

EcuTek ProECU



ECU Programming Guide

v1.2

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Programming an ECU

Programming an ECU is the process of taking a ROM file and placing it into permanent storage inside the ECU.

Minimise Power Drain from the Battery

It is recommended that all non-essential devices are switched off before attempting to program an ECU. This helps to minimise electrical interference to vehicle systems that may interfere with communication between ProECU and the ECU.

For devices within the car, this includes:

- Headlights
- Interior lights
- Air Conditioning, fan cooling & heating
- Any devices powered from the cigarette lighter socket, including mains inverters or laptop power supplies.
- **NOTE: It is NOT possible to program the Nissan GTR with the Interior Fan Blower turned ON, programming WILL FAIL!**
- **The doors on the Nissan Juke needs to be shut, otherwise programming will fail.**

For devices that are not part of the car, this includes:

- Mobile (cell) phones
- Nearby industrial equipment, such as welders and high power fans.

Remove devices that interfere with the CAN signal

3rd party devices such as the *HKS Velocity Advanced Computer Type CM* speed delimiter functions by interfering with the CAN signal. Such a devices will cause programming errors if it's attached to the CAN bus while programming the ECU.

Devices such as the HKS speed delimiter is normally not needed when tuning with EcuTek ProECU, as speed delimiter and boost cut delimiter settings can be modified using ProECU.

Connecting to the ECU

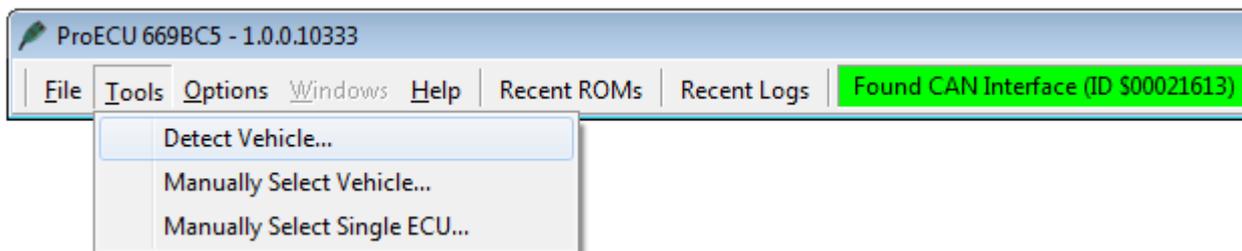
To program a car's ECU the programming interface must be connected to the vehicles OBD2 socket:

Plug the EcuTek OBD2 vehicle interface cable into the vehicles diagnostic socket. This is usually located on the lower section of the dashboard just above the drivers throttle pedal.

Connect the other end of the EcuTek vehicle interface cable to a USB port on the laptop.

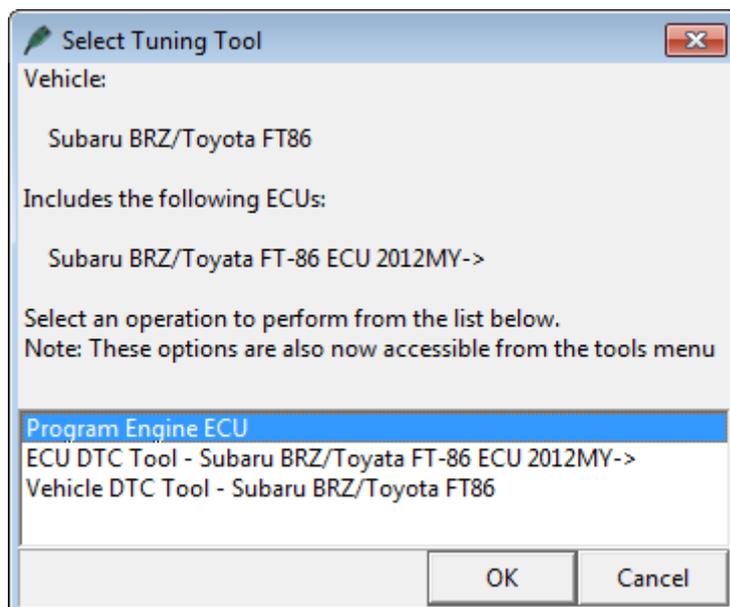


Entering Programming mode



Follow these steps to enter programming mode:

