Last Modified: 12-04-2024	6.11:8.1.0	**Doc ID:** RM100000002BLUX
Model Year Start: 2023	**Model:** Prius Prime	**Prod Date Range:** [03/2023 -]
Title: M20A-FXS (ENGINE CONTROL): SFI SYSTEM: P01152A; Engine Coolant Temperature Sensor 1 Signal Stuck in Range; 2023 - 2024 MY Prius Prius Prime [03/2023 -]		

DTC	**P01152A**	**Engine Coolant Temperature Sensor 1 Signal Stuck in Range**

DESCRIPTION

Refer to DTC P011511.

Click here INFO

DTC NO.	DETECTION ITEM	DTC DETECTION CONDITION	TROUBLE AREA	MIL	DTC OUTPUT FROM	PRIORITY	NOTE
P01152A	Engine Coolant Temperature Sensor 1 Signal Stuck in Range	Either of the following conditions is met (2 trip detection logic): • When the engine is started cold and warmed up, the engine coolant temperature sensor value does not change. • After the warmed up engine is stopped and the next cold engine start is performed, the engine coolant temperature sensor value does not change.	• Water inlet with thermostat sub-assembly • Engine coolant temperature sensor	Comes on	Engine	B	SAE Code: P0116

MONITOR DESCRIPTION

Engine Coolant Temperature Sensor Cold Start Monitor

When a cold engine start is performed and then the engine is warmed up, if the engine coolant temperature sensor value does not change, it is determined that a malfunction has occurred. If this is detected in 2 consecutive driving cycles, the MIL is illuminated and this DTC is stored.

Engine Coolant Temperature Sensor Soak Monitor

If the engine coolant temperature sensor value does not change after the warmed up engine is stopped and then the next cold engine start is performed, it is determined that a malfunction has occurred. If this is detected in 2 consecutive driving cycles, the MIL is illuminated and this DTC is stored.

MONITOR STRATEGY

Related DTCs	P0116: Engine coolant temperature sensor rationality (cold start monitor) P0116: Engine coolant temperature sensor rationality (soak monitor)
Required Sensors/Components (Main)	Engine coolant temperature sensor
Required Sensors/Components (Related)	-
Frequency of Operation	Once per driving cycle
Duration	10 seconds: Soak monitor -: Cold start monitor
MIL Operation	2 driving cycles
Sequence of Operation	None

TYPICAL ENABLING CONDITIONS

Cold Start Monitor

All of the following conditions are met	-
Auxiliary battery voltage	10.5 V or higher
Time after engine start	1 second or more
Engine coolant temperature at engine start	Less than 60°C (140°F)
Soak time	0 seconds or more
Accumulated mass air flow	for HEV Model: 1980 g or more for PHEV Model: 1338 g or more (Changes based on temperature difference between engine coolant temperature and ambient temperature)
Engine	Running
Fuel cut	Off
Intake air temperature sensor circuit fail (P0112, P0113)	Not detected
Engine coolant temperature sensor circuit fail (P0117, P0118)	Not detected
Engine water pump circuit fail (P26CA, P26CC, P26CD)	Not detected
Difference between engine coolant temperature at engine start and intake air temperature	Less than 40°C (72°F)

Soak Monitor

All of the following conditions are met	-
Auxiliary battery voltage	10.5 V or higher
Engine	Running
Soak time	5 hours or more
Either of the following conditions is met	1 or 2
1. Engine coolant temperature	60°C (140°F) or higher
2. Accumulated mass air flow	for HEV Model: 3960 g or more for PHEV Model: 8728 g or more
Engine coolant temperature sensor circuit fail (P0117, P0118)	Not detected
Soak timer fail (P2610)	Not detected
Engine water pump circuit fail (P26CA, P26CC, P26CD)	Not detected

TYPICAL MALFUNCTION THRESHOLDS

Cold Start Monitor

Engine coolant temperature sensor value change	Less than 5°C (9°F)

Soak Monitor

Difference between current engine coolant temperature sensor value and previous engine coolant temperature sensor value when engine stopped	Less than 5°C (9°F) (Varies with engine coolant temperature of last trip engine stop)

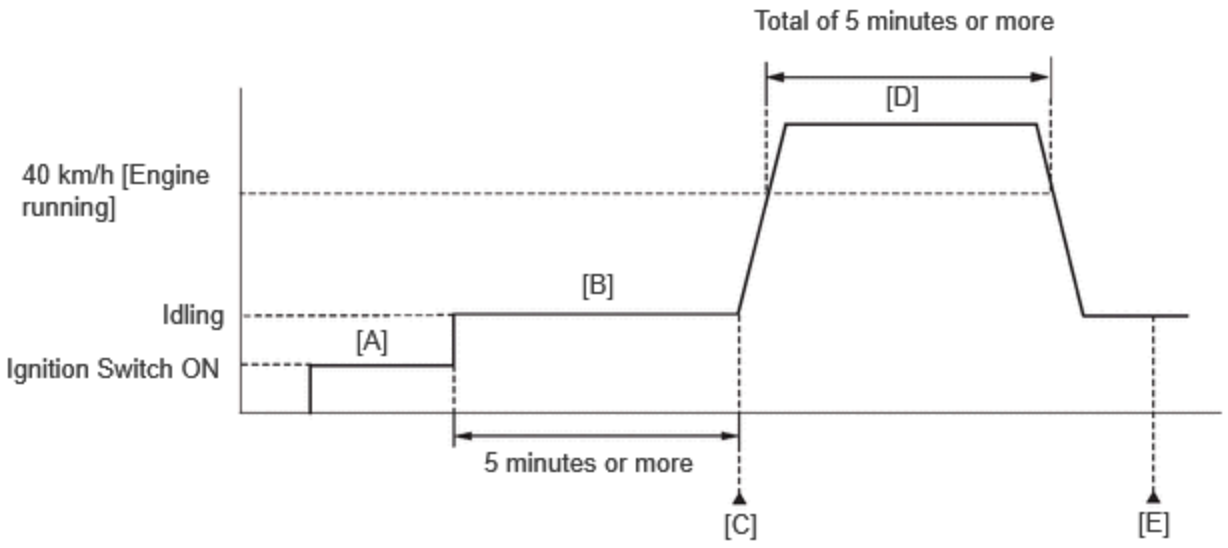
CONFIRMATION DRIVING PATTERN

HINT:

- After repair has been completed, clear the DTC and then check that the vehicle has returned to normal by performing the following All Readiness check procedure.

