



Omni™ Legend PET/CT

Pre-Installation Manual



5881677-1EN
Revision 6

Important...X-Ray Protection

X-ray equipment if not properly used may cause injury. Accordingly, the instructions herein contained should be thoroughly read and understood by everyone who will use the equipment before you attempt to place this equipment in operation. The General Electric Company, Healthcare Technologies, will be glad to assist and cooperate in placing this equipment in use.

Although this apparatus incorporates a high degree of protection against x-radiation other than the useful beam, no practical design of equipment can provide complete protection. Nor can any practical design compel the operator to take adequate precautions to prevent the possibility of any persons carelessly exposing themselves or others to radiation.

It is important that anyone having anything to do with x-radiation be properly trained and fully acquainted with the recommendations of the National Council on Radiation Protection and Measurements as published in NCRP Reports available from NCRP Publications, 7910 Woodmont Avenue, Room 1016, Bethesda, Maryland 20814, and of the International Commission on Radiation Protection, and take adequate steps to protect against injury.

The equipment is sold with the understanding that the General Electric Company, Healthcare Technologies, its agents, and representatives have no responsibility for injury or damage which may result from improper use of the equipment.

Various protective materials and devices are available. It is urged that such materials or devices be used.

Important...Radioactive Material Handling

Only employees formally training in radioactive materials handling and this equipment are authorized by the GE Healthcare Radiation Safety Officer to use radioactive materials to service this equipment.

GE Healthcare Services is required to notify the applicable U.S. state agency PRIOR to any source service event involving pin source handling. See NUC/PET Radioactive material guides for specific instruction or contact your EHS Specialist.

Rev 2 (July 21, 2005)

Language Policy

DOC0371395 - Global Language Procedure

PARALAJMËR- IM (SQ-AL)	<p>Ky manual është i disponueshëm në disa gjuhë.</p> <ul style="list-style-type: none"> Nëse një ofrues shërbimi klientësh kërkon një gjuhë të ndryshme nga ato që mundësohen në Portalin e dokumentacionit të klientit, është përgjegjësia e klientit që të ofrojë shërbime përkthimi. Mos u përpiqni të kryeni shërbime në pajisje, pa lexuar dhe kuptuar paraprakisht manualin e shërbimit. Mosrespektimi i këtij paralajmërimi mund të çojë në lëndim të ofruesit të shërbimit, operatorit ose pacientit si pasojë e goditjes elektrike, mekanike ose një rreziku tjetër.
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تحذير (AR-SA)	<p>هذا الدليل متوفر بعدة لغات</p> <ul style="list-style-type: none"> • إذا كان مقدم الخدمة التابع للعميل يطلب لغة غير تلك المتوفرة في بوابة توثيق العميل، فإنه يقع على عاتق العميل مسؤولية تقديم خدمات الترجمة • لا تحاول صيانة الجهاز ما لم تتم استشارة دليل الخدمة هذا وفهمه • قد يؤدي عدم مراعاة هذا التحذير إلى إصابة مقدم الخدمة أو المشغل أو المريض من جراء الصدمات الكهربائية أو المخاطر الميكانيكية أو غيرها من المخاطر
ПРЕДУПРЕЖ ДЕНИЕ (BG)	<p>Това ръководство е налично на няколко езика.</p> <ul style="list-style-type: none"> • Ако доставчикът на услуги на даден клиент изисква език, който е различен от осигурените в портала с документация за клиенти, отговорност на клиента е да предостави преводачески услуги. • Не се опитвайте да обслужвате оборудването, освен ако не сте се консултирали с това сервизно ръководство и сте го разбрали. • Несъблюдаването на това предупреждение може да доведе до нараняване на предоставящия услугите, оператора или пациента вследствие на токов удар, механична или други опасности.
警告 (ZH-CN)	<p>本手册有多种语言版本。</p> <ul style="list-style-type: none"> • 如果客户的服务提供商要求使用 Customer Documentation Portal (客户文档门户) 未提供的其他语言, 则客户有责任提供相应的翻译服务。 • 请勿尝试检修设备, 除非已明确参考并理解本检修手册。 • 不遵循此警告可能会导致检修服务提供者、操作员或患者受到触电、机械或其他危害的损伤。
警告 (ZH-HK)	<p>本手冊備有多個語言版本。</p> <ul style="list-style-type: none"> • 若客戶的服務提供者所需語言版本不在 Customer Documentation Portal (客戶文件入口網站) 所列語言之中, 客戶需自行負責提供翻譯服務。 • 除非已查閱並理解本檢修手冊, 否則, 請勿嘗試檢修設備。 • 不遵循此警告可能會導致服務提供者、操作員或患者因為觸電、機械或其他危險而受傷。
警告 (ZH-TW)	<p>本手冊備有多個語言版本。</p> <ul style="list-style-type: none"> • 若客戶的服務提供者所需語言版本不在 Customer Documentation Portal (客戶文件入口網站) 所列語言之中, 客戶需自行負責提供翻譯服務。 • 除非已查閱並理解本檢修手冊, 否則, 請勿嘗試檢修設備。 • 不遵循此警告可能會導致服務提供者、操作員或患者因為觸電、機械或其他危險而受傷。
UPOZORENJE (HR)	<p>Ovaj je priručnik dostupan na nekoliko jezika.</p> <ul style="list-style-type: none"> • Ako serviser klijenta zahtijeva jezik koji nije jedan od jezika dostupnih na portalu s korisničkom dokumentacijom (Customer Documentation Portal), odgovornost je klijenta pružiti uslugu prevođenja. • Nemojte pokušavati servisirati opremu ako niste proučili i razumjeli ovaj servisni priručnik. • Nepoštovanje ovog upozorenja može izazvati ozljede servisera, rukovatelja ili pacijenta kao posljedicu strujnog udara, mehaničkih ili drugih opasnosti.
VÝSTRAHA (CS)	<p>Tato příručka je k dispozici v několika jazycích.</p> <ul style="list-style-type: none"> • Pokud zákazníkům poskytovatel služeb vyžaduje jiný jazyk než jazyky, které jsou k dispozici na portálu s uživatelskou dokumentací, je odpovědností zákazníka poskytnout překladatelské služby. • Nepokoušejte se provádět servis zařízení, aniž byste prostudovali tuto servisní příručku a porozuměli jí. • Nedodržení tohoto varování může vést ke zranění poskytovatele služeb, obsluhy nebo pacienta, způsobenému úrazem elektrickým proudem či mechanickým nebo jiným nebezpečím.

ADVARSEL (DA)	<p>Denne vejledning fås på flere sprog.</p> <ul style="list-style-type: none"> • Hvis en kundes tjenesteudbyder kræver et andet sprog end dem, der er til rådighed i Kundedokumentationsportalen, er det kundens ansvar at levere oversættelsestjenester. • Undgå at forsøge at udføre service på udstyret, medmindre du har læst og forstået denne servicevejledning. • Hvis du undlader at overholde denne advarsel, kan det føre til skader på servicemedarbejderen, operatøren eller patienten på grund af elektrisk stød, mekaniske eller andre farer.
WAARSCHUWING (NL)	<p>Deze handleiding is in verschillende talen beschikbaar.</p> <ul style="list-style-type: none"> • Als de serviceprovider van een klant een andere taal vereist dan de talen die beschikbaar worden gesteld in het Customer Documentation Portal (Klantdocumentatieportaal), is het de verantwoordelijkheid van de klant om vertaalservices te leveren. • Probeer geen service op de apparatuur uit te voeren zonder de servicehandleiding te hebben gelezen en begrepen. • Het negeren van deze waarschuwing kan leiden tot letsel bij de serviceprovider, de operator of de patiënt door elektrische schokken, mechanische of andere gevaren.
WARNING (EN)	<p>This manual is available in several languages.</p> <ul style="list-style-type: none"> • If a customer's service provider requires a language other than those provided in the Customer Documentation Portal, 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)	<p>Käesolev juhend on saadaval mitmes keeles.</p> <ul style="list-style-type: none"> • Kui kliendi teenusepakkuja vajab juhendit mõnes muus keeles, mida pole kliendidokumentatsiooni portaalis, on kliendi kohustuseks tõlketeenuste osutamine. • Ärge hakake seda seadet hooldama enne, kui olete käesolevat hooldusjuhendit lugenud ja selle sisu mõistnud. • Selle hoiatuse eiramine võib põhjustada hooldusteenuse pakkujale, operaatorile või patsiendile elektrilöögist, mehhaanilistest või muudest ohtudest tulenevaid vigastusi.
VAROITUS (FI)	<p>Tämä opas on saatavilla useilla kielillä.</p> <ul style="list-style-type: none"> • Jos asiakkaan palveluntarjoaja edellyttää muita kuin asiakkaan asiakirjaportaalissa saatavilla olevia kieliä, käännöspalveluiden tarjoaminen on asiakkaan vastuulla. • Lue huolto-opas huolellisesti ennen laitteen huoltotoimenpiteiden suorittamista. • Tämän varoituksen huomiotta jättäminen voi johtaa huollon suorittajan, laitteen käyttäjän tai potilaan loukkaantumiseen sähköiskun, mekaanisen vaaran tai muun vaaran vuoksi.
ATTENTION (FR)	<p>Ce manuel est disponible en plusieurs langues.</p> <ul style="list-style-type: none"> • Si le prestataire de services d'un client nécessite que le manuel soit rédigé dans une autre langue que celles fournies sur le Portail de Documentation Client, il incombe au client de le faire traduire. • Ne pas essayer d'assurer la maintenance de l'équipement sans avoir au préalable consulté et compris les informations contenues dans ce manuel. • 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.

<p>WARNUNG (DE)</p>	<p>Dieses Handbuch ist in mehreren Sprachen erhältlich.</p> <ul style="list-style-type: none"> • Wenn ein Dienstleister des Kunden dieses in einer anderen Sprache als der im Kundendokumentationsportal verfügbaren benötigt, liegt es in der Verantwortung des Kunden, Übersetzungsdienstleistungen zu erbringen. • Wartungsarbeiten am Gerät dürfen nur durchgeführt werden, nachdem dieses Wartungshandbuch gelesen und verstanden wurde. • Andernfalls besteht Verletzungsgefahr für den Dienstleister, Bediener oder Patienten durch Stromschlag, mechanische Gefahren oder andere Gefahren.
<p>ΠΡΟΕΙΔΟΠΟΙΗΣΗ (EL)</p>	<p>Αυτό το εγχειρίδιο διατίθεται σε διάφορες γλώσσες.</p> <ul style="list-style-type: none"> • Εάν ο πάροχος υπηρεσιών συντήρησης ενός πελάτη χρειάζεται διαφορετική γλώσσα από αυτές που διατίθενται στο Customer Documentation Portal (Πύλη τεκμηριώσεων πελάτη), ο πελάτης είναι υπεύθυνος για την παροχή υπηρεσιών μετάφρασης. • Μην επιχειρήσετε να εκτελέσετε συντήρηση του εξοπλισμού, εάν δεν έχετε διαβάσει και κατανοήσει το παρόν εγχειρίδιο συντήρησης. • Εάν δεν τηρήσετε αυτήν την προειδοποίηση, μπορεί να προκληθεί τραυματισμός του παρόχου υπηρεσιών συντήρησης, του χειριστή ή του ασθενούς λόγω ηλεκτροπληξίας, μηχανικής βλάβης ή άλλου κινδύνου.
<p>אזהרה (HE)</p>	<p>מדריך זה זמין במספר שפות</p> <ul style="list-style-type: none"> • פורטל תיעוד Customer Documentation Portal-אם ספק שירות של לקוח זקוק לשפה שאינה מסופקת ב באחריות הלקוח לספק את שירותי התרגום, (ללקוחות • אסור לנסות להעניק שירות לציוד לפני עיון במדריך שירות זה והבנת התוכן שלו • פעולה שלא בהתאם לאזהרה זו עלולה לגרום לפגיעה של ספק השירות, המפעיל או המטופל כתוצאה מהתחששות, סיכונים מכניים או סיכונים אחרים
<p>FIGYELMEZTETÉS (HU)</p>	<p>Ez a kézikönyv több nyelven is rendelkezésre áll.</p> <ul style="list-style-type: none"> • Ha az ügyfél szervizszolgáltatója azoktól eltérő nyelvű kézikönyvet szeretne, mint amelyeket az Ügyféldokumentációs portálon biztosítunk, akkor az ügyfél feladata, hogy gondoskodjon a megfelelő fordításról. • Ne próbálkozzon a berendezés szervizelésével anélkül, hogy a jelen szervizkézikönyvet elolvasta és megértette volna. • Ennek a figyelmeztetésnek a figyelmen kívül hagyása áramütés, mechanikai vagy egyéb veszélyek következtében a szervizszolgáltató, a kezelő vagy a páciens sérülését okozhatja.
<p>AÐVÖRUN (IS)</p>	<p>Þessi handbók er fáanleg á mörgum tungumálum.</p> <ul style="list-style-type: none"> • Ef þjónustuaðili viðskiptavinar þarfnast annars tungumáls en þessara tungumála er það á ábyrgð viðskiptavinarins að veita þýðingarþjónustu. • Ekki reyna að þjónusta búnaðinn fyrr en búið er að lesa og skilja þessa þjónustuhandbók. • Sé ekki farið eftir þessari viðvörðun getur það valdið meiðslum á þjónustuaðila, notanda eða sjúklingi af völdum raflosts, vélrænna áverka eða annarar hættu.
<p>PERINGATAN (IN)</p>	<p>Manual ini tersedia dalam beberapa bahasa.</p> <ul style="list-style-type: none"> • Jika penyedia layanan pelanggan membutuhkan bahasa selain dari yang disediakan dalam Portal Dokumentasi Pelanggan, merupakan tanggung jawab pelanggan untuk menyediakan layanan penerjemahan. • Jangan berupaya untuk melakukan servis pada peralatan sebelum menyimak manual servis dan memahami isinya. • Jika peringatan ini tidak ditaati, ini dapat menyebabkan cedera penyedia layanan, operator, atau pasien, akibat sengatan listrik, bahaya mekanis, atau bahaya lainnya.

AVVERTENZA (IT)	<p>Il presente manuale è disponibile in varie lingue.</p> <ul style="list-style-type: none"> • Qualora un fornitore di servizi del cliente richieda una lingua diversa da quelle fornite nel Portale con la documentazione per il cliente, sarà responsabilità del cliente fornire il servizio di traduzione corrispondente. • Non tentare di riparare l'apparecchiatura se non si è prima consultato e compreso il presente manuale di servizio. • Il mancato rispetto di questa avvertenza può provocare lesioni per il fornitore dei servizi, per l'operatore o per il paziente, a causa di scosse elettriche, meccaniche o altri pericoli.
警告 (JA)	<p>本マニュアルは多言語で提供されています。</p> <ul style="list-style-type: none"> • お客様のサービスプロバイダが、お客様ドキュメントポータルページで使用されていない言語を必要とする場合は、お客様の責任で翻訳サービスを提供してください。 • 機器の保守を行う場合は、必ず本サービスマニュアルを読み理解した上で行ってください。 • この警告に従わない場合は、サービスプロバイダー、オペレータ、または患者が、感電、機械的異常、またはその他の有害要因によって負傷する恐れがあります。
경고 (KO)	<p>이 설명서는 여러 언어로 제공됩니다.</p> <ul style="list-style-type: none"> • 고객님의 서비스 제공자가 고객 문서 포털에 제공된 언어가 아닌 다른 언어를 요구하는 경우 번역 서비스를 제공하는 것은 고객님의 책임입니다. • 이 서비스 설명서를 참고했고 이해하지 않는 한은 해당 장비를 수리하려고 시도하지 마십시오. • 이 경고를 지키지 않으면 감전, 기계상의 위험 또는 다른 위험으로부터 서비스 제공자, 사용자 또는 환자가 다칠 수 있습니다.
BRĪDINĀJUMS (LV)	<p>Šī rokasgrāmata ir pieejama vairākās valodās.</p> <ul style="list-style-type: none"> • Ja klientu apkalpošanas speciālistam ir nepieciešama cita valoda, kas nav piedāvāta klientu dokumentācijas portālā, klienta pienākums ir nodrošināt tulkošanas pakalpojumus. • Nemēģiniet veikt aprikojuma apkopi, kamēr nav izlasīta un izprasta apkopes rokasgrāmata. • Ja šis brīdinājums netiek ņemts vērā, pakalpojumu sniedzējs, operators vai pacients var tikt savainots elektriskās strāvas trieciena, mehāniskas vai citas bīstamības rezultātā.
ĮSPĖJIMAS (LT)	<p>Šis vadovas yra išverstas į keletą kalbų.</p> <ul style="list-style-type: none"> • Jei kliento paslaugų teikėjui reikalingas vertimas į kitą kalbą, kurios nėra kliento dokumentacijos portale, už vertimo paslaugų suteikimą atsako klientas. • Neatlikite įrangos techninės priežiūros, kol neperžiūrėjote ir neišsiaiškinote šio techninės priežiūros vadovo. • Nepaisant šio įspėjimo dėl elektros smūgio, mechaninio arba kitokio pavojaus gali būti sužalotas paslaugų teikėjas, operatorius arba pacientas.
TWISSIJA (MT)	<p>Dan il-manwal huwa disponibbli f'diversi lingwi.</p> <ul style="list-style-type: none"> • Jekk fornitur tas-servizz ta' klient ikun jeħtieg lingwa għajr dawk ipprovduti fil-Portal tad-Dokumentazzjoni tal-Klijent, hija r-responsabbiltà tal-klijent li jipprovdni servizzi ta' traduzzjoni. • Tippruvax tagħmel service fuq it-tagħmir sakemm ma jkunx għe kkonsultat u mifhum dan il-manwal għas-service. • Jekk wieħed jonqos milli josserva din it-twissija, dan jista' jwassal f'korriment lill-fornitur tas-servizz, lill-operatur jew lill-pazjent minn xokk elettriku, mekkaniku, jew perikli oħra.
ADVARSEL (NO)	<p>Denne håndboken er tilgjengelig på flere språk.</p> <ul style="list-style-type: none"> • Hvis en kundes tjenesteleverandør krever et annet språk enn de som finnes i dokumentasjonsportalen for kunder, er det kundens ansvar å levere en oversettelsestjeneste. • Ikke prøv å utfør service på utstyret med mindre man har konsultert og forstått servicehåndboken. • Om denne advarselen ikke følges kan det føre til skade på tjenesteleverandør, operatør eller pasient fra elektrisk støt, mekanisk eller annen fare.

OSTRZEŻENIE (PL)	<p>Niniejszy podręcznik jest dostępny w kilku językach.</p> <ul style="list-style-type: none"> • Jeżeli serwisant klienta wymaga języka, który nie został udostępniony w portalu dokumentacji klienta, obowiązkiem klienta jest zapewnienie usług tłumaczeniowych. • Nie podejmować prób serwisowania urządzenia bez uprzedniego zapoznania się z niniejszym podręcznikiem serwisowym i zrozumienia jego treści. • Nieprzestrzeganie tego ostrzeżenia może spowodować obrażenia u serwisanta, operatora lub pacjenta, spowodowane porażeniem prądem, zagrożeniami mechanicznymi lub innymi.
ATENÇÃO (PT-BR)	<p>Este manual está disponível em vários idiomas.</p> <ul style="list-style-type: none"> • Se o prestador de serviços de um cliente necessitar de um idioma diferente dos fornecidos no Portal da Documentação do Cliente, o fornecimento dos serviços de tradução é de responsabilidade do cliente. • Não tente realizar manutenção do equipamento a menos que o manual de serviço tenha sido consultado e seja entendido. • O não cumprimento deste aviso resultará em lesões ao provedor de serviço, operador ou paciente de choque elétrico, mecânico ou outros riscos.
ATENÇÃO (PT-PT)	<p>Este manual está disponível em vários idiomas.</p> <ul style="list-style-type: none"> • Se o fornecedor de serviços de um cliente necessitar de um idioma diferente dos fornecidos no Portal de Documentação do Cliente, é da responsabilidade do cliente assegurar os serviços de tradução. • Não experimente reparar o equipamento sem primeiro consultar, e compreender, o presente manual de assistência. • O incumprimento deste aviso pode resultar em ferimentos para o técnico de reparação, o operador ou o paciente decorrentes de perigos de eletrocussão, mecânicos ou outros.
ATENȚIE (RO)	<p>Acest manual este disponibil în mai multe limbi.</p> <ul style="list-style-type: none"> • Dacă furnizorul de servicii al unui client necesită o limbă diferită de cele furnizate în Customer Documentation Portal (Portalul cu documentație pentru clienți), este responsabilitatea clientului să furnizeze servicii de traducere. • Nu încercați să efectuați întreținerea echipamentului decât dacă ați consultat și ați înțeles acest manual de service. • Nerespectarea acestei avertizări poate duce la rănirea furnizorului de servicii, a operatorului sau a pacientului din cauza șocurilor electrice, mecanice sau a altor pericole.
ПРЕДУПРЕЖ ДЕНИЕ (RU)	<p>Это руководство доступно на нескольких языках.</p> <ul style="list-style-type: none"> • Если поставщику услуг заказчика требуется языковая версия, отличная от предложенных на портале документации для заказчиков, перевод руководства на необходимый язык осуществляется стороной заказчика. • Не начинайте эксплуатацию оборудования без предварительного надлежащего ознакомления с этим руководством. • Если вы проигнорируете это предупреждение, поставщик услуг, оператор или пациент могут получить механические травмы, травмы вследствие поражения электрическим током или другие увечья.
UPOZORENJE (SR)	<p>Ovaj priručnik je dostupan na nekoliko jezika.</p> <ul style="list-style-type: none"> • Ako korisnikov serviser zahteva neki drugi jezik osim onih koji su dostupni na portalu sa korisničkom dokumentacijom (Customer Documentation Portal), klijent mora da obezbedi prevod. • Nemojte pokušavati da servisirate opremu ako niste proučili i razumeli ovaj priručnik za servisiranje. • Nepoštovanje ovog upozorenja može da izazove povrede servisera, operatera ili pacijenta kao posledicu strujnog udara, mehaničkih ili drugih opasnosti.

<p>UPOZORNENIE (SK)</p>	<p>Táto príručka je k dispozícii v niekoľkých jazykoch.</p> <ul style="list-style-type: none"> • Ak poskytovateľ služieb daného zákazníka požaduje jazyk odlišný od jazykov dostupných na portáli s dokumentáciou pre zákazníkov, za prekladateľské služby zodpovedá zákazník. • Nepokúšajte sa vykonávať servis na zariadení, pokiaľ ste si neprečítali a nepochopili pokyny v servisnej príručke. • Nedodržanie tohto varovania môže byť príčinou úrazu poskytovateľa servisu, obsluhy alebo pacienta v dôsledku zásahu elektrickým prúdom alebo v dôsledku mechanických alebo iných nebezpečenstiev.
<p>OPOZORILLO (SL)</p>	<p>Ta priročnik je na voljo v več jezikih.</p> <ul style="list-style-type: none"> • Če ponudnik storitev stranke potrebuje priročnik v jeziku, ki ni na voljo na portalu z dokumentacijo stranke, mora stranka zagotoviti prevod. • Opreme ne poskušajte servisirati, če niste prebrali in razumeli tega servisnega priročnika. • V primeru neupoštevanja tega opozorila lahko pride do telesnih poškodb ponudnika storitev, upravljavca ali pacienta zaradi električnega udara, mehanskih ali drugih nevarnosti.
<p>ADVERTENCIA (ES)</p>	<p>Este manual se encuentra disponible en varios idiomas.</p> <ul style="list-style-type: none"> • Si el proveedor de servicios de un cliente requiere un idioma distinto de los proporcionados en el Customer Documentation Portal (Portal de documentación para clientes), es responsabilidad del cliente proporcionar los servicios de traducción. • No intente realizar el mantenimiento del sistema a menos que haya consultado y comprendido este manual de servicio. • El incumplimiento de esta advertencia puede causar lesiones al suministrador de servicios, el operador o el paciente debido a descarga eléctrica, mecánica u otros riesgos.
<p>VARNING (SV)</p>	<p>Denna manual är tillgänglig på flera språk.</p> <ul style="list-style-type: none"> • Om en kunds tjänsteleverantör behöver ett annat språk än de som tillgängliggjorts på portalen för kunddokumentation är det kundens ansvar att erbjuda översättningstjänster. • Försök inte att reparera utrustningen utan att först rådfråga och förstå denna servicehandbok. • Om denna varning inte beaktas kan det leda till skada för tjänsteleverantör, operatör eller patient genom elektrisk stöt, mekaniska eller andra faror.
<p>DİKKAT (TR)</p>	<p>Bu kılavuz birden fazla dile sunulmaktadır.</p> <ul style="list-style-type: none"> • Bir müşterinin servis sağlayıcısı Müşteri Belgeleri Portalı'nda sağlananlardan farklı bir dil talep ederse çeviri hizmeti sağlamak müşterinin sorumluluğundadır. • Bu servis kılavuzuna başvurmadan ve içeriğini anlamadan ekipman üzerinde servis işlemi yapmayı denemeyin. • Bu uyarıya uyulmaması; elektrik çarpması, mekanik tehlikeler veya başka tehlikelerden ötürü servis sağlayıcı, operatör veya hastanın yaralanmasıyla sonuçlanabilir.
<p>ПОПЕРЕДЖЕННЯ (UK)</p>	<p>Цей посібник доступний кількома мовами.</p> <ul style="list-style-type: none"> • Якщо постачальник послуг замовника використовує мову, яку не вказано на порталі з документацією для замовників, послуги з перекладу має забезпечити замовник. • Не починайте роботу з обладнанням без попереднього належного ознайомлення з посібником із використання. • Якщо ви проігноруєте це попередження, постачальник послуг, оператор або пацієнт можуть зазнати механічних травм, ураження електричним струмом або інших тілесних ушкоджень.

CẢNH BÁO (VI)	<p>Tài liệu hướng dẫn này có sẵn ở một số ngôn ngữ.</p> <ul style="list-style-type: none"> Nếu nhà cung cấp dịch vụ của khách hàng yêu cầu ngôn ngữ khác với ngôn ngữ được cung cấp trong Cổng Thông Tin Tài Liệu Khách Hàng, khách hàng có trách nhiệm cung cấp dịch vụ dịch thuật. Không cố bảo dưỡng thiết bị trừ khi đã tham khảo và hiểu rõ hướng dẫn sử dụng này. Việc không chú ý đến cảnh báo này có thể dẫn đến thương tích cho nhà cung cấp dịch vụ, người vận hành hoặc bệnh nhân do điện giật, nguy hiểm cơ học hoặc các mối nguy hiểm khác.
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Chapter 1 General Requirements

1.1 Introduction

1.1.1 Objective and Scope of this Manual



NOTE

This manual contains data that is applicable for several system configurations. Please refer to the system you are going to install to understand which data is applicable.

Table 1-1 System Configurations

Description	Configuration	Field of View (FOV)
Omni BGO 3R	3 Rings	16cm
Omni BGO 4R	4 Rings	21cm
Omni BGO 6R	6 Rings	32cm

This manual is the official guide and informational resource for planning and preparing a location for the installation of the Omni BGO PET/CT system. The responsibility of arranging and paying for all work associated with site planning, site preparation, and system installation rests solely with the buyer/purchaser of the system.

This manual guides you through the pre-installation siting and regulatory requirements. Keep in mind, this manual cannot address or answer each and every site specific question or concern. Contact your GE Healthcare Project Manager of Installation (PMI) for answers to any additional questions or concerns not addressed in this manual. Prior to any construction or approval, General Electric Headquarters Architectural Planning must review all PET/CT preliminary concepts, site plans, and final working drawings associated with the installation of the system. Contact your GE PMI or complete information regarding your site-specific room layout.

1.1.2 Responsibility of the Customer

It is the responsibility of the customer (buyer/purchaser) to prepare the site in accordance with all the specifications provided in this manual and in conjunction with site-specific drawings and applicable regulations. It is essential to verify all aspects of the site configuration before construction has begun, as subsequent changes can be costly or impractical. A detailed pre-installation checklist is provided in this manual. It is the responsibility of the customer to ensure all requirements on the checklist are fulfilled and that the site conforms to all specifications and requirements detailed in this manual.

Pre-Installation requirements shall include the procurement and installation of all required materials and services necessary to prepare the room to be ready for installation of the PET/CT system. The customer is responsible for all aspects of site preparation, including:

- Assigning a project coordinator.
- Planning and construction requirements for the installation of the PET/CT system in accordance with all national, state, or local regulatory requirements for the country in which the installation occurs, for example:
 - Fire control devices as required by local codes.

- Permits, inspections, radiation licensing, etc.
- Earthquake-related regulations.
- Selecting a location suitable for the installation of the PET/CT system.
- Constructing or renovating the site.
- All design work associated with preparing the installation site for the PET/CT system and all architectural, mechanical, and electrical drawings associated with the design of the site.
- All alterations or modifications to products not specifically included in the sales contract.
- A clean and safe work environment for installation of the PET/CT system.
- A location with proper lighting, a level finished floor, finished walls, and a finished ceiling.
- A support structure in the floor, walls, and ceiling suitable for mounting all system components as specified in the site design.
- Installation of all required conduit, ducts, and raceways to safely route all cables and coolant lines.
- Supplying electrical power of the required voltage, all necessary power supply cables and grounds, all necessary power cables and grounds to the PDU, and an Emergency-Off switch in the scan room.
- Installation of all properly-sized junction boxes, outlets with covers, line safety switches, and fittings installed at the locations specified in the site design.
- All Non-GE wires and cables as specified in this document:
 - The electrical contractor shall ring out and tag all wires at both ends.
 - Wires shall be continuous and without splices.
 - Ground wires shall conform to product requirements.
 - Color-coded wires shall be used whenever possible, to enable easier identification.
- All work shall conform to IBC (International Building Code) and local building and safety codes.

**NOTE**

GE Healthcare does not provide or install the wires, conduits, junction boxes, or ducting illustrated in this publication, unless specifically stated.

1.1.3 Site Project Coordinator

The site project coordinator is the primary contact and liaison between GE Healthcare and all site related functions, between the purchaser, the construction planners, architects, contractors, and any other site administrative personnel.

To ensure a successful installation, it is recommended that a single/individual site project coordinator manage the entire project. Ideally, the project coordinator is a person familiar with all phases of pre-installation and installation of similar medical device construction projects, from conceptual planning through to system start up. The site project coordinator shall be responsible for working closely with GE Healthcare to ensure the client (buyer/purchaser) upholds all requirements in this manual.

1.2 System Siting Requirements

- **System Site Print**

A system installation, relocation, or move requires a site print. The PET/CT room layout shall match the layout detailed on the site print.

- **Regulatory Code & System Requirements**

A site shall meet all regulatory code and system requirements associated with; service, structural, flooring, vibration, HVAC, electrical, IT network, radiation protection, operational clearance requirements, and all applicable codes.

- **Floor Specification**

The floor shall have a minimum concrete thickness of 127 mm (5 in.).

The floor shall be no greater than 6 mm (0.250 in.) out of level over a 3048 mm (10 ft.) range, with level defined as the horizontal surface between the highest and lowest points.

**NOTE**

If the concrete floor has a floor covering installed over it (such as floor tile), 17 or more openings 101.6 mm (4 in.) in diameter will be cut into the floor covering to ensure the table and gantry rest on the concrete. (Openings are cut during installation.)

Shims shall not be used to level the gantry or patient table.

**NOTE**

The PET weldment gantry moves backwards during service on detachable rails, therefore concrete floor strength and levelness should be met behind the PET gantry as well. Please refer to the floor mounting details section for detachable rails position.

- **Floor Strength**

Concrete floors must have a minimum strength of $f'c = 2000$ psi (1.4 X 10⁷ pa) at 28 days for (curing time) mounting floor anchors. It is the responsibility of each customer to have appropriate tests performed to determine and measure concrete strength.

**NOTE**

If installing the scanner on a floor type thinner than a 102 mm (4 in.) concrete floor, the purchaser, at their expense, shall provide acceptable anchoring and mounting methods that meet all structural specifications provided in the Pre-Installation Manual.

- **Related Hospital Equipment Clearances**

Carefully check/verify the room layout for the necessary clearances required of any related hospital equipment. Good judgment is required to avoid compromising important system features. There shall be ample maneuvering space around the patient table for a hospital cart, any emergency equipment, and all personnel, etc.

1.2.1 Project Manager of Installation (PMI) Tasks

GE Healthcare Project Manager of Installation (PMI) will assist buyer with system siting requirements.

1.2.2 Customer Requirements for Site Readiness

- **Site Readiness Completion and Verification**

Installation cannot proceed until all site-readiness requirements have been completed and verified. A site is ready when all renovations/modifications have been completed and the scan

suite meets all regulatory, code, and system requirements, system delivery needs, and all requirements for any options.

- **Contractor’s Final Confirmation**

Final confirmation of installation site readiness shall be made by all contractors associated with the project; structural engineer/architect, HVAC contractor, electrical contractor, qualified radiological health physicist, cleaning service, etc.

- **Schedule of Site-Ready Visit**

To ensure timely system delivery and installation, the customer shall complete all necessary work listed in this Pre-Installation Manual and schedule a site-ready Project Manager of Installation (PMI) visit prior to system delivery.

- **Pre-installation Checklist**

The customer shall also verify site readiness by filling out and signing the following Pre-Installation Checklist. The checklist shall be completed *six weeks prior to scheduled delivery date*.

Table 1-2 Customer Pre-Installation Checklist - Required Information for Site

<i>Complete prior to scheduled delivery date.</i>			
Today's Date:			
Hospital Name:			
(as it appears on the system screen)			
Network ID numbers/IP Addresses:		List IP Numbers and Address	
<input type="checkbox"/> AW			
AW Direct Connect Address:			
<input type="checkbox"/> Scanner			
Scanner Setup Information			
<input type="checkbox"/> PACS			
<input type="checkbox"/> Other			

<input type="checkbox"/> Other			

Do you want HIPAA enabled?	<input type="checkbox"/> Yes	<input type="checkbox"/> No	
Do you want automatic downloads enabled?	<input type="checkbox"/> Yes	<input type="checkbox"/> No	
Commitment Dates:			
Action Item	Action Item Completed?		Comments
	Yes	No	
Have the facilities department, contractor, and GE Healthcare certified the project schedule?			
Will committed site-ready date be met?			
Does construction completion date meet or precede the delivery date?			

