Pisa, 10/07/2024

CARATTERISTICHE MACCHINA GAMMA CAMERA DISCOVERY NM/CT 670

La macchina è situata presso l'ospedale Santa Chiara di Pisa reparto di Medicina Nucleare edificio 31 piano 1 stanza 8

Sistema A511421236 INV 283245 Matr. 273925HM8 .

La macchina sarà venduta senza collimatori LEHR, MEGP, HEGP e Pin Hole e altri accessori (es. cuscini posizionamento).

La macchina è stata collaudata a Luglio 2011 ed è attualmente in uso.

Valore presunto approssimativo della Macchina circa € 6000-8000 (IVA esclusa se dovuta)

Lo smontaggio e il trasporto è a carico di chi presenta l'offerta.

La smontaggio e il ritiro della macchina deve avvenire prima dell'apertura del cantiere per l'istallazione della nuova gamma camera attualmente previsto per metà settembre 2024.

Si allega brochure con le caratteristiche tecniche della macchina in vendita.

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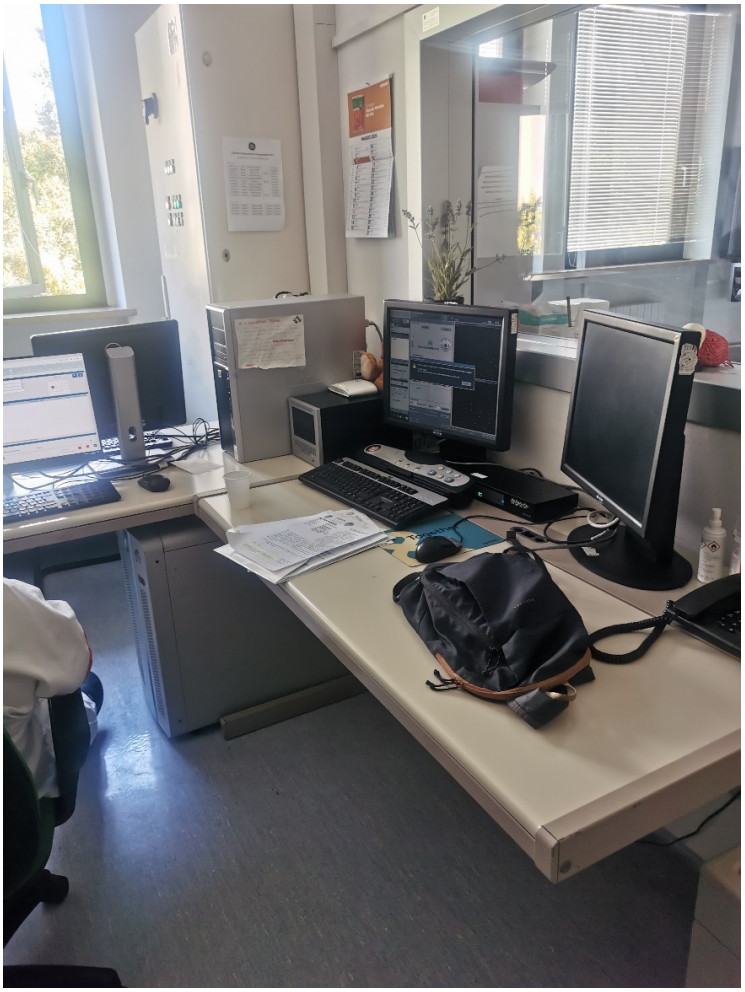

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Discovery NM/CT 670

Data Sheet

Overview

Discovery* NM/CT 670 is a premium Hybrid SPECT/CT imaging system . It combines an all-purpose, dual detector, free-geometry integrated nuclear imaging system, featuring advanced, all-digital Elite NXT detector technology, slim gantry, cantilevered patient table, acquisition station, and Xeleris* 3 processing & review workstation, with the high-performance BrightSpeed* Elite CT system.
Elite NXT detectors feature 3/8" or 5/8" Detectors for all-purpose nuclear imaging.
BrightSpeed Elite features a 16 slice configuration which is driven by LightSpeed VCT* technology for exceptional CT image quality.
Key features of the free-geometry Discovery NM/CT 670 design include:

- Slim-profile, wide-bore, robotic gantry design
- 180° and 90° orientations of the detectors for high SPECT and WB scanning efficiency
- Rapid simultaneous multi-axis gantry motions
- Upright and horizontal detector orientations for exceptional clinical versatility, including patients in hospital bed, standing or sitting during scan
- Multi-functional, dual-axis imaging table
- Automatic "home" positioning enables easy setup of the gantry and the table using pre-programmed detectors geometries and imaging modes
- Real-time automatic body contouring
- User friendly, intuitive Linux-based user interface
- Ignite one-click, integrated workflow with Xeleris processing and review workstation designed to help enhance departmental productivity

Discovery NM/CT 670

Primary Benefits

- Excellent image quality based on advanced Elite NXT detector technology with SPECT-optimized design, and superb CT image quality based on Brightspeed multi-detector with LightSpeed VCT technology
- Dose reduction without compromising image quality is enabled in both CT and NM scans :
  - In CT scans, based on BrightSpeed innovative dose management technology.
  - In NM scans, based on the Evolution family of advanced reconstruction algorithms.
- Exceptional productivity enabled through ½ time planar and SPECT scans, fast and flexible robotic gantry motions for maximal clinical versatility and Ignite streamlined workflow
- Advanced integrated Xeleris 3 workstation clinical applications with remote PC and PACS processing and review solutions
  - Investment protection through simple and easy upgradeability path from 3/8" to 5/8" NM detectors configuration, to ASiR§ dose reduction technology, and the ability to add Xeleris options.

