

TECHNICAL INSTRUCTIONS

FOR

23TA01

VEHICLE MAY LOSE MOTIVE POWER WHILE DRIVING

2021 RAV4 PRIME

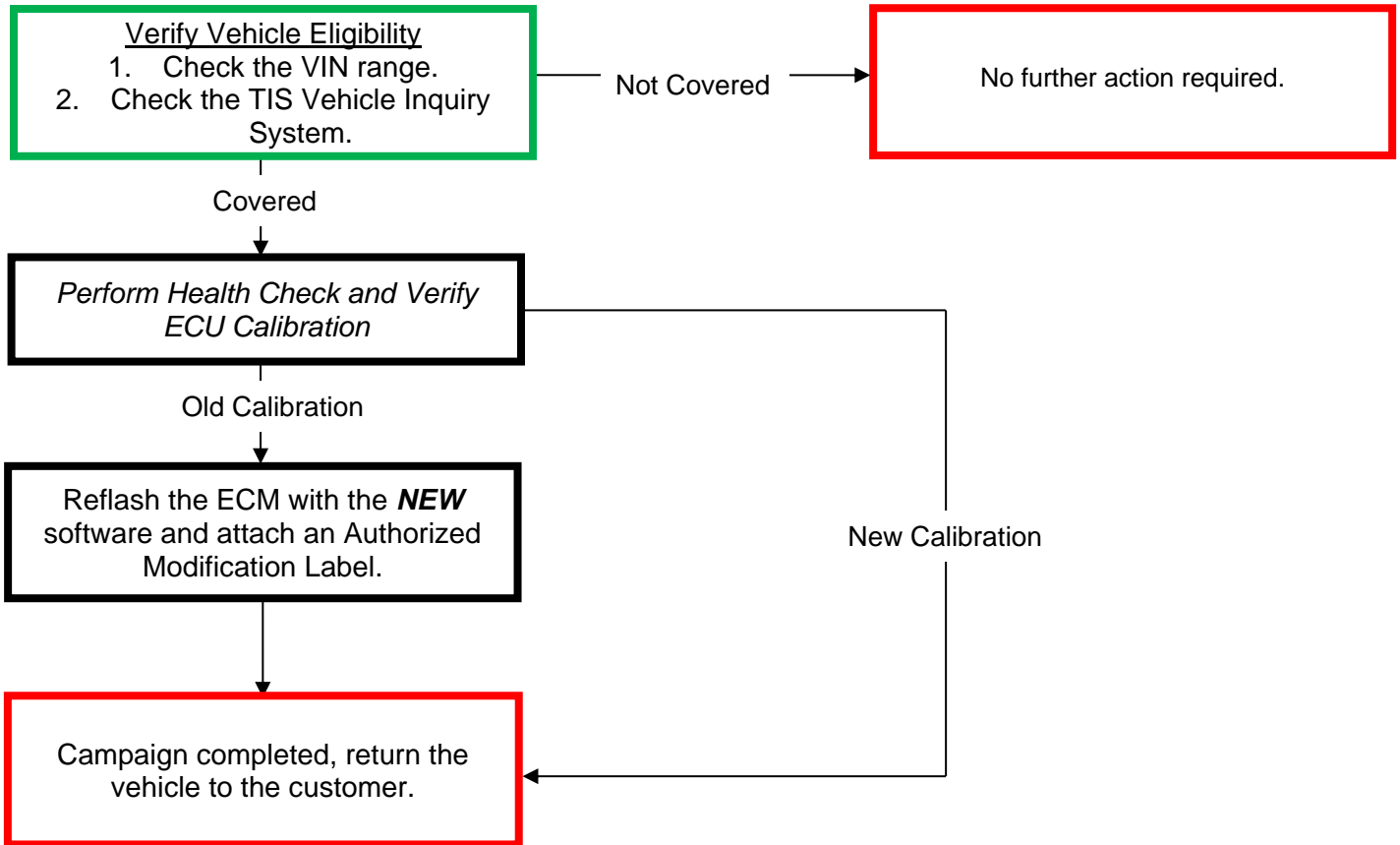
The repair quality of covered vehicles is extremely important to Toyota. All dealership technicians performing this recall are required to successfully complete the most current version of the E-Learning course “Safety Recall and Service Campaign Essentials”. To ensure that all vehicles have the repair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

- T623 – Electrical Circuit Diagnosis

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

The flow chart is for reference only. DO NOT use it in place of the full technical instructions. Follow ALL steps as outlined in the full technical instructions to confirm the campaign is completed correctly.



