REV	DATE	MODIFICATIONS
A	24/FEB/2023	First issue drawing (DC-376449)

SUDABELT MEDICAL CO LTD
LAGOS
NIGERIA

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 Healthcare

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-
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REVOLUTION MAXIMA
FINAL STUDY

Drawn by	Verified by	Concession	S.O. (GON)	PIM Manual	Rev
N. Farkas	M. Czibók	-	-	5809942-1EN	6

Format	Scale	File Name	Date	Sheet
A3	1:50	CT-B329269-FIN-00-A.DWG	24/FEB/2023	01/12

EQUIPMENT LAYOUT

ITEM	DESCRIPTION	DIMENSIONS LxWxH (mm)	WEIGHT (kg)
1	GANTRY	2041x1014x1928	1558
2	GT1700V TABLE	650x2370x1046	445
3	ECG MONITOR	-	3
4	INJECTOR ON PEDESTAL	-	-
5	POWER DISTRIBUTION UNIT (PDU)	700x550x1062	370
6	POWER DISTRIBUTION BOX (PDB)	225x424x929	33
7	FULL UPS 120 kVA	-	-
8	FULL UPS BATTERY CABINET	-	-
9	GE STORAGE CABINET	610x914x1067	68
10	OPEN CONSOLE	672x400x576	64.2
11	INJECTOR CONTROL	-	-
12	AURORA SWS TABLE	1300x850x850	40
13	DV5700 LASER IMAGER	660x610x470	54

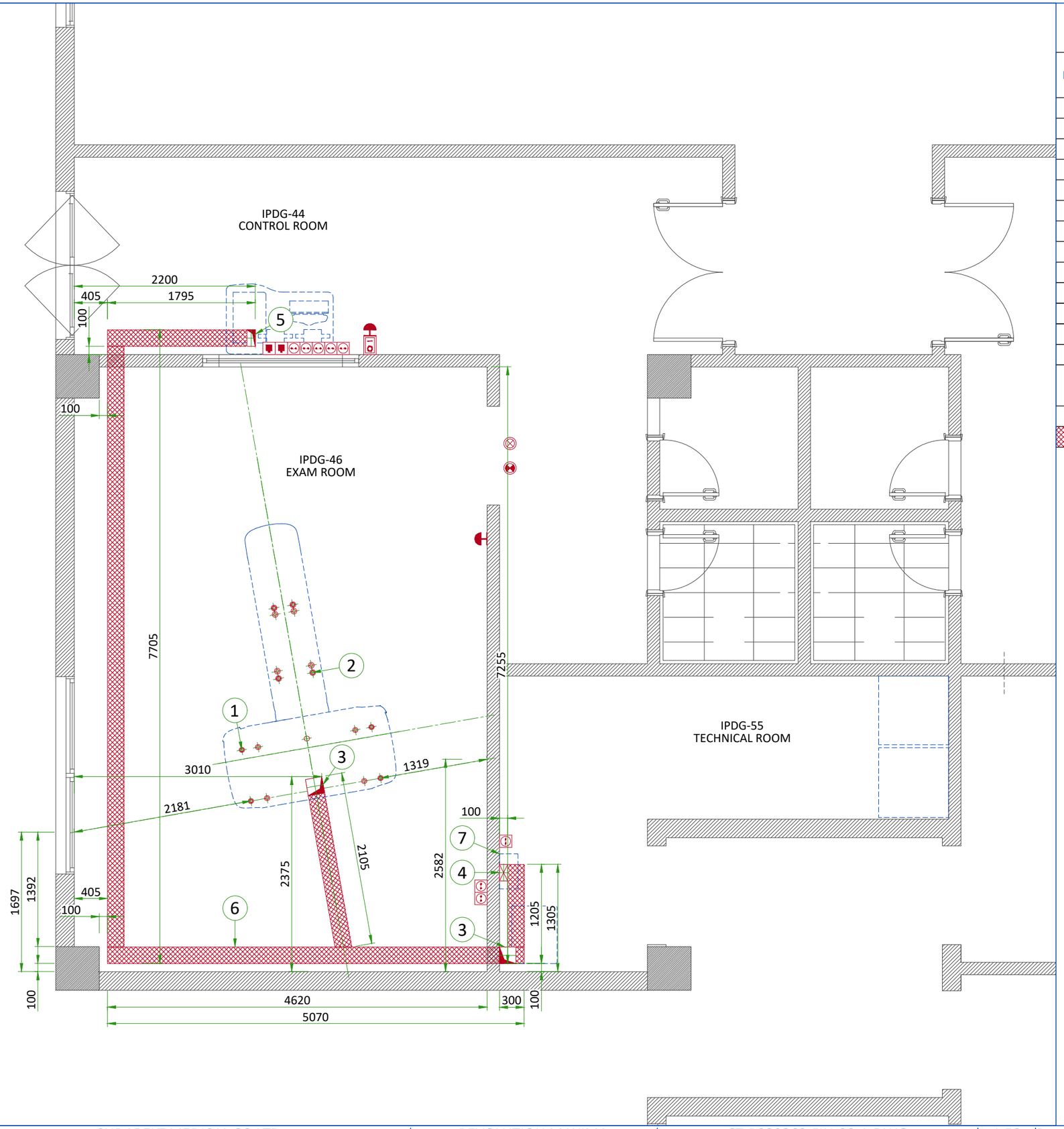
	WALL - ACCORDING TO RECEIVED DRAWING
	STRUCTURE - ACCORDING TO RECEIVED DRAWING

EXAM ROOM HEIGHT	
FINISHED FLOOR TO SLAB HEIGHT	3,00 m
FALSE CEILING HEIGHT	2.70 m

Notes:

