

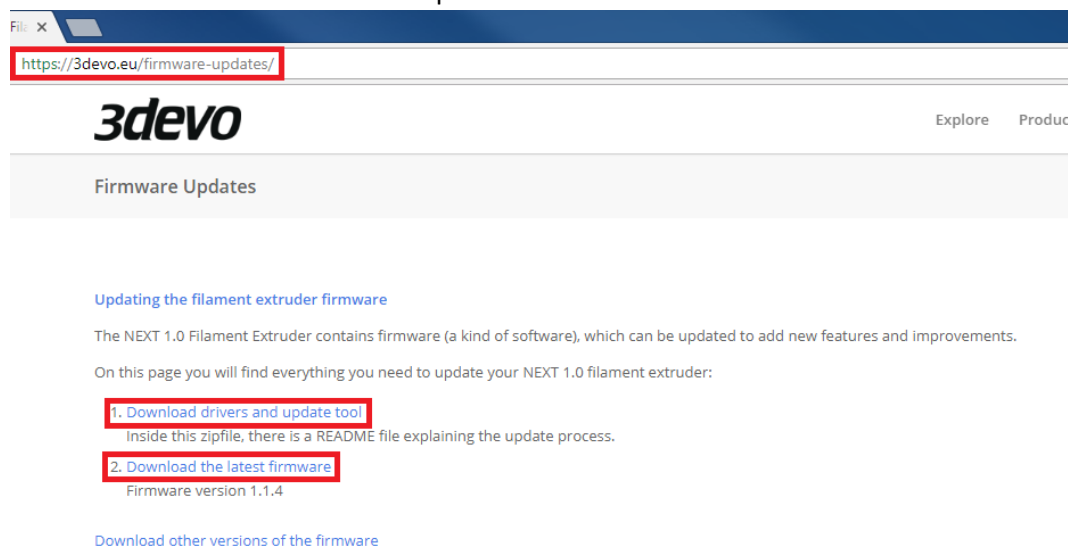
# ***How to make a diagnostic test for the NEXT 1.0 Extruder***

## ***What's a diagnostic test?***

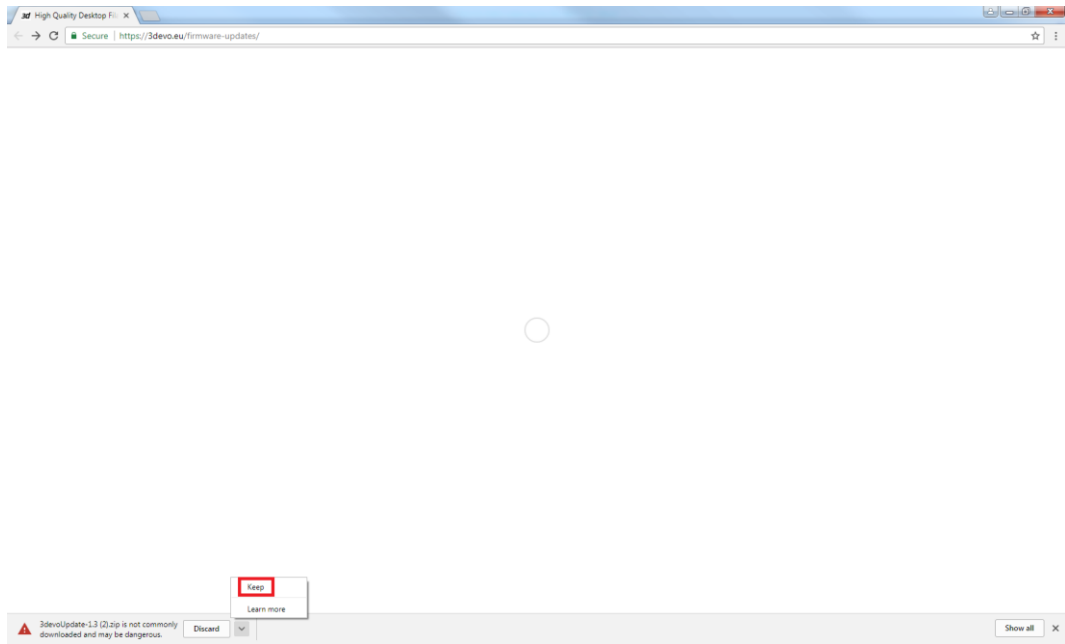
In the diagnostic test we will change the firmware of the extruder to allow it to ignore certain errors, by ignoring these errors we allow the machine to operate whilst there are occurring errors. There for you will be able to observe if certain parts of the machine are working properly

1. Make sure you have the correct driver installed on your computer.

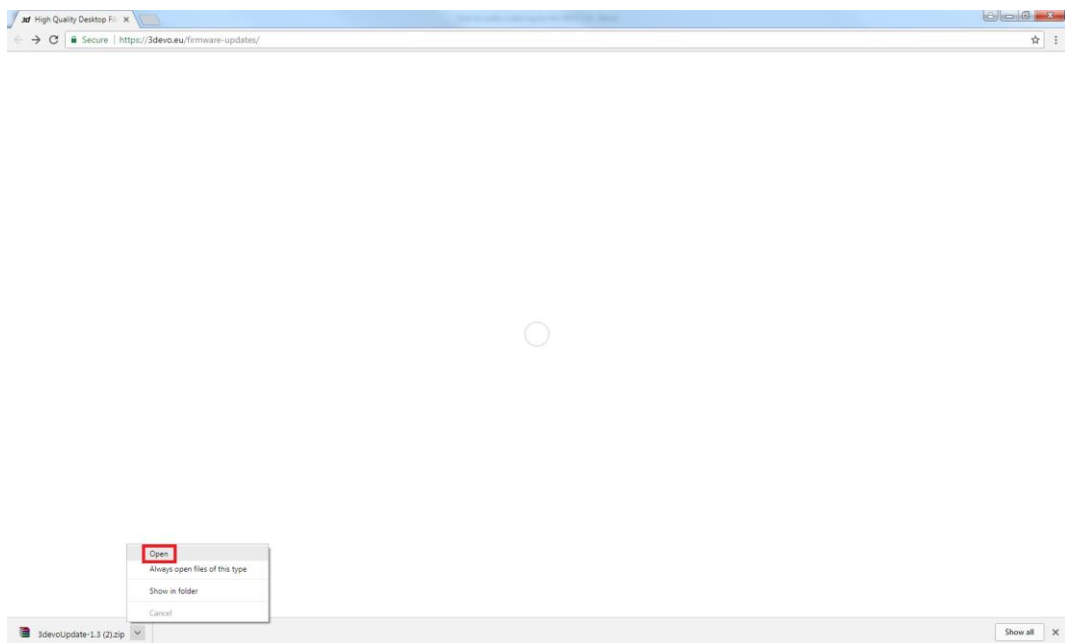
The driver can be found in the latest firmware update (only install the latest firmware after your done with the diagnostic test) on our website, you can go to the designated site by copy or clicking the given web address; <http://3devo.eu/firmware-updates/> here you can download the update tool and the correct driver.



