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HYBRID / BATTERY CONTROL: PLUG-IN CHARGE CONTROL SYSTEM (for PHEV Model): P0E6A73; Hybrid/EV Battery Chargi...

Last Modified: 12-04-2024	6.11:8.1.0	Doc ID: RM10000002BIYD			
Model Year Start: 2023	Model: Prius Prime	Prod Date Range: [03/2023 - ]			
Title: HYBRID / BATTERY CONTROL: PLUG-IN CHARGE CONTROL SYSTEM (for PHEV Model): P0E6A73; Hybrid/EV					

Battery Charging System Precharge Contactor Control Actuator Stuck Closed; 2023 - 2024 MY Prius Prime [03/2023 - ]

DTC	POE6A73	Hybrid/EV Battery Charging System Precharge Contactor Control Actuator Stuck Closed	
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# **DTC SUMMARY**

### **MALFUNCTION DESCRIPTION**

The Plugin charge control ECU assembly detects a stuck closed malfunction of a charge relay on the HV battery negative (-) terminal side.

The cause of this malfunction may be one of the following:

### Solar energy control ECU assembly internal voltage sensor (VSOL) circuit malfunction

- Voltage sensor (VSOL) malfunction
- Solar energy control ECU assembly malfunction
- Communication (wire harness) malfunction

### High voltage system malfunction

• No. 1 traction battery device box malfunction

### Low-voltage circuit (12 V) malfunction

- Plugin charge control ECU assembly malfunction
- No. 1 traction battery device box malfunction
- Battery ECU assembly malfunction
- Low voltage wire harness malfunction
- Low voltage connector malfunction

# **DESCRIPTION**

Refer to the description for DTC P0D0700.

Click here

DTC NO.	DETECTION ITEM	DTC DETECTION CONDITION	TROUBLE AREA	MIL	WARNING INDICATE	DTC OUTPUT FROM	PRIORITY	NOTE
	Battery Charging System Precharge Contactor	The voltage in the solar energy control ECU assembly does not drop even though the CHRP relay is turned off.	<ul> <li>No. 1 traction battery device box</li> <li>Battery ECU assembly</li> </ul>			Plug-in Control	В	SAE Code: P0E6B

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DTC NO.	DETECTION ITEM	DTC DETECTION CONDITION	TROUBLE AREA	MIL	WARNING INDICATE	PRIORITY	NOTE
	Actuator Stuck Closed	(1 trip detection logic)	<ul> <li>Solar energy control ECU assembly</li> <li>Wire harness or connector</li> </ul>				

# **MONITOR DESCRIPTION**

The plugin charge control ECU assembly monitors the operating state of the CHR relay. If the voltage of the SOL-ECU does not decrease even though the CHRP relay is turned off, the solar energy control ECU assembly judges that there is a malfunction and illuminates the MIL and stores a DTC.

# **MONITOR STRATEGY**

Related DTCs	P0E6B: Battery Charging System Pre-charge Contactor Circuit Stuck Closed			
Required sensors/components	No. 1 traction battery device box Battery ECU assembly Solar energy control ECU assembly			
Frequency of operation	-			
Duration	TMC's intellectual property			
MIL operation	1 driving cycle			
Sequence of operation	None			

# **TYPICAL ENABLING CONDITIONS**

The monitor will run whenever the following DTCs are not stored	TMC's intellectual property
Other conditions belong to TMC's intellectual property	-

# **TYPICAL MALFUNCTION THRESHOLDS**

TMC's intellectual property	-

# **COMPONENT OPERATING RANGE**

Plug-in charge control ECU

DTC P0E6A73 is not detected

# **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.

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Click here

• When clearing the permanent DTCs, refer to the "CLEAR PERMANENT DTC" procedure.

Click here

- 1. Connect the GTS to the DLC3.
- 2. Turn the ignition switch to ON and turn the GTS on.
- 3. Clear the DTCs (even if no DTCs are stored, perform the clear DTC procedure).
- 4. Turn the ignition switch off and wait for 2 minutes or more.
- 5. Confirm to start solar charging and wait for 2 minutes or more. [\*1]

### HINT:

[\*1]: Normal judgment procedure.

