

# 3D SCANNER

For use with NextGen scanner

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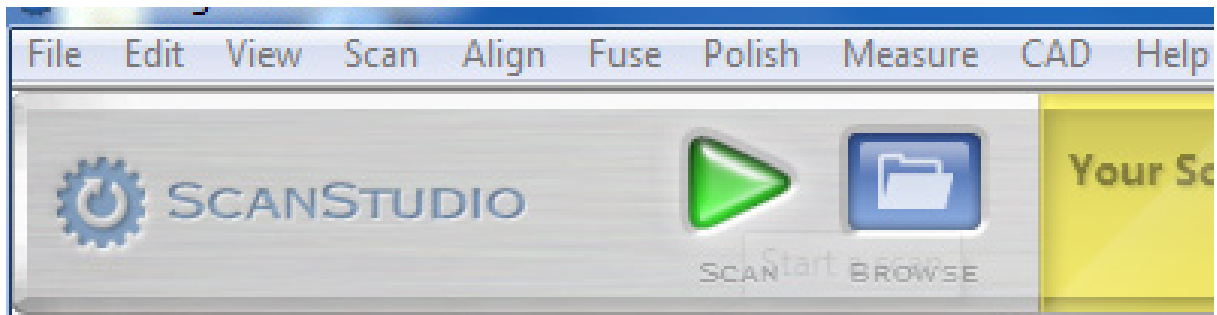
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