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Model Year Start: 2023	**Model:** Prius Prime	**Prod Date Range:** [03/2023 -]
Title: HYBRID / BATTERY CONTROL: MOTOR GENERATOR CONTROL SYSTEM (for PHEV Model): P0A949E,P0D3319; DC/DC Converter Stuck On; 2023 - 2024 MY Prius Prime [03/2023 -]		

DTC	**P0A949E**	**DC/DC Converter Stuck On**

DTC	**P0D3319**	**DC/DC Converter Circuit Current Above Threshold**

DTC SUMMARY

MALFUNCTION DESCRIPTION

This DTC indicates that a large current flowed in the boost converter. The cause of this malfunction may be one of the following:

AREA	MAIN MALFUNCTION DESCRIPTION
Hybrid vehicle transaxle assembly	• Open or short circuit in the motor or generator coils • Motor (MG2) or generator (MG1) internal malfunction (iron particles or damage from foreign objects)
Resolver	Open or short circuit in the motor resolver or generator resolver
Inverter	• Inverter internal circuit malfunction • Malfunction in ECU that controls the inverter • Malfunction in sensor for inverter control (current sensor, VH sensor, VL sensor)
Inverter cooling system	• Inverter water pump assembly malfunction • Coolant leak • Frozen • Blockage

DESCRIPTION

For a description of the boost converter.

Click here INFO

DTC NO.	DETECTION ITEM	DTC DETECTION CONDITION	TROUBLE AREA	MIL	WARNING INDICATE	DTC OUTPUT FROM	PRIORITY	NOTE
P0A949E	DC/DC Converter Stuck On	Boost converter fail signal detected (circuit malfunction)	• Inverter cooling system • Cooling fan system	Comes on	Master Warning: Comes on	Motor Generator	A	SAE Code: P0A94

DTC NO.	DETECTION ITEM	DTC DETECTION CONDITION	TROUBLE AREA	MIL	WARNING INDICATE	DTC OUTPUT FROM	PRIORITY	NOTE
		(1 trip detection logic)	• Wire harness or connector • Motor cable • Hybrid vehicle transaxle assembly • PCU NO. 1 fuse • Inverter with converter assembly • Hybrid vehicle control ECU • No. 1 traction battery device box assembly					
P0D3319	DC/DC Converter Circuit Current Above Threshold	Boost converter fail signal detected: A malfunction is detected in any of the boost converter components (inverter, hybrid vehicle transaxle, motor generator control ECU, etc.). (1 trip detection logic)	• Inverter cooling system • Cooling fan system • Wire harness or connector • Motor cable • Hybrid vehicle transaxle assembly • PCU NO. 1 fuse • Inverter with converter assembly • Hybrid vehicle control ECU	Comes on	Master Warning: Comes on	Motor Generator	A	SAE Code: P0D33

DTC NO.	DETECTION ITEM	DTC DETECTION CONDITION	TROUBLE AREA	MIL	WARNING INDICATE	DTC OUTPUT FROM	PRIORITY	NOTE
			• No. 1 traction battery device box assembly					

MONITOR DESCRIPTION

If excessive amperage flows through the boost converter, the boost converter will transmit a boost converter fail signal to the motor generator control ECU. Upon receiving this signal, the ECU will illuminate the MIL and store a DTC.

MONITOR STRATEGY

Related DTCs	P0A94 (INF P0A949E): FCV detection (Circuit malfunction) P0D33 (INF P0D3319): FCV detection (Over current malfunction)
Required sensors/components	Boost converter
Frequency of operation	Continuous
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

Motor generator control ECU	DTC P0A94 (INF P0A949E) is not detected DTC P0D33 (INF P0D3319) 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.

  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 2 minutes or more.
3. Turn the ignition switch to ON and wait for 5 seconds or more. [*1]
4. Turn the ignition switch to ON (READY) and wait for 5 seconds or more. [*2]
5. Press the HV EV CHG HOLD mode switch to enter HV drive mode. [*3]
6. Depress the accelerator pedal of the vehicle with the engine stopped and the shift lever in P to start the engine. [*4]

NOTICE:

As the state of charge of the HV battery may be low after driving in fail-safe mode, it will automatically be charged for 5 to 10 minutes with ignition switch ON (READY) after repairs have been performed.

HINT:

- Check that there are no abnormalities (abnormal sounds, coolant leaks, etc.).
- [*1] to [*4]: Normal judgment procedure.

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

7. Enter the following menus: Powertrain / Motor Generator / Utility / All Readiness.
8. 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, perform the normal judgment procedure again.

WIRING DIAGRAM

Refer to the wiring diagram for the Generator Resolver Circuit.

