MEMORANDUM

DATE: ***August 23, 2023***

TO: Justin Lamar
Noah Bardwell
Jeffrey Bernath
Andrew Williams
Mike Mingee

FROM: Seth Kenney

RE: T-Rex/Flotilla Service Tool User Guide

The purpose of this guide is to outline the features and functionality of our new Karcher Software Suite.

Main screen

User Sign In

User sign in is not required for general use, however some advanced functionality is locked behind this option.

Currently the implementation allows for four levels of access based on how the user signs in to the application. The levels are Basic, OEM, Factory, and Engineering. Without any sign in the mode defaults to Basic and some functionality is hidden. The default user and password for the OEM user are ‘oem’ for both fields. Similarly for Factory mode the default log in for both fields is ‘factory’. The only outlier mode is engineering mode which has all functionality unlocked. The default username and password for this mode is ‘lab’ in both fields.

When in ‘Lab Mode’ the user is able to change machine-critical information such as DMC configurations, as well as use the Phoenix CLI tool and CAN Spy tool. These tools should remain locked behind engineering access so that the user does not accidentally change anything on the machine that would alter intended functionality.

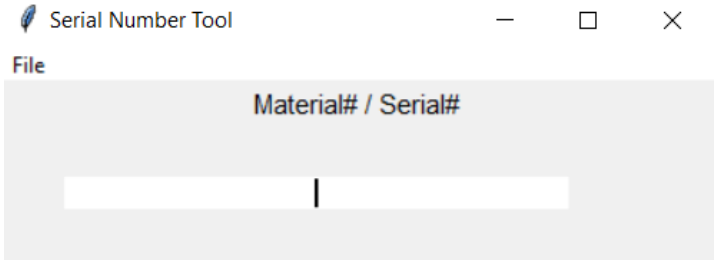
T-Rex Specific Operations

Connecting to/Programming the machine

Programming the T-Rex machine works the same as with previous software. Please refer to the Updating Firmware section of the “Field Service Programming Instructions” for the T-Rex version (Deluxe or Kira) that is being used.

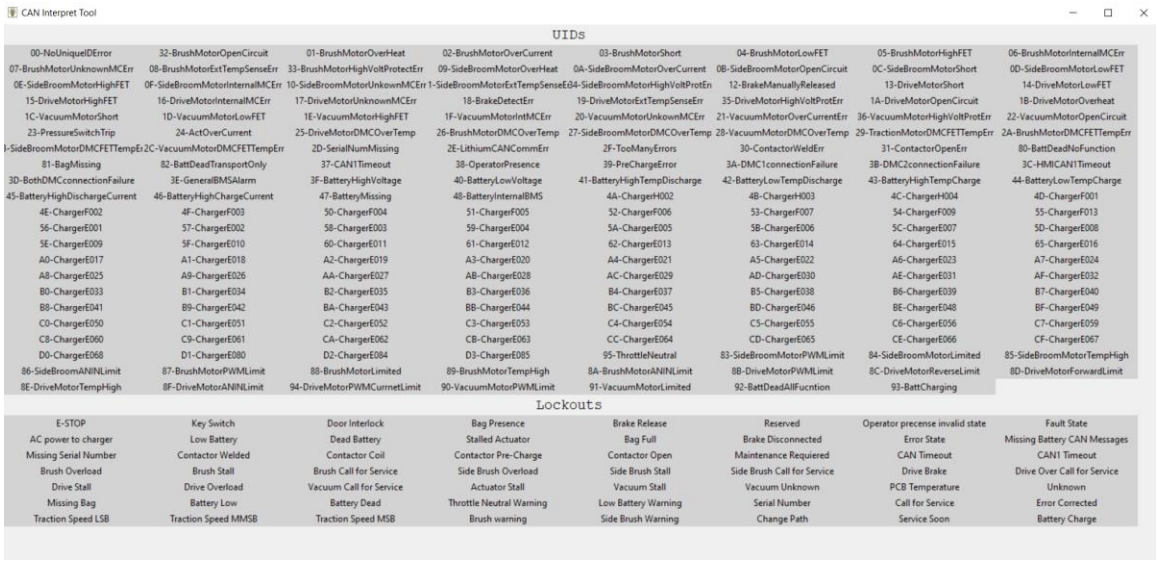
Serial Number Tool

When clicking the ‘Serial Number Tool’ button on the main screen a new window will appear that lets the user program a Serial Number onto the machine. Serial number should be entered as a string of numbers with no spaces or dashes such as ‘10121010000001’.