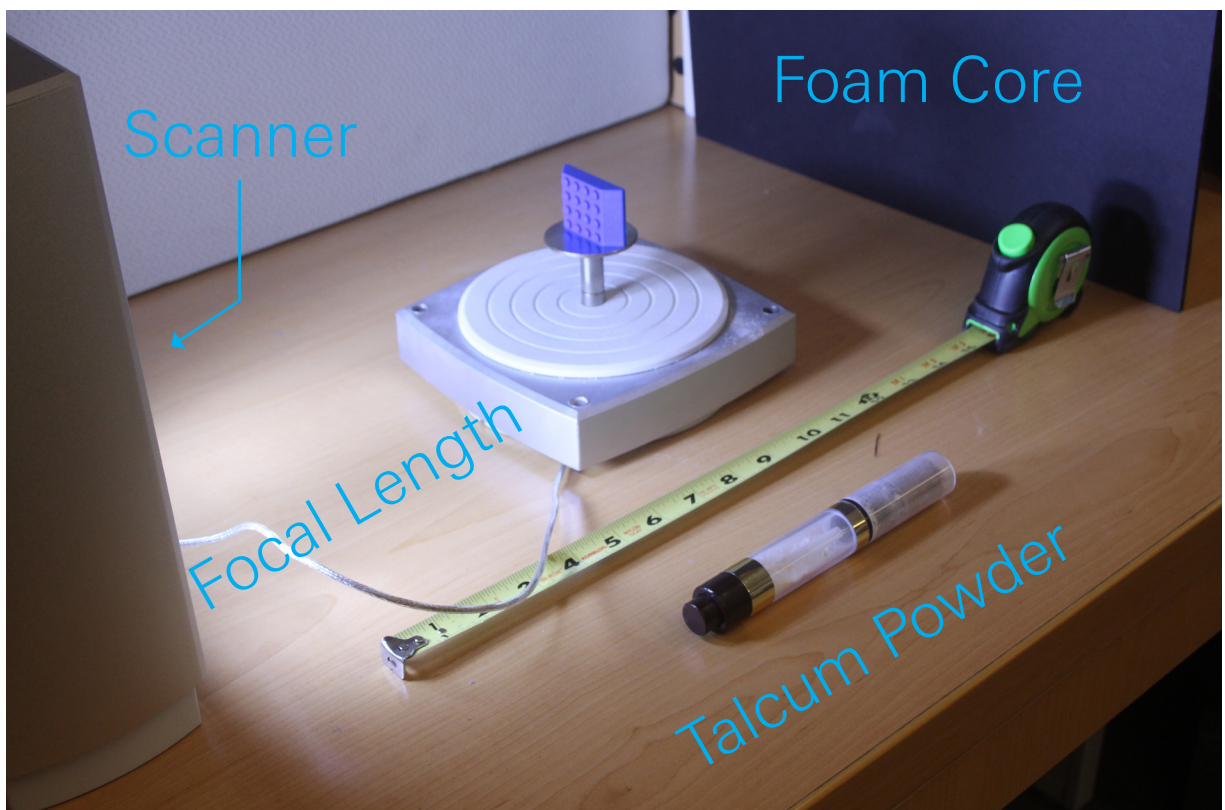
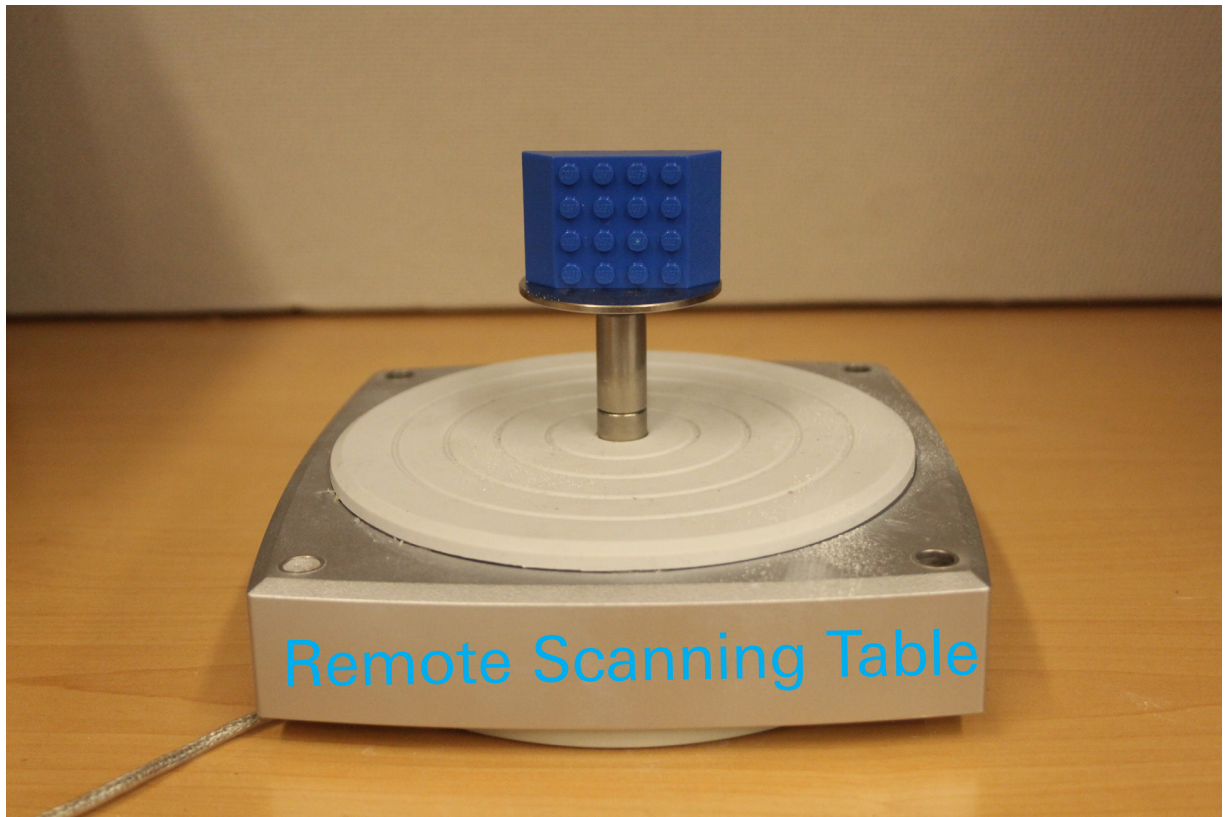
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# Setting Up the Scanner