*image 1 website with download links*

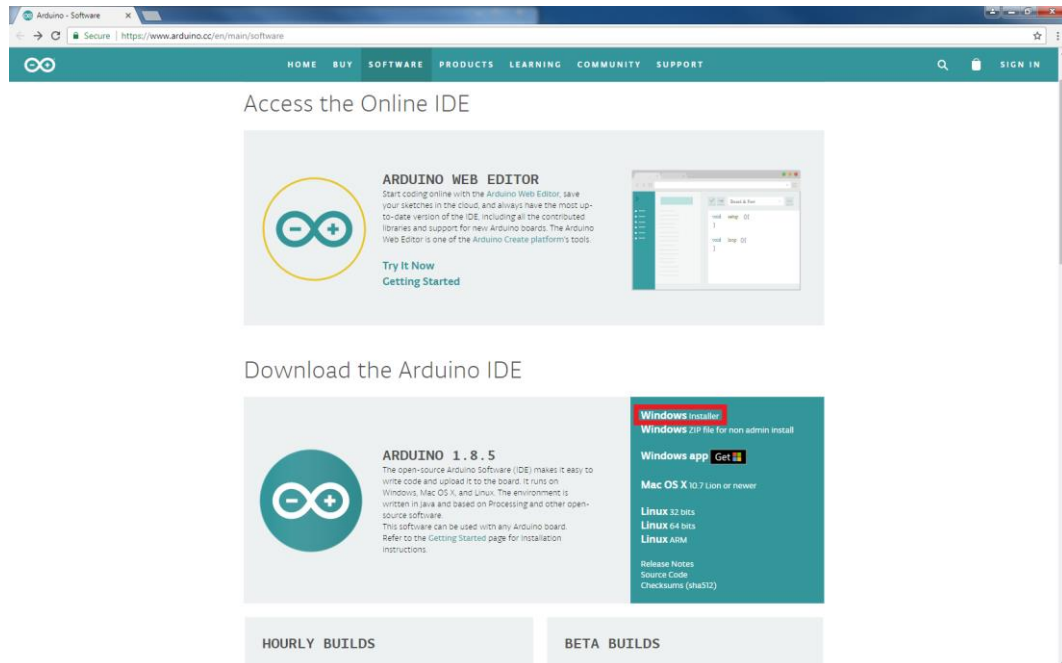


*image 2 download option*



*image 3 download option*

2. Install the “Arduino IDE” software latest version as found on given web address;  
<https://www.arduino.cc/en/main/software>, when on the site click the button designated in the first picture under step 2, on the page after you may either click on the designated “**JUST DOWNLOAD**” button or on the “**CONTRIBUTE & DOWNLOAD**” button if you feel generous as displayed in image 5. This program will be used to display the data log



3.

