

Corning® Matribot® Bioprinter Demonstration Equipment Instructions

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These instructions are to help guide you through unpacking the Corning Matribot bioprinter at the beginning of your demo and through repacking the Corning Matribot bioprinter at the end of your demo. There is also a short troubleshooting guide included for common questions that arise during demos. For more comprehensive troubleshooting, please refer to the Corning Matribot Bioprinter Instruction Manual (CLS-AN-641DOC). If you have any questions, please contact your Corning representative.



Unpacking the Corning® Matribot® Bioprinter

Follow these steps to unpack the Corning Matribot Bioprinter.



Do not attempt to unpack the Corning Matribot Bioprinter without reviewing the procedures below. Doing so risks personal injury and equipment damage.

Always use a minimum of two people to unpack and move the Corning Matribot Bioprinter.

The Corning Matribot Bioprinter should never be placed on wet, damp, moist, or humid surfaces.

Do not force or tear anything during the unpacking or setup process as this may irreversibly damage your Corning Matribot Bioprinter.

Position the system to ensure the user has fast access to the power cable or that the system is run through an emergency disconnect when an emergency stop may be required.

The device must be connected to a power outlet with protective grounding.

1. Clear a sturdy table benchtop and floor space of at least 2 x 3 feet (0.6 x 0.9 meters).
2. Place the box on the floor and open it.
3. Save boxes to return the unit after the demo is completed.
4. Remove the two loose item boxes.
5. Review the contents of the two boxes to ensure that you have received all of the items listed below. Depending on your region, product(s) and quantity may be different.



Electrical supply box contains:	Qty
24V Power supply	1
Power cord	2
USB cable A male to B male 1.83m	1
SD card, 32GB, SDHC	1
384-well microplate nozzle thermal insulator	1
Standard nozzle thermal insulator	1
Surface probe	1
Toolkit for preventive maintenance (3 hex keys)	1

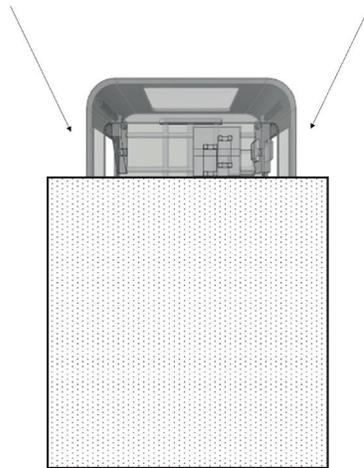
Consumables supply box contains:	Qty
3 mL syringes, sterile or	5
2.7 mL Corning Start Sacrificial Ink syringe	2
High precision conical bioprinting nozzles, 22G (non-sterile)	10
High precision conical bioprinting nozzles, 25G (non-sterile)	10
Glass Petri dish	1



6. Remove the top protective shipping foam.



7. Use the Corning Matribot bioprinter frame to grab the device. Be careful not to grab any movable parts or loose components. It is recommended to have 2 people lift from the sides of the frame at the indicated locations. Remove the device out of the box and place it on the table or benchtop.



8. Remove the protective plastic bag from the unit.



9. Remove the top inner foam insert as shown. **DO NOT** pull on the printhead cable.



10. Remove the middle inner foam insert as shown.



11. Lift the printbed support located at the back of the printer to release the lower foam insert. Pull the foam insert from the front of the printer to remove as shown below.



12. Take the surface probe out of the electrical supply box and place it inside the device against the gray silhouette of a surface probe. A magnet at this location will hold the probe in place for storage.



13. Refer to the Corning Matribot Bioprinter Instruction Manual (CLS-AN-641DOC) or the Corning Matribot Bioprinter Introduction videos for start up instructions and support.
NOTE: Please do not add/delete files to the SD card provided in the package.



14. Keep all of the original packaging materials such as foams, plastic envelopes, return shipping label, and boxes in a safe place. You will need them for repacking the instrument after completion of the demo.

Corning® Matribot® Bioprinter Initial Calibration

When you first set up the Matribot bioprinter, you will need to perform a machine calibration. Connect the bioprinter to a power source using the provided power cable. Use the supplied USB cable to connect the bioprinter to a computer that has Corning DNA Studio software. Launch Corning DNA Studio software, and select the bioprinter on the home screen to connect it. Then, follow the instructions below to perform a machine calibration.

