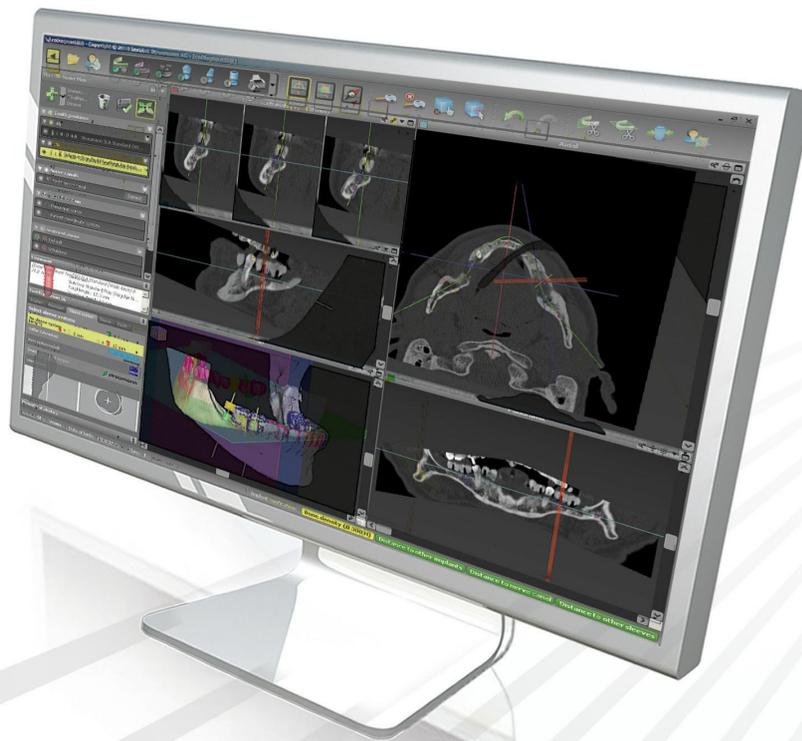


# coDiagnostiX™ 9.0

## Supporting information for CT/DVT scans





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# 1. Supporting information for CT/DVT scans

This appendix provides additional information for radiologists and MTAs to help them produce appropriate CT/DVT scans for subsequent dental implant planning with coDiagnostiX™ software. It outlines the specific requirements imposed on such scans by the coDiagnostiX™ software.

## 1.1 CT scans

### 1.1.1 Preparation

All metal parts (such as those contained in removable partial dentures) which are not fixed must be removed from the patient's mouth.

#### **Additional instructions for the analog workflow with the gonyX™**

During radiology, the patient must wear a scan template with reference pins. These reference pins must be completely visible in the CT scan. The correct fabrication of the scan template lies within the responsibility of the user.

- Make sure that all components attached to the scan template are firmly fixed to avoid the risk of aspiration.
- Have the patient bite lightly on the scan template.

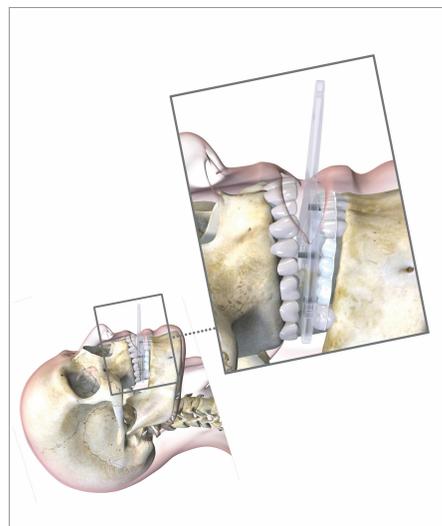
#### **Caution**

Before placing the scan template or drill guide into the patient's mouth, make sure to prepare such template or guide according to dental standard operating procedures and the instruction for use provided for your material.

## 1.1.2 Patient positioning

The positioning instructions given below are applicable for scanning maxilla or mandible as well as for scanning both jaws simultaneously. In the latter case, the patient must wear both scan templates.

