

# Optima CT540 Installation Manual

*(Book 1 of 2)*

OPERATING DOCUMENTATION



5341628-1EN  
Rev 22



# Book 1 of 2: Mechanical Installation

Pages 1 - 324

## Effectivity

The information in this manual applies to the following CT Systems:

- Optima CT540



# IMPORTANT PRECAUTIONS

## LANGUAGE

<p><b>ПРЕДУПРЕЖДЕНИЕ</b> (BG)</p>	<p>Това упътване за работа е налично само на английски език.</p> <ul style="list-style-type: none"> <li>• Ако доставчикът на услугата на клиента изиска друг език, задължение на клиента е да осигури превод.</li> <li>• Не използвайте оборудването, преди да сте се консултирали и разбрали упътването за работа.</li> <li>• Неспазването на това предупреждение може да доведе до нараняване на доставчика на услугата, оператора или пациента в резултат на токов удар, механична или друга опасност.</li> </ul>
<p><b>警告</b> (ZH-CN)</p>	<p>本维修手册仅提供英文版本。</p> <ul style="list-style-type: none"> <li>• 如果客户的维修服务人员需要非英文版本，则客户需自行提供翻译服务。</li> <li>• 未详细阅读和完全理解本维修手册之前，不得进行维修。</li> <li>• 忽略本警告可能对维修服务人员、操作人员或患者造成电击、机械伤害或其他形式的伤害。</li> </ul>
<p><b>警告</b> (ZH-HK)</p>	<p>本服務手冊僅提供英文版本。</p> <ul style="list-style-type: none"> <li>• 倘若客戶的服務供應商需要英文以外之服務手冊，客戶有責任提供翻譯服務。</li> <li>• 除非已參閱本服務手冊及明白其內容，否則切勿嘗試維修設備。</li> <li>• 不遵從本警告或會令服務供應商、網絡供應商或病人受到觸電、機械性或其他危險。</li> </ul>
<p><b>警告</b> (ZH-TW)</p>	<p>本維修手冊僅有英文版。</p> <ul style="list-style-type: none"> <li>• 若客戶的維修廠商需要英文版以外的語言，應由客戶自行提供翻譯服務。</li> <li>• 請勿試圖維修本設備，除非 您已查閱並瞭解本維修手冊。</li> <li>• 若未留意本警告，可能導致維修廠商、操作員或病患因觸電、機械或其他危險而受傷。</li> </ul>
<p><b>UPOZORENJE</b> (HR)</p>	<p>Ovaj servisni priručnik dostupan je na engleskom jeziku.</p> <ul style="list-style-type: none"> <li>• Ako davatelj usluge klijenta treba neki drugi jezik, klijent je dužan osigurati prijevod.</li> <li>• Ne pokušavajte servisirati opremu ako niste u potpunosti pročitali i razumjeli ovaj servisni priručnik.</li> <li>• Zanemarite li ovo upozorenje, može doći do ozljede davatelja usluge, operatera ili pacijenta uslijed strujnog udara, mehaničkih ili drugih rizika.</li> </ul>
<p><b>VÝSTRAHA</b> (CS)</p>	<p>Tento provozní návod existuje pouze v anglickém jazyce.</p> <ul style="list-style-type: none"> <li>• V případě, že externí služba zákazníkům potřebuje návod v jiném jazyce, je zajištění překladu do odpovídajícího jazyka úkolem zákazníka.</li> <li>• Nesnažte se o údržbu tohoto zařízení, aniž byste si přečetli tento provozní návod a pochopili jeho obsah.</li> <li>• V případě nedodržování této výstrahy může dojít k poranění pracovníka prodejního servisu, obslužného personálu nebo pacientů vlivem elektrického proudu, respektive vlivem mechanických či jiných rizik.</li> </ul>

<p><b>ADVARSEL</b> (DA)</p>	<p>Denne servicemanual findes kun på engelsk.</p> <ul style="list-style-type: none"> <li>• Hvis en kundes tekniker har brug for et andet sprog end engelsk, er det kundens ansvar at sørge for oversættelse.</li> <li>• Forsøg ikke at servicere udstyret uden at læse og forstå denne servicemanual.</li> <li>• Manglende overholdelse af denne advarsel kan medføre skade på grund af elektrisk stød, mekanisk eller anden fare for tekniker, operatøren eller patienten.</li> </ul>
<p><b>WAARSCHUWING</b> (NL)</p>	<p>Deze onderhoudshandleiding is enkel in het Engels verkrijgbaar.</p> <ul style="list-style-type: none"> <li>• Als het onderhoudspersoneel een andere taal vereist, dan is de klant verantwoordelijk voor de vertaling ervan.</li> <li>• Probeer de apparatuur niet te onderhouden alvorens deze onderhoudshandleiding werd geraadpleegd en begrepen is.</li> <li>• Indien deze waarschuwing niet wordt opgevolgd, zou het onderhoudspersoneel, de operator of een patiënt gewond kunnen raken als gevolg van een elektrische schok, mechanische of andere gevaren.</li> </ul>
<p><b>WARNING</b> (EN)</p>	<p>This service manual is available in English only.</p> <ul style="list-style-type: none"> <li>• If a customer's service provider requires a language other than english, it is the customer's responsibility to provide translation services.</li> <li>• Do not attempt to service the equipment unless this service manual has been consulted and is understood.</li> <li>• Failure to heed this warning may result in injury to the service provider, operator or patient from electric shock, mechanical or other hazards.</li> </ul>
<p><b>HOIATUS</b> (ET)</p>	<p>See teenindusjuhend on saadaval ainult inglise keeles</p> <ul style="list-style-type: none"> <li>• Kui klienditeeninduse osutaja nõuab juhendit inglise keelest erinevas keeles, vastutab klient tõlketeenuse osutamise eest.</li> <li>• Ärge üritage seadmeid teenindada enne eelnevalt käesoleva teenindusjuhendiga tutvumist ja sellest aru saamist.</li> <li>• Käesoleva hoiatuse eiramine võib põhjustada teenuseosutaja, operaatori või patsiendi vigastamist elektrilöögi, mehaanilise või muu ohu tagajärjel.</li> </ul>
<p><b>VAROITUS</b> (FI)</p>	<p>Tämä huolto-ohje on saatavilla vain englanniksi.</p> <ul style="list-style-type: none"> <li>• Jos asiakkaan huoltohenkilöstö vaatii muuta kuin englanninkielistä materiaalia, tarvittavan käännöksen hankkiminen on asiakkaan vastuulla.</li> <li>• Älä yritä korjata laitteistoa ennen kuin olet varmasti lukenut ja ymmärtänyt tämän huolto-ohjeen.</li> <li>• Mikäli tätä varoitusta ei noudateta, seurauksena voi olla huoltohenkilöstön, laitteiston käyttäjän tai potilaan vahingoittuminen sähköiskun, mekaanisen vian tai muun vaaratilanteen vuoksi.</li> </ul>
<p><b>ATTENTION</b> (FR)</p>	<p>Ce manuel d'installation et de maintenance est disponible uniquement en anglais.</p> <ul style="list-style-type: none"> <li>• Si le technicien d'un client a besoin de ce manuel dans une langue autre que l'anglais, il incombe au client de le faire traduire.</li> <li>• Ne pas tenter d'intervenir sur les équipements tant que ce manuel d'installation et de maintenance n'a pas été consulté et compris.</li> <li>• 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.</li> </ul>

<p><b>WARNUNG</b> (DE)</p>	<p>Diese Serviceanleitung existiert nur in englischer Sprache.</p> <ul style="list-style-type: none"> <li>• Falls ein fremder Kundendienst eine andere Sprache benötigt, ist es Aufgabe des Kunden für eine entsprechende Übersetzung zu sorgen.</li> <li>• Versuchen Sie nicht diese Anlage zu warten, ohne diese Serviceanleitung gelesen und verstanden zu haben.</li> <li>• Wird diese Warnung nicht beachtet, so kann es zu Verletzungen des Kundendiensttechnikers, des Bedieners oder des Patienten durch Stromschläge, mechanische oder sonstige Gefahren kommen.</li> </ul>
<p><b>ΠΡΟΕΙΔΟΠΟΙΗΣΗ</b> (EL)</p>	<p>Το παρόν εγχειρίδιο σέρβις διατίθεται μόνο στα αγγλικά.</p> <ul style="list-style-type: none"> <li>• Εάν ο τεχνικός σέρβις ενός πελάτη απαιτεί το παρόν εγχειρίδιο σε γλώσσα εκτός των αγγλικών, αποτελεί ευθύνη του πελάτη να παρέχει τις υπηρεσίες μετάφρασης.</li> <li>• Μην επιχειρήσετε την εκτέλεση εργασιών σέρβις στον εξοπλισμό αν δεν έχετε συμβουλευτεί και κατανοήσει το παρόν εγχειρίδιο σέρβις.</li> <li>• Αν δεν προσέξετε την προειδοποίηση αυτή, ενδέχεται να προκληθεί τραυματισμός στον τεχνικό σέρβις, στο χειριστή ή στον ασθενή από ηλεκτροπληξία, μηχανικούς ή άλλους κινδύνους.</li> </ul>
<p><b>FIGYELMEZTETÉS</b> (HU)</p>	<p>Ezen karbantartási kézikönyv kizárólag angol nyelven érhető el.</p> <ul style="list-style-type: none"> <li>• Ha a vevő szolgáltatója angoltól eltérő nyelvre tart igényt, akkor a vevő felelőssége a fordítás elkészítése.</li> <li>• Ne próbálja elkezdni használni a berendezést, amíg a karbantartási kézikönyvben leírtakat nem értelmezték.</li> <li>• Ezen figyelmeztetés figyelmen kívül hagyása a szolgáltató, működtető vagy a beteg áramütés, mechanikai vagy egyéb veszélyhelyzet miatti sérülését eredményezheti.</li> </ul>
<p><b>AÐVÖRUN</b> (IS)</p>	<p>Þessi þjónustuhandbók er aðeins fáanleg á ensku.</p> <ul style="list-style-type: none"> <li>• Ef að þjónustuveitandi viðskiptamanns þarfnast annas tungumáls en ensku, er það skylda viðskiptamanns að skaffa tungumálaþjónustu.</li> <li>• Reynið ekki að afgreiða tækið nema að þessi þjónustuhandbók hefur verið skoðuð og skilin.</li> <li>• Brot á sinna þessari aðvörun getur leitt til meiðsla á þjónustuveitanda, stjórnanda eða sjúklings frá raflosti, vélrænu eða öðrum áhættum.</li> </ul>
<p><b>AVVERTENZA</b> (IT)</p>	<p>Il presente manuale di manutenzione è disponibile soltanto in lingua inglese.</p> <ul style="list-style-type: none"> <li>• Se un addetto alla manutenzione richiede il manuale in una lingua diversa, il cliente è tenuto a provvedere direttamente alla traduzione.</li> <li>• Procedere alla manutenzione dell'apparecchiatura solo dopo aver consultato il presente manuale ed averne compreso il contenuto.</li> <li>• Il mancato rispetto della presente avvertenza potrebbe causare lesioni all'addetto alla manutenzione, all'operatore o ai pazienti provocate da scosse elettriche, urti meccanici o altri rischi.</li> </ul>
<p><b>警告</b> (JA)</p>	<p>このサービスマニュアルには英語版しかありません。</p> <ul style="list-style-type: none"> <li>• サービスを担当される業者が英語以外の言語を要求される場合、翻訳作業はその業者の責任で行うものとさせていただきます。</li> <li>• このサービスマニュアルを熟読し理解せずに、装置のサービスを行わないでください。</li> <li>• この警告に従わない場合、サービスを担当される方、操作員あるいは患者さんが、感電や機械的又はその他の危険により負傷する可能性があります。</li> </ul>

<p><b>경고</b> (KO)</p>	<p>본 서비스 매뉴얼은 영어로만 이용하실 수 있습니다 .</p> <ul style="list-style-type: none"> <li>• 고객의 서비스 제공자가 영어 이외의 언어를 요구할 경우 , 번역 서비스를 제공하는 것은 고객의 책임입니다 .</li> <li>• 본 서비스 매뉴얼을 참조하여 숙지하지 않은 이상 해당 장비를 수리하려고 시도하지 마십시오 .</li> <li>• 본 경고 사항에 유의하지 않으면 전기 쇼크 , 기계적 위험 , 또는 기타 위험으로 인해 서비스 제공자 , 사용자 또는 환자에게 부상을 입힐 수 있습니다 .</li> </ul>
<p><b>BRDINJUMS</b> (LV)</p>	<p>Šī apkopes rokasgrāmata ir pieejama tikai angļu valodā.</p> <ul style="list-style-type: none"> <li>• Ja klienta apkopes sniedzējam nepieciešama informācija citā valodā, klienta pienākums ir nodrošināt tulkojumu.</li> <li>• Neveiciet aprīkojuma apkopi bez apkopes rokasgrāmatas izlasīšanas un saprašanas.</li> <li>• Šī brīdinājuma neievērošanas rezultātā var rasties elektriskās strāvas trieciena, mehānisku vai citu faktoru izraisītu traumu risks apkopes sniedzējam, operatoram vai pacientam.</li> </ul>
<p><b>ĮSPĖJIMAS</b> (LT)</p>	<p>Šis eksploatavimo vadovas yra tik anglų kalba.</p> <ul style="list-style-type: none"> <li>• Jei kliento paslaugų tiekėjas reikalauja vadovo kita kalba – ne anglų, suteikti vertimo paslaugas privalo klientas.</li> <li>• Nemėginkite atlikti įrangos techninės priežiūros, jei neperskaitėte ar nesupratote šio eksploatavimo vadovo.</li> <li>• Jei nepaisysite šio įspėjimo, galimi paslaugų tiekėjo, operatoriaus ar paciento sužalojimai dėl elektros šoko, mechaninių ar kitų pavojų.</li> </ul>
<p><b>ADVARSEL</b> (NO)</p>	<p>Denne servicehåndboken finnes bare på engelsk.</p> <ul style="list-style-type: none"> <li>• Hvis kundens serviceleverandør har bruk for et annet språk, er det kundens ansvar å sørge for oversettelse.</li> <li>• Ikke forsøk å reparere utstyret uten at denne servicehåndboken er lest og forstått.</li> <li>• Manglende hensyn til denne advarselen kan føre til at serviceleverandøren, operatøren eller pasienten skades på grunn av elektrisk støt, mekaniske eller andre farer.</li> </ul>
<p><b>OSTRZEŻENIE</b> (PL)</p>	<p>Niniejszy podręcznik serwisowy dostępny jest jedynie w języku angielskim.</p> <ul style="list-style-type: none"> <li>• Jeśli serwisant klienta wymaga języka innego niż angielski, zapewnienie usługi tłumaczenia jest obowiązkiem klienta.</li> <li>• Nie próbować serwisować urządzenia bez zapoznania się z niniejszym podręcznikiem serwisowym i zrozumienia go.</li> <li>• Niezastosowanie się do tego ostrzeżenia może doprowadzić do obrażeń serwisanta, operatora lub pacjenta w wyniku porażenia prądem elektrycznym, zagrożenia mechanicznego bądź innego.</li> </ul>
<p><b>ATENÇÃO</b> (PT-BR)</p>	<p>Este manual de assistência técnica encontra-se disponível unicamente em inglês.</p> <ul style="list-style-type: none"> <li>• Se outro serviço de assistência técnica solicitar a tradução deste manual, caberá ao cliente fornecer os serviços de tradução.</li> <li>• Não tente reparar o equipamento sem ter consultado e compreendido este manual de assistência técnica.</li> <li>• A não observância deste aviso pode ocasionar ferimentos no técnico, operador ou paciente decorrentes de choques elétricos, mecânicos ou outros.</li> </ul>

<p><b>ATENÇÃO</b> (PT-PT)</p>	<p>Este manual de assistência técnica só se encontra disponível em inglês.</p> <ul style="list-style-type: none"> <li>• Se qualquer outro serviço de assistência técnica solicitar este manual noutra língua, é da responsabilidade do cliente fornecer os serviços de tradução.</li> <li>• Não tente reparar o equipamento sem ter consultado e compreendido este manual de assistência técnica.</li> <li>• O não cumprimento deste aviso pode colocar em perigo a segurança do técnico, do operador ou do paciente devido a choques eléctricos, mecânicos ou outros.</li> </ul>
<p><b>ATENȚIE</b> (RO)</p>	<p>Acest manual de service este disponibil doar în limba engleză.</p> <ul style="list-style-type: none"> <li>• Dacă un furnizor de servicii pentru clienți necesită o altă limbă decât cea engleză, este de datoria clientului să furnizeze o traducere.</li> <li>• Nu încercați să reparați echipamentul decât ulterior consultării și înțelegerii acestui manual de service.</li> <li>• Ignorarea acestui avertisment ar putea duce la rănirea depanatorului, operatorului sau pacientului în urma pericolelor de electrocutare, mecanice sau de altă natură.</li> </ul>
<p><b>ОСТОРОЖНО!</b> (RU)</p>	<p>Данное руководство по техническому обслуживанию представлено только на английском языке.</p> <ul style="list-style-type: none"> <li>• Если сервисному персоналу клиента необходимо руководство не на английском, а на каком-то другом языке, клиенту следует самостоятельно обеспечить перевод.</li> <li>• Перед техническим обслуживанием оборудования обязательно обратитесь к данному руководству и поймите изложенные в нем сведения.</li> <li>• Несоблюдение требований данного предупреждения может привести к тому, что специалист по техобслуживанию, оператор или пациент получит удар электрическим током, механическую травму или другое повреждение.</li> </ul>
<p><b>UPOZORENJE</b> (SR)</p>	<p>Ovo servisno uputstvo je dostupno samo na engleskom jeziku.</p> <ul style="list-style-type: none"> <li>• Ako klijentov serviser zahteva neki drugi jezik, klijent je dužan da obezbedi prevodilačke usluge.</li> <li>• Ne pokušavajte da opravite uređaj ako niste pročitali i razumeli ovo servisno uputstvo.</li> <li>• Zanemarivanje ovog upozorenja može dovesti do povređivanja servisera, rukovaoca ili pacijenta usled strujnog udara ili mehaničkih i drugih opasnosti.</li> </ul>
<p><b>UPOZORNENIE</b> (SK)</p>	<p>Tento návod na obsluhu je k dispozícii len v angličtine.</p> <ul style="list-style-type: none"> <li>• Ak zákazníkovi poskytovateľ služieb vyžaduje iný jazyk ako angličtinu, poskytnutie prekladateľských služieb je zodpovednosťou zákazníka.</li> <li>• Nepokúšajte sa o obsluhu zariadenia, kým si neprečítate návod na obsluhu a neporozumiete mu.</li> <li>• Zanedbanie tohto upozornenia môže spôsobiť zranenie poskytovateľa služieb, obsluhujúcej osoby alebo pacienta elektrickým prúdom, mechanické alebo iné ohrozenie.</li> </ul>

<p><b>ATENCION</b> (ES)</p>	<p>Este manual de servicio sólo existe en inglés.</p> <ul style="list-style-type: none"> <li>• Si el encargado de mantenimiento de un cliente necesita un idioma que no sea el inglés, el cliente deberá encargarse de la traducción del manual.</li> <li>• No se deberá dar servicio técnico al equipo, sin haber consultado y comprendido este manual de servicio.</li> <li>• La no observancia del presente aviso puede dar lugar a que el proveedor de servicios, el operador o el paciente sufran lesiones provocadas por causas eléctricas, mecánicas o de otra naturaleza.</li> </ul>
<p><b>VARNING</b> (SV)</p>	<p>Den här servicehandboken finns bara tillgänglig på engelska. .</p> <ul style="list-style-type: none"> <li>• Om en kunds servicetekniker har behov av ett annat språk än engelska, ansvarar kunden för att tillhandahålla översättningstjänster.</li> <li>• Försök inte utföra service på utrustningen om du inte har läst och förstår den här servicehandboken.</li> <li>• Om du inte tar hänsyn till den här varningen kan det resultera i skador på serviceteknikern, operatören eller patienten till följd av elektriska stötar, mekaniska faror eller andra faror.</li> </ul>
<p><b>OPOZORILO</b> (SL)</p>	<p>Ta servisni priročnik je na voljo samo v angleškem jeziku.</p> <ul style="list-style-type: none"> <li>• Če ponudnik storitve stranke potrebuje priročnik v drugem jeziku, mora stranka zagotoviti prevod.</li> <li>• Ne poskušajte servisirati opreme, če tega priročnika niste v celoti prebrali in razumeli.</li> <li>• Če tega opozorila ne upoštevate, se lahko zaradi električnega udara, mehanskih ali drugih nevarnosti poškoduje ponudnik storitev, operater ali bolnik.</li> </ul>
<p><b>DIKKAT</b> (TR)</p>	<p>Bu servis kılavuzunun sadece ingilizcesi mevcuttur.</p> <ul style="list-style-type: none"> <li>• Eğer müşteri teknisyeni bu kılavuzu ingilizce dışında bir başka lisandan talep ederse, bunu tercüme ettirmek müşteriye düşer.</li> <li>• Servis kılavuzunu okuyup anlamadan ekipmanlara müdahale etmeyiniz.</li> <li>• Bu uyarıya uyulmaması, elektrik, mekanik veya diğer tehlikelerden dolayı teknisyen, operatör veya hastanın yaralanmasına yol açabilir.</li> </ul>

## DAMAGE IN TRANSPORTATION

All packages should be closely examined at time of delivery. If damage is apparent, have notation "Damage in Shipment" written on all copies of the freight or express bill before delivery is accepted or "signed for" by a General Electric representative or a hospital receiving agent. Whether noted or concealed, damage MUST be reported to the carrier immediately upon discovery, or in any event, within 14 days after receipt, and the contents and containers held for inspection by the carrier. A transportation company will not pay a claim for damage if an inspection is not requested within this 14-day period.

To file a report:

- Call 1-800-548-3366 and use option 6.
- Fill out the GIQ workflow for any items missing, damaged, OBF/FOI for in process installs:  
[http://supportcentral.ge.com/ProcessMaps/form\\_new\\_request.asp?prod\\_id=268679&form\\_id=573167&node\\_id=1916016&map\\_id=&reference\\_id=&reference\\_type](http://supportcentral.ge.com/ProcessMaps/form_new_request.asp?prod_id=268679&form_id=573167&node_id=1916016&map_id=&reference_id=&reference_type)
- Contact your local service coordinator for more information on this process.

## 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 Medical personnel. 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.

## 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, GE Healthcare Group, 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, GE Healthcare Group, 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 trained 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 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.

A radiation survey must be performed when a pin source has been removed and replaced. See Radiation Survey Form Instructions or contact your EHS Specialist.

Rev 2 (July 21, 2005)

## **LITHIUM BATTERY CAUTIONARY STATEMENTS**



**CAUTION**  
Risk of  
Explosion

**Danger of explosion if battery is incorrectly replaced. Replace only with the same or equivalent type recommended by the manufacturer. Discard used batteries according to the manufacturer's instructions.**



**ATTENTION**  
Danger  
d'Explosion

**Il y a danger d'explosion s'il y a remplacement incorrect de la batterie. Remplacer uniquement avec une batterie du même type ou d'un type recommandé par le constructeur. Mettre au rebut les batteries usagées conformément aux instructions du fabricant.**

## **OMISSIONS & ERRORS**

Customers, please contact your GE Sales or Service representatives.

GE personnel, please use the GEMS CQA Process to report all omissions, errors, and defects in this publication.

# Revision History

Rev	Date	Reason for change
22	05/16/22	<p><b>Chapter 3:</b>                      Section 4.1.1 / 4.2.1: Update Figure 3-3 keyboard overlay and warning label attached (English)                      Section 4.1.1: Add cable arrangement                      Section 4.2.3: Add EIZO (DIN) and EIZO S1934 LCD for Z8G4                      Section 6.3: Add AVIMOS camera information</p> <p><b>Chapter 5:</b>                      Section 7.2: add Alarm Tape Attaching procedure.</p>
21	09/14/20	<p><b>Chapter 6:</b>                      Section 2.7.2: Update reconfig command                      Section 2.7.2: Add HIPAA information</p> <p><b>Appendix A:</b>                      Add OpenOC Console cover removal / installation procedure</p>
20	05/28/20	<p>Add Chapter for Position Subsystems with the new Install/Align service tool</p> <p><b>Chapter 1:</b>                      Section 3.7: Updated A1 EMEA information                      Section 8.0: Update PDU Contactor torque value and add model ABB info                      Section 10.0: Update Console and PDU seismic information.</p> <p><b>Chapter 3:</b>                      Section 5.0: Add Table 3-15 Z8G4 cable information: add figure 3-33 OpenOC with Z8G4 Interconnect, add figure 3-35 Z8G4 rear view with AC Box</p> <p><b>Chapter 8:</b>                      Section 12.0: Add RSvP Information</p>
19	03/08/19	<p><b>Chapter 1:</b>                      Section 10.0: Updated Console Seismic Mounting Information</p> <p><b>Chapter 2:</b>                      Section 5.0: Updated DVI cable information on Table 2-14                      Section 5.3: Updated LCD Monitor Connection</p>
18	11/13/17	<p><b>Chapter 2:</b>                      Section 5.5: Updated Figure 2-33 Z840 Host Computer rear connection</p>
17	07/11/17	<p><b>Chapter 1:</b>                      Section 10.1: Add seismic open console mounting hole location</p> <p><b>Chapter 2:</b>                      Add new section 6.0 for open console connection</p> <p><b>Chapter 5:</b>                      Section 2.11: Add Figure 5-22 Open Console Boot-up Flow Chart</p> <p><b>Chapter 7:</b>                      Section 1.0: Add IEC 3.0 option for china market                      Section 11.0 Add z840 host computer rear view</p>

Rev	Date	Reason for change
16	04/11/16	<p><b>Chapter 2:</b>  Section 4.2.3: Add PMT-22 information on TIO console  Section 5.1: Add Figure 2-21 Keyboard and warning label installed information. Update Figure 2-23 and Table 2-10 for GSCB connection  Section 5.2: Add PMT-22 information on NIO console  Section 5.4: Update Figure 2-30 NIO console interconnect with z800 Host Computer  Section 5.5: Update Figure 2-34 z800 Host Computer Connections</p>
15	10/27/15	<p>According to SPR HCSDM00379322, update Installation manual as below:  <b>Chapter 5, section 3.11.2.1:</b> update Table 5-6 3.11.2.1-12 and 3.11.2.1-13 column, change optima CT540 table height from 62 to 90  <b>Chapter 5, section 3.11.2.3:</b> update Table 5-8 3.11.2.3-14 column, change optima CT540 table height from 62 to 90</p>
14	04/24/15	<p><b>Chapter 1:</b>  Section 4.2.3: Updated Figure 1-4  Section 4.13, Section 4.14, Section 4.15, Section 4.16: Added new anchor 5487992-2 information</p>
13	02/11/15	<p><b>Chapter 2:</b>  Section 5.1: Added Table 2-8 GE Healthcare Supplied NIO16 Console (Z820 Host Computer) Cables  Section 5.3: Added NIO16 console with z820 host computer LCD connection  Section 5.4: Added Figure 2-31 NIO OC Interconnect_z820 Host Computer  Section 5.5: Added Figure 2-35 Z820 Host Computer Connections  <b>Chapter 7:</b>  Added Section 6.0 for Declaring Remote Hosts on the CT System (SUSE OS System)  <b>Chapter 8:</b>  Delete this section according to global requirement</p>
12	01/21/14	<p><b>Chapter 6:</b>  Added Section 6.5.1 for Image Performance Verification Methods Selection  Added Section 6.5.2 for Image Performance Verification (without QA2 Protocol)</p>

Rev	Date	Reason for change
11	11/04/13	<p><b>Chapter 1:</b>                      Section 8.0: Corrected TS1-1, TS1-2, TS1-3 on Table 1-5</p> <p><b>Chapter 2:</b>                      Section 4.4.2: Added connecting the monitor with FX1800 graphic card on TIO console                      Section 4.8: Updated Figure 2-20 TIO OC Interconnect with FX1800 Graphic Card                      Section 5.4: Added Figure 2-28 NIO OC Interconnect with FX1800 Graphic Card</p> <p><b>Appendix B:</b> Added Section 5.0 Gantry Bore Cover Removal and Installation procedure.</p> <p><b>Chapter 6 Section 6.4.2.2:</b> Updated Brightness Uniformity (AvXo - AvXc) spec to +/- 17 on Table 6-3</p> <p><b>Chapter 7 Section 1.0:</b> Added verify JJG option for China Market</p>
10	06/25/13	<p><b>Chapter 2:</b>                      Section 4.0: Added TIO USB Connector Location with FX1800 graphic card                      Section 5.2 Added PMT-20 information                      Section 5.6 Added new AC BOX (5412524-2) information                      Section 7.0 Added Simplified Power Pan Connections information</p> <p><b>Chapter 3:</b> Added Simplified Power Pan on Figure 3-2</p> <p><b>Appendix B:</b> Updated Section 4.3 Front Cover Installation about Set the dip switch S19 on the control panel to all <b>OFF</b> position.</p> <p><b>Appendix C:</b> Added Section 2.0 for Aurora Table Installation procedure</p> <p><b>Chapter 5:</b> Updated System Setting Screen, Preference Setup Screen on Section 2.6.2</p>
9	11/19/12	<p><b>Chapter 2:</b> Updated Section 5.0 NIO16 Console Connection                      Added Section 3.2 Scan Room Warning Light &amp; Door Interlock</p> <p><b>Appendix C:</b> Updated Appendix C FWS Assembly and Adjustment</p>

Rev	Date	Reason for change
8	03/29/12	<p><b>Chapter 2:</b> Section 5.0 Added Table 2-6 Healthcare Supplied NIO16 Console Cables</p> <p>Section 9.0 Updated title of Figure 2-33 PDU Cable Connections for PDU-3- Front</p> <p>Added Figure 2-34 PDU Cable Connections for PDU-71 - Front</p> <p>Updated Figure 2-35 PDU Cable Connections - rear</p> <p>Updated title of Figure 2-37 Circuit Breaker Panel for PDU-3</p> <p>Added Panel Circuit Breaker for PDU-71 for section 9.1.2 Panel - Circuit Breakers</p> <p>Updated section 9.1.6 Gantry &amp; Console Power Connections (120V)</p> <p><b>Appendix B:</b> Section 1.0 Added front cover dolly part number in section 1.3.4 Gantry Front Cover and added rear cover dolly part number in section 1.4 Gantry Rear Cover</p> <p><b>Chapter 5:</b> Section 2.0 Updated title of section 2.10</p> <p>Section 3.0 Updated Table 5-6 Position Tilt, Move Table to Interference Limit Tests</p> <p>Updated Table 5-7 Position Table, Move Tilt to Interference Limit Tests</p> <p>Updated Table 5-8 Tilt Limits When Table Below Scan Plane Lower Limit Tests</p> <p><b>Chapter 6:</b> Section 6.0 Updated section 6.5 20cm QA Phantom Image Series Image Performance Verification</p>
7	02/17/12	<p>Added Optima CT540 product name for whole manual</p> <p>Added Appendix B Removal &amp; Installation of Covers for Optima CT540</p> <p><b>Chapter 5:</b> Section 1.0 Added Figure 5-7 Optima CT540 Gantry Emergency Stop Button Positions</p> <p>Updated Figure 5-5 Reset buttons on Gantry and Service Switch bank</p> <p>Updated Figure 5-8 GSCB Emergency Stop Button on NIO16 Console for IEC3 requirements</p> <p>Section 3.0 Updated Figure 5-23 GSCB Volume Controls on NIO16 Console for IEC3 requirements</p> <p>Updated 3.4.1 Check And Install System Warning Labels for IEC3 requirements</p>

Rev	Date	Reason for change
6	12/13/11	<p><b>Chapter 1:</b> Section 9.3 Added Install Optima Desk                      Updated Section 9.4 Peripherals Placement</p> <p><b>Chapter 2:</b> Added Section 5.0 NIO16 Console Connection                      Updated Section 6.0 Install Options                      Updated Table 2-3 BrightSpeed System Interconnect Cables</p> <p><b>Chapter 5:</b> Section 1.0 Added Figure 5-7 GSCB Emergency Stop Button on NIO16 Console                      Updated Section 1.0 Electrical Power ON &amp; Ground Checks                      Section 2.0 Added Figure 5-18 NIO16 Console Boot-up Flow Chart                      Section 3.0 Added Figure 5-21 GSCB Volume Controls on NIO16 Console                      Updated Section 3.0 Table Gantry Integration                      Section 3.0 updated 3.4.1 Check And Install System Warning Labels for IEC3 requirement</p> <p><b>Chapter 7:</b> Section 10.0 Added Figure 7-18 NIO16 Console Rear View                      Updated Section 10.0 Network Connections</p>
5	08/05/11	<b>Chapter 1:</b> Section 4.9: Added table ISO unit during table alignment
4	12/03/10	<b>Chapter 2:</b> Section 4.2: Added new Media Tower connection
3	11/05/10	<p><b>Chapter 1:</b> Added Section 9.6 for TIO Console Power Switch adjustment</p> <p><b>Chapter 5, Section 3.11:</b> Updated the Interference Test Value per Service Note175</p>
2	06/01/10	<p><b>Chapter 5, Section 3.4.1:</b> Remove Table rear side cover warning label and Accessories Sagittal Head Holder Warning label from the Table 5-2</p> <p><b>Chapter 5, Section 3.10:</b> Correct the MTCB to GTCB</p> <p><b>Chapter 5, Section 3.10:</b> Updated GT1700 cradle travel distance</p>
1	08/24/07	Initial Release



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# Preface

## Publication Conventions

Please become familiar with the conventions used within this publication before proceeding.

### Section 1.0 Safety & Hazard Information

#### 1.1 Text and Character Representation

Within this publication, different paragraph and character styles have been used to indicate potential hazards. Paragraph prefixes, such as hazard, caution, danger and warning, are used to identify important safety information. Text (Hazard) styles are applied to the paragraph contents that is applicable to each specific safety statement. Words describe the type of potential hazard that may be encountered and are placed immediately before the paragraph it modifies. Safety information will normally include:

- Type of potential hazard
- Nature of potential injury
- Causative condition
- How to avoid or correct the causative condition

#### EXAMPLES OF HAZARD STATEMENTS USED

A few examples are provided that have been adapted from GEMS' global document standard (2119696-100). They include paragraph prefixes and modified text styles.



**CAUTION**  
Pinch Points  
Loss of Data  
Sharp Objects

**Caution is used when a hazard exists that can or could cause minor injury to self or others if instructions are ignored. They include for example:**

- Loss of critical patient data
- Crush or pinch points
- Sharp objects



**DANGER**  
EXCESSIVE  
VOLTAGE  
CRUSH  
POINT

**DANGER IS USED WHEN A HAZARD EXISTS THAT WILL CAUSE SEVERE PERSONAL INJURY OR DEATH IF INSTRUCTIONS ARE IGNORED. THEY CAN INCLUDE:**


- ELECTROCUTION
- CRUSHING
- RADIATION



**WARNING**  
ROTATING  
EQUIPMENT  
BARE WIRES

**WARNING IS USED WHEN A HAZARD EXISTS WHICH COULD OR CAN CAUSE SERIOUS PERSONAL INJURY OR DEATH IF INSTRUCTIONS ARE IGNORED. THEY CAN INCLUDE:**

- Potential for shock
- Exposed wires
- Failure to Tag and lockout system power could allow for un-command motion.


 **NOTICE**  
**Equipment Damage Possible**

**Notice is used when a hazard is present that can cause property damage but has absolutely no personal injury risk. They can include:**

- Disk drive will crash
- Internal mechanical damage, such as to the x-ray tube
- Coasting the rotor through resonance.

It's important that the reader not ignore hazard statements in this document.

## 1.2 Graphical Representation

Important information will always be preceded by the exclamation point  contained within a triangle, as seen throughout this chapter. In addition to text, several different graphical icons (symbols) may be used to make you aware of specific types of hazards that could possibly cause harm.

### ELECTRICAL



**LASER**



### MECHANICAL



**HEAT**



### RADIATION



**PINCH**



Some others make you aware of specific procedures that should be followed.

### AVOID STATIC ELECTRICITY



### TAG AND LOCK OUT



### WEAR EYE PROTECTION



# Section 2.0 Publication Conventions

## 2.1 General Paragraph and Character Styles

Prefixes are used to highlight important non-safety related information. Paragraph prefixes (such as Purpose, Example, Comment and Note) are used to identify important but non-safety related information. Text styles are also applied to text within each paragraph modified by the specific prefix.

### EXAMPLES OF PREFIXES USED FOR GENERAL INFORMATION

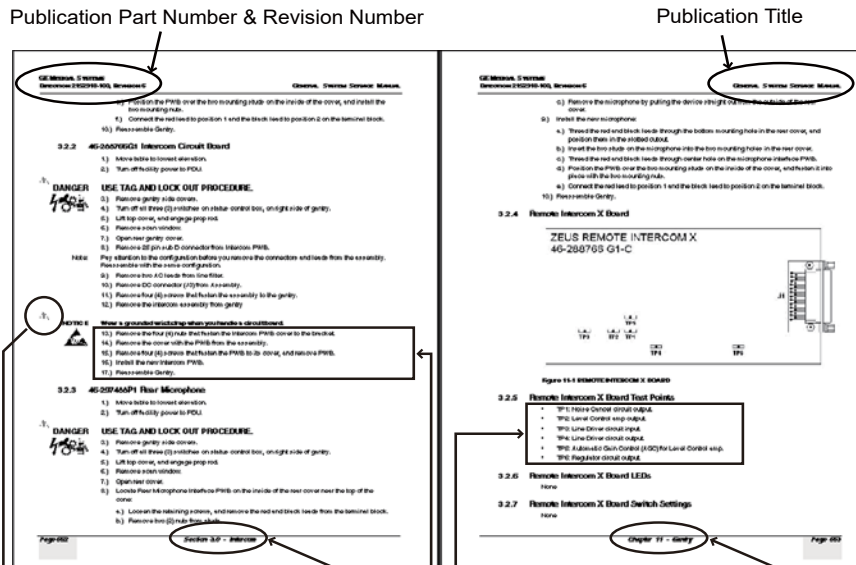
**Purpose:** Introduces and provides meaning as to the information contained within the chapter, section or subsection, such as used at the beginning this chapter for example.

**Note:** Conveys information that should be considered important to the reader.

**Example:** Used to make the reader aware that the paragraph(s) that follow are examples of information possibly stated previously.

**Comment:** Represents "additional" information that may or may not be relevant.

## 2.2 Page Layout



The current section and its title are always shown in the footer of the left (even) page. An exclamation point in a triangle is used to indicate important information to the user. Paragraphs preceded by Alphanumeric (e.g. numbers) characters is information that must be followed in a specific order

The current chapter and its title are always shown in the footer of the right (odd) page. Paragraphs preceded by symbols is (e.g. bullets) information that has no specific order.

Headers and footers in this publication are designed to allow you to quickly identify your location. The document's part number and revision number appears in every header on every page. Odd numbered page footers indicate the current chapter, its title, and current page number. Even page footers show the current section and its title, as well current page number.

## 2.3 Computer Screen Output/Input Character Styles

Within this publication different character styles are used to indicate computer input and output text. Character (input, output, and variable) styles are used and applied to the text within a paragraph so as to indicate directions. Computer screen output and input is also formatted using mono (fixed width) spaced fonts.

**Example:** This paragraph denotes computer screen fixed output. It's output is fixed from the sense that it does not vary from application to application. It's the most commonly used style used to indicate filenames, paths, and text.  
**Fixed Output**

**Example:** *This paragraph denotes computer screen output that is variable. Its output varies from application to application. Variable output is sometimes found placed between greater than and lesser than operators. For example: <variable\_ouput>*  
**Variable Output**

**Example:** **This paragraph denotes fixed input. It's typed input that will not vary from application to application. Fixed text the user is required to supply as input.**  
**Fixed Input**

**Example:** ***This paragraph denotes computer input that can vary from application to application. Variable text the user is required to supply as input. Variable input sometimes is placed between greater than and lesser than operators. For example: <variable\_input>. In these cases, the (<>) operators are dropped prior to input. Exceptions are noted in the text.***  
**Variable Input**

## 2.4 Buttons, Switches and Keyboard Inputs (Hard & Soft Keys)

Different character styles are used to indicate actions requiring the reader to press either a hard or soft button, switch, or key. Physical hardware, such as buttons and switches, are called hard keys because they are hard wired or mechanical in nature. A keyboard or on/off switch would be a hard key. Software or computer generated buttons are called soft keys because they are software generated. Software driven menu buttons are an example of such keys. Soft and hard keys are represented differently in this publication.

**Example:** A power switch **ON/OFF** or a keyboard key like **ENTER** is indicated by applying a character style that uses both over and under-lined bold text that is bold. This is a hard key.  
**Hard Keys**

**Example:** Whereas the computer MENU button that you would click with your mouse or touch with your hand uses over and under-lined regular text. This is a soft key.  
**Soft Keys**

# Chapter 1

## Position Subsystems with Floor Template



**NOTICE** Potential for Data Loss and/or Equipment Damage.

To prevent potential data loss and equipment damage, please do the following:

- Record data collected from procedures in this chapter into Form 4879 when directed, located in [Section 8.0](#) of this book.
- Only use the installation manual that arrives with your system. Any other revisions of this manual may not exactly match your system.

### Section 1.0

#### Installer/FE Notices

##### 1.1 General Safety Guidelines

- 1.) Follow all safety precautions, warnings and instructions in this manual.
- 2.) Read and obey the warnings and instructions on equipment labels or tags.
- 3.) Allow only qualified personnel to install, maintain and service this equipment.
- 4.) While the system is designed to meet all safety requirements applicable to medical equipment, qualified operators must understand the potential safety hazards, and take steps to minimize the risk at all times.
- 5.) **Never** modify the system in whole or in part without prior written approval by GE Healthcare.
- 6.) Do **not** change, add, or remove any system accessory without prior written approval of the vendor's local service manager.
- 7.) **Never** leave the system in an unsafe condition. Notify the customer that the system is not to be used until a problem is resolved.
- 8.) Read and follow the precautions described in this manual.

##### 1.2 Shipping, Warehouse and Transportation Warning

- This gantry is designed to be moved using the shipping dollies and should not be lifted or moved using a lift truck.
- Do Not Hoist Gantry or Table using Dollies.

##### 1.3 International Shipments

- Dollies must be used to remove the gantry from the shipping skid and to transport the gantry to the customer's site.
- If lifting is required, refer to the *Pre-Installation Manual* for instructions.

## 1.4 On Site Warning

This system requires a gantry bearing gap inspection *before* electrical calibration is started. See [Gantry Bearing Gap Inspection](#) on section 4.4 of this Chapter.

## 1.5 Service Actions

Open a dispatch and record the bearing inspection results first, then close the dispatch and continue with the electrical calibration procedures.

## Section 2.0

# Install Table/Gantry Introduction

This chapter describes how to mount, position, and level the CT Scanner subsystems.

Note: Before you start the installation, make sure the site preparation complies with conditions and instructions found in the *Pre-installation manual*. Failure to comply will result in excessive installation delay and potential increased, unrecoverable installation costs. This product is designed to meet specific mechanical installation standards that should be reviewed prior to installing this system.

## 2.1 Floor and Room Preparation

### 2.1.1 Preparation

Consult your local GE Sales and Service representative about your specific needs. It is the purchaser's (buyer) responsibility to provide an approved support structure and an approved method of mounting. General Electric is not responsible for any failure of the support structure or method of anchoring.

The system has a total floor load of approximately 6500 lbs (2950 kg). About 5175 lbs (2350 kg), including patient (500 lbs (227 kg)), is concentrated in the table-gantry assembly. Refer to the *Pre-installation Manual* for more information.

### 2.1.2 Flooring

Do not place the scanner on any resilient flooring. Resilient tile or carpeting may slowly yield over a period of time and disturb the alignment of the table to the gantry. Refer to the floor template to determine locations where resilient flooring material should be removed.

Limitations include:

- No part of the floor surface within the table, gantry, or the two interface areas between table and gantry should be higher than the support areas for the table and gantry.
- The floor structure must withstand the occupied weight of table and gantry, as well as the individual contact area loading of these components.
- The method and placement of anchors or through bolts must not reduce the structural strength of the floor.

If you have to remove the gantry covers in order to move the gantry into the room, refer to [Appendix A](#) for the cover removal procedure. Please read the caution statement on [page 169](#) before removing the gantry covers.

## 2.2 Overview

Procedures in this chapter provide detailed instructions to position, level, and anchor the gantry and table securely for operation. The system uses adjustable leveling pads to support the gantry and table. The gantry has four (4) primary leveling pads located on the gantry base. The table has four (4) pads used for leveling it.

The process you will be following is:

- 1.) Use the room-layout template to determine the general position of the gantry and table.
- 2.) Move the gantry into position.
- 3.) Level gantry.
- 4.) Use the laser tool to position the table relative to the gantry.

5.) Level the table to the gantry, and anchor the system.

Note: Use the template to position the system; however, use the gantry and table to locate and drill the anchor holes. Drill the anchor holes with the system in place.

## 2.3 Pre-Installation Template

**Always** use the room-layout template (in two pieces), during installation (see [Table 1-1](#), for part number). The gantry and table will not be properly aligned if existing holes are used. The template shows the location of the gantry and table anchor holes.

This template is shipped with the system. It is located on the middle shelf on the Lean Installation Cart. You can also order it via the web GEMS BUY, from OneTouchPoint.

**Table 1-1 Room Layout Templates**

System	Part Number
Optima CT540	5341997

## 2.4 Required Common Tools and Supplies

The following tools and supplies are required for installation of the scanner. Please refer to [Appendix C, on page 303](#), for pictorial descriptions of the tools and supplies.

### WRENCHES

- Standard and metric combination wrench sets
- Standard and metric hex key (Allen wrench) sets
- ½" and 3/8" drive torque wrench: 0-100 N-m (0-100 ft.-lb.) Must be calibrated yearly.

### SOCKETS AND EXTENSIONS

- 3/8" and ½" drive ratchet wrenches
- ½" drive 3" & two 6" long extensions
- 3/8" drive 12" long extension
- Standard & Metric 3/8" drive socket sets
- ¾" deep well socket 3/8"
- 1", 1-1/8", 1-¼" & 1-½" sockets for ½" drive
- 3/8" drive universal joint
- Metric hex bit set ¼" or 3/8" drive, including:
  - 14mm hex bit 3/8" or ½" drive (14mm ball hex helpful)
  - 10mm hex bit 3/8" drive

### SCREW DRIVERS

- Phillips screwdriver set (small, medium, and large)
- Straight blade screwdriver set (small, medium, and large)

### DRILL BITS

- Complete set of standard (U.S.) drill bits
- Metric tap set (Optional)
- 12 mm concrete drill bit (2203081: HILTI, TE-CX 12/17 or equivalent)
- ½" masonry bit, min. 8" long USA; 18" optional (for rear table hole)
- 3" (76mm) hole saw with 1/4" (6mm) masonry bit (to remove flooring)

### POWER TOOLS

- 3/8" or 1/2" drill, cordless or electric
- Reciprocating saw (Sawzall or equivalent) and assorted blades
- Hammer Drill & Bit (8" min, 12" max)
- Sears 17740 Shop Vacuum or equivalent, with "HEPA" or dry wall dust filter (Sears part number 17918 or equivalent)
- 25' extension power cords

### HAND TOOLS

- Ball-Peen Hammer (1lb or 2lb)
- Tongue & Groove Pliers (large)
- Diagonal Cutting Pliers, Large (to cut 1/0 ground)
- Framing Square (e.g., Empire 16" x 24" aluminum square)
- Diagonal Cutting Pliers, Small
- Large pry bar
- 4', 2' & 9" torpedo levels (see [Table 1-2: Recommended Levels](#))
- Laser level (see [Table 1-2: Recommended Levels](#))

**Table 1-2 Recommended Levels**

	Johnson Magnetic Level, model 7500M*
9"	Johnson Magnetic Level, model 4500 Stanley Magnetic Level
6"	Level
2'	Johnson Professional Box Beam Level, model 9624* Empire Titan Professional Box Beam Level, model 900 series
4' (nominal)	48" Johnson Professional Box Beam Level* 42" Stanley Contractor Grade Level 48" Empire Titan Professional Box Beam Level, model 900 series 48" Stabila Aluminum Box Beam Level, Kit 24816

\* Preferred levels

### ELECTRICAL TOOLS

- DVM capable of reading 0.5 ohms or less
- Continuity Tester
- Dale 600 or 601 Leakage meter (The Fluke ESA612 be used globally when the Dale analyzer is not available)
- Temperature/humidity tool: Oregon Scientific Wireless Weather Station Model BAR608HGA or equivalent

---

## PERSONAL SAFETY EQUIPMENT

- Safety shoes\*
- Safety glasses\*
- Gloves
- LOTO kit\* -- MUST have
- Hearing protection\*
- 6' or 8' step ladders

\* These PPE items are absolutely required for every installation job, with NO exceptions.

## SYSTEM CLEANERS

Purchase Locally:

- Glass Cleaner or equivalent
- Scrubbing Bubbles Bathroom Cleaner or equivalent
- Grease Cutting Cleaner or equivalent

## GE TOOLS

- 5148193 (VCT Alignment Kit)
- 5180876 (TARGET TABLE ALIGNMENT)
- 5272090 (Complete Laser alignment tool for VCT, BrightSpeed Select and RT16, which includes 5148193 and 5180876)

Note: A box labeled Installation Support Kit is shipped with each system. It contains materials needed to install this CT scanner.

## Section 3.0 Delivery Procedure

### 3.1 System Transportation - Temperature Extremes

When transporting the CT system, ensure that the system is not exposed to temperatures or humidity outside the following specifications.

Temperature: -40° to +158° F (-40° to +70° C)

Humidity: 10% to 100%, including condensing

**NOTICE** **Component Freezing occurs if CT system is exposed to temperatures below 0° F (-18° C) for a period longer than two days.**

**Allow a minimum of 12 hours for the CT system to adjust to ambient room temperature prior to installation.**

**Inspect for visible condensation and allow all moisture to evaporate before starting the installation.**

### 3.2 Stored Systems

If your system was stored for more than three months:

- Complete a visual inspection, looking for damage due to improper storage.
- Check for the latest software revisions, options and component changes.
- Contact the OLC for support.
- Movers are required to move the equipment to the scan room.

### 3.3 Construction Site Storage

When storing the CT system at a construction site, be sure to adhere to the following storage requirements:

- Construction site packaging must be ordered and the system shipped packaged for storage.
- Do not damage or puncture the shipping crate.
- Do not remove packaging until the completion of all construction at the site and the removal of all dust created by the construction.
- Maintain a storage temperature with the range of 50° to 90° F (10° to 32° C)
- Maintain a relative humidity (non-condensing) between 20% to 70%

### 3.4 Construction Site Installation

A construction installation describes installations at sites without an occupancy permit, or ongoing construction. In general, construction sites fail to meet the required specification for system delivery, and GE does not recommend such installations, as they can result in delays, increased costs, and possible damage to the system. When construction-site delivery proves unavoidable, the installation fails into one of two categories:

- Full construction site with completed radiology area.
- Full construction site with limited delivery access.

Review these categories to determine which most closely matches the conditions of the planned installation site.

### 3.4.1 Full Construction Site with Completed Radiology Area

This type of site consists of a finished, dust-free, occupancy-ready radiology suite at a site with ongoing construction in other areas, but with no remaining construction in or around the scan suite area. At the time of delivery such sites feature:

- Dust control measures deployed in the radiology suite area.
- Scan suite access limited to a single entrance.
- Radiology suite sealed off from the remaining construction area.
- Operational HVAC, with a positive air pressure within the radiology suite

In addition, the radiology suite at such a site REMAINS in a dust-free, occupancy-ready state after delivery and throughout the remaining construction phase.

For more details, refer to the *Pre-Installation Manual*.

### 3.4.2 Full Construction Site with Limited Delivery Access

This type of site allows delivery during ongoing construction of the radiology suite area.

Construction site packaging must be ordered and the system is delivered packed for construction site storage. Packaging cannot be added during the delivery.

At Full Construction sites, delivery occurs prior to site completion, but the product remains stored until the completion of a finished, dust-free, occupancy-ready radiology suite area. This system is delivered in sealed package with dollies. Delivery to the storage area requires a lift truck or riggers. Installation work can begin **only** when the site reaches the completed, dust-free, occupancy-ready radiology suite requirement.

### 3.4.3 Construction Site Unpacking

If room is not completed, following escalation process. Pre-installation escalation is the process used to consult CT Engineering, the Design Center, or EHS to resolve pre-installation issues related to siting concerns and requirements.

A typical construction site package consists of 8-12 package. Each package is plastic-wrapped in dust-free packaging. Each package must be vacuumed to remove construction dust prior to moving components into the CT scan room. This process can add approximately two hours to your installation time.

Typical components are:

- Gantry
- Table
- Console
- NGPDU
- Lean Cover Cart
- Lean Install Cart
- Chair
- Service Cabinet

## 3.5 Working with the Mover

Follow the instructions provided by your installation specialist regarding working with equipment movers. Help direct movers on where to place equipment and which items you need first.

Generally movers should move all equipment into the customer room. Door removal and other site changes to move equipment should be done only as directed by the install specialist.

For component sizes and weights, refer to the *Optima CT540 Pre-Installation* manual.

### 3.5.1 Delivery Dolly Options:

- Gantry Mini Dolly - ordered from UMI at <http://www.umi-dollyshop.com>

Follow the instructions provided by your Project Manager of Installation regarding working with equipment movers. Help direct movers as to where to place equipment and which items are needed first.

Movers should move all equipment into the customer's room. Door removal and other site changes to move equipment should be done only as directed by the Project Manager of Installation.

For component sizes and weights, refer to the *Pre-installation Manual* for this system.

Note: Do not place equipment in its final location at this time. Templates must be laid first.

Note: If you have to remove the gantry covers in order to move the gantry into the room, please read the notice statement before removing the gantry covers.

### 3.5.2 Equipment Delivery Route

Prior to equipment delivery, review the delivery route with the movers. Refer to the Project Manager of installation for any additional delivery instructions.

### 3.5.3 Floor Protection

It is suggested that the movers use floor protection. Most equipment movers can provide floor protection during the equipment delivery. Installers should provide floor protection for the room.

### 3.5.4 Removing Gantry Dollies and Covers

Refer to [Appendix A](#) for the dolly and cover removal procedures. Please read the caution statement on [page 169](#) before removing the gantry covers.

## 3.6 Damage In Transportation

Check for damage to property that may have occurred at the site during delivery, such as damage to floors, door frames or walls. If damage is found, notify the Project Manager of Installation.

All packages should be closely examined at time of delivery. If damage is apparent, have notation "Damage in Shipment" written on all copies of the freight or express bill before delivery is accepted or "signed for" by a General Electric representative or a hospital receiving agent. Whether noted or concealed, damage shall be reported to the carrier immediately upon discovery, or in any event, within 14 days after receipt, and the contents and containers held for inspection by the carrier. A transportation company will not pay a claim for damage if an inspection is not requested within this 14-day period.

To file a report:

- Call 1-800-548-3366 and use option 6.
- Fill out the GIQ workflow for any items missing, damaged, OBF/FOI for in process installs:  
[http://supportcentral.ge.com/ProcessMaps/form\\_new\\_request.asp?prod\\_id=268679&form\\_id=573167&node\\_id=1916016&map\\_id=&reference\\_id=&reference\\_type](http://supportcentral.ge.com/ProcessMaps/form_new_request.asp?prod_id=268679&form_id=573167&node_id=1916016&map_id=&reference_id=&reference_type)
- Contact the local service coordinator for more information on this process.

### 3.7 A1 Breaker

- NOTICE**
- All site must have a main disconnect with Lockout/Tagout capability.
  - Non GE-supplied breakers must have/provide under-voltage protection. For more information, refer to the *Pre-Installation Manual* for this system.
  - A LICENSED ELECTRICIAN shall install and make connections inside the main disconnect.

Lock-out and tag-out the A1 breaker now.

A1 Breaker		UPS
Global except EMEA	EMEA	
90Amp, 440V-480V <b>E4502AB/E4502BB</b> 110Amp 380V-420V <b>E4502AC/E4502BC</b>	<b>E46001AC/                      E45021BB (125A)</b>	<i>Optional Partial UPS Kit</i> <b>B7999ZA alt.E4502KY</b> (includes 5169128 9155-10GE model 10KVA, 2ph UPS & hardware kit) requires one of the A1 Panels shown at left <b>B7999ZB alt.E4502KZ</b> (includes 5820687 Liebert GXT4 model 10KVA, 2ph UPS & hardware kit) requires one of the A1 Panels shown at left

Table 1-3 A1 Panel and UPS

1 – Pos. Subsystems

Figure 1-1 Sample A1 Breaker



### 3.8 Installation Support Kits

An Installation Support Kit is shipped with every system. Locate this box now and open it. All included materials are to be used during the installation process. These items are to be left ON SITE, for future service needs.

## 3.9 Installation Conditions

- 1.) A Final Site Print is REQUIRED. Contact your PMI for a final site print.
- 2.) The room size must match the print.

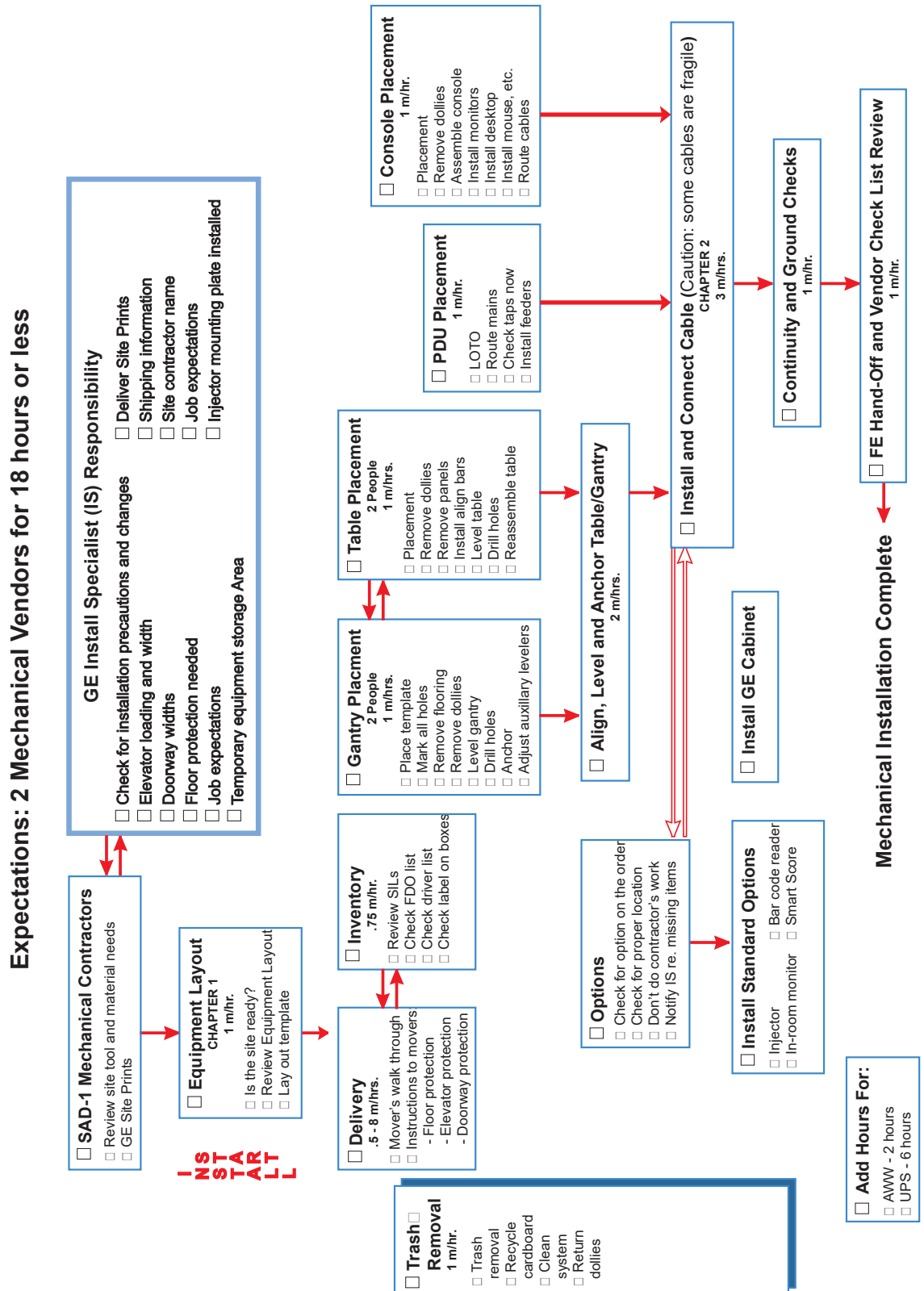
Measure the room size. If it does not match the stated size, and is smaller, then check all regulatory clearances. If any regulatory clearance is less than the minimum, the DO NOT continue. Notify the PMI to set up a site escalation.

**Note: Service Clearances MUST be met to continue.**

- 3.) A customer Anchoring Plan is required if there is anything other than a 101.6 mm (4 in.) (minimum) concrete floor. GE employees shall only install the anchors supplied with this system.
- 4.) Complete this section on the GE Form e4879.
- 5.) Do Not start the installation process if the site is under construction:
  - In the Room
  - In the Scan Area
  - In addition, the radiology suite at such a site will REMAIN in a dust-free, occupancy-ready state after delivery and throughout the remaining construction phase.

### 3.10 Mechanical Block Diagram

Figure 1-2 Mechanical Installation Block Diagram



# Section 4.0

## Install and Level Table/Gantry

### 4.1 Establish Room Layout



**NOTICE** The floor must meet the minimum floor specification in order to begin this procedure. Refer to the *Pre-Installation Manual* for details.

Use the GE print (developed for your site) to establish the room layout. Make sure all the operating and service clearances shown on the print are observed. Using the supplied template, locate the anchor holes. Make sure they clear structural interferences in the floor.

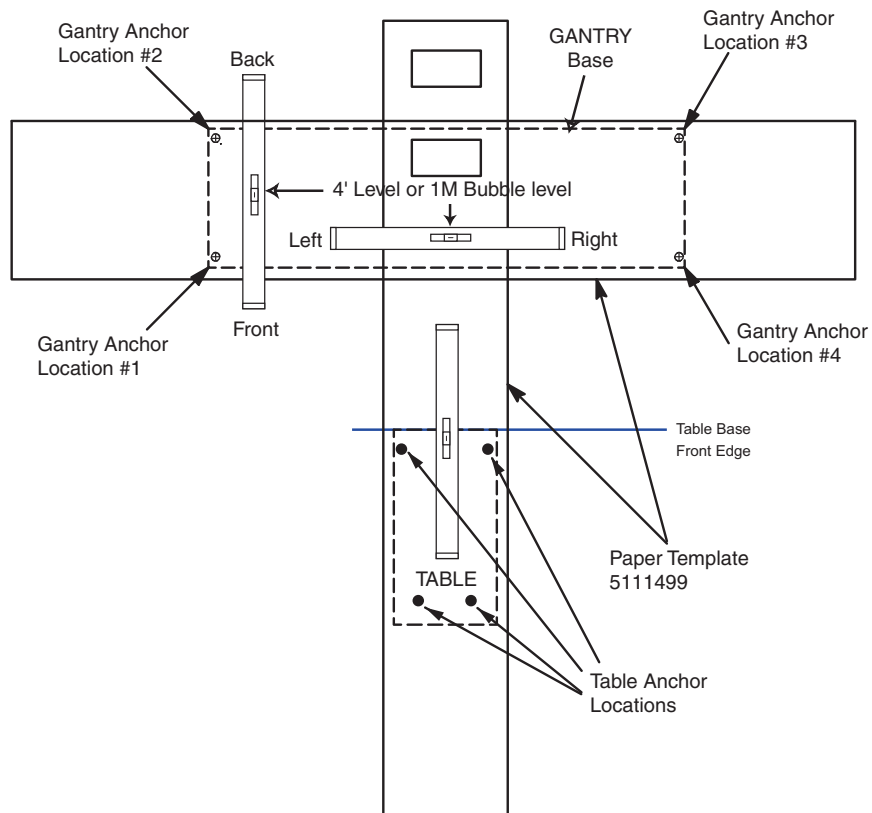
Clean the area. Free the mounting surface of any material that may interfere with the positioning and leveling of the system.

- 1.) Lay out the two (2) pieces of the floor template (P/N 5341997).
- 2.) Start with the Gantry template. align per the GE print.

Note: If the floor has existing anchor penetration, the new anchors must be set at least 4" from the nearest penetration.

- 3.) Place the table template over the top of the Gantry template. Align the scan and table centerlines and secure the templates to the floor. Make sure there are no potential clearance issues.
- 4.) Refer to the ruler of the table template to confirm table travel distance and mark the limitation on the floor if table short footprint setting is needed.
- 5.) Now, check the level of the floor (See [Figure 1-3](#)) across the templates.

**Figure 1-3 Hole Locations**





**NOTICE**

- 6.) Scribe a mark (e.g., use a center punch) at each of the gantry's mounting hole locations (there are four (4) of these).
- 7.) Using a center punch, mark the four (4) table mounting hole and two (2) leveler locations.

**Positioning requires cutting 8 holes in the floor.**

**Before you drill or cut any flooring, make sure the appropriate hospital personnel have approved the location of the table/gantry.**

- 8.) Cut tiles (or other resilient flooring) around all holes punched in the template for the gantry and table. Use a utility knife with a heat gun, a 3" hole saw with 1/4" masonry bit or other adequate tools to cut the flooring.
- 9.) Some sites may require sealing of the floor penetrations after the flooring is removed.

- Note:
- Use RTV or other sealant to seal the floor covering, as necessary.
  - All documentation in this manual is based on mounting the table / gantry on a concrete floor only.

## 4.2 Position the Gantry

### 4.2.1 Gantry Prep - For Access Greater Than 28"

- 1.) Remove all the transportation packaging, except for dollies, from the gantry.

Note: Some sites require floor protection. Locate and install any required floor protection now.

### 4.2.2 Gantry Prep - For Access Less Than 28"

- 1.) Remove all the transportation packaging, except for dollies, from the gantry.

Note: Some sites require floor protection. Locate and install any required floor protection now.

- 2.) Remove the blue dolly from the left side of the gantry so that the gantry can be positioned closer to the left side wall:

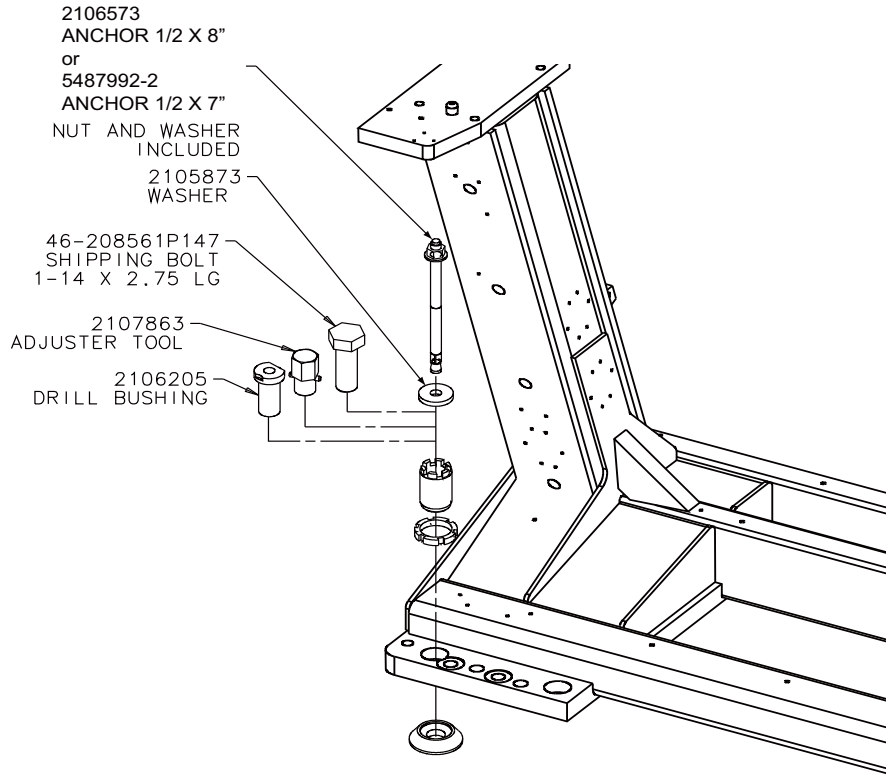
Note: Use Floor Protection for this process.

- a.) Lower the gantry to the floor so that the gantry is resting on the floor.
- b.) Remove the three (3) M14 hex bolts that secure the gantry to the dolly.
- c.) Replace the removed dolly with the shipped black gantry-positioning dolly, and reinstall the three (3) M14 hex bolts.
- d.) Raise the gantry so that it is once again off of the floor.

### 4.2.3 Gantry Positioning - All Sites

- 1.) Position the gantry over the floor cutouts appropriately.
  - a.) Locate the four (4) leveling pads, and position each of them beneath its associated adjuster.
  - b.) Use the dollies to evenly lower the gantry, until it is just off of the floor (approximately 2/ or 17.0 mm). Use a 1/2" ratchet to raise and lower the dollies.
  - c.) Carefully rotate the gantry into the correct position over the template.

**Figure 1-4 Gantry Base Installation Hardware**



Note: Adjusters are used at each anchor location. Anchor hole ID is 1" (2.5 cm). Void between adjuster and anchor must be filled according to local building codes for seismic application.

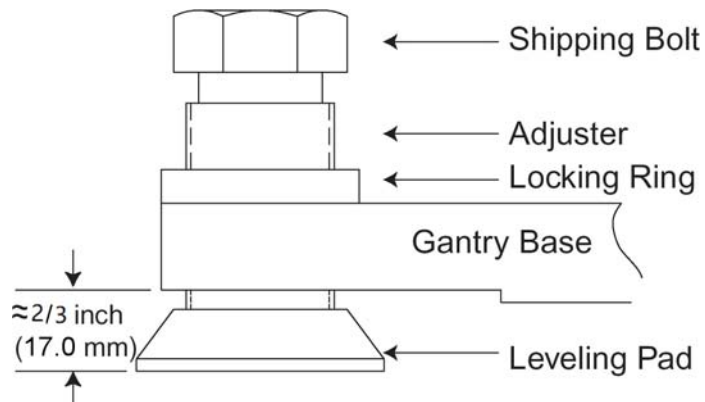
- 2.) Remove the paper templates from the floor and discard properly.
- 3.) Loosen the locking rings and shipping bolts so you can fine-tune the leveling pads to compensate for slight variations in the floor surface.
- 4.) Position the gantry so that the adjusters are centered over their respective holes scribed earlier into the floor.

**IMPORTANT:**

Make certain to route the gantry power cord under the two rear gantry rails, before removing the gantry shipping dollies.

- 5.) Using a 1/2" ratchet, gently lower the gantry until it rests on the floor, over the marked areas.

**Figure 1-5 Gantry and Table Base Leveling Pads (Starting Positions)**



**NOTICE**



**Gantry dollies weigh approximately 250 lbs each. Exercise caution when removing dollies so as to not damage the floor covering.**

- 6.) Using a 14mm hex socket, remove the dollies from the gantry by removing the three dolly bolts found at both ends of the gantry ([Figure 1-6](#)).

**Figure 1-6 Gantry Dolly Bolts**



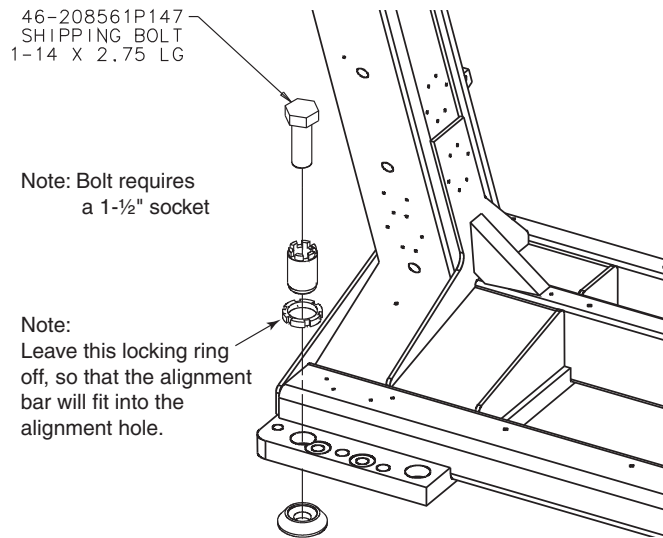
- 7.) Remove the dolly plates on both sides of the gantry. Retain the dolly plates in the service cabinet at the hospital.

**Figure 1-7 Dolly Plate**



- 8.) Remove the four (4) gantry shipping bolts, using a 1½" socket.

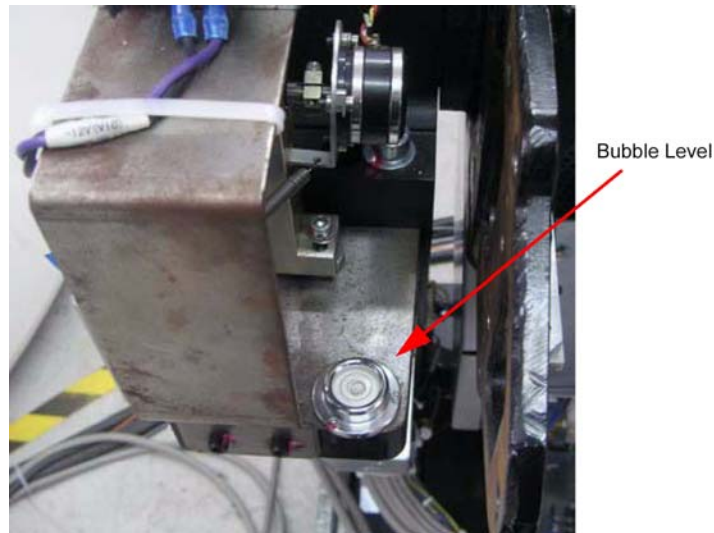
**Figure 1-8 Gantry Shipping Bolts**



### 4.3 Level the Gantry

The gantry uses 2 bubble levels that are permanently mounted to machined surfaces on the stationary base to tell when it is level.

**Figure 1-9 Gantry Bubble Level**



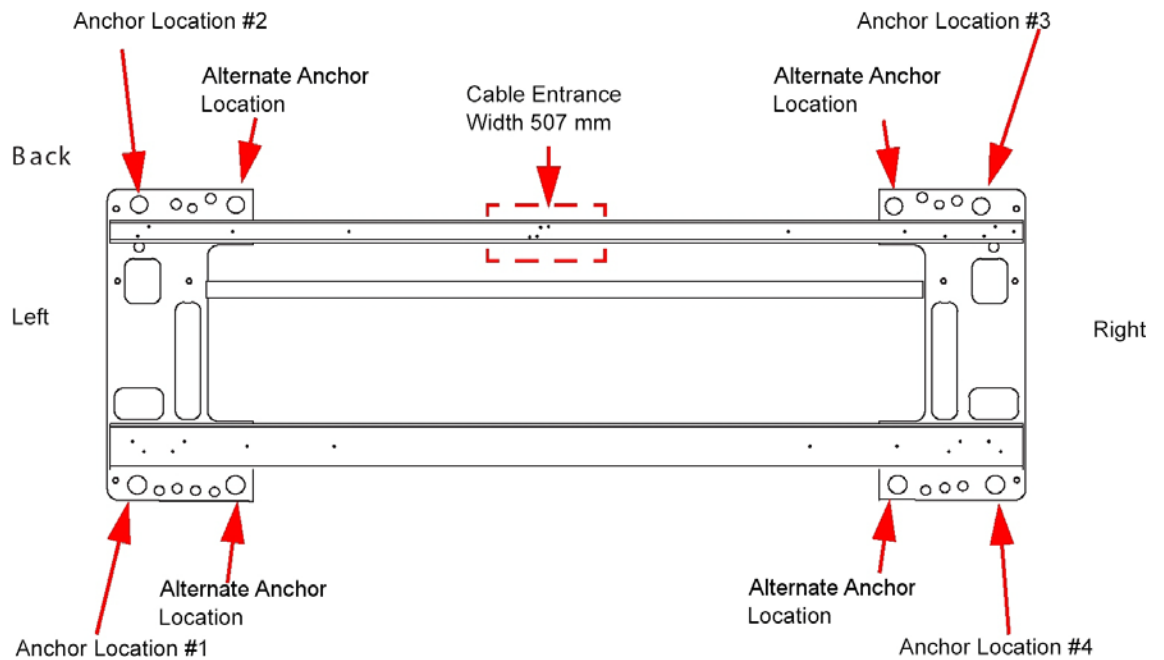
Bubble levels are located on both ends of the gantry stationary base. They're located on the stationary base near a point where the rotating structure pivots mount to the base structure. (See [Figure 1-9.](#)) The gantry is properly leveled when the bubble is centered. (See [Figure 1-11, on page 52.](#))

- 1.) Loosen all adjuster lock rings (use a spanner wrench or large channel lock pliers).
- 2.) Systematically turn each of the gantry's adjusters (locations 1, 2, 3 and 4 in [Figure 1-11](#)) until both bubble levels are centered left to right and front to back.
  - Begin by turning each adjuster no more than 1 turn at a time.
  - Use the adjuster tool, 1-1/8" socket, and the 1/2" drive ratchet to turn each adjuster. (Refer to [Figure 1-4](#), on page 48.)

**Systematic Procedure for Leveling gantry follows:**

- a.) Level the left side from front to back by turning adjusters #1 and #2.
- b.) Level the right side from front to back by turning adjusters #3 and #4.
- c.) Level the side (right or left) that is higher with respect to the other side. Turn both adjusters on a side equally until that side is level. The side should now also be level.

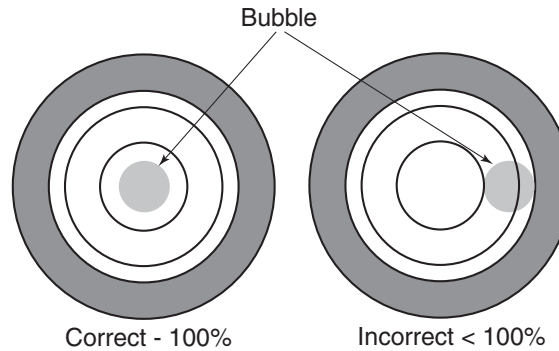
**Figure 1-10 Gantry Base "Adjuster" Locations - Top View**



- 3.) When the bubble levels are centered ([Figure 1-11](#)), each of the four (4) leveling pads should be carrying a portion of the gantry weight. Distribution of the gantry weight prevents the base frame from rocking during normal operation. **DO NOT leave any adjuster un-loaded or floating.**

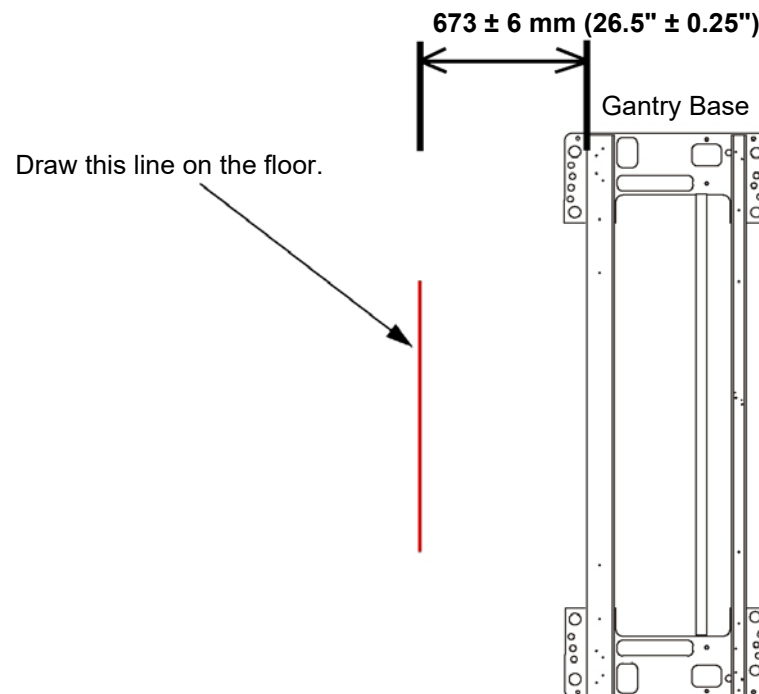
**Figure 1-11 Bubble Level Centering**

Correct level is 100% of bubble within small circle  
Incorrect level is less than 100% of bubble within small circle



- 4.) Adjust the distance between floor and gantry base at Anchor location #1 becomes approximately 17.0 mm by turning four (4) adjusters equally. (Be careful no more than 1 turn at a time.)
- 5.) Draw a reference line of  $673 \pm 6$  mm ( $26.5'' \pm 0.25''$ ) position from Gantry Base on the floor as shown in the [Figure 1-12](#). This line should be parallel to the gantry. In a later section, you will move the table against the 673 mm (26.5") mark.

**Figure 1-12 Draw Reference Line**



## 4.4 Gantry Bearing Gap Inspection

All CT systems require a Gantry Bearing Gap inspection before starting electrical calibration. All international gantries are shipped in a wooden shipping crate that should not be removed until it arrives at the installation site. This shipping container is designed to reduce the risk of shipping damage.

### 4.4.1 Personnel Requirements

REQUIRED PERSONS	PRELIMINARY REQS	PROCEDURE	FINALIZATION
2 (mechanical suppliers or installation team)	15 min	15 min	15 min

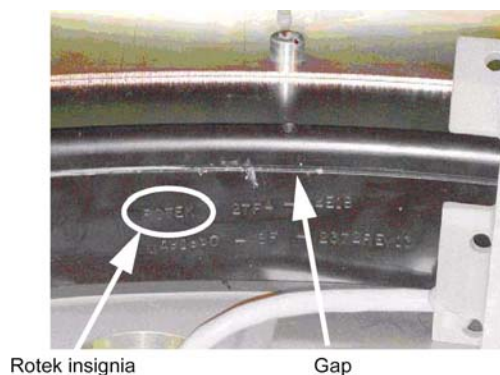
### 4.4.2 Tools and Test Equipment

- Standard tool kit
- Inspection document
- 2.5 mm Allen wrench
- Rear cover dollies (2)
- Flashlight

### 4.4.3 Damage Indicators

On the inside edge of the black-colored bearing assembly, a mark similar to that shown in [Figure 1-13](#) will be seen, if this is a Rotek bearing.

