Multitom Rax

Move beyond traditional X-ray

siemens-healthineers.com/multitom-rax

Study ID 5aab558

SIEMENS Healthineers

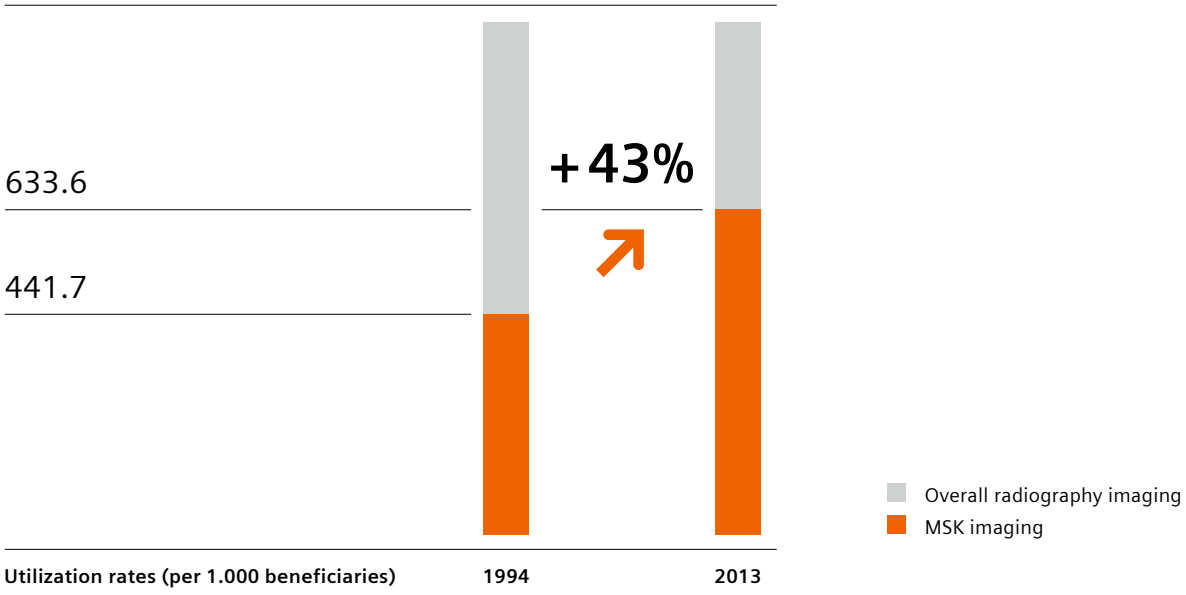
Radiography remains key

Around the globe, musculoskeletal (MSK) conditions are highly prevalent, affecting more than 1 in 5 people.[1] In fact, MSK disorders are the biggest contributor to years lived with disability (YLDs), accounting for 17% of all YLDs worldwide.[2]

While the prevalence of musculoskeletal conditions increases with age – and the global population is clearly growing older[3] – all age groups are affected. Low back pain is currently the main culprit in disability-related early retirement, and its incidence is projected to increase.[4]
What's more, lifestyle factors such as obesity strain the musculoskeletal system – and cost pressures on healthcare systems intensify as a result.[5]

In the United States, radiography remains the most common modality for MSK imaging (63.4% in 2013) and plays a key role when initially screening patients' extremities in trauma and chronic pain cases.[6]

Changing Musculoskeletal Extremity Imaging Utilization from 1994 through 2013:



In the United States, radiography is the most commonly used MSK modality (63.4% in 2013), despite having shown only 43% growth from 1994 to 2013.[3]

