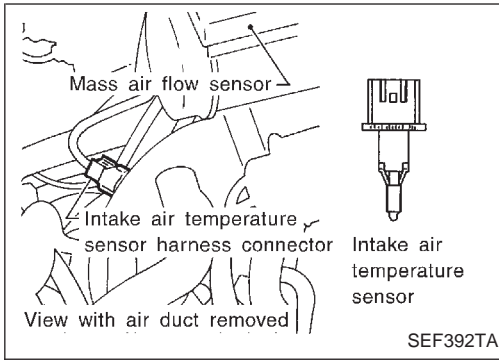


TROUBLE DIAGNOSIS FOR DTC P0110

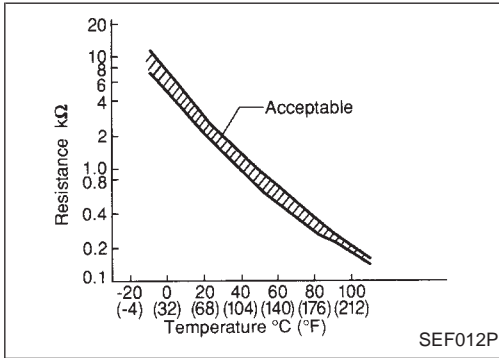


Intake Air Temperature Sensor

COMPONENT DESCRIPTION

The intake air temperature sensor is mounted to the air duct, detects intake air temperature and transmits a signal to the ECM. The temperature sensing unit uses a thermistor, which is sensitive to the change in temperature. Electrical resistance of the thermistor decreases in response to the temperature rise.

This sensor is not directly used to control the engine system. It is used only for the on board diagnosis.



<Reference data>

Intake air temperature °C (°F)	Voltage* (V)	Resistance (kΩ)
-10 (14)	4.4	7.0 - 11.4
20 (68)	3.5	2.1 - 2.9
80 (176)	1.23	0.27 - 0.38

*: These data are reference values and are measured between ECM terminal ⑤⑧ (Intake air temperature sensor) and ECM terminal ④⑨ (Sensor's ground).

ON BOARD DIAGNOSIS LOGIC

Diagnostic Trouble Code No.	Malfunction is detected when ...	Check Items (Possible Cause)
P0110 0401	<p>A) An excessively low or high voltage from the sensor is entered to ECM.</p> <p>.....</p> <p>B) Rationally incorrect voltage from the sensor is entered to ECM, compared with the voltage signal from engine coolant temperature sensor.</p>	<ul style="list-style-type: none"> ● Harness or connectors (The sensor circuit is open or shorted.) ● Intake air temperature sensor

TROUBLE DIAGNOSIS FOR DTC P0110

Intake Air Temperature Sensor (Cont'd) DIAGNOSTIC TROUBLE CODE CONFIRMATION PROCEDURE

Perform "Procedure for malfunction A" first. If DTC cannot be confirmed, perform "Procedure for malfunction B".

NOTE:

If "DIAGNOSTIC TROUBLE CODE CONFIRMATION PROCEDURE" has been previously conducted, always turn ignition switch "OFF" and wait at least 5 seconds before conducting the next test.


Procedure for malfunction A

-  1) Turn ignition switch "ON".
2) Select "DATA MONITOR" mode with CONSULT.
3) Wait at least 5 seconds.

OR

-  1) Turn ignition switch "ON" and wait at least 5 seconds.
2) Select MODE 7 with GST.

OR

-  1) Turn ignition switch "ON" and wait at least 5 seconds.
2) Turn ignition switch "OFF", wait at least 5 seconds and then turn "ON".
3) Perform "Diagnostic Test Mode II (Self-diagnostic results)" with ECM.


Procedure for malfunction B

CAUTION:


Always drive vehicle at a safe speed.