- Position the patient as shown in the figure and ensure that the patient does not move during the scanning procedure.
- A gantry angle of  $0^\circ$  is recommended. However, the software is able to process image data produced with a gantry angle  $\neq 0^\circ$ , if necessary.
- Align the occlusal plane to the scan plane as accurately as possible.



## 1.1.3 Scanning process

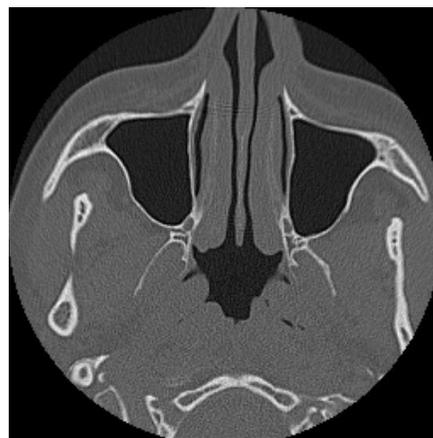
### Maxilla

When scanning the maxilla, choose the image section so that the upper jaw bone is completely visible. The scan should comprise the area from the occlusal plane to the middle of the maxillary sinus.

The ideal field of view (FOV) is 8 to 12 cm.

### Exception

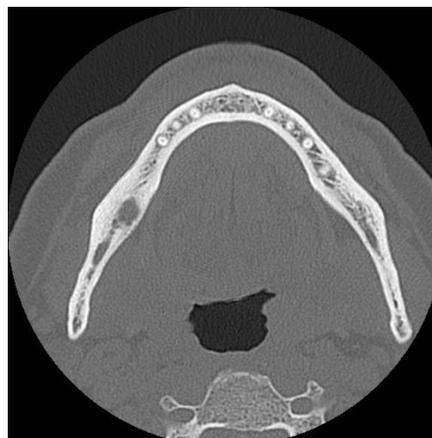
If a sinus lift is planned or planning will occur with Zygoma implants, the scan should comprise the area from the occlusal plane to the orbital floor to meet the modified planning situation. Additionally, it is recommended to choose a field of view which also includes the zygomatic arches.



## Mandible

When scanning the mandible, choose the image section so that the lower jaw bone is completely visible. The scan should comprise the area from the occlusal plane to the basis of the mandible. It is recommended to scan an additional slice below the bone in the soft tissue to make sure that the corpus mandibulae is completely captured.

The ideal field of view (FOV) is 9 to 14 cm.



## Important scanning parameters

- A gantry angle of 0° is recommended to achieve the best quality for image reconstruction.
- Block the opposite jaw bone using plastic material or cotton wool pads to avoid artifacts around the reference pins.
- Do NOT vary reconstruction parameters within a series (constant value for X and Y axis).
- Set a high-resolution bone algorithm, e.g.:
  - "Inner Ear"
  - "Bone"
  - "High"
  - No "EDGE!"
  - "AK 97"
  - "Ultra High"
- Parameters for a complete dataset when using dynamic mode:
  - Slices: 0.5 mm to 1.0 mm
- When using spiral mode, reconstruction to 1.0 mm slices or less is recommended.
- KV: approx. 110 to 130
- mA: approx. 20 to 120

## 1.1.4 Storage of CT scans

For dental implant planning with coDiagnostiX™, only axial slices are required.

- Store the image data set in DICOM III format on CD-ROM or on any other portable storage device. Do not save raw data. Only axial image data are required for planning with coDiagnostiX™.

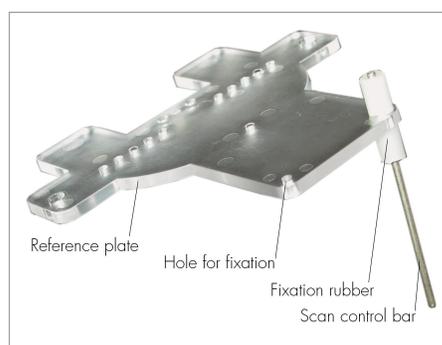
## 1.1.5 Visualization of motion artifacts

Motion artifacts in CT scans may affect 3D planning with coDiagnostiX™. When working with a scan template, you may attach a scan control bar to the template prior to scanning.

