

Service Category Engine/Hybrid System

Section	Emission Control	Market USA	Lexus Supports
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#### 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, LS400, 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Service Bulletin No. L-SB-0021-14 is obsolete and any printed versions should be discarded.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.

#### 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	Т2
N/A	Not Applicable to Warranty	-	_	-	—

#### **Parts Information**

PART N	JMBER	PART NAME	ΟΤΧ
PREVIOUS	NEW		QTY
00451-000	001-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.

#### **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 <u>techinfo.toyota.com</u> 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.

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### **Techstream ECU Flash Reprogramming Procedure**

#### Techstream Preparation - Selecting the Correct VIM (Continued)

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

#### Figure 1.

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<complex-block>  Rejter Techstream Softwar   Lor Report Hat Kay   Charles   Dark Coll   Softwar   Registration   Der Registration   Dark Coll   Softwar   Beglands   Der Registration   Softwar   Softwar   Softwar   Beglands</complex-block>	VIM Select		<b>P</b>				
<complex-block>  Rejter Techstream Softwar   Lor Report Hat Kay   Charles   Dark Coll   Softwar   Registration   Der Registration   Dark Coll   Softwar   Beglands   Der Registration   Softwar   Softwar   Softwar   Beglands</complex-block>	Check for Updates	Sh	stream		X		
Error Report Hot Kay   Check for Scantol   Generic OBD I   Schware   Registration   Lise colon   Language   Selection   Advanced   Diagnoss   (a) Colon Co	Register Techstream Sof					00	
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- 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.

#### **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.

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 T/S -Diagnostics – Reprogramming – Calibrations – Reference Documents.
- 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**

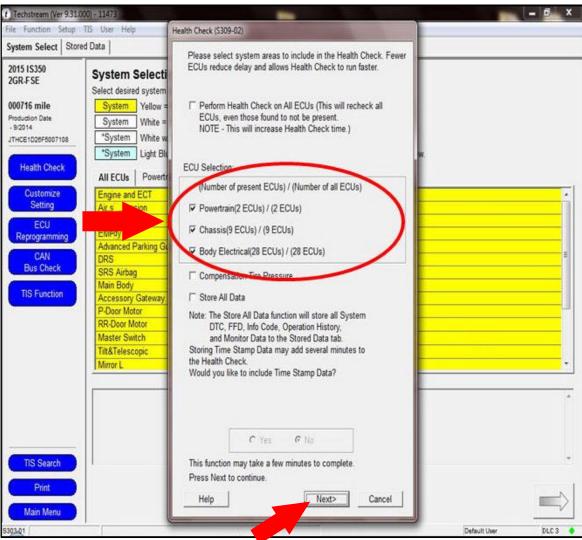
- 1. Verify the vehicle's applicability for recalibration and locate the desired calibration file.
  - A. Connect Techstream and establish a vehicle connection.
  - B. Click the Health Check button on the System Select tab.

#### Figure 2.

t Techstream (Ver 9.31.00	00) - 11473		- 0 - X-
File Function Setup	TIS User Help		
System Select Stored	d Data		
2015 IS350 2GR-FSE 000716 mile Production Date - 9/2014 JTHCE1D26F5007108 Health Check	System Selection Menu           Select desired system and then press the arrow button to access           System         Yellow = ECU status unknown.           System         White = ECU communication OK.           *System         White w/Asterisk = ECU not supported or not res           *System         Light Blue w/Asterisk = ECU communication OK           Powertrain         Chassis         Body Electrical	ponding.	
Customize		Radar Cruise	*
Setting		ABS/VSC/TRAC	
ECU	For An-	Tire Pressure Monitor	
Reprogramming	EMPS	VGRS	
	Advanced Parking Guidance/Parking Assist Monitor	Lane Departure Alert	
CAN	DRS	Air Conditioner	=
Bus Check	SRS Airbag	Pre-Collision 2	
TOPOT	Main Body	Gateway	
TIS Function	Accessory Gateway	D-Door Motor	
	P-Door Motor	RL-Door Motor	
	RR-Door Motor	Driver Seat	
	Master Switch	Sliding Roof	
	Tilt&Telescopic	Combination Meter	
	Mirror L	Mirror R	•
TIS Search			*
Print Main Menu \$303.01		Default User	

#### **Operation Procedure (Continued)**

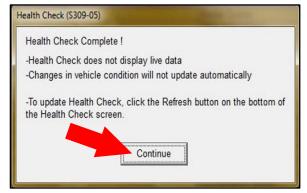
C. Choose the desired ECU group(s) in the Health Check dialog box. Then click Next. Figure 3.



