



SERVICE BULLETIN

ISSUE DATE:	1/11/2019
SERVICE BULLETIN SUBJECT:	Catalyst 40 FC Vehicle Software Update
VINs or MODELS AFFECTED:	Park City Catalyst 40 FC Buses 1 through 6
COMPLETE BY:	Next Available Service Opportunity
SERVICE BULLETIN #:	SB-19-05

NOTICE! This service bulletin requires the completion of SB-18-38 prior to beginning this work.

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

CATALYST 40 FC VEHICLE SOFTWARE UPDATE

Description

The reason for this software update is to update various controllers. All the included Proterra Catalyst Fast-Charge vehicles require a change to the software/configuration for the following items:

- CCS Charger Controller
- DWP/Dash
- Powertrain Controller
- Body Controller (ZR)
- BMC Software

Summary of Software changes:

This update is to expand the max number of vehicles that can dock on the Proterra overhead charging system.

Tools/Programs Required:

Tools Required:

- Laptop Computer
- Proterra/Logena USB License Key (Hardlock)
- Logena Diagnostics Interface Connector (HS Light)
- NexIQ USB-Link 2
- PCAN Dongle (Optional)
- K-line USB Adapter
- USB to Serial Adapter
- Proterra OBD Breakout cable "Octopus"
- Programming Harness
- Kvaser Programming Tool
- License Dongle
- PCAN Dongle (Optional)
- Fine point permanent marker

Programs Required:

- Proterra Diagnostic Tool
- MicroBoot (optional)
- MotoServerRuntime RELEASE 8.13.7.178
- MotoTune RELEASE 8.13.7.178
- Ride7 suite installed
- ESS_MotoTune_Settings.xml

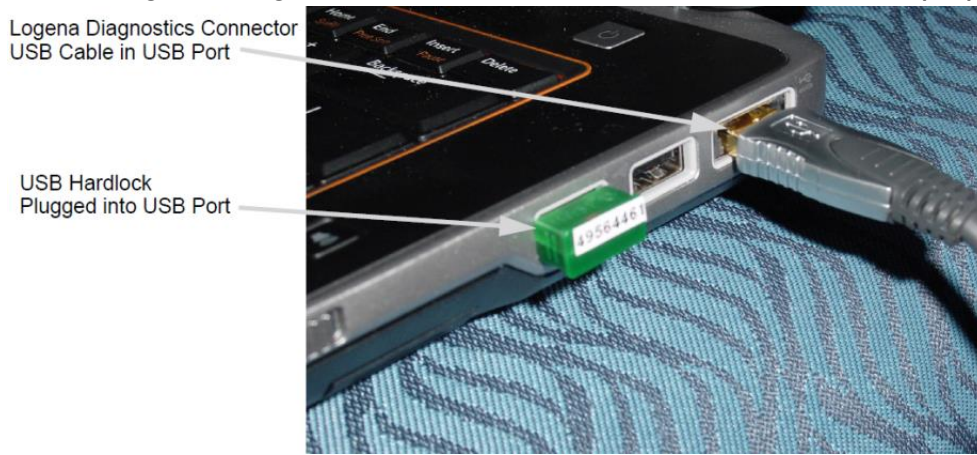
Software Files Required:

- 040289 (CC_2_0_2_release.srec)
- 037586.ZR32A_A (40.25)
- 0036018.hex (2.0.0)
- BMC_CatalystFC_Ver3_0_7.srz
- 031728_rev6.zip

Update the Charge Station EPROM:

IMPORTANT! There should be no bus attempting to dock while performing this Service Bulletin. Be sure no buses are docking or charging before beginning work.

1. Press the emergency stop on the charger so that no vehicles may dock.
2. Power up (boot) the Proterra-supplied laptop containing the Proterra/Logena Service Tool software.
3. Verify that the USB hardlock is installed in one of the laptop USB ports and that the USB cable for the Logena Diagnostics Connector is installed in one of the laptop USB ports.



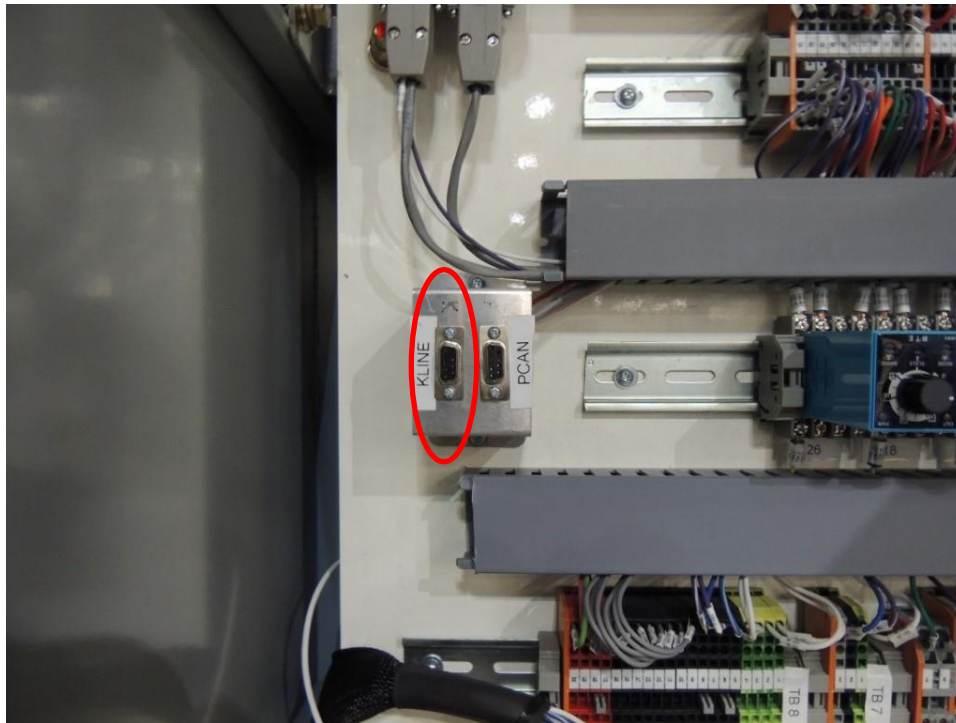
4. Verify that the other end of the USB cable for the Logena Diagnostics Connector is installed in the Logena HS Light Diagnostics Interface Box.



5. Connect the Logena Diagnostics Interface Box to the OBD2 to DB9 Converter.



6. Connect the OBD2 to DB9 Converter to the K LINE port **located in the Docking Control Box.**

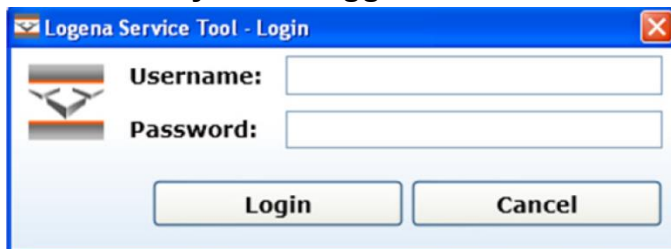


7. On the laptop, double-click on the Logena Service Tool software icon to start the Logena Diagnostics program.

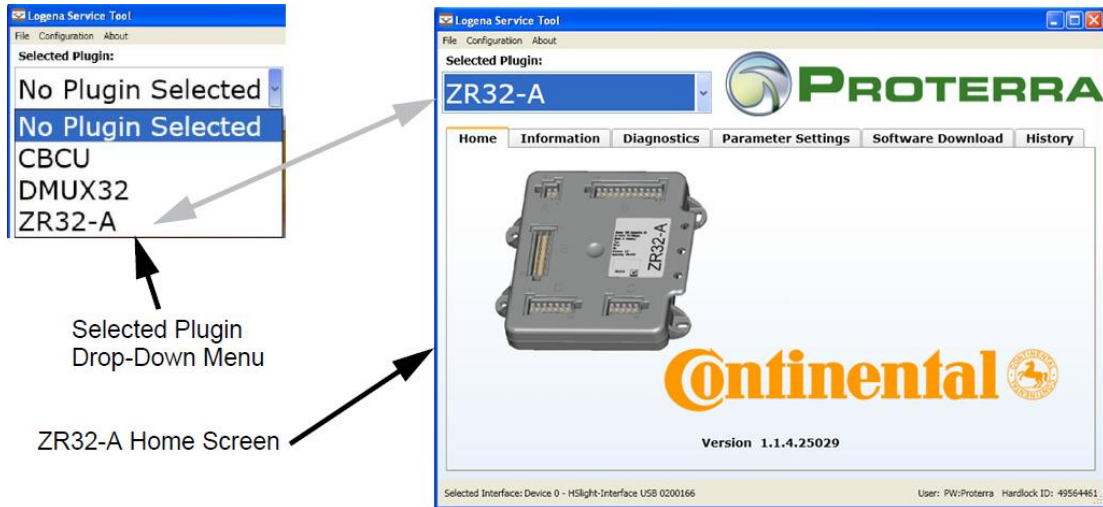


8. On the Logena Service Tool - Login screen, enter your supplied Username and Password, then click the Login button.

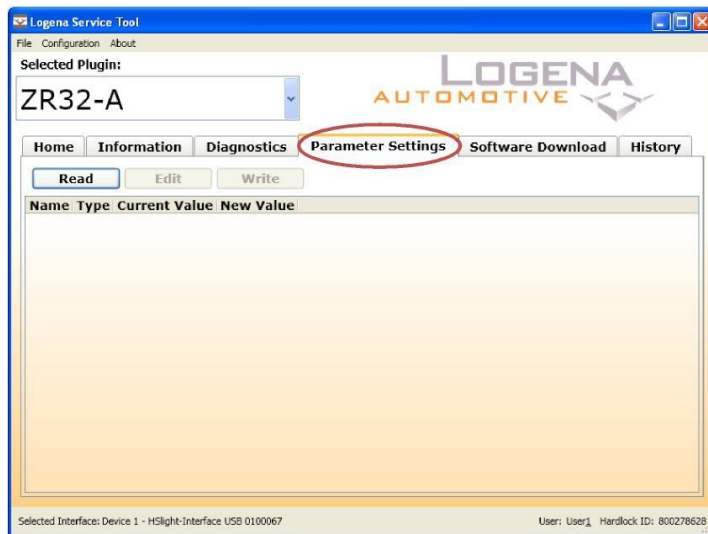
Ensure that you are logged into the “Service” access of Logena!



