L-SB-0015-10



Techstream ECU Flash Reprogramming Procedure

Service Category	Engine/Hybrid System
Section	Engine Control

Market USA



Applicability

YEAR(S)	MODEL(S)	ADDITIONAL INFORMATION	
2001 - 2014	CT200H, ES300,		
	ES300H, ES330,		
	ES350, GS300,		
	GS350, GS430,		
	GS450H, GS460,		
	GX460, GX470,		
	HS250H, IS F, IS250,		
	IS250C, IS300, IS350,		
	IS350C, LFA, LS430,		
	LS460, LS600H,		
	LX470, LX570, RX300,		
	RX330, RX350,		
	RX400H, RX450H,		
	SC430		

REVISION NOTICE

January 23, 2013 Rev2:

- Applicability has been updated to include additional 2013 and 2014 model year vehicles.
- The entire bulletin has been updated to include information for Techstream 2.0.

March 15, 2012 Rev1:

• Applicability has been updated to include 2012 - 2013 model year Lexus vehicles.

Any previous printed versions of this bulletin should be discarded.

SUPERSESSION NOTICE

The information contained in this bulletin supersedes SB No. SS002-07.

- Applicability has been updated to include 2009 2011 model year Lexus vehicles.
- A new section, Techstream Preparation, has been added.
- Techstream Lite has been added as an option in Required Tools & Equipment.
- Process Overview and Operation Procedure sections have been updated.

Service Bulletin No. SS002-07 is Obsolete and any printed versions should be discarded.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.

ECU

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

Warranty Information

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

Parts Information

PREVIOUS PART NUMBER	CURRENT PART NUMBER	PART NAME	ατγ
00451-00001-LBL	Same	Authorized Modification Labels	1

NOTE

Authorized Modification Labels may be ordered in packages of 25 from the Materials Distribution Center (MDC) through Dealer Daily – Dealer Support Materials Orders.

Required Tools & Equipment

REQUIRED EQUIPMENT	SUPPLIER	PART NUMBER	ΟΤΥ
Techstream 2.0*		TS2UNIT	
TIS Techstream	ADE	TSPKG1	1
Techstream Lite		TSLITEDLR01	1

NOTE

- · Only ONE of the Techstream units listed above is required.
- Software version 7.31.003 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 <u>techinfo.toyota.com</u> for more information regarding J2534 reprogramming.

SPECIAL SERVICE TOOLS (SST)	PART NUMBER	QTY
GR8 Battery Diagnostic Station*	00002-MCGR8	<u> </u>

NOTE_

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

* Essential SST

Techstream Preparation

Selecting the Correct VIM.

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

Rev2

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 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" or "MongoosePro MFC" (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.

- If using TIS Techstream, select "TIS Techstream VIM".
- 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.

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.

Figure 2.

All ECUs Palienzan Chassie Body Electrical Approximate Control Approximate Section App		System Selection Menu Select cashed by stem and then press Like I hate. An asternal "undicates a system that	e is instituces or up is	itortija			
Bus Check	Customize Setting ECU	Engine and EDT Guise Quitton	ABS VSC TRAC				•
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Operation Procedure (Continued)

C. Choose desired ECU group(s) in the "Health Check" dialog box.

Figure 3.

	System Selection Menu Select ceased system and thin press Lite Citatib access the ECU Note An acternatify indicates als , start that is unsupported an rist responding All ECUs Poliedran Chassis Eco, Electingar
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- D. Click "Next".
- E. Click "Continue" to view Health Check results. Figure 4.

Health Check (5787-05)
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 Health Check" button
Continue

Operation Procedure (Continued)

F. Available calibration updates are indicated by a <u>Yes</u> link in the "Cal. Update?" column. Click the <u>Yes</u> link to access the appropriate Service Bulletin on TIS.

NOTE
Note any DTCs stored in systems that will be flash reprogrammed.
Clicking the <u>Yes</u> link will automatically launch TIS and perform a calibration search.

Figure 5.

#*004000088478908	Health Check does not display live Jata -Changes in whicle constant without update J To update Hivath Check, click libe Tartesh H						
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G. Log in to TIS. (If already logged in, skip this step.)

