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

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 drawings. 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.

NM/CT 850 - NM/CT 860

A1 17/Dec/2018 Final study based on DC-

REV | DATE | MODIFICATIONS
---|---|---
C1 - 01 - Cover Sheet | S3 - 11 - Structural Details (1)
C2 - 02 - Disclaimer - Site Readiness | M1 - 12 - HVAC
A1 - 03 - General Notes | E1 - 13 - Electrical Notes
A2 - 04 - Equipment Layout | E2 - 14 - Electrical Layout
A3 - 05 - Radiation Protection | E3 - 15 - Electrical Elevation
A4 - 06 - Equipment Dimensions (1) | E4 - 16 - Power Requirements
A5 - 07 - Equipment Dimensions (2) | E5 - 17 - Electrical Details - Interconnections
A6 - 08 - Delivery | ---
S1 - 09 - Structural Notes | ---
S2 - 10 - Structural Layout | ---

A3 1/4"=1'-0" EN-NUC-TYP-NMCT_850-860-WEB.DWG 17/Dec/2018 01/17
**GLOBAL SITE READINESS CHECKLIST (DI)**

**DOC180966 Rev. 6**

<table>
<thead>
<tr>
<th>Customer Name:</th>
<th>PMI Name:</th>
</tr>
</thead>
<tbody>
<tr>
<td>GON/SO Number:</td>
<td>Field Service Name:</td>
</tr>
<tr>
<td>Equipment:</td>
<td>Country/City or City/State:</td>
</tr>
<tr>
<td>Site Visit Date for SRC:</td>
<td>SRC Status:</td>
</tr>
</tbody>
</table>

### Site Ready Checks at Installation

<table>
<thead>
<tr>
<th>General Site Planning</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dimensions, including ceiling height, for all Exam, Equipment/Technical &amp; Control rooms meet GE specifications.</td>
</tr>
<tr>
<td>Ceiling support structure, if on the GE drawing, is at correct location and height according to the drawing specifications. Levelness and spacing has been measured. Overhead support structure has been confirmed with contractor to meet GE criteria.</td>
</tr>
<tr>
<td>Rooms that will contain equipment, including staging areas if applicable, are construction debris free. Precautions must be taken to prevent debris from entering rooms containing equipment.</td>
</tr>
<tr>
<td>Delivery route from truck to installation space has been reviewed, all communications have occurred, arrangements made for special handling (if needed). Floors along delivery route will support weight of the equipment, reinforcements arranged if needed.</td>
</tr>
<tr>
<td>System power &amp; grounding (PDB/MDP) is available as per GE specifications, installed at point of final connection and ready to use. Lock Out Tag Out is available.</td>
</tr>
<tr>
<td>System power and grounded audit has been scheduled to be completed during installation of equipment. (If Required) GEHC PM to confirmed if needed.</td>
</tr>
<tr>
<td>Adequate room illumination installed and working.</td>
</tr>
<tr>
<td>Cableways (floor, wall, ceiling, etc.) ready for GE cables and are of correct length and diameter. Cableways routed per GE Final drawings and access openings installed as determined by GEHC PM. Surface floor duct installed at time of system installation.</td>
</tr>
<tr>
<td>HVAC systems installed, and the site meets minimum environmental operational system requirements.</td>
</tr>
<tr>
<td>Network outlets installed and computer network available and working.</td>
</tr>
<tr>
<td>Hospital/IT/connectivity contacts have been engaged and information has been added to Project management tool. (If Required)</td>
</tr>
<tr>
<td>Floor levelness/flatness is measured and within tolerance, and there are no visible defects per GEHC specifications. Floor Strength and thickness have been discussed with customer/contactor and they have confirmed GE requirements are met.</td>
</tr>
<tr>
<td>Customer supplied countertops where GE equipment will be installed are in place.</td>
</tr>
</tbody>
</table>

