

WAREHOUSE B40009
V.A. Medical Center
JAH VA HOSPITAL
13000 BRUCE B. DOWNS
TAMPA, FL 33612-4745
P.O.# 673-B40009

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EQUIPMENT SUMMARY:

TITAN.000

TITAN HIGH FIELD MRI SYSTEM

PRE-INSTALLATION KIT FOR TITAN

MRI SYSTEM MAGNET

TITAN SYSTEM ELECTRONICS WITHOUT
MAGNET

ASGC FOR TITAN WITHOUT HIGH ORDER
SHIM

WATER DISTRIBUTION PANEL

MEDIA FOR DVD-RAM DRIVE (9.4 GB) (Qty
5)

GATING WAVEFORM LCD DISPLAY

TITAN 8-CHANNEL TO TITAN 16-
CHANNEL RF ELECTRONICS (FACTORY
OPTION)

16 CHANNEL RF ELECTRONICS

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EQUIPMENT SUMMARY: (continued)

ATLAS SPINE COIL

ATLAS/TITAN HEAD/CERVICAL COIL

SOFTWARE, MBODY PACKAGE

TITAN BODY COIL

MVASCULAR PACKAGE

FREEZE FRAME PACKAGE FOR VANTAGE

NON-CONTRAST MRA AND SUPERFASE
PACKAGE

MNEURO PACKAGE

BODY VISION AND DTI PACKAGE FOR
VANTAGE

D~~I~~FFUSION TENSOR TRACTOGRAPHY
APPLICATION

GATING PACKAGE -- WIRELESS

WIRELESS CARDIAC GATING UNIT

WIRELESS PERIPHERAL / RESPIRATORY
GATING PACKAGE

DICOM STORAGE COMMITMENT KIT

DICOM Q/R SCP UNIT

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VIDEO FADER

CONSOLE DESK 65" X 36" X 30"

SILENT SCAN STEREO AND INTERCOM
SYSTEM

LCD MONITOR FOR ECG

ELECTRODE PADS (BOX OF 25) (Qty 2)

PATIENT PADS FOR SPINE AND
EXTREMITY

OVERHEAD CABLE INSTALLATION

GANTRY LIGHTING OPTION

DRAKE HEAT EXCHANGER DUAL LOOP
460 FOR TITAN OR ATLAS Z

TITAN HIGH CAPACITY TABLE - FACTORY
OPTION

- *Not Compatible with Extended Travel Option*

ADDITIONAL ON-SITE APPLICATIONS
TRAINING - 32 HOURS

ADVANCED NON-CONTRAST MRA
IMAGING

4-CHANNEL FLEX SPEEDER COIL

16-CHANNEL FLEX SPEEDER MEDIUM
COIL

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16-CHANNEL FLEX SPEEDER LARGE COIL

FLEX COIL POSITIONING PAD SET

SHOULDER SPEEDER COIL

COIL, EXTRA LARGE ARRAY KNEE

MEDRAD SPECTRIS SOLARIS EP MR
INJECTION SYSTEM WITH ICBC

UNINTERRUPTIBLE POWER SUPPLY TITAN
U4/U5 480 LARGE BATTERY

UPS,120KVA, 480V

BATTERY,LARGE

THINLINE-TITAN

BIOMED TRAINING - TUITION ONLY -
TITAN, ATLAS, VANTAGE (20 CT ASS DAYS
- TWO I RiPS)

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- Includes 12 Month Service Warranty.

TITAN HIGH FIELD MRI SYSTEM

Fast, powerful and easy to use, Vantage Titan provides patients with the most comfortable, non-claustrophobic MR imaging environment available in the market. Titan combines diagnostic versatility with streamlined workflow, from routine examinations to whole-body scans and MRA from head-to-toe, including Toshiba's proprietary non-contrast techniques.

Highlights include:

- Open-bore technology with a 71 cm patient aperture, designed to reduce claustrophobia and increase patient comfort
- The speed and image quality of Integrated Coil Solutions
- The unsurpassed technology of the world's highest homogeneity ultra-short-bore magnet

The system's large clinical field-of-view (FOV) - 55x55x50 cm _ produces high-quality images without compromising homogeneity or overall imaging performance. Only Toshiba offers a 55-cm field of view with a 1.49-meter magnet.

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Titan simplifies patient repositioning while still allowing excellent image quality, featuring Integrated Coil Technology that uses up to 128 elements simultaneously, a moveable spine coil, wide-area coverage and extended table travel that enables feet-first imaging.

Toshiba's proprietary non-contrast MRA techniques, now in their fourth generation, minimize risk to patients while delivering superb images. The new M-Power state-of-the-art user interface is designed to maximize ease-of-use and efficiency.

Vantage Titan offers a scalable solution to meet any customer's clinical needs with the highest level of patient comfort and diagnostic capability all in one package.

KEY COMPONENTS

- Magnet with actively shielded gradient coil (34 mT/m, SR 148)
- Open bore featuring a 71 cm patient aperture
- 8-channel array electronics standard
 - o Optional 16 RF Channel Kit - MKPA-1506/S 1
 - o Optional 32 RF Channel Kit - MKPA-1505/S1
- SPEEDER package, including high-speed reconstruction engine capable of 12,600 images/sec
- 9.4 GB DVD ROM drive
- Oxygen monitor and emergency run-down unit
- QD Titan whole body coil
- Patient monitoring camera and LCD display for the technologist
- Cardiac, peripheral and respiratory gating
- Pianissimo Plus imaging package
- UPS for Host Computer to prevent damage during power problems
- Accessories (positioning pads, arm rest, DVD media (set of five), and electrodes/ECG leads)

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PERFORMANCE FEATURES

The system's integrated coils and enhanced speed combine with a digital-RF Xeon platform and high-performance gradients to enable a wide range of imaging techniques while providing unsurpassed flexibility and patient comfort.

Patient Comfort

Titan reaches a new level in patient comfort with its open-bore technology featuring a 71 cm patient aperture.

Titan's clinical efficiency also enhances the patient experience, with features that enable feet-first imaging and coil combinations that virtually eliminate the need for repositioning.

Pianissimomi Noise Reduction System

Pianissimo noise-reduction technology, standard on all Titan systems, uses a unique vacuum-sealed chamber to dramatically reduce acoustic sound levels making patients more cooperative and comfortable. There is no compromise in image quality or speed of acquisition.

Pianissimo is always on - there is no user interaction required or special sequences that need to be selected.

Pianissimo **Plus Imaging Package**

Imaging sequences designed to further reduce the already-quiet Pianissimo noise-reduction technology.

