CT SCAN PROTOCOL FOR FOREARM
This CT scanning protocol consists of a localizer and a detailed axial scan of the bilateral forearm. The CT scan quality *(with clear bony edges and details)* is critical to the production of accurate patient-specific surgical instruments.

Please contact the Materialise support team if you require further clarification.

*DEVIANAS FROM THIS PROTOCOL MAY RESULT IN AN UNUSABLE SCAN AND DELAY OF SURGERY*

**Scanning Parameters**

<table>
<thead>
<tr>
<th>Region of interest / Axial Scan</th>
<th>From the <em>elbow to the carpometacarpal joint</em> Bilateral: prefer a single acquisition; individual scans are acceptable</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Collimation</strong></td>
<td>Slice thickness: <em>0.625mm</em> or smaller Slice increment: <em>Contiguous Slices</em> No Gantry Tilt or Obliqueness or Oblique Reconstructions</td>
</tr>
<tr>
<td><strong>kVp</strong></td>
<td>90-120 (higher for obese patients or metal hardware in scan region)</td>
</tr>
<tr>
<td><strong>mA</strong></td>
<td>As given by the automatic system</td>
</tr>
<tr>
<td><strong>Pitch</strong></td>
<td>Use 1 or smaller</td>
</tr>
<tr>
<td><strong>Field of View (FOV)</strong></td>
<td>200mm x 200mm or smaller. Use the smallest FOV possible to capture the required bone regions. Capturing all of the soft tissue is unnecessary.</td>
</tr>
<tr>
<td><strong>Matrix</strong></td>
<td>Use a 512 x 512 matrix</td>
</tr>
<tr>
<td><strong>Kernel / Algorithm</strong></td>
<td>Bone / Details</td>
</tr>
<tr>
<td><strong>Table Position</strong></td>
<td>Area to be scanned should be centered in the scan field. DO NOT raise or lower the CT table between slices, or alter the X or Y centering between scans. Center Points must be identical.</td>
</tr>
<tr>
<td><strong>Reconstruction</strong></td>
<td>NO secondary reconstructions, images must be scanned at the given parameters or smaller NO reformatting into coronal or sagittal planes, no MPR’s or 3D reconstructions</td>
</tr>
<tr>
<td><strong>Data Anonymization</strong></td>
<td>Do not erase patient name and ID- ensure necessary rights are obtained for transfer of data to Materialise. Data will be anonymized by Materialise after cross-check with prescription of the surgeon to ensure the images of the right patient are provided.</td>
</tr>
</tbody>
</table>

**General Scan Requirements** :

- Remove any non-fixed metal prosthesis, jewelry, and zippers that might interfere with the region to be scanned.
- Make the patient comfortable and instruct him/her not to move during the procedure. If any movement is detected the patient will need to be rescanned as this will prevent the accurate development of the patient-specific model.
- **If possible, scan the forearms in the position of greatest deformity, with both limbs in as close to the same position as possible (ex. full supination to demonstrate subluxation of the radial head).** Otherwise, position the patient prone with arms in front of him/her and with palms facing each other in the neutral position. If this is not possible, position the patient in the supine position.
- Scan forearms with (both) arms above the head and the head out of the FOV, if possible. Make sure the patient’s elbows are propped up, if needed, to allow for even scanning within the same plane. Place forearms as close together as possible to fit into the designated FOV. Scan each arm separately if both arms do not fit within the required FOV.

Provide the complete data set of ONLY the raw/original/axial DICOM images. Lossy Compression is NOT allowed (ISO_10918_1, ISO_14495_1, ISO_1544_1, or ISO_13818_1). Retain a permanent archive (PACS) copy of the RAW data of images (As scanned by the original parameters, uncompressed). We recommend building a “Materialise Forearm” in your CT scanner with the appropriate ranges & parameters.

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