### Specific for PET and Nuclear Medicine

| Nuclear Medicine systems leavelness measurement survey must be provided to GE prior the delivery. |
| Site has license for using/importing radioactive sources and a Hot Lab is available. Radioactive Sources should be available for system calibration during installation. |
| Doors and windows complete or scheduled to be installed. If applicable, radiation protection (shelting) finished & radioprotection regulatory approval for installation obtained. |

**PMI Signature:**

**Customer Signature:**

**FS Signature: Optional**

### The undersigned, hereby certifies that I have read and approved the plans in this document.

<table>
<thead>
<tr>
<th>DATE</th>
<th>NAME</th>
<th>SIGNATURE</th>
</tr>
</thead>
</table>

**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 room 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 conformance with local regulations. GE does not take responsibility for the specification or provision of radio-protection.
**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.
  - **Gantry:** Ambient static magnetic fields less than 1 Gauss.
  - **Operator console:** Ambient static magnetic fields less than 1 Gauss.
  - Use static dissipative vinyl.

**MAXIMUM GANTRY AUDIBLE NOISE LEVEL**
- The maximum ambient noise level is produced by the gantry during a CT scan acquisition.
  - It is less than 70 dB when measured at a distance of one meter from the nearest gantry surface, in any direction.

**BACKGROUND RADIATION**
- When the system is calibrated, background radiation from surrounding areas may adversely affect calibration. Therefore all radiation sources must be suitable shielded, including:
  - Waiting/Injection areas
  - Radionuclide storage and preparation area (sometimes known as "Hot Lab")

**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).
- The maximum steady state vibration transmitted through the floor should not exceed 0.001 m/s² RMS maximum single frequency above ambient baseline from 0.5 to 80 Hz (measured in any 1 hour during a normal operating period).
- The behavioral characteristics must be such that any measurable transient disturbance must also be minimized to less than 0.01 m/s² peak-to-peak.

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**CUSTOMER SITE READINESS REQUIREMENTS**

- 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. Capability for image analysis,
  4. Restrooms.
- Provide for refuse removal and disposal (e.g. crates, cartons, packing)
- 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 preinstallation manual for the vibration specification.

- New construction requires the following:
  1. Secure area for equipment,
  2. Power for drills and other test equipment,
  3. Capability for image analysis,
  4. Restrooms.

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The GE HPI Technical Support Group is an additional resource that can provide answers for general GE product siting questions and can be reached at (877)-305-9677 or mail to: HPITechCOE@ge.com

For Accessory Sales: (866) 281-7545 Options 1, 2, 1, 2 or mail to: gehcaccessorysales@ge.com

<table>
<thead>
<tr>
<th>BY ITEM</th>
<th>DESCRIPTION</th>
<th>MAX HEAT OUTPUT (btu)</th>
<th>WEIGHT (lbs)</th>
<th>MAX HEAT OUTPUT (W)</th>
<th>WEIGHT (kg)</th>
</tr>
</thead>
<tbody>
<tr>
<td>A 1</td>
<td>CT Gantry</td>
<td>11945</td>
<td>2535</td>
<td>3500</td>
<td>1150</td>
</tr>
<tr>
<td>A 2</td>
<td>NM Gantry</td>
<td>4500</td>
<td>4828</td>
<td>1320</td>
<td>2190</td>
</tr>
<tr>
<td>A 3</td>
<td>Patient table</td>
<td>682</td>
<td>1228</td>
<td>200</td>
<td>557</td>
</tr>
<tr>
<td>A 4</td>
<td>CT PDU</td>
<td>2389</td>
<td>661</td>
<td>700</td>
<td>300</td>
</tr>
<tr>
<td>A 5</td>
<td>Storage Cabinet</td>
<td>-</td>
<td>287</td>
<td>-</td>
<td>130</td>
</tr>
<tr>
<td>A 6</td>
<td>CT Console &amp; computer</td>
<td>1024</td>
<td>-</td>
<td>300</td>
<td>-</td>
</tr>
<tr>
<td>A 7</td>
<td>NM Acquisition station</td>
<td>1024</td>
<td>-</td>
<td>300</td>
<td>-</td>
</tr>
<tr>
<td>A 8</td>
<td>Collimator Cart</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>A 9</td>
<td>Xeleris workstation</td>
<td>1024</td>
<td>-</td>
<td>300</td>
<td>-</td>
</tr>
<tr>
<td>A 10</td>
<td>SmartConsole</td>
<td>1024</td>
<td>-</td>
<td>300</td>
<td>-</td>
</tr>
<tr>
<td>A 11</td>
<td>ECG Monitor</td>
<td>1350</td>
<td>106</td>
<td>395</td>
<td>48</td>
</tr>
<tr>
<td>A 12</td>
<td>6kVA UPS</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>A 13</td>
<td>Transformer for 6kVA UPS</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>B 14</td>
<td>Main Disconnect Panel</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>B 15</td>
<td>Power Input Distribution Box</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>C 16</td>
<td>Lead glass viewing window</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>C 17</td>
<td>Counter top for equipment</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>C 18</td>
<td>Minimum opening for equipment delivery is 56 in. w x 82 in. h, contingent on a 99 in. corridor width</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>C 19</td>
<td>Counter top with sink, base and wall cabinets</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>

