Techstream ECU Flash Reprogramming Procedure

Service Category  Engine/Hybrid System
Section        Emission Control
Market        USA

Applicability

<table>
<thead>
<tr>
<th>YEAR(S)</th>
<th>MODEL(S)</th>
<th>ADDITIONAL INFORMATION</th>
</tr>
</thead>
</table>

REVISION NOTICE
July 01, 2019 Rev1:
- Applicability has been updated to include 2019 – 2020 model year Lexus vehicles.
- The Techstream Preparation and Process Overview sections have been updated.

Any previous printed versions of this bulletin should be discarded.

SUPERSESSION NOTICE
The information contained in this bulletin supersedes Service Bulletin No. L-SB-0021-14.
- Applicability has been updated to include applicable 2018 models and 2016 – 2018 model year RC 300 and 2015 – 2018 model year RC 350 vehicles.
- Applicability has been updated to exclude 2001 – 2003 model year ES 300 vehicles.
Service Bulletin No. L-SB-0021-14 is obsolete and any printed versions should be discarded. Be sure to review the entire content of this bulletin before proceeding.
Techstream ECU Flash Reprogramming Procedure

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 Techstream ECU flash reprogramming process and outlines the 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.

NOTE

ECU is a Lexus 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 Lexus-specific control unit

Warranty Information

<table>
<thead>
<tr>
<th>OP CODE</th>
<th>DESCRIPTION</th>
<th>TIME</th>
<th>OFP</th>
<th>T1</th>
<th>T2</th>
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</thead>
<tbody>
<tr>
<td>N/A</td>
<td>Not Applicable to Warranty</td>
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<td>–</td>
<td>–</td>
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</table>

Parts Information

<table>
<thead>
<tr>
<th>PART NUMBER</th>
<th>PART NAME</th>
<th>QTY</th>
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</thead>
<tbody>
<tr>
<td>00451-00001-LBL</td>
<td>Authorized Modifications Label</td>
<td>1</td>
</tr>
</tbody>
</table>

NOTE

Authorized Modifications Labels may be ordered in packages of 25 from the Materials Distribution Center (MDC) through Dealer Daily – Parts – Dealer Support Materials Orders.
Techstream ECU Flash Reprogramming Procedure

Required Tools & Equipment

<table>
<thead>
<tr>
<th>REQUIRED EQUIPMENT</th>
<th>SUPPLIER</th>
<th>PART NUMBER</th>
<th>QTY</th>
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<tbody>
<tr>
<td>Techstream ADVi*</td>
<td>ADE</td>
<td>TSADVUNIT</td>
<td>1</td>
</tr>
<tr>
<td>Techstream 2.0</td>
<td>ADE</td>
<td>TS2UNIT</td>
<td>1</td>
</tr>
<tr>
<td>Techstream Lite</td>
<td>ADE</td>
<td>TSLITEPDLR01</td>
<td>1</td>
</tr>
<tr>
<td>Techstream Lite (Green Cable)</td>
<td>ADE</td>
<td>TSLP2DLR01</td>
<td>1</td>
</tr>
</tbody>
</table>

*Essential SST.

NOTE
- Only ONE of the Techstream units listed above is required.
- Software version 14.10.028 or later is required.
- Additional Techstream units may be ordered by calling Approved Dealer Equipment (ADE) at 1-800-368-6787.
- Use Techstream or an approved J2534 interface to perform flash reprogramming updates. Visit techinfo.toyota.com for more information regarding J2534 reprogramming.

<table>
<thead>
<tr>
<th>SPECIAL SERVICE TOOLS (SST)</th>
<th>PART NUMBER</th>
<th>QTY</th>
</tr>
</thead>
<tbody>
<tr>
<td>Battery Diagnostic Tool*</td>
<td>DCA-8000P_T</td>
<td>1</td>
</tr>
</tbody>
</table>

*Essential SST.

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

Techstream Preparation

Select the Correct User Type

The appropriate user type MUST be selected for Techstream to function correctly.

Perform the following:

1. Select Setup from the Techstream main menu screen.
2. Select Techstream Configuration from the Setup dropdown menu.
3. Select the area and language.
4. Input information and select US Dealer 1 from the User Type dropdown menu.
Techstream ECU Flash Reprogramming Procedure

Techstream Preparation (continued)

Select the Correct VIM

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

Perform the following:

5. Select Setup from the Techstream main menu screen.

6. Select VIM Select from the Setup dropdown menu.

7. Select the correct interface setup from the dropdown list.
   - If using Techstream ADVi, select MongoosePro MFC2.
   - If using Techstream 2.0, select MongoosePro MFC.
   - If using Techstream Lite, select MongoosePro MFC (blue or updated clear case), or MongoosePro MFC2 (green case) 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.

8. Click OK.
Techstream ECU Flash Reprogramming Procedure

Process Overview

Techstream ECU flash reprogramming is a four-step process:

1. Verify the vehicle’s applicability for recalibration and locate the 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 if the PC is connected to the Network (see figures below). Calibration file links can be found embedded in the corresponding Service Bulletin.

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.

3. Locate the appropriate calibration ID and reprogram the vehicle ECU with Techstream. Techstream 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 Techstream and establish a vehicle connection.
   B. Click the Health Check button on the System Select tab.
   C. Choose the desired ECU group(s) in the Health Check dialog box, then click Next.
   D. Click Continue to view the Health Check results.
Techstream ECU Flash Reprogramming Procedure

Operation Procedure (continued)

E. Available calibration updates are indicated by a **Yes** link in the Calibration 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.

**Figure 8.**

F. Log in to TIS. (If already logged in, skip this step.)

G. 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 Lexus Certified Technicians and other authorized users may access calibration files.

**Figure 9.**
Techstream ECU Flash Reprogramming Procedure

Operation Procedure (continued)

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.
   • Power Supply Mode is used 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.
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.

   **Figure 10.**

   ![Calibration Identification Chart](image1)

B. Click Open to load the calibration file information.

   **NOTE**
   Techstream 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.

   **Figure 11.**

   ![File Download](image2)
Operation Procedure (continued)

C. Click Next to start the calibration update process.

Figure 12.
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 13. 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 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 15 shows an example of the update procedure for a two-processor ECU.

F. Turn ignition OFF, then click Next.
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 11.8V

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

Then, click Start.

**NOTE**
If the key cycle is NOT done properly, reprogramming will stop at 10% and Cal 1 will fail to load.

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).

Does the vehicle require only ONE calibration update?
- **YES** — Go to substep M.
- **NO** — If the vehicle requires a SECOND calibration update, continue as follows:
  - For serial communication vehicles, continue to substep H.
  - For CAN communication vehicles, go to substep J.
H. When Cal 1 completes the update process, turn the ignition OFF for a minimum of 10 seconds, then click Next.

![Figure 18.](image)

I. Turn the ignition to the ON position, then click Start.

![Figure 19.](image)

**NOTE**
If the key cycle is NOT done properly, reprogramming will stop at 10% and Cal 2 will fail to load.

![Figure 20.](image)

J. Do NOT disturb the vehicle during flash reprogramming.
K. Turn the ignition OFF for a minimum of 10 seconds, then click Next.

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

M. Confirm ALL calibrations were updated as specified in the Service Bulletin, then click Finish.

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.
Operation Procedure (continued)

4. Attach the Authorized Modifications Label.

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

**Figure 24.**

| 1 | Replacement ECU Part Number |
| 2 | Calibration ID(s)            |
| 3 | Dealer Code                 |
| 4 | Date Completed              |
| 5 | Service Bulletin or Campaign Number |

B. Attach the Authorized Modifications 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.