REV	DATE	MODIFICATIONS

SITE NAME

CITY

COUNTRY

01 - Cover Sheet
02 - Equipment Layout
03 - Floor-Electrical Layout
04 - Structural Details
05 - Power Requirements-Power Distribution
06 - Environment - Delivery
07 - Equipment Dimensions
08 - HVAC - Interconnections
09 - Disclaimer - Site Readiness

A mandatory component of this drawing set is the GE Healthcare Pre Installation manual. Failure to reference the Pre Installation manual will result in incomplete documentation required for site design and preparation.
Pre Installation documents for GE Healthcare products can be accessed on the web at: www.gehealthcare.com/siteplanning

GE does not take responsibility for any damages resulting from changes on drawings made by others. Errors may occur by not referring to the complete set of final issue drawing. GE cannot accept responsibility for any damage due to the partial use of GE final issue drawings, however caused. All dimensions are in millimeters unless otherwise specified. Do not scale from printed pdf files. GE accepts no responsibility or liability for defective work due to scaling from these drawings.

GE Healthcare

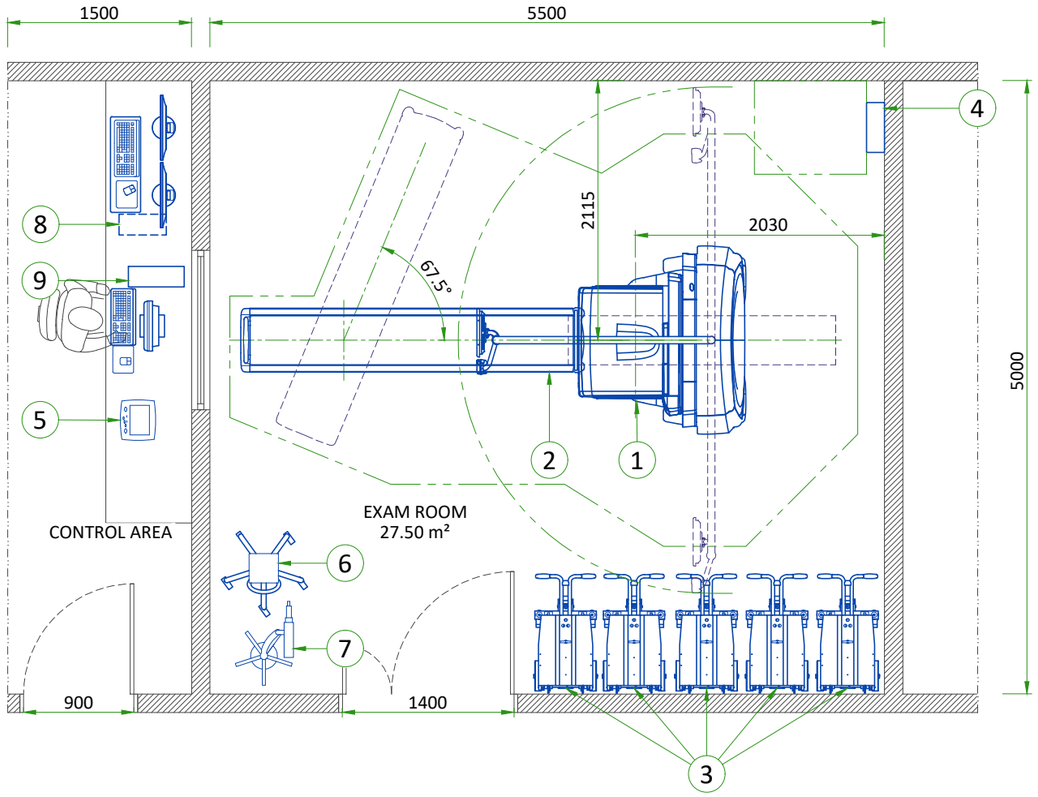
GE Contact Name
Phone Number
Email Address

BRIVO NM 615
TYPICAL STUDY

Drawn by	Verified by	Concession	S.O. (GON)	PIM Manual	Rev
-	-	-	-	5429007-1EN	7

Format	Scale	File Name	Date	Sheet
A3	1:50	EN-NUC-TYP-BRIVO_NM_615.DWG	26/MAY/2023	01/09

