

HITACHI
Inspire the Next

APERTO Lucent

Prime Open MRI



0.4T x open design

APERTO Lucent offers sophisticated MR imaging with a 0.4T permanent magnet in a compact, patient-focussed gantry. Hitachi's technological expertise enabled the design and creation of a single-pillar MRI structure which offers premium open space.

As the only single-pillar MRI system within the Hitachi range, the APERTO Lucent offers an expansive, panoramic open aspect designed to reduce patient anxiety and provide a comfortable examination environment.

■ Footswitch Allowing the operator to focus on the patient

The footswitch enables hands-free control of the table in the vertical and horizontal direction, allowing the operator to focus on patient care.



■ Open Design

Created to expand space and light, helping to reduce claustrophobia and anxiety

The single-pillar design creates an open examination area which together with the rounded architecture and innovative colour design establishes a secure, calming atmosphere for the patient.



■ Lateral Slide

Enables high-definition imaging even in off-centered regions

In MRI, the highest image definition is obtained at the centre of the gantry where the uniformity of both the static field and RF field is at a maximum, in conjunction with the highest linearity of the gradient magnetic field.

APERTO Lucent's table can be moved laterally (right and left) inside the gantry. Therefore, any region that is out of the midline (shoulder, knee, etc.) can be centralized to the magnetic field.



■ Free-moving Table

Designed for comfort, accessibility and isocentric imaging

The lateral slide function allows the free-moving table to move right and left inside the gantry and the target region can be positioned easily in the centre of the magnetic field. The table can be lowered to a minimum height of 490 mm, allowing easier accessibility for children and elderly patients. The 700 mm wide table top offers patients both comfort and a 'feel-good' factor, helping to reduce claustrophobia.



Open Your Vision Make a Smart Choice

Prime Imaging

Hitachi's magnetic circuit technology and unparalleled diagnostic functions enable crisp, high-definition imaging of clinically challenging regions and applications.



■ RADAR*

Motion reduction capability

RADAR uses radial scan technology to mitigate motion artefacts caused by voluntary or involuntary patient movement. It is available with T2WI, T1WI and FLAIR imaging in any plane and any anatomical region including the head and shoulder joint, which are susceptible to respiration movements, and the cervical spine, which can be affected by swallowing movements. RADAR can help reduce repeat scans and improve image quality.

■ 3D-GEIR*

Acquire high contrast, 3D sequences at high spatial resolution

This function offers high-speed T1WI by combining Gradient Echo sequences with IR pulses. This allows high contrast 3D images to be acquired at high spatial resolution and can be used for measurement of volume data when imaging the head.

■ VASC-ASL*

Non-contrast MR Angiography

VASC-ASL is a non-contrast MRA imaging function that uses 3D BASG (Balanced SARGE) to visualize the blood flow labelled with IR pulses. This function is used to produce images of portal veins, renal arteries, and upper and lower extremity arteries.

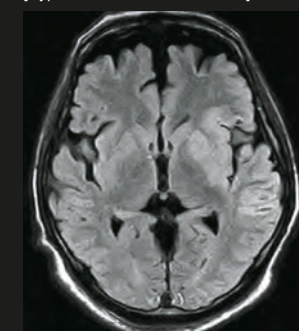
■ VR (Volume Rendering) Function*

Supports diagnosis of complex vascular structures

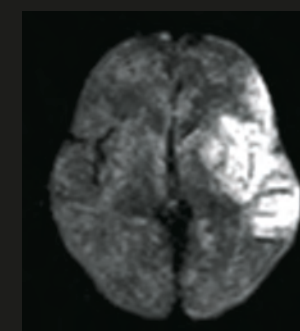
Volume rendering, a reconstruction method, can be created at the console. Blood flow can be depicted in 3D using MIP, providing diagnostic support in regions with complex vascular structures such as the head.

