

MY-D054K-A

Farol 1.5T

[MY-D054K-A]

Farol 1.5T Superconducting Magnetic Resonance Imaging System

catalogs



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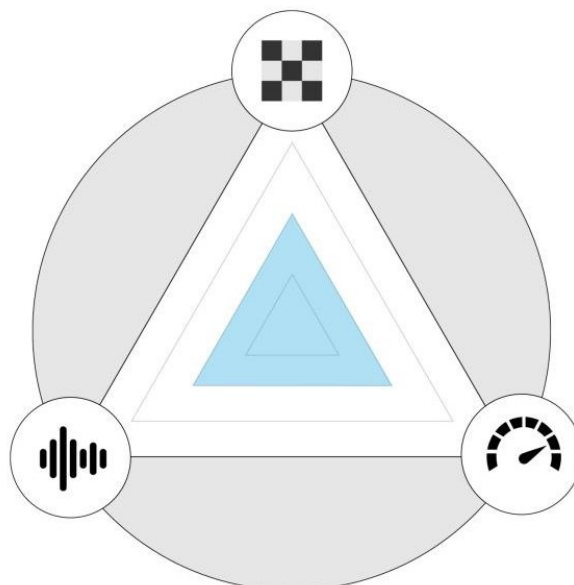


II. Product characteristics

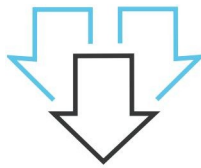
- **Industry-leading RF platform system with** high fidelity and expandability;
- **Fully self-developed spectrometer + imaging software**, high degree of self-development of core technologies, good system expandability, wide clinical applications and rich functionality.
- **20kW top-of-the-line RF amplifier to** fully meet clinical demands for system performance.
- **Highly stable magnet system**, truly realizing "0" liquid helium volatility, ultra-high uniformity to improve imaging quality.

Algorithms are fully upgraded to help hospitals grow rapidly

MRI scanning speed is slow compared to CT scanning speed, how to complete the scanning at high speed and high quality has been an important topic in the development of magnetic resonance technology, MR imaging exists in the "signal-to-noise ratio - resolution - scanning speed" of the three checks and balances, how to ensure the signal-to-noise ratio and resolution, that is, the image scanning quality of the prerequisite to improve the scanning speed, or to ensure that the scanning speed as much as possible to improve the image scanning quality is an important basis for testing the technical level of an MR device. How to improve the scanning speed under the premise of guaranteeing the signal-to-noise ratio and resolution, i.e. image scanning quality; or guaranteeing the scanning speed and improving the image scanning quality as much as possible, is an important basis for examining the technical level of an MR equipment.



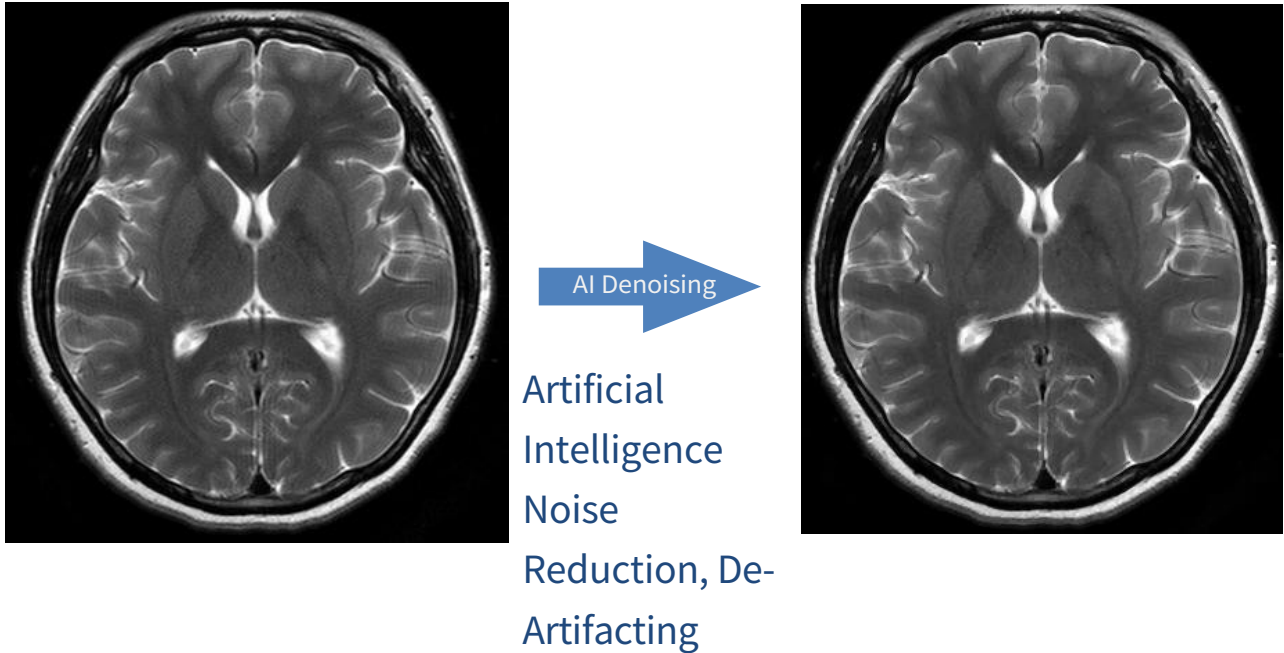
Phantom has a variety of core algorithms, such as machine learning AI noise reduction and de-artifacting algorithm: AI Denoising, compressed sensing algorithm CS (Compressed Sensing), and high-speed parallel acquisition Grappa technology, etc., which help hospitals develop rapidly while guaranteeing scanning speed and imaging quality.