#### **Operation Procedure (Continued)**

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

#### Figure 4.



#### **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.

System Select Store	Contraction in the second s		_								
2015 IS350 2GR-FSE	Tire Pressure / Threshold	Value [ps	i(g	auge)] 🔀							
000716 mile Production Date - 9/2014 ITHCE1D26F5007108		8 Sensor 2: 7 Sensor 4: A		35.66 / 29.43 36.66 / 30.18						PERMAN	IENT: NO
2015_IS350_2GF File Notes	Enhanced Generic									and the second	
Health Checl Data 1-12/	System	Monitor Status		DTC	Curr Conf	Pend	Hist	Test Failed	SB	Calibration	Update
	1			U0155			X		No	892	No
	And the second second second			U0199			X		No		
	Main Body			U0200			Х		No		
				U0208		1	X		NP		
				U1115			X		No		
	Smart Access	-		U0155			X		No		
	Navigation System		ŵ	B1324			X		No	-	
	Radar Cruise	-							_	-	
	Engine and ECT	Com			-					353M4000	No
					-	1		1		553C1000	No
	Advanced Parking Guidance/Parking Assist					1 2				867B014077	No
	Monitor									867B1E726B	No
	ABS/VSC/TRAC			2-					-	F152653203	No
	Four Wheel Drive			1	-				_	F153630010	No
	EMPS								_	8965B53033	No
Sort	Tire Pressure Monitor	1			-						
Expand>>	Lane Departure Alert									400A-P02	No
	Occupant Detection	-						-	-	53010	No
TIS Search	Air Conditioner	-							-	886505340101	No
Print Back	12/8/2014 3:31:18 PM Campaign Status:NONE							å	0	" []	

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

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### 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 Co	ertified Technie	cians and othe	r authorized	users may	access calibrati	on files.
igure 6.						
O Library O Diagnostics		O Vehicle Inquiry	Key Code	Telematics	Navigation	Tools & Equipment
Calibrations	Reprogramming					
Calibration/Multimedia	Search Form			Reference Doc	uments	
Choose the criteria you w Division/Model/Yea Calibration ID/Multime	Calibration ID/N			Step-by-step in update files to Vehicle Reprog This quick refer practices. Lexus ECU Flas	rence sheet outlines reprogr h Reprogramming Bulletin L- de to reprogramming with TI	sB-0021-14
ECU Calibrations (1)	Multimedia Up	odates				
Current ECU CAL ID	New ECU CAL ID		<b>Oocument Title</b> (Release Date)		Year / Model / VDS	Market
896637805200 896637805400 896637805400 896637806200 896637806200 896637806400 896637807200 896637807200 896637807400	896637805500 896637806500 896637807500	L-SB-0041-16: '15-'1 Pressure Fu	6 NX200T: MIL "ON" P el Sensor Signal Stuck (2016-08-01)		2015 / NX200T / BARBZ 2015 / NX200T / YARBZ 2016 / NX200T / BARBZ 2016 / NX200T / YARBZ	

2. Connect the GR8 Battery Diagnostic Station.

### NOTE

Refer to "<u>Vehicle Reprogramming Tips</u>" 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.

#### **Operation Procedure (Continued)**

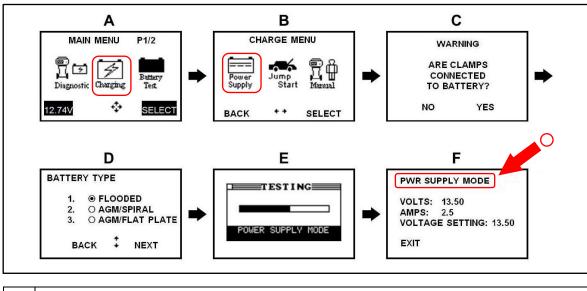
B. Select *Pwr Supply Mode* by following the screen flow below.

#### 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 "<u>GR8 Instruction Manual</u>" located at TIS – Diagnostics – Tools & Equipment – Battery Diagnostics.



