L-SB-0021-14



Techstream ECU Flash Reprogramming Procedure

Service

Category Engine/Hybrid System

Section Emission Control

Market USA



Applicability

YEAR(S)	MODEL(S)	ADDITIONAL INFORMATION	
2001 – 2015	CT200H, ES300,		1.242
	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		

SUPERSESSION NOTICE

The information contained in this bulletin supersedes SB No. L-SB-0015-10.

Applicability has been updated to include 2015 model year Lexus vehicles.

Service Bulletin No. L-SB-0015-10 is Obsolete and any printed versions should be discarded.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)

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	QTY
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	QTY
Techstream 2.0*		TS2UNIT	
TIS Techstream	ADE	TSPKG1	1
Techstream Lite		TSLITEDLR01	

NOTE

- Only ONE of the Techstream units listed above is required.
- Software version 9.10.037 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	1

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.

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.

	System Selec	tion Menu	ata to access the FCII				
	Note: An asterisk(*) i	ndicates a system that	is unsupported or not re	sponding			
	All ECUs Powe	ntrain Chassis B	ody Electrical				
Health Check	Engine and ECT	Cruise Control	ABS/VSC/TRAC	Immobiliser	SRS Airbag	Body	-
	Rear Left Door	Rear Right Door	"Back Door	Combination Meter	Occupant Detection		
Customize			1				
Reprogramming					1		
Bus Check							
The second s							
	[]	1					- 11
							-
		New York Contraction	O CONTRACTOR OF				
	This ECU controls for	sel injection, ignition tim	ning, knock control, idling	g engine speed, self-diag	nesis function, and back	up function in	-
	extraordinary circum	stance etc. Additionally	it controls automatic to	ansmission.			1. 1
	1.000.20080						-1
ALC: NOT A REAL PROPERTY AND A REAL PROPERTY AND A REAL PROPERTY.							

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Operation Procedure (Continued)

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

	F	ig	u	re	3.
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	System Select Select desired system Note: An asterisk(*) in All ECUs Power	t ion Menu n and then press Live D Idicates a system that i train Chassis Bo	ata to access the ECU is unsupported or not se dy Electrical	sponding			
Health Check	Engine and ECT	Cruise Control	ABS/VSC/TRAC	Immobiliser	SRS Airbag	Body	-
	"Rear Left Door	Rear Right Door	*Back Door	Combination Meter	Occupant Detection		
Setting	Transformed a second second second second			-	1		
		Heat	h Check (5.309 62)	Certo Latin Constant	1986		
	This ECU controls fu	T P	Powertrain(2 ECUs) Chassis(2 ECUs) Body(7 ECUs) his function may take a ress Next to continue. Help.	few minutes to complete	ction, and back	kup function in	
Print	extraordinary circum	stance etc Additic —					1

- D. Click Next.
- E. Click *Continue* to view Health Check results.

Figure 4.





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.

NOTI • 1	E Note any DTCs stored in systems that will be flash reprogramme Clicking the <u>Yes</u> link will automatically launch TIS and perform a	d. calibration search.
Figure 5		
	TIS techstream - 10588	الالماء
	System Select Stored Data Cal Update	

sto2A2302e8438e29 -Change -To upda	s in vehicle condition will not update a te Health Check, click the "Refresh H	utomatically fealth Check" button					
2004_RX330_ File Notes	System	Current	Pending	History	Monitor Status	Calibration	Cal. Update?
Data 1.11	and ECT	8	Q	0	Inc	34815000	Yes
					1.00	54803000	Yes
Cruise	Control	0					
Tire Pre	ssure Monitor	0				· · ·	A -
ABSAVS	C/TRAC	0	· ·		-	· · ·	-
Occupa	nt Detection	0	· · · · · · · · · · · · · · · · · · ·	0			· · · · ·
SRS A	bag	0		0			· · · ·
Ait Con	stioner	0	· · · ·	0	•	· · · · · · · · · · · · · · · · · · ·	
Combin	ation Mater	0		0			
Main Bo	xdy	0		0			*
Access	ory Gateway	0		0		· · · · · · · · · · · · · · · · · · ·	
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designation of the second second					1.		
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A THE REAL PROPERTY AND							and the second second

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.