1. Machine Learning AI Noise Reduction De-Artifacting Algorithm: AI Denoising

Achievable:

- AI Intelligence Removes Gibbs Artifacts
- AI Intelligent Noise Reduction, High Fidelity



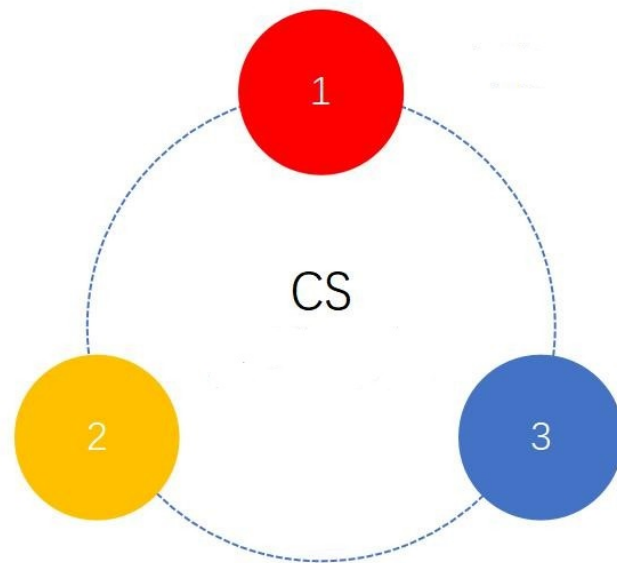
T2FSE after ordinary reconstruction.
Subtle Gibbs artifacts are present in cortical areas

After AI Denoising intelligent optimization, artifacts are effectively reduced and normal anatomical structures are not affected by blurring

2. ACKs (Accelerating Kits) Accelerating Kits

- Advanced CS (Compressed Sensing) compressed sensing algorithm
- Incoherent (random) undersampling

- 
- sparse transformation (math)
 - Nonlinear iterative reconstruction



CS compressed sensing acceleration technology is one of the most cutting-edge acceleration algorithms for MR, which can greatly improve the scanning speed without significant loss of image quality. Using compressed sensing technology, it can greatly improve

Scanning speed (Note: Depending on the sequence and application scenarios, the enhancement performance varies. Up to 20 times faster is possible, and generally more than 30% faster), without significantly sacrificing image quality.