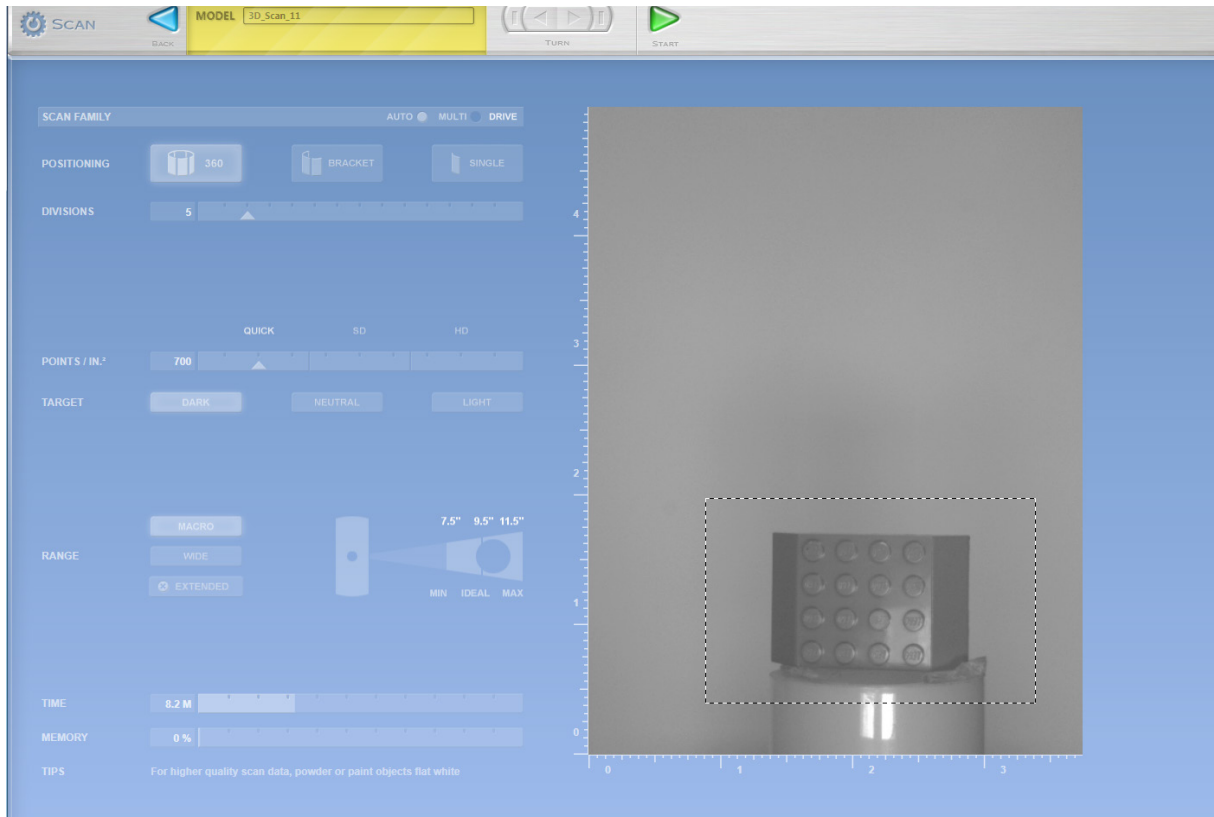
1. Before you begin, make sure that the scanner is plugged into the computer with a USB cable and the power supply is plugged into the wall outlet. Both are located underneath the desk.
2. The remote scanning table should also be plugged into the scanner. Refer to the Troubleshooting section for more information on how to set up different scanning tables.
3. Log onto the computer and launch the “Scan Studio” application (the shortcut looks like a gear) and then click on the “Start Scan” button to begin setting up the remote scanner table. The scanner will start to “buzz” and turn on.



