

TECHNICAL INSTRUCTIONS
FOR
SAFETY RECALL FOR
SOFTWARE UPDATE FOR MOTOR GENERATOR ECU AND POWER
MANAGEMENT ECU

CERTAIN: 2012-2014 PRIUS V

	<u>2 SET's of CALIBRATION UPDATES ARE REQUIRED</u> These instructions will direct you through installation and/or verification of four (4) Calibration ID's. <u>Installation 1 of 2</u> will install 2 CID's <u>Installation 2 of 2</u> will install 2 CID's
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UPDATE: 10/11/18 - TI has been updated to specify CID's

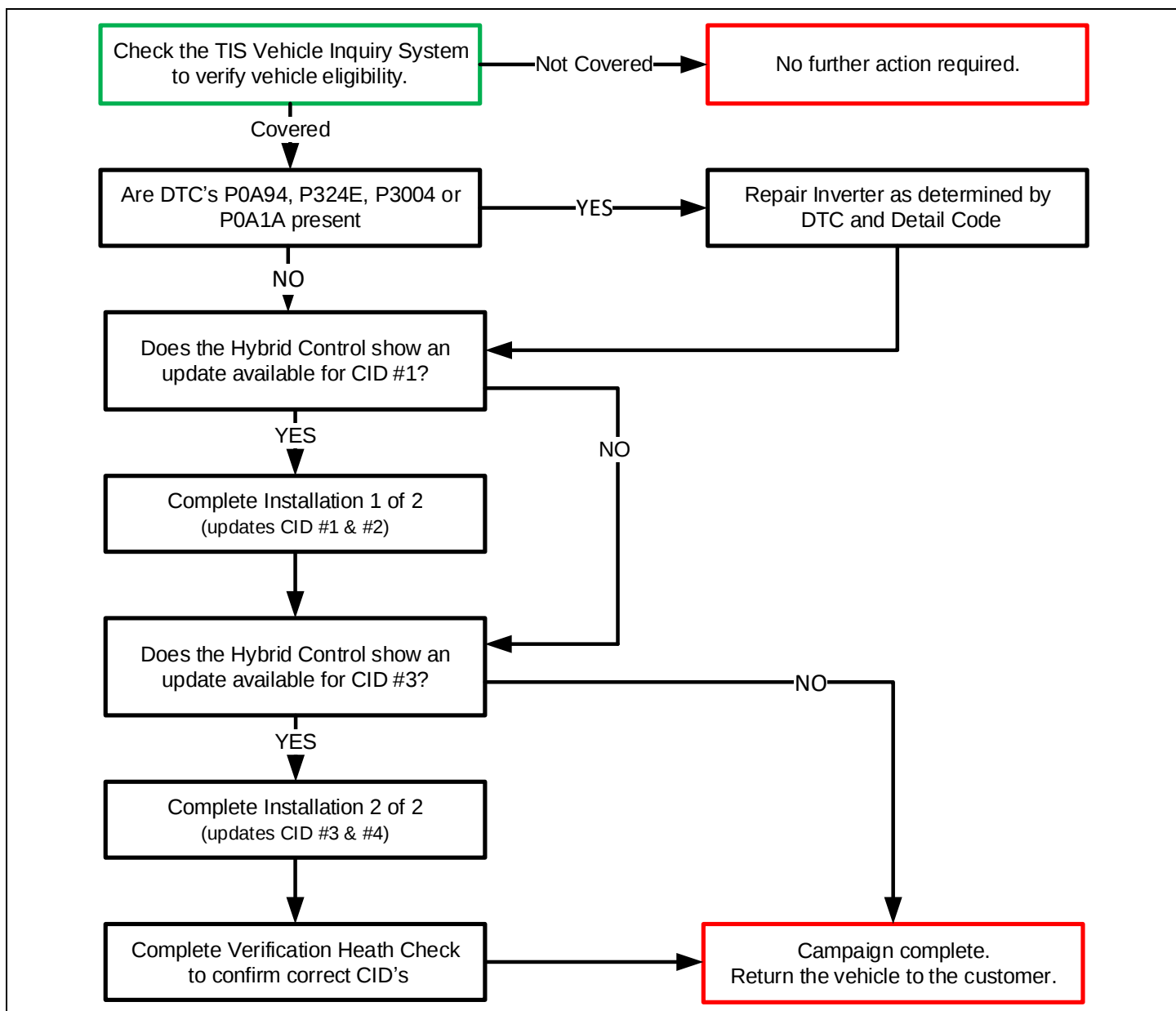
UPDATE: 10/10/18 - TI has been updated to "clarify" the requirement to update two (2) Calibrations in the Hybrid Control system

The repair quality of covered vehicles is extremely important to Toyota. All dealership technicians performing this recall are required to successfully complete the most current version of the E-Learning course "Safety Recall and Service Campaign Essentials". To ensure that all vehicles have the repair performed correctly; technicians performing this recall repair are required to currently hold at least one of the following certification levels:

- Expert Technician (Hybrid)
- Master Technician
- Master Diagnostic Technician

It is the dealership's responsibility to select technicians with the above certification level or greater to perform this recall repair. Carefully review your resources, the technician skill level, and ability before assigning technicians to this repair. It is important to consider technician days off and vacation schedules to ensure there are properly trained technicians available to perform this repair at all times.