A) Additional heat dissipation

STRUCTURAL-ELECTRICAL LAYOUT

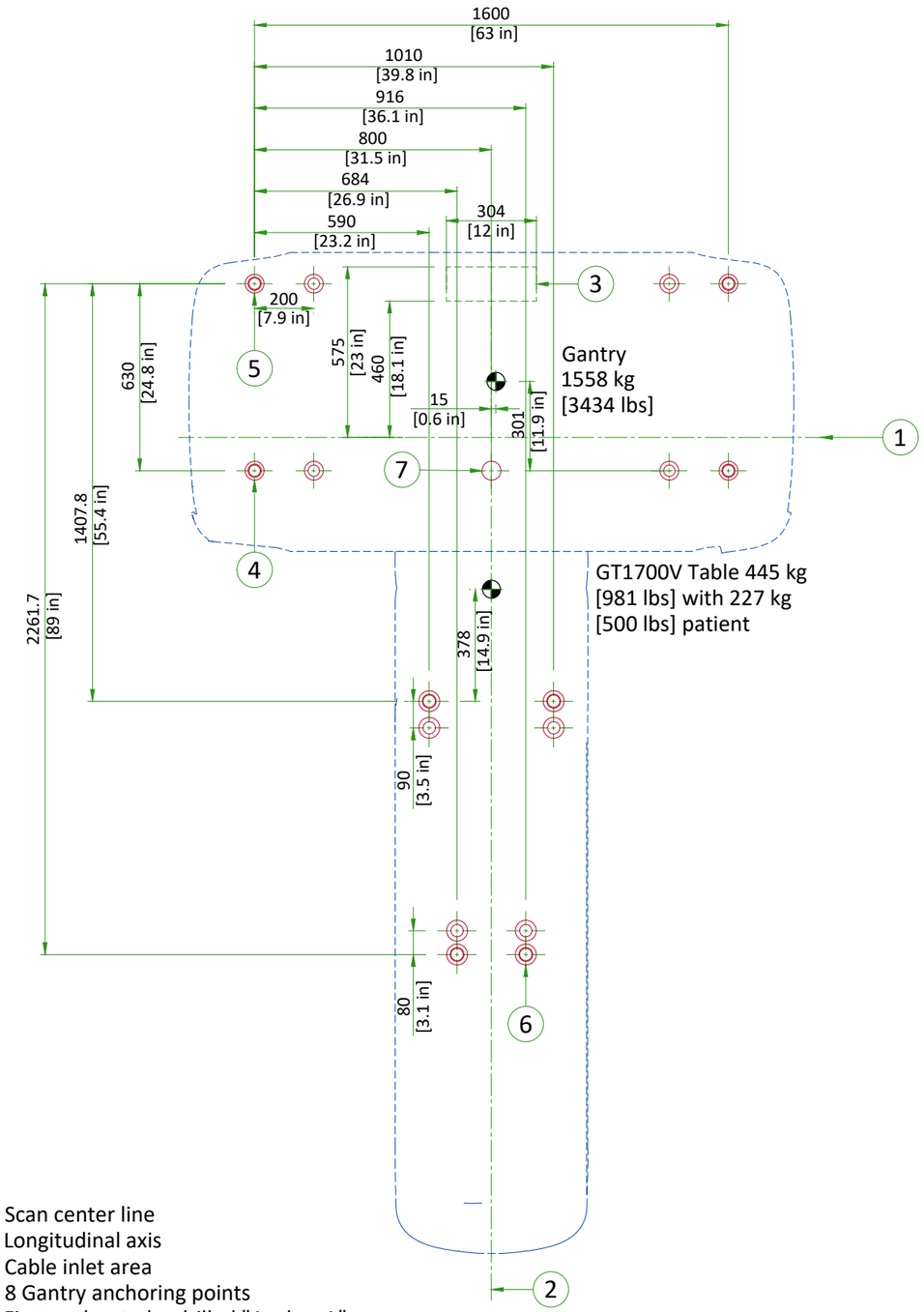


ITEM	QTY	DESCRIPTION
1		Gantry anchoring (see Structural Details)
2		Table anchoring (see Structural Details)
3		200x200 cable inlet on the floor
4		200x100 cable inlet on the floor and 200x100 vertical duct for MDP cabling (h=1.1m)
5		200x100 cable inlet on the floor
6		200x70 flush floor duct
7		Main Disconnect Panel (MDP)

	Electrical outlet 10/16A 230V + G
	RJ 45 network socket
	System emergency off (SEO), (recommended height 1.50m-1.85m above floor)
	X-Ray ON lamp (L1) - 24V
	System ON light (L) - 24V
	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

	Flush floor duct

ANCHORING/LOADING DISTRIBUTION TO THE FLOOR

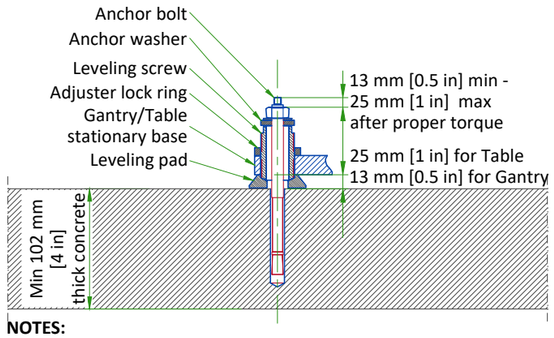


(1) Scan center line
(2) Longitudinal axis
(3) Cable inlet area
(4) 8 Gantry anchoring points
(5) First anchor to be drilled "Anchor A"
(6) 8 Table anchoring points
(7) Front leveling screw
Center of gravity
Main anchoring points
Backup anchoring points

SCALE 1:20

FLOOR REQUIREMENTS

GE SUPPLIED TABLE/GANTRY ANCHORS



NOTES:

- The distance from central line of anchor to the edge of concrete basement of Gantry/Table should not be less than 160 mm [6.3 in].
- Torque anchor to 54 Nm (40 ft-lb)

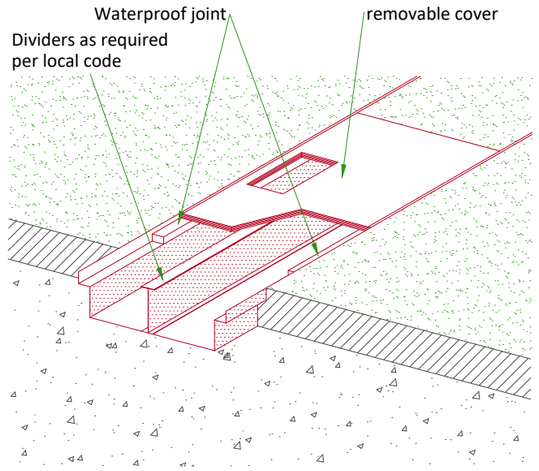
FINISHED FLOOR REQUIREMENTS

- Installation requires a finish floor in the scan and control rooms
- The floor surface in the scan room directly under the gantry and table must be level.
- The floor levelness tolerance of the floor surface that the gantry and table will rest on is 6 mm [1/4 in] over a 3048 mm [10 ft] distance.
- Shims should not be used to compensate for a floor that does not meet this requirement.
- Eight or more floor covering openings that are 102 mm [4 in] in diameter are made to ensure the table and gantry rest on a solid surface. These floor penetrations can be sealed if required.
- These requirements apply to all installation types.

