

Discovery™ IGS 730, Discovery™ IGS 740 Pre-Installation Manual



OPERATING DOCUMENTATION

5507046-1-1EN
Revision 2

ATTENTION

LES APPAREILS A RAYONS X SONT DANGEREUX A LA FOIS POUR LE PATIENT ET POUR LE MANIPULATEUR SI LES MESURES DE PROTECTION NE SONT PAS STRICTEMENT APPLIQUEES

Bien que cet appareil soit construit selon les normes de sécurité les plus sévères, la source de rayonnement X représente un danger lorsque le manipulateur est non qualifié ou non averti.

Une exposition excessive au rayonnement X entraîne des dommages à l'organisme.

Par conséquent, toutes les précautions doivent être prises pour éviter que les personnes non autorisées ou non qualifiées utilisent cet appareil créant ainsi un danger pour les autres et pour elles-mêmes.

Avant chaque manipulation, les personnes qualifiées et autorisées à se servir de cet appareil doivent se renseigner sur les mesures de protection établies par la Commission Internationale de la Protection Radiologique, Annales 26 : Recommandations de la Commission Internationale sur la Protection Radiologique et les normes nationales en vigueur.

WARNING

X-RAY EQUIPMENT IS DANGEROUS TO BOTH PATIENT AND OPERATOR UNLESS MEASURES OF PROTECTION ARE STRICTLY OBSERVED

Though this equipment is built to the highest standards of electrical and mechanical safety, the useful x-ray beam becomes a source of danger in the hands of the unauthorized or unqualified operator.

Excessive exposure to x-radiation causes damage to human tissue.

Therefore, adequate precautions must be taken to prevent unauthorized or unqualified persons from operating this equipment or exposing themselves or others to its radiation.

Before operation, persons qualified and authorized to operate this equipment should be familiar with the Recommendations of the International Commission on Radiological Protection, contained in Annals Number 26 of the ICRP, and with applicable national standards.

ATENCION

LOS APARATOS DE RAYOS X SON PELIGROSOS PARA EL PACIENTE Y EL MANIPULADOR CUANDO LAS NORMAS DE PROTECCION NO ESTAN OBSERVADAS

Aunque este aparato está construido según las normas de seguridad más estrictas, la radiación X constituye un peligro al ser manipulado por personas no autorizadas o incompetentes. Una exposición excesiva a la radiación X puede causar daños al organismo.

Por consiguiente, se deberán tomar todas las precauciones necesarias para evitar que las personas incompetentes o no autorizadas utilicen este aparato, lo que sería un peligro para los demás y para sí mismas.

Antes de efectuar las manipulaciones, las personas habilitadas y competentes en el uso de este aparato, deberán informarse sobre las normas de protección fijadas por la Comisión Internacional de la Protección Radiológica, Anales No 26: Recomendaciones de la Comisión Internacional sobre la Protección Radiológica y normas nacionales.

ACHTUNG

RÖNTGENAPPARATE SIND EINE GEFAHR FÜR PATIENTEN SOWIE BEDIENUNGSPERSONAL, WENN DIE GELTENDEN SICHERHEITSVORKEHRUNGEN NICHT GENAU BEACHTET WERDEN

Dieser Apparat entspricht in seiner Bauweise strengsten elektrischen und mechanischen Sicherheitsnormen, doch in den Händen unbefugter oder unqualifizierter Personen wird er zu einer Gefahrenquelle.

Übermäßige Röntgenbestrahlung ist für den menschlichen Organismus schädlich.

Deswegen sind hinreichende Vorsichtsmaßnahmen erforderlich, um zu verhindern, daß unbefugte oder unqualifizierte Personen solche Geräte bedienen oder sich selbst und andere Personen deren Bestrahlung aussetzen können.

Vor Inbetriebnahme dieses Apparats sollte sich das qualifizierte und befugte Bedienungspersonal mit den geltenden Kriterien für den gefahrlosen Strahleneinsatz durch sorgfältiges Studium des Hefts Nr. 26 der Internationalen Kommission für Strahlenschutz (ICRP) vertraut machen: Empfehlungen der Internationalen Kommission für Strahlenschutz und anderer nationaler Normenbehörden.

Important Information

LANGUAGE

ПРЕДУПРЕЖДЕНИЕ (BG)

Това упътване за работа е налично само на английски език.

- Ако доставчикът на услугата на клиента изиска друг език, задължение на клиента е да осигури превод.
- Не използвайте оборудването, преди да сте се консултирали и разбрали упътването за работа.
- Неспазването на това предупреждение може да доведе до нараняване на доставчика на услугата, оператора или пациента в резултат на токов удар, механична или друга опасност.

警告 (ZH-CN)

本维修手册仅提供英文版本。

- 如果客户的维修服务人员需要非英文版本，则客户需自行提供翻译服务。
- 未详细阅读和完全理解本维修手册之前，不得进行维修。
- 忽略本警告可能对维修服务人员、操作人员或患者造成电击、机械伤害或其他形式的伤害。

警告 (ZH-HK)

本服務手冊僅提供英文版本。

- 倘若客戶的服務供應商需要英文以外之服務手冊，客戶有責任提供翻譯服務。
- 除非已參閱本服務手冊及明白其內容，否則切勿嘗試維修設備。
- 不遵從本警告或會令服務供應商、網絡供應商或病人受到觸電、機械性或其他危險。

警告 (ZH-TW)

本維修手冊僅有英文版。

- 若客戶的維修廠商需要英文版以外的語言，應由客戶自行提供翻譯服務。
- 請勿試圖維修本設備，除非您已查閱並瞭解本維修手冊。
- 若未留意本警告，可能導致維修廠商、操作員或病患因觸電、機械或其他危險而受傷。

UPOZORENJE (HR)

Ovaj servisni priručnik dostupan je na engleskom jeziku.

- Ako davatelj usluge klijenta treba neki drugi jezik, klijent je dužan osigurati prijevod.
- Ne pokušavajte servisirati opremu ako niste u potpunosti pročitali i razumjeli ovaj servisni priručnik.
- Zanimarite li ovo upozorenje, može doći do ozljede davatelja usluge, operatera ili pacijenta uslijed strujnog udara, mehaničkih ili drugih rizika.

**VÝSTRAHA
(CS)**

Tento provozní návod existuje pouze v anglickém jazyce.

- V případě, že externí služba zákazníkům potřebuje návod v jiném jazyce, je zajištěn překlad do odpovídajícího jazyka úkolem zákazníka.
- Nesnažte se o údržbu tohoto zařízení, aniž byste si přečetli tento provozní návod a pochopili jeho obsah.
- V případě nedodržování této výstrahy může dojít k poranění pracovníka prodejního servisu, obslužného personálu nebo pacientů vlivem elektrického proudu, respektive vlivem mechanických či jiných rizik.

**ADVARSEL
(DA)**

Denne servicemanual findes kun på engelsk.

- Hvis en kundes tekniker har brug for et andet sprog end engelsk, er det kundens ansvar at sørge for oversættelse.
- Forsøg ikke at servicere udstyret uden at læse og forstå denne servicemanual.
- Manglende overholdelse af denne advarsel kan medføre skade på grund af elektrisk stød, mekanisk eller anden fare for tekniker, operatøren eller patienten.

**WAARSCHUWING
(NL)**

Deze onderhoudshandleiding is enkel in het Engels verkrijgbaar.

- Als het onderhoudspersoneel een andere taal vereist, dan is de klant verantwoordelijk voor de vertaling ervan.
- Probeer de apparatuur niet te onderhouden alvorens deze onderhoudshandleiding werd geraadpleegd en begrepen is.
- Indien deze waarschuwing niet wordt opgevolgd, zou het onderhoudspersoneel, de operator of een patiënt gewond kunnen raken als gevolg van een elektrische schok, mechanische of andere gevaren.

**WARNING
(EN)**

This service manual is available in English only.

- If a customer's service provider requires a language other than English, it is the customer's responsibility to provide translation services.
- Do not attempt to service the equipment unless this service manual has been consulted and is understood.
- Failure to heed this warning may result in injury to the service provider, operator or patient from electric shock, mechanical or other hazards.

**HOIATUS
(ET)**

See teenindusjuhend on saadaval ainult inglise keeles.

- Kui klienditeeninduse osutaja nõuab juhendit inglise keelest erinevas keeles, vastutab klient tõlketeenuse osutamise eest.
- Ärge üritage seadmeid teenindada enne eelnevalt käesoleva teenindusjuhendiga tutvumist ja sellest aru saamist.
- Käesoleva hoiatuse eiramine võib põhjustada teenuseosutaja, operaatori või patsiendi vigastamist elektrilöögi, mehaanilise või muu ohu tagajärjel.

VAROITUS
(FI)

Tämä huolto-ohje on saatavilla vain englanniksi.

- Jos asiakkaan huoltohenkilöstö vaatii muuta kuin englanninkielistä materiaalia, tarvittavan käännöksen hankkiminen on asiakkaan vastuulla.
- Älä yritä korjata laitteistoa ennen kuin olet varmasti lukenut ja ymmärtänyt tämän huolto-ohjeen.
- Mikäli tätä varoitusta ei noudateta, seurauksena voi olla huoltohenkilöstön, laitteiston käyttäjän tai potilaan vahingoittuminen sähköiskun, mekaanisen vian tai muun vaaratilanteen vuoksi.

ATTENTION
(FR)

Ce manuel d'installation et de maintenance est disponible uniquement en anglais.

- Si le technicien d'un client a besoin de ce manuel dans une langue autre que l'anglais, il incombe au client de le faire traduire.
- Ne pas tenter d'intervenir sur les équipements tant que ce manuel d'installation et de maintenance n'a pas été consulté et compris.
- Le non-respect de cet avertissement peut entraîner chez le technicien, l'opérateur ou le patient des blessures dues à des dangers électriques, mécaniques ou autres.

WARNUNG
(DE)

Diese Serviceanleitung existiert nur in englischer Sprache.

- Falls ein fremder Kundendienst eine andere Sprache benötigt, ist es Aufgabe des Kunden für eine entsprechende Übersetzung zu sorgen.
- Versuchen Sie nicht diese Anlage zu warten, ohne diese Serviceanleitung gelesen und verstanden zu haben.
- Wird diese Warnung nicht beachtet, so kann es zu Verletzungen des Kundendienst-technikers, des Bedieners oder des Patienten durch Stromschläge, mechanische oder sonstige Gefahren kommen.

ΠΡΟΕΙΔΟΠΟΙΗΣΗ
(EL)

Το παρόν εγχειρίδιο σέρβις διατίθεται μόνο στα αγγλικά.

- Εάν ο τεχνικός σέρβις ενός πελάτη απαιτεί το παρόν εγχειρίδιο σε γλώσσα εκτός των αγγλικών, αποτελεί ευθύνη του πελάτη να παρέχει τις υπηρεσίες μετάφρασης.
- Μην επιχειρήσετε την εκτέλεση εργασιών σέρβις στον εξοπλισμό αν δεν έχετε συμβουλευτεί και κατανοήσει το παρόν εγχειρίδιο σέρβις.
- Αν δεν προσέξετε την προειδοποίηση αυτή, ενδέχεται να προκληθεί τραυματισμός στον τεχνικό σέρβις, στο χειριστή ή στον ασθενή από ηλεκτροπληξία, μηχανικούς ή άλλους κινδύνους.

FIGYELMEZTETÉS
(HU)

Ezen karbantartási kézikönyv kizárólag angol nyelven érhető el.

- Ha a vevő szolgáltatója angoltól eltérő nyelvre tart igényt, akkor a vevő felelőssége a fordítás elkészítése.
- Ne próbálja elkezdni használni a berendezést, amíg a karbantartási kézikönyvben leírtakat nem értelmezték.
- Ezen figyelmeztetés figyelmen kívül hagyása a szolgáltató, működtető vagy a beteg áramütés, mechanikai vagy egyéb veszélyhelyzet miatti sérülését eredményezheti.

AÐVÖRUN
(IS)

Þessi þjónustuhandbók er aðeins fánleg á ensku.

- Ef að þjónustuveitandi viðskiptamanns þarfnast annas tungumáls en ensku, er það skylda viðskiptamanns að skaffa tungumálþjónustu.
- Reynið ekki að afgreiða tækið nema að þessi þjónustuhandbók hefur verið skoðuð og skilin.
- Brot á sinna þessari aðvörun getur leitt til meiðsla á þjónustuveitanda, stjórnanda eða sjúklings frá raflosti, vélrænu eða öðrum áhættum.

AVVERTENZA
(IT)

Il presente manuale di manutenzione è disponibile soltanto in lingua inglese.

- Se un addetto alla manutenzione richiede il manuale in una lingua diversa, il cliente è tenuto a provvedere direttamente alla traduzione.
- Procedere alla manutenzione dell'apparecchiatura solo dopo aver consultato il presente manuale ed averne compreso il contenuto.
- Il mancato rispetto della presente avvertenza potrebbe causare lesioni all'addetto alla manutenzione, all'operatore o ai pazienti provocate da scosse elettriche, urti meccanici o altri rischi.

警告
(JA)

このサービスマニュアルには英語版しかありません。

- サービスを担当される業者が英語以外の言語を要求される場合、翻訳作業はその業者の責任で行うものとさせていただきます。
- このサービスマニュアルを熟読し理解せずに、装置のサービスを行わないでください。
- この警告に従わない場合、サービスを担当される方、操作員あるいは患者さんが、感電や機械的又はその他の危険により負傷する可能性があります。

경고
(KO)

본 서비스 매뉴얼은 영어로만 이용하실 수 있습니다.

- 고객의 서비스 제공자가 영어 이외의 언어를 요구할 경우, 번역 서비스를 제공하는 것은 고객의 책임입니다.
- 본 서비스 매뉴얼을 참조하여 숙지하지 않은 이상 해당 장비를 수리하려고 시도하지 마십시오.
- 본 경고 사항에 유의하지 않으면 전기 쇼크, 기계적 위험, 또는 기타 위험으로 인해 서비스 제공자, 사용자 또는 환자에게 부상을 입힐 수 있습니다.

BRĪDINĀJUMS
(LV)

Šī apkopes rokasgrāmata ir pieejama tikai angļu valodā.

- Ja klienta apkopes sniedzējam nepieciešama informācija citā valodā, klienta pienākums ir nodrošināt tulkojumu.
- Neveiciet aprīkojuma apkopi bez apkopes rokasgrāmatas izlasīšanas un saprašanas.
- Šī brīdinājuma neievērošanas rezultātā var rasties elektriskās strāvas trieciena, mehānisku vai citu faktoru izraisītu traumu risks apkopes sniedzējam, operatoram vai pacientam.

**ĮSPĖJIMAS
(LT)**

Šis eksploataavimo vadovas yra tik anglų kalba.

- Jei kliento paslaugų tiekėjas reikalauja vadovo kita kalba – ne anglų, suteikti vertimo paslaugas privalo klientas.
- Nemėginkite atlikti įrangos techninės priežiūros, jei neperskaitėte ar nesupratote šio eksploataavimo vadovo.
- Jei nepaisysite šio įspėjimo, galimi paslaugų tiekėjo, operatoriaus ar paciento sužalojimai dėl elektros šoko, mechaninių ar kitų pavojų.

**ADVARSEL
(NO)**

Denne servicehåndboken finnes bare på engelsk.

- Hvis kundens serviceleverandør har bruk for et annet språk, er det kundens ansvar å sørge for oversettelse.
- Ikke forsøk å reparere utstyret uten at denne servicehåndboken er lest og forstått.
- Manglende hensyn til denne advarselen kan føre til at serviceleverandøren, operatøren eller pasienten skades på grunn av elektrisk støt, mekaniske eller andre farer.

**OSTRZEŻENIE
(PL)**

Niniejszy podręcznik serwisowy dostępny jest jedynie w języku angielskim.

- Jeśli serwisant klienta wymaga języka innego niż angielski, zapewnienie usługi tłumaczenia jest obowiązkiem klienta.
- Nie próbować serwisować urządzenia bez zapoznania się z niniejszym podręcznikiem serwisowym i zrozumienia go.
- Niezastosowanie się do tego ostrzeżenia może doprowadzić do obrażeń serwisanta, operatora lub pacjenta w wyniku porażenia prądem elektrycznym, zagrożenia mechanicznego bądź innego.

**ATENÇÃO
(PT-BR)**

Este manual de assistência técnica encontra-se disponível unicamente em inglês.

- Se outro serviço de assistência técnica solicitar a tradução deste manual, caberá ao cliente fornecer os serviços de tradução.
- Não tente reparar o equipamento sem ter consultado e compreendido este manual de assistência técnica.
- A não observância deste aviso pode ocasionar ferimentos no técnico, operador ou paciente decorrentes de choques elétricos, mecânicos ou outros.

**ATENÇÃO
(PT-PT)**

Este manual de assistência técnica só se encontra disponível em inglês.

- Se qualquer outro serviço de assistência técnica solicitar este manual noutra idioma, é da responsabilidade do cliente fornecer os serviços de tradução.
- Não tente reparar o equipamento sem ter consultado e compreendido este manual de assistência técnica.
- O não cumprimento deste aviso pode colocar em perigo a segurança do técnico, do operador ou do paciente devido a choques elétricos, mecânicos ou outros.

**ATENȚIE
(RO)**

Acest manual de service este disponibil doar în limba engleză.

- Dacă un furnizor de servicii pentru clienți necesită o altă limbă decât cea engleză, este de datoria clientului să furnizeze o traducere.
- Nu încercați să reparați echipamentul decât ulterior consultării și înțelegerii acestui manual de service.
- Ignorarea acestui avertisment ar putea duce la rănirea depanatorului, operatorului sau pacientului în urma pericolelor de electrocutare, mecanice sau de altă natură.

**ОСТОРОЖНО!
(RU)**

Данное руководство по техническому обслуживанию представлено только на английском языке.

- Если сервисному персоналу клиента необходимо руководство не на английском, а на каком-то другом языке, клиенту следует самостоятельно обеспечить перевод.
- Перед техническим обслуживанием оборудования обязательно обратитесь к данному руководству и поймите изложенные в нем сведения.
- Несоблюдение требований данного предупреждения может привести к тому, что специалист по техобслуживанию, оператор или пациент получит удар электрическим током, механическую травму или другое повреждение.

**UPOZORENJE
(SR)**

Ovo servisno uputstvo je dostupno samo na engleskom jeziku.

- Ako klijentov serviser zahteva neki drugi jezik, klijent je dužan da obezbedi prevodilačke usluge.
- Ne pokušavajte da opravite uređaj ako niste pročitali i razumeli ovo servisno uputstvo.
- Zanemarivanje ovog upozorenja može dovesti do povređivanja serviser, rukovaoca ili pacijenta usled strujnog udara ili mehaničkih i drugih opasnosti.

**UPOZORNENIE
(SK)**

Tento návod na obsluhu je k dispozícii len v angličtine.

- Ak zákazník poskytovateľ služieb vyžaduje iný jazyk ako angličtinu, poskytnutie prekladateľských služieb je zodpovednosťou zákazníka.
- Nepokúšajte sa o obsluhu zariadenia, kým si neprečítate návod na obsluhu a neporozumiete mu.
- Zanedbanie tohto upozornenia môže spôsobiť zranenie poskytovateľa služieb, obsluhujúcej osoby alebo pacienta elektrickým prúdom, mechanické alebo iné ohrozenie.

**ATENCION
(ES)**

Este manual de servicio sólo existe en inglés.

- Si el encargado de mantenimiento de un cliente necesita un idioma que no sea el inglés, el cliente deberá encargarse de la traducción del manual.
- No se deberá dar servicio técnico al equipo, sin haber consultado y comprendido este manual de servicio.
- La no observancia del presente aviso puede dar lugar a que el proveedor de servicios, el operador o el paciente sufran lesiones provocadas por causas eléctricas, mecánicas o de otra naturaleza.

**VARNING
(SV)**

Den här servicehandboken finns bara tillgänglig på engelska.

- Om en kunds servicetekniker har behov av ett annat språk än engelska, ansvarar kunden för att tillhandahålla översättningstjänster.
- Försök inte utföra service på utrustningen om du inte har läst och förstår den här servicehandboken.
- Om du inte tar hänsyn till den här varningen kan det resultera i skador på serviceteknikern, operatören eller patienten till följd av elektriska stötar, mekaniska faror eller andra faror.

**OPOZORILO
(SL)**

Ta servisni priročnik je na voljo samo v angleškem jeziku.

- Če ponudnik storitve stranke potrebuje priročnik v drugem jeziku, mora stranka zagotoviti prevod.
- Ne poskušajte servisirati opreme, če tega priročnika niste v celoti prebrali in razumeli.
- Če tega opozorila ne upoštevate, se lahko zaradi električnega udara, mehanskih ali drugih nevarnosti poškoduje ponudnik storitev, operater ali bolnik.

**DİKKAT
(TR)**

Bu servis kılavuzunun sadece ingilizcesi mevcuttur.

- Eğer müşteri teknisyeni bu kılavuzu ingilizce dışında bir başka lisandan talep ederse, bunu tercüme ettirmek müşteriye düşer.
- Servis kılavuzunu okuyup anlamadan ekipmanlara müdahale etmeyiniz.
- Bu uyarıya uyulmaması, elektrik, mekanik veya diğer tehlikelerden dolayı teknisyen, operatör veya hastanın yaralanmasına yol açabilir.

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Revision History

Part/Rev	Date	Reason for Change	Pages
5507046-1-1EN rev 1	January 27, 2015	Initial Release of 5507046-1-1EN	204
5507046-1-1EN rev 2	March 25, 2015	Second Release of 5507046-1-1EN	204

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Chapter 1 General Requirements

1 Objectives & Overview

1.1 Object and Scope of this manual

1.1.1 Object and Scope

The Pre-installation manual is a specification document used for planning and preparation for a Discovery™ IGS Systems installation.

The name Discovery™ IGS systems is used to designate both systems. In this case, the procedure and /or tests are applicable indifferently to Discovery™ IGS 730 or Discovery™ IGS 740.

In addition, this document provides references to the pre-installation documents of the various product included with the System.

These documents are intended to assist the Installation Specialist and the Site Planner in properly preparing a site for the installation of this system.

It provides pre-installation data, such as site preparation prior to the delivery of the System, environmental and electrical requirements and some additional planning aids.



MAKE SURE THE ROOM PREPARATION COMPLIES WITH LOCAL REGULATIONS AS THE PIM IS NOT INTENDED TO REFLECT ALL OF THEM

1.1.2 Quebec

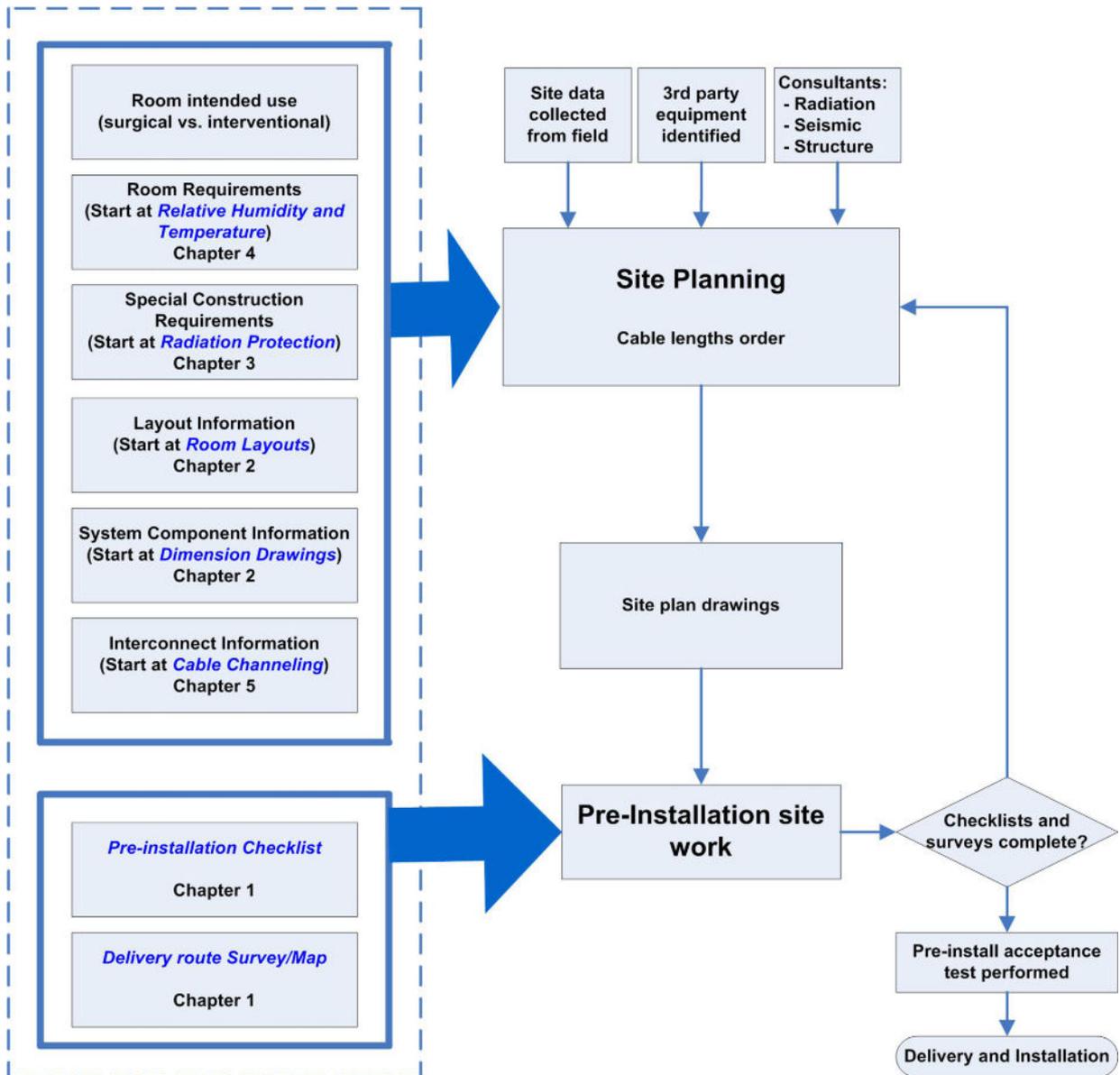
GE Healthcare is "GE Santé" in Province of Quebec - Canada.

1.2 Pre-Installation Process

Complete the checklists in *ROOM LAYOUTS*, *ELECTRICAL REQUIREMENTS*, and *GENERAL REQUIREMENTS* of this manual. They represent an important part of the pre-installation process. The checklists summarize the required preparations and allow to verify the proper completion of the pre-installation procedures.

You will find hereafter a chart of the information flow in the pre-installation process.

Illustration 1-1: Pre-Installation Process



2 Customer Responsibilities

2.1 Purchaser/Customer Responsibilities

To ensure that the installation of the System meets the purchaser or customer expectations, it is important to determine who will take responsibility for the various items during the system installation process. To help you in determining these responsibilities, review the [Pre-Installation Checklist](#) with the customer and assign responsibilities as appropriate:

NOTE: Contract Changes:

The cost of any alteration or modification not specified in the sales contract will be payable by the customer.

The following GE-supplied equipment must be installed by the Hospital's Contractors, per room drawings:

- PDB (Electrical Power Distribution Box or Main Disconnect Panel)
- LCD Monitor suspension stationary rails (if part of the order)
- Table base plate

NOTE: For the Tilting Table, it is critical to have the table base plate flushed in the concrete.

- **(For US only)**
System of Anchorage for Seismic Event (SAFE).

NOTE: Means of attachment (anchors, bolts, screws) necessary to anchor the pole of the SAFE are not delivered with the kit and should be provided under customer responsibility.



NOTICE

The mechanical interface design for the CMS fixation falls under the customers contractor responsibility, including the means for reducing potential air leakage to meet the room overpressure specification (if applicable).

2.2 Equipment Classifications

The following equipment classifications are applicable to the product.

Table 1-1:

Classification category	Equipment classification
Protection against electric shock	Class I  
Degree of protection against electric shock	 Type B applied parts Applied parts complying with the specified requirements of the IEC 60601-1 standard to provide protection against electric shock, particularly regarding allowable patient leakage current and patient auxiliary current include: <ul style="list-style-type: none"> • Mattress • Table accessories: shoulder rest, foot rest, digital head holder, table head extender, armboard with replacement pad, Quick strap, Clear-Vu arm support, Removable rails (sleeve), Head widener with pad/cushion, Width extender with pad/cushion, armboard with thick pad/cushion, rail extender and patient restraint strap with cushion.
Degree of protection against harmful ingress of water.	Ordinary equipment (enclosed equipment without protection against ingress of water, IPX0) except: <ul style="list-style-type: none"> • 3D Mouse (protected against spraying, IPX2), • Table, Smart Box, TSSC, Central touch screen (ITU), Table Panning Device (all protected against splashing, IPX4), • Footswitch (protected against the effects of permanent submersion, IPX8).
Method(s) of sterilization or disinfection recommended by the manufacturer.	<ul style="list-style-type: none"> • Sterilization: not applicable • Disinfection: refer to operator manual (Chapter Safety and Regulatory section Disinfection), recommended disinfecting agents.
Degree of safety of application in the presence of a flammable anesthetic mixture with air or with oxygen or nitrous oxide.	Equipment not suitable for use in the presence of a flammable anesthetic mixture with air or with oxygen or nitrous oxide. The system does not fulfill the requirements for AP/APG classification (IEC 60601-1).
Mode of operation	Continuous operation with intermittent loading.

Classification category	Equipment classification
Specification of Laser system	<p>Protection class: Class 1 (in accordance with IEC 60825-1 and certified devices according to 21 CFR).</p> <p style="text-align: center;">CLASS 1 LASER PRODUCT</p> <p>Location of Laser Aperture: Through front clear window of the scanner (see picture in Service Manual in Safety and Regulatory / Protection against laser radiation exposure)</p> <ul style="list-style-type: none"> • Laser Wavelength: 780 nm nom. • Pulse Duration: 0.5 µs nom. • Scanner Average Output Power: 20 µW max • Internal Laser Source Power: 1.8 mW max • Divergence: Horizontal <0.5 mrad Vertical 25 mrad nom. • Beam Out of Plane: <60 mm @ 10 m <p>The product integrates a laser product for localization purposes. The laser is mounted on the vehicles pole above 2 meters height and continuously rotates to scan its environment. It emits an infrared laser beam invisible for a human eye. The emitted beam poses no risk to a person's eyes or skin.</p>

The OR table mattress has antistatic properties. As it is connected to the ground and placed on a conductive tabletop, this provides an antistatic leakage path for the surgical configuration: it is mandatory to use the OR table mattress provided with the equipment.

The Discovery systems are compliant to electromagnetic compatibility IEC 60601-1-2 Edition 1 (1993) Edition 2.1 (2004) and Edition 3 (2007) standards for medical devices.



NOTICE

The system can only be installed in an anesthetizing location if that location is classified as Other Than Hazardous as per NFPA 70 clause 517.60



NOTICE

The product is not classified as AP, APG (Equipment not suitable for use in the presence of a flammable anaesthetic mixture with air or with oxygen or nitrous oxide).

2.3 Pre-Installation Checklist

GE Healthcare Site Readiness Checklist							
GEHC Global Order # :			Customer:				
GEHC On-site Representative :			MI Supplier:				
Name of customer reviewed with :			Lead Installer:				
GEHC PMI :			Phone Number:				
Target Site Prep Completion Date:			Helper:				
The customer is responsible for proper site preparation and site readiness regardless of any GEHC inspections/assessments.							
For Magnet Delivery: Ensure cryogen vents, power for the cooling system and exhaust fan system are installed and operational (0.7T, 1.5T & 3T) and chilled water supply is available 24x7 that meets system cooling equipment requirements.							
Inspection Date:							
Item #	GEHC Minimum Requirements	Storage: Is item ready?	Predict (Pre-ship)		Verify (Delivery): Is item ready?	Validate (Mech Install): Is item ready?	Comments If "N", please enter in comments or action plan
			Is this item ready?	Will item be ready?			
1	Equipment installation drawings must match actual room size and must meet clearance requirements. Deviations that meet installation requirements may be red-lined, if red-lining is allowed by local code. Seismic requirements are identified on construction drawings.	X					Chapter 2, Room Dimension Requirements
2	Delivery route to installation or storage area meets requirements and has been discussed and scheduled with the customer. Ensure floor protection is discussed, requirements identified, and will be available at time of delivery and installation.					X	Route Survey and Chapter 2, Floor Requirements
3	Rooms that will contain equipment, including storage areas, are dust free. Room security to prevent unauthorized access and theft has been discussed with customer. The customer is aware of these security issues, implications and responsibility.						
4	In room HVAC ductwork and units (in room) must be mechanically installed and dust free. Installation rooms appear to meet environmental conditions (see Further Definitions) and observed issues have been communicated to the customer. If being stored, storage area must meet PIM storage criteria.						
5	Ceiling grid is installed, Unistrut is located per the installation drawings, and permanent lighting is installed and operational.	X					Chapter 2, Ceiling Requirements and Chapter 5, Room Light Distribution
6	Floor finish is according to the GE specification and protection is installed Table baseplate installed and flush to the finished floor.						Chapter 2, Floor Requirements

7	Access to a working phone at the facility for emergency use, including magnet delivery.	X					
8	All walls primed (final coat not needed on Day 1), and counter tops that will support equipment must be installed. No dust-producing cabinetry work in installation areas.	X	Customer confirmation needed that lasers are accepted in the room. Walls are not reflective for lasers.				
9	Mechanical supplier has been provided with a set of equipment installation drawings for reference. For California, permitted construction drawings or PMI-specified installation drawings are required.	X	X	X	X		
10	Conduit/electrical cable ducting/dividers/access flooring installed, with the exception of surface-mounted floor ducting. Wiring to the main disconnect panel is installed and compliant with equipment installation drawings or pre-installation manual.	X	X	X	X		Chapter 5, Cable Channeling and Chapter 5, Power and Grounding
11	3rd party vendor equipment installed and wired						
12	RIRP value has been defined with the customer: 1278 or 1508 cm						Chapter 2, Section 2.1.1.1.1, Patient Room Length / Width
Issued Date: 7/9/07 Rev 11		GEHC Only: COE # (888) 799.7266 Option 5 (PMI Support)					

3 Delivery Requirements

3.1 Shipping Information

3.1.1 Product Shipping Information

Refer to the table below for the packaged parts dimensions and weights.

Table 1-2:

PRODUCT OR COMPONENT	DIMENSIONS MM (INCHES)			WEIGHT KILOGRAMS (POUNDS)	METHOD OF SHIPMENT
	Height	Length	Depth		
Gantry (shipping & moving): Full configuration	2060 (81.1)	1410 (55.5)	2890 (113.7)	1100 (2425)	On dolly, see Illustration 1-2
Gantry (moving): Left Top Handle removed and Right Top Handle inside	2060 (81.1)	1280 (50.4)	2890 (113.7)	1088 (2398)	
Gantry (moving): Short lifts configuration	2120 (83.5)	1280 (50.4)	2300 (90.5)	940 (2072)	
Gantry (moving): No dolly Configuration	2000 (78.7)	1260 (49.6)	2150 (84.6)	715 (1576)	For moving in hospital only
Gantry Dolly Packaging (Gantry full configuration (on dolly) + pallet)	2280 (89.8)	1560 (61.4)	3080 (121.3)	1250 (2755)	see Illustration 1-3
Bottom antico covers	480 (18.9)	900 (35.4)	1755 (69.1)	18.3 (40.3)	On pallet
Gantry Cover set	1250 (49.2)	1000 (39.4)	1200 (47.2)	29 (63.9)	On pallet
Gantry Pole and laser covers	485 (19.1)	710 (27.9)	1755 (69.1)	9.1 (20.1)	On pallet
Gantry Saucer technical covers				0.9 (1.98)	On pallet
(For US only) Pole of Gantry Anchorage System for Seismic Event	1550 (61)	1100 (43.3)	1100 (43.3)	180 (396.8)	On pallet
(For US only) Covers of Gantry Anchorage System for Seismic Event	1200 (47.2)	1200 (47.2)	800 (31.5)	25 (55.1)	On pallet
(For US only) Documentation of Gantry Anchorage System for Seismic Event					Cardbord box
Cable Management System	1465 (57.7)	923 (36.3)	1812 (71.3)	475 (1047)	On pallet. See Illustration 1-7
CMS Pallet Assembly	1750 (68.9)	1100 (43.3)	2000 (78.7)		see Illustration 1-8
Cable Management System short covers				8.4 (18.5)	On pallet
Fixation parts for Y cover	170 (6.7)	180 (7.1)	470 (18.5)	1.5 (3.3)	On pallet
C1 Cabinet	2110 (83)	1080 (42.5)	820 (32.3)	539 (1188)	In crate, on pallet. See Illustration 1-4
C2 Cabinet	2110 (83)	1080 (42.5)	820 (32.3)	338 (745)	In crate, on pallet. See Illustration 1-4

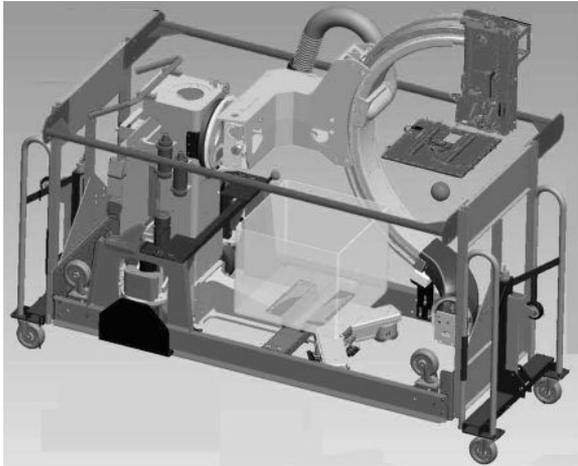
PRODUCT OR COMPONENT	DIMENSIONS MM (INCHES)			WEIGHT KILOGRAMS (POUNDS)	METHOD OF SHIPMENT
	Height	Length	Depth		
Tilting Table Base Assembly	1160 (45.7)	1000 (39.4)	2150 (84.6)	700 (1534)	On pallet. See Illustration 1-5
Tilting Table covers	600 (23.6)	940 (37)	940 (37)	50 (110)	On pallet, see Illustration 1-6
DL User parts	1040 (41)	860 (33.9)	680 (26.8)	100 (220)	On pallet
X-Ray tube housing	960 (37.7)	770 (30.3)	710 (28)	113 (250)	On pallet
Tube chiller	1200 (47.2)	555 (21.8)	610 (24)	120 (264.5)	
Detector Conditioner	550 (21.6)	470 (18.5)	350 (13.7)	17.6 (38.8)	On pallet
Cables					On pallet
Monitor susp. bridge	640 (25.2)	980 (38.6)	3060 (120.5)	210 (445)	On pallet
Monitor susp. rails	380 (15)	300 (12)	5960 (235)	160 (355)	On pallet
Fluoro UPS UL (*)	2100 (82.7)	890 (35)	1000 (39.4)	561 (1235)	On pallet
Fluoro UPS CE (*)	1750 (68.9)	890 (35)	1000 (39.4)	585 (1287)	On pallet
System cables group 1 (max length)	400 (15.7)	800 (31.5)	600 (23.6)	44.8 (98.7)	On pallet
System cables group 1 (std length)	400 (15.7)	800 (31.5)	600 (23.6)	54.6 (120.4)	On pallet
System cables group 3	400 (15.7)	800 (31.5)	600 (23.6)	36.1 (79.6)	On pallet
System cables UPS	300 (11.8)	600 (23.6)	400 (15.7)	13 (28.7)	On pallet
Gty Pole Cable set	200 (7.9)	400 (15.7)	400 (15.7)	1.2 (2.6)	On pallet
AGVC inner cable 3100	300 (11.8)	600 (23.6)	400 (15.7)	10 (22)	On pallet
AGVC inner cable 4100	300 (11.8)	600 (23.6)	400 (15.7)	10 (22)	On pallet
System cables group 5 (CMS)	400 (15.7)	800 (31.5)	600 (23.6)	76.2 (168)	On pallet
Large Display monitor	1050 (41.3)	1500 (59)	800 (31.4)	95 (209)	On pallet, see Illustration 1-9
Large Display cabinet	1600 (63)	950 (37.4)	750 (29.5)	192 (423)	On pallet, see Illustration 1-10
LD system suspension	1100 (43.3)	1100 (43.3)	1850 (72.8)	168 (370)	On pallet
LD system handle	400 (15.7)	950 (37.4)	1650 (65)	7 (15)	Cardbord box
LD suspension 36m harness	230 (9)	800 (34.5)	800 (34.5)	62 (134)	On pallet
LDM UPS	570 (22.4)	320 (12.6)	485 (19.1)	37.5 (82.7)	On pallet

(*) Estimated values

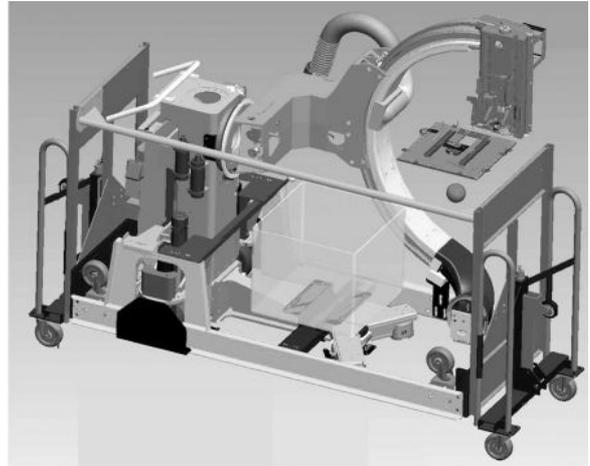
3.1.2 Detail Of System Shipping Information

3.1.2.1 Gantry on Shipping Dolly

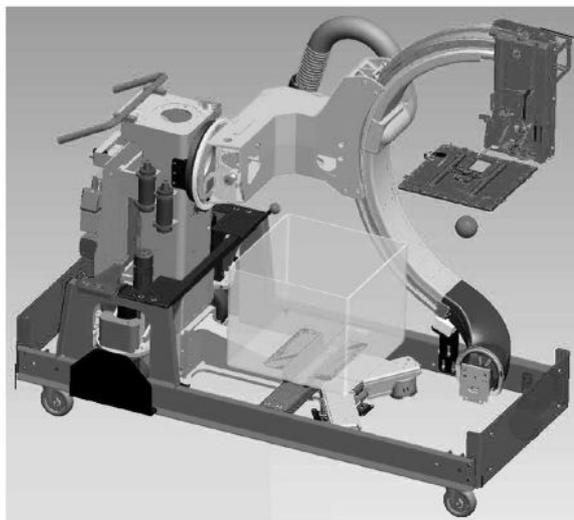
Illustration 1-2:



Full configuration : Right and Left Top handles outside



Left Top Handle removed and Right Top Handle inside



Short lifts configuration

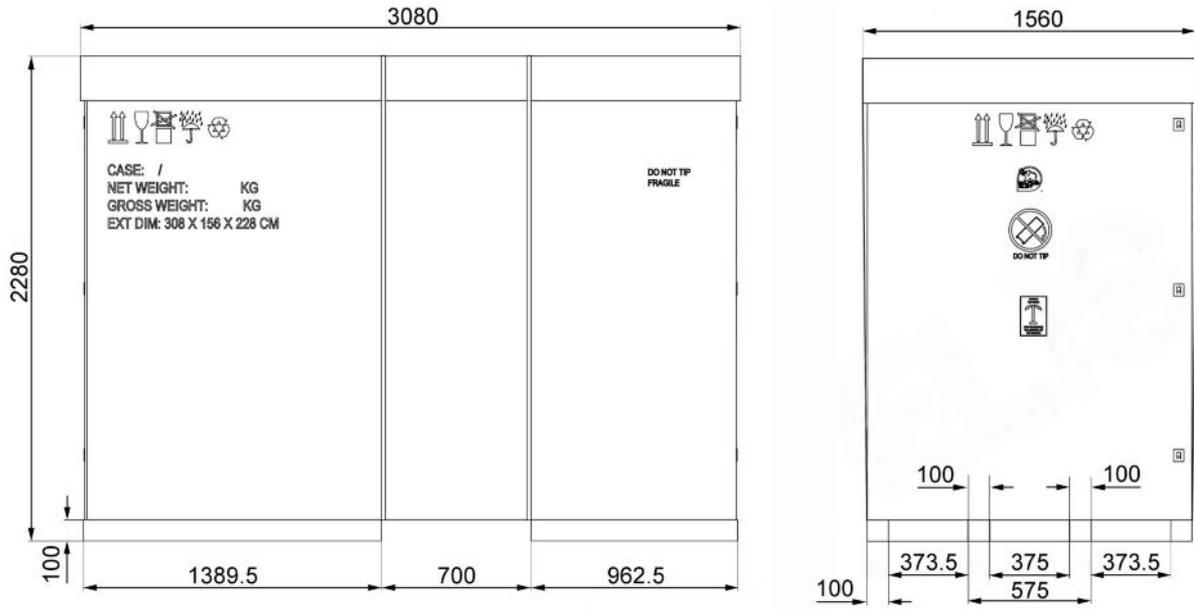


NOTICE

If moving the Gantry without shipping dolly, there is a risk of damaging the floor surface.

The gantry's dolly described above is packaged inside a specific transportation packaging as defined below:

Illustration 1-3:



3.1.2.2 C1 and C2 Cabinet on pallet

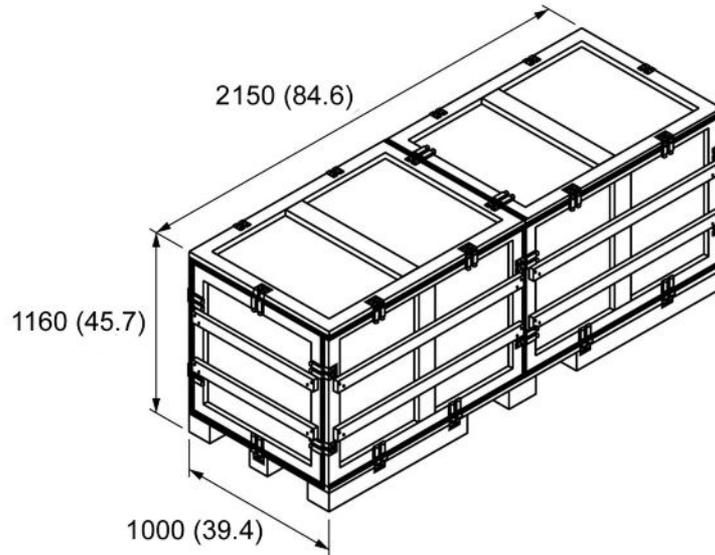
Illustration 1-4:



The shipping weight (crate and pallet) is 81kg (179 lbs).

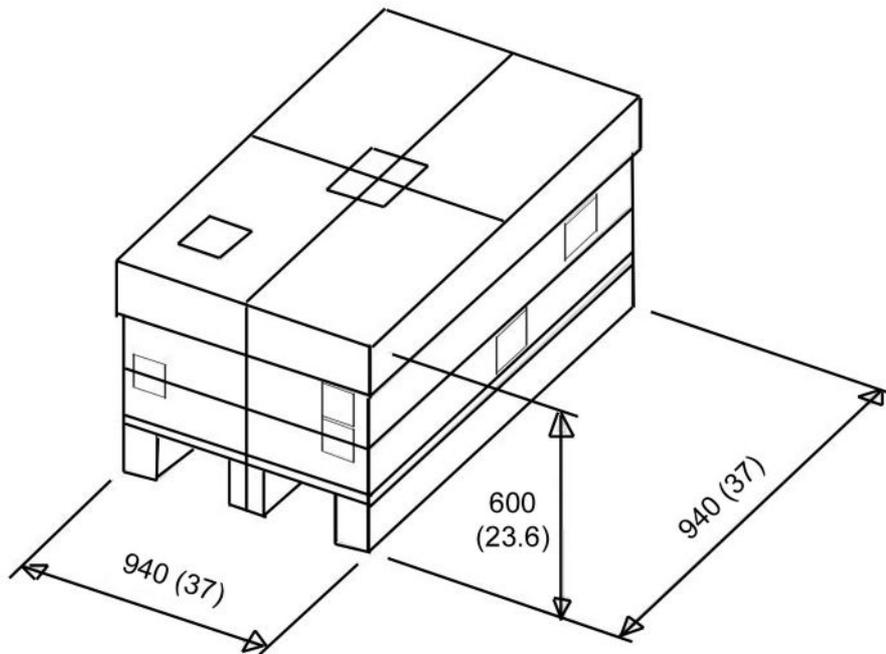
3.1.2.3 Tilting Table Shipment

Illustration 1-5: Tilting Table Base Assembly



All dimensions are in mm (inches)

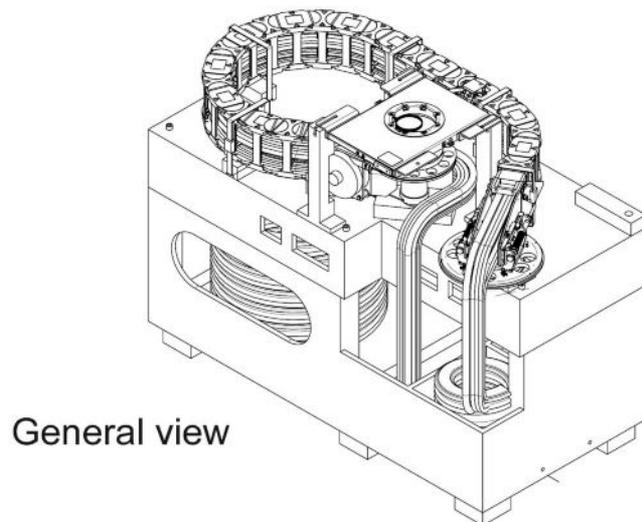
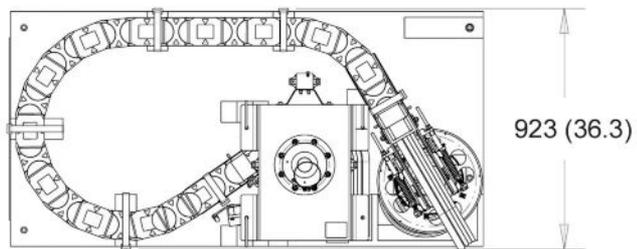
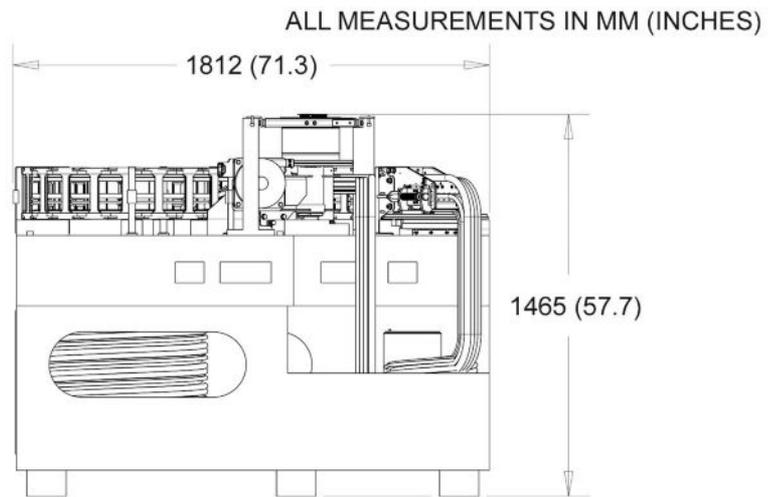
Illustration 1-6: Tilting Table covers



All dimensions are in mm (inches)

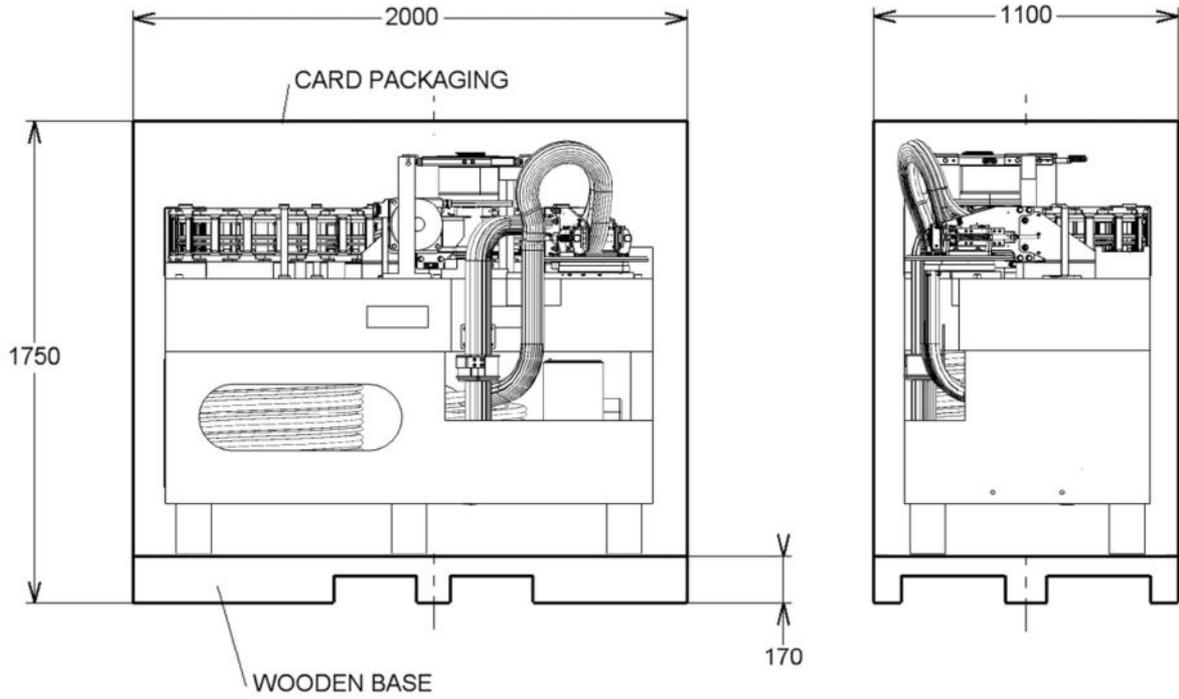
3.1.2.4 Cable Management System

Illustration 1-7:



The CMS Pallet Assembly described above is packaged inside a specific transportation packaging as defined below:

Illustration 1-8:



3.1.3 Large Display Option

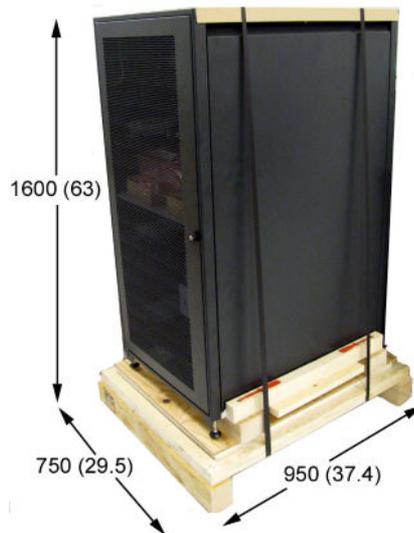
Illustration 1-9: Large Display Monitor on pallet

Measurements in mm (inches)



Illustration 1-10: Large Display cabinet on pallet

Measurements in mm (inches)



3.2 Door Size Requirements

Minimum door sizes also apply to hallways and elevators. For additional details, refer to [Shipping Information](#).

3.2.1 Door Height

The minimum door height (to accommodate Gantry on its dolly) is **2060 mm** (81.1 in).

If the height is limited to 2 m (79 in), you will need to move it in no dolly Configuration (refer to [Shipping Information](#)).

3.2.2 Door Width

The minimum door width needed (to accommodate the Gantry shipping dolly) is:

- 1410 mm (55.5 in) with protective side rail,
- 1280 mm (50.4 in) with Left Top Handle removed and Right Top Handle inside.

NOTE: Door widths are based on a *straight-in* approach requiring a 2.44 m (96 in) wide corridor. Calculations need to be made for accommodation of equipment through narrower corridors.