imagination at work

System Components

Elite NXT NM detectors

Discovery NM/CT 670 nuclear image quality is based on two Elite NXT slim , large field-of-view rectangular digital detectors, performing the following five corrections on each detected event in real time, even at high count-rates :

- Uniformity
- Linearity
- Energy
- Isotope decay
- Center of Rotation (COR)

3/8" NM Detector characteristics

- 59 circular PMT's - 53 x 3" (76 mm) and 6 x 1.5" (38 mm)
- Crystal thickness: 3/8" (9.5 mm)
- One ADC per PMT, 30.0 MHz sampling rate
- UFOV: 21.25" x 15.75" (54 x 40 cm ± 0.5 mm)
- Energy range: 40 - 620 keV

5/8" NM Detector

- 59 circular PMT's - 53 x 3" (76 mm) and 6 x 1.5" (38 mm)
- Crystal thickness: 5/8" (15.9 mm)
- One ADC per PMT, 30.0 MHz sampling rate
- UFOV: 21.25" x 15.75" (54 cm x 40 cm ± 0.5 mm)
- Energy range: 40 - 620 keV

NM Gantry

Discovery NM/CT 670 70 cm wide-bore gantry combines slim NM gantry, with BrightSpeedElite ultra-compact design. It enables acquisition of SPECT, whole body planar and SPECT, gated planar and gated SPECT studies in various geometries, combined with multi-slice CT scanning for a wide patient population.

Key features include:

- Automated detector radial motion (in/out), rotation around the ring, transitions between 180° and 90° **geometries or other orientations
- Flexible design enables a variety of scanning orientations including upright seated or standing patients and imaging patients on stretchers.
- The stationary gantry is secured to the floor, for tomographic center-of-rotation precision.
- Camera setup is performed interactively by the remote control handset and via user-definable pre-programmed acquisition-specific "home" positions. A gantry display unit displays current status of the gantry's moving parts and the patient table.
- Real-time, infrared-based Automatic Body Contouring (ABC) designed to enhance scanning efficiency and resolution in 90° & 180° SPECT and whole body procedures and help minimize patient-detector distance and maximize image quality.

Patient table

Discovery NM/CT 670 features dual-axis cantilevered table, used for planar, whole body, SPECT and other scanning procedures performed in horizontal patient orientation.

Key features include:

- Maximum patient weight - 227 kg (500 lb)
- Whole Body scan range 200 cm (79")
- Minimum table height 53 cm (21") - facilitates patient loading and unloading from wheelchair or stretcher
- Dual-axis cantilevered table with a dual-position CT-NM telescopic transporter for precise SPECT-CT registration
- Low attenuation carbon fiber tabletop includes mattress pad with straps for patient comfort.
- Automated positioning helps simplify setup
- Bedside touch-ruler for easy scan range setup
- Manual emergency patient egress
- Mobile design enables easy swiveling of the table away from the gantry around a pivot point , facilitating fast dual-collimator exchange and scanning of patients who are seated or on hospital bed / stretcher
- Firm anchoring to the floor with locking pins and floor plates. Free access from both sides for patient loading / unloading with IV, EKG or other devices.
- Optional accessories include a head holder, table extender, arm support, leg support and table pads/straps

NM Acquisition station

The integrated SPECT-CT acquisition console employs a Graphic User Interface for exam scheduling, scan acquisition, CT reconstruction and scan QC as well as utilities for protocol editing, routine quality control and analysis and networking, including:

- Universal connectivity via DICOM 3.0 (as per DICOM conformance statement) and Interfile 3.3 TCP/IP based protocols
- HIS-integrated workflow including DICOM Worklist
- The BrightSpeed Elite CT desktop environment is available for CT imaging*** including: protocol definition, networking and archiving manual film control, as well as CT image processing such as multi-planar reformatting (MPR), multi–projection volume rendering (MPVR) and MR image display.

Display

- 1280 x 1024 true-color display
- Threshold and windowing control in multiple window settings
- Cinematic display of dynamic and all multi-frame datasets
- Online, live display of acquired data and imaging parameters

Main Features

Acquisition

The Discovery NM/CT 670 acquisition station is based on Linux operating system with an icon-based graphical user interface shared with the Xeleris workstation.
Data acquisition may be performed in any of the following imaging modes: Static, Dynamic, Multi-Gated, Whole Body Scanning, SPECT, and Gated SPECT
Operation of the Discovery NM/CT 670 is done with the interactive, graphical GE Common User Interface (CUI). The CUI is designed to help maximize flexibility and productivity and includes the following features:

- Pre-defined or user-configurable protocols for rapid recall and setup
- On-the-fly digital linearity, energy and uniformity corrections
- Energy spectrum histogram (PHA) display with 16 windows per detector. Ensures acquisition into correct energy window for given isotope(s)
- Acquisition termination by preset time, preset count or manual stop
- Pan/zoom and rotate modes
- Ability to resume paused acquisitions for whole body, SPECT, and gated SPECT

Utilities

Acquisition software includes control of camera maintenance activities including:

- Disk space management
- Pulse Height Analysis (PHA)
- Center of Rotation (COR)
- Uniformity correction map
- Energy, sensitivity, and linearity map
- Daily/periodic QC including gantry calibrations
- Customizable system parameters
- Definition and setup of acquisition sequences
- Use of preset acquisition protocols

Discovery NM/CT 670 is capable of acquiring single or multi-isotope scans in the following acquisition modes:

Static Acquisition
Single frame image (word mode), Frame sizes : 32^2, 64^2, 128^2, 256^2, 512^2

