

**TECHNICAL INSTRUCTIONS
FOR
SAFETY RECALL A0G
SKID CONTROL ECU CALIBRATION UPDATE
2003 MODEL YEAR SEQUOIA**

UPDATED April 28, 2021

Updated 4/28/21

– Added instructions for skid control ECU replacement

TECHNICAL INSTRUCTION REVISION NOTICE:

- **April 28, 2021**
 - **Added instructions for repairing vehicle when A0G-Cable or Toughbook with Windows 7 is not available.**
- **July 5, 2016:**
 - The software has been revised to Version 181 A0G and instructions has been modified to support Windows 7. **DO NOT USE PREVIOUSLY PROVIDED SOFTWARE**
- **August 3, 2010:**
 - The instructions have been modified to support updated Version 222 A0G Reprogramming Software. **DO NOT USE PREVIOUSLY PROVIDED SOFTWARE**
- **June 24, 2010:**
 - The procedure requiring the GR8 battery charger has been removed from the instructions.
- **June 16, 2010:**
 - Additional reminders NOT to cycle the key during reprogramming have been included on pages 4, 6, and 8.

Previous versions of this Technical Instruction should be discarded.



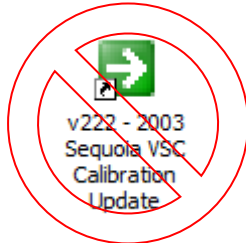
Important Note 1:

Before performing this repair you must have the “v181 - 2003 Sequoia VSC Calibration Update” application installed on your Techstream Toughbook.



A0G 2003
Sequoia VSC
Calibration
Update

= Correct v181 Software



v222 - 2003
Sequoia VSC
Calibration
Update

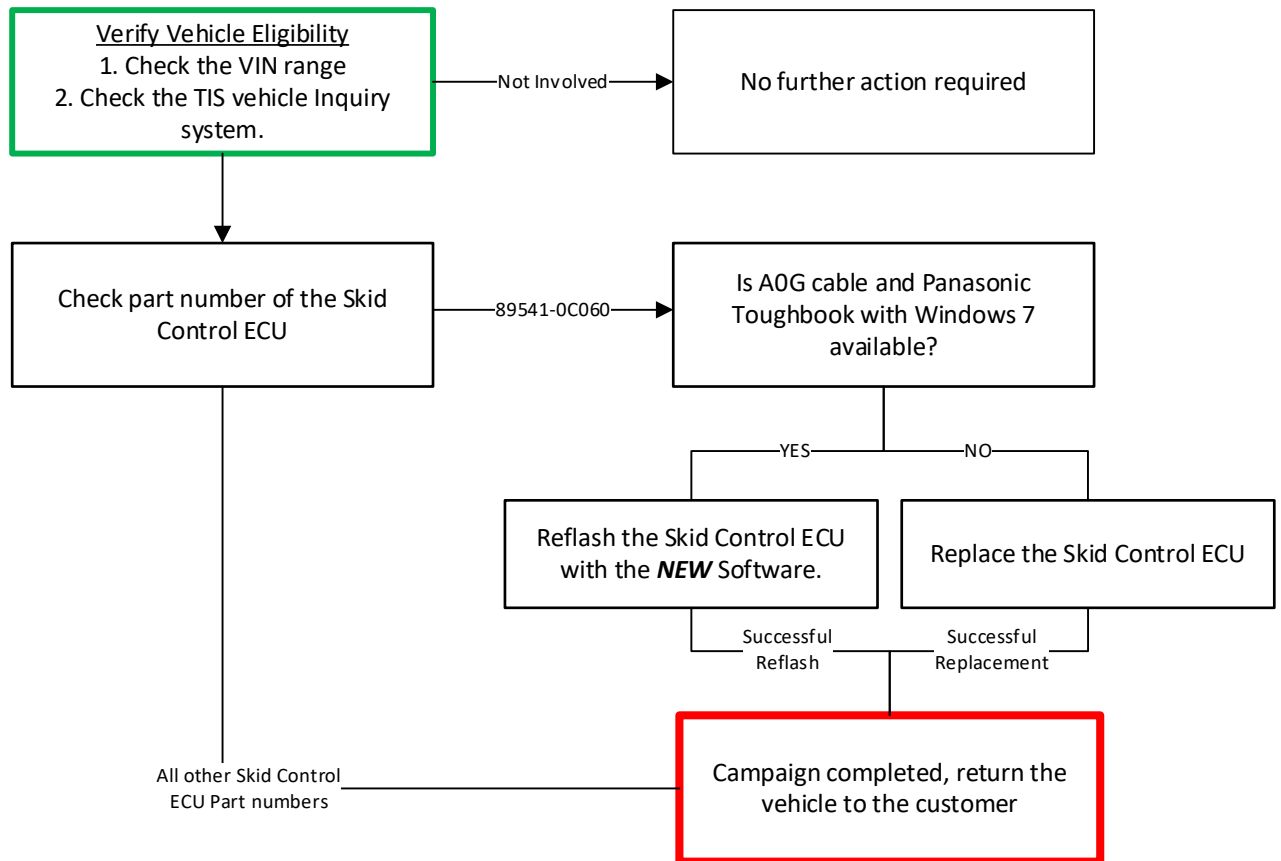
**= Incorrect v222 Software
MUST DOWNLOAD NEW SOFTWARE**

To install v181 software on your PC, download and read the [A0G 181 Software Application Installation Guide](#). NOTE: You must be a certified technician to access the application.

Important Note 2:

This procedure also **requires the use of a custom Techstream cable to connect and reprogram the Skid Control ECU**. You will not be able to reprogram the Skid Control ECU with the standard cable.

I. OPERATION FLOWCHART



II. IDENTIFICATION OF AFFECTED VEHICLES

A. AFFECTED VIN RANGE

Model	WMI	Year	VIN Range	
			VDS	Range
Sequoia	5TD	2003	BT44A	S101211 - S187555
			BT48A	S099426 - S187569
			ZT34A	S100033 - S187571
			ZT38A	S100343 - S187568

NOTE:

- Check the TIS Vehicle Inquiry System to confirm the VIN is involved in this Safety Recall, and that the campaign has not already been completed prior to dealer shipment or by another dealer.
- TMS warranty will not reimburse dealers for repairs conducted on vehicles that are not affected or were completed by another dealer.

