

# OMEGA<sup>®</sup> Scanner 3D



User's Guide

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Names and examples used in this document are fictitious unless otherwise noted.

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## **INTRODUCTION**

Highly accurate, portable, and intuitive, the OMEGA Scanner 3D provides a precise, fast method for non-contact prosthetic and orthotic shape capture.

The OMEGA Scanner 3D projects a white light fixed pattern onto the surface to scan. The distortion of the pattern allows the system to determine the position and shape of the surface. When the surface being scanned does not cause sufficient distortion of the light pattern, reflective targets can be applied to the surface to provide additional detail.

## **WASTE ELECTRICAL AND ELECTRONIC EQUIPMENT**

This equipment is not intended for sale to the general public and is only provided to trained clinical personnel.

Please do not use conventional disposal methods; return after the end of the product's life to the following address:

WillowWood  
15441 Scioto Darby Rd.  
Mt. Sterling, OH 43143  
USA  
740.869.3377

## RECOMMENDED SYSTEM REQUIREMENTS

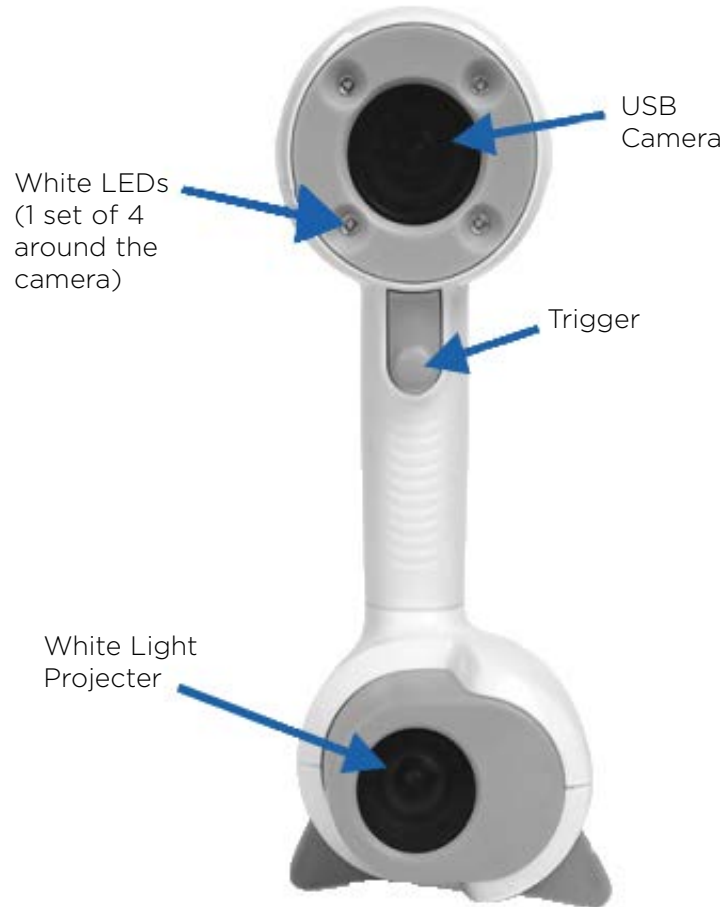
|                  |                             |
|------------------|-----------------------------|
| Operating System | Windows 10 Pro 64 Bit       |
| CPU              | Intel® Core™ i7 (Quad Core) |
| Graphics         | NVIDIA Quadro M1200M        |
| RAM              | 32 GB                       |
| Storage          | 500 GB SSD                  |
| Connector        | USB 3.0                     |
| Display          | 1920 x 1080                 |

## HARDWARE

The OMEGA Scanner 3D and all necessary hardware fit into a protective case equipped with a custom foam insert to ensure that every part has its place. The calibration plate is located under the foam insert.



## SCANNER COMPONENTS



Only WillowWood staff or authorized technicians are authorized to open the scanner or any of its components. Unauthorized opening of the scanner or its components could cause inadvertent damage and will void the warranty. Please contact WillowWood in the event of any trouble or malfunction.