CAN Interpret Tool

When clicking the ‘CAN Interpret Tool’ button on the main screen a new window will appear that will display any errors or lockouts that are currently active on the T-Rex Machine.

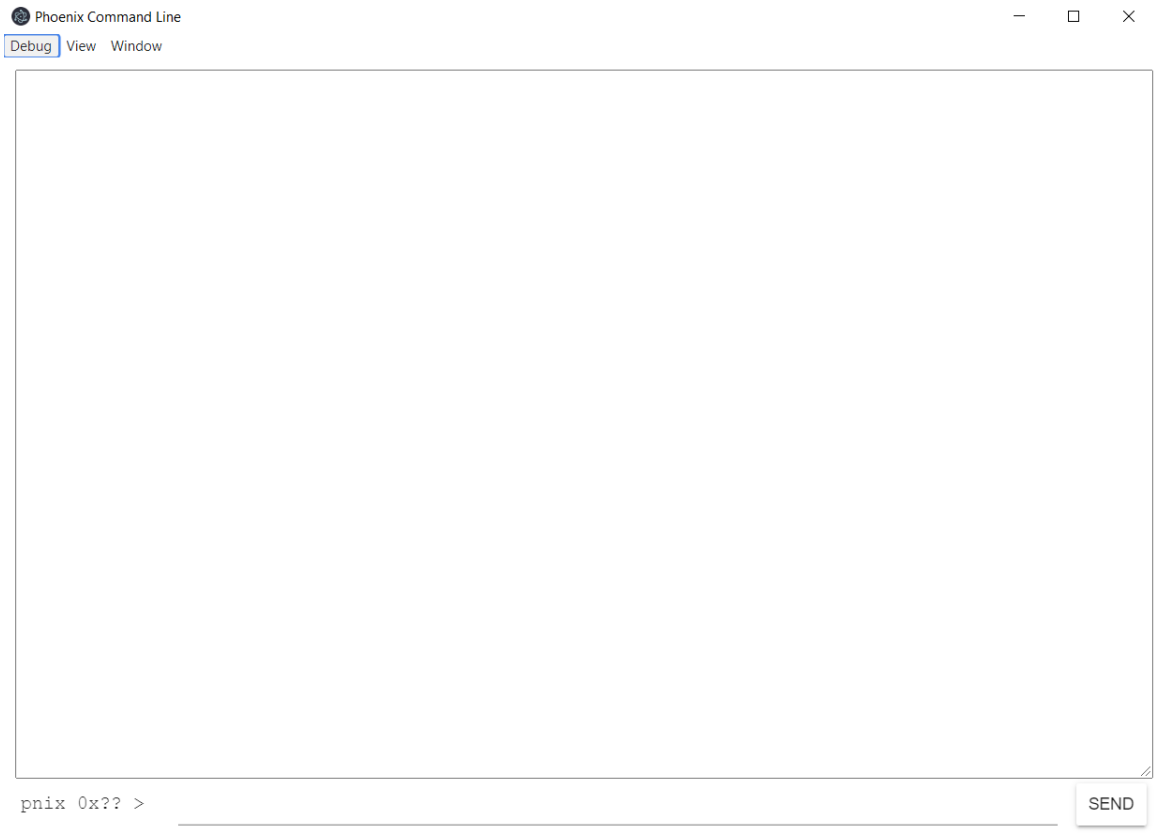


CAN Spy

This functionality is currently hidden behind ‘Engineering’ access. Access is granted by logging in with ‘lab’ in both username and password fields. When clicking on the ‘CAN Spy’ button a new window is launched. This window allows users to spy on the CANbus messages. This will mainly be used for diagnostic purposes for Engineering.

CLI Window

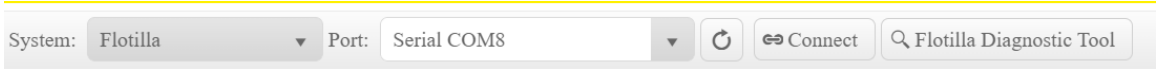
This functionality is currently hidden behind ‘Engineering’ access. Access is granted by logging in with ‘lab’ in both username and password fields. When clicking on this icon the Phoenix Command Line Interface is launched. This is primarily to be used by Engineering for diagnostic purposes.