II. IDENTIFICATION OF AFFECTED VEHICLES

1. CHECK VEHICLE FOR CAMPAIGN ELIGIBILITY

- a) Compare the vehicles VIN to the VIN listed on the Repair Order to ensure they match.
- b) Check the TIS Vehicle Inquiry System to confirm the VIN is involved in this Campaign, and that it has not already been completed.

NOTICE:

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

III. PREPARATION

A. PARTS

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

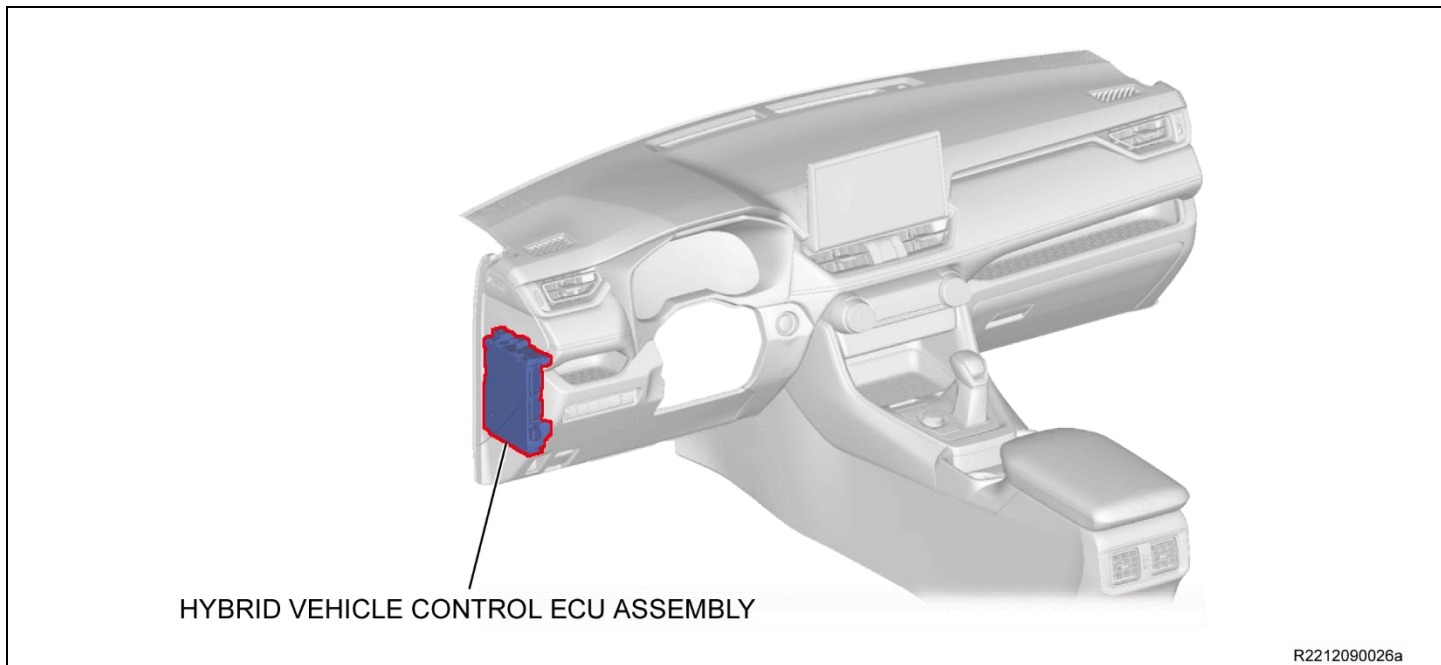
*Labels can be ordered in packs of 25 from the MDC through the Dealer Daily Website

