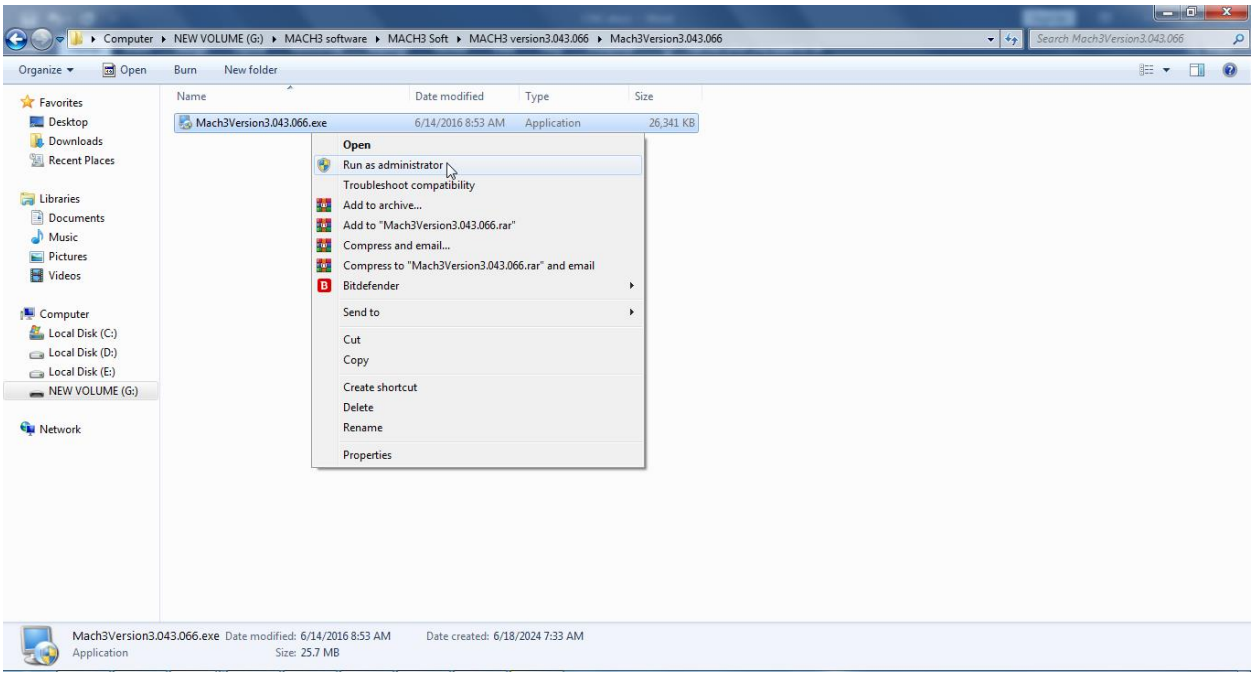
Operating Instruction for CNC Machine

Chapter 1: Software Installation

To install the software, you need the files related to the CNC machine, which are provided to the operator or the purchasing company for machine setup.

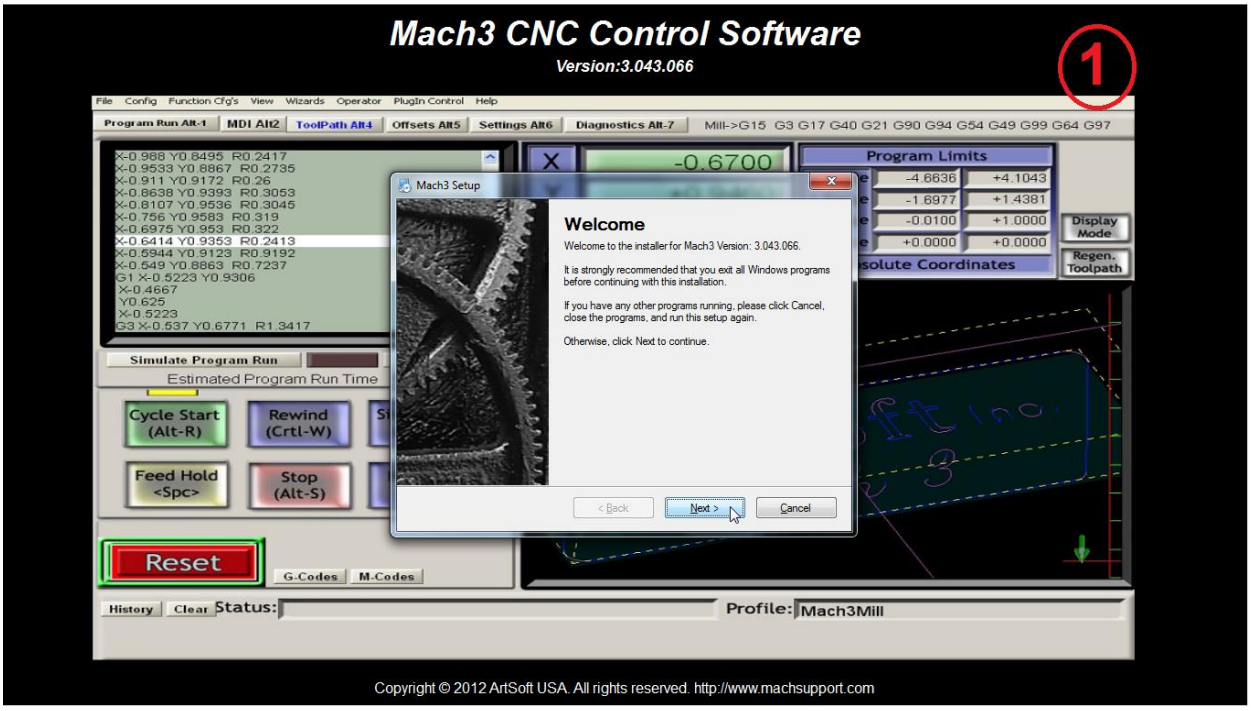
Once you have obtained the required files, navigate to the following path:
MACH3 software/MACH3 Soft/MACH3 version 3.043.066/Mach3Version3.043.066

Right-click on the **Mach3Version3.043.066** application and select Run as administrator to proceed with the installation.



Then, run the following path.

Note: A tutorial video is available in the installation file directory, but it is only required for the software installation steps.


Mach3 CNC Control Software
Version:3.043.066
1
Mach3 Setup
Welcome
Welcome to the installer for Mach3 Version: 3.043.066.
It is strongly recommended that you exit all Windows programs before continuing with this installation.
If you have any other programs running, please click Cancel, close the programs, and run this setup again.
Otherwise, click Next to continue.
< Back
Next >
Cancel
Program Limits
Simulate Program Run
Estimated Program Run Time
Cycle Start (Alt-R)
Rewind (Crtl-W)
Feed Hold <Spc>
Stop (Alt-S)
Reset
G-Codes
M-Codes
History
Clear
Status:
Profile:
Mach3Mill
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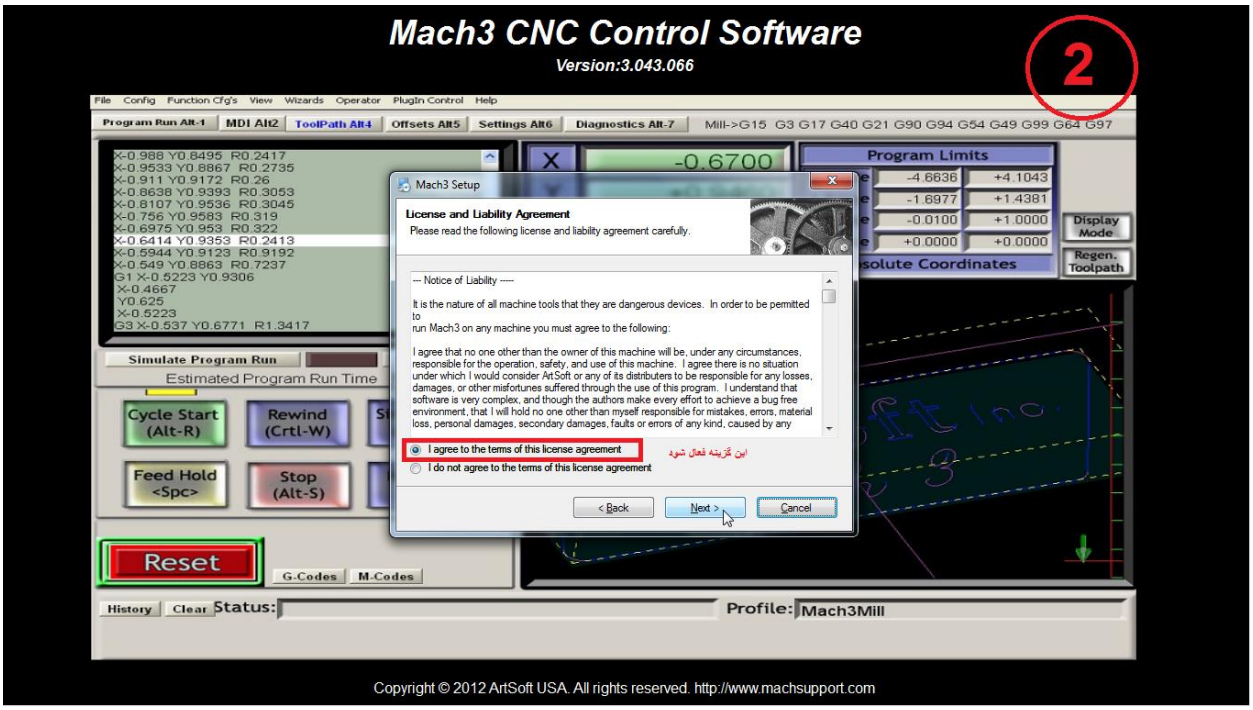
Mach3 CNC Control Software
Version:3.043.066
2
Mach3 Setup
License and Liability Agreement
Please read the following license and liability agreement carefully.
-- Notice of Liability ----
It is the nature of all machine tools that they are dangerous devices. In order to be permitted to
run Mach3 on any machine you must agree to the following:
I agree that no one other than the owner of this machine will be, under any circumstances, responsible for the operation, safety, and use of this machine. I agree there is no situation under which I would consider ArtSoft or any of its distributers to be responsible for any losses, damages, or other misfortunes suffered through the use of this program. I understand that software is very complex, and though the authors make every effort to achieve a bug free environment, that I will hold no one other than myself responsible for mistakes, errors, material loss, personal damages, secondary damages, faults or errors of any kind, caused by any
I agree to the terms of this license agreement
I do not agree to the terms of this license agreement
این گزینه فعال شود
< Back
Next >
Cancel
Program Limits
Simulate Program Run
Estimated Program Run Time
Cycle Start (Alt-R)
Rewind (Crtl-W)
Feed Hold <Spc>
Stop (Alt-S)
Reset
G-Codes
M-Codes
History
Clear
Status:
Profile:
Mach3Mill
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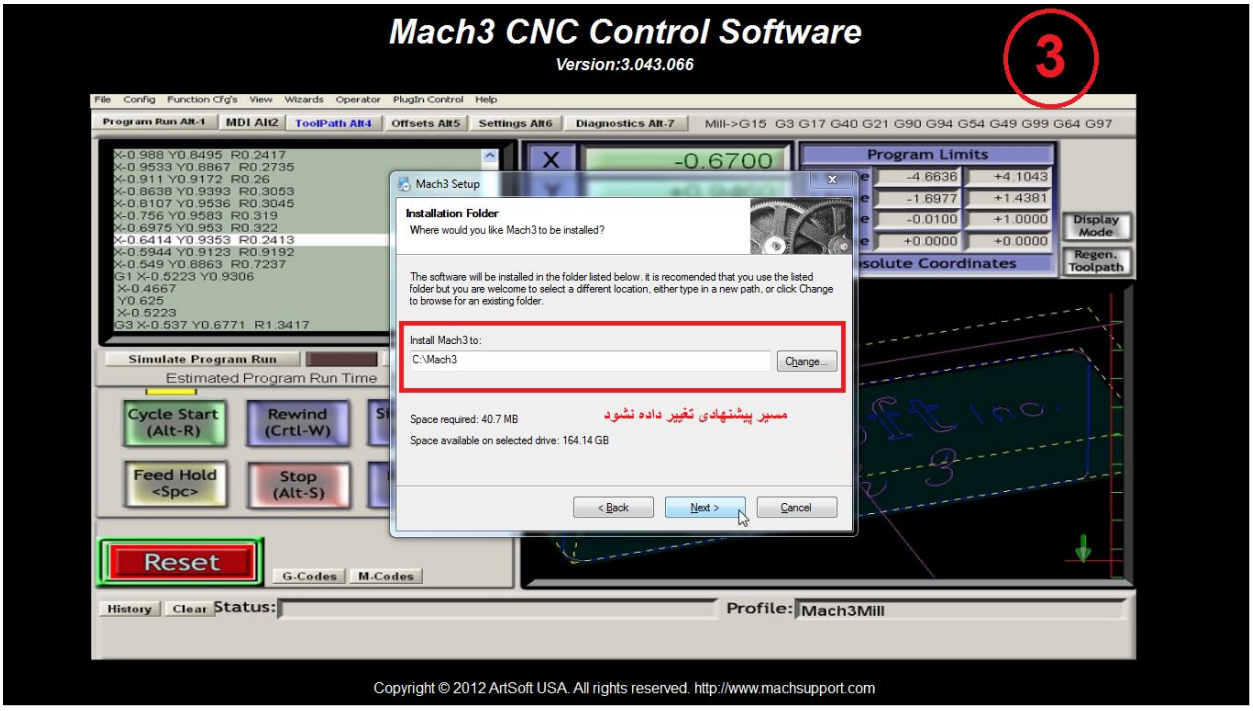
Mach3 CNC Control Software
Version:3.043.066
3
Mach3 Setup
Installation Folder
Where would you like Mach3 to be installed?
The software will be installed in the folder listed below. it is recomended that you use the listed folder but you are welcome to select a different location, either type in a new path, or click Change to browse for an existing folder.
Install Mach3 to:
C:\Mach3
Change...
مسیر پیشنهادی تغییر داده نشود
Space required: 40.7 MB
Space available on selected drive: 164.14 GB
< Back
Next >
Cancel
Program Limits
Simulate Program Run
Estimated Program Run Time
Cycle Start (Alt-R)
Rewind (Crtl-W)
Feed Hold <Spc>
Stop (Alt-S)
Reset
G-Codes
M-Codes
History
Clear
Status:
Profile: Mach3Mill
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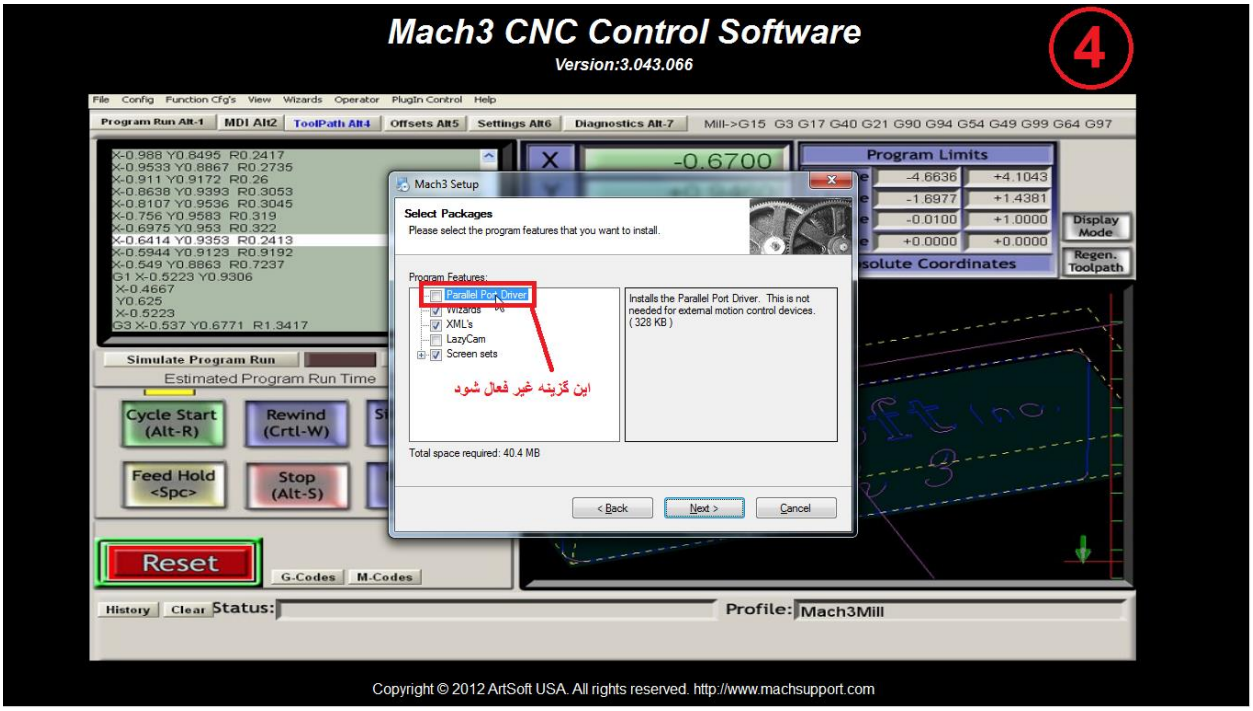
Mach3 CNC Control Software
Version:3.043.066
4
Mach3 Setup
Select Packages
Please select the program features that you want to install.
Program Features:
Parallel Port Driver
XML's
LazyCam
Screen sets
این گزینه غیر فعال شود
Installs the Parallel Port Driver. This is not needed for external motion control devices. (328 KB)
Total space required: 40.4 MB
< Back
Next >
Cancel
Program Limits
Simulate Program Run
Estimated Program Run Time
Cycle Start (Alt-R)
Rewind (Crtl-W)
Feed Hold <Spc>
Stop (Alt-S)
Reset
G-Codes
M-Codes
History
Clear
Status:
Profile: Mach3Mill
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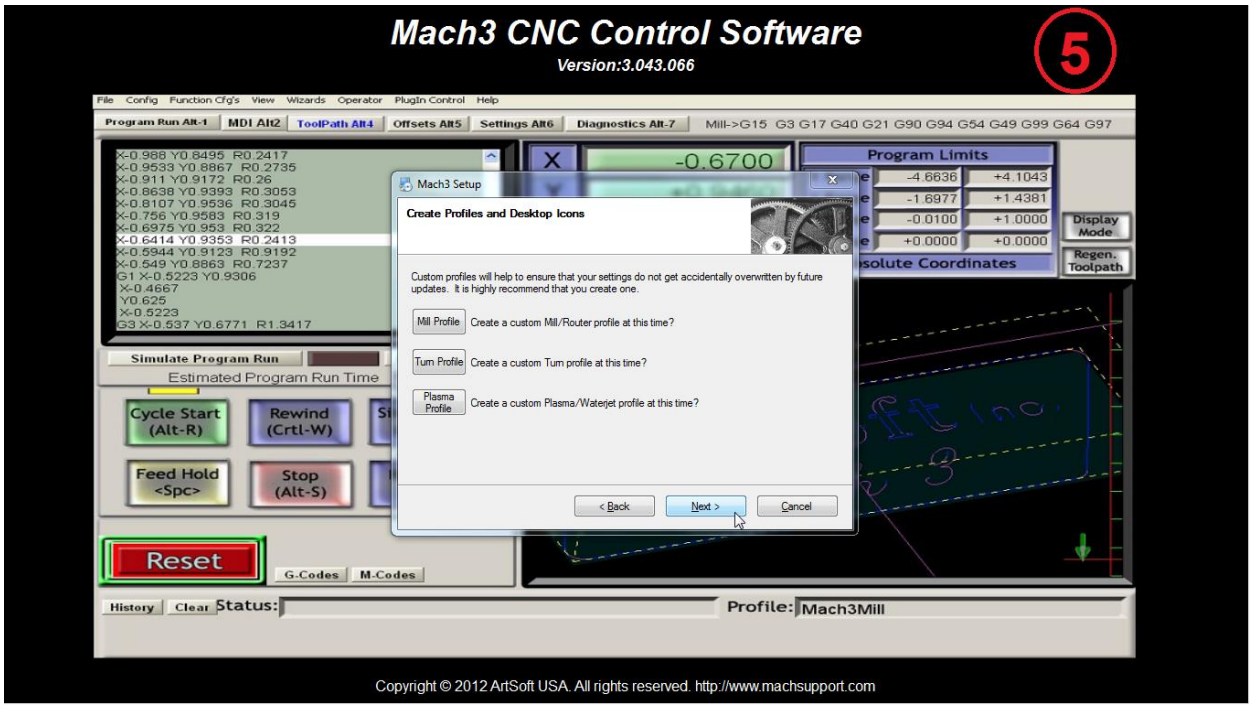
Mach3 CNC Control Software
Version:3.043.066
5
Mach3 Setup
Create Profiles and Desktop Icons
Custom profiles will help to ensure that your settings do not get accidentally overwritten by future updates. It is highly recommend that you create one.
Mill Profile
Create a custom Mill/Router profile at this time?
Turn Profile
Create a custom Turn profile at this time?
Plasma Profile
Create a custom Plasma/Waterjet profile at this time?
< Back
Next >
Cancel
Program Limits
Simulate Program Run
Estimated Program Run Time
Cycle Start (Alt-R)
Rewind (Crtl-W)
Feed Hold <Spc>
Stop (Alt-S)
Reset
G-Codes
M-Codes
History
Clear
Status:
Profile:
Mach3Mill
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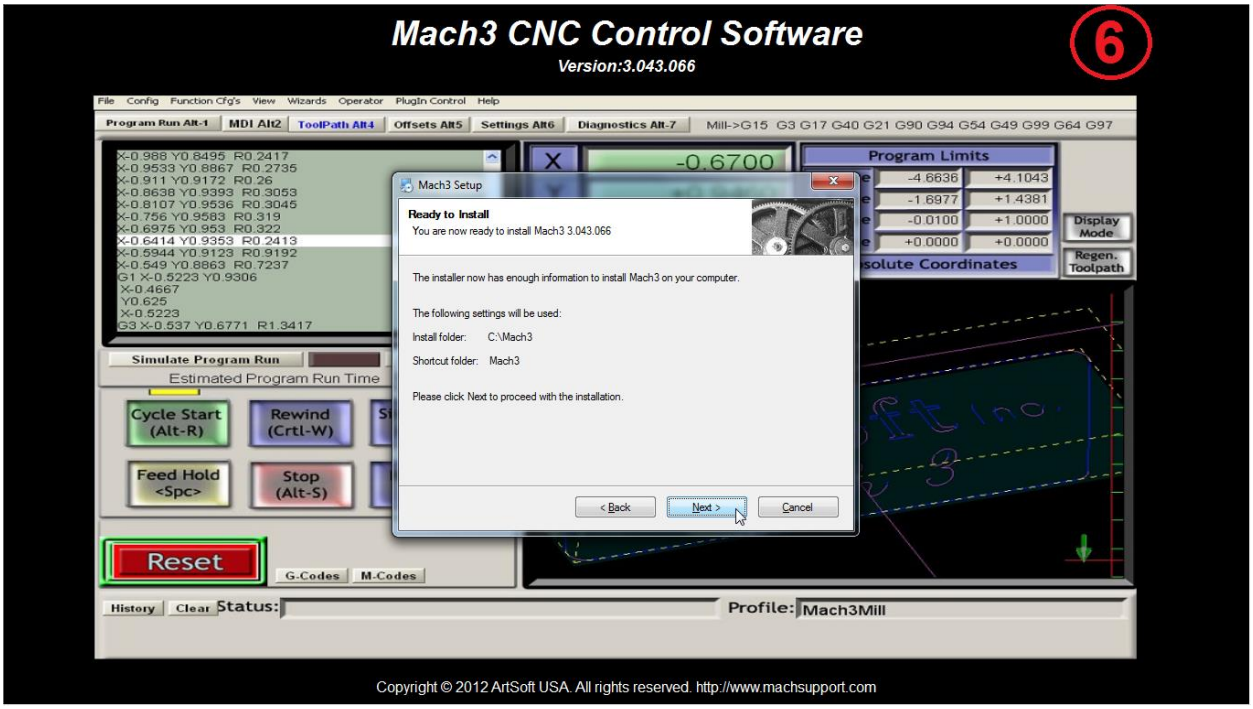
Mach3 CNC Control Software
Version:3.043.066
6
Mach3 Setup
Ready to Install
You are now ready to install Mach3 3.043.066
The installer now has enough information to install Mach3 on your computer.
The following settings will be used:
Install folder: C:\Mach3
Shortcut folder: Mach3
Please click Next to proceed with the installation.
< Back
Next >
Cancel
Program Limits
Simulate Program Run
Estimated Program Run Time
Cycle Start (Alt-R)
Rewind (Crtl-W)
Feed Hold <Spc>
Stop (Alt-S)
Reset
G-Codes
M-Codes
History
Clear
Status:
Profile:
Mach3Mill
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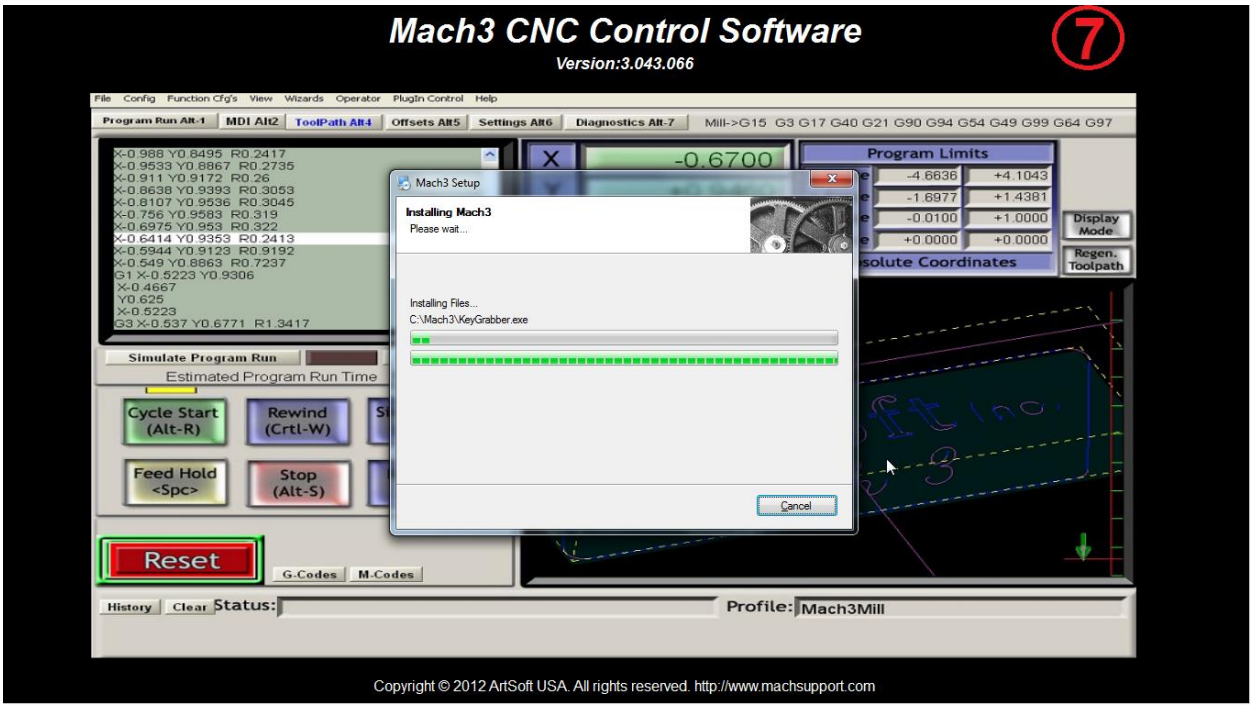
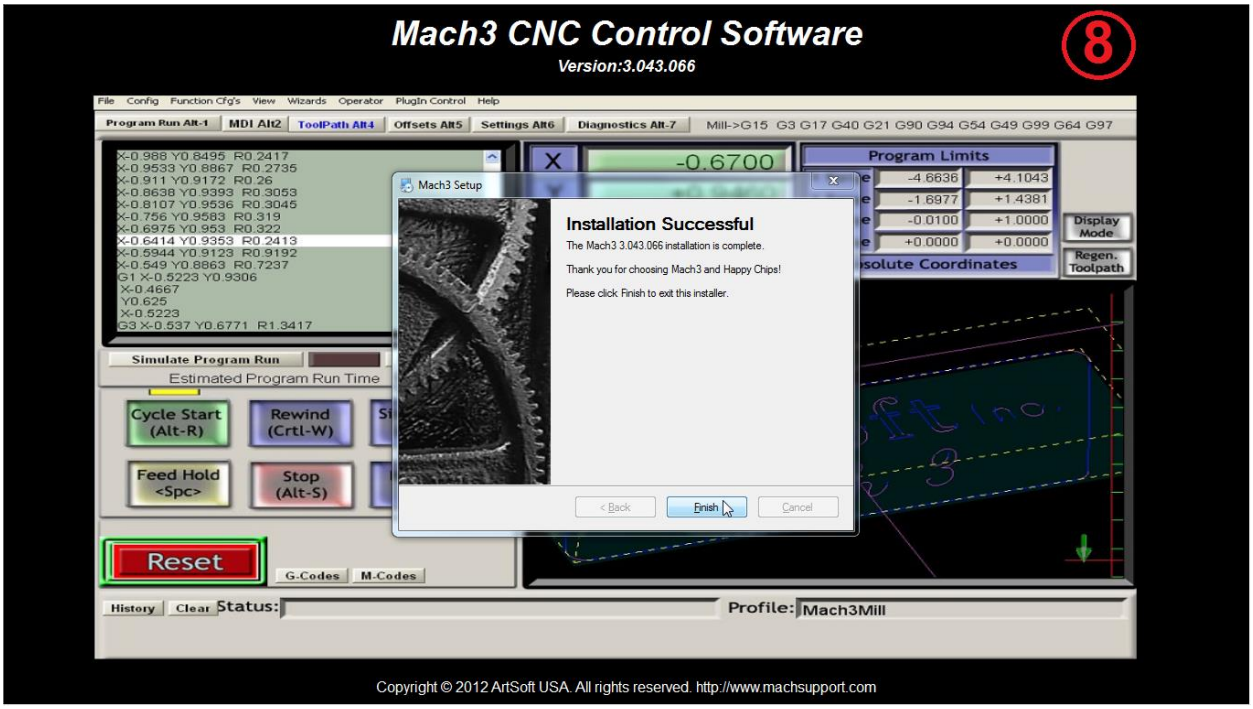
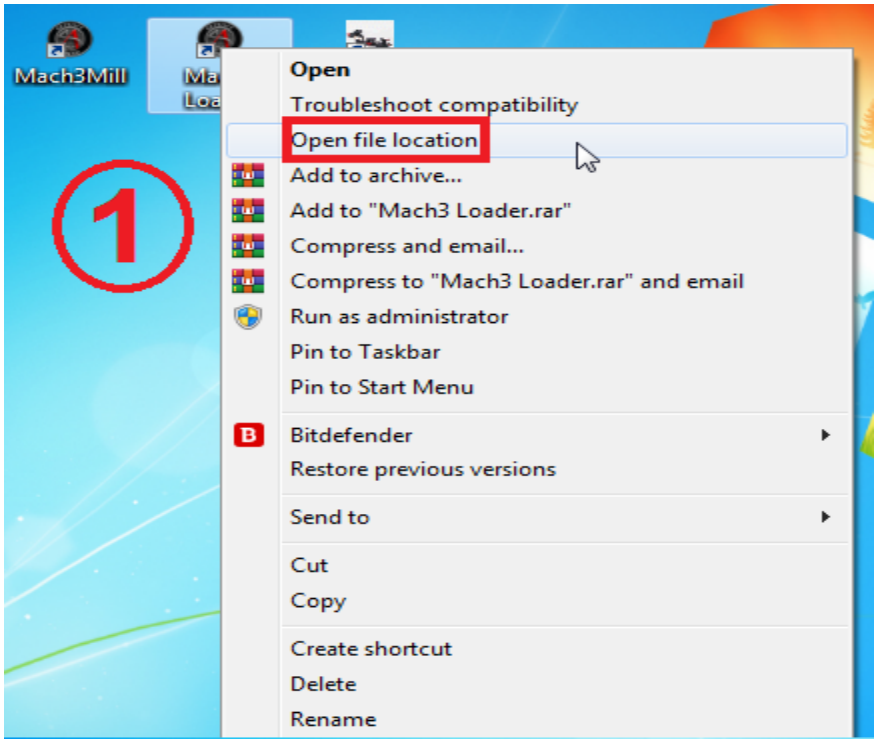


