Optima CT620
Installation Manual

(Book 1 of 2)

5836557-1EN
Rev. 1

Book 1 of 2: Mechanical Installation

Pages 1 - 212

Effectivity

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

- Optima CT620

IMPORTANT PRECAUTIONS

LANGUAGE

ПРЕДУПРЕЖДЕНИЕ (BG)	Това упътване за работа е налично само на английски език. • Ако доставчикът на услугата на клиента изиска друг език, задължение на клиента е да осигури превод. • Не използвайте оборудването, преди да сте се консултирали и разбрали упътването за работа. • Неспазването на това предупреждение може да доведе до нараняване на доставчика на услугата, оператора или пациента в резултат на токов удар, механична или друга опасност.
警告 (ZH-CN)	本维修手册仅提供英文版本。 • 如果维修服务提供商需要非英文版本，客户需自行提供翻译服务。 • 未详细阅读和完全理解本维修手册之前，不得进行维修。 • 忽略本警告可能对维修人员，操作员或患者造成触电、机械伤害或其他形式的伤害。
警告 (ZH-HK)	本服務手冊僅提供英文版本。 • 倘若客戶的服務供應商需要英文以外之服務手冊，客戶有責任提供翻譯服務。 • 除非已參閱本服務手冊及明白其內容，否則切勿嘗試維修設備。 • 不遵從本警告或會令服務供應商、網絡供應商或病人受到觸電、機械性或其他的危險。
警告 (ZH-TW)	本維修手冊僅有英文版。 • 若客戶的維修廠商需要英文版以外的語言，應由客戶自行提供翻譯服務。 • 請勿試圖維修本設備，除非 您已查閱並瞭解本維修手冊。 • 若未留意本警告，可能導致維修廠商、操作員或病患因觸電、機械或其他危險而受傷。
UPOZORENJE (HR)	Ovaj servisni priručnik dostupan je na engleskom jeziku. • Ako davatelj usluge klijenta treba neki drugi jezik, klijent je dužan osigurati prijevod. • Ne pokušavajte servisirati opremu ako niste u potpunosti pročitali i razumjeli ovaj servisni priručnik. • Zanemarite li ovo upozorenje, može doći do ozljede davatelja usluge, operatera ili pacijenta uslijed strujnog udara, mehaničkih ili drugih rizika.
VÝSTRAHA (CS)	Tento provozní návod existuje pouze v anglickém jazyce. • V případě, že externí služba zákazníkům potřebuje návod v jiném jazyce, je zajištění překladu do odpovídajícího jazyka úkolem zákazníka. • Nesnažte se o údržbu tohoto zařízení, aniž byste si přečetli tento provozní návod a pochopili jeho obsah. • V případě nedodržování této výstrahy může dojít k poranění pracovníka prodejního servisu, obslužného personálu nebo pacientů vlivem elektrického proudu, respektive vlivem mechanických či jiných rizik.

ADVARSEL (DA)	Denne servicemanual findes kun på engelsk. • Hvis en kundes tekniker har brug for et andet sprog end engelsk, er det kundens ansvar at sørge for oversættelse. • Forsøg ikke at servicere udstyret uden at læse og forstå denne servicemanual. • Manglende overholdelse af denne advarsel kan medføre skade på grund af elektrisk stød, mekanisk eller anden fare for teknikeren, operatøren eller patienten.
WAARSCHUWING (NL)	Deze onderhoudshandleiding is enkel in het Engels verkrijgbaar. • Als het onderhoudspersoneel een andere taal vereist, dan is de klant verantwoordelijk voor de vertaling ervan. • Probeer de apparatuur niet te onderhouden alvorens deze onderhoudshandleiding werd geraadpleegd en begrepen is. • Indien deze waarschuwing niet wordt opgevolgd, zou het onderhoudspersoneel, de operator of een patiënt gewond kunnen raken als gevolg van een elektrische schok, mechanische of andere gevaren.
WARNING (EN)	This service manual is available in English only. • If a customer's service provider requires a language other than English, it is the customer's responsibility to provide translation services. • Do not attempt to service the equipment unless this service manual has been consulted and is understood. • Failure to heed this warning may result in injury to the service provider, operator or patient from electric shock, mechanical or other hazards.
HOIATUS (ET)	See teenindusjuhend on saadaval ainult inglise keeles. • Kui klienditeeninduse osutaja nõuab juhendit inglise keelest erinevas keeles, vastutab klient tõlketeenuse osutamise eest. • Ärge üritage seadmeid teenindada enne eelnevalt käesoleva teenindusjuhendiga tutvumist ja sellest aru saamist. • Käesoleva hoiatuse eiramine võib põhjustada teenuseosutaja, operaatori või patsiendi vigastamist elektrilöögi, mehaanilise või muu ohu tagajärjel.
VAROITUS (FI)	Tämä huolto-ohje on saatavilla vain englanniksi. • Jos asiakkaan huoltohenkilöstö vaatii muuta kuin englanninkielistä materiaalia, tarvittavan käännöksen hankkiminen on asiakkaan vastuulla. • Älä yritä korjata laitteistoa ennen kuin olet varmasti lukenut ja ymmärtänyt tämän huolto-ohjeen. • Mikäli tätä varoitusta ei noudateta, seurauksena voi olla huoltohenkilöstön, laitteiston käyttäjän tai potilaan vahingoittuminen sähköiskun, mekaanisen vian tai muun vaaratilanteen vuoksi.
ATTENTION (FR)	Ce manuel d'installation et de maintenance est disponible uniquement en anglais. • Si le technicien d'un client a besoin de ce manuel dans une langue autre que l'anglais, il incombe au client de le faire traduire. • Ne pas tenter d'intervenir sur les équipements tant que ce manuel d'installation et de maintenance n'a pas été consulté et compris. • Le non-respect de cet avertissement peut entraîner chez le technicien, l'opérateur ou le patient des blessures dues à des dangers électriques, mécaniques ou autres.

WARNUNG (DE)	Diese Serviceanleitung existiert nur in englischer Sprache. • Falls ein fremder Kundendienst eine andere Sprache benötigt, ist es Aufgabe des Kunden für eine entsprechende Übersetzung zu sorgen. • Versuchen Sie nicht diese Anlage zu warten, ohne diese Serviceanleitung gelesen und verstanden zu haben. • Wird diese Warnung nicht beachtet, so kann es zu Verletzungen des Kundendiensttechnikers, des Bedieners oder des Patienten durch Stromschläge, mechanische oder sonstige Gefahren kommen.
ΠΡΟΕΙΔΟΠΟΙΗΣΗ (EL)	Το παρόν εγχειρίδιο σέρβις διατίθεται μόνο στα αγγλικά. • Εάν ο τεχνικός σέρβις ενός πελάτη απαιτεί το παρόν εγχειρίδιο σε γλώσσα εκτός των αγγλικών, αποτελεί ευθύνη του πελάτη να παρέχει τις υπηρεσίες μετάφρασης. • Μην επιχειρήσετε την εκτέλεση εργασιών σέρβις στον εξοπλισμό αν δεν έχετε συμβουλευτεί και κατανοήσει το παρόν εγχειρίδιο σέρβις. • Αν δεν προσέξετε την προειδοποίηση αυτή, ενδέχεται να προκληθεί τραυματισμός στον τεχνικό σέρβις, στο χειριστή ή στον ασθενή από ηλεκτροπληξία, μηχανικούς ή άλλους κινδύνους.
FIGYELMEZTETÉS (HU)	Ezen karbantartási kézikönyv kizárólag angol nyelven érhető el. • Ha a vevő szolgáltatója angoltól eltérő nyelvre tart igényt, akkor a vevő felelőssége a fordítás elkészíttetése. • Ne próbálja elkezdeni használni a berendezést, amíg a karbantartási kézikönyvben leírtakat nem értelmezték. • Ezen figyelmeztetés figyelmen kívül hagyása a szolgáltató, működtető vagy a beteg áramütés, mechanikai vagy egyéb veszélyhelyzet miatti sérülését eredményezheti.
AÐVÖRUN (IS)	Þessi þjónustuhandbók er aðeins fáanleg á ensku. • Ef að þjónustuveitandi viðskiptamanns þarfnast annas tungumáls en ensku, er það skylda viðskiptamanns að skaffa tungumálaþjónustu. • Reynið ekki að afgreiða tækið nema að þessi þjónustuhandbók hefur verið skoðuð og skilin. • Brot á sinna þessari aðvörun getur leitt til meiðsla á þjónustuveitanda, stjórnanda eða sjúklings frá raflosti, vélrænu eða öðrum áhættum.
AVVERTENZA (IT)	Il presente manuale di manutenzione è disponibile soltanto in lingua inglese. • Se un addetto alla manutenzione richiede il manuale in una lingua diversa, il cliente è tenuto a provvedere direttamente alla traduzione. • Procedere alla manutenzione dell'apparecchiatura solo dopo aver consultato il presente manuale ed averne compreso il contenuto. • Il mancato rispetto della presente avvertenza potrebbe causare lesioni all'addetto alla manutenzione, all'operatore o ai pazienti provocate da scosse elettriche, urti meccanici o altri rischi.
警告 (JA)	このサービスマニュアルには英語版しかありません。 • サービスを担当される業者が英語以外の言語を要求される場合、翻訳作業はその業者の責任で行うものとさせていただきます。 • このサービスマニュアルを熟読し理解せずに、装置のサービスを行わないでください。 • この警告に従わない場合、サービスを担当される方、操作員あるいは患者さんが、感電や機械的又はその他の危険により負傷する可能性があります。

경고 (KO)	본 서비스 매뉴얼은 영어로만 이용하실 수 있습니다 . • 고객의 서비스 제공자가 영어 이외의 언어를 요구할 경우 , 번역 서비스를 제공하는 것은 고객의 책임입니다 . • 본 서비스 매뉴얼을 참조하여 숙지하지 않은 이상 해당 장비를 수리하려고 시도하지 마십시오 . • 본 경고 사항에 유의하지 않으면 전기 쇼크 , 기계적 위험 , 또는 기타 위험으로 인해 서비스 제공자 , 사용자 또는 환자에게 부상을 입힐 수 있습니다 .
BRĪDINĀJUMS (LV)	Šī apkopes rokasgrāmata ir pieejama tikai angļu valodā. • Ja klienta apkopes sniedzējam nepieciešama informācija citā valodā, klienta pienākums ir nodrošināt tulkojumu. • Neveiciet aprīkojuma apkopi bez apkopes rokasgrāmatas izlasīšanas un saprašanas. • Šī brīdinājuma neievērošanas rezultātā var rasties elektriskās strāvas trieciena, mehānisku vai citu faktoru izraisītu traumu risks apkopes sniedzējam, operatoram vai pacientam.
ĮSPĖJIMAS (LT)	Šis eksploatavimo vadovas yra tik anglų kalba. • Jei kliento paslaugų tiekėjas reikalauja vadovo kita kalba – ne anglų, suteikti vertimo paslaugas privalo klientas. • Nemėginkite atlikti įrangos techninės priežiūros, jei neperskaitėte ar nesupratote šio eksploatavimo vadovo. • Jei nepaisysite šio įspėjimo, galimi paslaugų tiekėjo, operatoriaus ar paciento sužalojimai dėl elektros šoko, mechaninių ar kitų pavojų.
ADVARSEL (NO)	Denne servicehåndboken finnes bare på engelsk. • Hvis kundens serviceleverandør har bruk for et annet språk, er det kundens ansvar å sørge for oversettelse. • Ikke forsøk å reparere utstyret uten at denne servicehåndboken er lest og forstått. • Manglende hensyn til denne advarselen kan føre til at serviceleverandøren, operatøren eller pasienten skades på grunn av elektrisk støt, mekaniske eller andre farer.
OSTRZEŻENIE (PL)	Niniejszy podręcznik serwisowy dostępny jest jedynie w języku angielskim. • Jeśli serwisant klienta wymaga języka innego niż angielski, zapewnienie usługi tłumaczenia jest obowiązkiem klienta. • Nie próbować serwisować urządzenia bez zapoznania się z niniejszym podręcznikiem serwisowym i zrozumienia go. • Niezastosowanie się do tego ostrzeżenia może doprowadzić do obrażeń serwisanta, operatora lub pacjenta w wyniku porażenia prądem elektrycznym, zagrożenia mechanicznego bądź innego.
ATENÇÃO (PT-BR)	Este manual de assistência técnica encontra-se disponível unicamente em inglês. • Se outro serviço de assistência técnica solicitar a tradução deste manual, caberá ao cliente fornecer os serviços de tradução. • Não tente reparar o equipamento sem ter consultado e compreendido este manual de assistência técnica. • A não observância deste aviso pode ocasionar ferimentos no técnico, operador ou paciente decorrentes de choques elétricos, mecânicos ou outros.

ATENÇÃO (PT-PT)	Este manual de assistência técnica só se encontra disponível em inglês. • Se qualquer outro serviço de assistência técnica solicitar este manual noutro idioma, é da responsabilidade do cliente fornecer os serviços de tradução. • Não tente reparar o equipamento sem ter consultado e compreendido este manual de assistência técnica. • O não cumprimento deste aviso pode colocar em perigo a segurança do técnico, do operador ou do paciente devido a choques eléctricos, mecânicos ou outros.
ATENŢIE (RO)	Acest manual de service este disponibil doar în limba engleză. • Dacă un furnizor de servicii pentru clienţi necesită o altă limbă decât cea engleză, este de datoria clientului să furnizeze o traducere. • Nu încercaţi să reparaţi echipamentul decât ulterior consultării şi înţelegerii acestui manual de service. • Ignorarea acestui avertisment ar putea duce la rănirea depanatorului, operatorului sau pacientului în urma pericolelor de electrocutare, mecanice sau de altă natură.
ОСТОРОЖНО! (RU)	Данное руководство по техническому обслуживанию представлено только на английском языке. • Если сервисному персоналу клиента необходимо руководство не на английском, а на каком-то другом языке, клиенту следует самостоятельно обеспечить перевод. • Перед техническим обслуживанием оборудования обязательно обратитесь к данному руководству и поймите изложенные в нем сведения. • Несоблюдение требований данного предупреждения может привести к тому, что специалист по техобслуживанию, оператор или пациент получит удар электрическим током, механическую травму или другое повреждение.
UPOZORENJE (SR)	Ovo servisno uputstvo je dostupno samo na engleskom jeziku. • Ako klijentov serviser zahteva neki drugi jezik, klijent je dužan da obezbedi prevodilačke usluge. • Ne pokušavajte da opravite uređaj ako niste pročitali i razumeli ovo servisno uputstvo. • Ne pokušavajte da opravite uređaj ako niste pročitali i razumeli ovo servisno uputstvo.
UPOZORNENIE (SK)	Tento návod na obsluhu je k dispozícii len v angličtine. • Ak zákazníkov poskytovateľ služieb vyžaduje iný jazyk ako angličtinu, poskytnutie prekladateľských služieb je zodpovednosťou zákazníka. • Nepokúšajte sa o obsluhu zariadenia, kým si neprečítate návod na obluhu a neporozumiete mu. • Zanedbanie tohto upozornenia môže spôsobiť zranenie poskytovateľa služieb, obsluhujúcej osoby alebo pacienta elektrickým prúdom, mechanické alebo iné ohrozenie.

ATENCION (ES)	Este manual de servicio sólo existe en inglés. • Si el encargado de mantenimiento de un cliente necesita un idioma que no sea el inglés, el cliente deberá encargarse de la traducción del manual. • No se deberá dar servicio técnico al equipo, sin haber consultado y comprendido este manual de servicio. • La no observancia del presente aviso puede dar lugar a que el proveedor de servicios, el operador o el paciente sufran lesiones provocadas por causas eléctricas, mecánicas o de otra naturaleza.
VARNING (SV)	Den här servicehandboken finns bara tillgänglig på engelska. • Om en kunds servicetekniker har behov av ett annat språk än engelska, ansvarar kunden för att tillhandahålla översättningstjänster. • Försök inte utföra service på utrustningen om du inte har läst och förstår den här servicehandboken. • Om du inte tar hänsyn till den här varningen kan det resultera i skador på serviceteknikern, operatören eller patienten till följd av elektriska stötar, mekaniska faror eller andra faror.
OPOZORILO (SL)	Ta servisni priročnik je na voljo samo v angleškem jeziku. • Če ponudnik storitve stranke potrebuje priročnik v drugem jeziku, mora stranka zagotoviti prevod. • Ne poskušajte servisirati opreme, če tega priročnika niste v celoti prebrali in razumeli. • Če tega opozorila ne upoštevate, se lahko zaradi električnega udara, mehanskih ali drugih nevarnosti poškoduje ponudnik storitev, operater ali bolnik.
DİKKAT (TR)	Bu servis kılavuzunun sadece ingilizcesi mevcuttur. • Eğer müşteri teknisyeni bu kılavuzu ingilizce dışında bir başka lisandan talep ederse, bunu tercüme ettirmek müşteriye düşer. • Servis kılavuzunu okuyup anlamadan ekipmanlara müdahale etmeyiniz. • Bu uyarıya uyulmaması, elektrik, mekanik veya diğer tehlikelerden dolayı teknisyen, operatör veya hastanın yaralanmasına yol açabilir.

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
- 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 replacement incorrect de la batterie.

Remplacer uniquement avec une batterie du même type ou d'un type recommandé par le constructeur. Mettre au rébut les batteries usagées conformément aux instructions du fabricant.

OMISSIONS & ERRORS

Customers, please contact your GE Sales or Service representatives. GE personnel, please use the GE Healthcare PQR Process to report all omissions, errors, and defects in this publication.

Revision History

Rev	Date	Reason for change
1	Dec 06, 2019	Initial release

Table of Contents: Book 1

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 indicated 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 below. 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

MECHANICAL

RADIATION

LASER

HEAT

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

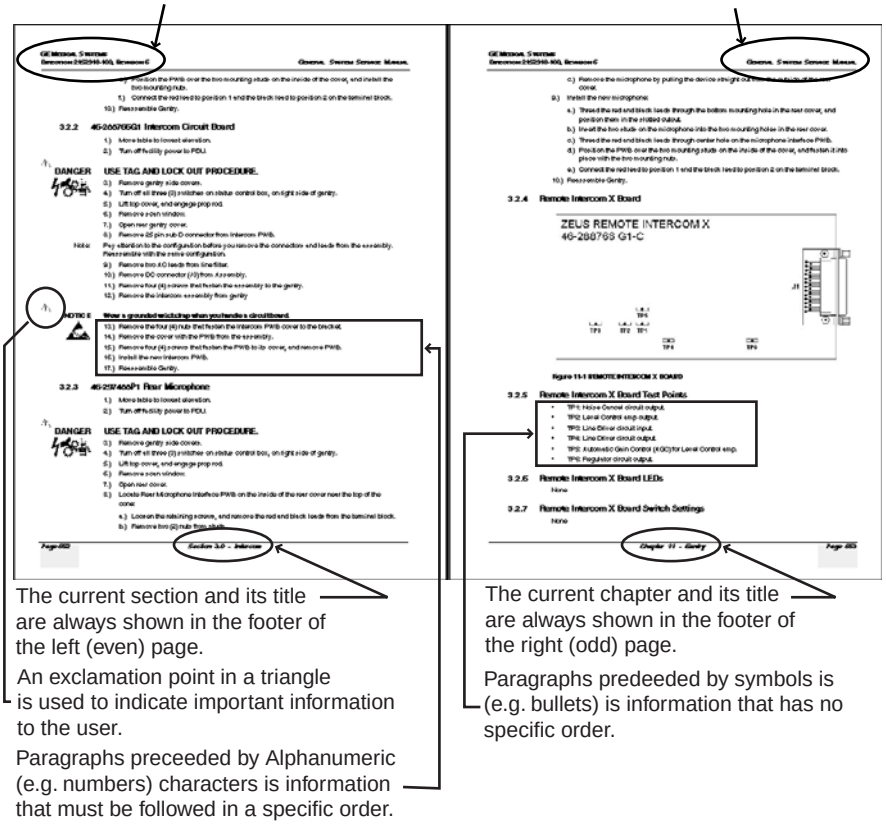
Purpose: Introduces and provides meaning as to the information contained within the chapter, section or subsection, such as used at the beginning this chapter for example.

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



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: Fixed Output

`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.`

Example: Variable Output

`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>`

Example: Fixed Input

`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.`

Example: Variable Input

`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.`

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: Hard Keys

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.

Example: Soft Keys

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.

Chapter 1
Position Subsystems

NOTICE

- **Record data collected from procedures in this chapter into Form 4879 when directed.**
- **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 warning 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 part without prior written approval by GE Healthcare.
6.) Do not change, add or remove any system accessory without prior written approval of the vendors 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 should be moved using the shipping dollies only. Do not lift or move it using a lift truck under the gantry frame.

1.3 International Shipments

- Use dollies to remove the gantry from the shipping skid and to transport the gantry to the customer's site.
- If lifting is required, instructions are in the *Pre-Installation Manual* for this system.

1.4 On Site Warning

This system requires a gantry bearing gap inspection *before* electrical calibration is started.

1.5 Service Actions

If the bearing inspection fails the FE opens a dispatch and does not 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* for this system. Failure to comply results 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 you follow is:

1.) Use the gantry/table installation tool 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 to position the system and drill the anchor holes. Refer to Section 5.0, on page 34. This CT system installation procedure requires the items listed in Section 2.2, on page 25.

2.2 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 in. and 3/8 in. (9.5mm), drive torque wrench: 0-100 N-m (0-100 ft.-lb.) Must be calibrated yearly.

Sockets and Extensions

- 3/8 in. drive metric and standard socket set
- 1 in, 1-1/8 in, 1-¼ in, 1-½ in, 1-5/8 in sockets
- ½ in. drive ratchet wrenches
- ¾ in. deep well socket
- Metric hex bit set ¼ in. or 3/8 in. drive, including 10 mm and 14 mm hex bit
- 3/8 in. drive universal joint
- 21mm socket (optional)

Screw Drivers

- Torque Screwdriver
- Phillips screwdriver set (small, medium, and large)
- Straight blade screwdriver set (small, medium, and large)
- Pozi-drive 0 (S)
- Pozi-drive #1
- Hex bit set with: Flat blade bit, Plus blade bit, Hex bits, and Star bits.

Drill Bits

- Complete set of standard (U.S.) drill bits
- Metric tap set (Optional)
- ½ in. masonry bit, min. 10 in. long USA; 12 in. optional (Bit must not be metric.)
- 4" (100mm) hole saw with 1/8" (5mm) masonry bit (to remove flooring)

Power Tools

- 3/8 in. or ½ in. drill, cordless or electric
- Reciprocating saw (Sawzall or equivalent) and assorted blades
- Hammer Drill & BIt (8 in. min, 12 in. max)
- Sears shop vacuum or equivalent, with HEPA or drywall dust filter
- 25 ft. extension power cords

Electrical Tools

- DVM capable of reading 0.5 ohms or less
- Continuity Tester
- FE Electronic Monitor Static Kit or equivalent static mat kit with ground wrist strap (P/N 2220482)
- Dale 600 or 601 Leakage meter or equivalent
- Temperature/humidity tool: Oregon Scientific Wireless Weather Station Model BAR608HGA or equivalent

Hand Tools

- Ball-peen hammer (1 lb. or 2 lb.)
- Tongue & groove pliers (large)
- Diagonal cutting pliers, large (to cut 1/0 ground)
- Diagonal cutting pliers, small and large
- Large pry bar 460 mm . 600 mm (18 in. - 24 in.)

Recommended Levels

- Johnson Magnetic Level, model 7500M -- 225 mm (9 in.)
- Johnson Professional Box Beam Level, model 9624 -- 600 mm (24 in.)
- Digital level with accuracy of ± 0.1º -- 225 mm (9 in.)
- Johnson Professional Box Beam Level -- 1225 mm (48 in.) (Optional)

Personal Safety Equipment

- Safety shoes*
- Safety glasses*
- Hand Protection (Leather is required when performing duct work.)
- Knee pads or kneeling pad
- Face Shield

  * Required items
- LOTO kit -- MUST have tags and appropriate lock(s)
- Hearing protection
- 2 m (6 ft.) or 4 m (8 ft.) step ladders or equivalent

System Cleaners

Purchase Locally:

- Alcohol
- 10% Bleach
- *Scrubbing Bubbles* bathroom cleaner or equivalent
- Sani-cloth HB
- Incidin Plus
- TriGrene

Other

Purchase locally (available at office supply stores): a China marker or wax marking pencil or equivalent, any color that is visible on the floor where the system is being installed. Permanent markers are often used if the lines will be covered by the product.

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: -40º to +158º F (-40º to +70º 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 0º F (-18º 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 within the range of 10º to 32º C (50º to 90º F).
- Maintain a relative humidity (non-condensing) between 20% and 70%.

3.4 Construction Site Installations

A construction installation describes installations at sites without an occupancy permit, or ongoing construction. In general, construction sites fail to meet the required specifications for system delivery, and GE Healthcare 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 condition of the planned installation site.

3.4.1 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 packages 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, follow 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 packages. 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
- PDU
- UPS
- Lean Cover Cart
- Lean Install Cart
- Chair

3.5 Working with the Mover

- System is shipped lean-packed in North America.
- Ensure that the installation lean cart is the first item moved into the room.

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 on Appendix A Gantry Cover Removal and Dolly Setup, on page 183 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

Movers should 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

- Gantry components cannot be removed to reduce the dimensions.
- Zero clearance dollies are available from UMI at http://www.umi-dollyshop.com
- Please read the notice statement on page 186 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
- Contact the local service coordinator for more information on this process.

3.7 A1 Breaker

NOTICE

- **All sites 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 (Global except EMEA)	UPS
90Amp, 380V-480V **E4502BB**	*Optional Partial UPS Kit* **B7999ZA alt.E4502KY** (includes 5169128 9155-10GE model 10KVA, 2ph UPS & hardware kit) requires one of the A1 Panels shown at left
110Amp 380V-480V **E4502BC**	

Table 1-1 A1 Panel and UPS

3.7.1 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 clearances. **Service clearances MUST be met to continue.**

3.) A customer Anchoring Plan is required if there is anything other than a 102 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

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 3000 kg (6600 lbs). A concentrated load of about 2500 kg (5500 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 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.
- Measure and determine ISO using the GE Site print. Using a marker, mark ISO on the floor. Use a chalk line to connect the table center line marks on the floor. This is the line on the print that runs down the center of the table through the gantry. Use this as a reference when positioning the table.

Section 5.0 Gantry-Table Installation/Alignment Tool

5.1 Time & Personnel

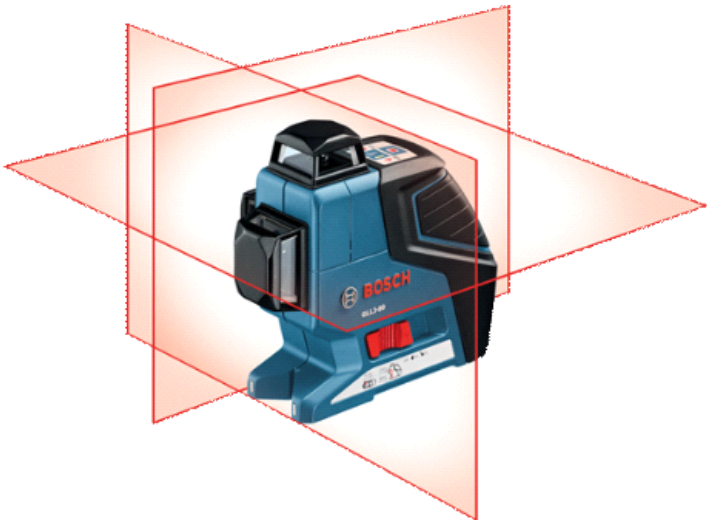
Required Persons	Preliminary Reqs	Procedure	Finalization
2 (FE or mechanical supplier)			

5.2 Tools and Test Equipment

- System Installation and Alignment Tool
- Standard Install Tool Kit
- Install Support Kit
- GE Site Print
- 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 Installation and Alignment Tool (5824714)

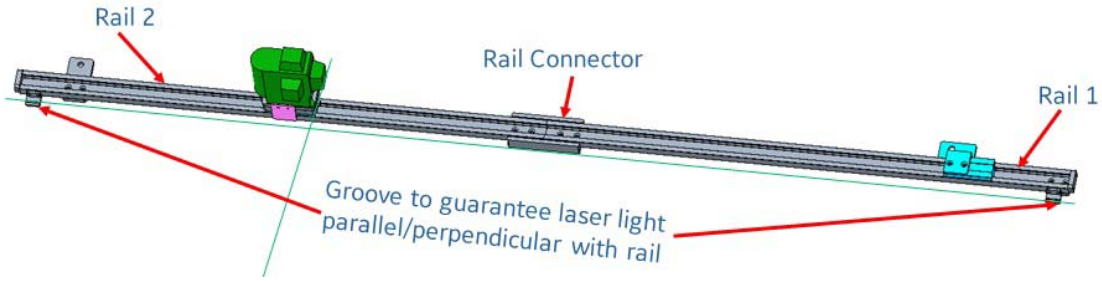
- Line Laser (5820779)



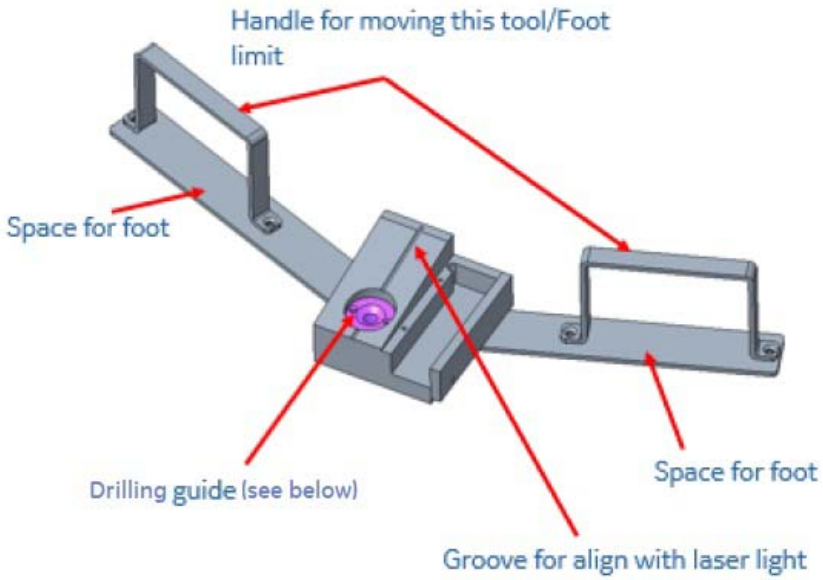
- Laser Measure (5823264)

- Digital Protractor (5825051)

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

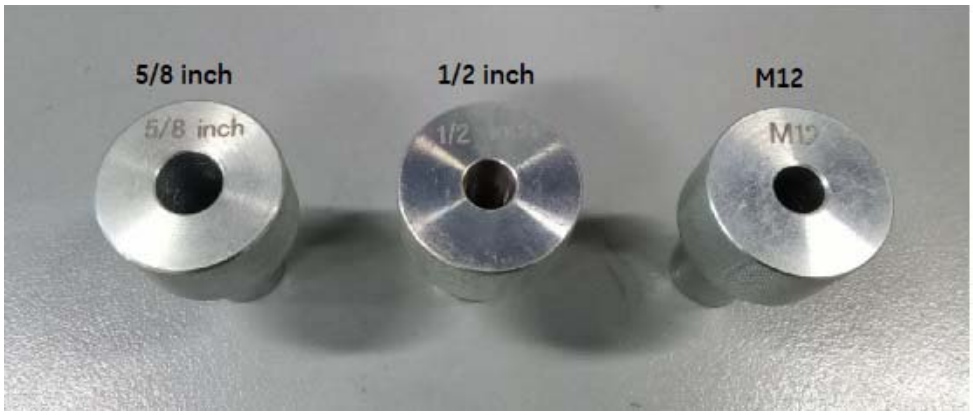


- Drilling Tool Assembly (5821081)

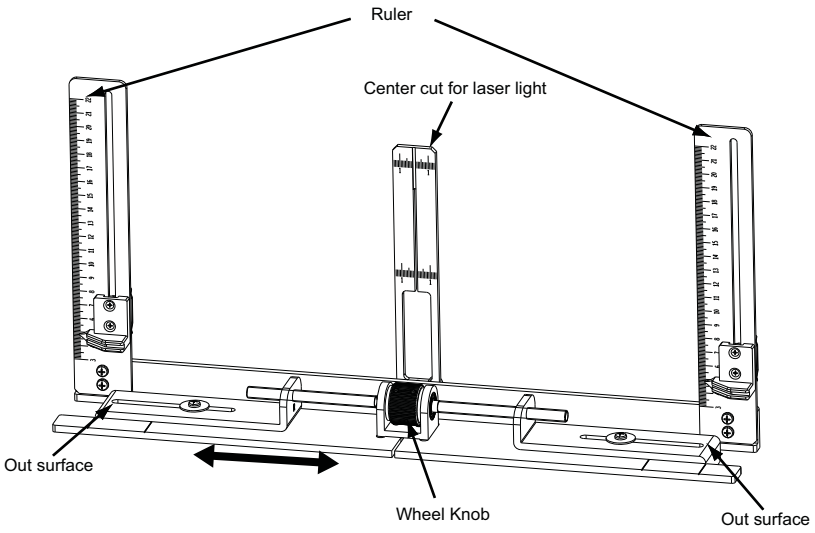


- Drilling Guide/Drilling Bushing
  - Drilling guide for anchor 1/2 inch (5829433)
  - Drilling guide for anchor 5/8 inch (5824151)
  - Drilling guide for anchor M12 (5821085)

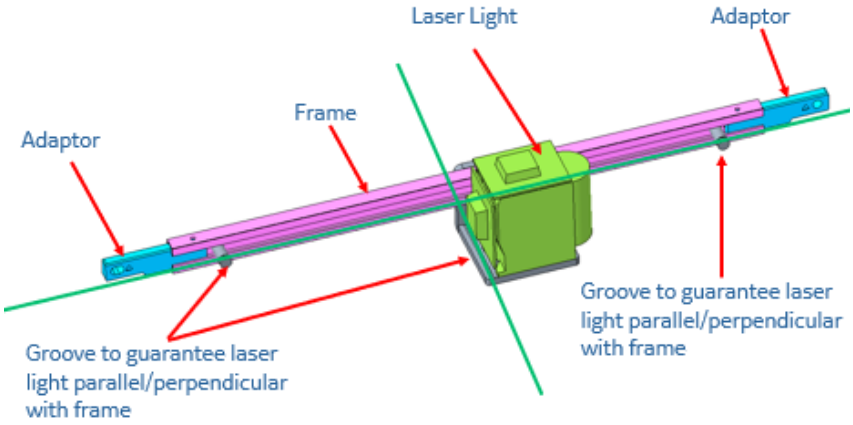
Note: Please select 1/2 inch drilling guide/drilling bushing (5829433) for Optima CT620 system Gantry/ Table alignment.



- Table Alignment Tool Assembly (5820676)



- Gantry/Table Alignment Assembly
  - Gantry Side 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 Optima CT620 system Gantry/Table alignment.

