



# CadCamTechnology Ltd

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## **FB**SERIES

### **FB LASER**

### **TOUCH SCREEN CONTROL PANEL**



### **USER GUIDE**

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## Introduction

### About This Guide

This document provides details about the advanced capabilities, services, and functions available with the touch screen of the **'FB Laser'** system and how to use them.

### Overview of the Touch Screen

The interactive touch screen is a convenient device that helps you manage your **'FB Laser'** system. The easiest way to learn about the touch screen how to use it!

### Touch Input

The touch screen provides an interactive experience for managing **'FB Laser'**. It provides a simple, safe, and connected experience as a part of your system. The feature and service icons appear on the touch screen, by touching an icon, button, or control displayed on the screen, you can directly access the corresponding feature and service.

## System Start-up

During power on the Touch Screen will display the CadCam Technology '**Splash Screen**' for a few seconds, after this the '**Loading Screen**' will be displayed as the motion system of the '**FB Laser**' moves to the '**Home Position**'. The Lid of the '**FB Laser**' must be closed for the system to home. When the motion system has fully homed the Touch Screen will display the '**Home Screen**'.

### Splash Screen



### Loading Screen

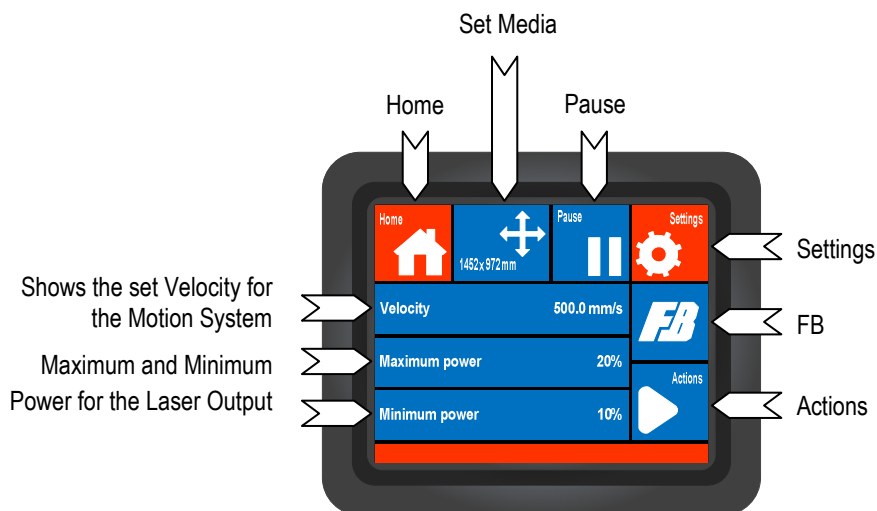


### Close Cover Screen



## Home Screen

The '**Home Screen**' is the main Touch Screen display and most functions are accessible from here.



## Home



Press the '**Home**' button to return to the '**Home Screen**'.

## Set Media Area



Press the '**Set Media**' button to view the '**Set Origin**' and '**Set Media**' screens. This button also shows the '**Set Media size**'. The default setting is the maximum bed area shown in millimetres.

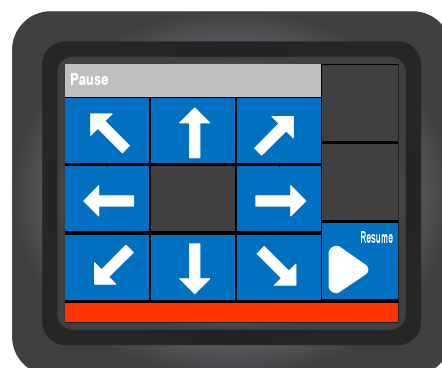
## Pause



The '**Pause**' button can be pressed at any time during laser cutting or in standby to move the position of the cutting head or to check the cutting quality of the laser cut.

Press the '**Pause**' button to pause the Laser Cutting and if required use the cursor keys to move the head a position away from the cut material for inspection.

Press the '**Resume**' button to send the head back to its previous position, and resume cutting.



## FB



Press the '**FB**' button to view the current Machine Type and Firmware Revision.

This example shows:

**FB1500**

**Serial number:**

**Revision: L01**

**Build: Jan 16 2017**



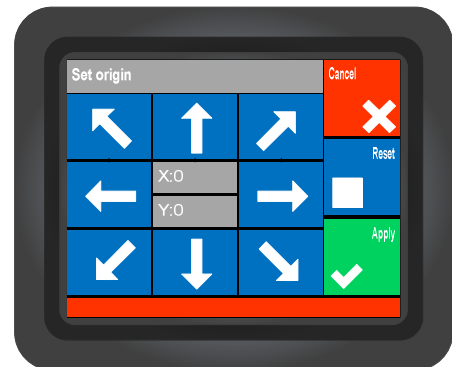
## Setting the Media Area

To set the '**Media Area**' for the job you require, place the media (the material you wish to work with) on to the desired position of the '**FB Laser**' bed. Close the Lid and press the '**Set Media**' button.

The '**Set Origin**' screen will now be shown. Please use the cursor keys to move the cutting head to the lower left position of your media, and then press the '**Apply**' button.

Press the '**Cancel**' button to return to the '**Home Screen**'.