EQUIPMENT LAYOUT

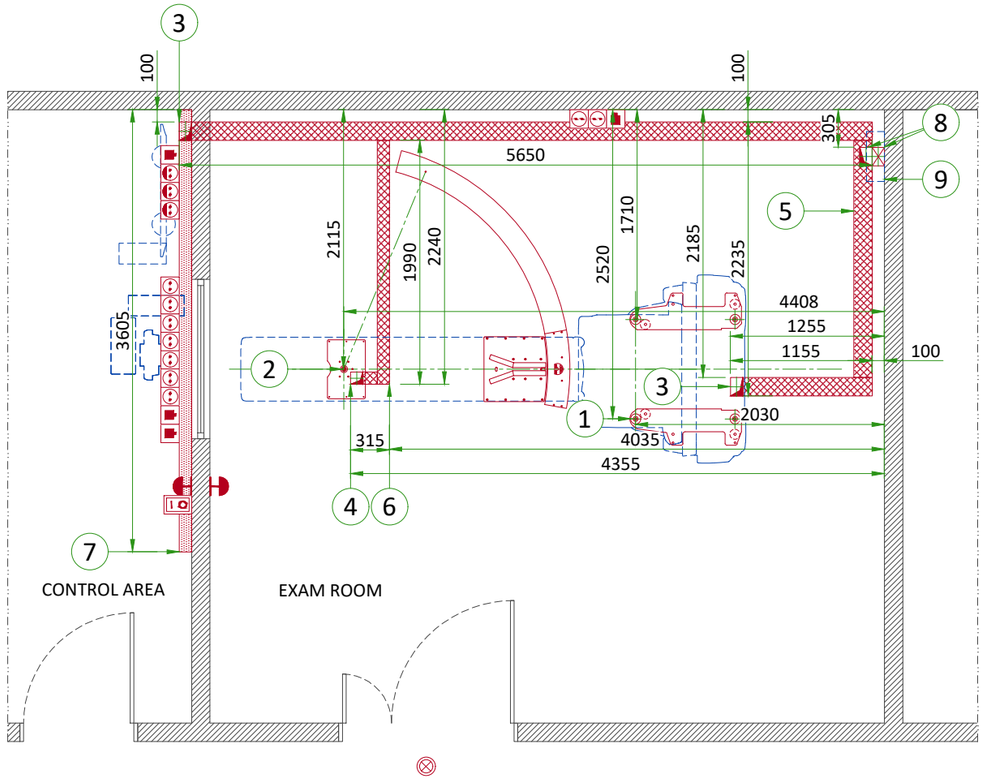


ITEM	DESCRIPTION	DIMENSIONS LxWxH (mm)	WEIGHT (kg)
1	GANTRY	2070x1530x2110	1595
2	PATIENT TABLE	2809x528x1000	360
3	COLLIMATOR CART (WITHOUT COLLIMATORS)	500x970x1458	68
4	MAIN DISCONNECT PANEL (MDP)	146x406x610	23
5	INJECTOR CONTROL	-	-
6	ECG MONITOR	-	3
7	INJECTOR ON PEDESTAL	-	-
8	XELERIS WORKSTATION (WITH TWO LCD MONITORS)	-	30
9	NM AQUISITION STATION	445x169x386	11.3

COLLIMATOR OPTIONS
LEHR COLLIMATOR (1 PER SYSTEM/CART) - 62 kg
LEGP COLLIMATOR (1 PER SYSTEM/CART) - 55 kg
MEGP COLLIMATOR (1 PER SYSTEM/CART) - 103 kg
HEGP COLLIMATOR (1 PER SYSTEM/CART) - 131 kg
ELEGP COLLIMATOR (1 PER SYSTEM/CART) - 62 kg

	WALL - ACCORDING TO RECEIVED DRAWING

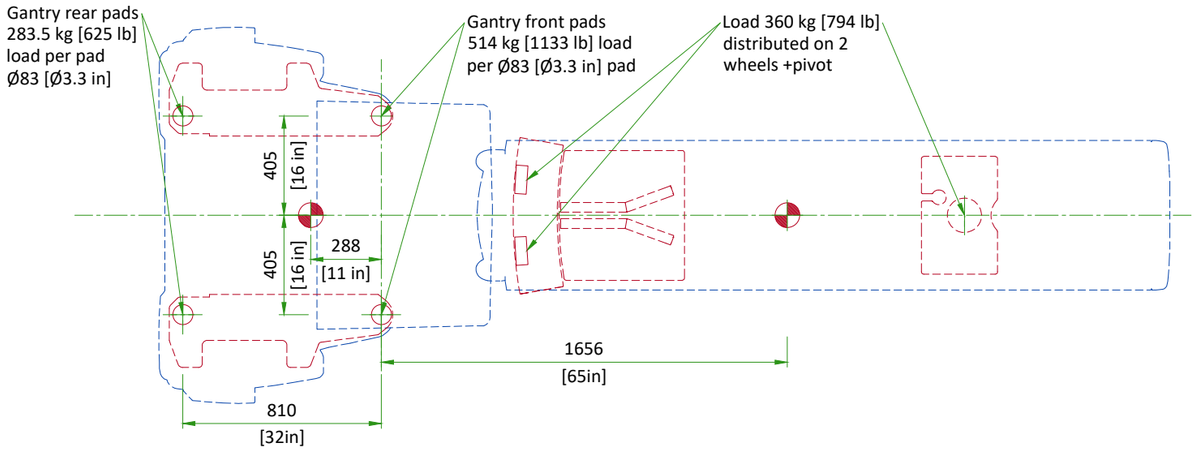
EXAM ROOM HEIGHT	
FINISHED FLOOR TO SLAB HEIGHT	-
FALSE CEILING HEIGHT	min. 2.25 m



FLOOR-ELECTRICAL LAYOUT

ITEM	QTY	DESCRIPTION
1		Gantry anchoring (see Structural Details)
2		Table anchoring (see Structural Details)
3		150x100 cable inlet on the floor
4		100x100 cable inlet on the floor
5		150x70 flush floor duct
6		100x70 flush floor duct
7		150x100 horizontal wall duct
8		150x100 cable inlet on the floor and 150x100 vertical duct from floor to MDP (h=1.1 m)
9		Main Disconnect Panel (MDP)
		Basic system
	8	Electrical outlet 10/16A 230V + G
	3	RJ 45 network socket
	1	System remote control (Y), locked when power OFF "ON" and "OFF" impulse buttons with indicator lamps red=ON / green=OFF located at 1.50m above floor
	2	System emergency off (SEO), (recommended height 1.50m-1.85m above floor)
	1	System ON light (L) - 24V
		Injector Option
	1	Electrical outlet for Injector: 230V 10/16A
		Xeleris Option
	3	Electrical outlets for Xeleris workstation: 10/16A 230V + G linked to the hospital UPS or through a dedicated UPS of 1 kVA single phase (If available)
	1	RJ 45 network socket for Xeleris workstation
		Flush floor duct
		Wall duct