Table 1-2 Customer Pre-Installation Checklist - Required Information for Site (Table continued)

Is the Power & Ground survey complete? Hospital Contact Name/No. _____ _____			
Is the site-ready visit scheduled?			
Is the delivery date scheduled?			
Does the delivery date require adjustment?			
Is the installation date scheduled?			
Does the installation date require adjustment?			
Is the installation timing determined?			
<input type="checkbox"/> Weekdays			
<input type="checkbox"/> Weekend			
<input type="checkbox"/> Quick Install			
If Weekend or Quick Install selected, have all sub-contractors been notified?			
Is the system first-use date scheduled?			
Are system applications/training dates scheduled?			
<input type="checkbox"/> On-Site Training Date: _____			
<input type="checkbox"/> Healthcare Institute Training Date: _____			
Equipment Compatibility:			
Action Item	Action Item Completed?		Comments
	Yes	No	
Has the order been reviewed for completeness and compatibility with existing equipment?			
<input type="checkbox"/> Remote Monitors			
<input type="checkbox"/> AW Relocation			
<input type="checkbox"/> Cardiac Option			
<input type="checkbox"/> Injectors			
Are interfaces to existing or new accessories ordered and planned accordingly?			
Are cables of the correct length on order?			
Have the locations of the following peripherals (or options) been included in the site drawings?			

Table 1-2 Customer Pre-Installation Checklist - Required Information for Site (Table continued)

<input type="checkbox"/> EKG Monitor			
<input type="checkbox"/> Injector Control			
<input type="checkbox"/> Laser camera			
<input type="checkbox"/> UPS			
<input type="checkbox"/> 2nd Monitor			
<input type="checkbox"/> Respiratory Gating			
<input type="checkbox"/> RCK-AVIMOS			
<input type="checkbox"/> Express Mode Camera			
Site Planning Requirements:			
Action Item	Action Item Completed?		Comments
	Yes	No	
Were final drawings approved and distributed to the contractors?			
Are final drawings signed off to approve equipment layout and orientation?			
Has the surface penetration permit been obtained and signed?			
Do the actual room dimensions match those on the final drawings?			
Has VQC Phantom been ordered by customer?			
Has DQA (Annulus) Phantom been ordered by customer?			
Optional: Has customer purchased Annulus Phantom safe accessory?			
Is RAM license valid?			
Is Radiation Safety Officer ready to receive the Annulus and VQC Phantoms?			
Has the radiologist health physician reviewed and approved the room layout shielding requirements?			
Have any additional requirements or questions about the installation been discussed with GE Healthcare?			List additional items:
Is there a person assigned to review and verify that all installation requirements are met?			
Have the specific site requirements been discussed with all contractors?			

Table 1-2 Customer Pre-Installation Checklist - Required Information for Site (Table continued)

Has the responsibility of cabling, installing, and interfacing any GE approved accessories not on the order been discussed with GE Healthcare?			
Are all third-party vendors identified, notified, and scheduled?			
Have all Regulatory, Code, & System Requirements been met?			
Has it been verified there is no metallic (e.g., copper) plumbing or any grounded surface within 1.83 m (6 ft.) of the table or gantry?			
Will the existing network, broadband, and camera cable drops reach all required locations for the PET/CT scanner?			List any issues or concerns:
Is this installation using the system anchoring method defined by GE or an alternate Method?			
Optional: Has the Storage Cabinet (B77292CA) been purchased with the system? If not verify that adequate storage space has been defined for all service tools purchased with the system. Refer to Chapter 2, Section 3.9, Service Storage Cabinet Requirements.			
Network Installation:			
Action Item	Action Item Completed?		Comments
	Yes	No	
Have IP address and host names been obtained?			
Will a network camera be used?			
Required: Is the network installed, are the network jacks installed, and is the entire network tested?			
Required: Is the broadband VPN installed and setup?			
Required: Are network software options ordered?			
<input type="checkbox"/> HIS RIS Option			
<input type="checkbox"/> DICOM Print			
<input type="checkbox"/> AW			
Delivery and Miscellaneous:			
Action Item	Action Item Completed?		Comments
	Yes	No	

Table 1-2 Customer Pre-Installation Checklist - Required Information for Site (Table continued)

Have arrangements been made in the schedule to allow adequate time for re-modeling, if required (such as construction, floor or ceiling work, painting, or other cosmetic work)?			
Have arrangements been made to clean the floor after equipment removal and prior to the installation of the new equipment?			
Is de-installation of existing equipment required?			
Is there a trade-in of existing equipment?			
<input type="checkbox"/> GoldSeal			
Has the delivery route been identified with the proper hospital personnel?			
Have the elevators and doors been checked for size and weight constraints?			
Have the appropriate arrangements been made with traffic for delivery?			
Will any acceptance, performance, or bio-medical testing be required?			
Are trash and recycling bins available for the disposal of paper, cardboard, etc.			

1.3 Regulatory Requirements

1.3.1 Building Codes, Regulations and Permits

Building Codes and Regulations

The customer shall be responsible to ensure the scan suite meets all building codes and applicable regulations.

Compliance to specifications defined in this manual as well as all federal, state, territory, province, city or local regulations (building codes, etc.) shall be the responsibility of the customer. If a federal, state, territory, province, city, or local regulation is in conflict with a specification defined in this manual the most restrictive of the two specifications shall be applied.

GE Surface Penetration Permit

Prior to GE personnel drilling holes in the floor, conduit or any customer surface, a penetration permit for customer approval of the penetrations is required. A GE surface penetration permit shall be approved by the appropriate facility or building representative. (Drilling holes into a concrete floor is an example of surface penetration.) The GE surface penetration permit can be obtained through GE Service Operations. Consult with your GE PMI to obtain a copy of this document.

A GE Penetration Permit is not required if the customer has made other arrangements to drill holes, install anchors, and provide the necessary mounting hardware as specified in this manual.

1.3.2 Clearance Regulations

Federal & National Association Regulations

Clearance regulations for all systems installed in the U.S. are determined by various federal agencies and the National Fire Protection Association (NFPA). The regulating publications are: OSHA 29 CFR 1910, NFPA 70E (Standard for Electrical Safety in the Workplace), NFPA 101: (Life Safety Code), NFPA 99: (Standard for Health Care Facilities), and the ADA Amendments Act of 2008 (Americans with Disabilities Act).

**NOTE**

CFR: Code of Federal Regulation

OSHA: Occupational Safety and Health Administration

Federal and Foreign Regulations

All systems installed within the U.S. and its territories shall comply with all federal, state, and local regulations. Compliance to specifications defined in this manual as well as all federal, state, territory, province, city or local regulations shall be the responsibility of the customer. If a federal, state, territory, province, city, or local regulation is in conflict with a specification defined in this manual the most restrictive of the two specifications shall be applied.

1.3.3 Codes, Clearances, and Service Space Regulation

Federal, State, and Local Codes The diagrams and dimensions used throughout this manual, detail required clearances for proper system operation and servicing only. The customer shall be responsible for ensuring all federal, state, and local codes and clearances are followed and maintained, regarding facility egress and all other related requirements.

1.4 Delivery and Handling

1.4.1 Installation Tasks

The following tasks are to be done by the GE Project Manager of Installation (PMI).

**NOTE**




During system delivery, the PMI needs to make sure that boxed gauges are being inspected by the movers/installers (shock, tilt, temperature). If there are any issues shown on the gauges, it needs to be reported to the PMI for damage claim.

NOTICE

This document should be reviewed by the GE Project Manager of Installation (PMI) and site service personnel a minimum of 6 weeks prior to the actual installation.

NOTICE

It is highly recommend that the PMI review the product Installation manual prior to starting an installation to ensure no major changes to the install process requires additional pre-work.

Task	Description
Site Dimensions	<p>Project manager shall measure and verify all site dimensions to ensure the facility can accommodate the delivery of the system (and any related components or equipment), from the delivery drop-off point to the scan suite.</p> <p> NOTE Refer to Minimum Clear Doorway Opening Widths and Hallway Widths on page 21 and Minimum Clear Doorway Opening Heights and Unobstructed Hallway Heights on page 22 for details.</p>
Delivery Type	<p>Project manager shall determine type of delivery: ground level, loading dock, or tilt-bed truck.</p>
Delivery Equipment	<p>Project manager shall determine if delivery requires special dollies, lifting crates, or riggers. PMI shall order any additional delivery equipment and all necessary delivery personnel.</p> <p> NOTE The PET/CT gantries or their sections cannot be lifted or transported by any means other than the GE support cradle and dolly system on which it was shipped. Otherwise, serious damage to the PET/CT gantries could result.</p>
Identify Delivery Route	<p>Project manager shall identify the delivery route, which may include any elevators, doorways, and hallways necessary to accommodate the delivery of all system components.</p> <p> NOTE The buyer or buyer's Structural Engineer of record is responsible for making sure the floor material and design along the delivery route (loading dock, halls and rooms) meets the forces and weight requirements for the delivery of the individual subsystems to the final installation location within the facility.</p>
Non-Construction-Zone Route to Scan Suite	<p>Project manager shall verify an accessible, dust-free, non-construction-zone delivery route to the scan suite.</p>
Packaging Requirements	<p>Project manager shall order any construction site packaging requirements prior to shipment. Packaging cannot be modified once the system is shipped.</p>
Floor Protection	<p>Project manager shall determine if floor protection is required along facility delivery route and communicates requirement to delivery company/personnel.</p>

1.4.1.1 Minimum Clear Doorway Opening Widths and Hallway Widths

The scan room shall have at least one doorway with a minimum unobstructed clear doorway opening width of 1067 mm (42 in.). This accommodates the CT Gantry with covers and dollies attached, but side rails removed. This also accommodates the PET Gantry Image Ring with dollies attached, but side protective braces removed. The customer is responsible for removing or protecting any doorway threshold (if one exists) in order to move the scanner subsystems in and out of the room.

Often the table and the PET/CT gantries will need to be turned in the hallway to enter the scan room. If there is enough room in the hallway, the minimum doorway width will be smaller. If the hallway is smaller in width, the doorway width must increase. [Table 1-3 Minimum Clear Doorway Openings and](#)

Hallway Widths on page 22 represents the minimal requirements when combined with average door width sizes.

Table 1-3 Minimum Clear Doorway Openings and Hallway Widths

Doorway Clear Opening	Hallway
Minimum Width	
1067 mm (42 in.)	No hallway or need to turn subsystems to enter the room
Minimum Width Needed to Turn Subsystem	
1067 mm (42 in.)	3048 mm (120 in.)
1219 mm (48 in.)	2591 mm (102 in.)
1397 mm (55 in.)	2438 mm (96 in.)
1829 mm (72 in.)	1803 mm (71 in.)

1.4.1.2 Minimum Clear Doorway Opening Heights and Unobstructed Hallway Heights

The minimum clear doorway opening heights shall be 2083 mm (82 in.) and unobstructed hallway heights shall be 2439 mm (96 in.) in the path of the subsystems.



NOTE

It is the PMI's responsibility to make sure there is a clear path for moving the system. If necessary, the PMI shall coordinate with the customer and a 3rd party expert moving team if moving paths don't meet clearance requirements.

1.4.2 Shipping Dimensions and Weight

1.4.2.1 Delivery Sizes and Weights

Table 1-4 Estimated Loading Dock Delivery Sizes and Weights

Item	Height mm (in.)	Width/Depth mm (in.)	Length mm (in.)	Weight kg (lb)
CT Gantry with Dollies On, Side Rails On	2000 (79)	1291 (51)	2775 (109)	1835 (4045)
CT Gantry with Dollies On, Side Rails Off	2000 (79)	1006 (39.6)	2775 (109)	1807 (3987)
CT Gantry with Dollies Off	1867 (74)	924 (36)	1938 (76)	1412 (3113)
PET Base Assembly with Dollies	670 (26.3)	1080 (42.5)	496 (19.5)	287 (632.7)
PET Base Assembly without Dollies and Detachable Rails	NA	NA	NA	207.5 (457.4) See Note 2.
PET Image Ring with Dollies (32 cm FOV)	1713 (67.4)	926 (36.5)	2775 (109)	1490 (3285)
PET Image Ring without Dollies (32 cm FOV)	1713 (67.4)	913 (36)	2086 (82.1)	1250 (2756)
PET Image Ring Dolly (assembled with dolly)	1206 (47.5)	455 (18)	890 (35)	120 (265)
Table (Blue Dollies On)	1410 (55.5)	864 (34)	3836 (151)	1165 (2568)
Table (Blue Dollies Off, Red Castors On)	1410 (55.5)	1016 (40)	3086 (121.5)	890 (1962)

Table 1-4 Estimated Loading Dock Delivery Sizes and Weights (Table continued)

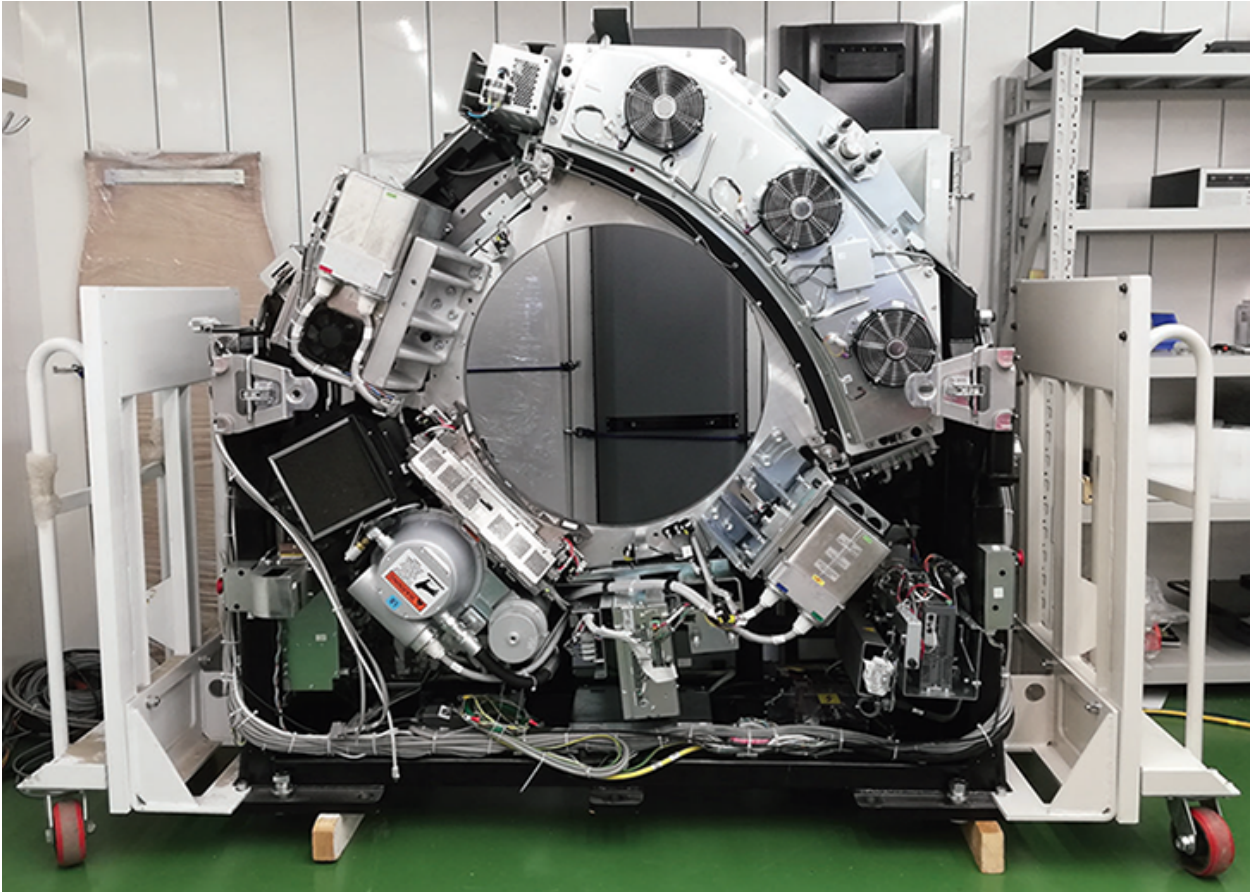
Item	Height mm (in.)	Width/Depth mm (in.)	Length mm (in.)	Weight kg (lb)
Table (Tilting Dollies On)	1778-2032 (70-80)	965 (38)	2489-2921 (98-115)	1147 (2530)
Power Distribution Unit (with shipping crate)	1092 (43)	584 (23)	762 (30)	413 (910)
Chiller Power Distribution Box (with shipping crate)	460 (18.1)	710 (27.9)	875 (34.4)	55 (121.2)
PARC4.X Reconstruction Mini Cabinet (on skid)	1032 (40.6)	847 (33.3)	1352 (52.2)	294 (648)
OC Console (on skid)	740 (29.1)	550 (21.6)	850 (33.5)	91(201)
Chiller (on skid)	1375 (54.1)	804 (31.7)	1220 (48)	185 (408)
Chiller Coolant (4 per box; Note 1)	381 (15)	325 (12.8)	325 (12.8)	15 (34)
Annulus Phantom Safe (option; on skid)	914 (36)	914 (36)	914 (36)	140 (309)
Service Storage Cabinet (option; with shipping crate)	1207 (48)	673 (27)	978 (39)	61 (135)
UPS (box 1)	304.8 (12)	609.6 (24)	1143 (45)	281.2 (620)
UPS (box 2)	355.6 (14)	254 (10)	1397 (55)	362.9 (800)
Note 1: System ships with six boxes. Values are per box, which contains four 3.8 L (1 gallon) containers.				
Note 2: Detachable Rail Assembly Left: 16.6 kg (36.6 lb); Detachable Rail Assembly Right: 16.4 kg (36.2 lb)				
Note 3: Width dimensions do not include gantry dollies.				

1.4.2.2 Shipping Methods (Dollies, Skids)

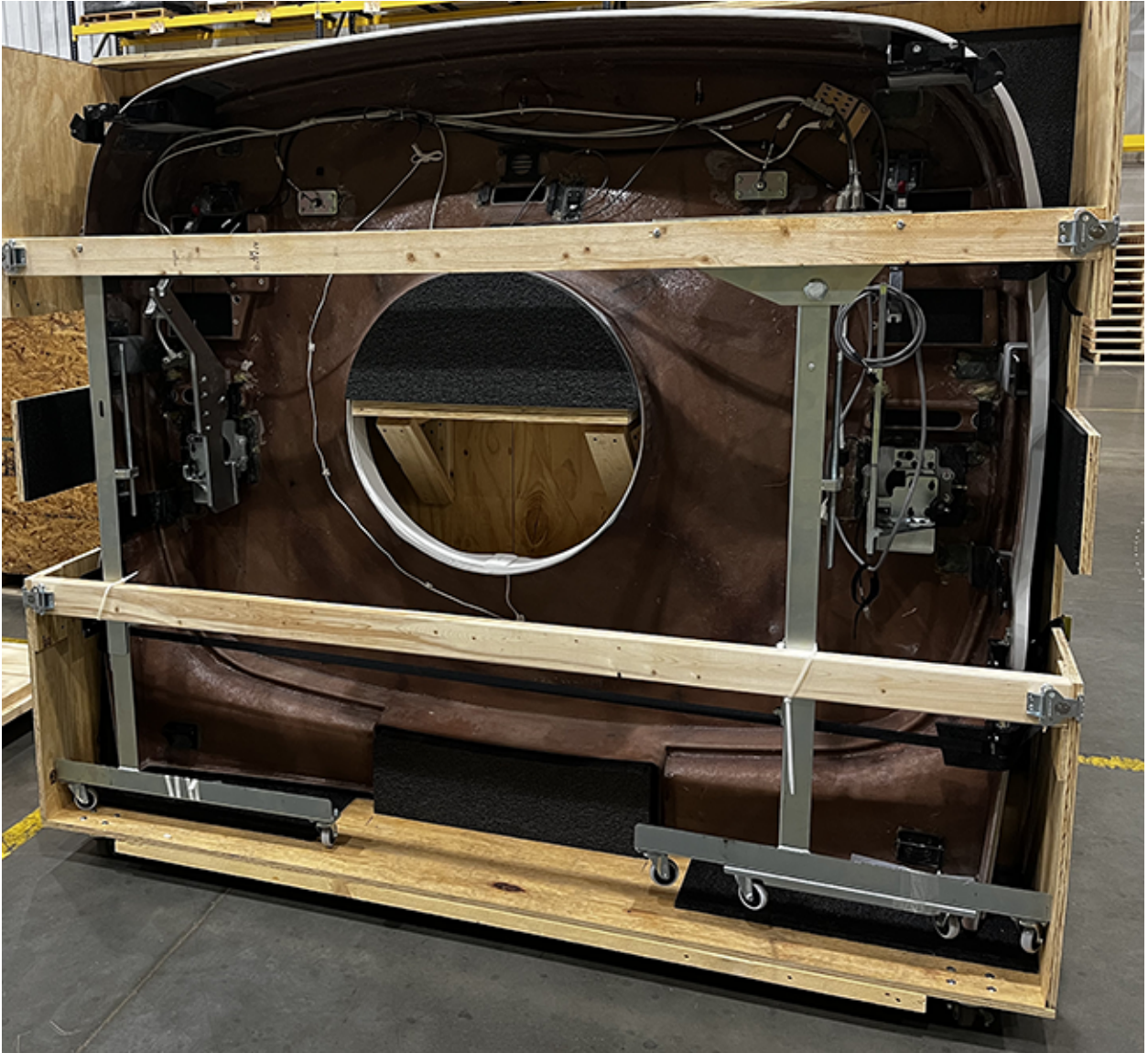
1.4.2.2.1 CT Gantry

The CT Gantry ships with the front and rear covers attached to its front and rear cover brackets. During installation, the rear cover is transferred to the PET Gantry, and the rear cover brackets are removed from the CT Gantry. The assembly is mounted between two dollies [Figure 1-1 CT Gantry with Shipping Dollies and Side Rails on page 24](#).

Two side rails are bolted to the dollies to stabilize dollies and protect the CT Gantry. The dolly elevating casters lift the CT Gantry off its base and roll it into position.

Figure 1-1 CT Gantry with Shipping Dollies and Side Rails**NOTE**

For systems installed in the United States and Canada, the CT gantry is shipped without the covers installed. The gantry front and rear covers are supplied in separate packaging, and need to be installed after system alignment according to the installation manual. Disassembly of the covers from the CT gantry is not applicable in this case.

Figure 1-2 CT Gantry - Covers Packaging

1.4.2.2.2 CT Dollies

- The system uses new gantry dollies. If the site has the old gantry dollies (refer to [Figure 1-3 Old Gantry Dolly \(B78502CA\) on page 26](#)), order **Gantry Dolly Bracket Kit (B76072DA)** and replace the left and the right brackets. The detailed replacement procedure is in the *Installation Manual (5809945-1EN)*.

Figure 1-3 Old Gantry Dolly (B78502CA)



NOTE

This adapter is also common in dark green.

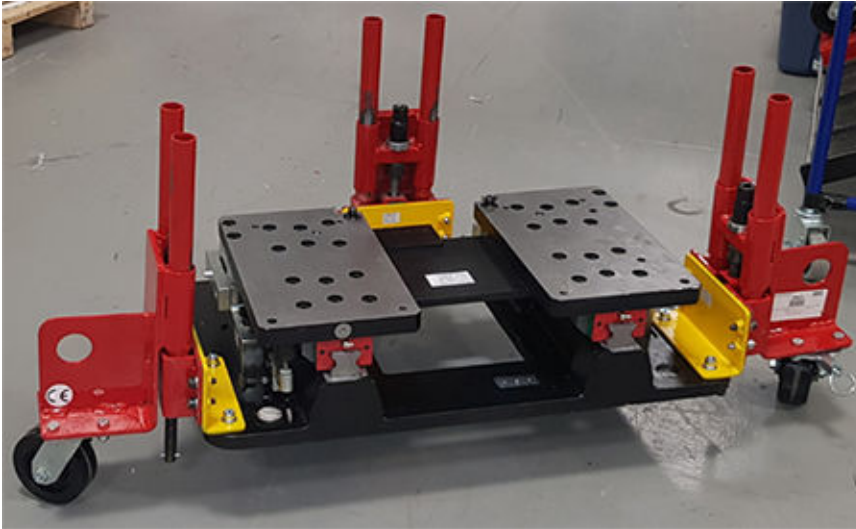
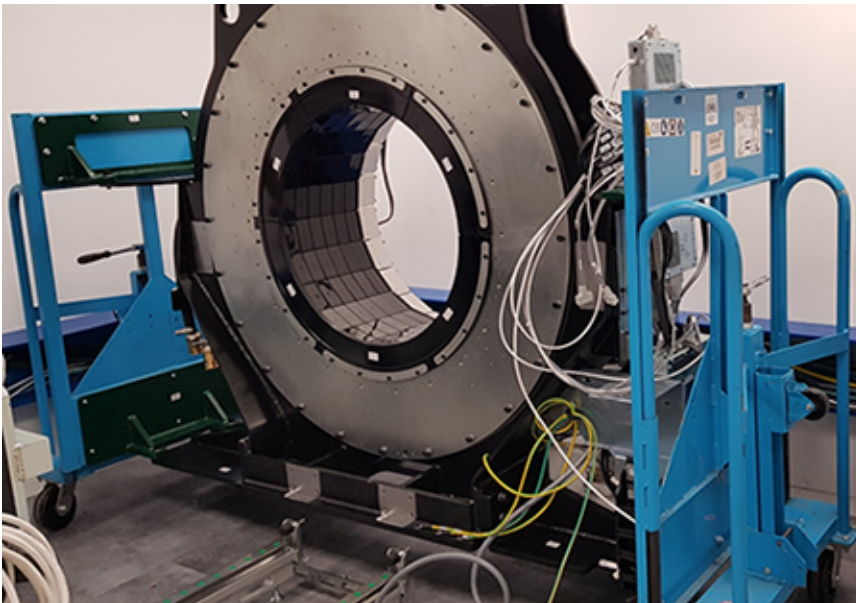
- If the site has the first installation, order **Gantry Dolly (B76142DA)**.

Figure 1-4 New Gantry Dolly (B76142DA)

1.4.2.2.3 PET Components

The PET Gantry consists of:

- PET Base [Figure 1-5 PET Base, with Shipping Dollies on page 28](#). The PET Base dollies have a center stabilizing frame to protect the exposed components.
- PET Image Ring [Figure 1-6 PET Gantry Image Ring, with Shipping Dollies and Side Rails on page 28](#).

Figure 1-5 PET Base, with Shipping Dollies**Figure 1-6 PET Gantry Image Ring, with Shipping Dollies and Side Rails**

1.4.2.2.4 Patient Table

The patient table ships to domestic (North American) installations on a set of dollies with stabilizing side rails [Figure 1-7 Patient Table with Shipping Dollies on page 29](#). The secondary base covers ship separately.

Red caster towers ship attached to the ends of the dollies [Figure 1-7 Patient Table with Shipping Dollies on page 29](#). They are used for fitting the Table in an elevator and for final positioning of the Table in front of the Gantry [Figure 1-8 Patient Table on Red Caster Towers on page 29](#).

**NOTE**

The patient table ships to international sites in a crate. The installation team uncrates the table and attaches the dollies at the site.

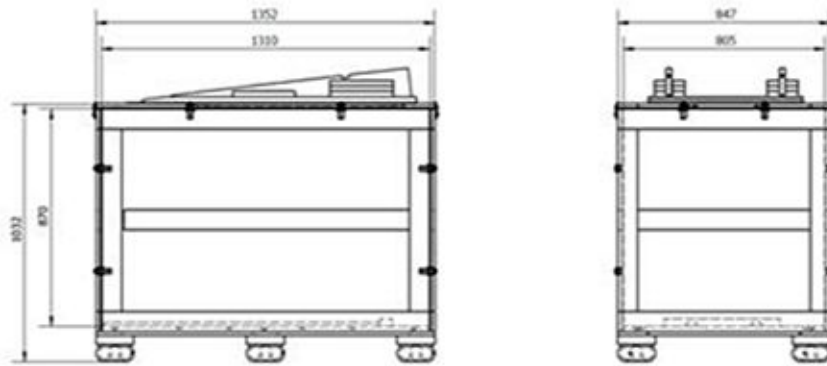
Figure 1-7 Patient Table with Shipping Dollies**Figure 1-8 Patient Table on Red Caster Towers**

1.4.2.2.5 PDU

The PDU is shipped on a skid. Do not remove the PDU from the skid until it is in the room ready for installation.

1.4.2.2.6 PARC4.X Reconstruction Mini Cabinet

The PARC4.X is shipped on a skid. Do not remove the PARC4.X from the skid until it is in the room ready for installation.

Figure 1-9 PARC4.X Packaging

1.4.2.2.7 Operator Console

The Console is shipped on a skid. Do not remove the Console from the skid until it is in the equipment room. The keyboard table is shipped with the Console, but not assembled.

1.4.2.2.8 Chiller

The Chiller is shipped on a skid. Do not remove the Chiller from the skid until it is in the equipment room.

Figure 1-10 Chiller Packaging

1.4.2.2.9 Chiller Power Distribution Box

Figure 1-11 Power Distribution Box Packaging



1.4.2.2.10 Annulus Phantom Safe (option)

The Annulus Phantom Safe is shipped on a combined crate/skid.

Figure 1-12 Annulus Phantom Safe on Skid



1.4.2.2.11 Covers Lean Cart

The Covers are shipped in a lean cart.

Figure 1-13 Covers Lean Cart - Closed / Open



1.4.3 Delivery Types and System Lifting and Rigging Restrictions

Lift-Gate and Rollback Truck Deliveries



PERSONAL INJURY OR DEATH, EQUIPMENT DAMAGE. TIP HAZARD.

Gantry is very heavy and may tip over if tilted past 10 degrees.

When transporting a system to the final destination, do not exceed tilt angle equal to, or greater than 10 degrees in either direction of axis.

Loading Dock Deliveries (Preferred method)

Facilities with a loading dock in the receiving areas can generally accommodate delivery of the system by semi-tractor trailer. This is the preferred method for system delivery. Dock-to-dock shipment

minimizes the possibility of dropping the PET/CT gantries or damaging other subsystems during the transition from the trailer to the facility. This method also allows for the most efficient packing and unpacking of the system.

Ground (Non-Loading Dock) Deliveries

Facilities without a loading dock require a Lift Gate truck with side door access or Tilt Bed truck. Such deliveries require unloading the system components from the truck bed to ground level and then transported to the facility over a smooth surface such as a concrete sidewalk or driveway or paved area. These paved surfaces must be able to support the weight of the subsystems. It may be necessary to protect these surfaces as well.

Lift-Gate Truck

If a truck equipped with a lift-gate is used, the delivery truck requires a lift gate rated for at least a 2722.0 kg (3.0 Tons) capacity. When the PET/CT gantries and table are lowered to ground level, it should be lowered at a steady rate using the slowest speed as possible to minimize G-loads when the lift gate reaches the ground. Keep PET/CT gantries and table level during movement to avoid flipping. Failure to smoothly transition the table and PET/CT gantries to ground level may cause serious damage to the table, PET/CT gantries, or their transport dollies.

Rigging

The PET/CT gantry assemblies shall not be lifted by their dollies. The PET/CT gantry assemblies shall not be transported across any surface by any means other than the dollies provided by GE. The PET/CT gantry assemblies have no lifting points on them and are not designed to be lifted by any special rigging attached to the PET/CT gantry assemblies themselves.

DANGER



POSSIBLE SEVERE PERSONAL INJURY OR DEATH.

The dollies are not designed to be used as an attachment point for any method of lifting the subsystems.

attaching lifting straps, cables or mechanisms to the dolly handles or any other part of the dolly is strictly prohibited.

NOTICE

If it is determined that the subsystems must be lifted by crane or other lifting method the PMI or person responsible for local siting of the system shall NOT proceed with the installation without consulting directly with GE Engineering.

Lifting the subsystems by crane or other lifting method should always be avoided. All alternate methods of delivery should be evaluated including the removal of any obstructions, doorways, walls, and windows.

If lifting is still required:

1. The entire PET/CT gantry assemblies and both gantry transport side dollies must be placed on a lifting platform. GE does not provide a lifting platform.

The CT Stationary Assembly shall be lowered to its transport position with the gantry base in contact with the platform. The CT Rotating Assembly shall be lowered to its transport position resting on the dolly transport pads in contact with the platform.

**NOTE**

If the platform has limited space, the gantry transport side dollies may be removed during the lift. Once the lift is completed, the gantry transport side dollies must be installed back on the gantry assembly.

2. The entire patient table must be on its dollies and lifted while sitting on a lifting platform. The patient table on its dolly shall be lowered to its transport position so the table base is in contact with the platform.
3. The platform must be designed such that no lifting straps or cables come in contact with any part of the PET/CT gantries or table subsystems or their side dollies.
4. The lifting platform shall bear the entire load. No part of the subsystem shall bear any load during the lift.

**NOTE**

If delivery requires vertical or horizontal lifting, the PMI needs to add the necessary identifier to the order.

1.4.4 Shipping and Receiving

1.4.4.1 Handling Restrictions

- *Forklift Restrictions:* Never lift the gantry using a forklift under the gantry frame. Use 8 ft. forks on the forklift.
- *Shock Restrictions:* The system cannot tolerate shock or vibration. System components cannot be tipped, dropped, or hoisted. The PMI shall communicate these restrictions to everyone involved with handling the system components.
- *Rolling on Surfaces:* System components shall be rolled across smooth surfaces (sidewalks, parking lots, tile flooring, etc.) only. If a smooth surface is not available (such as a sidewalk or driveway with cracks or uneven joints, or across a tiled floor with deep or rough joint lines), then floor protection shall be used to move the system across the uneven surface.
- *Shipping Crate/Packaging Integrity:* Do not damage or puncture the shipping crate or packaging.