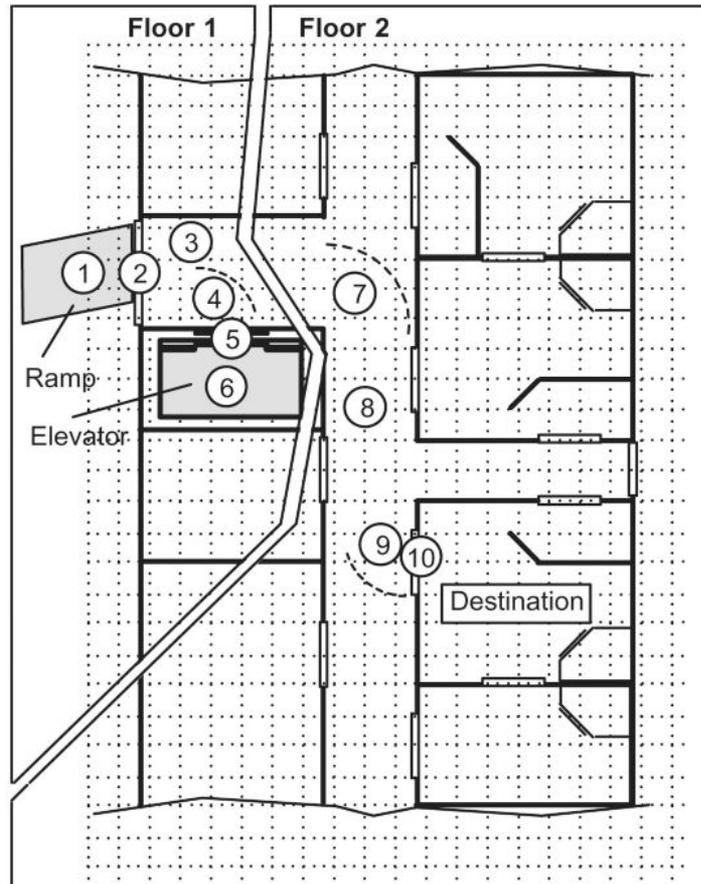
3.3 Route Survey

3.3.1 Step One – Sketch

Start preparing Route Survey by sketching a floor plan of the hospital or clinic which will receive the equipment. Include all areas on the delivery route from outside the building to destination. See [Illustration 1-11](#).

Reference Numbers: Numbers in circles refer to Route Survey data. The Route Survey is a form on which site data are listed (see [Section 3.3.2](#)).

Illustration 1-11:



3.3.2 Step Two – Survey

Data concerning the intended delivery route are recorded on the Route Survey in the following pages. Record all loading capacities, corridor widths, door openings, turning radii, flooring materials, elevator sizes, obstructions and so on.

3.3.3 Step Three – Check

Verify equipment can be transported via the route specified in [Section 3.3.1](#). Compare Route Survey compiled in [Section 3.3.2](#) to equipment specifications in this and other applicable pre-installation directions.

4 Product Storage and Handling Requirements

4.1 Product Storage and Handling limits



NOTICE
 Avoid extremes in temperatures

Table 1-4: Storage and Transport

Component	TEMPERATURE		HUMIDITY (see Note (2))		PRESSURE	
	MIN	MAX	MIN	MAX	MIN	MAX
All UPS units (see also Section 4.2)	-20°C (-4°F)	+40°C (+104°F)	10%	90%	70 kPa	103 kPa
All Monitors	-20°C (-4°F)	+55°C (+131°F)	10%	80%	70 kPa	103 kPa
All Injectors	-20°C (-4°F)	+60°C (+140°F)	10%	80%	70 kPa	106 kPa
All Footswitches	-20°C (-4°F)	+60°C (+140°F)	10%	90%	50 kPa	106 kPa
Cardiac Collimator	-20°C (-4°F)	+70°C (+158°F)	10%	95%	70 kPa	106 kPa
Diammentor	-20°C (-4°F)	+60°C (+140°F)	0%	85%	70 kPa	106 kPa
All other components	-40°C (-40°F)	+70°C (+158°F)	10%	95%	50 kPa	106 kPa

NOTE: (1)The detector should be stored at 10 to 40 °C (50 to 104 °F) and less than or equal to 90% RH in the plastic wrapped shipping box. (This should include two bags of desiccant as well). The lowest temperature (e.g. 10 °C (50 °F)) and humidity is preferable. If they are to be stored outside of their shipping box or in the inner shipping box without plastic wrapping they should be stored at 20 °C (68 °F) or less and 30% RH or less. In terms of transportation, do not expose to temperatures below -20 °C (-4 °F) **in its shipping box** for more than 15 hours. The detector will reach the ambient temperature after 20 to 25 hours. The detector should not be allowed to reach temperatures less than -10 °C (14 °F) or irreparable damage to the detectors scintillator will occur. Care must be taken when removing a detector from a shipping box. If the detector has been subject to cold temperatures for an extended period the detector in the box should be allowed to sit in the plastic wrapped box to reach room temperature. This will prevent condensation from occurring. Condensation on the detector can cause irreparable damage to the electronics. Storage 10 to 40 °C (50 to 104 °F); 10 to 90 % RH, 250 day storage transportation -20 to +60 °C (-4 to 140 °F) and 10 to 80% RH. The detector conditioner HEAT DRY 1 is shipped within GEMS packaging.

NOTE: (2) **Special Humidity Instructions:** The following parts can be shipped in standard shipment conditions with the requirement that on arrival to installation site, and before supplying power to these parts, they shall be kept in an environmental relative humidity equal or lower than their specified capability, and that's for a minimum of 48 hours.

- LDM UPS 110 V & 220 V (Maximum specified relative humidity capability = 90%)
- LDM Monitor (Maximum specified relative humidity capability = 90%)
- CVI Injector (Maximum specified relative humidity capability = 85%)
- Diamentor (Maximum specified relative humidity capability = 80%)
- 1MP MX191 LCD Monitor (Maximum specified relative humidity capability = 80%)



NOTICE

If the Fluoro UPS is stored for a period exceeding 3 months, the battery must be recharged periodically (time depending on storage temperature).

4.2 Fluoro & LDM UPS Shipment Duration

NOTE: In the case the material shipped will be subject to different temperature values during shipment, the maximum shipment duration can be calculated, depending on the duration of different temperature values application, and using values given in the tables above

4.2.1 Fluoro UPS (CE and UL)

The maximum shipment duration is given in the table for both Fluoro UPS CE and UL. It depends on the temperature to which the material will be subject during shipment. This limitation is due to the capability of batteries included in UPS.

Table 1-5: Maximum shipment duration for Fluoro UPS

Temperature	Shipment max duration (Weeks)
55°C (131°F)	2
50°C (122°F)	3
40°C (104°F)	6
30°C (86°F)	12

4.2.2 LDM UPS (220 V and 110 V)

The maximum shipment duration is given in the table for both LDM UPS 220 V and 110 V. It depends on the temperature to which the material will be subject during shipment. This limitation is due to the capability of batteries included in UPS.

Table 1-6: Maximum shipment duration for LDM UPS

Temperature	Shipment max duration (Weeks)
55°C (131°F)	4
50°C (122°F)	7

Temperature	Shipment max duration (Weeks)
40°C (104°F)	14
30°C (86°F)	25

4.3 Handling instructions

The packaging of the following components must be marked with special handling instructions for transport and storage:

- C1 Cabinet and C2 Cabinet:

Illustration 1-12:



- Gantry and Tilting Table:

Illustration 1-13:



Chapter 2 Equipment Requirements

1 System Components

1.1 Presentation of the 3 Rooms

The components shall be installed in three different rooms with different constraints: the Exam room, the Control room and the Technical room

1.1.1 Exam room

This is where the patient is installed. It contains the table on which the patient is lying, the table side user interface (TSUI) , the gantry and the control monitors.

1.1.2 Control room

This room contains user interface and control monitors. No intentional or unintentional contact with the patient shall occur with the patient in this area.

1.1.3 Technical room

This room contains electronic cabinets. No intentional or unintentional contact with the patient shall occur with the patient in this area. It is strongly recommended that this room is separated from the control room, in order to minimize risks of transmission of airborne pathogens. Its construction should be adapted to minimize ambient noise level; for example the use of glass doors instead of louvered hung doors

1.2 Description of the System

1.2.1 Core system

1.2.1.1 Gantry

Illustration 2-1: Gantry



Gantry including an X-Ray tube with a collimator and a Revolution Digital Detector.

1. AGV
2. Pivot and C-Arc
3. X-Ray tube with collimator
4. X-Ray Tube cover spacer

NOTE: Depending on country regulation (i.e. USA and New Zealand), the tube cover Spacer must be installed over the X-ray tube cover.

5. Revolution Digital detector:
 - 31 cm for Discovery™ IGS 730
 - 41 cm for Discovery™ IGS 740
6. Laser

7. Saucer
8. Cable Management System (CMS)
9. CMS cable entry point to ceiling
10. CMS mounting interface
11. Positioning targets

(For US only) As per California Building Code 2013 Section 1616A.1.18, a means to secure temporarily the gantry in place when the equipment is not in use for a period longer than 8 hours may be required by the enforcement agency of the hospital for the installation in California (US).

(For US only) The System of Anchorage for Seismic Event (SAFE) is used to secure the gantry. The SAFE is a mechanical device to be anchored in the exam room floor. It is designed for Discovery IGS systems.

Illustration 2-2: System of Anchorage for Seismic Event (For US only)



1.2.1.2 Patient table

Two configurations of tilting tables can be chosen: interventional and OR. The OR table is compliant with the EC60601-2-46 standard and shall be used with the OR configuration of the Discovery system.

Illustration 2-3: Patient Tilting Table

OR Table



GE Healthcare
OR



Interventional Table



1.2.1.3 User interfaces

Illustration 2-4: User interfaces



Table Side Control (TSSC) with contour filtering



Smart Box



Table Panning Device



Table Footswitch



AGV User Touchscreen



DLX Keypad



Remote Control



VCIM with DL Keyboard console

1.2.1.4 Monitors

Two 19" monitors are provided in the exam room. Two 19" monitors are provided in the control room.

1.2.1.5 Electronic cabinets

The following cabinets are provided with the system:

- The C1 cabinet, which contains the High Voltage generator, 2 PCs and IT components
- The C2 cabinet, which is in charge of the gantry and table control.
- The PDB (2 different model for UL and CE markets)
- The Fluoro UPS (2 different model for UL and CE markets) and a UPS I/F box and cables
- The EMI filter box (CE market only)
- The tube chiller and its autotransformer
- The detector conditioner

The Fluoro UPS solution allows the customer to complete an exam in fluoroscopy mode in case of mains power failure. The autonomy provided by this UPS is 5 minutes of fluoroscopy every 24 hours. GE is responsible for the installation & commissioning of the Fluoro UPS. An additional cabinet with EMI filter is also provided for CE market only.

1.2.2 Options

1.2.2.1 Large Display Monitor (LDM)

The system can integrate a Large Display solution to:

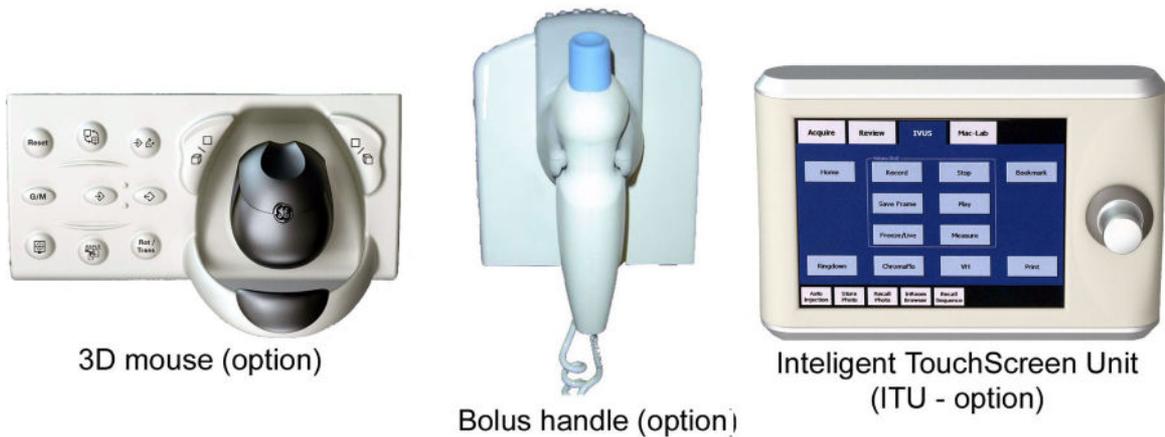
- See images larger at full IQ with greater flexibility in monitor distance in the procedure room
- Display multiple video images simultaneously at different sizes based on stage of workflow
- Conveniently switch operator defined video layouts at different points in procedure workflow

This option consists in a 58" color monitor and 2 backup 19" B&W monitors in the exam room, and a LDM cabinet and a UPS in the technical room.

1.2.2.2 User interfaces

- 3D mouse: For OR configuration, the 3D Mouse shall not to be installed on the table rail but shall be installed on the tableside cart (that can be in the patient vicinity).
- Bolus handle
- ITU (mandatory with the LDM option)

Illustration 2-5:



1.2.2.3 Monitors

Up to 3 additional 19" monitors can be installed in the control room.

1 additional 19" monitors can be installed in the exam room.

1.2.2.4 System Full UPS

In addition to 20 kVA UPS, a 150 kVA UPS can be provided to keep the system fully functional in case of mains power failure. Such an UPS will provide the customer with minimum 10 minutes of autonomy. Contact your local GEHC representative for more information.

1.2.2.5 Advantage Windows workstation (AW)

The AW workstation option is composed of a workstation, 1 or 2 monitors 19" flat panel in the Control Room. One optional monitor can be fixed on the suspension, or both AW screens can be displayed on the LDM if the option is present.

1.2.2.6 CENTRICITY CA1000 option



NOTICE

Full CA1000 compatibility with a Tilting table is achieved with CA1000 V2 Spa8. All earlier versions are not compatible with a Lab equipped with a Tilting table. This restriction is related to sites where the images created by a lab with the Tilting table will be viewed on a CA1000. There is no restriction for sites where the images are viewed on an AW or other vendor's workstation.

Refer to : *Centricity Cardiology CA 1000 V2.0 Preinstallation Guide* in the OEMs of the Discovery™ IGS 730, Discovery™ IGS 740 service manual.

1.2.2.7 Injectors

The injectors certified for use with the system are:

- ACIST CVI pedestal
- Medrad Avanta pedestal
- Medrad Mark 7 Arterion with 15ft/ 4.5m cable (XMC 915R).



WARNING

USE ONLY COMPATIBLE INJECTORS.



CAUTION

Table accessory rail load consideration

The maximum load per table accessory rail is 40 kg (88 lbs) at 150 mm (0.49 ft) (60 N.m or 44.25 ft/lbs). Therefore:

- Only light extra load not exceeding 5 kg (11 lbs) at 100 mm (0.33 ft) (i.e IV pole with its accessories, pressure head...) is authorized on the same table accessory rail as the injector.
- Never install injector and radiation protection on the same table accessory rail.
- Typical installation on the front table accessory rail is Smart box, Table Side System Control (TSSC), InnovaCentral/Touchscreen, Table panning device and cables support.

1.2.2.8 Volcano IVUS s5i Option

NOTE: For IVUS Rev 3 components, refer to [Volcano s5i Imaging System Integration in IGS Systems - Service Manual](#).

1.2.2.8.1 Purpose

Volcano is a manufacturer of intravascular ultrasound systems, which are used in the cath lab. GE has a strategic agreement with Volcano. GE will be selling and servicing some of the Volcano products.

1.2.2.8.2 Product Description

The Volcano s5i GE systems are dedicated equipments for IntraVascular UltraSound imaging (s5i GE) and Fractional Flow Reserve (FFR) evaluation, designed as add on equipment to Vascular Imaging systems. The s5i GE equipment is also capable of receiving patient data from the Discovery system.

The Volcano s5i GE Hardware configuration consists of:

- A computer (s5i GE CPU) connected to a monitor (s5i GE Monitor), both located in the Control Room,
- Patient Interface Modules as the s5i GE PIM, the PIMr for rotational catheters and Pimette for the FFR catheter, located in the Procedures Room,
- Various user interface units to control the system:
 - s5i GE Control Station or s5i GE Joystick,
 - s5i GE Touchpad Controller
 - s5i GE Keyboard & mouse pad installed in the Control Room,
- Optional Image Printer, located in the Control Room is available for the s5i GE system

The s5i GE integration to Discovery, involves further components :

- Innova Central (Touchscreen) as optional control station,
- Video Signal Switch to route Workstation and s5i GE video signals,
- Procedures Room monitor shared by Workstation (AW or Ca1000) and s5i GE operations,
- Network cable (s5i GE to Discovery system),
- Grounding cable (s5i GE Isolation Transformer to C1 Cabinet ground bar),

NOTE: For OR configuration, the s5i Control Station and s5i Joystick must be installed on a wheeled cart in the patient vicinity and not to be installed on the table rail.

Both these devices need additional protective ground connection.

Illustration 2-6: s5i GE Rev 2+ components



1.2.2.9 ECG Acquisition kit Option

The ECG Acquisition kit allows the connection of an ECG device (such as GE's MacLab, CardioLab or ComboLab) to the system. The ECG Acquisition kit consists of a Hubican and Physio modules and their associated cables; it is compatible with ECG devices installed in the exam room and in the control room.

1.2.2.10 Comfort accessories Cart

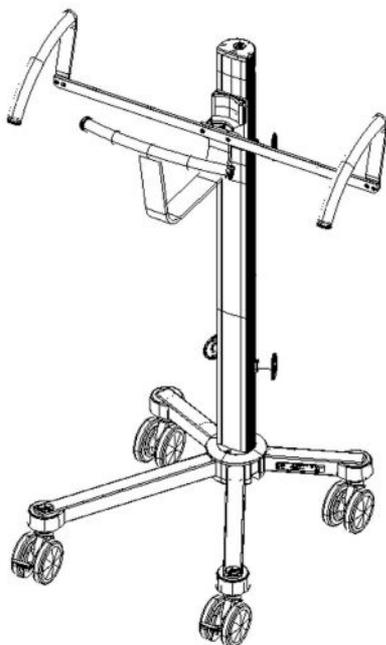
Illustration 2-7: Comfort Accessories Cart



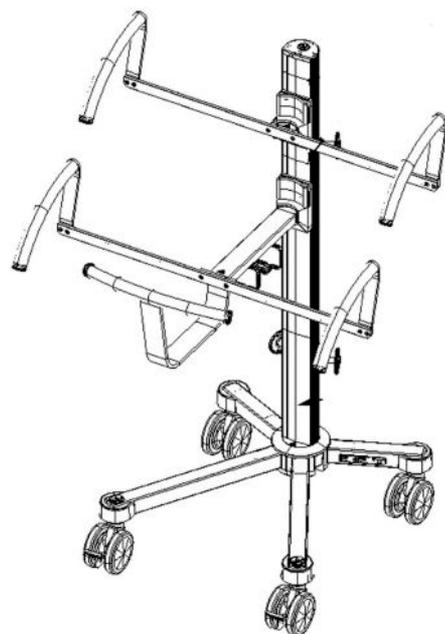
1.2.2.11 Tableside Cart

Illustration 2-8: Tableside Cart

One rail configuration



Two rails configuration



1.2.3 Suspension

GE provides as option several types of suspensions; alternatively, the customer can install the suspension of his choice (“open suspension”), provided all requirements in the paragraph [Section 1.2.3.3](#) are met.



NOTICE

In the OR configuration of the system, it is mandatory to use a suspension that is compatible with the OR environmental constraints. The suspension provided by GE are not compatible with the OR environment and shall not be used.

1.2.3.1 LCD monitors suspension (without LDM):

The system can be equipped with a suspension for 4 LCD monitors or 6 LCD monitors.

The common type of this suspension is an XT inboard monitor bridge. A monitor frame support receiving 4 or 6 LCD monitors (fixed monitor suspension).

These suspensions are delivered and installed by GE.

1.2.3.2 With the LDM option

For the systems with the LDM option, a specific suspension can be provided, the two backup monitors are mounted on the back of this suspension for faster access in case of failure. For the second LDM, a wall mounting kit can be provided.

1.2.3.3 Open suspension

For Discovery IGS systems product with Open Suspension Option, the overhead monitor suspension shall be installed by strictly following the GEHC installation instructions. The manufacturer specifically disclaims any and all liability arising out of or relating to the use or performance of the monitor suspension (including cables), including, without limitation, any liability or claims relating to patient injury, death, or the reliability of such monitors suspension(s).

Where a stand-alone monitor suspension(s) is supplied by the Purchaser of the Discovery System, the stand-alone monitors suspension(s) shall comply with the applicable Regulation enforced in the country (eg., when installed in an European Community country, the associated monitors suspension(s) shall be CE marked).

The association of Innova product delivered with Open Suspension Option and the purchaser’s (customer) monitors suspension(s), is not covered by Discovery product certification.



CAUTION

The Discovery System delivered with the Open Monitor Suspension option cannot presume on the mechanical constraints of non-GE monitor(s) suspension(s) introduced in the system.

For further details on Open monitor suspension Pre-installation, please refer to Regulatory Requirements and Pre-Installation Instructions contained in Open Monitor Suspensions – Service Instruction for Installation, 5442831-x-1EN contained in the Service manual



CAUTION

Avoiding collision between gantry and third party equipment is under customer responsibilities.

Depending of the height of suspended elements of the open monitor suspension, collision must be avoided with the gantry components see Illustration *Potential collision between laser, detector lift and mast/chain* in [Ceiling Requirements](#).

1.2.4 Components location and characteristics

Table 2-1:

PRODUCT OR COMPONENT	Number of components in:			NET WEIGHT KG (LBS)	DIMENSIONS MM (INCHES) WIDTH x DEPTH x HEIGHT	LOAD ON THE FLOOR kg/m ²
	Exam room	Control room	Technical room			
Gantry	1			Distributed load: 990 (2183) for Discovery™ IGS 730 and 1000 (2205) for Discovery™ IGS 740 Rear isolated load: 350 (772) Front isolated load: 110 (243)	See Illustrations <i>GANTRY DIMENSIONS</i> : • Side view • Top view • Front view in Dimension Drawings	Distributed load: 990 (202.7) for Discovery™ IGS 730 and 1000 (204.8) for Discovery™ IGS 740 Rear isolated load : 5.5 MPa Front isolated load : 8.1 MPa Refer to Illustration 2-9
System of Anchorage for Seismic Event (SAFE)	1				See SAFE Dimensions in Dimension Drawings	
Patient Table	1			581 (1281) See note 1	See Patient Table Dimensions in Dimension Drawings	2000 (409)
Footswitch	1					
B&W Monitors	2	1			See B&W and Color Monitors Dimensions in Dimension Drawings	
Smart Box	1			6 (13)		
TSSC	1			6 (13)		
TPD	1					
VCIM & X-ray handle		1		1 (2)	450 (17.7) x 150 (5.9) x 50 (2)	
DLX Keypad		1		1 (2)	see DLX Keypad Dimensions in Dimension Drawings	
DL Monitor		1		7.2 (16)	see DL Monitor in Dimension Drawings	
Keyboard and mouse		1				

PRODUCT OR COMPONENT	Number of components in:			NET WEIGHT KG (LBS)	DIMENSIONS MM (INCHES) WIDTH x DEPTH x HEIGHT	LOAD ON THE FLOOR kg/m ²
	Exam room	Control room	Technical room			
C2 Cabinet			1	257 (567)	See <i>C2 Cabinet Dimensions</i> in Dimension Drawings	401 (82)
C1 Cabinet			1	458 (1010)	See <i>C1 Cabinet Dimensions</i> in Dimension Drawings	769 (157)
Fluoro UPS UL			1	530 (1169)	see <i>Fluoro UPS UL Dimensions</i> in Dimension Drawings	975 (200)
Fluoro UPS CE				480 (1059)	see <i>Fluoro UPS CE Dimensions</i> in Dimension Drawings	883 (181)
Fluoro UPS IF box			1	4 (9)	see <i>UPS IF Box (Optional) Dimensions</i> in Dimension Drawings	
EMI filter box (CE only)			1	40 (89)	see <i>EMI Filter Box (CE Only) Dimensions</i> in Dimension Drawings	667
PDB UL			1	148 (326)	see <i>PDB UL Dimensions</i> in Dimension Drawings	
PDB CE				110 (242)	see <i>PDB CE Dimensions</i> in Dimension Drawings	
Tube chiller				120 (265)	see <i>Tube Chiller Floor Space Diagram & Dimensions</i> in Dimension Drawings	424 (87)
Autotransformer (Tube chiller)			1	30 (66)	see <i>Tube Chiller Floor Space Diagram & Dimensions</i> in Dimension Drawings	312.50 (64)
Detector Conditioner			1	14.6 (32)	See <i>Detector Conditioner Orientation & Dimensions</i> in Dimension Drawings	
OPTIONS						
B&W Monitors	x	x			See <i>B&W and Color Monitors Dimensions</i> in Dimension Drawings	
Smart Box	1 in Exam room or 1 in control room			6 (13)		
TSSC	1 in Exam room or 1 in control room			6 (13)		
Bolus handle	1					
ITU	1			3.8 (8)		
ECG Acquisition Device Modules						
Hubican		1			see <i>ECG Acquisition Device Modules Dimensions</i> in Dimension Drawings	

PRODUCT OR COMPONENT	Number of components in:			NET WEIGHT KG (LBS)	DIMENSIONS MM (INCHES) WIDTH x DEPTH x HEIGHT	LOAD ON THE FLOOR kg/m ²
	Exam room	Control room	Technical room			
Physio box	1				see <i>ECG Acquisition Device Modules Dimensions</i> in Dimension Drawings	
LDM option						
LD monitor	Up to 2			47 (103)	1319 (52) x 146 (6) x 776 (31)	
LD cabinet			1	115 (254)	see <i>Large Display Cabinet (Optional) Dimensions</i> in Dimension Drawings	268
LDM UPS			1	36 (79)	see <i>LDM UPS Dimensions</i> in Dimension Drawings	
LDM suspension boom and frame	1			121 (267)	see <i>Large Display Suspension (Optional) Dimensions</i> in Dimension Drawings	
LD suspension precabled (self weight without monitor and accessories given)	1			215 (474)	see <i>Large Display Suspension (Optional) Dimensions</i> in Dimension Drawings	
AW option						
AW workstation		1				
Monitors	optional	1 or 2				
s5i GE Rev 2+ Option						
IVUS workstation		1		24 (53)		
Monitors	optional	1		9 (20)		
PIM	1			1.5 (3)		
Keyboard and mouse pad		1				
Touchpad controller	1					
Control station or joystick	1			3.6 (8)		
Printer		Optional		6 (13)		
IVUS Rev 3 Option						
Refer to Volcano s5i Imaging System Integration in IGS Systems - Service Manual						

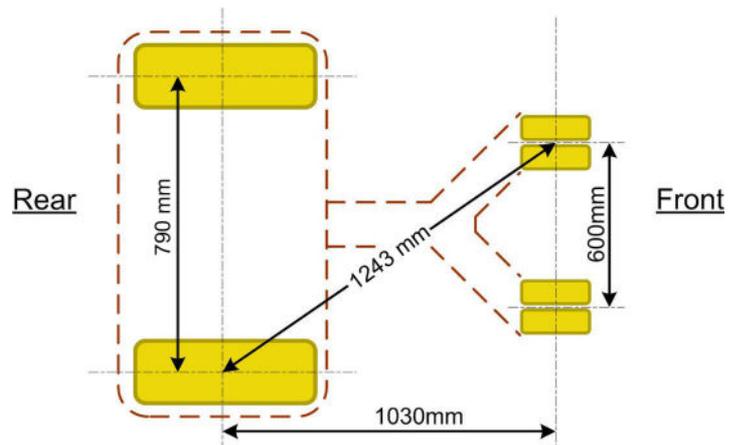
NOTE: (1) The weight 581 kg includes 524 Kg (Table weight) + 17 Kg (Table Top) + 40 Kg (Covers). The patient weight is not included.



WARNING

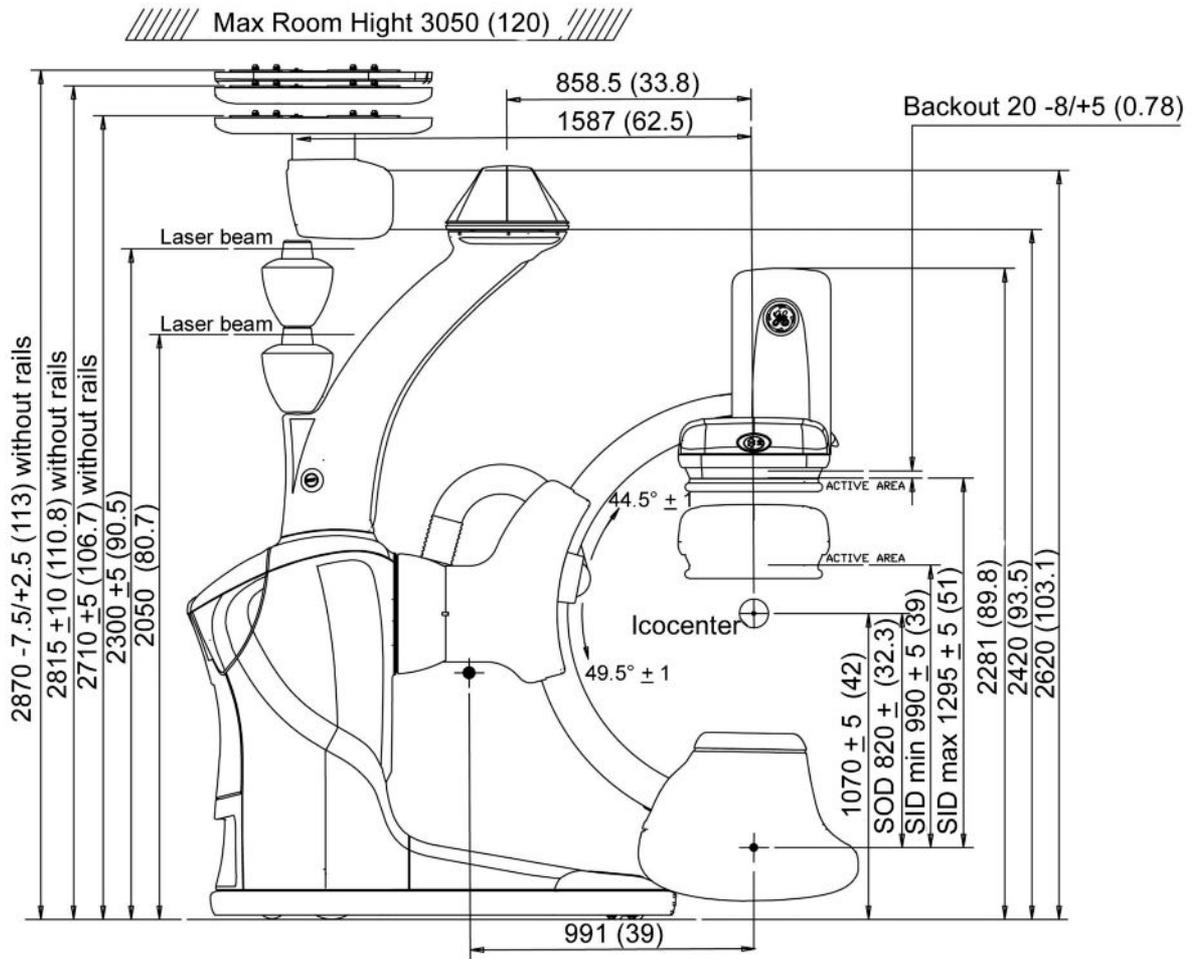
THE COMPONENTS IDENTIFIED AS TO BE INSTALLED IN THE TECHNICAL ROOM ARE NOT CERTIFIED FOR USE OUTSIDE OF THIS AREA. IT IS MANDATORY TO INSTALL THEM IN THE TECHNICAL ROOM.

Illustration 2-9: AGV occupied area



1.3 Dimension Drawings

Illustration 2-10: Gantry Side View Dimensions



ALL MEASUREMENTS IN MM (INCHES)

Illustration 2-11: Gantry Front view Dimensions

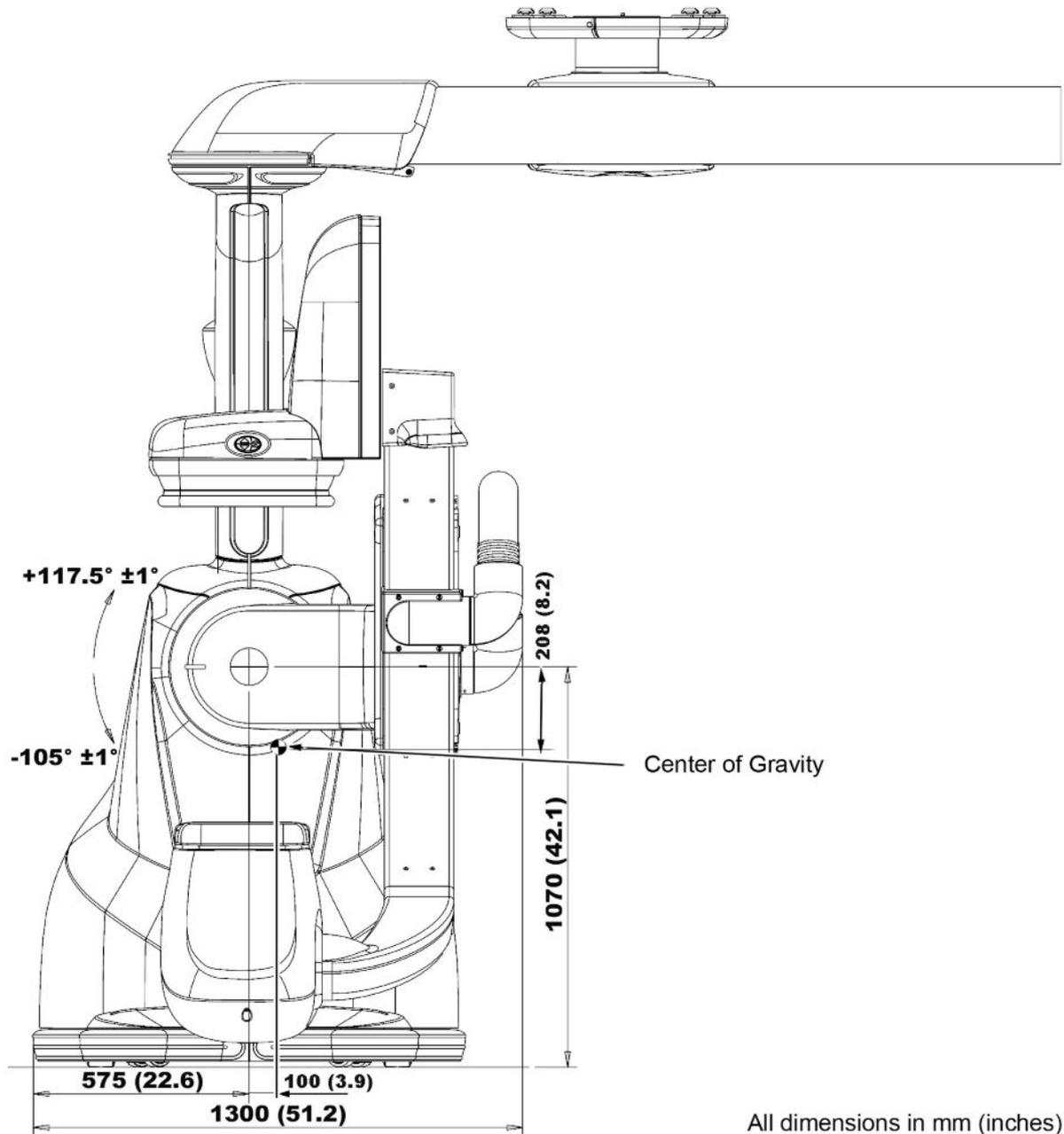


Illustration 2-12: Gantry Top view Dimensions

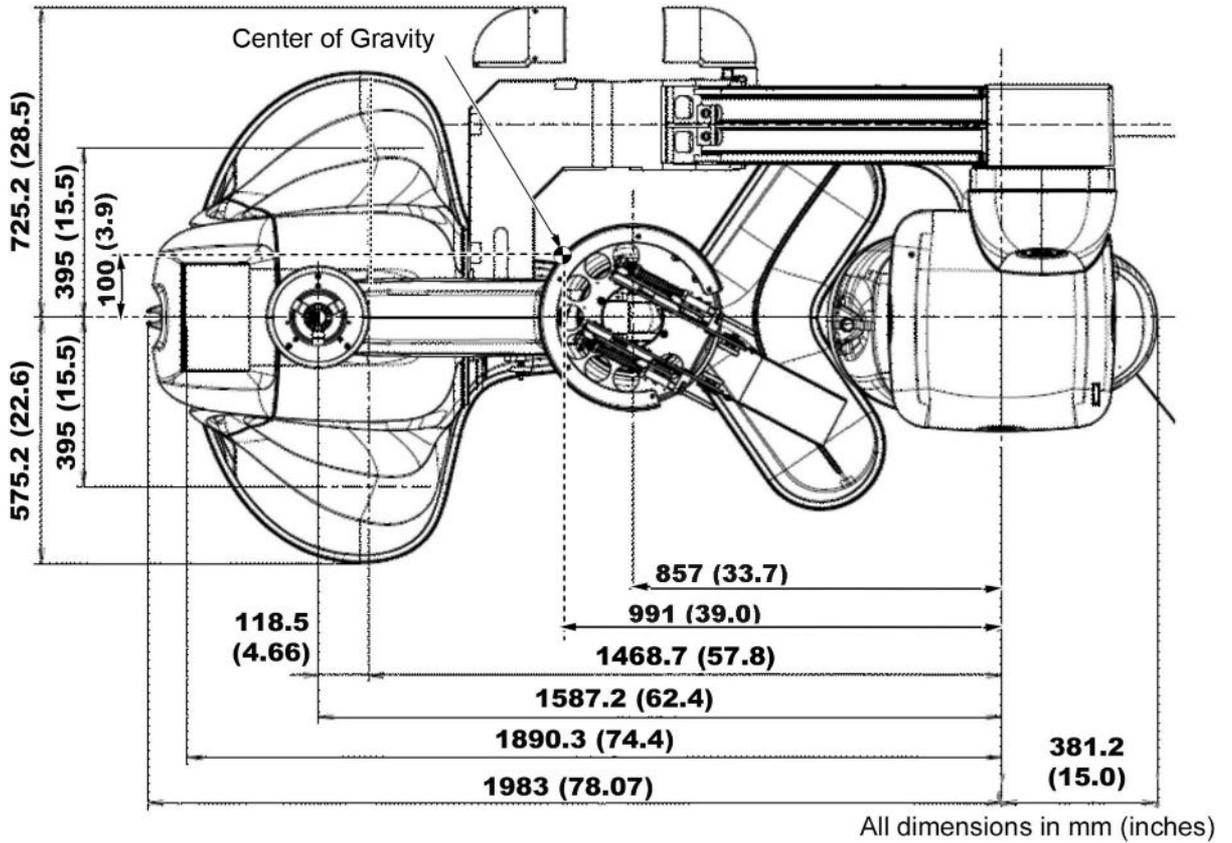
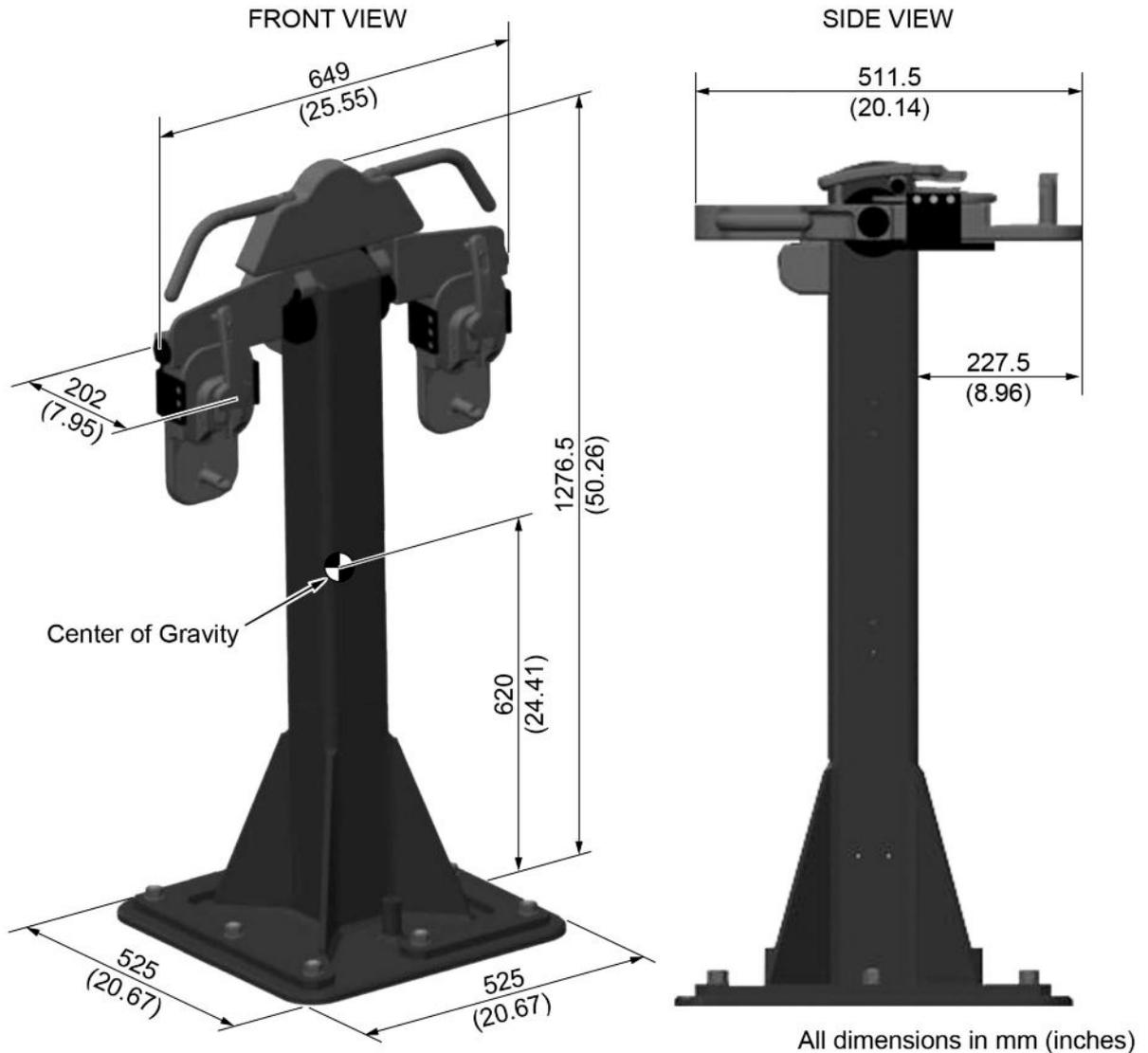


Illustration 2-13: Laser Target Reflector Dimensions



Illustration 2-14: SAFE Dimensions (For US only)



NOTE: The center of gravity (COG) is located on the central vertical axis of the post.

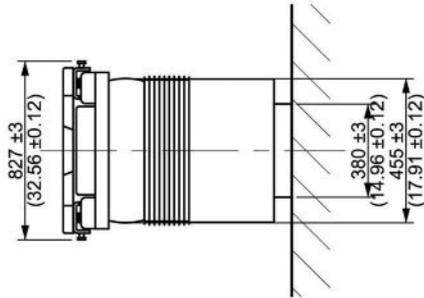
Illustration 2-15: SAFE Covers Footprint (For US only)



Illustration 2-16: Patient Table Dimensions

FRONT VIEW
 (HEAD END)

All dimensions are in mm (inches)



NOTE

The table dimensions are correct for the position (longi=0, lat=0, lift=0, tilt=0, rot=0).

SIDE VIEW

TOP VIEW

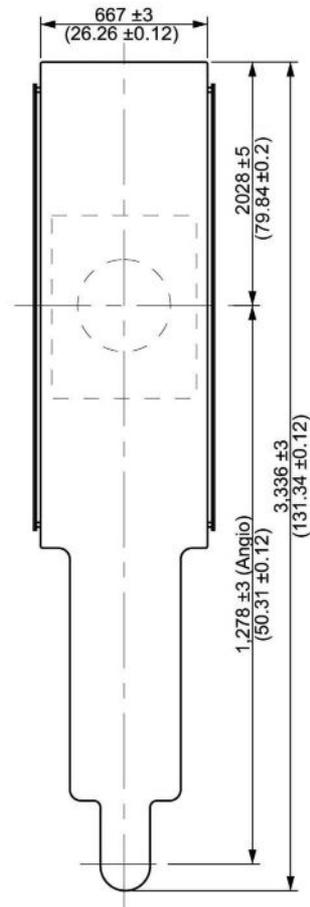
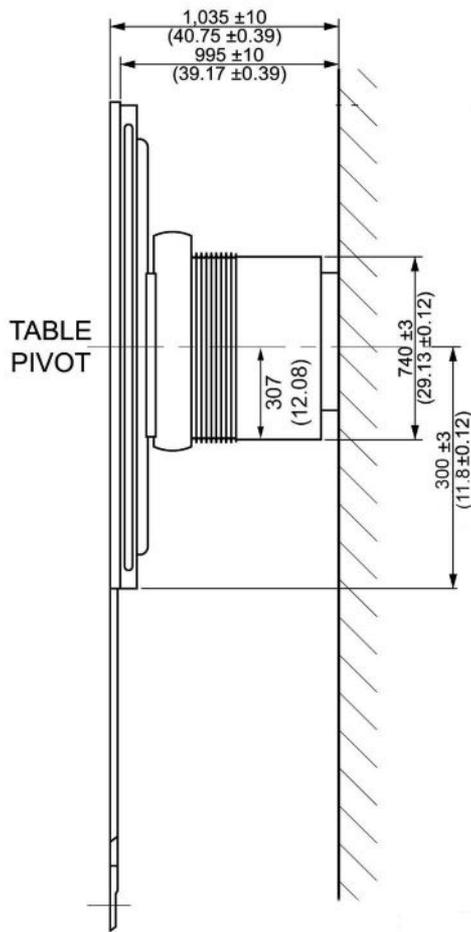
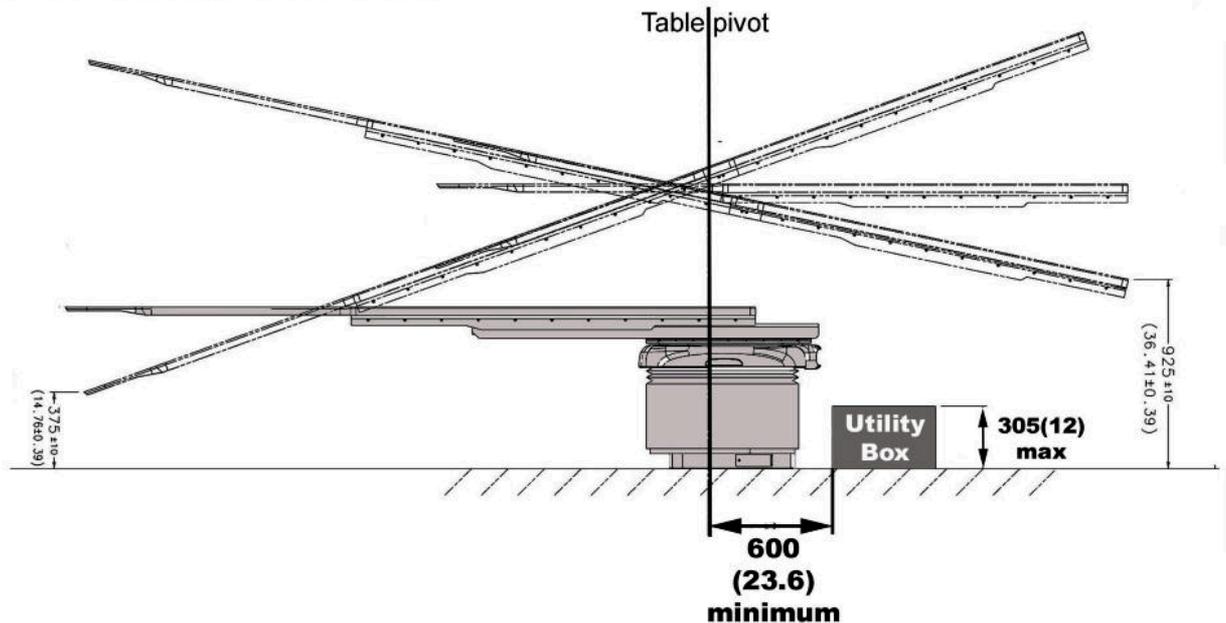


Illustration 2-17: Utility Box Outlets Dimensions

All measurements are in mm (inches)



NOTE: The minimum distance from table pivot to the medical Utility Box is 600 mm and the maximum dimensions of the medical Utility Box are :

- height = 305 mm
- width = 250 mm
- length = 500 mm



NOTICE

The Utility box under the table is not recommended for the surgical configuration.



NOTICE

It is forbidden to place or install objects under the table towards head end that could interfere with the AGV motion.

Illustration 2-18: Patient Table Head Extender Dimensions

All measurements are in mm (inches)
Based on drawing 5262690ADW

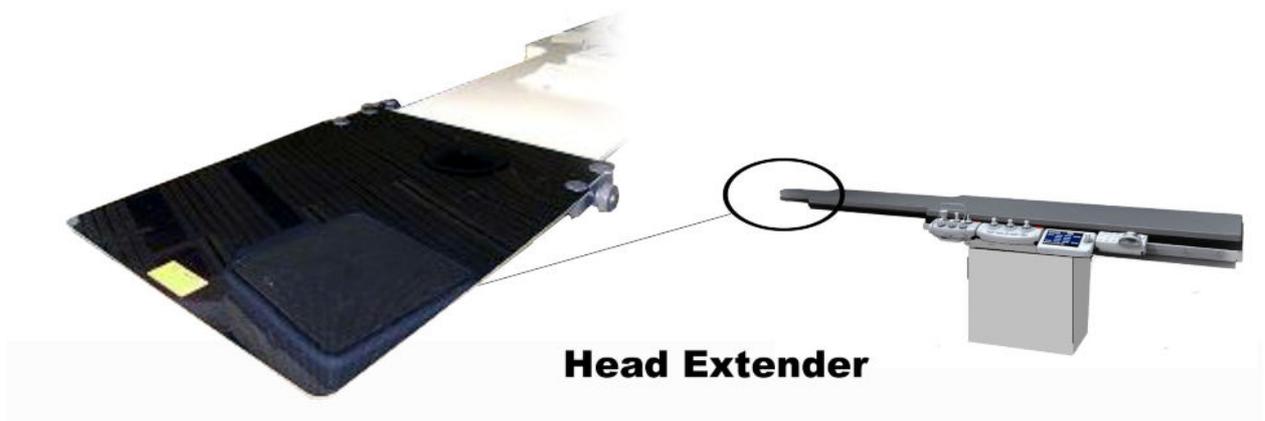
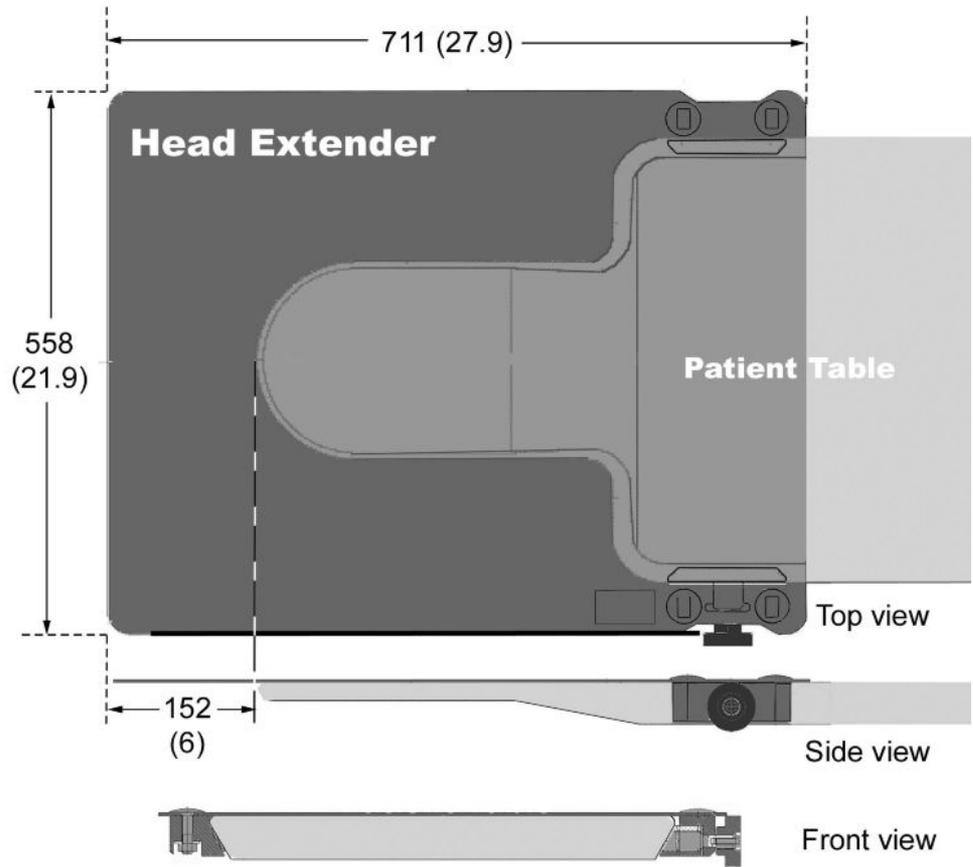


Illustration 2-19: C1 and C2 Cabinet Dimensions

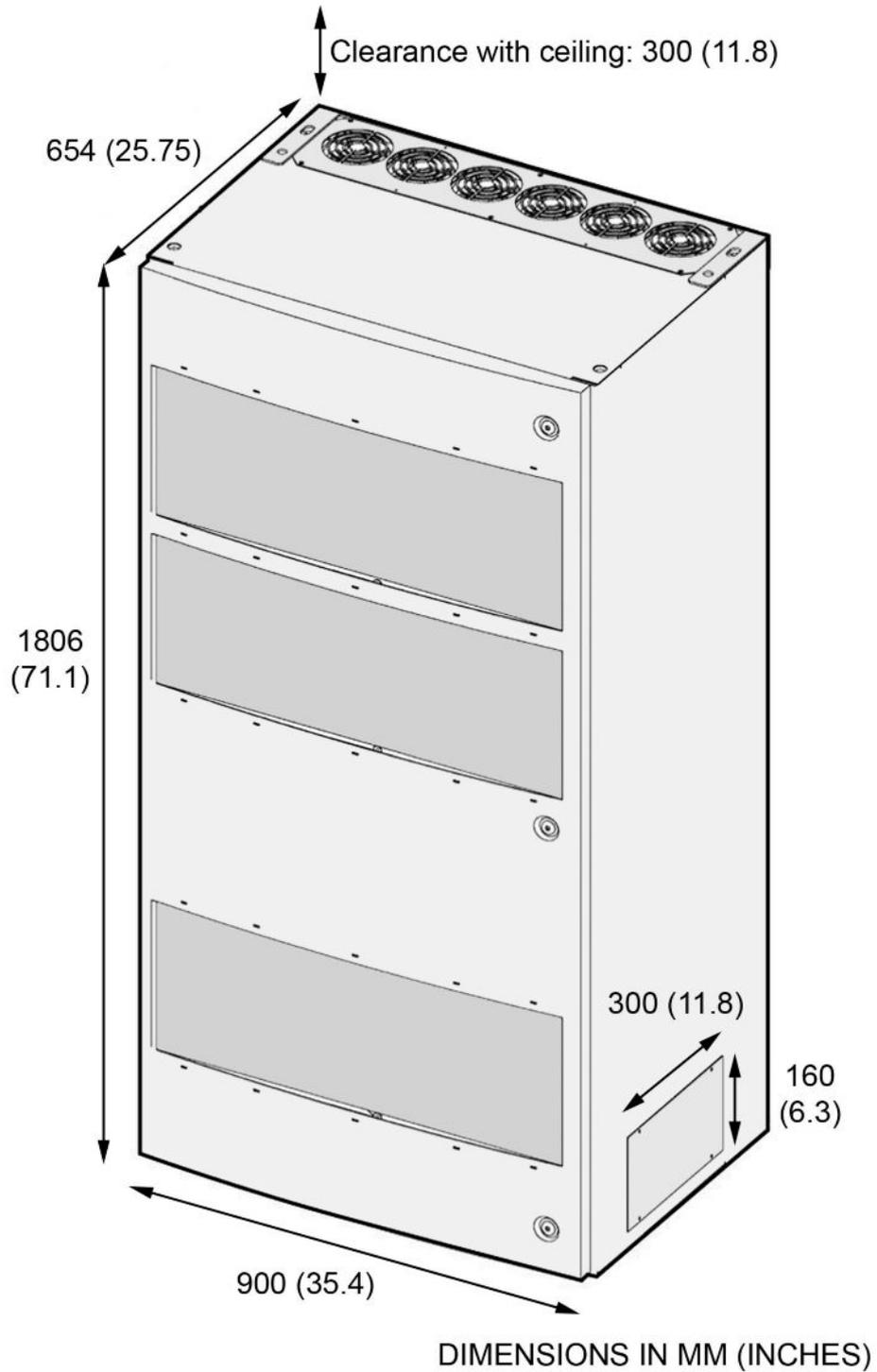
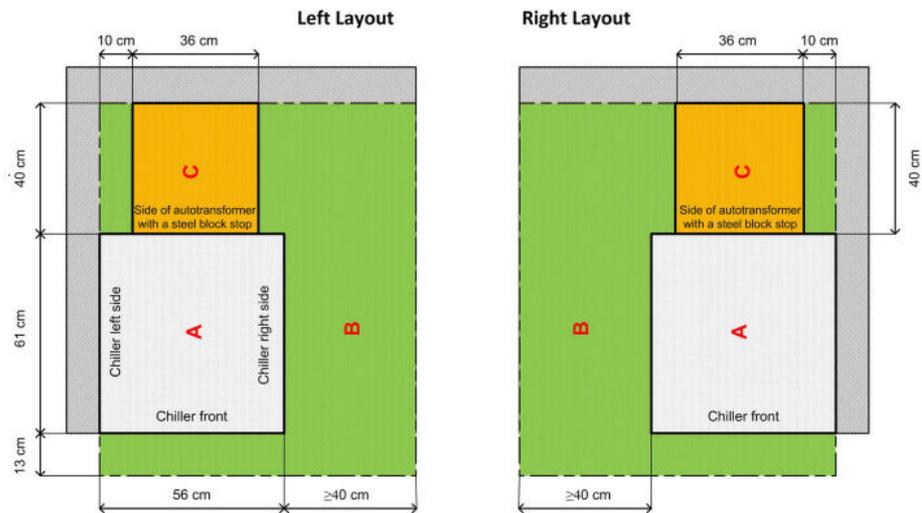


Illustration 2-20: Tube Chiller Floor Space Diagram & Dimensions



NOTICE

The chiller shall be no more than 5 m (15 feet) below or 8 m (25 feet) above the X-ray tube

NOTE: Required floor space depends on ambient room temperatures. When in doubt, allow for maximum floor space.

