LEXUS

Technical Service Information Bulletin

Techstream ECU Flash Reprogramming Procedure

Service Category   Engine/Hybrid System

Section   Emission Control   **Market** USA

Lexus Supports
ASE Certification **ASE** CERTIFIED

Applicability

YEAR(S)	MODEL(S)	ADDITIONAL INFORMATION
2001 - 2018	CT200H, ES300H, ES330, ES350, GS F, GS200T, GS300, GS350, GS430, GS450H, GS460, GX460, GX470, HS250H, IS F, IS200T, IS250, IS250C, IS300, IS350, IS350C, LC500, LC500H, LFA, LS430, LS460, LS500, LS500H, LS600H, LX470, LX570, NX200T, NX300, NX300H, RC F, RC200T, RC300, RC350, RX300, RX330, RX350, RX400H, RX450H, SC430	

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Service Bulletin No. L-SB-0021-14 is obsolete and any printed versions should be discarded.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 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

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

Parts Information

PART NUMBER		PART NAME	QTY
PREVIOUS	**NEW**		
00451-00001-LBL		Authorized Modifications Label	1

> **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

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

* Essential SST.

> **NOTE**
> - Only ONE of the Techstream units listed above is required.
> - Software version 12.20.024 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.

SPECIAL SERVICE TOOLS (SST)	PART NUMBER	QTY
GR8 Battery Diagnostic Station*	00002-MCGR8	1

* Essential SST.

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

Techstream Preparation – Selecting the Correct VIM

Techstream software requires a VIM selection before it can be used for reprogramming. Perform the following:
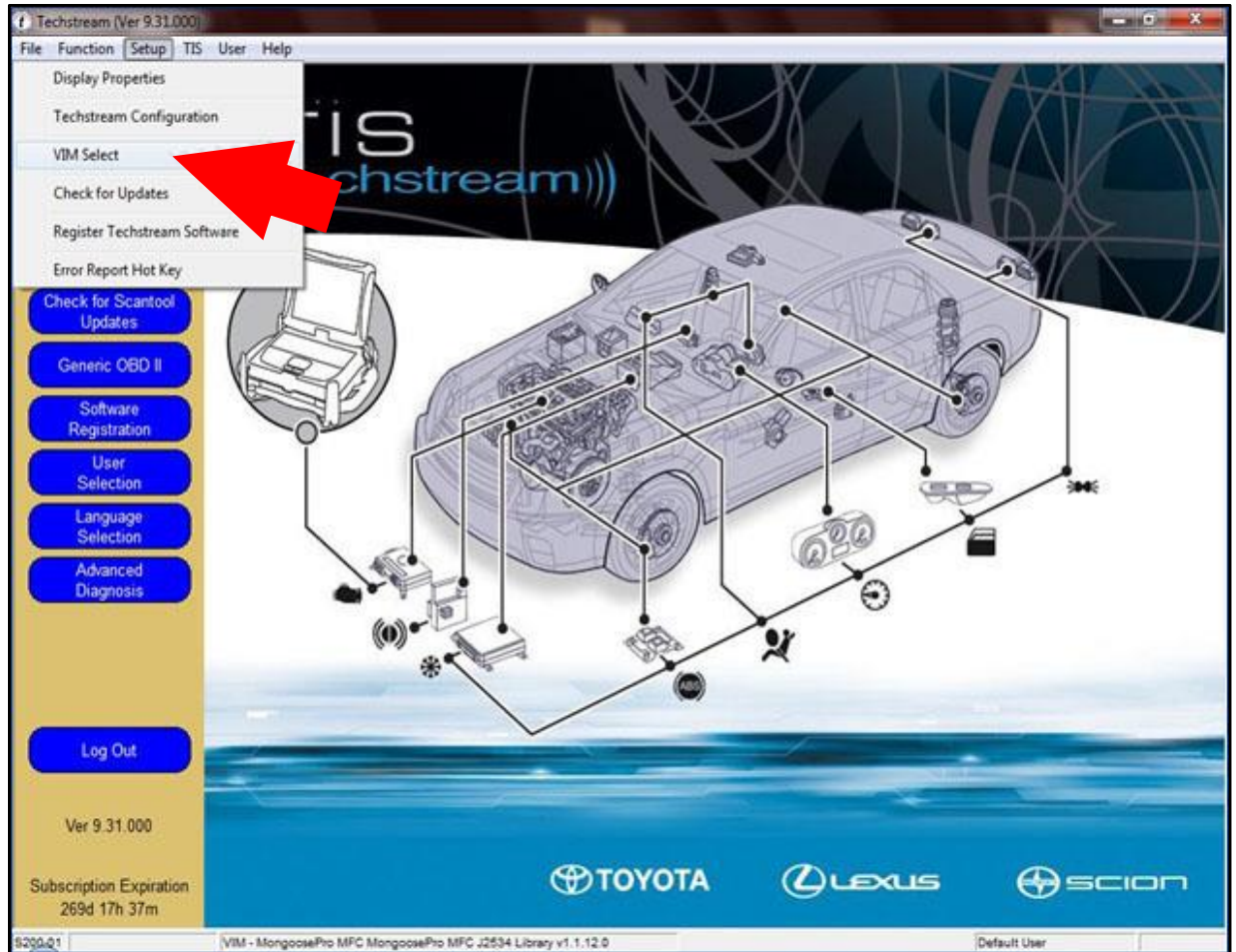
1. Select *Setup* from the Techstream Main Menu screen.

Techstream ECU Flash Reprogramming Procedure

Techstream Preparation – Selecting the Correct VIM (Continued)

2. Select *VIM Select* from the Setup drop-down menu.

   Figure 1.

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**
     >
     > A Mongoose driver MUST be installed before Mongoose selections will be available.
     >
     > See *TIS – Diagnostics – Scantool* for additional information.

4. 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. 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 13.5V during ECU reprogramming.

   > **NOTICE**
   >
   > - **ECU damage may occur if the correct battery charger and mode setting is NOT used.**
   > - **Refer to "*Vehicle Reprogramming Tips*" for other approved chargers, located at *TIS – Diagnostics – Reprogramming – Calibrations – 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.