B. TOOLS, SUPPLIES & EQUIPMENT

- Standard Hand Tools
- T-SB-0134-16
- T-SB-0107-20
- DCA-8000 Battery Diagnostic Station
- Techstream ADVi / Techstream 2.0 / Techstream Lite

IV. BACKGROUND

The Hybrid Vehicle Control ECU (HEV-ECU) in the subject plug-in hybrid electric vehicles contains software that could cause the hybrid system to shut down after driving continuously in “EV Mode” in cold temperatures and then the accelerator pedal is rapidly pressed to further accelerate the vehicle. **System shutdown with the loss of motive power at higher speeds can increase the risk of a crash.**



V. SAFETY PRECAUTIONS

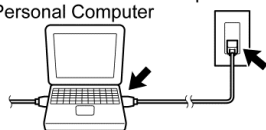
Critical

CRITICAL INFORMATION - READ THOROUGHLY

An ECU could be damaged if an error occurs in the communication while reprogramming the ECU. Confirm all work is performed as described in these instructions.

Be sure to connect the personal computer to an external AC power supply.

Personal Computer AC power supply



K1400880016e

Turn off the screen saver and power saving mode.



K1400880008e

DO NOT block the ventilation opening.



K1400880068e

1. STABILIZE THE POWER TO THE PERSONAL COMPUTER SIDE

- Be sure to connect the personal computer to an external AC power supply.

NOTICE:

The ECU could be damaged if the battery voltage of the personal computer drops while reprogramming.

- Turn off the screen saver and power saving mode of the personal computer so that the power to the hard disk is kept supplied.

NOTICE:

If the screen saver or power saving mode launches while reprogramming, the communication may be disconnected, resulting in the damage of the ECU.

- DO NOT** block the ventilation opening for the cooling fan of the personal computer.

NOTICE:

If the ventilation opening for the cooling fan is blocked with a sheet cover or the like, the personal computer may be heated excessively, causing the operation of the personal computer to stop. Due to the stop of the operation, the communication for reprogramming signals could be stopped, resulting in the damage of the ECU.

VI. HYBRID VEHICLE CONTROL SYSTEM CALIBRATION ID VERIFICATION



1. CHECK FOR DTC'S

- a) Using a Techstream, perform a Health Check to check for any Diagnostic Trouble Codes.

NOTICE:

This Campaign covers only the software update to the Hybrid Control System, as detailed in these instructions. It does not cover the diagnosis or replacement of any other systems on the vehicle.

2. CHECK CURRENT CALIBRATION

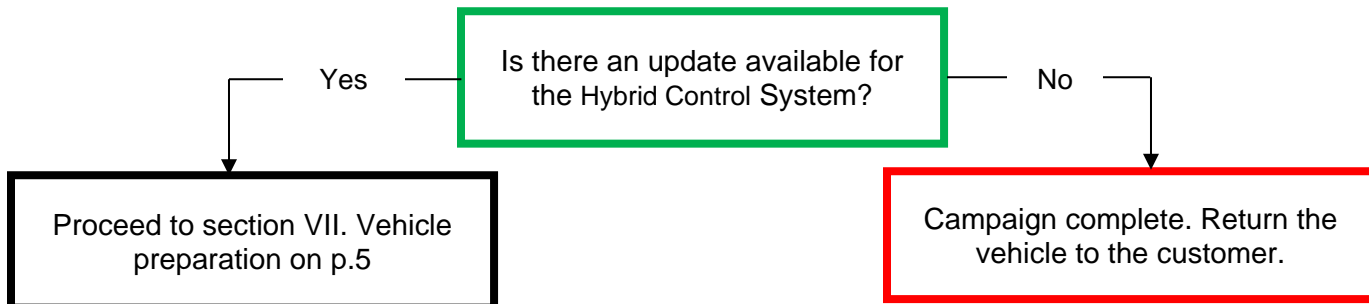
- a) Locate the Update column for the Hybrid Control system in the Stored Data tab for this vehicle.
- b) Determine the status of an available update; indicated by a YES or NO.

HINT:

If the CID's indicate 'Yes', proceed with the update procedure.