Exam room height
Finished floor to slab height: TBD
Recommended finished ceiling height: 8'-9"
RADIOACTIVE ISOTOPES FOR SYSTEM CALIBRATION

<table>
<thead>
<tr>
<th>DESCRIPTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>Site has license for Tc-99m</td>
</tr>
<tr>
<td>Tc-99m will be available during installation</td>
</tr>
<tr>
<td>Co-57 (Rectangular Flood Source)</td>
</tr>
<tr>
<td>Tm-170</td>
</tr>
<tr>
<td>In-111</td>
</tr>
<tr>
<td>Ga-67</td>
</tr>
<tr>
<td>Xe-133 (inhalation gas)</td>
</tr>
</tbody>
</table>

RADIATION PROTECTION LAYOUT

**SHIELDING REQUIREMENTS SCALING**

<table>
<thead>
<tr>
<th>CHANGED PARAMETER (mAs)</th>
<th>MULTIPLICATION FACTOR (new mAs/100)</th>
</tr>
</thead>
<tbody>
<tr>
<td>80 kV</td>
<td>0.24</td>
</tr>
<tr>
<td>100 kV</td>
<td>0.45</td>
</tr>
<tr>
<td>120 kV</td>
<td>0.71</td>
</tr>
<tr>
<td>140 kV</td>
<td>1.00</td>
</tr>
<tr>
<td>1.25 mm aperture</td>
<td>0.16</td>
</tr>
<tr>
<td>5 mm aperture</td>
<td>0.61</td>
</tr>
<tr>
<td>10 mm aperture</td>
<td>1.00</td>
</tr>
</tbody>
</table>

**SHIELDING REQUIREMENTS:**

Radiation shielding regulations differ from one country or state to another. It is the customer’s responsibility to ensure that radiation protection and shielding comply with such regulations and requirements during site preparation and system installation and operation. The system produces x-ray radiation and involves the use and storage of radionuclides. Appropriate barriers such as walls, lead-shielded glass, lead shields, etc. can be installed to protect staff from unnecessary exposure to radiation. Patients become significant sources of radioactivity; therefore consideration should be given to maximize the distance between the patient and operator during the uptake and acquisition phases of scan procedures.

Scatter room shielding requirements must be reviewed by a qualified radiological health physicist taking into consideration:

- Scatter radiation levels within the scan room
- Equipment placement
- Weekly projected workloads (#patient/day technique (kvp*ma))
- Materials used for construction of walls, floors, ceiling, doors, and windows
- Access to areas surrounding the Scan Room

Equipment in areas surrounding the Scan Room (for example: film developer, film storage)

### BACKGROUND RADIATION

When the system is calibrated, background radiation from surrounding areas may adversely affect calibration. Therefore all radiation sources must be suitably shielded, including:

- Waiting/Injection areas
- Radionuclide storage and preparation area (sometimes known as "hot lab")

As a general guideline, if the anticipated background radiation in the Scan Room will be higher than 0.1 mR/h (1 μGy/h), then lead shielding with sufficient thickness must be installed.

