S-SB-0015-14



Techstream ECU Flash Reprogramming Procedure

Service Category	Engine/Hybrid System			Scion Sunnorts
Section	Engine Control	Market	USA	ASE Certification

Applicability

YEAR(S)	MODEL(S)	ADDITIONAL INFORMATION	
2004 – 2015	FR-S, iQ, iQ EV, tC, xA, xB, xD		

SUPERSESSION NOTICE

The information contained in this bulletin supersedes SB No. S-SB-0003-10.

• Applicability has been updated to include 2015 model year Scion vehicles.

Service Bulletin No. S-SB-0003-10 is Obsolete and any printed versions should be discarded.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.

ECU

Electronic Control Unit (ECU) is a Toyota 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 Toyota 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.

rie runcton Setup TE	S User Hep		in a company	and the second party	nichter and and and a	and the second s	
System Select Stor	ed Data Cal Update						
	System Selection Select desired system Note: An astenisk(*) ind	on Menu and then press Live D icates a system that i	ata to access the ECU s unsupported or not re	sponding.			
	All ECUS Politenin	ain Chassis Bo	ARS//SC/TRAC	Immobilizar	SDS Airban	Body	
Health Check	"Rear Let Door	Rear Right Door	*Back Door	Combination Meter	Occupant Detection	Deay	
Customize		ites ragin ever					1
Setting	N						
							1
Reprogramming							
CAN							
DUS GROOK							
						-	
	1	- and an and a second second			L.	-	<u> </u>
	This ECU controls fuel extraordinary circumsL	injection, ignition timi ance etc Additionally,	ng, knock control, idling it controls automatic tr	g engine speed, self-diagr ansmission.	iesis function, and back	up function in	

Operation Procedure (Continued)

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

Figure 3.

System Select Stored	d Data Cal Update						
	System Selecti Select desired system Note: An asterisk(*) inc	on Menu and then press Live I licates a system that	Data to access the ECU is unsupported or not re	sponding			
	All ECUs Powerti	rain Chassis B	ody Electrical	Immobilizar	EDS Airban	Badu	1
Health Check	"Rear Left Door	Rear Right Door	*Back Door	Combination Meter	Occupant Detection	Body	
Customice							
Selling		lico	Ith Check (5.502-02)	CONTRACTOR OF THE OWNER	100000		
			♥ Powertrain(2 ECUs) ♥ Chassis(2 ECUs) ♥ Body(7 ECUs) This function may take a) few minutes to complete			
		a produce	Press Next to continue.				
Pont	extraordinary circumsi	ance etc Additic	Help	Next> Can	cuon, and back	op narceon ar	د د احــــ

- 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.

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.

System Select Stored	i Data			39-	S. 2. 1- 5.		
2005 tC 2AZ-FE	Health Check Results -Health Check does not display live data -Changes in vehicle condition will not update a -To update Health Check, click the "Refresh H	uternatically ealth Check" button					
2005_IC_2AZ.FE File Notes	System	Current	Pending	History	Monitor	Calibration	Cal. *
Bata 1.4/4	Engine and ECT	0	0	0	Com	32105000	Yes
	Cruise Control	0			- 1		
	ABS/VSC/TRAC	0	· ·		· · ·	· · · · · · · · · · · · · · · · · · ·	· ·
	CDC autor	0		0			-
Expand>>							

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.

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но	me / TIS	· /		TOYOTA Help Ny Account Logo
e Library	 Diagnostic 	• Tech Assistance	• Vehicle Inquiry	
Stant	Filmunn anun	Calibrations	Immobilizer Reset	LINER CONTRACTOR OF THE STREET
Calibration S	earch Form	and the second	Part and a second	Reference Documents
Choose the ch	teria you would odel/Year Divis Mo Yi	Inve to search by: Calibration ID VD ion: SCION = del: IC = sar: [2005 = Clear] Search	S	Relaze Notes (v.1) Relaze Notes (v.1) A complete guide to the new diagnostic applications updates released for 2004 model year scantool support. Toyota Process Bulletin SS002-01 A complete guide to the ECU Flash Reprogramming process Toyota Error Bulletin SS004-01 During the ECU Flash Reprogramming process with the vehicle, you may receive an error message. Check out this bulletin for details.
Calibration S	earch Result			Diagnostic Support Applications
Current ECU CAL ID	New ECU CAL ID	Document Title (Release Date)	Year / Model / VDS	TIS Diagnostic Applications Installer Select the link above to scan your workstation and verify that recommended diagnostic support applications are currently installed. If undate see conjugat follow the standay step
32104000 32105000	32104100 32105100	EG035-04: 05 Scient C: M.I.L. "ON" DTC P0031 and/or P2233 (2004-08-23)	2005 / tC / DE167 2005 / tC / DE177	instructions provided. If you need to install CUW (Calibration Update Wizard), it is
3YW20200	3YW20201	2005-2006 SCION IC TRD A/T Supercharger PTR01-21051 Rev. B (2006-05-10)	2005 / tC / DE167 2005 / tC / DE177	now bundled with Techstream software instead of the TIS Diagnostic Applications Installer. Use the Techstream 2.00.008 Full Software Installer if you do not already have Techstream software installed on your PC
3YW20200	3YW20201	Supercharger PTR01-21051 Rev. B (2006-05-10)	2005 / tC / DE167 2005 / tC / DE177	Diagnostic Applications Installer. Use the Techstream 2.00.0 Full Software Installer if you do not already have Techstream software installed on your PC.