9. From the Logena Service Tool - Home Screen, click the Selected Plugin down arrow and then select ZR32-A from the list. The ZR32-A Home screen will be displayed.



10. From the ZR32-A Home Screen, select the "Parameter Settings" tab.



11. On the Parameter Settings tab, click the "Read" button to read all EEPROM parameters.
12. In the parameters list, locate the variable "EP_bo_UseLongBusNumber" by scrolling through the list and/or by sorting by the "Name" column.
13. Click on the "EP_bo_UseLongBusNumber" line item and click "Edit".
14. Change the value to **1** and then click "Write".
15. Again click "Read" to refresh the list of Parameters. The value in the "Parameters" List should now show "1".
16. Close the Logena program and disconnect the laptop.

Update the Charge Controller Software for Customer Vehicles (using Proterra Diagnostic Tool):

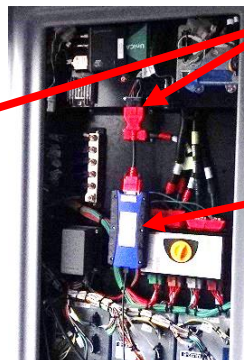
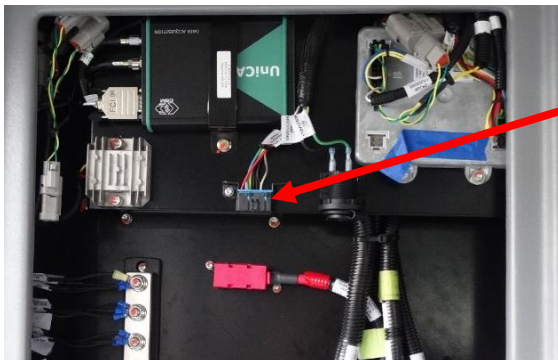
The purpose of this procedure is to update the Charge Controller software version using the Proterra Diagnostics Tool.

Note: See the next section for performing this procedure using the alternate Microboot method)

1. Access the following folder to obtain the new configuration file:
<\\BUS.Local\\files\\Engineering\\Service Bulletins\\Service Bulletin Files for SB-19-05\\Charge Controller\\>
2. Copy the software file **42089 (CC 2 0 2.srec)** to a known location on the service technician's computer (Folder or Desktop).
IMPORTANT! NEVER access the software from the USB memory device, ALWAYS copy the software files to your computer hard drive and access the software from this location.
3. Turn **ON** the 12/24V rear Master Disconnect located behind the vehicle curbside rear upper access panel.
4. Turn **OFF** the bus High-Voltage Master Switch at the Driver's Workplace and ensure the Dash screen is **OFF**.
5. Power up (boot) the Proterra-supplied laptop containing the Proterra Diagnostic Tool.
6. Connect the Nexiq USB Link to the laptop.



7. Connect the Nexiq USB Link to the Diagnostic Port located on the street side wheel well electronics cabinet (eCab).



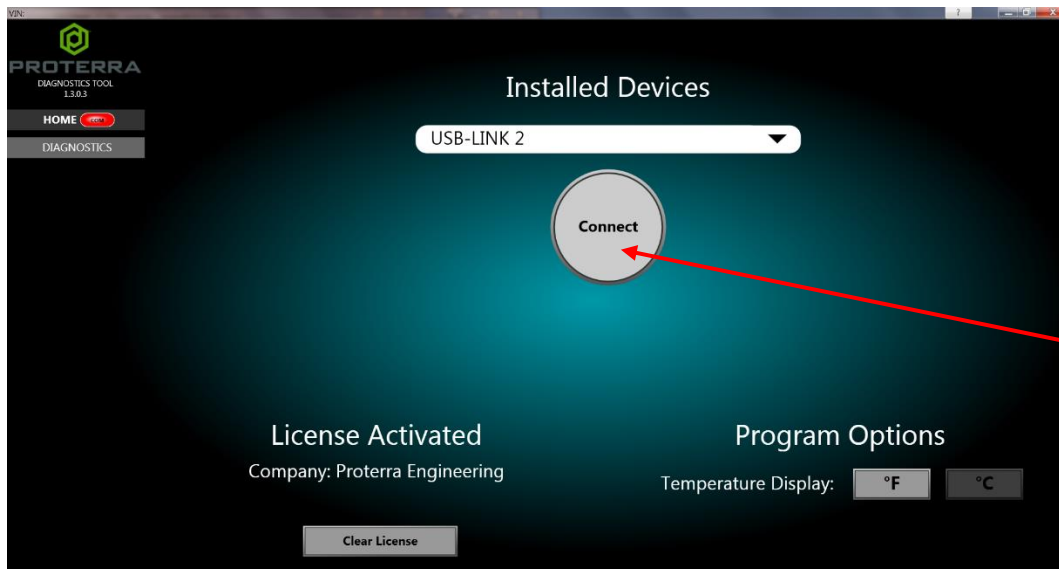
Diagnostic Port

Nexiq USB Link

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

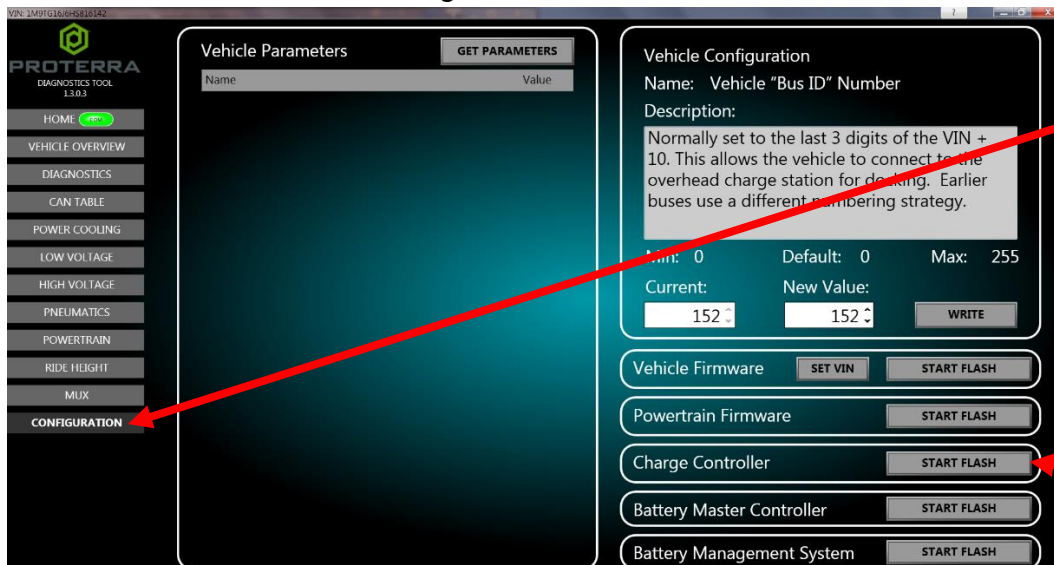


9. On the Proterra Diagnostics screen, select “USB-LINK 2” in the drop-down box then click the “Connect Button.”



Click Connect

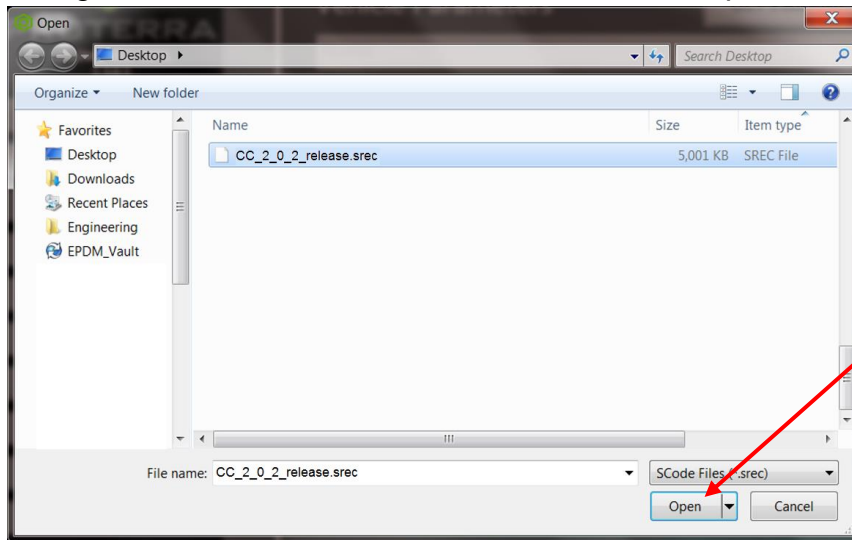
10. The Home screen will open. Click on the “Configuration Button” to open the Configuration screen and then click the Charge Controller “Start Flash” Button.