image 4 website with download link

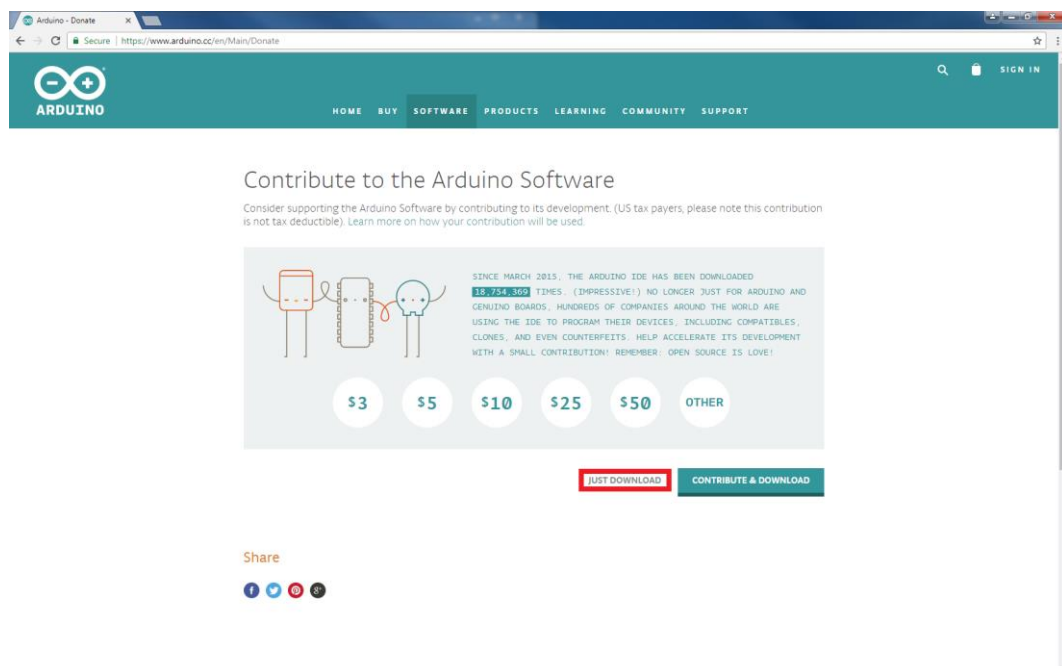


image 5 page with download link

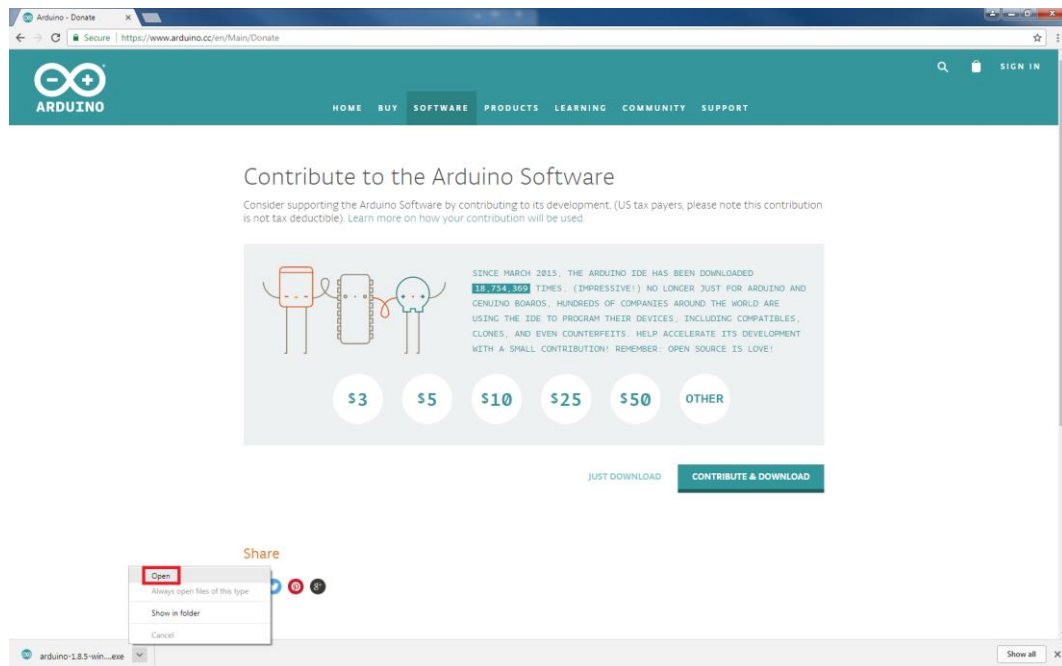


image 6 download option

4. Turn on the power of the Filament Extruder

5. Connect the filament extruder with the USB cable to the computer.

6. Open the Program 3devoUpdate.

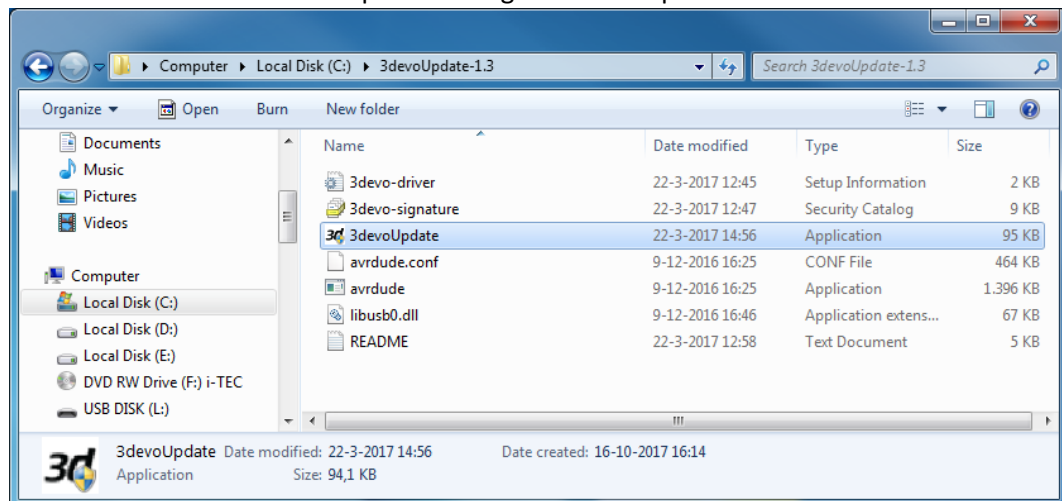


image 7 location of 3devoUpdate

7. Click **this** button to select the firmware.

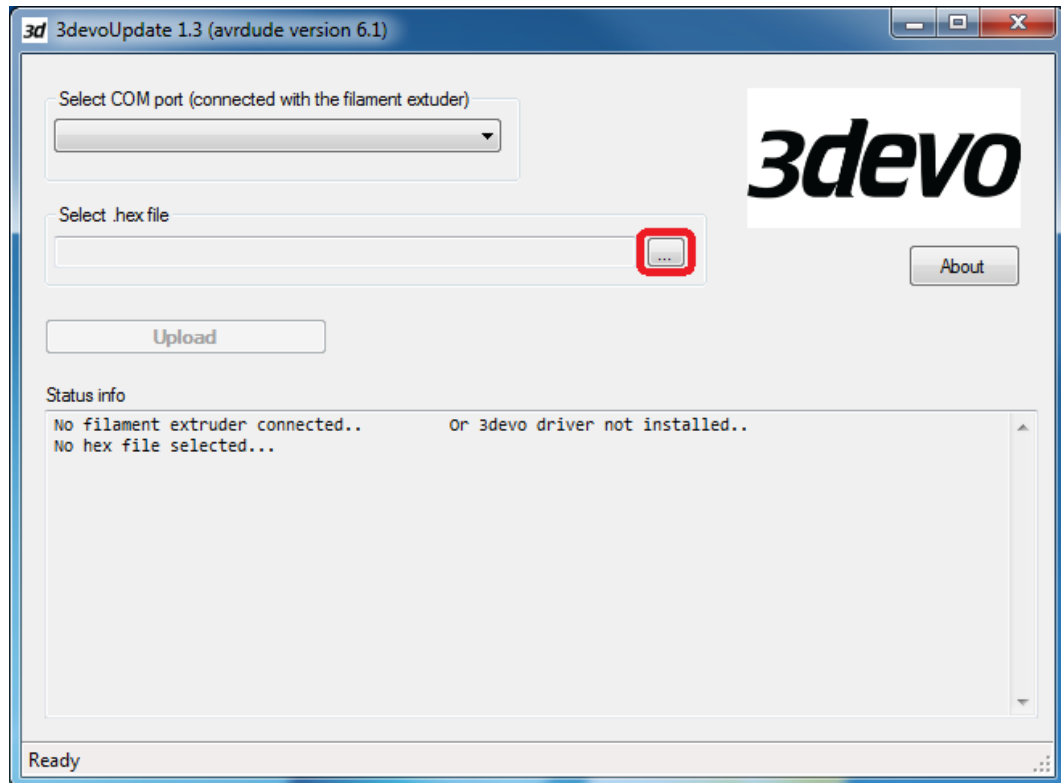


image 8 button to select file

8. Go to the map in which you saved the firmware and select it then press open. (the firmware should be called something like this the version number may diver)

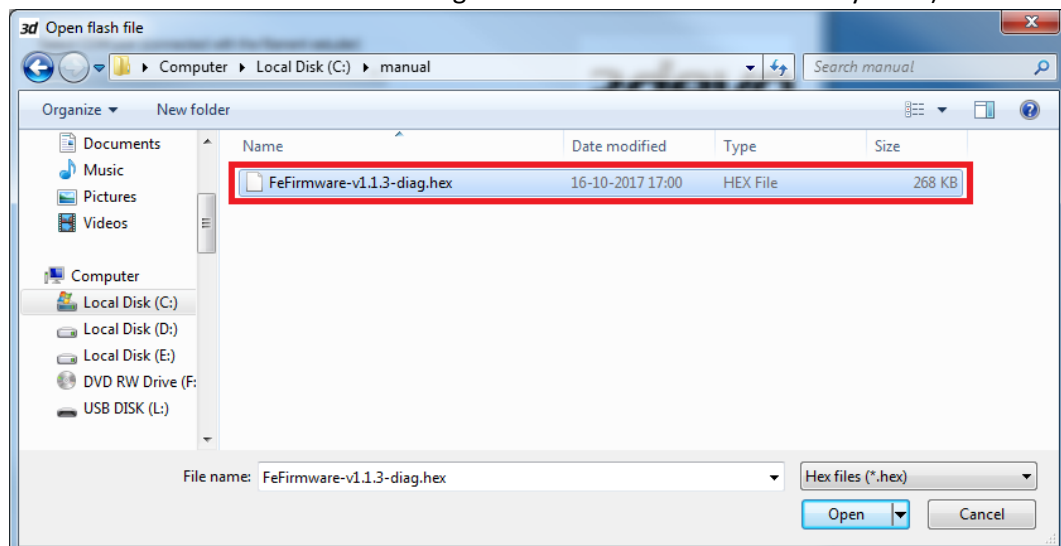


image 9 A file that can be used in 3devoUpdate

9. The “Select .hex file” field should display the location of the firmware you just selected.

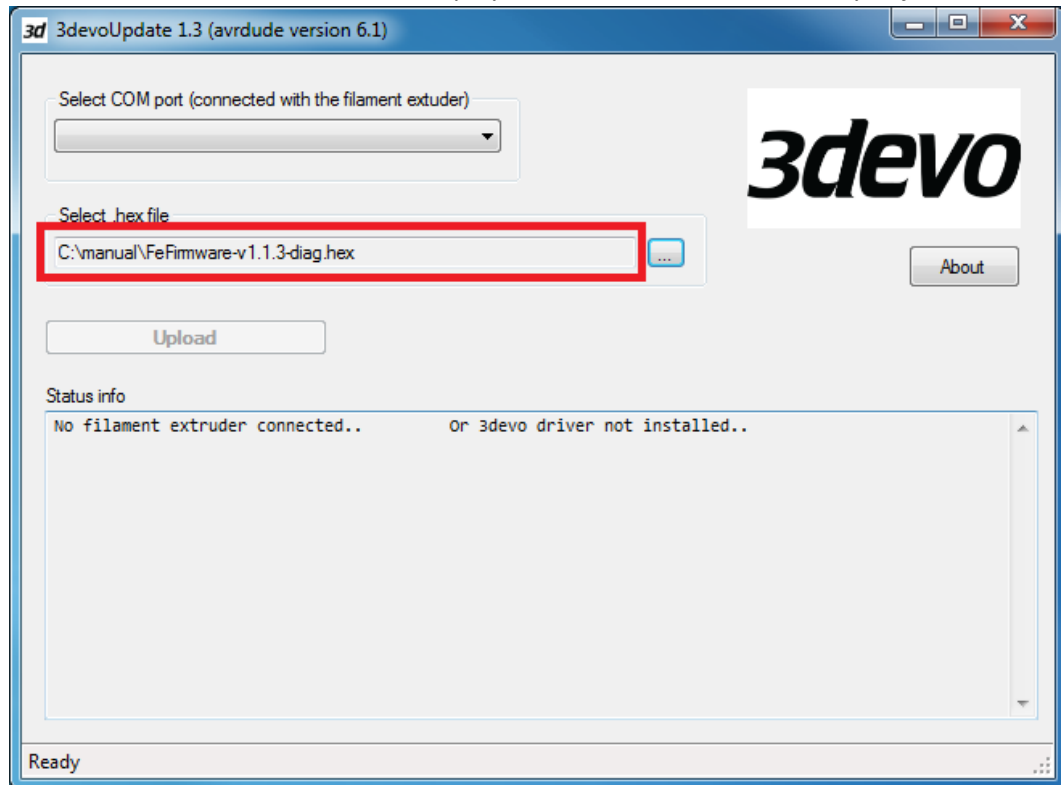


image 10 the result of selecting a file

10. Connect the extruder to your computer with the “Select COM port (connected with the filament extruder)” field open the field and select the com port which connects to the extruder (you may have multiple com ports active on your PC you can find the correct COM port by disconnecting then connecting the USB cable in the extruder).