1.4.4.2 Floor Protection

To protect the floor during delivery, floor protection shall be used along the entire delivery path and throughout the scan suite, where necessary.

1.4.4.3 Door Threshold Not Allowed

The customer is responsible for removing or protecting any doorway threshold (if one exists), in order to move the scanner subsystems in and out of the room.

1.4.4.4 Floor Load Along Delivery Route

The customer's structural engineer of record is responsible for making sure the floor material and design along the delivery route (loading dock, halls and rooms) meets the forces and weight requirements for the delivery of the individual subsystems to the final installation location within the facility.

1.4.4.5 Dollies

- U.S. Installations – Shipments within the United States typically involve the use of dollies (pre-installed on the gantry sections and table) for moving the gantry sections and table to the can suite and lean carts and pallets for other parts. After completing the installation, return all dollies, the gantry shipping cage, and lean carts to UMI using the shipping document found in Box #1. <http://www.umi-dollyshop.com>. Pallets are not re-usable.
- Zero Clearance Dollies (Mini) (For CT Gantry only) – Deliveries involving small elevators with a depth of at least 2692 mm (106 in.) require zero clearance dollies. Zero clearance dollies allow movement of the gantry in tight areas; avoid using them for normal dock or van deliveries. To order zero clearance dollies, go to: <http://www.umi-dollyshop.com>.
- Tilting Dollies (for Patient Table) – Deliveries involving small elevators with a depth of at least 2438 mm (96 in.) require tilting dollies. If storing the patient table prior to installation, do not order tilting dollies as there is a limited number of dollies available. If you are unable to obtain tilting dollies, substitute riggers in place of the dollies to deliver the table. To order tilting dollies for the patient table, go to: <http://www.umi-dollyshop.com>.
- Installations Outside U.S. – For shipments outside the United States, customers may purchase dollies at: <http://www.umi-dollyshop.com>. DO NOT return dollies or the gantry shipping cage to the U.S. Instead, forward dollies and cage to the local GE office or warehouse. The gantry sections and table subsystems are shipped with dollies attached placed on a pallet for transport. Pallets are not re-usable.

1.4.4.6 Delivery Temperature and Humidity Tolerance

NOTICE

Failure to adhere to temperature requirements during delivery and storage will likely result in equipment damage.

Avoid extreme temperatures during system transportation and delivery. Prevent extended exposure of the system (maximum two weeks) to temperatures or humidity outside of the following specifications:

- Temperature: When transporting the system, excluding any scanner desktop LCD display monitors, water-filled calibration/IQ phantoms, and chiller coolant, the temperature shall be maintained within the range of -40° to +50° C (-40° to +122° F), inclusive.



NOTE

See the table below for the shipping temperature and humidity ranges of excluded items.

Table 1-5 Shipping Temperature Ranges for Excluded Items

Items	Temperature
LCD Monitors	-20° to +60° C (-4° to +140° F)
Water-filled Calibration/IQ Phantoms and Chiller coolant	+5° to +70° C (+41° to +158° F)

- Humidity: When transporting the system, excluding water-filled calibration/IQ phantoms and chiller coolant, all packing material shall remain intact and the relative humidity shall be maintained within the range of 10% to 90%, inclusive.

After delivery to the scan suite and before unpacking any system components, allow 12 hours for the equipment to adjust to room temperature to avoid condensation or rapid temperature change. This 12 hour warm up period is not required if the shipping environment meets the same temperature and humidity requirement as the Scan Room and the system components are already at steady room temperature.

1.4.4.7 Unpacking System

Do not remove any protective wrapper or packaging from any system component until all construction is complete and all construction dust is removed from the installation site.

Retain the packaging surrounding the scanner desktop and UPS.

Do not remove the Console and Chiller from their shipping skids or the PARC4.X from its crate until after they have been delivered to the PET/CT equipment room.

1.4.5 Temporary Storage

If storing a system prior to installation, the system shall be stored in its original packaging in a temperature and humidity controlled environment protected from water and dust. It is advised that storage of the system be *no longer than six months*. If storage is going to exceed six months, contact your PMI for long-term storage procedures.

Table 1-6 Humidity and Ambient Temperatures for Storage*

Ambient temperature shall be maintained within a range of:	0 to +30° C (+32° to +86° F)
Maximum rate of change in the temperature shall be no greater than:	3°C (5.4°F) per hour
Relative humidity (non-condensing) shall be maintained within a range of:	up to 70% RH
Maximum rate of change in the relative humidity shall be no greater than:	5% RH per hour
* Delivery van/truck storage shall meet these same requirements.	

NOTICE

Storage exceeding six months is not advised.

Chapter 2 Equipment Requirements

2.1 System Components

2.1.1 Component Weight/Load, Dimensions, and Center of Gravity

Table 2-1 System Component Weight/Load

System Component	Net Weight kg (lbs)	Maximum Uplift Load N (lb)	Maximum Compressive Load (Per Leveling Pad) N (lb)	Load Pattern mm (in.)	Normal Method of Mounting mm (in.) (GE-supplied; Note 1)
CT Gantry	1558 (3434)	0	4614 (1038)	Rectangular base plate 1006 x 2041 (40 x 80) with four round pads, each 64 (2.5) in contact with floor.	Hilti Kwik-Bolt II 12.7 mm (1/2 in.) diameter by 203 mm (8 in.) long per P/N 2106573 at four leveling pads into the concrete floor.
PET Gantry (32 cm FOV)	1250 (2755)	0	4441 (998)	In the imaging position, the effective PET load area is 398 x 645 (15.7 x 25.4) with 4 pads each 63.5 (2.5)	Hilti Kwik-Bolt II 12.7mm (1/2 in.) diameter by 8 in. (203mm) long per P/N 2106573 at four leveling pads into concrete floor.
Patient Table	1047 (2308) Includes 227 (500) Patient	890 (200)	4926 (1107)	Rectangular base 550 x 2134 (21.7 x 84.0) with 6 round pads, each 63.5 (2.5) in contact with the floor.	Hilti Kwik-Bolt II 12.7mm (1/2 in.) diameter per 8 in. (203 mm) long per P/N 2106573 at four leveling pads into concrete floor.
Power Distribution Unit (PDU)	370 (813)	0	1070 (240)	Four Casters support area of 700 x 550 (27.6 x 21.7).	Casters are for positioning and service. See Note 2.
Chiller Power Distribution Box	30 (66)	0			Mounted on wall (same as A1 mains disconnect)
PARC4.X Mini Cabinet	225.2 (496)	0	527	Rectangular base with four castors.	Casters are for positioning and service. See Note 2.
OC Z8G4 Op Console Computer	64.2 (142)	0	-	Rectangular base with four castors of 400 x 672 (16 x 26).	
Monitor - LCD (each)	3.2 (7)				
Workspace Table (with 2 monitors)	70 (154)				
Chiller (with coolant)	220 (485)	0	540 (121)	Rectangular base with four castors in contact with the floor.	Casters unlock for positioning and service.

Table 2-1 System Component Weight/Load (Table continued)

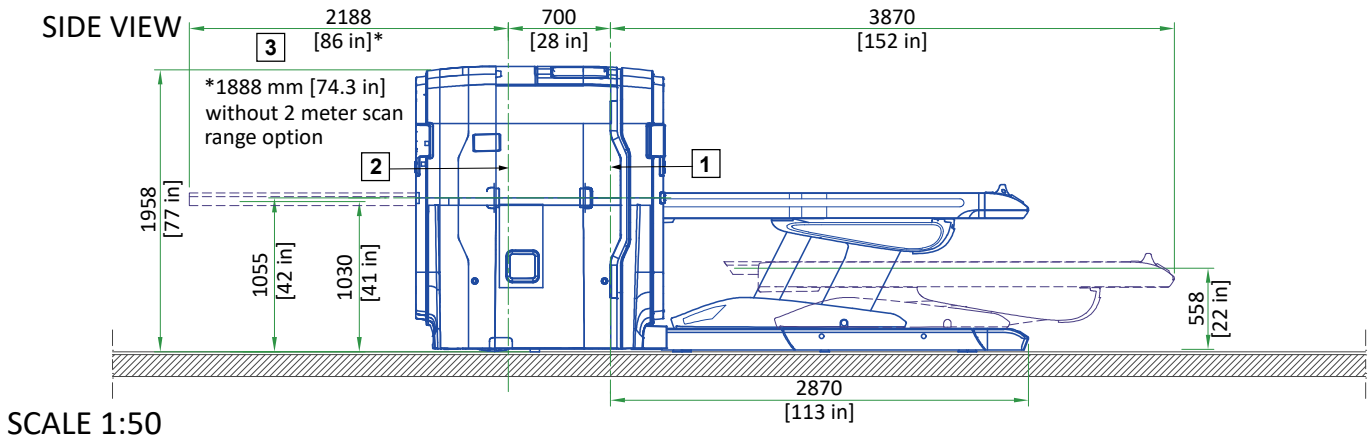
System Component	Net Weight kg (lbs)	Maximum Uplift Load N (lb)	Maximum Compressive Load (Per Leveling Pad) N (lb)	Load Pattern mm (in.)	Normal Method of Mounting mm (in.) (GE-supplied; Note 1)
Optional Components					
Universal Power Supply (UPS)	281 (619)	0	689 (155)	Rectangular base with four castors in contact with the floor.	Castors for positioning. Adjust six leveling pads on the floor.
Annulus Phantom Safe	140 (309)	0		Rectangular base with four castors in contact with the floor.	Castors are for moving safe and can be locked to prevent motion.
Service Cabinet	41 (90)	0			
Notes:					
1.) Use the GE-supplied mounting hardware only if anchoring the system to 127 mm (5 in.) concrete floors.					
2.) May be anchored to floor with supplied angle brackets in seismic zones.					

Table 2-2 System Component Dimensions

System Component	A	B	C
	Width mm (in.)	Depth mm (in.)	Height mm (in.)
PET-CT Gantry (overall)	2341 (92)	1700 (67)	1958 (77)
Table (at max elevation; 1" [25 mm] below Gantry ISO center)	660 (26)	3454 (136)	1067 (42)
Power Distribution Unit (PDU)	700 (27.6)	550 (21.7)	1062 (41.8)
Chiller Power Distribution Box	500 (19.7)	241 (9.5)	630 (24.8)
PARC4.X Reconstruction Mini Cabinet	622 (24.5)	1163 (45.8)	801 (31.5)
OC Z8G4 Operator Console Computer	400 (15.7)	616 (24.3)	576 (22.7)
Workspace Table 5486188-10 (adjustable height)	1486 (58.5)	902 (35.5)	688-1139 (27.1-44.8)
Chiller	665 (26.1)	900 (35.4)	1110 (43.7)
UPS (option)	305 (12)	813 (32)	1219 (48)
Service Cabinet (option)	914 (36)	610 (24)	1067 (42)
Annulus Phantom Safe	406 (16)	406 (16)	702 (27.7)

2.1.2 System Component Diagrams

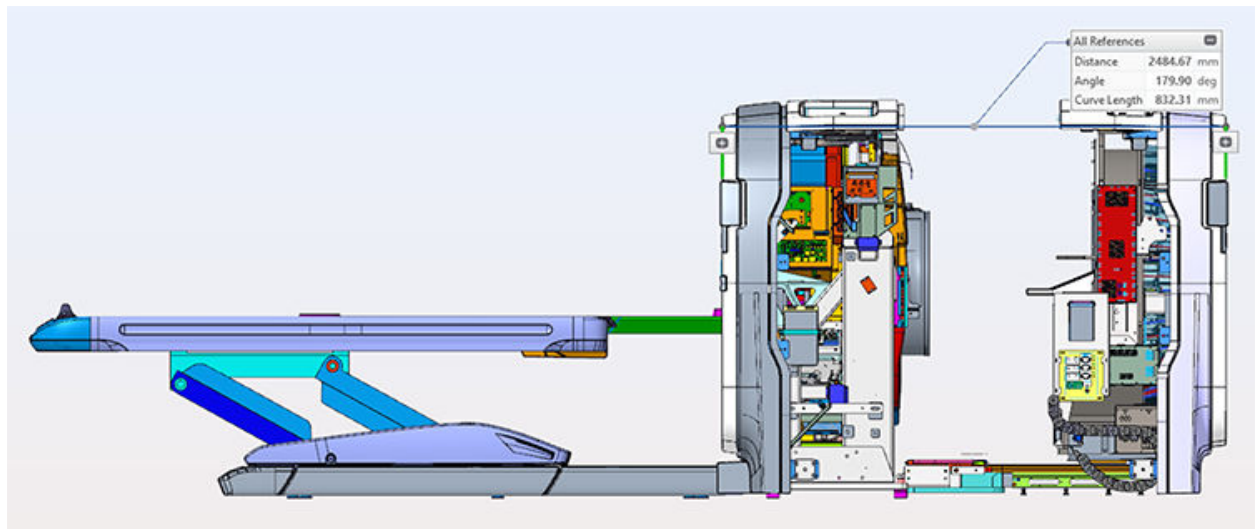
Figure 2-1 Gantry and Table Dimensions



All dimensions are in millimeters; bracketed dimensions are in inches.

1	CT scan plane centerline
2	PET primary scan plane centerline
3	With Head Extender

Figure 2-2 Gantry and Image Ring Dimensions (Service Position)



All dimensions are in millimeters.

Distance	2484.67 mm
Angle	179.90 degrees
Curve Length	832.31 mm

Figure 2-3 CT Gantry with Covers Dimensions

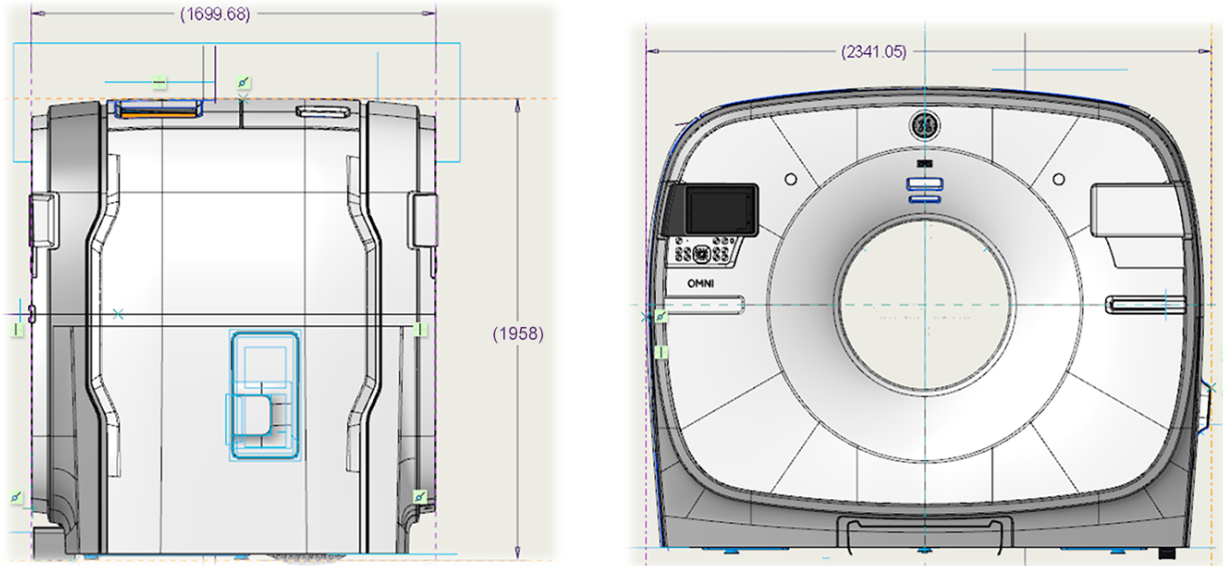
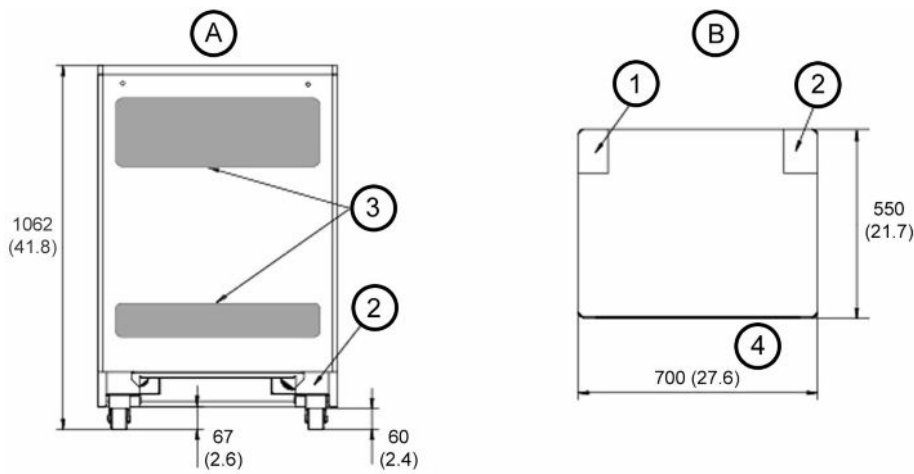


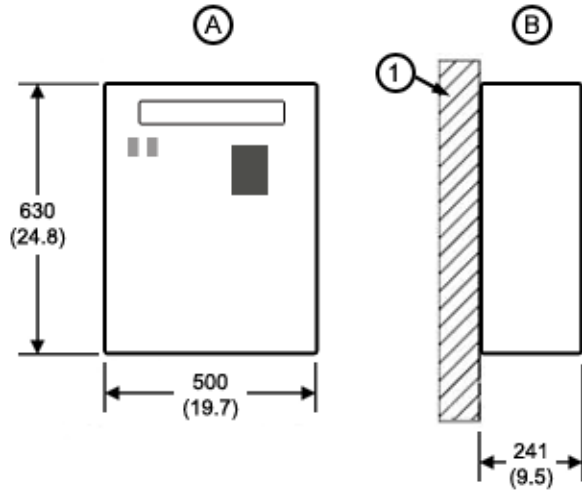
Figure 2-4 Power Distribution Unit (PDU) Dimensions



All dimensions are in millimeters; bracketed dimensions are in inches.

A	Rear View	1	I/O Connections Panel
B	Top View	2	AC Power Input Box
		3	Rear vent access
		4	Front

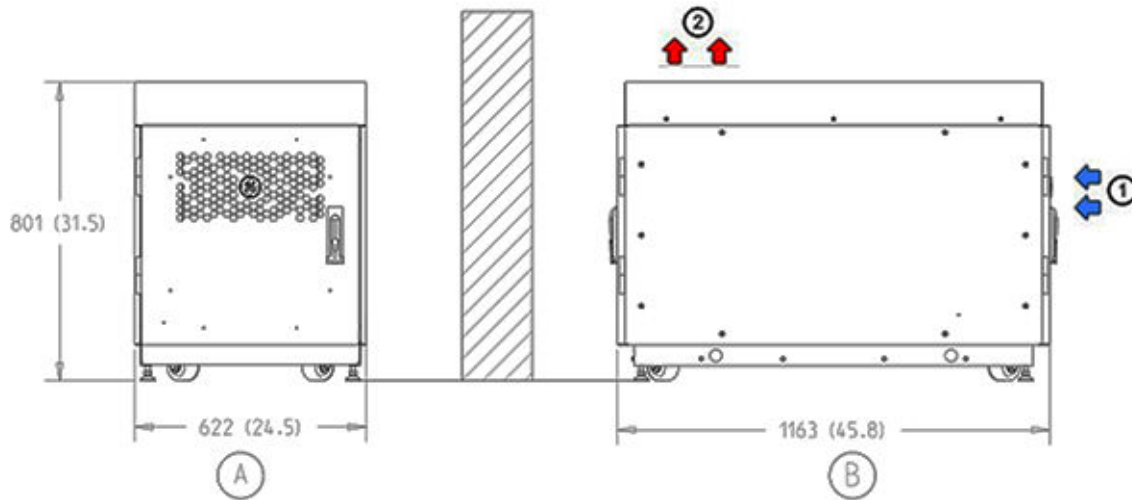
Figure 2-5 Chiller Power Distribution Box



All dimensions are in millimeters; bracketed dimensions are in inches.

A	Front View	1	Wall (mounting surface)
B	Side View	2	

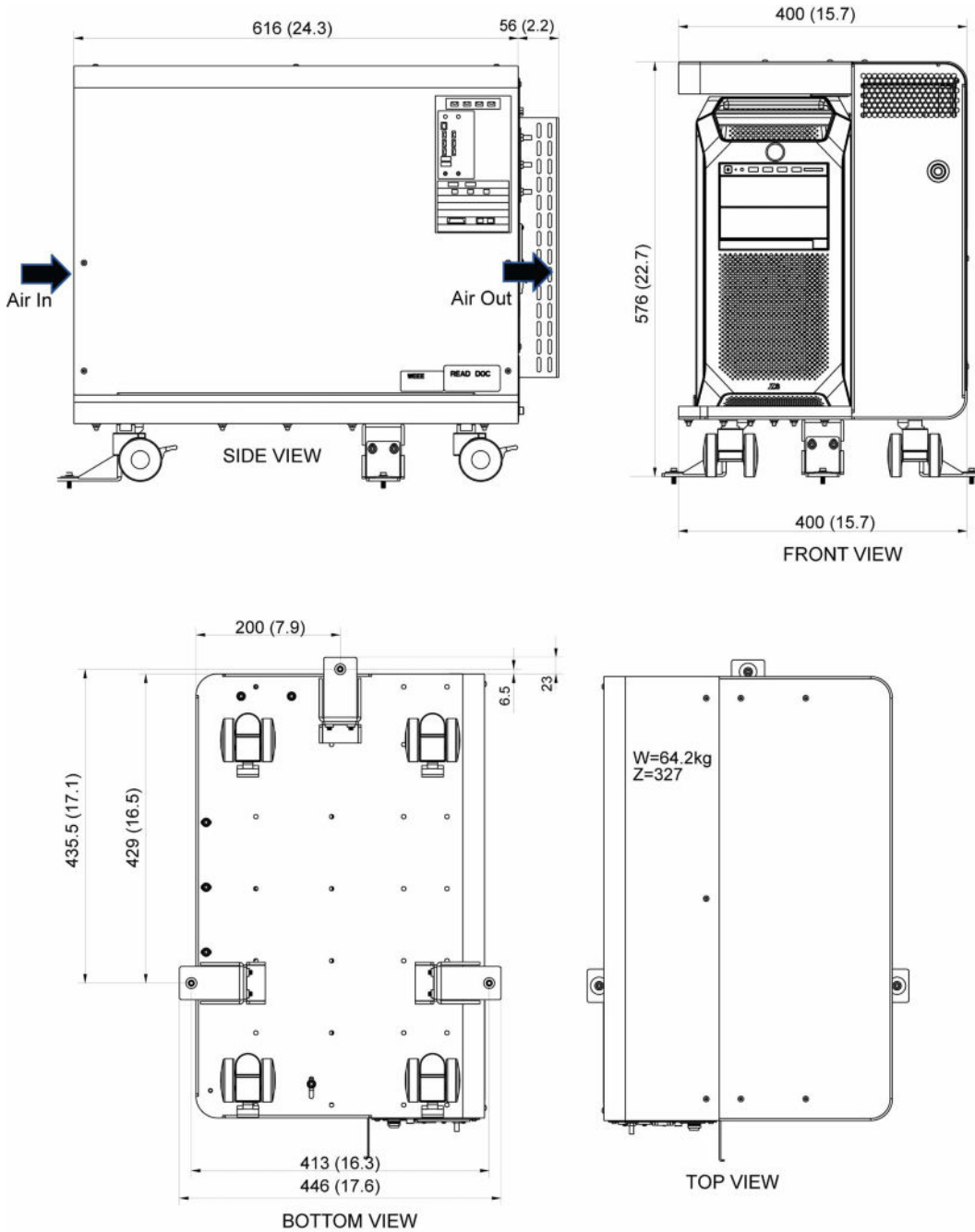
Figure 2-6 PARC4.X Reconstruction Mini Cabinet Dimensions



All dimensions are in millimeters; bracketed dimensions are in inches.

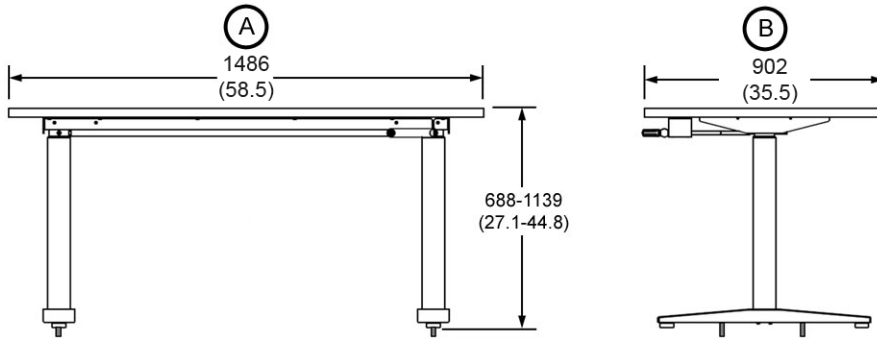
A	Front View	1	Air in (front of cabinet)
B	Side View	2	Air out (top of cabinet)

Figure 2-7 Operator Console Computer Dimensions (Open Console with Z8G4)



Description	Width mm (in.)	Depth mm (in.)	Height mm (in.)	Weight kg (lb.)
Open Console with Z8G4	400 (15.7)	672 (26.5)	576 (22.7)	64.2 (142) (without package)
				90.5 (199.5) (with package)

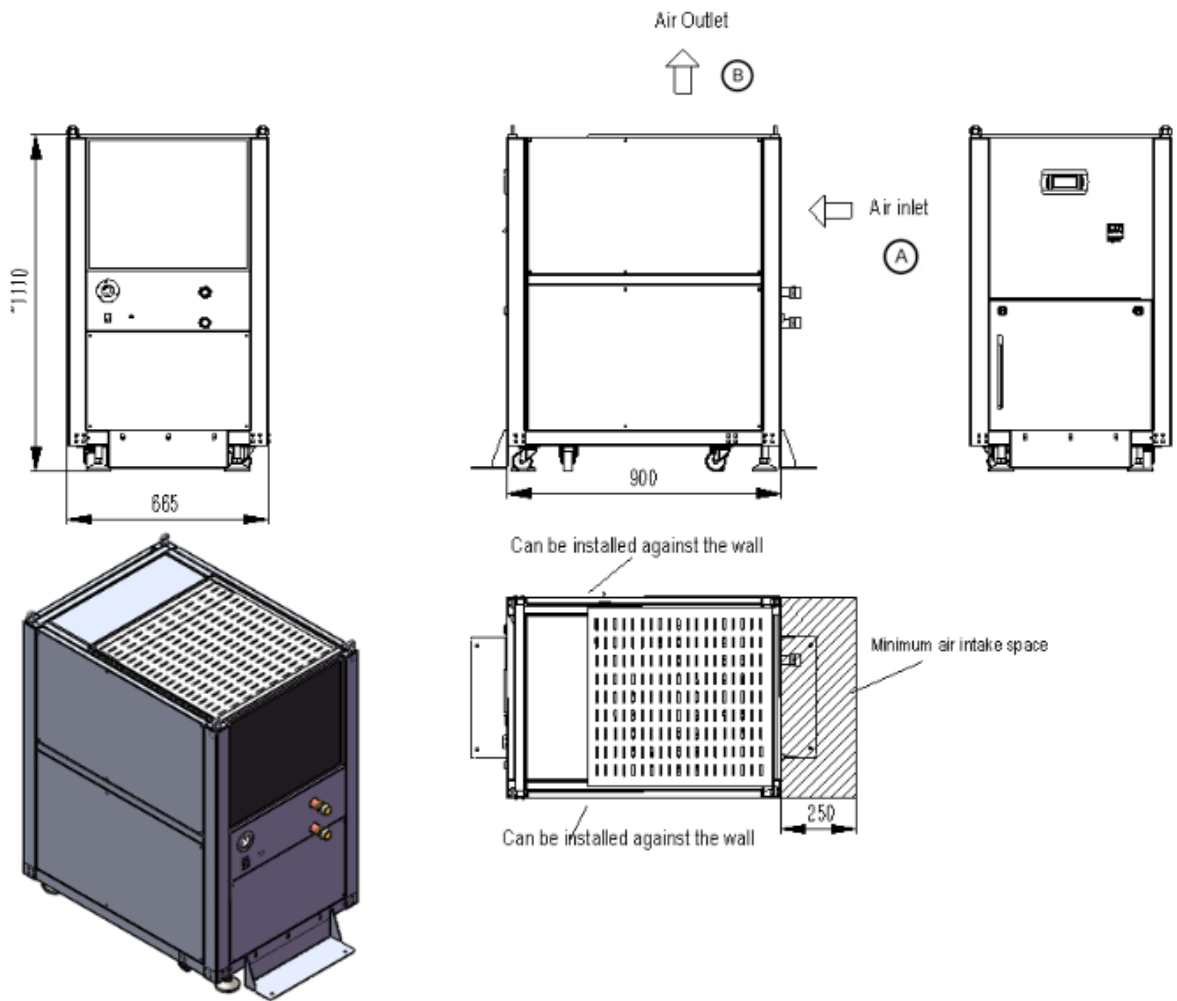
Figure 2-8 Workspace Table Dimensions (5486188-10)



All dimensions are in millimeters; bracketed dimensions are in inches.

A	Front View
B	Side View

Figure 2-9 Chiller Dimensions



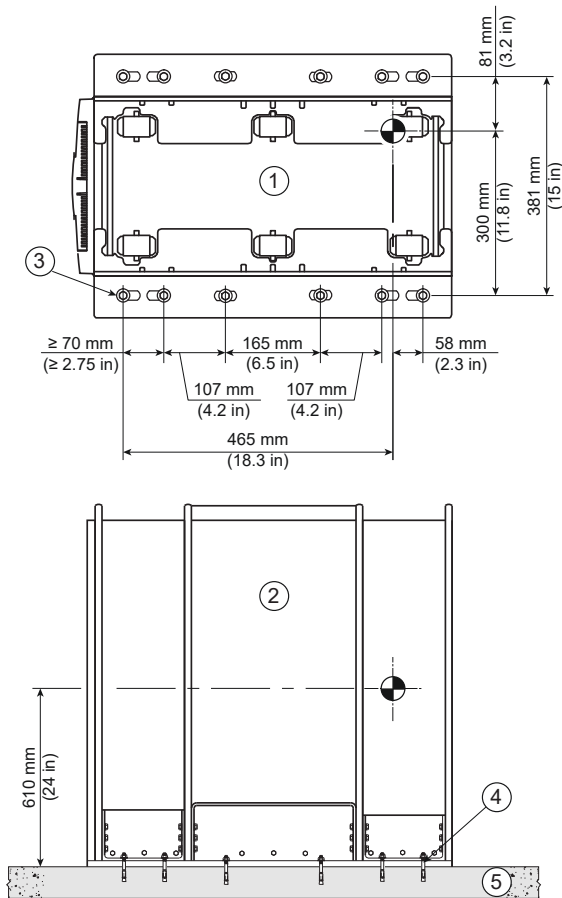
All dimensions are in millimeters; bracketed dimensions are in inches.	
A	Air in (back of cabinet - side view)
B	Air out (top of cabinet - side view)

Figure 2-10 Uninterruptible Power Supply (UPS) Dimensions (Optional) (shown with seismic brackets installed)



NOTE

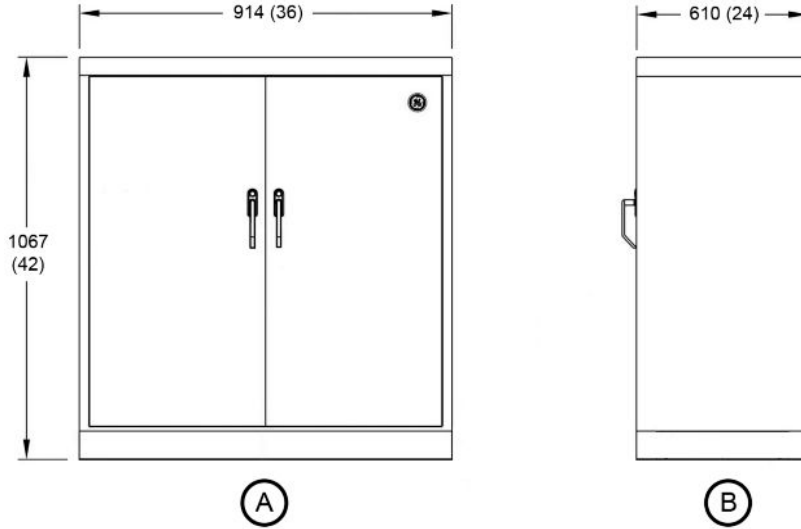
This is the recommended anchoring method provided by the OEM, GE HealthCare doesn't design any seismic brackets for the UPS; however, GE HealthCare does distribute EATON's seismic kit as GE HealthCare Catalog E4502YA.



Item	Description	Item	Description
1	Bottom view	3	Pre-manufactured mounting bracket with (12)-3/8 in Ø Hilti KB-TZ2 expansion anchors (min. embed. = 2 in) and 1-1/2 Ø O.D. x 7/16 in I.D. x 1/8 in thick washers
2	Side view	4	Pre-manufactured mounting bracket with (12)-3/8 in. Ø Hilti KB-TZ2 expansion anchors or with (12)-Hilti HY 200 + has R316 3/8 in Ø (ASTM F593H) and 1-1/2 Ø O.D. x 7/16 in I.D. x 1/8 in thick washer
-	-	5	Concrete floor

	Height mm (in)	Length mm (in)	Width/Depth mm (in)	Weight kg (lb)
Eaton Partial UPS	1244.6 (49.0)	812.8 (32.0)	304.8 (12.0)	281 (620) *
* Weight does not include seismic brackets 60 (136) kg(lb).				

