Last Modified: 12-04-2024	6.11:8.1.0	**Doc ID:** RM100000002BM1V
Model Year Start: 2023	**Model:** Prius Prime	**Prod Date Range:** [03/2023 -]
Title: M20A-FXS (ENGINE CONTROL): SFI SYSTEM: P26CB71; Engine Coolant Pump Actuator Stuck; 2023 - 2024 MY Prius Prius Prime [03/2023 -]		

DTC	**P26CB71**	**Engine Coolant Pump Actuator Stuck**

DESCRIPTION

Refer to DTC P26CA12.

Click here INFO

DTC NO.	DETECTION ITEM	DTC DETECTION CONDITION	TROUBLE AREA	MIL	DTC OUTPUT FROM	PRIORITY	NOTE
P26CB71	Engine Coolant Pump Actuator Stuck	Even though an operation request signal is being output, the engine water pump assembly does not rotate* (1 trip detection logic).	• Lack of engine coolant • Engine coolant leak • Engine water pump assembly (water inlet housing) • ECM	Comes on	Engine	B	SAE Code: P26CB

*: As the frequency signal (WPI) is 4 Hz when the engine water pump assembly is stopped to enable the ECM to detect an open or short in the signal line, the engine water pump assembly speed will be displayed as approximately 160 rpm even when the pump is stopped. If there is an open in the WPI circuit, the engine water pump speed will be displayed as 0 rpm.

Related Data List

DTC NO.	DATA LIST
P26CB71	• Coolant Temperature • Electric Water Pump Target Speed • Electric Water Pump Speed

MONITOR DESCRIPTION

The ECM receives a frequency signal (WPI) from the engine water pump assembly and calculates the speed of the engine water pump assembly. The ECM outputs an operation duty signal (WPO) to steplessly control the speed of the engine water pump assembly. If the duty signal (WPI) indicates that the engine water pump assembly is stopped even though the ECM is outputting an operation duty signal (WPO), the ECM judges that the engine water pump assembly is stuck and stores this DTC.

As the frequency signal (WPI) is 4 Hz when the engine water pump assembly is stopped to enable the ECM to detect an open or short in the signal line, the engine water pump assembly speed will be displayed as approximately 160 rpm even when the pump is stopped.

MONITOR STRATEGY

Related DTCs	P26CB: Engine water pump motor lock
Required Sensors/Components (Main)	Water inlet housing with water pump sub-assembly
Required Sensors/Components (Related)	-
Frequency of Operation	Continuous
Duration	Less than 65 seconds
MIL Operation	Immediate
Sequence of Operation	None

TYPICAL ENABLING CONDITIONS

All of the following conditions are met	-
Engine coolant temperature	-10°C (-50°F) or higher
Engine water pump output duty ratio	30 to 85%
Auxiliary battery voltage	Higher than 10.5 V
Engine coolant temperature sensor malfunction (P0117, P0118)	Not detected
Engine water pump (IN) malfunction (P26CA)	Not detected
Engine water pump (OUT) malfunction (P26CC, P26CD)	Not detected

TYPICAL MALFUNCTION THRESHOLDS

Fail Counter*	15 seconds or more
*: Count up fail counter when both of the following conditions are met	(a) and (b)
(a) Engine water pump (IN) motor speed	100 rpm or higher
(b) Engine water pump (IN) motor speed	Less than 170 rpm

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

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. Put the engine in Inspection Mode (Maintenance Mode).

Click here INFO

5. Start the engine and maintain the engine speed at 2500 rpm or more for at least 70 seconds [B].
6. Enter the following menus: Powertrain / Engine / Trouble Codes [C].
7. 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.

8. Enter the following menus: Powertrain / Engine / Utility / All Readiness.
9. Input the DTC: P26CB71.
10. Check the DTC judgment result.

HINT:

- If the judgment result is NORMAL, the system is normal.
- If the judgment result is ABNORMAL, the system has a malfunction.
- If the judgment result is INCOMPLETE, perform steps [B] through [C] again.
- [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.

WIRING DIAGRAM

Refer to DTC P26CA12.

Click here INFO

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:

As the frequency signal (WPI) is 4 Hz when the engine water pump assembly is stopped to enable the ECM to detect an open or short in the signal line, the engine water pump assembly speed will be displayed as approximately 160 rpm even when the pump is stopped.

PROCEDURE

1.	**CHECK ANY OTHER DTCS OUTPUT (IN ADDITION TO DTC P26CB71)**

(a) Read the DTCs.