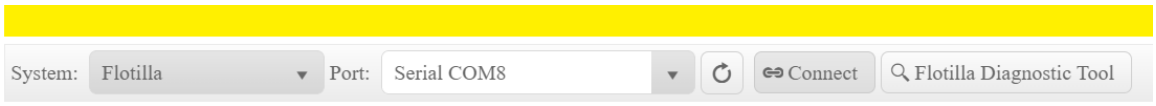
Flotilla Specific Operation

Connecting to/Programming the machine

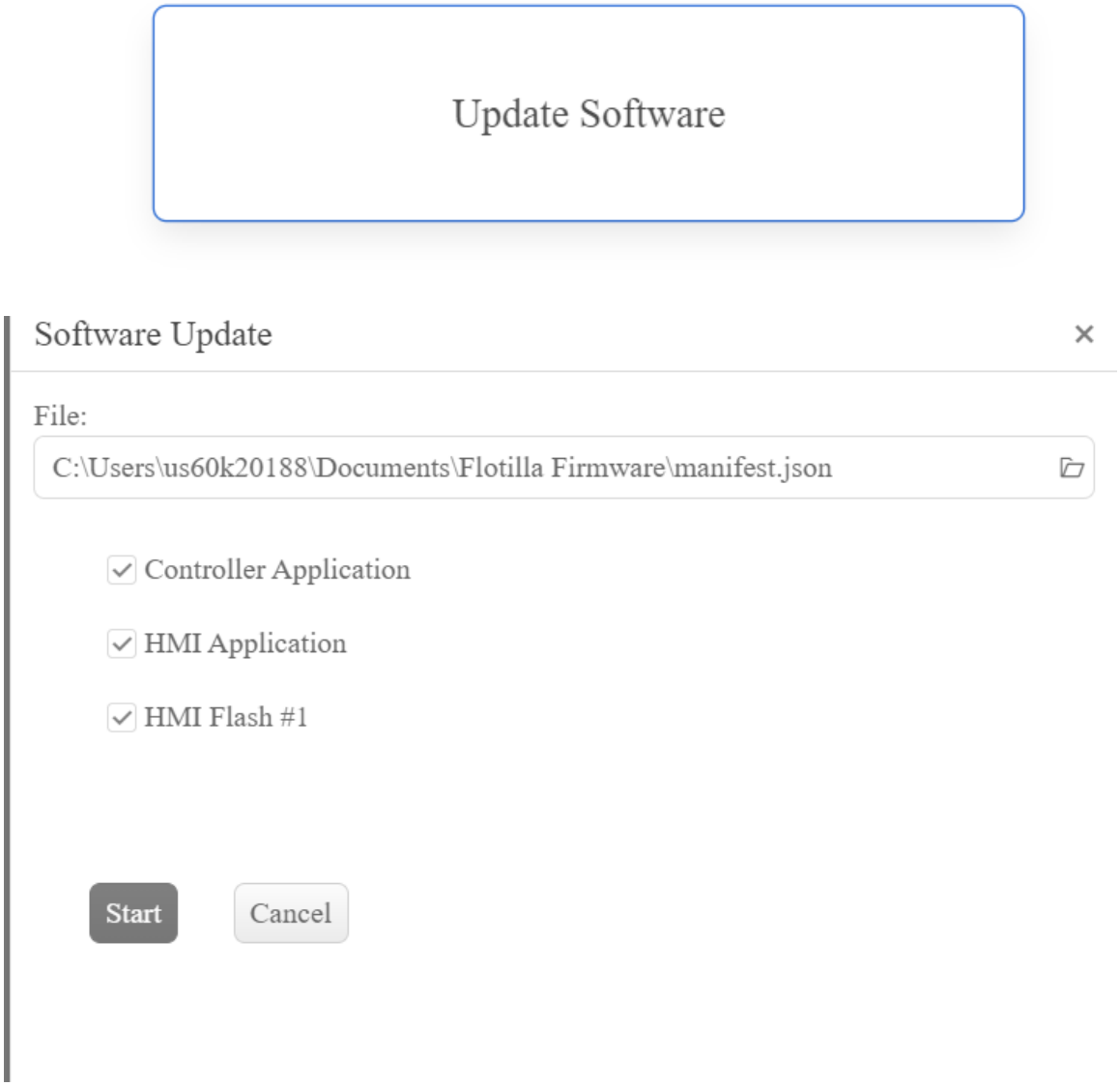
Make sure that all other USB devices are disconnected from the computer to ensure that we do not connect to something that is not a Flotilla machine. Most computers will have a few options under the ‘Port’ drop-down menu. Check which ports are listed without any machine attached to determine which ones are NOT the Flotilla machine. Plug in the Flotilla machine USB and power cord and observe that a new Port is added to the drop-down list. This is the Flotilla machine port and we should select that new port in the drop-down list.



