

TOSHIBA

Vantage Titan

DISCLAIMER
Some products and features described here are optional and not commercially available in all countries. We cannot guarantee that the system and all of options are available in all areas due to regional restrictions. Please contact your local Toshiba sales representatives for the most current information.
*The version of this system is M Power V31

TOSHIBA MEDICAL SYSTEMS CORPORATION
<http://www.toshibamedicalsystems.com>

©Toshiba Medical Systems Corporation 2013-2015. All rights reserved.
Design and specifications subject to change without notice.
MCAIR00066EAB 2015-12 TMSCD

Toshiba Medical System Corporation meets internationally recognized standards for Quality Management System ISO 9001, ISO 13485, Toshiba Medical Systems Corporation Naqa Operations meets the Environmental Management System Standard ISO 14001
Vantage Titan, M Power, Peninsula, DelayTracker and JE are trademarks of Toshiba Medical Systems Corporation.
Windows is a registered trademark of Microsoft Corporation.

Printed in Japan



Vantage Titan

Vantage Titan™ provides your best solution.

The 71 cm patient aperture provides the improved access for examinations on any size patient. The unique combination of this wide-bore and our industry leading homogeneity enables you to acquire outstanding image quality without compromise. Daily workflow and productivity is optimized by M-Power™, Toshiba's intuitive user interface.



Opening the door to new possibilities

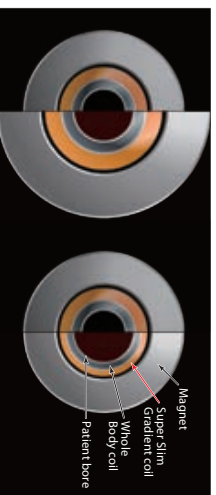


Unique combination of wide bore and high-quality image

One of the challenges for MRI systems with wide bore is maintaining the homogeneity of the magnetic field as the diameter of the patient bore increases. Toshiba's advanced technologies enable the combination of 71 cm patient aperture and high-quality images by keeping high homogeneity specifications.

Super Slim Gradient

Toshiba's Super Slim Gradient coil is an actively shielded gradient coil, which provides more room for examinations while enhancing performance. It allows a wide bore system to have a high-magnetic field homogeneity.

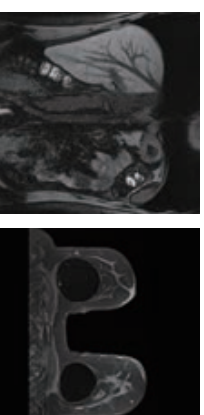


■ **Conventional system**
Large magnet diameter deteriorates the homogeneity of the magnetic field.

■ **Vantage Titan**
Super Slim Gradient coil enables to provide wide bore system without enlarging magnet diameter.

Fat Free Imaging

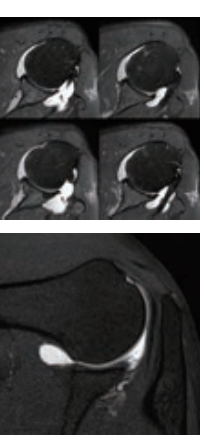
Magnetic field homogeneity is the most important factor for any fat suppression technique. The high quality magnet and the advanced Super Slim Gradient coil of Toshiba's Titan makes for superior fat suppression over a wide range of clinical applications.



■ **Effective fat suppression for wide-area coverage**
Superior fat suppression can be accomplished even on large areas such as the abdomen and chest, including the breast.

Off-center Imaging

Magnetic field homogeneity is also the important factor for successful off-center imaging. Vantage Titan provides high quality images even for an off-center image like shoulders or elbows.



■ **Shoulder image at off-center region**
High quality image can be acquired even at off-center region.

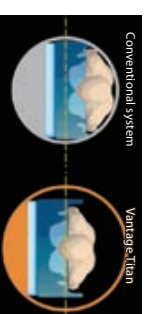


True comfort for all patients

Successful examinations begin with comfortable patients. In addition to wide bore, Vantage Titan offers a quiet scan environment, making examinations more comfortable and easier to complete especially for patients with noise sensitivity.