I. OPERATION FLOW CHART



II. IDENTIFICATION OF AFFECTED VEHICLES

- Check the TIS Vehicle Inquiry System to confirm that each VIN is eligible for this Safety Recall, and that it has not already been completed prior to dealer shipment or by another dealer.

Note: TMNA warranty will not reimburse dealers for repairs completed on vehicles that are not affected or were completed by another dealer.

III. PREPARATION

1. PARTS

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

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

2. TOOLS, SUPPLIES & EQUIPMENT

- Standard Hand Tools
- Techstream 2.0 / TIS Techstream / Techstream Lite
- GR8 Battery Diagnostic Station
- T-SB-0134-16

SST – These Special Service Tools required for this repair:

Part Number	Tool Name	Quantity
09891-47020	Inverter Case Separator	1

IV. BACKGROUND

Inside the Hybrid Inverter Assembly is an Intelligent Power Module (IPM) which contains a control board equipped with transistors. In certain Model Year 2010-2014 Prius and Prius V vehicles, the current software settings for the motor generator ECU and power management ECU could result in higher thermal stress in certain transistors, potentially causing them to become damaged. If this happens, various warning lights will illuminate and the vehicle can enter a failsafe mode. In rare circumstances, the hybrid system might shut down while the vehicle is being driven, resulting in the loss of power and the vehicle coming to a stop, increasing the risk of a crash.

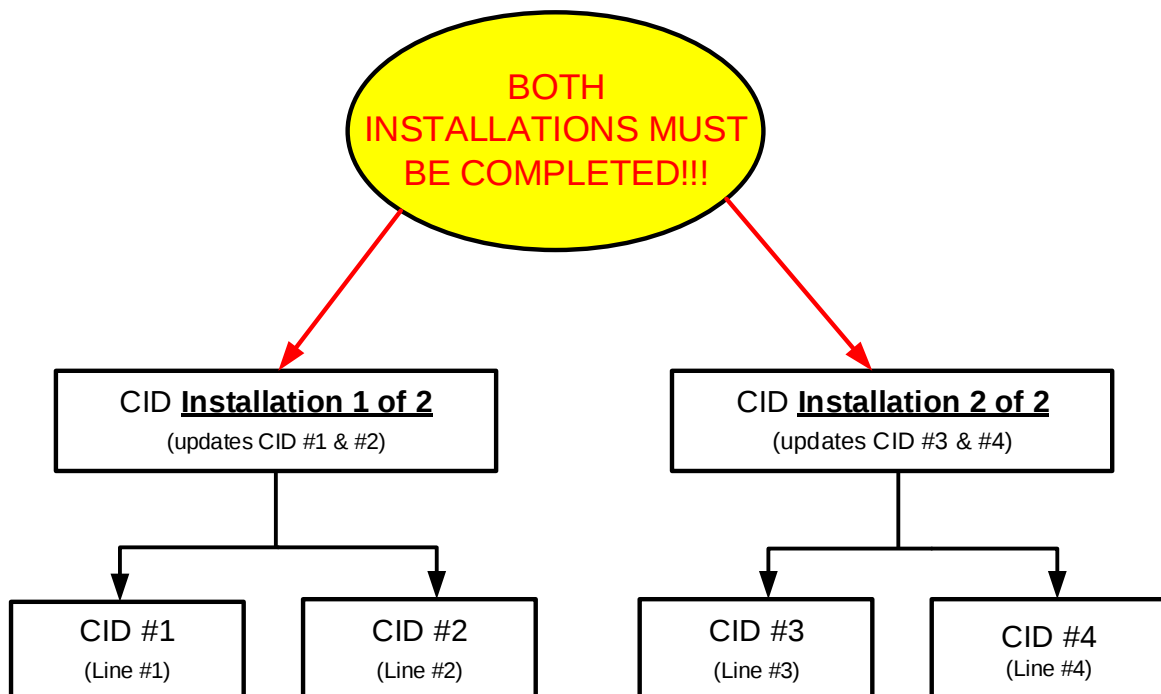


2 SET's OF UPDATES ARE REQUIRED

The following instructions will direct you through the installation of four (4) Calibration ID's (CID's) in the Hybrid Control System.