## SETUP

**Important: DO NOT connect the scanner until Step 3.**

1. Plug the power supply in to a wall outlet or power bar. Connect the other end to the USB cable.



2. Plug the USB cable into one of the USB 2.0 ports on the computer.

If you purchased the computer from WillowWood, the correct port will be labeled.



3. Plug the USB cable into the scanner.



After completing a scanning project, unplug the scanner from the USB cable before disconnecting anything else.



## CALIBRATION

Changes in the environment such as temperature or pressure variations may modify the Scanner's mechanical configuration. To ensure the quality and accuracy of the data acquired by this high precision equipment, calibration is recommended at the beginning of each scanning session.

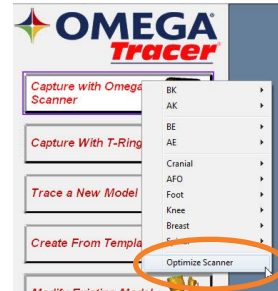
Calibration is accomplished using the calibration plate that was included with the Scanner. The calibration plate should be at a temperature close to factory calibration conditions (20-22° C, or 68 - 72° F).

The reflective targets on the calibration plate do not have the same coating as the targets used for scanning. As a result, the calibration targets have a greater sensitivity to exterior contaminants. **If you touch the targets on the calibration plate with your fingers or with any other oily substance, the calibration plate will have to be replaced.**

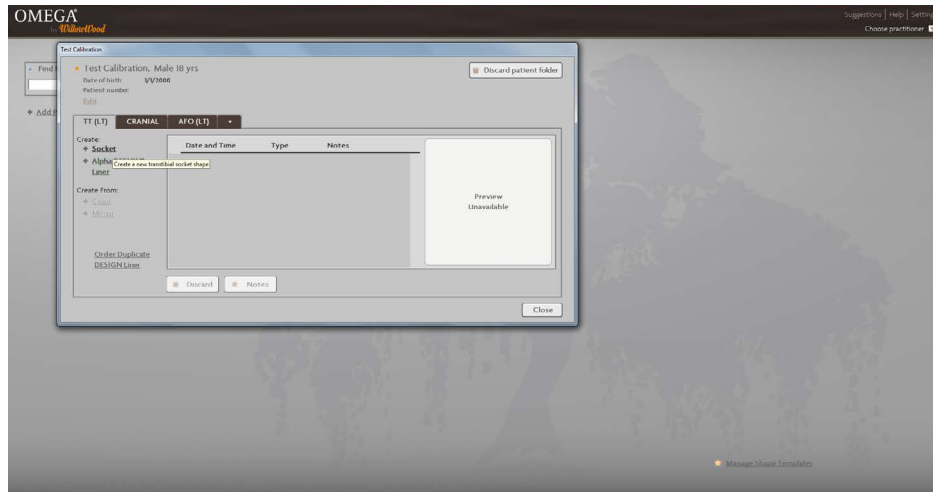
The first step depends on the software you are using:

- For Tracer Version 12.2, select **Capture with Omega Scanner** from the Start screen, then click **Optimize Scanner**.

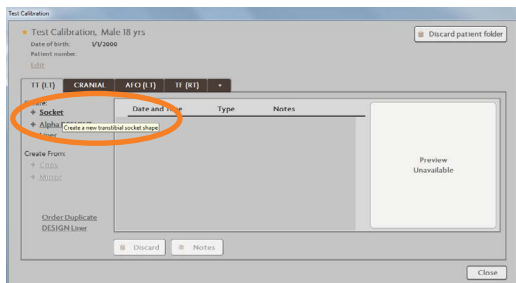
Proceed to page [14](#).