Techstream ECU Flash Reprogramming Procedure

Operation Procedure

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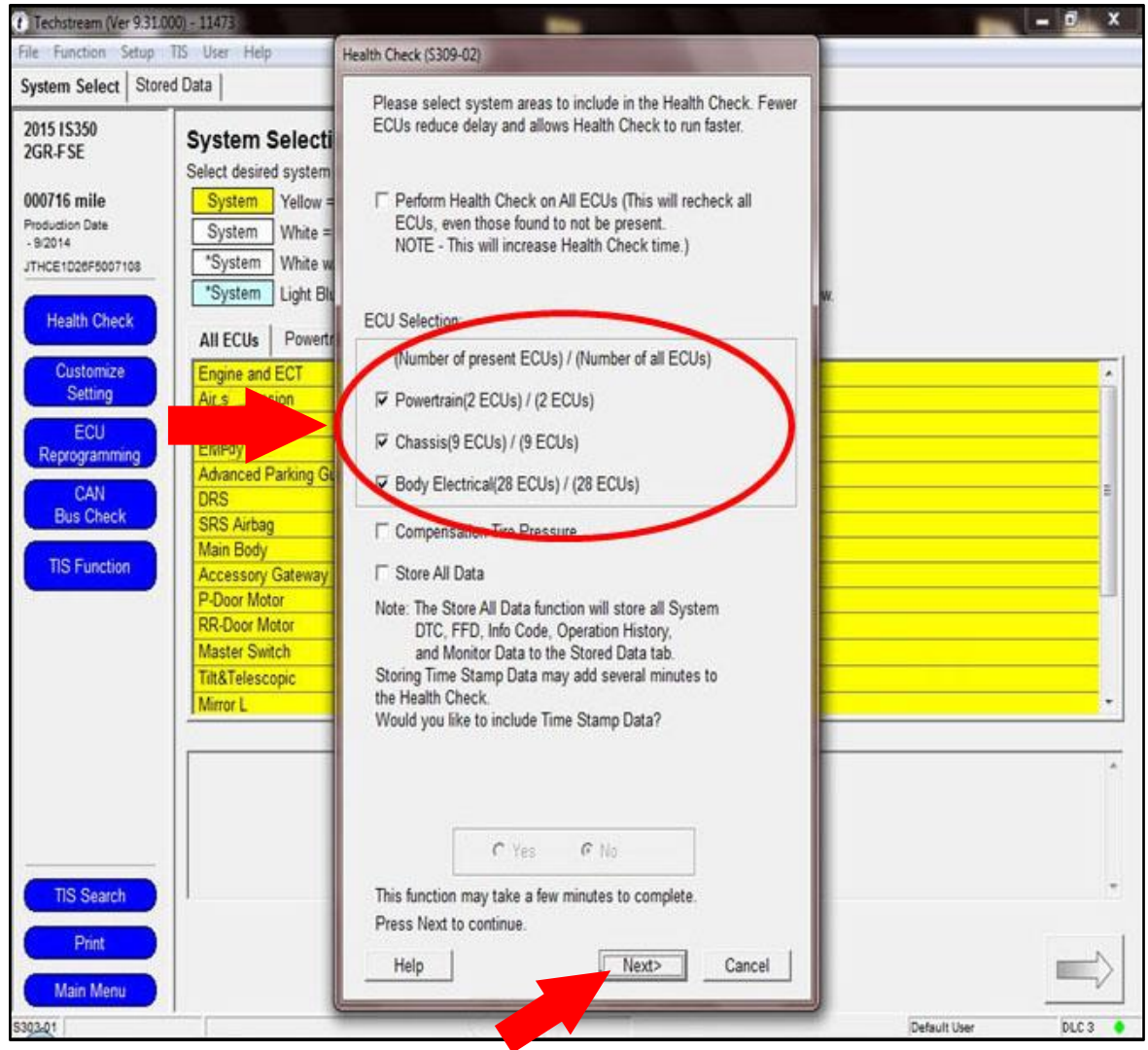   B. Click the *Health Check* button on the System Select tab.

   Figure 2.
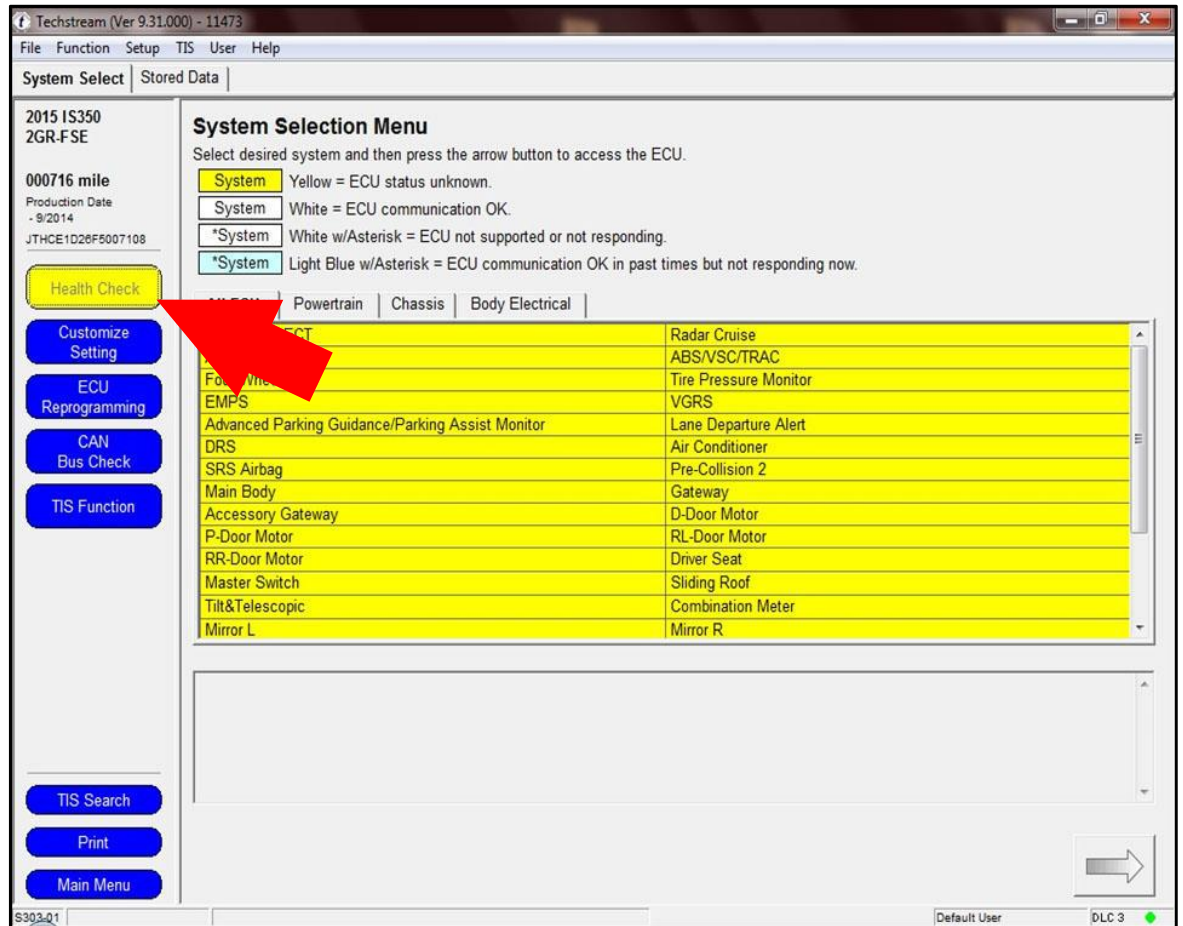
Techstream ECU Flash Reprogramming Procedure

