PMI® Patient-Matched Implants

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The prevention of motion is critical for 3D imaging and modeling. Instruct the patient on the importance of holding completely still during the scan.

The following instructions are very important. Please read them carefully before scanning.

Scanning the Patient and Technical Factors (for all scanners)

Slice Thickness: See specific protocols.

Field of View: Magnify or zoom image so it fills the entire screen without cutting off any of the anatomy for imaging. The FOV must not be changed during the scan.

Table Position: The CT couch must **not** be raised or lowered between slices. The X and Y centering must **not** be altered between slices.

Matrix: Quality images can be obtained from any scan matrix, although a high resolution 512 x 512 matrix should be used whenever possible.

Algorithm: **A standard or soft tissue algorithm** with no edge enhancement must be used. Do **not** use bone algorithm.

Note: Do not use metal artifact reduction (MAR/OMAR).

Slice Spacing: All slices must be contiguous or overlapping. Slice thickness and table increment is dependent on anatomy.

Data Collection: We accept CD-ROM in **DICOM** format off all CT machines.

CT Image data (not raw data) is required for patient modeling. Do **not** send hard copy X-rays.

Please contact the PMI department for assistance with CT Protocol requirements. via email pmi.imaging@zimmerbiomet.com or by phone at (574) 371-0557.

CT data may be submitted for reconstruction:

Ship to:
PMI Imaging Group
Zimmer Biomet
2392 N Boeing Road
Warsaw, IN 46582

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Revision Hip/Acetabulum Replacement (Triflange)

Femurs must be positioned so they are parallel to the horizontal plane of the table. Patient needs to be in A/P position with feet inverted.

Start (see below)

Stop (see below)

Start: Top of Iliac crest

Stop: Mid-femur or below existing femoral

Slice Thickness and Spacing: 2 mm by 2 mm, 2.5 mm by 2.5 mm, or 3 mm by 3 mm

Field of View: 38 – 44 cm FOV, depending on patient size. Needs to include full pelvis.

Algorithm: A **standard** or **soft tissue** algorithm, **no** bone enhancement

Note: Do not use metal artifact reduction (MAR/OMAR).

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Primary Femoral Hip Stem (CT based hip)

Femurs must be positioned so they are parallel to the horizontal plane of the table. Patient needs to be in A/P position with feet inverted.

Start (see below)

Stop (see below)

*Start (see below)

Stop (see below)

Start: Top of Iliac crest

Stop: Mid-femur or below existing femoral

   *Perform two femoral condyle slices (to show anteversion).
    Do **not** change FOV or X and Y coordinates.

Slice Thickness and Spacing: 2 mm by 2 mm, 2.5 mm by 2.5 mm, or 3 mm by 3 mm

Field of View: 38 – 44 cm FOV depending on patient size. Needs to include full pelvis.

Algorithm: A **standard** or **soft tissue** algorithm, **no** bone enhancement

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Acetabulum/Pelvis for Oncology

Position patient in A/P with feet inverted, no rotation. Entire pelvis in FOV.

Start (see below)

Stop (see below)

Start: Top of Iliac crest

Stop: Ending slice just below ischial tuberosity

Slice Thickness and Spacing: 2 mm by 2 mm, 2.5 mm by 2.5mm, or 3 mm by 3 mm

Field of View: 38–44 cm FOV, depending on patient size. Needs to include full pelvis.

Algorithm: A **standard** or **soft tissue** algorithm, **no** bone enhancement

Note: Do not use metal artifact reduction (MAR/OMAR).

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Knee: Primary or Revision

Start

Stop

Start

Stop

* If metal in, start and stop at least 5 cm above and below metal implant

Start

Stop

Slice Thickness and Spacing: 1 mm by 1 mm, 1.25 mm by 1.25 mm, or 2 mm by 2 mm

Field of View: 25–35 cm FOV, depending on patient size

Algorithm: A **standard** or **soft tissue** algorithm, **no** bone enhancement

Note: Do not use metal artifact reduction (MAR/OMAR).

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Patella / Femoral Implant

Start (see below)

Stop (see below)

Start: 10 cm above joint line

Stop: 3 cm below joint space

Slice Thickness and Spacing: 1 mm by 1 mm, 1.25 mm by 1.25 mm, or 2 mm by 2 mm

Field of View: 25 cm FOV, depending on patient size

Algorithm: A **standard** or **soft tissue** algorithm, **no** bone enhancement

Note: Do not use metal artifact reduction (MAR/OMAR).

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Shoulder: Primary or Revision (VRS)

(Implant Example : Vault Reconstructive Shoulder System (VRS))

Start (see below)

Stop (see below)

Start: Above acromion process

Stop: 15 cm below top of humerus or 3 cm below existing implant

Slice Thickness and Spacing: 1.25 mm by 1.25 mm, 1.5 mm by 1.5 mm, 2.5 mm by 2.5 mm, or 3 mm by 3 mm is acceptable

Field of View: 25–30 cm FOV, depending on patient size. Needs to include entire scapula.

