Technical Service Information Bulletin
December 16, 2004

Title:

SENSOR INSPECTION FOR AIR CONDITIONING SYSTEM

Models:

'90 – Current All Models

Introduction

This service bulletin contains inspection procedures to more precisely confirm proper operation of the following temperature sensors of the air conditioning system. Follow the procedures in this service bulletin when inspecting these sensors. These contents will be reflected in future repair manuals.

- Room Temperature Sensor
- Ambient Temperature Sensor
- Air Duct Sensor
- Evaporator Temperature Sensor
- Solar Sensor
- Room Humidity Sensor

Applicable Vehicles

- **All 1990 – Current** model year **Lexus** vehicles.

Warranty Information

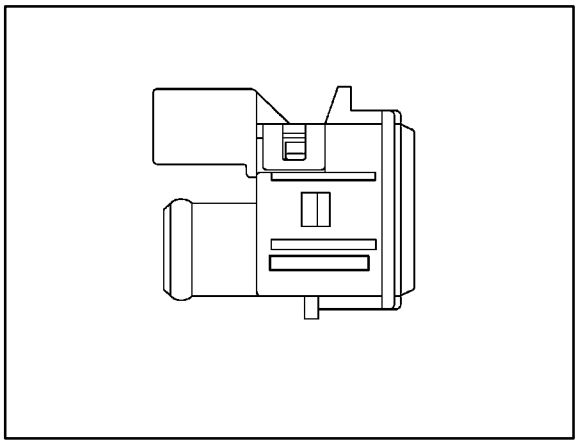
OP CODE	DESCRIPTION	TIME	OFP	T1	T2
N/A	Not Applicable to Warranty	–	–	–	–

Inspection Procedure

1. Inspect Room Temperature Sensor.

A. Measure the sensor resistance.

Resistance Value at 77°F (25°C)	1700 +/– 85Ω



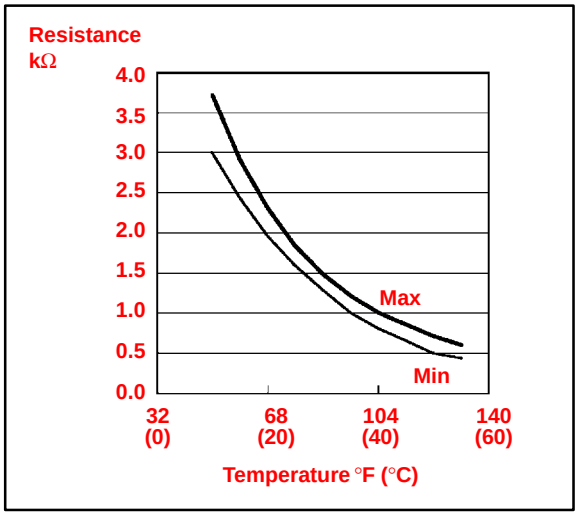
NOTE:

- **Even slightly touching the sensor may change the resistance value. Be sure to hold the connector of the sensor.**
- **When measuring, the sensor temperature must be the same as the ambient temperature.**

HINT:

As the temperature increases, the resistance decreases.

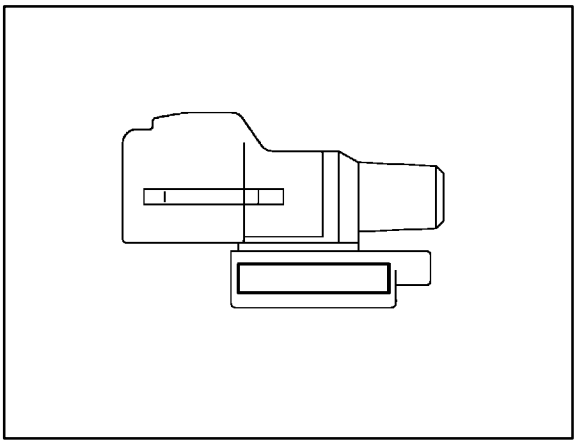
TEMPERATURE °F (°C)	SPECIFICATION kΩ
50 (10)	3.00 to 3.73
59 (15)	2.45 to 2.88
68 (20)	1.95 to 2.30
77 (25)	1.60 to 1.80
86 (30)	1.28 to 1.47
95 (35)	1.00 to 1.22
104 (40)	0.80 to 1.00
113 (45)	0.65 to 0.85
122 (50)	0.50 to 0.70
131 (55)	0.44 to 0.60
140 (60)	0.36 to 0.50