4. Setup object on remote scanner table at appropriate focal distance (appropriate ranges described in software settings) - use a ruler.
5. Make sure to place a foam core sheet behind the model to ensure adequate contrast. You may need to dust your object with talcum powder if it is too reflective. Refer to the Troubleshooting page for more information on how to best set up your object to scan.



# Configure Settings



1. **Scan Family:** Set this to auto.
2. **Positioning:** This is your range of rotation for your scan. Usually you want to set this to 360, to get a scan of the object in its entirety. You can also scan portions if you are looking to only scan particular surfaces.
3. **Divisions:** This is the number of consecutive scans taken and overlaid to generate the 3D model. Use at least 8 scans to get a high enough quality scan to work with.
4. **Points/in<sup>2</sup>:** This determines the resolution of your scan. If you are planning on using the scan to modify in

a CAD program, use resolutions in the “quick” range. Higher resolutions are available , however they can take a long time and are overly detailed for a CAD program. You may want to use a higher resolution if you are looking to create an exact replica of something.

**5. Target:** Select whether your object is **Dark, Neutral, or Light**. Make sure to place a foamcore sheet behind the model that brings out the contrasts (e.g. a white object on a black foam core sheet)

**6. Range:** The scanner plate supports Macro and Wide settings. After selecting the appropriate settings, make sure to place your object at the appropriate distance from the scanner. You will see the suggested distance to the right.

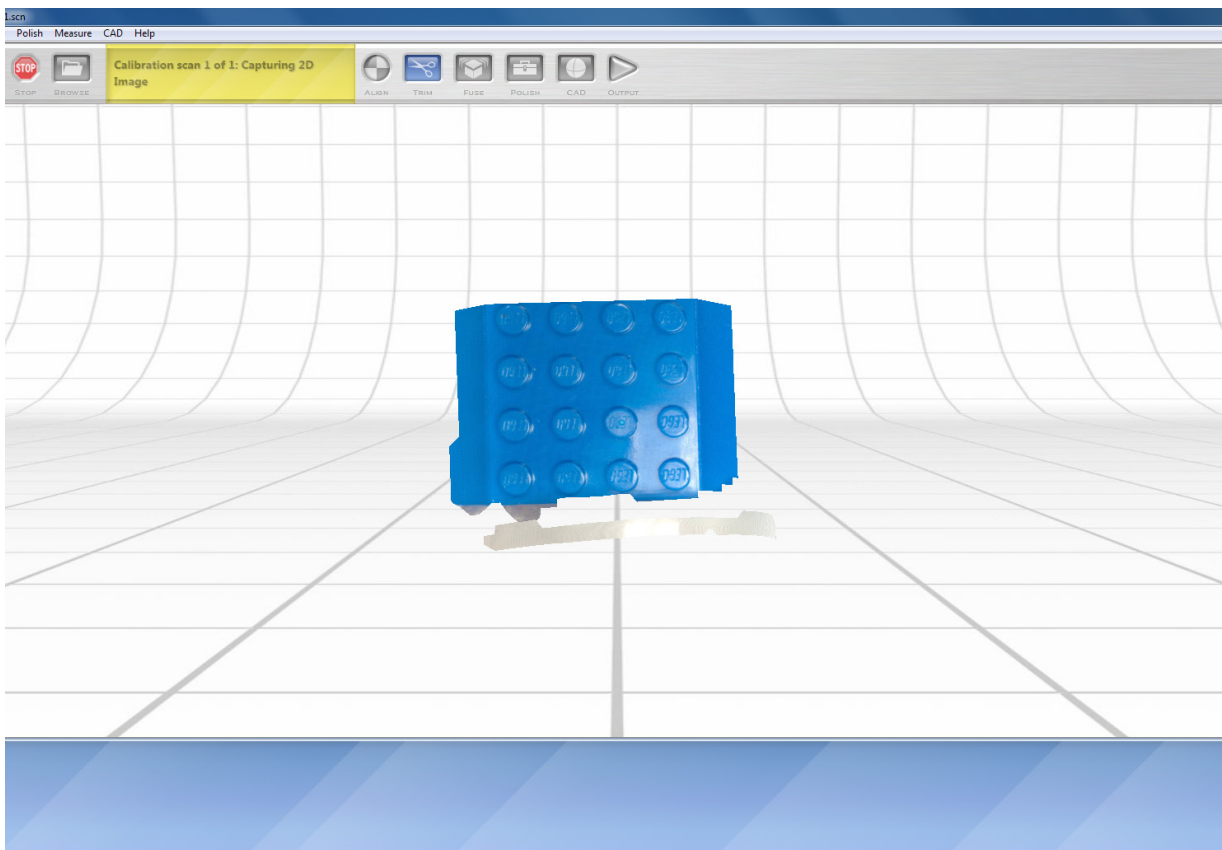
**7. Time and Memory:** These are calculated based on how you have configured your settings. You may need to adjust the “**Points/in<sup>2</sup>**” and “**Divisions**” settings to reduce the amount of time for the scan, or how large the file is.

