

Technical Bulletin	Model 911 C2/4 911 turbo	Group 8
	Subject: Climate Control Troubleshooting	Part Identifier 8702

ATTENTION: Service Manager/Service Technician

Models Affected: **911 Carrera 2/4, All Model Years
911 turbo, Model Year '91 (M)**

Concern: Unnecessary replacement of climate control units.

General Information: Parts testing revealed no defects on a high number of climate control units replaced for A/C-heater problems.

Most faults stored are in the perimeter and therefore cannot be repaired by replacing the control unit. The only exception: inside temperature sensor code 11.

Troubleshooting:

A. Detailed fault diagnosis with system tester 9288.

If a fault is displayed in the perimeter, precise diagnosis with use of the additional menu points of tester 9288 must be performed.

This applies for all fault codes listed in section B.

Note: The additional menu points cannot be activated on control units with Part Number 964 659 047 00. For diagnosis control unit 964 659 047 01 (from '91 (M) model year) can be used.

When installing control unit Part Number 964 659 047 01 in cars prior to '91 (M) models, heater fans and engine compartment fan are running in the emergency function (with heater on heater fans-half value, engine compartment fan - position 2). This condition does not affect testing. Therefore, the controls should be set to max. cold.

Refer to Workshop Manual 911 Carrera 2/4 Volume VI, page 87-27 for wiring harness modification when replacing "...00" control unit with "...01" control unit for reasons other than diagnosis.

Sensor Faults: Menu point "Input Signals". The values of all connected sensors can be displayed and compared to published values. (Workshop Manual D80/87).

Drive Motor Faults: Menu point "Drive Links". The operation of each drive motor can be checked.

Fan Motor Faults: Menu point "Drive Links". Each fan motor can be activated. A bar graph displays the voltage for engine compartment, A/C condenser and oil cooler fan motor. Operation of left and right heater fan motors can be checked by observing air flow and fan noise.

B. Fault Diagnosis according to Fault Codes

Code	Fault area
Repair steps	
11	Inside temperature sensor break; present
Erase fault memory. Switch on A/C-heater fan control for at least 3 seconds with ignition on. Read out fault memory. If fault still present, replace control unit.	
11	Inside temperature sensor break; not present
Same as above. Try to locate possible loose contact by moving control unit and wiring in the area of the temperature sensor.	
12, 13	Left and right mixing chamber temperature sensor; present
Erase fault memory. Switch on controls for at least 35 seconds. Read out fault memory. If fault still present, replace affected sensor.	



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8702

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9105

Troubleshooting:

Code | **Fault area**

Repair steps

12, 13 **Left and right mixing chamber temperature sensor; not present**

Erase fault memory. Switch on controls for at least 35 seconds. Read out fault memory. If fault still present, replace affected sensor. Try to locate possible loose contact by moving wiring and sensors.

14 **Evaporator temperature sensor**

Same as for fault codes 12, 13.

15, 21 **Rear fan temperature sensor and oil cooler temperature sensor**

Same as for fault codes 12, 13. Wiring harness connectors must also be checked when locating possible loose contacts. Refer to wiring diagram for locations of harness connectors.

22, 23, 24, 31, 32 **All drive links; present**

Visually inspect drive motors and wiring connectors. Connect wiring plug to another drive motor (drive motor on heater system or spare motor) to determine if motor is defective. If motor is not defective, try a different control unit (see note on page 1) to localize fault area. Replace defective part. Erase fault memory. Select drive link menu and operate drive motor several times. Read out fault memory again.

22, 23, 24, 31, 32 **All drive links; not present**

Check wiring connectors on drive motors for corrosion and tight installation. Erase fault memory. Select drive link menu and operate drive motor several times. Read out fault memory again. If the same fault is displayed, replace drive motor.

Code | **Fault area**

Repair steps

Important: Before activating fresh air flap motor, set controls to max. cold and A/C switch off (not pushed).

33, 34 **Heater fan motor left and right**

Fault indicates excessive temperatures, defective final stage or wiring plug. If fans are not operating, check wiring plug. If necessary, replace final stage. If fans are operating, erase fault memory and operate fans in switch position "1" for approx. 5 min. Read out fault memory again. If same fault is stored, replace final stage.

41 **Condenser fan seized; present**

Fault indicates voltage at fan motor is less than 22% battery voltage. Check fuse No. 39 (30A). If fuse is defective, check fan for free movement. Replace fan if binding. If fuse is OK, check condenser fan resistor and wiring for breaks.

41 **Condenser fan seized; not present**

Fault indicates previous, temporary fan binding or seizure from outside influences. Erase fault memory.

42 **Oil cooler fan seized; present (fan not operating)**

Fault indicates voltage at fan motor is less than 30% battery voltage. Check fuse No. 2 (30A). If fuse is defective, check fan for free movement. Replace fan if binding. If fuse is OK, check oil cooler fan resistor and wiring for breaks.

42 **Oil cooler fan seized; not present**

Same as 41.