3. Comprehensive parallel acquisition technology

- Grappa: a parallel acquisition algorithm for calibrating K-space data
- Sense: a parallel acquisition algorithm for calibrating image data
- CAIPIRINIA: Cocktail Algorithm - Parallel Acquisition Algorithm for Acceleration in 3D Direction

4. DE-FSE: Fast Spin-Echo Technology for Driving Balanced Acceleration

- Improve effective data acquisition time with drive balance pulses

5. **Half-scan: acceleration technique for half-Fourier acquisition**

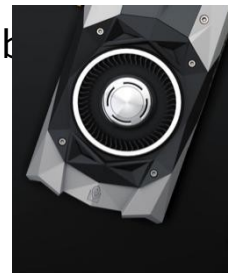
- Partial K space-filling technique for faster data sampling

6. **Pro 3-Three Generation Propeller De-Artifacting Technology**

- Newly upgraded acquisition method with wider application scenarios
- Suppression of somatic motion artifacts
- Removal of magnetization rate artifacts

7. **True-16 channel platform**

- 16 independent ADCs (analog-to-digital converters) + fiber optic transmission technology
- Five-generation topology coil: 16-channel phased array receiver coil - fully supports various parallel acquisition techniques
- High-speed acquisition algorithms supported by GPU hardware acceleration
- High-fidelity, three-generation fiber optic transmission technology

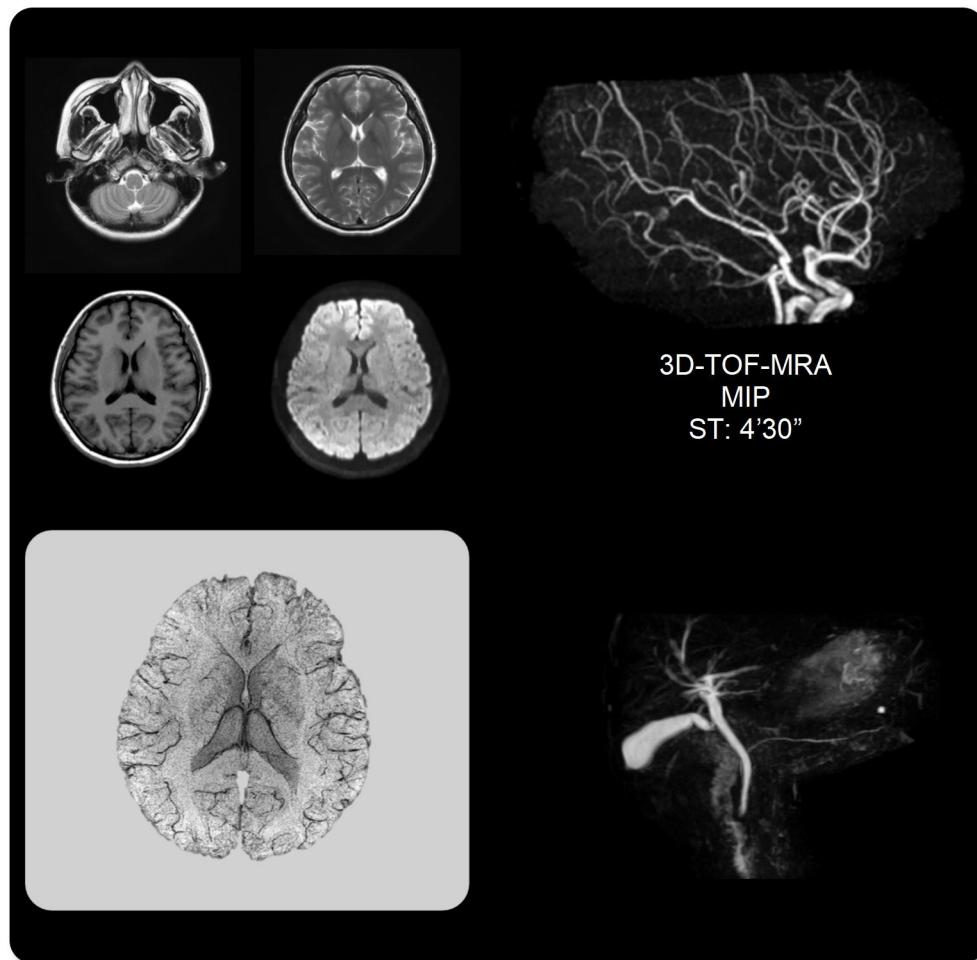


8. **High Definition Vascular Imaging - Comprehensive Application of Advanced Vascular Imaging Techniques**