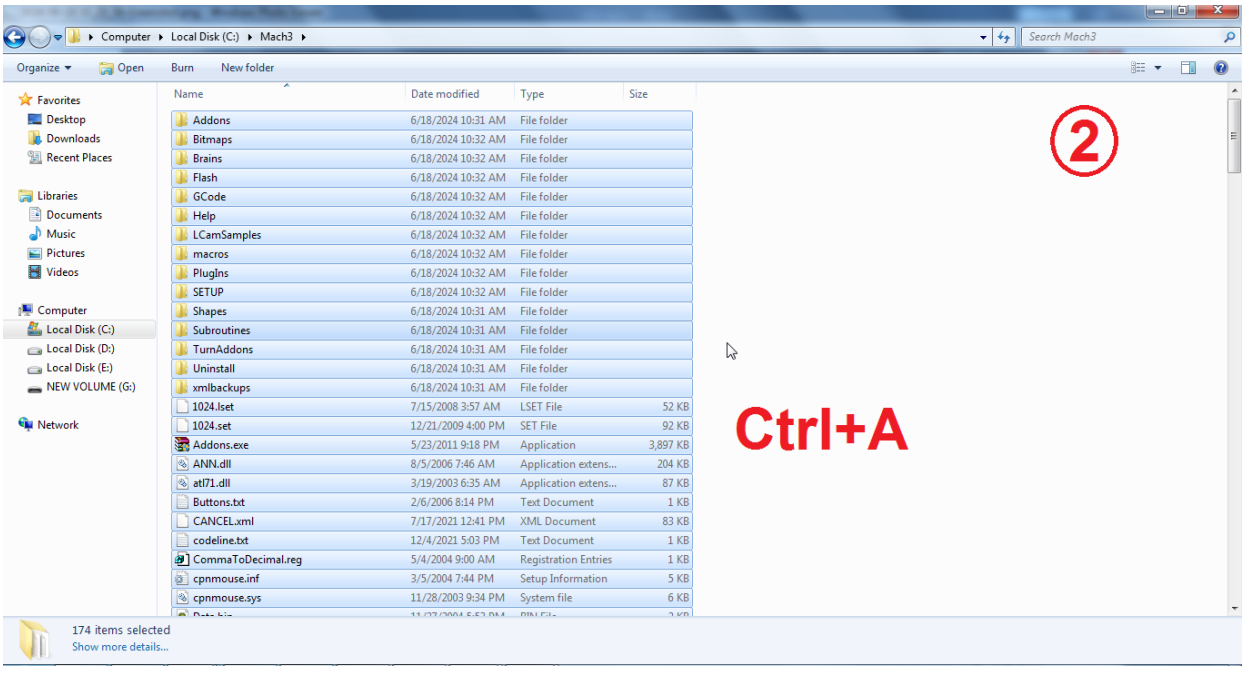


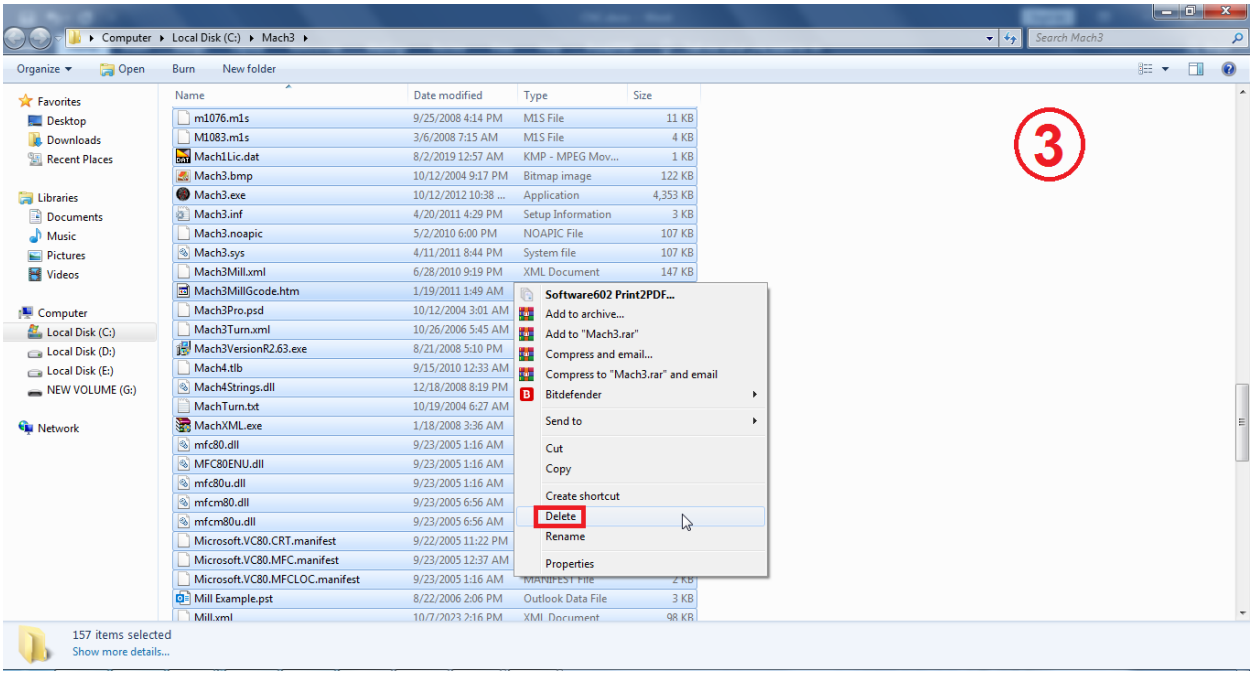
After completing the installation process, the following icons will appear on the desktop.

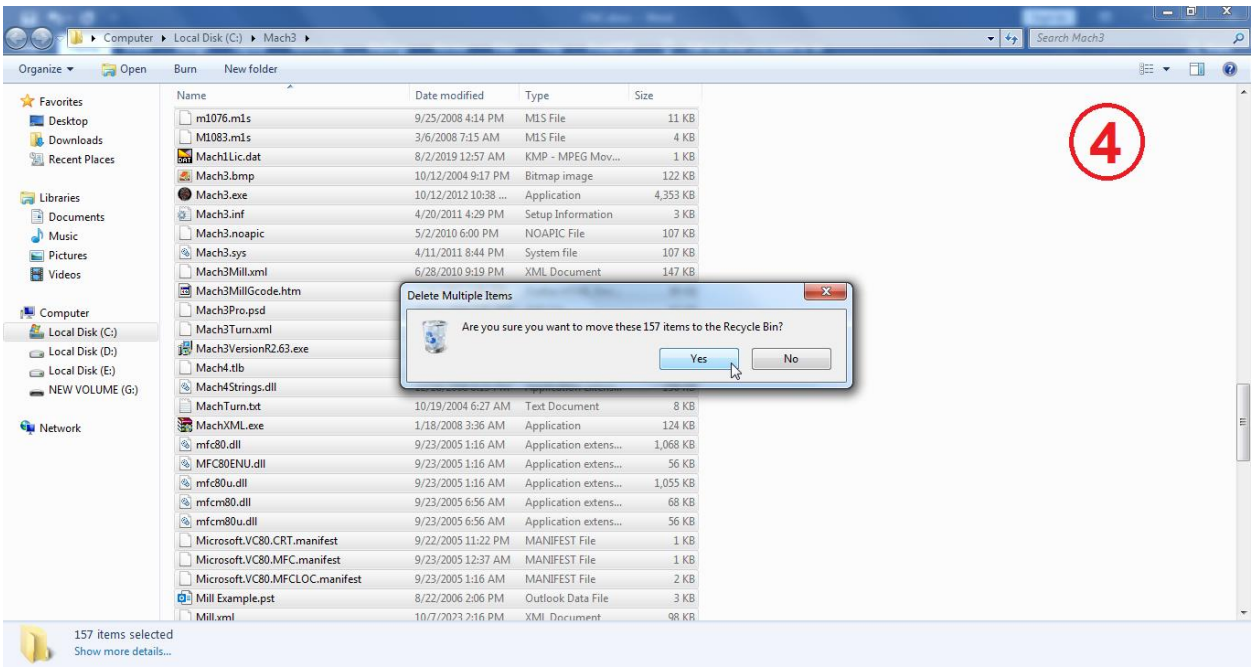
Right-click on one of the icons and select **Open file location** to display the software installation folder. In the opened folder, all the raw files of the software are present. Then, in the CNC machine folders, open the