Lighting and Ventilation

- **New track lighting inside the bore of the magnet provides a much brighter environment for the patient.**
- **Air vents have been positioned high on the rear of the magnet bore to provide increased airflow to the patient.**

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Integrated Coils

- 10 integrated coil ports to position multiple coils simultaneously
 - o Nine on the patient couch
 - o One on the magnet gantry
- Can accept up to 128 elements simultaneously
- Reduces the need to change coils between studies
- Integrated, moveable spine coil
- Integrated posterior head and neck array
- Light-weight for improved flexibility and patient comfort

Extensive Coverage

- Extended table travel option allows (205 cm) of table movement for greater flexibility
- Moveable spine coil to accommodate feet-first imaging
- Extended clinical field-of-view: 55x55x50 cm

Patient Call and Intercom System

- A hand switch enables the patient to signal an emergency during scanning.
- The integrated intercom system allows for the patient and operator to speak to each other.

SPEEDER Package

This parallel-imaging technology offers:

- Higher temporal resolutions for dynamic imaging
- Higher spatial resolutions for acquiring images in a shorter time

JET Motion Correction Software

JET imaging detects the amount of motion and corrects for the effect by acquiring k-space data in a radial trajectory. Data in the center of k-space is acquired multiple times during the scan to suppress motion artifact. Two kinds of motion, rotational and translational, are evaluated and corrected.

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- Reduces motion artifact caused by physical movement as with acute stroke, uncooperative or pediatric patients
- Reduces motion artifact caused by physiologic motion, such as CSF flow and breathing
- Reduces respiratory artifacts for the shoulder and abdominal regions

mVox

- Allows isotropic, FSE, 3-D volume acquisitions, which can then be reformatted into multiple imaging planes to increase efficiency and reduce patient imaging time.
- Can be used with T2 and T2 FLAIR contrasts.

Reconstruction Engine

A high-speed computer that reduces reconstruction times in all imaging modes. Conventional images with a 256x256 matrix are reconstructed at a rate of 12,600 images/sec.

Conventional Pulse Sequences

SE (Spin Echo)

- **Proton** density
- T1 and T2 weighted contrast

FE (Field Echo)

- Varied flip angle to optimize contrast and SNR
- Provides T1 and T2* weighted images

IR (Inversion Recovery)

Generates desired contrast for STIR, FLAIR and T1 heavily weighted images.

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Fast Scan Sequences

FastSE (Fast Spin Echo)

- Compatible with 2-DFT and 3-DFT
- Short and variable echo-train spacing available

FastIR (Fast Inversion Recovery)

- Enhances T1 contrast to a 2 _DFT FastSE technique

FastFLAIR (Fluid Attenuated IR)

- Increases contrast between fluids and tissues such as CSF
- Shorter scan times than conventional IR

FastSTIR

- Suppresses fat signal with short TI
- Shorter scan times than conventional STIR

FastFE

- Provides Ti contrast with short scan times
- A useful breath-hold technique
- 2-DFT and 3-DFT applicable

Advanced Fast Scan Techniques

FASE (Fast Advanced Spin Echo):

An RF-refocused imaging technique that broadens clinical applications such as MRCP (MR cholangio-pancreatography), urography and myelography.

- Combined with half-Fourier imaging, reduces scan times dramatically
- Can be used with both 2-DFT and 3-DFT
- Provides high-contrast, T2-weighted images
- Large number of echoes
- Provides echo factors up to 512 or, with optional software, 1024

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EPI (Echo Planar Imaging):

Hybrid EPI that uses a combination of spin and gradient echoes in one acquisition to reduce SAR.

- Multiple echo-train lengths available
- SE-based techniques provide T2-weighted contrast while reducing SAR
- Multi-Shot EPI also included

True SSFP (Steady State Free Precision):

- Rapidly obtains T₁ or T₂ weighted contrast images
- Well suited for tissues with longer T₂ values
- 2-D and 3-D sequences included

T2 Plus FastSE/FASE:

Provides reduced scan times, higher resolution capabilities and increased SNR by refocusing residual transverse magnetization back to longitudinal per TR with no compromise in T₂ contrast.

SSFP (Steady State Free Precision):

- Provides images with T₁ or T₂ weighted contrast
- Well-suited for CSF or synovial fluid imaging
- Can be applied in a 2-D or 3-D mode

Advanced Pulse Sequences

- Digital RF capabilities provide precise phase control
- Suitable for T₁-weighted sequences with short TR and TE

MR Fluoroscopy:

Continuously acquires and reconstructs data and displays the reconstructed image immediately.

Real-Time Locator:

Advanced application of MR Fluoroscopy, which acquires three planes to facilitate patient positioning.

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Vascular Imaging Techniques

Fine vascular structures are visualized with various innovative techniques.

- 2-D Time-of-Flight (TOF)
- 3-D TOF
- Multi-slab 3-D TOF
- Multi coverage - separates large 3-D TOF slabs to minimize saturation of blood in fine distal vessels
- 3-D FE and 3-D FastFE - for contrast-enhanced MRA applications
- SORS-STC (Slice Selective Off-Resonance Sync Pulse Saturation Transfer Contrast) - applies Magnetization Transfer Contrast (MTC) pulse to individual slices, resulting in a more robust magnetization transfer technique
- ISCE (Inclined Slab for Contrast Enhancement) - increases vessel detail by using variable flip-angle RF pulses with 3-D TOF to enhance the contrast from blood flow throughout the volume
- 2-D phase shift (PS)
- Cine 2-D PS - used with cardiac gating unit for cine imaging
- Flow quantification - measures blood flow velocity using cine 2-D PS and cardiac gating
- 3-D PS
- BEST (Blood Vessel Enhancement by Selective Suppression Technique) - a post-processing algorithm to selectively enhance small-vessel detail and suppress background tissue

Fat Free Imaging

Coupled with Vantage's superior homogeneity, various sequences provide uniform and consistent fat suppression over the imaging area. Sequences include:

- STIR
- Fast STIR

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- WFOP (Water/Fat Opposed Phase) - a Spin Echo technique that acquires signals from water and fat as they go in and out of phase
- MSOFT (Multislice, Off-Resonance, Fat-Suppression Technique) - a Toshiba exclusive for fat suppression using a slice-selective, offset RF pulse for each slice
- PASTA (Polarity Altered Spectral and Spatial Selective Acquisition) - a water-excitation technique for FSE and SE fat-signal suppression
- DIET (Dual Interval Echo Train) - reduces bright, fat signal in Fast Spin Echo sequences by varying inter-echo spacing

Cardiac Gating Package

Acquires ECG data to identify the cardiac cycle during scan acquisition. Multislice/single-phase and single-slice/multi-phase modes can be used. The unit consists of

- Gating manager
- LCD monitor
- Patient lead wire
- ECG electrodes
- Set of connection cables
- Set of accessories
- Operator's manual

Respiratory Gating Package

Compensates for motion artifacts caused by patient breathing and chest movement. Monitors respiratory motion and transmits the signal through the cardiac gating electronics. The package consists of

- Respiratory sense box
- Air bag and belt
- Set of accessories
- Operator's manual

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Peripheral Pulse Gating Package

Used to synchronize slice data with the patient's cardiac cycle when imaging. Monitors pulse from the patient's finger and sends the signal to the scanner through the cardiac gating unit electronics. The package consists of

- Pulse-wave, pick-up sensor with 1.5 m optical fiber
- Set of accessories
- Operator's manual

M-POWER PRODUCTIVITY FEATURES

Titan 1.5T employs the new M-Power interface designed for intuitive scanning, enabling even those with less experience to operate the system without difficulty.