Click here INFO

Refer to the wiring diagram for the Motor Resolver Circuit.

Click here INFO

Refer to the wiring diagram for the Generator High-voltage Circuit.

Click here INFO

Refer to the wiring diagram for the Motor High-voltage Circuit.

Click here INFO

Refer to the wiring diagram for the Inverter Low-voltage Circuit.

Click here INFO

Refer to the wiring diagram for the Cooling System.

Click here INFO

CAUTION / NOTICE / HINT

CAUTION:

Refer to the precautions before inspecting high voltage circuit.

Click here INFO

NOTICE:

- After the ignition switch is turned off, there may be a waiting time before disconnecting the negative (-) auxiliary battery terminal.

  Click here INFO
- 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 INFO
- After troubleshooting and repairing all output DTCs, be sure to replace the inverter with converter assembly. (The inverter with converter assembly may have been broken or damaged due to overheating.)

HINT:

- P0A949E or P0D3319 may be output as a result of the malfunction indicated by the DTCs in table below.

  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.)
- If DTC P0A949E is output, replace the inverter with converter assembly after completing repairs.

Table 1

MALFUNCTION CONTENT	SYSTEM	RELEVANT DTC	
Insulation malfunction	Hybrid control system	P1C7C49	Hybrid/EV Battery Voltage System Isolation (A/C Area) Internal Electronic Failure
		P1C7D49	Hybrid/EV Battery Voltage System Isolation (Hybrid/EV Battery Area) Internal Electronic Failure
		P1C7E49	Hybrid/EV Battery Voltage System Isolation (Transaxle Area) Internal Electronic Failure
		P1C7F49	Hybrid/EV Battery Voltage System Isolation (Direct Current Area) Internal Electronic Failure
		P1C8049	Hybrid/EV Battery Voltage System Isolation (Rear Motor Area) Internal Electronic Failure
System main relay or high voltage circuit malfunction	Hybrid control system	P0AD911	Hybrid/EV Battery Positive Contactor Circuit Short to Ground
		P0AD915	Hybrid/EV Battery Positive Contactor Circuit Short to Auxiliary Battery or Open
		P0ADD11	Hybrid/EV Battery Negative Contactor Circuit Short to Ground
		P0ADD15	Hybrid/EV Battery Negative Contactor Circuit Short to Auxiliary Battery or Open
		P1C8449	High Voltage Power Resource Circuit Short during Ready ON
HV battery malfunction	Hybrid control system	P0A1F94	Hybrid/EV Battery Energy Control Module Unexpected Operation
		P0ABF00	Hybrid/EV Battery Current Sensor "A" Circuit Range/Performance
		P0B231C	Hybrid/EV Battery "A" Voltage Sensor Voltage Out of Range

MALFUNCTION CONTENT	SYSTEM	RELEVANT DTC	
		P31B300	Hybrid/EV Battery Voltage High
		U011187	Lost Communication with Hybrid/EV Battery Energy Control Module "A" Missing Message
	Hybrid battery system	P056014	System Voltage (BATT) Circuit Short to Ground or Open
		P060629	Hybrid/EV Battery Energy Control Module Processor to Monitoring Processor Signal Invalid
		P060687	Hybrid/EV Battery Energy Control Module Processor to Monitoring Processor Missing Message
		P060A47	Hybrid/EV Battery Energy Control Module Monitoring Processor Watchdog / Safety MCU Failure
		P060A87	Hybrid/EV Battery Energy Control Module Processor from Monitoring Processor Missing Message
		P060B16	Hybrid/EV Battery Energy Control Module A/D Processing Circuit Voltage Below Threshold
		P060B49	Hybrid/EV Battery Energy Control Module A/D Processing Internal Electronic Failure
		P0ABF11	Hybrid/EV Battery Current Sensor "A" Circuit Short to Ground
		P0ABF15	Hybrid/EV Battery Current Sensor "A" Circuit Short to Auxiliary Battery or Open
		P0ABF28	Hybrid/EV Battery Current Sensor "A" Signal Bias Level Out of Range / Zero Adjustment Failure
		P0ABF2A	Hybrid/EV Battery Current Sensor "A" Signal Stuck In Range
		P0B0E11	Hybrid/EV Battery Current Sensor "B" Circuit Short to Ground
		P0B0E15	Hybrid/EV Battery Current Sensor "B" Circuit Short to Auxiliary Battery or Open
		P0B1362	Hybrid/EV Battery Current Sensor "A"/"B" Signal Compare Failure
		P0E2D00	Hybrid/EV Battery Energy Control Module Hybrid/EV Battery Monitor Performance
		P1A001C	Hybrid Battery Stack 2 Cell Voltage Detection Voltage Out of Range
		P1A051C	Hybrid Battery Stack 3 Cell Voltage Detection Voltage Out of Range
		P1A0A1C	Hybrid Battery Stack 4 Cell Voltage Detection Voltage Out of Range
		P1A6017	Hybrid/EV Battery Stack 2 Cell Circuit Voltage Above Threshold
		P1A6116	Hybrid/EV Battery Stack 2 Cell Circuit Voltage Below Threshold