Figure 2-11 Service Storage Cabinet Dimensions (Optional)

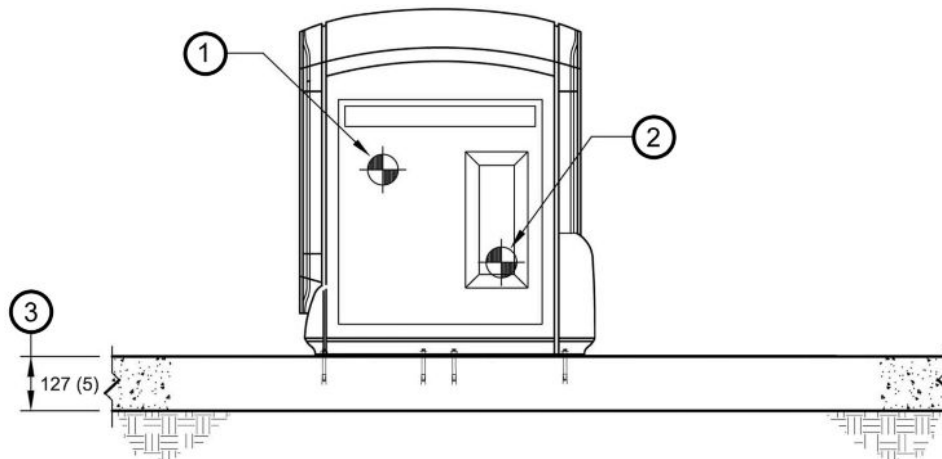


All dimensions are in millimeters; bracketed dimensions are in inches.	
A	Front View
B	Side View

2.1.3 System Component Center-of-Gravity Diagrams

Refer to [Figure 2-12 CT/PET Gantry Center-of-Gravity \(Side View\)](#) on page 45 through [Figure 2-24 Service Storage Cabinet Center-of-Gravity \(Optional\)](#) on page 53 for the individual system component center-of-gravity dimensions for the PET/CT system.

Figure 2-12 CT/PET Gantry Center-of-Gravity (Side View)



All dimensions are in millimeters; bracketed dimensions are in inches.
--

1	Center of gravity for CT Gantry (also see Figure 2-13 CT Gantry Center-of-Gravity on page 46)
2	Center of gravity for PET Gantry (also see Figure 2-14 PET Gantry Center-of-Gravity on page 47)
3	Minimum floor thickness

Figure 2-13 CT Gantry Center-of-Gravity

Unit: mm (in)

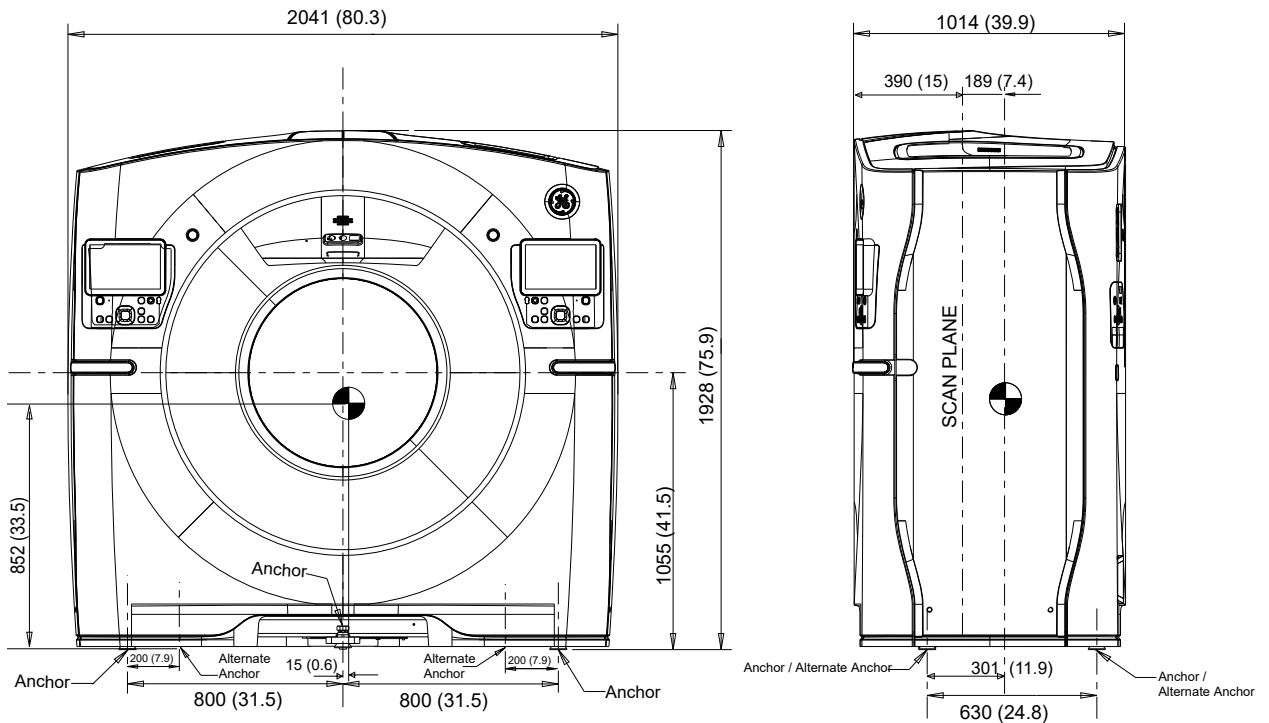
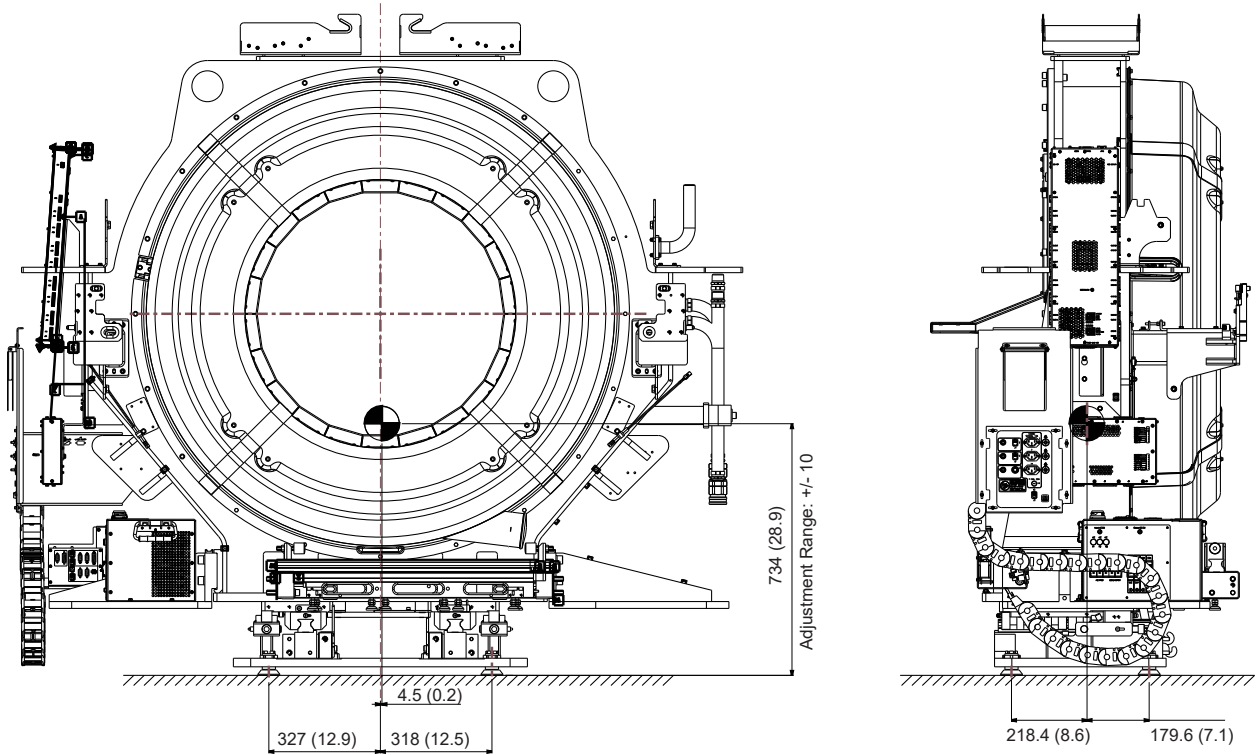


Figure 2-14 PET Gantry Center-of-Gravity

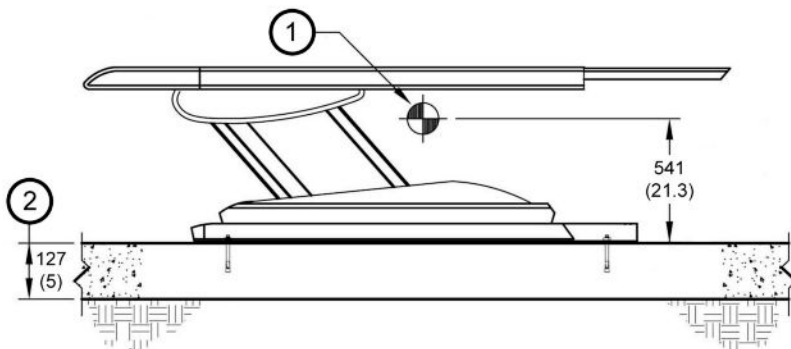


NOTE

The dimension in the Y-direction of the PET Gantry Center-of-Gravity can be adjusted between 724 mm and 744 mm using the PET base jacks.

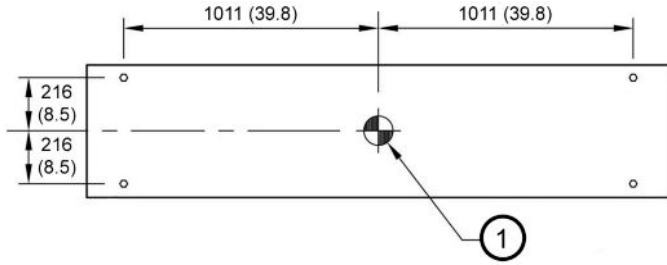
All dimensions are in millimeters; bracketed dimensions are in inches.	
Center of gravity weight; X= 4.5 (0.2), Y = 734 (28.9), Z= 218.4 (8.6)	
32 cm FOV: 1650 kg (3738 lb)	16 cm FOV: 1554 kg (3424 lb)

Figure 2-15 Patient Table Center-of-Gravity (Side View)



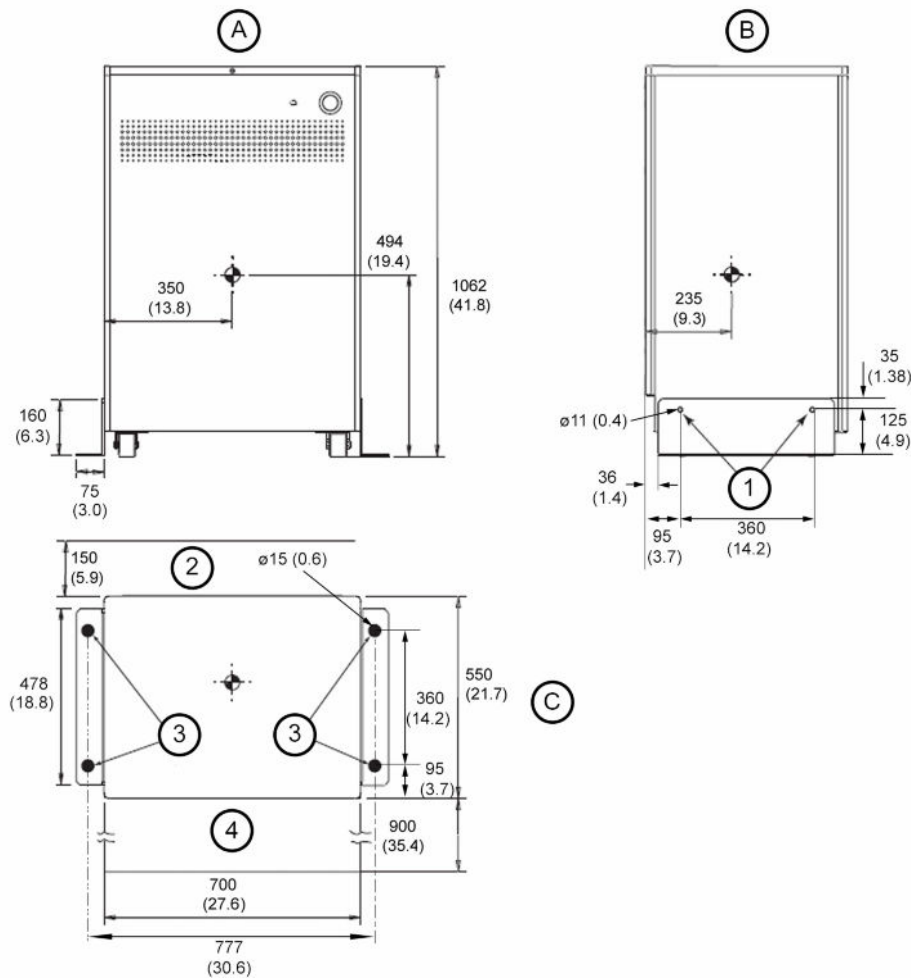
All dimensions are in millimeters; bracketed dimensions are in inches.	
1	Center of gravity weight = 1047 kg (2308 lb); includes 227 kg (500 lb) patient
2	Minimum thickness

Figure 2-16 Patient Table Center-of-Gravity (Top View – Plan at Base)



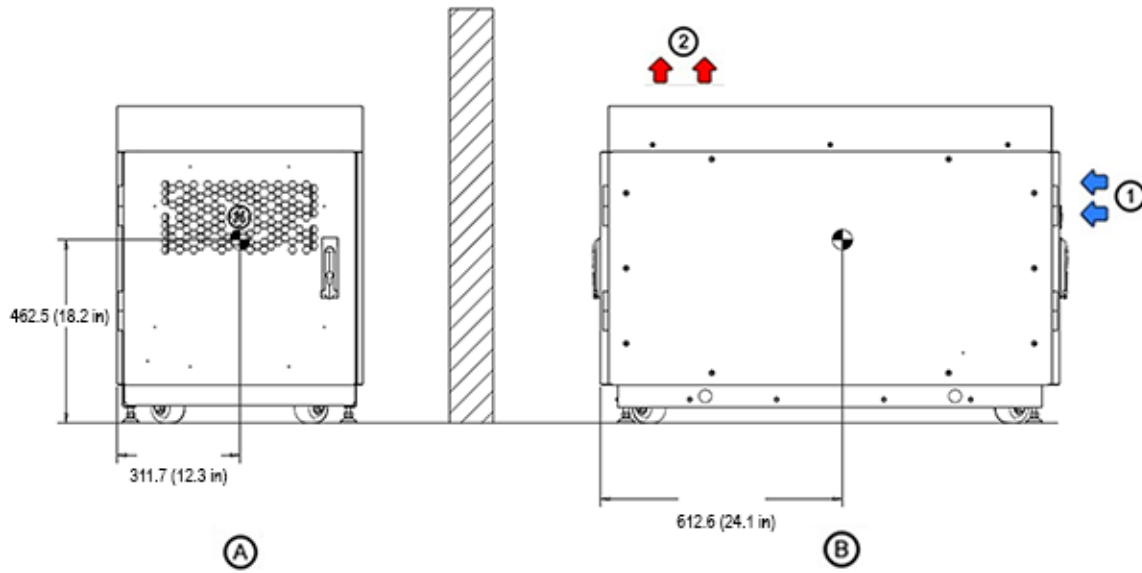
All dimensions are in millimeters; bracketed dimensions are in inches.	
1	Center of gravity weight = 1047 kg (2308 lb); includes 227 kg (500 lb) patient. Y (height) = 541 mm (21.3 in.)

Figure 2-17 Power Distribution Unit (PDU) Center-of-Gravity



All dimensions are in millimeters; bracketed dimensions are in inches.			
A	Front View	1	Seismic mounting holes on PDU
B	Side View	2	Minimum air flow clearance (back of cabinet)
C	Top View	3	Seismic floor mounting holes; 15 mm (0.6 in.)
		4	Front Clearance (minimum)

Figure 2-18 PARC4.X Reconstruction Mini Cabinet Center-of-Gravity



All dimensions are in millimeters; bracketed dimensions are in inches.

A	Front View	1	Air in (front of cabinet)
B	Side View	2	Air out (top of cabinet)

Center of gravity weight = 225.2 kg (496.8 lb)

Figure 2-19 Operator Console Computer Center-of-Gravity (Z8G4)

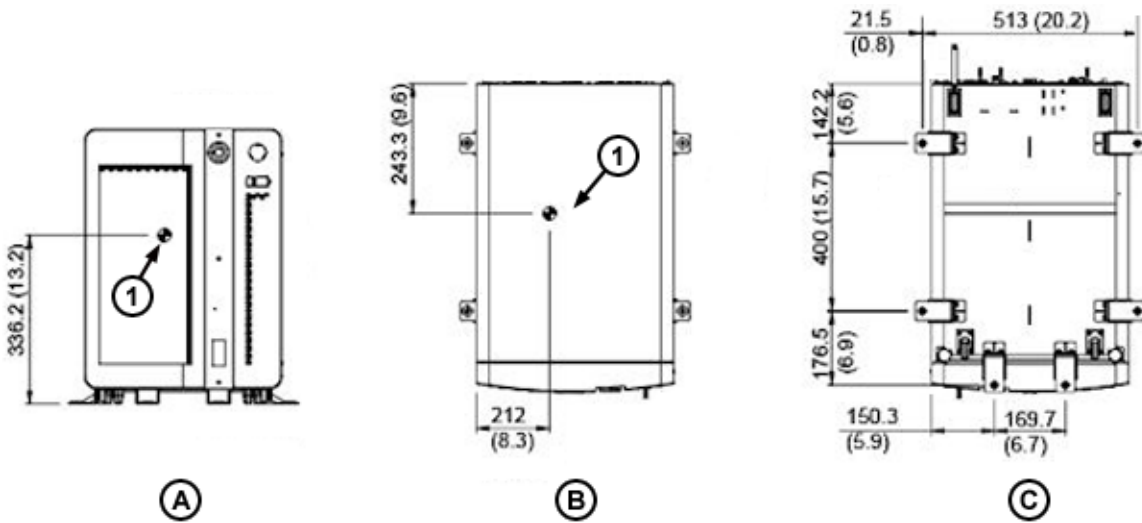


Figure 2-20 Operator Console Computer Center-of-Gravity (Open Console)

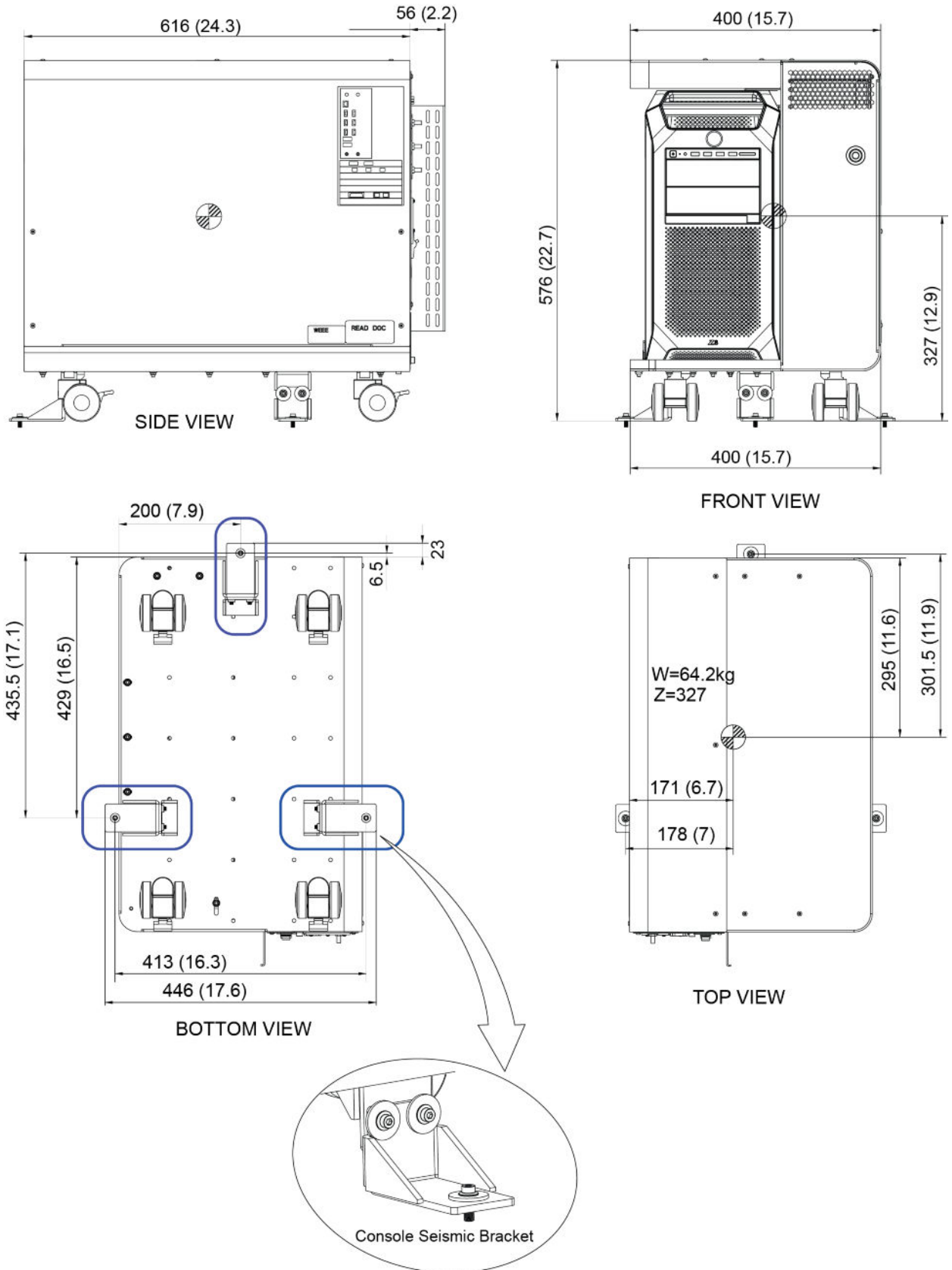
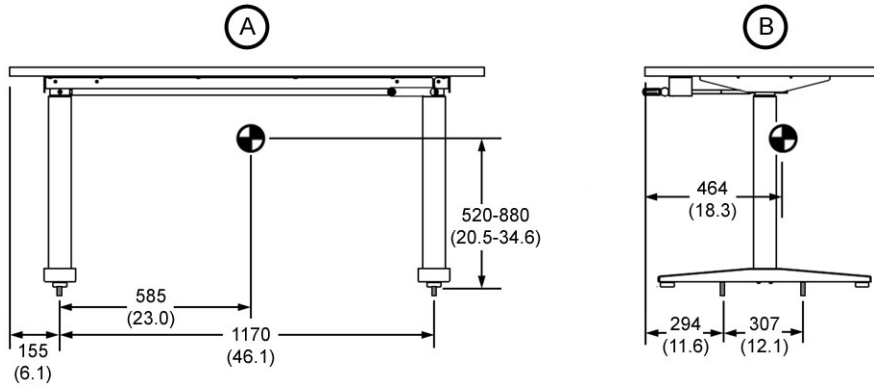
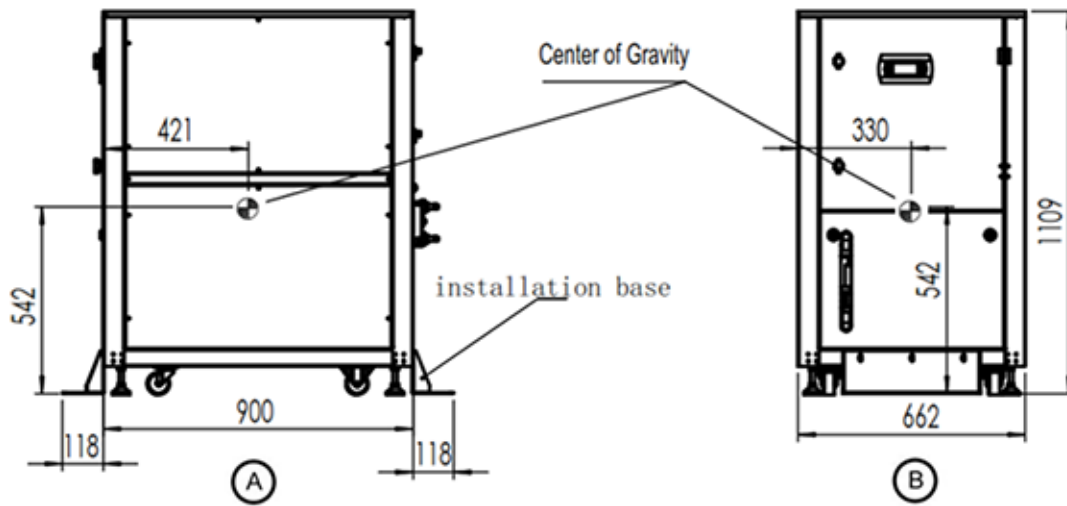


Figure 2-21 Workspace Table (5486188-10) Center-of-Gravity



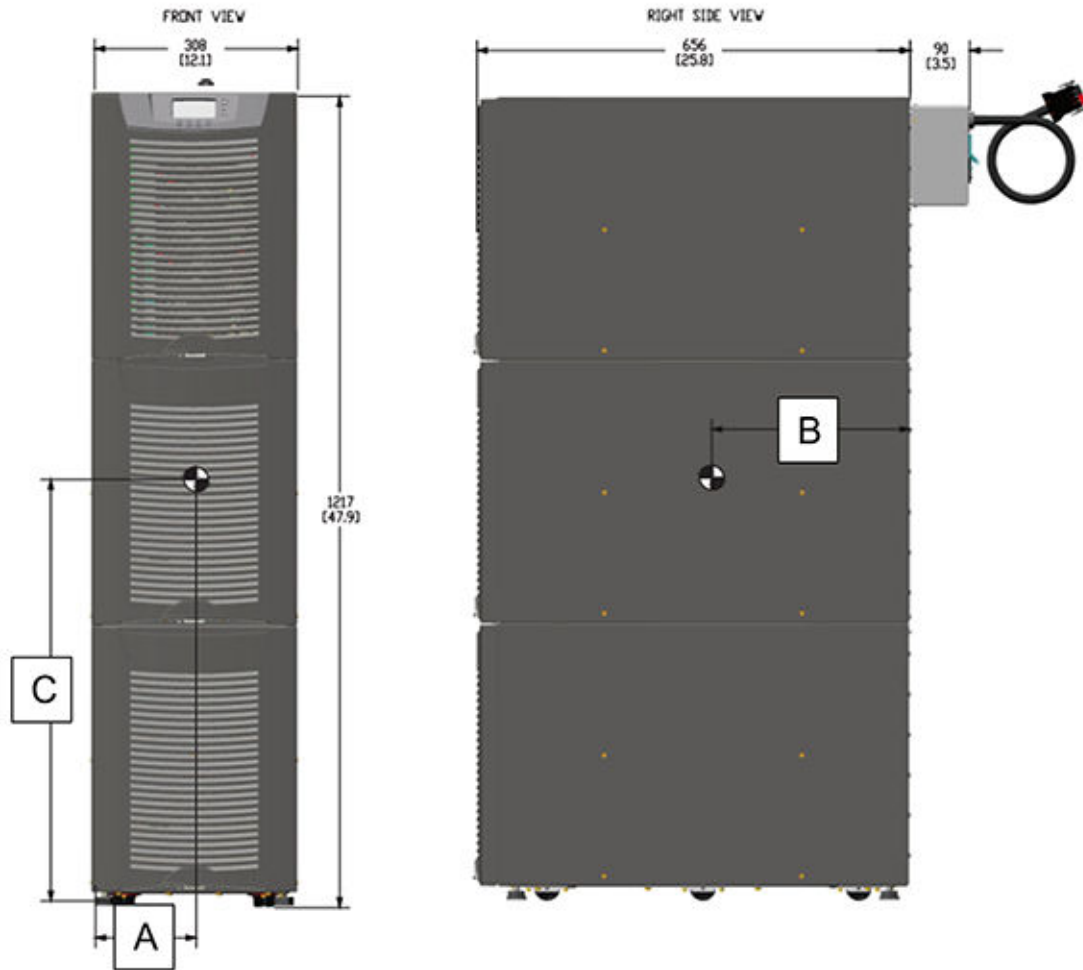
All dimensions are in millimeters; bracketed dimensions are in inches.	
A	Front View
B	Side View
Note: Center of gravity weight = 63.5 kg (139 lb). Y (typical) = 580 mm (22.8 in.) for table height of 765 mm (30 in.)	

Figure 2-22 Chiller Center-of-Gravity



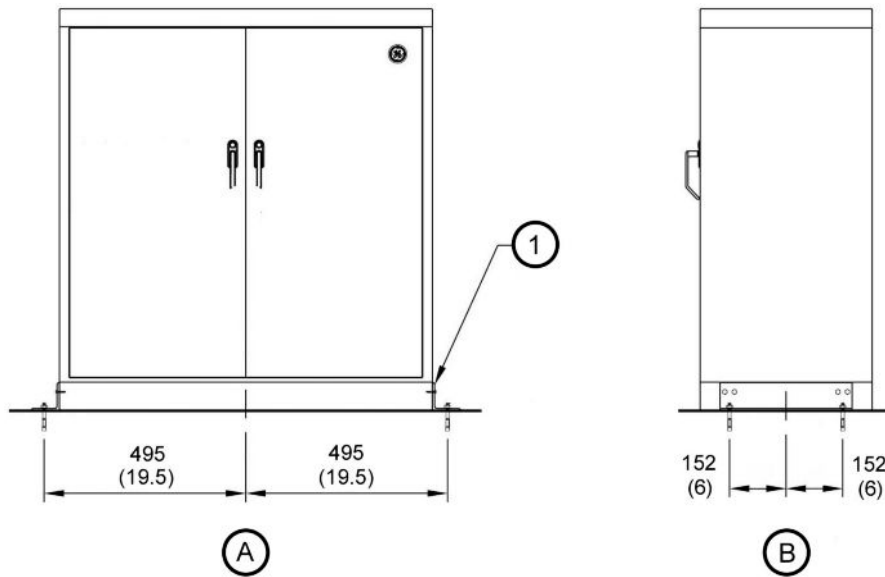
All dimensions are in millimeters; bracketed dimensions are in inches.	
A	Side View
B	Front View
Center of gravity weight (with coolant) = 220 kg (485 lb)	

Figure 2-23 Uninterruptible Power Supply (UPS) Center-of-Gravity (Optional)



	A	B	C	Weight kg (lb)
	Center of Gravity mm (in)			
Eaton 9355 8-15 kVA UPS 3-High	81 (3.2)	452 (17.8)	610 (24)	276 (609)

Figure 2-24 Service Storage Cabinet Center-of-Gravity (Optional)



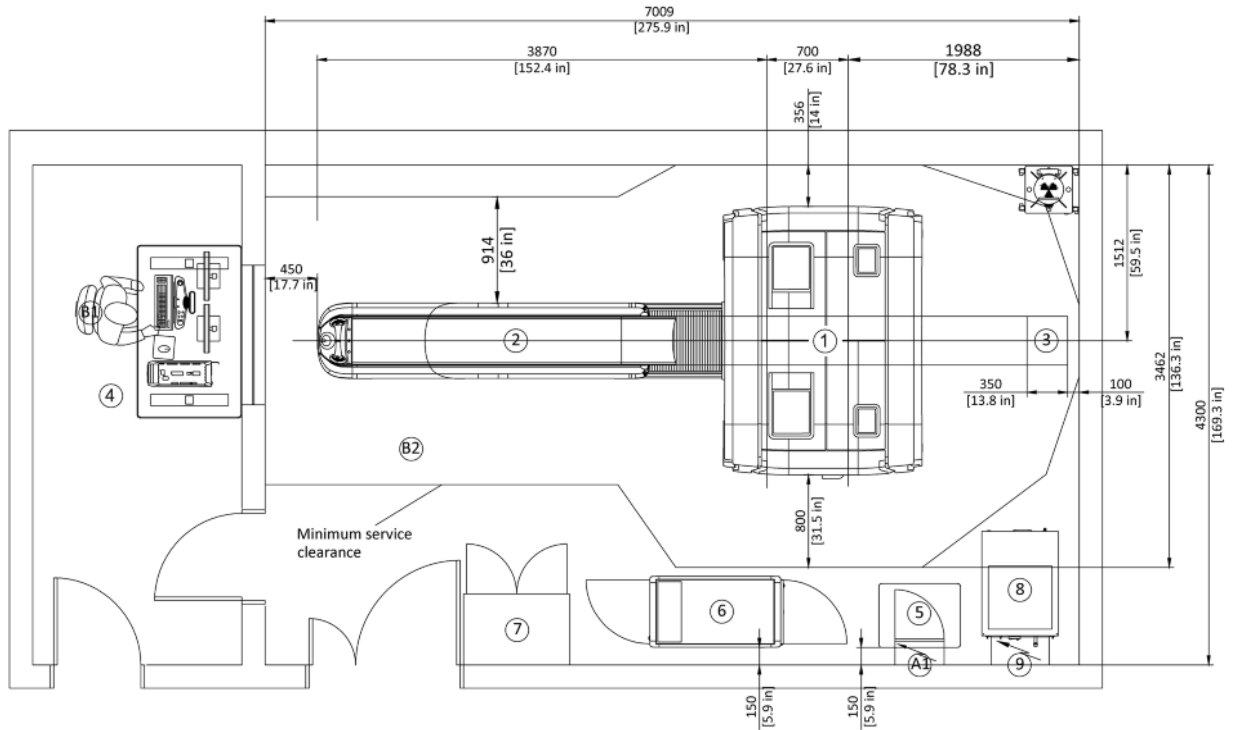
All dimensions are in millimeters; bracketed dimensions are in inches.	
A	Front View
B	Side View
1	L 3" x 3" x 1/4" x 14" bracket mounted to cabinet frame with 4 - #12 S.M. screws (each side)
Note: The Center of Gravity for the optional Storage Cabinet is site specific. It depends on the weight and location of items placed in the cabinet.	

