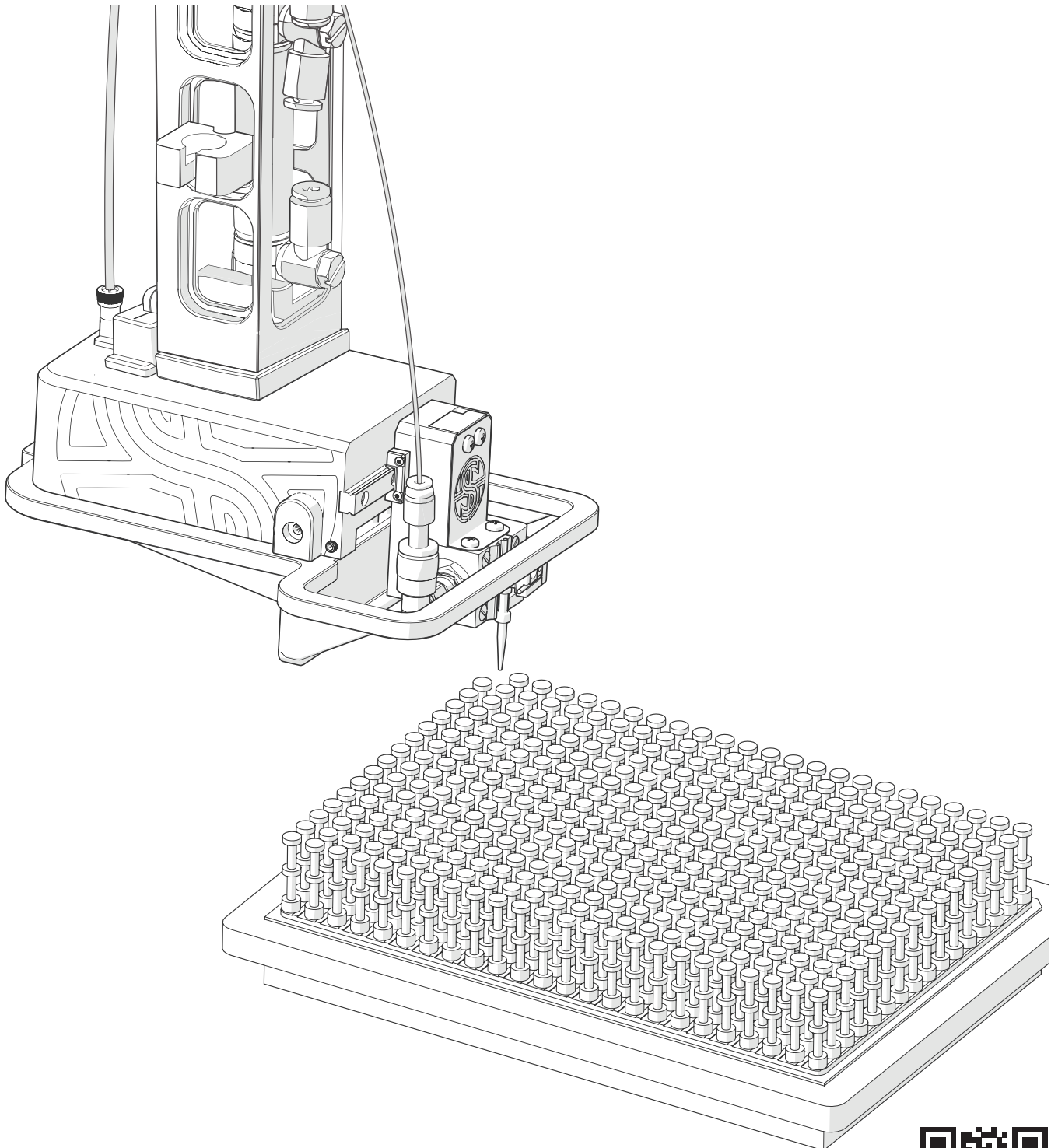




SINGER
INSTRUMENTS
A RESPONSIBILITY TO SCIENCE!

THE STINGER™

USER GUIDE v1.4



For more support
resources visit
bit.ly/StingerHelp





BEFORE YOU START!

- **All on-screen instructions MUST be followed.** Straying from the on-screen instructions could cause damage to the machine and the user.
- **Always check that wires and tubes are clear before fitting The Stinger or Pad Head.** Failure to do so could cause machine damage.
- **The Stinger and Pad Head should be stored in their foam case.** To prevent loss or damage always store The Stinger and Pad Head in their case as soon as they are removed.
- **Do NOT twist or rotate any connectors.** This will cause damage to both the ROTOR+ and The Stinger.
- **Take care when removing The Stinger or Pad Head.** The magnets are very strong — do not let The Stinger or Pad Head collide with the ROTOR+.
- **Pull all connectors by their plugs only.** NEVER pull connectors by the cables or damage will occur.
- **Always pinch down the white ring on the pneumatic connectors when removing.** The white ring locks the connector in place, trying to remove without unlocking will cause connection damage.
- **Ensure black connectors are orientated correctly.** The black connectors have locators that need to be align before inserted. Misalignment will cause damage.
- **During head removal, always ensure the push cylinder is cleared before moving away from the carriage.** The push cylinder runs from the carriage arm into The Stinger/Pad Head. If either are not pulled down far enough during removal, the cylinder will catch and damage the ROTOR+.
- **Ensure the unused connector is securely in the holder before operating the ROTOR+.** A loose cable may cause machine damage.
- **Always ensure the power is OFF before changing heads.** Leaving the power on can cause a hardware crash.
- **Ensure The Stinger's pin cartridge is pushed to back left corner of ROTOR+ pad rim.** This is to avoid damage to the pad rim's locator pins.

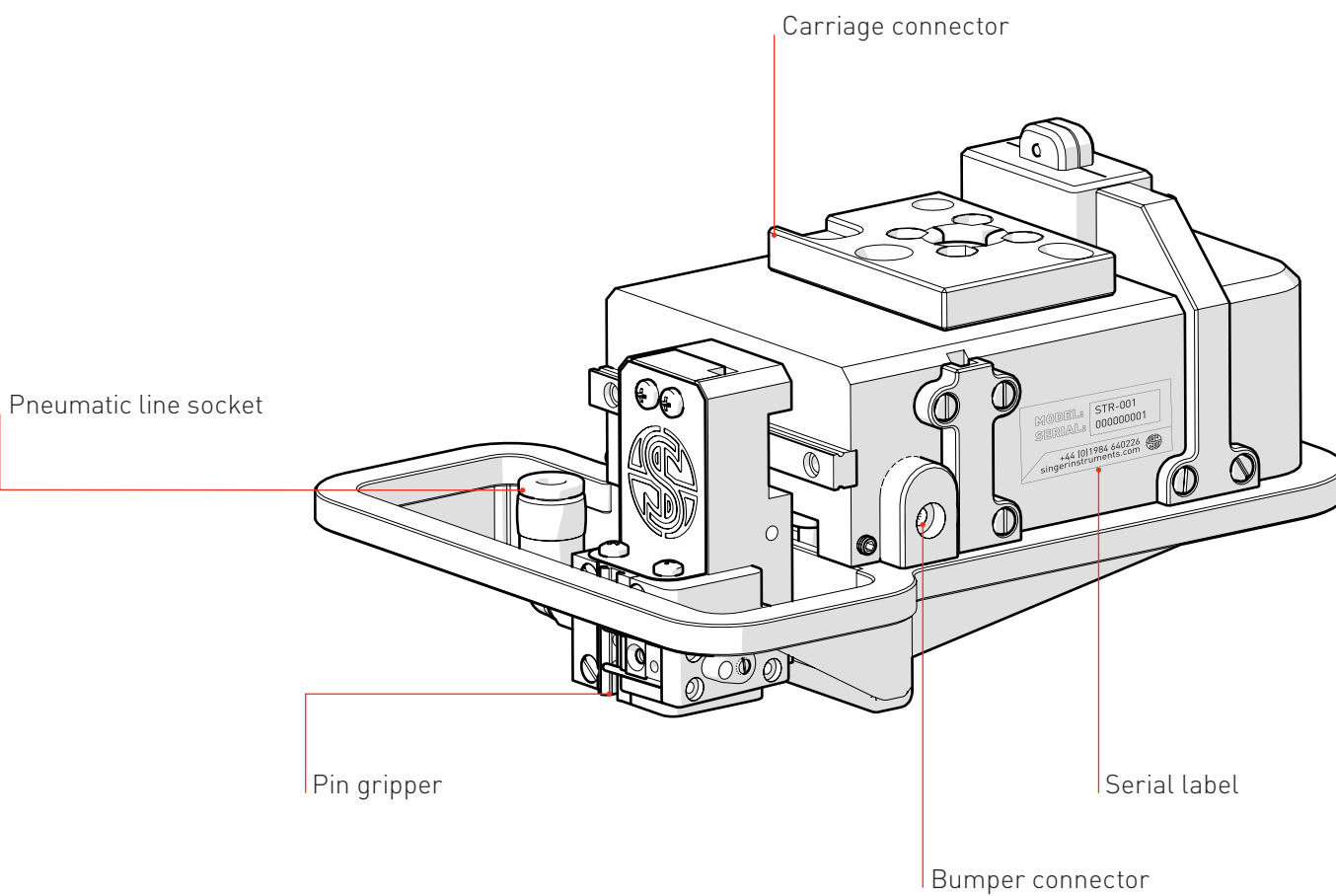
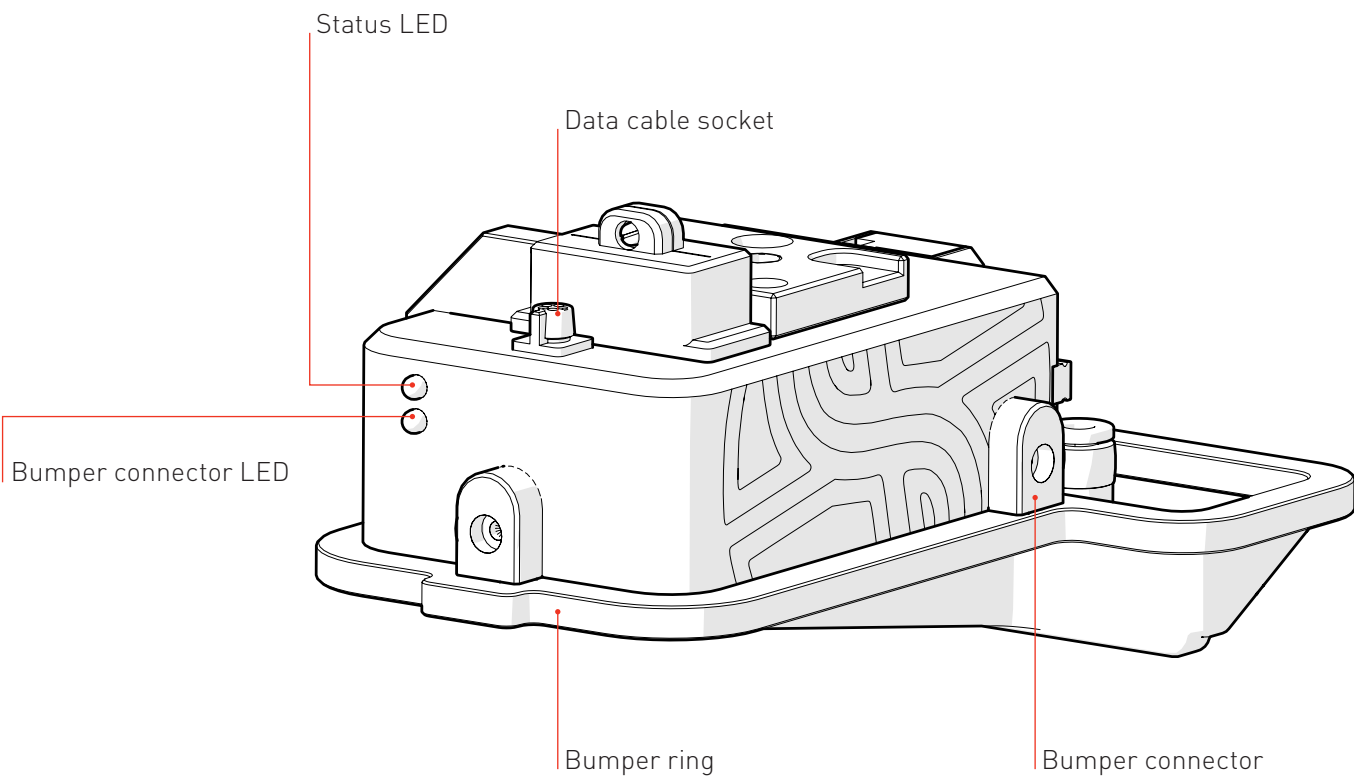
3	Introduction
4	Anatomy & features
6	Installing The Stinger
9	Installing the Pad Head
12	Cleaning pins
13	Selecting & running from .csv file
16	Selecting manual mode
18	Manual selecting colony locations

