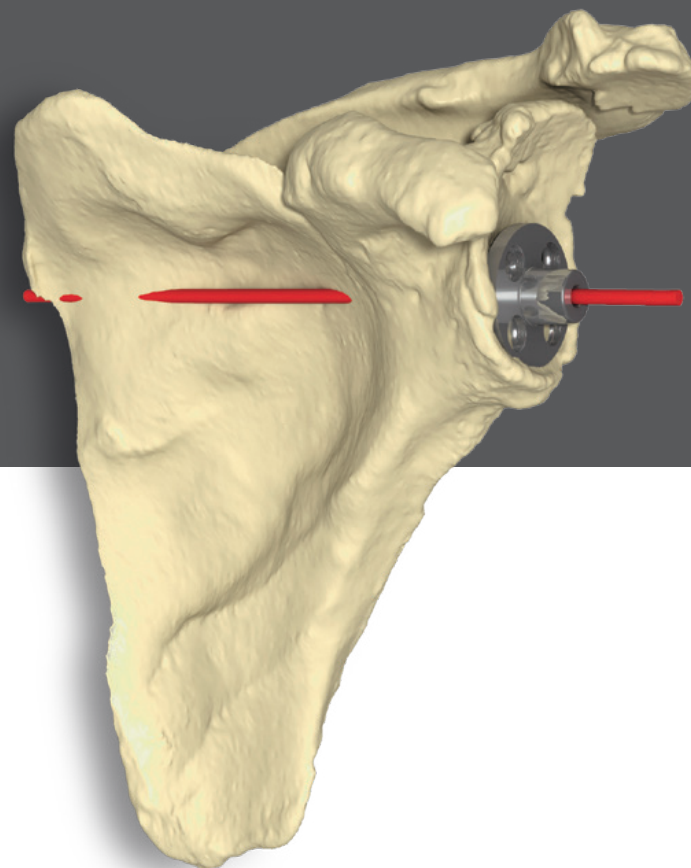


AltiVate® Match Point System®

SHOULDER CT SCAN PROTOCOL



PURPOSE

This CT scan protocol consists of a localizer and a detailed axial scan of the shoulder. The CT scan quality needs to identify clear bony edges and surface detail critical for the production of accurate patient-specific surgical instruments. Deviations from this protocol may result in unusable images.

For more information or questions about the scan protocol, please contact Materialise via email at [djoserice@materialise.be](mailto:djoservice@materialise.be) or by phone:

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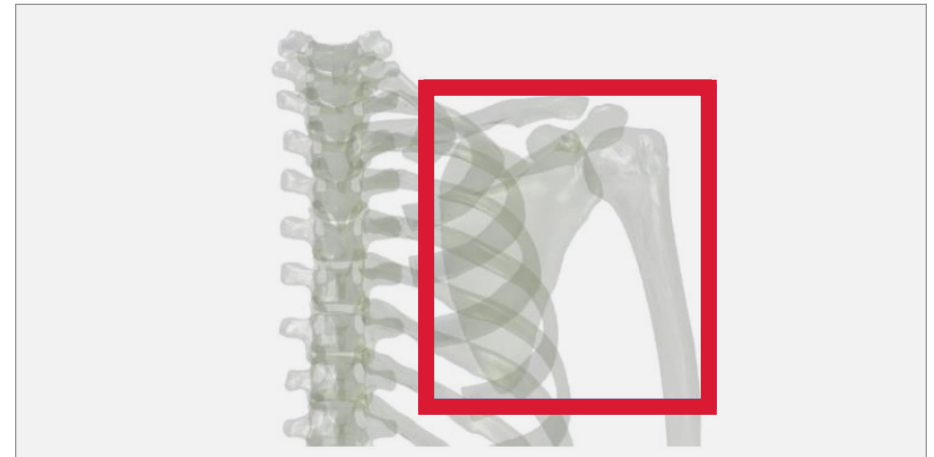
PATIENT PREPARATION

- Remove any non-fixed metal prosthesis, jewelry, or zippers that might interfere with the scan region to be scanned.
- Make the patient comfortable and instruct them not to move during the procedure.
- Position the patient head first, supine. Arms remain at the side of the body with the shoulder in neutral rotation.
- Indicate the body side scanned (Right or Left).
- If an implant is present in the contralateral shoulder, raise the contralateral arm above the head to prevent the artifact from affecting the surgical side.