2.2 Room Layout

2.2.1 Scan Suite Configuration

A scan suite, which includes a control room and a scan room, requires a minimum room size to safely support all PET/CT service activities. An example of a typical system configuration is detailed in [Figure 2-25 Typical Scan Suite Layout Configuration on page 54](#).

Figure 2-25 Typical Scan Suite Layout Configuration



All dimensions are in millimeters (mm) and inches (in.).			
A1	Mains Disconnect	4	Scanner Desktop/Computer
B1	Control Room	5	Power Distribution Unit (PDU)
B2	Scan Room	6	PARC4.X Reconstruction Mini Cabinet
1	Gantry	7	Service Cabinet (option)
2	Table	8	Chiller
3	Cradle Extender	9	Chiller Power Distribution Box
* Defines the minimum area required to enable installation, operation and service of the system in safe conditions.			
** Does not take into account local requirements. If local requirements are stricter, they should be followed. See Regulatory Requirements.			
*** No option for permanent objects around the CT (i.e. wall ducts, sink, cabinet, etc.).			
**** When using the 2m extender option (instead of the cradle extender - #3 above) it adds 650mm to the table travel (instead of 350 mm for the cradle extender - #3 above). Room clearance area should be considered accordingly.			
***** Equipment on casters (such as PARC4.X) can penetrate into the system service clearance area, as long as it's possible to clear this area from any equipment during service activity.			
***** It is recommended to install the A1 and the PDB higher than the PDU and Chiller to save some space and allow the A1 and PDB to be opened without any obstacle – at least 1110 mm higher than floor level.			
***** It is recommended to install the Chiller in a cool place in the scan room to reduce coolant vaporization as much as possible (preferably below an air vent).			



NOTE

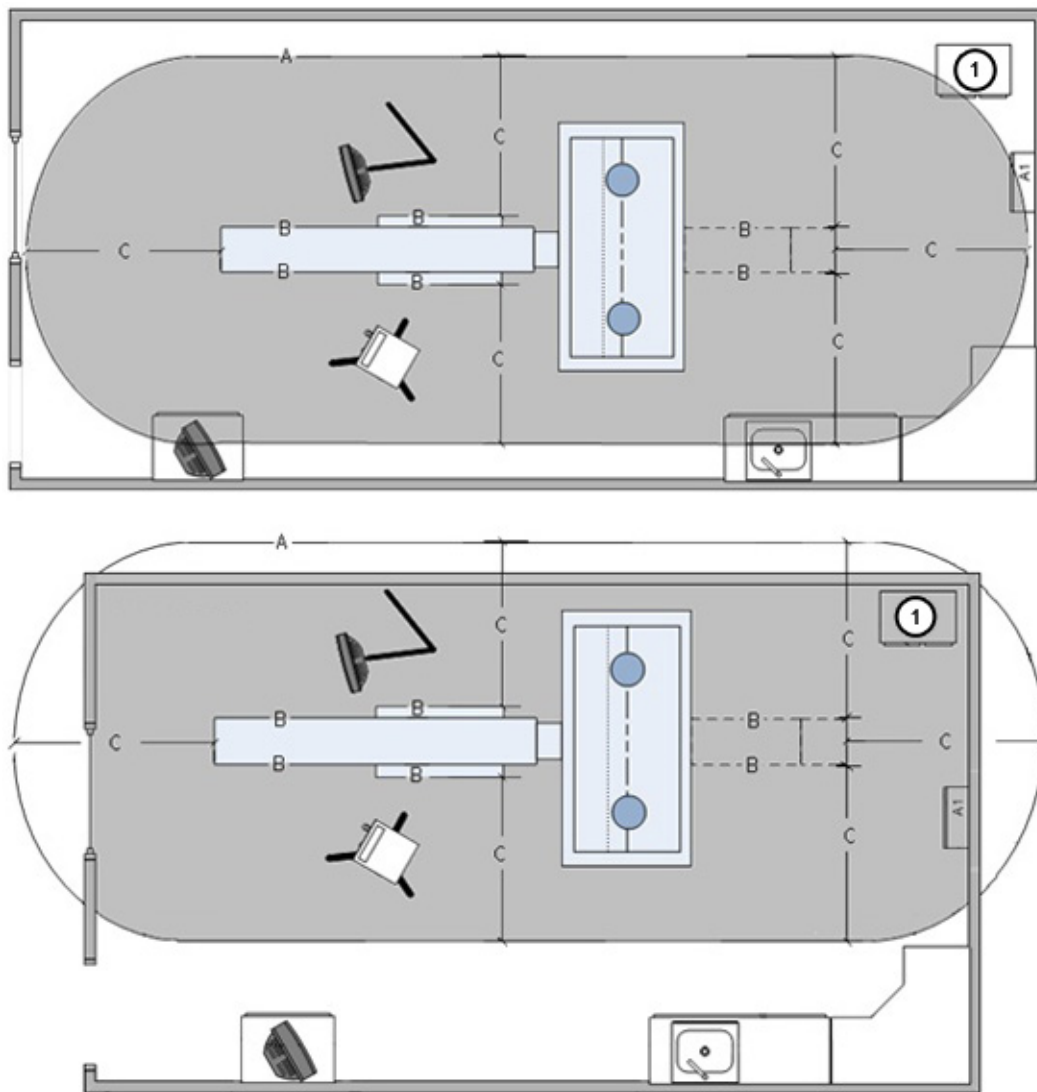
It is recommended to install the PARC4.X and Chiller in a separate equipment room, in order to reduce noise level and heat load in the scanner room. This room shall meet clearance requirements.

The enclosure (Patient Touch) Leakage Envelope, as detailed in [Figure 2-26 Leakage Envelope – Scan Room on page 55](#), defines a zone in the Scan Room only, where the enclosure leakage must be tested. Areas that fall outside of this envelope DO NOT need to be tested. The intent of this graphic is to provide the PMI with a view of potential electrical devices, plumbing fixtures, hospital gas outlets, and metal surfaces that may fall within this scan room envelope, which may require additional grounding prior to customer turnover.

NOTE
 The enclosure leakage envelope has nothing to do with Regulatory Work Space Clearance or Safe Egress requirements for Service Personnel (NFPA 70E).

NOTE
 For an Omni Total Body Scanner, refer to the Omni Total Body Pre-Installation Addendum.

Figure 2-26 Leakage Envelope – Scan Room



1 = PDU, A = Patient Care Perimeter Envelope, B = Equipment Perimeter, C = Width and Height

Reference	Dimension [C]	
—	Width	Height

IEC Ed 3.1	1829.0 mm (6.0 Ft.)	1829.0 mm (6.0 Ft.)
------------	---------------------	---------------------

2.2.2 Minimum Scan Room Sizing

2.2.2.1 Scan Room Operational Space Requirement

For a minimum scan room layout, the customer should consider room workflow, patient care accessibility, critical-care equipment space requirements, and applicable local building codes. Refer to the dimensions detailed in [Figure 2-25 Typical Scan Suite Layout Configuration on page 54](#) and [Figure 2-26 Leakage Envelope – Scan Room on page 55](#).

2.2.2.2 Scan Room Equipment Accessibility

Minimum scan room layout provides limited equipment accessibility on the left side of the gantry, particularly when loading patients or when positioning equipment between the gantry and wall. Refer to the dimensions detailed in [Figure 2-25 Typical Scan Suite Layout Configuration on page 54](#) and [Figure 2-26 Leakage Envelope – Scan Room on page 55](#).

2.2.3 Minimum Control Room Sizing

2.2.3.1 Control Room Considerations and Requirements

The control room shall be suitably sized for the scanner desktop. Refer to the dimensions detailed in [Figure 2-25 Typical Scan Suite Layout Configuration on page 54](#). The control room should also provide a comfortable working environment for the operator. Refer to [HVAC Requirements on page 86](#).

2.2.3.2 Autoinjector Control Placement

Provide a suitable work area for placement of the autoinjector control, within reach of the scanner desktop. Autoinjector controls vary in size, depending on the manufacturer. Refer to the manufacturer's installation instructions.

2.2.4 Control Room Scanner Desktop Requirements

2.2.4.1 Scanner Desktop Configuration

The scanner desktop shall remain in the same configuration it was shipped. System components shall not be disassembled, removed, or rearranged.

Once the system is installed, do not relocate any system or operator components to a different counter, table, or location in the room.

2.2.4.2 Scanner Desktop Clearance

To ensure the exhaust fans located on the back of the scanner desktop vent without obstruction, maintain 152 mm (6 in.) of clear, unobstructed space along the sides of the desktop.

2.2.4.3 Scanner Desktop Power

No other electrical devices may be connected to the scanner desktop components. All other devices shall be connected to their own electrical outlet or power source.

2.2.4.4 Scanner Desktop Cables

Scanner desktop cables shall remain as shipped. Cables cannot be cut or lengthened to relocate the desktop monitor to a remote table or counter.

2.3 Hospital Equipment and Service Space Requirements

2.3.1 Clearances

2.3.1.1 Operational Clearances

Review operational clearances to verify daily use items will properly fit (beds, carts, wheelchairs, etc.).

2.3.1.2 Service Clearances

Service infringement area shall not contain any floor obstacles such as cables, hoses, ducts, etc. This area includes the PET service area at the rear side of the gantry along the PET image ring travel range.

2.3.1.3 Emergency Medical Equipment Clearances

Consider clearances for emergency medical equipment.

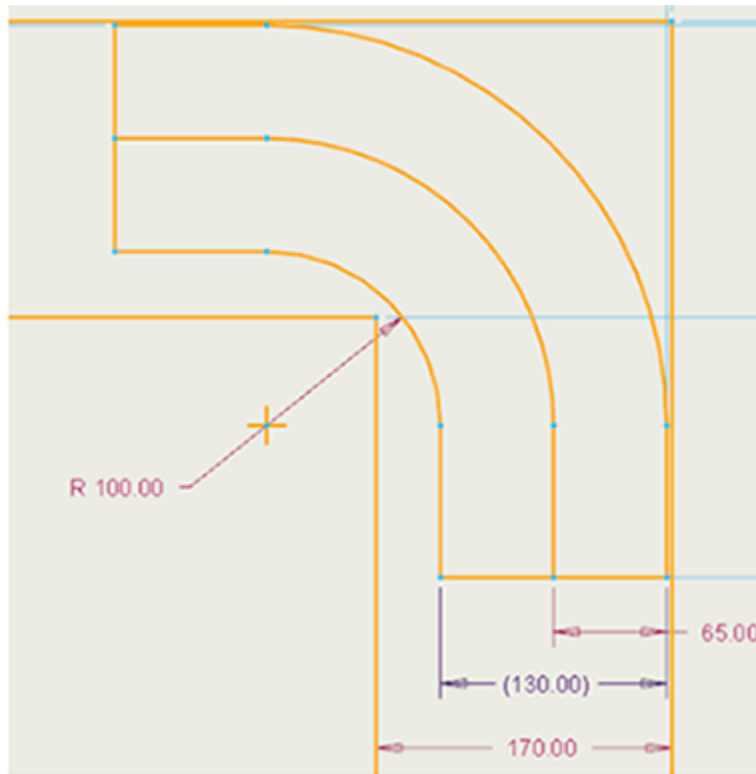
2.3.1.4 Replacement Parts and Service Equipment Space

Prior to the installation of the system, verify there will be adequate space in the scan room to receive and install all replacement parts and provide room for all service equipment that will be used during the installation.

X-ray Tube Box has W x L x H dimensions of 700mm x 1015mm x 737mm (27.5" x 39.88" x 29.00"), and room design should ensure adequate access to deliver the tube box to the right side of the CT Gantry.

2.3.1.5 Cable and Hoses Duct Requirements

If a duct is needed to route the cables and hoses from the peripherals to the system, there shall be two (2) separate ducts: one for the electrical cables and one for the hoses.

Figure 2-27 Duct Size

Both ducts shall be 10 x 25cm and will be directed to the cable access area shown in [Anchoring on page 65](#).

2.3.1.6 Ceiling Height Requirements

The minimum ceiling height above the table and gantry shall measure at least 2326.0 mm, within the entire service clearance area.

2.3.1.7 Ceiling Requirement for Auto Patient Positioning Depth Camera (Express Mode)

Please refer to the latest version of **5809939-1EN** in SIMS Content Viewer for detailed information about the Auto Patient Positioning Option: Installation, Alignment and Calibration procedures.

2.3.1.8 AVIMOS Camera Installation Requirements

Please refer to the latest version of **DOC2588256** in SIMS Content Viewer for detailed information about the AVIMOS Camera Option: Installation, Alignment and Calibration procedures.

2.3.2 Workplace Requirements

2.3.2.1 U.S. Code Requirements

The required service space, as noted in [Figure 2-28 Work Space Conditions on page 61](#) and [Figure 2-29 Small Room Condition on page 62](#), has several conditions defined by the (U.S.) National Electrical Code (NEC). These conditions are defined by the wall type and accessibility/exposure to:

electrical power panels, electrical outlets, surface mounted conduits, plumbing, hospital gases, or surface ground points directly opposite exposed CT equipment.

Work space clearances apply to equipment operating at 600V or less, where examination, adjustment, servicing, and maintenance is likely to occur with live parts exposed. System servicing requires a space for one service engineer to accomplish all system component replacement tasks without the need of special tools or equipment.

There shall be sufficient working space in the scan room to allow adequate egress during service operations that require both front and rear cover removal. If the customer and PMI have any concern that the site will not provide adequate work space for egress under these conditions, the necessary provisions should be made to accommodate this event.

The customer shall maintain the required regulatory clearance distances and not use these areas for storage. This applies during normal system operation and during service inspection and routine maintenance.

This work space is defined where the cover has been removed in an area where service is performed, with power applied to the system. The conditions of this space are as follows:

Service Space: Also defined as Working Space by: IEC/NFPA 70e (Table 110.26) 2011 Edition. GE Healthcare also requires the following minimum work space requirements for the safe servicing of the product:

Working Space: Work space for equipment operating at 600 Volts, nominal, or less, to ground, and likely to require examination, adjustment, servicing, or maintenance while energized. Refer to the conditions in [Table 2-3 Work Space Conditions on page 60](#) and [Table 2-4 Small Room Condition on page 60](#).

IEC/NFPA 70e (Table 110.26) 2011 Edition GE Healthcare requires the following minimum work space requirements for the safe servicing of the product.

Terms Defined for “Work Space Conditions”

- **Grounded Surface/Wall:** Made of concrete, masonry, brick, ceramic tile, or a wall that contains surface mounted electrical boxes, conduits, or ducting.
- **Ungrounded Surface/Wall:** Made of wood or other insulated construction material that will not create a path to ground when touched.
- **Obstructions:** Surface mounted floor ducts or other trip hazards, walls, pilasters, support columns, and equipment covers stored temporarily that would block direct access to an exit from the room.
- **Head Clearance:** Head clearance represents the height dimension of the work space, as measured from the floor directly in front of the equipment to the ceiling (or overhead obstruction). It requires a minimum of 1981 mm (78.0 in.), or the height of the equipment, whichever is greater.
- **Powered On Service – Work Space Egress - 712.0 mm (28.0 in.):** Any work space around the perimeter of the system or subsystem, shall have at least one unobstructed route to a direct exit of the room. The width of the exit route shall not be less than 712.0 mm (28.0 in.) along the entire length of the route. This emergency egress route must be free of obstructions and trip hazards, including equipment covers that may have been removed for service.
- **Small Room – (Not Recommended):** A condition of installation where the gantry may be placed a minimum of 356.0 mm (14.0 in.) from a wall where access to electrical power or the wall is not required. (Limited to the side of the gantry, opposite the Tube-Change side of the gantry.)

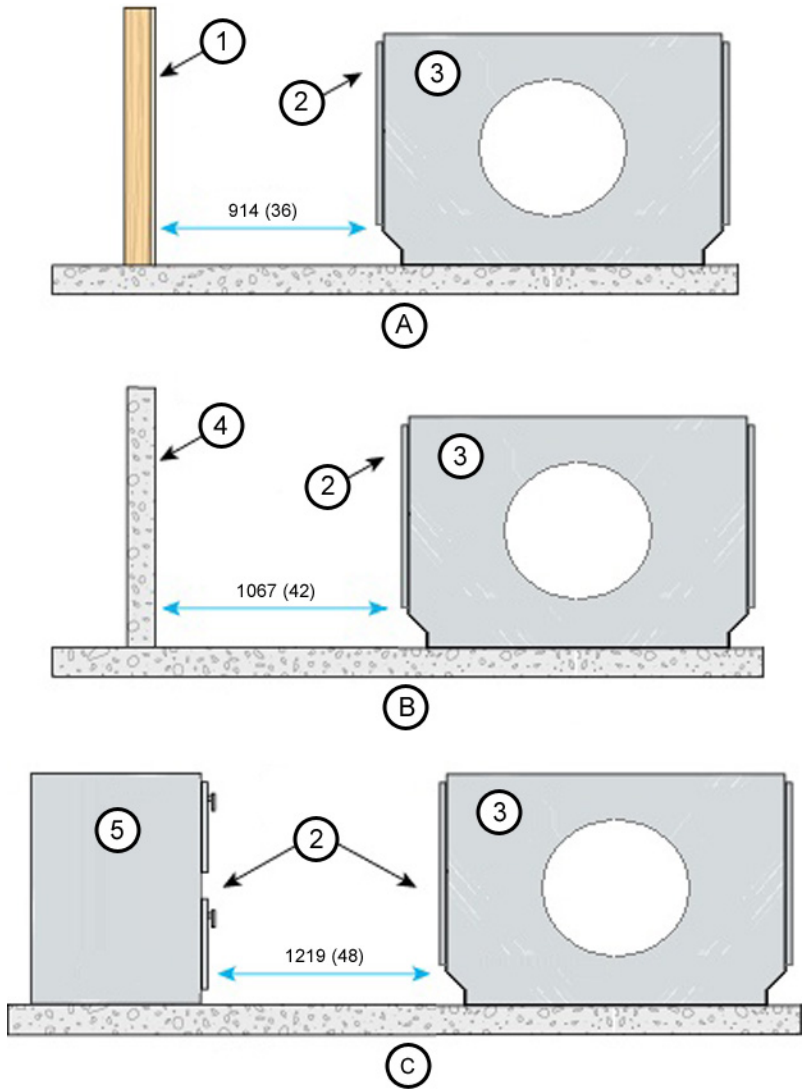
Table 2-3 Work Space Conditions

Dimension	Condition Number	Condition	Separation Distance mm (in.)
Length/Depth	1	If the depth of the working space is directly facing an ungrounded surface or wall without live voltage panels (600V or less) and without surface mounted ducts or conduits.	914.0 (36.0)
	2	If the depth of the working space is directly facing a grounded surface or wall.	1067.0 (42.0)
	3	If the depth of the working space is directly facing a surface or wall with live voltage panels (600V or less), grounded surface mounted ducts, or conduits.	1219.0 (48.0)
Width	4	Minimum width of the working space in front of the electrical equipment, unless the width of the equipment is larger.	762.0 (30.0)
		If the equipment is wider than 762.0 mm (30.0 in) the width of the equipment shall become the width of working space.	Size of Equipment
		The working space shall permit at least a 90 degree opening of equipment doors.	—
Height	5	Minimum Height of the working space shall be clear and extend from the grade (floor), unless the height of the equipment is higher.	2000.0 (78.0)
		If the equipment is taller than 2000.0 mm (78.0 in.), the required height of the working space shall become the height of the equipment.	Height of Equipment

Table 2-4 Small Room Condition

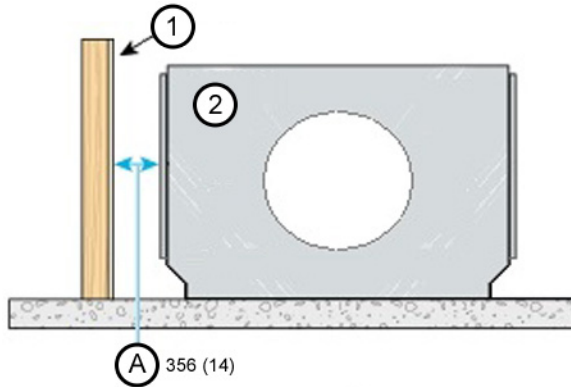
Small Room Condition	Separation Distance mm (in.)
Minimum distance required on the side of the gantry, opposite the Tube-Change side of the gantry.	356.0 (14.0)

Figure 2-28 Work Space Conditions



All dimensions are in millimeters; bracketed dimensions are in inches.

A	Condition 1	2	Exposed live parts
B	Condition 2	3	Scanner or subsystem
C	Condition 3	4	Grounded parts, concrete, etc.
1	Effectively insulated	5	A1, other electrical equipment power panels

Figure 2-29 Small Room Condition

All dimensions are in millimeters; bracketed dimensions are in inches.	
1	Effectively insulated
2	Scanner or subsystem
A	Small Room Condition. No live parts to service on this side.

2.3.2.2 Cover Removal Clearance

System servicing requires sufficient space to remove all covers from the system.

2.3.3 Cover Clearance Requirements

2.3.3.1 Gantry Front Cover – Removal Clearance

Front cover removal requires a minimum clearance space, as specified in [Figure 2-25 Typical Scan Suite Layout Configuration on page 54](#). The cover is removed using a pair of dollies that allow the service engineer to remove the cover from the gantry, tilt the cover 90° to roll it to the foot end of the table, and then tilt the cover an additional 90° so it is upsidedown, relative to its normal installation position.

2.3.3.2 Gantry Front Cover – Service Clearance

Once the front cover of the gantry is removed, the service engineer shall have the ability to reposition the cover to an area that satisfies the minimum service clearance. The cover cannot be placed in an area where it will encroach on the minimum service area.

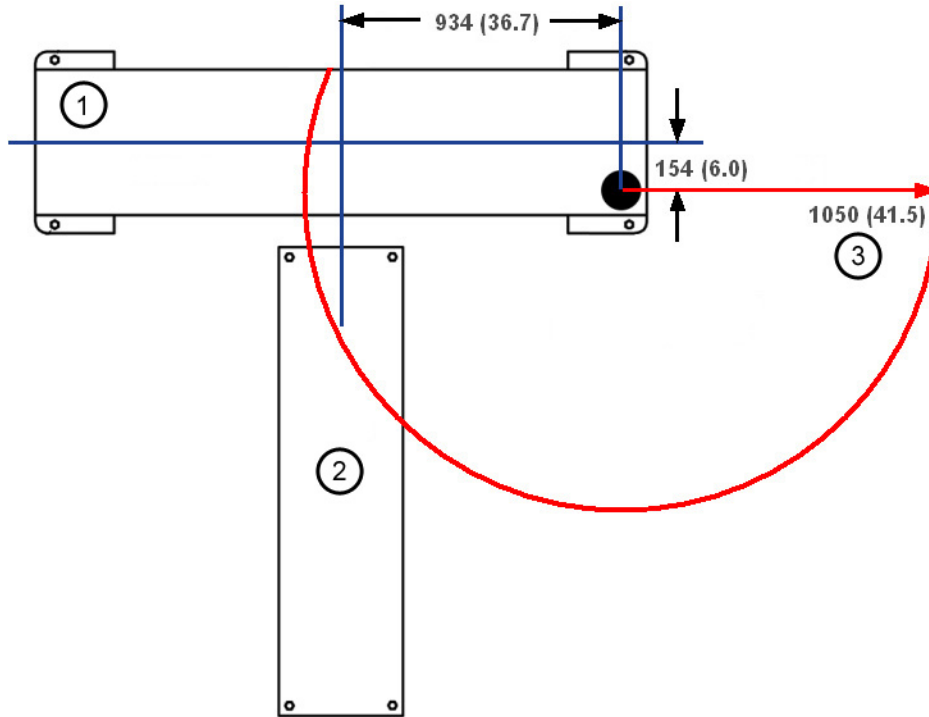
2.3.3.3 Gantry Rear Cover – Removal Clearance

Rear cover removal requires a minimum clearance space, as specified in [Figure 2-25 Typical Scan Suite Layout Configuration on page 54](#). Minimum service clearance space allows the service engineer to move the cover either straight back or off to one side of the table. The rear cover and dollies cannot extend into the service clearance space, even if the system is positioned diagonally.

2.3.4 Gantry Space Requirements

Specifications for Boom Assembly clearance arc are defined in [Figure 2-30 Boom Assembly Clearances on page 63](#). The Boom Assembly is used during Tube and Detector replacement.

Figure 2-30 Boom Assembly Clearances



All dimensions are in millimeters; bracketed dimensions are in inches.

1	CT Gantry
2	Table
3	Clearance radius

2.3.5 PDU Placement Requirements

When positioning the PDU, consider regulatory compliance. Also, refer to the room layout illustrations in [Room Layouts](#).

2.3.6 Scanner Desktop Placement Requirements

2.3.6.1 Scanner Desktop Depth

The site shall maintain a working space at all times, with a minimum depth of 1219 mm (48 in.), extending the full width of the scanner desktop for service activity.

2.3.6.2 Scanner Desktop Operating Space

The console is on wheels. As some service activities require access to the rear of the console, be sure to maintain sufficient space for moving the console to allow rear service access.

2.3.7 PARC4.X Reconstruction Mini Cabinet Placement Requirements

The PARC4.X is on wheels and can be pulled away from the wall for service. Upon completion of service, the PARC4.X shall be placed no closer than 152.4 mm (6.0 in.) on any side near a wall.

On both ends of the PARC4.X, a clearance of 600 mm (23.6 in) is required to open the doors for service. If replacing components inside the PARC4.X, the PARC4.X can be pulled away into an area that has 960 mm (37.7 in) of clearance space.

Do not block upwards exhaust flow and thermostats shall not be in the PARC4.X exhaust.

2.3.8 Chiller Requirements

The Chiller is on wheels and can be pulled away from the wall for service. Chiller water lines must be routed in a separate cable trough than all other system cabling (e.g., data, fiber optic, power, ground). The minimum bend radius for the chiller hoses with insulation is 200 mm (8").

Airflow is critical to optimize performance of the chiller. The back of the unit **MUST** be kept clear and unobstructed for 250 mm. Either of the two sides can be pushed against the wall. The top of the chiller must remain clear. Ensure that the hot air exiting the chiller does not recirculate into the inlet openings. The front of the unit must have a free supply of ambient-temperature air. The chiller hose can run one level above or below the exam room, up to 16 ft (4.9 m) with maximum hose length of 100 ft (30.5 m).

Chiller clearance for service (800 mm from the rear, 600 mm from all other sides) should be met from at least one side and from the rear side. The Chiller is on wheels and should be free to move around so all other sides are accessible if needed.

2.3.9 Service Storage Cabinet Requirements

An optional storage cabinet (B77292CA) is available to store all supplied service equipment. (See [Table 2-5 Storage Cabinet and Equipment on page 64](#) for equipment list.) The storage cabinet should be located in the scan room suite area for easy service access.

A storage cabinet or defined storage space is required to store service equipment purchased with the system. If the optional storage cabinet has not been ordered with the system (See Pre-Install Checklist— Site Planning Requirements) adequate space must be provided to store this equipment. GE Healthcare recommends that the storage of the service equipment be located as close as possible to the scan suite.



NOTE

The service equipment is the property of the customer and shall NOT be removed from the site and/or stored off-site by GE Healthcare personnel.

Table 2-5 Storage Cabinet and Equipment

Item	Size	Weight (total)
Storage Cabinet	61 x 91 x 107 cm (24" D x 36" W x 42" H)	45.3 kg (100 lb) (approximately)
QA Phantom (water filled)	23 x 15 cm (9" x 6")	4.5 kg (10 lb)
Phantom Holder	25 x 25 cm (10" x 10")	3.6 kg (8 lb)
FE Documents & CD/DVD		4.5 kg (10 lb)

Table 2-5 Storage Cabinet and Equipment (Table continued)

Item	Size	Weight (total)
35 CM Poly (Circle)	35 x 8 cm (14" x 3")	6.8 kg (15 lb)
48 CM Poly (Circle)	48 x 8 cm (19" x 3")	11.3 kg (25 lb)
Stool	48 x 48 cm (19" x 19")	1 kg (2 lb)
Blue Tote	81 x 51 x 32 cm (30" x 20" x 17")	2 kg (4 lb)
Install Support Kit (box)	30 x 30 x 38 cm (12" x 12" x 15")	9.1 kg (20 lb)
Tube Hoist Kit	77 x 8 cm and 38 x 15 cm (30" x 3" and 15" x 6")	13.6 kg (30 lb)
Balance Weight Kit	(2 boxes)	33 kg (73 lb)
Spatial Resolution Phantom	23 x 15 x 8 cm (9" x 6" x 3")	
Coolant (Box of 4 containers)	325 x 325 x 381 (12.8" x 12.8" x 15")	15 (34)
Detector Service Tools	Various size hand tools	3 (7)

2.3.10 Verify Site Print

The customer shall ensure all equipment, storage cabinets, countertops, and sinks appear on the site print, in their proper location.

2.4 Anchoring

2.4.1 Anchoring Requirements – Non-Seismic Installation



POTENTIAL FOR PATIENT INJURY!

AN IMPROPERLY SECURED TABLE MAY TIP, DISLODGING THE PATIENT.

PATIENT SAFETY DURING SYSTEM OPERATION REQUIRES PROPER ANCHORING OF SYSTEM COMPONENTS.

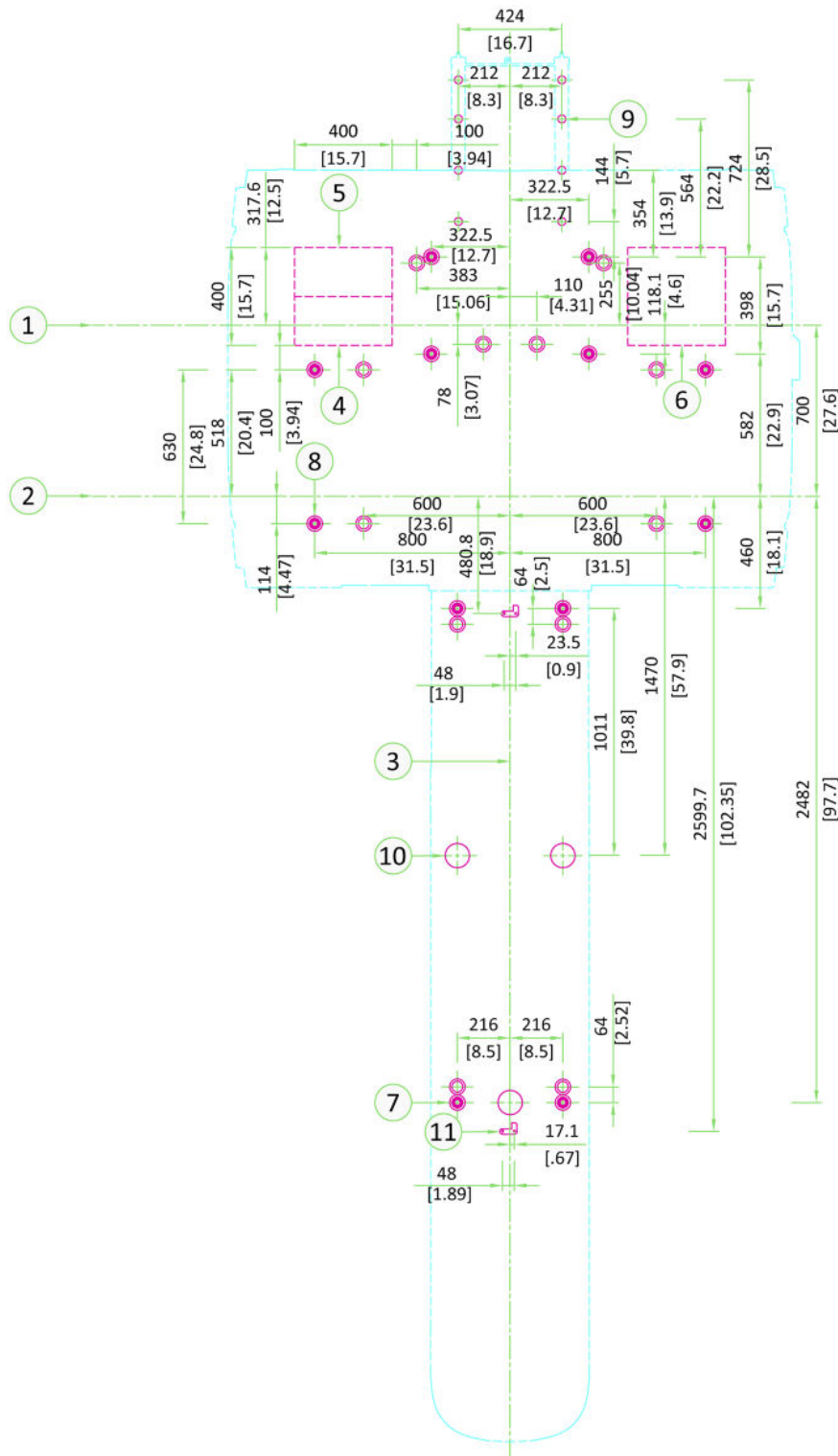
2.4.1.1 CT Gantry, Patient Table, and PET Base Anchoring – Non-Seismic

The CT Gantry, Patient Table, and PET Base shall be securely anchored to the floor [Figure 2-31 Floor Mounting Detail on page 66](#). The Operator Console, Power Distribution Unit, Chiller, UPS, Adjustable Desk and PARC4.X Reconstruction Cabinet do not require anchoring to the floor in a non-seismic installation. Use the floor template (p/n 5867780) to locate the CT Gantry, Patient Table, and PET Base support positions within the scan room, making sure that any anchors that pass through the supports clear all structural beams and interferences in the floor.



It is the responsibility of the buyer/purchaser of the system to have a licensed structural engineer work in conjunction with a qualified contractor to use either the GE-supplied floor anchor hardware or provide an equivalent anchoring system to mount the CT Gantry, Patient Table, and PET Base to the floor.