MALFUNCTION CONTENT	SYSTEM	RELEVANT DTC	
		P1A6317	Hybrid/EV Battery Stack 3 Cell Circuit Voltage Above Threshold
		P1A6416	Hybrid/EV Battery Stack 3 Cell Circuit Voltage Below Threshold
		P1A6617	Hybrid/EV Battery Stack 4 Cell Circuit Voltage Above Threshold
		P1A6716	Hybrid/EV Battery Stack 4 Cell Circuit Voltage Below Threshold
		P1A8100	Hybrid/EV Battery Stack 1 Delta SOC High (Extreme)
		P1A8600	Hybrid/EV Battery Stack 2 Delta SOC High (Extreme)
		P1A8B00	Hybrid/EV Battery Stack 3 Delta SOC High (Extreme)
		P1A9100	Hybrid/EV Battery Stack 4 Delta SOC High (Extreme)
		P1AC413	Hybrid/EV Battery Stack 1 Current Interrupt Device Circuit Open
		P1AC49E	Hybrid/EV Battery Stack 1 Current Interrupt Device Stuck On
		P1AC513	Hybrid/EV Battery Stack 2 Current Interrupt Device Circuit Open
		P1AC59E	Hybrid/EV Battery Stack 2 Current Interrupt Device Stuck On
		P1AC613	Hybrid/EV Battery Stack 3 Current Interrupt Device Circuit Open
		P1AC69E	Hybrid/EV Battery Stack 3 Current Interrupt Device Stuck On
		P1AC713	Hybrid/EV Battery Stack 4 Current Interrupt Device Circuit Open
		P1AC79E	Hybrid/EV Battery Stack 4 Current Interrupt Device Stuck On
		P1AFD00	Flying Capacitor Circuit Voltage Out of Range
		P1AFD1C	Flying Capacitor/Internal Control Module Hybrid/EV Battery Monitor Voltage Out of Range
		P1CBB12	Hybrid/EV Battery Current Sensor Power Supply Circuit Short to Auxiliary Battery
		P1CBB14	Hybrid/EV Battery Current Sensor Power Supply Circuit Short to Ground or Open
HV battery malfunction	Hybrid battery system	P1CC81E	Hybrid/EV Battery Stack 1 Voltage Difference Out of Range
		P1CC91E	Hybrid/EV Battery Stack 2 Voltage Difference Out of Range
		P1CCA1E	Hybrid/EV Battery Stack 3 Voltage Difference Out of Range
		P1CCB1E	Hybrid/EV Battery Stack 4 Voltage Difference Out of Range

MALFUNCTION CONTENT	SYSTEM	RELEVANT DTC	
		P2BE411	Hybrid/EV Battery Pack Current Sensor "C" Low Circuit Short to Ground
		P2BE415	Hybrid/EV Battery Pack Current Sensor "C" High Circuit Short to Auxiliary Battery or Open
		P2BE41C	Hybrid/EV Battery Pack Current Sensor "C" Circuit Range/Performance Circuit Voltage Out of Range
		P2BE428	Hybrid/EV Battery Pack Current Sensor "C" Circuit Range/Performance Signal Bias Level Out of Range / Zero Adjustment Failure
		P301A1C	Hybrid Battery Stack 1 Cell Voltage Detection Voltage Out of Range
		P31AA17	Hybrid/EV Battery Stack 1 Cell Circuit Voltage Above Threshold
		P31AB16	Hybrid/EV Battery Stack 1 Cell Circuit Voltage Below Threshold
		P33DA1E	Hybrid/EV Battery Stack 1 Circuit Resistance Out of Range
		P33DB1E	Hybrid/EV Battery Stack 2 Circuit Resistance Out of Range
		P33DC1E	Hybrid/EV Battery Stack 3 Circuit Resistance Out of Range
		P33DD1E	Hybrid/EV Battery Stack 4 Circuit Resistance Out of Range
		P33E01B	Hybrid/EV Battery Stack 1 Circuit Resistance Above Threshold
		P33E11B	Hybrid/EV Battery Stack 2 Circuit Resistance Above Threshold
		P33E21B	Hybrid/EV Battery Stack 3 Circuit Resistance Above Threshold
		P33E31B	Hybrid/EV Battery Stack 4 Circuit Resistance Above Threshold
		P33EC16	(Extreme) Hybrid/EV Battery Stack 1 Cell Circuit Voltage Below Threshold
		P33ED16	(Extreme) Hybrid/EV Battery Stack 2 Cell Circuit Voltage Below Threshold
		P33EE16	(Extreme) Hybrid/EV Battery Stack 3 Cell Circuit Voltage Below Threshold
		P33EF16	(Extreme) Hybrid/EV Battery Stack 4 Cell Circuit Voltage Below Threshold
		U029387	Lost Communication with Hybrid/EV Powertrain Control Module Missing Message
		U115087	Lost Communication with Hybrid Powertrain Control Module (Hybrid/EV Battery Local Bus) Missing Message