Section 6.0 Gantry-Table Installation/Alignment

6.1 Preparation

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

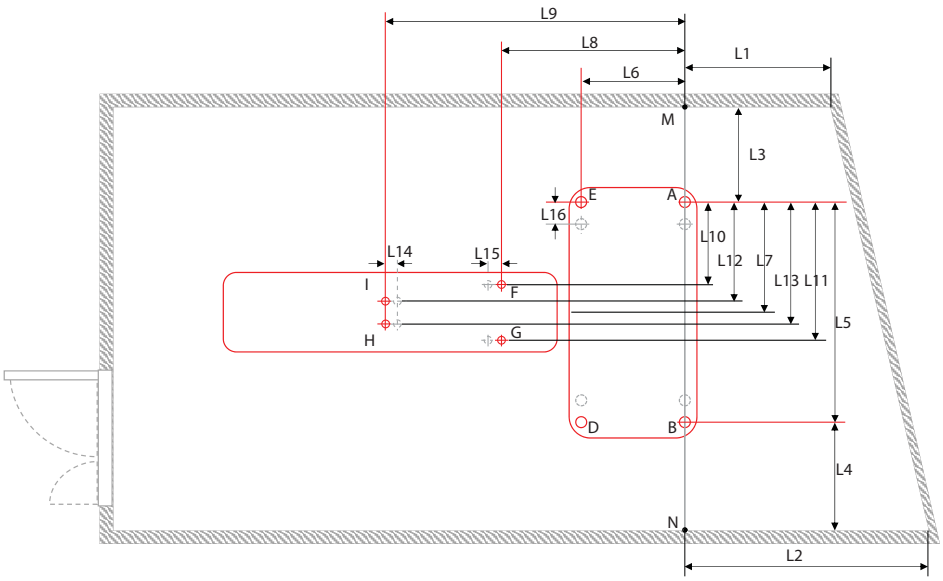


Figure 1-1 GE Print with GT Table

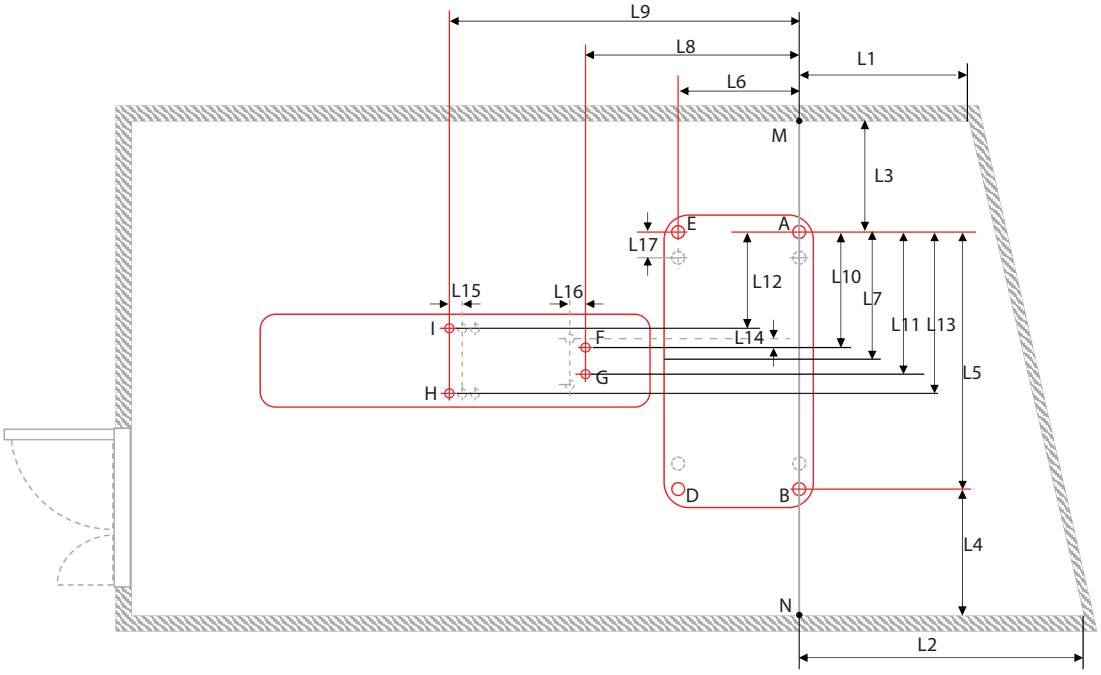


Figure 1-2 GE Print with Lite Table

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	1756.30	630	878.15	1382.8	2236.8	668.15	1088.15	762.15	994.15	80	90	200	-
System with Lite Table	determined by room size	1756.30	630	878.15	1199	1998	809.15	947.15	666.15	1090.15	83.5	65	72.5	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 1-3).

Figure 1-3 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. The floor must meet the minimum levelness specification: 6 mm (1/4 in.) over 3.5 m (10 ft.) between the table and gantry.

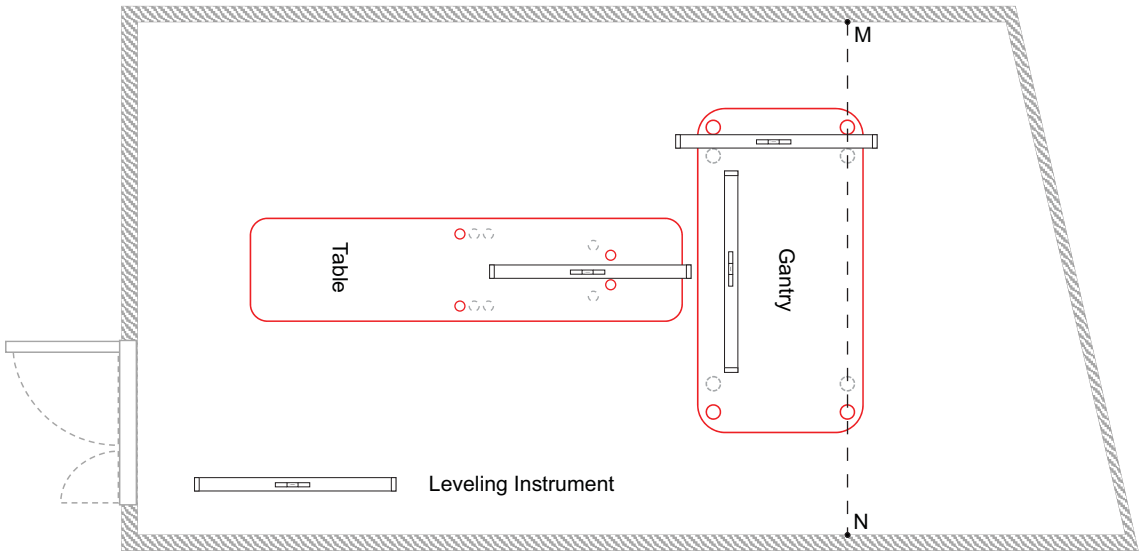


Figure 1-4 Check Floor Levelness (example)

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.**

6.2 Anchor Hole Information

6.2.1 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.

6.2.2 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

6.2.3 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 1-5) which will then provide a visual means of making sure the proper hole depth has been reached.

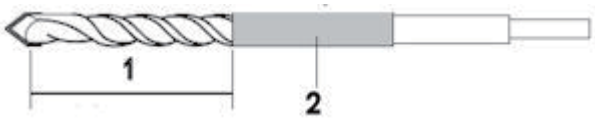


Figure 1-5 Drill Bit

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

	Anchor P/N: 5487992-2 (Gantry and GT1700 Table)	Anchor P/N: 2106573-3 (Lite Table)
1	155mm (6.1 in.)	170mm (6.7 in.)
2	Adhesive Tape	Adhesive Tape

Table 1-2 Drill Depth Gauge Mark Tape Location

MOUNTING REQUIREMENTS	GANTRY AND GT1700 TABLE ANCHOR P/N 5487992-2	LITE TABLE ANCHOR P/N 2106573-3
Minimum Floor Thickness:	102 mm (4 in.)	110 mm (4-1/3 in.)
Recommended Drilling Depth:	85 mm (3.35 in.)	100 mm (4 in.)
Average Anchor Embedment:	75 mm (2.95 in.)	90 mm (3.54)
Minimum Anchor Embedment:	63 mm (2.48 in.)	80 mm (3.15 in.)
Shipped Anchor Size:	178 mm (7 in.)	140 mm (5.5 in.)
FLoor Levelness Requirement:	6 mm (1/4 in.) over 3 m (10 ft.)	6 mm (1/4 in.) over 3 m (10 ft.)

Table 1-3 Gantry and Table Mounting Requirements

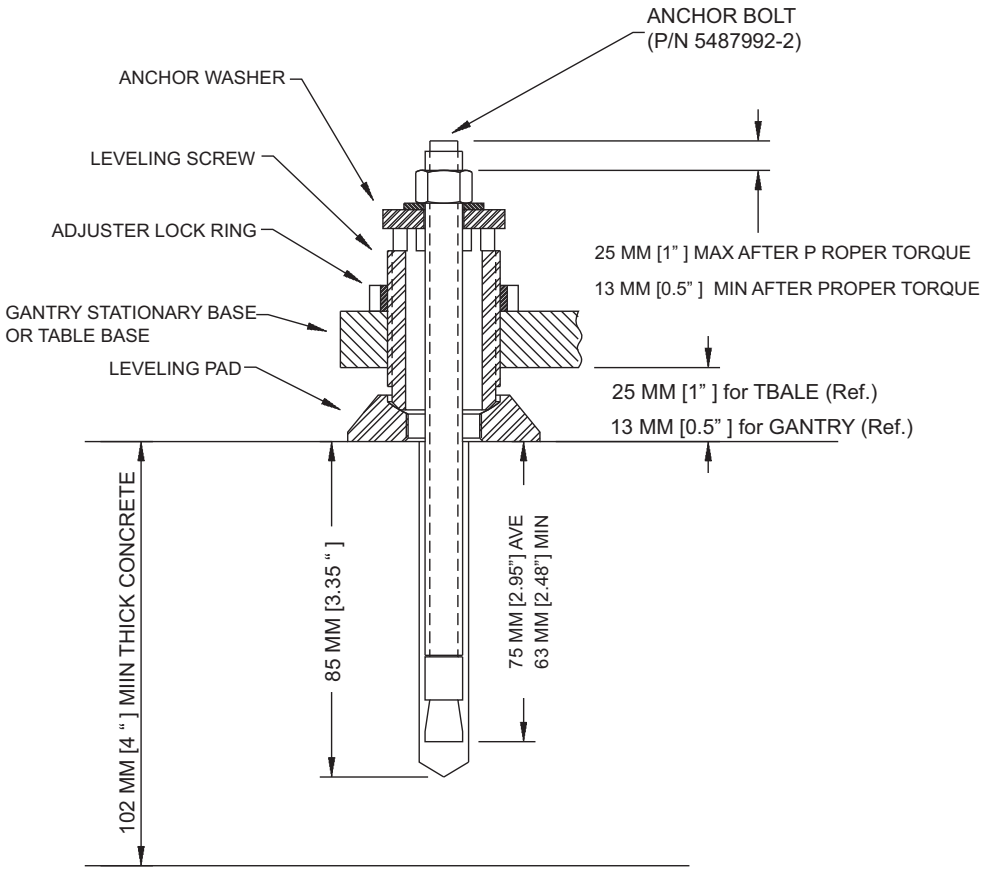


Figure 1-6 Gantry and GT1700 Table Anchor Assembly (P/N 5487992-2)

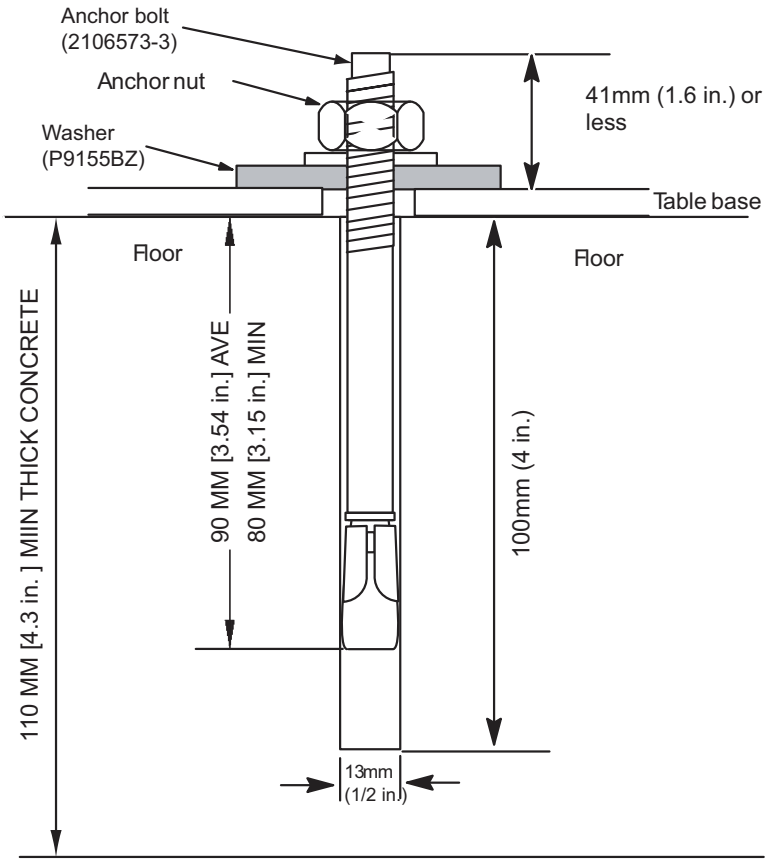


Figure 1-7 Lite Table Anchor Assembly (P/N 2106573-3)

6.3 Position Gantry and Table

1.) Unpack the Table Gantry Drilling / Alignment Tool Kit (5824714). (See 5.3 System Installation and Alignment Tool (5824714), on page 34)

2.) Follow the GE print, according to L1 & L2 to identify two points (M and N) by using the Laser Measure (5823264), mark these two points. (See Figure 1-8)

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

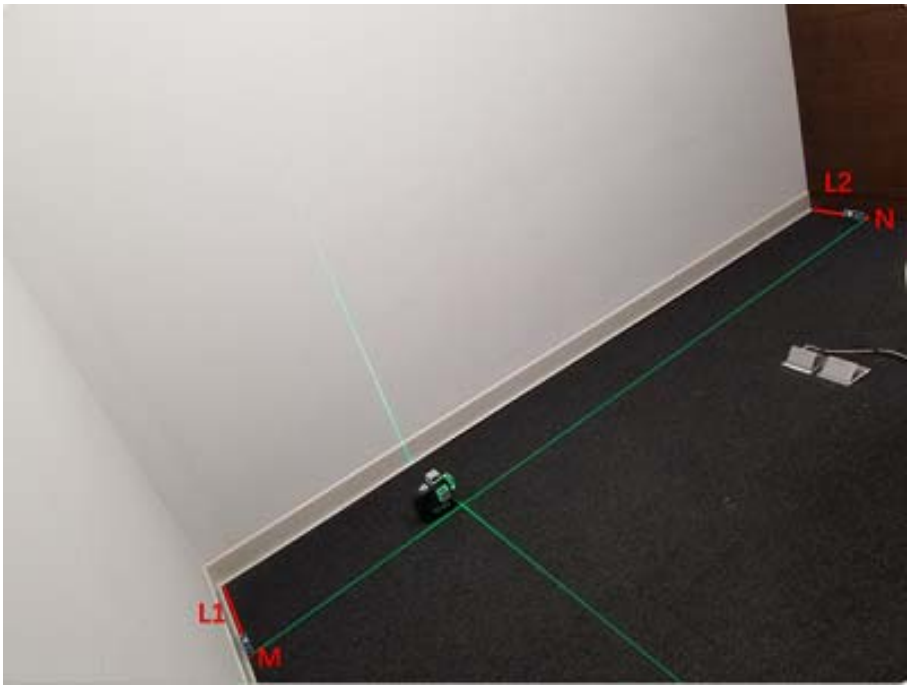


Figure 1-8 Mark M and N

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 + L5 to confirm the point B.

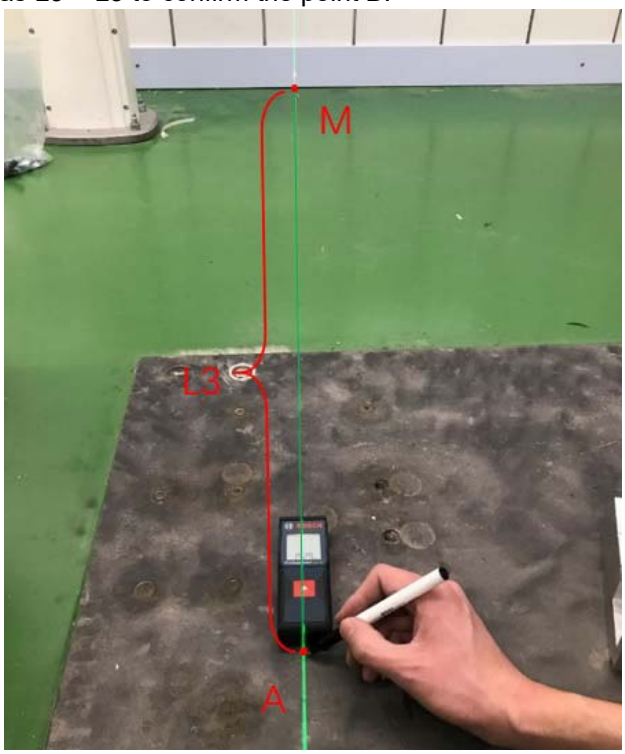


Figure 1-9 Point A Confirmation

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

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

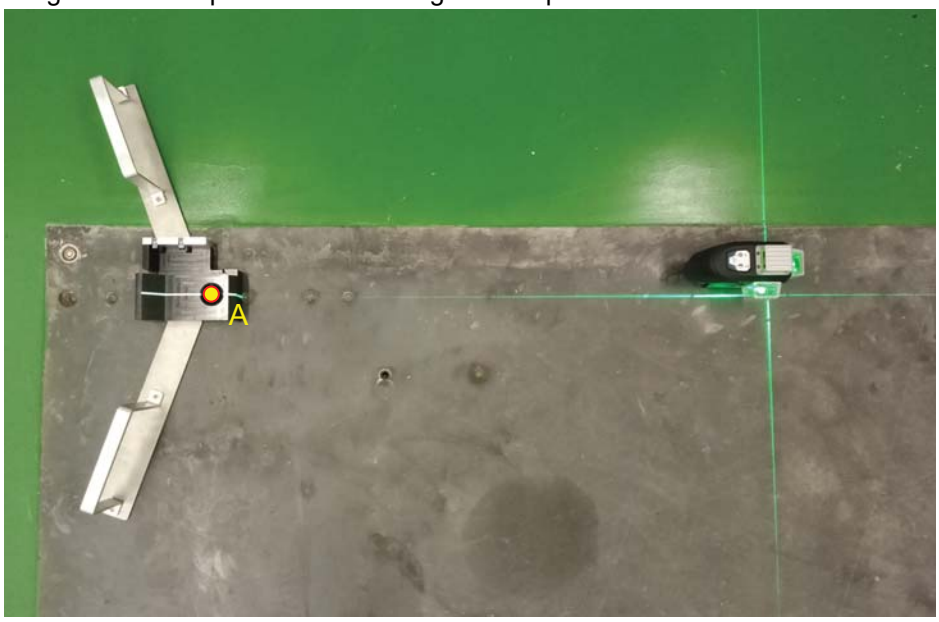


Figure 1-10 Align Points A&B

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

6.) Locate the hammer drill and ½" X 12" drill bit. The ½" bit will be used to drill all four (4) gantry anchor holes and four (4) table anchor holes. You must use the Drilling Kit to drill all holes.

7.) Drill the hole perpendicular to the floor, use the drill bushing (1/2 inch) to guide the drill bit. **Important - Follow these guidelines when drilling anchor hole:**

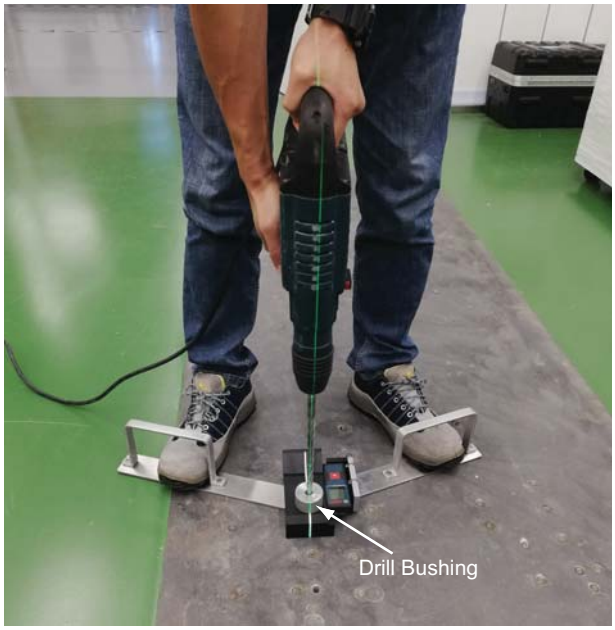
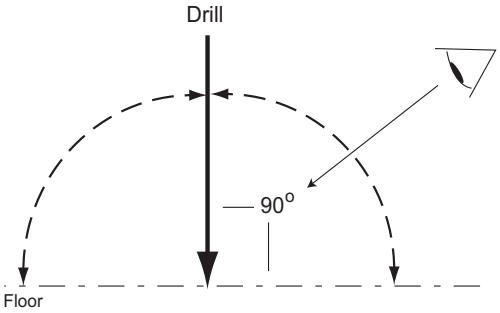


Figure 1-11 Drill Gantry Anchor Holes A (B)

- 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 1-3. Use an upside-down anchor to check the hole depth.

CAUTION **If you cannot use adjuster anchor hole (A or B) 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.**

8.) Recheck the depth of the hole by inserting an anchor backward into the hole. Re-drill if needed.

9.) When finished drilling and clearing the anchor hole, vacuum the debris from the inside hole and from the surrounding (floor) area.

10.) Assemble the Sliding Rail1 and Rail2 to the Rail Connector by using four M6 flat head screws, **DO NOT tighten them**. (See Figure 1-12)

11.) Tighten two wing screws so that two Rails are tight against the side of the Rail Connector.

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 1-12 Assemble Sliding Rails

12.) Find two drilling anchor pins which are in the tool box (5824714), insert these two pins in their respective anchor hole to fix the Sliding Rail on the floor.

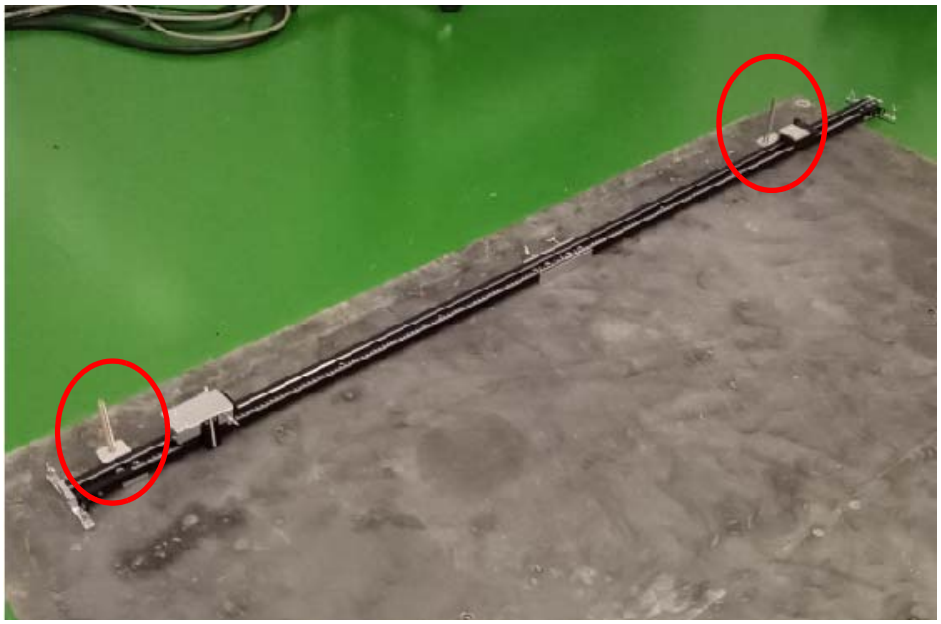


Figure 1-13 Sliding Rail Installation (example)

13.) Adjusting the leveling of the Sliding Rail Assy by using four wing screws in both sides of the Sliding Rail Assy, let the angle less than 0.1 degree in **left/center/right** of the Sliding Rail Assy respectively, and then tighten the lock nut.

Figure 1-14 Level the Sliding Rail Assy

14.) Loosen two wing screws to remove the laser line light base, and remove the laser line light screw from the base.

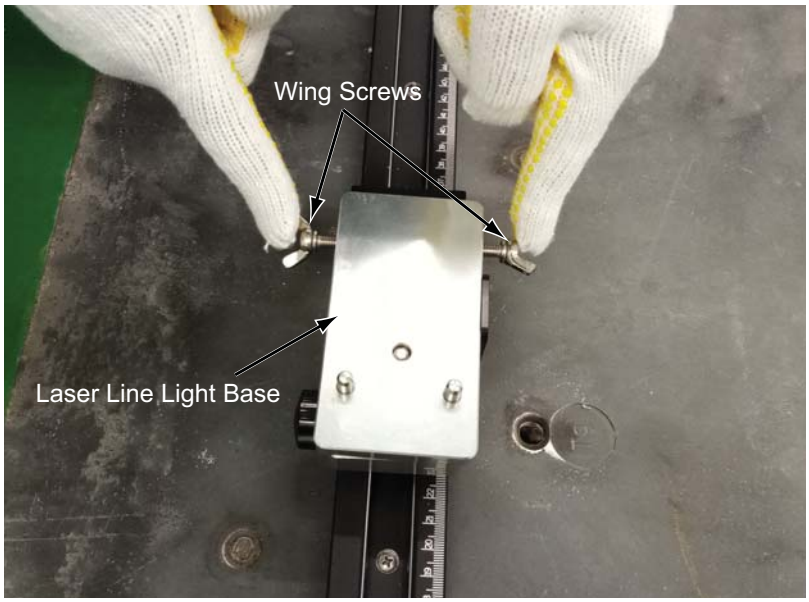


Figure 1-15 Laser Line Light Base

15.) Assemble the laser line light base and the Line Laser, then use the laser line light screw to fix them.

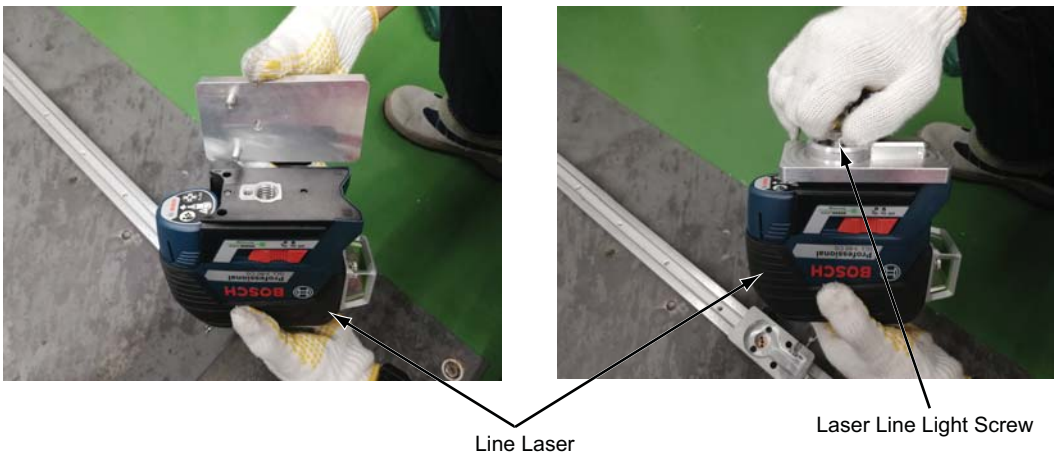


Figure 1-16 Assemble the Laser Line Light Base and the Line Laser

16.) Insert the Line Laser Assy on the Sliding Rail and slide it the Line Line Laser to the middle of the Slide Rail. Adjust the position of the Line Laser through two wind screws so that the laser line is projected on two groove targets.

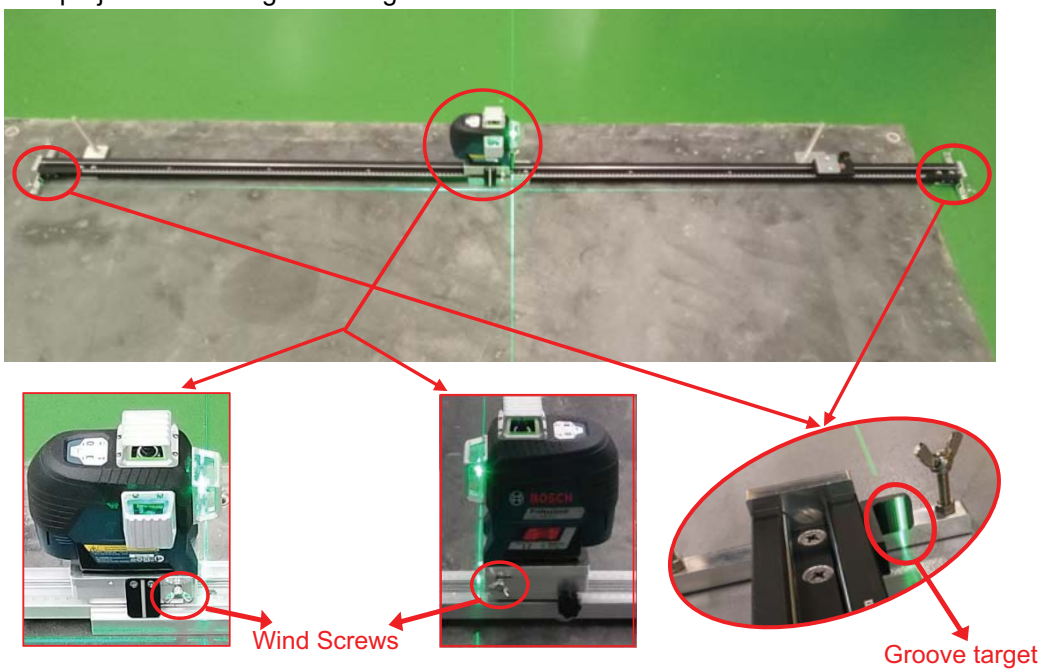


Figure 1-17 Line Laser Installation (example)

17.) Slide the Line Laser to both sides of the Sliding Rail to double confirm the position of the Line Laser, then tighten two wind screws.

NOTICE **The position of the Line Laser MUST be aligned, because it will affect the measure results in the future.**

18.) Place the Laser Measure on the Drilling Kit as shown in Figure 1-18, then slide the Line Laser to the left-limit (right limit) of the Sliding Rail.

19.) Align the Drilling Kit with the laser line and keep the laser beam from the Laser Measure projected on the target of the Line Laser. At the same time, make the value displayed on the Laser Measure is same as L6, confirm the point E (D).

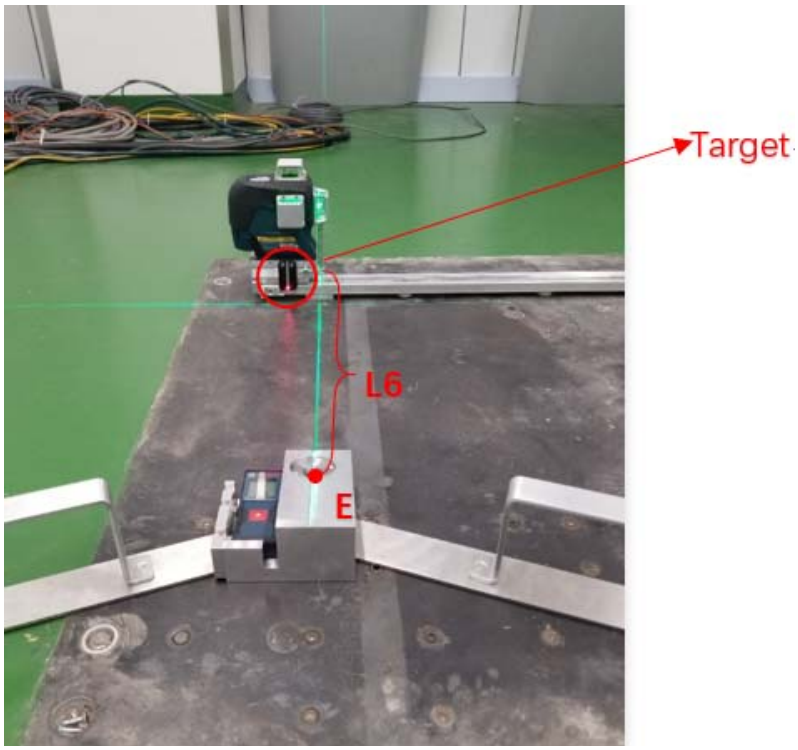


Figure 1-18 Gantry Front Anchor Holes Confirmation

20.) Repeat Step 6 - Step 9 to drill Gantry anchor holes for point D (E).

Note: If you cannot use one of the adjuster anchor holes (D and E) due to structural interference, such as reinforcement bars in the concrete, you must use one of the alternate anchor locations to drill, as shown in Figure 1-1 and Figure 1-2.

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.

21.) Slide the Line Laser to ensure that the sliding distance from the left-limit is the same as L10. Align the Drilling Kit with the laser line and keep the light beam from the Laser Measure projected on the target of the Line Laser. At the same time, make the value displayed on the Laser Measure is same as L8, confirm the point F.

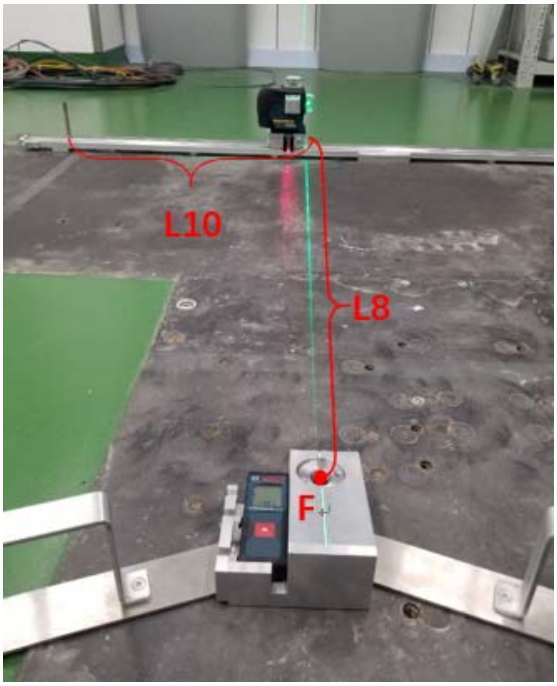


Figure 1-19 Confirm Table Anchors Position

22.) Use the same method (see Step 21) to determine and mark the remaining three points (G/H/I).

23.) Repeat Step 6 - Step 9 to drill four Table anchor holes for point F (G/H/I).

Note: If you cannot use one of the anchor holes (F/G/H/I) due to structural interference, such as reinforcement bars in the concrete, you must use one of the alternate anchor locations to drill, as shown in Figure 1-1 and Figure 1-2.

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.