The buyer/purchaser shall consult a licensed architect, licensed structural engineer or qualified contractor to resolve all anchoring issues.

Figure 2-31 Floor Mounting Detail



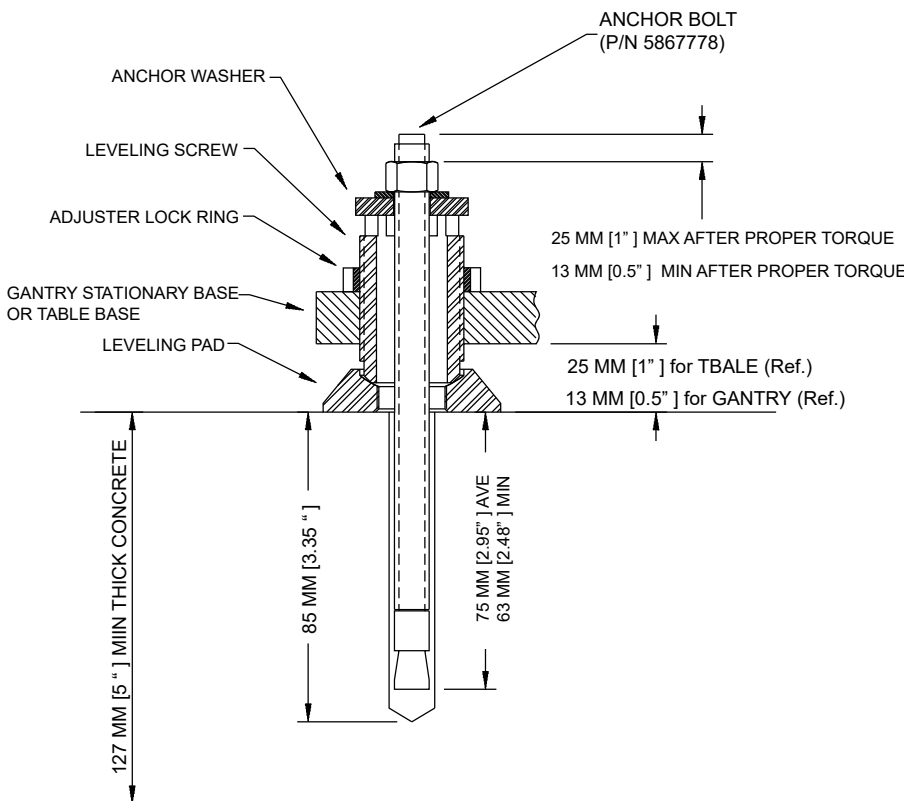
All dimensions are in millimeters; bracketed dimensions are in inches.			
1	PET primary scan plane axis	7	Eight (8) anchoring points for the table
2	CT scan plane axis	8	Sixteen (16) anchoring points for the gantry

3	Longitudinal axis	9	Eight (8) detachable rail leveling pads used only during service
4	Cable access	10	Three (3) adjuster / leveling pads
5	Hose access	11	Two (2) table calibration brackets
6	Secondary cable and hose access		
	Main anchoring points		Backup anchoring points
Patient Table 1047 kg (2308 lbs) including 227 kg (500 lbs) patient.			

2.4.1.2 GE-Supplied Anchors

The GE-supplied anchors for the CT Gantry, Patient Table, and PET Base shall only be used for mounting components to a concrete floor, in a non-seismic application. Refer to [Figure 2-32 PET Gantry and GT Table Anchor Assembly \(P/N 5867778\)](#) on page 67 for anchoring requirements.

Figure 2-32 PET Gantry and GT Table Anchor Assembly (P/N 5867778)



NOTE

CT gantry anchoring shall be done with anchors P/N 5867778-2.

2.4.1.3 Anchor Placement

Each floor anchor shall be installed to clear any structural object hidden or buried in the floor. (Hidden objects could be floor beams, rebar, and concrete wire mesh.)

2.4.1.4 Minimum Number of Anchors

Non-Seismic installations shall use a minimum of four floor anchors to mount the CT Gantry, four floor anchors to mount the Patient Table, four anchors to mount the PET Base. Any anchors showing more than 21 mm (~0.9 in.) of thread above the torqued nut shall require the installation of a second anchor in the closest adjacent mounting location. The second anchor shall meet the same requirements in [Figure 2-32 PET Gantry and GT Table Anchor Assembly \(P/N 5867778\) on page 67](#).

2.4.2 Anchoring Requirements – Seismic Installation

For a seismic installation, the customer shall refer to all applicable state/local laws and building codes. The customer shall consult with a structural engineer, site contractor, or architect for seismic installation requirements pertaining to all scanner components/sub-systems. The customer can also contact a GEHC Project Manager to obtain additional seismic calculations and information.

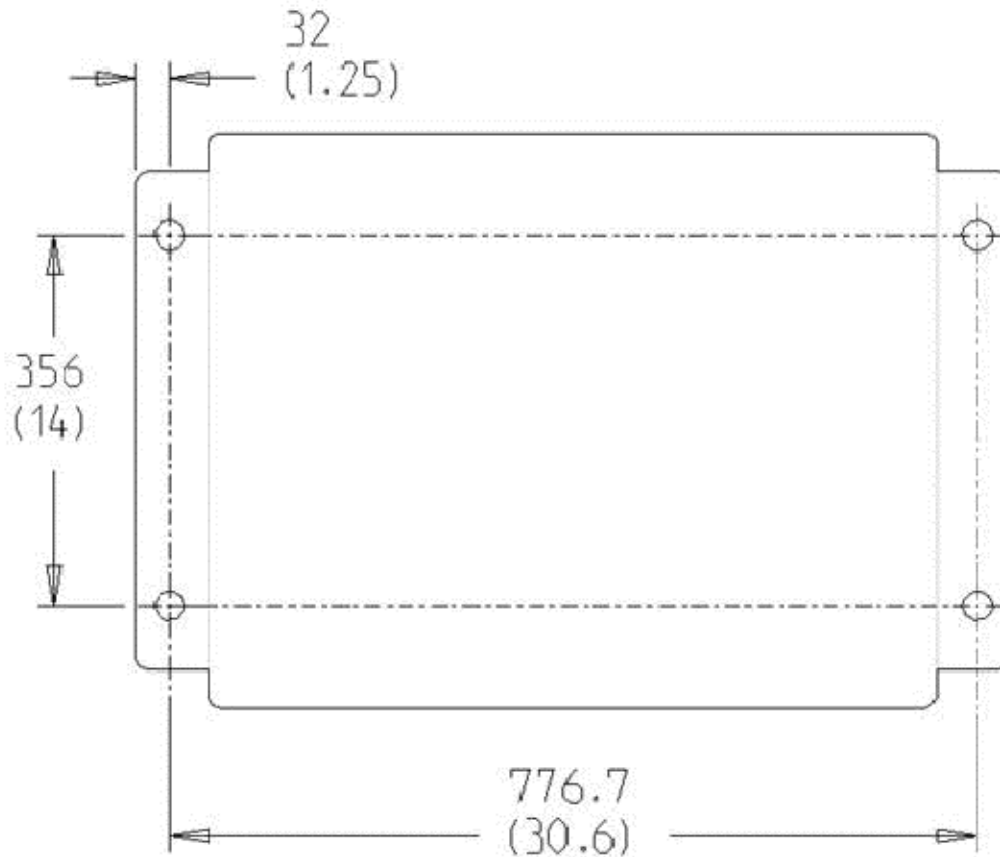
Seismic anchoring is considered to be an alternate anchoring method. An alternative installation plan that meets all required seismic codes for the region the product is located in, should be developed for sites requiring seismic installations. Development of this plan is the responsibility of the customer. Generally, this requires the customer to contract the services of a Structural Engineering firm to develop the seismic anchoring plan prior to install. The alternative seismic installation plan should be executed at time of installation in place of the existing anchoring method defined in the product install manual. This plan must be retained by the customer, since it must be reviewed by service personnel at time of de-installation.

Use of seismic anchoring kit (P3000MK) designed by GE Healthcare will result in an EASE compliant installation. The kit provided by GE Healthcare is designed for anchors that are 5/8 inch (15.9 mm) in diameter. Anchors of this size are not provided by GE Healthcare. The type and length of the anchor must be defined in the alternative seismic anchoring plan and purchased separately by the customer.

The existing 1/2 inch anchors provided by GE Healthcare shall be discarded and NOT used for Seismic installations.

2.4.2.1 PDU

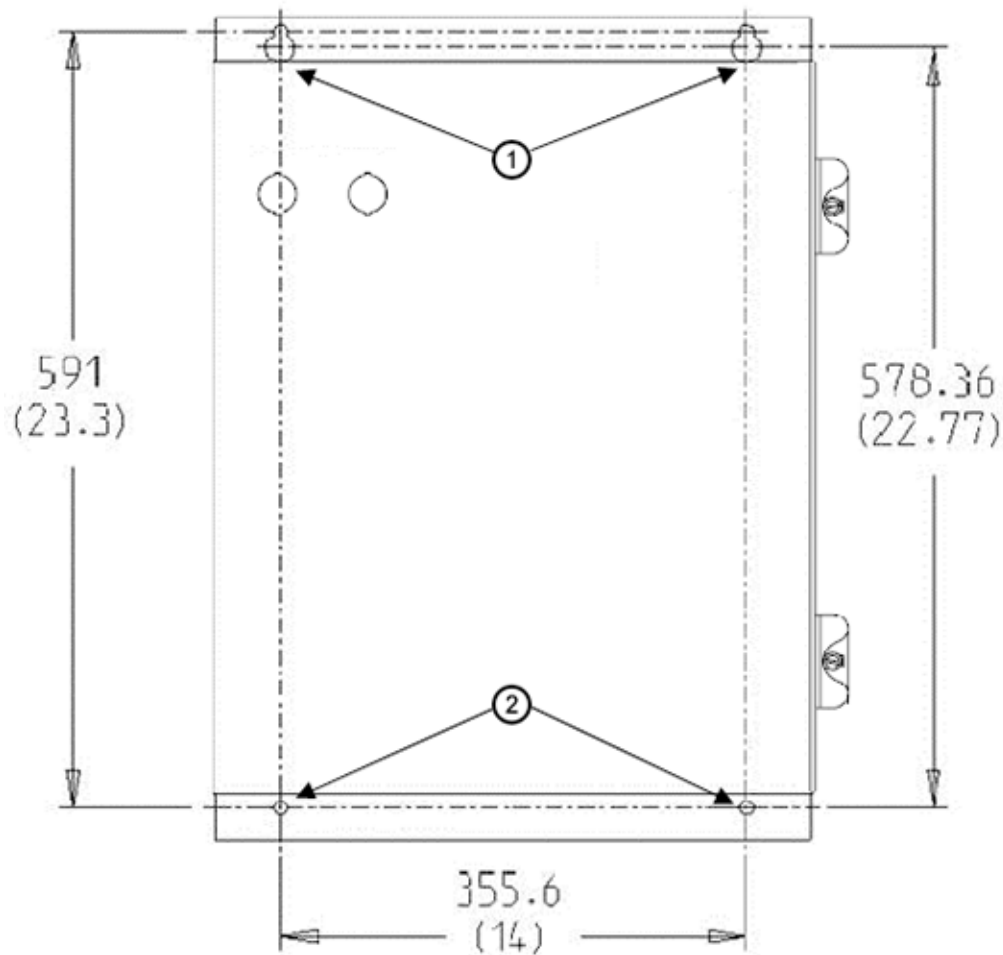
If site specifications require seismic mounting, use the seismic brackets shipped with the PDU. Refer to [Figure 2-33 Seismic PDU Mounting Hole Locations on page 69](#) for hole locations to mount the PDU so it can be easily removed for service.

Figure 2-33 Seismic PDU Mounting Hole Locations

All dimensions are in millimeters; bracketed dimensions are in inches.
Seismic floor mounting holes (4); 15 mm (0.6 in.)
Refer to Figure 2-17 Power Distribution Unit (PDU) Center-of-Gravity on page 48 for additional views.

2.4.2.2 Chiller Power Distribution Box (PDB)

If site specifications require seismic mounting, refer to [Figure 2-34 Seismic PDB Chiller Mounting Hole Locations](#) on page 70 for Chiller PDB hole locations.

Figure 2-34 Seismic PDB Chiller Mounting Hole Locations

All dimensions are in millimeters; bracketed dimensions are in inches.

1	Top mounting key holes
2	Bottom mounting 10mm holes

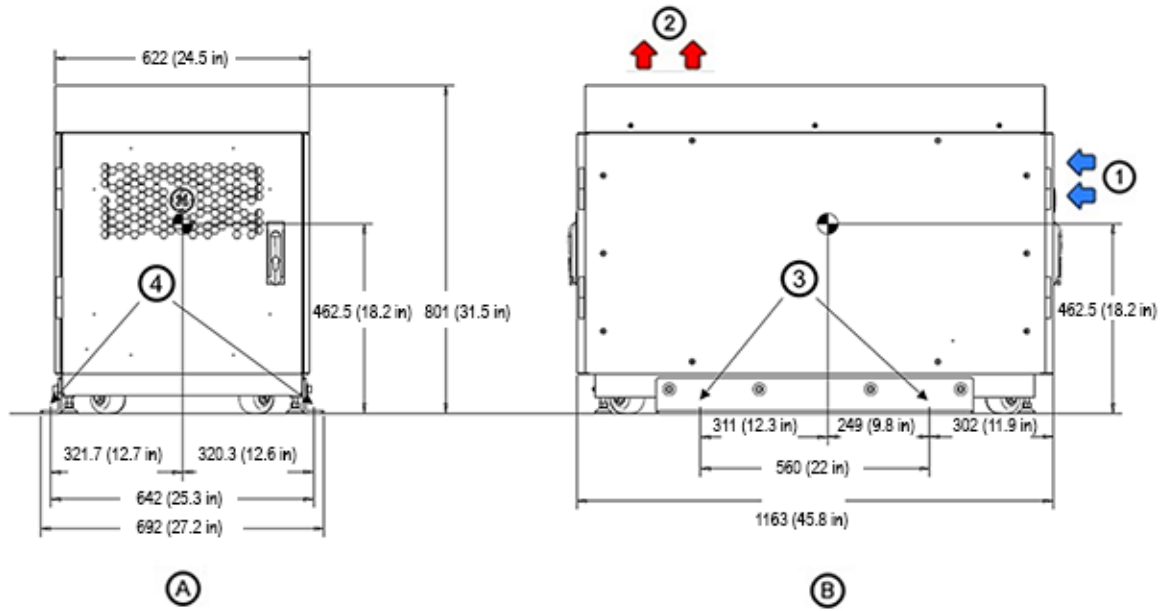
**NOTE**

8mm hardware can be used to mount the Chiller PDB.

2.4.2.3 PARC4.X

If site specifications require seismic mounting, use the Mini Cabinet seismic hardware kit (P/N: B7919WP). This seismic kit (P/N: B7919WP) must be ordered separately. Refer to [Figure 2-35 Seismic PARC4.X Mounting Hole Locations on page 71](#) for hole locations to mount the PARC4.X so it can be easily removed for service.

Figure 2-35 Seismic PARC4.X Mounting Hole Locations



All dimensions are in millimeters; bracketed dimensions are in inches.	
A	Front View
B	Side View
1	Air in (front of cabinet)
2	Air out (top of cabinet)
3	Seismic bracket mounting holes (Total: 4); 16 mm (0.63 in.)
4	Seismic bracket mounting holes (Total: 4); 16 mm (0.63 in.)

2.4.2.4 Operator Console

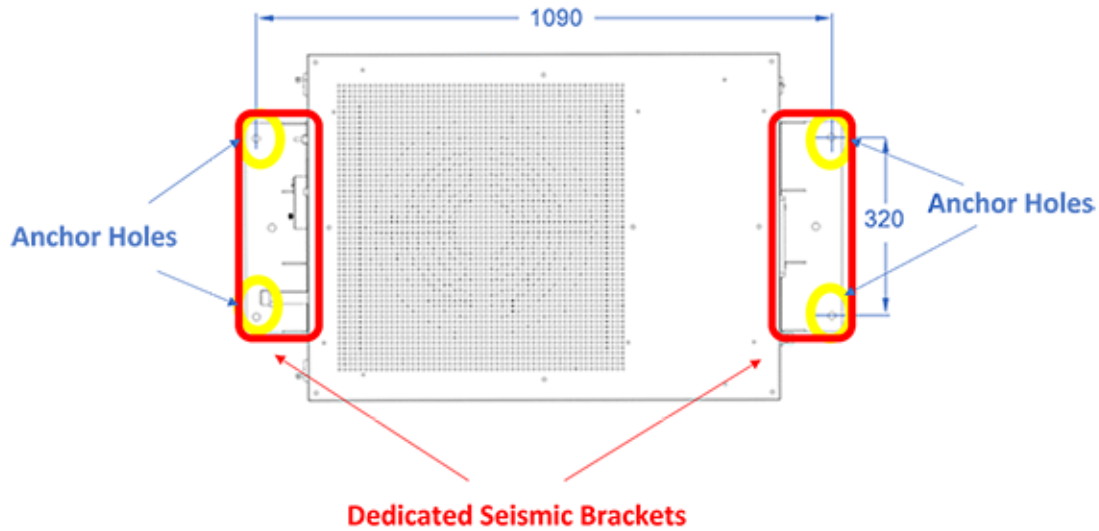
If site specifications require seismic mounting, use the seismic brackets shipped with the console (5812703-2), and seismic anchoring kit (P3000MK). Refer to [Figure 2-19 Operator Console Computer Center-of-Gravity \(Z8G4\) on page 49](#) and [Figure 2-20 Operator Console Computer Center-of-Gravity \(Open Console\) on page 50 \(C\)](#) for hole locations to mount the Operator Console so it can be easily removed for service.

2.4.2.5 Workspace Table

If site specifications require seismic mounting, use the seismic brackets shipped with the system. Refer to [Figure 2-21 Workspace Table \(5486188-10\) Center-of-Gravity on page 51 \(A\)\(B\)](#) for hole locations to mount the Workspace Table so it can be easily removed for service.

2.4.2.6 Chiller

If site specifications require seismic mounting, use the seismic brackets shipped with the chiller (attached to the chiller's pallet). Refer to [Figure 2-36 Seismic Chiller Mounting - Top View on page 72](#) and the latest version of 5927295-1EN (Omni Legend PET/CT Seismic Kit Installation Instructions) in SIMS Content Viewer.

Figure 2-36 Seismic Chiller Mounting - Top View

2.4.2.7 UPS

If site specifications require seismic mounting, use the seismic brackets shipped separately with the UPS (E4502YA). Refer to [Figure 2-23 Uninterruptible Power Supply \(UPS\) Center-of-Gravity \(Optional\) on page 52 \(B\)](#) for hole locations to mount the UPS so it can be easily removed for service.

Chapter 3 Special Construction Requirements

3.1 Radiation Protection

3.1.1 X-Ray Radiation Protection

3.1.1.1 Shielding Requirements

A qualified radiological health physicist shall verify the scan room radiation barrier is properly designed and installed, taking into consideration:

- Scatter radiation levels within the scanning room (see [Figure 3-1 Typical Scatter Survey \(Body Filter\) on page 74](#) and [Figure 3-2 Typical Scatter Survey \(Body Filter\) on page 75](#))
- Equipment placement
- Weekly projected workloads (# patient/day technique (kvp*ma))
- Materials used for construction of walls, floors, ceiling, doors, and windows
- Activities in surrounding scan room areas
- Equipment in surrounding scan room areas (such as film developer, film storage)
- Room size and equipment placement within the room relative to room size

The illustrations in this Chapter depict measured radiation levels within the scanning room, while scanning a 32 cm CTDI phantom with the technique shown. Use the mAs, kV and aperture scaling factors shown in [Table 3-1 Shielding Requirements Scaling on page 73](#) to adjust exposure levels to the scan technique used at the site.

Example (from [Figure 3-1 Typical Scatter Survey \(Body Filter\) on page 74](#)): The exposure level for a 120 kV, 800 mA, 1 sec. scan at 1270 mm (50 in.) away from the scan plane is: $10.4 \mu\text{Gy} \times 0.71 \times 800/100 = 59.2 \mu\text{Gy}$.



NOTE

Actual measurements can vary. Expected deviation equals $\pm 15\%$, except for the 5 mA and 1 mm techniques, where variation may be greater (up to a factor of 2), due to the inherent deviation in small values. The maximum deviation anticipated for tube output equals $\pm 40\%$.

Table 3-1 Shielding Requirements Scaling

Changed Parameter	Multiplication Factor	Changed Parameter	Multiplication Factor
mAs	new mAs/100	1 mm aperture	0.20
80 kV	0.24	3 mm aperture	0.22
100 kV	0.45	5 mm aperture	0.27
120 kV	0.71	10 mm aperture	0.38
140 kV	1.00	15 mm aperture	0.48

Table 3-1 Shielding Requirements Scaling (Table continued)

Changed Parameter	Multiplication Factor	Changed Parameter	Multiplication Factor
		20 mm aperture	0.59
		30 mm aperture	0.79
		40 mm aperture	1.00

NOTICE

This publication uses μGy (micrograys) to measure radiation levels. The conversion factor from mR to μGy (micrograys) is: $1 \text{ mR} = 8.69 \mu\text{Gy}$.

3.1.1.2 System X-ray Scatter Envelope

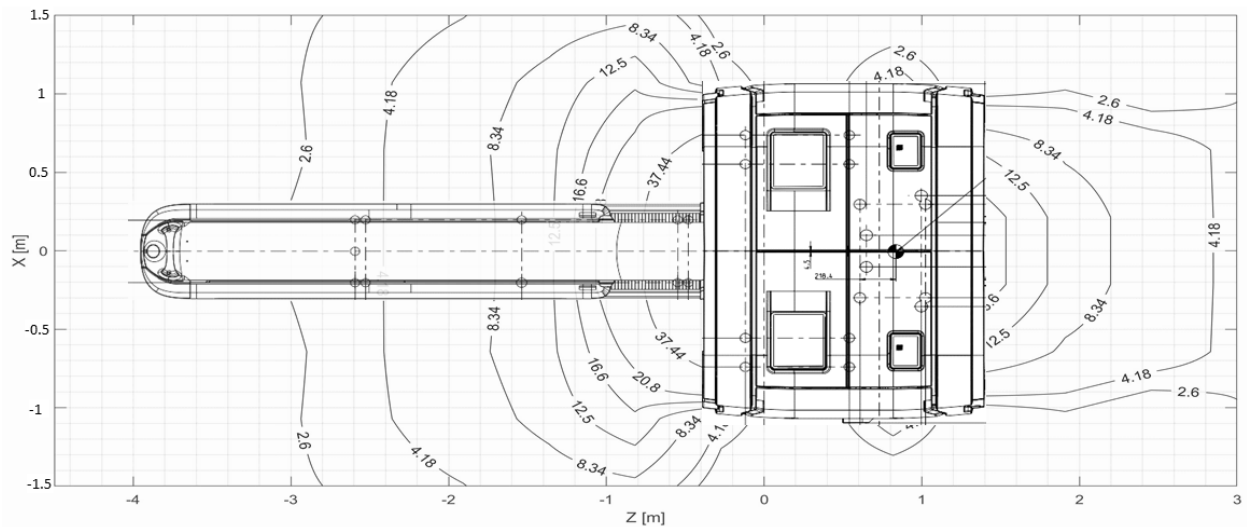
The following figures depict the iso-contour dose levels in $\mu\text{Gy}/\text{sec}$ within the system room using the Body Phantom.



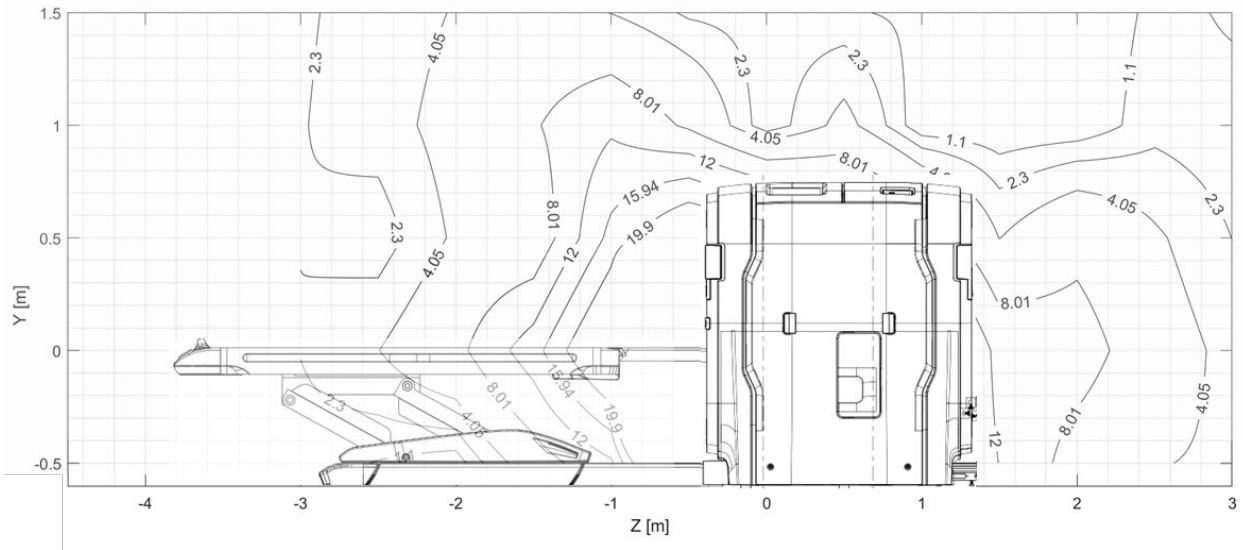
NOTE

The 32 cm CTDI Phantom should be placed on the patient table.

Figure 3-1 Typical Scatter Survey (Body Filter)



Stray Radiation in $Y=0$ with Body Phantom; Scan Technique: 140 kV, 100 mA, 1 sec, 40 mm, Body Filter

Figure 3-2 Typical Scatter Survey (Body Filter)

Stray Radiation in X=0 with Body Phantom; Scan Technique: 140 kV, 100 mA, 1 sec, 40 mm, Body Filter

3.1.2 Gamma Ray Protection

A number of radioactive substances, of various levels of stability are used by the PET unit of the PET/CT system. This material is necessary in imaging procedures. Before the suite is operational, unstable material may be on the premises. It is very important to recognize that clear and significant hazards from ionizing radiation may exist at the site, as it is undergoing preparation. Other equipment may be in place and operational at this time. This may include such equipment as X-ray systems and CT scanners (other than the CT Gantry within the PET/CT system). Calibration source may be on the site at some time during the preparation process, as well as after the PET imager has been put into operation. A cyclotron may be operational at the site. Definite steps should be taken to ensure the safety of workers, patients, and visitors, during all phases of the construction, installation and operation of the facility.



NOTE

By the time the site is ready to have radioactive material brought in, the licensing process must be complete. The site must be properly licensed before receiving radioactive material.

3.1.2.1 Protection of Equipment

It is important that background radiation be kept to a minimum. The coincidence detection used in a PET system allows a moderate amount of external singles events. The PET/CT system has been found to have less than 1% deadtime if the external field is below 1 mR/hr from a single source. Because area background can be more general than a single source, a lower limit is appropriate. If the area dose rate is maintained to less than 0.2 mR/hr (due to 511 or lower energy gamma rays) at the covers, detector deadtime should not exceed 1%.

Radioactive sources must be stored in approved shielded containers or be stored in a separate room (hot lab) adjacent to, and accessible from, the Scan Room. This hot lab should be near the cyclotron (if used). Doses should be prepared in the same area.

Some procedures involve the use of radioactive water. This will result in the patient exhaling radioactive carbon dioxide. This carbon dioxide must be contained in order to avoid adversely affecting the image quality. Some PET procedures require the use of radioactive gases. This too can result in compromising image quality if not properly controlled.

3.1.2.2 Protection of Personnel

The escape of radioactive gases, if not properly confined, can cause unnecessary exposure to clinical staff. All sources must be properly stored in appropriate enclosures to provide adequate protection to all in the suite.

3.1.2.3 Barriers, Partitions and Shielding

Appropriate barriers such as walls, lead-shielded glass, lead shields etc. must be installed to protect staff from unnecessary exposure to radiation. A qualified radiological health physicist must be consulted in the design of walls and safety barriers to assure proper attenuation.

Keep in mind that patients become significant sources of radioactivity. Consideration should be given to maximize the distance between the patient and operator during the uptake and acquisition phases of scan procedures.

3.1.2.4 External Sources of Radiation

A number of common radio nuclides are used in the PET/CT system. These radio nuclides are either produced at the site or brought to the site from an outside source. In either case, these nuclides have relatively short half-life (2 min. to 110 min.) and as such decay to benign levels fairly quickly. Typical positron emitting isotopes include: Carbon-11, Nitrogen-13, Oxygen-15, and Fluorine-18.

3.1.2.5 PET Alignment (VQC) Phantom (E8008P)

The PET Alignment (VQC) phantom is used during the Check Image Alignment procedure. This special phantom contains spheres (commonly referred to as “marbles”). The five (5) small spheres embedded in the phantom are a source of very low radiation (0.7 MBq Germanium-68 per sphere; total 3.5 MBq for p/n 5308767 phantom). The average life of the phantom is 2.5 to 4.0 years. Individuals using this phantom must be trained to handle radioactive materials as well as maintain proper source handling procedures while handling the phantom. This may include local site-specific procedures for the safe handling of radioactive material.

3.1.2.6 PET Annulus Phantom (E8008PV)

The PET Annulus phantom (DQA Phantom) is used for the Daily Quality Assurance (DQA) procedure. The Annulus Phantom is made of ABS plastic and filled with Epoxy Ge-68 radioactive resin material (nominal activity 55.0 MBq ($\pm 10\%$)). Individuals using this phantom must be trained to handle radioactive materials as well as maintain proper source handling procedures while handling the phantom. This may include local site specific procedures for the safe handling of radioactive material.

3.2 Electromagnetic Interference (EMI) Consideration

3.2.1 Electromagnetic Interference (EMI) System Placement

If you know of, or suspect, the presence of excessive electromagnetic interference (EMI), consult your GE Healthcare PM or GE Sales and Service for recommendations to reduce EMI fields. Consider the following to reduce EMI:

- EMI field strength decreases rapidly with distance from the source of the electromagnetic field.
- EMI from a three-phase transformer is much less than a bank of three single-phase transformers of equivalent power.
- Large electric motors are a substantial source of EMI.
- High-powered radio signals are a source of EMI.
- Maintain good shielding of cables and electronic cabinets.
- Consider and measure EMI where the facility power is running near the scan room.
- Pay attention to power substations and high-voltage power lines near the scan facility.
- If you have any concerns, measure for all EMI to confirm the site meets all required specifications.

3.2.1.1 EMI – Gantry

The gantry shall be located in an area where the ambient static magnetic field is less than $10E-4$ tesla (1000 milligauss) and the ambient AC magnetic field is less than $10E-6$ tesla (10 milligauss); otherwise, EMI will affect the image quality of the scanner.

3.2.1.2 EMI – PDU

The gantry, sensitive electronics (i.e. PARC4.X) or patient table shall not be placed within 0.3 meters (12 in.) of the power distribution unit.

3.2.1.3 EMI – PARC4.X/Scanner Desktop/Computer Equipment

The PARC4.X, scanner desktop, and its associated computer equipment shall be located in an area where the ambient static magnetic field is less than $10E-3$ tesla (10,000 milligauss).

3.2.1.4 Electromagnetic Immunity

The system is intended for use in the electromagnetic environment specified in [Table 3-2 Electromagnetic Immunity on page 77](#). The customer, or the user of the system, shall ensure the system is used in such an environment.

Table 3-2 Electromagnetic Immunity

Immunity Test	EC 60601-1-2 Test Level	Compliance Level	Electromagnetic Environment Guidance
Electrostatic discharge (ESD) IEC 61000-4-2	± 8 kV air ±15 kV air	±8 kV contact ±15 kV air	Floors should be wood, concrete, or ceramic tile. If floors are covered with synthetic material, the relative humidity should be at least 30%.