  Click here INFO
- When clearing the permanent DTCs, refer to the "CLEAR PERMANENT DTC" procedure.

  Click here INFO



HINT: Start the engine when the engine coolant temperature is 60°C or less

1. Clear the DTCs (even if no DTCs are stored, perform the clear DTC procedure).
2. Turn the ignition switch off and wait for at least 30 seconds.
3. Turn the ignition switch to ON [A].
4. Enter the following menus: Powertrain / Engine / Data List / Coolant Temperature.
5. Check that the engine coolant temperature is 60°C (140°F) or less.
6. Put the engine in Inspection Mode (Maintenance Mode).

   Click here INFO
7. Start the engine and idle it for 5 minutes or more [B].

HINT:

If the engine coolant temperature does not change by 5°C (9°F) or higher, the engine coolant temperature sensor is malfunctioning. It is not necessary to continue this procedure.

8. Enter the following menus: Powertrain / Engine / Trouble Codes [C].
9. Read the pending DTCs.

HINT:

- If a pending DTC is output, the system is malfunctioning.
- If a pending DTC is not output, perform the following procedure.

10. Enter the following menus: Powertrain / Engine / Utility / All Readiness.
11. Input the DTC: P01152A.
12. Check the DTC judgment result.

HINT:

- If the judgment result is NORMAL, the system is normal.
- If the judgment result is ABNORMAL, the system is malfunctioning.
- If the judgment result is INCOMPLETE, perform steps [D] through [E].
- [A] to [C]: Normal judgment procedure.

  The normal judgment procedure is used to complete DTC judgment and also used when clearing permanent DTCs.
- When clearing the permanent DTCs, do not disconnect the cable from the auxiliary battery terminal or attempt to clear the DTCs during this procedure, as doing so will clear the universal trip and normal judgment histories.

13. Press the EV/HV mode selection switch to select HV mode. (for PHEV Model)
14. Drive the vehicle at 40 km/h (25 mph) or more for a total of 5 minutes or more [D].

CAUTION:

When performing the confirmation driving pattern, obey all speed limits and traffic laws.

HINT:

- In the event of the drive pattern being interrupted (possibly due to factors such as traffic conditions), the drive pattern can be resumed.
- If the engine stops, further depress the accelerator pedal to restart the engine.

15. Check the DTC judgment result again [E].

HINT:

- If the judgment result is NORMAL, the system is normal.
- If the judgment result is ABNORMAL, the system is malfunctioning.
- [A] to [E]: Normal judgment procedure.

  The normal judgment procedure is used to complete DTC judgment and also used when clearing permanent DTCs.
- When clearing the permanent DTCs, do not disconnect the cable from the auxiliary battery terminal or attempt to clear the DTCs during this procedure, as doing so will clear the universal trip and normal judgment histories.

CAUTION / NOTICE / HINT

NOTICE:

- Vehicle Control History may be stored in the hybrid vehicle control ECU if the engine is malfunctioning. Certain vehicle condition information is recorded when Vehicle Control History is stored. Reading the vehicle conditions recorded in both the freeze frame data and Vehicle Control History can be useful for troubleshooting.

  for HEV Model: Click here INFO

  for PHEV Model: Click here INFO

  (Select Powertrain in Health Check and then check the time stamp data.)
- If any "Engine Malfunction" Vehicle Control History item has been stored in the hybrid vehicle control ECU, make sure to clear it. However, as all Vehicle Control History items are cleared simultaneously, if any Vehicle Control History items other than "Engine Malfunction" are stored, make sure to perform any troubleshooting for them before clearing Vehicle Control History.

  for HEV Model: Click here INFO

  for PHEV Model: Click here INFO

HINT:

- If DTC P011511, P011515 or P012500 is output simultaneously with DTC P01152A, the engine coolant temperature sensor may have an open or a short circuit. Troubleshoot those DTCs first.
- When the DTC is output, check the engine coolant temperature using the GTS. Enter the following menus: Powertrain / Engine / Data List / Coolant Temperature. If the Coolant Temperature value is lower than the actual engine coolant temperature, the engine coolant temperature sensor circuit may be malfunctioning. In this case, check the wire harnesses and connectors (and those connections) between the ECM and the engine coolant temperature sensor first.

PROCEDURE

1.	**CHECK ANY OTHER DTCS OUTPUT (IN ADDITION TO DTC P01152A)**

(a) Read the DTCs.

Powertrain > Engine > Trouble Codes

RESULT	PROCEED TO
P01152A and other DTCs are output	A
P01152A is output	B

HINT:

If any DTCs other than P01152A are output, troubleshoot those DTCs first.

A ▶ **GO TO DTC CHART**

B

▼

2.	**INSPECT WATER INLET WITH THERMOSTAT SUB-ASSEMBLY**

Click here INFO

OK ▶ **REPLACE ENGINE COOLANT TEMPERATURE SENSOR**

NG ▶ **REPLACE WATER INLET WITH THERMOSTAT SUB-ASSEMBLY**