Operation Procedure (Continued)

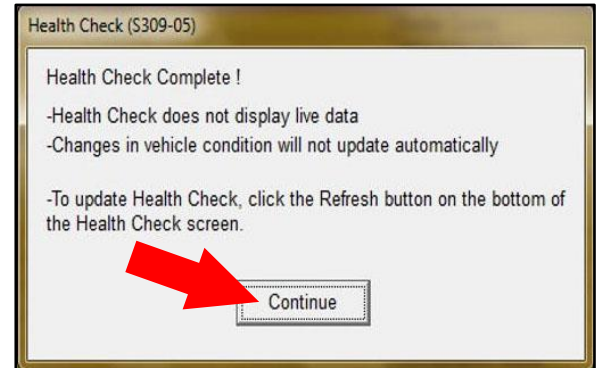C. Choose the desired ECU group(s) in the Health Check dialog box. Then click *Next*.

Figure 3.

Techstream ECU Flash Reprogramming Procedure

Operation Procedure (Continued)

D. Click *Continue* to view the Health Check results.

Health Check (S309-05)

Health Check Complete !

-Health Check does not display live data
-Changes in vehicle condition will not update automatically

-To update Health Check, click the Refresh button on the bottom of the Health Check screen.

Continue

Techstream ECU Flash Reprogramming Procedure

Operation Procedure (Continued)

E. Available calibration updates are indicated by a **Yes** link in the 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 5.

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

Techstream ECU Flash Reprogramming Procedure

Operation Procedure (Continued)

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 6.
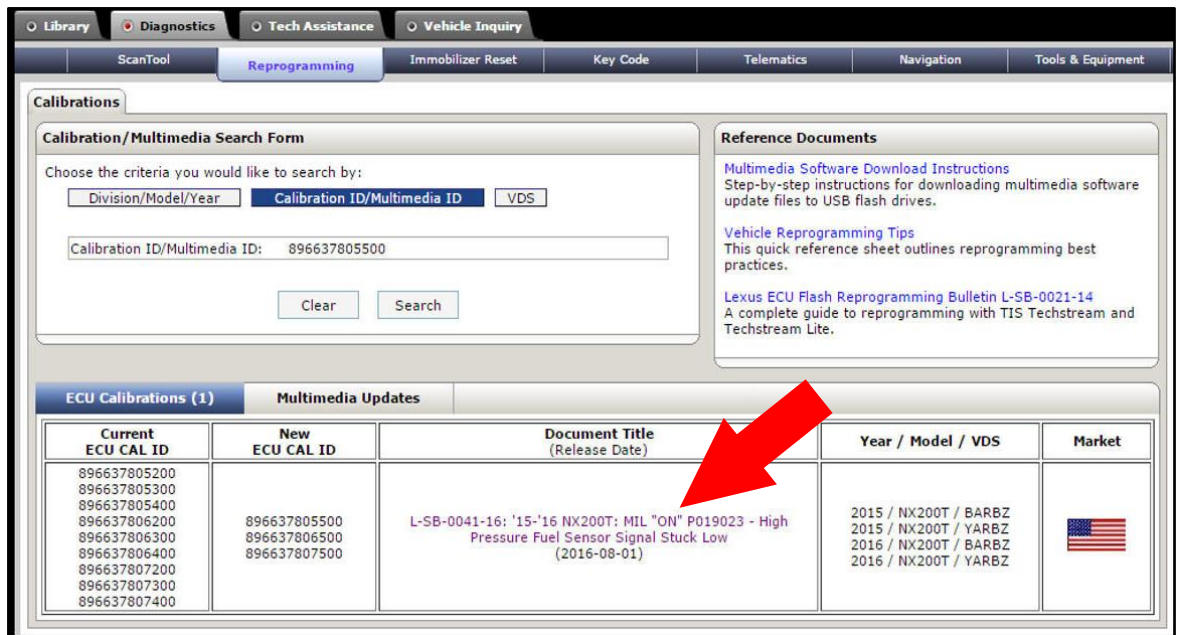
2. Connect the GR8 Battery Diagnostic Station.

> **NOTE**
>
> Refer to "*Vehicle Reprogramming Tips*" for other approved chargers, located at *TIS – Diagnostics – Reprogramming – Reference Documents*.

A. Connect the GR8 Battery Diagnostic Station to the vehicle and turn it ON.
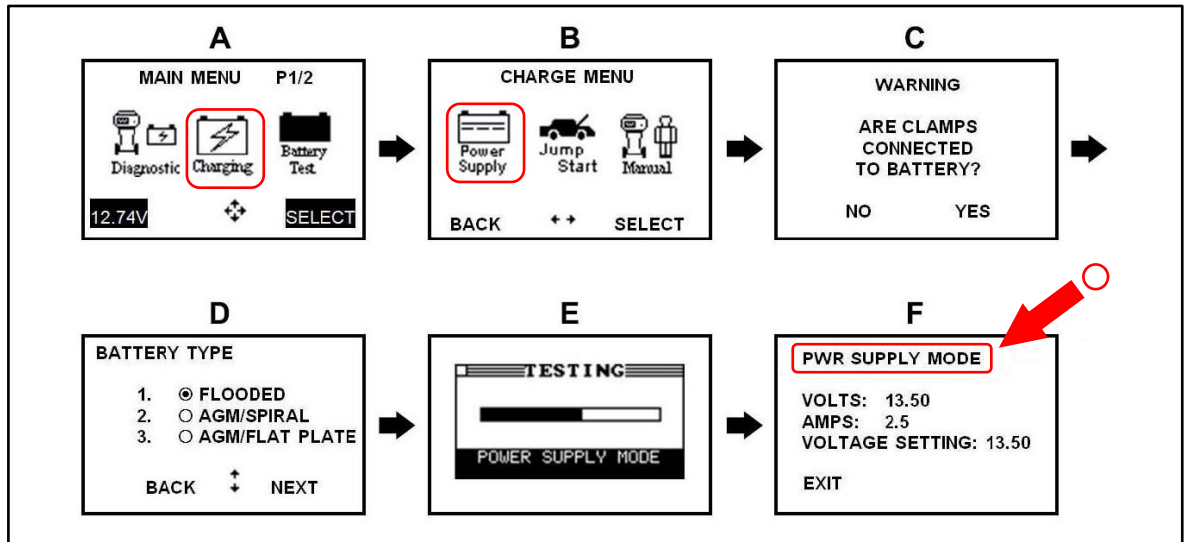
Techstream ECU Flash Reprogramming Procedure

Operation Procedure (Continued)

B. Select *Pwr Supply Mode* by following the screen flow below.

> **NOTICE**
> - **ECU damage may occur if the correct battery charger and mode setting is 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 GR8 Battery Diagnostic Station, refer to the "GR8 Instruction Manual" located at *TIS – Diagnostics – Tools & Equipment – Battery Diagnostics.***

Figure 7.