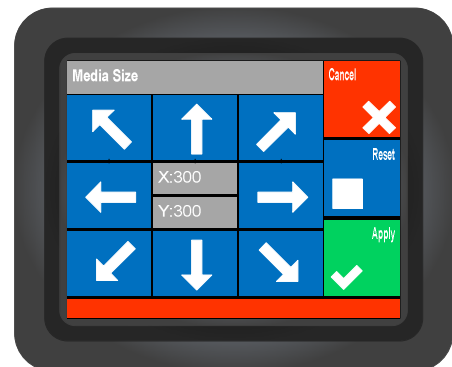
Press the '**Reset**' button to reset the media area to default (full bed size).



The '**Media Size**' screen will now be shown. Please use the cursor keys to move the cutting head to the upper right position of your media, and then press the '**Apply**' button.

Press the '**Cancel**' button to return to the '**Home Screen**'.

Press the '**Reset**' button to reset the media area to default (full bed size).



The X and Y co-ordinates are displayed in the centre of both the '**Set Origin**' and '**Media Size**' screens so that you can choose an exact media area if required, for example if you require using a jig.

## Settings Screen



Press the **'Settings'** button to access the main **'Settings Screen'** for the **'FB Laser'**. In the **'Settings Screen'** you are able to change a number of settings that control the speed, acceleration, laser power and calibrations. Press the **'More'** button for additional settings on screens 2 and 3.

### Maximum and Minimum Power

The Max and Min Power can be set here for the calibration functions of the laser

- Please note that Ethos (Cutting Software) overrides these settings when a job is sent. The Max and Min Power Settings at the Touch panel only affect the calibration power of the laser

### Velocity

This affects the cutting speed of the motion system. When the Laser is enabled the velocity set here will be applied

- Please note that Ethos (Cutting Software) overrides these settings when a job is sent to the FB Laser. The Velocity Setting at the Touch panel only affects the Calibration functions of the laser

### Up Velocity

This affects the non-cutting speed of the motion system. When the Laser is disabled the Up Velocity set here will be applied to the motion system

- Please note that this is a global setting and applies to all jobs sent from Ethos, manual functions and calibrations

### Down Acceleration

This affects the cutting acceleration of the motion system. When the Laser is enabled the Down Acceleration set here will be applied to the motion system

- Please note that this is a global setting and applies to all jobs sent from Ethos, manual functions and calibrations

### Up Acceleration

This affects the non-cutting acceleration of the motion system. When the Laser is disabled the Up Acceleration set here will be applied to the motion system

- Please note that this is a global setting and applies to all jobs sent from Ethos, manual functions and calibrations

### General

The LCD Contrast can be set in the General Screen

### Communications

Shows the communication settings, LAN will be implemented later

### Calibrate X-Y

Used to calibrate the X and Y distances for the motion system

### Feed Calibration

Used to calibrate the feed distance for the conveyor or roll feed

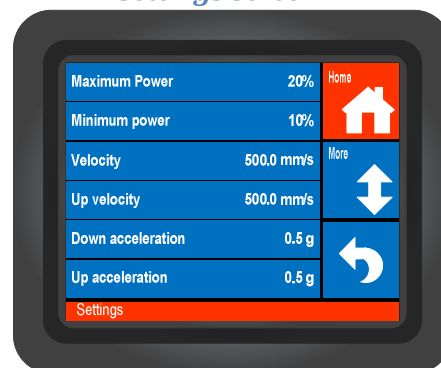
### Y Raster Calibration

Used to calibrate the motion system to Raster in the Y axis

### X Raster Calibration

Used to calibrate the motion system to Raster in the X axis

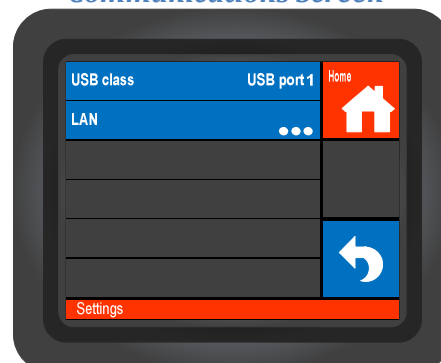
### Settings Screen 1



### Settings Screen 2



### Communications Screen

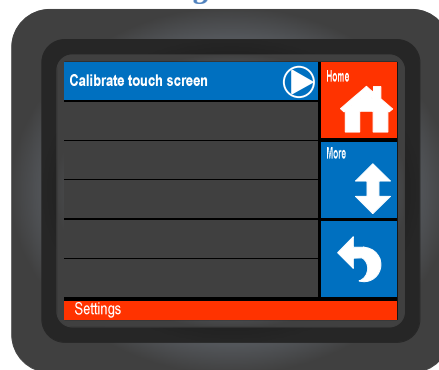


## Calibrate Touch Screen

Used to Calibrate the Touch Display Input



## Settings Screen 3



To calibrate the display press the '**Calibrate Touch Screen**' button and follow the on screen instructions.