Illustration 2-21: Detector Conditioner Orientation & Dimensions

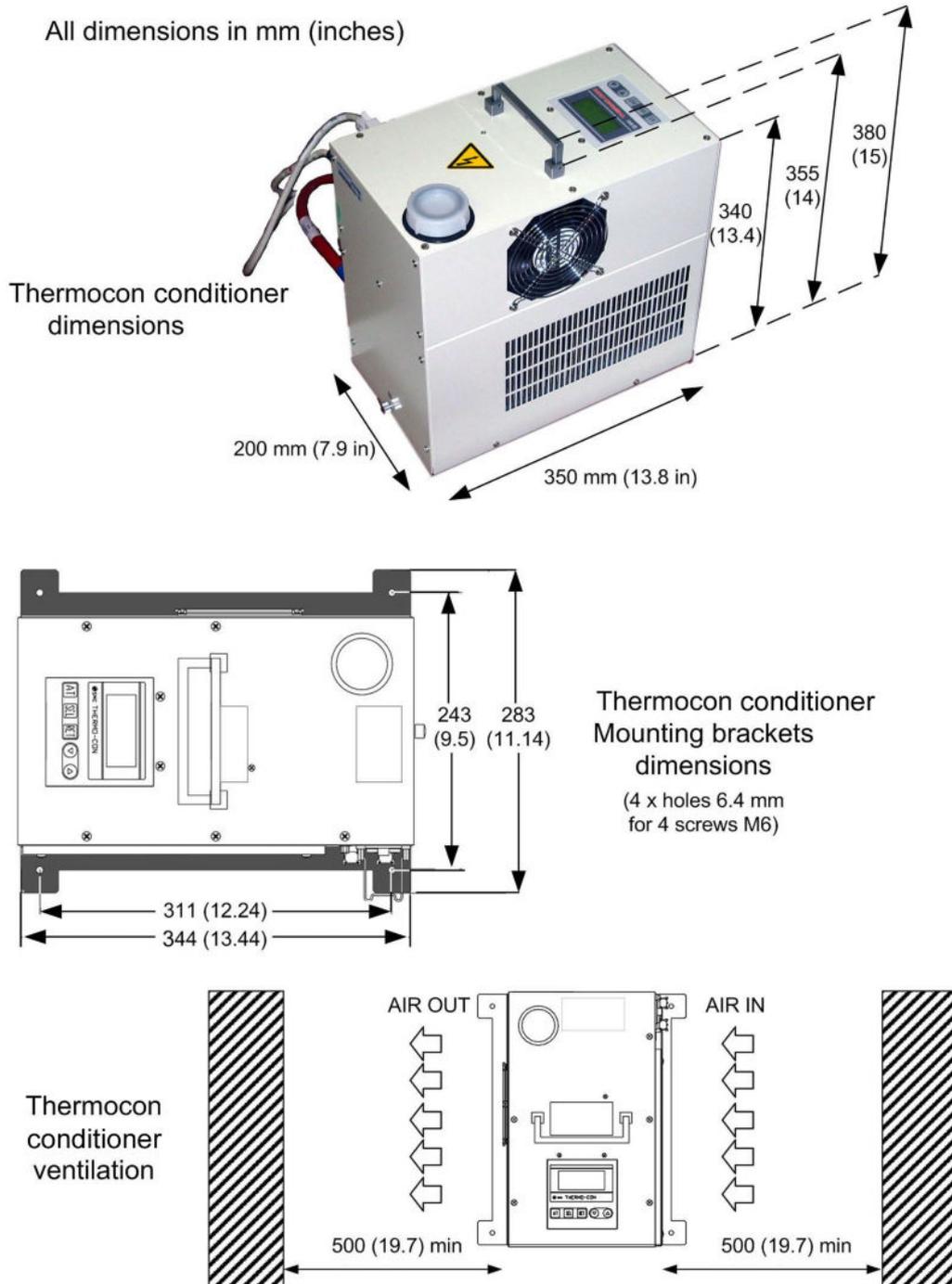


Illustration 2-22: Fluoro UPS UL Dimensions

All dimensions are in mm (inches)

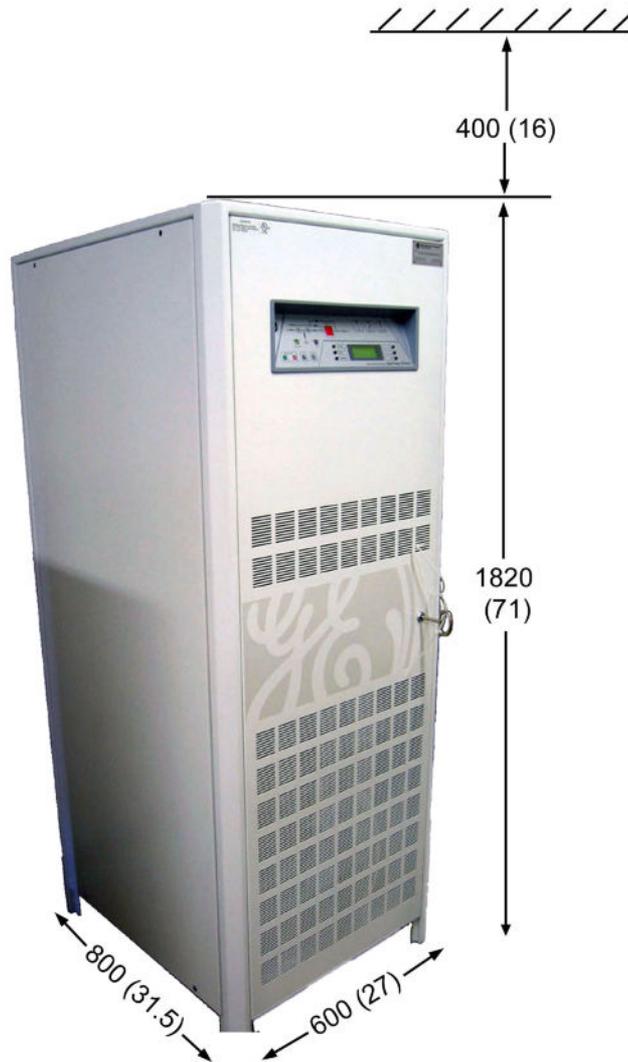


Illustration 2-23: Fluoro UPS CE Dimensions



Illustration 2-24: UPS IF Box Dimensions

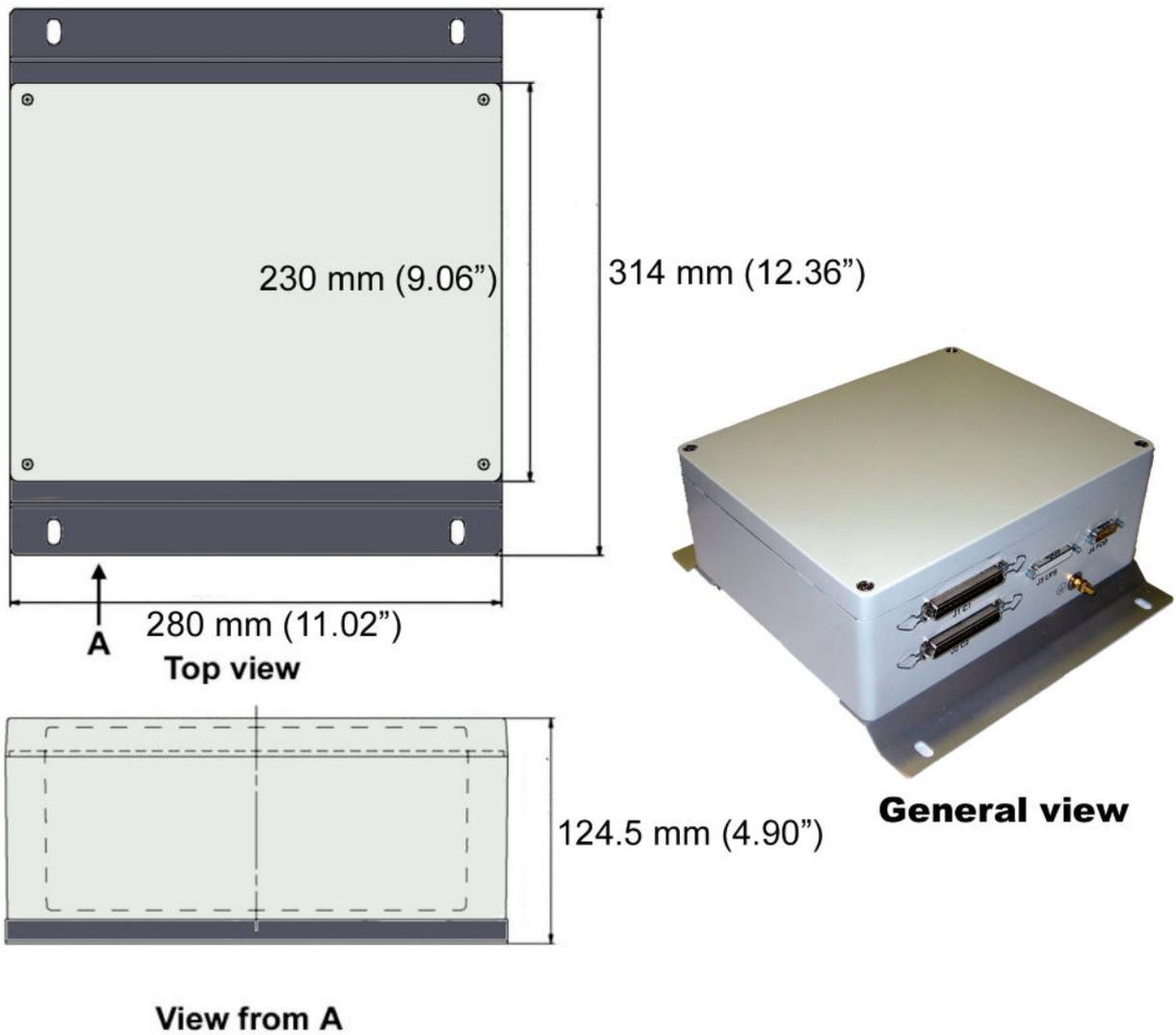


Illustration 2-25: EMI Filter Box (CE Only) Dimensions



Illustration 2-26: PDB UL Dimensions



ALL MEASUREMENTS IN MM (INCHES)

Illustration 2-27: PDB CE Dimensions



ALL MEASUREMENTS IN MM (INCHES)

Illustration 2-28: DL Monitor

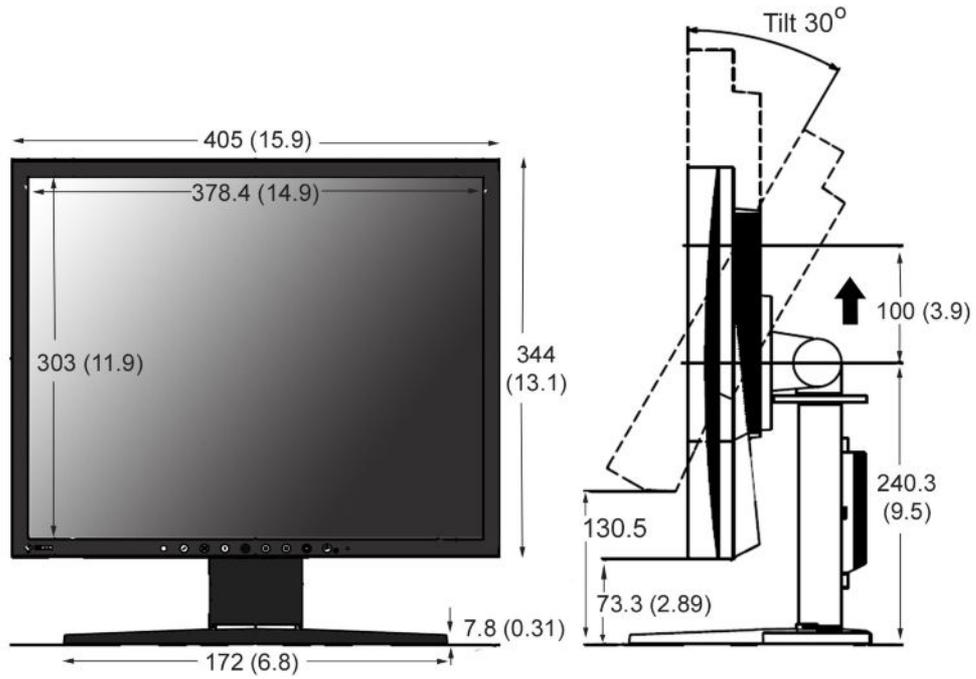


Illustration 2-29: B&W and Color Monitors Dimensions

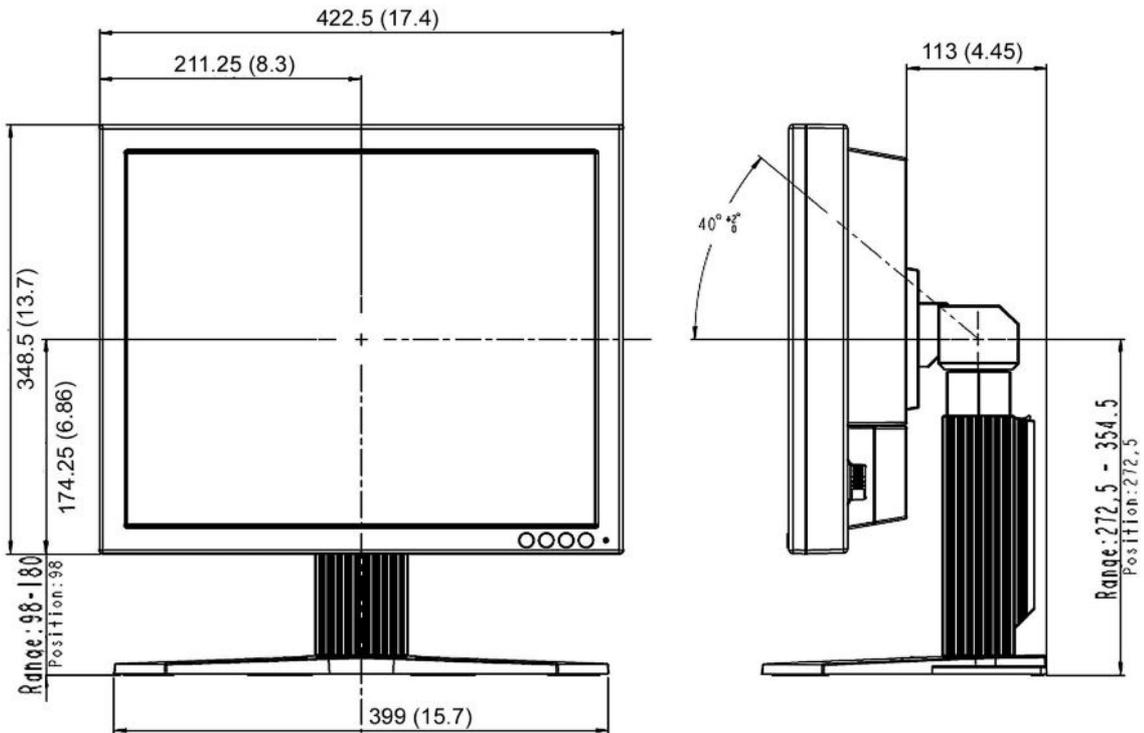
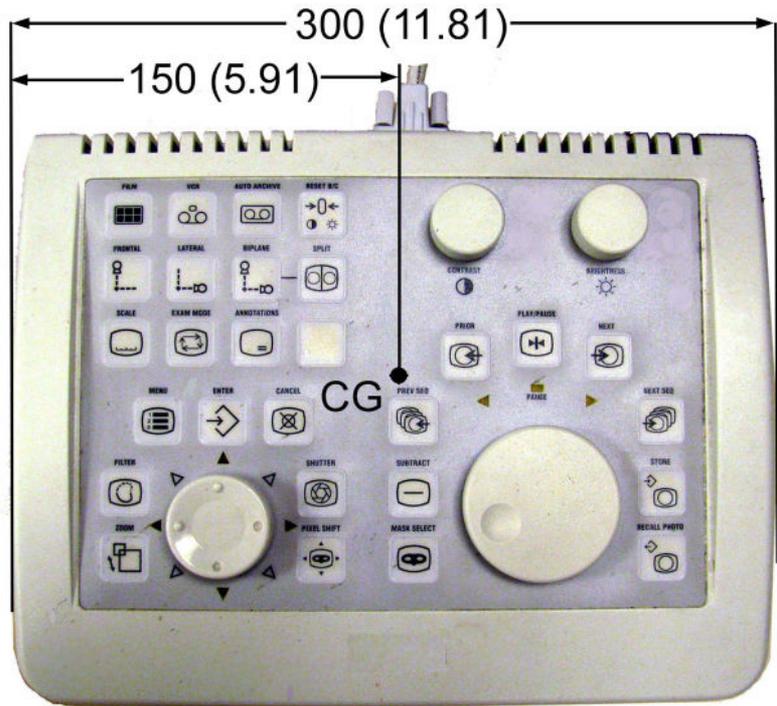
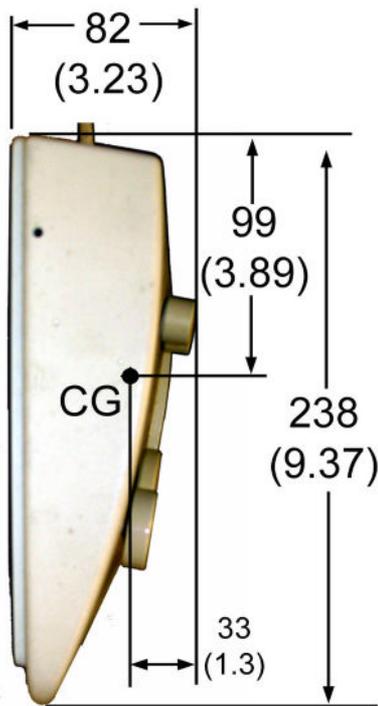


Illustration 2-30: DLX Keypad Dimensions



All dimensions are in mm (inches)

Illustration 2-31: Large Display Cabinet (Optional) Dimensions



Illustration 2-32: LDM UPS Dimensions



Illustration 2-33: Large Display Suspension (Optional) Dimensions

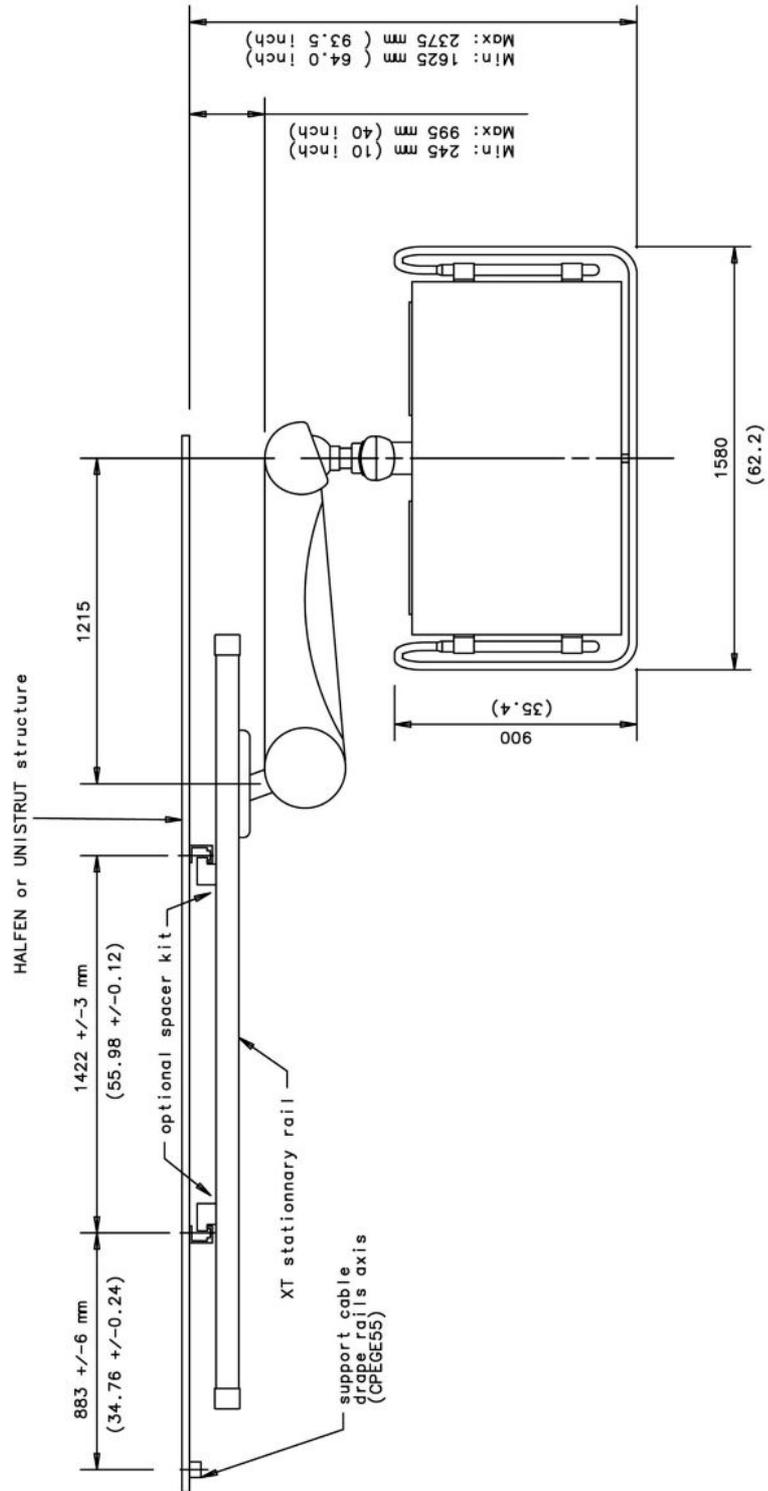
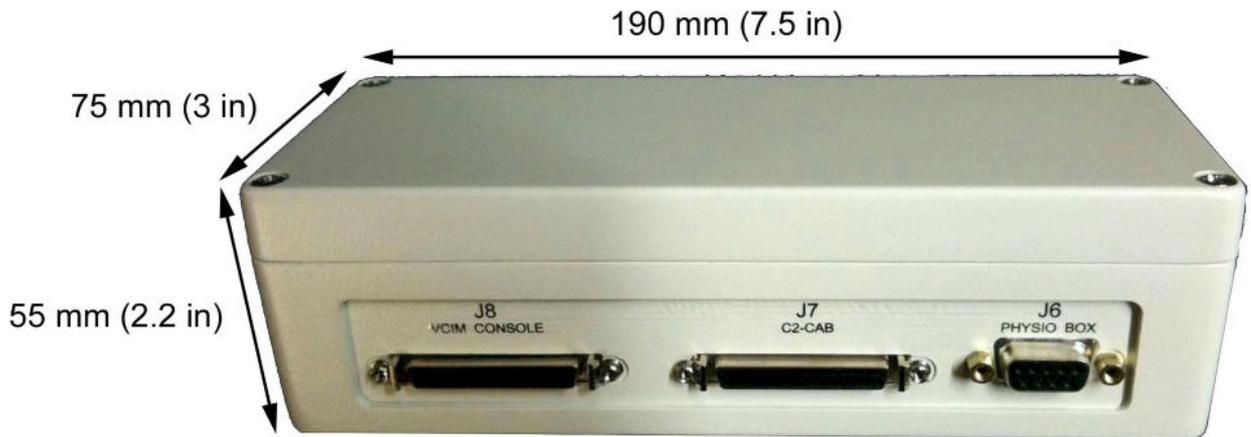
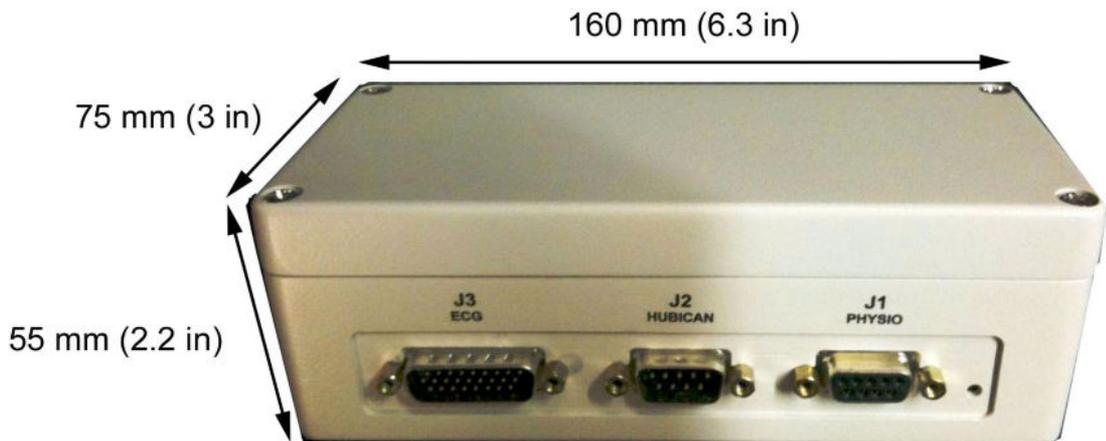


Illustration 2-34: ECG Acquisition Device Modules Dimensions

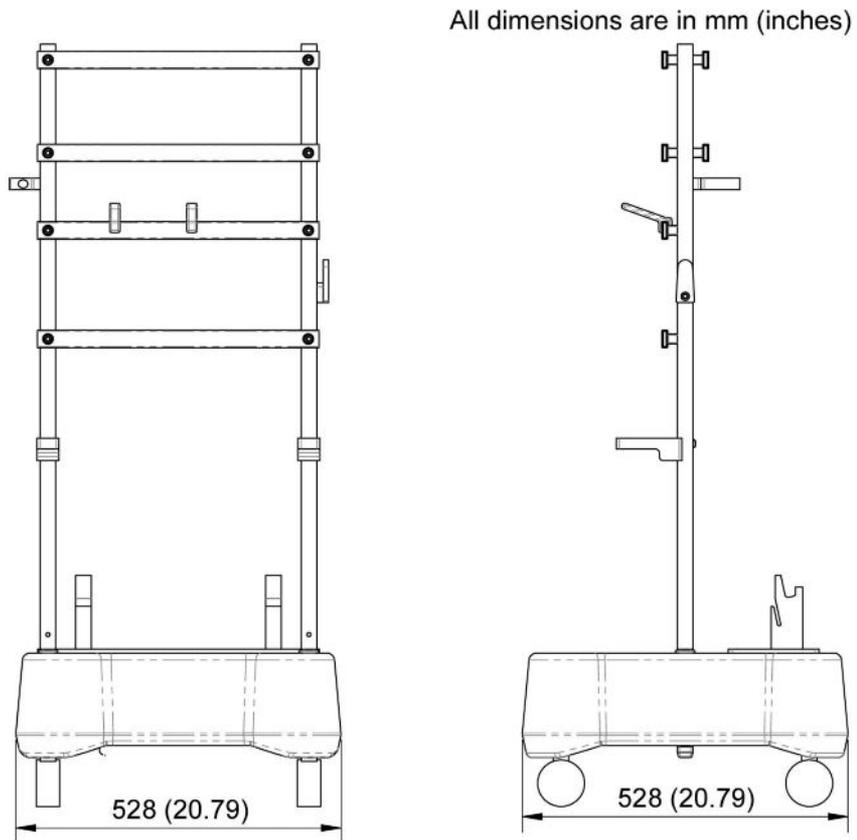


Hubican Module



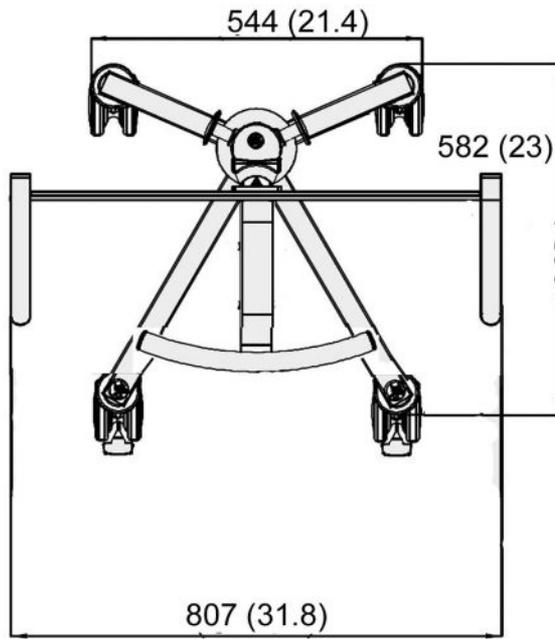
Physio Module

Illustration 2-35: Comfort Accessories Cart Dimensions

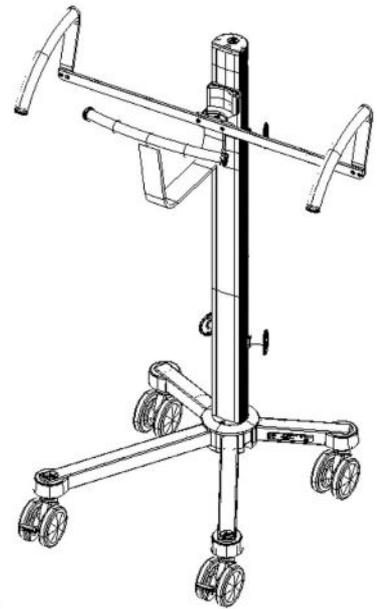


General View

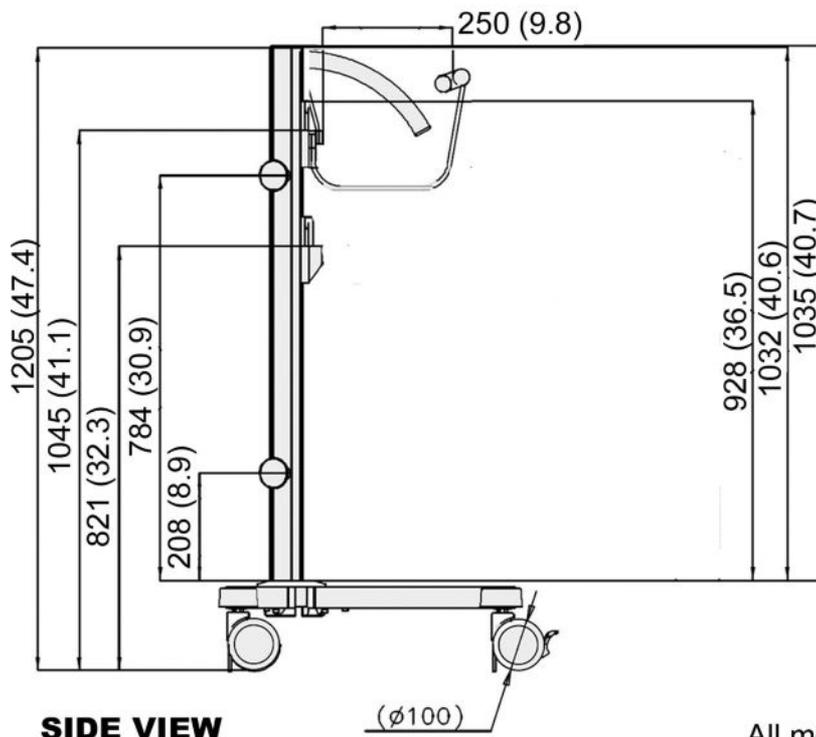
Illustration 2-36: Tableside Cart Dimensions (one rail)



TOP VIEW



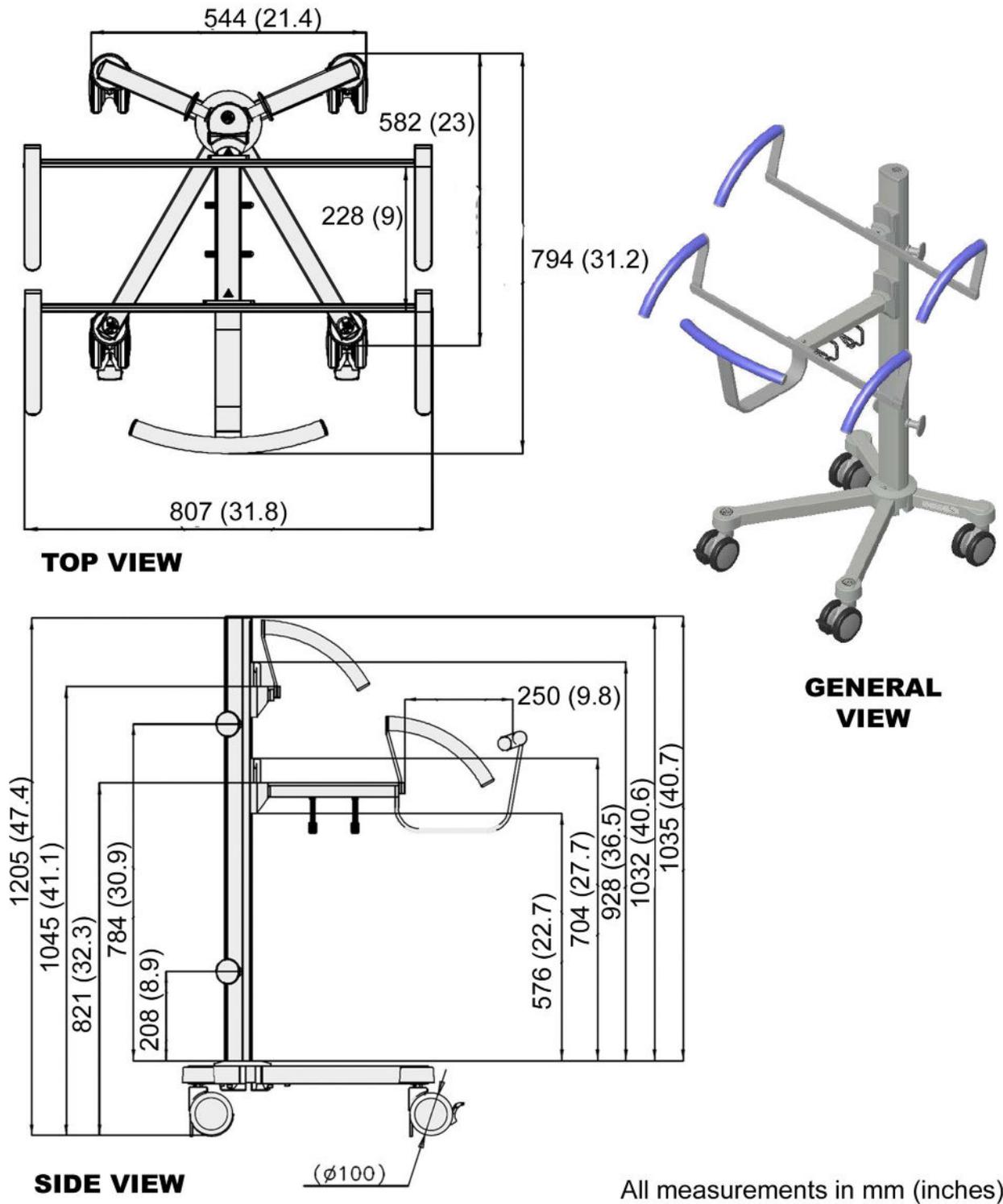
GENERAL VIEW



SIDE VIEW

All measurements in mm (inches)

Illustration 2-37: Tableside Cart Dimensions (two rails)



1.4 Monitor and Monitor Suspension References

1.4.1 System Compatibility Cross-Reference - Monitor Support & Suspension

PRODUCT NAME	MODEL NUMBER	PRE-INSTALLATION DOCUMENT NUMBER	CATALOG NUMBER
PRECABLED LCD 4 MONITOR SUSPENSION: <ul style="list-style-type: none"> • CABLE HARNESS 24 m • or CABLE HARNESS 36 m 	5520084 <ul style="list-style-type: none"> • 5420080 • or 5420081 	2393190-100	
PRECABLED LCD 6 MONITOR SUSPENSION: <ul style="list-style-type: none"> • CABLE HARNESS 24 m • or CABLE HARNESS 36 m 	5520086 <ul style="list-style-type: none"> • 5420085 • or 5420087 	2393190-100	
OPEN MONITOR SUSPENSION <ul style="list-style-type: none"> • CABLE HARNESS 24M • or CABLE HARNESS 36M • or LDM power and video cables for open suspension 	Non-GE supplied <ul style="list-style-type: none"> • 5420085 • or 5420087 • or 5449713 	See manufacturer's documentation 5442831-2-1EN	
OEM LARGE DISPLAY SUSPENSION <ul style="list-style-type: none"> • HARNESS 36 m for LARGE DISPLAY SUSPENSION • Handle of LDM suspension 	5410519 <ul style="list-style-type: none"> • 5410521 • 5415439 	5422757-3-1EN	

1.4.2 System Compatibilities Cross-Reference - 19" Monitors

PRODUCT NAME	MODEL NUMBER	PRE-INSTALLATION DOCUMENT NUMBER	CATALOG NUMBER
LCD 19" - SMD19100G B& W with Stand	5148721-2	sm 5219983-100	
LCD 19" - SMD19100G B& W without Stand	5148721-3		
LCD 19" - SMD19100G Color with Stand	5148720-2		
LCD 19" - SMD19100G Color without Stand	5148720-3		
Eizo 19" LCD HB color monitor RX150 GE		sm 5499528-1-8EN	

2 Room Layouts

2.1 Room Layout Drawings

2.1.1 Patient Room Layout

2.1.1.1 Patient Room Dimension Requirements

2.1.1.1.1 Patient Room Length / Width

2.1.1.1.1.1 Length / Width Dimensions

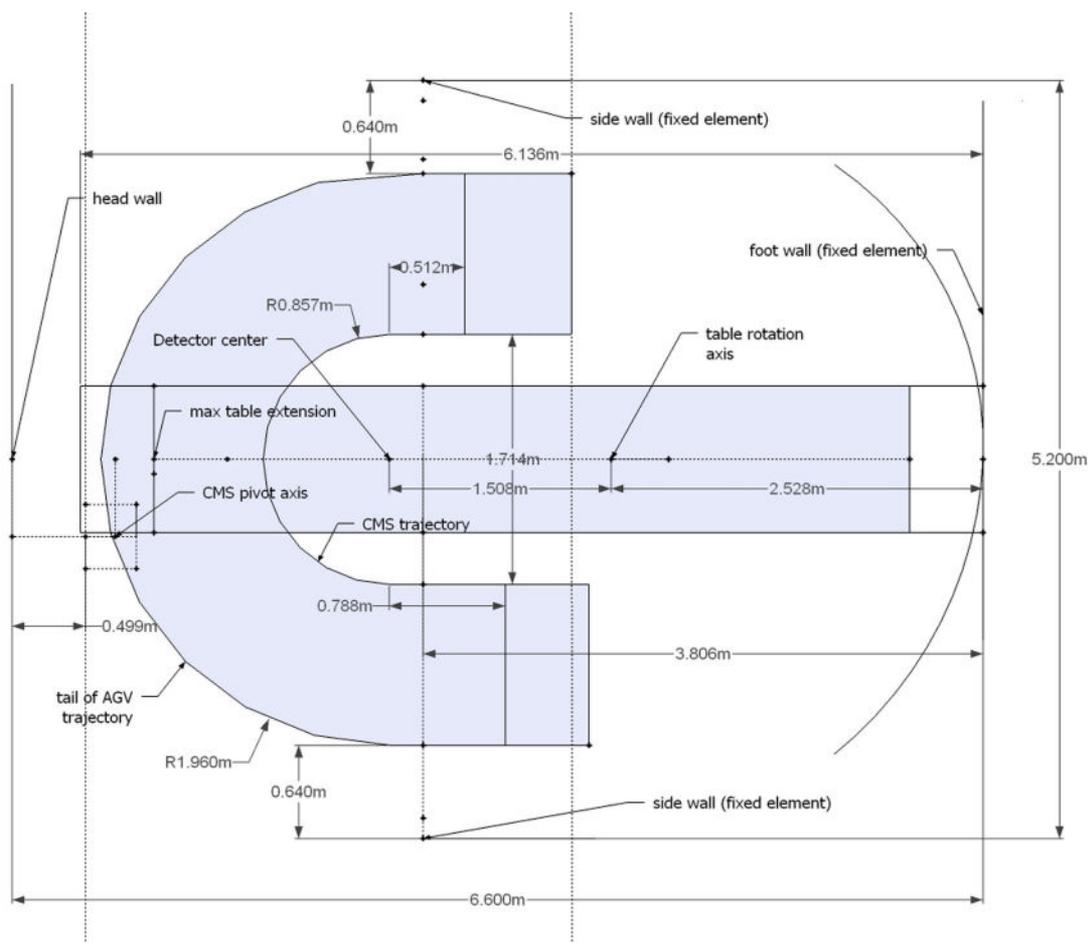
Table 2-2: Patient Room Lengths/Widths

Configuration	Length	Width	Comment
Minimum	6600 mm (260 in)	5200 mm (205 in)	parking depending on purchased options and room geometry
Typical	8500 mm (335 in)	7000 mm (276 in)	with backout and parking
Maximum	10000 mm (393.7 in)	8000 mm (315 in)	optimization between backout and parking
For the values above, see Illustration 2-38			
For a view of Parking positions, see Illustration 2-39 & Illustration 2-40 For a view of Backout positions, see Illustration 2-42 & Illustration 2-43 For a view of Arm Backin and Panning positions, see Illustration 2-44 & Illustration 2-45			

NOTE: The values above are calculated with the table **without** accessories, such as the Table Head extender. For details of Head Extender dimensions, see [Dimension Drawings](#)

NOTE: The values in [Table 2-2](#) include a 700 mm safety clearance zone behind the CMS.

Illustration 2-38: Patient Room size (RIRP 1508 mm)



2.1.1.1.1.2 Gantry Parking Positions

2.1.1.1.1.2.1 General Requirements



NOTICE

Parking trajectories, which are available according to installation option chosen by customer, need to be specified during room planning and are customizable during the system installation with the following constraints:

- Choice of trajectories: Minimum is NONE. Maximum is TWO parking trajectories (positions).
- Each parking trajectory has a specific starting point on the swivel circuit
- Each parking trajectory has a given gantry orientation in the parking position
- Each parking trajectory has a minimum length by design

In the following illustrations and tables, the Room Interventional Reference Point (RIRP) which corresponds to the gantry isocenter location when the gantry is in head position, can be configured either at a distance of 1278 mm or at a distance of 1508 mm from the table rotation

axis, along the table longitudinal axis. The RIRP is configured at system installation and cannot be changed afterwards.

Illustration 2-39: Gantry Parking (RIRP 1278 mm) versus patient room size

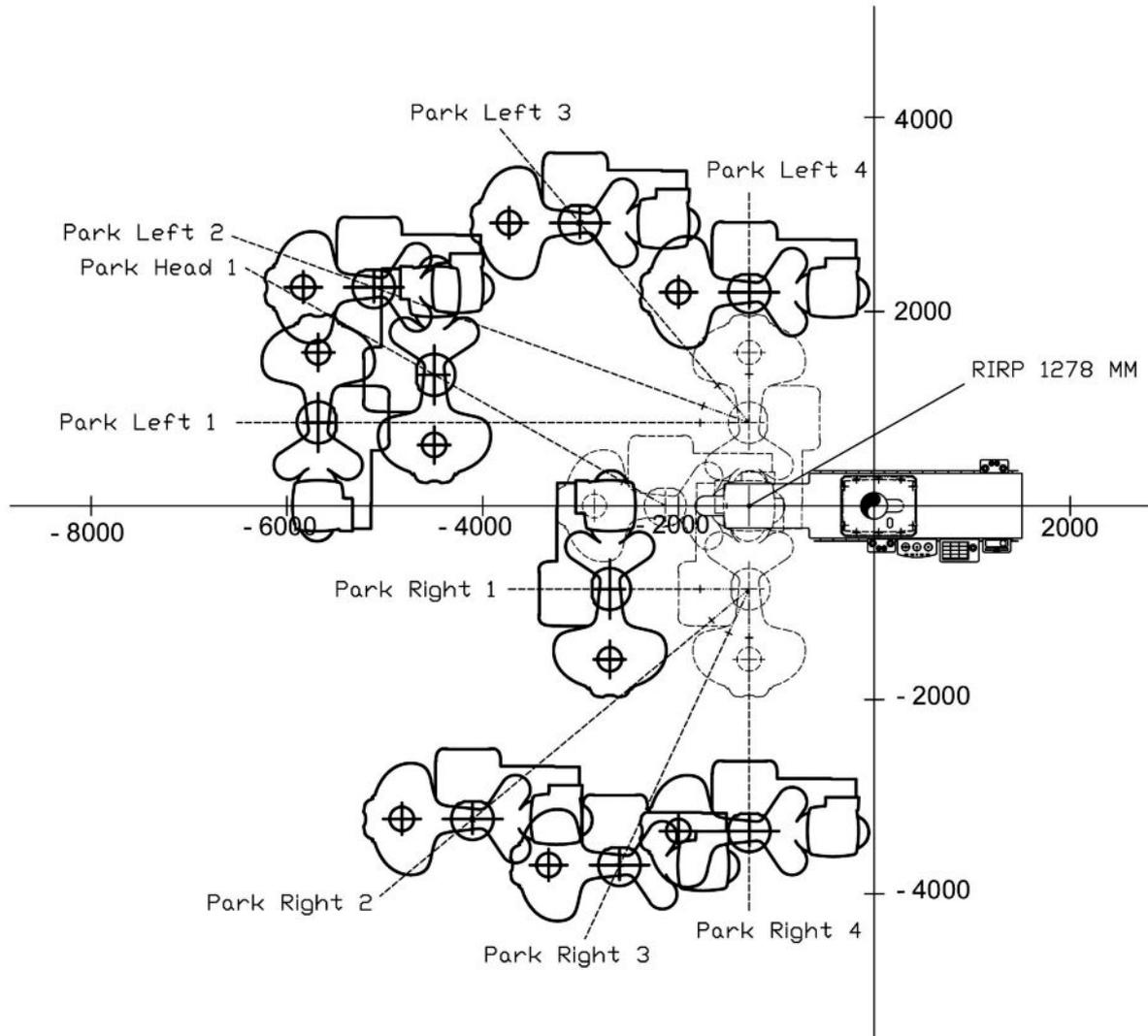


Illustration 2-40: Gantry Parking (RIRP 1508 mm) versus patient room size

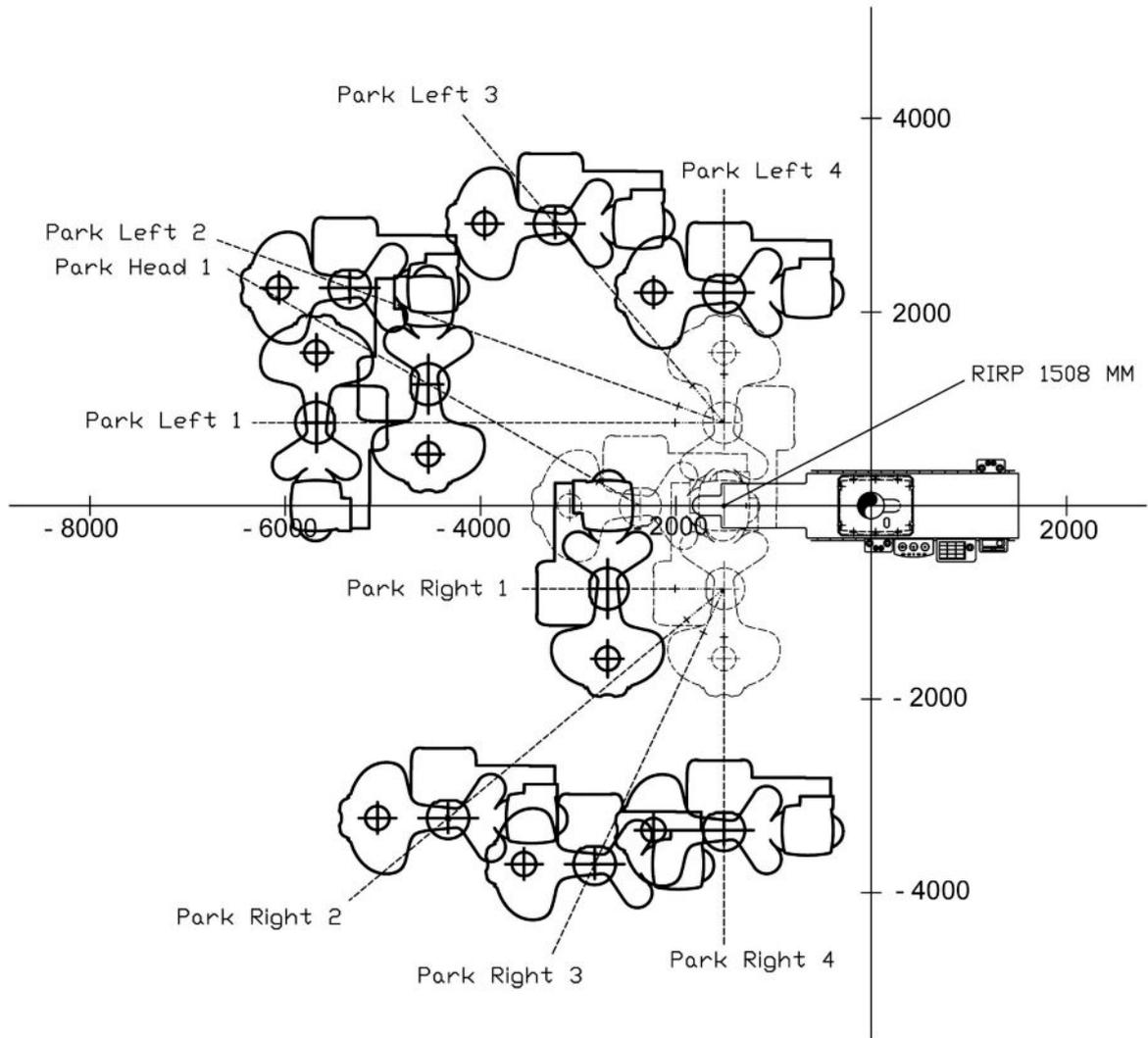


Table 2-3: Minimum/Typical/Maximum Parking Positions

Name	RIRP 1278 mm (Illustration 2-39)			RIRP 1508 mm (Illustration 2-40)		
	Typical	Min	Max	Typical	Min	Max
Park Head 1*	-	500	3930	-	500	3930
Park Left 1	-	500	4400	-	500	4170
Park Left 2	-	500	4080	-	500	4080
Park Left 3	-	500	2690	-	500	2690
Park Left 4*	-	500	1340	-	500	1340
Park Right 1*	-	500	1420	-	500	1190
Park Right 2	-	500	3680	-	500	3680
Park Right 3	-	500	3140	-	500	3140
Park Right 4	-	500	2490	-	500	2490

NOTE: (For US only) *: Not authorized with System of Anchorage For Seismic Event (SAFE).

2.1.1.1.1.2.2 Requirements specific to SAFE (For US only)

The System of Anchorage For Seismic Event (SAFE) shall be installed at **parking positions only**.

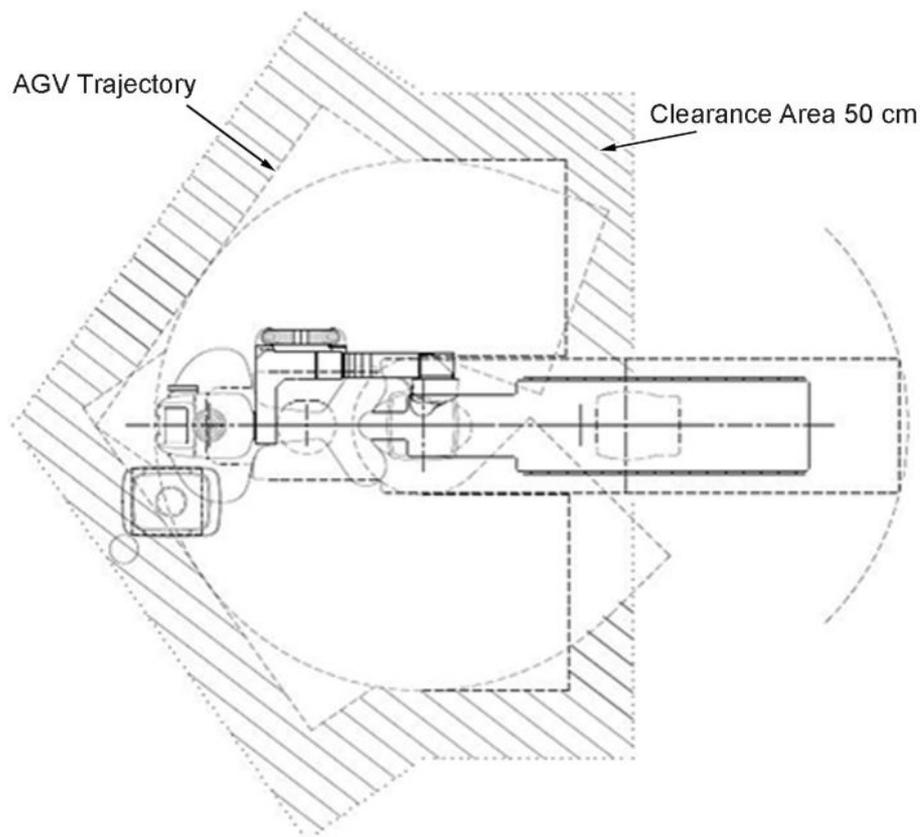
Only 6 out of the 9 available parking positions can be used for gantry attachment. The 3 following positions are not authorized as the SAFE cannot be installed at these locations:

- Park Head 1
- Park Right 1
- Park Left 4.