Operation Procedure (Continued)

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 Lexus Certified Technicians and above may access calibration files.

Figure 6.

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Operation Procedure (Continued)

- 2. Connect the GR8 Battery Diagnostic Station.
 - 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 <u>GR8</u> <u>Instruction Manual</u> located on 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.
- . Some vehicles require special preparation - please review the selected Service Bulletin carefully.

Figure 8.

Calibration Identification	MODEL	ECM (CPU)	PREVIOUS CALIBRATION ID	NEW CALIBRATION D
Chart	2004 RX 330 FF (2WD)	Main	34815000 34815100 34815200	
Trans 2004 FF (Gate S Trans 2004 RX	Sequential Shift (SS) Transmission	Sup	54803000 54803100	1
	2004 RX 330 FF (2WD)	Main	34816000 34816100 34816200	1928.00
	Gate Shift (GS) Transmission	Sub	54804000 54804100	-
	2004 RX 330 (4WD) Sequential Shift (SS)	Man	34817000 34317100 34817200	<u>19.14</u> 19.14
	Transmission	Sub	54805000 54805100	539 of
	2004 BX 330 (4WD) Gate Shift (GS)	Man	34818000 34818100 34818200	1

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.

Figure 9.

File Downia		X
Do you •	rant to open or save this fife?	
<u> </u>	Name (7-0015-06-cus) Type (cus) 1-341/43 From (Omedia toyota.com)	
ि संस्कृत	ask before opening this type of file	
10/ 15	Prielfes from the internet can be useful some files can priterually am your computer if you do not trust the source, coinct open or ave this file <u>"Unite time roce"</u>	

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 <u>MUST NOT FALL BELOW 11.4 volts</u> during reprogramming. Confirm battery voltage is higher than 11.4 volts, but be sure voltage <u>DOES NOT RISE ABOVE</u> 16.0 volts during reprogramming.
- Turn OFF all vehicle accessories (e.g. 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 parking brake.
- Complete ALL flash calibration updates provided for each ECU.
- If the battery's state of charge or capacity are in question, test with SST. No. 00002-V8150-KIT "Digital Battery Analyzer," and follow Service Bulletin No. <u>PG001-06</u>, "Battery Maintenance for In-Stock Vehicles & Pre-Delivery", or the appropriate "Maintenance for HV & Auxiliary Batteries" Service Bulletin.
- The GR8 Battery Diagnostic Station MUST be used in Power Supply Mode 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 <u>GR8 Instruction Manual</u> located on TIS, Diagnostics – Tools & Equipment – Battery Diagnostics.
- C. Click "Next" to start the calibration update process.

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Operation Procedure (Continued)

D. Select the correct reprogramming device.

- If using Techstream 2.0, select "Generic J2534 Interface".
- If using Techstream Lite, select "Generic J2534 Interface".
- If using Techstream, select "Techstream VIM".

Then click "Next".

Figure 11.

The Calibration Update V	Vizand- Screen-570	_1_1	×
Please select the desired lepto	gramming device		
C Diagnostic Tester	C Generic J2534 Interface	Techstream vtM	
	J2534	Transfer star and a	
		Tled Cancel	



Operation Procedure (Continued)

E. 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 12. Using Techstream 2.0 or Techstream Lite

Calibration Update Wizard - Screen S200-0	
Connect to Vehicle	
Connect the device as described by the component manufacturer	
Please confirm 1 J2534 device is connected to PC. 2 J2534 device is connected to the DLC3(J1962) connector. 3 Key ON Engine OFF 4 Select J2534 device Tool Onew Technologies Inc. Mongoose MFC • Caution! Any unsupported device may negatively affect reprogramming performance and the ECU. Please see TIS (Technical Information System website at http://techning.confirm that your device and firmware is supported before proceeding with repr	o.toyota.com) to
J2534	-00-
	Next Concel
Select Correct Device Tool ("Mongoose MFC" or "MongoosePro MFC")	



Operation Procedure (Continued)

Figure 13. Using TIS Techstream

Connect to Vehicle	<u>. × </u>
Connect the device as described by the component manufacturer	
Please confirm 1 Techstream VIM is connected to PC 2 Techstream VIM is connected to the DLC3 (J1962) connector 3 Key ON. Engine OFF	فو
	and a sub-the
Hed	Cancel



Operation Procedure (Continued)

F. 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 14 shows an example of the update procedure for a two-processor ECU.