Created with universal design concept to be user-friendly, reduce operator stress and facilitate efficient workflow.

New image-processing engine provides:

- 3-D image processing and color-fusion processing
- Flexible support for clinical application software

The software is designed to facilitate easy integration in the widest variety of network environments for patient registration, scan planning, image review, and filming and archiving for maximum efficiency and productivity.

- High-resolution, 24", LCD color monitor with display matrix of 1,280x1,024 with 256 B/W gradation levels
- Calendar for advanced patient scheduling and registration
- DICOM-compliant to facilitate easy integration with other network environments
- Pre-programmed protocols - accessed by a mouse-click over an anatomical icon, this integrated smart software eliminates guesswork and provides clinical flexibility and productivity

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- Graphic scan planning - easy-to-understand graphics and prompts to quickly plan subsequent exams and input last-minute sequence-parameter selections on all three orthogonal planes
- Image selector - displays visual table of contents for quick and simple image display of complete studies
- Batch MIP and CINE display while continuing other functions
- Extensive post-processing algorithms for image enhancement
- Two-way patient intercom system
- Patient monitoring camera and LCD display for the technologist

GENERAL HARDWARE DESCRIPTION

1.5T Self-Shielded, Open, Ultra-Short-Bore Magnet

A combination of passive and auto-active shimming provides optimum homogeneity and uniformity for maximizing imaging results.

- Homogeneity specified at 2 ppm (guaranteed value) or less over 50 cm DSV (50x50x50 cm) using a 24-plane plot VRMS method.
- 71 cm patient opening and 1.49-meter magnet ensure maximum patient comfort and accessibility.
- Productivity features such as scan start, localizers and couch control are incorporated on both sides of the bore.

Patient Couch

Atlas features a coil solution integrated into the couch for maximum patient comfort and increased technologist productivity. Couch also includes manual, automatic and emergency controls to facilitate patient handling for routine and extraordinary conditions.

- Nine coil ports are integrated into the patient couch; one additional port located on the magnet gantry
- Hydraulically controlled bed lowers to 16.5" (42 cm) from the floor
- Includes multiple couch mats and positioning pads for greater comfort

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- Includes bilateral arm rests to facilitate injections
- Maximum patient weight of 440 lbs (550 lbs optional)

Titan Gradient Subsystem

Precision and reliability are integrated into Toshiba's gradient subsystem.

- **Powered with a 148 T/m/sec slew rate and 34 mT/m gradient strength.**
- 229 ms rise time enables generation of complex gradient pulses.
- Maximized clinical performance with Toshiba's actively shielded gradient coil - virtually eliminates eddy currents from the magnet while maintaining gradient linearity.

Digital RF system

Titan comes standard with a **digital RF system with 8 RF channels supporting array acquisition.** The digital transmitter provides the precise RF phase control needed to employ advanced pulse sequences. The high-frequency data sampling capability supports fast scan techniques.

M-Power Computer System

Provides outstanding multi-tasking performance. Image reconstruction and advanced image processing are performed simultaneously with scanning to increase exam productivity. The system includes network connectivity for expandability.

Host Computer Includes:

- Intel® Xeon™ 6-core 12 CPU system
- Clock speed: 2.4 GHz or more
- 2 hard disk drives
- 12 GB or more of main memory
- 300 GB hard drive for system use (unformatted storage)
- 600 GB hard drive for image data (unformatted storage)
- Stores approximately 1,120,000 images (256x256 images)
- 32-bit CPU
- 256 MB memory capacity

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Reconstruction System

- **6 core** dual-processors system
- Reconstruction speeds up to 12,600 images/ second (256x256,FFT)
- Simultaneous image reconstruction during scanning
- Reconstruction matrix up to 1,024x1,024
- Main memory capacity: 12 GB or more
- 3.5TB hard disk drive (unformatted storage)

DVD Drive Unit

- **9.4 GB storage** capacity (unformatted storage)
- Up to 44,000 saved-image capacity (256x256 images)

Connection With External Devices

- Ethernet interface (1000BASE-T)
- DICOM 3.0

Auto Voice Package

**Provides pre-recorded patient instructions to use during scan acquisition.
Messages can be edited and re-recorded by the operator.**

Networking DICOM Licenses

DICOM Basic License

Provides the basis for DICOM on the MRI system.

DICOM MWM Modality Worklist Management

Allows the scanner to manually or automatically pull work orders scheduled on RIS from Broker.

Note: RIS Broker is not included.

DICOM Print Service Class User (SCU)

This provides a connection to a DICOM-compliant Service Class Provider (SCP) laser camera or film imager.

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DICOM Storage Service Class User (SCU)

This allows the MRI scanner to push images out to multiple destinations on a network which is connected to the scanner.

Image Maker Express Marketing Support

The Image Maker Express is a marketing support online resource designed exclusively for Toshiba customers that helps you create outreach programs to generate awareness about your imaging services.

- Includes positioning and messaging guides to help you strategize your communications efforts and tactics.
- Contains product information, ready-to-use collaterals and ideas for creating custom materials to promote your new imaging capabilities.

Image Maker Express gives you access to:

- Product images
- Clinical images
- PowerPoint presentations
- Sample brochures
- Sample press releases
- Marketing strategy tutorials
- Updates at www.imagemaker.toshiba.com/express

**Offerings may vary perproduct*

APPLICATIONS SUPPORT

Each system includes three phases of operator training.

Phase I: Two vouchers for a one-week intensive course at the Toshiba Education Center in Irvine, California.

- One technologist must attend prior to system installation
- Travel expenses included
- The second voucher is valid for six months following installation
- Additional vouchers available fo

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Phase II: Two weeks of on-site training at the customer's facility.

- For one to four technologists
- Covers operation of the complete system including set up of customized scan protocols

Phase III: On-site training to follow up on questions, review key areas and address requests for advanced imaging procedures.

- 32 hours of training
- Four to six weeks after the initial training
- For one to four technologists

Performance Pro

Performance Pro is a custom program created to offer a unique approach to education, focusing on achieving technical proficiency and optimal productivity. The program includes the following:

- A planning meeting at your facility with Toshiba's MRI Applications Manager. The purpose of the meeting is to discuss objectives and timing, and to explain Toshiba's custom approach. During the meeting the manager also will ensure that the following takes place:
 - o Review Toshiba's New Customer Education Guide (what to expect and how to plan and prepare).
 - o Introduce the Toshiba Three Phase Education Program and the role of the Toshiba Education Center.
 - o Co-develop a custom training program based on the facility's specific needs and ensure it is well documented for execution.

