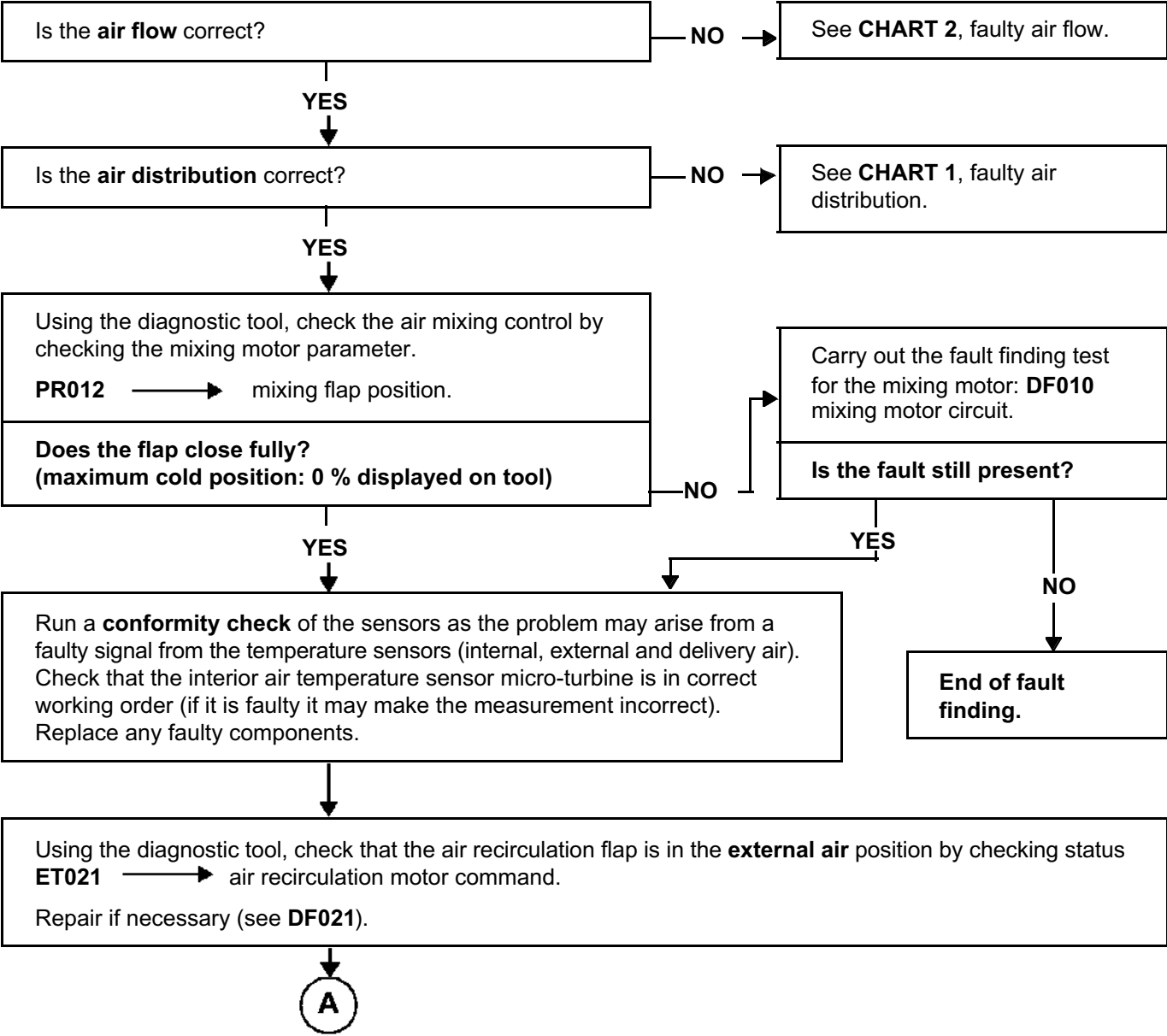
CHART 6 CONTINUED	
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AFTER REPAIR	Check that the system is operating correctly.
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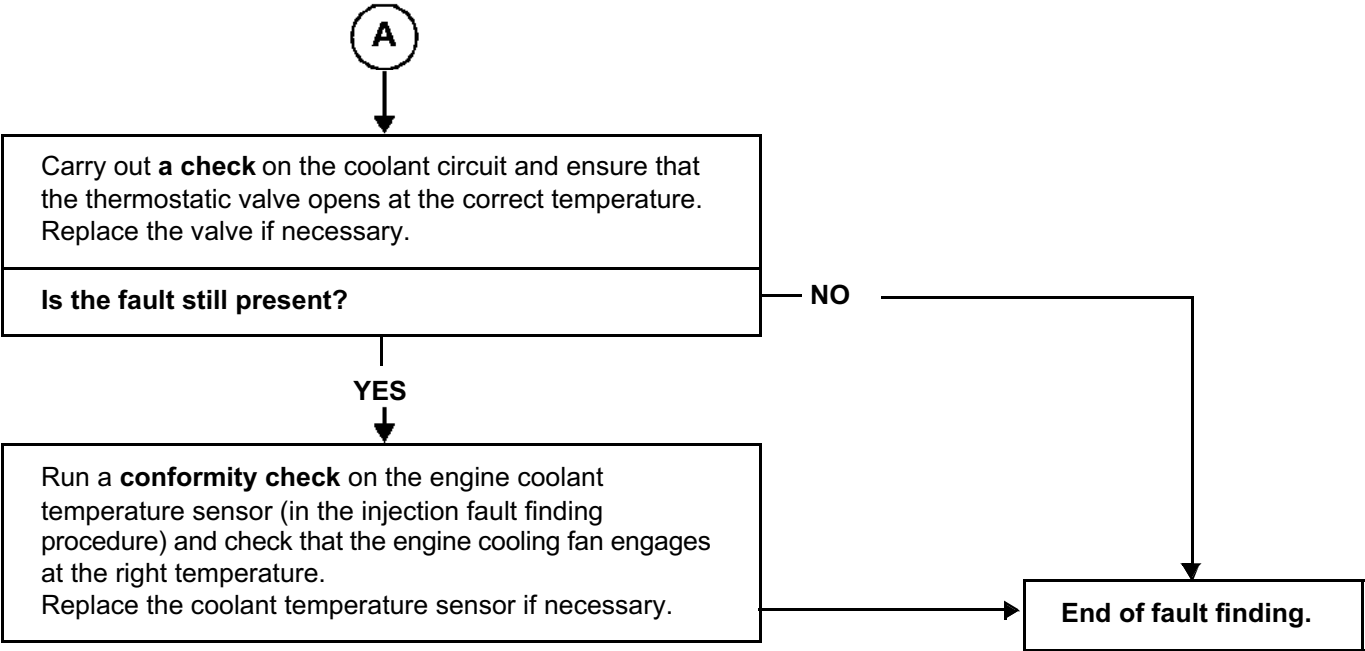
CHART 7	TOO HOT
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NOTES	Only refer to this customer complaint after a complete check using the diagnostic tool
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AFTER REPAIR	Check that the system is operating correctly.
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CHART 7
CONTINUED