Table 2

MALFUNCTION CONTENT	SYSTEM	RELEVANT DTC	
Microcomputer malfunction	Motor generator control system	P0A1A47	Generator Control Module Watchdog / Safety MC Failure
		P0A1A49	Generator Control Module Internal Electronic Failure
		P0A1B1F	Generator Control Module Circuit Intermittent
		P0A1C47	Drive Motor "B" Control Module Watchdog / Safety MCU Failure
		P0A1C49	Drive Motor "B" Control Module Internal Electronic Failure
		P1C2A1C	Generator A/D Converter Circuit Circuit Voltage Out of Range
		P1C2A49	Generator A/D Converter Circuit Internal Electronic Failure
		P1C2A71	Generator A/D Converter Circuit Actuator Stuck
		P1C2B1C	Drive Motor "A" Control Module A/D Converter Circuit Voltage Out of Range
		P1C2B49	Drive Motor "A" Control Module A/D Converter Circuit Internal Electronic Failure
		P1C2B71	Drive Motor "A" Control Module A/D Converter Circuit Actuator Stuck
		P1C2C1C	Drive Motor "B" Control Module AD Converter Circuit Voltage Out of Range
		P1C2C49	Drive Motor "B" Control Module AD Converter Internal Electronic Failure
		P1C2C71	Drive Motor "B" Control Module A/D Converter Circuit Actuator Stuck
		P310A83	Communication Error from Drive Motor "B" to Drive Motor "A" Value of Signal Protection Calculation Incorrect
		P310A86	Communication Error from Drive Motor "B" to Drive Motor "A" Signal (Some Circuit Quantity, Reported via Serial Data) Invalid
		P310A87	Communication Error from Drive Motor "B" to Drive Motor "A" Missing Message
		P310B83	Communication Error from Drive Motor "A" to Drive Motor "B" Value of Signal Protection Calculation Incorrect
		P310B86	Communication Error from Drive Motor "A" to Drive Motor "B" Signal (Some Circuit Quantity, Reported via Serial Data) Invalid
		P310B87	Communication Error from Drive Motor "A" to Drive Motor "B" Missing Message
		P313383	Communication Error from Generator to Drive Motor "A" Value of Signal Protection Calculation Incorrect
		P313386	Communication Error from Generator to Drive Motor "A" Signal Invalid

MALFUNCTION CONTENT	SYSTEM	RELEVANT DTC	
		P313387	Communication Error from Generator to Drive Motor "A" Missing Message
		P313483	Communication Error from Drive Motor "A" to Generator Value of Signal Protection Calculation Incorrect
		P313486	Communication Error from Drive Motor "A" to Generator Signal Invalid
		P313487	Communication Error from Drive Motor "A" to Generator Missing Message
		P32BF83	Lost Communication between Drive Motor "A" and "B" (Drive Motor "A") Value of Signal Protection Calculation Incorrect
		P32BF86	Lost Communication between Drive Motor "A" and "B" (Drive Motor "A") Signal (Some Circuit Quantity, Reported via Serial Data) Invalid
		P32BF87	Lost Communication between Drive Motor "A" and "B" (Drive Motor "A") Missing Message
		P32CF83	Lost Communication between Drive Motor "A" and "B" (Drive Motor "B") Value of Signal Protection Calculation Incorrect
		P32CF86	Lost Communication between Drive Motor "A" and "B" (Drive Motor "B") Signal (Some Circuit Quantity, Reported via Serial Data) Invalid
		P32CF87	Lost Communication between Drive Motor "A" and "B" (Drive Motor "B") Missing Message
	Hybrid control system	P0A1B49	Drive Motor "A" Control Module Internal Electronic Failure
Power source circuit malfunction	Motor generator control system	P06B01C	Generator Control Module Position Sensor REF Power Source Circuit Voltage Out of Range
		P06B31C	Drive Motor "B" Control Module Position Sensor REF Power Source Circuit Voltage Out of Range
		P06D61C	Generator Control Module Offset Power Circuit Voltage Out of Range
		P19F81C	Generator Control Module Offset Power Circuit Voltage Out of Range
		P19F91C	Drive Motor "B" Control Module Offset Power Circuit Voltage Out of Range
		P26DF1C	Generator Control Module Position Sensor REF Power Source Circuit Voltage Out of Range
Communication malfunction	Motor generator control system	U11B387	Lost Communication with Hybrid/EV Powertrain Control Module (ch5) Missing Message
	Hybrid control system	U117E87	Lost Communication with Drive MotorControl Module "A" (ch4) Missing Message