III. PREPARATION

A. TOOLS & EQUIPMENT

- Techstream Panasonic Toughbook. (Windows 7 only) with A0G application software installed.
- Techstream Panasonic Toughbook A/C Charging Adaptor
- A0G-CABLE (Special DLC3 to RS232 Connector) →



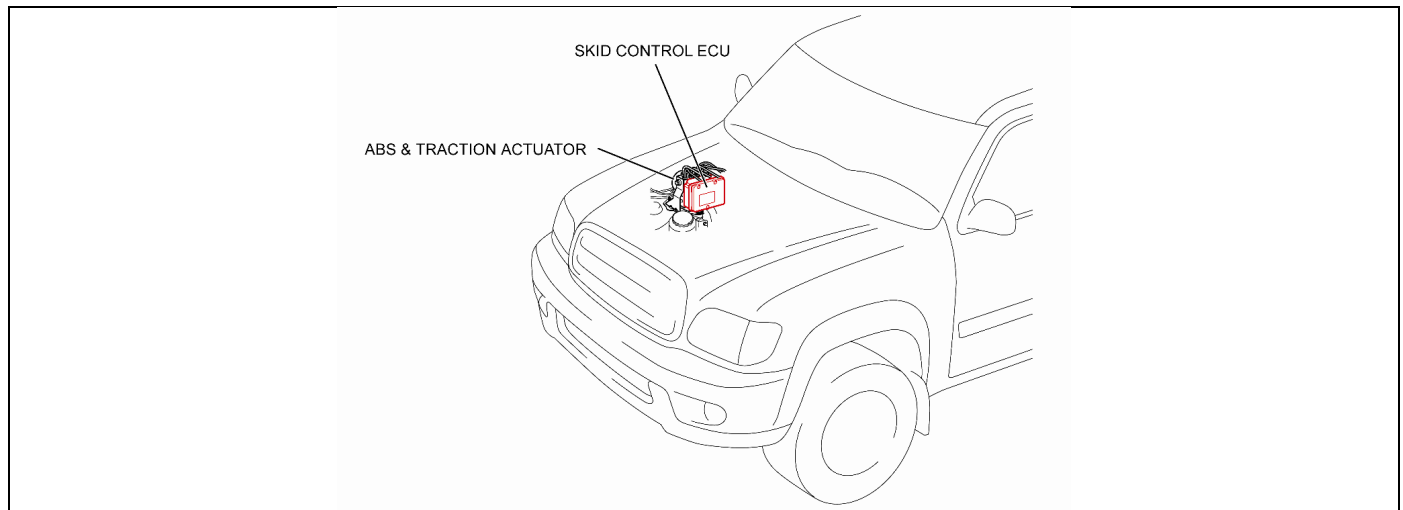
B. PARTS

- Skid Control ECU, only if equipment is not available
- Brake Fluid (SAE J1703 or FMVSS No. 116 DOT3)
- Plastic Bag (For protecting ECU connector and brake tube)
- Piece of Cloth (for wiping off brake fluid)
-

Part Number	Part Description	Quantity
89541-0C062	Skid Control ECU	1

IV. BACKGROUND

On certain 2003 Model Year Toyota Sequoia vehicles, the center position of the Steering Angle Sensor (SAS) may not be stored correctly due to improper logic of the Skid Control ECU programming. If this occurs, in most cases the VSC/TRAC warning light will illuminate. However, in limited situations the Vehicle Stability Control (VSC) system could activate at low speed (approximately 9 mph) for a few seconds after acceleration from a stopped position, and the vehicle may not accelerate as quickly as the driver expects.



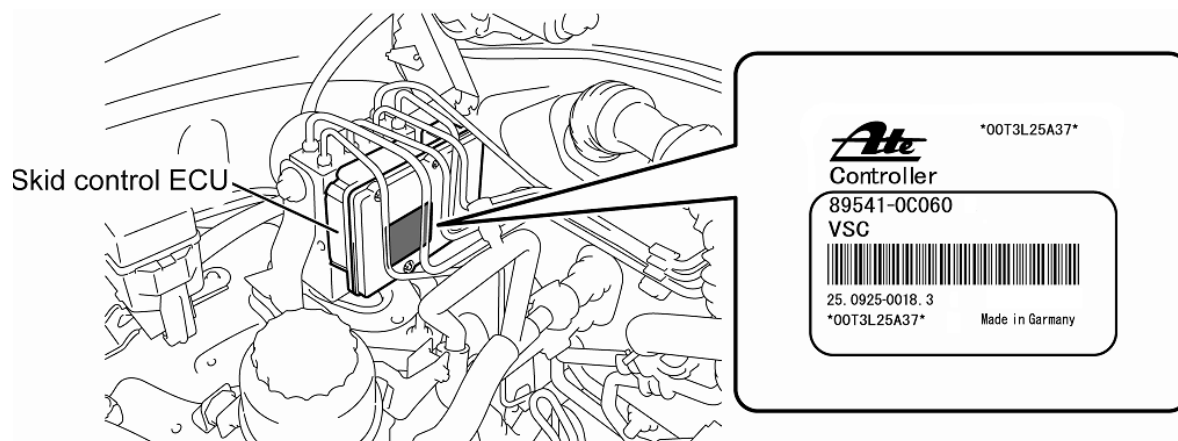
Ensure the equipment and the vehicle is properly prepared to prevent Skid Control ECU damage during reprogramming.

- Vehicle battery is between 12-13 volts.
- NO VEHICLE BATTERY CHARGER INSTALLED
- LAPTOP is charging with A/C Power Supply
- Monitor OFF settings are set to 20 minutes or more
- Screen Saver settings are set to 20 minutes or more

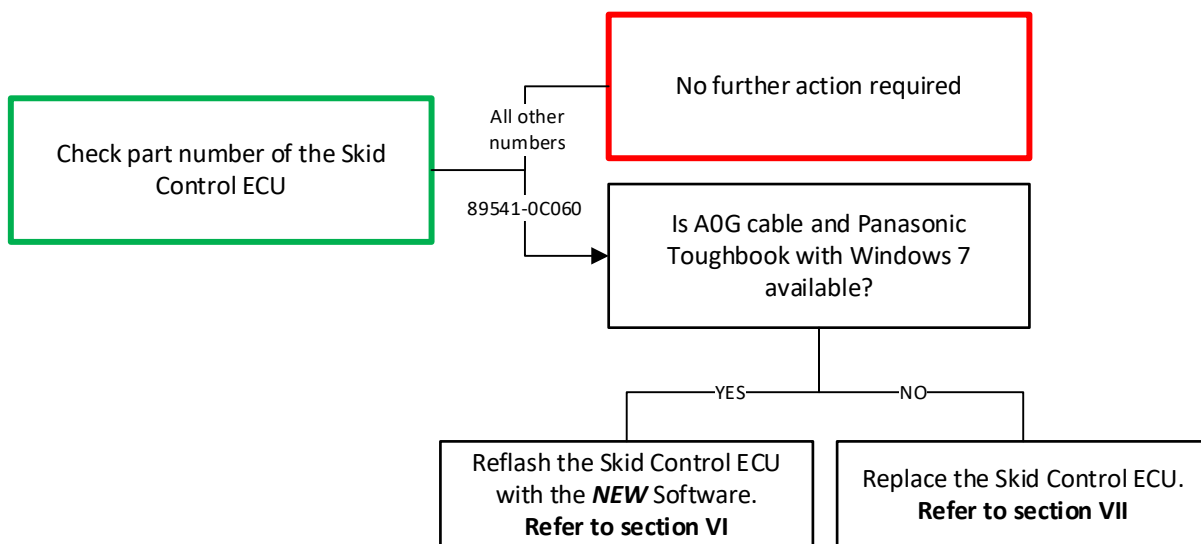
Remember:
NEVER cycle the key and
NEVER turn off the
ignition during the
reprogramming process!
These actions will cause