AFTER REPAIR

Check that the system is operating correctly.

CHART 8	NO COLD AIR
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NOTES	Only refer to this customer complaint after a complete check using the diagnostic tool
	Special notes: The compressor control, coolant pressure sensor and engine cooling fan are controlled by the injection computer.

Check that **the air circuit** (**particle filter**, scuttle panel grille, air vents and extractors etc.) is not blocked.
Check that **the evaporator** is not blocked.
Repair, clean or replace the particle filter and the evaporator if necessary.

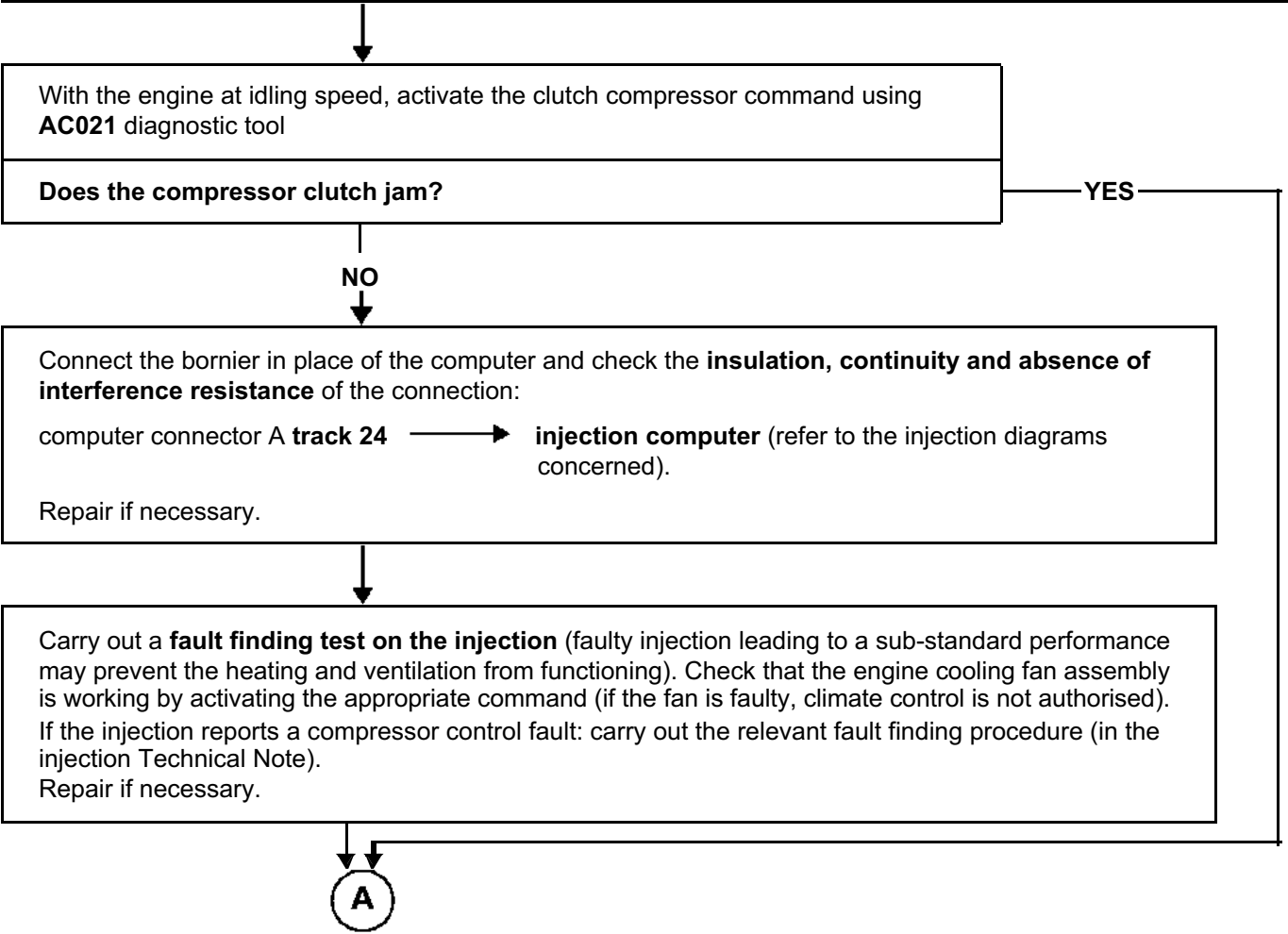
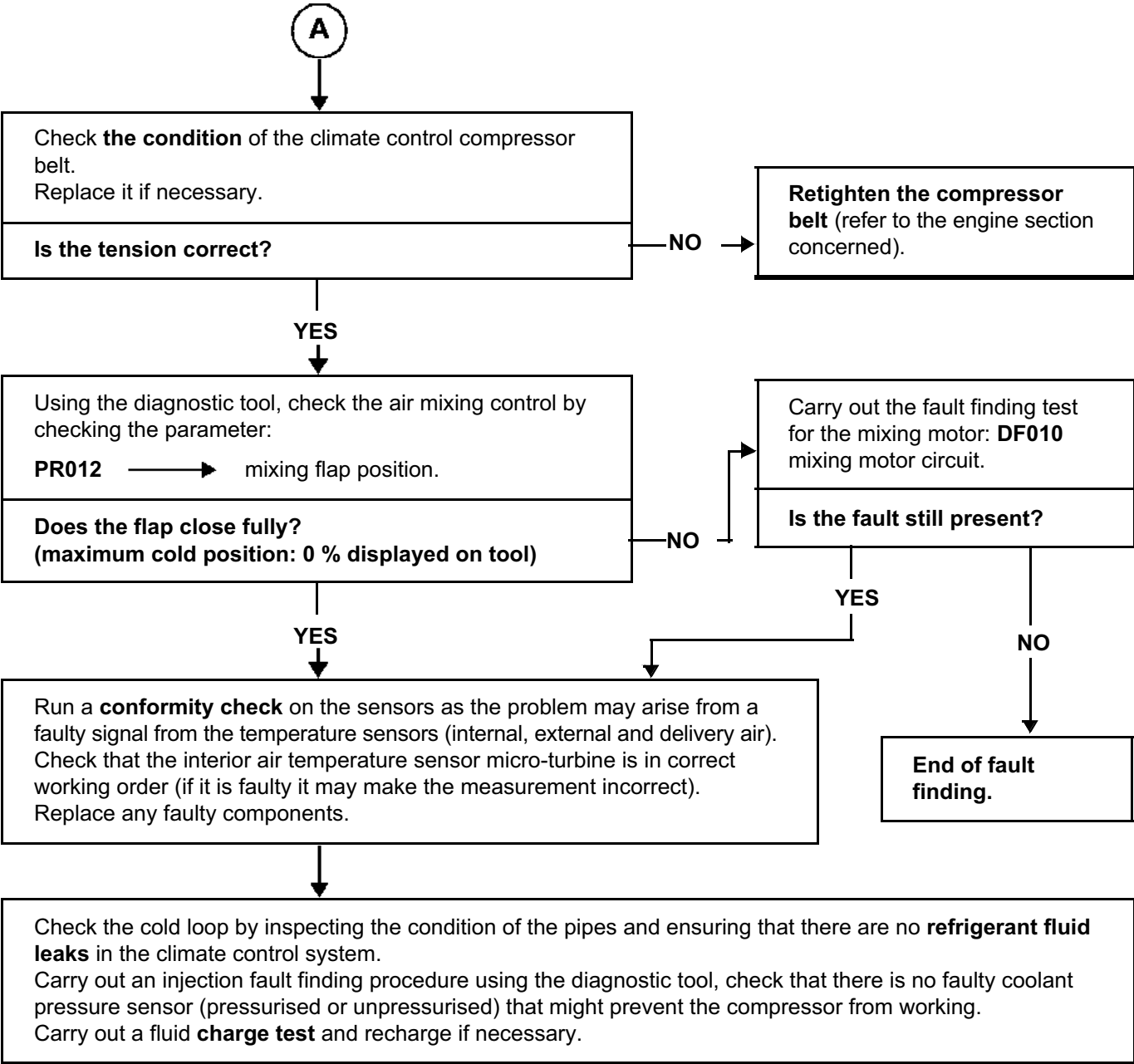


