



Quick Start Guide

Congratulations on your new Pocket NC!

Get started with this basic guide and the “Getting Started” playlist on our Youtube channel.

For additional information visit: www.support.pocketnc.com For support, service or any other inquiries, contact us at: info@pocketnc.com

Thank you!

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Revision History:

V1.0 October 2017 (JD)

V1.1 May 2018 (KN): Updated bolt removal photos

V2.0 May 2019 (QR): Large revision

V2.1 Sep. 2019 (QR): Added user interface section

V2.2 Oct. 2019 (QR): Fixed URLs

V2.3 Feb. 2020 (QR): Removed V2-10 info and renamed

V2 Shipping Bolt Removal

There are four shipping bolts installed in the Pocket NC in order to lock the axes in position and prevent damage to the machine during shipment. The bolts are shown in green circles below. They must be removed before the machine may be used.

Do NOT remove any other bolts from the Pocket NC as this could cause damage to the machine.

The shipping bolts are M6 shoulder bolts of three different lengths. The 4 mm hex key needed to remove the bolts is included in the toolkit shipped with the machine. The bolts are installed only hand-tight.



Figure 1: Pocket NC V2 Series all shipping bolt locations shown in green circles.

Do not discard the bolts. They should be retained with the rest of the machine packaging in case the user needs to ship the machine in the future.

Two of the shipping bolts are located behind the Y-axis, they are shown in green circles in Figure 2. When the user is looking at the back of the machine they are located in the lower-right quadrant of the machine. One of them locks the trunnion housing to the L-bracket and the other locks the A-table to the A-housing.

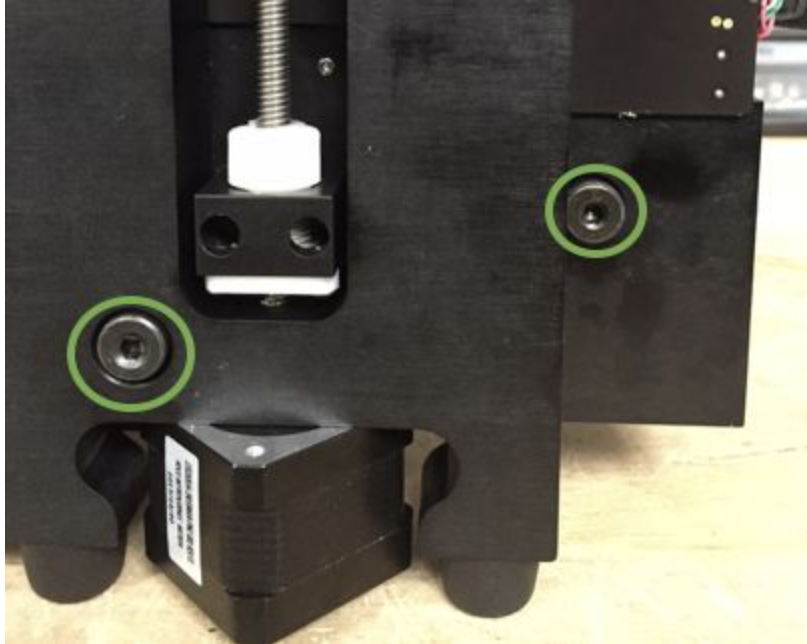


Figure 2: Close up of shipping bolts in green circles behind Y-axis

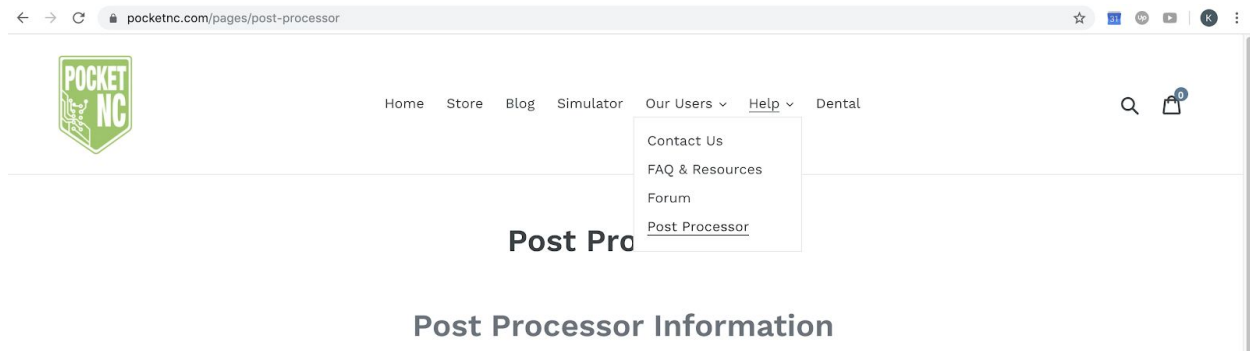
The other two shipping bolts are located on the X-carriage, behind the spindle. They are both accessed from the top of the machine. The right bolt locks the spindle mount to the X-carriage. The left bolt locks the X-carriage to the main block.