Powertrain > Engine > Trouble Codes

RESULT	PROCEED TO
P26CB71 and other DTCs are output	A
P26CB71 and P26CE37 are output	B
P26CB71 is output	C

HINT:

If any DTCs other than P26CB71 are output, troubleshoot those DTCs first.

A ▶ **GO TO DTC CHART**

B ▶ **GO TO STEP 2**

C

▼

2.	**CHECK ENGINE COOLANT LEVEL IN RESERVOIR TANK**

(a) Click here INFO

HINT:

Check that the engine coolant level is between the FULL and LOW lines.

RESULT	PROCEED TO
Engine coolant level is above the LOW line	A
Engine coolant level is below the LOW line	B

A ▶ **GO TO STEP 6**

B

▼

3.	**CHECK FOR ENGINE COOLANT LEAKS**

(a) Check the areas around the engine and heater for engine coolant leaks.

Click here INFO

HINT:

If the engine oil is cloudy during the engine oil level dipstick check, it means that engine coolant has entered the engine lubrication system.

OK:

No leaks.

NG ▶ **GO TO STEP 5**

OK ▼

4.	**ADD ENGINE COOLANT**

(a) Fill the reservoir tank up to the FULL line with engine coolant.

NOTICE:

Make sure not to add engine coolant when the engine is hot.

NEXT ▶ **GO TO STEP 6**

5.	**REPAIR OR REPLACE MALFUNCTIONING PARTS, COMPONENT AND AREA**

(a) Repair any engine coolant leaks.

HINT:

Add engine coolant and perform air bleeding after repair.

NEXT ▼

6.	**PERFORM ACTIVE TEST USING GTS (ACTIVATE THE ELECTRIC WATER PUMP)**

(a) According to the display on the GTS, read the Data List while performing the Active Test.

Powertrain > Engine > Active Test

ACTIVE TEST DISPLAY
Activate the Electric Water Pump

DATA LIST DISPLAY
Electric Water Pump Speed

Standard:

ACTIVE TEST OPERATION	ELECTRIC WATER PUMP SPEED
3000 rpm	2000 rpm or higher

OK ▶ **GO TO STEP 8**

NG ▼

7.	**INSPECT ECM (INTERNAL CIRCUIT)**

Pre-procedure1

(a) Disconnect the engine water pump assembly (water inlet housing) connector.

(b) Turn the ignition switch to ON.

Procedure1

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

Standard:

EWD INFO

Click Location & Routing(C38)
Click Connector(C38)

TESTER CONNECTION	CONDITION	SPECIFIED CONDITION
C38-3 (SWP) - Body ground	Ignition switch ON	Resistance fluctuates*

HINT:

- *: When the connector of the engine water pump assembly (water inlet housing) is disconnected, the ECM will enter fail-safe mode. When the ECM is in fail-safe mode, a continuous duty signal will be output and the resistance will fluctuate as the transistor inside the ECM is turned on an off.
- If the resistance fluctuates while the ECM is in fail-safe mode after the connector of the engine water pump assembly (water inlet housing) is disconnected, it can be determined that the transistor is operating.
- If the transistor is not operating, the ECM may be malfunctioning.
- If the resistance fluctuates after turning the ignition switch to ON, it can be determined that the ECM is in fail-safe mode.

Post-procedure1

(d) None.

NG ▶ **REPLACE ECM**

OK

▼

8.	**REPLACE ENGINE WATER PUMP ASSEMBLY (WATER INLET HOUSING)**

HINT:

- Click here INFO
- When replacing any cooling system parts, if excessive deposits of rust or scale exist or the concentration of the engine coolant is abnormal, replace the engine coolant.

NEXT

▼

9.	**CLEAR DTC**

Pre-procedure1

(a) None.

Procedure1

(b) Clear the DTCs.

Powertrain > Engine > Clear DTCs

Post-procedure1

(c) Turn the ignition switch off and wait for at least 30 seconds.

NEXT

▼

10.	**CHECK WHETHER DTC OUTPUT RECURS (DTC P26CB71)**

Pre-procedure1

(a) Drive the vehicle in accordance with the driving pattern described in Confirmation Driving Pattern.

Procedure1

(b) Read the DTCs.

Powertrain > Engine > Trouble Codes

HINT:

If no DTC is output, the repair has been successfully completed.

Post-procedure1

(c) None.

NEXT **END**