The scan control bar is available as accessory. It has a length of 6 cm and a diameter of 2 mm and should be visible in all slices of the CT scan.

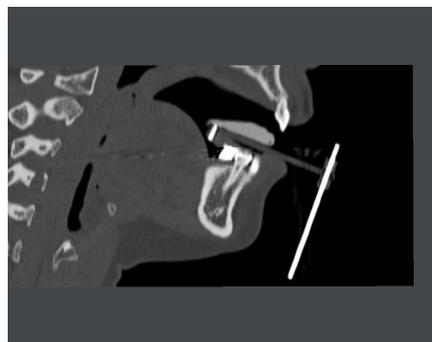
### How to use the scan control bar

- There is a hole on the left and right side in the front area of the reference plate to fix the scan control bar. One scan control bar will be sufficient. During the CT scan, the scan control bar remains outside the mouth.

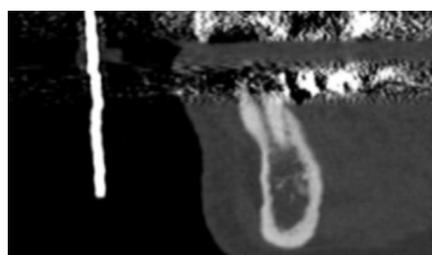


- Position the scan control bar in a way that it will be visible in the axial planes at upper or lower jaw level.
- Make sure the scan control bar is not bent.

- After CT scanning, scroll through the axial slices to evaluate the appearance of the scan control bar in these slices and identify possible motion during the scan. 3D reconstruction will facilitate evaluation.



- If you detect significant offset between the single slices, it may be necessary to repeat the CT scan.



 **Note**

It is not mandatory to use the scan control bar when working with coDiagnostiX™. However, it is recommended to visualize motion artifacts better. The scan control bar is not needed for devices which do not scan by slices (e.g. DVTs).

## 1.1.6 Checklist for CT scans

Work step			Done
1.	With scan template	Before placing the scan template in the patient's mouth make sure such template is prepared according to dental standard operating procedures and the material's instructions for use.	<input type="checkbox"/>
2.	With scan template	Patient interview/indication by remitter: <ul style="list-style-type: none"> <li>▪ Patient wears a template</li> </ul>	YES <input type="checkbox"/> NO <input type="checkbox"/>
3.	With scan template	Scan template check: <ul style="list-style-type: none"> <li>▪ Template correctly fitted</li> <li>▪ Opposite jaw blocked with cotton wool pads or plastic material, if necessary</li> <li>▪ Scan control bar fitted to the scan template to visualize motion artifacts</li> </ul>	<input type="checkbox"/>
4.		Gantry angle adjustment: <ul style="list-style-type: none"> <li>▪ Gantry angle: 0°</li> <li>▪ ATTENTION: Set a gantry angle of 0° even if the patient cannot move the occlusal plane to the scan plane. This will be calculated by coDiagnostiX™ afterwards.</li> </ul>	<input type="checkbox"/>
5.		Slice distance setting: <ul style="list-style-type: none"> <li>▪ 1 mm or less</li> </ul>	<input type="checkbox"/>
6.	With scan template	Advices when patient is wearing a scan template with reference pins: <ul style="list-style-type: none"> <li>▪ ALL 3 reference pins have to be scanned completely</li> <li>▪ Scanning one slice above the pins will be sufficient</li> </ul>	<input type="checkbox"/>
7.		Standard instructions for patients: <ul style="list-style-type: none"> <li>▪ Do not move, do not swallow, do not breathe</li> </ul>	<input type="checkbox"/>
8.		Adjustment of the image section according to the advices given in the preceding sections of this Appendix 2	<input type="checkbox"/>
9.		Data export to CD: <ul style="list-style-type: none"> <li>▪ DICOM III Format, no raw data</li> <li>▪ No separate viewer required</li> </ul>	<input type="checkbox"/>

## 1.2 DVT scans

### 1.2.1 Preparation

For the production of DVT scans follow the instructions of your device manufacturer.