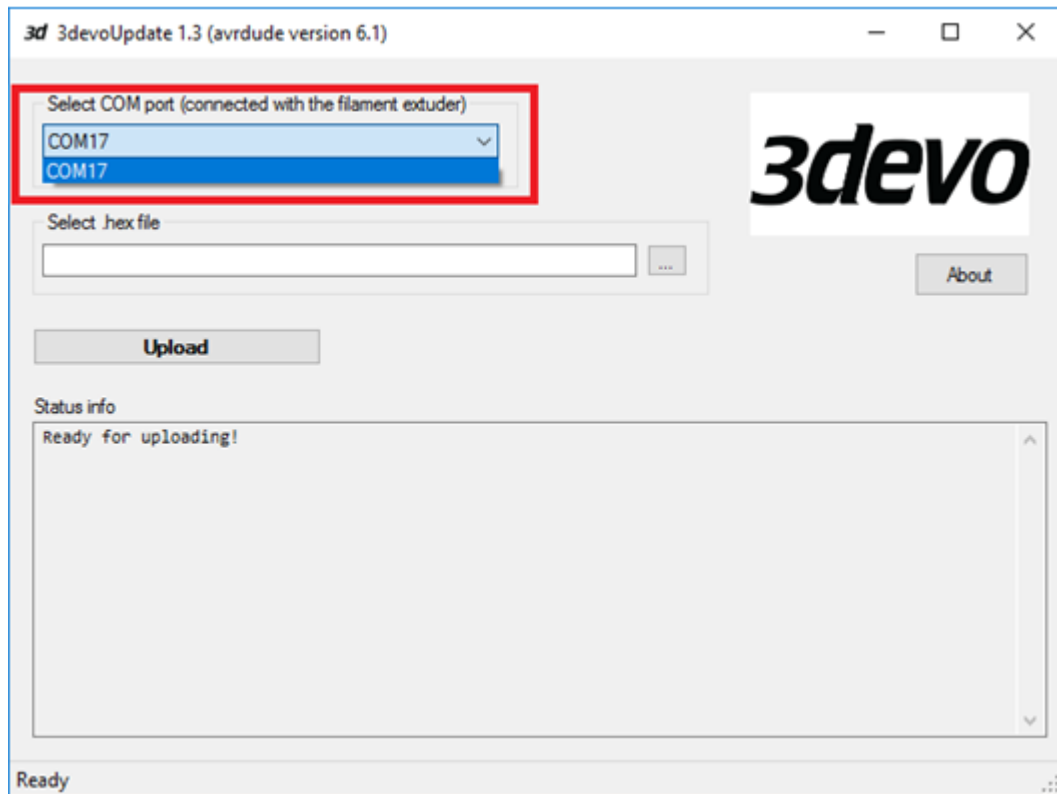


image 11 selecting a COM port

11. Now press the button marked “**Upload**” to upload the firmware to the extruder.

## 12. Open the “Arduino” IDE program

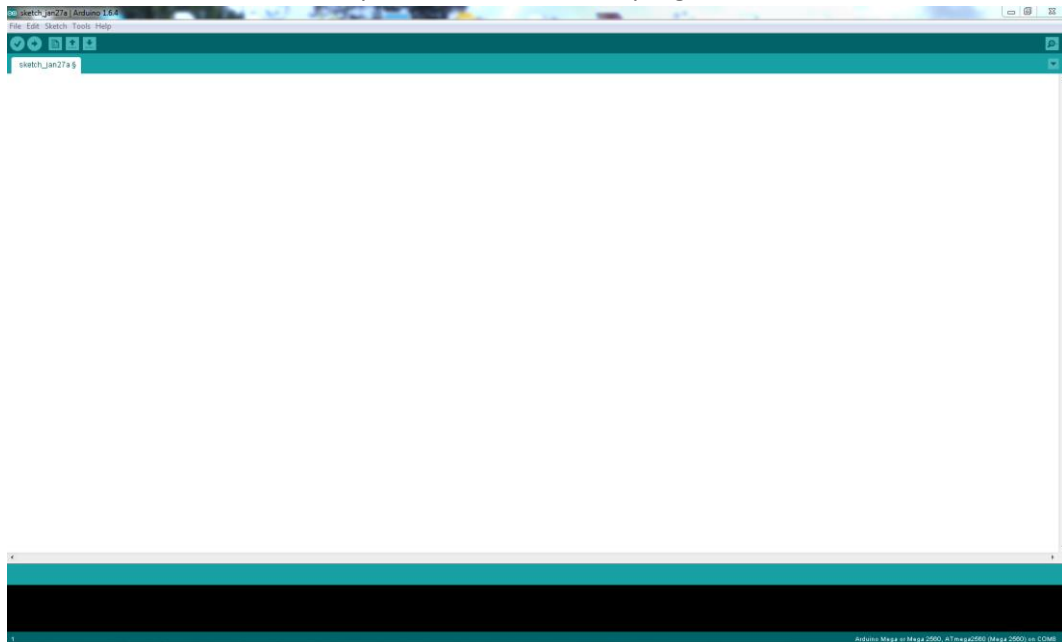
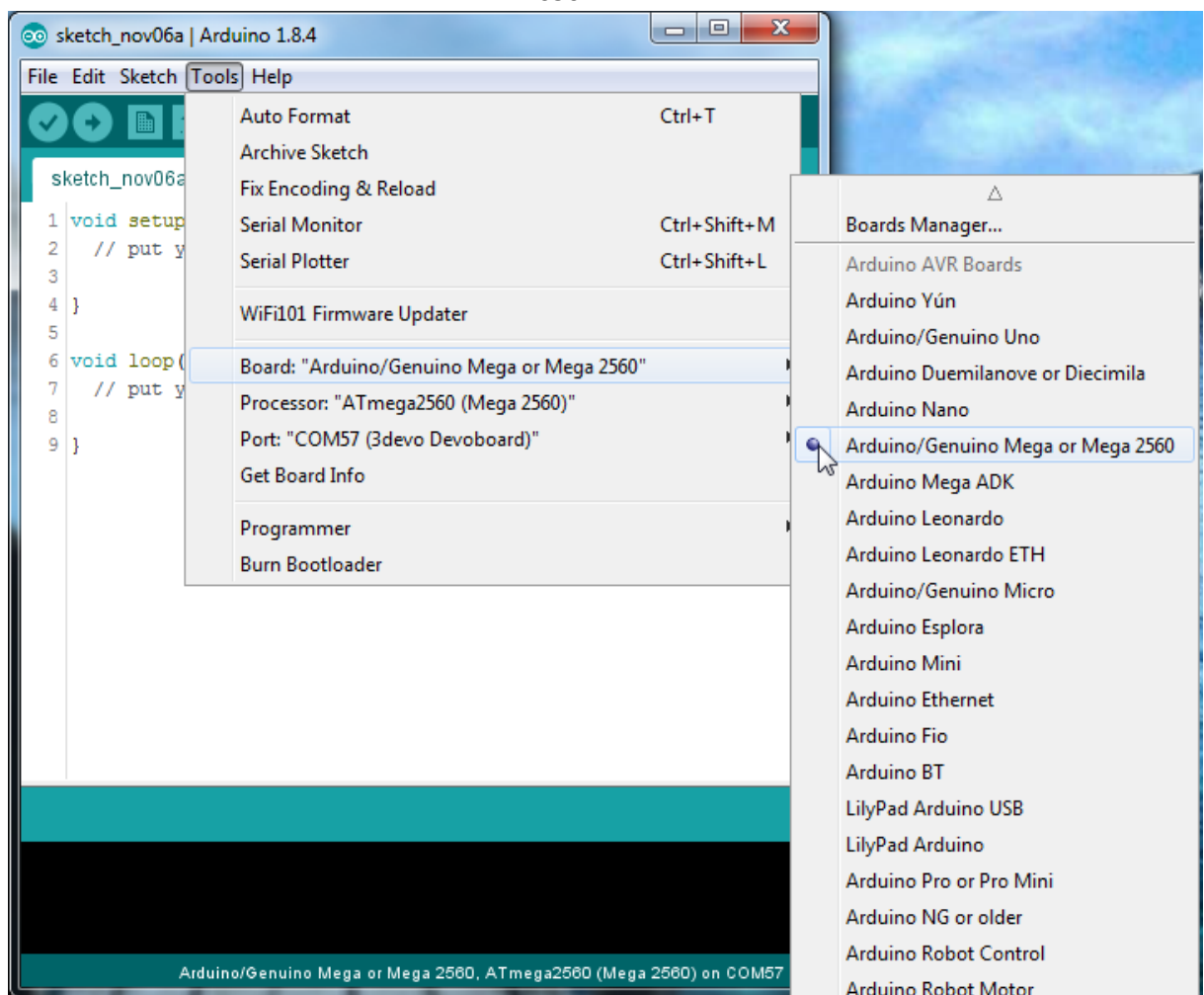


image 12 The ide program

## 13. Go to the tab “Tools” and then click “Board” and select the “Arduino/Genuino Mega or Mega 2650”





14. Now select the correct com port by selecting “tools” then use the drop down menu to select “Port:” then select the correct COM port. (select the same COM port which you selected while uploading the firmware to the extruder in step 10)