71 cm Wide Bore

The 71 cm patient aperture gives you more room and flexibility, providing patient with a feeling of openness. It allows you to have an examination in lateral position, which is difficult with conventional system. This comfortable room allows you to adjust a wide range of clinical situations and move the patient within the bore when necessary.



Comfortable room for breast examination

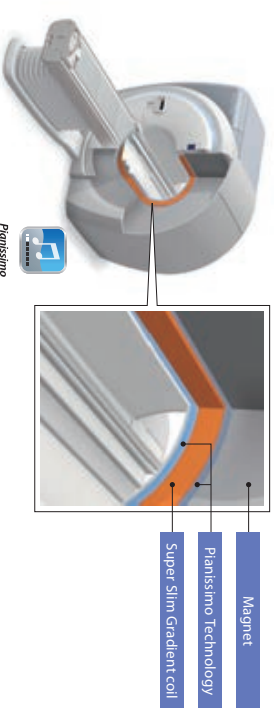
Breast examination is available without compromise due to the expanded off-center imaging field of view within the large bore.

Lateral position examination

Examination in the lateral position, similar to endoscopic operation, is easily available. Patients can be scanned in the most relaxed position for their condition.

Pianissimo™

Pianissimo technology significantly reduces the noise in and around the MRI environment. The Super Slim Gradient coil is encased in a vacuum chamber, suppressing propagation of acoustic noise. Pianissimo provides the quietest examination environment in the industry.



Comfort Design

System details are designed for patients' comfort.



- ① **Gantry ambient lighting**
Special lighting eases the patients' anxiety caused from entering a closed space.
- ② **Gently curved aperture design**
The aperture design reduces patients' anxiety when patients enter the bore.
- ③ **Low height tabletop**
Patients can easily get onto the table.
- ④ **LED illumination inside the bore**
Adjustable LED eases patients' anxiety during examinations.
- ⑤ **Easily viewable physiological information monitor**
Operators can easily check the patients' physiological information.

High quality, non-contrast MRA minimizes patient risk

An increasing awareness of the potential risks associated with gadolinium-based contrast agents has revealed the need for an alternative, which led to the early development of our new contrast-free MRA techniques. Toshiba's Trian provides advanced non-contrast MRA techniques that minimize risk to patients while producing high quality images.

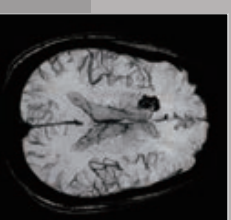
FBI (Fresh Blood Imaging)	Depicting arteries and veins separately by utilizing the difference of flow velocities between diastole and systole.
Flow-spoiled FBI (Flow-spoiled Fresh Blood Imaging)	By applying a pre-pulse to FBI, more details of blood vessels can be depicted.
SPREED	Depicting vessels running in various directions such as pulmonary blood vessels. By setting a pre-pulse for extraction or suppression, target vessels can be depicted clearly.
Time-SLIP (Time-Spatial Labeling Inversion Pulse)	Providing perfusion-weighted images without contrast medium by labeling the blood itself with the RF pulse.
ASL (Arterial Spin Labeling)	Showing details of both arteries and veins by utilizing flow dephase effect.
FSBB (Flow Sensitive Black Blood)	Combining FSBB and TOF to depict blood vessels with a wide range of flow velocities.
V-Trace	

Non-contrast MRA

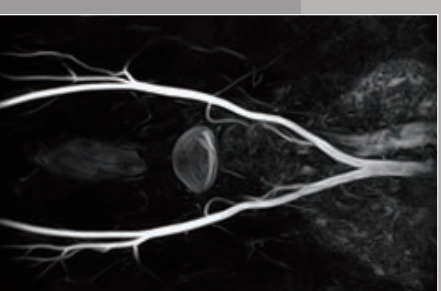
Vantage Trian provides a complete suite of non-contrast MRA techniques to fully meet the clinical requirements for non-contrast MRA imaging.



■ **TOF**
(Time of Flight)
Volume Rendering image of head and cervical vasculature clearly shows details of arteries.