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- **A trained Applications Specialist will be assigned ownership of the education experience for the facility. They will perform the following duties:**
 - Participate in planning meetings with the project team to address any training issues in a proactive fashion.
 - Communicate with the facility prior to the turnover date to ensure everything is on track and all questions or concerns are addressed.
 - Ensure all materials (training manuals and learning aids) are on site at the time of the go-live date.
- A Quality Installation Checklist developed by Toshiba's service team and physicists will be used to ensure all system requirements have been met and the scanner is working properly and yielding good image quality.
- A Clinical Evaluation will be conducted by a National Clinical Support specialist prior to the turnover to ensure the system is ready for go-live date. The specialist will communicate approval to the Applications Manager, the assigned Applications Specialist, the Account Executive and the Service Team.
- Consistent on-site service support during the turnover.
- The Toshiba Education Center will properly train and prepare the core trainers to perform their role with the most advanced education approach in the industry.
- Toshiba will send two Application Specialists to the turnover. One will work with technologists for two consecutive weeks (the assigned Applications Specialist) and the other **will** work with physicians for one week to achieve desired image quality.

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- At the start of the turnover, Toshiba will begin with a presentation for the staff and referring physicians to highlight system capabilities and generate excitement.
- Performance Pro is a blended learning approach and includes prerequisites and additional accredited CE courses for the clinical staff.

A special visit will be conducted by National Clinical Support Specialist four to six weeks after turnover to check protocols and image quality. The specialist will be available to meet with physicians and technologists to answer all questions.

Additional On-Site Training

Additional On-site training available for purchase.

InTouch Center®

This centralized service facility provides applications and service support for Titan 1.5T customers 24 hours a day, seven days a week.

InnerVision™ Plus

Remote system diagnostics are available around-the-clock to help identify problems and provide potential solutions before care is interrupted or an engineer can arrive.

InTouch Agreements

Based on customer needs, InTouch customer agreements can range from an a-la-carte approach to full-security agreements that provide complete system protection.

Technical Assistance

Customer support specialists are available 24/7 to help resolve technical issues in real time. Application support specialists are also available to assist staff with protocol and image-quality issues.

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Service Support

Local Customer Teams

A single call mobilizes a local team of Toshiba customer engineers. With an average of 10 years of Toshiba experience and 105 hours of specialized training, they can resolve almost any performance issue.

Parts Support

A complete inventory of Titan 1.5T product parts is ready for shipment when and where they are needed, any time of day or night.

Installation

Toshiba's installation coordinator and Atlas site planning guide are made available to facilitate site planning. All installation and standard rigging costs are included.

Note: RF Shielding and RF Room are not included or provided by Toshiba

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COMPONENT SUMMARY:

PRE-INSTALLATION KIT FOR TITAN

MRI SYSTEM MAGNET

TITAN SYSTEM ELECTRONICS WITHOUT MAGNET

ASGC FOR TITAN WITHOUT HIGH ORDER SHIM

WATER DISTRIBUTION PANEL

This custom-designed manifold standardizes on-site plumbing for all Toshiba MRI systems. It distributes chilled water to all MRI processes, contains all required valves, flow meters, temperature gauges, and pressure gauges.

MEDIA FOR DVD-RAM DRIVE (9.4 GB) (Qty 5)

9.4 GB Removable Cartridge Media for DVD-RAM Drive.

- Type 4, Double-sided
- 3x Speed

GATING WAVEFORM LCD DISPLAY

Displays physiological signals (ECG, respiration, peripheral). Mounted on the magnet front so a single operator can verify proper ECG lead placement from the magnet room.

**TITAN 8-CHANNEL TO TITAN 16-CHANNEL RF ELECTRONICS
(FACTORY OPTION)**

16-CHANNEL RF ELECTRONICS

The 16-channel RF electronics kit includes the hardware and components to take the 8-channel to a 16-channel RF system

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ATLAS SPINE COIL

Feet-first positioning maximizes patient comfort and increases flexibility with this moveable, 32-element array suitable for spine studies with optimal signal-to-noise ratio. This coil is integrated into the patient table and can remain on the table for most exams.

- Coil covers 100 cm and can be positioned at either end of the table.
- Works with the Atlas body coils to form the posterior elements of the array. Together the spine and body coils can be used for imaging the spine, abdomen, pelvis and lower extremities.

ATLAS/TITAN HEAD/CERVICAL COIL

- Combined head/neck coil has up to 17-elements, making it ideal for head, neck and neurovascular studies. This array coil is part of the Atlas integrated coil design and can be used in combination with the Atlas spine and body coils. The advanced coil technology permits the use of up to 17 coil elements for excellent coverage as well as high signal to noise.
- Head coil has 15-elements providing ultra-high signal as well as increased SPEEDER factors.
- The neck and chest attachment enables high-quality neck, cervical spine and neurovascular exams, and adds the additional elements in the 17-element array.

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SOFTWARE, MBODY PACKAGE

TITAN BODY COIL

Titan 16 channel RF configuration

16 element array design is suitable for chest, cardiac, abdominal and pelvic studies with an extended field of view (EFOV) with 50 cm of coverage as well as optimal signal-to-noise ratio.

- Works with the Atlas Spine Coil to create a 32-element array.
- Combine with Atlas Head/Neck and Atlas Spine Coil or with two other body coils for full-body coverage.

Titan 8 channel RF configuration

The body coil creates an 8 element array when combined with the integrated spine coil.

Note: Standard Atlas Body Coils cannot be used on the Titan system.

MVASCULAR PACKAGE

The M-Power mVascular Software Package contains pulse sequences and imaging functions to perform Contrast MRA, Dynamic Contrast MRA (Freeze Frame) and Contrast Free MRA exams.

MRA Software includes:

Visual Prep

Enables the technologist to begin scanning at the optimal time by observing the contrast medium as it flows to the target region. By using subtraction techniques, images can be displayed even more clearly and without signal inversion.

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- **Other features of VisualPrep include:**
- **WB coil scanning:**
 - o View the contrast flow using the WB coil while conducting the main scan with the optimal receive coil.
 - o This includes all coils supporting the SPEEDER technique.
- **Dynamic scan:**
 - o Execute VisualPrep at the start of the second segment and subtract images automatically in post-processing.
 - o Acquire arterial phase images in the first segment and venous-phase images in the second.
- **Moving Bed:**
 - o Specify in each stage of MovingBed.
 - o Acquire images without contrast, then start contrast images at optimal time.
- **Gated Scan: Image the heart in** synchronization with cardiac contraction.

Moving Bed

Allows MRA to be performed over a wide range, such as from the chest or abdomen to the lower limbs, by moving the couch-top between scans.

- Set optimal couch-top slide distances according to the flow speed of the contrast.
- Use with VisualPrep to start scanning at the optimal time
- Enable effective fat suppression by performing shimming acquisition semi-automatically in advance at each couch-top position.