V. DECIDE REPAIR PATH

1. CHECK THE PART NUMBER OF THE SKID CONTROL ECU



SKID CONTROL ECU PART NUMBER	WORK CONTENTS
89541-0C060	Reprogram the skid control ECU
All other Skid Control ECU part numbers	Vehicle does NOT require reprogramming

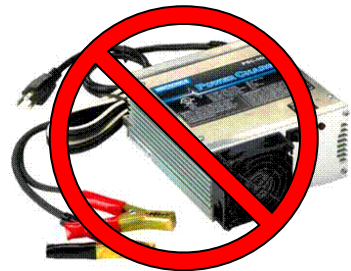


VI. REFLASH THE SKID CONTROL ECU

1. VEHICLE PREPARATION

- a) Check for any preexisting VSC codes in the Skid Control ECU memory.
 - If DTC C1231, C1247, C1310 exists you may proceed with this procedure.
 - If any other VSC codes exist except for DTC C1231, C1247, C1310 troubleshoot according to the repair manual before proceeding.
- b) Confirm the vehicle/ignition is off.
- c) Open the hood and ensure the engine compartment temperatures do not exceed 212° F.
- d) **Check the battery voltage.** If the battery voltage is lower than 12 volts, **CHARGE** the battery before reprogramming the skid control ECU.

Do NOT have any battery charger installed on the vehicle when performing this reprogramming procedure.



- Not using a battery charger during skid control ECU reprogramming applies to A0G reprogramming ONLY.

- e) Using the A0G-CABLE, connect one side to the RS232 Serial Port on the Techstream Laptop and the other side to the DLC3 connector on the vehicle.



RS232 Serial Port

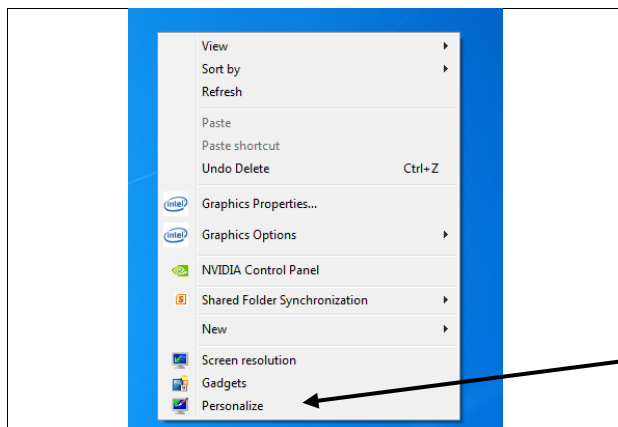
- f) Connect A/C Charger to the Techstream Laptop.



2. SKID CONTROL REPROGRAMMING



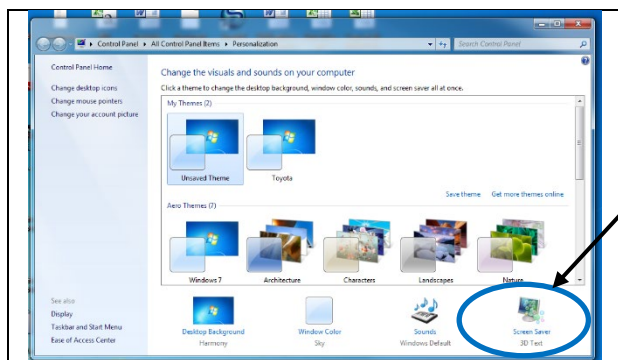
- Do NOT apply any electrical load while reprogramming. (i.e. audio, A/C, defroster...)
- Do NOT touch the mouse buttons / touch screen / or keyboard after the reprogramming has started until it completes.



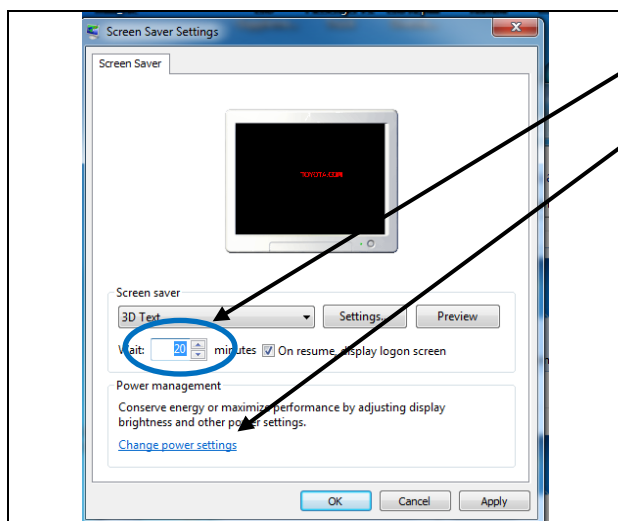
a) Confirm that the Screen Saver is set to 20 minutes or more.

NOTE: If you do not have administrator rights to make these adjustments; please contact your local IT support. Failure to adjust these settings will result in permanent ECU damage.

- Right-Click on empty space of Desktop
- Select Properties.

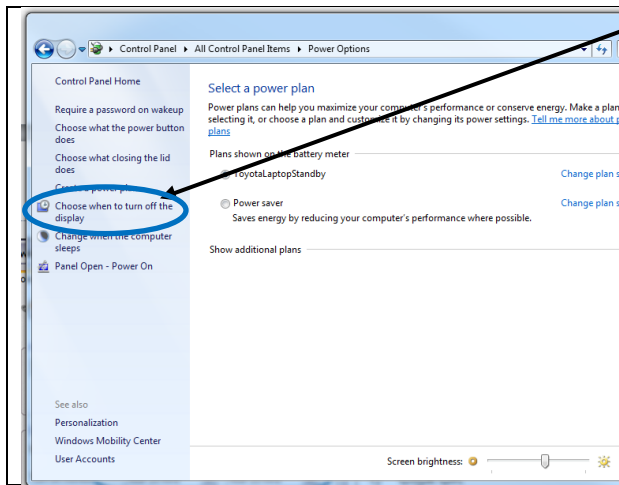


b) "Select the Screen Saver Tab"



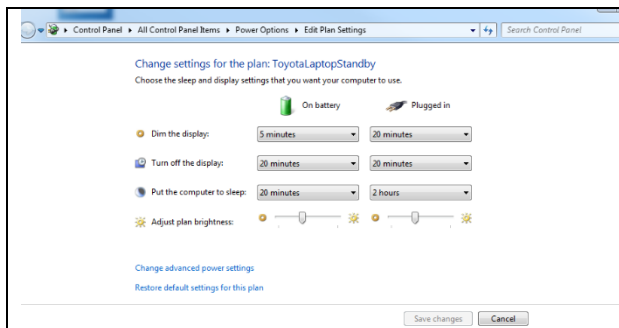
c) Confirm "Wait:" is set to 20 minutes or more.

d) Click the "Power" button



e) Click “Choose when to turn off the display”

NOTE: If you do not have administrator rights to make these adjustments; please contact your local IT support. Failure to adjust these settings will result in permanent ECU damage.