1



#### Confirm the Power Supply Mode is Selected

#### **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.

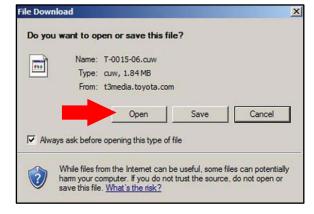
alibration	MODEL	ECM (CPU)	PREVIOUS CALIBRATION ID	NEW CALIBRATION ID
Chart	2004 RX 330 FF (2WD)	Main	34815000 34815100 34815200	34845100
	Sequential Shift (SS) Transmission	Sub	54803000 54803100	54813100
	2004 RX 330 FF (2WD)	Main	34816000 34816100 34816200	34846100
	Gate Shift (GS) Transmission	Sub	54804000 54804100	54814100
	2004 RX 330 (4WD) Sequential Shift (SS)	Main	34817000 34817100 34817200	34847000
	Transmission	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.



#### **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.

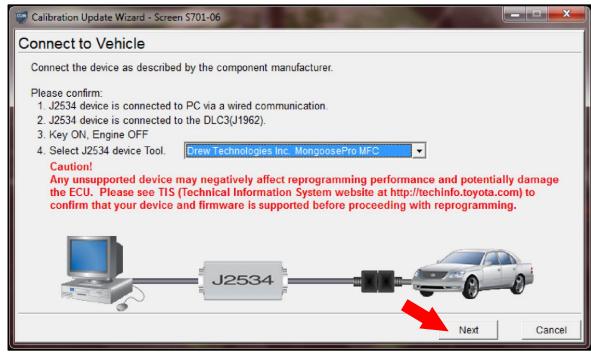
	Vehicle ECU
	Calibration Update Wizard
	Version 8.18.1
This applica	Welcome to Calibration Update Wizard. Ion is designed for professional automotive technicians who service Toyota, Lexus, and Scion vehicles
NOTE: If you are	using a serial mouse, either plug the diagnostic tester into a different COM port or disconnect the s mouse and reboot your machine.

#### **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



#### **Operation Procedure (Continued)**

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

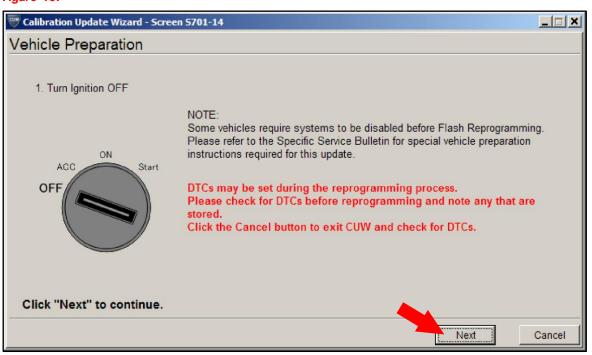
#### NOTE

- 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.

alibration Sel	lection Confirmatio	n		
ENG & ECT				
Current Calibration		New Calibration Ir	formation:	
Current Cal ID	34815000	New Cal ID	34845100	_
Current Cal ID	54803000	New Cal ID	54813100	
Current Cal ID		New Cal ID		
		Issue Date	Aug. 02, 2006	
		Model Name	RX 330	
		Model Year	04	
		Engine Type	3MZ-FE	
		Vehicle Type	2WD	
Press NEXT	libration file is authorized to to continue. applicable TSB for calibration			

#### **Operation Procedure (Continued)**

F. Turn ignition OFF. Then click *Next*. Figure 13.



### **Operation Procedure (Continued)**

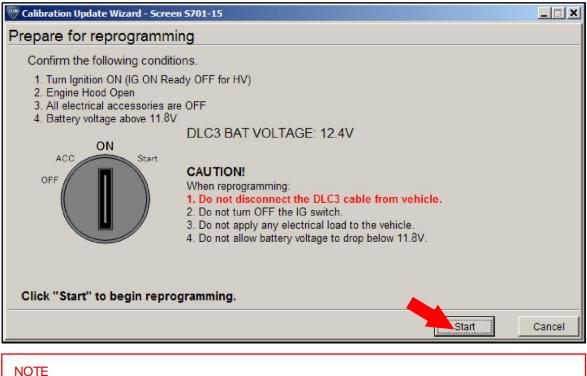
- G. Confirm the following:
  - PC is connected to VIM.
  - Ignition is ON and engine is OFF or Ready OFF (hybrid vehicles).
  - Hood is open.
  - ALL accessories are OFF.
  - Battery voltage is above 11.8V.