The exact SAFE location will be determined by the GE Field Engineer during the installation of the Discovery IGS 730, Discovery IGS 740 system. It is recommended that the pole shall be installed at a **minimum 50 cm clearance distance** from AGV on all customized trajectories to avoid entrapment between the pole and all moving parts.

For the 6 authorized parking positions (Park Left 1, 2, 3 and Park Right 2, 3 and 4), the length of the trajectories shall be defined to ensure the 50 cm clearance between the pole and the AGV on all the configured trajectories.

Illustration 2-41: Requirement for Pole Installation



2.1.1.1.1.3 Gantry Backout Positions



NOTICE

Backout positions need to be specified during the room planning activities and are customizable during the installation.

Illustration 2-42: Backout positions (RIRP 1278 mm)

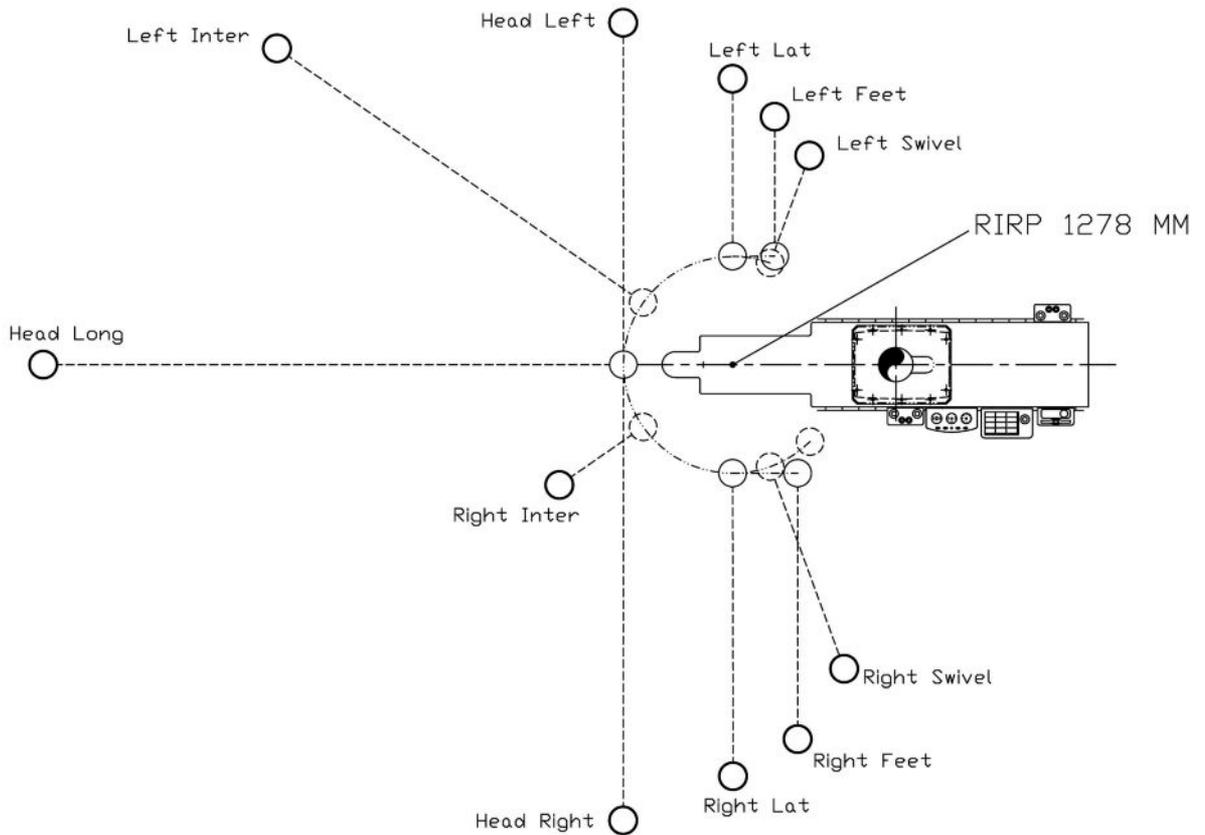


Illustration 2-43: Backout positions (RIRP 1508 mm)

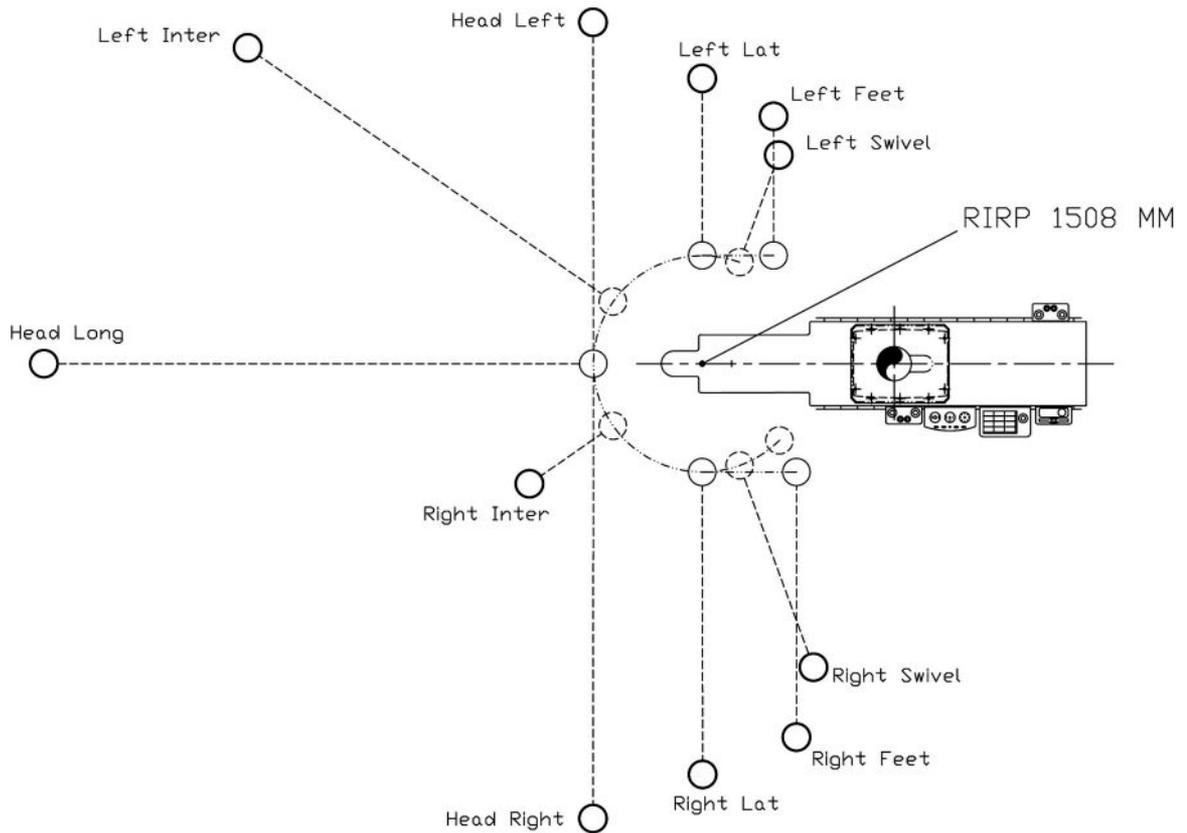


Table 2-4: Backout Positions

Type	Name	RIRP 1278 mm (Illustration 2-42)			RIRP 1508 mm (Illustration 2-43)		
		Typical	Min	Max	Typical	Min	Max
Backouts	Head Long	1200	500	4540	1200	500	4310
	Head Left	2700	500	2700	2700	500	2700
	Head Right	2700	500	3600	2700	500	3600
	Left Lat	900	500	1400	900	500	1400
	Left Feet	900	500	1100	900	500	1100
	Right Lat	900	500	2400	900	500	2400
	Right Feet	900	500	2100	900	500	2100
Arm backouts	Left Inter	-	500	3500	-	500	3500
	Right Inter	-	500	800	-	500	800
	Left Swivel	-	500	900	-	500	900
	Right Swivel	-	500	1700	-	500	1700

2.1.1.1.1.4 Arm Backin and Panning Positions

Illustration 2-44: Arm backin and panning (RIRP 1278 mm)

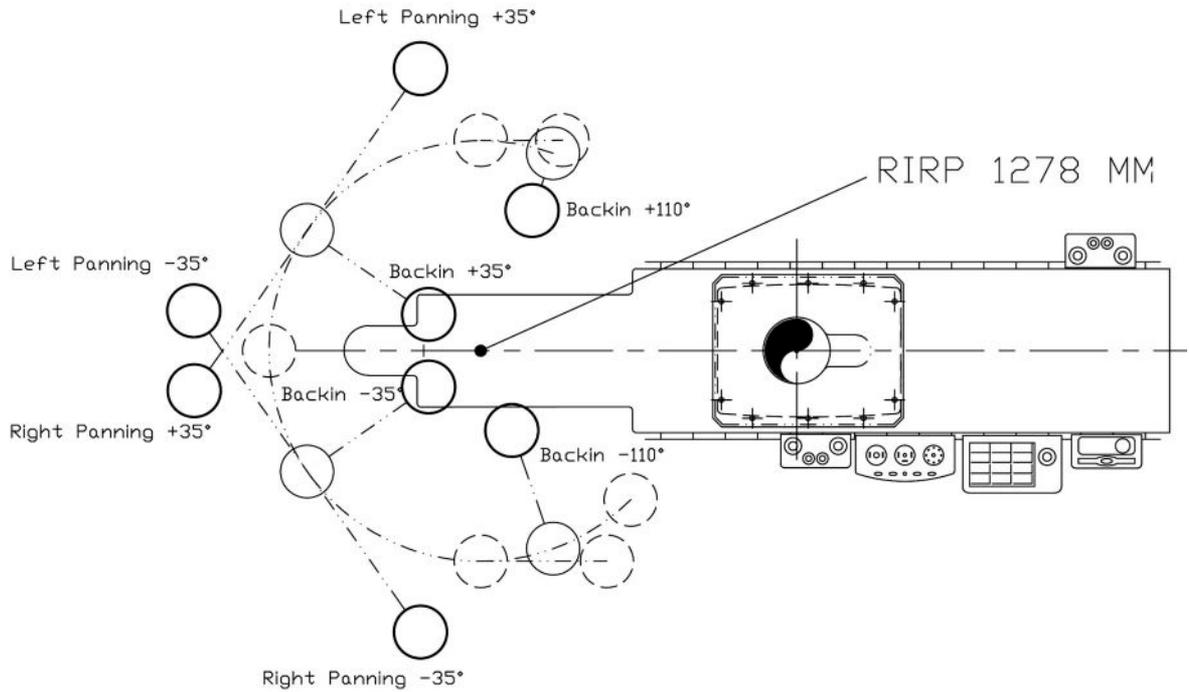


Illustration 2-45: Arm backin and panning (RIRP 1508 mm)

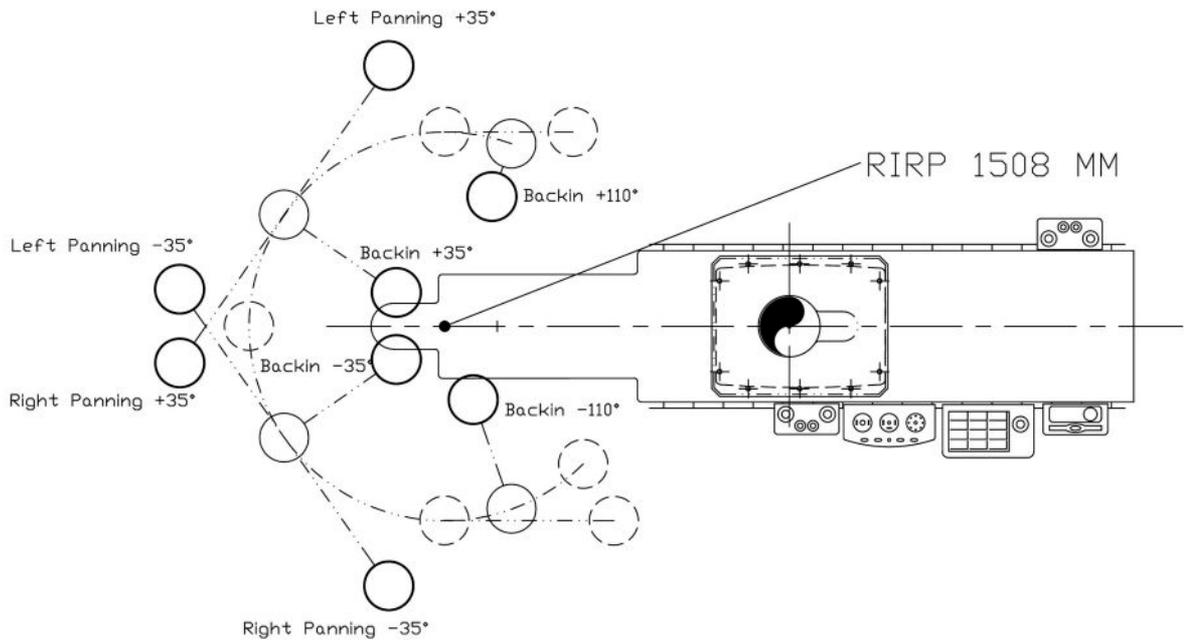


Table 2-5: Arm Backin and Panning

Type	Name	RIRP 1278 mm (Illustration 2-44)			RIRP 1508 mm (Illustration 2-45)			
		Typical	Min	Max	Typical	Min	Max	
Arm Backin (fixed)	backin +35°	600			600			fixed value
	backin -35°	600			600			fixed value
	backin +110°	250			250			fixed value
	backin -110°	500			500			fixed value
Arm Panning (fixed)	left +35°	800			800			fixed value
	right +35°	800			800			fixed value
	left -35°	800			800			fixed value
	right -35°	800			800			fixed value

2.1.1.1.2 Patient Room Height

The room height, which can be defined as the distance between the finish floor surface and the plane on which the CMS pivot is attached, must be set to one of the 4 values specified in table below in order to be able to install this product.

Failing in respecting these dimensions will have an impact on performance and safety.

The Cable Management System (CMS) may require the installation of "intermediate" rails and/or spacers as defined in the table column "CMS Mounting requirements".

See [Ceiling Requirements](#) section for more details on CMS Installation requirements.

Table 2-6:

Configuration *	Height	CMS Mounting Requirements
Height 1 (Lowest configuration)	2740 mm (108 in) ±5 mm with CMS rails	CMS rails are 30 mm high and can be used for IR rooms. CMS spacer is not allowed with this configuration. ** Acceptable for OR rooms if: <ul style="list-style-type: none"> • mounting plate designed locally (not provided) • CMS mounting structure or rails area to be closed with rest of ceiling surface (drop-down box, covers...). • Local solution to be designed to avoid interference with other components close to the CMS (e.g booms).
	2710 mm (107 in) with mounting plate	
Height 2 (Small configuration)	2845 mm (112 in) ±5 mm with CMS rails	CMS rails are 30 mm high and can be used for IR rooms. Small CMS spacer (105 mm) must be mounted too. Acceptable for OR rooms if: <ul style="list-style-type: none"> • mounting plate designed locally (not provided) • CMS mounting structure or rails area to be closed with rest of ceiling surface (drop-down box, covers...). • Local solution to be designed to avoid interference with other components close to the CMS (e.g booms).
	2815 mm (111 in) with mounting plate	

Height 3 (Medium configura- tion)	2905 mm (114,4 in) +5/-5 mm with CMS rails NOTE: For existing ceiling, min- imum height shall be 2900 mm (114,2 in) +10/-0 mm with CMS rails	CMS rails are 30 mm high and can be used for IR rooms. Medium CMS spacer (165 mm) must be mounted too. Acceptable for OR rooms if: <ul style="list-style-type: none"> • mounting plate designed locally (not provided) • CMS mounting structure or rails area to be closed with rest of ceiling surface (drop-down box, covers...). • Local solution to be designed to avoid interference with other components close to the CMS (e.g booms).
	2875 mm (113.2 in) with mounting plate	
Height 4 (Highest configura- tion)	3050 mm (120.1 in) +7.5/-2.5 mm with mounting plate	CMS rails are typically not used with this configuration. *** Large CMS spacer (340 mm) must be mounted. If the 30 mm CMS rails can be used, they need to be mounted on a structure at 3080 mm from floor. If the CMS mounting structure height is between 2900 and 3050, lower it so that you're back in the same configuration as for Height 3 with use of the 165 mm Spacer (but a bigger drop-down will be required to close mounting area).
	3080 mm (121.3 in) +7.5/-2.5 mm with CMS rails (if allowed)	

NOTE: * See [Dimension Drawings](#) (Illustration "Gantry Dimensions - Side View") for views in the 4 configurations. It clearly shows for example that the CMS chain lower surface shall be at 2420 mm from the finished floor whatever solution is used to mount the CMS to the ceiling.

** CMS spacers are used only for the 3 highest ceiling heights (above 2740 mm). Spacers and CMS rails are provided with the system.

*** The max height of 3050 mm is considered to be only for surgical configuration (OR rooms) where use of rails - like the CMS intermediate rails - is forbidden.

NOTE: The ceiling height has to be measured between the surface where the CMS Pivot Platform will be mounted and the top surface of the finish floor once completely done (typically 7 mm above the rectified concrete level on which the resin will be poured).

2.1.1.2 Patient Room Layout

NOTE: Optional remote Smart Box and TSUI shall be installed at a location where all the gantry axis are visible by the operator, but not on the longitudinal axis of the table (to avoid any operator visual dead angle due to tilted table hiding the patient).

Room Layouts:

The following are two layout scenarios:



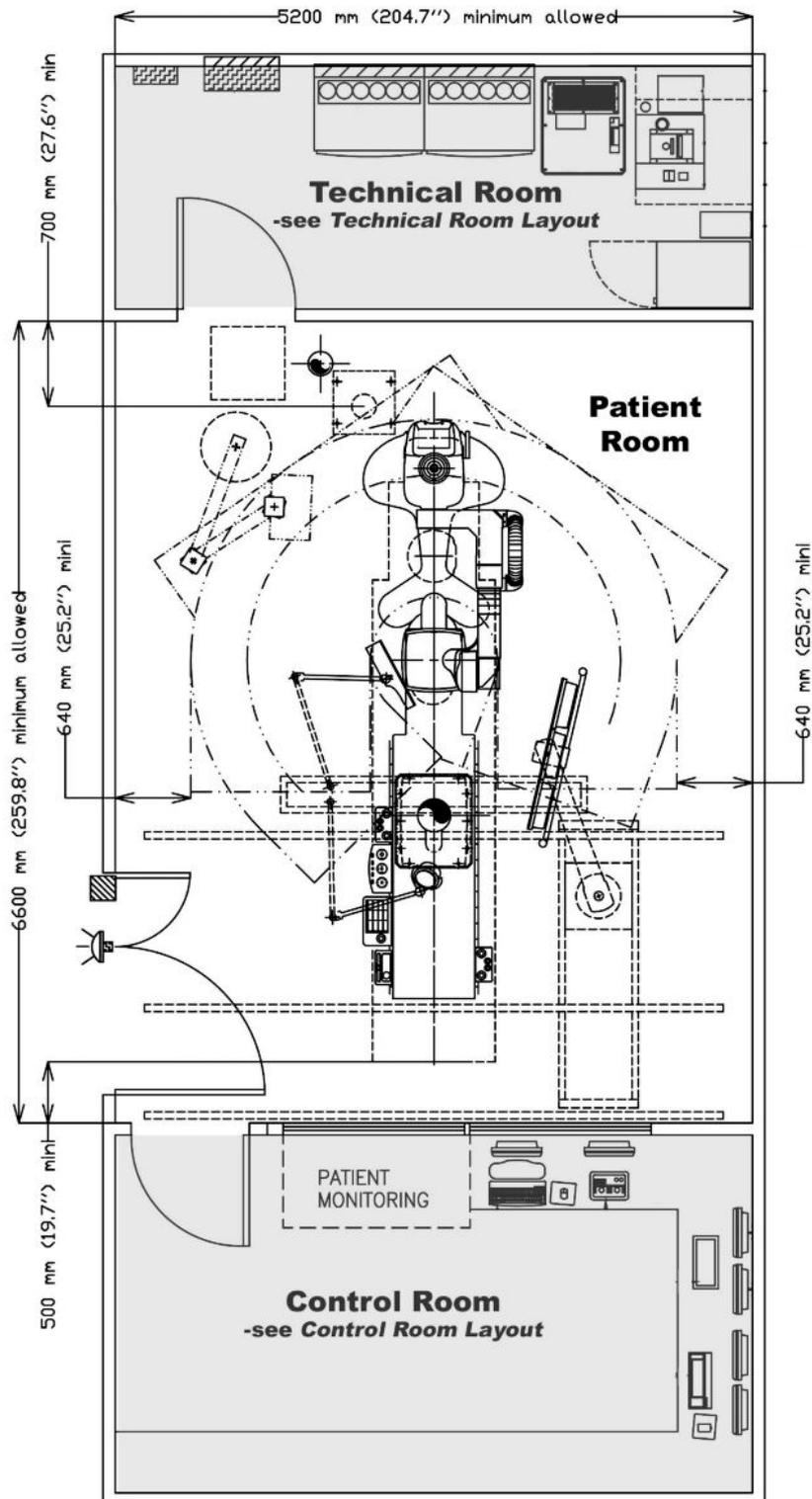
NOTICE

11 targets (reflectors) shall be installed on the walls at a height of 2050 mm min and 2300 mm max. Care should be taken not to install the targets on moving objects (doors etc) or in positions where they can be obscured by moving components (monitor suspensions etc). For additional information on AGV laser targets, see *Preparing targets mounting on the wall* in [Wall Requirements](#).

NOTE: The parking/backout axis of the gantry is either parallel or perpendicular to the patient table longitudinal axes.

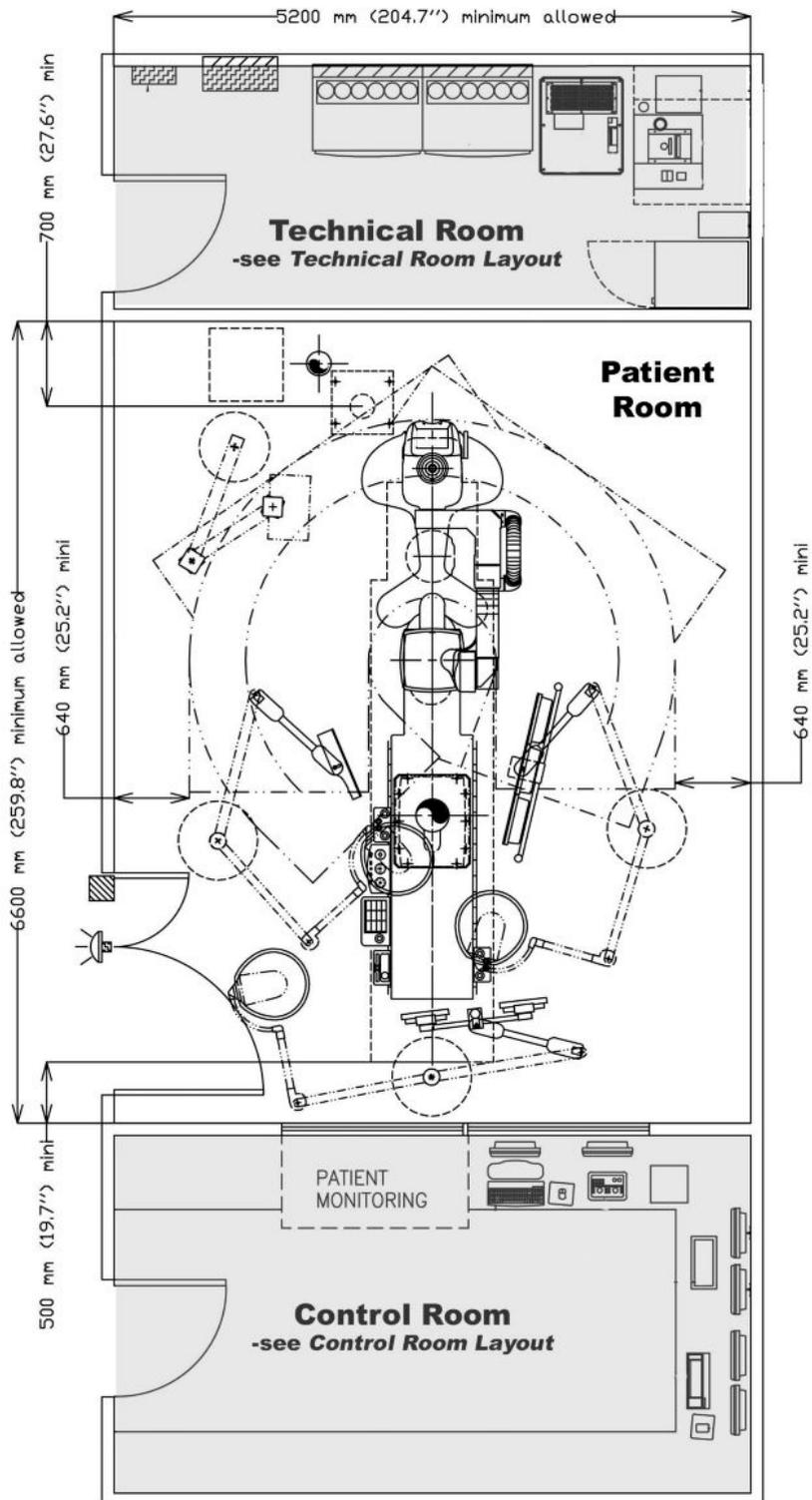
2.1.1.2.1 Layout for interventional configuration (minimum room)

Illustration 2-46: Interventional configuration (minimum room)



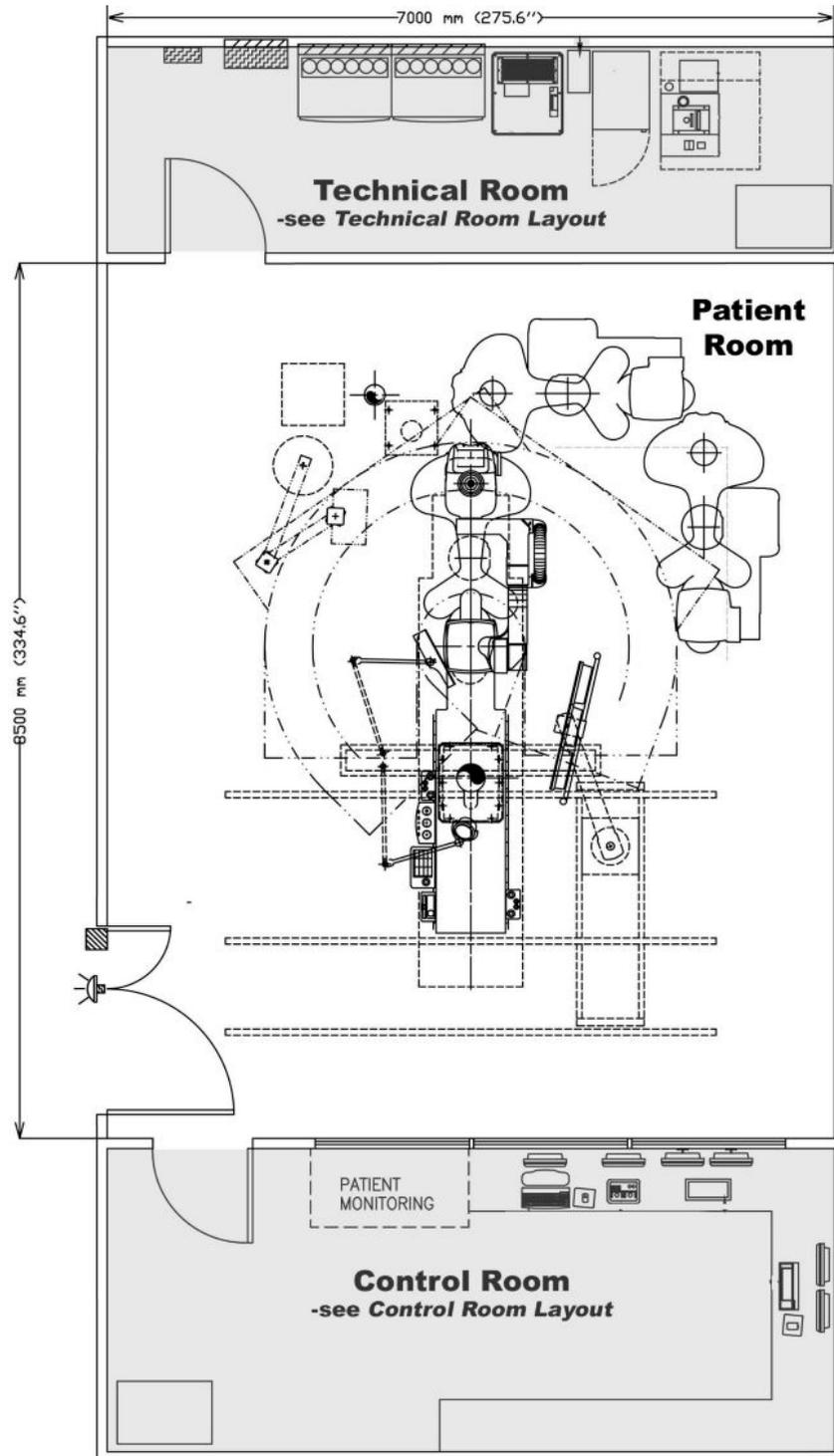
2.1.1.2.2 Layout for surgical configuration (minimum room)

Illustration 2-47: Surgical configuration (minimum room)



2.1.1.2.3 Layout for interventional configuration (typical room)

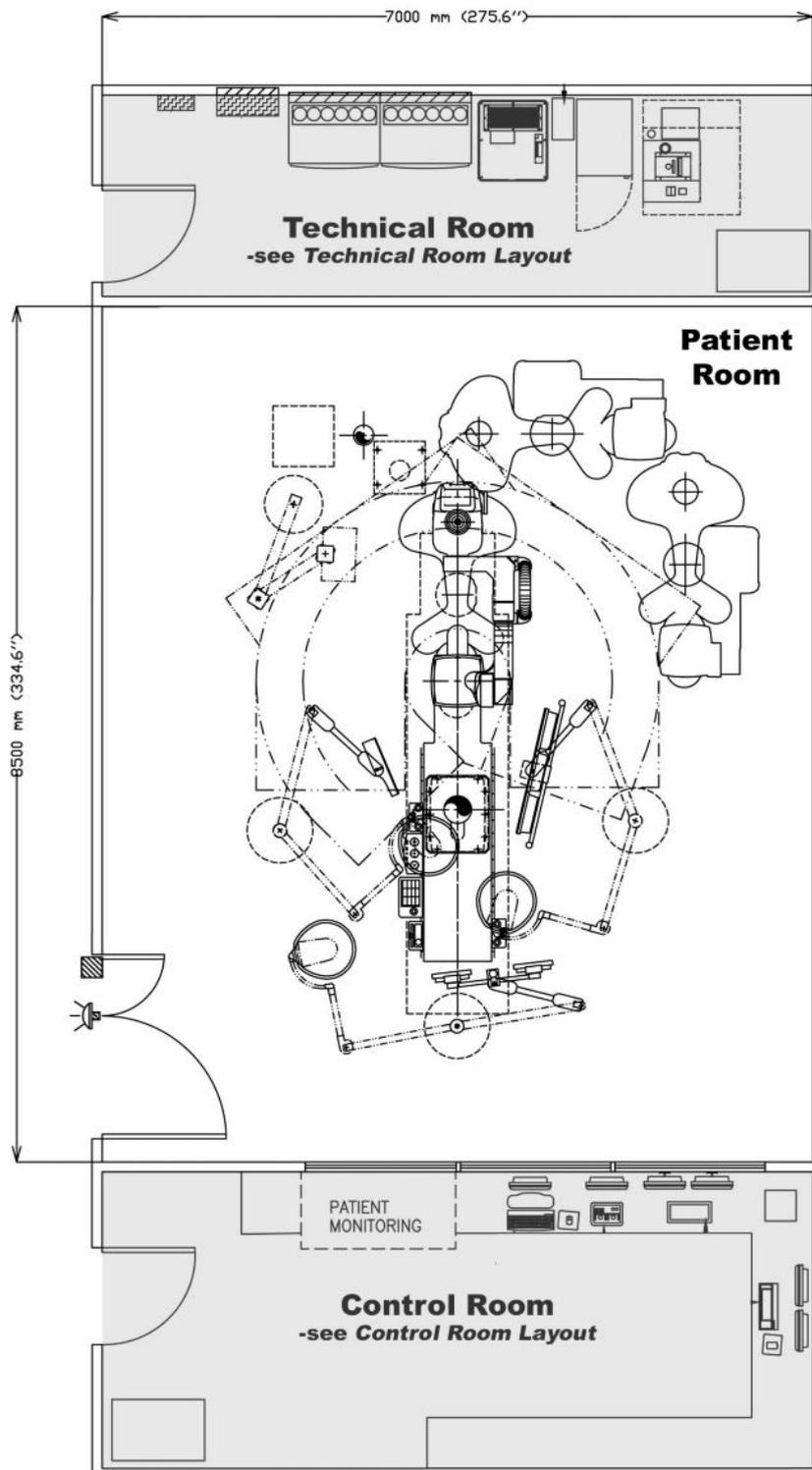
Illustration 2-48: Interventional configuration (typical room)



NOTE: The minimum ceiling height for Mavig suspension above gantry area is 2.93 m (115 inch).

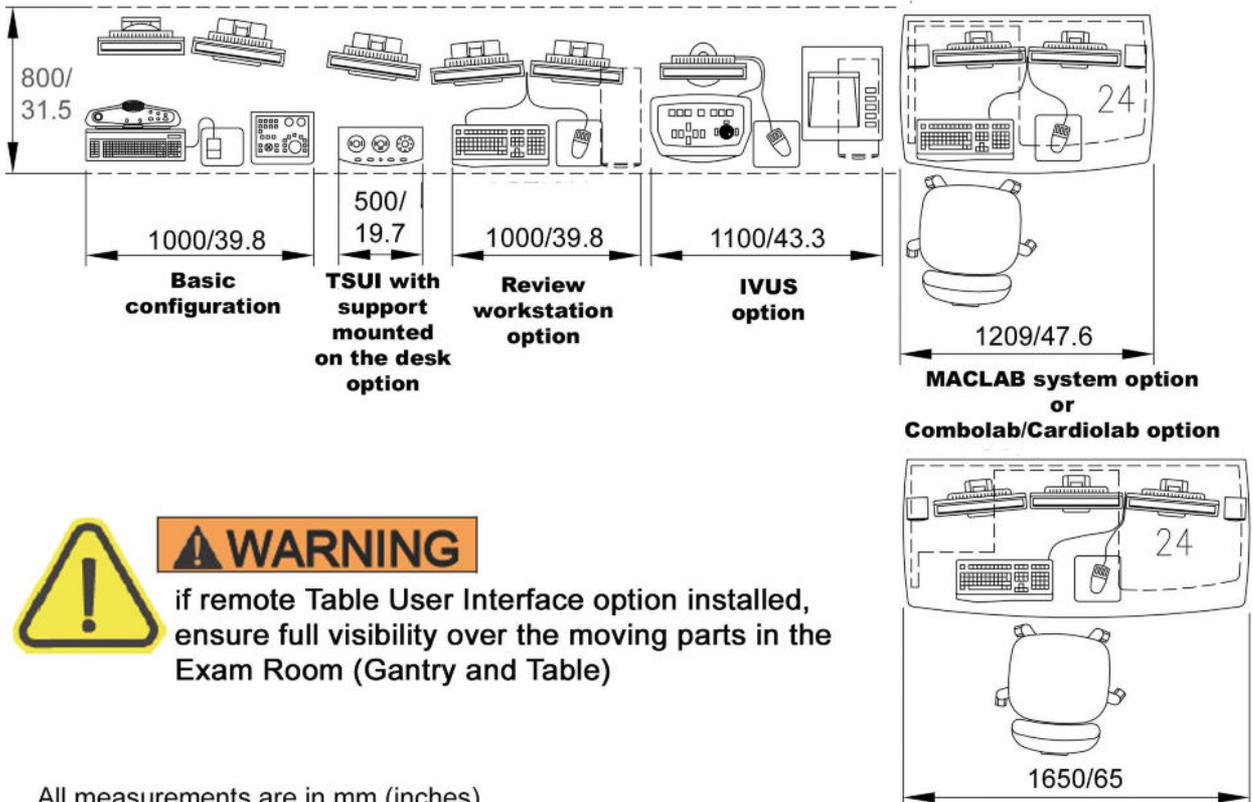
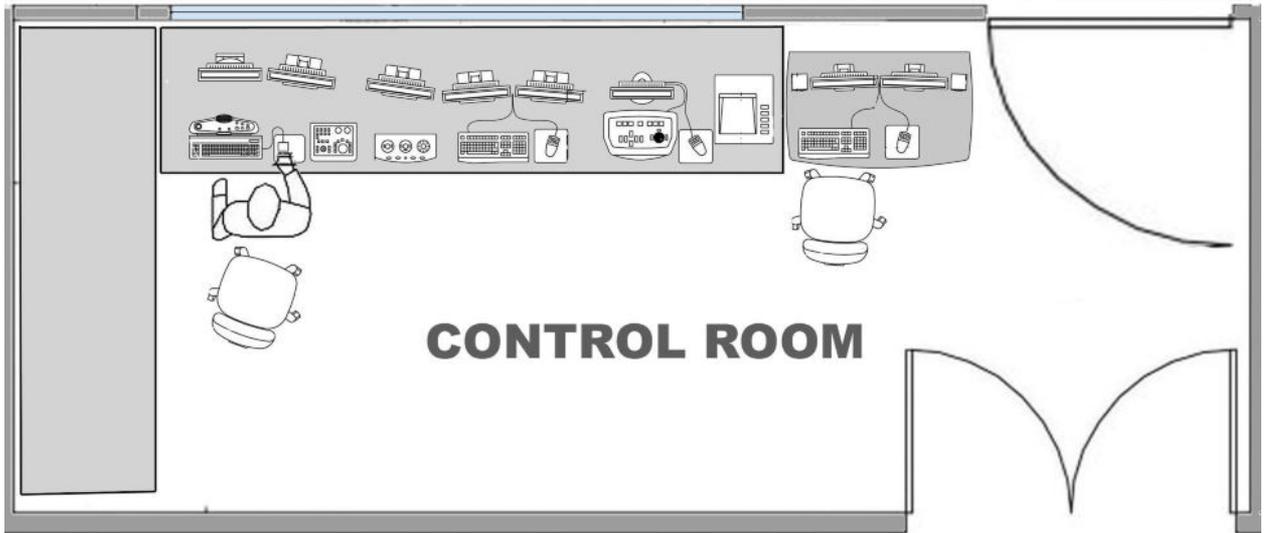
2.1.1.2.4 Layout for surgical configuration (typical room)

Illustration 2-49: Surgical configuration (typical room)



2.1.2 Control Room Layout

Illustration 2-50:
PATIENT ROOM

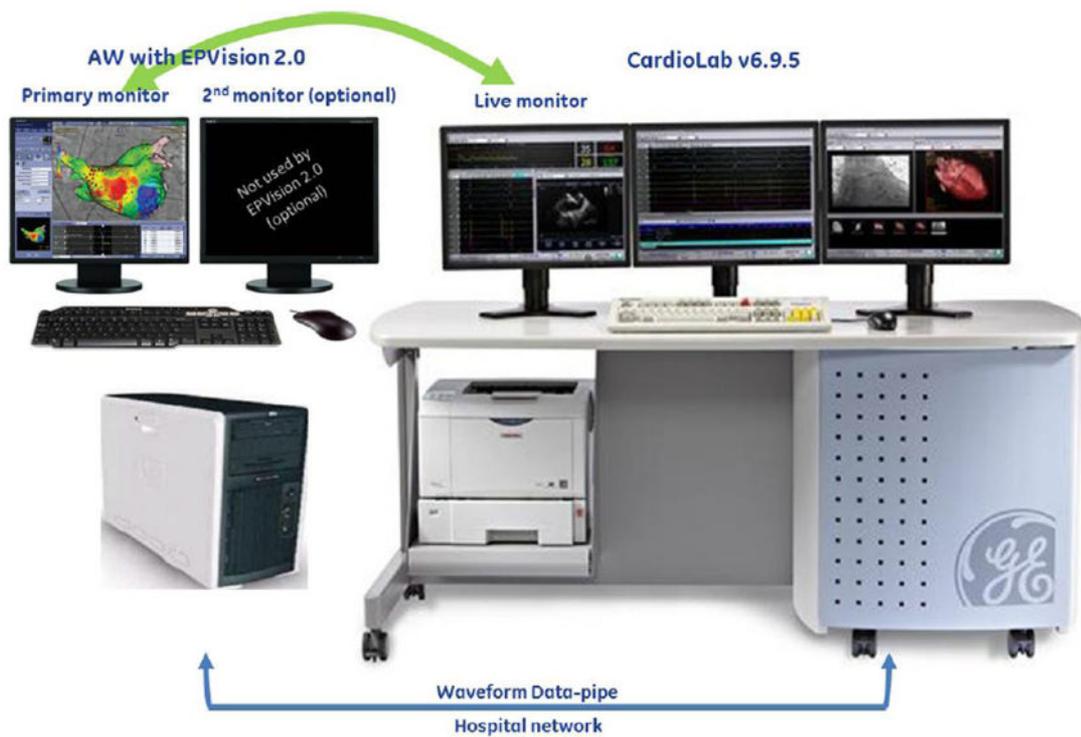


All measurements are in mm (inches)

Recommended layout for control room when Innova EPVision 2.0 is installed:

To have optimal arrangement, place AW primary monitor close to CardioLab Live monitor.

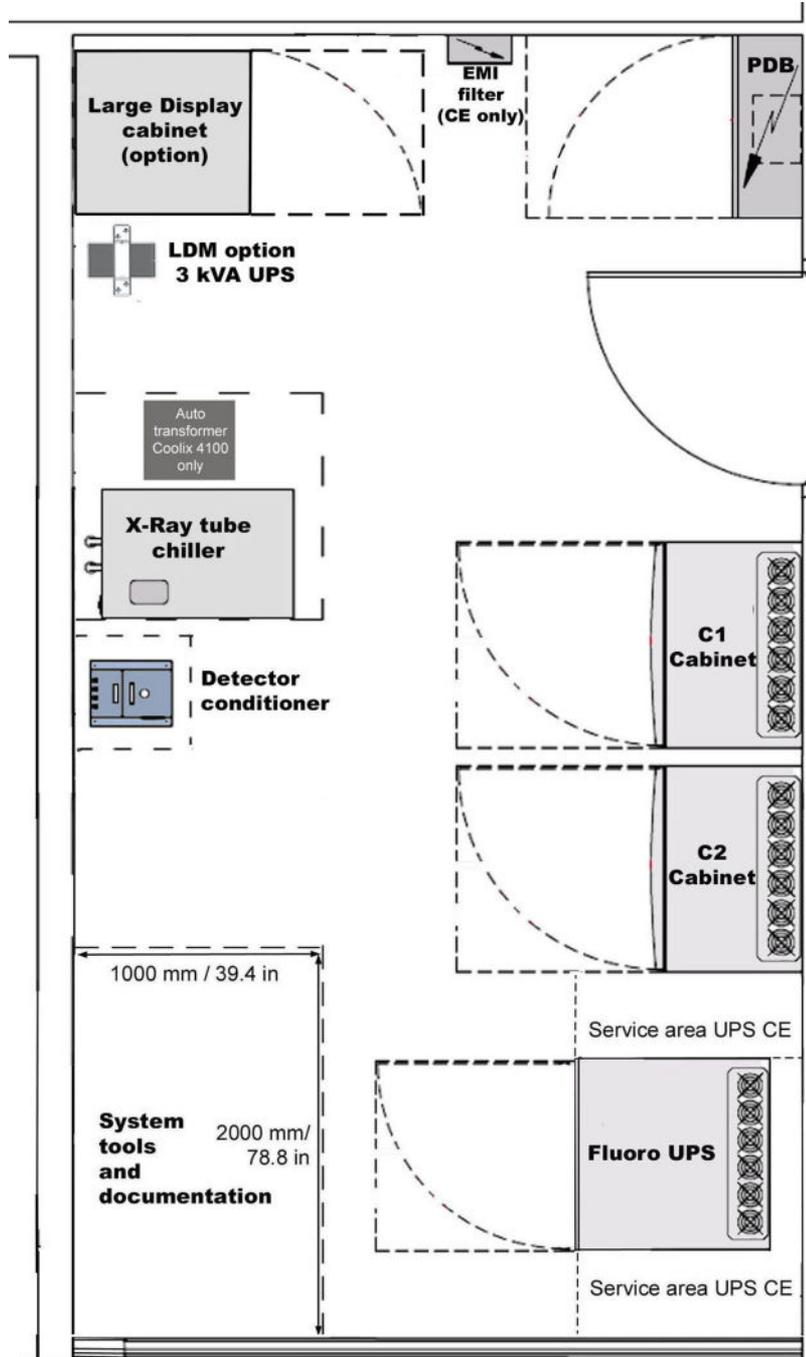
Illustration 2-51:



2.1.3 Technical Room Layout

For the service access and ventilation restraint dimensions below, see [Dimension Drawings](#) and [Room Layout Considerations](#).

Illustration 2-52:



A clearance of at least 0.9 m shall be provided in front of all cabinets (C1, C2, FUPS and PDB) and at least 1m for the LDM cabinet. When 2 cabinets are installed with the doors facing each

other, the clearance shall be at least 1.2 m. these are minimum requirements. Service areas shall comply with local regulations if more stringent.

Cabinets:

- Do not stack cabinets or install additional components above the cabinets.
- The electric cabinets shall be protected of the sources of humidity: e.g. condensation caused by the air conditioner or water drops from outlets and pipes. The use of drip trays with a float alarm is recommended to protect the cabinets from exposure to water.

Fluoro UPS:

- The minimum clearance between the top of the UPS and the ceiling should be 400 mm (16") for proper cooling air exhaust
- The left, right or back side of the UL UPS can be positioned against the wall.
- The back of the CE UPS shall be installed 200 mm (8") from the wall, the right and left sides must be accessible for maintenance operation (500 mm (20") clearance minimum.



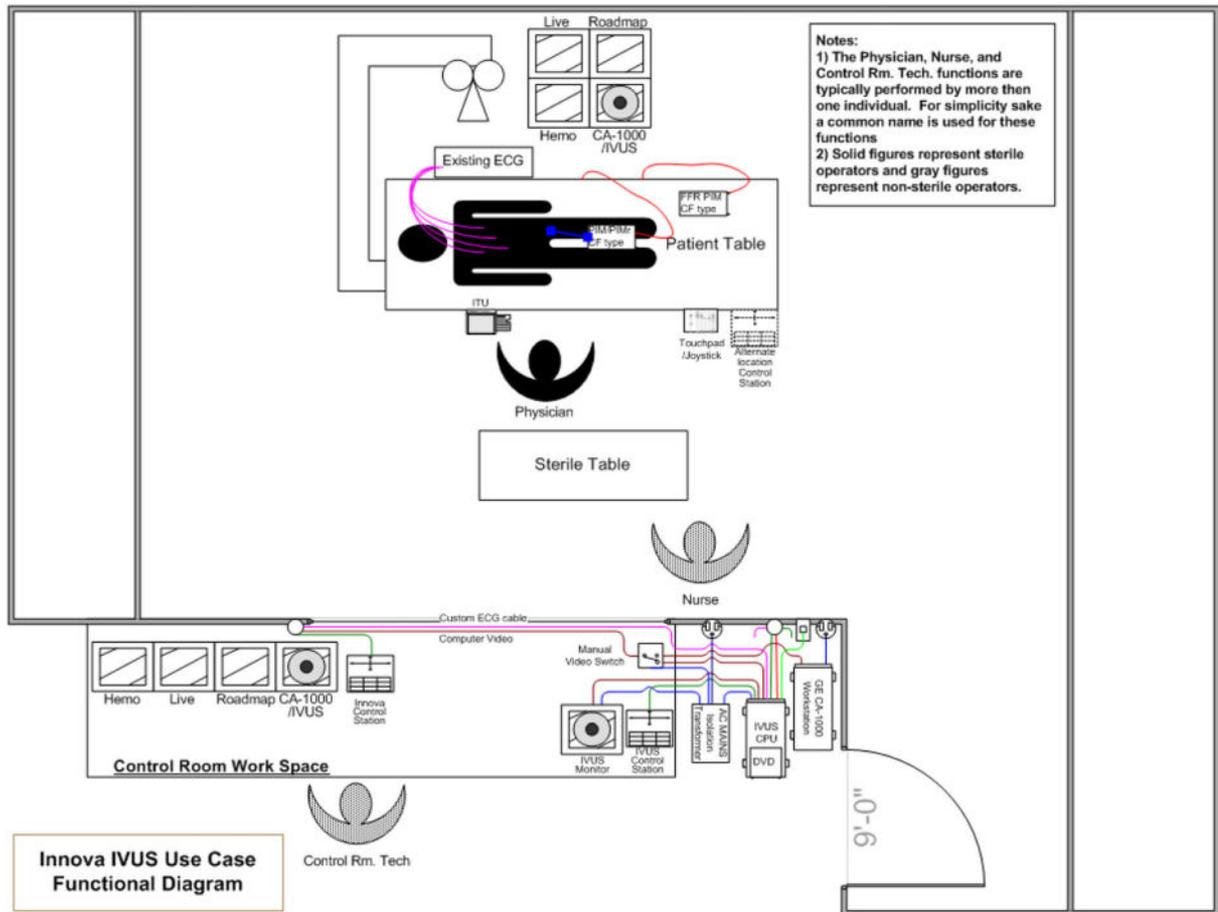
NOTICE

A Fire extinguisher (non-water type, ex. CO2) shall be installed close to the Fluoro UPS.

2.1.4 IVUS Room Layout

2.1.4.1 S5I GE Rev 2+ Option

Illustration 2-53:



2.1.4.2 IVUS Rev 3

Refer to [Volcano s5i Imaging System Integration in IGS Systems - Service Manual](#).