[1] *The United Nations Department of Economic and Social Affairs (UN DESA) estimates the 2019 global population at 7.7 billion: https://population.un.org/wpp/Publications/Files/WPP2019_Highlights.pdf. Accessed 2021-07-16. In 2019, approximately 1.71 billion people had musculoskeletal conditions (Cieza et al., see below). This number divided by 7.7 billion (estimated global population) gives 22.22%.*
[2] *Cieza A, et al. (2020). Global estimates of the need for rehabilitation based on the Global Burden of Disease study 2019: a systematic analysis for the Global Burden of Disease Study 2019. https://doi.org/10.1016/S0140-6736(20)32340-0. Accessed 2021-07-16.*
[3] *UN DESA predicts that the population share aged 65+ will grow from 9.3% in 2020 to approx. 16% in 2050: https://www.un.org/development/desa/pd/sites/www.un.org.development.desa.pd/files/undesa_pd-2020_world_population_ageing_highlights.pdf. Accessed 2021-07-16.*
[4] *Hartvigsen J, et al. (2018). What low back pain is and why we need to pay attention. https://doi.org/10.1016/S0140-6736(18)30480-X. Accessed 2021-07-16.*
[5] *Woolf AD, et al. (2012). The need to address the burden of musculoskeletal conditions. https://doi.org/10.1016/j berh.2012.03.005. Accessed 2021-08-05.*
[6] *Gyftopoulos S, et al. (2017). Changing Musculoskeletal Extremity Imaging Utilization From 1994 Through 2013: A Medicare Beneficiary Perspective. American Journal of Roentgenology, 209(5).*

Expanding precision medicine with Multitom Rax

Using traditional X-ray, complex radiographic examinations are often challenging or cumbersome, especially in musculoskeletal or trauma cases. Whether due to time-consuming manual work, less experienced staff, limited precision in system positioning, or difficult-to-move patients – these exams may result in unsatisfactory diagnostic outcomes.

With Multitom Rax, we offer a high-performance system that excels in such examinations, helping you expand precision medicine and improve patient experience. A Twin Robotic X-ray system, it offers unparalleled positioning flexibility, unique automated workflows around the patient, and a multitude of diagnostic procedures, including Real3D[7]. What's more, Multitom Rax now features True2scale Body Scan[8]: for full-body images that avoid distortion. Standing, seated, or even supine. All at ALADA[9] dose.

Discover Multitom Rax

[7] Option
[8] Option. True2scale Body Scan is pending 510(k) clearance, and is not yet commercially available in the United States.
[9] ALADA = as low as diagnostically acceptable

Multitom Rax at a glance

Multitom Rax supports your technologists and radiologists in daily clinical routine and beyond. It is particularly suited for difficult examinations such as trauma or orthopedic cases. Benefit from precise insights, efficient workflows, as well as comprehensive diagnosis on a single system – and set new standards in advanced musculoskeletal imaging.

Precise insights through unique automation

With Multitom Rax, you can combine high precision and wide coverage. Accuracy is at your fingertips. Projections from nearly any angle and automated workflows combine to meet referrers' demands, while dose is kept as low as possible.

Efficient workflows around your patients

Multitom Rax offers fast, robotic setup and barrier-free 360° patient access. This helps you relieve staff workload and improve patient experience. Automated alignment, trolley workflows, and projection flexibility reduce the need for patient repositioning.

Comprehensive diagnosis with multiple procedures

Whether you need to perform functional diagnosis or administer injections into joint spaces, Multitom Rax enables a broad range of procedures: from Real3D[1] bone imaging to radiography, fluoroscopy, and minor interventions. Switch modalities, not rooms!

[1] *Option*
[2] *Option. True2scale Body Scan is pending 510(k) clearance, and is not yet commercially available in the United States.*
[3] *In scanning direction*

Go even further with True2scale Body Scan[2]

Acquire up to two corresponding X-ray images in one scan run – with the patient supine, standing in natural weight-bearing position, or seated. Powered by slot-scanning technology, these low-dose images reliably avoid distortion and magnification.[3]

AI-Rad Companion

AI-Rad Companion is a family of vendor-neutral, multi-organ augmented reading solutions that automatically prepare clinical images to be interpreted by radiologists and/or clinicians.