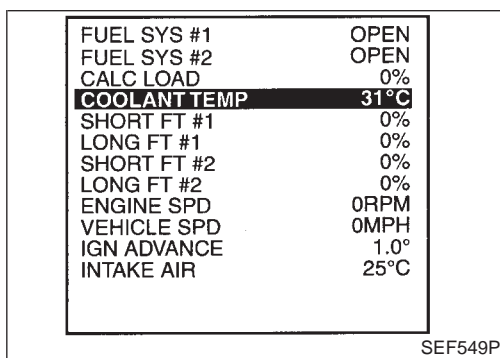
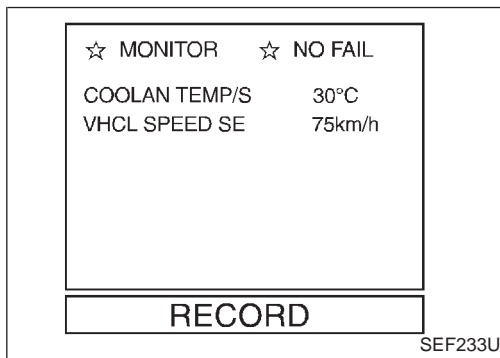
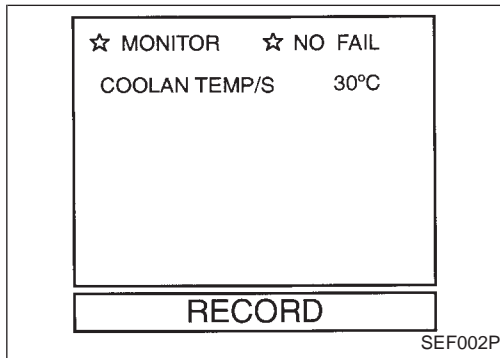
TESTING CONDITION:

This test may be conducted with the drive wheels lifted in the shop or by driving the vehicle. If a road test is expected to be easier, it is unnecessary to lift the vehicle.

-  1) Wait until engine coolant temperature is less than 90°C (194°F).
(a) Turn ignition switch "ON".
(b) Select "DATA MONITOR" mode with CONSULT.
(c) Check the engine coolant temperature.
(d) If the engine coolant temperature is not less than 90°C (194°F), turn ignition switch "OFF" and cool down engine.
- Perform the following steps before engine coolant temperature is above 90°C (194°F).
- 2) Turn ignition switch "ON".
3) Select "DATA MONITOR" mode with CONSULT.
4) Start engine.
5) Hold vehicle speed more than 70 km/h (43 MPH) for 100 consecutive seconds.

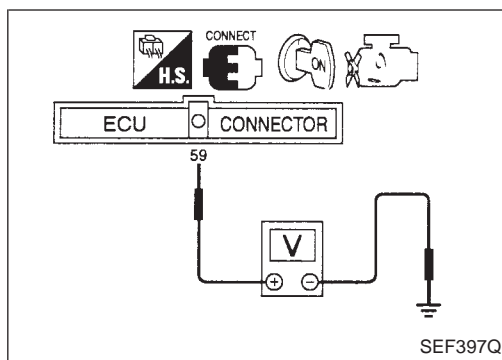
OR

-  1) Wait until engine coolant temperature is less than 90°C (194°F).
(a) Turn ignition switch "ON".
(b) Select MODE 1 with GST.
(c) Check the engine coolant temperature.
(d) If the engine coolant temperature is not less than 90°C (194°F), turn ignition switch "OFF" and cool down engine.
- Perform the following steps before engine coolant temperature is above 90°C (194°F).
- 2) Start engine.
3) Hold vehicle speed more than 70 km/h (43 MPH) for 100 consecutive seconds.
4) Select MODE 7 with GST.