LOADING DISTRIBUTION TO THE FLOOR



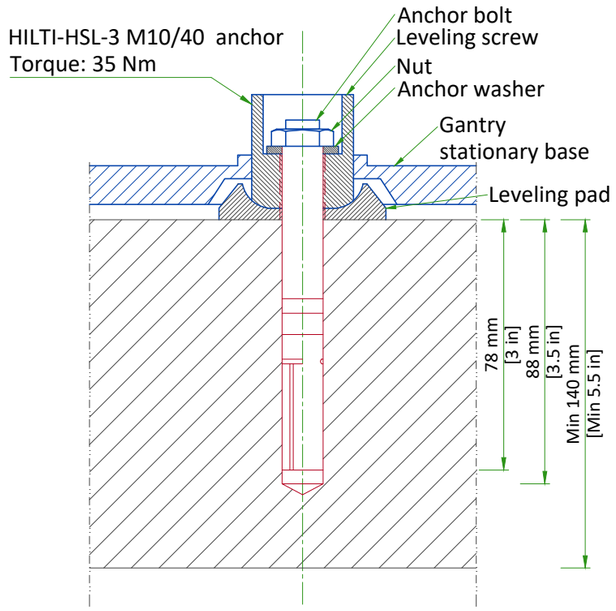
Center of gravity

SCALE 1:25

Gantry weight: 1595 kg [3517 lb]
(with HEGPcollimators mounted)
Table weight: 360 kg [794 lb]

FLOOR SPECIFICATIONS

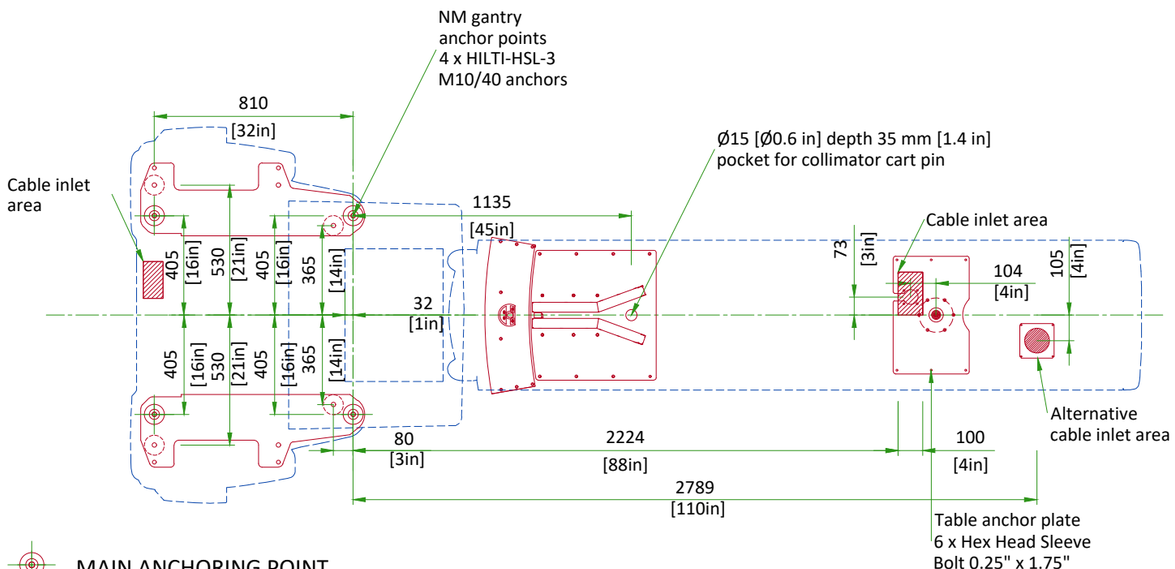
GANTRY ANCHORING



NOT TO SCALE

- Floor leveling area: 512 cm [201.6 in] x 374 cm [147.2 in] (covering the entire planned area of table and gantry surface).
- Slope less than 13 mm [0.5 in] over 4300 mm [160 in], if slope is between 13 mm [0.5 in] and 30 mm [1.18 in] refer to PIM for additional requirements.
- Flatness: the surface must be smooth, with deviations of no more than 5 mm [0.195 in] between depressions and high spots in any 1500 mm [59 in] throughout the room or system installation area.
- Floor surface: a single poured surface.
- Floor strength: in order to enable mounting of the system floor anchors, concrete floors must have a minimum cube strength of f'c=4350 psi. (30 MPa) at 28 days (curing time) for 25/30 concrete
- Floor thickness: the system's floor anchors are designed for use only on concrete floors that meet the minimal 140 mm [5.5 in] concrete floor requirements
- The selected anchoring method must have a pulling tensile force of 19.7 kN on each of the anchors bolting the NM gantry to the floor.