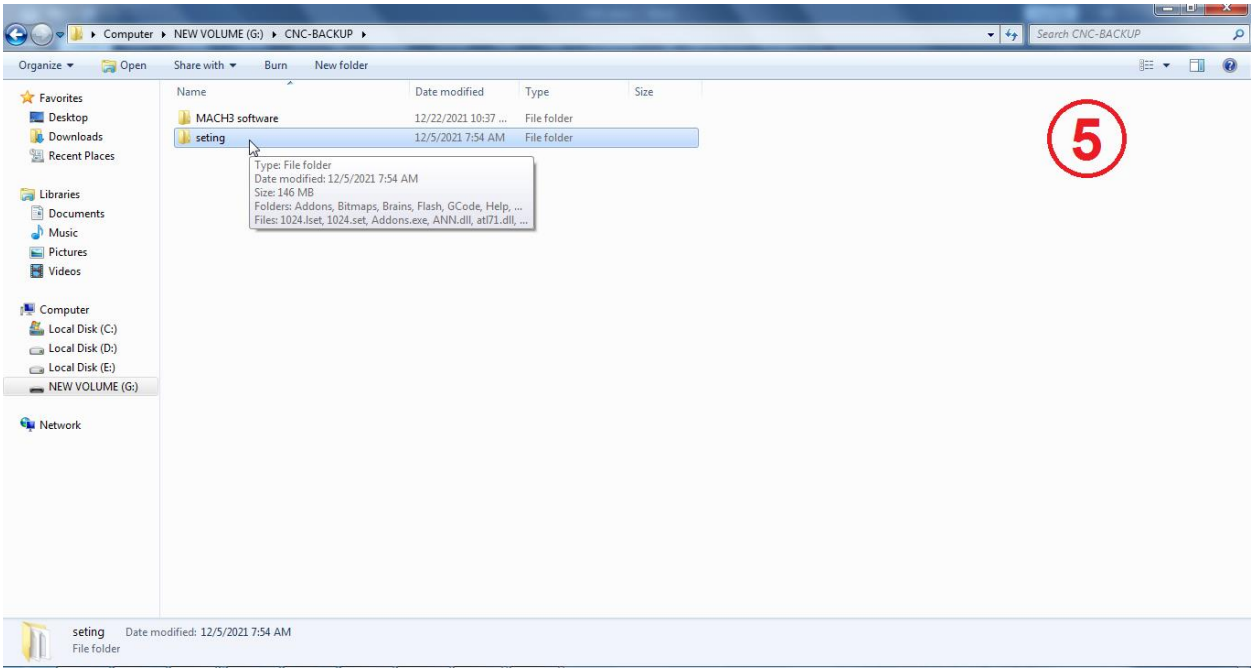
folder named **Setting** and replace all its contents with the raw files in the software installation location on the computer, following the sequence below

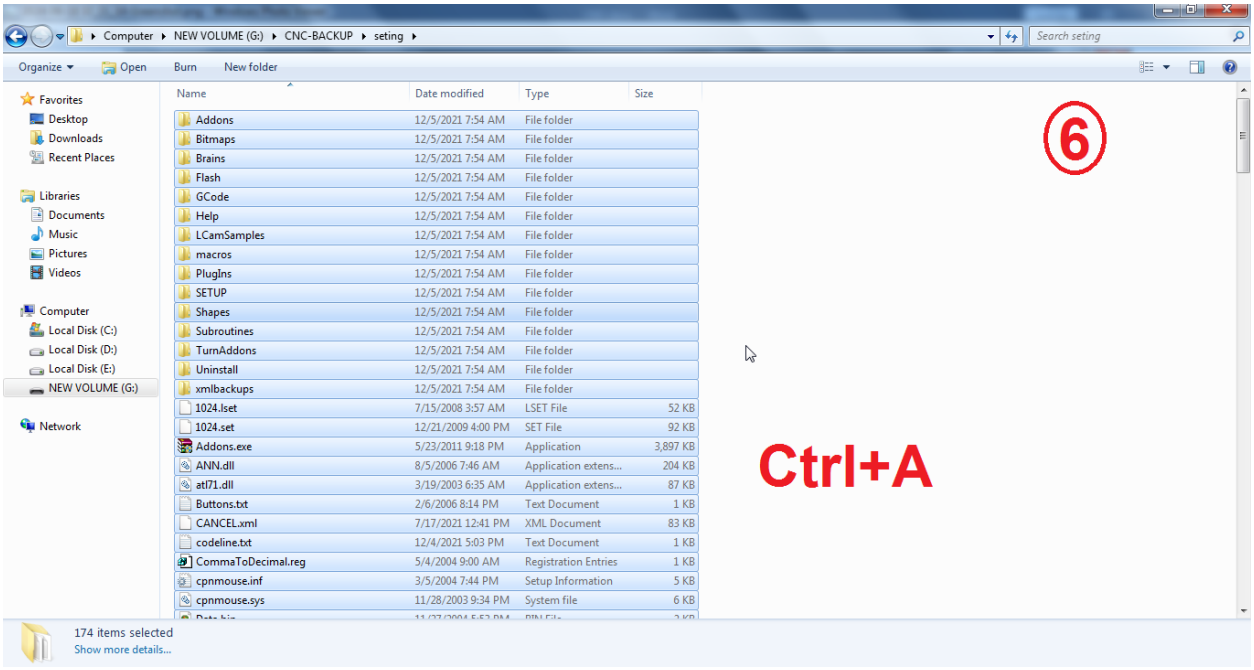


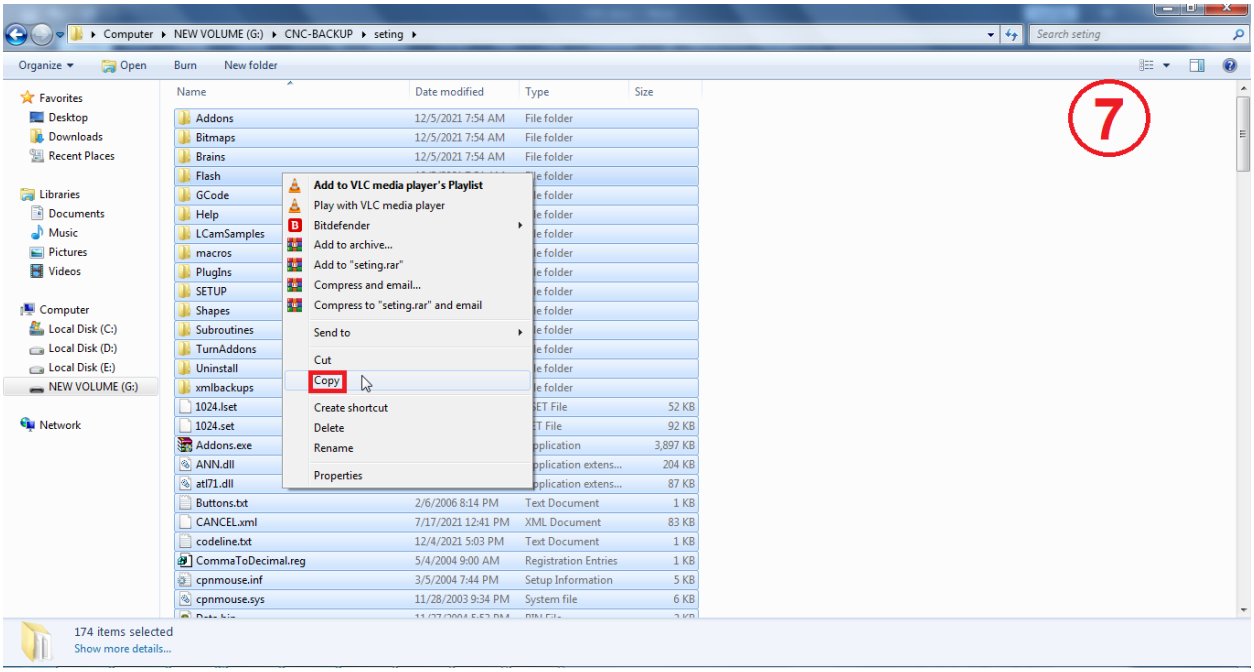


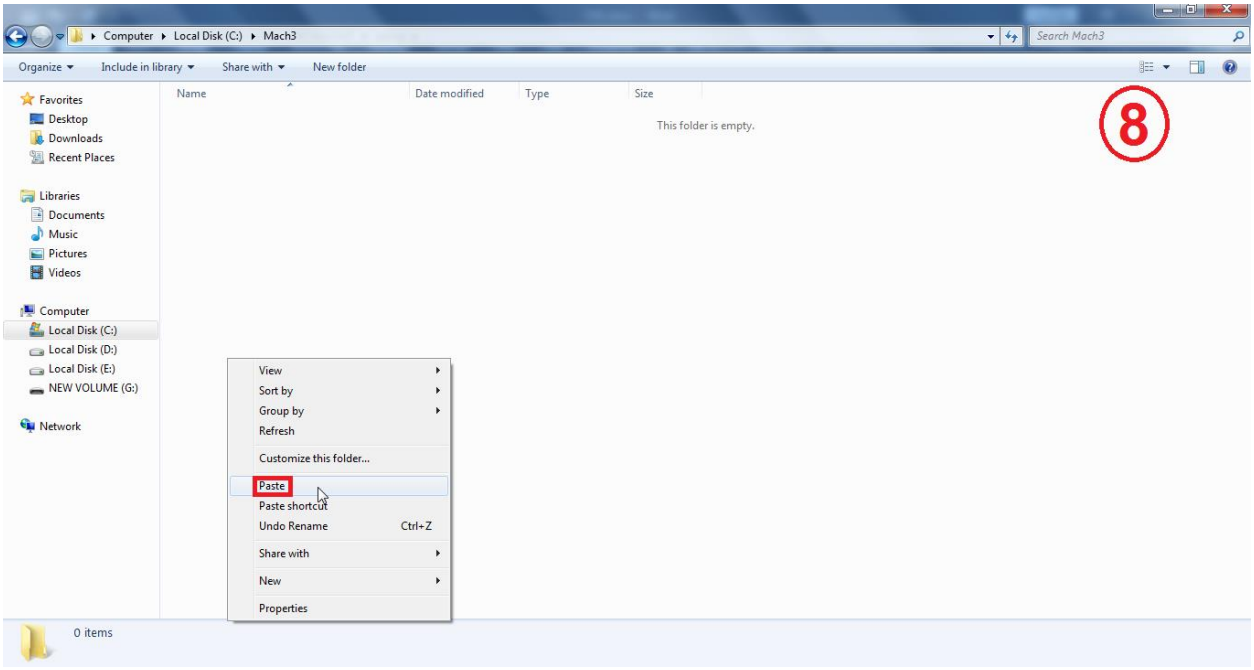

Computer ▸ Local Disk (C:) ▸ Mach3 ▸
Search Mach3
Organize
Open
Burn
New folder
Favorites
Desktop
Downloads
Recent Places
Libraries
Documents
Music
Pictures
Videos
Computer
Local Disk (C:)
Local Disk (D:)
Local Disk (E:)
NEW VOLUME (G:)
Network
Name
Date modified
Type
Size
m1076.m1s 9/25/2008 4:14 PM M1S File 11 KB
M1083.m1s 3/6/2008 7:15 AM M1S File 4 KB
Mach1Lic.dat 8/2/2019 12:57 AM KMP - MPEG Mov... 1 KB
Mach3.bmp 10/12/2004 9:17 PM Bitmap image 122 KB
Mach3.exe 10/12/2012 10:38 ... Application 4,353 KB
Mach3.inf 4/20/2011 4:29 PM Setup Information 3 KB
Mach3.noapic 5/2/2010 6:00 PM NOAPIC File 107 KB
Mach3.sys 4/11/2011 8:44 PM System file 107 KB
Mach3Mill.xml 6/28/2010 9:19 PM XML Document 147 KB
Mach3MillGcode.htm 1/19/2011 1:49 AM
Mach3Pro.psd 10/12/2004 3:01 AM
Mach3Turn.xml 10/26/2006 5:45 AM
Mach3VersionR2.63.exe 8/21/2008 5:10 PM
Mach4.tlb 9/15/2010 12:33 AM
Mach4Strings.dll 12/18/2008 8:19 PM
MachTurn.txt 10/19/2004 6:27 AM
MachXML.exe 1/18/2008 3:36 AM
mfc80.dll 9/23/2005 1:16 AM
MFC80ENU.dll 9/23/2005 1:16 AM
mfc80u.dll 9/23/2005 1:16 AM
mfcm80.dll 9/23/2005 6:56 AM
mfcm80u.dll 9/23/2005 6:56 AM
Microsoft.VC80.CRT.manifest 9/22/2005 11:22 PM
Microsoft.VC80.MFC.manifest 9/23/2005 12:37 AM
Microsoft.VC80.MFCLOC.manifest 9/23/2005 1:16 AM
Mill Example.pst 8/22/2006 2:06 PM Outlook Data File 3 KB
Mill.xml 10/7/2023 2:16 PM XML Document 98 KB
Software602 Print2PDF...
Add to archive...
Add to "Mach3.rar"
Compress and email...
Compress to "Mach3.rar" and email
Bitdefender
Send to
Cut
Copy
Create shortcut
Delete
Rename
Properties
157 items selected
Show more details...
3


Computer ▸ Local Disk (C:) ▸ Mach3 ▸
Search Mach3
Organize
Open
Burn
New folder
Favorites
Desktop
Downloads
Recent Places
Libraries
Documents
Music
Pictures
Videos
Computer
Local Disk (C:)
Local Disk (D:)
Local Disk (E:)
NEW VOLUME (G:)
Network
Name
Date modified
Type
Size
m1076.m1s 9/25/2008 4:14 PM M1S File 11 KB
M1083.m1s 3/6/2008 7:15 AM M1S File 4 KB
Mach1Lic.dat 8/2/2019 12:57 AM KMP - MPEG Mov... 1 KB
Mach3.bmp 10/12/2004 9:17 PM Bitmap image 122 KB
Mach3.exe 10/12/2012 10:38 ... Application 4,353 KB
Mach3.inf 4/20/2011 4:29 PM Setup Information 3 KB
Mach3.noapic 5/2/2010 6:00 PM NOAPIC File 107 KB
Mach3.sys 4/11/2011 8:44 PM System file 107 KB
Mach3Mill.xml 6/28/2010 9:19 PM XML Document 147 KB
Mach3MillGcode.htm
Mach3Pro.psd
Mach3Turn.xml
Mach3VersionR2.63.exe
Mach4.tlb
Mach4Strings.dll
MachTurn.txt 10/19/2004 6:27 AM Text Document 8 KB
MachXML.exe 1/18/2008 3:36 AM Application 124 KB
mfc80.dll 9/23/2005 1:16 AM Application extens... 1,068 KB
MFC80ENU.dll 9/23/2005 1:16 AM Application extens... 56 KB
mfc80u.dll 9/23/2005 1:16 AM Application extens... 1,055 KB
mfcm80.dll 9/23/2005 6:56 AM Application extens... 68 KB
mfcm80u.dll 9/23/2005 6:56 AM Application extens... 56 KB
Microsoft.VC80.CRT.manifest 9/22/2005 11:22 PM MANIFEST File 1 KB
Microsoft.VC80.MFC.manifest 9/23/2005 12:37 AM MANIFEST File 1 KB
Microsoft.VC80.MFCLOC.manifest 9/23/2005 1:16 AM MANIFEST File 2 KB
Mill Example.pst 8/22/2006 2:06 PM Outlook Data File 3 KB
Mill.xml 10/7/2023 2:16 PM XML Document 98 KB
Delete Multiple Items
Are you sure you want to move these 157 items to the Recycle Bin?
Yes
No
157 items selected
Show more details...
4


Computer ▸ NEW VOLUME (G:) ▸ CNC-BACKUP ▸
Search CNC-BACKUP
Organize
Open
Share with
Burn
New folder
Favorites
Desktop
Downloads
Recent Places
Libraries
Documents
Music
Pictures
Videos
Computer
Local Disk (C:)
Local Disk (D:)
Local Disk (E:)
NEW VOLUME (G:)
Network
Name
Date modified
Type
Size
MACH3 software 12/22/2021 10:37 ... File folder
seting 12/5/2021 7:54 AM File folder
Type: File folder
Date modified: 12/5/2021 7:54 AM
Size: 146 MB
Folders: Addons, Bitmaps, Brains, Flash, GCode, Help, ...
Files: 1024.lset, 1024.set, Addons.exe, ANN.dll, atl71.dll, ...
5
seting Date modified: 12/5/2021 7:54 AM
File folder

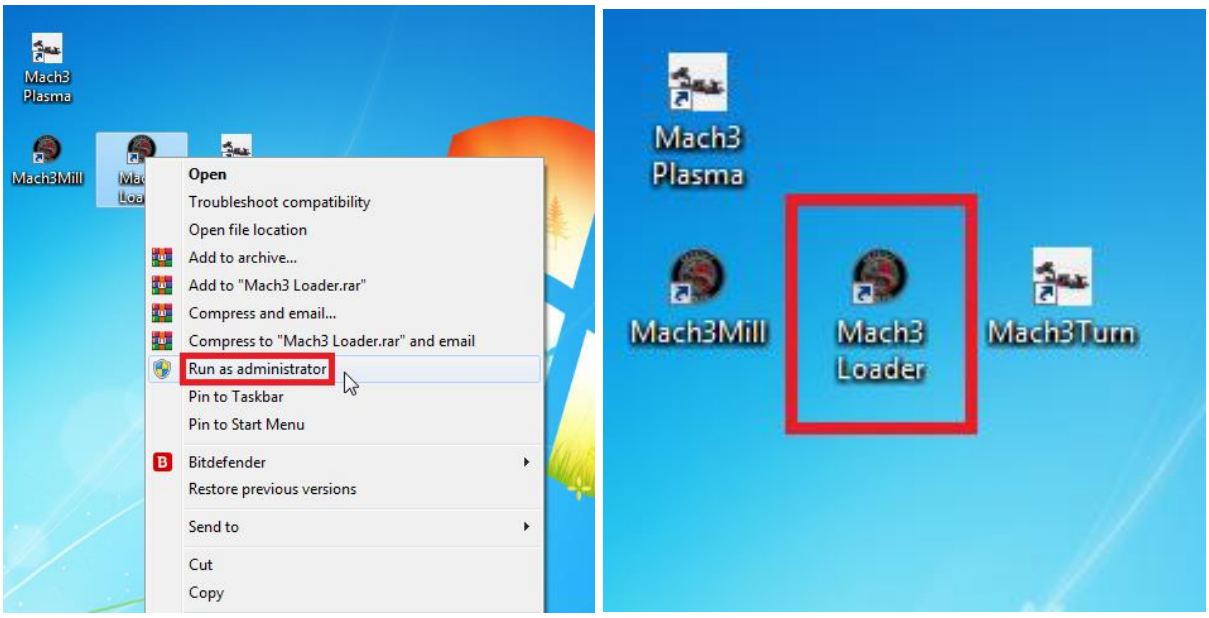

Computer ▸ NEW VOLUME (G:) ▸ CNC-BACKUP ▸ seting ▸
Search seting
Organize
Open
Burn
New folder
Favorites
Desktop
Downloads
Recent Places
Libraries
Documents
Music
Pictures
Videos
Computer
Local Disk (C:)
Local Disk (D:)
Local Disk (E:)
NEW VOLUME (G:)
Network
Name
Date modified
Type
Size
Addons 12/5/2021 7:54 AM File folder
Bitmaps 12/5/2021 7:54 AM File folder
Brains 12/5/2021 7:54 AM File folder
Flash 12/5/2021 7:54 AM File folder
GCode 12/5/2021 7:54 AM File folder
Help 12/5/2021 7:54 AM File folder
LCamSamples 12/5/2021 7:54 AM File folder
macros 12/5/2021 7:54 AM File folder
PlugIns 12/5/2021 7:54 AM File folder
SETUP 12/5/2021 7:54 AM File folder
Shapes 12/5/2021 7:54 AM File folder
Subroutines 12/5/2021 7:54 AM File folder
TurnAddons 12/5/2021 7:54 AM File folder
Uninstall 12/5/2021 7:54 AM File folder
xmlbackups 12/5/2021 7:54 AM File folder
1024.lset 7/15/2008 3:57 AM LSET File 52 KB
1024.set 12/21/2009 4:00 PM SET File 92 KB
Addons.exe 5/23/2011 9:18 PM Application 3,897 KB
ANN.dll 8/5/2006 7:46 AM Application extens... 204 KB
atl71.dll 3/19/2003 6:35 AM Application extens... 87 KB
Buttons.txt 2/6/2006 8:14 PM Text Document 1 KB
CANCEL.xml 7/17/2021 12:41 PM XML Document 83 KB
codeline.txt 12/4/2021 5:03 PM Text Document 1 KB
CommaToDecimal.reg 5/4/2004 9:00 AM Registration Entries 1 KB
cpnmouse.inf 3/5/2004 7:44 PM Setup Information 5 KB
cpnmouse.sys 11/28/2003 9:34 PM System file 6 KB
6
Ctrl+A
174 items selected
Show more details...