Figure 14.

ENG & ECT			
Current Calibrati	on:	New Calibration In	notermatr
Current Cal ID	34815000	flew Cal ID	34845100
Current Cal ID	54803000	New Cal ID	54813100
Current Cal ID		New Cat ID	
		Issue Date	Aug 02, 2006
		Modelflame	RX 330
		Model Year	04
		Engine Type	3MZ-FE
		Vehicle Type	2WD
*/ Press NE	Calibration file is authorized to (T to continue e applicable TSB for calibration	·	



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Techstream ECU Flash Reprogramming Procedure

Operation Procedure (Continued)

G. Turn ignition OFF. Then click "Next".

Figure 15.



Operation Procedure (Continued)

H. Confirm the following:

- Ignition is ON and engine is OFF or "READY" OFF (hybrid vehicles).
- Hood is open.
- All accessories are OFF.
- Battery voltage is above 11.4 volts.

Verify the vehicle is connected to a battery charger before continuing — If battery voltage falls below 11.4 volts, ECU damage may occur.	NOTICE
	Verify the vehicle is connected to a battery charger before continuing — If battery voltage falls below 11.4 volts, ECU damage may occur.

Then click "Start".

Figure 16.

Prepare for reprogramming	e company and the second se	<u>si X</u>
Confirm the following conditions		
1 Turn ignition ON 2 Engine Hood Open 3 All electocal accessories are OFF 4 Battery voltage above 11 4V		
OFF ON Start	CAUTION! When reprogramming: 1. Do not disconnect the DLC3 cable from vehicle. 2 Do not tum OFF the IG switch 3 Do not apply any electrical load to the vehicle 4 Do not allow battery voltage to drop below 11 4V ming.	
	Star	Cancel

NOTE

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



Operation Procedure (Continued)

I. 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 17.



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 J.
 - For CAN communication vehicles, go to step L.

Operation Procedure (Continued)

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

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Figure 18.

Calibration Update Witzend - Screen 570 Flash Calibration Update Suc	
CAL 1 has been loaded successfully	
OFF OFF	 Please cycle ignition OFF for a minimum of 10 seconds. Confirm ignition is returned to the ON position.
Cilck "Next" to continue.	

K. Turn ignition to the ON position. Then click "Start".

Figuro 19.

Prepare for reprogramming	
Confirm the following conditions 1 Turn ignition ON 2 Engine Mood Open 3 All electrical accessories are OFF 4 Battery voltage above 11 4V	
	CAUTION! When reprogramming 1. Do not disconnect the OLC3 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 11.4V ning.
	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)

L. Do NOT disturb the vehicle during flash reprogramming.

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Figure 20.

-⊡ Flash Calibration Update in Process	
Estimated Time: 00 02 37 Remaining Time: 00 02 07	
CAL 1	
CAL 2	
Do not latinch of use any other application while reprogramming is in progress. Do not disconnect iturit vehicle.	
]

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

Figure 21.





Operation Procedure (Continued)

- N. Turn ignition to the ON position. Then click "Next".
 - Figure 22.

Scalender update woord - Screen 5781-22 (1997-2011) Prepare for verifying vehicle	± = = = =
Please confirm IG ON to download calibration information	
ON Start	
Click "Next" to continue.	· · · · · · · · · · · · · · · · · · ·

O. Confirm all calibrations were updated as specified in the Service Bulletin. Then click "Finish". Figure 23.

Reprogramming successful ! Please turn IG off	
Please confirm that calibration ID has been up	dated as outlined in the specific Service Bulletin
Before Update:	After Update:
Current Cal ID-1 34815000	Current Cal ID-1 34845100
Current Cal (D-2 54003000	Current Cal ID-2 54813100
Current Cal ID-3	Current Cal ID-3
NOTE: Some DTCs may have been set during th Clear all DTCs after restoring the vehicle	he reprogramming process.

Operation Procedure (Continued)

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.

Figure 24.



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.

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