

# GTS+ ECU Flash Reprogramming With Security Signature

**Service Category** Engine/Hybrid System

**Market** USA and Mexico

**Section** Engine Control

Toyota Supports  
ASE Certification 

## Applicability

YEAR(S)	MODEL(S)	ADDITIONAL INFORMATION
2025	4Runner HV, Crown Signia, Prius PHV, RAV4 PHV	
2022 - 2025	86, Corolla Cross, Tundra HV	
2024 - 2025	Grand Highlander, Grand Highlander HV, Highlander, Highlander HV, Land Cruiser, Tacoma, Tacoma HV	
2021 - 2025	Mirai, Sienna HV, Tundra, Venza HV	
2023 - 2024	Prius Prime	
2021 - 2024	RAV4 Prime	
2023 - 2025	bZ4X, Corolla, Corolla Cross HV, Corolla HV, Crown, GR Corolla, Prius, Sequoia HV	

### SUPERSESSION NOTICE

The information contained in this bulletin supersedes Service Bulletin No. T-SB-0107-20.

- Applicability has been updated to include 2025 model year 4Runner Hybrid, 86, bZ4X, Corolla, Corolla Cross, Corolla Cross Hybrid, Corolla Hybrid, Crown, Crown Signia, GR Corolla, Grand Highlander, Grand Highlander Hybrid, Highlander, Highlander Hybrid, Land Cruiser, Mirai, Prius, Prius PHV, RAV4 PHV, Sequoia Hybrid, Sienna Hybrid, Tacoma, Tacoma Hybrid, Tundra, Tundra Hybrid, and Venza Hybrid vehicles.
- The Parts Information section has been removed.
- Required Tools & Equipment and Operation Procedure sections have been updated.

Service Bulletin No. T-SB-0107-20 is obsolete and any printed versions should be discarded.

# GTS+ ECU Flash Reprogramming With Security Signature

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## Introduction

Flash reprogramming allows the Electronic Control Unit (ECU) software to be updated without replacing the ECU. Flash calibration updates for specific vehicle models/ECUs are released as field-fix procedures described in individual Service Bulletins. This bulletin details the Global Techstream+ (GTS+) ECU flash reprogramming procedures and outlines use of the Technical Information System (TIS) and the Calibration Update Wizard+ (CUW+). To ensure the correct ECU software is installed, ECUs will require a Security Signature before the ECU will initialize the flash reprogramming sequence. This bulletin also details the process for acquiring a Security Signature from TIS during the GTS+ ECU flash reprogramming process.

### NOTE

ECU is a Toyota term used to describe integrated computerized devices responsible for managing the operation of a system or subsystem. For the purposes of this bulletin, the term “ECU” is used as a generic label for the following SAE J1930 standard references:

- Powertrain Control Module (PCM)
- Engine Control Module (ECM)
- Transmission Control Module (TCM)
- Any other Toyota specific control unit

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## GTS+ ECU Flash Reprogramming With Security Signature

### Warranty Information

OP CODE	DESCRIPTION	TIME	OFF	T1	T2
N/A	Not Applicable to Warranty	–	–	–	–

### Required Tools & Equipment

SPECIAL SERVICE TOOLS (SST)	PART NUMBER	QTY
DSS-5000 Battery Diagnostic Tool*	<a href="#">DSS-5000P T</a>	1
DCA-8000 Battery Diagnostic Tool*	<a href="#">DCA-8000P T</a>	1

\*Essential SST.

#### NOTE

Additional SSTs may be ordered by calling 1-800-368-6787 (USA) or 01-800-504-5330 (Mexico) or by visiting *Home – Service Resources – Toyota Special Service Tools (SSTs)*.

REQUIRED EQUIPMENT	SUPPLIER	PART NUMBER	QTY
Techstream ADVi*	ADE	TSADVUNIT	1
Techstream 2.0		TS2UNIT	
Techstream Lite		TSLITEPDLR01	
Techstream Lite (Green Cable)		TSLP2DLR01	

\*Essential SST.

#### NOTE

- Only ONE of the Techstream units listed above is required.
- GTS+ software version 2024.04.004.02 or later is required.
- Additional Techstream units may be ordered by calling Approved Dealer Equipment (ADE) at 1-800-368-6787 (USA) or 01-55-50103041 (Mexico) or by visiting *TIS – Diagnostics – Tools & Equipment – Techstream Order Portal*.
- Use Techstream or an approved J2534 interface to perform flash reprogramming updates. Visit [techinfo.toyota.com](https://techinfo.toyota.com) for more information regarding J2534 reprogramming.

## GTS+ ECU Flash Reprogramming With Security Signature

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### GTS+ Preparation

#### Select the Correct User Type

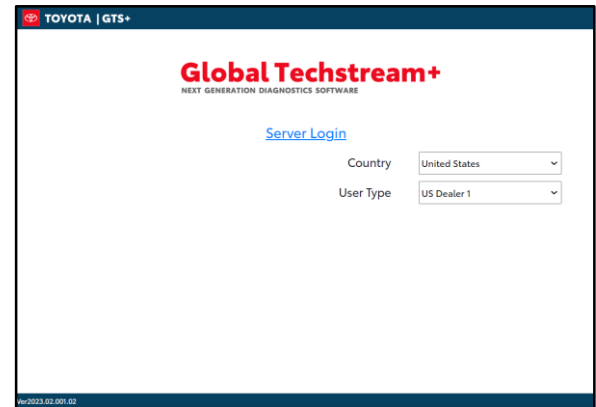
1. Launch GTS+.
2. From the initial login screen select the Country and the User Type.