Click Configuration

Beside Charge Controller, Click Start Flash

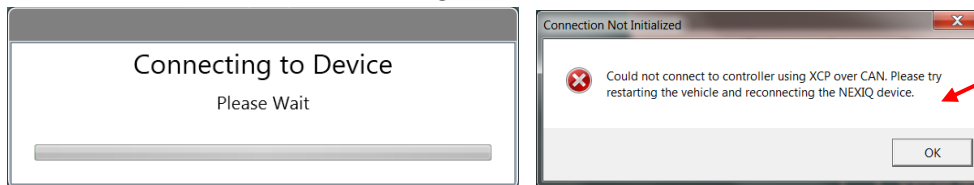
11. The following screen will be displayed. Navigate to the location where you stored the configuration file earlier. Select the file and click “Open” to load the file.



Select the file and
Click Open

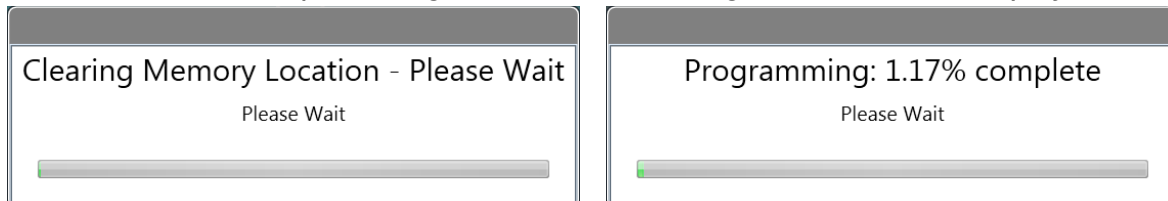
12. The Proterra Diagnostic Tool will attempt to connect to the device.

NOTE: You may receive an error on the first attempt. If so, retry by clicking the Charge Controller Start Flash button again.

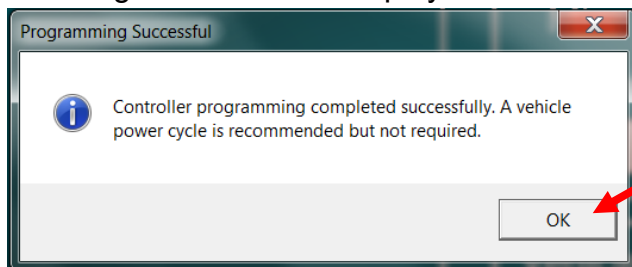


Error message on
failed first attempt

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



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



Click OK

15. The software update is now complete.

Update the Charge Controller Software for Customer Vehicles (Microboot, alternate method):

The purpose of this procedure is to update the Charge Controller software version.

1. Access the following folder to obtain the new configuration file:
<\\BUS.Local\\files\\Engineering\\Service Bulletins\\Service Bulletin Files for SB-19-05\\Charge Controller\\>
2. Copy the software file **42089 (CC 2 0 2.srec)** to a known location on the service technician's computer (Folder or Desktop).
IMPORTANT! NEVER access the software from the USB memory device, ALWAYS copy the software files to your computer hard drive and access the software from this location.
3. Turn **ON** the 12/24V rear Master Disconnect located behind the vehicle curbside rear upper access panel.
4. Turn **OFF** the bus High-Voltage Master Switch at the Driver's Workplace and ensure the Dash screen is **OFF**.
5. Power up (boot) the Proterra-supplied laptop containing the MicroBoot executable file.
6. Connect the octopus cable to the OBD port located in the Rear Deck of the bus
7. Connect the PCAN dongle to the PCAN connection on the octopus cable.
8. Verify no other CAN utilities are running on the laptop; close PCAN Explorer, Proterra Diagnostic Tool, etc.
9. Connect PCAN dongle to the USB port on the laptop
10. Launch MicroBoot on the laptop
11. Use the "Browse" button to navigate to and select the SREC file to be loaded.
 - a. The software will load automatically from this point
12. The software update may take several minutes to complete. When the update is complete the following screen will be displayed. Click the "OK" button to complete the update process
13. The software update is now complete.

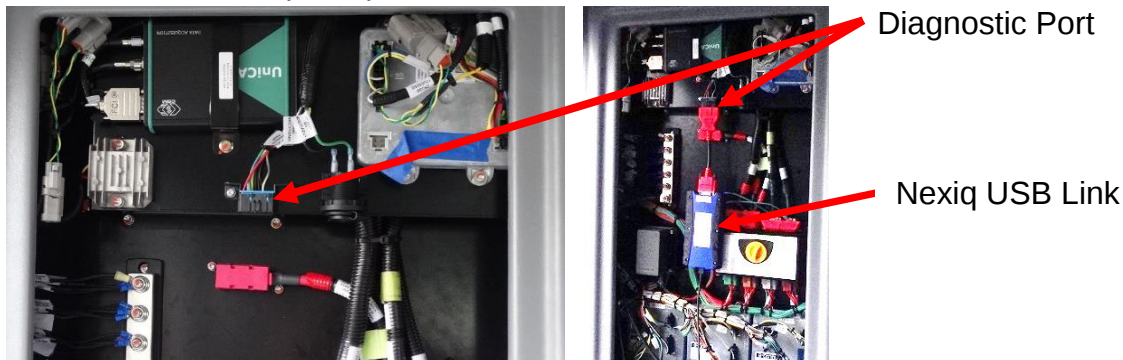
Update the Powertrain Controller Software for Customer Vehicles (Proterra Diagnostic Tool):

The purpose of this procedure is to update the Powertrain Controller software version.

1. Access the following folder to obtain the new configuration file:
<\\BUS.Local\\files\\Engineering\\Service Bulletins\\Service Bulletin Files for SB-19-05\\Powertrain\\>
2. Copy the software file **036018.hex** to a known location on the service technician's computer (Folder or Desktop).
IMPORTANT! NEVER access the software from the USB memory device, ALWAYS copy the software files to your computer hard drive and access the software from this location.
3. Turn **ON** the 12/24V rear Master Disconnect located behind the vehicle curbside rear upper access panel.
4. Turn **ON** to low voltage the bus High-Voltage Master Switch at the Driver's Workplace and ensure the Dash screen is **ON**.
5. Power up (boot) the Proterra-supplied laptop containing the Proterra Diagnostic Tool.
6. Connect the Nexiq USB Link to the laptop.



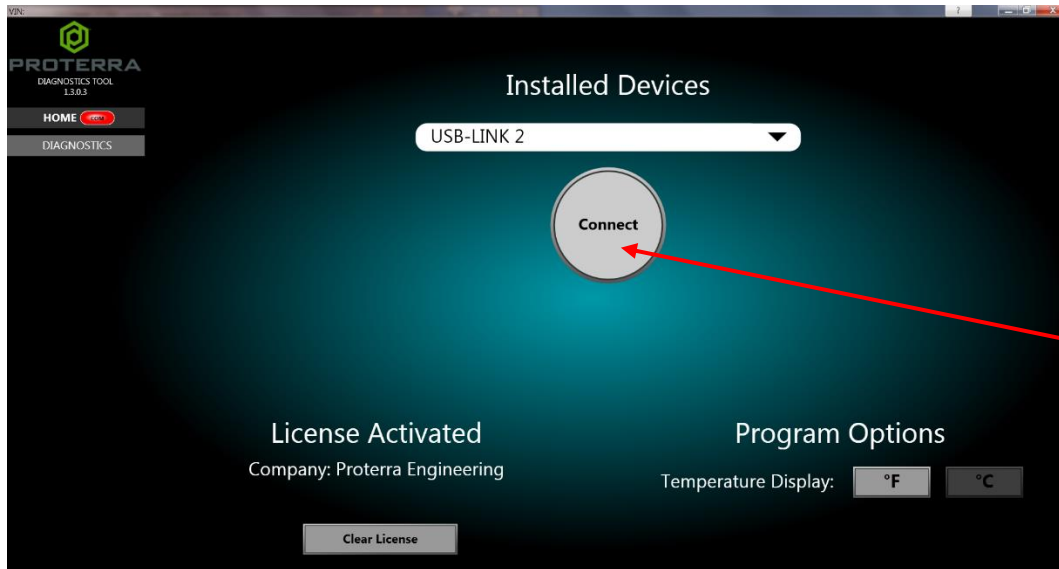
7. Connect the Nexiq USB Link to the Diagnostic Port located on the street side wheel well electronics cabinet (eCab).