ANCHORING TO THE FLOOR



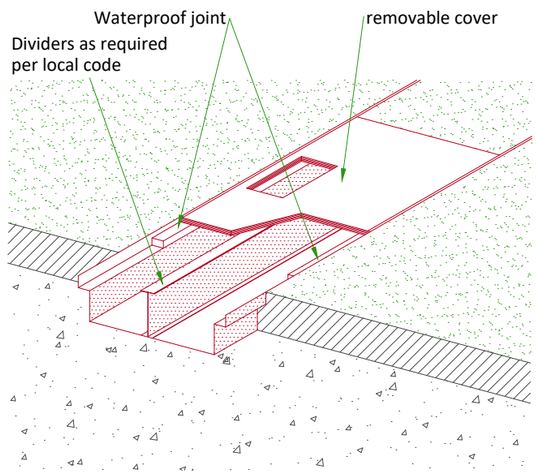
MAIN ANCHORING POINT

ALTERNATIVE ANCHORING POINT

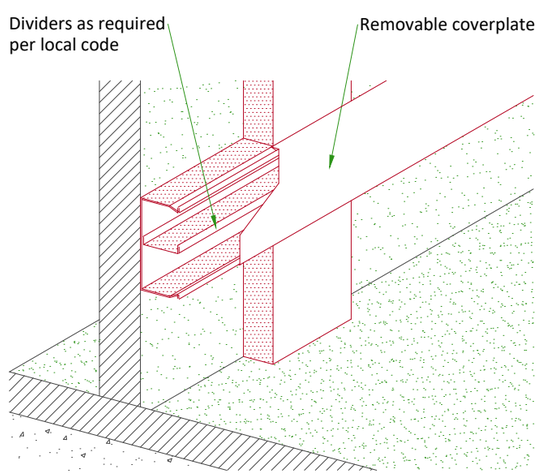
SCALE 1:25

TYPICAL CABLE MANAGEMENT

FLUSH FLOOR DUCT Rev Date: 15.Dec.21



WALL DUCT Rev Date: 15.Dec.21



NOT TO SCALE

POWER REQUIREMENTS

POWER SUPPLY	**SINGLE PHASE (G+L+N) OR DUAL PHASE (G+L1+L2) 208-240 VAC ±10%**
FREQUENCIES	**50/60 Hz ± 3 Hz**
MAXIMUM POWER DEMAND	**6 kVA**
CONTINUOUS (AVERAGE) POWER DEMAND	**2.5 kVA**

- Line supply should come into a Main Disconnect Panel (MDP) containing the protective units and controls. The section of the supply cable should be calculated in accordance with its length and the maximum permissible voltage drops, equal to 2.9% max. of regulation for feeder size.
- There must be discrimination between supply cable protective material at the beginning of the installation (main low-voltage transformer side) and the protective devices in the MDP.

SUPPLY CHARACTERISTICS

- Power input must be separate from any others which may generate transients (elevators, air conditioning, radiology rooms equipped with high speed film changers ...)
- All equipment (lighting, power outlets, etc...) installed with GE system components must be powered separately.
- Phase imbalance 2% maximum.
- Maximum voltage regulation at full load= 6% (including line impedance)
- Transients must be less than 1500 V peak (on a 230 V line). A record of power input disturbances over a continuous one-week period (prior to delivery) enables determination of the frequency and degree of these disturbances and can be used to ascertain the need to provide line conditioning equipment.
- Inrush current can withstand up to 10 times the recommended circuit breaker rating that could be reached during system power up, due to the system main transformer.

GROUND SYSTEM

- Equipotential: The equipotential link will be by means of an equipotential bar. This equipotential bar should be connected to the protective earth conductors in the ducts of the non GE cableways and to additional equipotential connections linking up all the conducting units in the rooms where GE system units are located.

CABLES

- Power and cable installation must comply with the distribution diagram below.
- All cables must be isolated and flexible, cable color codes must comply with standardsfor electrical installation.
- The cables from signaling and remote control (Y, SEO, L ...) will go to MDP with a pigtail length of 1.5 m, and will be connected during installation. Each conductor will be identified and isolated (screw connector).

CABLEWAYS

The general rules for laying cableways should meet the conditions laid down in current standards and regulations, with regard to :

- Protecting cables against water (cableways should be waterproof)
- Protecting cables against abnormal temperatures (proximity to heating pipes or ducts)
- Protecting cables against temperature shocks
- Replacing cables (cableways should be large enough for cables to be replaced)
- Metal cableways should be grounded