*Option

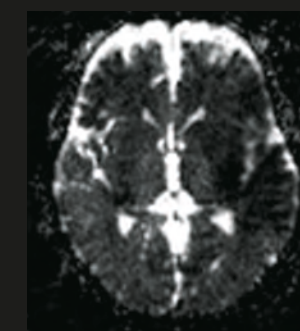
[Hyperacute Cerebral Infarction]



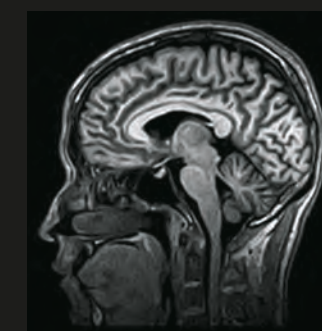
FLAIR



DWI

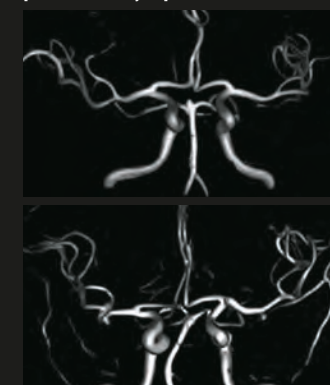


ADC map



3D-GEIR

[Cerebral Aneurysm]



3D-TOF VR image

[Internal Carotid Stenosis]



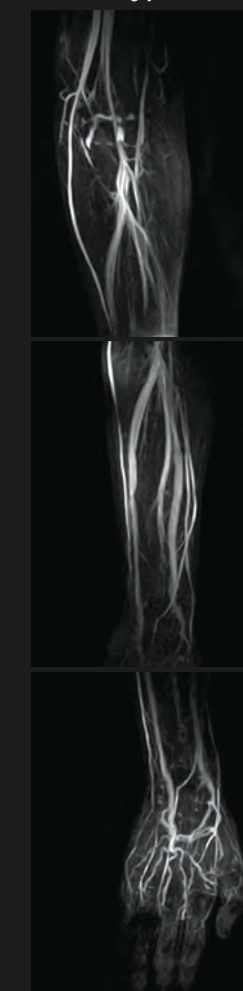
2D-TOF MIP image

[Neck Pulse-gated MIP image]

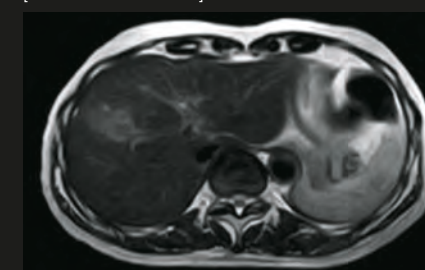


3D-VASC-ASL (Non-Subtraction technique)

[Upper extremity Pulse-gated MRA MIP image]

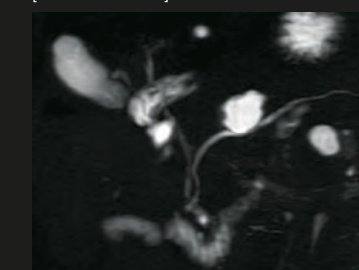


[Metastatic Liver Tumour]

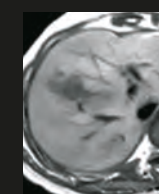


T2WI

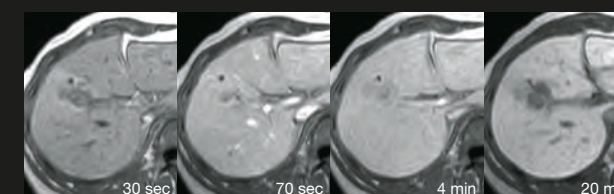
[Abdominal MRCP]



Respiratory-gated MIP image

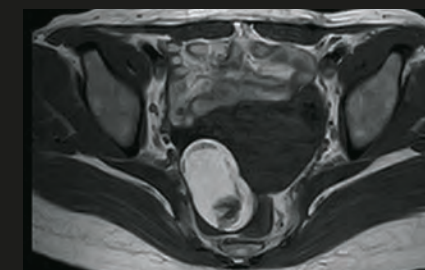


T1WI

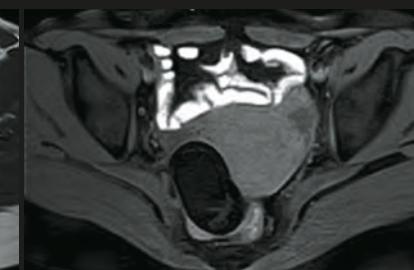


2D-RSSG Dynamic

[Right Ovarian Dermoid Cyst]