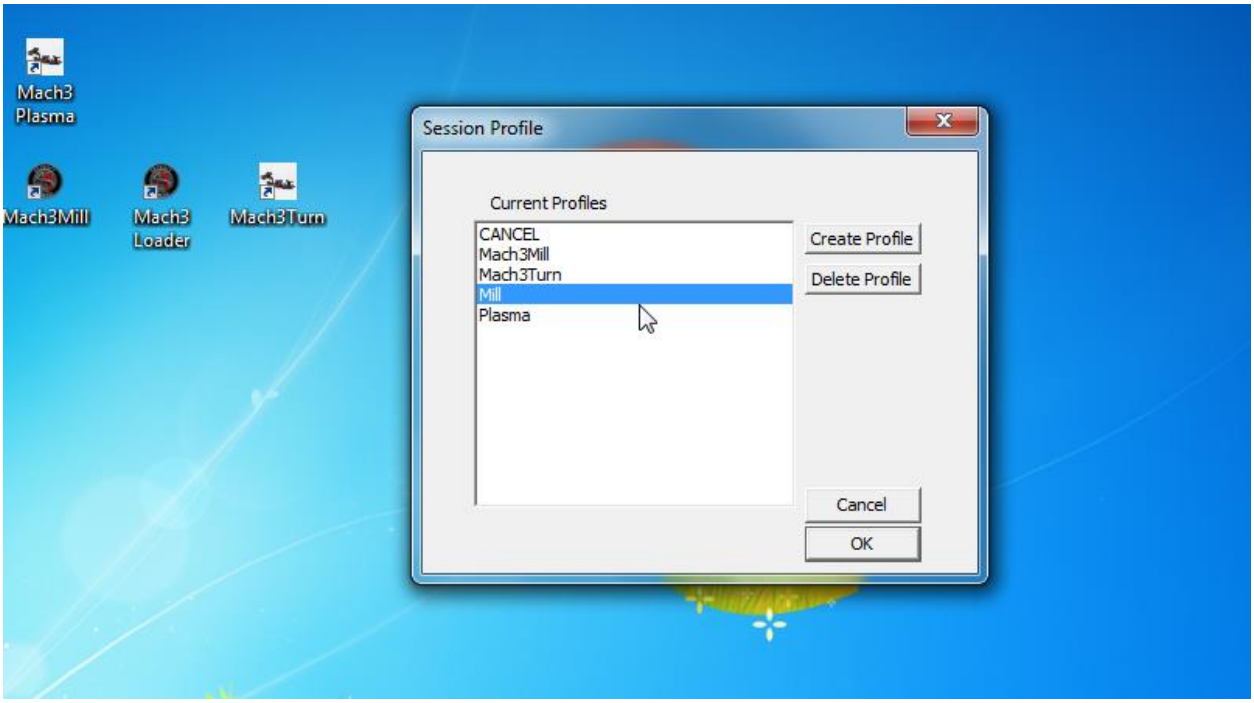


After completing the steps, your software will be successfully installed, and all configured parameters will be placed. Finally, restart your computer once and run the software.

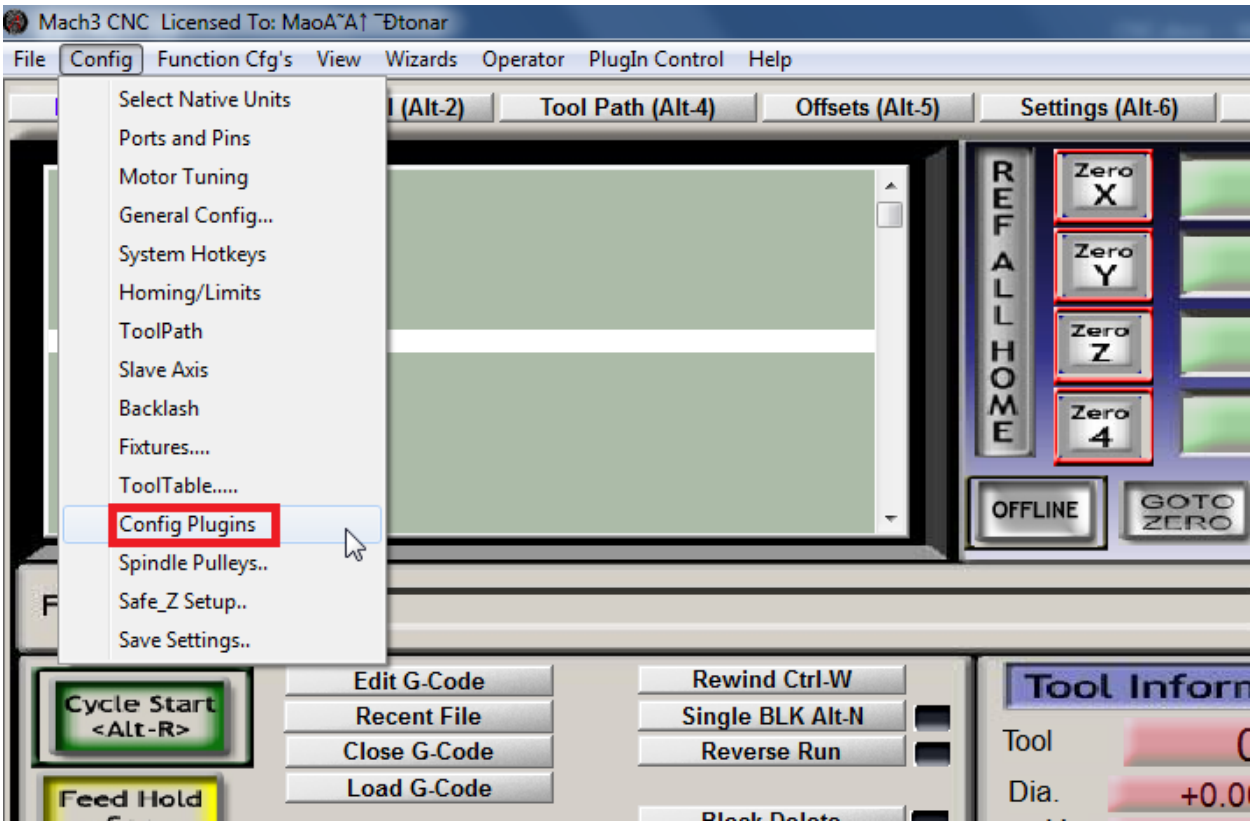
Once the computer has booted up and the operating system is loaded, right-click on the **Mach3 Loader** icon and select **Run as administrator**.



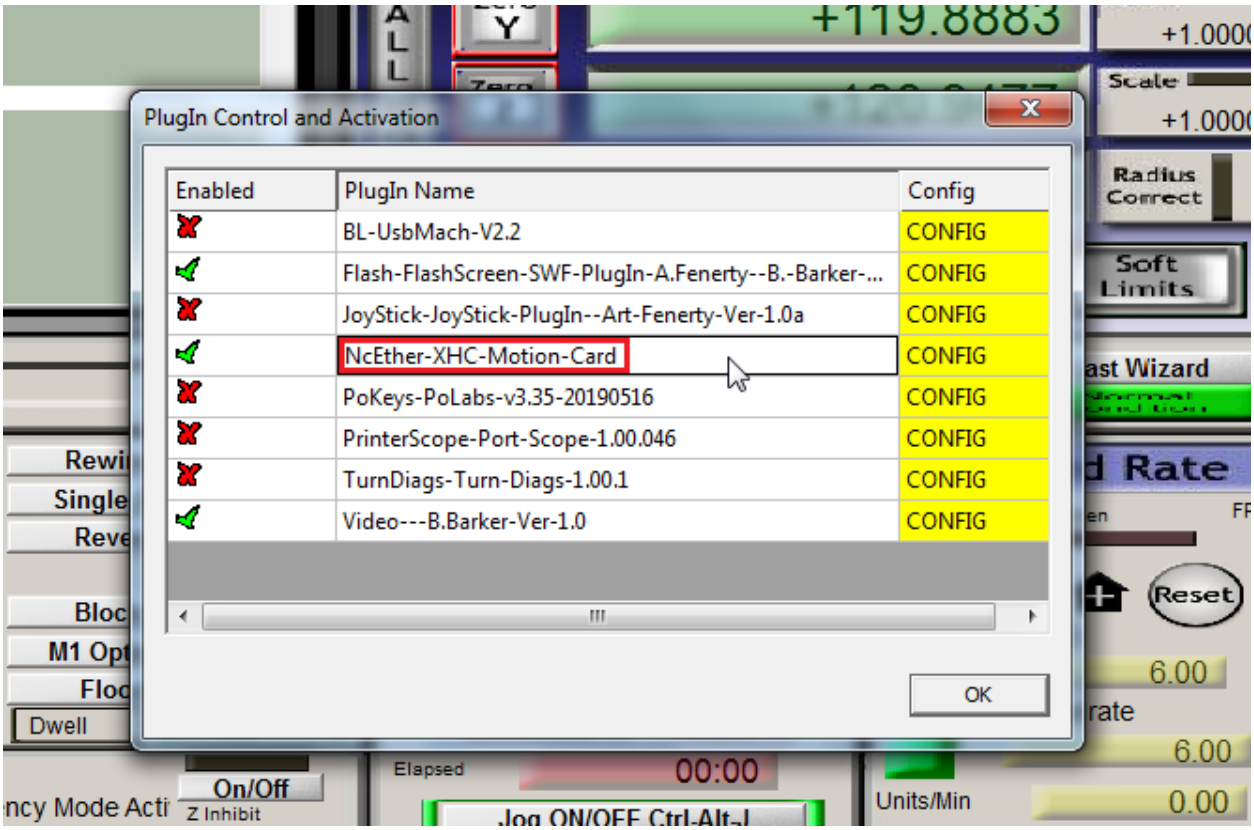
Then, from the dropdown menu, select **Mill**.



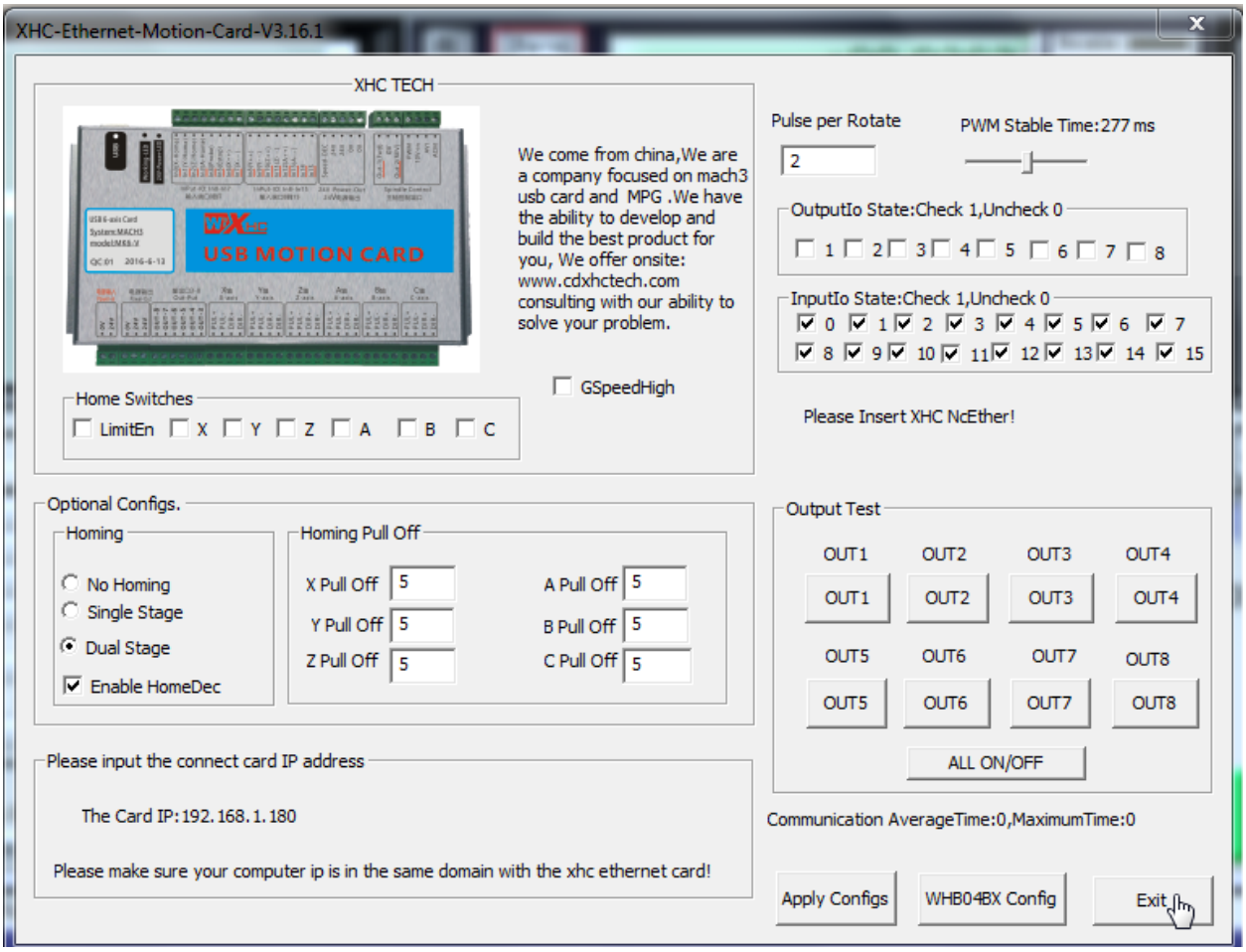
After running the software, go to the path **Config / Config Plugins**.



If the installation steps were successful, the option will be available in the dropdown menu.



By completing the steps in Chapter 2 and successfully connecting the device to the computer, you can access the driver menu through the icon displayed next to the driver. From there, you can enable or disable the input and control the outputs of the driver.



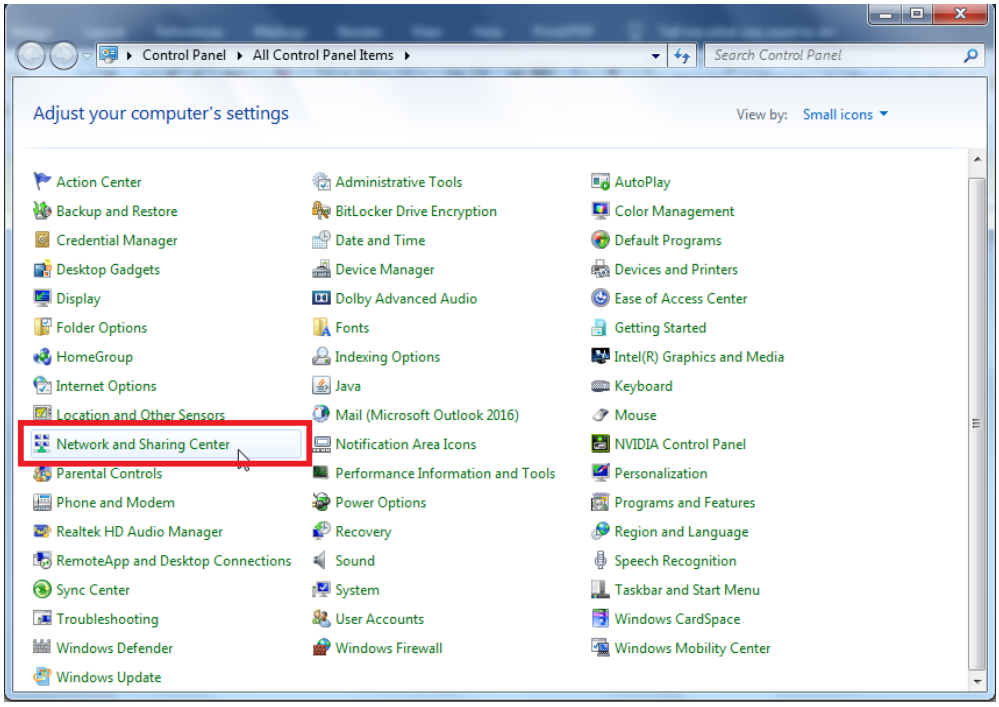
Chapter 2: Connecting the Computer to the CNC Machine

The device is connected to the PC or laptop network port using a CAT6 network cable provided with the device. This cable contains two noise filters. Removing these noise filters or using a cable other than the one specifically provided with the device may cause errors in the machine's performance, for which the manufacturer is not responsible.

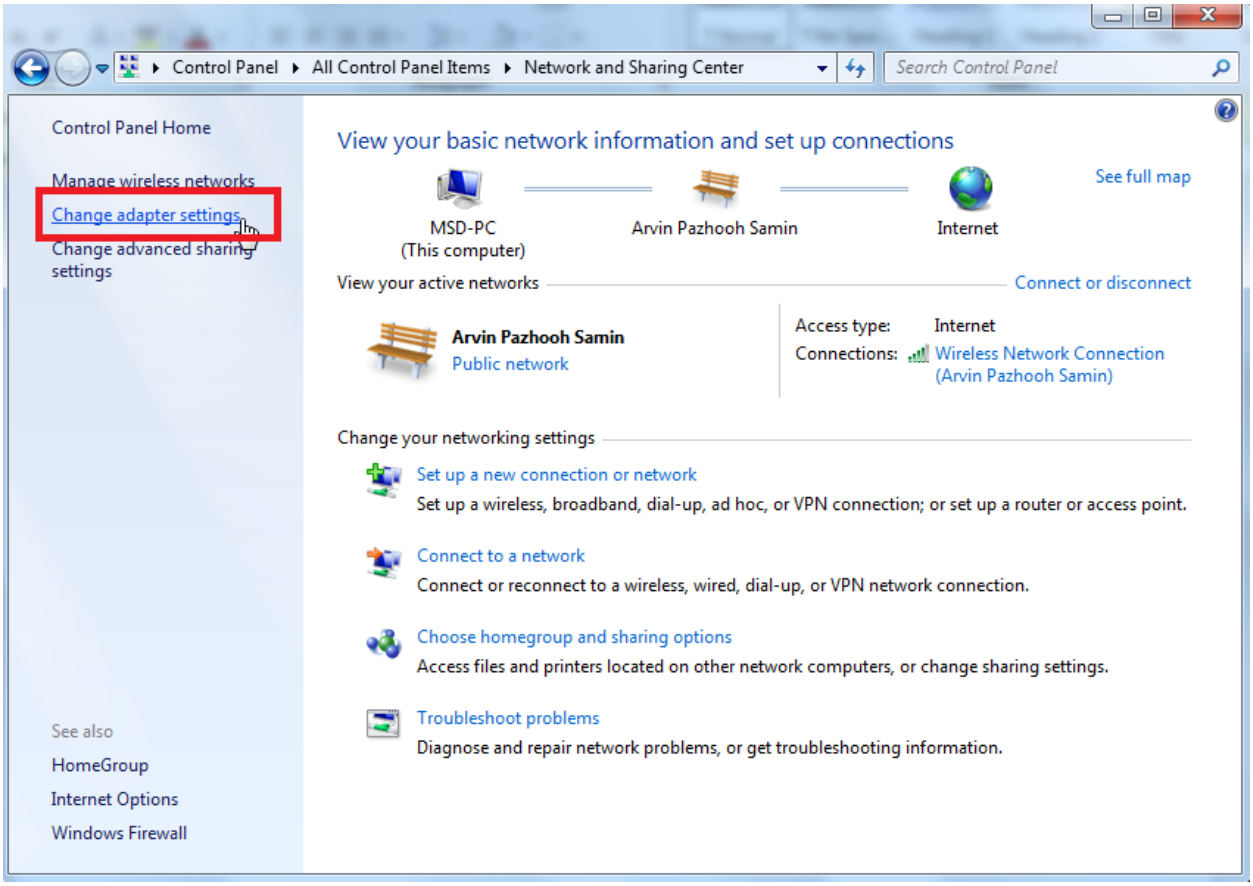
Note: To connect the device to the computer, you need to configure the network port of the computer. If the purchasing company connects the computer intended for use with the device to the internal company network with a specific IP and configuration, it will no longer be able to connect to the device. To avoid this issue, either a separate system for the device should be purchased, or the computer should not be connected to the company's internal network.

Once the network cable is connected to both the device and the computer, and both are powered on, the lights next to the network ports on both the computer and the device will start blinking, indicating the cable is functioning properly. Next, network configuration is required on the computer, and instructions with images will guide you through each step.

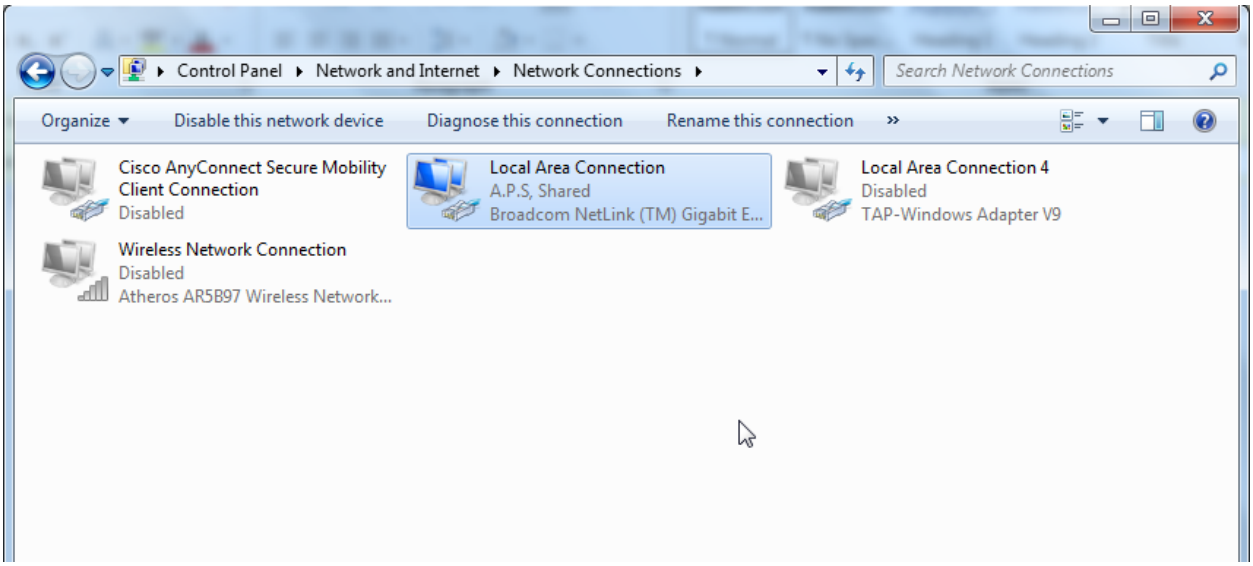
Go to **Control Panel** and open **Network and Sharing Center**.