Table 3-2 Electromagnetic Immunity (Table continued)



Immunity Test	EC 60601-1-2 Test Level	Compliance Level	Electromagnetic Environment Guidance
Electrical fast transient/burst IEC 61000-4-4	± 2 kV for power supply lines 100Khz rate ± 1 kV for input/output lines 100Khz rate	±2 kV for power supply lines, 100Khz rate ±1 kV for input/output lines, 100Khz rate	Mains power quality should be a typical commercial or hospital environment.
Surge IEC 61000-4-5	±1 kV line-line ±2 kV line-earth	±1 kV line-line ±2 kV line-earth	Mains power quality should be a typical commercial or hospital environment.
Voltage dips, short interruptions and voltage variations on power supply input lines IEC 61000-4-11	0% UT for 5 sec	0% UT for 5 sec	Mains power quality should be a typical commercial or hospital environment. If the user of the system requires continued operation during power mains interruptions, it is recommended that the system is powered from an uninterruptible power supply or a battery.
Power frequency (50/60 Hz) magnetic field IEC 61000-4-8	30 A/m	30 A/m	Power frequency magnetic fields should be at levels characteristic of a typical location in a typical commercial or hospital environment.
 NOTE UT equals the alternating current mains voltage prior to application of the test level.			
Conducted RF IEC 61000-4-6	6Vrms in ISM bands 150 kHz to 80 Mhz	6 Vrms in ISM bands 150 kHz to 80 Mhz	<p>Do not use portable and mobile RF communications equipment closer to any part of the system, including cables, than the recommended separation distance (d) calculated from the equation appropriate for the frequency of the transmitter.</p> <p>Recommended Separation Distance (d):</p> $d = \left[\frac{3.5}{3} \right] \sqrt{P}$ <p>See Table 3-4 Recommended Separation Distances on page 80 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,^a should be less than the compliance level in each frequency range.^b Interference may occur in the vicinity of equipment marked with the following symbol:</p> 
Radiated fields in close proximity IEC 61000-4-39	65 A/m at 134.2 kHz (PM 2.1 kHz 50%) 7.5 A/m at 13.56 MHz (PM 50 kHz 50%)	65 A/m at 134.2 kHz (PM 2.1 kHz 50%) 7.5 A/m at 13.56 MHz (PM 50 kHz 50%)	Close proximity radiated fields should be at levels characteristic of a typical location in a professional healthcare facility environment

Table 3-2 Electromagnetic Immunity (Table continued)


Immunity Test	EC 60601-1-2 Test Level	Compliance Level	Electromagnetic Environment Guidance
Radiated RF Fields / Proximity Fields from Wireless Transmitters IEC 61000-4-3	3 V/m 80 MHz to 2.7 GHz 80% AM 1 kHz 9V/m to 28 V/m spot frequencies 385/450/710 /745/ 780/810 /870/930/ 1720/1845/1970 / 2450/5240/5500 / 5785 MHz PM 18 Hz or 217 Hz (50% duty cycle) see Table 3-4 Recommended Separation Distances on page 80 for more details.	3 V/m 80 MHz – 2.7 GHz 80% AM 1 kHz 9 V/m to 28 V/m spot frequencies 385/450/710/745/7 80/ 810/870/930/1720/ 1845 / 1970/2450/5240/5 500/ 5785 MHz PM 18 Hz or 217 Hz (50% duty cycle) see Table 3-4 Recommended Separation Distances on page 80 for more details.	Do not use portable and mobile RF communications equipment closer to any part of the system, including cables, than the recommended separation distance (d) calculated from the equation appropriate for the frequency of the transmitter. Recommended Separation Distance (d) $d = \left[\frac{3.5}{3} \right] \sqrt{P}$: (800 MHz to 2.7 GHz) $d = \left[\frac{7}{3} \right] \sqrt{P}$ Refer to Table 3-4 Recommended Separation Distances on page 80 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, ^a should be less than the compliance level in each frequency range. ^b Interference may occur in the vicinity of equipment marked with the following symbol: 
<p>^a Field strengths from fixed transmitters, such as base stations for radio (cellular/cordless) telephones and land mobile radios, amateur radio, AM and FM radio broadcast, and TV broadcast cannot be predicted theoretically with accuracy. To assess the electromagnetic environment due to fixed RF transmitters, an electromagnetic site survey should be considered. If the measured field strength in the location in which the system is used exceeds the applicable RF compliance level above, the system should be observed to verify normal operation. If abnormal performance is observed, additional measures may be necessary, such as reorienting or relocating the system.</p> <p>^b Over the frequency range 150 kHz to 80 MHz, field strengths should be less than 3 V/m.</p>			

Table 3-3 Spot Frequencies

Spot Frequency (Mhz)	Band (Mhz)	Service	Maximum Power (Watts)
385	380-390	TETRA 400	1,8
450	430-470	GMRS 460 FRS 460	2,0
710	704-787	LTE Band 13, 17	2
745			
780			
810	800-960	GSM 800/900 TETRA 800 IDEN 820 CDMA 850	2
870			

Table 3-3 Spot Frequencies (Table continued)

Spot Frequency (Mhz)	Band (Mhz)	Service	Maximum Power (Watts)
930		LTE Band 5	
1720	1700-1990	GSM 1800	2
1845		CDMA 1900	
1970		GSM 1900	
		DECT LTE Band 1, 3, 4, 25 UTMS	
2450	2400-2570	Bluetooth WLAN 802.11 b/g/n RFID 2450 LTE Band 7	2
5240	5100-5800	WLAN 802.11 a/n	0,2
5300			
5785			

3.2.1.5 Electromagnetic Separation Distance

Maintain the electromagnetic separation distance as described in [Table 3-4 Recommended Separation Distances](#) on page 80 (between 150K to 2.7G Hz).

Table 3-4 Recommended Separation Distances

Rated Maximum Output Power (P) of Transmitter Watts (W)	Separation Distance (Meters) by Frequency of Transmitter		
	150 kHz to 80 MHz $d = \left[\frac{3.5}{3}\right]\sqrt{P}$	80 MHz to 800 MHz $d = \left[\frac{3.5}{3}\right]\sqrt{P}$	800 MHz to 2.7 GHz $d = \left[\frac{7}{3}\right]\sqrt{P}$
0.01	0.12	0.12	0.23
0.1	0.37	0.37	0.74
1	1.17	1.17	2.33
10	3.69	3.69	7.38
100	11.7	11.7	23.3

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

**NOTE**

At 80 MHz to 800 MHz, the separation distance for the higher frequency range applies.

**NOTE**

These guidelines may not apply in all situations. Electromagnetic propagation is affected by absorption and reflection from structures, objects, and people.

As an example, keep a 1 W mobile phone (800 MHz to 2.7 GHz carrier frequency) at least 2.3 m from the PET/CT system (to avoid image interference risks).

Limitations Management:

Adhering to the distance separation recommended in (150 KHz to 2.7 GHz) reduces disturbances recorded at the image level, but may not eliminate all disturbances. However, when installed and operated as specified, the system maintains its essential performance by continuing to acquire, display, and store diagnostic quality images safely.

3.2.1.6 Cable Shielding and Grounding

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

GE Healthcare is not responsible for any interference caused by using other than recommended interconnect cables or panels, or by unauthorized changes or modifications to this equipment.

Unauthorized changes or modifications could void the users' authority to operate the equipment.

3.2.2 Electromagnetic Emission

This equipment complies with IEC 60601-1-2:2014 + AMD1:2020 (Edition 4.1) EMC standard for medical devices.

**NOTE**

This system complies with the EMC standard when used with supplied cables. If cables of different lengths are required, contact your PM. Cables cannot be cut, shortened, lengthened, or spliced.

The system is suitable to be used in an electromagnetic environment, in compliance with the limits and recommendations provided in [Table 3-5 Electromagnetic Compliance on page 81](#).

Table 3-5 Electromagnetic Compliance

Emissions Test	Compliance	Electromagnetic Environment Guidance
RF emissions CISPR 11	Group 1	The system uses RF energy only for its internal function. Therefore, its RF emissions are very low and not likely to cause interference in nearby electronic equipment.
RF emissions CISPR 11	Class A	When installed in such a shielded location, the scanner 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	N/A	The system 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 fluctuation/ flicker emissions IEC 61000-3-3	N/A	The system 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.

3.3 Vibration Isolation

3.3.1 Scanning Facility Vibration Isolation

The scanning facility shall be isolated from vibration such as; hospital power plants, pumps, motors, air handling equipment, air conditioning units, nearby rooms with exercise equipment or where exercise occurs, hallway foot traffic, elevators, parking lots, roads, subways, trains, and heliports; otherwise, vibration will affect the image quality of the scanner.

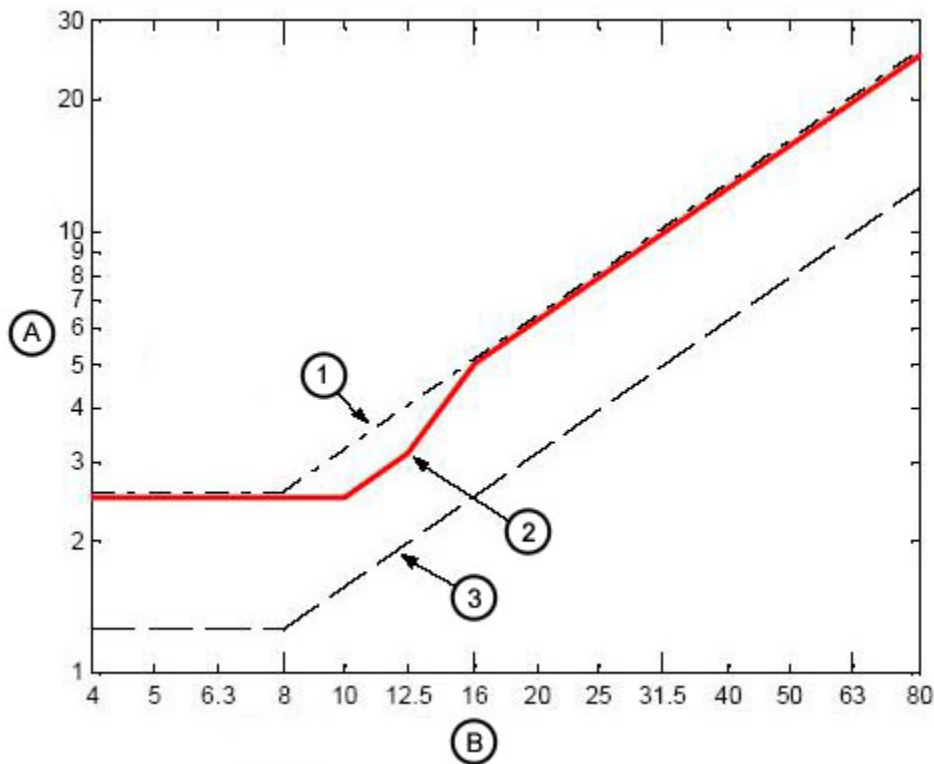
3.3.2 Frequency/Vibration Range

PET/CT systems are sensitive to vibration and may display limited performance if exceeding the vibration limits listed below. The band of frequencies in which systems exhibit the most sensitivity appears at or near the resonant frequencies of the gantry and the patient table, the latter of which varies depending on patient mass and location. These frequencies fall within the following ranges:

- Patient Table: 2 – 10 Hz
- Gantry: 8 – 14 Hz

Floor vibration from any source shall not exceed the levels detailed in [Figure 3-3 Allowable floor vibration in acceleration units compared to ISO class A and B limits on page 82](#) and [Figure 3-4 Allowable floor vibration in velocity units compared to ISO class A and B limits on page 83](#), as represented by the solid line labeled CT Scanner/Table. These illustrations compare this limit to the limits of what the AISC (American Institute of Steel Construction) and the ISO (International Organization for Standardization) call Class A (VC-A) and Class B (VC-B).

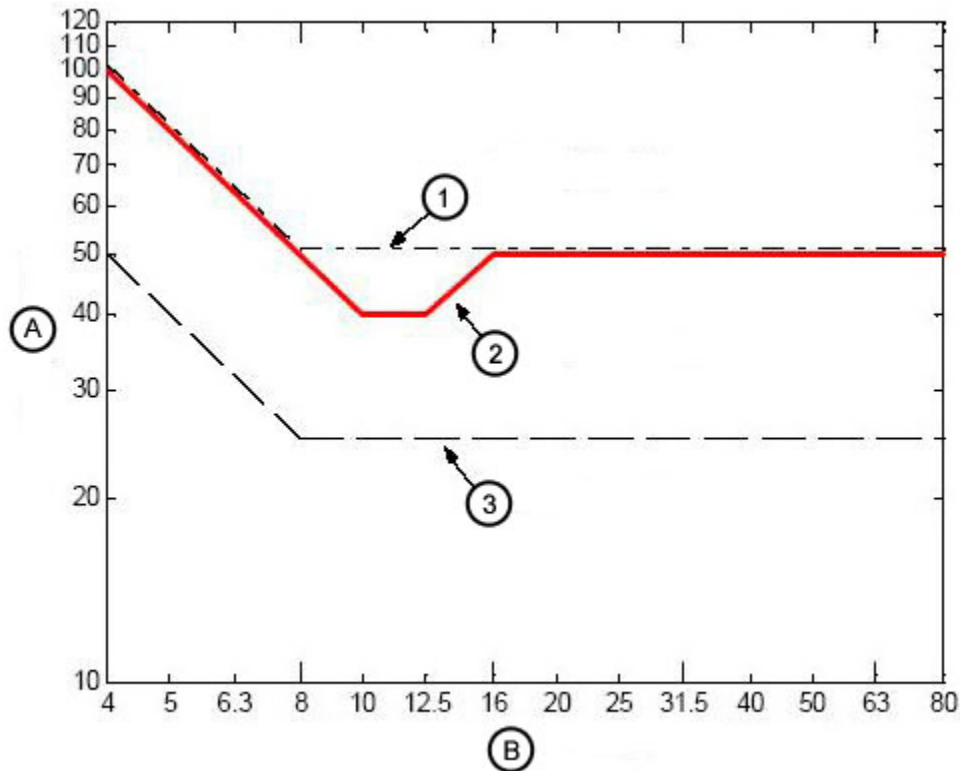
Figure 3-3 Allowable floor vibration in acceleration units compared to ISO class A and B limits



A	Acceleration [mm/s ² , rms]	Frequency [Hz]	Acceleration [mm/s ² , rms]
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B	One-Third-Octave Band Center Frequency [Hz]	4	2.5
1	VC-A (50 μm/s)	10	2.5
2	CT Scanner/Table	12.5	3.1
3	VC-B (25 μm/s)	16	5
		80	25

Figure 3-4 Allowable floor vibration in velocity units compared to ISO class A and B limits



A	Velocity [μm/s, rms]	Frequency [Hz]	Velocity [um/s, rms]
B	One-Third-Octave Band Center Frequency [Hz]	4	100
1	VC-A (50 μm/s)	10	40
2	CT Scanner/Table	12.5	40
3	VC-B (25 μm/s)	16	50
		80	50

3.4 Other Construction Considerations

3.4.1 Patient Viewing Window Dimensions

The recommended patient viewing window is: 1219 mm wide x 1067 mm high (48 in. x 42 in.).

3.4.2 Support Structure Installation

Approved steelwork or equivalent support structure for mounting equipment to walls, ceilings, and floors shall be installed prior to the system installation.

3.4.3 Chemical Contamination Concerns



WARNING

THE SILVER, COPPER, GOLD FILMS USED IN THE CT SYSTEM ARE ESPECIALLY SENSITIVE TO CHEMICAL CONTAMINATION.

the presence of sulfide, chloride and nitrate contaminants (with Sulfur being the most damaging), can damage the ct system.

If high levels of contaminants exist, consider installing an appropriate air filtration system.

The scanner shall not be installed in the same room with a wet film processor. Certain scanner components could become contaminated by the chemicals contained in the processor.

Ensure any sulfide, chloride, or nitrate contaminate levels are at acceptable levels (Class 1). See IEC 60654-4 for air quality guidelines.

3.4.4 Finished Wall Requirement

3.4.4.1 Wall Paint

The scan and control room walls shall be painted prior to the system installation.

3.4.4.2 Wall Paint - Exception

A primer coat of paint is acceptable for system installation. After the system is installed, any final coats of paint shall be applied by brush. Spray painting is not permitted as it can seriously damage CT system components.

NOTE

Spray painting is not permitted. Spray painting can seriously damage CT system components.

3.4.5 Option Requirements

3.4.5.1 Non-GE Installed Options

Buyer/purchaser shall confirm all non-GE installed options have been reviewed and final locations determined. Prior to system installation, the buyer/purchaser shall be responsible for pre-installing all ceiling mounting plates/pedestals for non-GE installed options prior to system delivery.

3.4.5.2 GE Options

Buyer/purchaser shall confirm all GE-installed options have been reviewed and final locations determined.

3.4.5.3 Options Power and Control Cables

Buyer/purchaser shall install all power source/connections and all control cables for all options prior to system delivery.

Chapter 4 Environmental Requirements (HVAC)

4.1 HVAC Requirements

4.1.1 Temperature and Humidity

Ensure the site provides an HVAC system capable of maintaining the temperature and humidity requirements as specified in [Table 4-1 System Temperature Limits on page 86](#) and [Table 4-2 Humidity \(Scan and Control Rooms\) on page 86](#). The environmental conditions at the site shall be maintained at all times (including overnight, weekends, and holidays). Environmental conditions apply to the Table, Gantry, Power Distribution Unit, PARC4.X, Chiller (including PDB) and scanner desktop. Consider patient comfort needs when designing or modifying the HVAC system for the scan suite. To prevent cold air from venting onto patients, position air supply ducts in exam room so they do not discharge onto the patient Table. Position ducts over Gantry and Chiller.

To verify the environmental conditions of the site are met, the temperature and humidity of the installation site shall be recorded before and after system installation. Any necessary changes shall be made to maintain the proper environmental conditions.



NOTE

Exceeding the environmental specifications may adversely affect system operation and image quality.

Table 4-1 System Temperature Limits

Altitude	Up to 2400 m	Up to 3000 m	Up to 4000 m
Maximum rate of change in temperature shall be no greater than:	3°C (5.4°F) per hour	3°C (5.4°F) per hour	3°C (5.4°F) per hour
Maximum allowable ambient room temperature:	26°C (79°F)	25°C (77°F)	23°C (73.4°F)
Recommended ambient room temperature:	22°C (72°F)	22°C (72°F)	22°C (72°F)
Minimum allowable ambient room temperature:	18°C (64°F)	18°C (64°F)	18°C (64°F)



NOTE

Be certain to account for ANY cooling equipment cycle-control range, ensuring that the maximum and minimum ambient room temperatures do not exceed those shown in [Table 4-1 System Temperature Limits on page 86](#) during room thermal cycling. For example, if the HVAC is capable of $\pm 2^\circ\text{C}$ control, then the limits would be $20^\circ\text{C} - 24^\circ\text{C}$ to maintain absolute limits.

Table 4-2 Humidity (Scan and Control Rooms)

Maximum rate of change in relative humidity shall be no greater than:	5% per hour
Maximum allowable non-condensing relative humidity:	60%
Minimum allowable non-condensing relative humidity:	30%

**NOTE**

Dehumidifier is optional, and required if room operating conditions temporarily exceed 26°C (64°F) or exceed 60% relative humidity.

4.1.2 Altitude Operating Range

The system shall be operated within an altitude range of -150 m to 3000 m (-492 ft. to 9843 ft.) sea level.

4.1.3 Heat Output

Table 4-3 System Heat Load* on page 87 details the heat load produced by the PET/CT system and its various components. Use the BTU/Wattage ratings listed to determine the requirements of the HVAC system.

- Gantry air INTAKE occurs along the BOTTOM of the Gantry. Gantry air EXHAUST occurs along the TOP of the Gantry.
- PARC4.X air INTAKE occurs along the FRONT of the PARC4.X. PARC4.X air EXHAUST occurs at the TOP of the PARC4.X.
- Chiller air INTAKE occurs along the REAR of the Chiller. Chiller air EXHAUST occurs at the TOP of the Chiller.

Table 4-3 System Heat Load*

System Components	Maximum BTU/HR	Maximum Kilowatts
Scan Room:		
CT Gantry	18700	5.5 kW
PET Gantry	2500	0.73 kW
Table	1050	0.3 kW
Power Distribution Unit (PDU)	9700	2.85 kW
PARC4.X (Reconstruction Mini Cabinet)	13000	3.8 kW
Chiller	9700	2.85 kW
Scan Room Subtotal:	54650	16.03 kW
Control Room:		
Operator Console	2860	0.84 kW
LCD Monitor (2 units, 170 BTU/50 Watts each)	340	0.10 kW
Control Room Subtotal:	3200	0.94 kW
System Total	57850	16.97 kW

* Does not include heat load from room lighting, non-PET/CT equipment, personnel, etc.

** Heat load does not include options such as - UPS (3000 BTH/HR), Dehumidifier (3200 BTU/HR), etc.

4.1.4 Air Quality

See IEC 60654-4 for air quality guidelines.

4.1.4.1 Construction Dust Concerns

All construction and cleanup work to the scanner suite must be completed prior to the installation of the CT system. Damage to or early failure of the CT scanner can occur if the scanner is exposed to construction material particles. Ensure NO construction dust occurs in or immediately around the scan suite. Avoid the following:

- concrete dust
- drywall dust
- ceiling tile dust
- sawdust or wood shavings
- dust tracked into PET/CT suite from adjoining rooms

4.1.4.2 Air-Handling System Initial Start-Up Considerations

Prior to the initial startup, ensure the air-handling system ducts and filters are thoroughly clean and free of dust and other potential airborne contaminants. The air-handling ventilation system could blow dust and other airborne contaminants throughout the scan suite, potentially damaging the CT scanner.

4.1.4.3 Chemical Contamination Concerns

The silver, copper, gold films used in the PET/CT system are especially sensitive to chemical contamination. The presence of sulfide, chloride, and nitrate contaminants (with sulfur being the most damaging), can damage the PET/CT system. If high levels of contaminants exist, consider installing an appropriate air filtration system.

The scanner shall not be installed in the same room with a wet film processor. Certain scanner components could become contaminated by the chemicals contained in the processor.

Ensure any sulfide, chloride, or nitrate contaminate levels are at acceptable levels (Class 1).

Asbestos contamination of the working environment caused by the materials used to cover the concrete floor. The customer is responsible for ensuring that the flooring material does not contain asbestos and if necessary, abatement measures prior to install for the purpose of providing a safe work environment.

4.1.4.3.1 Noise Levels

Maximum Gantry Audible Noise Level

- The maximum ambient noise level is produced by the gantry during a CT scan acquisition. It is less than 68 dBA when measured at a distance of one meter from the nearest gantry surface in any direction.

Maximum Console Audible Noise Level

- The maximum audible noise level is less than 54 dBA when measured at a distance of one meter from the nearest console surface in any direction.

Chapter 5 Electrical Requirements

5.1 Power Requirements

5.1.1 Certified Electrical Contractor Statement

All electrical Installations that are preliminary to positioning of the equipment at the site prepared for the equipment shall be performed by licensed electrical contractors. In addition, electrical feeds into the Power Distribution Unit shall be performed by licensed electrical contractors. Other connections between pieces of electrical equipment, calibrations and testing shall be performed by qualified GE personnel or by a person or persons trained by GE for the purpose of installing, de-installing, moving, servicing and maintaining the CT scanner. The products involved (and the accompanying electrical installations) are highly sophisticated, and special engineering competence is required. In performing all electrical work on these products, GE will use its own specially trained field engineers. All of GE's electrical work on these products will comply with the requirements of the applicable electrical codes. The purchaser of GE equipment shall only utilize qualified personnel (i.e., GE's field engineers, personnel of third-party service companies with equivalent training, or licensed electricians) to perform electrical servicing on the equipment.

5.1.2 Regulations

NFPA 70E Standard

All electrical work shall comply with NFPA 70E: Standard for Electrical Safety in the Workplace.

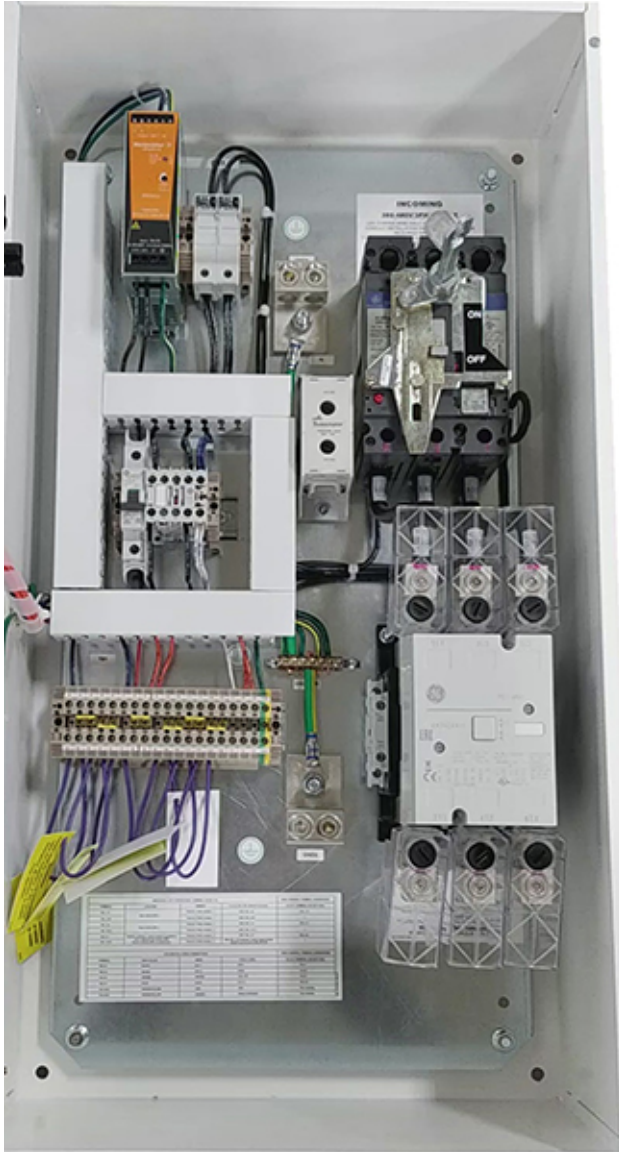
5.1.3 Disconnects

5.1.3.1 Emergency Off Switch

The A1 mains disconnect shall provide over-current protection for the entire system and have at least one Emergency OFF switch within the scan suite, near the scanner desktop.

5.1.3.2 Local Disconnects (E4502BB, E4502BC)

The A1 mains disconnect with Lock-out and Tag-out (LOTO) capability shall be installed within the scan suite "(OSHA Title 29 CFR). See [Figure 5-1 Typical Primary Power Disconnect \(A1\) – Fusible Disconnect and Magnetic Contactor on page 90](#).

Figure 5-1 Typical Primary Power Disconnect (A1) – Fusible Disconnect and Magnetic Contactor

5.1.4 Electrical and Junction Boxes

All electrical boxes and junction boxes shall be installed as specified by the architectural, mechanical, or electrical drawings associated with the design of the site.

5.1.5 Power Feed and Overcurrent Requirements

5.1.5.1 Power Feed

The system shall operate on a three-phase electrical power supply input that is provided with a 4-wire grounded-wye configuration. No delta configuration is available. Qualified personnel shall verify the power transformer and feeder lines (at the point of take-off) leading to the PET/CT scanner, meet all requirements stated in this document.

5.1.5.2 Voltage

Voltage range: 380 to 480 VAC

5.1.5.3 Frequency

Frequency ranges: 50 or 60 Hz, +/- 3 Hz

5.1.5.4 Maximum Power Demand

Maximum power demand is 100 kVA at 0.85 PF at the maximum selected technique of 140 kV, 515 mA.

5.1.5.5 Average Power Demand at Maximum Duty Cycle

Average power demand at maximum duty cycle: 30.0 kVA.

5.1.5.6 Idle Power Demand

Idle power demand is 10 kVA without rotation and X-ray.

5.1.5.7 Under voltage Release Control

The preferred disconnect, will utilize under voltage release control, rather than shunt trip devices.

5.1.5.8 Overcurrent Protection

To prevent power loss to other loads during an unexpected system fault, the power feeder shall have overcurrent protection such that the downstream overcurrent protection devices clear the fault before an up-stream overcurrent protection device opens.

5.1.5.9 Voltage Regulation Effects

To minimize voltage regulation effects, keep power wiring between the facility main distribution panel and the PDU as short as possible.

5.1.5.10 Load Regulation

Total load regulation, measured at the PDU input terminals, shall not exceed 6%.

5.1.6 Phase Imbalance

The difference between the highest line-to-line voltage and lowest line-to-line voltage shall not exceed 2% of the lowest line-to-line voltage.

5.1.7 Sags, Surges, and Transients

5.1.7.1 Sags and Surges

Sags and surges of the power line shall not exceed the absolute range limits show in [Table 5-1 Nominal Line Voltage Ranges on page 92](#).

5.1.7.2 Transient Voltage

The maximum transient voltage is 1500 V peak.

5.1.8 Power Source Configuration

5.1.8.1 Neutral Wire

If a neutral wire is used, it shall be terminated in the A1 disconnect.

5.1.8.2 Dedicated Feeder (A1 Mains)

A dedicated main distribution panel (A1 Mains) or MDP (Mains Disconnect Panel), shall be used to supply power to the scanner. The A1 mains shall be located in the same room as the PDU.

5.1.8.3 Protective Disconnect Device Location

The protective disconnect shall be located within 10 m (32 ft.) of the PDU and be visible to personnel servicing the PDU.

5.1.8.4 Protective Disconnect Device with LOCK-OUT/TAG-OUT

The National Electrical Code (NFPA 70) states there shall be a protective disconnect device with a LOCK-OUT and TAG-OUT provision in the power supply line leading to the PDU.

5.1.9 Dedicated Distribution Transformer

5.1.9.1 Dedicated Feeder (A1 Mains)

It is recommended a dedicated distribution transformer from the facility's main isolation transformer supply power to the PET/CT Scanner.

5.1.9.2 Power Distribution Transformer

The minimum recommended size for a dedicated distribution transformer is: 125 kVA, rated 2.4% regulation at unity power factor. Resultant maximum allowable feeder regulation is 3.4%.

5.1.9.3 Using an Existing Distribution Transformer

Do not use an existing distribution transformer to power a system if other X-ray equipment, using rapid film changers, is connected to the existing transformer.

5.1.10 System Power Requirements

The customer shall ensure the site meets all minimum system power requirements listed below before installation can begin.

- Maximum power demand = 100 kVA @ 0.85 PF: at a Selected Technique of 140 kV, 515 mA.
- Average power demand at maximum duty cycle = 30 kVA
- Maximum allowable total source regulation is 6%.

Table 5-1 Nominal Line Voltage Ranges

Nominal line voltage MUST fall within ONE of these ranges.						
Nominal Line Voltage	380	400	420	440	460	480

Table 5-1 Nominal Line Voltage Ranges (Table continued)

Nominal line voltage MUST fall within ONE of these ranges.						
Hi-Line Limit, +10%	418	440	462	484	506	528
Lo-Line Limit, -10%	342	360	378	396	414	432
Continuous Line Current	30	29	27	26	25	24
Momentary Line Current	152	144	137	131	126	120
Maximum Line Current	169	160	153	146	139	134
Minimum Recommended Circuit Protection Rating	110	110	100	100	90	90

Table 5-2 Minimum Feeder Wire Size

Feeder Length (Power Substation to A1 Disconnect)	Minimum Feeder Wire Size, AWG or MCM (sq. mm)/ VAC					
	380 VAC	400 VAC	420 VAC	440 VAC	460 VAC	480 VAC
15 m (50 ft)	2 (35)	2 (35)	3 (30)	3 (30)	3 (30)	3 (30)
30 m (100 ft)	2 (35)	2 (35)	3 (30)	3 (30)	3 (30)	3 (30)
46 m (150 ft)	2 (35)	2 (35)	3 (30)	3 (30)	3 (30)	3 (30)
61 m (200 ft)	2 (35)	2 (35)	3 (30)	3 (30)	3 (30)	3 (30)
76 m (250 ft)	1 (45)	1 (45)	2 (35)	2 (35)	2 (35)	3 (30)
91 m (300 ft)	1/0 (55)	1/0 (55)	1 (45)	1 (45)	2 (35)	2 (35)
107 m (350 ft)	2/0 (70)	1/0 (55)	1/0 (55)	1 (45)	1 (45)	1 (45)
122 m (400 ft)	2/0 (70)	2/0 (70)	1/0 (55)	1/0 (55)	1/0 (55)	1 (45)

**NOTE**

In all cases the recommended ground wire is a 1/0 (55 sq. mm) ground wire.

Table 5-3 Minimum Sub-Feeder Wire Size

Sub-feeder Length (A1 to PDU)	Minimum Sub-feeder Wire, AWG or MCM (sq. mm)					
	380 VAC	400 VAC	420 VAC	440 VAC	460 VAC	480 VAC
9.75 m (32 ft)	2 (35)	2 (35)	3 (30)	3 (30)	3 (30)	3 (30)

The information in [Table 5-1 Nominal Line Voltage Ranges on page 92](#), [Table 5-2 Minimum Feeder Wire Size on page 93](#), and [Table 5-3 Minimum Sub-Feeder Wire Size on page 93](#) (above) assumes the use of copper wire, rated 75° C and run in steel conduit. All ampacity is determined in accordance with the National Electrical Code (NFPA 70), Table 310-16 (2002). The ampacity of the circuit protection device listed above determines the minimum feeder size, except where total source regulation limits require a larger size.

**NOTE**

Power feeders running under the scan room floor, as well as power vault substations under the floor, above the scan suite, or in adjacent rooms, may cause excessive EMI fields. The responsibility for meeting all site EMI requirements rests with the customer.

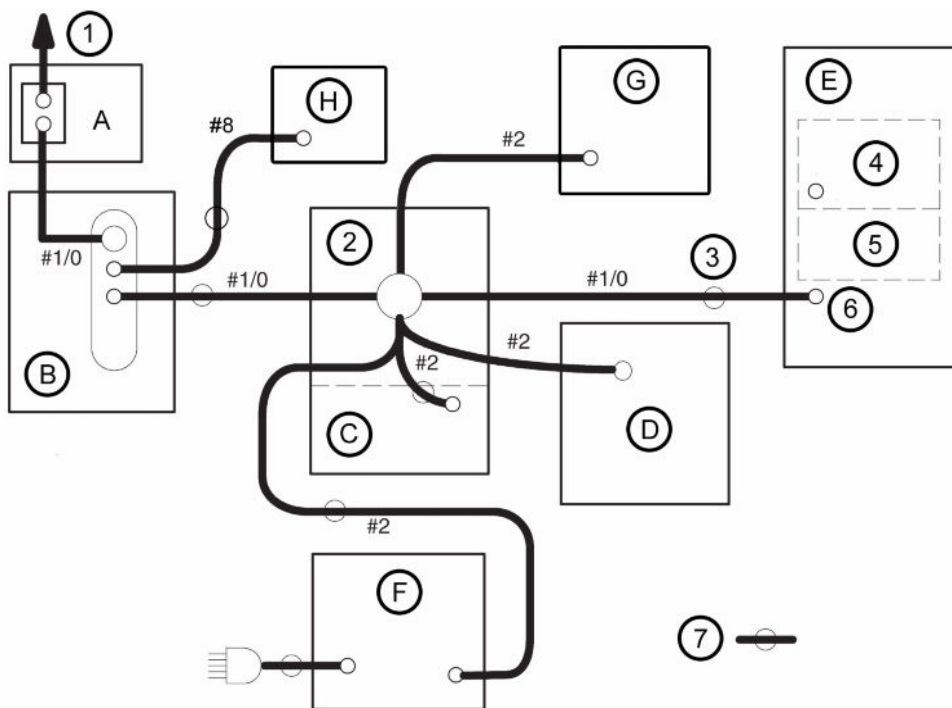
5.2 Grounding

The design of the scanner uses an equal potential grounding system. [Figure 5-2 System Ground Map on page 94](#) and [Table 5-4 System Ground Points on page 95](#) detail the required ground system. Three primary grounding points exist, they include:

- A system power ground point located in the PDU.
- A reference ground point located between the gantry and the table base.
- A patient ground point located at the front of the table base.