**NOTE**

The appropriate User Type MUST be selected for GTS+ to function correctly.

3. Click Server Login.

**Figure 1.**



## GTS+ ECU Flash Reprogramming With Security Signature

### GTS+ Preparation (continued)

#### Confirm the Correct VIM

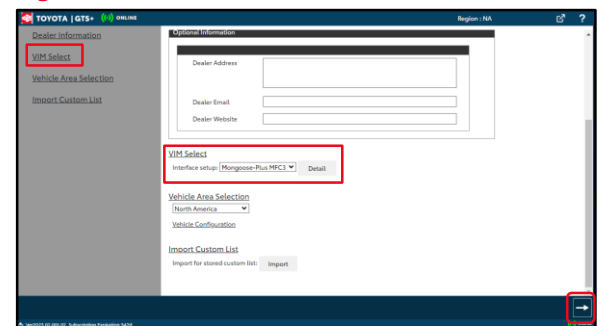
GTS+ software requires a VIM selection before it can be used for reprogramming.

1. Select GTS+ Settings from the Main Menu screen.
2. Select VIM Select from the GTS+ Settings menu.
3. Select the correct interface setup from the dropdown list.
  - Mongoose-Plus MFC3 VIM:
    - Techstream Lite w/Blue & Black Case w/Detachable Cable
    - Techstream ADVi w/Grey Case
  - MongoosePro MFC2 VIM:
    - Techstream Lite w/Green Case
    - Techstream ADVi w/Black Case
  - MongoosePro MFC VIM:
    - Techstream Lite w/Blue Case
    - Techstream Lite w/Updated Clear Case
    - Techstream 2.0

#### NOTE

The Mongoose driver MUST be installed before Mongoose selections will be available. For additional information, see *TIS – Diagnostics – Scantool*.

**Figure 2.**



4. Click the arrow in the bottom right corner.

# GTS+ ECU Flash Reprogramming With Security Signature

## Process Overview

1. Verify the vehicle's applicability for recalibration and locate the desired calibration file by performing the GTS+ Health Check function.

### NOTE

- GTS+ will automatically search TIS for the appropriate Service Bulletin using the current calibration ID from the vehicle if the PC is connected to the network (see the figures below).
- Calibration file links can be found embedded in the corresponding Service Bulletin.

Figure 3.

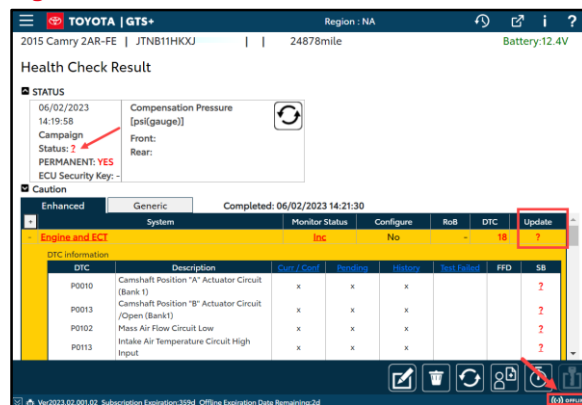
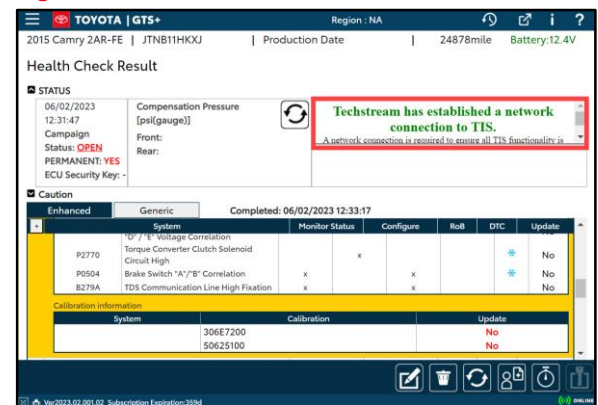


Figure 4.



2. Connect the DCA-8000 battery diagnostic tool using "Power Supply Mode" ONLY. The DCA-8000 battery diagnostic tool includes a power supply mode to help maintain battery voltage at 13.5V during ECU reprogramming.

### NOTICE

- ECU damage may occur if the correct battery charger mode setting is NOT used.
- Refer to Vehicle Reprogramming Tips for other approved chargers, located at *TIS – Diagnostics – Reprogramming – Reference Documents*.
- The battery diagnostic tool MUST be used in Power Supply Mode to maintain battery voltage at 13.5V while flash reprogramming the vehicle.
- For details on how to use the battery diagnostic tool, refer to the [DCA-8000 Instruction Manual](#) located at *TIS – Diagnostics – Tools & Equipment – Battery Diagnostics*.

# GTS+ ECU Flash Reprogramming With Security Signature

## Process Overview (continued)

3. Locate the appropriate calibration ID and reprogram the vehicle ECU with GTS+.  
GTS+ uses the CUW+ application to open calibration files and facilitate the ECU flash reprogramming process.
4. Attach the Authorized Modifications Label.  
Modifications to ECU calibrations **MUST** be recorded and properly displayed on the vehicle using the Authorized Modifications Label.