THE STINGER

INTRODUCTION

The Stinger is an accessory for the ROTOR+ which enables individual colony manipulation by using one pin at a time. It allows colonies of interest to be cherry-picked from one (or multiple) source plate(s) to one (or multiple) target plate(s) on agar or in liquid medium. Programs may be compiled by file upload or by manual operation.

ANATOMY & FEATURES



ANATOMY & FEATURES

Cartridge screws

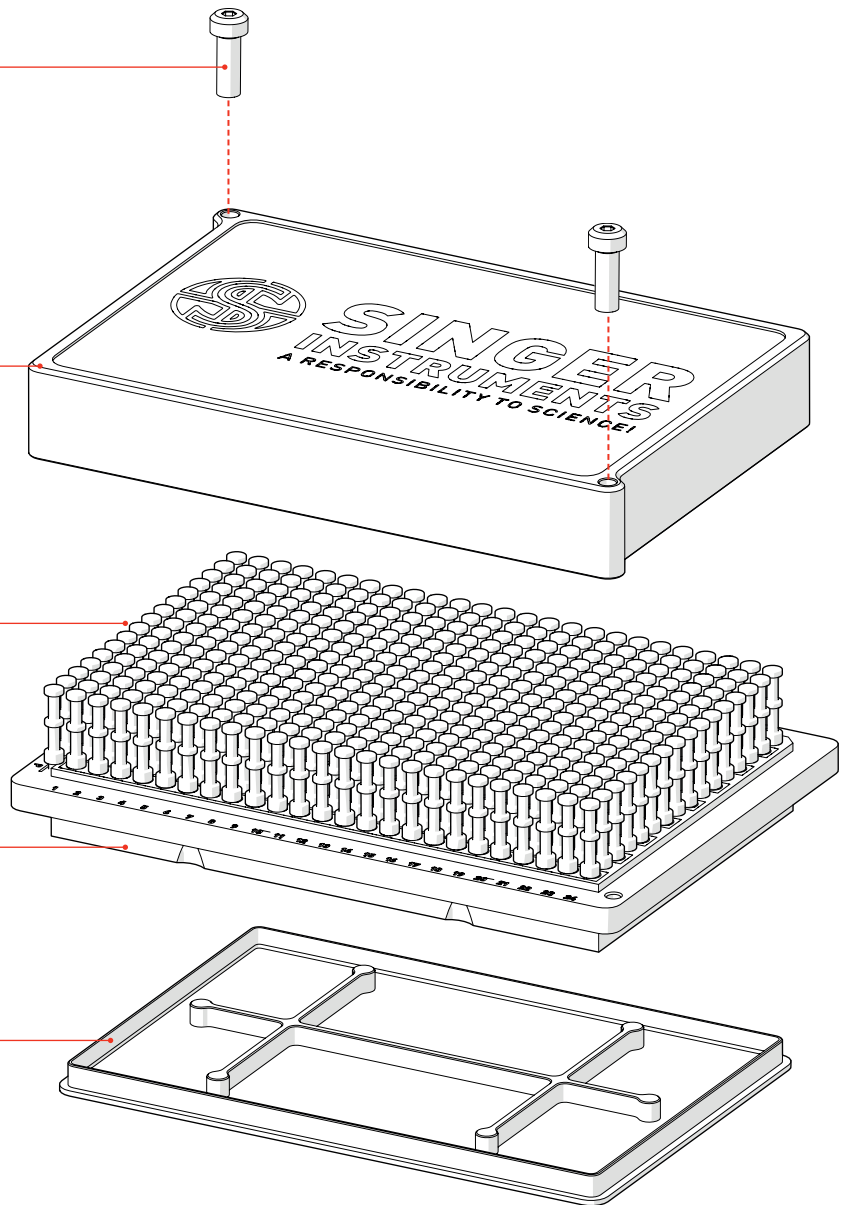
NOTE: Always load and remove the cartridge with cover in place and secured with screws (thumb-tight).

Cartridge cover

Tool-pins

Pin cartridge

Bottom tray cartridge

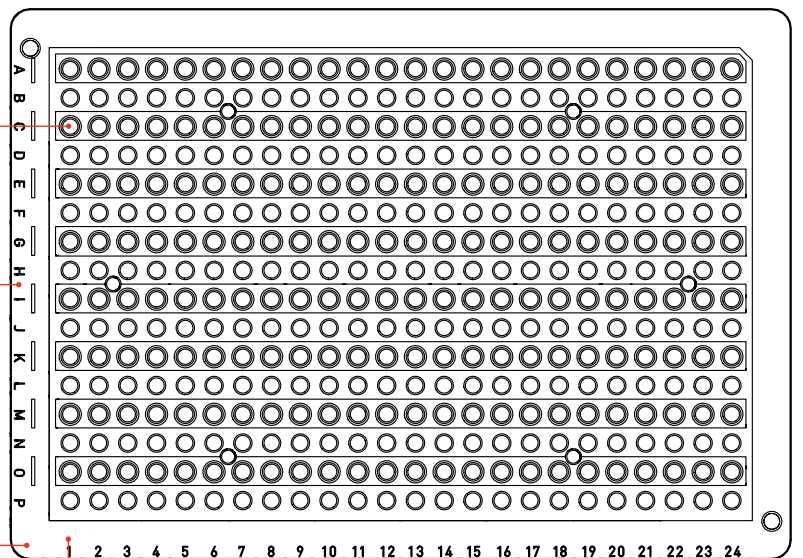


Pin holes

Row markers

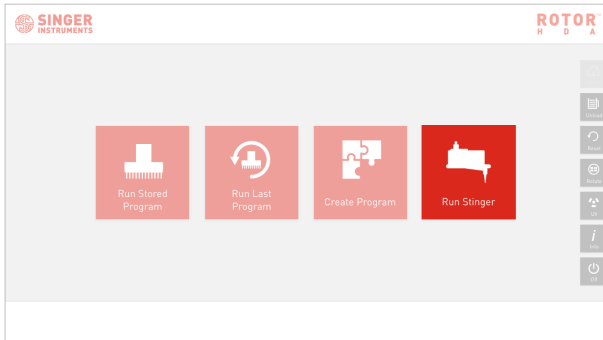
NOTE: Always load cartridges with this corner to the front left.