**Figure 1-13 Gantry Bearing - Rotek Label**

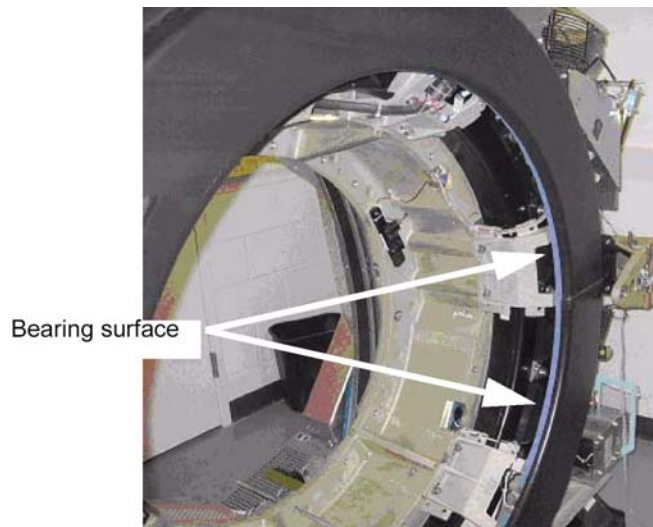


The mark has a serial number in the same format as:

ROTEK 2TF4-44E1B-MA91960-8F-2372-REV13.

The gap to be inspected is shown in [Figure 1-14](#) next to the serial number.

**Figure 1-14 Gantry Bearing**



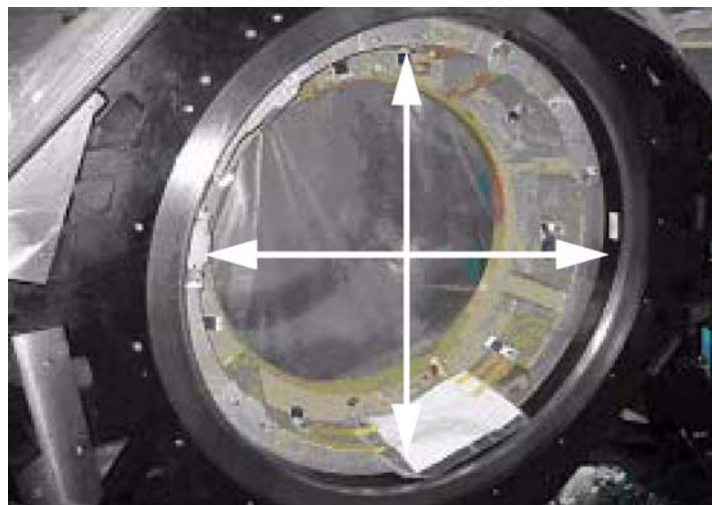
On most systems, a change in the bearing gap does not cause the gantry to make unusual sounds, unless the gap is severe. If the gantry is badly damaged and the gap is severe, it can cause operation issues. Some systems are shipped with shock indicators that must be returned to Milwaukee.

A severe failure may be seen during installation as a problem rotating the gantry.

#### **4.4.4 Procedure**

- 1.) Remove the scan window following the procedure in appendix A, [Section 6.0, on page 186](#).
- 2.) Remove the top and rear gantry covers, following the procedures in Appendix A, [Section 2.0, on page 171](#) and [Section 4.0, on page 182](#).
- 3.) Use a 2.5mm hex wrench as a tool to measure the gap at the positions shown in [Figure 1-15](#). The location of gantry components does not matter. Simply measure four (4) locations 90 degrees apart from each other.

**Figure 1-15 Inspection Locations**



- 4.) If the 2.5mm hex wrench easily fits without effort in the gap, the gap is out of spec. [Figure 1-16](#) shows a gap that is too large. [Figure 1-17](#) shows a gap that is good. Notice that the hex

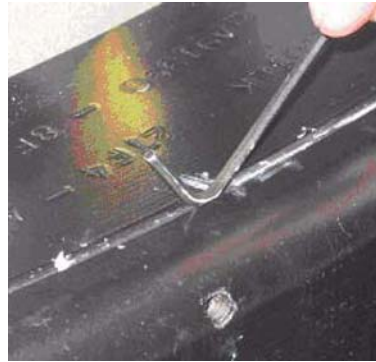
wrench does not fit in the gap in [Figure 1-17](#) but does in [Figure 1-16](#).

Note: Do not use force when putting the wrench in the gap. Either it slips in or it doesn't.

**Figure 1-16 Gap Too Large**



**Figure 1-17 Gap Is Good**



- 5.) Replace the top and rear gantry covers, following the procedures in Appendix A, [Section 2.0, on page 171](#) and [Section 4.0, on page 182](#).
- 6.) Replace the scan window, following the procedures in Appendix A, [Section 6.0, on page 186](#).

#### **4.4.5 Finalization - Mechanical Installers**

If the Bearing Gap Inspection passes, complete the signoff on the GE Form e4879, Installation Data verification form, that this inspection was completed.

If the Bearing Gap Inspection fails, contact your site FE.

#### **4.4.6 FE Service Action Required**

If the Bearing Gap Inspection fails, the mechanical installer notifies the site FE that the inspection failed.

The site FE should:

- 1.) Open a bearing inspection dispatch.
- 2.) Follow the inspection procedure described in this section.
- 3.) Record the bearing inspection results.

If no damage is found, close this dispatch and continue with the electrical calibration procedures.

If the system is damaged, go to the Equipment Delivery Quality web site and follow their instructions.

To enter a damaged in shipping claim, please contact related service team.

#### 4.4.7 FE Inspection Completion

- 1.) After the Gantry Bearing Inspection passes, complete the opened service dispatch with the following information:
  - Gantry Serial Number
  - Gantry Type
  - System ID
  - Site Name
  - Installation date
  - Was the Gantry transported to the site in the shipping crate? (Yes/No)
  - Was the Gantry lifted or hoisted, were riggers used, or was the Gantry delivered via flatbed wrecker? (Yes/No)
  - Number of locations that fail the gap inspection if any: \_\_\_\_\_
- 2.) Close the service dispatch.

Should any follow-up be required after this inspection, the site engineer will be contacted directly by CT Engineering.

### 4.5 Install Gantry Alignment Laser and Bracket

#### 4.5.1 Tools and Test Equipment

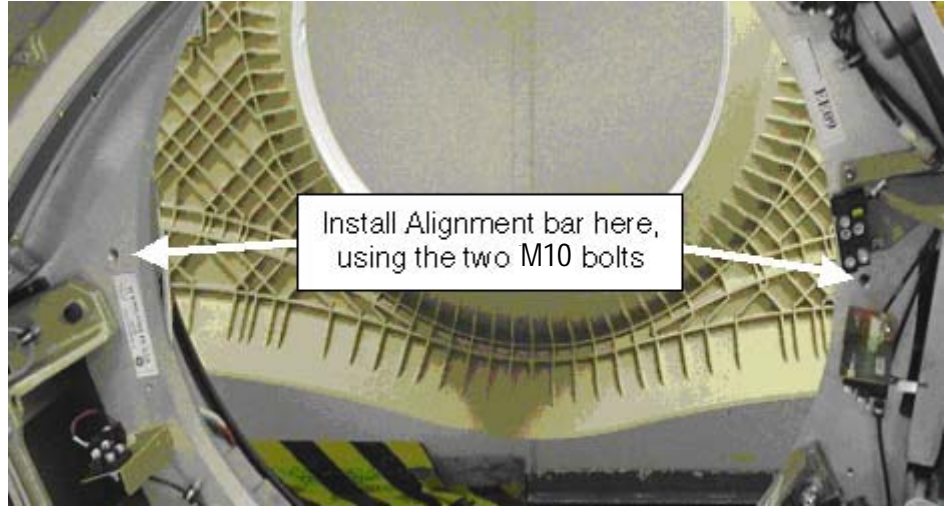
- Standard tool kit
- Laser Alignment Kit (P/N 5148193 or 5272090)
- Tape measure
- Masking tape

#### 4.5.2 Procedure

**NOTICE** Use caution while removing the gantry scan window.

- 1.) Rotate the gantry by hand until the collimator face plate is at the 5 o'clock position.  
Note: With power OFF, the gantry movement is tight.  
DO NOT pin the gantry during this alignment process.
- 2.) With the top and back gantry covers removed, locate the two M10 bolt holes as shown in [Figure 1-18](#). These bolt holes will be used to attach the laser tool to the gantry.
  - The bolts can be installed using an 8mm Allen wrench. Be careful not to bump the alignment light; the mounting space is tight near the alignment light. Tighten bolts until both are snug.
  - Do not drop bolts or the bar on the collimator faceplate. Attach the bar as shown in [Figure 1-18](#).
  - Using a minimum 223 mm (9 in.) level placed on the attached bar, level the bar by rotating the gantry.

**Figure 1-18 Alignment Bar Installation Location**



**CAUTION**



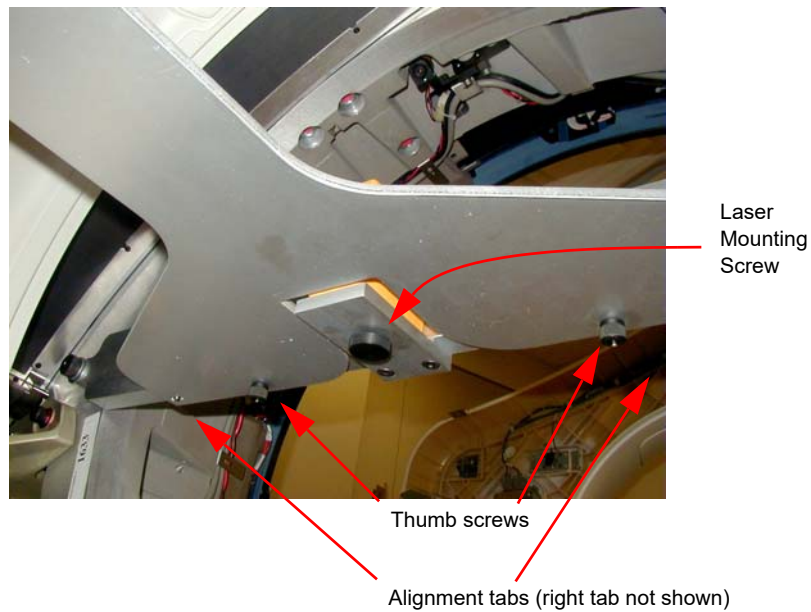
**Potential for injury.**

**DO NOT look into the laser.**

**Use appropriate safety procedures when working with lasers.**

- 3.) Attach the laser centering plate onto the laser mounting bar as shown in [Figure 1-19](#). The plate is attached from under the alignment bar using two fixed locators and two thumb screws.

**Figure 1-19 Attach Laser Center Plate**

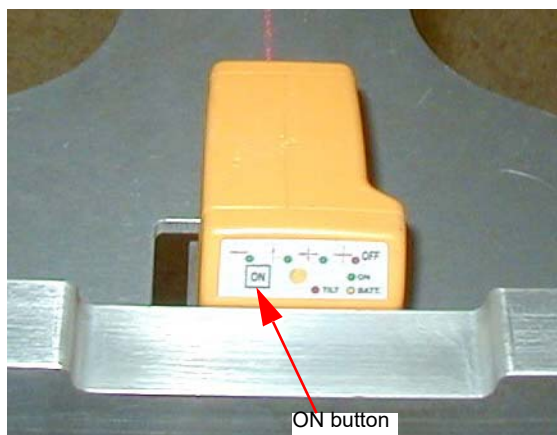


- 4.) When done, insert the laser and turn on the laser using the controls on the back. If the laser is loose when mounted, use a 2" piece of Velcro loop (fuzzy) section and attach to the alignment plate over the attachment screw. Remount the laser and it should fit snugly without moving.

- 5.) When pressed, the **ON** button steps through four different beam profiles and “Self-Leveling Off”. Press the **ON** button until the “|” beam shows. It will be used for this operation.

Times pressed	Function	Notes
1	—	Self-leveling on
2		
3	+	
4	Self-leveling off	Do not use

**Figure 1-20 Laser On Button**

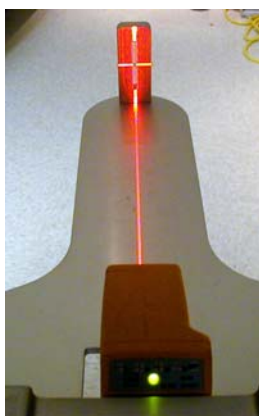


- 6.) Align the laser by carefully rotating the laser base assembly so that the “|” beam shines through the center of the alignment sight mounted on the end of the alignment plate.

Note: The laser beam may be wider depending on the battery life.

- 7.) Use the locking screw on the bottom of the alignment bar to secure the laser to the bar, as shown in [Figure 1-21](#). When done the laser should fit snugly without moving on the mounting bracket.

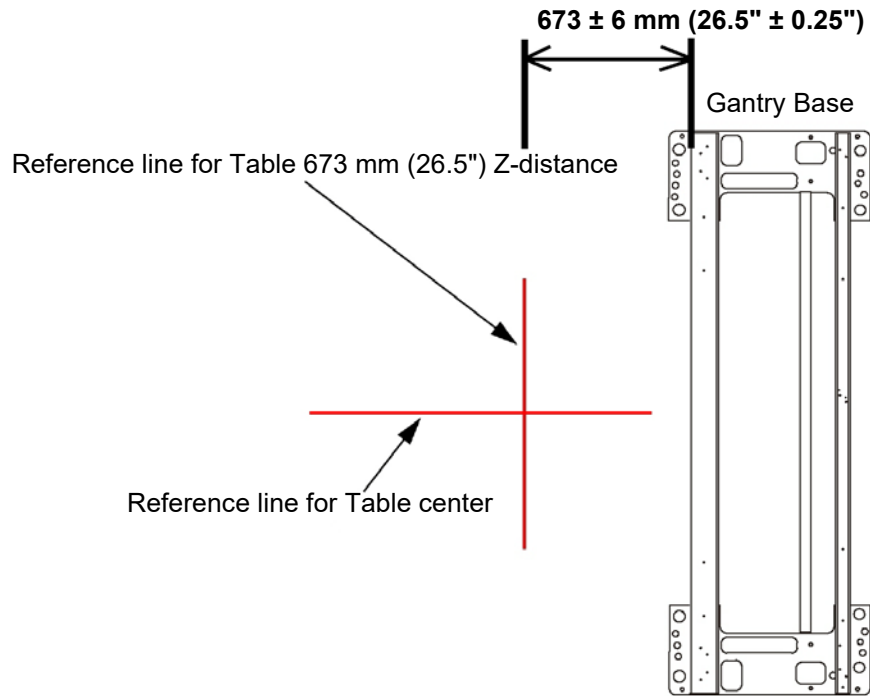
**Figure 1-21 Laser Centering**



Note: When tightening, the laser may move. Use caution to prevent any movement. Any movement can result in drilling the table anchor holes in the wrong location.

- 8.) After the laser is centered, notice that the laser beam also appears on the back wall. Place a piece of masking on the wall at and carefully mark a line on the laser line. This line will later be used in the table alignment. This line is also useful in determining if the laser unit moves during the alignment process.
- 9.) Remove the alignment centering plate and store in the alignment case.
- 10.) Using a chalk line, mark a table center line on the floor along the laser light shining on the floor.

**Figure 1-22 Draw Reference Line for Table Center**



- 11.) Recheck the table-to-gantry reference line for  $673 \pm 6 \text{ mm}$  ( $26.5" \pm 0.25"$ ) Z-distance. Refer to [Figure 1-22](#).
- 12.) Turn off the laser but do not remove.

## 4.6 Table Prep and Set-up

### Tools Required

- Standard Install Tool Kit
- 1-1/2", 1-1/4", 3/4" sockets
- 1-5/8" (40-41mm) socket
- 10mm and 14mm hex socket bits

### Time and Personnel

- 1.5 hour labor on site
- 2 Engineers

### SAFETY

CAUTION



**Potential for Electric Shock.**

**Equipment is Energized.**

**Follow appropriate safety procedures when working with an energized system.**

CAUTION



**Potential for Injury.**

**Table will tip if not anchored on the dolly.**

**Make certain that Table is adequately secured to the dolly.**

CAUTION



**Potential for Injury.**

**Table on dolly length is 118" (9'-10").**

**Exercise caution when moving the table on the dolly.**

### PROCEDURE

CAUTION



**Potential for Injury.**

**Table will tip if not anchored on the dolly.**

**Make certain that Table is adequately secured to the dolly.**

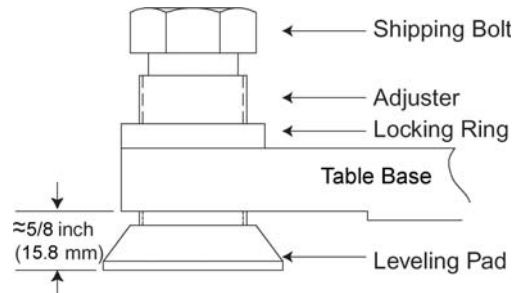
- 1.) Remove all the transportation packaging and boxes, except dollies, from the table. (See [Figure 1-23](#).) Leave a layer of packing material on the cradle to protect the cradle from damage. (It can be removed during laser alignment of the table.)

**Figure 1-23 Remove Table Packing**



- 2.) Unpack the items and locate all of the items needed to install the table.
- Note: The GT table on dollies is approximately 118" long and may require additional room to maneuver.
- 3.) Using the table centering and distance locator marks made earlier, wheel the table to its approximate position relative to the gantry.
- 4.) Locate the table leveling pads inside the table in the back and on the side in the front. Preset leveling pad heights to 15.8 mm (5/8"). (See Figure 1-22.)

**Figure 1-24 Table Base Leveling Pads (Starting Positions)**



- 5.) Use a 1-5/8" socket and 1/2" ratchet to loosen the shipping bolt. Loosen the locking rings if present.
- 6.) A 1-1/8" socket is used with the adjuster tool if needed to lower the adjuster.
- 7.) Use the dollies to evenly lower the table until it rests on the leveling pads using a 1/2" ratchet on each end.

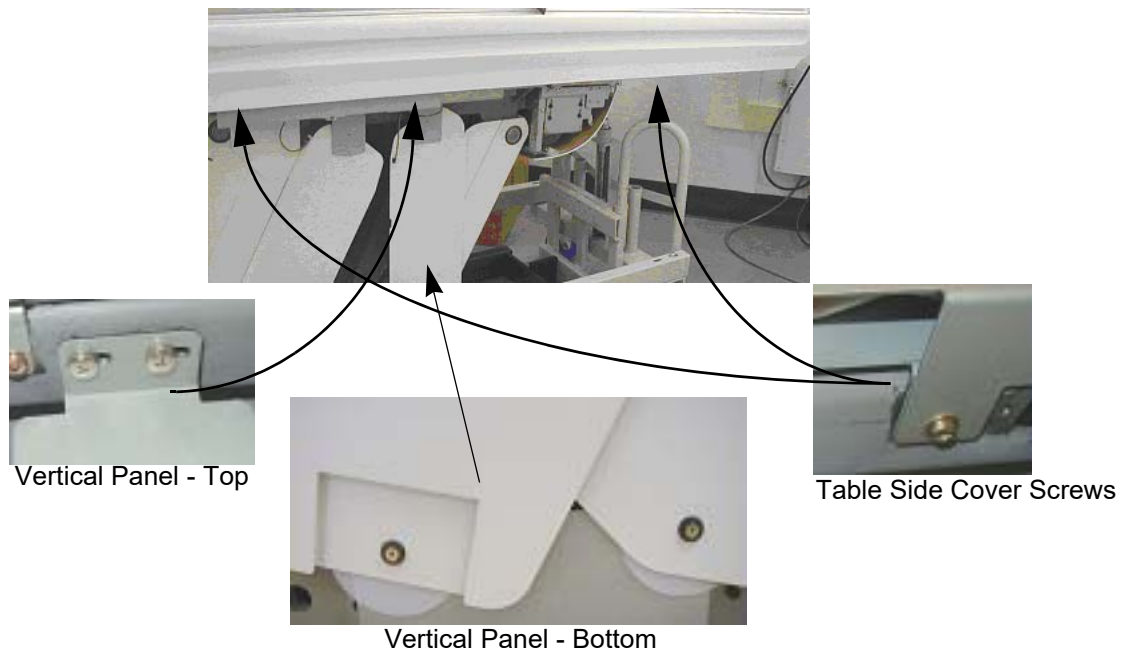
**Figure 1-25 Adjusters and Lock Rings**



## 4.7 Table Cover Removal

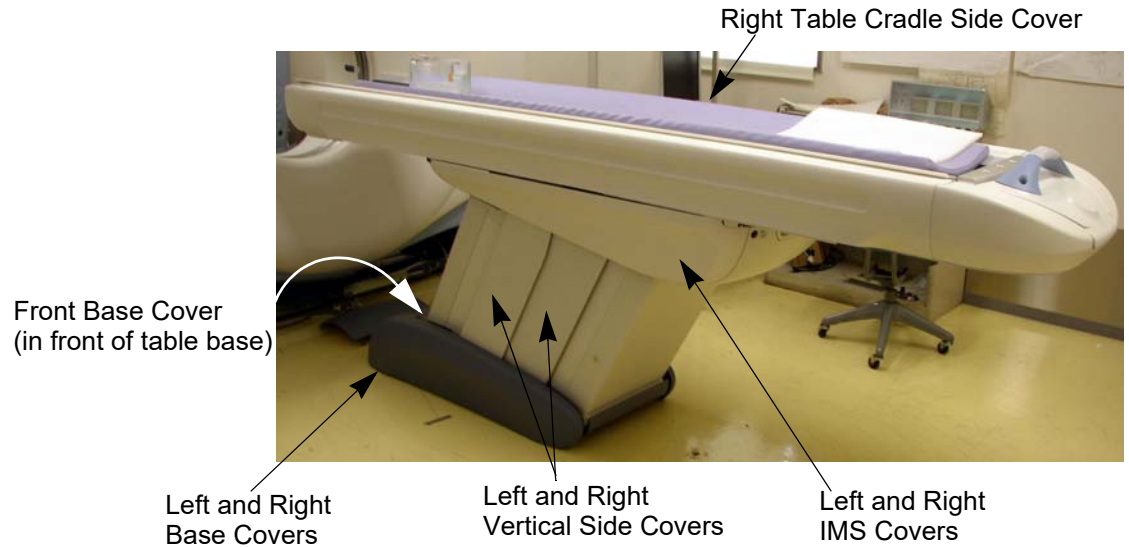
- 1.) Remove the table right side cover, as shown in [Figure 1-27](#).
  - a.) Removing the two screws on each end of the underside of the long side cover of the table.
  - b.) Slide each cover forward to unlatch, lift upward slightly to disengage the latches, and remove the side cover. Doing this procedure will require patience and practice to remove and replace this cover.

**Figure 1-26 Table Covers**



- 2.) The table is normally shipped with some of the side/vertical panels removed. If installed, remove the four side panels, using a Pozi drive #1 screwdriver.
- 3.) Carefully lay the side panels on protective padding out of the way.
- 4.) Make sure that all four of the table levelers are on the floor. The table should set on the four levelers with the dollies still installed.
- 5.) Carefully center the four levelers over the 102 mm (4") floor cutouts.
- 6.) Check that the front table base center line is on the chalk table center line.
- 7.) If still present, remove all packing materials and the table cradle pad from the table cradle.

**Figure 1-27 Table Covers**



## 4.8 Removing the Accessory Rail Strip

- 1.) Remove the accessory mounting strip attached on each side of the cradle using a small flat blade screw driver. The nylon screws are inserted inside the accessory rail on the cradle.
- 2.) Place the accessory strips on the floor and reinstall the nylon screws into the accessory rail for safe keeping.

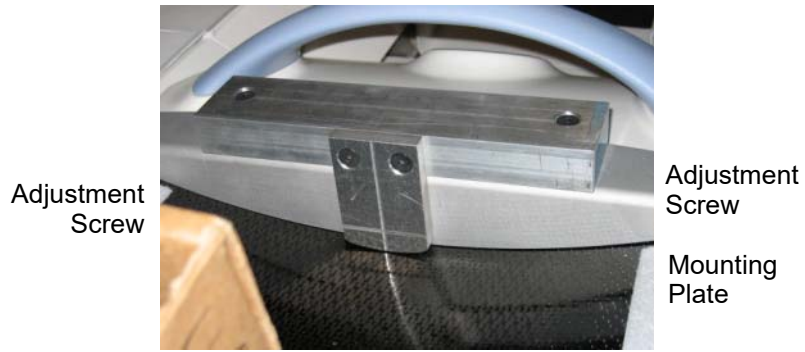
**Figure 1-28 Accessory Rail Screw**



## 4.9 Install the Table Cradle Laser Alignment Plates

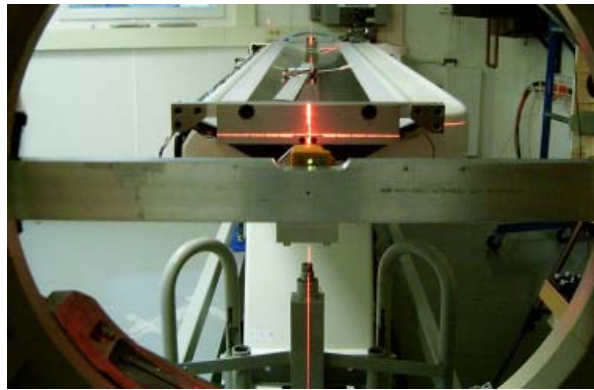
- 1.) Locate the aluminum accessory tray mounting plate with the three holes on the rear of the cradle. Fit the rear alignment target into the two mounting holes as shown in [Figure 1-29](#). Use the adjustment screw to adjust the fit as needed. See [Figure 1-29](#). The fit should be snug, without play, when you are finished.

**Figure 1-29 Cradle Rear Laser Alignment Tool**



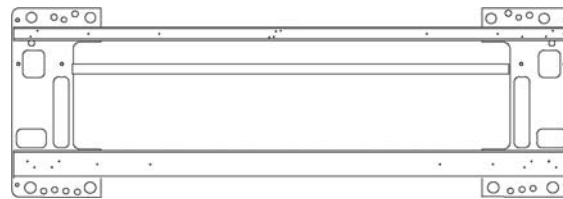
- 2.) Check that the table base is centered over the table center line, and the base is on the  $673 \pm 6$  mm (26.5 in.  $\pm$  0.25 in.) made on the floor.

**Figure 1-30 Rear Laser Alignment Tool - Installed**



- 3.) Lower the table to the floor using the dollies, making sure to maintain the  $673 \pm 6$  mm (26.5 in.  $\pm$  0.25 in.) distance.

**Figure 1-31 Two Reference Lines**



Reference line for table Z-distance

Reference line for table perpendicularity

## 4.10 Level the Table

### 4.10.1 Basic Information

#### 4.10.1.1 Tools Required

- Standard Install Tool Kit
- 3/4", 1-1/4", 1-1/2" and 1-5/8" sockets
- 8mm, 10mm, and 14mm hex socket bits
- Laser Alignment Kit
- Johnson Professional 6" level
- Johnson Professional 4' level
- Johnson Professional 2' level

#### 4.10.1.2 Time and Personnel

- 0.5 hour labor on site
- 2 Engineers

#### 4.10.1.3 Alignment Conditions

- Before you start, turn on the laser and check that the beam is still on the mark placed on the wall. If not, reset the laser.
- If mark is not present - Using a measuring tape measure and place a 5" piece of masking tape on the cradle at the 1000mm and on the laser line.
- Gantry must be at zero degrees within 0.14 degrees from gantry zero.

#### 4.10.1.4 Alignment Specifications

- Mechanical base alignment must be perpendicular within 0.14 degrees from gantry zero ( $\pm 1.5\text{mm}$ ) as measured in this procedure.
- Table cradle travel (X axis) must be perpendicular 0.14 degrees from gantry (Y axis) zero ( $\pm 1.5\text{mm}$ ) as measured in this procedure.
- Table cradle must be level in all directions  $\pm 0.0625$  in. (centered within the lines on a Johnson Professional level).
- All table adjusters should be preset to a minimum of 15.5 mm (5/8 in.) down from the table base to make adjustment easier. Based on floor levelness and your experience, a different preset height may work better.

### 4.10.2 Level and Center the Table to the Gantry

**NOTICE** Avoid leaning on the cradle during this procedure.  
**DO NOT** pin the gantry during this alignment process.

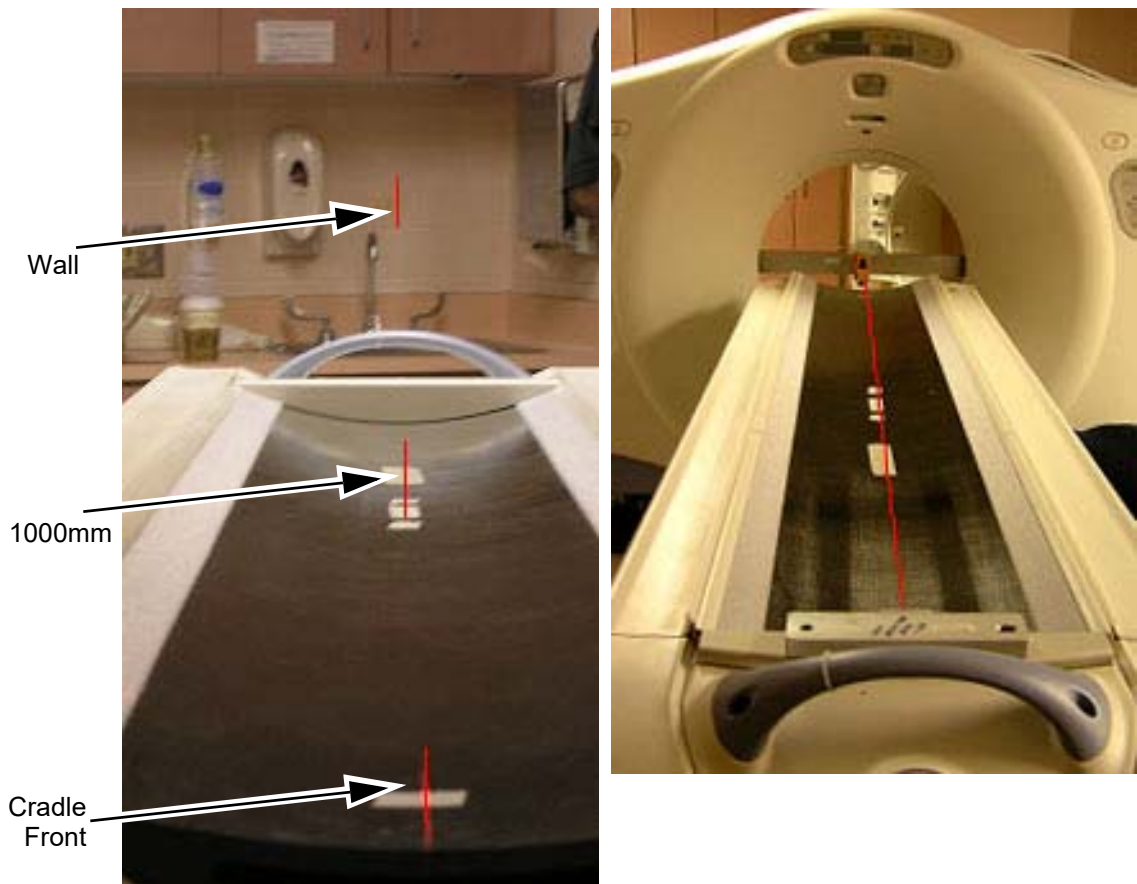
**This procedure as described is for systems mounted on 102 mm (4 in.) concrete floors only!**

Note: If the floor covering was not properly removed with the glue removed or the levelers were not centered over the floor cutouts, the leveler may become trapped against the edge of the floor covering, causing the table to become unlevelled. If this happens, move the table and enlarge the 102 mm (4 in.) floor cutout for the table. Glue removal is important and aids in moving the table to its final location.

- 1.) Have the table side panels removed and have a ratchet, 1-1/8" socket, and a 2-foot level ready to use.
- 2.) Turn on the laser's "I" beam (vertical beams) by pressing the **ON** button 2 times.

- Note: [Step 4](#) through [Step 7](#) are for perpendicular positioning of the cradle to the gantry.
- 3.) The table on the dollies should be resting on the floor, and the laser beam visible on the cradle. The laser light should now shine down the cradle onto the rear vertical target. Moving the table on the dollies by raising and lowering makes it easier to center the table right to left.
- Note: When using the table dolly to move the table, be sure that the shipping bolts are still attached to the adjuster leveler feet.) This prevents the adjuster levelers from gripping on the floor adhesive, making it difficult to move.
- 4.) Move the table so that the base is roughly centered over the scan center line, the front edge of the table base is on the  $673 \pm 6$  mm (26.5 in.  $\pm$  0.25 in.) line, and the table is resting on the floor. Check that the leveling feet are centered in the cutout circles.
  - 5.) Carefully move the table so that the cradle front center line and the back target are aligned. You may need to raise the table to move the table. When aligned, lower the table to the floor.
  - 6.) If not already done - Measure 1000mm from the front of the cradle, and place a piece of tape under the laser center line. Carefully mark a line along the laser line.
  - 7.) The laser beam should now connect the cradle front centerlines, the 1000 mm cradle center line, onto the rear alignment tool vertical center and finally onto the alignment centering mark placed on the wall. The centering alignment line on the wall is used to be sure the laser is still centered. If the alignment line on the wall is NOT on the original mark, readjust the laser and repeat the above steps. See [Figure 1-32](#).

**Figure 1-32 Alignment Laser Marks - Table & Wall**



- Note: [Step 8](#) through [Step 9](#) are for front-to-back and side-to-side leveling of the cradle.

- 8.) The table should be completely on the floor and resting on all 4 levelers. Carefully remove one side of the table dolly, taking care not to bump or move the table. Either side and/or end of the table dolly assembly can be removed.

**CAUTION**

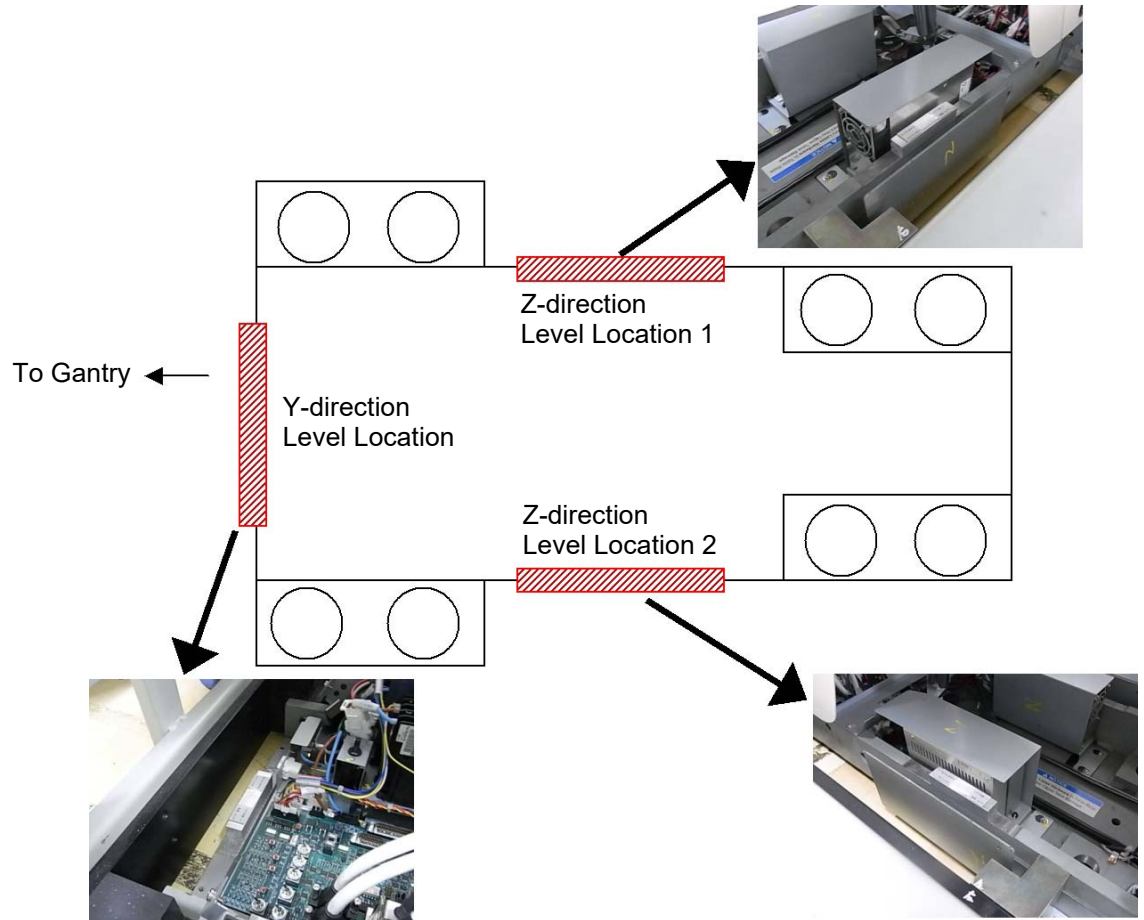


**Potential for Injury.**

**In the ship position, the table tips easily!**

**DO NOT lean on the table! The shipping bracket should still be in place!**

**Figure 1-33 Level Location on the Table Base**



- 9.) Raise or lower the table as needed using the front and rear levelers and level the table base in the Z-direction (2 positions) and the Y-direction (1 position). Refer to [Figure 1-33](#).

This process is complete when:

- The cradle is still centered on the front, mid, and rear marks.
- The cradle is leveled in the Z-direction at 2 positions shown in [Figure 1-33](#).
- The bubble is leveled in the Y direction.
- The laser is still centered on the wall center line.
- The table is still on the 673 mm (26.5") line and the levelers are not resting on the flooring.
- The laser is the same as in [Step 7](#).

Note: The leveling process may take several iterations of [Step 1](#) through [Step 9](#). Patience and accuracy is required to properly complete this process.

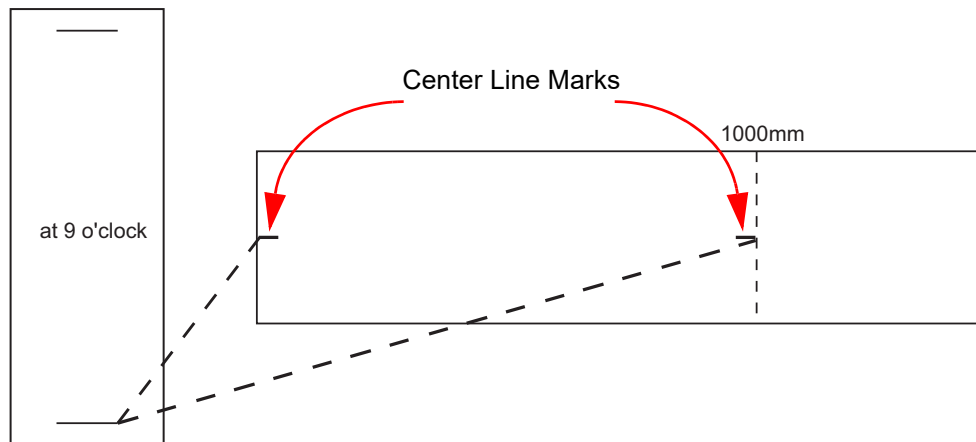
- 10.) When completed, turn off the laser tool.

Note: Do not remove the table dollies.

## 4.11 Cradle/Table Parallel Check

- 1.) With the cradle in the home position, rotate the collimator to the 9 o'clock position. Confirm with a level placed on the collimator face plate.

**Figure 1-34 First Cradle/Table Parallel Check**

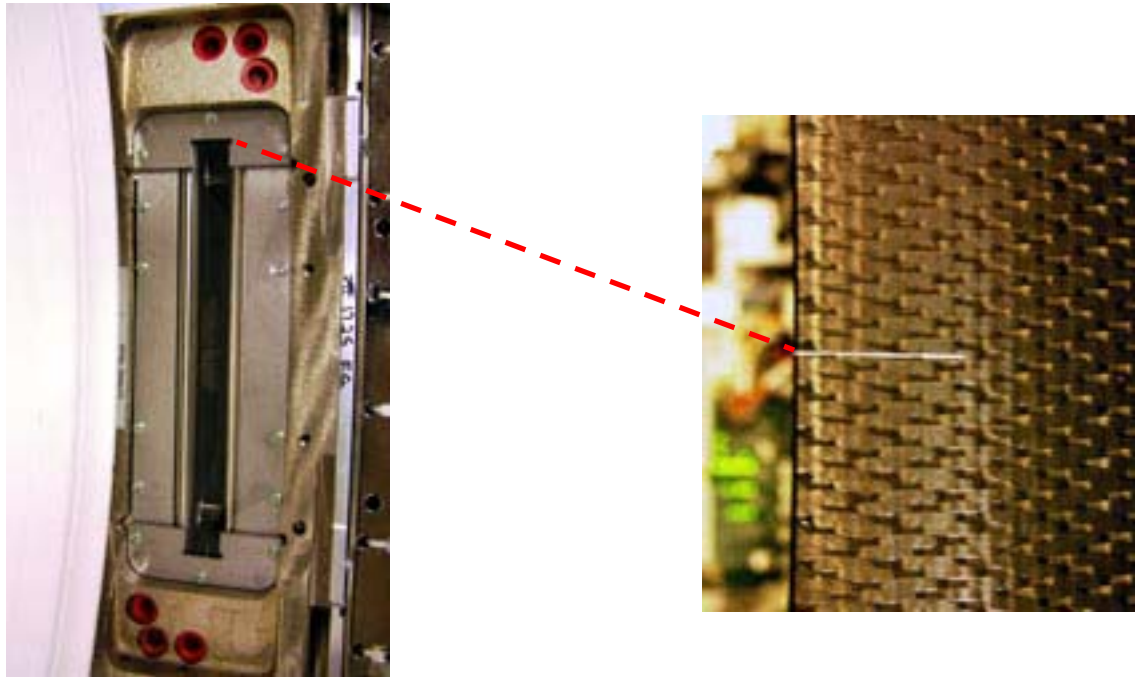


- 2.) Measure the distance from the front top corner of the collimator face plate to the mark at the center front of the cradle. See [Figure 1-34](#), [Figure 1-35](#) and [Figure 1-36](#). Note all measurements in [Table 1-4](#).

**Figure 1-35 Collimator Face Plate to Front of Table - Overview**

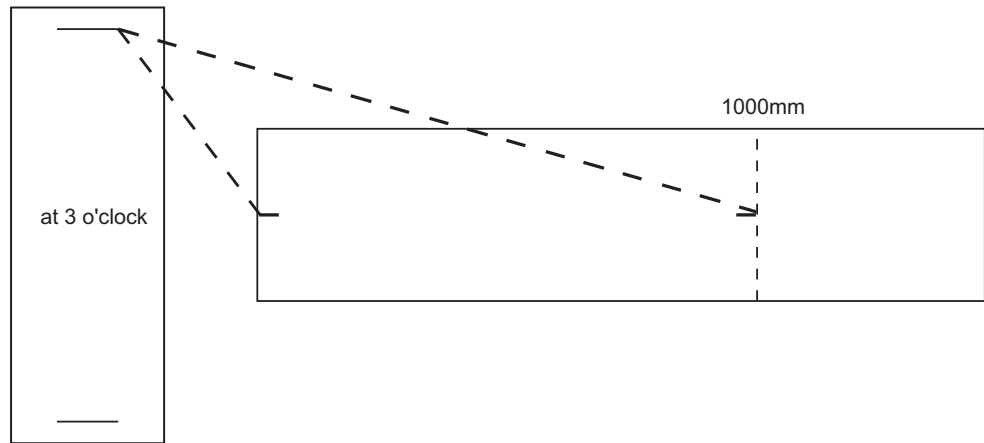


**Figure 1-36 Collimator Face Plate to Front of Table - Detail**



- 3.) Measure the distance from the same point of the collimator face plate to the center point on the cradle at the 1000mm mark. See [Figure 1-34](#).
- 4.) Rotate the collimator to the 3 o'clock position. Confirm with a level.
- 5.) Repeat [Step 2](#) and [Step 3](#). See [Figure 1-37](#).

**Figure 1-37 Second Cradle/Table Parallel Check**



- 6.) If needed, move the table using an appropriate tool and re-measure each side until measurements are equal side to side  $\pm 1$  mm.

Note: This final adjustment may be slightly different than the placement obtained using laser.

**Table 1-4** Alignment Worksheet

MEASUREMENT	A: 3 O'CLOCK	B: 9 O'CLOCK	DIFFERENCE:   A-B
Test #1			
To front of cradle			
To 1000mm mark			
Test #2			
To front of cradle			
To 1000mm mark			
Test #3			
To front of cradle			
To 1000mm mark			

7.) Recheck cradle level (front to back and across) and re-level as required.

## 4.12 Tighten the Lock Rings

- 1.) Re-check gantry bubble levels.
- 2.) Re-check that each of the eight adjuster is loaded by attempting to turn it.
- 3.) Tighten the lock rings at all locations with the spanner, where possible. Use a hammer and chisel to tighten the lock rings only where you can not use the spanner.

**CAUTION**



**Eye protection is required when using a hammer and chisel.**

## 4.13 Drill the Table Anchor Holes

**WARNING POTENTIAL FOR PATIENT INJURY.**



**IMPROPERLY SECURED TABLE MAY TIP, DISLODGING PATIENT.  
PROPER ANCHORING IS KEY TO MAINTAINING PATIENT SAFETY DURING  
SYSTEM OPERATION.**

### 4.13.1 Notes to Mechanical Installers

#### 4.13.1.1 Note 1: Basic Anchoring Information

GE provided floor anchors are designed for use ONLY on concrete floors that meet the 4-inch concrete floor requirement. Supplied floor anchors must be installed by a trained contractor, and shall be set to a minimum depth of 3-inches at each anchor point. ANY anchors having more than 1-inch of thread showing above the nut, when specified torque is set, shall have a second anchor installed in the closest adjacent hole. This is because the minimum anchor engagement length in the concrete was not met. The second anchor shall be installed to the standard depth and torque specification. Do not cut anchor bolts that extend longer than the 1-inch limit.

#### 4.13.1.2 Note 2: Alternate Anchoring

If at least four anchors cannot be set for the gantry, and at least four anchors for the table using the alternate anchor holes, then the installer must inform the PMI that the minimum anchoring cannot be met. Additionally, the customer's structural engineering contractor must be engaged to determine the anchoring method, set the anchors, and certify that their anchoring meets the stated GE minimum load requirement and torque specification.

#### 4.13.1.3 Note 3: Non-Concrete Floors

All other anchoring methods - on floor types other than the concrete minimum - must be determined at the customer's expense by a structural engineering contractor. The anchoring and method must be certified by the customer's contractor to meet the stated GE minimum load requirement and torque specification.

#### 4.13.1.4 Note 4: GE Notification

It is not the role of mechanical contractors or installers (FEs) to determine acceptable methods to install or anchor equipment on non-4-inch concrete floors. The PMI or appropriate GE contact person shall be notified that the facility's floor type DOES NOT MEET the installation mounting requirement for the installation procedure (described in this Installation Manual), and therefore the table-gantry mounting process CANNOT continue.

### 4.13.2 Requirements

#### 4.13.2.1 Tools Required

- Standard Install Tool Kit
- Hammer Drill
- 12mm concrete drill bit (Metric equivalent must not be used)
- ½" Drill Bushing (shipped in install support kit)
- Vacuum with HEPA or drywall dust filter
- Vacuum Hole Attachment - to clean debris from the holes
- PPE

### 4.13.2.2 Time and Personnel

- .5 hour labor on site
- 2 Engineers

### 4.13.3 Drilling Procedure

Note: The gantry rear cover should still be removed and the table should still be on the dolly.

- 1.) Make sure that all table and gantry levelers (four each) are firmly on the concrete floor.

**NOTICE**  
 Potential for  
 Equipment  
 Damage from  
 Dust

**To prevent damage due to the dust created during drilling, you must cover all electronic assemblies in the table base prior to drilling.**

- 2.) Locate the hammer drill and 1/2" X 12" drill bit. The 1/2" bit will be used to drill all eight (8) table and gantry anchor holes. You must use the drilling bushing to drill all table and gantry holes. All primary holes can be drilled with the gantry covers installed.

Note: Drilling bushing cannot be used for the table holes.

- 3.) Apply a piece of adhesive tape (see [Figure 1-38](#)) which will then provide a visual means of making sure the proper hole depth has been reached.

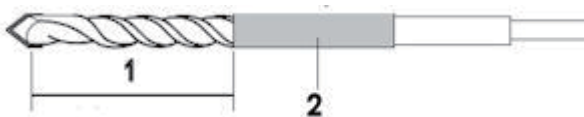


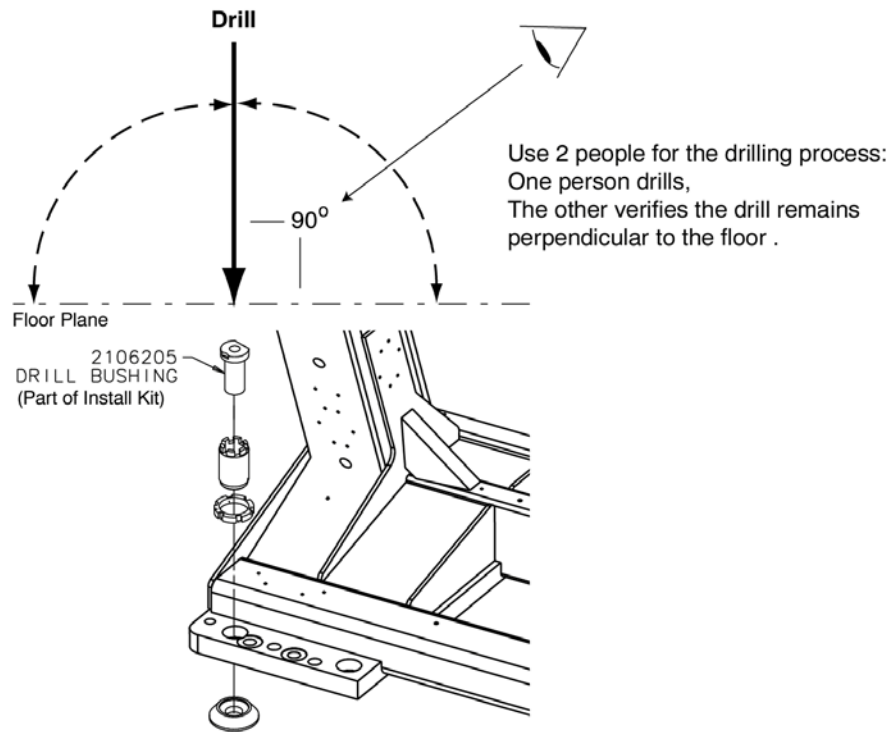
Figure 1-38 Drill Bit

Table 1-5 Drill Depth Gauge Mark Tape Location

Anchor P/N: 5487992-2/5874830-2	
1	85 mm (3-3/8 inches)
2	Adhesive Tape

- 4.) Use the 1/2" bit to drill all eight (8) anchor holes to a specified depth as measured from the top of the drill bushing. Review [Figure 1-39](#) and [Figure 1-40](#) prior to drilling.

**Figure 1-39 Drilling Position**



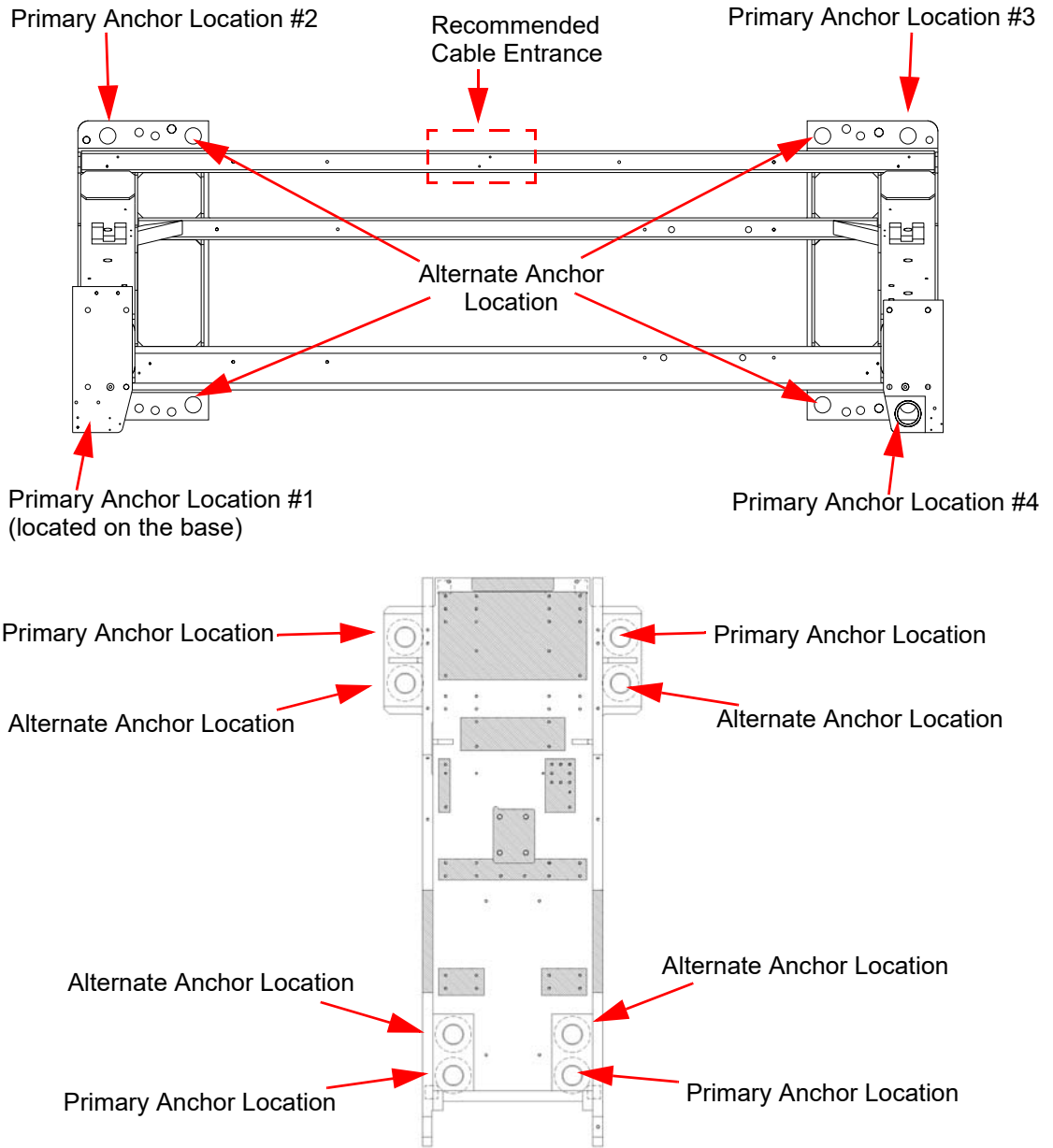
- 5.) Place appropriate protection to prevent damage and dust contamination to electronic assemblies.
- 6.) Place the drill bushing inside each adjuster, to keep the hole vertical and centered within the adjuster.
  - Use the drill bushing to center the anchor holes in all adjuster locations, to provide maximum lateral alignment capacity when you center the cradle on isocenter during subsequent system testing.
  - Take care not to injure yourself on the gantry cover brackets.
- 7.) Drill the holes perpendicular to the floor.

**Important - Follow these guidelines when drilling anchor holes:**

- While one person drills the holes, position a second person to watch the relationship between the drill bit and floor. Make sure the bit remains absolutely perpendicular to the floor throughout the drilling operation.
  - Always use the mechanical guide when drilling.
  - Stop drilling every 15 or 20 seconds and clear the hole of debris. This lets the drill bit cool and helps to prevent binding of the drill bit.
  - Vacuum while drilling to keep gantry and table as free of dust contamination as possible. Place the funnel tip or long extension tip inside the hole.
- A drywall dust filter must be used on the vacuum.**
- Drill each hole until the mark on the drill bit is even with the top of the drill bushing. All holes must have a depth specified in [Table 1-5](#), as measured from the top of the adjuster to the bottom of the hole. (See [Figure 1-42, on page 77](#)) Use an upside-down anchor to check the hole depth.
- 8.) Recheck the depth of all holes by inserting an anchor backward into the hole. A 13 mm (½”) or less should be showing. Re-drill if needed.

- 9.) When finished drilling and clearing the anchor holes, vacuum the debris from the inside of each of the holes and from the surrounding (floor) area.

**Figure 1-40 Anchor Locations**



Note: If alternate location(s) are used to anchor the table or gantry, you must move the respective leveler(s) and pad(s) to the new alternate location(s) and re-drill.

## 4.14 Gantry & Table Alternate Anchor Holes

If you cannot use one of the adjuster anchor holes due to structural interference, such as reinforcement bars in the concrete, you must use one of the alternate anchor locations, as shown in [Figure 1-40](#). You must also move the respective leveler(s) and pad(s) to the new alternate location(s) and re-drill.

- Note: Do not remove the adjuster to move to the alternate anchor hole.
- The gantry requires a minimum of four (4) anchors, one (1) in each corner.
  - The table requires a minimum of four (4) anchors, one (1) at location.

If you must use an alternate anchor hole in the gantry, you must remove the gantry covers to drill the holes. See [Appendix A Removal & Installation of Covers for BrightSpeed Elite](#), on page 169 for gantry cover removal.



**WARNING**

**POTENTIAL FOR PATIENT INJURY.**

**IMPROPERLY-SECURED TABLE MAY TIP, DISLODGING PATIENT.**

**PROPER ANCHORING IS KEY TO MAINTAINING PATIENT SAFETY DURING SYSTEM OPERATION.**

It is the purchaser's responsibility to provide an approved support structure and mounting method for all floor types other than those listed. General Electric is not responsible for any failure of the support structure or method of anchoring, including seismic requirements and/or through-bolting.

- Note: GE is not responsible for anchoring methods other than those listed in the pre-installation manual. Provided floor anchors are designed for use ONLY on concrete floors that meet the 4-inch concrete floor requirements.

MOUNTING REQUIREMENTS	ANCHOR P/N 5487992-2/5874830-2
<b>Minimum Floor Thickness:</b>	102 mm (4 in.)
<b>Recommended Drilling Depth:</b>	85 mm (3-3/8 in.)
<b>Average Anchor Embedment:</b>	75 mm (3 in.)
<b>Minimum Anchor Embedment:</b>	63 mm (2-1/2 in.)
<b>Available Alternate Anchor Locations:</b>	Yes
<b>Shipped Anchor Size:</b>	178 mm (7 in.)
<b>Alternate Anchoring Methods:</b>	Yes (see notes, above)
<b>Floor Levelness Requirement:</b>	6 mm (1/4 in.) over 3 m (10 ft.)

**Table 1-6 Gantry and Table Mounting Requirements**

## 4.15 Install the Anchors (For Gantry and Table)

**NOTICE** Each anchor must be prepared by installing a nut 13.0 mm from the top of the anchor as measured from the top of the anchor to the top of the nut. before inserting and setting them in their respective anchor hole. failing to do this may result in anchor failure.

**NOTICE** The anchors will bend if they are hit too hard with a hammer. Strike the anchor with sufficient force to drive it down into the hole so the washer touches the leveling screw.

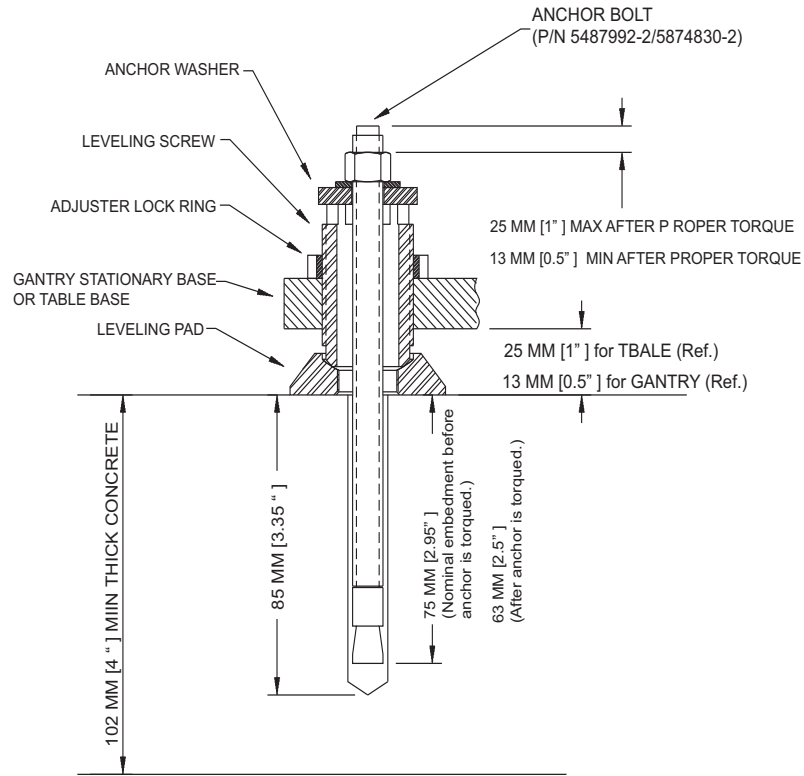
- 1.) Prepare each anchor by installing the large flat washer and nut on to each anchor. Adjust the nut so there is 13.0 mm between the top of the anchor and top of the nut.

**Figure 1-41 Anchor Preparation-set nut at 13.0 mm**



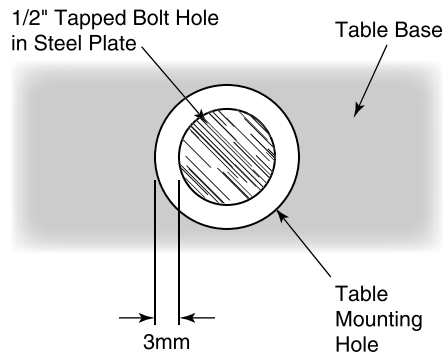
- 2.) Place another nut on the anchor and thread it on far enough so it is flush with the top of the anchor. This nut will protect the threads.
  - 3.) Insert an anchor into each anchor hole in the gantry and set the anchors with a hammer. The washer should touch the leveling screw if the anchor is installed and set properly.
- Remove the nuts placed on the anchors to protect the end threads.

**Figure 1-42 Gantry and Table Anchor Assembly with 7-inch Anchor (P/N 5487992-2/5874830-2)**



1 – Pos. Subsystems

**Figure 1-43 Center tapped holes under mounting holes in table base**



Bolt centering is important to provide  $\pm 3\text{mm}$  of adjustment for electrical alignment. Always use the drilling centering tool when drilling all bolt holes.

## 4.16 Alignment Recheck

Note: Alignment is critical. Recheck carefully.

- 1.) Turn on the alignment tool and recheck alignments. The table alignment must be the same as in [Cradle/Table Parallel Check, on page 68](#). If re-leveling is required, repeat this procedure. Using the bubble levels, make adjustments as required to maintain required alignment.
- 2.) Once alignment has been verified, torque all mounting bolts.  
Tighten the location #1 through #7 anchors and torque to:
  - 54 N-m (40 ft.-lb.) for 7-inch Anchor (P/N 5487992-2/5874830-2)
- 3.) Remove the laser tools.
- 4.) Reinstall all the removed table panels and hardware.
- 5.) Reinstall the gantry rear cover.

Note: If you cannot replace the lower table cover because the floor interferes, adjust all of the table and gantry levelers by half-turn increments to raise the table/gantry until the lower table covers clear the floor. Then return to the alignment sections to level the gantry, level the table, and tighten the locking rings, respectively.

## 4.17 Removing Table Shipping Dollies

### 4.17.1 Time and Personnel

(FE or mechanical supplier)

Required Persons	Preliminary Reqs	Procedure	Finalization
1 Electrician		20 min. labor on-site	

### 4.17.2 Tools and Test Equipment

- Standard Installation Tools Kit

### 4.17.3 Preparation

- All table mechanical alignment procedures are completed.
- The table is on the floor with at least one anchor in place.

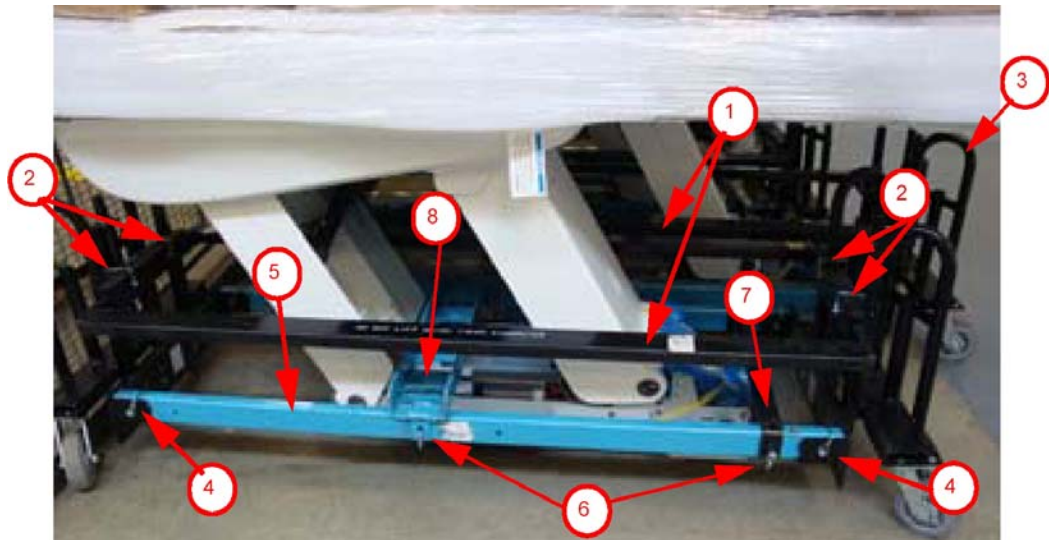
### 4.17.4 Procedure

Refer to [Figure 1-44](#) for the location of items in the table dolly.

- 1.) Remove the two, long side (stabilizer) rails using the quick disconnect pins. There is one pin on each end of the bar.
- 2.) Carefully slide the bar out and place the bars on the side, out of the traffic area.

Note: The table should be resting on the floor. You may need to lower or raise the dolly to remove the dolly ends.

- 3.) Using the quick release pins, remove each end of the dolly.
- 4.) Slide the dolly off of the long attachment bar on each side.
- 5.) Using the quick release pins, remove the two long attachment bars that are attached to the front and rear table attachment points. Place the bars on the side, out of the traffic area.
- 6.) Use the 19 mm wrench to remove the bolts on each side of the smaller front table attachment bracket. Remove the bracket.
- 7.) Use the 19 mm wrench to remove the bolts on each side of the larger front table attachment bracket and transporter base. Remove the bracket.
- 8.) Reassemble the dolly for transportation.



**Figure 1-44 Table Shipping Dollies**

Item	Description
1	Side Rails (two rails, black, one each side)
2	Quick Release Pins (for side rails, two on each side)
3	Dolly Ends (two, one each end)
4	Quick Release Pins (for dolly ends, two each side)
5	Table Dolly Lifting Tube (two, blue, one each side)
6	Quick Release Pins (for dolly lifting tube, two each side)
7	Front Attachment Bar (black, one; 19 mm table base bolt located under the bar, not shown)
8	Back Attachment Bar (blue, one; see <a href="#">Figure 1-44</a> )
9	Table Base Bolt (see <a href="#">Figure 1-44</a> )

**Table 1-7 Description of Table Shipping Dollies**



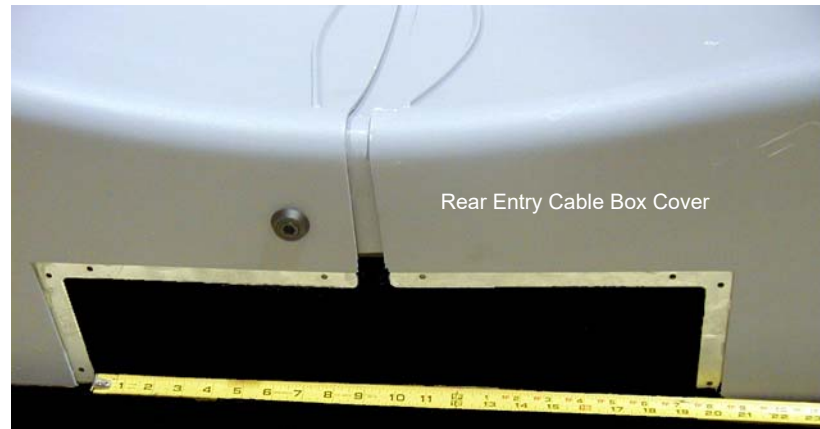
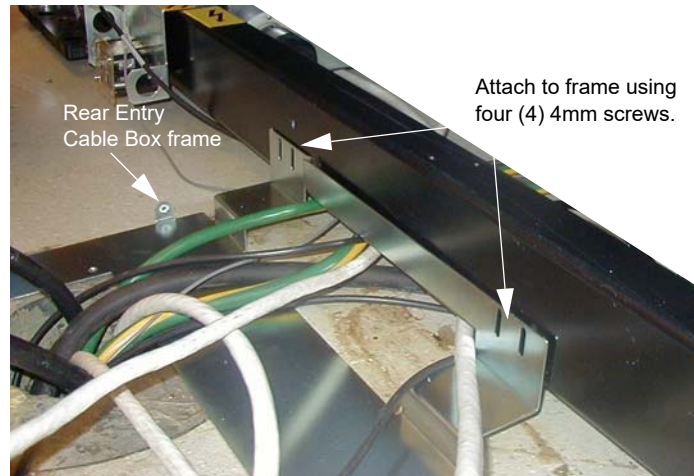
**Figure 1-45 Close-up of table base connection**

## Section 5.0 Rear Entry Cable Box

A rear entry cable box (B78032CB) is used when the cables to the gantry cannot be brought up inside the gantry base. The box is not supplied with the system and must be ordered separately.

- 1.) Attach the rear entry cable box frame to the gantry base using four (4) screws that are shipped with the kit. See [Figure 1-46](#). The assembly can be made to fit floor entrance conduit or surface floor duct.

**Figure 1-46 Rear Entry Cable Box**



- 2.) There are three pairs of spacers shipped with this cover. Select the pair that is most appropriate for this site, based on the hardware.
  - Solid metal
  - Precut L-shaped metal
  - Solid plastic - Can be cut

## Section 6.0

# Install Table Footswitch Assembly

### 6.1 Requirements

#### 6.1.1 Tools Required

- Standard Install Tool Kit

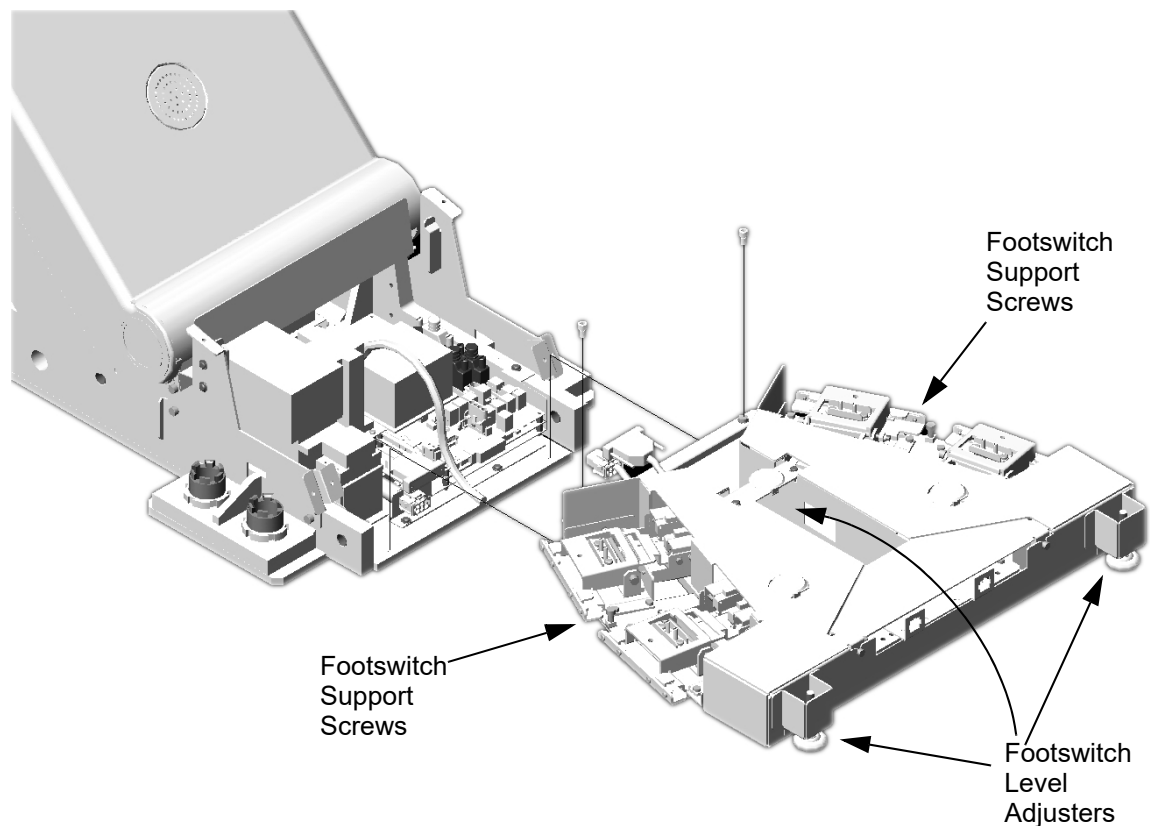
#### 6.1.2 Time and Personnel

- 1 hour labor on site
- 1 Engineer

### 6.2 Procedure

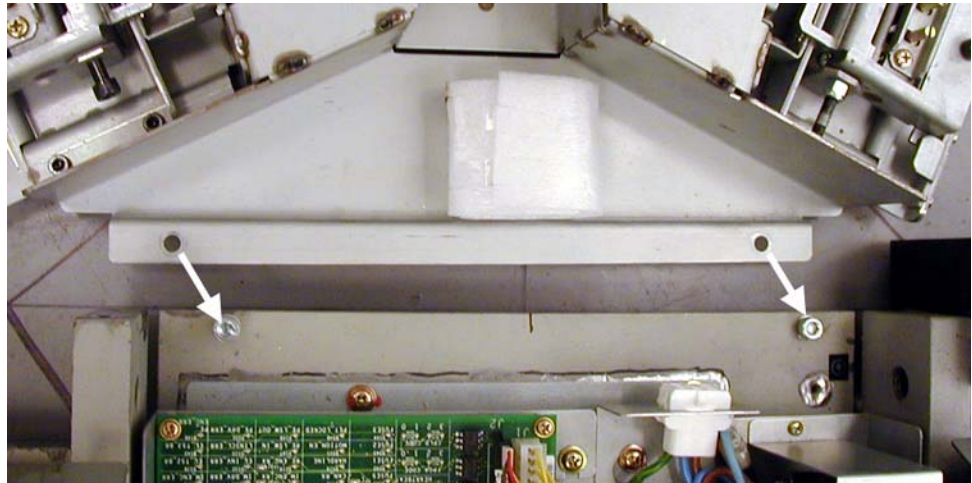
After Table positioning is completed and anchors installed, install the footswitch assembly as shown in [Figure 1-47](#) following the steps below.

**Figure 1-47 Install Table Foot-switch Assembly**



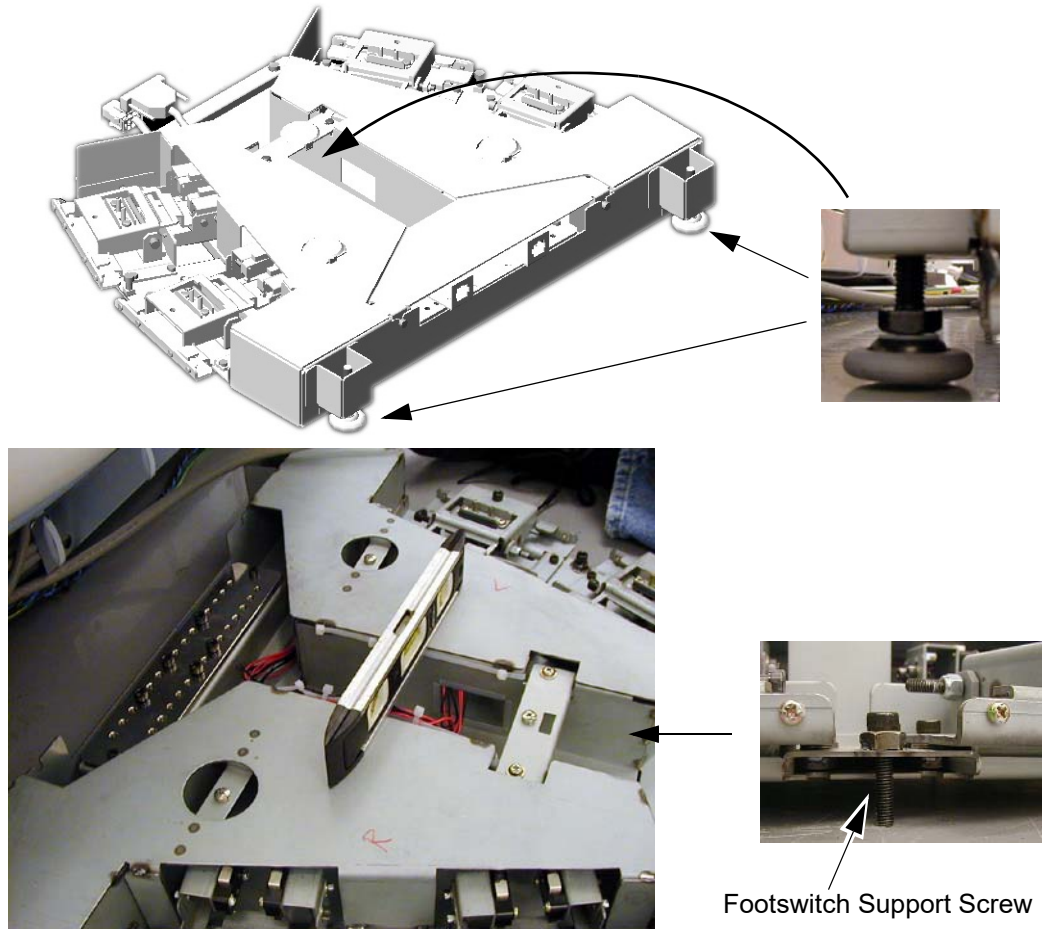
- 1.) Using two (2) M6 bolts, attach the footswitch assembly to the Table base.

**Figure 1-48 Attach Footswitch**



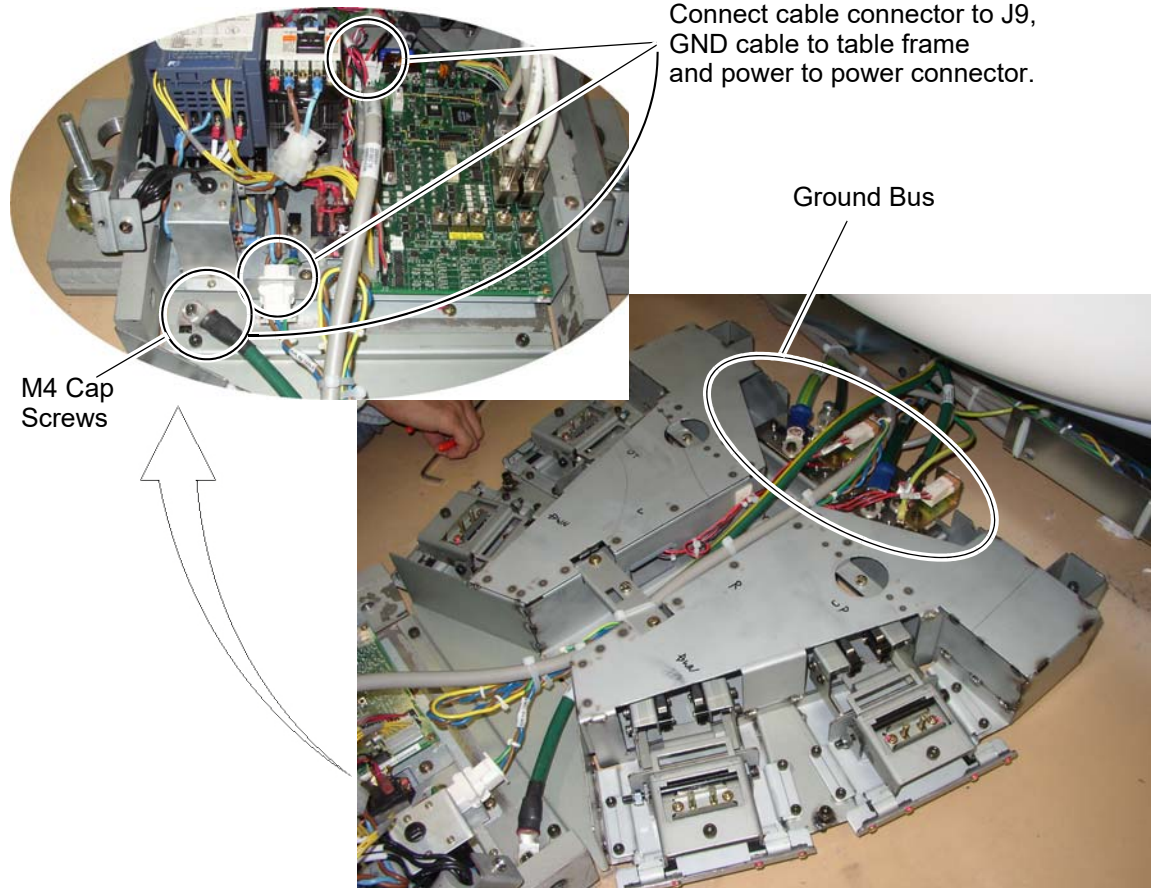
- 2.) Level the footswitch assembly using the three (3) level adjusters. Two are on the gantry side and one is in the middle. Use a 9" level to check the level in all directions.

**Figure 1-49 Level Footswitch**



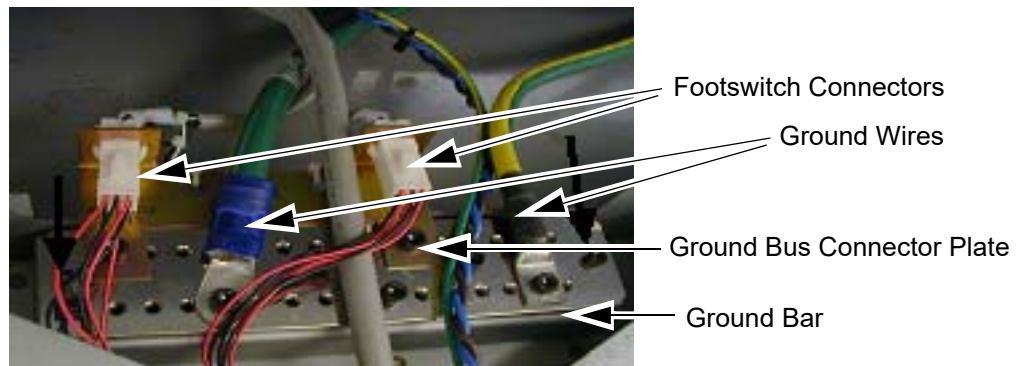
- 3.) Route the power cables from the gantry as shown in [Figure 1-50](#).

**Figure 1-50 Footswitch Assembly Cable Wiring**



- 4.) Connect the ground bus connector plate.

