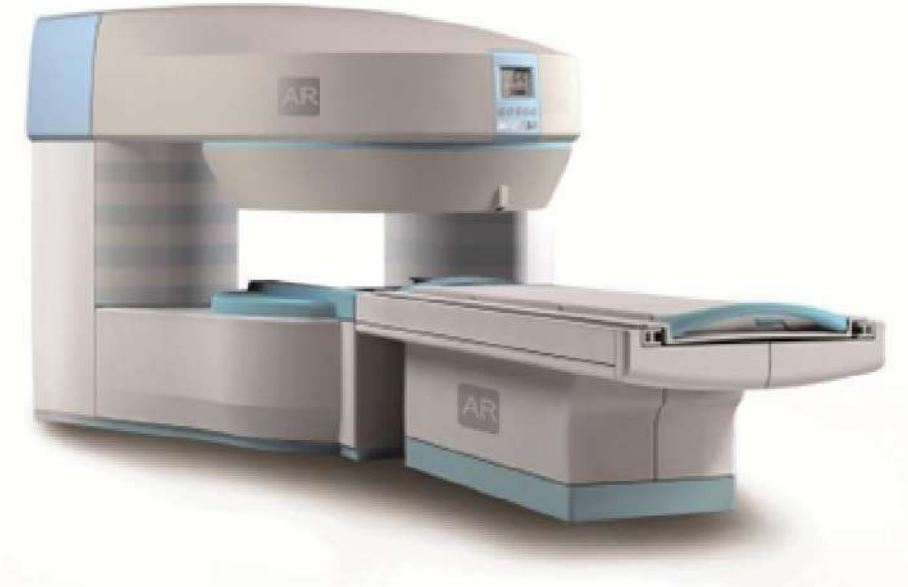
Veterinary MRI



2. Vet MRI introduction

- **Magnet strength: 0.5T(Upper) / 0.35T**

Vet MRI combined many pioneering MRI imaging technology and human based humanized design concept, make it achieving high. Vet MRI led a technical revolution in the permanent MRI field. It provides clear images and stable system quality, the system is used for rabbit, cat, monkey, dogs, it can make an accurate diagnosis of pet animal diseases with reliable basis, in order to facilitate the veterinarian hospitals in the diagnosis and treatment. The system is applicable to the laboratory, pet hospital, etc.

Vet MRI system, not only had accumulated the products' technical essence from major companies home and abroad, but also followed the developing trend, and with constant innovation, breakthrough in the industry field and achieved:

Make sure the imaging quality achieved qualitative improve.

The shimming algorithm technology (ensure field strength with high uniformity and stability), ensure the MRI system operating stably with high quality and high performance.

The high magnetic uniformity, high stability, fast and accurate position operation are always the hard breakthrough technical bottleneck. Vet MRI's system not only breakthrough the bottleneck historically, and achieved the "high stability, high performance, high imaging quality and high efficiency".

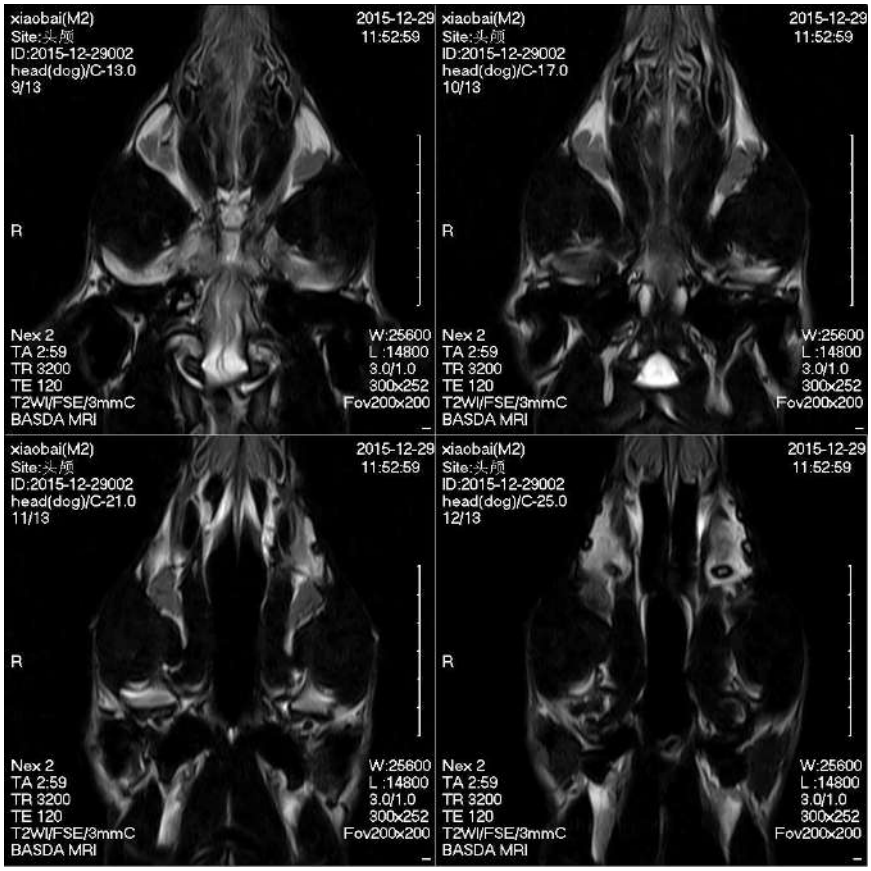
And with the special designed high power gradient magnet field for Vet MRI, it achieved as an all-new concept Vet MRI system.