POWER DISTRIBUTION

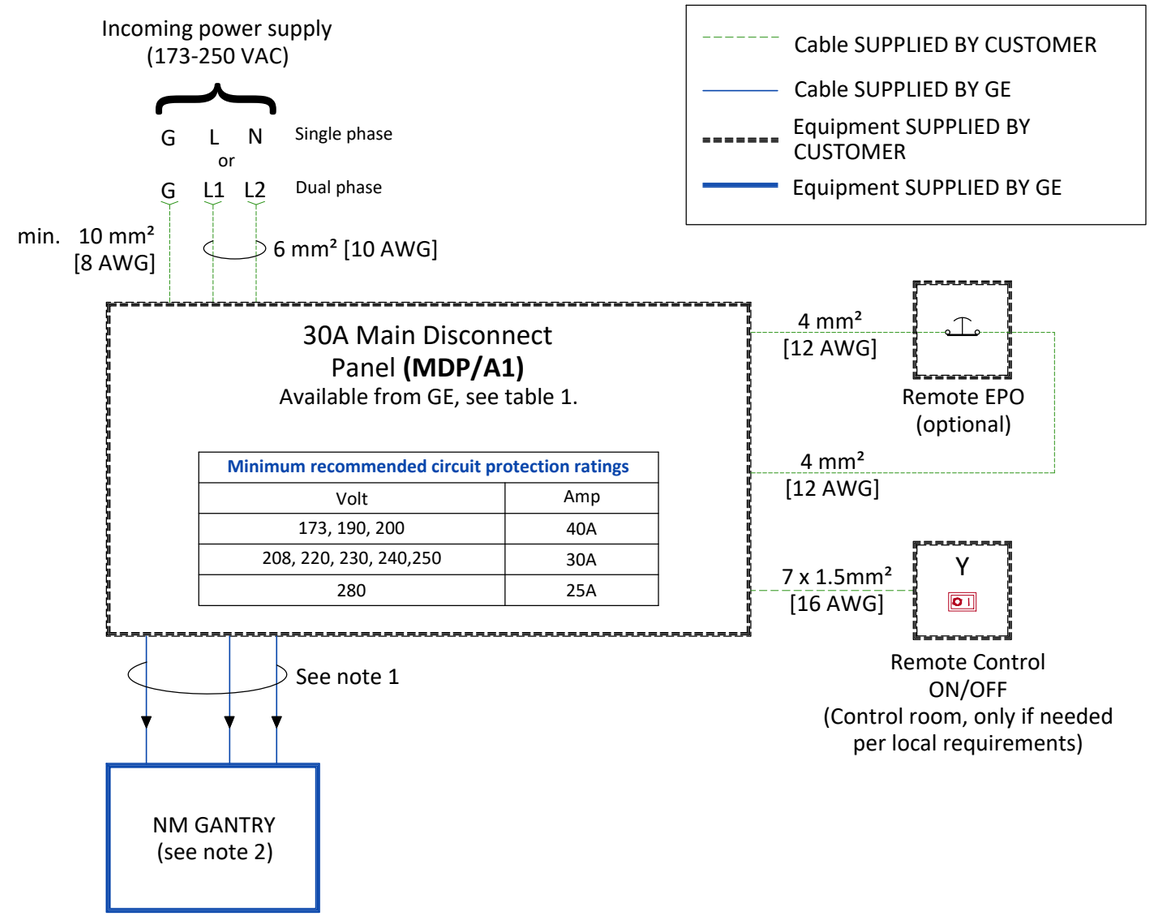
Notes :

(1) 3 x 10 mm² [8 AWG] cable with a usable length of 10 m [32.8 ft] is delivered with the system. If needed, a 19 m [62.3 ft] cable is available as a spare part.

(2) GE gantry contains transformer with multiple taps that can accommodate listed voltages.

Table 1: GE Supplied MDP(A1) options

System	Region	Ecat
Brivo NM615, Discovery NM630, NM830	EU/EAGM	E45011CR/CL
	USCAN LATAM	E4502SV (30A)



ENVIRONMENT

ALTITUDE

Operating altitude: from -150 m [-492 ft] to 4100 m [13451 ft].

MAGNETIC FIELD SPECIFICATIONS

In order to avoid interference on the system, the static field limits from the surrounding environment must be less than 1 Gauss in both the scan and the operator rooms.

VIBRATION SPECIFICATIONS

The system components are sensitive to vibration in the frequency range of 0.5 to 20 Hz, depending on the amplitude of the vibration. It is the customer's responsibility to contract a vibration consultant or qualified engineer to verify that these specifications are met and implement an appropriate solution.
To minimize vibrations, the system must be installed on a solid floor, as far as possible from vibration sources (parking lots, roadways, heliports, elevators, hospital power plants... etc).
Please refer to the PIM for detailed information.

ACOUSTIC SPECIFICATIONS

The system creates acoustic noise. In compliance with IEC 601-1-1standard the measured noise (at 1m distance away from the system) is less than 70 db.
It is recommended that the wall and ceiling surface is of a sound dampening material so that the noise is not reverberated and amplified.

CONNECTIVITY REQUIREMENTS

Your new GE Healthcare imaging modality will require local and remote connectivity to enable our full range of digital support:

- Local connectivity - This allows your system to connect to local devices such as PACS and modality worklist. We will require network information to configure the system(s), and a live ethernet port(s) prior to the delivery of the system(s).
- Remote connectivity - Your GE Healthcare service warranty includes InSite™ (applicable to InSite capable products), a powerful broadband-based service which enables digital tools that can help guard your hospital against equipment downtime and revenue loss by quickly connecting you to a GE Healthcare expert.

Depending on product family and software version, imaging systems can be connected in one of the following methods:

1. TLS over TCP Port 443 (Preferred method for new products) via:
    a. DNS resolution
    b. Customer-provided Proxy or
    c. GE Proxy (Available in some regions)
2. Site-to-Site IPsec VPN tunnel

Please provide the GE project manager with the contact information for the resource that can provide information required to set up these connections. GEHC will send out communication to these contacts, which will include the project's Connectivity requirements, and a Connectivity form. This form will need to be completed and returned to GEHC prior to delivery of the system to ensure the system is tested and connectivity is enabled prior to the completion of the installation.

DELIVERY

THE CUSTOMER/CONTRACTOR SHOULD:

- Provide an area adjacent to the installation site for delivery and unloading of the GE equipment.
- Ensure that the dimensions of all doors, corridors, ceiling heights are sufficient to accommodate the movement of GE equipment from the delivery area into the definitive installation room.
- Ensure that access routes for equipment will accommodate the weights of the equipment and any transportation, lifting and rigging equipment.
- Ensure that all necessary arrangements for stopping and unloading on public or private property not belonging to the customer have been made.