MALFUNCTION CONTENT	SYSTEM	RELEVANT DTC	
Sensor and actuator circuit malfunction	Motor generator control system	P0A3F16	Drive Motor "A" Position Sensor Circuit Voltage Below Threshold
		P0A3F21	Drive Motor "A" Position Sensor Signal Amplitude < Minimum
		P0A3F22	Drive Motor "A" Position Sensor Signal Amplitude > Maximum
		P0A4516	Drive Motor "B" Position Sensor Circuit Voltage Below Threshold
		P0A4521	Drive Motor "B" Position Sensor Signal Amplitude < Minimum
		P0A4522	Drive Motor "B" Position Sensor Signal Amplitude > Maximum
		P0A4B16	Generator Position Sensor Circuit Voltage Below Threshold
		P0A4B21	Generator Position Sensor Signal Amplitude < Minimum
		P0A4B22	Generator Position Sensor Signal Amplitude > Maximum
		P0A6012	Drive Motor "A" Phase V Current (High Resolution) Circuit Short to Battery
		P0A6014	Drive Motor "A" Phase V Current (High Resolution) Circuit Short to Ground or Open
		P0A601C	Drive Motor "A" Phase V Current (High Resolution) Circuit Voltage Out of Range
		P0A6312	Drive Motor "A" Phase W Current (High Resolution) Circuit Short to Battery
		P0A6314	Drive Motor "A" Phase W Current (High Resolution) Circuit Short to Ground or Open
		P0A631C	Drive Motor "A" Phase W Current (High Resolution) Circuit Voltage Out of Range
		P0A6912	Drive Motor "B" Phase V Current(High Resolution) Circuit Short to Battery
		P0A6914	Drive Motor "B" Phase V Current(High Resolution) Circuit Short to Ground or Open
		P0A691C	Drive Motor "B" Phase V Current(High Resolution) Circuit Voltage Out of Range
		P0A6C12	Drive Motor "B" Phase W Current(High Resolution) Circuit Short to Battery
		P0A6C14	Drive Motor "B" Phase W Current(High Resolution) Circuit Short to Ground or Open
		P0A6C1C	Drive Motor "B" Phase W Current(High Resolution) Circuit Voltage Out of Range
		P0BE512	Drive Motor "A" Phase U Current Sensor Circuit Short to Battery

MALFUNCTION CONTENT	SYSTEM	RELEVANT DTC	
		P0BE514	Drive Motor "A" Phase U Current Sensor Circuit Short to Ground or Open
		P0BE528	Drive Motor "A" Phase U Current Sensor Signal Bias Level Out of Range / Zero Adjustment Failure
		P0BE912	Drive Motor "A" Phase V Current Sensor Circuit Short to Battery
		P0BE914	Drive Motor "A" Phase V Current Sensor Circuit Short to Ground or Open
		P0BE928	Drive Motor "A" Phase V Current Sensor Signal Bias Level Out of Range / Zero Adjustment Failure
		P0BED12	Drive Motor "A" Phase W Current Sensor Circuit Short to Battery
		P0BED14	Drive Motor "A" Phase W Current Sensor Circuit Short to Ground or Open
		P0BED28	Drive Motor "A" Phase W Current Sensor Signal Bias Level Out of Range / Zero Adjustment Failure
		P0BF112	Drive Motor "B" Phase U Current Sensor Circuit Short to Battery
		P0BF114	Drive Motor "B" Phase U Current Sensor Circuit Short to Ground or Open
		P0BF128	Drive Motor "B" Phase U Current Sensor Signal Bias Level Out of Range / Zero Adjustment Failure
		P0BF512	Drive Motor "B" Phase V Current Sensor Circuit Short to Battery
		P0BF514	Drive Motor "B" Phase V Current Sensor Circuit Short to Ground or Open
		P0BF528	Drive Motor "B" Phase V Current Sensor Signal Bias Level Out of Range / Zero Adjustment Failure
		P0BF912	Drive Motor "B" Phase W Current Sensor Circuit Short to Battery
		P0BF914	Drive Motor "B" Phase W Current Sensor Circuit Short to Ground or Open
		P0BF928	Drive Motor "B" Phase W Current Sensor Signal Bias Level Out of Range / Zero Adjustment Failure
		P0BFD62	Drive Motor "A" Phase U-V-W Current Sensor Signal Compare Failure
		P0BFE62	Drive Motor "B" Phase U-V-W Current Sensor Signal Compare Failure
		P0C5013	Drive Motor "A" Position Sensor Circuit "A" Circuit Open
		P0C5016	Drive Motor "A" Position Sensor Circuit "A" Circuit Voltage Below Threshold