The screenshot shows the Techstream interface for a 2021 Rav4 Prime A25A-FXS. The 'Stored Data' tab is selected. The 'Health Check Results' section shows that the health check does not display live data and that changes in vehicle condition will not update automatically. The 'ECU Security Key' is displayed as 'Campaign Status: YES' and 'PERMANENT: NO'. A table lists various systems with their 'Update' status. The 'Hybrid Control' system is highlighted, and its 'Update' status is 'Yes'.

System	RoB	Calibration	Update	Configure
Engine		8966342S7000	No	No
Hybrid Control	●	899834222000	Yes	No
Brake/EPB	●	899854203000	Yes	No
Brake/EPB	●	F15264228300	Yes	No
HV Battery	●	8989F4201400	No	No
HV Battery	●	8989G4201000	No	No
EMPS	●	8965B4209000	No	No
EMPS	●	8646F4205100	No	No
EMPS	●	8646G4202000	No	No
Front Recognition Camera	●	8646G4202000	No	No
Tire Pressure Monitor	●	897BF0101000	No	No



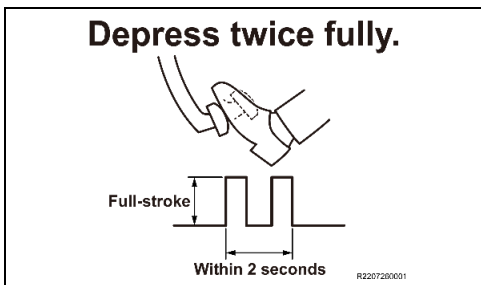
◀ CRITICAL MESSAGE ▶

It is critical that T-SB-0134-16 in addition to the Technical Instructions for this Recall are followed. This TSB outlines all steps necessary to prevent reprogramming failure. Toyota will not provide reimbursement coverage for reprogramming failures if this TSB is not followed. If you have a reprogramming failure that requires Hybrid Vehicle Control ECU replacement and the Technical Instructions and TSB were followed correctly, please create a case with the Technical Assistance Hotline documenting all information related to the failure. If sufficient reporting is received related to re-flash failure, there will be consideration for reimbursement.

VII. VEHICLE PREPARATION

1. VEHICLE PREPARATION

- 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. climate control, audio system, etc.)
 - Headlight switch in the DRL OFF position.
 - Windshield wiper switch in the OFF position.



2. PRESSURIZE HYDRO-BOOSTER

- a) Depress the brake pedal fully 2 times within 2 seconds.
- b) Release brake pedal.
- c) Wait 10 seconds.

NOTICE:

You may hear the hydro-boost pump run for a few seconds when completing these steps. The procedure will prevent the pump from running during the re-flash procedure.

3. CONNECT THE 12V BATTERY TO A POWER SUPPLY (DCA-8000)

- a) Connect the DCA-8000 or other type of a power supply (not a battery charger) to the 12 V battery.
- b) Tap the Reflash icon from the Main Menu screen of the DCA-8000.

A power supply MUST be used during reprogramming. Please ensure DCA-8000 is connected and set to power supply mode. Voltage MUST be set to 13.5V.



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

ECU damage will occur if the battery voltage is not properly maintained during this re-flash procedure.

4. 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 120 V source.
 - The DLCIII cable is in good condition.