The normal judgment procedure is used to complete DTC judgment and also used when clearing permanent DTCs.

- 6. Enter the following menus: Powertrain / Plug-in Control / Utility / All Readiness.
- 7. Check the DTC judgment result.

### HINT:

- If the judgment result shows NORMAL, the system is normal.
- If the judgment result shows ABNORMAL, the system has a malfunction.
- If the judgment result shows INCOMPLETE or N/A, perform the normal judgment procedure again.

# WIRING DIAGRAM

Refer to the wiring diagram for the P0D0700

Click here

# **CAUTION / NOTICE / HINT**

### **CAUTION:**

Refer to the precautions before inspecting high voltage circuit.

Click here

### **NOTICE:**

- If the DTCs are cleared or the cable is disconnected from and reconnected to the negative (-) auxiliary battery terminal before performing repairs, connecting the electric vehicle charger cable assembly connector may cause a malfunction. Do not connect the electric vehicle charger cable assembly connector.
- After the ignition switch is turned off, there may be a waiting time before disconnecting the negative (-) auxiliary battery terminal.

Click here

• When disconnecting and reconnecting the auxiliary battery.

### HINT:

When disconnecting and reconnecting the auxiliary battery, there is an automatic learning function that completes learning when the respective system is used.

Click here

## **PROCEDURE**

1.

CHECK DTC OUTPUT (HYBRID CONTROL, HV BATTERY, PLUG-IN CONTROL, SOLAR CHARGING CONTROL) 12/16/24, 8:59 PM HYBRID / BATTERY CONTROL: PLUG-IN CHARGE CONTROL SYSTEM (for PHEV Model): P0E6A73; Hybrid/EV Battery Chargi...

Pre-procedure1

(a) Enter the following menus:

Powertrain > Hybrid Control > Trouble Codes Powertrain > HV Battery > Trouble Codes Powertrain > Plug-in Control > Trouble Codes Powertrain > Solar Charging Control > Trouble Codes

Procedure1

(b) Check for DTCs.

RESULT	PROCEED TO		
P0E6A73 only is output, or DTCs except the ones in the table below are also output.	А		
DTCs of Hybrid Control System in the tables below are output.	В		
DTCs of Hybrid Battery System in the tables below are output.			
DTCs of Plug-in Charge Control System in the tables below are output.	D		
DTCs of Solar Charging System in the tables below are output.	E		

MALFUNCTION CONTENT	SYSTEM		RELEVANT DTC		
		P060B49	Plug-in Control Module A/D Processing Internal Electronic Failure		
Microcomputer	Plug-in Charge Control System	P0E5E87	Plug-in Control Module Processor from Hybrid/EV Battery Charger Control Module Processor Missing Message		
malfunction		P1C1F49	Hybrid/EV Battery Charger Control Module A/D Processing Internal Electronic Failure		
	Solar Charging System	P1EDB49	Solar Charger Control Module A/D Processing Internal Electronic Failure		
	Plug-in Charge Control System	U01BB87	Lost Communication with Battery Charger Control Module "B" Missing Message		
		U113A87	Lost Communication with Solar Charging Control Module Missing Message		
Communication system		U117B87	Lost Communication with Hybrid/EV Battery Energy Control Module "A" (ch2) Missing Message		
malfunction	Solar Charging U System	U115087	Lost Communication with Hybrid Powertrain Control Module (Hybrid/EV Battery Local Bus) Missing Message		
		U117B87	Lost Communication with Battery Energy Control Module "A" (ch2) Missing Message		
		U115387	Lost Communication with Battery Charger Control Module "A" (ch2) Missing Message		