Figure 3: Close up of shipping bolts in green on X-carriage

CAM Software Options

The Pocket NC machines take G-Code, which can be written by hand or by a CAM software. Pocket NC has a list of post-processors for an array of CAM packages under [Help > Post Processor](#). These include Mastercam, Autodesk products (Fusion 360, HSM Works, Feature CAM), RhinoCAM, NX, BobCAD/CAM, SolidCAM, and EspritCAM.



Fusion 360 continues to be free for educators, please register at [autodesk.com/education/home](https://www.autodesk.com/education/home). Fusion 360 is also free for personal users although there are some restrictions. Start-ups can apply for a free commercial license if they meet certain criteria. Please see more information on these new licenses here:

<https://www.autodesk.com/products/fusion-360/blog/subscription-types/>.

A standard Fusion 360 commercial license is \$495 per year which can be purchased through Autodesk.

If you have any questions about CAM software choices and options please email info@pocketnc.com.

Pocket NC Basics

User Interface

To connect to your Pocket NC, follow the steps below for accessing the user interface

- 1) With the machine's power switch in the off (o) position, plug the power cord into a wall outlet and then the machine.
- 2) Plug the usb cord into a computer.
- 3) Plug the usb cord into the machine and flip the power switch to the on (-) position. Wait for the machine to boot up fully.
- 4) Once the E-stop button is blinking red, open a new window in a supported browser (Google Chrome, Firefox, Safari) and type 192.168.7.2 into the address bar and press enter.
- 5) When the user interface shows up, confirm that it says "Connected" in the bottom left corner.

If you are experiencing connection issues, please make sure you have the most recent Beaglebone driver for your operating system installed on your computer.

To help avoid connection issues in the future, please be sure to regularly clear log and g-code files from the machine using the user interface's "Conf." tab. The options to do so will be found under "Status".

It is also recommended that users completely shutdown the Pocket NC when it will be idle for more than a couple of hours. This includes turning the power switch off and unplugging the USB cable.

Tooling

The 1/8" single flute end mill that came with your machine should not be used for cutting metals or plunging in any material. (Part Number 52508 - Carbide, Plastic Cutting End Mill - Square Upcut Single Flute)

If additional tooling is needed for cutting metals or other materials, visit pocketnc.com to see the selection of Harvey and Datron tools we offer.

Installing or Changing the Tool (V2-50)

- 1) Make sure the spindle is off (it can be hard to tell when running at low RPM's)
- 2) Locate the lever on the spindle and pull it until it clicks into the "Open" position
- 3) Change CHB collet if necessary by using the 10 and 6.1mm wrenches provided

- 4) Insert the tool into the collet with the desired amount of tool left sticking out
- 5) Push the lever back to the vertical, “Lock” position.
- 6) Remember to measure the tool offset using the directions below.

Measuring Tool Offset (telling the machine where the end of the tool is)

- 1) Home machine
- 2) Navigate to the “Tooling” page of the user interface (www.support.pocketnc.com >> [User Resources](#) >> [Software Overview](#))
- 3) With the desired tool loaded, click the “Measure Tool XX” button that matches the *tool used in your program*.

Alternatively, the tool length offset can be measured by hand by following the directions here: www.support.pocketnc.com >> [User Resources](#) >> [Tool Length Offset](#)

Work Holding

For information and instructions on how to set up the various work holding options Pocket NC offers, visit www.support.pocketnc.com >> [User Resources](#) >> [V2 Series Workholding](#)

V2-50 Spindle

Safety

With the spindle on the V2-50 having a much higher maximum RPM than the V2-10, it is important to be extra cautious around the tool and spindle.

Always double check that the tool is not spinning before allowing anything near it. The V2-50 spindle is much quieter than the V2-10 spindle and only spins a tool, not a tool holder, so it can be hard to tell when it is running, especially when at high RPM.

Once the machine is stopped the spin down cycle can take longer than anticipated, be sure that the tool has stopped turning before changing tools or getting near the spindle.

Maintenance

The V2-50 has a few extra requirements when it comes to maintaining and prolonging the life of the spindle.