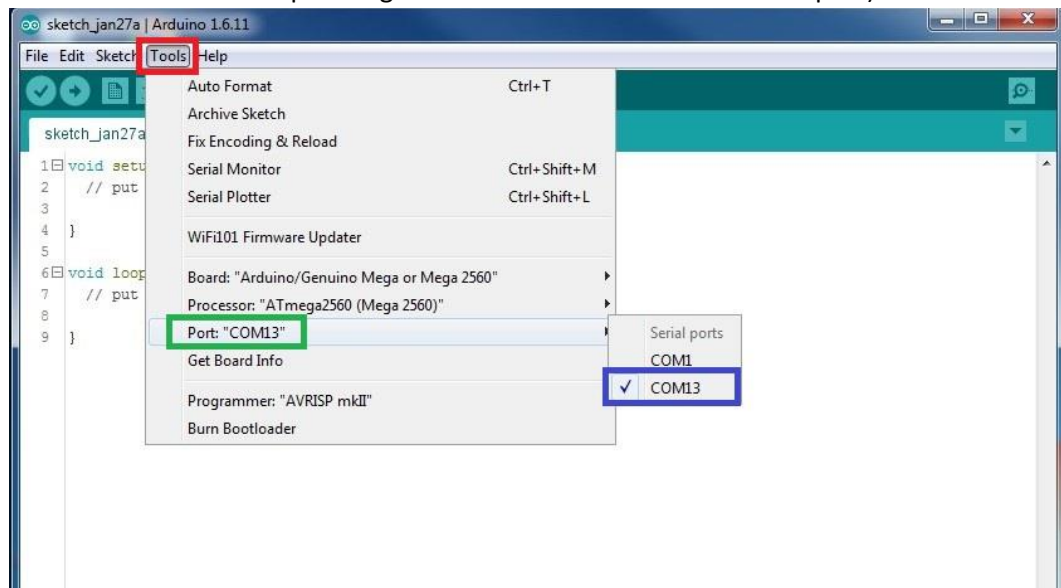


image 13 selecting a COM port

15. Go to the upper right corner of the Arduino IDE main screen, and click the looking glass icon:



This will open the “Serial Monitor”.

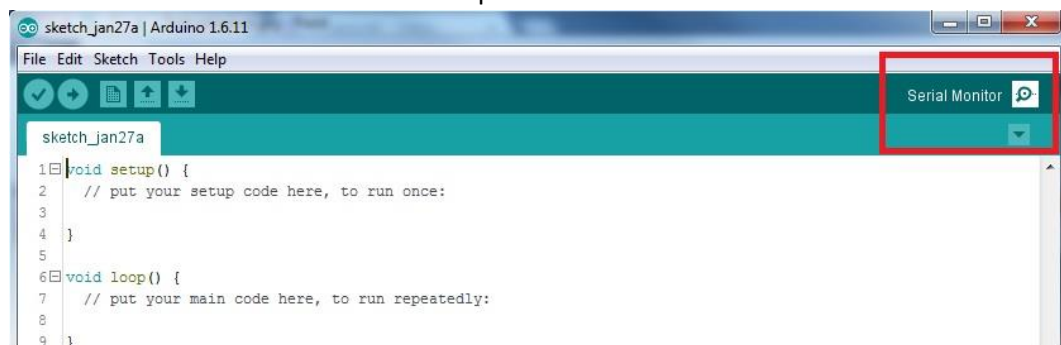


image 14 button to open serial monitor

16. When the “Serial Monitor” is opened, make sure you set the options in the bottom right corner to “Both NL & CR” and “115200 baud”

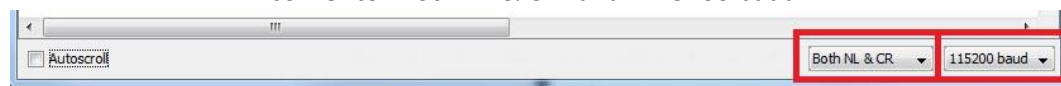


image 15 Serial monitor settings

17. At this point you should be able to see some information on the “Serial monitor” screen. One of the following message will be visible in the log depending on which interface board is used in your machine. The messages shown are just for debug purposes and are no errors when the machine is restarted by opening the serial monitor.

Starting...

Found slave, type = 0x1, revision = 0x1, bootloader version = 0x1

Slave serial number: 59 34 32 31 36 33 04 16 42

ProcessGuard: Startup error: Reset signal received.

Or

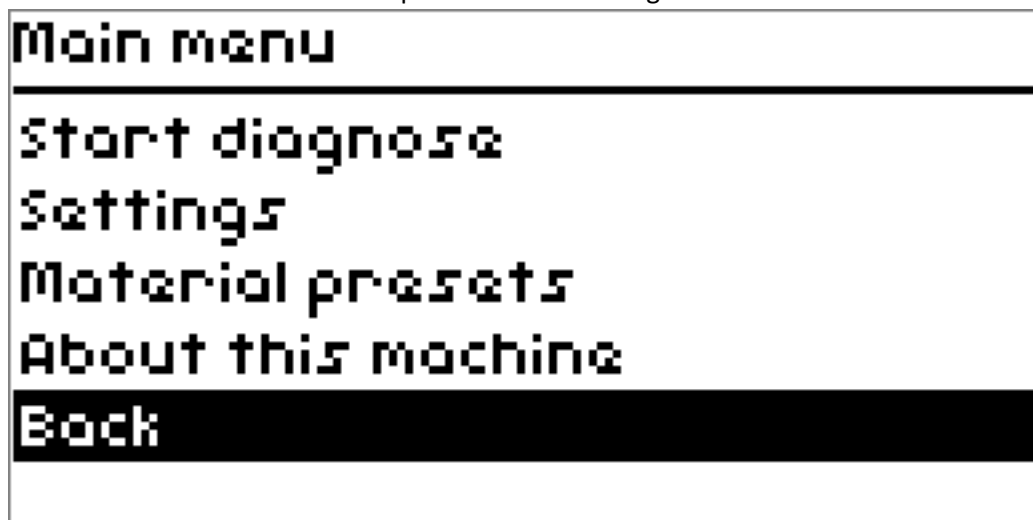
Starting...

Slave write failed: 2

InterfaceBoard: Did not find slave, assuming older interface board

ProcessGuard: Startup error: Reset signal received.

18. Go to the main menu on the extruder and you shall see the option “Start diagnose” you may select this option to start the diagnostic test.