Dynamic Acquisition

- Frame sizes: 32^2, 64^2, 128^2,256^2
- Maximum frame rate: 50 frames/sec

Whole Body Scanning

- Infrared-based real-time Automatic Body Contouring
- Sequential multi-spot and continuous scanning modes
- Minimum WB continuous scan speed : 3 cm/min
- Maximum WB continuous scan speed : 25 cm/min
- Simultaneous anterior/posterior dual view scan
- Image matrix: 256 x 1024

Multi-Gated Acquisition

- Equi-time and equi-phase gating modes with real-time irregular beat rejection
- ECG display during acquisition
- On-line R-to-R histogram display
- Multi-gated acquisition capacity : 8, 16, 24, 32, or 64 frames per cycle

SPECT Acquisition

- Infrared-based on-line Automatic Body Contouring system
- Step and shoot angular view resolution (2°-6°, 9°,12°, 15°, 18°, 20°, 30°, 45°, 60°, 90°)
- Either 90° or 180° detector geometries for cardiac SPECT
- Matrix size: 64 x 64, 128 x 128, 256 x 256

Gated SPECT acquisition

- Gated tomography with real-time irregular beat rejection
- User-modified R-R acceptance window
- An extra bin sums all data, both accepted and rejected, securing non-gated study completion in case of exceptionally irregular heart rate.
- Number of frames per R-R interval may vary between 4,8,12,16,24,32

CT acquisition

All CT acquisition features provided by the BrightSpeed Elite 16 Slice Edition are available***, excluding : Gantry tilt and the CT options SmartStep (CT Interventional Kit) and SmartView Fluoro.

Hybrid SPECT/CT acquisition

Any supported SPECT and CT single or multiple exams may be combined to create hybrid protocols

- Scout, Axial and Helical CT modes
- Attenuation Correction
- Localization
- Integrated hybrid workflow includes setup of scan range using scout image and defining the order of the scan phases (NM first or CT first)

NM data processing and review

The Discovery NM/CT 670 acquisition station allows networking to local area networks.
Data acquired on Discovery NM/CT 670 is transferred under Ignite workflow, a one-click productivity solution, to Xeleris processing & review workstations via DICOM 3.0 standard for processing, archiving, reporting and hard copying

SPECT processing & review

Xeleris offers Volumetrix* MI, a hybrid imaging tomography review package to superimpose and display matching pairs of nuclear and CT tomograms. Volumetrix MI is an interactive display allowing users to navigate in 3D throughout the entire tomographic study, including comparative display of corrected and uncorrected images.

Ignite

The Ignite feature for Discovery NM/CT 670 and Xeleris is designed to help streamlines clinician workflow via three simple steps:

- Select the patient in worklist
- Set up patient and utilize auto-home positioning
- Click once to begin acquisition of scan and automatic transfer and processing of results on Xeleris.

Volumetrix MI

A tomographic data viewing and processing package - a consolidated application for SPECT and PET data processing with or without anatomical data (CT or MR), capable of Multi-SPECT sessions pasting, follow up on multiple studies and input of anatomical oblique slices.
Its Integrated SPECT reconstruction and correction algorithm includes interactive selection of optimal image reconstruction parameters and Hybrid QC (ACQC) tools to help improve alignment of SPECT and CT data sets for accurate attenuation correction and localization.

- Inputs anatomical oblique slices and features on-the-fly oblique creation/manipulation.
- Facilitates dual isotope and study follow-up reading and accepting multiple SPECT, PET ,CT and MR datasets.
- Supports standard uptake value (SUV) calculation and display mode for PET (LBM, BSA, & BW methods).
- Flexible and user customized layouts.
- Auto Condense mode to automatically condense slices to fit on one screen for printing or filming.
- Multiple fusion modes, including weighted fusion, which allows the user to adjust the contribution of the NM and CT images to the fused results.
- Both the anatomical and the functional images retain resolution
- Fast CT scroll

MDC - Motion Detection and Correction (option)

- Automated cardiac and general purpose SPECT motion correction
- Sinogram and linogram images for QC analysis
- Tools for manual adjustment and correction

SPECT reconstruction

- Adjustment of any of the reconstruction settings
- On the fly image correction setup including resolution recovery (option), attenuation and scatter.
- Filter selection with filter gallery review to determine the most effective filter and filter parameters. 2D Hanning, Metz, Butterworth, Hamming, and Wiener filters are available for FBP reconstruction. 3D Butterworth, Hanning and Gauss filters are available for OSEM reconstruction

QC package for hybrid NM/CT studies

Enabling effective alignment of hybrid NM and CT data sets in order to minimize potential inter-study misalignments. It can help reduce the potential need for study retakes and features:

- Automatic Hybrid QC (user overridden) of the NM FOV relative to Hybrid CT FOV
- Confirm or reject each FOV separately
- Correct or generate attenuation maps

Multi-FOV Pasting

- Automatic pasting (user overridden) up to 7 FOV's (covering the whole body)
- Preview pasted volume on SPECT/CT (NM & fused available – up to two FOV's)

Registration

- Manual adjustment via shift/rotate
- Single landmark registration
- Regional registration

- Fusion & spots collection are supported on registered images
- Auto accept or user intervention are allowed at any one of the above packages

Evolution for Bone (details under "options")

Evolution for Cardiac (details under "options")

Evolution toolkit (details under "options")

Volumetrix Suite
Optional software for Volumetrix MI that expands the review capabilities of SPECT/CT, including:

Volumetrix 3D Optional s/w package, integrating 3D Fusion into nuclear medicine workflow (more details under "options")

Volumetrix IR Optional s/w package , registering external CT or MR to SPECT or PET data (more details under "options")

Attenuation correction
Using CT transmission maps for reducing SPECT scans attenuation artifacts, Discovery NM/CT 670 provides a highly effective cardiac and general purpose SPECT attenuation correction system. Imported CT transmission data can be used in both 90° and 180° detector geometries.