Fleet Level Benefits

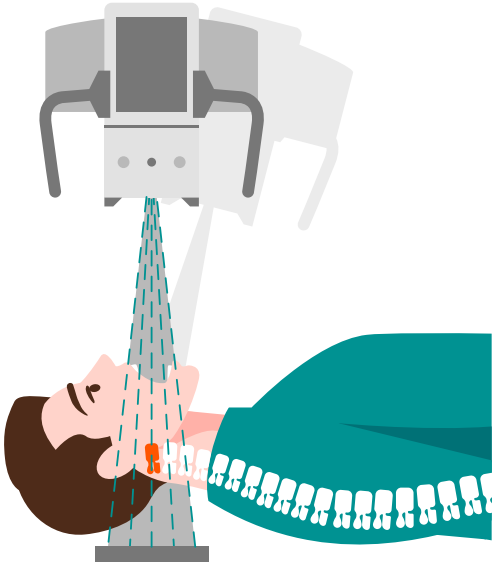
A systematic concept which helps you to reduce complexity. By standardizing you can achieve consistency for operational and clinical excellence. Supervision of your department's performance generates transparency for high availability and utilization. Securing your systems means having confidence in data and systems protection.

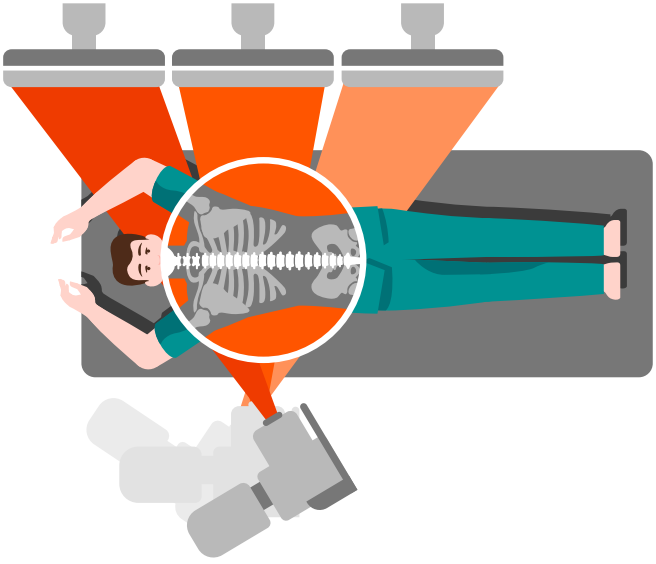
Precise insights through unique automation

To meet referrers' demands in advanced musculoskeletal (MSK) imaging, a high degree of precision, accurate positioning, and wide anatomical coverage are needed.

Multitom Rax offers unparalleled precision and flexibility in positioning, allowing projections from virtually all angles – plus unique automated workflows that let you integrate advanced MSK imaging in clinical routine.

And all that while saving dose.





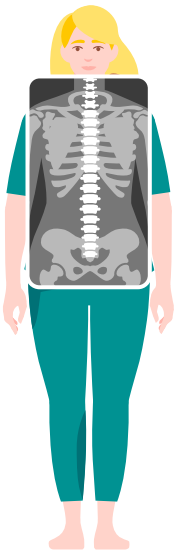
Accurate positioning
Obtain accurate MSK insights through precise system and patient positioning – easily. Twin Robotic arms give you more flexibility through projections from nearly all angles. RAXalign sets the correct SID and orthogonally aligns the tube and detector, while RAXconfirm offers fluoroscopic guided positioning.

Extended anatomical coverage
Benefit from unique automation with enhanced RAXortho[1] acquisition modes built on the well-known SmartOrtho tilting technique. Whether it's lateral imaging of the full spine, visualization of both shoulders or the pelvis in one view, Multitom Rax is designed to suit you and your patients.

[1] *Option*

"When we go into active planning, we must have accurate, high-precision images. Multitom Rax delivers the necessary high-quality imaging in order to realize successful treatment solutions especially for surgical procedures."

Prof. Alexander Carl Disch, MD
Head, University Comprehensive Spine Center
University Hospital Dresden, Germany



Right dose
Use the right dose for every patient: Choose proven technology with dedicated low-dose and pediatric organ programs (OGPs) to help reduce necessary radiation, limit unnecessary radiation with CAREPROFILE/CAREPOSITION, and minimize the risk of over-exposure and over-collimation with AEC and ACSS.

Ortho full Spine

Study ID: 5aac422

Male patient, 12 years old. SmartOrtho full spine, composed image. AP mAs 18 kV 71 DAP [µGy*m²] 0,571. LAT mAs 85 kV 78 DAP [µGy*m²] 2.3.