Algorithm: A **standard** or **soft tissue** algorithm, **no** bone enhancement

Note: Do not use metal artifact reduction (MAR/OMAR).

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Elbow: Primary or Revision

Start (see below)

Stop (see below)

Note: Have patient fully extend arm if possible.

Note: It is imperative that the technologist input the correct directional instructions before data acquisition is initiated (head first vs. feet first).

Start: 10 cm above joint line or 5 cm above existing implant

Stop: 8 cm below joint line or 5 cm below existing implant

Slice Thickness and Spacing: 1 mm by 1 mm, 1.25 mm by 1.25 mm, or 2 mm by 2 mm

Field of View: 15–20 cm FOV, depending on patient size

Algorithm: A **standard** or **soft tissue** algorithm, **no** bone enhancement

Note: Do not use metal artifact reduction (MAR/OMAR).

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Wrist/Hand

Start (see below)

Stop (see below)

Start: Tip of fingers

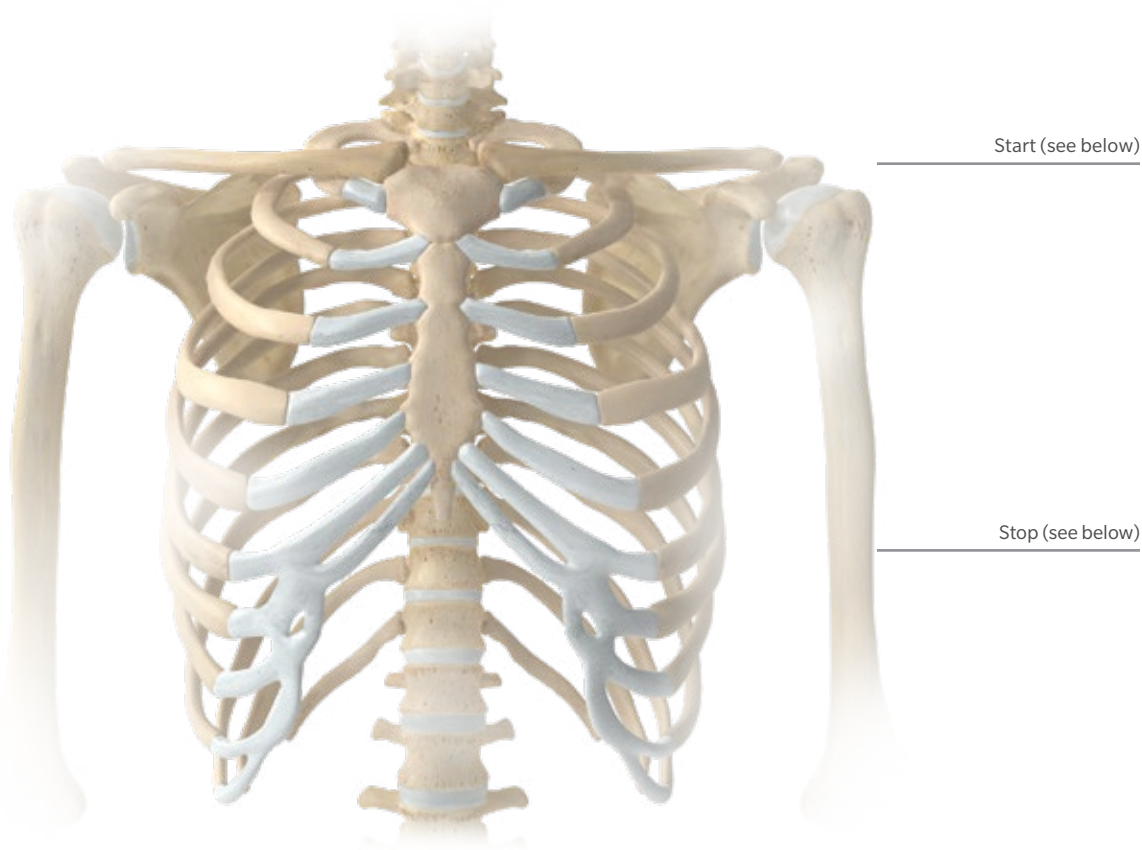**Stop**: 4–5 cm proximal to carpal bones

Slice Thickness and Spacing: 0.625 mm by 0.625 mm, 1 mm by 1 mm, or 1.25 mm by 1.25 mm

Field of View: 15 cm FOV

Algorithm: A **standard** or **soft tissue** algorithm, **no** bone enhancement

Note: Do not use metal artifact reduction (MAR/OMAR).