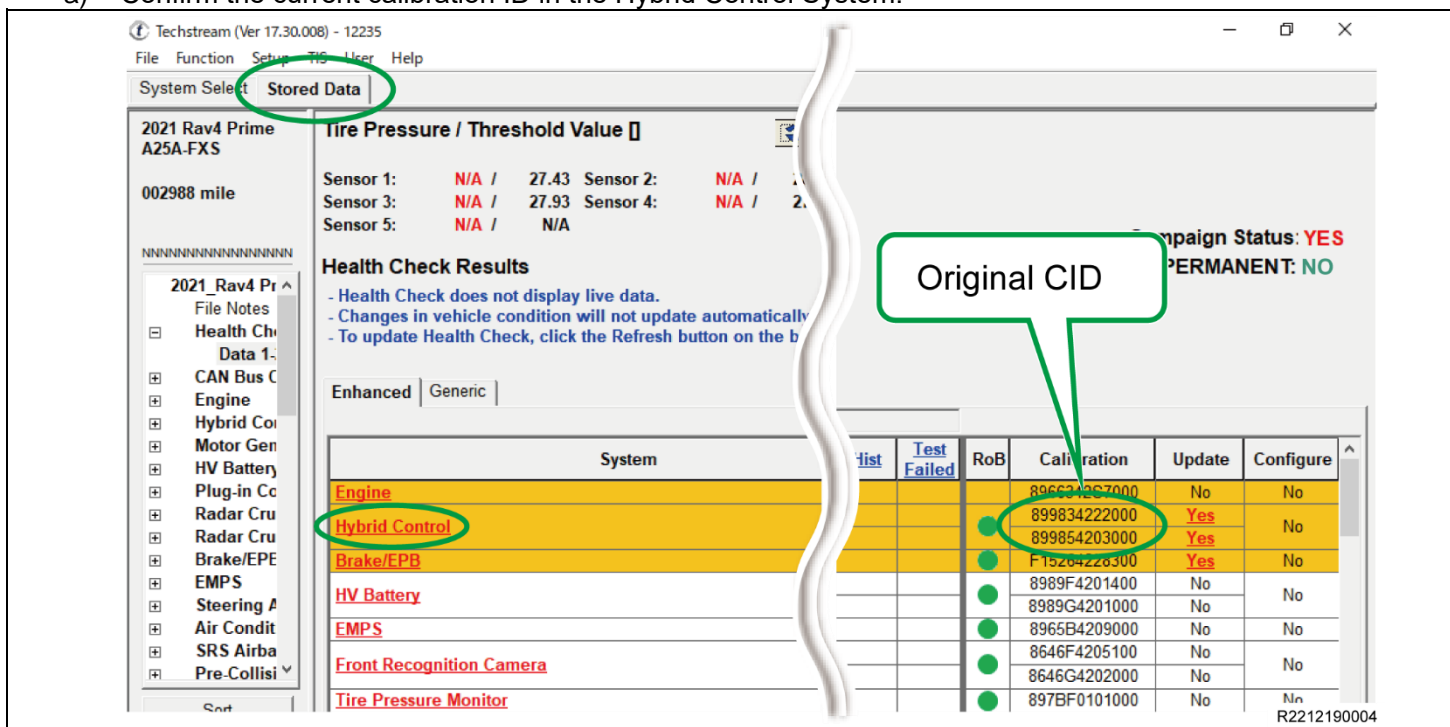
The Techstream's battery voltage must also be maintained during the re-flash procedure. If necessary, plug the Techstream into a 120v outlet during this procedure.

If the Techstream communication with the vehicle fails during the re-flash procedure, the Hybrid Vehicle Control ECU will be damaged.

VIII. UPDATE CALIBRATION

1. CONFIRM THE ECU CALIBRATION ID

a) Confirm the current calibration ID in the Hybrid Control System.



The calibration IDs to re-flash in this campaign are as shown in the table below.

Vehicle Model Spec	Hybrid Vehicle Control ECU Calibrations		
	CPU	Current Calibration ID	NEW Calibration ID
RAV4 PHEV	Main	899834222000	899834222200
	Sub	899854203000	899854203100

NOTICE:

If the Hybrid Vehicle control ECU has the New CID's, no update is necessary.

2. REFLASH THE HYBRID VEHICLE CONTROL ECU

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

NOTICE:

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

IX. COMPLETE REPAIR



3. PERFORM VERIFICATION HEALTH CHECK

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

Critical THIS VERIFICATION HEALTH CHECK IS NECESSARY to update the results and CID's to the National database.