Courtesy of University Hospital Dresden, Germany.

Efficient workflows around your patients

Advanced musculoskeletal imaging requires time-consuming patient and system positioning, complex manual workflow steps – and may be painful for patients or physically demanding for staff. As a result, it is cumbersome to perform in clinical routine.

Multitom Rax precisely positions and aligns itself, reducing the need for unnatural patient positioning – even in challenging situations like trauma cases. It supports staff and offers barrier-free 360° patient access, helping to optimize the diagnostic experience.

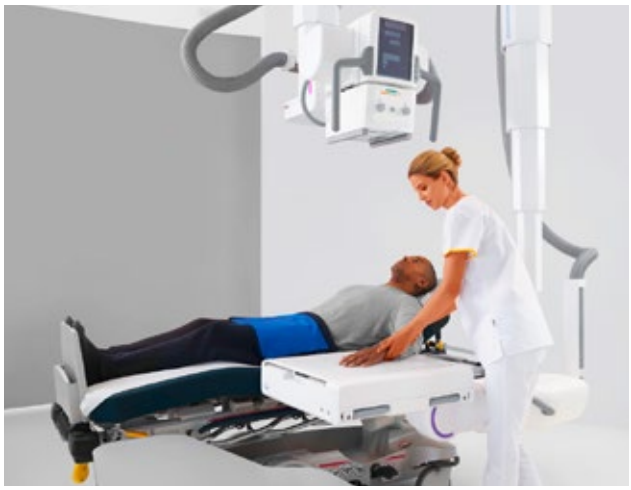
For fast, efficient, and productive workflows revolving around your patients.

Fast, robotic exam setup
Let standardized robotic movements speed up your daily routine. Faster setup is made possible by one-touch workflows and virtually unlimited, customizable organ programs that meet your specific requirements.

Automated detector/tube alignment
Reduce manual workflow steps and save valuable time. Thanks to RAXalign and RAXtrack, detector and tube align automatically and stay aligned when repositioning the system. The predictable and very compact virtual U-arm movement quickly shifts the system 90° around the patient – ideal for emergency departments.

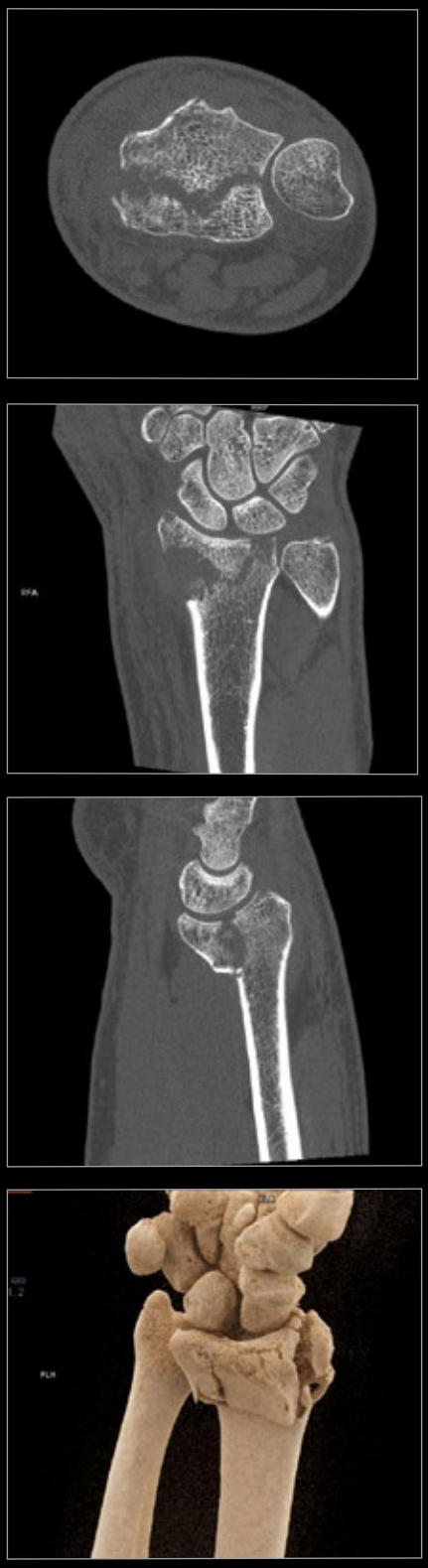
"Multitom Rax has made our workflows noticeably smoother, faster, and more predictable. And our patients appreciate the extra comfort."