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Troubleshooting (cont.):

Code	Fault area
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Repair steps

Note: On turbo vehicles, the following codes 43 and 44 refer to the right, and 46 and 47 the left rear fan motor. 911 Carrera 2/4: All codes refer to one rear blower motor. From Part Number 964 659 047 01 control units are identical for 911 turbo and 911 Carrera 2/4. Therefore, on 911 Carrera 2/4, two codes are displayed for one fault. The same text is displayed with different fault codes. For instance, code 43 and 46 or code 44 and 47.

Codes in parenthesis are displayed on 911 Carrera 2/4 in pairs if control unit 964 659 047 01 is installed. One code is displayed on 911 turbos depending if fault is one left or right rear fan.

43 (46) Rear fan motor speed "1" seized; present

Rear fan only operates at speed 2 and fresh air fan only operates at switch position "max. cold." Open circuit in rear fan motor resistor. (Voltage less than 44% battery voltage).

43 (46) Rear fan motor speed "1" seized; not present

Fault indicates previous, temporary fan binding or seizure from outside influences. Erase fault memory.

43 (46) Rear fan motor speed "1" positive short; present

Voltage on rear fan motor is higher than 93% battery voltage while operating at speed "1". Rear fan motor, wiring plug or fuse defective. Open circuit on fan motor ground connection. Fault usually occurs in conjunction with code 44 (47).

43 (46) Rear fan motor speed "1" positive short; not present

Check for loose contact.

Code	Fault area
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Repair steps

43 (46) Rear fan motor speed "1" positive short/ground short

Combination of both.

44 (47) Rear fan speed "2" seized; present

Rear fan does not operate. Check fuse and wiring plug for fan motor. If both OK, check fan motor. Fault usually occurs in combination with fault for "speed 1".

44 (47) Rear fan speed "2" seized; not present

"Not present" can be displayed even if fault is present if fan motor was not activated when switched off. (Will be changed with future update). Follow same steps as above. If fan is operating (indicates previous, temporary binding) erase fault memory.

45 Inside temperature sensor fan motor signal unplausible; present

Inside temperature fan motor does not operate. Possibly mechanical damage. Replace fan motor.

45 Inside temperature sensor fan motor signal unplausible; not present

Usually temporary fault only relevant if customer complains about inside temperature going down after approx. 15 min. driving time. Turn ignition on-off several times and check operation of fan.

Note: If ignition is switched on less than 30 sec., fan run on is 10 seconds. If ignition is switched on longer, fan run on is approx. 20 minutes.



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Troubleshooting (cont.):

Code	Fault area
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Repair steps

46, 47 Rear fan speed "1" or speed "2" seized; present

In position "heating" left heater fan operates with half value: control unit Part Number "...01" is installed in vehicle model year '89 (K) or '90 (L). Install wire bridge between G1 and G19. Refer to 911 Carrera 2/4 Workshop Manual Volume VI, page 87-27.

C. Location of Wiring Plugs

T5 - 14 pin plug under instrument panel right
T30 - 14 pin plug relay carrier plate engine compartment left
T34 - 14 pin plug in luggage compartment on right heater fan housing

D. Symptoms of Some Faults Diagnosable from Operating Pattern

1. Fuse for rear fan motor defective

Starting position: Heater fan switch position 3-4 and temperature switch "max cold".

Test Step: Set temperature switch to "max heat".

Result: Heater fan off. Cars with control unit part number "...01": fan switches to half value. 911 turbo: Fan speed decreases only on side of the defective rear fan.

Remark: To determine acoustically reduced fan speed, open only the two side air vents. Close all other vents.

Switch back temperature control to "max cold.". Heater fan switches on again.

Fault Memory: Rear fan speed "1" seized; present Code 43/46 and Rear fan speed "2" seized; (not) present. Code 44 (47)

2. Rear Fan Motor or Wiring Plug Defective

Starting position: Heater fan switch position 3-4 and temperature switch "max. cold".

Test Step: Set temperature switch to "max. heat"

Result: Heater fan off. Cars with control unit part number "...01": fan switches to half value. 911 turbo: fan speed decreases only on side of the defective rear fan. Switch back temperature control to "max. cold". Heater fan switches on again.

Fault Memory: Rear fan motor speed "1" positive short; present. Code 43 (46) and Rear fan speed "2" seized; (not) present. Code 44 (47).

3. Rear Fan - Resistor Open Circuit

Starting Position: Heater fan switch position 1, 4, temperature switch "max. cold", all air vents closed, only one center vent open.

Test Step: Set temperature switch to "max. heat".

Result: Heater fan off. Rear fan motor speed "2". After 5 seconds, rear fan switches off for 1 second. After an additional 5 seconds, heater fan switches on again.

Fault Memory: Rear fan speed "1" seized (not) present. Code 43 (46)

4. Rear Fan Motor - NTC Open Circuit

Starting position: Engine cold, fan switch position "1", temperature switch "max. cold".

Result: Rear fan operates in speed "1" only.

Fault Memory: Temperature sensor, rear fan motor open circuit; present. Code 15

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