ISSUE DATE:	11-17-2020
SERVICE BULLETIN SUBJECT:	Prodrive Powertrain Software Update
VINs or MODELS AFFECTED:	Service Specified Buses
COMPLETE BY:	Next Service Opportunity
SERVICE BULLETIN #:	SC-20-164
LABOR OPERATION CODE:	PD43Z

NOTICE! It is expected that this process will require 1 hour per bus. Please schedule appropriately to minimize vehicle downtime.

DUOPOWER POWERTRAIN SOFTWARE UPDATE

Description

This procedure updates the Duopower Powertrain software to the latest version for improved powertrain performance.

Note: This update requires Body Controller Software version 6.3.0 or higher. If this is not the case Proterra Service Campaign SC-20-91 is required to be complete before beginning this procedure.

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Summary of Software Changes

Improvements

- Improved speed determination reliability and diagnostic coverage in certain fault conditions.
- Revised rounding of reported power on CAN to improve accuracy of Apex calculations.
- Modified torque filtering to ensure consistent drive feel across all driving conditions.
- Revised startup procedure to improve reliability.
- Significant improvements to traction control performance.
- Revised transmission oil pump command when oil temperature sensor is faulted.

New Features

- Implemented inverter under-voltage diagnostic (SPN 9101, FMI 17) to indicate loss of high voltage at the inverter in non-driving conditions.
- Added support for SAE J1939 EEC1 message from SA 0x5A to support ITS integration.

Bugs

- Modified transmission oil temperature sensor diagnostic logic to eliminate false positive diagnostics (SPN 64 and 171, FMI 3) at temperatures less than 0 C.
- Corrected issue prohibiting a driver requested neutral shift when in certain fault conditions.
- Resolved a bug which limited the effect of ETL activation during short traction events.

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Tools/Parts Required

- Customer Service Laptop with Proterra Diagnostic Tool
- Nexiq USB Link2 Device

Parts Required:

- 056501 SOFTWARE, POWERTRAIN, 800V, DuoPower, v2.0.1 1 EA

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Connect to the Vehicle to Start the Proterra Diagnostics Tool

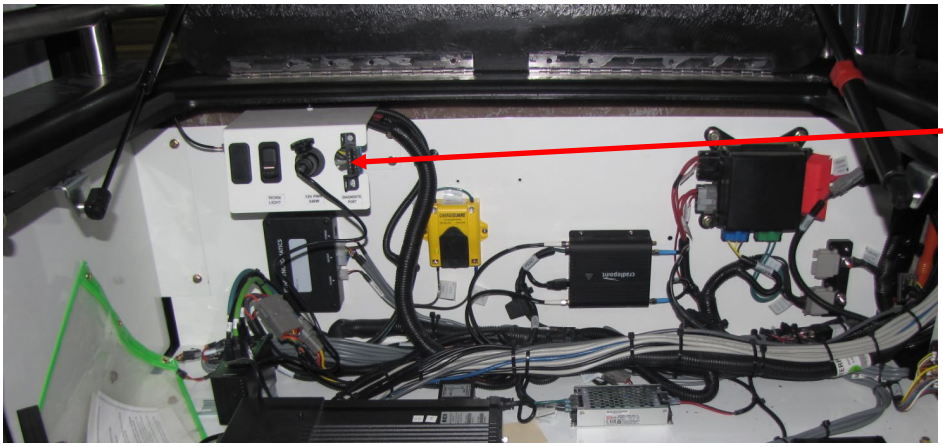
This process will guide the user to connect to the vehicle with the Proterra Diagnostics Tool.

1. Turn **ON** the 12/24V rear Vehicle Master Disconnect located behind the vehicle curbside rear charge port access panel.

2. Turn **ON** the bus Master Run Switch at the Driver's Workplace and ensure the Dash screen is **ON** to display “KEY ACC”.