- **Much open, easy for the operator**

More space for surgery. Affinity C-shape magnets, creating a maximum of openness, offer a maximum vision for doctors, especially leave much space for operation.

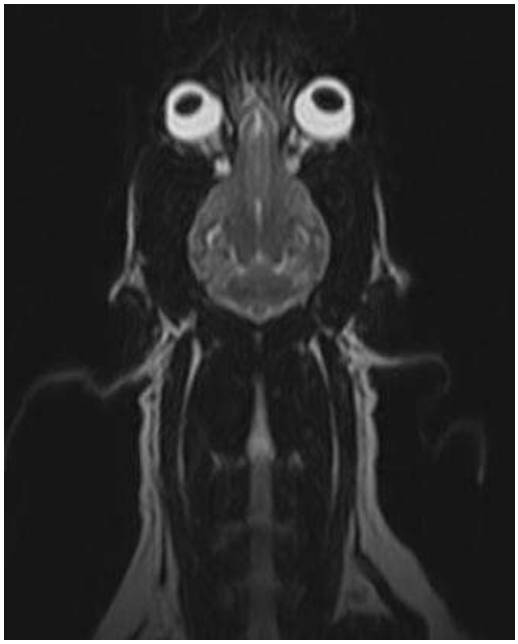
- **High performance gradient system**

Gradient system helps to provide higher resolution pictures, Vet MRI's gradient system（X、Y、Z） gradient intensity is 15mT/m，Higher the gradient intensity, faster imaging speed, shorter of scanning time; Higher the gradient intensity, thinner of imaging slice, higher of image resolution.



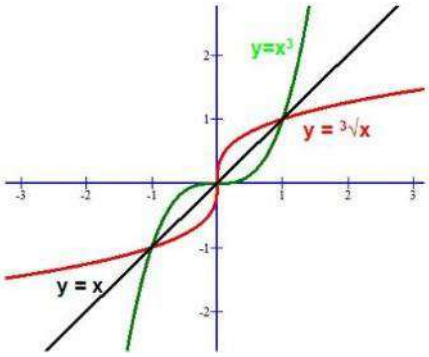
- **The new technology**

4D shimming:



Use of advanced active shimming algorithm for real-time automatic shimming on each examination to ensure the magnetic field always maintain the highest uniformity. Magnetic field homogeneity and stability of the MRI images always are the most important guarantee of the high-resolution, high SNR and high contrast.

They are the important indicators of the level of magnet design, the better the smaller the value, directly determines the SNR of the image, like a car chassis, stability is essential.



Eddy Zero Technology:

a) Magnet design uses breakthrough anti-eddy current technology

b) The gradient coil using self-shielded active anti - eddy current technology

c) Implementation of precision eddy current compensation algorithm, completely eliminate the impact of eddy current

The eddy current together with the high gradient and high slew rate come from ultra-fast sequence was resolved completely, guarantee to get the best clinic image.

- **Advanced RF system**

Fast 2 channels RF system. All phased array coils provide best SNR pictures.

3. Vet MRI Specification

No.	Item	Specification
1	**Magnet System**	
1.1	Magnet Type	Permanent magnet with automatic constant temperature system
1.2	Field strength	0.5T / 0.35T
1.3	Magnet shape	Open type
1.4	Homogeneity (40cm, DSV, Vrms)	≤2.5ppm
1.5	Shim method	Active/Passive/Dynamic
1.6	Magnet vertical gap	40cm / 35cm
1.7	Accessibility (Horizontal opening angle)	>250°
1.8	5 Gauss fringe field	2.5m*2.5m*2.5m
2	**Gradient System**	
2.1	Gradient field strength (Single Axis)	≥18mT/m
2.2	Gradient slew rate (Single Axis)	≥45mT/m/ms
2.3	Rise time	<0.3ms
2.4	Gradient cooling system(Gradient coils	Air

	and power electronics)	
3	**RF System**	
3.1	Spectrometer	Fully digital
3.2	RF system type	Digital Transmit and Receive
3.3	Number of RF channel	4
3.4	Transmitter amplifier peak power	5kW
3.5	RF bandwidth of receiver	Each >400KHz
3.6	Dynamic range	≥80dB
3.7	Noise factor	0.3dB
3.8	Coil type	Phase array
4	**Scan environment**	
4.1	Max. vet weight	135kg / 200Kg
4.2	High accurate position assist	Yes
4.3	Localizer	Yes
4.4	Position accurate	≤1mm
4.5	Position accessories	Yes
4.6	Emergence stop	Yes
4.7	Communication system	Yes
5	**Computer system**	
5.1	Host computer	Dual core
5.2	System software	Vet MRI's

