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Model Year Start: 2023	**Model:** Prius	**Prod Date Range:** [12/2022 -]
Title: HEATING / AIR CONDITIONING: AIR CONDITIONING SYSTEM (for HEV Model): Cooling is Poor; 2023 - 2024 MY Prius [12/2022 -]		

Cooling is Poor

DESCRIPTION

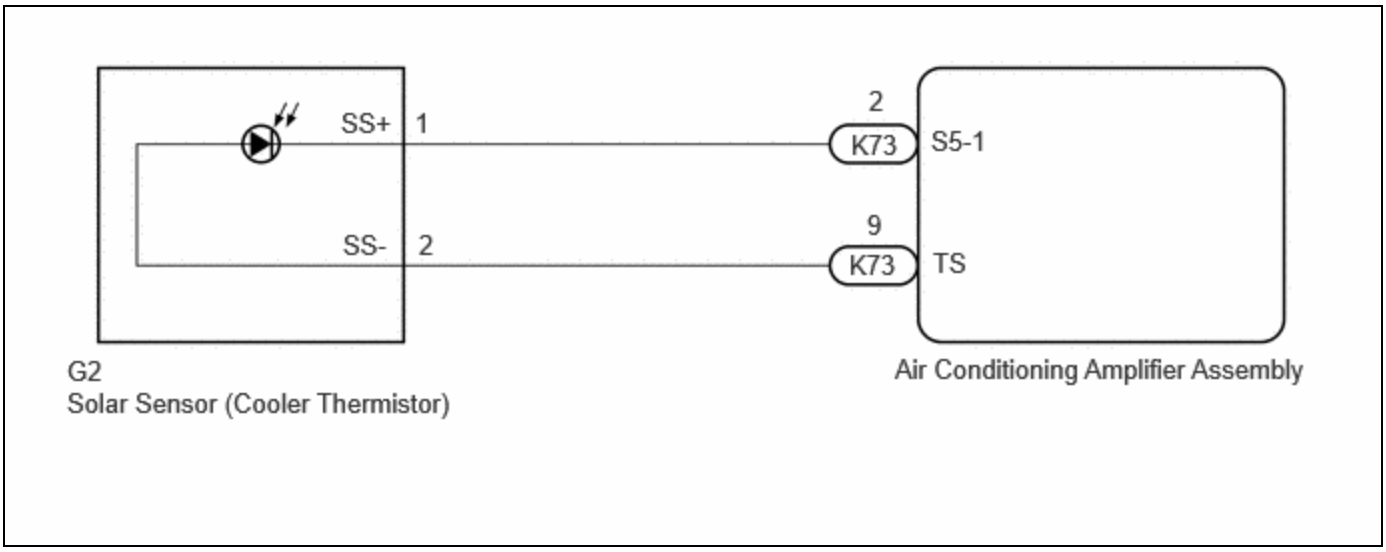
If the cooling effect of the air conditioning system is weak, the following factors may be the cause.

SYMPTOM	FACTOR
• Cooling effectiveness is poor • Cooling response is slow	• ECO mode control of air conditioning system is enabled • Compressor with motor assembly malfunction • Refrigerant volume (high) • Refrigerant volume (low) • Clogged cooler condenser assembly fins • Cooling fan system malfunction • Mechanical locking of damper and damper link • Solar sensor (cooler thermistor) malfunction*1 • Solar sensor (automatic light control sensor) malfunction*2 • High inlet air temperature • Harness or connector