2.2 System Mechanical Curves

Refer to this section for the System Mechanical Curves of the Patient Tilting table

Table 2-7:

TITLE	ILLUSTRATION
Patient Tilting Table Interference Regions	Illustration 2-54
Table Rotation Axis vs Table Flange	Illustration 2-55
Tilting Table side clearance (CPR access)	Illustration 2-56

Illustration 2-54: Patient Tilting Table Interference Regions

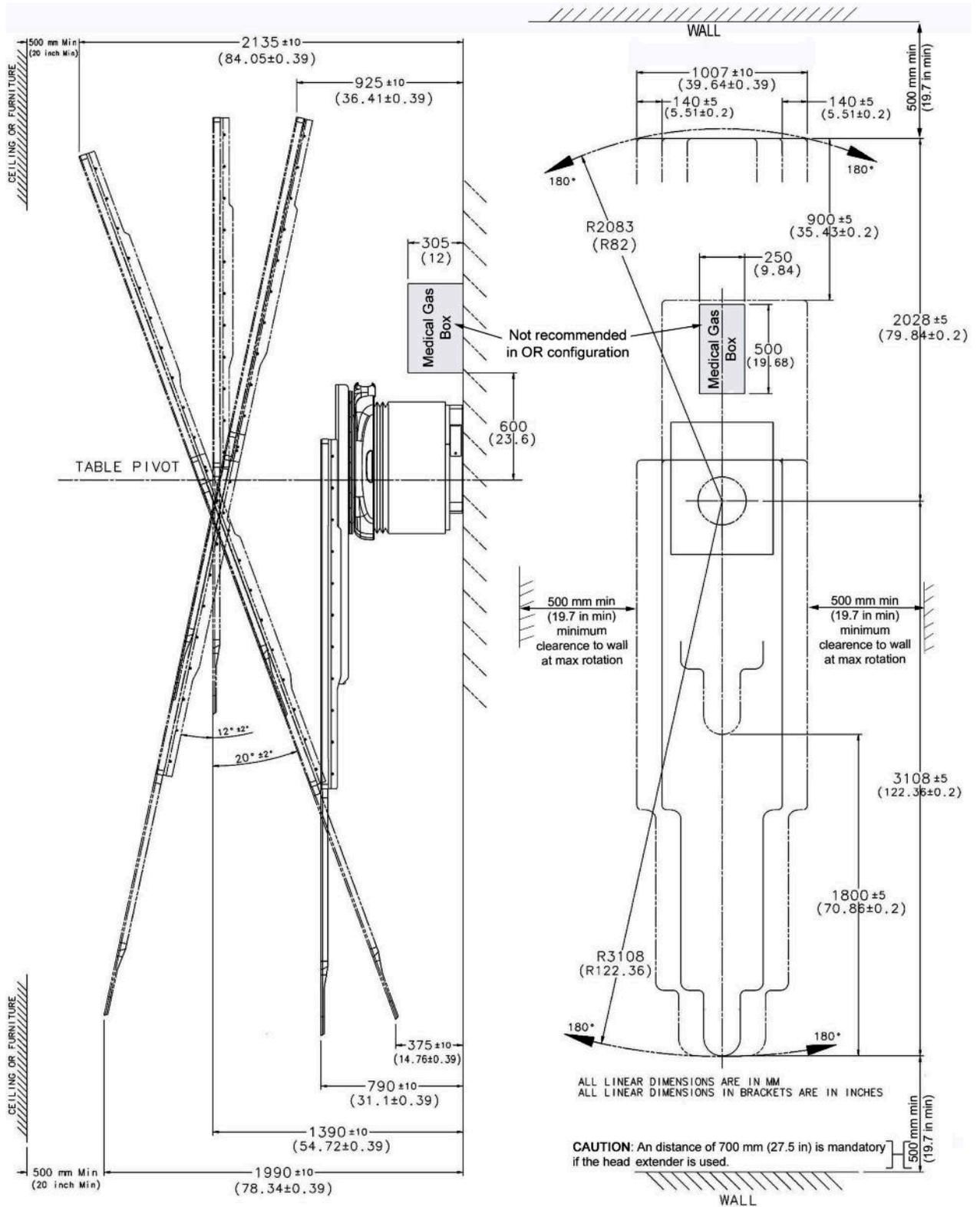


Illustration 2-55: Table Rotation Axis vs Table Flange

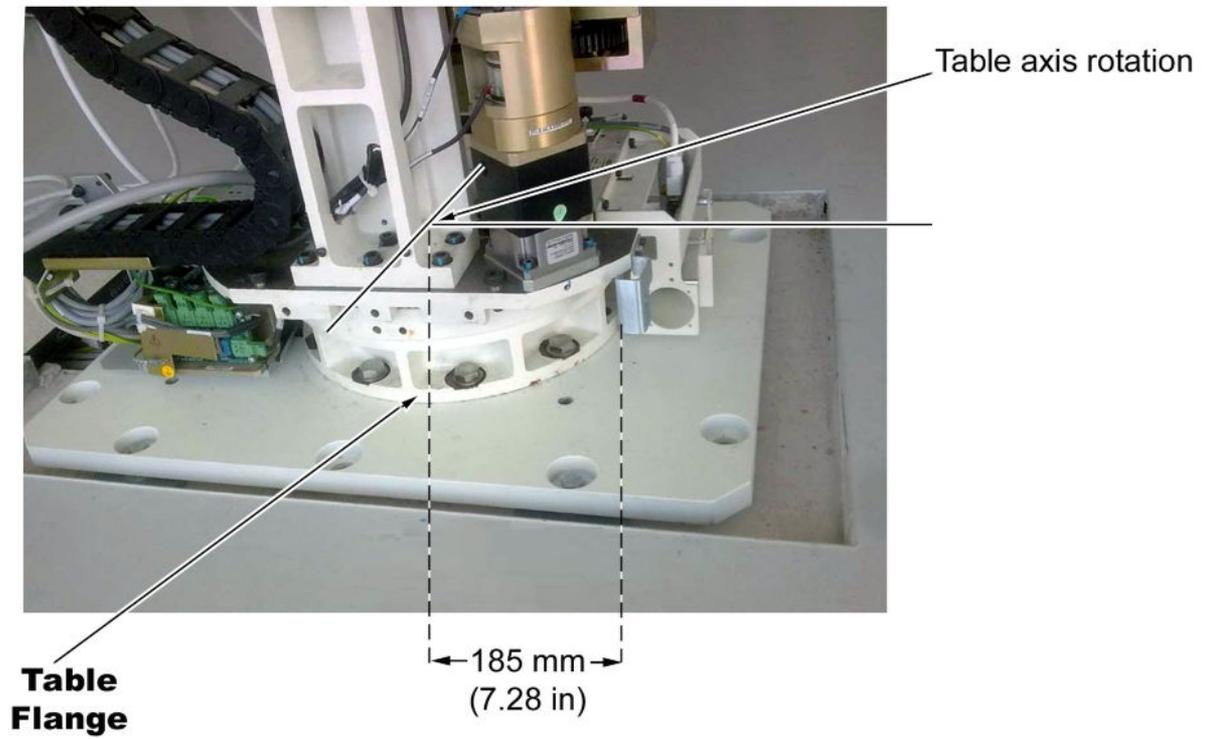
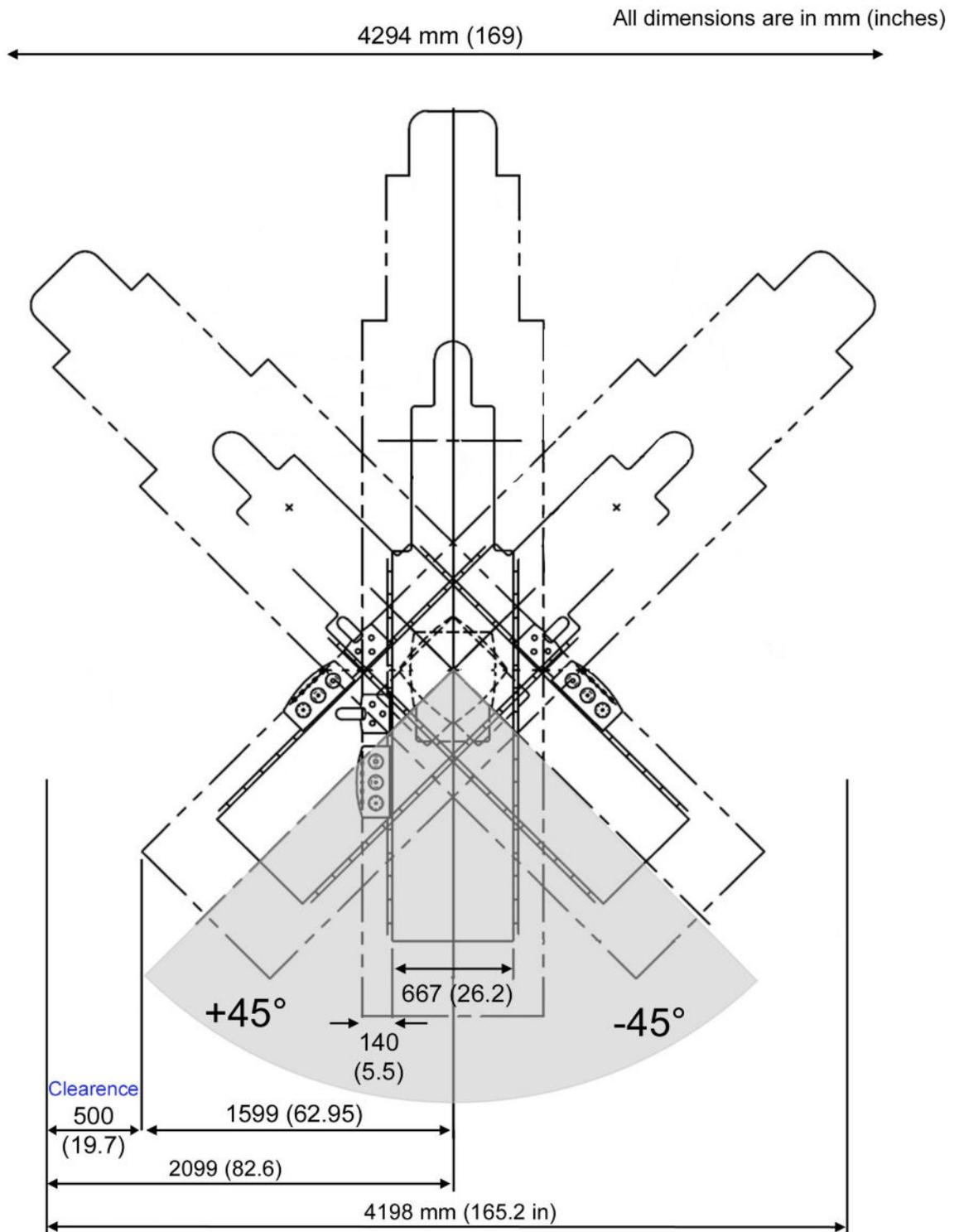


Illustration 2-56: Tilting Table side clearance (CPR access)



2.3 Room Layout Considerations

2.3.1 Service Access

Allow appropriate space for service access of equipment. Consult component pre-installation directions for clearance information.

In particular for the CMS assembly described in [Section 3.4.1, Cable Management System](#), it is required to manage the following access:

- a minimum of 700 mm between the wall and the CMS rotation axis to give access to both the CMS assembly and cables during installation and maintenance (refer to [Section 3.4.1.2, Illustration 2-72: CMS layout at ceiling](#)).
- a service opening (800 mm x 400 mm min typically) in the ceiling window to give access to the both CMS assembly and cables during installation and maintenance (refer to [Section 3.4.1.2, Illustration 2-72: CMS layout at ceiling](#)).

2.3.2 Clinical Access

Make sure that you plan the room with the following clinical access requirements:

- Provide easy access to the patient table. Stretchers and other mobile hospital equipment must reach the table quickly.
- Provide 500 mm safety clearance for moving components (Patient table, Gantry etc). The layout of the table in the room (PIM) shall make a provision so that the clearance between the maximum table position (head side) on system axis and any object in the room (e.g.: wall, device) be greater than 500 mm (19.7 in) or 65 cm (25.6 in) if the Header Extender is used), taking into account the fact that the Patient Table can rotate 180°.
- Provide sufficient space around the patient table for the unimpeded conduct of CPR (Cardiac Pulmonary Resuscitation). With the table in this position, the table must be capable of rotating +/- 45°
- Clinicians at the patient table must be able to communicate with assistants in the control area.
- There must be an unrestricted view of the video monitors and physiological monitoring equipment from the operator working position. For Large Display option systems, in case of failure of the large monitor:
 - if the GE 19" back-up monitors are mounted on the back of the LDM, the clearance around the main monitor suspension must assure that it can be immediately flipped at 180°, exposing the backup monitors
 - if the GE back-up monitors are mounted on a separate support, they must be visible from working position within 1 minute
- A 2nd LDM can be installed in patient vicinity in open LDM suspension configuration
- Operators in the control area must have easy access to the control console. However, position the controls (including handswitches) so that the operator cannot take exposures while looking around or standing outside the control booth's lead glass window.

- Consult customer on the number and location of nonelectrical lines (air, oxygen, vacuum, water, etc.) in the vascular room.

2.3.3 Peripheral Equipment

Consult hospital personnel regarding additional space requirements for the following types of hospital equipment:

- Storage cabinets.
- Sinks.
- Oxygen stations.
- IV apparatus.
- Injectors.
- Heart monitoring equipment.
- Crash cart.

2.3.4 Patient Environment Equipment

The components that may be installed within patient vicinity shall be certified medical equipment (the patient vicinity is defined in the standard as a space within the room 1.83 m (70.7 in) beyond the perimeter of the examination table and extending vertically 2.29 m (90.2 in) above the floor.”). For the System, the components that can be installed within patient vicinity are:

- Table
- C-arm
- Monitors
- Injector
- S5I GE System Intravascular Ultrasound Imaging System
 - Control Console or Joystick..
 - Touch Pad
 - Patient Interface Module(s).
- Table Side User Interfaces (TSUI)
 - Smart Box
 - Table Side Status Control (TSSC)
 - Table Panning Handle (TPD)
 - Intelligent Touchscreen Unit (ITU)
- Footswitch

- 3D Mouse
- Accessories:
 - Table Head Extender
 - Armboard
 - IV pole
 - Quick Strap
 - Head holder
 - Clear-Vu Arm Support
 - Mattress and mattress slicker
 - Shoulder Rests
 - Footrest
- Removable rails (sleeve)
- Rail Extender
- Head Widener
- Adaptor rail for table side controls
- Width Extender
- Armboard with thick pad (armrest)
- Universal Clamp
- Patient restraint strap

2.3.5 Layout Constraints



NOTICE

Minimum distance between Detector and Fluoro UPS is 3 m (118 inches).



NOTICE

The minimum distance between the detector and the C1 cabinet is 1 m.



NOTICE

The conditioner shall not be located more than 3 m (10 ft) below or 20 cm above the CMS interface.



NOTICE

The chiller shall not be located more than 5 m (15 ft) below or 8m above the X-ray tube.

2.3.6 Use of Room Template

The Room Template (p/n 5447156) delivered as pre-install item can be used to clearly identify the mounting position for the main system components.

It also provides good information to help during the target positioning survey.

NOTE: This template can be ordered in advance with pre-installation parts. When using the room template to install the table baseplate, mark on the template (in the boxes close to the reference point) the X and Y values corresponding to the distances between the wall and the reference point so the template can be repositioned accurately during the mechanical installation.

3 Room Structural Requirements

3.1 General Policy

The customer is responsible for the structural analysis and mounting of the base plates. If GEHC is forced to mount the base plate, the Local Customer Team must hire a structural engineer to design and approve the mounting method and provide GEHC with an engineering report.



NOTICE

Floor, walls and ceiling structural design that meet mechanical constraints of supporting the system, fall under the customer's responsibility.



NOTICE

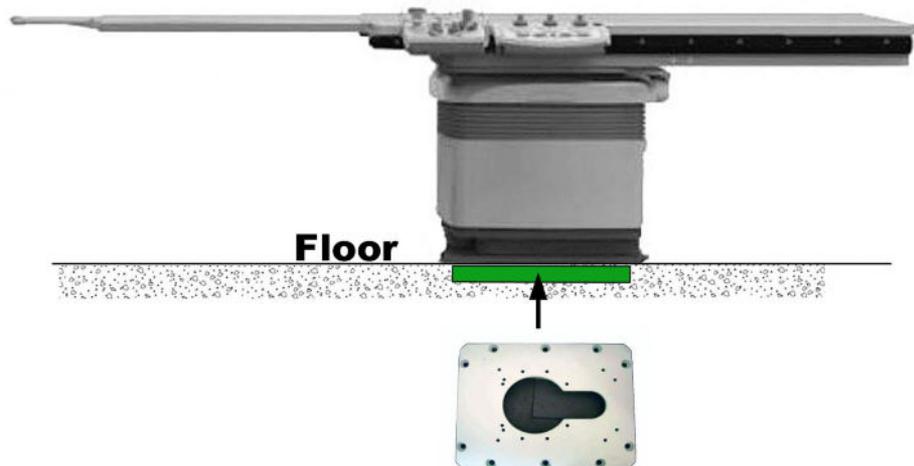
The customer is responsible for the preparation of the floor according to the specifications below.



NOTICE

The baseplate is mandatory to install the Tilting table (patient support).
The Table must never be installed on grade.

Illustration 2-57: Table on table baseplate

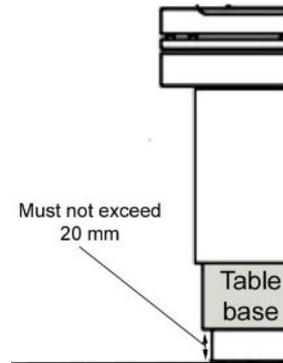




NOTICE

The gap between the Table Foot bottom and the floor end shall be lower than 20 mm (0.97 in). Any bigger gap would make the system incompatible with the Innova Vision Applications.

Illustration 2-58: Gap between Table Foot bottom and the floor



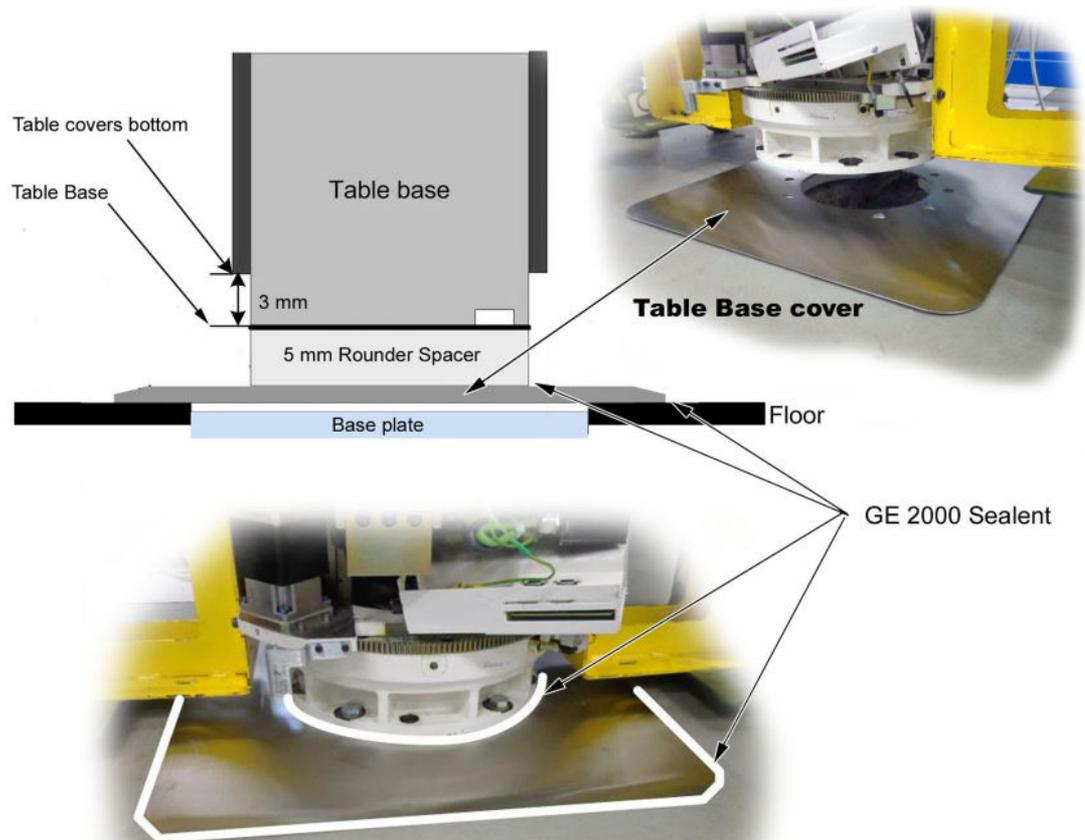


NOTICE

It is recommended to seal the table base by adding a special cover on top of the table base plate. This recommendation particularly applies to Discovery IGS systems installation where the floor finish (top resin layer) may be higher than the table base plate.

Gap between the Table base and the Base plate must be sealed using GE 2000 Silicone Sealant. Any Sealant that may protrude along the edges can be removed.

Illustration 2-59: Table Baseplate cover



NOTE: Any gap between the table base plate top surface and the stainless cover shall be shimmed so that it does not bend when tightening bolts which secure the table base on the floor.

The 5 mm spacer not shown on all pictures.

Refer to IST0142 - Tilting Table Installation provided in the service manual for more details on the mounting instruction.

The preferred installation method for the patient table is through-bolting. The through-bolting method can be used in all seismic zones. If through-bolting cannot be used, use provided floor anchors instead.

3.2 Floor Requirements

3.2.1 Requirement for sub-floor



NOTICE

A detailed Sub-Flooring Control Report (measurements before flooring) shall be provided by the applicator. It shall contain at least the following information:

- substrate flatness
- tensile test of substrate
- compression strength test on substrate
- substrate humidity
- substrate level

Table 2-8: Acceptance specifications for concrete Substrate before monopur application

CONTROLS	SPEC (Metric)	Spec (Imperial)
Before Flooring (substrate = concrete)		
Substrate flatness	< 3 mm under 2 m straightedge	< 3 mm under 6 foot straight-edge
Substrate levelness	< 1 mm/m	< 1 mm/m
Pull-off strength (i.e Elcometer Adhesion tester)	> 1.5 MPa	> 218 PSI
Hardness (i.e Schmidt Hammer Sclerometer)	> 30 N/ mm ²	> 4300 PSI

3.2.2 Requirement for Tilting table baseplate installation



NOTICE

The Table baseplate is mandatory to install the table (patient support).

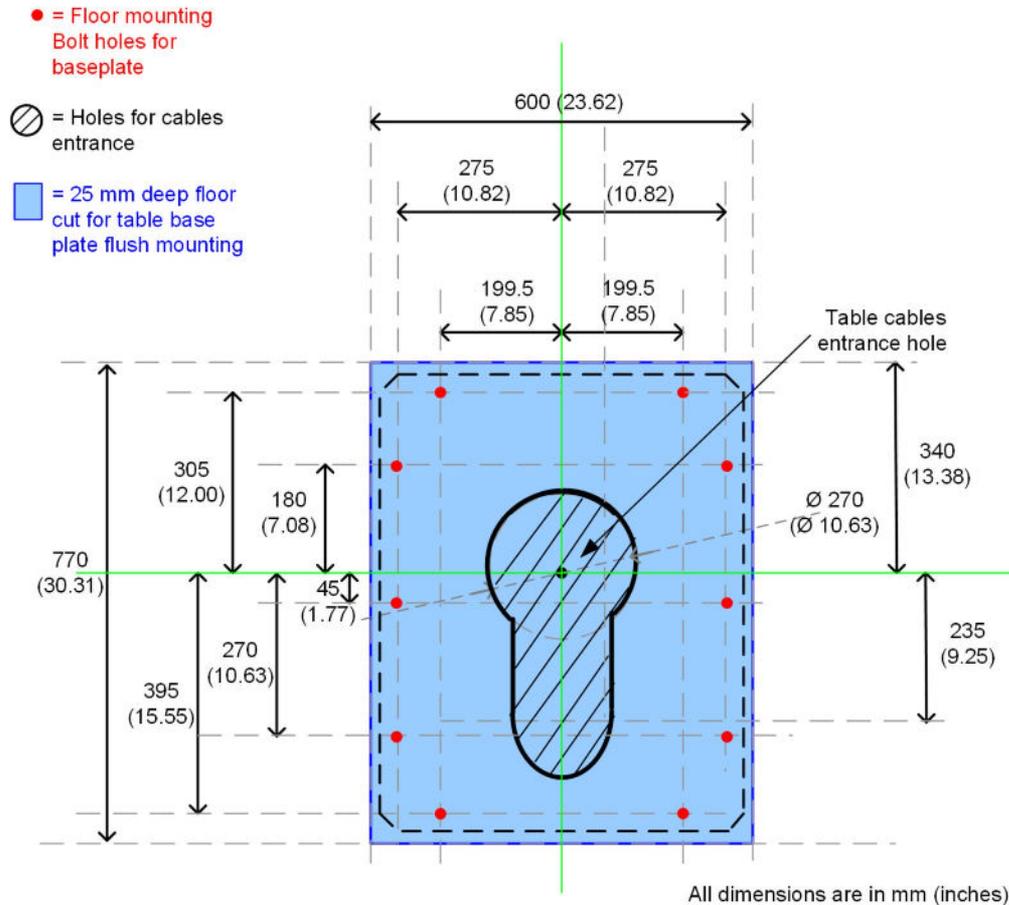
3.2.2.1 Preferred location in concrete floor and hole dimension

In the examination room, the patient table baseplate is placed directly on the concrete floor. The location of the cable access needs to be carefully planned.

If the cable run is located under the concrete floor, the cables will have to come through the floor and in this case you will need a hole for the patient table.

The diameter of the cable entrance hole must be 270 mm or 10.63 in.

Illustration 2-60: Holes location in concrete floor



NOTE: With any kind of fixation methods (Bolts M20, Mechanical anchors or Chemical anchors), the number of holes used mandatorily is: **Table baseplate : 10 max and 8 min holes used are acceptable.**

We can have only 2 consecutive holes omitted.



NOTICE

Due to the plastic bushing used in the USA to protect cables from the sharp edges of conduits it is necessary to place the cable conduit inside the table cable access opening. The height of the outcoming conduit plus bushing is limited to 1/2 in (12.7 mm).

- NOTE:** Refer to [Table 2-9](#) for:
- diameter and depth of mounting holes for baseplate
 - pull out effort on each fixation bolts.

3.2.2.2 Floor requirements when using provided floor anchors

The maximum pullout force per provided anchor was calculated assuming:

- A concrete compression strength of **30 MPa** at 28 days (which is the minimum required compression strength).
- Anchors installed to the required hole depth of **165.1 mm** minimum, and
- Center of anchor hole to concrete edge distance **79.4 mm**.

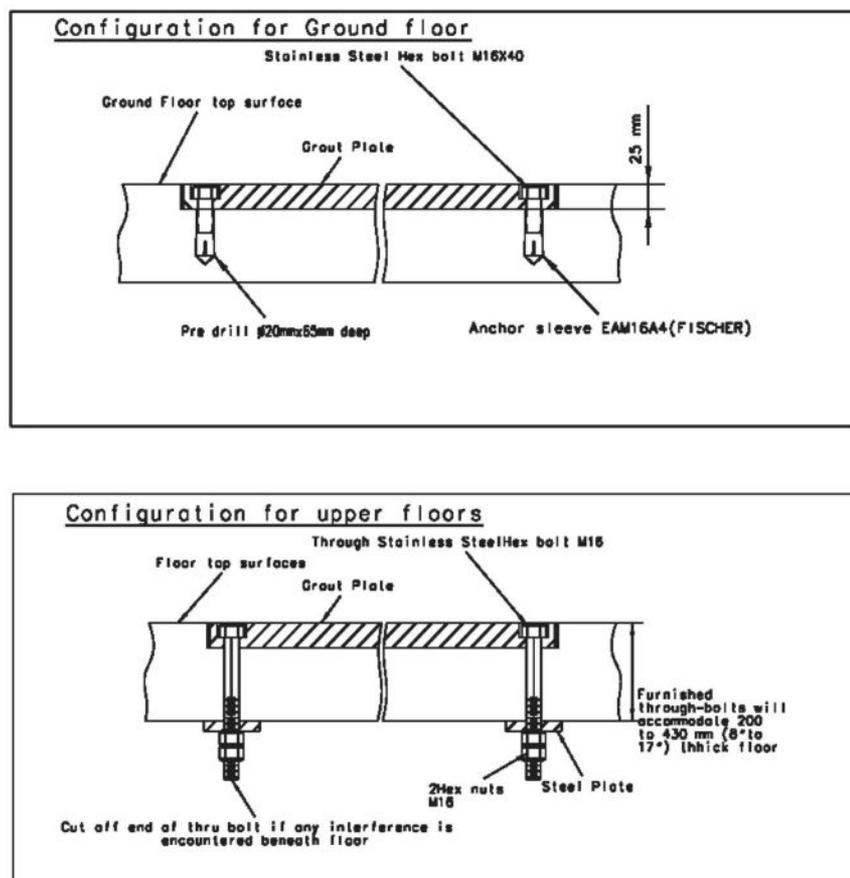
Make sure to obtain data on compression strength of the concrete before using floor anchors.

3.2.2.3 Pan Type Floor Construction Requirement

For Pan type floor construction, steel channels must be designed by a local structural engineer to span floor joists.

NOTE: For specific floor preparation procedures, refer to PIM Discovery™ IGS 730, Discovery™ IGS 740 Cardiovascular Imaging System Pre-Installation Kit Installation Procedures.

Illustration 2-61: Table floor mounting layout





NOTICE

Prepare the floor such that the Table baseplate will be flush with the floor finish surface, taking into account the thickness of the floor finish material.

3.2.2.4 Pull out efforts, holes specifications and recommended chemical anchors

NOTE: Chemical anchors are not provided by GE.

Table 2-9: Chemical anchors Pull out efforts and recommendations

see <i>Floor mounting Bolts for baseplate</i> in Illustration 2-60	
Pull out effort	1120 daN per bolt if 10 used and 2000 daN per bolt if 8 used
Number of holes in the plate	10 max (8 min mandatory)
Recommended chemical anchors example 1	Supplier HILTIHVU adhesive capsule + HAS Anchor rod
Threaded rod	M20 A4-70 / 333 135 3/4
Hole diameter in the floor	24 mm (7/8 in)
Hole depth in the floor	170 mm (6-5/8 in)
Minimum floor thickness	220 mm (8-1/2 in)
Max Tightening Torque	150 N.m (110 ft-lb)

NOTE: Refer to supplier technical documents for all specification and installation data about chemical anchors.

NOTE: For Floor mounting holes location, refer to [Illustration 2-60](#).

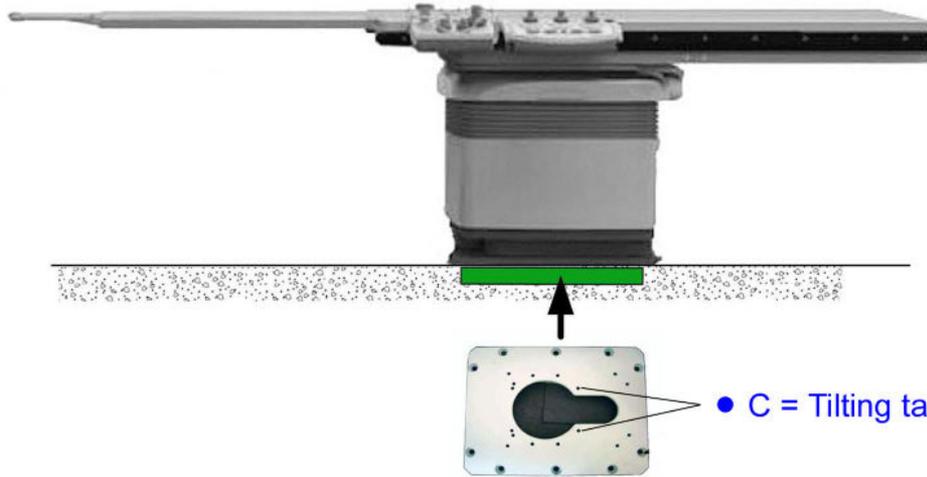
3.2.3 Requirement for Tilting table installation



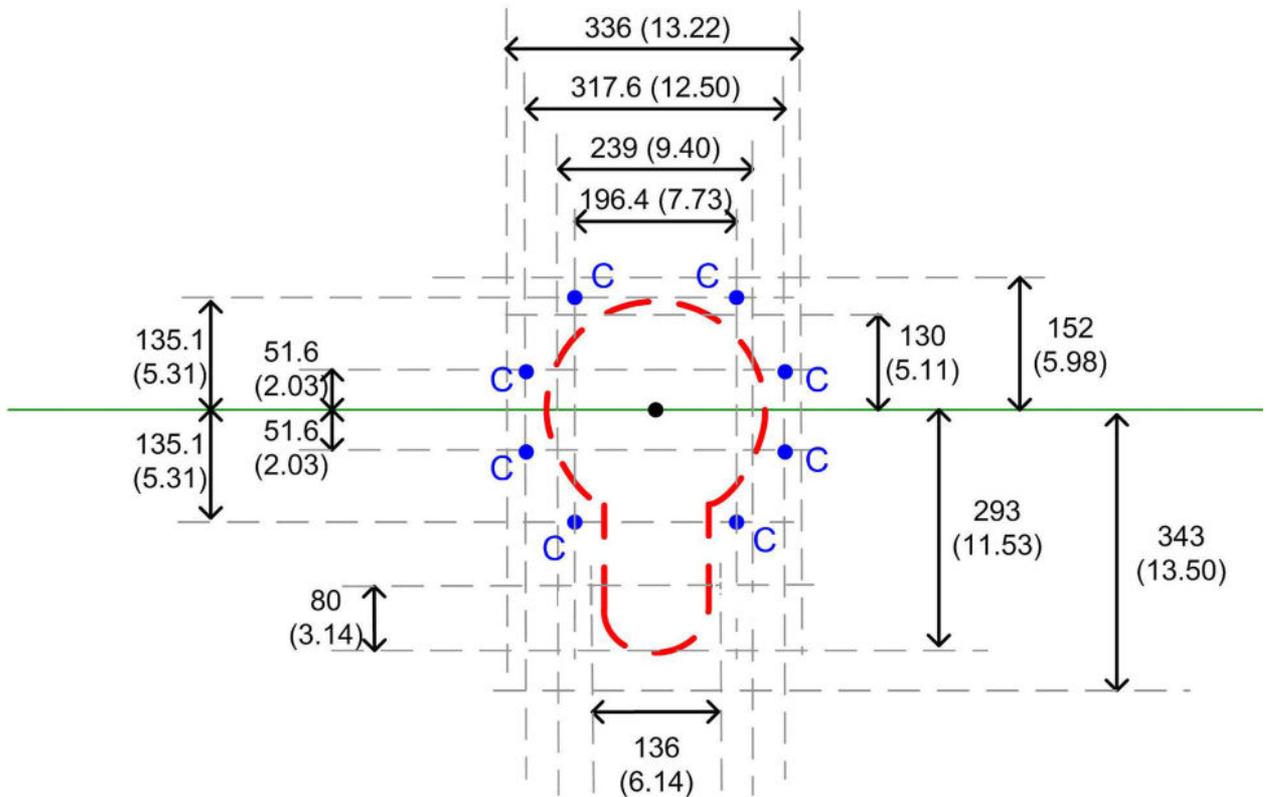
NOTICE

The Table must never be installed on grade. "Above the floor" mounting of the Table Baseplate is not allowed. It would cause collisions with the gantry.

Illustration 2-62: Table mounting holes



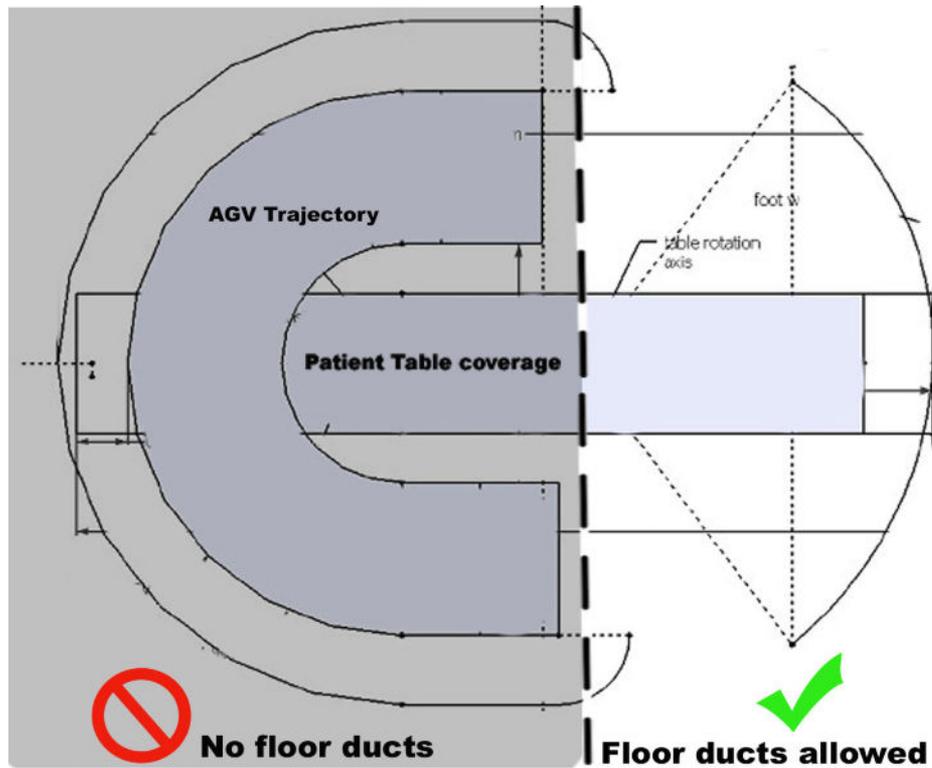
All dimensions are in mm (inches)



3.2.4 Requirement for cables route in the floor restrictions

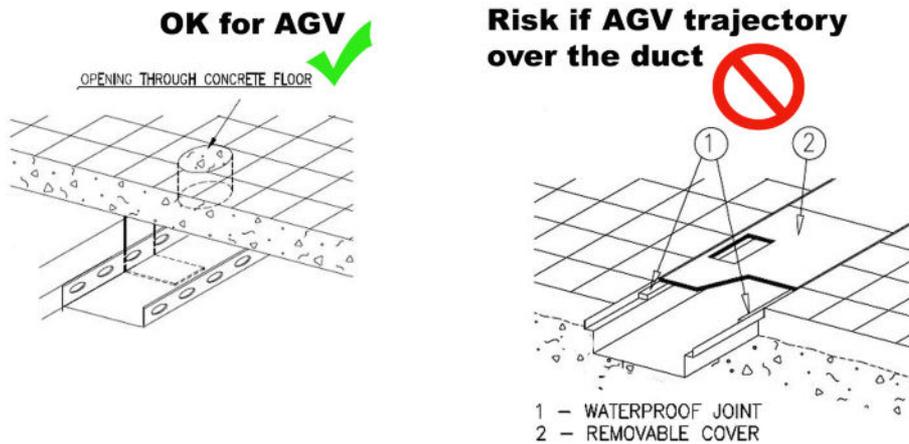
Placing of Floor ducts are not allowed in the area covered by the passage of the Gantry.

Illustration 2-63:



The presence of ducts presents a risk to the AGV.

Illustration 2-64:



CAUTION

Caution! No floor drain in Gantry area

3.2.5 Requirement for flooring system

The floor system compatible with the Discovery™ IGS 730, Discovery™ IGS 740 system is the “Monopur 4+3” monolithic flooring. It consists of 5 layers as described below:

1. primer layer “Monopur industry Primer”
2. bulk layer “Monopur industry”
3. conductive adherence layer of the two components conductive epoxy “Monopox conductive primer WB”
4. surface layer of PU-cement three components mix “Monopur industry SL conductive”
5. hardtop conductive layer.

Contact your local GE representative for a list of certified applicators of the flooring system.



NOTICE

(Bare) concrete floor preparation and floor resin application falls under the customer responsibility.

No expansion joint shall be present in the concrete in the area where the flooring system will be applied.

The resulting finished floor surface shall meet the following specifications:

- Levelness 1 mm/m
- Flatness 3 mm/2m



WARNING

MEETING THE REQUIRED SPECIFICATIONS FOR THE FLOORING SYSTEM IS CRITICAL FOR THE PERFORMANCE OF THE DISCOVERY™ IGS 730, DISCOVERY™ IGS 740 SYSTEM.



NOTICE

A detailed Flooring Control Report (measurements during/after flooring) shall be provided by the applicator. It shall contain at least the following information:

During the application of the flooring system (for each individual layer):

- used material quantity
- thickness monitoring (comb method)
- curing time
- substrate temperature
- substrate humidity
- ambient temperature
- ambient humidity.

After the application of the flooring system:

- tensile test of floor finish on substrate
- hardness measurement
- conductivity measurement
- flatness measurement.

3.3 Mounting Requirements

3.3.1 Floor Loading and Recommended Mounting Methods

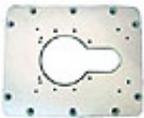
For floor loading, see section *Components location and characteristics* in [Description of the System](#)

The following components are ground mounted:

- Patient Table
- Fluoro UPS

3.3.2 Table Floor Mounting

Table 2-10: Table base plate mounting components (5433811)

Item	Name	Part #	Description	Quan.	Notes
	Table base plate	2361993	Plate to be anchored under the table	1 pc	
	Hex Screws	5120708	Screw M16x40x40 Inox A4-70 Pass	10 pc	
	Washer, Flat	99125091	Washer Plain - Large 17 mm/40 mm	10 pc	
	Floor Anchor	46-302265P1	5/8 diameter 6" floor anchor bolts	10 pc	
	Dowel	2290937-2	Wood Dowel; 16 mm diameter	10 pc	
	Bolt, Hex	2296892	Through bolt M20-500-400	10 pc	
	Washer, Flat	99142204	Washer plain 21 mm/40 mm for Through Bolts; one for each bolt	10 pc	
	Plate	2290941	Special Steel Spacer Plate; 4 in. x 4 in. (102 mm x 102 mm); one for each bolt	10 pc	
	Nut, Hex	99141607	Hex Nut M20 STL galvanized, two for each bolt	20 pc	
	Dowel	2290937	Wood Dowel; 24 mm diameter	10 pc	

Item	Name	Part #	Description	Quan.	Notes
	Cap	5130979	Plastic Cap	10 pc	
	M16 Plug	5130982	Plastic Plug	10 pc	

3.4 Ceiling Requirements

3.4.1 Cable Management System

The gantry Cable Management System assembly (CMS) must be mounted to the ceiling according to the requirements given in this section.

Subsequent sections describe different mounting configurations depending on the type of room.

Load on the interface

maximum load per bolt (4 bolts):

- max axial effort **1530 N**.
- max shear force **125 N**.

The supporting structure design shall take into consideration the safety coefficient of 4 (customer's contractor responsibility).

3.4.1.1 CMS Fixation modes to the ceiling

There are two fixation modes to the ceiling:

1. Using a structure provided by the customer: typically the case for OR Room (surgical environment) where use of rail is not recommended.
2. Using the CMS intermediate rails provided with the system: normally the case for any standard interventional rooms.

For the allowed configurations of Patient Room Height, refer to the configuration table in [Patient Room Dimension Requirements](#), § Patient Room Height.

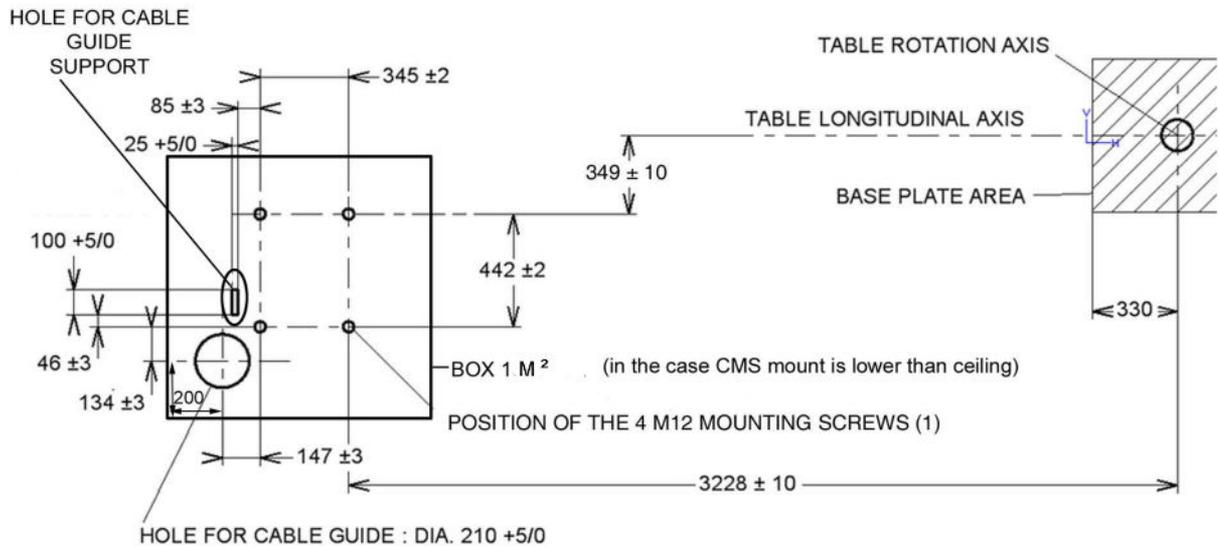


The ceiling structure is the customer's contractor responsibility.

3.4.1.1.1 CMS Mounting directly on the structure

The ceiling structure shall be constructed considering the CMS specifications given in [Section 3.4.1.2](#).

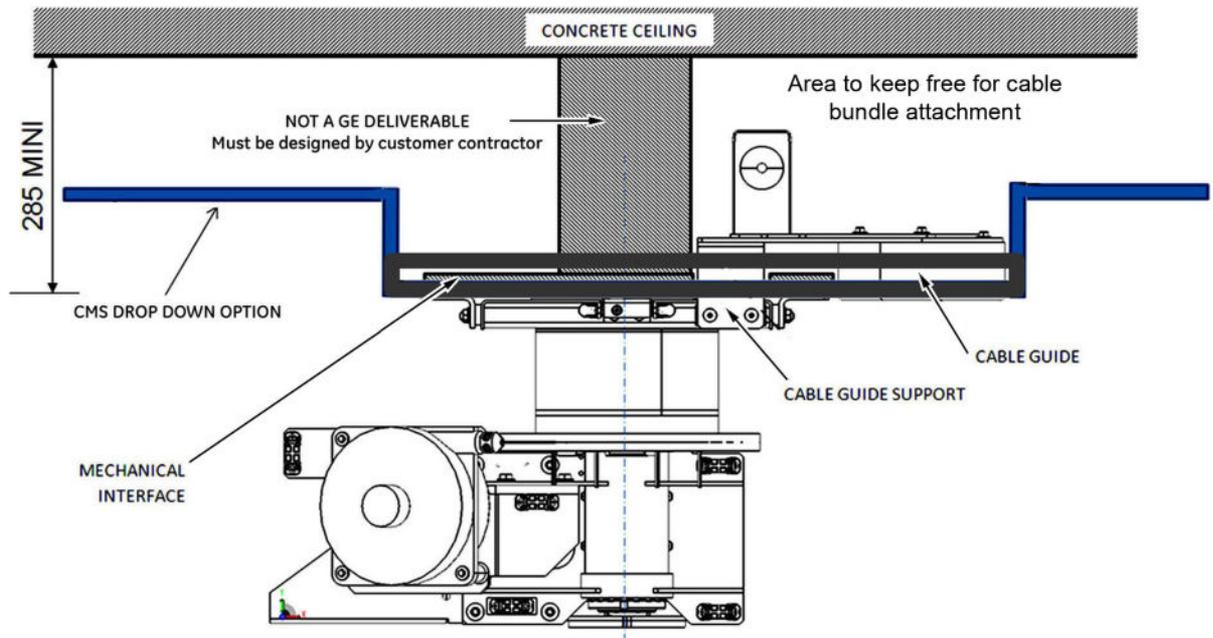
Illustration 2-65: Mechanical interface with mechanical support or concrete ceiling



- (1): Position needs to be controlled while drilling holes or installing the CMS mounting structure to make sure that position is within the specified range.
- (2): The Mechanical interface (mounting plate) shall be adjustable in height to allow final adjustment once the flooring is done.
- (3): The Mechanical interface (mounting plate) dimension shall be kept typically under the 520mm x 490mm so that the CMS top covers mounted at the end of install can nicely hide them.
- (4): Refer to [Section 3.4.1.2](#) below for more information on CMS fixation constraints.

NOTE: In OR (without the intermediate rails 50 / 30): the distance between the bearing face of the mounting brackets of carriage and the slab ceiling must be 285 mm.

Illustration 2-66: CMS OR fixation mode sideview



NOTE: In the case of hard (sealed) ceiling (surgical configuration), a service entry point shall be designed (customer responsibility) near the CMS fixation point to allow for the service access for installation and maintenance operations.

Enough space shall be managed in the ceiling around the CMS fixation area so the top part of the cable guide support mounted above the ceiling can actually be used to attach the cable bundle with no risk of damaging the cables. If not possible, a local solution needs to be designed to ensure the cable bundle is securely attached.

NOTE: Screws for attaching the CMS to the mounting structure are not coming with the system and shall be provided locally based on the type of mechanical interface to be used and following recommendations below.

Illustration 2-67: Mounting on mechanical interface with smooth holes

Mounting on mechanical interface with smooth holes

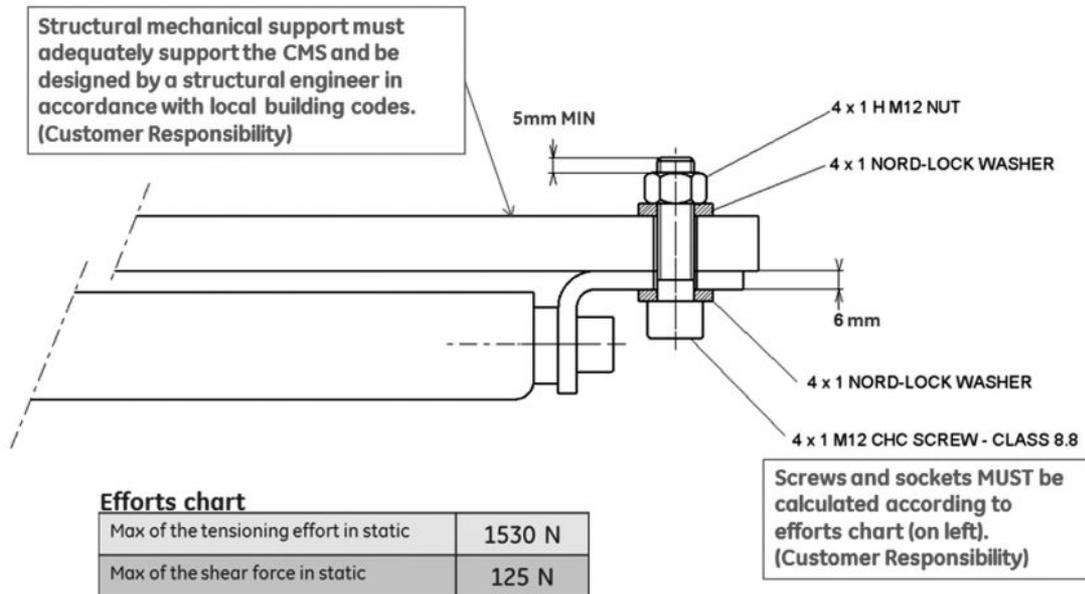
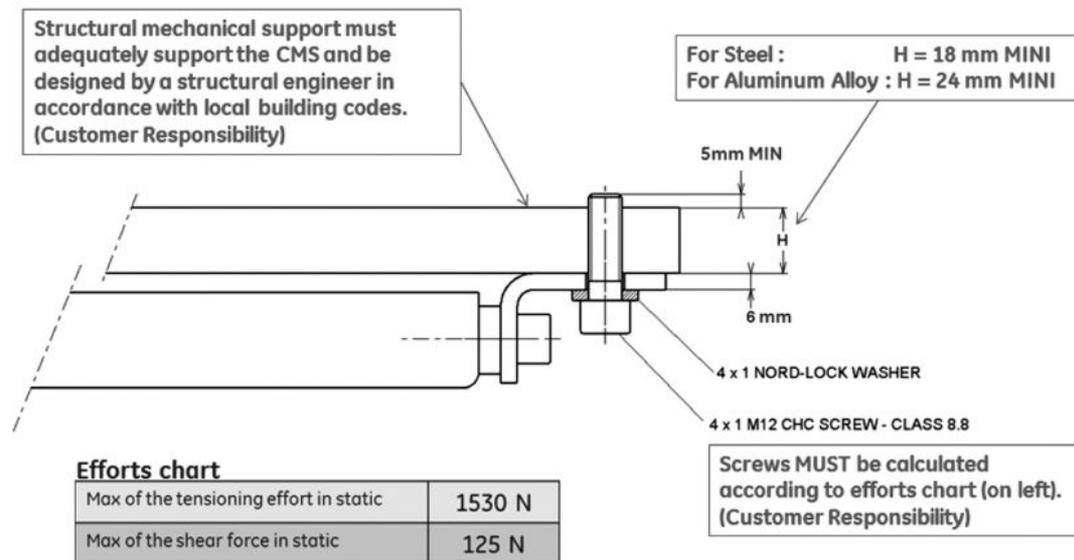


Illustration 2-68: Mounting on mechanical interface with threaded holes

Mounting on mechanical interface with threaded holes



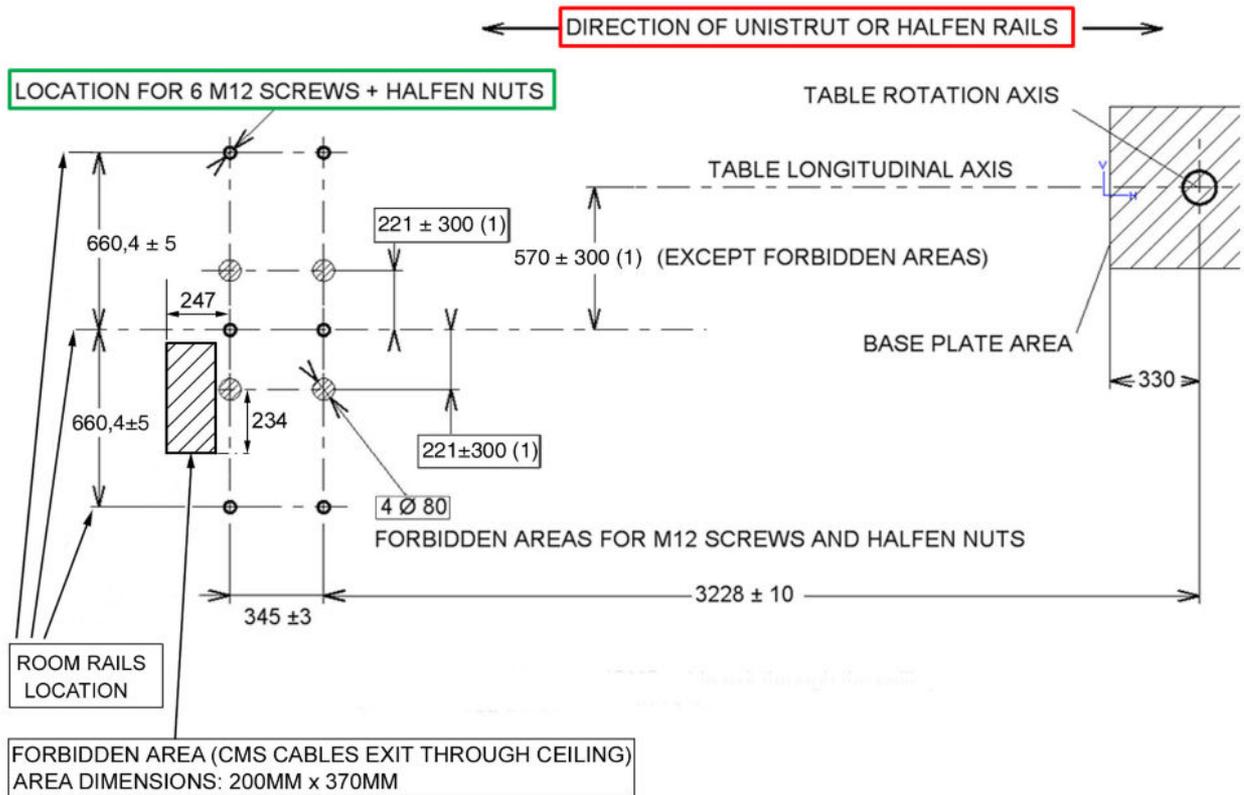
3.4.1.1.2 CMS Mounting with intermediate rails (for interventional configuration)

The CMS (intermediate) rails are designed to be mounted on a ceiling structure under customer's ownership.

NOTE: It is assumed that the ceiling structure is made of rails at a distance of 660.4 ± 5 mm (either parallel or perpendicular to table axis).

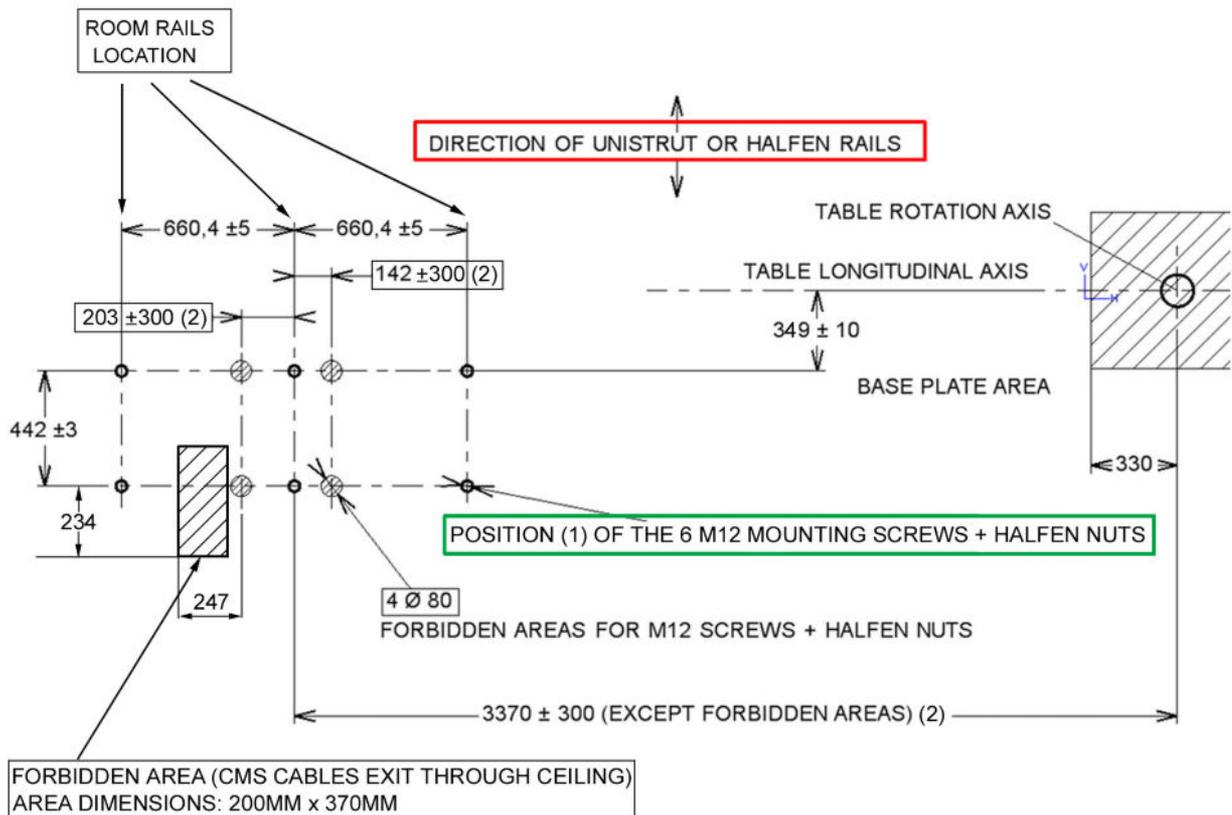
Refer to Section 3.4.2.2.3 for detail on similar structure recommended for Mavig Suspension.