TROUBLE DIAGNOSIS FOR DTC P0110

Intake Air Temperature Sensor (Cont'd)



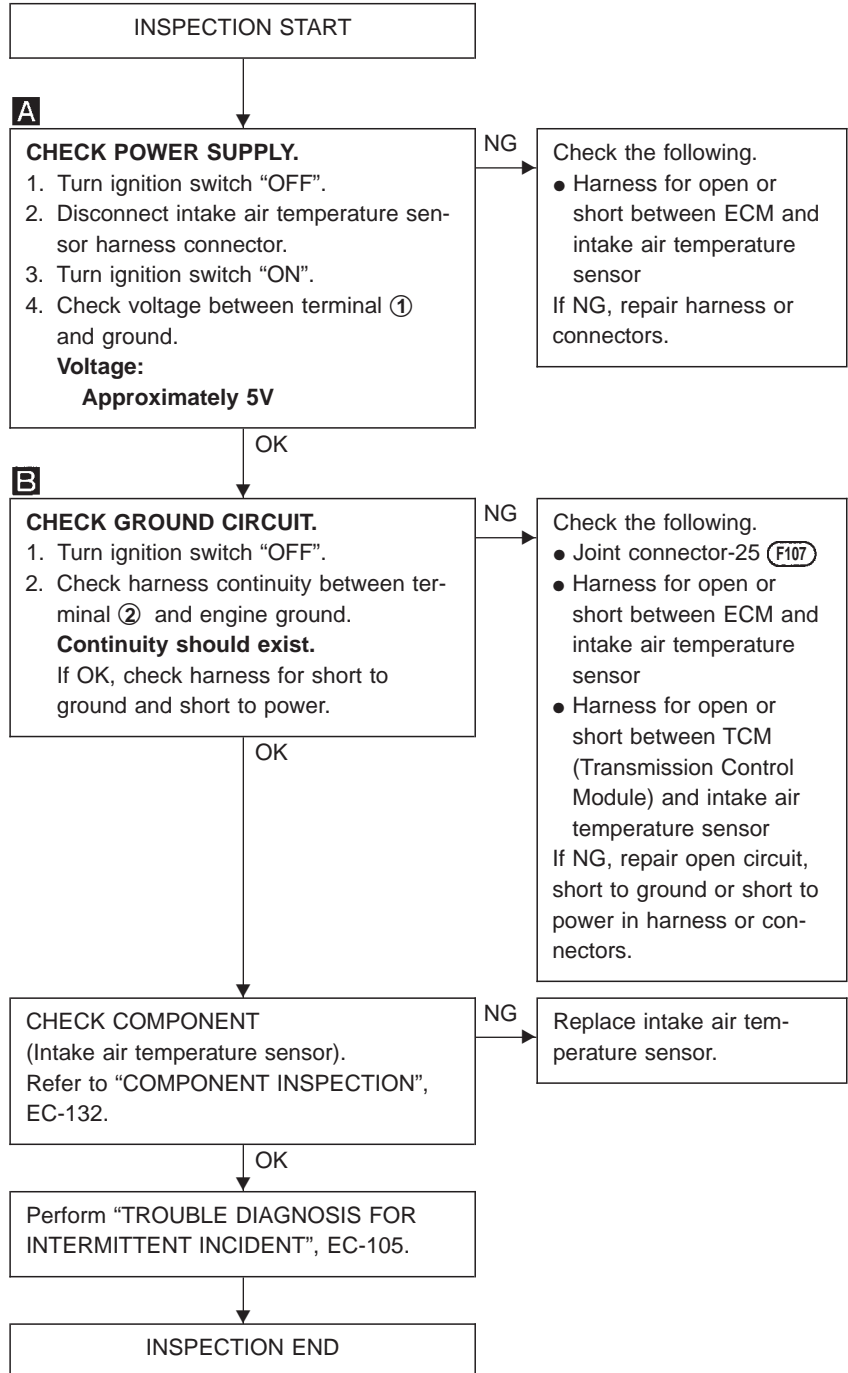
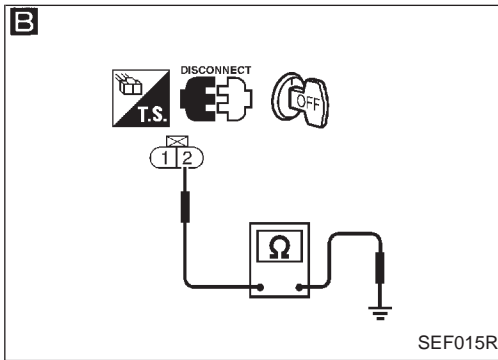
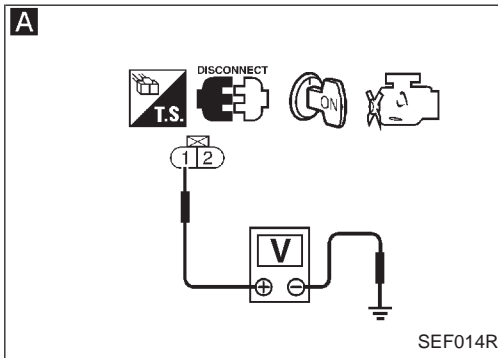
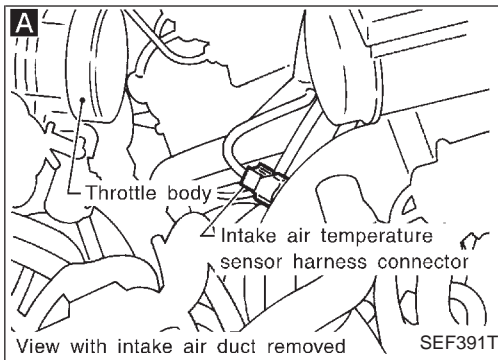
OR