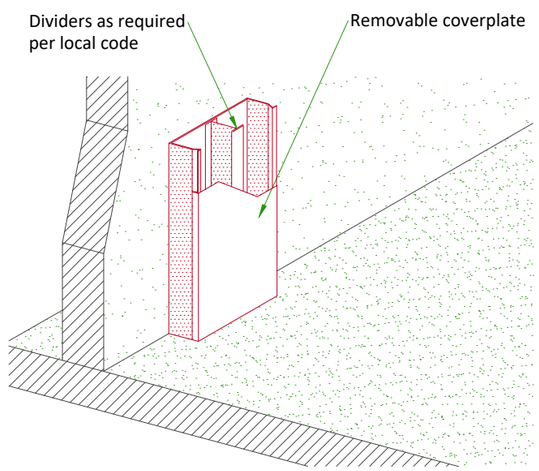
NOT TO SCALE

TYPICAL CABLE MANAGEMENT

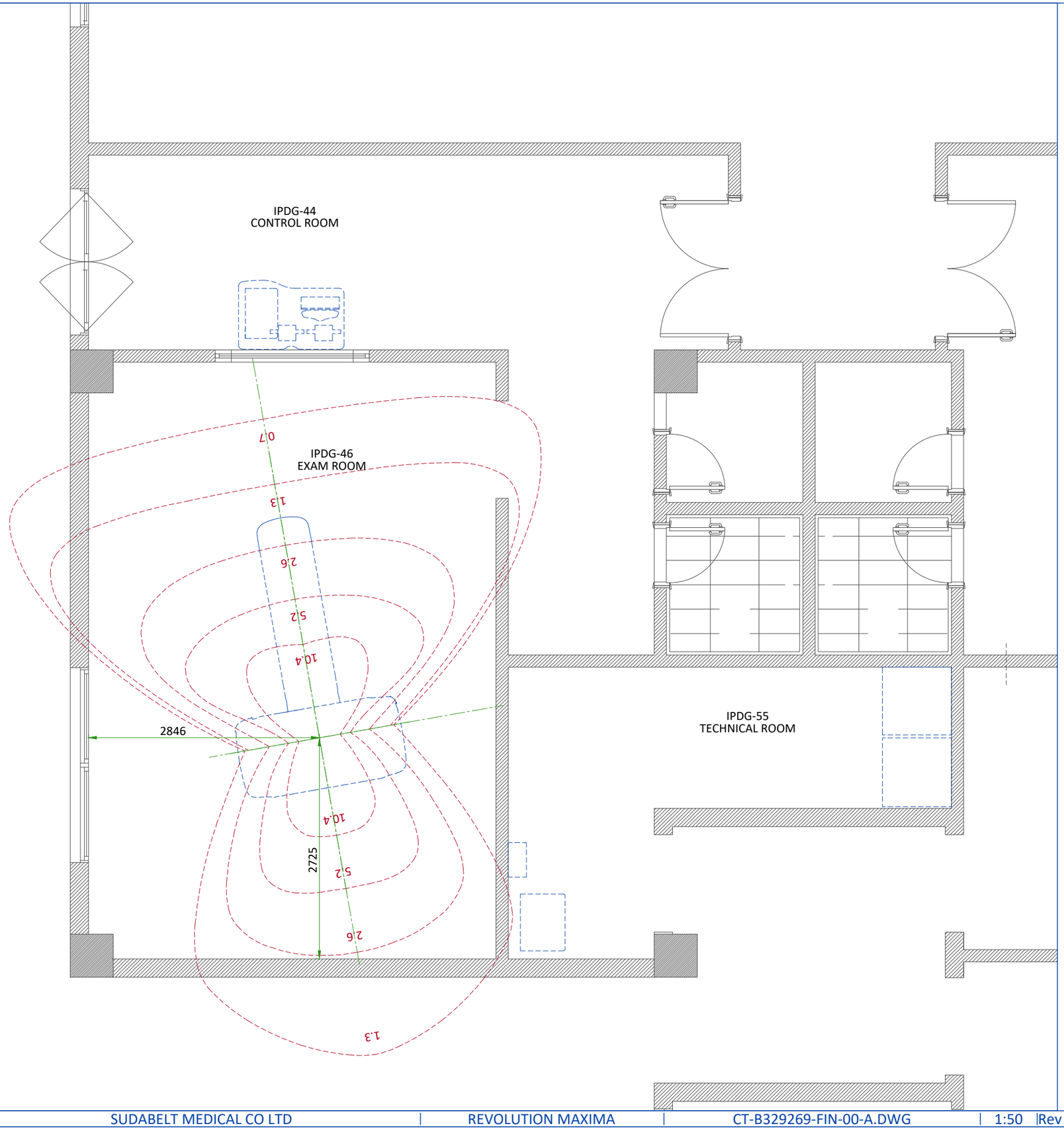
FLUSH FLOOR DUCT



VERTICAL DUCT ON WALL



NOT TO SCALE



RADIATION PROTECTION LAYOUT

SHIELDING REQUIREMENTS SCALING	
CHANGED PARAMETER (mAs)	**MULTIPLICATION FACTOR (new mAs/100)**
80 kV	0.24
100 kV	0.45
120 kV	0.71
140 kV	1.00
1 mm aperture	0.20
3 mm aperture	0.22
5 mm aperture	0.27
10 mm aperture	0.38
15 mm aperture	0.48
20 mm aperture	0.59
30 mm aperture	0.79
40 mm aperture	1.00

SHIELDING REQUIREMENTS:

Engage a qualified radiological health physicist to review your scan room shielding requirements, taking into consideration:

- Scatter radiation levels within the scanning room
- Equipment placement.
- Weekly projected work-loads (number of patients/day technique (kvp*ma))
- Materials used for construction of walls, floors, ceiling, doors, and windows.
- Activities in surrounding scan room areas.
- Equipment in surrounding scan room areas (e.g., film developer, film storage)
- Room size and equipment placement within the room relative to room size.