- TONE Technology
- SLINKY technology
- MTC technology
- AI Intelligent Noise Reduction and Background Signal Suppression Technology

9. Selected clinical images

- High Definition Images of the Cranium
- Head and Neck HD Vascular
- HR SWI high-resolution magnetically sensitive weighted imaging
- HR MRCP High Definition Magnetic Resonance Cholangiopancreatic Imaging



III. 1.5T System parameters

1.1	Magnet Type	Solenoidal superconducting magnets
1.2	magnetic field strength	1.5T
1.3	center frequency	63.87MHz
1.4	Magnet weight	4300kg
1.5	Patient scanning aperture	600mm
1.6	Magnet Stability	≤ 0.10 ppm/h
1.7	Magnet uniformity (Vrms)	≤ 1.5 ppm 45cm DSV
1.8	Magnet uniformity (P-P)	≤ 15 ppm 45cm DSV
1.9	5Gauss line range	4m (A), 2.5m (R)
1.10	uniform field method	Active equalization + passive equalization
1.11	Liquid helium volume	1150L
1.12	Liquid helium consumption rate	≤ 0.01 L/year, "0" liquid helium evaporation technology
2.1	Maximum gradient strength	35.5mT/m
2.2	Maximum switching rate	120mT/m/ms
2.3	Minimum Climbing Time	0.26ms
2.4	control method	Fully digitalized real-time
2.5	Cooling method	circulating water cooling

2.6	Automatic leveling function	able fulfill (conditions or requirements)
3.1	fully digitalized	able fulfill (conditions or requirements)
3.2	Independent RF receiver channel	16
3.3	peak RF power	20KW
3.4	RF amplifier cooling method	circulating water cooling
3.5	RF Receive Bandwidth	1MHz
3.6	Biocompatible Coatings	able fulfill (conditions or requirements)
3.7	Automatic coil recognition function	able fulfill (conditions or requirements)
3.8	Automatic RF calibration function	able fulfill (conditions or requirements)
3.9	Automatic gain matching function	able fulfill (conditions or requirements)
3.10	Integrated Transmit/Receive Coil	able fulfill (conditions or requirements)
3.11	solenoid (electrical engineering)	Yes, Independent 16 Channel, Phased Array
3.12	Cervical Coil	Phased Array, Standalone, 8-Channel
3.13	body coil	Yes, Independent 16 Channel, Phased Array
3.14	Shoulder Coil	Phased Array, Standalone, 8-Channel
3.15	Kneecap Coil	Yes, Independent 16 Channel, Phased Array
3.16	Spine coil (optional)	Phased Array, Standalone, 8-Channel
3.17	Ankle Coil (optional)	Yes, Independent 16 Channel, Phased Array



4.1	Spin echo sequence (SE)	able fulfill (conditions or requirements)

4.2	Fast Spin Echo Sequence (FSE)	able fulfill (conditions or requirements)
4.3	Single-excitation fast spin-echo sequence	able fulfill (conditions or requirements)
4.4	Reverse Recovery Sequence (IR)	able fulfill (conditions or requirements)
4.5	Fast Inversion Recovery Sequence (FIR)	able fulfill (conditions or requirements)
4.6	2D/3D Gradient Echo Sequence	able fulfill (conditions or requirements)
4.7	Fast Gradient Echo Sequence	able fulfill (conditions or requirements)
4.8	Echo Plane Sequence (EPI)	able fulfill (conditions or requirements)
4.9	Diffusion imaging (DWI)	able fulfill (conditions or requirements)
4.10	Angiography (MRA)	able fulfill (conditions or requirements)
4.11	Water imaging (MRCP/MRU/MRM)	able fulfill (conditions or requirements)
4.12	Magnetization Transfer Technology (MTC)	able fulfill (conditions or requirements)
4.13	Dynamic pre-saturation technology	able fulfill (conditions or requirements)
4.14	Saturation band following technique	able fulfill (conditions or requirements)
4.15	Maximum Density Projection Technology	able fulfill (conditions or requirements)
4.16	Flow Compensation Technology	able fulfill (conditions or requirements)
4.17	Motion Compensation Technology	able fulfill (conditions or requirements)
4.18	Water-lipid separation technology	able fulfill (conditions or requirements)