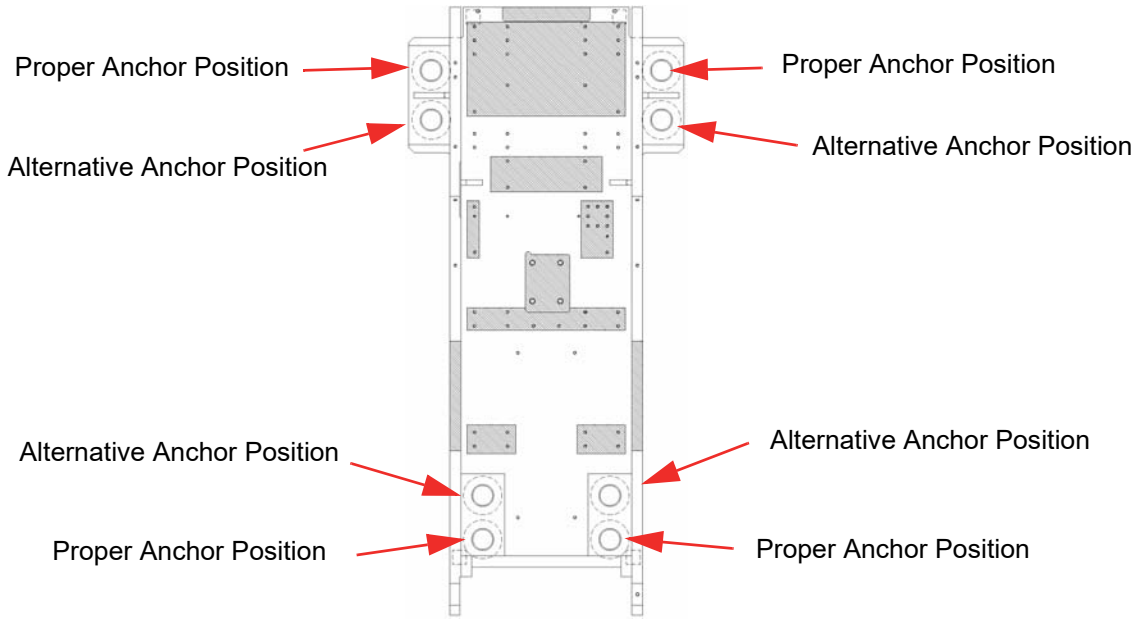


Figure 1-20 GT Table Anchor Locations

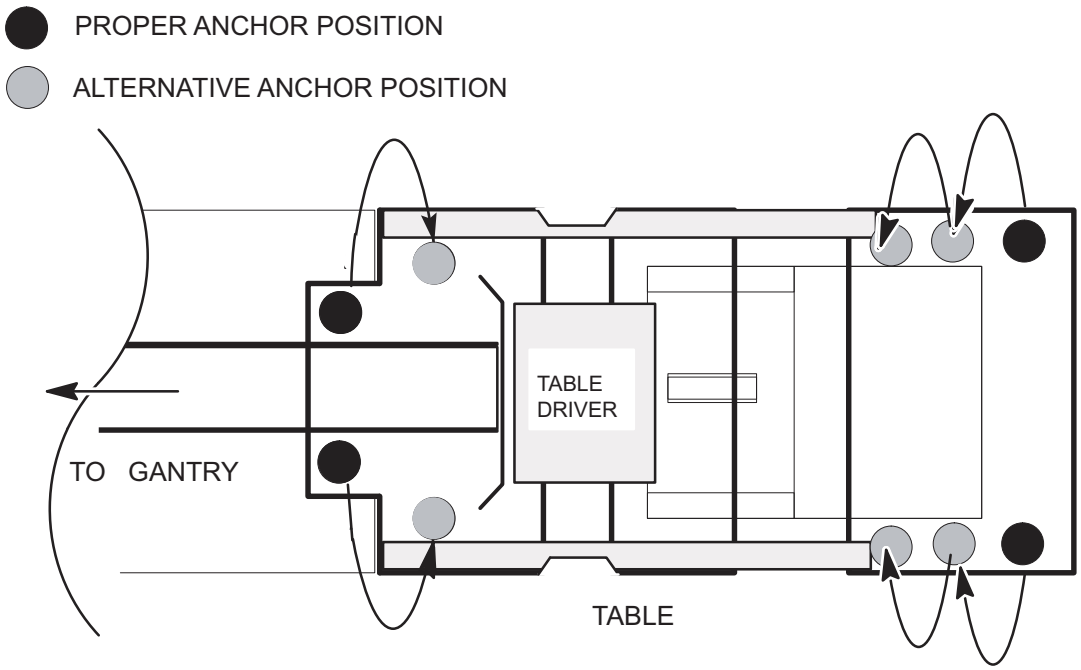


Figure 1-21 Lite Table Anchor Locations

6.4 Install the Gantry

6.4.1 Time and Personnel

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

6.4.2 Tools and Test Equipment

- Standard Install Tool Kit
- Install Support Kit
- GE Site Print
- Installation Manual
- Gantry Adjuster Tool, P/N 2107863
- Spanner Wrench, P/N 2110003
- PPE (hand protection, foot protection, face shield, eye protection, personal dosimeter)

6.4.3 Gantry Preparation

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

Note: The Gantry side covers has been removed before shipped.

Figure 1-22 Gantry Transportation

6.4.3.1 Access Greater than 28 in.

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

6.4.3.2 Access Less than 28 in.

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.) Remove the three (3) M14 hex bolts that secure the gantry to the dolly.

   b.) Replace the removed dolly with the shipped black gantry-positioning dolly, and reinstall the three (3) M14 hex bolts.

   c.) 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.

6.4.4 Position the Gantry

1.) Delivery the gantry to the scan room.

2.) Remove top, front and rear of the gantry covers.

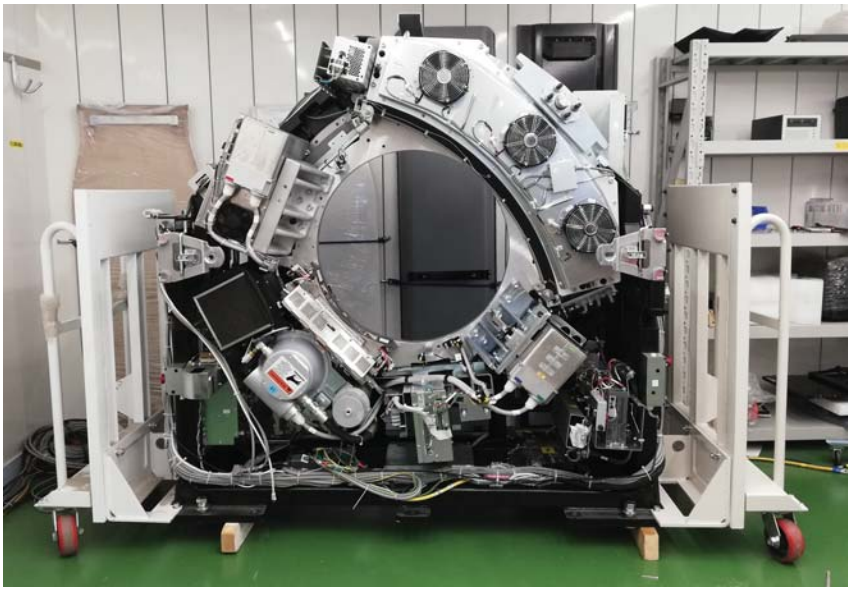


Figure 1-23 Gantry Delivery

3.) Hammer the anchor bolts (5487992-2, shipped with system shipping collector) in the drilled gantry holes (A/B/C/D/E), and confirm the minimum anchor embedment is 75mm. (See Table 1-3)

Figure 1-24 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.

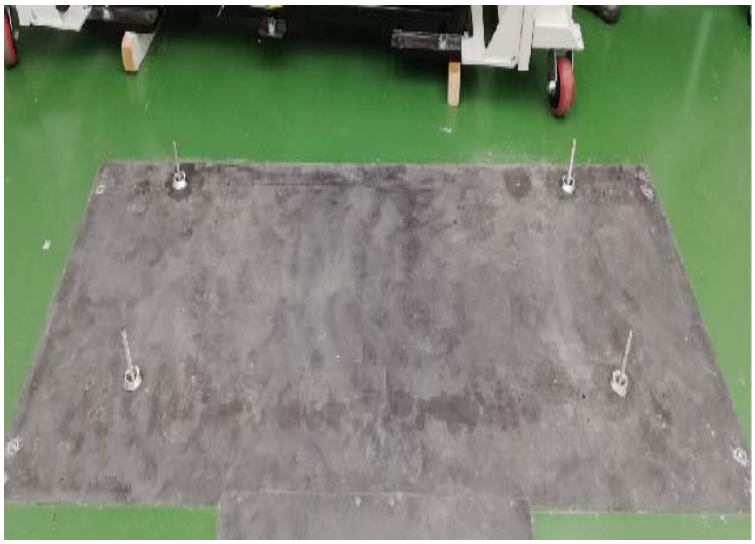


Figure 1-25 Gantry Anchor Bolts

b.) Remove the shipping bolts.

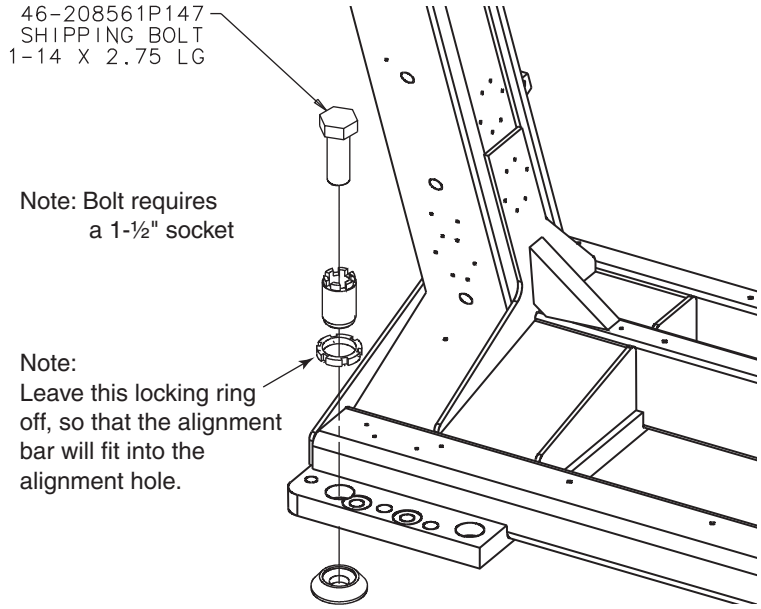


Figure 1-26 Shipping Bolt

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

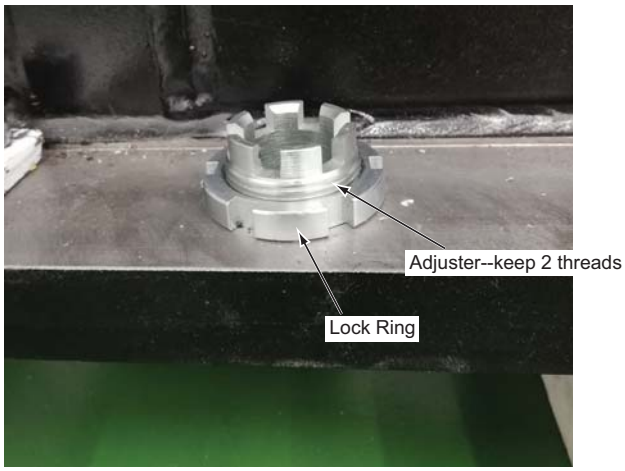


Figure 1-27 Adjuster

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

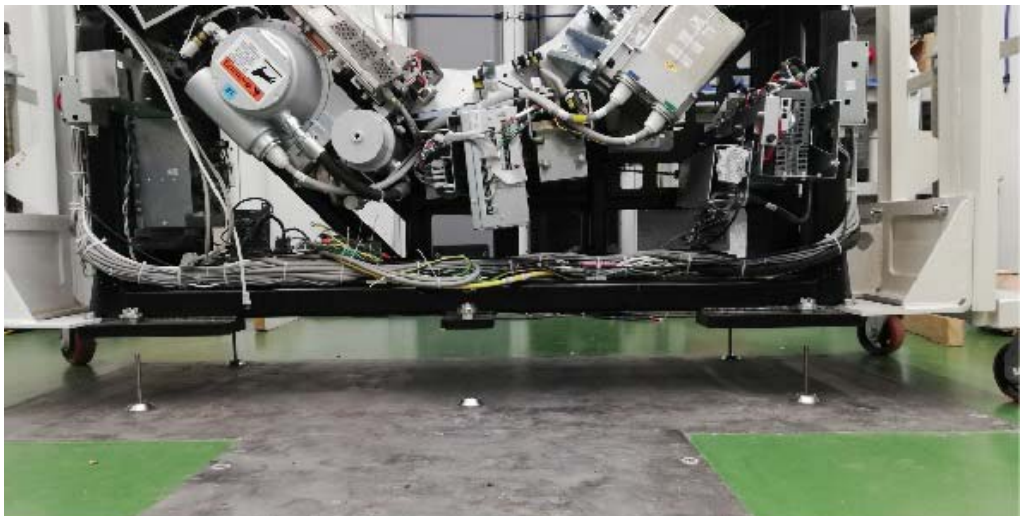


Figure 1-28 Gantry Position

e.) Use the dollies to evenly lower the gantry, pass anchor bolt through the four anchor

adjusters separately on the Gantry.

Figure 1-29 Align Center Anchor Bolt

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

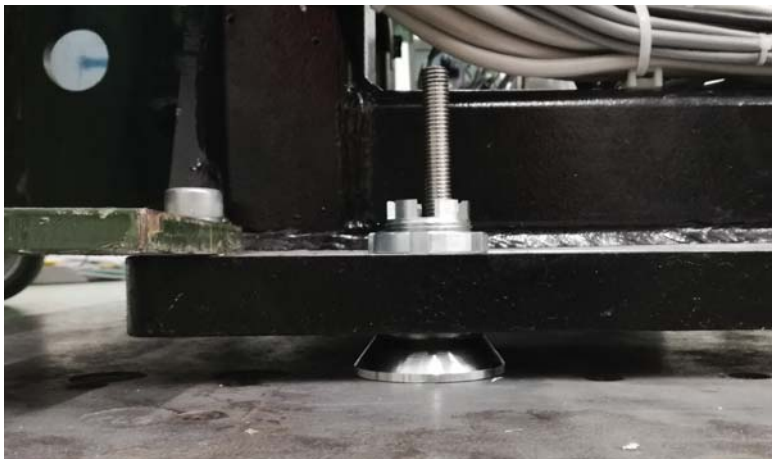


Figure 1-30 Lower the Gantry

f.) 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.**

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

6.4.5 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 1-31). The gantry is properly leveled when the bubble is centered.

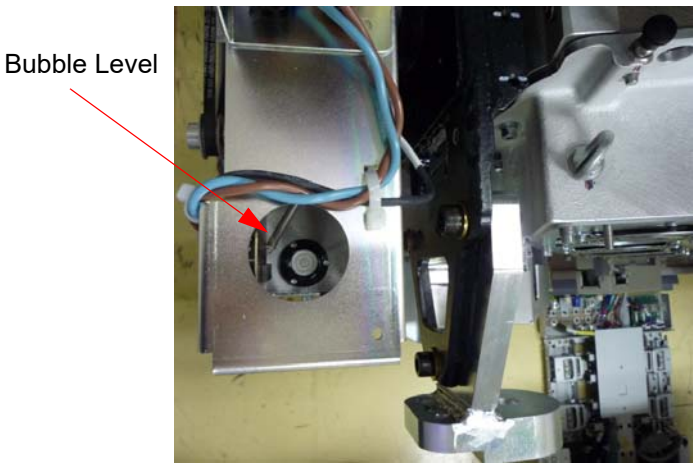


Figure 1-31 Gantry Bubble Level

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 rase the foot off the floor. It is recommended to use this method only when rasing the corners, not when lowering them.

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 1-32) 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 ½" drive ratchet to turn each adjuster. (Refer to Figure 1-32, on page 60.)

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.

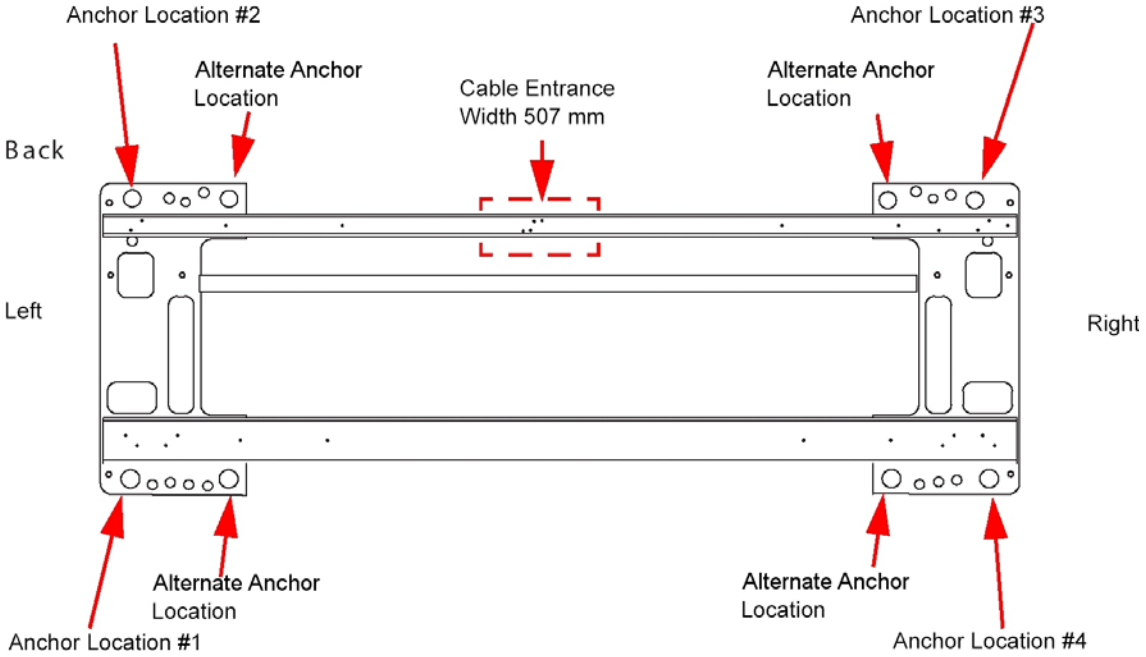


Figure 1-32 Gantry Base "Adjuster" Locations - Top View

3.) When the bubble levels are centered (Figure 1-33), 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.**

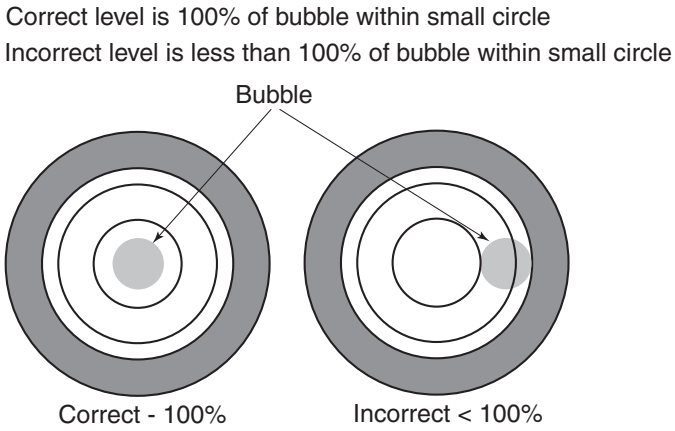


Figure 1-33 Bubble Level Centering

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.)

6.5 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.

6.5.1 Time and Personnel

Required Persons	Preliminary Reqs	Procedure	Finalization
2 (FE or mechanical supplier)	15 min	15 min	5 min

6.5.2 Tools and Test Equipment

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

6.5.3 Preparation: Damage Indicators

If this is a Rotek bearing, a mark similar to that shown in Figure 1-34 is visible on the inside edge of the black-colored bearing assembly.

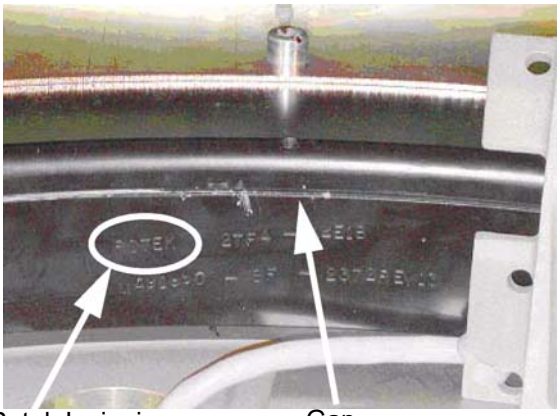


Figure 1-34 Gantry Bearing - Rotek Label

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

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

The gap to inspect is shown in Figure 1-35 next to the serial number.

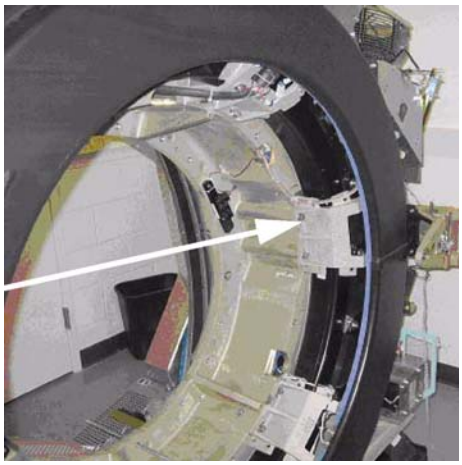


Figure 1-35 Gantry Bearing

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.

6.5.4 Procedure

1.) Remove the scan window.

2.) Remove the top cover and slide out the rear gantry cover.

3.) Slide out gantry bore cover by using the bore cover support tool (Refer to *Replacement > Gantry > Enclosure> Gantry Bore Cover Support Tool Usage* in Service Method

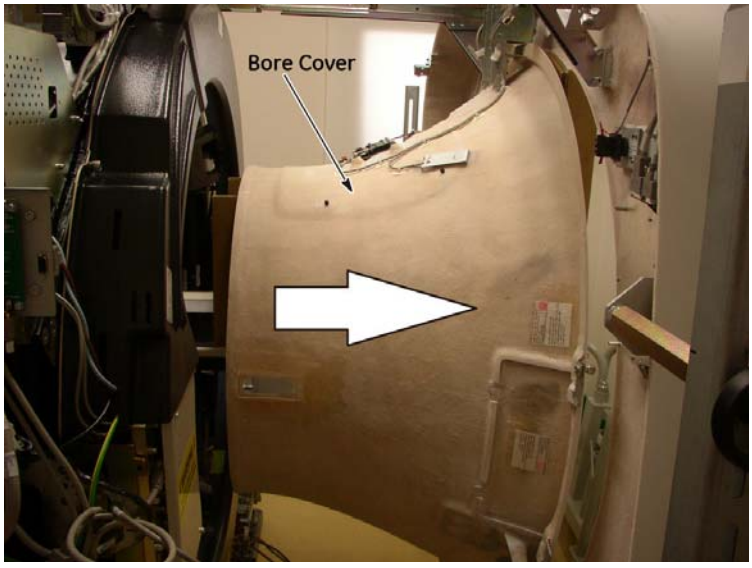


Figure 1-36 Gantry Bore Cover

4.) Use a 2.5 mm hex wrench as a tool to measure the gap at the positions shown in Figure 1-37. The location of gantry components does not matter. Measure four (4) locations 90 degrees apart from each other.

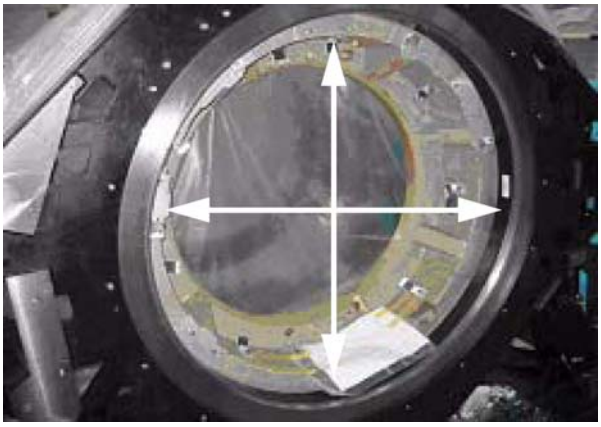


Figure 1-37 Inspection Locations

5.) If the 2.5 mm easily fits without effort in the gap, the gap is out of spec. Figure 1-38 shows a gap that is too large in the left picture. Figure 1-38 shows a gap that is good in the right picture. Notice that the hex wrench does not fit in the gap in Figure 1-38 (left picture), but does in Figure 1-38 (right picture).

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

Figure 1-38 Gap too large (left) **Gap is good (right)**

6.6 Finalization

6.6.1 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.

6.6.2 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.

6.6.3 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 (GT1700V)

Note: For Lite Table Installation, refer to Section 8.0 Table Installation (Lite Table), on page 76.

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 2.5m (98 in.).

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 1-39.) 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 1-39 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 5/8" (15.5mm). (See Figure 1-22.)

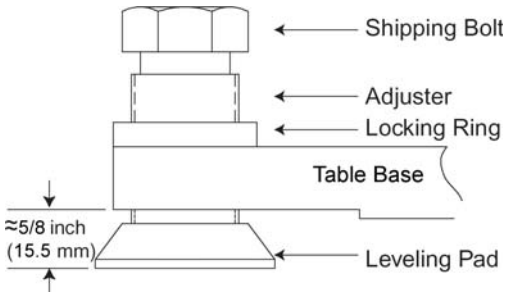


Figure 1-40 Table Base Leveling Pads (Starting Positions)

5.) Use a 1-5/8” socket and ½” 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 ½”ratchet on each end.

Back

Front

Figure 1-41 Adjusters and Lock Rings

7.3.2 Table Cover Removal

1.) Remove the table right side cover, as shown in Figure 1-43.

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.

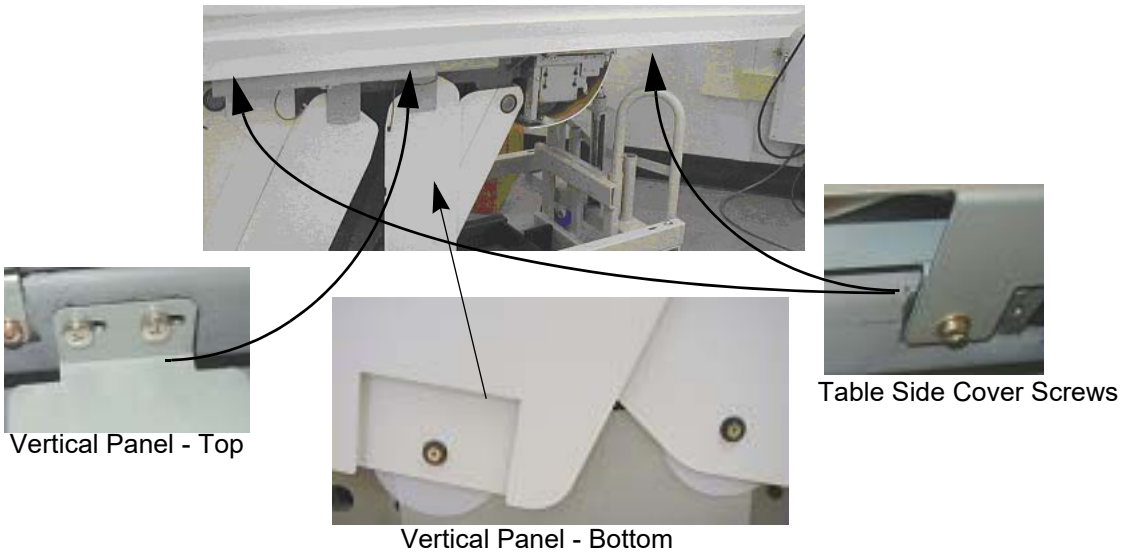


Figure 1-42 Table Covers

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 4" (102mm) 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.

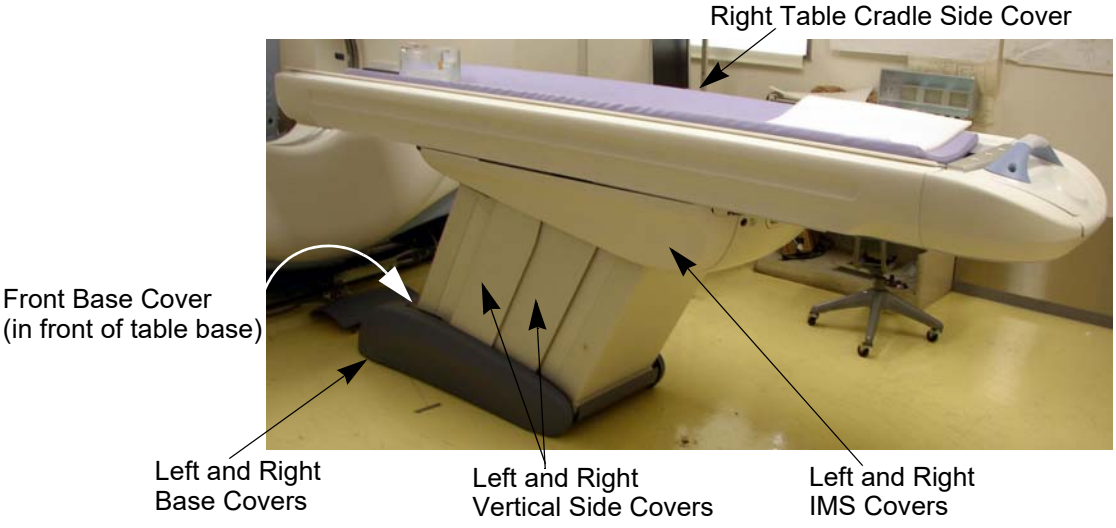


Figure 1-43 Table Covers

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.

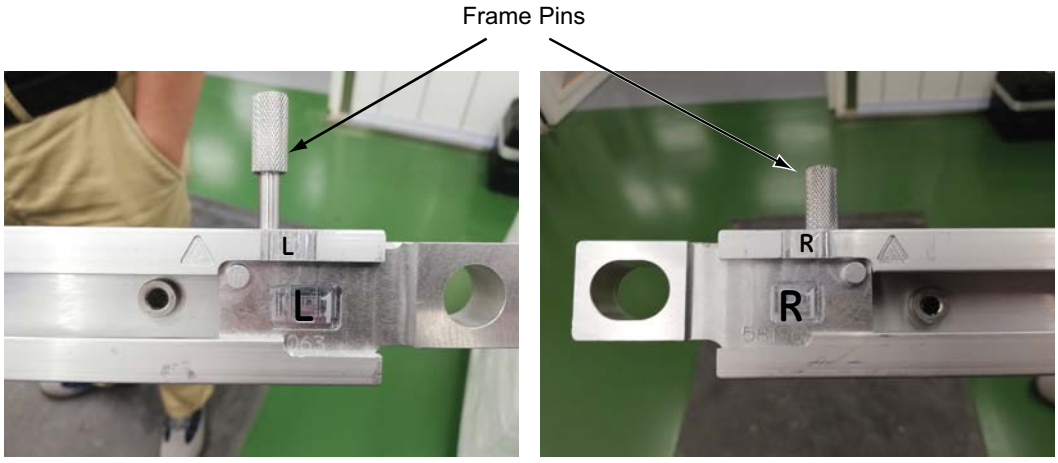
2.) Place the accessory strips on the floor and reinstall the nylon screws into the accessory rail for safe keeping.

Figure 1-44 Accessory Rail Screw

7.3.4 Gantry-Table Alignment

Gantry Alignment Tool Installation:

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



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

Figure 1-45 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.**

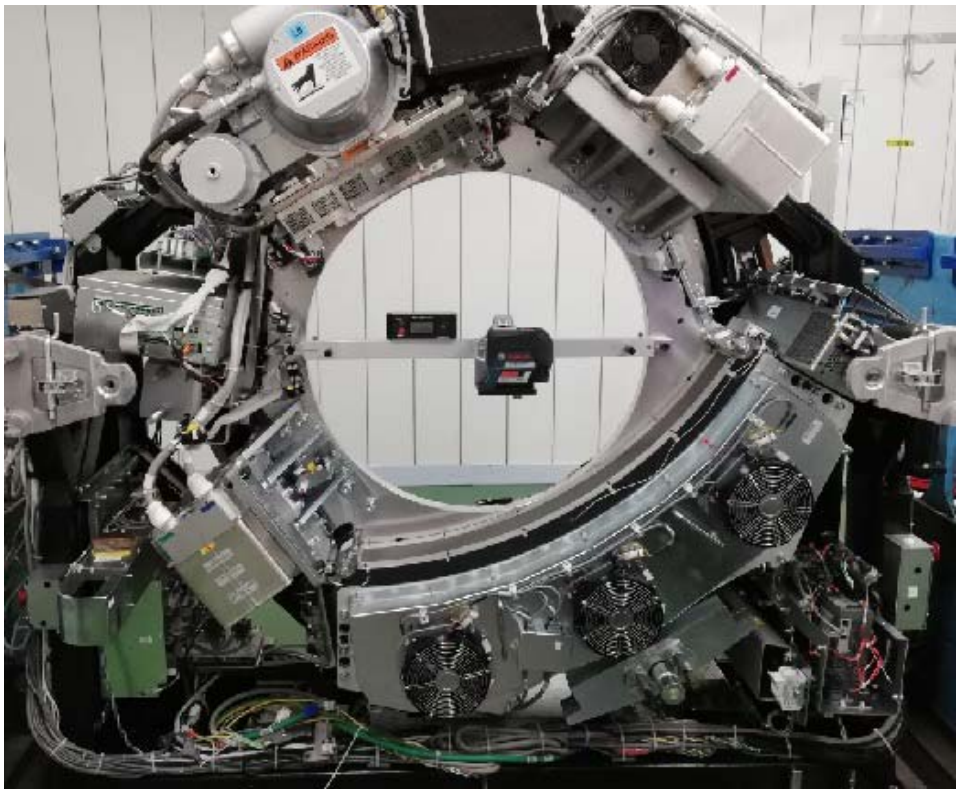


Figure 1-46 Mount the Alignment Bar to the Gantry

4.) Install the Line Laser on the gantry alignment bar using the Laser Line Light Screw, use the level gauge to level the alignment bar (**Level Specification:** ± **0.1**°) by rotating the gantry manually. (See Figure 1-46)

5.) Power on the Line Laser and align it to keep the light beams projected on the groove targets of the alignment bar.