CID **Installation 1 of 2** will install CID's #1 & #2

CID **Installation 2 of 2** will install CID's #3 & #4



V. INSPECT INVERTER CONDITION



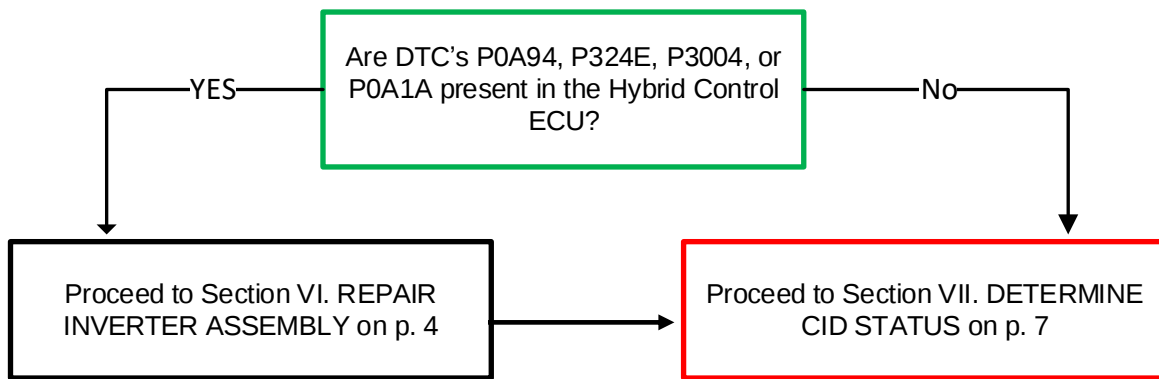
1. PERFORM HEALTH CHECK

- Using a Techstream, perform a Health Check.



If any hybrid DTC's are found that indicate a safety risk at performing this repair, do not proceed until they have been resolved.

Note: This Safety Recall covers only the specified ECU updates and Inverter repairs, as detailed in these instructions. It does not cover the diagnosis or replacement of any other parts on the vehicle, including the hybrid system.

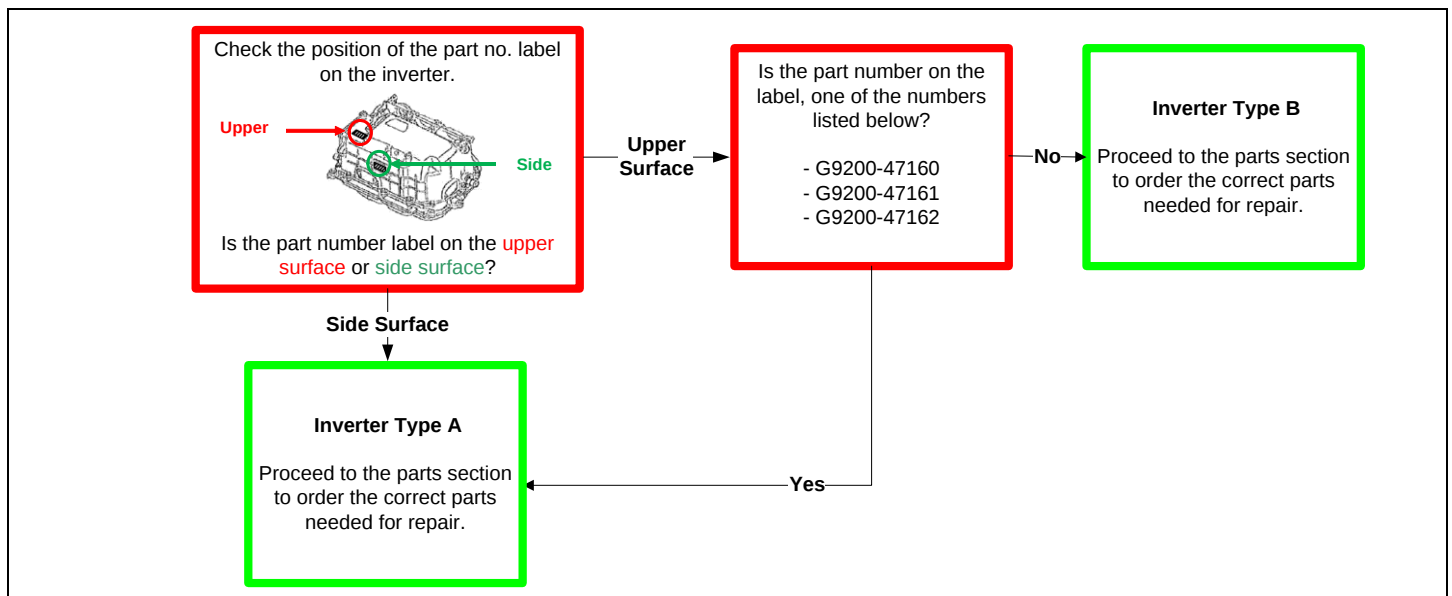


VI. REPAIR INVERTER ASSEMBLY

Note: Repairing the inverter is required only if DTC's P0A94, P324E, P3004 or P0A1A is present. If these DTC's are not present, skip to section VII. Determine Calibration Status on p.8.

1. DETERMINE INVERTER ASSEMBLY TYPE

- Using the flowchart below determine the inverter type (A or B).



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

- If multiple DTCs are present save the freeze frame data.
- After saving the freeze frame data, clear codes and confirm what DTCs reset.
- If multiple codes return, follow the repair manual diagnosis procedure for the DTC with Freeze Frame Data Occurrence Order value of "1".
- Use the correct table below to identify the parts required for repair, the correct parts are listed in the bottom row of each table.