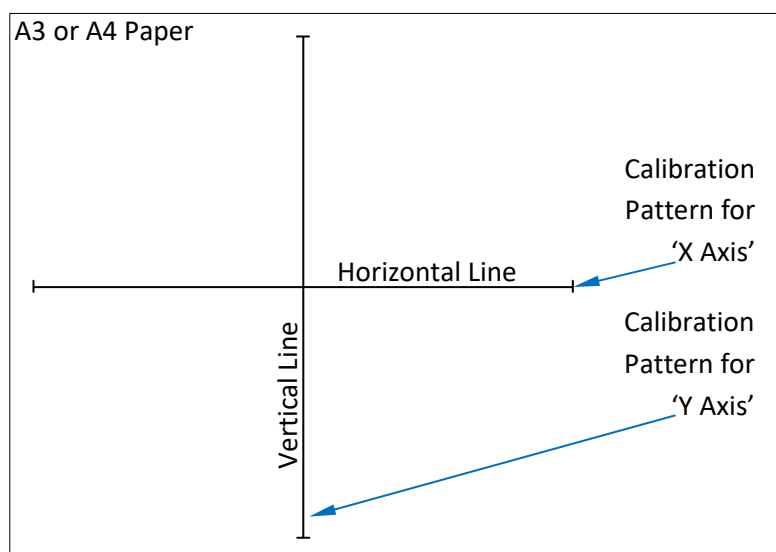
## Calibrating the FB Laser

Calibrating the X-Y scale and Raster for the '**FB Laser**'

### X-Y Calibration

Follow the steps below to perform the '**X-Y Calibration**' (also referred to as '**X-Y Scale**').

1. Place a sheet of A4 or A3 paper onto the bed of the laser with the long edge parallel to the front of the machine and set the '**Media Area**' to the size of the paper as described in the '**Setting the Media Area**' section (on Page 6)
2. Using the Touchpad, press '**Settings**' and set the '**Max**' and '**Min**' '**Power**' both to 10% or 15%
3. Using the Touchpad, set the '**Velocity**' to 350mm/s
4. Using the Touchpad, press '**Settings**'> press '**More**' (for settings screen 2) and press '**X-Y Calibration**'
5. The laser will now draw a calibration pattern on the paper
6. Taking note of the orientation of the paper, remove the paper from the bed
7. Using a Steel Ruler, measure the **Horizontal Line** and input the exact measurement into the Touchpad for the '**X Axis**'
8. Using the Steel Ruler again, measure the **Vertical Line** and input the exact measurement into the Touchpad for the '**Y Axis**'
9. Repeat from step 1 to ensure the '**X-Y Scale**' is correct.





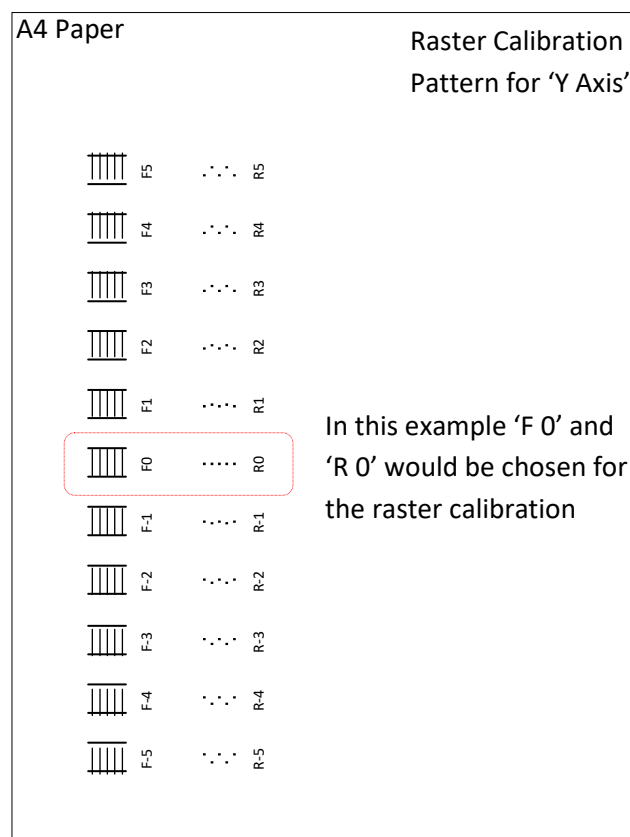
## X-Y Calibration –Quick Menu Selection