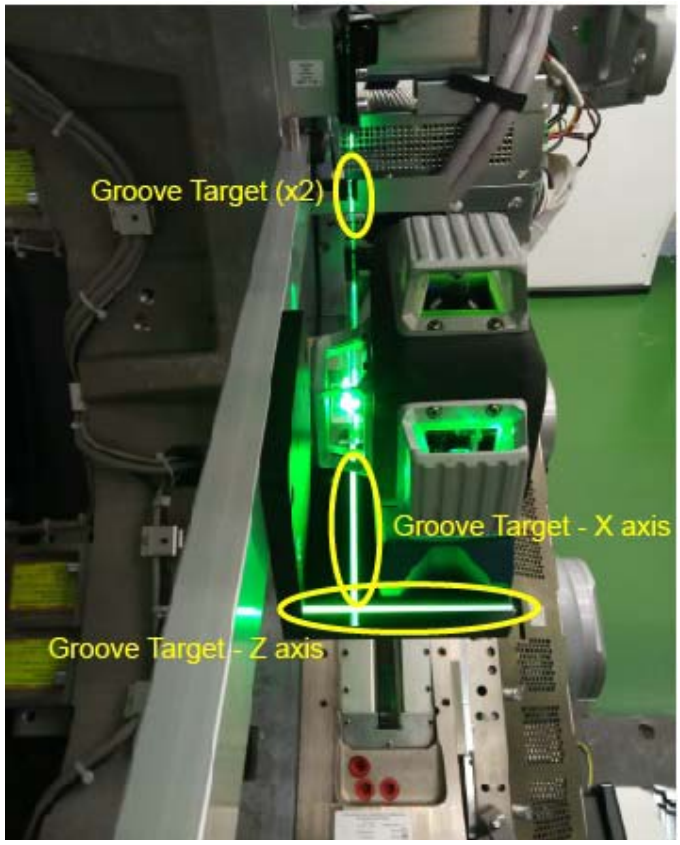


Figure 1-47 Line Laser Alignment

6.) Tighten the Laser Line Light Screw to fix the Line Laser.

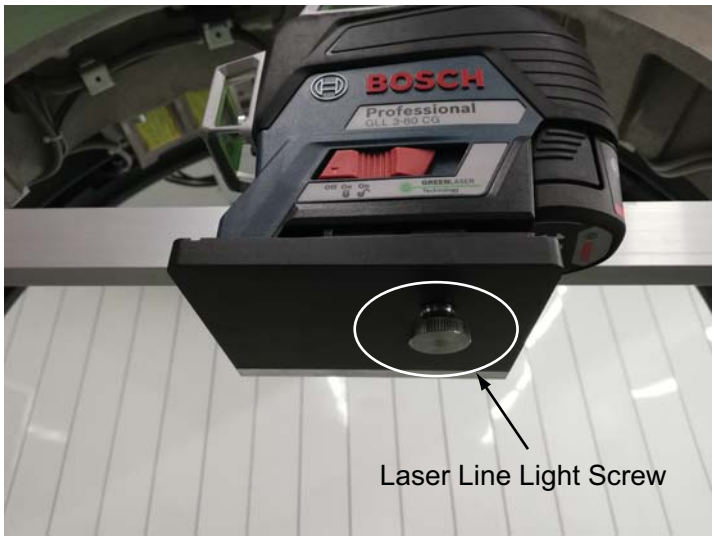


Figure 1-48 Fix the Line Laser

NOTICE **The position of the Line Laser MUST be aligned, because it will affect the table alignment.**

Table Alignment Tool Installation:

7.) 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 69) and the table alignment tool base fits perfectly to the table cover.

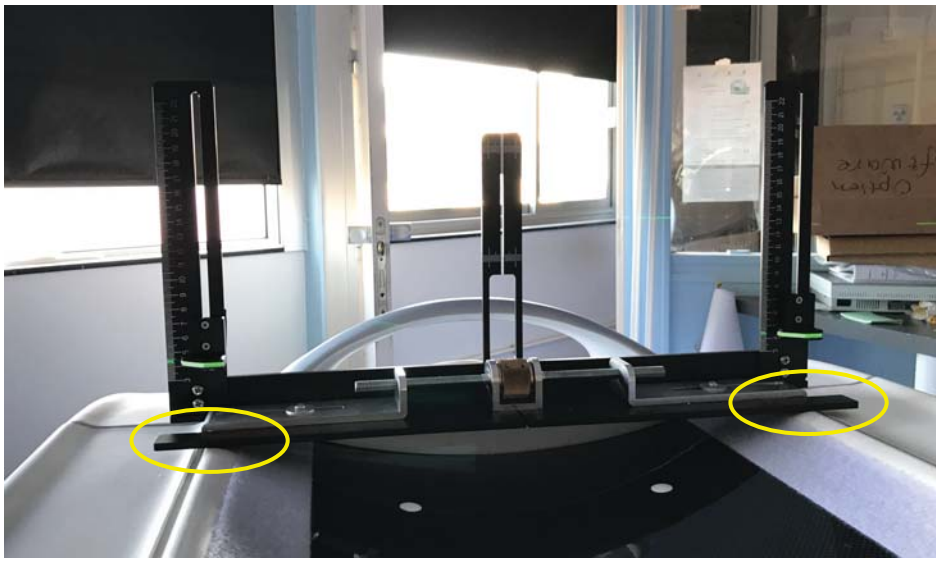


Figure 1-49 Table Alignment Tool

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

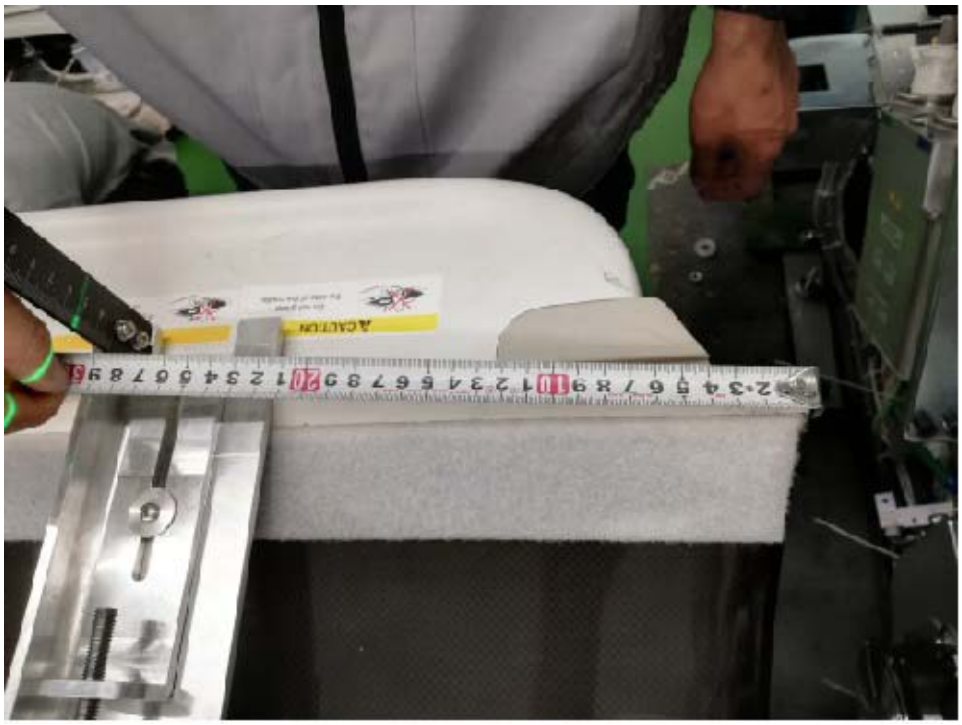


Figure 1-50 25cm Distance from Cradle Front End

8.) Tighten the nut wheel (See Figure 1-49) to fix the table alignment tool on the cradle.

Level and Center the Table to the Gantry:

Note: All Table adjusters should be preset to 15.5mm (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. One thread must be showing above all locking rings when leveled.

Table cannot be higher than 1005mm from the center of cradle to floor.

9.) Power on the Line Laser, use laser lines to align the table position.

- The vertical laser line projects through the center cut of the alignment tool onto the wall (See Figure 1-49)
- The horizontal laser line projects on all 4 rulers

a.) Adjust the table position in X-axis and Z-axis direction to align the vertical laser line and both center cuts.

Figure 1-51 Table Alignment in X-axis and Z-axis

b.) Adjust the table height position using leveling adjusters to let the horizontal laser line projects on all 4 rulers, and keep the same value (**Height Specification: 43 ± 2mm**).

NOTICE **The projected values on all four rulers should be the same, the tolerance range is 2mm.**

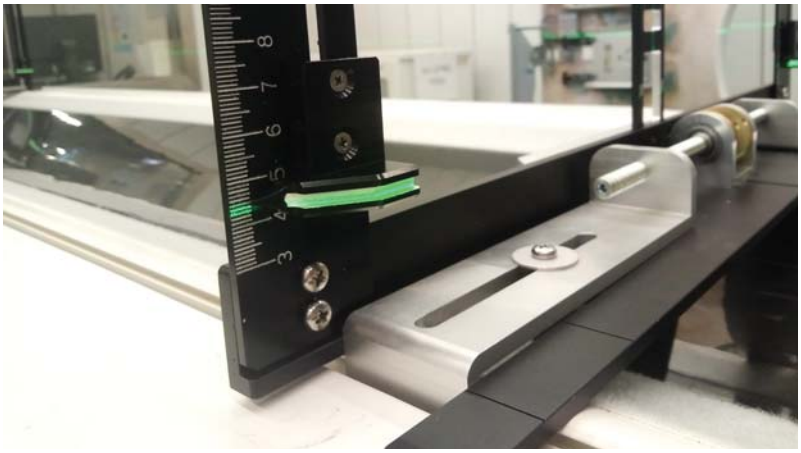


Figure 1-52 Adjust Table Height

10.) When completed, turn off the Line Laser.

Note: Do not remove the table dollies.

11.) Re-check that each of the four adjusters is loaded by attempting to turn it.Tighten the locking rings.

12.) Tighten the locking rings at all locations with the spanner, where possible. Use a hammer and chisel to tighten the locking rings only where you can not use the spanner.

Section 8.0 Table Installation (Lite Table)

Note: For GT1700V Table Installation, refer to Section 7.0 Table Installation (GT1700V), on page 66

8.1 Time and Personnel

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

8.2 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

8.3 Procedures

8.3.1 Table Prep and Set-up

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.

2.) Wheel the table to its approximate position relative to the gantry, using the marks made earlier.

   a.) Locate the table leveling pads and position them against the base of the table, using the adjusters with a 1½" socket and ½" ratchet.

   b.) Use the dollies to evenly lower the table until it rests on the leveling pads using an ½" ratchet.

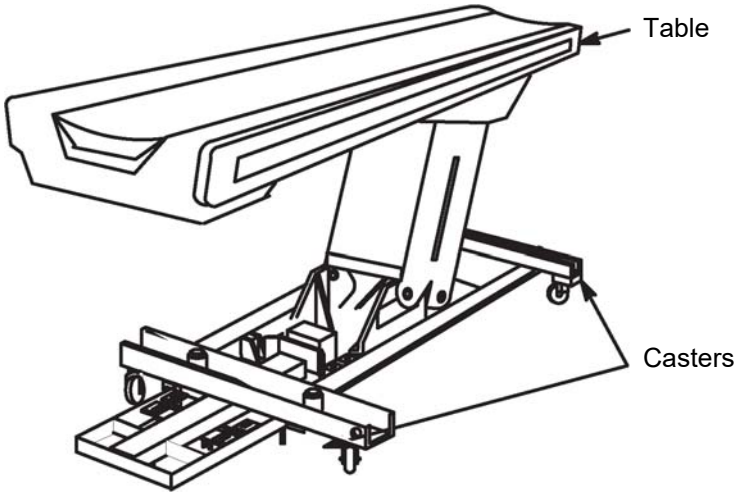


Figure 1-53 Moving the Table

3.) Preset leveling pad heights to 20mm, see Figure 1-54.

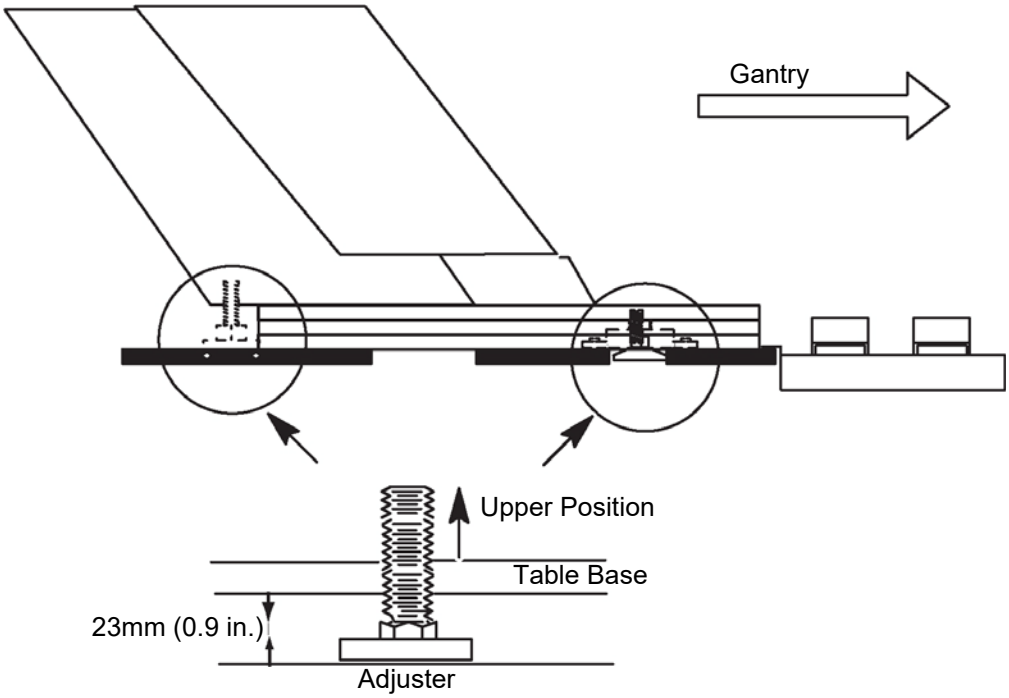


Figure 1-54 Setting the Adjusters

To adjust two leveling pads at rear end of table, please insert the screw driver into the hole located on the bolt then rotate the bolt, refer to the Figure 1-55.

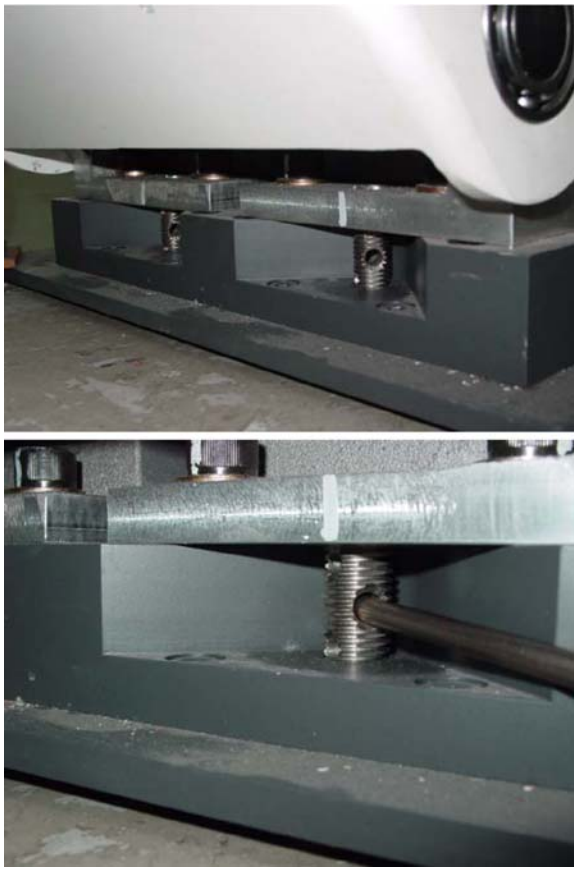


Figure 1-55 Adjust Leveling Pads

8.3.2 Cradle Center Procedure

1.) Remove a bottom cover under a cradle handle. See Figure 1-56.

Figure 1-56 Remove Bottom Cover

2.) Release a latch by pushing a bracket to move the cradle by hands. See Figure 1-57.

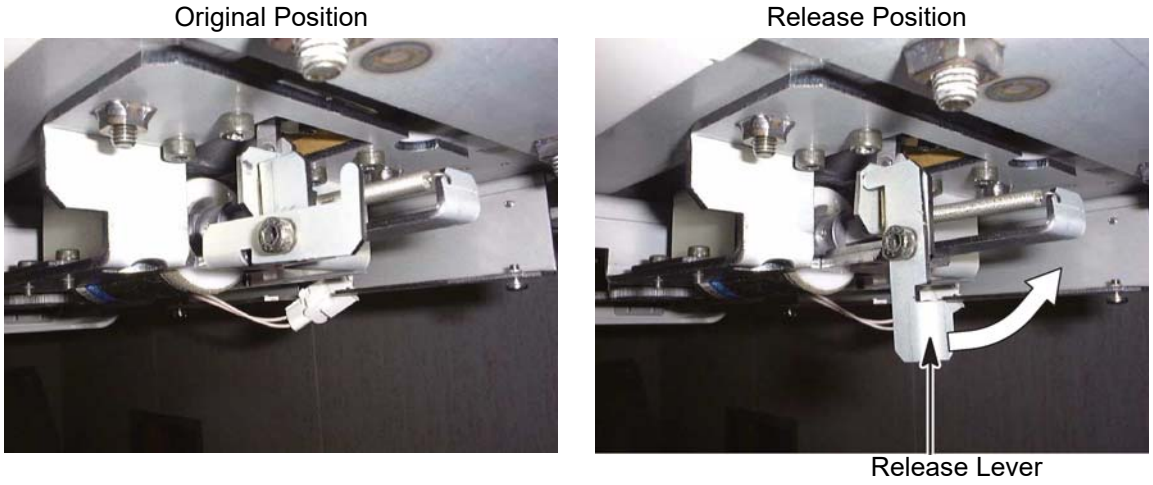


Figure 1-57 Release the Cradle

3.) Center the cradle on the drive rollers assembly by pushing the cradle into the gantry to its maximum position and back to just before the latch position six times. The cradle should be centered.

You must push and pull a center of cradle hand. See Figure 1-58.

Figure 1-58 Push and Pull Cradle

8.3.3 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.

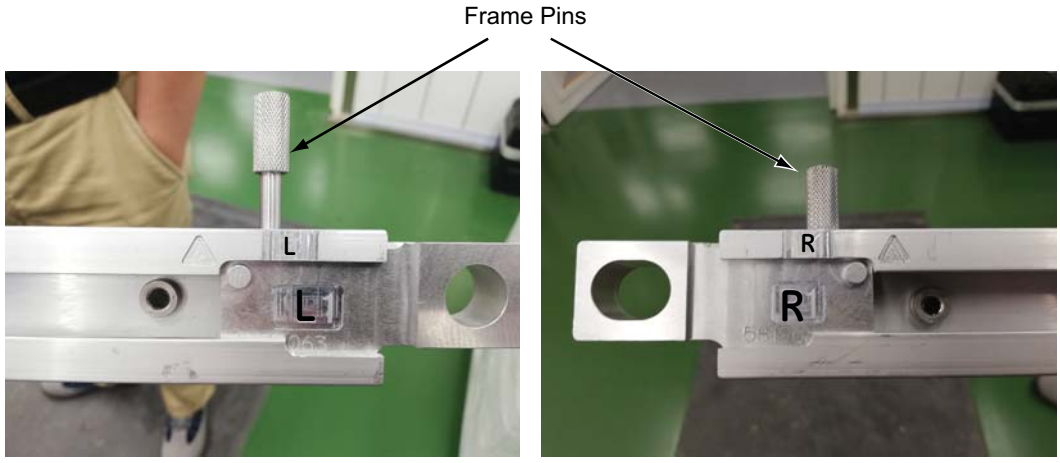
2.) Place the accessory strips on the floor and reinstall the nylon screws into the accessory rail for safe keeping.

Figure 1-59 Accessory Rail Screw

8.3.4 Gantry-Table Alignment

Gantry Alignment Tool Installation:

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



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

Figure 1-60 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.**

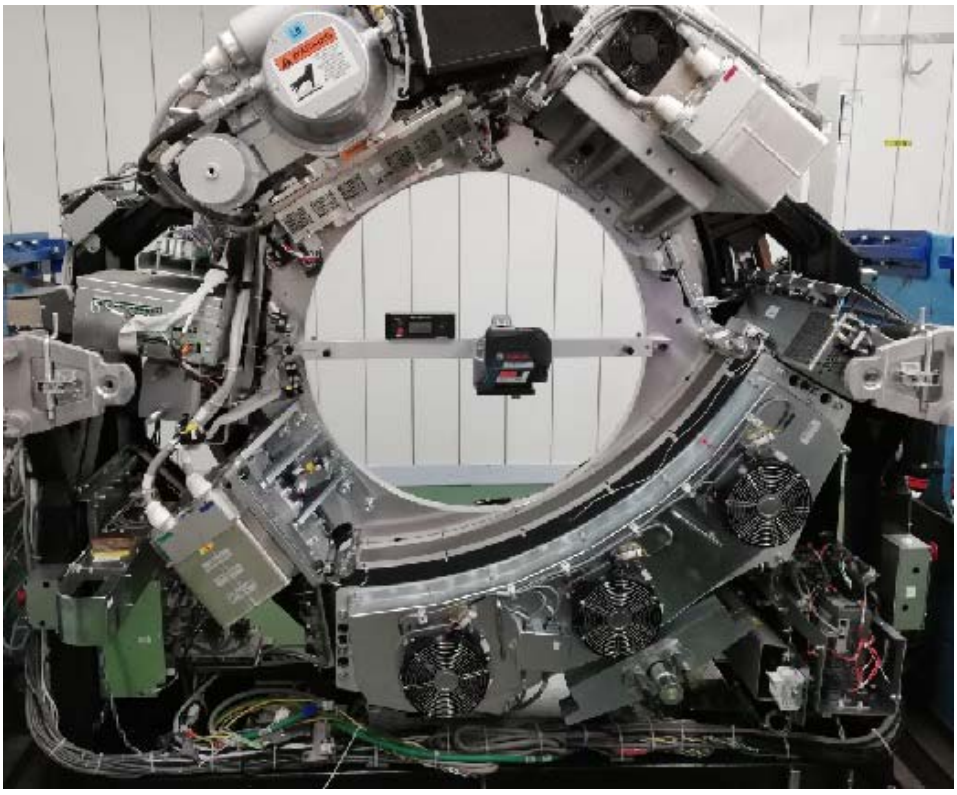


Figure 1-61 Mount the Alignment Bar to the Gantry

4.) Install the Line Laser on the gantry alignment bar using the Laser Line Light Screw, use the level gauge to level the alignment bar (**Level Specification:** ± **0.1**°) by rotating the gantry manually. (See Figure 1-61)

5.) Power on the Line Laser and align it to keep the light beams projected on the groove targets of the alignment bar.

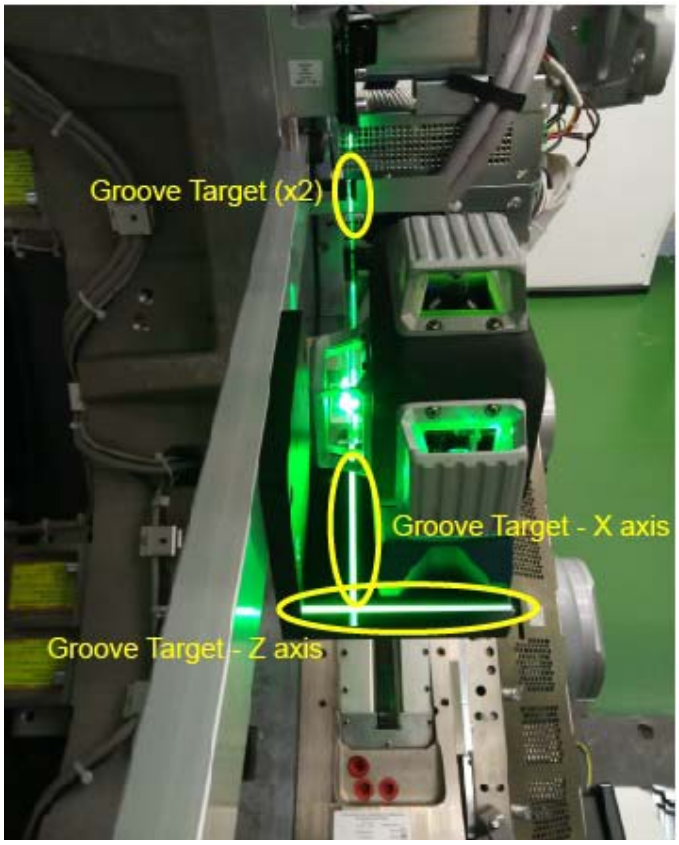


Figure 1-62 Line Laser Alignment

6.) Tighten the Laser Line Light Screw to fix the Line Laser.

Figure 1-63 Fix the Line Laser

NOTICE **The position of the Line Laser MUST be aligned, because it will affect the table alignment.**

Table Alignment Tool Installation:

7.) 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 8.3.3 Removing the Accessory Rail Strip, on page 80) and the table alignment tool base fits perfectly to the table cover.

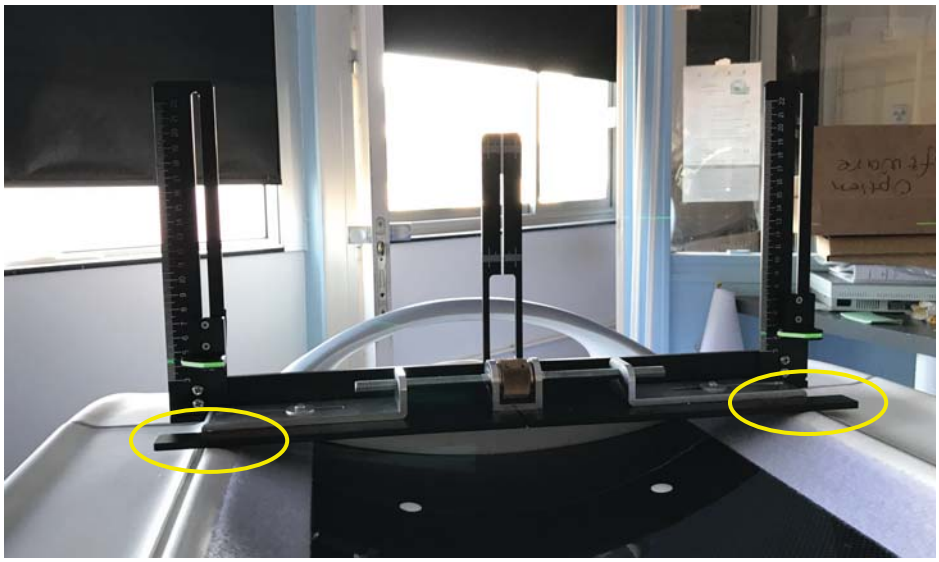


Figure 1-64 Table Alignment Tool

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

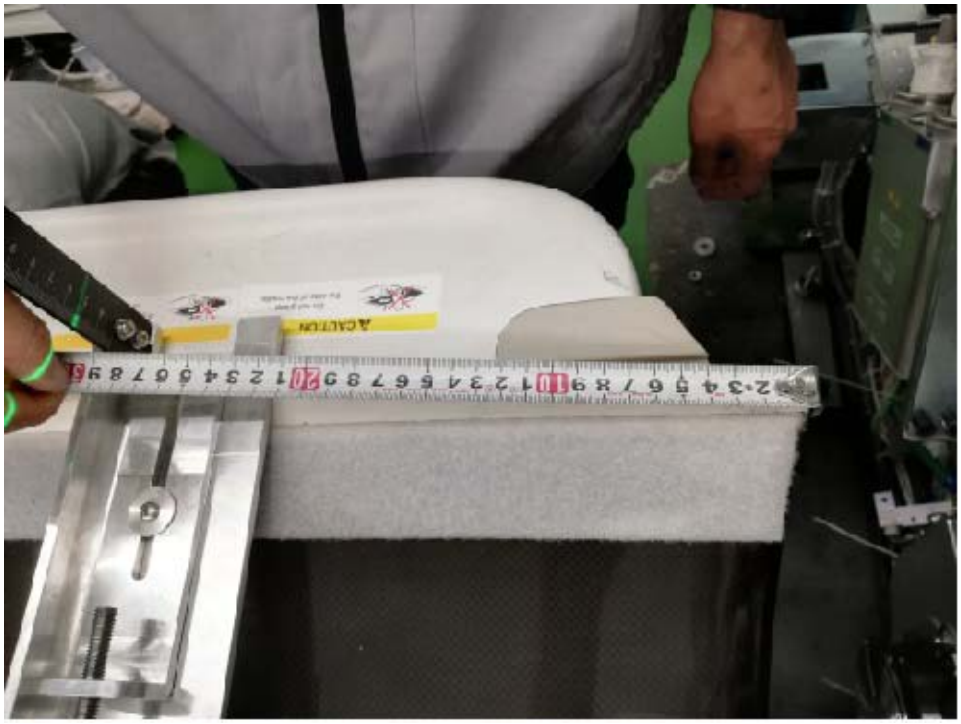


Figure 1-65 25cm Distance from Cradle Front End

8.) Tighten the nut wheel (See Figure 1-64) to fix the table alignment tool on the cradle.

Level and Center the Table to the Gantry:

Note: All Table adjusters should be preset to 15.5mm (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. One thread must be showing above all locking rings when leveled.

Table cannot be higher than 1005mm from the center of cradle to floor.

9.) Power on the Line Laser, use laser lines to align the table position.

- The vertical laser line projects through the center cut of the alignment tool onto the wall (See Figure 1-66)
- The horizontal laser line projects on all 4 rulers

a.) Adjust the table position in X-axis and Z-axis direction to align the vertical laser line and both center cuts.

Figure 1-66 Table Alignment in X-axis and Z-axis

b.) Adjust the table height position using two front and two rear adjusters so that the horizontal laser line projects on all 4 rulers, and keep the same value (**Height Specification: 43 ± 2mm**).
The front sides of the adjuster contain the lock nut. After level adjustment, tighten the lock nuts securely.

Level Specification: +/- 0.5 mm/1000 mm

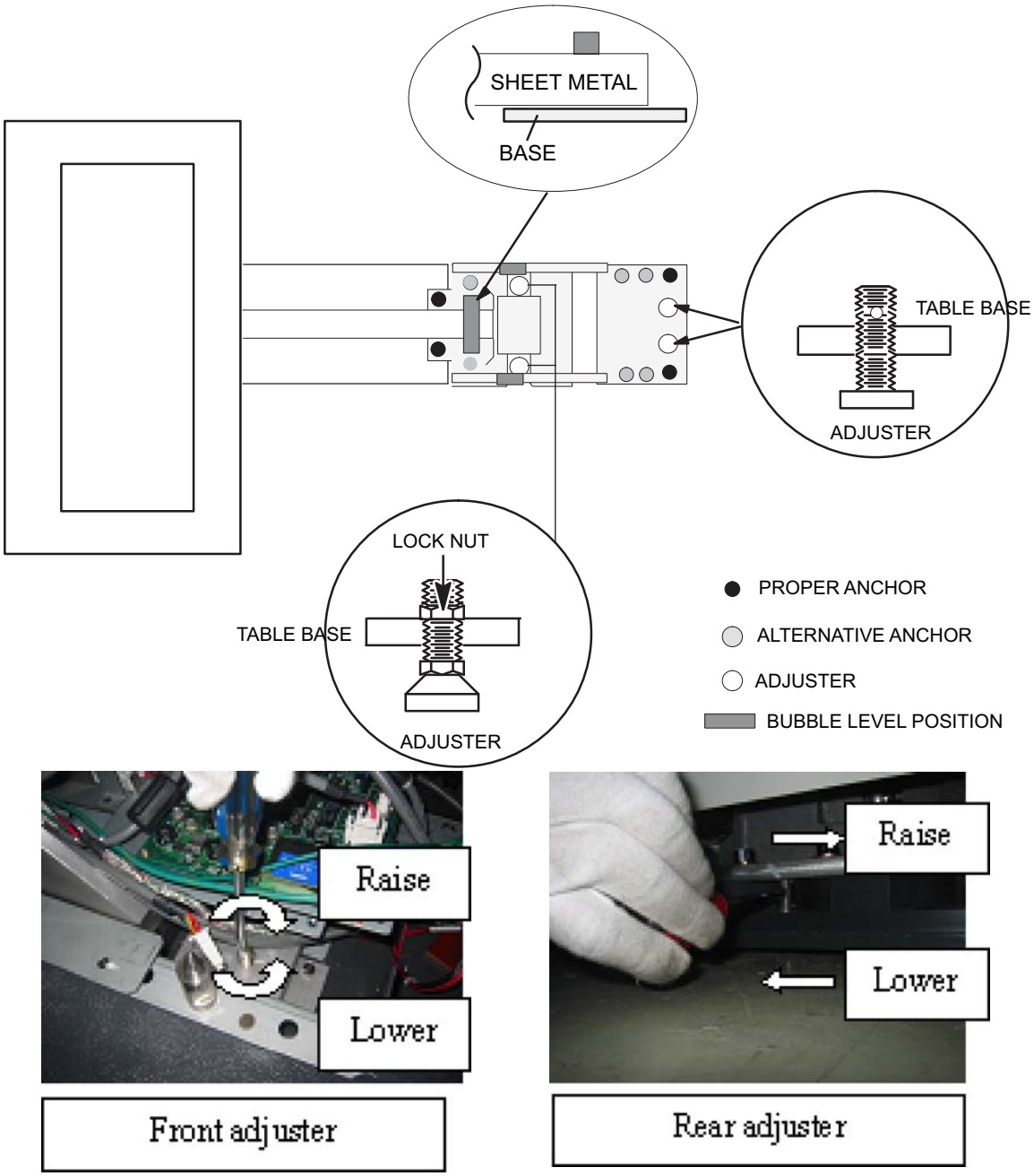


Figure 1-67 Table Adjuster and Bubble Level Position

c.) Check that the Cradle is also leveled.

NOTICE **The projected values on all four rulers should be the same, the tolerance range is 2mm.**

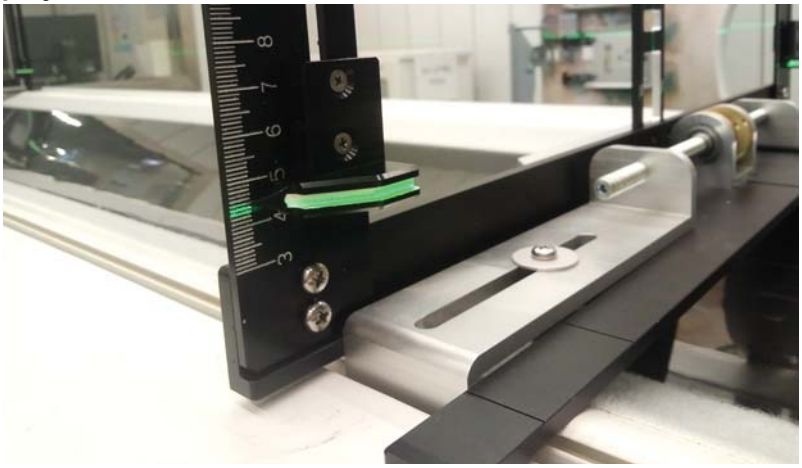


Figure 1-68 Adjust Table Height

10.) 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 (For Gantry and GT1700V Table)

For Lite Table anchor procedure, refer to 9.2 Install the Anchors (For Lite Table), on page 90.

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 1-69 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. 54 N-m

5.) Verify that the Table to Gantry Alignment should be correct.