## Operation Procedure

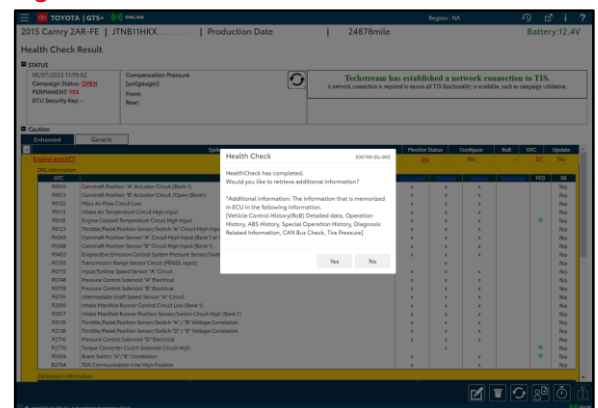
1. Verify the vehicle's applicability for recalibration and locate the desired calibration file.
  - A. Connect GTS+ and establish a vehicle connection.
  - B. Click the Health Check button on the Main Menu.

Figure 5.



- C. A Health Check completed window opens. To continue, click either Yes or No.
  - (1) Click Yes to include additional information in the Health Check.
  - (2) Click No if additional information is NOT desired.

Figure 6.



## GTS+ ECU Flash Reprogramming With Security Signature

### Operation Procedure (continued)

- D. Available calibration updates are indicated by a Yes in the Calibration Update column. Click the Yes link in the calibration information section to access the appropriate Service Bulletin on TIS.

#### NOTE

- Note ANY DTCs stored in systems that will be flash reprogrammed.
- Clicking the Yes link will automatically launch TIS and perform a calibration search.

Figure 7.

Health Check Result	
<b>STATUS</b> 05/31/2023 13:52:06 Campaign Status: <b>OPEN</b> PERMANENT: <b>YES</b> ECU Security Key: -	Compensation Pressure [psi(gauge)] Front: Rear:

DTC Information	
DTC	Description
P0010	Camshaft Position "A" Actuator Circuit (Bank 1)
P0013	Camshaft Position "W" Actuator Circuit/Open (Bank1)
P0102	Mass Air Flow Circuit Low
P0113	Intake Air Temperature Circuit High Input
P0118	Engine Coolant Temperature Circuit High Input
P0121	Throttle/Pedal Position Sensor/Switch "A" Circuit High Input
P0343	Camshaft Position Sensor "A" Circuit High Input (Bank 1 or Single Sensor)
P0368	Camshaft Position Sensor "B" Circuit High Input (Bank 1)
P0453	Evaporative Emission Control System Pressure Sensor/Switch High Input
P0705	Transmission Range Sensor Circuit (PRNDL Input)
P0715	Input/Turbine Speed Sensor "A" Circuit
P0748	Pressure Control Solenoid "A" Electrical
P0779	Pressure Control Solenoid "B" Electrical
P0791	Intermediate Shaft Speed Sensor "A" Circuit
P2009	Intake Manifold Runner Control Circuit Low (Bank 1)
P2017	Intake Manifold Runner Position Sensor/Switch Circuit High (Bank 1)
P2135	Throttle/Pedal Position Sensor/Switch "A" / "B" Voltage Correlation
P2138	Throttle/Pedal Position Sensor/Switch "D" / "E" Voltage Correlation
P2716	Pressure Control Solenoid "D" Electrical
P2770	Torque Converter Clutch Solenoid Circuit High
P0504	Brake Switch "A"/"B" Correlation
B2794	TDS Communication Line High Frequency

Calibration Information	
System	Calibration
206E7100	556C5105

- E. Login to TIS.

#### HINT

If already logged in, skip this step.



## GTS+ ECU Flash Reprogramming With Security Signature

### Operation Procedure (continued)

- F. To review the Service Bulletin and access the calibration file, click the Service Bulletin link in the Document Title column of the Calibration Search Result portlet.

#### NOTE

ONLY Toyota certified technicians and other authorized users may access calibration files.

Figure 8.

The screenshot shows the Toyota TIS Techstream interface. The 'Calibrations' tab is selected, and the 'Calibration/Multimedia Search Form' is displayed. The search criteria are set to 'Calibration ID/Multimedia ID' with the value 'F152606320'. The search results are shown in a table with columns: Current ECU CAL ID, New ECU CAL ID, Document Title (Release Date), Year / Model / VDS, and Market. A red arrow points to the 'Document Title' column, which contains the link 'T-SB-0037-19: '15-'17 Camry: "Check Brake System" Displayed in MID at Startup (2019-04-04)'. The table also lists 'Multimedia Updates' and 'Reference Documents' on the right side.

Current ECU CAL ID	New ECU CAL ID	Document Title (Release Date)	Year / Model / VDS	Market
F152606091 F152606100	F152606320 F152606330	T-SB-0037-19: '15-'17 Camry: "Check Brake System" Displayed in MID at Startup (2019-04-04)	2015 / Camry / BF1FK 2015 / Camry / BK1FK 2016 / Camry / BF1FK 2016 / Camry / BK1FK 2017 / Camry / BF1FK 2017 / Camry / BK1FK	

2. Connect the DCA-8000 battery diagnostic tool.

#### NOTE

Refer to [Vehicle Reprogramming Tips](#) for other approved chargers, located at *TIS – Diagnostics – Reprogramming – Reference Documents*.