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.

NOTE

Calibration	TRANSMISSION	VDS	CURRENT CALIBRATION ID	NEW CALIBRATION ID
mormation	MT	054/17	32104000	32104100
Γ	AT	J DE1#7	32105000	32105100

B. Click Open to load calibration file information.

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.

	Name: T-	-0015-06.cuw		
1499	Туре: с.	uw, 1.84 MB		
	From: t3	amedia.toyota.c	m	
	-	One	1 Cause	1 Canad
		Open	Jave	
Always	ask before or	pening this type	of file	

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

Figure 10.



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 desired rep	orogramming device.	
C Diagnostic Tester	C Generic J2534 Interface	C Techstream VIM
CONFECT	- LOE24 -	feethstream))
	J2534	
		and the second states in the

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.

Then click Next.

Figure 12. Using Techstream 2.0 or Techstream Lite

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
Any unsupported device may negatively affect reprogramming performance and potentially damage the ECU. Please see TIS (Technical Information System website at http://techinfo.toyota.com) to confirm that your device and firmware is supported before proceeding with reprogramming.

Operation Procedure (Continued)

Figure 13. Using TIS Techstream



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 Calibration	r	New Calibration Ir	nformation:	
Current Cal ID	32104000	New Cal ID	32104100	
Current Cal ID	32105000	New Cal ID	32105100	
Current Cal ID		New Cal ID		
	D. C. P. C.	Issue Date	Aug. 02, 2006	
		Model Name	Scion tC	
		Model Year	05	
		Engine Type	500-	
		Vehicle Type	2WD	
Selected Ca Press NEXT	libration file is authorized t to continue.	o update this vehicle.	•	

Operation Procedure (Continued)

G. Turn ignition OFF. Then click Next.

Figure 15.

Vehicle Preparation	
1. Ignition OFF	
OFF	NOTE Some vehicles require systems to be disabled before Flash Reprogramming Please refer to the Specific Service Bulletin for special vehicle preparation instructions required for this update DTCs may be set during the reprogramming process. Please check for DTCs before reprogramming and note any that are stored. Click the Cancel button to exit CUW and check for DTCs
Click "Next" to continue	



Operation Procedure (Continued)

- H. Confirm the following:
 - · Ignition is ON and engine is OFF.
 - Hood is open.
 - · All accessories are OFF.
 - Battery voltage is above 11.4 volts.

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		
Confirm the following conditions.		St. Marshart
1. Turn ignition ON. 2. Engine Hood Open 3. All electrical accessories are OFF 4. Battery voltage above 11.4V		
OFF OFF	CAUTION! When reprogramming:	
	Do not disconnect the DLC3 cable from vehicle. Do not tum OFF the IG switch. Do not apply any electrical load to the vehicle. Do not allow battery voltage to drop below 11.4V.	
Click "Start" to begin reprogram	ning.	
and the second second second	Star	Cancel
	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.

	III FIOCESS			
			-0	
Estimated Time: 00:02:37				
Remaining Time: 00:02:07				
CAL 1:	and the second	No. of the second second		
CAL 2:				1916
Do not launch or use any other a	pplication while reprogrammin	ig is in progress.		

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 Updat	e Successful	
CAL 1 has been loaded suc	cessfully.	
OFF	 Start 1. Please cycle ignition OFF for a minimum of 10 seconds. 2. Confirm ignition is returned to the ON position. 	
Click "Next" to continue.		

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

Figure 19.



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.

Figure 20.

Flash Cali	oration Update in Process	
- And		ø
Estimated	Time: 00:02:37	
Remaining	Time: 00:02:07	CHE T
CAL 1:		
CAL 2:		
Do not laur	ch or use any other application while reprogramming is in progress.	

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.

Design for set if it	LL C	
Prepare for verifying ve	nicie	
Please confirm IG ON to dow	wnload calibration information.	
ACC ON S	Start	
Click "Next" to continue.		
Click Next to continue.		

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

ease turn IG off.			
ease confirm that calibration	on ID has been update	d as outlined in the specific S	Service Bulletin
Before Update:		After Update:	
Current Cal ID-1 32	104000	Current Cal ID-1	32104100
Current Cal ID-2 32	105000	Current Cal ID-2	32105100
Current Cal ID-3		Current Cal ID-3	
NOTE: Some DTCs may have b Clear all DTCs after rest	been set during the re toring the vehicle.	eprogramming process.	

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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. Sample of Completed Authorized Modifications Label



B. Attach the label under the hood in the location determined by the specific Service Bulletin or Campaign.