1	Confirm the Power Supply Mode is Selected

Techstream ECU Flash Reprogramming Procedure

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.

   M.I.L. "ON" DTC P0031, P0051, P2238, AND/OR P2241 – EG002-05 Revised   February 9, 2005

Calibration Identification Chart	MODEL	ECM (CPU)	PREVIOUS CALIBRATION ID	NEW CALIBRATION ID
	2004 RX 330 FF (2WD) Sequential Shift (SS) Transmission	Main	34815000 34815100 34815200	34845100
		Sub	54803000 54803100	54813100
	2004 RX 330 FF (2WD) Gate Shift (GS) Transmission	Main	34816000 34816100 34816200	34846100
		Sub	54804000 54804100	54814100
	2004 RX 330 (4WD) Sequential Shift (SS) Transmission	Main	34817000 34817100 34817200	34847000
		Sub	54805000 54805100	54815000
	2004 RX 330 (4WD) Gate Shift (GS)	Main	34818000 34818100 34818200	34848000

   B. Click *Open* to load the 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.

   Figure 9.
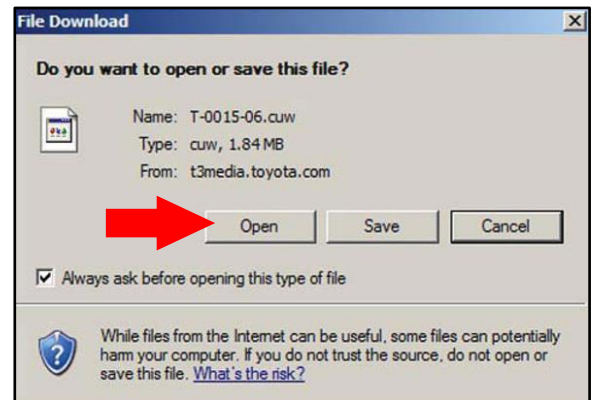
Techstream ECU Flash Reprogramming Procedure
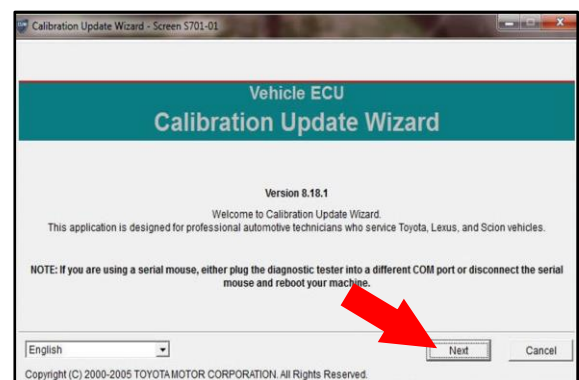
Operation Procedure (Continued)

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 11.8V during reprogramming. Confirm battery voltage is higher than 11.8V, but be sure voltage DOES NOT RISE ABOVE 16.0V during reprogramming.

- Turn OFF ALL vehicle accessories (e.g., audio system, A/C, interior lights, DRL). 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 parking brake.

- Complete ALL flash calibration updates provided for each ECU.

- If the battery's State-Of-Charge or capacity is in question, test with a digital battery system analyzer, SST No. **00002-V8150-KIT**, and follow Service Bulletin No. **L-SB-0108-17**, "*Battery Maintenance During PDS,*" or the appropriate "*Maintenance for HV & Auxiliary Batteries*" Service Bulletins.

- The GR8 Battery Diagnostic Station 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 GR8 Battery Diagnostic Station, refer to the "*GR8 Instruction Manual*" located at *TIS – Diagnostics – Tools & Equipment – Battery Diagnostics.*

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

Figure 10.
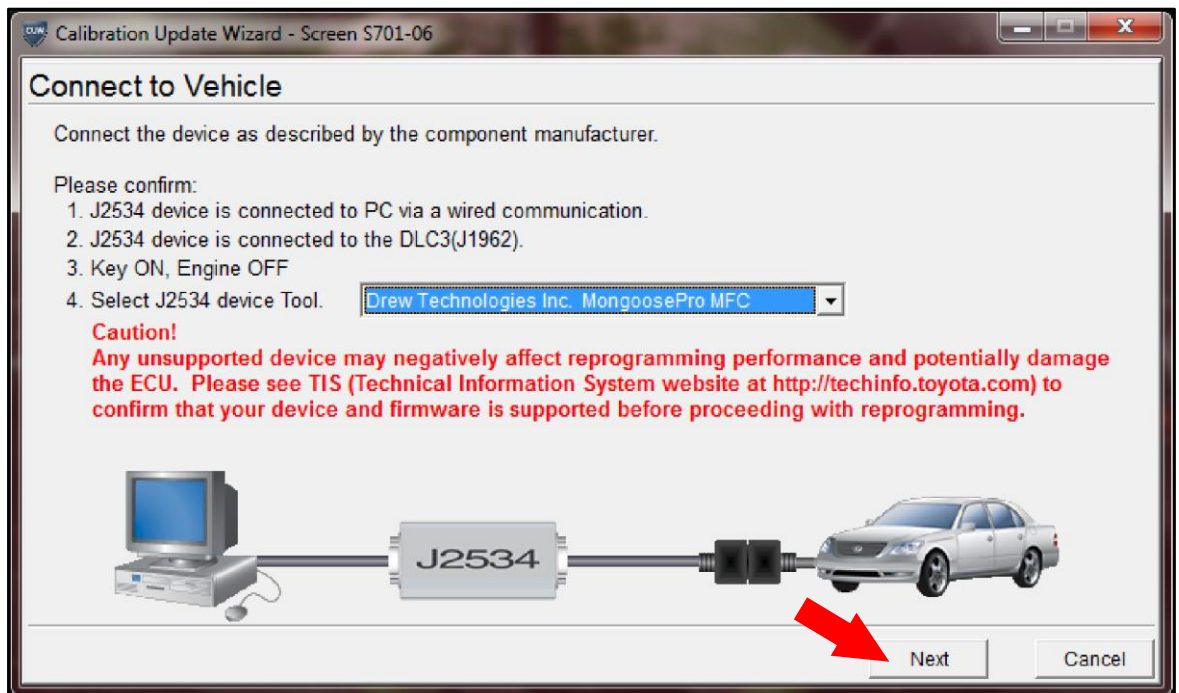
Techstream ECU Flash Reprogramming Procedure