Column markers



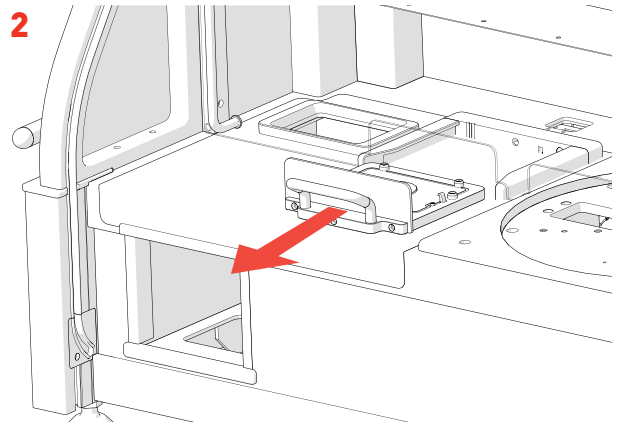
INSTALLING THE STINGER

1



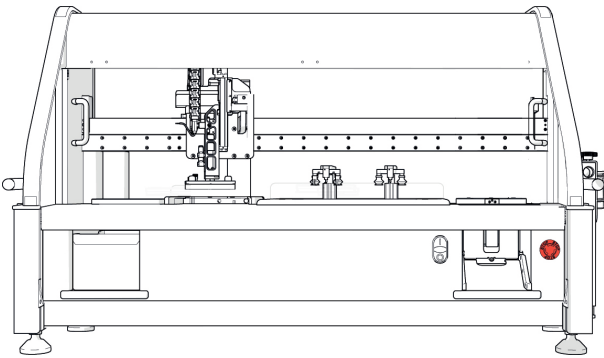
- Select *Run Stinger* and choose one of the project options
- On-screen instructions will guide you through the following steps.

2



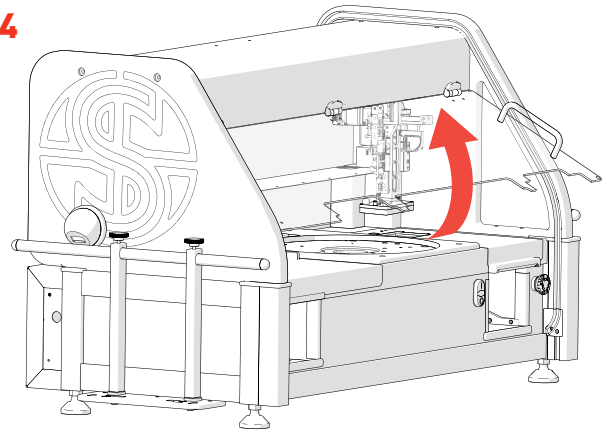
- Remove the *Black Bay* from the ROTOR+

3



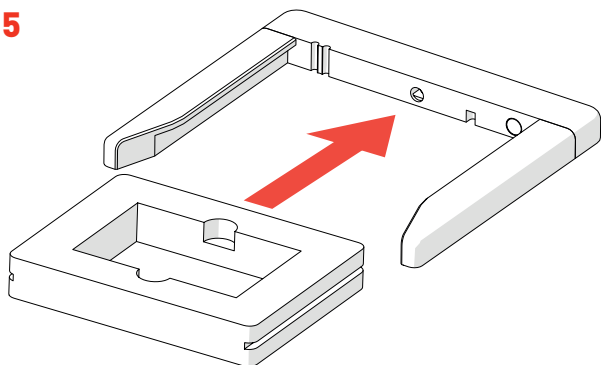
- Once the carriage arm has moved into position, turn power off ROTOR+ by pressing the *Red Stop Button*.

4



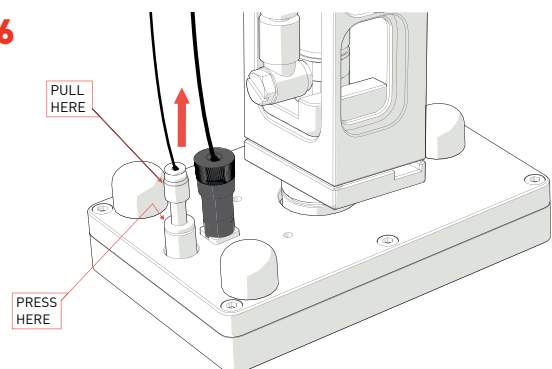
- Lift up the *Safety Screen*.

5



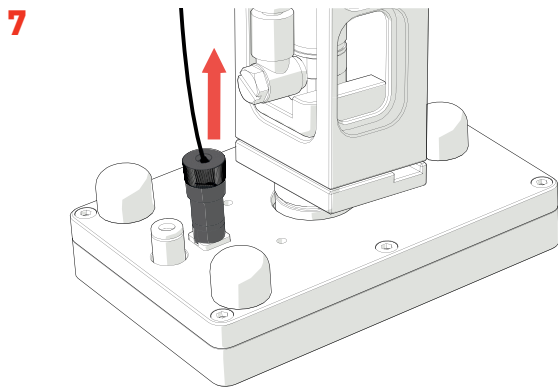
- Insert the *Pad Head Foam Case* into the *Black Bay Zone*.

6

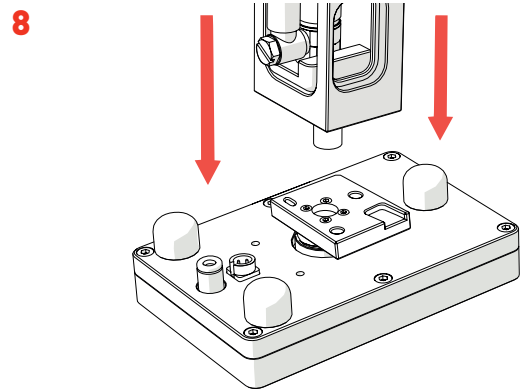


- While holding the *Pad Head* with one hand, press in the *Connection Locking Ring* with your thumb and first finger while gently pulling the *Pneumatic Connector* by the plastic shaft with your other hand.

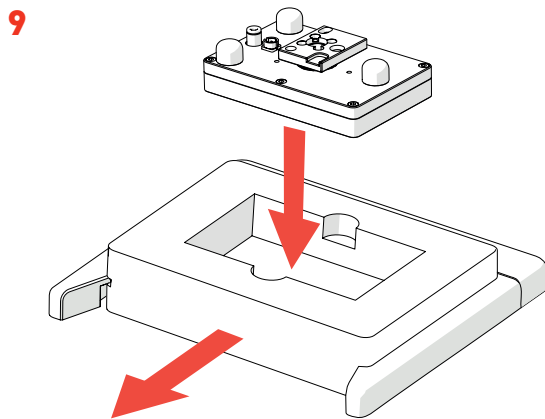
INSTALLING THE STINGER



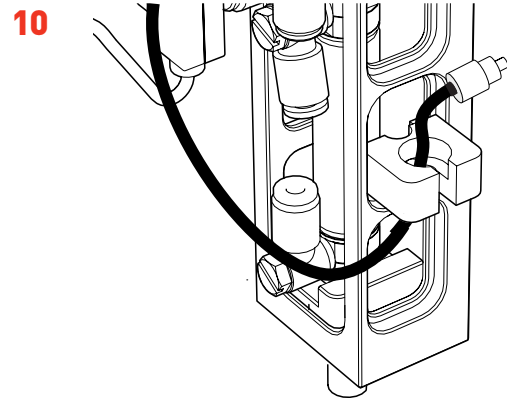
- While still holding the *Pad Head*, without twisting, gently pull the *Gripper Contact Cable* with your free hand by the plug, until it disconnects.



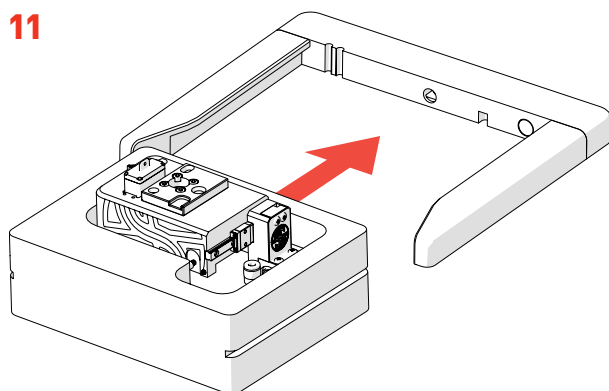
- Pull down gently on the *Pad Head* with both hands until it comes free from the *Magnetic Carriage Arm*. Remember to grip the pad head firmly.



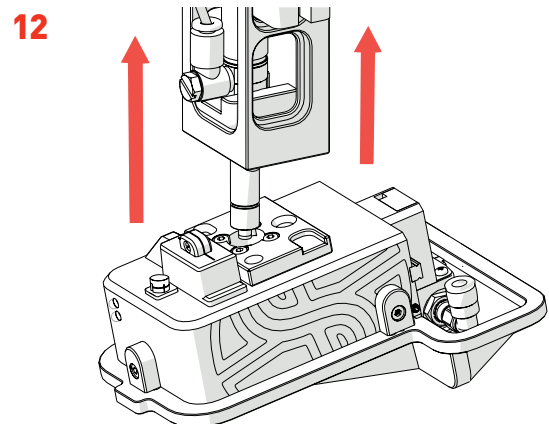
- Place the *Pad Head* into the *Foam Case*, remove from the *Black Bay Zone* and store away safely.



- Remove *The Stinger Data Contact Cable* from the holder on the carriage arm and replace it with the *Pad Head Gripper Contact Cable*.