Shielding of the Scan Room includes walls, lead-shielded glass, lead shields, etc. and must be sufficient to protect staff from unnecessary exposure to radiation. The shielding requirements must be determined by a qualified radiological health physicist, taking into consideration:

- Local regulatory requirements
- Facility policy
- CT scatter radiation levels within the scanning room
- Patient location and level of radiation from patients after intake of radionuclides
- Equipment placement
- Materials used for construction of walls, floors, ceiling, doors, and windows
- Weekly projected work-loads (#patient/day technique (kvp*ma))
- Access to areas surrounding the Scan Room
- Equipment in areas surrounding the Scan Room (for example: film developer, film storage)
- Protection of operator room, included leaded window, walls and door

The illustrations on this page depicts measurable CT radiation levels within the scanning room while scanning a 32 cm CTDI phantom (body) and 20 cm water phantom (head) with the technique shown. The mAs, kvp and aperture scaling factors shown in the table can be used to adjust exposure levels to the scan technique used at the site.

### NOTE:

Actual measurements can vary. All measurements have an accuracy of ±20% because of measurement equipment, technique, and system-to-system variation.

The units of measure used for radiation levels have been changed in this document, from mR (millirads) to μGy (micrograys). The conversion factor is: 1 mR = 8.69 μGy

The illustrations on this page were created using the following technique:

- 140kV, 100mA, 1 sec, 8x1.25 mm

**RADIOACTIVE ISOTOPES FOR SYSTEM CALIBRATION**

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.

### 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

<table>
<thead>
<tr>
<th>DESCRIPTION</th>
</tr>
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</tr>
<tr>
<td>Ga-67</td>
</tr>
<tr>
<td>Xe-133 (inhalation gas)</td>
</tr>
</tbody>
</table>
COLLIMATOR CARTS

SIDE VIEW

FRONT VIEW

TOP VIEW

SCALE 1:20
DELIVERY DETAILS

CT GANTRY:

L = 2500 mm [98.4 in]
W = 1160 mm [45.9 in]
H = 2200 mm [86.6 in]

NM GANTRY:

L = 2220 mm [87.4 in]
W = 1400 mm [55.1 in]
H = 2000 mm [78.75 in]

NOT TO SCALE

CORRIDOR/ELEVATOR MINIMAL DIMENSIONS (without 90 degree turns):

L = 2220 mm [87.4 in]
W = 1400 mm [55.1 in]
H = 2000 mm [78.75 in]

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.

CRATED DIMENSIONS OF DELIVERY

<table>
<thead>
<tr>
<th>EQUIPMENT</th>
<th>DIMENSIONS</th>
<th>WEIGHT</th>
</tr>
</thead>
<tbody>
<tr>
<td>CT GANTRY</td>
<td>LENGTH 2070</td>
<td>1552 kg 3375 lb</td>
</tr>
<tr>
<td></td>
<td>WIDTH 1160</td>
<td></td>
</tr>
<tr>
<td></td>
<td>HEIGHT 2250</td>
<td></td>
</tr>
<tr>
<td>NM GANTRY WITH DETECTORS MOUNTED</td>
<td>LENGTH 2250</td>
<td>2413 kg 5320 lb</td>
</tr>
<tr>
<td></td>
<td>WIDTH 1200</td>
<td></td>
</tr>
<tr>
<td></td>
<td>HEIGHT 2200</td>
<td></td>
</tr>
<tr>
<td>NM GANTRY WITHOUT THE DETECTORS</td>
<td>LENGTH 1680</td>
<td>2175 kg 4795 lb</td>
</tr>
<tr>
<td></td>
<td>WIDTH 1500</td>
<td></td>
</tr>
<tr>
<td></td>
<td>HEIGHT 2200</td>
<td></td>
</tr>
<tr>
<td>TABLE</td>
<td>LENGTH 3000</td>
<td>785 kg 1731 lb</td>
</tr>
<tr>
<td></td>
<td>WIDTH 900</td>
<td></td>
</tr>
<tr>
<td></td>
<td>HEIGHT 1400</td>
<td></td>
</tr>
</tbody>
</table>