The Illustrations on this page depict measured radiation levels within the scanning room, while scanning a 32 cm CTDI phantom with the technique shown:

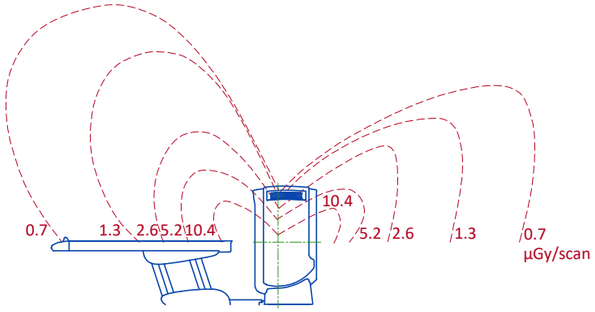
- 140 kV
- 100 mA
- 1 sec
- 40 mm

Use the mAs, kV and aperture scaling factors in the table shown here to adjust exposure levels to the scan technique used at the site.

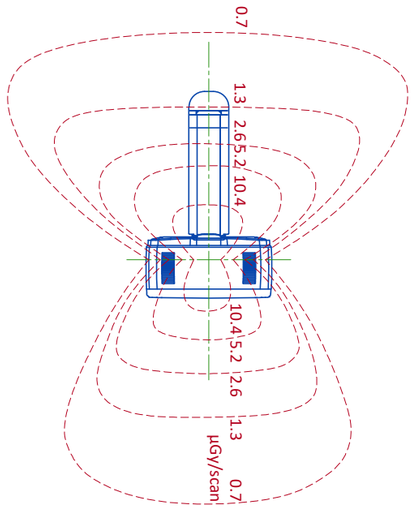
NOTE: Actual measurements can vary. Expected deviations equals ±15%, expect for the 5 mA and 1 mm techniques, where variations may be greater (up to a factor of 2), due to the inherent deviation in small values. The maximum deviation anticipated for tube output equals ±40%.

RADIATION SCATTER - HEAD PHANTOM

NOTE: 140 kV
100 mAs/scan
1 sec
40mm aperture



Elevation

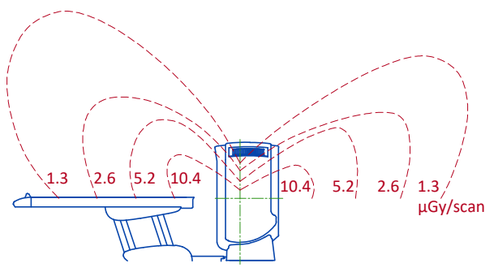


Plan View

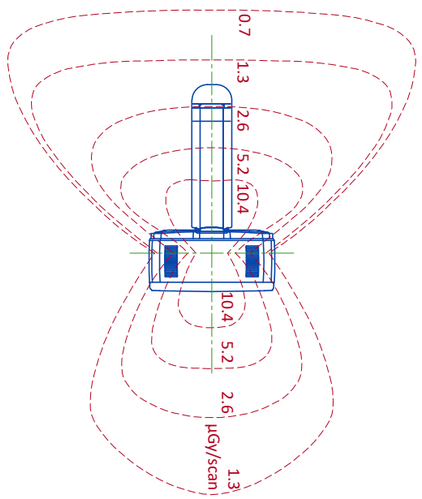
APPROX.
0" 50"
0.5 1.0m

RADIATION SCATTER - BODY PHANTOM

NOTE: 140 kV
100 mAs/scan
1 sec
40mm aperture



Elevation



Plan View

APPROX.
0" 50"
0.5 1.0m

POWER REQUIREMENTS

POWER SUPPLY	**3 PHASES+N+G** **200/220/240/380/400/420/440/460/480 V ± 10%**
FREQUENCIES	**50/60 Hz ± 3 Hz**
MAXIMUM POWER DEMAND	**100 kVA**
AVERAGE (CONTINUOUS) POWER DEMAND	**20 kVA**
POWER FACTOR	**0.85**

- 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 discrimination 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.
- Transients must be less than 1500V peak. (on a 400V 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.

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 1.5m, 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

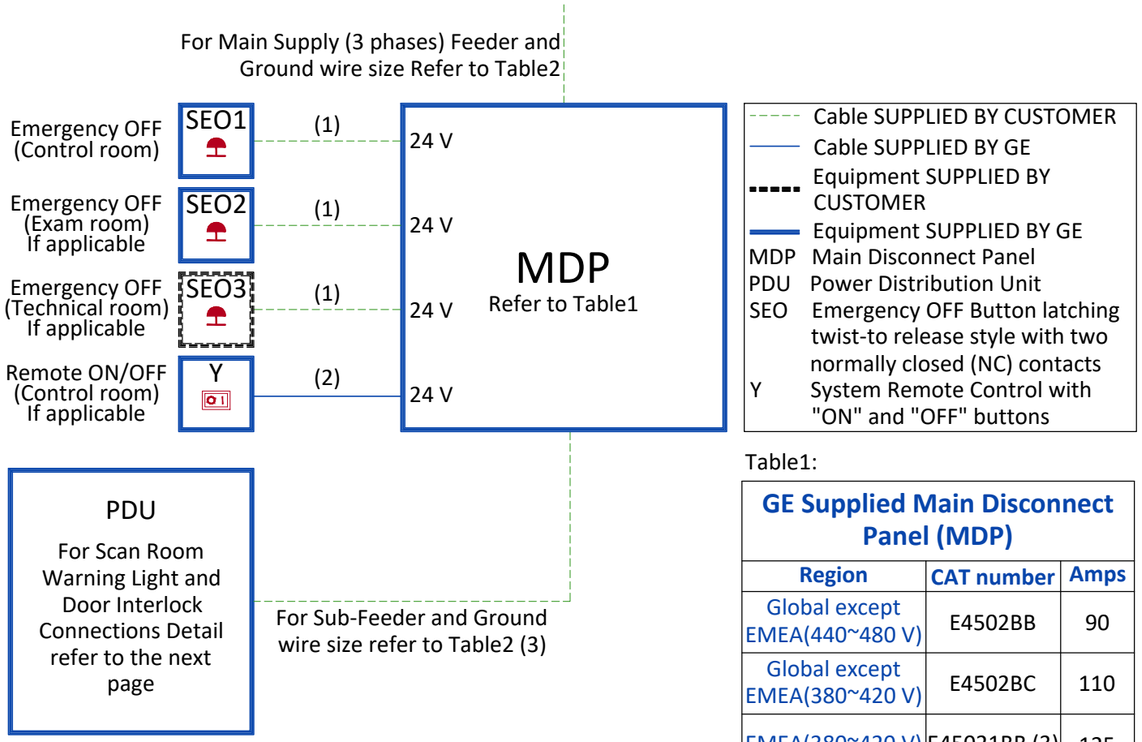


Table1:

GE Supplied Main Disconnect Panel (MDP)		
Region	**CAT number**	**Amps**
Global except EMEA(440~480 V)	E4502BB	90
Global except EMEA(380~420 V)	E4502BC	110
EMEA(380~420 V)	E45021BB (3)	125

Table2:

Feeder Table								
The information below assumes the use of copper wire, rated 75 C and run in steel conduit. All ampacity is determined in accordance with the National Electrical Code (NFPA 70), Table 310-16 (2002). The ampacity of the circuit protection device listed above determines the minimum feeder size, except where total source regulation limits require a larger size. If the wire size does not match the above lists, please select the nearest wire size as per to local standards								
Feeder length from Power Substation to MDP - ft (m)	**Minimum Wire Size, AWG or MCM (mm²)/VAC**							
	200 VAC	220 VAC	240 VAC	380 VAC	400 VAC	420 VAC	440 VAC	460 VAC	480 VAC
50 (15)	1/0 (55)	1/0 (55)	1/0 (55)	2 (35)	2 (35)	3 (30)	3 (30)	3 (30)	3 (30)
100 (30)	2/0 (70)	1/0 (55)	1/0 (55)	2 (35)	2 (35)	3 (30)	3 (30)	3 (30)	3 (30)
150 (46)	4/0 (100)	3/0 (85)	3/0 (85)	2 (35)	2 (35)	3 (30)	3 (30)	3 (30)	3 (30)
200 (61)	5/0 (125)	4/0 (100)	4/0 (100)	2 (35)	2 (35)	3 (30)	3 (30)	3 (30)	3 (30)
250 (76)	6/0 (170)	5/0 (125)	5/0 (125)	1 (45)	1 (45)	2 (35)	2 (35)	2 (35)	3 (30)
300 (91)	7/0 (215)	6/0 (170)	5/0 (125)	1/0 (55)	1/0 (55)	1 (45)	1 (45)	2 (35)	2 (35)
350 (107)	8/0 (275)	7/0 (215)	6/0 (170)	2/0 (70)	1/0 (55)	1/0 (55)	1 (45)	1 (45)	1 (45)
400 (122)	8/0 (275)	7/0 (215)	7/0 (215)	2/0 (70)	2/0 (70)	1/0 (55)	1/0 (55)	1/0 (55)	1 (45)
Sub-Feeder length from MDP to PDU - ft (m)									
32 (9.7536)	1 (45)	1/0 (55)	1/0 (55)	2 (35)	2 (35)	3 (30)	3 (30)	3 (30)	3 (30)
Grounding									
Run a dedicated 1/0 [50 mm²] or larger insulated copper ground wire from the power source to the MDP and from MDP to the PDU. Run the ground wire in the same raceway with the three-phase wires.									

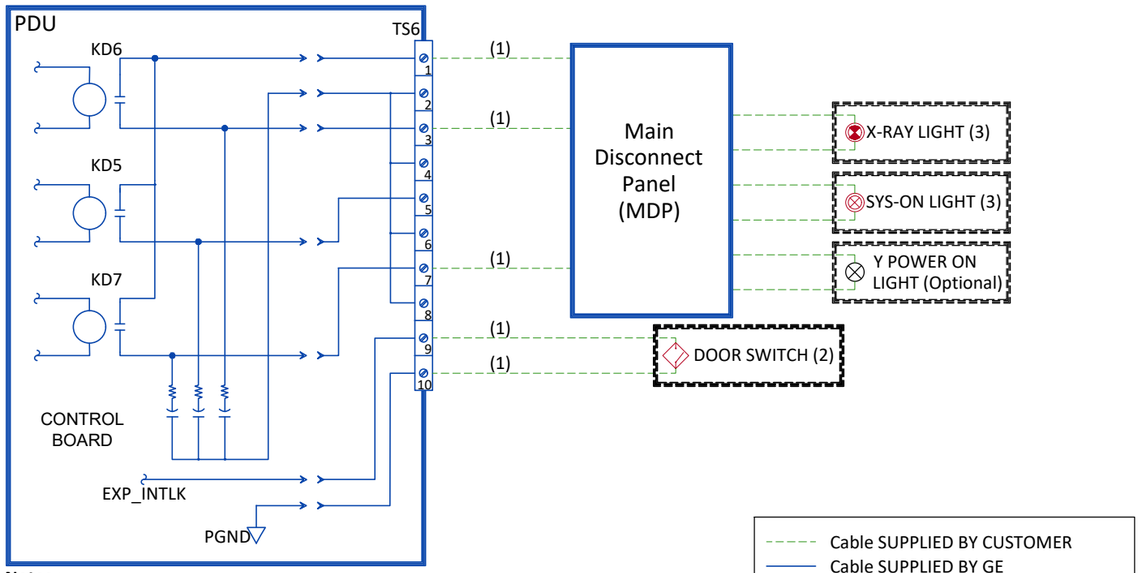
Notes :

(1) Wire size: 2x2mm² [14AWG] and 1x2mm² [14AWG] GND

(2) Power cable: 3 Meter/10', multi-conductor, 24V DC

(3) GE supplied MDP option E45021BB includes a 10 meter long power cable (H07RN-F) with wire size 4x50mm² and a 50 meter long control cable with wire size 2x1.5mm²