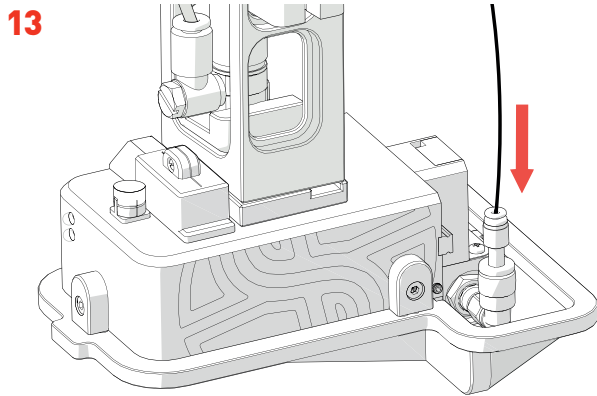


- Insert *The Stinger* with its protective foam case into the *Black Bay Zone*.

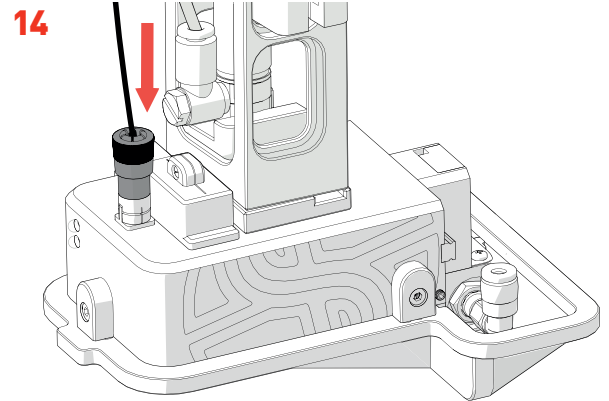


- Connect *The Stinger* to the *Carriage Arm* by lifting it up until it snaps into place. The cylinder arm should be on the right hand side when facing the ROTOR+ (as shown).

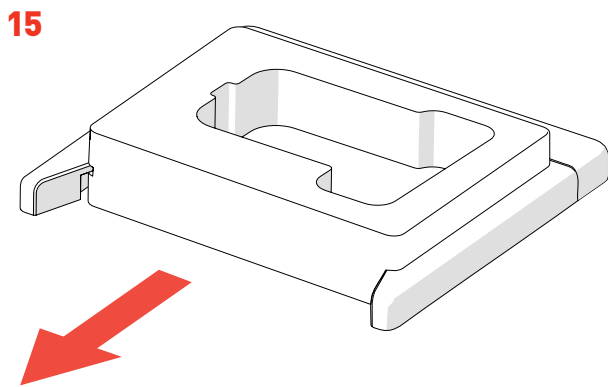
INSTALLING THE STINGER



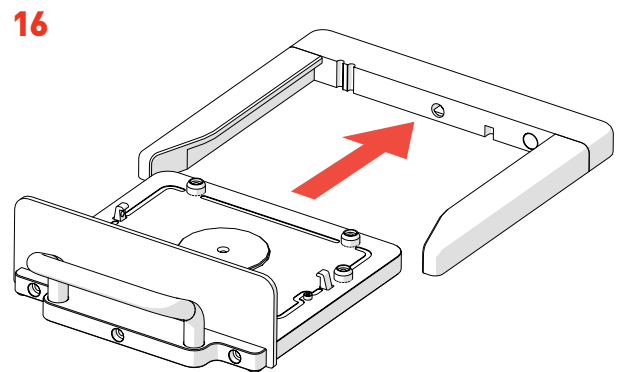
- Connect the *Pneumatic Line* to *The Stinger Head* by gently inserting it into the *Pneumatic Socket*



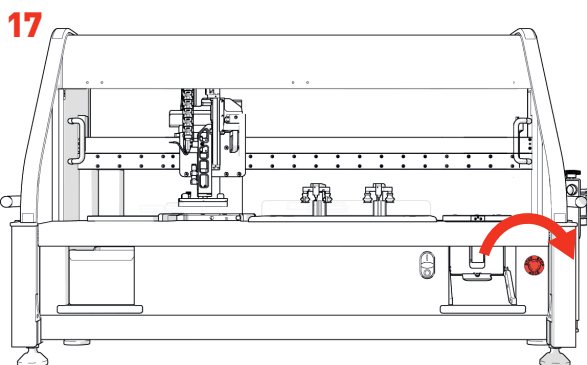
- Insert *The Stinger Data Cable* into *Data Socket*.



- Remove the *Stinger Foam Case* from the *Black Bay Zone*.



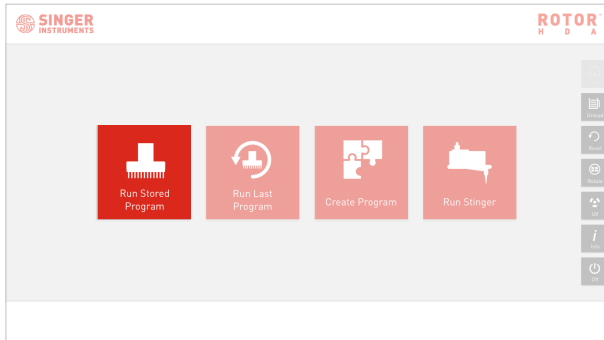
- Re-insert the *Black Bay*.



- Turn the *Red Stop Button* clockwise until it pops out.
- Initialise the ROTOR+.

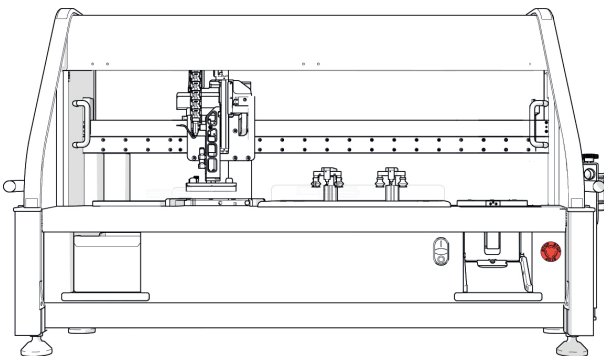
INSTALLING PAD HEAD

1



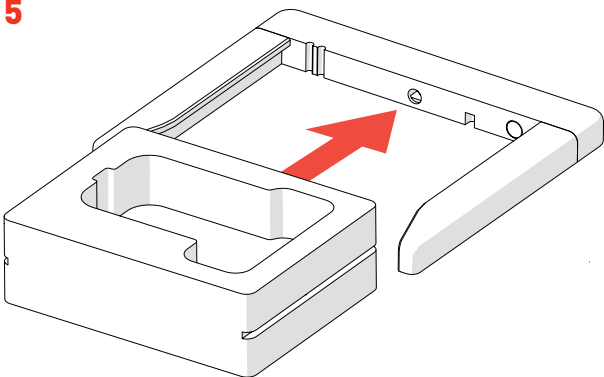
- On the home screen, select *Run Stored Program* and choose an option.
- On-screen instructions will guide you through the following steps.

3



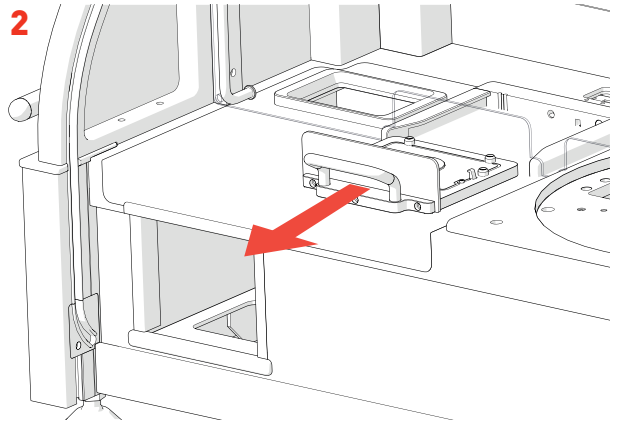
- Once the carriage arm has moved into position, turn power off ROTOR+ by pressing *Red Stop Button*.

5



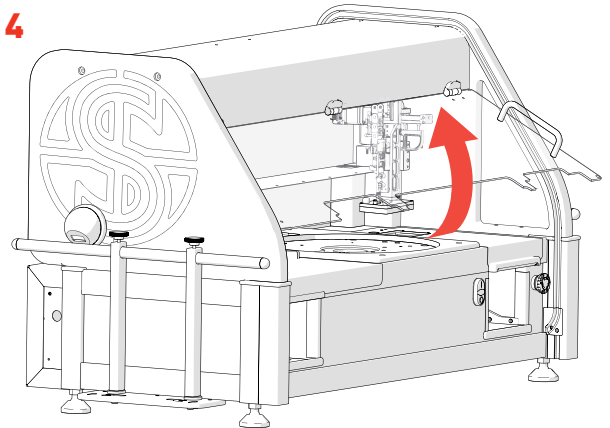
- Insert the *Stinger Foam Case* into the *Black Bay Zone*.

2



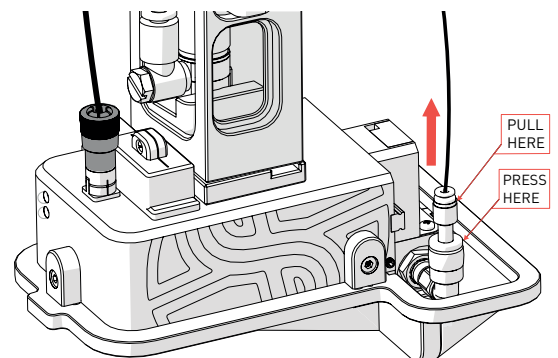
- Remove the *Black Bay* from the ROTOR+.