**8.** Once you have configured your settings, ensure that your object fits within the view of the scanner preview. Use the arrow keys (**Marked Turn**) at the top of the settings to rotate the model, ensuring that it stays in view. You can also draw a bounding box by clicking and dragging into the preview window to crop the scan and make it go quicker.

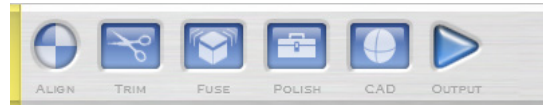


# Scanning

1. Press **"Start"** to begin your scan. You will see lights flash onto your object and laser lines sweeping across it. (make sure not to look directly at the laser.) Once a portion of the scan is done you should see a preview of your object on the screen.
2. If you need the top/bottom of your object- these areas usually do not scan well- wait until your first scan is finished. Then press the **"Scan"** button again to set up another scan, this time with your object positioned so that the other view (i.e. top) is visible. These scans will come up as another family or letter on the bottom of your screen.



# Editing Tools



Alignment:

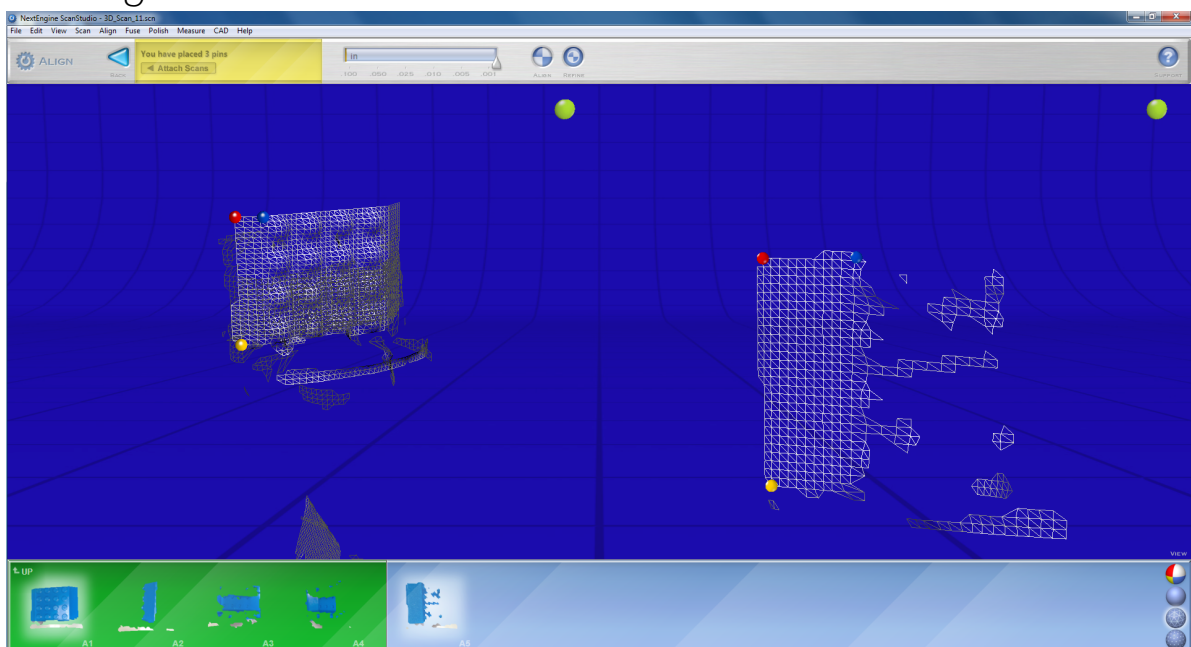
1. Double click on the family of one of the scan sets to view individual scans.