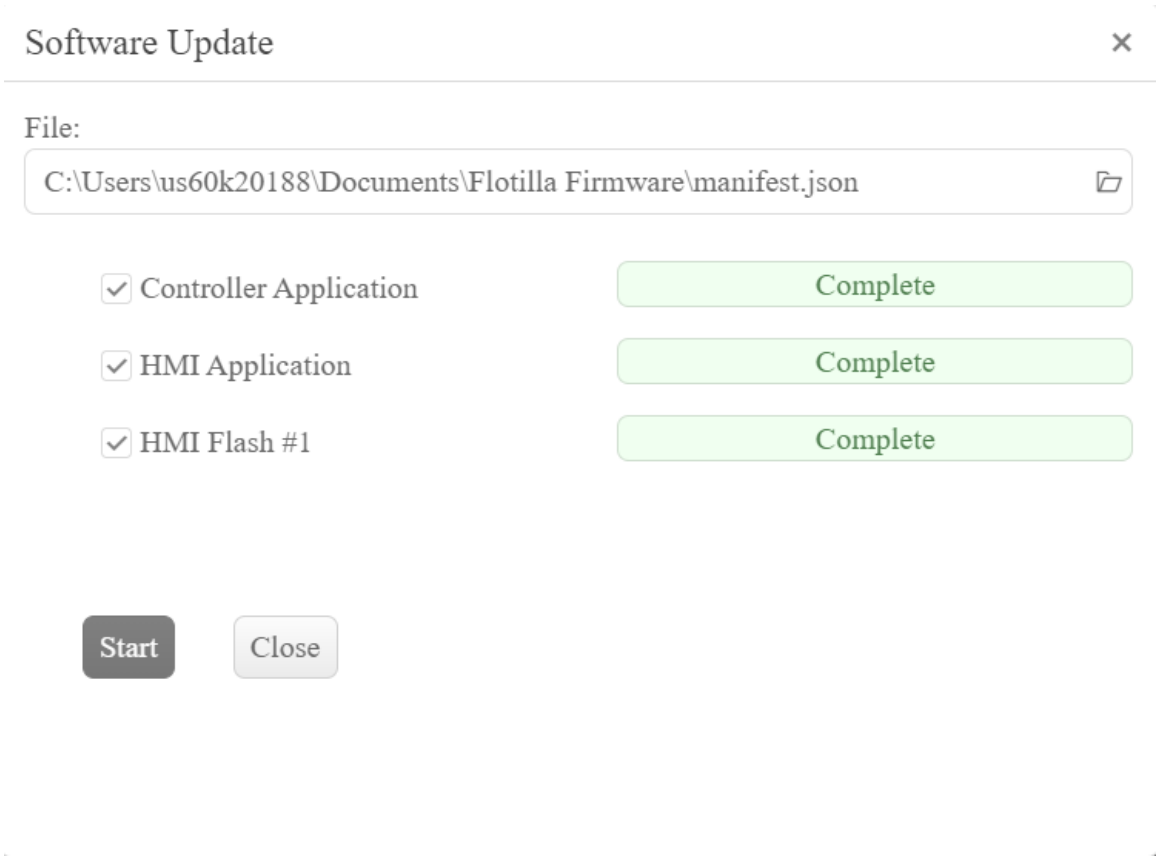
Click the ‘Connect’ button to open communication with the Machine for programming.



Click the ‘Update Software’ button to bring up the programming interface.

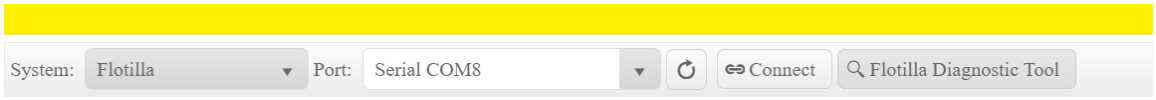


Click the folder icon to open the file explorer, and navigate to and select the ‘manifest.json’ file that has been provided. Make sure that all options are selected as shown above. Next, hit the ‘Start’ button to begin programming the Flotilla device. Wait until all three sections are complete before moving on as any interruption will cause the device to fail programming and we will have to try again.