4.19	Partial Echo Acquisition Technique	able fulfill (conditions or requirements)
4.20	parallel acquisition technology	able fulfill (conditions or requirements)
4.21	oversampling technique	able fulfill (conditions or requirements)
4.22	Magnetization Transfer Contrast Technology	able fulfill (conditions or requirements)

4.23	Bandwidth acquisition optimization techniques	able fulfill (conditions or requirements)
4.24	SAR value dynamic monitoring technology	able fulfill (conditions or requirements)
5.1	Maximum scanning field of view (FOV)	500mm
5.2	Minimum scanning field of view (FOV)	5mm
5.3	Maximum Echo Trace Length (ETL)	256
5.4	2D Minimum Layer Thickness	0.5mm
5.5	3D Minimum Layer Thickness	0.1mm
5.6	Maximum Acquisition Matrix	1024*1024
5.7	Maximum reconstruction matrix	2048*2048
5.8	Minimum TR	1.6ms
5.9	Minimum TE	1.0ms
6.1	Multi-threaded multi-task parallel processing	able fulfill (conditions or requirements)
6.2	Fast adaptive calibration function	able fulfill (conditions or requirements)
6.3	Automatic calculation function for optional parameters	able fulfill (conditions or requirements)
6.4	One-click scanning function	able fulfill (conditions or requirements)
6.5	Parameter calibration prompt	able fulfill (conditions or requirements)

	function	
6.6	Scanning Protocol Management Function	able fulfill (conditions or requirements)
6.7	Image Post-Processing Component Package	able fulfill (conditions or requirements)
6.8	Area of interest statistics function	able fulfill (conditions or requirements)

6.9	3D Visualization Post-Processing Component Package	able fulfill (conditions or requirements)
6.10	Printing Component Packages	able fulfill (conditions or requirements)
6.11	DICOM 3.0 compliant	able fulfill (conditions or requirements)
6.12	Worklist Patient Registration Function	able fulfill (conditions or requirements)
6.13	PACS image storage function	able fulfill (conditions or requirements)
6.14	Structured Reporting Component Package	able fulfill (conditions or requirements)
6.15	Data storage and retrieval functions	able fulfill (conditions or requirements)
6.16	burn function	able fulfill (conditions or requirements)
6.17	Data import and export backup function	able fulfill (conditions or requirements)
6.18	Electronic film generation function	able fulfill (conditions or requirements)
6.19	Software disaster recovery mechanisms	able fulfill (conditions or requirements)
6.20	Real-time 3D MIP	able fulfill (conditions or requirements)
6.21	MPR Multi-Planar Reconstruction	able fulfill (conditions or requirements)
6.22	SSD surface method reconstruction	able fulfill (conditions or requirements)
6.23	Image Enhancement	able fulfill (conditions or requirements)
6.24	CINE Movie Features	able fulfill (conditions or requirements)



7.1	CPU frequency	3.6GHz, 4 cores, 8 threads
7.2	Memory capacity	16GB

7.3	Hard disk capacity	1TB
7.4	operating system	Windows (computer)
7.5	monitor (computer)	27-inch dedicated color monitor
7.6	DVD burning	able fulfill (conditions or requirements)
7.7	Digital Interface for Laser Cameras	able fulfill (conditions or requirements)
7.8	DICOM3.0 Interface	able fulfill (conditions or requirements)
8.1	Maximum load capacity of the examination bed	200kg
8.2	control method	electric powered
8.3	Repeat Positioning Accuracy	1mm
8.4	Inspection bed travel	$2018 \pm 10\text{mm}$ (HF), $226 \pm 6\text{mm}$ (AP)
8.5	Bilateral control	able fulfill (conditions or requirements)
8.6	Imaging aperture ventilation	able fulfill (conditions or requirements)
8.7	Imaging aperture illumination	able fulfill (conditions or requirements)
8.8	Two-way communication system between doctors and patients	able fulfill (conditions or requirements)