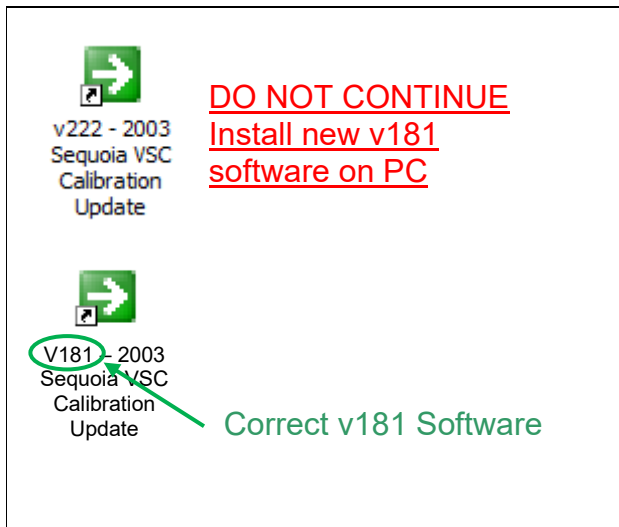


f) Confirm that the “Turn of the Display” setting is 20 minutes or more.



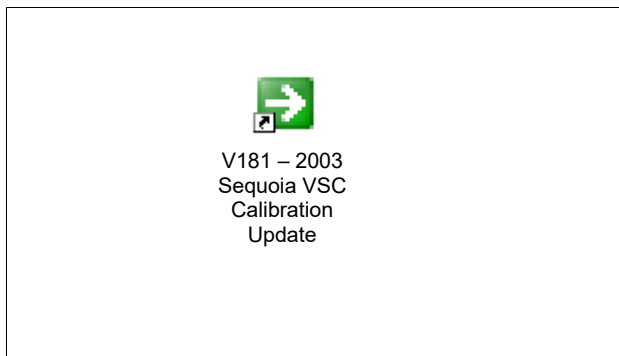
Failure to adjust these settings may result in reprogramming failure and permanent ECU damage.

g) Confirm AOG Cable is connected to Techstream and vehicle.



h) Confirm the new v181 software is installed. The desktop link should show:
“v181 – 2003 Sequoia VSC Calibration Update”.

If any update is required, follow the [AOG v181 Software Application Installation Guide](#).



i) Double Click this icon on the desktop.

```

[v222 - 2003 Sequoia VSC Calibration Update]
XBU version: XBU3.1.10.222
=====
ReFlash of Toyota via XBU
=====
This application will update
From Cal ID : WDPY26A1.PC5
To Cal ID : WDPY5AA1.UG1
=====
- WARNING -
.1) Confirm the IGN is OFF
.2) Confirm 12 to 13 VOLTS
.3) Confirm NO VEHICLE CHARGER is installed
.4) Confirm that PC IS CHARGING with AC Power Supply
.5) Confirm Monitor Off setting is greater than 20 minutes
.6) Confirm Screen Saver setting is greater than 20 minutes
Continue (yes/no)? (Press 'y' and hit 'enter' to continue or
Press any key and 'enter' to abort the process)_

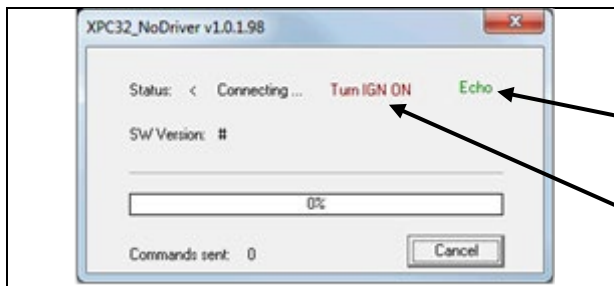
```

- j) Confirm the following.
- Ignition Switch is OFF
 - Vehicle battery is between 12-13 volts.
 - NO VEHICLE BATTERY CHARGER INSTALLED
 - LAPTOP is charging with A/C Power Supply
 - Monitor OFF settings are set to 20 minutes or more
 - Screen Saver settings are set to 20 minutes or more



Failure to confirm these items may result in reprogramming failure and permanent ECU damage.

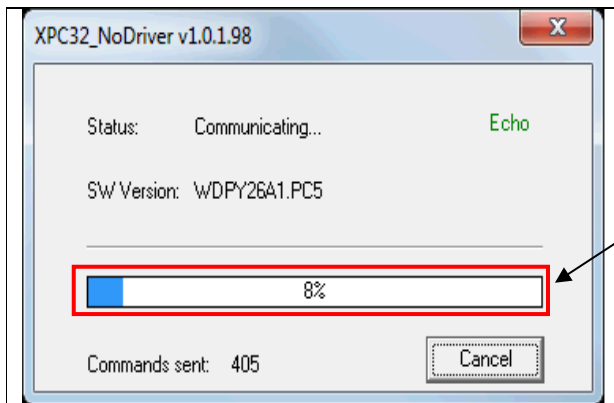
- k) Press 'y' and 'ENTER'. Be ready to turn the IG ON when prompted.



- l) Turn the ignition ON within 15 seconds of seeing this screen

Echo should be Green

Turn IGN ON...



- m) Wait approximately 6-7 minutes until the reprogramming completes.

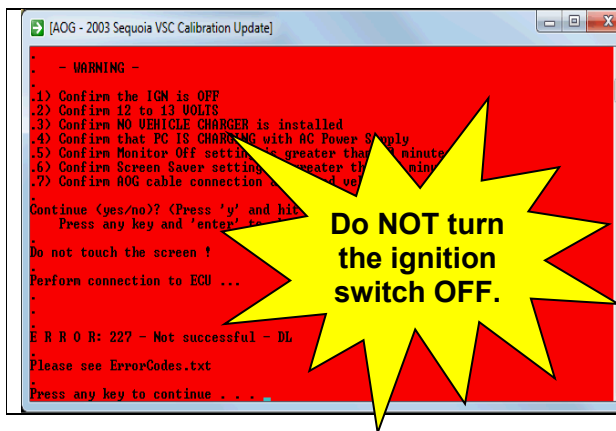
Progress Bar

```

DLT 7.14
000.004 : -----2/10/2014 10:38:56 AM-----
000.008 : FREESCALE DOWNLOAD CORE (Windows 7, 6.1.7601.65536)
000.008 : Freescale Download Utility: Version 7.14, Configuration File: DOWNLOAD
.CFG Version 7.14 1
000.008 : Freescale Download Utility: Version 7.14, Configuration File: DEVICE.C
FG Version 7.14 1
000.008 : Freescale Download Utility: Version 7.14, Configuration File: ERROR.cf
g Version 7.14 1
000.008 : Copyright (c) 1999-2013 Freescale Corporation. All rights reserved
000.009 : COMMAND : Download p C:\UTIL\XDL\XBU_Toyota\Packages\Toyota\DLSoftware
\WDPY5AA1.UG1 h38400.38400 com1 x
000.016 : Download config file comment: download.cfg - Download U7.14 Release
000.017 : Device config file comment: Device.cfg - Download U7.14 Release
000.018 : Error config file comment: error.cfg - Download U7.14 Release
000.019 : Loading all configuration files...
000.061 : Performing PC-MCU initialization on COM1 at 38400 bps.
000.072 : Connected to MCU over COM1 at 38400 bps
000.079 : Cmd Delay=200000 Program Cmd Delay=300000 Additional Delay=8
000.144 : DeviceID=0x000007A2 BootRev=0x00000009 Emulation=NO
000.145 : Hardware chip id : 0x000007A2, Software chip id : 0x000007A2
000.229 : Reading Input File
001.953 : File 1, Device(s) Allowed: ANY.
001.954 : Processing Memory Range: 0x00000000 to 0x00042EBB
001.954 : Memory areas:
001.955 : Array Block 0 (0x00000000): 32768 bytes 512 pages 64 bytes/page

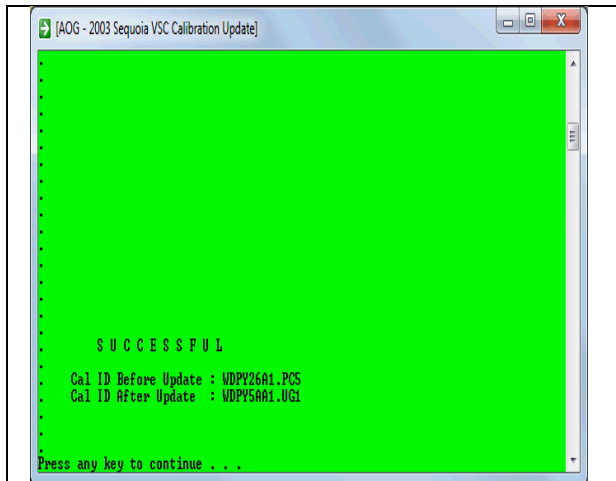
```