4



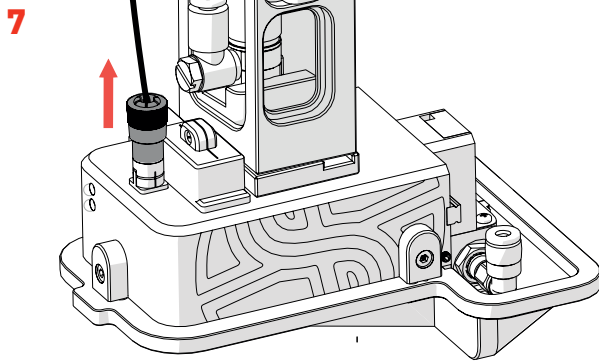
- Lift up the *Safety Screen*.

6

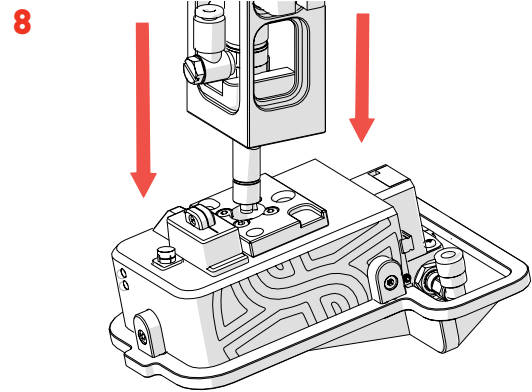


- While holding the *The Stinger* with one hand, press in the *Connection Locking Ring* with your thumb and first finger while gently pulling the *Pneumatic Connector* by the plastic shaft with your other hand.

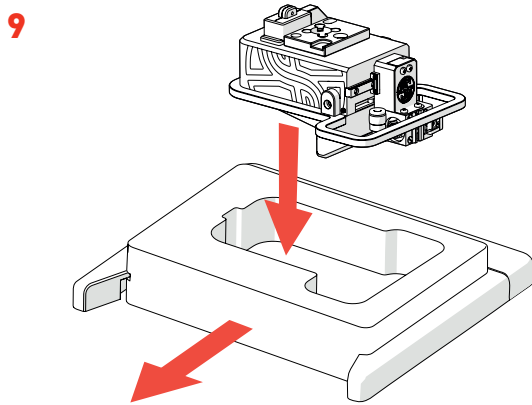
INSTALLING PAD HEAD



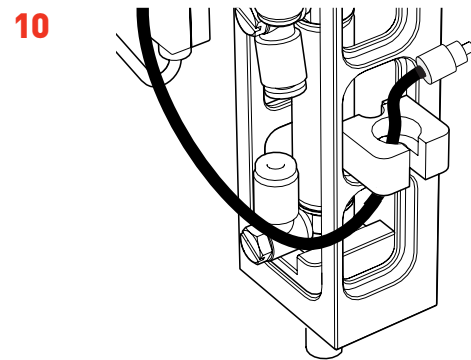
- While still holding *The Stinger*, without twisting, gently pull the *Data Cable* with your free hand by the plug, until it disconnects.



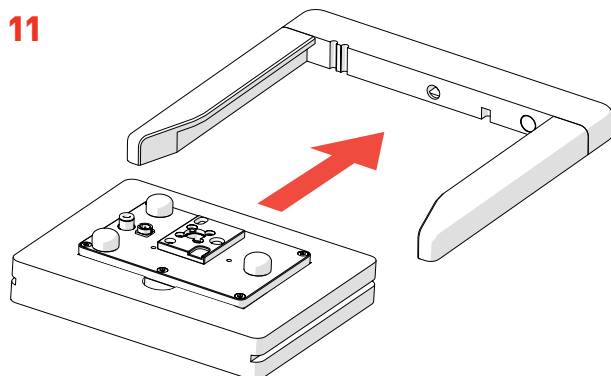
- Pull down gently on *The Stinger* with both hands until it comes free from the *Carriage Arm*. Remember to grip *The Stinger* firmly.



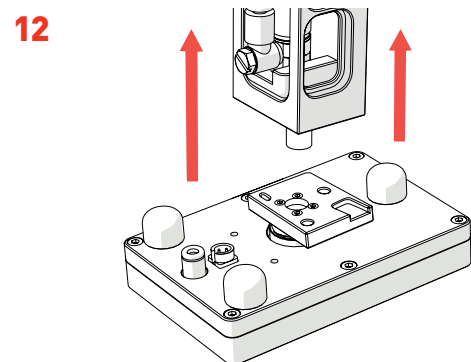
- Place *The Stinger* into the *Foam Case*, remove from the *Black Bay Zone* and store away safely.



- Remove the *Pad Head Gripper Contact Cable* from the holder on the carriage arm and replace it with *The Stinger Data Cable*.



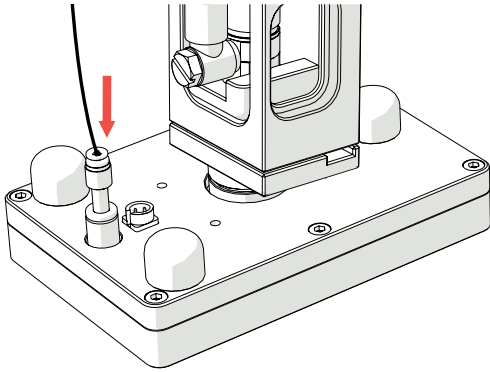
- Insert the *Pad Head* with its protective foam case into the *Black Bay Zone*.



- Connect the *Pad Head* to the *Carriage Arm* by lifting it up until it snaps into place. The pneumatic connector should be on the left hand side when facing the ROTOR+.

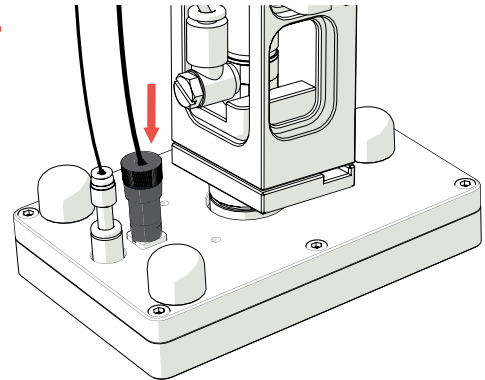
INSTALLING PAD HEAD

13



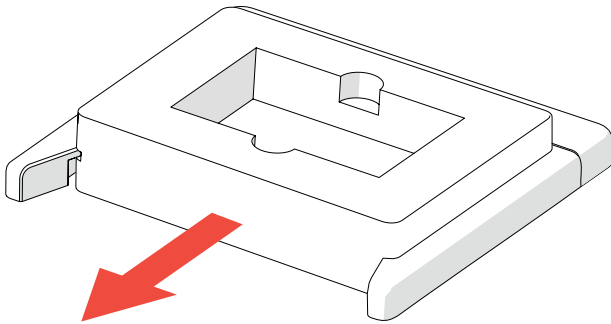
- Connect the *Pneumatic Line* to the *Pad Head* by gently inserting it into the *Pneumatic Socket*.

14



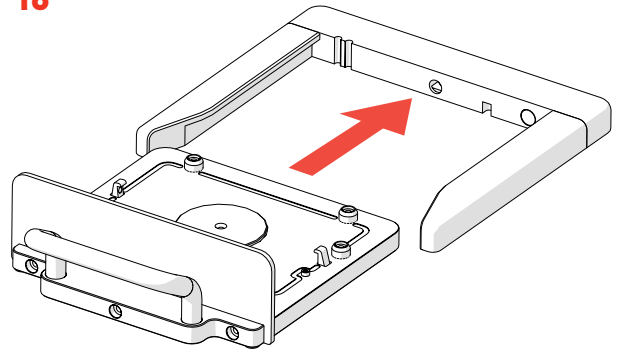
- Insert the *Pad Head Gripper Contact Cable* into the *Contact Cable Socket*.

15



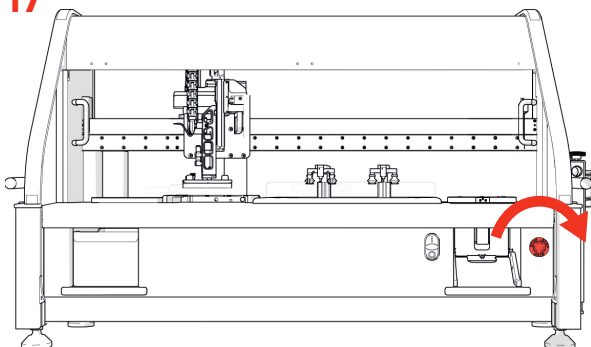
- Remove the *Pad Head Foam Case* from the *Black Bay Zone*.

16



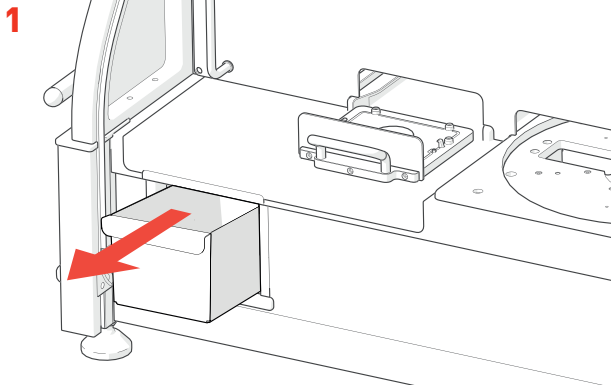
- Re-insert the *Black Bay*.