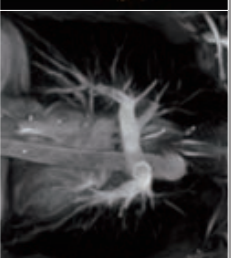
■ **FSBB**
(Flow Sensitive Black Blood)
FSBB shows arterial and venous detail which may not be depicted by TOF.



■ **Flow-spoiled FBI**
(Flow-spoiled Fresh Blood Imaging)
Vessels of lower limb can be clearly visualized by separating arteries and veins with ability to depict vessels of low velocity blood flow.



■ **Time-SLIP**
(Time-Spatial Labeling Inversion Pulse)
Time-SLIP can be applied to a wide variety of regions with multi-directional flow as in the renal and pulmonary arteries.



■ **3D ASL**
(Arterial Spin Labeling)
ASL enables users to acquire perfusion-weighted images by labeling the blood itself with a RF pulse. It provides hemodynamic information non-invasively.

*Some functions are options.



Ease of use

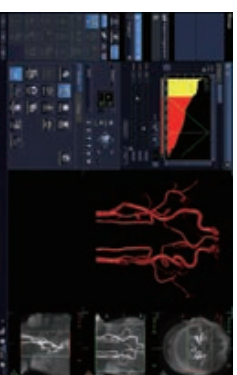
M-Power is Toshiba's intuitive user interface, which can be easily used by any technologist or physician whether they are new to MR or have years of experience. It allows for the efficient use of Vantage Titan for optimized workflow and productivity.

Intuitive User Interface M-Power

The design of M-Power is based on clinical workflow in order to enhance the daily productivity. M-Power makes MRI operators remarkably easy to learn and use, enabling the operator to access its full range of functionality.

M-Power User Interface

Look and feel of the interface are common among Toshiba's Medical Imaging Modalities. It enables operators to use all Toshiba's modalities in a similar way. It is designed to enhance daily workflow, which maximizes system productivity.

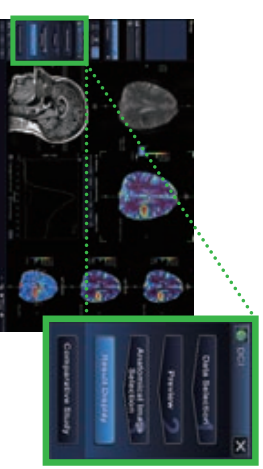


M-Power operation window

M-Power intuitive icons and operation windows designed for ease of use. For operators, colors were specifically chosen to reduce eye fatigue.

Work Flow Driven Application (WFDA)

The M-Power interface appropriately improves clinical workflow by guiding the operator through optimization of scan parameters, post-processing and simplifying the use of advanced applications.



DCI (Dynamic Contrast Imaging) post processing navigation

The whole process is displayed on the monitor guiding the operator through all post-processing steps. The data can be saved and post-processed can be resumed at any point.

Ensuring high quality examinations

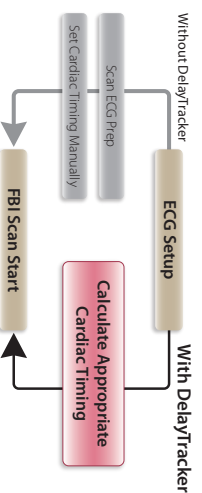
It is important to ensure the highest possible examination quality no matter who operates the MRI system. Vantage Titan provides advanced operation support functions, enabling every level of user to acquire the same standard results. It makes daily examinations consistent and efficient.

DelayTracker™

DelayTracker provides you the most appropriate delay time for visualizing the target vessels in FBI scans. It enables repeatability and consistent acquisition of images for such as the lower limb.