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

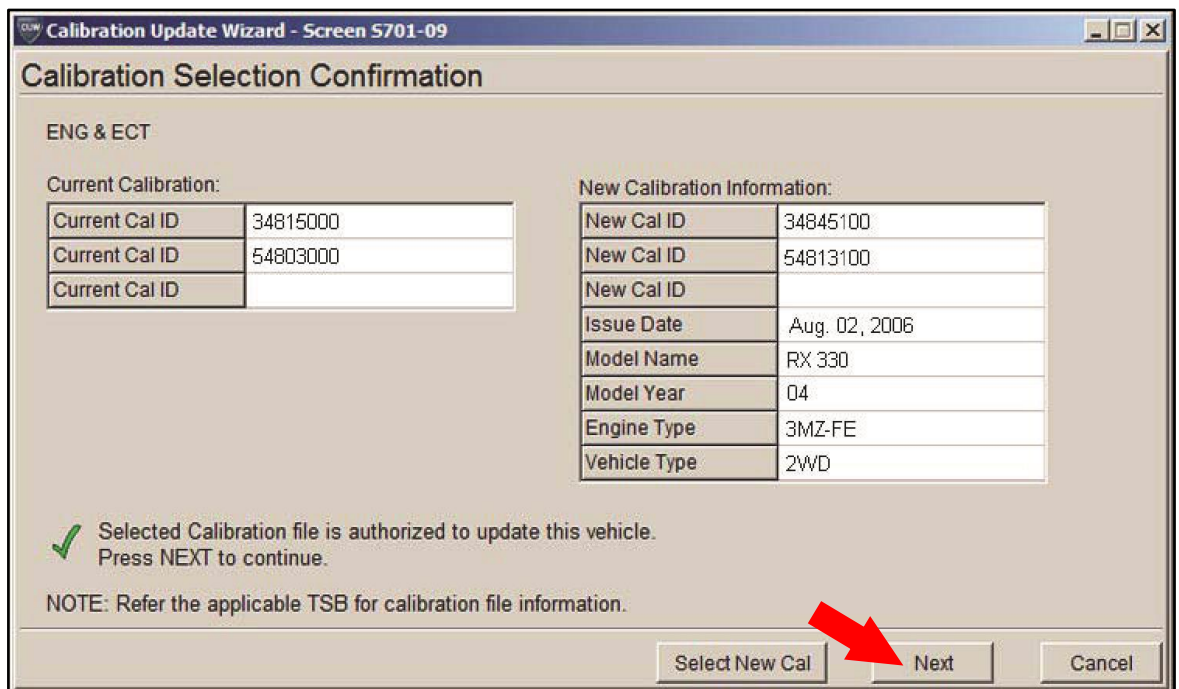# Techstream ECU Flash Reprogramming Procedure

Operation Procedure (Continued)

E. Verify correct current calibration and NEW calibration information. Then click *Next*.

> **NOTE**
> - 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.

Figure 12.

Techstream ECU Flash Reprogramming Procedure

Operation Procedure (Continued)

F. Turn ignition OFF. Then click *Next*.

Figure 13.
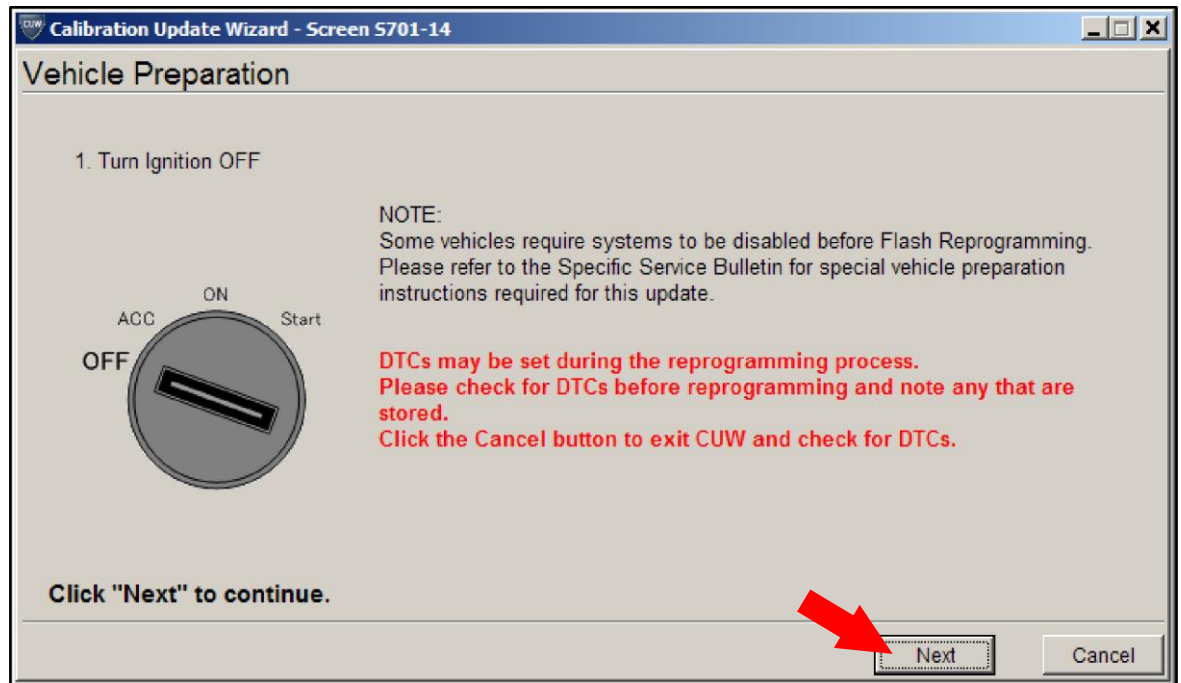
Techstream ECU Flash Reprogramming Procedure

