CONSOLE
USER MANUAL

Contents

Unit 1 Westfield Court | Barns Ground | Clevedon | Bristol | BS21 6FQ
Tel No: +44 1275 217060 | Email: support@yetitool.com

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1 Initial start-up

1.1 Safety disclaimer

Please take note of all the warnings. Mechanical cutting tools can cause serious injury if used in an improper way.

Do not use SmartBench unless you have read and familiarised yourself with the safety instruction, which can be found here: https://www.yetitool.com/support/downloads

To proceed you need to confirm you have read the manual, are competent to use SmartBench and are aware of the safety warnings.

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1.2 Homing and auto-square

Upon initial start-up of SmartBench, you will be greeted with the homing screen. Homing will allow SmartBench to find its zero coordinates in the X, Y and Z Axis.
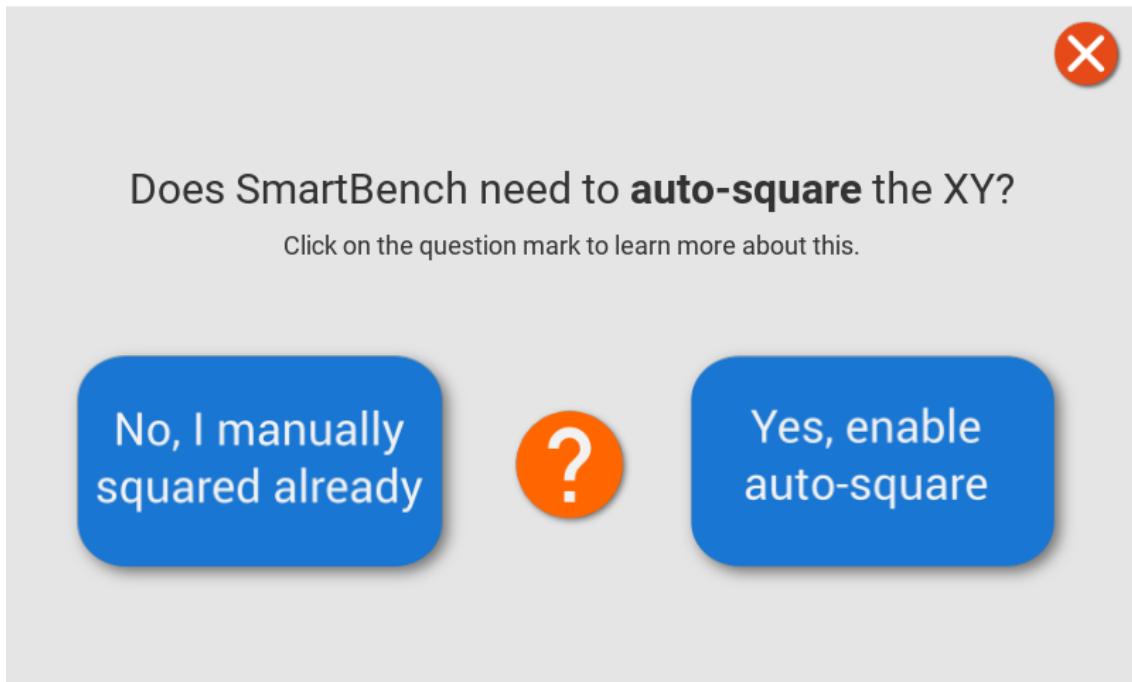
The first screen will ask you if you have manually squared the Lower X Beam, or if you would like the machine to square this automatically.

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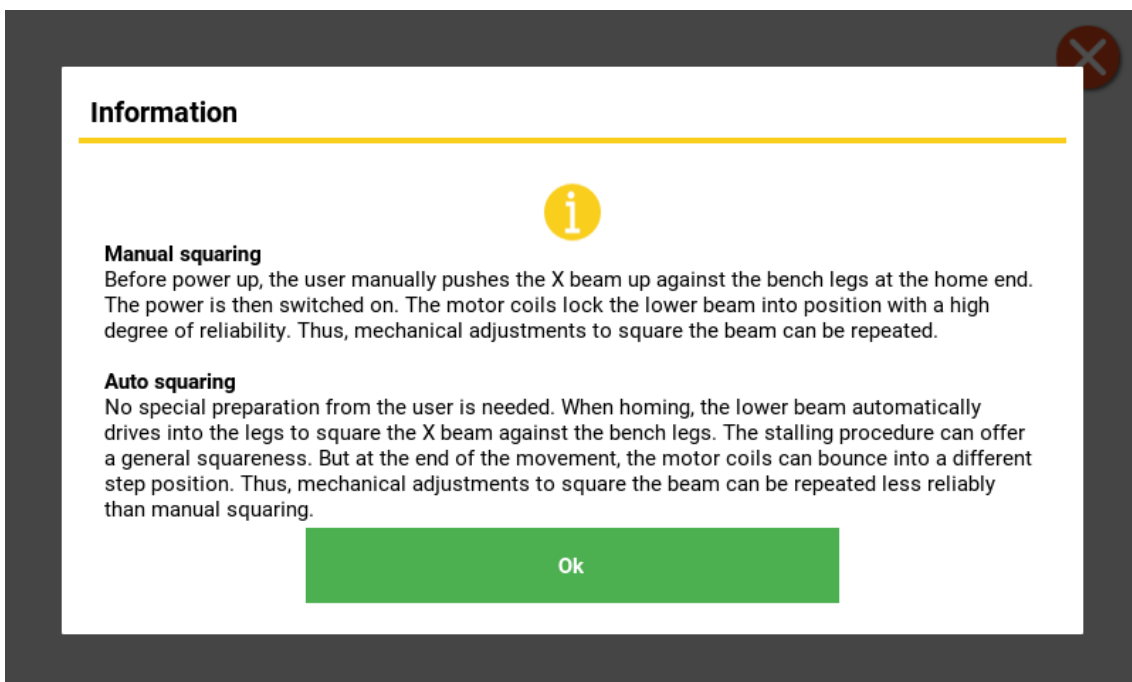
1.3 Lobby

1. **PRO CAD / CAM**

   Use this with files you have processed through your CAM package. You will need to have a GRBL generated GCode file saved in your system.

2. **Shape Cutter**

   This allows you to generate and cut 10 simple geometry directly on SmartBench.

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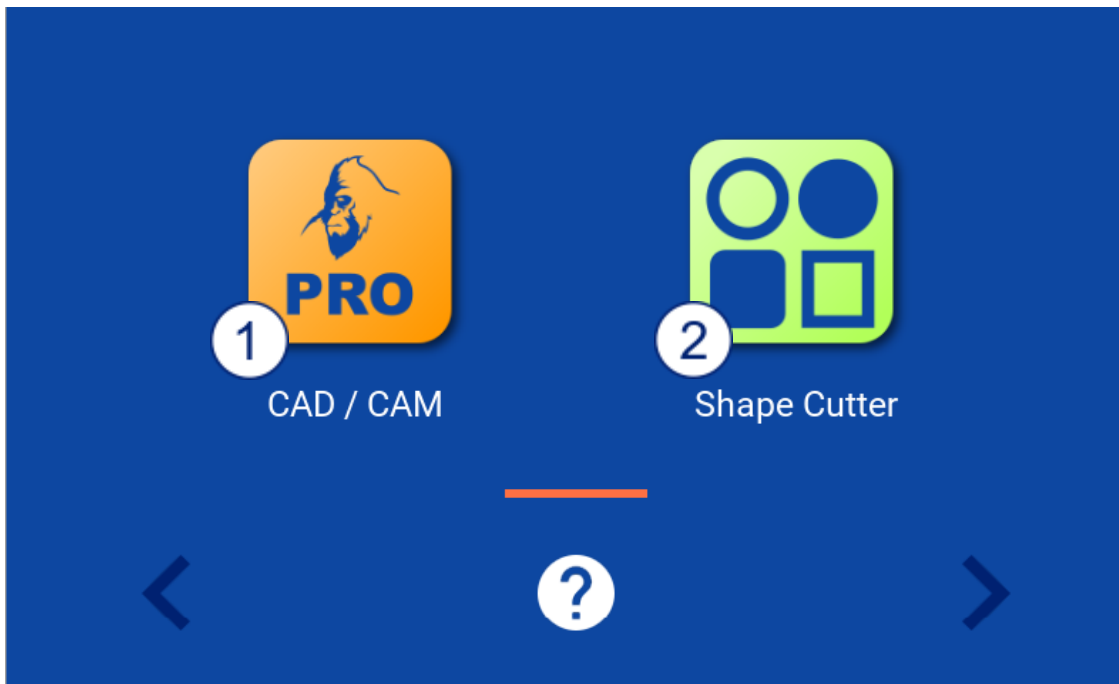
3. Wi-Fi App

This allows you to connect to your Wi-Fi network. This enables file transfer and software update functionality.

4. Calibrate

This allows you to calibrate SmartBench to improve accuracy.

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5. Update

This allows you to connect to update your Software via Wi-Fi or USB.

6. Maintenance

Laser datum setup – Set your offset value for the laser datum crosshair.
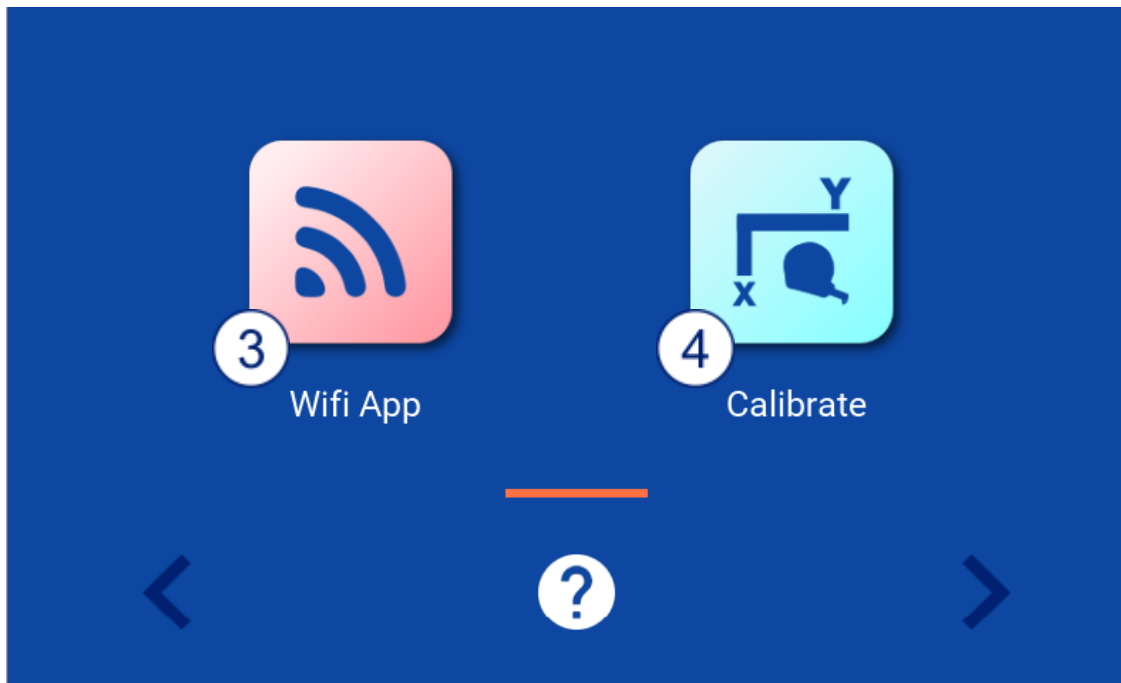
Brush life monitor – keep track of your spindle brush life and receive reminders on the console of when you need to inspect your brushes.

Spindle cooldown – Adjust your spindle cool down settings after a job to prevent it from overheating and to extend its lifetime.

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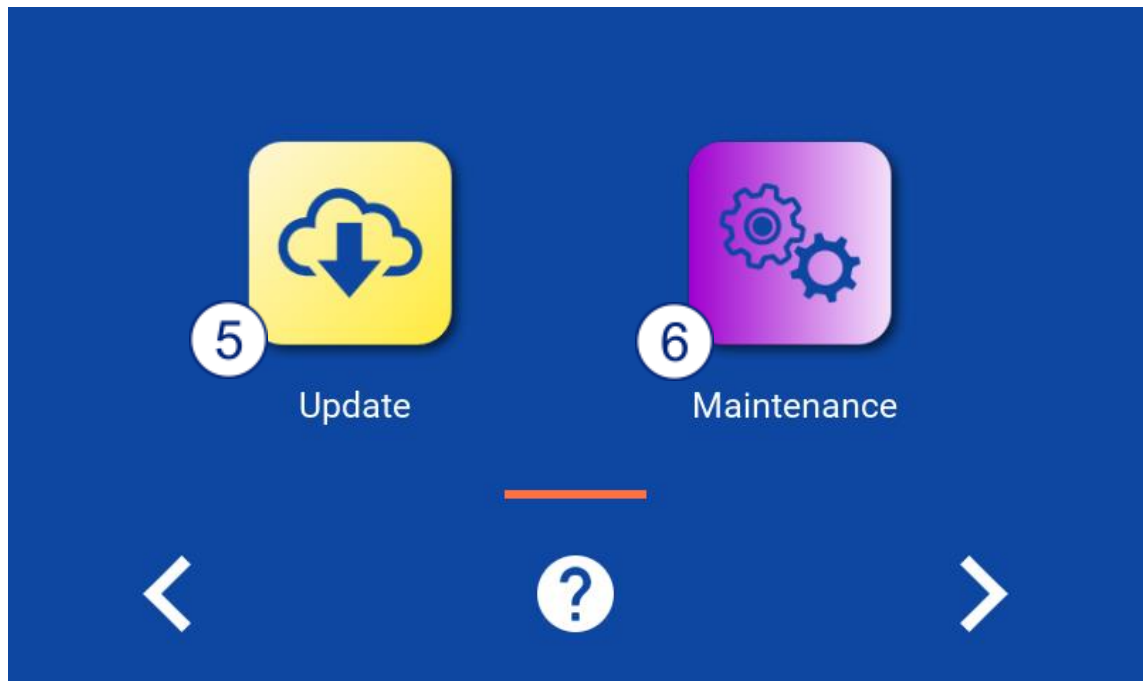
7. Developer

This allows you to access developer features.

NOTE: The developer app is to help our engineers access extra settings and functions that might not be stable or change how SmartBench behaves. By using the developer app, you may risk causing damage to SmartBench.

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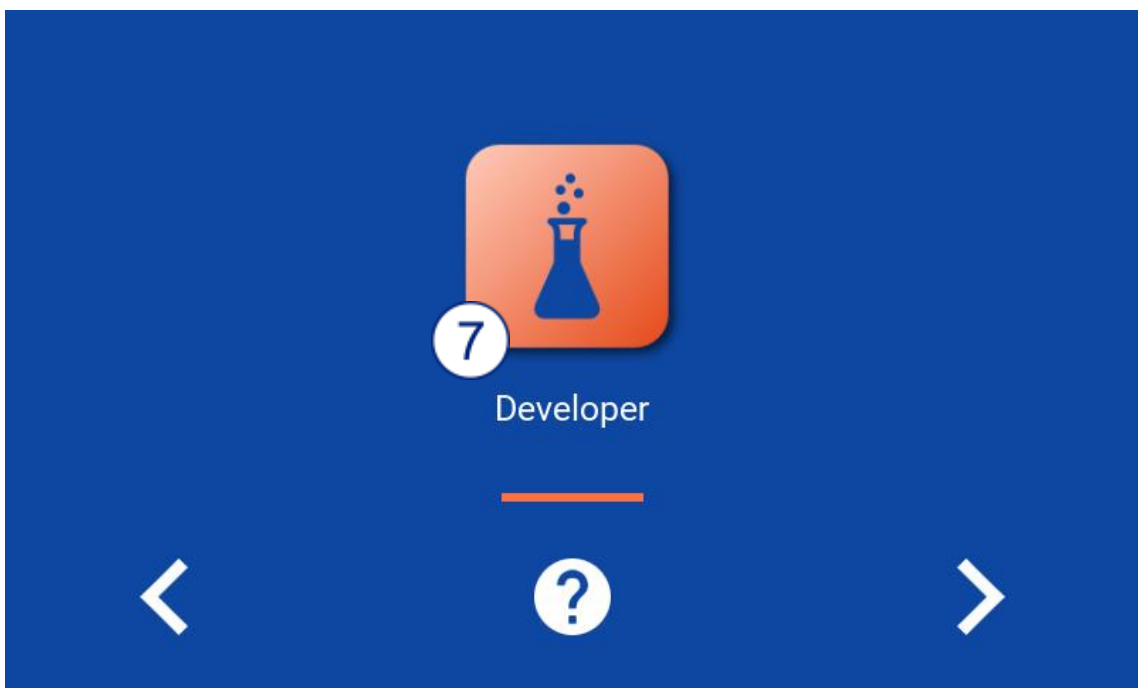
2 Pro CAD CAM

2.1 Core functions

The core function buttons appear on all screens

1. **Exit** – This will allow you to return to the lobby screen

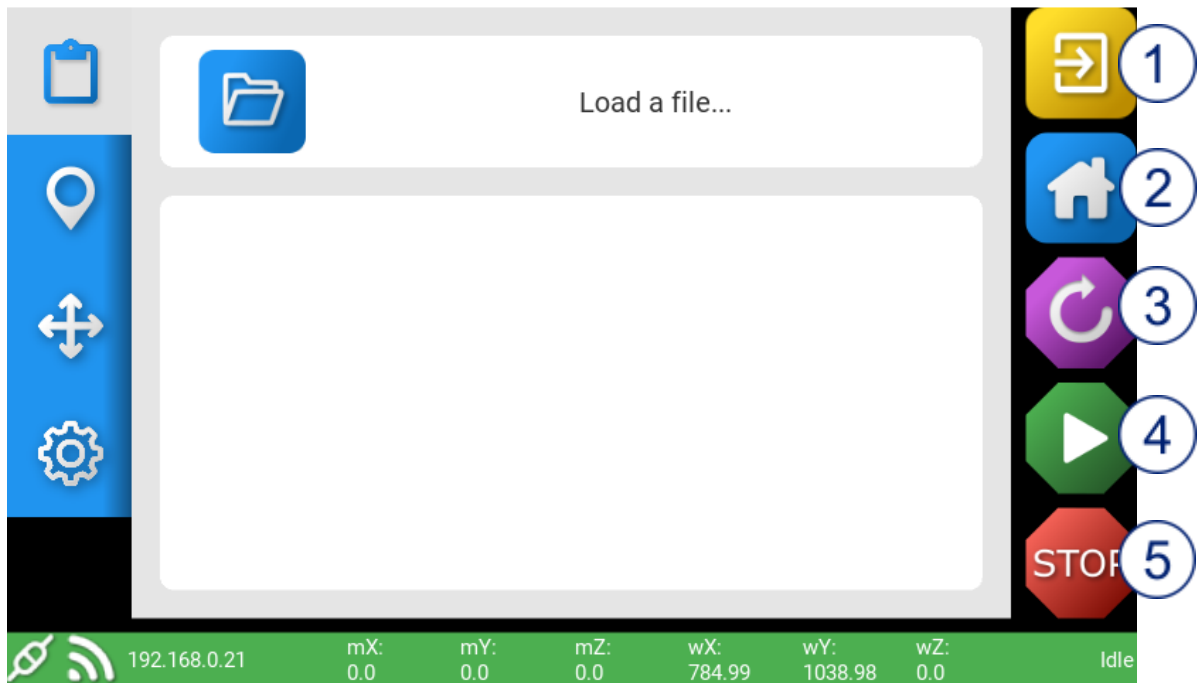2. **Home** – This is where SmartBench finds its zero X, Y and Z coordinates