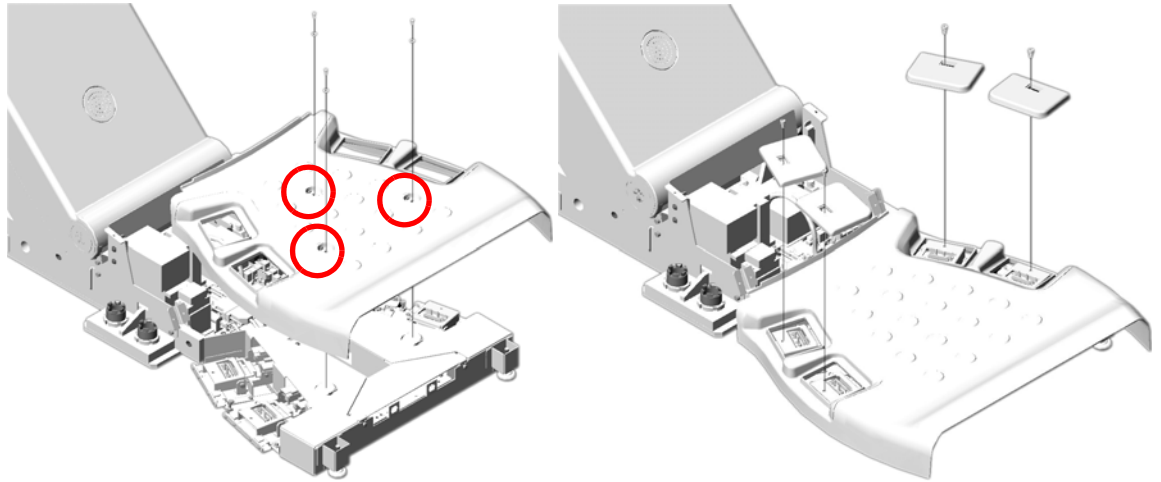
**Figure 1-51 Footswitch Ground/Bus Bar**



- 5.) Connect the ground wires (not all shown in [Figure 1-51](#)) to the installed ground bus:
  - Table #2
  - Gantry #1/0
  - Console #2
  - PDU #1/0
  - Power Pan#10
- 6.) Install the footswitch pedal bracket onto the installed ground bus bar.

- 7.) Install the footswitch cover using three (3) screws (see [Figure 1-52](#)).

**Figure 1-52 Footswitch Cover Installation**



- 8.) Install cover caps on each pad.

**Figure 1-53 Footswitch Pad Caps**

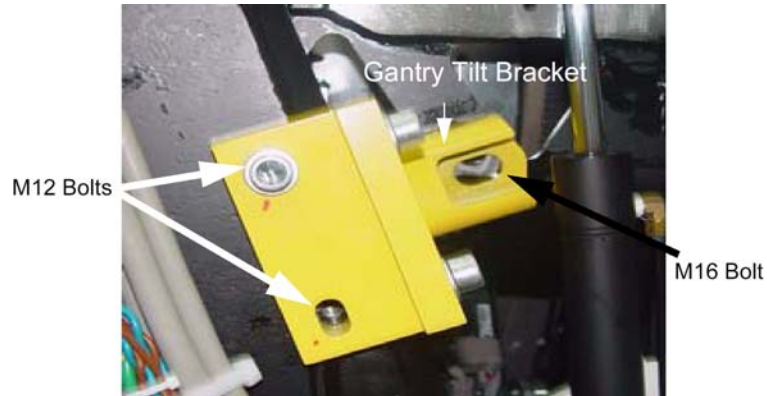


- 9.) Install the four (4) foot pads onto the footswitch assembly.

## Section 7.0

# Remove Gantry Tilt Bracket

Figure 1-54 Gantry Tilt Bracket Removal



- 1.) Refer to [Figure 1-54](#). Remove the M12 bolts using a 10 mm Hex wrench.
- 2.) Loosen the M16 bolt 1-2 turns and check the Gantry tilt bracket, it should be loose to the touch. If loose continue with step 4.



**CAUTION**

**Potential for personal injury.**

**If tilt bracket is not loose, stop and put the M12 bolts back in and tighten tilt bracket back in place. If there is a load on the tilt bracket, removal may cause the gantry to suddenly tilt all the way back due to a possible lack of hydraulic pressure.**

- 3.) Check the hydraulic connections for leaks or lack of fluid. You will have to wait until the system can be energized to use the tilt controls to relieve the load on the tilt bracket prior to removal. Do not use force to remove the bracket.
- 4.) If the bracket feels loose, remove the M16 bolt using a 16 mm Hex wrench.
- 5.) Remove the bracket.
- 6.) Close the gantry covers and reinstall the scan window.
- 7.) Store brackets in the gantry base.



# Section 8.0

## Position the Power Distribution Unit

### 8.1 Tools and Test Equipment

Hex wrench set

### 8.2 Procedure



**WARNING**

**LOCKOUT/TAGOUT IS REQUIRED BEFORE PERFORMING THIS TASK. USE THE SUPPLIED LOTO KIT.**

**ALL INSTALLATION WORK WITHIN THIS SECTION ON THE POWER DISTRIBUTION UNIT SHOULD BE COMPLETED BY A LICENSED ELECTRICIAN ONLY.**

- 1.) Remove all the transportation packaging, delivery the PDU to the scan room or the control room and close to the PDB.
- 2.) Roll the PDU into position on its permanently mounted casters. Leave at least 15.5 cm (6") between the PDU and back wall to allow cooling air to circulate.

**Note:**

**Connecting the primary incoming power is performed by the customer's electrical contractor. The electrician needs to provide a reducing bushing to attach the flexible conduit to the PDU.**

**WARNING**



**WORK WITH THE ELECTRICAL CONTRACTOR TO BE SURE EXTERNAL POWER SOURCE IS TURNED OFF.**

Table 1-8 Contractor Connections

Connection or Wall Box	AWG #	Connection From	Connection To PDU	Installed & Checked
TS1	#1	PDB-A	TS1-1	(Do NOT connect anything to neutral point.)
	#1	PDB-B	TS1-2	
	#1	PDB-C	TS1-3	
	#1/0	GND	N/G	
WL (Warning Light)	#14	LV Source -1	TS6 1	
	#14	LV Source -2	TS6 2	
	#14	X-Ray ON Light -1	TS6 3	
	#14	X-Ray ON Light -2	TS6 4	
	#14	Sys-ON Light -1	TS6 5	
	#14	Sys-ON Light -2	TS6 6	
	#14	Ready Light -1	TS6 7	
	#14	Ready Light -2	TS6 8	
DS (Scan Room Door Switch)	#14	Door SW -1	TS6 9	
	#14	Door SW -2	TS6 10	


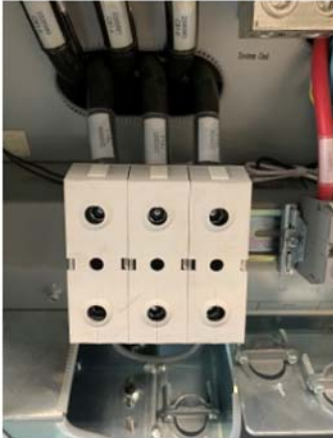
- 3.) Run the main input power conductors and ground through flexible metal conduit (attached between the PDU chassis and room duct-work) so you can move the PDU away from the wall during service.

**Figure 1-55 Flexible Conduit for PDU Power**




- 4.) Locate the hole cover plate in Box 1 and attach the flexible metal conduit to the PDU.
- 5.) If present, remove the TS1 panel front cover.
- 6.) Strip the wires to fit securely on the power block.
- 7.) Observe incoming phases (L1, L2 and L3) and insert bare leads into each location on TS1. Torque to specification, see [Figure 1-56](#)

**Figure 1-56 TS1 Power Torque Values**

TS1 (Model-Phoenix)	Bolt/Hex
	12.91 ft-lb (17.5 N-m)
TS1 (Model-ABB)	Bolt/Hex
	6.82 ft-lb (9.25 N-m)



- 8.) Insert vault ground in to PDU vault ground lug. Torque to specification, see [Figure 1-57](#)

**Figure 1-57 Ground Torque Values**

Main Ground	Bolt/Hex
	22.87 ft-lb (31.0 N-m)

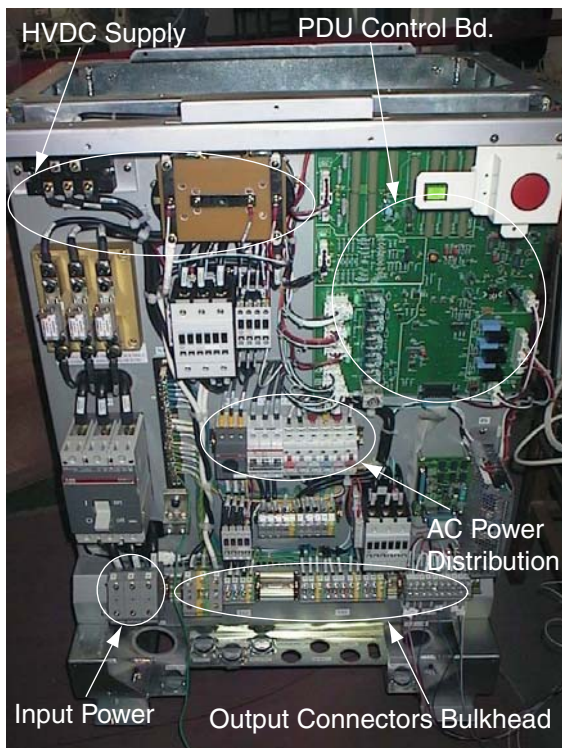
- 9.) Observe cable mark and insert bare leads into each location on TS6, Torque to specification, see [Figure 1-58](#)

**Figure 1-58 Warning Light and Door SW Connections**

TS6 (Model-Phoenix)	Bolt/Hex
	<p>1.2 ft-lb (1.6N-m)</p>
TS6 (Model-ABB)	Bolt/Hex
	<p>1.0ft-lb (1.4N-m)</p>

- 10.) Tighten all fasteners securely.

Figure 1-59 PDU Area Locations



1 – Pos. Subsystems

TERMINAL NO.	MODEL-PHOENIX			MODEL-ABB		
	P/N	MODEL	TORQUE	P/N	MODEL	TORQUE
TS1	5324772	UKH95	12.9ft-lb (17.5N-m)	5795116	ZS95	6.8ft-lb (9.25N-m)
TS2	5324755; 5324758	UKH50; USLKG50	5.2ft-lb (7N-m)	5807667; 5807668	ZS70; ZS70-P	4.8ft-lb (6.5N-m)
				5795117; 5795118	M35/16; M35/16.P	2.2ft-lb (3N-m)
TS3/4/5	5324773; 5324757	UK16N; USLKG16N	1.2ft-lb (1.6N-m)	5795119; 5795120	M16/12; M16/12.P	1.0ft-lb (1.4N-m)
TS6	5324774	UK10N	1.2ft-lb (1.6N-m)	5795121	M10/10	1.0ft-lb (1.4N-m)

Table 1-9 PDU Terminal Torque Values

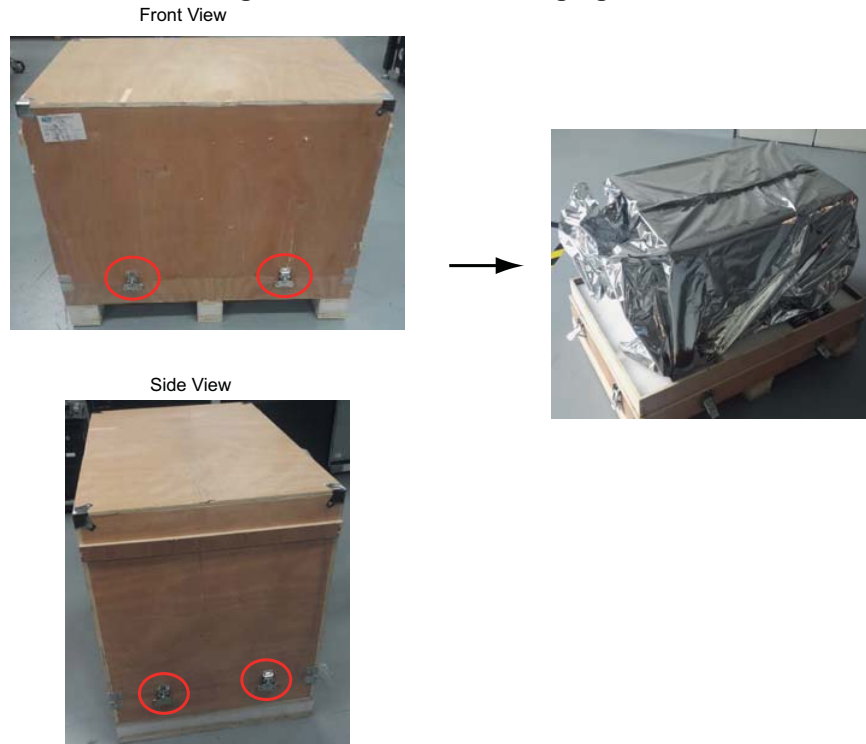
## Section 9.0

# Install Operator Console

### 9.1 Unpack OpenOC16 Console

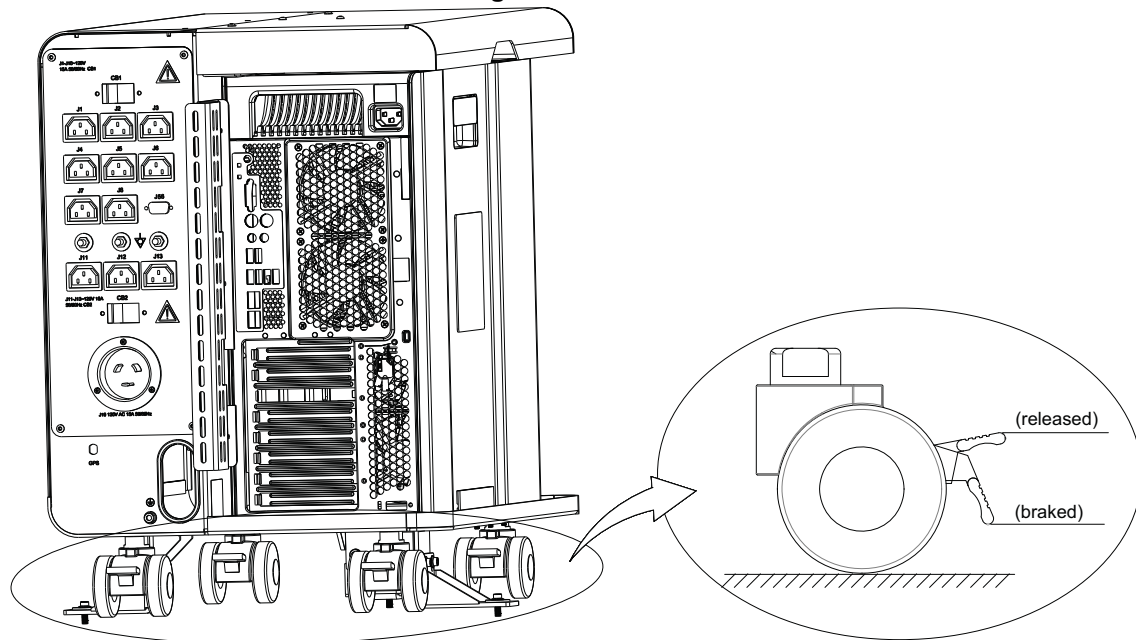
- 1.) Release eight latches and remove the packaging covers.

**Figure 1-60 Console Packaging Removal**



- 2.) Remove all packaging and discard per local requirement
- 3.) Move console to installation location.
- 4.) Adjust console position, and then pedal four brakes to prevent console from sliding.

Figure 1-61 Brake



## 9.2 Unpack NIO Console

- 1.) Remove all items from the console.
- 2.) Remove all packing materials and discard.
- 3.) Place the step-board under the front edge of the skid and step on it to raise the front edge of the skid as in [Figure 1-62](#).

Figure 1-62 Step-board used to raise front edge of skid



- 4.) Remove the two front cushions from the bottom of the skid. Refer to [Figure 1-63](#)

**Figure 1-63 Cushion on bottom of skid**

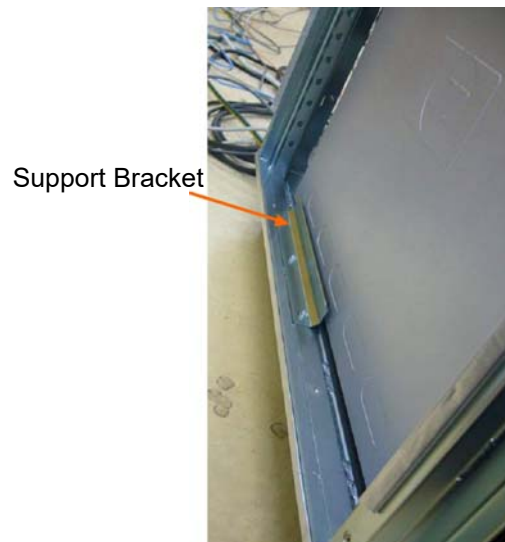


- 5.) Lift up on the strap on the front of the step-board ([Figure 1-62](#)) to lower the skid. Remove the step-board.
- 6.) Ensure the console stabilizers are in line with the notched portion at the front of the skid. This will allow enough clearance to smoothly roll the console down the ramps.
- 7.) Move console to installation location.

### 9.2.1 Remove the HostPC support Bracket

- 1.) Remove the Host PC Support Bracket from left side of Console (refer to [Figure 1-64](#)).

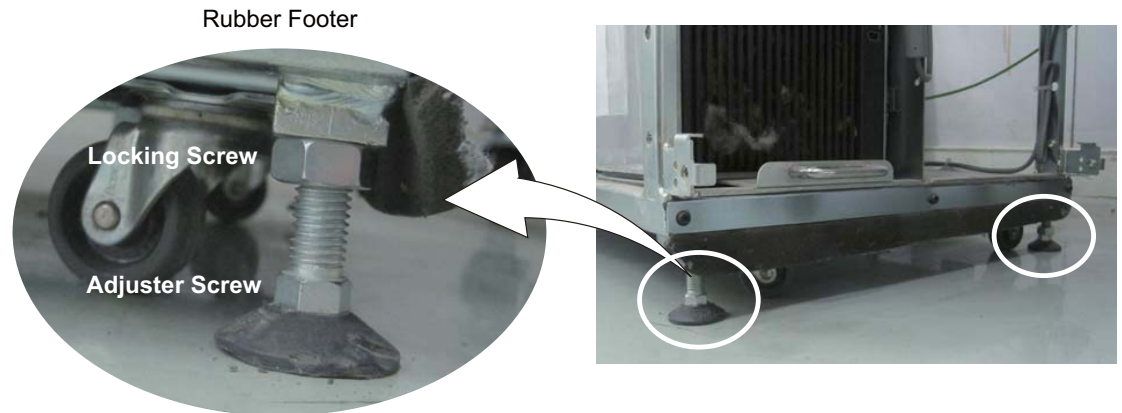
**Figure 1-64 Host PC Support Bracket**



### 9.2.2 Footer Adjustment

- 1.) Place the console at the operator room.
- 2.) Adjust two rubber footer to prevent console from sliding.

**Figure 1-65 Rubber Footer Adjustment**



## 9.3 Install Operating Table

### 9.3.1 Install FWS Table (5168666-3) and Monitor Arms

- 1.) Assemble FWS table.  
Refer to [Appendix B Section 1.0, on page 283](#) for details of FWS and monitor arms assembly.
- 2.) Install LCD Monitor and install monitor arms.
- 3.) Place the FWS table at one side of the console.

Note: FWS table should be place side by side with the console considering that the extended cable length used between FWS and Console is limited within 3 metre.

### 9.3.2 Install Optima Desk (5371587)

- 1.) If your system has the Optima Desk, place the desk in the control room.
- 2.) Attach the cable hooks and console stopper by the M4 screws.

### 9.3.3 Install Aurora SWS Table (5449758-2)

- 1.) If your system has the SWS Table, assemble SWS Table.  
Refer to [Appendix B Section 2.0, on page 296](#) for detail Aurora Table assembly.
- 2.) Place the table in the control room.

## 9.4 Peripherals Placement

- 1.) Place keyboard and GSCB
- 2.) Locate and unpack the Media tower.
- 3.) Place the Media tower on the console desk.

## **9.5 Install GPU Card (If applicable)**

Install the GPU Card in the Host Computer if the site has the option. Refer to Service Methods-->Installation--> Option-->*GPU Fluoro Prerequisite Installation Manual*

## **9.6 Cover Installation**

### **9.6.1 OpenOC Console Cover Installation**

Install the OpenOC console cover. Refer to *Service Methods-->Replacement--> OpenOC16--> Console Cover Removal and Installation procedure.*

### **9.6.2 NIO16 Console Cover Installation**

Install the NIO console cover. Refer to *Service Methods-->Replacement--> NIO16 Console--> Console Cover Removal and Installation procedure.*

# Section 10.0 Seismic Mounting

Before proceeding with seismic mounting for any of the components in this section, be sure to allow sufficient space to unbolt and move the component from its mounted location for service.

- You may need to remove all four mounting bolts.
- If removing the component requires lifting, use an appropriate-sized pry bar to lift each corner of the component.
- Two installers may be required to safely complete this task.
- 5/8 in. anchor or IBC2007 standards or as provided in the seismic kit.

1 – Pos. Subsystems

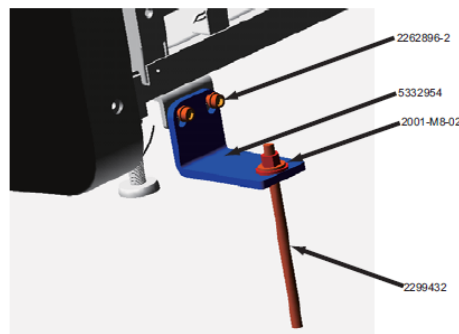
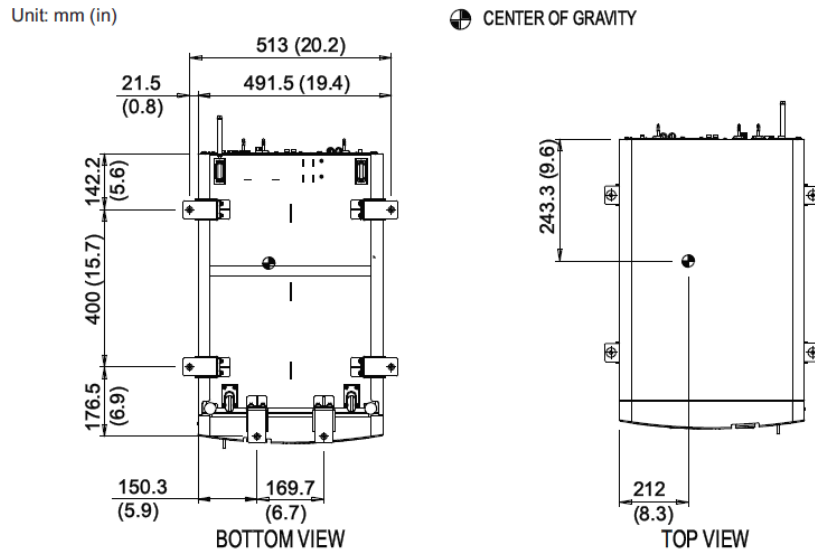
## 10.1 Console

### NIO16 Console

If site specifications require seismic mounting, use 1/2" bolts to mount the brackets to the floor. Refer to [Figure 1-66](#) for hole placement. The console seismic brackets are included in Console Seismic Kit (5394347-2).

Note: If you use the front anchor holes as alternative anchor location, use the Drop-in type anchor.

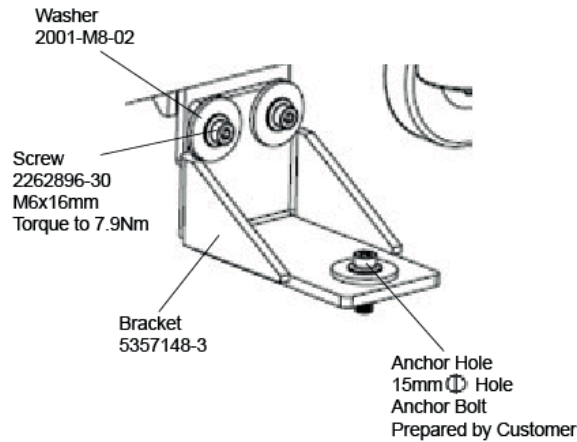
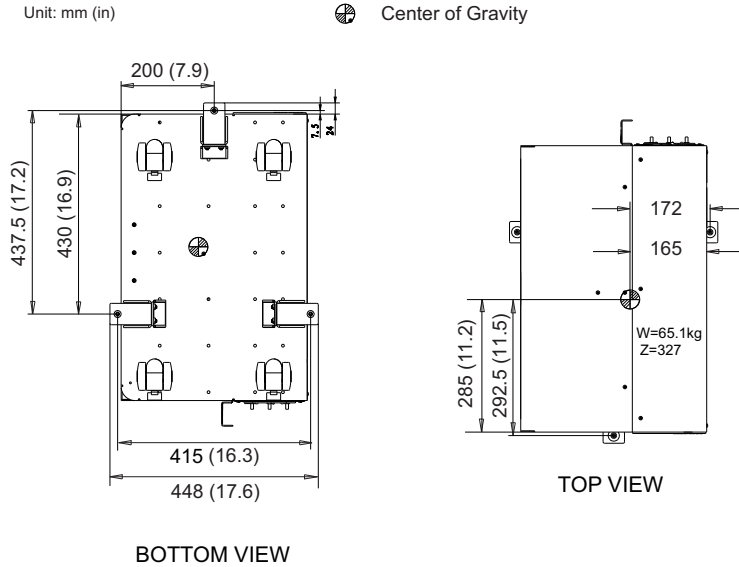
**Figure 1-66 Seismic Console Mounting Hole Locations (NIO16 Console)**



**OpenOC 16 Console**

If site specification require seismic mounting, the customer may require different anchoring methods based on local requirement. Anchor type, size and torque shall be defined by the customer. Refer to [Figure 1-67](#) for hole placement. The console seismic brackets (5357148-3), M6 screws (2262896-30) and M8 washers (2001-M8-02) are includes in Console Seismic Kit (5812703-2) that is shipped with Console.

**Figure 1-67 Seismic Console Mounting Hole Locations (OpenOC16 Console)**



## 10.2 Power Distribution Unit

If site specifications require seismic mounting, use the seismic brackets (2354563-2) and the PDU shipping kit (5453382-2) that were shipped with PDU. Refer to [Figure 1-68](#) for mounting hole locations, and mount the PDU so it can be easily removed for service.

It is the customer's responsibility to provide an appropriate anchor/fastener from the bracket to the floor.

### CAUTION



The PDU is very heavy and may present a crush hazard if proper precaution and tools are not used.

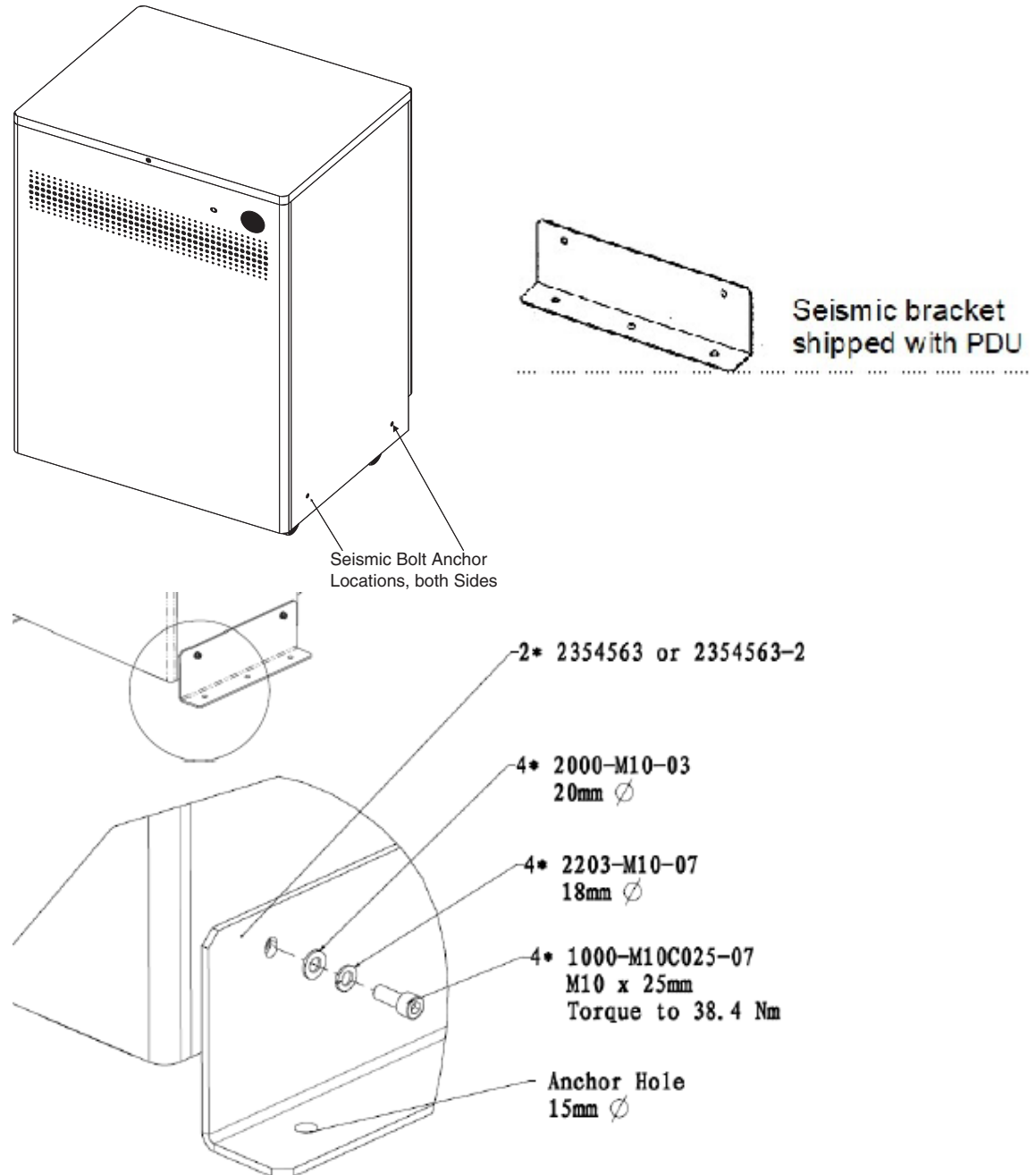


Figure 1-68 PDU Seismic Brackets and Shipping Kit

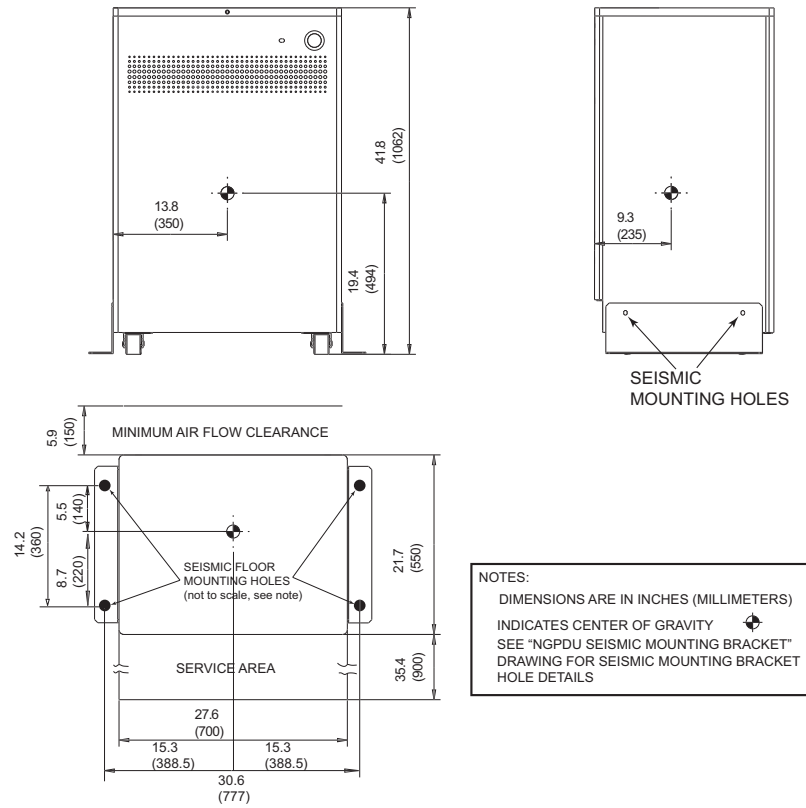


Figure 1-69 Seismic PDU Mounting Hole Locations

# Chapter 2

## Position Subsystems with Install/Align Tool



**NOTICE** Potential for Data Loss and/or Equipment Damage.

To prevent potential data loss and equipment damage, please do the following:

- Record data collected from procedures in this chapter into Form 4879 when directed, located in [Section 8.0](#) of this book.
- Only use the installation manual that arrives with your system. Any other revisions of this manual may not exactly match your system.

### Section 1.0

#### Installer/FE Notices

##### 1.1 General Safety Guidelines

- 1.) Follow all safety precautions, warnings and instructions in this manual.
- 2.) Read and obey the warnings and instructions on equipment labels or tags.
- 3.) Allow only qualified personnel to install, maintain and service this equipment.
- 4.) While the system is designed to meet all safety requirements applicable to medical equipment, qualified operators must understand the potential safety hazards, and take steps to minimize the risk at all times.
- 5.) **Never** modify the system in whole or in part without prior written approval by GE Healthcare.
- 6.) Do **not** change, add, or remove any system accessory without prior written approval of the vendor's local service manager.
- 7.) **Never** leave the system in an unsafe condition. Notify the customer that the system is not to be used until a problem is resolved.
- 8.) Read and follow the precautions described in this manual.

##### 1.2 Shipping, Warehouse and Transportation Warning

- This gantry is designed to be moved using the shipping dollies and should not be lifted or moved using a lift truck.
- Do Not Hoist Gantry or Table using Dollies.

##### 1.3 International Shipments

- Dollies must be used to remove the gantry from the shipping skid and to transport the gantry to the customer's site.
- If lifting is required, refer to the *Pre-Installation Manual* for instructions.

## 1.4 On Site Warning

This system requires a gantry bearing gap inspection *before* electrical calibration is started. See [Gantry Bearing Gap Inspection](#) on section 6.6 of this Chapter.

## 1.5 Service Actions

Open a dispatch and record the bearing inspection results first, then close the dispatch and continue with the electrical calibration procedures.

## Section 2.0 Introduction

This chapter describes how to mount, position, and level the CT Scanner subsystems.

Note: Before you start the installation, make sure the site preparation complies with conditions and instructions found in the *Pre-installation manual*. Failure to comply will result in excessive installation delay and potential increased, unrecoverable installation costs. This product is designed to meet specific mechanical installation standards that should be reviewed prior to installing this system.

### 2.1 Overview

Procedures in this chapter provide detailed instructions to position, level, and anchor the gantry and table securely for operation. The system uses adjustable leveling pads to support the gantry and table. The gantry has four (4) primary leveling pads located on the gantry base. The table has four (4) pads used for leveling it.

The process your follow is:

- 1.) Use the gantry-table installation tool (CAD drawing) to determine the general position of the gantry and table.
- 2.) Drill anchor holes of gantry and table
- 3.) Move the gantry into position
- 4.) Level gantry
- 5.) Move the table into position.
- 6.) Use the gantry/table alignment tool to level the table position.
- 7.) Complete the mechanical installation section of GE Form e4879.

Note: Use the gantry/table installation tool (CAD drawing) to position the system and drill the anchor holes.

### 2.2 Pre-Installation

**Always** use the gantry-table installation tool, during installation. The gantry and table are not properly aligned if existing holes are used. The CAD drawing determines the location of the gantry and table anchor holes.

The gantry/table installation tool (5824714) is service tool. You can also order it via the web GEMS BUY, from QZMX.

## 2.3 Required Common Tools and Supplies

The following tools and supplies should be included in the standard CT installation tool kit. The tools listed represent the minimum tools required for installing this CT scanner.

### WRENCHES

- Standard and metric combination wrench sets
- Standard and metric hex key (Allen wrench) sets
- ½" and 3/8" drive torque wrench: 0-100 N-m (0-100 ft.-lb.) Must be calibrated yearly.

### SOCKETS AND EXTENSIONS

- 3/8" and ½" drive ratchet wrenches
- ½" drive 3" & two 6" long extensions
- 3/8" drive 12" long extension
- Standard & Metric 3/8" drive socket sets
- ¾" deep well socket 3/8"
- 1", 1-1/8", 1-¼" & 1-½" sockets for ½" drive
- 3/8" drive universal joint
- Metric hex bit set ¼" or 3/8" drive, including:
  - 14mm hex bit 3/8" or ½" drive (14mm ball hex helpful)
  - 10mm hex bit 3/8" drive

### SCREW DRIVERS

- Phillips screwdriver set (small, medium, and large)
- Straight blade screwdriver set (small, medium, and large)

### DRILL BITS

- Complete set of standard (U.S.) drill bits
- Metric tap set (Optional)
- 12 mm concrete drill bit (2203081: HILTI, TE-CX 12/17 or equivalent)
- ½" masonry bit, min. 8" long USA; 18" optional (for rear table hole)
- 3" (76mm) hole saw with 1/4" (6mm) masonry bit (to remove flooring)

### POWER TOOLS

- 3/8" or ½" drill, cordless or electric
- Reciprocating saw (Sawzall or equivalent) and assorted blades
- Hammer Drill & Bit (8" min, 12" max)
- Sears 17740 Shop Vacuum or equivalent, with "HEPA" or dry wall dust filter (Sears part number 17918 or equivalent)
- 25' extension power cords

## HAND TOOLS

- Ball-Peen Hammer (1lb or 2lb)
- Tongue & Groove Pliers (large)
- Diagonal Cutting Pliers, Large (to cut 1/0 ground)
- Framing Square (e.g., Empire 16" x 24" aluminum square)
- Diagonal Cutting Pliers, Small
- Large pry bar
- 4', 2' & 9" torpedo levels (see [Table 2-1: Recommended Levels](#))
- Laser level (see [Table 2-1: Recommended Levels](#))

**Table 2-1 Recommended Levels**

9"	Johnson Magnetic Level, model 7500M*
	Johnson Magnetic Level, model 4500
	Stanley Magnetic Level
6"	Level
2'	Johnson Professional Box Beam Level, model 9624*
	Empire Titan Professional Box Beam Level, model 900 series
4' (nominal)	48" Johnson Professional Box Beam Level*
	42" Stanley Contractor Grade Level
	48" Empire Titan Professional Box Beam Level, model 900 series
	48" Stabila Aluminum Box Beam Level, Kit 24816

\* Preferred levels

## ELECTRICAL TOOLS

- DVM capable of reading 0.5 ohms or less
- Continuity Tester
- Dale 600 or 601 Leakage meter (The Fluke ESA612 be used globally when the Dale analyzer is not available)
- Temperature/humidity tool: Oregon Scientific Wireless Weather Station Model BAR608HGA or equivalent

## PERSONAL SAFETY EQUIPMENT

- Safety shoes\*
- Safety glasses\*
- Gloves
- LOTO kit\* -- MUST have
- Hearing protection\*
- 6' or 8' step ladders

\* These PPE items are absolutely required for every installation job, with NO exceptions.

## SYSTEM CLEANERS

Purchase Locally:

- Glass Cleaner or equivalent
- Scrubbing Bubbles Bathroom Cleaner or equivalent
- Grease Cutting Cleaner or equivalent

## **GE Tools**

- System Installation and Alignment Tool (p/n 5824714)  
(This tool may not be available via the tool pool in some areas.)

## Section 3.0 Delivery Procedure

### 3.1 System Transportation - Temperature Extremes

When transporting the CT system, ensure that the system is not exposed to temperatures or humidity outside the following specifications.

- Up to two weeks duration
- Temperature: -40° to +158° F (-40° to +70° C)
- Humidity: 10% to 100%, including condensing
- Altitude: -1,800ft to 18,000ft

**NOTICE** **Component Freezing occurs if CT system is exposed to temperatures below 0° F (-18° C) for a period longer than two days.**

**Allow a minimum of 12 hours for the CT system to adjust to ambient room temperature prior to installation.**

**Inspect for visible condensation and allow all moisture to evaporate before starting the installation.**

### 3.2 Stored Systems

If your system was stored for more than three months:

- Complete a visual inspection, looking for damage due to improper storage.
- Check for the latest software revisions, options and component changes.
- Contact the OLC for support.
- Movers are required to move the equipment to the scan room.

### 3.3 Construction Site Storage

When storing the CT system at a construction site, be sure to adhere to the following storage requirements:

- Construction site packaging must be ordered and the system shipped packaged for storage.
- Do not damage or puncture the shipping crate.
- Do not remove packaging until the completion of all construction at the site and the removal of all dust created by the construction.
- Maintain a storage temperature with the range of 50° to 90° F (10° to 32° C)
- Maintain a relative humidity (non-condensing) between 20% to 70%

### 3.4 Construction Site Installation

A construction installation describes installations at sites without an occupancy permit, or ongoing construction. In general, construction sites fail to meet the required specification for system delivery, and GE does not recommend such installations, as they can result in delays, increased costs, and possible damage to the system. When construction-site delivery proves unavoidable, the installation falls into one of two categories:

- Full construction site with completed radiology area.
- Full construction site with limited delivery access.

Review these categories to determine which most closely matches the conditions of the planned installation site.

### 3.4.1 Full Construction Site with Completed Radiology Area

This type of site consists of a finished, dust-free, occupancy-ready radiology suite at a site with ongoing construction in other areas, but with no remaining construction in or around the scan suite area. At the time of delivery such sites feature:

- Dust control measures deployed in the radiology suite area.
- Scan suite access limited to a single entrance.
- Radiology suite sealed off from the remaining construction area.
- Operational HVAC, with a positive air pressure within the radiology suite

In addition, the radiology suite at such a site REMAINS in a dust-free, occupancy-ready state after delivery and throughout the remaining construction phase.

For more details, refer to the *Pre-Installation Manual*.

### 3.4.2 Full Construction Site with Limited Delivery Access

This type of site allows delivery during ongoing construction of the radiology suite area.

Construction site packaging must be ordered and the system is delivered packed for construction site storage. Packaging cannot be added during the delivery.

At Full Construction sites, delivery occurs prior to site completion, but the product remains stored until the completion of a finished, dust-free, occupancy-ready radiology suite area. This system is delivered in sealed package with dollies. Delivery to the storage area requires a lift truck or riggers. Installation work can begin **only** when the site reaches the completed, dust-free, occupancy-ready radiology suite requirement.

### 3.4.3 Construction Site Unpacking

If room is not completed, following escalation process. Pre-installation escalation is the process used to consult CT Engineering, the Design Center, or EHS to resolve pre-installation issues related to siting concerns and requirements.

A typical construction site package consists of 8-12 package. Each package is plastic-wrapped in dust-free packaging. Each package must be vacuumed to remove construction dust prior to moving components into the CT scan room. This process can add approximately two hours to your installation time.

Typical components are:

- Gantry
- Table
- Console
- NGPDU
- UPS
- Lean Cover Cart
- Lean Install Cart
- Chair

## 3.5 Working with the Mover

Follow the instructions provided by your installation specialist regarding working with equipment movers. Help direct movers on where to place equipment and which items you need first.

Generally movers should move all equipment into the customer room. Door removal and other site changes to move equipment should be done only as directed by the install specialist.

For component sizes and weights, refer to the *Optima CT540 Pre-Installation* manual.

### 3.5.1 Delivery Dolly Options:

- Gantry Mini Dolly - ordered from UMI at <http://www.umi-dollyshop.com>

Follow the instructions provided by your Project Manager of Installation regarding working with equipment movers. Help direct movers as to where to place equipment and which items are needed first.

Movers should move all equipment into the customer's room. Door removal and other site changes to move equipment should be done only as directed by the Project Manager of Installation.

For component sizes and weights, refer to the *Pre-installation Manual* for this system.

Note: Do not place equipment in its final location at this time. Templates must be laid first.

Note: If you have to remove the gantry covers in order to move the gantry into the room, please read the notice statement before removing the gantry covers.

### 3.5.2 Equipment Delivery Route

Prior to equipment delivery, review the delivery route with the movers. Refer to the Project Manager of installation for any additional delivery instructions.

### 3.5.3 Floor Protection

It is suggested that the movers use floor protection. Most equipment movers can provide floor protection during the equipment delivery. Installers should provide floor protection for the room.

### 3.5.4 Removing Gantry Dollies and Covers

Refer to [Appendix A](#) for the dolly and cover removal procedures. Please read the caution statement on [page 169](#) before removing the gantry covers.

## 3.6 Damage In Transportation

Check for damage to property that may have occurred at the site during delivery, such as damage to floors, door frames or walls. If damage is found, notify the Project Manager of Installation.

All packages should be closely examined at time of delivery. If damage is apparent, have notation "Damage in Shipment" written on all copies of the freight or express bill before delivery is accepted or "signed for" by a General Electric representative or a hospital receiving agent. Whether noted or concealed, damage shall be reported to the carrier immediately upon discovery, or in any event, within 14 days after receipt, and the contents and containers held for inspection by the carrier. A transportation company will not pay a claim for damage if an inspection is not requested within this 14-day period.

To file a report:

- Call 1-800-548-3366 and use option 6.
- Fill out the GIQ workflow for any items missing, damaged, OBF/FOI for in process installs:  
[http://supportcentral.ge.com/ProcessMaps/form\\_new\\_request.asp?prod\\_id=268679&form\\_id=573167&node\\_id=1916016&map\\_id=&reference\\_id=&reference\\_type](http://supportcentral.ge.com/ProcessMaps/form_new_request.asp?prod_id=268679&form_id=573167&node_id=1916016&map_id=&reference_id=&reference_type)
- Contact the local service coordinator for more information on this process.

### 3.7 A1 Disconnect Panel

- NOTICE**
- All site must have a main disconnect with Lockout/Tagout capability.
  - Non GE-supplied breakers must have/provide under-voltage protection. For more information, refer to the *Pre-Installation Manual* for this system.
  - A LICENSED ELECTRICIAN shall install and make connections inside the main disconnect.

Lock-out and tag-out the A1 breaker now.

A1 Breaker		UPS
Global except EMEA	EMEA	
90Amp, 440V-480V <b>E4502BB</b> 110Amp 380V-420V <b>E4502BC</b>	<b>E45021BB (125A)</b>	Optional Partial UPS Kit <b>B7999ZB / E4502KZ</b> (includes 5820687 Liebert GXT4 model 10KVA, 2ph UPS & hardware kit) requires one of the A1 Panels shown at left

Table 2-2 A1 Panel and UPS

2 - Pos. Subsystems

Figure 2-1 Sample A1 Breaker



### 3.8 Instalation Support Kit

An Installation Support Kit is shipped with every system. Locate this box now and open it. All included materials are to be used during the installation process. These items are to be left ON SITE, for future service needs.

## 3.9 Installation Conditions

- 1.) A Final Site Print is REQUIRED. Contact your PMI for a final site print.
- 2.) The room size must match the print.

Measure the room size. If it does not match the stated size, and is smaller, then check all regulatory clearances. If any regulatory clearance is less than the minimum, the DO NOT continue. Notify the PMI to set up a site escalation.

**Note: Service Clearances MUST be met to continue.**

- 3.) A customer Anchoring Plan is required if there is anything other than a 101.6 mm (4 in.) (minimum) concrete floor. GE employees shall only install the anchors supplied with this system.
- 4.) Complete this section on the GE Form e4879.
- 5.) Do Not start the installation process if the site is under construction:
  - In the Room
  - In the Scan Area
  - In addition, the radiology suite at such a site will REMAIN in a dust-free, occupancy-ready state after delivery and throughout the remaining construction phase.

## Section 4.0 Layout the Room Floor



**CAUTION** The System Installation-Alignment Tool (5824714) has been phased in as service tool, you can order it via the Tool Pool.

### 4.1 Safety



**CAUTION** Potential for Injury.  
The gantry presents a variety of mechanical and electrical hazards.

### 4.2 Floor Preparation

#### 4.2.1 Preparation

The PMI notifies the installation team if any requirements are not met. It is the purchaser's (buyer) responsibility to provide an approved support structure and an approved method of mounting. General Electric is not responsible for any failure of the support structure or method of anchoring.

#### 4.2.2 Flooring

The system has a total floor load of approximately 2950 kg (6500 lbs). A concentrated load of about 2350 kg (5175 lbs), including patient (227 kg (500 lbs)) is found in the table-gantry assembly. For more information, refer to the Pre-installation Manual for this system.

Do not place the scanner on any resilient flooring. Resilient tile or carpeting may slowly yield over a period of time and disturb the alignment of the table to the gantry. Refer to the floor template to determine locations where resilient flooring material should be removed.

Limitations include:

- No part of the floor surface within the table, gantry, or the two interface areas between table and gantry should be higher than the support areas for the table and gantry.
- The floor structure must withstand the occupied weight of table and gantry, as well as the individual contact area loading of these components.
- The method and placement of anchors or through bolts must not reduce the structural strength of the floor. In some circumstances, the final floor may not be installed. Refer to Chapter 8.0 in the *Pre-Installation Manual* for this system.

If you have to remove the gantry covers in order to move the gantry into the room, refer to the cover removal procedure. Please read the notice statement on [Appendix A Gantry Cover Removal and Dolly Setup](#), on page 183 before removing the gantry covers.

### 4.3 Room Preparation

- Use the GE print (CAD drawing) developed for your site to establish the room layout. Make sure all the operating and service clearances shown on the print are observed. Record this information on the GE Form e4879.
- Clean the area. The mounting surface must be free of any material that may interfere with the positioning and leveling of the system.

## Section 5.0 Gantry-Table Position Confirmation

### 5.1 Time & Personnel

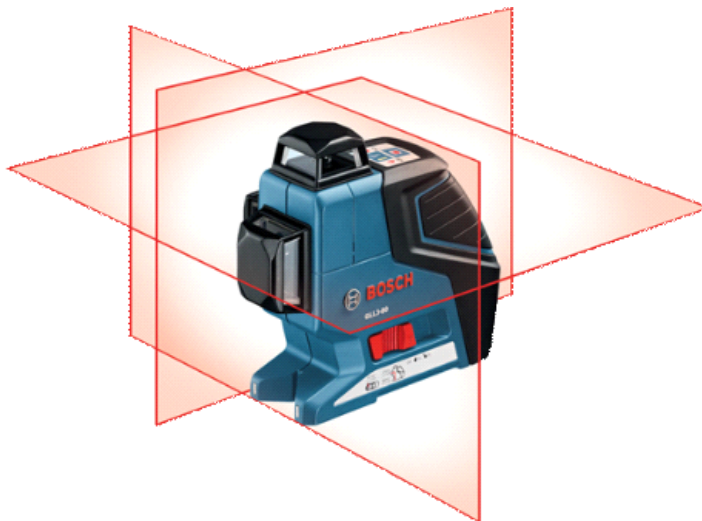
Required Persons	Preliminary Reqs	Procedure	Finalization
2 (FE or mechanical supplier)			

### 5.2 Tools and Test Equipment

- System Installation and Alignment Tool
- Standard Install Tool Kit
- Install Support Kit
- GE Site Print (CAD drawing)
- Chalk line
- China marker or wax marking pencil, or equivalent
- Masking Tape, or equivalent
- PPE (hand protection, foot protection, face shield, eye protection, personal dosimeter)

### 5.3 System Install/Align Tool (5824714 includes:)

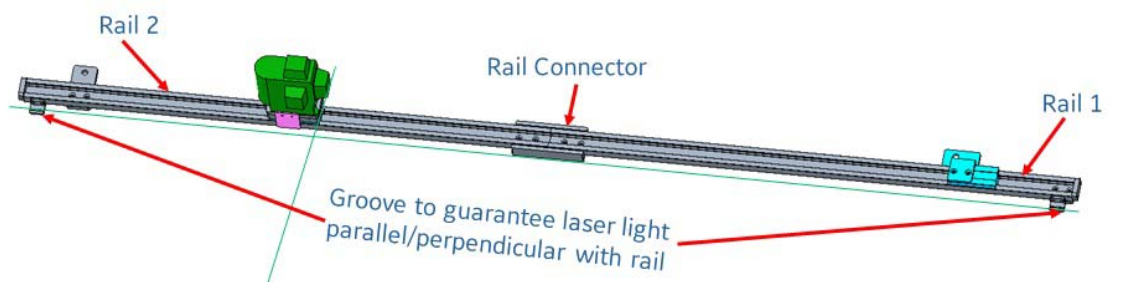
- Line Laser (5820779)



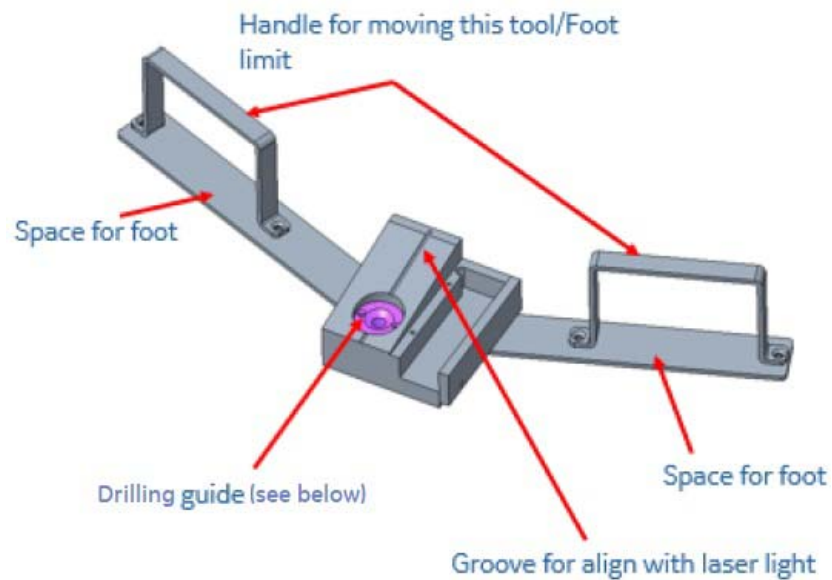
- Laser Measure (5823264)



- Drilling Rail Assembly
  - Rail 1 (5819062)
  - Rail 2 (5819065)
  - Rail Connector (5821014)

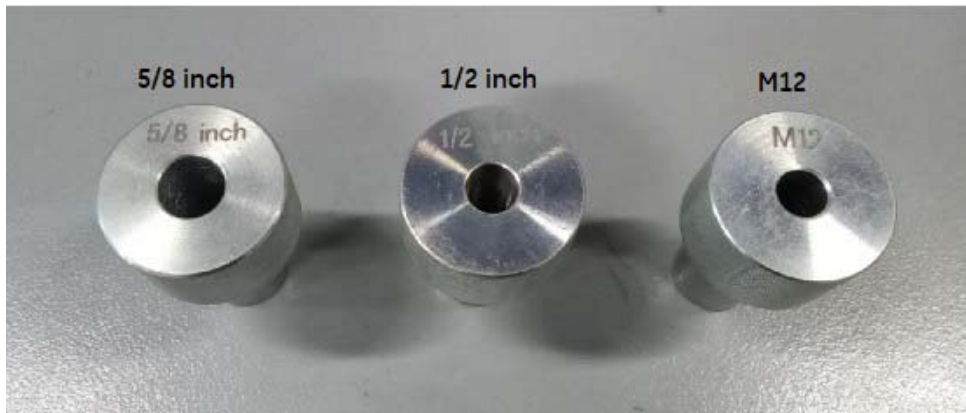


- Drilling Tool Assembly (5821081)



- Drilling Guide/Drilling Bushing
  - Drilling guide for anchor 1/2 inch (5829433)
  - Drilling guide for anchor 5/8 inch (5824151)
  - Drilling guide for anchor M12 (5821085)

Note: Please select 1/2 inch drilling guide/drilling bushing (5829433) for bit drilling guide.



## 5.4 Preparation

- 1.) Start to measure the position of the gantry in the room per the GE print.

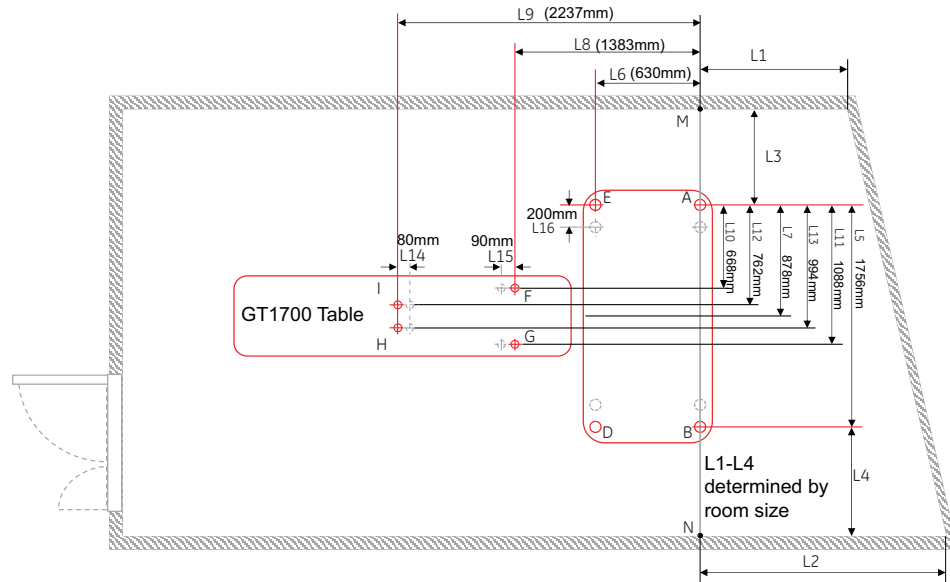


Figure 2-2 GE Print with GT Table

Configuration	L1-L4 (mm)	L5 (mm)	L6 (mm)	L7 (mm)	L8 (mm)	L9 (mm)	L10 (mm)	L11 (mm)	L12 (mm)	L13 (mm)	L14 (mm)	L15 (mm)	L16 (mm)	L17 (mm)
System with GT1700 Table	determined by room size	1756	630	878	1383	2237	668	1088	762	994	80	90	200	-

- 2.) Identify the position of the gantry and table in the room per the GE print. If everything matches the GE print, continue. If not, please redo two point identification.
- 3.) Make sure there are no potential clearance issues. If there are floor obstructions, such as conduits or old anchors, be sure to cut them flush to the floor to prevent the gantry from resting on them. Also, be sure there is at least 102 mm (4 in.) of clearance between any existing floor penetration and the new gantry position.

Note:

There must be clear space without obstructions in order to:

- Change major components, with access to the gantry tube-change (RH) side (See [Figure 2-3](#)).

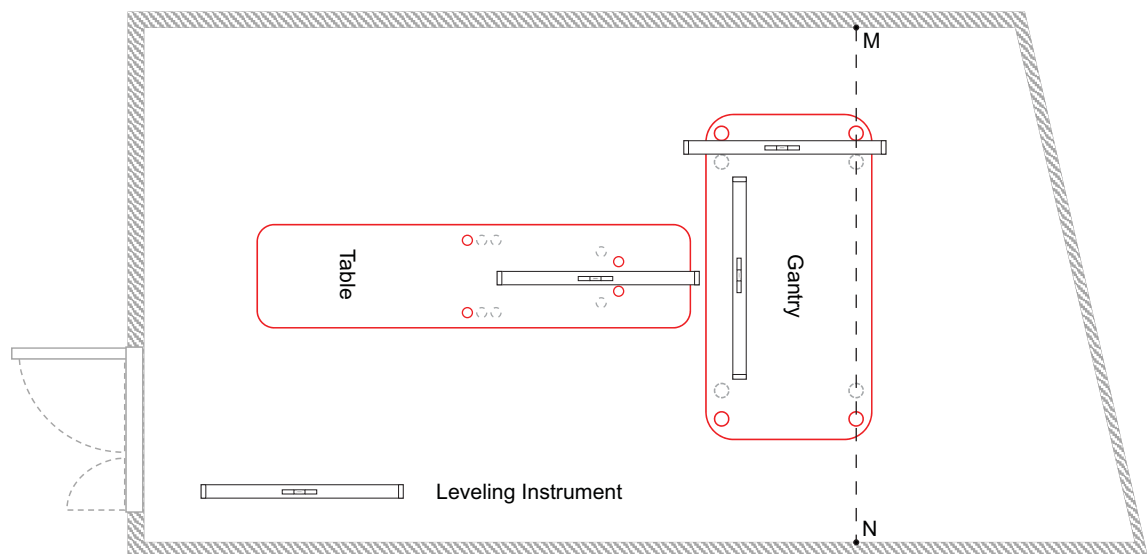


**Figure 2-3 Gantry Tube Change Cart**

- Allow space for front and rear cover removal

Note: See Service Clearance Section found in the *Pre-Installation Manual*.

- 4.) Check floor levelness per GE print, as shown in [Figure 2-4](#). The floor must meet the minimum levelness specification: 6 mm (1/4 in.) over 3.05 m (10 ft.) between the table and gantry.



**Figure 2-4 Check Floor Levelness (example)**

**NOTICE**



**Positioning requires cutting eight (8) holes in the floor covering.**

**Before you drill or cut any flooring, make sure that you have discussed this issue with the customer, and that the appropriate hospital personnel have approved the location of the table/gantry.**

**Any repositioning must meet all regulatory requirements to be completed.**

- Check that the floor meets the levelness specification. Follow the escalation procedure if the floor does not meet the floor specification.
- If the floor is not level, the system does not meet the table ISO specification. The distance from the table cradle to the floor cannot be greater than 1005 mm (40 in.).

- 5.) Re-check with the customer for approval of the gantry/table placement.
- 6.) Cut tiles (or other resilient flooring) around all holes punched for the gantry and table.

**NOTICE**



**Some sites require sealing of the floor penetrations after the flooring is removed. If this site does, use RTV or other sealant to seal the floor covering as necessary.**

## 5.5 Anchor Hole Information

### 5.5.1 Notes to Mechanical Installers

#### Note 1: Basic Anchoring Information

GE provided floor anchors are designed for use ONLY on concrete floors that meet the 4-inches concrete floor requirement. Supplied floor anchors must be installed by a trained contractor, and shall be set to a minimum depth of 3-inches at each anchor point. ANY anchors having more than 1-inch of thread showing above the nut, when specified torque is set, shall have a second anchor installed in the closest adjacent hole. This is because the minimum anchor engagement length in the concrete was not met. The second anchor shall be installed to the standard depth and torque specification. Do not cut anchor bolts that extend longer than the 1-inch limit.

#### Note 2: Alternate Anchoring

If at least four anchors cannot be set for the gantry, and at least four anchors for the table using the alternate anchor holes, then the installer must inform the PMI that the minimum anchoring cannot be met. Additionally, the customer's structural engineering contractor must be engaged to determine the anchoring method, set the anchors, and certify that their anchoring meets the stated GE minimum load requirement and torque specification.

#### Note 3: Non-Concrete Floors

All other anchoring methods - on floor types other than the concrete minimum - must be determined at the customer's expense by a structural engineering contractor. The anchoring and method must be certified by the customer's contractor to meet the stated GE minimum load requirement and torque specification.

#### Note 4: GE Notification

It is not the role of mechanical contractors or installers (FEs) to determine acceptable methods to install or anchor equipment on non-4-inch concrete floors. The PMI or appropriate GE contact person shall be notified that the facility's floor type DOES NOT MEET the installation mounting requirement for the installation procedure (described in this Installation Manual), and therefore the table-gantry mounting process CANNOT continue.

### 5.5.2 Tools Required

- Standard Install Tool Kit
- Drilling Tool Assy and Drilling Guide
- Hammer Drill
- ½" x 12" Drill Bit (Metric equivalent must not be used)
- Vacuum with HEPA or drywall dust filter
- Vacuum Hole Attachment - to clean debris from the holes
- PPE

### 5.5.3 Gantry and Table Anchors

**CAUTION** Potential for personal injury.



Use appropriate safety procedures when drilling the floor holes, especially if there is lead under the floor.

Appropriate PPE is required when working with hazardous materials.

**NOTICE** All documentation in this manual is based on mounting the table/gantry on a 102 mm (4 in.) - 110mm (4-1/3 in.) concrete floor.

Apply a piece of adhesive tape (see [Figure 2-5](#)) which will then provide a visual means of making sure the proper hole depth has been reached.

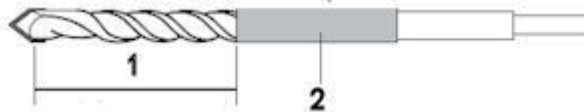


Figure 2-5 Drill Bit

**Note:** Mark 1 is the drilling depth and the drilling guide length (70mm), mark 2 is the adhesive tape.

Anchor P/N: 5487992-2/5874830-2 (Gantry and GT1700 Table)	
1	155 mm (6.1 in.)
2	Adhesive Tape

Table 2-3 Drill Depth Gauge Mark Tape Location

MOUNTING REQUIREMENTS	GANTRY AND GT1700 TABLE ANCHOR P/N 5487992-2 / 5874830-2
Minimum Floor Thickness:	102 mm (4 in.)
Recommended Drilling Depth:	85 mm (3.35 in.)
Average Anchor Embedment:	75 mm (2.95 in.)
Minimum Anchor Embedment:	63 mm (2.48 in.)
Shipped Anchor Size:	178 mm (7 in.)
Floor Levelness Requirement:	6 mm (1/4 in.) over 3 m (10 ft.)

Table 2-4 Gantry and Table Mounting Requirements

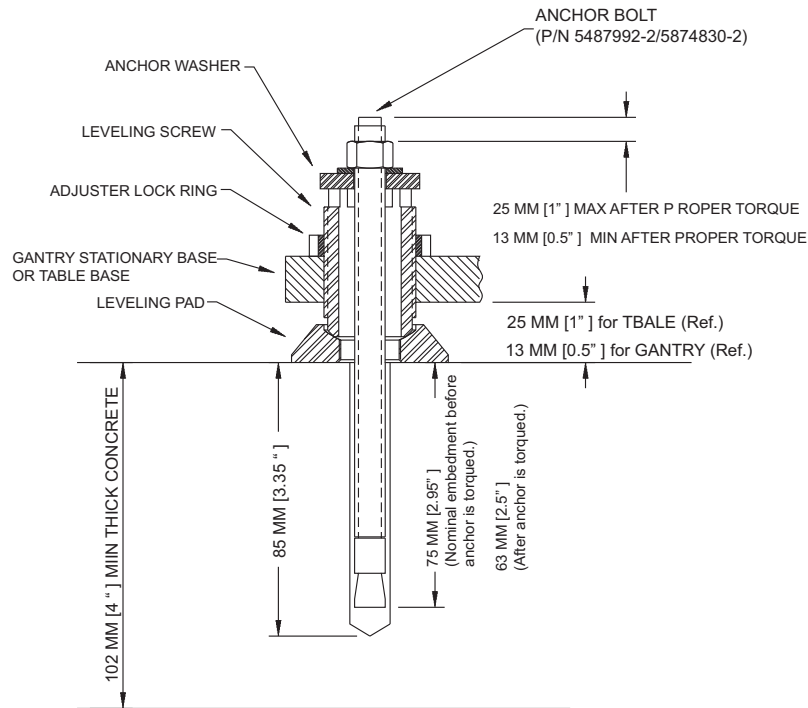


Figure 2-6 Gantry and GT1700 Table Anchor Assembly (P/N 5487992-2/5874830-2)

## 5.6 Position Gantry and Table

- 1.) Unpack the Table Gantry Drilling / Alignment Tool Kit (5824714). (See [5.3 System Install/Align Tool \(5824714 includes:\)](#), on page 114)
- 2.) Follow the GE print drawing, identify the points M & N by using the laser Measure (5823264), mark two points according to L1 & L2 respectively.

Note: The reading displayed on the Laser Measure includes the distance from the tail of the Laser Measure to the target point.

- 3.) Turn on the Line Laser (5820779), adjust its position, pass the laser line through two points M and N.



Figure 2-7 Mark M and N (Example)


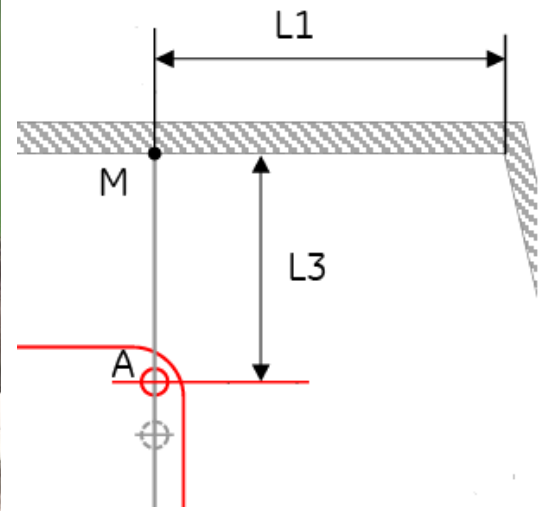
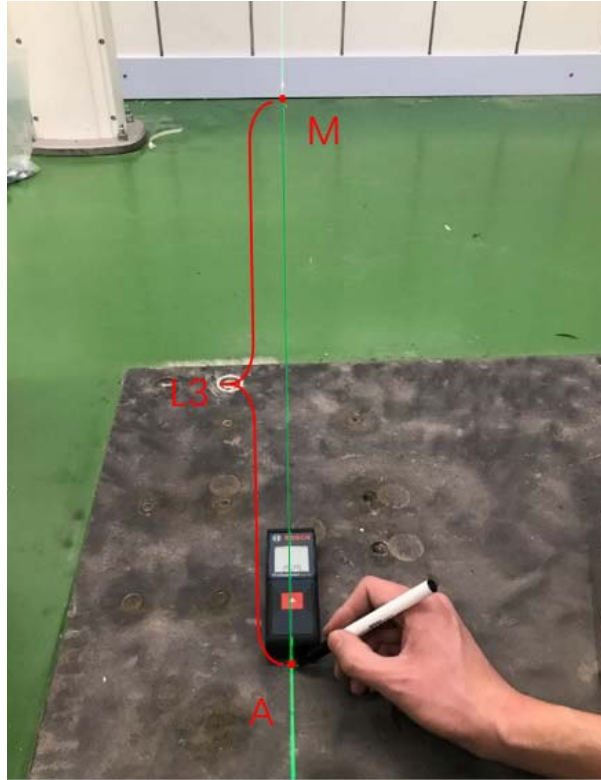
Note: Set the Line Laser switch is “ On” (See [Figure 2-8](#)) to make sure it is set to self-level.

Figure 2-8 Switch “On”



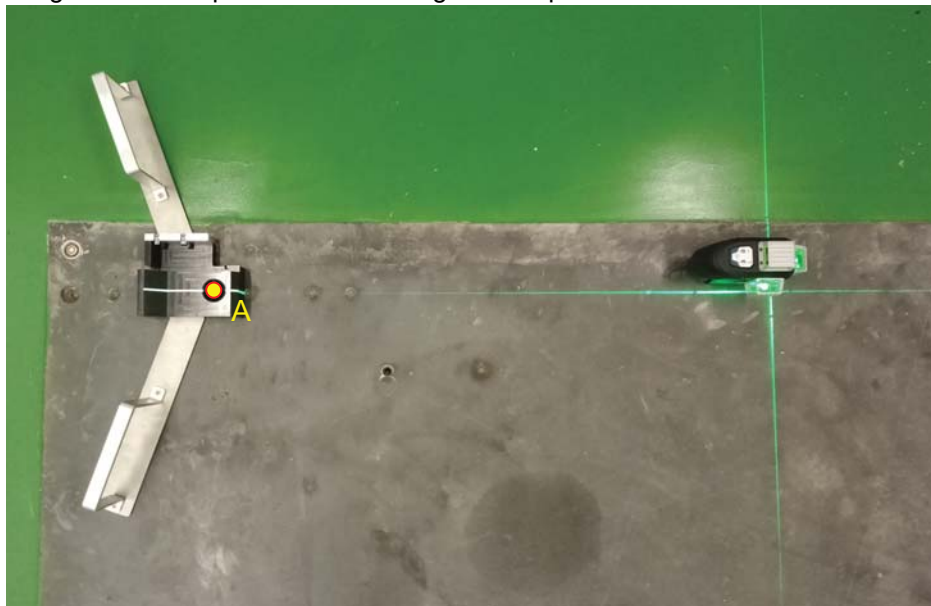
- 4.) Align the Laser Measure with the Laser Line, make the value displayed on the Laser Measure is same as L3 to confirm the point A and the value displayed on the Laser Measure is same as L3 + 1756mm to confirm the point B.

Note: The value displayed on the laser measure includes the length of itself.



**Figure 2-9 Point A Confirmation**

- 5.) Align the center punch of the Drilling Kit with point A.



**Figure 2-10 Align Points A&B**

Note: DO NOT move the Line Laser, make sure the laser line is aligned with the mark A before drilling.

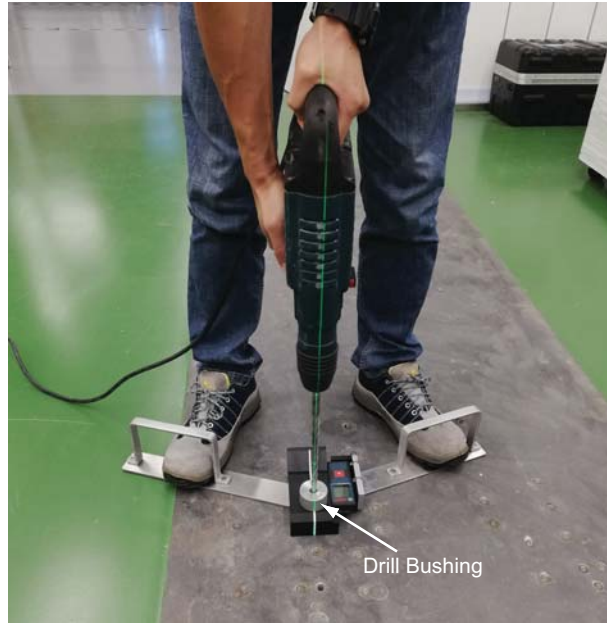


**CAUTION Potential for personal injury.**

**Use appropriate safety procedures when drilling the floor holes, especially if there is lead under the floor.**

**Appropriate PPE is required when working with hazardous materials.**

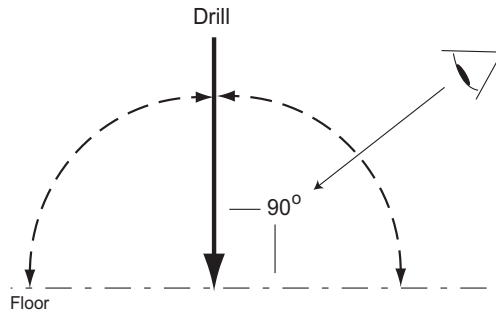
- 6.) Locate the 1/2" X 12" drill bit, and use the drill bushing (1/2 inch) to guide the drill bit and keep the drill bit perpendicular on the floor when drilling the holes.



**Figure 2-11 Drill Gantry Anchor Holes A by using 1/2 inch Bushing**

**Important - Follow these guidelines when drilling anchor hole:**

- During drilling, always keep the drill bit perpendicular to the floor.



- Always use the mechanical guide (drill bushing) when drilling.
- Stop drilling every 15 or 20 seconds and clear the hole of debris. This lets the drill bit cool and helps to prevent binding of the drill bit.
- Vacuum while drilling to keep gantry and table as free of dust contamination as possible. Place the funnel tip or long extension tip inside the hole.

**A drywall dust filter must be used on the vacuum.**

- Drill each hole until the mark on the drill bit is even with the Drilling Kit. All holes must be have a depth specified in [Table 2-4](#). Use an upside-down anchor to check the hole depth.

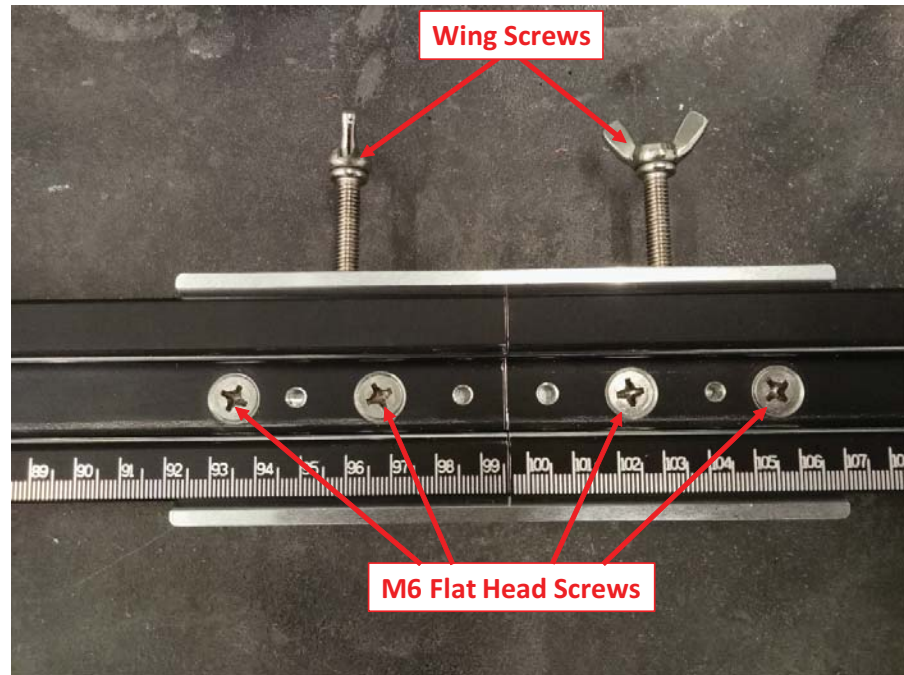


**CAUTION**

If you cannot use adjuster anchor hole due to structural interference, such as reinforcement bars in the concrete, you must remove the G/T Installation Tool to re-identify points A and B according to GE print.

- 7.) When finished drilling and clearing the anchor hole, vacuum the debris from the inside hole and from the surrounding (floor) area.
- 8.) Assemble the Sliding Rail1 and Rail2 to the Rail Connector by using four M6 flat head screws, **DO NOT tighten them.** (See Figure 2-12)
- 9.) Secure two wing screws so that two Rails are tight against the side of the Rail Connector, then tighten four M6 screws.

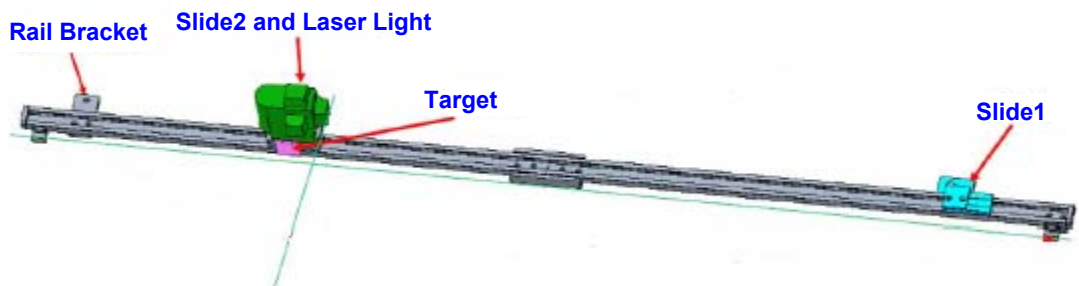
Note: Pay attention to the direction of two Sliding Rails, the wing screws of the Rail Connector should be in the no scale side of the Sliding Rails.



**Figure 2-12 Assemble Sliding Rails**

- 10.) Align the hole of the rail bracket with the hole A drilled in Step 6, then insert a drilling anchor found from the tool box (5824714) into the rail bracket and the hole A.
- 11.) Slide the slide 1 and align the hole of the slide 1 with the hole B marked in Step 4

**Figure 2-13 Rail Bracket and Slide 1**

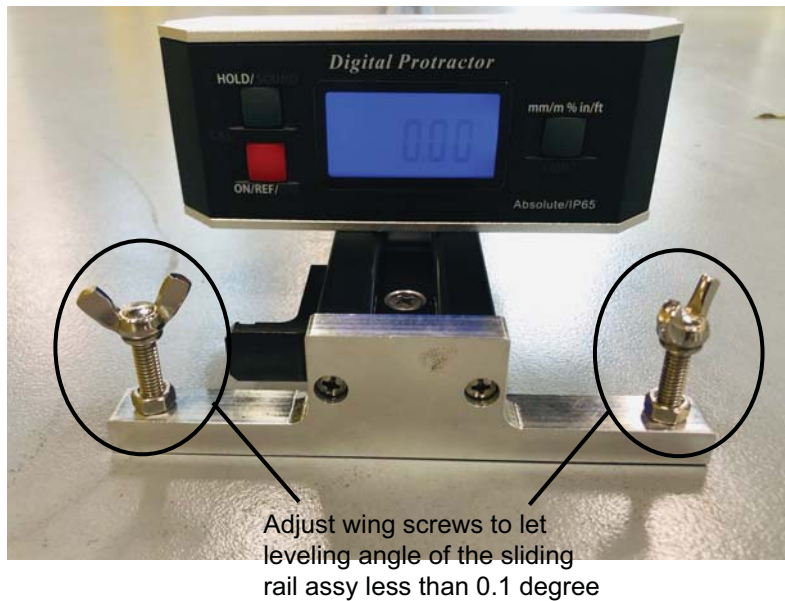


- 12.) Confirm that the reading on rail is equal to  $1756\text{mm} \pm 2\text{mm}$  between two holes (A and B).
  - If no, need to remark the position of the point B.
  - If yes, remove the rail assy, then repeat [Step 5.\)](#) - [Step 7.\)](#) to drill gantry anchor hole for point B.
- 13.) Find the other drilling anchor pins from the tool box (5824714), then insert it into the slide 1 and the hole B to fix the rail assy.



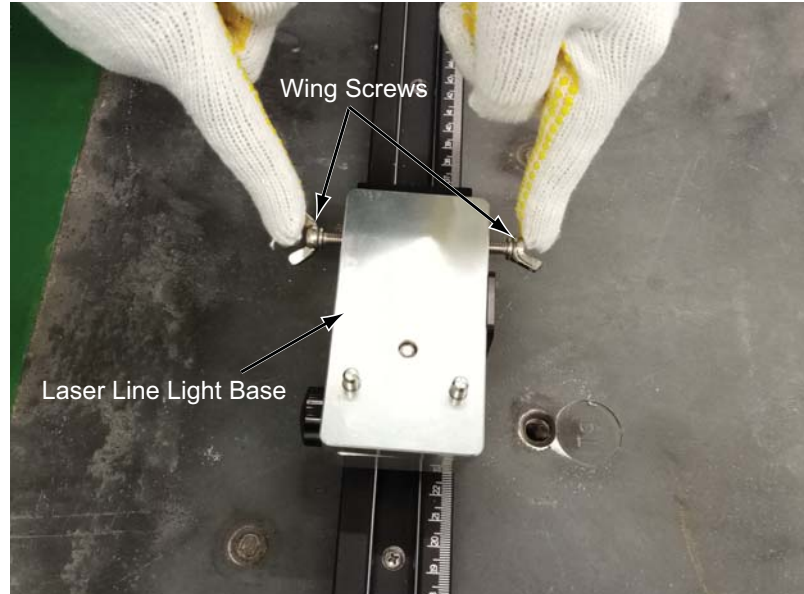
**Figure 2-14 Sliding Rail Installation (example)**

- 14.) Put the Digital Protractor on the sliding rail assy, adjust the leveling of the sliding rail assy by using four wing screws in both sides. Ensure the angle less than 0.1 degree in **left/center/right** position of the sliding rail assy respectively, and then tighten the lock nuts.