- n) Download Phase



If you receive a RED or BLACK screen after the reprogramming progress bar has started:

- **Keep the ignition ON**
- **Read and follow the commands**
- **Write the Error / Return Code down**
- Immediately skip to the appendix for instructions
- After two consecutive error screens during reprogramming please contact Technical Assistance



- o) A green screen will indicate the completion of the reprogramming or if the reprogramming has already been completed.
- p) Press any key to continue/close the reprogramming window.

3. CONFIRM VEHICLE CONDITION AFTER REPROGRAMMING THE SKID CONTROL ECU

- a) Turn off the ignition.
- b) Start the vehicle and confirm the ABS/VSC/TRAC warning lights are OFF

4. CHECK FOR DTC CODES

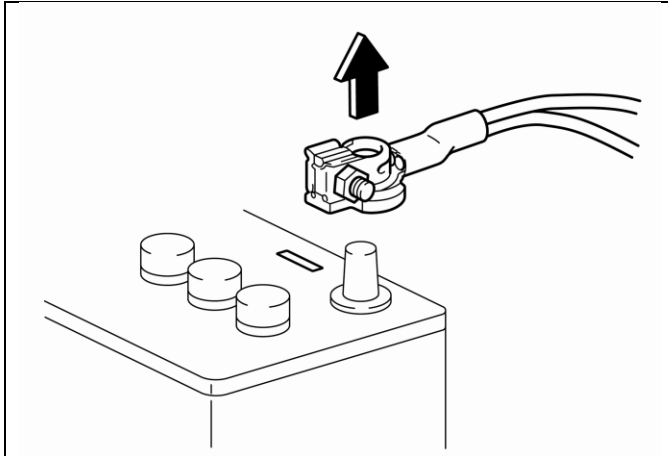
- a) Connect the Techstream to the DLC3.
- b) Confirm NO new Skid Control DTC's have occurred.

NOTE:

If any Pending, Current, and/or History DTCs are set, troubleshoot according to the repair manual.

5. TEST DRIVE THE VEHICLE AND INSPECT FOR ANY PROBLEMS

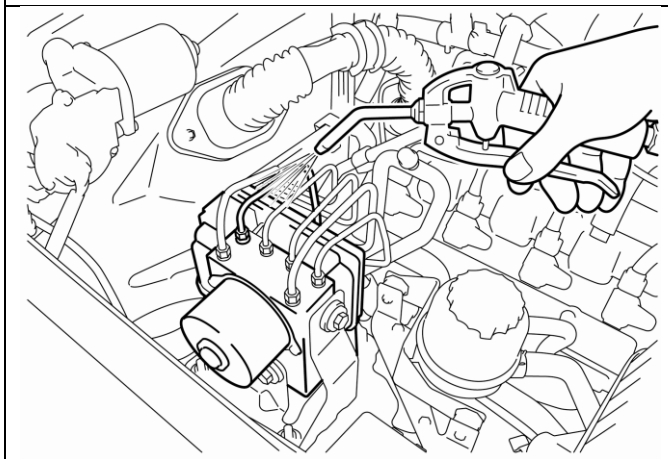
VII. REPLACE THE SKID CONTROL ECU



1. DISCONNECT THE NEGATIVE BATTERY TERMINAL CABLE

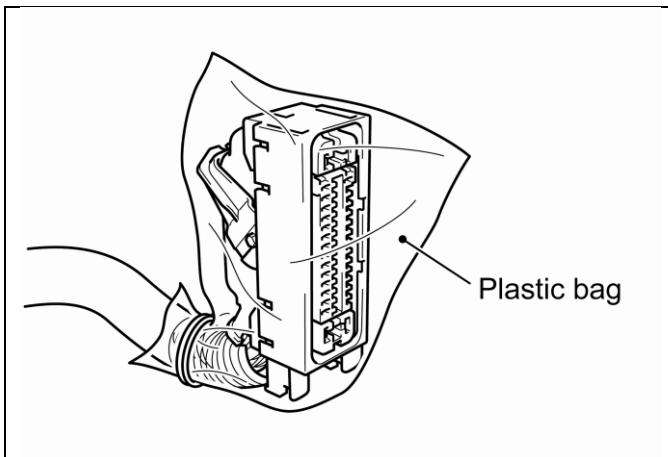
CAUTION:

Record the contents of the memories of systems such as the clock and radio and the diagnosis codes beforehand, as they will be cleared when the cable is disconnected from the negative terminal of the battery.



2. CLEAN THE ABS & TRACTION ACTUATOR

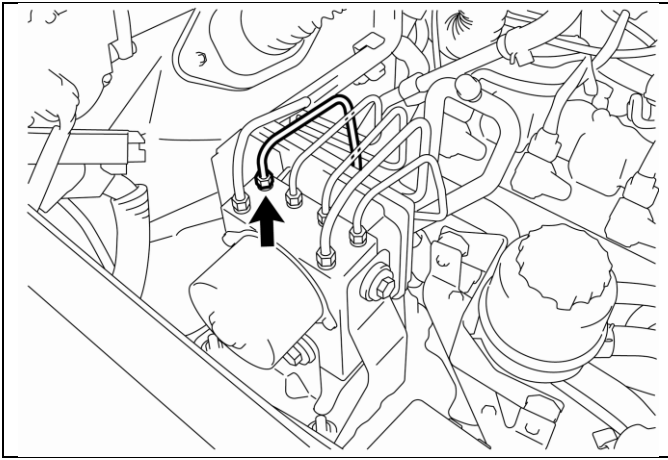
Using an air duster, remove any foreign matter from the installation surfaces of the ABS & traction actuator and the skid control ECU and the area surrounding the brake tube connection sections.