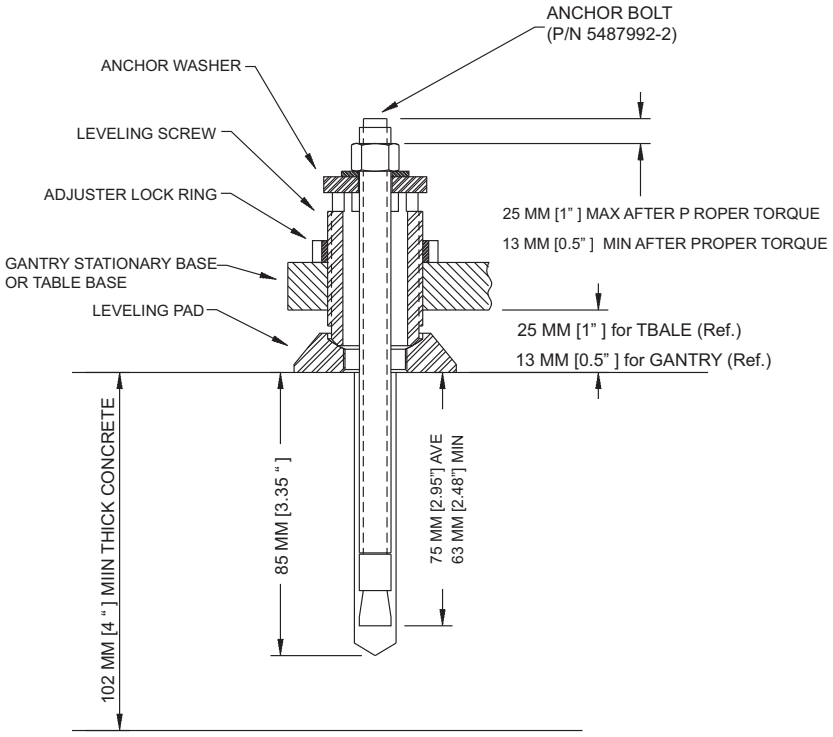
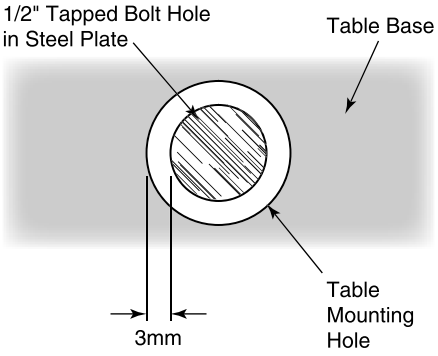


Figure 1-70 Gantry and Table Anchor Assembly Anchor (P/N 5487992-2)



Bolt centering is important to provide ± 3mm of adjustment for electrical alignment. Always use the drilling centering tool when drilling all bolt holes.

Figure 1-71 Center tapped holes under mounting holes in table base

9.2 Install the Anchors (For Lite Table)

Recommended - Use “Hilti Kwik-Bolt 3" anchors P/N 2106573-3 (12.7 mm (½") dia. by 140 mm (5-½") long) as shipped with the system for this procedure.

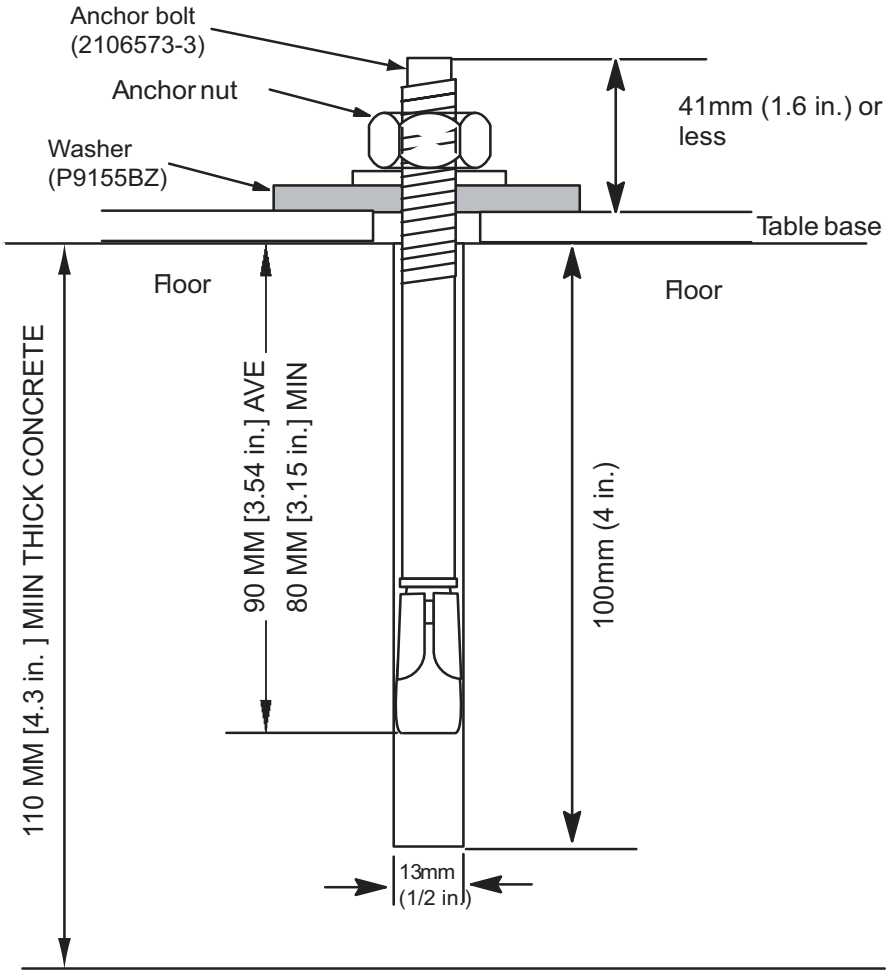


Figure 1-72 Lite Table Anchor Assembly

1.) Assemble the anchors before you install them. Refer to Figure 1-72.

a.) Remove the nut and washer from the anchor.

b.) Add a ¼" thick washer (PN P9155BZ) under the regular anchor washer.

c.) Reassemble the anchor washer and nut and position nut so top is flush with threads of anchor.

2.) Insert an anchor into each anchor hole in the Table 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.**

3.) Adjust all anchor nuts until tight.
TORQUE: Approx. 50 N-m

NOTICE **To over-tighten nuts will damage the frame of the Table and also bring an out-of-level Gantry.**

4.) Verify that the Table to Gantry Alignment should be correct.

NOTICE **The minimum Tensile load strength of the anchor must be 13000 N.**

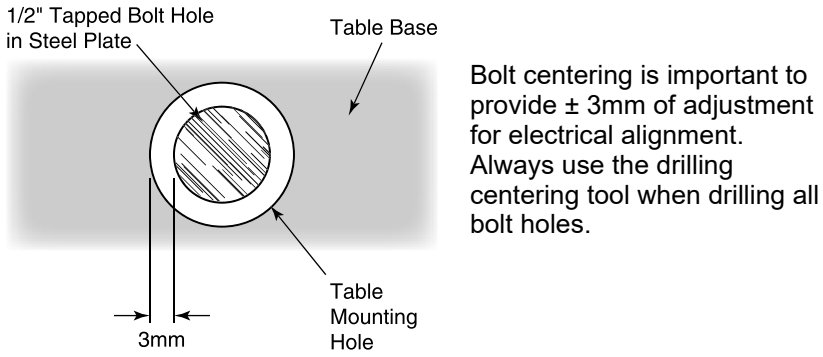


Figure 1-73 Center tapped holes under mounting holes in table base

9.3 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 7.3.4 Gantry-Table Alignment, on page 70 (GT1700V Table) or 8.3.4 Gantry-Table Alignment, on page 81 (Lite Table). If re-leveling is required, repeat this procedure.

2.) Once alignment has been verified, torque all mounting bolts.
Tighten the location #1 through #7 anchors and torque to:

- **Gantry and GT1700V Table:**
  54 N-m (40 ft.-lb.) for 7-inch Anchor (P/N 5487992-2)
- **Lite Table:**
  Initially torque at 50 N-m (37 t.-lb.), then loosen until approximately 5 N-m (3.7 ft.-lb.)

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.

9.4 Removing Table Shipping Dollies

9.4.1 Time and Personnel

(FE or mechanical supplier)

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

9.4.2 Tools and Test Equipment

- Standard Installation Tools Kit

9.4.3 Preparation

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

9.4.4 Procedure

Refer to Figure 1-74 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.

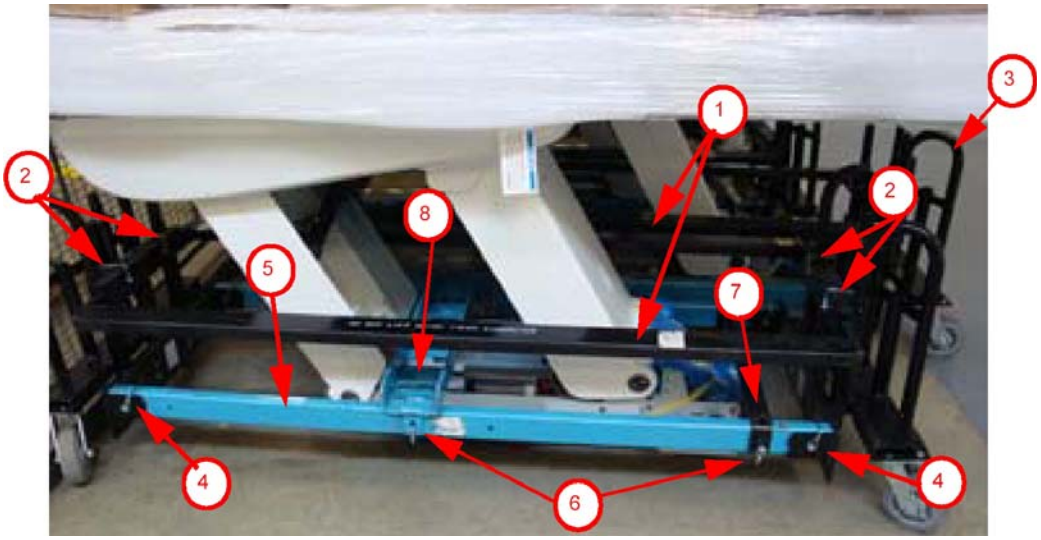


Figure 1-74 Table Shipping Dollies

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 Figure 1-74)
9	Table Base Bolt (see Figure 1-74)

Table 1-4 Description of Table Shipping Dollies

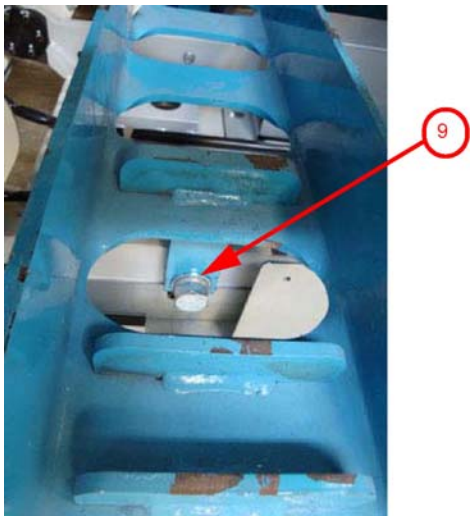


Figure 1-75 Close-up of table base connection

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 1-76. The assembly can be made to fit floor entrance conduit or surface floor duct.

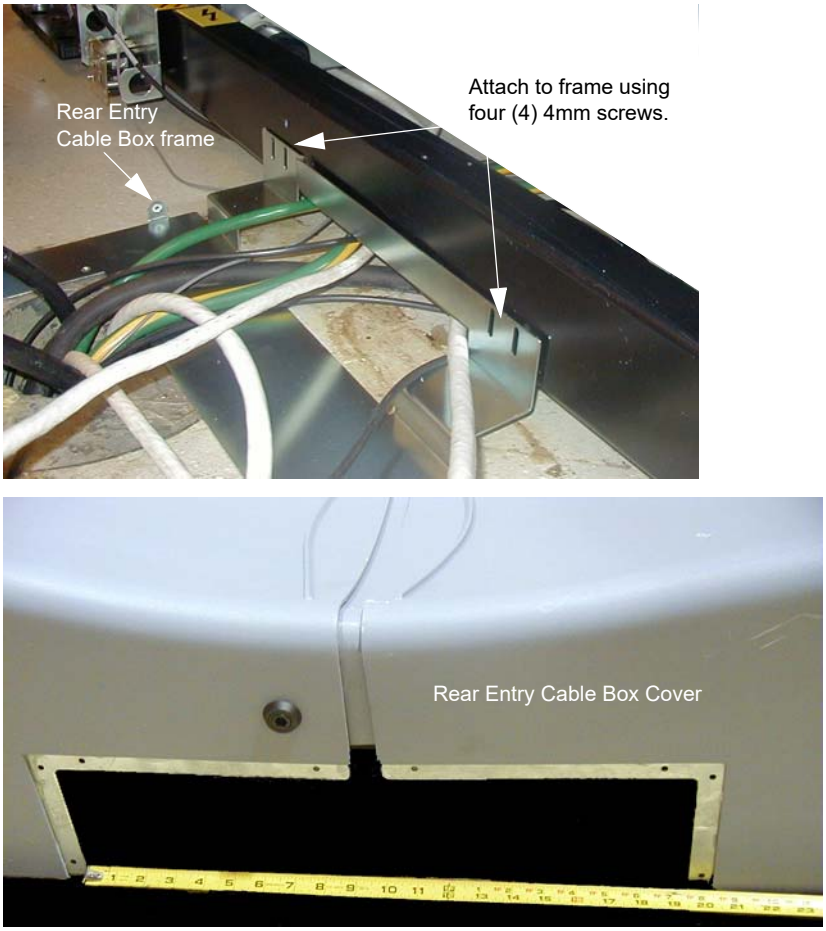


Figure 1-76 Rear Entry Cable Box

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

10.1 Rear Entry with Surface Floor Duct

An OSHA ramp is required. The ramp must have 1’ run of slope for each 1" rise in height.

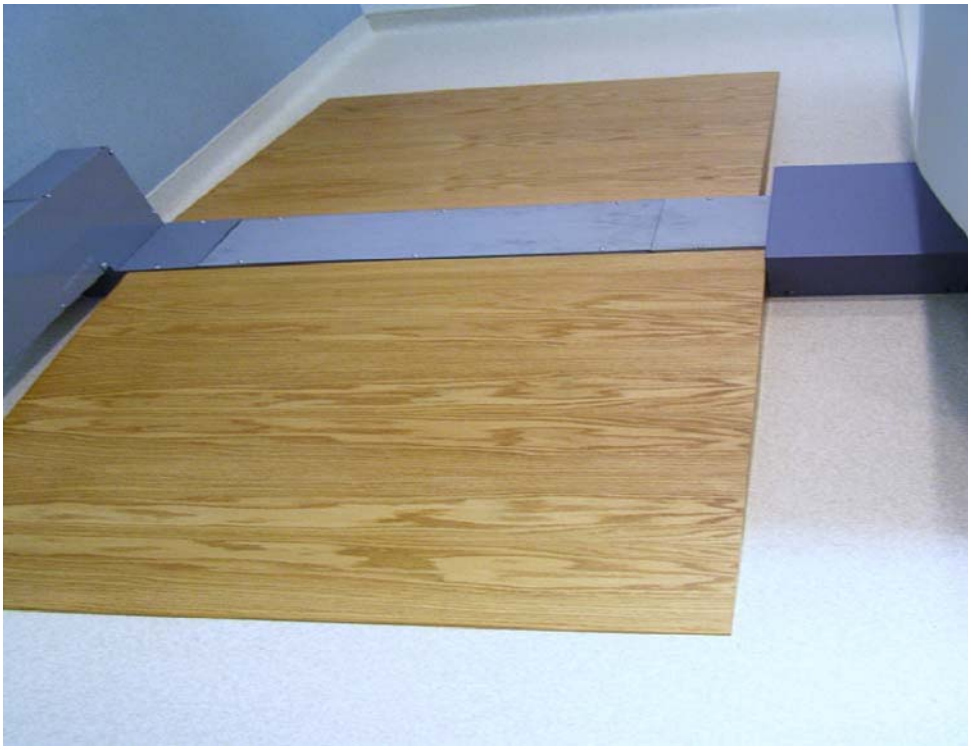


Figure 1-77 OSHA Ramp Example

Section 11.0 Install Table Footswitch Assembly (GT1700V)

11.1 Time and Personnel

Required Persons	Preliminary Reqs	Procedure	Finalization
1 (FE or mechanical supplier)		1.0 hour labor on-site	

11.2 Tools and Test Equipment

- Standard Install Tool Kit

11.3 Procedure

After table positioning is completed and the anchors are installed, install the footswitch assembly as shown in Figure 1-78.

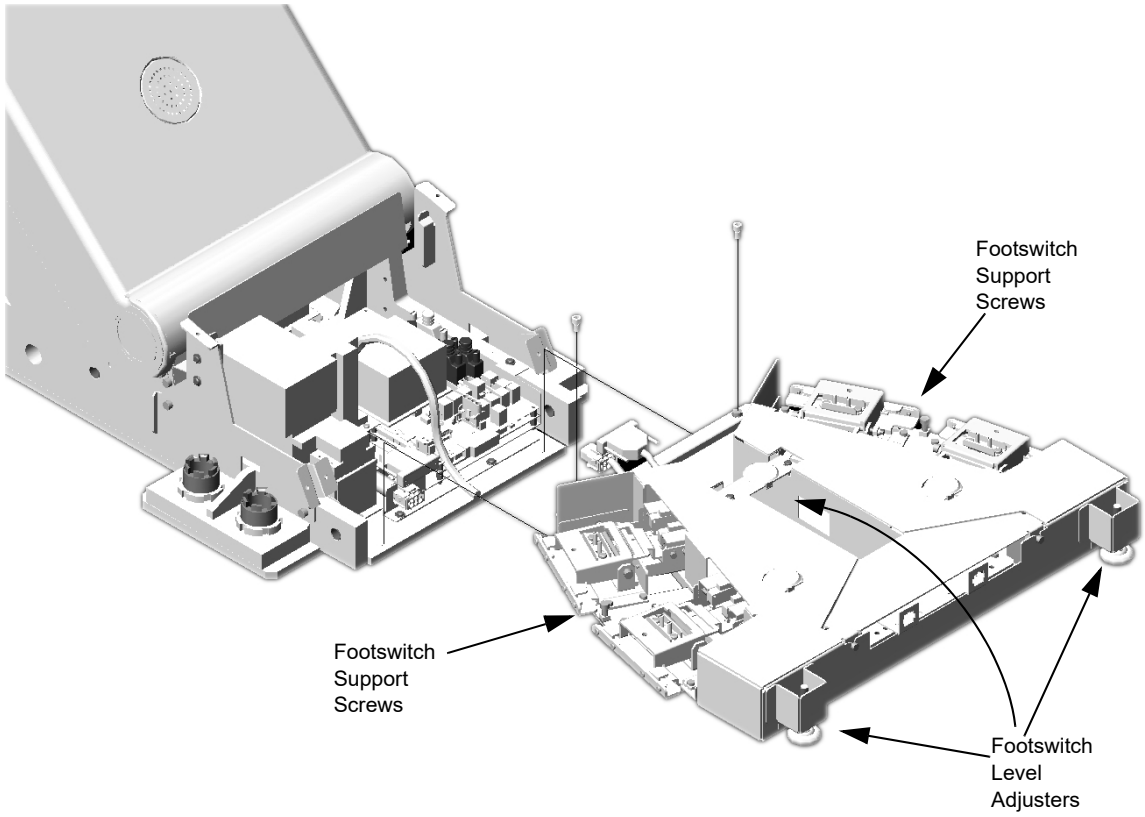


Figure 1-78 Footswitch Assembly Installation

1.) Pop off foot pedal screw cover tabs.
2.) Remove foot switch covers.
3.) Remove 3 Phillips screws that secure the assembly cover.

4.) Remove the footswitch assembly cover.

5.) Using two (2) M6 bolts, attach the footswitch assembly to the table base.

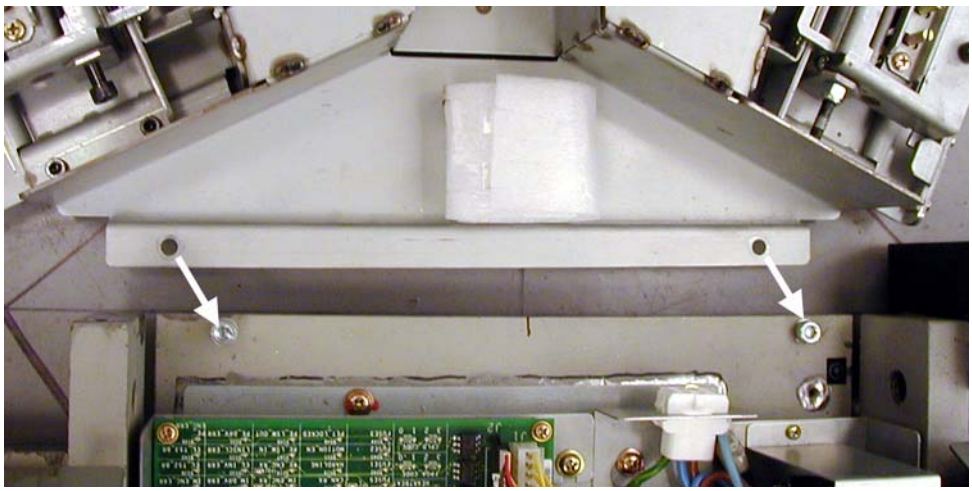
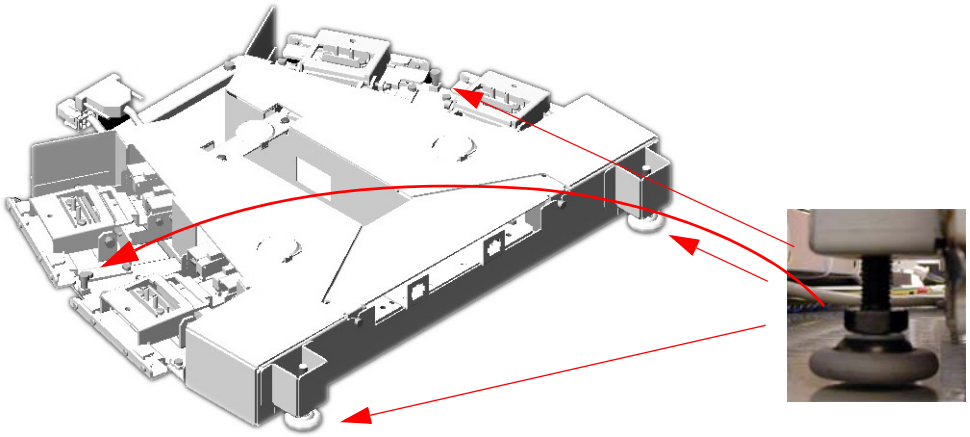


Figure 1-79 Attach Footswitch

6.) 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 in. level to check the levelness in all directions.



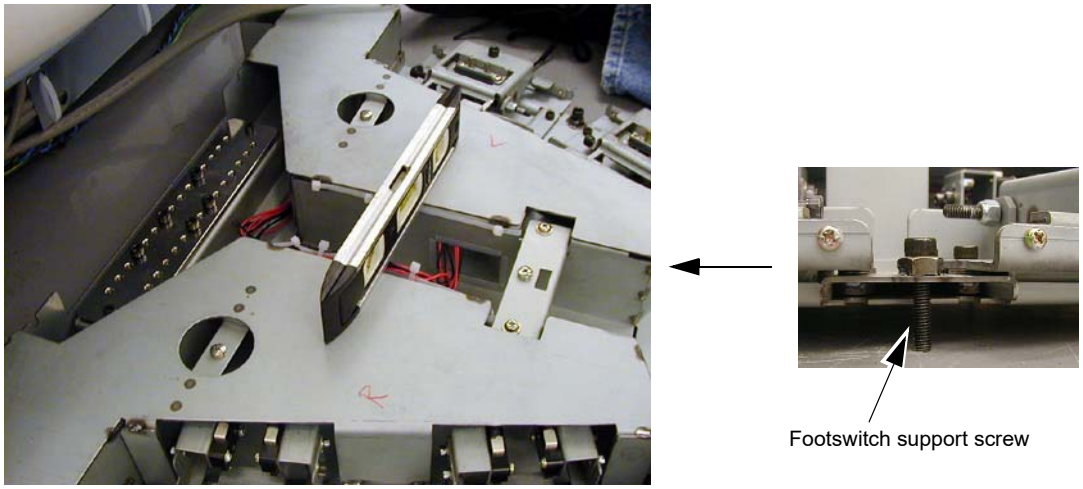


Figure 1-80 Level Footswitch

7.) Cut the tie-wraps from around the cables in the gantry base and route the power cables from the gantry as shown in Figure 1-81.

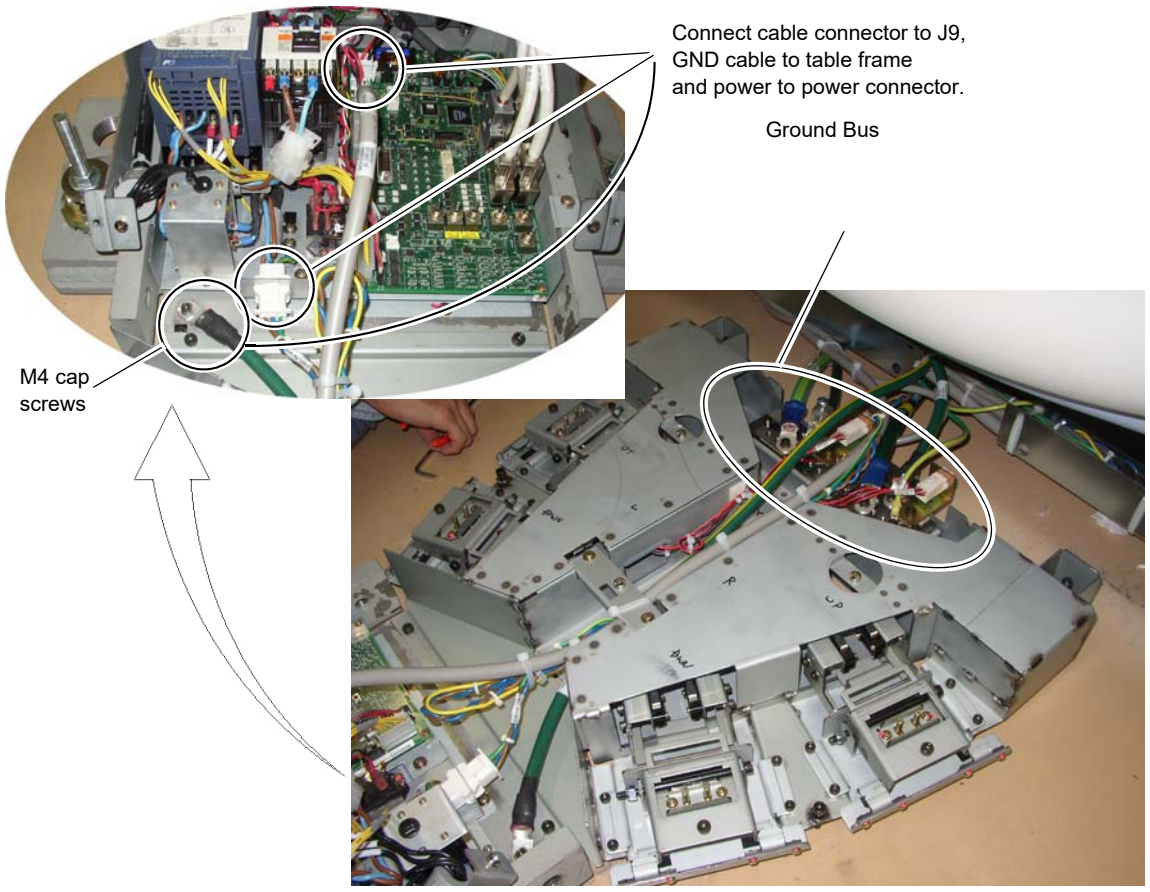


Figure 1-81 Footswitch Assembly Cable Wiring

8.) Connect the ground bus connector plate.

Note: Additional M6 Hex-screws may be required to connect grounds.

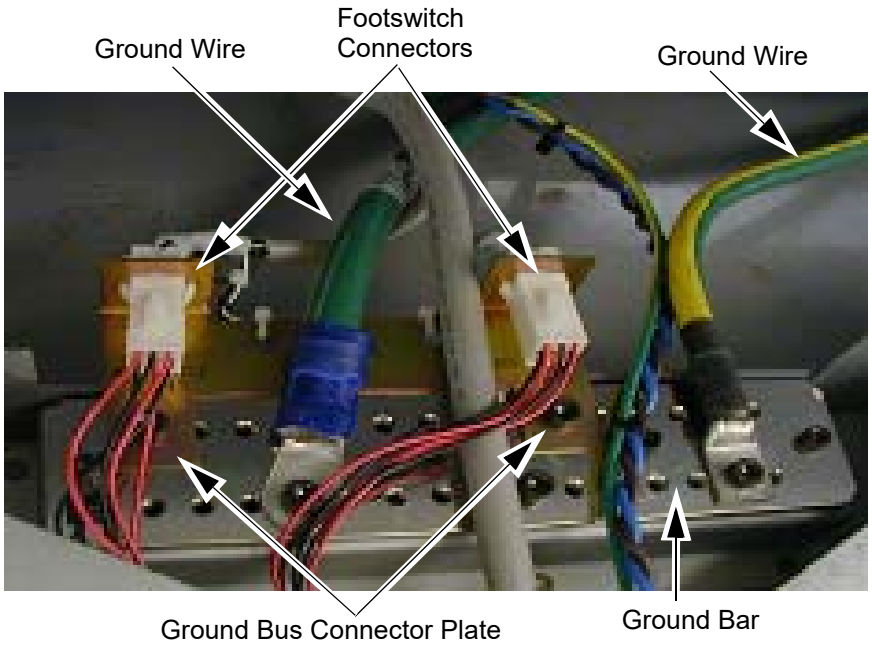


Figure 1-82 Footswitch Ground/Bus Bar

9.) Install the footswitch pedal bracket onto the installed ground bus bar.
Connect the ground wires (not all shown in Figure 1-82) to the installed ground bus:
Table#2
Gantry#1/0 and #10 and 2-#8 (Optional)
Console#2
PDU#1/0

10.) Torque per Table 1-5.

Wire Size AWG	Driver	Bolt/Hex
#14 - 8	1.67 ft-lb (2.3 N-m)	6.25 (8.5 N-m)
#6 - 4	3.0 ft-lb (4.1 N-m)	12.5 (17 N-m)
#3 - 1		21 ft-lb (28.5 N-m)
#0 - 2/0		29 ft-lb (39.3 N-m)

Table 1-5 Ground Buss Bar Torque Values

11.) Install all footswitch covers after work is completed. See Section 1.8 Install Gantry Base Covers, on page 164.

Section 12.0 Install Table Footswitch Assembly (Lite Table)

12.1 Time and Personnel

Required Persons	Preliminary Reqs	Procedure	Finalization
1 (FE or mechanical supplier)		1.0 hour labor on-site	

12.2 Tools and Test Equipment

- Standard Install Tool Kit

12.3 Procedure

Install the table foot-switch assembly as shown in Figure 1-83, along with filler strip.

1.) Connect foot-switch cables.

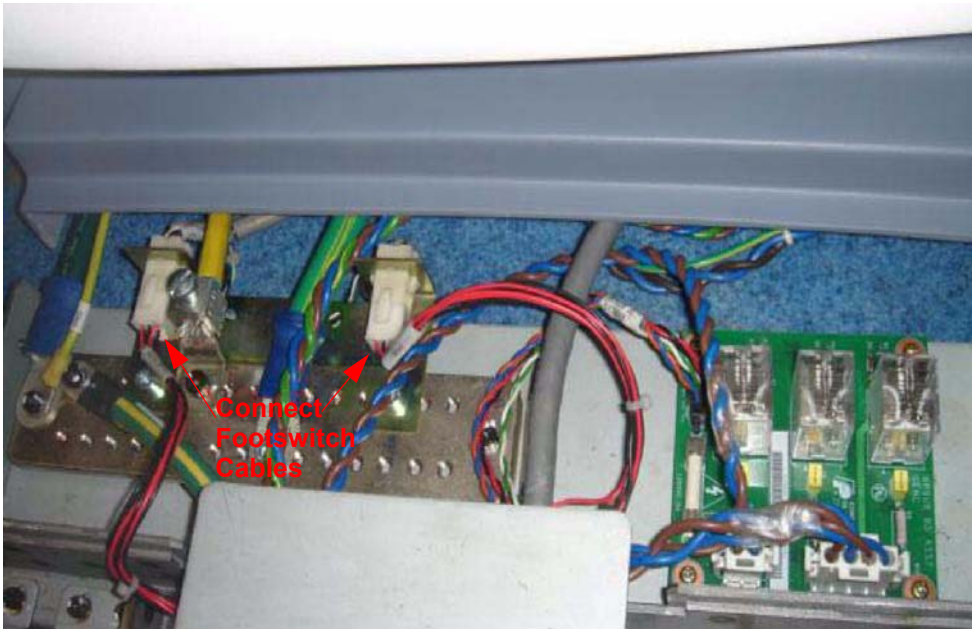


Figure 1-83 Install Table Foot-switch

2.) Install front bottom cover and footswitch pedals.

Figure 1-84 Install Front Bottom Cover

Figure 1-85 Install Footswitch Pedals

Section 13.0 Remove Gantry Tilt Bracket

13.1 Time and Personnel

Required Persons	Preliminary Reqs	Procedure	Finalization
1 (FE or mechanical supplier)		Labor on-site	

13.2 Tools and Test Equipment

- 10 mm Hex wrench
- 14 mm Hex wrench

13.3 Procedure

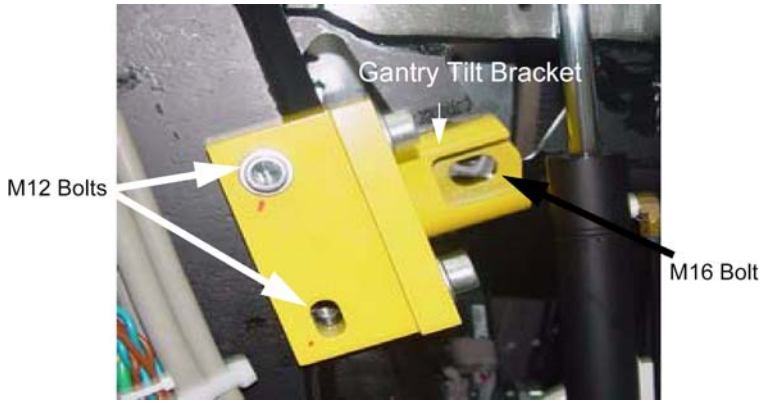


Figure 1-86 Gantry Tilt Bracket Removal

1.) Refer to Figure 1-86. 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 14.0 Position the Power Distribution Unit

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.

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**

14.1 Time and Personnel

Required Persons	Preliminary Reqs	Procedure	Finalization
1 Customer Electrician		Labor on-site	

14.2 Tools and Test Equipment

Hex wrench set

14.3 Procedure

14.3.1 Position the Power Distribution Unit

1.) Roll the PDU into position on its permanently mounted casters. Leave at least 15.5 cm (6 in.) between the PDU and back wall to allow cooling air to circulate.