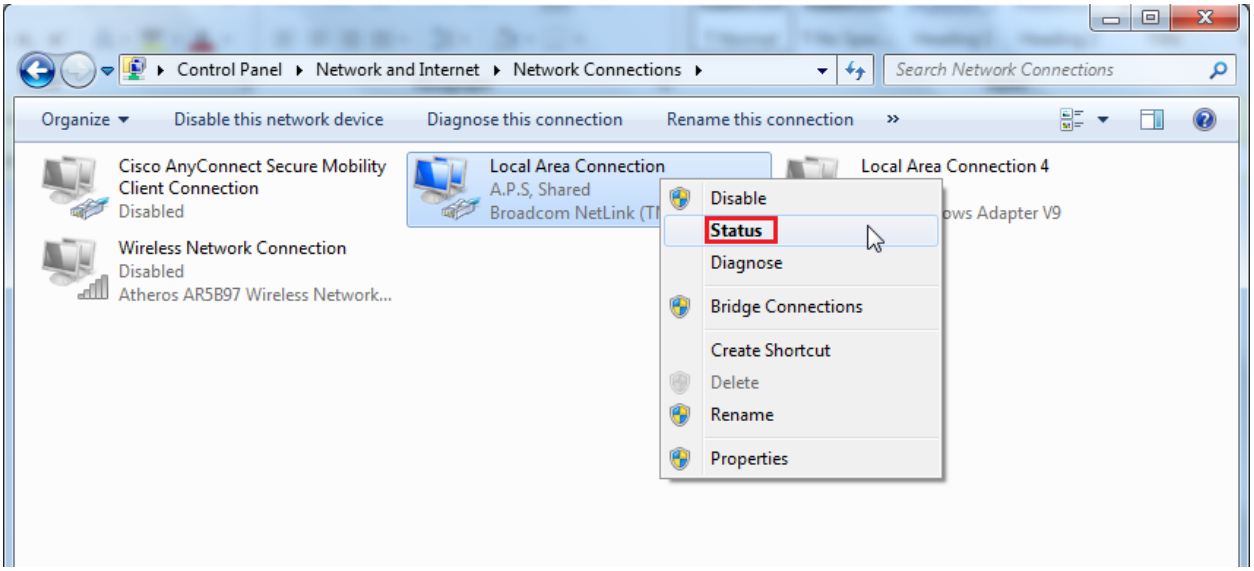
Then, go to the **Change adapter settings** section.



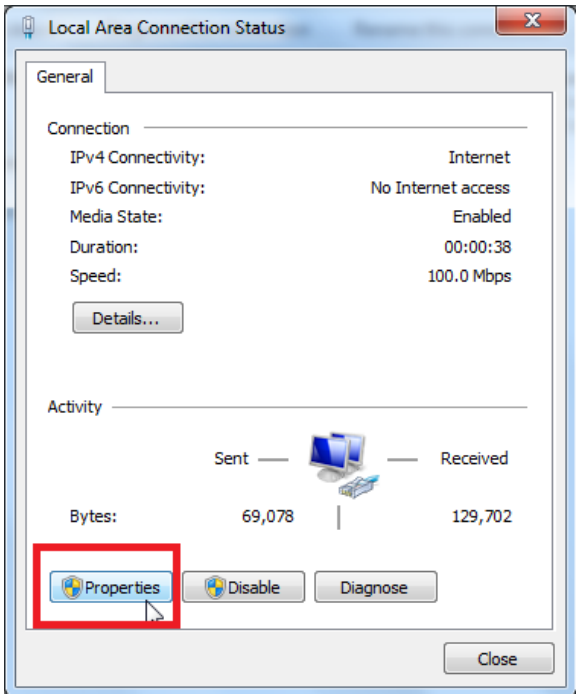
If the network cable is correctly connected, the monitor icons will turn blue.



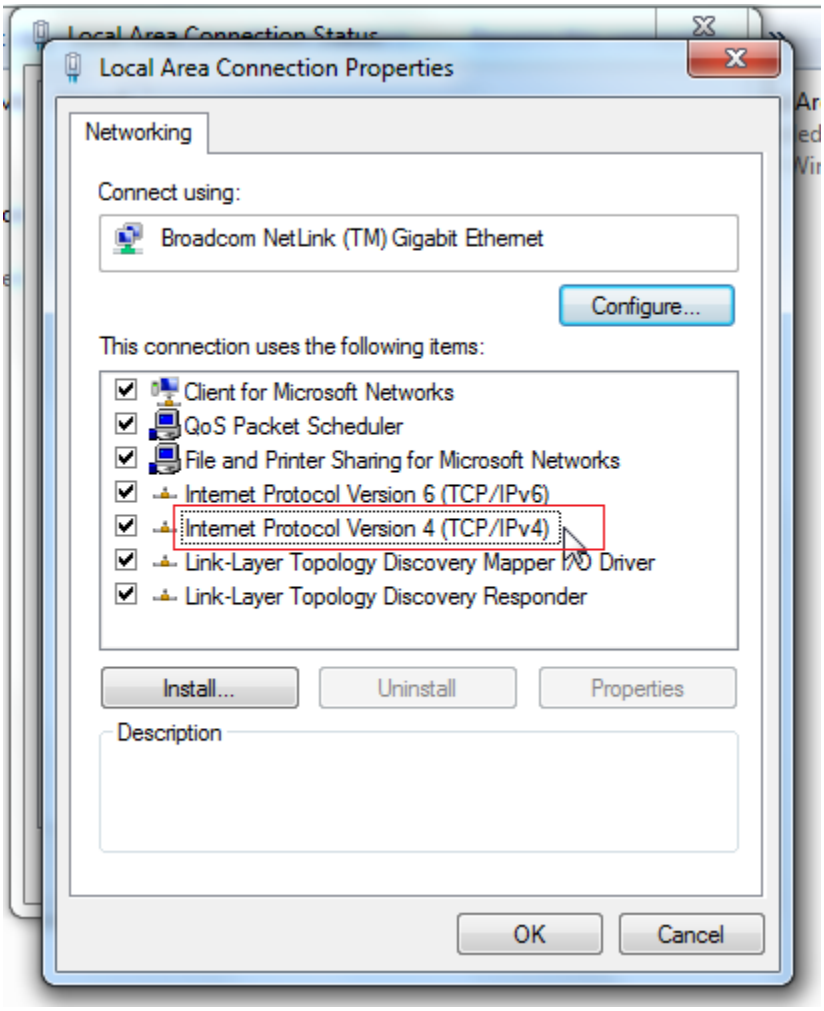
Right-click on the icon and select **Status** to enter the status menu.



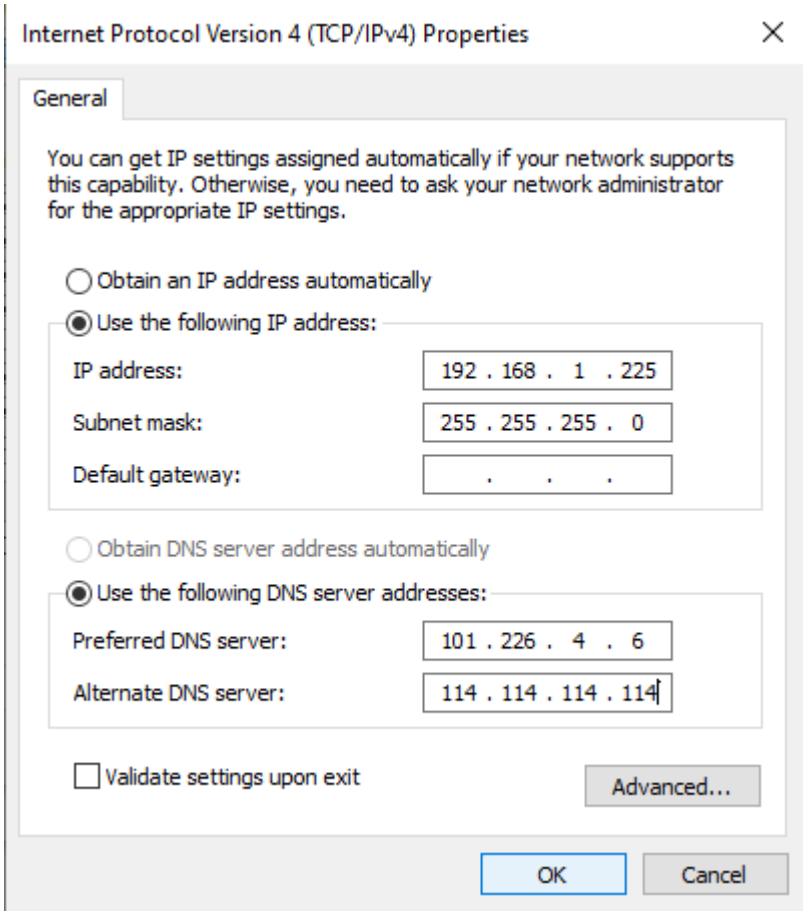
To configure the network, click on **Properties** to open the settings menu.



Now, go to **Internet Protocol Version 4 (TCP/IPv4)**.

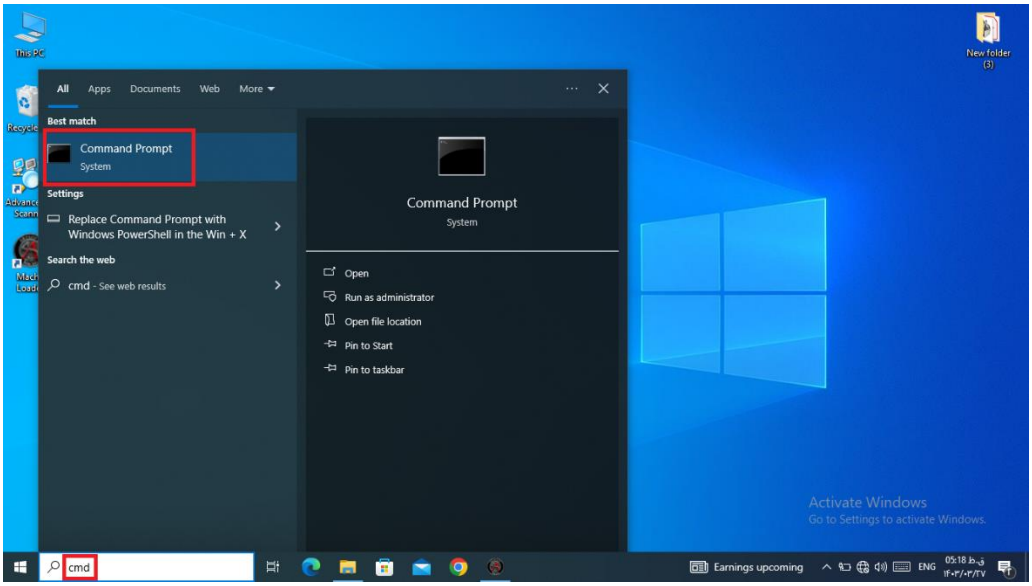


Now, fill in all the parameters in this menu according to the image below.

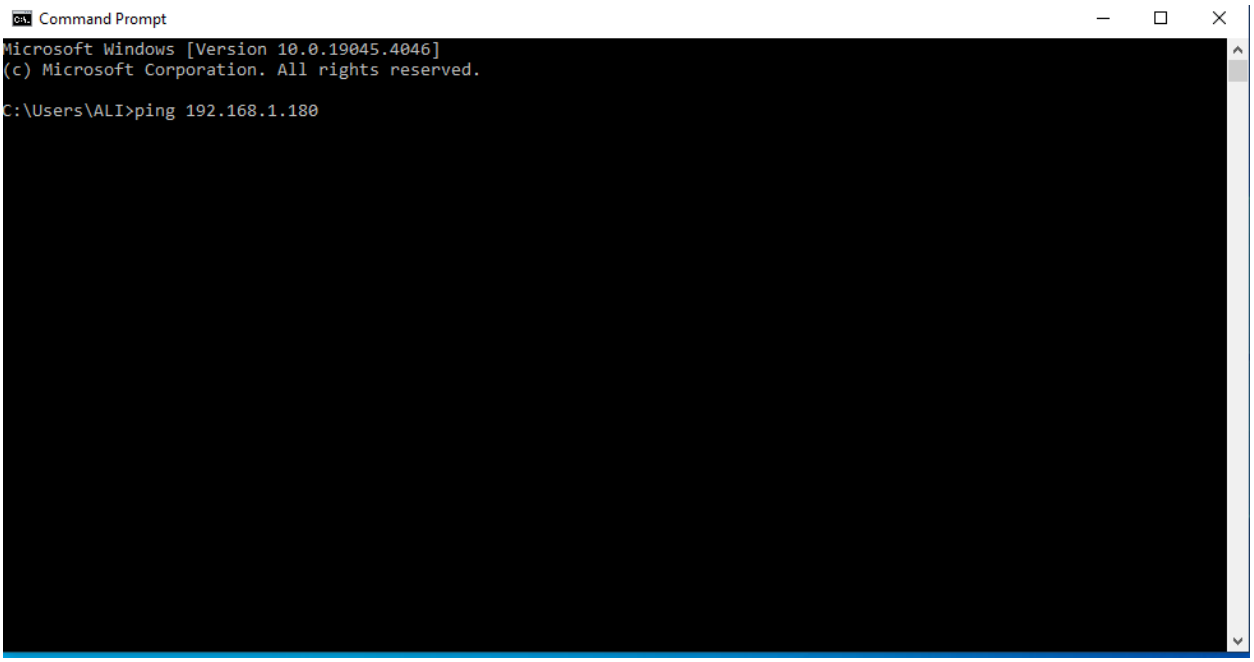


At the end of all the steps, click **OK** and return to the desktop.

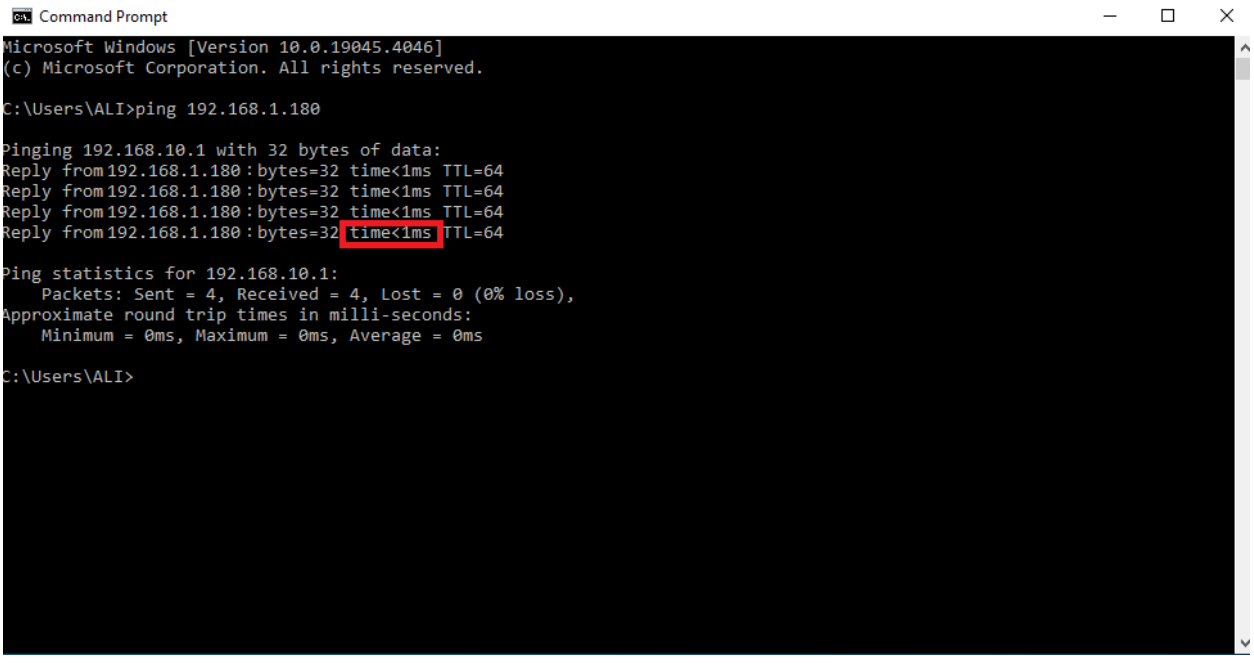
After completing the above steps, the device should be connected to the system. To verify the connection, you need to enter the Windows Command Prompt. To do this, search for **CMD** in the Windows search bar and open the **CMD** environment.



In the opened environment, type **“ping 192.168.1.180”** and then press **Enter**.

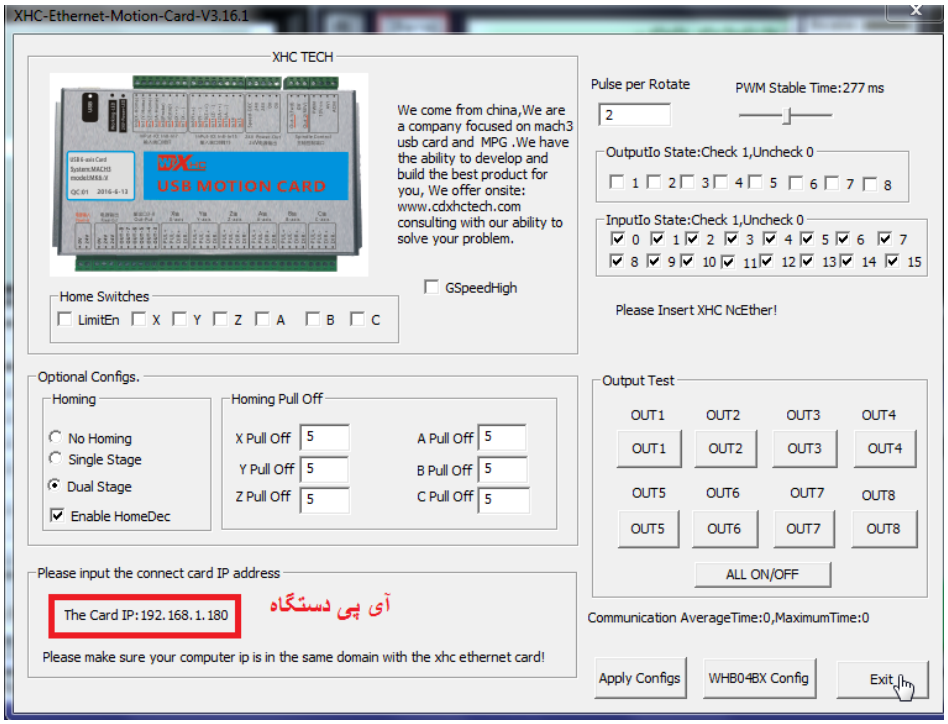


If the response is as shown below, it indicates a successful connection between the device and the computer. Otherwise, the network settings should be repeated, or you should contact the manufacturer.



If a non-standard network cable is used, the response time will exceed 1ms, and if it increases further, the likelihood of errors in the device's operation will rise.

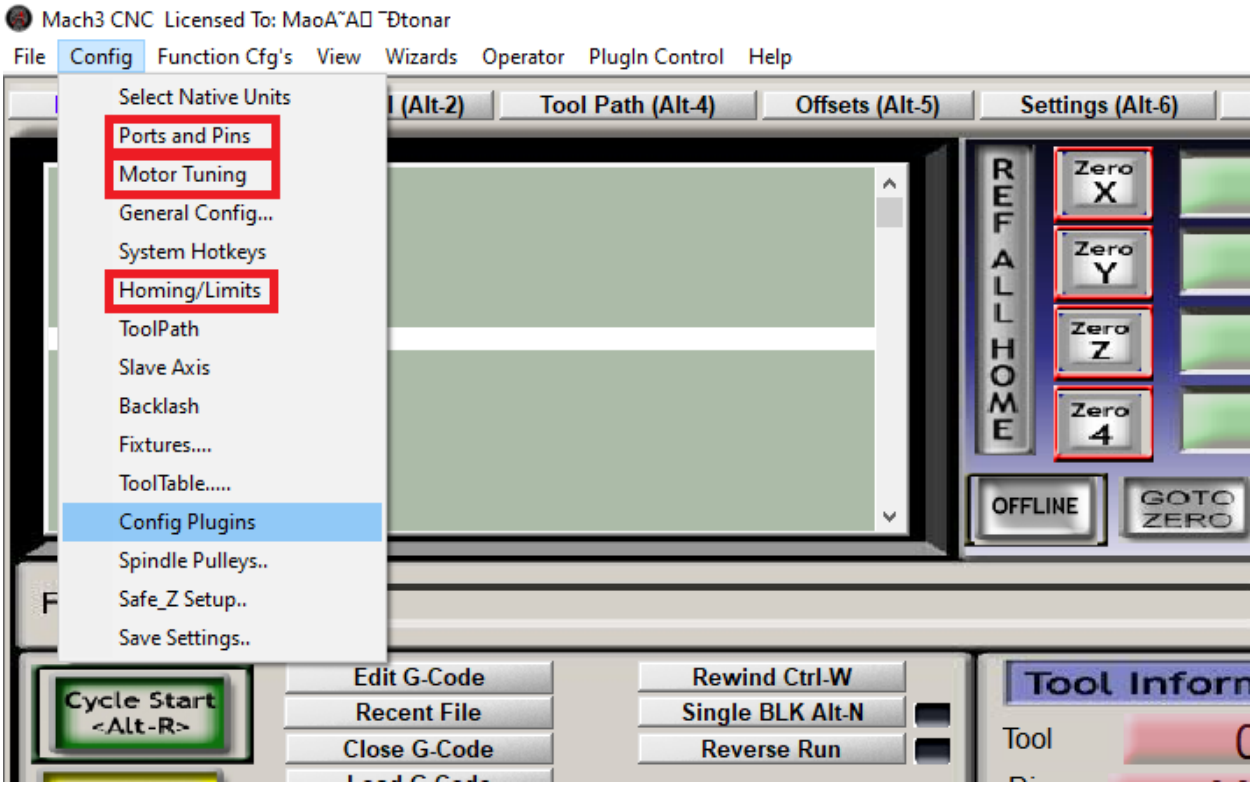
Now, if the connection between the device and the computer is correct, you can control the driver’s inputs and outputs separately from the software and the configuration menu.