Frank Schellhammer, MD
Head physician of diagnostic and interventional radiology
Academic Hospital Augustinerinnen Cologne, Germany



Less patient repositioning
Let the robots move, not the patient. With Multitom Rax, exams are less cumbersome, less painful, and less risky for patients. The system moves around the patient, so repositioning them is no longer necessary. And flexible workflows for wheelchairs, trolleys, and stretchers mean that patients need not be transferred onto the system's table at all.

Wrist



Study ID 5aaa477

Male patient, 55 years old. Real3D Hi-Res, wrist, distal radius fracture. mAs 0.6/pulse kV 14.1 DAP [µGy*m²] slice thickness 0.3mm.

Courtesy of Academic Hospital Augustinerinnen Cologne, Germany.

Comprehensive diagnosis with multiple procedures

Advanced musculoskeletal imaging calls for more than just radiography. A patient may also require 3D bone imaging, functional diagnosis, or contrast and drug injections into joint spaces.

Thanks to its modular design, Multitom Rax can be quickly configured to suit your and your patients' needs. Starting with precision radiography, it also allows Real3D[1] imaging for the lumbar spine and extremities, as well as fluoroscopic[1] and interventional[1] imaging for functional assessment.

This way, Multitom Rax enables comprehensive diagnosis and can provide the basis for treatment planning – all in a single room on a single system.

More informed diagnosis and treatment planning
Acquire 3D bone imaging with our optimized Real3D feature for improved image quality, more stable patient positioning, fewer metal artefacts, and streamlined, faster exams.[2] Its Hi-Res setting offers even higher spatial resolution (~150µm³ isotropic) for the upper extremities.

Enhanced comfort, flexibility, and independence
Depending on the individual patient's case, imaging can be done in supine, seated, or weight-bearing position. Multitom Rax can also help speed up diagnosis, since complementary imaging exams can be performed on a single system.

[1] *Option*
[2] *Compared to previous version*

"Multitom Rax holds the potential to be a 'one-stop shop' device for trauma-associated wrist imaging."

Jan-Peter Grunz, MD
University Hospital Wuerzburg, Germany

Expanded orthopedic capabilities
Perform fluoroscopy and minor interventions with 30 fps for needle guidance in musculoskeletal procedures such as functional diagnosis of joints, fracture and luxation repositioning, contrast and drug injections into joint spaces, as well as catheter or tube placements.

Real3D[1] weight-bearing

Enhanced diagnosis and surgical planning

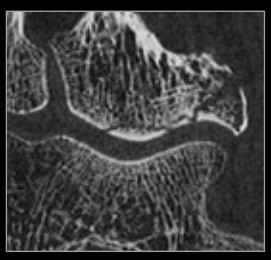
Study ID 5aab015

Real3D Hi-Res[1] upper extremities

High isotropic resolution without increase in dose

Study ID 5aaa190

3rd Gen. MDCT
UHR Mode (Ur77)



Study ID 5aaa186

Multitom Rax
Real3D Hi-Res[1]

Fluoroscopy[1] and interventions[1] for orthopedic specialists

StudyID 5aaa957

Arthrography of a knee joint

Go even further with True2scale Body Scan[1]

Geometrical distortions and magnification effects in X-ray images make assessing musculoskeletal pathologies a challenge. What's more, treatment of deformities calls for frequent, recurring exams.

With True2scale Body Scan, Multitom Rax offers full-body slot scanning – fully integrated. Acquire up to two panoramic images in one run, with the patient standing, seated, or even supine. This technique also avoids distortion, which can improve quantitative assessment of skeletal malpositioning.

All at ALADA dose.

