

IMPORTANT UPDATED

TECHNICAL INSTRUCTIONS
FOR
SAFETY RECALL E0E
SOFTWARE UPDATE FOR MOTOR GENERATOR ECU AND POWER
MANAGEMENT ECU
CERTAIN 2010-2014 MODEL YEAR PRIUS

UPDATED August 22, 2014

Updated 8/22/14

- The TI has been updated to include inverter repair (IPM).
(Section VII)

Updated 3/13/14

- The TI has been updated to include a Vehicle Prep procedure.
(Section VI, Step 1)

Updated 2/21/14

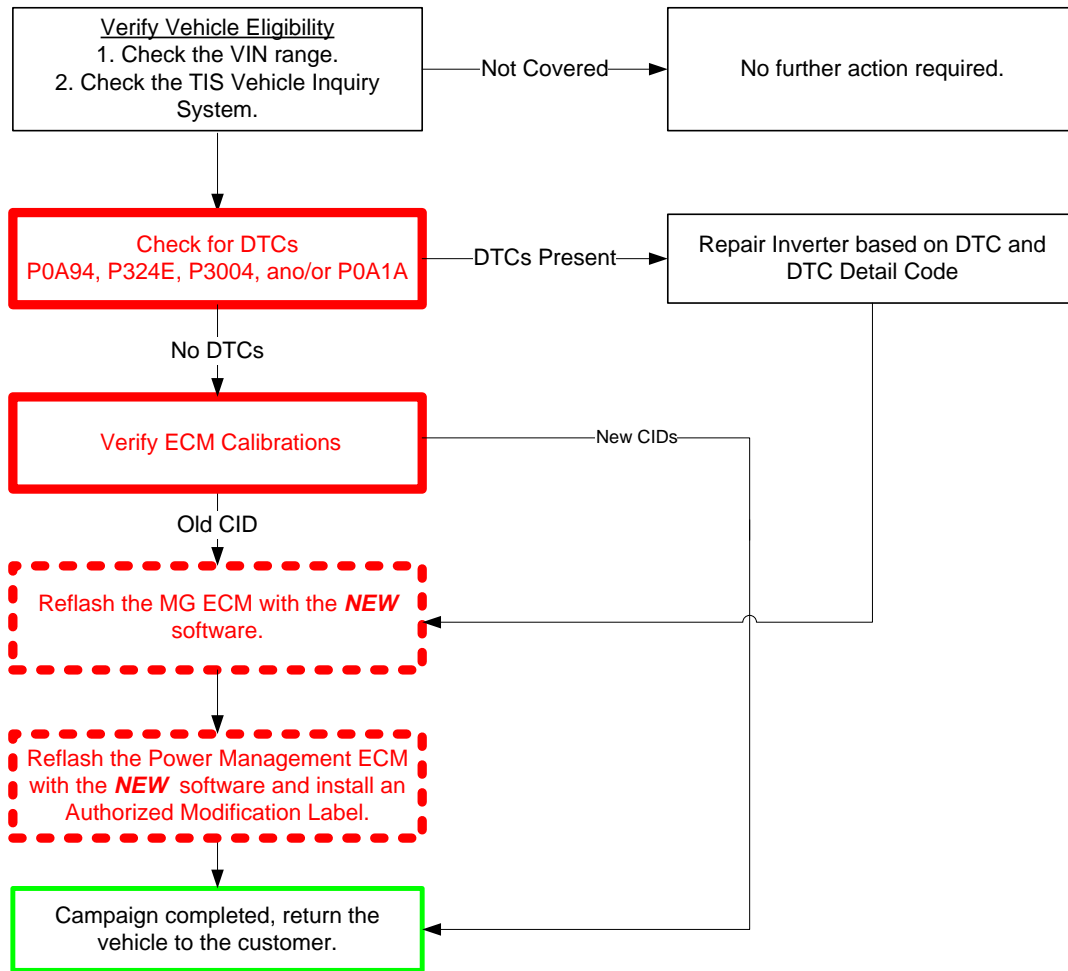
- The TI has been updated to include a Customer Health Check Report after ECU reprogramming.
(Section VI, Step 8)

Updated 2/18/2014

- The TI has been updated to include part numbers for the ECM for filling out the authorized modification label.
(Section VI, Step 9)

In order to perform this campaign, technician must be ***HYBRID CERTIFIED***. If you have questions regarding certification, contact your regional representative.