The electrical contractor shall ground ALL patient-accessible metal surfaces to the same potential as the A1 Disconnect. The electrical contractor shall bond the ground wire to any intermediate distribution panel the ground wire passes through, in accordance with all local codes.

Figure 5-2 System Ground Map



Note: Shield/signal grounds are not shown.

A	A1 Power Disconnect / Mains Disconnect Panel (MDP)	1	To power vault ground
B	Power Distribution Unit (PDU) ground terminal	2	Table/Gantry junction raceway
C	Patient Table (CT1)	3	Part of Gantry
D	PARC4.X Reconstruction Mini Cabinet (PRC4)	4	Rotating Assembly frame
E	Gantry (CT2)	5	Tilt Mech (NA)
F	Operator's Console/Computer (OC1)	6	Frame
G	Chiller (CC)	7	Ground wire in supplied cable
H	Chiller Power Distribution Box (Chiller PDB)		

Table 5-4 System Ground Points

Ground Points	Description
Bonding Power from A1 to PDU	The metal conduit, raceway, or armored cabling used to run power from the A1 Disconnect to the PDU shall be bonded in accordance to the NEC.
Dedicated Ground	A dedicated 1/0 (55 mm ²), or larger, insulated copper ground wire shall be installed between the main distribution panel and the PDU, in accordance with the NEC.
Grounding Power, A1, and PDU	All three-phase wires with ground running between the power source, the A1 Disconnect, and the PDU shall be installed in accordance to the NEC.
Maximum Resistance Between PDU and Facility Ground	The resistance between the PDU ground and the facility Earth ground shall not exceed 0.5 ohm.
Maximum Resistance Between PDU and Earth	The resistance between the PDU ground and Earth ground shall not exceed 2 ohms.
Cable Shielding and Grounding	All interconnect cables to peripheral devices shall be shielded and properly grounded, except where technologically prohibited.

5.3 System Interconnection and Cabling

5.3.1 Component Interconnections

The customer and electrical contractor shall refer to the following system, network, and power interconnection requirements:

- [Table 5-5 Component Designators on page 96](#) defines the component designators for system equipment, electrical components, options, and communication outlets.
- [Table 5-6 Standard-Length Cable Kit – Supplied by GE Healthcare on page 96](#) details the Standard-Length Cable Kit – Supplied by GE Healthcare.
- [Table 5-7 Long-Length Cable Kit, Optional – Supplied by GE Healthcare on page 99](#) details the Long-Length Cable Kit, Optional – Supplied by GE Healthcare
- [Table 5-8 UPS Cables \(Standard-Length\) – Supplied by GE Healthcare on page 102](#) details the PDU/UPS Cables (Standard-Length) – Supplied by GE Healthcare.
- [Table 5-9 A1, Chiller Power Distribution Box \(PDB\), and UPS Catalog Numbers on page 102](#) details the A1, Chiller PDB, and UPS Catalog Numbers – Supplied by GE Healthcare.
- [Table 5-10 Miscellaneous Electrical Cables – Supplied by Customer/Contractor on page 103](#) details the Miscellaneous Electrical Cables – Supplied by Customer/Contractor.
- [Table 5-11 Miscellaneous Electrical Components – Supplied by Customer/Contractor on page 104](#) details the Miscellaneous Electrical Components – Supplied by Customer/Contractor.



NOTE

For system Interconnects and Block Diagrams, please refer to 6890030SCH in the *Omni Legend Service Manual*.

5.3.1.1 Component Designators

Table 5-5 Component Designators

Designator	Applies to:	Source
A1	Primary power disconnect	Contractor-supplied
BBNC	Broadband Network Connection	Contractor-supplied
CT1	Patient Table	System
CT2	Gantry	System
DS	Door Interlock Switch	Contractor-supplied
EPO	Emergency Power Off	Contractor-supplied
OC1	Operator Console (Scanner Desktop)/computer	System
PDU	Power Distribution Unit	System
PDB	Power Distribution Box	System
PRC4	PARC4.X Reconstruction Mini Cabinet	System
CC	Chiller	System
SEO	System Emergency Off	Contractor-supplied
WL/AD	X-ray on warning light/ Audible Device	Contractor-supplied

5.3.1.2 Cable Specifications

Table 5-6 Standard-Length Cable Kit – Supplied by GE Healthcare

Run #	Cable Length, Actual [Usable] m (ft)	Part Number	Description	UL Cable Information								Pull Size mm (in.)
				UL Style	Flame Rating	Voltage Rating	Actual Voltage	Temp. Rating (C)	Outer Dia. mm (in.)	# of Cond.	Wire Size (AWG)	
Cables for CT Gantry Interconnect (B75692DA)												
50	8.5 (28) [6 (20)]	5824788-2	HVDC, PDU to Gantry	2587	FT4	600	350VDC	90	19 (0.75)	3	(2) 4 (1) 8	22 (0.87) Dia.
51	8.5 (28) [6 (20)]	5824792-2	HVAC, PDU to Gantry	2587	FT4	600	440Y/254	90	15 (0.59)	4	14	11 (0.44) Dia.
52	8.5 (28) [6 (20)]	5824791-2	LVAC, PDU to Gantry	2587	FT4	600	208Y/120	90	14 (0.55)	5	8	56 (2.2) Dia.
53	20 (65) [18 (59)]	5824978-2	LVAC, PDU to Console	2587	FT4	600	120VAC	90	12 (0.47)	3	10	56 (2.2) Dia.
54		n/a	LVAC, Gantry to Table	1015		600	120VAC			3	14	
55	20 (65) [18 (59)]	5824785-2	Ground, PDU to raceway	1284	VW-1 (FT-1)	600	0	105	16 (0.63)	1	1/0	16 (0.63) Dia.

Table 5-6 Standard-Length Cable Kit – Supplied by GE Healthcare (Table continued)

Run #	Cable Length, Actual [Usable] m (ft)	Part Number	Description	UL Cable Information								Pull Size mm (in.)
				UL Style	Flame Rating	Voltage Rating	Actual Voltage	Temp. Rating (C)	Outer Dia. mm (in.)	# of Cond.	Wire Size (AWG)	
56	21 (69) [17 (56)]	5824785-4	Ground, Raceway to console	1283	VW-1 (FT-1)	600	0	105	12 (0.47)	1	2	12 (0.47) Dia.
100	10 (33) [6 (20)]	5824794-2	Signal, Gantry TGPG to PDU		FT-4	300	<30VDC	80	11 (0.433)	25	22	17 x 58 (0.68 x 2.30)
101	22 (72) [18 (60)]	5824787-2	Signal, Gantry TGPG to OC	2464	VM-1	300	<30VDC	80	12.5 (0.49)	25	22	17 x 58 (0.68 x 2.30)
102	22 (72) [18 (60)]	5824786-2	Signal (LAN), Gantry to OC	CAT5E CM	CM	300	<30VDC	75	6 (0.236)	8	24	15 (0.59) Dia.
103	20 (65) [18 (60)]	5478856-2	Fiber Optic, Gantry to OC			N/A	N/A			1	N/A	10 (0.39) Dia
104		n/a	Signal, Gantry to Table		FT-4	300		80	6 (0.236)	25	22	
Cables for PET Gantry Interconnect (P3030MB)												
NA	30.5 (100) [27.7 (91)]	5169456	Cable, Gantry to Injector Path-Finder	2464	FT-4	300		80	6.6 (0.26)		22	40 (1.5)
NA	28.2 (92.5) [24.8 (82)]	5193969-4	Cable LAN	UL	FT-4			60			24	40 (1.5)
	30.5 (100) [7.6 (25)]	5199717	Cable - Gantry to RPM Unit	UL	FT-4	300	<15 VDC		5.9 (0.23)	4	22	15 (0.5)
200	30.5 (100) [22.9 (75)]	5313938-6	Cable Assembly, Ethernet, RUN205, CT J7 to Console, Respiratory	UL	FT-4	300	<30 VDC	60	6.8 (0.26)	8 (4 pair)	24	13 (0.5)
201	13 (42.6) [9.6 (32)]	5313938-8	Cable Assembly, Ethernet, Coin Link, RUN201, RRR J4 to Switch Port 5	UL	FT-4	300	<30 VDC	60	6.8 (0.26)	8 (4 pair)	24	13 (0.5)

Table 5-6 Standard-Length Cable Kit – Supplied by GE Healthcare (Table continued)

Run #	Cable Length, Actual [Usable] m (ft)	Part Number	Description	UL Cable Information								Pull Size mm (in.)
				UL Style	Flame Rating	Voltage Rating	Actual Voltage	Temp. Rating (C)	Outer Dia. mm (in.)	# of Cond.	Wire Size (AWG)	
203	13 (42.6) [9.6 (32)]	5313941-2	Cable Assembly, PDU to Remote Recon Rack	2587	FT-4	600	208Y/120	60	19 (0.75)	5	10	25 (1.0)
206	13 (42.6) [8.4 (28)]	5313938-13	Cable Assembly, PDD, Run 206 Q.Core J5 to SBA J1	UL	FT-4	300	<30 VDC	60	6.8 (0.26)	8 (4 pair)	24	13 (0.5)
208	13 (42.6) [8.3 (27.2)]	5452158-3	Cable Assembly, OM3 fiber Cable, 13000mm LG, SBA BH to PARC			NA	NA			2	NA	13 (0.5)
209	13 (42.6) [9.6 (32)]	5339979-6	Lead Assembly - Ground, 13000 LG, PARC GND to Raceway GND Bar	1238	VW-1 (FT-1)	600	0	105	11.9 (0.47)	1	2	12.2 (0.5)
210	13 (42.6) [9.6 (32)]	5313938-15	Cable Assembly, Ethernet, PARC J7 to Switch J7									13 (0.5)
211	13 (42.6) [9.3 (30.5)]	5339979-9	Lead Assembly - Ground, 13000 LG, Chiller GND to Raceway GND Bar	1015	VW-1 (FT-1)	600	0	105	11.9 (0.47)	1	10	12.2 (0.5)
70	6 (19.7) [5 (16.4)]	5125079-6	Power Cable for Columbia Systems - PDU to PDB	2587	FT-4	600	208Y/120	90	19 (0.75)	5	8	19.5 (0.8)
71	6 (19.7) [5 (16.4)]	5125079-7	Power Cable for Columbia Systems - PDB to PDU	2587	FT-4	600	208Y/120	90	15 (0.6)	5	8	19.5 (0.8)

Table 5-6 Standard-Length Cable Kit – Supplied by GE Healthcare (Table continued)

Run #	Cable Length, Actual [Usable] m (ft)	Part Number	Description	UL Cable Information								Pull Size mm (in.)	
				UL Style	Flame Rating	Voltage Rating	Actual Voltage	Temp. Rating (C)	Outer Dia. mm (in.)	# of Cond.	Wire Size (AWG)		
72	7	5641477	Cable Assembly, PDB Control, Columbia										
76	13 (42.6) [12.8 (42)]	5627939-2	Cable, AC Power, Chiller to Power Box	2587	FT-4	600	208 VAC	90	12 (0.46)	3	10	12 (0.5)	
77	13 (42.6) [9.9 (32.5)]	5627938-2	Cable, RS-232 Chiller to SBA Bulkhead	2095 /444	FT-4/CM	300	<30 VDC	80/75	5.3/5.8 (0.22)	2 pair/ 4 pair	22/26	37 (1.5)	

Table 5-7 Long-Length Cable Kit, Optional – Supplied by GE Healthcare

Run #	Cable Length, Actual [Usable] m (ft)	Part Number	Description	UL Cable Information								Pull Size mm (in.)
				UL Style	Flame Rating	Voltage Rating	Actual Voltage	Temp. Rating (C)	Outer Dia. mm (in.)	# of Cond.	Wire Size (AWG)	
Cables for CT Gantry Interconnect (B75702DA)												
50	19 (62) [17 (56)]	5824788	HVDC, PDU to Gantry	2587	FT4	600	350VDC	90	19 (0.75)	3	(2) 4 (1) 8	22 (0.87) Dia.
51	19 (62) [17 (56)]	5824792	HVAC, PDU to Gantry	2587	FT4	600	440Y/254	90	15 (0.59)	4	14	11 (0.44) Dia.
52	19 (62) [16 (53)]	5824791	LVAC, PDU to Gantry	2587	FT4	600	208Y/120	90	14 (0.55)	5	8	56 (2.2) Dia.
53	25 (82) [13 (43)]	5824978	LVAC, PDU to Console	2587	FT4	600	120VAC	90	12 (0.47)	3	10	56 (2.2) Dia.
54		n/a	LVAC, Gantry to Table	1015		600	120VAC			3	14	
55	19 (62) [16 (53)]	5824785	Ground, PDU to raceway	1284	VW-1 (FT-1)	600	0	105	16 (0.63)	1	1/0	16 (0.63) Dia.
56	26 (86) [22 (72)]	5824785-3	Ground, Raceway to console	1283	VW-1 (FT-1)	600	0	105	12 (0.47)	1	2	12 (0.47) Dia.
100	21 (69) [17 (56)]	5824794	Signal, Gantry TGPG to PDU		FT-4	300	<30VDC	80	11 (0.44)	25	22	17 x 58 (0.68 x 2.30)
101	26 (85) [22 (72)]	5824787	Signal, Gantry TGPG to OC	2464	VM-1	300	<30VDC	80	12.5 (0.49)	25	22	17 x 58 (0.68 x 2.30)

Table 5-7 Long-Length Cable Kit, Optional – Supplied by GE Healthcare (Table continued)

Run #	Cable Length, Actual [Usable] m (ft)	Part Number	Description	UL Cable Information								Pull Size mm (in.)
				UL Style	Flame Rating	Voltage Rating	Actual Voltage	Temp. Rating (C)	Outer Dia. mm (in.)	# of Cond.	Wire Size (AWG)	
102	26 (85) [22 (72)]	5824786	Signal (LAN), Gantry to OC	CAT5 E CM	CM	300	<30VDC	75	6 (0.236)	8	24	15 (0.59) Dia.
103	26 (85) [23 (76)]	5478856	Fiber Optic, Gantry to OC			N/A	N/A			1	N/A	10 (0.39) Dia
104		n/a	Signal, Gantry to Table		FT-4	300		80	6 (0.234)	25	22	
Cables for PET Gantry Interconnect (P3030MC)												
NA	30.5 (100) [27.7 (91)]	5169456	Cable, Gantry to Injector Path-Finder	2464	FT-4	300		80	6.6 (0.26)		22	40 (1.5)
NA	28.2 (92.5) [24.8 (82)]	5193969-4	Cable LAN	UL	FT-4			60			24	40 (1.5)
	30.5 (100) [7.6 (25)]	5199717	Cable - Gantry to RPM Unit	UL	FT-4	300	<15 VDC		5.9 (0.23)	4	22	15 (0.5)
200	30.5 (100) [22.9 (75)]	5313938-6	Cable Assembly, Ethernet, RUN205, CT J7 to Console, Respiratory	UL	FT-4	300	<30 VDC	60	6.8 (0.26)	8 (4 pair)	24	13 (0.5)
201	30.5 (100) [25.9 (85)]	5313938-2	Cable Assembly, Ethernet, Coin Link, RUN201, RRR J4 to Switch Port 5	UL	FT-4	300	<30 VDC	60	6.8 (0.26)	8 (4 pair)	24	13 (0.5)
203	19.4 (63.6) [15.8 (52)]	5313941	Cable Assembly, PDU to Remote Recon Rack	2587	FT-4	600	208Y/120	60	19 (0.75)	5	10	25 (1.0)
206	30.5 (100) [25.9 (85)]	5313938-12	Cable Assembly, PDD, Run 206 Q.Core J5 to SBA J1	UL	FT-4	300	<30 VDC	60	6.8 (0.26)	8 (4 pair)	24	13 (0.5)

Table 5-7 Long-Length Cable Kit, Optional – Supplied by GE Healthcare (Table continued)

Run #	Cable Length, Actual [Usable] m (ft)	Part Number	Description	UL Cable Information								Pull Size mm (in.)	
				UL Style	Flame Rating	Voltage Rating	Actual Voltage	Temp. Rating (C)	Outer Dia. mm (in.)	# of Cond.	Wire Size (AWG)		
208	30.5 (100) [25.8 (85)]	5452158-4	Cable Assembly, OM3 fiber Cable, 13000mm LG, SBA BH to PARC			NA	NA				2	NA	13 (0.5)
209	25.5 (83.6) [22.1 (73)]	5339979-5	Lead Assembly - Ground, 13000 LG, PARC GND to Raceway GND Bar	1238	VW-1 (FT-1)	600	0	105	11.9 (0.47)	1	2		12.2 (0.5)
210		5313938-14	Cable Assembly, Ethernet, PARC J7 to Switch J7										13 (0.5)
211	30 (98.4) [26.3 (86)]	5339979-8	Lead Assembly - Ground, 13000 LG, Chiller GND to Raceway GND Bar	1015	VW-1 (FT-1)	600	0	105	11.9 (0.47)	1	10		12.2 (0.5)
70	6 (19.7) [5 (16.4)]	5125079-6	Power Cable for Columbia Systems - PDU to PDB	2587	FT-4	600	208Y/120	90	19 (0.75)	5	8		19.5 (0.8)
71	6 (19.7) [5 (16.4)]	5125079-7	Power Cable for Columbia Systems - PDB to PDU	2587	FT-4	600	208Y/120	90	15 (0.6)	5	8		19.5 (0.8)
72	7	5641477	Cable Assembly, PDB Control, Columbia										
76	30 (98.4) [29.8 (98)]	5627939	Cable, AC Power, Chiller to Power Box	2587	FT-4	600	208 VAC	90	12 (0.46)	3	10		12 (0.5)

Table 5-7 Long-Length Cable Kit, Optional – Supplied by GE Healthcare (Table continued)

Run #	Cable Length, Actual [Usable] m (ft)	Part Number	Description	UL Cable Information								Pull Size mm (in.)
				UL Style	Flame Rating	Voltage Rating	Actual Voltage	Temp. Rating (C)	Outer Dia. mm (in.)	# of Cond.	Wire Size (AWG)	
77	30 (98.4) [26.9 (88)]	5627938	Cable, RS-232 Chiller to SBA Bulkhead	2095/444	FT-4/CM	300	<30 VDC	80/75	5.3/5.8 (0.22)	2 pair/4 pair	22/26	37 (1.5)

Table 5-8 UPS Cables (Standard-Length) – Supplied by GE Healthcare

Run #	Cable Length, Actual [Usable] m (ft)	Part Number	Description	UL Cable Information								Pull Size mm (in.)
				UL Style	Flame Rating	Voltage Rating	Actual Voltage	Temp. Rating (C)	Outer Dia. mm (in.)	# of Cond.	Wire Size (AWG)	
060	6 (19.7) [5 (16)]	5125079	Chiller Power Distribution Box to UPS	2587	FT4	600	208Y/120	90	19 (0.75)	5	8	19.5 (0.8)
061	6 (19.7) [5 (16)]	5125079-2	UPS to Chiller Power Distribution Box	2587	FT4	600	208Y/120	90	15 (0.60)	5	8	19.5 (0.8)
110	14 (46) [13.7 (45)]	5169224	A1 / Mains Disconnect Panel (MDP) to UPS	2587	FT4	600	120 VAC	90	14 (0.54)	5	18	25 (1.0)

Table 5-9 A1, Chiller Power Distribution Box (PDB), and UPS Catalog Numbers

PDU Model No.	Maximum Nominal kVA Rating	Required Mains Disconnect (A1) Catalog No.		Required Chiller Power Distribution Box (PDB) Catalog No.	Optional Partial UPS Kit Catalog No. (See Note 2)
		Europe and Asia (380-400V or 420V) (See Note 1)	North America (440V or 460-480V)		
NGPDU-61	150 kVA	E4502AC (110A) E4502BC (110A) Includes Auto Restart and Integrated UPS Control	E4502AB (90A) E4502BB (90A) Includes Auto Restart and Integrated UPS Control	P3000AK Controls power to the Chiller	B7864PZ PowerWare 9355-15-14GE (14.4 kVa - 40A)

Note 1: Additional A1 Disconnects for Europe available through European Sales Team
Note 2: REQUIRES one of the A1 mains disconnect detailed at left, or equivalent.

Table 5-10 Miscellaneous Electrical Cables – Supplied by Customer/Contractor

Customer Installed Wiring		Description	Cables Supplied			Plug Pulling Dimensions		Wire and Cable Pigtails m (ft)	
Qty	Size AWG (mm ²)		Part No	Length m (ft)	Dia. in. (mm)	From	To	From	To
RUN NO. 1 FROM PRIMARY POWER SOURCE TO FACILITY DISCONNECT (POWER SOURCE - A1) Maximum Run Length *									
3	*	POWER						1 (3)	1 (3)
1	1/0 (50)	GROUND						1 (3)	1 (3)
RUN NO. 2 FROM FACILITY DISCONNECT TO POWER DISTRIBUTION UNIT (A1 - PM) Maximum Run Length *									
3	*	POWER						1 (3)	1 (3)
1	1/0 (50)	GROUND						1 (3)	1 (3)
-	-	NEUTRAL - Not Required						1 (3)	1 (3)
RUN NO. 3 FROM FACILITY DISCONNECT TO SYSTEM EMERGENCY OFF (A1 - SEO)									
2	14 (2)	Partial UPS EPO Circuit						2 (6)	2 (6)
2	14 (2)	Facility Disconnect EPO Circuit						2 (6)	2 (6)
1	14 (2)	GROUND						2 (6)	2 (6)
RUN NO. 4 POWER DISTRIBUTION UNIT TO WARNING LIGHT / AUDIBLE DEVICE CONTROL (PDU - WL/AD)									
2	14 (2)	WARNING LIGHT / AUDIBLE DEVICE 24 VOLT							
		CONTROL TS6 1, 2, 3, 4, 5, 6, 7, 8							
RUN NO. 5 POWER DISTRIBUTION UNIT TO SCAN ROOM DOOR INTERLOCK (PDU - DOOR SWITCH)									
2	14 (2)	SCAN ROOM DOOR INTERLOCK TS6 9, 10							
*REFER TO LOCAL BUILDING CODES FOR AWG (MM ²) WIRE SIZES.									
RUN NO. n/a BBNC									
1	customer determined	Hospital Broadband Network Connection (Wall Jack: Placed on the wall behind the console.)							

Table 5-11 Miscellaneous Electrical Components – Supplied by Customer/Contractor

Reference	Associated Equipment	Material/Labor Supplied by Customer Contractor	USA Vendor / CAT No. GE Catalog
A1 380V - 480V 50/60 Hz	Circuit Breaker with Magnetic Contactor	Three Pole, 380V - 480V, Combination breaker with magnetic contactor. Includes control transformer, optional UPS interface, On/Off controls and auto-restart feature, if GE-supplied.	Recommend: <ul style="list-style-type: none"> E4502AC (110A) E4502AB (90A) E4502BC (110A) E4502BB (90A) Optional remote operator control available from GE Supply, Cat # GESCTROCS1
BBNC (required)	Broad-band Network Connection	Broad-Band network connection wall jack, located within 1m (39inches) of Operator Console location, for internal hospital networking and InSite Broad-Band connectivity. Cabling to conform to facility's IT standards.	
	System Components	Reference the system installation drawings supplied by Installation Support Services within your geographic area.	
		Room Warning Light Controller	E4500AM

5.3.2 Cable Routing Requirements

5.3.2.1 Properly Sized Conduit, Duct Work, and Floor Troughs

Install appropriate conduits, duct work, and floor troughs for all system cables. Refer to [Table 5-6 Standard-Length Cable Kit – Supplied by GE Healthcare on page 96](#) through [Table 5-10 Miscellaneous Electrical Cables – Supplied by Customer/Contractor on page 103](#). Also refer to [Cable and Hoses Duct Requirements on page 57](#).



NOTE

To minimize the need for additional junction boxes, use either a cable raceway system or a raised computer floor. The system uses prefabricated cables with large plugs.

5.3.2.2 Future Expansion

Ensure all cable passageways have additional capacity for future cable installations.

5.3.2.3 Routing Power Wiring

All three-phase power wires and ground line shall run in the same conduit or raceway duct.

5.3.2.4 Power and System Control Wire Separation

Power supply wires and system control lines shall be located in separate conduit or ductwork. **Do NOT run coolant lines in cable conduits/ductwork.**

5.3.2.5 Cabling External to PET/CT components

All customer supplied equipment and GE options with cables outside the covers of the PET/CT system components need to be taken into account for room planning. Ensure routing of cables avoids trip hazards and cable damage during system operation.

5.4 Scan Room Warning Light and Door Interlock

The scan room shall have a scan warning light and door interlock connected to the scan system as detailed in the following diagrams.

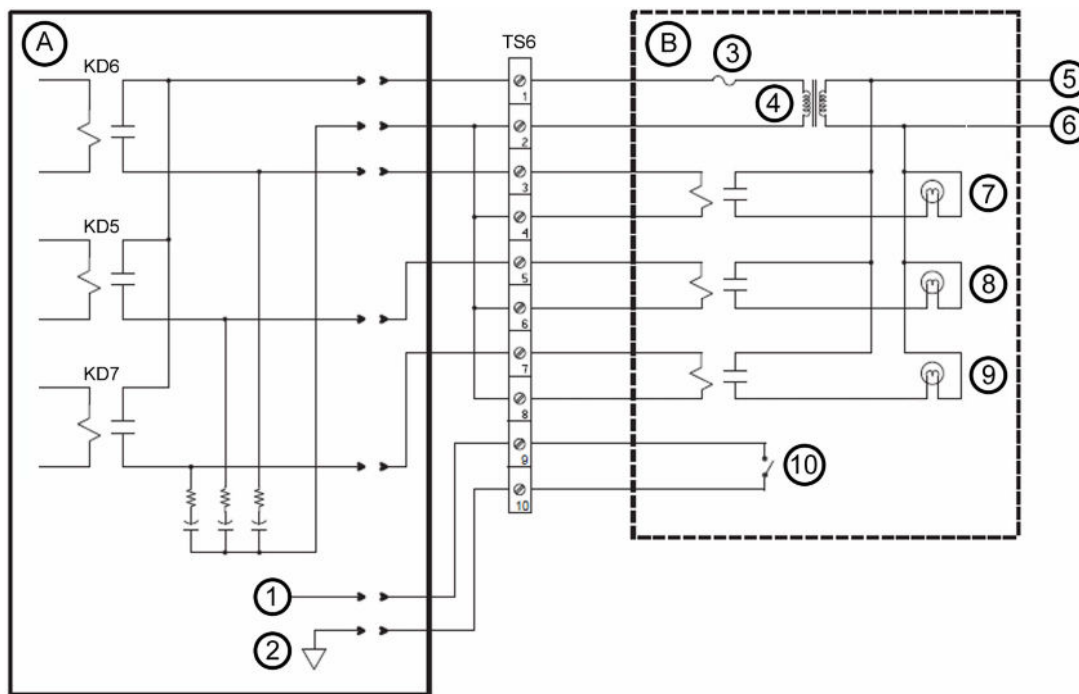


NOTE

The x-ray door contact (supplied by the customer) is: 15V DC @ 10 ma

5.4.1 X-Ray Warning Light

Figure 5-3 TS6 X-Ray Warning Light Connections



A	PDU	5	Line
B	Facility supplied room light	6	Neutral
1	EXP_INTLK signal	7	X-RAY light or Audible Device
2	PGND	8	SYS-ON light
3	Fuse	9	READY light (Room Warning lamp)
4	24V secondary	10	Door Switch

5.4.2 Scan Room Door Interlock Connections



NOTE

The terminal blocks detailed in [Figure 5-4 TS6 Room Door Interlock Connections – without Door Interlock](#) on page 106 and [Figure 5-5 TS6 Room Door Interlock Connections – with Door Interlock](#) on page 106 are located in the power distribution unit (PDU).

Figure 5-4 TS6 Room Door Interlock Connections – without Door Interlock

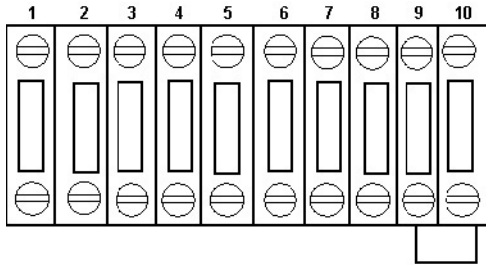
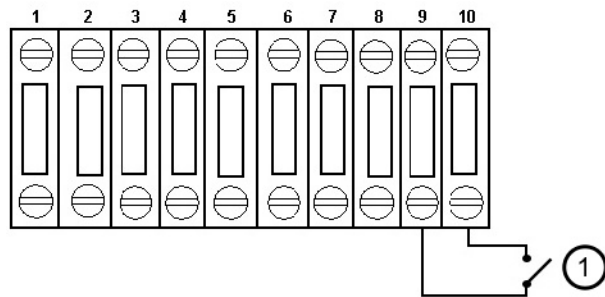


Figure 5-5 TS6 Room Door Interlock Connections – with Door Interlock



1	Normally open door switch
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Chapter 6 Communications Requirements

6.1 Network Requirements

6.1.1 Communication Network

6.1.1.1 Network Wall Outlet

The customer shall provide an RJ45 wall outlet within 2 m (6.6 ft.) of the scanner desktop location.

6.1.1.2 Network Speed

Broadband interface type: 1000BASE-T (1000 Mbit/s [1 Gbit/s]) Ethernet connection.

6.1.1.3 Network Communication

The customer shall ensure a network broadband line is installed and active.

6.1.1.4 Patch Cable

The customer shall provide a patch cable, not to exceed 3.05 m (10 ft.), to connect the scanner desktop to a wall outlet.

6.1.1.5 Cable Duct Work

The customer shall complete any cable duct work or conduit installation required for routing network cables to workstation, camera, and scanner desktop.

6.1.1.6 Communication Run to RJ45 Wall Outlet

The customer shall ensure the communication run from the hospital/facility network switch to the RJ45 wall outlet does not exceed 88 m (290 ft.).

The use of STP (Shielded Twisted Pair) cable is not allowed.

6.1.2 Customer Broadband Responsibilities

6.1.2.1 Contact GE to Find Zone Broadband Specialist

Contact your GE PMI to obtain the name of the zone broadband specialist who will:

- Work with the Customer Champion to complete any identified infrastructure changes.
- Provide IP addresses for new CT equipment.
- Provide a VPN compatible appliance that will support the IPSec tunneling protocol and 3DES data encryption.
- Utilize an Internet Service Provider that supports static routing.

6.1.2.1.1 Provide GE with IT Contact Information for the Site

Provide your GE PMI with an accurate site address, telephone number, contact name, and e-mail address for the customer IT contact who will:

- Coordinate VPN activities between Radiology/Cardiology and the Information Technology (IT) departments.
- Act as a focal point in assuring site broadband infrastructure meets GE requirements for connection, as determined by a mutual assessment with the GE connectivity team.
- Complete an equipment assessment with the GE connectivity team to determine site readiness for broadband.

6.2 Digital Service and Connectivity Requirements

6.2.1 Background

GE Healthcare provides digital service and asset management through its InSite Connectivity Platform. InSite RSvP (Remote Service Platform) is the latest connectivity platform that has replaced the existing InSite 1 connectivity infrastructure in the system.

GE can proactively monitor the key operational parameters of your medical systems to provide early warning of potential issues to head off costly and unscheduled downtime. The GE online engineers can recalibrate key operational parameters to help ensure optimal system performance or can dispatch a field engineer to assist in mitigating the issue. Additionally, automated software downloads require reliable connectivity platform to ensure software updates and upgrades in a timely manner to keep the system working efficiently. Software downloads also significantly reduce the time it takes to upgrade your GE Healthcare devices, which means the scheduled system downtime and clinical workflow interruptions are greatly reduced.

The two major technical components of InSite RSvP are Agent and Server. The Agent is installed on the GE Healthcare equipment at the customer sites while the Server resides within GE Healthcare. The role of the Agent is to:

- monitor device performance data on an ongoing basis,
- establish secure communications to the Server via the Internet,
- and send fault information and log files to the Server

The Server uses the secure Web Services to communicate with the Agent. It processes the performance and fault information provided by the Agent.

6.2.2 InSite RSVP Connectivity Requirements

The Agent establishes connectivity from behind the safety of your corporate firewall, adhering to all the security policies set up by your network administrators. To your network, the Agent is just another computer on the LAN. To set up the InSite 2.0 Agent at your site, the only networking requirements are as follows:

1. A physical connection or a route to an existing enterprise LAN
2. Allow outbound Internet access for the device using HTTPS protocol over port 443

GE Healthcare Field Engineer will configure network connections for InSite RSVP connectivity according to the site IT requirements. Customer IT personal would need to ensure the following details to enable connectivity at install:

1. DNS IP Address or Proxy IP address and authentication information as applicable is made available when requested by the GE Field Engineer or Project manager of Installation
2. In case it is required to whitelist, only certain URLs being used by GE Healthcare, here is a list that could be used:
 - 2.1. Enterprise production: <https://insite.gehealthcare.com:443>
 - 2.2. Flexera URL: <https://gehealthcare-fno.flexnetoperations.com/flexnet/operations>

InSite RSVP utilizes existing the outbound broadband internet connection. It uses the Secure Sockets Layer (SSL) and complies with the existing firewall rules and Web proxies. Once the Agent has established a secure tunnel, the connection is visible only to InSite RSVP clients and services (applications or user).

**NOTE**

For GEHC Personnel only:

1. If a customer is not able to provide the internet connection then GEHC needs to provide the internet connection along with the required router device.
2. If a customer has GEHC provided internet connection or has GEHC provided router device running on the customer provided internet connection then consult the customer if the same set is to be used.



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