Connection or Wall Box	AWG #	Connection From	Connection To PDU	Installed & Checked
TS1	Note 1	PDB-A	TS1-1	
	Note 1	PDB-B	TS1-2	
	Note 1	PDB-C	TS1-3	
	#1/0	GND	N/G **(Do NOT connect anything to neutral point.)**	
Note 1 : Refer to Pre-Installation manual.				

Table 1-6 Contractor Connections

Terminal No.	P/N	Model - (ABB/TE)	Torque
TS1	5795116	ZS95	6.8 ft-lb (9.25 N-m)
TS2	5795117; 5795118	M35/16;M35/16.P	2.2 ft-lb (3 N-m)
TS3/4/5	5795119; 5795120	M16/12;M16/12.P	1.0 ft-lb (1.4 N-m)
TS6	5795121	M10/10	1.0 ft-lb(1.4 N-m)

Table 1-7 PDU Terminal Torque Values

2.) Run the main input power conductors and ground though 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 1-87 Flexible Conduit for PDU Power

3.) Locate the hole cover plate in Box 1 and attach the flexible metal conduit to the PDU.
4.) If present, remove the TS1 panel front cover.
5.) Strip the wires to fit securely on the power block.
6.) Observe incoming phases (L1, L2, and L3) and insert bare leads into each location on TS-1. Torque to specification. (9.25 Nm (6.8 ft-lb))
7.) Insert vault ground in to PDU vault ground lug. Torque to specification. (31 Nm (22.9 ft-lb))
8.) Tighten all fasteners securely.

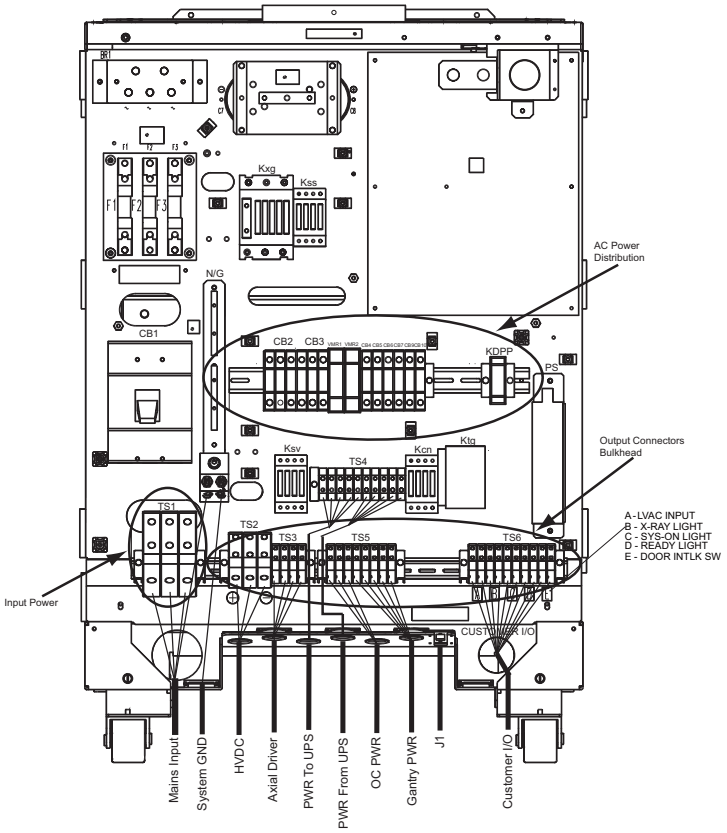


Figure 1-88 PDU Area Locations

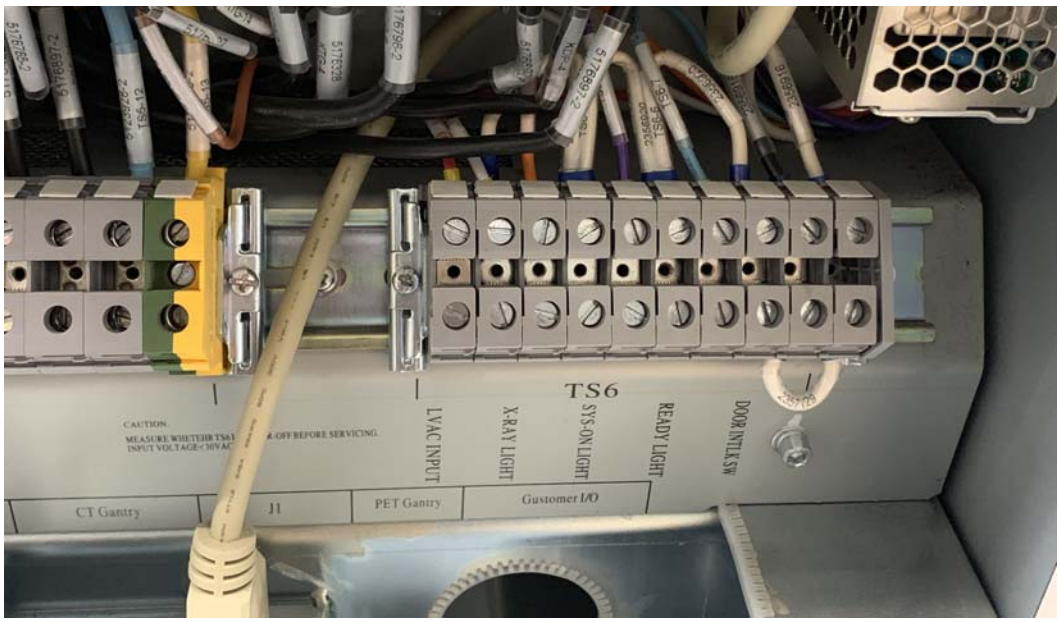


Figure 1-89 PDU Power Connections

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

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 **(Do NOT connect anything to neutral point.)**	
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	

***1:** Sub-feeder wire size depends on system input voltage. Refer to Ch. 12 - Power Requirements in Pre-Installation manual.

Table 1-8 Contractor PDU Connections

Section 15.0 Install Operator Console

15.1 Unpack OpenOC Console

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

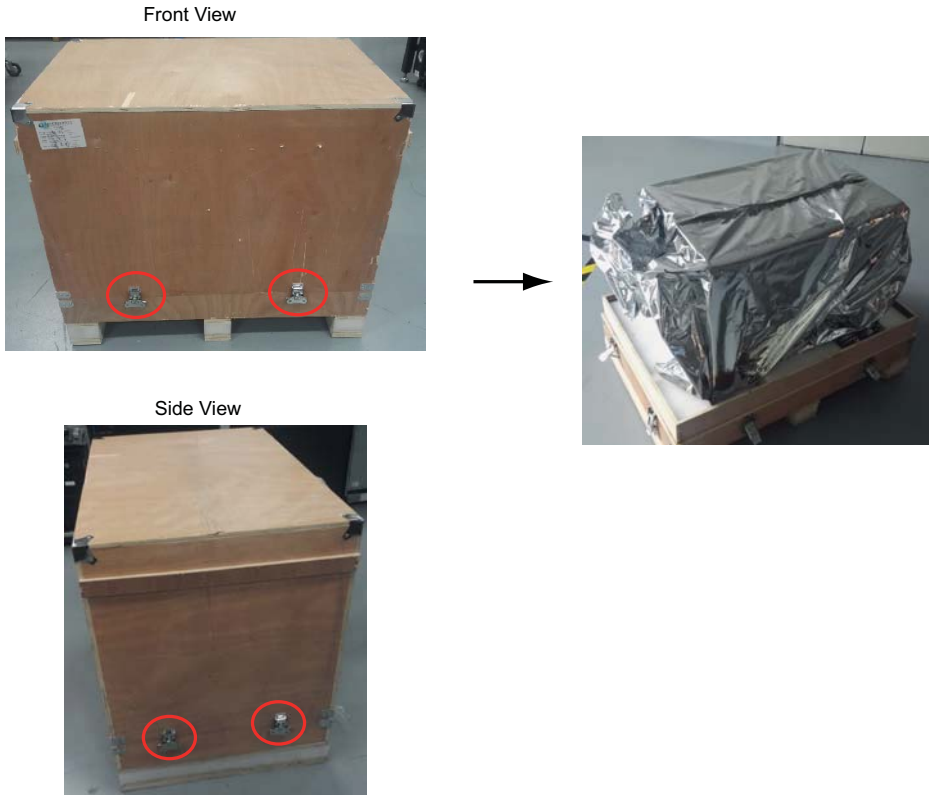


Figure 1-90 OpenOC Packaging Removal

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.

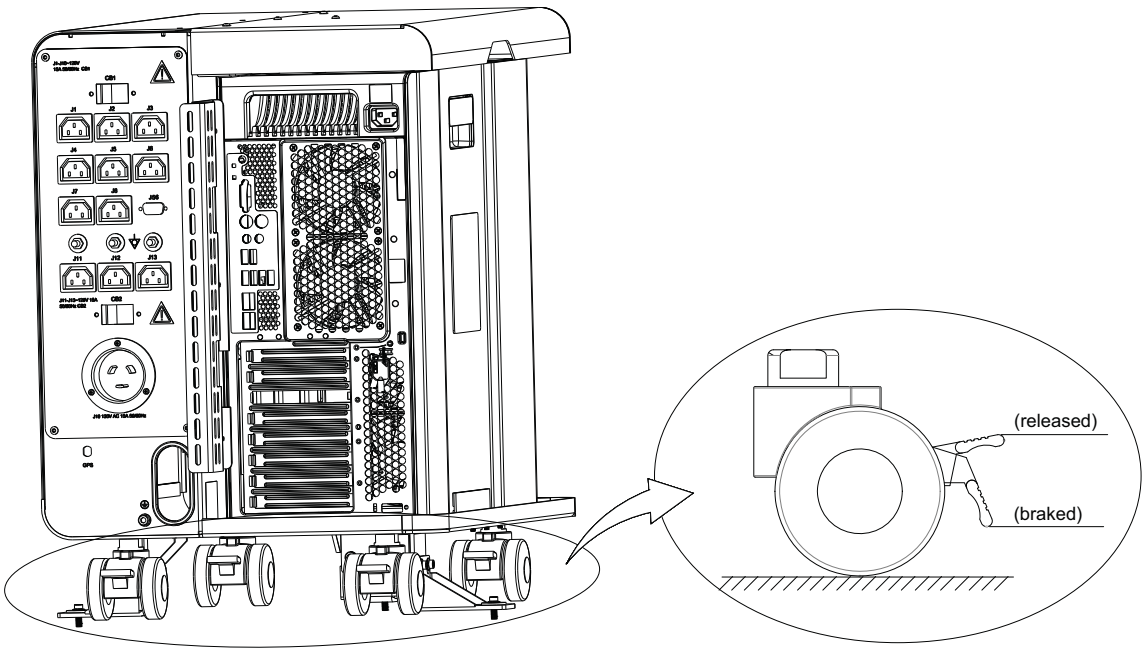


Figure 1-91 Brake

5.) Remove the side access panel by unscrewing its three screws from left side of the host computer.

Figure 1-92 Side Access Panel

15.2 Install Operation Table

15.2.1 Install Aurora SWS table (5449758-2)

1.) If your system has the SWS table, assemble SWS table.
Refer to Appendix C for details of SWS Table assembly.

2.) Place the SWS table at one side of the console.

3.) Install LCD Monitor.

15.3 Peripherals Placement

Place keyboard, GSCB

Section 16.0 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 for IBC 2007 standards or as provided in the seismic kit.

16.1 Time and Personnel

Required Persons	Preliminary Reqs	Procedure	Finalization
1 (FE or mechanical supplier)		Labor on-site	

16.2 Procedures

16.2.1 Console

If site specifications 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 1-93 for holes 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.

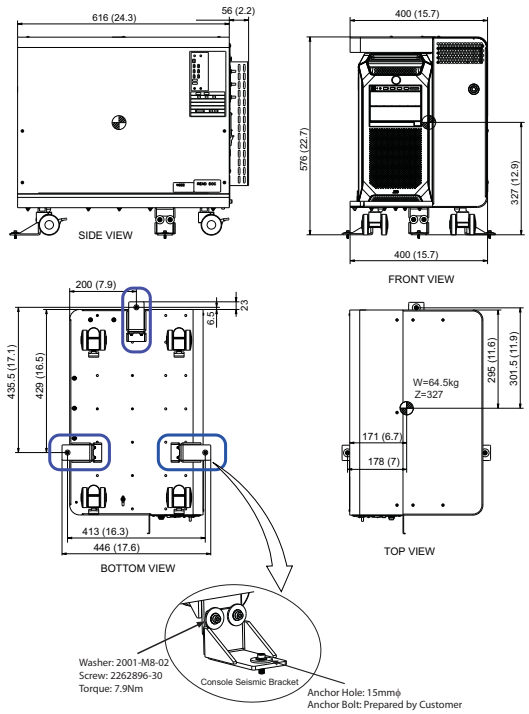


Figure 1-93 Console Mounting Hole Locations

16.2.2 Power Distribution Unit

If site specifications require seismic mounting, use the seismic brackets (2354563-2) and the PDU shipping kit (5453382-2) that where shipped with PDU. Refer to Figure 1-94 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.**

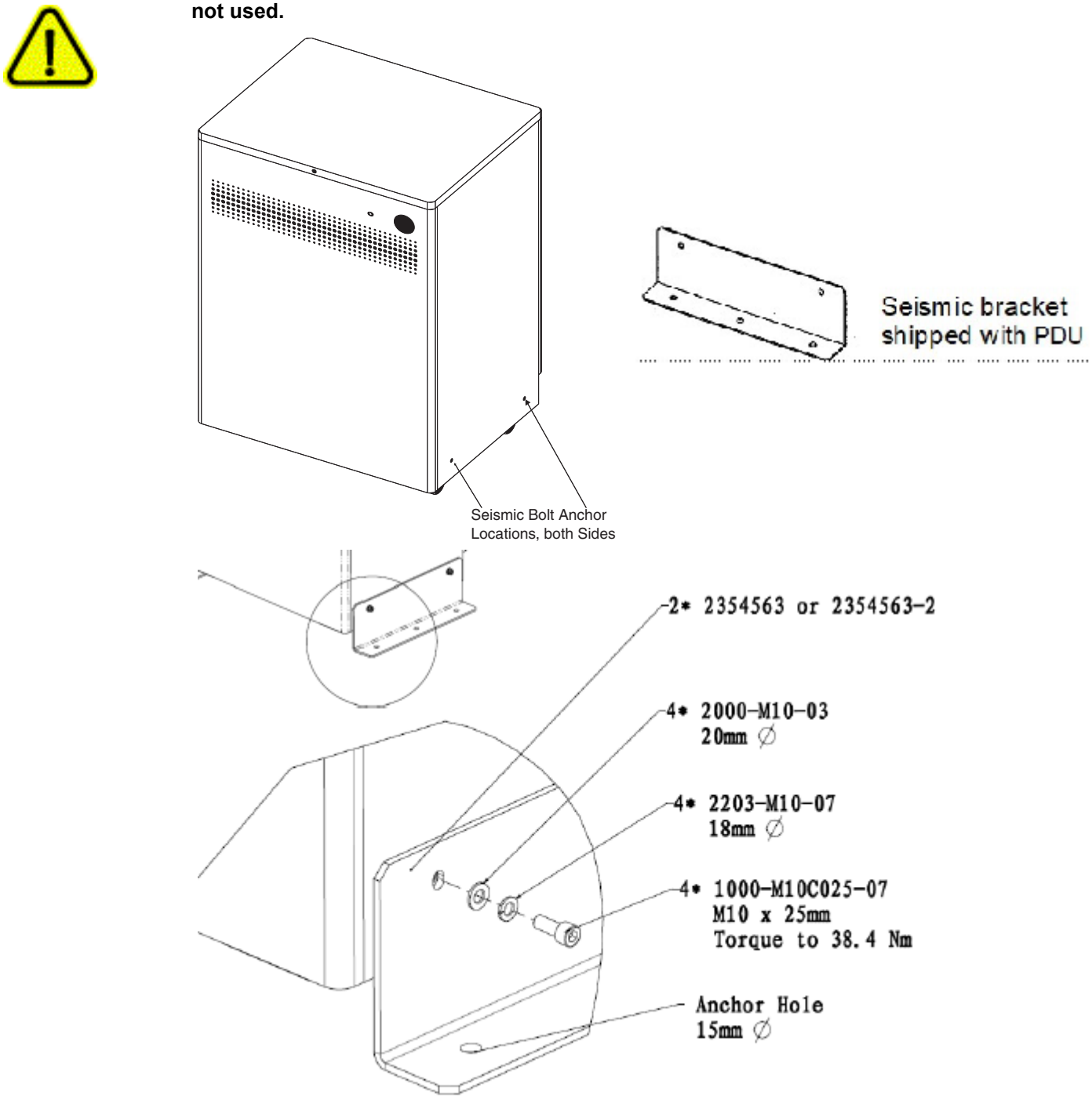


Figure 1-94 PDU Seismic Brackets and Shipping Kit

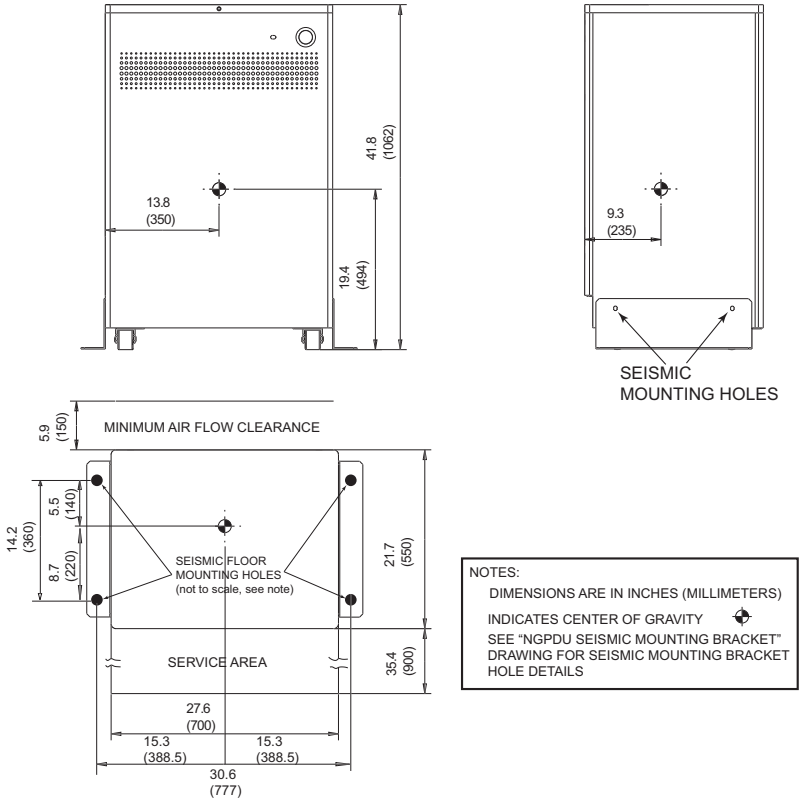


Figure 1-95 Seismic PDU Mounting Hole Locations

Chapter 2
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.**
- **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

1.1 Cable Storage

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

Do not store excess cable behind or under the installed components (table, PDU, gantry or console). Check with the site electrical contractor, before hiding excess in conduits or cable ducts.

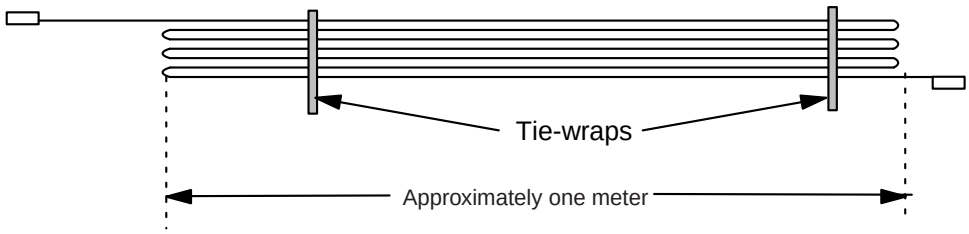


Figure 2-1 Excess Cable Storage Configuration

- **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.

1.2 System Component Identification

Identify all system cables by the system component designators listed in Table 2-1. Each end of a system cable has a label, and may have a color near the connector, (refer to Table 2-2) to indicate the component and the jack identifier of the component. All cables are located on the lower right shelf of the lean cart.

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

Table 2-1 System Component Identifiers

1.3 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 2-2 lists the subcomponent, and corresponding color.

SUBCOMPONENT	COLOR
Gantry	Blue
Table	Yellow
PDU	Red
Console Computer	Orange

Table 2-2 Cable Color Identifiers

RUN NO.	DESCRIPTION	PART NUMBER	
		LONG CABLES (KIT P/N 5444556-2)	SHORT CABLES (KIT P/N 5444556)
1	Facility MDP to Room Disconnect (A1)	cust. supplied	cust. supplied
2	Room Disconnect (A1) to PDU	cust. supplied	cust. supplied
3	Room Disconnect (A1) to System E-Off	cust. supplied	cust. supplied

Table 2-3 System Interconnect Cables

RUN NO.	DESCRIPTION	PART NUMBER	
		LONG CABLES (KIT P/N 5444556-2)	SHORT CABLES (KIT P/N 5444556)
4	PDU to Room Warning Light(s)	cust. supplied	cust. supplied
5	PDU to Scan Room Door Switch	cust. supplied	cust. supplied
50	HVDC Power Cable - PDU to Gantry	2343529	2343529-2
51	HVAC Power Cable - PDU to Gantry	2343530	2343530-2
52	LVAC Power Cable - PDU to Gantry	2343528-3	2343528-4
53	LVAC Power Cable - PDU To Operator's Console	2343531	2343531-2
54	LVAC Power Cable - Gantry to Table	n/a	n/a
55	Ground, PDU to Raceway	2371450	2371450-2
56	Ground, Raceway to Console	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
101	Signal Cable - Gantry to Console	5419981	5419981-2
102	Signal Cable (Ethernet) - Gantry to Console	5454760-2	5454760
103	Data Cable (Fiber Optic) - Gantry to Console	5478856	5478856-2
104	Signal Cable - Gantry to Table	n/a	n/a
110	Signal Cable - UPS Control to Room Disconnect (A1)	-	-
111	Signal Cable - UPS Control to UPS Disconnect Panel	-	-

Table 2-3 System Interconnect Cables (Continued)

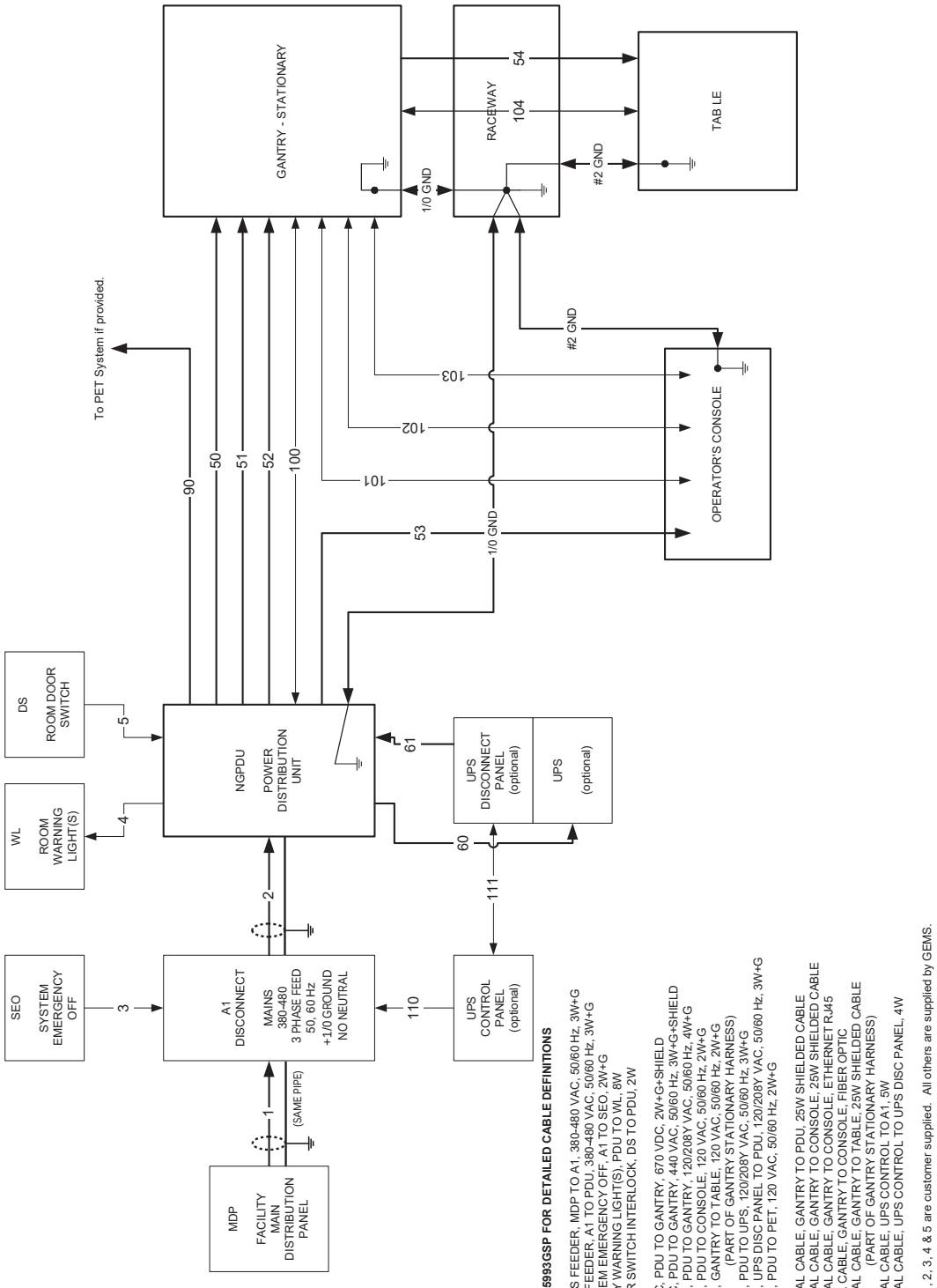
NOTICE **Shortening power cables is not allowed. The crimping tool and ferrules are not shipped with the system.**

If longer or shorter cables are required, order the correct set.

Excess cables cannot be stored under or behind the PDU, gantry or console.

Section 2.0 System Interconnect Diagram

Figure 2-2 System Interconnect Diagram



Section 3.0 Console Connections

3.1 GSCB, Keyboard & Mouse Installation

PART #	DESCRIPTION	CONNECT TO	QUANTITY	LENGTH	
				MM	INCHES
5431909	3.5m USB Extension Cable	Keyboard	1	3500 ± 50	137.8 ± 1.97
5458346	3.5m USB Extension Cable	Mouse	1	3500 ± 50	137.8 ± 1.97
5408703-2	DP to DVI cable, 3 meter	Monitor	2	3000 ± 50	118.11 ± 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 2-4 GE Healthcare Supplied OpenOC (Z8G4 Host Computer) Cables

1.) Route the keyboard cable under the GSCB, as shown in Figure 2-5.

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.

2.) Route the keyboard and mouse cables to OpenOC.

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 2-5 Cable Extension

3.) Select the local language overlay from the keyboard collector (5431062-1-XX) for your system.

- Select keyboard overlay from keyboard collector (5324605-XX) to attach. (See Figure 2-3)

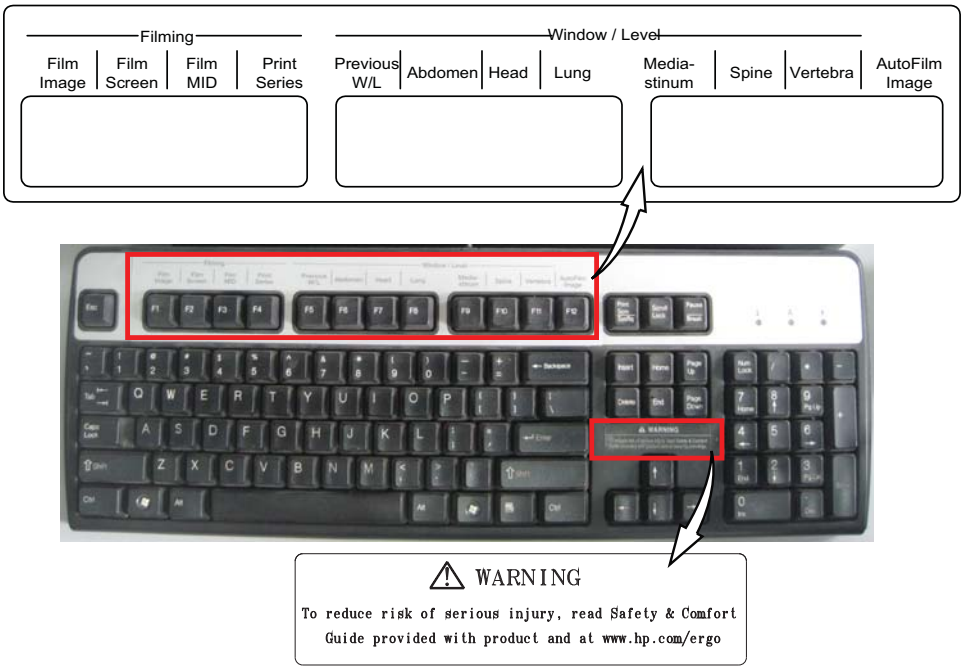


Figure 2-3 Keyboard with the English Overlay and Warning Label Installed

Note: There are two kinds of overlay in the keyboard collector.

- with Home Button
- with Home/Tilt Button

• Select the GSCB film (with both Tilt and E-Reset, P/N is 5401237-XXX) install the proper overlay with the appropriate language for the system.

Figure 2-4 GSCB Film with Home Button

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

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->Console-> GSCB Troubleshooting***.

4.) The keyboard should attach to the GSCB using the supplied Velcro strip and fit snugly against the GSCB when finished.

5.) Route the GSCB cable and connect connectors according to Figure 2-5 and Table 2-6

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

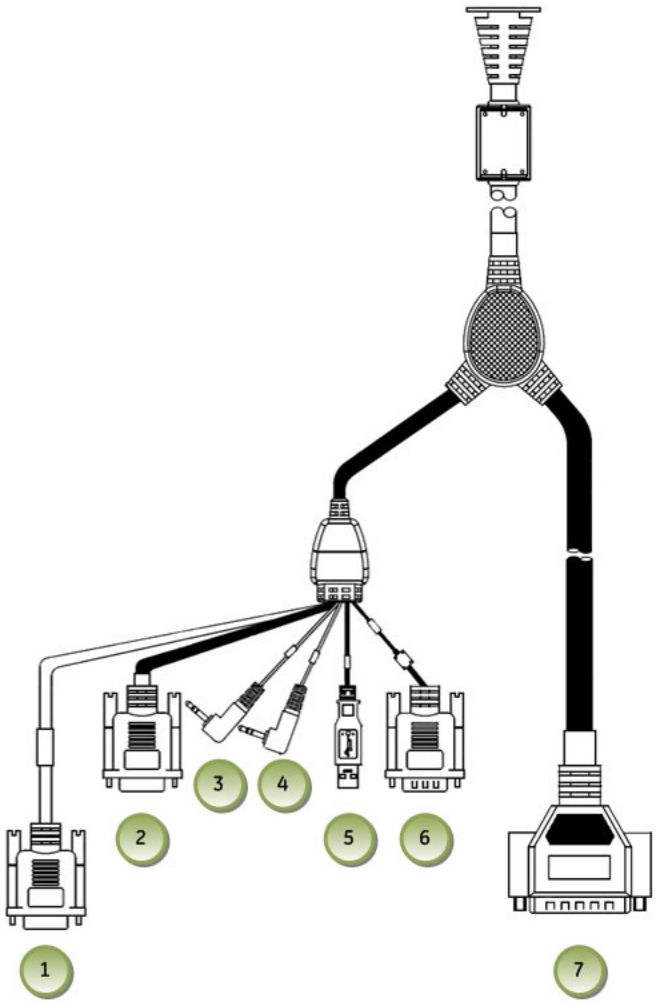


Figure 2-5 GSCB and Connection

	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 2-6 GSCB Cables

3.2 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.