Air- To ensure that it stays cool and doesn't get any debris in it, it is important that the spindle be attached to *filtered, dry* air while running at *any* RPM. We recommend 25 psi or .17 MPa. There are several 4mm hose fittings on the back of the machine and spindle for this. Included

with your V2-50 is an air filter and regulator, please refer to that section below to ensure proper set up.

Warm-up- The V2-50 spindle requires warming up after periods of disuse. On the user interface, there is a “Warm-Up” button that will start the warm up program, this program should be run anytime the machine has been cooled down or heated up (i.e. shipping in extreme temps). After starting the warm up cycle the machine will run the spindle for about 50 minutes if it has been off for more than 7 days. If the machine has been off for more than 12 hours, this program will run for about 10 minutes.

The warm-up cycles the speed of the spindle, increasing the RPM every few minutes. The main reason for the warm-up cycle is to evenly coat the bearings in the spindle with lubrication before cutting. This is necessary in order to avoid damaging the spindle or the motor.

Cleaning- The spindle on the V2-50 should be cleaned regularly. Cleaning the spindle with any sort of liquid, except alcohol, is not recommended. A Q-tip with most of its fluff removed and a little alcohol can be used to clean the inside of the spindle and collet. When cleaning the outside of the spindle and the spindle housing it is best to have the *air on* and then use a vacuum and dry rag to remove any chips and dust that has accumulated.

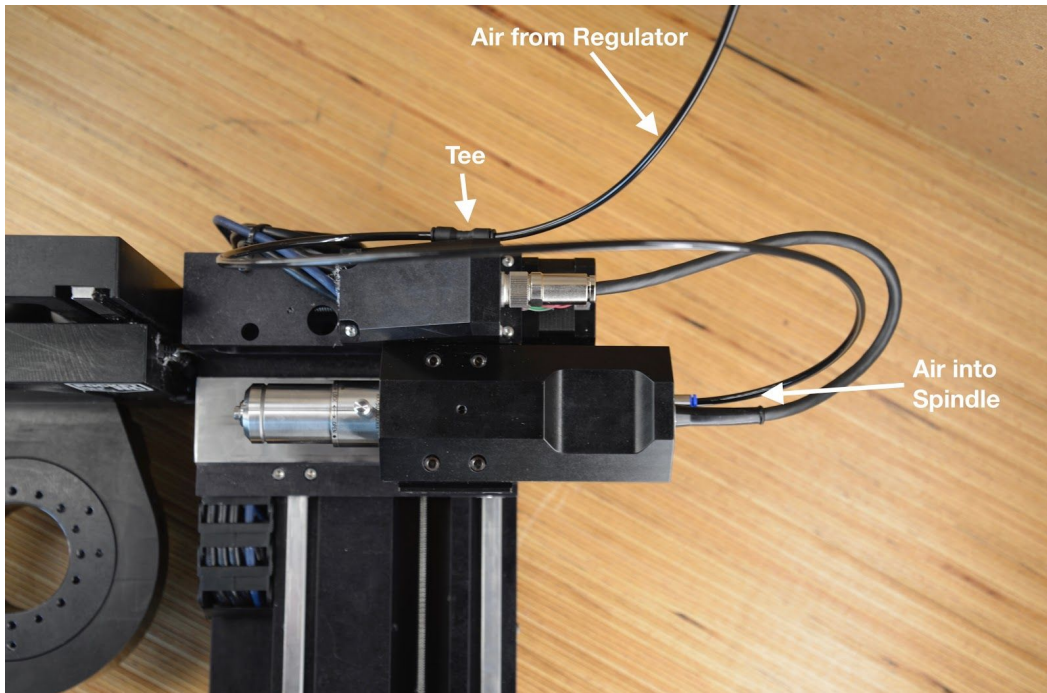
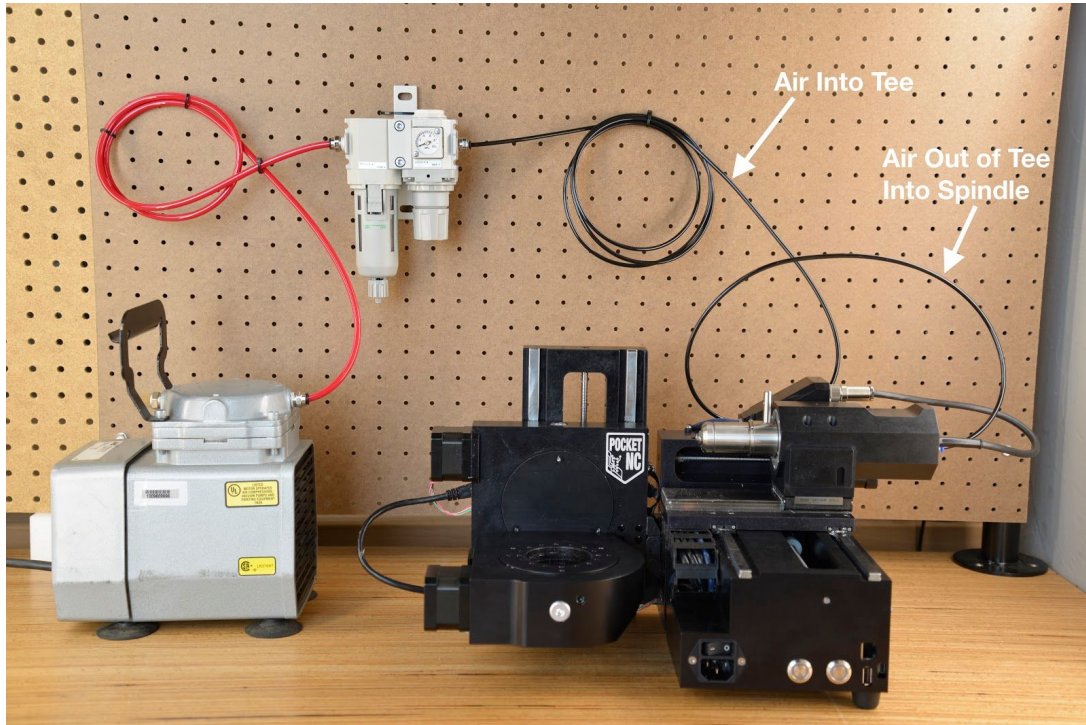
Tooling