Standard Selectable Items

Local language kits including user's manuals and local keyboard layout

Options

Volumetrix Suite
Optional software for Volumetrix MI that expands the review capabilities of Discovery NM/CT 670 and offers extended display and reporting flexibility .

Volumetrix 3D
Optional software package, integrating 3D Fusion into nuclear medicine workflow, bringing together the benefits of advanced 3D visualization with the productivity of traditional 2D image analysis.

- 3D VR of fused SPECT-CT, PET-CT or MR images
- NM segmentation tools to include or exclude portions of either volume in the 3D rendered images, including removal of the table from the CT image and threshold based semi-automatic segmentation.
- Clip & Cut Planes to integrate traditional Axial, Sagittal and Coronal slices simultaneously in to the 3D rendered objects

Volumetrix IR
Optional software which provides a choice of DICOM 3.0 CT data sets to be registered to NM or PET data sets in the NM workflow:

- Rigid registration of NM to CT or MR
- Manual adjustment via shift/rotate
- Full or Regional registration (fusion & collect supported)
- Auto accept or user intervention are allowed

High Precision Collimators
Discovery NM/Ct 670 features a choice of optional collimators which cover a comprehensive selection of applications in a wide range of energies including fan beam and pinhole collimators. For detailed list of collimators refer to p12-13.

Evolution for Bone
Optional iterative reconstruction with resolution recovery well-suited for Bone SPECT studies. The Evolution for Bone algorithm, which was developed at John Hopkins University & UNC Chapel Hill, models the collimator-detector response, improves Bone SPECT resolution, signal to noise ratios and reduces noise variability.
Use of the option enables:
1. Improved resolution of Bone SPECT studies acquired over standard acquisition time; or
2. Non-inferior image quality with up to 50% Reduction in count density, enabling:
   a. Imaging at ½ acquisition time compared to standard Bone SPECT protocols; or
   b. Imaging at ½ the dose compared to standard Bone SPECT imaging protocols; or
   c. Various combinations of (a) and (b).

Evolution toolkit
Optional package enabling improved resolution and reduced noise for SPECT studies of Tc99m, I123, In111, Ga67 by the use of the Evolution reconstruction technique with resolution-recovery. Compared to standard FBP or iterative reconstruction, Evolution Toolkit can enable improved visual clarity.

Evolution for Bone Planar
Optional add-on feature to Whole Body and Spots Bone Review application. Evolution for Planar Bone includes a noise-reduction algorithm that preserves the finest structures in the image. Evolution for Planar Bone uses well-suited pixel size and optimal energy window settings. (Adaptive Structure Matching Non-Local Filter).

It enables non-inferior image quality with up to 50% reduction in count density compared to standard protocol, delivering any of the following:

1. Improved WB planar image quality for the same scan time
2. Shorter WB planar scan time while preserving image quality
3. Reduced injected dose of the same scan time while preserving image quality

Evolution for Cardiac

An optional OSEM resolution recovery reconstruction algorithm which models the collimator-detector response developed at John Hopkins University & UNC Chapel Hill. It improves cardiac SPECT resolution, signal to noise ratios, and noise variability. The package provides non-inferior image quality with up to 50% reduction in count density of Cardiac SPECT studies, enabling:

1. Imaging at ½ acquisition time compared to standard MPI protocols, or
2. Imaging at ½ the dose compared to standard MPI protocols, Or
3. Various combinations of 1 and 2.

Cardiac Morphing

Optional software providing the following performance :

- Delivers enhanced perfusion image quality for Gated SPECT data
- Overcomes non-uniform blurring of the myocardium due to cardiac motion, enhancing the visual clarity of the images
- Based on elastic summation of tomograms representing all bins in a cardiac cycle – rescaled to match end-diastolic LV size

Dosimetry Toolkit

Optional application enabling quantification of changes in radiopharmaceutical absorption at multiple body organs over time through analysis of SPECT or planar WB studies and a hybrid SPECT/CT scan. The results may help in radiotherapy treatment planning. The quantification algorithm includes :

1. Aligning multiple planar WB and/or SPECT studies to each other and to registered hybrid SPECT/CT scan of the same patient.
2. Delineating organ VOIs through CT segmentation
3. Applying the VOI's for organ uptake quantification in series of NM scans acquired over time , resulting in calculated residual time per organ

Other Options

- High Precision Collimators (refer to p12-13)
- Carbon fiber head holder for brain scans
- External R-Wave Trigger with & without ECG chart recorder
- Table Leg Extender
- QA bar phantom
- Rectangular Co-57 flood *(Site license required)*
- Butterfly arm support
- Leg support
- Uninterruptible Power Supply (UPS)

Siting Requirements

Minimum Room Size

- Exam Room Size : 630 cm x 370 cm (20'8" x 12'1")
- Control Room Size : 274.3 cm x 426.7 cm (9' x 14') with single desktop table 469.9 cm x 240.3 cm (15'5"x 8'11")

These values meet minimum clearance requirements under U.S. Federal Regulations and National Standards: 29 CFR 1910 (OSHA), NFPA 70E (Standard for electrical Safety In The Workplace), and NFPA 101 (Life Safety Code). Specific room requirements may also need to comply with local and regulatory requirements.

Power Requirements

Power conditioning is incorporated into the primary power supply of the system. The system can operate on line voltage based on local conditions and codes.
380-480 V nominal, 3 phase Delta or Wye , 50/60Hrz. Power consumption is 90 kVA, 22 kvA average.