2. Click on the Alignment tool. You should see a split-screen.

The green thumbnails are scans that have already been assembled and the blue thumbnails are not part of the assembly yet. You can drag scans from one side to the other.

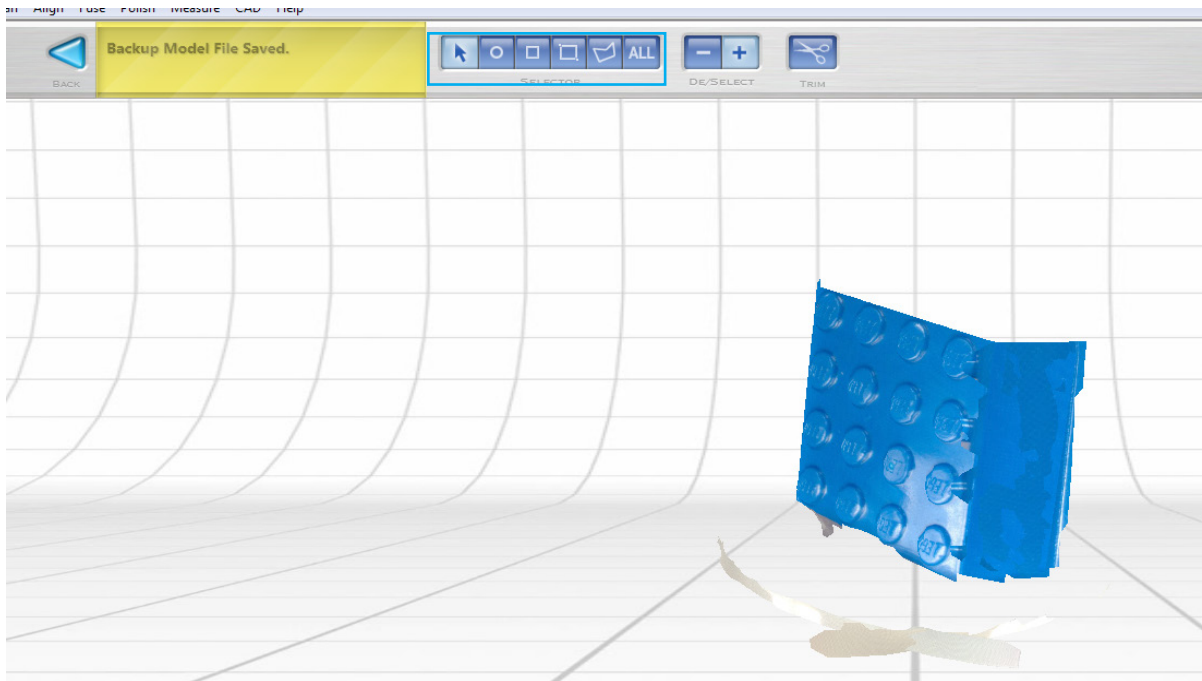
3. You will see three pins appear. You want to place the pins on a common location between the two scans.

4. Once you have placed your pins, click “Align” to finish the alignment.





**Trimming:** You can clean up scans with the “Trim” tool. Select the areas that you would like to delete. The “Selector” tool bar gives you different ways to select the parts you do not want. The selected parts will come up as red, and then you press the “Trim” button again to delete.



**Fuse:** The Fuse tool will close up any holes that may have resulted from the scan. Using the default settings will computationally fix these gaps for you and works pretty well.