Master Switch
“ACC”

3. Open the Streetside wheel well box to access to the OBDII Port.



OBDII Port

4. Power up (boot) the Proterra-supplied laptop containing the Proterra Diagnostic Tool.

5. Connect the Nexiq USB Link2 device to the laptop and to the appropriate OBDII Diagnostic Port.

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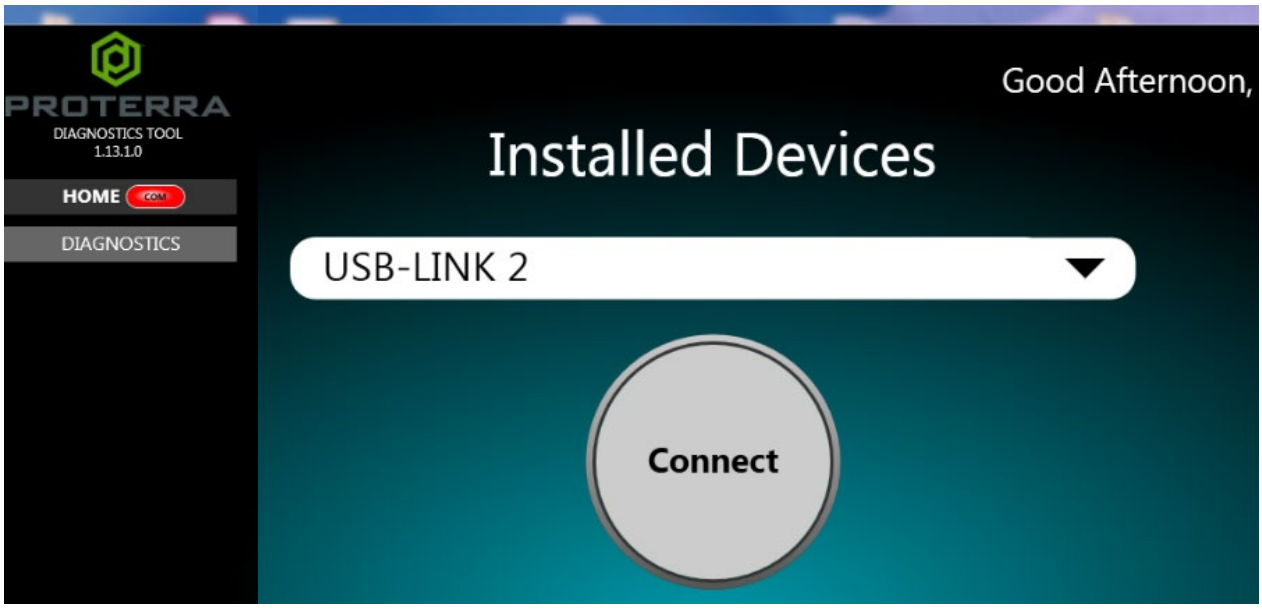
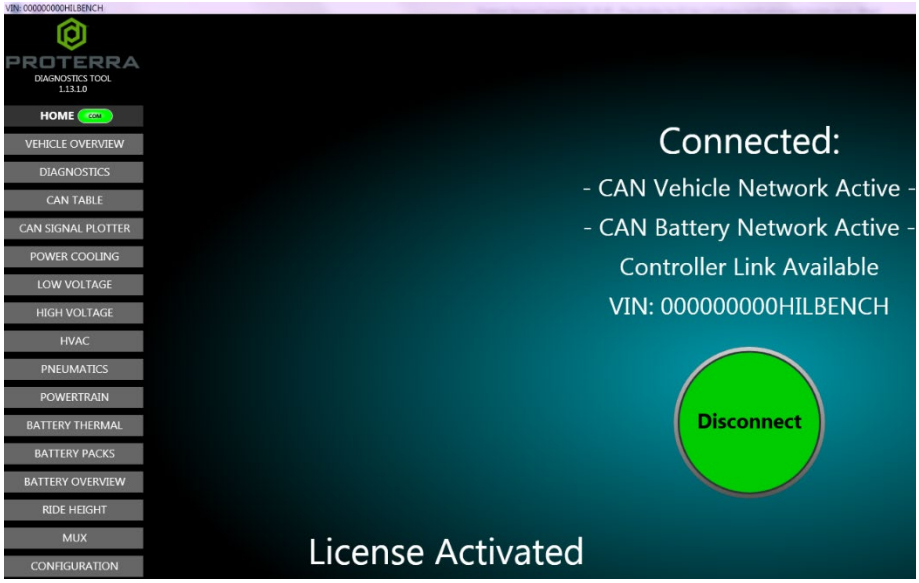
6. On the laptop, double-click on the Proterra Diagnostics Tool software icon to start the software.