STAMD

Depicts the spatial relationship between blood vessels more clearly by changing the slice range for MIP processing in a step-by-step manner.

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Dynamic Complex Data Subtraction

To prevent signal inversion in the blood vessels, perform subtraction between the dynamic images and the reference image that is acquired before contrast medium injection. Subtraction is available automatically after data acquisition is completed.

Fat Suppression in FFE 3-D Swirl Encode Imaging

The increase in the scan time is minimized by applying the fat-saturation pulse most effectively.

FREEZE FRAME PACKAGE FOR VANTAGE

Differential Rate K-space Sampling (DRKS) provides an increase in temporal resolution without sacrificing scan resolution.

- Eliminates the need for bolus timing as multiple, high-resolution dynamic images are produced per scan.
- Uses a sophisticated method of sampling k-space by segmenting it into several parts, allowing centric segment data to be acquired more frequently.

NON-CONTRAST MRA AND SUPERFASE PACKAGE

Provides pulse sequences effective for non-contrast vascular imaging, cardiac imaging and functions that expand the range of clinical applications.

Fresh Blood Imaging (FBI)

- Produces angiograms and venograms without the use of contrast.
- Combines ECG gating with (EASE) Fast Advanced Spin Echo pulse sequences.
- Acquires arterial and venous flow in one acquisition, which can be viewed together or separately using an automated subtraction technique.

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- Integrated Atlas SPEEDER coil technology allows multiple consecutive stations to be imaged. These stations can be automatically stitched together, creating one large field-of-view image that depicts vasculature from above the femoral bifurcation to the feet.

Contrast-Free Improved Angiography (CIA) — Flow Spoiled FBI

- An extension of Fresh Blood Imaging using additional flow spoiler gradients to produce a stronger separation between arterial and venous flow signals.
- Uses a flow preparation scan to optimize the effectiveness of the Flow Spoiler pulses. This ensures that the optimal Flow Spoiler value is selected.
- The improved visualization of slower vascular flow is especially useful for diabetic patients with compromised circulation.

Time_SLIP (Spatial Labeling Inversion Pulse)

- Based on Arterial Spin Labeling, uses a non-selective spatial inversion pulse, spatial tag pulses and natural blood as its own tracer.
- Applicable in multiple regions of the body for both hemodynamic velocity and vascular visualization.
- Especially useful for imaging complex vessels flowing in multiple directions, such as renal arteries, portal venous system and pulmonary arteries.
- Can be used as a non-contrast MRA option for the carotid arteries.

TSA

Non_contrast, time_resolved, **head-and-neck blood flow using the Time-SLIP technique with variable BB-TI times.**

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Time-SLIP BB TI

Non-contrast vascular imaging of the abdomen and lung fields with Time-SLIP Optimization.

- **Determines optimal BBTI in FASE imaging by varying the TI at regular intervals.**
- **Programmable parameters are the:**
 - o Initial TI value (unit: 1 ms)
 - o Interval (1 to 500 ms)
 - o Number of repetitions (max 1000)

SPEED (Swap Phase Encode Extended Data Acquisition)

For non-contrast vascular imaging.

- Acquires two images with phase encode directions shifted by 90 degrees for the same slice in a single scan. Then combines the images using a composite MIP post-processing technique.
- The matrix and FOV scanning parameters are automatically set to square.
- Respiratory gating can be combined with cardiac gating or peripheral-pulse gating.

FASE BB (Black Blood)

Used for chest imaging to acquire cardiac and thoracic images with reduced blood-flow artifacts. Applies a black-blood pre-pulse to suppress the signals from blood flowing into the slice plane.

Sequential FASE

Multislice imaging of the heart and great vessels, useful for the sequential acquisition of different slice images in the same cardiac phase.

TrueSSFP 2-D/3-D

- **Rapidly obtains T2 or T1 contrast-weighted images.**
- **Suitable for imaging relatively longer T2 tissues and vascular structures during breath holds.**
- **Fat saturation is possible by dividing scans into multiple segments.**

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FSE/FASE T2 Plus

- Reduces scan times and increases resolution with no loss of T2 contrast and SNR by promoting transverse magnetization recovery in FSE and FSE 2-D.

FSE 3-D RealIR Head Imaging

Obtains heavily T1-weighted FSE 3-D images in a shorter time.

FE 3-D SSFP

Used in neuro and orthopedic applications to acquire images with T2/T1 contrast in a shorter time.

m-Vox

- Allows isotropic, FSE, 3 _EI volume acquisitions, which can then be reformatted into multiple imaging planes to increase efficiency and reduce patient imaging time.
- Can be used with T2 and T2 FLAIR contrasts.

MNEURO PACKAGE

- The mNeuro software package provides pulse sequences for diffusion imaging, perfusion imaging and fMRI (functional magnetic resonance imaging) as well as new imaging functions to expand the range of clinical applications.

Diffusion Imaging

Images can be acquired by enhancing diffusion water molecules in the body.

EPI Diffusion

- Isotropic diffusion-weighted images can be generated through calculations based on images acquired with MPG applied in the slice, readout or phase directions.

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- Apparent diffusion coefficient images can be generated by calculation using two or more images acquired with different MPG levels. It is possible to specify this method before the start of the scan.

BODY VISION AND DTI PACKAGE FOR VANTAGE

DTI - Diffusion Tensor Imaging

Visualizes white-matter fibers running in a specific direction based on the diffusion anisotropy.

The following can be calculated based on the acquired images:

- Amount of diffusion in each direction
- Degree of anisotropy
- Sum of diffusion factors

Requires at least seven sets of diffusion-weighted images:

- One set must be without MPG (motion probing gradient)
- At least six sets must be with the MPG pulses applied in different directions (with 6 directions possible).

The information generated from the diffusion gradients can be used to calculate directional vector, which can be used to describe the trajectory of molecular motion. The fiber direction is indicated by the tensor's main lineal trajectory (lambal, lambda2 and lambda3).

Post-Processing for Diffusion Tensor

- **FA (Fraction Anisotropy)** image shows the degree of diffusion anisotropy, and can be generated automatically after image acquisition.
- Lambal, lambda2, lambda3 images (characteristic value images) are generated by converting these values from the diffusion tensor.

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Perfusion Function (ASL)

Generates perfusion-weighted images without contrast by labeling the blood with the RF pulse and using it as a tracer to obtain vascular or perfusion-weighted images.

Captures images of flow components entering the slice by eliminating the stationary tissues. This is done by subtracting the tagged image, which includes the labeled flow, from the control image.

Functional Magnetic Resonance Imaging (fMRI)

Generates images of local areas in which the signal intensity increases when the patient is stimulated due to the BOLD and inflow effect.