DIMENSIONS OF DELIVERY WITH DOLLY TRANSPORT EQUIPMENT

EQUIPMENT	DIMENSIONS		WEIGHT
NM GANTRY WITH DETECTORS MOUNTED	LENGTH	1680 mm [66.1 in]	1765 kg [3892 lb]
	WIDTH	1500 mm [59 in]	
	HEIGHT	2200 mm [86.6 in]	
NM GANTRY WITHOUT THE DETECTORS	LENGTH	1680 mm [66.1 in]	2175 kg [4685 lb]
	WIDTH	1500 mm [59 in]	
	HEIGHT	2200 mm [86.6 in]	
TABLE	LENGTH	3000 mm [118.1 in]	562 kg [1239 lb]
	WIDTH	900 mm [35.4 in]	
	HEIGHT	1400 mm [55 in]	

RADIOACTIVE ISOTOPES

USING RADIOACTIVE ISOTOPES

Since the system involves the use of radioactive isotopes, compliance with Nuclear Regulatory Commission regulations, or similar regulatory requirements (depending on the country), must be adhered to and all permissions obtained well in advance. It is recommended that regulatory compliance is arranged early in the site planning process.

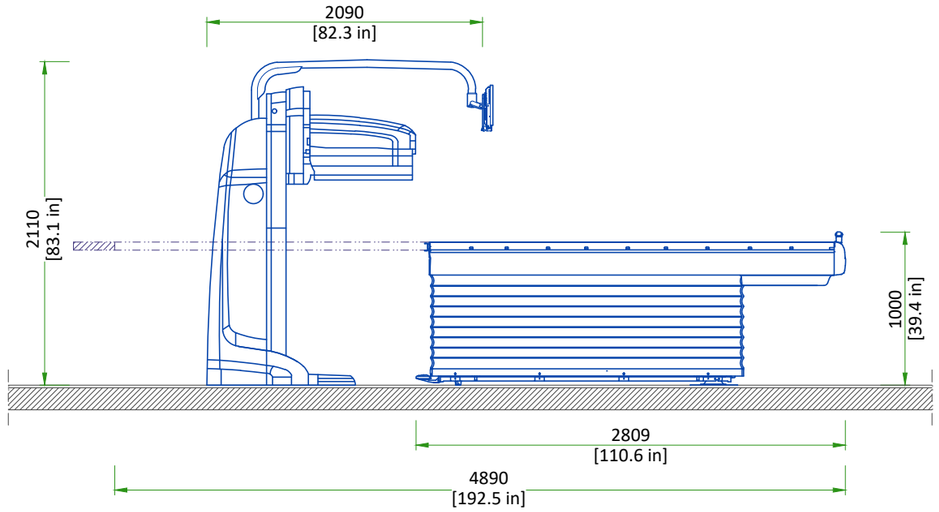
It is essential that all preparations are completed so that required source materials can be obtained prior to installation, including calibration sources. Take into consideration that these sources may have fairly long delivery lead times, yet may also have a short half life, so that it may not be advisable to store them over long periods of time.

RADIOACTIVE ISOTOPES FOR SYSTEM CALIBRATION

DESCRIPTION	
Basic calibration	Site has license for Tc^{99m}
	Tc^{99m} will be available during installation
Isotopes to be used at site are available for installation. Note: Specify age and strength	Co^{57} (Rectangular Flood Source)
	Tl^{201}
	I^{131}
	I^{123}
	In^{111}
	Ga^{67}
	Xe^{133} (inhalation gas)

