MSK Extreme® 1.5T

Extreme Image Quality **Extreme** ROI **Extremely** Smart

ONI Medical Systems provides state-of-the-art MRI systems and services for dedicated MSK applications. Our unrivaled experience in MR enables us to deliver the innovations our customers depend on for better patient care and financial success.

Now, ONI has revolutionized MSK imaging. Our newest dedicated MRI system offers hospitals and practices the ability to increase both image quality and return on investment.

Extreme Image Quality

The system provides high image quality, fast scan times, robust pulse sequences for contrast-enhanced studies, and late echo imaging. An extraordinary combination of three proprietary innovations creates the image quality advantage of the MSK Extreme 1.5T:

- **2x Higher Gradient Strength Increases Visualization of Detail**

  The 70 mT/m gradient strength of the MSK Extreme 1.5T and a fast constant slew rate of 200 T/m/s enables the system to achieve compressed echo trains of < 5 ms. This allows you to collect more data in each image acquired, so you can visualize more detail.

- **v-SPEC™ Technology Improves Accuracy**

  ONI's exclusive v-SPEC coils are scalable to MSK anatomy and patient size. This increases the MRI signal in your defined region of interest, and gives you more precise information than ever before. With the precision power of v-SPEC, you get better pre-operative screening data, enabling you to optimize your time in surgical procedures.

- **Sweet Spot Imaging Puts You in Control**

  The MSK Extreme 1.5T puts the physician in complete control of image optimization. Since the system is designed specifically for extremity applications, no surface coils are required, and the patient anatomy is always in the iso-center of the magnet. The patient is reclined in a comfortable seated position, and all imaging areas—even elbows—are now at the true iso-center of the system. This eliminates motion, reduces noise and improves image contrast.

Extreme ROI

The MSK Extreme 1.5T is a powerful, yet inexpensive 1.5T system. It features a better return on investment than a whole-body 1.5T system and is the most cost-effective way to image MSK patients. By adding an MSK Extreme 1.5T into the imaging suite, physicians can optimize workflow and maximize return on investment. For those practices that routinely refer MSK patients elsewhere for MRI studies, the MSK Extreme 1.5T represents a new revenue stream. According to one user: "The MSK Extreme just makes sense. You can earn money while you're doing other things."

MSK Extreme 1.5T Specifications

ONI Medical Systems is registered to ISO 13485.

System Space Requirements
Suite Size: 12 ft x 17 ft (3.7 m x 5.2 m) minimum floor space

Ergo™ Patient Chair and Ottoman
Type: Manually positioned, free-floating cushioned chair with lock-in position brakes, adjustable seat and back inclination, and easily moveable ottoman.
Weight Support: Up to 350-lb (159-kg) patient

Magnet System
Type: Superconducting, passive shims
Field Strength: 1.5 T active shield
Fringe Field: 0.5 mT line
1.85 m axial x 1.15 m radial
Helium Capacity: < 60 liters liquid helium
Size: 518 mm long, 683 mm OD, 285 mm ID
Helium Fills: Normally not required
Field Stability: < 0.1 ppm/hr
Magnet Weight: < 745 lbs (339 kg)
Compressor Weight: 350 lbs (159 kg)

Gradient System
Strength: 70 mT/m
Slew Rate: 200 T/m/s

RF Transmit / Receive
Frequency: 63.8 MHz ±500 kHz
RF Power: 2500 W peak rms, 75 W average
Image BW: Variable 5 kHz – 118 kHz
Preamp Noise Fig: < 0.5 dB

RF Coils
180 mm RF Coil:
The 180 mm diameter coil is used for routine lower extremity imaging of the foot, ankle, leg and knee.
160 mm RF Coil:
The 160 mm diameter coil is a specialty coil that offers up to a 40% increase in SNR (signal-noise ratio) for imaging medium- to small-sized knees and feet and larger-sized elbows and hands.
145 mm RF Coil (Optional):
The 145 mm RF coil is primarily used for imaging feet and ankles, as well as elbows. For smaller patients, it can also be used for knee imaging.
123 mm RF Coil:
The 123 mm diameter coil is used for routine upper extremity imaging of the hand, wrist, forearm and elbow, and for high-resolution imaging of small feet, ankles and knees.
100 mm RF Coil (Optional):
The 100 mm RF coil is used for routine upper extremity imaging of hands and wrists. It can also be used for imaging elbows on smaller patients.
80 mm RF Coil (Optional):
The 80 mm RF coil is used for routine imaging of the hands and wrists.
Type: All are removable quadrature volume transmit and receive coils.
Patient Access: All coils are cylindrical in design with either 180 mm, 160 mm, 145 mm, 123 mm, 100 mm or 80 mm diameter in the center, flared to 200 mm at the patient entrance.

Computer System
Host Computer: PC based; Core 2 duo processor, 2.4 GHz min; 80 GB removable hard drive; 400 W power supply
OP System: Windows XP Embedded
Data Storage: DVD-R/W, 9.4 GB total (4.7 GB each side), cased type
Display: 19-inch LCD panel
Data Transfer and Handling (HIS / RIS): DICOM 3.0 send/receive and DICOM Worklist
Camera Support: DICOM Print, most popular direct digital camera protocols
Reconstruction:
2D < 200 msec/image
3D < .25 sec/plane, 256 x 128 x 64

Imaging Capabilities
Sequences: Spin Echo, Fast Spin Echo, 2D and 3D gradient Echo
Imaging Options: Inversion Recovery, Driven Equilibrium, predefined protocols, single and double oblique imaging with use of graphical slice selection, RF Spoiling, Slice Interleave, Fat Suppression, Min TE, No Phase Wrap, Partial Data, Spatial Saturation, Flow Compensation, Magnetization Transfer, Rectangular FOV
FOV: 4 cm – 16 cm, variable in 1 mm increments
Slice Thickness:
2D: 2 mm – 10 mm, variable in 0.1 mm increments
3D: 0.5 mm – 10 mm, variable in 0.1 mm increments
Matrix:
2D: Phase and Frequency variable separately in steps of 2 from 64 to 512, and in z in steps of 1 from 1 to 64.
3D: Phase and Frequency variable separately in steps of 2 from 64 to 512, and in z in steps of 2 from 8 to 256. (some multiples of prime numbers not allowed)

Image Review
Features: Auto display, window/level, pan/zoom, multiple image display, ROI, annotate, measurements, multi-planar reformat, and simultaneity of scan, reconstruction, image display, filming, archiving and DICOM transfer

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