3. DISCONNECT THE CONNECTOR OF THE SKID CONTROL ECU

- (a) Release the lock and disconnect the connector while raising the release bar.

To prevent the entry of foreign matter, cover the connector on the vehicle harness side with a plastic bag to protect it.

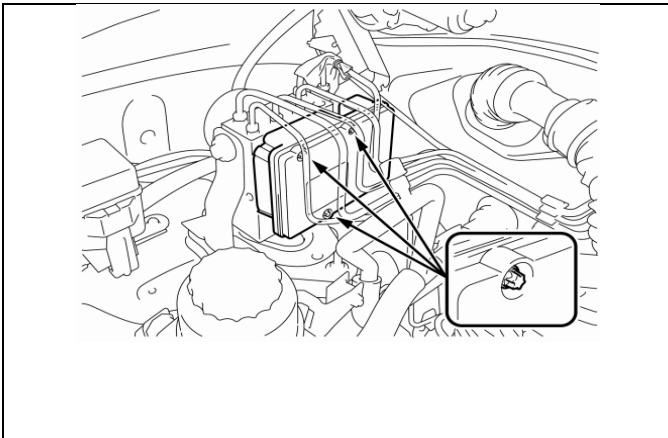


4. DISCONNECT THE BRAKE TUBE

- (a) Disconnect the brake tube in the position shown in the illustration.

CAUTION:

Take care not to bend or damage the brake tube.



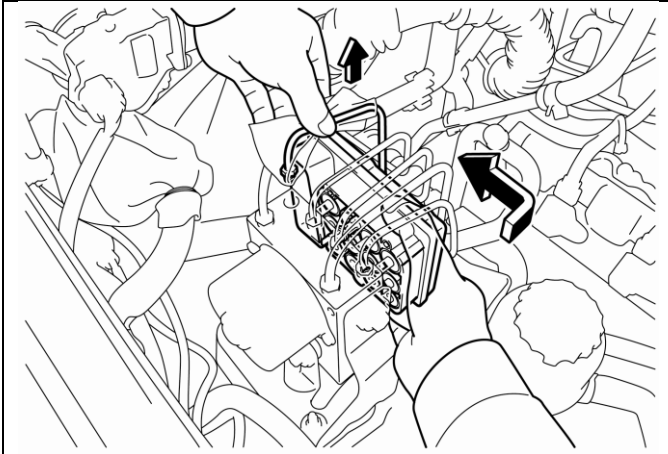
5. REMOVE THE ACTUATOR ASSEMBLY

Remove the 3 nuts and actuator assembly with the actuator bracket.

- a) While lifting the brake tube up and holding it, push the skid control ECU towards the left side of the vehicle, and separate it from the actuator.

Caution:

To prevent the removed skid control ECU from being reused, mark it and put it in a storage box.

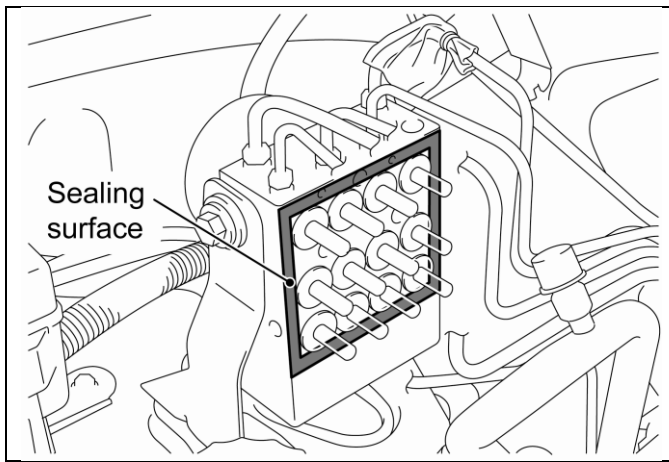


- b) While lifting the brake tube up and holding it, push the skid control ECU as shown by the arrows, and separate it from the actuator.

CAUTION:

Take care not to bend or damage the brake tube.

- c) Tilt the connector side of the ECU downward and move the ECU towards the rear of the vehicle.



NOTICE:

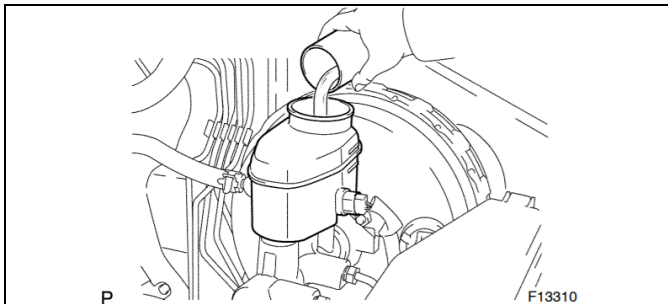
Protect the actuator in order to prevent sealing surface from getting dirty and causing damage on the valve body. If the dirt and the like is stuck to the sealing surface, use plastic tools or soft objects to remove the dirt. Do not use chemical solvents.

6. INSTALL THE SKID CONTROL ECU

Torque: 10 mm nut: 15 N·m (155 kgf·cm, 11ft·lbf)

7. CONNECT CONNECTOR

- a) Push the release bar and re-connect the connector

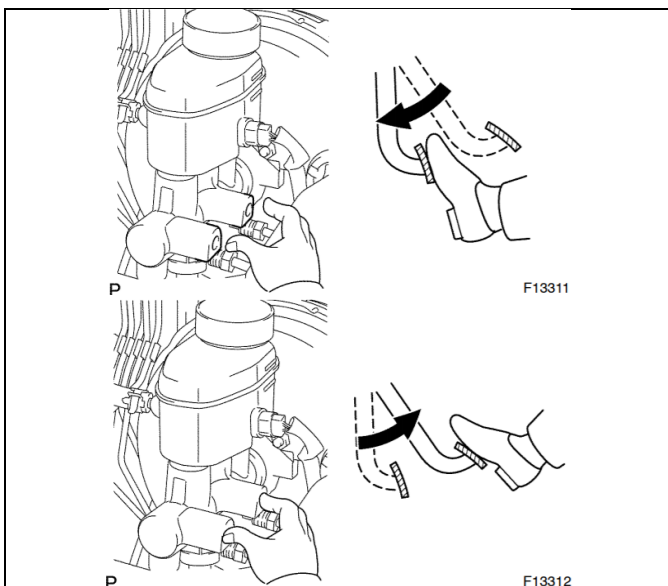


8. FILL BRAKE RESERVOIR WITH BRAKE FLUID

- a) Check the fluid level in the reservoir after bleeding each wheel. Add fluid, if necessary.