I. OPERATION FLOW CHART



II. IDENTIFICATION OF AFFECTED VEHICLES

Certain 2010-2014 Prius Vehicles

WMI	VDS	MY	START	FINISH
JTD	KN3DU	2010	0001044	0246000
			1000089	1314319
			5000058	5229180
		2011	0242812	0329648
			1308891	1479507
			5226927	5374171
		2012	0320767	0336945
			1389037	1615196
			5287389	5538257
		2013	0336850	0356537
			1575758	1735090
			5489733	5705210
2014	0356538	0361595		
	1732984	1795148		

NOTE:

- Check the TIS Vehicle Inquiry System to confirm the VIN is covered in this Safety Recall, and that the campaign has not already been completed prior to dealer shipment or by another dealer.
- TMS warranty will not reimburse dealers for repairs conducted on vehicles that are not affected or were completed by another dealer.

III. PREPARATION

A. PARTS

The only parts required for this campaign is the label below

Part Number	Part Description	Quantity
00451-00001-LBL	Authorized Modification Label*	1

*Labels can be ordered in packs of 25 from the MDC through Dealer Daily website

The parts listed below are only required in very rare cases and is not needed for every vehicle. Parts required for repair will vary based on vehicle inverter configuration/part number. Parts required also vary based on which component is being serviced within the inverter assembly. See section VII to identify what type of inverter and repair is required.

Inverter Assembly Type A:

MG ECU Replacement due to Reflash Failure

Part Number	Part Description	Qty
G920H-47030	MG ECU	1
G920J-52010	Current Sensor	1
G9208-47090	Wire Harness	1
04899-47050	Plug Kit	1
08833-80090	TSE3971-W Adhesive	1
08826-00100	Seal Packing	1
90430-18008	Gasket	1

IPM Repair (Based on DTC Detail Code Chart)

Part Number	Part Description	Qty
04899-47020	Intelligent Power Module (IPM)	1
08887-02809	Toyota Thermal Grease X-23-7884-4	2
04899-47050	Plug Kit	1
08833-80090	TSE3971-W Adhesive	1
08826-00100	Seal Packing	1
90430-18008	Gasket	1

IPM and MG ECU Repair

(Based on DTC Detail Code Chart)

Part Number	Part Description	Qty
04899-47020	Intelligent Power Module (IPM)	1
08887-02809	Toyota Thermal Grease X-23-7884-4	2
G920H-47030	MG ECU	1
G920J-52010	Current Sensor	1
G9208-47090	Wire Harness	1
04899-47050	Plug Kit	1
08833-80090	TSE3971-W Adhesive	1
08826-00100	Seal Packing	1
90430-18008	Gasket	1

Inverter Assembly Type B:

MG ECU Replacement due to Reflash Failure

Part Number	Part Description	Qty
G920H-47030	MG ECU	1
04899-47050	Plug Kit	1
08833-80090	TSE3971-W Adhesive	1
08826-00100	Seal Packing	1
90430-18008	Gasket	1

IPM Repair (Based on DTC Detail Code Chart)

Part Number	Part Description	Qty
04899-47020	Intelligent Power Module (IPM)	1
08887-02809	Toyota Thermal Grease X-23-7884-4	2
04899-47050	Plug Kit	1
08833-80090	TSE3971-W Adhesive	1
08826-00100	Seal Packing	1
90430-18008	Gasket	1

IPM and MG ECU Repair

(Based on DTC Detail Code Chart)