Operating Conditions

Parameter	Maximum	Minimum	Recommended	Maximum Change Rate
Temperature	26^0C (79^0 F)	18^0C (64^0 F)	22^0C (72^0 F)	3^0C/hr (5^0 F/hr)
Humidity	60% non-condensing relative	30% non-condensing relative		5 % / hr

Cooling Requirements

- The cooling requirements do not include cooling for the room lighting, personnel or non-NM/CT equipment present. Cooling requirements are listed by subsystem to allow planning for each room of the NM/CT suite.
- Cooling requirements are given for minimum, recommended and growth allowance scenarios.
- The minimum cooling figures assume patient throughput of 3 patients per hour and 75 scan rotations per patient
- The recommended cooling requirements assume patient throughput limited by the tube-cooling algorithm.
- The suite cooling can be sized for future developments by using the growth allowance figures. This cooling will accommodate more patients per hour and/or potential future system enhancements.

	Minimum Allowance (± 10%)	
Subsystem	**Watts**	**BTU/hr**
Gantry	7,700	26,300
Table	500	1700
PDU	1,000	3,400
Operator Console	2,165	7,400

Regulatory Compliance

This product is designed to comply with applicable safety standards.
The Discovery NM/CT 670 system complies with the requirements of IEC 60601-1 and relevant collaterals,; UL 60601-1, Safety Standards for Medical Electrical Equipment
This product is a CE-compliant device that satisfies regulations regarding Electro-Magnetic Compatibility (EMC) and Electro-Magnetic Interference (EMI), pursuant to IEC-60601.
GE Healthcare has been certified to be ISO-9001 and ISO-13485 compliant

Warranty

Please contact your sales representative for information.

Mechanical specifications

Patient Table	Specification
Table Weight	565 kg (1246 lb)
Maximum patient load capacity	227 kg (500 lb)
Maximum NM Scan Length	78.7" (200 cm) 10" (25 cm) with table extender
Maximum CT Scan Length	78.7" (200 cm)
Maximum Hybrid NM / CT Scan Length	63.0" (160 cm) + non-continuous 12.6" (32 cm) for brain scans
Table Width	24.0" (61 cm)
Tabletop width	15.8" (40 cm)
Table length	9'2" (280 cm)
Height	Minimal : 53.3 cm (21") Maximal: 100 cm (39.4")
Attenuation	<10% for 140 keV gamma rays < 27% for 120 kVp X-rays
Maximum pallet Height at center	34.1" (86.7 cm)
Vertical travel time (full range)	Slow : 30 sec Fast : 14 sec
Horizontal Speed (Manual, handheld controller)	Slow : 50 mm/s Fast : 100 mm/s

NM/CT Gantry	Specification
Depth (length)	86.6" (220 cm)
Width	85.8" (218 cm)
Height (Excluding the gantry display pole)	80.0" (203 cm)
Gantry bore size (Diameter)	70 cm (27.6")
Weight	9,581 (4345 kg) (without collimators)
NM Rotational (Axial) Motion Speed	0.25-3.0 rpm
NM Independent Radial Motion Speed (with Pinhole collimator)	11.8" or 29.5"/min (30 or 75 cm/min)
Emergency Stops	2
NM Rotation range	540^0
NM Gantry Orientations SPECT	90° and 180° opposing
Planar	90° and 180° opposing, Horizontal 0° Planar, Vertical 180° Planar
NM Swivel Tilt Range	0° to 180° about detector axis
NM Caudal/Cephalic Tilt Range	Each detector can swivel independently $\pm 45^0$ (available only on hospital bed/gurney)
NM Detector Scan Radius (With LEHR Collimators)	Minimum: 3.9" (10 cm) Maximum: 13.8" (35 cm)
NM Lateral Motion Speed	11.8" or 29.5"/min (30 or 75 cm/min)

Main programmed orientations of Discovery NM/CT 670 gantry

Discovery NM/CT 670 NM features summary

SUBSYSTEM	KEY FEATURE	USER/PATIENT BENEFIT
NM Elite NXT 3/8" or 5/8" DETECTORS	2 rectangular digital detectors with real-time corrections for sensitivity, linearity, energy, isotope decay, and COR	High resolution large FOV detectors with excellent image quality and stability
	Slim detectors	Low gantry load for excellent mechanical precision and wide detector clearance for wide referral population
	Real-time Automatic Body Contouring	Automatically follows the contour of the patient for both SPECT and whole body imaging, maintaining minimal patient to detector distance for high resolution images; minimizes time to position patients
	3/8" - Shielded for 40 - 620 keV range	Optimized for low and mid energy isotope studies
	5/8" – Shielded for 40-620 keV range	Optimized for high energy isotope studies
COLLIMATION	Collision sensitive pads	Pressure sensitive pads detect collisions and automatically halt detector/table motions for patient safety
	High Precision Collimators	Maintain excellent image quality in all applications
	Collimator storage/exchange device combined	Productivity, ease of use and safety; both collimators removed/replaced during one exchange session
DUAL AXIS IMAGING TABLE	Single table for all study types	Ease of use and productivity for both whole body and SPECT procedures without changing table positions
	Patient weight load of up to 227 kg (500 lb)	Accommodates greater portion of the scanned population compared with previous GE NM camera models
	Tabletop longitudinal travel accommodates 6'7" (200 cm) patient	Accommodates greater portion of the scanned population compared with previous GE NM camera models
	Table vertical travel range: 21" - 33" (53.3 cm – 82.5 cm)	Ease of patient transfer from wheelchair or stretcher; well suited for geriatric and pediatric patients
	Mobile design pivots on rear floor pin	Study flexibility for seated and stretcher patients, as well as collimator exchange; reduces tripping hazards
	Curved profile , low attenuation carbon-fiber tabletop	Patient comfort on wide table can help reduce patient movement and, therefore, improved image quality
	Touch ruler for scan range delineation	Fast and simple …may enhance operator productivity
	Hand grips on sides and cradle release on rear of table	Ease of table positioning and fast patient egress (cradle release) in case of emergency
	Accommodates head holder	Fixed patient positioning for high quality brain SPECT studies
	Accommodates wide arm support straps	Patient comfort
	Accommodates tabletop extender	Ability to image taller patients in legs-in position