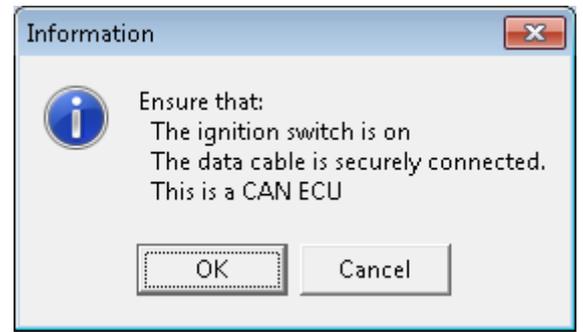
- Ensure the OBD2 Vehicle Interface is connected.
- Turn on the vehicles Ignition, DO NOT START the engine, just Ignition Lights ON.
- Choose 'Detect Vehicle...' from the 'Tools' menu
- Choose 'Program Engine ECU' when the below window appears and press OK



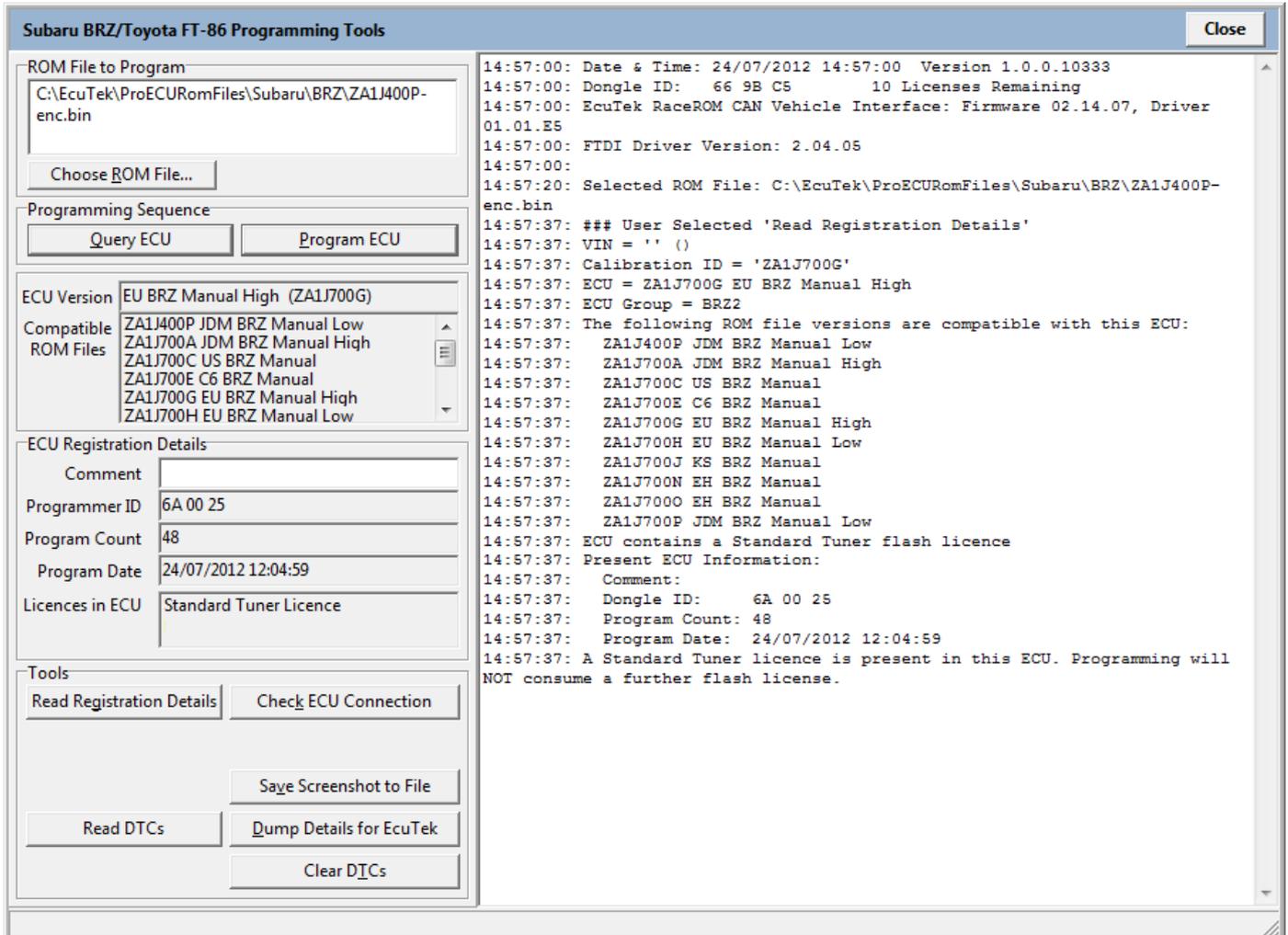
The following message will be shown if ProECU can't establish communication with the ECU.