Illustration 2-69: Interface definition with rails parallel to the table



(1): Forbidden areas correspond typically to mounting configurations for which either the nuts would interfere (see the 4 areas of 80 mm diameter that are not allowed) or the CMS screws would be too close to the CMS rail fixations. The CMS cables exit area (200 mm x 370 mm) need also to be taken into account.

Illustration 2-70: Interface definition with rails perpendicular to the table



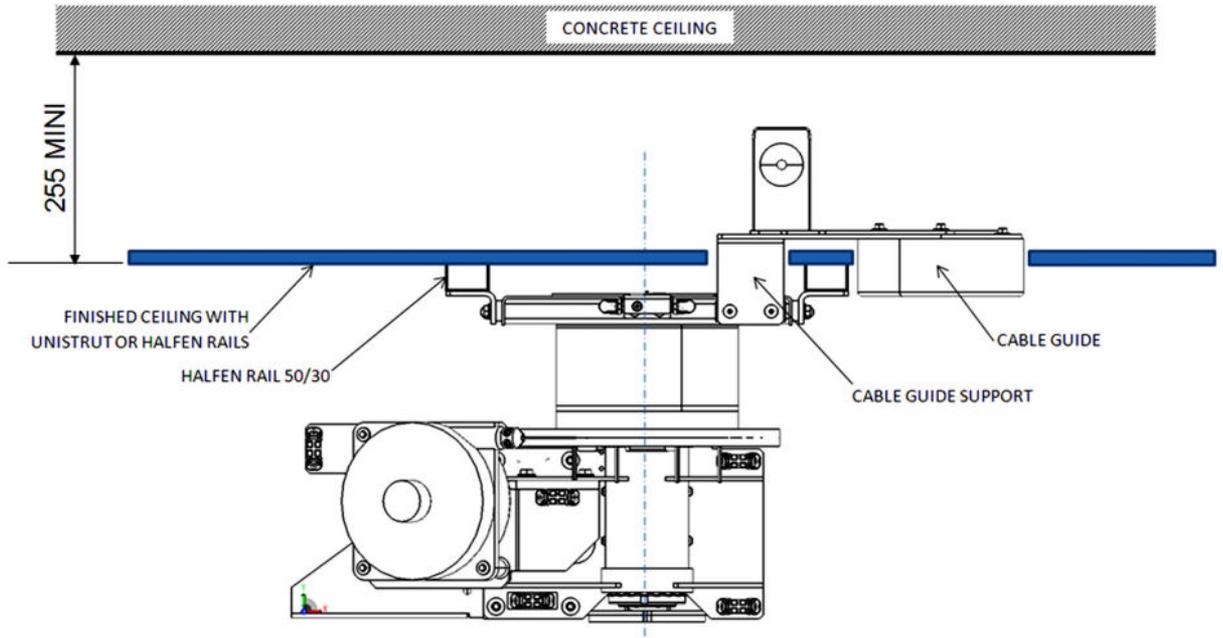
(1): Position need to be controlled while drilling holes or installing the CMS mounting structure to make sure position is within the specified range.

(2): Forbidden areas correspond typically to mounting configurations for which either the nuts would interfere (see the 4 areas of 80mm diameter that are not allowed) or the CMS screws would be too close to the CMS rail fixations. The CMS cables exit area (200mm x 370mm) need also to be taken into account.

NOTE: In IR (with CMS rails provided): the distance between the underside of the rails or Halfen Unistrut 41/41 and ceiling slab shall be 255 mm.

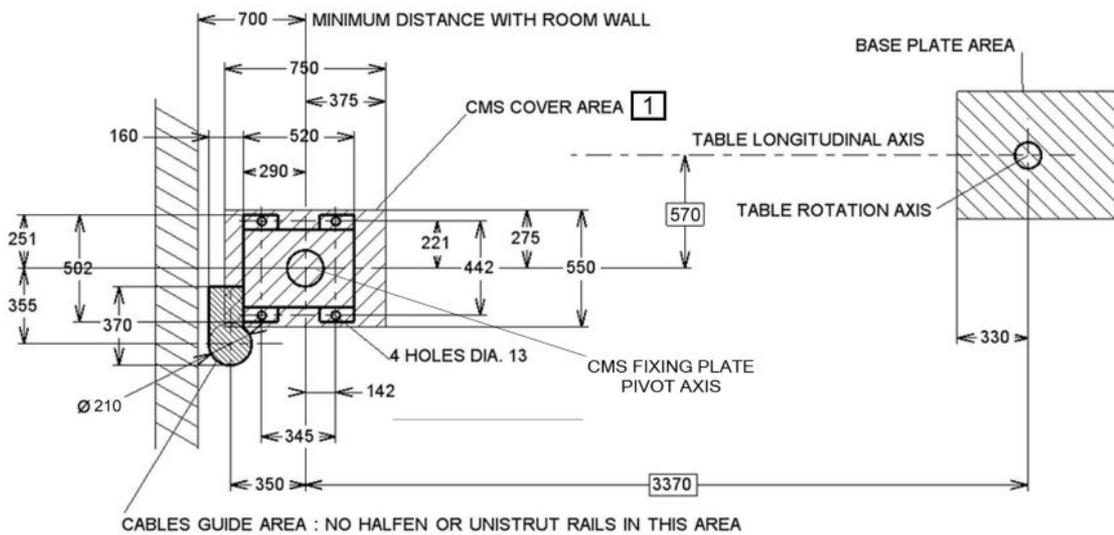
NOTE: CMS (intermediate) rails are standard Alfen 50/30: other type of rails can be used in replacement if fully equivalent (e.g. for aesthetic reason).

Illustration 2-71: CMS IR fixation mode sideview



3.4.1.2 CMS fixing plate pivot versus the patient table axis

Illustration 2-72: CMS layout at ceiling



CAUTION

The CMS fixing plate pivot axis is NOT in the center of the four fixation points. It is 30mm shifted towards to table ($345/2 - 142 = 30.5\text{mm}$).

NOTE: The minimal distance to the wall on the rear is required to manage access during CMS installation and maintenance.

NOTE: The room template can be used to easily mark position on the floor and ceiling using a laser.

3.4.1.3 Space requirement for CMS plate fixation covers



WARNING

NO MOUNTED HARDWARE CAN PROTRUDE BELOW THE FINISHED CEILING HEIGHT IN THE CMS COVERS AREA SUCH AS UNISTRUT MOUNTING BOLTS, SUPPORT BRACKETS, SPRINKLERS, AIR VENTS, ETC.

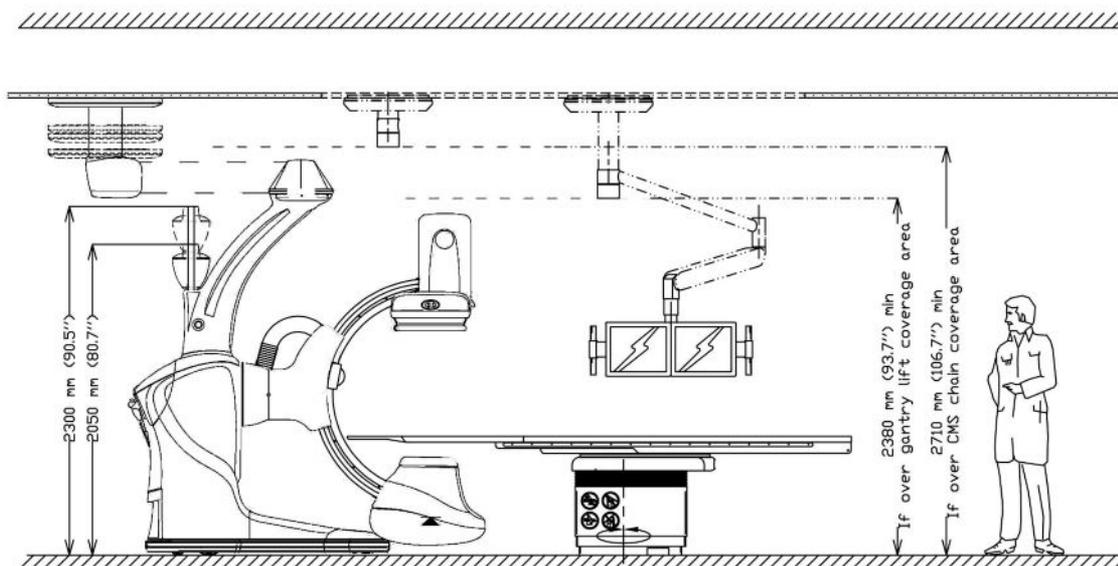
Refer to (1, Illustration 2-72) for CMS covers area.

3.4.2 Monitors suspensions

3.4.2.1 Open Monitor suspension

Attention must be paid to the height of suspended elements of the open suspension, collision must be avoided with the gantry.

Illustration 2-73: Potential collision between laser, detector lift and mast/chain



3.4.2.2 Mavig Suspension

Aluminum rails support the In-Room Monitor bridge used in the system X-ray rooms.

Reference:

For additional details on ceiling requirements for stationary rails, refer to: Direction 46-019639, *Advantx (VHLA) XT Stationary Rails Installation and Adjustment*.

When evaluating ceiling you must take into account the following mounting information:

3.4.2.2.1 Rail Mounting

Attach stationary rails to structural steel with through-bolts in concrete ceilings. Do not use screw anchors in direct tension.

Mount stationary rails directly to the ceiling slab or to flush-mounted unistrut or halfen structure. In higher rooms with false ceiling, mount stationary rails to rigid vertical members hung from ceiling slab.

Securing a supplementary channel to the bottom of the vertical members and mounting the stationary rails to this channel can greatly reduce the number of vertical members.

The stationary rail support structure must be leveled before installation can begin. Do not assume that any support structure is level within specified tolerances, particularly after removing suspensions from an existing room.

3.4.2.2.2 Bolt Specifications

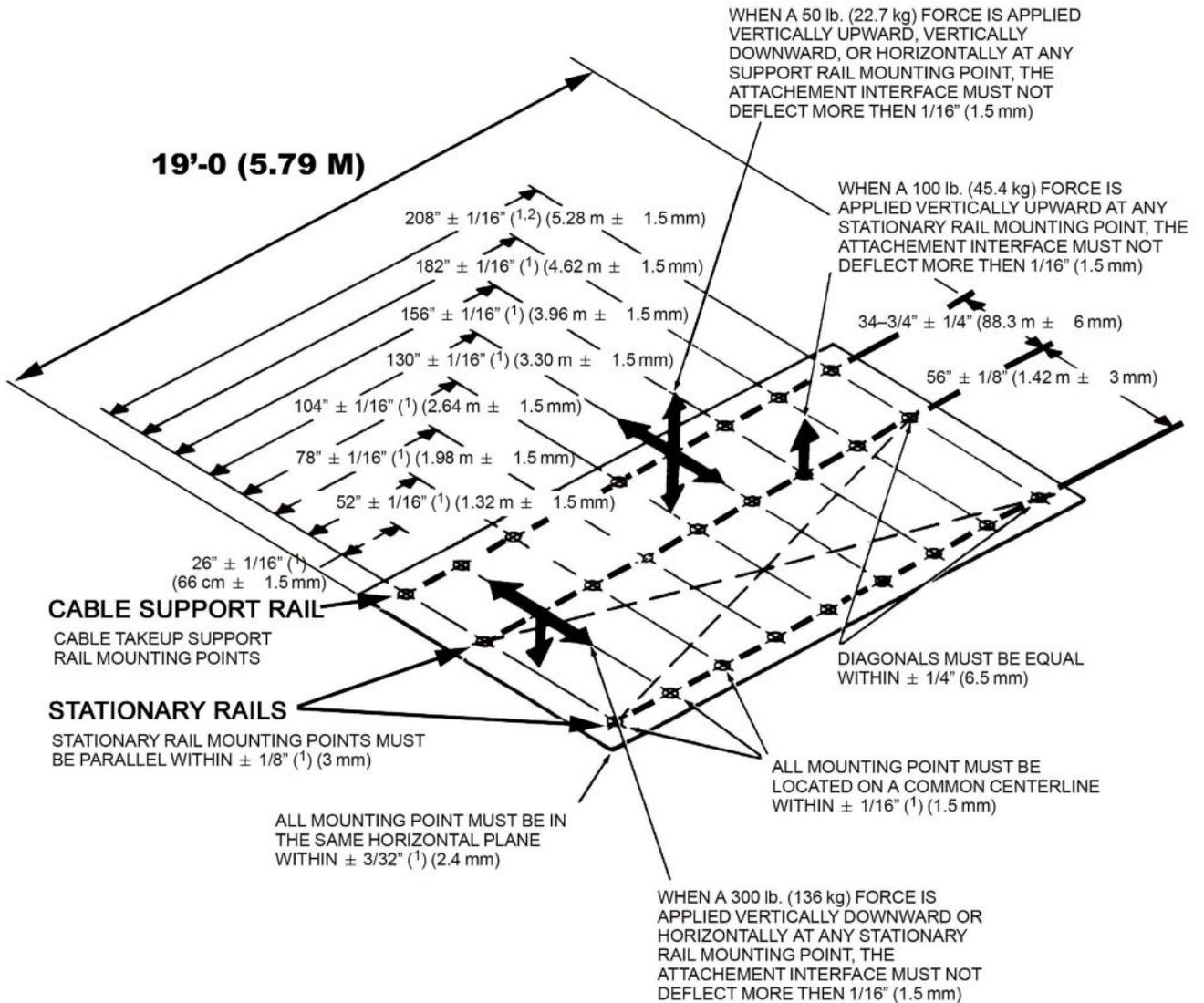
- The maximum load per bolt will not exceed **1557 N**.
- Each bolt must not “pull out” or otherwise fail under a vertically downward *dead* load of **6227 N**.

3.4.2.2.3 Select Rails

Rails for Mavig suspension:

All XT Stationary rails are with a select length process.

Illustration 2-74: SPECIFICATIONS FOR A TYPICAL 19'-0 (5.79 M) INBOARD STATIONARY RAIL MOUNTING INTERFACE (BOTH RAILS CEILING MOUNTED), FOR MAVIG SUSPENSION



NOTES: 1. NONE CUMULATIVE ERROR.
 2. SPACE BETWEEN LAST 2 HOLES MAY BE LESS THAN 26" (66 cm)

Table 2-11: Stationary rail in different length

Rail length mm (ft)	A	C	D	INBOARD RAILS
186 inch / 472 cm	7*660.4=4,623		51	S18121RC
222 inch / 563 cm	8*660.4=5,283	254	51	S18121RB
228 inch / 579 cm	8*660.4=5,283	406	51	S18121RA

3.4.2.2.4 Cable Support for Monitor Cables

A cable support (cable drape) is provided with the System.

The cable support kit contains:

S18101SX (Drape with 3 M Bridge, on suspensions for X-Ray tubes and monitors, contains 9'6" track, three carriers, and mounting hardware)

NOTE: In Americas the Cable Support Kit must be provided locally by the Customer (e.g. CPGE55 from Unistrut).

3.5 Wall Requirements

3.5.1 General Requirement

The C1 & C2 Cabinet, the PDB and the LDM cabinet (optional) must be securely fastened to the wall to prevent them from tipping. The Fluoro UPS interface box shall be fixed to the wall, floor mounting is not accepted.

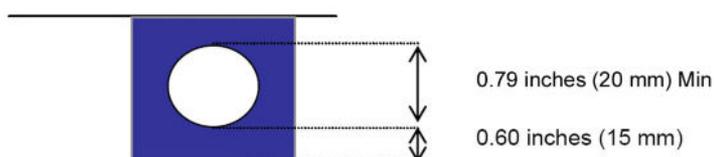
3.5.2 Optional Large Display secondary monitor

An optional wall mounting kit for a 2nd LDM can be provided by GE. It shall be mounted according to the manufacturer's mounting manual, see *Articulating Arm Wall Mount Installation Manual* in OEM manuals list.

A hooking point shall be provided in order to lift the monitor to the swingout arm during installation:

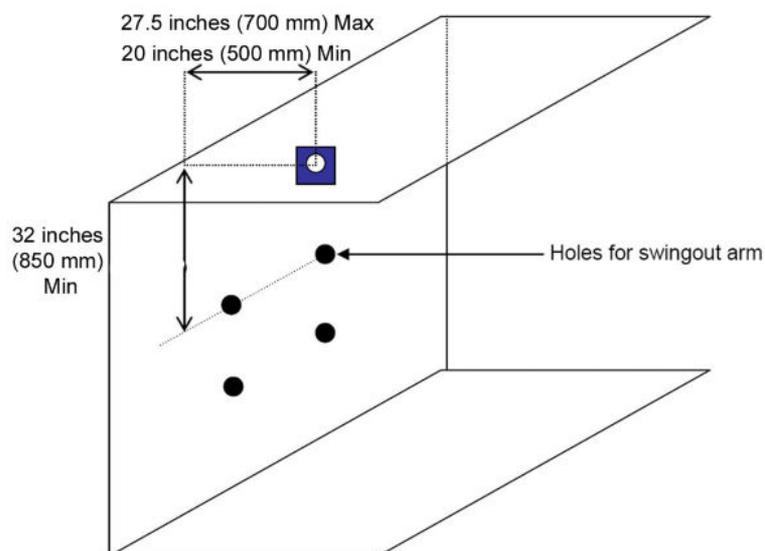
- Hooking point characteristic: It must withstand up to 440 lbs (200 Kgs)
- Hooking point position:

Illustration 2-75: Hooking point position



- Recommended hooking point dimensions:

Illustration 2-76: Hooking point dimensions



The position of the Swing out arm Center of Gravity (with weights) is given in illustration *LD option Swing out arm* in [Mounting Data, Including Seismic](#).

3.5.3 Preparing targets mounting on the wall

Target positions need to be checked and adequate space allocated during the pre-installation process. This will ensure no issue will be encountered during the target installation phase which takes place during the gantry calibration process.



NOTICE

Targets should be visible to the laser source of the AGV and therefore should not be mounted on movable surface (door etc.). Neither should they be mounted on a surface that could be hidden in operation by door or movable component.

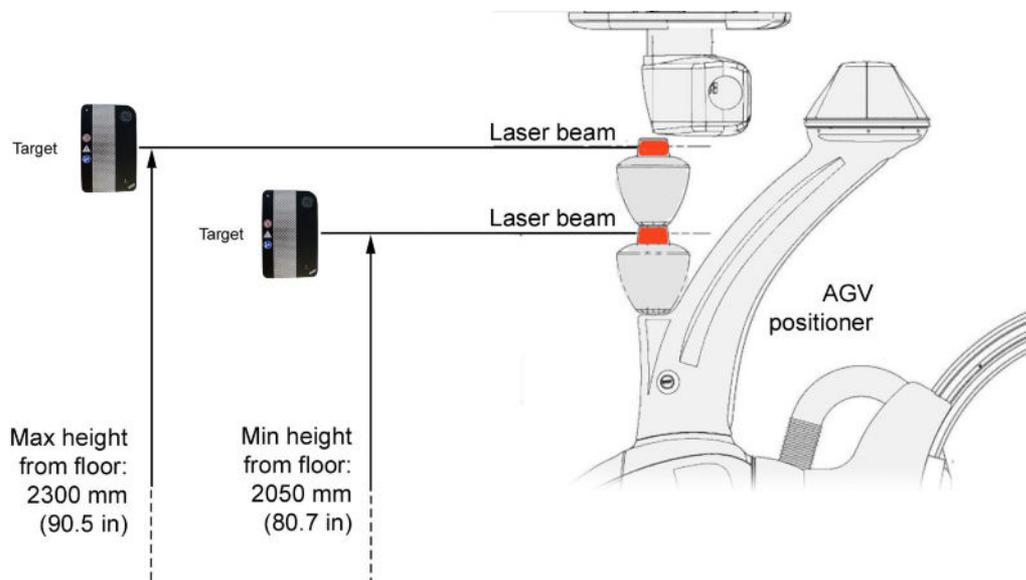
The targets are mounted at the time of Gantry installation. The eleven targets are fixed to the wall using the 2 screws (M4 x 15) supplied with the targets (for target dimensions, see *Laser Target Reflector Dimensions* in [Dimension Drawings](#)). The walls must be capable of holding the screw wall anchors (Diam 5mm - 25 mm long) also (supplied with the reflectors).

NOTE: Target weight is approximately 0.1kg (0.22 lbs).

3.5.3.1 Target Heights

The maximum/minimum target center line heights are 2300 mm (90.5 in) / 2050 mm (80.7 in). The center line of the targets will be mounted during install between these two heights at the point where the walls are best visible.

Illustration 2-77: Target Heights



NOTE: The best achievable height (named HLP – Height of Laser Plane - in the installation procedure) will be determined at install depending on final implementation for the booms, monitors, etc...

The center line of each target will need to be kept within +/-15mm of the HLP to ensure good laser beam reflection for all AGV positions in the room.

3.5.3.2 Target Angles

Predefined angles from laser at head position.

NOTE: The angles are defined from a reference point located at 2300 mm (90.5 in) vs table baseplate border.

The room template can be used to identify the position of the survey station (laser) and visualize target orientations.

Illustration 2-78: Target positioning vs table baseplate border

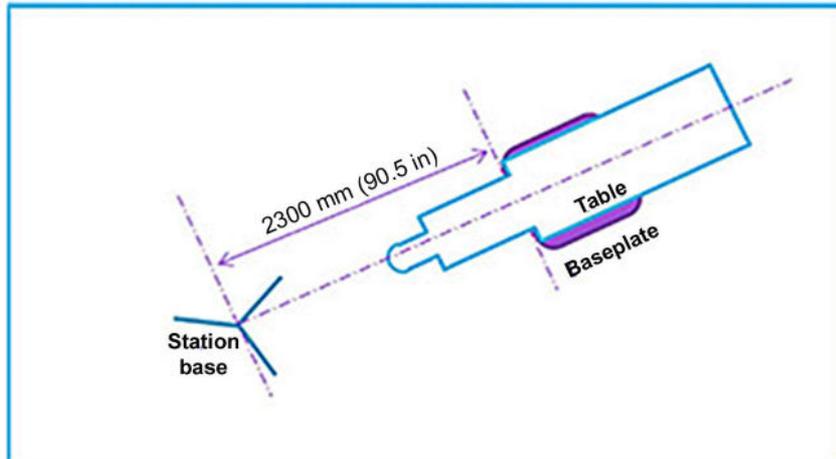
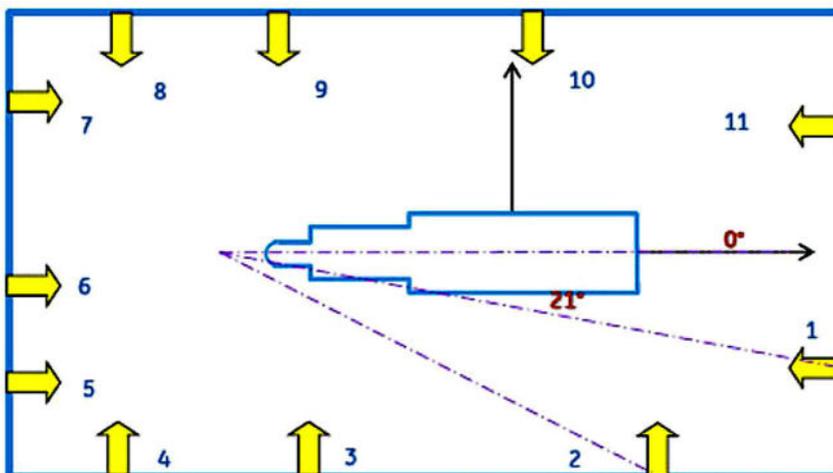


Illustration 2-79: Target Angles





NOTICE

The table below is a predefined and recommended layout. Targets positions can be changed whenever it is not possible to mount the reflector at the given angle (as long as target minimum spacing and maximum angles are respected).

Table 2-12: Reflector ID / Angle

Reflector ID	Hz Angle
1	21°
2	39°
3	79°
4	109°
5	146°
6	167°
7	214°
8	246°
9	271°
10	312°
11	339°

3.5.3.3 Target Adjustment Rules

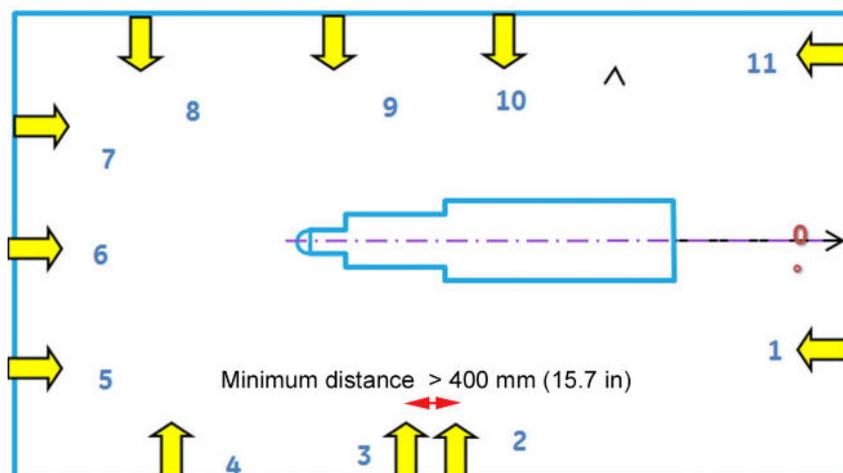
The optimization of the targets placement will be done during the system installation, to maximize their visibility vs. ceiling mounted components (booms, lamps, etc).



NOTICE

The minimum distance between two targets is 400 mm (15.7 in).

Illustration 2-80:

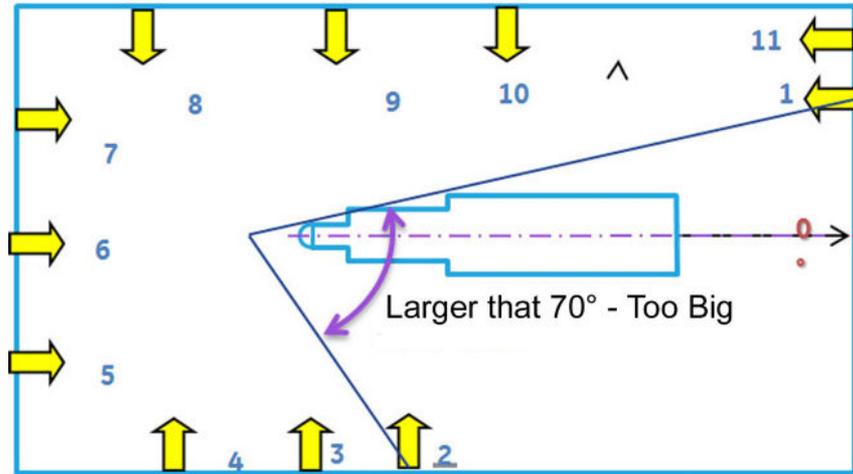




NOTICE

The maximum angle between two adjacent targets is 70°.

Illustration 2-81:



4 Mounting Data, Including Seismic

4.1 Seismic areas

Seismic kits (excluding bolts) are provided with each of the following components of the system:

- C1 and C2 cabinets
- Fluoro UPS
- Tube Chiller and autotransformer
- Detector conditioner
- Color monitor
- DLX keypad
- VCIM

Local seismic codes shall be considered when planning cabinet mounting. Consult seismic expert to determine which mounting method is appropriate for the seismic region. Certain seismic regions may require additional reinforcement in walls.

4.2 Seismic Calculations

Seismic requirements are determined and specified by the hospital/ Design Professional of record and may require approval by the specific state or country agency.

Seismic attachment hardware shown on seismic calculations may differ from hardware supplied with system. Any additional hardware that is required will be the responsibility of the institution and/or their contractor. Contact your local GE Installation Program Manager to obtain the latest seismic calculations.

(For US only) For the Gantry System of Anchorage for Seismic Event (SAFE), EASE Company has performed seismic calculations on the SAFE. You can get in contact for more details.

Seismic calculations are per California Building Code (CBC) and International Building Code (IBC).

Center of Gravity data:

The following shows center-of-gravity information for system components:

- C1 cabinet, [Illustration 2-82](#)
- C2 cabinet, [Illustration 2-83](#)
- Fluoro UPS UL, [Illustration 2-84](#)
- Fluoro UPS CE, [Illustration 2-85](#)
- PDB UL, [Illustration 2-86](#)
- PDB CE, [Illustration 2-87](#)
- Tube Chiller, [Illustration 2-88](#)

- Tube Chiller Autotransformer, [Illustration 2-89](#)
- Detector Conditioner, [Illustration 2-90](#)
- Patient table, [Illustration 2-91](#)
- Gantry:
 - AGV, [Illustration 2-92](#)
 - (For US only) System of Anchorage for Seismic Event, [Illustration 2-93](#)
- Cable Management System, [Illustration 2-94](#)
- LDM UPS, [Illustration 2-95](#)
- Large Display Cabinet, [Illustration 2-96](#)
- Large Display Monitor suspension, [Illustration 2-97](#)
- LD secondary monitor Swing out arm, [Illustration 2-98](#)

Illustration 2-82: C1 cabinet

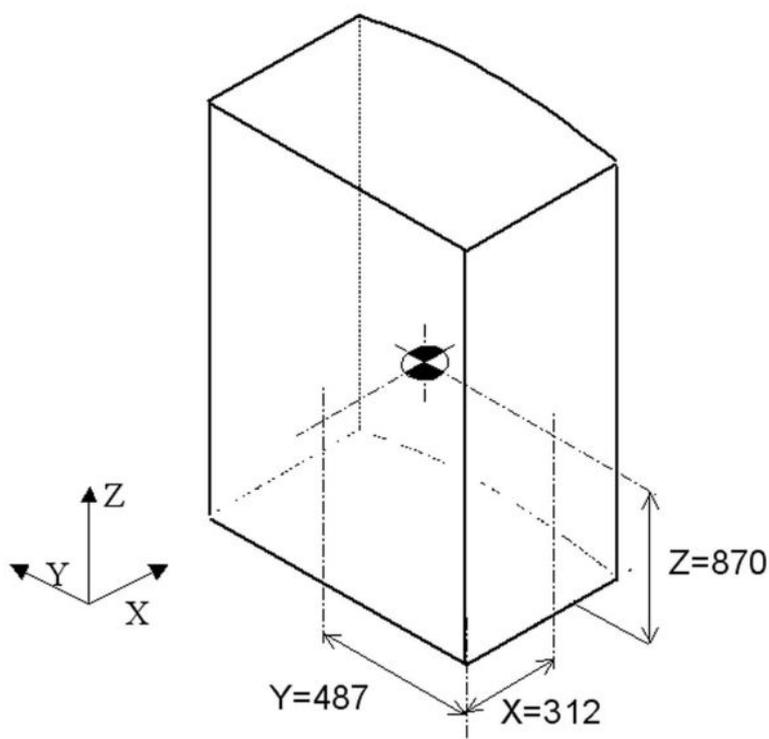


Illustration 2-83: C2 cabinet

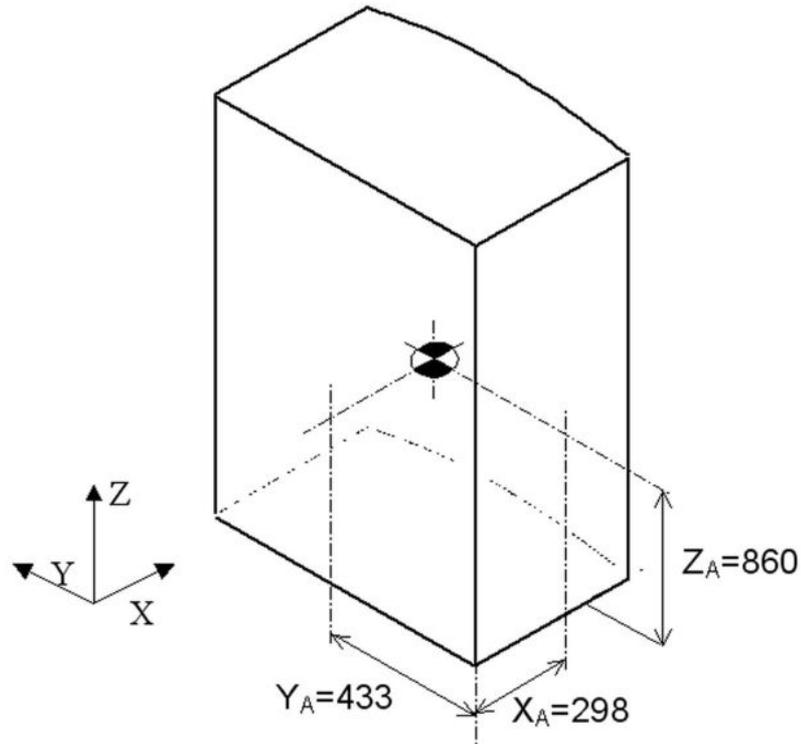


Illustration 2-84: Fluoro UPS UL

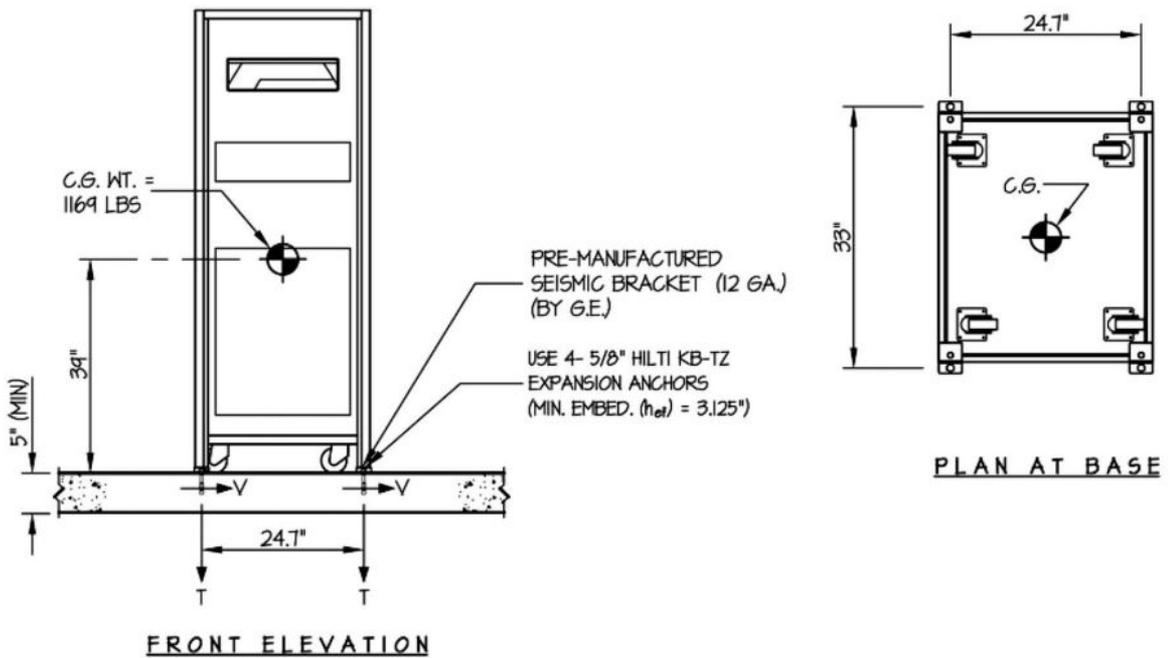


Illustration 2-85: Fluoro UPS CE

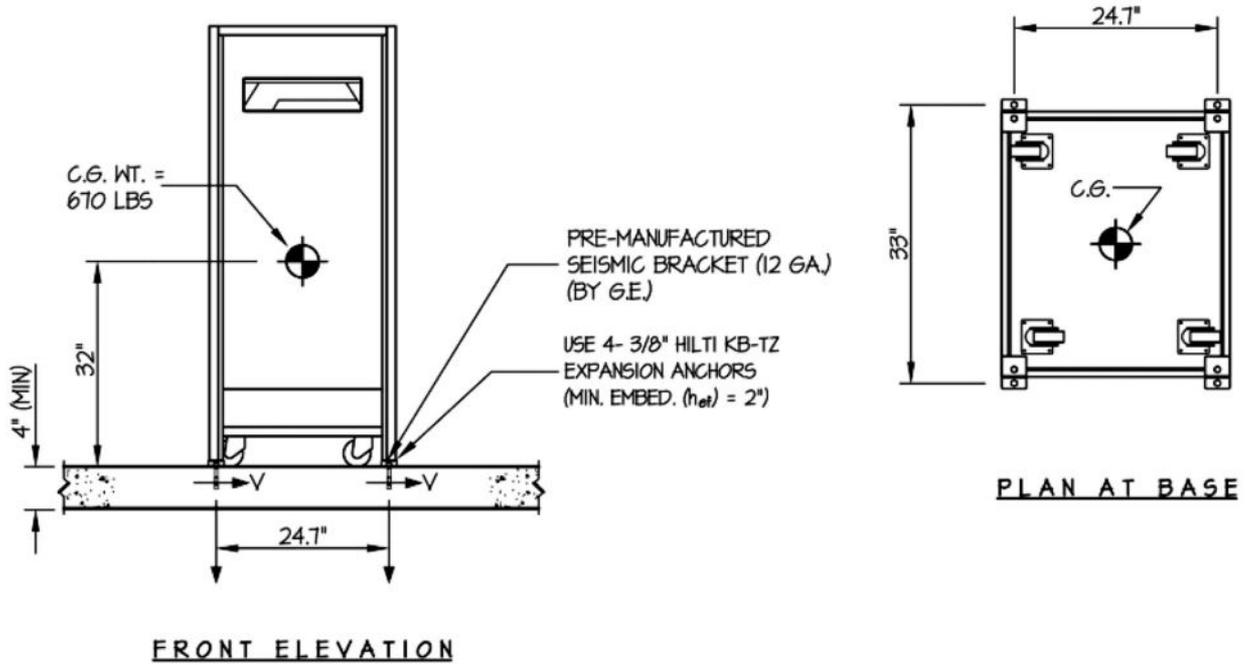


Illustration 2-86: PDB UL

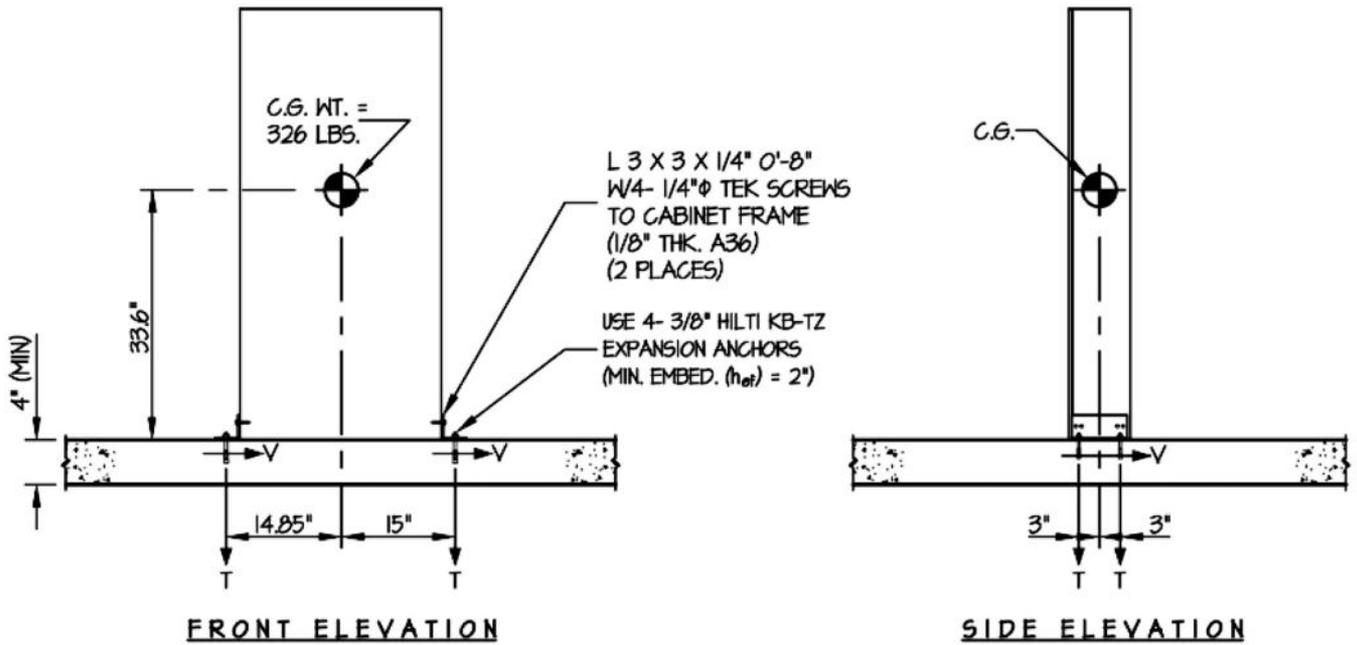


Illustration 2-87: PDB CE

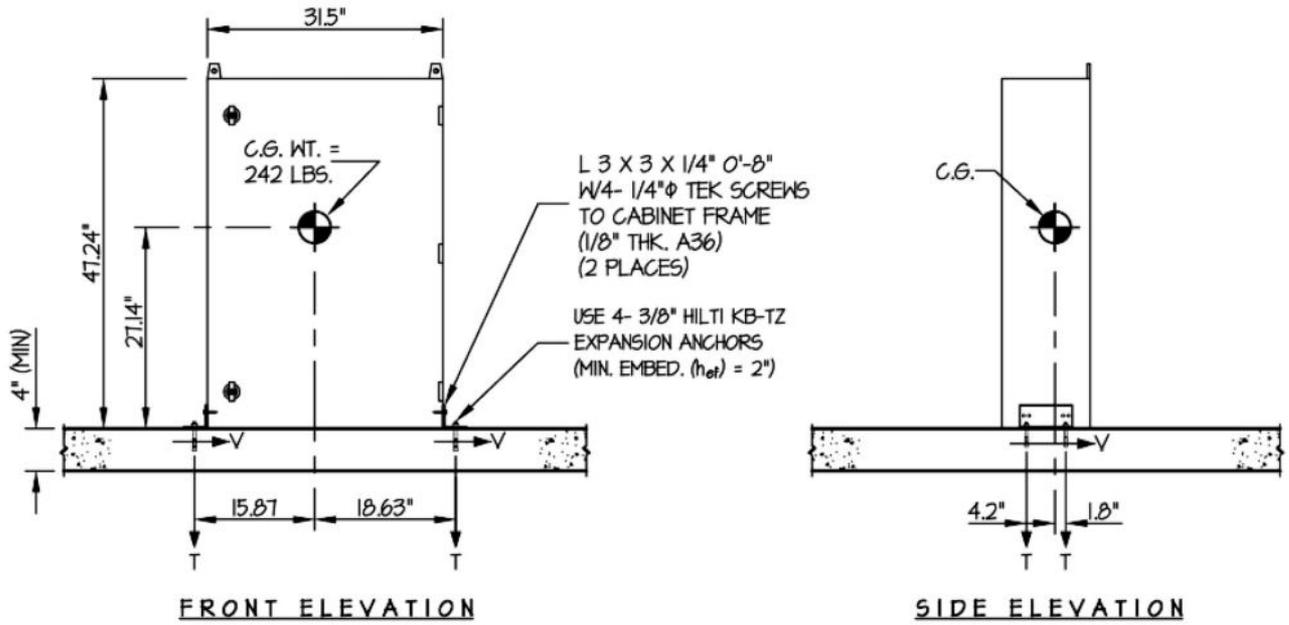


Illustration 2-88: Tube Chiller

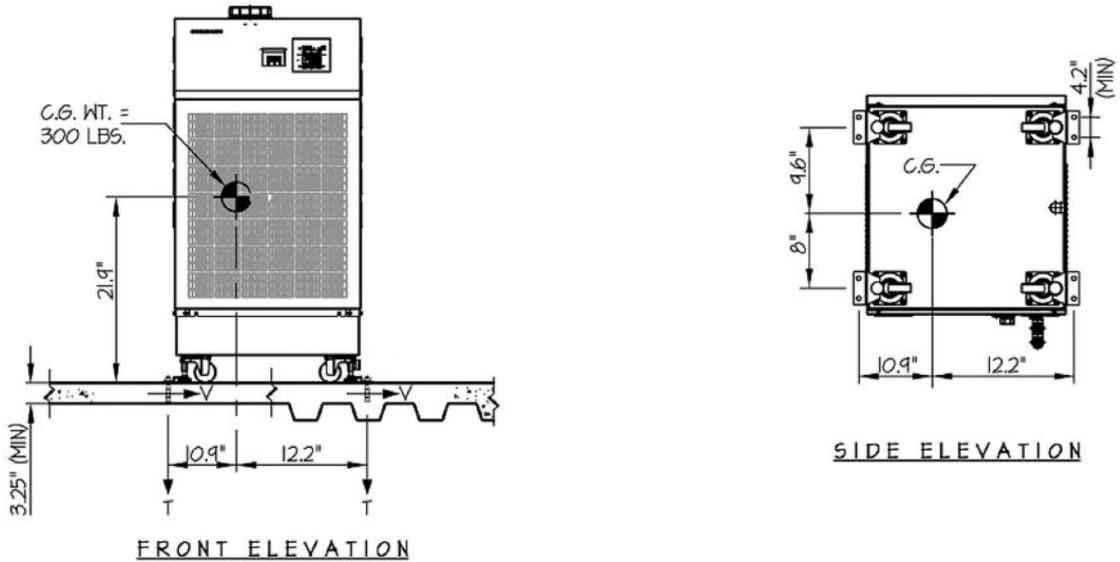


Illustration 2-89: Tube Chiller Autotransformer

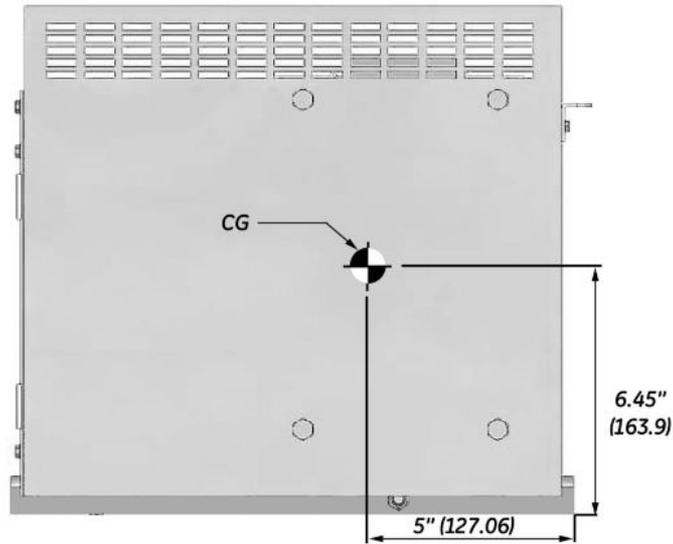


Illustration 2-90: Detector Conditioner

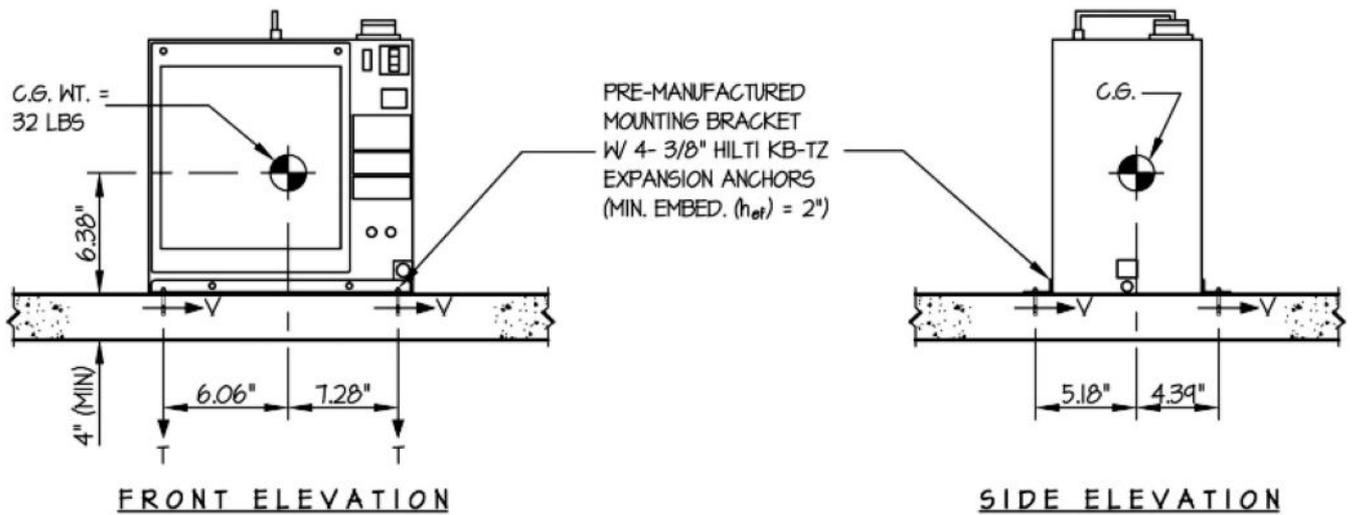


Illustration 2-91: Patient table

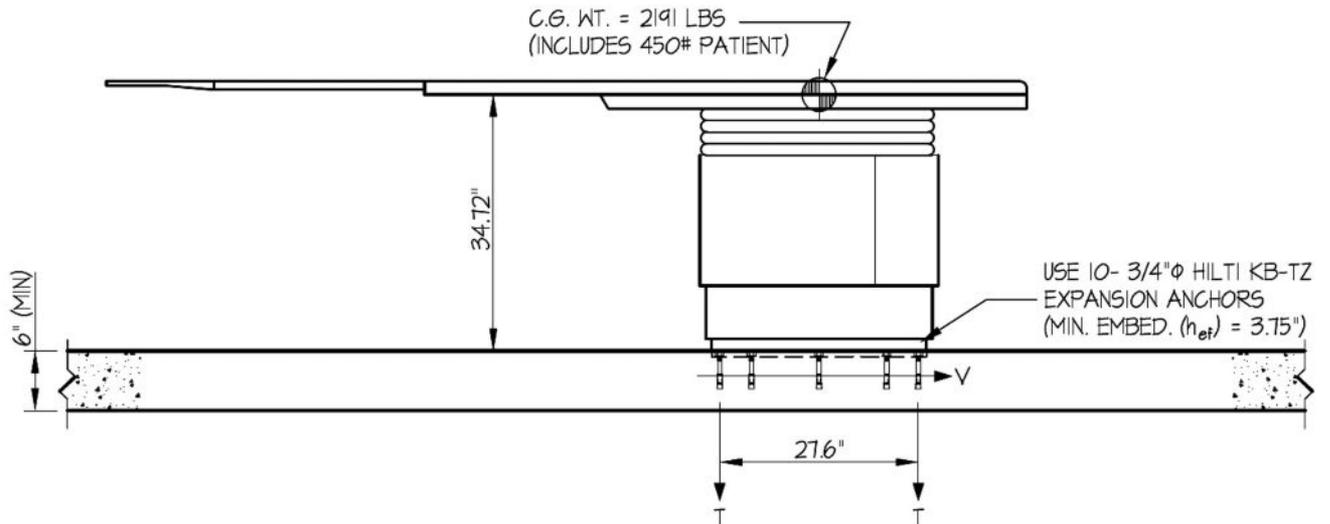


Illustration 2-92: Gantry

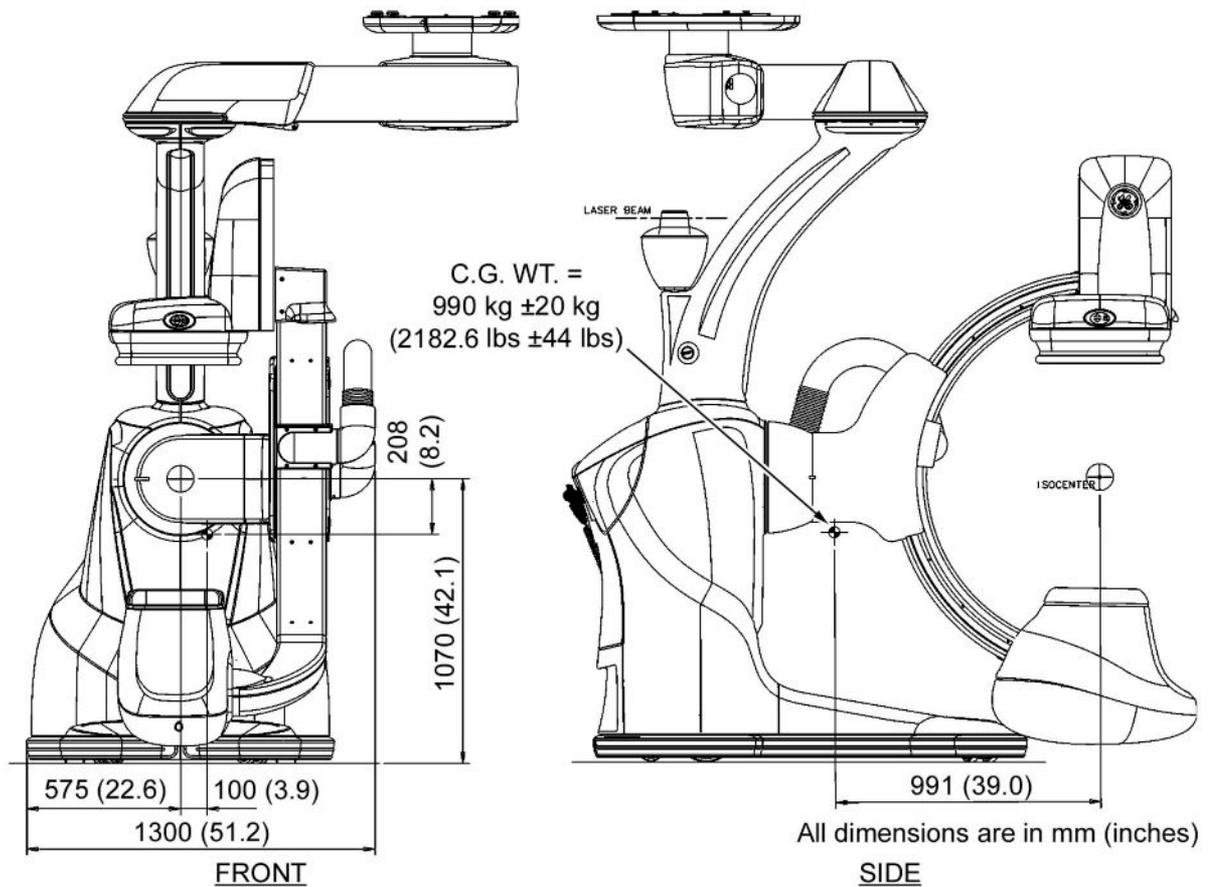


Illustration 2-93: Gantry System of Anchorage for Seismic Event (For US only)