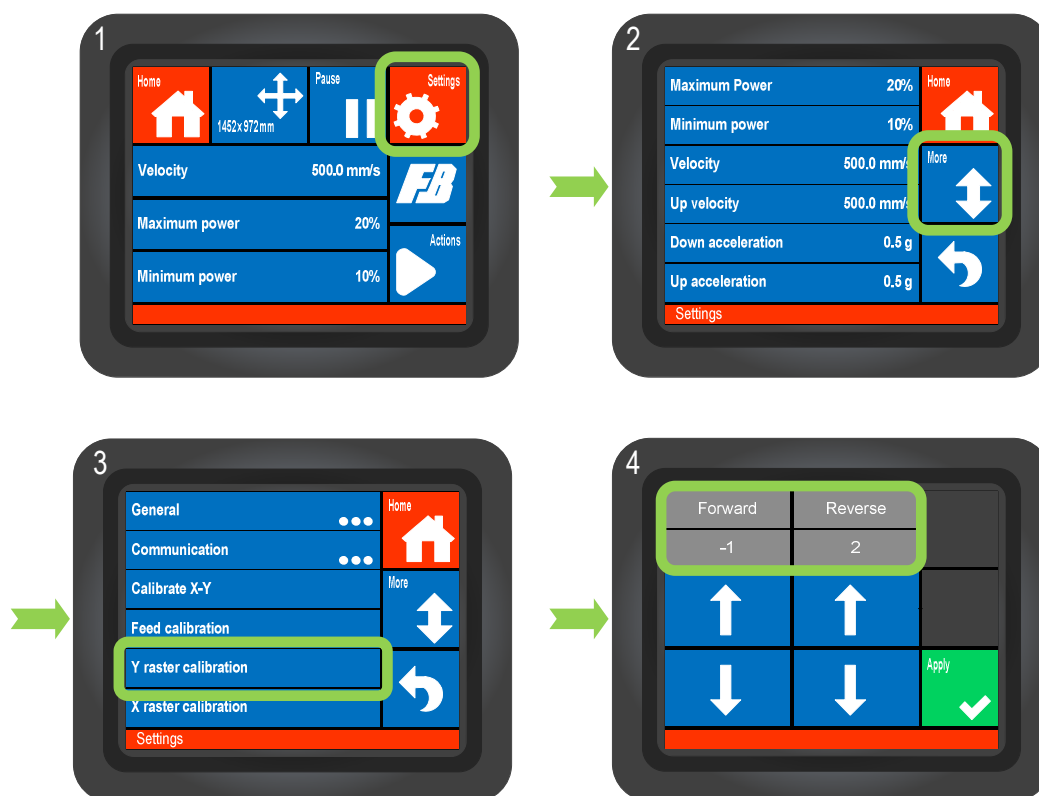
## Y Raster Calibration

To perform a '**Raster Calibration**' of the laser, follow the steps below.

1. Place a sheet of A4 paper onto the bed of the laser with the short edge parallel to the front of the machine at the home position of the bed (position 0,0)
2. Using the Touchpad, press '**Settings**' and set the '**Max**' and '**Min**' '**Power**' both to 10% or 15%
3. Using the Touchpad, set the '**Up Velocity**' and '**Velocity**' to 1000mm/s
4. Using the Touchpad, set the '**Up Acceleration**' and '**Down Acceleration**' to 1.0G
5. Using the Touchpad, press '**Settings**' > press '**More**' (for settings screen 2) and press '**Y Raster Calibration**'
6. The laser will now draw a calibration pattern on the paper
7. Remove the paper from the bed
8. Check the alignment patterns drawn on the paper and choose the pattern which is centered and input into the Keypad, see example below.



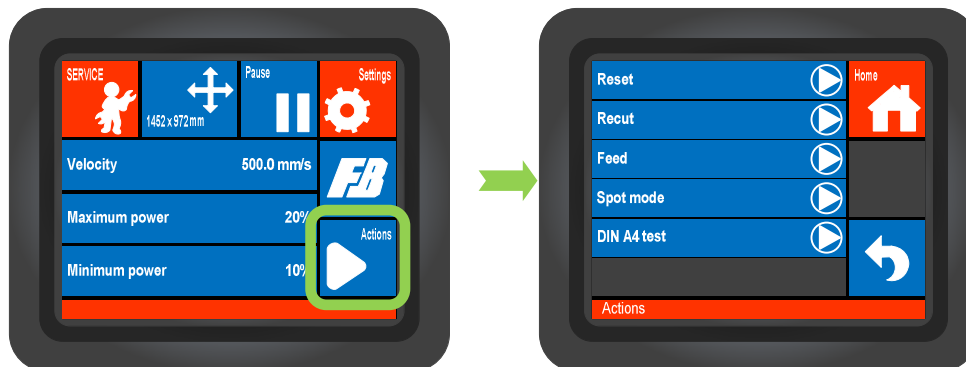
## Y Raster Calibration – Quick Menu Selection



## Actions Screen



Press the '**Actions**' button to access the '**Actions Screen**' for the '**FB Laser**'. In the '**Actions Screen**' you have 4 or 5 options depending on the '**FB Laser**' type you have. If your Laser has a Roll Feed or Conveyor then the '**Feed**' option will also be displayed.



### Reset

Press the '**Reset**' button to clear the last job sent to the Laser from Ethos.

### Recut

Press the '**Recut**' button to re-send the last job sent to the '**FB Laser**' from '**Ethos**'.

### Feed

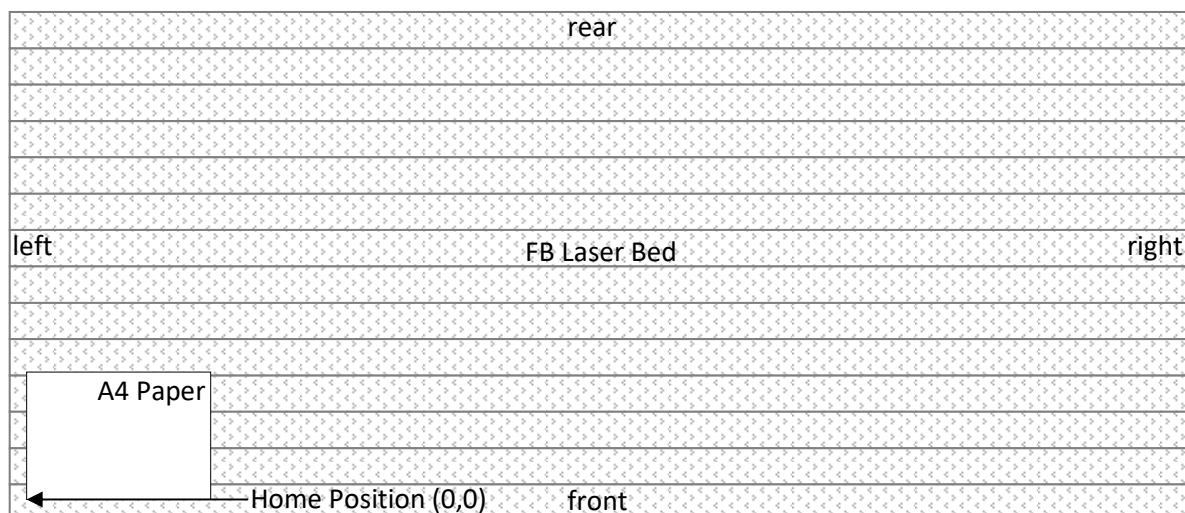
Press the '**Feed**' button to manually feed the Roll Feed or Conveyor on the '**FB Laser**', see page 13 for further information.