3. **Reset** – Reset in the event of an error

4. **Run** – Opens the job run dialogue screen

5. **Stop** – Stops SmartBench during any operation

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2.2 Navigation ribbon
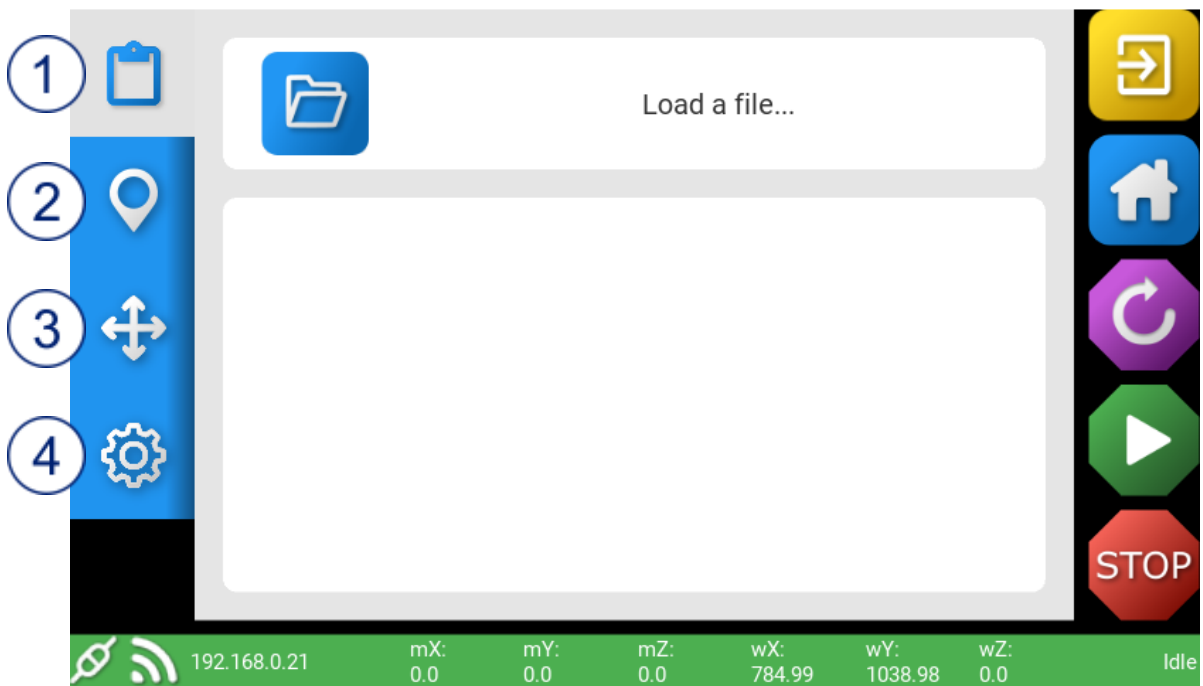
1. **File** – Choose, open, delete, change files

2. **Map** - Overview of the job, Set or Go to Park and X/Y Datum

3. **Move** – Manual move X, Y, Z control move speeds, turn on/off spindle and extraction

4. **Settings** – G Code Monitor

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2.3 Information bar
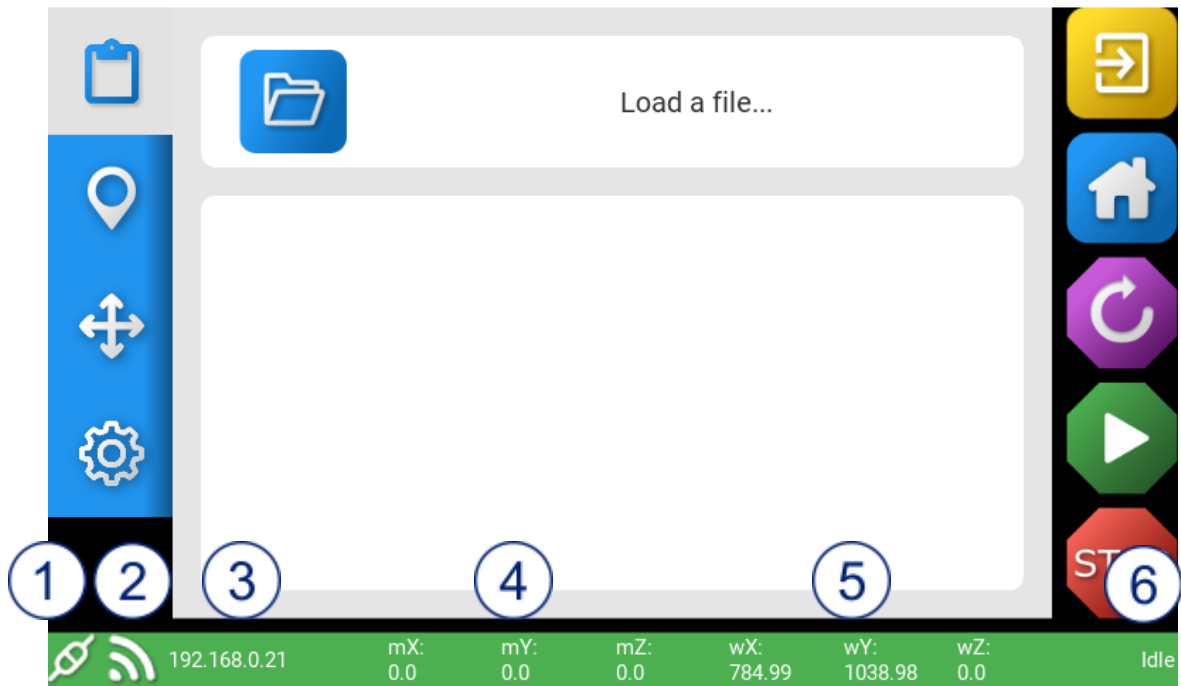
1. **Serial connection established**
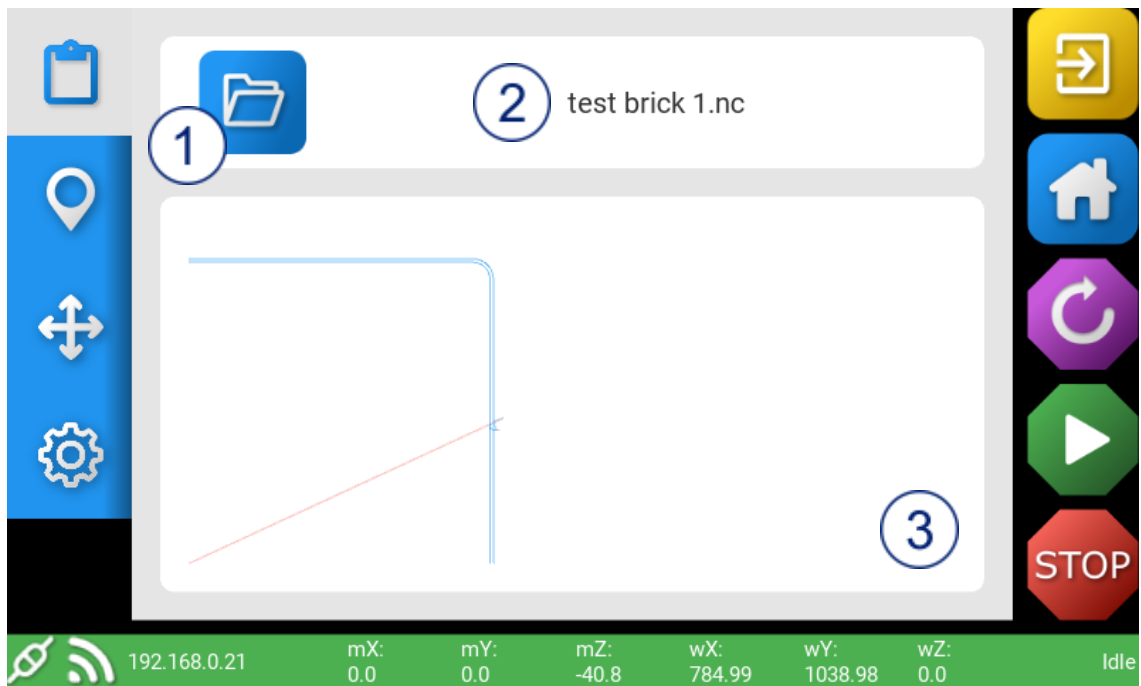
2. **Wi-Fi indicator** – Status of connection to your Wi-Fi network

3. **IP address** - IP address on your local network

4. **Machine coordinates** – Tool head's position relative to the home position

5. **Work piece coordinates** – Tool head's position relative to the job's datum position

6. **SmartBench status** – Idle, Alarm, Run, Home, Unknown

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2.4 File screen

1. **Open File explorer** – Opens the file explorer

2. **File Name** – Displays the name of the file loaded

3. **Tool path viewer** – Displays the top 1000 GCode lines of the file you load
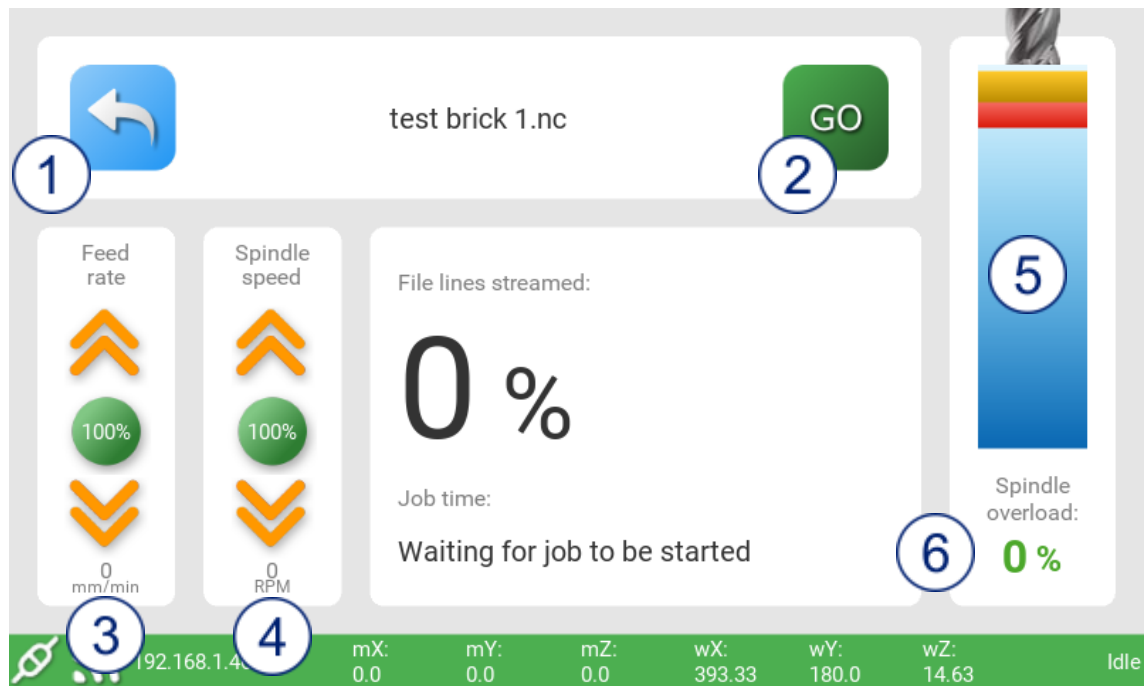
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2.5 File explorer

Only .nc and .gcode files will be shown. Press the icon to display the full filename here.
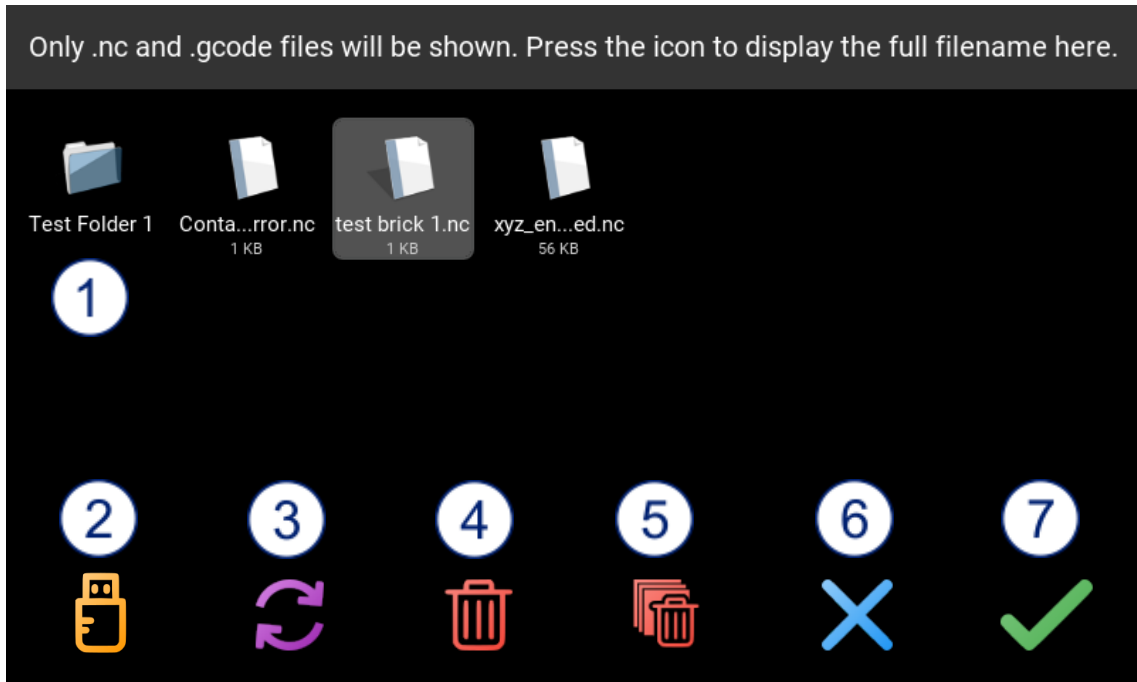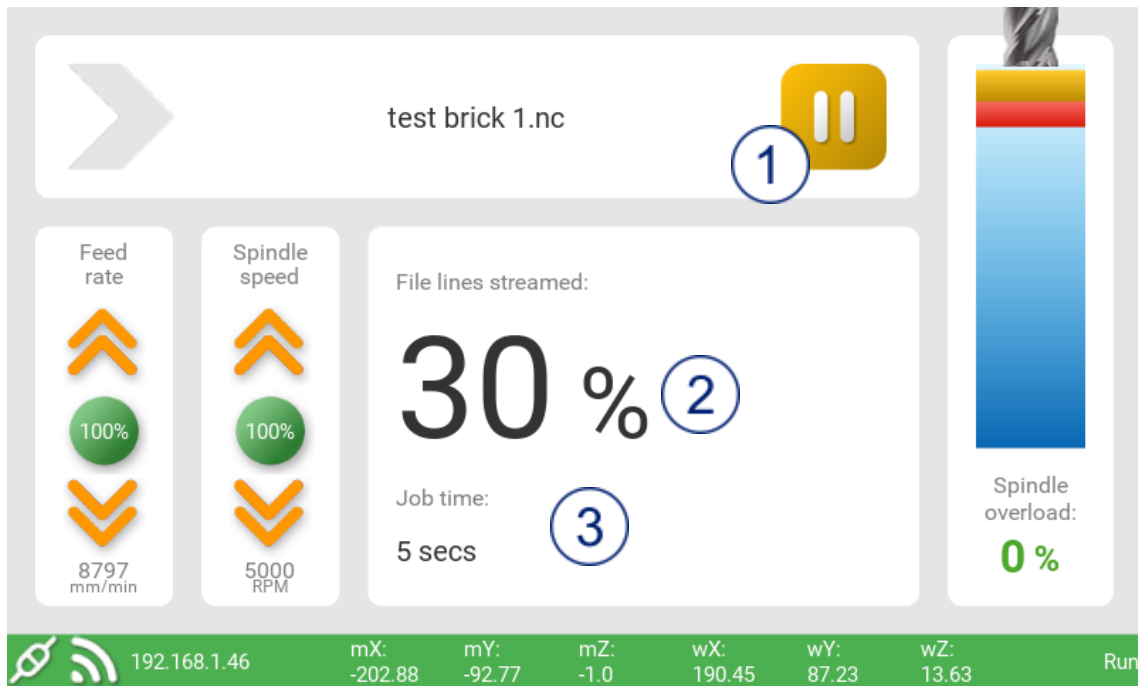
1. **Files** – The list of files available for selection

2. **Load from USB** – Used if loading from a USB stick. When a USB is loaded, the icon will turn orange

3. **Refresh** – Refresh file list

4. **Delete** – Delete file from the file list

5. **Delete all files** – Delete all the files from the console

6. **Close file explorer** – Do not process any changes and return to file load screen

7. **Select file** – Process all changes and return to file load screen

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2.6 File run screen

1. **Go Back** – Go back to the file load screen

2. **Start Job** – Start the job loaded

3. **Feed rate** - Increase or decrease cutting feed rate

4. **Spindle Speed** - Increase or decrease spindle speed (Precision and PrecisionPro models only)

5. **Z height graphic** – Position of your Z Height

6. **Spindle Overload –** spindle overload value (PrecisionPro Model only)

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1. **Pause** – Pause the job running