SUBSYSTEM	KEY FEATURE	USER/PATIENT BENEFIT
NM HANDHELD CONTROLLER	Icon-based design	Ease of use for simple patient setup
	Pole-mounted handheld controller on top of gantry	User can operate controller from either side of the gantry for flexibility; user can start exam without leaving the patient's side

NM GANTRY	Exam Room Size : 6.30m x 3.7 m (20'8" x 12'1")	Minimal room layout requirements
	detectors shaped for 90° geometry (valid for LEHR only)	Shaped detector edges fit together tightly during 90° cardiac mode, minimizing dead space for high sensitivity and resolution
	Secured position on floor	Gantry does not move on rails, providing for mechanical stability and reliability; reduces tripping hazards
	Automatic study "Home" positions	Ease of use and quick patient setup with factory home positions of: collimator exchange, 180° SPECT, 180° Brain SPECT, 180° Whole Body, Vertical orientation facing out, 90° Cardiac SPECT, 90° SPECT Spine, and Stretcher
	Externally mounted dual detectors	Patient friendly; ease and speed of patient positioning
	Emergency Stop buttons	Stops all system motions upon emergency for patient safety
	Motorized radial detector movement in 90° position	Highly flexible patient positioning for cardiac imaging; COR stability and reproducibility
	Free geometry capability of various 0°, 90°, and 180° configurations	High throughput configurations for cardiac SPECT and whole body imaging, as well as providing flexibility of a single-head camera
	Flexible detectors positioning including upright standing or seated patients and hospital bed scanning	High clinical utility including "single-head positioning flexibility"
	Rapid transition between the various gantry geometries	Technologist productivity; ease and speed of study set-up;
NM ACQUISITION STATION	Graphical user interface with Xeleris workstation	Facilitates ease of use
	Standard high-end Windows PC running a real-time multi-tasking interface	May enhance productivity with multi-window, multi-tasking system
	Linux operating system	Parallel operations allow simultaneous acquisition and display to help enhance productivity
	Fully-integrated workflow solution with Ignite	Workflow productivity for streamlined imaging procedures including camera /patient setup , acquisition, processing and archiving.
	Networks to Xeleris Processing & Review	Non-proprietary communication protocols; open system
DICOM CONNECTIVITY	Networks to DICOM-compliant systems	Communicates with 3rd party DICOM-compliant workstations
	DICOM Modality Worklist	Streamlines patient admittance and scheduling

Elite NXT NM Detector Performance Specifications† Summary

SPECIFICATION	PARAMETER		RANGE	DATA (3/8" Crystal)	DATA (5/8" Crystal)
Field of view	UFOV	Length	=	54 cm	54 cm
		Width		40 cm	40 cm
Intrinsic Energy Resolution (Tc-99m @ 20 kcps)	UFOV	FWHM	≤	9.5 %	9.5 %
Intrinsic Spatial Resolution	CFOV	FWHM	≤	3.8 mm	4.5 mm
		FWTM	≤	7.1 mm	8.5 mm
	UFOV	FWHM	≤	3.9 mm	4.6 mm
		FWTM	≤	7.2 mm	8.7 mm
Intrinsic Uniformity	CFOV	Differential	≤	2.1%	2.1%
		Integral	≤	3.0%	3.0%
	UFOV	Differential	≤	2.3%	2.3%
		Integral	≤	3.6%	3.6 %
Intrinsic Spatial Linearity	CFOV	Differential	≤	0.2 mm	0.2 mm
		Absolute	≤	0.5 mm	0.5 mm
	UFOV	Differential	≤	0.2 mm	0.2 mm
		Absolute	≤	0.5 mm	0.5 mm
Multiple Window Spatial Registration			≤	0.5 mm	1.0 mm
Intrinsic Count Rate	Maximum Count Rate		≥	460 kcps	460 kcps
	Maximum @ 20% Window		≥	370 kcps	370 kcps
	20% Loss @ 20% Window		≥	250 kcps	250 kcps
SPECT Reconstructed Spatial Resolution with Scatter (LEHR Collimators)	Central		≤	9.9 mm	10.3 mm
	Radial		≤	9.9 mm	10.3 mm
	Tangential		≤	7.5 mm	7.9 mm

Evolution for Bone SPECT performance specifications

SPECIFICATION	PARAMETER	RANGE	Full time	½ time
Evolution for Bone SPECT Reconstructed Spatial Resolution with Scatter ‡ (LEHR Collimators)	Central	≤	6.4 mm	7.0 mm
	Radial	≤	5.7 mm	6.0 mm
	Tangential	≤	5.1 mm	5.4 mm