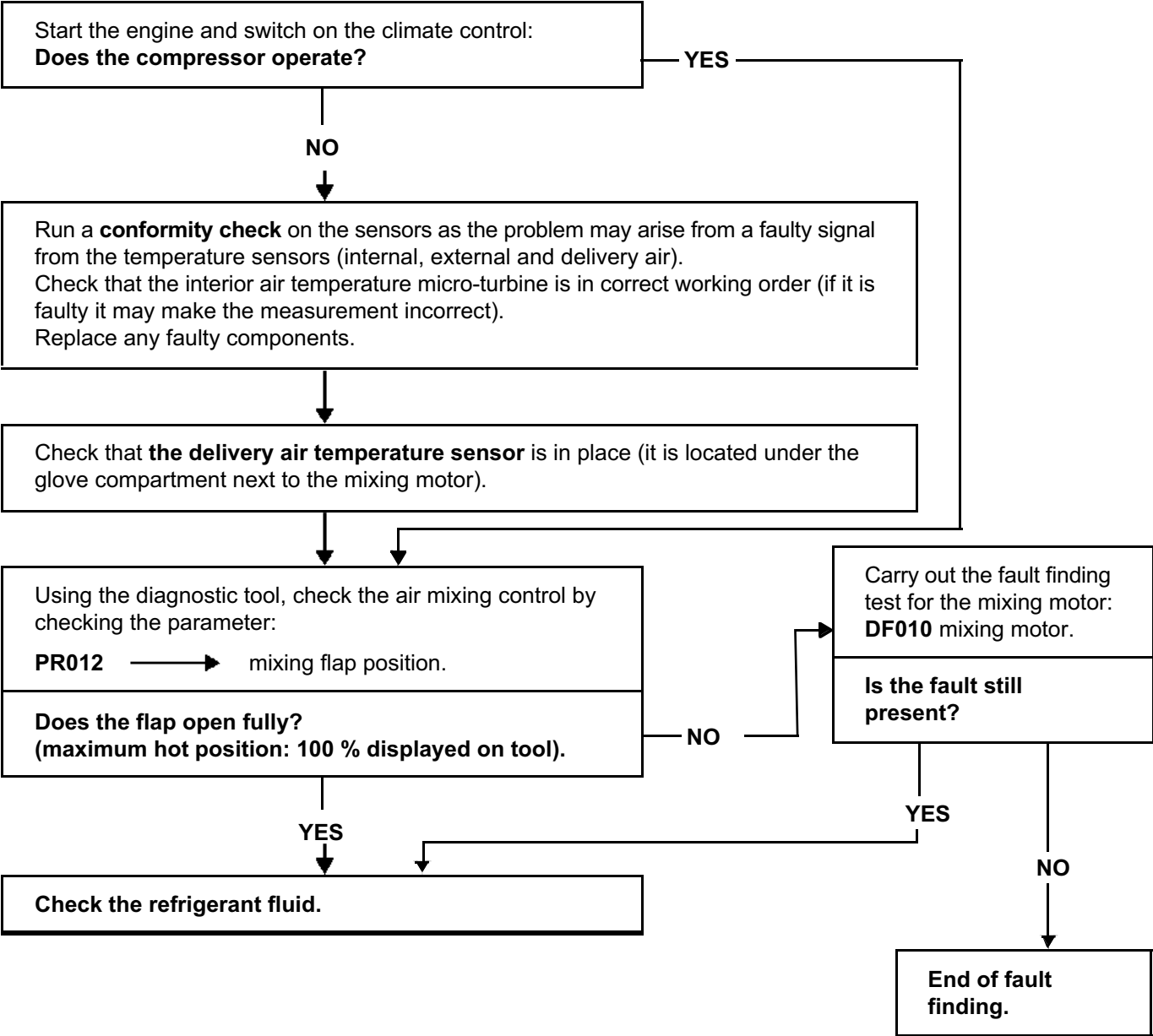
CHART 8 CONTINUED	
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AFTER REPAIR	Check that the system is operating correctly.
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CHART 9	AIR TOO COLD
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NOTES	