XHC-Ethernet-Motion-Card-V3.16.1
XHC TECH
USB MOTION CARD
We come from china,We are a company focused on mach3 usb card and MPG .We have the ability to develop and build the best product for you, We offer onsite: www.cdxhctech.com consulting with our ability to solve your problem.
GSpeedHigh
Home Switches
LimitEn X Y Z A B C
Pulse per Rotate
2
PWM Stable Time:277 ms
OutputIo State:Check 1,Uncheck 0
1 2 3 4 5 6 7 8
InputIo State:Check 1,Uncheck 0
0 1 2 3 4 5 6 7
8 9 10 11 12 13 14 15
Please Insert XHC NcEther!
Optional Configs.
Homing
No Homing
Single Stage
Dual Stage
Enable HomeDec
Homing Pull Off
X Pull Off 5
Y Pull Off 5
Z Pull Off 5
A Pull Off 5
B Pull Off 5
C Pull Off 5
Output Test
OUT1 OUT2 OUT3 OUT4
OUT5 OUT6 OUT7 OUT8
ALL ON/OFF
Please input the connect card IP address
The Card IP:192.168.1.180
آی پی دستگاه
Please make sure your computer ip is in the same domain with the xhc ethernet card!
Communication AverageTime:0,MaximumTime:0
Apply Configs
WHB04BX Config
Exit

Chapter 3: Software Settings

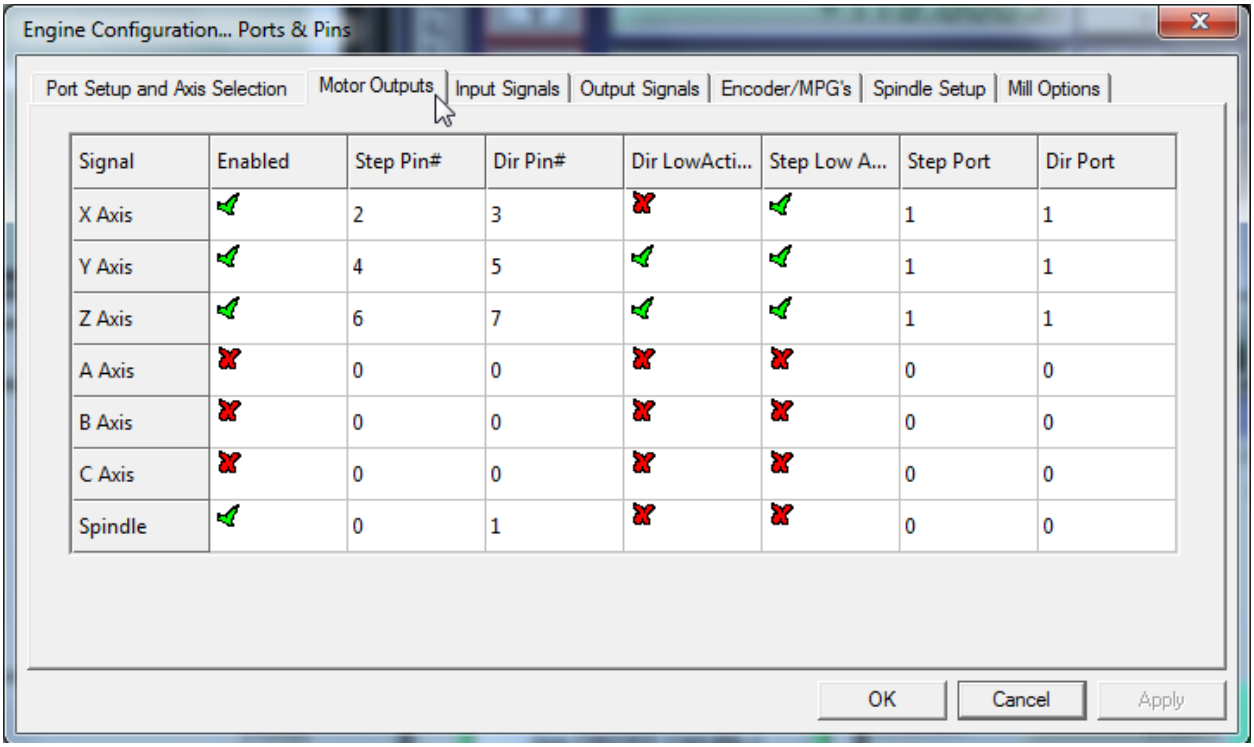
This software is designed and built for communication with a wide range of drivers. Therefore, to establish communication with these drivers, as well as to manage the inputs and outputs on the driver, you need to introduce the port numbers and driver interfaces to the software.

The main parameters in the **Config** tab include **Ports and Pins**, **Motor Tuning**, and **Homing / Limits**.



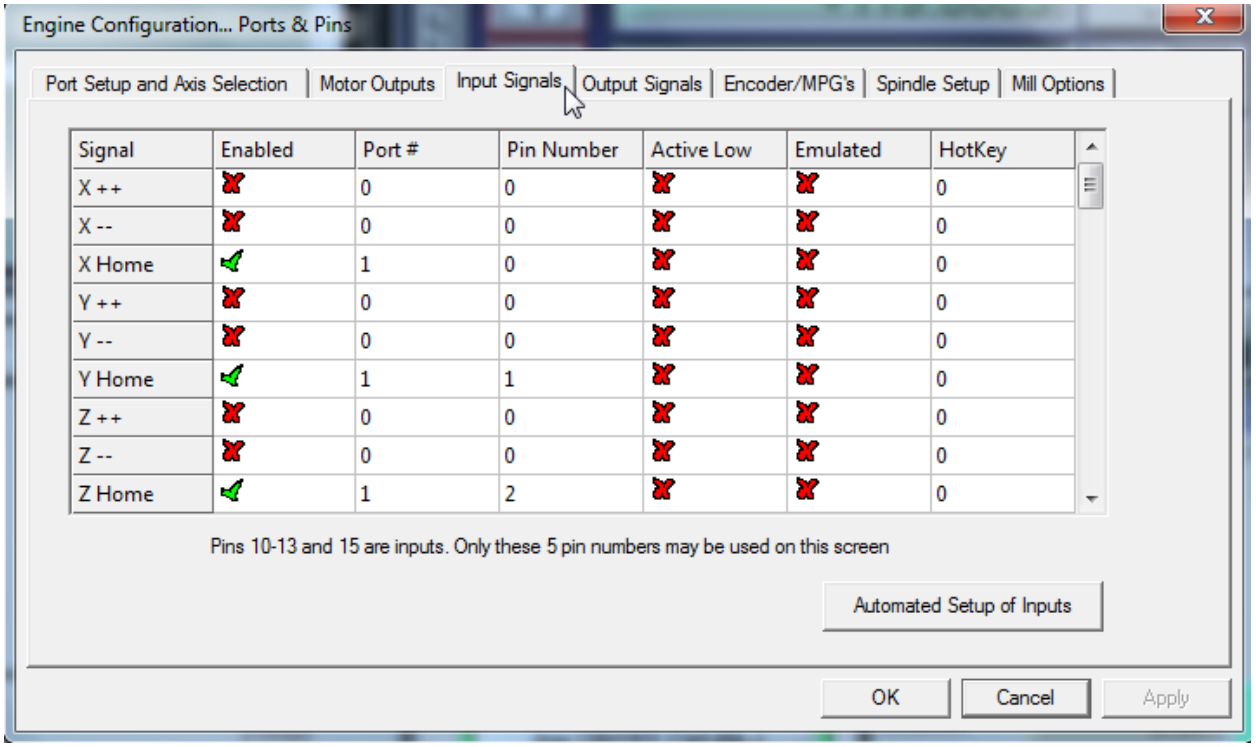
Ports and Pins: In this menu, you can specify the parameters related to the inputs and outputs of the driver, which include the following options:

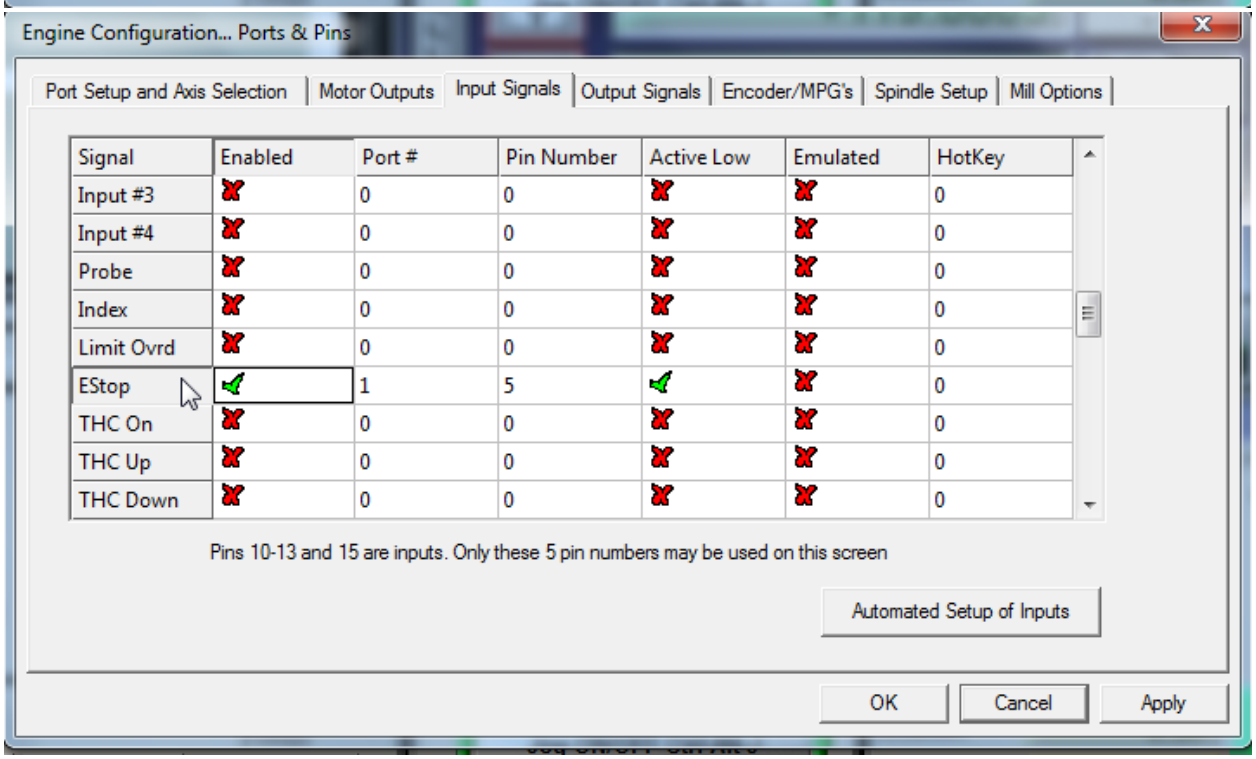
1. **Motor Outputs**:
   In this menu, the settings for the driver outputs are defined, which include the stepper motors for the four axes: X, Y, Z, and the spindle motor. The parameters in this menu are defined and set by the manufacturer.



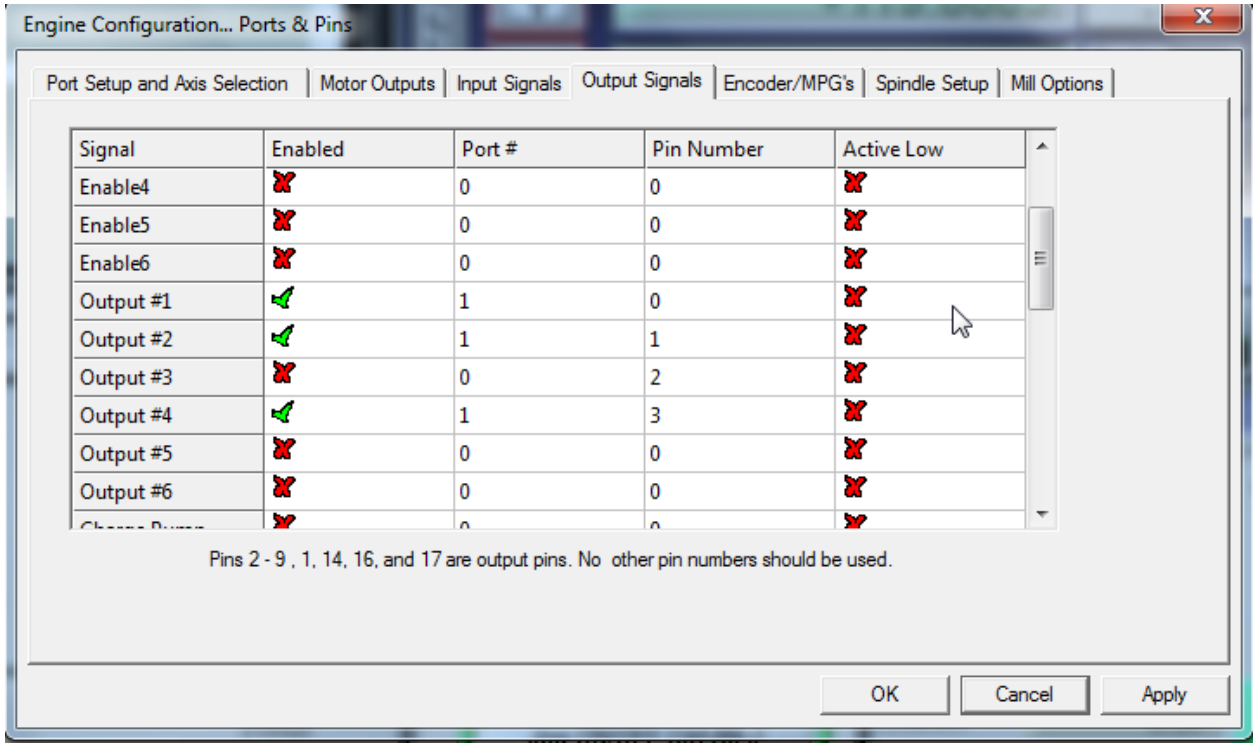
Signal	Enabled	Step Pin#	Dir Pin#	Dir LowActi...	Step Low A...	Step Port	Dir Port
X Axis	✓	2	3	✗	✓	1	1
Y Axis	✓	4	5	✓	✓	1	1
Z Axis	✓	6	7	✓	✓	1	1
A Axis	✗	0	0	✗	✗	0	0
B Axis	✗	0	0	✗	✗	0	0
C Axis	✗	0	0	✗	✗	0	0
Spindle	✓	0	1	✗	✗	0	0

1. **Input Signals**:
   In this menu, the parameters related to the driver inputs are specified, including the **HOME** sensors, limit switches for each axis, and the error signals related to the stepper motor drivers. The parameters in this menu are defined by the manufacturer.

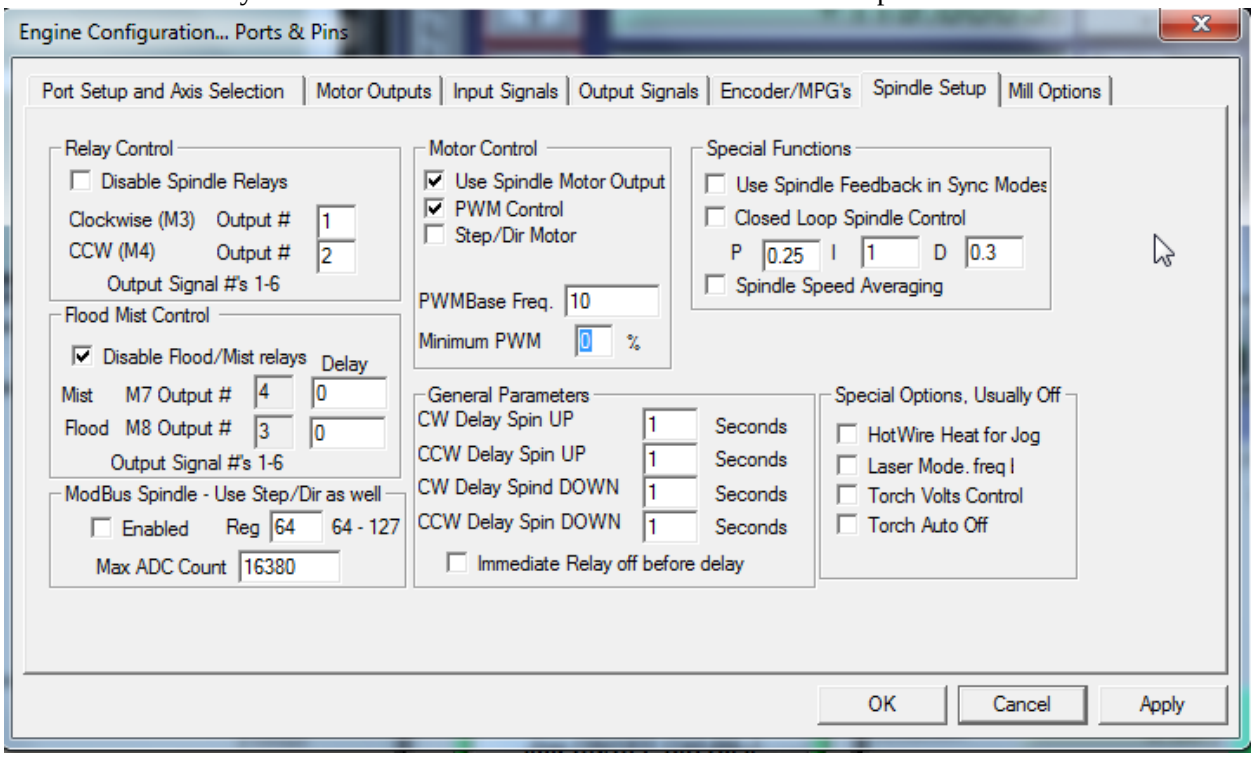




1. **Output Signals**:
   In this menu, the driver relay outputs are defined for enabling and disabling the stepper motors. When the device connection is disconnected, the stepper motors are turned off. The parameters in this menu are defined by the manufacturer.



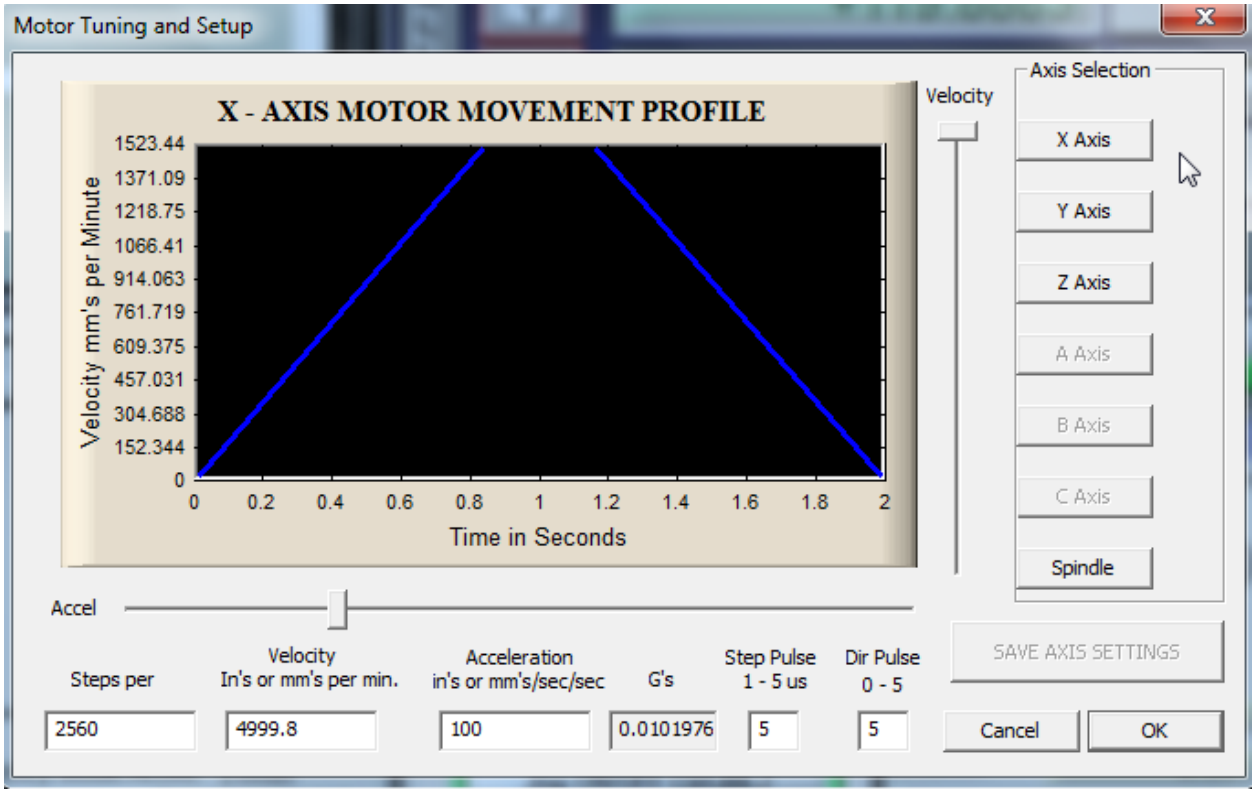
Spindle Setup:
The parameters in this menu are related to the operation of the spindle on the device. These values are defined by the manufacturer based on the device structure and speed.