Two series of images are acquired:

- When stimulation is applied to the patient
- When the patient is at rest

No contrast is needed because:

- Hemoglobin is used as a native contrast medium
- Cerebral function information is assumed from the changes in signal intensity

Multishot FE EPI

- Single-shot EPI is modified by extending the ETS, which reduces the imaging time while ensuring the spatial resolution and SNR of a standard FE technique.
- The time required for T₁ weighted-imaging of the abdomen is reduced while maintaining high-image contrast, spatial and temporal resolution.

High b value

- Increases the contrast in diffusion-weighted images.
- The permissible maximum b value is 10000.
- An extended sampling time is used to improve the image quality.

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Diffusion for tissues with short T2

- SE_EPI sequences with 105ms TE or less is used for tissues with short T2.
- Two types of MPG pulse application methods are available:
 - o **3-Axis**
 - o **Tensor**
- **DTI license is** required for the Tensor method.

Fat suppression

Three types of fat suppression methods are available:

- **PASTA**
- **FatSAT** (recommended for DWI of the head)
- **IR**

SPEEDER

Parallel imaging can be used with EPI to reduce distortion.

T1 weighted imaging for the abdomen

- **Use** the 3-DFT-EPI technique for higher data acquisition efficiency by increasing the number of phases for dynamic scanning or for reducing breath-hold time.
- The 3-DFT technique achieves resolution in the slice direction as high as 1mm.

V-TRACE (Variable True Rate Angiography with Combined Encodings)

This head-imaging application acquires four image contrasts in one sequence, visualizing slow- and fast-velocity vessels together. V-TRACE is especially effective for visualizing collateral vessels, which are difficult to see with standard TOF imaging.

Combines the advantages of TOF and FSBB to produce MRA images that depict blood vessels with a wide range of flow velocities, making it ideal for head imaging.

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This dual-echo 3-D FE sequence generates high-intensity vascular images in a scan time nearly equivalent to only TOF or FSBB.

- First echo acquired using standard TOF
- Second echo acquired using flow-sensitive black blood (FSBB) technique
- Echoes are combined using one of two subtraction methods:
 - o Simple weighted subtraction (SWS) for thin slabs in the axial plane
 - o Frequency weighted subtraction (FWS) for thick slabs in any plane
- Pulse sequence type: FE3-D_hop
- Main contrast types:
 - o 3-D TOF
 - o FSBB
 - o T1W
 - o Combined 3-D TOF and FSBB
- Scanning plane:
 - o Axial
 - o Coronal
 - o Sagittal

V-TRACE does not employ an STC pulse for background suppression, therefore, the SAR does not increase, and the original TOF image can be used as a T1W 3-D image.

DIFFUSION TENSOR TRACTOGRAPHY APPLICATION

This application creates various types of diffusion maps and allows visualization of multiple white matter tracts based on the diffusion tensor imaging data.

- Isotropic DWI
- Isotropic ADC
- Mean BO
- ColorMap 1/2/3
- Lambda 1/2/3

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GATING PACKAGE -- WIRELESS

WIRELESS CARDIAC GATING UNIT

Performs wireless ECG gating for cardiovascular MR examinations that require gating.

WIRELESS PERIPHERAL/ RESPIRATORY GATING PACKAGE

Performs wireless peripheral and respiratory gating for cardiovascular, MRA and body MR examinations that require gating.

DICOM STORAGE COMMITMENT KIT

Guarantees the receiver that another device has taken ownership of the images sent.

- Identifies that images have been sent to a destination
- Stores selected images on a DICOM-compliant server
- Obtains commitment to retain the images

Note: This is a single user license. A separate license must be ordered for each console.

DICOM Q/R SCP UNIT

Query and retrieve image data on the MR console from a network image server, such as PACS.

Note: This is a single user license. A separate license must be ordered for each console.

VIDEO FADER

CONSOLE DESK 65" X 36" X 30"

Measures 65" x 36" x 30"

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SILENT SCAN STEREO AND INTERCOM SYSTEM

Includes the following:

Patient Microphone

Patient's headset has a built-in microphone for crystal-clear communication between technologist and patient. Coupled with Pianissimo technology, the patient will be heard, regardless of scan type or location within the MRI bore.

Patient Alarm System

A hand-held, rubber squeeze bulb for claustrophobic patients to trigger an audible alarm at the communication console.

Communication Console

Includes a flexible, gooseneck microphone for effortless patient communication.

Patient Comfort Music Headset

Offers hearing protection and allows patients to relax to music, free from gradient noise. Careful matching of transducer characteristics and filter design provides remarkably clear music.

LCD MONITOR FOR ECG

ELECTRODE PADS (BOX OF 25) (Qty 2)

PATIENT PADS FOR SPINE AND EXTREMITY

OVERHEAD CABLE INSTALLATION

Allows for overhead cable installation during scanner installation.

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GANTRY LIGHTING OPTION

The ambient gantry lighting kit provides a soothing blue glow on the front cover of the magnet. Patients who see a bright friendly scanner will ultimately respond more positively and tolerate the scanning process more effectively.

DRAKE HEAT EXCHANGER DUAL LOOP 460 FOR TITAN OR ATLAS Z

The Drake Dual Loop Chiller is composed of a base unit and the Indoor Heat Exchanger. The Indoor Heat Exchanger is supplied as standard equipment and is placed in the MRI equipment room. The base unit (chiller) is installed on the outside of the building, typically on a concrete pad. Advantages include ease of installation and a smaller footprint in the MRI equipment room. The chiller comes with a remote monitor that provides remote indications of chiller operation.

Note: The PACT78S3-T3-ZTM 208 Vac and PACT78S3-T4-ZTM 460 Vac chillers are designed to operate in ambient temperatures of -20F to 125° F.

TITAN HIGH CAPACITY TABLE - FACTORY OPTION

- Not Compatible with Extended Travel Option

This option increases the weight limit of the standard Titan table from 440 lbs. to 550 lbs. It allows travel in all directions.

Note: This option is not compatible with the Extended Travel option.

ADDITIONAL ON-SITE APPLICATIONS TRAINING - 32 HOURS

- Four (4) consecutive days (32 hours) additional on-site applications support for all modalities.
(trainer's expenses included)
- Training is held Monday through Friday only, with Monday mornings and Friday afternoons scheduled as travel time for trainers

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ADVANCED NON-CONTRAST MRA IMAGING

A three (3) day advanced training course that provides an overview of Toshiba's proven non-contrast MRA techniques - Fresh Blood Imaging (FBI), Time Spatial Labeling Inversion Pulse (Time-SLIP), Contrast Free Improved Angiography (CIA) and Time Space Angiography (TSA). The course will be conducted at Toshiba Institute of Advanced Imaging in Irvine, CA.

Coursework includes:

- Principles and physics of each non-contrast MRA imaging technique
- Overview of acquisition techniques and image parameters
- Practical MRA "hands-on" scanning
- Tuition cost includes economy airfare, lodging and meals for one student
- Accredited for continuing education by the ASRT Education Foundation

4-CHANNEL FLEX SPEEDER COIL

This versatile, 4 element coil's flexible design allows it to wrap around extremities, joints and a variety of other anatomical areas the user wishes to image.