- 1) Wait until engine coolant temperature is less than 90°C (194°F).
 - (a) Turn ignition switch "ON".
 - (b) Check voltage between ECM terminal ⑤9 and ground.
Voltage: More than 1.0 (V)
 - (c) If the voltage is not more than 1.0 (V), turn ignition switch "OFF" and cool down engine.
- Perform the following steps before the voltage is below 1.0V.
- 2) Start engine.
- 3) Hold vehicle speed more than 70 km/h (43 MPH) for 100 consecutive seconds.
- 4) Turn ignition switch "OFF", wait at least 5 seconds and then turn "ON".
- 5) Perform "Diagnostic Test Mode II (Self-diagnostic results)" with ECM.

TROUBLE DIAGNOSIS FOR DTC P0110

Intake Air Temperature Sensor (Cont'd) DIAGNOSTIC PROCEDURE



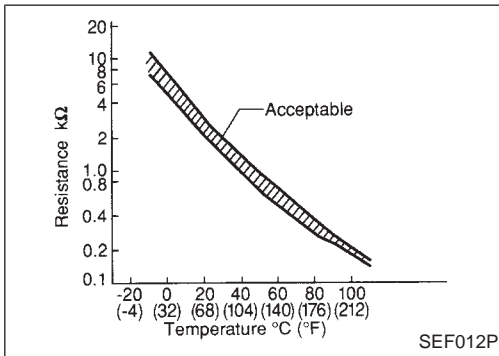
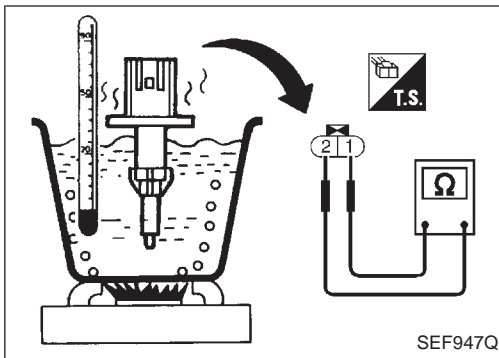
TROUBLE DIAGNOSIS FOR DTC P0110

Intake Air Temperature Sensor (Cont'd)

COMPONENT INSPECTION

Intake air temperature sensor

Check resistance as shown in the figure.



<Reference data>

Intake air temperature °C (°F)	Resistance kΩ
20 (68)	2.1 - 2.9
80 (176)	0.27 - 0.38

If NG, replace intake air temperature sensor.