Techstream ECU Flash Reprogramming Procedure

Service Category: Engine/Hybrid System

Section: Engine Control

Market: USA

Applicability

<table>
<thead>
<tr>
<th>YEAR(S)</th>
<th>MODEL(S)</th>
</tr>
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<tbody>
<tr>
<td>2001 - 2017</td>
<td>4Runner, 86, Avalon, Avalon HV, Camry, Camry HV, Celica, Corolla, Echo, FJ</td>
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<tr>
<td></td>
<td>Cruiser, Highlander, Highlander HV, Land Cruiser, MR2 Spyder, Matrix, Mirai, Prius, Prius C, Prius PHV, Prius Prime, Prius V, RAV4, RAV4 EV, RAV4 HV, Sequoia, Sienna, Solara, Tacoma, Tundra, Venza, Yaris, Yaris SD MEX-Prod, iA, iM</td>
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SUPERSESSION NOTICE
The information contained in this bulletin supersedes SB No. T-SB-0012-13.
- Applicability has been updated to include 2017 model year Toyota vehicles.
- The entire bulletin has been updated to include information for Techstream 2.0.

Service Bulletin No. T-SB-0012-13 is Obsolete and any printed versions should be discarded. Be sure to review the entire content of this bulletin before proceeding.

Introduction

Flash reprogramming allows the 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 Techstream ECU flash reprogramming process and outlines use of the Technical Information System (TIS) and the Calibration Update Wizard (CUW). Flash calibration updates can only be applied to the vehicle/ECU combination for which they are intended. ECUs have internal security that will not allow them to be programmed with another ECU’s information.
Introduction (Continued)

NOTE
Electronic Control Unit (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)
- Or any other Toyota specific control unit

Warranty Information

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<th>T2</th>
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Parts Information

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<td>00451-00001-LBL</td>
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<td>Authorized Modification Labels</td>
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NOTE
Authorized Modification Labels may be ordered in packages of 25 from the Materials Distribution Center (MDC) through Dealer Daily – Parts – Dealer Support Materials Orders.
NOTE

- Only ONE of the Techstream units listed above is required.
- Software version 11.20.019 or later is required.
- Additional Techstream units may be ordered by calling Approved Dealer Equipment (ADE) at 1-800-368-6787.
- The Diagnostic Tester is NOT recommended for flash reprogramming. Please use Techstream or an approved J2534 interface to perform flash reprogramming updates. Visit techinfo.toyota.com for more information regarding J2534 reprogramming.

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<th>REQUIRED EQUIPMENT</th>
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<th>QTY</th>
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<td>TS2UNIT</td>
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<td>Techstream Lite</td>
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<td>Techstream Lite (Green Cable)</td>
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NOTE

Additional SSTs may be ordered by calling 1-800-933-8335.

* Essential SST.
Techstream ECU Flash Reprogramming Procedure

Techstream Preparation

Selecting the Correct VIM

Techstream software requires a VIM selection before it can be used for reprogramming. Perform the following:

1. Select Setup from the Techstream Main Menu screen.
2. Select VIM Select from the Setup drop down menu.

Figure 1.
Techstream ECU Flash Reprogramming Procedure

Techstream Preparation (Continued)

3. Select the correct Interface Setup from the drop down list.
   - If using Techstream 2.0, select *MongoosePro MFC*.
   - If using Techstream Lite, select Mongoose MFC, MongoosePro MFC, or MongoosePro MFC2 (green) depending on the cable being used.

   **NOTE**
   Mongoose Driver MUST be installed before Mongoose selections will be available. *See TIS – Diagnostics – Scantool page for additional information.*

4. Click *OK*.

Process Overview

Techstream ECU flash reprogramming is a 4-step process:

1. Verify the vehicle’s applicability for recalibration and locate desired calibration file by performing the Techstream Health Check function.

   **NOTE**
   Techstream will automatically search TIS for the appropriate Service Bulletin using the current Calibration ID from the vehicle. Calibration file links can be found embedded in the corresponding Service Bulletin.

2. Connect the GR8 Battery Diagnostic Station using “Power Supply Mode” only.

   The GR8 Battery Diagnostic Station includes a Power Supply Mode to help maintain battery voltage at 13.5 volts 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 on TIS, *Diagnostics – Reprogramming – Reference Documents*.

3. Locate appropriate calibration ID and reprogram the vehicle ECU with Techstream.

   Techstream uses the Calibration Update Wizard (CUW) application to open calibration files and facilitate the ECU flash reprogramming process.

4. Attach the Authorized Vehicle Modification Label.

   Modifications to ECU calibrations MUST be recorded and properly displayed on the vehicle using the Authorized Modification Label.
Operation Procedure

1. Verify the vehicle’s applicability for recalibration and locate desired calibration file.
   A. Connect Techstream and establish a vehicle connection.
   B. Click the Health Check button on the System Select tab.

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**Figure 2.**

![Techstream System Select Menu](image-url)
C. Choose desired ECU group(s) in the *Health Check* dialog box.