MALFUNCTION CONTENT	SYSTEM	RELEVANT DTC	
		P0C5017	Drive Motor "A" Position Sensor Circuit "A" Circuit Voltage Above Threshold
		P0C5513	Drive Motor "B" Position Sensor Circuit "A" Circuit Open
		P0C5516	Drive Motor "B" Position Sensor Circuit "A" Circuit Voltage Below Threshold
		P0C5517	Drive Motor "B" Position Sensor Circuit "A" Circuit Voltage Above Threshold
		P0C5A13	Drive Motor "A" Position Sensor Circuit "B" Circuit Open
		P0C5A16	Drive Motor "A" Position Sensor Circuit "B" Circuit Voltage Below Threshold
		P0C5A17	Drive Motor "A" Position Sensor Circuit "B" Circuit Voltage Above Threshold
		P0C5F13	Drive Motor "B" Position Sensor Circuit "B" Circuit Open
		P0C5F16	Drive Motor "B" Position Sensor Circuit "B" Circuit Voltage Below Threshold
		P0C5F17	Drive Motor "B" Position Sensor Circuit "B" Circuit Voltage Above Threshold
		P0C6413	Generator Position Sensor Circuit "A" Circuit Open
		P0C6416	Generator Position Sensor Circuit "A" Circuit Voltage Below Threshold
		P0C6417	Generator Position Sensor Circuit "A" Circuit Voltage Above Threshold
		P0C6913	Generator Position Sensor Circuit "B" Circuit Open
		P0C6916	Generator Position Sensor Circuit "B" Circuit Voltage Below Threshold
		P0C6917	Generator Position Sensor Circuit "B" Circuit Voltage Above Threshold
		P0D2D16	Drive Motor "A" Inverter Voltage Sensor (VH) Circuit Voltage Below Threshold
		P0D2D17	Drive Motor "A" Inverter Voltage Sensor (VH) Circuit Voltage Above Threshold
		P0DFA62	Generator Phase U-V-W Current Sensor Signal Compare Failure
		P0E0012	Generator Phase U Current Sensor Circuit Short to Battery
		P0E0014	Generator Phase U Current Sensor Circuit Short to Ground or Open
		P0E0028	Generator Phase U Current Sensor Signal Bias Level Out of Range / Zero Adjustment Failure
		P0E0412	Generator Phase V Current Sensor Circuit Short to Battery

MALFUNCTION CONTENT	SYSTEM	RELEVANT DTC	
		P0E0414	Generator Phase V Current Sensor Circuit Short to Ground or Open
		P0E0428	Generator Phase V Current Sensor Signal Bias Level Out of Range / Zero Adjustment Failure
		P0E0812	Generator Phase W Current Sensor Circuit Short to Battery
		P0E0814	Generator Phase W Current Sensor Circuit Short to Ground or Open
		P0E0828	Generator Phase W Current Sensor Signal Bias Level Out of Range / Zero Adjustment Failure
		P0E3116	DC/DC Converter Voltage Sensor "A" (VL) Circuit Voltage Below Threshold
		P0E3117	DC/DC Converter Voltage Sensor "A" (VL) Circuit Voltage Above Threshold
		P0E5111	DC/DC Converter Current Sensor Circuit Short to Ground
		P0E5115	DC/DC Converter Current Sensor Circuit Short to Battery or Open
		P0E5128	DC/DC Converter Current Sensor Signal Bias Level Out of Range / Zero Adjustment Failure
		P0E512A	DC/DC Converter Current Sensor Signal Stuck In Range
		P1CAC49	Generator Position Sensor Internal Electronic Failure
		P1CAD49	Drive Motor "A" Position Sensor Internal Electronic Failure
		P1CAE49	Drive Motor "B" Position Sensor Internal Electronic Failure
		P1CAF38	Generator Position Sensor REF Signal Cycle Malfunction Signal Frequency Incorrect
		P1CB038	Drive Motor "A" Position Sensor REF Signal Frequency Incorrect
		P1CB138	Drive Motor "B" Position Sensor REF Signal Frequency Incorrect
		P1CFF62	Hybrid/EV Battery Current/DC/DC Converter Current Signal Compare Failure
	Hybrid control system	P0C7600	Hybrid/EV Battery System Discharge Time Too Long
		P0D2D1C	Drive Motor "A" Inverter Voltage Sensor Voltage Out of Range
		P0E311C	Boosting Converter Voltage Sensor "A" Voltage Out of Range
System malfunction	Motor generator control system	P0A9000	Drive Motor "A" Performance
		P0A9100	Drive Motor "B" Performance
		P0A9200	Hybrid/EV Generator Performance
		P0BFF1D	Drive Motor "A" Circuit Current Out of Range