NOT TO SCALE

The gantry is shipped on a dolly equipped with elevating casters (normal shipping configuration).
STRUCTURAL NOTES

- All units that are wall mounted or wall supported are to be provided with supports where necessary. Wall supports are to be supplied and installed by the customer or his contractors. See plan and detail sheets for suggested locations and mounting hole locations.

- Floor slabs on which equipment is to be installed must be level to specifications. (If not specified elsewhere on this sheet, the floor levelness should be 1/8 in. [3 mm] in 10 ft. [3.05 m].)

- Dimensions are to finished surfaces of room.

- For seismic regions ensure supports span three members.

- Customers' contractors must provide all penetrations in post tension floors.

- Customers' contractors must provide and install any non-standard anchoring. Documents for standard anchoring methods are included with GE equipment drawings for geographic areas that require such documentation.

- Customers' contractors must provide and install hardware for "through the floor" anchoring and/or any bracing under access floors. This contractor must also provide floor drilling that cannot be completed because of an obstruction encountered while drilling by the GE installer such as rebar etc.

- It is the customer's responsibility to perform any floor or wall penetrations that may be required. The customer is also responsible for ensuring that no subsurface utilities (e.g., electrical or any other form of wiring, conduits, piping, duct work or structural supports (i.e. post tension cables or rebar)) will interfere or come in contact with subsurface penetration operations (e.g. drilling and installation of anchors/screws) performed during the installation process. To ensure worker safety, GE installers will perform surface penetration operations only after the customer's validation and completion of the "GE surface penetration permit"
<table>
<thead>
<tr>
<th>ITEM</th>
<th>DESCRIPTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>CT Gantry baseplate</td>
</tr>
<tr>
<td>2</td>
<td>NM Gantry baseplate</td>
</tr>
<tr>
<td>3</td>
<td>Table Anchor plate</td>
</tr>
<tr>
<td>4</td>
<td>Collimator exchange plate</td>
</tr>
<tr>
<td>5</td>
<td>Swing plate</td>
</tr>
</tbody>
</table>

**Diagram:**

- **EXAM ROOM**
  - Dimensions: 8'-6" x 10'-4"
- **CONTROL ROOM**
**FLOOR SPECIFICATIONS**

- **Floor leveling area:** 595 cm x 334 cm [19'-6"x11"] (covering the entire planned area of table and gantry surface).
- **Slope:** within 30 mm [1.18"] over 4300 mm [160"] (for further information refer to PIM).
- **Flatness:** the surface must be smooth, with deviations of no more than 5 mm [0.2"] over 1500 mm [59"] in any direction.
- **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 fc=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"] concrete floor requirements.
- **It is the customer/contractor responsibility to have appropriate tests performed to determine and measure concrete strength.**

---

**LOADING DISTRIBUTION**

- **Center of gravity**
  - **Patient Table center of gravity:** 509 Kg [1122 lb]
  - **NM Gantry center of gravity:** 2190 Kg [4828 lb]
  - **CT Gantry weight:** 1150 Kg [2535 lb]
  - **Table weight:** 509 Kg [1122 lb]
  - **NM Gantry weight:** 2190 Kg [4828 lb]
  - **CT Gantry rear leveling pads:** 228 Kg [502.7 lb] on each Ø83 mm pad [2.5 in]
  - **CT Gantry front leveling pads:** 237 Kg [522.5 lb] on each Ø63.5 mm pad [2.5 in]
  - **NM Gantry rear pads:** 250 Kg [551.2 lb] on each Ø83 mm pad [3.3 in]
  - **NM Gantry front pads:** 845 Kg [1863 lb] on each Ø83 mm pad [3.3 in]
  - **Load 509 Kg [1122 lb] distributed on 2 wheels + pivot**
  - **CT Gantry weight: 1150 Kg [2535 lb]**
  - **NM Gantry weight: 2190 Kg [4828 lb]**
  - **Table weight: 509 Kg [1122 lb]**