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

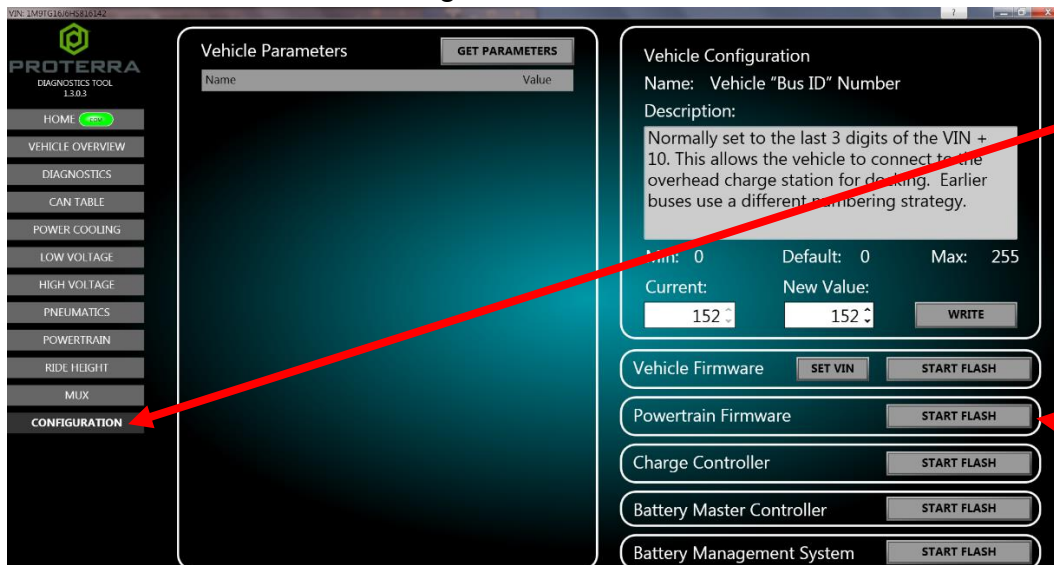


9. On the Proterra Diagnostics screen, select “USB-LINK 2” in the drop-down box then click the “Connect Button.”



Click Connect

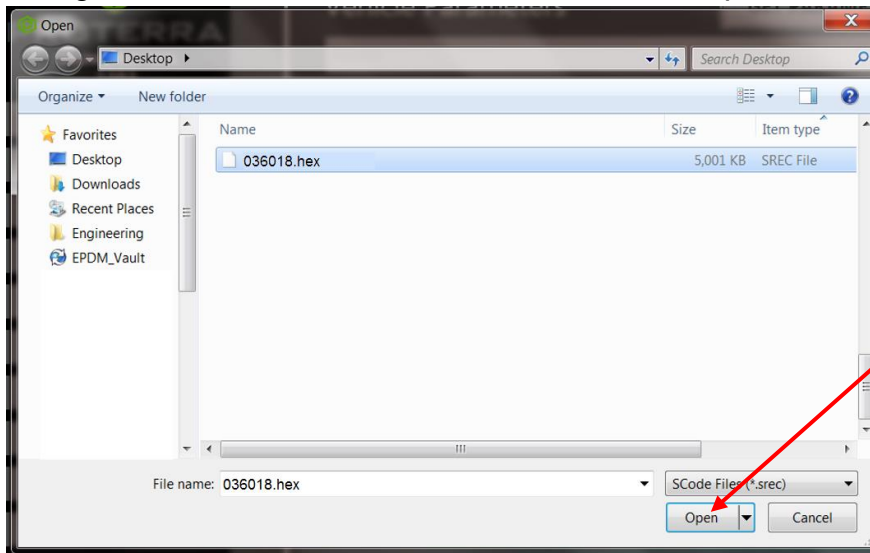
10. The Home screen will open. Click on the “Configuration Button” to open the Configuration screen and then click the Charge Controller “Start Flash” Button.



Click Configuration

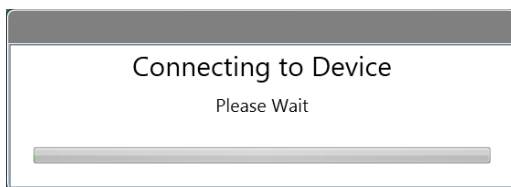
Beside Powertrain, Click Start Flash

11. The following screen will be displayed. Navigate to the location where you stored the configuration file earlier. Select the file and click “Open” to load the file.

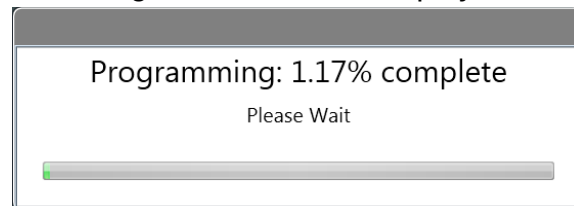
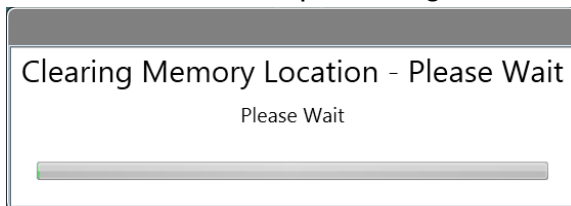


Select the file and
Click Open

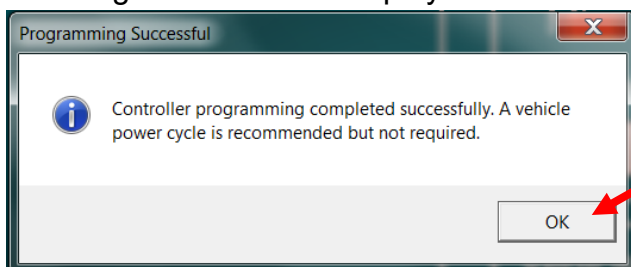
12. The Proterra Diagnostic Tool will attempt to connect to the device.



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



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



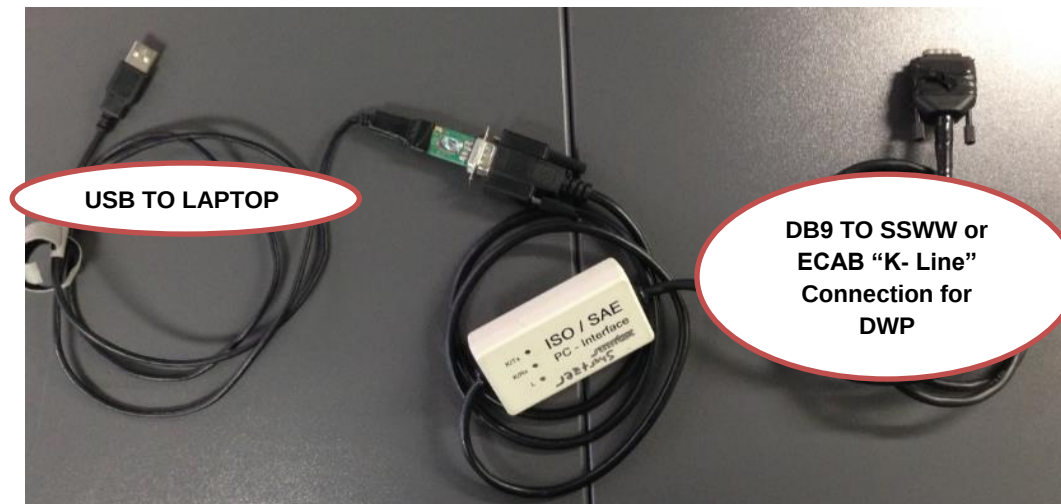
Click OK

15. The software update is now complete.

Update DWP - Driver Workplace Configuration:

The purpose of this procedure is to update the driver workplace (dash screens) configuration to deploy the new look of the Proterra Dash.

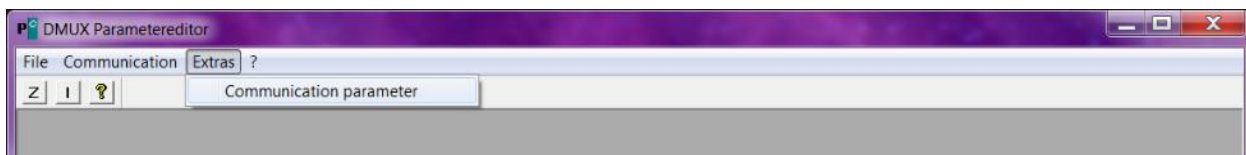
1. Access the following folder to obtain the new configuration file:
<\\BUS.Local\\files\\Engineering\\Service Bulletins\\Service Bulletin Files for SB-19-05\\DWP Dash\\>
2. Copy file **031728_rev6.ZIP** to the service technician's laptop's local drive.
NOTICE: DO NOT Unzip the archive to a directory on your computer's hard drive. The download will use the zip file. Simply copy the zip file to your computer's hard drive.
3. Connect the USB-Serial Port adapter to your computer. Connect the K-Line Adapter to the USB to serial adapter. Connect the K-Line Adapter to the OBD Breakout "K-Line" programming port (and connect it to the OBD connection at the street side front wheel well).
NOTE: Make sure you have the K-Line adapter connected to the K-Line connection to the OBD Breakout cable and not the PCAN DB9.