2. **File lines streamed** - Percentage of file lines streamed

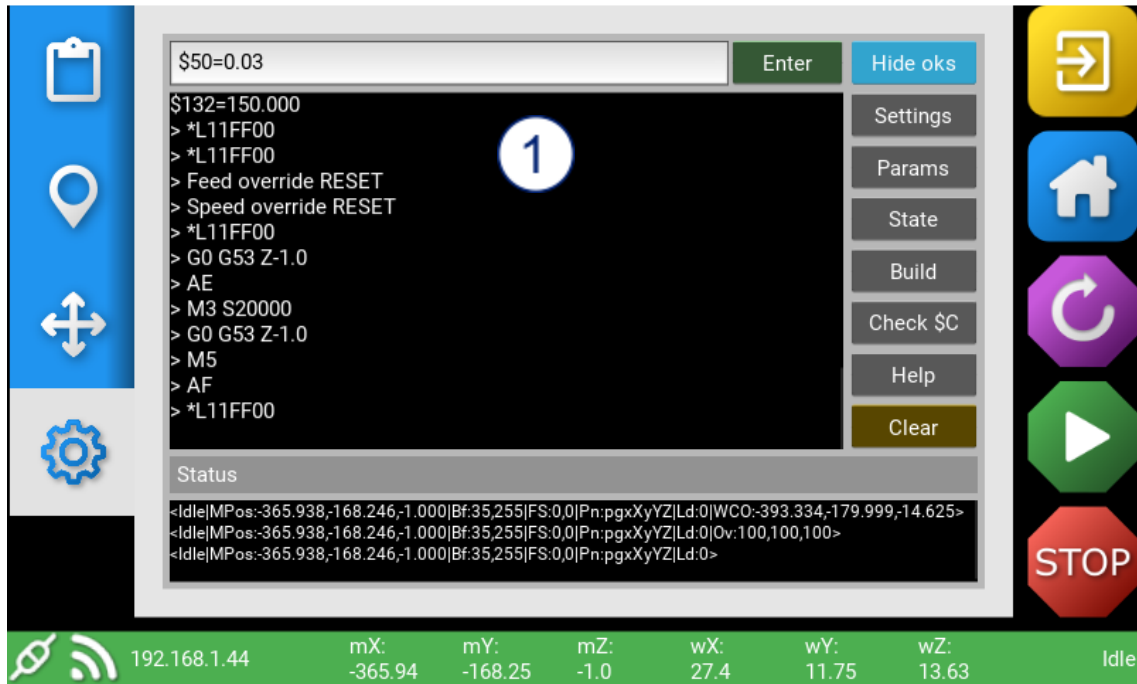3. **Job time** - Elapsed Job Time

2.7 Map screen
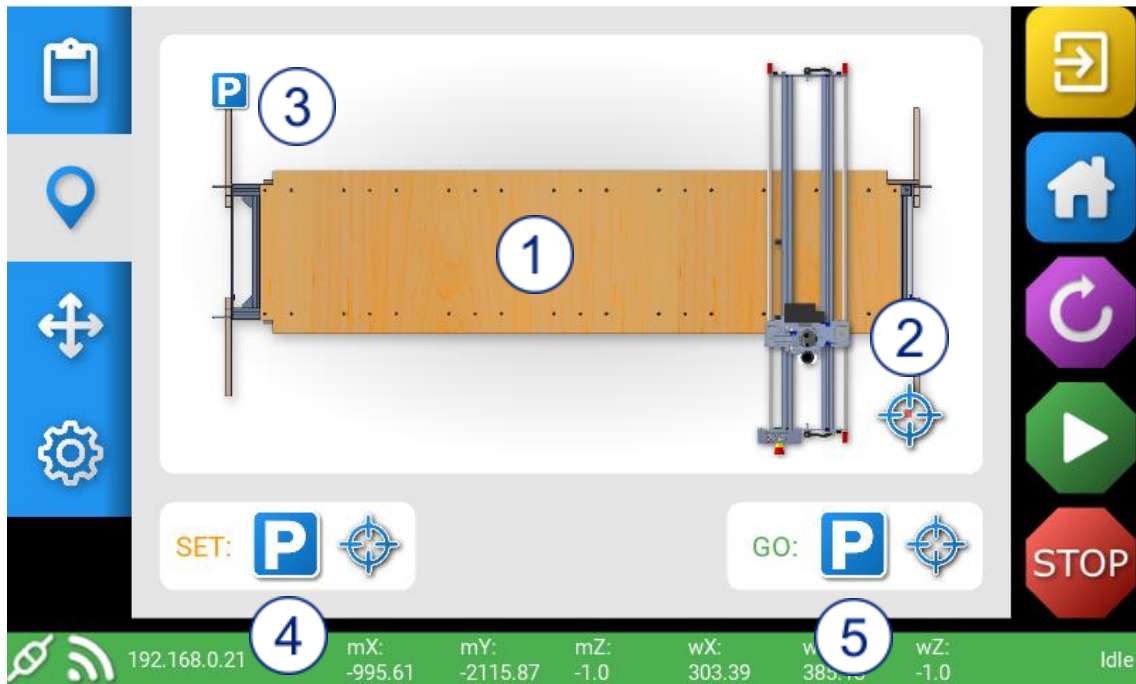
1. **SmartBench graphical overview**

2. **X/Y Datum point** – The current position of the X/Y datum point

3. **Park position** – The current park position

4. **Set Park and X/Y Datum point** – Set a new position Park or X/Y Datum point positions

5. **Go to Park or X/Y Datum point** – Take the Z Head to the set Park or X/Y Datum position
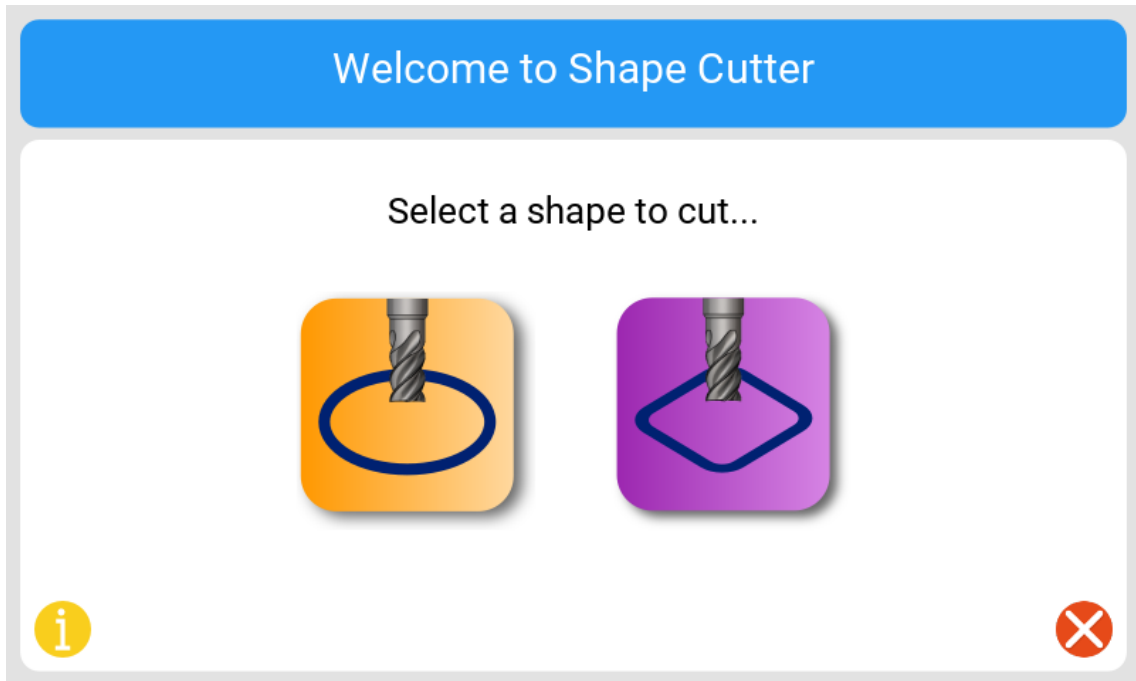
2.8 Move screen
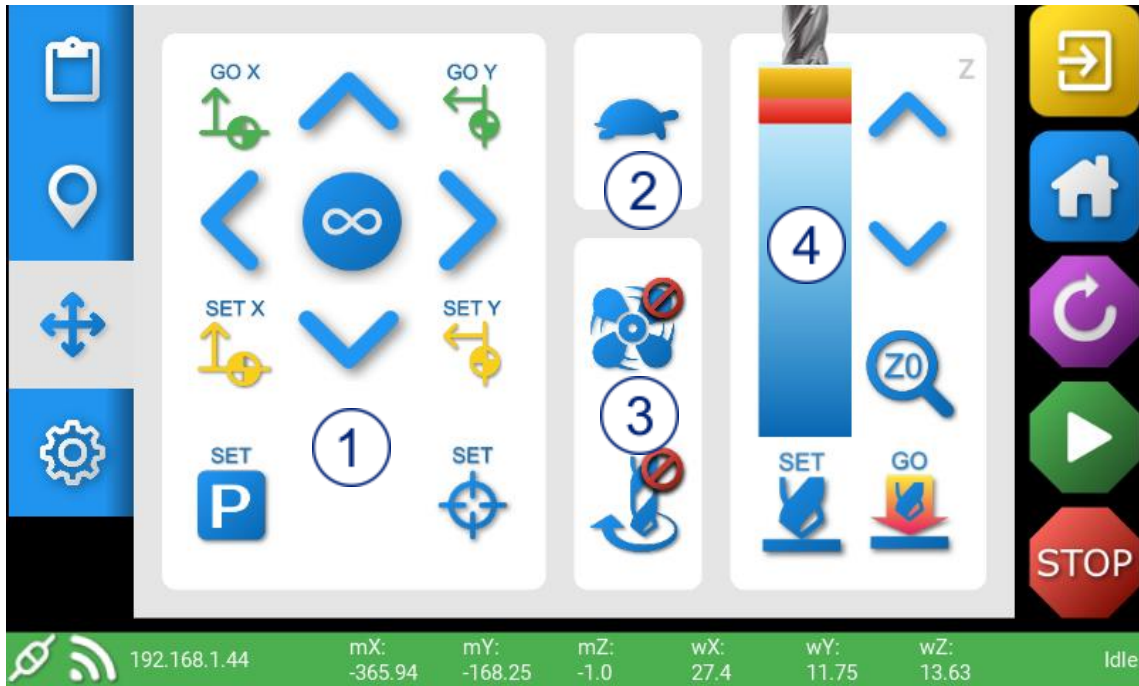
1. **X/Y Move Controls** – Controls which have an effect on the X and Y position of SmartBench

2. **Additional Controls** – Controls which allow you to adjust movement speed in the X, Y and Z axis as well as turning the spindle and extraction on/off

3. **Movement speed** – Change the movement speed

4. **Z Move Controls –** Controls which have an effect on the Z position of SmartBench

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2.9 Settings

1. **GCode Monitor** – Simple monitoring of SmartBench GCode

2. **Status** – Realtime GRBL status

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3 Shape Cutter

3.1 Shape Cutter overview

Shape cutter allows you to design and cut directly on SmartBench. Enter your shape dimensions, follow the step by step setup and then start cutting.

Choose from 10 different geometry including circles, squares, and rectangles.

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4 Wi-Fi

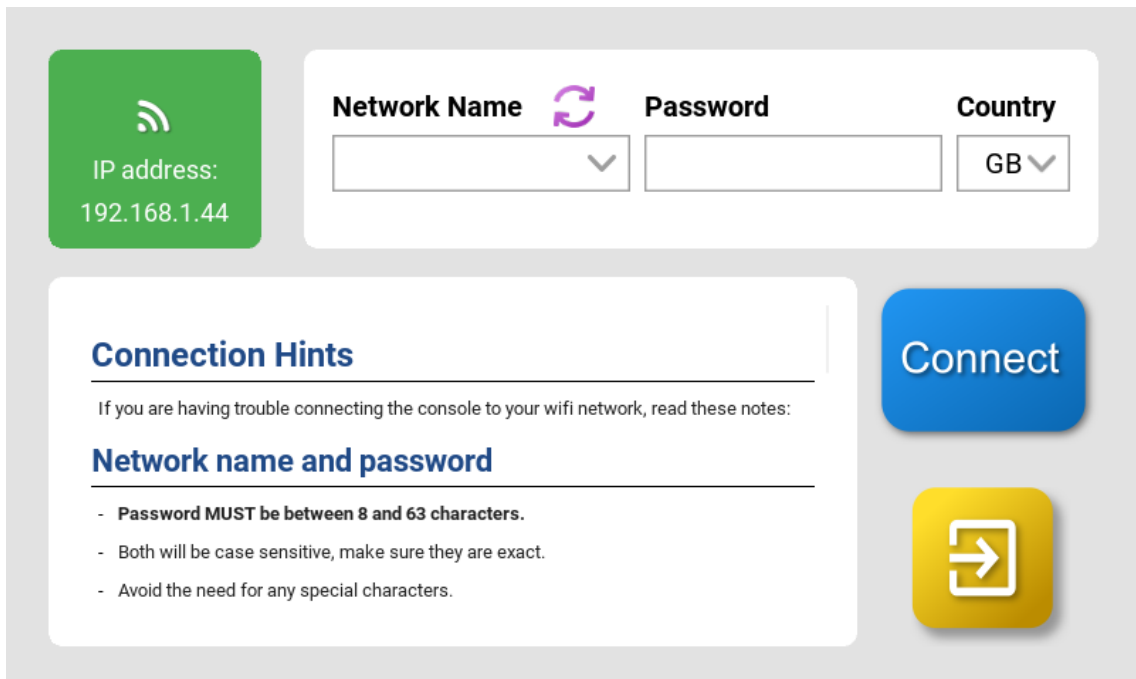## 4.1 Connect to your local Wi-fi network

Connecting your console to Wi-Fi will give you the following functionality

- Software updates
- Files transfer over Wi-Fi

To connect to your Wi-Fi:

1. Select your network from the drop-down list
2. Enter your password (This is case sensitive)
3. Set your country code – please see table here
4. Press "Connect"
5. The console will then reboot and connect to the network

NOTE: When the connection is stable, your IP address will be shown as below

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5 Calibration

The calibration app will allow you to calibrate SmartBench to improve accuracy and squareness. This will need to be carried out if:

- You have many any adjustments to the X or Y wheels
- SmartBench has had a bumpy journey
- After 320 hours of use
- You want to improve accuracy and squareness

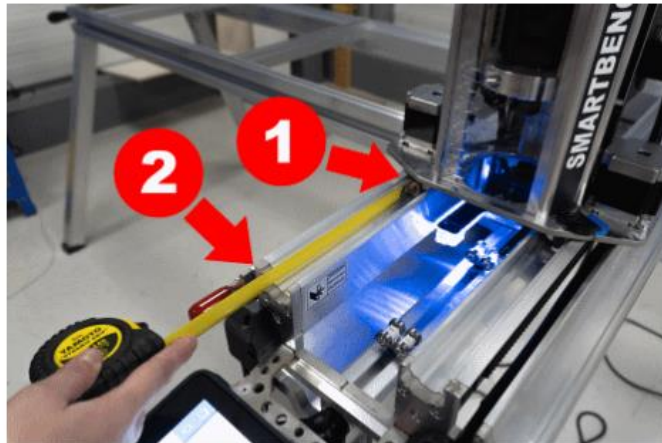The app will take you through each step of the calibration procedure.

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6 Update

Our update app makes it easy for you to update your console software. Your software can be updated by Wi-Fi or from USB.

6.1 Wi-Fi update

To update your console over Wi-Fi, you will first need to ensure you are connected to your local Wi-Fi network – see here

When you are connected to your network the app will indicate if there is a newer version available.
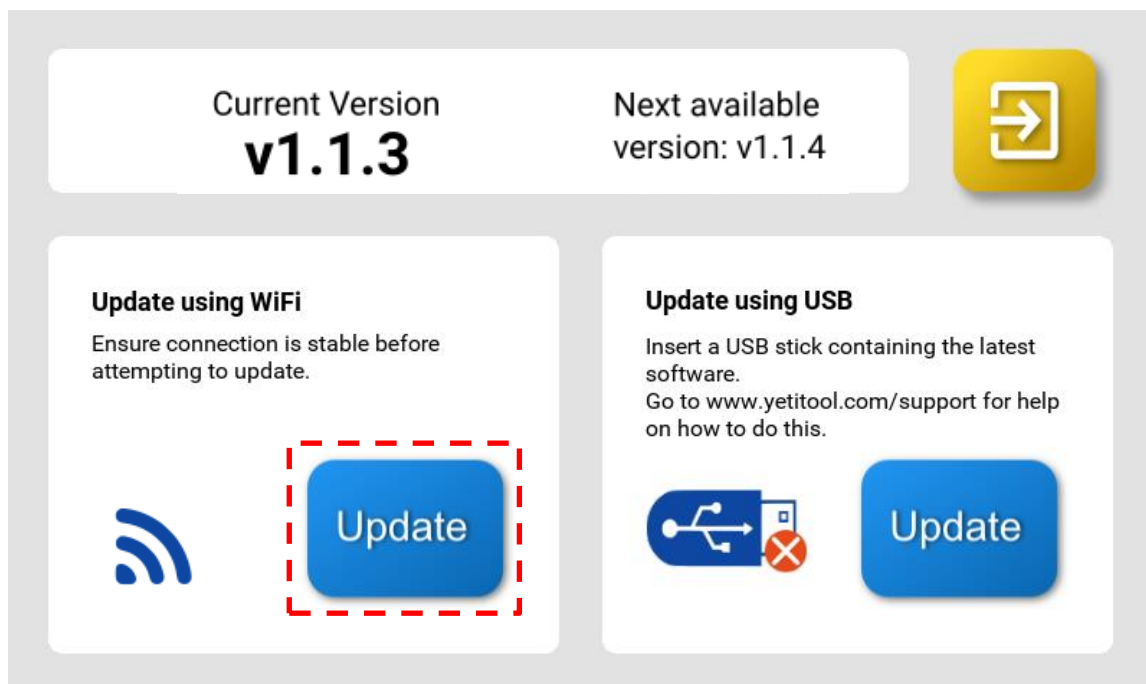
Pressing the update button will automatically connect to our server, download, and update the latest version of software and then reboot.

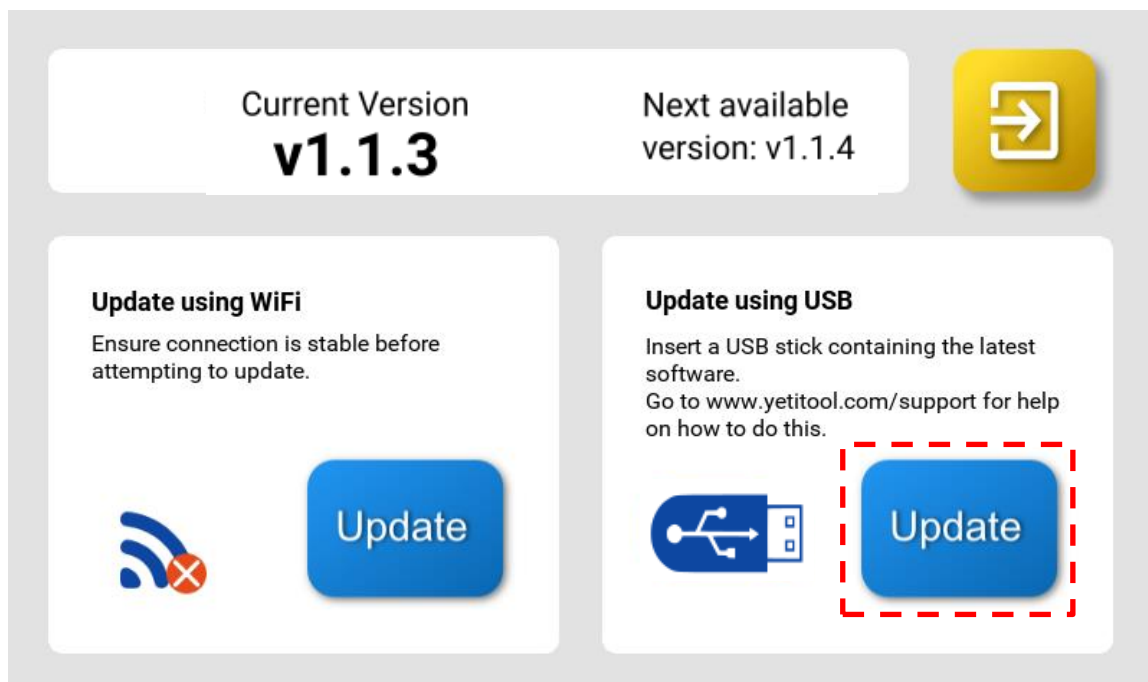**NOTE: It is important to note none of your job files will be touched, and the last set datum or park points will be retained.**

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6.2 USB update

If you are unable to update your software via your network, then you can update using a USB drive.

You will be able to download the latest software update from our website here: www.yetitool.com/support/downloads

Once you have downloaded the file, you will need to unzip the folder and save it to your USB drive.

Plug your USB drive into the port on SmartBench. Pressing the update button will automatically install the latest version of software and reboot.

**NOTE: It is important to note none of your job files will be touched, and the last set datum or park points will be retained.**

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7 Maintenance

7.1 Laser datum

If you have the laser datum fitted, then you can use the laser datum tab in the maintenance app to adjust and set up your laser datum crosshair offset.