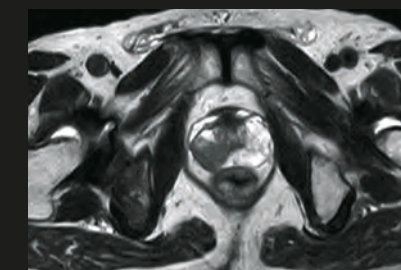


T1WI



FatSep-T1WI

[Prostate Cancer]



T2WI

[Ossification of Posterior Longitudinal Ligament]



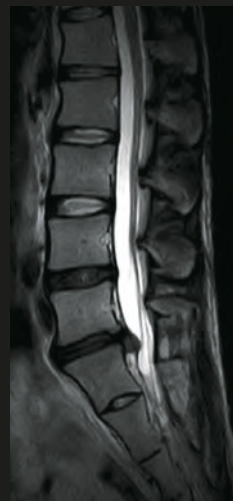
T2WI

[Multiple Myeloma]



T2WI

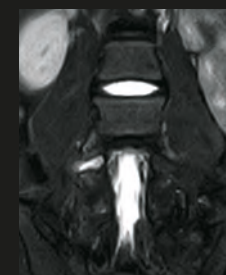
[Disc Herniation]



T2WI



[Lumbar Spondylolysis]



FatSep-T2WI

[3D Neurography]



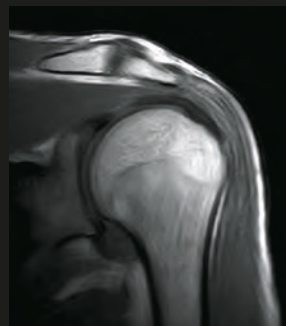
FatSep-T2*WI

[High Resolution image]



T2WI

[Shoulder Joint]

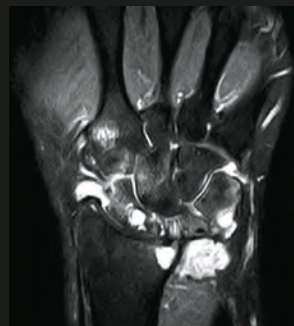


T1WI RADAR OFF



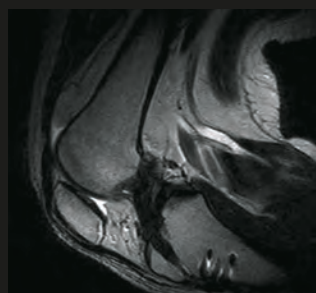
T1WI RADAR ON

[Lunate Malacia]



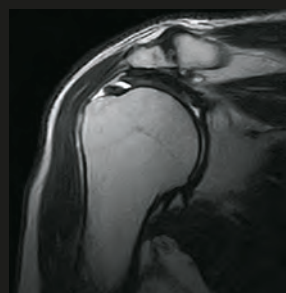
FatSat-PDWI

[ACL Post-surgery (Flexed Position)]

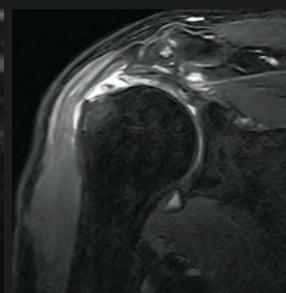


T2WI

[Rotator Cuff Partial Tear]

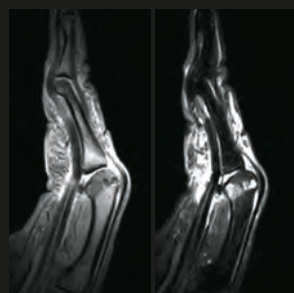


T2WI



FatSep-T2WI

[Finger Fracture]



T2*WI

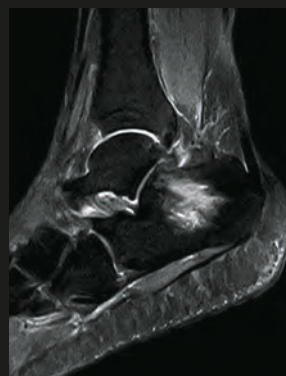
STIR

[Meniscus Injury]