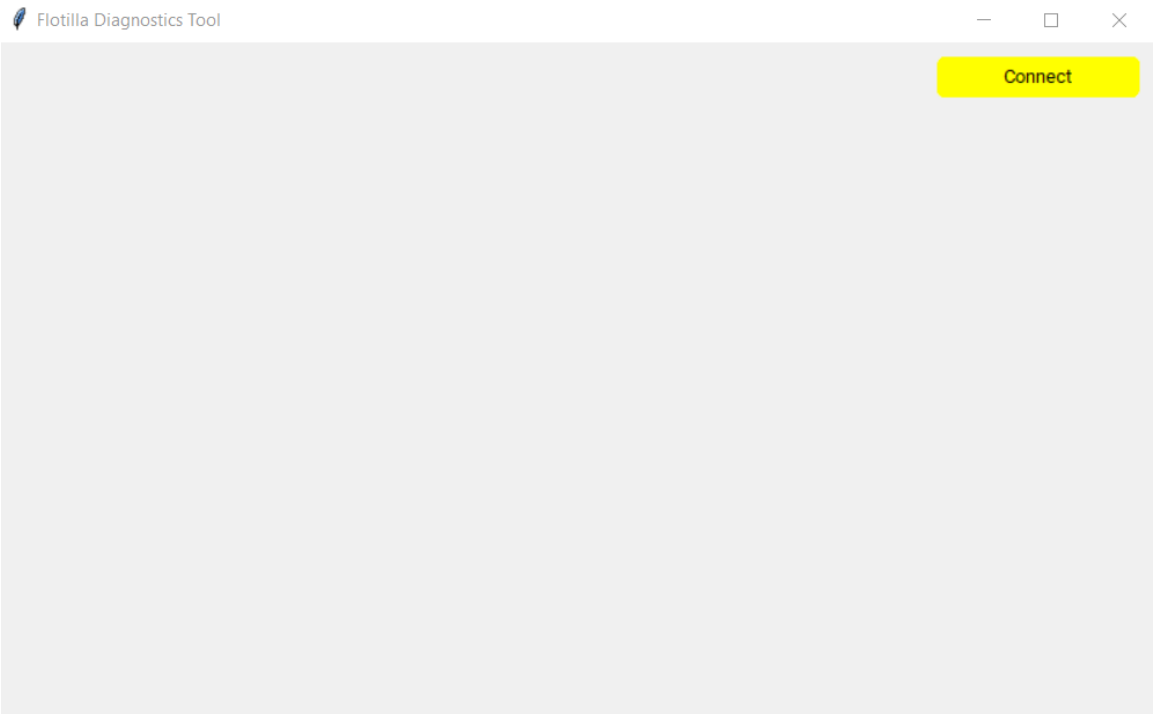


Flotilla Diagnostic Tool

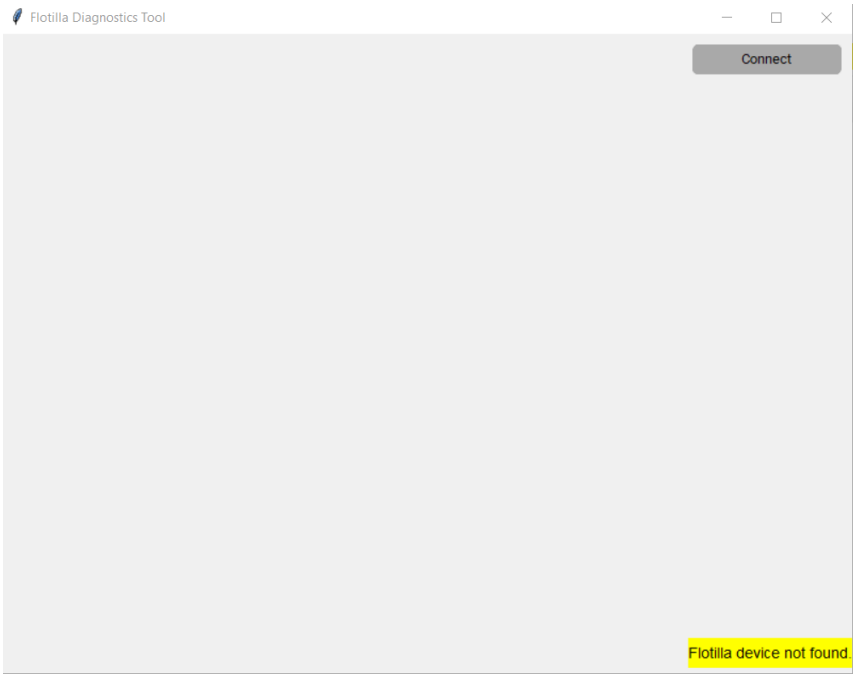
The Flotilla Diagnostic tool has been provided to help diagnose any possible failures or issues the machine is having. Launch the tool by hitting the 'Flotilla Diagnostics Tool' button as shown below. NOTE: If we do not hit 'Disconnect' on the main application window before opening and clicking 'Connect' on the Flotilla Diagnostic Tool we will encounter an error telling us to disconnect from all other applications. This is because the machine cannot connect to more than one tool at a time.