5.3	OS	WINDOWS
5.4	CPU clock rate	≥2.8GHz, be able for extension
5.5	Main memory	≥2GB, be able for extension
5.6	Color LCD monitor	24"
5.7	Keyboard and mouse	Standard
5.8	Hard disk	≥500GB, be able for extension
5.9	Media driver	CRW / DVD
5.10	DICOM 3.0	Yes
5.11	Ethernet	Yes
6	**Scanning parameter**	
6.1	Max. FOV (recommend)	300mm
6.2	Min. FOV (recommend)	90mm
6.3	Max. Image matrix	512*512
7	**Scanning sequence &imaging technology**	
7.1	Spin echo 2D/3D (SE 2D/3D)	Yes
7.2	Multi-slice multi-echo(MSME)	Yes
7.3	Gradient echo(GRE 2D/3D)	Yes
7.4	Steady state process gradient echo(SSPGRE)	Yes
7.5	Fast spin echo (FSE)	Yes
7.6	Fast double echo(FDE)	Yes

7.7	Fast recover fast spin echo(FRFSE)	Yes
7.8	Single shot fast spin echo(SSFSE)	Yes
7.9	Multi shot fast spin echo (MSFSE)	Yes
7.10	Inversion recovery (IR)	Yes
7.11	Inversion recovery fast spin echo (IRFSE)	Yes
7.12	Short time inversion recovery (STIR)	Yes
7.13	Fluid attenuated inversion recovery (FLAIR)	Yes
7.14	Gating technology	Yes
7.15	Section scan	Yes
7.16	TOF 2D MRA	Yes
7.17	TOF 3D MRA	Yes
7.18	Diffusion weighted imaging (DWI)	Yes
7.19	Max. b Value	1000s/mm^2
7.20	Magnetization transfer (MTC) technology	Yes
7.21	MIP	Yes
7.22	Invert film	Yes
7.23	3D position	Yes
7.24	Pre-saturation technology (PS)	Yes
7.25	Pre-saturation adjustment technology	Yes

7.26	Part metal implant scan technology	Yes
7.27	Automatic coil tuning	Yes
7.28	Head scan package (Vet)	Yes
7.29	Body scan package (Vet)	Yes
7.30	Bone scan package (Vet)	Yes
7.31	Online image filtration	Yes
7.32	Online post procession	Yes
7.33	Optimal algorithm of active shimming	Yes
7.34	Scan sequence queuing	Yes
7.35	Multi-layer and multi-angle scanning technology	Yes
7.36	Optimize bandwidth acquisition technology	Yes
7.37	Flow compensation	Yes
7.38	Parallel acquisition technology	Yes
7.39	Section acquisition technology	Yes
7.40	Scan parameter preset	Yes
7.41	Oversampling technology	Yes
7.42	Image fusion technology	Yes
7.43	Artifact suppression technology	Yes
7.44	Thin imaging technology	Yes
7.45	Movie playback technology	Yes

7.46	Post processing package	Yes

4. Vet MRI Configuration

Standard Configurations	Unit	Quantity
Standard Hardware include:		
RF shielding room	set	1
Permanent Nd-Fe-B magnet, Full open C-shaped eddy current-free self-consistent temperature magnet 0.35T	set	1
Spectrometer	pc	1
Preamplifier	set	1
RF amplifier	pc	1
Flat panel transmitter coil	set	1
Gradient amplifier	pc	1
Gradient coil	set	1
Computer	set	1
Imaging monitor	set	1
Diagnostic table	set	1
Large Vet coil	set	1
Middle Vet coil	set	1
Small Vet coil	set	1
Table pats	set	1
Quality control water phantom	pc	1

MRI safety marks	set	1
Technical manual	pc	1
User manual	pc	1
Maintenance manual	pc	1
3-phase AC voltage stabilizer	pc	1
Magnet self-consistent temperature system	set	1
Dual-voice-communication system	set	1
Laser location system	set	1
Standard Software include		
Imaging software	set	1
Pulse sequence	set	1
Imaging enhancement software	set	1
DICOM interface software	set	1
Vet vascular imaging software	set	1
Diffusion imaging package	set	1
MR CINE	set	1
Image analyzing software	set	1
Quality control software	set	1