The offset will allow SmartBench to accurately calculate the distance in X and Y between the centre of your tool and the crosshair.
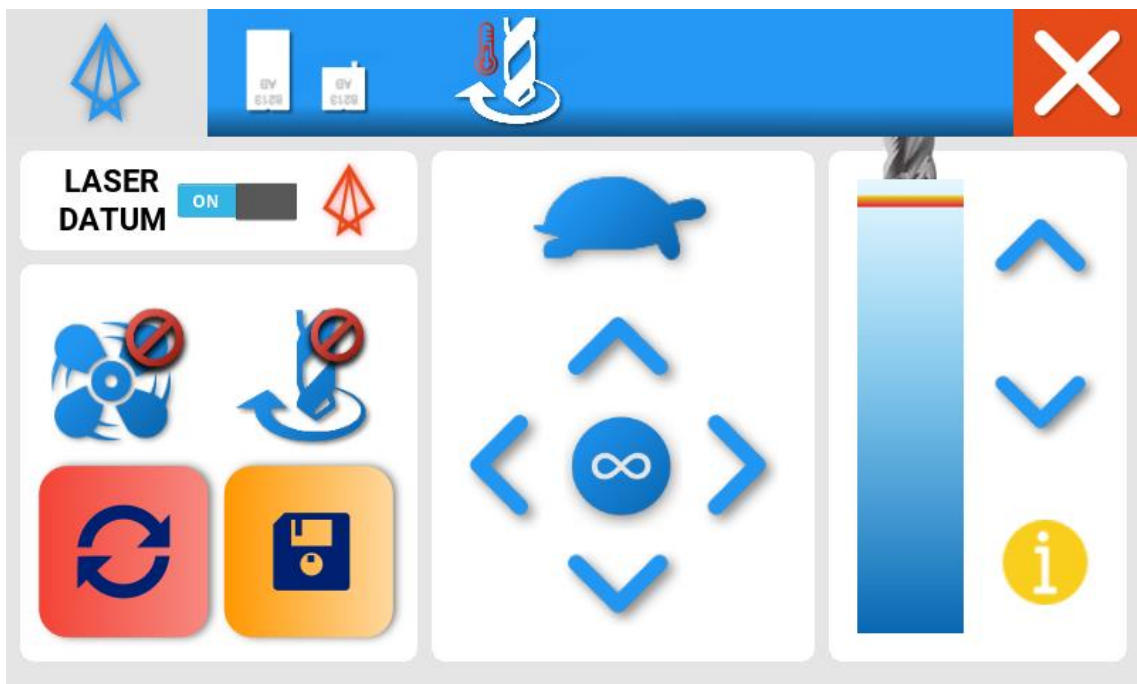

To set if laser hardware is fitted:

1. Enable laser datum (Switch to **on**)

2. On a test piece of material, cut a mark using manual moves. We would recommend using a v-groove bit for higher accuracy

3. Lift head and press the reset button in the bottom left

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4. Move the Z Head in the X and Y axis using the arrows so that the laser cross hair lines up with the mark centre

5. Press **Save**

Your laser datum offset will then be saved into the system. You can reset this by repeating the steps above.

7.2 Brush life monitor

The brush life monitor allows you to keep track of your spindle brush life, and log running hours to prevent the spindle turning off while a job is running.
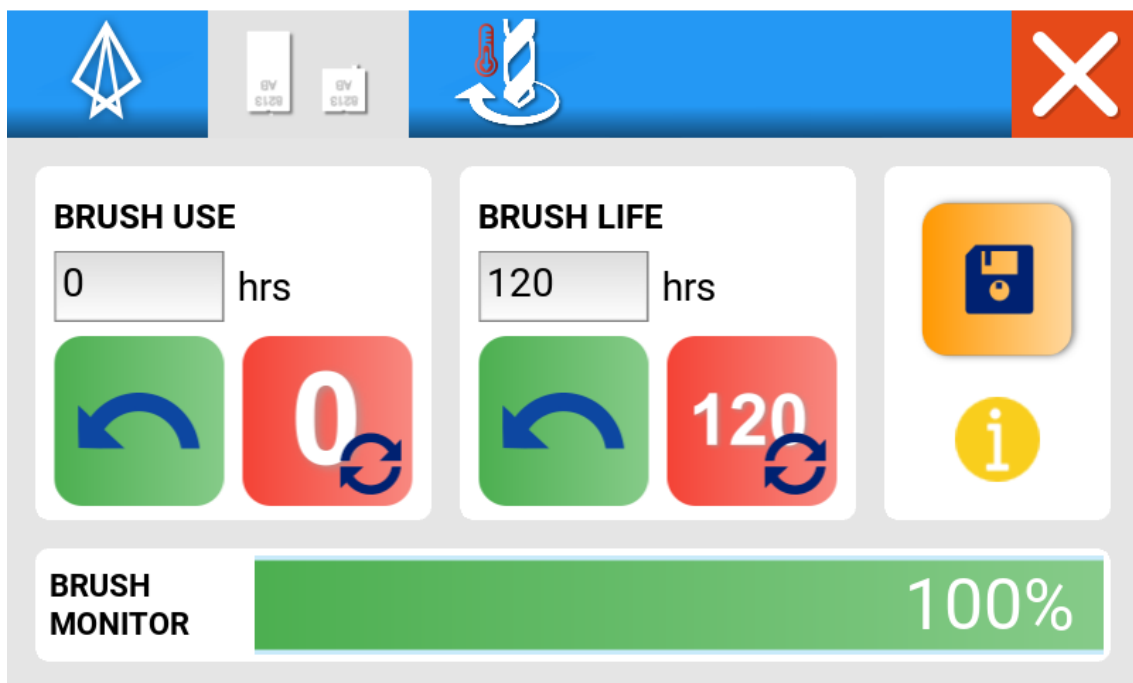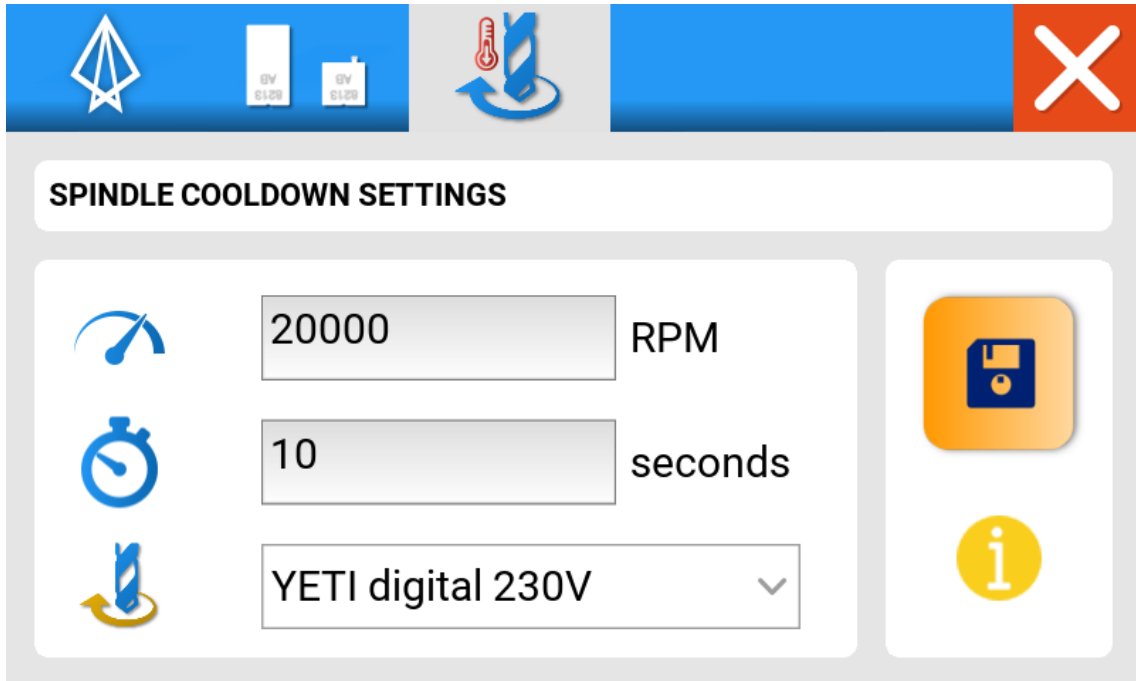

Brush use

Brush use indicates the number of hours the spindle has run for.

Brush life

Brush life indicates the number of hours the brushes are expected to last. This can vary from a minimum of approximately 120 hours to a maximum of 500 hours.

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7.3 Spindle cooldown

The spindle cooldown feature allows your spindle to cooldown under zero load after a job has been completed. This helps increase the life of your spindle and prevents the spindle from overheating.

We have entered default values, but these can be adjusted if you wish.

YetiTool SC1 – 20,000RPM for 10 seconds

AMB – 10,000RPM for 30 seconds

Please ensure the correct spindle model and voltage from the drop down as this will affect the spindle RPM.

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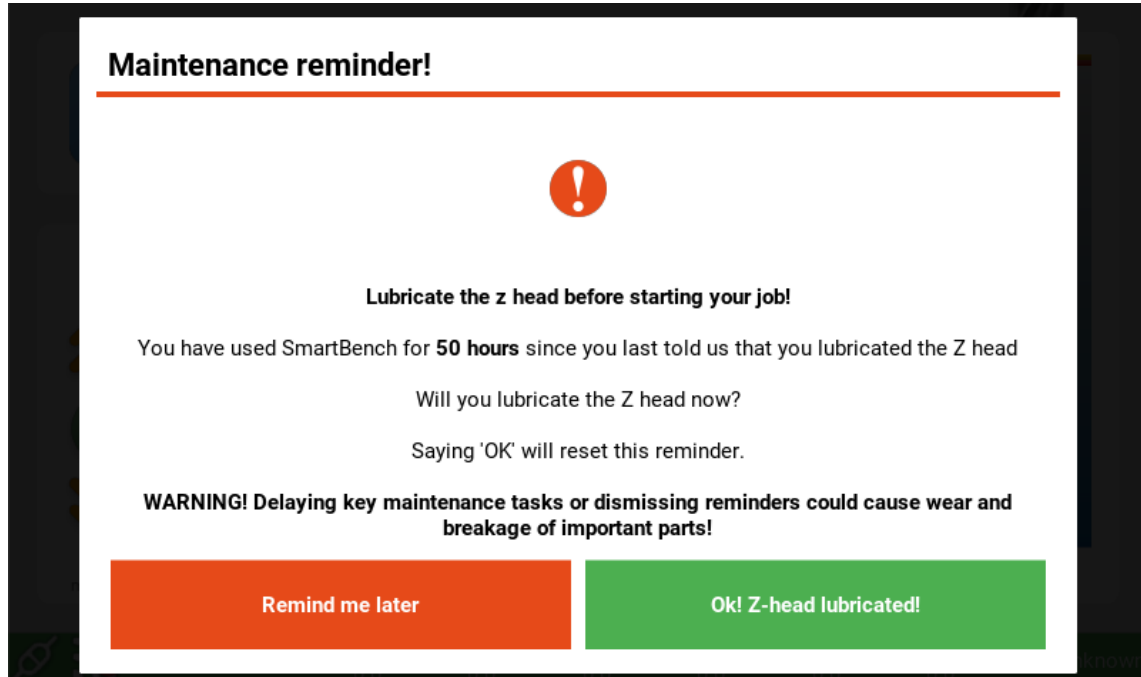
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7.4 Maintenance reminders

SmartBench will provide maintenance reminders based on machine usage to ensure you do not experience any operational problems.

It is important to note that the running hours will not be affected by software update.

Should you wish, maintenance reminders can be turned off from the developer app however this is not recommended.

7.4.1 Lubricate Z axis

At each 50-hour duration of use, we would recommend you lubricate the Z lead screw with a lithium-based grease. This will ensure the Z axis runs smooth and does not stall during operation.

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7.4.2   Calibration

At each 320-hour duration of use, we recommend you calibrate SmartBench. This is not mandatory; however, it can help improve accuracy in the X and Y axis.

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7.4.3 Spindle brush life

Depending on brush usage, you will be prompted to check your spindle brushes before starting a job if the life percentage falls below 10%. These values can be reset in the maintenance app.

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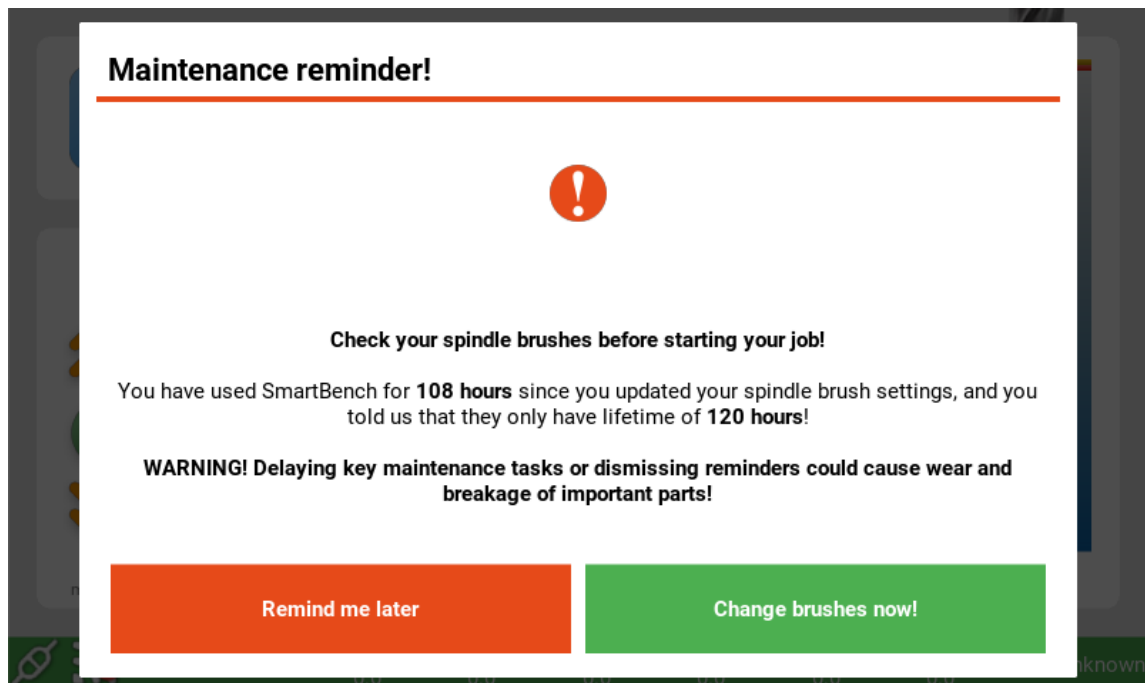
8   Developer

The developer app is to help our engineers access extra settings and functions that might not be stable or change how SmartBench Behaves.

By using the developer app, you may risk causing damage to SmartBench.

NOTE: This should only be used when authorised by a member of the YetiTool support team.

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9 File transfer

9.1 File transfer via Wi-Fi

SmartBench has the ability for you to send .nc and .gcode file types to the console via your Wi-Fi network using FileZilla.

9.1.1 Install FileZilla

You will first need to download and install Filezilla FTP from here: https://filezilla-project.org/

9.1.2 Note IP address

1. Turn on SmartBench
2. Note IP address in bottom left corner of console

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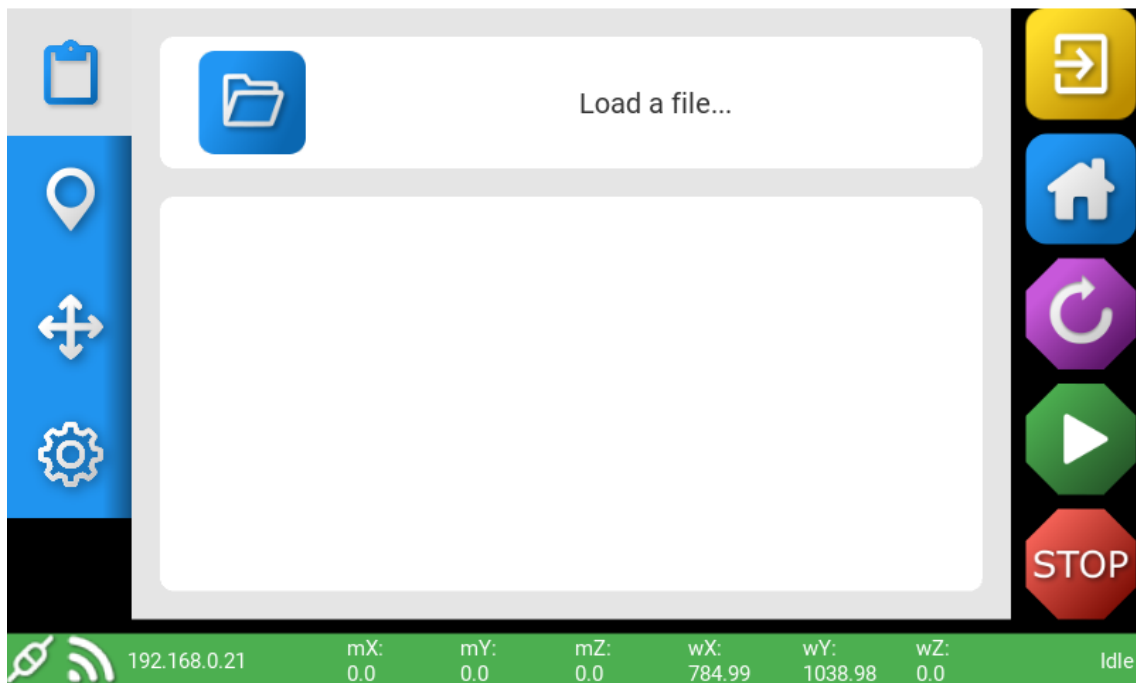
9.1.3 Setup Connection in Filezilla

1. Open Filezilla
2. Open Site Manager
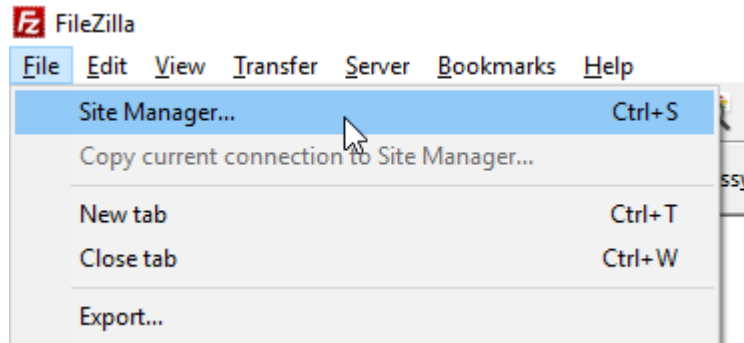
3. Create 'New Site' & name it something appropriate such as "YetiTool SmartBench"