**ANCHORING TO THE FLOOR**

- **CT Gantry anchor points:** 4 x HILTI-HSL-3 M10/40 anchors
- **NM Gantry anchor points:** 4 x HILTI-HSL-3 M10/40 anchors
- **35 mm depth pocket for collimator cart pin**
- **Table anchor plate 6 x Hex Head Sleeve Bolt 0.25" x 1.75"**
- **NM FOV Ø200 [8 in]**
- **CT FOV Ø180 [7.1 in]**
- **Main anchoring point**
- **Alternative anchoring point**
## TEMPERATURE AND HUMIDITY SPECIFICATIONS

### 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.

### STORAGE CONDITIONS

<table>
<thead>
<tr>
<th>Temperature</th>
<th>Min</th>
<th>Recommended</th>
<th>Max</th>
</tr>
</thead>
<tbody>
<tr>
<td>Temperature Gradient</td>
<td>≤ 3°C/h (≤ 5°F/h)</td>
<td>≤ 3°C/h (≤ 5°F/h)</td>
<td></td>
</tr>
<tr>
<td>Relative Humidity</td>
<td>30% to 60%</td>
<td>30% to 60%</td>
<td></td>
</tr>
<tr>
<td>Humidity Gradient</td>
<td>≤ 5%h</td>
<td>≤ 5%h</td>
<td></td>
</tr>
<tr>
<td>Altitude</td>
<td>-150 m [-492 ft] to 4100 m [13451 ft]</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### IN-USE CONDITIONS

<table>
<thead>
<tr>
<th>Room Type</th>
<th>Description</th>
<th>Heat Dissipation (Kw)</th>
<th>Heat Dissipation (BTU/hr)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Exam Room</td>
<td>NM Gantry</td>
<td>1.32</td>
<td>4500</td>
</tr>
<tr>
<td></td>
<td>CT Gantry</td>
<td>3.50</td>
<td>11945</td>
</tr>
<tr>
<td></td>
<td>Patient table</td>
<td>0.20</td>
<td>682</td>
</tr>
<tr>
<td></td>
<td>TOTAL</td>
<td>5.02</td>
<td>17127</td>
</tr>
<tr>
<td>Exam/Technical Room*</td>
<td>Power distribution unit (CT PDU)</td>
<td>0.70</td>
<td>2389</td>
</tr>
<tr>
<td></td>
<td>Eaton 6 kVA UPS</td>
<td>0.39</td>
<td>1350</td>
</tr>
<tr>
<td></td>
<td>Transformer for 6kVA UPS</td>
<td>0.29</td>
<td>1000</td>
</tr>
<tr>
<td></td>
<td>TOTAL</td>
<td>1.38</td>
<td>4739</td>
</tr>
<tr>
<td>Control Room</td>
<td>CT Acquisition station (computer only)</td>
<td>0.30</td>
<td>1024</td>
</tr>
<tr>
<td></td>
<td>NM Acquisition station (with monitors)</td>
<td>0.30</td>
<td>1024</td>
</tr>
<tr>
<td></td>
<td>SmartConsole workstation</td>
<td>0.30</td>
<td>1024</td>
</tr>
<tr>
<td></td>
<td>Xeleris workstation (computer with 2 monitors)</td>
<td>0.08</td>
<td>256</td>
</tr>
<tr>
<td></td>
<td>TOTAL</td>
<td>0.97</td>
<td>3328</td>
</tr>
</tbody>
</table>

*Technical Room is not mandatory, the placements of these elements are recommended in the Exam Room.
### ELECTRICAL NOTES