The V2-50 is equipped with a CHB collet. Though this collet type tends to slip less, it still doesn't have the gripping power of an ER collet and tool holder. The machine will probe the tool after each tool change (M6) but it is still important to watch for tool pull-out while running parts.

Leaving tooling in the spindle when it is not in use is permitted, but users should watch for development of rust on HSS tooling and the collet if in an area where rust can be a problem.

Compressed Air Setup

Below is an example of the air setup required to run the Pocket NC V2-50. Please note that the source of air and inlet hose may differ if the user has chosen a different air supply than the one recommended by Pocket NC. If this is the case, the user will need to supply and install the appropriate adapter into the 1/4" BSPT port on the inlet side of the filter in order to hook up the desired air hose.



In the setup above, the air supply is a Gast air compressor with 1/4" air hose (red) supplying air to the CKD filter and regulator that is included with the V2-50. The 4mm (black) hose supplies air to the tee on the backside of the spindle, which supplies air to the internal air sensor. The tee also carries the air to the spindle using a short length of 4mm hose connected to the blue

connection on the end of the spindle motor. It is important that air comes into the tee and then out of the tee and into the spindle so that the machine recognizes that air has been provided.

The recommended air pressure for the V2-50 spindle is 25 psi or .17 MPa. This can be adjusted using the knob on the bottom of the regulator by pulling down to unlock it and then turning to the right for more pressure or the left for less. It is best to push the knob back up into its locked position after adjustment to reduce the risk of accidental pressure adjustments.

The air filter of the CKD assembly also traps any water that is in the air lines. The water is deposited into the bowl that is to the left of the air pressure knob. When the float inside the bowl reaches a certain point, the water is automatically drained through the port at the bottom of the bowl. Included with your machine is a piece of hose that can be attached to the port to direct the drained water to a desired location. It is important to monitor the level of water in the bowl and make sure it does not fill past the green "max" line, just in case the auto drain function stops working properly.

For more information on the CKD air filter and regulator please visit:

<https://www.ckd.co.jp/kiki/en/product/detail/38/M%E2%80%BB000>

<https://www.ckd.co.jp/kiki/en/product/detail/396/>

Important Values

Measured “B-table offset”: _____ in
(Distance from B-Table to the Center of A axis rotation)

Shipping position - X1.26 Y2.51 Z-3.333 A90.00 B0.00

V2-50 Collet Type - Nakanishi CHB

Machine Number: _____

What's Next?

If you are new to machining, we have a few resources that will help you become acquainted with your new machine. For the basics start here: www.support.pocketnc.com. From there, go check out our tutorials section found here: www.support.pocketnc.com >> [user resources](#) >> [Tutorials](#). Also, be sure to go through the Fusion 360 Ultimate tutorials found on Autodesk's website to become familiar with CAD/CAM and how it works with CNC machines.