Inspection Procedure (Continued)

2. Inspect Ambient Temperature Sensor.

A. Measure the sensor resistance according to the selected graph (specification).



Resistance Value at 77°F (25°C)	1700 +/– 85Ω

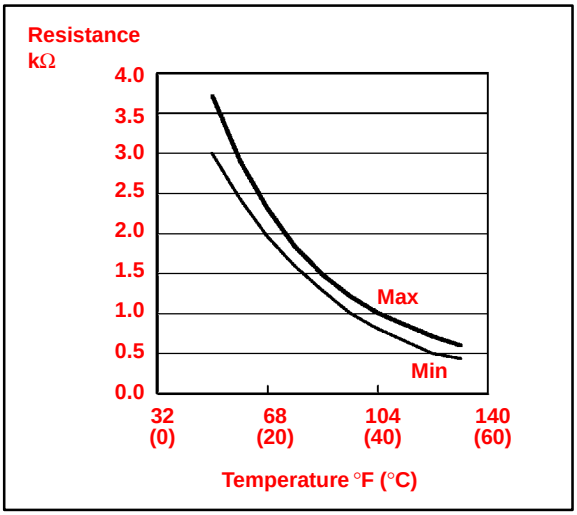
NOTE:

- **Even slightly touching the sensor may change the resistance value. Be sure to hold the connector of the sensor.**
- **When measuring, the sensor temperature must be the same as the ambient temperature.**

HINT:

As the temperature increases, the resistance decreases.

TEMPERATURE °F (°C)	SPECIFICATION kΩ
50 (10)	3.00 to 3.73
59 (15)	2.45 to 2.88
68 (20)	1.95 to 2.30
77 (25)	1.60 to 1.80
86 (30)	1.28 to 1.47
95 (35)	1.00 to 1.22
104 (40)	0.80 to 1.00
113 (45)	0.65 to 0.85
122 (50)	0.50 to 0.70
131 (55)	0.44 to 0.60
140 (60)	0.36 to 0.50



Inspection Procedure (Continued)

3. Inspect Air Duct Sensor.

A. Measure the sensor resistance according to the table and graph (specification).

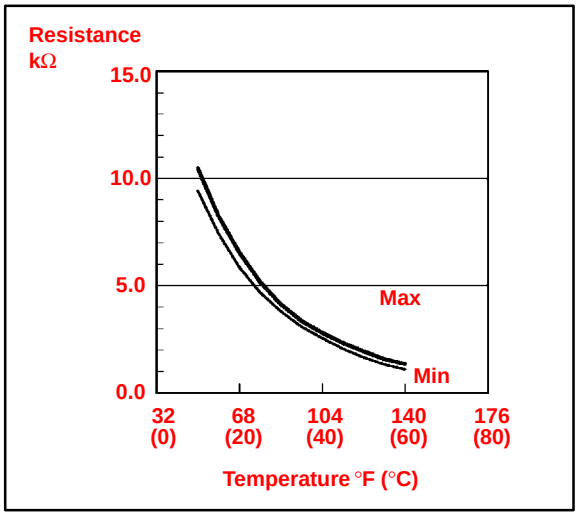
NOTE:

- **Even slightly touching the sensor may change the resistance value. Be sure to hold the connector of the sensor.**
- **When measuring, the sensor temperature must be the same as the ambient temperature.**

HINT:

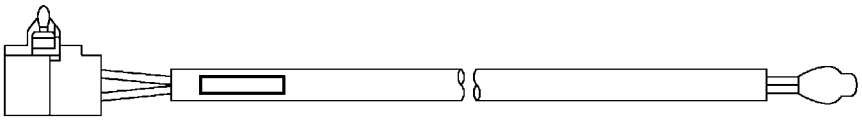
As the temperature increases, the resistance decreases.