1. All wires specified shall be copper stranded, flexible, thermo-plastic, color coded, cut 10 foot long at outlet boxes, duct termination points or stubbed conduit ends. All conductors, power, signal and ground, must be run in a conduit or duct system. Electrical contractor shall ring out and tag all wires at both ends. Wire runs must be continuous copper stranded and free from splices.
   1. Aluminum or solid wires are not allowed.
   2. Wire sizes given are for use of equipment. Larger sizes may be required by local codes.
   3. It is recommended that all wires be color coded, as required in accordance with national and local electrical codes.
   4. Conduit sizes shall be verified by the architect, electrical engineer or contractor, in accordance with local or national codes.
   5. Convenience outlets are not illustrated. Their number and location are to be specified by others. Locate at least one convenience outlet close to the system control, the power distribution unit and one on each wall of the procedure room. Use hospital approved outlet or equivalent.
   6. General room illumination is not illustrated. Caution should be taken to avoid excessive heat from overhead spotlights. Damage can occur to ceiling mounting components and wiring if high wattage bulbs are used. Recommend low wattage bulbs no higher than 75 watts and use dimmer controls (except mr). Do not mount lights directly above areas where ceiling mounted accessories will be parked.
   7. Routing of cable ductwork, conduits, etc., must run direct as possible otherwise may result in the need for greater than standard cable lengths (refer to the interconnection diagram for maximum usable lengths point to point).
   8. Conduit turns to have large, sweeping bends with minimum radius in accordance with national and local electrical codes.
   9. A special grounding system is required in all procedure rooms by some national and local codes. It is recommended in areas where patients might be examined or treated under present, future, or emergency conditions. Consult the governing electrical code and confer with appropriate customer administrative personnel to determine the areas requiring this type of grounding system.
   10. The maximum point to point distances illustrated on this drawing must not be exceeded.
   11. Physical connection of primary power to GE equipment is to be made by customers electrical contractor with the supervision of a GE representative. The GE representative would be required to identify the physical connection location, and insure proper handling of GE equipment.
   12. GEHC conducts power audits to verify quality of power being delivered to the system. The customer’s electrical contractor is required to be available to support this activity.

- All junction boxes, conduit, duct, duct dividers, switches, circuit breakers, cable tray, etc., are to be supplied and installed by customers electrical contractor.
- Conduit and duct runs shall have sweep radius bends.
- Conduits and duct above ceiling or below finished floor must be installed as near to ceiling or floor as possible to reduce run length.
- Ceiling mounted junction boxes illustrated on this plan must be installed flush with finished ceiling.
- All ductwork must meet the following requirements:
  1. Ductwork shall be metal with dividers and have removable, accessible covers.
  2. Ductwork shall be certified/rated for electrical power purposes.
  3. Ductwork shall be electrically and mechanically bonded together in an approved manner.
- PVC as a substitute must be used in accordance with all local and national codes.
- All openings in access flooring are to be cut out and finished off with grommet material by the customers contractor.
- General contractor to insert pull cords for all cable run conduits between the equipment room and the operators control room.
- 10 foot pigtails at all junction points.
- Grounding is critical to equipment function and patient safety. Site must conform to wiring specifications shown on this plan.

### CONNECTIVITY REQUIREMENTS

Broadband Connections are necessary during the installation process and going forward to ensure full support from the Engineering Teams for the customers system. Maximum performance and availability for the customers system is maintained and closely monitored during the lifetime of the system. Proactive and reactive maintenance is available utilising the wide range of digital tools using the connectivity solutions listed below:

- Site-to-Site VPN/GE Solution
- Site-to-Site VPN/Customer Solution
- Connection through Dedicated Service Network
- Internet Access - connectivity for InSite 2.0

The requirements for these connectivity solutions are explained in the broadband solutions catalogue (separate document).
**POWER REQUIREMENTS**