Only refer to this customer complaint after a complete check using the diagnostic tool
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AFTER REPAIR	Check that the system is operating correctly.
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CHART 10	UNPLEASANT ODOURS IN PASSENGER COMPARTMENT
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NOTES	Only refer to this customer complaint after a complete check using the diagnostic tool
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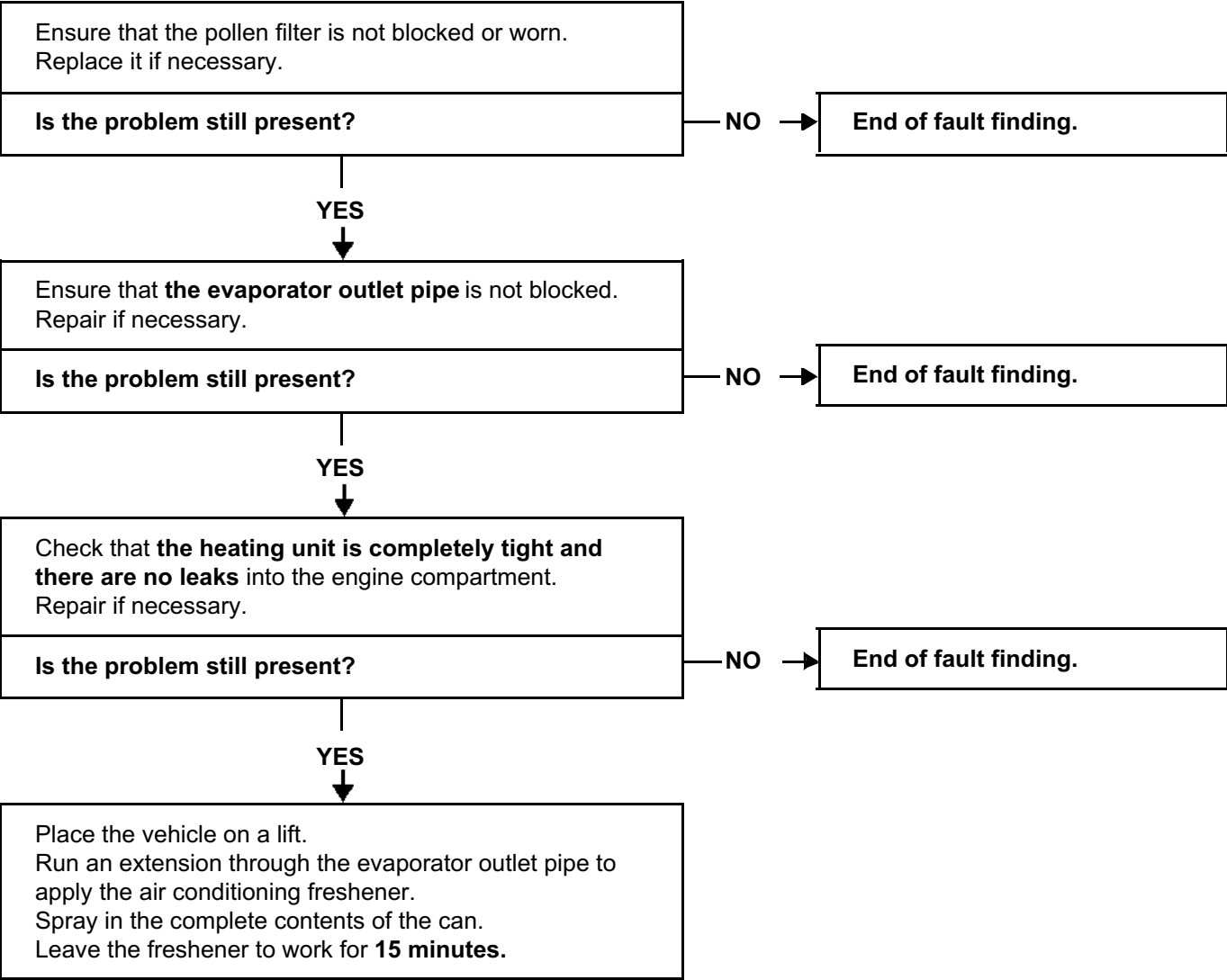
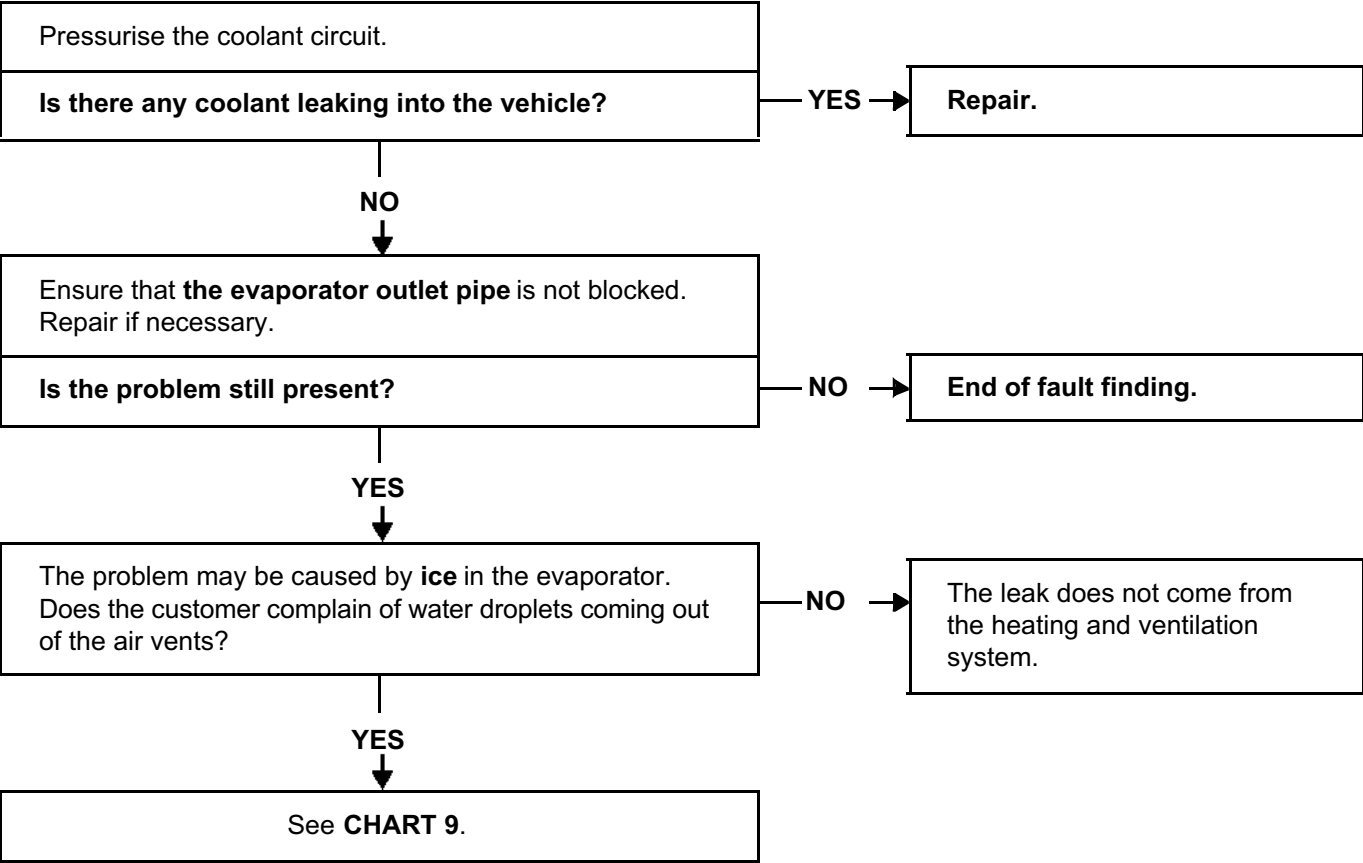