*image 16 main menu in diagnostic firmware*

19. On the display of the extruder a question appears asking if the machine is empty of granulate (the important aspect here is that the screw is exposed and easily observable as seen in image 18) if so proceeded by selecting continue, if not deprive the machine of granulate to the best of your ability. (you may use a vacuum cleaner to suck the granulate out of the hopper)

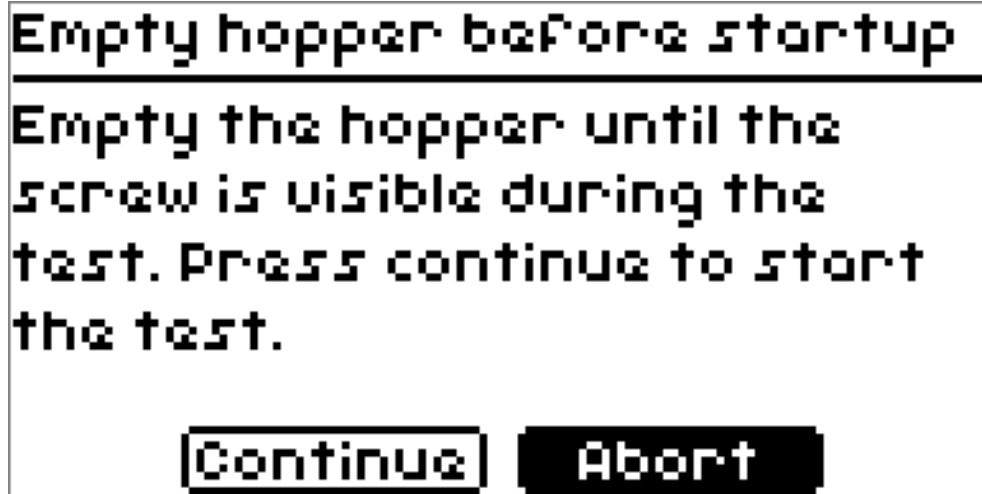


image 17 First question in the diagnostic test



image 18 empty hopper with visible screw

20. The next question will ask if the screw is rotating if it is proceed by selecting yes, if not select no.

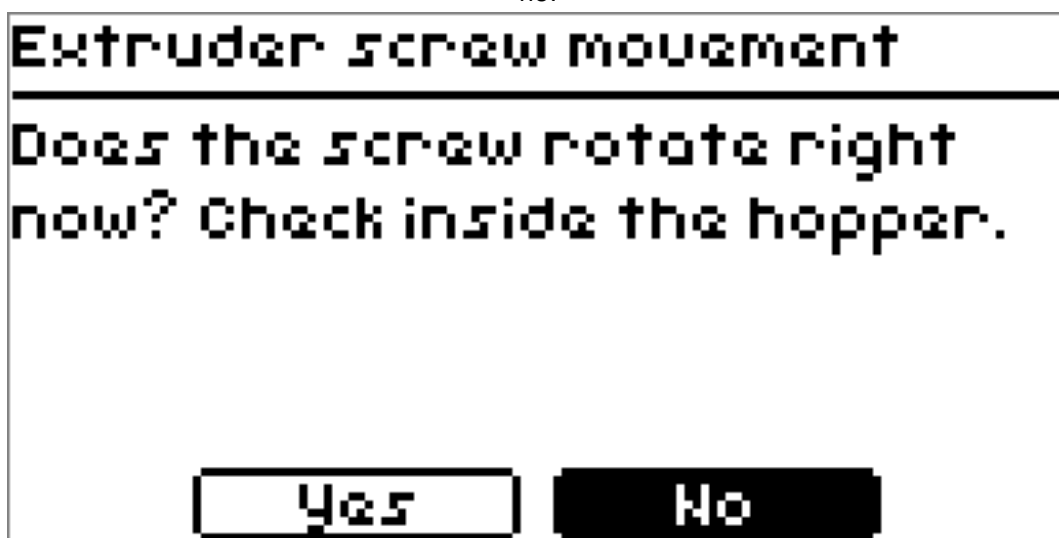
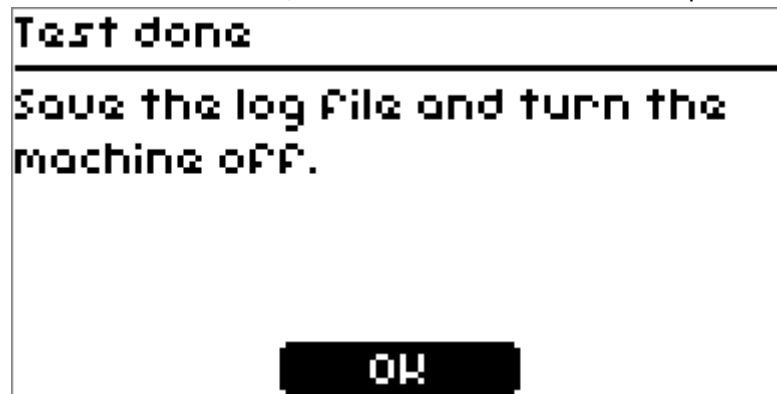
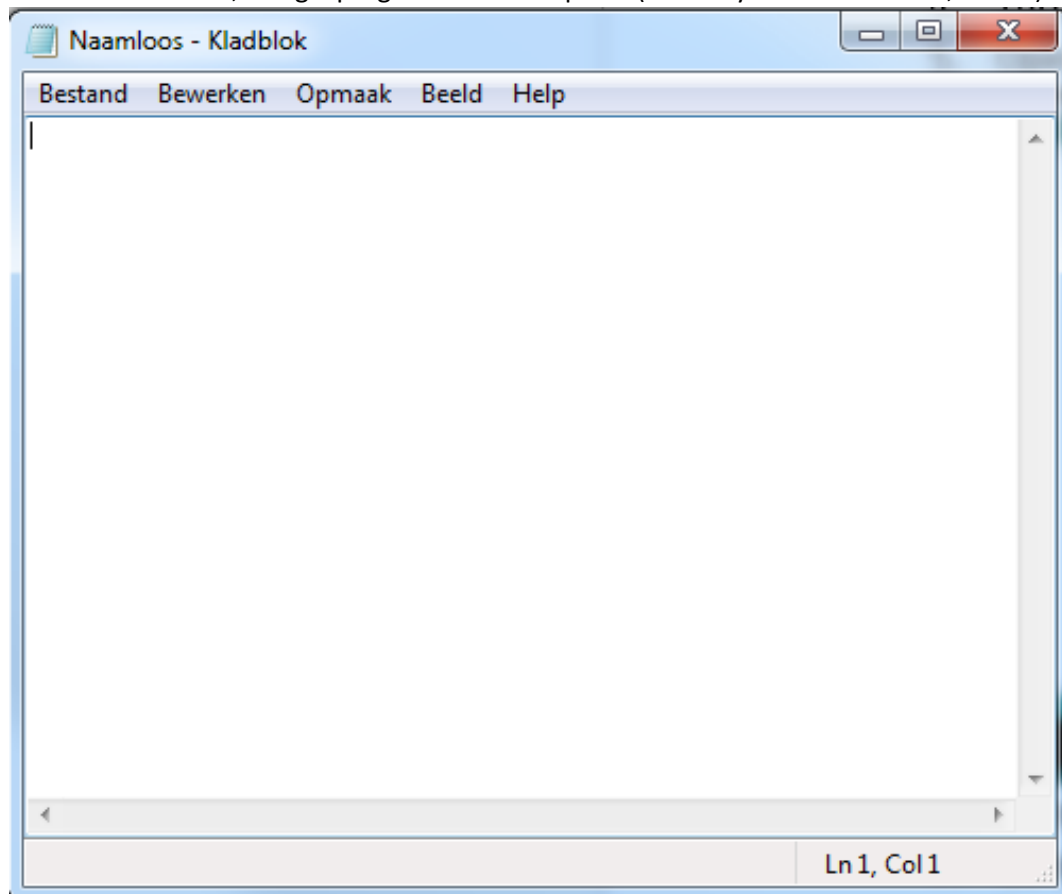


image 19 Second question in the diagnostic test

21. Check if machine shows the following message after the testing is complete. If the message shows that the test has failed, restart the test and answer the question again.