**Figure 2-15 Level the Sliding Rail Assy**

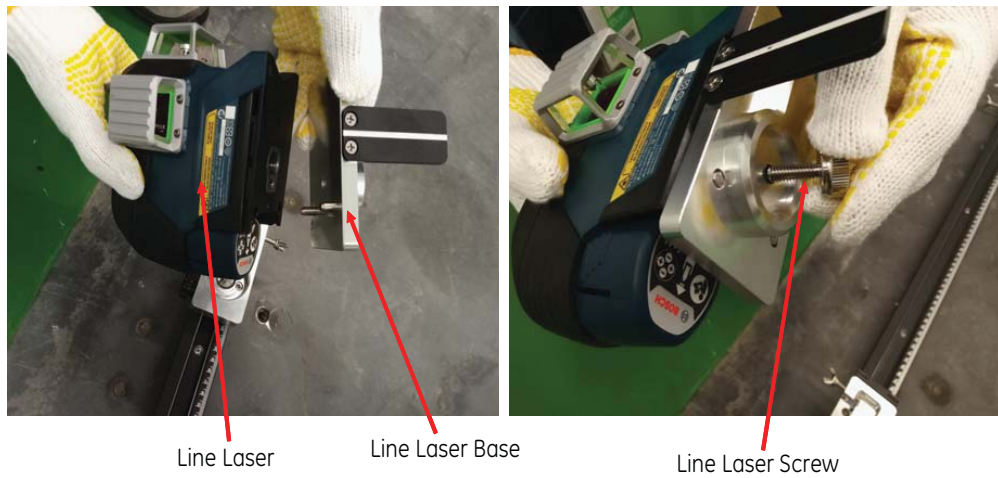
15.) Loosen two wing screws to remove the laser line base.



**Figure 2-16 Laser Line Light Base**

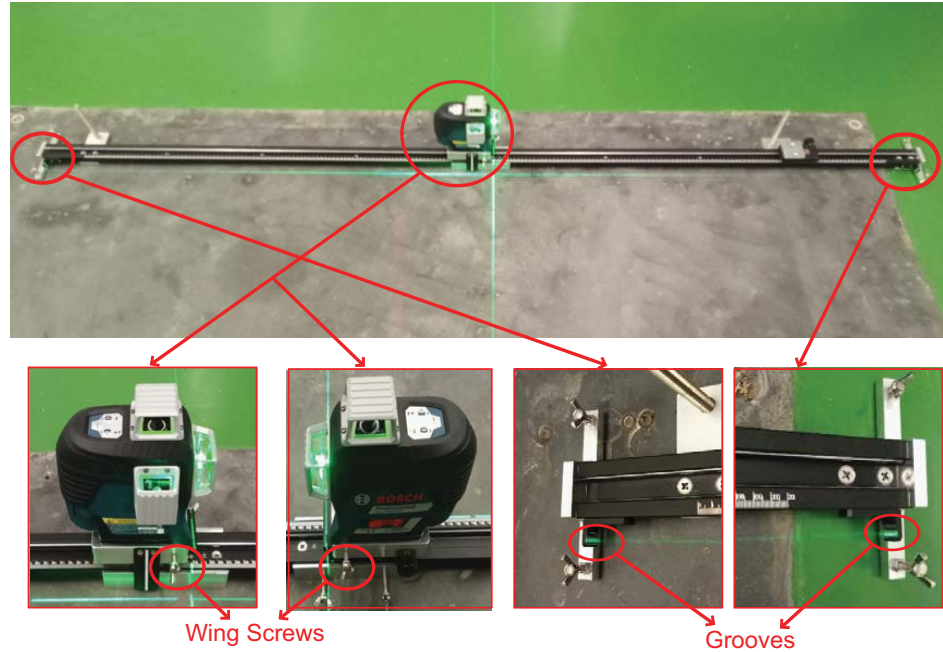
16.) Find the line laser screw (5824080) from the tool box (5824714)

17.) Assemble the line laser base and the line laser by using the line laser screw.



**Figure 2-17 Assemble the Laser Line Light Base and the Line Laser**

- 18.) Locate the Line Laser Assy on the slide 2 (see [Figure 2-13](#)) of the sliding rail assy, and slide the Line Laser to the middle of the sliding rail. Adjust the position of the Line Laser using two wing screws so that the laser line is projected on two grooves.



**Figure 2-18 Line Laser Adjustment**

- 19.) Slide the Line Laser to both ends of the sliding rail assy to double confirm the laser line in the grooves, then tighten two wind screws.

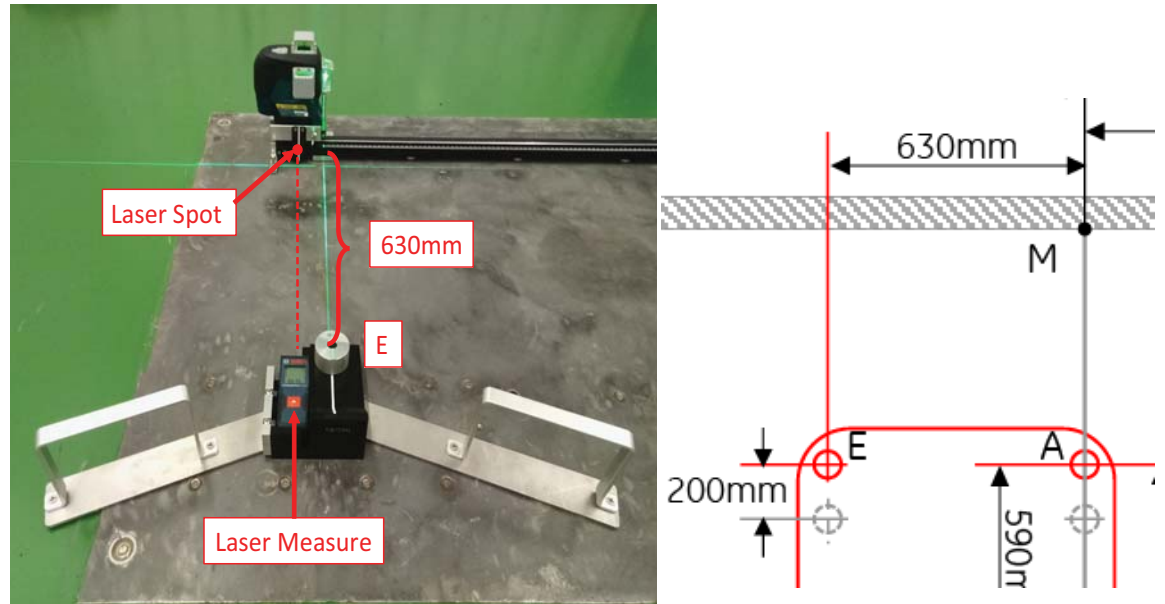
**NOTICE**

**The laser line MUST be aligned with two grooves of the sliding rail assy, because it will affect the accuracy in following steps.**



- 20.) Place the Laser Measure on the Drilling Kit as shown in [Figure 2-19](#), ensure the Laser Measure is flat placed on the Drilling Tool Assy.

- 21.) Slide the Line Laser to the left/right-limit of the sliding rail assy, align the laser line with groove of the Drilling Tool Assy, and align the laser spot from the Laser Measure with groove of the Line Laser Base simultaneously. Identify the reading displayed on the Laser Measure is 630mm, mark the point E (D).



**Figure 2-19 Gantry Front Anchor Holes Confirmation**

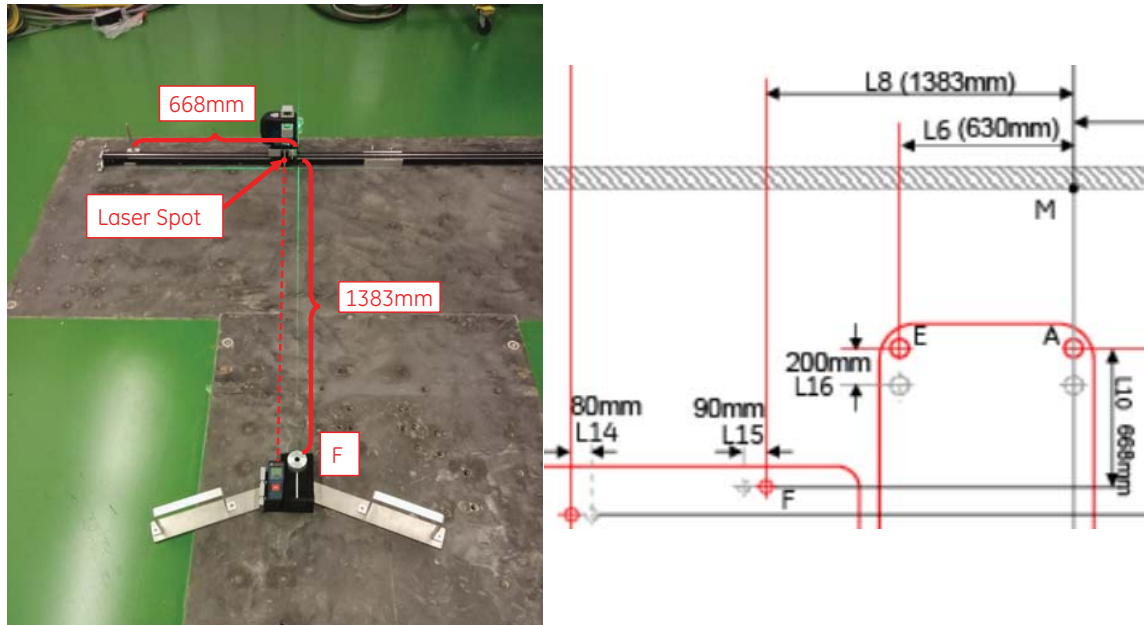
- 22.) Repeat [Step 5](#) - [Step 7](#) to drill Gantry anchor holes for point E (D).



**Figure 2-20 Drill Point E**

**NOTICE** If the master anchor hole is unavailable due to structural interference, such as reinforcement bars in the concrete, you must mark the alternate anchor hole position to re-drill, as shown in [Figure 2-2](#).

23.) Slide the Line Laser from the left-limit of the sliding rail assy to the position shown in below [Figure 2-21](#), align the laser line with groove of the Drilling Tool Assy, and align the laser spot from the Laser Measure with groove of the Line Laser Base simultaneously. Identify the reading displayed on the Laser Measure and mark the point F.

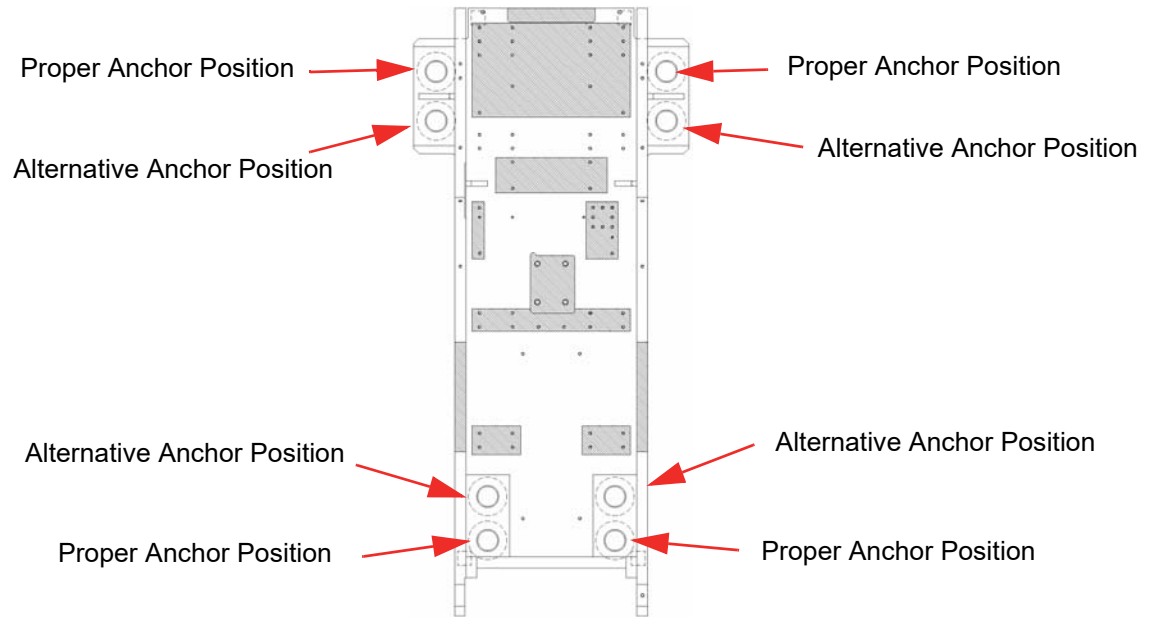


**Figure 2-21 Confirm Table Anchors Position**

24.) Use the same method (see [Step 23](#)) to determine and mark the remaining three points (G/H/I).  
25.) Repeat [Step 5](#) - [Step 7](#) to drill four Table anchor holes for point F/G/H/I

**NOTICE** If the master anchor hole is unavailable due to structural interference, such as reinforcement bars in the concrete, you must mark the alternate anchor hole position to re-drill, as shown in [Figure 2-2](#).

If alternate location(s) are used to anchor the table, you must move the respective leveler(s) and pad(s) to the new alternate location(s) and re-drill.



**Figure 2-22 GT Table Anchor Locations**

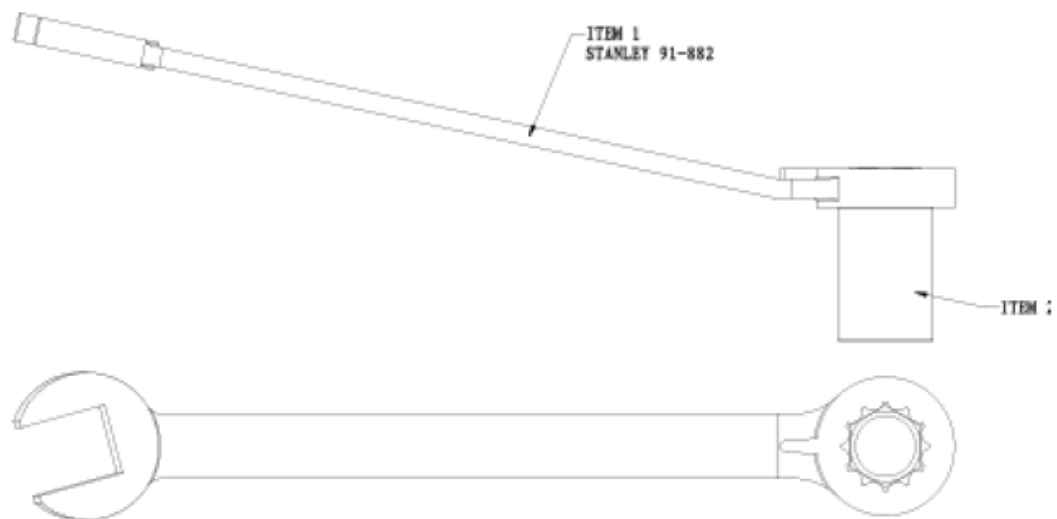
## Section 6.0 Install and Level Gantry

### 6.1 Tools and Test Equipment

- Standard Install Tool Kit
- Install Support Kit
- Leveling Ratchet Wrench (included in System Install/Align Tool)
- Installation Manual
- PPE (hand protection, foot protection, face shield, eye protection, personal dosimeter)

### 6.2 System Install/Align Tool (5824714 includes:)

- Leveling Ratchet Wrench (5825033)



### 6.3 Gantry Preparation

Note: Locate and install any required floor protection now.

#### 6.3.1 Access Greater than 28"

Remove all the transportation packaging from the gantry, except for the dollies.

#### 6.3.2 Access Less than 28"

Measure from the wall or object protruding from the wall to the gantry side cover. The gantry left side cover must be installed for this measurement. When finished, the gantry cannot be closer than 14 in. to the wall or object protruding from the wall.

- 1.) Remove all the transportation packaging from the gantry, except for the dollies.
- 2.) Remove the blue dolly from the left side of the gantry and install the limited access dolly so that the gantry can be positioned closer to the left side wall.
  - a.) Lower the gantry to the floor so that the gantry is resting on the floor.

- b.) Remove the three (3) M14 hex bolts that secure the gantry to the dolly.
- c.) Replace the removed dolly with the shipped black gantry-positioning dolly, and reinstall the three (3) M14 hex bolts.
- d.) Raise the gantry so that it is once again off of the floor.  
The gantry can now be moved up to 14 in. from the wall, measured from the wall or object protruding from the wall to the gantry side cover. Only use the supplied, limited-access dolly for this procedure.

Note: If this procedure cannot be completed, follow the site escalation procedure established for your area.

## 6.4 Installation Procedure

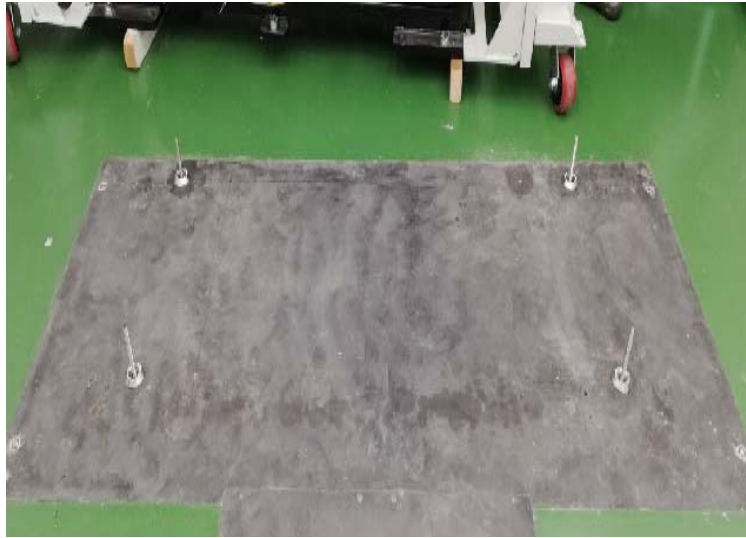
- 1.) Delivery the gantry to the scan room.
- 2.) Remove top, front and rear of the gantry covers, Refer to [Appendix A Removal & Installation of Covers, on page 253](#)
- 3.) Hammer the anchor bolts (5487992-2, shipped with system shipping collector) in the drilled gantry holes (A/B/C/E), and confirm the minimum anchor embedment is 75mm. (See [Table 2-4](#))



**Figure 2-23 Anchor Bolts**

- 4.) Use the gantry dollies to evenly raise the gantry, until it is approximately 5" (127mm) above the floor.

- 5.) Move the gantry and position it over the anchor bolts.
  - a.) Loosen the locking ring and the shipping bolt to remove four leveling pads from the gantry, then pass them through the five anchor bolts separately on the floor.



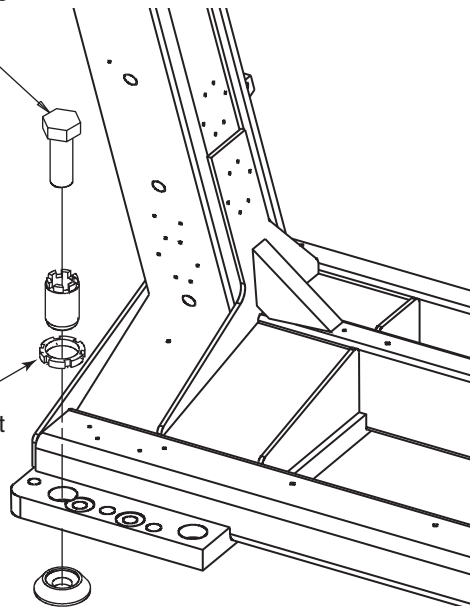
**Figure 2-24 Gantry Anchor Bolts**

- b.) Remove the shipping bolts.

46-208561P147  
SHIPPING BOLT  
1-14 X 2.75 LG

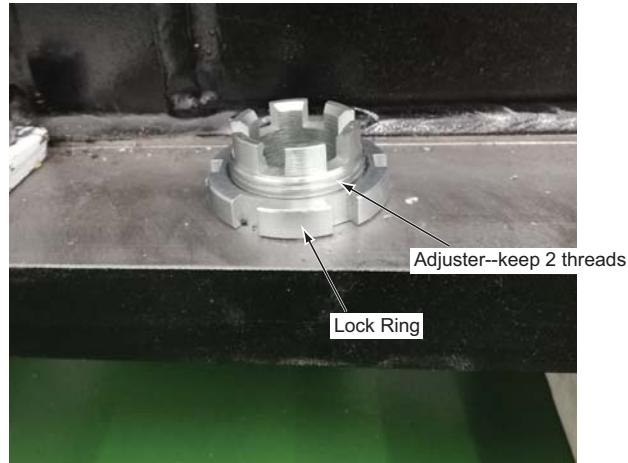
Note: Bolt requires  
a 1-1/2" socket

Note:  
Leave this locking ring  
off, so that the alignment  
bar will fit into the  
alignment hole.



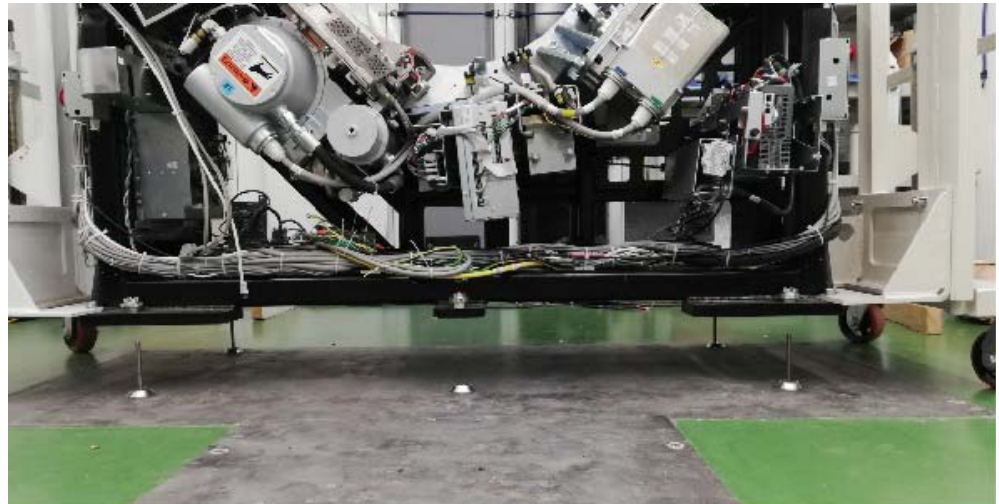
**Figure 2-25 Shipping Bolt**

- c.) Rotate the adjuster so there is 2 threads between the top of the adjuster and the top of the lock ring.



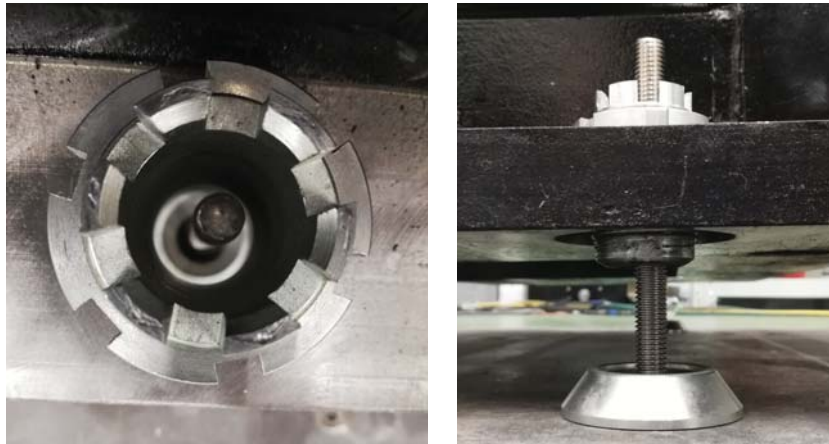
**Figure 2-26 Adjuster**

- d.) Carefully move the gantry to the correct position so that the adjusters are centered over their respective anchor bolts.



**Figure 2-27 Gantry Position**

- e.) Use the dollies to evenly lower the gantry, pass anchor bolt through the four anchor adjusters separately on the Gantry.



**Figure 2-28 Align Center Anchor Bolt**

- 6.) Evenly lower the gantry until the adjuster is fully located the five leveling pads separately.



**Figure 2-29 Lower the Gantry**

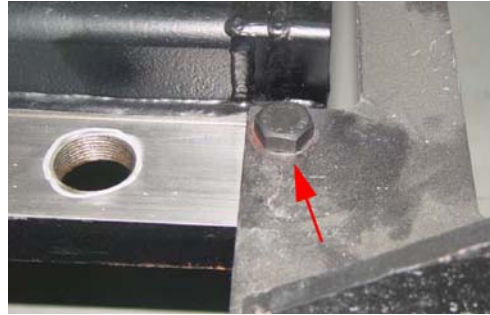
- 7.) Position each of leveling pads beneath its associated adjuster, fine-tune the leveling pads to compensate for slight variations in the floor surface.

**NOTICE**



**Gantry dollies weight approximately 250 lbs each. Exercise caution when removing dollies so as to not damage the floor covering.**

- 8.) Using a 14mm hex socket, remove the dollies from the gantry by removing the three dolly bolts found at both ends of the gantry.



**Figure 2-30 Gantry Dollies Removal**

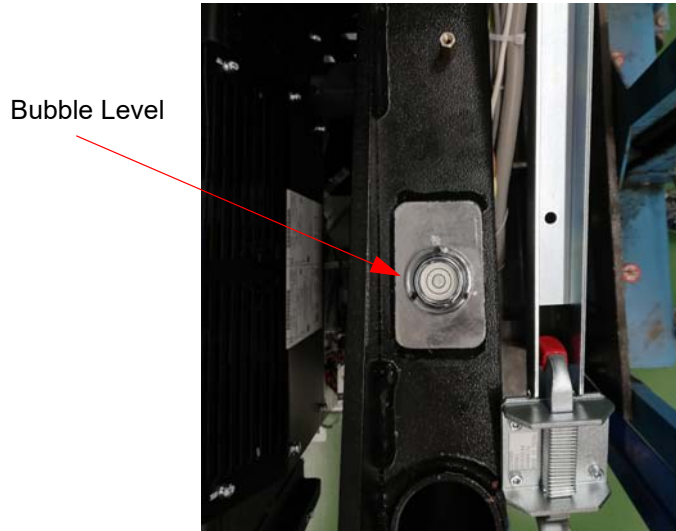
- 9.) Remove the dolly plates on both sides of the gantry. Retain the dolly plates in the service cabinet at the hospital.



**Figure 2-31 Dolly Plate**

## 6.5 Level the Gantry

The gantry uses a bubble level that is permanently mounted to machined surface on the stationary base to tell when it is level. It is located on the stationary base near a point where the rotating structure pivots mount to the base structure (See [Figure 2-32](#)). The gantry is properly leveled when the bubble is centered.

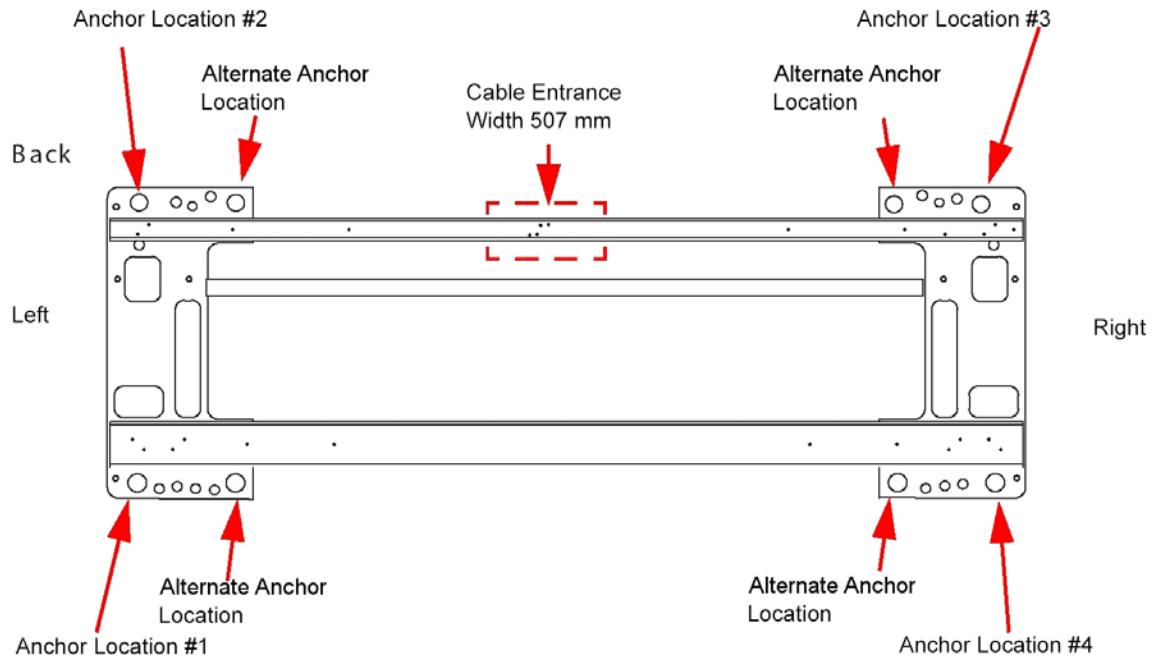


**Figure 2-32 Gantry Bubble Level**

**Note:** In these next steps the full weight of the gantry is on three leveling feet (front center and two rear corner feet). If necessary, you may use the gantry side dollies to relieve some of the weight off of the leveling screws to make them easier to turn with a wrench while leveling the stationary gantry assembly. Adjust the side dolly jackscrews only enough to take some pressure off the leveling foot, but not enough to raise the foot off the floor. It is recommended to use this method only when raising the corners, not when lowering them.

**Systematic Procedure for Leveling gantry follows:**

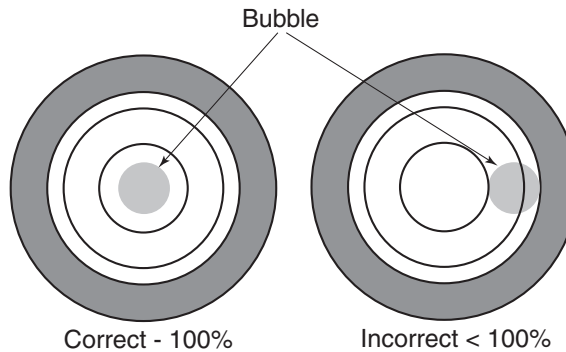
- 1.) Loosen all adjuster lock rings (use a spanner wrench or large channel lock pliers).
- 2.) As viewed from the front of the stationary gantry assembly, verify the two front corner (outer) gantry leveling screws are retracted (off the floor).
  - a.) Level the left side from front to back by turning adjusters #1 and #2.
  - b.) Level the right side from front to back by turning adjusters #3 and #4.
  - c.) Level the side (right or left) that is higher with respect to the other side. Turn both adjusters on a side equally until that side is level. The side should now also be level.



**Figure 2-33 Gantry Base "Adjuster" Locations - Top View**

- 3.) Using the bubble level located on the right side of the gantry stationary base, level the gantry by adjusting the three footpad levelers until the bubble level is centered left to right and front to back, See Note below for a recommended time-saver tip.

Correct level is 100% of bubble within small circle  
 Incorrect level is less than 100% of bubble within small circle



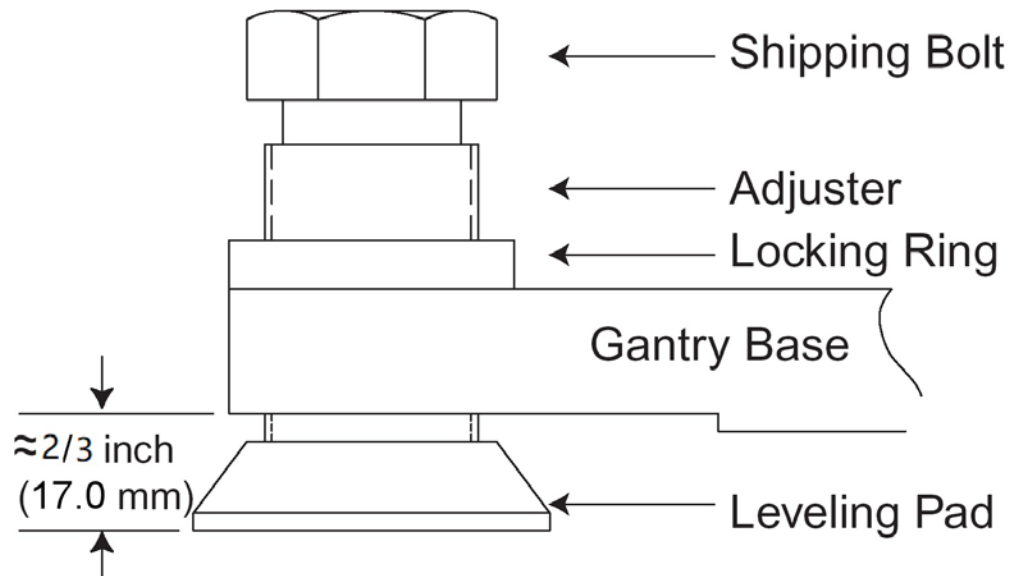
**Figure 2-34 Bubble Level Centering**

- Begin by turning each adjuster no more than 1 turn at a time.
- Use the leveling ratchet wrench (5825033) to turn each adjuster.

**Note: Time-saver Tip:**

It is recommended to bias the bubble slightly so that when it is inside the center ring it just touches the rear of the inner ring. This bias will be automatically taken out in a later step when lowering the two front corner leveling screws, and will save time making small adjustments. Note also it is not necessary to spend a lot of time getting the bubble in the exact center of the small circle. Once 100% of the bubble is in the small circle, the gantry is sufficiently leveled.

- 4.) Adjust the distance between floor and top of the gantry base becomes approximately 17.0 mm by turning four (4) adjusters equally.  
(Be careful no more than 1 turn at a time.)



**Figure 2-35 Gantry Height**

- 5.) Lower the two front corner (outer) foot levelers by hand until they make solid contact (hand-tight only) with the leveling pads placed earlier on the floor. DO NOT proceed to the next step until both front corner levelers are down and properly seated with their respective leveling pads.
- 6.) Turn each front corner adjuster clockwise 1/4 turn to tighten the adjusters against the leveling pads.
- 7.) Retract the front center foot adjuster screw only and tighten the center leveler screw locking ring.
- 8.) Check the bubble level. If not in the center of the inner ring, adjust either the rear or the front corner levelers in small but equal increments of no more than 1/8 turn each time.
- 9.) After the gantry is level, tighten the locking rings on all gantry levelers.
- 10.) Reinstall and tighten the shipping bolt and footpad onto the center footpad leveler screw to secure them in place for future use.

## 6.6 Gantry Bearing Gap Inspection

All CT systems require a Gantry Bearing Gap inspection before starting electrical calibration.

All international gantries are shipped in a wooden shipping crate that should not be removed until it arrives at the installation site. This shipping container is designed to reduce the risk of shipping damage.

The back cover needs to be removed to gain access to the gantry bearing.

### 6.6.1 Personnel Requirements

REQUIRED PERSONS	PRELIMINARY REQS	PROCEDURE	FINALIZATION
2 (mechanical suppliers or installation team)	15 min	15 min	15 min

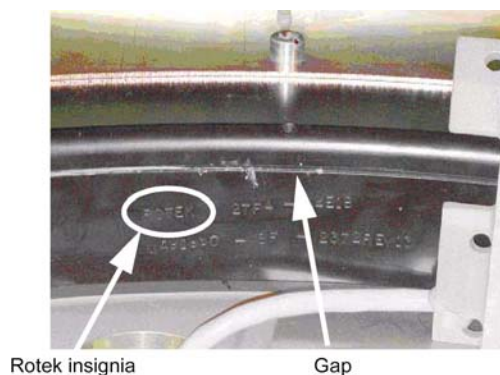
### 6.6.2 Tools and Test Equipment

- Standard tool kit
- Inspection document
- 2.5 mm Allen wrench
- Rear cover dollies (2)
- Flashlight

### 6.6.3 Damage Indicators

On the inside edge of the black-colored bearing assembly, a mark similar to that shown in [Figure 2-36](#) will be seen, if this is a Rotek bearing.

**Figure 2-36 Gantry Bearing - Rotek Label**

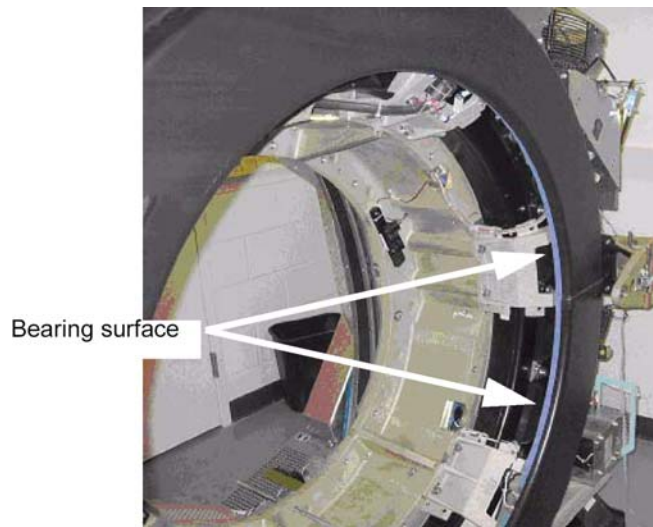


The mark has a serial number in the same format as:

ROTEK 2TF4-44E1B-MA91960-8F-2372-REV13.

The gap to be inspected is shown in [Figure 2-37](#) next to the serial number.

**Figure 2-37 Gantry Bearing**



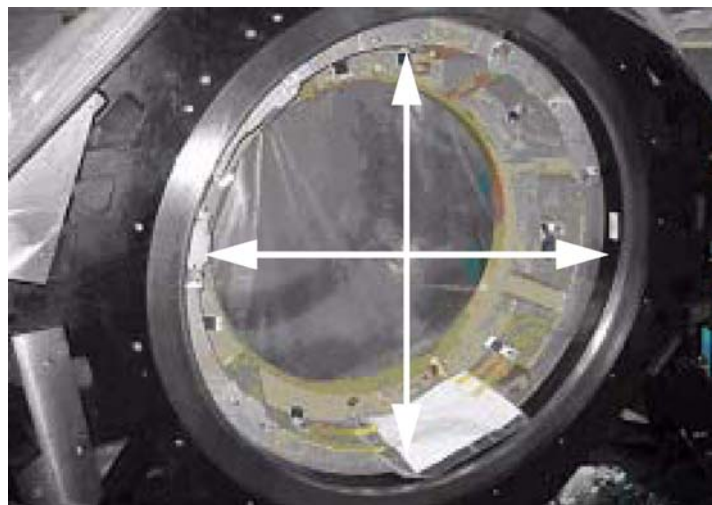
On most systems, a change in the bearing gap does not cause the gantry to make unusual sounds, unless the gap is severe. If the gantry is badly damaged and the gap is severe, it can cause operation issues. Some systems are shipped with shock indicators that must be returned to Milwaukee.

A severe failure may be seen during installation as a problem rotating the gantry.

#### **6.6.4 Procedure**

- 1.) Remove the scan window following the procedure in appendix A, [Section 6.0, on page 186](#).
- 2.) Remove the top and rear gantry covers, following the procedures in Appendix A, [Section 2.0, on page 171](#) and [Section 4.0, on page 182](#).
- 3.) Use a 2.5mm hex wrench as a tool to measure the gap at the positions shown in [Figure 2-38](#). The location of gantry components does not matter. Simply measure four (4) locations 90 degrees apart from each other.

**Figure 2-38 Inspection Locations**



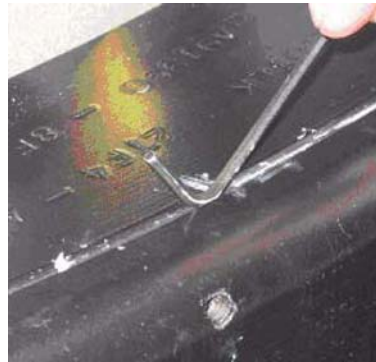
- 4.) If the 2.5mm hex wrench easily fits without effort in the gap, the gap is out of spec. [Figure 2-39](#) shows a gap that is too large. [Figure 2-40](#) shows a gap that is good. Notice that the hex wrench does not fit in the gap in [Figure 2-39](#) but does in [Figure 2-40](#).

Note: Do not use force when putting the wrench in the gap. Either it slips in or it doesn't.

**Figure 2-39 Gap Too Large**



**Figure 2-40 Gap Is Good**



- 5.) Replace the top and rear gantry covers, following the procedures in Appendix A, [Section 2.0, on page 171](#) and [Section 4.0, on page 182](#).
- 6.) Replace the scan window, following the procedures in Appendix A, [Section 6.0, on page 186](#).

## 6.7 Finalization

### 6.7.1 Mechanical Installers

If the Bearing Gap Inspection passes, complete the sign-off on the GE Form e4879, Installation Data verification form, that this inspection was completed.

If the Bearing Gap Inspection fails, contact your site FE.

### 6.7.2 FE Service Action, if Required

If the Bearing Gap Inspection fails, the mechanical installer notifies the site FE that the inspection failed.

The site FE should:

- 1.) Open a bearing inspection dispatch.
- 2.) Follow the inspection procedure described in this section.
- 3.) Record the bearing inspection results.

If no damage is found, close this dispatch and continue with the electrical calibration procedures.  
If the system is damaged, go to the Equipment Delivery Quality web site and follow their instructions.  
To enter a damaged in shipping claim, please contact related service team.

### 6.7.3 FE Inspection Completion

- 1.) After the Gantry Bearing Inspection is complete, close the service dispatch with the following information:
  - Gantry Serial Number
  - Gantry Type
  - System ID
  - Site Name
  - Installation date
  - Was the gantry transported to the site in the shipping crate? (Yes/No)
  - Was the gantry lifted or hoisted, were riggers used, or was the gantry delivered via flatbed wrecker? (Yes/No)
  - Number of locations that fail the gap inspection if any: \_\_\_\_\_
- 2.) Close the service dispatch.

Should any follow-up be required after this inspection, the site engineer will be contacted directly by CT Engineering.

## Section 7.0 Table Installation

### 7.1 Time and Personnel

Required Persons	Preliminary Reqs	Procedure	Finalization
2 (FE or mechanical supplier)		1.5 hours labor on-site	

### 7.2 Tools and Test Equipment

- Standard Install Tool Kit
- 3/4", 1-1/4", 1-1/2" and 1-5/8" sockets
- 8mm, 10mm, and 14mm hex socket bits
- Laser Alignment kit
- Johnson Professional 6" level
- Johnson Professional 4' level
- Johnson Professional 2' level

### 7.3 Procedures

#### 7.3.1 Table Prep and Set-up

#### SAFETY

CAUTION



Potential for Electric Shock.  
 Equipment is Energized.  
 Follow appropriate safety procedures when working with an energized system.

CAUTION



Potential for Injury.  
 Table will tip if not anchored on the dolly.  
 Make certain that Table is adequately secured to the dolly.

CAUTION



Potential for Injury.  
 Table on dolly length is 118" (9'-10").  
 Exercise caution when moving the table on the dolly.

#### PROCEDURE

CAUTION



Potential for Injury.  
 Table will tip if not anchored on the dolly.  
 Make certain that Table is adequately secured to the dolly.

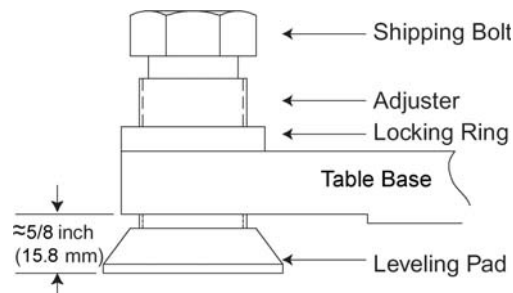
- 1.) Remove all the transportation packaging and boxes, except dollies, from the table. (See [Figure 2-41](#).) Leave a layer of packing material on the cradle to protect the cradle from damage. (It can be removed during laser alignment of the table.)

**Figure 2-41 Remove Table Packing**



- 2.) Unpack the items and locate all of the items needed to install the table.
- Note: The GT table on dollies is approximately 118" long and may require additional room to maneuver.
- 3.) Using the table centering and distance locator marks made earlier, wheel the table to its approximate position relative to the gantry.
  - 4.) Locate the table leveling pads inside the table in the back and on the side in the front. Preset leveling pad heights to 15.8 mm (5/8"). (See [Figure 1-22](#).)

**Figure 2-42 Table Base Leveling Pads (Starting Positions)**



- 5.) Use a 1-5/8" socket and 1/2" ratchet to loosen the shipping bolt. Loosen the locking rings if present.
- 6.) A 1-1/8" socket is used with the adjuster tool if needed to lower the adjuster.
- 7.) Use the dollies to evenly lower the table until it rests on the leveling pads using a 1/2" ratchet on each end.

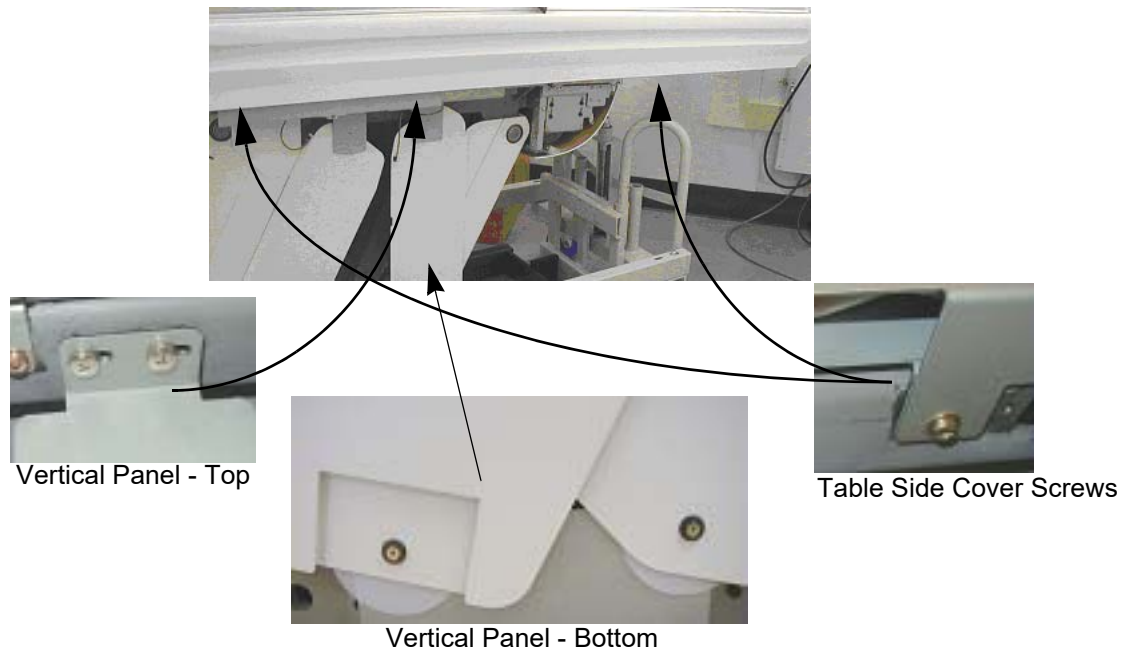
**Figure 2-43 Adjusters and Lock Rings**



### 7.3.2 Table Cover Removal

- 1.) Remove the table right side cover, as shown in [Figure 2-45](#).
  - a.) Removing the two screws on each end of the underside of the long side cover of the table.
  - b.) Slide each cover forward to unlatch, lift upward slightly to disengage the latches, and remove the side cover. Doing this procedure will require patience and practice to remove and replace this cover.

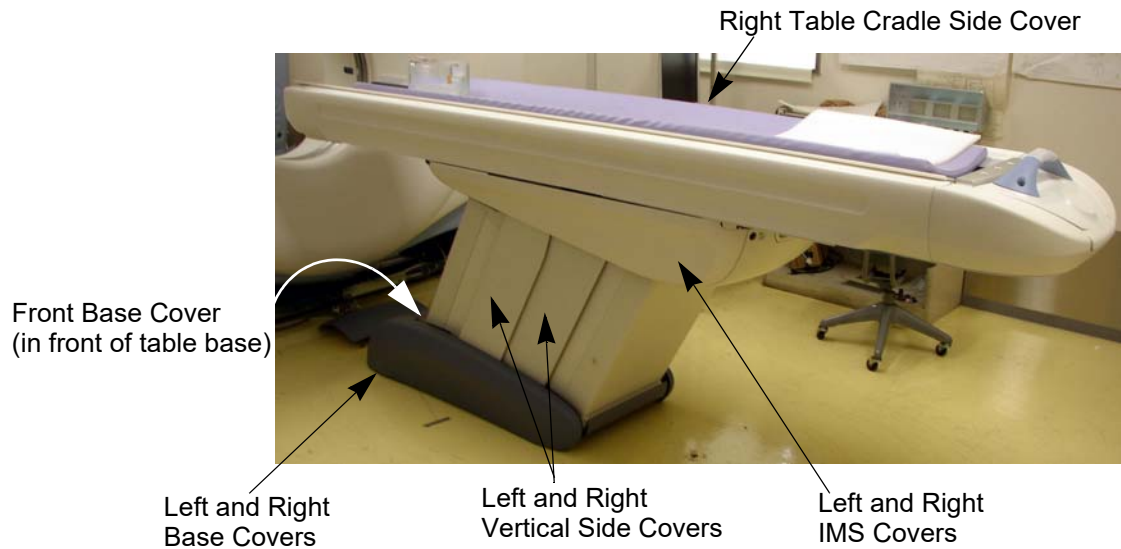
**Figure 2-44 Table Covers**



- 2.) The table is normally shipped with some of the side/vertical panels removed. If installed, remove the four side panels, using a Pozi drive #1 screwdriver.
- 3.) Carefully lay the side panels on protective padding out of the way.
- 4.) Make sure that all four of the table levelers are on the floor. The table should set on the four levelers with the dollies still installed.

- 5.) Carefully center the four levelers over the 102 mm (4") floor cutouts.
- 6.) Check that the front table base center line is on the chalk table center line.
- 7.) If still present, remove all packing materials and the table cradle pad from the table cradle.

**Figure 2-45 Table Covers**



### 7.3.3 Removing the Accessory Rail Strip

- 1.) Remove the accessory mounting strip attached on each side of the cradle using a small flat blade screw driver. The nylon screws are inserted inside the accessory rail on the cradle.
- 2.) Place the accessory strips on the floor and reinstall the nylon screws into the accessory rail for safe keeping.

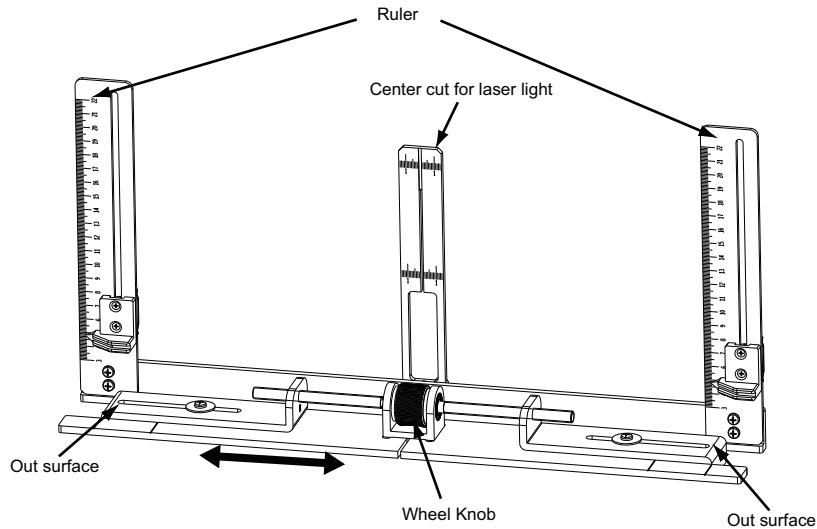
**Figure 2-46 Accessory Rail Screw**



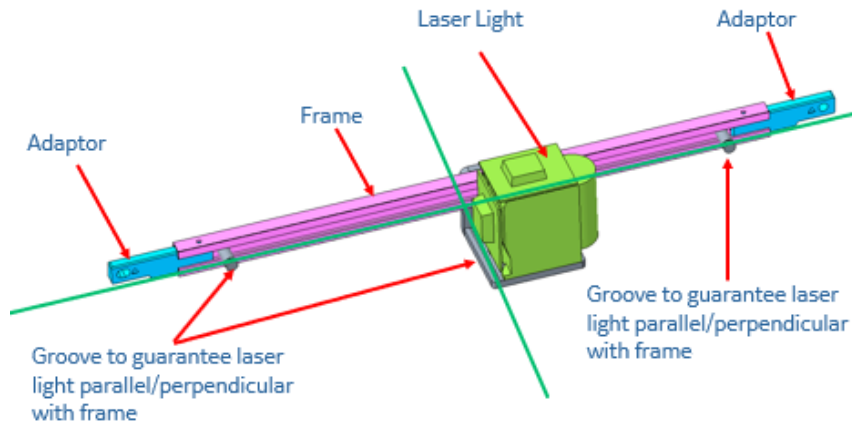
## Section 8.0 Gantry-Table Alignment

### 8.1 System Install/Align Tool (5824714 includes:)

- Table Alignment Tool Assembly (5820676)



- Gantry/Table Alignment Assembly
  - Gantry Slide Frame (5819055)



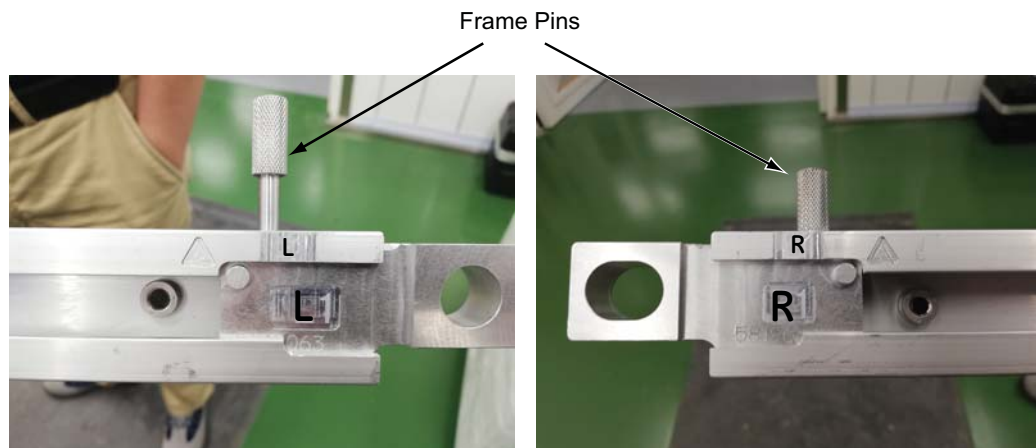
- Adapter - 80mm Length (5819063/5819066) with M12 bolts
- Adapter - 80mm Length (5820835/5820836) with M6 bolts
- Adapter - 130mm Length (5819068/5819070) with M12 bolts

Note: Please select the Adapter - 80mm length (5819063/5819066) with M12 bolts for gantry frame installation.



## 8.2 Gantry Alignment Tool Installation:

- 1.) Assemble two adapters to both sides of the gantry alignment frame by using frame pins.



Note: please pay attention to signs (L and R) on adapters and both sides of the gantry alignment bar

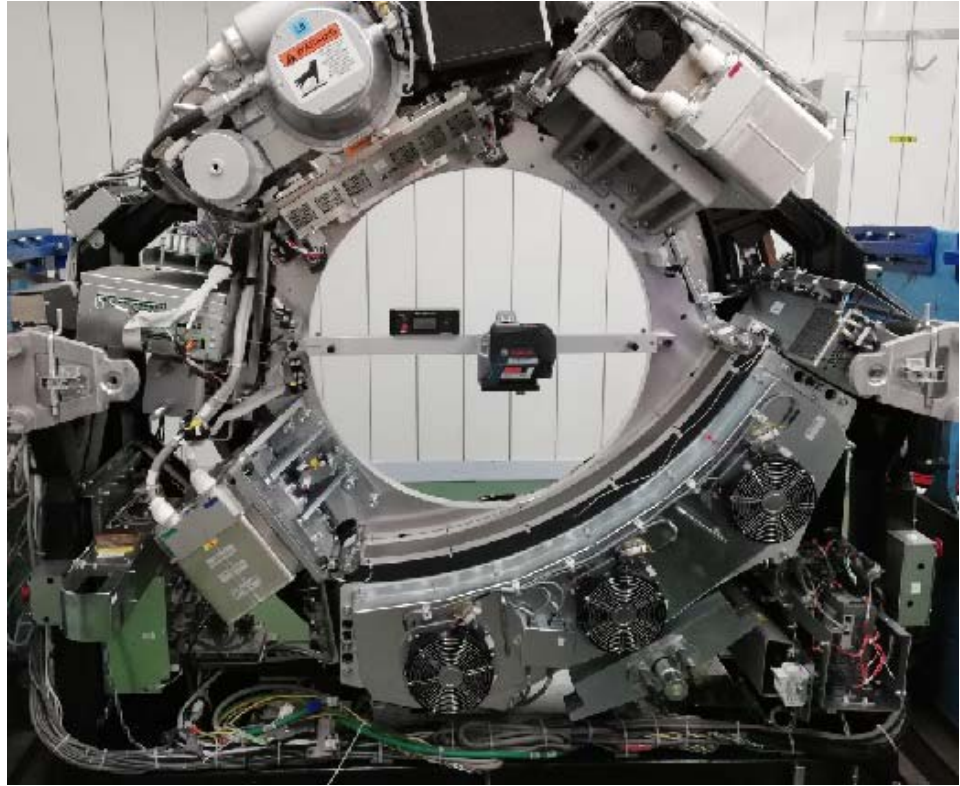
**Figure 2-47 Assemble Gantry Alignment Bar**

- 2.) Manually rotate the gantry until the tube reaches about 11 o'clock position.
- 3.) Mount the gantry alignment bar to the gantry frame by using two M12 mounting bolts.

### NOTICE

Be careful not to bump the alignment light, the mounting space is tight near the alignment light. Tighten two bolts until both are snug.

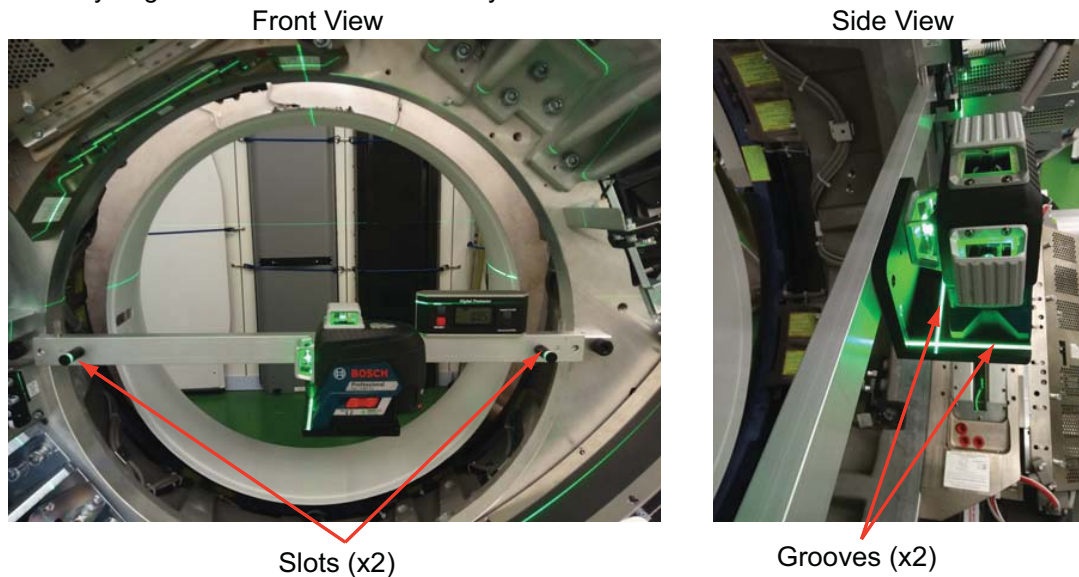




**Figure 2-48 Mount the Alignment Bar to the Gantry**

- 4.) Install the Line Laser on the Gantry Alignment Frame by using the Line Laser Screw, use the level gauge to level the alignment bar (**Level Specification:  $\pm 0.1^\circ$** ) by rotating the gantry manually. (See [Figure 2-48](#))
- 5.) Install the Line Laser on the gantry alignment frame by using the line laser screw, don't tighten it at this time.

- 6.) Power on the Line Laser, and align the laser line with the two slots and two grooves on the Gantry Alignment Frame simultaneously.



**Figure 2-49 Line Laser Alignment**

- 7.) Tighten the Laser Line Light Screw to fix the Line Laser.



**Figure 2-50 Fix the Line Laser**

**NOTICE**

Line Laser **MUST** be aligned with the slots and grooves of Gantry Alignment Frame, because it will affect the accuracy in following steps.



### 8.3 Table Alignment Tool Installation

- 1.) Take out two table alignment tools and set them on the cradle front end and rear end, avoid the interference between the table top cover and the alignment tool.

Note: Make sure that two rail strips are removed from the cradle (see [7.3.3 Removing the Accessory Rail Strip, on page 148](#)) and the table alignment tool base fits perfectly to the table cover.



Figure 2-51 Table Alignment Tool

Note: Please keep about 20-30cm distance from the cradle front end to the front table alignment tool.



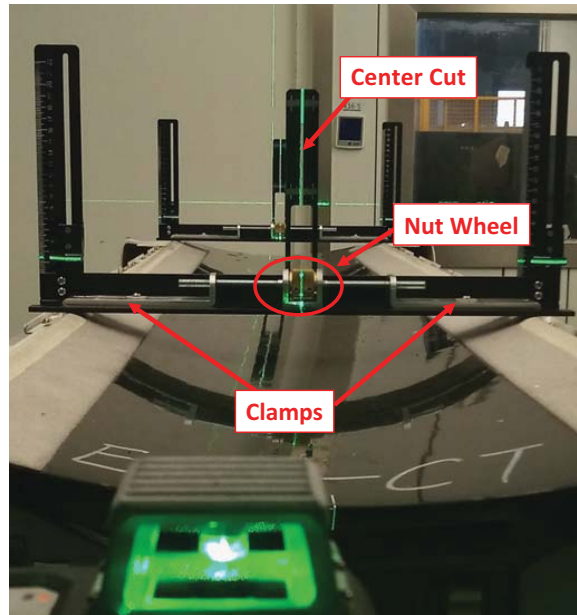
Figure 2-52 25cm Distance from Cradle Front End

- 2.) Tighten the nut wheel (See [Figure 2-51](#)) to fix the table alignment tool on the cradle.

## 8.4 Level and Center the Table to Gantry

**NOTICE** All Table adjusters should be preset to 20 mm (3/4 in.) down from the table base to make adjustment easier. Based on floor levelness and your experience, a different preset height may work better. One thread must be showing above all locking rings when leveled. Table cannot be higher than 1005mm from the center of cradle to floor.

- 1.) Power on the Line Laser, use laser lines to align the table position.
  - a.) Adjust the table position in X-axis direction to mark the laser line cross both center cut of two table alignment tools.

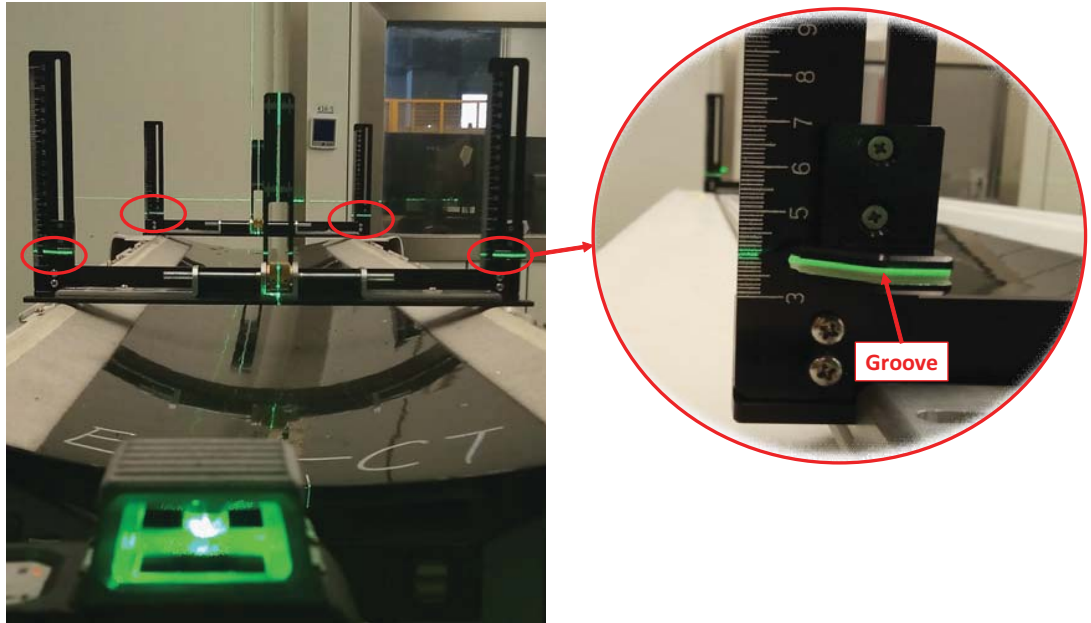


**Figure 2-53 Table Alignment**

- b.) Move four indicators of table alignment tools to 43mm ruler reading.
- c.) Adjust the table height position using two front and two rear adjusters to align the laser line with the groove of four indicators (**Specification:  $\pm 1\text{mm}$** )

The front sides of the adjuster contain the lock nut. After level adjustment, tighten the lock nuts securely.

Level Specification:  $\pm 0.5\text{mm}/1000\text{mm}$



**Figure 2-54 Indicators**

- 2.) Repeat [Step 10.](#)) until the center cuts and the groove of indicators are aligned with laser lines simultaneously.
- 3.) When completed, turn off the Line Laser.

## Section 9.0 Table Anchor Holes

**WARNING** POTENTIAL FOR PATIENT INJURY.



**IMPROPERLY SECURED TABLE MAY TIP, DISLODGING PATIENT.**

**PROPER ANCHORING IS KEY TO MAINTAINING PATIENT SAFETY DURING SYSTEM OPERATION.**

### 9.1 Install the Anchors

**NOTICE** Each anchor must be prepared by installing a nut 13.0 mm from the top of the anchor as measured from the top of the anchor to the top of the nut. before inserting and setting them in their respective anchor hole. failing to do this may result in anchor failure.

**NOTICE** The anchors will bend if they are hit too hard with a hammer. Strike the anchor with sufficient force to drive it down into the hole so the washer touches the leveling screw.

- 1.) Prepare each anchor by installing the large flat washer and nut on to each anchor. Adjust the nut so there is 13.0 mm between the top of the anchor and top of the nut.

**Figure 2-55 Anchor Preparation-set nut at 13.0 mm**



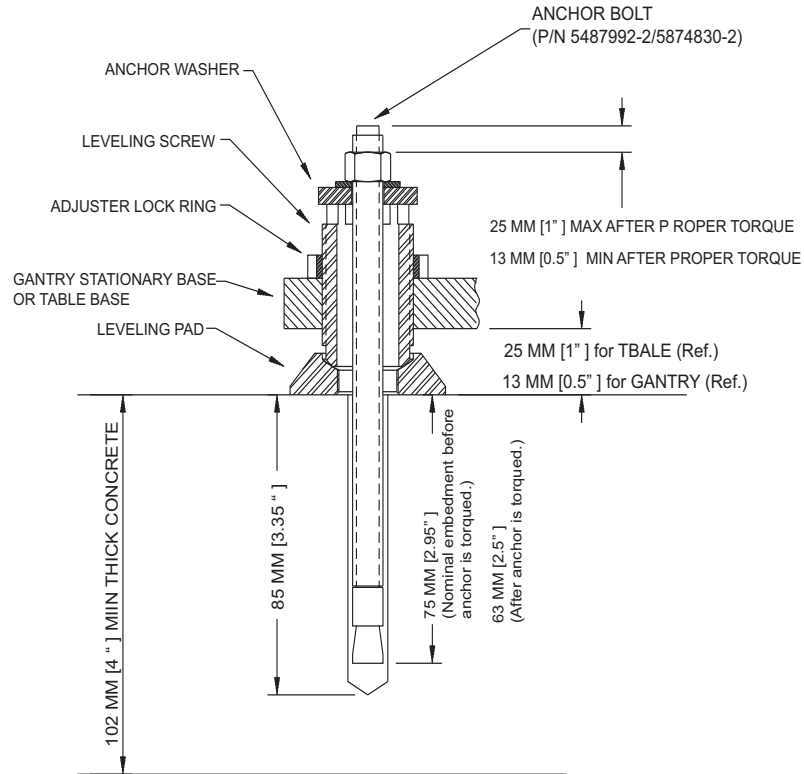
- 2.) Place another nut on the anchor and thread it on far enough so it is flush with the top of the anchor. This nut will protect the threads.
- 3.) Insert an anchor into each anchor hole in the gantry and set the anchors with a hammer. The washer should touch the leveling screw if the anchor is installed and set properly.



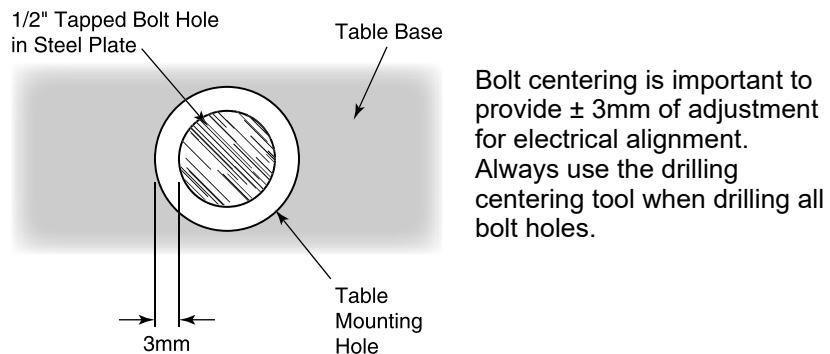
**NOTICE** The anchors will bend if they are hit too hard with a hammer. Strike the anchor with sufficient force to drive it down into the hole so the washer touches the leveling screw.

- 4.) Adjust all anchor nuts until tight.  
**TORQUE: Approx. 50 N-m**
- 5.) Verify that the Table to Gantry Alignment should be correct.

**Figure 2-56 Gantry and Table Anchor Assembly with 7-inch Anchor (P/N 5487992-2/ 5874830-2)**



**Figure 2-57 Center tapped holes under mounting holes in table base**



## 9.2 Alignment Recheck

Note: Alignment is critical. Recheck carefully.

- 1.) Turn on the alignment tool and recheck alignments. The table alignment must be the same as in [8.2 Gantry Alignment Tool Installation](#), on page 150. If re-leveling is required, repeat this procedure. Using the bubble levels, make adjustments as required to maintain required alignment.
- 2.) Once alignment has been verified, torque all mounting bolts.  
Tighten the location #1 through #7 anchors and torque to:
  - 54 N-m (40 ft.-lb.) for 7-inch Anchor (P/N 5487992-2/5874830-2)
- 3.) Remove the Gantry-Table Alignment tools.
- 4.) Reinstall all the removed table panels and hardware.
- 5.) Reinstall the gantry rear cover.

Note: If you cannot replace the lower table cover because the floor interferes, adjust all of the table and gantry levelers by half-turn increments to raise the table/gantry until the lower table covers clear the floor. Then return to the alignment sections to level the gantry, level the table, and tighten the locking rings, respectively.

## 9.3 Removing Table Shipping Dollies

### 9.3.1 Time and Personnel

(FE or mechanical supplier)

Required Persons	Preliminary Reqs	Procedure	Finalization
1 Electrician		20 min. labor on-site	

### 9.3.2 Tools and Test Equipment

- Standard Installation Tools Kit

### 9.3.3 Preparation

- All table mechanical alignment procedures are completed.
- The table is on the floor with at least one anchor in place.

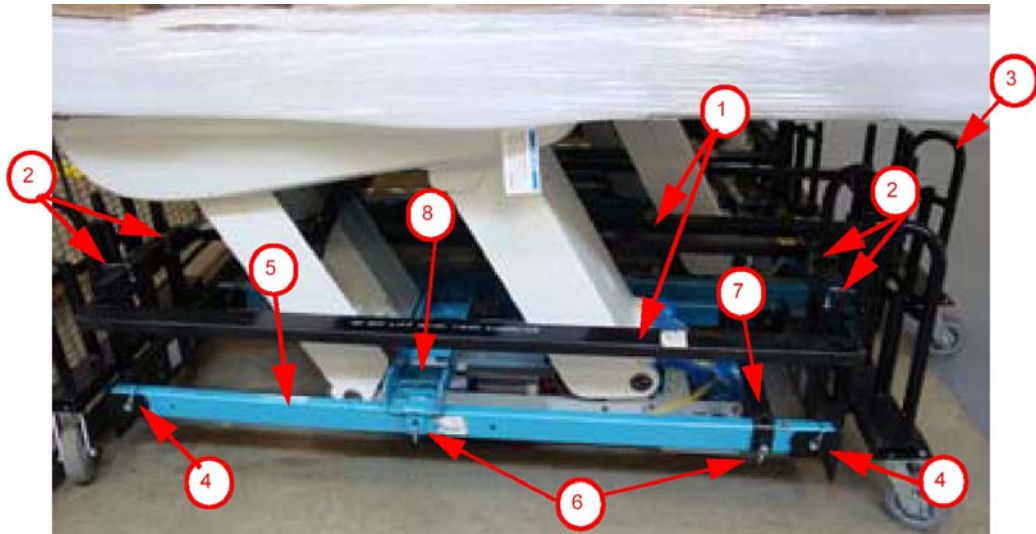
### 9.3.4 Procedure

Refer to [Figure 2-58](#) for the location of items in the table dolly.

- 1.) Remove the two, long side (stabilizer) rails using the quick disconnect pins. There is one pin on each end of the bar.
- 2.) Carefully slide the bar out and place the bars on the side, out of the traffic area.

Note: The table should be resting on the floor. You may need to lower or raise the dolly to remove the dolly ends.

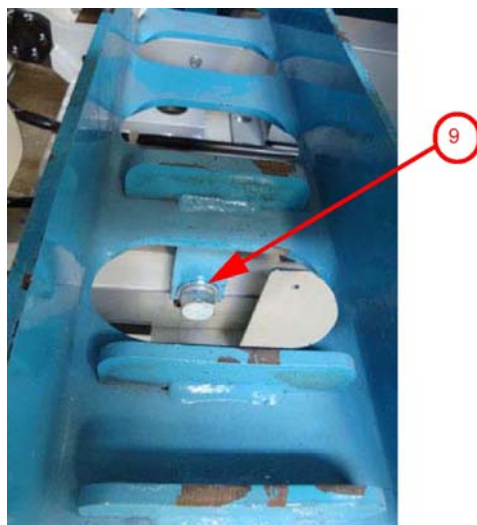
- 3.) Using the quick release pins, remove each end of the dolly.
- 4.) Slide the dolly off of the long attachment bar on each side.
- 5.) Using the quick release pins, remove the two long attachment bars that are attached to the front and rear table attachment points. Place the bars on the side, out of the traffic area.
- 6.) Use the 19 mm wrench to remove the bolts on each side of the smaller front table attachment bracket. Remove the bracket.
- 7.) Use the 19 mm wrench to remove the bolts on each side of the larger front table attachment bracket and transporter base. Remove the bracket.
- 8.) Reassemble the dolly for transportation.



**Figure 2-58 Table Shipping Dollies**

Item	Description
1	Side Rails (two rails, black, one each side)
2	Quick Release Pins (for side rails, two on each side)
3	Dolly Ends (two, one each end)
4	Quick Release Pins (for dolly ends, two each side)
5	Table Dolly Lifting Tube (two, blue, one each side)
6	Quick Release Pins (for dolly lifting tube, two each side)
7	Front Attachment Bar (black, one; 19 mm table base bolt located under the bar, not shown)
8	Back Attachment Bar (blue, one; see <a href="#">Figure 2-58</a> )
9	Table Base Bolt (see <a href="#">Figure 2-58</a> )

**Table 2-5 Description of Table Shipping Dollies**



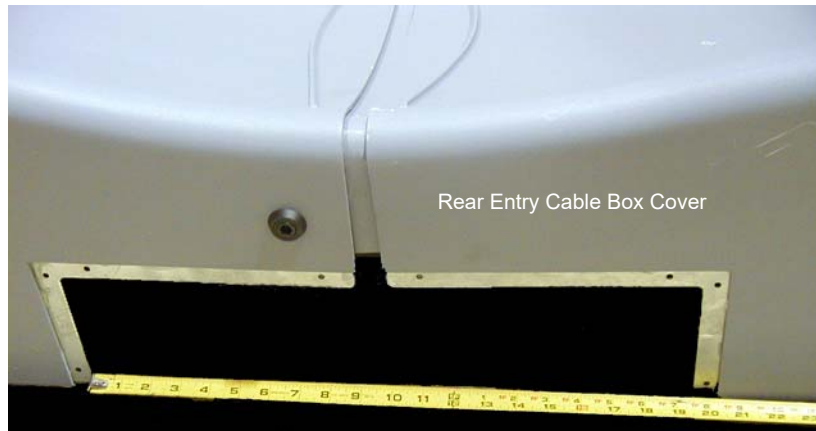
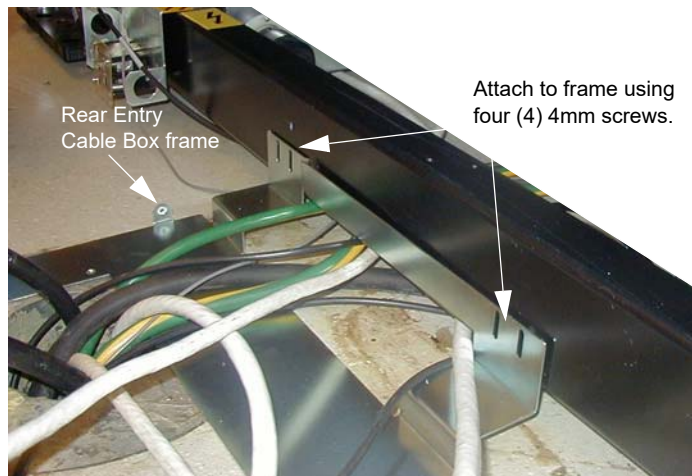
**Figure 2-59 Close-up of table base connection**

## Section 10.0 Rear Entry Cable Box

A rear entry cable box (B78032CB) is used when the cables to the gantry cannot be brought up inside the gantry base. The box is not supplied with the system and must be ordered separately.

- 1.) Attach the rear entry cable box frame to the gantry base using four (4) screws that are shipped with the kit. See [Figure 2-60](#). The assembly can be made to fit floor entrance conduit or surface floor duct.

**Figure 2-60 Rear Entry Cable Box**



- 2.) There are three pairs of spacers shipped with this cover. Select the pair that is most appropriate for this site, based on the hardware.
  - Solid metal
  - Precut L-shaped metal
  - Solid plastic - Can be cut

## Section 11.0

# Install Table Footswitch Assembly

### 11.1 Requirements

#### 11.1.1 Tools Required

- Standard Install Tool Kit

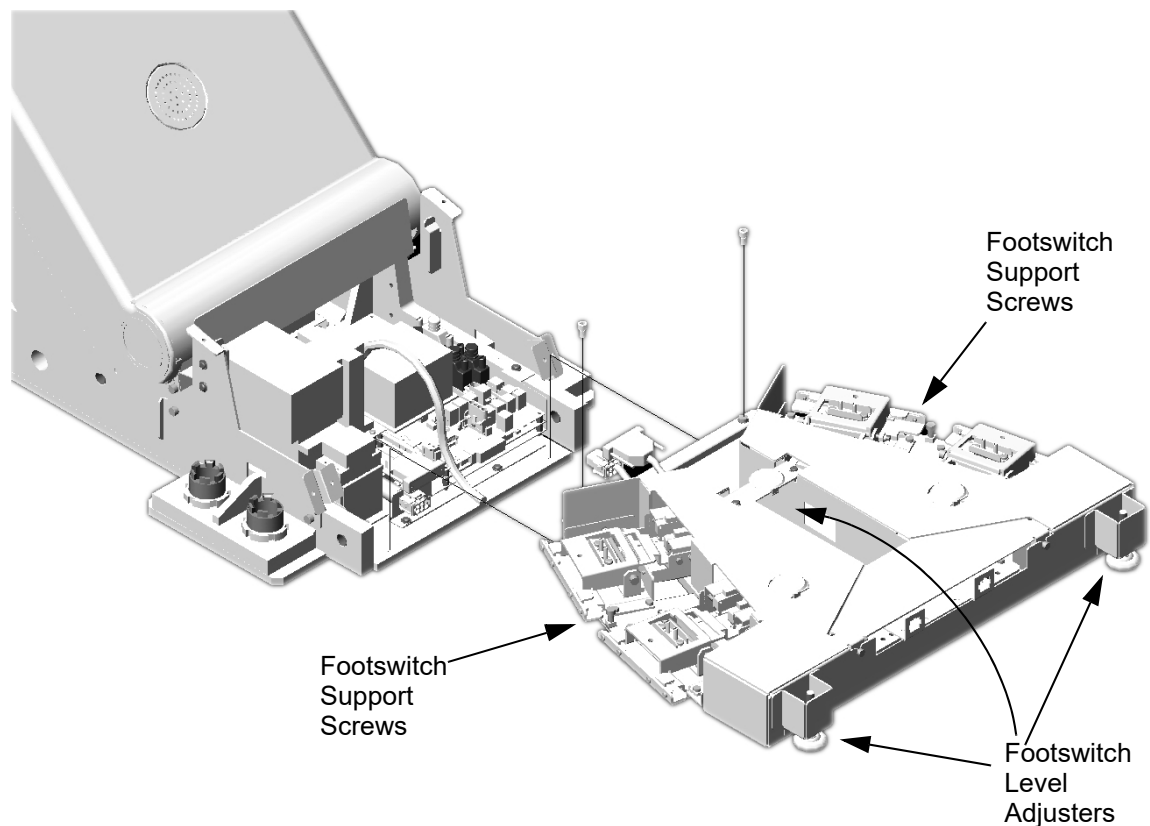
#### 11.1.2 Time and Personnel

- 1 hour labor on site
- 1 Engineer

### 11.2 Procedure

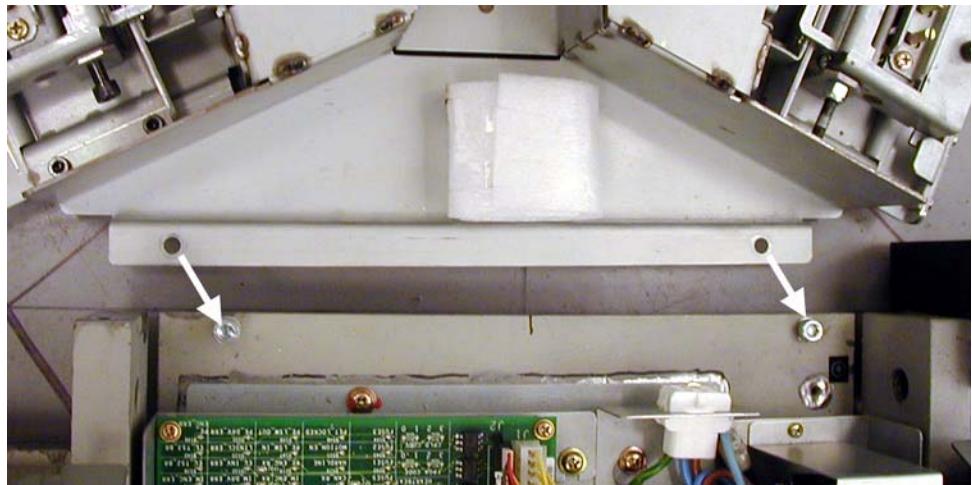
After Table positioning is completed and anchors installed, install the footswitch assembly as shown in [Figure 2-61](#) following the steps below.