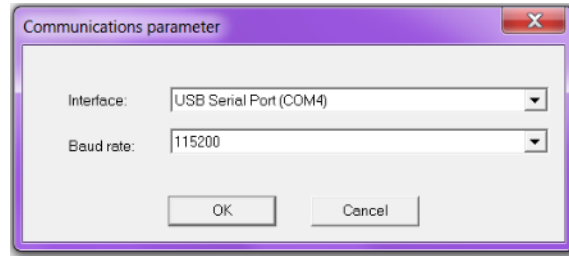
4. Open the "Parametereditor" version 3 software. If you do not have this version, please contact Proterra Engineering.



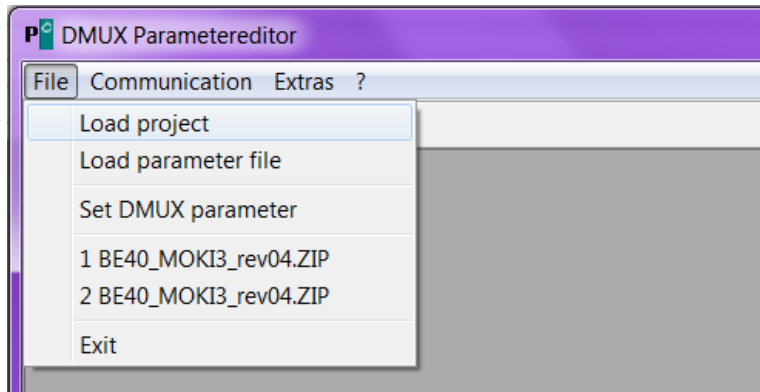
5. On the Parametereditor toolbar, select "Extras" and then "Communications Parameter".



6. Ensure the communication parameters are correctly set. Your COM port may be a different number.



7. On the Parametereditor toolbar, select “File” and then “Load Project”.



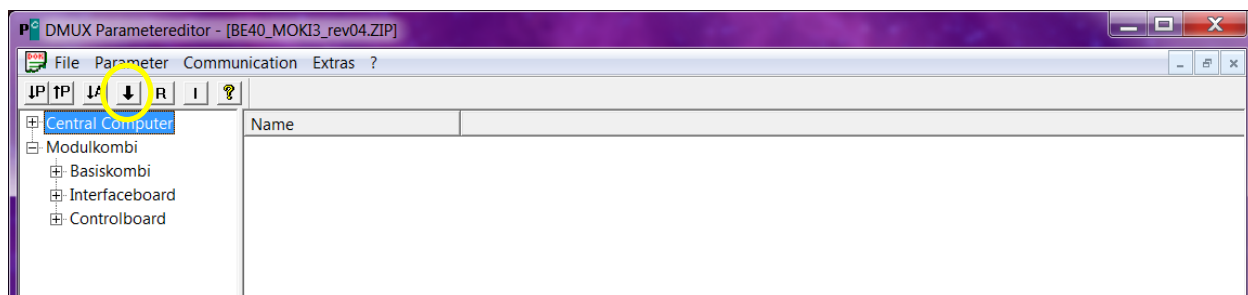
8. Open the folder where the Driver Work Place configuration is stored, and select the appropriate *.ZIP file from above.

9. Switch the vehicle Low Voltage On to give power to the Driver’s Work Place.

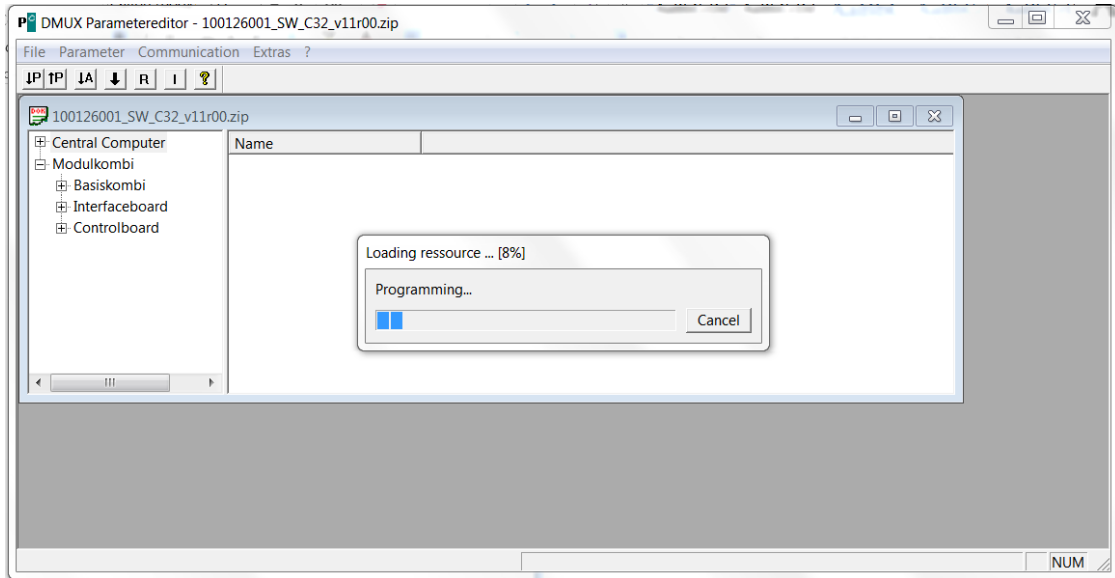
10. **IMPORTANT!** Before downloading the selected software:

- Ensure that the 12/24V rear Master Disconnect is switched **ON**.
- Ensure the Driver’s Workplace Master Switch is switched **OFF**.
- Ensure the Driver’s Hazard switch is switched **ON** and the Dash screen is **ON**.

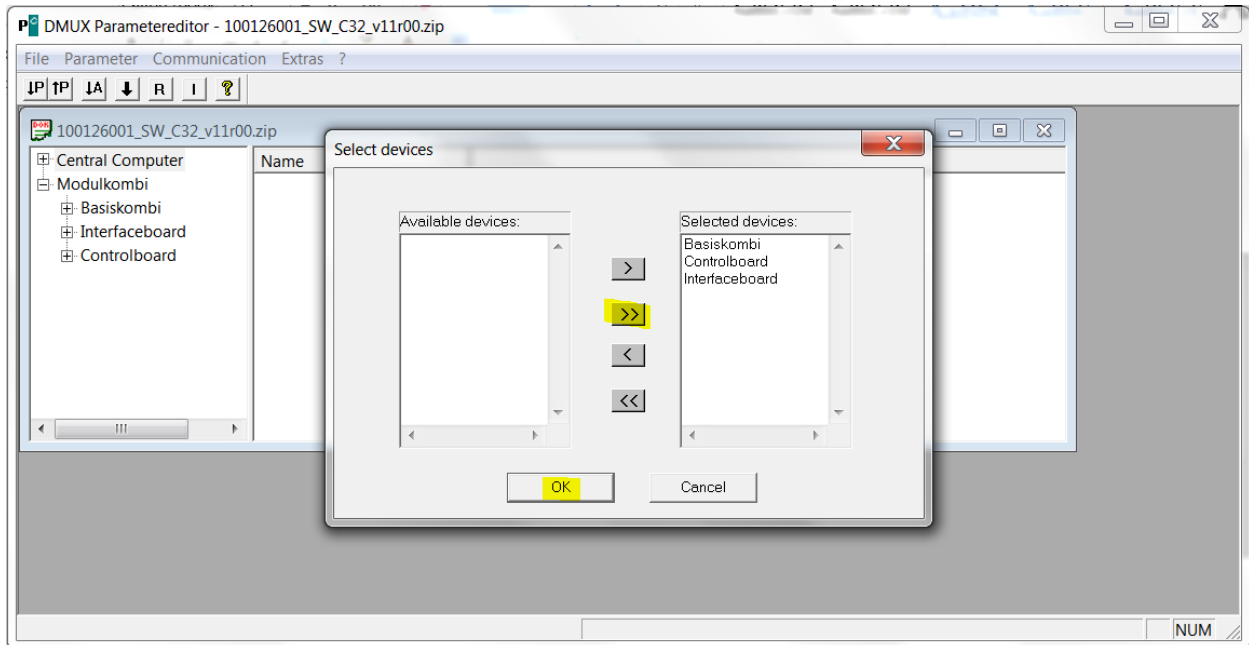
11. **Select** “Load All” (the large down arrow with no letter label next to it):



12. The download should begin and takes about 10 minutes (approximately):
- The vehicle dash may flash on and off a few times during the process.
 - The low voltage contactors may cycle on and off a few times during the process.
 - Ensure that the 12/24V batteries remain charged during the download.