3.2.1 LCD Monitor Connection

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

Table 2-7 Monitor Cables for Z8G4

Figure 2-6 HP LCD Monitor

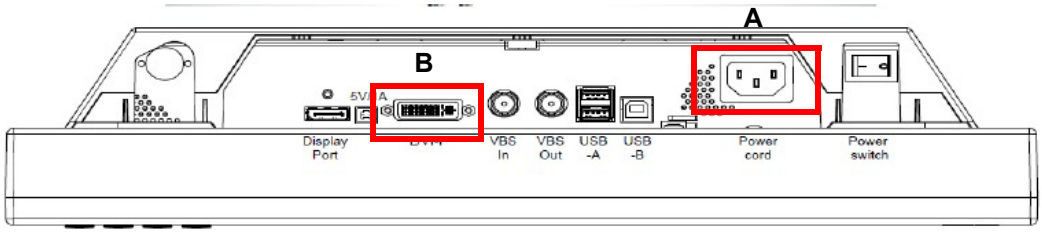


Figure 2-7 DIN LCD Monitor

ITEM	DESCRIPTION
A	Power Cable Connection
B	DVI Video Connection

Table 2-8 Monitor Connections

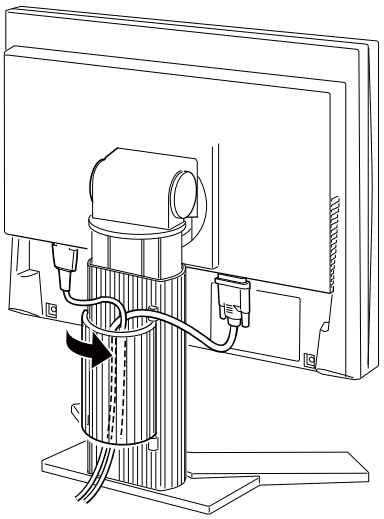
Scan Monitor

- Video cable: from Host PC DP to Monitor DVI
- Power cable: AC Box J1 to Monitor power

Image Monitor

- Video cable: from Host PC DP to Monitor DVI
- Power cable: AC Box J2 to Monitor power

Figure 2-8 Cable Routing and Keeper

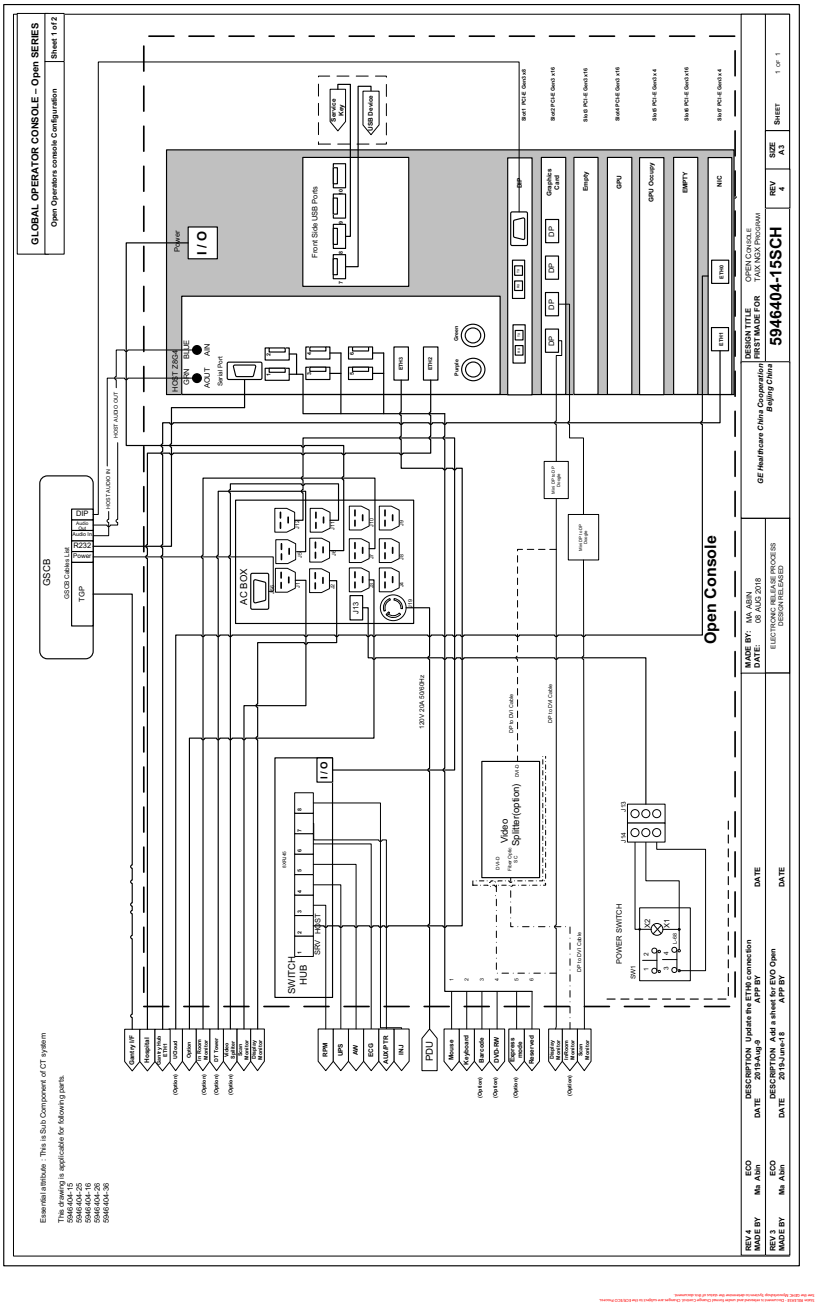


3.2.2 LCD Video Monitor Setup

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

3.3 OpenOC Interconnect

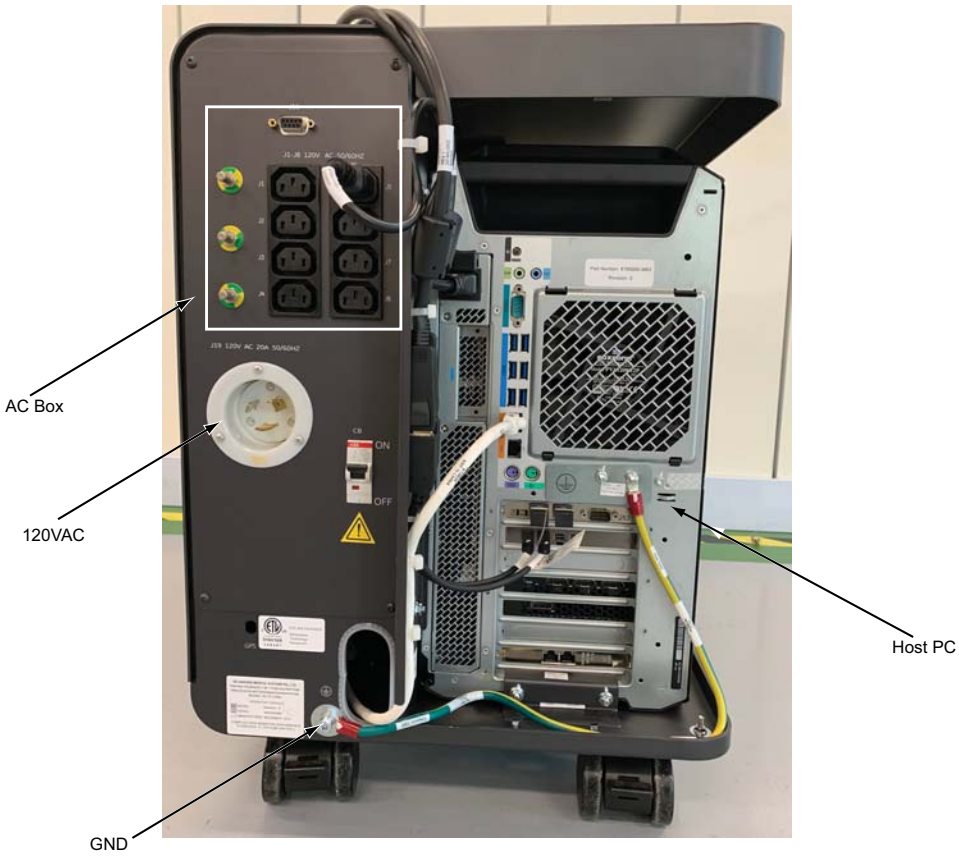
Figure 2-9 OpenOC Interconnect_Z8G4 Host Computer



3.4 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 2-10 Open Console Rear View with AC BOX



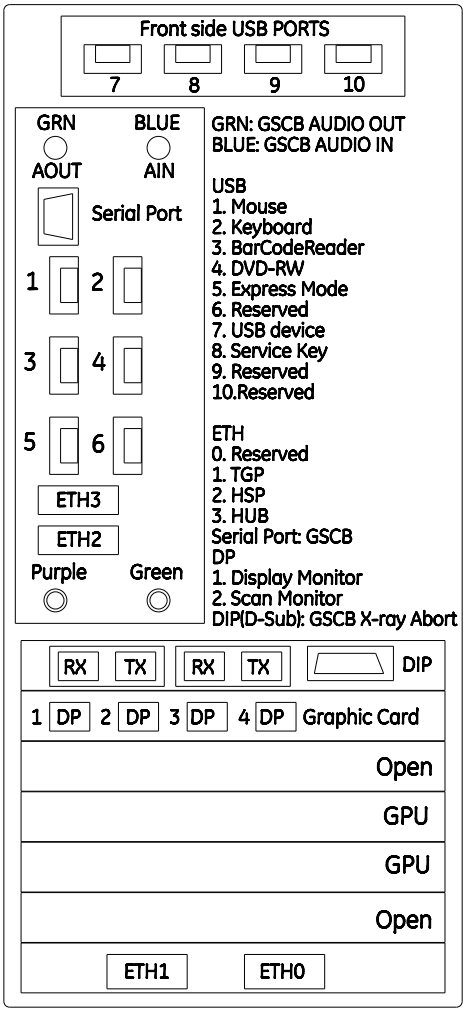
1.) Connect the power cable and ground cable to the console rear panel. (See Figure 2-10)

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

Table 2-9 Console Cable Connections

2.) Connect the all cables (see Table 2-4) to the rear of Host Computer referring to the drawing below (Figure 2-11).The drawing is also printed on the right rear door of the console.

Figure 2-11 Z8G4 Host Computer Connections



3.4.1 Optional Long Cable Connections

In most cases the Console peripherals such as Monitors, Keyboard, Mouse and GSCB will be mounted to, or placed on top of the Console Unit. In some cases these items may be placed to a short distance away from 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.

3.5 Network Switch Hub Connections

Network Switch located inside the OpenOC chassis. Plug cables into Network Switch on console.

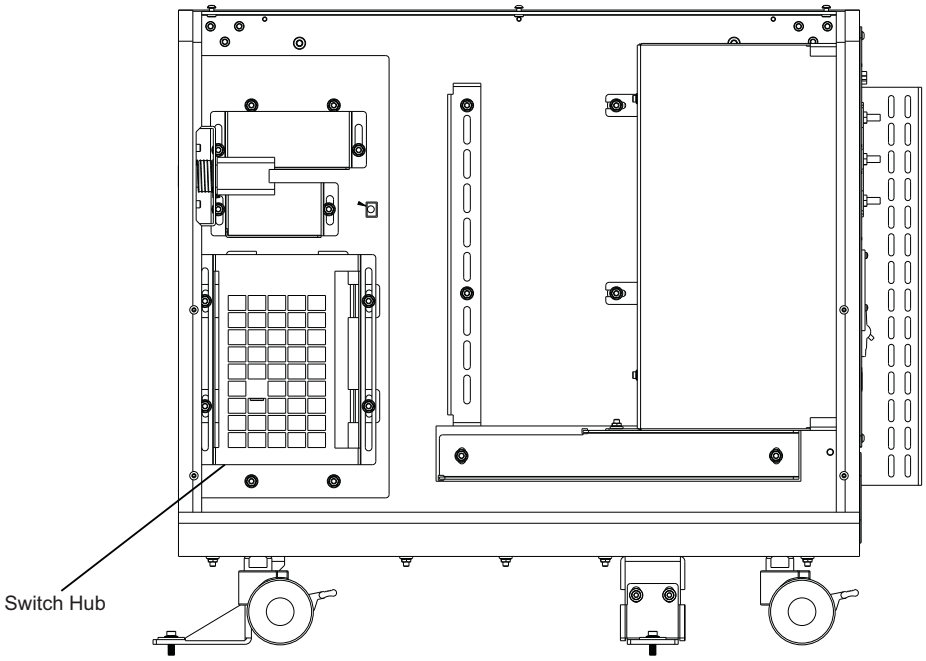


Figure 2-12 Network Switch Hub Location

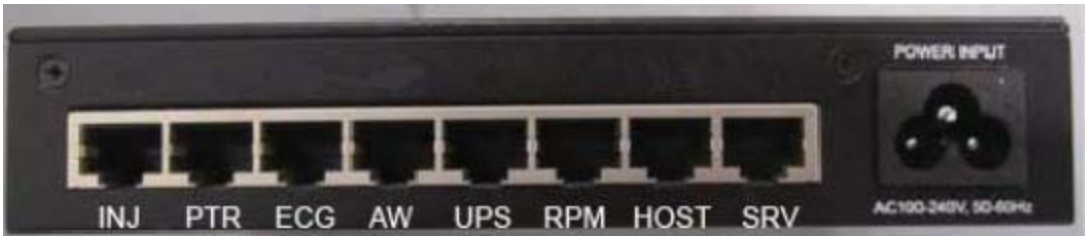


Figure 2-13 Network Switch Hub Connections

3.6 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 2-10. ("J numbers" increment from top to bottom, left to right)

Number	Description
J1	Scan Monitor Power Connection
J2	Display Monitor Power Connection
J3/J4	Option
J5	DT Tower Power Connection
J7	In-Room Monitor
J11	Video Splitter
J12	Switch Hub
J13	Injector Power Connection
J56	GSCB Power Connection

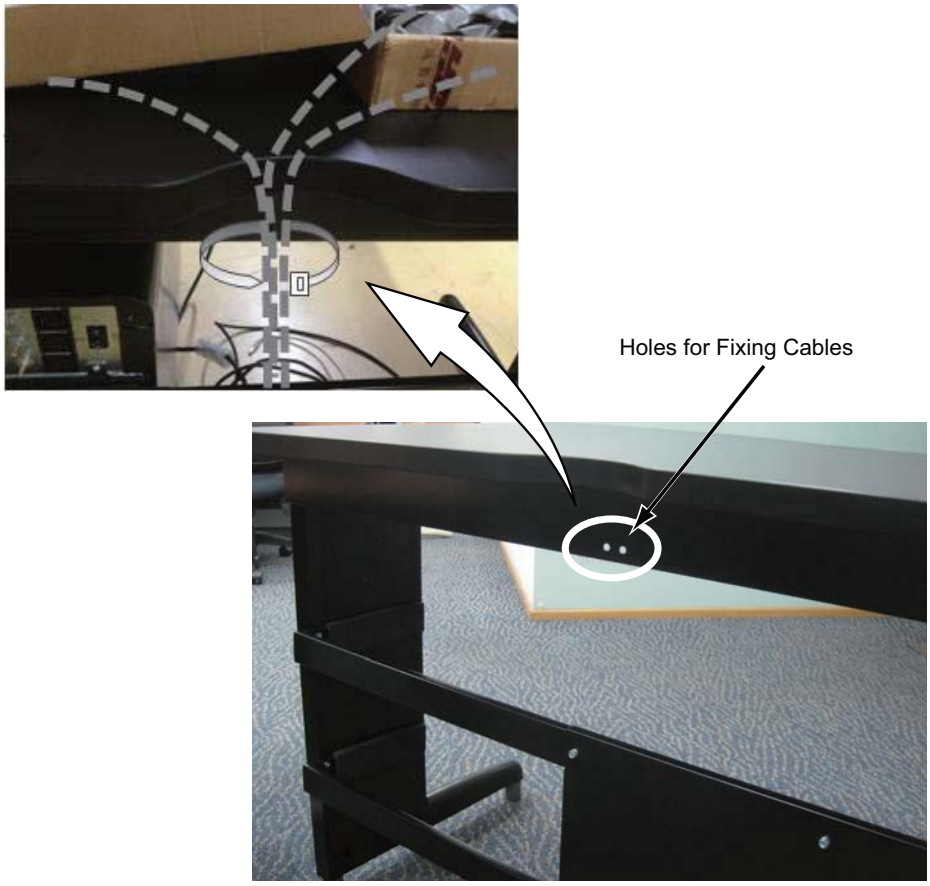
Table 2-10 AC Box Outlet Assignments

Figure 2-14 Open Console AC Box Connections

3.7 Cable Arrangement

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

Figure 2-15 Example: Cable Arrangement



Section 4.0 Install Options

Note: Most shipped options can be located on the lean cart. Only large options such as the UPS and Smart Step will arrive on its own skid.

4.1 Install USB Barcode Reader

1.) Locate the barcode reader box on the lean cart options section.
2.) Connect the USB cable to port USB 3 on the back of the console.
3.) Dress any excess cable and place under the monitor desktop.

4.2 Install Optional Remote Monitor

Follow the instruction (5620471-1EN) shipped with the option.

4.3 Install Accessory I/F Hardware (IPC) Option

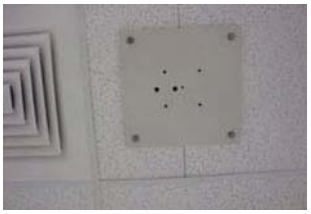
Follow the instructions (5317931-1EN) shipped with the option.

Note: 8-port Ethernet switch is pre-installed on Gantry. Ignore the section of LAN Switch installation in the option installation manual.

4.4 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.

Mavig ceiling mounting plate. Customer installs this plate.



Mavig safety chain bracket.

4.5 Install Cardiac Gating IVY Monitor and Stand Option

Follow the instructions shipped with the Monitor and stand kit. Review the instructions carefully before assembling the stand and accessory basket to avoid repeated steps. Connect to the option interface panel, See Chapter 2 Section 5.2.

4.6 Customer Accessories - Head Holders and Extender

Open the boxes and installed the appropriate language warning labels.

The head holders are shipped with shims that require installation to ensure proper fit. Check that shims are included. Follow the shim procedure in Chapter 3, Section 3. The holder should fit snugly.

4.7 UPS Installation

If the site has an Uninterruptible Power Supply (UPS), please refer to UPS Installation for Direction 5174051-100. This manual should be shipped with the UPS. Use caution when removing the UPS from the skid. The UPS weight is 170kg (375lb).

4.8 SmartStep Installation

Follow the instruction shipped with option.

For the installation of the additional Gantry hardware (e.g. Gantry accessory panels and cables), refer to Accessory I/F Hardware option installation manual (5317931-1EN).

Section 5.0 Gantry Cable Connections

5.1 Gantry Cable Connections

Please refer to Figure 2-2 for complete system interconnect details.

TO	FROM	CABLE DESCRIPTION
Gantry Power Pan	PDU	HVDC
Gantry Power Pan	PDU	440VAC
Gantry Power Pan	PDU	120VAC
Gantry Power Pan	Console	Fiber - *Take extreme care when you install the fiber optic DAS data cable. Do not step on, kink, or sharply bend this fragile DAS cable*.
Gantry Power Pan	Console	LAN
TGPG (J9)	Console	Control
TGPG (J11)	PDU	Control

Table 2-11 Gantry Cable Connections

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 2-16 and Figure 2-18 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.

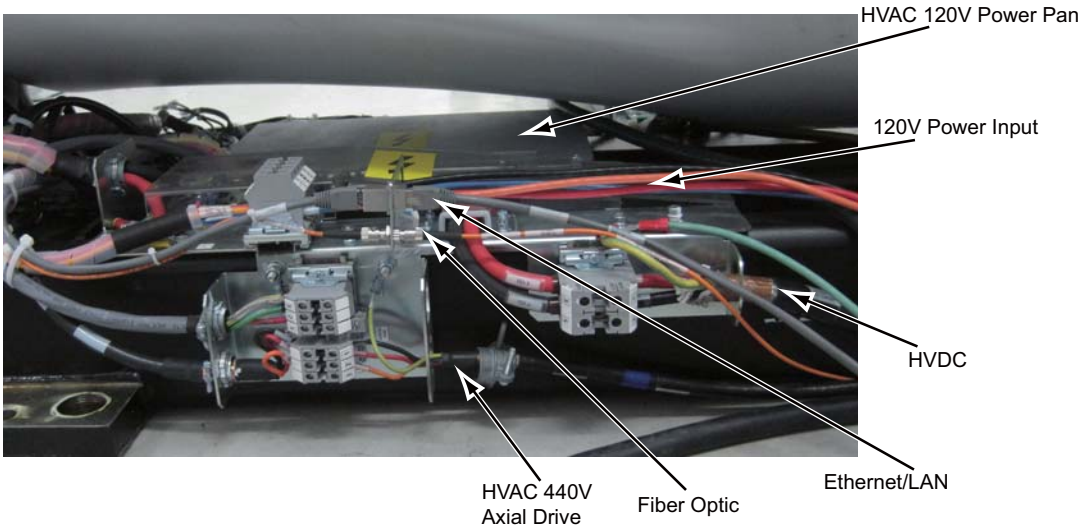


Figure 2-16 Gantry Power Pan Connections

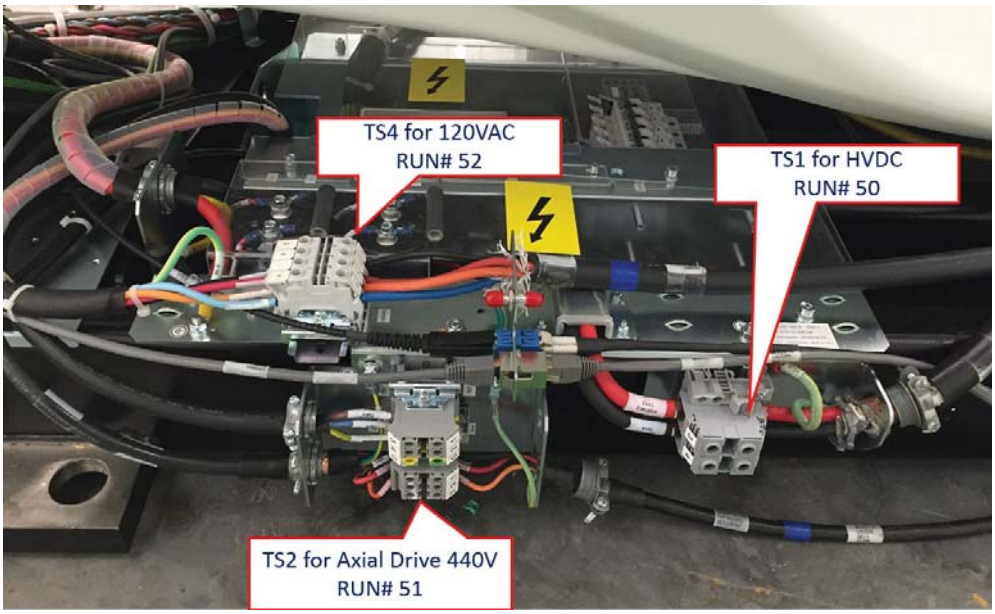


Figure 2-17 Gantry Power Pan Connections

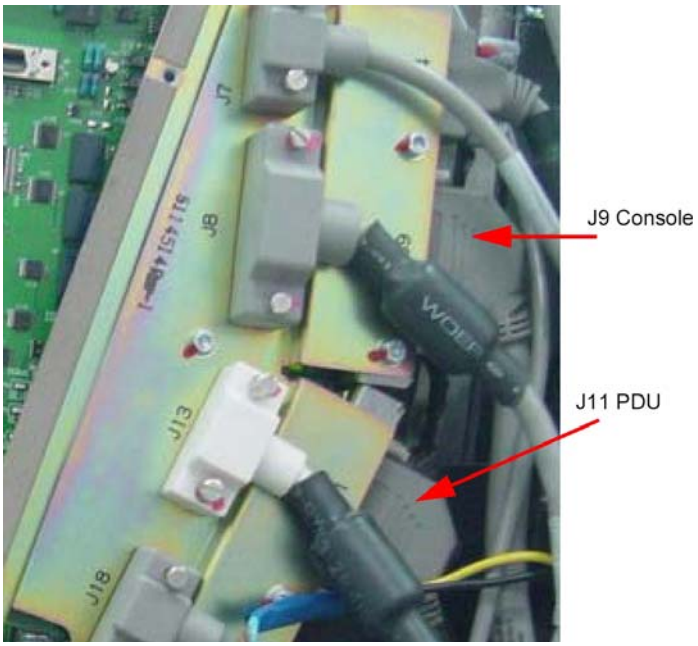


Figure 2-18 TGPG Connections

3.) Install cables to the gantry TGPG.

Note: 4.) Route J9 and J11 cables behind all cables at this area. See Figure 2-19.

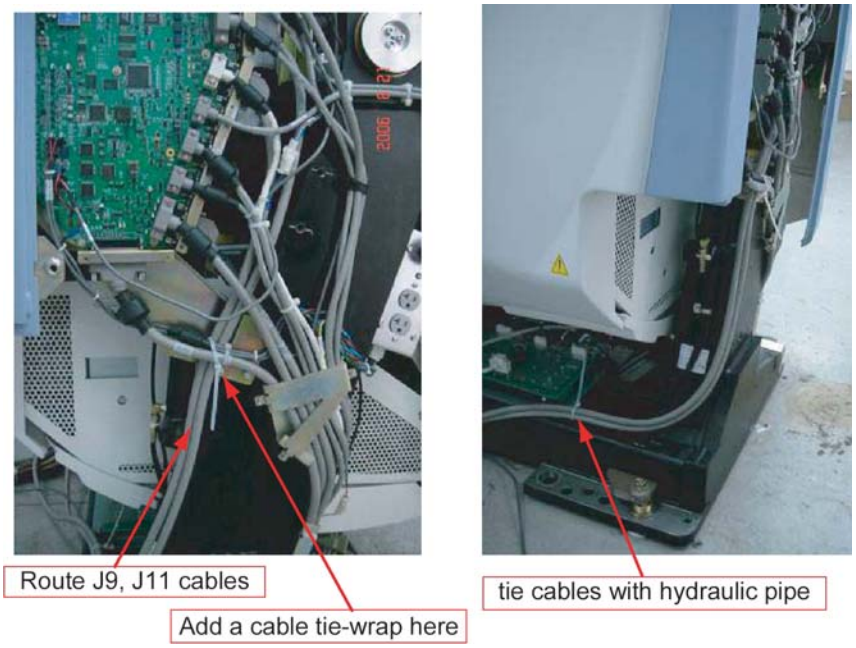


Figure 2-19 Route Cables

5.2 Cardiac Monitor Setup

Note: The following procedure is applied only if the Accessory I/F Hardware (IPC) Option is installed.

1.) Follow install instructions shipped with monitor to set up the monitor stand with basket.

2.) After the stand is assembled, mount the monitor to the stand by sliding the monitor onto the plate.

3.) Pull down the front pin on plate and slide monitor until it snaps into place.

4.) Secure the monitor using the two nylon set screws under the plate.

5.) Connect the long CAT5 LAN cable between back side of Gantry option interface and Console EKG port.
The long CAT5 cable is included in IVY Monitor kit.

6.) Attach the cables. *Do not use the cables shipped with the monitor*, find the 5317480 cable included with the Cardiac Cable Kit (E8007TB).

CAUTION **The outlets are not for General Use. Gantry outlets have a rating for 3.0A at 120VAC. Accessories should not exceed above rating.**

7.) Connect the IEC power cord, ground wire, LEMO and CAT5 to the gantry option interface panel. (See Figure 2-20).

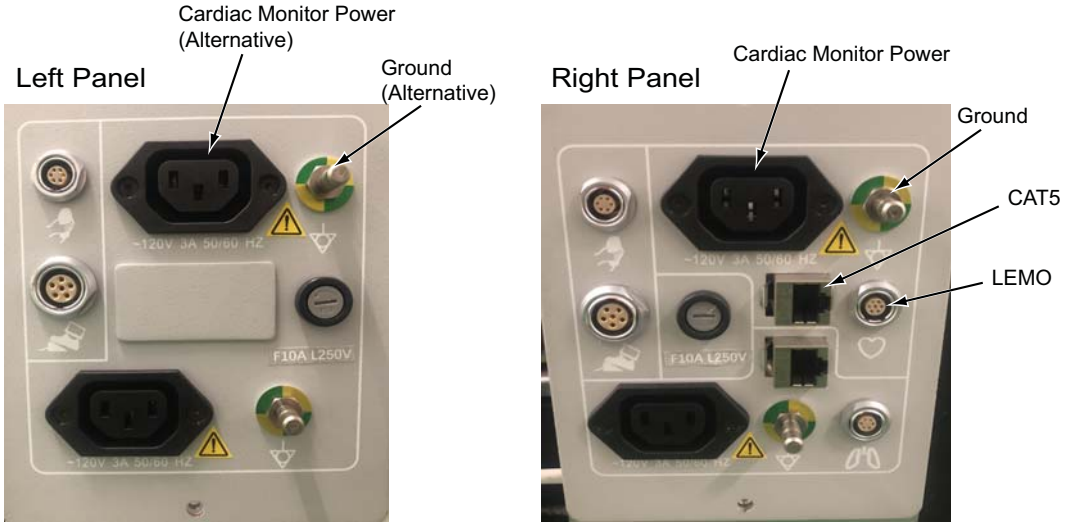


Figure 2-20 Gantry Option Interface Panel

Figure 2-21 Connections on Rear of Cardiac Monitor (IVY7800)

8.) Connect the power cord, ground wire, HD15 and CAT5 to the monitor panel.(See Figure 2-21).

9.) The cardiac monitor receives power from the gantry.

10.) Strain relief the cables to the monitor stand, and to the gantry base covers using tie-wraps. (See Figure 2-22).

Figure 2-22 Cables Strain Relieved to Stand

Section 6.0 Table Connections (GT1700V)

Pull and connect the cables as described in Table 2-12. The table cables are bundled with the gantry frame. Cut the cable ties to release bundles of cables.

Note: The footswitch connector and wiring harness may be run and secured to the ground bar assembly.

TABLE	FROM	CABLE DESCRIPTION
J1 table power	Gantry	120 VAC
J9 table control	Gantry	Signal Cable
Table ground	Gantry	Table ground

Table 2-12 Table Cable Connections

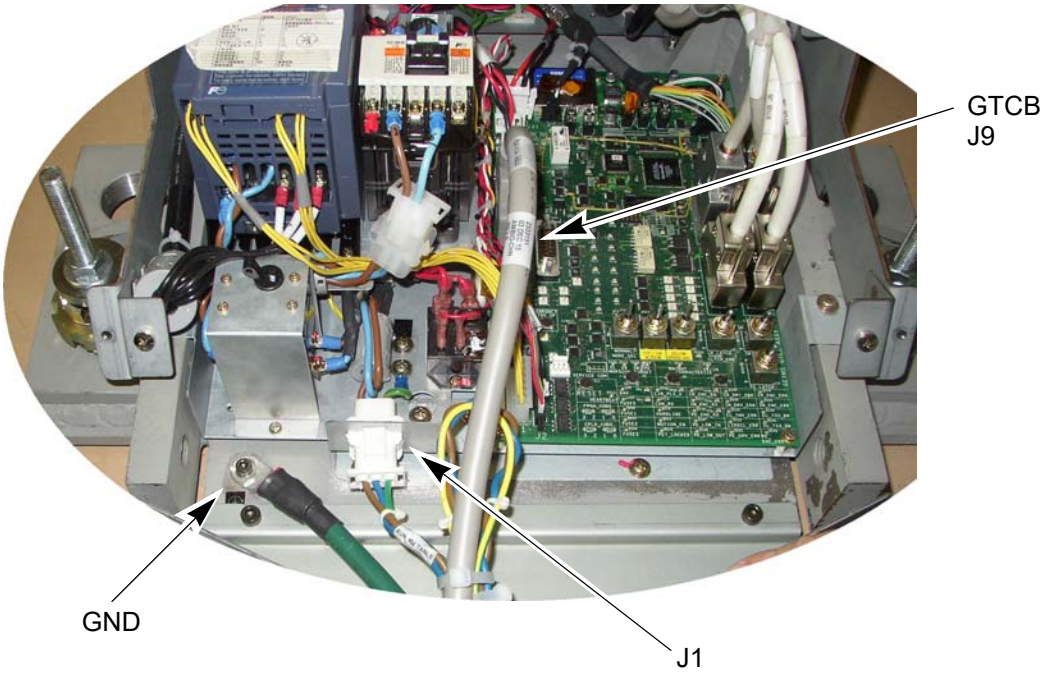


Figure 2-23 Table Connections

Note: You need to add the table ground cable and the footswitch adapter plate to ground bar, as shown.

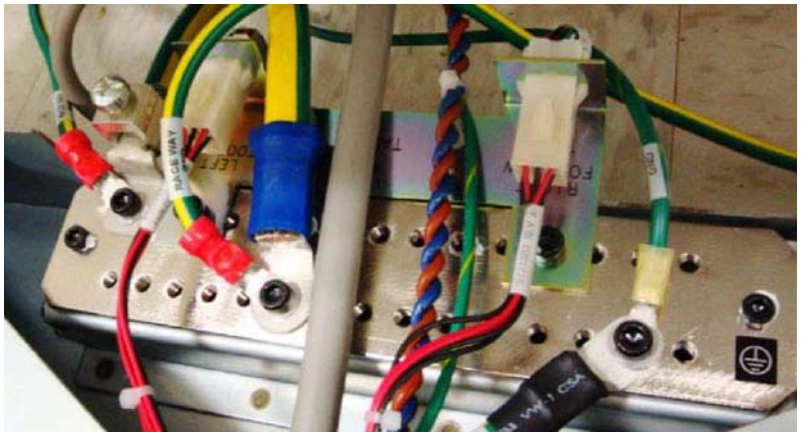


Figure 2-24 Finished Ground Bar Connections

Section 7.0 Table Connections (Lite Table)

Pull and connect the following cables:

J#	CABLE DESCRIPTION
J1	120 VAC
J9	Signal Cable

Table 2-13 Cables Connected to Table

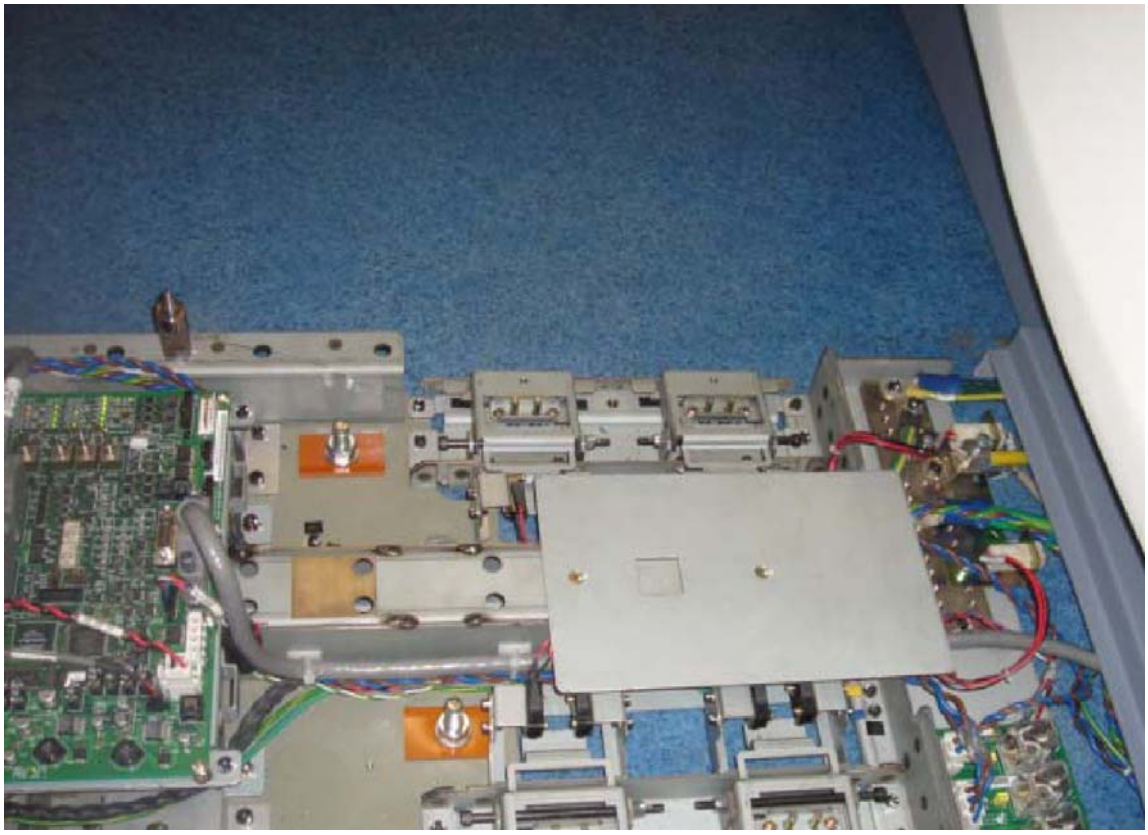


Figure 2-25 Table Bulkhead Connections

Section 8.0
PDU Cable Connections & Configuration

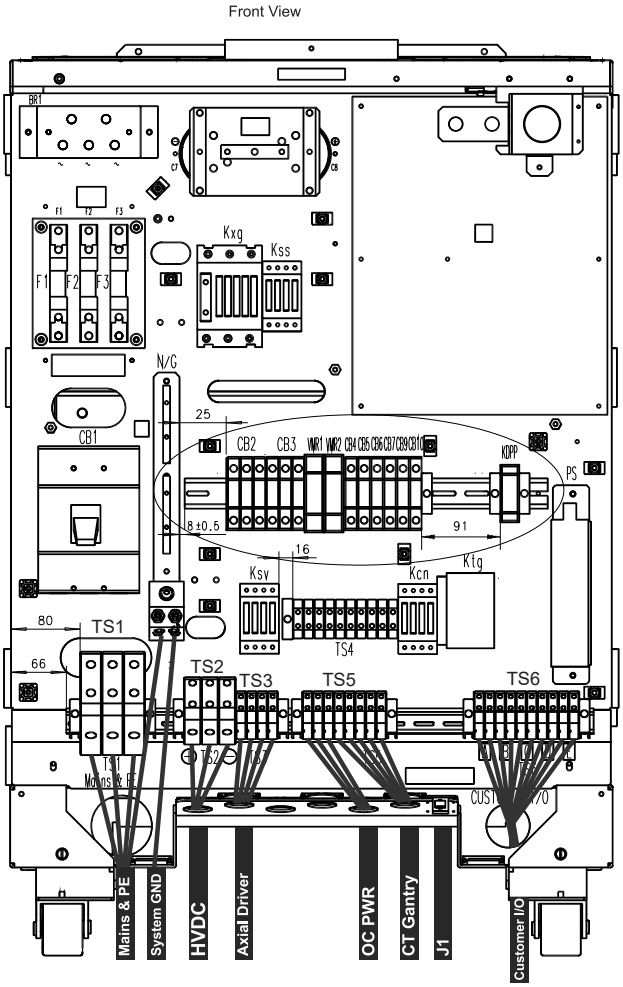
CAUTION

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 due 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.