4. CONFIRM CID UPDATE

- a) On the Stored Data tab, confirm the following for the Hybrid Control System:
 - The Calibration number has the “New CID” number.
 - The Update column lists “No”

Techstream (Ver 17.30.008) - 12235

File Function Setup TIS User Help

System Select **Stored Data**

2021 Rav4 Prime A25A-FXS
002988 mile

Health Check Results
- Health Check does not display
- Changes in vehicle condition
- To update Health Check, click

Enhanced | Generic

Component	Calibration Number	Update Status	Other Status
Engine	8966342S8000	No	No
Air Conditioner	8865F4204005	Yes	No
	886AF4201002	No	No
Hybrid Control	899834222200	No	No
	899854203100	No	No
Plug-in Control	G911F4201104	No	No
	G911G4201001	No	No
Radar Cruise2	-	-	No
EMPS	8965B4220000	No	No
Lane Control	-	-	No

Campaign Status: YES
PERMANENT: NO

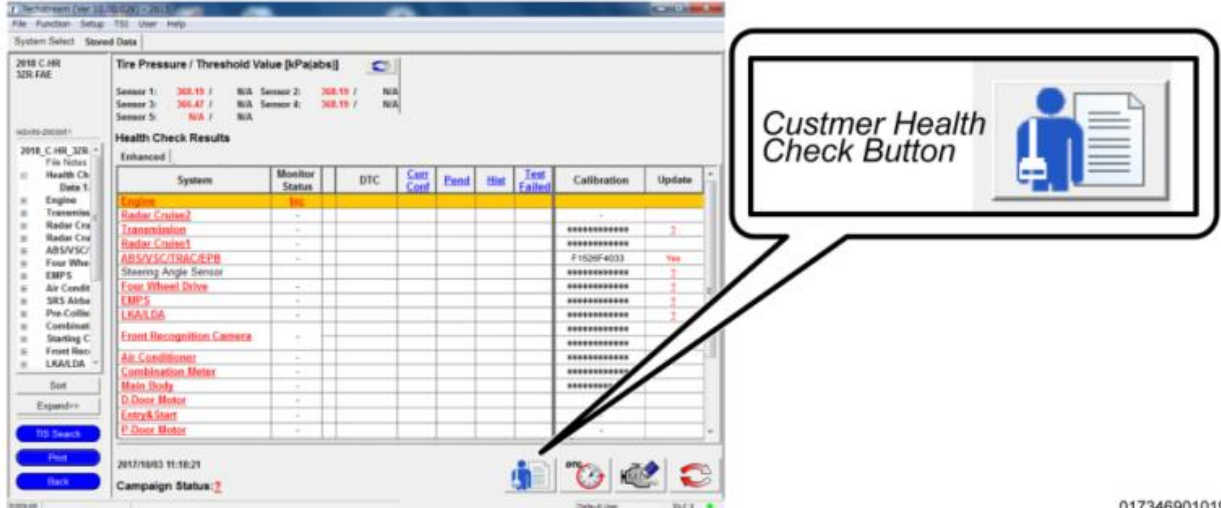
ECU Security Key: -

R2212190005

Critical Confirm the CID's has been updated successfully to the NEW CID's by someone other than the individual who performed the repair. Refer to p.6.

5. PRINT CUSTOMER HEALTH CHECK REPORT

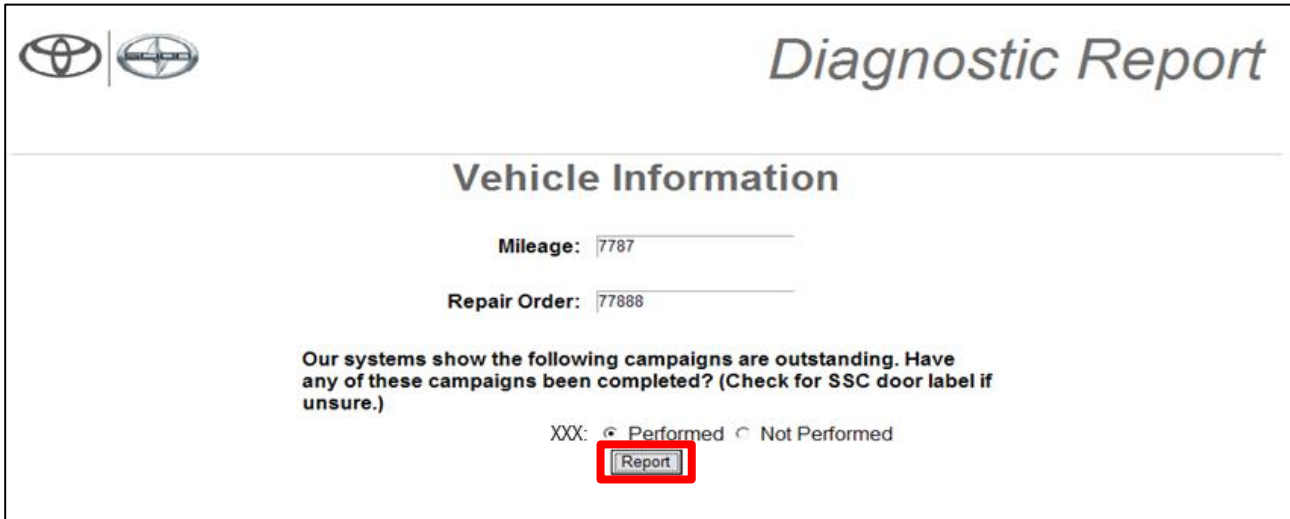
- a) From the Stored Data tab, select the Customer Health Check Report button (TIS will launch when button is pressed).