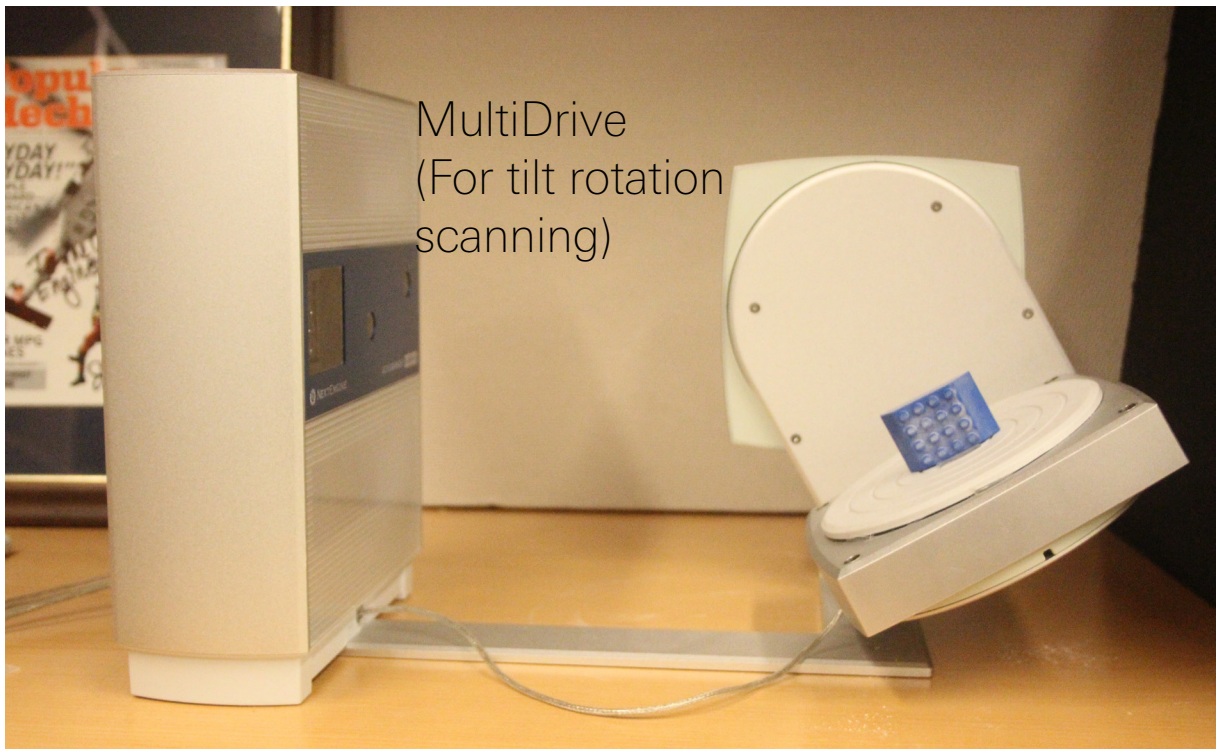
**Output:** This will let you save your scan as a file to use on other CAD models or to 3D print. You can save your scan as an .STL or .OBJ file.

# Troubleshooting

*I cannot seem to get my object to stay on the plate:* To secure your object in place for an accurate scan, you can use double sided tape or clay to “stick” your object onto the plate. There are also other scanning tables that can hold your object vertically.

**Changing the Scanning Table:** You can change out the scanning table through the “drive” port located at the bottom of the scanner.





*I cannot see a preview of my object after I have pressed "Scan"*- Go back to your settings to make sure that your object is visible in the greyscale preview. Make sure that the background is completely clear- this is why the foamcore is important.

An object that is very reflective or has a shiny surface might not scan well. You can dust the object with talcum powder to get rid of the shine.

You also want to make sure that the lighting and environment around your object is controlled. You may need to create more of an enclosure around your object to make sure people walking by or a change in lighting does not throw off your calibrated settings.



***Different Views:*** You can look at your scan through different views if you need to see the points or mesh that the software has created. In the bottom right corner you will see four spheres. They refer to the views “Color”, “Shaded”, “Mesh” and “Points”.

**Color:** shows your object rendered as is

**Shaded:** shows your object with a flat grey color

**Mesh:** shows the triangular mesh formed by the points in your scan

**Points:** shows the individual points of the 3D map of your object.