SCAN ROOM WARNING LIGHT AND DOOR INTERLOCK



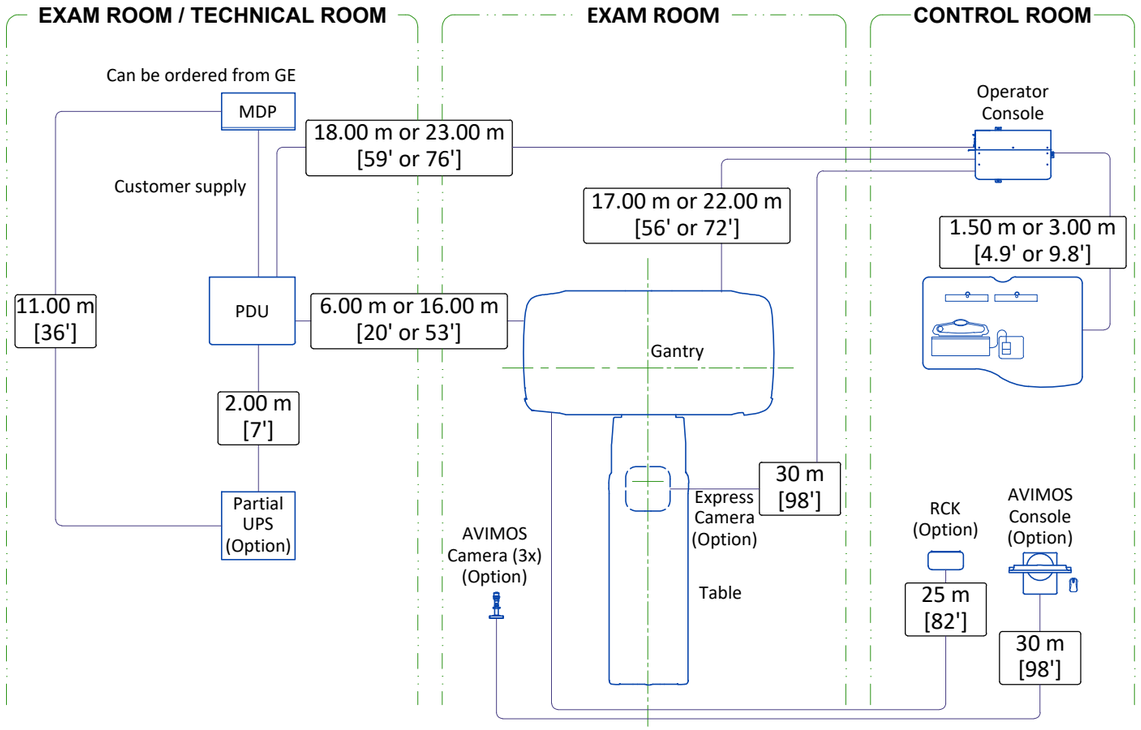
Notes :

(1) Wire size: 2mm² [14 AWG] at 24V

(2) Door Interlock circuit is jumpered out if a door switch is not provided.

(3) Additional room warning light circuit is required if the warning lights are NOT RATED 24VDC. MDP internal 24VDC contact are rated 2A Max and 230VAC contact are rated 6A max.

INTERCONNECTIONS



ENVIRONMENT

ALTITUDE

- The system shall meet all functional and performance specifications when placed in a room that is at an elevation of -150 m to 2,400 m [-492 ft to 7,875 ft] above sea level. For different altitudes refer to the PIM.

MAGNETIC FIELD SPECIFICATIONS

- Limit the magnetic interference to guarantee specified imaging performance.

GANTRY:
- Ambient static magnetic fields less than 1 Gauss.
- Ambient AC magnetic fields less than 0.01 Gauss peak.

OPERATOR CONSOLE:
- Ambient static magnetic fields less than 10 Gauss.

SYSTEM COMPONENT NOISE LEVEL

- **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 dBA when measured at a distance of 1 m [3.3 ft] from the nearest gantry surface, in any direction.
- **Maximum Console Audible Noise Level:** The maximum ambient noise levels is less than or equal to 54 dBA when measured 1 m [3.3 ft] up and 1 m [3.3 ft] away from the console at an ambient temperature of 26°C [79°F].

CONNECTIVITY REQUIREMENTS

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

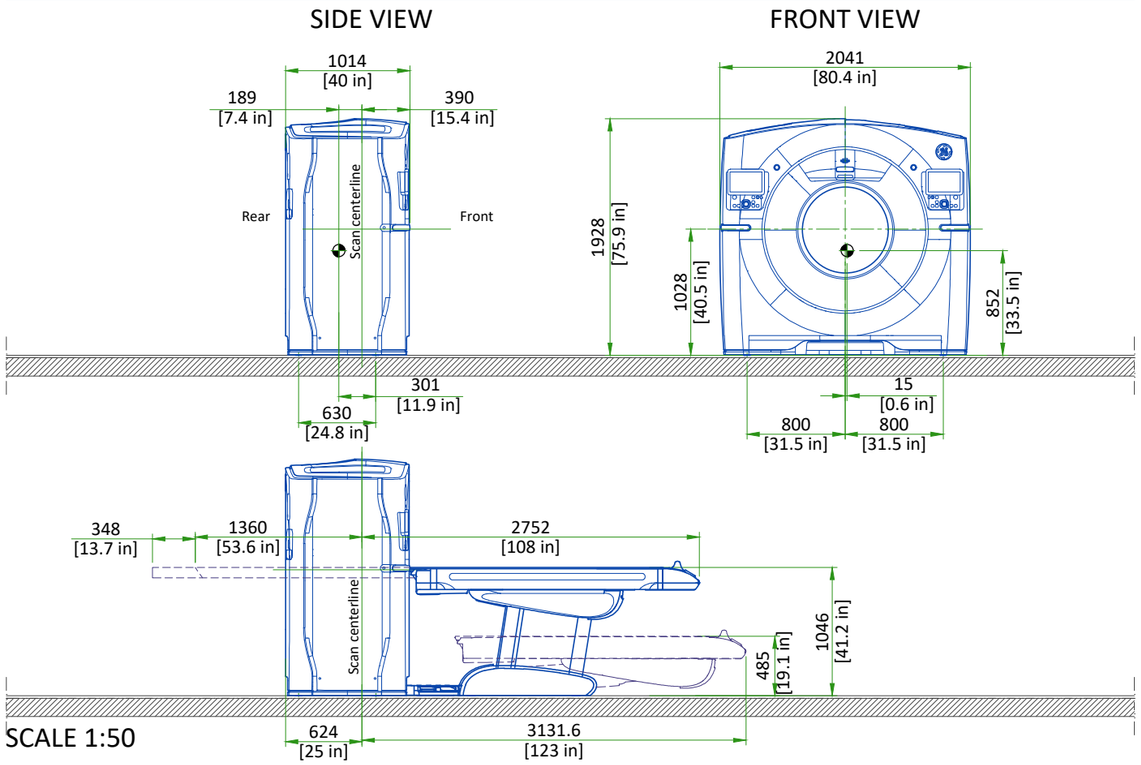
- Local connectivity - This allows your system to connect to local devices such as PACS and modality worklist. We will require network information to configure the system(s), and a live ethernet port(s) prior to the delivery of the system(s).
- Remote connectivity - Your GE Healthcare service warranty 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