MALFUNCTION CONTENT	SYSTEM		RELEVANT DTC
		P0D0A11	Hybrid/EV Battery Charging System Positive Contactor Control Circuit Short to Ground
		P0D0A15	Hybrid/EV Battery Charging System Positive Contactor Control Circuit Short to Auxiliary Battery or Open
	Hybrid Battery	P0D1111	Hybrid/EV Battery Charging System Negative Contactor Control Circuit Short to Ground
	System	P0D1115	Hybrid/EV Battery Charging System Negative Contactor Control Circuit Short to Auxiliary Battery or Open
		P0E6D11	Hybrid/EV Battery Charging System Precharge Contactor Control Circuit Short to Ground
Sensor and actuator		P0E6D15	Hybrid/EV Battery Charging System Precharge Contactor Control Circuit Short to Auxiliary Battery or Open
circuit malfunction	Plug-in Charge Control System	P0D4C12	Hybrid/EV Battery Charger Hybrid/EV Battery Input Voltage Sensor Circuit Short to Auxiliary Battery
		P0D4C14	Hybrid/EV Battery Charger Hybrid/EV Battery Input Voltage Sensor Circuit Short to Ground or Open
		P0D4C1C	Hybrid/EV Battery Charger Hybrid/EV Battery Input Voltage Sensor Voltage Out of Range
		P1EA41C	Hybrid/EV Control Battery Voltage Sensor / Solar Charging Voltage Sensor Voltage Out of Range
	Solar Charging	P1EA412	Solar Charging Voltage Sensor Circuit Short to Auxiliary Battery
	System	P1EA414	Solar Charging Voltage Sensor Circuit Short to Ground or Open
System malfunction	Hybrid Control System	P0A1F94	Hybrid/EV Battery Energy Control Module Unexpected Operation
		P1BAC1C	Hybrid/EV Battery Charging System Positive/Negative Contactor Enable Circuit Circuit Voltage Out of Range

### HINT:

• P0E6A73 may be output as a result of the malfunction indicated by the DTCs above.

- a. The chart above is listed in inspection order of priority.
- b. Check DTCs that are output at the same time by following the listed order. (The main cause of the malfunction can be determined without performing unnecessary inspections.)

Post-procedure1

(c) None



SYSTEM)

### **E GO TO DTC CHART (SOLAR CHARGING SYSTEM)**



### 2. CHECK FREEZE FRAME DATA (P0E6A73)

(a) Read the freeze frame data of DTC P0E6A73.

### Powertrain > Plug-in Control > DTC(P0E6A73) > Freeze Frame Data

### TESTER DISPLAY

Solar Charging Boosting DC/DC Converter Voltage

HV/EV Battery Total Voltage

### **NOTICE:**

In this step, read only the values of "0(s)", which means the moment the DTC has been confirmed, although other information before and after the moment is also displayed when reading the freeze frame data.

RESULT	PROCEED TO
Difference between "Hybrid/EV Battery Total Voltage" and "Solar Charging Boosting DC/DC Converter Voltage" is always less than 100 V.	А
Difference between "Hybrid/EV Battery Total Voltage" and "Solar Charging Boosting DC/DC Converter Voltage" is 100 V or more.	В

### HINT:

When the difference between "Solar Charging Boosting DC/DC Converter Voltage" and "Hybrid/EV Battery Total Voltage" is large even though the charge relay of HV battery positive (+) terminal side is OFF, the solar energy control ECU assembly has a malfunction.