1. **Motor Tuning**:
   The parameters in this menu are related to the speed, acceleration, and step of the motors used in the device. These parameters can be adjusted separately for each of the three axes (X, Y, Z).

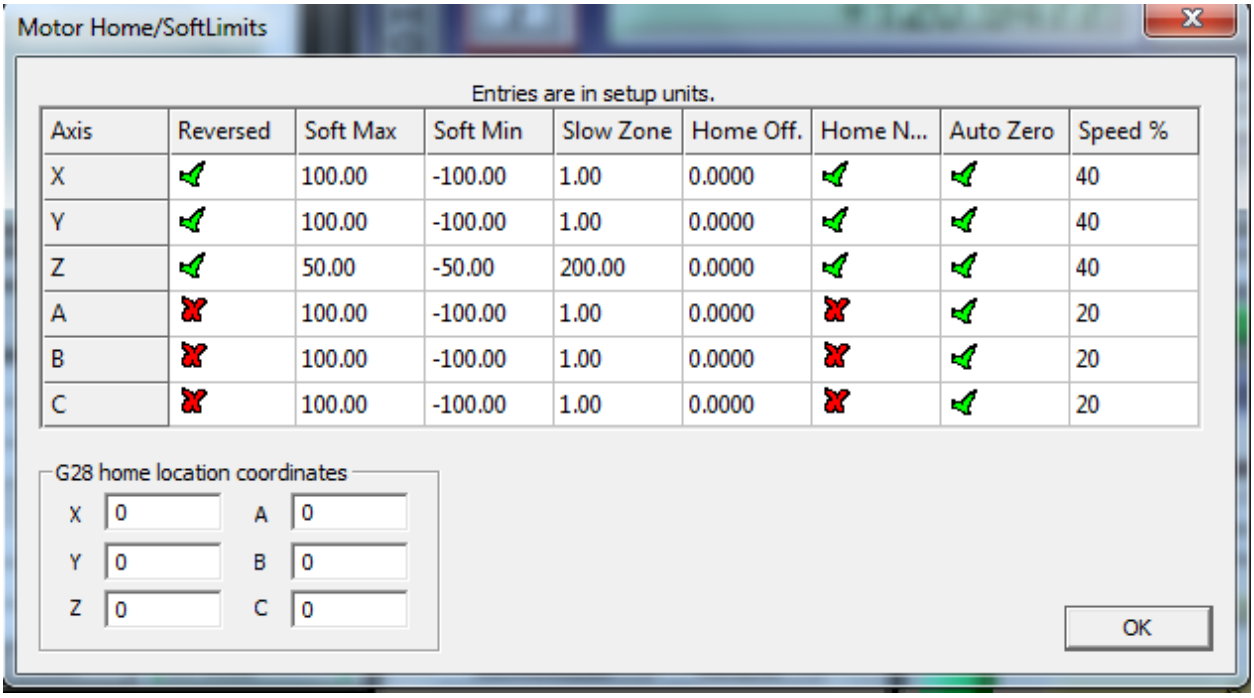
- **Steps per**: This parameter is adjusted based on the step size of the scrolls and the stepper motor's step divider.
- **Velocity**: This parameter is related to the speed of the stepper motors.
- **Acceleration**: This parameter is related to the acceleration, soft stop, and soft start of the motors on each axis.

These parameters are set and defined by the manufacturer, and any changes should only be made by qualified personnel. Otherwise, irreparable damage may occur to the device.



1. **Homing / Limits**:
   In this menu, the parameters related to homing and calibration of the device are defined. This includes the position of the locating sensors, direction of movement, and the **REF ALL HOME** speed, all of which are configured in this menu.

These parameters are set and defined by the manufacturer, and any changes should only be made by qualified personnel. Otherwise, irreparable damage may occur to the device.



Chapter 4: Zeroing TYPE

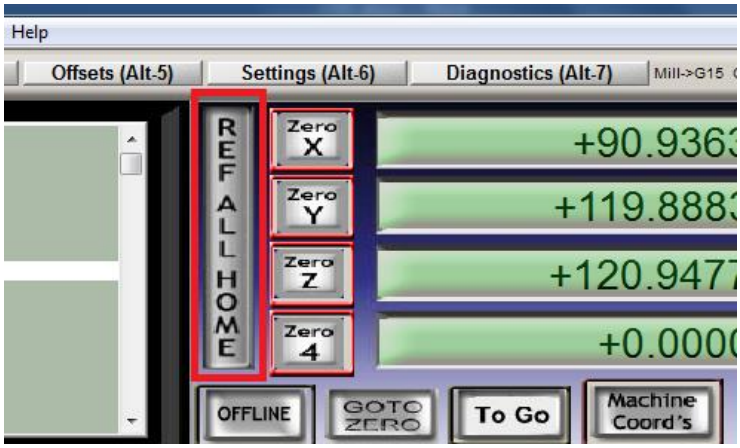
Zeroing is a crucial step in the initial setup of the device. Essentially, the device starts machining based on the positions provided from the **HOME** point of each axis.

Each type has its own specific zero point, which is determined and stored in the software during the initial startup of the device.

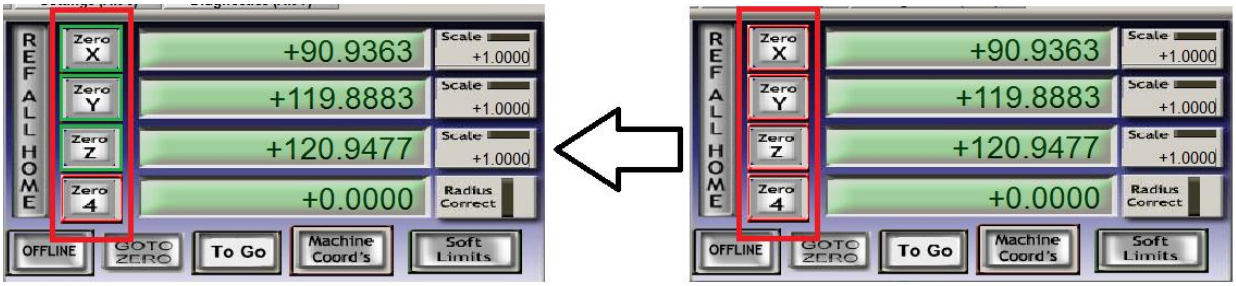
To zero each type, use an indexing drill with a sharp point. It's essential to ensure that the distance the machining drill extends from the spindle chuck is equal to the distance of the indexing drill. This is a very important point. The distance should be set with accuracy to within 1 millimeter. If it extends too far, the drill will hit the holder at the bottom, and if it extends too little, the sample will not be machined from the bottom, leaving a protrusion.

This guide covers zeroing for **Type 1 (30mm)**.

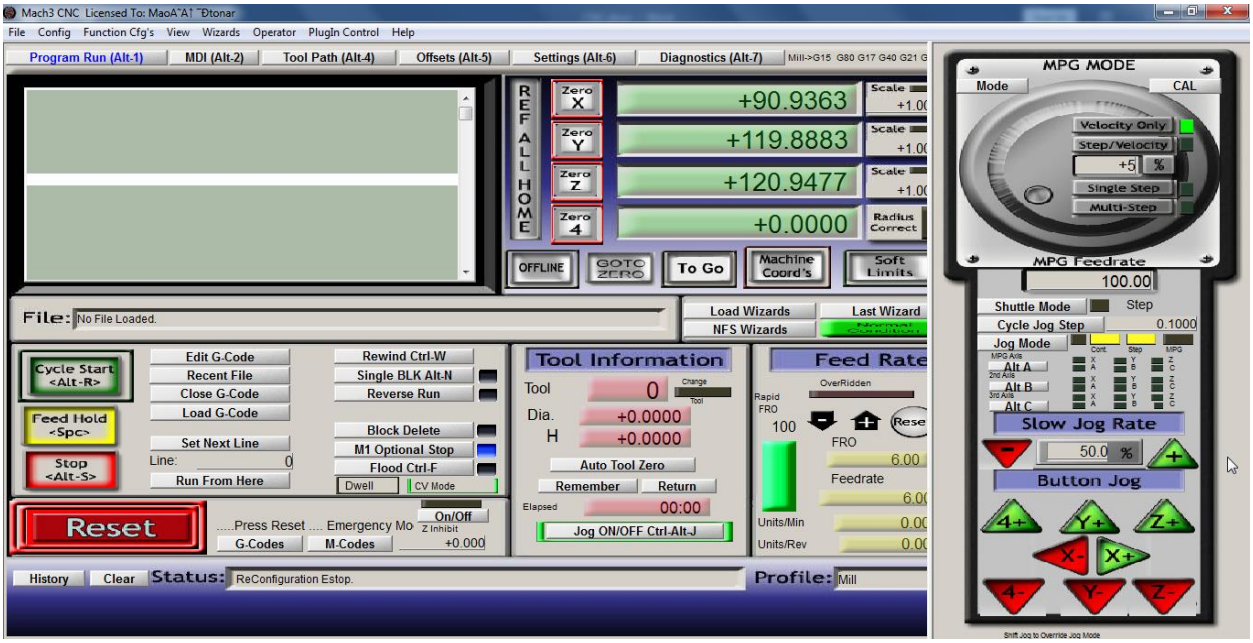
1. First, secure the Type 1 holders in their proper position. There is a punch mark in the center of the holder. After connecting the device to the software, press the button several times to clear any errors in the status bar.
2. Then, click on **REF ALL HOME** to perform the homing process for the device.



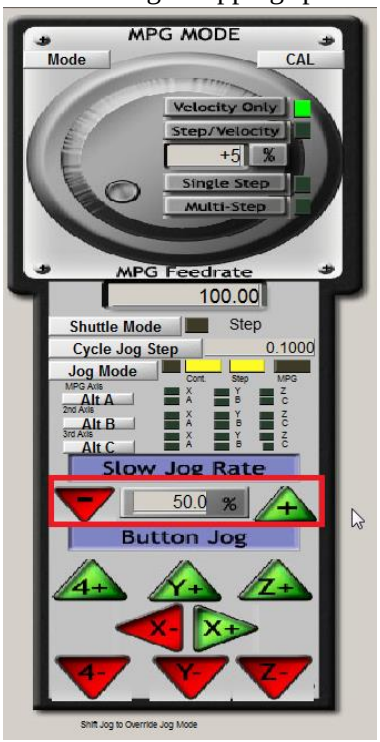
Wait until the screen changes to the following state.



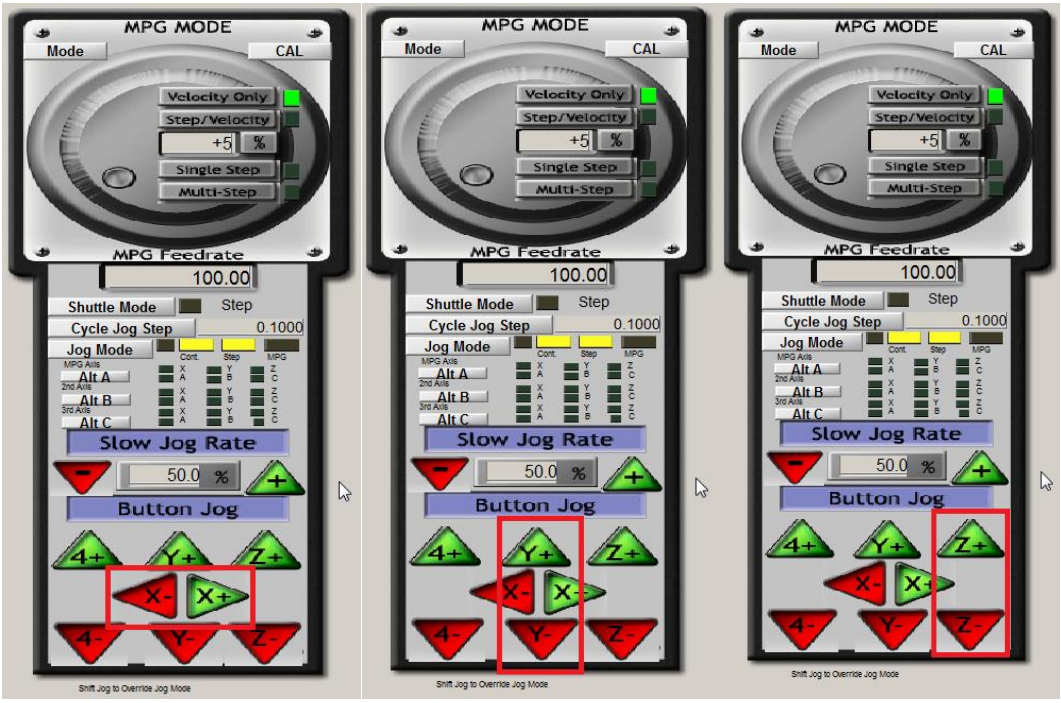
1. Then, press the **Tab** key on the keyboard to open the manual control page.



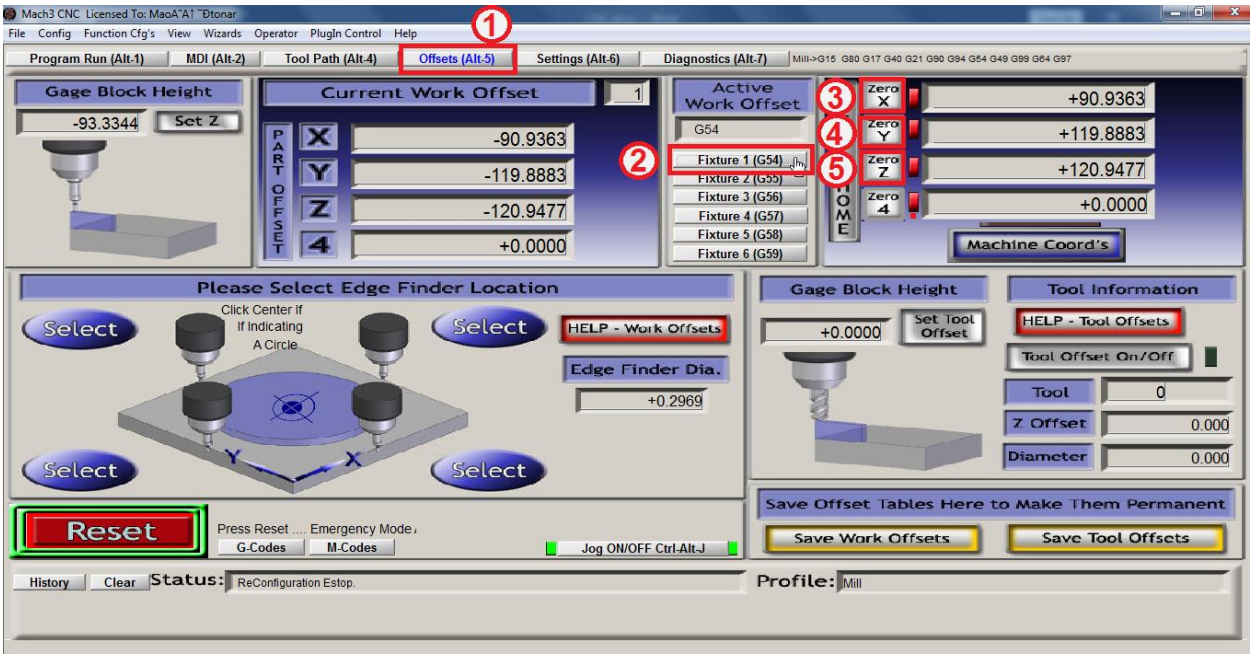
Now, reduce the speed of the axes based on the level of precision needed for the movement, so that during the movement of the axes, there is enough stopping speed to avoid collisions with the holders.



Now, use the arrow keys to adjust the X, Y, and Z axes so that the tip of the indexing drill aligns with the punch mark on the holder or beneath the holder (for types 3, A1, and A2).



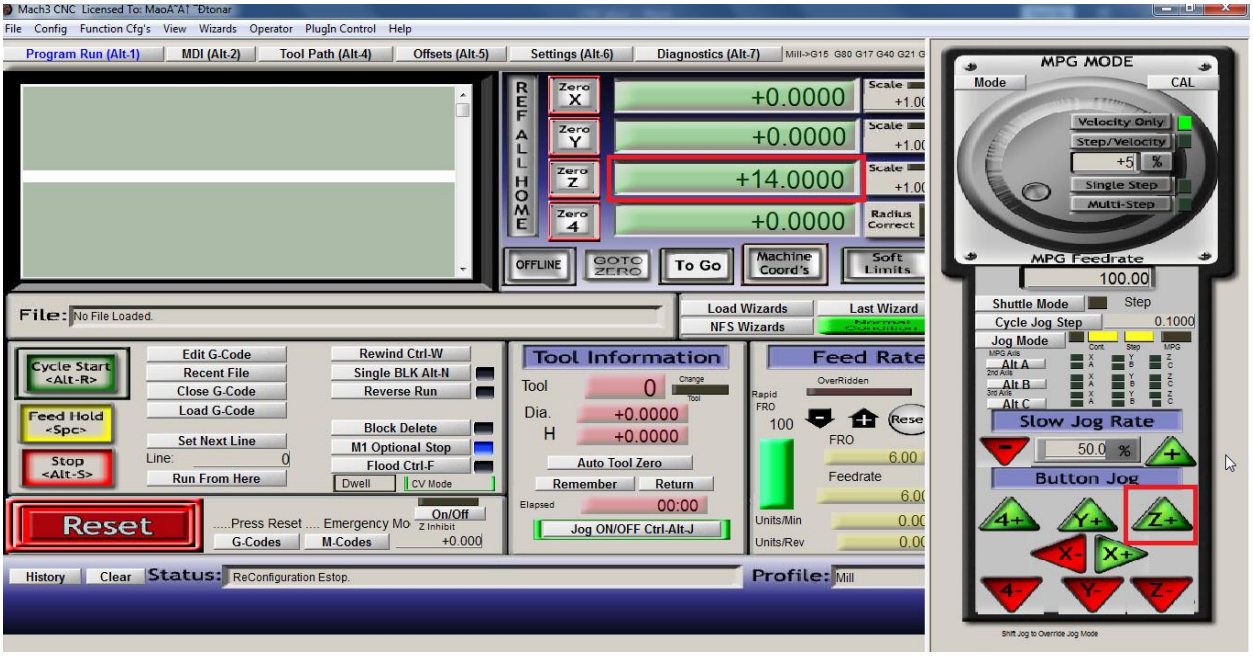
Then, go to the **Offsets** menu (Alt-5) and select one of **G54-G59**. (Note: The selected parameter must be entered in the corresponding G-code for the specific type.) Afterward, zero all the axis positions.