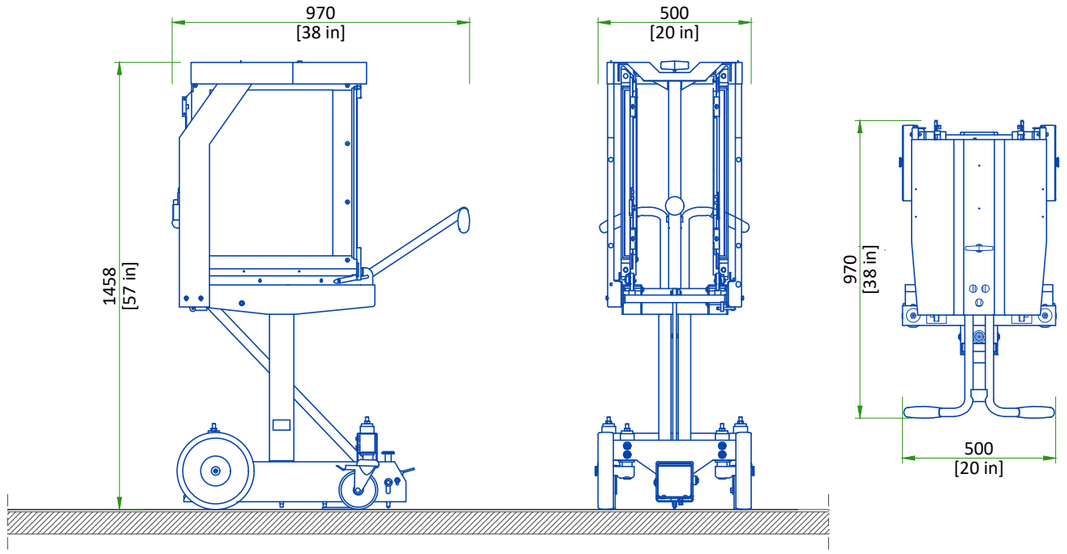
GANTRY AND PATIENT TABLE

SIDE VIEW



NOT TO SCALE

COLLIMATOR CARTS

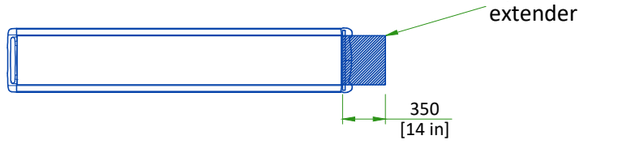


SIDE VIEW FRONT VIEW TOP VIEW

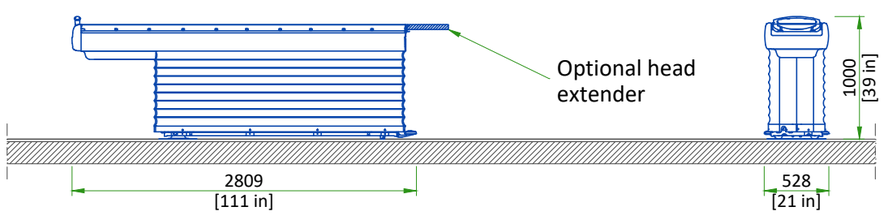
SCALE 1:20

PATIENT TABLE

TOP VIEW



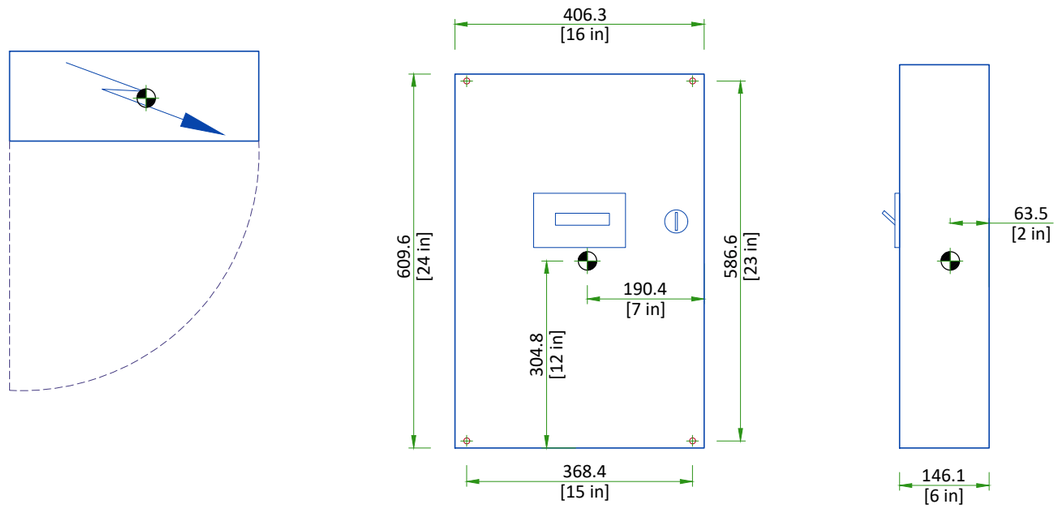
SIDE VIEW FRONT VIEW



NOT TO SCALE

MAIN DISCONNECT PANEL

TOP VIEW FRONT VIEW SIDE VIEW



Center of gravity

SCALE 1:10

TEMPERATURE AND HUMIDITY SPECIFICATIONS

IN-USE CONDITIONS

	EXAM /CONTROL ROOM		
Temperature	Min	Recommended	Max
	18 °C [64 °F]	22 °C [72 °F]	26 °C [79 °F]
Temperature gradient	**≤ 3 °C/h [≤ 5 °F/h]**		
Relative humidity (1)	30% to 60%		
Humidity gradient	**≤ 5%/h**		

STORAGE CONDITIONS

Temperature	+4 °C to +27 °C [+40 °F to +80 °F]
Temperature gradient	**≤ 3 °C/h [≤ 5 °F/h]**
Relative humidity (1)	20% to 60%
Humidity gradient	**≤ 5%/h**
Air pressure	700 hPA to 1060 hPa

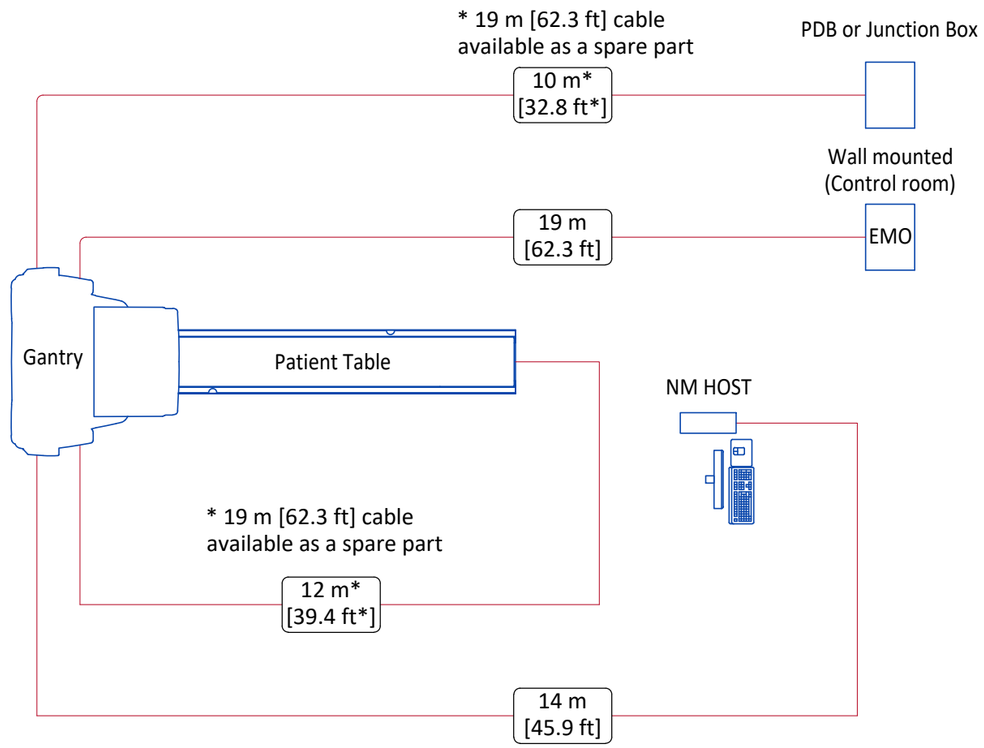
(1) non condensing

AIR RENEWAL

According to local standards.