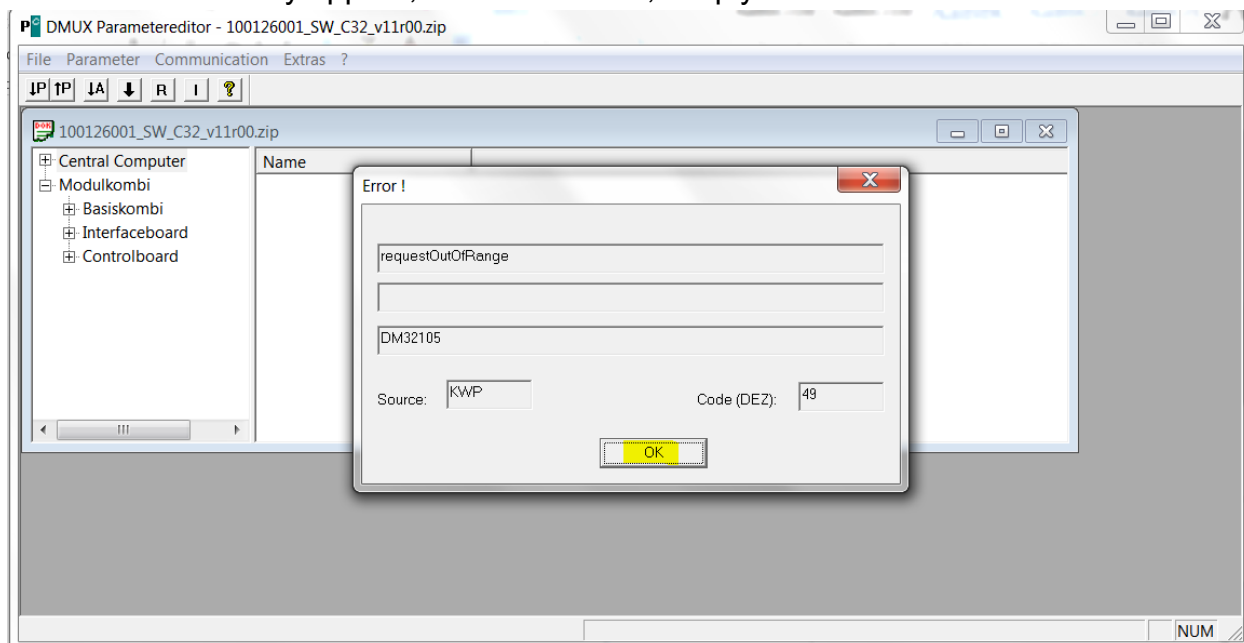


13. When “Select Devices” screen appears, select the double arrows to the right and click “OK”.



14. Wait about 1 minute.

15. An Error screen may appear, which is normal, simply click “OK”.



16. Wait 1 minute.

17. When the download is complete, the lights on the dash should stop flashing.

18. The DMUX/DWP is now configured and you can proceed to the next task.

Updating BMC Software

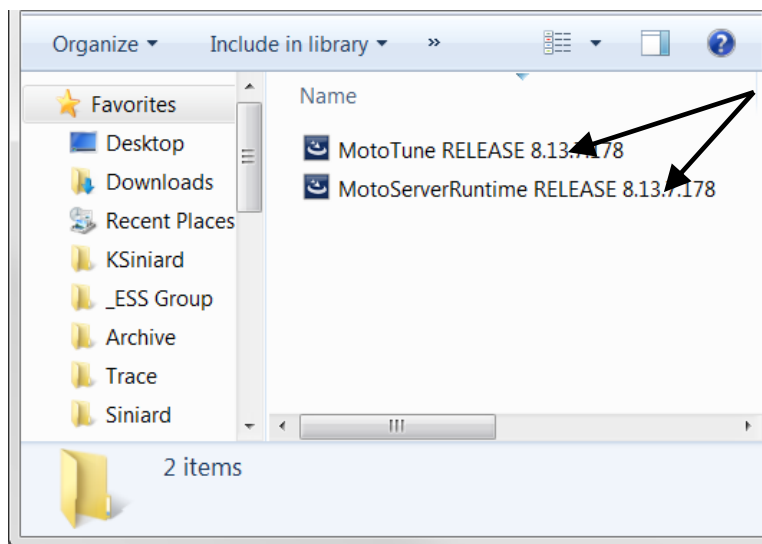
Perform the following to install the BMC Software.

Installing MotoTune Software

IMPORTANT: If software is already installed jump to BUS SETUP section.

This procedure will flash the Proterra BMC with the correct software.

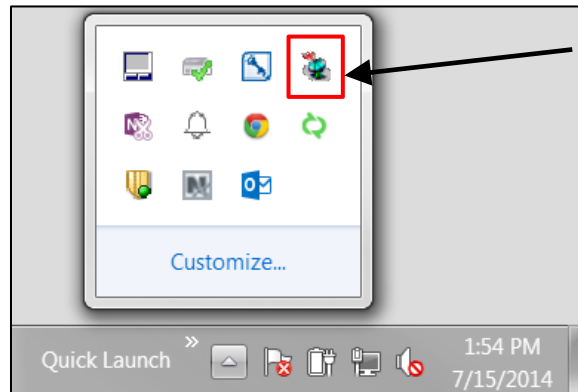
1. Navigate to: **\\bus.local\\files\\Engineering_ESS Group\\Software\\MotoTune.**
2. Download all files to your laptop desktop.
3. Install **MotoServerRuntime RELEASE 8.13.7.178**. Use default settings.
4. Install **MotoTune RELEASE 8.13.7.178**. Use default install settings.



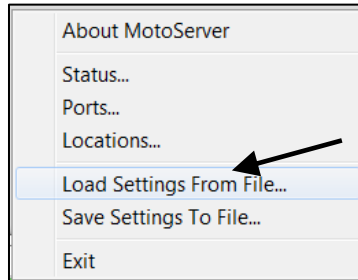
5. Navigate to: **\\bus.local\\files\\Engineering_ESS Group\\Software\\MotoService.**
6. Download all files to your laptop desktop.
7. Install MotoService RELEASE 10.0.0.244.exe

Initial Software Setup

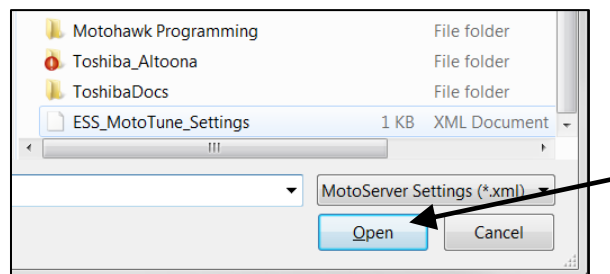
- 1) Open the MotoTune software.
- 2) Right click on the antenna icon in the system tray.



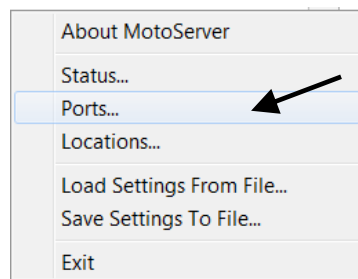
- 3) Select "Load Settings From File" from the menu.



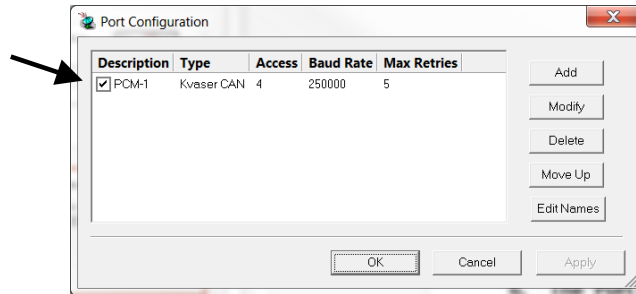
- 4) Locate the downloaded "**ESS_MotoTune_Settings.xml**" and then click Open.
NOTE: These settings will be active each session until changed by the user.



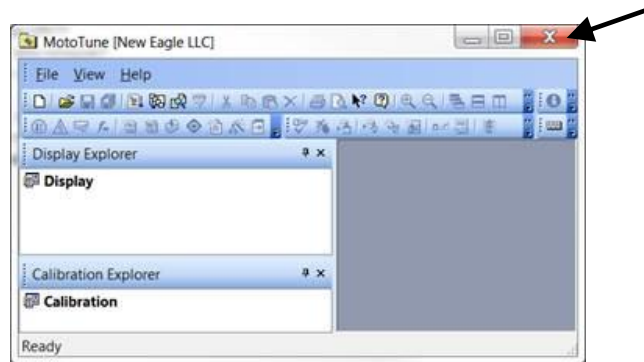
- 5) Right click on the MotoTune antenna icon and select 'Ports' from the menu.



- 6) The 'Port Configuration' window should now display the settings shown below. Make sure PCM-1 is selected.



- 7) Click OK.
- 8) Exit the Moto Server Software by selecting the exit "X" from top menu. Moto Server Software appears on the system tray when MotoTune is open and will exit when the user exits MotoTune.



Bus Setup

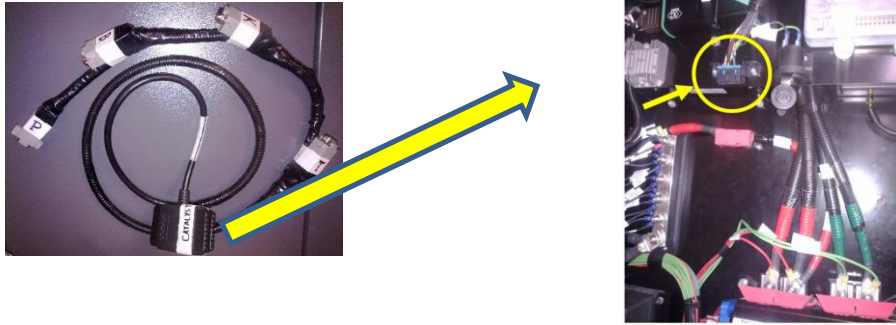
1. Equipment Needed: Kvaser programming tool, license dongle, CAN breakout cable.