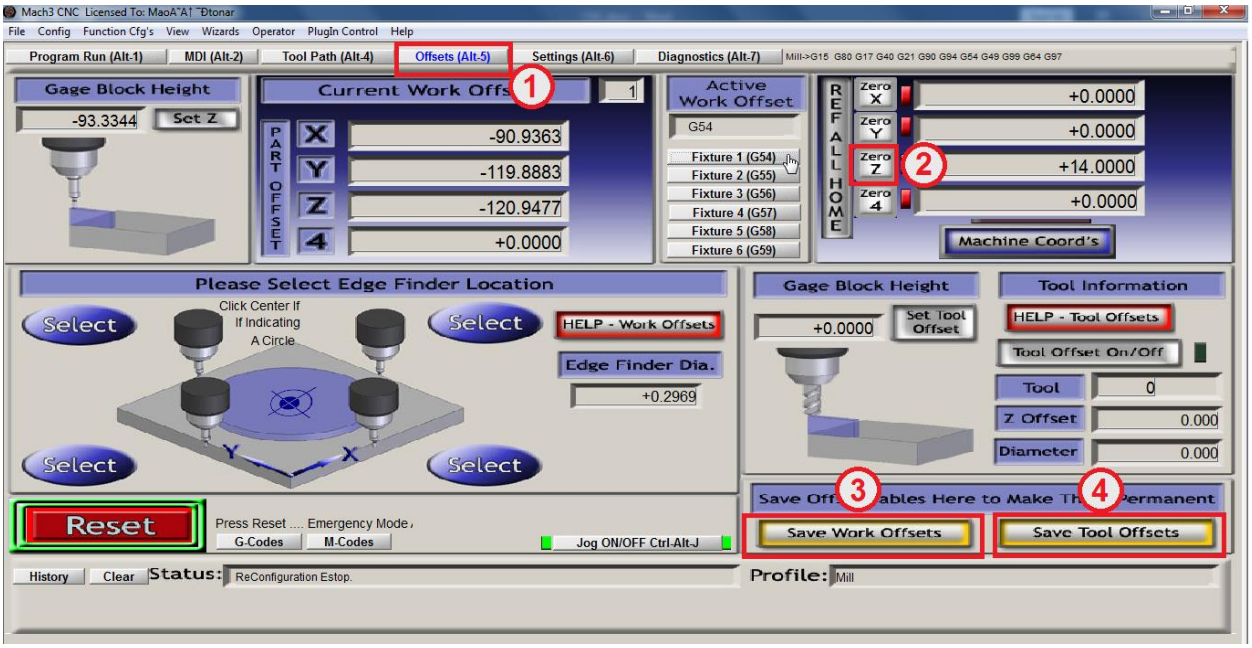
Now, return to the **Program Run** page (Alt-1) and press the **Tab** key again to open the manual control menu. You need to raise the **Z** axis based on the diameter of the tube defined in the G-code. For **Type 1**, the tube diameter is 30mm. If the type being used requires a reducer (as in the case of Type 1, which has a reducer), you must subtract the reducer size from 30mm and raise the Z axis by that amount. For example, if the reducer is 15mm, it will be calculated as:

30mm - 15mm = 14mm.

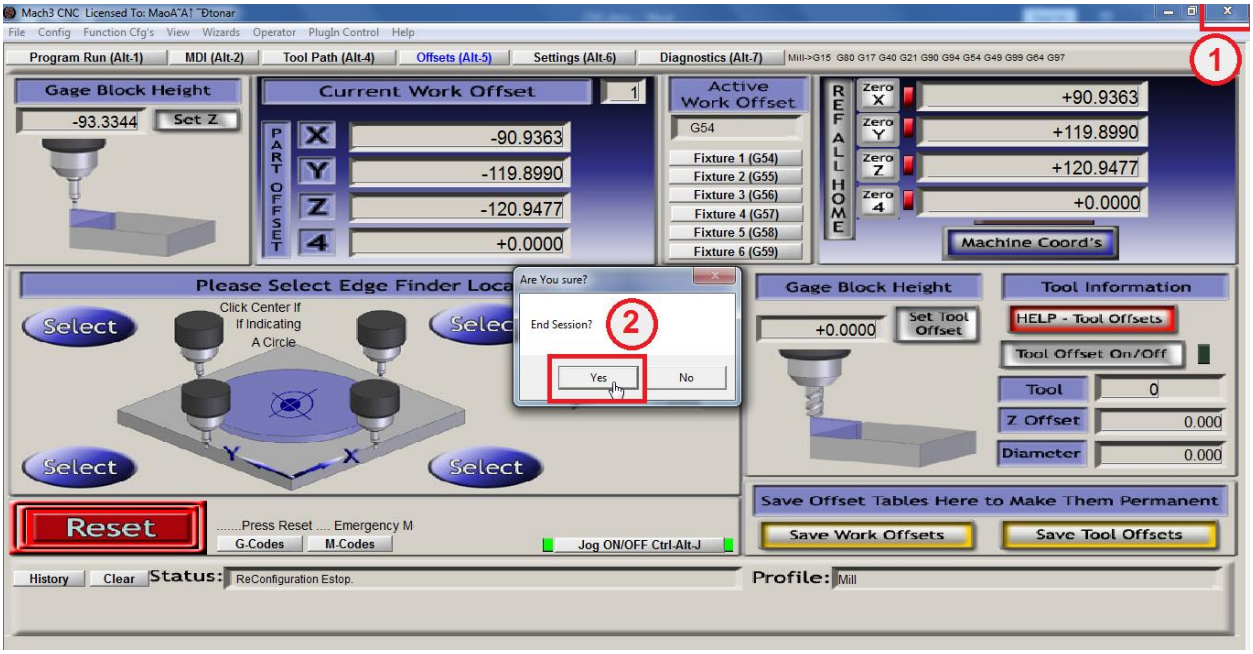
So, the operator should move the Z axis 14mm upwards.

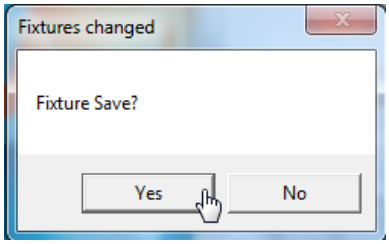


Now, go to the **Offsets** menu (Alt-5), zero the **Z** axis again, and click on the save options.



Finally, close the software, and if the following warning appears, confirm it.





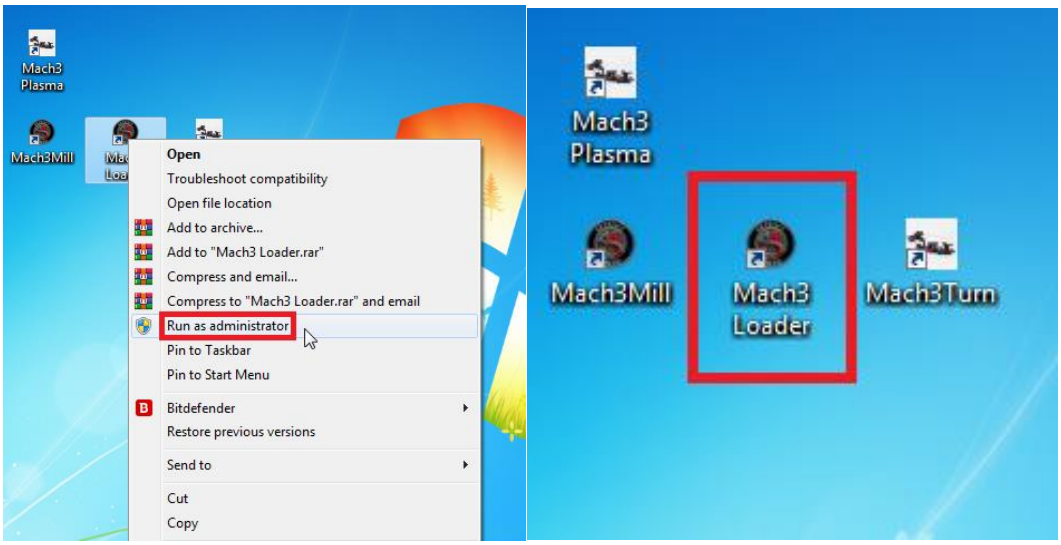
Note: Only confirm the save warning if changes have been made to the zeroing by a technician. Otherwise, it may result in changes to the axis positions and cause damage to the device.

1. Finally, run the device once with the corresponding G-code that has been zeroed using the indexing drill, to check if any issues arise during the zeroing process.

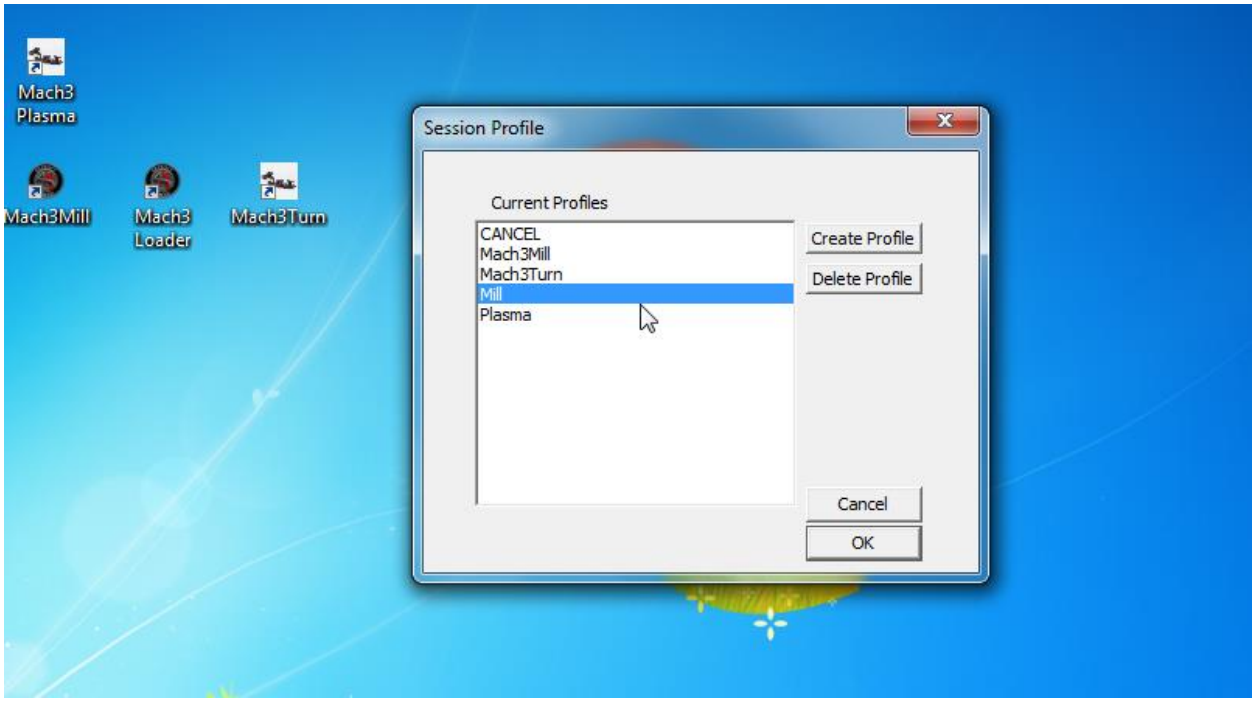
Chapter 5: Performing the Test

To start machining a sample, you must first complete the steps from the previous chapters in order. Then, follow the visual instructions below to begin working with the device.

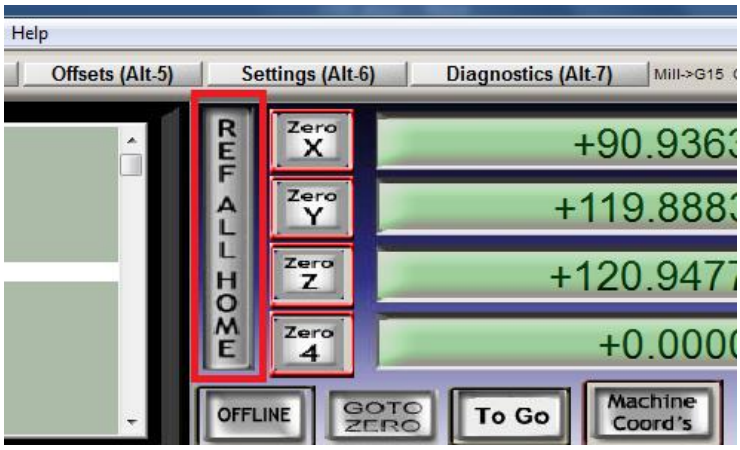
1. First, double-click on the **Mach3 Loader** icon (it is recommended to select **Run as administrator**).



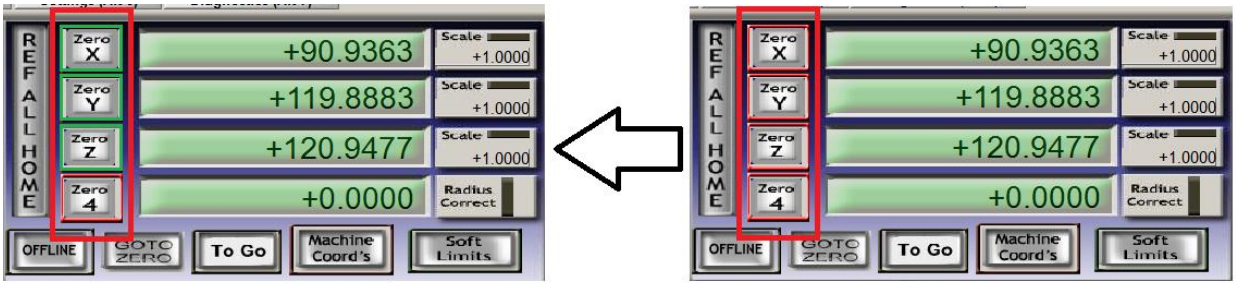
And then, run the **Mill** section.



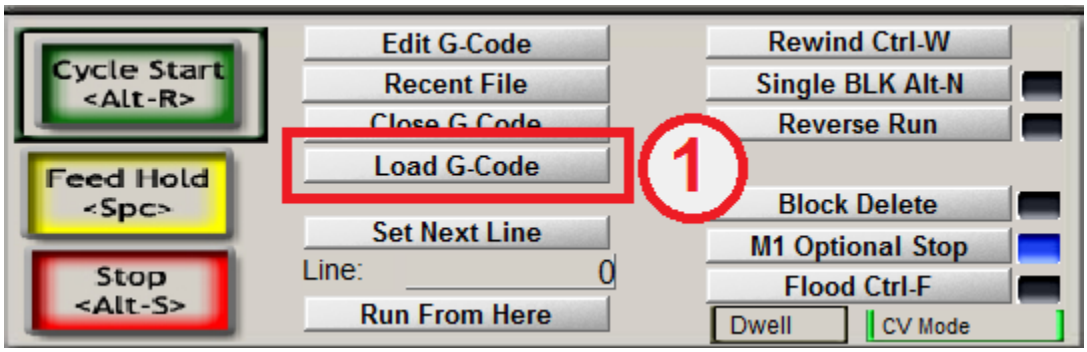
- First, secure the holders of the selected type in their proper positions. After connecting the device to the software, press the button several times to clear any errors in the status bar.
- Then, press the **REF ALL HOME** button to perform the homing process for the device.

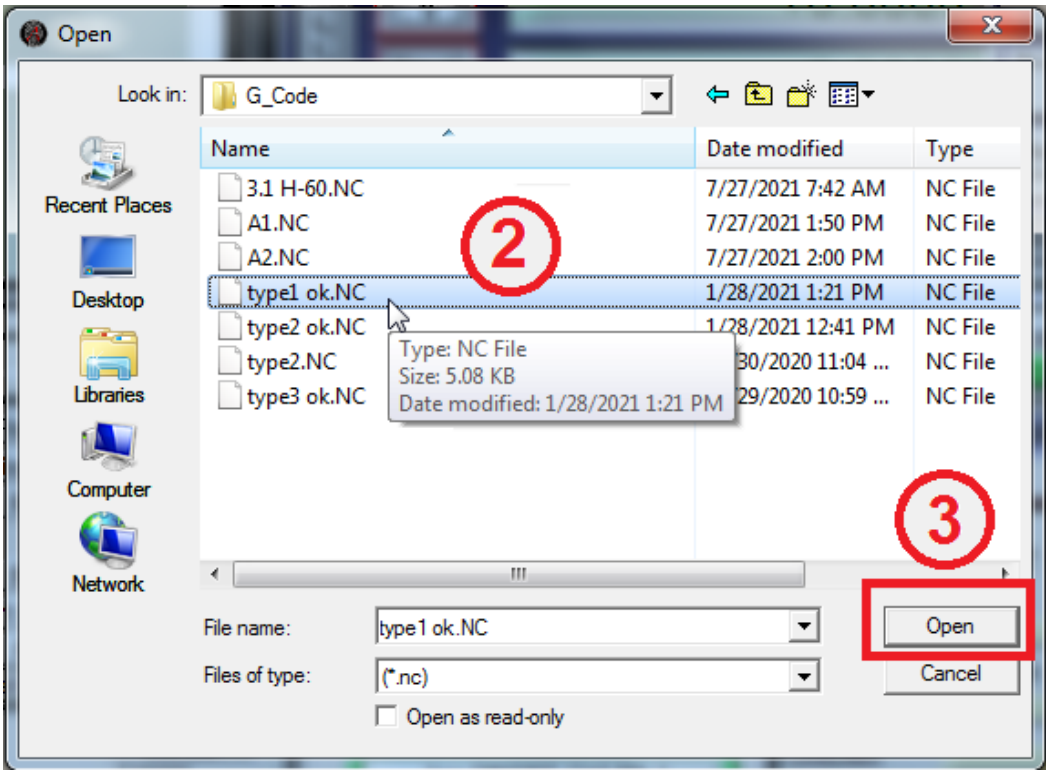


Wait until the screen changes to the shape shown below.



- Now, securely place the sample cut from the tube, which has been cut according to the standard, between the holders and ensure that it does not move even slightly. This is crucial, as any movement during the test due to vibrations and oscillations could cause damage to the device.
- Now, in the software environment of the device, click on **Load G-Code** and select the corresponding G-code for the selected type from the folder where these codes are stored.

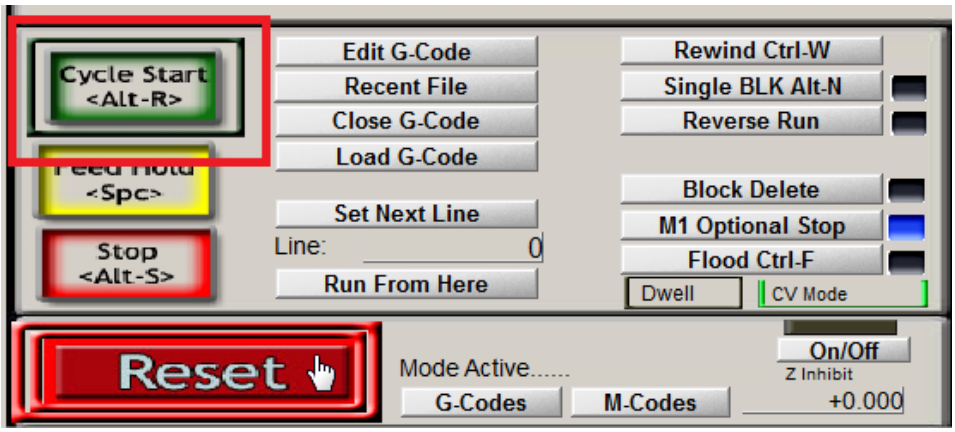




1. On the main software screen, the **G-Code** and a view of the drill's movement will be displayed.
2. Finally, the operator can start the test by pressing the **Cycle Start** button.

Important Notes:

1. Ensure the device's door is closed during the entire operation.
2. Before starting the test, thoroughly clean the waste from the previous test using a vacuum cleaner.
   Each axis has micro switches and proximity sensors, and if these are triggered, the device's zero points may be affected, and the drill could get stuck on the device components. If this happens, the zeroing process needs to be repeated for all types.
3. During the operation, the operator should remain near the device so that in case of any issue or abnormal movement of the axes, they can quickly press the emergency stop button located on the machine body to prevent damage to the device.
4. If any issues arise, the testing process must start over from the beginning.



The operator can stop the test by pressing the **Stop** or **Reset** button, but for the next test, the operator must repeat all the steps from the beginning.

Error Troubleshooting:

The device is not connecting to the software?

1. If the device is turned on but not connecting, first check the network cable to ensure it's in good condition. For this, a cable tester should be used by someone with expertise in this field.
2. If the cable is fine, check the network configuration again.
3. Ensure the network input of the system is working by checking with specialized personnel.
4. If there is a firewall on the system, disable it.
5. If the computer or laptop is connected to the internet through Wi-Fi, disconnect it, as in some versions of Windows, the priority is given to the network that provides internet access, and other interfaces may be blocked.
6. Ensure the correct software is being run.

After pressing the button multiple times during the start or movement of the axes, the error "Estop" or "Home Switch" appears?

1. To resolve this, turn off the device for 5 minutes. Then, turn it back on and repeat the test process. If the error persists:
2. Press and hold the red emergency stop button (do not confuse it with the emergency cutoff button), then press the button multiple times to clear the errors.
3. Afterward, press the **Tab** key on the keyboard to open the manual control menu, and reduce the movement speed of the axes.

Steps to Follow in Case of Errors:

1. **Deactivating Emergency Cutoff Switches:**
    - Use the controller buttons to slowly move the axes toward the center of the device to deactivate the emergency stop switches.
    - Once the emergency stop switch is deactivated, release the red emergency stop button and press the button multiple times to clear any errors in the status bar.
    - Press **REF ALL HOME** to perform homing again.
2. **Starting the Test:**
    - After the homing process, the operator can proceed to conduct the test as per the previous instructions.

Important Notes:

1. Ensure that the **device cover** is closed during operation.
2. **Clean the area** before starting the test by using a vacuum to remove any leftover debris from the previous test.
3. **Micro switches and proximity sensors** are placed on each axis. If these sensors are triggered, the zero position of the device can become corrupted, and the probe may get stuck on the device components. In such cases, you will need to re-perform the **zeroing procedure** for all types.
4. During operation, the **operator must remain next to the device** to quickly press the emergency stop button in case of unexpected movement or abnormal behavior from the axes to prevent damage to the device.
5. If any issues arise, the test process should be restarted from the beginning.