Part Number	Part Description	Qty
04899-47020	Intelligent Power Module (IPM)	1
08887-02809	Toyota Thermal Grease X-23-7884-4	2
G920H-47030	MG ECU	1
G920J-52010	Current Sensor	1
G9208-47090	Wire Harness	1
04899-47050	Plug Kit	1
08833-80090	TSE3971-W Adhesive	1
08826-00100	Seal Packing	1
90430-18008	Gasket	1

IPM, MG ECU, and Current Sensor Repair

(Based on DTC Detail Code Chart)

Part Number	Part Description	Qty
04899-47020	Intelligent Power Module (IPM)	1
08887-02809	Toyota Thermal Grease X-23-7884-4	2
G920H-47030	MG ECU	1
G920J-52010	Current Sensor	1
04899-47050	Plug Kit	1
08833-80090	TSE3971-W Adhesive	1
08826-00100	Seal Packing	1
90430-18008	Gasket	1

INVERTER REPLACEMENT

Part Number	Part Description	Qty
G9200-49025	Inverter Assy, w/converter	1
G9200-49075 (MY 2014)	Inverter Assy, w/converter	1

B. TOOLS & EQUIPMENT

Reflash Procedure

- Techstream 2.0 / TIS Techstream /Techstream Lite (Software 8.30 or Higher)
- GR8 Battery Diagnostic Station

Inverter Repair

- Standard Hand Tools
- Torque Wrench
- DVOM
- Air Gun
- Protective Tape

SST- These are essential special service tools that the dealership should have.

Part Number	Description	Quantity
00002-03100-S	Electrical Insulating Gloves (Small)	1
00002-03200-M	Electrical Insulating Gloves (Medium)	
00002-03300-L	Electrical Insulating Gloves (Large)	
09308-00010	Oil Seal Puller	1
09890-47010	Anti-Static Mat	1
09891-47010	Squeegee	1
09961-00950	Torque Wrench Adapter	1

Note: If additional SSTs are needed they can be ordered by calling 800-933-8335.

IV. BACKGROUND

Inside the Hybrid Inverter Assembly is an Intelligent Power Module (IPM) which contains a control board equipped with transistors. Due to software programming in the involved vehicles, certain transistors in the IPM could become damaged when operating the vehicle under high-load driving conditions, such as accelerating during highway driving. If this occurs, various warning lamps on the instrument panel will illuminate. In most cases the vehicle will enter a fail-safe mode, resulting in reduced motive power in which the vehicle can still be driven for short distances. In limited instances, the motor/generator ECU could reset, causing the hybrid system to shut down, resulting in the vehicle stopping while being driven and increasing the risk of a crash.

V. ECU CALIBRATION ID VERIFICATION AND DTC CHECK

1. CHECK FOR DTCs

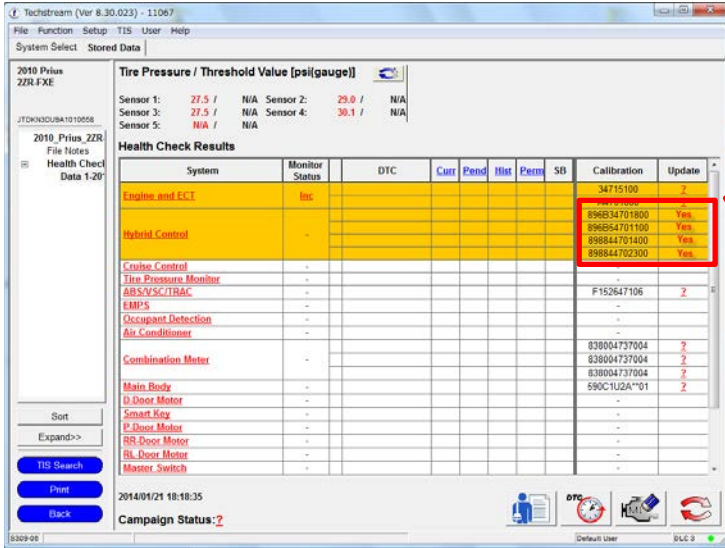
- a) Perform a Health Check.
- b) Check if DTCs P0A94, P324E, P3004, and/or P0A1A

DTCs Not Present: Proceed to step V. 2 Confirm the ECU Calibration ID.