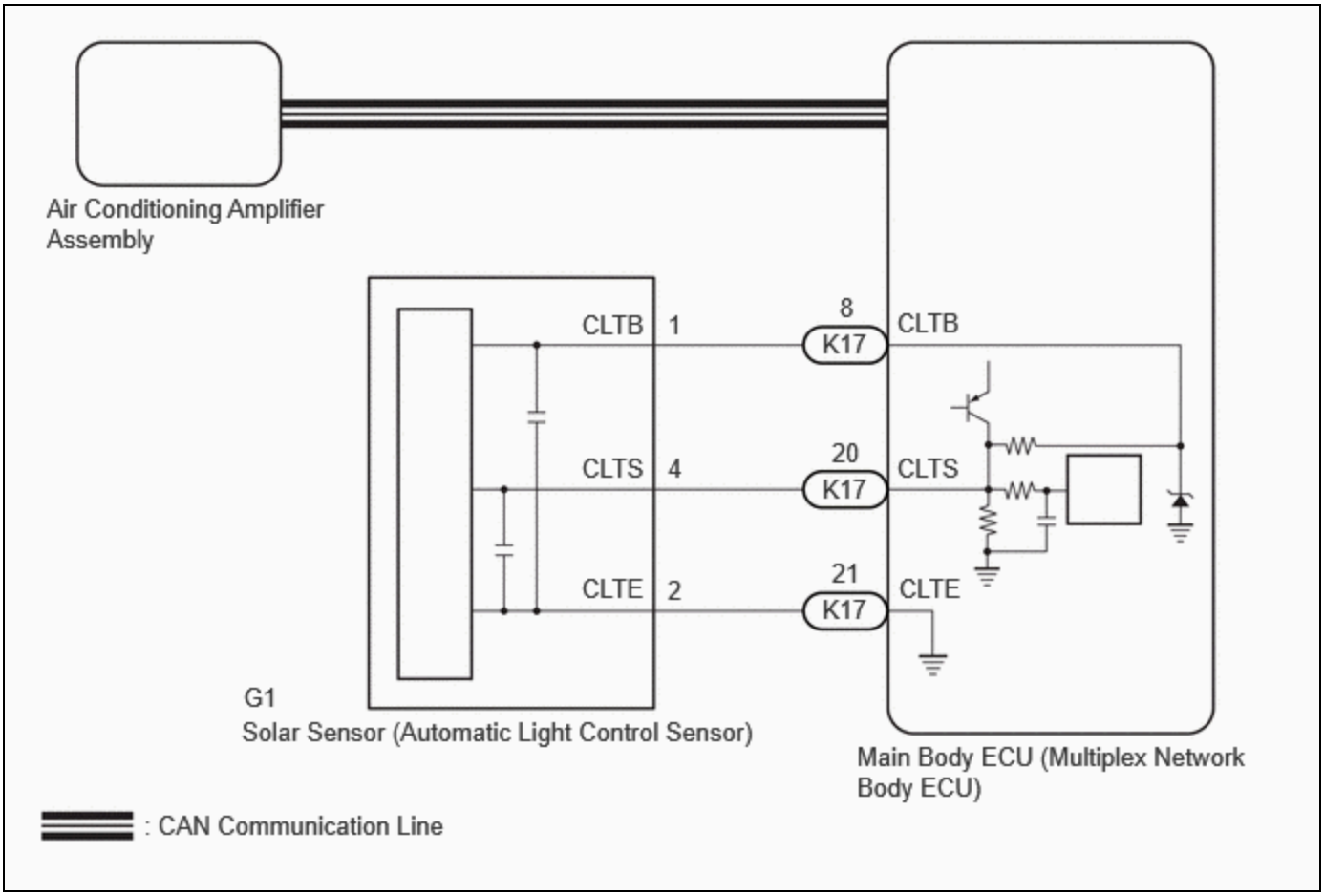
*1: w/o Automatic Light Control
*2: w/ Automatic Light Control

WIRING DIAGRAM

w/o Automatic Light Control:



w/ Automatic Light Control:



CAUTION / NOTICE / HINT

NOTICE:

When disconnecting a wire harness of any component connected to the supply power of the integrated capacitor (integration control supply) or when removing the integrated capacitor (integration control supply), make sure to wait 5 minutes or more after turning the ignition switch off for self-diagnosis to complete and the voltage of the integrated capacitor (integration control supply) to discharge.

PROCEDURE

1.	**CHECK ECO MODE SETTING**

(a) Confirm that ECO HEAT/COOL switch is set to off.

(b) Confirm that ECO drive mode is set to off.

HINT:

When the ECO drive mode is set to ON, the air conditioning amplifier assembly performs minimal air conditioning control in order to promote the improvement of fuel economy. Ensure that the customer understands that the airflow volume will be decreased compared to normal operation.

CONTROL	CONTROL SUMMARY
Air Volume Control	Sets the blower level to less.

NEXT

2.	**CHECK REFRIGERANT SHORTAGE**

(a) Prepare the vehicle according to the table below.

Measurement Condition:

ITEM	CONDITION
A/C Switch	On
Ambient Temperature*1	0 to 49°C (32 to 120°F)
Air Conditioning Air Inlet Temperature*2	25 to 35°C (77 to 95°F)
Set Temperature	MAX COLD
Recirculation/fresh Control Switch	Recirculation
Air Vent Damper Position	FACE
Blower Speed	HI

HINT:

*1: This inspection can be judged correctly only if the ambient temperature is within a range of 0 to 49°C (32 to 120°F). Therefore, postpone the test if the temperature is low.

*2: This inspection can be judged correctly only if the air inlet temperature is within a range of 25 to 35°C (77 to 95°F). Therefore, postpone the test if the temperature is out of range.

(b) Using the GTS, check the amount of refrigerant.

Body Electrical > Air Conditioner > Utility

TESTER DISPLAY
Refrigerant Gas Volume Check

NOTICE:

If the conditions for the inspection are not met, "Refrigerant incorrect" will be displayed on the GTS. Confirm the conditions of the inspection and perform the check again.

HINT:

- If the amount of refrigerant is insufficient, "Refrigerant shortage" is displayed on the GTS and the indicator light on the A/C switch turns off.
- When performing this inspection, a DTC will not be output even if "Refrigerant shortage" is displayed on the GTS.