7. When the program opens, read and click OK for the prompt.

8. On the Home tab, select the appropriate device from the drop down and click “Connect”.



9. Once the diagnostic tool has connected to the vehicle, you will have a VIN number and connection status displayed on the home screen, and tabs available to navigate.



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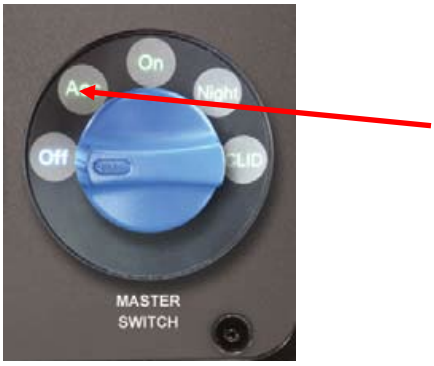
Update Powertrain Software

This procedure updates the Powertrain software version and maintains the Powertrain parameter configuration data across the flash download of new software.

1. Ensure you have the latest software file **056501.hex** in a known location on the service technician's computer (Folder or Desktop).
   IMPORTANT! NEVER access the software from a remote server or from a USB memory device, ALWAYS copy the software files to your computer hard drive and access the software from this location. It is recommended that you copy the entire "service bulletin files" folder to your local machine in order to more effectively keep track of the software versions you are deploying:
   \\bus.local\files\Engineering\Service Bulletins\Service Bulletin Files for SC-20-164\

2. Turn **ON** the 12/24V rear Vehicle Master Disconnect located behind the vehicle curbside rear upper access panel.

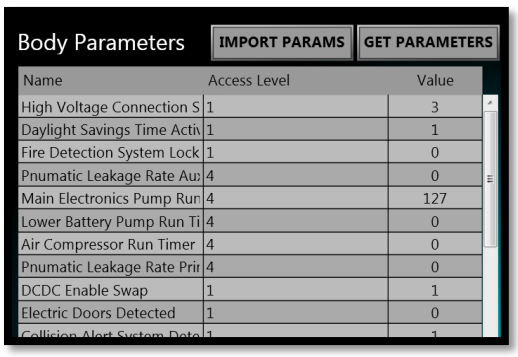
3. Turn **ON** the bus Master Switch at the Driver's Workplace and ensure the Dash screen is **ACC**.



Master Switch "ACC"

4. After connecting to the vehicle using the Proterra Diagnostic tool at the **front OBDII Port (SSWW Box),** navigate to the Configuration Tab.

5. Wait at least 10 seconds after starting the tool, then click the "Get Parameters" button at the top of the page.
   a. **NOTE: This ensures that we have a backup copy of the original configuration parameters stored in a "zip" file, contained in the C:/Logs folder on your computer in case we need to refer to it later.**