### Spot Mode

The '**Spot Mode**' button opens the manual firing screen for the '**FB Laser**', see pages 14 and 15 for further information.

### DIN A4 test

The '**DIN A4 test**' will cut a test pattern to check the output and quality of the '**FB Laser**'. Please ensure the '**Laser Power**' and '**Velocity**' settings are correctly set in the '**Settings Screen**' and you have placed a piece of A4 paper in the front left corner (Home Position) on the '**FB Laser**' Bed before you press the '**DIN A4 test**' button.



## Feed Conveyor

To manually feed the conveyor please follow the below steps:

1. From the '**Home**' screen press the '**Actions**' button
2. In the Actions menu press the '**Feed**' button
3. Press the '**Down**' arrow to feed the conveyor continually until you release the button
4. Press the '**Numpad**' button to enter a desired distance to feed the conveyor



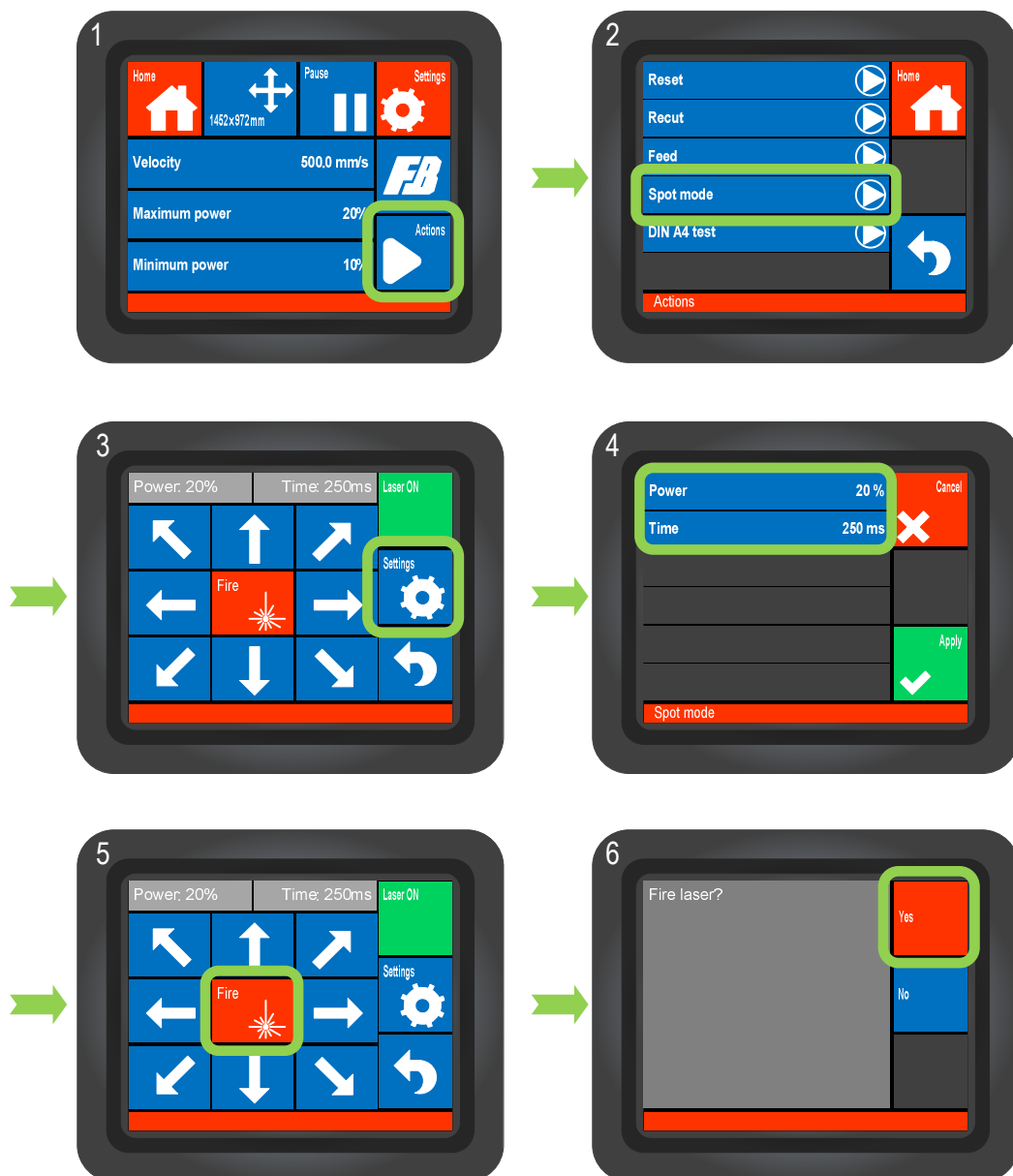
## Spot Mode

In '**Spot Mode**' it is possible to force the laser to fire. Manually firing the laser is used mainly for laser alignment and checking the output power of the laser tube, usually by authorised engineers.