- A. Connect the DCA-8000 battery diagnostic tool to the vehicle and turn it ON.  
B. Select Power Supply Mode.

#### NOTICE

- ECU damage may occur if the correct battery charger and mode setting are NOT used.
- The battery diagnostic tool MUST be used in Power Supply Mode to maintain battery voltage at 13.5V while flash reprogramming the vehicle.
- For details on how to use the battery diagnostic tool, refer to the [DCA-8000 Instruction Manual](#) located at *TIS – Diagnostics – Tools & Equipment – Battery Diagnostics*.

## GTS+ ECU Flash Reprogramming With Security Signature

### Operation Procedure (continued)

3. Click the appropriate calibration ID and reprogram the vehicle's ECU with GTS+.
  - A. AFTER reviewing the procedures outlined in the selected Service Bulletin, click the appropriate calibration ID link by matching the vehicle's current calibration ID to the Previous Calibration ID in the Calibration Identification Chart.

#### NOTE

- Calibration files are embedded as live links in the Service Bulletin.
- Some vehicles require special preparation. Review the selected Service Bulletin carefully.

Figure 9.

		T-SB-0111-22	December 16, 2022	Page 6 of 8
Hesitation From Stop and Surge Concerns				
Calibration Information				
MODEL	DRIVETRAIN	CALIBRATION ID		
		PREVIOUS		NEW
Tundra	2WD	8A2100C01200 <del>8A2100C01300</del>		<a href="#">8A2100C01400</a>
	4WD	8A2100C03200 8A2100C03300		<a href="#">8A2100C03400</a>

## GTS+ ECU Flash Reprogramming With Security Signature

### Operation Procedure (continued)

- B. Click Open to load the calibration file information. If prompted to choose GTS or GTS+, select GTS+.

#### NOTE

- GTS+ downloads calibration files as needed to ensure the latest calibration file is used.
- Do NOT save calibrations locally on the hard drive or other media for future use.

Figure 10.

MODEL		DRIVETYP	LIBRATION ID	
			PREVIOUS	NEW
Tundra	2WD		8A2100C01200	<a href="#">8A2100C01400</a>
			8A2100C01300	<a href="#">8A2100C01400</a>
	4WD		8A2100C03200	<a href="#">8A2100C03400</a>
			8A2100C03300	<a href="#">8A2100C03400</a>

Figure 11.

Which do you want to start,  
GTS or GTS+?

GTS

GTS+

#### NOTICE

Errors during the flash reprogramming process can permanently damage the vehicle ECU. Minimize the risk by following the steps below.

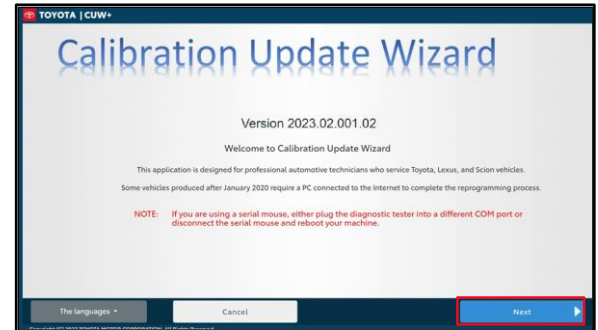
- Battery voltage **MUST NOT FALL BELOW 12V** during reprogramming. Confirm battery voltage is higher than 12V but be sure voltage **DOES NOT RISE ABOVE 16.0V** during reprogramming.
- Turn **OFF ALL** vehicle accessories (audio system, A/C, interior lights, DRL, etc.).
- Do **NOT** add to or significantly change the vehicle's electrical load while reprogramming.
- Confirm the hood is open and ensure under-hood temperature does **NOT** exceed 158°F (70°C).
- Confirm cable connections between the vehicle and Techstream are secure.
- Do **NOT** disconnect or turn off Techstream or vehicle ignition during reprogramming.
- Set the parking brake.
- Complete **ALL** flash calibration updates provided for each ECU.
- If the battery's State-Of-Charge (SOC) or capacity is in question, test with SST No. [DSS-5000P T](#) (Battery Diagnostic Tool), and follow the [DSS-5000 Instruction Manual](#) located at *TIS – Diagnostics – Tools & Equipment – Battery Diagnostics*.
- The DCA-8000 battery diagnostic tool **MUST** be used in Power Supply Mode to maintain battery voltage at 13.5V while flash reprogramming the vehicle. For details on how to use the DCA-8000 battery diagnostic tool, refer to the [DCA-8000 Instruction Manual](#) located at *TIS – Diagnostics – Tools & Equipment – Battery Diagnostics*.