DTCs Present: Proceed to Section VII to determine the inverter type and which components need to be replaced based on DTC and DTC detail code.

2. CONFIRM THE ECU CALIBRATION ID

a) Confirm the current calibration ID in the MG ECU and Power Management ECU.



System	Calibration ID Display Order	Cal ID	Update
Hybrid Control	Power Management (Main)	896B34701000	Yes
	Power Management (Sub)	896B54701000	*Yes
	MG ECU #1	898844701200	Yes
	MG ECU #2	898844702100	Yes

*The Power Management sub cal does not always require updating and may or may not display an update status of "Yes"

b) Referencing the table below, verify if the ECU has the Updated Calibration



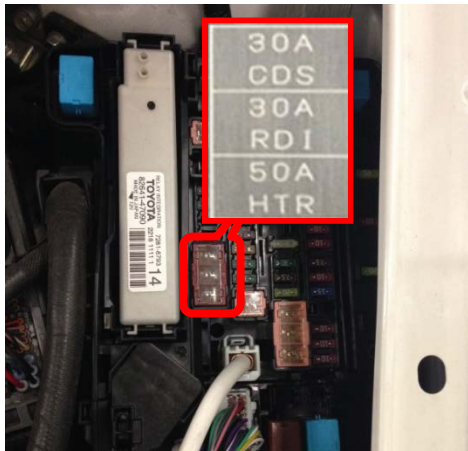
The vehicle has two separate ECUs that need to be reflashed, you must reflash both ECUs in a specific order to complete the remedy.

MG ECU Calibrations					
Model	Model Year	MG Cal	Current CID	New CID	
Prius	2010-2014	MG1	898844701200	898844701400 / 898844702300	
			898844701300		
		MG2	898844702100		
			898844702200		
		MG1	898844708000		898844708200 / 898844709200
			898844708100		
MG2	898844709000				
	898844709100				

Power Management ECU Calibrations				
Model	Model Year	Cal Type	Current CID	New CID
Prius	2010	Main	896B34701000	896B34701800 / 896B54701100
			896B34701100	
			896B34701200	
			896B34701300	
			896B34701400	
			896B34701500	
			896B34701600	
			896B34701700	
	Sub	896B54701000		
	2011	Main	896B34714000	896B34714500
			896B34714100	
			896B34714200	
			896B34714300	
	2012	Main	896B34714400	896B34720300
			896B34720000	
			896B34720100	
896B34720200				
2013	Main	896B34736000	896B34736200	
		896B34736100		
2014	Main	896B34747000	896B34747100	

Note: If the ECUs have already been calibrated with the new calibration the campaign is complete.

VI. MG ECU AND POWER MANAGEMENT ECU REFLASH PROCEDURE



1. VEHICLE PREP

- a) Prior to vehicle shut down preform the following steps:
 - Vehicle in the ready on position
 - Transaxle in the P range
 - Parking brake engaged
- b) Depress the brake pedal fully 2 times within 2 seconds.
- c) Release brake pedal.
- d) Wait 10 seconds.
- e) Turn off the vehicle.

Note: This procedure will pressurize the brake actuator and prevent the ABS pump from running during the reflash procedure.

2. REMOVE FUSE FROM ENGINE BAY FUSE BOX

- a) Confirm fuse orientation before removal because the fuse can be installed in either direction.
- b) Remove the joint fuse that encases the CDS (30A), RDI (30A) and HTR (50A).



Note: This fuse must be removed to stop the vehicle from performing onboard diagnostic tests during reflash which could cause the reflash to fail.