SCANNING REQUIREMENTS

- Use true axial slices. Oblique slices are not accepted. No reformatted images.
- Gantry tilt is not accepted.
- **Region of Interest:** Include the complete scapula and proximal humerus until the distal end of the scapula. Capturing the surrounding soft tissues is not necessary.
- **Scan Range:** The scan should cover the entire scapula and proximal humerus. You may add axial slices as necessary to ensure coverage from superior to inferior.
- **Field of View (FOV):** 250mm or smaller. **Do not exceed.**
- If bilateral shoulders are ordered, reconstruct them separately. Acquire at 500 mm FOV and reconstruct individual shoulders at 250 mm FOV.

SCAN PARAMETERS



SCANNER TYPE	Multi-detector row CT with number of detector rows ≥ 16
SCAN MODE	Helical
REGION OF INTEREST	Include the complete scapula and proximal humerus until distal end of the scapula
KVP	100-140 (automatic voltage selection, if available)
mA(S)	As given by the automatic system
PITCH	≤ 1
DETECTOR CONFIGURATION	Single collimation \leq slice thickness
SLICE THICKNESS	1.25mm or smaller (Do not acquire a thicker slice and retrospectively reconstruct to noted thickness)
SLICE INCREMENT	50% overlap
MATRIX	512 x 512
FIELD OF VIEW (FOV)	250mm or smaller. DO NOT EXCEED. (Use smallest FOV that includes the complete bone anatomy of interest.)
RECONSTRUCTION ALGORITHM/KERNEL	Use a standard or soft tissue algorithm without edge enhancement. Always provide this reconstruction. If metal is present, provide additional reconstruction(s) with metal artifact reduction applied if available.
HU SCALE	If metal implants are present, use a HU scaled of 16-bit

IMAGE FORMATTING

- Submit DICOM format only.
- Uncompressed DICOM data is necessary for processing.
- The scanner should be set to DICOM format “raw image”, with no compression.
- The complete data set of primary DICOM images must be provided.
- No .jpg images or other image formats are acceptable.
- Do not submit reconstructed or reformatted images.
- Lossy and other forms of compression are NOT allowed (ISO_10918_1, ISO_14495_1, ISO_15444_1 or ISO_13818_1).
- If loading from PACS, import and export the scan as DICOM files with the uncompressed option.
- Do not erase patient name and ID. Please include patient date of birth and sex.
- **IMPORTANT:** Please retain a permanent archive (PACS) copy of the raw data, in uncompressed DICOM format and the original scanning parameters.

SCAN PARAMETER OPTIMIZATION IN PRESENCE OF EXISTING HARDWARE

If metal hardware is present, please follow the aforementioned scan parameters and make the appropriate modifications as listed below. Please provide additional reconstruction(s) with metal artifact reduction applied, if available. **Submit this along with the standard scan.**

Due to image distortion challenges involving existing hardware, these additional steps increase the probability of but **does not guarantee** full visualization of the glenoid anatomy.

Once images are received, they will be reviewed for acceptability for the intended use of 3D plan imaging and the production of accurate patient-specific surgical instruments.

- Use a Metal Artifact Reducing algorithm/ filter, like O-MAR, if available.
- Increase the kVp, preferably between 120-140.
- Use the maximum allowed mA(s); i.e. 120-340.
- Use the lowest possible pitch setting (<1).
- Use a narrow collimation; i.e. 0.6mm.
- Use the maximum allowed slice thickness of 1.25mm with a 50% overlap (slice increment).
- Use a soft tissue, standard, or smooth kernel/algorithm.
- Increase the HU scan range by using a 16bit or extended CT scale, if available.

**FOR MORE INFORMATION OR QUESTIONS ABOUT THE SCAN PROTOCOL,
PLEASE CONTACT DJO® DEDICATED SUPPORT LINE AT MATERIALISE:**

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MKT0031108-131 Rev E

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