Operation Procedure (Continued)
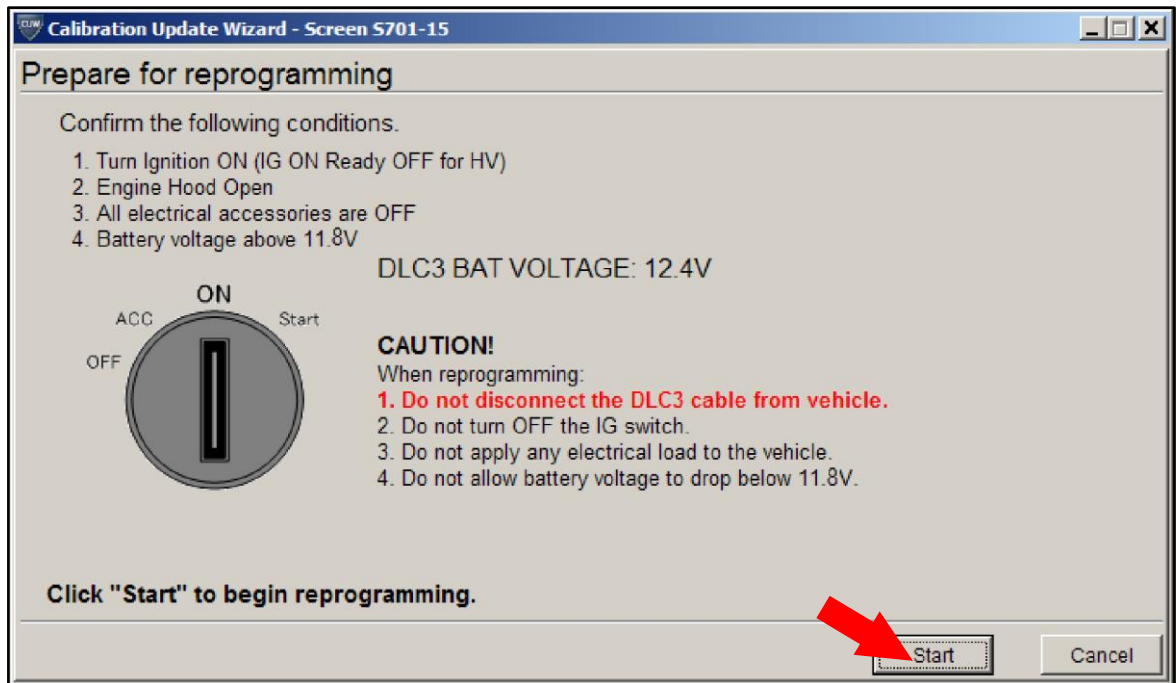
G. Confirm the following:

- 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 11.8V.

> **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*.

Figure 14.

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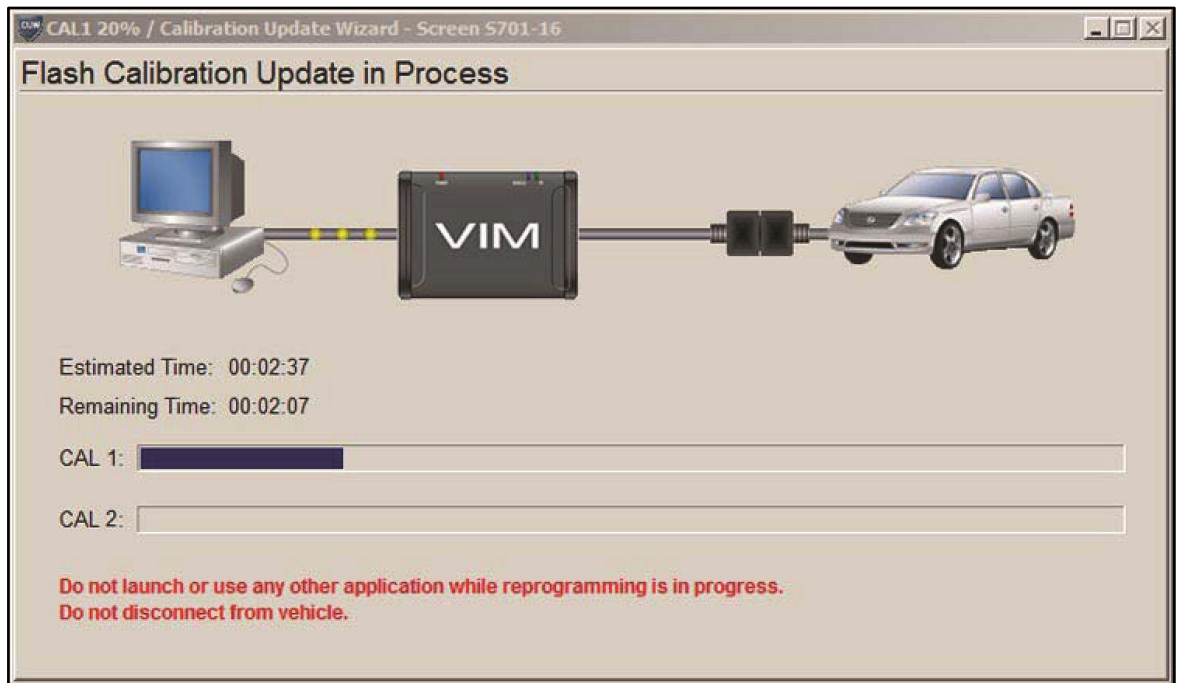
Techstream ECU Flash Reprogramming Procedure

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).
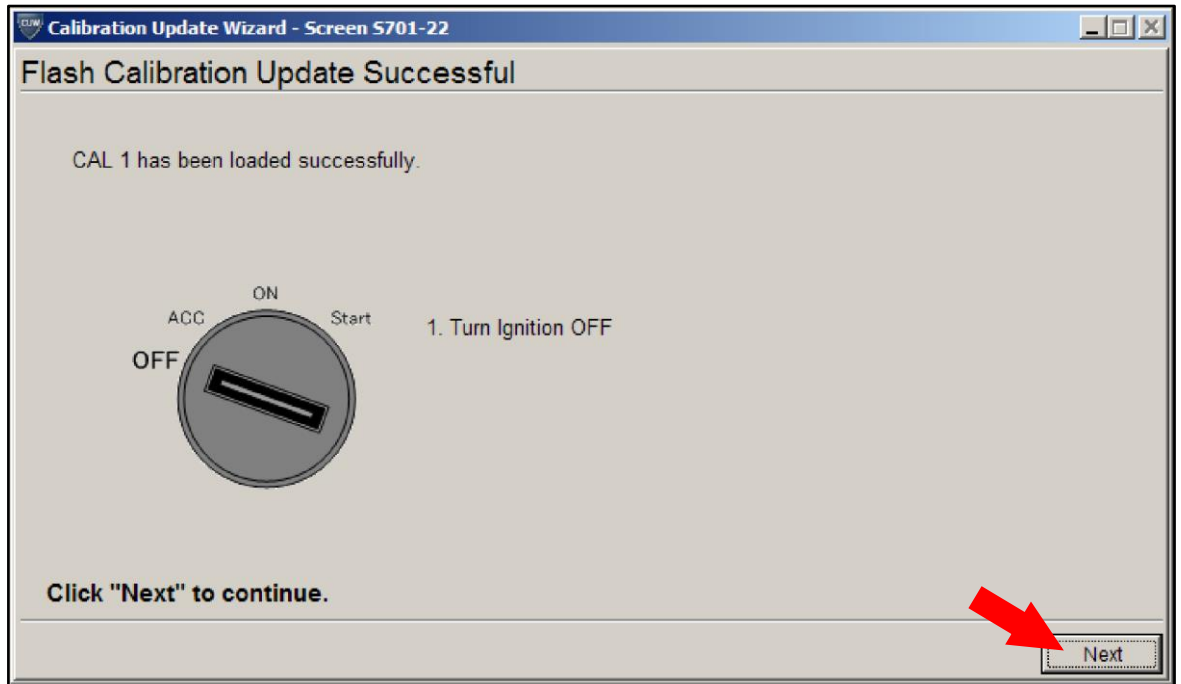
Figure 15.