Perform a machine calibration to reset the touchpad location:

1. In DNA Studio, click Tools from the top tool bar and go to Utilities.
2. From the pop-up Tools menu, select Machine Calibration from the panel on the left.
3. Click the large Start button to home the printer (Figure 1).

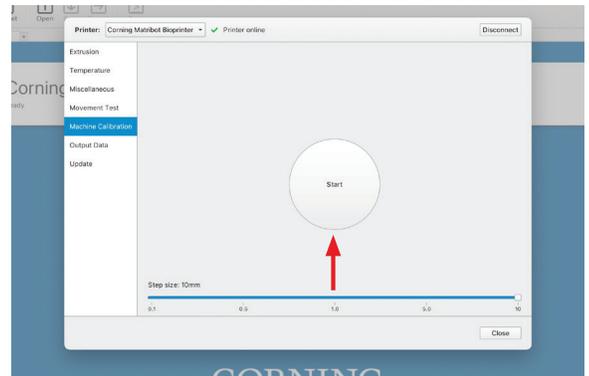


Figure 1. To initiate machine calibration, navigate to Machine Calibration in the tools pop-up window and select Start to home the bioprinter. **NOTE:** The top of the window should show that the printer is online.

4. After homing is complete, place the surface probe into the printhead (Figure 2).



Figure 2. The surface probe magnetic connection point is located near the back of the printhead.

5. Use the arrow buttons in the software window (Figure 3) to move the tip of the probe to the center of the touchpad on the printbed (Figure 4). Adjust step size (eg., 10 mm, 1 mm, etc.) as needed. The probe tip does not have to touch the pad, but it may be useful to raise the printbed using the Up button to locate the center of the touchpad. Use caution when raising the printbed setting that your step size is no larger than 1 mm to avoid a collision.
6. Once the surface probe is centered, click Calibrate.
7. The machine calibration is now complete. You can rerun the routine if necessary to overwrite the position.
8. There may be some instances where syringe dispense is not centered in the well – such as when using a plate not available in the drop-down menu – and it can be beneficial to adjust the dispense along the y-axis by calibrating the surface probe slightly off-center. This adjustment can only impact the y-axis of dispense, and changes to the probe position will inversely affect the print. This means that moving the probe towards the back of the touch pad will bring the syringe closer to the front of the well and moving the probe towards the front of the touchpad will bring the syringe closer to the back of the well.

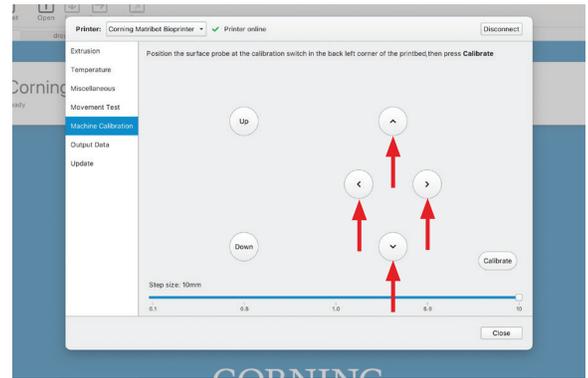


Figure 3. Use the arrows on the Machine calibration window in Corning DNA Studio to adjust the position of the printhead until the surface probe is centered over the touchpad.

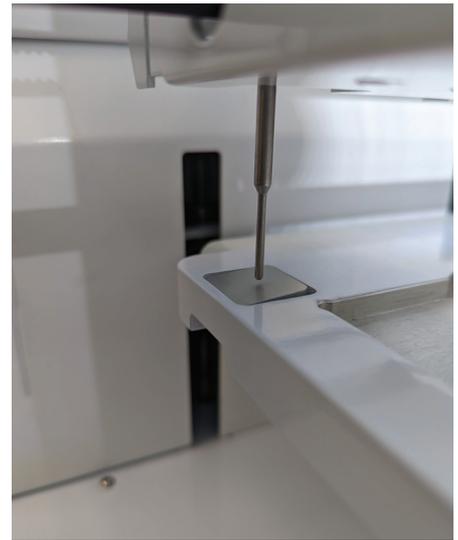


Figure 4. The desired position of the surface probe centered over the touchpad.