TYPE A

DTC	DTC DETAIL CODE	IPM REPLACEMENT	• MG-ECU • CURRENT SENSOR • IPM • INVERTER WIRE HARNESS	INVERTER ASSY
P0A94	127		X	
	172	X		
	442		X	
	547			
	548		X	
	549			
	550		X	
	553	X		
	554			
	555		X	
	556			
	557	X		
	564		X	
	585		X	
	587		X	
	589		X	
P324E	788		X	
P0A1A	151		X	
	155			
	156			
	166			
	200			
	658			
	659			
	791			
P3004	131			X
	132			X
	800	X		
	801	X		
PARTS & QUANTITY (QTY)		04899-47021 (1) 08887-02809 (2) 04899-47060 (1) 08826-00100 (1) 90430-18008 (1)	G920H-47040 (1) G920J-52010 (1) 04899-47021 (1) 08887-02809 (2) G9208-47090 (1) 04899-47060 (1) 08826-00100 (1) 90430-18008 (1)	ORDER BY VIN



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

TYPE B

DTC	DTC DETAIL CODE	IPM REPLACEMENT	• MG-ECU • IPM	• MG-ECU • CURRENT SENSOR • IPM	INVERTER ASSY
P0A94	127		X		
	172	X			
	442		X		
	547				
	548			X	
	549				
	550		X		
	553	X			
	554				
	555			X	
	556				
	557	X			
	564		X		
	585		X		
	587		X		
	589		X		
	590		X		
P324E	788			X	
P0A1A	151			X	
	155				
	156				
	166				
	200				
	658				
	659				
	791				
	792				
	793				
P3004	131				X
	132				X
	800	X			
	801	X			
PARTS & QUANTITY (QTY)		04899-47021 (1) 08887-02809 (2) 04899-47060 (1) 08826-00100 (1) 90430-18008 (1)	G920H-47040 (1) 04899-47021 (1) 08887-02809 (2) 04899-47060 (1) 08826-00100 (1) 90430-18008 (1)	G920H-47040 (1) G920J-52010 (1) 04899-47021 (1) 08887-02809 (2) 04899-47060 (1) 08826-00100 (1) 90430-18008 (1)	ORDER BY VIN



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

3. TO REPAIR THE INVERTER, CLICK ON THE RELEVANT LINK BELOW:

[2012 Prius V: Intelligent Power Module Transistor Removal](#)

[2013 Prius V: Intelligent Power Module Transistor Removal](#)

[2014 Prius V: Intelligent Power Module Transistor Removal](#)

4. CONTINUE TO THE NEXT SECTION TO CONFIRM CID'S

VII. DETERMINE CID STATUS

1. DETERMINE STATUS of HYBRID CONTROL SYSTEM CID's

- Locate the Update column for the Hybrid Control System in the Stored Data tab.
- Determine the status of the **4 CID's** for the Hybrid Control ECU; indicated by a **YES** or **NO** in the Update column.

Techstream (Ver 13.00.022) - 11433

File Function Setup Tools User Help

System Select **Stored Data**

2014 Prius
2ZR-FXE

Tire Pressure / Threshold Value [psi(gau

Sensor 1: 30.1 / 27.5 Sensor 2:
Sensor 3: 29.7 / 28.3 Sensor 4:
Sensor 5: N/A / N/A

Health Check Results

- Health Check does not display live data.
- Changes in vehicle condition will not update au
- To update Health Check, click the Refresh butto

Campaign Status: Y
PERMANENT: NO

Enhanced | Generic |

System	RoB	Calibration	Update
Engine and ECT	-	34754000 A4701000	No
Hybrid Control	-	896B34747100 896B57602000 898844708200 898844709200	Yes Yes Yes Yes
Cruise Control	-	-	-
Tire Pressure Monitor	-	-	-
ABS/VSC/TRAC	-	F152647216	No
EMPS	-	JCU315F0	No
Transmission Control	-	-	-