*Figure 3.*

D. Click *Next.*
Operation Procedure (Continued)

E. Click Continue to view Health Check results.

F. Available calibration updates are indicated by a Yes link in the Cal. Update column. Click the Yes link 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.
G. Log in to TIS. (If already logged in, skip this step.)

H. 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 above may access calibration files.
Techstream ECU Flash Reprogramming Procedure

Operation Procedure (Continued)

2. Connect the GR8 Battery Diagnostic Station.

NOTE
Refer to Vehicle Reprogramming Tips for other approved Chargers, located on TIS, Diagnostics – Reprogramming – Reference Documents.

A. Connect the GR8 Battery Diagnostic Station to the vehicle and turn it ON.
B. Select Power Supply Mode by following the screen flow below.

NOTICE
- ECU damage may occur if the correct battery charger and mode setting are NOT used.
- Power Supply Mode is used to maintain battery voltage at 13.5 volts while flash reprogramming the vehicle.
- For details on how to use the GR8 Battery Diagnostic Station, refer to the GR8 Instruction Manual located on TIS, Diagnostics – Tools & Equipment – Battery Diagnostics.

Figure 7.

![Diagram of GR8 Battery Diagnostic Station screen flow]
Operation Procedure (Continued)

3. Click the appropriate calibration ID and reprogram the vehicle’s ECU with Techstream.

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 — please review the selected Service Bulletin carefully.

**Figure 8.**

<table>
<thead>
<tr>
<th>Calibration Identification Chart</th>
<th>MODEL YEAR</th>
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B. Click Open to load calibration file information.

**NOTE**
Techstream pulls calibration files as needed to ensure the latest calibration file is used. Do NOT save calibrations locally on the hard drive or other media.
C. Click Next to start the calibration update process.
Techstream ECU Flash Reprogramming Procedure

Operation Procedure (Continued)

D. Confirm the following:
   - PC is connected to VIM.
   - VIM is connected to DLC3 connector.
   - Ignition is ON and engine is OFF or “READY” OFF (hybrid vehicles).

Then click Next.

Figure 11. Using Techstream 2.0 or Techstream Lite

1. Select Correct Device Tool (“Mongoose MFC,” “MongoosePro MFC,” or “MongoosePro MFC2” [green])
Operation Procedure (Continued)

E. Verify correct current calibration 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.
- Each calibration file may contain up to three separate calibrations.
- Figure 12 shows an example of the update procedure for a two-processor ECU.

Figure 12.
Operation Procedure (Continued)

F. Turn ignition OFF. Then click Next.

Figure 13.
Techstream ECU Flash Reprogramming Procedure

Operation Procedure (Continued)

G. Confirm the following:

- PC is connected to VIM.
- Ignition is ON and engine is OFF or “READY” OFF (hybrid vehicles).
- Hood is open.
- All accessories are OFF.
- Battery voltage is above 11.8 volts.

**NOTICE**

Verify the vehicle is connected to a battery charger before continuing — If battery voltage falls below 11.8 volts, ECU damage may occur.

Then click *Next*.

**Figure 14.**

![Prepare for reprogramming screen]

**NOTE**

If key cycle is NOT done properly, reprogramming will stop at 10% and Cal 1 will fail to load.
Operation Procedure (Continued)

H. Do NOT disturb the vehicle during flash reprogramming.

**NOTE**
- ECU flash reprogramming may take anywhere from 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 15.

NOTE
- If vehicle requires only ONE calibration update, then proceed to step N in this bulletin.
- If vehicle requires a SECOND calibration update, then continue as follows:
  - For serial communication vehicles, go to step I.
  - For CAN communication vehicles, go to step K.
I. When Cal 1 has completed the update process, turn ignition OFF for a minimum of 10 seconds. Then click Next.

Figure 16.
Operation Procedure (Continued)

J. Turn ignition to the ON position. Then click Start.

Figure 17.

NOTE
If key cycle is NOT done properly, reprogramming will stop at 10% and Cal 2 will fail to load.
Operation Procedure (Continued)

K. Do NOT disturb the vehicle during flash reprogramming.

Figure 18.

Do not launch or use any other application while reprogramming is in progress.
Do not disconnect from vehicle.
Operation Procedure (Continued)

L. Turn ignition OFF for a minimum of 10 seconds. Then click Next.

Figure 19.
M. Turn ignition to the ON position. Then click Next.

Figure 20.
N. Confirm all calibrations were updated as specified in the Service Bulletin. Then click Finish.

**Figure 21.**

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 Techstream. 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.
4. Attach the Authorized Modifications Label.
   A. Using a permanent marker or ball point pen, complete the Authorized Modifications Label and attach to the vehicle. The Authorized Modifications Label is available through the MDC, P/N 00451-00001-LBL.

![Authorized Modifications Label]

**Figure 22.**

<table>
<thead>
<tr>
<th></th>
<th>Replacement ECU Part Number</th>
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B. Attach the label under the hood in the location determined by the specific Service Bulletin or Campaign.

**NOTE**

Wait 60 – 90 seconds for ink to set before handling.