## GTS+ ECU Flash Reprogramming With Security Signature

### Operation Procedure (continued)

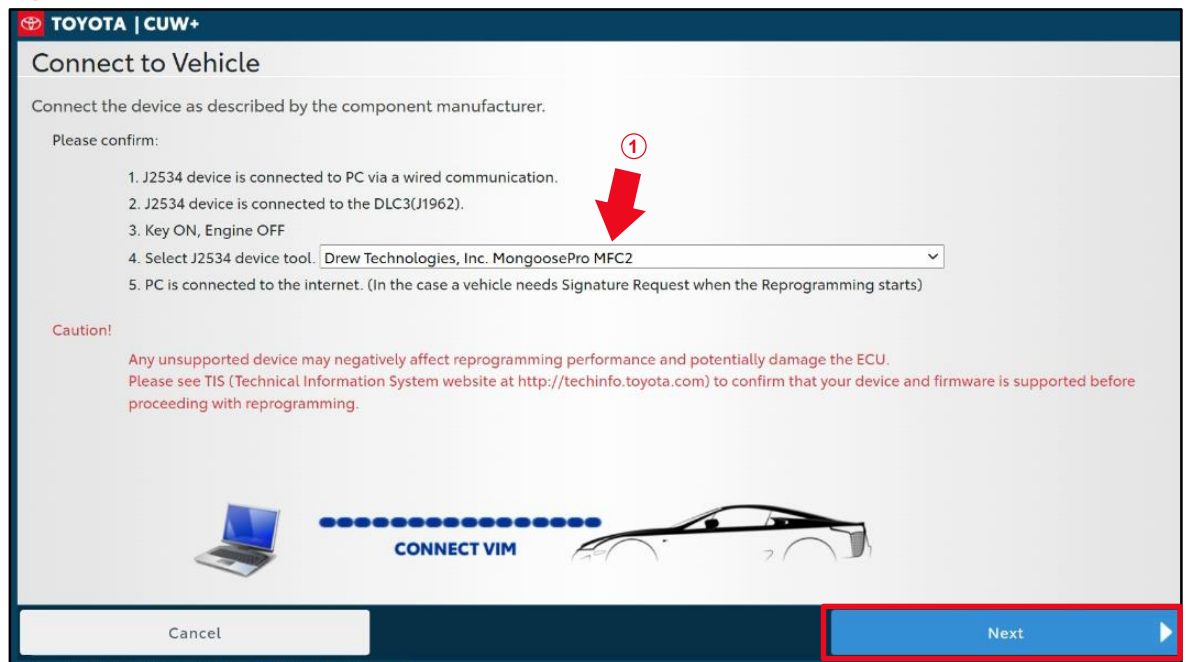
- C. Click Next to start the calibration update process.

**Figure 12.**



- D. Confirm the following:
- The PC is connected to VIM.
  - The VIM is connected to DLC3 connector.
  - The Ignition is ON and the engine is OFF or READY-OFF (hybrid vehicles).
- Then, click Next.

**Figure 13.**



1	Select the Correct Device Tool ("MongoosePro MFC," "MongoosePro MFC2," or "Mongoose-Plus MFC3" VIM)
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## GTS+ ECU Flash Reprogramming With Security Signature

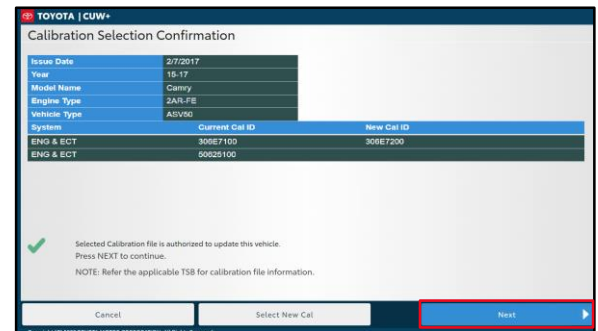
### Operation Procedure (continued)

- E. Verify the correct current and NEW calibration information, then click Next.

#### NOTICE

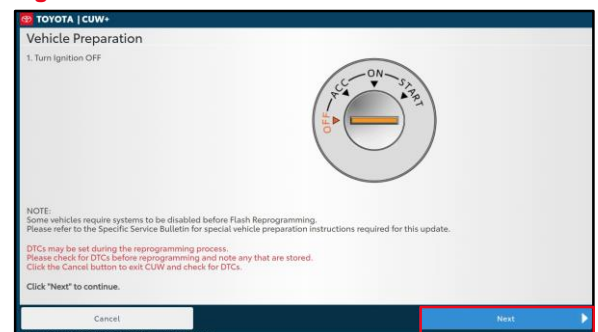
- The total number of calibration IDs in the calibration file corresponds to the number of reprogrammable processors in the ECU.
- The figure on the right shows an example of the update procedure for a two-processor ECU.

Figure 14.



- F. Turn the ignition OFF, click Next, and wait at least 10 seconds before proceeding.

Figure 15.



## GTS+ ECU Flash Reprogramming With Security Signature

### Operation Procedure (continued)

G. Turn the Ignition ON (IG ON Ready-OFF for hybrid vehicles).

H. Confirm the following:

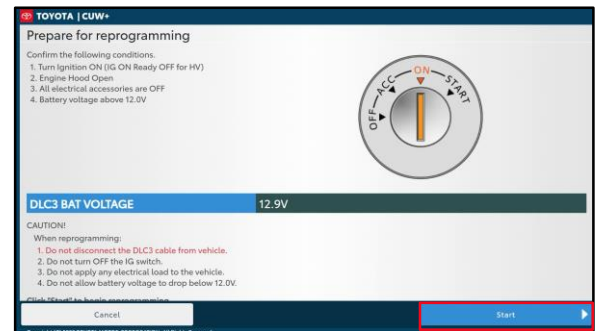
- The PC is connected to VIM.
- The hood is open.
- ALL accessories are OFF.
- Battery voltage is above 12V.