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Sternum

Start (see below)

Stop (see below)

Start: 5 cm above top of sternum
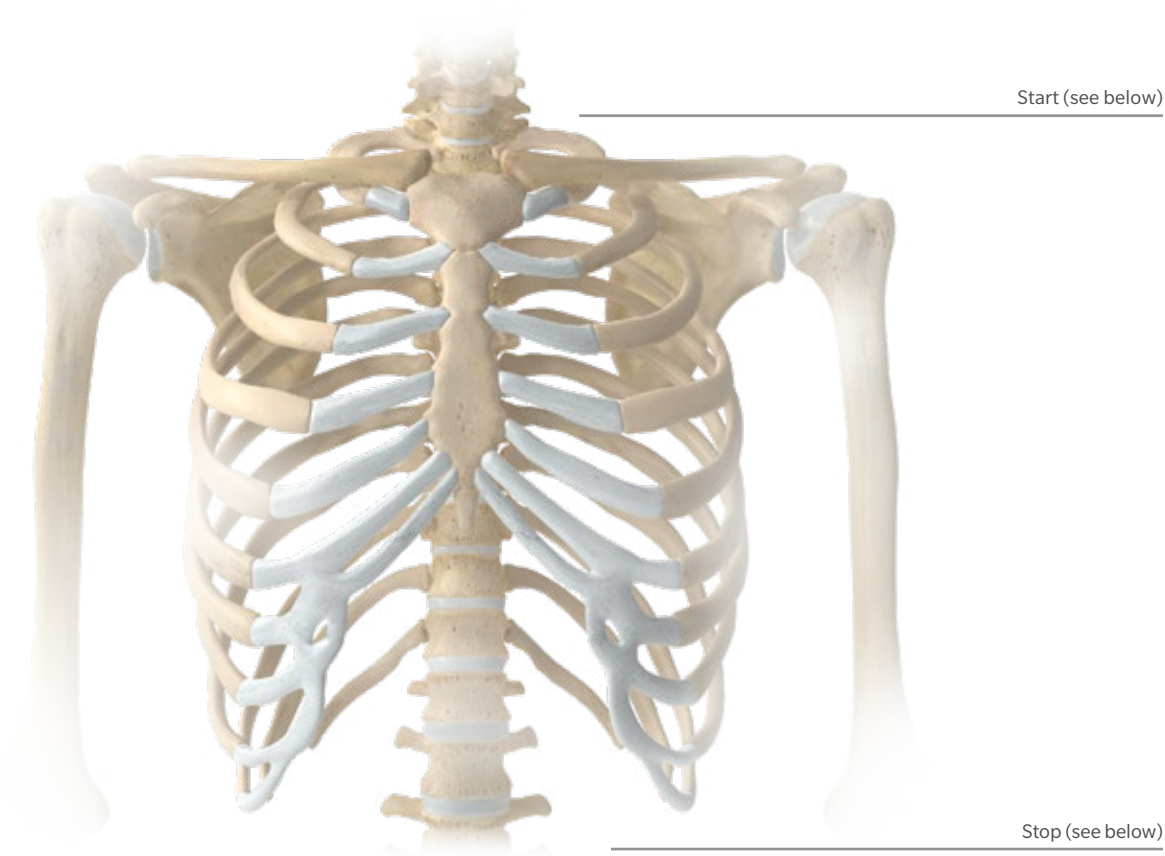
Stop: 5 cm below sternum

Slice Thickness: 1 mm by 1 mm, 1.25 mm by 1.25 mm, or 2 mm by 2 mm

Field of View: 25 cm–30 cm depending on patient size

Algorithm: A **standard** or **soft tissue** algorithm, **no** bone enhancement

Note: Do not use metal artifact reduction (MAR/OMAR).

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Ribs

Start (see below)

Stop (see below)

Start: 5 cm above 1st rib

Stop: 5 cm below last rib

Slice Thickness: 1 mm by 1 mm, 1.25 mm by 1.25 mm, or 2 mm by 2 mm

Field of View: 35 cm–44 cm depending on patient size

Algorithm: A **standard** or **soft tissue** algorithm, **no** bone enhancement

Note: Do not use metal artifact reduction (MAR/OMAR).

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Ankle

Start (see below)   Stop (see below)

Start: 15 cm above ankle joint

Stop: bottom of foot

Slice Thickness: .625 mm by .625 mm, 1 mm by 1 mm, or 2 mm by 2 mm

Field of View: 35 cm–44 cm depending on patient size

Algorithm: A **standard** or **soft tissue** algorithm, **no** bone enhancement

Note: Do not use metal artifact reduction (MAR/OMAR).

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Long Bone Study (Oncology tumor case or long stem)

Start (see below)

Start (see below)

Stop (see below)

Stop (see below)

Start (see below)

Start (see below)

Stop (see below)

Stop (see below)

Start/Stop: Include both joints of the bone

Slice Thickness and Spacing: 1.25 mm by 1.25 mm, 1.5 mm by 1.5 mm, or 2 mm by 2 mm

Field of View: 25–35 cm FOV, depending on patient size

Algorithm: A **standard** or **soft tissue** algorithm, **no** bone enhancement

Note: Do not use metal artifact reduction (MAR/OMAR).

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