Even more anatomical coverage
True2scale Body Scan lets you quickly acquire images of the full body or a region of interest. With a scan range of up to 190 cm lying and up to 170 cm standing, this novel acquisition technique enables advanced insights in supine or natural weight-bearing position.

Even greater precision
An ultra-small-angle tomosynthesis reconstruction is performed on the acquired slot images. No stitching or manual calibration is needed. This level of precision is clinically relevant for a range of applications, such as scoliosis progression monitoring, surgical planning, and post-operative follow-ups of spinal fusions and knee implants..

[1] *Option. True2scale Body Scan is pending 510(k) clearance, and is not yet commercially available in the United States.*

"We definitely need less dose for comparable image quality. Our pediatric radiologists are very happy with True2scale, since they get optimum image quality at lower dose."

Sophia Blum, MD
Radiologist, University Hospital Dresden, Germany

Even lower dose
True2scale Body Scan[1] is powered by slot-scanning technology adapted to orthopedic cases. You see what you need for diagnostic purposes, while scatter reduction inherent in the beam collimation helps ensure ALADA dose. Low-dose imaging is particularly important for pediatric patients and anyone needing frequent follow-up exams

True2scale Body Scan

Study ID 5aac714

Female patient, 11 years old. True2scale Body Scan, full-body S AP supine/seated. mAs 0.49 kV 80.9 CU 0.3 DAP [µGy*m2] 4.2.

Courtesy of University Hospital Dresden, Germany.

Case Study

Patient fell while horse riding. She suffered a concussion and reported left ankle and back pain.

X-rays of the left ankle were inconclusive. Despite considerable pain and swelling, no clear fracture dislocation or luxation could be ascertained. A fracture of the medial talus bone was suspected; however, the fracture pattern could not be sufficiently judged with radiography.

Real3D[7] images in the lying position displayed a multi-fragment injury of the talus bone with articular involvement of the upper ankle joint and smaller dislocated fragments at the medial side.

Real3D

AP view
Conventional X-ray examination

Lateral view

Axial view

Coronal view

Sagittal view

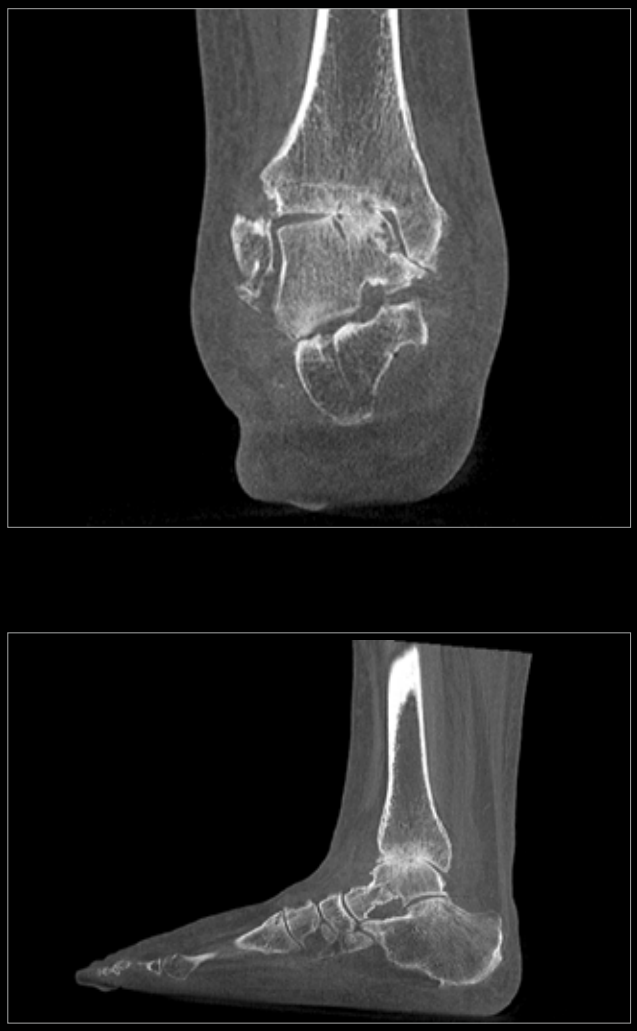
Study ID: 5aab345

Female patient, 31 years old. Real3D[7], talus. mAs 430 kV 80.5 DAP [µGy*m²] 1071.