Follow the instructions in the above message to try to establish a connection to the ECU.

If the above steps do not resolve the connection problem, close ProECU, unplug the EcuTek vehicle interface and then plug it back, and then restart the software.



The ProECU Programming Tools window will only be displayed if ProECU successfully established a connection to the ECU:



ProECU has two different methods of programming the ECU depending on the vehicle:

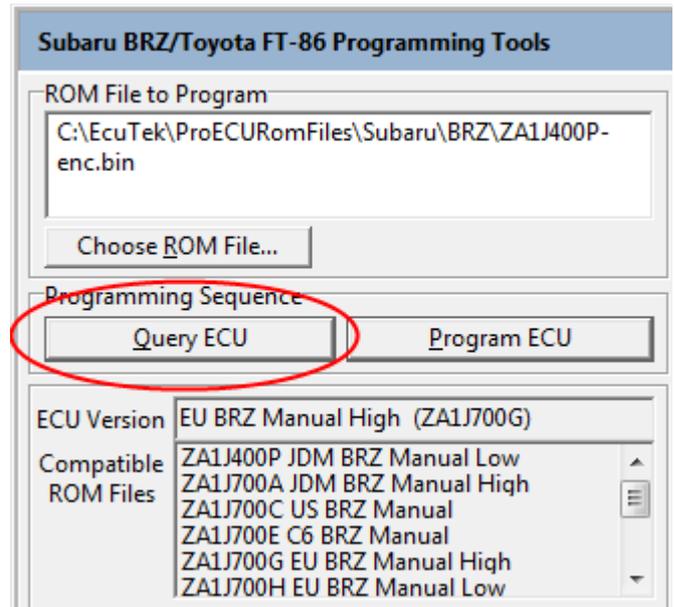
1. **Query ECU:** This is the most common method of programming the ECU, as shown in the above screenshot.
2. **Enter Utility Mode:** Most Subaru ECUs and Mitsubishi Diesel use this method.

Please read the below section for more information on the differences between the two programming methods.

Option 1: Query ECU

Before attempting to reprogram an ECU, first select 'Query ECU' to identify the ECU version fitted to the vehicle.

The ECU software version (ROM file name) is shown in the box below the QUERY ECU button, in this example it is 'EU BRZ Manual High (ZA1J700G)'. Other compatible ROMs are shown below the ECU version box.



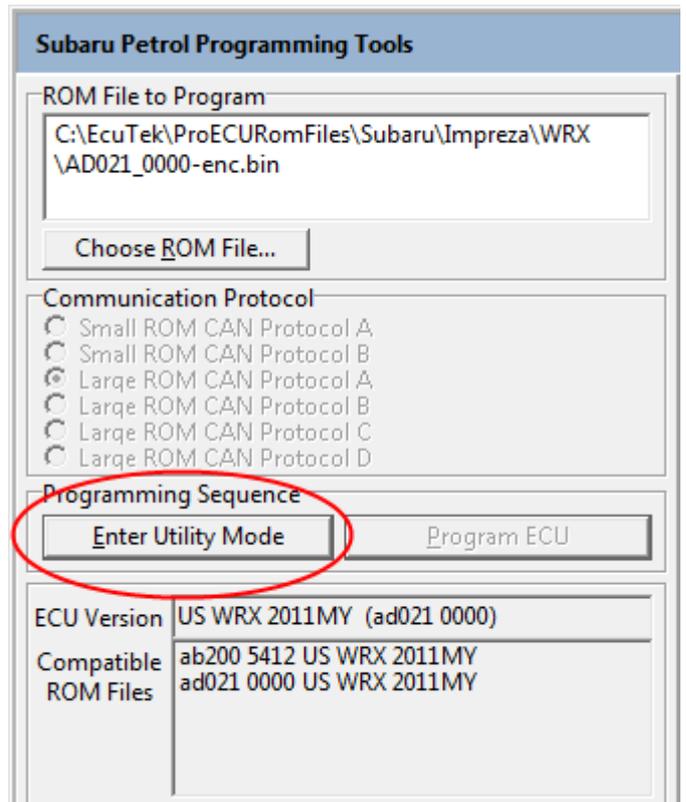
Option 2: Enter Utility Mode

Before attempting to reprogram an ECU, first select 'Enter Utility Mode' to identify the ECU version fitted to the vehicle.