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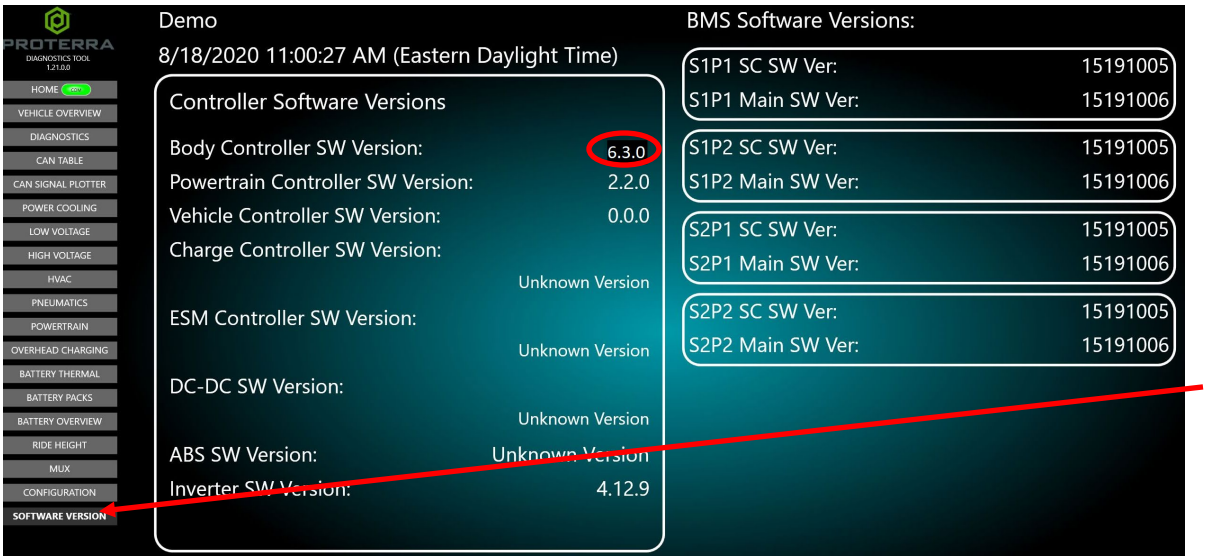
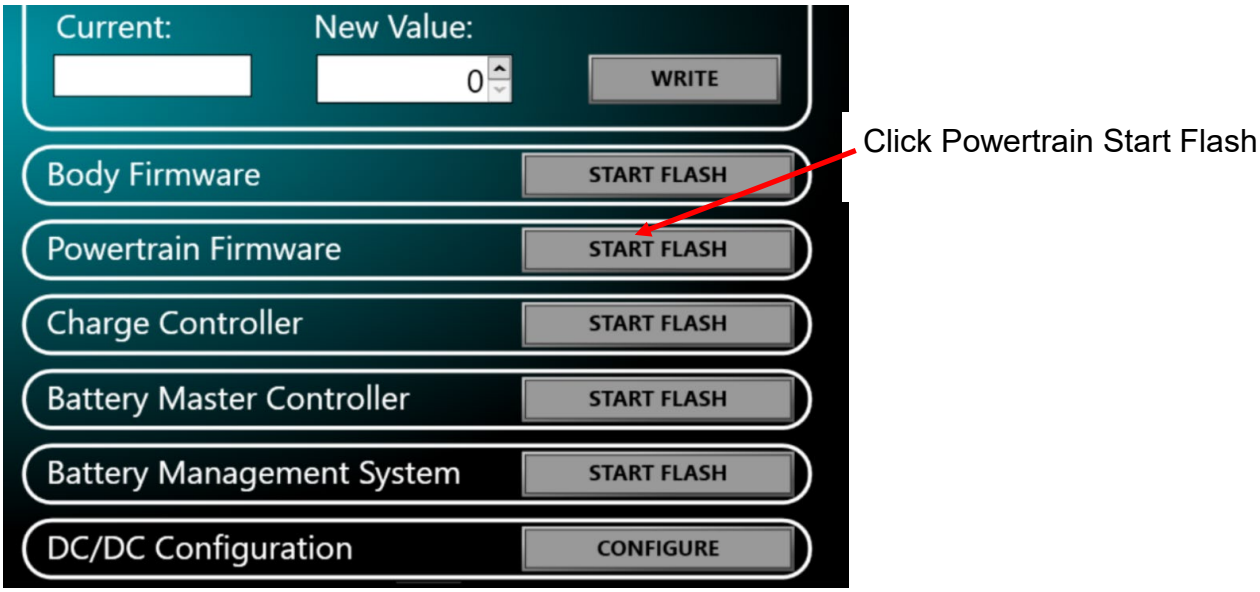
6. Click on the “SOFTWARE VERSION” button at the bottom left of the screen. Verify that the Body Controller Software is version 6.3.0.
   Note: If it is not Proterra Service Campaign SC-20-91 must be performed on the vehicle before proceeding.