† per NEMA NU-1 2007 with ±4% tolerance
‡ reconstructed without post-filtering

Discovery NM/CT 670 Parallel Hole Collimators

DESCRIPTION	NAME	CATALOG NUMBER (a)	RECOMMENDED ISOTOPE	FIELD OF VIEW (mm) (b)	CALCULATED PENETRATION (%)	SYSTEM SENSITIVITY (cpm/μCi) @100 mm 3/8" / 5/8" Per Detector (c)	SYSTEM SENSITIVITY (cps/MBq) @100 mm 3/8" / 5/8" Per Detector (c)	SYSTEM RESOLUTION FWHM (mm) @100mm 3/8" / 5/8" (d)	TYPE OF HOLE	HOLE DIAMETER (mm)	SEPTAL THICKNESS (mm)	HOLE LENGTH (mm)	WEIGHT (kg / lb) 1pcs
Low Energy** High Resolution	LEHR	H2506TB	Tl-201 / Tc99m Studies	540 x 400	0.3 (Tc99m)	160 / 165 (Tc99m)	72 / 74 (Tc99m)	7.4 / 7.7	hex	1.5	0.2	35	60 / 132
Extended Low Energy General Purpose	ELEGP	H2506TD	I-123 / Kr-81 Studies	540 x 400	0.3 (I123) 2.3 (Kr81)	320 / 330 (Tc99m) 224 / 245 (I123)	144 / 148 (Tc99m) 101 / 110 (I123)	10.3 / 10.6	hex	2.5	0.4	40	62 / 136
Medium Energy General Purpose	MEGP	H2506TC	Ga-67 / In-111 studies	540 x 400	2.0 (Ga67)	144 / 150 (Ga67)	65 / 67 (Ga67)	9.4 / 9.8	hex	3.0	1.05	58	103 / 227
High Energy General Purpose	HEGP	H2506TE	I-131 studies	540 x 400	2.0 (I131)	97 / 165 (I131)	97 / 165 (I131)	12.0 / 12.5	hex	4.0	1.8	66	131 / 289

(a) Each commercial item includes 2 collimators mounted on a cart
(b) Collimator field of view
(c) Measured with 20% window using relevant isotope for each collimator , with ±10% tolerance
(d) Measured at 100 mm distance from collimator face with ±4% tolerance

** LEHR is the only collimator operational in L-mode (90^0 detectors geometry)

Discovery NM/CT 670 Pinhole Collimator

DESCRIPTION	NAME	CATALOG NUMBER	RECOMMENDED APPLI-CATION / ISOTOPE	FIELD OF VIEW (mm) @ (b)	Weight (kg/lb)	Insert hole diameter (mm)	SYSTEM SENSITIVITY (cpm/µCi) @100 mm 3/8" / 5/8"" Per Detector (c)	SYSTEM SENSITIVITY (cps/MBq) @100 mm 3/8" / 5/8" Per Detector (c)	SYSTEM RESOLUTION FWHM (mm) @100mm 3/8" / 5/8" (d)
General Purpose Pin Hole (3 inserts)	GPPH(a)	H2506TF	Thyroid / Tc99m, I123, I131	200 diameter	98/216 – 1 pcs. 169/370 – 2 pcs.	2 4.45 8	43 / 47 200 / 216 570/ 600	19 / 20 90 / 95 258 / 268	3.8 / 4.2 6.5 / 7.1 11.4 / 12.1

(a) Commercial item includes a single collimator mounted on a cart
(b) Sensitivity measured with Co57 (point source@100mm from insert center with PSD cover, 20% window) extrapolated to Tc-99m.
(c) Sensitivity measured with ±10% tolerance
(d) Resolution measured with ±4% tolerance

Discovery NM/CT 670 Fan Beam Collimator

The optional Fan Beam collimator enables higher efficiency brain SPECT studies compared to LEHR collimator.

DESCRIPTION	NAME	CATALOG NUMBER (a)	RECOMMENDED APPLI-CATION / ISOTOPE	FIELD OF VIEW (mm) @ (b)	CALCULATED PENETRATION (%)	TYPE OF HOLE	HOLE DIAMETER (mm)	SEPTAL THICKNESS (mm)	HOLE LENGTH (mm)	Volume sensitivity (c) 3/8" / 5/8"	SPECT resolution 3/8" / 5/8" (d)	Weight (kg/lb) 1pcs
Fan Beam	Fan Beam	H2506TG	Brain / Tc99m	540*250	0.1 (Tc99m)	hex	1.5	0.2	40	39,960 / 41,000 [cpm / µCi / cm^2] 18,000 / 18,500 [cps / MBq / cm^2]	Central 8.0 / 8.2 mm Peripheral Radial 8.5 / 8.7 mm Peripheral Tangential 6.7 / 7.0 mm	64

(a) Commercial item includes 2 collimators mounted on a cart
(b) Collimator field of view
(c) Sensitivity measured on two detectors, Tc99m with 15% window , with ±10% tolerance
(d) SPECT resolution measured with ±6% tolerance

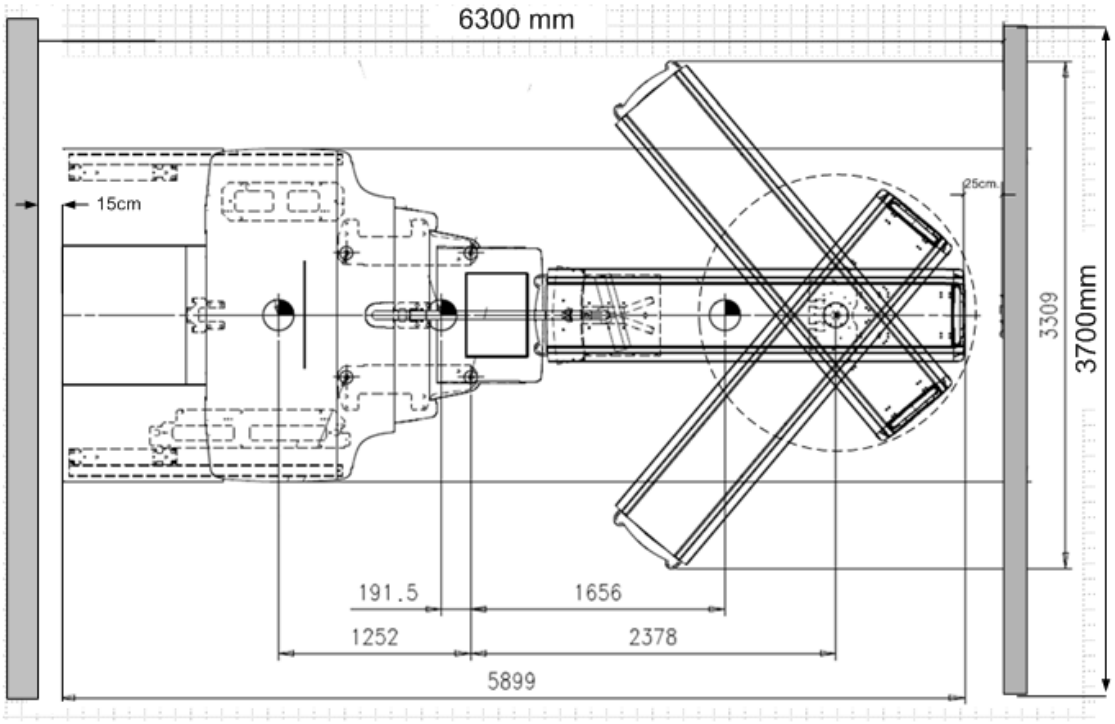
Note :