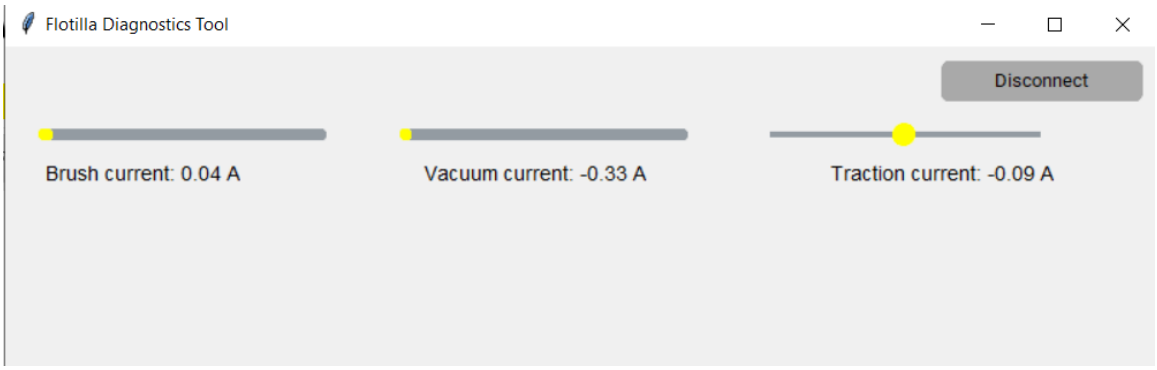
Once a Flotilla machine has been plugged into the USB port on the computer we can click the 'Connect' button on the application to open the main screen.



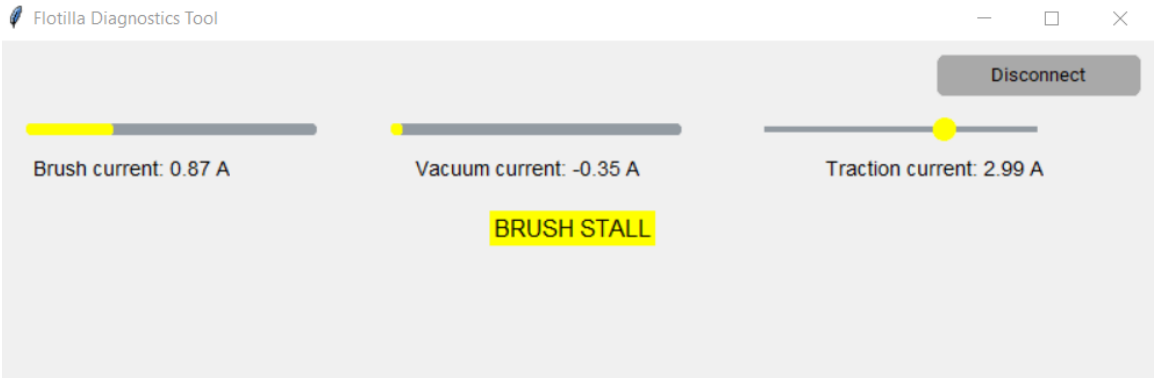
If no machine is found an error message will show on the bottom-right of the screen indicating that either the machine is not plugged in, or there is an issue with the board and it may need to be replaced or reprogrammed. This error message is shown below.



Upon successful connection to a Flotilla machine, we are greeted with another screen that will show the current draw readouts of the three motors in Amps as shown below. This is useful to determine if the motors are getting the appropriate power. The traction motor has both a forward and reverse direction, so the bar is centered to allow for representation of either direction. Left is reverse and right is forward.



If an error is active on the machine, it will appear highlighted in yellow in the middle of the screen. If no error is present on the screen, it can be assumed that the machine is reporting no errors. An example of an error present is shown below.



Questions

What tools and functionality do we want each level of user to have?

Are there any other features that need to be added?