**Figure 2-61 Install Table Foot-switch Assembly**



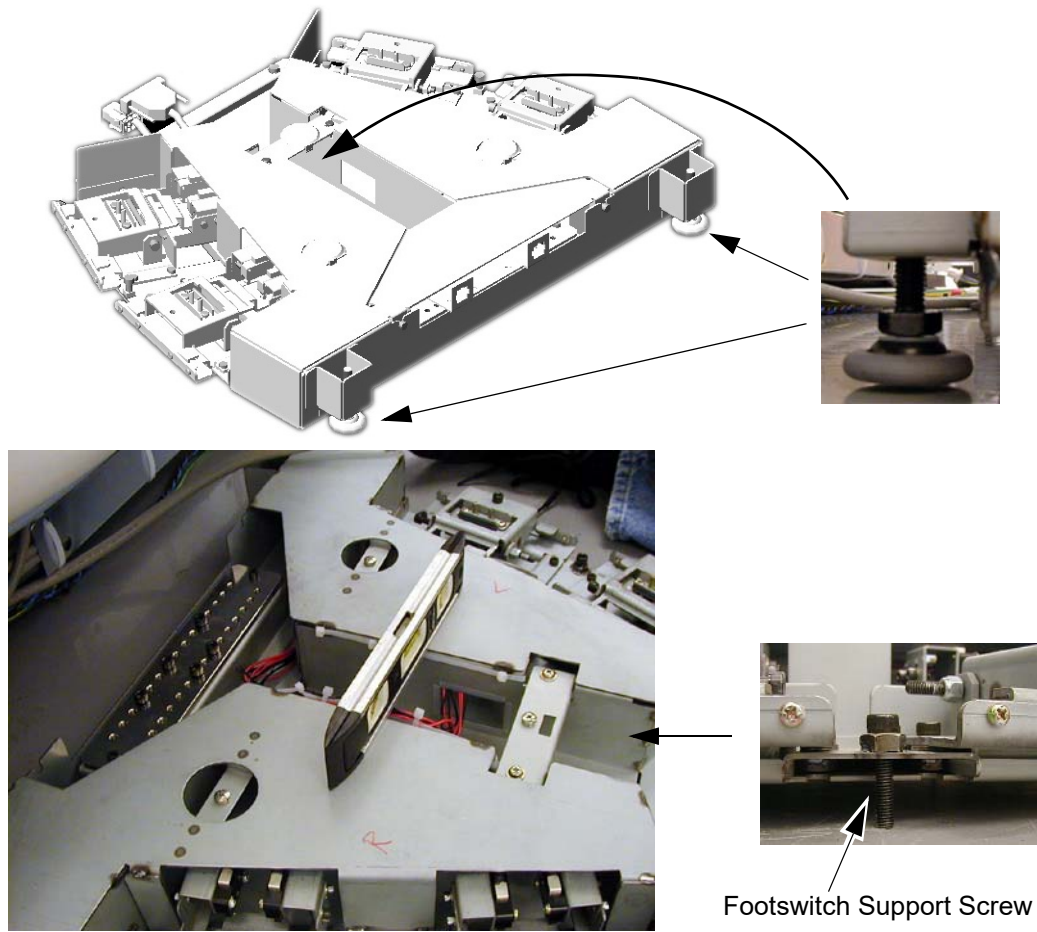
- 1.) Using two (2) M6 bolts, attach the footswitch assembly to the Table base.

**Figure 2-62 Attach Footswitch**



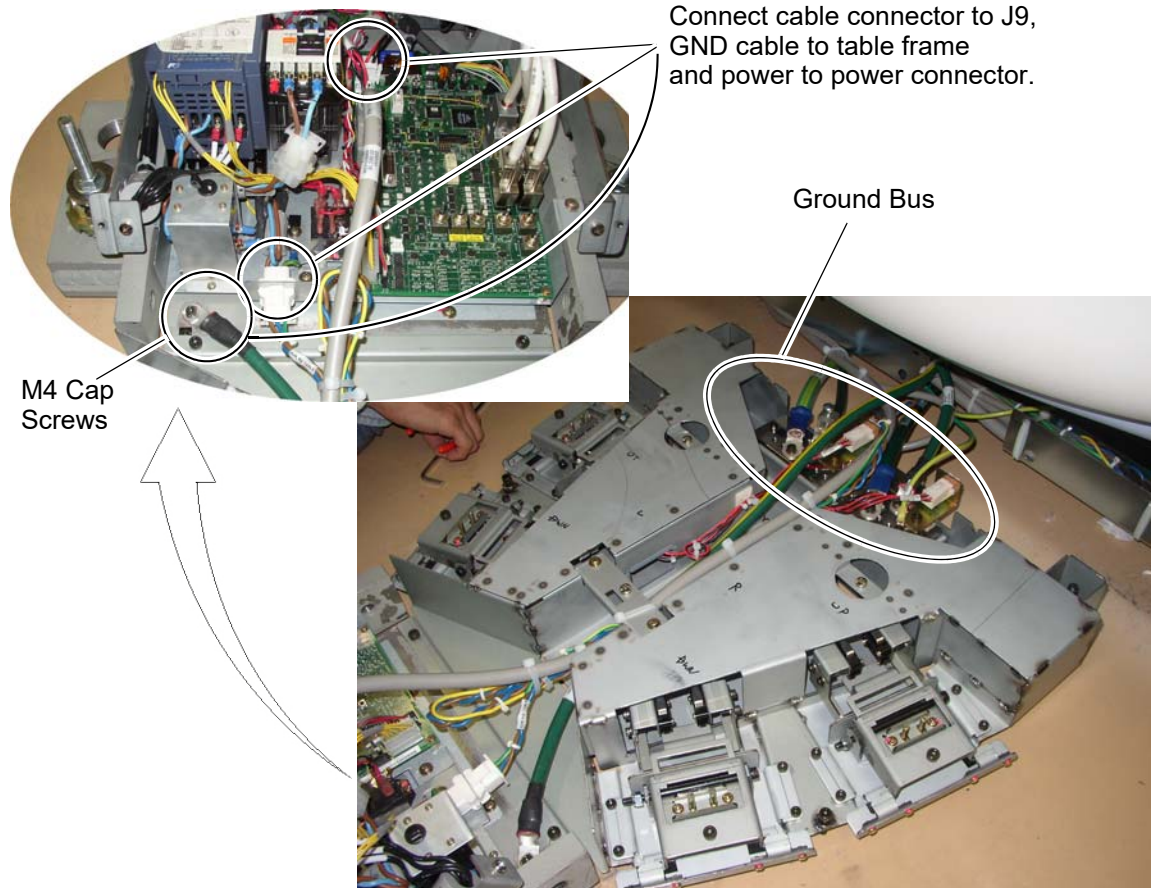
- 2.) Level the footswitch assembly using the three (3) level adjusters. Two are on the gantry side and one is in the middle. Use a 9" level to check the level in all directions.

**Figure 2-63 Level Footswitch**



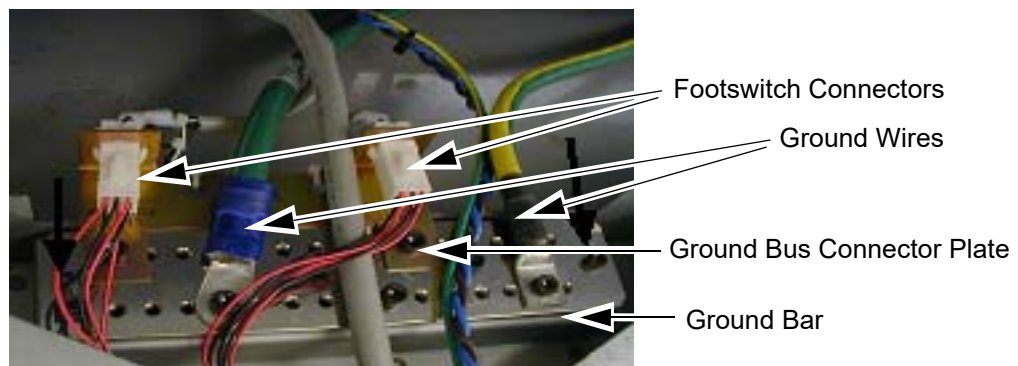
- 3.) Route the power cables from the gantry as shown in [Figure 2-64](#).

**Figure 2-64 Footswitch Assembly Cable Wiring**



- 4.) Connect the ground bus connector plate.

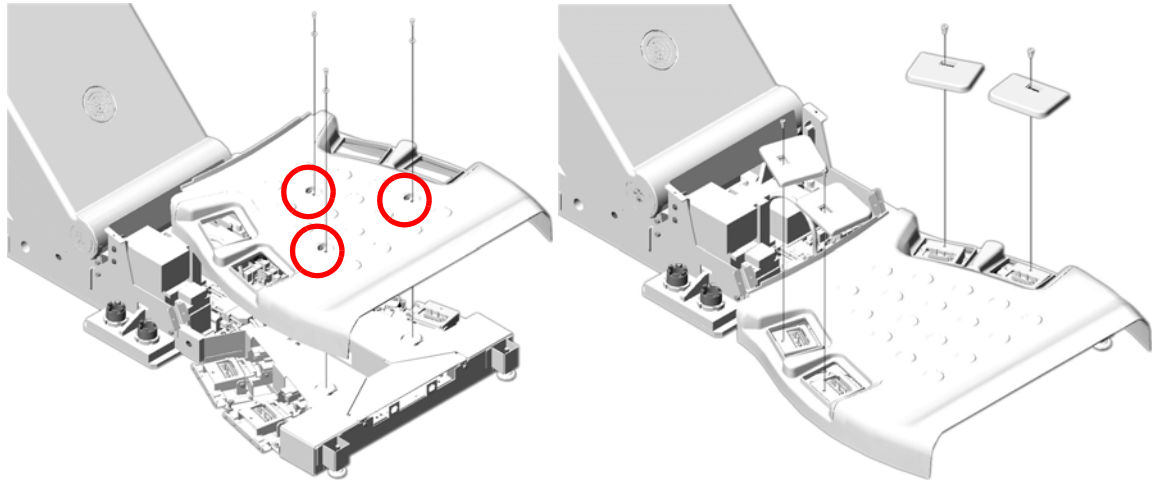
**Figure 2-65 Footswitch Ground/Bus Bar**



- 5.) Connect the ground wires (not all shown in [Figure 2-65](#)) to the installed ground bus:
- Table #2
  - Gantry #1/0
  - Console #2
  - PDU #1/0
  - Power Pan#10
- 6.) Install the footswitch pedal bracket onto the installed ground bus bar.

- 7.) Install the footswitch cover using three (3) screws (see [Figure 2-66](#)).

**Figure 2-66 Footswitch Cover Installation**



- 8.) Install cover caps on each pad.

**Figure 2-67 Footswitch Pad Caps**

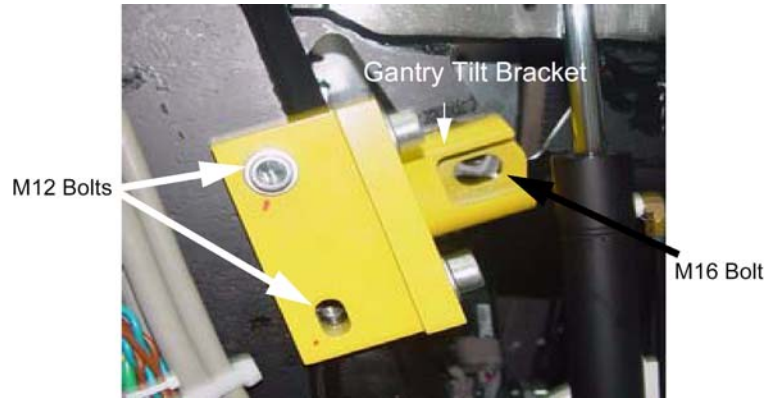


- 9.) Install the four (4) foot pads onto the footswitch assembly.

## Section 12.0

# Remove Gantry Tilt Bracket

Figure 2-68 Gantry Tilt Bracket Removal



- 1.) Refer to [Figure 2-68](#). Remove the M12 bolts using a 10 mm Hex wrench.
- 2.) Loosen the M16 bolt 1-2 turns and check the Gantry tilt bracket, it should be loose to the touch. If loose continue with step 4.

### CAUTION



#### Potential for personal injury.

**If tilt bracket is not loose, stop and put the M12 bolts back in and tighten tilt bracket back in place. If there is a load on the tilt bracket, removal may cause the gantry to suddenly tilt all the way back due to a possible lack of hydraulic pressure.**

- 3.) Check the hydraulic connections for leaks or lack of fluid. You will have to wait until the system can be energized to use the tilt controls to relieve the load on the tilt bracket prior to removal. Do not use force to remove the bracket.
- 4.) If the bracket feels loose, remove the M16 bolt using a 16 mm Hex wrench.
- 5.) Remove the bracket.
- 6.) Close the gantry covers and reinstall the scan window.
- 7.) Store brackets in the gantry base.

# Section 13.0

## Position the Power Distribution Unit

### 13.1 Tools and Test Equipment

Hex wrench set

### 13.2 Procedure



**WARNING**

**LOCKOUT/TAGOUT IS REQUIRED BEFORE PERFORMING THIS TASK. USE THE SUPPLIED LOTO KIT.**

**ALL INSTALLATION WORK WITHIN THIS SECTION ON THE POWER DISTRIBUTION UNIT SHOULD BE COMPLETED BY A LICENSED ELECTRICIAN ONLY.**

- 1.) Remove all the transportation packaging, delivery the PDU to the scan room or the control room and close to the PDB.
- 2.) Roll the PDU into position on its permanently mounted casters. Leave at least 15.5 cm (6") between the PDU and back wall to allow cooling air to circulate.

**Note:**

**Connecting the primary incoming power is performed by the customer's electrical contractor. The electrician needs to provide a reducing bushing to attach the flexible conduit to the PDU.**



**WARNING**

**WORK WITH THE ELECTRICAL CONTRACTOR TO BE SURE EXTERNAL POWER SOURCE IS TURNED OFF.**

Table 2-6 Contractor Connections

Connection or Wall Box	AWG #	Connection From	Connection To PDU	Installed & Checked
TS1	#1	PDB-A	TS1-1	<b>(Do NOT connect anything to neutral point.)</b>
	#1	PDB-B	TS1-2	
	#1	PDB-C	TS1-3	
	#1/0	GND	N/G	
WL (Warning Light)	#14	LV Source -1	TS6 1	
	#14	LV Source -2	TS6 2	
	#14	X-Ray ON Light -1	TS6 3	
	#14	X-Ray ON Light -2	TS6 4	
	#14	Sys-ON Light -1	TS6 5	
	#14	Sys-ON Light -2	TS6 6	
	#14	Ready Light -1	TS6 7	
	#14	Ready Light -2	TS6 8	
DS (Scan Room Door Switch)	#14	Door SW -1	TS6 9	
	#14	Door SW -2	TS6 10	



- 3.) Run the main input power conductors and ground through flexible metal conduit (attached between the PDU chassis and room duct-work) so you can move the PDU away from the wall during service.

**Figure 2-69 Flexible Conduit for PDU Power**



- 4.) Locate the hole cover plate in Box 1 and attach the flexible metal conduit to the PDU.
- 5.) If present, remove the TS1 panel front cover.
- 6.) Strip the wires to fit securely on the power block.
- 7.) Observe incoming phases (L1, L2 and L3) and insert bare leads into each location on TS1. Torque to specification, see [Figure 2-70](#)


**Figure 2-70 TS1 Power Torque Values**

TS1 (Model-Phoenix)	Bolt/Hex
	12.91 ft-lb (17.5 N-m)
TS1 (Model-ABB)	Bolt/Hex
	6.82 ft-lb (9.25 N-m)

2 - Pos. Subsystems



- 8.) Insert vault ground in to PDU vault ground lug. Torque to specification, see [Figure 2-71](#)

**Figure 2-71 Ground Torque Values**

Main Ground	Bolt/Hex
	22.87 ft-lb (31.0 N-m)

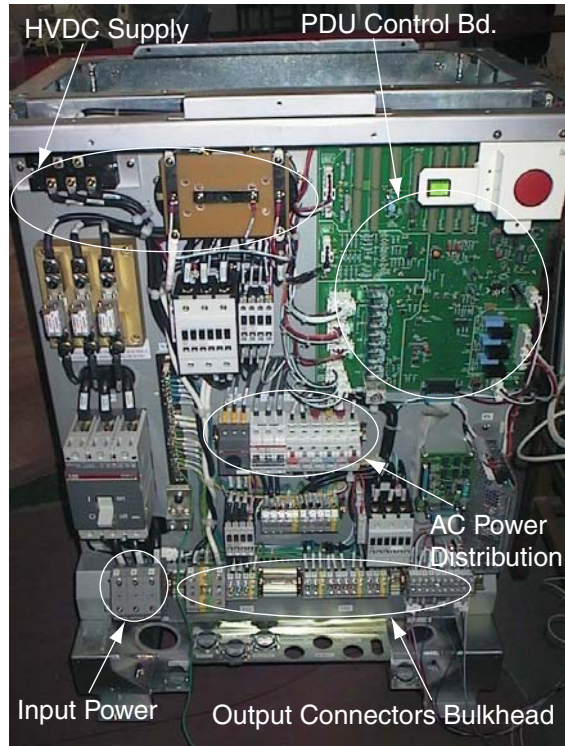
- 9.) Observe cable mark and insert bare leads into each location on TS6, Torque to specification, see [Figure 2-72](#)

**Figure 2-72 Warning Light and Door SW Connections**

TS6 (Model-Phoenix)	Bolt/Hex
	<p>1.2 ft-lb (1.6N-m)</p>
TS6 (Model-ABB)	Bolt/Hex
	<p>1.0ft-lb (1.4N-m)</p>

- 10.) Tighten all fasteners securely.

Figure 2-73 PDU Area Locations



2 - Pos. Subsystems

TERMINAL NO.	MODEL-PHOENIX			MODEL-ABB		
	P/N	MODEL	TORQUE	P/N	MODEL	TORQUE
TS1	5324772	UKH95	12.9ft-lb (17.5N-m)	5795116	ZS95	6.8ft-lb (9.25N-m)
TS2	5324755; 5324758	UKH50; USLKG50	5.2ft-lb (7N-m)	5807667; 5807668	ZS70; ZS70-P	4.8ft-lb (6.5N-m)
				5795117; 5795118	M35/16; M35/16.P	2.2ft-lb (3N-m)
TS3/4/5	5324773; 5324757	UK16N; USLKG16N	1.2ft-lb (1.6N-m)	5795119; 5795120	M16/12; M16/12.P	1.0ft-lb (1.4N-m)
TS6	5324774	UK10N	1.2ft-lb (1.6N-m)	5795121	M10/10	1.0ft-lb (1.4N-m)

Table 2-7 PDU Terminal Torque Values

## Section 14.0

# Install Operator Console

### 14.1 Unpack OpenOC16 Console

- 1.) Release eight latches and remove the packaging covers.

**Figure 2-74 Console Packaging Removal**

Front View

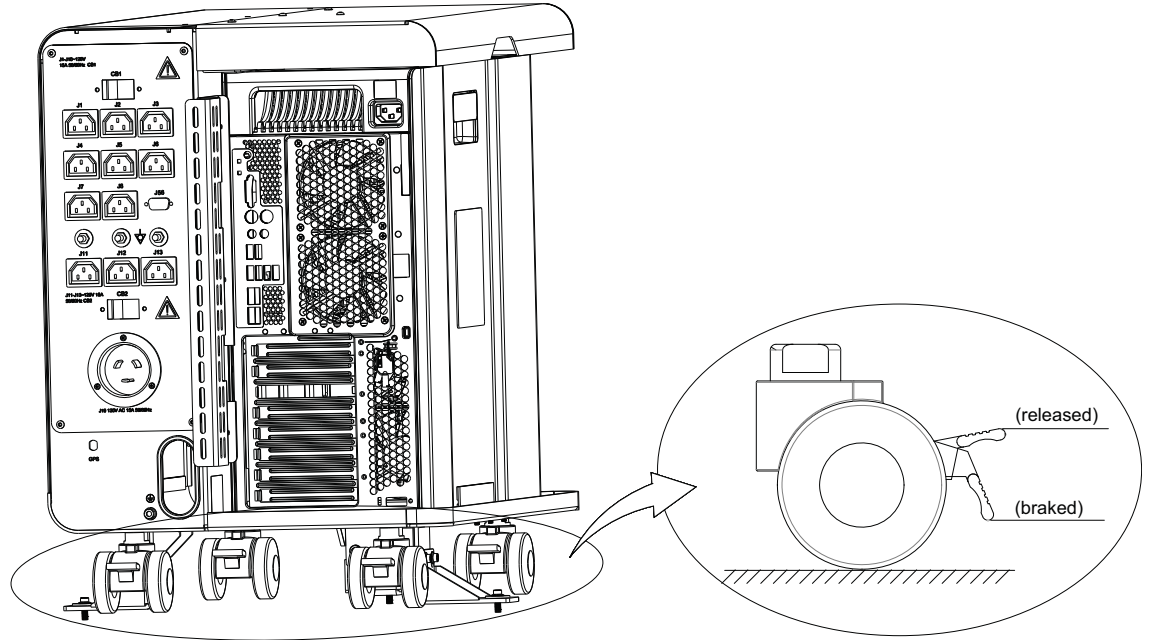


Side View



- 2.) Remove all packaging and discard per local requirement
- 3.) Move console to installation location.
- 4.) Adjust console position, and then pedal four brakes to prevent console from sliding.

Figure 2-75 Brake



## 14.2 Install Operating Table

### 14.2.1 Install Aurora SWS Table (5449758-2)

- 1.) If your system has the SWS Table, assemble SWS Table.  
Refer to [Appendix B Section 2.0, on page 296](#) for detail Aurora Table assembly.
- 2.) Place the table in the control room.

## 14.3 Peripherals Placement

Place keyboard and GSCB

## 14.4 Install GPU Card (If applicable)

Install the GPU Card in the Host Computer if the site has the option. Refer to Service Methods-->Installation--> Option-->GPU Fluoro Prerequisite Installation Manual

## 14.5 Cover Installation

### 14.5.1 OpenOC Console Cover Installation

Install the OpenOC console cover. Refer to Service Methods-->Replacement--> OpenOC16--> Console Cover Removal and Installation procedure.

## Section 15.0

# Seismic Mounting

Before proceeding with seismic mounting for any of the components in this section, be sure to allow sufficient space to unbolt and move the component from its mounted location for service.

- You may need to remove all four mounting bolts.
- If removing the component requires lifting, use an appropriate-sized pry bar to lift each corner of the component.
- Two installers may be required to safely complete this task.
- 5/8 in. anchor or IBC2007 standards or as provided in the seismic kit.


### 15.1 Console

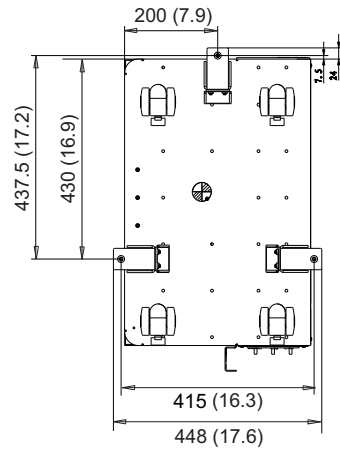
#### OpenOC 16 Console

If site specification require seismic mounting, the customer may require different anchoring methods based on local requirement. Anchor type, size and torque shall be defined by the customer. Refer to [Figure 2-76](#) for hole placement. The console seismic brackets (5357148-3), M6 screws (2262896-30) and M8 washers (2001-M8-02) are includes in Console Seismic Kit (5812703-2) that is shipped with Console.

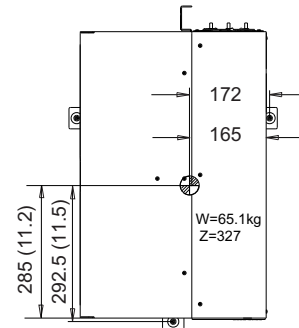
**Figure 2-76 Seismic Console Mounting Hole Locations (OpenOC16 Console)**

Unit: mm (in)

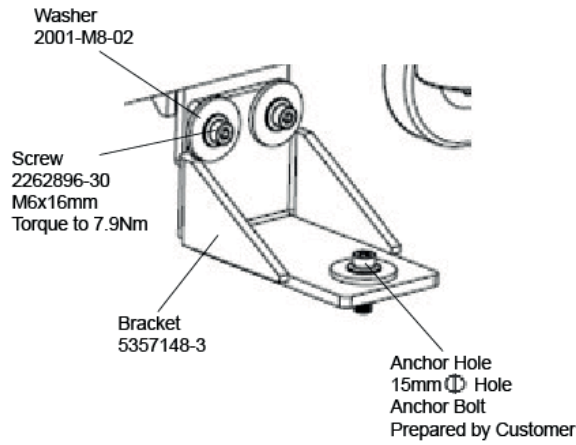
 Center of Gravity



BOTTOM VIEW



TOP VIEW



## 15.2 Power Distribution Unit

If site specifications require seismic mounting, use the seismic brackets (2354563-2) and the PDU shipping kit (5453382-2) that were shipped with PDU. Refer to [Figure 2-77](#) for mounting hole locations, and mount the PDU so it can be easily removed for service.

It is the customer's responsibility to provide an appropriate anchor/fastener from the bracket to the floor.

### CAUTION

The PDU is very heavy and may present a crush hazard if proper precaution and tools are not used.

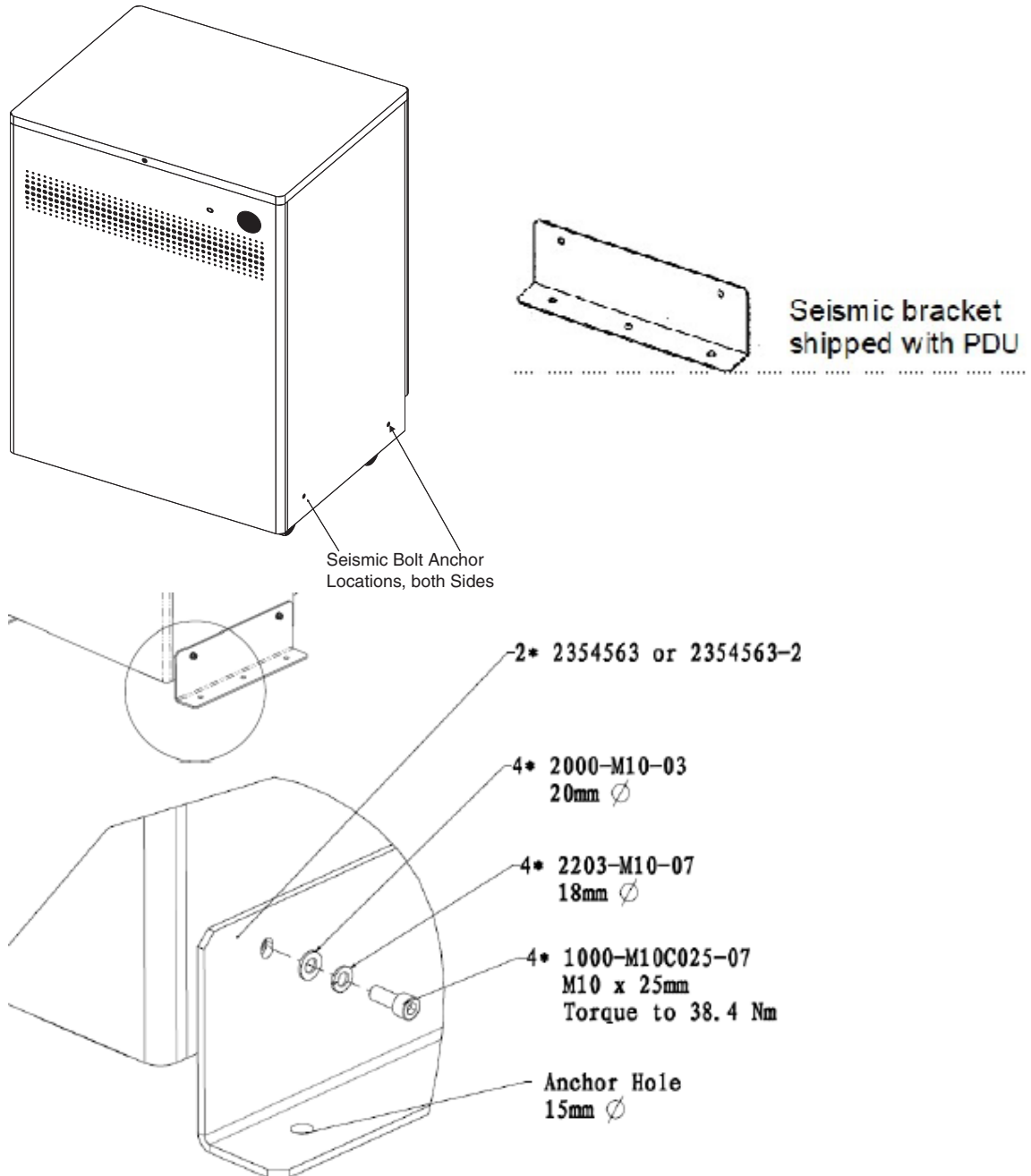


Figure 2-77 PDU Seismic Brackets and Shipping Kit

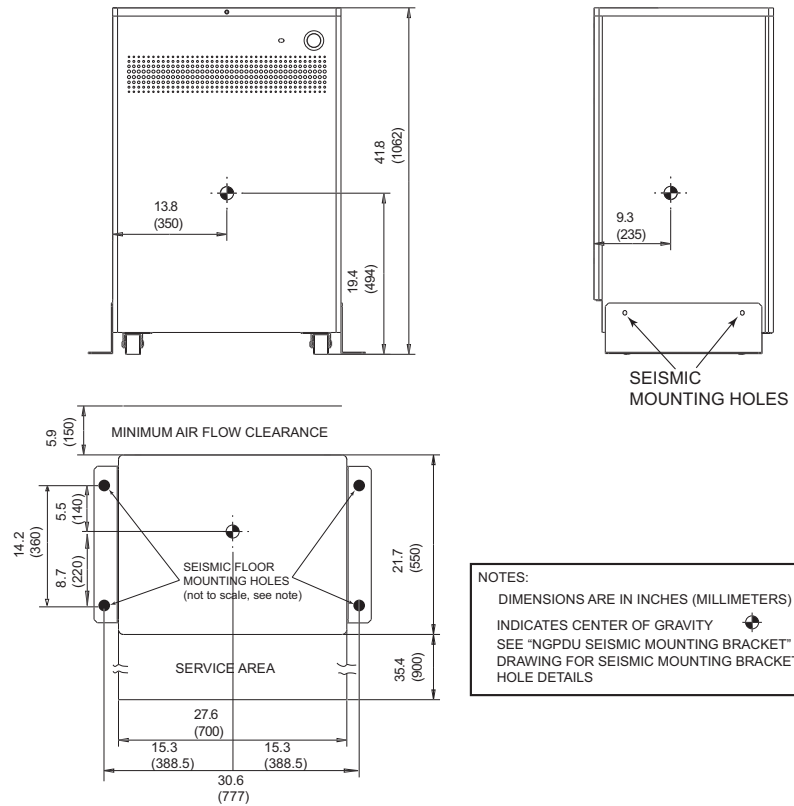


Figure 2-78 Seismic PDU Mounting Hole Locations



# Chapter 3

## Power, Ground & Interconnect Cables



**NOTICE** Potential for Data Loss and/or Equipment Damage

To prevent potential data loss and equipment damage, please do the following:

- Record data collected from procedures in this chapter into Form F4879 when directed, located in [Section 8.0](#) of Chapter 4 of this book.
- Only use the Installation manual that arrives with your system for installation. Any other revisions of this manual may not exactly match your system.

### Section 1.0 Introduction

Site use of conduit, floor duct, wall duct, or a raised computer floor, as well as the individual component layout determines the system cable sequence. If your site has floor or wall ducts that will interfere with placement of the table/gantry, it may be important to have the movers unload the cable boxes (8 & 9) first and run those cables while others unload the subsystems.

- Try to run the system cables after the contractor completes the contractor supplied wiring.
- All ground wires and other contractor wiring should be complete to the point of equipment placement.

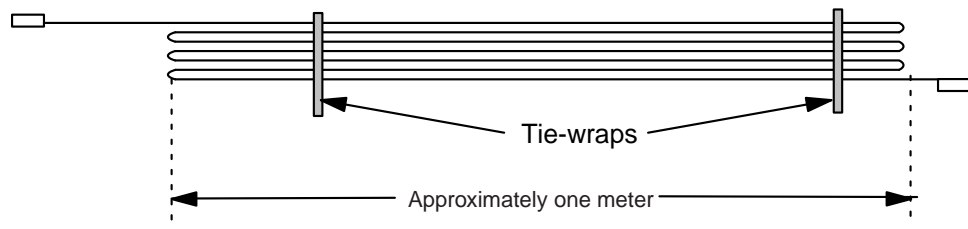


**NOTICE** Potential for Equipment Damage

**Do not store excess cable in the bottom of the PDU or Gantry.**

When possible, store excess cable length in a serpentine configuration, approximately one meter long. **(Do NOT coil excess cable.)**

**Figure 3-1 Excess Cable Storage Configuration**



- Keep signal and control cables away from power cables and power wiring. When you lay cables in a raceway, locate the signal cables in a separate section of the raceway, or a separate conduit.
- Check all connections for tightness.
  - Use suitable tools and judgment.
  - Check all visible connections, especially ground connections.
- Check for reasonable cable routing.
  - Take into consideration necessary take-up distances for equipment maintenance, etc.
  - Try to complete as neat a job as possible.

## 1.1 System Component Identification

Identify all system cables by the system component designators listed in Table 3-1 on page 180. Each end of a system cable has a label, and may have a color near the connector, (refer to Table 3-2 on page 180) to indicate the component and the jack identifier of the component.

**Table 3-1 System Component Identifiers**

DESIGNATOR	SYSTEM COMPONENT
CT2	Gantry
CT1	Patient Table
PDU	Power Distribution Unit
OC	Operator Console (Console Computer)
WL	X-Ray ON Warning Light
A1	Primary Power Disconnect
SEO	System Emergency OFF
DS	Door Interlock Switch
BBNC	Broad-Band Network Connection

## 1.2 Cable Color Identifiers

The ends of the cables may be marked with a piece of blue, yellow, red, or orange colored tape to help with the cable installation. Table 3-2 on page 180 lists the subcomponent, and corresponding color.

**Table 3-2 Cable Color Identifiers**

SUBCOMPONENT	COLOR
Gantry	Blue
Table	Yellow
PDU	Red
Console Computer	Orange

**Table 3-3 System Interconnect Cables**

RUN NO.	DESCRIPTION	PART NUMBER			
		For NIO16 Console		For NIO16 Console with Simplified Power Pan / Open Console	
		LONG CABLES (Kit 2281840-13)	SHORT CABLES (Kit 2281840-14)	LONG CABLES (Kit 5438124)	SHORT CABLES (Kit 5443710)
1	Facility MDP to Room Disconnect (A1)	cust. supplied	cust. supplied	cust. supplied	cust. supplied
2	Room Disconnect (A1) to PDU	cust. supplied	cust. supplied	cust. supplied	cust. supplied

**Table 3-3 System Interconnect Cables (Continued)**

RUN NO.	DESCRIPTION	PART NUMBER			
		For NIO16 Console		For NIO16 Console with Simplified Power Pan / Open Console	
		LONG CABLES (Kit 2281840-13)	SHORT CABLES (Kit 2281840-14)	LONG CABLES (Kit 5438124)	SHORT CABLES (Kit 5443710)
3	Room Disconnect (A1) to System E-Off	cust. supplied	cust. supplied	cust. supplied	cust. supplied
4	PDU to Room Warning Light(s)	cust. supplied	cust. supplied	cust. supplied	cust. supplied
5	PDU to Scan Room Door Switch	cust. supplied	cust. supplied	cust. supplied	cust. supplied
50	HVDC Power Cable - PDU to Gantry	2343529	2343529-2	2343529	2343529-2
51	HVAC Power Cable - PDU to Gantry	2343530	2343530-2	2343530	2343530-2
52	LVAC Power Cable - PDU to Gantry	2343528	2343528-2	2343528-3	2343528-4
53	LVAC Power Cable - PDU To Operator's Console	2343531	2343531-2	2343531	2343531-2
54	LVAC Power Cable - Gantry to Table	n/a	n/a	n/a	n/a
55	Ground, PDU to Raceway	2371450	2371450-2	2371450	2371450-2
56	Ground, Raceway to Console	2371450-3	2371450-4	2371450-3	2371450-4
60	LVAC Power Cable - PDU to Optional UPS	-	-	-	-
61	LVAC Power Cable - UPS Disconnect Panel to PDU	-	-	-	-
90	LVAC Power Cable - PDU to PET	-	-	-	-
100	Signal Cable - Gantry to PDU	5419992	5419992-2	5120646	5120646-2
101	Signal Cable - Gantry to Console	5419981	5419981-2	5419981	5419981-2
102	Signal Cable (Ethernet) - Gantry to Console	2373436-2	2373436-3	2373436-2	2373436-3
103	Data Cable (Fiber Optic) - Gantry to Console	5432019	5432019	5432019	5432019
104	Signal Cable - Gantry to Table	n/a	n/a	n/a	n/a

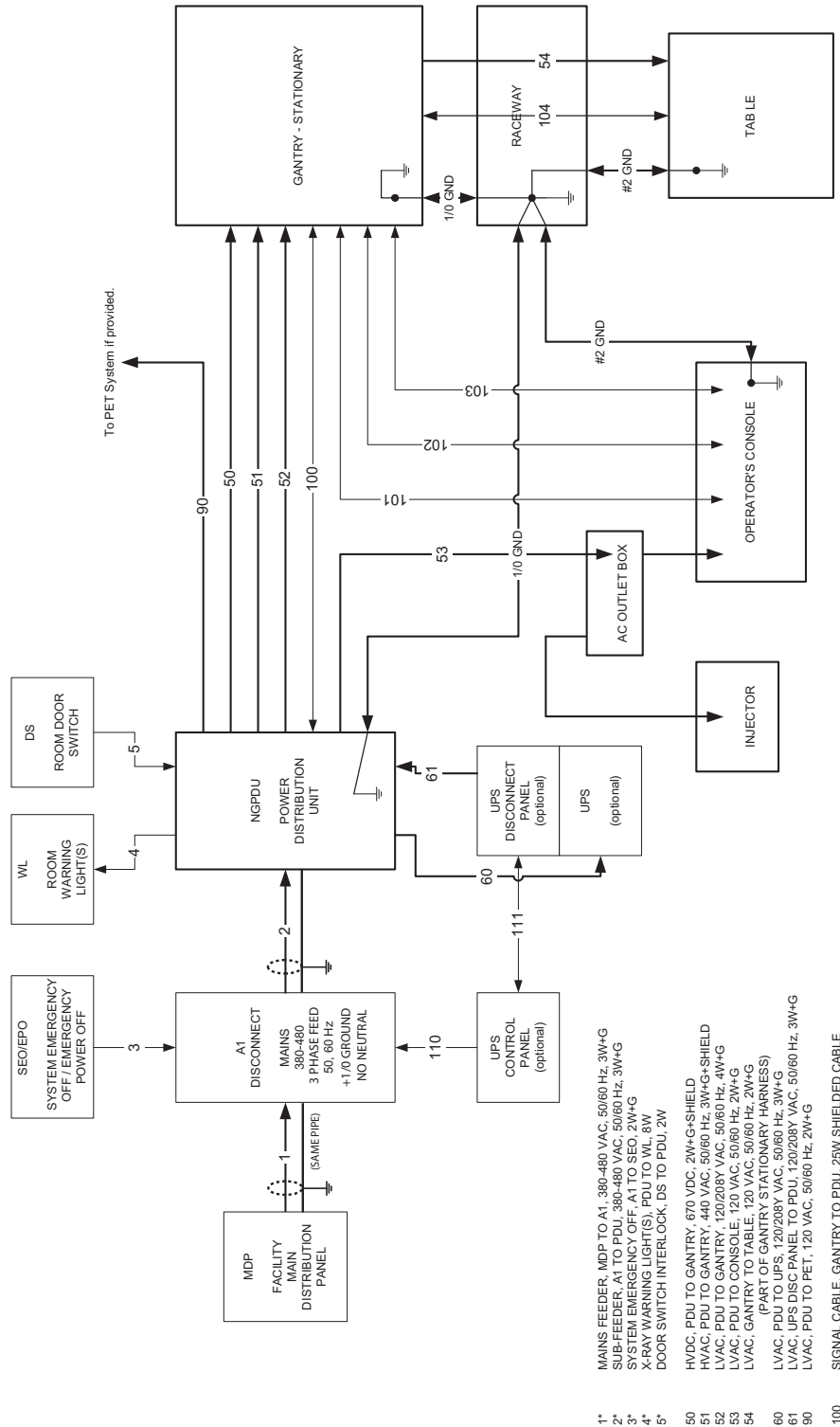
3 - Install Power

**Table 3-3 System Interconnect Cables (Continued)**

RUN NO.	DESCRIPTION	PART NUMBER			
		For NIO16 Console		For NIO16 Console with Simplified Power Pan / Open Console	
		LONG CABLES (Kit 2281840-13)	SHORT CABLES (Kit 2281840-14)	LONG CABLES (Kit 5438124)	SHORT CABLES (Kit 5443710)
110	Signal Cable - UPS Control to Room Disconnect (A1)	-	-	-	-
111	Signal Cable - UPS Control to UPS Disconnect Panel	-	-	-	-

# Section 2.0 System Interconnect Diagram

Figure 3-2 System Interconnect Diagram



# Section 3.0 Contractor Connections

## 3.1 Contractor Connections

Table 3-4 Contractor PDU Connections

CONNECTION OR WALL BOX	AWG #	CONNECTION FROM	CONNECTION TO PDU	INSTALLED AND CHECKED
A1	#1	Load - T1	TS-1 L1	
	#1	Load - T2	TS-1 L2	
	#1	Load - T3	TS-1 L3	
	#1/0	GND	TS-1 GND <b>(Do NOT connect anything to neutral point.)</b>	
WL (Warning light) <i>See Figure 3-64, on page 240.</i>	#14	LV Source -1	TS6 1	
	#14	LV Source -2	TS6 2	
	#14	X-Ray ON Light -1	TS6 3	
	#14	X-Ray ON Light -2	TS6 4	
	#14	Sys-ON Light -1	TS6 5	
	#14	Sys-ON Light -2	TS6 6	
	#14	Ready Light -1	TS6 7	
	#14	Ready Light -2	TS6 8	
DS (Scan Room Door Switch)	#14	Door SW-1	TS6 9	
	#14	Door SW-2	TS6 10	

Note:  
 Add #2 ground wire.

**IMPORTANT:** Add AWG #2 ground wire from table frame to table/gantry raceway ground bar (as shown in [Figure 3-2](#)).



**WARNING**



**WORK WITH THE ELECTRICAL CONTRACTOR TO BE SURE EXTERNAL POWER SOURCE IS TURNED OFF.**

## Section 4.0 NIO16 Console Connection

PART #	DESCRIPTION	CONNECT TO	QUANTITY	LENGTH	
				MM	INCHES
5366514-2	USB Extension Cable	Keyboard	1	3560 ± 30	140.16 ± 1.18
5450275	PS2 Extension Cable	Mouse	1	3500 ± 50	137.80 ± 1.97
5332107-2	CABLE, DVI to D-SUB VIDEO CABLE	Monitor	1	3000 ± 20	118.11 ± 0.79
5315370	CABLE, USB TYPE A-B	PMT media Tower, DVD-RW/USB external HDD	2	2000	78.74
5408703	DP to DVI cable, 3 meter	Monitor	1	3000 ± 50	118.11 ± 1.97
5432953-2	Power Cable, Peripheral Tower to NIO AC Box	PMT media Tower	1	3050 ± 50	120 ± 1.97
5432953-3	Power Cable, Display monitor to NIO AC Box	Monitor	1	3050 ± 50	120 ± 1.97
5432953-4	Power Cable, Scan monitor to NIO AC Box	Monitor	1	3050 ± 50	120 ± 1.97

**Table 3-5 GE Healthcare Supplied NIO16 Console (Z800 Host Computer) Cables**

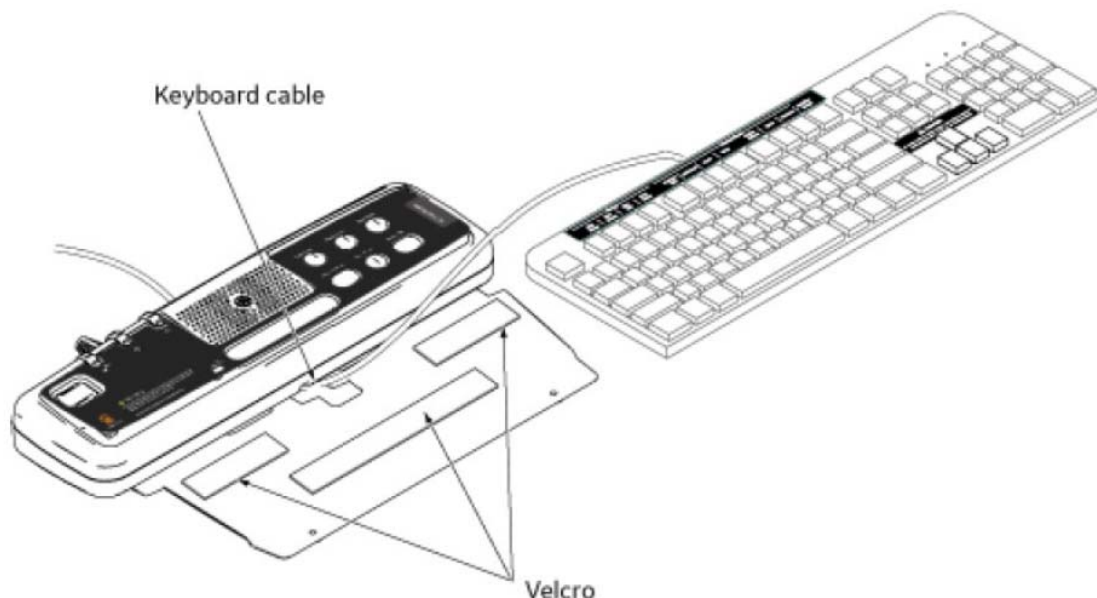
PART #	DESCRIPTION	CONNECT TO	QUANTITY	LENGTH	
				MM	INCHES
5366514-2	USB Extension Cable	Keyboard	1	3560 ± 30	140.16 ± 1.18
5366514	USB EXTENSION CABLE	Mouse	1	3000 ± 30	118.11 ± 1.18
5315370	CABLE, USB TYPE A-B	PMT media Tower, DVD-RW/USB external HDD	2	2000	78.74
5408703	DP to DVI cable, 3 meter	Monitor	2	3000 ± 50	118.11 ± 1.97
5432953-2	Power Cable, Peripheral Tower to NIO AC Box	PMT media Tower	1	3050 ± 50	120 ± 1.97
5432953-3	Power Cable, Display monitor to NIO AC Box	Monitor	1	3050 ± 50	120 ± 1.97
5432953-4	Power Cable, Scan monitor to NIO AC Box	Monitor	1	3050 ± 50	120 ± 1.97

**Table 3-6 GE Healthcare Supplied NIO16 Console (Z820 Host Computer) Cables**

## 4.1 GSCB, Keyboard, Trackball & Mouse Installation

- 1.) Install the GSCB to the metal plate by using four screws.
- 2.) Route the keyboard cable under the GSCB and attach the keyboard to the GSCB metal plate with velcro strip and fit snugly against the GSCB.

Figure 3-3 GSCB and Keyboard



### NOTICE



#### Potential for equipment damage

**Never connect a mouse or keyboard with the host computer powered "ON". Doing so can destroy components within the host computer.**

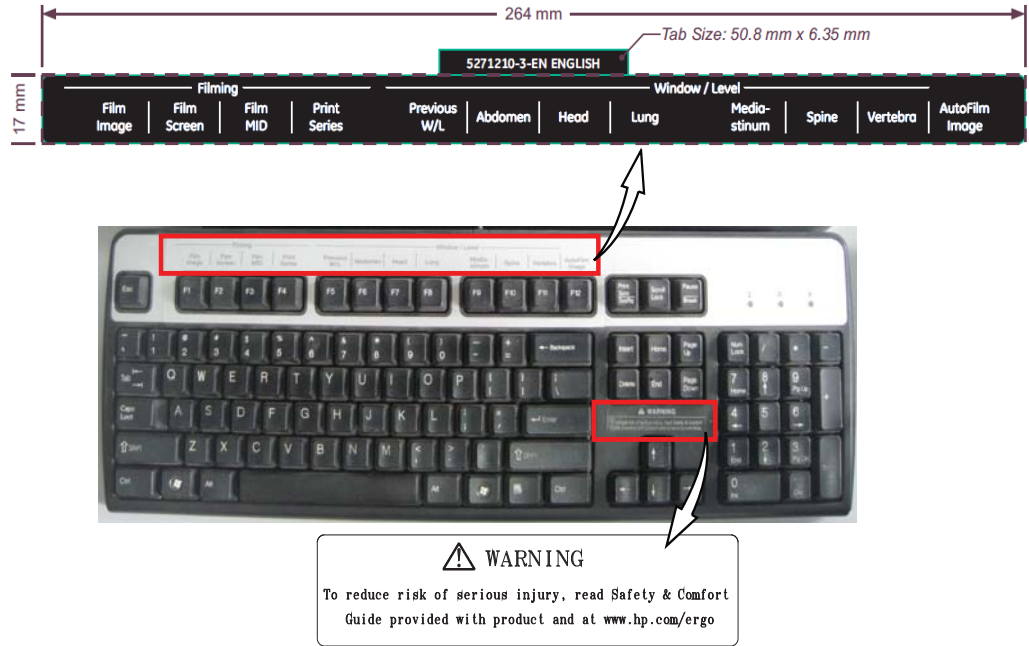
- 3.) Route the keyboard and mouse cables to console. If  
the length of keyboard and mouse cables is not enough, add the following cable extensions (shipped with OC collector).

DESCRIPTION	PART NUMBER	CABLE LENGTH	QTY
PS2 extension Cable (Mouse) for Z800 host computer	5450275	3500 mm	1
USB extension Cable (Mouse) for Z820 host computer	5366514	3000 mm	1
USB Cable (Keyboard)	5366514-2	3560 mm	1

Table 3-7 Cable Extension

- 4.) Select the local language keyboard overlay and GSCB film from the keyboard collector (5431062-1-XX) to attach.
  - Select the keyboard overlay and warning label from the keyboard collector (5324605-XX) to attach (see [Figure 3-4](#))

**Figure 3-4 Keyboard Overlay and Warning Label Attached (English)**

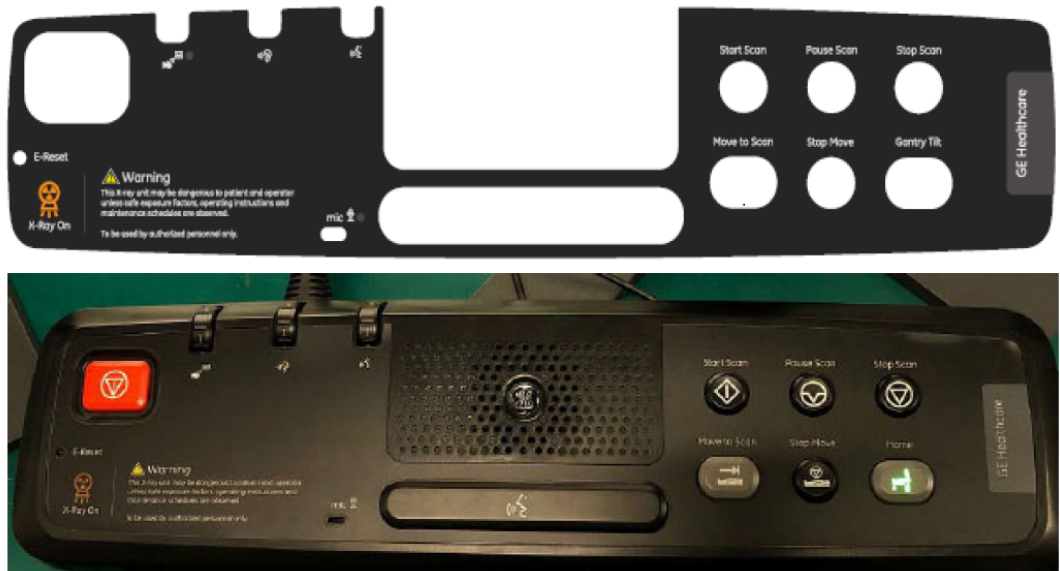


3 - Install Power

- Select the proper GSCB film (with **Tilt/E-Reset**, P/N is 5401237-XXX) to install.

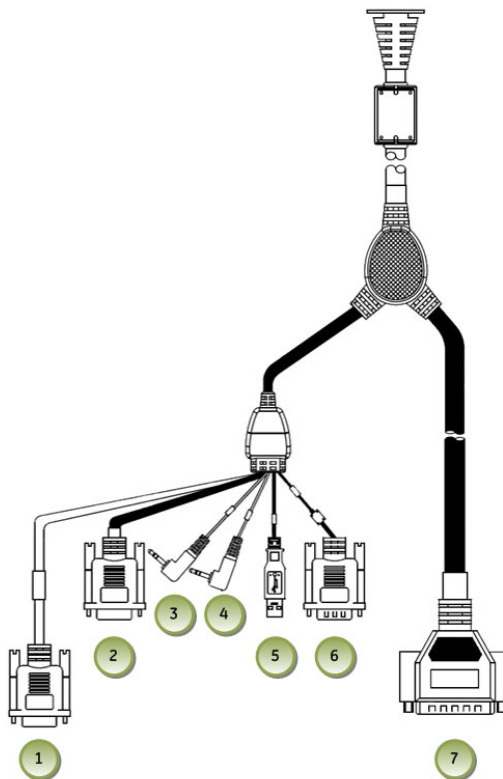
Note: Verify that none of the buttons get caught and stuck under the overlay. Pay close attention to the prescribed tilt button on system with tilt feature.

**Figure 3-5 GSCB connected to the keyboard with Tilt/E-Reset overlay Attached**



- Note: X-ray ON sound can be turned off / on using the switch on GSCB bottom if customer does not like it and if local regulation does not require X-ray ON sound. Detail information refer to **Service Methods->Troubleshooting->NIO16 Console-> GSCB Troubleshooting.**
- 5.) The keyboard should attach to the GSCB using the supplied Velcro strip and fit snugly against the GSCB when finished.
  - 6.) Route the GSCB cable and connect connectors according to [Figure 3-6](#) and [Table 3-8](#).
- Note: The USB cable of GSCB is reserved, please tie it with tie-wrap.

**Figure 3-6 GSCB and Connections**

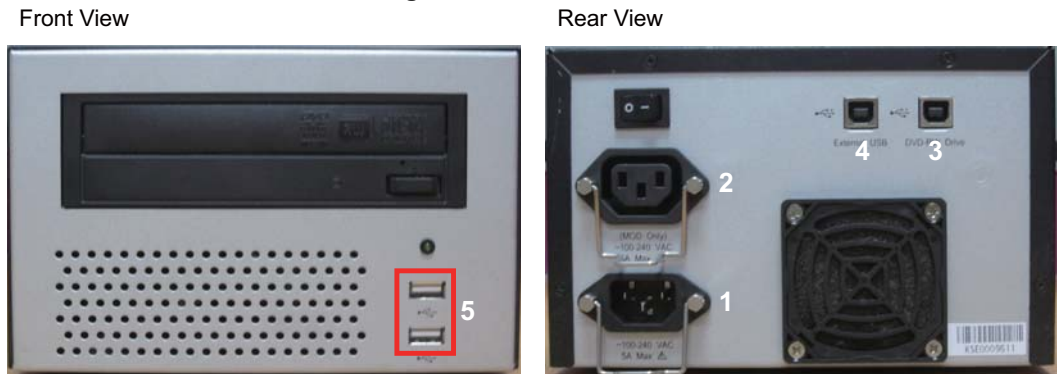


	ITEM	DESCRIPTION
1	GSCB - Black DB-9 (Female) Connector	Host Computer DIP
2	GSCB - Gray DB-9 (Female) Connector	Host Computer RS232
3	GSCB - Green Audio Connector	Host Computer Audio Out (Green)
4	GSCB - Blue Audio Connector	Host Computer Audio In (Blue)
5	GSCB - USB Connector	Reserved
6	GSCB - Black DB-9 (Male) Connector	AC Box J56
7	GSCB - Black DB-25 (Male) Connector	TGP Gantry Cable

**Table 3-8 GSCB Cables (5404262)**

## 4.2 Connecting the Media Tower (5270510-20/21/22)

Figure 3-7 Media Tower



- 1) Power for Media Tower
- 2) Power for MOD Drive
- 3) DVD-RW Drive
- 4) External USB
- 5) HDD External  
SSA Key

Connect the power cable to the rear of the media tower. Use the following cables for connection.

DESCRIPTION	PART NUMBER	CABLE LENGTH	QTY
USB Cable (PMT)	5315370	2000 mm	2
PMT power cable	5432953-2	3050 mm	1

Table 3-9 Media Tower Cables

## 4.3 Connecting the LCD Monitor

### 4.3.1 Connecting the Scan Monitor and Image Monitor for z800 Host Computer

**NOTICE** Equipment Damage Possible



Do not touch the video signal cable connector pins as this might bend them. When connecting the video signal cable, check the alignment of the HD15 and DVI connector. Do not force the connector in the wrong way, otherwise the pins might bend.

Scan Monitor

- Video cable from Console Host DP0 to Monitor DVI
- Power cable from Console J10
- Route through the cable keeper

**Figure 3-8 Video Cable and Power Cable**



Image Monitor

- Video cable from Console Host DVI-I to Monitor D-SUB
- Power cable from Console J9
- Route through the cable keeper

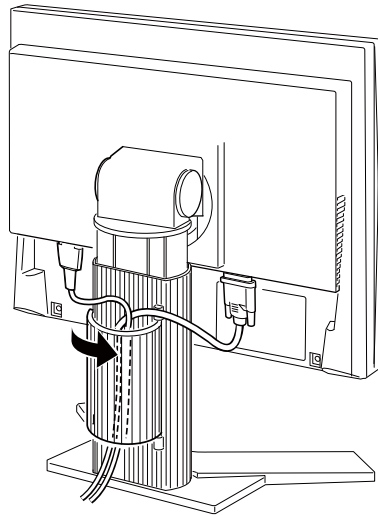
**Figure 3-9 Video Cable and Power cable**



DESCRIPTION	PART NUMBER	CABLE LENGTH	QTY
Scan Monitor Power Cable	5432953-4	3050 mm	1
Scan Monitor Video Cable	5408703	3000 mm	1
Image Monitor Power Cable	5432953-3	3050 mm	1
Image Monitor Video Cable	5332107-2	3000 mm	1

**Table 3-10 Monitor Cables for Z800**

**Figure 3-10 Cable Routing and Keeper**



### 4.3.2 Connecting the Scan Monitor and Image Monitor for z820 Host Computer

**Scan Monitor**

- Video cable from Console Host DP1 to Monitor DVI
- Power cable from Console J10
- Route through the cable keeper

**Image Monitor**

- Video cable from Console Host DP0 to Monitor DVI
- Power cable from Console J9
- Route through the cable keeper

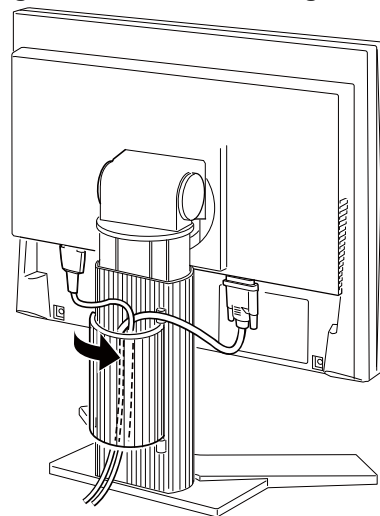
**Figure 3-11 Video Cable and Power Cable**



DESCRIPTION	PART NUMBER	CABLE LENGTH	QTY
Scan Monitor Power Cable	5432953-4	3050 mm	1
Image Monitor Power Cable	5432953-3	3050 mm	1
LCD Monitor Video Cable	5408703	3000 mm	2

**Table 3-11 Monitor Cables for Z820**

**Figure 3-12 Cable Routing and Keeper**

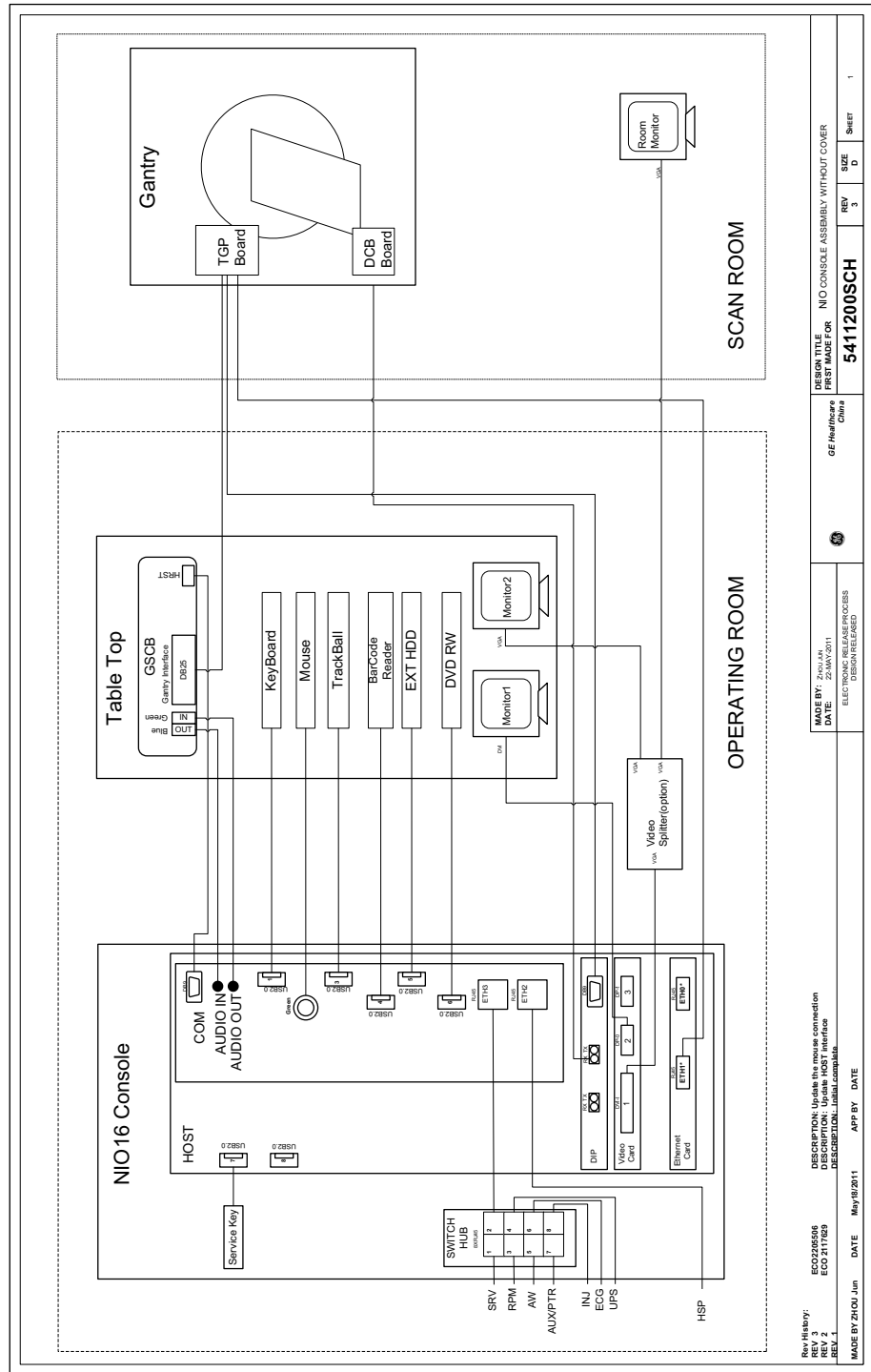


### 4.3.3 LCD Video Monitor Setup

Detail LCD Video Monitor Setup please refer to **Service Methods**→**Align, setup, Cals**→**Console**→ **LCD Video Monitor Setup**.

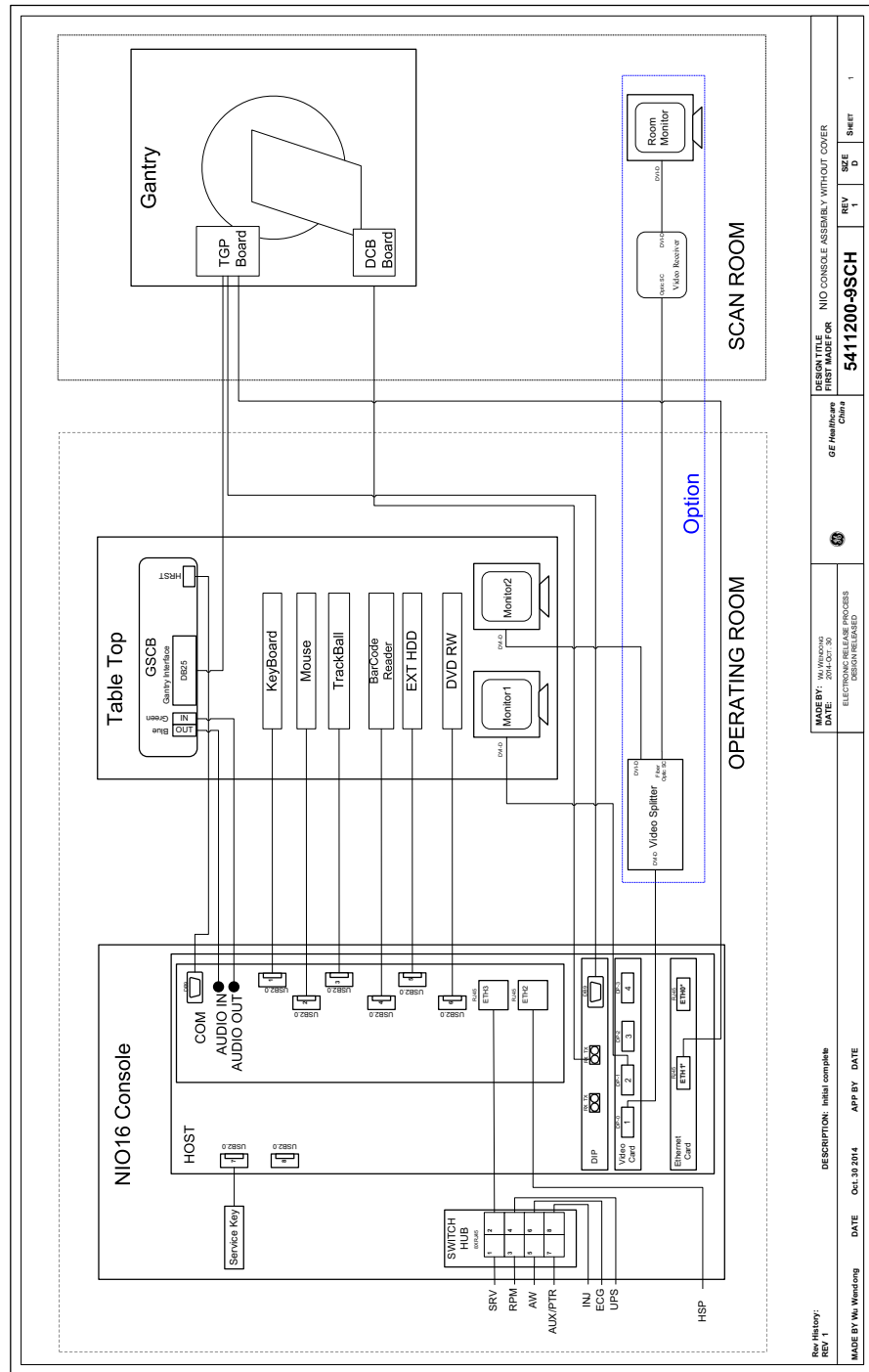
### 4.4 NIO Console Interconnect

Figure 3-13 NIO OC Interconnect\_z800 Host Computer



Information Proprietary to GE Healthcare. Source Master is stored on the CT Products Engineering ECAD database. Template Revision A - 5/26/2001

Figure 3-14 NIO OC Interconnect\_z820 Host Computer



## 4.5 Host Computer Connections

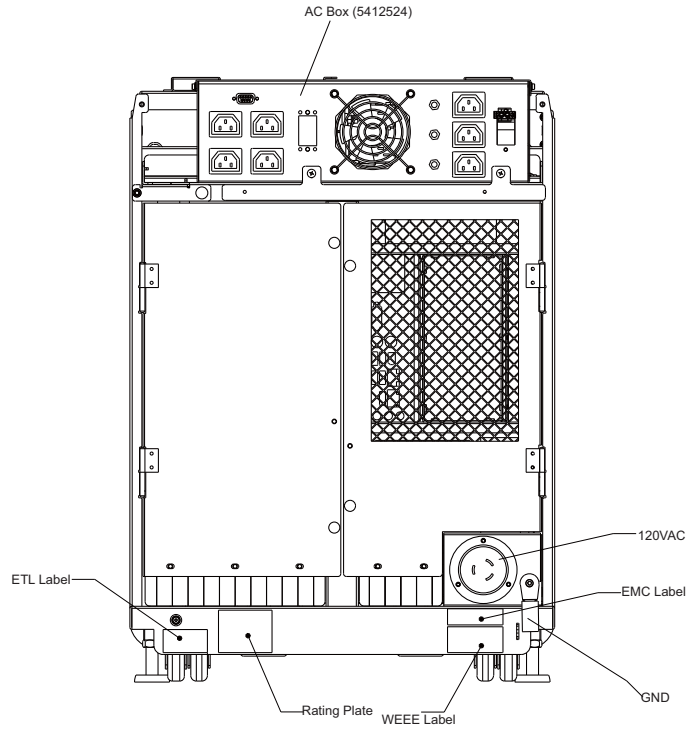


**NOTICE**

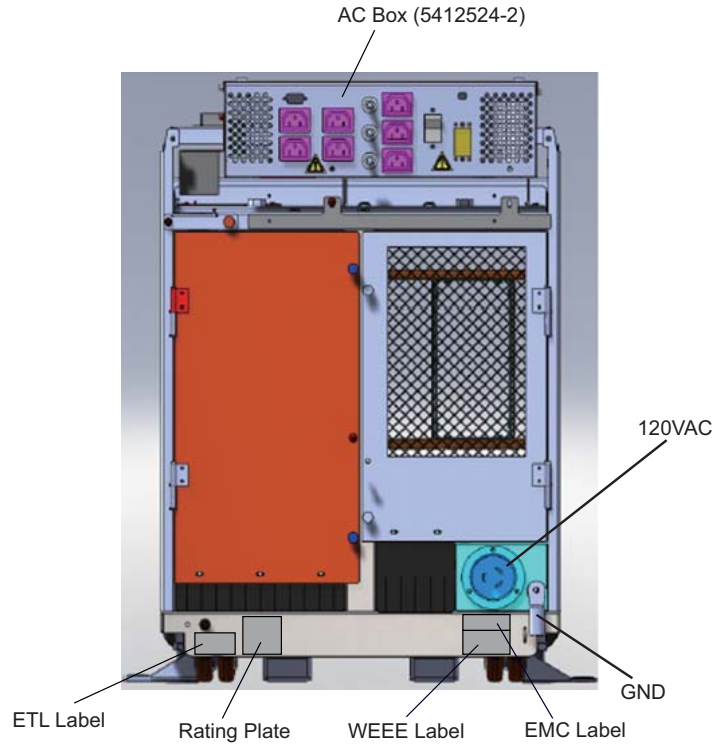
Potential for equipment damage Never connect a mouse or keyboard with the host computer powered "ON". Doing so can destroy components within the host computer.

- 1.) Open the right side of the console rear panel.

**Figure 3-15 NIO Rear View with 5412524 AC BOX**



**Figure 3-16 NIO Rear View with 5412524-2 AC BOX**



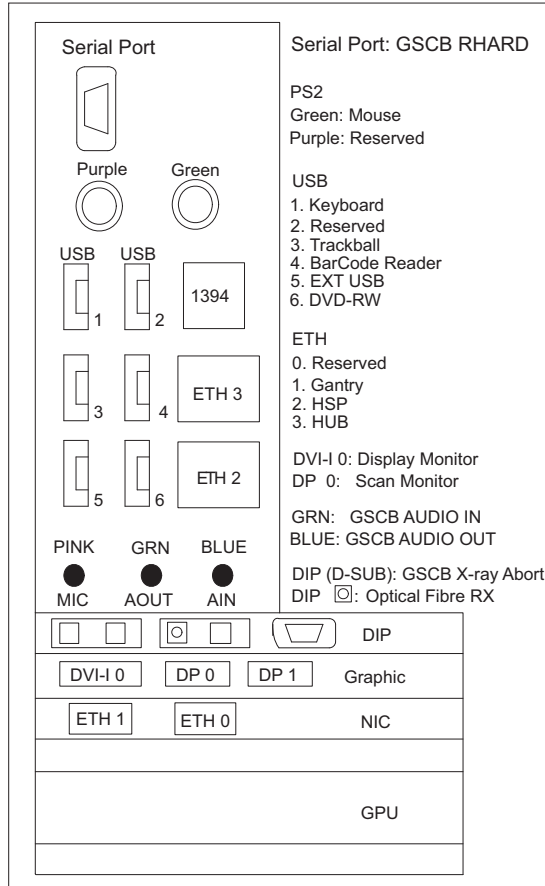
2.) Connect the power cable and ground cable to the console rear panel. (See [Figure 3-15](#))

PART NUMBER		DESCRIPTION
SHORT	LONG	
2343531-2	2343531	120VAC Power Cable from PDU to OC
2371450-4	2371450-3	Ground, Raceway to OC

**Table 3-12 Console Cable Connections**

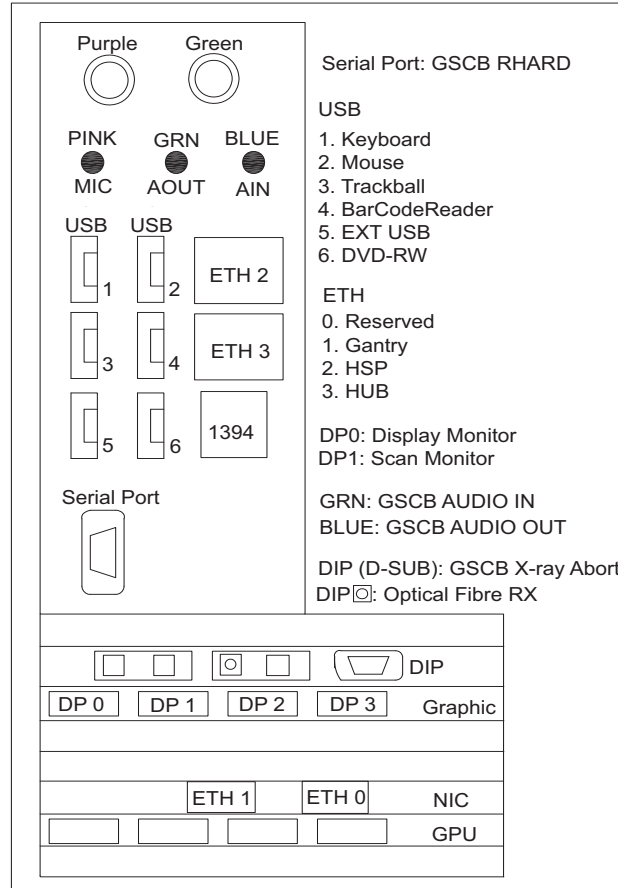
3.) Connect the all cables (see [Table 3-5](#) and [Table 3-6](#)) to the rear of Host Computer referring to the drawing below ([Figure 3-17](#) and [Figure 3-18](#)).The drawing is also printed on the right rear door of the console.

**Figure 3-17 Z800 Host Computer Connections**



**NOTE:** EXT USB is for DVD Tower External HD Drive  
 DVD-RW is for DVD Tower DVD-R / CD-R Drive

**Figure 3-18 Z820 Host Computer Connections**



**NOTE:** EXT USB is for DVD Tower External HD Drive  
 DVD-RW is for DVD Tower DVD-R / CD-R Drive

## 4.6 Optional Long Cable Connections

In most cases the Console peripherals such as Monitors, Keyboard, Mouse and GSCB will be mounted to, or place on top of the Console Unit. In some cases these items may be placed to a short distance away form the actual Console Unit on a counter top or other surface requiring additional extension cables.

Refer to **Service Methods -> Installation -> Option -> Console Long Cable Kit Installation Manual (5456816-1EN)** for the detailed information.

## 4.7 Switch Hub Connections

Switch Hub located on the left bottom of the console. Plug cables into Switch Hub on console.

Figure 3-19 Switch Hub Location

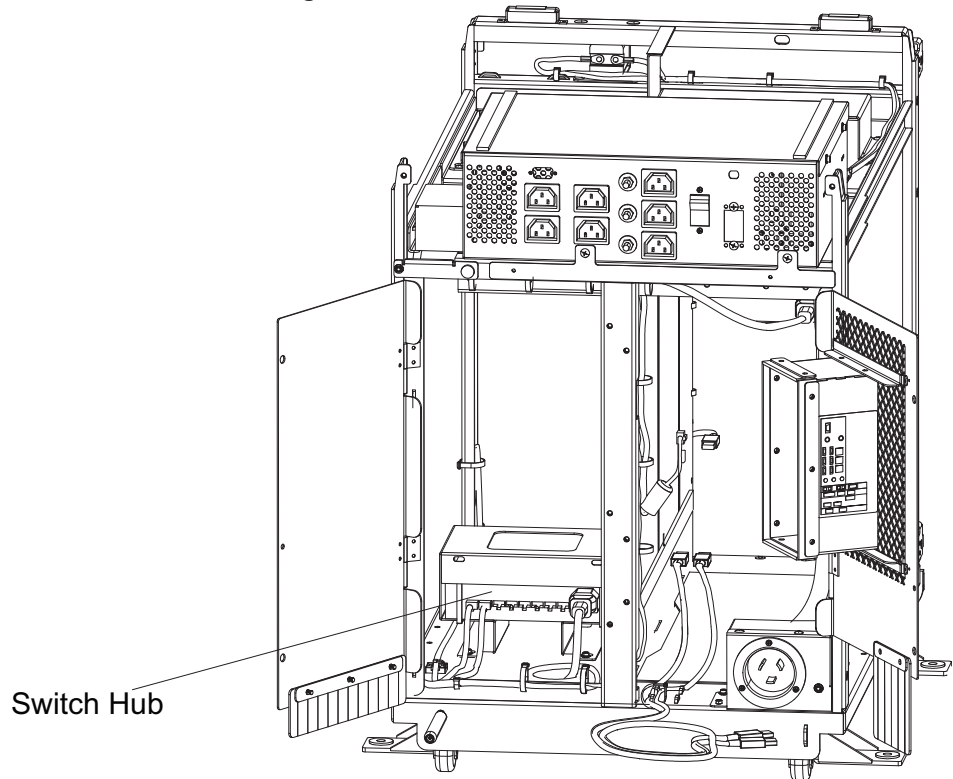
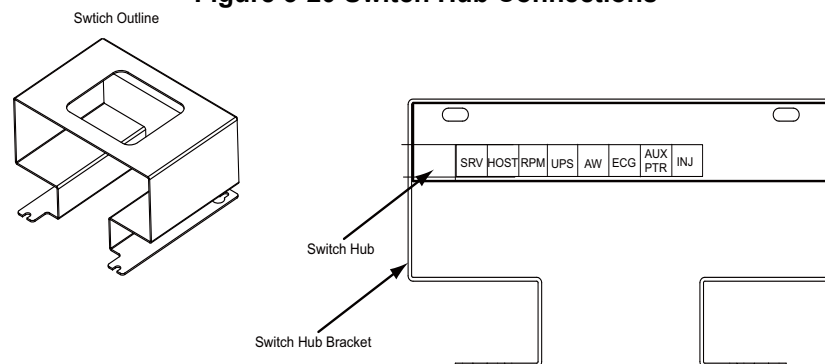


Figure 3-20 Switch Hub Connections



## 4.8 AC Box Connections

**CAUTION** The outlets are not for General Use. Operator Console outlet has a rating for 2.5A at 120VAC. Accessories should not exceed above rating.