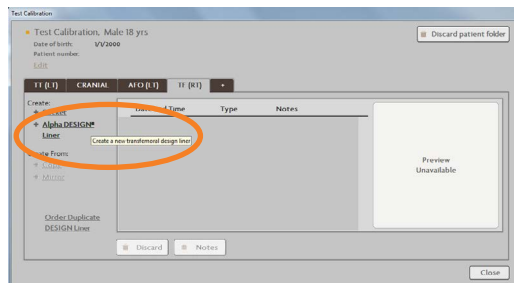
- For OMEGA, you will need to either create a new test patient folder or open an existing patient folder. Do not open an existing patient shape file.



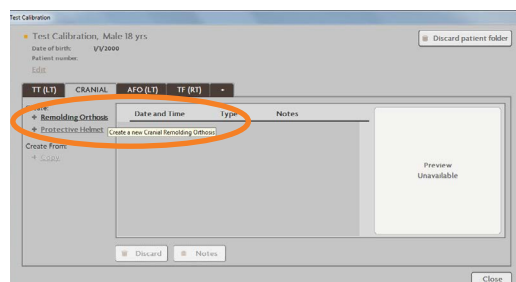
- Once in the patient folder, click on **+ Socket**, **+ Design Liner**, **+ Helmet** or **+ Orthosis** to open the Capture Stack in OMEGA.



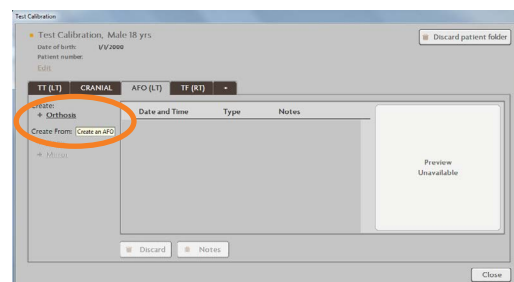
**+ Socket**



**+ Design Liner**



**+ Helmet**



**+ Orthosis**

- The next step depends on the version of VXelements (the software platform that powers OMEGA's scanning function) that is currently installed.


**VXelements 2**  
is primarily  
used with the  
**OMEGA Scanner.**



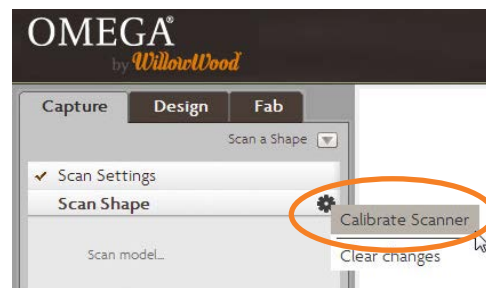
**VXelements 6**  
is primarily  
used with the  
**OMEGA Scanner 3D.**



If you are not sure which option is installed on your OMEGA scanning computer, please contact OMEGA Support at 800-872-2373.

- If using **VXelements 2**, click  in the **Scan Shape** step in the Capture Stack, then select **Calibrate Scanner**.

Proceed to page [14](#).

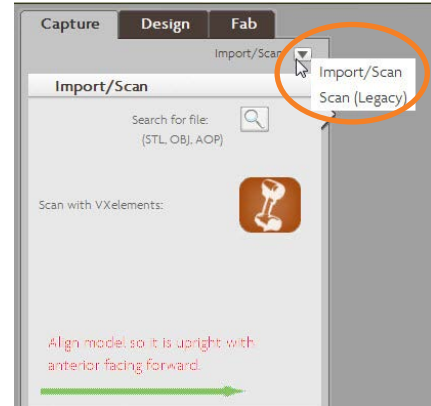


- If using **VXelements 6**, proceed to page [11](#).