#### NOTICE

**Verify the vehicle is connected to a battery charger before continuing. If battery voltage falls below 12V, ECU damage may occur.**

Then, click Start.

**Figure 16.**



#### NOTE

If the key cycle is NOT done properly, reprogramming will fail, and an error message will appear prompting you to restart.

I. Based on the version of GTS+ being used, please follow the appropriate steps listed below:

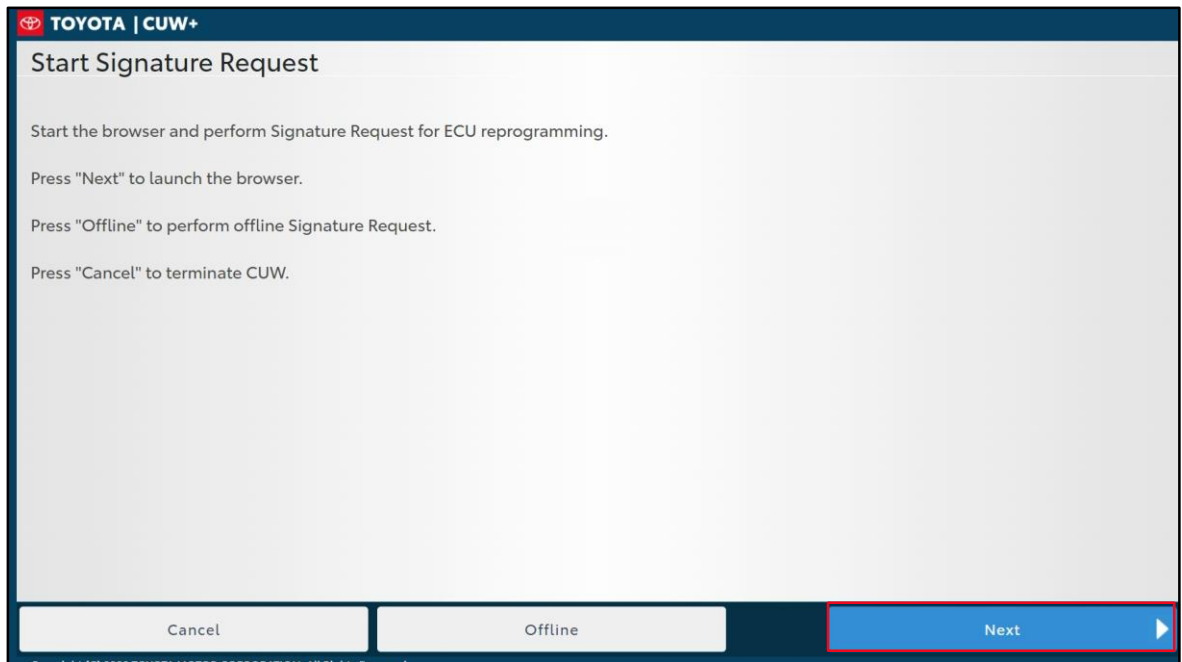
- GTS+ software version 2024.03 or newer, go to sub step P.
- GTS+ software version 2024.02 or older, continue to sub step J.

## GTS+ ECU Flash Reprogramming With Security Signature

### Operation Procedure (continued)

- J. This vehicle is equipped with additional security measures requiring a Signature from TIS. Select Next to open TIS and retrieve the Signature.

**Figure 17.**



- K. Input TIS login credentials and select Login.

**Figure 18.**



## GTS+ ECU Flash Reprogramming With Security Signature

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### Operation Procedure (continued)

- L. Input TIS login credentials for secondary authentication and select Login.

**Figure 19.**



The screenshot shows a window titled "Secure Reprogramming". Inside, the text "Receive Secure Reprogramming Signature" is centered. Below this, there are fields for "User ID: 1XXXXX" and "Password:". At the bottom, there are three buttons: "Clear", "Login", and "Switch User". The "Login" button is highlighted with a red box.

- M. Select Send.

**Figure 20.**



The screenshot shows a window titled "Secure Reprogramming". It displays the following information: "User ID: Technician 1", "Technician Name: Technician 1", "Distributor Code: 11111", "Distributor Name: TMNA", "Dealer Code: 12345", "Dealer Name: Toyota", "Vehicle VIN: 12345678912345678", and "Software ID: 123abc123abc123abc123abc123abc123abc". At the bottom right, there is a "Send" button highlighted with a red box.

- N. Click Copy to Clipboard to copy the signature from TIS.

**Figure 21.**



The screenshot shows a window titled "Secure Reprogramming". It displays the text "Signature calculation result" and "Input below signature to Calibration Update Wizard and press 'Next'". Below this, there is a long alphanumeric signature string. At the bottom left, there is a "Copy to Clipboard" button highlighted with a red box.