### Spot Fire

To fire the laser as an instant SPOT (mainly used for laser alignment), please follow the steps below:

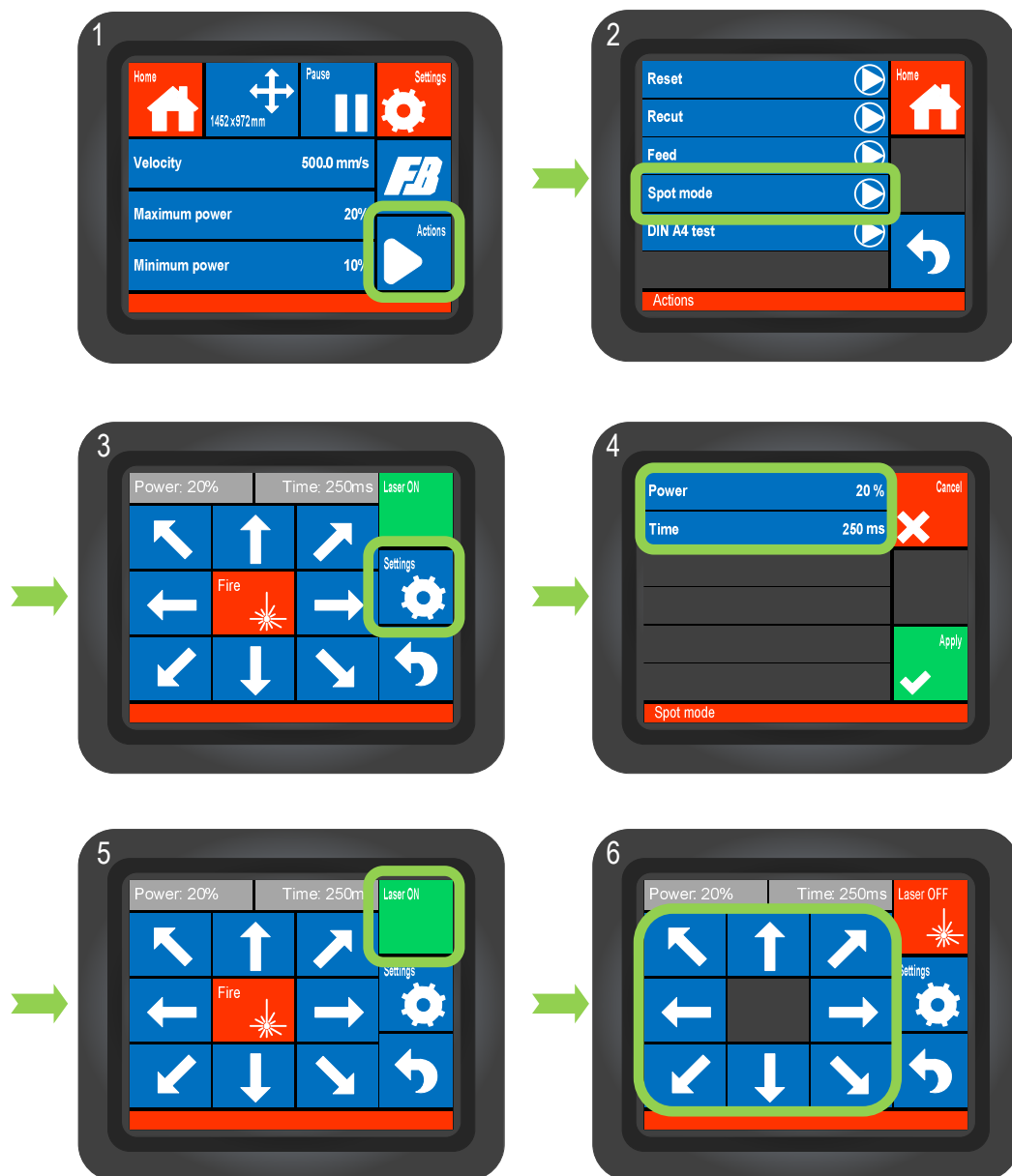
1. Place a sheet of A4 paper onto the '**FB Laser**' bed, under the nozzle and close the lid
2. From the '**Home**' screen press the '**Actions**' button
3. Now select '**Spot Mode**' from the '**Actions**' menu
4. Press the '**Settings**' button
5. Choose the desired '**Power**' and '**Time**' settings (typically 10% to 20% power and 400ms)
6. Once you are back at the '**Spot Mode**' screen, press the Red '**Fire**' button on the centre of the display, then the '**Yes**' button when prompted
7. The Laser will fire a spot on the paper.