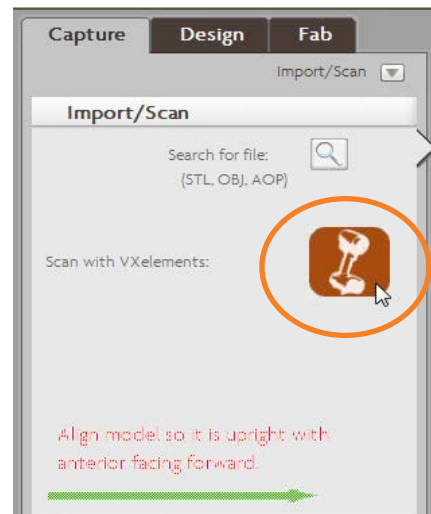
## CALIBRATING WITH VXELEMENTS 6

For scanning computers running OMEGA with VXelements 6, the calibration procedure is as follows.

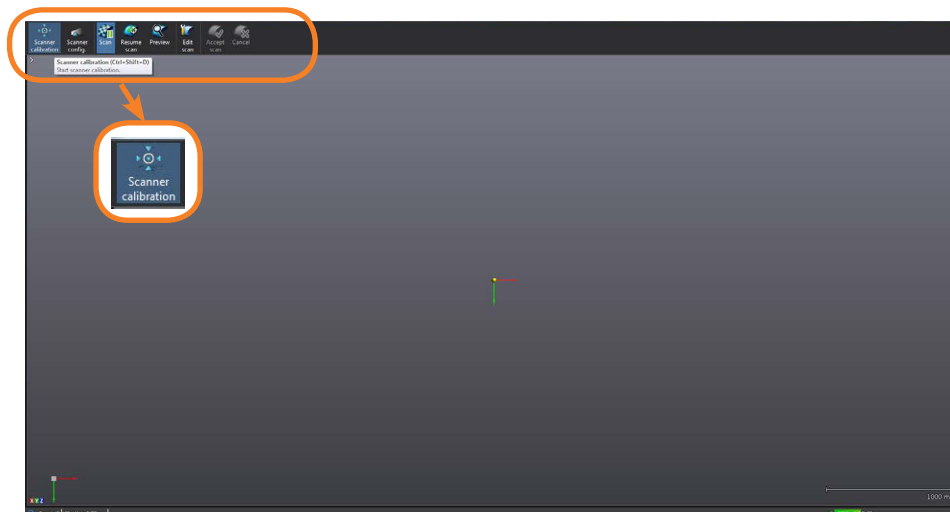
- Select **Import/Scan**.



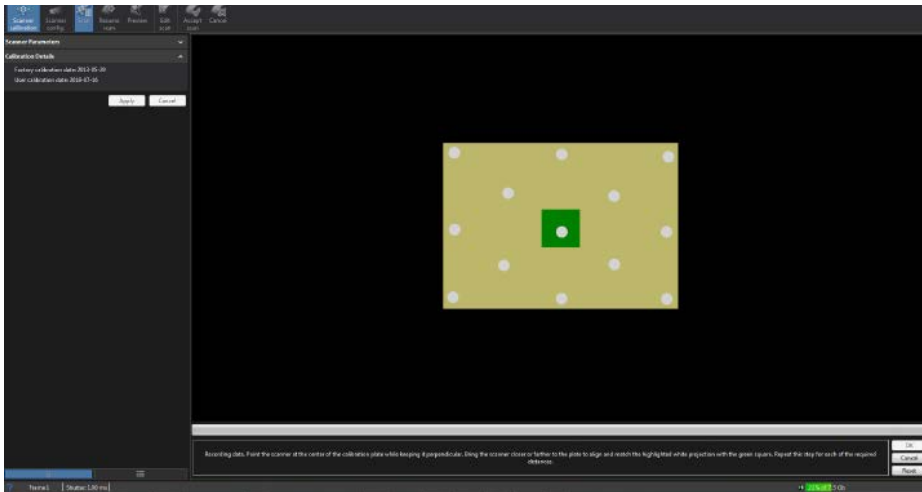
- Click the **Scan with VXelements** icon in the Import/Scan step.



- A window for the VXelements software will open. Click the **Scanner calibration** button.



- Lay the calibration plate on a stable and level surface. Make sure that there are no reflective objects nearby.