The ECU software version (ROM file name) is shown in the box below the 'Enter Utility Mode' button, in this example it is 'US WRX 2011MY (ad021 0000)'. Other compatible ROMs are shown below the ECU version box.

The correct Communication Protocol will automatically be selected.

NOTE: It is required to click the 'Restart ECU' button if you have Entered Utility Mode, but are NOT going to program the ECU.



Choose ROM File

Now select your ROM file you wish to reprogram the ECU with. You can only select a modified ROM file that is based on the original ECU ROM or is a compatible ECU ROM. In the Example above all compatible ROMs are based on the Manual Gearbox version of the Subaru BRZ.

NOTE: It is only possible to program a RaceROM patched file into the ECU or a completely standard ROM that is provided on EcuTek Update.

It is not possible to program a ROM into the ECU that is not shown in the 'Compatible ROM Files' window.

Program ECU

Click on the 'Program ECU' button after choosing a compatible ROM to program the ECU.

After programming the ECU, follow the on screen instruction to cycle the Ignition ON, OFF and back ON. It's important that this is done in sequence with the correct time delays.

Different ECUs will have different sequences, so take care to read the instructions carefully.

Programming Failures (ECU Recovery)

Programming failures happen occasionally on all vehicles for a variety of reasons. Sometimes the reason is obvious, like a cable falling out or laptop battery running out of charge. Other times it's hard to tell what caused the failure.

The good news is that in almost all cases, the ECU can be fully recovered.

Please refer to the appropriate section at the end of this manual.

Comment Field

After choosing your ROM file it is highly recommended that the file name is entered in the 'Comment' box under 'ECU Registration Details' section. This field should be used to store the name of ROM file used, the brand name, or the version or state of tune. This is stored inside the ECU so if the vehicle returns at a later date you can see exactly what ROM file you used in the ECU from the 'Comment' information. This is limited to 18 characters.

The comment is accessible by any ProECU user. However, this information is not viewable using an OBD2 reader/scanner or the factory diagnostic tools.

Read ROM

It is possible to read the ROM from the ECU using the 'Read ROM' feature **ONLY** if the ECU has never been reprogrammed using EcuTek software before. This can take some time so be prepared for a wait.

If you have previously programmed the ECU using ProECU then you are also allowed the Read the ROM, but if your Programmer ID (licence key ID) does NOT match the previous Programming Dongle ID then you are NOT allowed to Read the ECU ROM.

The ROM file that is saved when the Read ROM feature is used, can be opened for programming and editing using ProECU.

Read Registration Details

The following stored information will be retrieved and displayed from the ECU by clicking on the 'Read Registration Details' button:

- **Comment:** The comment field as described above.
- **Programmer ID:** The ID of the user who programmed the ECU – each license key has a unique ID, so the authenticity of an ECU can be confirmed.
- **Program Count:** The number of times the ECU has been reprogrammed. The rated life of the memory chip is around a 100 reprograms. If you are approaching this value, it is recommended that you program this ECU with a suitable map, and then try to exchange the ECU with another fresh ECU. Manufacturers generally quote a low reflash limit, experience has shown no deterioration in the memory chips performance even after 300+ reprograms!
- **ECU Version:** e.g. JF01C, ZA1J700G, AN330_0182. This will tell you on which base ROM file any tuning must be based on.

This function does not reprogram the ECU; it only retrieves information from the ECU.