17

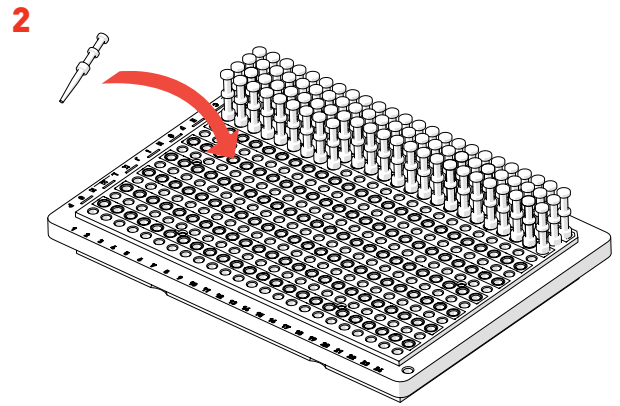


- Turn the *Red Stop Button* clockwise until it pops out.
- Initialise the ROTOR+.

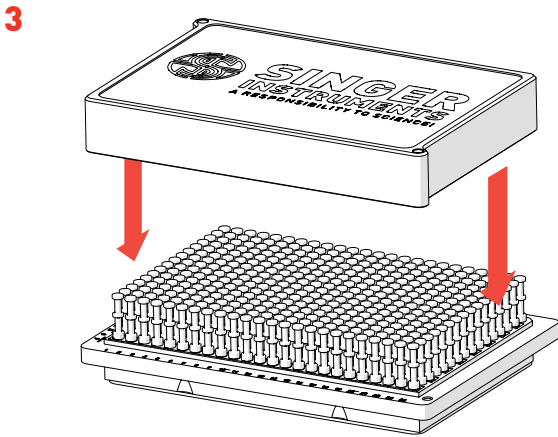
CLEANING PINS



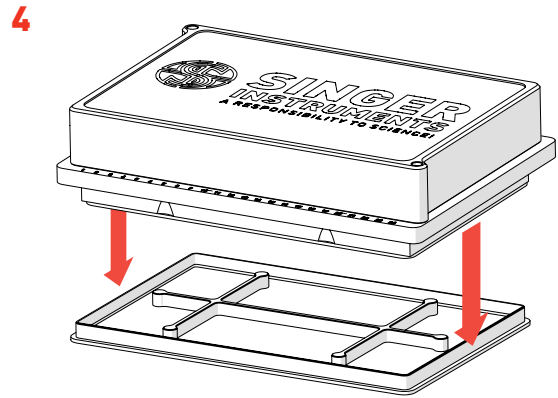
- After using The Stinger, remove *Dump Drawer* from the ROTOR+.



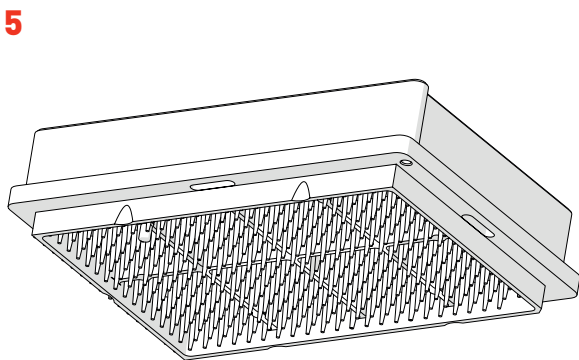
- Load the *Used Pins* into the empty *Pin Cartridge*.



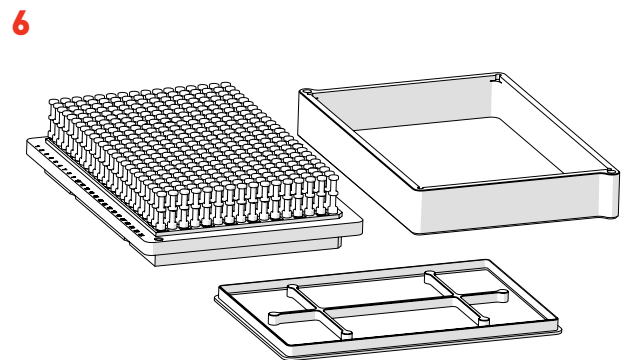
- Secure the *Cartridge Cover* to the full *Pin Cartridge* using the two *Cartridge Screws*.



- Remove the *Bottom Tray Cartridge* to enable access to the points of the used pins.



- Scrub the exposed *Pin Tips* with a 70% ethanol solution to clean, then rinse.
- Remove the *Cartridge Cover* and leave to dry.

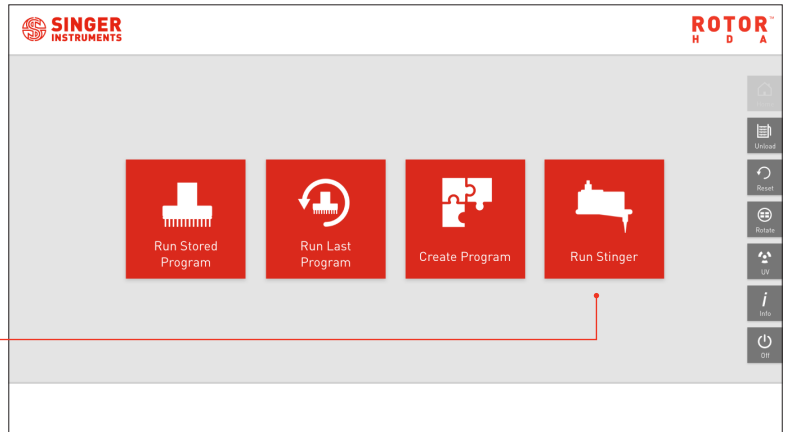


- Autoclave all parts of the *Cartridge*. Keep the pins in the cartridge but leave off the *Bottom Tray* and for optimum sterilisation.

SELECTING AND RUNNING FILES

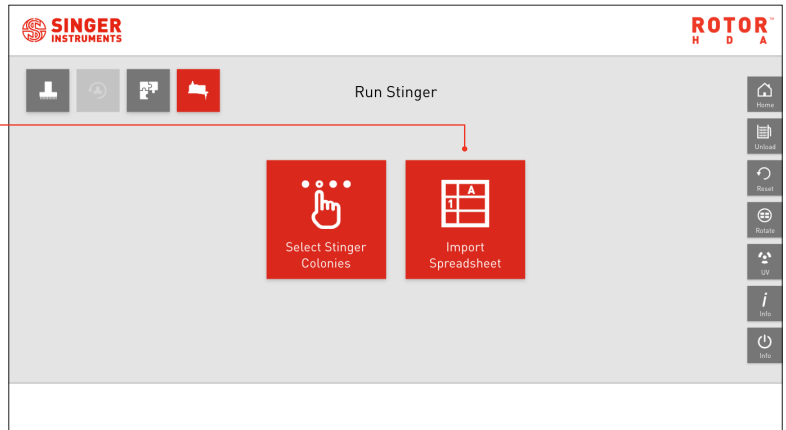
1.

- On the ROTOR+ home screen you will be asked to select an operation mode. Select the *Run Stinger* option.



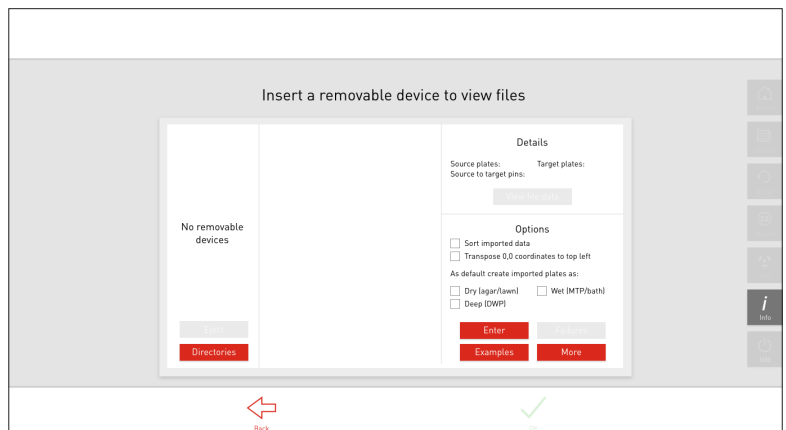
2.

- On the Run Stinger Screen, select the *Import Spreadsheet* option.



3.

- This screen will appear if no USB memory stick is inserted. Insert your USB memory stick to view files.



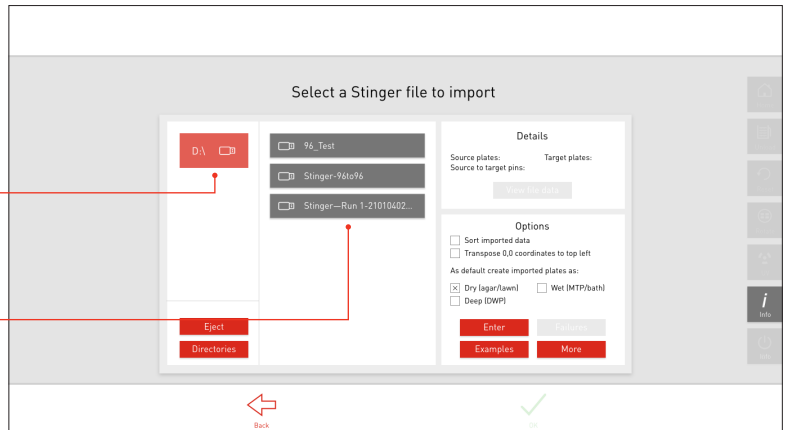
SELECTING & RUNNING FILES

4.

- Once your USB memory stick has been inserted, all .csv files in the root directory are displayed.