> **NOTE**
> - If the vehicle requires ONLY ONE calibration update, go to substep N.
> - If the vehicle requires a SECOND calibration update, continue as follows:
>   - For serial communication vehicles, continue to substep I.
>   - For CAN communication vehicles, go to substep K.

Techstream ECU Flash Reprogramming Procedure

Operation Procedure (Continued)

l.   When Cal 1 has completed the update process, turn the ignition OFF for a minimum of 10 seconds. Then click *Next*.
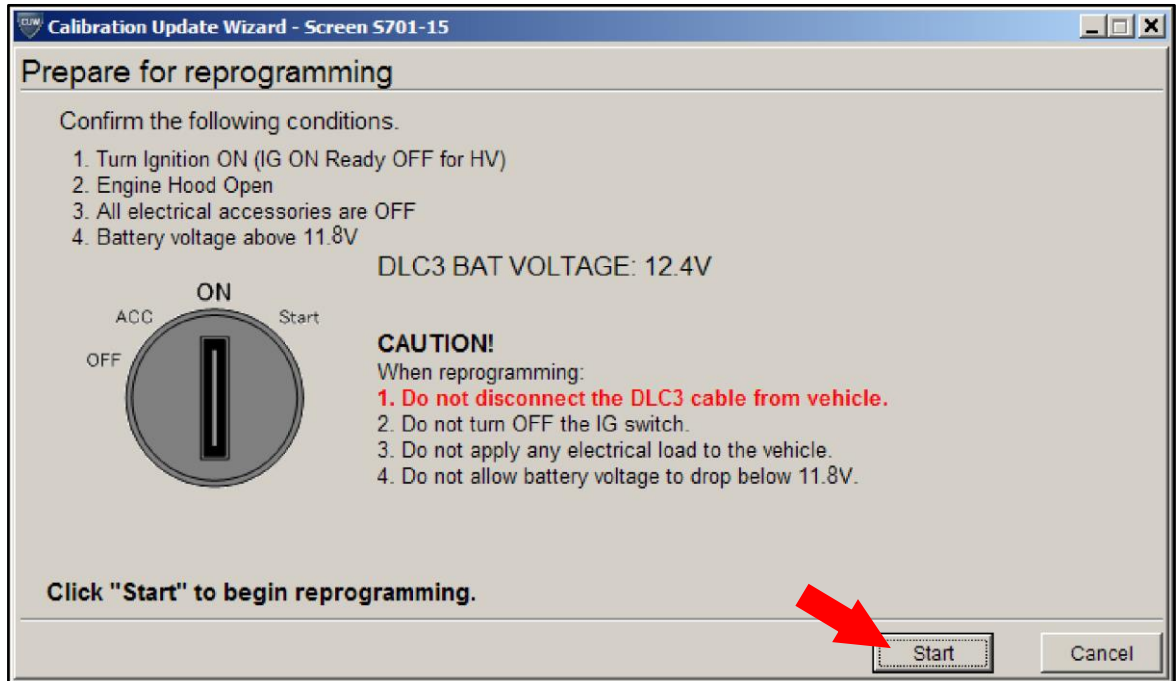
Figure 16.

Techstream ECU Flash Reprogramming Procedure

Operation Procedure (Continued)

J. Turn the 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.

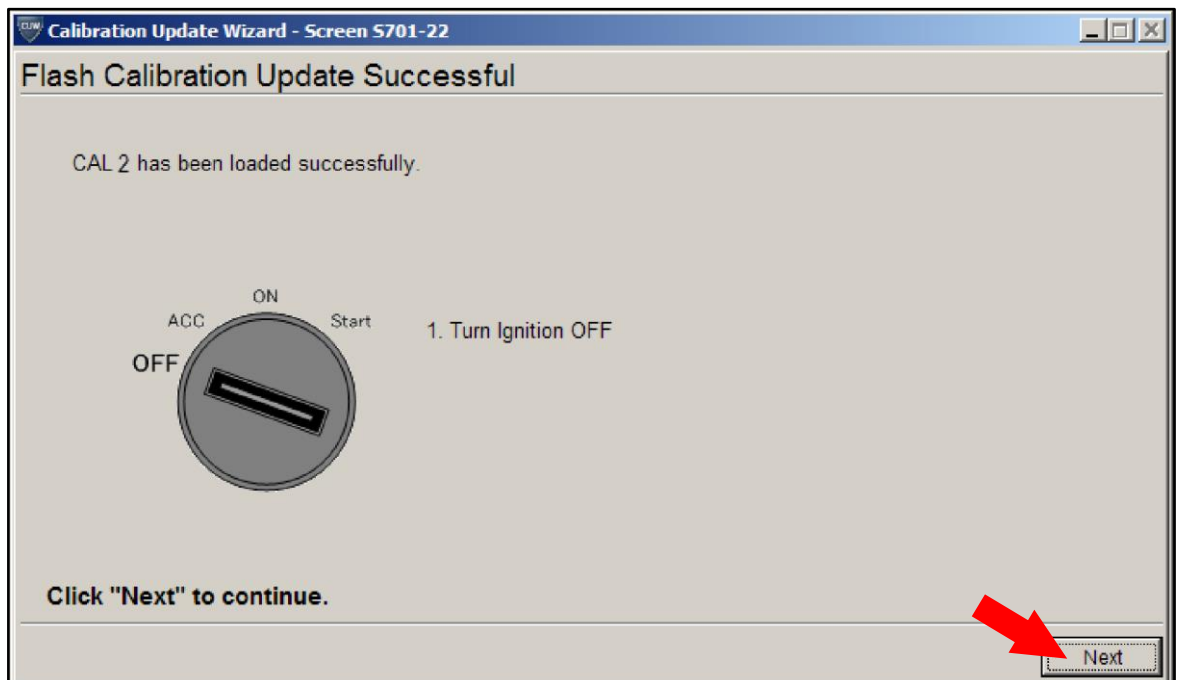# Techstream ECU Flash Reprogramming Procedure

Operation Procedure (Continued)

K. Do NOT disturb the vehicle during flash reprogramming.

Figure 18.