Courtesy of University Hospital Wuerzburg, Germany.

[1] *Option. True2scale Body Scan is pending 510(k) clearance, and is not yet commercially available in the United States.*

Real3D weight-bearing



Study ID: 5aab005

Female patient, 55 years old. Real 3D7, ankle weight-bearing. mAs 0.5/pulse kV 116 DAP [µGy*m²] 75.

Courtesy of Academic Hospital Augustinerinnen Cologne, Germany.

True2scale Body Scan[1]

Study ID: 5aac707

Spine supine with T2S

Female patient, 17 years old. True2scale Body Scan, full-body M AP weight-bearing. mAs 1.58 kV 80.9 CU 0.3 DAP [µGy*m2] 48.58.

Courtesy of University Hospital Dresden, Germany.

Technical specifications

Arm board

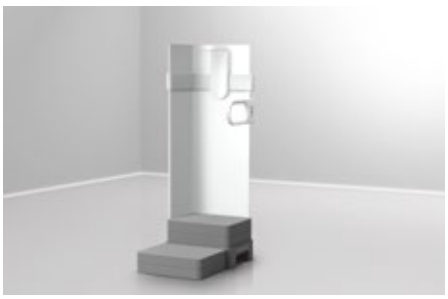
For Real3D images of hand and elbow

Arm support

For lateral Chest images

Tabletop extension

For Real3D images of knee and foot



RAX stand with head support

For Real 3D images under natural weightbearing condition

Fluoroscopy[1]

For extended MSK imaging tasks with multifunctional wireless footswitch[7]

Max detectors[1]

- MAX wi-D detector: 35 cm x 43 cm
  Weight capacity: max. 300 kg
- MAX mini detector: 24 cm x 30 cm

[1] *Option*

Large color touchscreen (10”)

User-friendly interface offers access to key image parameters with MAXtouch

Fast, robotic exam setup

- High speed, safe positioning with robotic precision
- Tube and detector move around the patient on up to 10 axes simultaneously
- Automated detector/tube alignment thanks to RAXalign, RAXtrack and Virtual U-arm

RAXdetector

Ceiling-mounted built-in 43 cm x 43 cm detector for static, dynamic[1], and 3D[1] imaging

Table[1]

Motorized height-adjustable table with minimum table height of 50 cm

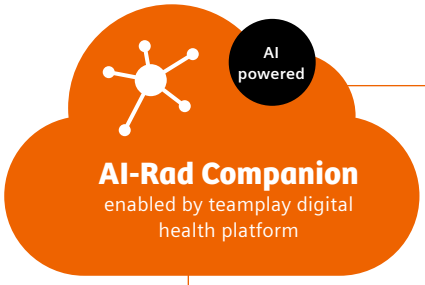
- Foot kick-switches for table height adjustment
- Weight capacity: 240 kg

AI-Rad Companion

Multi-modality decision support

We developed the AI-Rad Companion to help you cope with a growing radiology workload. With its deep learning algorithms, AI-Rad Companion automatically highlights abnormalities, segments anatomies, and compares results to reference values.

Drive productivity with seamless integration in the reading and reporting workflow, including automated measurements and DICOM structured reports. Every workflow step remains under wcontrol – enabling strong, evidence-based decisions.



Radiographic Findings

- Lesions
- Atelectasis
- Pneumothorax
- Consolidation
- Pleural effusion

Functionalities

- Highlighting
- Characterizing

Fleet Level Benefits

Unlock your potential – and increase the efficiency across your imaging fleet

As healthcare provider you are forced to do more with less, you have to run your radiology department more efficiently. A high level of complexity makes it challenging for you to reach the desired efficiency. Siemens Healthineers offers specific solutions across the entire X-ray portfolio that let you standardize, analyze, and secure your fleet. Experience consistency, transparency, and confidence as valuable Fleet Level Benefits and improve outcomes, increase efficiency – and achieve greater staff and patient satisfaction.