CHART 11	WATER IS PRESENT IN PASSENGER COMPARTMENT
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NOTES	Only refer to this customer complaint after a complete check using the diagnostic tool
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AFTER REPAIR	Check that the system is operating correctly.
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CONTROL PANEL LIGHTING FAILURE

Only refer to this customer complaint after a complete check using the diagnostic tool

-YES

NO

Is the problem still present?

YES

Is the problem still present?

YES

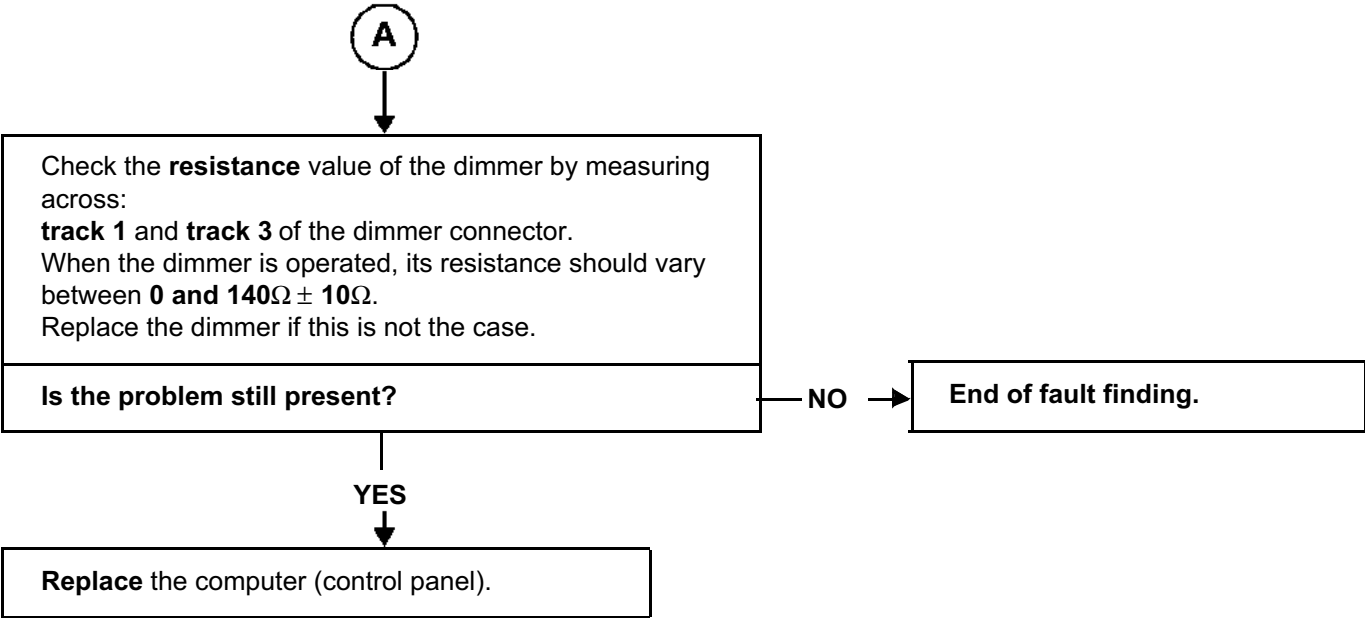
A

NO

End of fault finding.