- For general reprogramming procedures, refer to [T-SB-0012-13](#).
- Confirm the latest version of Techstream software is being used.
- If the Techstream does not have sufficient battery power the reflash will fail.
- Confirm the DLC3 cable is in good condition before attempting reflash.
- If vehicle exhibits any trouble codes or drivability symptoms, diagnose and repair using TIS before attempting to reprogram the ECU.

3. CONNECT THE GR8

- a) Set the GR8 to Power Supply Mode to help maintain 13.5 volts during ECU reprogramming.
- b) **The charge must be connected directly to the battery and NOT the remote jump post under the hood.**



- A battery charger set to power supply mode **MUST** be used during reprogramming.
- ECU damage may occur if the correct battery charger setting is not used.

4. REFLASH THE MG ECU

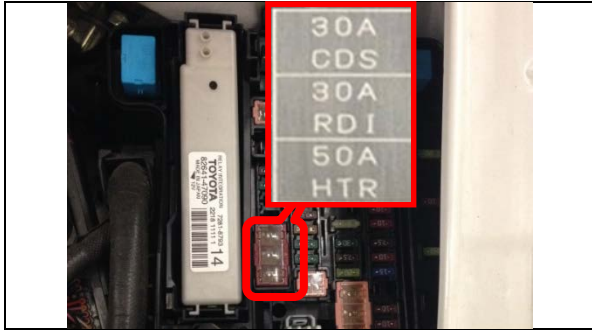
- a) Click yes on the health check results screen, or follow the links on the table above to begin the reflash process.

Note: The MG ECU must be reflashed first.

If the MG ECU reflash fails and cannot be retried successfully MG ECU replacement will be required. Please proceed to section VII to determine the inverter type so the correct parts can be ordered for the MG ECU replacement.

Reflash failure should be extremely rare and can be avoided by following all instructions and reprogramming best practices.

5. DISCONNECT THE GR8



6. REINSTALL FUSE FROM ENGINE BAY FUSE BOX

- a) Confirm fuse orientation before reinstalling because the fuse can be installed in either direction.
- b) Reinstall the joint fuse that encases the CDS (30A), RDI (30A) and HTR (50A).

7. PERFORM A HEALTH CHECK AND CLEAR DTCs

- a) Perform a health check on the vehicle.
- b) Clear DTCs that have been set during the reflash procedure.

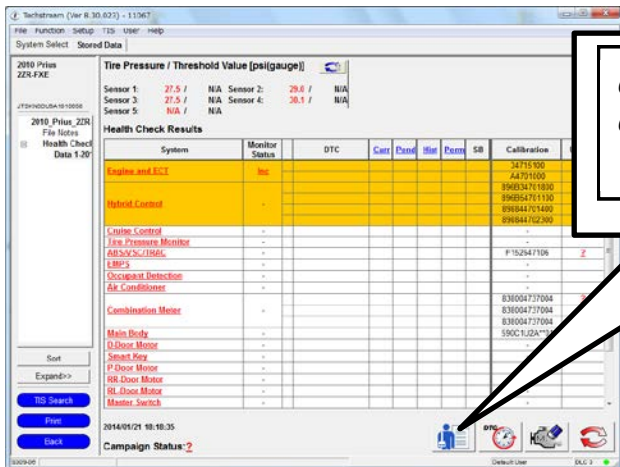
Note: During the reflash DTCs will set due to the removal of the fuse.

- c) Rerun health check and confirm all DTCs set during reflash are cleared.

Note: DTC U0100 will set during the reflash procedure as a permanent DTC and will not clear using Techstream, this code will clear after three consecutive drive cycles with the system self check achieving a normal judgment. This code will not illuminate any warning lights in the permanent status.

8. PRINT CUSTOMER HEALTH CHECK REPORT


- a) From the Health Check Results screen select the Customer Health Check Report button (TIS will launch when button is pressed).



- b) Log in to TIS.
- c) Input Vehicle Mileage and Repair Order number.
- d) Check the "Performed" campaign radio button for the applicable campaigns completed during this service event.
- e) Select the Report button.



f) Confirm Customer Health Check Report information is correct.