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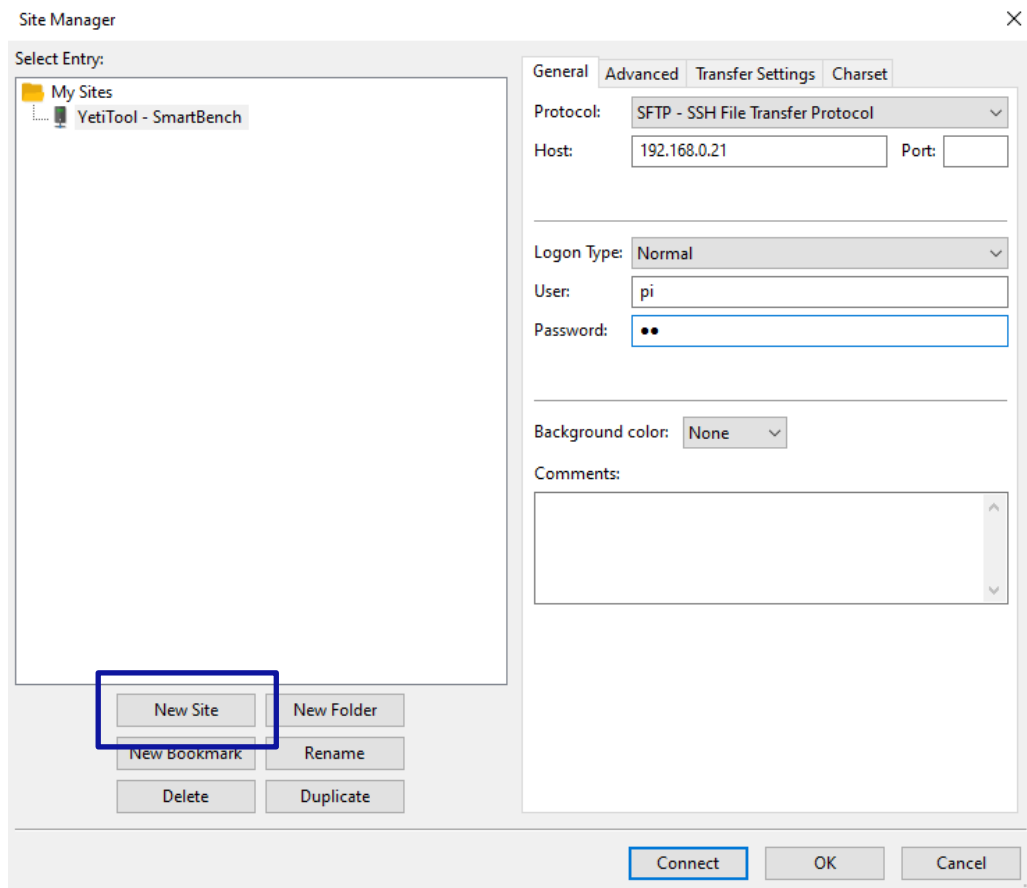
4. Under tab '**General**', match settings:

- Protocol: SFTP
- Host: <enter the IP address from the console>
- Port: leave blank
- Logon Type: normal
- User: pi
- Password: pi

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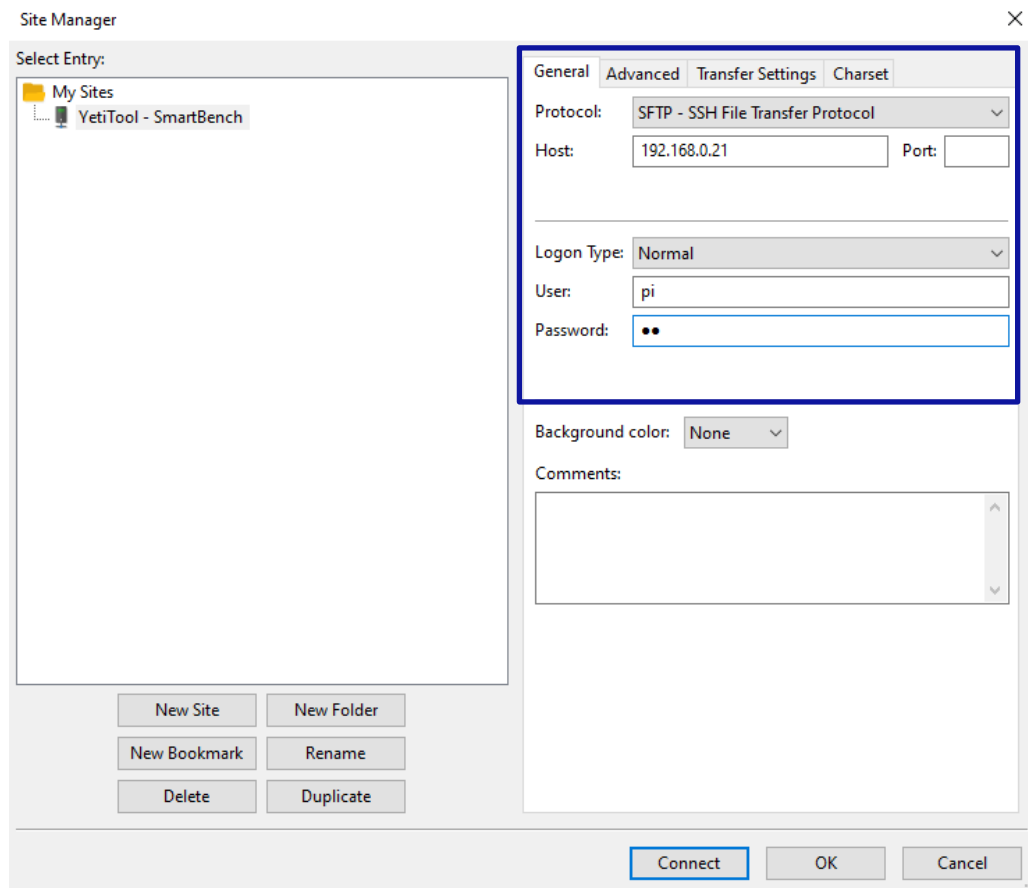
5. Click connect
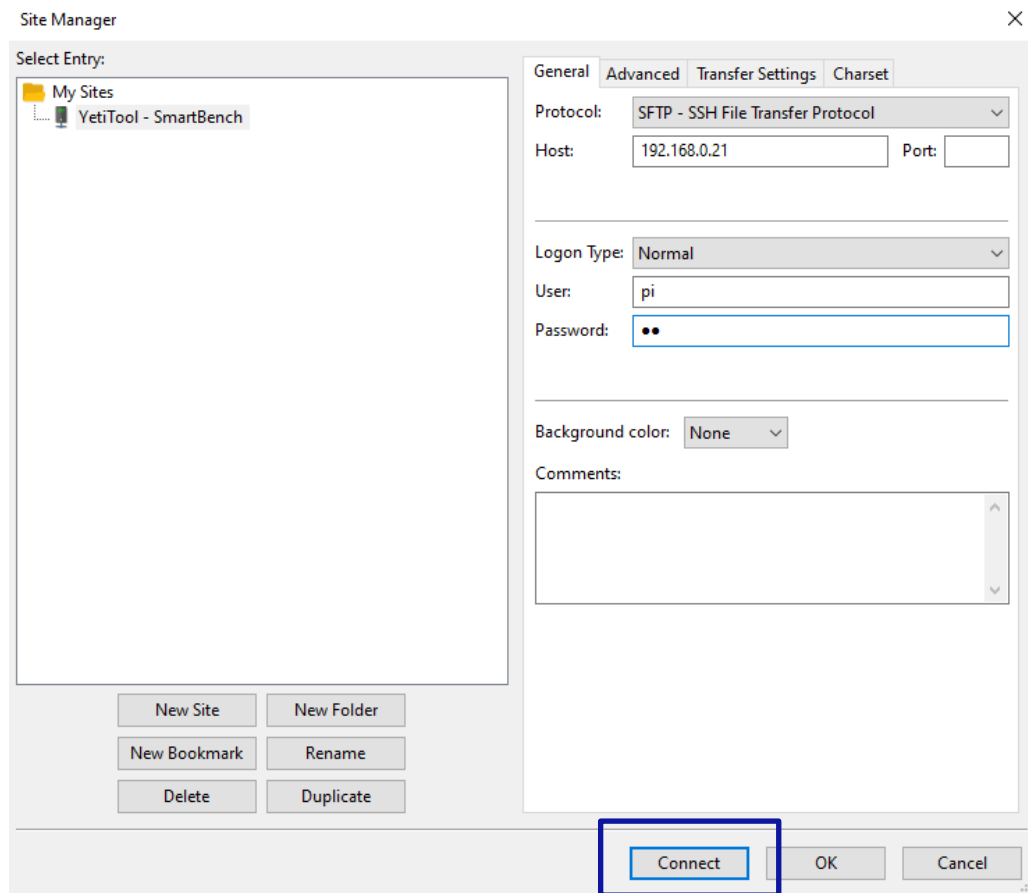
6. Accept key, update cached key (optional)

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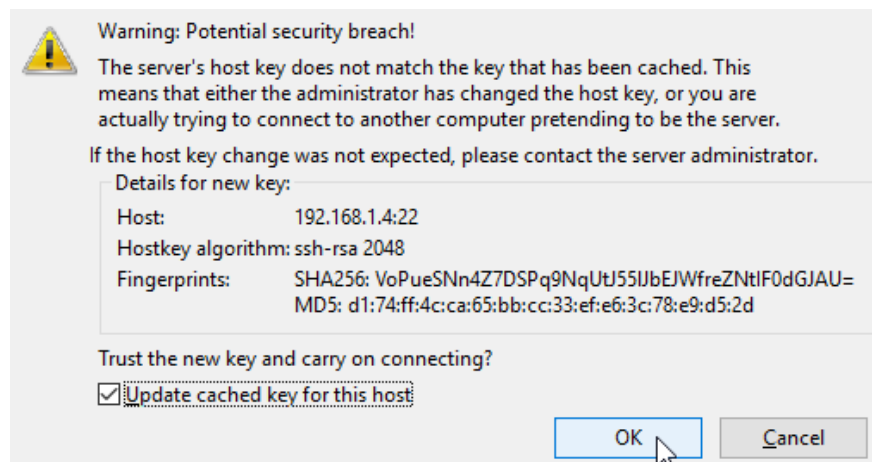
7. A successful connection will display something like:

9.1.4 Transfer file to the console
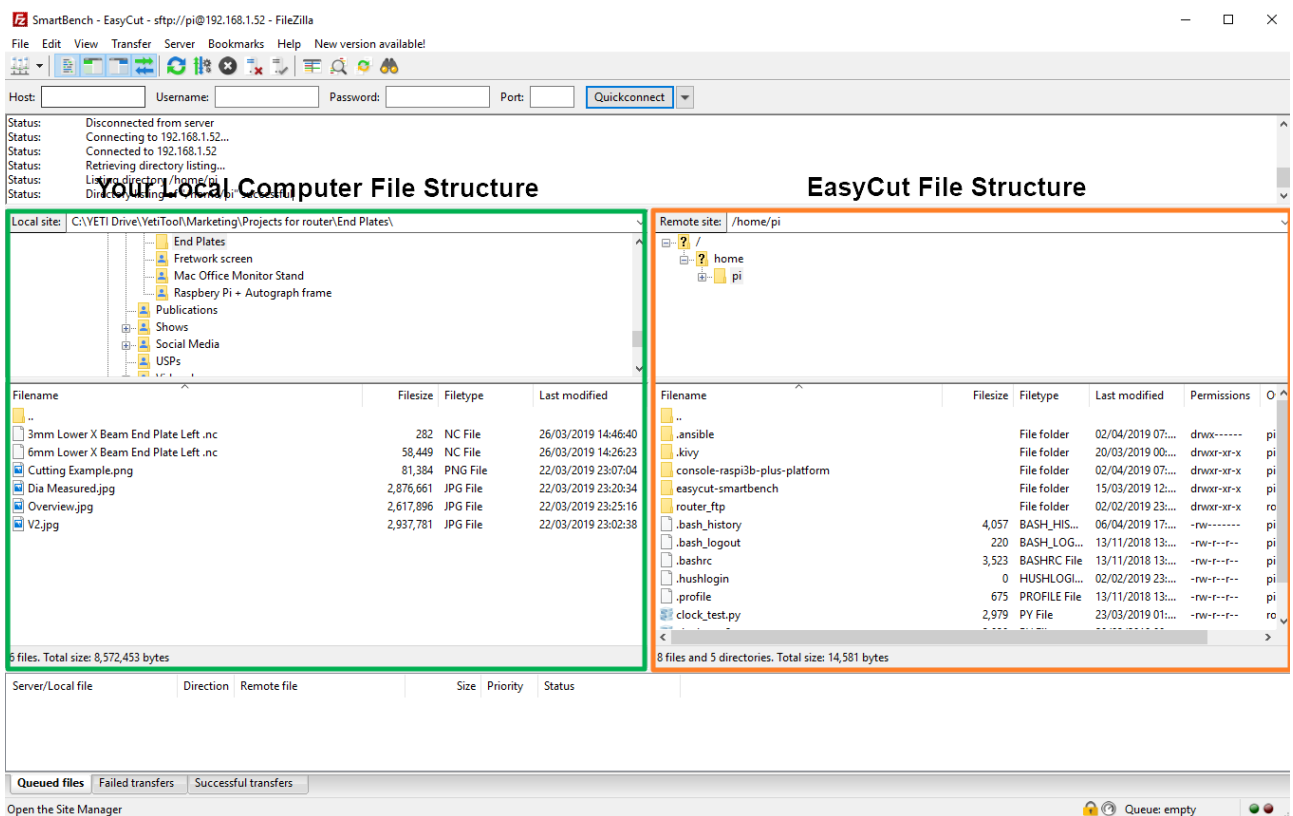
- Green side represents local filesystem (e.g. your PC)
- Orange side represents site's filesystem (i.e. the console)
- We are trying to move a file from the local to the site (i.e. green to orange)

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1. Navigate to the destination folder
   - On console side (orange area)
   - Navigate to destination folder: Console "jobCache" folder
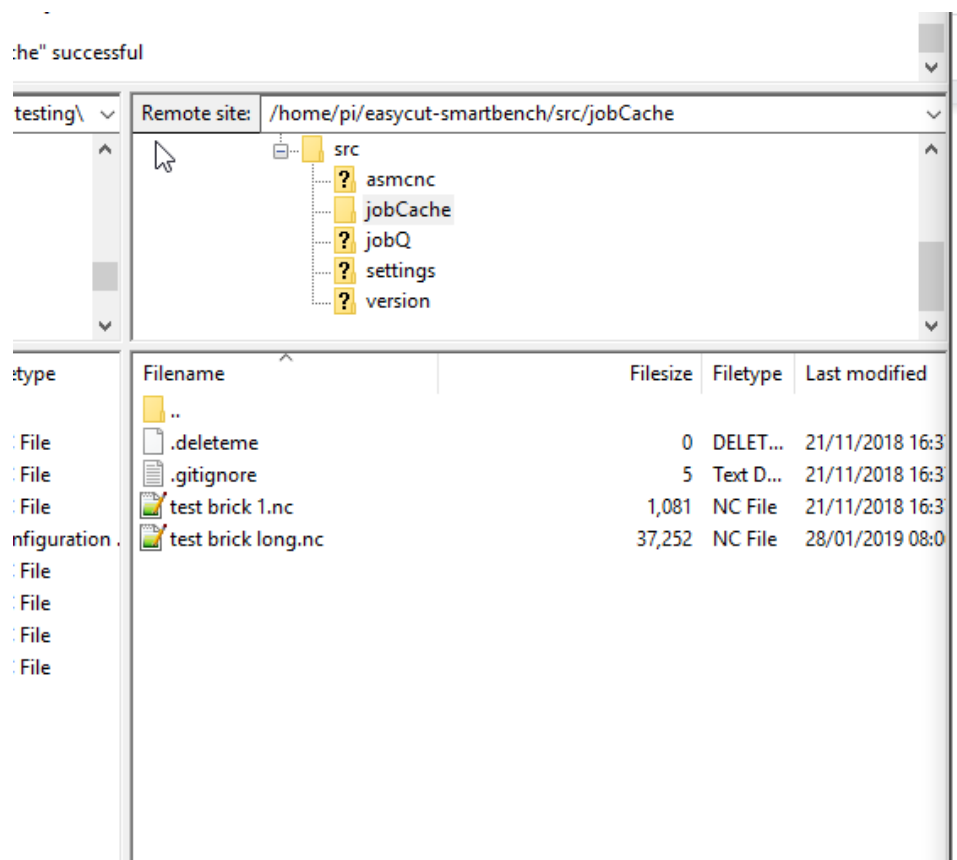
Remote site: /home/pi/easycut-smartbench/src/jobCache

Either navigate through the file tree, or copy and paste the line below into the 'Remote site' field:

/home/pi/easycut-smartbench/src/jobCache

A successful navigation will look something like this:

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1. Drag file over
   - You can either find the file in the green area and drag it over into the orange area;
   - **OR** drag it in from a windows folder or desktop into the orange area.
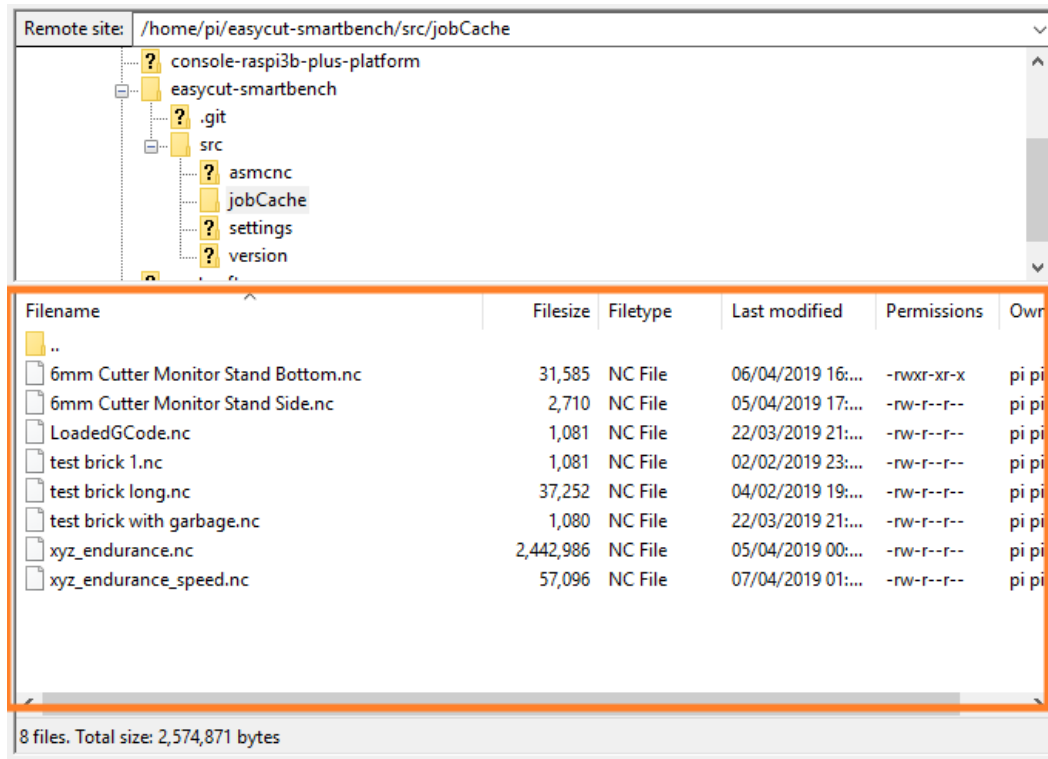
A successful copy will look something like this, and you will see your file displayed in the orange area.

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9.2 File transfer via USB

On the right side of the console you will find a USB port for loading files.