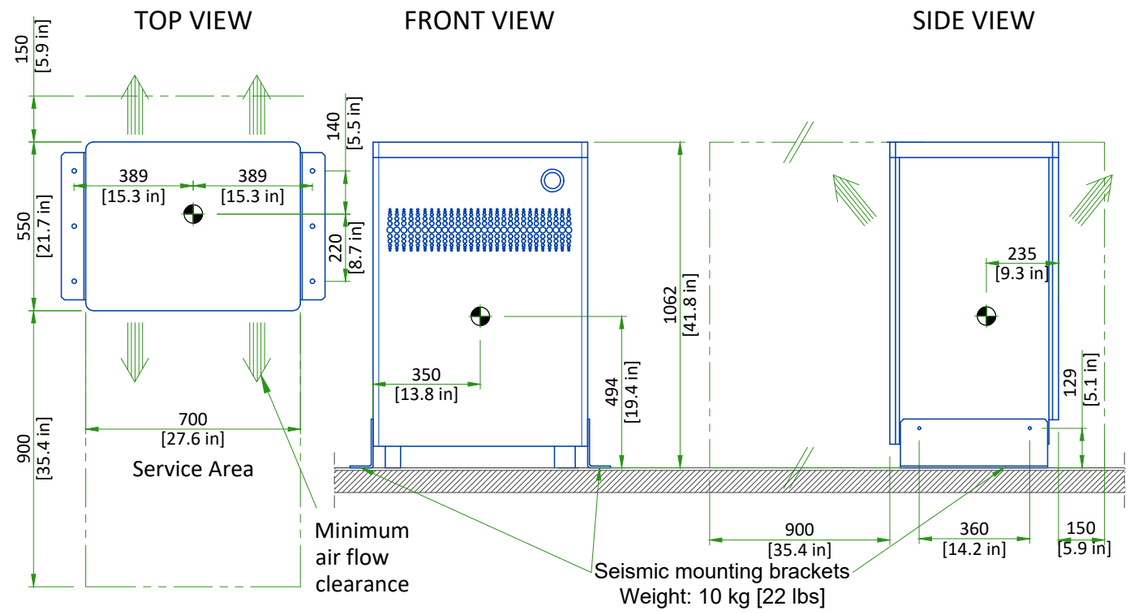
Please provide the GE project manager with the contact information for the resource that can provide information required to set up these connections. GEHC will send out communication to these contacts, which will include the project's Connectivity requirements, and a Connectivity form. This form will 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.

GANTRY WITH GT1700V TABLE



SCALE 1:50

POWER DISTRIBUTION UNIT (PDU)

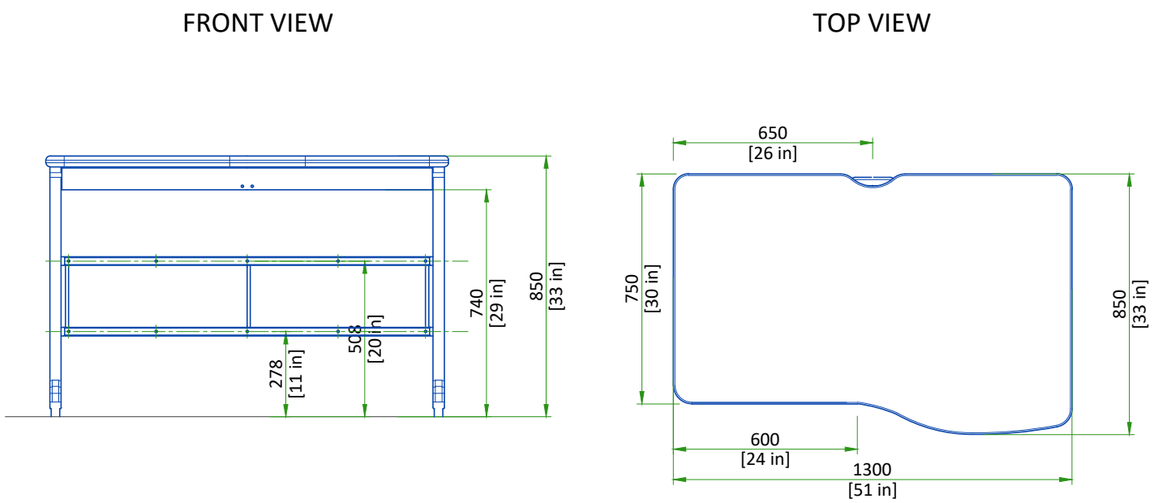


SCALE 1:20

Center of Gravity

Indicates air flow (Convection)

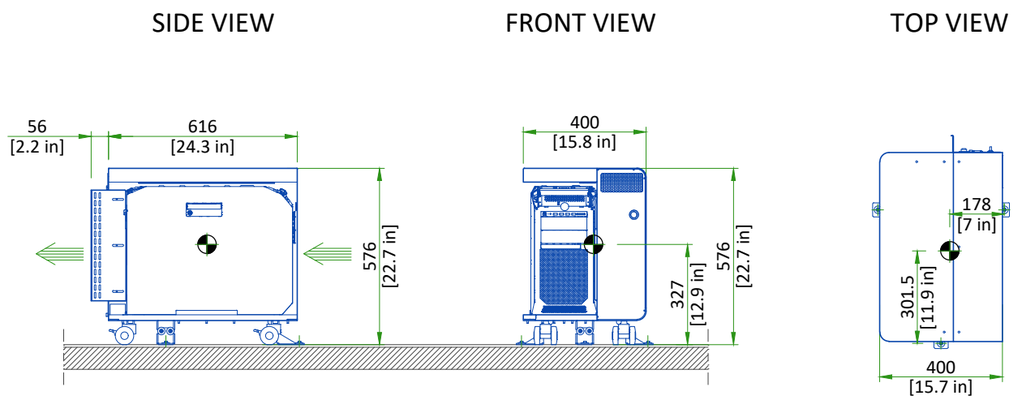
AURORA SWS TABLE



Weight: 40 kg [88 lbs]

SCALE 1:20

OPEN CONSOLE WITH Z8G4 HOST PC



Weight: 64.2 kg [142 lbs]