7. Now we are ready to click the Powertrain Firmware “Start Flash” Button.



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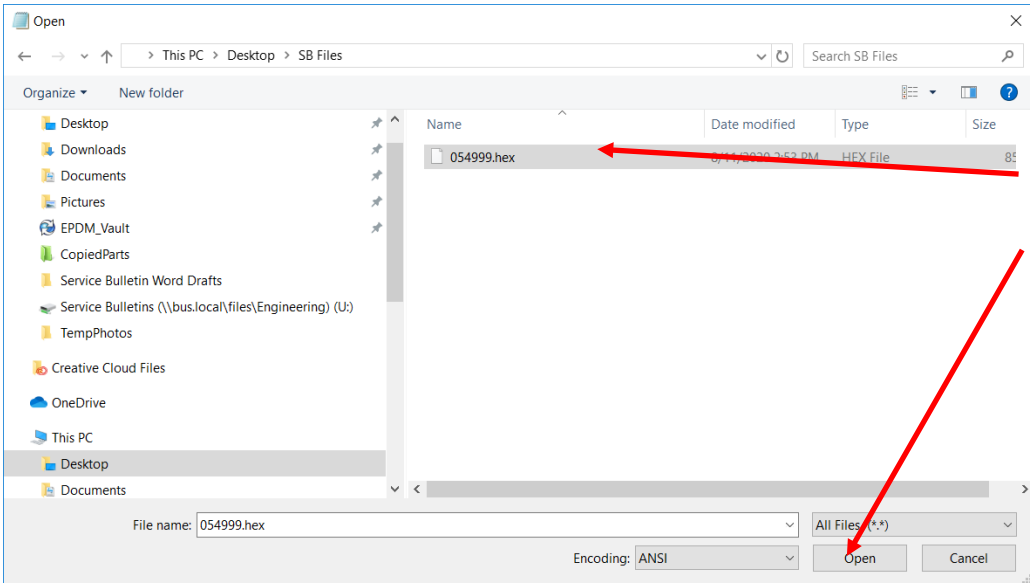
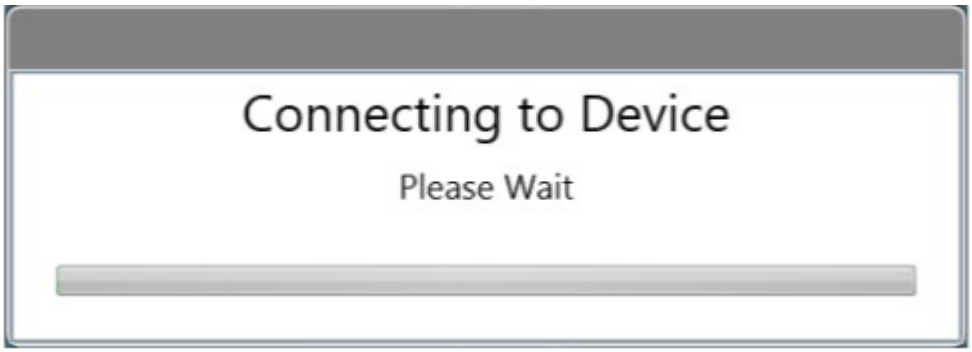
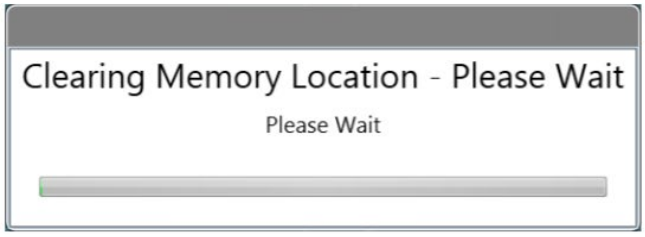
8. The following screen will be displayed. Navigate to the location where you stored the configuration file earlier. Select the software file downloaded previously and click “Open” to load the file.
   Note: The file name displayed should be 056501.hex.