1. Insert your USB into the port
2. Go to File Load Screen
3. Click on the file explorer

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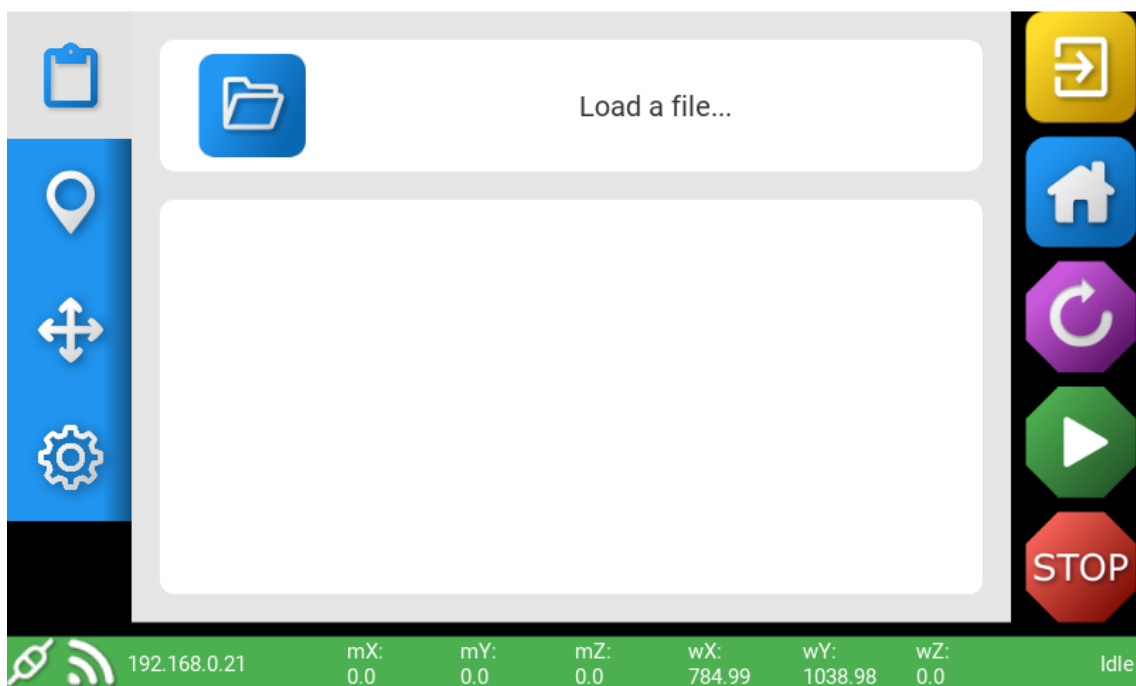
4. Press the USB icon (found bottom left) to load your files from your USB. When a USB is inserted, the icon will turn orange.

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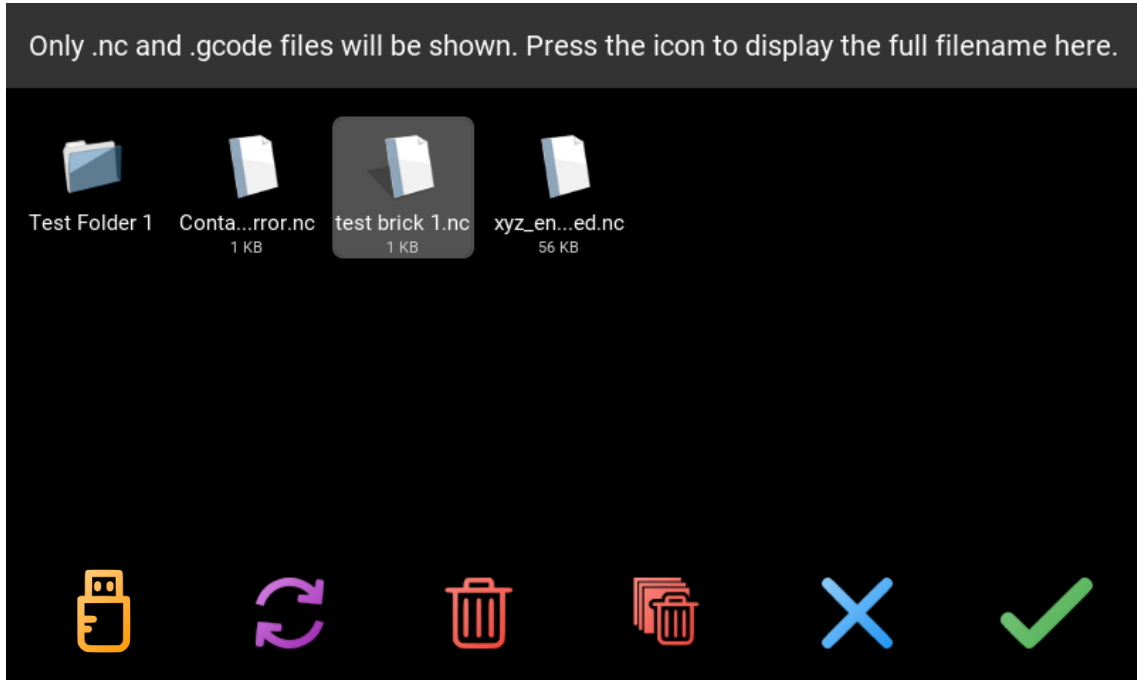
5. Select your file
6. Press the tick Icon to accept your file selection

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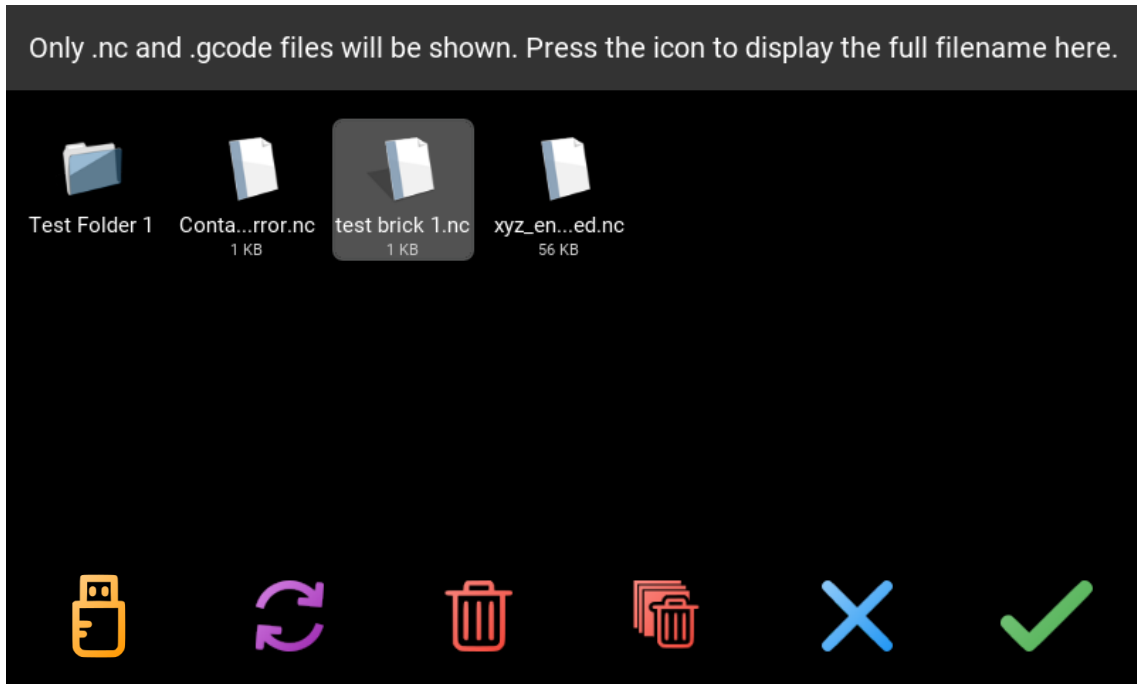
10 Using file explorer

10.1 Change a file

1. Your current file is shown with a light background colour
2. Press another file name to select your new file
3. Press the green tick icon to confirm

The console will automatically return to the File Load screen

10.2 File folders

SmartBench can support file folders to make it easier to organise your job files. If you are in a file folder, you can use the button highlighted below to navigate back to the top level.

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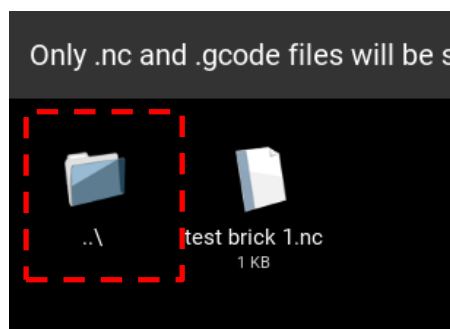
10.3 Delete a file

1. Select your file to be deleted – make sure it is highlighted with a light background
2. Press the delete button
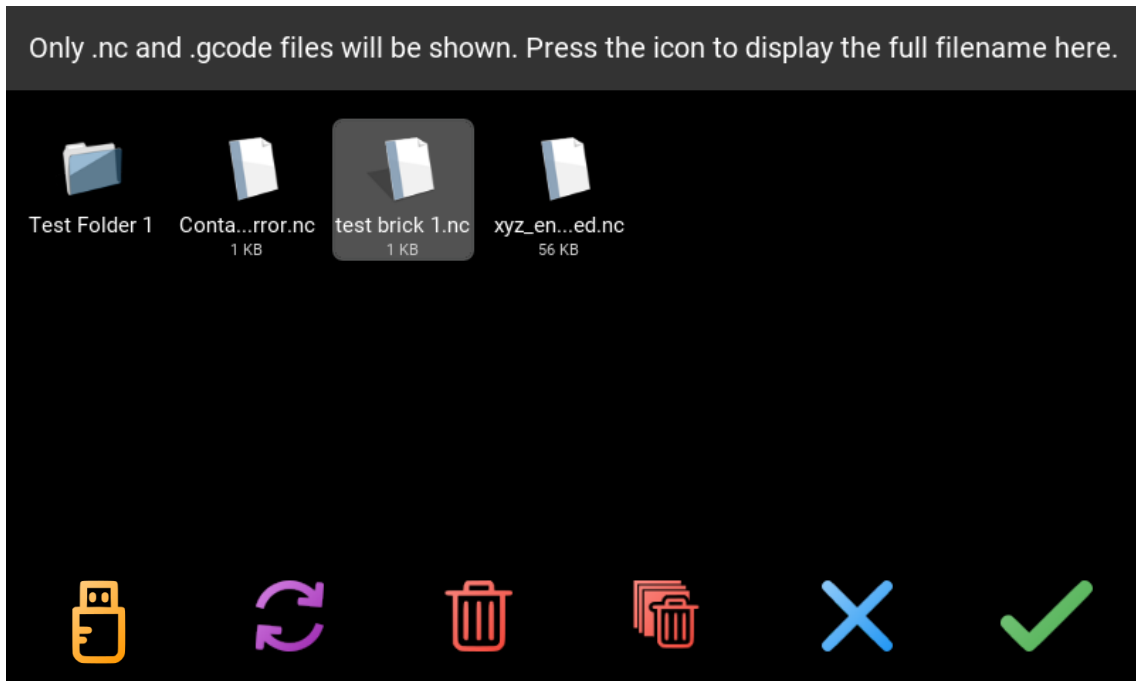
3. To close the File Explorer, press the blue X Icon

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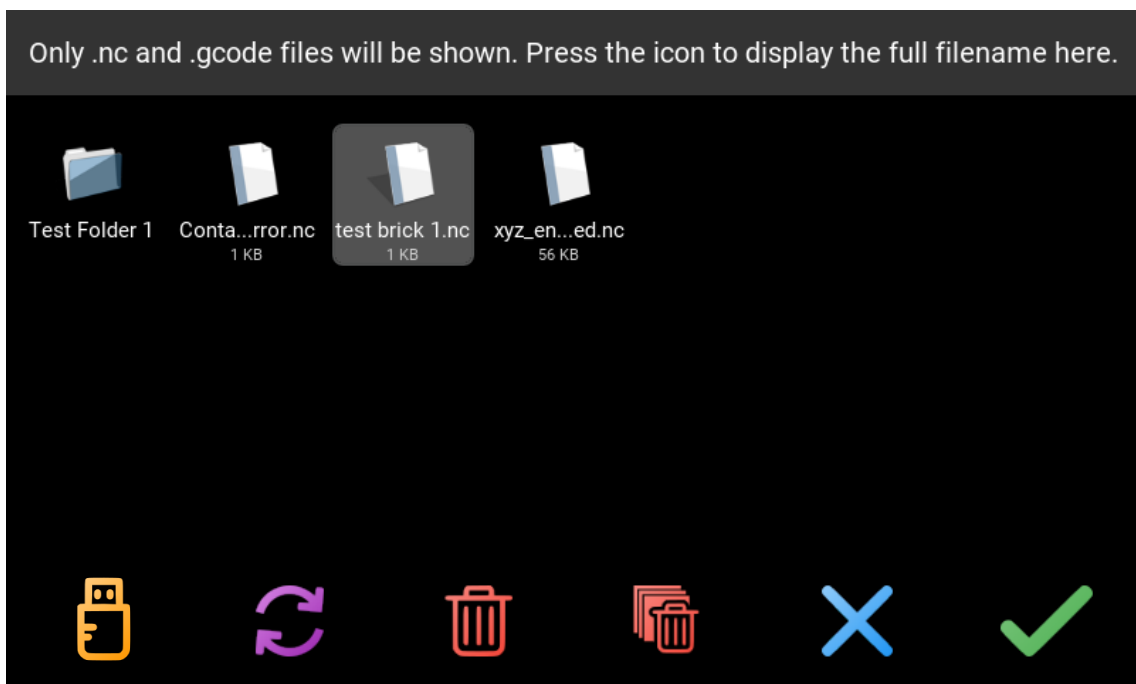
10.4 Refresh file list

1. Press the refresh file icon to refresh the file list

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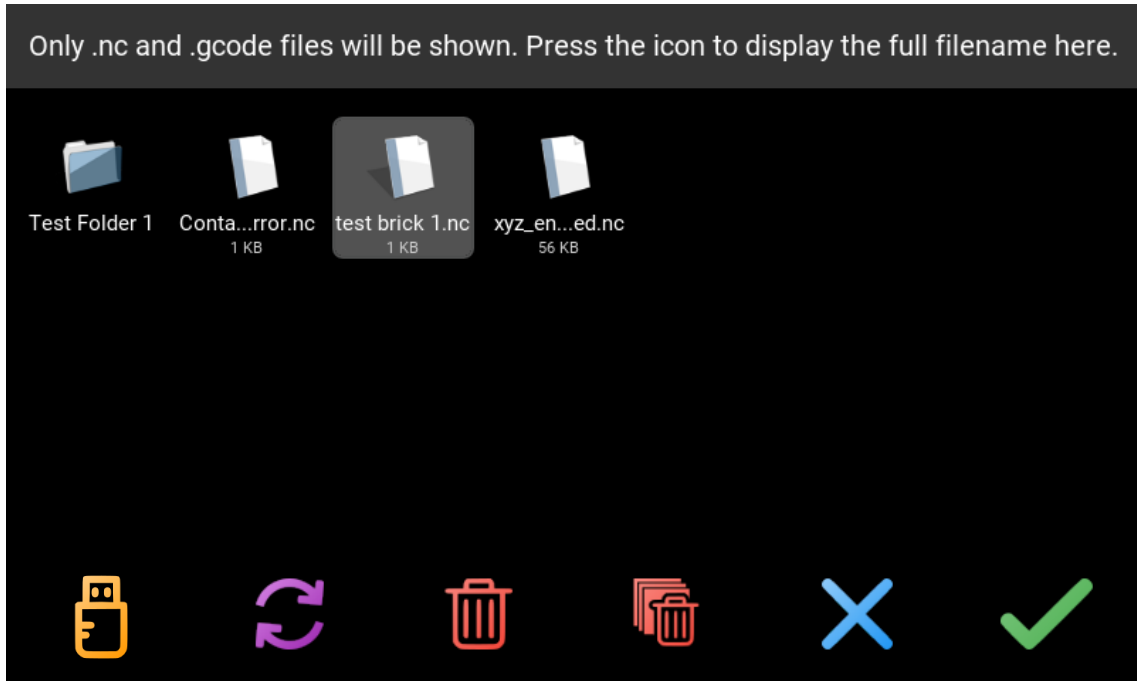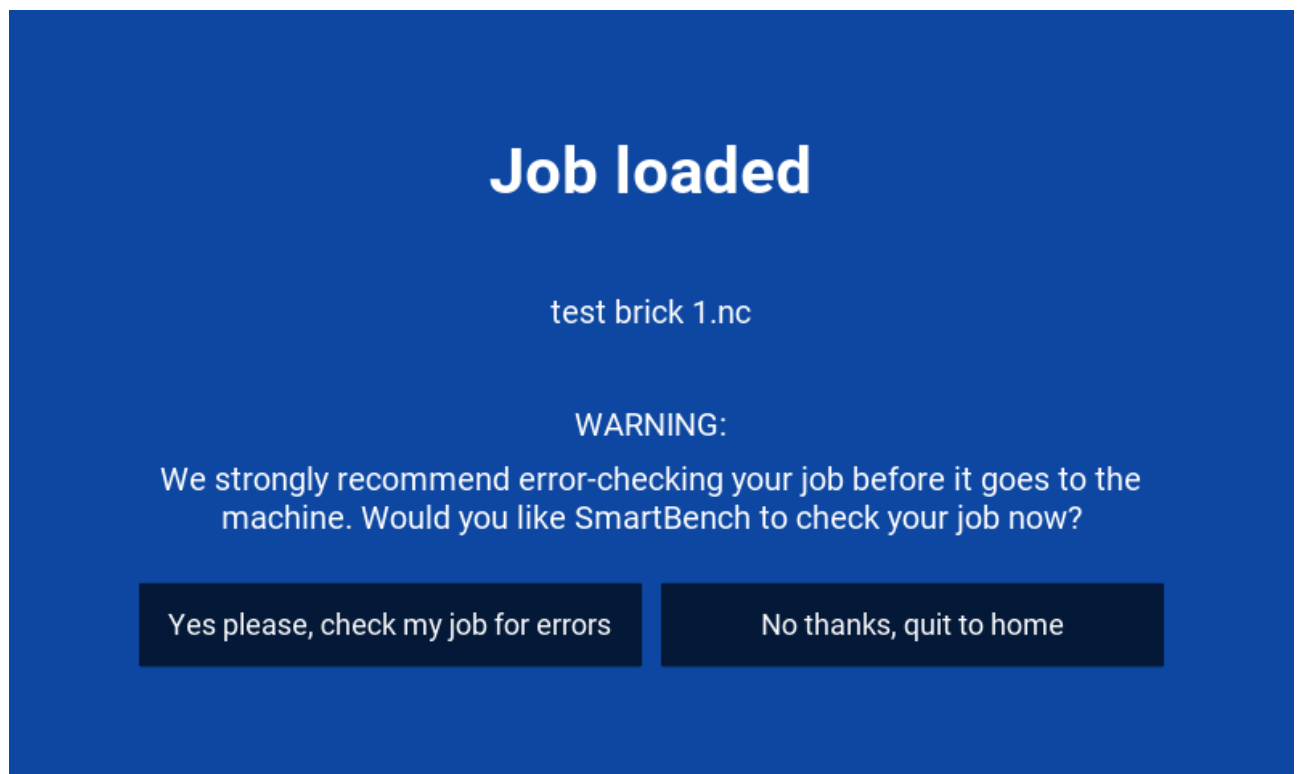
10.5 File checking

File checking occurs when you press the tick icon to confirm your file choice and the Job loads.

NOTE: We would strongly advise you check your files prior to processing

There are two main functions File Checking is looking to achieve

- Is your GCode good for our GRBL platform?
- Is the X/Y/Z Datum point set correctly to allow SmartBench to successfully process your file?

1. Choose "**Yes please**" if you would like your Job file checked
2. If you are sure the file is OK, for example you have cut with it before then select "**No thanks**"

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3. If your file passes its check, you will get the following screen.
4. Tap Finish and you will return to the file load screen where you can happily progress with your job

File is OK!

test brick 1.nc

No errors found. You're good to go!