Sort
Expand>>

TIS Search
Print
Back

S309-06

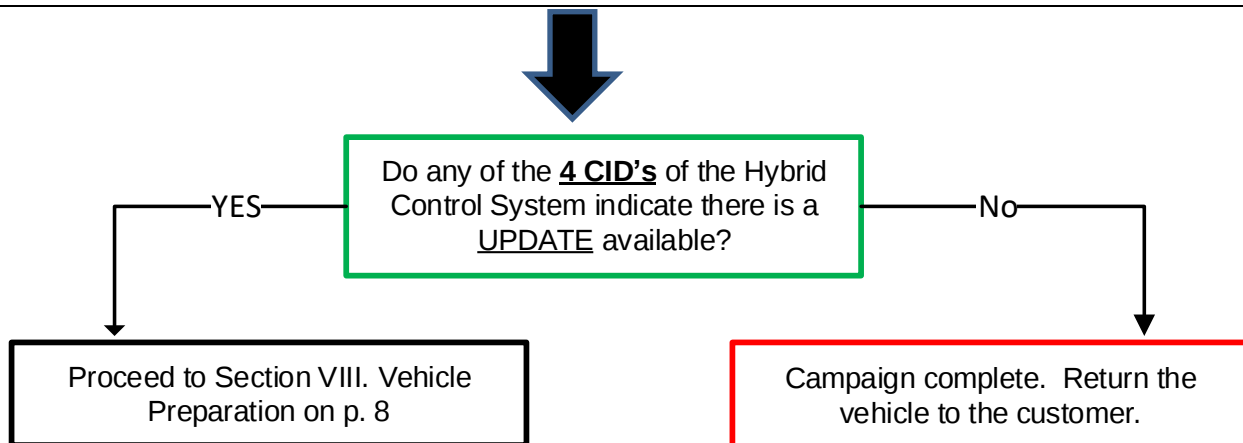
Default User

DLC 3

1:42 PM
10/1/2018

4 CID's for the Hybrid Control System

Status of available Update



Note: If the Hybrid Control System does not need any of the 4 CID's updated (indicated with "No" in the Update column), the campaign is complete. No further action is required. Submit the warranty claim to complete this vehicle.

VIII. VEHICLE PREPERATION

The ECU reprogramming procedure is detailed in [T-SB-0134-16](#). Reference this Bulletin for additional detailed procedures and information.

1. VEHICLE BASICS

- a. Confirm the following conditions:
 - Vehicle in the IG position (engine off).
 - Transaxle in Park.
 - Parking brake engaged.
 - Turn off all electrical accessories(i.e. Headlights, wipers, climate control, audio system, etc.)

2. CONNECT THE 12v BATTERY TO A POWER SUPPLY (GR8)

- a. Connect the GR8 or other type of a power supply (not a battery charger) to the 12v battery.
- b. Select the Power Supply Mode from the Charge Menu of the GR8.



A power supply *MUST* be used during reprogramming. ECU damage will occur if the battery voltage is not properly maintained during this re-flash procedure.

Note: A power supply must be connected directly to the 12v battery terminals and NOT the remote jump posts under the hood (if equipped).

3. VERIFY TECHSTREAM SETUP

- a. Verify that the Techstream meets the following conditions:
 - The latest version of software is loaded.
 - The Techstream battery is fully charged. If not, connect the Techstream to a 120v source.
 - The DLCIII cable is in good condition.

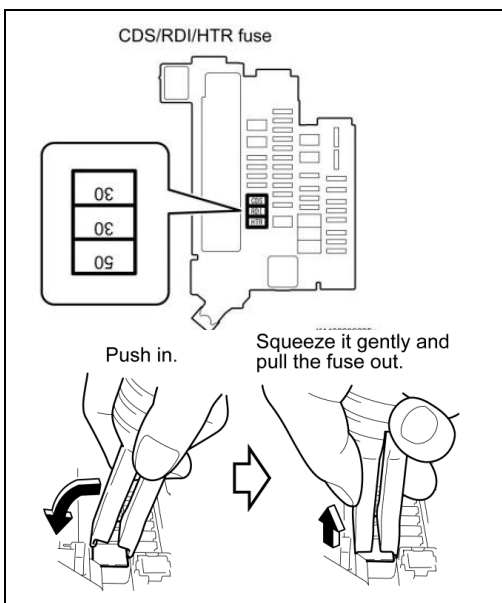


The Techstream battery must be maintained during the update procedure. If necessary, plug the Techstream into a 120v outlet to ensure that a failure does not occur.

Note: If the Techstream communication with the vehicle fails during the re-flash procedure, the ECU will be damaged and must be replaced.

4. MAINTAIN BRAKE SYSTEM PRESSURE

- a. Depress the brake pedal fully 2 times within 2 seconds.



5. REMOVE JOINT FUSE FROM ENGINE ROOM FUSE BOX

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



Permanent damage to the ECU's can happen if these fuses are not removed.

Removing these fuses will stop the vehicle from performing onboard diagnostic tests during the update, which could cause the update to fail and damage the ECU.