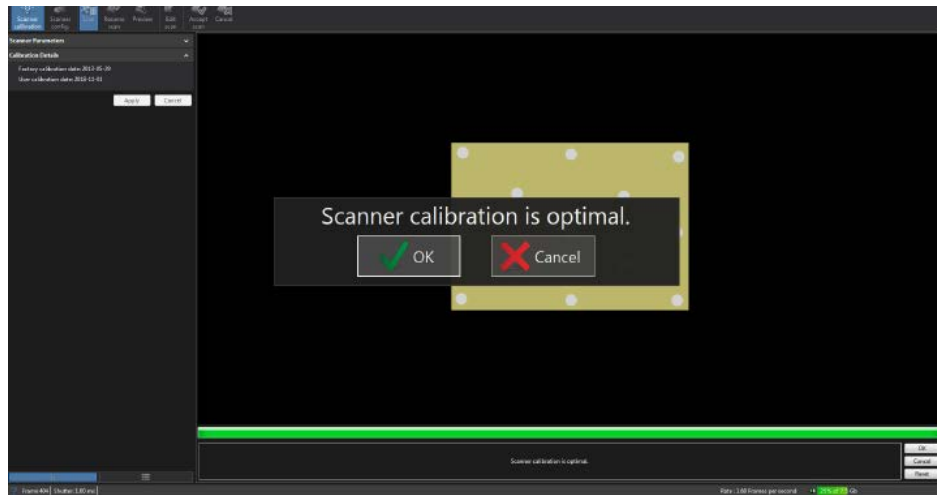
- While holding the Scanner perpendicular to the calibration plate, point the Scanner at the center of the plate. Bring the Scanner closer or farther to the plate to position the white projection within the green square. Repeat for each of the required distances.

Tips:

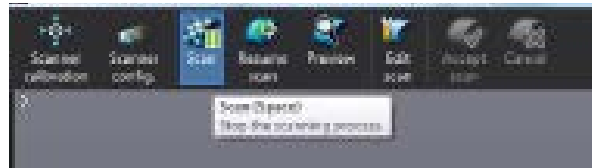
- Make sure to hold the Scanner perpendicular to the plate.
- Move the Scanner at a steady and slow speed.
- Once the first position is matched, slowly move the Scanner straight up.



- Once all the measurements have been successfully taken, the **Scanner calibration is optimal** message appears. Click **OK**.



- Click the pause button.

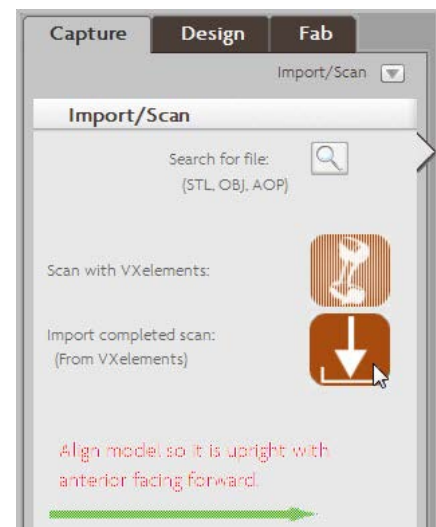


- Click the **Accept scan** button..



- At this point you will return to the Capture Stack. Do not click the **Import completed scan** button.