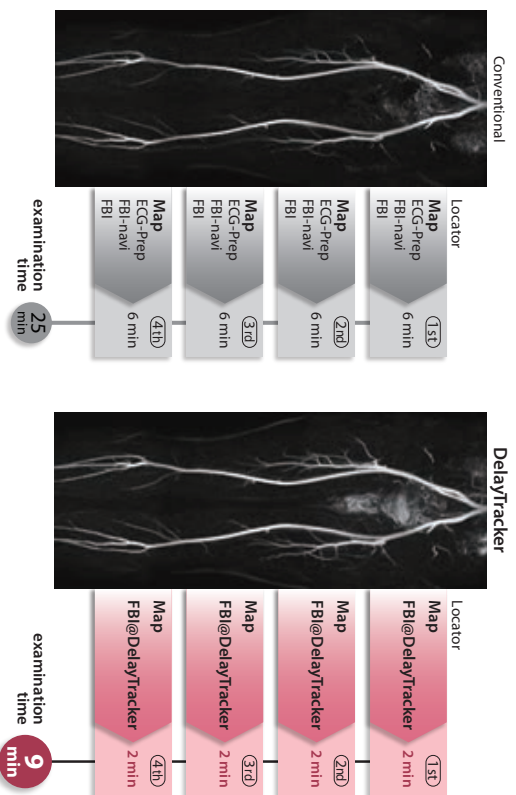
New workflow for FBI examination

DelayTracker puts automation and simplicity into the hands of the operator by automatically calculating the cardiac timing resulting in consistent high quality examinations.



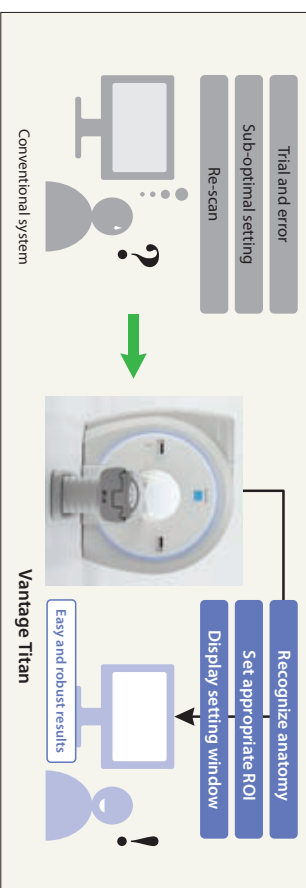
Ensuring the quality of lower limb FBI examination

Vantage Titan provides consistent and high image quality with minimized examination time.



EasyTech

EasyTech precisely recognizes target anatomy and helps the user to set optimized imaging planes. The calculation of the appropriate scan planes is completed in a few seconds, improving examination workflow.



Cardioline

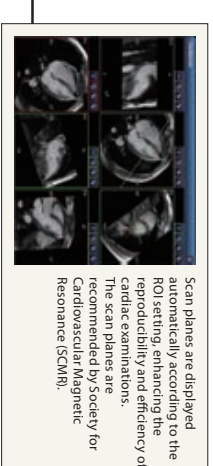
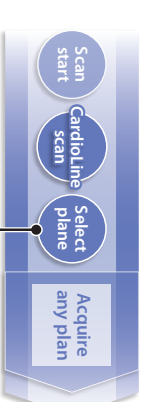
Scan planes are set in only a few seconds after acquiring 2D multi-slice images of whole heart. With Cardioline, precise cardiac examinations become available in a short time, thereby enhancing workflow.

Cardiac views

Cardioline, Toshiba's cardiac slice alignment software, automatically detects target anatomy for accurate and reproducible positioning of cardiac planes. The software flexibility allows alignment of Cardiac planes to be manually adjusted by the technologist or fully automated, reducing multi-operator variability and standardizing the MR cardiac exam. Cardioline reduces the number of positioning steps to acquire any cardiac imaging view.

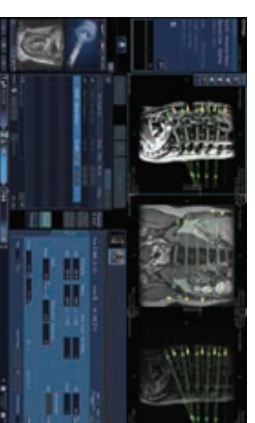


Cardioline



SpineLine

Generally, in spinal examinations, the reference line for the AX plane is manually drawn parallel to the target intervertebral disc or vertebral body. SpineLine automatically measures and analyzes the shape of the spine, determines the positioning ROI in each plane, and displays them within seconds.