TEMPERATURE °F (°C)	SPECIFICATION kΩ
50 (10)	9.48 to 10.49
59 (15)	7.50 to 8.28
68 (20)	5.95 to 6.57
77 (25)	4.77 to 5.25
86 (30)	3.85 to 4.21
95 (35)	3.12 to 3.40
104 (40)	2.53 to 2.79
113 (45)	2.06 to 2.30
122 (50)	1.69 to 1.91
131 (55)	1.39 to 1.59
140 (60)	1.15 to 1.33



Inspection Procedure (Continued)

4. Inspect Evaporator Temperature Sensor.



Select the appropriate graph (specification) using the following table.

NOTE:

Please inspect the sensors for model years not indicated by this bulletin, according to the instructions in the applicable repair manual.

MODEL	MODEL YEAR	COMMENTS	PART NUMBER	GRAPH
ES 300	1992 – 2001		88625–33070	2
ES 300/330	2002 – 2003		88625–17130	2
	2003		88625–33170	3
GS 300	1993 – 1997		88625–3A020	2
GS 300/400/430	1998 – 2002		88625–3A120	2
GX 470	2003 – 2005	Thermistor No. 1	88625–35050	3
		Thermistor No. 2	88625–16210	2
IS 300	2000 – 2001		88625–48010	2
LS 400	1990 – 1992		88625–32040	2
	1993 – 1994		88625–50100	2
	1995 – 2000		88625–50140	2
LS 430	2001 – 2005		88625–50160	2
LX 450	1996 – 1997		88625–60060	2
LX 470	1998 – 2000	Thermistor No. 2	88625–60140	2
	1998 – 2002	Thermistor No. 1	88625–60130	2
	2003 – 2005		88625–47011	2
RX 300	1998 – 2003		88625–48010	2
RX 330	2004	CBU	88625–48050	1
	2004 – 2005	CBU	88625–48060	3
		NAP		
SC 300/400	1991 – 2000		88625–32040	2

Inspection Procedure (Continued)

A. Measure the sensor resistance according to the selected graph (specification).

NOTE:

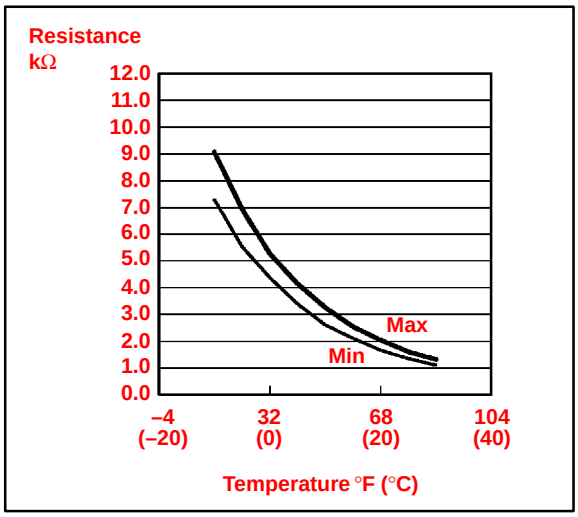
- **Even slightly touching the sensor may change the resistance value. Be sure to hold the connector of the sensor.**
- **When measuring, the sensor temperature must be the same as the ambient temperature.**

HINT:

As the temperature increases, the resistance decreases.

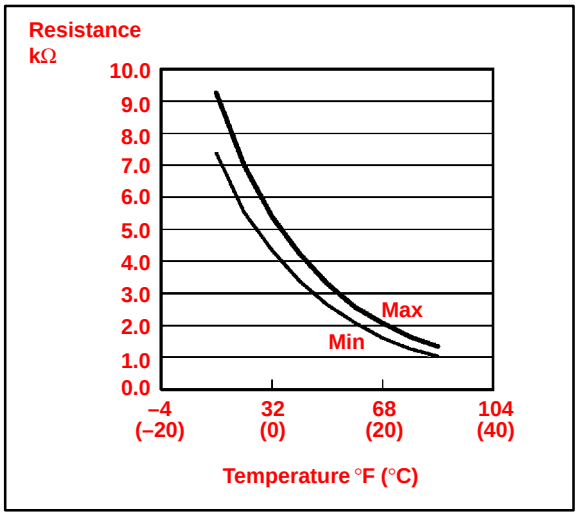
Graph 1:

TEMPERATURE °F (°C)	SPECIFICATION kΩ
14 (–10)	7.30 to 9.10
23 (–5)	5.65 to 6.95
32 (0)	4.40 to 5.35
41 (5)	3.40 to 4.15
50 (10)	2.70 to 3.25
59 (15)	2.14 to 2.58
68 (20)	1.71 to 2.05
77 (25)	1.38 to 1.64
86 (30)	1.11 to 1.32



Graph 2:

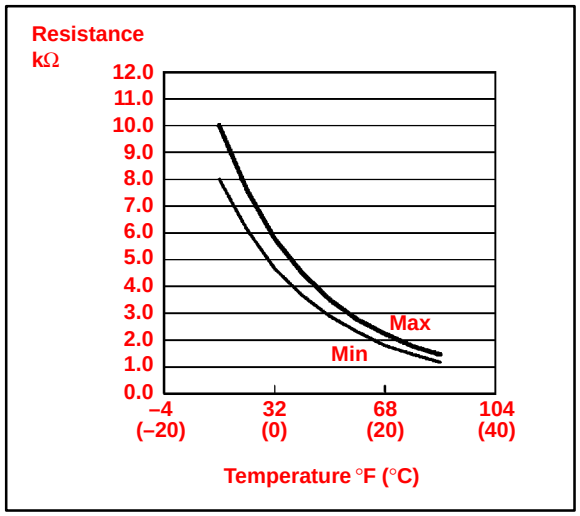
TEMPERATURE °F (°C)	SPECIFICATION kΩ
14 (–10)	7.40 to 9.20
23 (–5)	5.65 to 7.00
32 (0)	4.35 to 5.40
41 (5)	3.40 to 4.20
50 (10)	2.68 to 3.30
59 (15)	2.10 to 2.60
68 (20)	1.66 to 2.10
77 (25)	1.32 to 1.66
86 (30)	1.05 to 1.35



Inspection Procedure (Continued)

Graph 3:

TEMPERATURE °F (°C)	SPECIFICATION kΩ
14 (–10)	8.00 to 10.00
23 (–5)	6.15 to 7.65
32 (0)	4.75 to 5.85
41 (5)	3.70 to 4.55
50 (10)	2.91 to 3.55
59 (15)	2.32 to 2.80
68 (20)	1.85 to 2.22
77 (25)	1.48 to 1.77
86 (30)	1.20 to 1.43



Inspection Procedure (Continued)

5. Inspect Solar Sensor.

Four types of solar sensors are used on Lexus vehicles depending on the vehicle specifications. The inspection procedure for each type of sensor differs from the others. Select the appropriate inspection procedure from the table below according to vehicle specifications and perform the inspection.

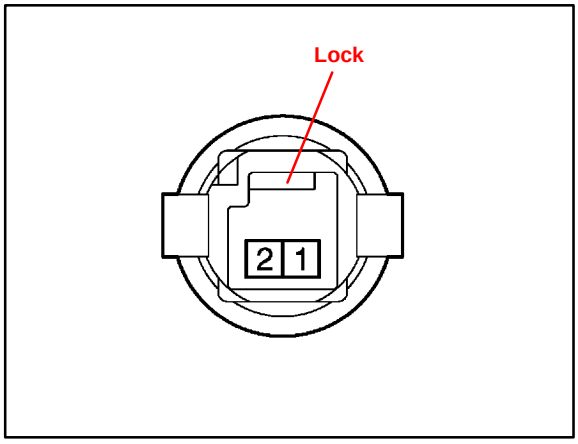
EQUIPPED WITH AUTOMATIC LIGHT CONTROL SYSTEM	A/C SYSTEM WITH RIGHT/LEFT INDEPENDENT TEMPERATURE CONTROL	INSPECTION PROCEDURE
No	No	A
No	Yes	B
Yes	Yes	C
Yes	No	D

Procedure A:

a. Disconnect the solar sensor connector.

b. Measure the resistance between terminals 1 and 2 of the solar sensor under the following conditions:

- Cover the sensor with a cloth to avoid direct light.
- Expose the sensor to light from a distance of 300 mm (11.81 in.) or less with an inspection light.



NOTE:

- **Terminal 1 of the sensor is always on the right, when the lock is facing up.**
- **When using an analog tester, connect the positive (+) lead to terminal 2 and negative (–) lead to terminal 1 of the solar sensor.**

HINT:

If the light is weak, the sensor may not react. Be sure to use an incandescent light for an inspection light.