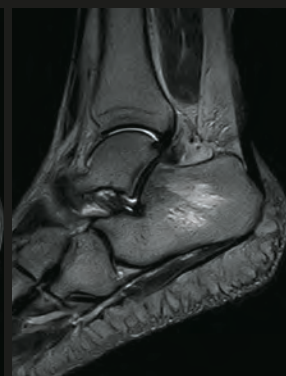


T2*WI

[Suspicion of Cellulitis, Osteomyelitis]



FatSat-PDWI



T2WI

[Labral Tear]



T2*WI RadialStack

■ SuperShim

Reduces magnetic field non-uniformity which cannot be corrected with primary shimming

SuperShim is a technology that increases the uniformity of the static field, which is of paramount importance in MRI. Non-uniformity in the magnetic field cannot be fully corrected with first order shimming which performs linear correction. SuperShim is provided to reduce non-uniformity in the magnetic field by enabling high order shimming.

■ FatSep Function

Provides fat suppression imaging with high SNR

FatSep (fat water separation) enables imaging at different TEs to acquire in-phase and out-of-phase images simultaneously. The two types of images are added to form fat suppressed images. Through this additional process, FatSep provides fat suppressed images with a good SN ratio and clarity. It can also provide a Fat image through a subtraction process.

■ High Reconstruction Matrix Imaging

Supports high-definition imaging

This function enables high spatial resolution imaging resulting in higher definition images of joint regions as required for orthopaedic examinations. An image reconstruction matrix of 2048 x 2048 is achieved through the high-speed imaging processor.

■ High Sensitivity Receiver Coils

Especially effective for images with a small FOV and high spatial resolution

Regions that require a small FOV and high spatial resolution, as in orthopaedics, need higher sensitivity receiver coils. The solenoid coil adopted in the APERTO Lucent delivers this high sensitivity. The small diameter coil is tailored to fit the body and the target region is easily positioned to the centre of the coil where sensitivity is at the highest.



Prime Operation

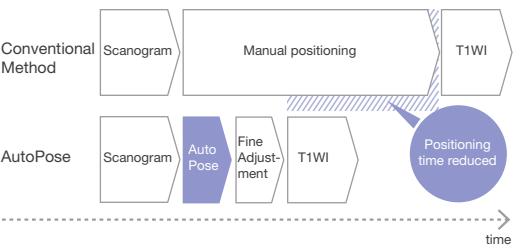
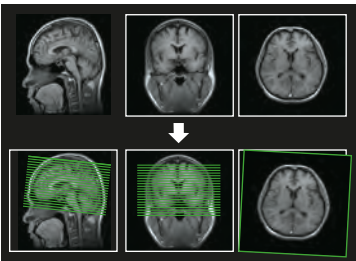
Enhanced operability supports efficient and reliable diagnosis, together with ease of operation and image sharing capabilities.



■ AutoPose*1

Supports correct image cross-section settings and reduces strain on the operator

AutoPose is a function that automates slice line positioning. This function allows faster set-up of the OM or AC-PC lines used in head examinations and reduces strain on the operator. Prior settings such as teach/register and 3D data acquisition are not required.



■ Unified, eye-friendly colour to minimize eye strain

A user interface that is easy to understand and operate

A soft celadon-based colour set, has been adopted for the GUI (Graphical User Interface). MRI parameters that can be complex are more easily displayed on the Windows-based wide screen.



■ Customization of protocols

Supports efficient registration and alteration of protocols

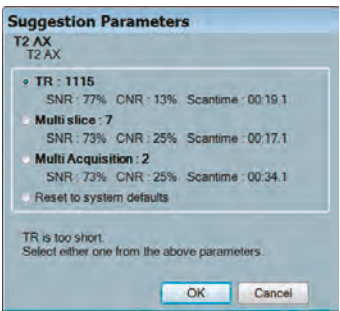
Routine protocols can be easily registered and changed by the operator, even during the examination to optimize the settings according to the patient and clinical requirements.



■ User Interface (UI) suggestions

Supports alteration of imaging parameters

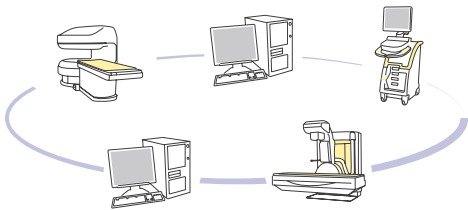
This function provides guidance for parameter settings. During protocol change, several options are displayed to allow the operator to select the parameter most appropriate for that particular scenario.