IV. 1.5T System Configuration List (Standard)

I. Main hardware configuration of the system		
1.1	superconducting magnet system (physics)	
1.2	Magnet monitoring	
1.3	helium compressor	
1.4	scanning bed	
1.5	spectrograph	
1.6	gradient coil	
1.7	gradient amplifier	
1.8	radio frequency amplifier	
1.9	16-channel radio frequency chain system	
1.10	Phased array coil assembly	16 Channel header coils
		8 Channel Cervical Coil
		16 Channel Body Coil
		8 Channel Shoulder Coil
		16 Channel Knee Coil
1.11	computer system	

1.12	Patient communication systems	
1.13	Door control system	
1.14	Magnet Housings	
1.15	Other related auxiliary accessories	
II. Major software/sequence/imaging technology configurations		
2.1	imaging software	Worklist compatible information registration components
		Scanning Control Assembly
		Image display and post-processing components
		PACS Compatible Storage Transport Components
		IHE Certification
2.2	spin echo sequence	SE Sequence
		FSE Sequence
		Single Stimulated FSE Sequence
		IR sequence
		diffusion-weighted series
		Dual-echo fast imaging sequence
		Multi-Echo Multi-Layer Imaging Sequence
2.3	gradient echo sequence	2D GRE Sequence
		Iso/Inverted Phase Sequence
		3D GRE Sequence



		Three-dimensional reversed gradient sequences (MPRAGE)
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		Gradient Multi-Echo Merged Sequence (MEDIC)
		Magnetically sensitive weighted imaging function (SWI)
		TIGRE three-dimensional inversion of a pressed-lipid gradient-echo sequence
2.4	Fat Suppression Technology	Short-Time Inversion of Lipid Inhibitory Sequence (STIR)
		Fluid Attenuation Inversion Recovery Sequence (FLAIR)
		CHESS method of fat suppression
		SPAIR Fat Suppression
2.5	Vascular Imaging Sequence	2D TOF MRA sequence
		3D TOF MRA sequence
		Tracking pre-saturation technology
		TONE Waveform Technology
III. Main technical configurations		
3.1	mobility compensation	
3.2	Pre-saturation technology	
3.3	Motion Compensation Technology	
3.4	Magnetization Transfer Contrast (MTC)	
3.5	Breath-triggered gating technology	
3.6	Image uniformity correction	
3.7	Image distortion correction	



3.8	Parallel acquisition acceleration
3.9	oversampling technique



3.10	SAR prediction techniques
3.11	Partial Fourier acquisition reconstruction acceleration
3.12	Phase direction overlap artifact suppression
3.13	Layer direction overlap artifact suppression
3.14	3D MIP Post-Processing
3.15	image enhancement