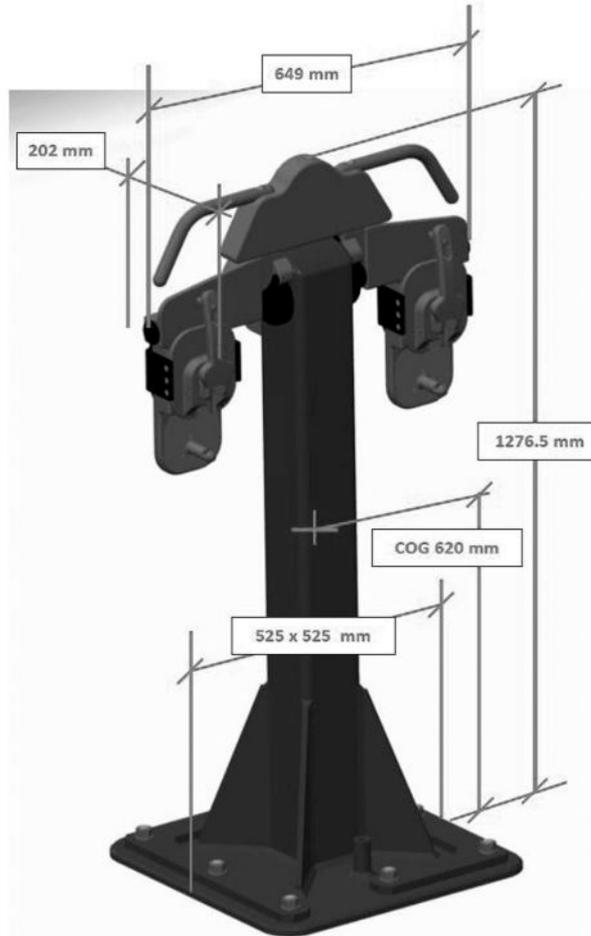


Illustration 2-94: Cable Management System

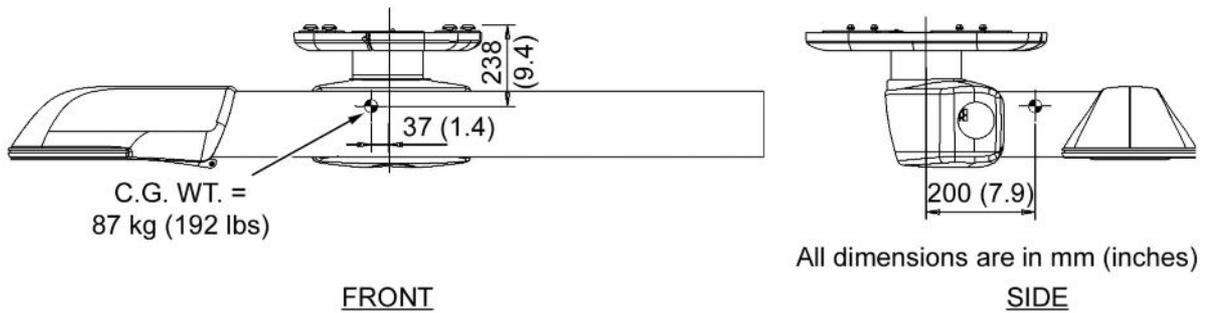


Illustration 2-95: LDM UPS

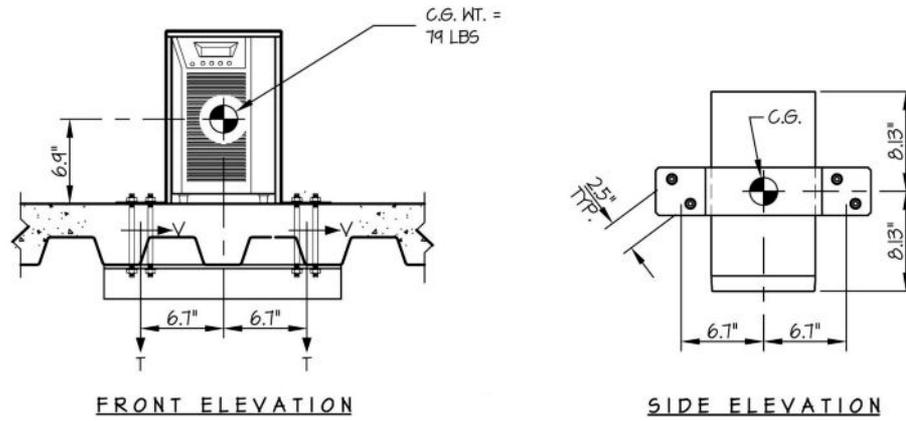


Illustration 2-96: Large Display Cabinet

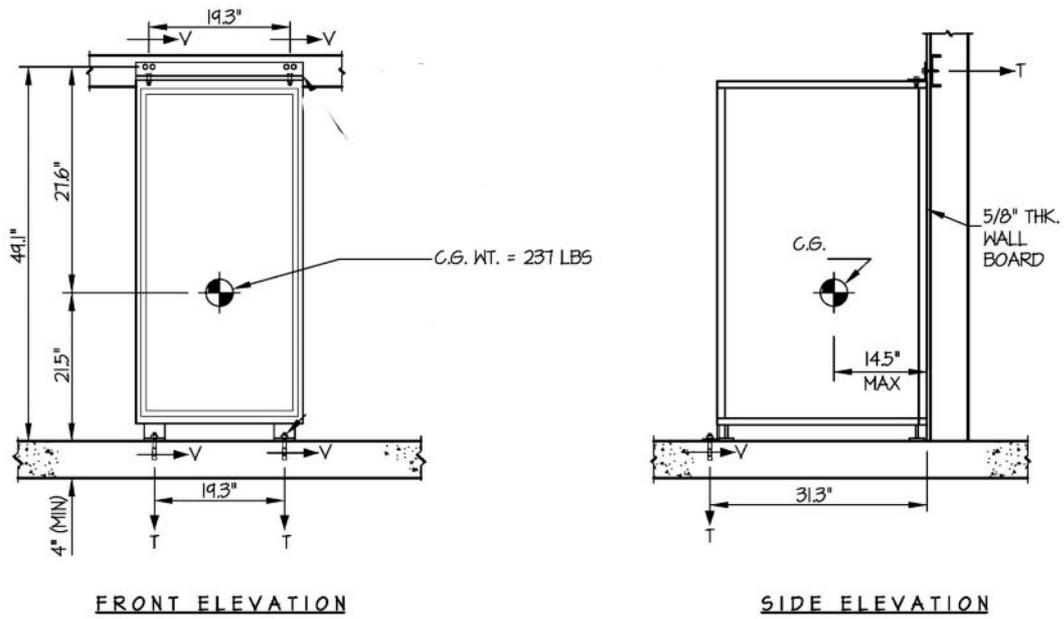


Illustration 2-97: Large Display Monitor suspension

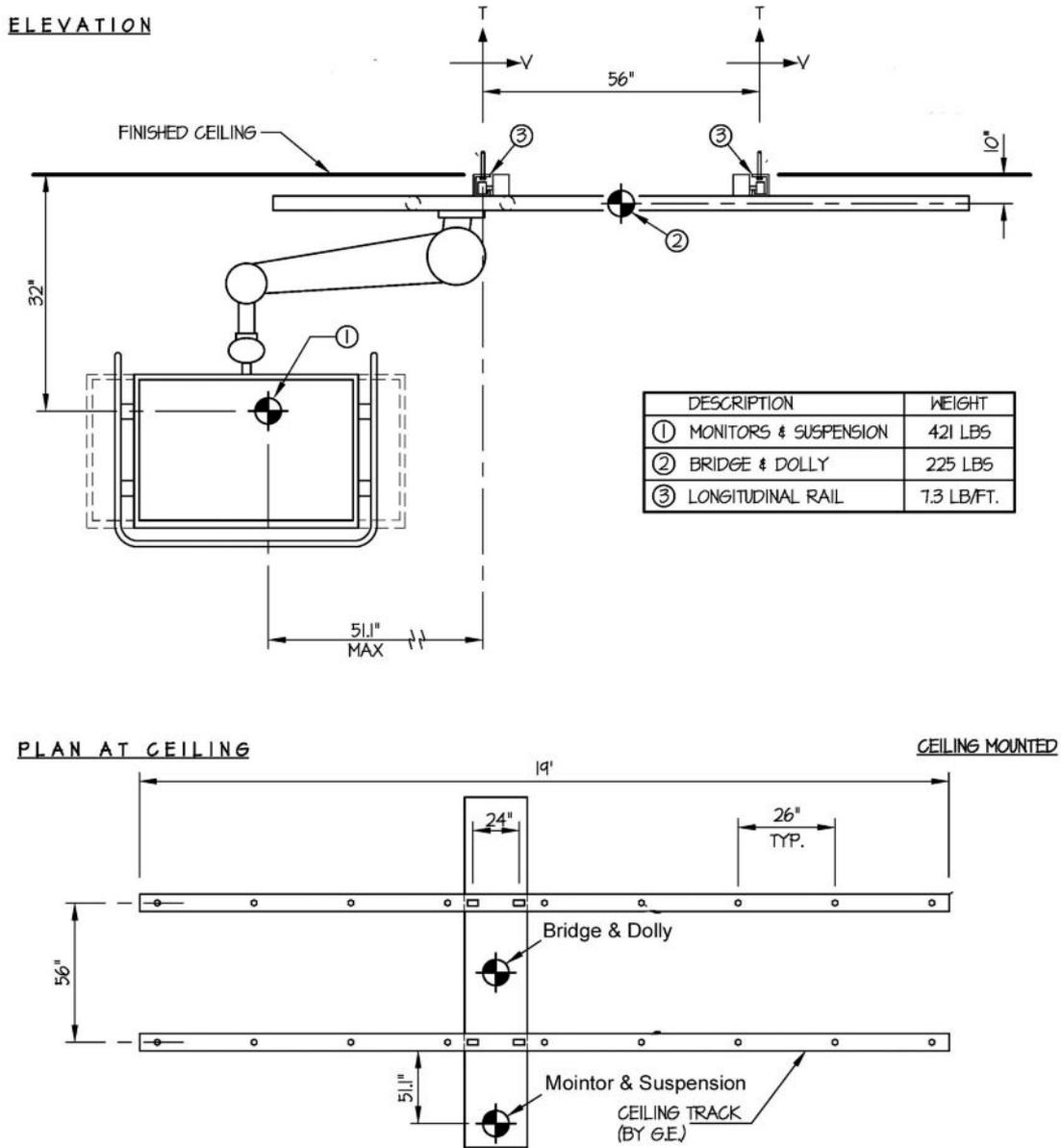
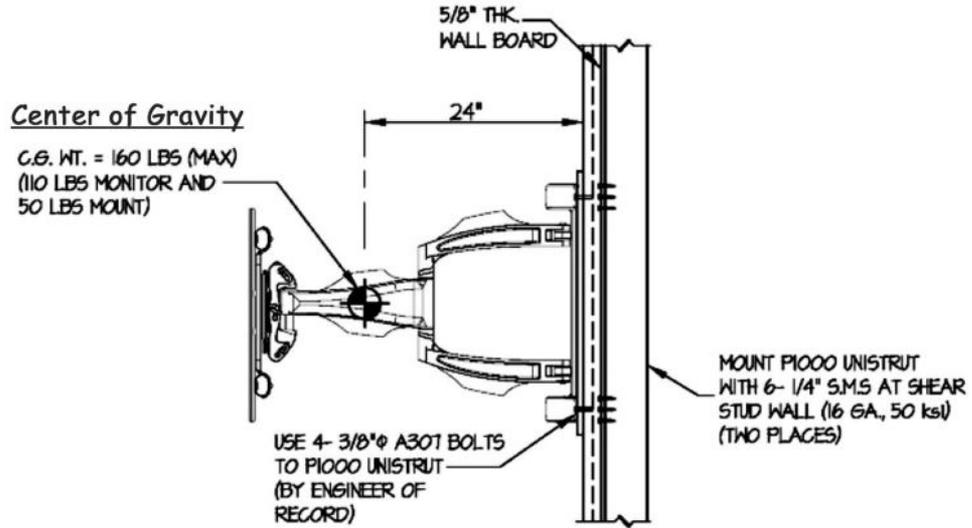


Illustration 2-98: LD secondary monitor Swing out arm



Chapter 3 Special Construction Requirements

1 Radiation Protection

Because X-ray equipment produces radiation, special precautions may be needed or special site modifications may be required. GEHC does not make recommendations regarding radiation protection. It is the customer's responsibility to consult a radiation physicist for advise on radiation protection in x-ray rooms.

2 EMI Consideration

IEC60601-1-2 Electromagnetic Standard Compliance & Documentation

The information contained in this section is also found in the system Operator Manual.

2.1 General Scope

This equipment complies with IEC-60601-1-2: Edition 2.1 and Edition 3 standard for medical devices

The system is suitable to be used in the electromagnetic environment, as per the limits & recommendations described in the tables here after:

- Emission Compliance level & limits ([Table 3-1](#)).
- Immunity Compliance level & recommendations to maintain equipment clinical utility (see [Table 3-2](#), [Table 3-3](#) and [Table 3-4](#)).

NOTE: This system complies with the above-mentioned EMC standard when used with cables compliant with the requirements of chapter 5 of this document.

2.2 Electromagnetic Emission

The Discovery™ IGS Systems is intended for use in the electromagnetic environment specified below.

The customer or the user of the Discovery™ IGS Systems should assure that it is used in such an environment.

Table 3-1:

Emissions	Test Compliance	Electromagnetic Environment
Radio-Frequency Emissions CISPR11	Group1 Class A limits	The Discovery™ IGS systems uses Radio Frequency energy only for its internal function. Therefore, its Radio Frequency emissions are very low and are not likely to cause any interference in nearby electronic equipment.
		The Discovery™ IGS systems is suitable for use in all establishments other than domestic and those directly connected to the public low-voltage power supply network that supplies buildings used for domestic purposes.
Harmonic emissions IEC 61000-3-2	Not applicable	The Discovery™ IGS systems is suitable for use in all establishments other than domestic and those directly connected to the public low-voltage power supply network that supplies buildings used for domestic purposes.
Voltage fluctuations / flicker emissions IEC 61000-3-3	Not applicable	The Discovery™ IGS systems is suitable for use in all establishments other than domestic and those directly connected to the public low-voltage power supply network that supplies buildings used for domestic purposes.

2.3 Electromagnetic Immunity

2.3.1 Electromagnetic Immunity IEC 60601-1-2

The Discovery™ IGS systems is intended for use in the electromagnetic environment specified below.

The customer or the user of the Discovery™ IGS systems should assure that it is used in such an environment.

Table 3-2:

Immunity Test	IEC 60601-1-2 Test Level	Compliance Level	Electromagnetic Environment
Electrostatic discharge (ESD) IEC 61000-4-2	+/-6 kV contact +/-8 kV air	+/-6 kV contact +/-8 kV air	Floors are wood, concrete or ceramic tile or floors are covered with synthetic material and the relative humidity is at least 30 %.
Electrical fast transient/burst IEC 61000-4-4	+/-2 kV for power supply lines +/-1 kV for input/output lines	+/-2 kV for power supply lines +/-1 kV for input/output lines	Mains power quality is that of a typical commercial or hospital environment.
Surge IEC 61000-4-5	+/-1 kV line(s) to lines(s) +/-2 kV line(s) to earth	+/-1 kV line(s) to lines(s) +/-2 kV line(s) to earth	Mains power quality is that of a typical commercial or hospital environment.
Voltage dips, short interruptions and voltage variations on power supply input lines IEC 61000-4-11	0 % U_n for 5 sec	0 % U_n for 5 sec	Mains power quality is that of a typical commercial or hospital environment. If the user of the Discovery™ IGS systems requires continued operation during power mains interruptions, it is recommended that the Discovery™ IGS systems be powered from an uninterruptible power supply.
Power frequency (50/60 Hz) magnetic field IEC 61000-4-8	3 A/m	3 A/m	Power frequency magnetic fields is at levels characteristic of a typical location in a typical commercial or hospital environment.
Note: U_n is the AC mains voltage prior to application of the test level.			

The Discovery™ IGS systems is intended for use in the electromagnetic environment specified below.

The customer or the user of the Discovery™ IGS systems should assure that it is used in such an environment.

Table 3-3:

Immunity Test	IEC 60601-1-2 Test Level	Compliance Level	Electromagnetic Environment
Conducted Radio Frequency IEC 61000-4-6	3 Vrms 150 kHz to 80 MHz	$V_1 = 3 \text{ V}$	Portable and mobile RF communications equipment is used no closer to any part of the Discovery™ IGS systems, including cables, than the recommended separation distance calculated from the equation applicable to the frequency of the transmitter. Recommended separation distance: $d = [3.5/V_1]\sqrt{P}$ $d = [3.5/E_1]\sqrt{P}$, from 80 MHz to 800 MHz $d = [7/E_1]\sqrt{P}$, from 800 MHz to 2.5 GHz Where P is the maximum output power rating of the transmitter in watts (W) according to the transmitter manufacturer and d is the recommended separation distance in meters (m). Field strengths from fixed RF transmitters, as determined by an electromagnetic site survey*, are less than the compliance level in each frequency range**. Interference may occur in the vicinity of equipment marked with <div style="text-align: center;"></div> the following symbol:
Radiated Radio Frequency IEC 61000-4-3	3 V/m 80 MHz to 2.5 GHz See statement below for Large Permanently Installed Medical Equipment.	$E_1 = 3 \text{ V/m}$ See statement below for Large Permanently Installed Medical Equipment.	

NOTE: * Field strengths from fixed transmitters, such as base stations for cellular telephones and land mobile radios, amateur radio, AM and FM radio broadcast, and TV broadcast cannot be estimated accurately. To assess the electromagnetic environment due to fixed RF transmitters, an electromagnetic site survey should be performed. If the measured field strength exceeds the RF compliance level above, observe the Discover™ IGS systems to verify normal operation in each use location. If abnormal performance is observed, additional measures may be necessary, such as re-orienting or relocating the Discovery™ IGS systems.

** Over the frequency range 150 kHz to 80 MHz, field strengths are less than 3 V/m.



! WARNING

THE DISCOVERY™ IGS SYSTEMS IS A LARGE, PERMANENTLY-INSTALLED MEDICAL EQUIPMENT FOR WHICH THE SIMULATED OPERATIONS IN AN ANECHOIC CHAMBER IS NOT FEASIBLE AND CONSEQUENTLY IS EXEMPT FROM THE TESTING REQUIREMENT SPECIFIED BY IEC 61000-4-3.

The Discovery™ IGS systems has not been tested for radiated RF IMMUNITY over the entire frequency range 80 MHz to 2.5 GHz.

The Discovery™ IGS systems has been tested in situ for radiated RF IMMUNITY only at selected frequencies in the range 80 MHz to 2.5 GHz.

ISM Frequency (MHz)	Field Level	Modulation
433.920 (ISM) ⁽¹⁾	3 V/m	80 % AM at 1 kHz rate
915 (ISM) ⁽¹⁾		
1440		
1750		
1920		
2450 (ISM) ⁽¹⁾		

NOTE: ⁽¹⁾: Industrial, Scientific and Medical (ISM) radio bands.

Equipment used for tests:

- RF signal generator,
- RF power amplifier,
- Transmitting antenna,
- Field sensor,
- Field meter.

The Recommended Separation Distances are listed in [Table 3-4](#).

2.3.2 Recommended Separation Distances for Portable and Mobile RF Communications Equipment IEC 60601-1-2

Table 3-4:

Frequency of Transmitter	150 KHz to 80 MHz	80 MHz to 800 MHz	800 MHz to 2.5 GHz
Equation	$d = [3.5 / V_1] \sqrt{P}$	$d = [3.5 / E_1] \sqrt{P}$	$d = [7 / E_1] \sqrt{P}$
Rated Power of Transmitter (watts)	Distance (meters)	Distance (meters)	Distance (meters)
10 mW	0.11	0.11	0.22
100 mW	0.37	0.37	0.74
1	1.1	1.1	2.3 (*)
10	3.7	3.7	7.4
100	12	12	23

For transmitters rated at a power not listed above, the distance can be estimated using the equation in the corresponding column, where P is the power rating of the transmitter in watts (W) according to the transmitter manufacturer.

2.4 Limitations Management

Following the recommendations of [Table 3-4](#), will guarantee the system's essential performance (acquisition, display and storage of diagnostic images). However, minor disturbance can be observed on the images.

2.5 Use Limitation



 **WARNING**

THE USE OF ACCESSORIES, TRANSDUCERS, AND CABLES OTHER THAN THOSE SPECIFIED MAY RESULT IN DEGRADED ELECTROMAGNETIC COMPATIBILITY OF THE SYSTEM.

2.6 Installations Requirements & Environment Control



NOTICE

In order to minimize interference risks, the following requirements shall apply:

- Cables shielding & grounding:

All interconnect cables to peripheral devices must be shielded and properly grounded. Use of cables not properly shielded and grounded may result in the equipment causing radio frequency interference.

- Separated Power supply distribution panel & separated power line:
 - This product complies with the radiated emission limits as per the CISPR11 Group1 ClassA standard.
 - The system is predominantly intended for use (e.g. in hospitals) with a dedicated supply system, and with an X-ray shielded room.
 - In case of using in a domestic environment (e.g. doctors' offices), in order to avoid interferences, it is recommended to use a separated AC power distribution panel & separated power line, and an X-ray shielded room.

- Subsystem & accessories Power supply distribution:

All components, accessories subsystems, systems which are electrically connected to the system, have to be all AC power supplied by the same power distribution panel & line.

NOTE: In order to avoid interferences, the same AC power distribution panel should supply all components, accessories, the system (& subsystems as the Advantage Workstation). The separated AC power line should supply the panel.

- Stacked components & equipment:

The system should not be used adjacent to or stacked with other equipment; if adjacent or stacked use is necessary, the system should be observed to verify normal operation in the configuration in which it will be used.

- Low frequency magnetic field:

In case of a Discovery™ IGS system, the Gantry (digital detector) shall be apart 1 meter from the X-Ray generator cabinet, 1 meter from the PDB cabinet, 3 meters from the UPS cabinet and 1 meter apart from monitors. These distances specifications shall minimize the low frequency magnetic field interference risk.

- Static Magnetic Field Limits : The Discovery system is compatible with the Earth magnetic Field. Earth magnetic Field is lower than 1 Gauss.
- Electrostatic discharges environment & recommendations:
 - In order to reduce electrostatic discharge interference, install a charge dissipative floor material to avoid electrostatic charge buildup.

- The relative humidity shall be at least 30 percent.
- The dissipative material shall be connected to the system ground reference, if applicable.



NOTICE

Route separately EMI filter incoming power lines and outgoing power lines (refer to Electrical Connections).

NOTE: The maximum distance between the EMI filter and the PDB is 3 m.

NOTE: The Fluoro UPS (CE) option requires an EMI filter box placed upstream the PDB. The EMI filter box will be delivered as a single product by GE Consumer & Industrial. For further information on the EMI filter box, see Typical EMI Filter box in Chapter 2 Equipment Requirements.

Chapter 4 Environmental Requirements

1 Relative Humidity and Temperature



WARNING

“IN USE” TEMPERATURE LIMITS SPECIFY THE RANGE WHERE THE SYSTEM IS WORKING. OPERATING OUTSIDE THESE LIMITS COULD CAUSE SEVERE PERFORMANCE AND RELIABILITY ISSUES.

“RECOMMENDED” TEMPERATURE LIMITS SPECIFY THE RANGE WHERE IT IS RECOMMENDED TO ADJUST AIR CONDITIONING CONTROL IN ORDER TO WARRANTY CURRENT OPERATIONS INSIDE THE IN USE RANGE.

Table 4-1:

INSTALLATION ROOM OF PRODUCT OR COMPONENT	RELATIVE HUMIDITY (NON- CONDENSING)		TEMPERATURE			
			NOMINAL CONDITIONS		RECOMMENDED	
	MIN	MAX	MIN	MAX	MIN	MAX
Examination room	30%	70%	+15°C +59°F	+32°C +90°F	Design for Patient/ Operator Comfort	
Technical room	30%	75%	+20°C +68 °F	+25°C +77°F	+20°C +68°F	+25°C +77°F
Control room	30%	75%	+15°C +59°F	+35°C +95°F	+20°C +68°F	+25°C +77°F

The system has been designed for use in the clean environment of medical diagnostics. Dust from dirty environments can penetrate into the components through the air inlets, which can cause degradation or failure. The system shall be protected from dust, e.g. during building measures at the installation location, and through the use of the original packaging for transport. If the system runs in a dusty environment, it is strongly recommended to install filters on the air inlets of the rooms.

2 Altitude and Atmospheric Pressure

Table 4-2: Altitude and Atmospheric Pressure

INSTALLATION ROOM OF PRODUCT OR COMPONENT	ALTITUDE (meters)		ATMOSPHERIC PRESSURE (kPa)	
	MIN	MAX	MIN	MAX
All Rooms	0	2000	79.4	106

3 Heat Output

3.1 Equipment Heat Output tables

Table 4-3:

		HEAT OUTPUT							
		Stand by		Moderate Use (4)		Typical Use (4)		Maximum Use (4)	
Room	Core System	kW	BTU/hr	kW	BTU/hr	kW	BTU/hr	kW	BTU/hr
Exam Room	Gantry and table	0.41	1394	0.55	1858	0.89	3020	1.62	5517
	2 B&W Monitor	0.17	573	0.17	573	0.17	573	0.17	573
Ctrl Room	DL user area with 1 monitor	0.16	546	0.16	546	0.16	546	0.16	546
	1 B&W monitor	0.09	287	0.09	287	0.09	287	0.09	287
Tech Room	C1 Cabinet	0.41	1398	0.69	2366	0.99	3389	1.29	4412
	C2 Cabinet	0.29	989	0.33	1125	0.54	1828	0.87	2966
	Fluoro UPS CE	2.14	7302	2.14	7302	2.14	7302	2.14	7302
	Fluoro UPS UL	1.98	6751	1.98	6751	1.98	6751	1.98	6751
	Coolix X-Ray tube chiller (1) (2)	2.53	8619	4.49	15309	5.49	18725	6.93	23625
	Tube chiller autotransformer @ 50Hz	0.04	136.48	0.048	164	0.045	153.54	0.065	221.78
	Tube chiller autotransformer @ 60Hz	0.06	204.72	0.064	218	0.07	238.84	0.09	307.08
	Detector conditioner	0.21	709	0.21	709	0.21	709	0.21	709
	Main disconnect panel - PDB	0.4	1534	0.45	1534	0.45	1534	0.45	1534
Total for core system		10.23	35029	11.8	40151	13.9	47349	20.9	71387
Room	Options (3 & 5)	Stand by		Moderate Use (4)	Typical Use (4)	Maximum Use (4)			
Exam Room	3 in room B&W monitors	0.25	859	Same values as Stand by	Same values as Stand by	Same values as Stand by			
	In room AW monitor	0.12	409						
	Typical injector	0.09	320						
	LD Monitor	0.5	1706						
Ctrl Room	AW work station	0.35	1201						
	2 AW TFT monitors	0.24	818						
	Printer	0.31	1054						
	LD Monitor	0.5	1706						
Tech Room	LD Cabinet	1.0	3412						
	LDM UPS	0.52	1755						

NOTE: (1) Air flow requirements 1200 m³/h (706 CFM)

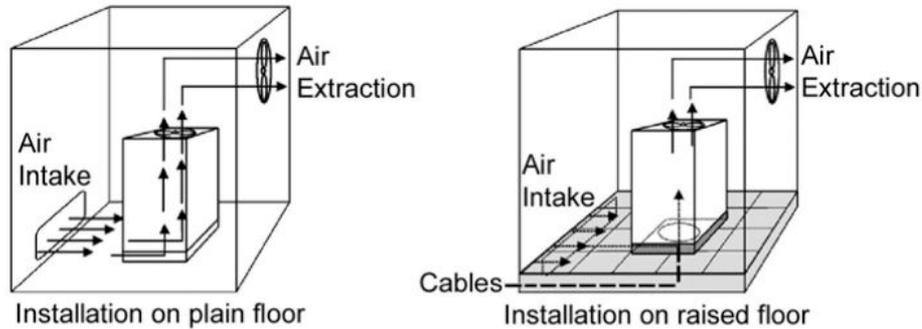
NOTE: (2) For more details, consult appropriate pre-installation manual

NOTE: (4) **Moderate use:** 8 cases / 10 hours, **typical use:** 11 cases / 10 hours, **maximum use:** during case.

NOTE: (5) For heat output, refer to [Section 3.3](#)

3.2 Fluoro UPS

Illustration 4-1:



The heat produced by the UPS is transferred to the environment by its ventilation. Cooling air enters the cabinets through the air inlet (grids) located at the bottom and exhausted through the outlet on the roof. A suitable ventilation or cooling system must be installed to extract the heat from the UPS room.



CAUTION

Make sure there is a ventilation air flow, preferably ensured by natural air flow, otherwise by enforced ventilation, so that hydrogen concentration is below 1% (according to Standard IEC 62040-1-2).

If the UPS is placed on a raised floor, the airflow for UPS cooling should enter from underneath the UPS, through the appropriate aperture on the raised floor.

If the UPS runs in a dusty environment, we recommend strongly to install filters on the air inlet of the UPS room. In this case it should be considered that these filters can cause reduced speed at the air inlet.

The size of the air inlet has therefore to be dimensioned accordingly.

3.3 IVUS Option Heat Output

Device	Location	Heat output
PC	Control room	335W – 1206 BTU/h
Monitor	Control room	125W – 427 BTU/h
Printer	Control room	67W – 229 BTU/h (idle)

NOTE: For IVUS Rev 3, refer to [Volcano s5i Imaging System Integration in IGS Systems - Service Manual](#).

4 Acoustic (Noise) Output

Audible Noise

- Less than 50 dB (A) at 1 meter for Gantry.
- Limited to 58 dB (A) at 1 meter for TiltingTable.
- Limited to 55 dB (A) at 1 meter for C2 Cabinet.
- Limited to 60 dB (A) at 1 meter for theTube chiller.
- Limited to 65 dB (A) at 1 meter for C1 Cabinet.
- Limited to 52 dB (A) (background of 35 dB (A)) at 1 meter for Digital Detector Conditioner.
- Less than 50 dB (A) at 1 meter for a DL LCD monitor.
- Less than 60 dB (A) at 1 meter for the Fluoro UPS.

NOTE: Both cabinets C1 and C2 generate 70 dB noise altogether. Noise can be reduced if cabinets are slightly separated.

NOTE: An acoustic expert must be engaged in the technical room design to minimize the noise output of the technical room.

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Chapter 5 Electrical Requirements

1 Power Requirements

1.1 System Electrical Characteristics

NOTICE

It is the customer's responsibility to ensure that electrical installation is compliant to local regulations. To avoid risk of electric shock, this equipment must only be connected to a supply mains with Protective Earth.

Power supply and ground cables shall be dedicated to the system. They must not be used to supply other systems.

Power supply and ground cables shall be kept separated from room system cables.

Power supply and ground cables must be connected to the same distribution panel. They must run near one to the other.

Power supply and ground cables provided by the customer shall be compliant with local regulations (e.g. UL, NFPA 70, CSA, IEC, CCC).

1.1.1 Core system

Table 5-1:

Nominal voltage	Frequency	Power consumption		Type of power input
		Nominal	Peak	
380 V ± 10%	50 Hz or 60 Hz (± 3 Hz)	60 kVA	150 kVA	3N~
400 V ± 10%				
415 V ± 10%				
480 V ± 10%	60 Hz only (± 3 Hz)			

The Hospital circuit breaker should fit the current protection of the Discovery system:

- 150A/ 480V, 3 Phases for UL
- 80A/ 380V, 3 Phases for CE



WARNING

THIS FLUORO UPS IS ONLY DESIGNED TO OPERATE IN A WYE-CONFIGURED ELECTRICAL SYSTEM WITH A SOLIDLY GROUNDED NEUTRAL.

FOR MORE DETAILS, REFER TO THE FLUORO UPS DOCUMENTATION.

1.1.2 Options

Table 5-2:

Option	Nominal voltage	Frequency	Nominal Power consumption	Type of power input
LDM	100-120 V / 220-240 V	50 Hz or 60 Hz (± 3 Hz)	3 kVA	Single phase
AW	100-127 V / 200-240 V	50 Hz or 60 Hz	11 A / 5.5 A	Single phase
S5I GE	100-120 V / 230 V	50 Hz or 60 Hz	400 VA	Single phase



 **WARNING**

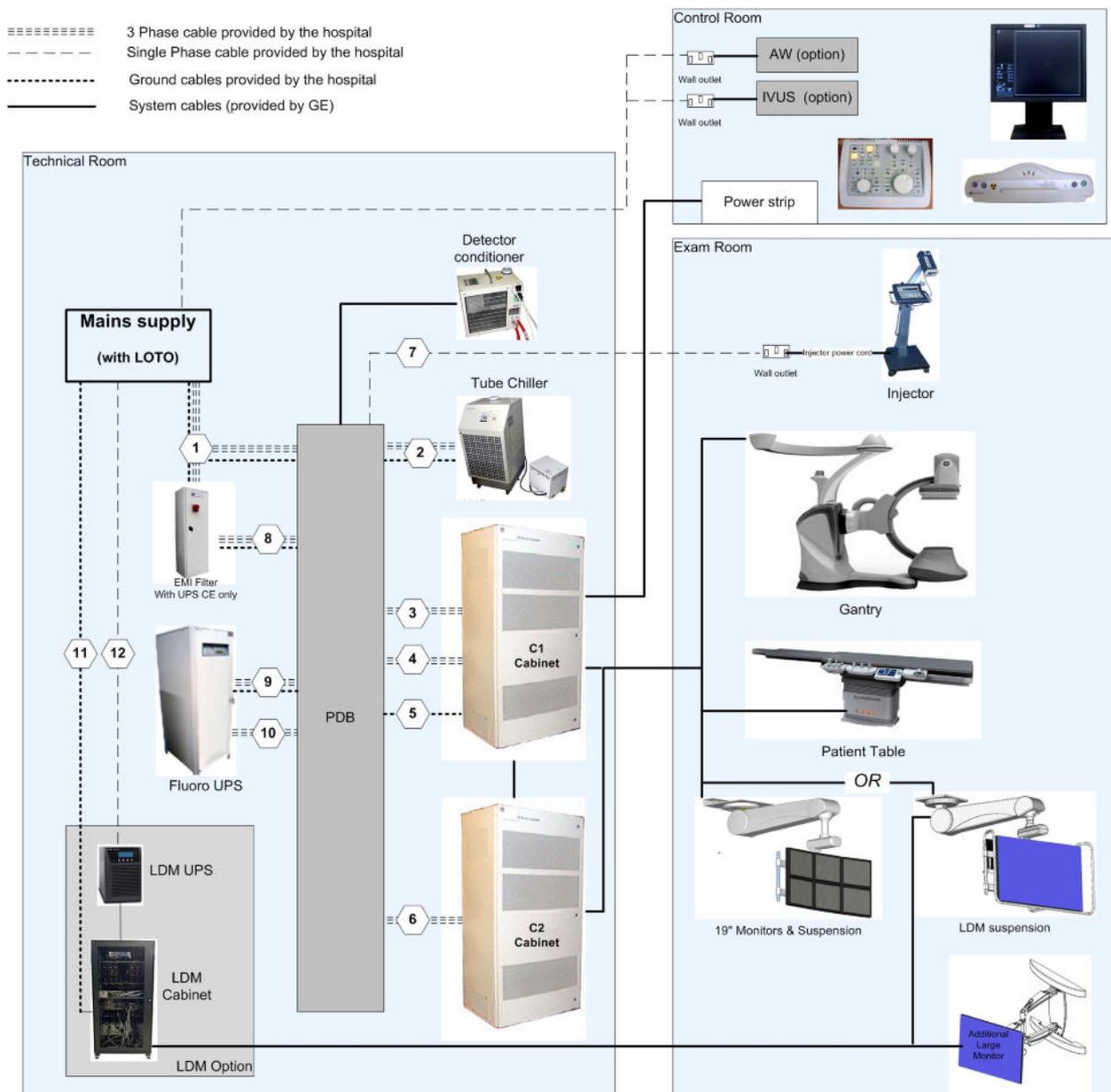
PRIOR TO EACH INSTALLATION, ENSURE THAT THE ECG POWER CABLE IS CONNECTED TO A LINE THAT IS PROTECTED AGAINST SHORT CIRCUIT HAZARDS, ACCORDING TO LOCAL REGULATIONS AND THAT THE ECG MONITOR IS POWERED ACCORDING TO IEC60601-1 REQUIREMENTS (LEAKAGE CURRENT AND GROUNDING).

1.2 Power and grounding

The power cords between the peripherals in the control room and the power strip are not shown on the following diagram. All are single phase power cords (with phase, neutral line and protective Earth) and are provided by GE.

1.2.1 Schematic

Illustration 5-1: Electrical and grounding schematic



NOTE: For the complete system connection schematic, refer to the MIS Map and MIS Chart provided in the Advanced Service Manual.

1.2.2 Cables to be provided by the installer

For cable # in the following tables, refer to [Illustration 5-1](#)

1.2.2.1 Core system

Table 5-3: Core system cables

Cable #	From	To	Type	Characteristics	Comments
1	Mains	PDB	3 phases	Diameter in conformity with the Max Line Impedance table	Only with UL Fluoro UPS
			Neutral	Diameter in conformity with the Max Line Impedance table	
			Ground	AWG2/35 mm ² , and not smaller than the neutral conductor	
1	Mains	EMI Filter	3 phases	Diameter 35 mm ² min, in conformity with the Max Line Impedance table	Only with CE Fluoro UPS
			Neutral	Diameter 35 mm ² min, in conformity with the Max Line Impedance table	
			Ground	AWG2/35 mm ² and not smaller than the neutral conductor	
2	PDB	Tube Chiller auto transformer	3 phases	Max length 24 m between PDB and chiller.	
			Ground	Min diameter AWG12 (UL) / 4 mm ² (CE)	
3	PDB	C1 cabinet	3 phases	Max length 12 m. Min diameter AWG10 (UL) / 4 mm ² (CE)	
4	PDB	C1 cabinet	3 phases	Max length 12 m. Diameter in conformity with the Max Line Impedance below	For the X-ray generator inside C1
5	PDB	C1 cabinet	Ground	Max length 12 m. Min diameter AWG2/35 mm ² .	
6	PDB	C2 cabinet	3 phases	Max length 12 m. Min diameter AWG10	Only for UL (system cable from C1 to C2 provided for CE)
7	PDB	Injector wall outlet	Phase, neutral and ground	Max length 24 m. Min diameter AWG12 (UL) / 1.5mm ² (CE)	120V outlet UL
8	EMI Filter	PDB	3 phases	Max length 3 m. Diameter in conformity with the Max Line Impedance table	Only with CE Fluoro UPS
			Neutral	Max length 3 m. Diameter in conformity with the Max Line Impedance table	
			Ground	AWG2/35 mm ² , and not smaller than the neutral conductor	
9	PDB	Fluoro UPS	3 phases	10 mm ² (CE)	Max diameter AWG3
				AWG6 (UL)	

Cable #	From	To	Type	Characteristics	Comments
			Neutral	10 mm ² (CE)	
				AWG6 (UL)	
			Ground	10 mm ² (CE)	
				AWG6 (UL)	
10	Fluoro UPS	PDB	3 phases	10 mm ² (CE)	Max diameter AWG3

NOTE: Cables 1 and 8 should be routed separately (CE Only) in order to avoid EMC interference.

Table 5-4:

Max Line Impedance for the line from the Hospital outlet to the X-rays Generator in C1 cabinet (cables #1 and #4)						
V	380	400	415	440	460	480
Ω	0.09	0.096	0.102	0.108	0.114	0.12

1.2.2.2 For the LDM option

Table 5-5: LDM option cables

Cable #	From	To	Type	Characteristics	Comments
11	Mains	LDM cabinet	Ground only	UL: AWG10 (5.26 mm ²)	
				CE: AWG12 (2.5 mm ²)	
12	Mains	LDM UPS	Phase, neutral and ground	UL: AWG10 (5.26 mm ²)	
				CE: AWG12 (2.5 mm ²)	

1.2.3 LOTO devices provided by the installer

1.2.3.1 Core system

A wall circuit breaker or equivalent device with LOTO capability must be installed on the mains line to the PBD. This device must be compatible with the power input specifications of the system. The customer is responsible for the procurement, delivery and installation of this breaker.

1.2.3.2 LDM option

A wall circuit breaker or equivalent device with LOTO capability must be installed on the mains line to the LDM UPS. The rating of this device shall be 30 A for UL and 16 A for CE configurations. The customer is responsible for the procurement, delivery and installation of this breaker.

1.2.4 System interconnections

1.2.4.1 Emergency power off

The PDB (in technical room) is provided with an EPO button on its front panel. The customer is given the possibility to install additional EPO buttons (for instance in the exam room and in the technical room). The PDB is designed for 2 additional EPO buttons; these buttons shall be "Push to activate - Push to release" type, 2 contacts Normally Closed, compatible with 24 VDC.

The UL PDB is provided with 2 additional EPO buttons, the CE PDB is provided without additional EPO buttons.

The customer is responsible for the procurement, delivery and installation of the cables for these additional EPO buttons. The max length shall be 24 m, the recommended diameter is AWG14/2 mm².

Protect the Emergency Stop from accidental actuation.

1.2.4.2 X-Ray ON lights



NOTICE

THE X-RAY ON LAMP MUST BE INSTALLED IN THE EXAM ROOM IN CONFORMITY TO THE STANDARD IEC/EN 60601-2-43. THE X-RAY ON LAMP SHALL BE VISIBLE BY THE OPERATOR IN ALL THE LOCATIONS DEFINED FOR THE PERSONNEL WHO MAY RECEIVE SCATTERED RADIATION.

The system is designed to provide power for X-ray ON lights. The customer is responsible for the procurement, delivery and installation of the cables and the X-ray ON lights.

UL system:

The terminals 2 & 3 from the Positioner Bulkhead of the C2 cabinet shall be connected to PDB TB1 terminals 24 & 25 (cable provided by the installer, maximum length 24m, minimum diameter AWG16). The lamp shall be 120V ~ 1A max, it shall be connected to PDB TB1 terminals 25 & 26, with cable AWG16 minimum

CE system:

The terminals 2 & 3 from the Positioner Bulkhead of the C2 cabinet shall be connected to PDB terminals BNC 12 & 13 (cable provided by the installer, maximum length 24 m, minimum diameter 1.5 mm²). 2 slots are provided for 24 V~ lamps or relays (PDB terminals 16-17 & 18-19), they shall be connected with cables of diameter 1.5 mm² minimum.

1.2.4.3 Room door interlock

The system is designed to provide room door interlocks that prevent X-ray emission when the door is open. IEC 60601-2-43 requires not to install door interlocks. It is the responsibility of the installer to check that this requirement is not in contradiction with local regulation. In case of conflict, the local regulation shall prevail.

To disable the door interlock: The terminals 8 & 9 from the Positioner Bulkhead of the C2 cabinet shall be shorted

To enable the door interlock: The terminals 8 & 9 from the Positioner Bulkhead of the C2 cabinet shall be connected to a door interlock switch provided by the installer. This switch shall be closed when the door is closed, it shall be compatible with 24 VDC. The max length between this switch and the C2 cabinet shall be 24 m

1.2.4.4 System on light

The system provides power for a System ON light. The customer is responsible for the procurement, delivery and installation of the cables and the X-ray ON lights.

For CE systems, the lamp shall be 230V~, 2 A max, the cables diameter shall be minimum 0.75 mm².

For UL systems, the lamp shall be 120V~, 250 mA max, the cables diameter shall be minimum AWG18

The maximum length shall be 36 m

1.2.4.5 Injector

The PDB provides a terminal block that can power an injector. The customer is responsible for the procurement, delivery and installation of the cables from the PDB and of the wall outlet to power the injector. The maximum length of these cables shall be 24 m.

For CE systems, the PDB output is 230V~, 6 A max. The cables diameter shall be minimum 0.75 mm².

For UL systems, the PDB output is 120V~, 16 A max, the cables diameter shall be minimum AWG12.

The impedance of the ground cable between the outlet and the PDB shall be 0.4 ohms maximum.

This wall outlet shall comply with the following requirements:

- It shall comply with the requirements of CSA C22.2 No. 42 & CSA C22.2 No. 49 (UL) or IEC 60884-1 (CE).
- Its rating shall be compatible with the max output of the PDB.
- It shall be of class I construction and the protective earth conductor shall be connected to the Earthing contacts in the socket-outlets.
- The creepage distances and air clearances shall comply with the following table:

Table 5-6:

System type	Between phase and Neutral		Between phase and ground and between neutral and ground		Between phase, Neutral and external accessible parts	
	Creepage distance	Air clearance	Creepage distance	Air clearance	Creepage distance	Air clearance
UL	2 mm	1 mm	1.5 mm	2.1 mm	3 mm	4.2 mm
CE	3 mm	1.6 mm	2.5 mm	2.2 mm	5 mm	4.4 mm



NOTICE

If the wall outlet is installed in the exam room, installation shall be done as per local regulation.

Additional multiple socket-outlet or extension cord shall not be connected to the terminal block or to the outlet. This outlet shall only power an injector; connecting other equipment could lead to fire hazard or excessive leakage currents.

The outlet shall be marked with the safety sign [Illustration 5-2](#) such that it is visible in normal use, with the maximum allowed continuous output in amperes or volt-amperes, and with the name of the equipment that will be connected (e.g. “injector”).

Illustration 5-2: Safety sign



1.3 Other Options

1.3.1 For USA only

A purchasable option I-sense (catalog number E4504B) allows the monitoring of the hospital main power line. It is recommended to install this option everywhere RMS and waveform variation events can impact the standard behavior of the system. I-sense is connected to each phase conductor and the ground. An analog telephone line also needs to be line to I-sense.

1.3.2 Third party monitors on suspension



WARNING

THIRD PARTY MONITORS INSTALLED ON THE SUSPENSION MUST NOT BE POWERED BY THE SYSTEM. DANGEROUS VOLTAGE MAY BE PRESENT AT THE INPUT OF THESE MONITORS, EVEN WHEN PDB IS OFF



NOTICE

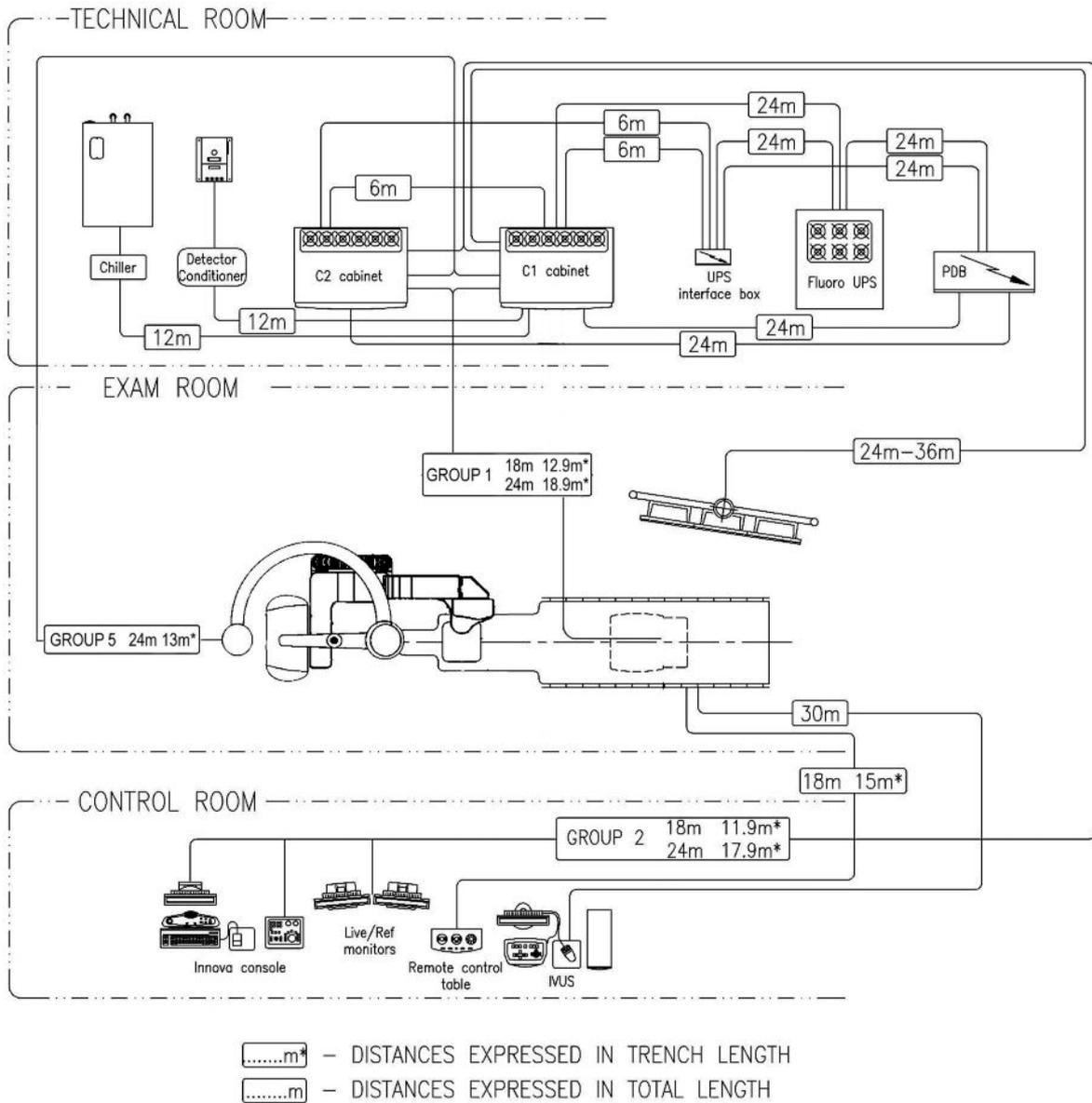
THIRD PARTY MONITORS SHALL BE CERTIFIED IEC60601-1 OR IEC60950. THIRD PARTY MONITORS MUST BE GROUNDED TO C1 CABINET GROUND BAR BY AN ADDITIONAL GROUND WIRE, AWG10 MINIMUM, AND 600V OF ANY UL TYPE.

2 System Cable Information

2.1 Physical Runs

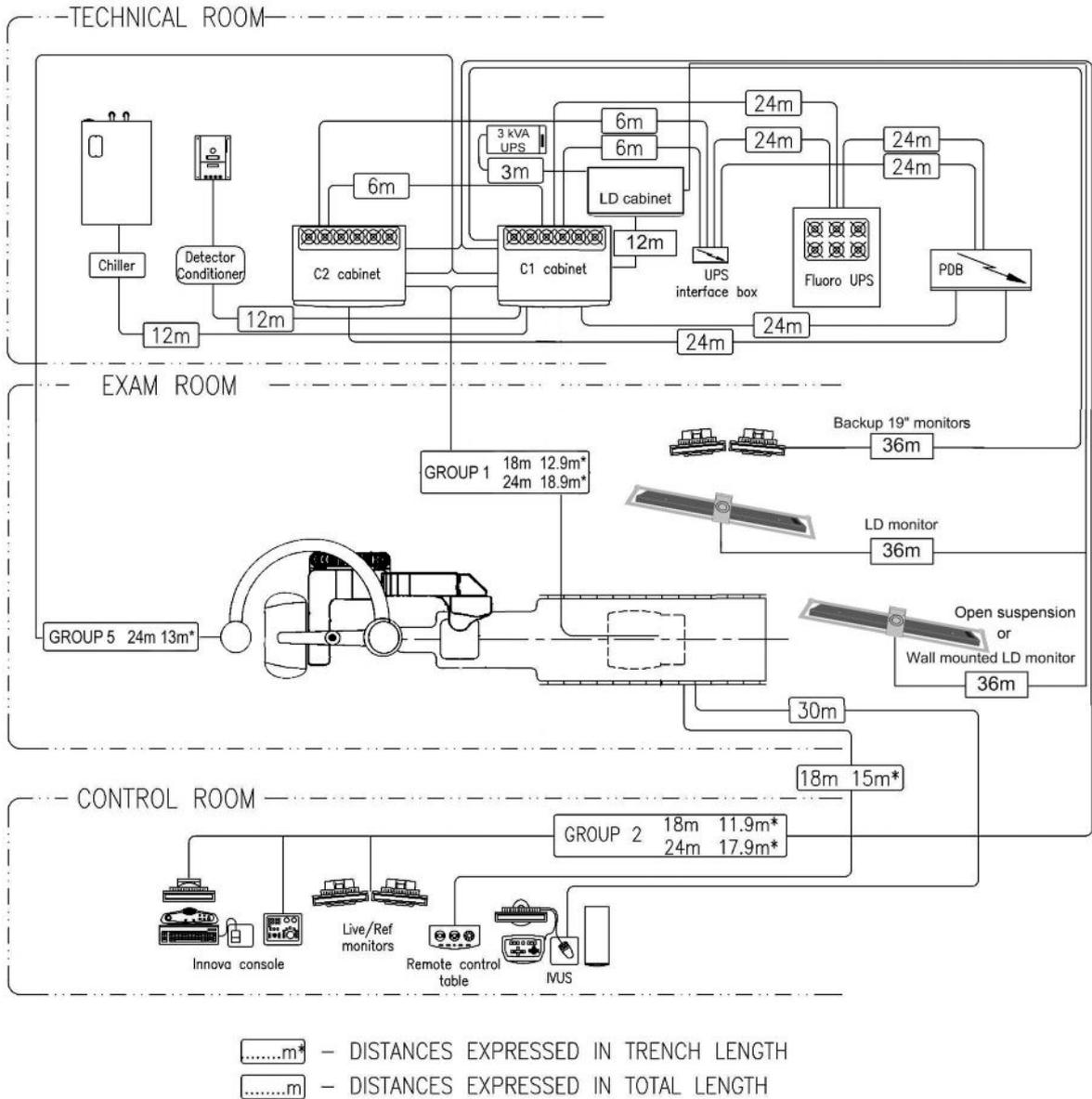
2.1.1 Physical Run Synoptic

Illustration 5-3: Mini / Maxi Interconnection Length (system with LCD monitors)



NOTE: A 24m Emergency UPS stop cable 27561A is available in FRU.

Illustration 5-4: Mini / Maxi Interconnection Length (system with Large Display Monitor option)



NOTICE

Radius of curvature of the cables that connect the 8MP Monitor: min 35mm.

2.1.2 MIS (Master Interconnect System)

The system interconnect cables are described in MIS (Master Interconnect System) documents. These documents specify all interconnections between components within the system.

Reference: For specific Vascular system interconnect maps and connection details, refer to the following

- Discovery™ IGS 730, Discovery™ IGS 740 - MIS Map
- Discovery™ IGS 730, Discovery™ IGS740 - MIS Charts

General Guidelines

The System introduces a new system interconnect with a star distribution for all cables from the technical area. The cables are shipped on spools to create cable groups. Cable group 1 for Exam room and cable group 2 for control room. The cable group shall be put in place during the same action. The cables are routed in the same duct.

The HV cables could be pulled separately.

2.1.3 System Core Matrix



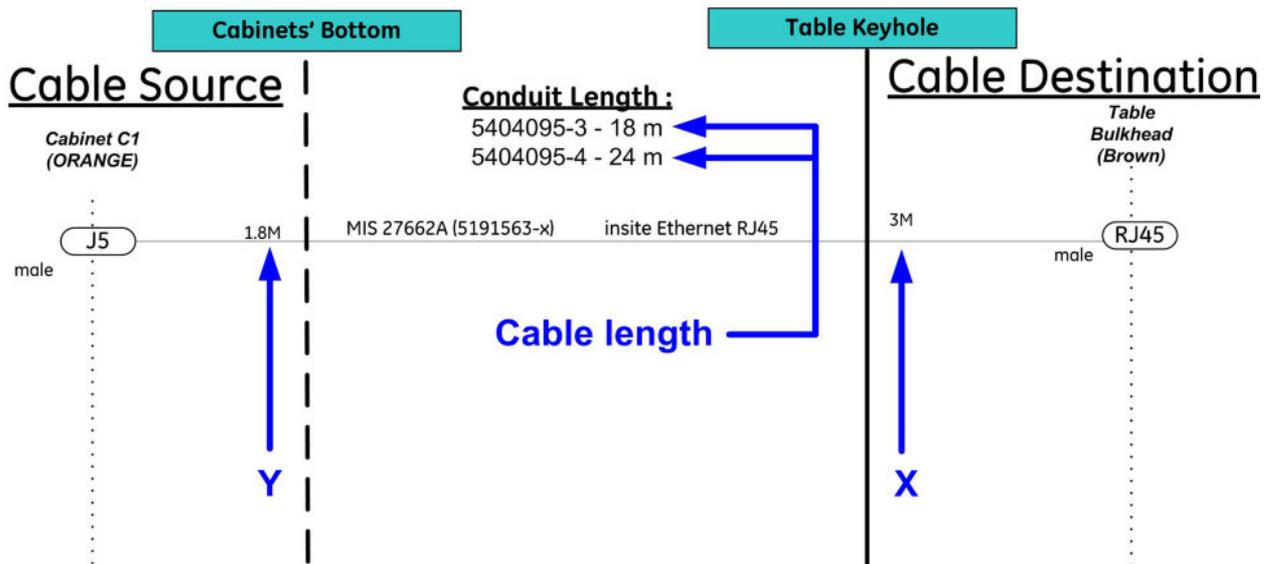
NOTICE

All lengths of cable are:

- in useable meter when you look at group level, or
- in meters (connector to connector) when you look at the cable level.