#### 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.



If the 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.	
CAL1 20% / Calibration Update Wizard - Screen 5701-16	
Flash Calibration Update in Process	
Estimated Time: 00:02:37	
Remaining Time: 00:02:07	
CAL 1:	
CAL 2:	
Do not launch or use any other application while reprogramming is in progress. Do not disconnect from vehicle.	

#### 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.

#### **Operation Procedure (Continued)**

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

rigure ro.	
🐺 Calibration Update Wizard - Screen S701-22	_ <u> </u>
Flash Calibration Update Successful	
CAL 1 has been loaded successfully.	
ACC Start 1. Turn Ignition OFF	
Click "Next" to continue.	Next

#### **Operation Procedure (Continued)**

J. Turn the ignition to the ON position. Then click *Start*. Figure 17.

Calibration Update Wizard - Screen	5701-15	
Prepare for reprogrammin	ng	
Confirm the following condition	ins.	
<ol> <li>Turn Ignition ON (IG ON Rea</li> <li>Engine Hood Open</li> <li>All electrical accessories are</li> <li>Battery voltage above 11.8V</li> </ol>	OFF	
ON	DLC3 BAT VOLTAGE: 12.4V	
OFF	CAUTION! When reprogramming: 1. Do not disconnect the DLC3 cable from vehicle. 2. Do not turn OFF the IG switch. 3. Do not apply any electrical load to the vehicle. 4. Do not allow battery voltage to drop below 11.8V.	
Click "Start" to begin repros	gramming.	
	Start	Cancel
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.

CAL1 20% / Calibration Update Wizard - Screen S701-16
Flash Calibration Update in Process
Estimated Time: 00:02:37
Remaining Time: 00:02:07
CAL 1:
CAL 2:
Do not launch or use any other application while reprogramming is in progress. Do not disconnect from vehicle.

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

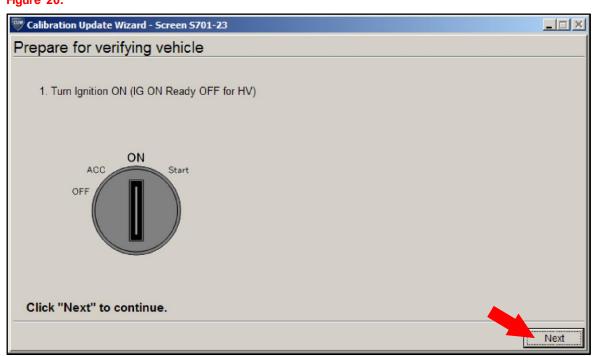
Calibration Update Wizard - Screen 5701-22	
Flash Calibration Update Successful	
CAL 2 has been loaded successfully.	
ACC Start 1. Turn Ignition OFF	
Click "Next" to continue.	Next

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### **Techstream ECU Flash Reprogramming Procedure**

#### **Operation Procedure (Continued)**

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



#### **Operation Procedure (Continued)**

N. Confirm ALL calibrations were updated as specified in the Service Bulletin. Then click Finish.

FIC	ure	21.

Before Update:		After Update:	
Current Cal ID-1	34815000	Current Cal ID-1	34845100
Current Cal ID-2	54803000	Current Cal ID-2	54813100
Current Cal ID-3		Current Cal ID-3	
	ave been set during the er restoring the vehicle.	reprogramming process.	

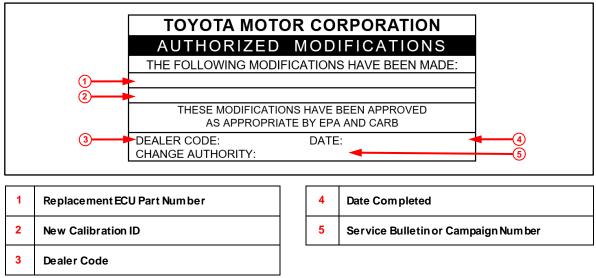
#### NOTE

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 22.



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.