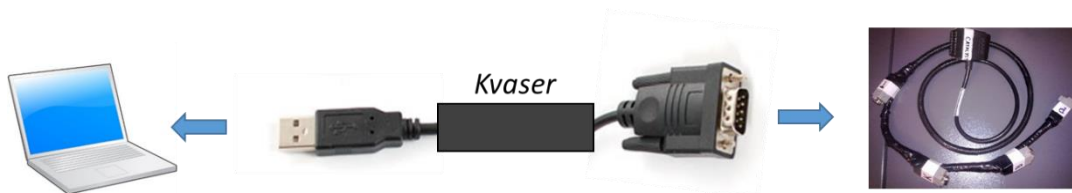
2. Power ON the bus at the Driver's Workplace (low voltage ON), and make sure the Master Disconnect Switch in the rear curbside access panel is ON.
3. Plug in license dongle to laptop USB port.



4. Plug in breakout cable to the bus port in the front access panel.



5. Connect DB9 side of Kvaser tool to 'PCAN' on the breakout cable, and the USB side to the laptop.

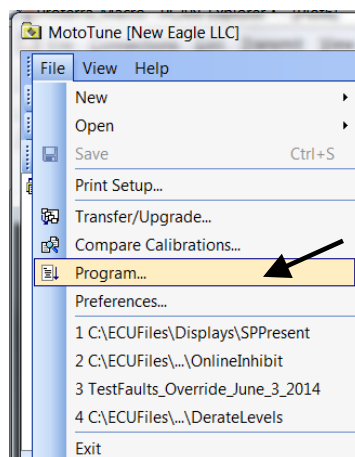


Programming

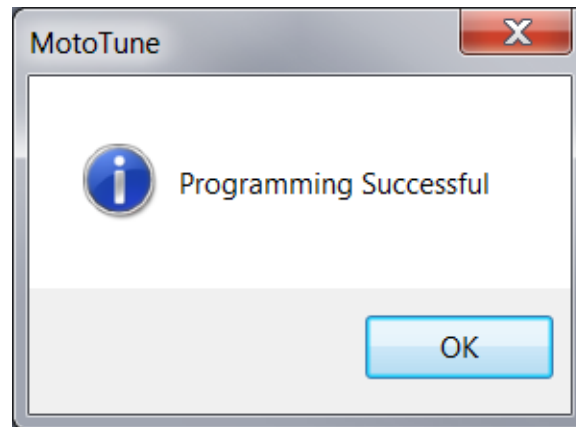
1. Open MotoTune software.



2. Under the 'File' menu select 'Program.'



3. In the bottom left corner, ensure that the Location selected is PCM-1. If not, select it from the drop down menu. See below.
4. Locate and select the downloaded .srz file you would like to flash to the controller (**BMC_CatalystFC_Ver3_0_7.srz**). Access the following folder for the new file and download it to your laptop desktop: <\\bus.local\\files\\Engineering\\Service Bulletins\\Service Bulletin Files for SB-19-05\\BMC\\>
5. With file selected from your desktop, click Open.
6. MotoTune will complete the software update, and a 'Programming Successful' dialog box should be displayed.



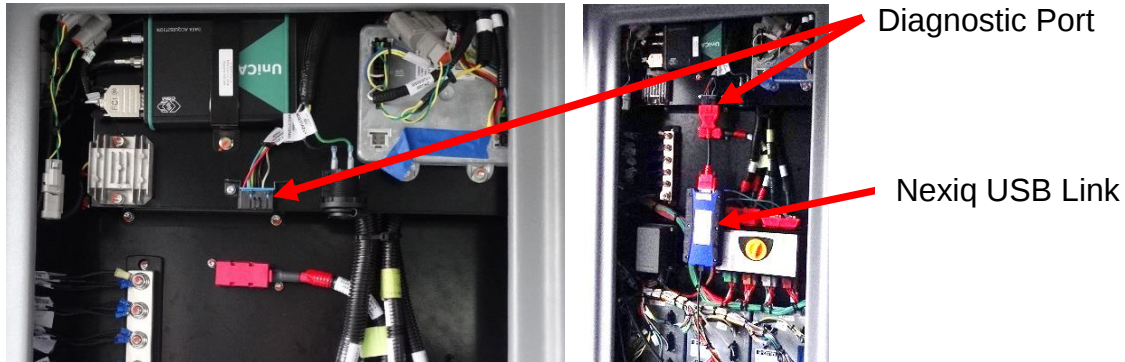
Update the Body Controller Software for Customer Vehicles (Proterra Diagnostic Tool):

The purpose of this procedure is to update the Body Controller software version. This update process has been designed to maintain body controller parameter configuration data across the flash download of new software. Certain added EEPROMs may need to be checked in the new version after flash is complete.

1. Access the following folder to obtain the new configuration file:
<\\BUS.Local\\files\\Engineering\\Service Bulletins\\Service Bulletin Files for SB-19-05\\Body Controller\\>
2. Copy the software file **037586.ZR32A_A** to a known location on the service technician's computer (Folder or Desktop).
IMPORTANT! NEVER access the software from the USB memory device, ALWAYS copy the software files to your computer hard drive and access the software from this location.
3. Turn **ON** the 12/24V rear Master Disconnect located behind the vehicle curbside rear upper access panel.
4. Turn **OFF** the bus High-Voltage Master Switch at the Driver's Workplace and ensure the Dash screen is **OFF**.
5. Turn **ON** the bus "programming switch" at the streetside wheel well box.
6. Power up (boot) the Proterra-supplied laptop containing the Proterra Diagnostic Tool.
7. Connect the Nexiq USB Link to the laptop.
Note: Using a USB cable connection, rather than Wi-Fi, is highly recommended.



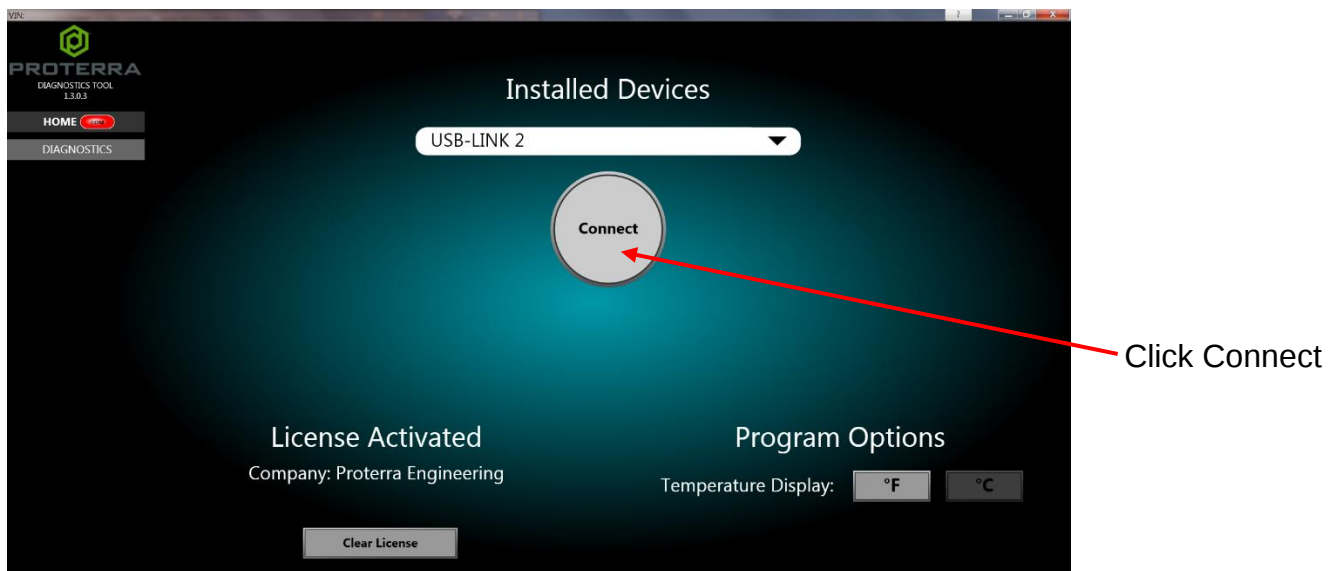
8. Connect the Nexiq USB Link to the Diagnostic Port located on the street side wheel well electronics cabinet (eCab).



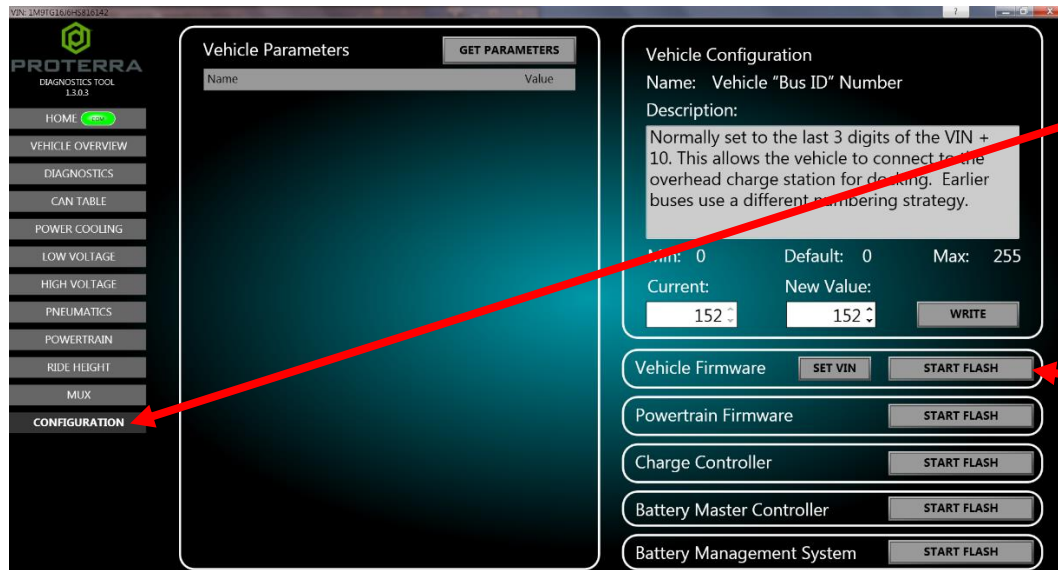
9. On the laptop, double-click on the Proterra Diagnostics Tool software icon to start the software.