L. Turn the ignition OFF for a minimum of 10 seconds. Then click *Next*.
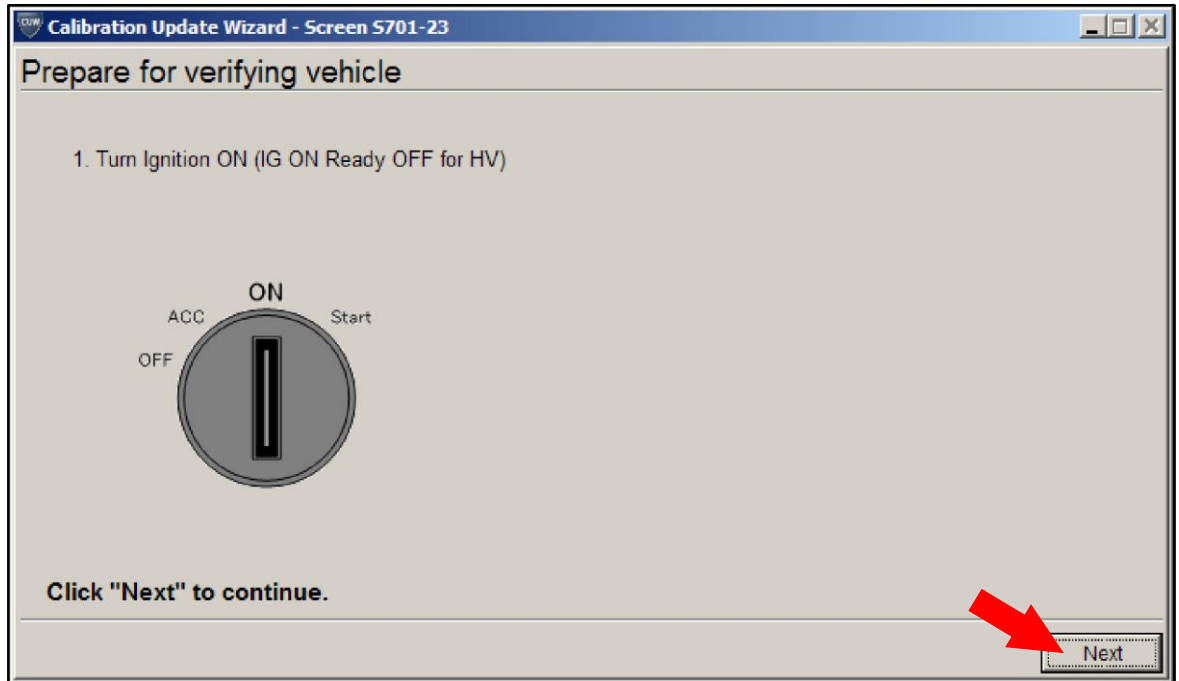
Figure 19.

Techstream ECU Flash Reprogramming Procedure

Operation Procedure (Continued)

M. Turn the ignition to the ON position. Then click *Next*.
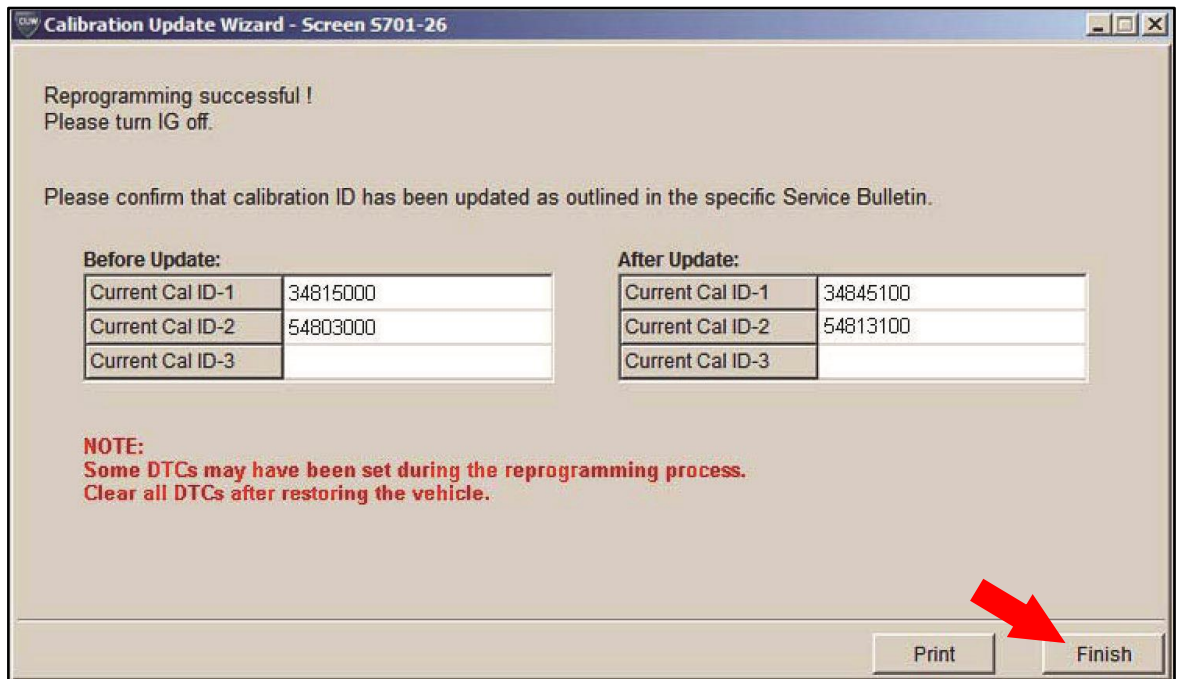
Figure 20.

Techstream ECU Flash Reprogramming Procedure

Operation Procedure (Continued)

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.

Techstream ECU Flash Reprogramming Procedure

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 22.

1	Replacement ECU Part Number
2	New Calibration ID
3	Dealer Code

4	Date Completed
5	Service Bulletin or Campaign Number

   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.