Corning® Matribot® Demo Troubleshooting Guide

If the bioprinter does not appear to be communicating with Corning DNA Studio, this can result in Automatic calibration not functioning. The printer does not move when Automatic calibration is started.

1. Check whether the bioprinter is recognized by Corning DNA Studio by navigating to the Dashboard tab and confirming whether a green bioprinter icon is being displayed along with the word Ready (Figure 5). If so, the bioprinter is connected and you may proceed to Step 3. If not, proceed to Step 2.
2. Confirm that the bioprinter is turned on and that it is connected to the computer running Corning DNA Studio via the USB cable. On the DNA Studio Dashboard tab, click Connect (Figure 6).
3. Verify that the bioprinter is not in SD card mode, which will prevent it from communicating with the software.
 - On the LCD interface of the bioprinter, select the Utilities menu and scroll toward the bottom.
 - You should see the option Enable SD print, which means that the bioprinter is not in SD card mode. If instead you see Disable SD print that means the bioprinter is in SD card mode and will not communicate with DNA Studio. Select Disable SD print so that it updates to showing Enable SD print.



Figure 5. If the bioprinter is connected to the computer and recognized by the DNA Studio software, a green bioprinter icon will appear on the Dashboard tab along with the word Ready.



Figure 6. If the bioprinter is not recognized by DNA Studio as being connected, the bioprinter icon on the Dashboard tab will appear as gray. Select the Connect button to connect the bioprinter.

Preparing to Return the Corning Matribot Bioprinter

Returning the Corning Matribot Bioprinter to Default Settings

Please return the Corning Matribot bioprinter to default settings by navigating on the LCD interface. First, navigate to the Prepare Bioprint menu and select Home Axes to return the printhead to the home position. Then, navigate to the Utilities menu and confirm that SD print is not enabled.

Cleaning or Sanitizing the Corning Matribot Bioprinter

Before cleaning, turn off and unplug the Corning Matribot Bioprinter. The Corning Matribot Bioprinter has a chemical-resistant coating. Clean or sanitize it with >70% (v/v) ethanol. Spray the surface, and wipe it with a soft cloth while wearing gloves to avoid direct contact with the unit.



After using ethanol, wait at least 60 seconds before starting the Corning Matribot Bioprinter. Ethanol is flammable, and this ensures that all remaining ethanol vapor is ventilated. Failure to wait can cause equipment damage and personal injury.

Task	Action
Clean the gantry system	Remove any dirt that is on the rods or the lead screw with a clean, lint-free rag, or by using your finger (with gloves on).
Clean exterior (sides, back, front, top)	Clean the surface with a cloth and ethanol >70% (v/v).
Clean LCD screen	Clean carefully with a smooth cloth and without using heavy solvents.
Clean printbed	Clean the printbed body with a smooth cloth and ethanol >70% (v/v). Pay special attention to the auto-calibration pad. If needed, the pad can be detached for a thorough cleaning.
Clean printhead	Clean the printhead body with a smooth cloth to remove any dust and debris. Check the fan of the printhead for residues or accumulated dirt.

Repacking the Corning Matribot Bioprinter

1. Unplug the power supply and outlet cord as well as the USB cable from the Corning Matribot bioprinter. **Remove any attached thermal insulators from the cooling block, detach the surface probe from its storage magnet, and eject the SD card if in use.**
2. Return all items to the electrical supply box (smaller white box), confirming that the following items have been placed inside the original packaging:

	Qty
24V Power supply	1
Power cord	2
USB cable A male to B male 1.83m	2
SD card, 32GB, SDHC	1
384-well microplate nozzle thermal insulator	1
Standard nozzle thermal insulator	1
Surface probe	1
Toolkit for preventive maintenance (3 hex keys)	1

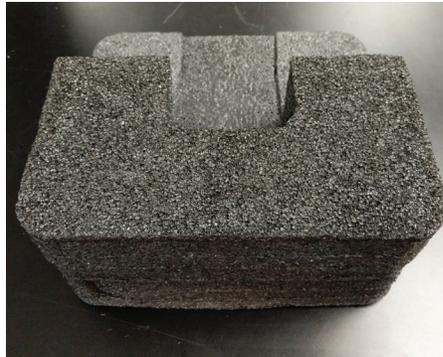


3. Return the consumable box (larger white box insert). **NOTE:** Unless the return shipping label was mailed separately to you, remove the return shipping label from the consumables box and set aside for returning the unit once the demo is complete.