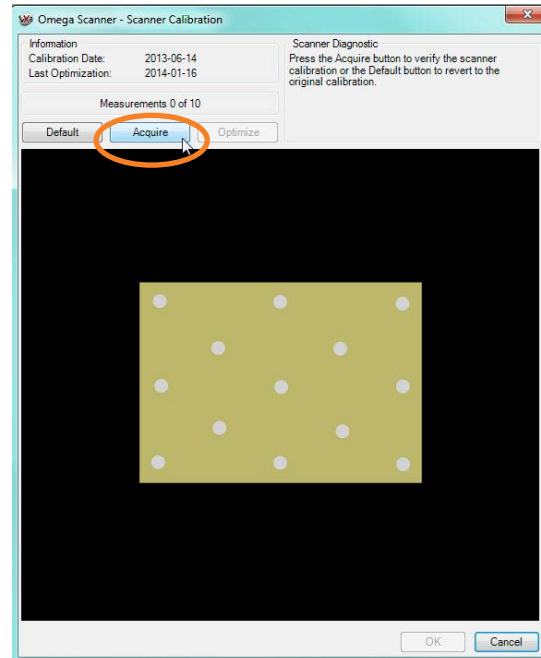
You may close the patient file that is currently open. No additional saving is required.



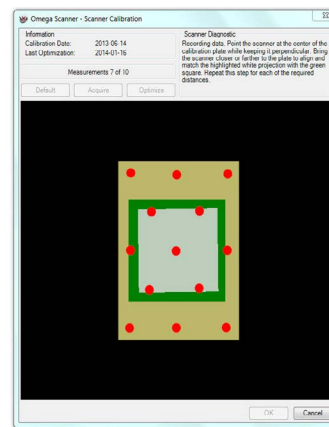
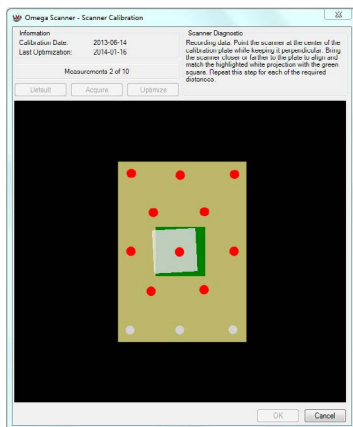
## CALIBRATING WITH TRACER 12.2 AND OMEGA VXELEMENTS 2

For scanning computers running Tracer Version 12.2 or OMEGA with VXElements 2, the calibration procedure is as follows.

- When the Scanner Calibration screen appears, click **Acquire**.
- Lay the calibration plate on a stable and level surface. Make sure that there are no reflective objects nearby.

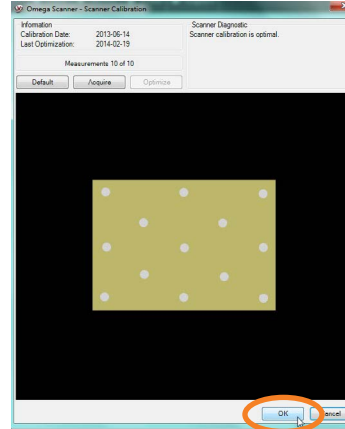
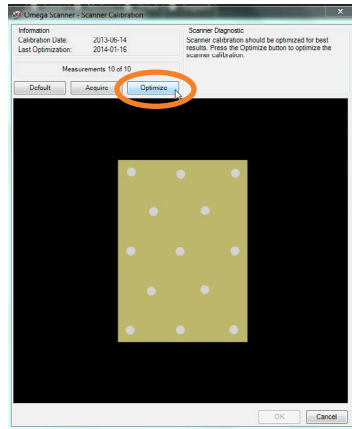


- While holding the Scanner perpendicular to the calibration plate, point the Scanner at the center of the plate. Bring the Scanner closer or farther to the plate to position the white projection within the green square. Repeat for each of the required distances.



Tips:

- Make sure to hold the Scanner perpendicular to the plate.
- Move the Scanner at a steady and slow speed.
- Once the first position is matched, slowly move the Scanner straight up for the other 9 positions.



- Once all 10 positions have been matched, press the **Optimize** button and follow the recommendations displayed in the **Scanner Diagnostic** area.
  - Click **OK** to finish.
  - While holding the Scanner perpendicular to the calibration plate, point the Scanner at the center of the plate. Bring the Scanner closer or farther to the plate to position the white projection within the green square. Repeat for each of the required distances.
- Tips:
- Make sure to hold the Scanner perpendicular to the plate.
  - Move the Scanner at a steady and slow speed.
  - Once the first position is matched, slowly move the Scanner straight up for the other 9 positions.