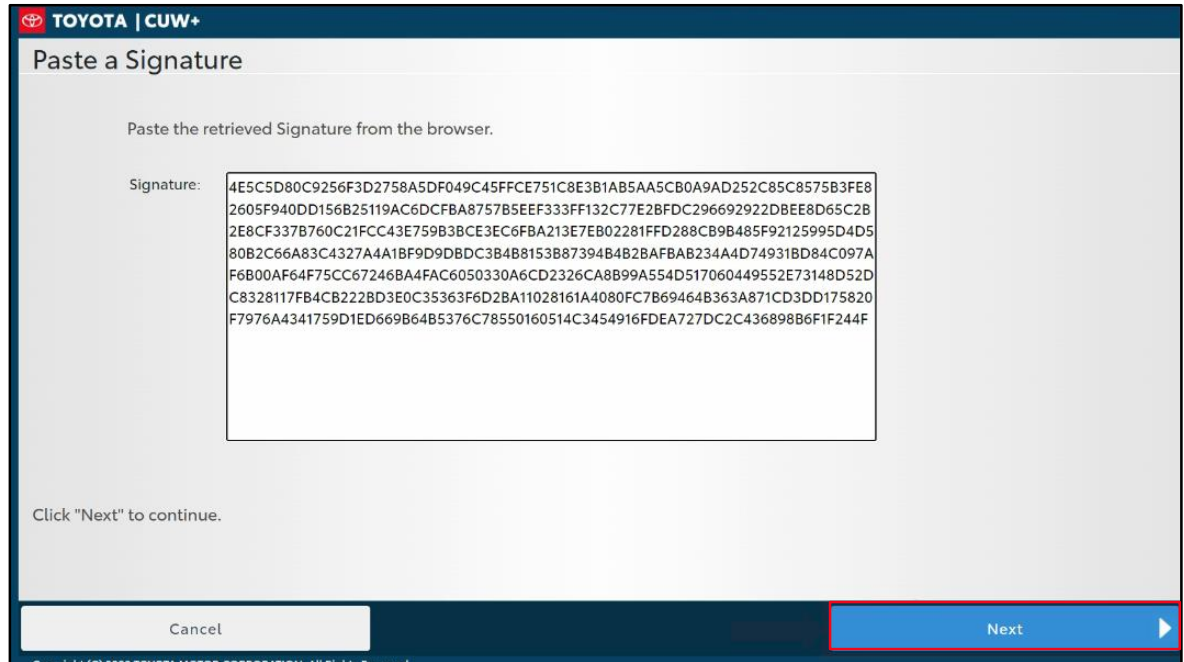


## GTS+ ECU Flash Reprogramming With Security Signature

### Operation Procedure (continued)

- O. Paste the Signature into CUW+ and select Next.

**Figure 22.**



**TOYOTA | CUW+**

Paste a Signature

Paste the retrieved Signature from the browser.

Signature: 4E5C5D80C9256F3D2758A5DF049C45FFCE751C8E3B1AB5AA5CB0A9AD252C85C8575B3FE8  
2605F940DD156B25119AC6DCFB8757B5EEF333FF132C77E2BFD296692922DBEE8D65C2B  
2E8CF337B760C21FCC43E759B3BCE3EC6FBA213E7EB02281FFD288CB9B485F92125995D4D5  
80B2C66A83C4327A4A1BF9D9DBDC3B4B8153B87394B4B2BAFBA8234A4D74931BD84C097A  
F6B00AF64F75CC67246BA4FAC6050330A6CD2326CA8B99A554D517060449552E73148D52D  
C8328117FB4CB222BD3E0C35363F6D2BA11028161A4080FC7B69464B363A871CD3DD175820  
F7976A4341759D1ED669B64B5376C78550160514C3454916FDEA727DC2C436898B6F1F244F

Click "Next" to continue.

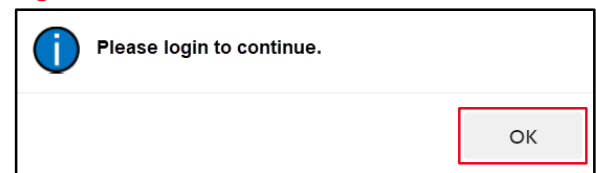
Cancel Next

- P. Select OK to continue.

**NOTE**

Sub steps P and Q are ONLY required for GTS+ software version 2024.03 and newer.

**Figure 23.**



**Please login to continue.**

OK

## GTS+ ECU Flash Reprogramming With Security Signature

### Operation Procedure (continued)

- Q. Enter your password and select LOG IN to continue

**Figure 24.**

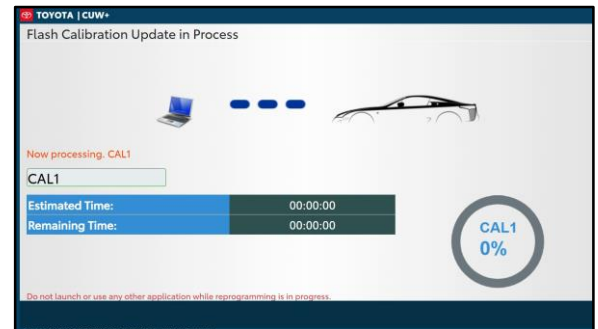


- R. Do NOT disturb the vehicle during flash reprogramming.

**NOTE**

- ECU flash reprogramming may take 3 – 30 minutes per calibration file.
- Reprogramming time will vary depending on model and ECU communication protocol. Vehicles using CAN communication protocol will reprogram much faster (2 – 7 minutes).