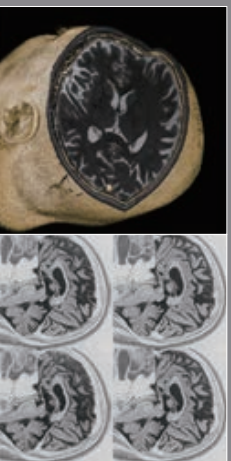


*Operation support functions are optional.

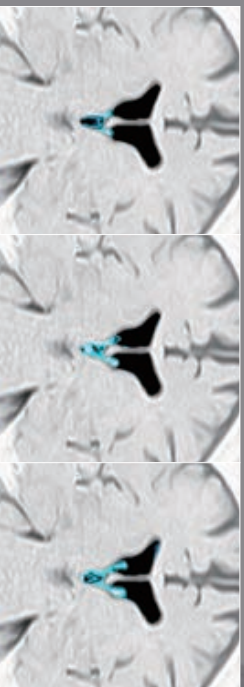
Advanced Clinical Applications

M-Power interface provides the Vantage Titan with a complete portfolio of advanced clinical applications. Optimized sequences and functions are packaged in each of the different application packages, providing the best solution for each clinical region.

Neuro

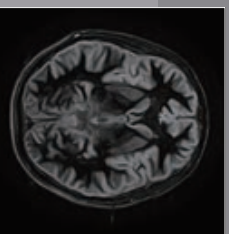


mVox
3D image data of whole head can be acquired and post-processed into any plane improving throughput.



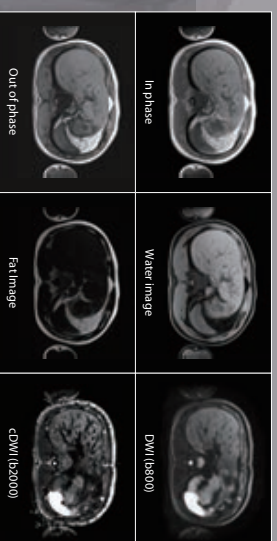
Time-SLIP (Time-Spatial Labeling Inversion Pulse)

Time-SLIP is a non-invasive technique used to visualize Cerebrospinal Fluid (CSF) dynamics in the brain and spinal cord.



DIR (Double Inversion Recovery)
Applying the double IR pulses allows better suppression of gray and white matter.

Body



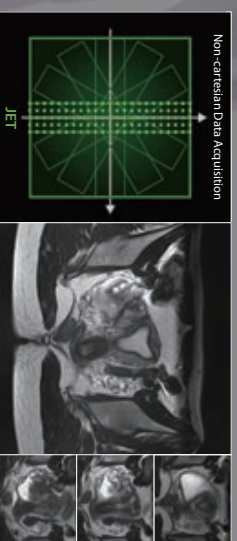
MFS (Water-Fat Separation)
MFS provides four different images including water-based images and fat-based images in one scan.

CDWI (Computed DWI)
CDWI provides the flexibility to extrapolate a single DWI series to different b-values without having to acquire extra data or spending extra scan time.

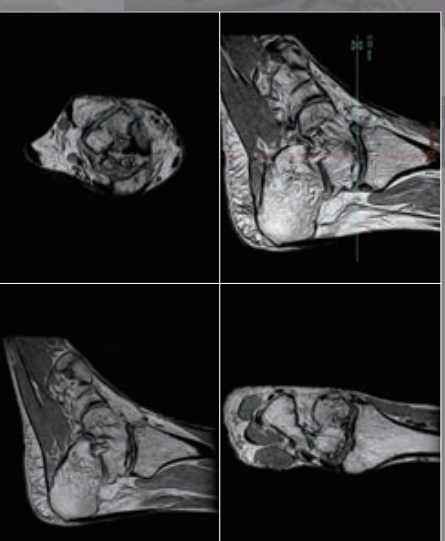
JET™
(Non-cartesian data acquisition)
The JET technique to suppress involuntary motion artifacts. JET is useful for body imaging in addition to orthopedic and neurological applications.