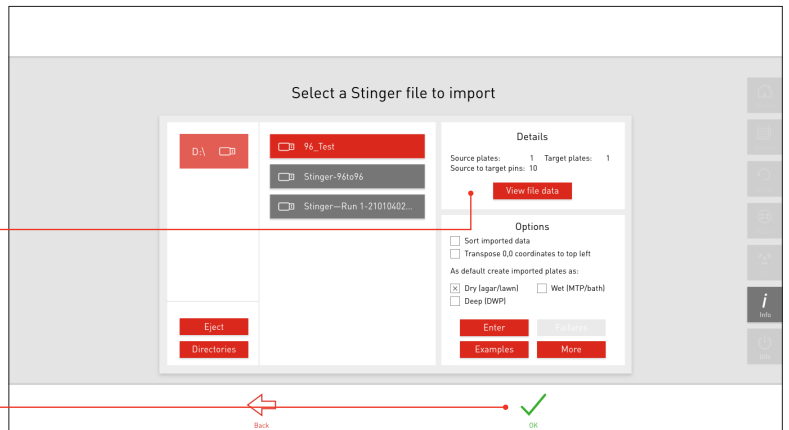
Memory stick

Files available



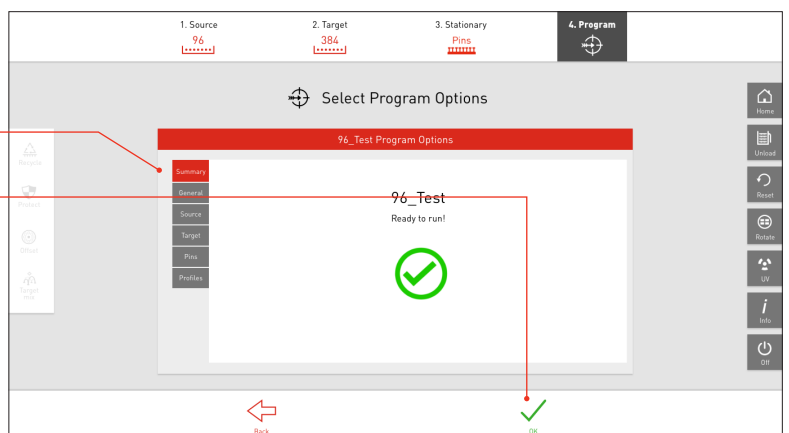
5.

- Select a file from the list.
- Details of the file are displayed on the right.
- Select *OK* to run chosen file.



6.

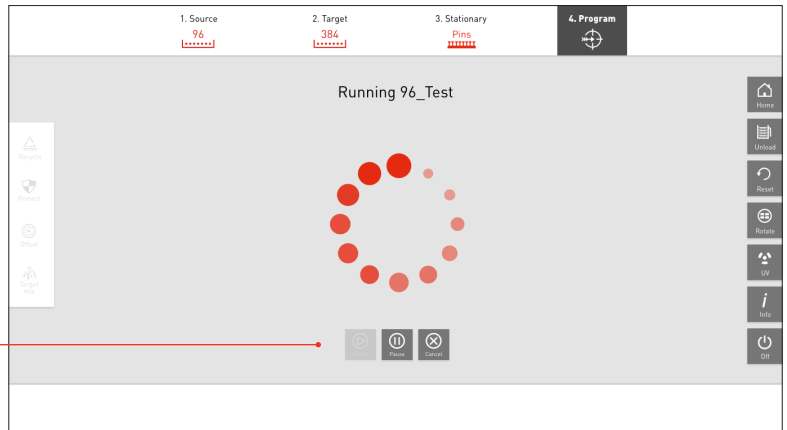
- On the summary screen, use the tabs on the left to change any of the project settings.
- Select *OK* to start program.
- Next, follow the on-screen instructions to load the plates and pins.



SELECTING & RUNNING FILES

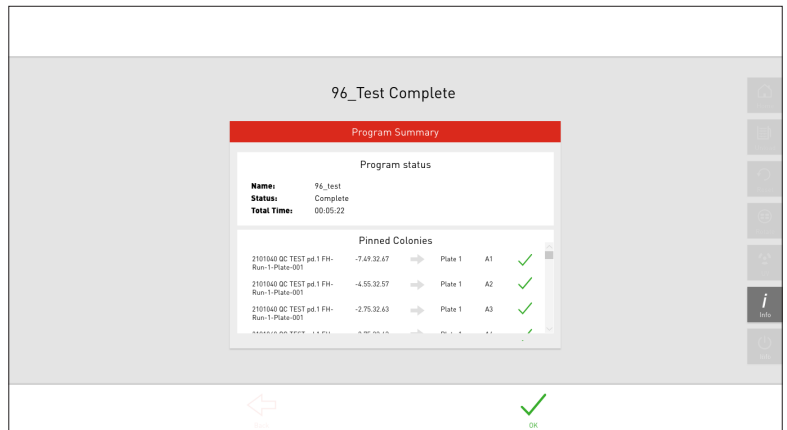
7.

- While the ROTOR+ is running you can pause/resume or abort the program at any time.



8.

- When the program has finished a summary is displayed.
- After clicking OK, follow the on-screen instructions to remove the plates.

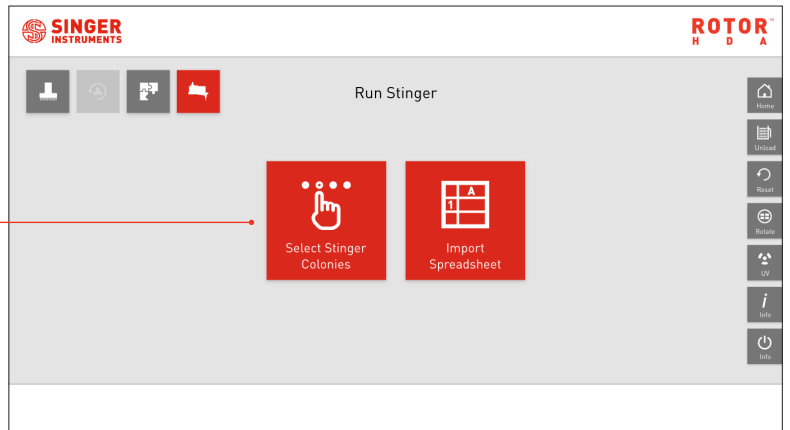


SELECTING MANUAL MODE

1.

- As well as using .CSV files to run The Stinger, you can also pin plates manually.

On the Stinger menu, choose *Select Stinger Colonies*.



2.

- This is the manual mode screen. Here you can manually control the Stinger in real time. There are 5 groups of commands:

Move to - Select where the Stinger should move.

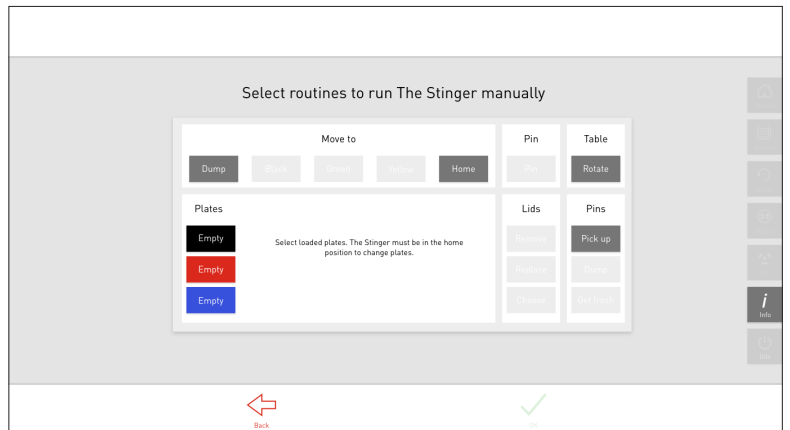
Pin - Pin in the Stinger's current location.

Table - Rotate the turntable to access other plates.

Lids - Remove or replace all or specific plate lids.

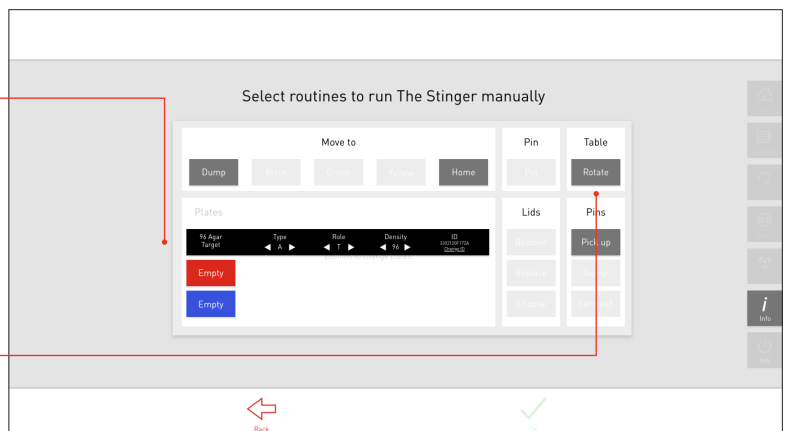
Pins - Pick up or dump pins.

- Click through these options to build your desired routine. The ROTOR+ will perform these options as you go.
- NOTE: Only possible options are displayed. E.g. You can't dump a pin if the Stinger isn't holding a pin.



3.

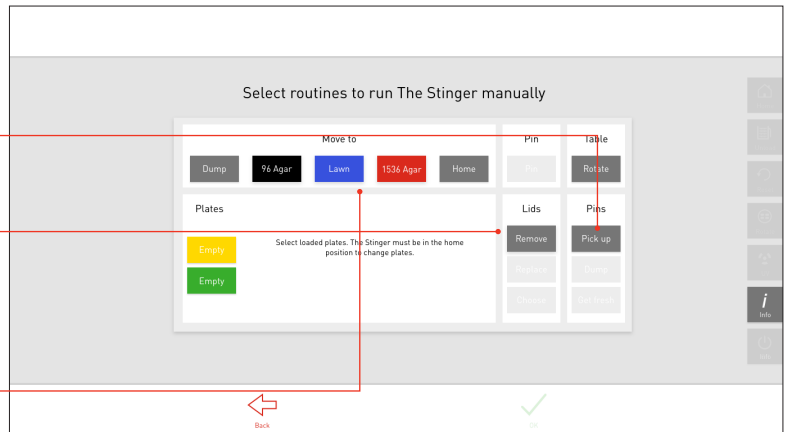
- Click a coloured plate bay and select your plate details.
- Remember:
Source is the plate that contains the colonies you want to pick.
Target is the plate you want to pin the colonies on.
- Load your plates into the ROTOR+'s colour-coded bays and then click *Rotate* to prepare them for pinning.