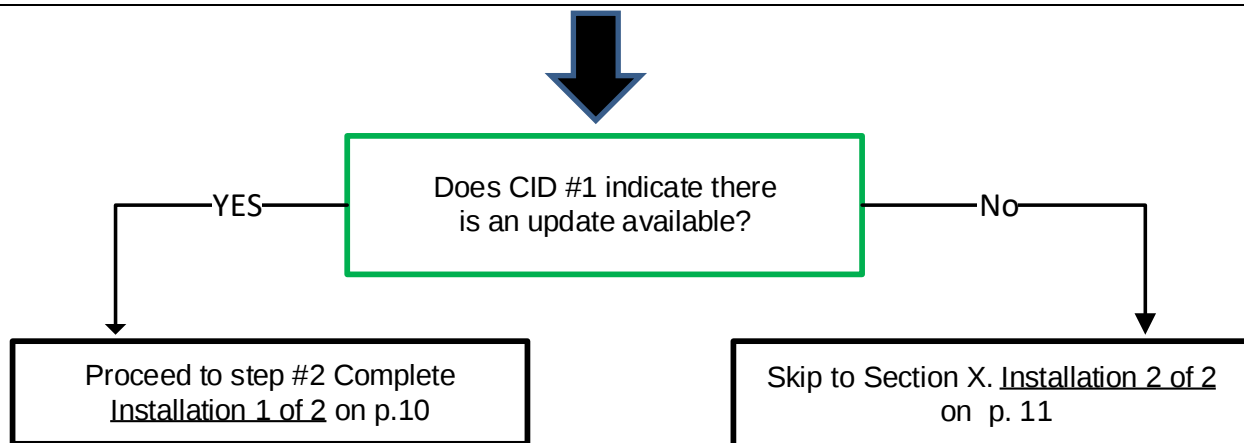
IX. INSTALLATION 1 OF 2

1. CHECK FOR AN AVAILABLE UPDATE FOR CID #1

a. Check the Update status of CID #1; indicated as a **Yes** or **No**.

The screenshot shows the Techstream (Ver 13.00.022) - 11433 interface. The 'Stored Data' menu is open, showing a list of system components. The 'Update' column indicates the status of each component. The 'Hybrid Control' component is highlighted with a red circle, and its update status is 'Yes'. A red arrow points to the 'Update' column header, labeled 'CID #1'. Another red arrow points to the 'Yes' status for 'Hybrid Control', labeled 'Status of available Update'.

System	RoB	Calibration	Update
Engine and ECT	-	34754000	No
	-	A4701000	No
Hybrid Control	-	896B34747100	Yes
	-	896B57602000	Yes
	-	898844708200	Yes
	-	898844709200	Yes
Cruise Control	-	-	-
Tire Pressure Monitor	-	-	-
ABS/VSC/TRAC	-	F152647216	No
EMPS	-	JCU315F0	No
Transmission Control	-	-	-



2. COMPLETE INSTALLATION 1 of 2

a. Locate CID #1 in the chart below.

NOTE: CID #1 “271” is used for 3 different NEW CID packages. If CID #1 is “271” you must also match CID #2 to ensure you pick the correct Installation 1 of 2.

b. Select the corresponding Installation 1 of 2 link to load the Calibration update.

c. Follow the on-screen instructions to complete the update procedure.

Note: Installation 1 of 2 will update both CID #1 and CID #2



Be careful to select the correct Installation 1 of 2 that corresponds to the Current CID's of the Hybrid Control System.

INSTALLATION 1 of 2			
Model	CURRENT CID's		NEW CID's
Prius V	CID #1	896B347 <u>110</u> 00	Installation 1 of 2 CID #1: 896B34764000 CID #2: 896B54705100
		896B347 <u>111</u> 00	
		896B347 <u>271</u> 00	
	CID #2	896B547 <u>050</u> 00	
		896B547 <u>051</u> 00	
	CID #1	896B347 <u>270</u> 00	Installation 1 of 2 CID #1: 896B34761000 CID #2: 896B54709000
		896B347 <u>271</u> 00	
	CID #2	896B547 <u>090</u> 00	
	CID #1	896B347 <u>271</u> 00	Installation 1 of 2 CID #1: 896B34727300 CID #2: 896B54712000
		896B347 <u>272</u> 00	
CID #2	896B547 <u>120</u> 00		

CID #1 “271” is used for 3 different NEW CID packages. If CID #1 is “271” you must also match CID #2 to ensure you pick the correct NEW CID.

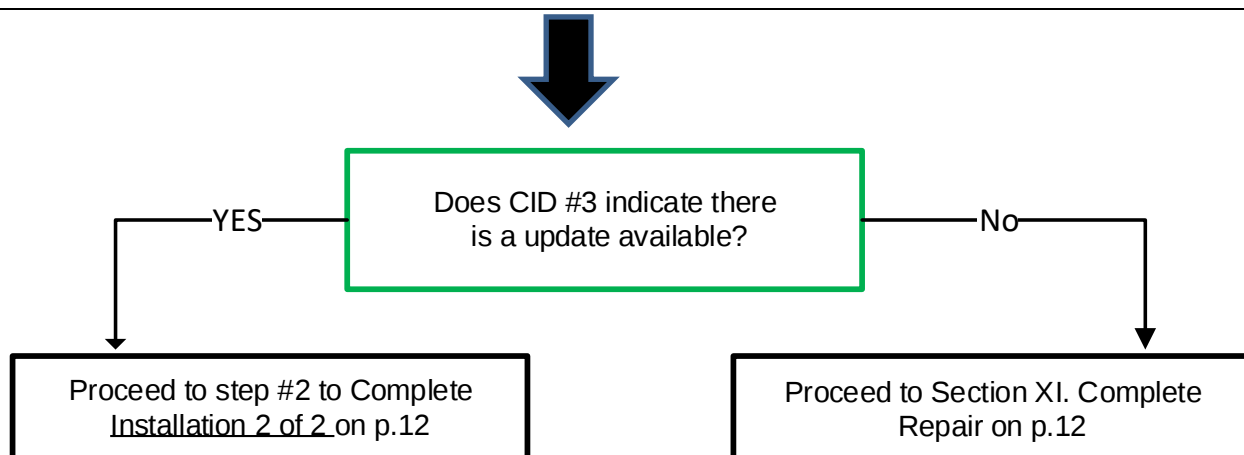
X. INSTALLATION 2 OF 2

1. CHECK FOR AN AVAILABLE UPDATE FOR CID #3

a. Check the Update status of CID #3; indicated as a **Yes** or **No**.