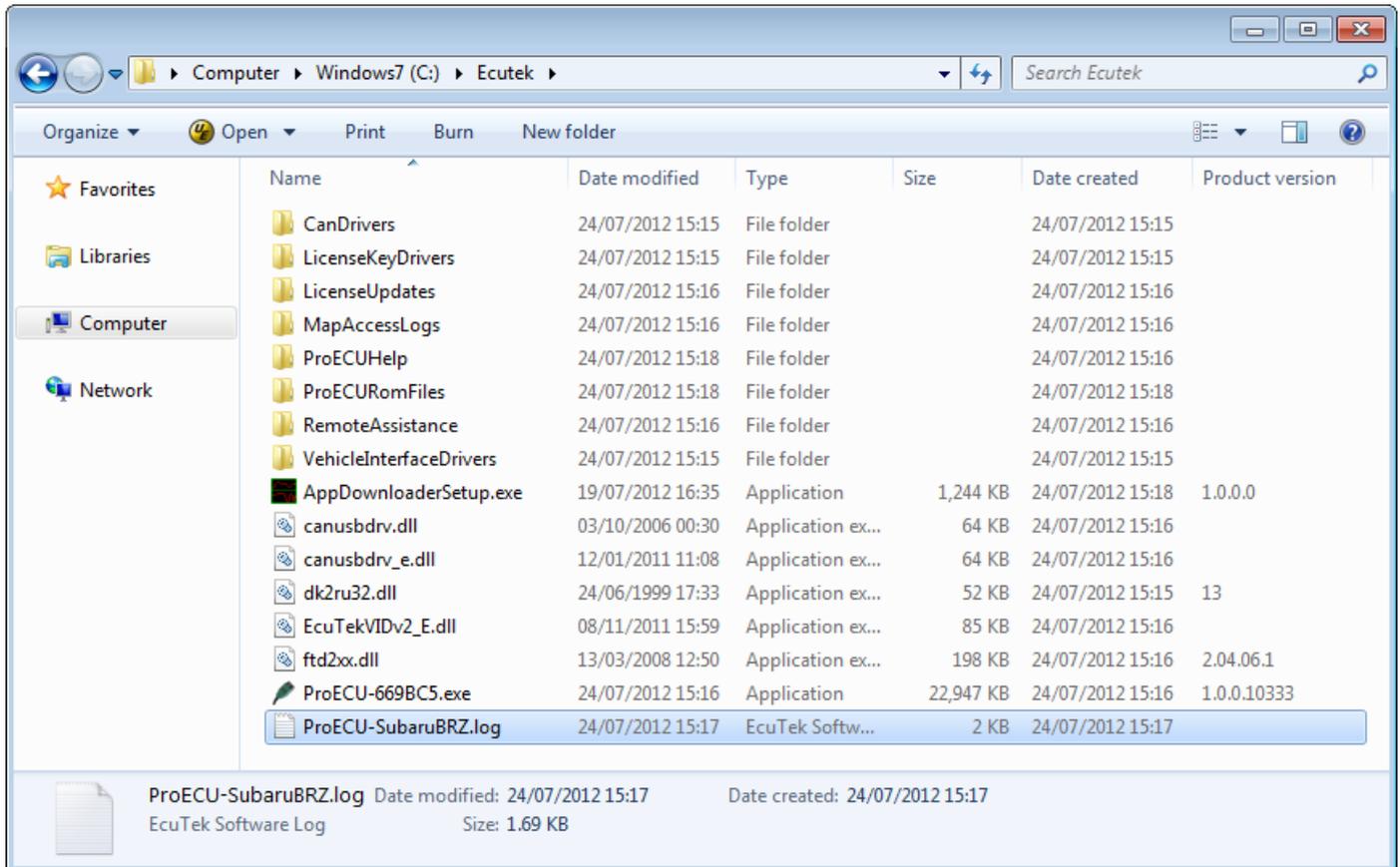
Clear DTCs

Click on the 'Clear DTCs' button to clear all the stored trouble codes in the vehicle's various ECUs. This should be done after programming to ensure all DTCs that are caused by the programming sequence are cleared.

Progress Window Data Box and Log files

On the right of the Programming Tool window there is a progress display. This area displays information throughout the reprogramming process. It records and stores information like the ROM file name you have used, your Dongle ID the version of software you are using and the UNIQUE ID code. All this data is recorded in a log file that is continuously updated every time you are in Utilities Mode.

The log file is stored alongside the ProECU executable in the **C:\EcuTek** folder:



An EcuTek Software Log file is created for each software product.

This file can be opened with Notepad if required.

ProECU-SubaruBRZ.log contains all the Subaru BRZ/Toyota FT-86 ECU programming data.