Standard:

CONDITION	SPECIFICATION
When the sensor is covered with a cloth (to avoid direct light)	Infinite ohms
When the sensor is exposed to light	Less than infinite resistance

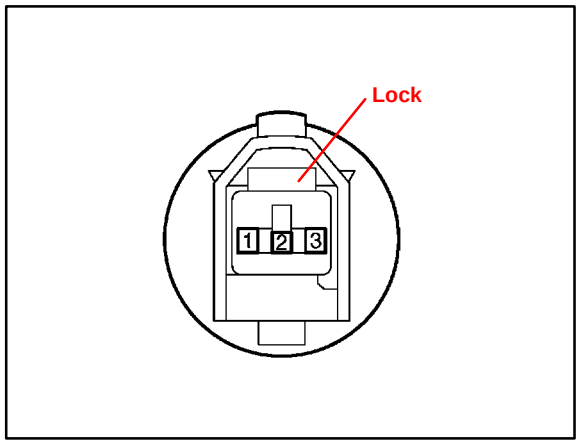
Inspection Procedure (Continued)

Procedure B:

a. Disconnect the solar sensor connector.

b. Measure the resistance between terminals 2 and 3 of the solar sensor under the following conditions:

- Cover the sensor with a cloth to avoid direct light.
- Expose the sensor to light from a distance of 300 mm (11.81 in.) or less with an inspection light.



NOTE:

When using an analog tester, connect the positive (+) lead to terminal 3 and negative (–) lead to terminal 2 of the solar sensor.

HINT:

If the light is weak, the sensor may not react. Be sure to use an incandescent light for an inspection light.

Standard:

CONDITION	SPECIFICATION
When the sensor is covered with a cloth (to avoid direct light)	Infinite ohms
When the sensor is exposed to light	Less than infinite resistance

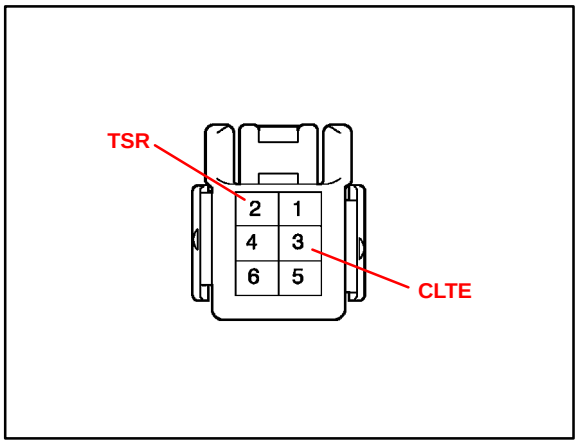
Inspection Procedure (Continued)

Procedure C:

a. Turn the ignition switch ON.

b. Measure the voltage between terminals TSR (+) and CLTE (–) of the connector under the following conditions:

- Cover the sensor with a cloth to avoid direct light.
- Expose the sensor to light from a distance of 300 mm (11.81 in.) or less with an inspection light.



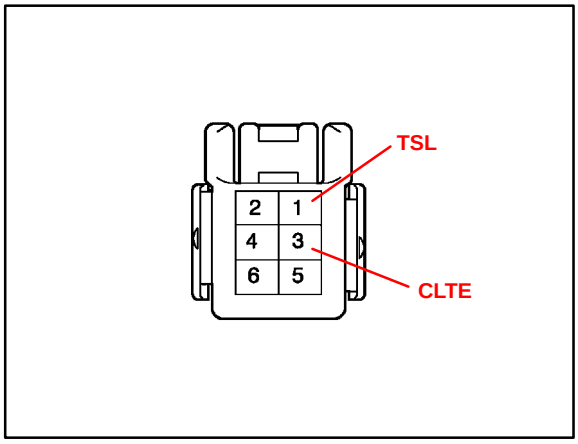
HINT:
- **If the light is weak, the sensor may not react. Be sure to use an incandescent light for an inspection light.**
- **Do not disconnect the solar sensor connector.**

Standard:

CONDITION	SPECIFICATION
When the sensor is covered with a cloth (to avoid direct light)	Below 0.8 V
When the sensor is exposed to light	4.3 +/– 0.3 V

c. Measure the voltage between terminals TSL (+) and CLTE (–) of the connector under the following conditions:

- Cover the sensor with a cloth to avoid direct light.
- Expose the sensor to light from a distance of 300 mm (11.81 in.) or less with an inspection light.