- Recommended brain scan radius is 14 -16 cm
- Focal distance from collimator surface is 350 mm
- Effective collimator thickness is 57 mm

Discovery NM/CT 670 16 slice CT key Specifications

CT Features Gantry Dimensions	Discovery NM/CT 670 16-slice configuration performance parameters
Aperature	70 cm
Scan Field	50 cm
Rotation Time	0.5;0.6;0.7;0.8;0.9;1.0; 2.0 (Axial);3.0(Axial);4.0 (Axial)
Temporal Resolution (min)	125 ms
Data Acquisition System	
Max.Number of Slices/Rotation	16
Number of Physical Detector Rows	24
Number of Projections	
Sequence Acquisition Modes (Axial)	1 x 1.25mm, 1 x 5mm, 1x 10mm, 2 x 0.625mm, 2 x 2.5mm, 2 x 5mm, 2 x 7.5mm, 2 x 10mm, 4x 1.25 4 x 2.5 mm,4 x 3.75mm, 4 x 5mm, 8 x 1.25mm, 8 x 2.5mm,16 x 0.625mm, 16 x 1.25mm
Spiral Acquisition Modes (Helical)	8 x 1.25mm, 8 x 2.5mm 16 x 0.625mm, 16 x 1.25mm
Tube Assembly	
Tube	Performix GE High Performance CT X-ray Tube
Tube Current Voltage	10- 440 mA
Tube Voltage	80, 100, 120, 140 Kv
Tube Anode Heat Storage Capacity	6.3 MHU
Focal Spot Size According to IEC 60 336	small 0.7x 0.6 mm/7 ° large 0.9 x 0.9 mm/7 °
Generator	
Max. Power	53.2 Kw
Axial Acquisition	
Reconstructed Slice Widths	0.625, 1.25, 2.5, 3.75, 5.0, 7.5, 10.0, 20.0
Scan Times Full Scan (360°)	0.5, 0.6, 0.8, 1.0, 1.5, 4.0
Multislice Helical Acquisition	
Reconstructed Slice Widths	0.625, 1.25, 2.5, 5.0, 10.0mm
Scan Times Full Scan (360°)	0.5, 0.6, 0.8, 1.0, 1.5
Reconstruction Increment	0.1 mm
Pitch Factor	0.625:1, 0.875:1, 1.35:1, 1.675:1 for 8 slices Helical 0.5625:1, 0.9375:1, 1.375:1, 1.75:1 for 16 Slice Helical
Spiral Scan Time Max	120 s (single helical scan)
Scan Length (max)	160 cm (continuos) 200 cm (160 + 30 non continuos)
Low-Contrast Detectability (Phantom CATPHAN (20 cm)	
Object Size	5mm @0.3% at 13.3 mGy 3mm @0.3% at 37.2mGy
Dose at Surface	5mm @0.3% at 13.3 mGy 3mm @0.3% at 37.2mGy
High Contrast Resolution	
	15.4 lp/cm 0.324mm @ 0% MTF
	13.4 lp/cm 0.324mm @10% MTF
Dose, CTDI100 Values	
Head	17.0 mGy/100mAs - Center (@ 120kV)
	16.8 mGy/100mAs - Surface (@ 120kV)
Body	5.5 mGy/100mAs - Center (@ 120kV)
	10.0 mGy/100mAs - Surface (@ 120kV)

Discovery NM/CT 670 Minimal Room Layout : 630 cm x 370 cm (20'8" x 12'1")



The floor plan of minimum room layout above (6.30 m x 3.70 m/ 20'8" x 12'1") meets egress and service clearance requirements under U.S. Federal Regulations and National Standards: 29 CFR 1910 (OSHA), NFPA 70E (Standard for Electrical Safety in the Workspace), and NFPA 101 (Life Safety Code). Specific room layouts may be subject to additional local and regulatory requirements.
For non-U.S. installations, specific installations are subject to country, local and regulatory requirements. For more information, please contact your local GE representative.

* Trademark of General Electric Company
** only LEHR collimators are operational at 90^0 geometry
*** See BrightSpeed Elite Product Data Sheet for details
§ (1) ASiR is licensed for use with a GE x-ray tube. Use of a third party x-ray tube will require the purchase of an additional license for these features.
(2) In clinical practice, the use of ASiR may reduce CT patient dose depending on the clinical task, patient size, anatomical location and clinical practice. A consultation with a radiologist and a physicist should be made to determine the appropriate dose to obtain diagnostic image quality for the particular clinical task.

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