■ DICOM Function

Offers various interfaces

The DICOM interface is included as standard in the APERTO Lucent which adapts to the hospital's current networks and which will continue to evolve and upgrade over time. DICOM MWM, SWF, and PIR functions are also supported.



■ IHE PDI Function

Extensive coordination for compatibility with the hospital's in-house and external network systems

Support for the IHE PDI standard is provided to enable various data exchanges, such as image zoom and rotation display, with other systems supporting the PDI standard. Ability to write DICOM data and simple browser software*2 to a CD-R are also included.

*1 Optional. *2 Cannot be used for diagnostic purposes.

■ Curved MPR

Reconstruction capability of various cross-sectional images from the 3D image data

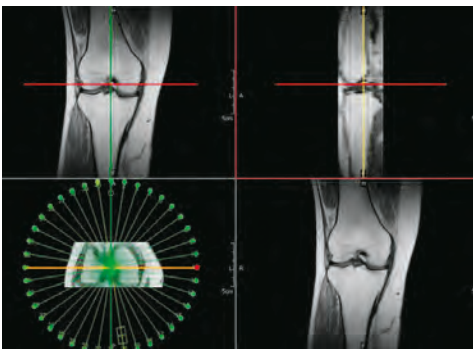
Arbitrary curved cross-sections can be reconstructed using data acquired through 3D imaging sequences. In addition, multiple curved-sections can be reconstructed simultaneously.



■ Radial MPR

Offers simultaneous image reconstruction of multiple cross-sections

Radial MPR images are created which can be useful when diagnosing complex structural tissue such as that found within the knee joint.

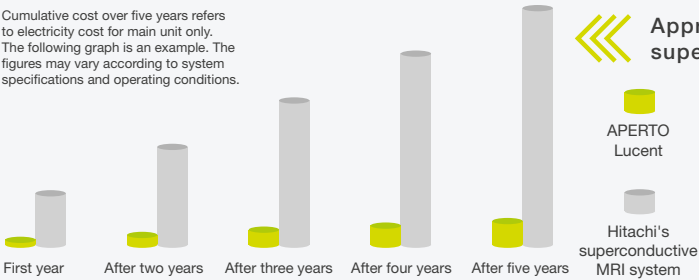


Why Hitachi is first choice for open MRIs around the world

01 Making MRI Affordable

Low running costs together with an attractive initial investment accelerate your MRI business and offer an excellent return on investment

Cumulative cost over five years refers to electricity cost for main unit only. The following graph is an example. The figures may vary according to system specifications and operating conditions.



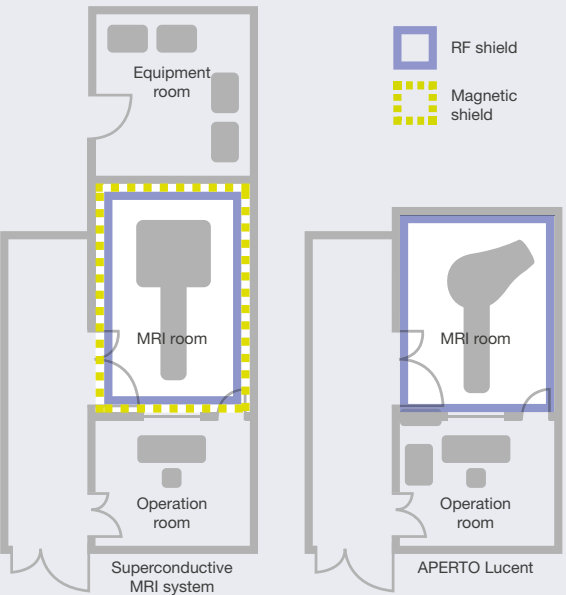
Approximately 1/10 compared to Hitachi's superconductive MRI system

In permanent magnet Open MRI technology, the magnetic field barely changes over the lifetime of the system. Unlike superconductive MRI, there is no need for additional equipment and infrastructure in order to maintain the magnetic field, thereby keeping the costs low. A low capacity power supply means the initial power system costs can be kept to a minimum, and lowering energy consumption reduces monthly running costs, too. The APERTO Lucent does not require a gradient cooling system negating the need for a complex and costly infrastructure and the installation area can be minimized as a result.