Standardize
for consistency

- Systems with highly intuitive user interfaces and common workflows
- Staff with consistent knowledge level
- Unified image quality and same image impression

Analyze
for transparency

- Consolidated data in one place
- Analyzed and evaluated data turned into valuable information

Secure
for confidence

- Protect large IT network and imaging fleet with one cybersecurity philosophy
- Same maintenance cycles and update strategies for the whole fleet

Service and exchange

Increasing value by partnering throughout the entire equipment lifecycle.

Equipment Maintenance & Monitoring
Reliably servicing your Multitom Rax allows you to identify deviations from current norms to maximize equipment availability.

Education Management
Personalized education and training improve your staff's expertise as well as your equipment efficiency.

Fleet Management
A transparent overview of your fleet allows you to manage the performance and maintenance of your Siemens Healthineers equipment, 24/7.

Accessory Solutions
Products from our partner companies complement your use of our equipment in your daily workflow.

Performance Management
An intelligible overview of your radiography performance data helps you make prompt and well-informed decisions.

Asset Management & Planning
Access to innovative medical technology and equipment throughout the entire contract lifetime allows you to maximize focus on patient care.

Business Modelling & Financing
Customized business and financial models address your budgetary and enterprise needs enabling you to remain more competitive.

Departmental Layout Optimization
3D visualization and digital twin analysis create more efficient workflows and a more enjoyable working environment.

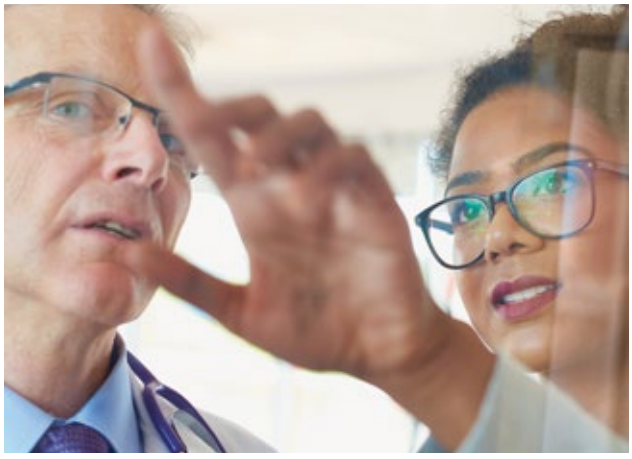
Continuously adding value and caring for your equipment, your workforce, and your entire institution.

Why Siemens Healthineers

At Siemens Healthineers, our purpose is to drive innovation to help humans live healthier and longer. Through our products, services and solutions we help physicians, medical staff, and healthcare providers prevent illnesses from occurring and to correctly diagnose and determine the right treatments for people who do become ill – resulting in fewer complications, shorter hospital stays, and faster patient recovery.

Our mission is to enable healthcare providers to increase value by expanding precision medicine, transforming are delivery, improving the patient experience, and digitalizing healthcare. With our comprehensive portfolio – from in-vitro diagnostics and imaging to therapy and follow-up care – we address the complete care continuum for many of the world's most threatening diseases.

Every hour, more than 240,000 patients are touched by technologies provided by Siemens Healthineers. We are at the center of clinical decision making with almost three-quarters of all critical clinical decisions influenced by our solutions. We are a leading medical technology company with over 120 years of experience and more than 65,000 highly dedicated employees around the globe who are innovating every day, truly shaping the future of healthcare.



The products/features mentioned herein are not commercially available in all countries. Their future availability cannot be guaranteed.

Results from case studies are not predictive of results in other cases. Results in other cases may vary.

True2scale Body Scan is an option. 510(k) pending and not yet commercially available in the United States or any other countries.

The outcomes achieved by the Siemens Healthineers customer described herein are based on results that were achieved in the customer's unique setting. Since there is no "typical" hospital and many variables exist (e.g. hospital size, case mix, level of IT adoption) there can be no guarantee that other customers will achieve the same results.

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Published by Siemens Healthcare GmbH · Order No. xxx-xxxx-xxx-xxxx · Printed in Germany · 11087 0921 ·