Sector Sector				
of starses (40)	100 target biss	Calibrations	All a series of the sector and the sector of	an a
Calibration S	earch Form	and the second	and the share	Reference Documents
Choose the cr C Division/M	iteria you would lodel/rear Calibration	I like to search by: Calibration ID VI ID: 54815000 Clear Search	DS	TIS Diagnostic Applications Updates: Reliase Notes (v. 1) A complete guide to the new diagnostic applications updates released for 2004 model year scentrol support. Toyota Process Bulletin 55002-01 A complete guide to the ECU Flash Reprogramming process Toyota Error Bulletin 55004-01 During the ECU Flash Reprogramming process with the vehicle, you may receive an error message. Check out this bulletin for details.
Current ECU CAL ID	New ECU CAL ID	Document Title (Release Date)	Year / Model / YDS	Diagnostic Support Applications
34835000 34815200 34815200 34816100 34816100 34817000 34817100 34817200 34817200 34818200 34818200 54803100 54803100 54804100	34845100 34846100 34847000 34848000 54813100 54813100 54813000 54816000	EG002-05 64 R × 330: M.I.L "ON" DTC P0031, P0051, P2234, and/or P2241 (Pevised) (2005-02-11)	2004 / RX330 / ALL 2004 / RX330 / GA31U 2004 / RX330 / HA31U	TIS Diagnostic Applications Installer Select the link above to scan your workstabon and varify all recommended diagnostic support applications are currently installed. It updates are required, follow the step-br step instructions provided. Note: After clicking the link above, be sure to choose "Run" or "Open" this program to launch the Installer.

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 Instruction Manual</u> located on TIS, *Diagnostics – Tools & Equipment – Battery Diagnostics.*





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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	MODEL	ECM (CPU)	PREVIOUS CALIBRATION ID	NEW CALIBRATION ID
Identification 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) Seguential Shift (SS)	Main	34817000 34817100 34817200	34847000
	Transmission	Sub	54805000 54805100	54815000
	2004 RX 330 (4WD)	Main	34818000 34818100 34818200	34848000

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.



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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> <u>16.0 volts</u> 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. <u>00002-V8150-KIT</u> "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.

Figure 10.

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

Celébration Update Witand - Screen S7021-01 Vehicle ECU Calibration Update Wizard Calibration Update Wizard Weicom & 1.9 Weicom & 1.9

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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.

Please select the desire	d reprogramming device.		
C Diagnostic Tester	C Generic J2534 Interface	C Techstream VIM	
CONSTRUCT	# 10-00 k	Techstreami)	
	J2534	CONTRACT CONTRACT	



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

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Operation Procedure (Continued)

Figure 13. Using TIS Techstream



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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 Calibratio	n:	New Calibration In	nformation:	
Current Cal ID	34815000	New Cal ID	34845100	
Current Cal ID	54803000	New Cal ID	54813100	
Current Cal ID		New Cal ID		
	A STATE OF THE STATE	Issue Date	Aug. 02, 2006	
		Model Name	RX 330	
		Model Year	04	
		Engine Type	3MZ-FE	
		Vehicle Type	2WD	
Selected C Press NEX	alibration file is authorized t I to continue. applicable TSB for calibrati	o update this vehicle.		

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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.



Then click Start.

Figure 16.

Droporo for representation		
Prepare for reprogramming	And the second	And the second second
Confirm the following conditions		
1. Turn ignition ON. 2. Engine Hood Open 3. All electrical accessories are OI 4. Battery voltage above 11.4V ACC ON Start OFF	F 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.	
Click "Start" to begin reprogra	mming.	
A CONTRACTOR OF A CONTRACTOR OFTA CONTRACTOR O		

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*.

Figure 18.

Flash Calibration Update 5	Successful
CAL 1 has been loaded success	sfully.
ACC ON Start	 Please cycle ignition OFF for a minimum of 10 seconds. Confirm ignition is returned to the ON position.
Click "Next" to continue.	

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

Figure 19.

Prepare for reprogramming	
Confirm the following conditions.	
1. Turn ignition ON. 2. Engine Hood Open 3. All electrical accessories are OFF 4. Battery voltage above 11.4V	
OFF OF Start	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 11.4V.
Click "Start" to begin reprogram	ming.
	Start Cancel

NOTE

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

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Operation Procedure (Continued)

L. Do NOT disturb the vehicle during flash reprogramming.

riash Co	
Estimat	ted Time: 00:02:37
Remain	ing Time: 00:02:07
CAL 1:	
CAL 2:	
Do not la	aunch or use any other application while reprogramming is in progress.

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





Figure 20.

Operation Procedure (Continued)

N. Turn ignition to the ON position. Then click Next.

Figure 22.

Calibration Update Wizard - Screen 5701-23	
Prepare for verifying vehicle	
Please confirm IG ON to download calibration information.	
ACC ON Start	
Click "Next" to continue.	

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

Please turn IG off.	Salur 1			
Please confirm that ca	libration ID has been upda	ated as outlined in the specific S	Service Bulletin.	
Before Update:		After Update:		
Current Cal ID-1	34815000	Current Cal ID-1	34845100	100
Current Cal ID-2	54803000	Current Cal ID-2	54813100	
Current Cal ID-3		Current Cal ID-3		
NOTE: Some DTCs may Clear all DTCs aft	tave been set during the er restoring the vehicle.	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.