**Figure 25.**



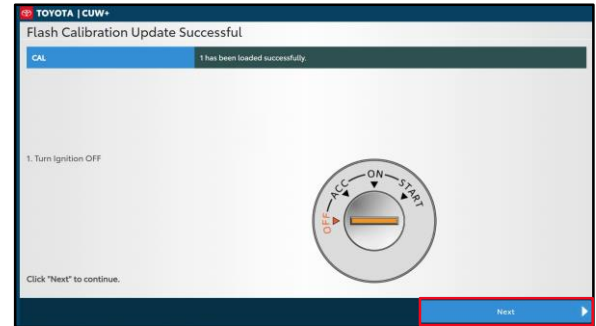
- S. Does the vehicle require only ONE calibration update?
- **YES** — Go to sub step T.
  - **NO** — If the vehicle requires a SECOND calibration update, continue as follows:
    - For serial communication vehicles, continue to sub step T.
    - For CAN communication vehicles, go to sub step V.

## GTS+ ECU Flash Reprogramming With Security Signature

### Operation Procedure (continued)

- T. When Cal 1 completes the update process, turn the ignition OFF, click Next, and wait a MINIMUM of 10 seconds before proceeding.

**Figure 26.**

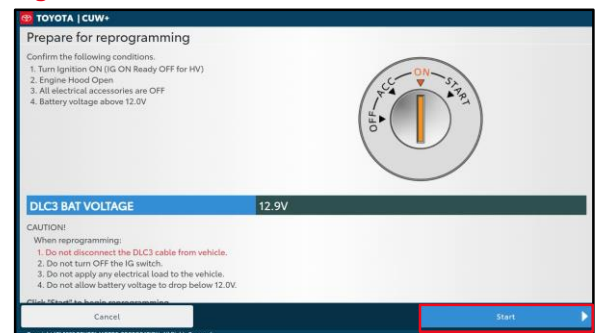


- U. Turn the ignition to the ON position, then click Start.

**NOTE**

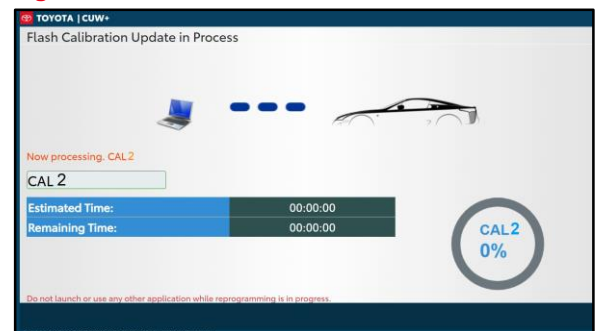
If the key cycle is NOT done properly, reprogramming may fail, and an error message will appear prompting you to restart Cal 2.

**Figure 27.**



- V. Do NOT disturb the vehicle during flash reprogramming.

**Figure 28.**

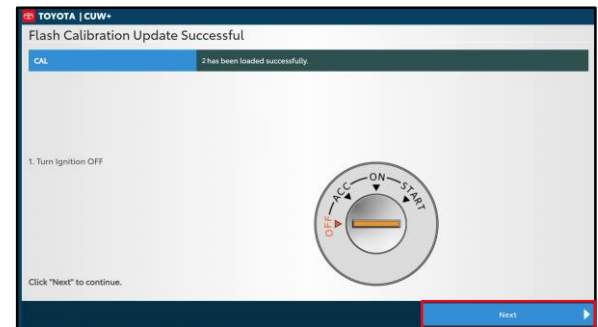


## GTS+ ECU Flash Reprogramming With Security Signature

### Operation Procedure (continued)

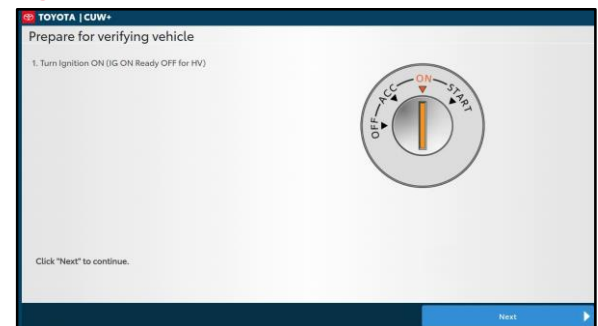
W. Turn the ignition OFF, click Next, and wait a MINIMUM of 10 seconds before proceeding.

**Figure 29.**



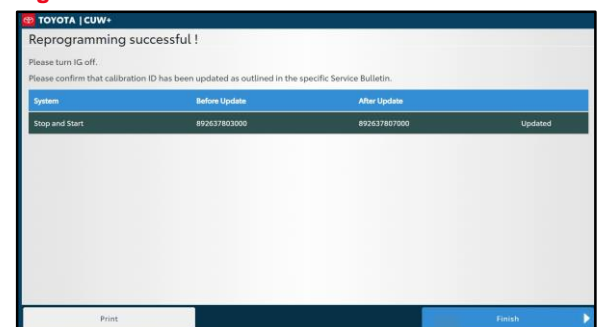
X. Turn the ignition to the ON position, then click Next.

**Figure 30.**



Y. Confirm calibrations were updated and click Finish.

**Figure 31.**



### NOTE

On some models, DTCs may set as a result of reprogramming. If DTCs are present, clear codes and run the Health Check again. Troubleshoot ANY remaining current, pending, or history codes. Permanent codes will NOT be cleared using GTS+. Permanent codes do NOT illuminate the MIL and do NOT require troubleshooting. They will clear during normal driving once the Universal Trip Drive Pattern is performed.