ProECU-NissanECU.log contains all the Nissan GTR ECU programming data.

Sometimes the log file or file extensions may be hidden by windows, if so then in the C:\EcuTek folder you need to select 'Organize', 'Folder and search options', go to the 'View' tab and then choose 'Show hidden files and folders', then uncheck the 'hide extensions for known file types'. We also recommend you change the View to 'Detailed' as shown above.

You can also right-click on the window bar saying Name, Size, Type and choose the 'More...' options at the bottom then add the very useful column called '**Product Version**', also shown above.

EcuTek Information Dump

It is possible that you will come across an ECU version that EcuTek have not seen. It will not be possible for you to program this ECU until EcuTek have been supplied with certain information about the ECU. The 'Dump Details for EcuTek' button saves certain information from this ECU. The information is stored in a file that will be saved into the '**C:\EcuTek\RomDumps**' folder. The name of the file will be displayed as it is saved.

This information should be sent to EcuTek using the **Website Form**, together with a clear photograph of the ECU label and details of the type of car (please include Model Year and Manual or Auto gearbox) from which the ECU originates. EcuTek will then supply an updated version of ProECU that will be capable of programming the ECU.

Please note that it is not something that can be done while-you-wait. Turnaround time is likely to be 3 to 7 days for support of a new ECU. It is therefore important for the tuner to check that the ECU version is supported well before the car is scheduled to be reprogrammed – this will avoid a panic situation for all parties involved.

Please note that it is not possible to open ROM Dumps in ProECU until the file has been emailed to EcuTek.

Programming ECU Overview

Follow the below steps to reprogram an ECU:

- Connect the vehicle interface cable to the OBD2 connector and turn ON the Ignition.
- Open ProECU and choose 'Tools' and 'Detect Vehicle'.
- Choose 'Program Engine ECU'
- Choose 'Query ECU' to identify the ECU version fitted to the vehicle.
- Then select 'Choose ROM File' and select your modified ROM file to program the ECU.
- Enter the ROM file name or your unique name for the ROM file in the 'Comments' box, so in the future you know exactly what ROM is in the ECU.
- Ensure all interior lights, Heater blower, Stereo are turned OFF and Mobile Cellular Phones are away from the vehicle.
- Choose 'Program ECU'.
- After programming the ECU, follow the on screen instruction to cycle the Ignition
- Start the engine.

ECU Recovery

If the ECU programming sequence is interrupted, ProECU might not be able to recognize automatically the ECU and you'll need to follow a manual recovery procedure.

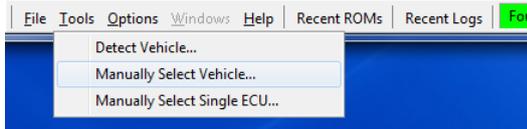
In general, you'll need to perform the following steps:

- Manually select the Vehicle
- Program a standard ROM

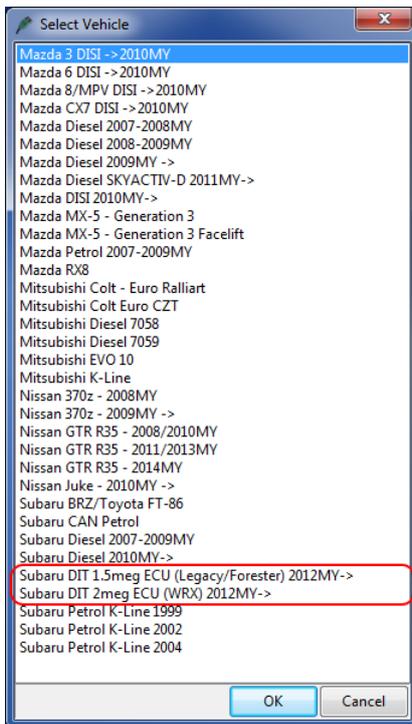
Please read the following sections for detailed information on specific cars.