If the calibration procedure fails, check the following:

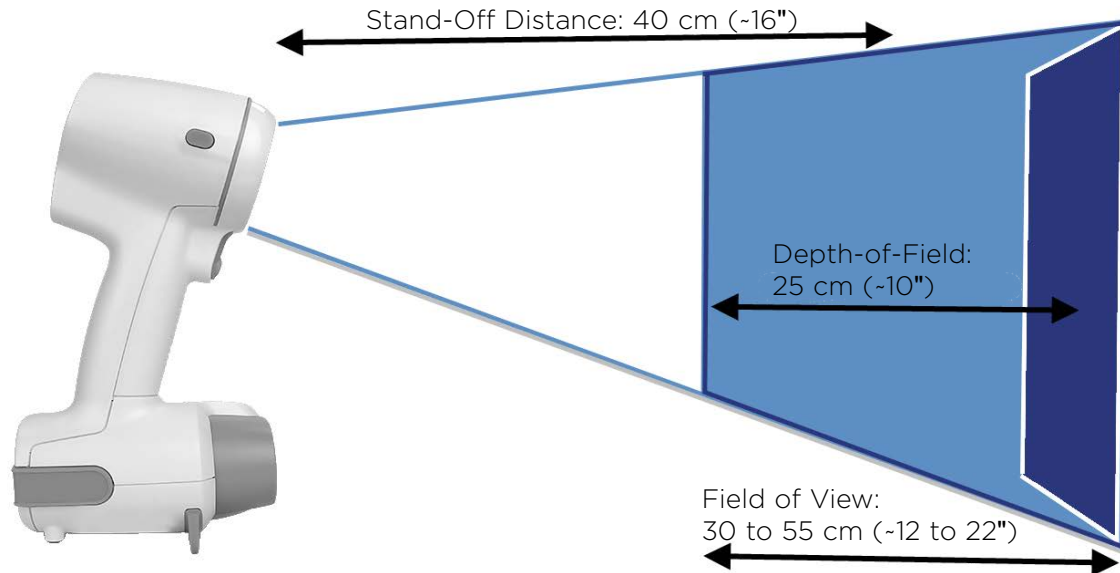
- If there are any reflective objects near the calibration plate, remove the objects and repeat the calibration process.
- Verify that the targets on the calibration plate are in good condition. A single damaged or misplaced target will cause the calibration to fail.
- Click on the **Default** button to restore the factory setting, and repeat the calibration process.

If these steps fail, please contact WillowWood for assistance.

## SCANNING

Before scanning the patient, apply reflective targets to any landmarks you wish to capture.

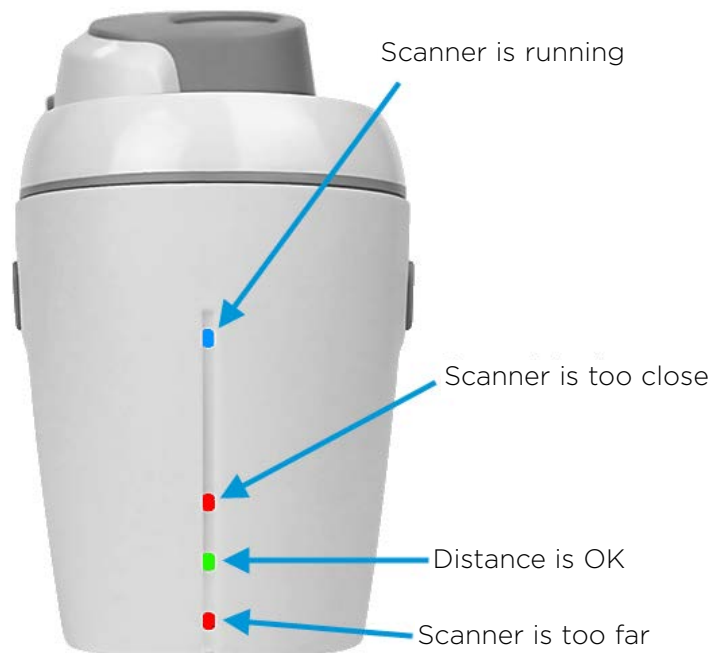
*Note: targets cannot be applied on the edge of a surface to be scanned; there must be at least 1/2" between a target and the edge of the surface.*