**B** REPLACE SOLAR ENERGY CONTROL ECU ASSEMBLY

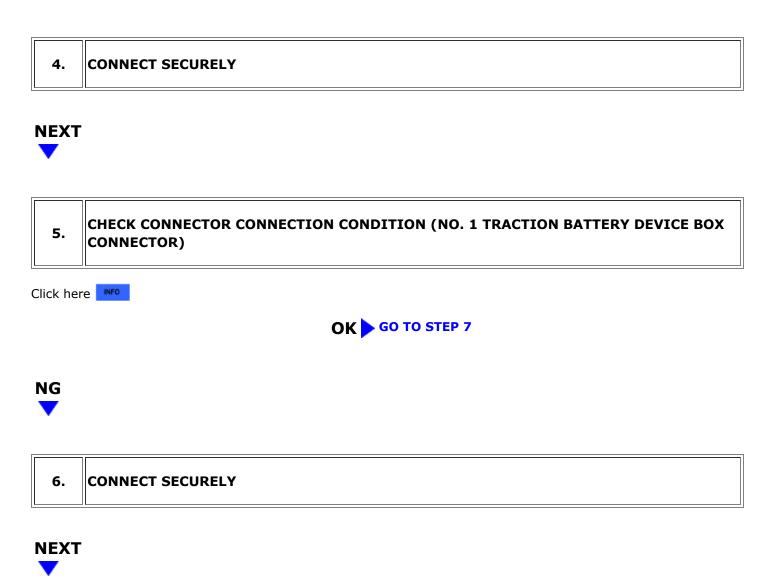


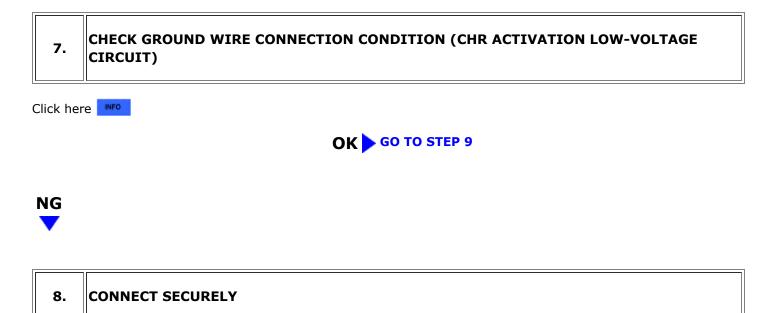
### 3. CHECK CONNECTOR CONNECTION CONDITION (BATTERY ECU CONNECTOR)

Click here

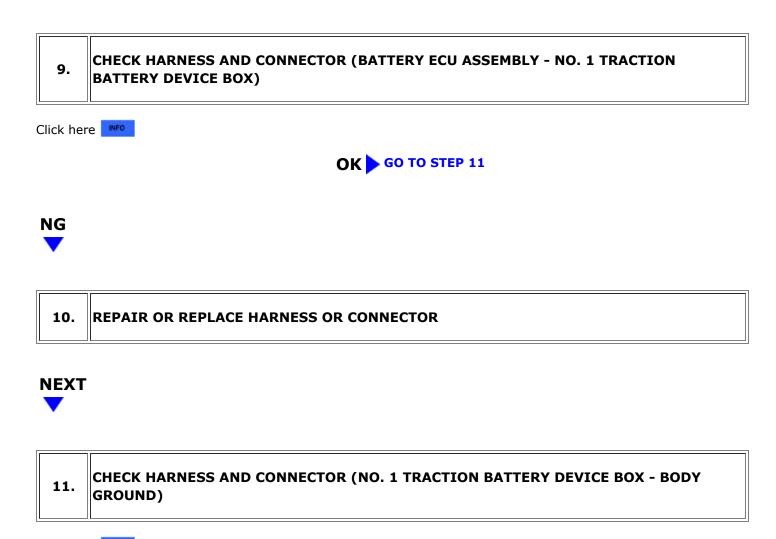












Click here



NG



# NEXT

13. INSPECT NO. 1 TRACTION BATTERY DEVICE BOX (CHRB, CHRP, CHRG)

Click here





### 14. CHECK NO. 1 TRACTION BATTERY DEVICE BOX

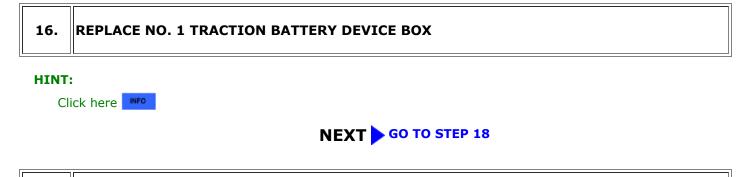
Click here

RESULT	JUDGMENT	PROCEED TO
ОК	Past malfunction	A
NG	Present malfunction	В





# 15. REPLACE NO. 1 TRACTION BATTERY DEVICE BOX HINT: Click here Click here NEXT GO TO STEP 18





### HINT:

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Click here

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18. READ VALUE USING GTS (CHECK FOR NORMAL OPERATION)		
Click here		
	RESULT	PROCEED
		ТО
Difference between "Hybrid/EV Battery Total Voltage" and "Solar Charging Boosting DC/DC Converter Voltage" is always less than 100 V.		А
Difference between "Hybrid/EV Battery Total Voltage" and "Solar Charging Boosting DC/DC Converter Voltage" is 100 V or more.		В