The screenshot shows the TIS software interface with the 'Health Check Results' table. The table has columns for System, Monitor Status, DTC, Cert, Pend, Stat, Test Failed, Calibration, and Update. A callout box labeled 'Customer Health Check Button' points to a button icon in the bottom right corner of the interface.

System	Monitor Status	DTC	Cert	Pend	Stat	Test Failed	Calibration	Update
Engine	OK							
Radar Cruise	-							2
Transmission	-							
Radar Cruise	-							2
ABS/ESC	-							
Four Wheel	-						F1528F4033	Yes
EMPS	-							2
Air Condit	-							2
SRS Airba	-							2
Disc Code	-							2
Combinal	-							
Steering C	-							
Front Reco	-							
LKALDA	-							
Seat	-							
Expand	-							
D-Door Motor	-							
Entry&Start	-							
P-Door Motor	-							

- b) Log in to TIS.
 c) Input Vehicle Mileage and Repair Order number.
 d) Check the "Performed" campaign button for campaign 23TA01.
 e) Select the Report button.



The screenshot shows the 'Diagnostic Report' form. The form displays 'Vehicle Information' with fields for Mileage (7787) and Repair Order (77888). Below the information, there is a message about outstanding campaigns and a 'Report' button highlighted with a red box.

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.)

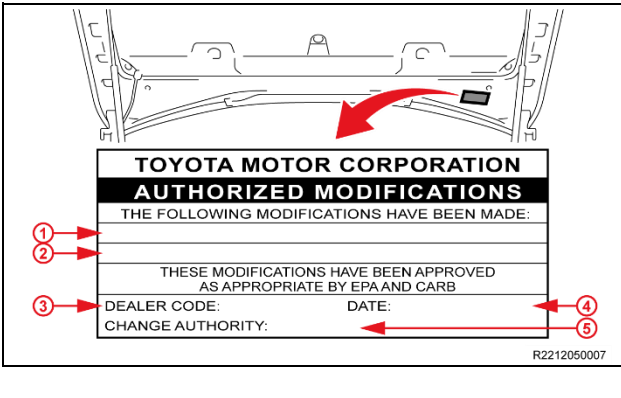
XXX: Performed Not Performed

Report

- f) Confirm Customer Health Check Report information is correct.
 g) Print Customer Health Check Report from TIS.
 h) Sign and provide to the customer.

6. ATTACH THE AUTHORIZED VEHICLE MODIFICATION LABEL

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



The authorized modification label only needs to have the ECM Information.

1	Repair ECU P/N*
	89980-#####
	89980-#####
	89980-#####
	* # varies depending on the vehicle specifications.
2	New ECM Calibration ID
3	Dealer Code
4	Date Completed
5	Campaign Code 23TA01

X. REASSEMBLY

1. REMOVE THE POWER SUPPLY FROM THE BATTERY

◀ VERIFY REPAIR QUALITY ▶

- Confirm the reflash completes successfully to the NEW CID.
- Confirm there are no DTCs in the Hybrid Vehicle Control system.
- If you have any questions regarding this update, please contact your area representative.

XI. APPENDIX

A. CAMPAIGN DESIGNATION DECODER

