



Cone Beam CT Scan and Optical Scan of Stone Model Protocol

Patient Preparation

- Patient must remove all metal prosthesis, as well as metal jewelry that might interfere with the region to be scanned.
- Patient's bite should be secure with cotton pads or other highly radio-translucent material (such as polyethylene).
- Avoid using any radio-opaque material that will prevent tooth surface from being segmented in CT data processing.
- Upper and lower teeth should not touch each other during the scan.
- Recommended space between two jaws is 5-8mm.
- Patient should be in a static position, and must not move or swallow during the scan acquisition.

Patient Scanning Instructions

- The occlusal plane should be parallel to the plane of image slice generated, with no tilt.
- The height must be set in order to center the occlusal plane in the field of view (FOV).
(See Figure 1, below.)
- If both arches require treatment, please provide a separate scan for each arch.



Figure .1

Mouth Impression/ Stone Model

Take impressions of the patient's upper and lower jaw and fabricate plaster stone models (full bite).



Optical Scan of Stone Model

Send the stone model of the patient's arch to Scan Implant Guide to be scanned by an optical scanner that will generate a 3D image of the model in an STL file. The STL file of the stone model and the DICOM file with the patient's CT scan will be uploaded to the Scan Implant Guide Planning Software, and digitally aligned to create a virtual 3D image of the patient's jaw.





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Alternate Intra-Oral Scan

An intra-oral scan of the patient may be used in lieu of scanning the stone model. If the clinician chooses to use an intra-oral scan, it should conform to the following parameters:

- Scan the patient's preparation area, preferably, the full arch.
- Consult your scanner's manual for settings.
- The scanned area needs to have 3-5 mm margin beyond the tooth surface.
- In case there are multiple units, and the case justifies a virtual tooth setup, use scanner or CAD software to virtually place the teeth, and save the diagnostic model as a different STL file.
- For immediate tooth extraction cases, if possible, it is recommended to use scanner or CAD software to remove the tooth (not including the root area) that will be extracted, and save as a different STL file.
- The preceding two steps can be combined.
- The antagonist scan is recommended for both restoration and implant planning purposes.

It is recommended, if possible, to have your scanner software trim the scan results along the edges, but the trimmed model should maintain the 3-5 mm margin. Any diagnostic

models can be designed with CAD software and made available to Scan Implant Guide, together with the STL files generated by the scanner software. If possible, STL models can be inspected with third party software or by Scan Implant Guide for overlapping, self intersections, holes, etc. The STL model resolution depends on various factors and scanner settings. An STL file size between 5-20MB is normally acceptable.

CT Scan Parameters

Use the manufacturer's settings for Dental CT Scan, with the following settings:

Slice Thickness	0.2 – 0.5 mm
Slice Increment	0.2 – 0.5 mm
Reconstruction Algorithm	Bone or High Resolution
Tilt	0°

CT Data Export

- Axial Slices in native **DICOM format** (format using scanner export function or PACS system).
- Data for each jaw to be saved in **SEPARATE DATA SETS**, together with the data for each intra-oral scan (if applicable) corresponding to that jaw.
- Output medium – **CD ROM disk**.



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