Finish
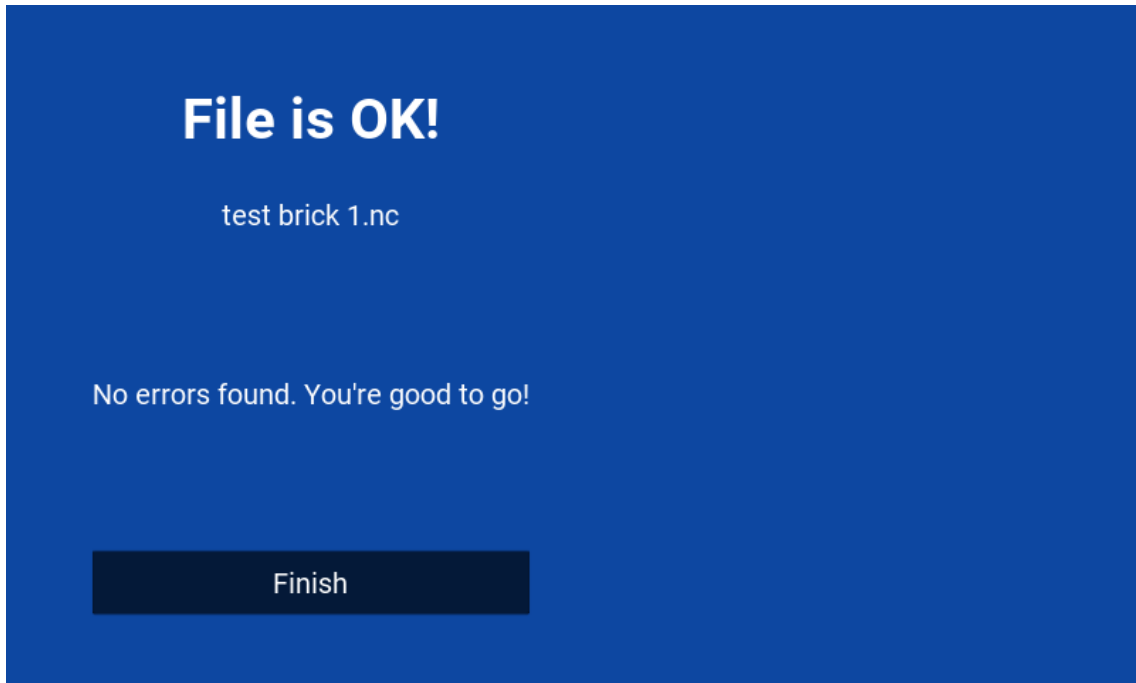
If there is a problem with your file, EasyCut will inform you of the errors

Boundary issue!

xyz_endurance_speed.nc

The job would exceed the working volume of the machine in one or more axes. See help notes (right).

BOUNDARY CONFLICT HELP

It looks like your job exceeds the bounds of the machine:

The job extent over-reaches the X axis at the far end. Try positioning the machine's **X datum closer to home**.

The job extent over-reaches the Y axis at the far end. Try positioning the machine's **Y datum closer to home**.

Most likely, the machine's job datum is set in the wrong place. To fix this, press "Adjust datums" and then reposition the X, Y or Z datums as suggested above so that the job envelopes fall within the machine's

Unload job   Adjust datums   Check G-code

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11 Control

11.1 X/Y axis control
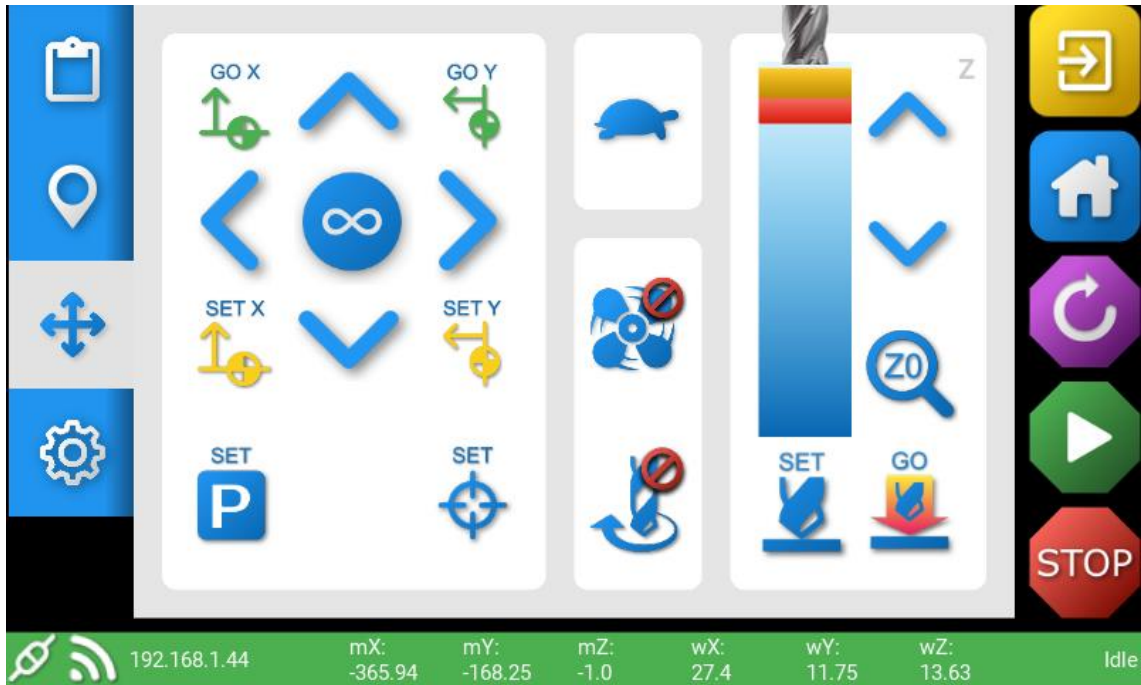
1. **X Axis movement** – Move the X axis in a positive or negative direction

2. **Y Axis movement** – Move the Y axis in a positive or negative direction

3. **Distance of X/Y travel** – Choose the distance in which to move the X, Y and Z axis

4. **Speed of X/Y/Z travel** – choose the speed in which to move the X, Y and Z axis

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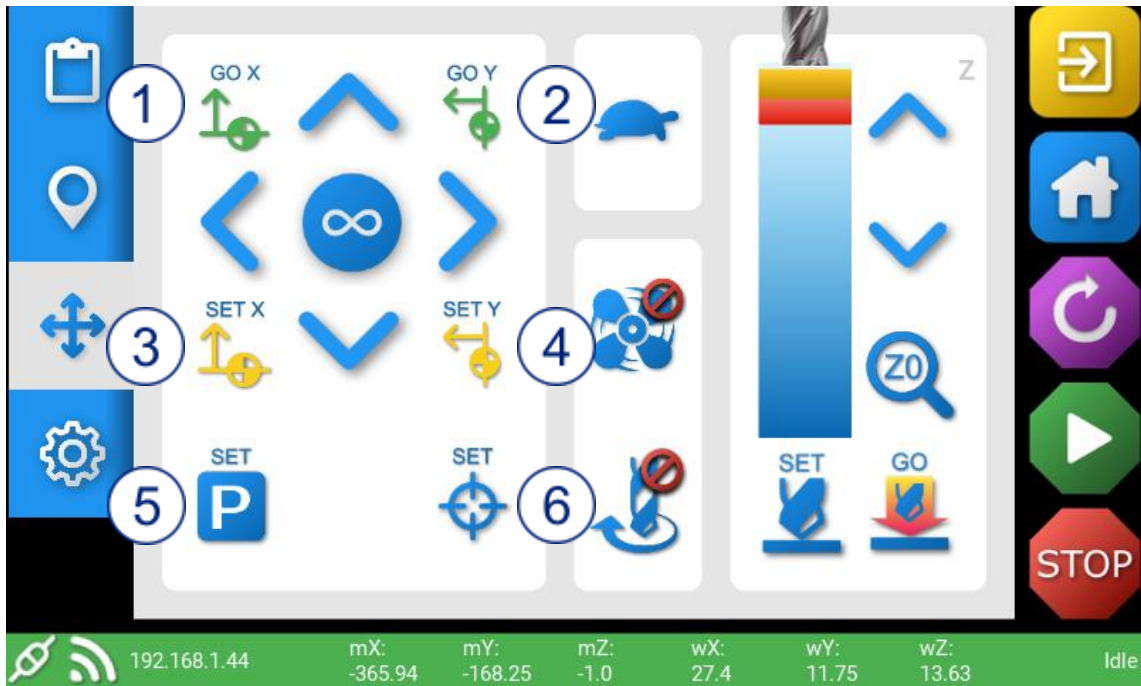
1. **Go to Y datum –** Go to your current datum in the Y axis

2. **Go to X datum –** Go to your current datum in the X axis

3. **Set Y datum –** Set a datum in the Y axis

4. **Set X datum –** Set a datum in the X axis

5. **Set current X/Y position as Park point**

6. **Set current X/Y position as X/Y Datum point**

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11.2 Z axis control

1. **Z Axis info panel –** Graphic to show Z axis travel

2. **Z Axis movement** – Moves the Z axis up and down

3. **Z Probe** – Allows you to set the Z datum using the probe plate

4. **Set** - Manually set Z height

5. **Go** - Go to the current set Z Height

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11.3 Speed and distance

You can adjust the speed at which you move the X. Y and Z axis by using the toggle button.

Slow speed		500mm/min (19.68''/min)
High speed		6000mm/min (236.2''/min)

The console gives the user variations of move different distances in X, Y and Z axis.

- Press the button in the middle of the X and Y Axis move buttons to change the distance you wish the head to move

Distance	Icon	Description
Continuous	∞	Moves continuously
Bounding Box		Moves the total distance of your file in either X or Y
10mm	10mm	Moves 10mm at a time
1mm	1mm	Moves 1mm at a time
0.1mm	0.1mm	Moves 0.1mm at a time
0.01mm	0.01mm	Moves 0.01mm at a time

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11.4 Additional controls
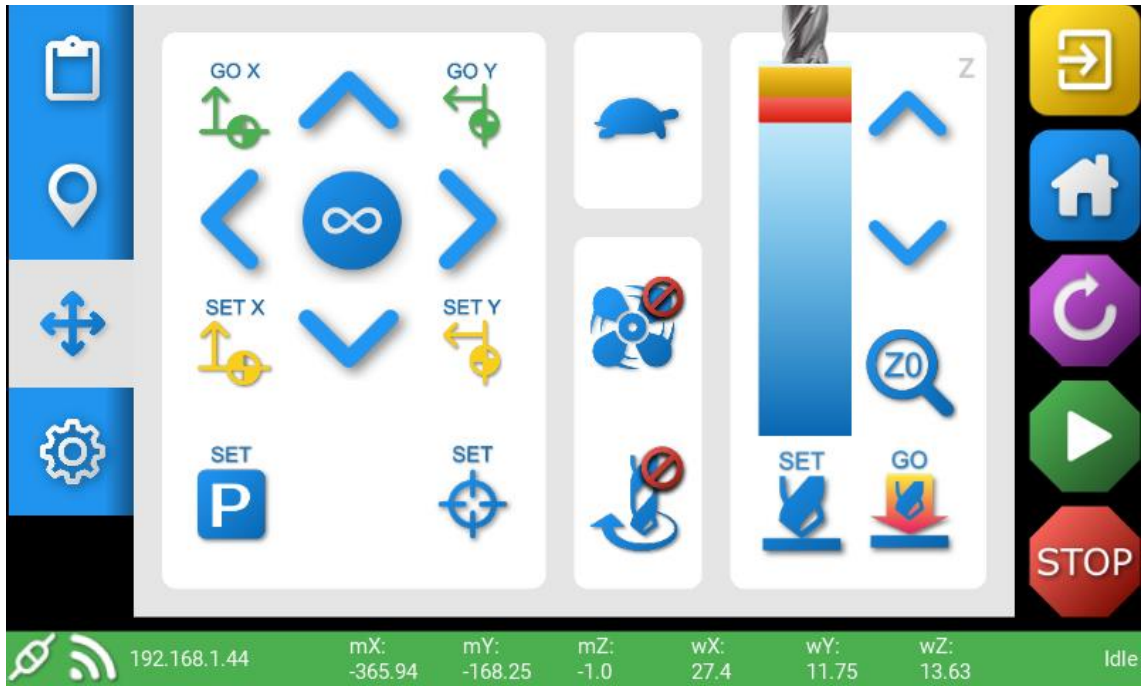
Turn the extraction on/off manually

Press

Turn the spindle on/off manually

Press

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12 Setting datums

12.1 XY datum

To set a Job Start Datum at a point in X

1. Select the speed you would like the tool head to move at
2. Set the move distance
3. Move the tool head using the X manual move to your desired point.

4. Press

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Set your Y datum

To set a Job Start Datum at a point in Y

1. Select the speed you would like the tool head to move at
2. Set the move distance
3. Move the tool head using the Y manual move to your desired point.
4. Press

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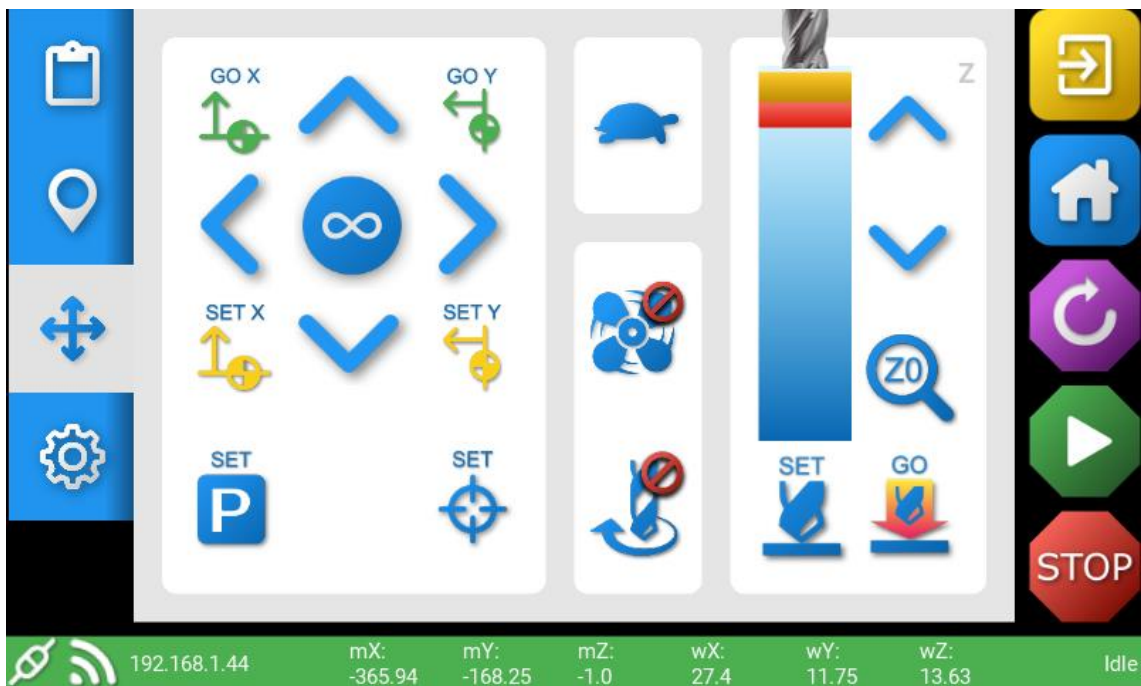Tel No: +44 1275 217060 | Email: support@yetitool.com

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Set your X/Y datum together

To set a Job Start Datum at a X/Y point

1. Select the speed you would like the tool head to move at
2. Set the move distance
3. Move the tool head using both the X and Y manual move controls to your desired point.
4. Press

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Go to X datum point

To go to your X position Datum point

1. Select the speed you would like the tool head to move at

2. Press

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Go to Y datum point

To go to your Y position Datum point

1. Select the speed you'd like the tool head to move at

2. Press

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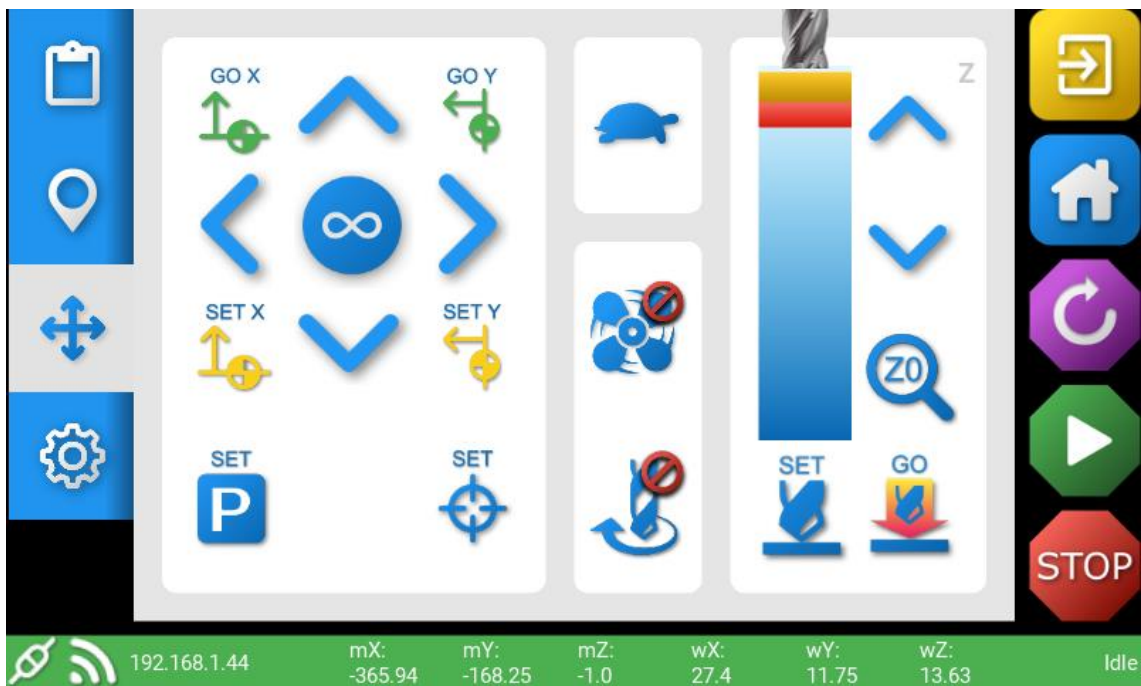
Set a Park position for the Z head