RESULT	AMOUNT OF REFRIGERANT
Refrigerant shortage	Insufficient or leakage
Refrigerant correct	Correct
Refrigerant incorrect	Incorrect

OK:

"Refrigerant correct" is displayed on the GTS.

NG ▶ **CHARGE SYSTEM WITH REFRIGERANT**

for HFC-134a(R134a): Click here INFO

for HFO-1234yf(R1234yf): Click here INFO

OK ▼

3.	**PERFORM ACTIVE TEST USING GTS**

(a) Perform the Active Test according to the display on the GTS.

Body Electrical > Air Conditioner > Active Test

TESTER DISPLAY	MEASUREMENT ITEM	CONTROL RANGE	DIAGNOSTIC NOTE
Front Air Mix Damper Control Servo Motor	This test activates the Front Air Mix Damper Control Servo Motor. (No. 1 air conditioning radiator damper servo sub-assembly (air mix))	128: Min 384: Max	Operate with ignition switch ON.

Body Electrical > Air Conditioner > Active Test

ACTIVE TEST DISPLAY
Front Air Mix Damper Control Servo Motor

DATA LIST DISPLAY
Front Air Mix Damper Control Servo Motor Actual Pulse

OK:
Damper servo motor is operated.

NG ▶ **GO TO DIAGNOSTIC TROUBLE CODE CHART (FOR SERVO MOTOR OF APPLICABLE ABNORMAL OPERATION)**

OK ▼

4.	**CONFIRM MODEL**

RESULT	PROCEED TO
w/o Automatic Light Control	A
w/ Automatic Light Control	B

B ▶ **GO TO STEP 7**

A ▼

5.	**CHECK HARNESS AND CONNECTOR (AIR CONDITIONING AMPLIFIER ASSEMBLY - SOLAR SENSOR (COOLER THERMISTOR))**

(a) Disconnect the G2 solar sensor (cooler thermistor) connector.

(b) Disconnect the K73 air conditioning amplifier assembly connector.

(c) Measure the resistance according to the value(s) in the table below.

Standard Resistance:

EWD INFO

Click Location & Routing(G2,K73)
Click Connector(G2)
Click Connector(K73)

TESTER CONNECTION	CONDITION	SPECIFIED CONDITION
G2-1 (SS+) - K73-2 (S5-1)	Always	Below 1 Ω
G2-2 (SS-) - K73-9 (TS)	Always	Below 1 Ω
G2-1 (SS+) or K73-2 (S5-1) - Other terminals and body ground	Always	10 kΩ or higher
G2-2 (SS-) or K73-9 (TS) - Other terminals and body ground	Always	10 kΩ or higher

NG ▶ **REPAIR OR REPLACE HARNESS OR CONNECTOR**

OK ▼

6.	**INSPECT SOLAR SENSOR (COOLER THERMISTOR)**

Click here INFO

OK ▶ **INSPECT REFRIGERANT PRESSURE WITH MANIFOLD GAUGE SET**

for HFC-134a(R134a): Click here INFO

for HFO-1234yf(R1234yf): Click here INFO

NG ▶ **REPLACE SOLAR SENSOR (COOLER THERMISTOR)** INFO

7.	**CHECK HARNESS AND CONNECTOR (SOLAR SENSOR (AUTOMATIC LIGHT CONTROL SENSOR) - MAIN BODY ECU (MULTIPLEX NETWORK BODY ECU))**

(a) Disconnect the G1 solar sensor (automatic light control sensor) connector.

(b) Disconnect the K17 main body ECU (multiplex network body ECU) connector.

(c) Measure the resistance according to the value(s) in the table below.

Standard Resistance:

EWD INFO

Click Location & Routing(G1,K17)
Click Connector(G1)
Click Connector(K17)

TESTER CONNECTION	CONDITION	SPECIFIED CONDITION
G1-1 (CLTB) - K17-8 (CLTB)	Always	Below 1 Ω
G1-2 (CLTE) - K17-21 (CLTE)	Always	Below 1 Ω
G1-4 (CLTS) - K17-20 (CLTS)	Always	Below 1 Ω
G1-1 (CLTB) or K17-8 (CLTB) - Other terminals and body ground	Always	10 kΩ or higher
G1-2 (CLTE) or K17-21 (CLTE) - Other terminals and body ground	Always	10 kΩ or higher
G1-4 (CLTS) or K17-20 (CLTS) - Other terminals and body ground	Always	10 kΩ or higher

NG ▶ **REPAIR OR REPLACE HARNESS OR CONNECTOR**

OK ▼

8.	**INSPECT SOLAR SENSOR (AUTOMATIC LIGHT CONTROL SENSOR)**

Click here INFO

OK ▶ **INSPECT REFRIGERANT PRESSURE WITH MANIFOLD GAUGE SET**

for HFC-134a(R134a): Click here INFO

for HFO-1234yf(R1234yf): Click here INFO

NG ▶ **REPLACE SOLAR SENSOR (AUTOMATIC LIGHT CONTROL SENSOR)** INFO