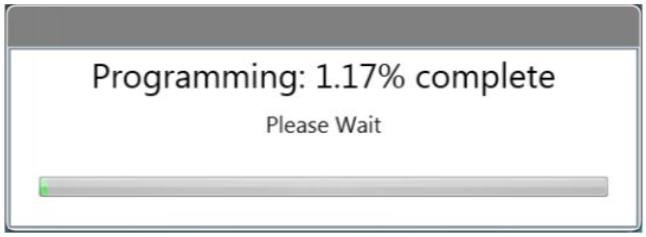


9. The Proterra Diagnostic Tool will attempt to connect to the device.



10. When the software update begins, the following screens will be displayed.





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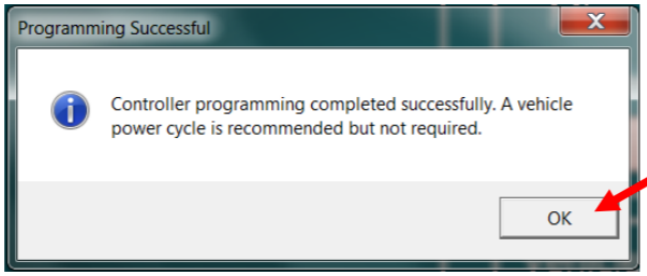
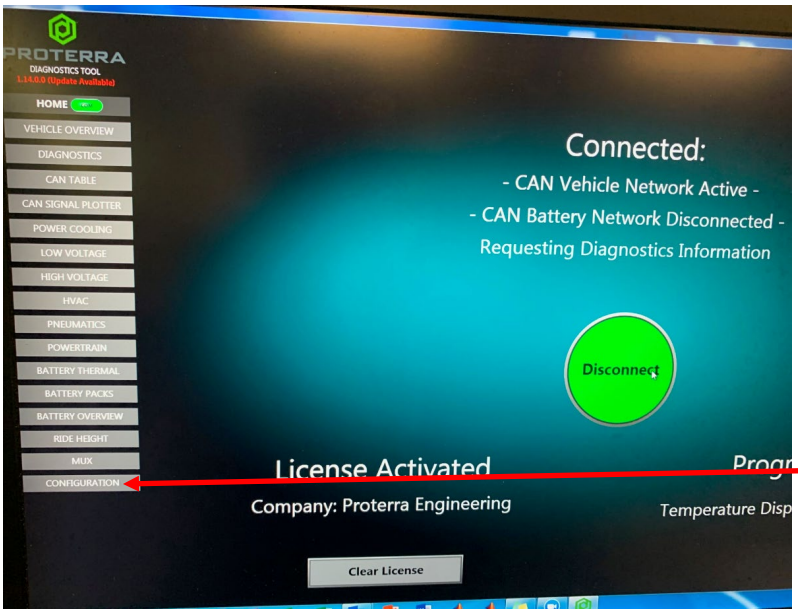
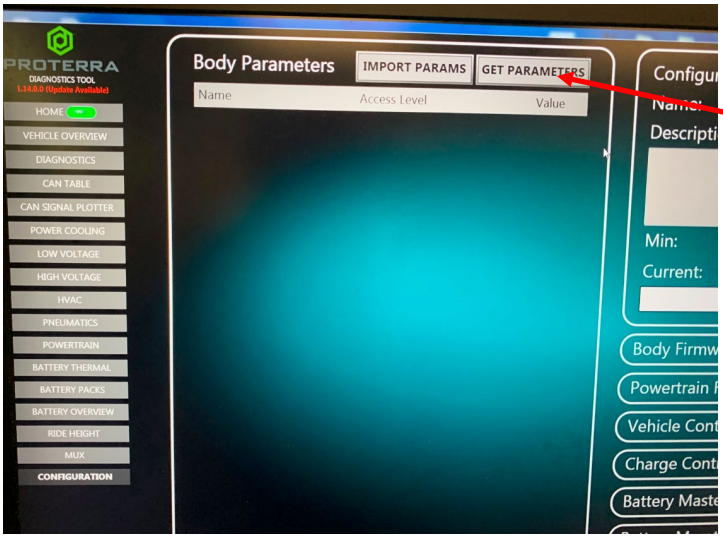
11. The software update may take several minutes to complete. When the update is complete the following will be displayed. Click the “OK” button to complete the update process.