10. On the Proterra Diagnostics screen, select “USB-LINK 2” in the drop-down box then click the “Connect Button.”



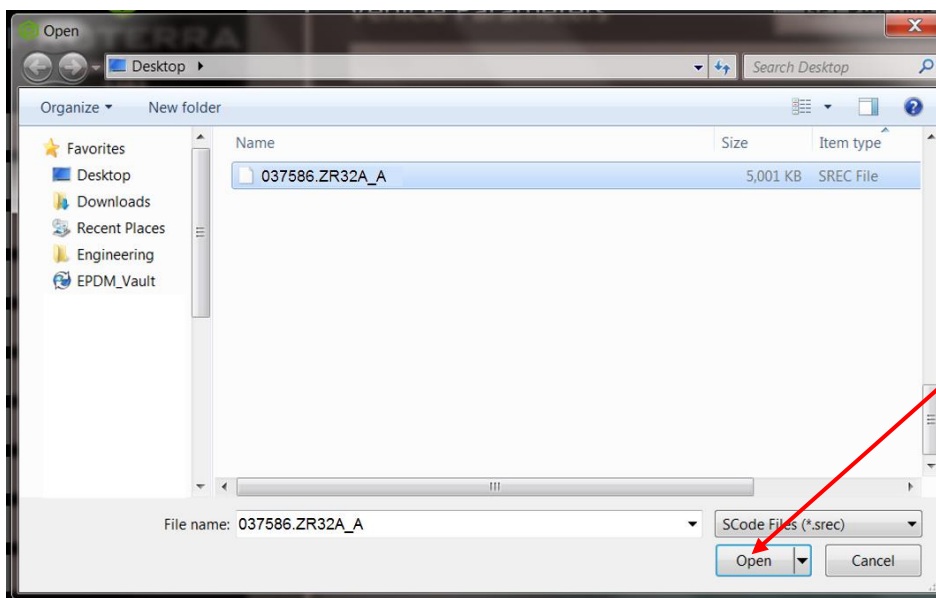
11. The Home screen will open. Click on the “Configuration Button” to open the Configuration screen and then click the ESM Controller “Start Flash” Button.



Click
Configuration

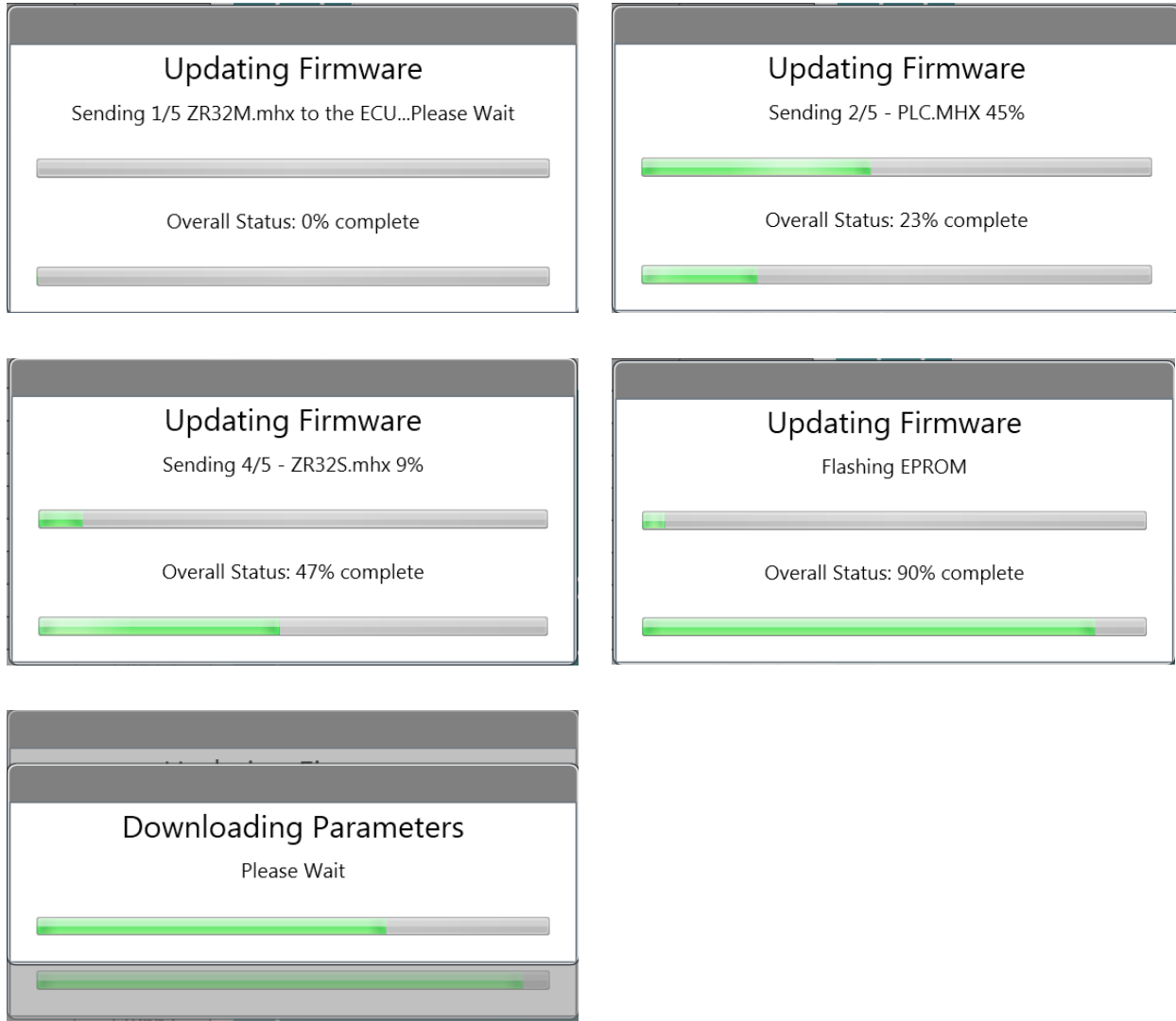
Beside Vehicle
Firmware, Click
Start Flash

12. The following screen will be displayed. Navigate to the location where you stored the configuration file earlier. Select the file and click “Open” to load the file.

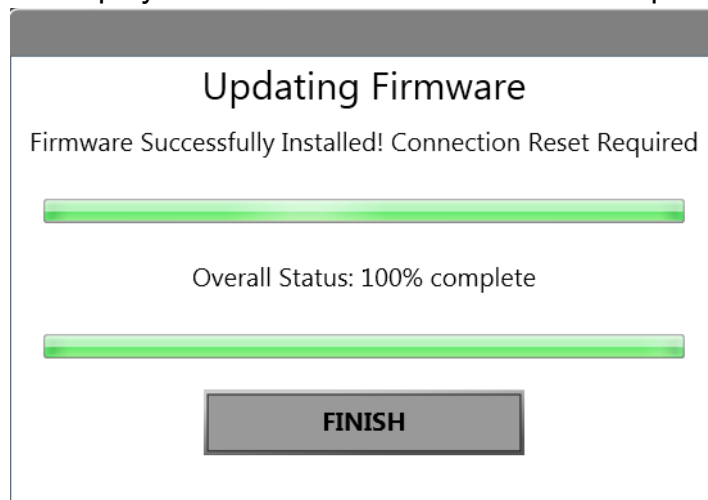


Select the file and
Click Open

13. The Proterra Diagnostic Tool will connect to the device, and the following screens are displayed.



14. The software update will take several minutes to complete. When the update is complete the following screen will be displayed. Click the "Finish" button to complete the update process.



Set the bus Number EPROM:

NOTICE! This process is **REQUIRED** to correctly set the bus number. The vehicle will not function properly until this is completed.

1. Set the Bus Number EPROM using the Proterra Diagnostic Tool.
2. If necessary, use the Logena Tool to verify the bus number and change as needed.

Verification of Customer Configuration:

The purpose of this verification is to ensure that through this Service Bulletin the vehicle software has been properly configured for the customer.

PLEASE NOTE: This could be a liability concern if the Verification plan is not performed and documented completely, as the customer expects the vehicle to perform in a certain way which can only be guaranteed by following the configuration process.

IMPORTANT! After verifying customer configuration, ensure that the vehicle powers up with no faults and is capable of Fast Charging at the Charge Station.