16-CHANNEL FLEX SPEEDER MEDIUM COIL

The medium 16-element flexible coil is designed to be lightweight and easy to position for multiple clinical applications. The coil:

- Easily wraps around extremities, joints and a variety of other anatomical areas the user wishes to image
- Lies flat for long bone studies
- Combines with other integrated coils to create a posterior and anterior array for maximum contrast and spatial resolution
- Has a pre-amplifier located on it, so there's no extra box to deal with when positioning the coil on the patient

Note: On an 8-channel RF system this coil operates as an 8-element coil

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16-CHANNEL FLEX SPEEDER LARGE COIL

The large 16-element flexible coil is designed to be lightweight and easy to position for multiple clinical applications. The coil:

- Easily wraps around extremities, joints and a variety of other anatomical areas the user wishes to image
- Lies flat for long bone studies
- Combines with other integrated coils to create a posterior and anterior array for maximum contrast and spatial resolution
- Has a pre-amplifier located on it, so there's no extra box to deal with when positioning the coil on the patient

Note: On an 8-channel RF system this coil operates as an 8-element coil.

FLEX COIL POSITIONING PAD SET

The Flex Coil Positioning Pad Set contains positioning accessories for ankle, knee, elbow and other clinical applications. The pad set will facilitate in positioning the coil easily and reliably for optimal image quality.

SHOULDER SPEEDER COIL

High Resolution, SPEEDER compatible, 6 Element Array coil. The unique design incorporates flexible coil elements both posterior and anterior which provides excellent deep tissue visualization of the shoulder joint anatomy. The design also allows for use on patients of all sizes and easily switches for right or left shoulder scanning applications. Pads, securing strap and Operator's Manual are included.

Prerequisite: v9.51 Software

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COW, EXTRA LARGE ARRAY KNEE

A lower extremity coil to better accommodate extremely large patients in MR imaging.

- 7 Elements
- Transmit / Receive design for optimal knee imaging
- 22 cm interior diameter to accommodate very large extremities

Prerequisites: Titan Systems V9.50, V9.51 R247 or later

MEDRAD SPECTRIS SOLARIS EP MR INJECTION SYSTEM WITH ICBC

Designed for controlled injection of MR contrast media. Two independent injection syringes allow automatic saline flush for a tighter bolus and efficient contrast delivery.

- Controls the quantity and timing of MR contrast media
- Allows consistent, repeatable injection parameters
- Includes iCBC - Integrated Continuous Battery Charger. Designed to maximize operator efficiency by not having to change the battery.
- Includes installation, Medrad applications training and one-year warranty

UNINTERRUPTIBLE POWER SUPPLY TITAN U4/U5 480 LARGE BATTERY

The UPS solution for the Toshiba systems consist of a state-of-the-art Powerware 9390 UPS integrated with a TEAL Thinline PDU or TEAL PCDU. This combination of modern UPS matched with a specific power distribution unit for the Toshiba system provides the greatest power flexibility with ease of overall system installation. The TEAL Thinline PDU mounts to the side of the UPS cabinet with a minimal added footprint, and utilizes a shielded isolation transformer for voltage conversion and distribution coupled with the TEALwatch© Power Monitor to ensure that fluctuations in your institutions power will not adversely affect your Toshiba diagnostic imaging system. The Toshiba UPS/PDU or PCPU combination provides:

- A state-of-the-art Powerware 9390 UPS system to power the entire imaging system, creating a clean AC waveform free of line-generated noise and transients.
- A custom Power Distribution Unit from TEAL, the Thinline PDU or PCPU, designed specifically as the interface for the Toshiba system and the Powerware 9390 UPS.
- The TEALwatch© Power Monitor included with the PDU, an embedded web-based device enabling you to remotely monitor the power quality 24x7 from anywhere.
- Toshiba specific voltage conversion and distribution to eliminate the need for multiple voltage feeds into the same room, which guarantees performance and compatibility.
- A new single point ground derived from the isolation transformer (the only NEC compliant method of establishing a new, clean ground source for the room).
- Only a single input voltage source is required, which reduces the cost of electrical site preparation dramatically.
- Safety agency listed product for safety, quality and ease of electrical inspection.
- The UPS can be ordered to operate on 480VAC or 208VAC input power. The battery cabinet size determines the length of operation at full rated power and must be selected between large (L) 10 minute range or the small (S) 5 minute range.

UPS,120ICVA, 480V

BATTERY,LARGE

THINLINE-TITAN

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BIOMED TRAINING - TUITION ONLY - TITAN, ATLAS, VANTAGE (20 CLASS DAYS - TWO TRIPS)

**Vantage/Titan Service (MR250)
10-Day Class, Instructor-led**

This MRI Vantage/Titan Service course is designed for customer engineers with minimum to no Mill experience but who have completed the MRI Fundamentals prerequisite course. This is a 2-week complete system course.

This course covers both theory and practice. Participants will become familiar with Vantage site planning requirements as well as learn installation methods, system configuration and pc-based adjustment and calibration procedures, preventive maintenance, service techniques, and troubleshooting. Hands-on lab exercises (85% of the class time), with particular emphasis on planned maintenance, calibration, are provided for each major topic discussed in class. MRI safety will be stressed at all times.

As part of the final testing at the end of the course, all TAMS CEs will participate in a practical hands-on final exam that will test their ability to troubleshoot, adjust, test and/or repair the system. To pass the class, all TAMS CEs will be required to pass both a written and practical final test with a minimum score of 80% on each.

Non-TAMS class participants will take the written filial, but will not take the practical test.

Students will not install a Vantage system during this class.

Prerequisites

- MR Fundamentals (MR101)
- MR Prestudy Course (MR102)
- MRI Safety CBT Level 2 (MR113)
- UNIX (NC107)

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Students must bring notebook computers equipped with Pentium-class CPUs, 1GB or more of available hard disk space, Windows 98, 2000 or XP, Office 97 or later, CD-ROM drive, serial port RS232, and network connectivity. Laptops used at the Center must have the latest virus scanning software and update definitions before being permitted to connect into the TAMS Training network. Laptops are not available to borrow or rent during class.

**Vantage/Titan Repair (MR350)
10-Day Class, Instructor-led**

This MRI Vantage/Titan Repair class is an advanced course for customer engineers who completed Vantage/Titan Service or the previous Vantage Complete class. This is a 2-week course.

This course covers both theory and practice, with heavy emphasis on hands-on labs. Building on what was learned in the first class; participants will concentrate on advanced system adjustments including QD Whole body coil, eddy currents, SPEEDER, and RF; system tuning; software loads, and troubleshooting. DICOM and coils will also be covered. The course is based on labs with lecture used to support the labs. MRI safety will be stressed at all times

As part of the final testing at the end of the course, all TAMS CEs will participate in a practical hands-on final exam that will test their ability to troubleshoot, adjust, test and/or repair the system. The minimum score to pass the class is 80% on both the written and practical tests.