Diagnostic Report

Vehicle Information

Vehicle: 2013 Prius VIN: JTDKN3DU7D1615492 Mileage: 13672
 Repair Order: 12345

Health Check Summary

Checkpoints	Status	Comments
Powertrain	All systems OK	
Chassis	All systems OK	
Electrical	All systems OK	
Network Systems	All systems OK	
Service Campaigns	No Action Required	E0E Performed

Performed: 02/20/14, 4:36 PM (PST)

Technician Signature

Quality Inspector Signature

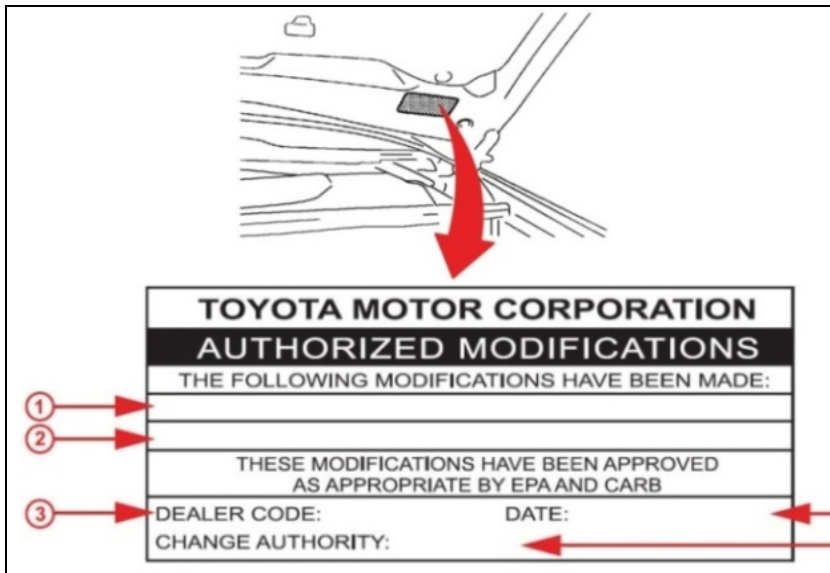
g) Print Customer Health Check Report from TIS.

h) Sign and provide to the customer.

9. ATTACH THE AUTHORIZED VEHICLE MODIFICATION LABEL

a) Fill out the label.

10. Affix the label to the under-side of the hood.



The authorized modification label only needs to have the Power Management ECU Information.

1	Replacement ECU P/N* 89681-47441 89681-47302 89681-47212 89681-47251 89681-47087 <i>Part # varies by model year and production period.</i>
2	New Power Management ECU Calibration IC
3	Dealer Code
4	Date Completed
5	Campaign Code (E0E)

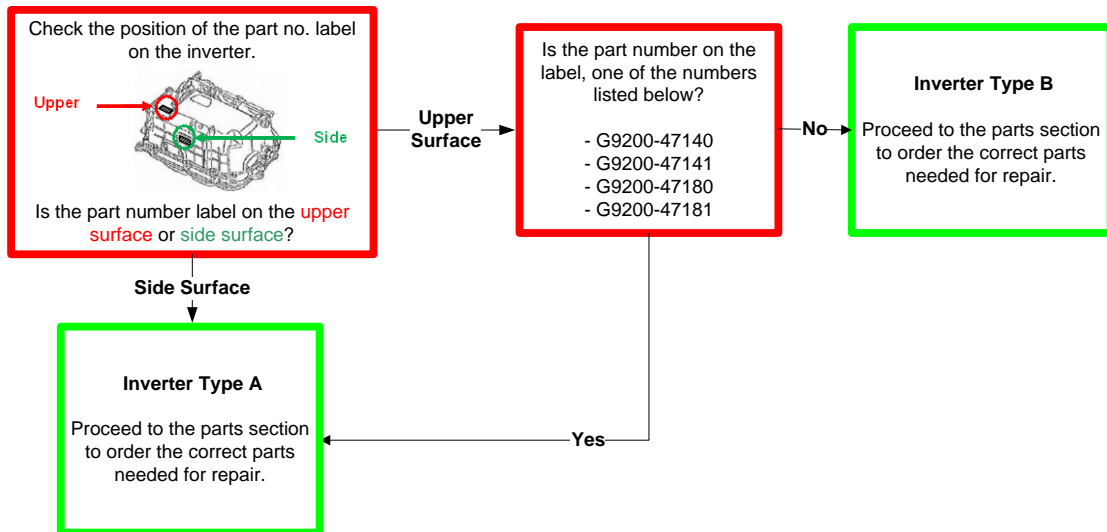
VII. INVERTER REPAIR PROCEDURE (Not required for all vehicles)