4. Lift the printbed support located at the back of the printer to raise the printbed slightly higher than required to fit the lower inner foam insert. Push the lower inner foam insert from the front of the printer to slide it under the printbed. Lower the printbed onto the foam by gently pushing on the printbed support located at the back of the printbed.



5. Confirm that the thermal insulator has been removed from the cooling block to prevent damaging the thermal insulator. Gently move the printhead to the center of the unit and slide the middle inner foam insert from the front as shown. Align the lower and middle foam inserts with each other by adjusting the position of the printhead.



6. Make sure the syringe plunger is straight so it is aligned with the slot in the top foam and hold the printhead cable out of the way, ensuring it is aligned with the cable cutout in the back of the foam insert. Insert the top inner foam insert from the top of the unit as shown.

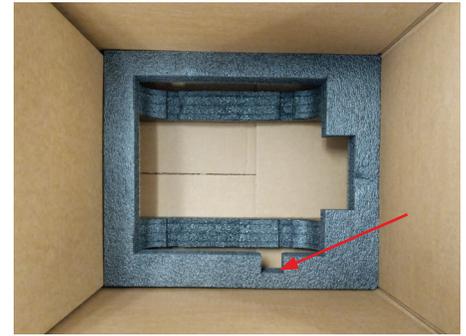


7. Place the Corning® Matribot® bioprinter inside the plastic bag, ensuring that the bioprinter is completely covered.



8. Remove the top shipping foam from the shipping box, and confirm that the bottom shipping foam is positioned as below.

NOTE: The bottom shipping foam has a cutout for the LCD knob on the Corning® Matribot® bioprinter (see red arrow).



9. Use the Corning Matribot bioprinter frame to grab the device. Be careful not to grab any movable parts or loose components. It is recommended to have 2 people lift from the sides of the frame at the indicated location. Carefully place the bagged Corning Matribot bioprinter into the bottom shipping foam, ensuring the LCD knob goes into the foam cutout.



10. Place the top shipping foam onto the top of the Corning Matribot bioprinter, encapsulating the unit in the box.



11. Place the empty consumables box on top of the shipping foam above the Corning Matribot bioprinter and place the electrical supply box in the foam insert next to the Corning Matribot bioprinter.



12. Attach the return shipping label (provided in the consumables box), and remove or mark out any previous shipping labels. Secure the shipping box by folding the top flaps and taping it shut.

Uninstalling Corning® DNA Studio Software

After your demo of the Corning Matribot® bioprinter is complete, please uninstall/remove Corning DNA Studio software from your computer following the instructions below.

- If you are using a Windows operating system, locate Corning DNA Studio in the Apps and Features settings or in the Control Panel Programs and Features. Select uninstall.
- If you are using a Mac operating system, remove Corning DNA Studio by dragging it from the Applications folder to the Trash can.

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CORNING

Corning Incorporated
Life Sciences

www.corning.com/lifesciences

NORTH AMERICA

t 800.492.1110
t 978.442.2200

ASIA/PACIFIC

Australia/New Zealand

t 61 427286832

Chinese Mainland

t 86 21 3338 4338

India

t 91 124 4604000

Japan

t 81 3-3586 1996

Korea

t 82 2-796-9500

Singapore

t 65 6572-9740

Taiwan

t 886 2-2716-0338

EUROPE

CSEurope@corning.com

France

t 0800 916 882

Germany

t 0800 101 1153

The Netherlands

t 020 655 79 28

United Kingdom

t 0800 376 8660

All Other European Countries

t +31 (0) 206 59 60 51

LATIN AMERICA

grupoLA@corning.com

Brazil

t 55 (11) 3089-7400

Mexico

t (52-81) 8158-8400