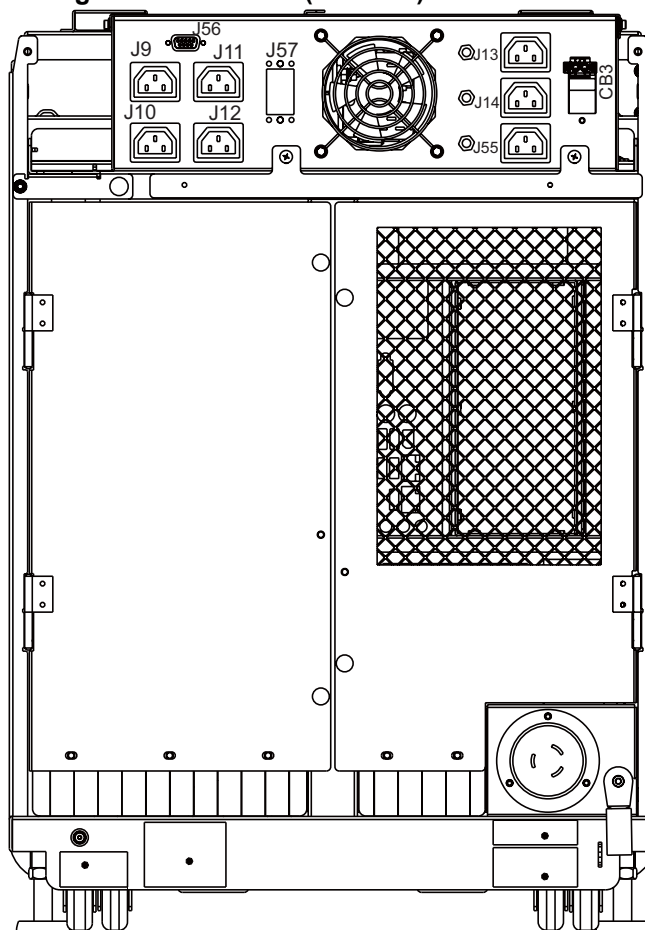
Note: Console power is single phase power. Outlet assigned is not critical.

- 1.) Connect the console power cable and ground cable to the console power panel.
- 2.) Connect console component power cords as listed in [Table 3-13](#). (“J numbers” increment from top to bottom, left to right)

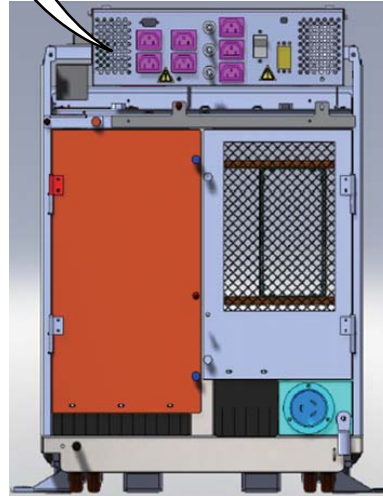
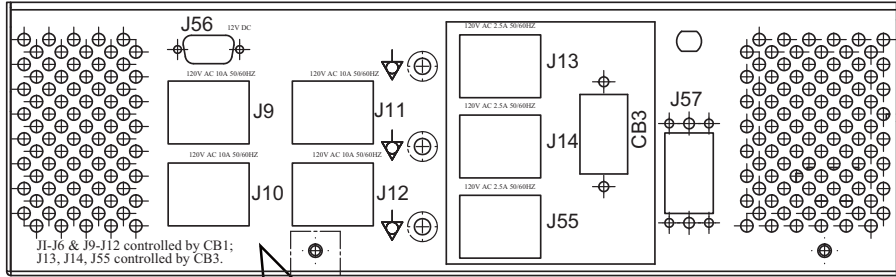
Number	Description
J9	Display Monitor Power Connection
J10	Scan Monitor Power Connection
J11	Peripheral Media Tower Power Connection
J12	In-Room Monitor Connection
J13	Injector Power Connection
J14	RPM Power Connection
J56	GSCB Power Connection

Table 3-13 AC Box Outlet Assignments

Figure 3-21 AC Box (5412524) Connections



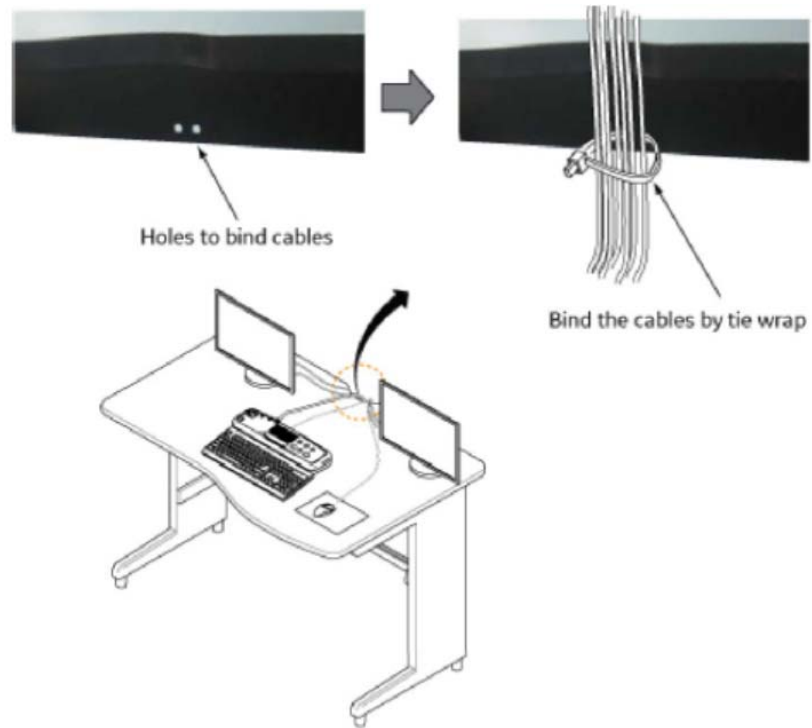
**Figure 3-22 AC Box (5412524-2) Connections**



## 4.9 Cable Arrangement

Arrange the cables appropriately by using the cable clamps equipped on the console tables.

**Figure 3-23 Example: Cable Arrangement**



## Section 5.0 OpenOC16 Connection

PART #	DESCRIPTION	CONNECT TO	QUANTITY	LENGTH	
				MM	INCHES
5431909	3.5m USB extension cable for Keyboard	Keyboard	1	3500 ± 50	137.8 ± 1.97
5458346	3.5m USB extension cable for Mouse	Mouse	1	3500 ± 50	137.8 ± 1.97
5315370	CABLE, USB TYPE A-B	PMT media Tower, DVD-RW/USB external HDD	2	2000	78.74
5408703-2	DP to DVI cable, 3 meter	Scan Monitor	1	3000 ± 50	118.11 ± 1.97
5641358	DVI-D to DVI-D Cable, 3 meter	Display Monitor	1	3000 ± 150	118.11 ± 5.9
5432953-6	Power Cable, Peripheral Tower to Open Chassis J5	PMT media Tower	1	3050 ± 50	120 ± 1.97
5478299-6	Power Cable, Display monitor to Open Chassis Console	Monitor	1	3050 ± 50	120 ± 1.97
5478299-5	Power Cable, Scan monitor to Open Chassis Console	Monitor	1	3050 ± 50	120 ± 1.97

**Table 3-14 GE Healthcare Supplied OpenOC16 (Z840 Host Computer) Cables**

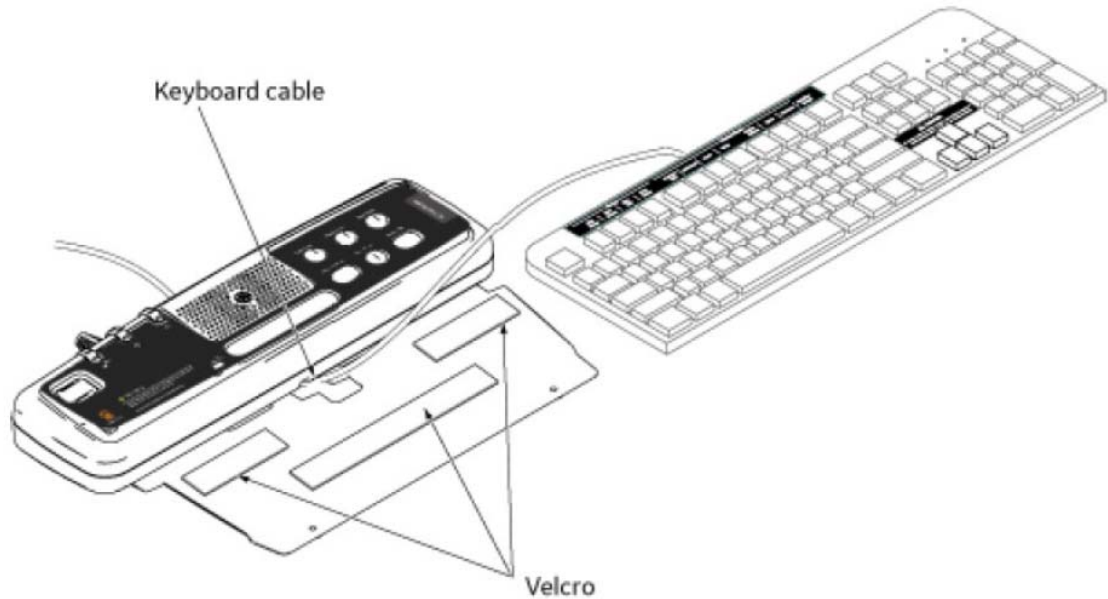
PART #	DESCRIPTION	CONNECT TO	QUANTITY	LENGTH	
				MM	INCHES
5431909	3.5m USB extension cable for Keyboard	Keyboard	1	3500 ± 50	137.8 ± 1.97
5458346	3.5m USB extension cable for Mouse	Mouse	1	3500 ± 50	137.8 ± 1.97
5408703-2	DP to DVI cable, 3 meter	Monitor	2	3000 ± 50	118.11 ± 1.97
5795077	Dongle MINI DP MALE TO DP FEMALE DP1.2a	DP to DVI cable	2	250	9.84
5478299-6	Power Cable, Display monitor to Open Chassis Console	Monitor	1	3050 ± 50	120 ± 1.97
5478299-5	Power Cable, Scan monitor to Open Chassis Console	Monitor	1	3050 ± 50	120 ± 1.97

**Table 3-15 GE Healthcare Supplied OpenOC16 (Z8G4 Host Computer) Cables**

## 5.1 GSCB, Keyboard, Trackball & Mouse Installation

- 1.) Install the GSCB to the metal plate by using four screws.
- 2.) Route the keyboard cable under the GSCB and attach the keyboard to the GSCB metal plate with velcro strip and fit snugly against the GSCB.

Figure 3-24 GSCB and Keyboard



**NOTICE**



**Potential for equipment damage**

**Never connect a mouse or keyboard with the host computer powered “ON”. Doing so can destroy components within the host computer.**

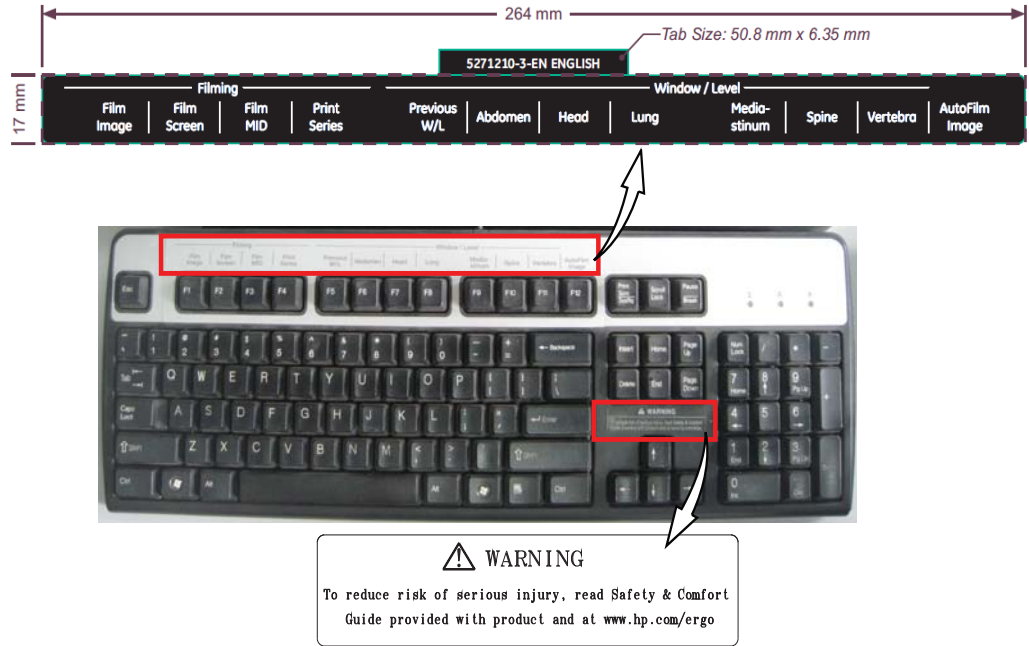
- 3.) Route the keyboard and mouse cables to Console.  
 If the length of keyboard and mouse cables is not enough, add the following cable extensions (shipped with OC collector).

DESCRIPTION	PART NUMBER	CABLE LENGTH	QTY
USB Extension Cable (Mouse)	5458346	3500 mm	1
USB Extension Cable (Keyboard)	5431909	3500 mm	1

Table 3-16 Cable Extension

- 4.) Select the local language keyboard overlay and GSCB film from the keyboard collector (5431062-1-XX) to attach.
  - Select the keyboard overlay and warning label from the keyboard collector (5324605-XX) to attach (see [Figure 3-25](#))

**Figure 3-25 Keyboard Overlay and Warning Label Attached (English)**

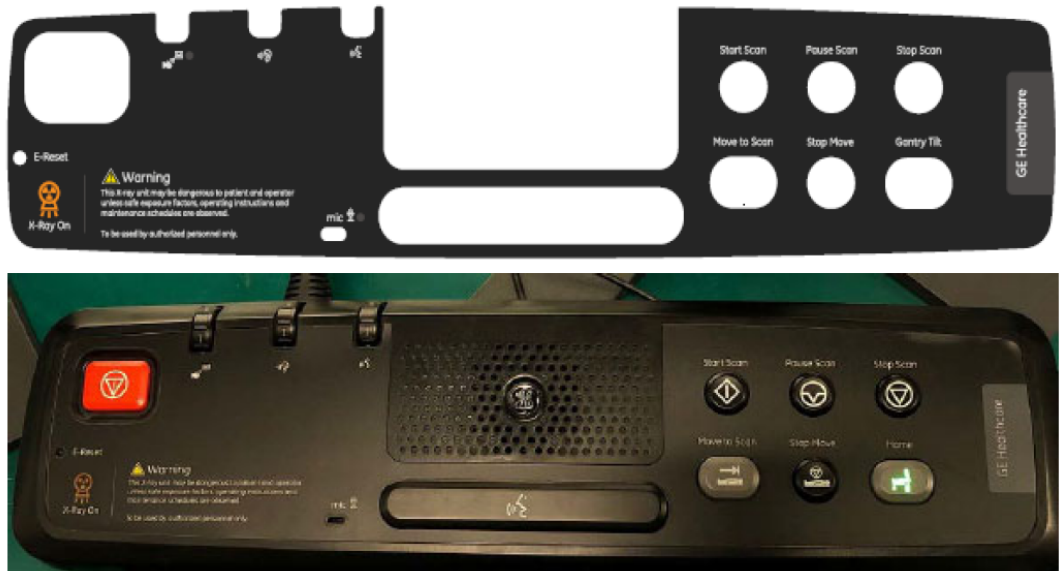


3 - Install Power

- Select the proper GSCB film (with **Tilt/E-Reset**, P/N is 5401237-XXX) to install.

Note: Verify that none of the buttons get caught and stuck under the overlay. Pay close attention to the prescribed tilt button on system with tilt feature.

**Figure 3-26 GSCB connected to the keyboard with Tilt/E-Reset overlay Attached**

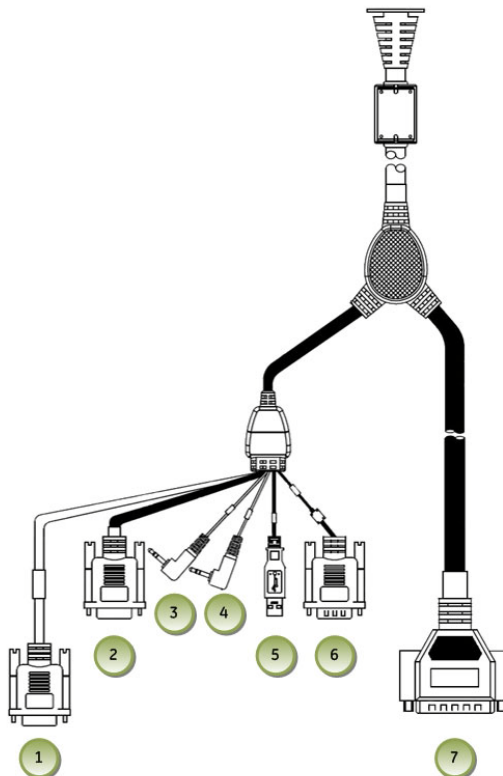


Note: X-ray ON sound can be turned off / on using the switch on GSCB bottom if customer does not like it and if local regulation does not require X-ray ON sound. Detail information refer to **Service Methods->Troubleshooting->NIO16 Console-> GSCB Troubleshooting**.

5.) Route the GSCB cable and connect connectors according to [Figure 3-27](#) and [Table 3-17](#).

Note: The USB cable of GSCB is reserved, please tie it with tie-wrap.

**Figure 3-27 GSCB and Connections**

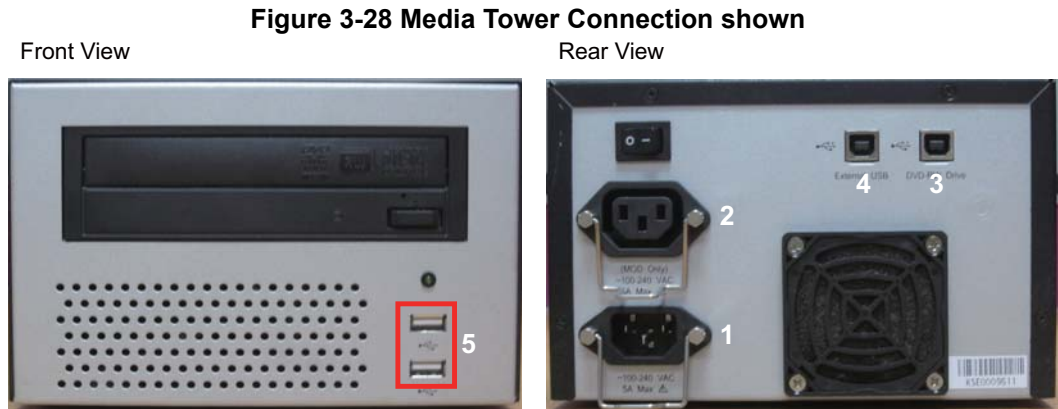


ITEM	DESCRIPTION
1	GSCB - Black DB-9 (Female) Connector Host Computer DIP
2	GSCB - Gray DB-9 (Female) Connector Host Computer RS232
3	GSCB - Green Audio Connector Host Computer Audio Out (Green)
4	GSCB - Blue Audio Connector Host Computer Audio In (Blue)
5	GSCB - USB Connector Reserved
6	GSCB - Black DB-9 (Male) Connector AC Box J56
7	GSCB - Black DB-25 (Male) Connector TGP Gantry Cable

**Table 3-17 GSCB Cables (5404262-20)**

## 5.2 Connecting the Media Tower

### 5.2.1 Connect the Media Tower (5270510-22) on Z840 Host Computer



- 1) Power for Media Tower
- 2) Power for MOD Drive
- 3) DVD-RW Drive
- 4) External USB
- 5) HDD External  
SSA Key

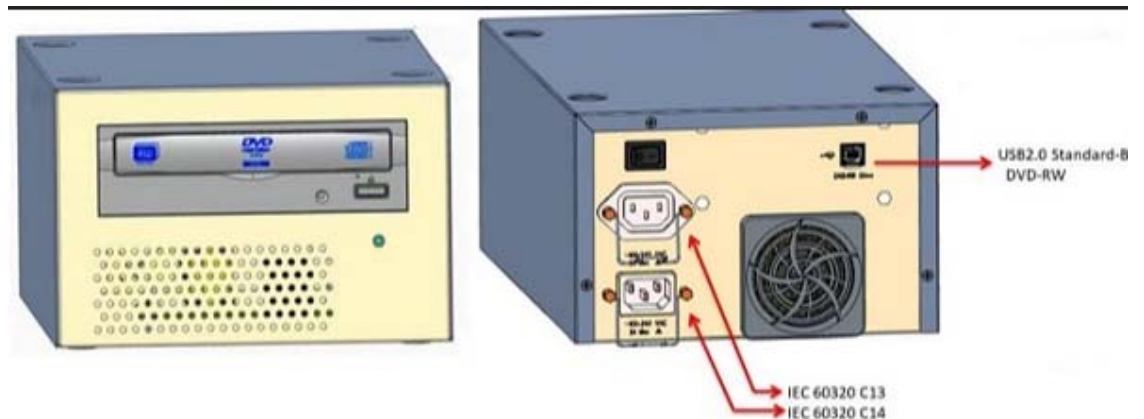
Connect the power cable to the rear of the media tower. Use the following cables for connection.

DESCRIPTION	PART NUMBER	CABLE LENGTH	QTY
USB Cable (PMT)	5315370	2000 mm	2
PMT power cable, Peripheral Tower to OpenOC	5432953-6	3050 mm	1

Table 3-18 Media Tower Cables

### 5.2.2 Connect the Media Tower (5270510-23) on Z8G4 Host Computer

**Note:** Media Tower is an Option for OpenOC with Z8G4 Host PC.



Connect the following cables to the rear of the media tower. Use the following cables for connection.

DESCRIPTION	PART NUMBER	CABLE LENGTH	QTY
USB Cable (PMT)	5315370	2000 mm	2
Interconnect Power Cord to OpenOC (with Z8G4) AC Box	5466460-4	3050 mm	1

**Table 3-19 Media Tower Cables**

### 5.3 Connecting the LCD Monitor



**NOTICE** Equipment Damage Possible

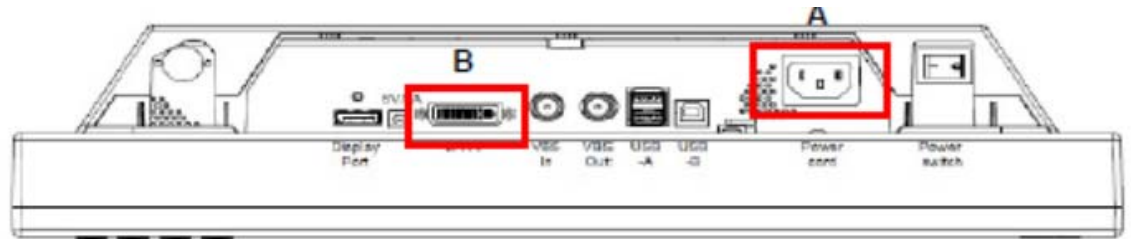
Do not touch the video signal cable connector pins as this might bend them. When connecting the video signal cable, check the alignment of the HD15 and DVI connector. Do not force the connector in the wrong way, otherwise the pins might bend.

#### 5.3.1 Connecting the Scan Monitor and Image Monitor for Z840 Host Computer

DESCRIPTION	PART NUMBER	CABLE LENGTH	QTY
Scan Monitor Power Cable	5478299-5	3050 mm	1
Image Monitor Power Cable	5478299-6	3050 mm	1
Scan Monitor Video Cable	5408703-2	3000 mm	1
Image Monitor Video Cable	5641358	3000 mm	1

Table 3-20 Monitor Cables for Z840

Figure 3-29 EIZO (DIN) LCD Monitor Cable Connectors



3 - Install Power

**Figure 3-30 HP LCD Monitor Cable Connectors**



ITEM	DESCRIPTION
A	Power Cable Connection
B	DVI Video Connection – Scan Monitor (left) – Display /Image Monitor (Right)

**Table 3-21 LCD Monitor Connections**

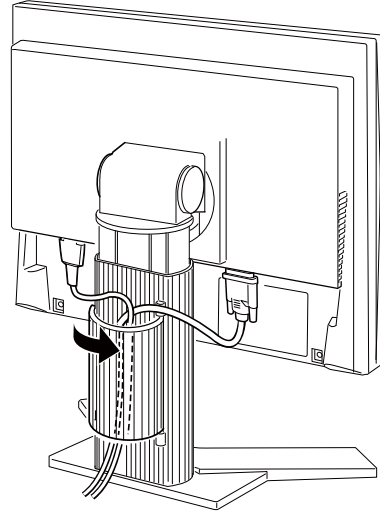
**Scan Monitor**

- Video cable: Z840 PC DP to Monitor DVI
- Power cable: AC Box J1 to Monitor power
- Route through the cable keeper

**Image Monitor**

- Video cable: Z840 PC DVI to Monitor DVI
- Power cable: AC Box J2 to Monitor power
- Route through the cable keeper

**Figure 3-31 Cable Routing and Keeper**



**5.3.2 Connecting the Scan Monitor and Image Monitor for Z8G4 Host Computer**

Note: Connect the Mini DP-DP Dongle (5795077) to the monitor video cable (5408703-2)

DESCRIPTION	PART NUMBER	CABLE LENGTH	QTY
Scan Monitor Power Cable	5478299-5	3050 mm	1
Image Monitor Power Cable	5478299-6	3050 mm	1
Monitor Video Cable	5408703-2	3000 mm	2
Mini DP-DP Dongle Cable	5795077	250 mm	2

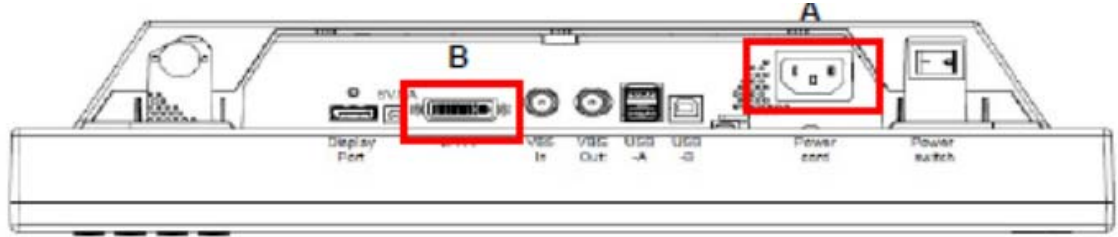
**Table 3-22 Monitor Cables for Z8G4**

**Figure 3-32 EIZO S1934 LCD Monitor Cable Connectors**



3 - Install Power

**Figure 3-33 DIN LCD Monitor Cable Connectors**



**Figure 3-34 HP LCD Monitor Cable Connector**



ITEM	DESCRIPTION
A	Power Cable Connection
B	DVI Video Connection – Scan Monitor (left) – Display /Image Monitor (Right)

**Table 3-23 LCD Monitor Connections**

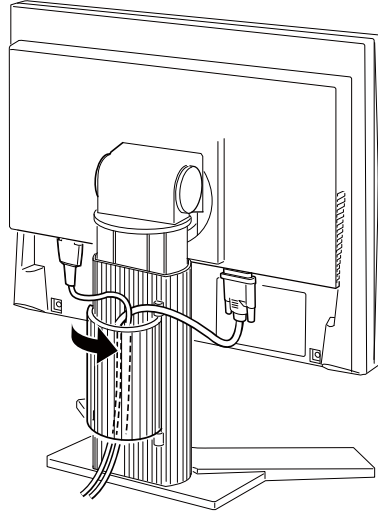
**Scan Monitor**

- Video cable: Z8G4 PC DP to Monitor DVI
- Power cable: AC Box J1 to Monitor power
- Route through the cable keeper

**Image Monitor**

- Video cable: Z8G4 PC DP to Monitor DVI
- Power cable: AC Box J2 to Monitor power
- Route through the cable keeper

**Figure 3-35 Cable Routing and Keeper**

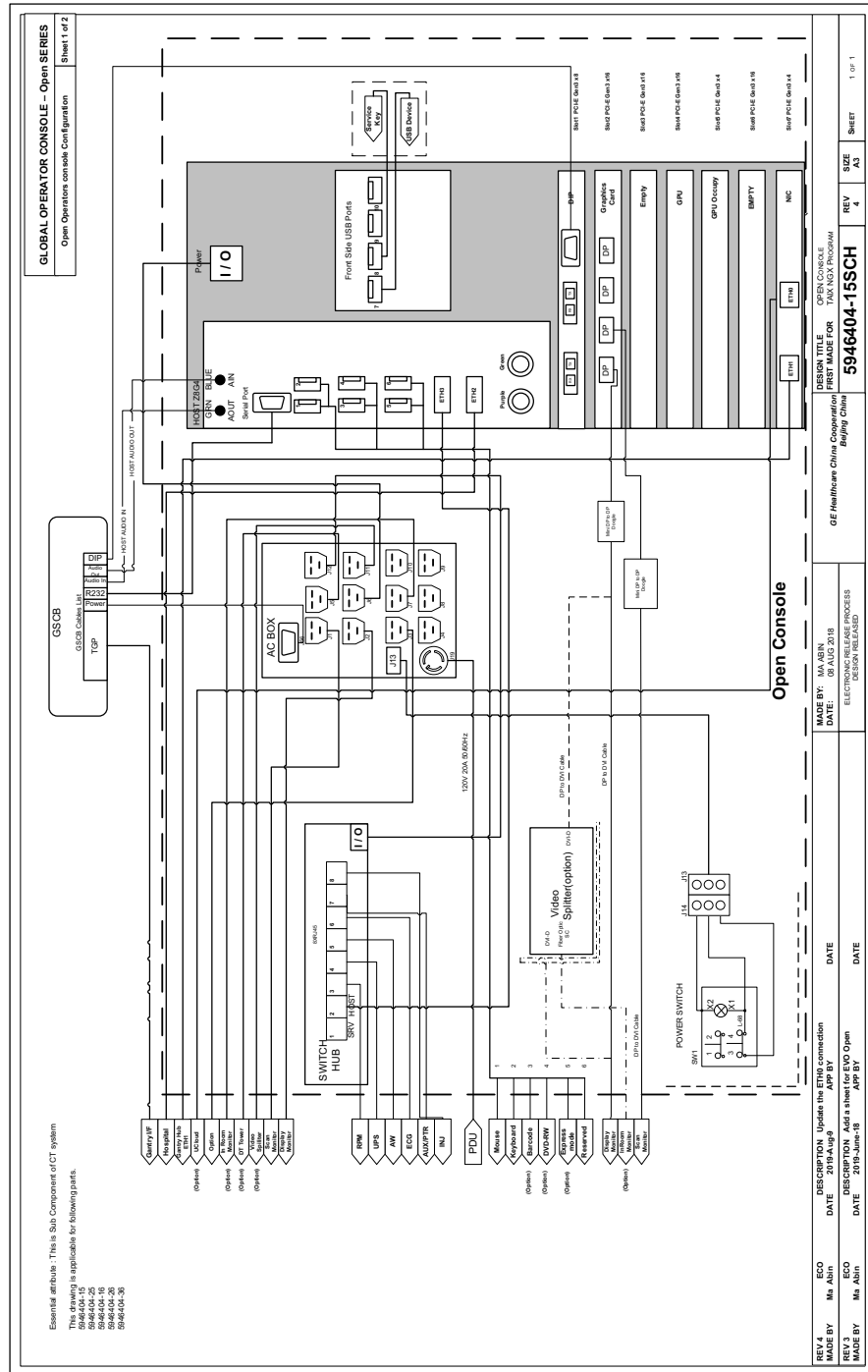


### 5.3.3 LCD Video Monitor Setup

Detail LCD Video Monitor Setup please refer to **Service Methods**→**Align, setup, Cals**→**Console**→ **LCD Video Monitor Setup**.



Figure 3-37 OpenOC Interconnect\_Z8G4 Host Computer



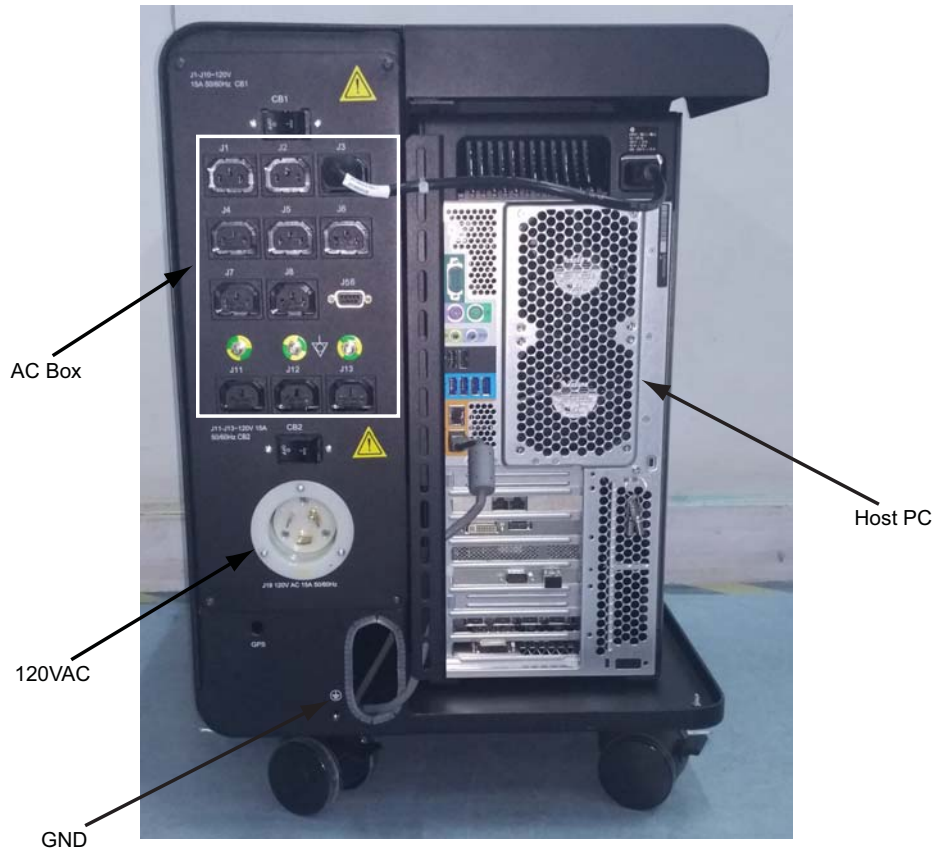
## 5.5 Host Computer Connections

**NOTICE**

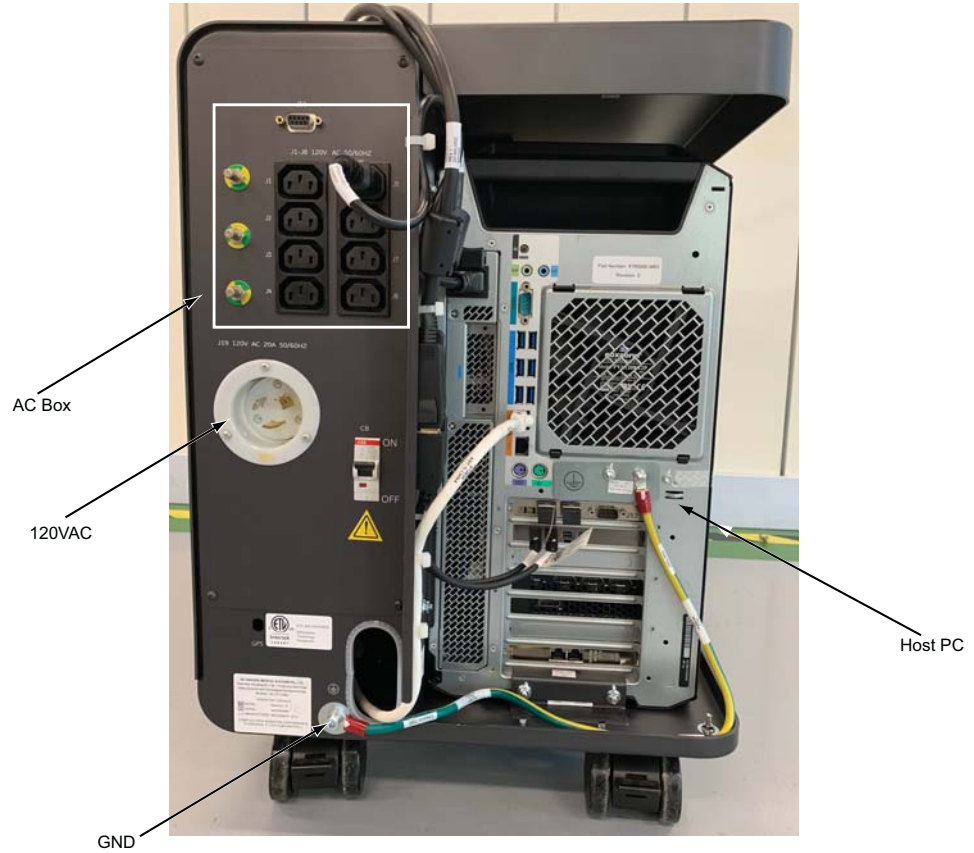
Potential for equipment damage Never connect a mouse or keyboard with the host computer powered "ON". Doing so can destroy components within the host computer.



**Figure 3-38 Open Console (Z840) Rear View with AC BOX**



**Figure 3-39 Open Console (Z8G4) Rear View with AC BOX**



3 - Install Power

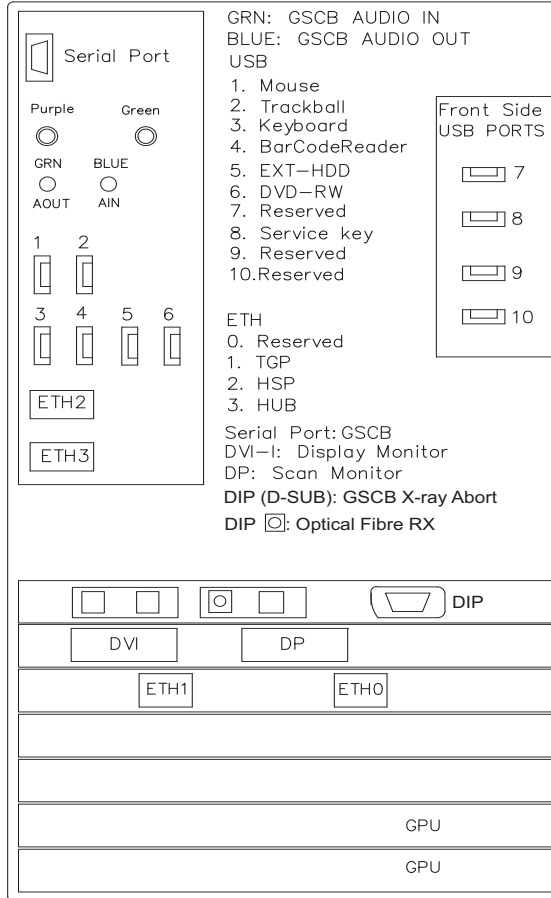
- 1.) Connect the power cable and ground cable to the console rear panel. (See [Figure 3-38](#))

PART NUMBER		DESCRIPTION
SHORT	LONG	
2343531-2	2343531	120VAC Power Cable from PDU to OC
2371450-4	2371450-3	Ground, Raceway to OC

**Table 3-24 Console Cable Connections**

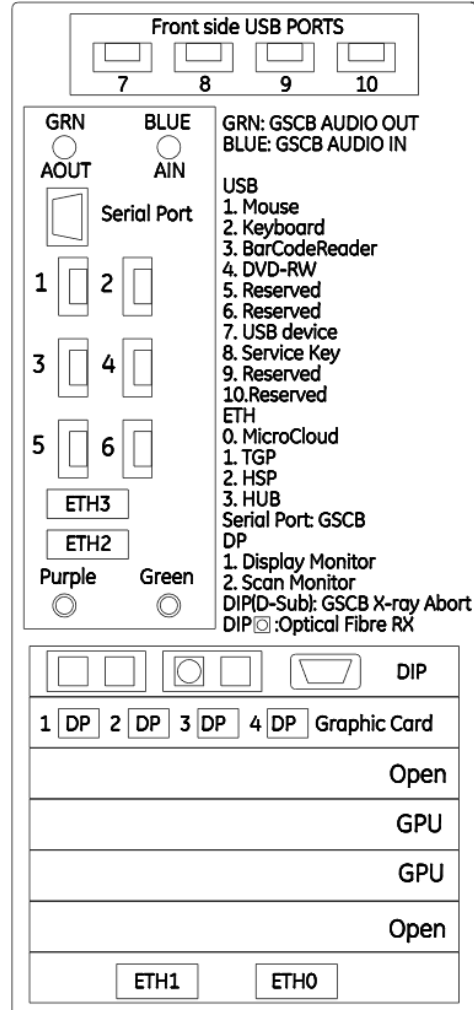
- 2.) Connect the all cables (see [Table 3-14](#)) to the rear of Host Computer referring to the drawing below ([Figure 3-40](#)).The drawing is also printed on the right rear door of the console.

**Figure 3-40 Z840 Host Computer Connections**



**NOTE: EXT HDD is for DVD Tower External HD Drive  
 DVD-RW is for DVD Tower DVD-R / CD-R Drive**

**Figure 3-41 Z8G4 Host Computer Connections**



3 - Install Power

## 5.6 Optional Long Cable Connections

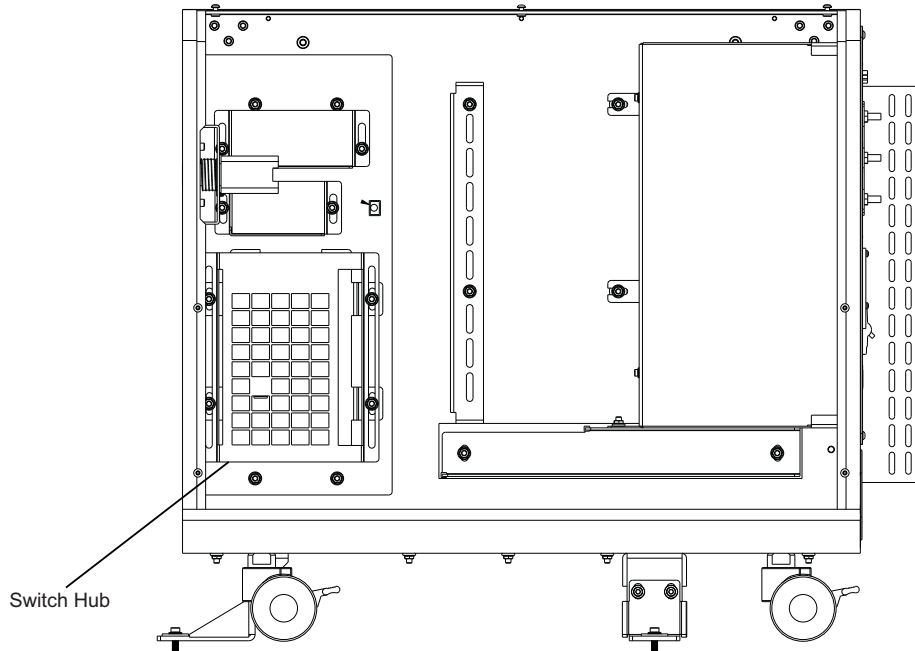
In most cases the Console peripherals such as Monitors, Keyboard, Mouse and GSCB will be mounted to, or place on top of the Console Unit. In some cases these items may be placed to a short distance away form the actual Console Unit on a counter top or other surface requiring additional extension cables.

Refer to **Service Methods -> Installation -> Option -> Console Long Cable Kit Installation Manual (5456816-1EN)** for the detailed information.

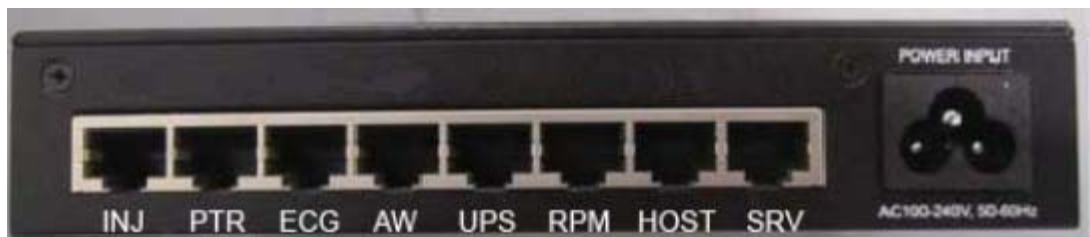
## 5.7 Network Switch Hub Connections

Network Switch located inside the OpenOC chassis. Plug cables into Network Switch on console.

**Figure 3-42 Network Switch Hub Location**



**Figure 3-43 Network Switch Hub Connections**



## 5.8 AC Box Connections

### 5.8.1 AC Box Connections for Z840

**CAUTION** The outlets are not for General Use. Operator Console outlet has a rating for 2.5A at 120VAC. Accessories should not exceed above rating.

Note: Console power is single phase power. Outlet assigned is not critical.

- 1.) Connect the console power cable and ground cable to the console power panel.
- 2.) Connect console component power cords as listed in [Table 3-25](#). (“J numbers” increment from top to bottom, left to right)

Number	Description
J1	Scan Monitor Power Connection
J2	Display Monitor Power Connection
J4	In-Room Monitor Connection
J5	Peripheral Media Tower Power Connection
J12	RPM Power Connection
J13	Injector Power Connection
J56	GSCB Power Connection

**Table 3-25 AC Box Outlet Assignments (Z840)**

**Figure 3-44 Open Console (Z840) AC Box Connections**



### 5.8.2 AC Box Connections for Z8G4

**CAUTION** The outlets are not for General Use. Operator Console outlet has a rating for 2.5A at 120VAC. Accessories should not exceed above rating.

Note: Console power is single phase power. Outlet assigned is not critical.

- 1.) Connect the console power cable and ground cable to the console power panel.
- 2.) Connect console component power cords as listed in [Table 3-26](#). (“J numbers” increment from top to bottom, left to right)

Number	Description
J1	Scan Monitor Power Connection
J2	Display Monitor Power Connection
J3/J4	In-Room Monitor Connection
J5	Peripheral Media Tower Power Connection
J7	In-Room Monitor
J11	Video Splitter
J12	Switch Hub
J13	Injector Power Connection
J56	GSCB Power Connection

**Table 3-26 AC Box Outlet Assignments**

**Figure 3-45 Open Console (Z8G4) AC Box Connections**

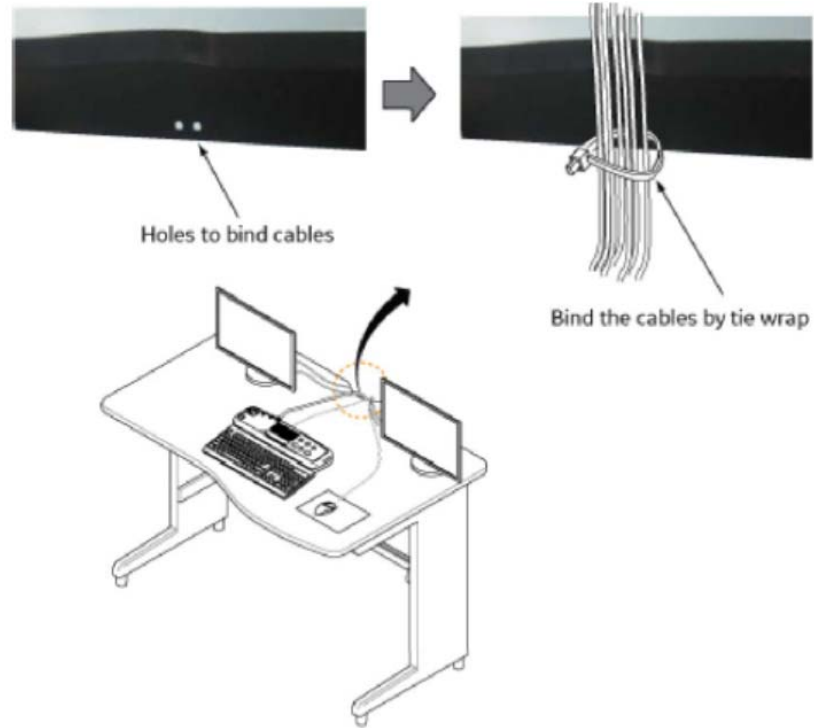


3 - Install Power

## 5.9 Cable Arrangement

Arrange the cables appropriately by using the cable clamps equipped on the console tables.

**Figure 3-46 Example: Cable Arrangement**



## Section 6.0 Install Options

### 6.1 Install Optional Bar Code Reader

Follow the installation procedures in the Bar Code Reader box.  
When finished neatly dress all cables.

### 6.2 Install Optional Remote Monitor

Follow the installation procedures in the Remote Monitor box.

### 6.3 AVIMOS Camera Optional

Follow the instructions (5863844-1EN) to install. This is a ceiling/wall-mounted option, check that the junction plate is installed correctly with the holes in the correct location.

GE will provide two junction plates (Standard - 5863746 and Pipe - 5863748). If the junction plates supplied by GE can not meet the requests of the building structure, the customer's architect can design and install the equivalent junction plate with sufficient strength to hold the camera.

Note: The customer's architect is responsible for installing of junction plate. The system manufacturer will NOT inspect and test that the fixing methods between the Junction Plate and the building structure meet the loading capacity specified (recommend a 4x safety factor).

### 6.4 Install Cardiac Gating IVY Monitor and Stand Option

Refer to the instruction shipped with the option. This option is attached to the Gantry Option Interface, and should only be mounted on the non-motor side of the gantry. Neatly dress all cables along the gantry base so that the base covers fit properly.

Note: For Gantry with GOB, Monitor power will plug into the wall. For Gantry with IPC board, Monitor power will plug into the Gantry or Console.

### 6.5 Install Respiratory Gating Option

Refer to the instruction shipped with the option. This option is attached to the Gantry Option Interface, and should only be mounted on the non-motor side of the gantry. Neatly dress all cables along the gantry base so that the base covers fit properly.

Note: For Gantry with GOB, Monitor power will plug into the wall. For Gantry with IPC board, Monitor power will plug into the Gantry or Console.

### 6.6 Install Injector Option

Follow the instructions shipped with the option. If this is a ceiling-mounted option, check that the plate is installed correctly with the holes in the correct location.

Note: For Gantry with GOB, Injector power will plug into the wall. For Gantry with IPC board, Injector power will plug into the Gantry.

## **6.7 Customer Accessories (Head Holders and Extender)**

Open the boxes and installed the appropriate language warning labels.

The head holders ship with shims installed to assure proper fit. Check that shims are included and a pair is installed. The holder should fit snugly. Follow the procedure in Section 4.0 of Chapter 3 to install Head Holders.

## 6.8 Install Service Cabinet (Optional)

The service cabinet you receive may ship disassembled. Assembly takes about 1.5 hours.

- 1.) Assemble the cabinet following the instructions located in the cabinets shipping box.
- 2.) When you complete assembly, place the cabinet in the location shown on the site print.
- 3.) Place all service materials shipped with the system in the service cabinet.

## 6.9 Install UPS

Follow the instructions shipped with the UPS option. The option ships with two sets of instructions, a GE set and a Powerware set.

The GE set instructs you to install the connections between the UPS and the PDU and between the UPS and the A1.

Please refer to *UPS Installation manual on service methods->Installation->Option*.

Note: A GE A1 Disconnect with UPS controls is required for this option.

The Powerware set instructs you to internally connect the batteries and do a power-up check. Refer to both manuals for additional guidance.

**WARNING LOCKOUT/TAGOUT IS REQUIRED WHEN WORKING IN THE A1 DISCONNECT.**

# Section 7.0

## Gantry Cable Connections

Please refer to [Figure 3-2](#) for complete system interconnect details.

**Table 3-27 Gantry Cable Connections**

TO	FROM	CABLE DESCRIPTION
Gantry Power Pan	PDU	HVDC
Gantry Power Pan	PDU	440VAC
Gantry Power Pan	PDU	120VAC
Gantry Power Pan	Console	Fiber - <i>Take extreme care when you install the fiber optic DAS data cable. Do not step on, kink, or sharply bend this fragile DAS cable.</i>
Gantry Power Pan	Console	LAN
TGPU/TGPG (J9)	Console	Control
TGP/UTGPG (J11)	PDU	Control

- 1.) If using a rear cable entry box (B7850RC), install it now, before routing cables to gantry.

**NOTICE**



**Potential for equipment damage.**

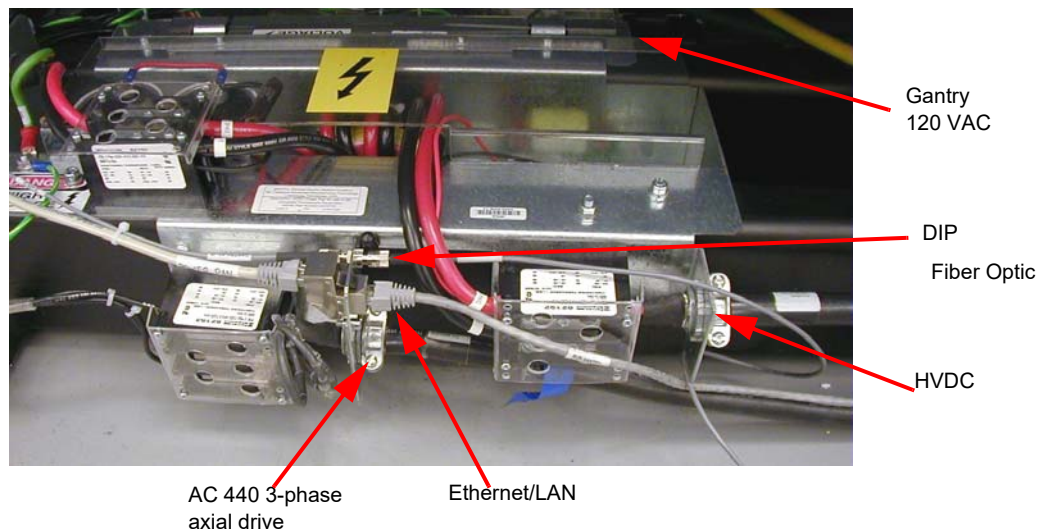
Observe correct polarity when connecting the high voltage DC power. Reversing these leads will result in serious equipment damage. The HVDC positive conductors have red insulation and are labeled “ONE.” The HVDC negative conductors have black insulation and are labeled “TWO.” Lead “ONE” must be connected to lead “ONE,” and lead “TWO” must be connected to lead “TWO.”

Observe correct phase rotation when connecting the axial motor power. Phases one, two and three should be connected top to bottom.

- 2.) Install the cables to the gantry power pan. The power pan is located on the rear of the gantry at its base. See [Figure 3-47](#), [Figure 3-48](#), and [Figure 3-50](#) for connections.

Note: The gantry 120VAC cable may not fit under the gantry frame. Install this cable before gantry placement—or remove the power plug—to route it under the gantry.

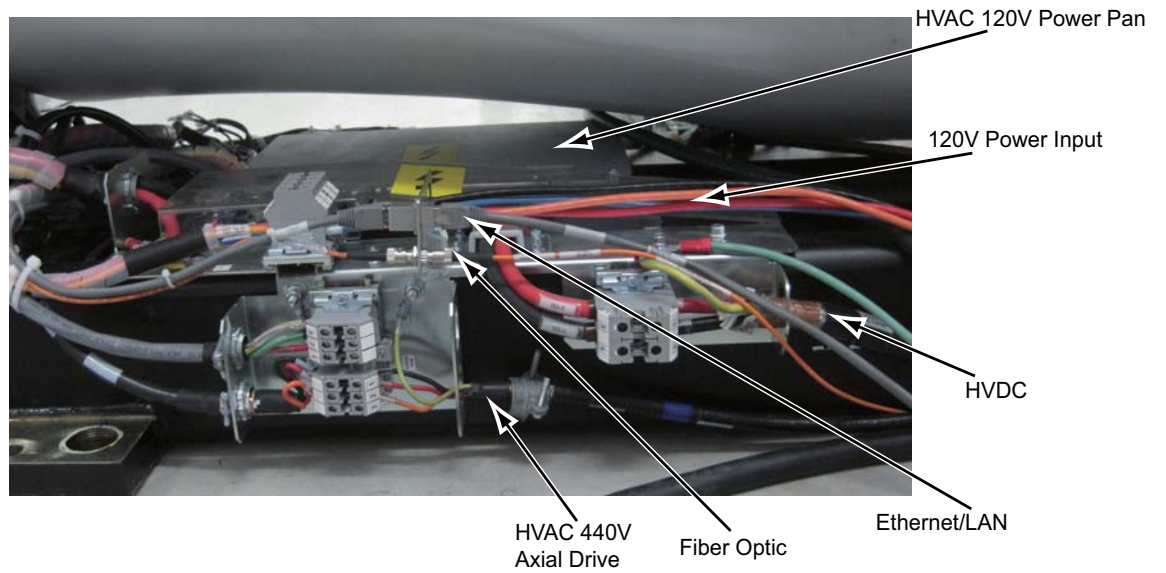
**Figure 3-47 Gantry Power Pan Connections**



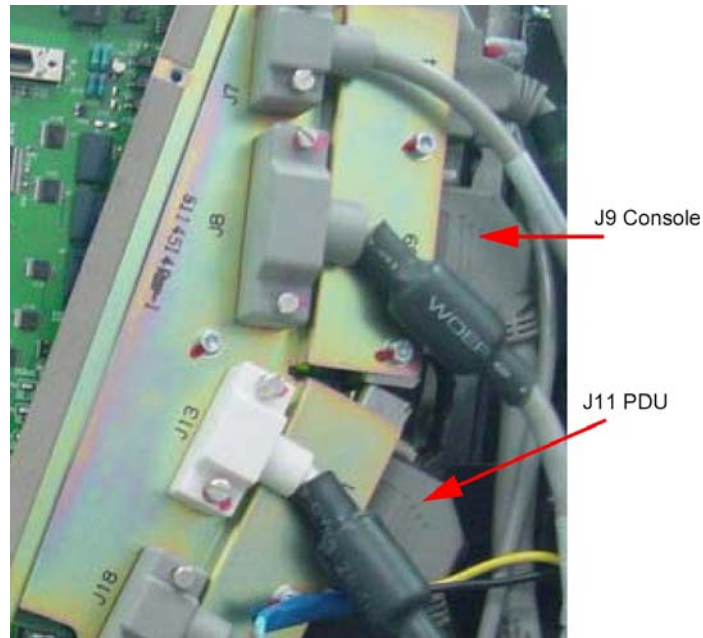
**Figure 3-48 Gantry Power Pan**



**Figure 3-49 Simplified Power Pan Connections**



**Figure 3-50 TGPU/TGPG Connections**

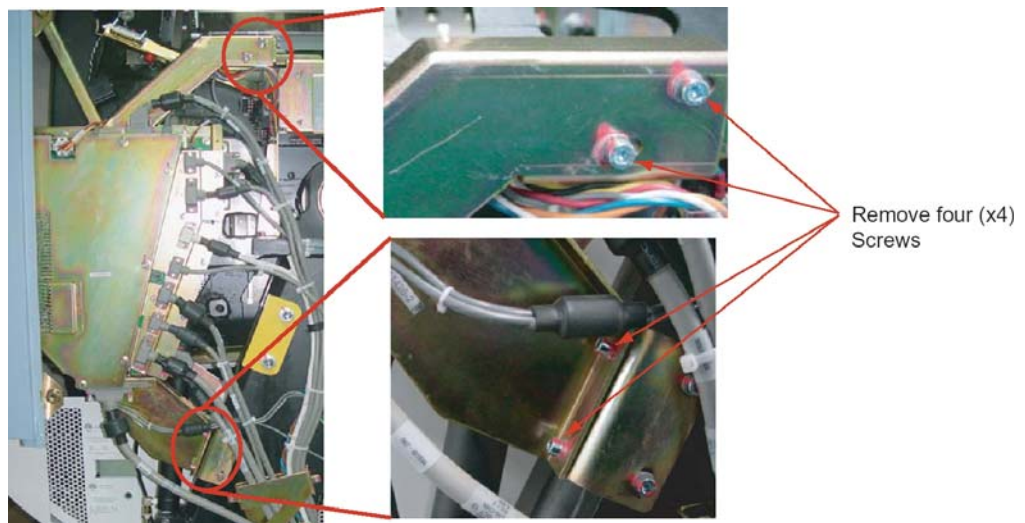


3.) Install cables to the gantry TGPU/TGPG.

Note: If it's difficult to connect the cables to TGPU/TGPG, follow below steps to take the TGPU/TGPG outside the gantry frame (not remove the TGPU/TGPG), so that it is easier to attach the cables to TGPU/TGPG.

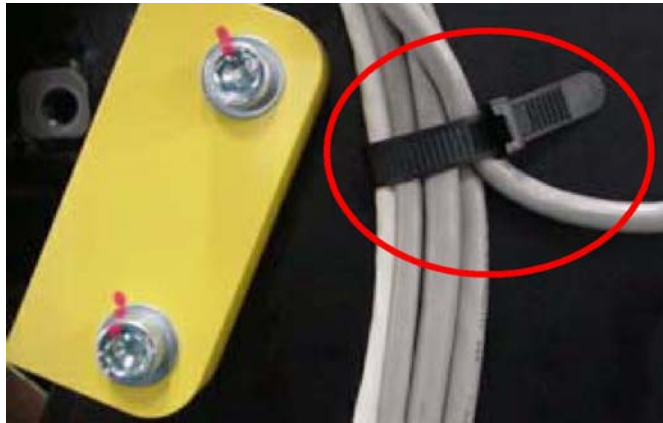
a.) Remove the four (4) screws which secure the TGPU/TGPG assembly on the gantry frame. See [Figure 3-51](#).

**Figure 3-51 TGPU/TGPG Assembly On The Gantry Frame**



b.) Loosen the cable clip. See figure below.

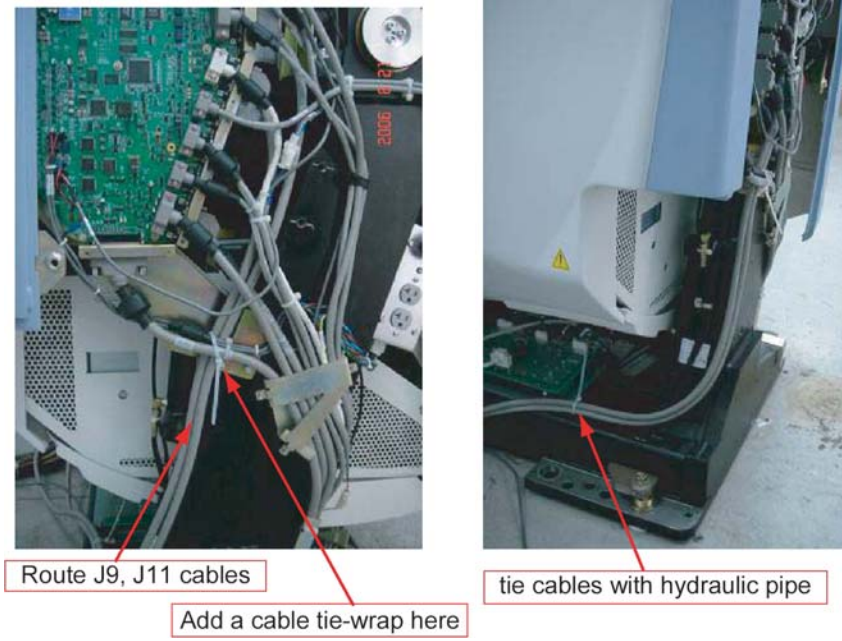
**Figure 3-52 Cable Clip**



- c.) Slightly rotate the TGPU/TGPG outside, so that the cable receptacles on the TGPU/TGPG is easier to access.
- d.) Connect the cables on TGPU/TGPG, then install the TGPU/TGPG assembly with reversed order through step c) to a).

- 4.) Route J9 and J11 cables behind all cables at this area. See [Figure 3-53](#).

**Figure 3-53 Route Cables**



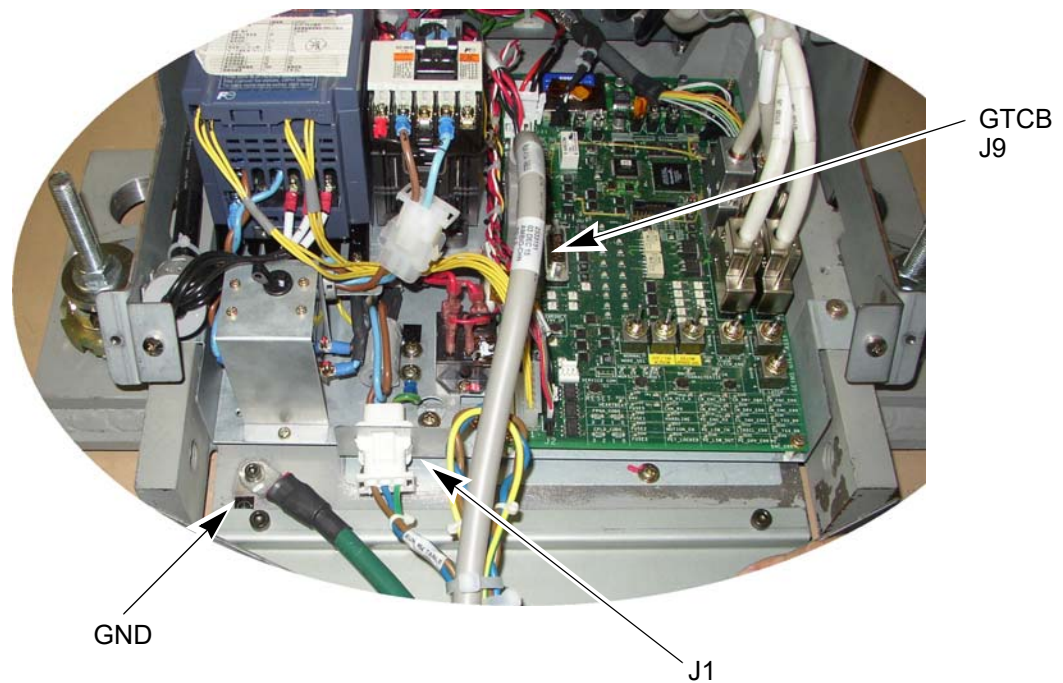
## Section 8.0 Table Connections

Pull and connect the following cables:

**Table 3-28 Table Cable Connections**

TABLE	FROM	CABLE DESCRIPTION
J1 table power	Gantry	120 VAC
J9 table control	Gantry	Signal Cable
Table ground	Gantry	Table ground

**Figure 3-54 Table Connections**



Note: You may need to add the table ground cable.

Check box when complete

# Section 9.0 PDU Cable Connections & Configuration



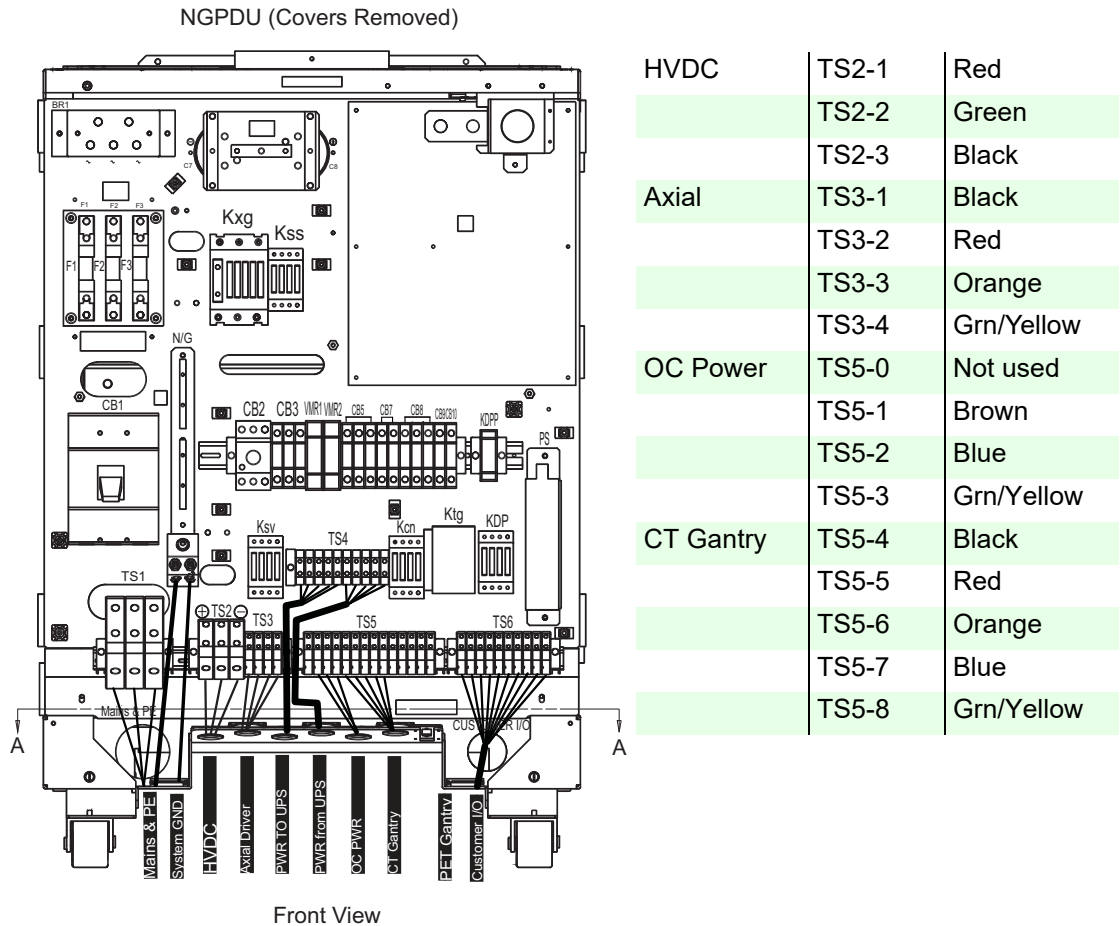
**CAUTION** Do not work in an energized PDU. When working on the PDU, follow this simple rule: Always tag and lock out power to the PDU at the “main” disconnect. Failure to do so can result in electrocution or death.

Do NOT apply power to the PDU until all work has been completed and all PDU covers are in their proper place.

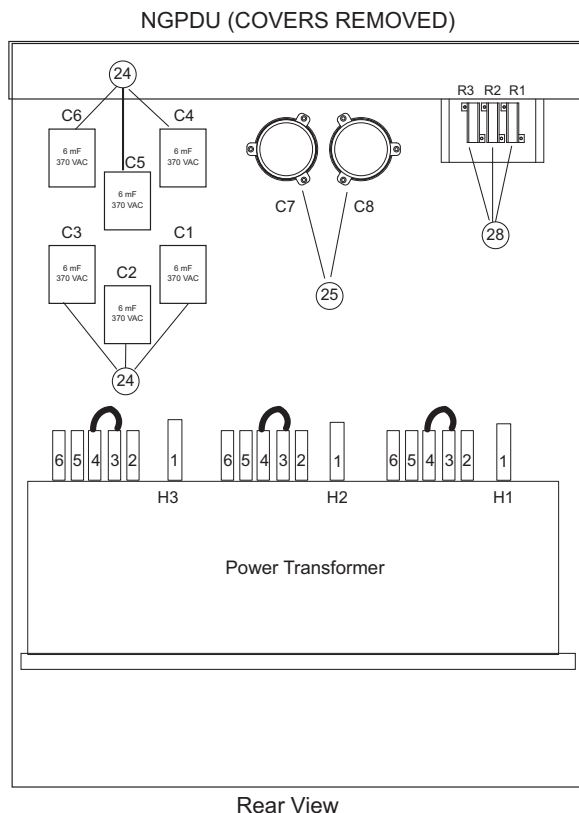
## 9.1 Introduction to NGPDU

As seen in Figure 3-55, a number of cables must be installed throughout the PDU. Specific details on each connection can be found in the sub-sections that follow. Use Figure 3-55 for reference. The PDU has been designed to have cables routed into the PDU from behind and/or beneath it.

**Figure 3-55 PDU Cable Connections for PDU-71- Front**



**Figure 3-56 PDU Cable Connections- rear**

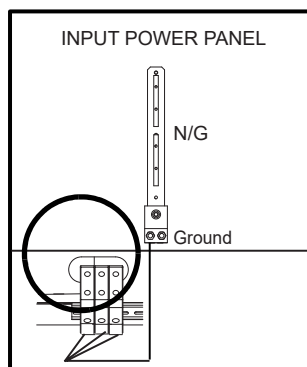


3 - Install Power

**9.1.1 Panel - 380 - 480VAC Mains “TS1” Input Power Connection**

- 1.) Remove the TS1 panel front cover.
- 2.) Strip the wires to fit securely on the power block.
- 3.) Observe incoming phases (L1, L2 and L3) and insert bare leads into power block.
- 4.) Insert “vault” ground into PDU “vault” ground lug.
- 5.) Tighten all fasteners securely and replace the TS1 front panel.

**Figure 3-57 Input Power Panel Connections**

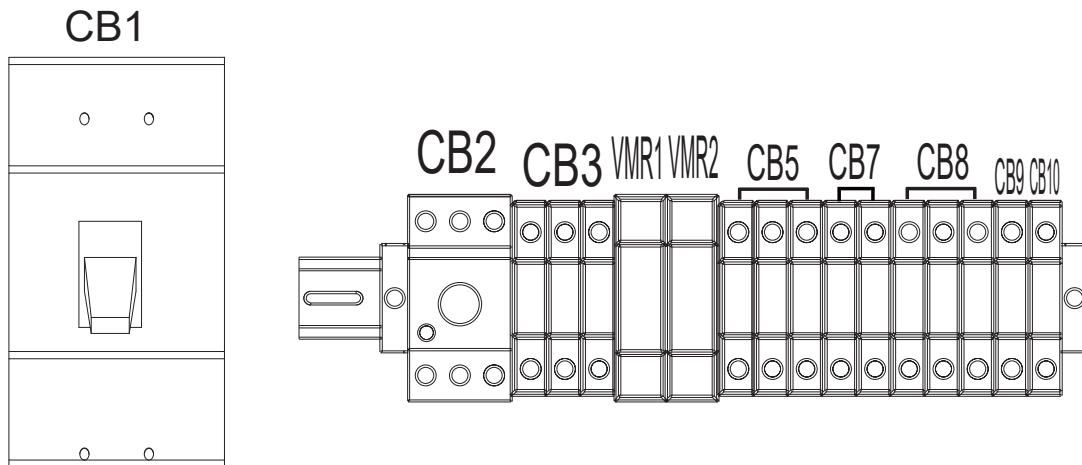


When Mains power is available to the PDU, the “TS1” power light will be illuminated. (See [Figure 3-55](#).)

### 9.1.2 Panel - Circuit Breakers

Place the circuit breakers in the “off/down” position during installation, even with Mains incoming power tagged and locked out. After you have completed work on the PDU, you may return the circuit breakers to the “ON” positions.

**Figure 3-58 Circuit Breaker Panel for PDU-71**



By design, when CB3 is in the “OFF” position, circuit breakers 5, 7, 8, 9 and 10 are switched “OFF”. CB3 is essentially in series with these breakers.

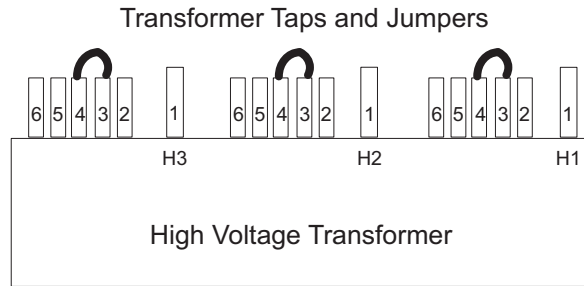
**Table 3-29 Panel Circuit Breaker Descriptions for PDU-71**

CIRCUIT BREAKER	DESCRIPTION
CB2	Circuit Protection (Axial Drive)
CB3	Fully Winding Protection (Master power of CB5, 7, 8, 9 and 10), 120 and 208 VAC
CB5	CT Gantry / CT Gantry option / PET Gantry
CB7	Operator Console
CB8	R3 Power
CB9	NGPDU Control Power Supply / Power monitor relay
CB10	Power monitor relay

### 9.1.3 Transformer (480VAC) Taps

Verify that the transformer taps are set properly. The transformer taps are set to 480 VAC operation at the factory. The taps should be set as shown in [Figure 3-59](#).

**Figure 3-59 PDU Tap Positions for 480 volt operation**

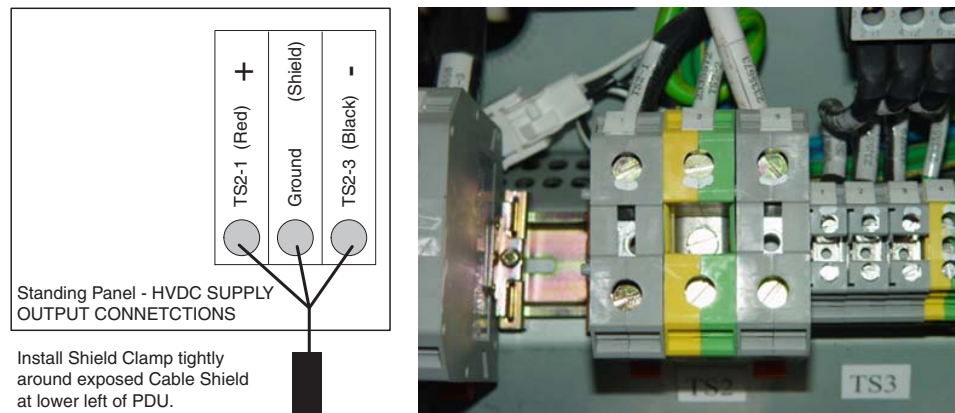


Note: Taps should be shipped as shown for 480 VAC only. For all others, you must move the taps to correct position according to [Figure 3-59](#).

### 9.1.4 HVDC Connection

Connect the internally shielded HVDC cable to TS2 on the standing panel. See [Figure 3-55](#) for the location of the connector and [Figure 3-60](#) for details. Observe polarities and grounds.

**Figure 3-60 HVDC Connection**

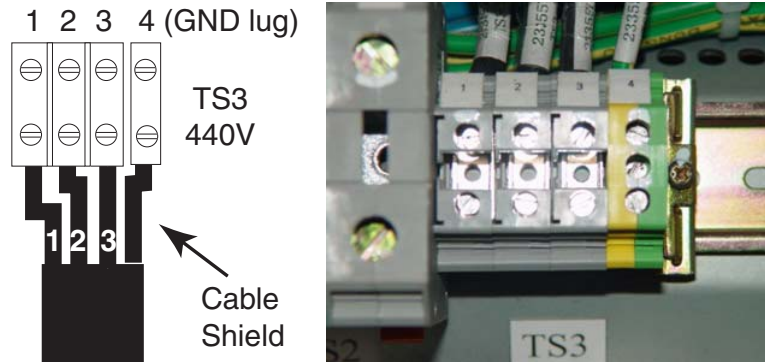


3 - Install Power

### 9.1.5 440V Connection

Connect the internally shielded 440V cable from the gantry to TS3 on the panel. See [Figure 3-55](#) for the location of the connector and [Figure 3-61](#) for details. Observe the labels on the cable leads for proper identification and orientation.

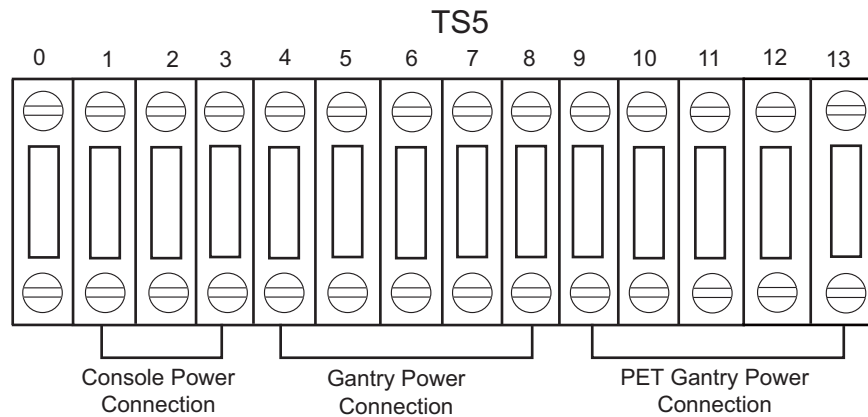
**Figure 3-61 440VAC Connection**



### 9.1.6 Gantry & Console Power Connections (120V)

Both Gantry and Console power cables come pre-terminated. Plug the console power cable wires to TS5, as shown in [Figure 3-62](#)

**Figure 3-62 Gantry & Console Power Connections for PDU-71**



### 9.1.7 Console Power Cable Re-termination

Power cable re-termination should be used as a last resort. Short and long cables are available.

- Carefully remove the power plug and **record the color of the wires** in [Table 3-30](#). The terminals are labelled X, W and G on the plug.

**Table 3-30 Console Power Cable Termination**

TERMINAL	X	W	G
Description	Hot	Neutral	Ground
Color			

- Cut the cable to desired length and dress ends.
- Re-install the power plug, according to the orientations recorded in [Table 3-31](#).

4.) Verify that less than 1 ohm of resistance exists between the following connections:

**Table 3-31 Resistance Verification Points**

FROM PDU PLUG	TO CONSOLE PLUG END	
CB1 -11 (Black) (J5 Phase X (Brown))	Phase X (Brown)	<input type="checkbox"/> Check box when complete
A3 Neutral Buss Bar (Blue) (J5 -13 Phase W)	Phase W (Blue) Neutral	<input type="checkbox"/> Check box when complete
A3 Ground Buss Bar (J5 -22 Ground Green)	Ground (Green) Ground Green screw	<input type="checkbox"/> Check box when complete

### 9.1.8 PDU Control Cable

The PDU control cable comes pre-terminated and should not be re-terminated in the field. Excess cable length must be stored. Simply plug the cable into “J2” on the “A4” panel. Secure it by using the fasteners intergrated into cable’s connector shell.

### 9.1.9 System Ground Connection

Connect the ground wire (green with a yellow strip) from the Table/Gantry raceway ground bus to the system ground lug in the PDU. See [Figure 3-55, on page 234](#), and [Figure 3-63](#), below.