The screenshot shows the Techstream (Ver 13.00.022) - 11433 interface. The 'Stored Data' tab is selected. The left sidebar shows '2014 Prius 2ZR-FXE' and 'Health Check Data 1-10/11'. The main area displays 'Tire Pressure / Threshold Value [psi/gau]' and 'Health Check Results'. The 'Enhanced' tab is selected, showing a table of systems and their update status. The 'Hybrid Control' system is highlighted, and the 'Update' column for CID #3 (898844708200) is circled in red, showing 'Yes'. Red arrows point to 'CID #3' and 'Status of available Update'.

System	RoB	Calibration	Update
Engine and ECT	-	34754000	No
	-	A4701000	No
	-	896B34747100	Yes
	-	896B57602000	Yes
	-	898844708200	Yes
	-	898844709200	Yes
Cruise Control	-	-	-
Tire Pressure Monitor	-	-	-
ABS/VSC/TRAC	-	F152647216	No
EMPS	-	JCU315F0	No
Transmission Control	-	-	-



2. COMPLETE INSTALLATION 2 OF 2

- Locate the CID #3 in the chart below.
- Select the corresponding Installation 2 of 2 link to load the Calibration update.
- Follow the on-screen instructions to complete the update procedure.

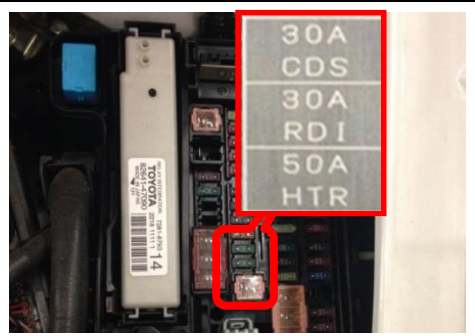
Note: Installation 2 of 2 will update both CID #3 and CID #4



Be careful to select the correct Installation 2 of 2 that corresponds to CID #3 of the Hybrid Control System.

INSTALLATION 2 of 2			
Model	Model Year	CID #3	New CID's
Prius V	2012	8988447 <u>061</u> 00	Installation 2 of 2 CID #1: 898844706400 CID #2: 898844707400
		8988447 <u>062</u> 00	
		8988447 <u>063</u> 00	
	2012-2014	8988447 <u>120</u> 00	Installation 2 of 2 CID #1: 898844712300 CID #2: 898844713300
		8988447 <u>121</u> 00	
		8988447 <u>122</u> 00	

XI. COMPLETE REPAIR



1. REINSTALL JOINT FUSE INTO ENGINE ROOM FUSE BOX

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



2. PERFORM VERIFICATION HEALTH CHECK

- Using a Techstream, perform a Health Check.
- Clear DTC's that may have set during the re-flash procedure.
- Re-run the Health Check to confirm that no DTC's reappear.

3. CONFIRM CID UPDATE

a. On the Stored Data tab, confirm the following for the Hybrid Control System:

- The Update column lists “No” for all 4 Hybrid Control System CID’s

Techstream (Ver 13.00.022) - 11433

File Function Setup TIS User Help

System Select **Stored Data**

2014 Prius 2ZR-FXE

Tire Pressure / Threshold Value [psi(gau]

Sensor 1: 30.1 / 27.5 Sensor 2: 29.7 / 28.3 Sensor 3: N/A / N/A Sensor 4: N/A / N/A

Health Check Results

- Health Check does not display live data.
- Changes in vehicle condition will not update au
- To update Health Check, click the Refresh butto

Campaign Status: N PERMANENT: NO

4 CID's for the Hybrid Control System

2014_Prius_2ZR File Notes

Health Check Data 1-10/

Enhanced Generic

System	RoB	Calibration	Update
Engine and ECT	-	34754000	No
		A4701000	No
		896B34747100	No
		896B57602000	No
		898844708200	No
		898844709200	No
Cruise Control	-	-	-
Tire Pressure Monitor	-	-	-
ABS/VSC/TRAC	-	F152647216	No
EMPS	-	JCU315F0	No
Transmission Control	-	-	-