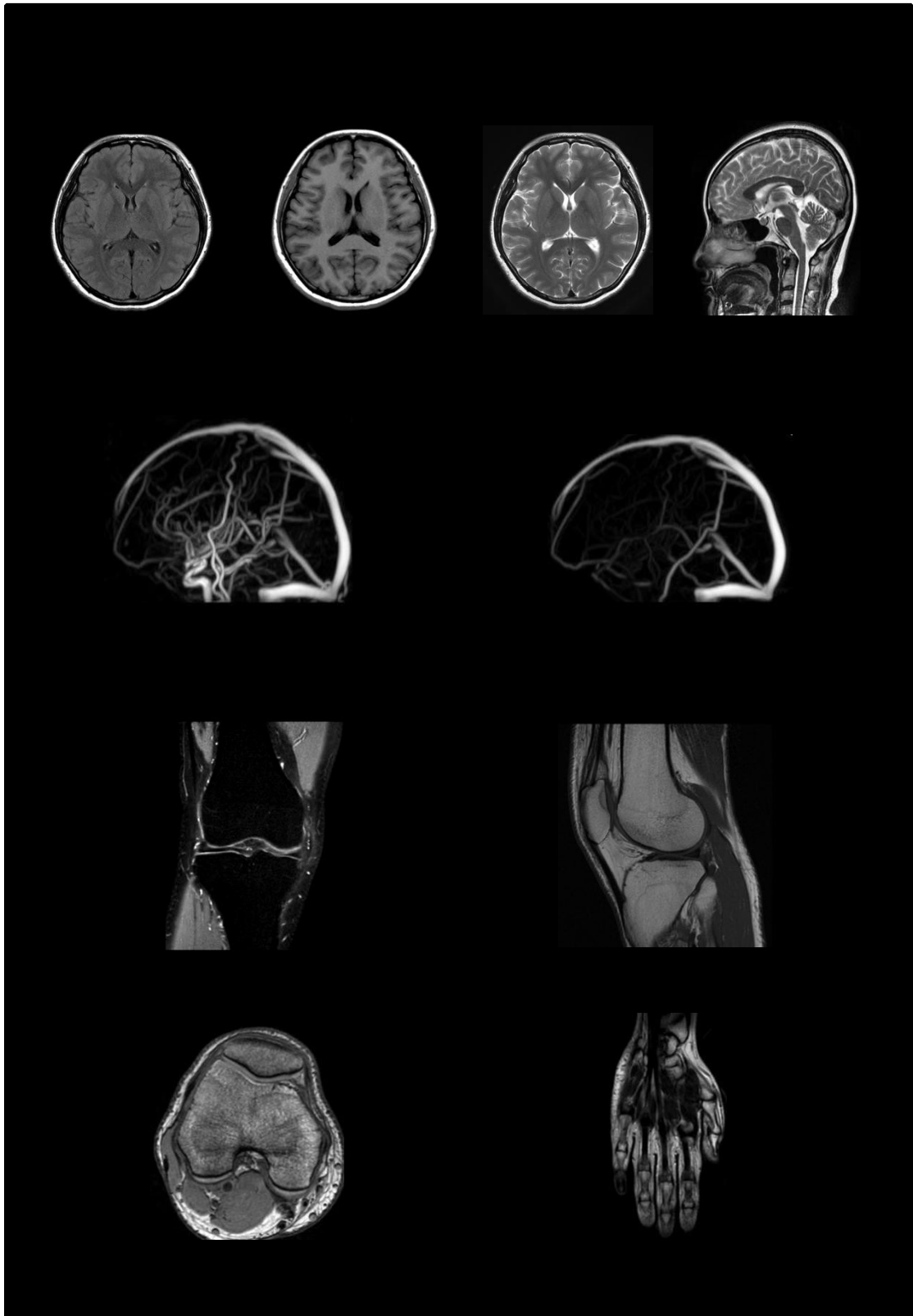
Third-party packages (standard)