MALFUNCTION CONTENT	SYSTEM	RELEVANT DTC	
		P0C021D	Drive Motor "B" System Circuit Current Out of Range
		P0C1900	Drive Motor "A" Execution Torque Performance
		P0C1A00	Drive Motor "B" Execution Torque Performance
		P0CA300	DC/DC Converter Step Up Voltage Performance
		P0E7100	Generator Execution Torque Performance
		P1CA51D	Hybrid/EV Generator Circuit Current Out of Range
		P314F1F	DC/DC Converter Voltage Sensor "A" (VL) Circuit Intermittent
		P31531D	DC/DC Converter Current Sensor Circuit Current Out of Range
	Hybrid control system	P0A9300	Inverter "A" Cooling System Performance
		P0AA649	Hybrid/EV Battery Voltage System Isolation Internal Electronic Failure
		P0C7396	Motor Electronics Coolant Pump "A" Component Internal Failure
		P314A31	Motor Electronics Coolant Pump "A" No Signal

Table 3

SYSTEM	RELEVANT DTC	
Motor generator control system	P06B31F	Drive Motor "B" Control Module Position Sensor REF Power Source Circuit Intermittent
	P0A3F1F	Drive Motor "A" Position Sensor Circuit Intermittent
	P0A451F	Drive Motor "B" Position Sensor Circuit Intermittent
	P0A4B1F	Generator Position Sensor Circuit Intermittent
	P0A601F	Drive Motor "A" Phase V Current (High Resolution) Circuit Intermittent
	P0A631F	Drive Motor "A" Phase W Current (High Resolution) Circuit Intermittent
	P0A691F	Drive Motor "B" Phase V Current(High Resolution) Circuit Intermittent
	P0A6C1F	Drive Motor "B" Phase W Current(High Resolution) Circuit Intermittent
	P0BF11F	Drive Motor "B" Phase U Current Sensor Circuit Intermittent
	P0BE51F	Drive Motor "A" Phase U Current Sensor Circuit Intermittent
	P0BE91F	Drive Motor "A" Phase V Current Sensor Circuit Intermittent
	P0BED1F	Drive Motor "A" Phase W Current Sensor Circuit Intermittent
	P0C501F	Drive Motor "A" Position Sensor Circuit "A" Circuit Intermittent
	P0C551F	Drive Motor "B" Position Sensor Circuit "A" Circuit Intermittent
	P0C5A1F	Drive Motor "A" Position Sensor Circuit "B" Circuit Intermittent
	P0C5F1F	Drive Motor "B" Position Sensor Circuit "B" Circuit Intermittent

SYSTEM	RELEVANT DTC	
	P0C641F	Generator Position Sensor Circuit "A" Circuit Intermittent
	P0C691F	Generator Position Sensor Circuit "B" Circuit Intermittent
	P0D2D1F	Drive Motor "A" Inverter Voltage Sensor (VH) Circuit Intermittent
	P0E001F	Generator Phase U Current Sensor Circuit Intermittent
	P0E041F	Generator Phase V Current Sensor Circuit Intermittent
	P0E081F	Generator Phase W Current Sensor Circuit Intermittent
	P0E311F	DC/DC Converter Voltage Sensor "A" (VL) Circuit Intermittent
	P0E511F	DC/DC Converter Current Sensor Circuit Intermittent
	P1C601F	Generator Control Module Position Sensor REF Power Source Circuit Intermittent
	P1C621F	Generator Control Module Offset Power Circuit Intermittent
	P1C641F	Generator Control Module Circuit Intermittent
	P1C651F	Generator Control Module Circuit Intermittent
	P1C661F	Drive Motor "B" Control Module Circuit Intermittent
	P1C671F	Drive Motor "A" Phase U-V-W Current Sensor Circuit Intermittent
	P1C681F	Drive Motor "B" Phase U-V-W Current Sensor Circuit Intermittent
	P1C691F	Generator Phase U-V-W Current Sensor Circuit Intermittent
	P26DF1F	Generator Control Module Position Sensor REF Power Source Circuit Intermittent
	P310A1F	Communication Error from Drive Motor "B" to Drive Motor "A" Circuit Intermittent
	P310B1F	Communication Error from Drive Motor "A" to Drive Motor "B" Circuit Intermittent
	P31241F	Lost Communication between Drive Motor "A" and HV/EV ECU Circuit Intermittent
	P32BF1F	Lost Communication between Drive Motor "A" and "B" (Drive Motor "A") Circuit Intermittent
	P32CF1F	Lost Communication between Drive Motor "A" and "B" (Drive Motor "B") Circuit Intermittent