22. Leave the data log running for as long as you seem necessary, then Copy all the collected data to a .txt file, using a program like "Notepad". (shortkeys Ctrl+A & Ctrl+C; Ctrl+V)



23. Send the file to us so we can analyze your specific situation.

The mail address for service is: [service@3devo.eu](mailto:service@3devo.eu)

24. When you sent the file you may want to install the correct firmware for regular use therefore you shall need the latest firmware which can be downloaded on the given web address;

<http://3devo.eu/firmware-updates/>

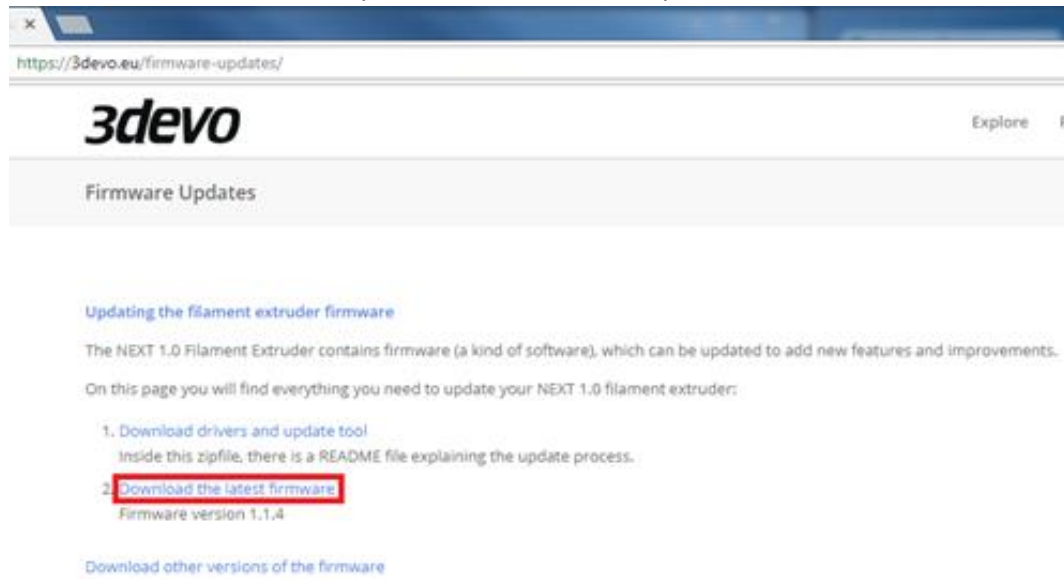


image 20 site with download link for firmware

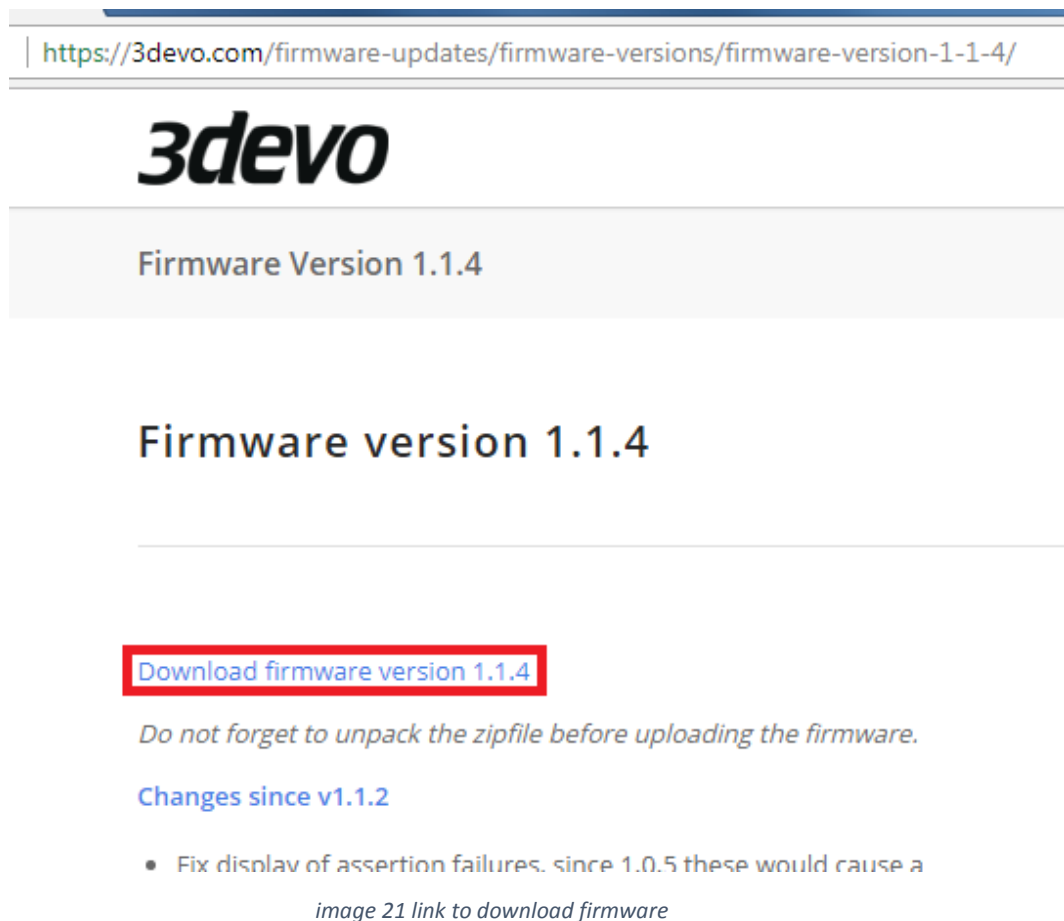


image 21 link to download firmware

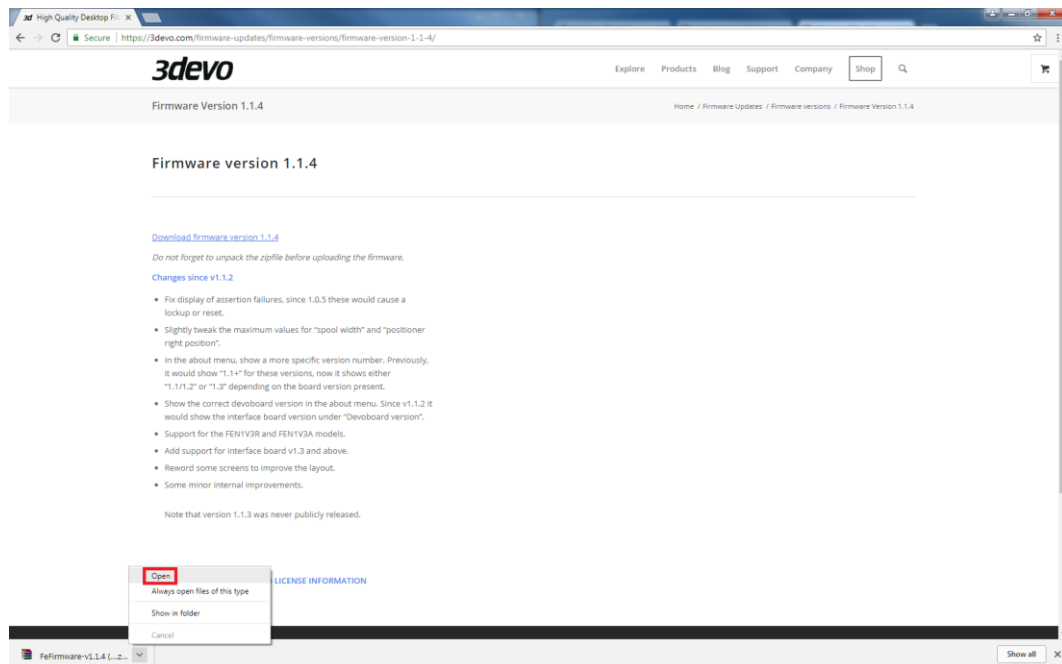


image 22 download option

25. To install the firmware on the extruder use the program “3devoUpdate”

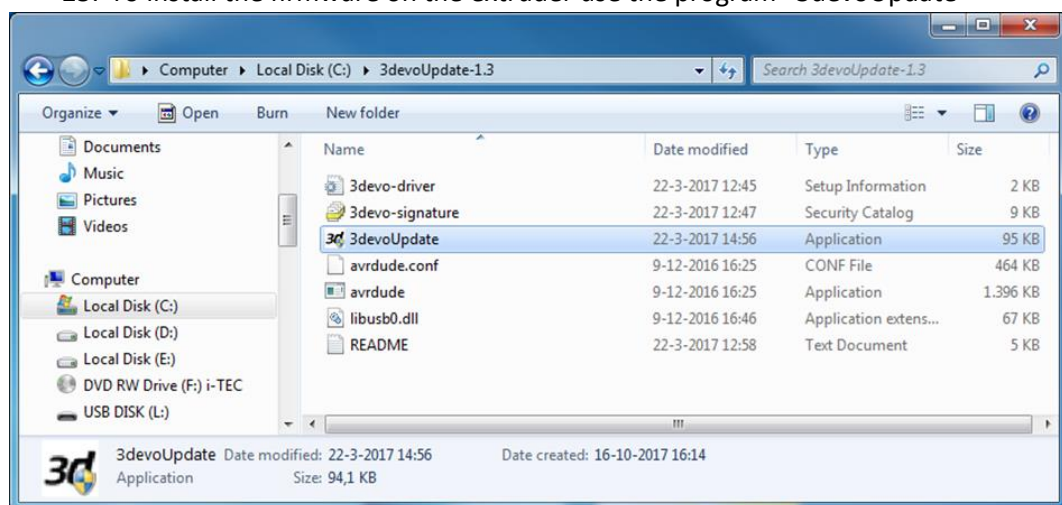


image 23 Location of 3devoUpdate

26. Now select the firmware you just downloaded by using the designated field in the first image  
now select the correct firmware