## Continuous Fire

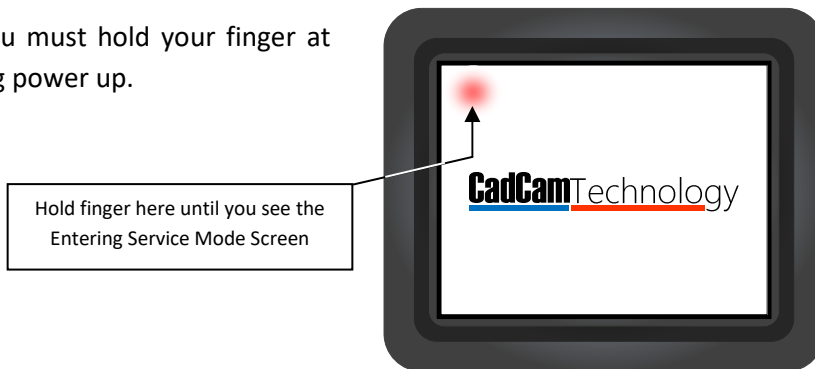
To fire the laser constantly in any direction (mainly used to align the last (Nozzle) mirror or to ensure the Y Rail is square to the X Rail if you have a conveyor fitted), please follow the steps below:

1. Place a sheet of A4 paper onto the **'FB Laser'** bed, under the nozzle and close the lid
2. From the **'Home'** screen press the **'Actions'** button
3. Now select **'Spot Mode'** from the **'Actions'** menu
4. Press the **'Settings'** button
5. Choose the desired **'Power'** and **'Time'** settings (typically 10% to 20% power and 400ms)
6. Once you are back at the **'Spot Mode'** screen, press the green **'Laser On'** button at the top right of the display, this button will turn red and change to **'Laser Off'** showing you that the laser is now active
7. Use the cursor keys to continually fire the laser in any desired direction
8. Press the **'Laser Off'** button at any time to disable the laser again.

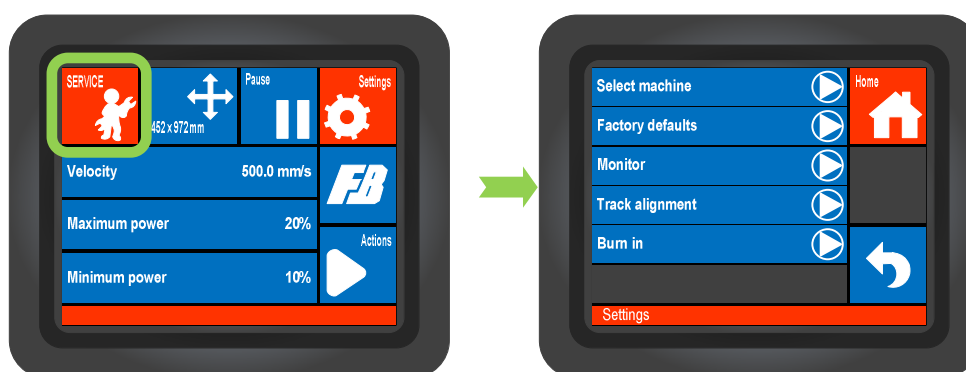


## Service Mode

To enter the '**Service Mode**' you must hold your finger at the Top Left of the display during power up.



## Service Mode Main Screen



### Select Machine

In the '**Select Machine**' menu you are able to choose the '**FB Laser**' machine type you have, this will pre-set your main *Control Board* with the default settings for your machine size.

### Factory Defaults

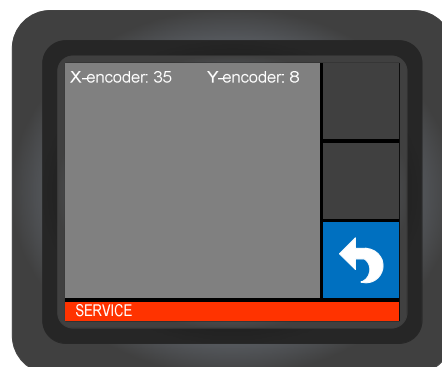
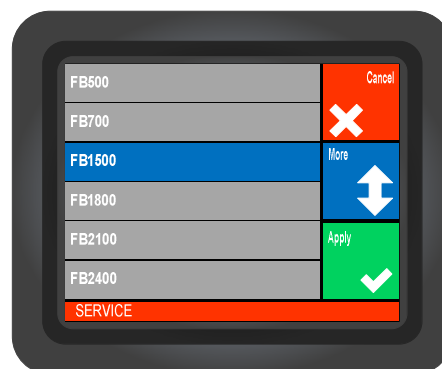
This resets your *Control Board* back to the *Factory Settings*.

Do not reset factory defaults unless advised to do so by an authorised engineer.

### Monitor

The monitor screen shows the current encoder position for the X and Y axis motors.

Only used as diagnostics for authorised engineers.