PROCEDURE

1.	**CHECK FREEZE FRAME DATA AND DIAGNOSIS RELATED INFORMATION**

Pre-procedure1

(a) None

Procedure1

(b) Read the diagnosis related information and freeze frame data of DTC P0A949E or P0D3319.

Powertrain > Motor Generator > Utility

TESTER DISPLAY
Diagnosis Related Information

Powertrain > Motor Generator > Trouble Codes

RESULT	PROCEED TO
DTC U11B300 or U11B387 is listed in Diagnosis Related Information.	A
DTC U11B300 or U11B387 is not listed in Diagnosis Related Information and the value of freeze frame data item Emergency Shutdown Signal is ON.	B
Other than above	C

Post-procedure1

(c) Turn the ignition switch off.

A ▶ **GO TO DTC CHART (U11B300)**

B ▶ **GO TO DTC CHART (P321E9F)**

C ▼

2.	**CHECK FREEZE FRAME DATA**

Pre-procedure1

(a) None

Procedure1

(b) Read the freeze frame data of DTC P0A949E or P0D3319.

Powertrain > Motor Generator > Trouble Codes

RESULT	PROCEED TO
Boosting Converter Temperature (Upper) and Boosting Converter Temperature 1 (Lower) are 120°C or more	A
Other than above	B

Post-procedure1

(c) Turn the ignition switch off.

B ▶ **GO TO STEP 4**

A ▼

3.	**CHECK COOLING SYSTEM**

Click here INFO

NEXT ▶ **GO TO STEP 4**

4.	**CHECK CONNECTOR CONNECTION CONDITION (INVERTER WITH CONVERTER ASSEMBLY CONNECTOR)**

Click here INFO

RESULT	PROCEED TO
OK	A
NG (The connector is not connected securely.)	B
NG (The terminals are not making secure contact or are deformed, or water or foreign matter exists in the connector.)	C

B ▶ **CONNECT SECURELY**

C ▶ **REPAIR OR REPLACE HARNESS OR CONNECTOR**

A ▼

5.	**CHECK GENERATOR RESOLVER CIRCUIT**

Click here INFO

NEXT

6.	**CHECK MOTOR RESOLVER CIRCUIT**

Click here INFO

NEXT

7.	**CHECK GENERATOR HIGH-VOLTAGE CIRCUIT**

Click here INFO

NEXT

8.	**CHECK MOTOR HIGH-VOLTAGE CIRCUIT**

Click here INFO

NEXT

9.	**CHECK INVERTER LOW-VOLTAGE CIRCUIT**

Click here INFO

HINT:

If the "Inverter Low-voltage Circuit" inspection results are normal, perform the next step.

NEXT

10.	**CHECK FREEZE FRAME DATA**

Pre-procedure1

(a) None

Procedure1

(b) Read the freeze frame data for DTC P0A949E or DTC P0D3319.

NOTICE:

As freeze frame data is stored immediately before and after a DTC is stored, make sure to only read the values for the moment the DTC was stored ("0(s)").

RESULT	PROCEED TO
The value of Inverter Input Current is less than 50 A	A
The value of Inverter Input Current is 50 A or more	B

Post-procedure1

(c) Turn the ignition switch off.

A **REPLACE INVERTER WITH CONVERTER ASSEMBLY**

B **REPLACE INVERTER WITH CONVERTER ASSEMBLY, NO. 1 TRACTION BATTERY DEVICE BOX ASSEMBLY and SERVICE PLUG GRIP**

INVERTER WITH CONVERTER ASSEMBLY: Click here INFO

NO. 1 TRACTION BATTERY DEVICE BOX ASSEMBLY: Click here INFO

SERVICE PLUG GRIP: Click here INFO