All metal parts (such as those contained in removable partial dentures) which are not fixed must be removed from the patient's mouth.

#### **Additional instructions for the analog workflow with the gonyX™**

During radiology, the patient must wear a scan template with reference pins. These reference pins must be completely visible in the DVT scan. The correct fabrication of the scan template lies within the responsibility of the user.

- Make sure that all components attached to the scan template are firmly fixed to avoid the risk of aspiration.
- Have the patient bite lightly on the scan template.

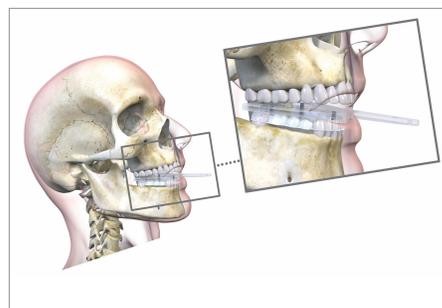
#### **⚠ Caution**

Before placing the scan template or drill guide into the patient's mouth, make sure to prepare such template or guide according to dental standard operating procedures and the instruction for use provided for your material.

### 1.2.2 Patient positioning

The positioning instructions given below are applicable for scanning maxilla or mandible as well as for scanning both jaws simultaneously. In the latter case, the patient must wear both scan templates.

- Position the patient as shown in the figure and ensure that the patient does not move during the scanning procedure.
- Align the occlusal plane to the scan plane as accurately as possible.



### 1.2.3 Scanning process

Follow the instructions and recommendations given by the manufacturer of your DVT device.

### 1.2.4 Storage of DVT scans

For dental implant planning with coDiagnostiX™, only axial slices are required.

Store the image data set in DICOM III format on CD-ROM or on any other portable storage device. Do not save raw data. Only axial image data are required for planning with coDiagnostiX™.

## 1.2.5 Checklist for DVT scans

Work step			Done
1.	With scan template	Before placing the scan template in the patient's mouth make sure such template is prepared according to dental standard operating procedures and the material's instructions for use.	<input type="checkbox"/>
2.	With scan template	Patient interview/indication by remitter: <ul style="list-style-type: none"> <li>▪ Patient wears a template</li> </ul>	YES <input type="checkbox"/> NO <input type="checkbox"/>
3.	With scan template	Scan template check: <ul style="list-style-type: none"> <li>▪ Template correctly fitted</li> <li>▪ Opposite jaw blocked with cotton wool pads or plastic material, if necessary</li> </ul>	<input type="checkbox"/>
4.		Slice distance setting: <ul style="list-style-type: none"> <li>▪ 1 mm or less</li> <li>▪ ATTENTION: Set a gantry angle of 0° even if the patient cannot move the occlusal plane to the scan plane. This will be calculated by coDiagnostiX™ afterwards.</li> </ul>	<input type="checkbox"/>
5.	With scan template	Advices when patient is wearing a scan template with reference pins: <ul style="list-style-type: none"> <li>▪ ALL 3 reference pins have to be scanned completely</li> </ul>	<input type="checkbox"/>
6.		Standard instructions for patients: <ul style="list-style-type: none"> <li>▪ Do not move, do not swallow, do not breathe</li> </ul>	<input type="checkbox"/>
7.		Adjustment of the image section according to the recommendations given for your DVT device	<input type="checkbox"/>
8.		Data export to CD: <ul style="list-style-type: none"> <li>▪ DICOM III Format, no raw data</li> <li>▪ No separate viewer required</li> </ul>	<input type="checkbox"/>





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