Subaru DIT

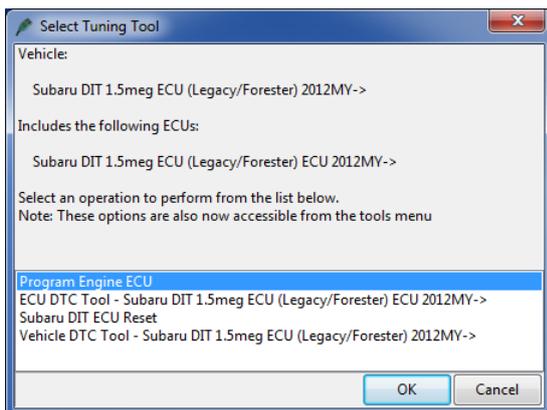
1. Click *Tools > Manually Select Vehicle...*



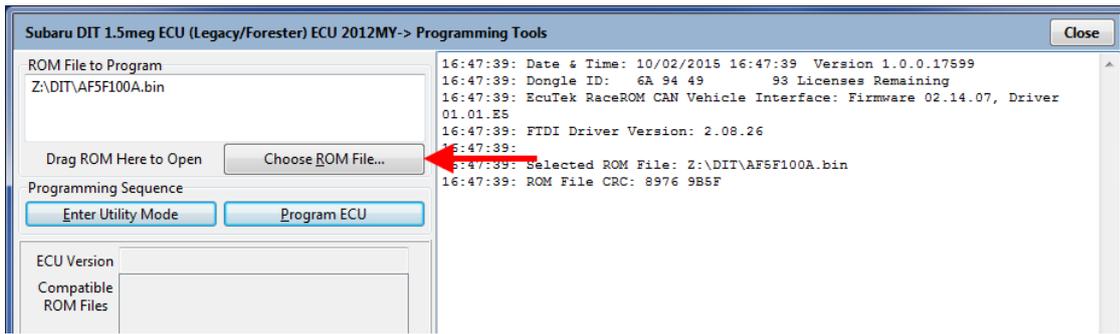
2. Select the appropriate vehicle from the list.
WARNING: different vehicles have different ECUs. You must select the correct vehicle otherwise the recovery sequence will fail.



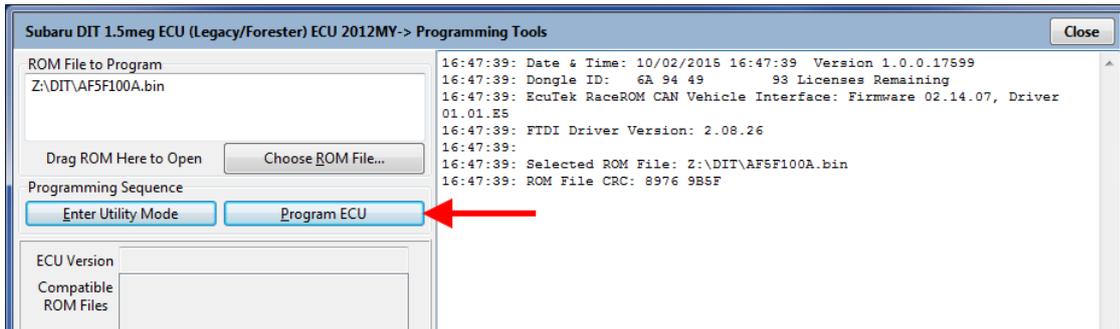
3. Choose *Program Engine ECU* in the next window



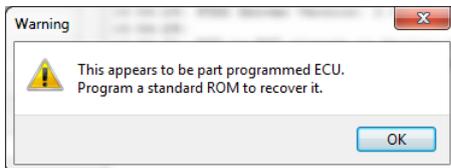
4. Click *Choose ROM File...* and select a STOCK rom file
NOTE: you can't recover the ECU with a tuned rom, you must use a STOCK one. After the recovery has completed you'll be able to program a tuned rom using the normal procedure.



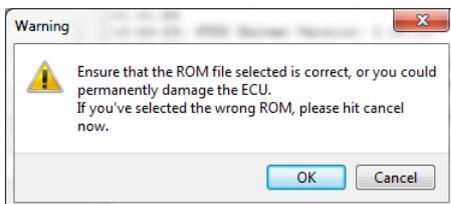
5. Click *Program ECU*



6. ProECU could display a message saying that the ECU is part-programmed. If so, press OK to continue.



7. ProECU will then ask you to ensure that you have selected the correct ROM file. Double-check that the selected Vehicle Type and Rom file are correct, then press OK if everything is fine. Otherwise press Cancel and restart the procedure from point 1.



8. At this point ProECU will program the ECU. Follow the indications on screen as in the normal programming sequence. When it's done the ECU has been recovered.