**Figure 3-63 PDU System Ground Connection**

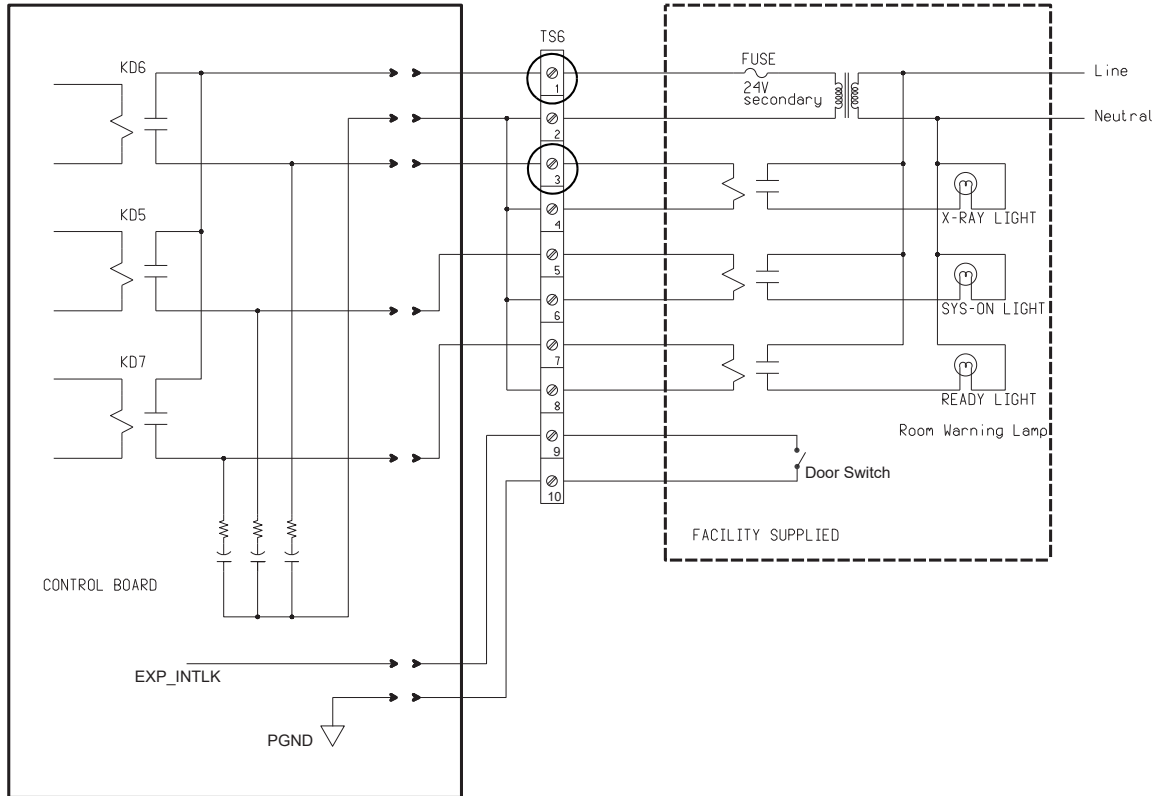


### 9.1.10 Warning Light & Door Interlock Connections

#### 9.1.10.1 Warning Light Configuration & Connection

- 1.) Warning Light is controlled by signals from the system.
- 2.) This step is site specific. The PDU by default is configured for “no” external warning light connection. If you have external warning lights, see [Figure 3-64](#) for proper connection.

**Figure 3-64 Typical TS6 Warning Light & Door Interlock Connections**



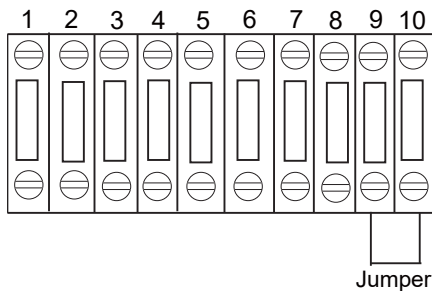
It is recommended that you use the four (4) wire method of adding an X-ray warning light to a room, as shown in [Figure 3-64](#). When using this method, you:

- Minimize EMC interference.
- Increase contact life of the relay used in the PDU.

### 9.1.10.2 Door Interlock Connections

Door interlocks are used to prevent X-Rays from being generated when the scan room door is open. The Door Interlock circuitry in the PDU is shipped from the factory engaged. This means the system cannot generate X-ray until disengaged. A short must exist between pins 9 & 10 for X-ray to be generated. Using a small piece of wire, short pins 1 and 2 together. See [Figure 3-65](#).

**Figure 3-65 Without a Door Interlock**

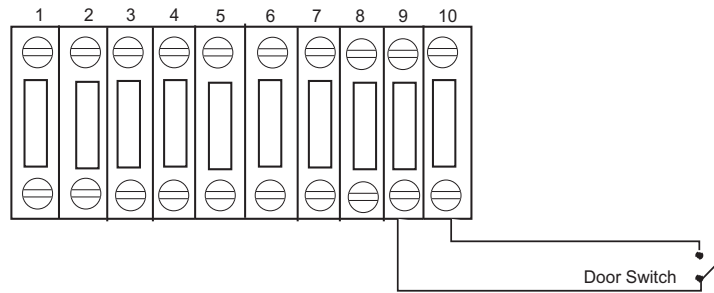


If not using a door switch, add a jumper.

If jumper is not in place, exposures will not be made. Check this jumper if you get scan interlock errors.

To use the system with a door interlock, wire a normally open switch between pins 1 & 2 that is attached to the interlock.

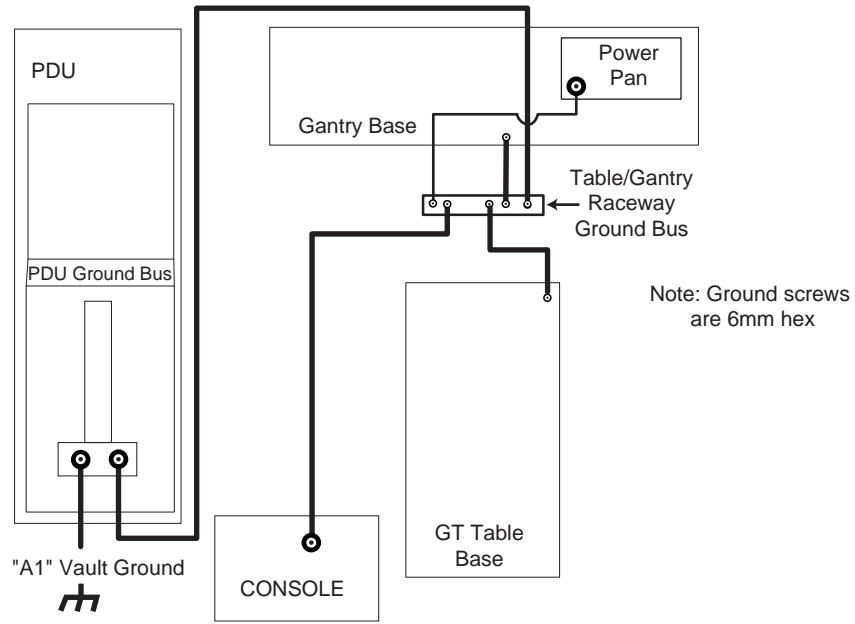
**Figure 3-66 With a Door Interlock**



## Section 10.0 System Ground Connections

As seen in [Figure 3-67](#), the Table/Gantry raceway ground bus is used to centralize all system grounding. The system ground is tied to vault ground at the PDU, through its chassis.

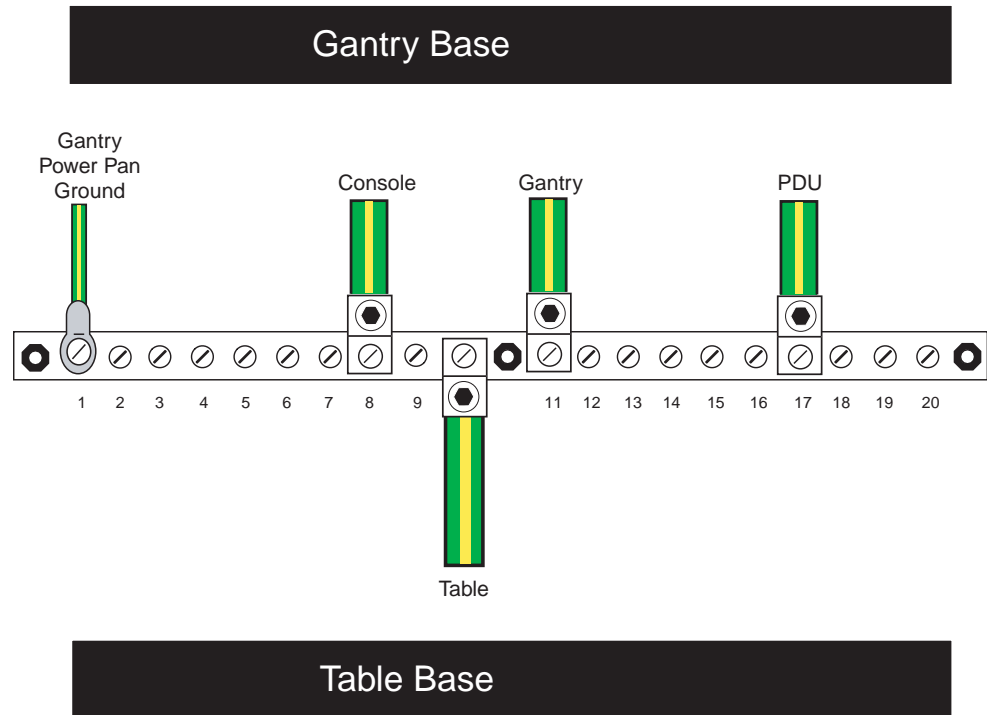
**Figure 3-67 CT System Ground Connections**



The gantry is tied to system ground at a number of points. It is important that all of these ground connections are securely made. See [Figure 3-68](#).

Check that the terminals will not be loosened, by moving or swinging the cables rather strongly by hand.

**Figure 3-68 Table/Gantry Raceway Bus - Grounds**



3 - Install Power

Various types and sizes of wire are used to ground the system. Please use the type and sizes specified in [Table 3-32](#).

**Table 3-32 System Ground Connections**

AWG #	CONNECTION TO	CONNECTION TO
#1/0	PDU	Power Main
#1/0	Gantry (Power Pan)	Raceway
#2	Console	Raceway
#1/0	Gantry	Raceway
#2	Table (frame)	Raceway
#1/0	PDU	Raceway



# Chapter 4

## System Continuity & Ground Checks



**NOTICE Potential for Data Loss and/or Equipment Damage**

To prevent potential data loss and equipment damage, please do the following:

- Record data collected from procedures in this chapter into Form F4879 when directed, located in **Chapter 10** of this book.
- Only use the Installation manual that arrives with your system for installation. Any other revisions of this manual may not exactly match your system.

Note: Use dry cleaning for electro components.

### Section 1.0

## System Continuity & Ground Checks (Mechanical Contractor)

Use this section to check cable and ground connections.

### 1.1 Tools Required

- Digital VOM
- 10m (30 ft) of #18 wire
- 600 VAC meter leads

### 1.2 Procedure

Reference [Figure 4-1: Front View of NGPDU, with Covers Removed](#) on page 247 and : on page 247.



**WARNING**



**USE AND FOLLOW LOCKOUT/TAGOUT PROCEDURES; LOCK OUT WALL POWER.**

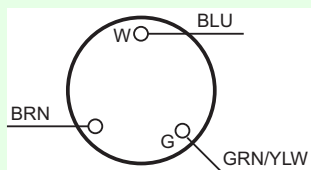
- 1.) Remove all System Power at the A1 Mains Disconnect Panel. Follow Lockout/Tagout procedures.
- 2.) Put the UPS in the Service Position.
- 3.) Remove the PDU A3 input power panel cover.
- 4.) Verify, with a voltmeter, that mains power is disconnected.
- 5.) Verify that less than 1 ohm of resistance exists between the following ground connections:

**Table 4-1 Mains Connections to PDU**

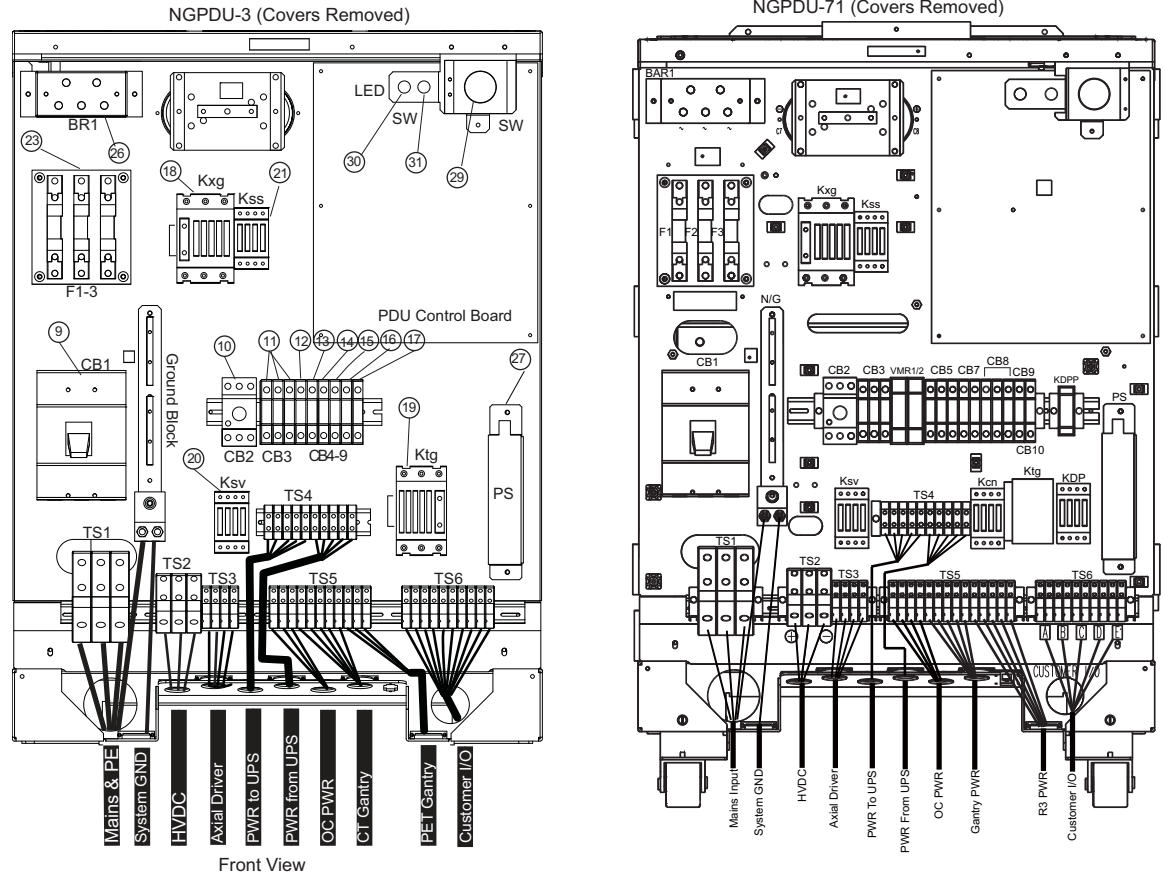
FROM	TO	
Wall ground connection	PDU Cabinet	<input type="checkbox"/> Check box when complete

6.) Verify that less than 1 ohm of resistance exists between the following connections:

**Table 4-2 Resistance Verification Points**

FROM	SIGNAL NAME (COLOR)	TO	
PDU TS2-1	+HVDC (Red)	Gantry HV Power Pan TS1-1	<input type="checkbox"/> Check box when complete
PDU TS2-2	HVDC Ground (Green/Yellow)	Gantry Power Pan Chassis	<input type="checkbox"/> Check box when complete
PDU TS2-3	-HVDC (Black)	Gantry HV Power Pan TS1-2	<input type="checkbox"/> Check box when complete
PDU Ground Bus	HVDC shield	Gantry HVDC cable shield	<input type="checkbox"/> Check box when complete
PDU TS3-1	Axial drive 440vac (Black)	Gantry HV Power Pan TS2-1	<input type="checkbox"/> Check box when complete
PDU TS3-2	Axial drive 440vac (Red)	Gantry HV Power Pan TS2-2	<input type="checkbox"/> Check box when complete
PDU TS3-3	Axial drive 440vac (Orange)	Gantry HV Power Pan TS2-3	<input type="checkbox"/> Check box when complete
PDU TS3-4	Axial drive ground (Green/Yellow)	Gantry Power Pan Chassis	<input type="checkbox"/> Check box when complete
PDU Ground Bus	Axial drive shield	Gantry 440 VAC cable shield	<input type="checkbox"/> Check box when complete
PDU TS5-1	120vac Phase A (Brown)	Console Power Plug: 	<input type="checkbox"/> Check box when complete
PDU TS5-2	120vac Neutral (Light Blue)		<input type="checkbox"/> Check box when complete
PDU TS5-3	Ground (Green/Yellow)		<input type="checkbox"/> Check box when complete
PDU TS5-4	120vac Phase A (Black)	Gantry LV Power Pan A1J1 Filter - L1	<input type="checkbox"/> Check box when complete
PDU TS5-5	120vac Phase B (Red)	Gantry LV Power Pan A1J1 Filter - L2	<input type="checkbox"/> Check box when complete
PDU TS5-6	120vac Phase C (Orange)	Gantry LV Power Pan A1J1 Filter - L3	<input type="checkbox"/> Check box when complete
PDU TS5-7	120vac Neutral (Light Blue)	Gantry LV Power Pan A1J1 Filter - N	<input type="checkbox"/> Check box when complete
PDU TS5-8	Ground (Green/Yellow)	Gantry Power Pan Chassis A1J1 Filter Ground Stud	<input type="checkbox"/> Check box when complete

**Figure 4-1 Front View of NGPDU, with Covers Removed**



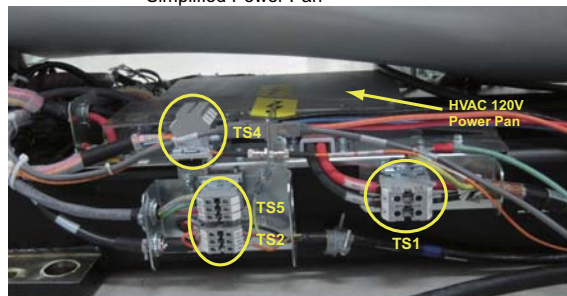
4 - Continuity Checks

**Figure 4-2 Gantry Power Pan**

Old Power Pan



Simplified Power Pan





**WARNING**

**TURN OFF ALL PDU CIRCUIT BREAKERS.**

- 7.) Set an ohmmeter to the lowest scale. Check between the following points for shorts to ground. Verify no continuity exists between the following points:

**Table 4-3 No Continuity Verification Points**

FROM PDU	TO A1 BREAKER BOX	
TS2-1 (+HVDC) (Red)	vault ground	<input type="checkbox"/> Check box when complete
TS2-3 (-HVDC) (Black)	vault ground	<input type="checkbox"/> Check box when complete
TS3-1 (440vac output) (Black)	vault ground	<input type="checkbox"/> Check box when complete
TS3-2 (440vac output) (Red)	vault ground	<input type="checkbox"/> Check box when complete
TS3-3 (440vac output) (Orange)	vault ground	<input type="checkbox"/> Check box when complete

- 8.) Leave the metal cover off the PDU A3 input power panel until you complete the checks in the next section.

## Section 2.0 Site Ground Continuity Check

Use an ohmmeter to verify the presence of **less than 1.0 ohm of resistance** between each of the following points:

**Table 4-4 Resistance Verification - Site Ground**

FROM	TO	
PDU Ground Bus	Vault Ground	<input type="checkbox"/> Check box when complete
PDU Ground Bus	Table/Gantry raceway ground point	<input type="checkbox"/> Check box when complete
Table/Gantry raceway ground point	Gantry Chassis	<input type="checkbox"/> Check box when complete
Table/Gantry raceway ground point	Table Chassis	<input type="checkbox"/> Check box when complete
Table/Gantry raceway ground point	Operator Console Chassis	<input type="checkbox"/> Check box when complete
All Display or Computing Options (if any)	Operator Console Chassis	<input type="checkbox"/> Check box when complete

# Section 3.0

## Axial Head Holder Shim Installation

### 3.1 Overview

This procedure applies to the following Table Types:

GT 2000	All head holders
GT 1700	All head holders
HP 1600	All head holders
PET Tables	All head holders

### 3.2 Requirements

Table 4-5 Personnel Requirements

REQUIRED PERSONS	PRELIMINARY REQS	PROCEDURE	FINALIZATION
1	10 mins	15 mins	5 mins

Table 4-6 Tools and Test Equipment

ITEM	QTY	EFFECTIVITY	PART#	MANUFACTURER
Standard FE Tool Kit	1	-	-	-

Table 4-7 Replacement Parts

ITEM	QTY	EFFECTIVITY	PART#	MANUFACTURER
Shim Kit	1	-	-	-

**NOTICE** Understand and Follow All General Table Safety Procedures.

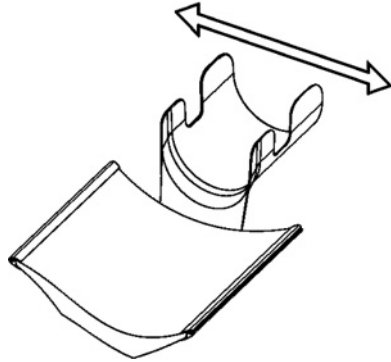


### 3.3 Required Conditions

Check head holder for a tight fit. If the head holder fit is loose, follow this procedure.

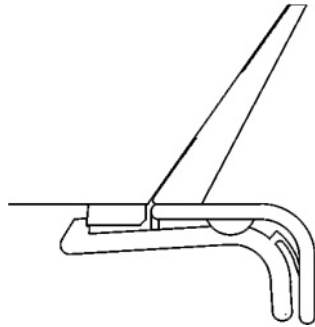
**Introduction:**

- Some Axial Head Holders have a large free-play in the horizontal direction which could potentially lead to motion and therefore image artifacts.
- Installation of the 2327335 rubber shim kit can minimize this motion.

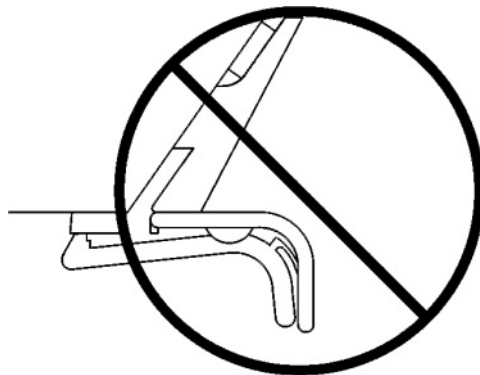


**Notes before Selecting Shim Thickness:**

- While selecting the best shim size, do not attach the rubber shim yet using the adhesive on the back. It is best to use a piece of tape to hold on the shim in order to see if the size is correct.
- Selecting a shim size that is too thick may result in:
  - Difficulty latching the head holder properly. The head holder must latch so that a patient is not injured.
  - Damage to the plastic latch or the plastic screws that secure it.



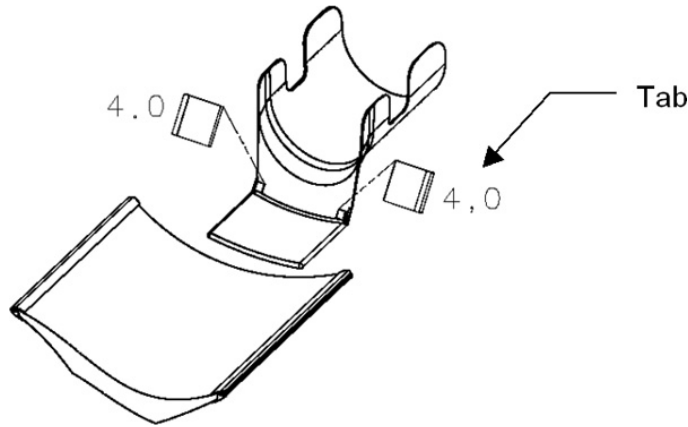
**Correct** - Head Holder is latched onto first step of plastic latch mechanism (The head holder does not need to be latched onto the second step)



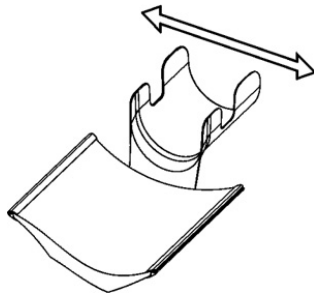
**Wrong** - Head Holder is NOT latched after installing shims

### 3.4 Procedure

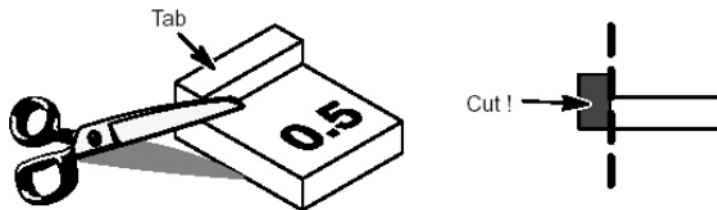
- 1.) First place the two 4.0mm shims (thickest size) onto both edges of the head holder as shown (use a piece of tape to temporarily secure them)
  - The shim must be placed with the tab facing out
  - The thickness is printed on the shim



- 2.) Insert the head holder into the cradle
- 3.) Check if the head holder is latched onto the cradle at the first step of the plastic latch mechanism. (The head holder does not need to be latched onto the second step)
- 4.) Check if the head holder has a small free-play in the horizontal direction



- 5.) If the rubber is too thick, repeat steps 1-4 using a thinner shim (3.5, 3.0...0.5mm) until the head holder is latched (without excessive force) and fits securely in the cradle.  
If the thinnest shim (0.5mm) is too tight, the tab can be cut off to reduce the thickness



- 6.) Clean off the surfaces where the shims will mount using alcohol.
- 7.) Peel off the paper from the back of the selected shims and attach with the tabs facing out. Hold each shim with your fingers for a few seconds to attach it to the head holder.

### 3.5 Finalization

Review latching of head holder with customer after installation

## **Section 4.0**

# **Mechanical Installation Completion Checklist**

Complete the *Mechanical Installation* section of the GE e4879 and turn it over to your site FE. The electronic file for the checklist is found on the System Service Information 5350501-8EN. The electronic checklist is also located in the downloadable forms directory of the SIMS Content Viewer.

# Appendix A

## Removal & Installation of Covers

Follow ALL required safety and PPE procedures customary for your organization, when working on this product.

Tool and Test Equipment:

- Front and rear cover dollies
- Hex wrench set

### Section 1.0

#### Gantry Scan Window

#### CAUTION



**Potential for Equipment Damage.** The cones of the front and rear gantry covers must be aligned within specification to ensure proper scan window fit. If the scan window is not fit properly, fluids can get into the collimator and detector, causing image artifacts or permanent damage.

This procedure assumes the front and rear covers are installed.

- 1.) Grab the window at the top and pull firmly downward.
- 2.) Pull the scan window down from the top center and then grasp both sides of the scan window, move them together and lightly pull upward, until you can free the window from between the front and rear covers. See Figure A-1.

**Note:** You may need to use the tip of a flat blade screwdriver to pull down the top edge of the scan window away from the cover in order to grab it with your fingers. Be careful not to push the screwdriver in too far as the gasket can be damaged.



**Figure A-1 Scan Window Removal**

Figure A-2 Installing the mylar window



## Section 2.0 Gantry Side Covers

### 2.1 Side Cover Removal

- 1.) If removing side cover in preparation for front cover removal, move the table to its lowest position before powering off gantry.

**Potential for injury if covers removed and power is left "ON".**

**Always remove the right side cover first, and turn OFF power at the Service Switch Panel.**

#### CAUTION



**Shock Hazard**

**Voltage Present**

**No service on left side while energized.**

- 2.) Use an 8mm Hex wrench to unlatch the side cover from the front cover. See [Figure A-3](#).

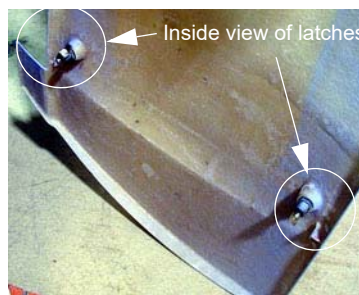
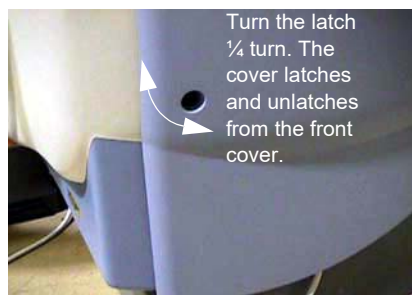
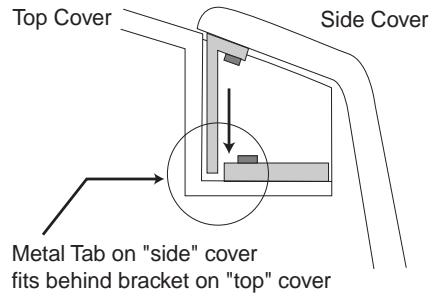


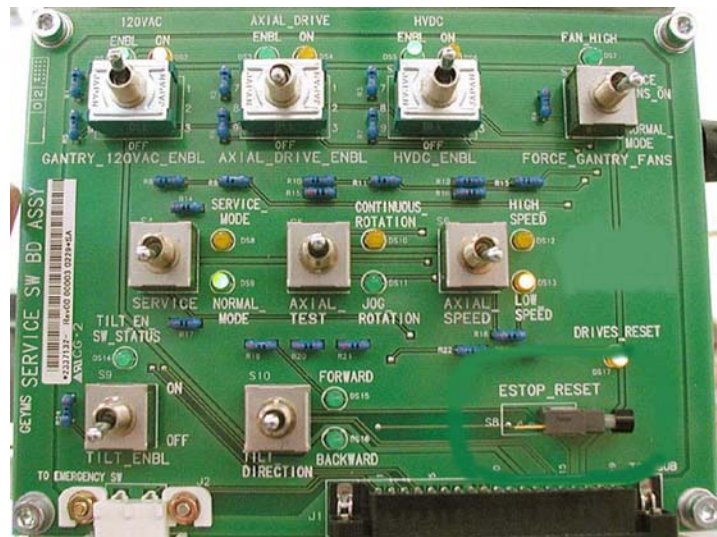
Figure A-3 Side Cover Latches

- 3.) Remove the right side cover by lifting it upward to release the two (2) latches, located on the top edge of the cover. See [Figure A-4](#). Once removed, the service switches should be exposed.



**Figure A-4 Side and Top Cover Clasp**

- 4.) Turn OFF the three (3) main power switches (HVDC, 120VAC, and Axial Drive) on the Service Switch Panel (SSP) as applicable for the service being performed. See [Figure A-5](#).



**Figure A-5 Service Switch Panel**

- 5.) Repeat Steps 1-3 for the left side cover.

## 2.2 Side Cover Installation

- 1.) To install a side cover, place it over the top cover and let the two (2) side cover latches slide behind the metal tabs, located on the top cover. See [Figure A-4](#).
- 2.) Use Hex wrench to secure the side cover to front cover by turning the bolts a quarter turn. See [Figure A-3](#).

# Section 3.0 Gantry Top Covers

## 3.1 Top Cover Removal



**CAUTION Potential for Shock.**  
Voltage may be present. Potential for injury if covers removed and power is left ON. Always remove the right side cover first, and turn OFF power at the service switches.



**NOTICE Always turn OFF the HVDC before the 120 VAC. Turning OFF 120 VAC power before HVDC power can result in equipment damage.**

- 1.) Remove the gantry right side cover (See Gantry Side Covers Removal and Re-Install).
- 2.) Turn OFF the three (3) main power switches (HVDC, 120VAC, and Axial Drive) on the Service Switch Panel (SSP) as applicable for the service being performed. See [Figure A-6](#).

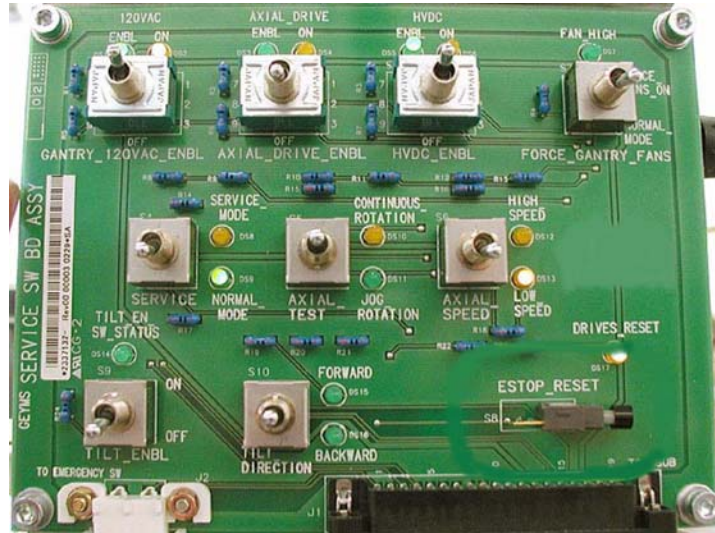


Figure A-6 Service Switch Panel

- 3.) Unscrew two screws that secure the top cover with Philip top screwdriver.

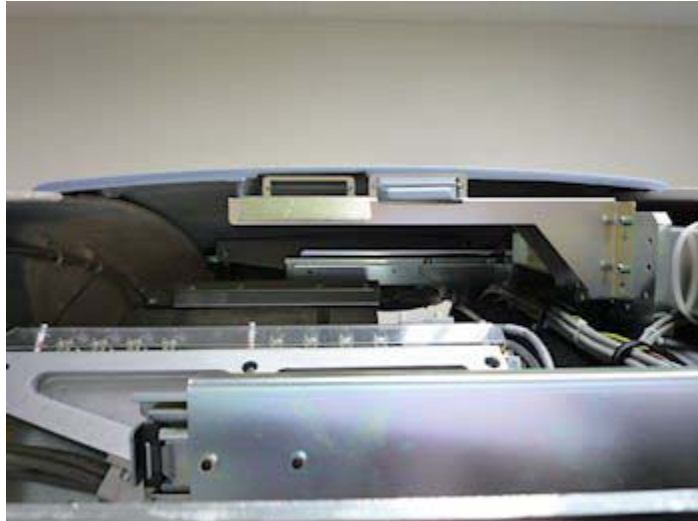


Top cover  
Screws

Figure A-7 Screws Securing Top Cover

- 4.) Take the end of the top cover nearest to the side cover and tilt upwards.

- 5.) Slide the cover down to disengage the tab from the mounting bracket.



**Figure A-8 Top Cover Tabs and Bracket**

- 6.) Lift the cover clear and repeat the above steps for the other cover.

## 3.2 Top Cover Installation

The top cover consists of two (2) pieces. Install the front and rear gantry covers, if not already installed.

- 1.) Take one of the top covers and align the tabs on the cover with its associated bracket. Lift and slide the cover into place. Secure 2 screws on the top cover.
- 2.) Take the other top cover and align the tabs on the cover with its associated bracket. Lift and slide the cover into place. Secure 2 screws on the top cover.
- 3.) Connect the cable from the fans to the gantry.

**NOTICE** Always turn ON the 120 VAC before the HVDC. Turning ON HVDC power before 120 VAC power can result in equipment damage.

- 4.) Turn on the three (3) power switches.
- 5.) Ensure fans work properly.
- 6.) Re-install the gantry side covers.

## Section 4.0 Gantry Front Covers

**NOTICE** Potential for cover damage.



Front and rear cover removal and installation can be safely accomplished by one (1) person using the dollies provided with the system. Failure to use these dollies will significantly increase the likelihood of damage to the covers. Do not lean covers against walls.

### 4.1 Front Cover Dolly Setup

**DANGER** EQUIPMENT TIP HAZARD



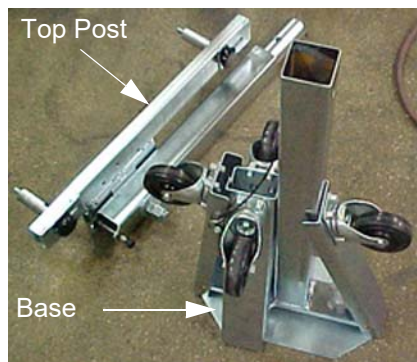
**DO NOT USE DOLLIES ON UNEVEN SURFACES SUCH AS STEPS OR ELEVATOR THRESHOLDS. THE DOLLIES ARE DESIGNED TO BE USED ON FLAT LEVEL FLOORS WITHIN THE SCANNING SUITE ONLY. MISUSE CAN RESULT IN PERSONAL INJURY OR DAMAGE TO COVERS OR OTHER FACILITY ITEMS. ONLY USE DOLLIES ON FLAT SURFACES.**

**CAUTION**

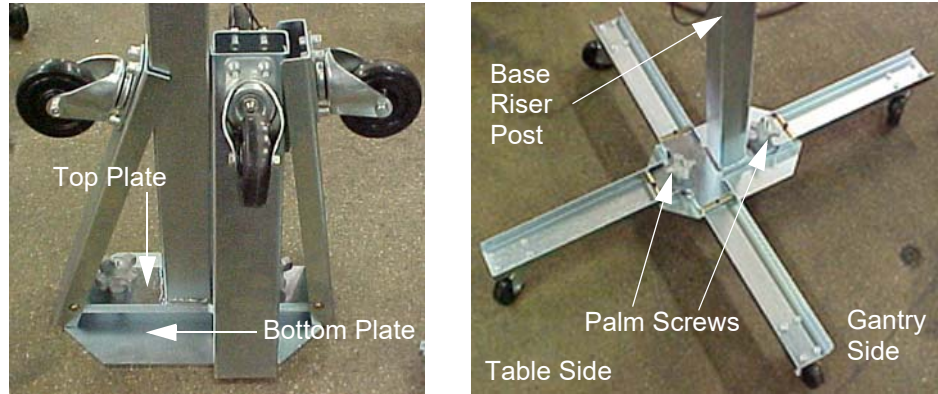


Rotating arms on the stand are supposed to be stiff. If they fall freely, tighten the tensioning nuts. Loose rotating arms will reduce the stability of the dollies when supporting the front cover. Do not lubricate.

- 1.) Arrange Dolly sections for assembly. The base and post can be assembled only one way.  
Refer to [Figure A-9](#) and [Figure A-10](#).
  - The base uses two (2) palm screws to clamp the four (4) legs in the open or usage mode.
  - The base also uses the same palm screws to prevent the legs from falling in storage mode.
  - The top post can be inserted in either base and is keyed for proper engagement.
  - The top post locking pin prevents the sections from separating during usage.



**Figure A-9 Front Cover Dolly in Storage Mode**



**Figure A-10 Front Cover Dolly Base Assembly**

- 2.) Unfold the base legs by loosening both palm screws to the top of their travel.
- 3.) Carefully unfold the legs so that the castors touch the floor.
- 4.) Tighten the palm screws to clamp the legs between the base top and bottom plates.

Note: Lifting the base by the riser post while leaving the castors on the floor will ease palm screw tightening. Reference [Figure A-10](#).

**WARNING**



**EQUIPMENT TIP HAZARD**

**COVER DOLLIES MAY TIP OVER IF NOT CONFIGURED PROPERLY.**

**ENSURE BOTH PALM SCREWS ARE TIGHTENED SECURELY AND THE LEGS ARE CLAMPED TIGHTLY BETWEEN THE BASE TOP AND BOTTOM PLATES. FAILURE TO DO SO WILL RESULT IN INSTABILITY DURING FRONT COVER HANDLING.**

- 5.) Insert top post into the base riser post. Align the key for complete engagement.
- 6.) Insert top post locking pin to secure both top and bottom sections.
- 7.) Reverse above steps to disassemble.

Note: For base storage only one (1) palm screw needs to be tightened. This will engage the bottom base plate and the leg ends preventing the legs from unfolding during transport and storage.

## 4.2 Front Cover Removal

- 1.) Position the table at its lowest position.

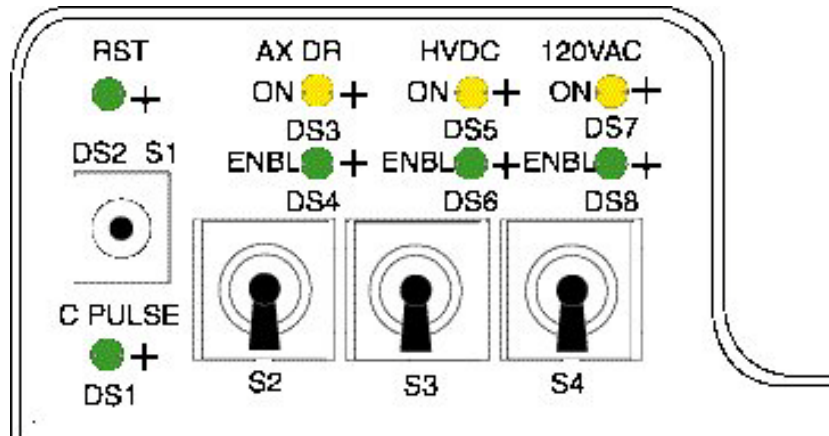
**NOTICE**



**Always turn OFF the HVDC before the 120 VAC. Turning OFF 120 VAC power before HVDC power can result in equipment damage.**

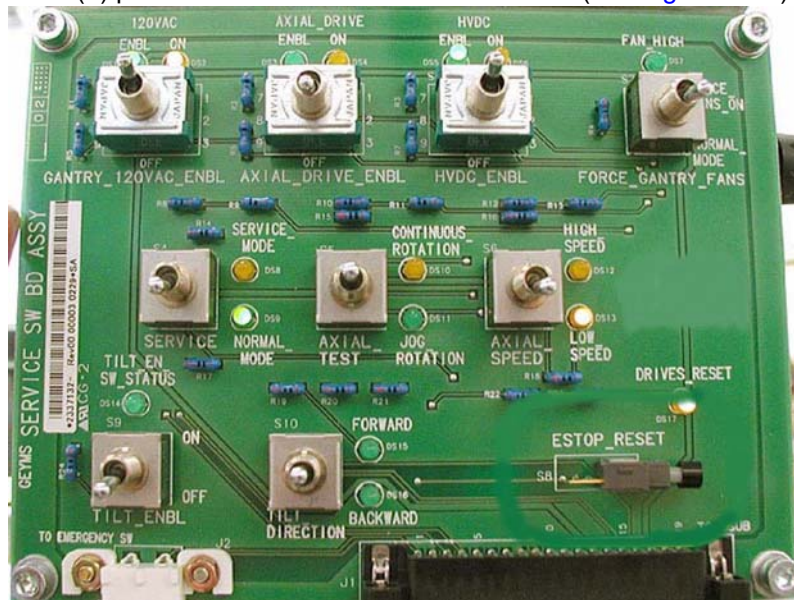
- 2.) Remove gantry side and top covers, if you have not already done so.

3.) Verify the three (3) power switches have been turned **OFF** (see [Figure A-11](#)).



**Figure A-11 STC Power Switches**

4.) Verify the three (3) power switches have been turned **OFF** (see [Figure A-12](#)).

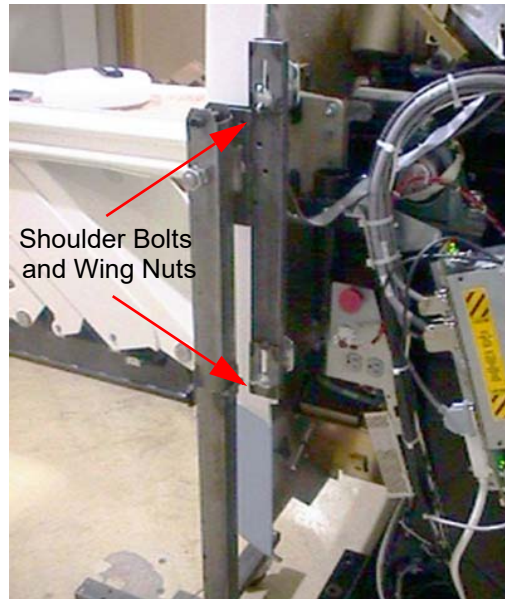


**Figure A-12 Service Switch Panel**

5.) Assemble the front cover dolly.

PART NUMBER	DESCRIPTION
5179183-2	Dolly, pivoting, small room, LH
5179183	Dolly, pivoting, small room, RH

a.) Tighten the two (2) shoulder bolts to the gantry securely. This makes cover installation easier (see [Figure A-13](#)).



**Figure A-13 Front Side Dolly**

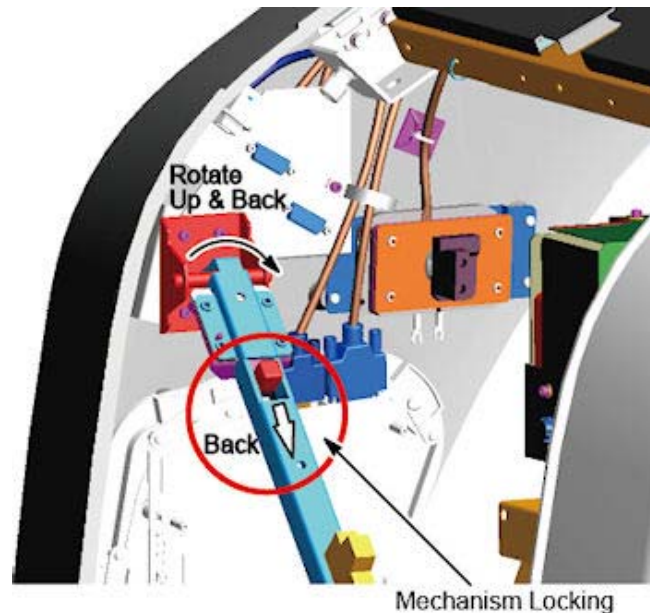
- b.) Attach side dolly to the shoulder bolts and secure assembly with two (2) wing nuts.
- c.) Repeat steps a and b to assemble the other side dolly.
- 6.) Detach front cover J1 and J3 and LAN cables.



**Figure A-14 Front Cover Cables**

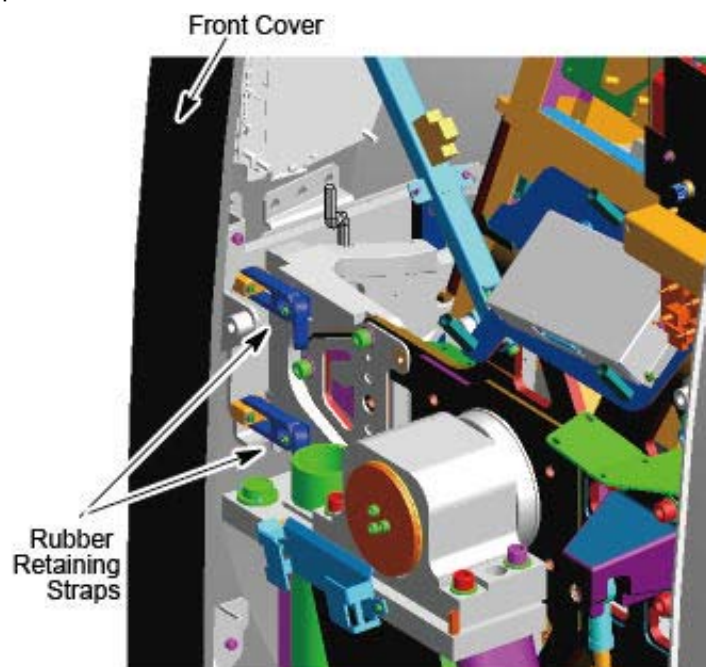
- 7.) Remove the Mylar (scan) window.
- 8.) Remove front cover.

- a.) Disengage upper cantrell bracket on right side of the cover.



**Figure A-15 Releasing Cover Brackets**

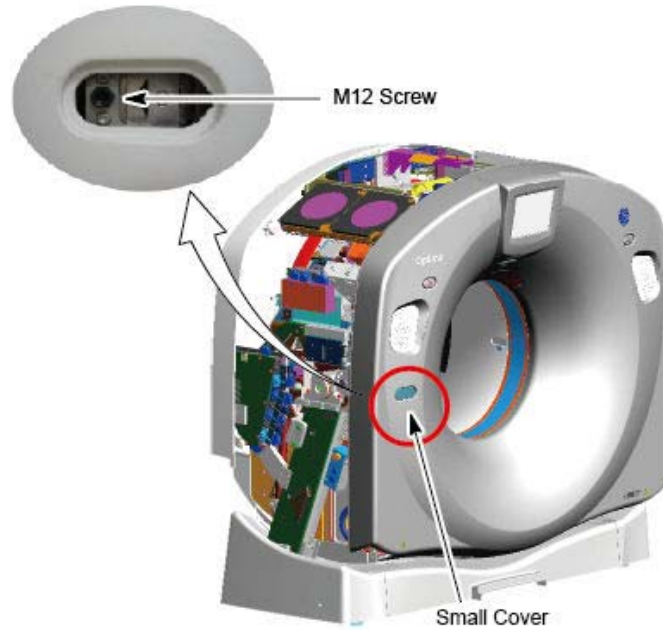
- A.) Disengage the locking mechanism on the upper cantrell brackets by using your thumb to slide the trigger (red lever) back. This will release the locking mechanism and allow the cantrell to be rotated upwards with steady and firm pressure.
- B.) Disengage the rubber retaining straps on right side. See [Figure A-16](#). You may find it helpful to lift "up" on the cover to align the stud while attaching the rubber retaining straps.



**Figure A-16 Rubber Retaining Straps and Cover Locking Mechanism**

- b.) Disengage the left side of the front cover.
- A.) Remove the small cover from the front cover.

B.) Loosen M12 screw.

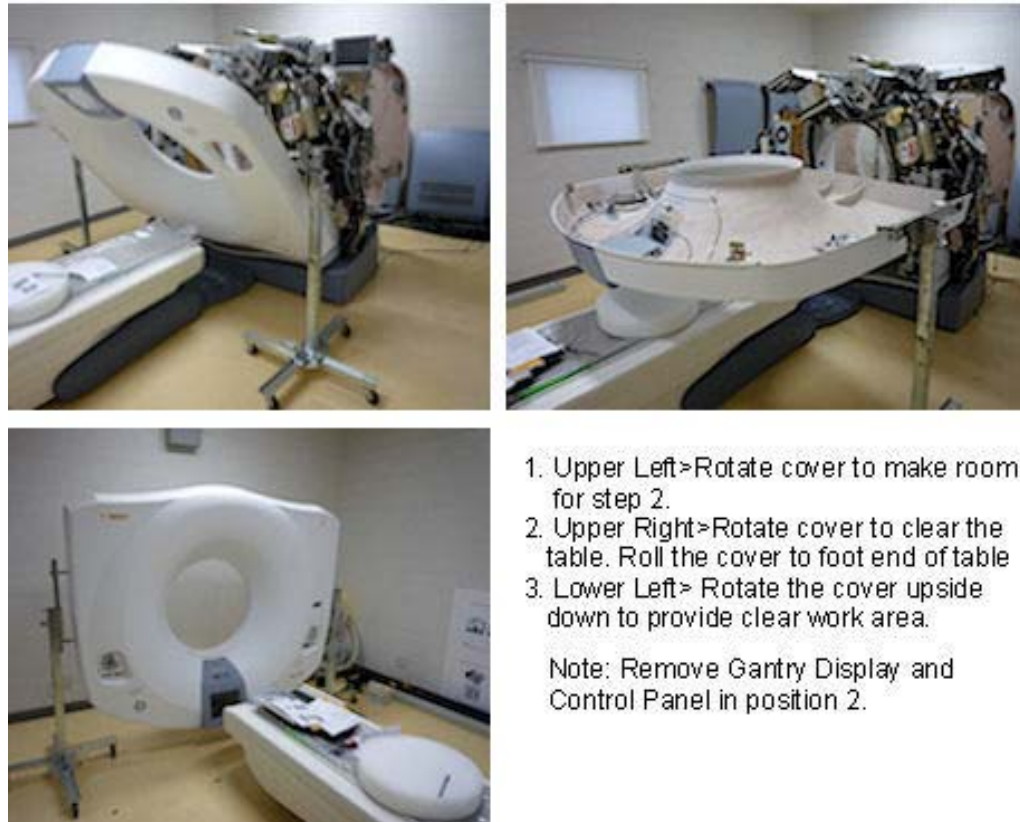


**Figure A-17 Disengage the Left Side of the Front Cover**

- 9.) Rotate front cover away from gantry.
  - a.) Move front cover away from gantry, leaving space (about 5 feet) between cover and gantry.
  - b.) Pull the locking pin and rotate front cover away from gantry. Place locking pin in one of the side dolly perforations (see [Figure A-18](#)).

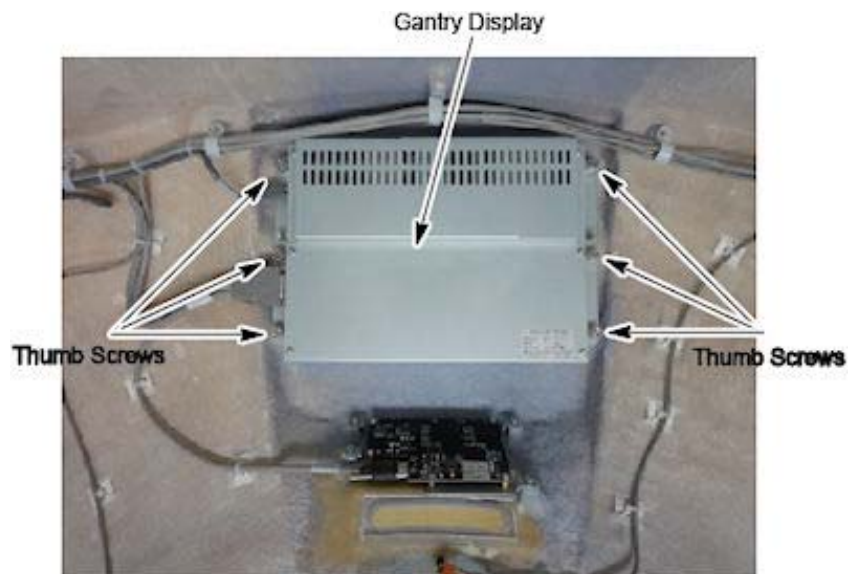


**Figure A-18 Releasing Front Cover Dolly Hinge**



**Figure A-19 Front Cover Removal Sequence**

- 10.) Rotate the cover horizontally and move it back and over the table to a safe location. Once in a safe location, you may over-rotate the cover full vertically but upside down.
- 11.) Remove the gantry display from the front cover and place it into its service position if scan is required during maintenance.
  - a.) The gantry display is held in place with (6) thumb screws. Use a flat-blade screwdriver to remove the Display (see [Figure A-20](#)).



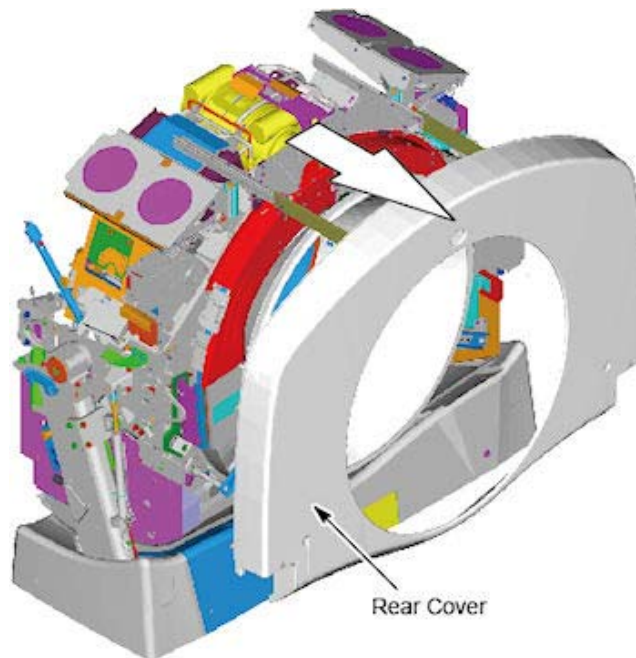
**Figure A-20 Gantry Display Removal**

b.) Loosen two lock screws of the rear cover.



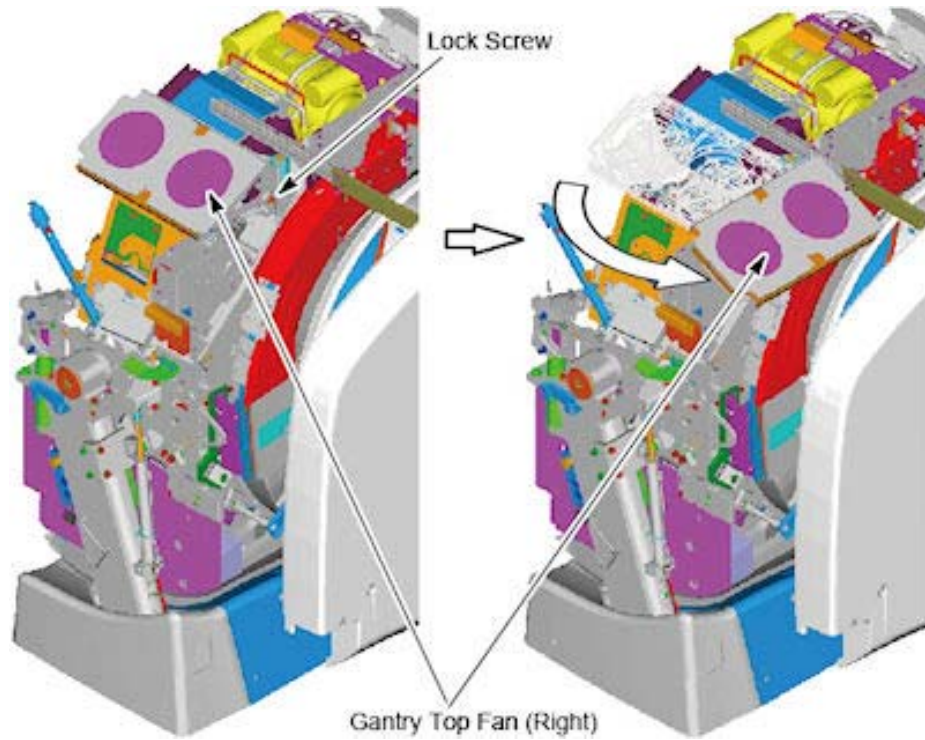
**Figure A-21 Lock Screws of the Rear Cover**

c.) Slide the rear cover backward.



**Figure A-22 Rear Cover Slide**

- d.) Loosen the lock screw of the right top fan of the gantry, and rotate the right top fan.



**Figure A-23 Top Fan Rotation**

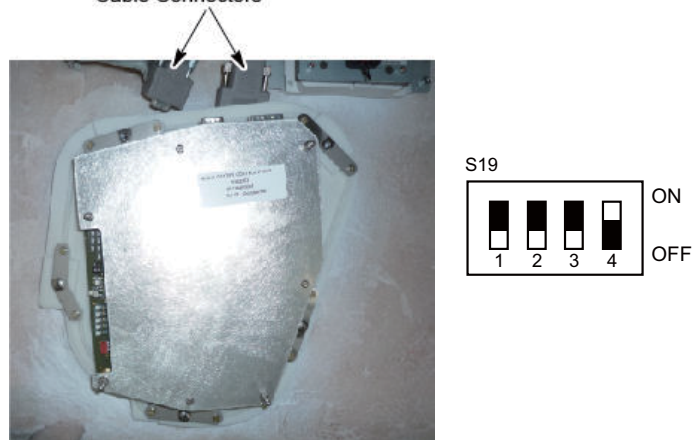
- e.) Place the Display in the bracket on the right side of the gantry. (see [Figure A-24](#))



**Figure A-24 Gantry Display Service Mounting Location**

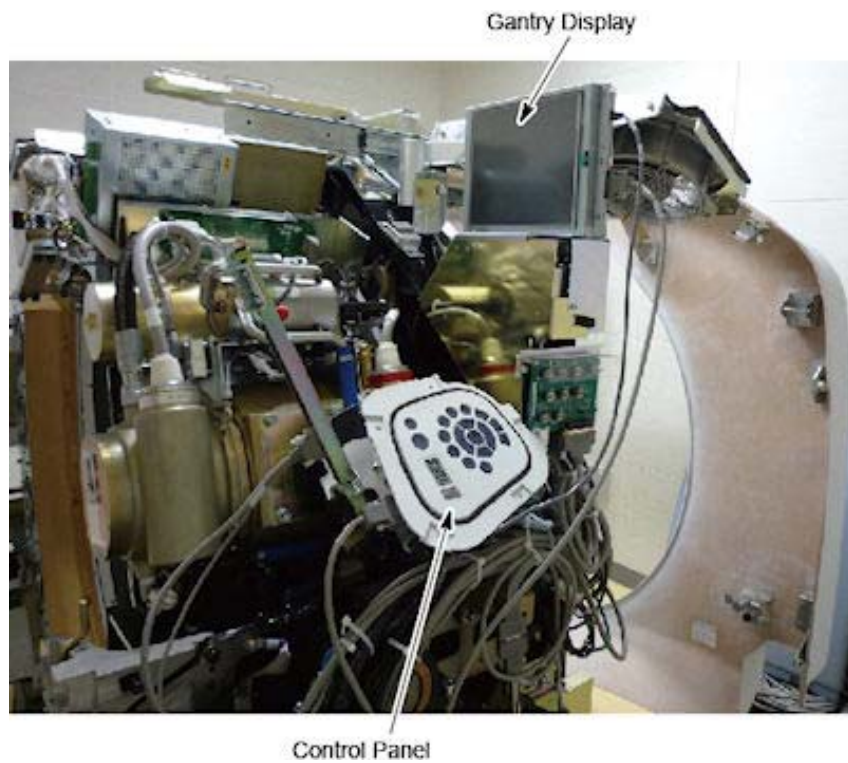
- 12.) Remove right gantry control assemblies, and place it into its service position.
- a.) Loose five (5) screws that fasten the control panel to the cover. See [Figure A-25](#). Keep one hand on the control panel at all times to prevent it from dropping to the floor.

- b.) Set dip switch s19-4 to ON position.



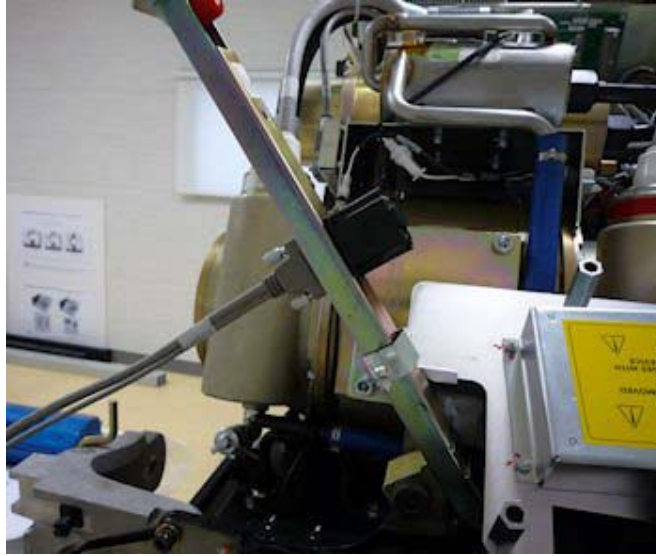
**Figure A-25 Dip Switch S19 - 4 Setting**

- c.) Align the ball studs with their associated receivers and snap into place.



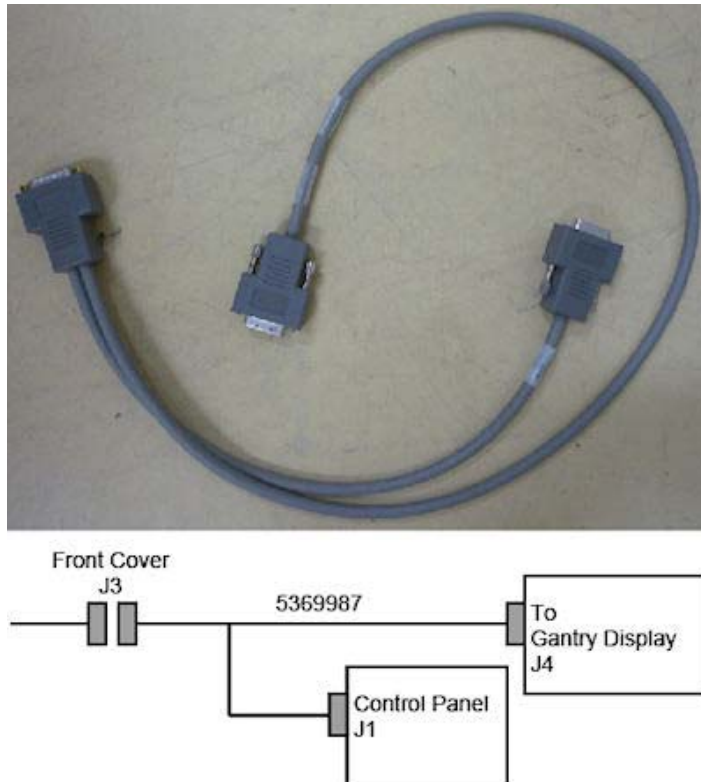
**Figure A-26 Control Panel Service Position**

- d.) Connect FCVR BKHD J1 cable to terminator located on the cantrell arm. See [Figure A-27](#).



**Figure A-27 Gantry Service Mode Cable Terminator**

- e.) Connect the FRT CVR J3 cable to the extension cable 5369987 and connect the other end of the connectors to display and control panel.



**Figure A-28 FRT CVR J3 Cable**

### 4.3 Front Cover Installation

- 1.) Remove the gantry xstream display and control panel assembly from their service position and re-attach them to the gantry cover.
  - a.) Disconnect cables from the gantry display and the control panel.
  - b.) Install Gantry Display in front cover. Secure the 6 thumbscrews. With a flat-blade screwdriver, gently tighten past finger-tight.
  - c.) Set the dip switch S19 on the control panel to all **OFF** position.
  - d.) Install Gantry control panel making sure the screws are secure within the receivers.
  - e.) Re-attach cables.



**NOTICE**

**Potential for front cover damage.**

**When you rotate the gantry front cover back to its vertical position, make sure not to scratch the front cover with the edge of the table cradle.**

- 2.) Rotate gantry front cover back to its vertical position.
- 3.) Attach the front cover.
  - a.) Align the studs on both sides of the front cover with each associated receiver. Receiver is located on the gantry frame.

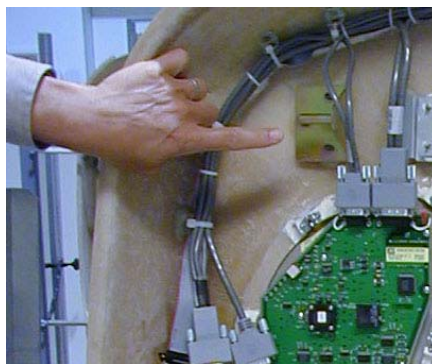


**Figure A-29 Cover stud and Mounting bracket receiver**

- b.) For Right Side:

Insert the stud on one side into its associated receiver and attach the rubber retaining straps. Then insert the stud on the other side into its associated receiver and attach its rubber retaining straps.

You may find it helpful to lift "up" on the cover to align the stud while attaching the rubber retaining straps.
- c.) Re-attach upper cantrell brackets on right sides.



**Figure A-30 Gantry Front Cover Mounting Pin (top)**

- d.) For Left Side:  
Insert the stud onto it's associated receiver and fasten the M12 screw and install the small cover. (see [Figure A-17](#))
- 4.) Remove dolly, disassemble and store safely away for later use.
- 5.) Reattach cables to cover.
- 6.) Re-install the Mylar (scan) window.

## Section 5.0 Gantry Bore Cover

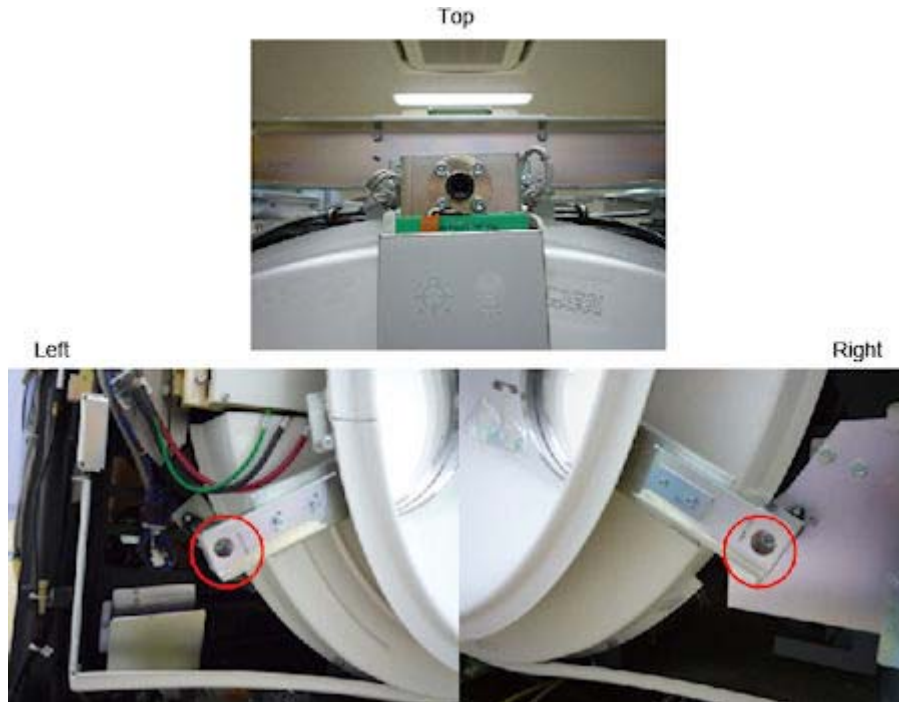
### 5.1 Removal

- 1.) Remove gantry side covers, top covers and Mylar window. Refer to each cover's removal procedure.
- 2.) Remove gantry rear cover and move away from the gantry. Refer to Gantry Rear Cover Removal procedure.
- 3.) Disconnect the Breath Navigator I/F cable and MIC REAR T-SW I/F cable from the top of the bore cover.



**Figure A-31 Breath Navigator I/F Cable**

- 4.) Remove the 2 screws located at two bottom brackets of the bore cover. Then loosen the screw on top. (Refer to [Figure A-32](#))



**Figure A-32 Screws of Bore Cover**

- 5.) Pull up safety pin small knob on the bore cover top bracket and rotate 1/4 turn to keep the safety pin disengaged.



**Figure A-33 Safety Pin**

- 6.) With two persons, pull out the bore cover from the gantry stationary brackets and place it on the floor.

A - Covers

**NOTICE** Disable UIF communication after gantry bore cover removal, So if need UIF continuation, please insert the terminal to the Mic/T-SW I/F connector.

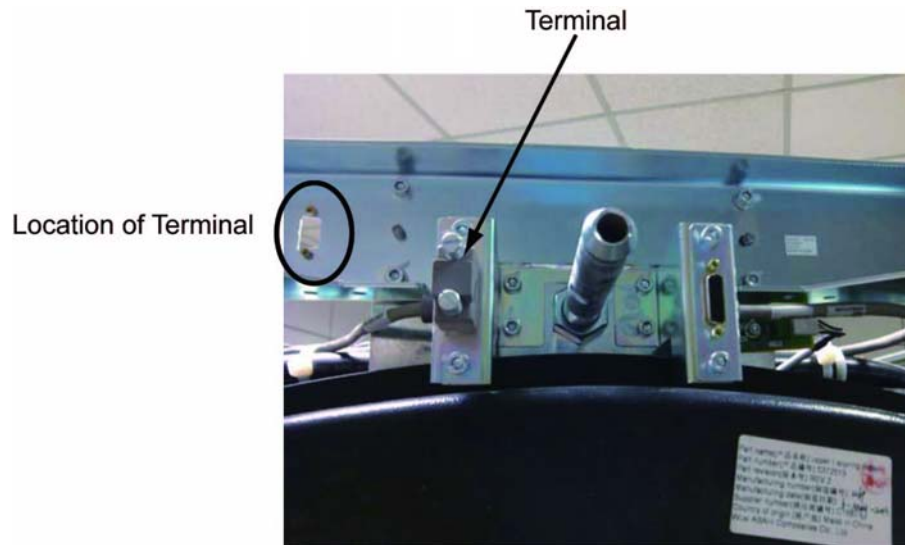


Figure A-34 Location of Terminal

## 5.2 Installation

- 1.) With two persons, lift the bore cover and attach it to the gantry stationary brackets. Insert the top of the cover bracket to the gantry stationary bracket first.

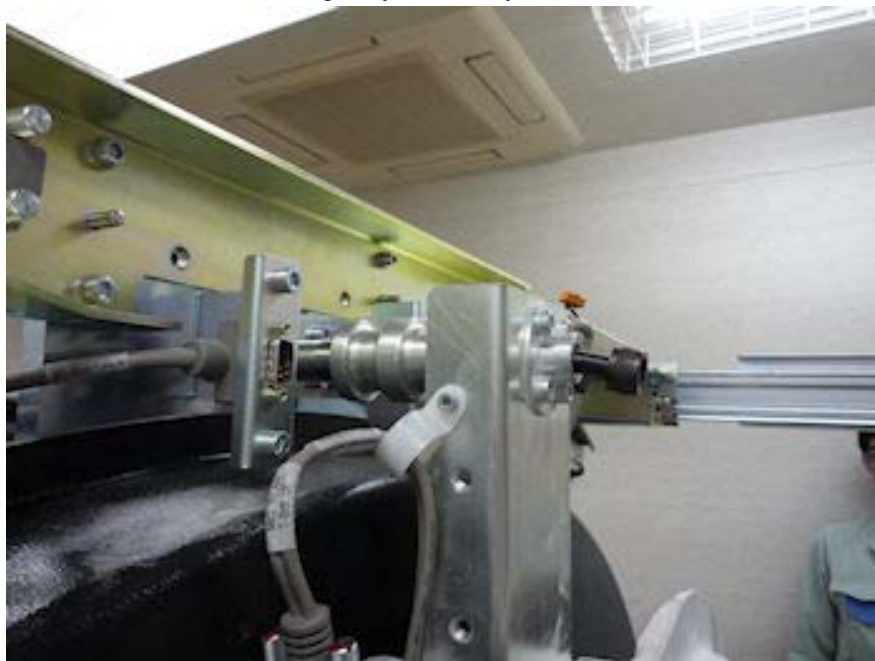


Figure A-35 Bore Cover Attachment

- 2.) Tighten 3 screws located at top and two bottom brackets of the cover.
- 3.) Connect the Breath Navigator I/F cable and MIC REAR T-SW I/F cable to the connectors.

## Section 6.0 Gantry Rear Covers

### 6.1 Removal

#### 6.1.1 Slide Out Rear Cover

**DANGER**



**ELECTROCUTION HAZARD.**

**HIGH VOLTAGE PRESENT. POTENTIAL FOR INJURY IF COVERS REMOVED AND POWER IS LEFT "ON".**

**DISABLE ALL SERVICE SWITCHES PRIOR TO REMOVING REAR COVERS.**

**NOTICE**



**Always turn OFF the HVDC before the 120 VAC. Turning OFF 120 VAC power before HVDC power can result in equipment damage.**

- 1.) Remove Gantry side covers, top covers and Mylar window.
- 2.) Use a 10mm Hex wrench to unlatch the rear cover.



**Figure A-36 Rear Cover Unlatch**

- 3.) Slide out the rear cover by pulling the cover backward.



Figure A-37 Rear Cover

### 6.1.2 Rear Cover Removal

**CAUTION**

**Pinch Hazard**

**Uncontrolled cover movement**

**Make sure the wing nuts are tightened on the cover dollies prior to releasing cover from gantry mounts.**



- 1.) Install the rear cover dolly (5150476).
  - a.) Tighten the two (2) shoulder bolts to the rear cover. Use the extending bolt for the upper side.
  - b.) Fit side dolly through the shoulder bolts and secure assembly with two (2) wing nuts.
  - c.) Repeat steps a and b for the other side dolly.
- 2.) Remove rear cover by removing 8 screws, which attach the rear cover to the brackets.



Figure A-38 8 Screws of Rear Cover



**Figure A-39 Removed Rear Cover**

- 3.) Move cover away from gantry as needed.

## **6.2 Rear Cover Installation**

- 1.) Position cover in back of gantry
- 2.) Attach the rear cover to the bracket by 8 screws. (See [Figure A-38](#))
- 3.) Remove dolly, disassemble and store safely away.
- 4.) Push the rear cover to gantry frame and secure the cover by turning two (2) latches.
- 5.) Re-install the Mylar (scan) window.

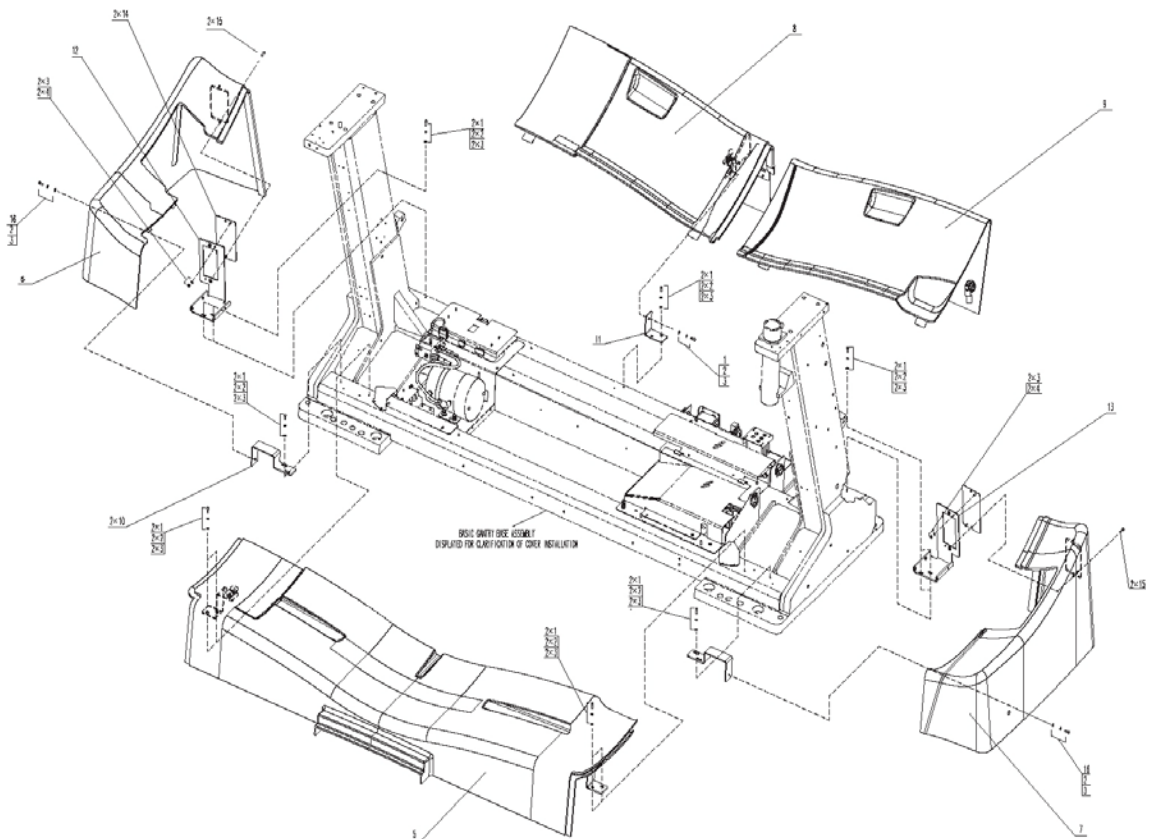
## Section 7.0 Gantry Base Covers

Refer to [Figure A-40](#) for the following assembly sequence.

Note: Tighten means torque to 2.3 Nm

- 1.) Position cover (item 5) on gantry base with bracket slots aligned to gantry holes. Center cover left to right and attach with (4) hardware (items 1, 2, 3) as shown and tighten.
- 2.) Assemble two (2) bulkheads (item 14) to two (2) brackets (item 13) using (4) hardware items 3 and 4. Assemble two (2) brackets (item 10) and two (2) brackets (item 13) to gantry base using eight (8) hardware items 1, 2 and 3. Finger tighten hardware with bracket moved outward to end slots. Install side covers (item 6 and 7) on base pushing brackets (item 11 and 13) inward until properly aligned with front cover. Remove side covers, tighten fasteners and replace side covers using one (1) hardware (item 16, 2 and 3) and two (2) item 15 on each cover and tighten.
- 3.) Assemble last bracket (item 11) loosely to gantry base with two (2) hardware (item 1, 2 and 3). Install rear cover (item 8) to base properly aligned to side cover (item 6). Attach rear cover to bracket with hardware (items 1, 2 and 3) tightening all fasteners. Lock latch.
- 4.) Place cover (item 9) on gantry base, aligned to covers (item 7 and 8). Lock both latches.

**Figure A-40 Gantry Base Covers**

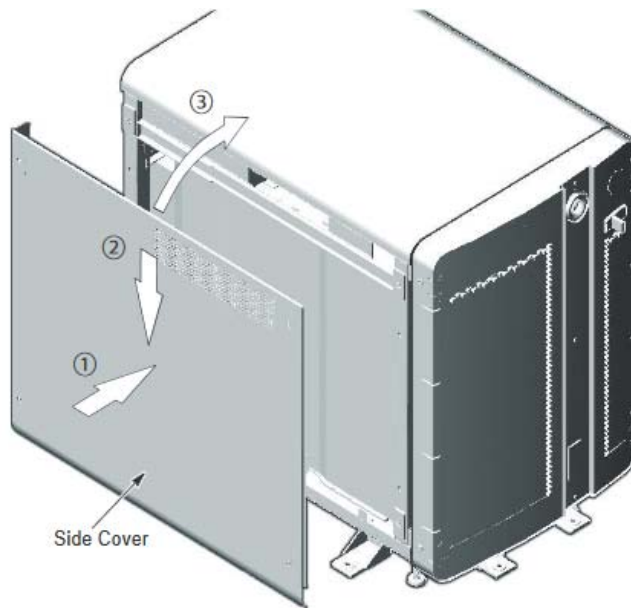


## Section 8.0 Console Covers Installation / Removal

### 8.1 NIO Console

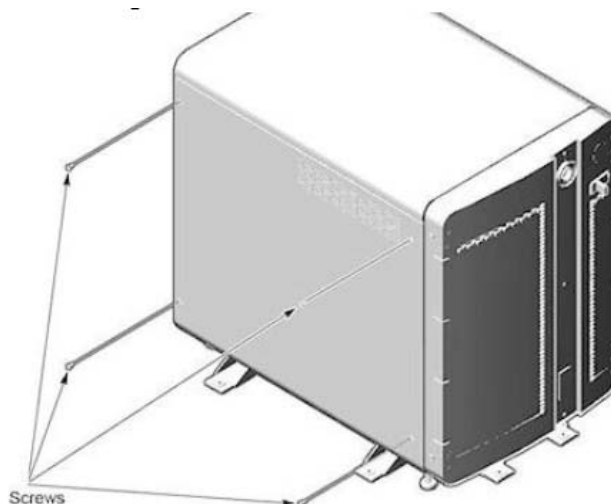
#### 8.1.1 Side Covers Installation

- 1.) Swing the side cover into position.
- 2.) Insert top edge of side cover into inside of top cover. The distance between side cover rear edge and chassis should be about 20mm.
- 3.) Move side cover forward and fix it on chassis.