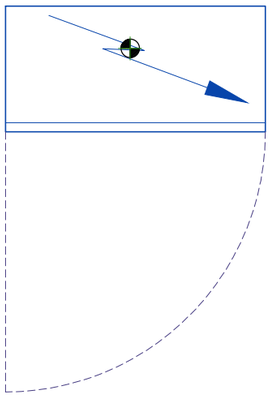
SCALE 1:20

Center of Gravity

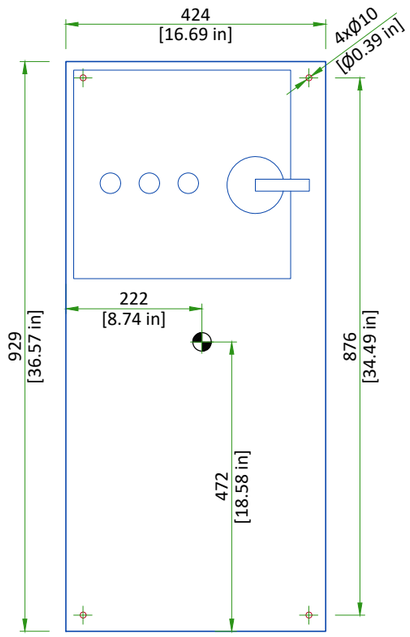
Indicates air flow (Convection)

MAIN DISCONNECT PANEL

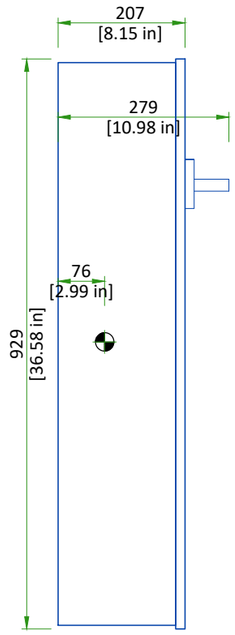
TOP VIEW



FRONT VIEW



SIDE VIEW



Center of gravity

SCALE 1:10

TEMPERATURE AND HUMIDITY SPECIFICATIONS

IN-USE CONDITIONS

	EXAM ROOM			CONTROL ROOM			TECHNICAL ROOM		
Temperature	Min	Recommended	Max	Min	Recommended	Max	Min	Recommended	Max
	18°C	22°C	26°C	18°C	22°C	26°C	18°C	22°C	26°C
	64°F	72°F	79°F	64°F	72°F	79°F	64°F	72°F	79°F
Relative humidity (1)	30% to 60%			30% to 60%			30% to 60%		

STORAGE CONDITIONS

Temperature	0°C to +30°C
	32°F to +86°F
Temperature gradient	**≤ 3°C/h**
	≤ 5°F/h
Relative humidity (1)	up to 70%
Humidity gradient	**≤ 5%/h**

Storage longer than 6 months is not recommended.
(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.

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.

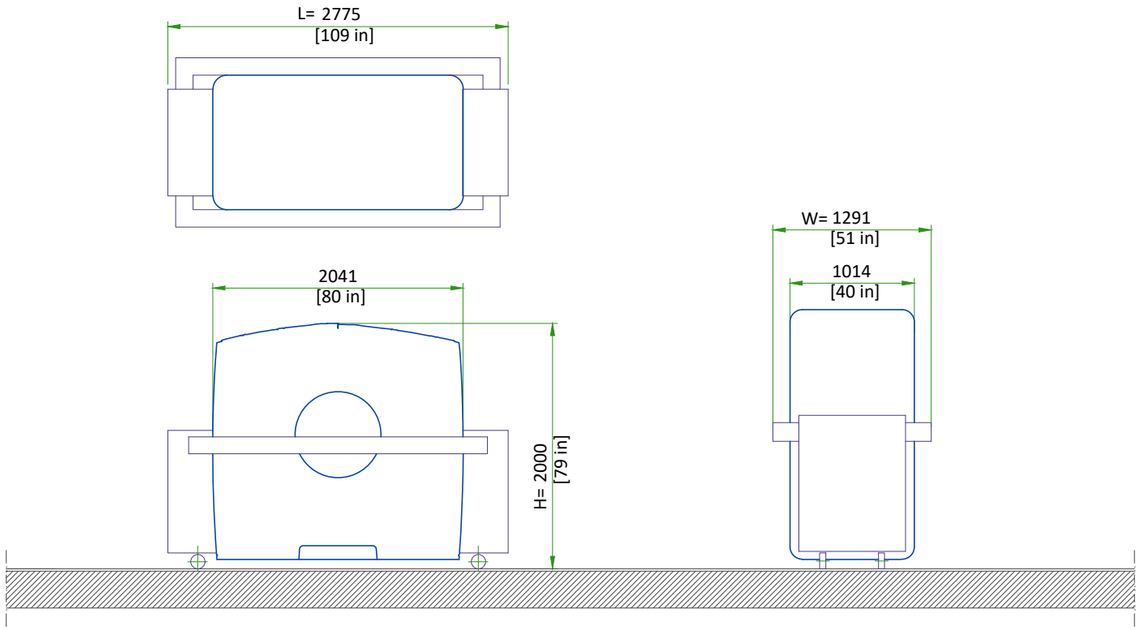
DIMENSIONS OF DELIVERY WITH DOLLY TRANSPORT EQUIPMENT

EQUIPMENT	DIMENSIONS			WEIGHT	
GANTRY	LENGTH	2775 mm	109 in	1835 kg	4049 lbs
	WIDTH	1291 mm	51 in		
	HEIGHT	2000 mm	79 in		
GT1700V TABLE	LENGTH	2489 mm	98 in	576 kg	1270 lbs
	WIDTH	762 mm	30 in		
	HEIGHT	1143 mm	45 in		

HEAT DISSIPATION DETAILS

ROOM	DESCRIPTION	Max (kW)	Max (BTU)
Exam Room	Gantry	5.48	18700
	GT1700V/GT2000 Table	0.3	1030
	TOTAL	**5.78**	**19730**
Exam Room or Technical Room*	Power Distribution Unit	1.0	3400
	TOTAL	**1.00**	**3400**
Control Room	Operator console	0.84	2860
	LCD monitor (Total amount of 2 monitors)	0.1	340
	TOTAL	**0.94**	**3200**
*Technical Room is not mandatory, the placements of these elements are recommended in the Exam Room.			

GANTRY DELIVERY



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

NOT TO SCALE

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)
  - For CT systems 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.