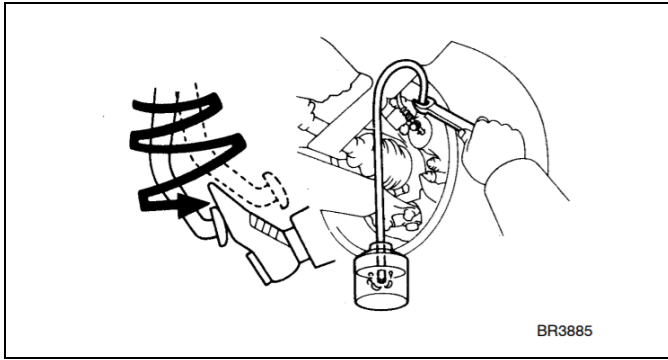
Fluid: SAE J1703 or FMVSS No. 116 DOT3

9. RECONNECT THE NEGATIVE BATTERY TERMINAL CABLE



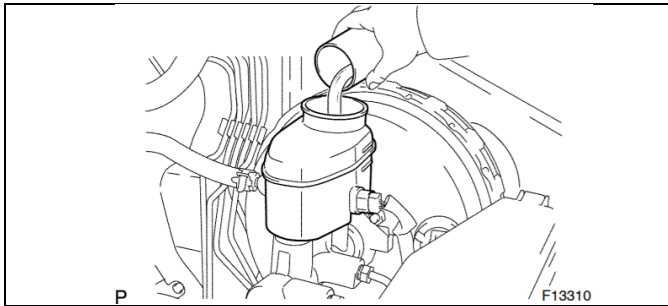
10. BLEED MASTER CYLINDER

- a) Disconnect the brake lines from the master cylinder. SST 09751-36011
- b) Slowly depress the brake pedal and hold it. Block off the outlet plug with your finger and release the brake pedal.
- c) Block off the outlet plug with your finger and release the brake pedal.
- d) Repeat (b) and (c) 3 or 4 times



11. BLEED BRAKE LINE

- Connect the vinyl tube to the caliper
- Depress the brake pedal several times, then loosen the bleeder plug with the pedal down.
- At the point when fluid stops coming out, tighten the bleeder plug, then release the brake pedal.
- Torque: 11 N·m (110 kgf·cm, 8 ft·lbf)
- Repeat (b) and (c) until all the air in the fluid has been bled out.
- Repeat the procedure on the previous page to bleed the air out of brake line for each wheel.



12. CHECK FLUID LEVEL IN RESERVOIR

- Check the fluid level and add fluid if necessary.
Fluid: SAE J1703 or FMVSS No. 116 DOT3

13. CONFIRM VEHICLE CONDITION AFTER REPLACING THE SKID CONTROL ECU

CAUTION:

- In case of replacing the skid control ECU on the 4WD vehicles, the registration for the 4WD vehicle to the ECU is necessary. If performing this registration on the 2WD vehicles by mistake, the registration cannot be put back for the 2WD vehicle.
- Do not exchange the skid control ECU for 4WD vehicle to 2WD vehicle.

- In case of 2WD: Nothing to do.
- In case of 4WD: After turning the ignition switch ON, with the shift lever in P position, move the transfer shift lever to L4 position.

HINT:

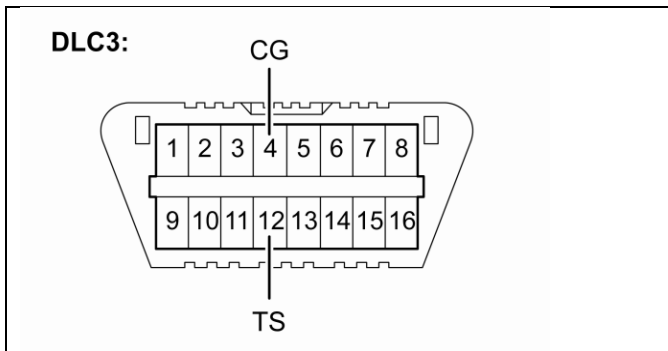
At this time, buzzer sounds for 3 seconds.

- Turn off the ignition.
Start the vehicle and confirm the ABS/VSC/TRAC warning lights are OFF

14. PERFORM THE ZERO POINT CALIBRATION OF THE MASTER CYLINDER PRESSURE, YAW RATE AND DECELERATION SENSORS

NOTICE:

- While obtaining the zero point, do not vibrate the vehicle by tilting, moving or shaking it, and keep it stationary. (Do not start the engine.)
- Be sure to do this on a level surface (within an inclination of 1 degree).



- (a) Perform master cylinder pressure, yaw rate and deceleration sensor zero point calibration.
- i Using the SST, connect terminals TS and CG of the DLC3.

SST: 09843-18040

Shift the shift lever to the P position

iii Turn the ignition switch to the ON position.

iv Check the ABS warning light and VSC TRAC warning light blink.

HINT:

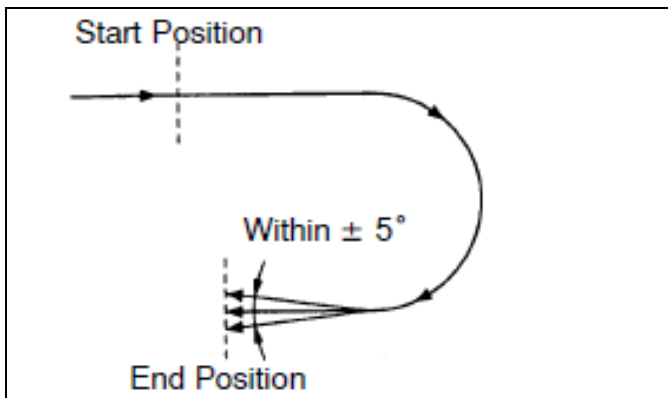
If the ABS warning light and VSC TRAC warning light do not blink, inspect the ABS warning light circuit, VSC TRAC warning light circuit and Ts terminal circuit

v keep the vehicle stationary on a level surface and wait for 4 seconds or more.

vi Start the engine.

vii shift the shift lever to the D position

viii Drive the vehicle at the vehicle speed of approx. 5 km/h (3mph), turn the steering wheel either to left or right for 90 degrees or more



ix Check that the VSC buzzer sounds for 3 sec. upon the first vehicle movement.

x Stop the vehicle and shift the shift lever to the P position.

xi Check that the VSC buzzer sounds again for 3 sec.

HINT:

- If the VSC buzzer sounds twice, the sensor check is in normal completion.
- If the VSC buzzer does not sound, check the VSC buzzer circuit, then do the sensor check again.
- Drive the vehicle circularly by 180° . At the end of the turn, the direction of the vehicle should be within $180^\circ \pm 5^\circ$ of its start position.
- Do not spin the wheels.
- If the buzzer sounds after the first vehicle movement, then deceleration sensor check has passed. If the buzzer sounds at completion of curve, yaw rate sensor check has passed. The buzzer should sound twice during the sensor check.

(b) Check the master cylinder pressure sensor.

i Keep the vehicle in the stationary condition on the level place for 2 sec. or more.

ii Keep the vehicle in the stationary condition and the brake pedal in free condition for 1 sec. or more, continue to depress the brake pedal with 147 N (15 kgf, 33 lbf) or more for 2 sec. or more.

HINT:

- At this time, the buzzer sounds for 3 seconds.

- If the zero point calibration for new ECU has not been performed, master cylinder pressure sensor check cannot be completed correctly. Perform the zero point calibration first.