Images of the uterus acquired with JET technique.

Ortho



mVox
Orthopedic 3D image data set can be acquired and post-processed into any plane improving throughput.



*Software applications are optional.

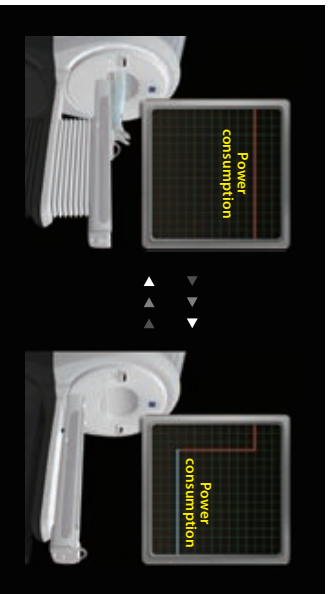


Safe and Eco Sensitive

ECO mode, which minimizes daily power consumption, together with zero helium boil-off technology reduce overall costs. In addition, site planning support helps our customers to install the system with the optimum design plan.

ECO Mode

The power consumption is reduced by utilizing the Eco Mode features. Eco Mode turns off a part of the system while it is not being used which minimizes the system's operating costs. Moreover, required rated power has been reduced by around 25%, minimizing the total cost of ownership*.



■ During examination

When the table is raised into scan position, scan mode is activated and standard power consumption is utilized.

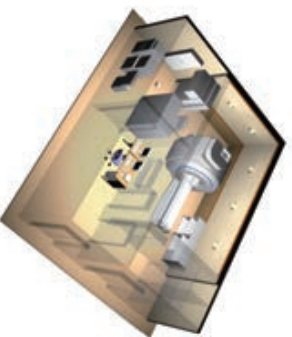
■ After examination

Power consumption is reduced by automatically switching to ECO mode. This switching is completed within less than 1 second. Power consumption is reduced simply by lowering the table by at least 2 cm from the scan height position.

*Comparison with Toshiba conventional system.

Site Planning

Toshiba's service and site planning teams collaborate to develop efficient design for the most cost effective system installation.





Magnet	1.5T High Field Homogeneity Magnet (Zero Helium Boil-Off)
Patient Aperture	71 cm
Active Shield Gradient Coil	Super Slim Gradient ¹⁾
Noise Reduction Technology	Planissimo ²⁾
Non-contrast MRA technology	Time-SLIP ³⁾ , FBI, FSBB, V-Trace, ASL and more advanced technologies
User Interface	M-Power
Operator support function	EasyTrack ⁴⁾ (Cardioline ⁵⁾ Spin line ⁶⁾ etc.), DelayTracker ⁷⁾ and other advanced technologies
Energy Saving Technology	Eco Mode ⁸⁾
Operation system	Windows [®] 7
Security Solutions	Utilizing Whitelist-based Security Software ⁹⁾ Meets the requirements of Risk Management Framework (RMF), governed by the Defense Health Agency (DHA) [*] [*] The system has received Approval To Operate (ATO) from the United States Air Force

- 1) Super Slim Gradient: Advanced Active Shielded Gradient Coil providing both high-quality images and low-noise scan environment for patient
- 2) Planissimo: Noise reduction technology collaborating with Super Slim Gradient for low-noise scan environment
- 3) Time-SLIP: Non-contrast MRA technique enabling to acquire hemodynamics from multiple scan planes
- 4) EasyTrack: Function to support settings of scan phase
- 5) Cardioline: Function to acquire a cardiac plane conforming to SCMR
- 6) Spinline: Function to set appropriate scan plane conforming to the curvature of spine
- 7) DelayTracker: Function to automatically set appropriate delay time for BI examinations
- 8) Eco Mode: Function to turn part of the system to reduce the power consumption, which saves energy and reduces the heat
- 9) Whitelist-based security software: Only the programs required for MRG operations can be executed, providing secure and stable operation of the MRG system

Vantage Titan

⁵⁾Some functions are options.