To set a Park point for the tool head at a X/Y point

1. Select the speed you would like the tool head to move at
2. Set the move distance
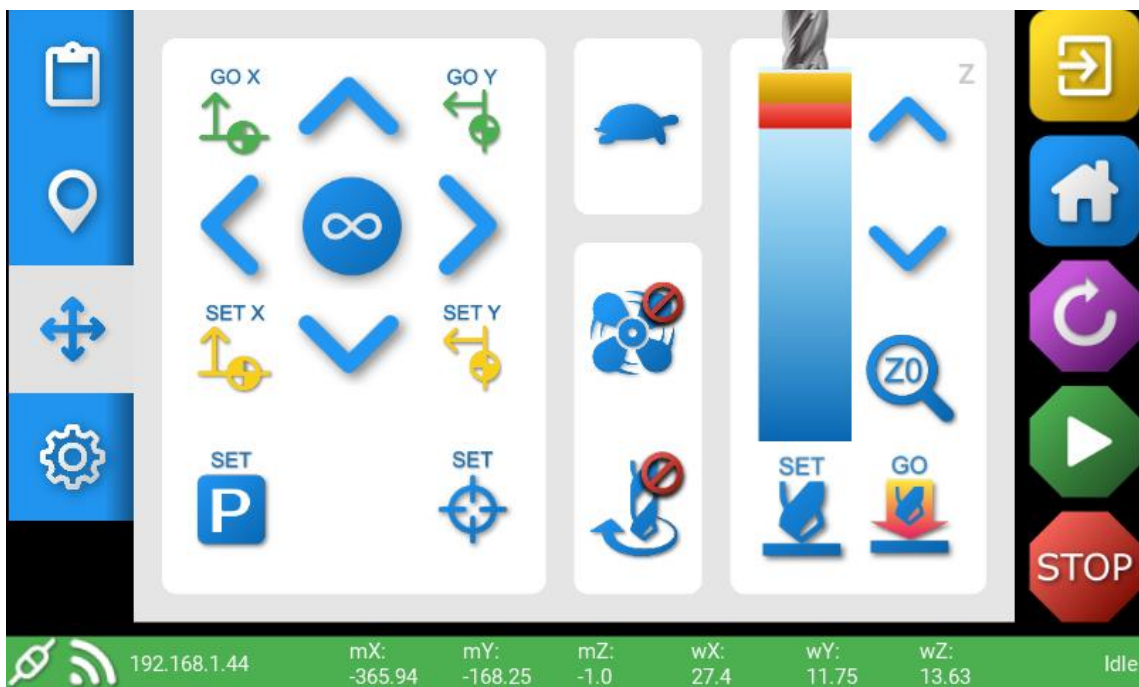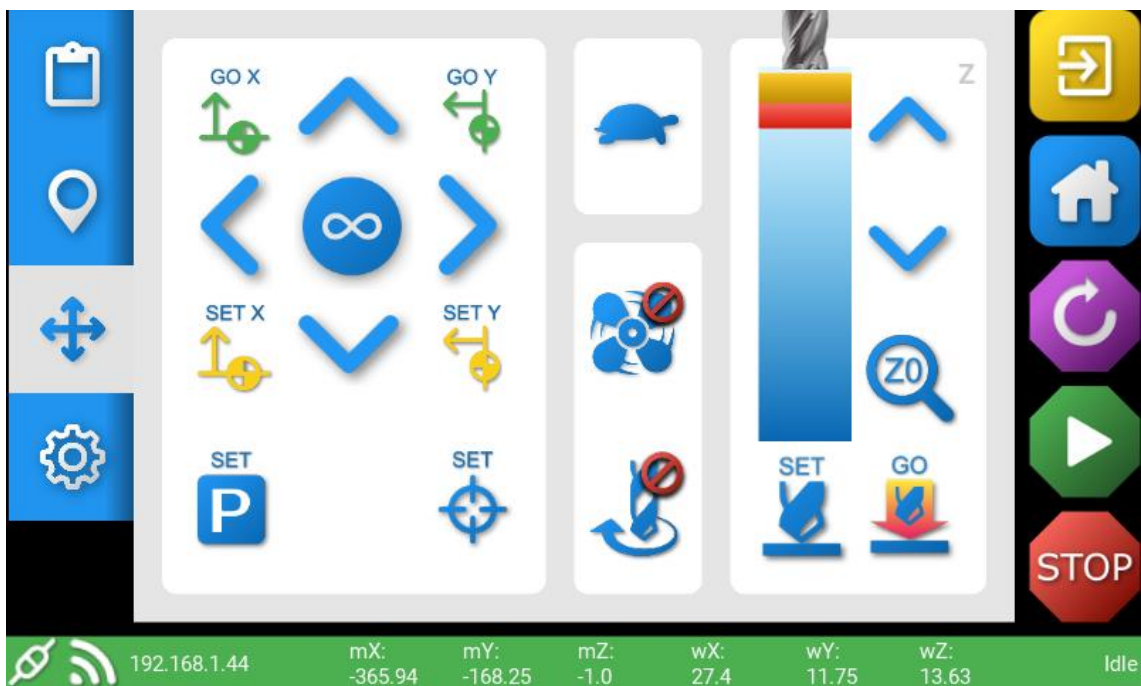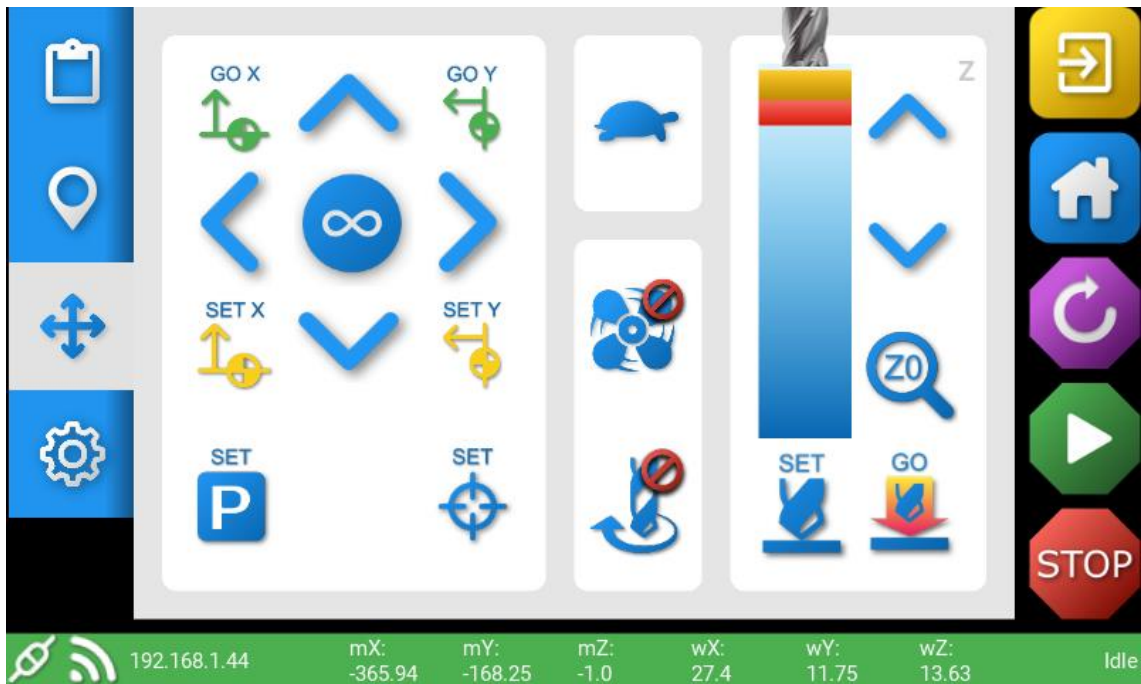3. Move the tool head using both the X and Y manual move controls to your desired point.

4. Press

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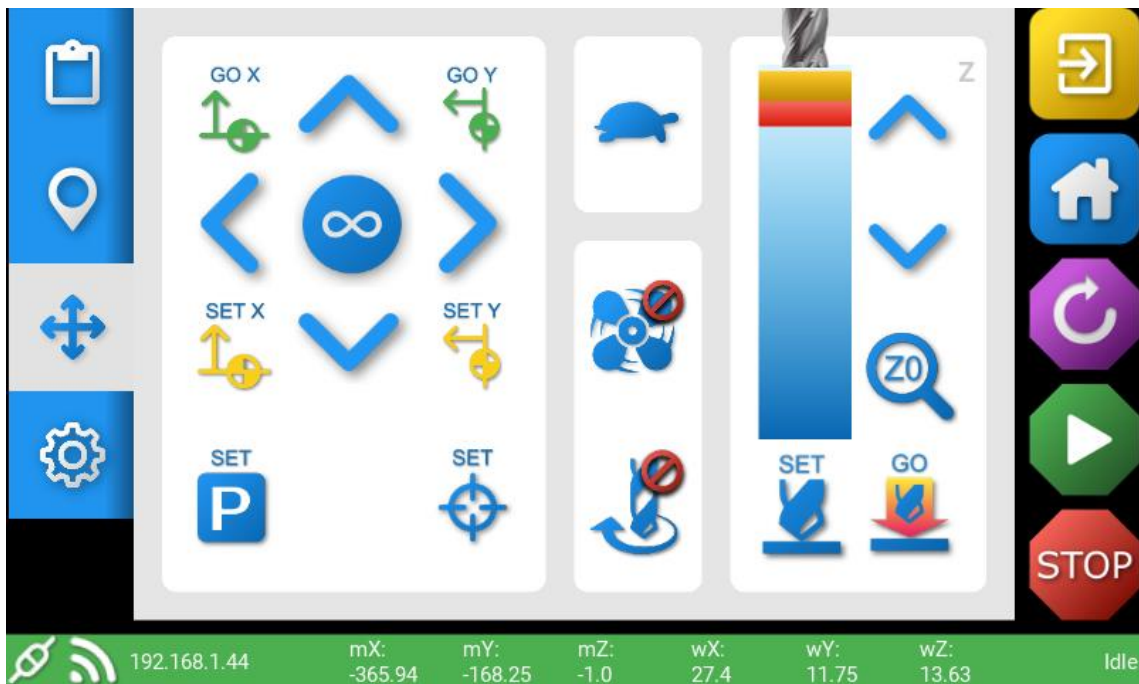
12.2 Z datum

To set the Z Height manually

1. Go to Move screen

2. Move the Z Head to the required place using manual move

3. Remove the dust shoe plug

4. Lower the spindle and cutter to the Z point referenced in your CAM strategy (normally either the top or bottom of the stock) using the Z move buttons

- Choose move speed

- Choose move distance

- Use Z down button

You may want to move quickly to a point close to your required Z point, and then change the move distance to 10mm, 1mm, 0.1mm or even 0.01mm amounts.

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- Press SET

- Replace the dust shoe plug

NOTE: After setting, do not forget to move the head up before moving in X or Y

Set the Z height with the probe

1. Go to Move Screen

2. Move the Z Head to the required place

3. Remove the dust shoe plug

4. Lower the spindle and cutter close to the Z point referenced in your CAM strategy (normally either the top or bottom of the stock) using the Z move buttons

- Choose move speed

- Choose move distance

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- Use Z down button

We suggest lowering the spindle and cutter to a distance approximately 5 – 10mm away from the top of the surface you wish to use as your Z point reference

- Take out the Z probe plate from its holder
- Place the probe plate on the desired surface you wish to reference, ensure it is flat and silver side up.

Ensure the Z probe plate is directly beneath the cutter
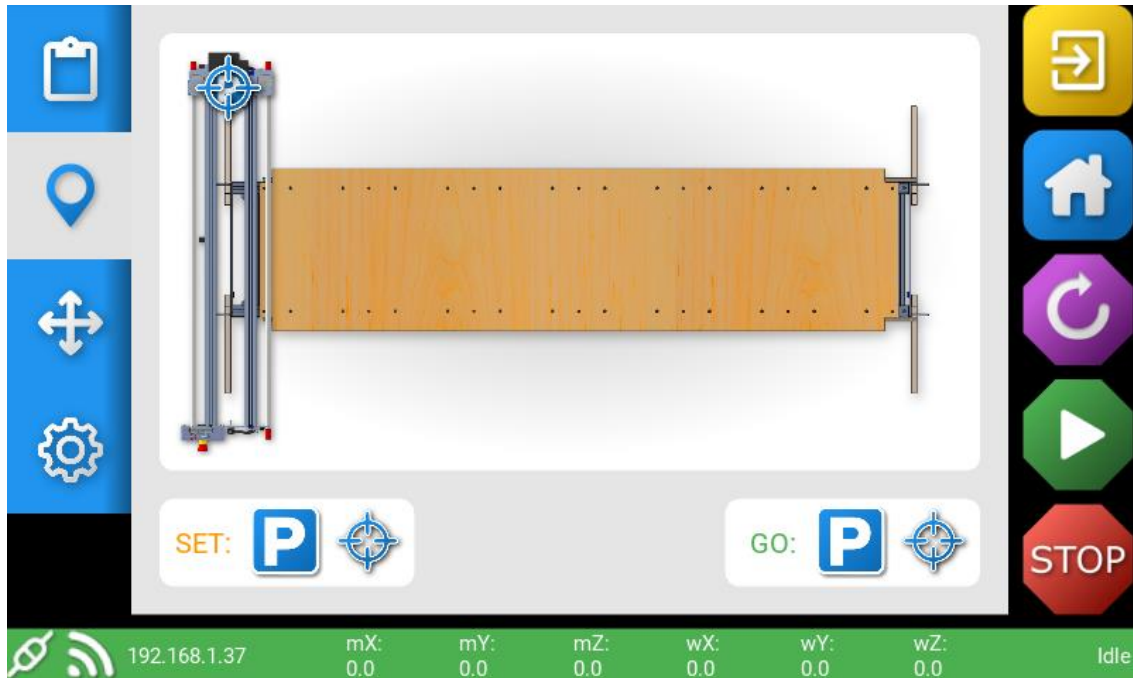
- Press the Z Zero button

The spindle slowly lower until the tip of the cutter touches the Z probe plate. Once it has done this, it will retract to the top. You will see a green light to confirm it has saved.

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13 Position job

Go to the Map screen and see where the X/Y Datum set position is located.

If the X/Y Datum position is in a place where the cut file will be outside of SmartBench capabilities, move your X/Y datum position to a more suitable position prior to opening your file.

Move the Z Head to your approximate XY job start position

1. Go to Move Screen
2. Move the Z Head to the required place
   - Ensure the spindle/cutter is retracted before any X/Y moves are performed.
   - Using manual move

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13.1 Open job file

Please refer to section – Section 10, Page 42

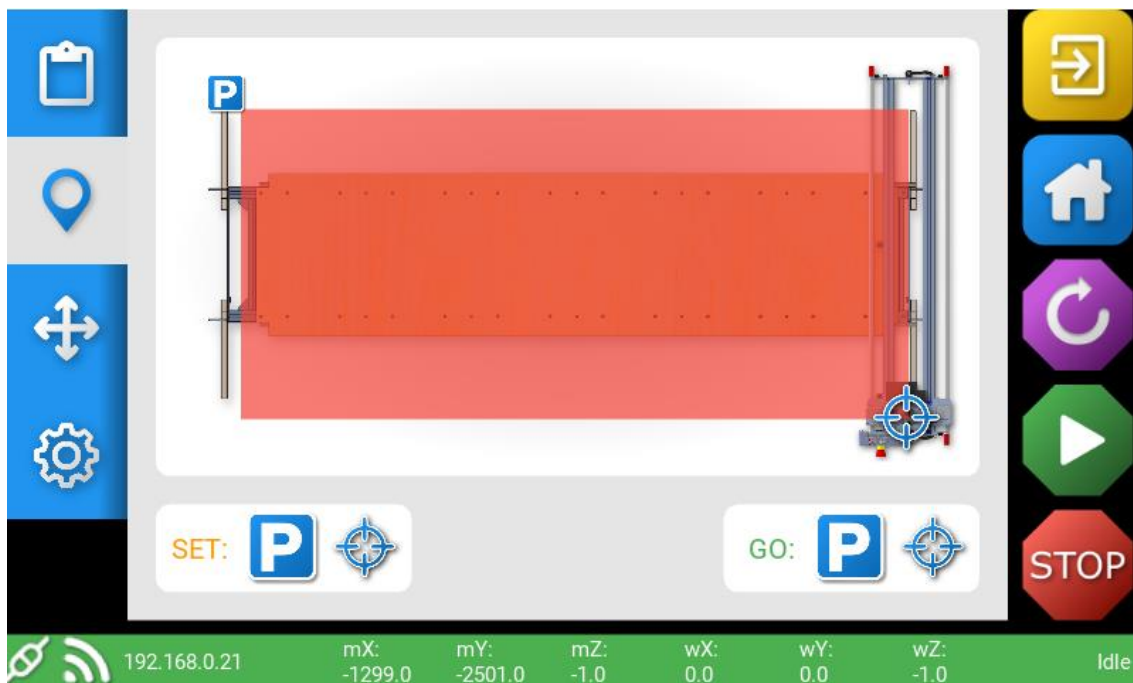## 13.2 Set X/Y datum

To set your X/Y Datum point

1. Press

This can be done in either the Move screen or the Map screen

13.3 View job on the map screen

To see where SmartBench will process your job file

1. Go to Map screen and see your Job file bounding box

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13.4 Check job using the bounding box function

Check the where the outer limits of your Job file will cut on your stock

1. Go to the X/Y Datum point by:

- Go to Move screen
- Press Go to Y Datum point

- Press Go to X Datum

OR

Go to Map screen

- Press Go To X/Y Datum

- Make sure you are now on Move screen

2. Change Move distance to Bounding Box

3. Press X Axis Move and Y Axis Move buttons to travel the outer limits of your job file.

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13.5 Making adjustments

There may be a few reasons that would require you to adjust your start position:

- The file is not in the right position for the stock your using
- Your CAM strategy start point is referenced at a different corner to your X/Y Datum start point.

To make any adjustments, repeat the steps above

14 Reset an Error

If you see the following screen, the console has encountered something to trigger an error. To reset the error, press the button on screen
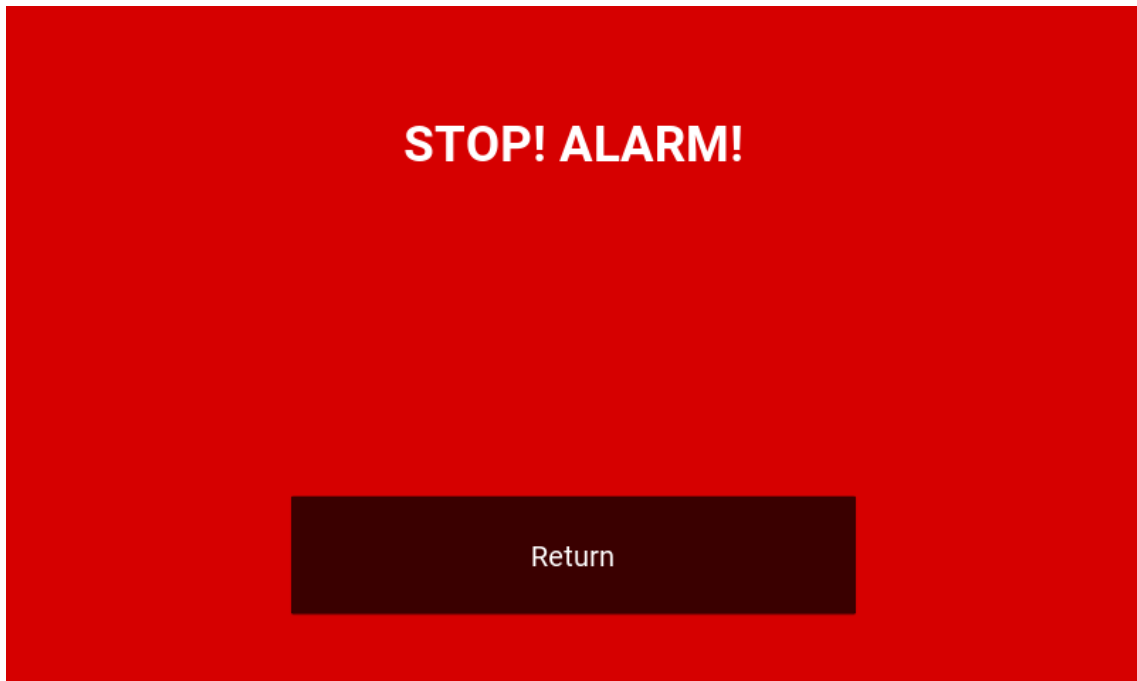
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15 Reset an alarm

If you see the following screen, the console has encountered something to trigger an alarm. To reset the alarm, press the button on screen

A list of alarms and error codes can be found on our knowledgebase
www.yetitool.com/support

16 Support

If you require any support, please visit our website, and raise a support ticket.

www.yetitool.com/support/submit-a-ticket

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