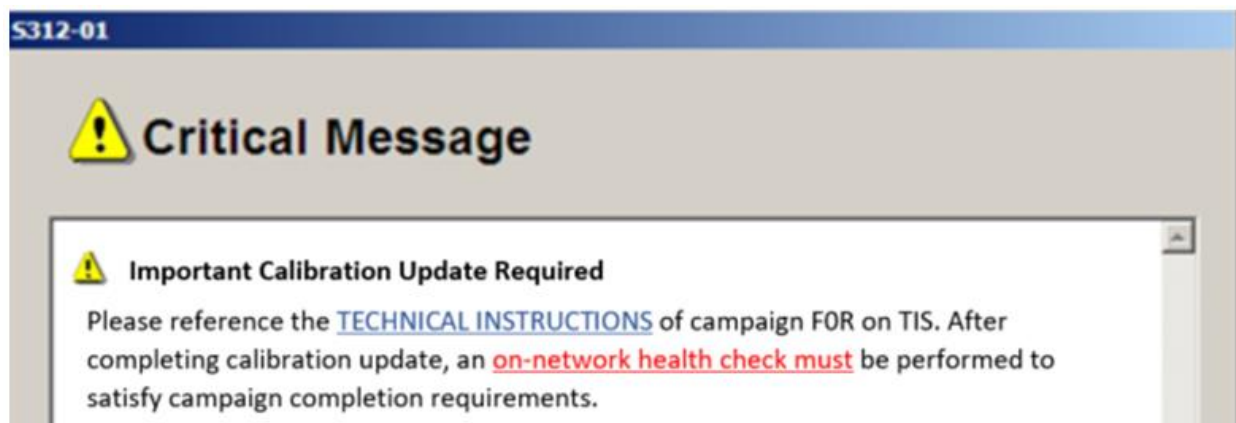
MUST say "NO"

S309-06

Default User

DLC 3

Note: If you receive the following message after the final Health Check, you have not properly completed the Required Calibration Updates!!



4. PRINT CUSTOMER HEALTH CHECK REPORT

- From the Stored Data tab, select the Customer Health Check Report button (TIS will launch when button is pressed).

Customer Health Check Button

System	Monitor Status	DTC	Cur	Perf	His	Perf	SB	Calibration
Engine and ECT	Ins							34715100 A4710100 B9604710100 B96047101100 B96047101400 B96047102000
Hybrid Control	-							
Cruise Control	-							
Tire Pressure Monitor	-							F152647106
ABS/ESC/EBLAC	-							
EMPS	-							
Occupant Detection	-							
Air Conditioner	-							838004737004 838004737004 838004737004 838004737004 838004737004
Combination Meter	-							
Main Body	-							
D-Door Motor	-							
Smart Key	-							
P-Door Motor	-							
RL-Door Motor	-							
RL-Door Motor	-							
Master Switch	-							

- Log in to TIS.
- Input Vehicle Mileage and Repair Order number.
- Check the “Performed” campaign button for campaign E0E.
- Select the Report button.

Diagnostic Report

Vehicle Information

Mileage: 7787

Repair Order: 77888

Our systems show the following campaigns are outstanding. Have any of these campaigns been completed? (Check for SSC door label if unsure.)

F0R ☒ Performed ☐ Not Performed

Report

- f. Confirm Customer Health Check Report information is correct.



Diagnostic Report

Vehicle Information

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

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	F0R Performed

Performed: 02/29/14, 4:36 PM (PST)

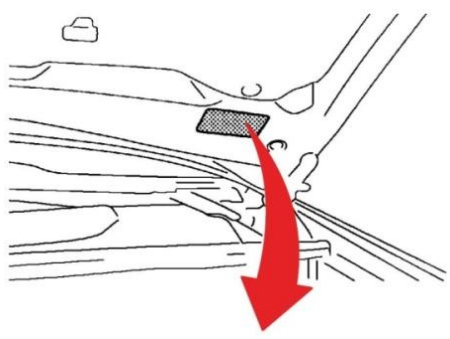
Technician Signature

Quality Inspector Signature

- g. Print Customer Health Check Report from TIS.
h. Sign and provide to the customer.

5. ATTACH THE AUTHORIZED VEHICLE MODIFICATION LABEL

- a. Fill out the label.
b. Affix the label to the under-side of the hood.



TOYOTA MOTOR CORPORATION
AUTHORIZED MODIFICATIONS

THE FOLLOWING MODIFICATIONS HAVE BEEN MADE:

THESE MODIFICATIONS HAVE BEEN APPROVED
AS APPROPRIATE BY EPA AND CARB

DEALER CODE:
DATE:

CHANGE AUTHORITY:

1	Hybrid Control System
2	(Calibration ID's)
3	(Dealer Code)
4	(Date Completed)
5	Safety Recall F0R

Calibration ID's listed for the Hybrid Control System after completing the final Health Check.

Hybrid Control	896B34747100
	896B57602000
	898844708200
	898844709200

◀ VERIFY REPAIR QUALITY ▶

- Confirm all ECM Calibration has been updated successfully to the NEW CID's.
- Confirm *that an* Authorized Modification Label has been installed
- If you have any questions regarding this Safety Recall, please contact your regional representative

XII. APPENDIX

A. PARTS DISPOSAL

As required by Federal Regulations, please make sure all recalled parts (original parts) removed from the vehicle are disposed of in a manner in which they will not be reused, ***unless requested for parts recovery return.***

B. CAMPAIGN DESIGNATION DECORDER