Non-TAMS class participants will take the written final, but will not take the practical test.

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Students will not install a Vantage system during this class and will not load cryogen (which is covered in Vantage/Titan Service).

Certain OJT-based prerequisites will be required for Vantage/Titan Repair.

Prerequisite

- Completion of Vantage/Titan Service (MR250) or equivalent Vantage class

Students must bring notebook computers equipped with Pentium-class CPUs, 1GB or more of available hard disk space, Windows 98, 2000 or XP, Office 97 or later, CD-ROM drive, serial port RS232, and network connectivity. Laptops used at the Center must have the latest virus scanning software and update definitions before being permitted to connect into the TAMS Training network. Laptops are not available to borrow or rent during class.

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OPTIONS

MCARDIAC KIT FOR TITAN

CARDIOLINE SOFTWARE

This application automates the acquisition of the six basic cardiac planes of the heart reducing total scan time. The horizontal long axis, vertical long axis, short axis, 4-chamber, 2-chamber and 3-chamber views are detected using a multislice image as an input, and then are automatically displayed. The cardiac planes are then used for sequence planning and acquisition. CardioLine allows adjustment to the orientation and position of the detected cardiac planes via MPR display.

Prerequisite: mCardiac Package MSSW-CFA— is required

PROTON SPECTROSCOPY FOR TITAN

ADVANCE PROTON MULTI-VOXEL SPECTROSCOPY PACKAGE (WITH HIGH ORDER SHIM)

44BREAST—P-AGISrsil

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The RADIANCE Plus Breast Imaging Package is an all inclusive package that includes specialized sequences and the Sentinelle Breast SPEEDER Coil. This coil is an 8-channel coil specially designed for high-resolution imaging of the breasts and axillary tissues. This coil is SPEEDER compatible, can be used in unilateral and bilateral exams, and allows the Vantage Body Coil to be used at any time while the coil is in the scanner to accommodate for large FOV body coil localizers.

Compatibility

- 1.5T Vantage Titan

Interventional Access

- Variable Coil Geometry
- Lateral approach accessibility for biopsy:
 - 70 cm and 60 cm bore: 352.71 cm^2
- Medial approach accessibility for biopsy:
 - 70 cm and 60 cm bore: 276.82 cm^2
- Bilateral intervention capable

Patient Accommodation

- Volume per breast (70 cm bore): 8287 cc
- Volume per breast (60 cm bore): 6672 cc
- Distance from sternum to bore (70 cm bore, Titan): 35 cm
- Distance from sternum to bore (60 cm bore, Atlas): 30 cm
- Arms at side, arms back or arms forward positioning
- Adjustable head rest
- Patient pads: 9 with memory foam
- Patient weight up to 200kg

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Training

- 6.0 Category A Continuing Education Hours with initial applications training on imaging and intervention. This applications training is provided by Sentinelle Medical Imaging.

Techniques included in this package.

- Quick 3-D's for dynamic evaluation
- Enhanced Fat saturation
- Silicone saturation
- High resolution axial and sagittal sequences
- Unique slice selective fat saturation
- LFOV imaging
- SPEEDER compatible

Note:

Warranty/ Service

Customer hereby acknowledges and agrees that solely as a convenience to Customer, Toshiba is entering into an agreement with Sentinelle, ("Vendor") in order for such Vendor to sell, deliver, install, and service its products, and perform other work to and for the benefit of Customer. However, Customer hereby agrees that Toshiba will not be liable for any defects in design, material and workmanship in the products or services sold and/or performed by Vendor or otherwise be responsible for such products or services. Customer will have no rights or remedies against Toshiba for such products or services. Customer's sole remedy will be against Vendor. Additional warranty may be purchased directly from Sentinelle ("Vendor") after the initial 12 month warranty period has expired.

Prerequisite: V9.5 Software

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RAPID TRANSPORT SYSTEM - RIGHT

Toshiba's unique rapid transport system provides a complete, MR compatible, patient transport system that does not disable the scanner when it is removed. This system allows the gurney to transport the patient from room to imaging suite, dock on top of the Titan's table and then be moved in the scanner for imaging. When the patient is done, the table comes out and lowers the top back onto the gurney for transport back to the patient's room. The scanner is still capable of imaging while this occurs as the MR table has not been removed.

***Prerequisite: Requires V2.21 or later Software on the 3T
Requires V2.2 or later Software on the 1.5T***

Vitreia® is a premier visualization and analysis solution. Designed with workflow in mind and compatible with DICOM compliant imaging devices, Vitrea software provides outstanding image quality and multi-modality clinical flexibility to help users rapidly view, evaluate, and communicate their diagnostic findings to referring physicians

The Vitrea Workstation, MR Package, provides a set of capabilities designed to supplement the viewing and analysis capabilities of an MR system, including basic MR study viewing, MRA visualization, integrated Medis cardiac analysis tools, plus additional optional applications.

Clinical Applications:

- **Basic MR Review**
 - o Multi-series layout and navigation
 - o Cross-reference lines and triangulation
 - o Comparative review

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- Vascular MRA Review
 - o Advanced MPR, MW, thick slab
 - o 3-D volume rendering
 - o Automated vessel analysis tools (Vessel Probe)
 - o Segmentation tools with multi-object rendering
 - o Dynamic MRA/MR Review
 - o Multi-volume cine display
 - o 4-D displays in MPR and volume
- MR Oncology/Organ Review
 - o Organ/Tumor segmentation tools
 - o Colored display and rendering tools
 - o Volume measurements
 - o Loads multiple time-points for longitudinal analysis
- MR Brain Tumor Analysis Application
 - o Semi-automated tumor segmentation
 - o Display/Measure enhancing & non-enhancing regions
- Medis Cardiac QMass MR Advanced Application
 - o Automatic RV and LV contour detection
 - o Analysis of global and regional cardiac
 - o Analysis of delayed signal intensity studies
 - o Analysis of time-intensity studies
 - o Visual scoring of wall motion, time-intensity and viability
- Medis Cardiac QFlow MR Application
 - o Three-click flow and velocity analysis of any type of vessels
 - o Automatic detection of vessel borders
 - o Automatic calculation of flow volumes, velocities and regurgitant fraction

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Warranty and Applications Training:

- One year software maintenance and warranty upon delivery
 - o 24 x 7 live customer support
 - o Dedicated service account manager
 - o Three additional education units

Hardware:

- HP Z420 Workstation
 - o Quad-Core Intel® Xeon® Processor E5-1620 3.6GHz
 - o 16GB DDR3-1600 ECC RAM
 - o Two (2) x 500 GB 7200 RPM SATA hard drives in RAID1
 - o NVIDIA Quadro 2000
 - o Microsoft® Windows® 7 Professional 64-bit Edition with SP1

30" MONITOR