NOTE
In case of using air conditioning systems that have a risk of water leakage it is recommended not to install it above electric equipment or to take measures to protect the equipment from dropping water.

INTERCONNECTIONS



HEAT DISSIPATION

ROOM	DESCRIPTION	HEAT DISSIPATION (kW)	HEAT DISSIPATION (BTU/hr)
		MAX	MAX
Exam Room	Gantry	1.00	3412
	Patient table	0.20	682
	TOTAL	**1.20**	**4094**
Exam/Control Room	NM acquisition station	0.08	256
	Xeleris Workstation	0.08	256
	TOTAL	**0.15**	**512**

DISCLAIMER

GENERAL SPECIFICATIONS

- GE is not responsible for the installation of developers and associated equipment, lighting, cassette trays and protective screens or derivatives not mentioned in the order.
- The final study contains recommendations for the location of GE equipment and associated devices, electrical wiring and room arrangements. When preparing the study, every effort has been made to consider every aspect of the actual equipment expected to be installed.
- The layout of the equipment offered by GE, the dimensions given for the premises, the details provided for the pre-installation work and electrical power supply are given according to the information noted during on-site study and the wishes expressed by the customer.
- The room dimensions used to create the equipment layout may originate from a previous layout and may not be accurate as they may not have been verified on site. GE cannot take any responsibility for errors due to lack of information.
- Dimensions apply to finished surfaces of the room.
- Actual configuration may differ from options presented in some typical views or tables.
- If this set of final drawings has been approved by the customer, any subsequent modification of the site must be subject to further investigation by GE about the feasibility of installing the equipment. Any reservations must be noted.
- The equipment layout indicates the placement and interconnection of the indicated equipment components. There may be local requirements that could impact the placement of these components. It remains the customer's responsibility to ensure that the site and final equipment placement complies with all applicable local requirements.
- All work required to install GE equipment must be carried out in compliance with the building regulations and the safety standards of legal force in the country concerned.
- These drawings are not to be used for actual construction purposes. The company cannot take responsibility for any damage resulting therefrom.

CUSTOMER RESPONSIBILITIES

- It is the responsibility of the customer to prepare the site in accordance with the specifications stated in the final study. A detailed site readiness checklist is provided by GE. It is the responsibility of the customer to ensure all requirements are fulfilled and that the site conforms to all specifications defined in the checklist and final study. The GE Project Manager of Installation (PMI) will work in cooperation with the customer to follow up and ensure that actions in the checklist are complete, and if necessary, will aid in the rescheduling of the delivery and installation date.
- Prior to installation, a structural engineer of record must ensure that the floor and ceiling is designed in such a way that the loads of the installed system can be securely borne and transferred. The layout of additional structural elements, dimensioning and the selection of appropriate installation methods are the sole responsibility of the structural engineer. Execution of load bearing structures supporting equipment on the ceiling, floor or walls are the customer's responsibility.

RADIO-PROTECTION

- Suitable radiological protection must be determined by a qualified radiological physicist in conformation with local regulations. GE does not take responsibility for the specification or provision of radio-protection.

THE UNDERSIGNED, HEREBY CERTIFIES THAT I HAVE READ AND APPROVED THE PLANS IN THIS DOCUMENT.		
DATE	**NAME**	**SIGNATURE**

CUSTOMER SITE READINESS REQUIREMENTS

REQUIRED MANUALS FOR SYSTEM PRE-INSTALLATION	
Description	**Document Number***
Product specific Pre-installation Manual	Refer to cover page
*documents can be accessed in multiple languages at *https://customer-doc.cloud.gehealthcare.com/#/cdp/dashboard*	

- A mandatory component of this drawing set is the GE Healthcare Pre-installation manual. Failure to reference the Pre-installation manual will result in incomplete documentation required for site design and preparation.
- The items on the GE Healthcare Site Readiness Checklist **DOC1809666** are REQUIRED to facilitate equipment delivery to the site. Equipment will not be delivered if these requirements are not satisfied.
  - Any deviation from these drawings must be communicated in writing to and reviewed by your local GE Healthcare installation project manager prior to making changes.
  - Make arrangements for any rigging, special handling, or facility modifications that must be made to deliver the equipment to the installation site. If desired, your local GE Healthcare installation project manager can supply a reference list of rigging contractors.
  - New construction requires the following;
    1. Secure area for equipment,
    2. Power for drills and other test equipment,
    3. Restrooms.
  - Provide for refuse removal and disposal (e.g. crates, cartons, packing)
  - It is required to minimize vibrations within the scan room. It is the customer's responsibility to contract a vibration consultant/engineer to implement site design modifications to meet the GE vibration specification. Refer to the system Pre-installation manual for vibration specifications.