HINT:
- **If the light is weak, the sensor may not react. Be sure to use an incandescent light for an inspection light.**
- **Do not disconnect the solar sensor connector.**

Standard:

CONDITION	SPECIFICATION
When the sensor is covered with a cloth (to avoid direct light)	Below 0.8 V
When the sensor is exposed to light	4.3 +/– 0.3 V

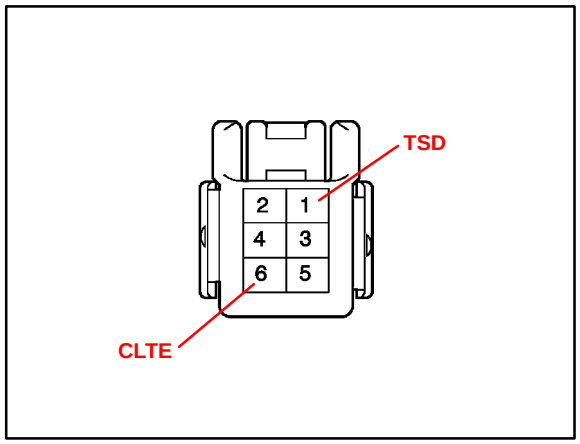
Inspection Procedure (Continued)

Procedure D:

a. Turn the ignition switch ON.

b. Using the tester, measure the voltage between terminals TSD (+) and CLTE (–) of the connector under the following conditions:

- Cover the sensor with a cloth to avoid direct light.
- Expose the sensor to light from a distance of 300 mm (11.81 in.) or less with an inspection light.



HINT:

- **If the light is weak, the sensor may not react. Be sure to use an incandescent light for an inspection light.**
- **Do not disconnect the solar sensor connector.**

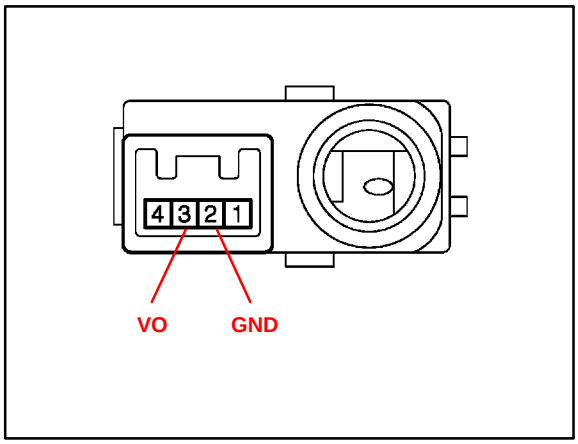
Standard:

CONDITION	SPECIFICATION
When the sensor is covered with a cloth (to avoid direct light)	Below 0.8 V
When the sensor is exposed to light	4.3 +/– 0.3 V

Inspection Procedure (Continued)

6. Inspect Room Humidity Sensor.

Measure the humidity and output voltage of the humidity sensor when the sensor is installed on the vehicle and the temperature at the humidity sensor position (room temperature sensor position) is 77°F (25°C).
If the output voltage is within the specifications according to the graph and table below, the sensor is normal.



HINT:

For the inspection procedure of the room temperature sensor, refer to "Room Temperature Sensor Inspection Procedure" in this bulletin.

A. Turn the ignition switch to the ON position.

B. Measure the voltage between terminal VO (3) and GND (2) of the room humidity sensor.

C. Measure the humidity and voltage when the room temperature (humidity sensor position) is 77°F (25°C). According to the result, determine whether the sensor is normal or not.

HUMIDITY (% RH)	OUTPUT VOLTAGE AT 77°F (25°C)
10	0.70 to 1.08 V
20	0.72 to 1.57 V
30	1.13 to 1.95 V
40	1.61 to 2.24 V
50	1.99 to 2.46 V
60	2.26 to 2.66 V
70	2.48 to 2.85 V
80	2.68 to 3.04 V
90	2.87 to 3.05 V