For a description of how to use the following cable group schematics, see below:

Illustration 5-5:



Cable length data is as follows:

- **Cable Length** = the total cable length, connector to connector (example above is 18/24 meters).

- $X + Y$ = used length for connection within system (example above is 4.8 meters).
- **Cable Length** - $(X + Y)$ = available length for conduit run (example above is 13.2 or 19.2 meters).

Illustration 5-6: Cable Group 1 – From Technical Area to Patient Table

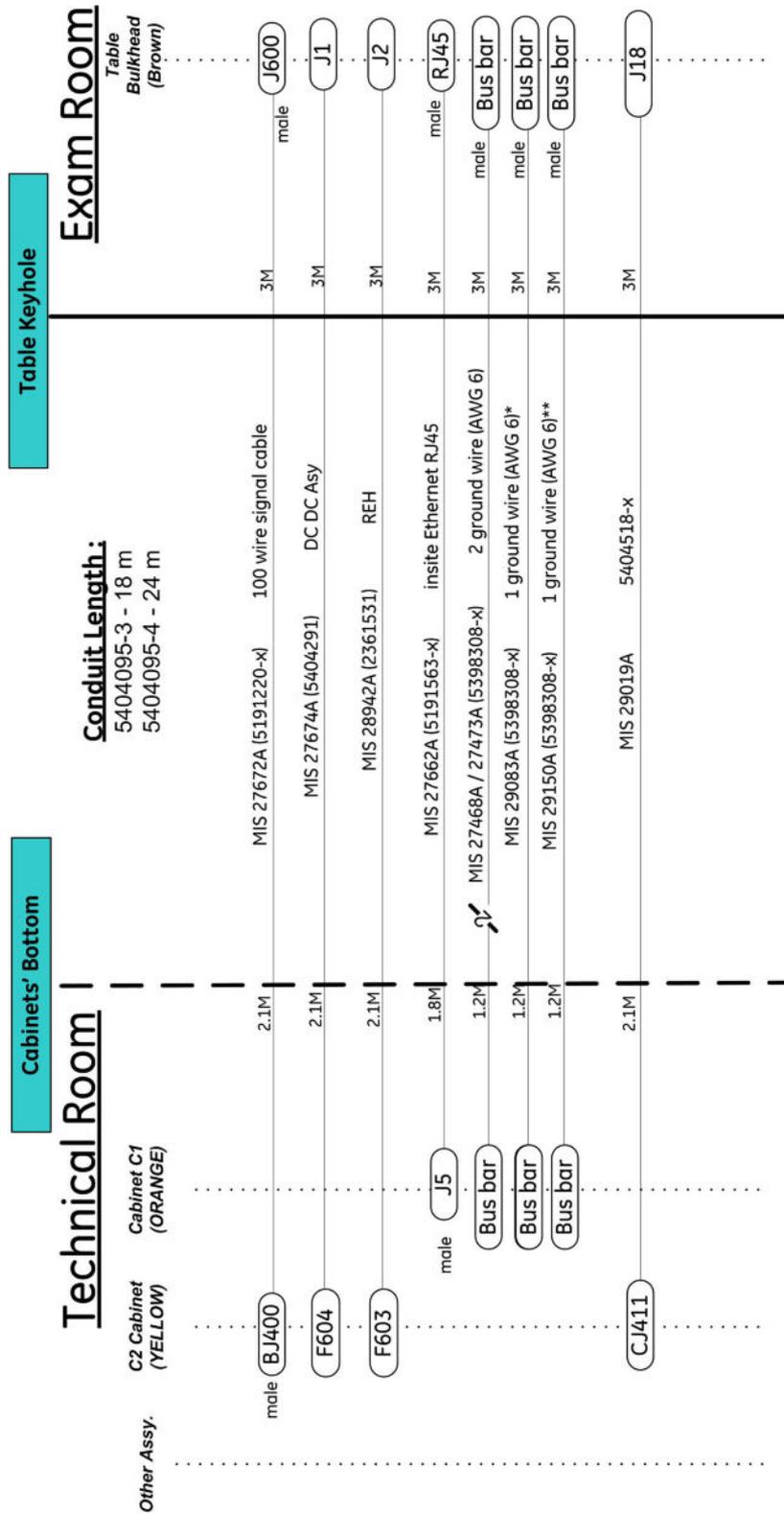


Illustration 5-7: Cable Group 2 – From Technical Area to Control Room

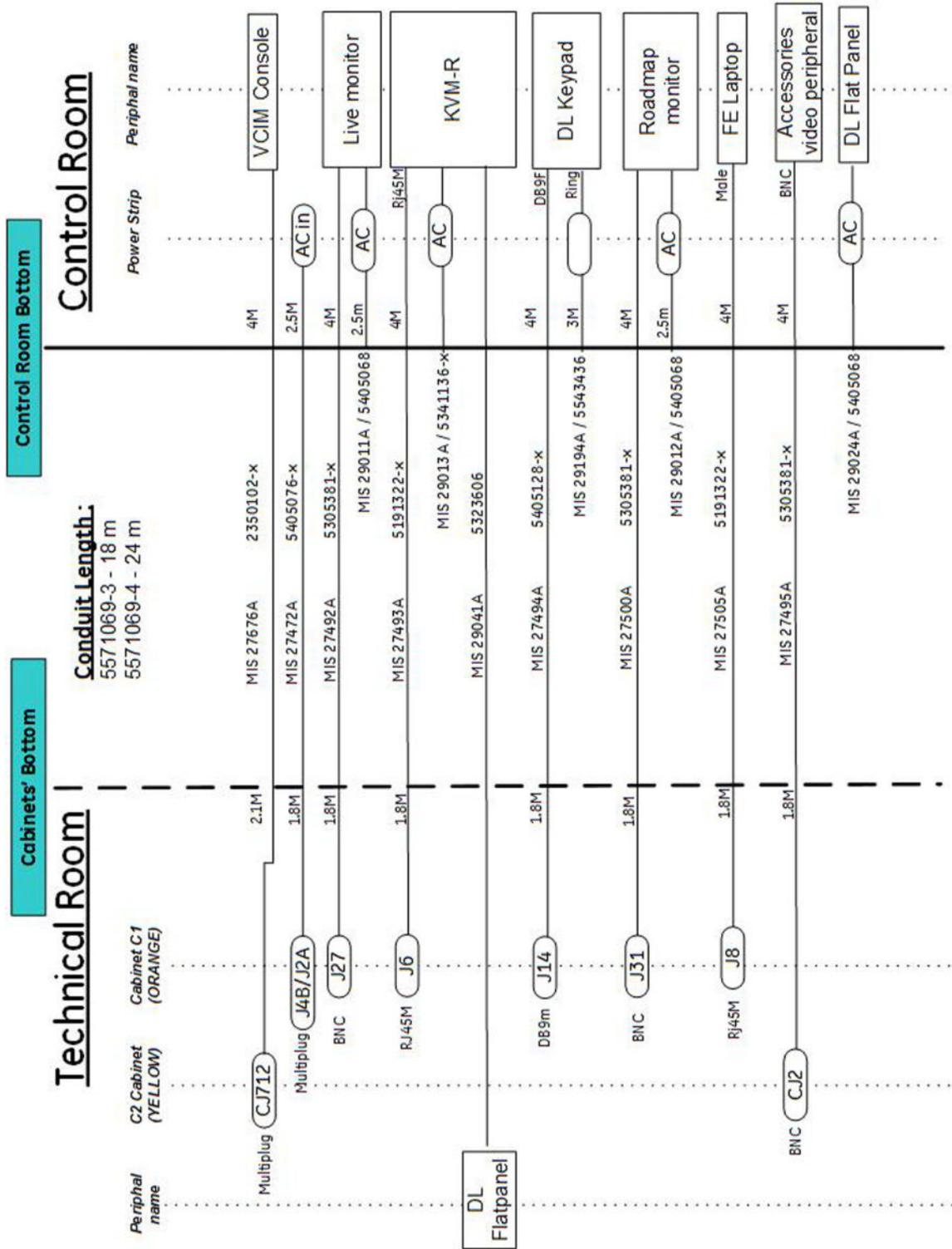


Illustration 5-8: Cable Group - Fast Link Option

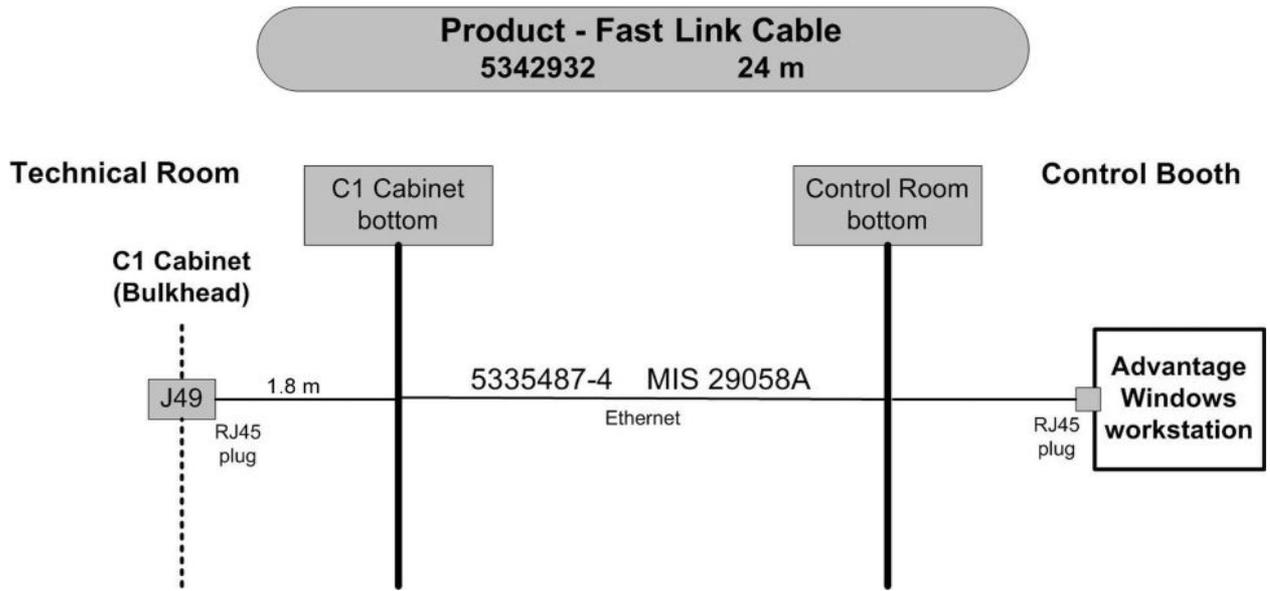
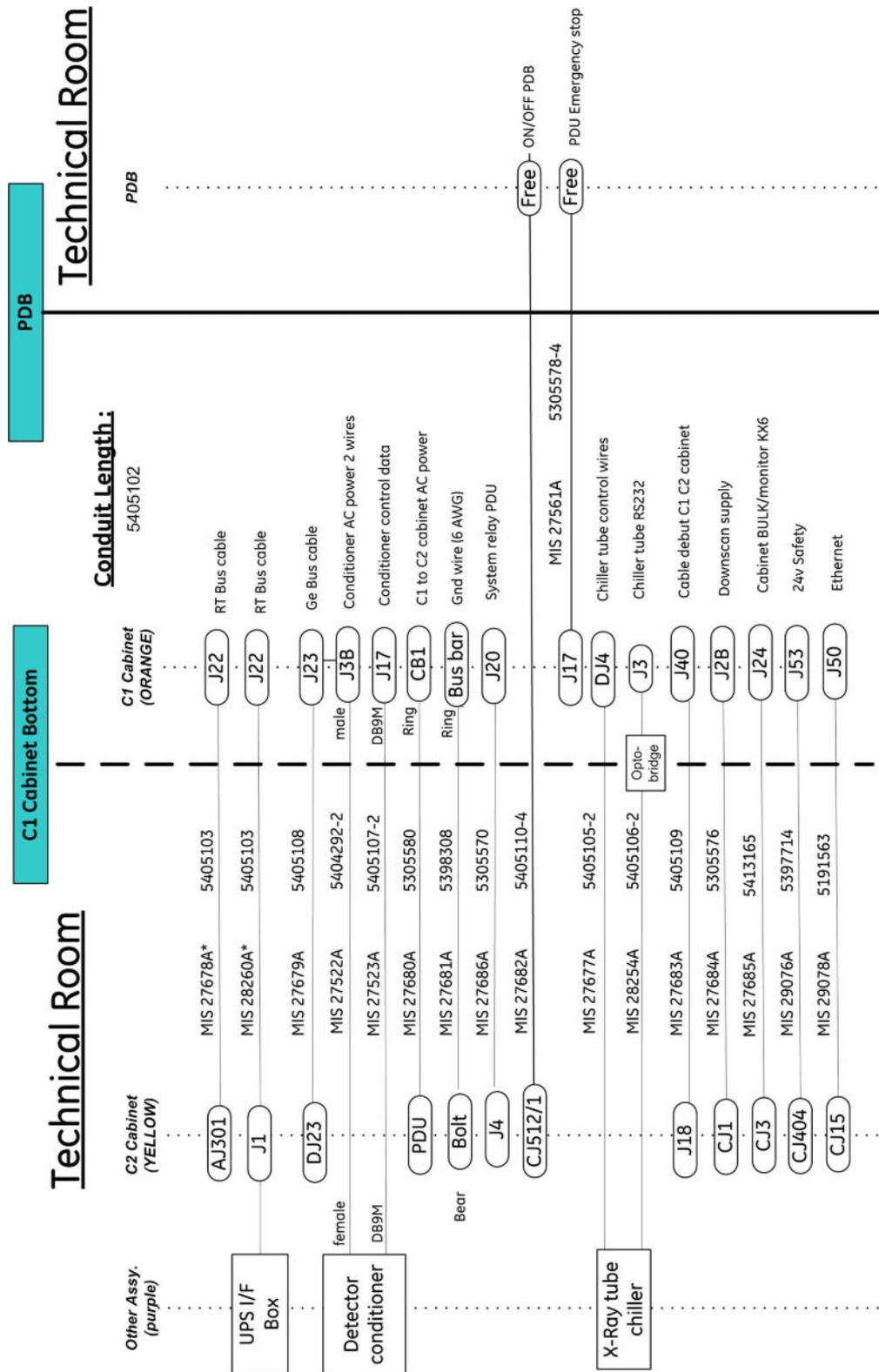


Illustration 5-9: Cable Group 3 – From Technical Room to Technical Room, C1 To C2 To PDB



* : MIS 27678A and MIS 28260A are same cable (double marking)

Illustration 5-10: Cable Group 4.2 – From Technical Area to Live Monitor Option

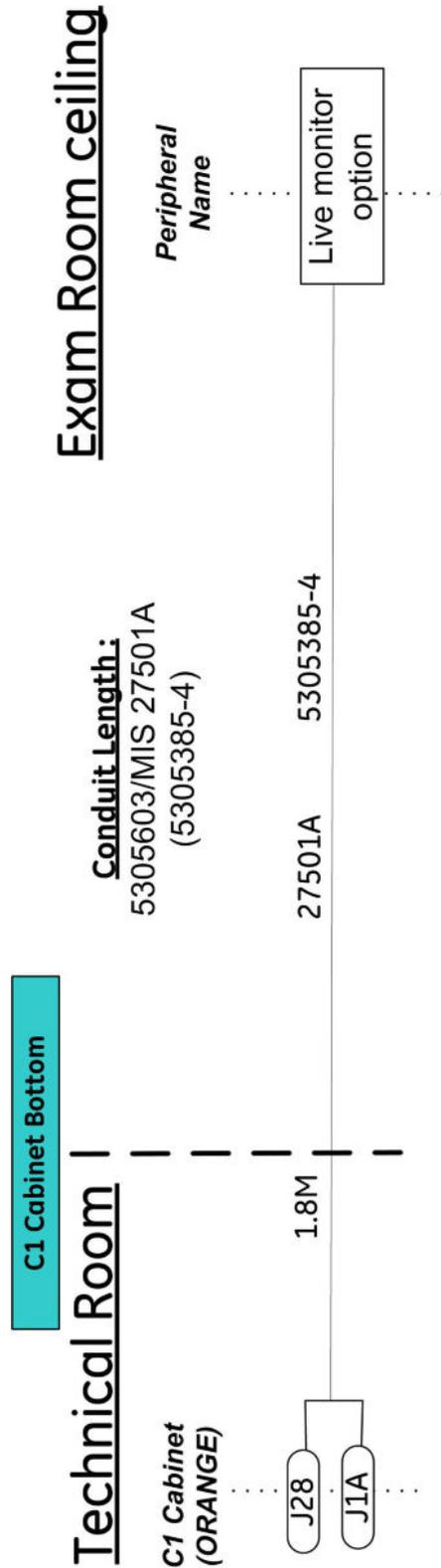


Illustration 5-11: Cable Group 4.3 – From Technical Area to Roadmap Monitor Option

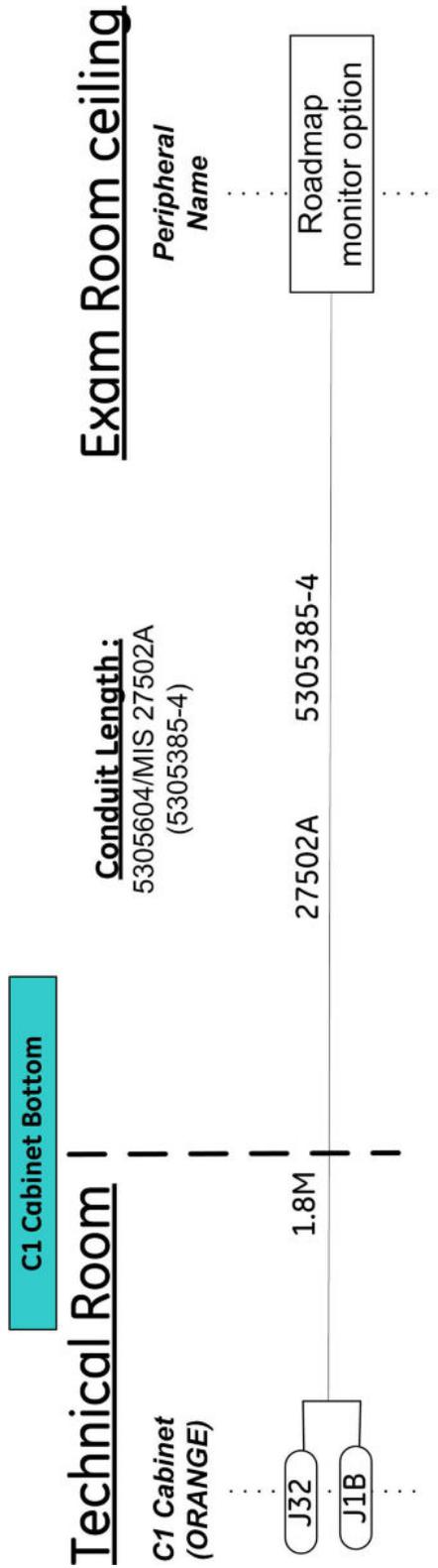


Illustration 5-12: Cable Group 4.4 – From Technical Area to LCD Monitor Suspension

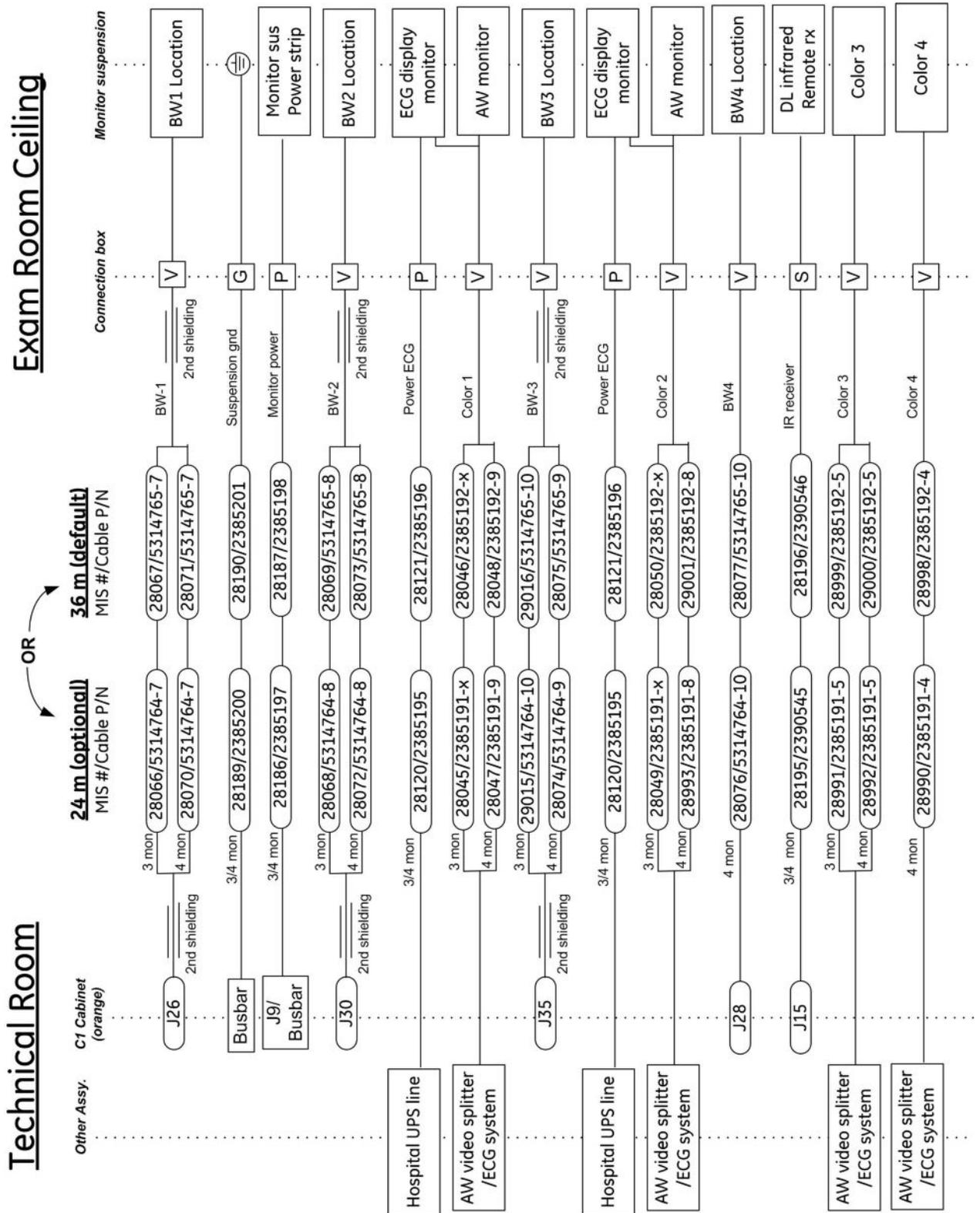


Illustration 5-13: Cable Group 4.5 – From Technical Area to Simultaneous Display

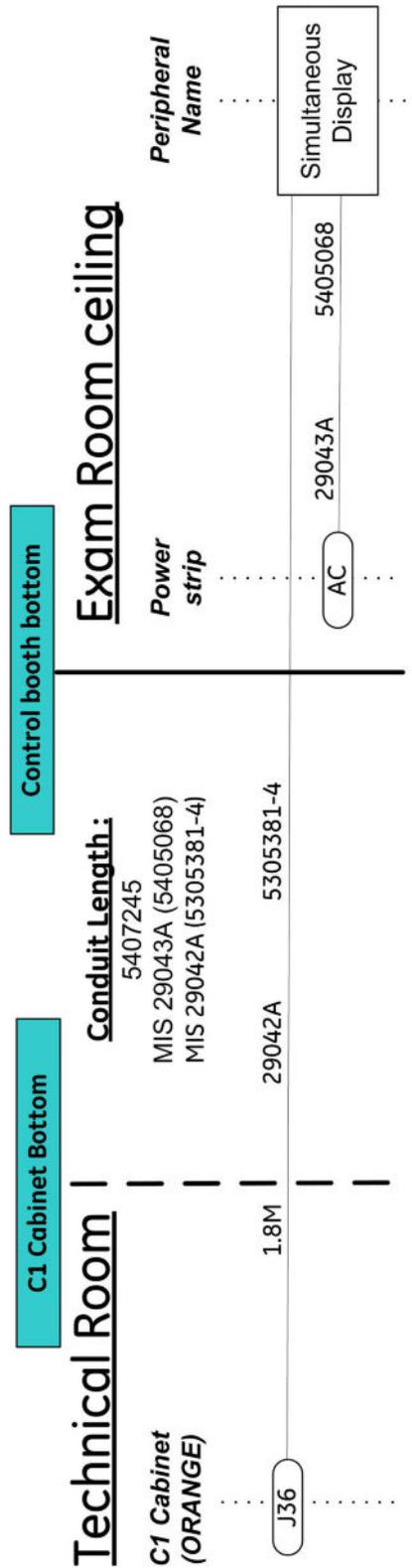


Illustration 5-14: Cables Group 5, HV cables and Cooling Hoses– From Technical Area to CMS/AGV

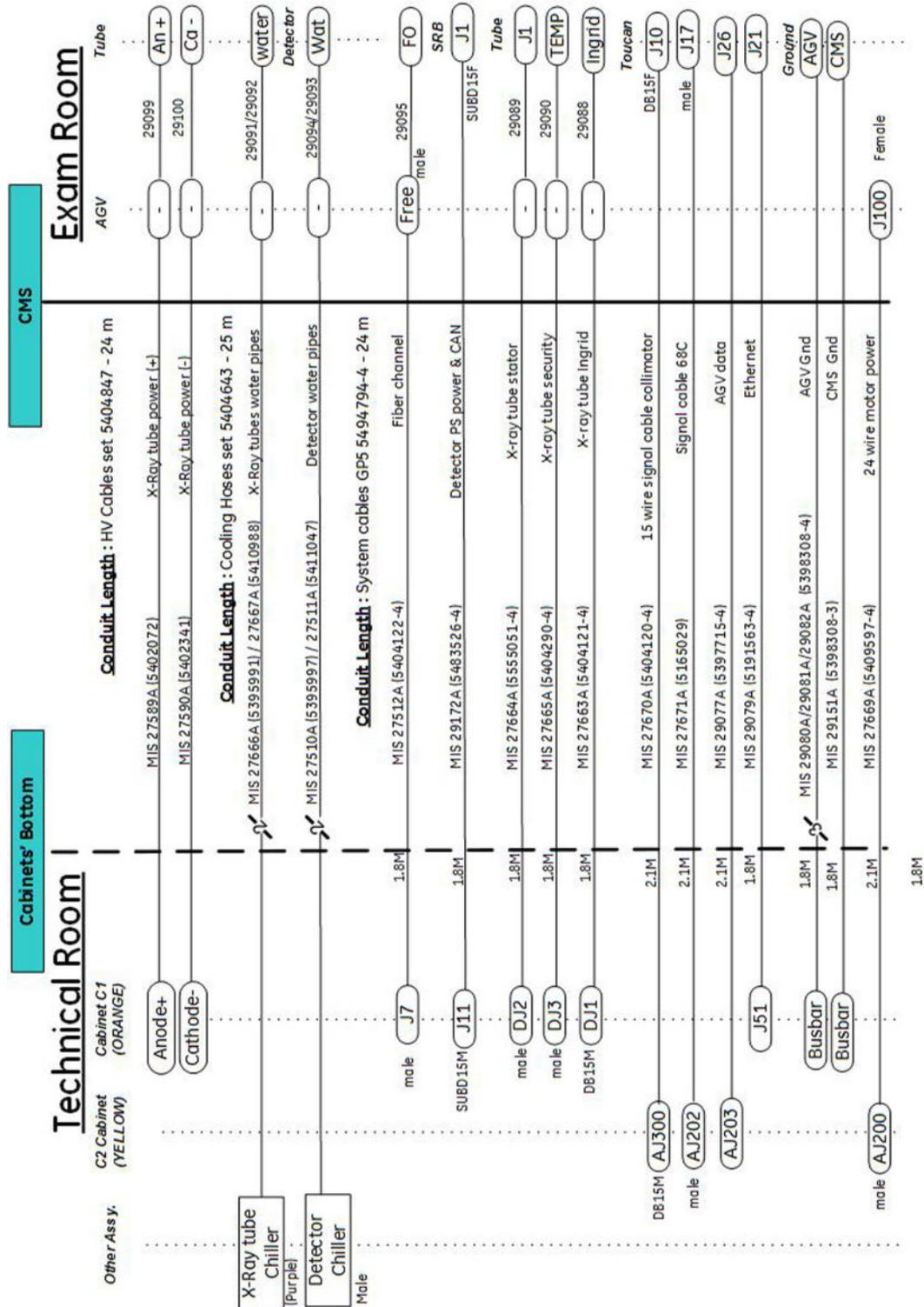
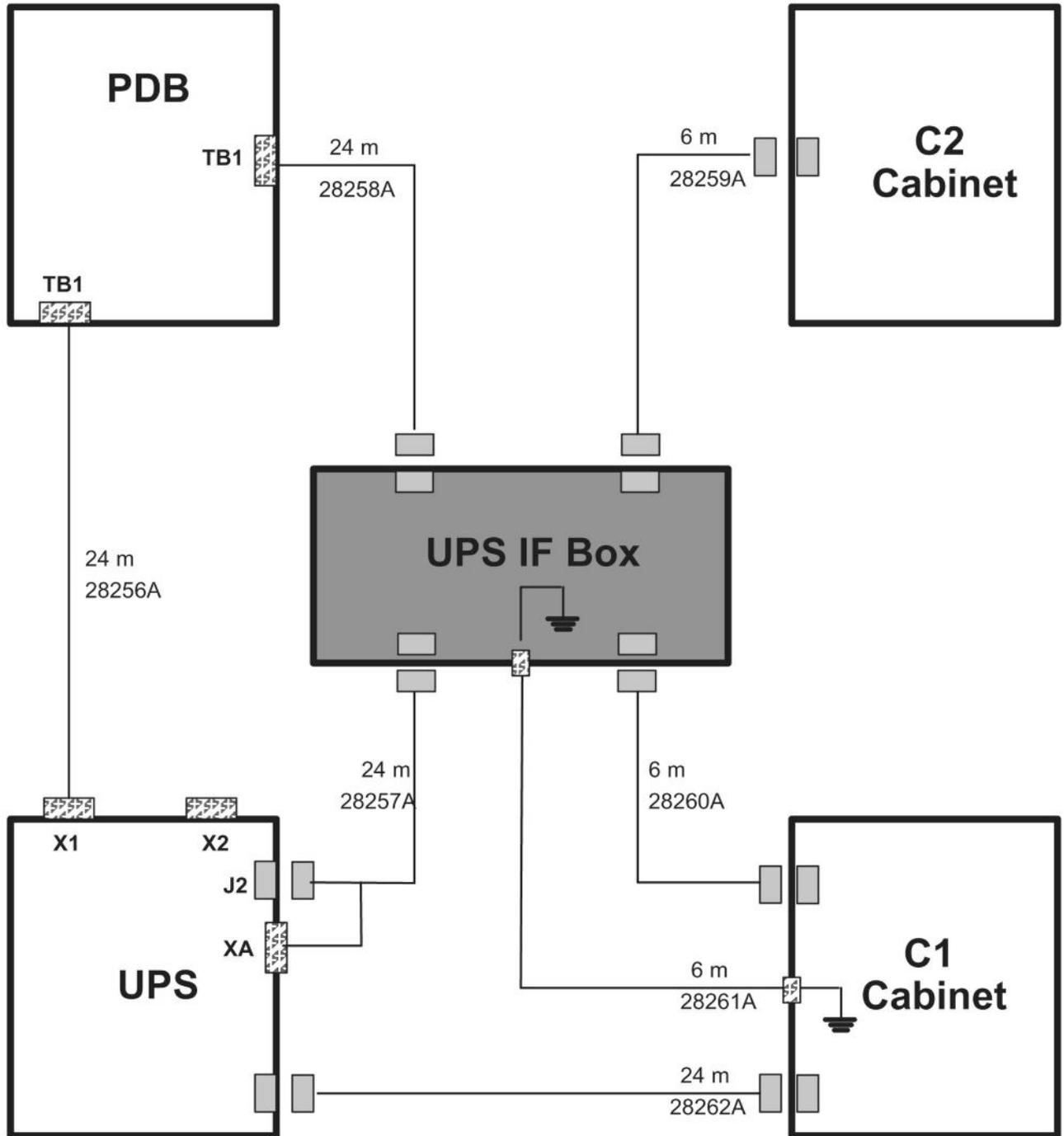


Illustration 5-15: Cable Group - UPS Cables Set



2.2 IVUS Option Wiring

2.2.1 S5I GE Rev 2+ Wiring

The connection cables between the S5I GE Control Room and Procedures Room components run in a dedicated under floor conduit (see [Cable Channeling](#)).

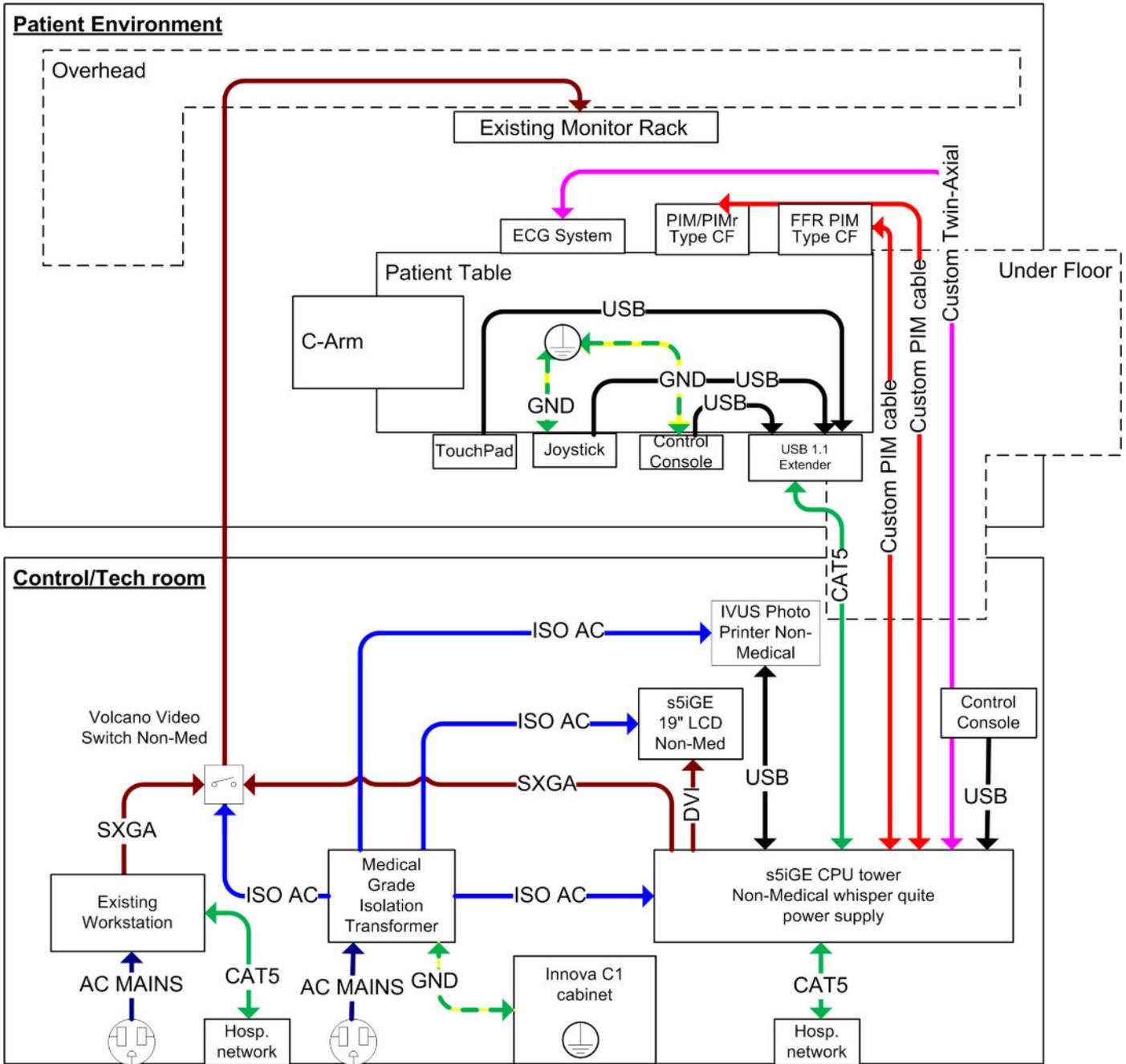
A GND wire between the C1 cabinet and the S5I GE Rev 2+ Isolation Transformer runs in the underfloor conduit prepared for the Control Booth cables between Equipment Room and Control Room.



NOTICE

Only one table grounding point is available for S5I GE Rev 2+ Option grounding. Therefore the option is limited to the joystick or control console.

Illustration 5-16:



2.2.2 IVUS rev 3 Wiring

Refer to [Volcano s5i Imaging System Integration in IGS Systems - Service Manual](#).

2.3 Cable Channeling

2.3.1 General

High voltage and power cables must be separated from other cables. Use a separate trough in the duct system, or use a separate conduit. Minimize cable length between the line disconnect and the System Cabinet power unit to reduce voltage regulation problems and wiring costs.

For information about the cables supplied with your system, please refer to [Physical Runs](#).

2.3.2 Conduit

Separate conduits must be used for power and signal wires. These wires must be kept separated from each other.

Using conduit imposes some important considerations when used with this system. Of primary concern, the majority of cables used are pre-terminated. Pre-termination greatly simplifies interconnection but makes cable-pulling difficult because of the added dimensions of the connectors.

Conduit must be large enough to pass the cable and connector through with all other cables already in the conduit. Also, the size of conduit chosen must allow for future growth. There is the possibility of additional cables being added later as the system is developed and options are added.

The use of conduit is recommended for cables running overhead between rooms, especially when a diagonal run provides the shortest cable path

Separate conduits must be used for Hospital and Fluoro UPS power wires. These wires must be kept separated from each other (at least 30 cm).

2.3.3 Electrical Ducts

NOTE: (For IVUS Rev 3 option) refer to [Volcano s5i Imaging System Integration in IGS Systems - Service Manual](#).

It's important that electrical ducts have separate compartments for power and signal wires. These wires must be kept separated from each other for proper system operation.

Electrical ducts have advantages, when used with a single room or two adjacent rooms. Electrical ducts combine cabling in a neat and functional appearance, with accessibility and room for expansion.

NOTE: Medrad AVANTA, IVUS and Mac-lab cables exit behind the table in the patient room.

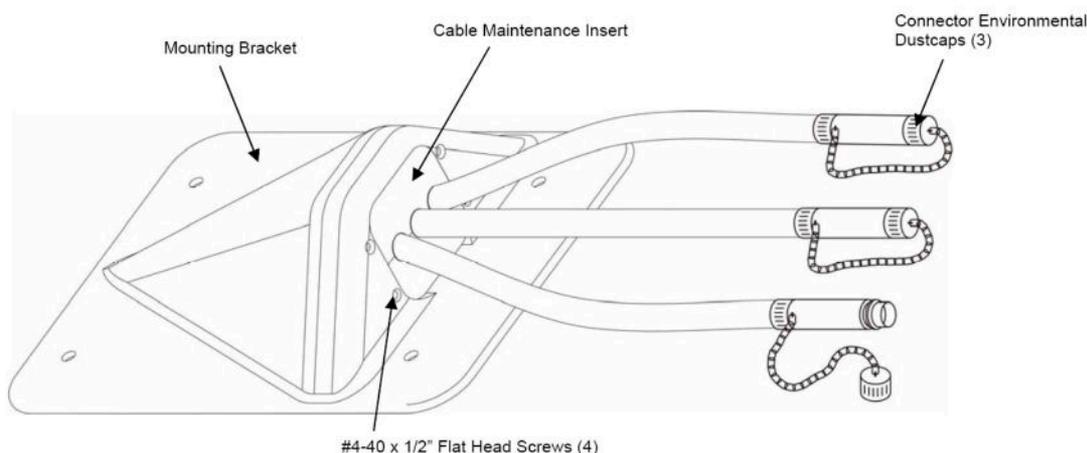
NOTE: For **Fast Link** cable (C1 cabinet - AW station), the static operation bending radius must be at least 4 times the outer cable diameter.

It is the responsibility of the site planner to provide the appropriate solution to the table exit (e.g Utility box, Clab II, Tram module, connection interface box)

- NOTE:** Specific Recommendations for installation with GE ECG Device such as MacLab, CardioLab or ComboLab:
- TRAM RAC in Exam Room with cable 2016134-106 routed back to Control Room where the other modules & PC are installed
 - If no GE Maclab cable 2016134-106 installed between the TRAM (Exam Room) and the Control Room, need to route it so that installation/connection of Physio module can be made in Control Room.

NOTE: **MEDRAD Avanta Table mount:** A 76.2 mm (3 in) and max 25 m (984 in) length conduit between technical room and patient room shall be prepared below the floor for the three injector cables. It is recommended to use the MEDRAD Avanta floor mounting bracket to cover the duct hole in the patient room if there is no Utility box.

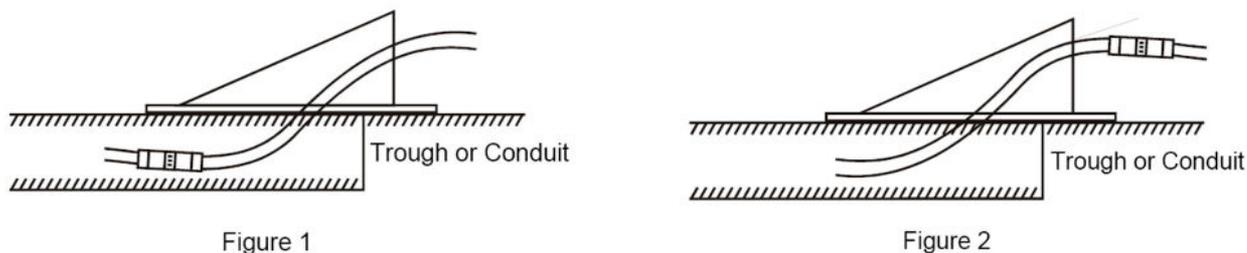
Illustration 5-17: MEDRAD Avanta mounting bracket



Floor mount installation can be accomplished one of two ways:

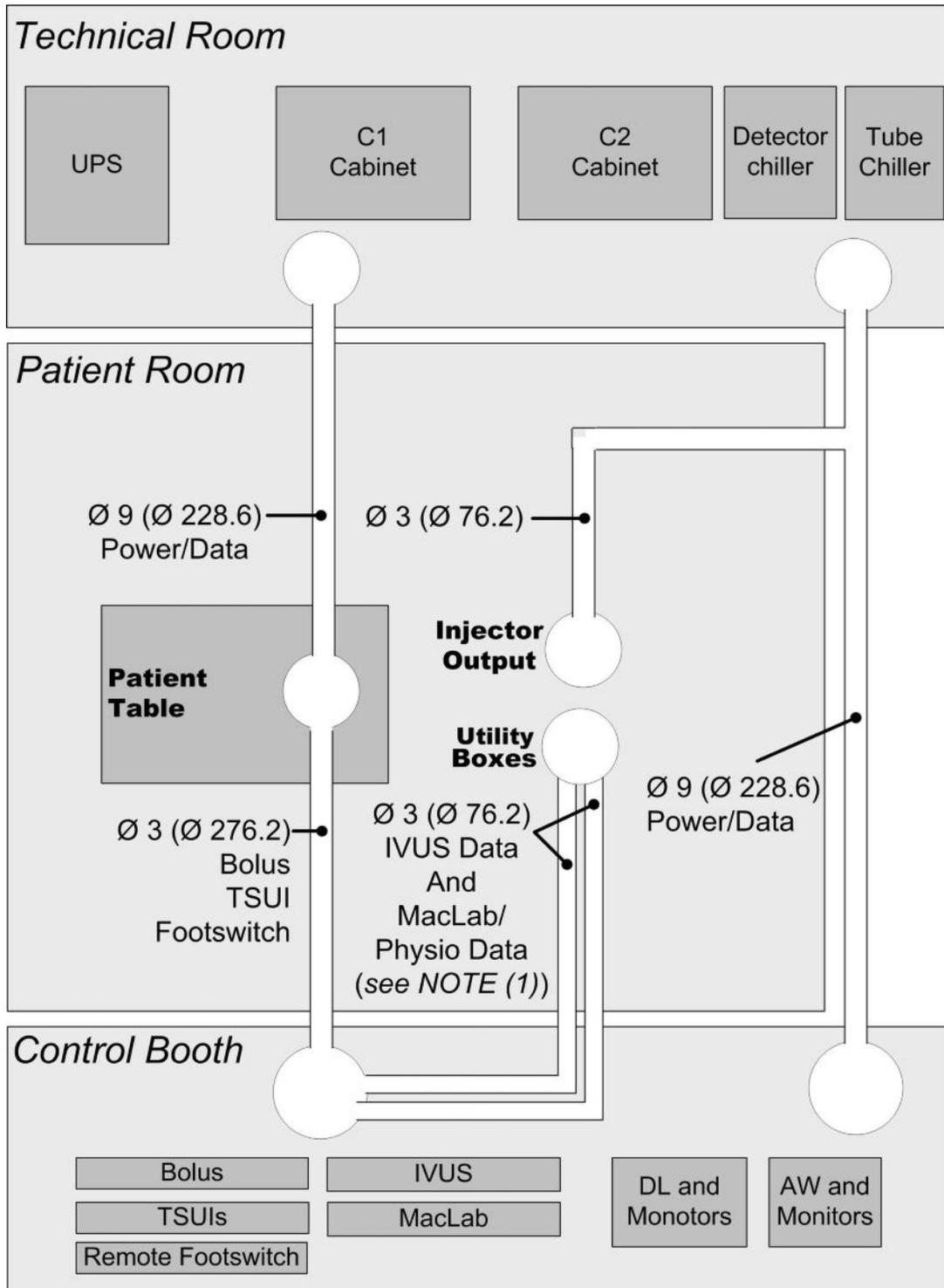
- Connectors mounted in trough under mounting bracket (Figure 1)
- Connectors mounted above mounting bracket (Figure 2)

Illustration 5-18: MEDRAD Avanta floor mounting methods



For further MEDRAD Avanta floor mounting, see the Installation guide MEDRAD Avanta Floor Mounting Bracket.

Illustration 5-19: Cable Channeling Layout



NOTE: (1) On some sites there is only one conduit between Exam room and Control room for the IVUS & MacLab.



NOTICE

In some countries, it is forbidden to run electrical cables and water pipes in the same conduit. In this case, two separate conduits are required.



NOTICE

Raceways or cable trays containing electrical conductors shall not contain any pipe, tube or equal for steam, water, air, gas, drainage or any service other than electrical.

NOTE: 18 meters (59 ft) is the only cable length available for the Remote TSUI box data cable connecting remote TSUIs in the control booth and the patient table.

Never connect the **Physio** module to the ground.

The Physio cable can run in the same conduit as the Bolus cable. In this case, it is required to have a conduit between the table and the physio Utility box.

If no conduit available between rear of table and Control Room (no Remote TSUI, no IVUS, no MacLab...), need to define proper cable routing or create new conduit as per PIM requirements.

If there is no physio Utility box behind the table in the layout, find a local solution to hide the hole in the floor and the cable exit.

2.3.4 IVUS S5I Option

2.3.4.1 Floor Conduits

NOTE: (For IVUS Rev 3 option) refer to [Volcano s5i Imaging System Integration in IGS Systems - Service Manual](#).

A 3 inches and max. 25 m long conduit between Control and Patient Rooms shall be prepared below the floor for the S5I GE Discovery interconnection cables.

- Locate the position of the S5I GE components in the Control Room, according to the workflow requirement of the operators.
- Establish a 76 mm (3") conduit below floor from the S5I GE CPU location in the Control Room, to the foot end area of the Patient Table in the Procedures Room:
 - Locate the Procedures Room exit of the conduit close to the centerline of the Patient Table
 - Locate it as close to the Patient Table base as possible, considering :
 - Room for access to the table for service purposes
 - Limitation from other cables connected to the table
 - Location of the table plate
 - Location of Mac-Lab conduit
 - Location of Physio or Med Gases connections

- The S5I GE cables are moving cables, they have to allow the Patient Table motions (Panning, Lifting, Tilting and Rotating)
- Use similar solutions (i.e. protection against cleaning fluids, etc.) as it is used for the Mac-Lab conduit
- See also guidance on Typical Layout drawing 4-58f sheets E1 and S2, showing Mac-Lab and P/M Gas location recommendations.

Estimated labour time: 1 hours

2.3.4.2 Run Interconnection cables through the Conduit

2.3.4.2.1 For S5I GE Rev 2+ option

Use the S5I GE Rev 2+ PIM (#806365026) as reference to the procedures below.

- Unpack , and check the completeness of the Preinstallation kit:
 - 1 pcs - Custom PIM cable 27 m (88.2 ft) - Volcano ID: 806452008
 - 1 pcs - CAT5 cable 30 m (98 ft, 5 in) - Volcano ID: 807055001
 - 1 pcs - Custom Twin axial cable - Volcano ID: 806380001
 - 1 pcs - Ground Cable, 30 m (98 ft, 5 in) s5i – Volcano ID: 806889001
 - 1 pcs - S5I GE Rev 2+ Preinstallation Manual - Volcano ID: 806365007
 - 1pcs - FFR cable 27 m - Volcano ID: 808632001
- Install 806889001 Ground Cable through the Control Booth conduit (see note)
- Install the cables through the S5I GE conduit from the Control Room end :
 - 806452008 PIM cable, round shaped connector end to the Procedures Room
 - 807055001 - Ethernet cable (1 pcs)
 - 808632001 – FFR cable - 27 m
- Install the optional cables through the S5I GE conduit from the Control Room end:
806380001 - ECG cable in case, if NON Mac-Lab ECG will be installed

NOTE: For the ground cable, see the S5I GE Rev 2+ service manual for special instructions concerning cable running and cutting .

NOTE: If the installation has the **Mac-Lab ECG** in the configuration, the ECG cable shall not be run through the conduit, it will be used in the Control Room **to connect Mac-Lab and S5I GE PCs.**

NOTE: You should consider running the ECG cable through the conduit in case, the customer requires interconnecting to a **NON Mac-Lab ECG** at the table base.

In this case you **shall hide the unconnected cable in the conduit** for future expansion options.

- Ensure sufficient cable length on the Procedures Room end of the cables according to the table below

Cable	Free length from the conduit exit
S5I GE PIM cable *	2.4 m (8')
FFR cable for Pimette **	0 m (0')
Control Station cable	2.1 m (7')
Joystick cable	2.7 m (9')
ECG cable	Depends on the ECG location

* Consider the 3 m length of the short cable, if the split cable preinstallation exists.

** Pimette has 3 m cable.

NOTE: The incorrect cable length might cause reliability issues during the operation !

Make sure, that the out of conduit parts of the cables with the connectors are properly protected during the rest of the installation

2.3.4.2.2 For IVUS Rev 3 option

Refer to [Volcano s5i Imaging System Integration in IGS Systems - Service Manual](#).

3 Lighting Specifications

3.1 Room Light Distribution

3.1.1 Requirements for lighting

Requirement for lighting concern the following, general, light-technique characteristics:

- Illuminator level.
- Lighting distribution.
- Preventing the operator from being dazzled by the light (by direct light sources or by reflection on bright objects).

The Illumination level must be compliant with established lighting technical rules and be as constant as possible.

Technical room, operating room and control room shall be provided with appropriate lighting in the maintenance area (maintenance area to be considered are service workplaces). It corresponds to service areas as defined for any of the product components.

The minimum required average luminance E_m shall be of 500Lx and minimum color rendering factor Ra of 80 as per IEC/EN 12464-1 (Light and lighting. Lighting of work places. Indoor work places: Illumination requirements for indoor workplaces corresponding to assembly of medium size electrical components, e.g. control panel) for the electrical industry).

3.1.2 Windows and curtains

When the examination room has a window with an aperture outside of the controlled light area (day light, other...) a curtain has to maintain the light intensity under a limit fixed to 150 lux.

3.1.3 Surgical Lights



IF A SURGICAL LIGHT IS INSTALLED BY THE CUSTOMER, IT HAS TO BE POWERED FROM AN INDEPENDENT POWER SUPPLY (PROVIDED BY THE HOSPITAL NOT BY THE SYSTEM)

Chapter 6 Communications Requirements

1 Network Requirements

1.1 Insite/Network Connection

1.1.1 Insite/Network Connection

The preferred Insite connection uses a broadband connection. This connection requires a dedicated Ethernet Jack (RJ45) that must be located less than 1 meter (3 feet) from the C1 cabinet

For complete descriptions of these connectivity solutions, please refer to the Broadband Solutions catalogue available through your local GEHC sales and service representative.

Connectivity Process and pre-installations checklists are available in the Broadband Connectivity PIM available through your local GEHC sales and service representative

InSite requires an Internet Address connecting it to the System. This address must be available before installing the system. A request form has been defined. For more information, please refer to [IP Addressing Process](#) or contact your GEMS OLC representative.



NOTICE

The C1 cabinet comes equipped with a Firewall unit. The hospital network must be capable of connecting to this firewall. In the case that it cannot be, please contact GE Healthcare to discuss alternatives.

1.1.2 IVUS Option Ethernet Network Requirement

NOTE: (For IVUS Rev 3 option) refer to [Volcano s5i Imaging System Integration in IGS Systems - Service Manual](#).

The S5I GE CPU located in the control room shall be connected to the hospital Ethernet network. A wall Ethernet outlet shall be available in the control room to connect the device..

DICOM Image Storage:

Saving patient cases to DVD: The archived images are stored in DICOM format with Volcano s5i system acting as a File Set Creator (FSC), following the guidelines in the 2004 DICOM 3.0 specification.

Sending patient cases to DICOM server: The Volcano s5i supports the ultrasound multi-frame image storage SOP class as an SCU (service class user).

For more information, see the Volcano s5 DICOM Conformance Statement located in the 806365-007 Volcano Service Manual.

1.2 IP Addressing Process

To obtain an IP address, contact the following for your pole:

- **GEMSAM:**

Contact: OnLine Center–Americas, Network Products and Services (NP&S)

Telephone: 1–800–321–7937

NOTE: Press [1] for the Online Center. Follow the phone tree instructions to select X–Ray modality. When prompted, select the option for obtaining an IP address.

- **GEMSE:**

Use the new mail form called *INSFORM.xls* or *INSFORM.txt* for obtaining an IP Address.

If you have questions or need clarification regarding the use of this form, do not hesitate to ask the Operation support OnLine.

Contact: OnLine Center–Europe

Telephone: +33 (0)1 30 83 13 00

FAX: +33 (0)1 30 70 99 70

NOTE: The INSITE FORM is on the formatted sheet (.xls) or text sheet (.txt) that can be found on the Service CD–Rom.

- **GEMSA:**

Contact: OnLine Center–Asia

Network Products and Services (NP&S)

Telephone: (81) 426 56 0033

FAX: (81) 426 56 0053

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General Electric Company
283, rue de la Minière
78530, Buc
FRANCE

www.gehealthcare.com