**POWER SUPPLY**

<table>
<thead>
<tr>
<th>POWER SUPPLY</th>
<th>3 PHASES+N+G 380 to 480 VAC ± 10%</th>
</tr>
</thead>
<tbody>
<tr>
<td>FREQUENCIES</td>
<td>50/60 Hz ± 3 Hz</td>
</tr>
<tr>
<td>MAXIMUM POWER DEMAND</td>
<td>40 kVA</td>
</tr>
<tr>
<td>AVERAGE (CONTINUOUS) POWER DEMAND</td>
<td>8.8 kVA</td>
</tr>
<tr>
<td>POWER FACTOR</td>
<td>0.85 (120kV, 200 mA)</td>
</tr>
</tbody>
</table>

- Power 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.
- There must be difference between supply cable protective device 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 variation at full load = 6% (Including line impedance).
- Transients must be less than 1500 V peak. (on a 400 V line)

**GROUND SYSTEM**

- System of equipotential grounding.
- 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.
- The impedance of the earth bar should be less than or equal to 0.5 Ohm.

**CABLES**

- Power and cable installation must comply with the distribution diagram.
- All cables must be isolated and flexible, cable color codes must comply with standards for 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.

**FEEDER TABLE**

<table>
<thead>
<tr>
<th>MIN. FEEDER WIRE SIZE</th>
<th>MINIMUM FEEDER WIRE LENGTH</th>
<th>- ft (m)</th>
</tr>
</thead>
<tbody>
<tr>
<td>(sq. mm)/VAC</td>
<td></td>
<td></td>
</tr>
<tr>
<td>50 (15)</td>
<td>100 (30)</td>
<td>150 (46)</td>
</tr>
<tr>
<td>100 (30)</td>
<td>150 (46)</td>
<td>200 (61)</td>
</tr>
<tr>
<td>150 (46)</td>
<td>200 (61)</td>
<td>250 (76)</td>
</tr>
<tr>
<td>200 (61)</td>
<td>250 (76)</td>
<td>300 (91)</td>
</tr>
<tr>
<td>250 (76)</td>
<td>300 (91)</td>
<td>350 (107)</td>
</tr>
<tr>
<td>300 (91)</td>
<td>350 (107)</td>
<td>400 (122)</td>
</tr>
</tbody>
</table>

**GENERAL NOTES**

In all cases qualified personnel must verify that the feeder (at the point of take-off) and the run to the NMCT system meet all the requirements stated in the PIM.

For a single unit installation, the minimum transformer size is 50kVA, with 2.4% rated regulation at unity power factor. Resultant maximum allowable feeder regulation is 3.6%.

Grounding conductor will be a 1/0 minimum - this ground will run from the Main Distribution Panel to the main facility ground. Connect the ground wire to the MDP through which it passes, in accordance with local codes.

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**MAIN DISCONNECT PANEL**

MDP: Main Disconnect Panel  
PIDB: Power input distribution box  
PDU: Power distribution unit  
SEO: Emergency OFF button (Control Room), located 1.50m (4.9') above floor  
WLC: Warning Light Control  
WL: Warning Light  
DS: Door Interlock Switch (needed only if required by state/local codes)

Notes:

1. Two dry contacts: "System ON" and "X-Ray ON", both released by PDU. Max. voltage = 30 V
2. If length < 10 m (32.8') Cable with 2m (6.6') extra length on the floor behind the back of PDU
3. Cable with 2m (6.6') extra length on the floor behind the back of PDU
4. Cable delivered with partial UPS installed by GE (Option)
5. NM additional ground for UPS
CABLE MANAGEMENT

FLUSH FLOOR DUCT

- Waterproof joint
- Removable cover

WALL DUCT

- Removable cover plate

NOT TO SCALE

INTERCONNECTIONS

EXAM ROOM

- 23.90 m (78.4 ft)
- 17.00 m (55.7 ft)
- 10.00 m (32.8 ft)
- 7.00 m (22.9 ft)

CONTROL ROOM

- 22.50 m (73.8 ft)
- 17.00 m (55.7 ft)
- 10.00 m (32.8 ft)
- 7.00 m (22.9 ft)

CT Gantry

NM Gantry

Table

PDU

NM UPS (OPTION)

PIDB

Can be ordered from GE