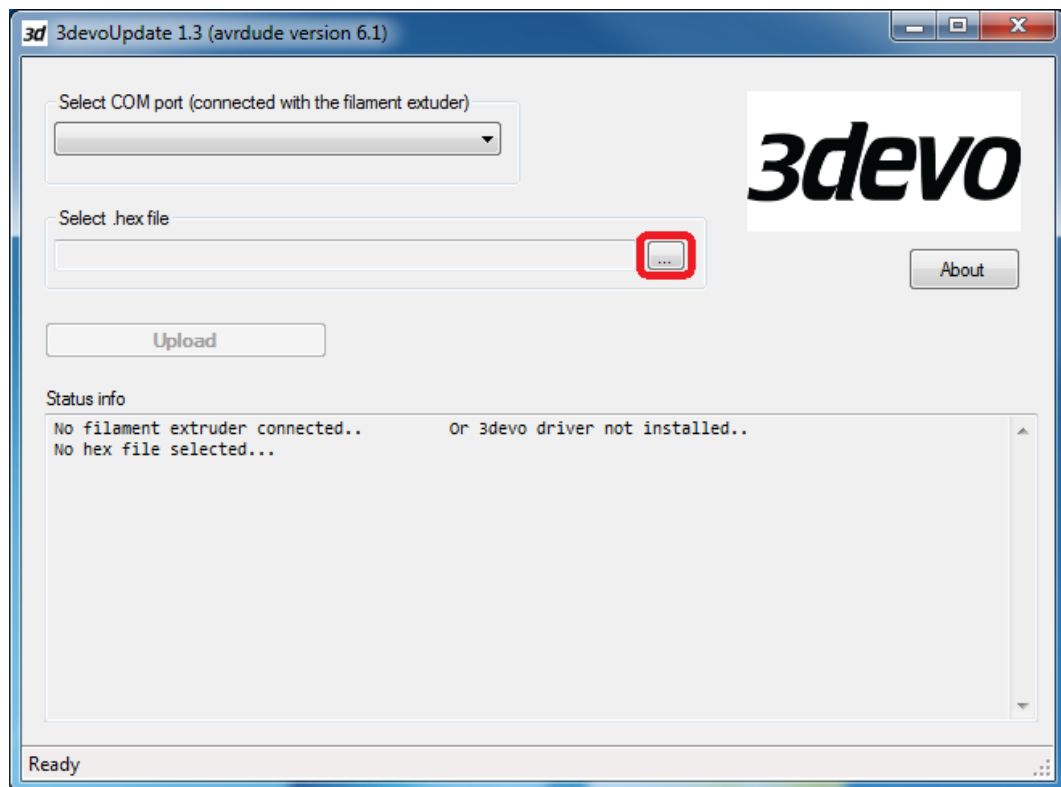


image 24 button to select file

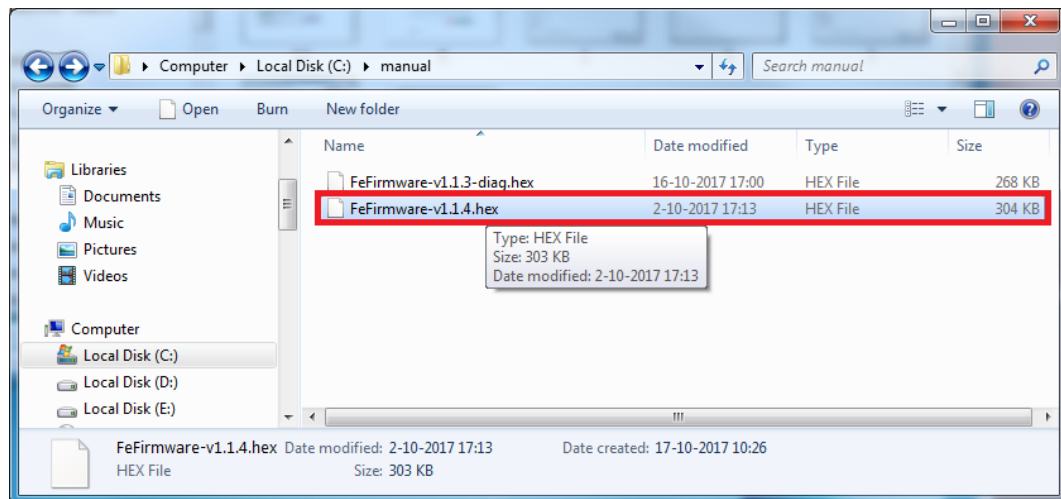
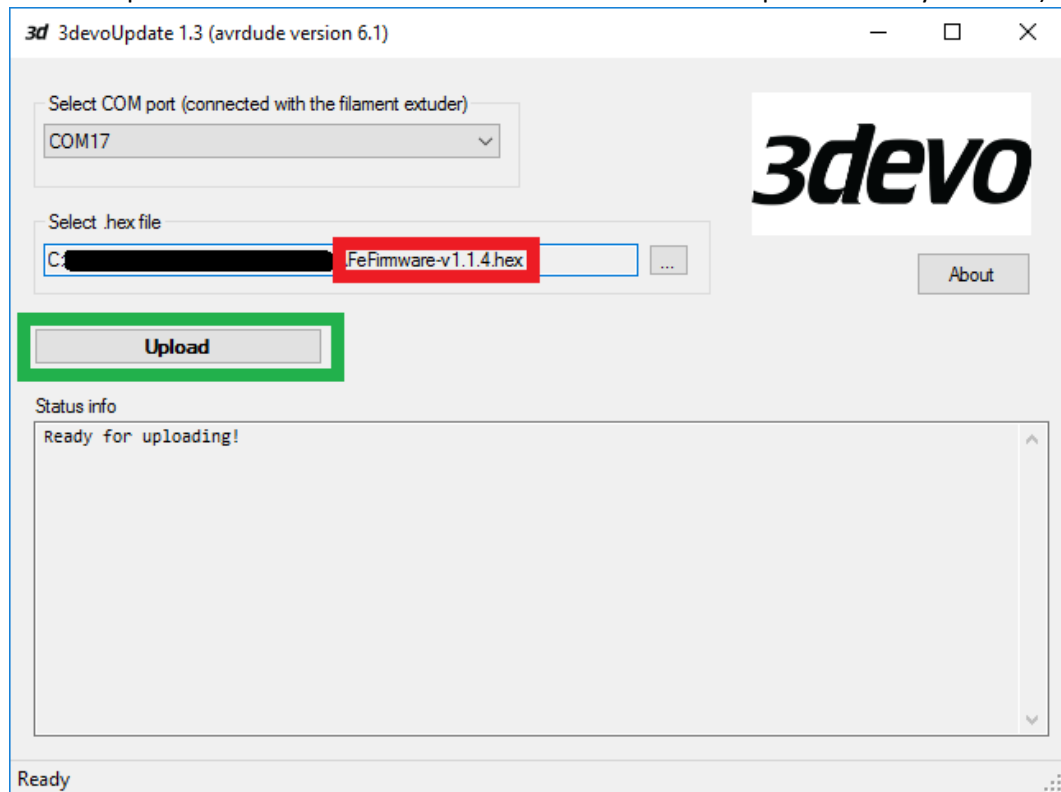


image 25 selecting a firmware file

27. When you selected the correct firmware and you have selected the correct COM port in the designated field if this all is done you may press the **Upload** button. (if you didn't close the 3DevoUpdate or disconnected the extruder the correct COM port is already selected)



*image 26 3devoUpdate ready to upload*

28. After the upload is complete you may disconnect the extruder and now you have completed the diagnostic test and the setup of your extruder.