Thermal grease for Prius IPM replacement is NOT interchangeable. Only grease specified for the Prius inverter can be used, grease for the Highlander IPM replacement will result in inverter failure if used.

1. DETERMINE INVERTER ASSEMBLY TYPE

a) Using the flowchart below determine the inverter type.



2. DETERMINE REPAIR COMPONENTS BASED ON DTC DETAIL CODE AND INVERTER TYPE

If multiple DTCs listed in the table below are present: Follow the repair manual diagnosis procedure for the DTC with Freeze Frame Data Occurrence Order value of "1".

TYPE A

DTC	DTC DETAIL CODE	IPM REPLACEMENT	MG-ECU CURRENT SENSOR INVERTER WIRE HARNES	MG-ECU CURRENT SENSOR IPM INVERTER WIRE HARNES	INVERTER ASSY
P0A94	127			X	
	172	X			
	442			X	
	547		X		
	548			X	
	549		X		
	550			X	
	553	X			
	554		X		
	555			X	
	556		X		
	557	X			
	564			X	
	585			X	
587			X		
589			X		
590			X		
P324E	788			X	
P0A1A	151			X	
	155		X		
	156		X		
	166		X		
	200		X		
	658		X		
	659		X		
791		X			
P3004	131				X
	132				X
	800	X			
	801	X			

TYPE B

DTC	DTC DETAIL CODE	IPM REPLACEMENT	MG-ECU	MG-ECU IPM	MG-ECU CURRENT SENSOR IPM	INVERTER ASSY
P0A94	127			X		
	172	X				
	442			X		
	547		X			
	548					X
	549		X			
	550				X	
	553	X				
	554		X			
	555					X
	556		X			
	557	X				
	564				X	
	585				X	
587				X		
589				X		
590				X		
P324E	788				X	
P0A1A	151				X	
	155		X			
	156		X			
	166		X			
	200		X			
	658		X			
	659		X			
	791		X			
	792		X			
793		X				
P3004	131					X
	132					X
	800	X				
	801	X				

3. REFERENCE PARTS SECTION TO ORDER CORRECT PARTS
4. TO REPAIR THE INVERTER CLICK ON THE LINK BELOW

- [2010 Prius: Intelligent Power Module Transistor Removal](#)
- [2011 Prius: Intelligent Power Module Transistor Removal](#)
- [2012 Prius: Intelligent Power Module Transistor Removal](#)
- [2013 Prius: Intelligent Power Module Transistor Removal](#)
- [2014 Prius: Intelligent Power Module Transistor Removal](#)

5. CONFIRM VEHICLE CONTAINS THE UPDATED CALIBRATIONS.

◀ VERIFY REPAIR QUALITY ▶

- Confirm the GR8 is set up properly prior to beginning the reprogramming
- Confirm both MG ECU and Power Management ECU were reflashed
- Confirm the reflash completes successfully
- Confirm the Authorized Vehicle Modification Label is filled out and affixed to the vehicle
- Confirm there are no DTCs in the ECU

If you have any questions regarding this update, please contact your regional representative

VIII. APPENDIX

A. CAMPAIGN DESIGNATION DECODER