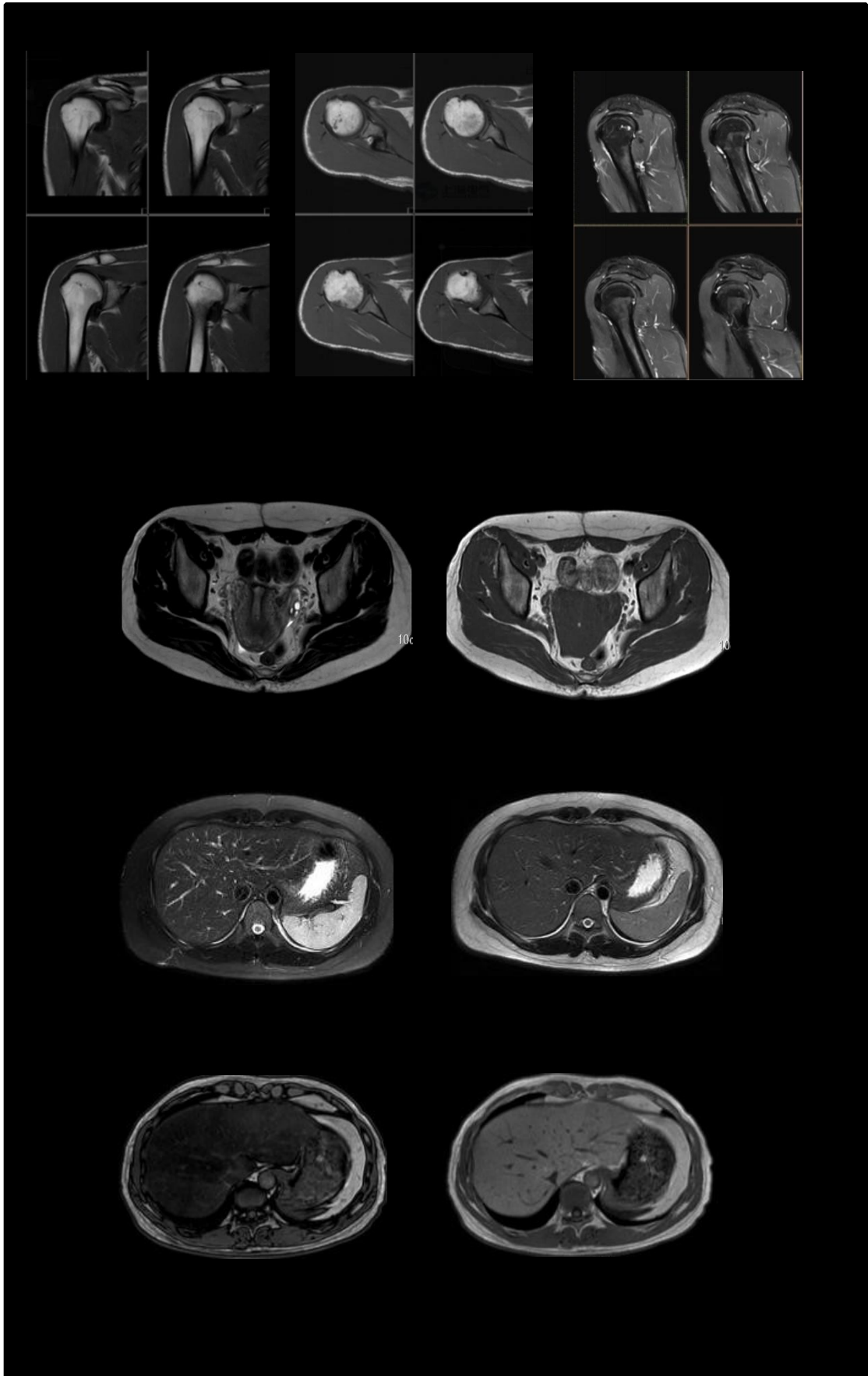
I. Machine room shielding	
1.1	Standard machine room shielding
1.2	water cooler
1.3	refrigeration

1.5T superconducting magnetic resonance system configuration list (optional)

I. Shopping for hardware	
1.1	8 Channel Spine Coil
1.2	16 Channel Ankle Coil
II. Third-party packages (optional)	
2.1	Film Reading Workstation
2.2	AI Artificial Intelligence Assisted Diagnosis Platform
2.3	Electronic film system

V. Clinical images





VI. After-sales service commitments

Technical Services

1. The seller sends technicians to the site for installation and is responsible for commissioning until acceptance.
2. The seller sends professional technicians to the place designated by the buyer to conduct on-site training on daily operation and maintenance for the buyer's technicians, so that the buyer's technicians can work skillfully and independently. Seller shall bear the cost of the professional and technical personnel appointed by Seller.
3. The Seller provides the Buyer with the following technical information, the cost of which is included in the price
 - 1) Operation, maintenance, repair, and installation manuals
 - 2) Mechanical and electrical maintenance technology wiring diagrams
 - 3) Provide drawings of the equipment room where the equipment will be installed

maintenance service

1. Goods acceptance after the quality assurance period of one year, the quality assurance period of equipment operation failure, the seller provides free advice, maintenance services.
2. Maintenance service call response time is within 2 hours, 48 hours to arrive

at the scene to repair.

Acceptance criteria and acceptance methods

1. Acceptance criteria: the equipment is accepted in accordance with the acceptance criteria for products produced by the manufacturer and the technical requirements specified in the bidding documents.

2. Acceptance methods:

1) Acceptance of goods by both buyer and seller at the project site.

- 
- 2) Upon completion of the installation, acceptance is carried out according to the technical parameters provided by the seller.

Seller's Quality Assurance

1. Product quality meets the design requirements, installation and commissioning of the indicators in line with technical parameters.

- 2 Warranty period and service requirements: in the warranty period of the equipment operation in the event of damage to the parts, the seller free of charge to replace the damaged parts, repair costs are the responsibility of the seller.

Service requirements after the warranty period

After the end of the warranty period, the seller has the responsibility to provide good and regular maintenance and repair of the buyer's equipment with favorable charges and free software upgrades.