System	Power supply capacity
Hitachi's superconductive MRI system	50kVA ~ 125kVA
APERTO Lucent	9.5kVA

02 Ease of Installation

Reduced construction costs with easy siting



Magnetic Shielding is required for all planes, including ceiling and floor surface.

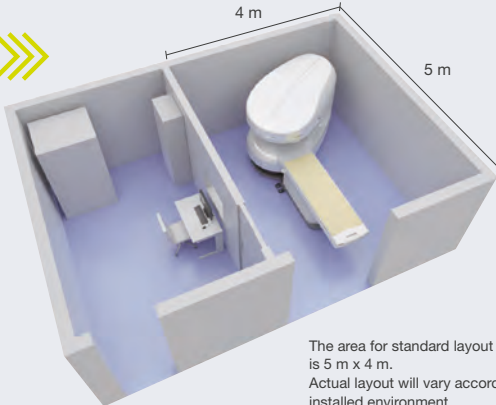
Magnetic shielding is not required

MRI installations usually include two types of shielding: RF shielding to block any high frequency noise from the outside and magnetic shielding to suppress leakage of the magnetic field from the inside. However, a permanent magnet MRI system generally does not require any specific magnetic shielding, so the cost of construction is reduced. Removing many of the construction processes usually associated with superconductive systems results in faster and easier installation ensuring your Open MRI is up and running in a shorter timeframe.

03 Small Footprint

APERTO Lucent's compact design significantly reduces the space required for installation

Equipment room not necessary



APERTO Lucent consists of three main units: the gantry, console and power supply system; fewer than its superconductive counterpart. The magnetic field leakage is also kept low, and in turn, the imaging room can be small. As an equipment room is unnecessary, the overall footprint is reduced and the space saved can be used for other purposes.



Over 7,000 Units*

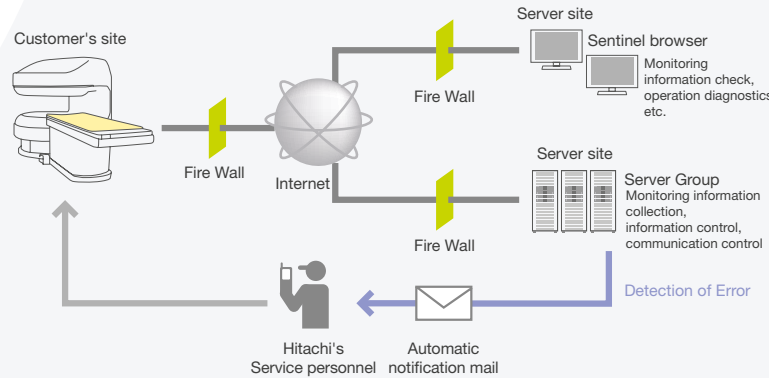
For more than 30 years, Hitachi has been leading the way in Open MRI. With more than 7,000 systems delivered worldwide*, Hitachi is at the forefront of MRI technology.

* Based on Hitachi's factory shipment records, as of end of March, 2016.

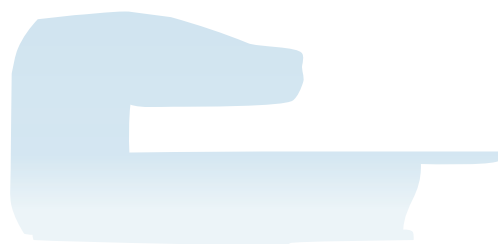
This ensures that your system is kept running smoothly and efficiently through round-the-clock monitoring. It provides proactive first class reliability for stability and maintenance.


Users are required to set up their network environment to make it compatible with Sentinel. The level of service may vary depending on the contractual coverage.

Sentinel Customer Support



System status screen



APERTO Lucent 
Prime Open MRI

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 - Windows is a registered trademark or trademark of Microsoft Corporation in the USA and other countries.
 - Specifications and physical appearance may change without prior notice.
 - Please refer to the operation manual and the related documents for appropriate use of this product.

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