Check that the system is operating correctly.

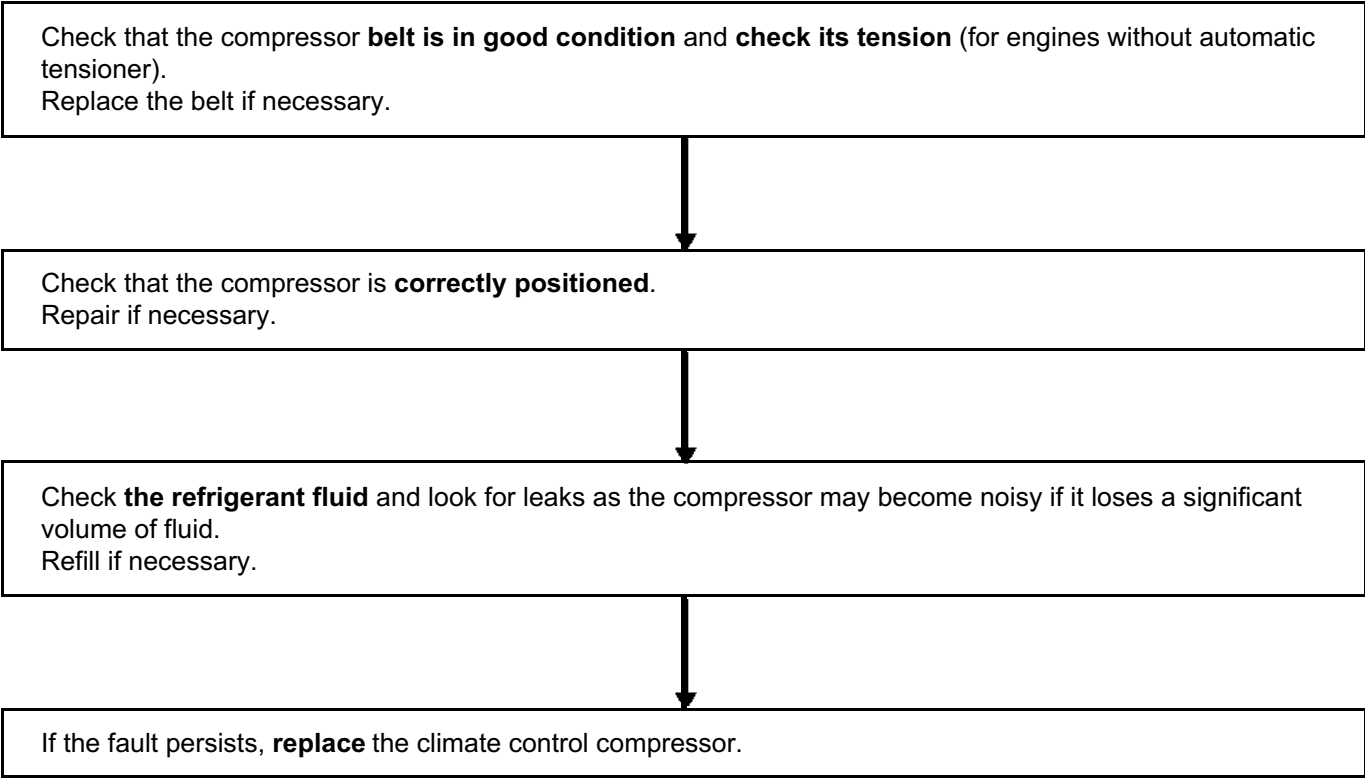
CHART 12 CONTINUED	
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AFTER REPAIR	Check that the system is operating correctly.
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CHART 13	Noisy compressor
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NOTES	Only refer to this customer complaint after a complete check using the diagnostic tool
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AFTER REPAIR	Check that the system is operating correctly.
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