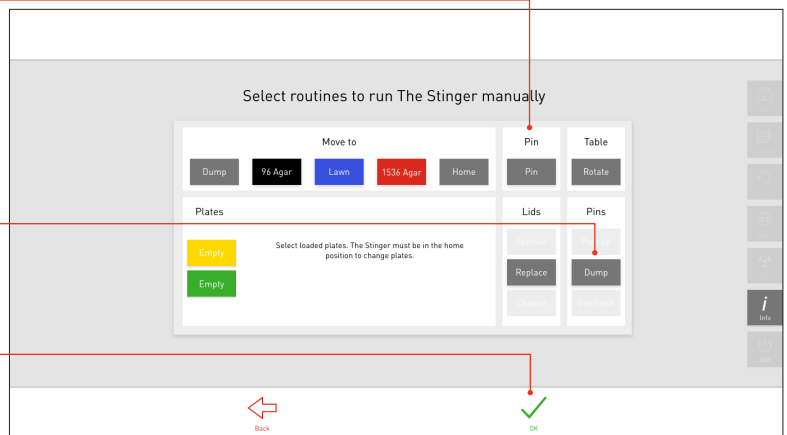
SELECTING MANUAL MODE

4.

- Once the plates have been assigned, select *Pick Up* to grab a sterile pin.
- Select *Remove* to remove the plate lids.
- Move The Stinger over your desired plate using the *Move* menu. Here you'll find the plates that are ready for pinning.



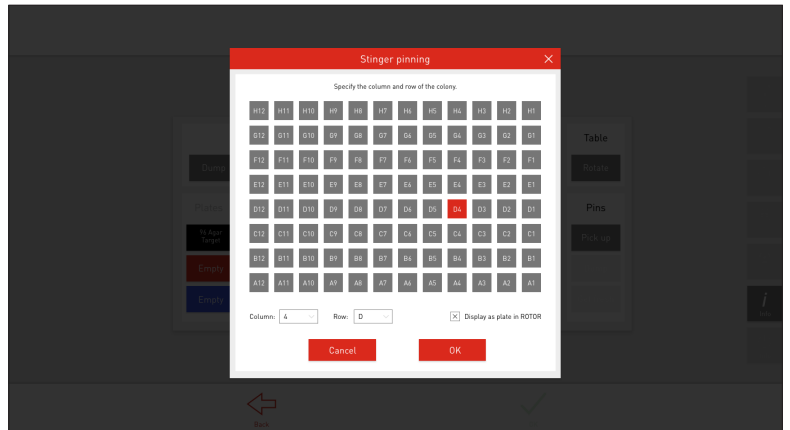
- Once your desired plate is chosen, select *Pin*. You will be asked on screen which colony location you want to pin. Use the *Move To* buttons to move to the next plate and then press *Pin* again to transfer the colonies.
- Discard spent pin using the *Dump Button*.
- Continue to use these tools until you've finished all of your pinnings. To finish, click *OK*.



MANUALLY SELECTING COLONY LOCATIONS

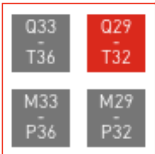
1. 96-Density

- While the Stinger is over a 96-density plate, after selecting *Pin*, a grid of the chosen plate will be displayed. This example shows a 96-density plate.
- Use the column/row drop down menu to select the colony location you want to pin. Or simply press the colony location on the plate diagram.
- In this example we have selected location D4.
- Click *OK* to pin.

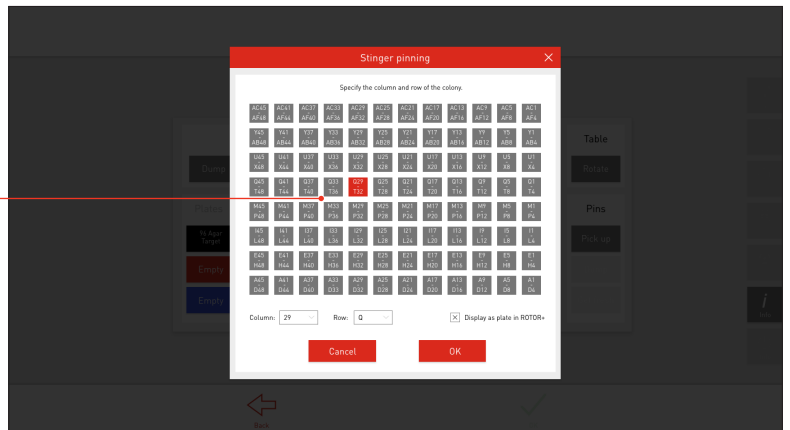


2. 1536-density

- To help with readability on screen, when selecting colonies on a 1536-density plate, locations are split into groups of 16.

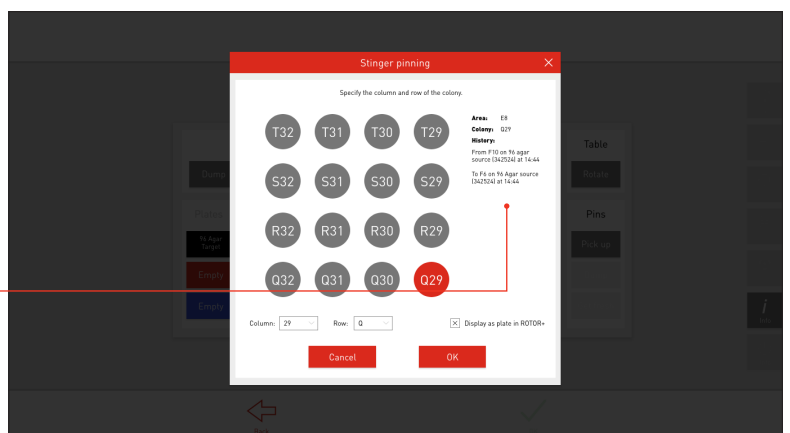


- Use the column/row drop down menu to select the exact colony location or click a range in the diagram to zoom in on those 16 locations.



3.

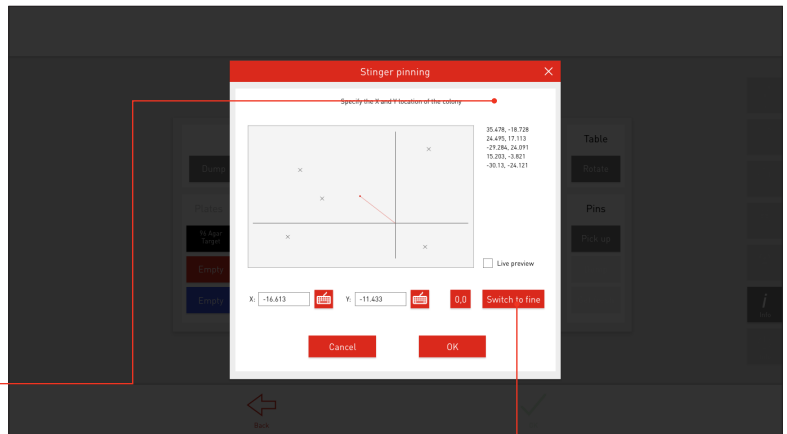
- After clicking a location range, click on a specific location to select a colony for picking.
- In this example we have selected Q29.
- The pinning history of the selected colony is displayed on the right.
- Select *OK* to pin.



MANUALLY SELECTING COLONY LOCATIONS

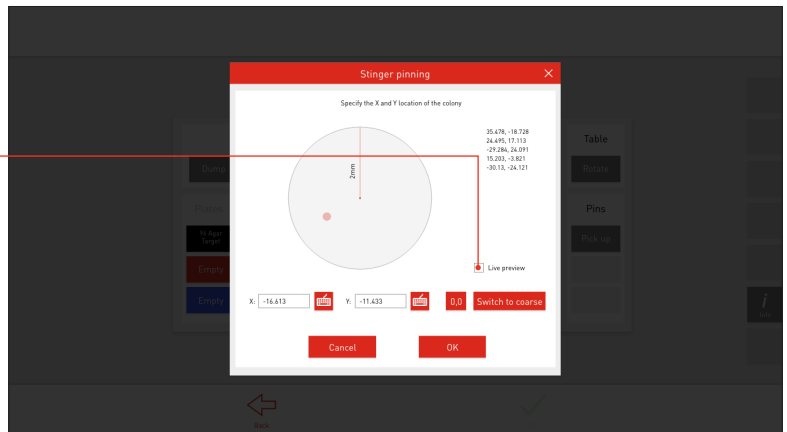
4. Lawn / Bath

- When selecting a lawn plate to pin, there is no grid view. Instead the colony locations are based on X/Y locations.
- Select the location of your colony on the plate using the touch screen, or type the X & Y locations.
- Previously pinned locations are listed on the right and also marked with crosses on the plate.
- The screen is currently in *Coarse Mode*. For more precise control, select *Switch To Fine*.



5.

- After selecting *Switch To Fine* the screen zooms in on your current location. Selecting *Live Preview* will move The Stinger as you move on screen.
- To zoom out select *Switch To Coarse*.
- If the colony is correctly located, select *OK* to pin.





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