When you are prompted by the software to scan the model:

- Hold the Scanner approximately 15" from the patient's body
- Aim the Scanner at an area of the surface that has the greatest amount of topographical detail.
- Press the trigger.

The Scanner's lights will help you to aim the Scanner correctly:





If you have difficulty getting the Scanner to "lock on" so that the green light is lit, you may need to apply more targets to the surface.

Once you have positioned the Scanner so that the green light is lit, move the Scanner around to follow the contours of the shape.

**Helpful Tips:**

- Hold the Scanner so that it is perpendicular to the surface being scanned.
- Keep your wrist locked, hold your elbow to the side of your body, and move the Scanner by moving your body.
- Attempting to scan a surface simply by flexing and extending your wrist (as if you were painting with a brush) will not be effective.
- Avoid scanning any parts of the body that are moving; for example, if a child's shoulders are moving during a cranial scan, avoid scanning the shoulders.
- You may release and press the trigger as often as desired; however, when you resume scanning, be sure to resume in an area that has already been captured before moving to an area that has not yet been captured.

As you scan, you will see the model being built on the computer screen. The model will be somewhat rough in appearance; you will see a smoother version as you advance through the software.

Release the trigger when you are done.

## **MAINTENANCE**

### **General Maintenance**

The OMEGA Scanner 3D contains optical precision parts and must be handled with care to avoid damaging its internal components or calibration system. It must be carried in its protective case at all times. The system must be stored in a dry and dust-free place and must be kept at room temperature.

While not being used, the scanner must be placed in its protective case.

### **Metal and Plastic Parts**

1. Do not use solvent to clean the device.
2. Use a soft cotton cloth with a small amount of water or a soapy solution.

### **Optical Parts**

Optical parts require very special attention to ensure optimal quality:

1. Spray dry air to remove any particles that may scratch the surface of the lenses and lights.
2. Clean the objectives and lights using a damp cloth like the non-abrasive optical towelette provided by Creaform or a microfiber cloth.
3. Wipe them with a clean and dry cloth, like a towelette or wipe.
4. Repeat steps 2 and 3 if necessary.

### **Calibration Plate**

Do not touch the reflective targets on the calibration plate. If any of the targets get scratched or marked, the calibration plate should be replaced.

Dirty targets may be cleaned with very special care:

1. Use a soft clean cloth with denatured alcohol to gently dab the retro-reflective surface.
2. Do not use acetone or other solvent to avoid permanently damaging the targets.

## TECHNICAL SPECIFICATIONS

|  |   |
|--|---|
| Weight                                   | 850 g (1.9 lb)                          |
| Dimensions                               | 96 x 140 x 258 mm (3.8 x 5.5 x 10.2 in) |
| Light Source                             | White light (LED)                       |
| Measurement Rate                         | 550,000 measurements/second             |
| Resolution                               | 1 mm (0.04 in)                          |
| Accuracy                                 | Up to 0.500 mm (0.02 in)                |
| Volumetric Accuracy*                     | 0.500 mm/m (0.02 in/ft)                 |
| Stand-Off Distance                       | 400 mm (15.75 in)                       |
| Depth of Field (from stand-off distance) | 250 mm (10 in)                          |
| Scanning Area                            | 380 x 380 mm (15 x 15 in)               |
| Connection Standard                      | USB 2.0                                 |

*\*With reflective targets or an object presenting sufficient geometry.*

*WillowWood*<sup>®</sup>

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