**Figure A-41 Place Side Cover**

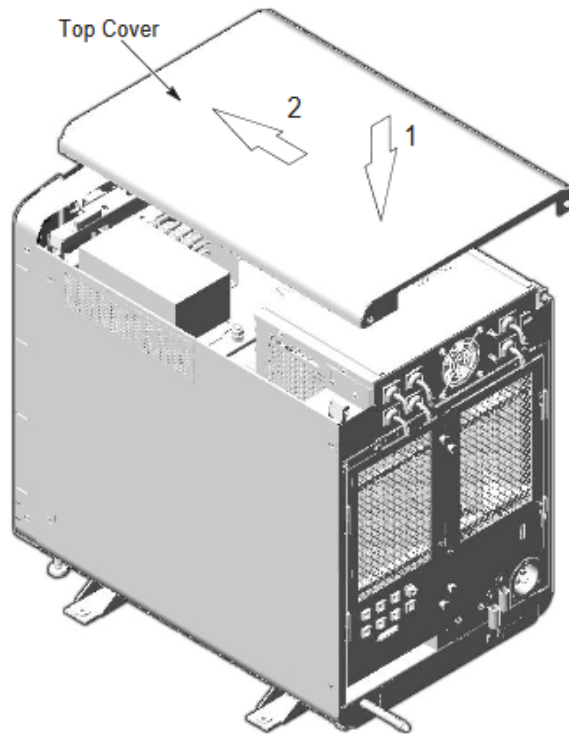
- 4.) Tighten the four screws at the side cover



**Figure A-42 Install Side Cover Screws**

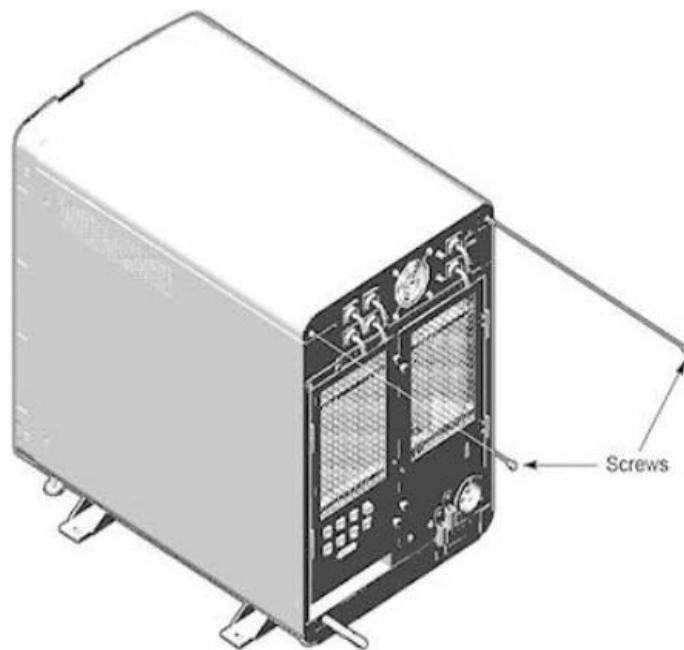
### 8.1.2 Top Cover Installation

- 1.) Insert two pins of top cover into the hole in the chassis.
- 2.) Slide cover backward and fix cover on chassis.



**Figure A-43 Place Top Cover**

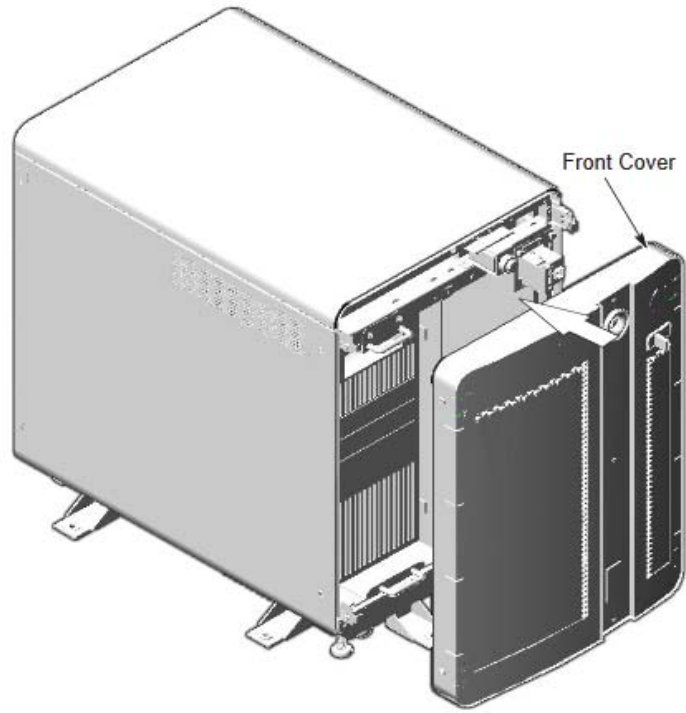
- 3.) Tighten two screws at behind of top cover.



**Figure A-44 Install Top Cover Screws**

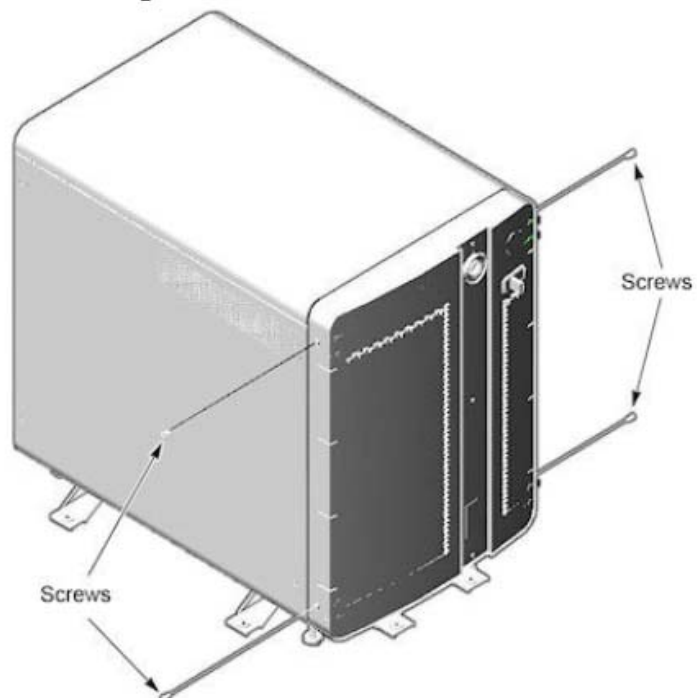
### 8.1.3 Front Cover Installation

- 1.) Place the front cover onto console.
- 2.) Rotate bottom of cover outward and upward until the cover is placed on the console.



**Figure A-45 Place Front Cover**

- 3.) Install four screws (two screws on each side).

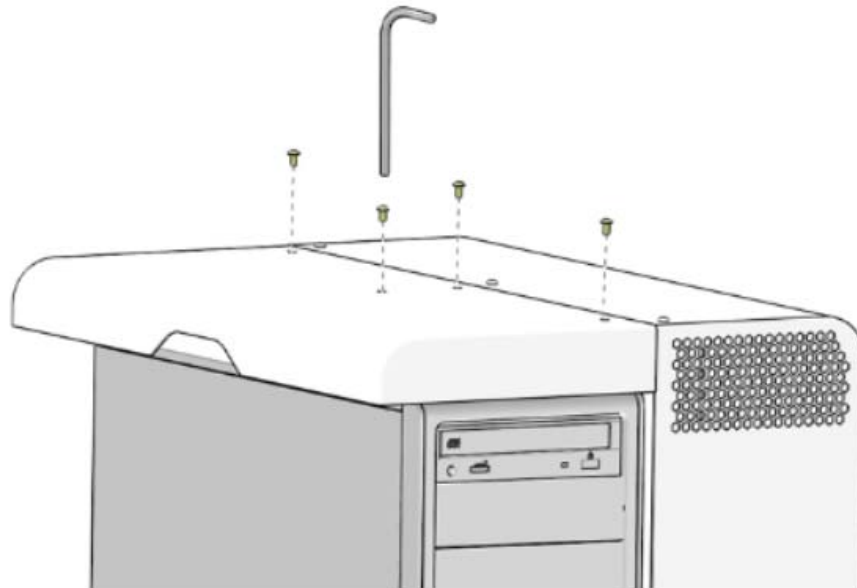


**Figure A-46 Install Front Cover Screws**

## 8.2 OpenOC Console

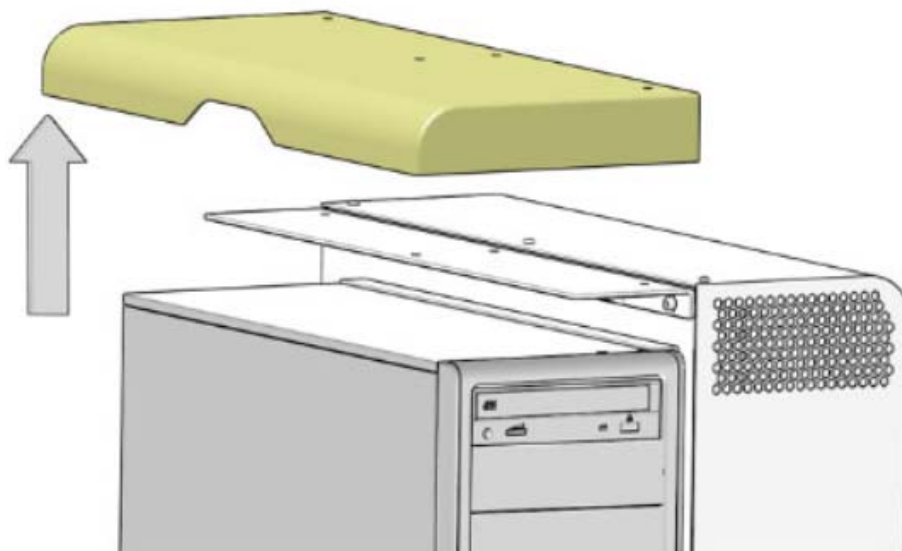
### 8.2.1 Top Cover Removal / Installation

- 1.) Remove the four (4) Hexagon Button Head Screws (M4 X 8mm) from the top cover at the top of the chassis.



**Figure A-47 Top Cover Mounting Screws Removal**

- 2.) Pull the top cover away from the chassis. Then lift upward until it is free of the chassis and set aside.



**Figure A-48 Top Cover Removal**

- 3.) Reset the top cover on top of the chassis.
- 4.) Install and tighten the four (4) Hexagon Button Head Screws (M4 X 8mm) on the top cover at the rear of the chassis.

### **8.2.2 Side Cover Removal / Installation**

- 1.) Remove the seven (7) Hexagon Button Head Screws (M4 X 8mm) from the Open Console side cover.
- 2.) Tilt the side cover away from the chassis. Then lift outward until it the side cover is free of the chassis and set aside.
- 3.) Insert the bottom edge of side cover into the chassis base and hinge the side cover onto the chassis.
- 4.) Install and tighten the seven (7) Hexagon Button Head Screws (M4 X 8mm) on the side cover.



# **Appendix B**

## **Operating Table Installation and Adjustment**

---

### **Section 1.0**

#### **FWS Assembly and Adjustment**

##### **1.1 Instruction**

Freedom WorkSpace (FWS) is an optional console table with better ergonomic performance. The monitor arm is designed to adjust quickly and easily.

Before assembly go through this section and checklist with the FWS to have an overview.

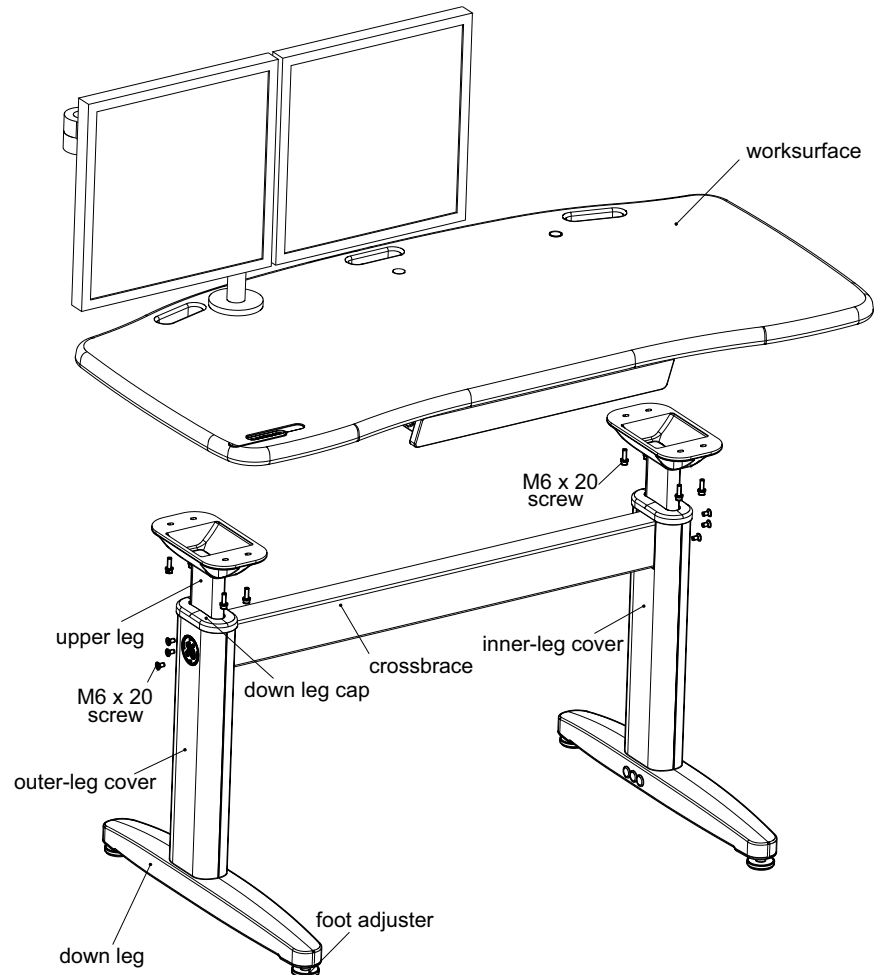
- Assemble worksurface
  - Assemble table base and worksurface
  - Assemble drawer
- Install Seismic Kit (if need)
- Install monitors
  - Mount pole onto table surface
  - Install monitor with monitor arms
  - Install monitor arms on the pole
  - Route cables
- Adjust the monitors for customer use

## 1.2 Procedure

### 1.2.1 Assemble Worksurface (For FWS 5168666-2/-3)

- 1.) Carefully remove the base assembly from the packaging material.
- 2.) Attach the crossbrace with the two inner-leg cover and secure the crossbrace to the down leg with six M6 x 10 screws (Figure B-2).

Figure B-1 Worksurface Assembly



**Figure B-2 Inner-Leg Cover**



- 3.) Press the inner-leg cover to secure with the adhesive pad (Figure B-3).

**Figure B-3 Inner-Leg Cover and Adhesive Pad**



- 4.) Install upper legs to down legs.
  - a.) Install down leg cap to the down legs (Figure B-4).
  - b.) Insert upper legs into down legs, adjust to desired height by attaching the upper legs' screws to appropriate down legs' holes. Figure B-5 shows an example of attaching upper legs at the fifth and seventh holes from the bottom upward. In this case, the height of worksurface would be 785mm.
  - c.) Secure the upper legs with four M6 x 20 screws each leg.

**Figure B-4 Down Leg Cap**



**Figure B-5 Down Leg and Screws**



- 5.) Insert outer-leg cover and inner-leg cover into down leg slot. Then push down the upper cover to fix them.([Figure B-6](#)).

**Figure B-6 Outer and Inner Leg Covers**



- 6.) Place the worksurface upside down on a clean, soft surface to prevent scratching. Invert the table base onto the worksurface, taking care to align the holes with the pre-drilled holes in the worksurface. Secure the table base to the worksurface with eight M6 x 20 screws (Figure B-7).

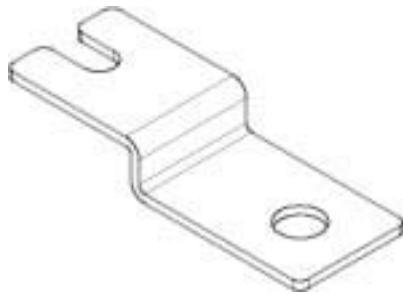
**Figure B-7 Table base and Worksurface**



- 7.) Carefully turn the table assembly to the upright position. Insert hole cover into one of the two holes in the worksurface, the other hole would be used for monitor installation.
- 8.) The four adjustable glides may be raised or lowered to accommodate varying floor surfaces. Lift the leg off the floor and turn the glide clockwise or counterclockwise to adjust.

## 1.2.2 Install Seismic Kit (For FWS 5168666-2/-3)

There are two kinds of anti seismic brackets as shown in below figure.



FWS anti seismic bracket

(Part No.: 5380721)



FWS anti seismic bracket

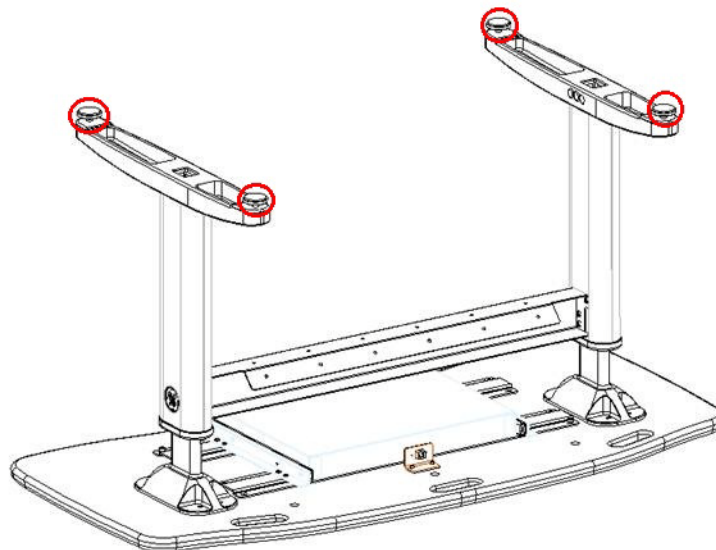
(Part No.: 5451608)

If site specifications require seismic mounting, follow below steps:

- **For anti seismic bracket 5380721**

- 1.) Turn over the Freedom WorkSpace (FWS), loosen the four foot adjusters as [Figure B-8](#) shown.

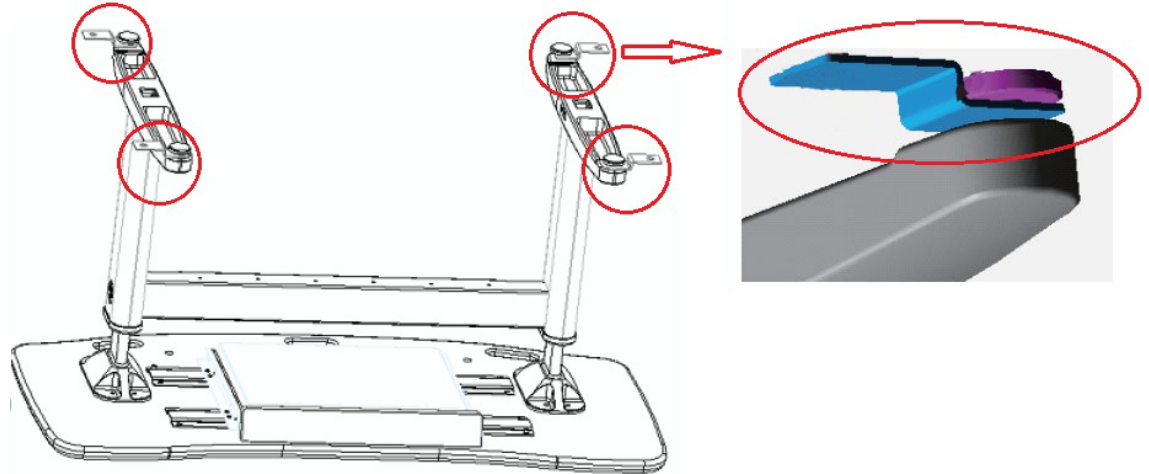
**Figure B-8 Loosen four foot adjusters**



- 2.) Insert the anti seismic brackets (5380721) between the adjusters and feet, then tighten the adjusters again, as [Figure B-9](#) shown.

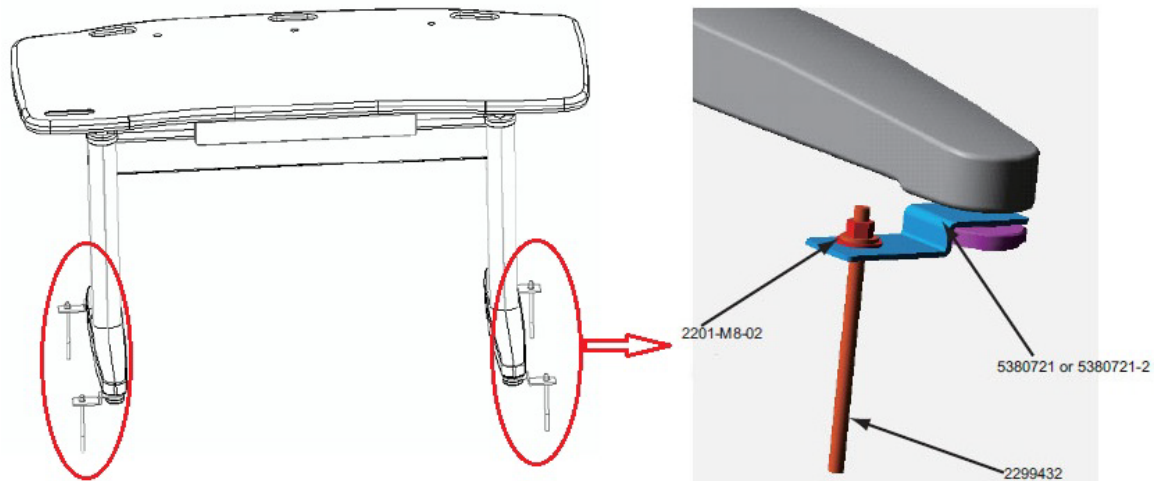
Note: Pay attention to the up down direction of the anti seismic brackets during installation, the side of bracket that used to mount to the floor shall be flush with the foot adjuster.

**Figure B-9 Insert brackets between adjuster and foot**



- 3.) Turn the Freedom WorkSpace (FWS) to the upright position, use anchors to mount the brackets to the floor, as shown in [Figure B-10](#).

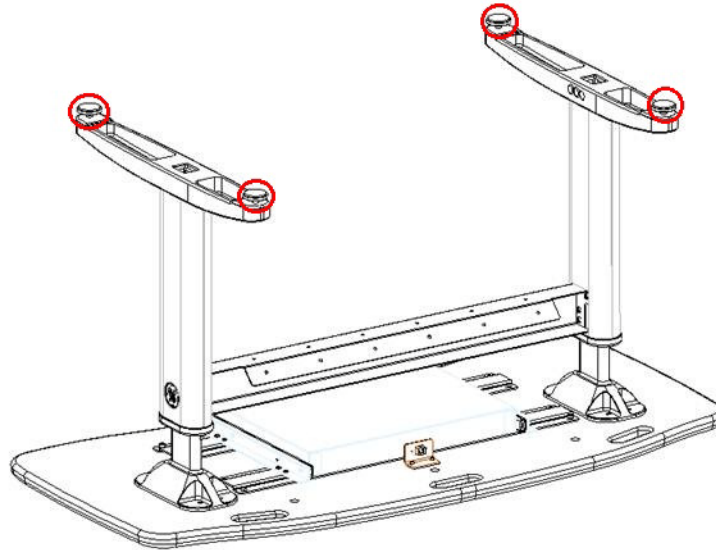
**Figure B-10 Mount brackets to floor**



- **For anti seismic bracket 5451608**

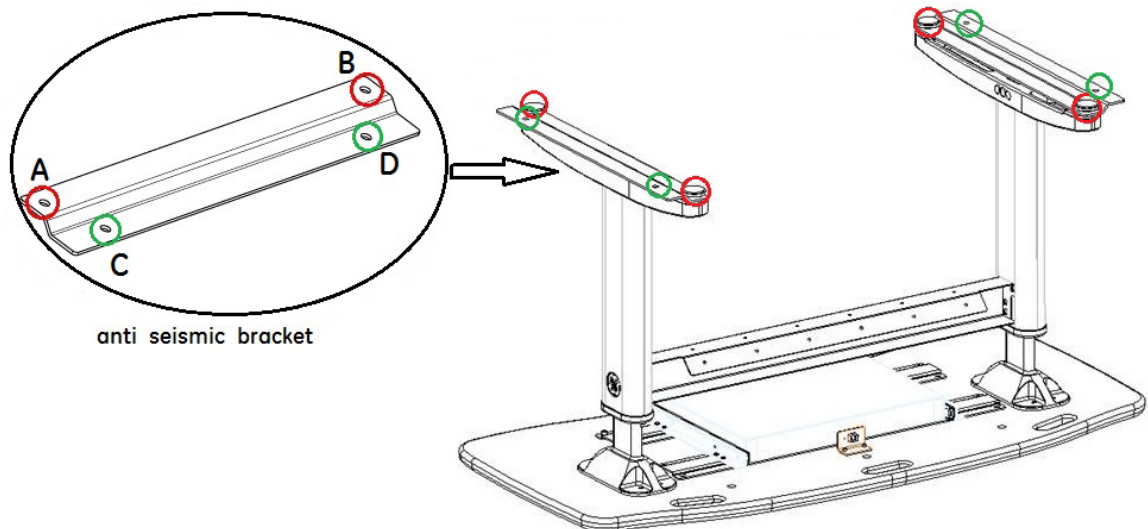
- 1.) Turn over the Freedom WorkSpace (FWS), loosen and remove the four foot adjusters as [Figure B-11](#) shown.

**Figure B-11 Loosen and remove four foot adjusters**



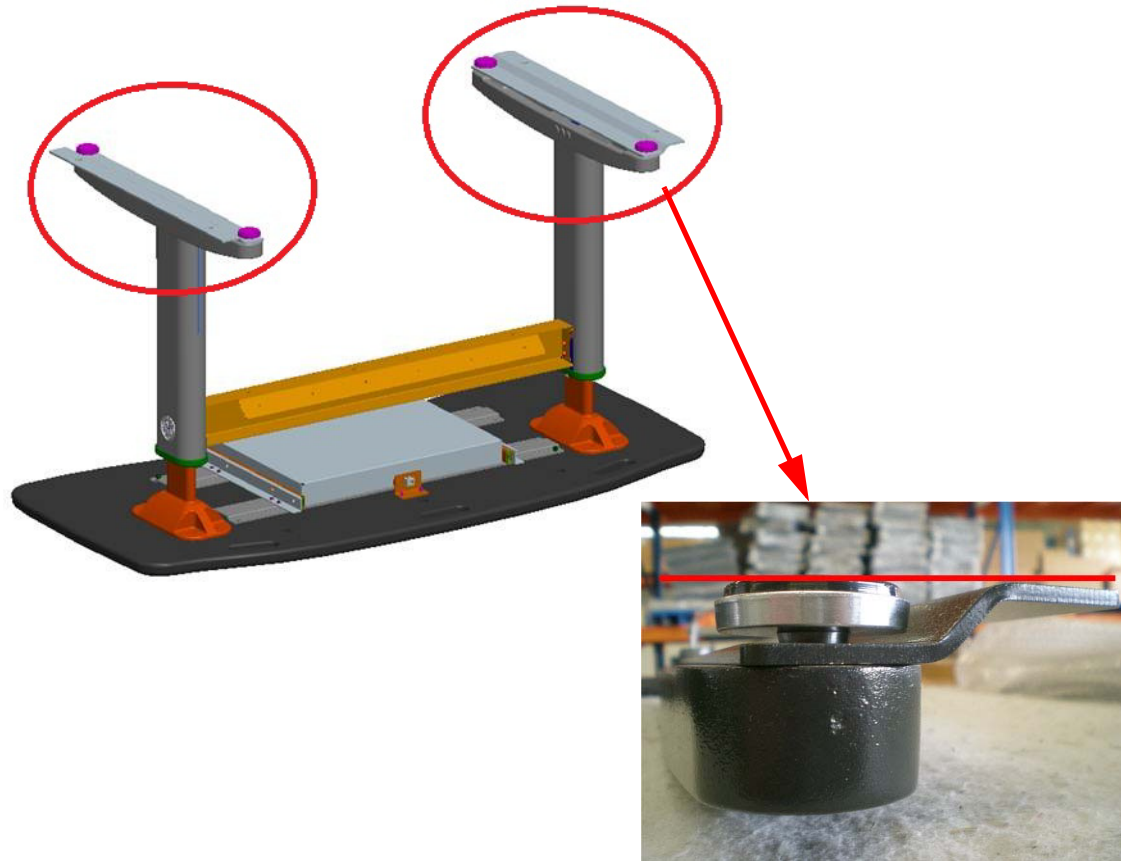
- 2.) Install two anti seismic brackets (5451608) to each down leg with the foot adjusters, hole A and B on bracket shall be used, and hole C and D are used for mounting the bracket to the floor, as shown in [Figure B-12](#).

**Figure B-12 Install the anti seismic brackets**



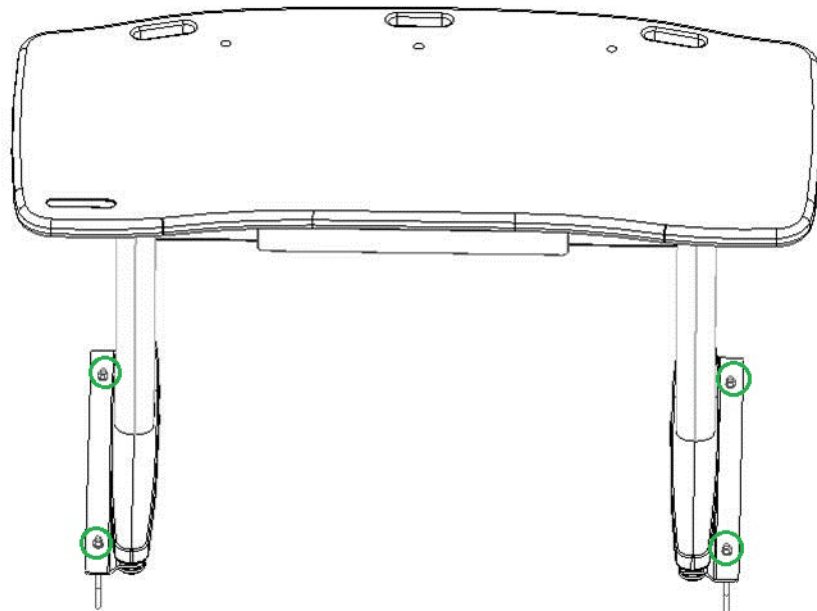
**Note:** Pay attention to the up down direction of the anti seismic brackets during installation, the side of bracket that used to mount to the floor shall be flush with the foot adjuster, and the holes reserved for mounting the brackets to floor shall be on the outside of each down leg, as shown in [Figure B-13](#).

**Figure B-13 Installation direction of anti seismic brackets**



- 3.) Turn the Freedom WorkSpace (FWS) to the upright position, use anchors provided by customer to mount the brackets to the floor, as shown in [Figure B-14](#).

**Figure B-14 Mount brackets to floor**



### 1.2.3 Install Monitors

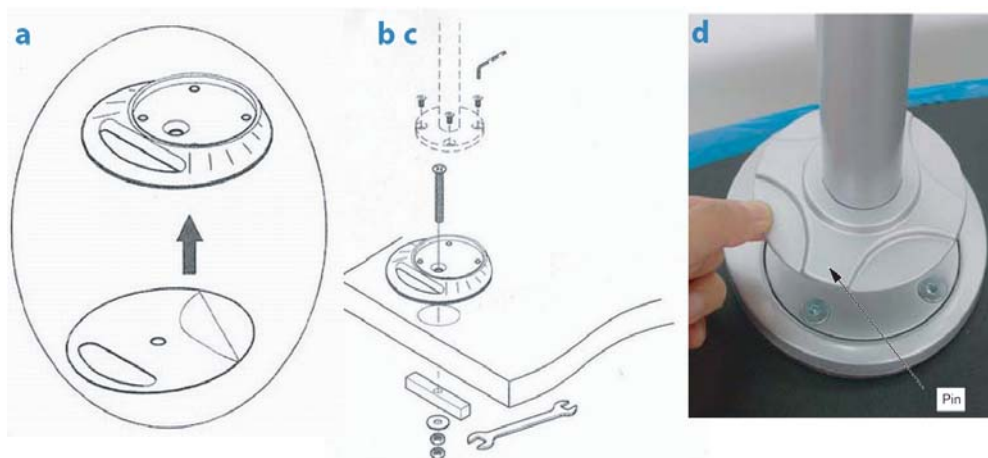
Note: For more information, refer to the materials shipped with the FWS.

**Figure B-15 (FWS 5168666-2/-3)**



- 1.) Mount the pole on the worksurface. (See [Figure B-15](#), [Figure B-15](#) and [Figure B-16](#))
  - a.) Adhesive the pad under the grommet mount.
  - b.) Use large bolt to go through parts.
  - c.) Fix the clamp on the desk with 4 screws.
  - d.) Put the screw plate cover through the pole. Check the pin position with the screw.

**Figure B-16 Pole Mounting**



- 2.) Change configuration of the monitor arms for site.
  - a.) Three configurations for customer to select, see pictures below:

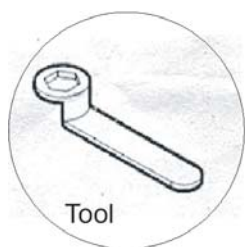
**Figure B-17 Three configurations**



18 cm arm    25 cm arm

- b.) If B or C is selected, disengage the not-to-used arm by unscrewing the junction bolts and reconfigure the arms.

**Figure B-18 Junction Bolt**



Junction Bolt (Notice the direction during reconfiguration)

- 3.) Secure cable covers onto monitor arms. Cable covers should open backward the customer.

**Figure B-19 Monitor Arms**

Rear View



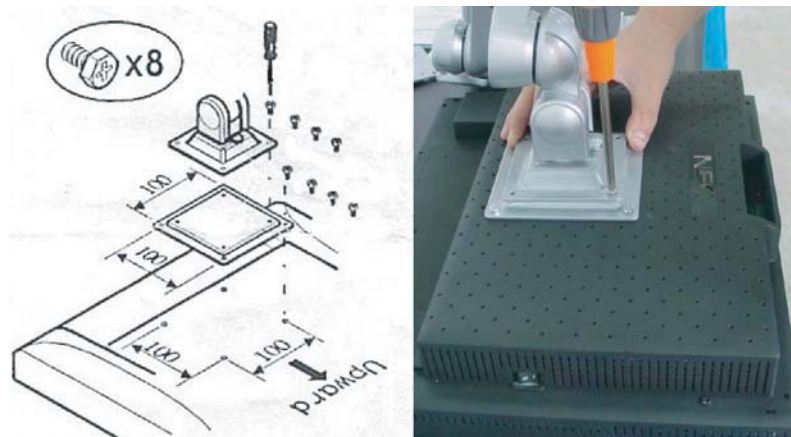
Cable Cover



Open Backward

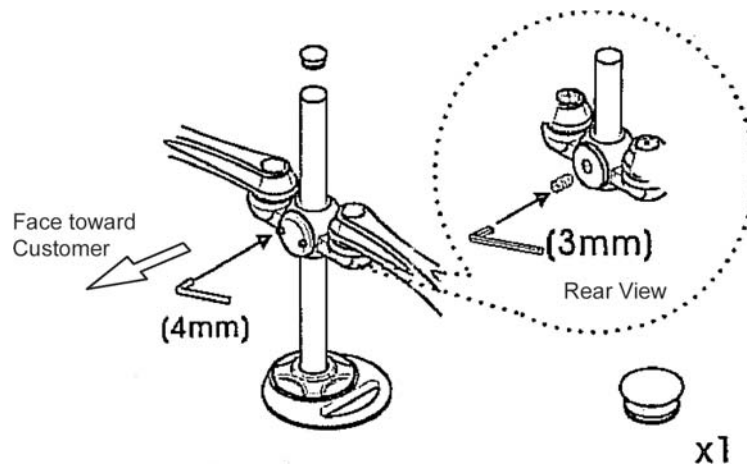
- 4.) Mount the monitors to the arm.

**Figure B-20 Monitor Installation**



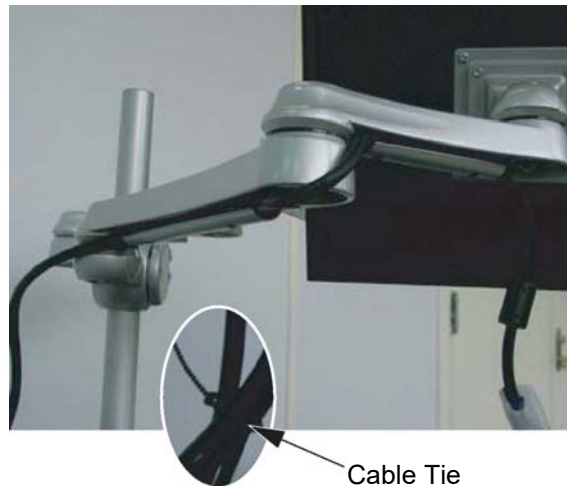
- 5.) Mount arms with pole. (Figure B-21)
  - a.) Loosen two screws slightly. Put the arm into the pole and adjust it to the suitable position. Middle joint mount (two large allen screws) of the monitor arms should face toward the customer.
  - b.) Tighten up the pole with 4mm and 3mm allen keys.
  - c.) Put in the plug on top of the pole.

**Figure B-21 Arm Installation**



- 6.) Put extra hole covers onto the holes not used. (Figure B-21)
- 7.) Route cables.
  - a.) Extended Cables Kit (5160577) for FWS is used to connect monitors, keyboard, mouse, SCIM and trackball. Connection is same with short cables
  - b.) Thread monitor cables through cable covers.
  - c.) Use cable tie to wrap the cables together or wrap the cables with pole.

**Figure B-22 Cable Fixing**



- 8.) Route cables (for FWS 5168666-2/-3), thread cables through worksurface and use cable tie to wrap them together to the back slot of crossbrace (Figure B-23).

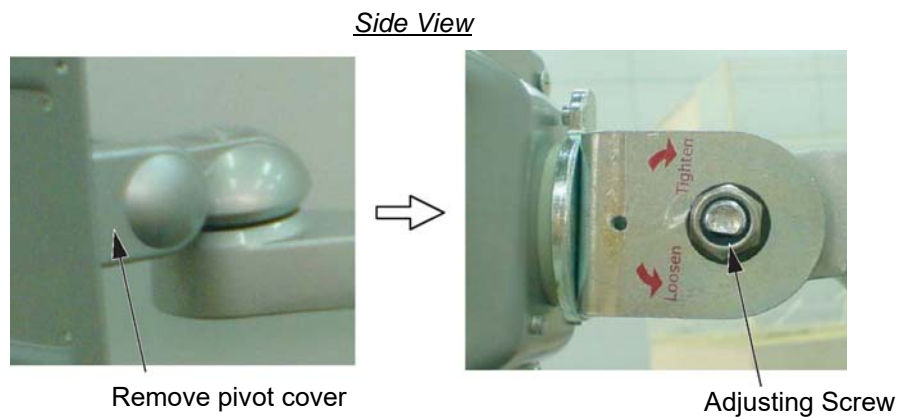
**Figure B-23 Cable Routing**



## 1.3 Monitor Adjustment

- 1.) Position the arms for ergonomic viewing. For optimum ergonomic viewing set top of monitor screen 1" below eye height. With monitor and arm properly supported, loosen screw and adjust up or down to desired height. Retighten to secure arm to pole.
- 2.) Adjust monitor tilt: Tilt monitor back and forth through entire pivot range of motion. If it does not stay in place or movement in one direction is stiff, pivot needs adjustment - see below (pivot cover is removed). Adjust until monitor stays in place and tilting forces, up or down, are equal.  
Increase tilt lifting force: Turn screw clockwise.  
Decrease tilt lifting force: Turn screw counterclockwise.

**Figure B-24 Adjusting Screw**

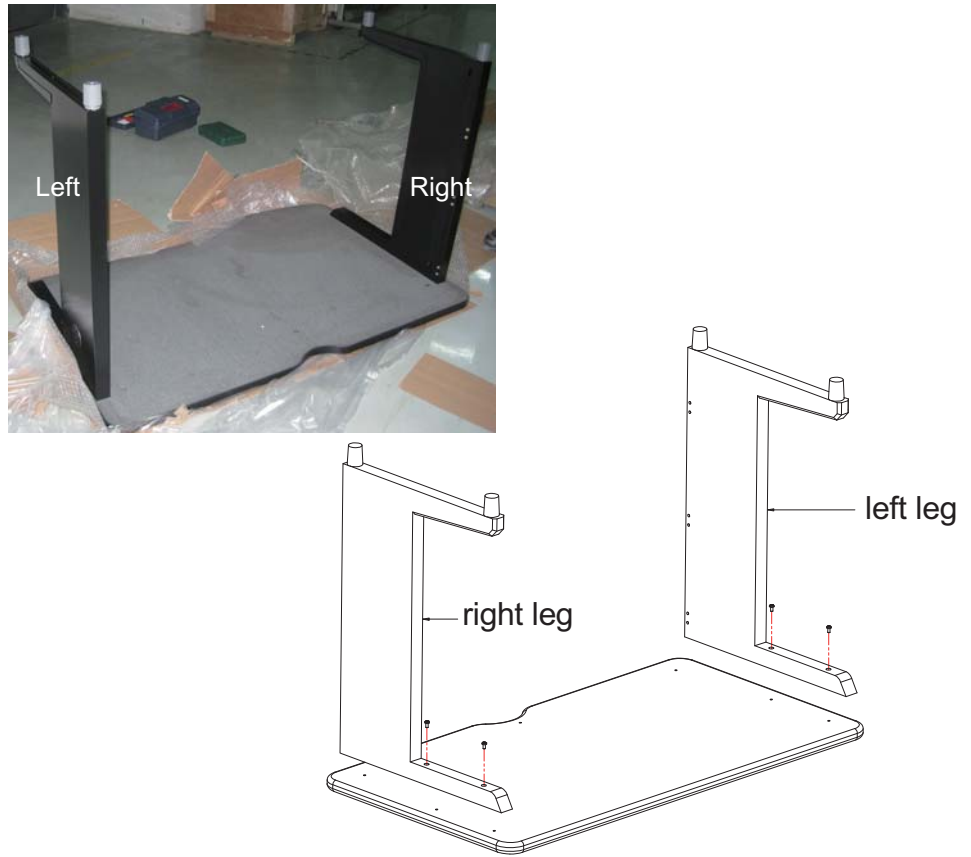


## Section 2.0 Aurora Table Assembly and Adjustment

Aurora table is an optional console table.

- 1.) Remove all the transportation packaging from the Aurora Table, use the packing material as cushion and carefully put tabletop on it to avoid scratches.
- 2.) Assembly the left and right legs to the tabletop by screwing 4 screws.

Figure B-25 Table Legs Installation



- 3.) Prepare crossbar and two beams.



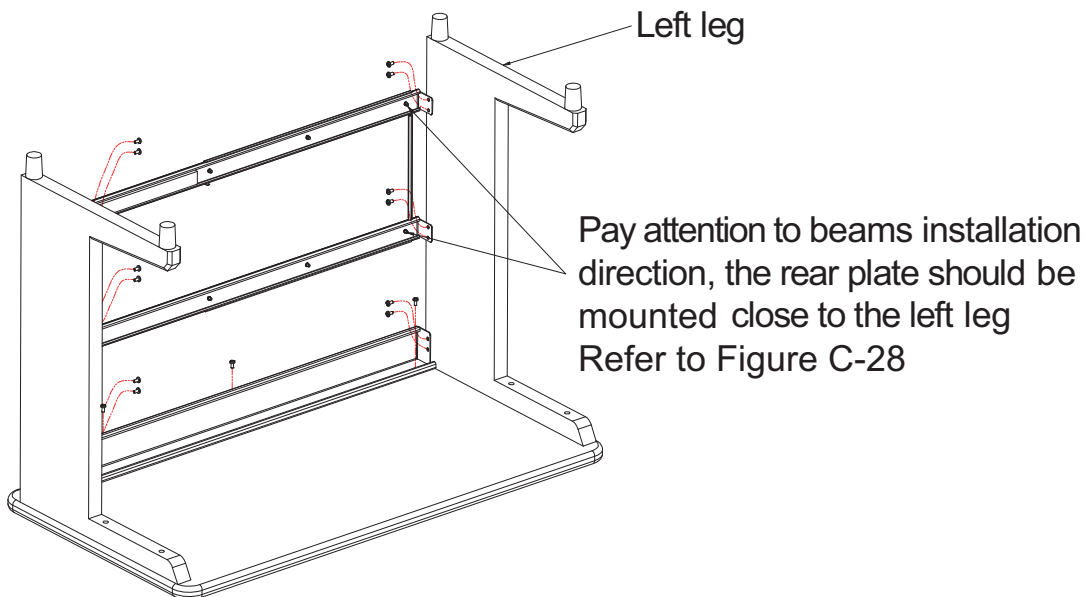
- 4.) Install the upper crossbar by screwing seven screws, three screws for tabletop, four screws for left and right legs.

**Figure B-26 Crossbar Installation**



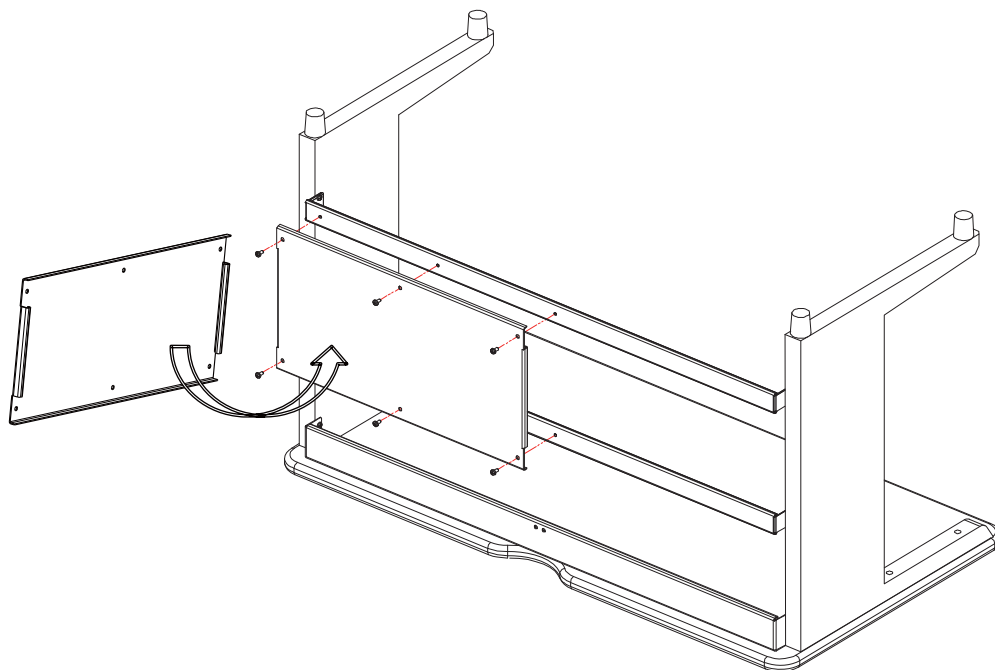
- 5.) Install two beams to the left and right legs as shown in Figure B-27. Note to keep all screws loose.

**Figure B-27 Beams Installation**



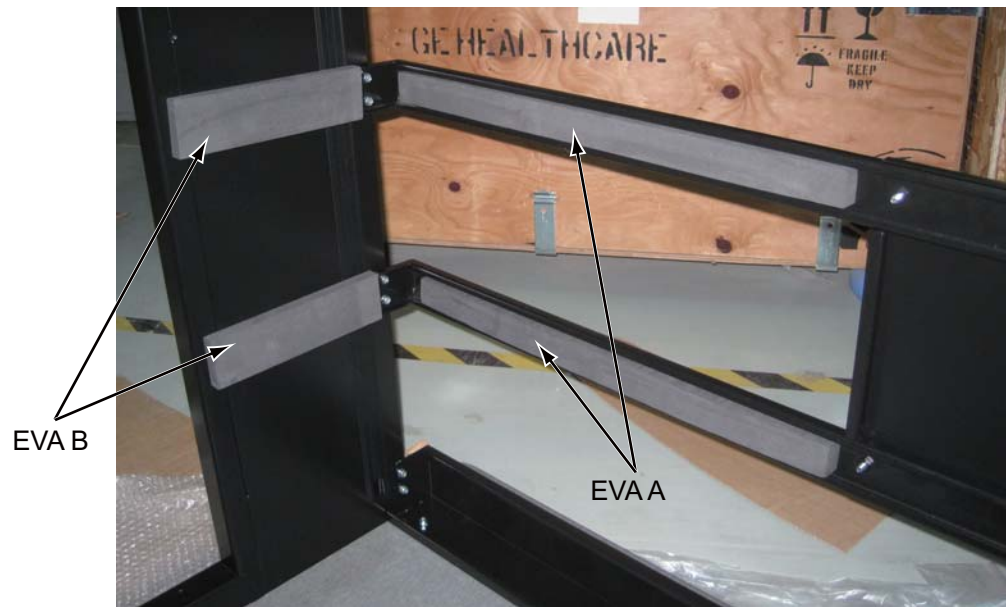
- 6.) Mount the rear plate on two beams by screwing 6 screws.

**Figure B-28 Rear Plate Installation**



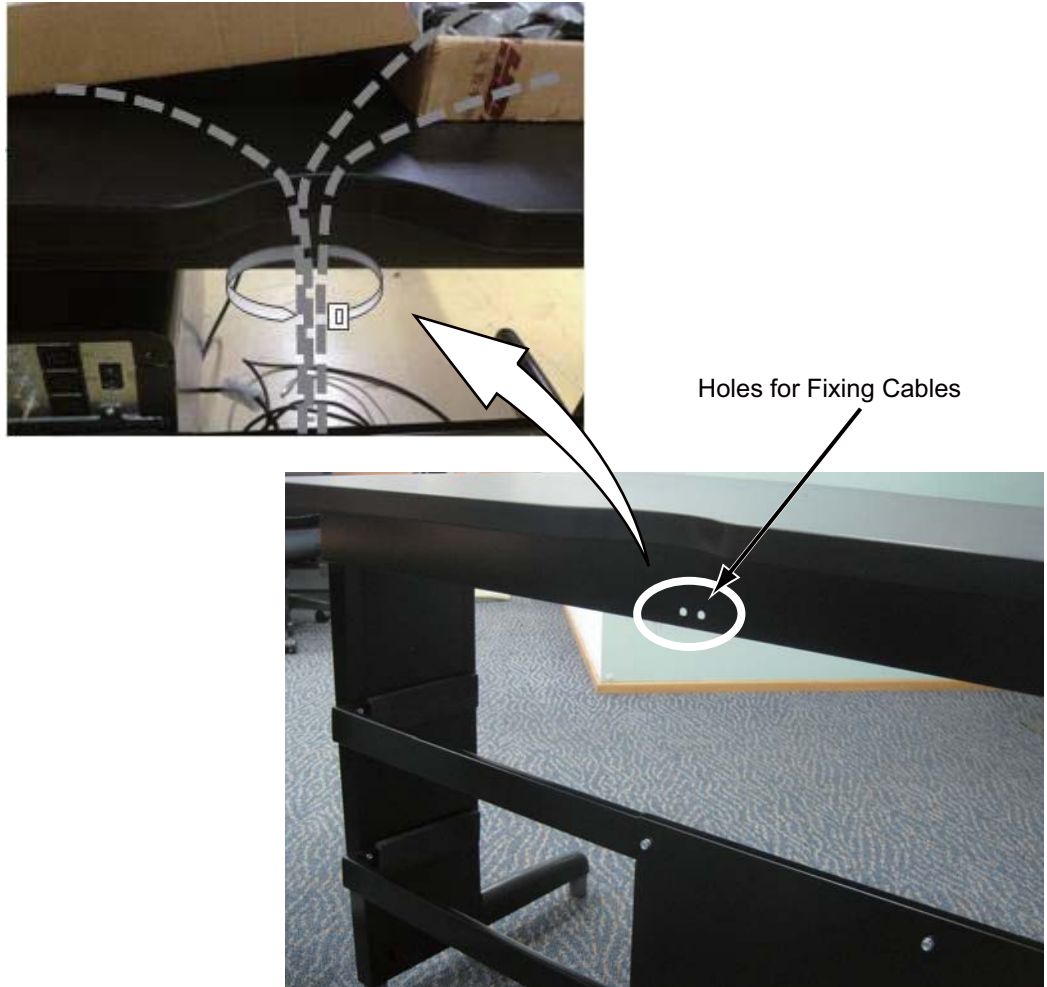
- 7.) Tighten all screws.
- 8.) Stick EVA A on the teams and EVA B on the right leg as shown in Figure B-29.

**Figure B-29 EVA Attaching**



- 9.) Overturn the table, then place monitors and route cables to the table.

Figure B-30 Route cables to the table










# Appendix C

## Pictorial Representation of Required Tools

Use the following guide as a reference, if you are unsure of a tool listed in [Section 2.4, on page 36](#).

**Table C-1 Required Tools**

TOOL NAME	PICTURE	EXAMPLE PART NUMBER*
Adapter		Sears Industrial: 3/8" to 1/2" (9-4258)
Ball-Peen Hammer		Sears Industrial: 1lb/2lb (9-38465)
Canned Air		Miller Stephenson: Aero Duster (MS-222N)
Clamp on Amp Meter		Sears Industrial: 9-WTAD105
Combination Wrench Set		Sears Industrial: U.S. Standard & Metric (9-44048)
Cordless Screwdriver		Sears Industrial: 9-MU65401
Deep Well Socket		Sears Industrial: 3/4" X 3/8" (included with 9-34496)
Dental Pick		
Diagonal Cutting Pliers		Sears Industrial: Small (9-45077)

\* Part Numbers given for reference only. GE Healthcare does not endorse any tool brand name.



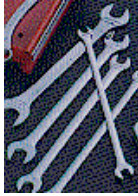







D - Tools

**Table C-1 Required Tools (Continued)**

TOOL NAME	PICTURE	EXAMPLE PART NUMBER*
Drill		Sears Industrial: $\frac{3}{8}$ " or $\frac{1}{2}$ " (9-27859)
Drill Adapter		Sears Industrial: 3" X $\frac{3}{8}$ " (9-APSZ24)
Drill Bit Set		Sears Industrial: U.S. Standard (9-66084)
DVM		Sears Industrial: 9-82028 Sears Industrial: 9-FL873
Extension for Ratchet Wrench		Sears Industrial: 3" X $\frac{1}{2}$ " (9-44133)
Gloves		Sears Industrial: Large (9-40502)
Hammer Drill		Sears Industrial: $\frac{1}{2}$ " (9-27205)
Hex Bit Set		Sears Industrial: $\frac{1}{4}$ " (9-SK45508)
Hex Key (Allen Wrench) Set		Sears Industrial: U.S. Standard (9-46284)

\* Part Numbers given for reference only. GE Healthcare does not endorse any tool brand name.








**Table C-1 Required Tools (Continued)**

TOOL NAME	PICTURE	EXAMPLE PART NUMBER*
Level		Sears Industrial: 4' (9-39856)
Masonry Bit		
Open-End Wrench (Thin or Standard Tappet)		Snap-on: 10mm (SRSM10) & 21mm (LTAM2124)
Pozi Screwdriver		
Ratchet Wrench		Sears Industrial: 3/8" (9-43175)
Reciprocating Saw with Blades		Sears Industrial: 9-MU650921
Safety Glasses		Sears Industrial: 9-18650
Safety Shoes		
Screwdriver Set		Sears Industrial: Phillips & Straight (9-41505)
Socket Set		Sears Industrial: Standard 3/8" (9-34496)

\* Part Numbers given for reference only. GE Healthcare does not endorse any tool brand name.

D - Tools

**Table C-1 Required Tools (Continued)**

TOOL NAME	PICTURE	EXAMPLE PART NUMBER*
Sockets		Sears Industrial: 1 1/8" X 1/2" (9-47516)
Step Ladder		Sears Industrial: 6' (9-WN6006)
Tongue & Groove Pliers		Sears Industrial: Large (9-CL440)
Torpedo Level		Sears Industrial: 9" (9-39829)
Torque Wrench		Sears Industrial: 3/8" (9-WR3470)
Universal Joint		Sears Industrial: 3/8" (9-4435)
Vacuum Cleaner		Sears Industrial: 8 Gal (9-17780)

\* Part Numbers given for reference only. GE Healthcare does not endorse any tool brand name.

# Appendix D

## Option Cables

Run all option cables that connect to the Table, Gantry or Console.  
For example the remote monitor (through the splitter) and SmartScore.  
For more information, refer to "LightSpeed Linux CRT & LCD Monitor Option"

**Figure D-1 Remote Monitor Splitter**



**Figure D-2 SmartScore**



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# Appendix E

## Regulatory Clearance Quick Reference Guide

### Section 1.0 Regulatory Code Description

**Egress:** 29 CFR 1910 Subpart E (OSHA) and NFPA 101 (Life Safety Code) define the minimum requirements for means of egress. The requirement most applicable to equipment installation and room layout is minimum width of exit access. Under OSHA 1910.37(f)(6), the minimum width of exit access shall in no case be less than 711 mm (28 in) from any potentially occupied point in the room.

Under NFPA 101 (2006 edition) 7.3.4.1, the minimum width of any means of egress is 914 mm (36 in). However, NFPA allows this to be reduced to 711 mm (28 in) around furniture or equipment, provided that a 914 mm (36 in) clearance would otherwise be available without moving permanent walls.

**Electrical Clearance:** 29 CFR 1910 Subpart S (OSHA) and NFPA 70E (Standard for Electrical Safety in the Workplace) define minimum clearance requirements for the workspace around electrical equipment. Under both OSHA 1910.303(g)(1) and NFPA 70E (2004 edition) 400.15, a minimum clear space of 914 mm (36 in) depth (with minimum 762mm (30 in) width and 1981 mm (78 in) height) must be provided in front of electrical equipment with parts operating at 600 volts or below and likely to require examination, adjustment, servicing, or maintenance while energized.

This safety clearance requirement applies to all GEHC equipment. Although 914 mm (36 in) is the minimum clearance for most installations, the standards require an increased minimum clearance distance where parts operate above 150 volts (but still below 600 volts) under the following circumstances:

- If the wall or surface directly facing the electrical equipment is grounded (e.g. brick, concrete, or tile) or includes grounded protrusions (such as medical gas ports, metal door or window frames, water sources and metallic sink structures, metallic cabinetry, electrical disconnects or emergency off panels, air conditioners or vents), then a 1067mm (42 in) clearance depth is required.
- If the possibility exists of exposed and unguarded live parts on both sides of the workspace (for example if a power distribution unit were positioned on the wall directly facing the GEHC equipment), then a 1219 mm (48 in) clearance depth is required.

## Section 2.0

### Terms and Definitions

**Egress:** The path of exit from within any room. U.S. regulations require a minimum of 711 mm (28 in) of continuous and unobstructed space, including trip hazards along the path of exit.

**Workspace:** The dimensional box required for safe inspection or service of energized equipment. It consists of depth, width, and height. The depth dimension is measured perpendicular to the direction of access. The U.S. regulation minimum is 914 mm (36 in), but additional conditions can increase the minimum dimension requirement. GEHC defines this as the envelope of the component superstructure with the external covers in place.

This is the dimensional box required for safe inspection or service of energized equipment. It consists of depth, width, and height. The depth dimension is measured perpendicular to the direction of access. U.S regulation is minimum of 914 mm (36 in). Additional conditions can increase the minimum requirement. CT defines this as the envelope of the component superstructure. For the NGPDU it is with the front panel removed. For the gantry and table, it is with the patient or external covers removed.

**Service Access Width:** The width of the workspace in front of the equipment. A minimum of 762 mm (30 in), or the width of the equipment, whichever is greater.

**Head Clearance:** The height dimension of the workspace. The height of the workspace measured from the floor at the front edge of the equipment to the ceiling or overhead obstruction(s). 1981 mm (78 in), or the height of the equipment, whichever is greater.

**Grounded Wall:** Any wall that can be electrically conductive to earth ground. Masonry, concrete, and tile are considered conductive. Additional commonly found aspects of a wall should also be considered grounded. This is not an all-inclusive list:

- Medical gas ports and plates
- Metal doors and window frames
- Water sources and metallic sink structures
- Metallic wall-mounted cabinetry
- A1 main disconnect panel
- Equipment Emergency Off panels
- Industrial equipment (such as air conditioners and vents)
- Expansion joints

The following are not considered as grounded elements of a common wall:

- Standard wall outlet
- Light switches
- Telephones
- Communication wall jacks

## Section 3.0 Regulatory and Service Clearances

### 3.1 Regulated Minimum Working Clearance by Major Subsystem

- Requirements apply to equipment operating at 600V or less, where examination, adjustment, servicing, or maintenance is likely to be performed while live parts are exposed.
- Direction of Service Access is defined as perpendicular to the surface of the equipment being serviced.
- Required regulatory clearance distances must be maintained and may not be used for storage. This includes normal system operation as well as service inspection or maintenance.

WORKSPACE REQUIREMENT	MINIMUM CLEAR SPACE	ADDITIONAL CONDITIONS
Direction of service access: Front of console	914mm (36 in.)	No exposed live part hazards with cover in place. If the console is placed under a counter, the front edge of the console must be even with the vertical edge of the console workspace.  Note: This component is typically serviced from the front with access to the rear.
Service access width: Front of console	762 mm (30 in.)	This is the width of the workspace in front of the equipment. 762 mm (30 in.) minimum or the width of the equipment, whichever is greater.
Head clearance	1981 mm (78 in.)	The height of the workspace measured from the floor at the front edge of the equipment to the ceiling or overhead obstruction(s).  1981 mm (78 in.) or height of equipment, which ever is greater.

Note: Distances are measured to the finished covers.

**Table F-1 Console Subsystem**

WORKSPACE REQUIREMENT	MINIMUM CLEAR SPACE	ADDITIONAL CONDITIONS
Direction of service access: Front of PDU	914 mm (36 in.)*	No exposed live part hazards with cover in place.  This component is typically serviced from the front with access to the rear.  *1219 mm (48 in.), if exposed live parts of 151 - 600V are present on both sides of workspace, with the operator between.  *1067 mm (42 in.), if opposite wall is grounded and exposed live parts of 151 - 600V are present.

**Table F-2 PDU Subsystem**

WORKSPACE REQUIREMENT	MINIMUM CLEAR SPACE	ADDITIONAL CONDITIONS
Service access width: Left-Right of workspace	762 mm (30 in.)	This is the width of the workspace in front of the equipment. 762 mm (30 in.) minimum or the width of the equipment, whichever is greater.
Head clearance	1981 mm (78 in.)	The height of the workspace measured from floor at the front edge of equipment to ceiling or overhead obstruction(s). 1981 mm (78 in.) or the height of equipment, which ever is greater

**Table F-2 PDU Subsystem (Continued)**

WORKSPACE REQUIREMENT	MINIMUM CLEAR SPACE	ADDITIONAL CONDITIONS
Direction of service access: All sides	914 mm (36 in.)*	*1219 mm (48 in.), if exposed live parts of 151 - 600 volts are present on both sides of workspace with the operator between. *1067 mm (42 in.), if the opposite wall is grounded and exposed live parts of 151 - 600 volts are present.
Service access width: Left-Right of workspace	762 mm (30 in.)	This is the width of the workspace on each side of the equipment. 762 mm (30 in.) minimum or the width of the equipment, whichever is greater.

Note: Distances are measured from the enclosure, not the finish covers.

**Table F-3 Gantry Subsystem**

WORKSPACE REQUIREMENT	MINIMUM CLEAR SPACE	ADDITIONAL CONDITIONS
Direction of service access: Table head or foot	914 mm (36 in.)*	No exposed live part hazards with cover in place. This component is typically serviced from all 4 sides This is the width of the workspace on each side of the equipment. 762 mm (30 in.) min or the width of the equipment, whichever is greater.
Direction of service access: Table sides	914 mm (36 in.)*	*This distance can be reduced to 711 mm (28 in.) provided a written and signed approval is obtained by the local team from the local AHJ (Authority Having Jurisdiction). The signed document must be on file with GE.
Direction of service access: Table foot [CT ONLY]	711 mm (28 in.)*	*457 mm (18 in.) minimum for Front Gantry Cover removal only if unobstructed egress space of 711 mm (28 in.) is maintained around the equipment for room exit. This also means no trip hazards exist along the path of egress.

Note: Distances are measured from the enclosure, not the finish covers.

**Table F-4 Table Subsystem**

WORKSPACE REQUIREMENT	MINIMUM CLEAR SPACE	ADDITIONAL CONDITIONS
Service access width: Left-Right of workspace	762 mm (30 in.)	This is the width of the workspace in front of the equipment. 762 mm (30 in.) minimum or the width of the equipment, whichever is greater.
Note: Distances are measured from the enclosure, not the finish covers.		

**Table F-4 Table Subsystem (Continued)**

WORKSPACE REQUIREMENT	MINIMUM CLEAR SPACE	ADDITIONAL CONDITIONS
Direction of service Access (Front of UPS)	914 mm (36 in.)*	There are no exposed live part hazards with the cover in place. This component is typically serviced from the front with access to the rear. *If exposed live parts of 151 - 600 volts are present, 1219 mm (48 in.) is required on both sides of the workspace with the operator between. *If the opposite wall is grounded and exposed live parts of 151 - 600 volts are present, 1067 mm (42 in.) is required.
Service access width: (Right side and length of UPS)	762 mm (30 in.)	This is the width of the working space in front of the equipment. A minimum of 762 mm (30 in.) or the width of the equipment, whichever is greater, is required.
Head Clearance	1981 mm (78 in.)	This is the height of the workspace measured from the floor at the front edge of the equipment to the ceiling or overhead obstruction(s). A minimum of 1981 mm (78 in.) or the height of the equipment, whichever is greater, is required.

**Table F-5 UPS Subsystem**

WORKSPACE REQUIREMENT	MINIMUM CLEAR SPACE	ADDITIONAL CONDITIONS
Direction of service Access (Front of A1 Disconnect)	914.4 mm (36 in.)*	There are no exposed live part hazards with the cover in place. This component is typically serviced from the front with access to the rear. *If exposed live parts of 151 - 600 volts are present, 1219 mm (48 in.) is required on both sides of the workspace with the operator between. *If the opposite wall is grounded and exposed live parts of 151 - 600 volts are present, 1067 mm (42 in.) is required.

**Table F-6 A1 Disconnect Subsystem**

WORKSPACE REQUIREMENT	MINIMUM CLEAR SPACE	ADDITIONAL CONDITIONS
Service access width: (Right side and length of A1 Disconnect)	762 mm (30 in.)	This is the width of the working space in front of the equipment. A minimum of 762 mm (30 in.) or the width of the equipment, whichever is greater, is required.
Head Clearance	1981 mm (78 in.)	This is the height of the workspace measured from the floor at the front edge of the equipment to the ceiling or overhead obstruction(s). A minimum of 1981 mm (78 in.) or the height of the equipment, whichever is greater, is required.

**Table F-6 A1 Disconnect Subsystem (Continued)**

## Section 4.0

### Minimum Room Size (Limited Access)

The CT Gantry Left Side Limited Access Initiative provides the capability to reduce the minimum room size for CT Systems while still meeting all installation requirements and specifications. This adds left side flexibility, allowing the CT system to be sited in rooms with widths 559 mm (22 in.) smaller than the current minimum room width.

In the minimum room configuration, left-side access and egress may be restricted for sites with less than 711 mm (28 in.) of left side clearance. Refer to your site's installation print for your room's detail.

#### 4.1 Regulatory Caution

Site prints are required for all system installations including relocation and moves. CT room layout as shown on your site print shall meet all regulatory requirements as described in the installation manual. Additional room components such as cabinets reduce room size. Equipment not shown on the site print may void the caution statement, making the room non-compliant. Actual site measurements before installation will be taken to determine room size and compliance.

For minimum room size sites, where the gantry distance between the wall and side cover is between 357 mm – 686 mm (14 in. – 27 in.) the left side cannot be considered or used for egress. In this configuration, egress around the left side of the gantry will be restricted. Unobstructed egress route shall be provided around the table foot end or behind the back of the gantry. If millwork is required or will be installed later, consider room placement locations that allows for regulatory compliance and clearances.

#### 4.2 Operational Caution

In this minimum room layout (357 mm – 686 mm [14 in. to 27 in.]) the customer should consider workflow, customer access for patient care, and critical-care operations space requirements. Additionally, there may be limited equipment access on the gantry left side when loading patients or when positioning patient equipment in the room between the gantry and the wall. Detailed customer installation tasks are detailed in the product PIM. Chapters 1-4.

#### 4.3 Recommended Room Size

This room configuration offers the most flexibility for future upgrades. It has sufficient workspace and space to add millwork, while meeting all regulatory requirements. This room would be compatible with most two-step future installations.

#### 4.4 Typical Room Size

This room configuration allows for some future upgrades. It has sufficient workspace but limited space to add millwork and meet all regulatory requirements. This room may be compatible with some two-step future installations.

#### 4.5 Minimum Room Size

This room configuration allows for no future upgrades. It has limited workspace and no in-room millwork, but meets all regulatory requirements. This room is not compatible with two-step future installations.

## Section 5.0 System Specifications

### 5.1 Recommended Room Size

3962 x 6299 mm (13' x 20'8")  
Same Regulatory requirements apply

### 5.2 Typical Room Size

3912 x 5868 mm (12'10" x 19'3")  
Same Regulatory requirements apply

### 5.3 Minimum Room Size

3353 x 6096 mm (11' x 20')  
Same Regulatory requirements apply, with the addition of no energized left side service.

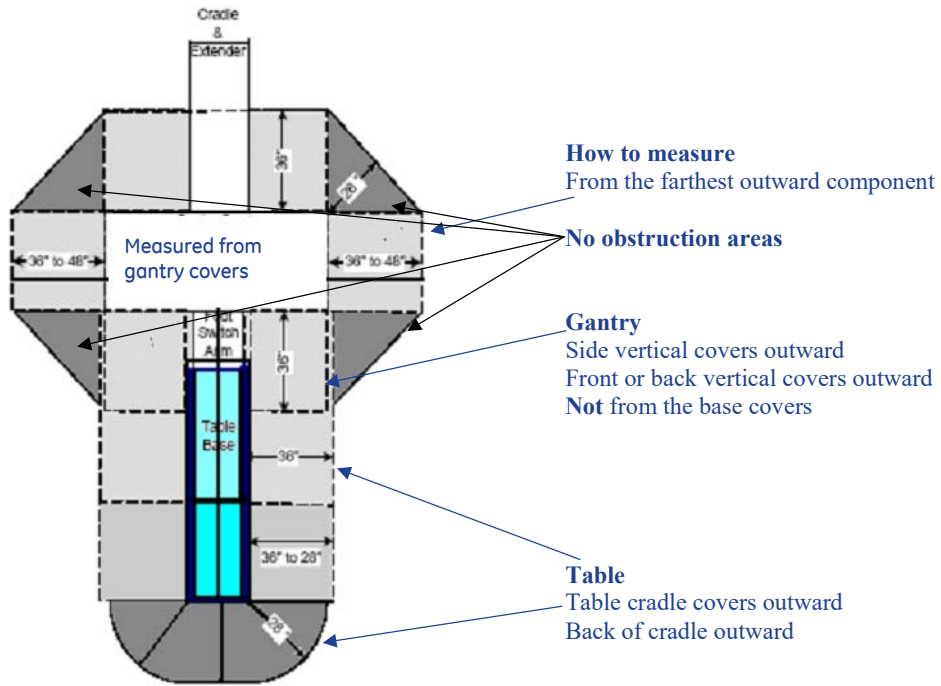
### 5.4 Rooms w/ Less Than 28 in. Egress Clearance around Table Foot End

Egress requires a clear unobstructed route out of the room, either around the back of the gantry or around the back of the table. If your egress route is not around the back of the table, maintain 18 in. of clearance between the back of the table, with a continuous width of 126 in. on each side to any obstruction so that the front cover can be removed. Refer to the Pre-Installation manual for more details on service clearances.

#### Exceptions

Rooms smaller than 11' x 20' or 20'8" will require construction to meet the minimum

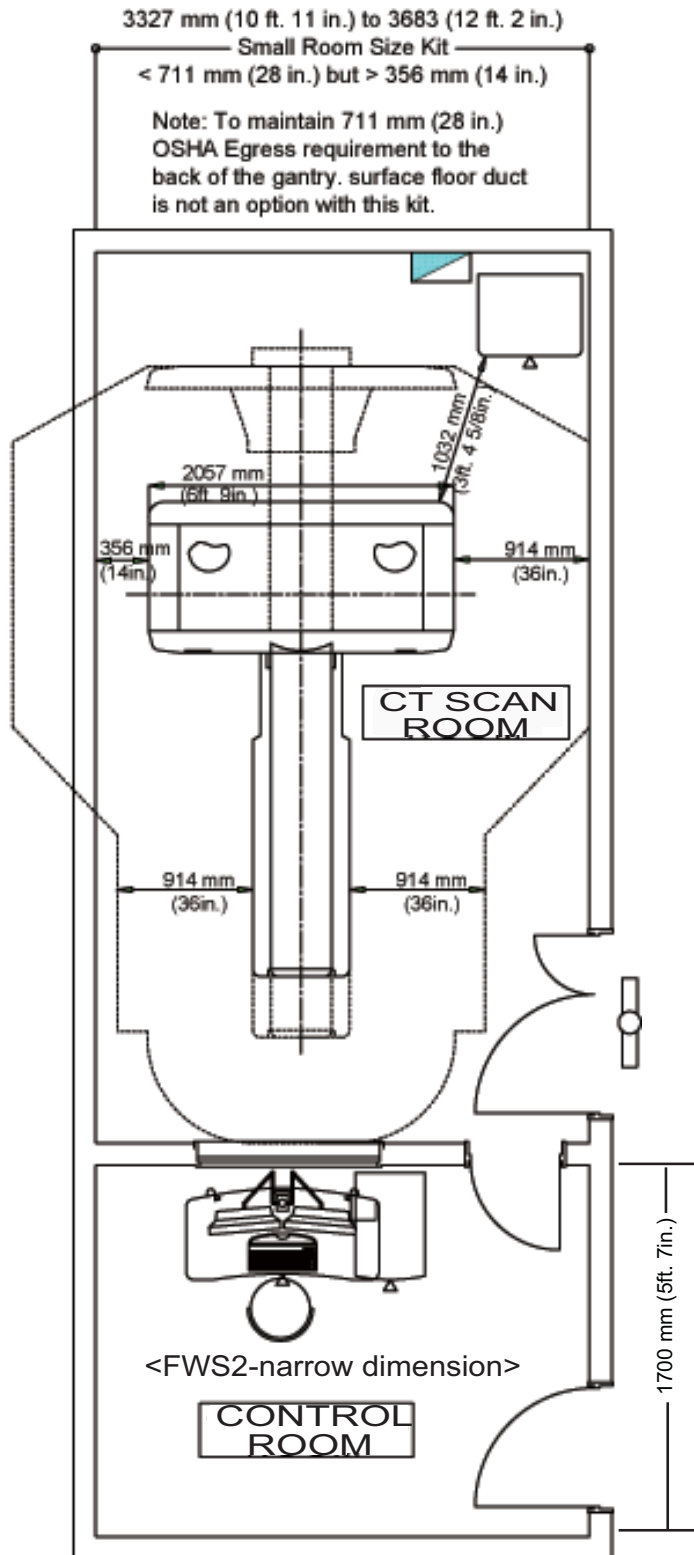
## Section 6.0 How to Measure



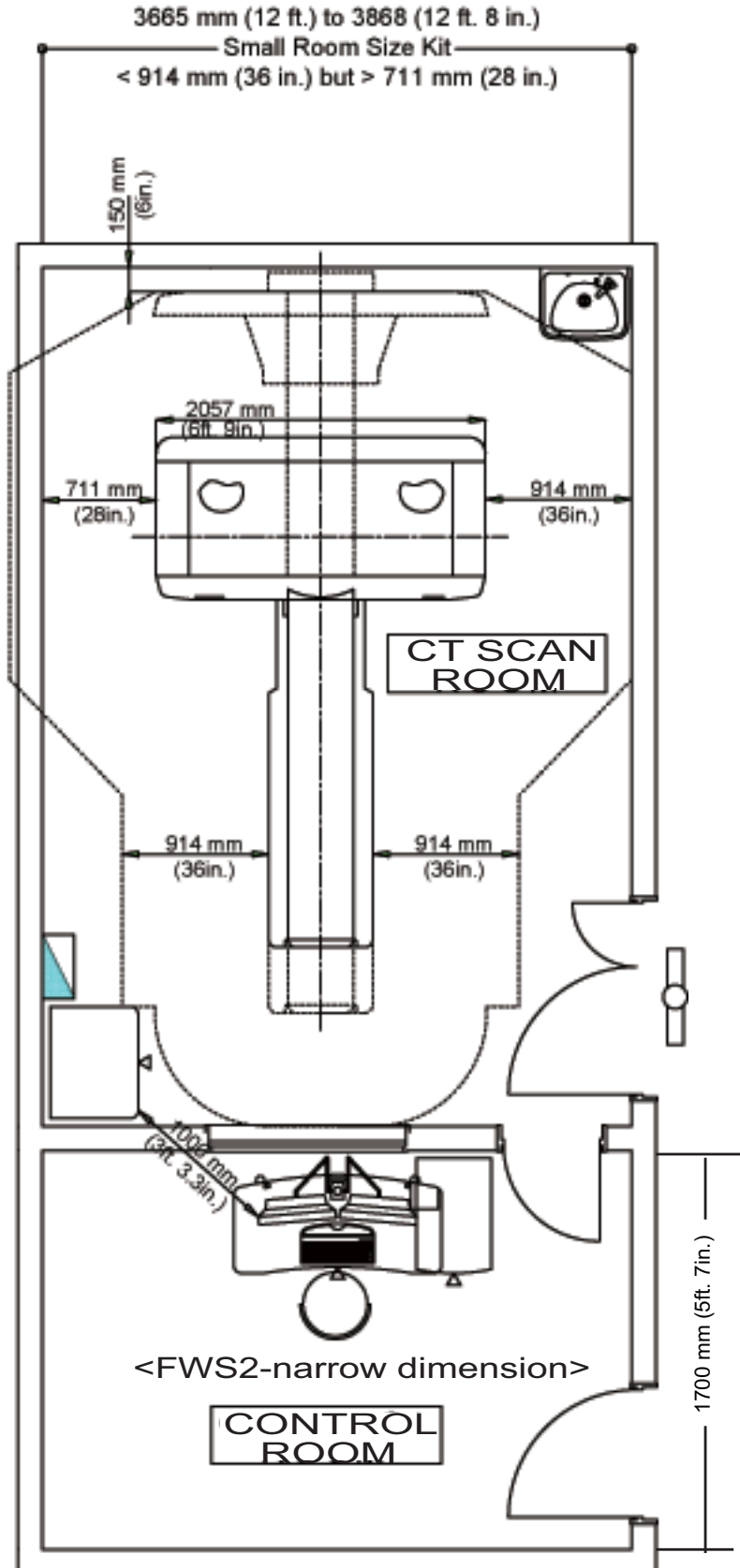
## 6.1 Minimum Room Size & Requirement Layouts

Note: **If the room size does not meet the recommended room layouts, but meet the minimum room layouts, you don't have to submit the concession.**

**Room A** - Less than 711 mm (28 in.) but greater than 256 mm (14 in.) measured from the covers to the left sidewall. In this configuration service, egress and workspace are compromised around the gantry.

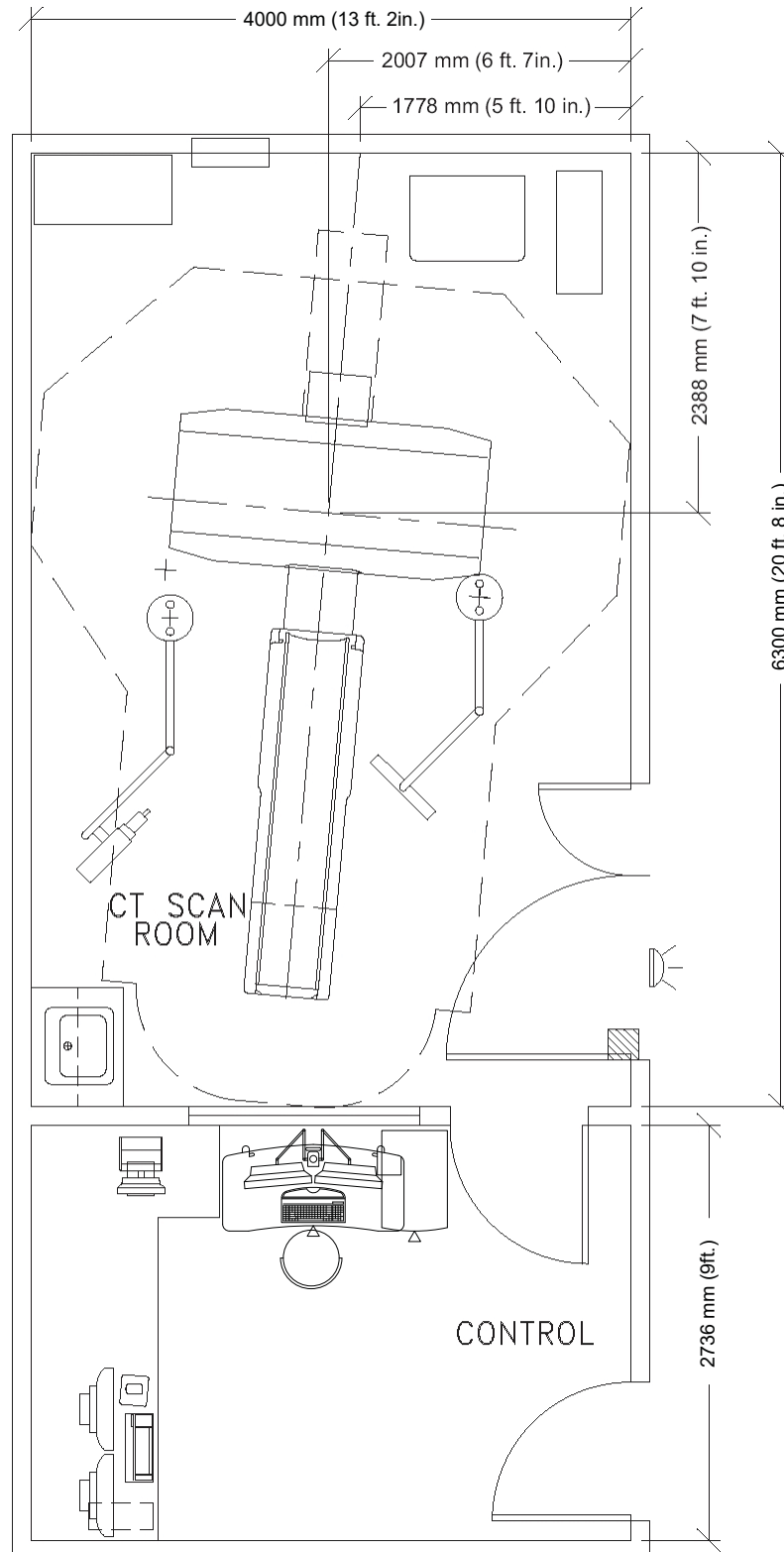


**Room B** - Less than 36 in. but greater than 28 in. measured from the covers to the left sidewall. In this configuration service, egress and workspace are acceptable around the gantry.



## 6.2 Recommended Room Size & Requirement Layouts

Note: Your room layout may meet the Recommended or Typical room requirements but look different than the room shown below. Contact your sales person to have a detail room layout completed for your site.





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