(c) Check the speed sensor.

- i Drive vehicle straight forward.
- ii When driving the vehicle at the speed of 45 km/h (28 mph) or higher for several seconds
- iii Check that the ABS warning light goes off.

HINT:

There is a case that the sensor check is not completed if the vehicle has its wheels spin or its steering wheel steered during this check.

- iv Stop the vehicle.
- v Remove the SST to disconnect terminals TS and CG.
- vi Turn the ignition switch to the OFF position.

(d) Perform steering angle sensor zero point calibration.

This calibration is carried out automatically by following the procedure below:

- i Turn the ignition switch to the ON position.
- ii Check the ABS warning light off.
- iii Calibrate the steering angle sensor by driving the vehicle in a straight line at more than 7 mph (12 km/h) for 5 seconds.
- iv Stop the vehicle. Use the intelligent tester to check that the steering angle value shown in the DATA LIST column increases when the steering wheel is turned to the left and decreases when it is turned to the right.
- v Turn the ignition switch to the OFF position.

HINT:

- If the steering angle reads 1,150 degrees when the steering wheel is in any position, the sensor has not been calibrated.
- Perform the calibration procedure again.
- DTC C1362/36 will be output from the skid control ECU if the skid control ECU is replaced with a new one and/or sensor calibration is not performed.

DTC C1362/36 will be deleted when sensor calibration is complete.

15. CHECK FOR DTC CODES

- d) Connect the Techstream to the DLC3.
- e) Confirm NO new Skid Control DTC's have occurred.

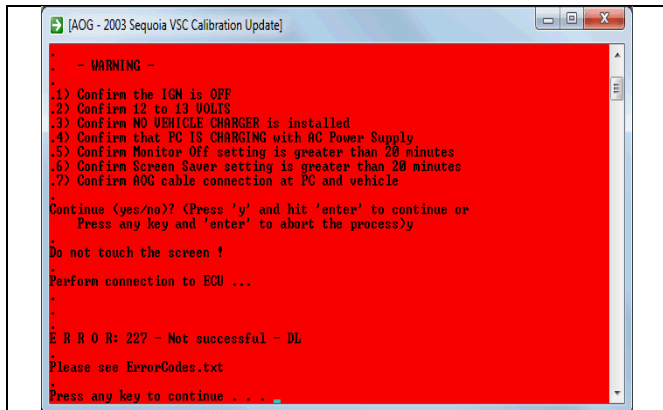
NOTE:

If any Pending, Current, and/or History DTCs are set, troubleshoot according to the repair manual.

16. TEST DRIVE THE VEHICLE AND INSPECT FOR ANY PROBLEMS

APPENDIX

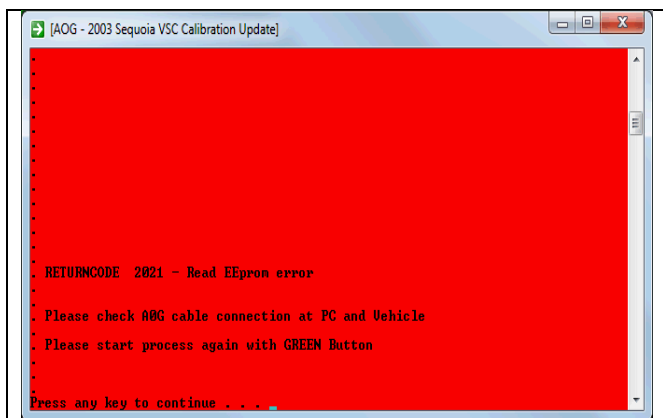
Only refer to this appendix if you have received a red or black error screen as shown below after attempting to reprogram the Skid Control ECU.



Error Code 227: XDL Connection timeout:

Cause:

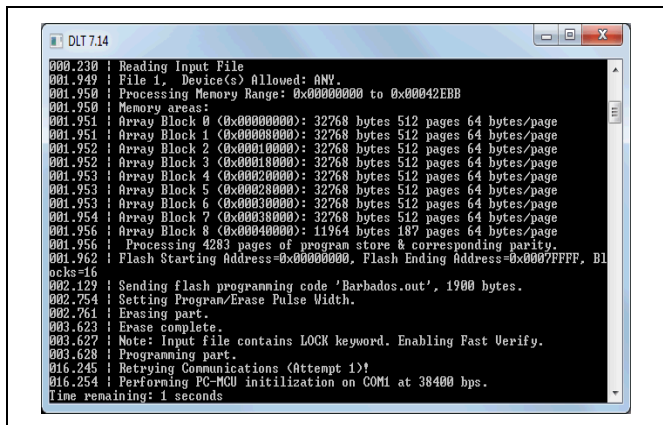
No battery power (13.8 V)
Iso-K-cable not connected
IGN OFF/ON not switch in 20 seconds interval



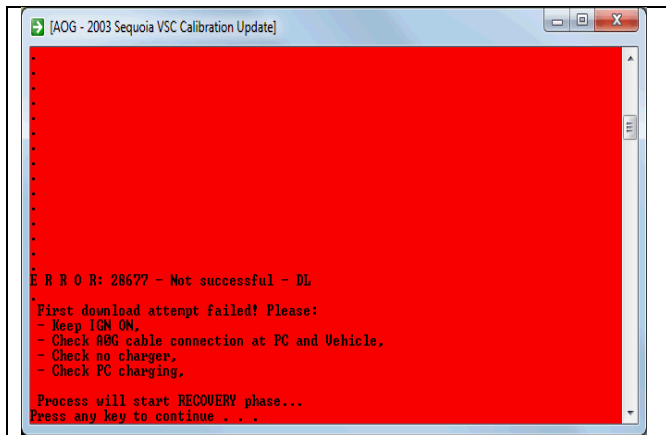
Error Code 2021: Forced error by turn IGN Off

Cause:

Poor AOG cable connection
IGN turned off during reprogramming



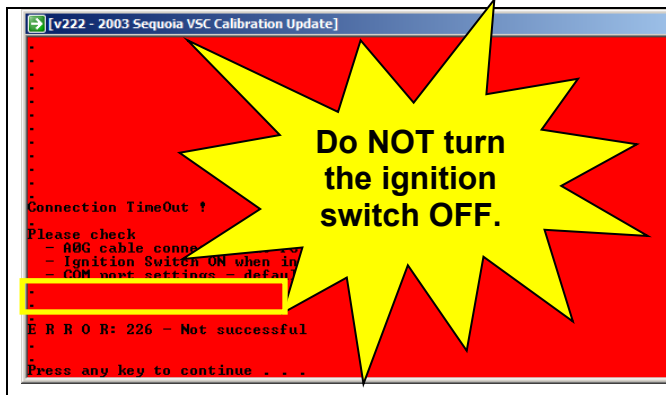
Error forced: turn OFF IGN while download APL: -> DLT will make a retry to reconnect to ECU (Attempt 1-3)



Error Code: 28677: DLT not successful

Cause:

Communication error (IGN turned off during reprogramming)



If you received a red error screen note the Return/Error Code and proceed to the next page to perform the VSC Failure Recovery.

RED SCREEN Troubleshooting Chart