12. On the main screen, click the “Configuration” Button.



13. The following screen will appear. Click on the “Get Parameters” button to download information for the vehicle. Allow a few seconds for the information to populate the screen.



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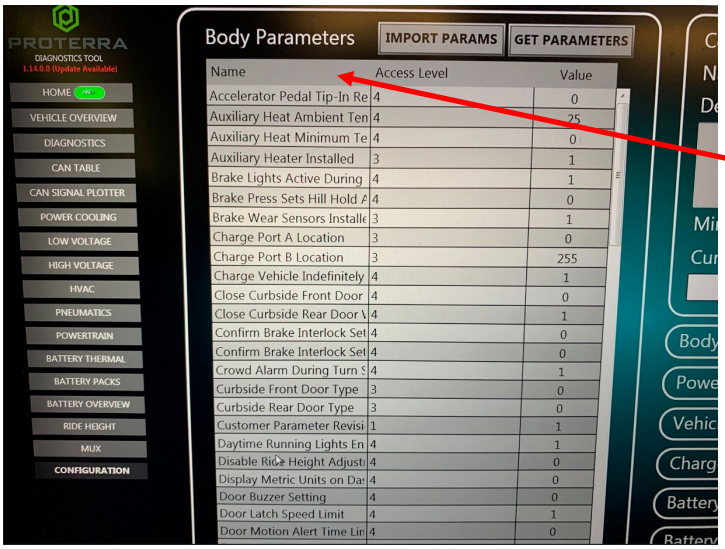
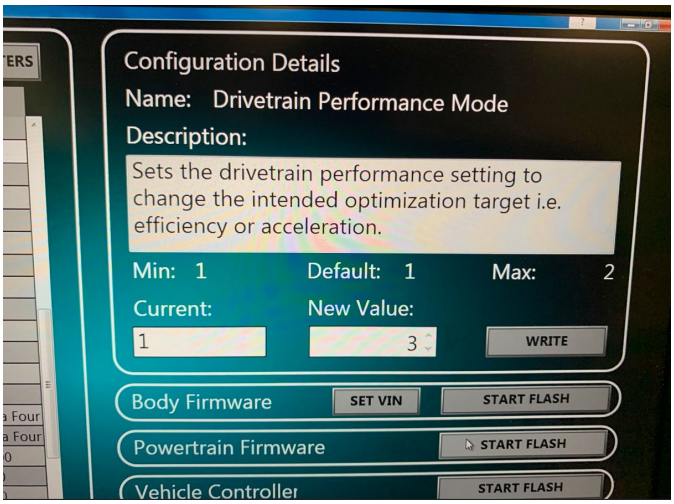
14. Once the screen has populated, sort the values alphabetically by clicking on the “Name” heading on the list.



Click Name

15. Scroll through the list to find the “EP_usi_ZR32_PerformanceMode_x”. Click on the name of this parameter. See the “Proterra Powertrain Configuration Overview” on page 13 of this document for a description of this parameter.

16. A screen similar to the following appears. The difference is the parameter name. The name should be “EP_usi_ZR32_PerformanceMode”.



17. Enter a 0 in the “New Value” box and hit the “Write Button”.

18. Scroll through the parameter list to find the “EP_usi_ZR32_AllowedRNDLConfiguration_xx” EEPROM value. See the “Proterra Powertrain Configuration Overview” on page 13 of this document for a description of this parameter.

19. Update the “EP_usi_ZR32_AllowedRNDLConfiguration_xx” value to 3.

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20. The software update is now complete.

21. Disconnect the cable from the OBD-II port.

22. Close the Streetside wheel well box

23. Return the bus to service.

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