## Track Alignment

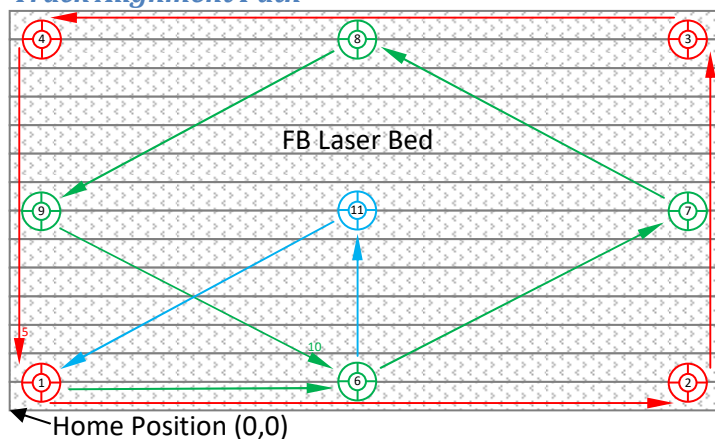
The '**Track Alignment**' feature is to aid in the alignment of the Laser Beam Path using a Target and Target Holder inserted into the Nozzle Head. Once the Target is in position press the '**Service**' button then press the '**Track alignment**' to view the following screen:-

The '**Settings**' button within the '**Track Alignment**' screen allow the '**Velocity**' of the motion system to be adjusted to the required values. An additional option called '**Delay**' is also available, this delay (in milliseconds) automatically pauses the motion system when running the '**Track Alignment**' so that the alignment can easily be seen at key points on the '**FB Laser**' bed.

Once the '**Run**' button is pressed the motion system will start moving around the entire bed and if the delay is set higher than 0ms then it will pause at each vector for the set delay value (5000ms max). The '**Settings**' can be adjusted whilst the system is running and it is also possible to manually pause the motion system at any time by pressing '**Pause**' within the '**Run**' screen.

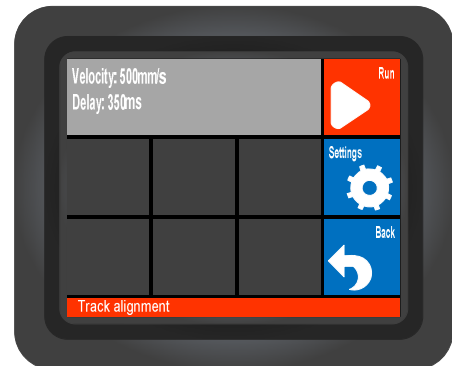
It is also possible to reduce the '**Media Area**' of the motion system thus changing the area that the track alignment path uses.

### Track Alignment Path

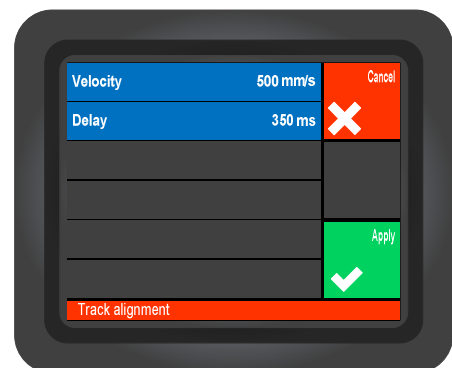


## Burn In

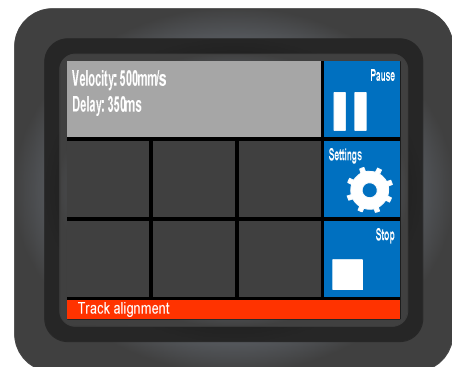
The '**Burn In**' feature uses the '**Track Alignment**' feature and in addition runs the Conveyor or Roll Feed for an allotted time. This feature is mainly used after initial production of the '**FB Laser**' for extensive testing and bedding in for all the moving parts. For this reason please do not use the '**Burn In**' feature unless advised to do so by an authorised engineer.



### Settings



### Run



## Troubleshooting

Please use the following table to solve any issues regarding the '**FB Laser**' system.

Error Messages: -

Error Message	Possible Cause	Checks	Corrective Action
AXIS ERROR (X, Y, Z or Aux)	Material or Object obstructing movement	Check affected area for any loose material, objects or thread that may have become entangled in moving parts	Remove any debris from moving parts
	Rail Dirty	Check the rail for any ingrained dirt built up over time	Remove dirt with green abrasive pad supplied with FB Laser, clean with soft cloth and apply small amount of Light Machine Oil (sewing machine oil)
	Carriage or Ball Slide damaged or loose	Power off the machine and SLOWLY move the head by hand feeling for any stiff or loose spots in the carriage(s)	If you suspect the Ball Slide or Carriage to be damaged, contact your agent
	Loop Drive Belt loose or damaged (orange or grey)	Check the Loop Drive Belt(s), ensure it is not loose and is located on the gears correctly	Refit or tighten the Loop Belt, if required clean between the teeth of the gears with a brush and apply Light Machine Oil
	Axis Belt loose or damaged (White)	Check the main Axis belt for damage, check if the belt is loose and ensure it locates on the pulleys correctly	Reposition or re-tension belt if necessary, or contact your agent
	Motor Connection issue	Check solder joints and connections to Main Control Board	Re-solder or reconnect as necessary, or contact your agent
	Motor Encoder issue	Check to see if the head is intermittently moving up/down or left/right out of its intended position	Replace Motor, or contact your agent
	Main Control Board issue	Axis still failed with replacement cable and motor	Replace control board, contact your agent
Close Cover	Open Covers	Check all Covers	Close all Covers
	Interlock switch damaged, not engaging or connection issue	Check all interlock switches and plugs	Replace or repair as necessary, or contact your agent