8.1 Introduction to NGPDU

As seen in Figure 2-26, 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 2-26 for reference. The PDU has been designed to have cables routed into the PDU from behind and/or beneath it.



Note: Wire colors may vary

HVDC	TS2-1	Red
	TS2-2	Grn/Yellow
	TS2-3	Black
Axial	TS3-1	Black
	TS3-2	Red
	TS3-3	Orange
	TS3-4	Grn/Yellow
Console Power	TS5-1	Brown
	TS5-2	Blue
	TS5-3	Grn/Yellow
CT Gantry	TS5-4	Black
	TS5-5	Red
	TS5-6	Orange
	TS5-7	Blue
	TS5-8	Grn/Yellow

Figure 2-26 PDU Cable Connections - Front

8.1.1 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.

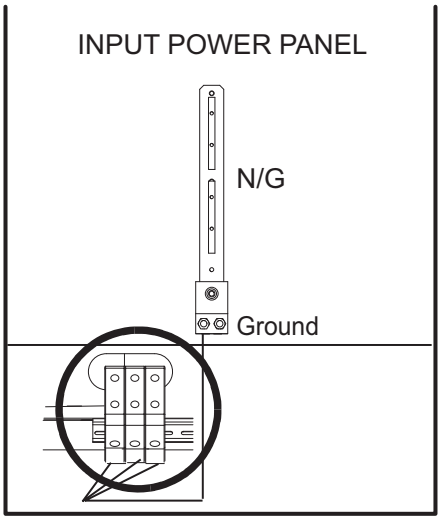


Figure 2-27 Input Power Panel Connections

When Mains power is available to the PDU, the "TS1" power light will be illuminated.

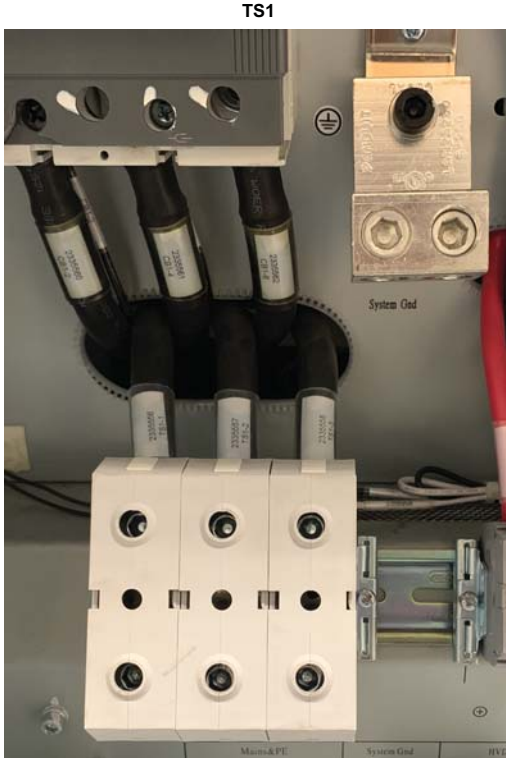


Figure 2-28 TS1 Power Torque Values

8.1.2 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.

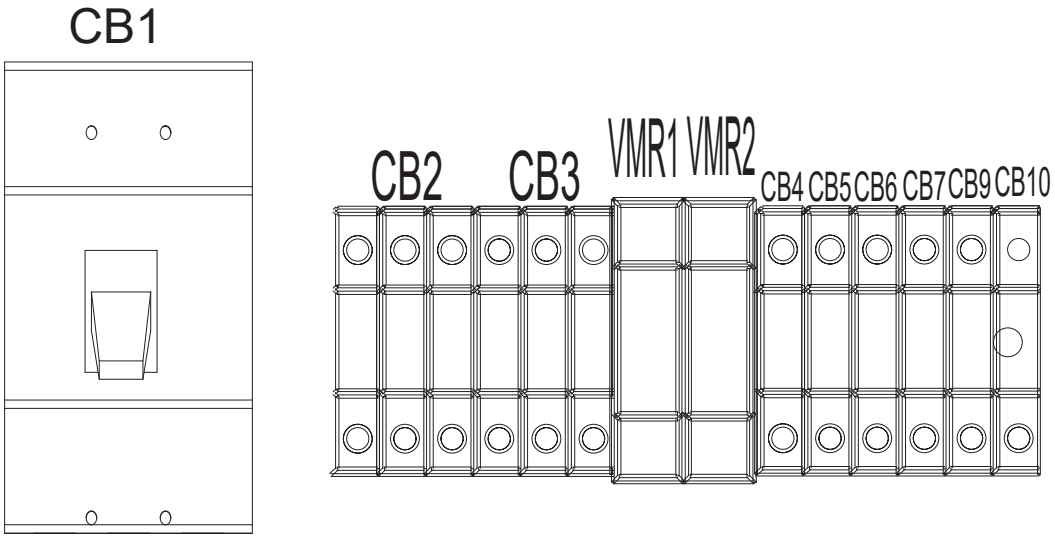


Figure 2-29 Circuit Breaker Panel

By design, When CB3 is in the "OFF" position, circuit breakers 4, 5, 6, 7, 9 and 10 are switched "OFF". CB3 is essentially in series with these breakers.

CIRCUIT BREAKER	DESCRIPTION
CB2	Circuit Protection (Axial Drive)
CB3	Full Winding Protection (Master power of CB4, 5, 6, 7, 9 and 10), 208Y120
CB4	32A, Gantry Loads
CB5	16A, Gantry Loads
CB6	32A, Gantry Loads
CB7	Operator Console Loads
CB9	VMR1, Control P.S Load
CB10	VMR2

Table 2-14 Panel Circuit Breaker Descriptions

8.1.3 HVDC Connection

Note: Refer to Table 2-3, System Interconnect Cables on page 116.

Connect the internally shielded HVDC cable to TS2 on the standing panel. See Figure 2-26 for the location of the connector and Figure 2-30 for details. Observe polarities and grounds. Do not cut or shorten cables unless you have all of the appropriate tools and crimper to re-terminate. If short cables are needed, have the PMI order the short cable set.

WARNING

Excess cable length cannot be stored under or behind the PDU. If cables are to be stored in the cable tray, do not overfill. Consult the local electrician to determine the maximum fill rate for your area.

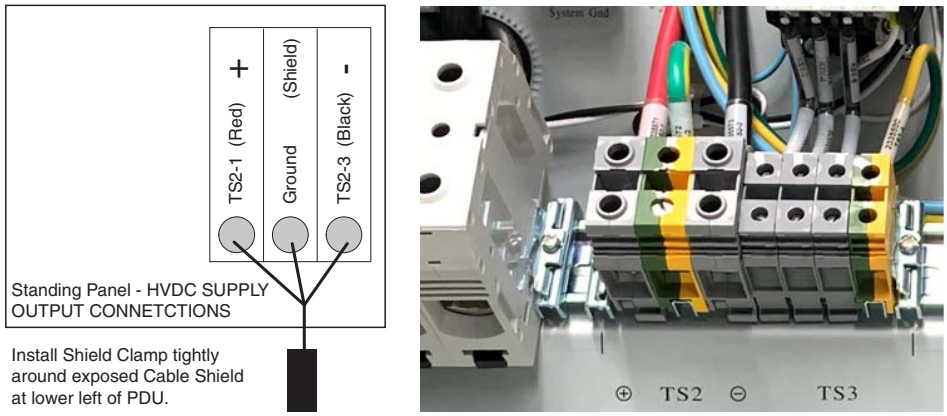


Figure 2-30 HVDC Connection

☐ Check box when complete.

8.1.4 440V Connection

Note: Refer to Table 2-3, System Interconnect Cables on page 116.

Connect the internally shielded 440V cable to TS3 on the standing panel (See Figure 2-26 for the location of the connector and Figure 2-31 for details). Observe polarities and grounds. Do not cut or shorten cables unless you have all of the appropriate tools and crimper to re-terminate. If short cables are needed, have the PMI order the short cable set.

WARNING

Excess cable length cannot be stored under or behind the PDU. If cables are to be stored in the cable tray, do not overfill. Consult the local electrician to determine the maximum fill rate for your area.

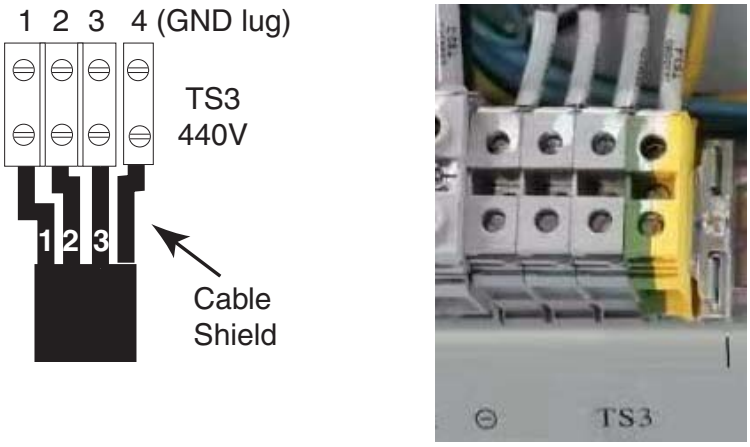


Figure 2-31 440VAC Connection

☐ Check box when complete.

8.1.5 Gantry & Console Power Connections

Note: Refer to Table 2-3, System Interconnect Cables on page 116.

Do not cut or shorten cables unless you have all of the appropriate tools and crimper to re-terminate. If short cables are needed, have the PMI order the short cable set.

WARNING Excess cable length cannot be stored under or behind the PDU. If cables are to be stored in the cable tray, do not overfill. Consult the local electrician to determine the maximum fill rate for your area.

Plug the console power cable wires to TS5, 1-3 and the gantry power cable wires TS5, 4-8 as shown in Figure 2-32.

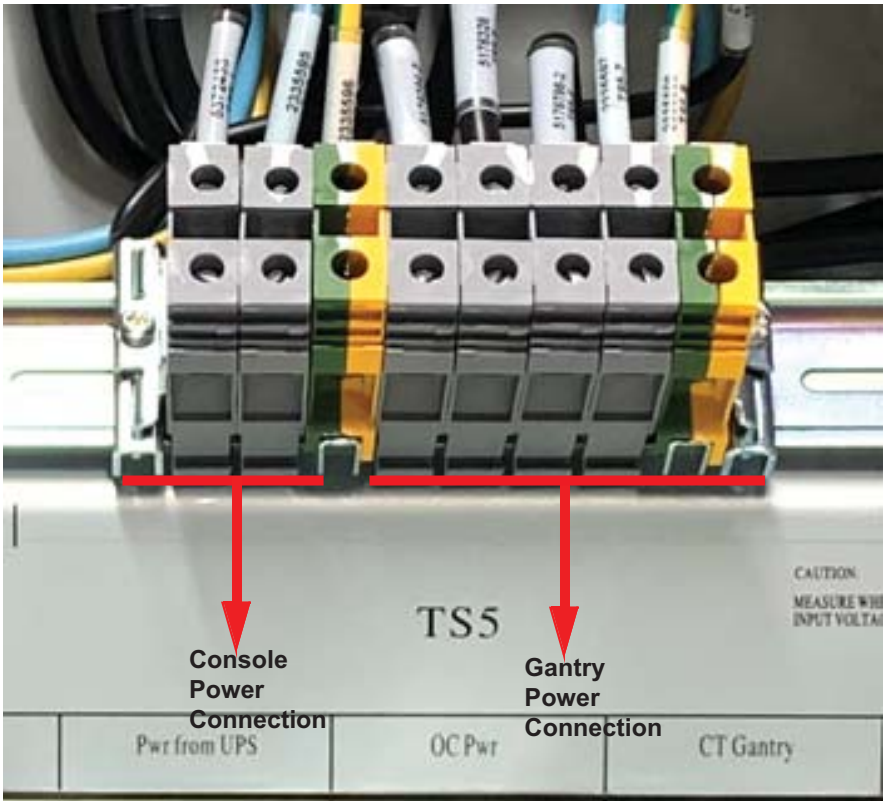


Figure 2-32 Gantry & Console Power Connections

☐ Check box when complete.

8.1.6 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 J1 on the A panel. Secure it by using the fasteners integrated into cable's connector shell.

☐ Check box when complete.

8.1.7 System Ground Connection

Connect the ground wire (green with a yellow stripe) from the table/gantry raceway ground bus to the system ground lug in the PDU.

Figure 2-33 PDU System Ground Connection

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

Figure 2-34 Ground Torque Values

8.1.8 Warning Light & Door Interlock Connections

8.1.8.1 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 2-35 for proper connection.

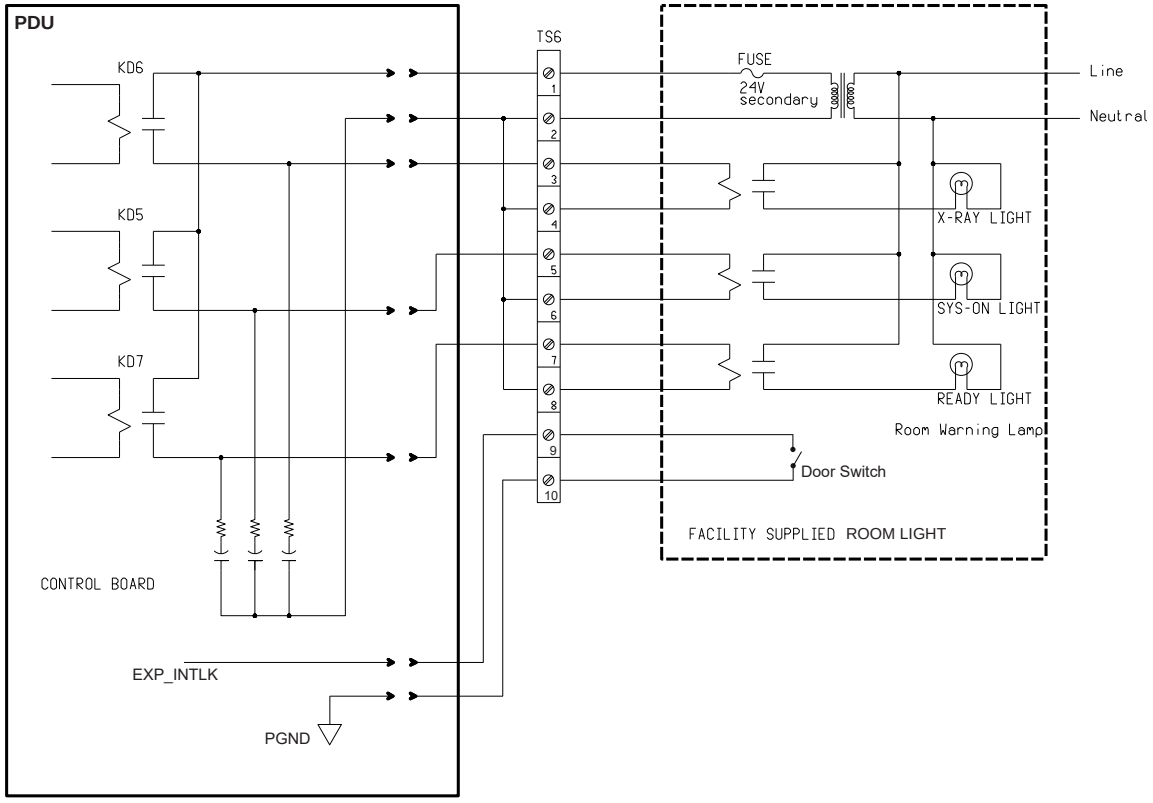


Figure 2-35 Typical TS6 Warning Light & Door Interlock Connections

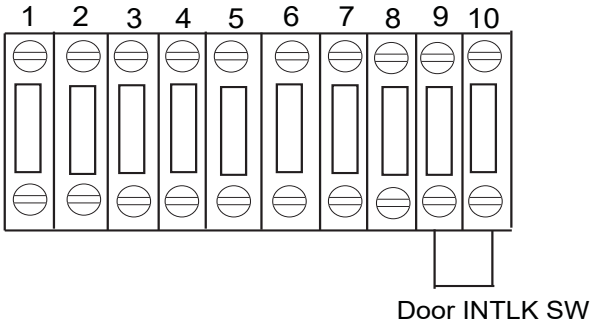
It is recommended that you use the four (4) wire method of adding an X-ray warning light to a room, as shown in Figure 2-36. When using this method, you:

- Minimize EMC interference.
- Increase contact life of the relay used in the PDU.

8.1.8.2 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 2-36.



Note: If jumper is not in place, exposures will not be made. Check this jumper if you get scan interlock errors.

Figure 2-36 Without a Door Interlock

To use the system with a a door interlock, wire a normally open switch between pins 1 & 2 that is attached to the interlock.

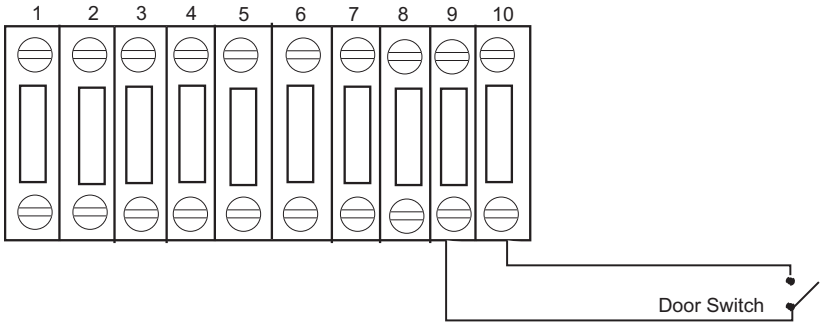


Figure 2-37 With a Door Interlock

Section 9.0 System Ground Connections

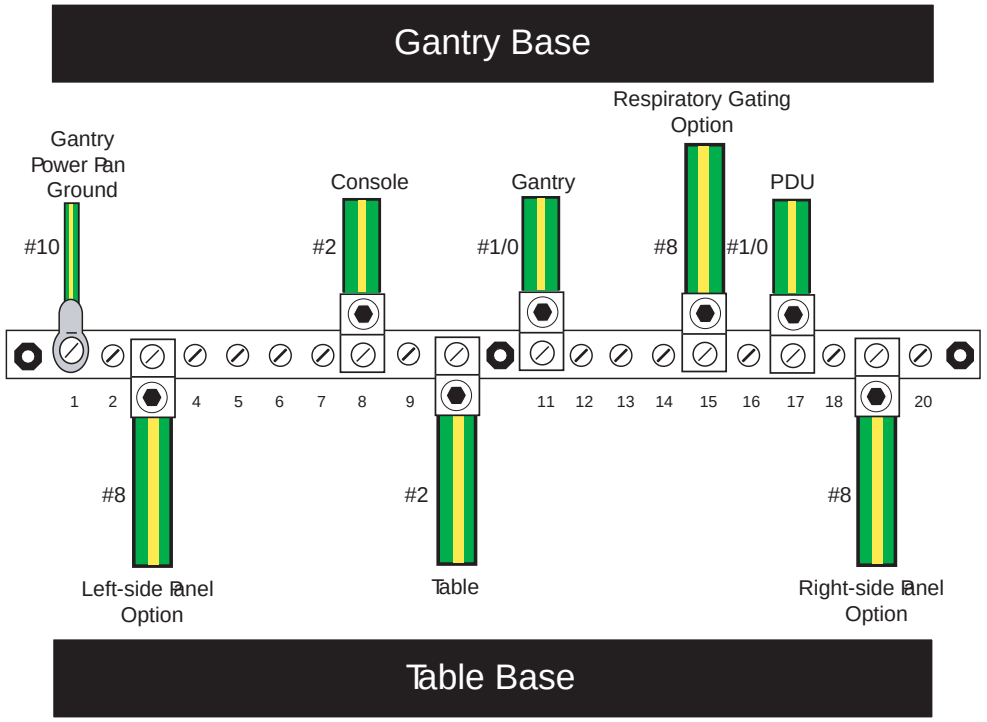


Figure 2-38 Table/Gantry Raceway Bus - Grounds

Various types and sizes of wire are used to ground the system. Please use the type and sizes specified in Table 2-15.

AWG #	Connection To	Connection To	Used on:
#10	Gantry (Power Pan)	Raceway	All
#8	Left-side Panel Option	Raceway	Option
#2	Console	Raceway	All
#2	Table (frame)	Raceway	All
#1/0	Gantry	Raceway	All
#8	Respiratory Gating Option	Raceway	Option
#1/0	PDU	Power Main	All
#8	Right-side Panel Option	Raceway	Option

Table 2-15 System Ground Connections

All connections should be torqued to the values in the chart below:

Wire Size AWG	Bolt/Hex
#14 - 8	6.25 (8.5 N-m)
#6 - 4	12.5 ft-lb (17 N-m)
#3 - 1	21 ft-lb (28.5 N-m)
#0 - 2/0	29 ft-lb (39.3 N-m)

Table 2-16 Ground Torque Values

Chapter 3
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 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 System Continuity (Mechanical Contractor)

1.1 Time and Personnel

Required Persons	Preliminary Reqs	Procedure	Finalization
1 (FE or mechanical supplier)		20 minutes labor on-site	

1.2 Tools and Test Equipment

- Digital VOM with the capability to read 0.5 ohms
- 30 ft of #18 wire
- 600 VAC meter leads

1.3 Procedure

Reference : on page 150 and : on page 151.

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 front 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:

FROM	TO	
Wall ground connection	PDU Cabinet	☐ Check box when complete

Table 3-1 Mains Connections to PDU

6.) Verify that less than 1 ohm of resistance exists between the following connections:

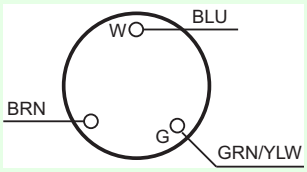
FROM	SIGNAL NAME (COLOR)	TO	
PDU TS2-1	+HVDC (Red)	Gantry HV Power Pan TS1-1	☐ Check box when complete
PDU TS2-2	HVDC Ground (Green/Yellow)	Gantry Power Pan Chassis	☐ Check box when complete
PDU TS2-3	-HVDC (Black)	Gantry HV Power Pan TS1-2	☐ Check box when complete
PDU Ground Bus	HVDC shield	Gantry HVDC cable shield	☐ Check box when complete
PDU TS3-1	Axial drive 440vac (Black)	Gantry HV Power Pan TS2-1	☐ Check box when complete
PDU TS3-2	Axial drive 440vac (Red)	Gantry HV Power Pan TS2-2	☐ Check box when complete
PDU TS3-3	Axial drive 440vac (Orange)	Gantry HV Power Pan TS2-3	☐ Check box when complete
PDU TS3-4	Axial drive ground (Green/Yellow)	Gantry Power Pan Chassis	☐ Check box when complete
PDU Ground Bus	Axial drive shield	Gantry 440 VAC cable shield	☐ Check box when complete
PDU TS5-1	120vac Phase A (Brown)	Console Power Plug: 	☐ Check box when complete
PDU TS5-2	120vac Neutral (Light Blue)		☐ Check box when complete
PDU TS5-3	Ground (Green/Yellow)		☐ Check box when complete
PDU TS5-4	120vac Phase A (Black)	Gantry LV Power Pan TS4-1	☐ Check box when complete
PDU TS5-5	120vac Phase B (Red)	Gantry LV Power Pan TS4-2	☐ Check box when complete
PDU TS5-6	120vac Phase C (Orange)	Gantry LV Power Pan TS4-3	☐ Check box when complete
PDU TS5-7	120vac Neutral (Light Blue)	Gantry LV Power Pan TS4-4	☐ Check box when complete
PDU TS5-8	Ground (Green/Yellow)	Gantry Power Pan Chassis	☐ Check box when complete

Table 3-2 Resistance Verification Points

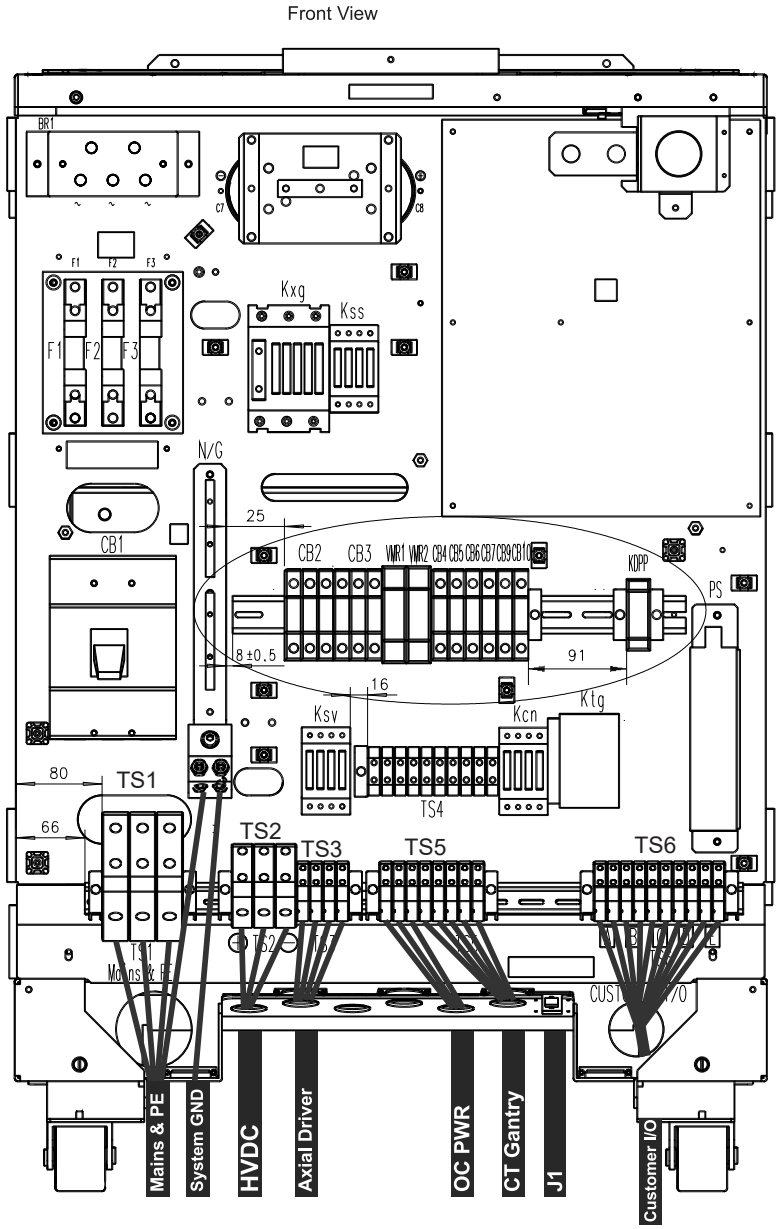


Figure 3-1 Front View of NGPDU, with Covers Removed

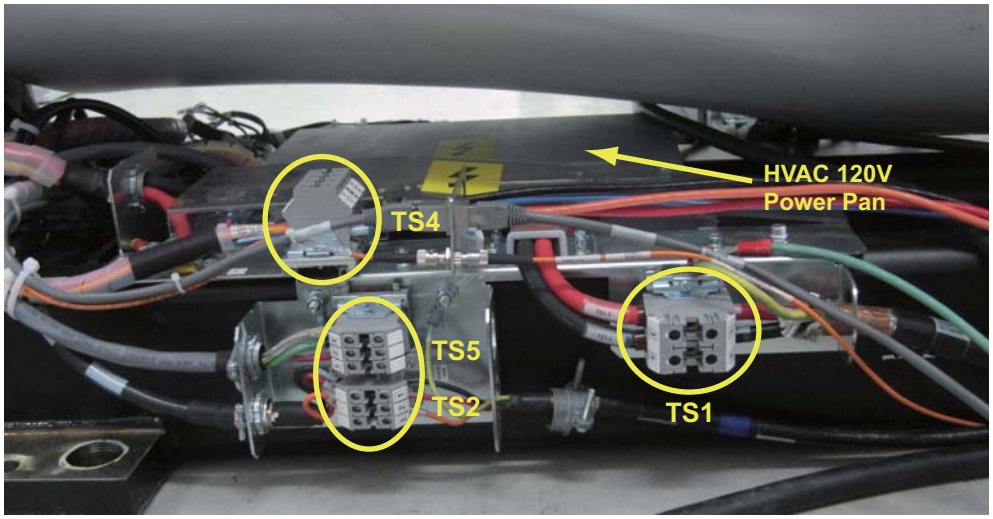


Figure 3-2 Gantry Power Pan

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 3-3 No Continuity Verification Points

FROM PDU	TO A1 BREAKER BOX	
TS2-1 (+HVDC) (Red)	vault ground	☐ Check box when complete
TS2-3 (-HVDC) (Black)	vault ground	☐ Check box when complete
TS3-1 (440vac output) (Black)	vault ground	☐ Check box when complete
TS3-2 (440vac output) (Red)	vault ground	☐ Check box when complete
TS3-3 (440vac output) (Orange)	vault ground	☐ 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

1.) Use an ohmmeter to verify the presence of **less than 1.0 ohm of resistance** between each of the following points:

FROM	TO	
PDU Ground Bus	Vault Ground	☐ Check box when complete
PDU Ground Bus	Table/Gantry raceway ground point	☐ Check box when complete
Table/Gantry raceway ground point	Gantry Chassis	☐ Check box when complete
Table/Gantry raceway ground point	Table Chassis	☐ Check box when complete
Table/Gantry raceway ground point	Operator Console Chassis	☐ Check box when complete
All Display or Computing Options (if any)	Operator Console Chassis	☐ Check box when complete

Table 3-4 Resistance Verification - Site Ground

2.) Install remaining covers on:

- Gantry
- Table
- Raceway
- Console
- PDU

Section 3.0 Shim Installation

3.1 Time and Personnel

Required Persons	Preliminary Reqs	Procedure	Finalization
1 (FE or mechanical supplier)	10 min.	15 minutes labor on-site	5 min.

3.2 Tools and Test Equipment

- Standard FE Tool Kit
- Shim Kit

NOTICE **Understand and Follow All General Table Safety Procedures.**

3.3 Preparation

Check head holder for a tight fit. If the head holder fit is loose, follow this procedure and shim for.

- Axial head holder
- Foot extender
- Phantom holder

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.

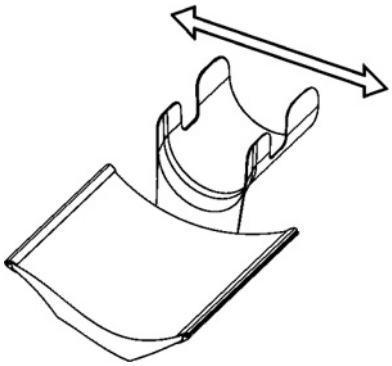


Figure 3-3 Axial Head Holder

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.

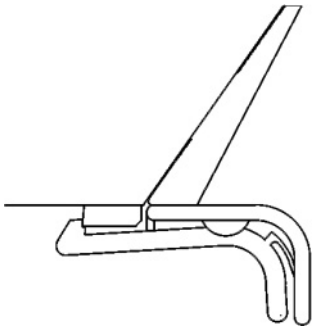


Figure 3-4 Correct - Head Holder is latched onto first step of plastic latch mechanism (The head holder does not need to be latched onto the second step)

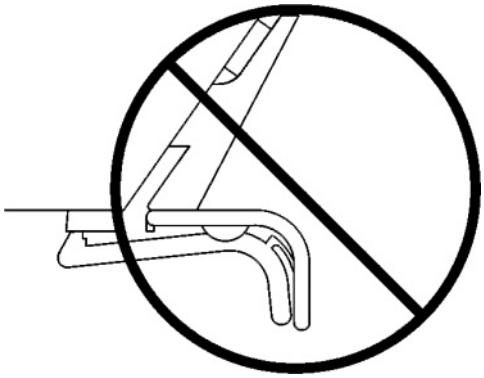


Figure 3-5 Wrong - Head Holder is NOT latched after installing shims

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

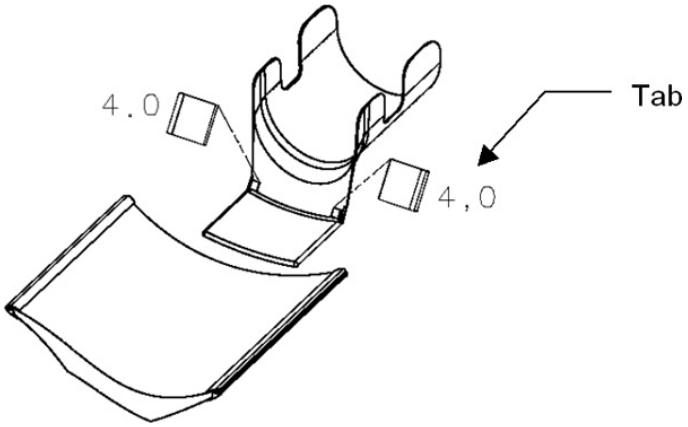


Figure 3-6 Headholder Tab

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

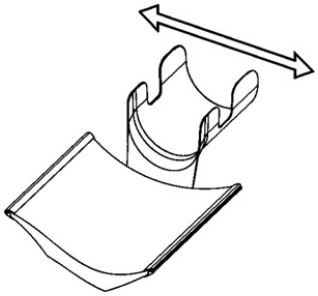


Figure 3-7 Axial Head Holder

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

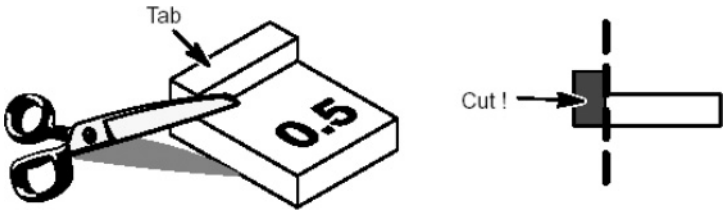


Figure 3-8 Cut the shim for Headholder

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 LB Tube Label Installation

LB Tube label (5790196) exist in shipping collector.

4.1 Procedure

- Please find the LB Tube label (5790196) from shipping collector and adhere these two labels onto PDU and mai power switch panel before powering on system.

5790196

- The following photos show a representative example of each label. See the label description above each photo, for the total number of labels of that type, and any other information concerning that label type.
- Clean the area where the label will be applied with isopropyl alcohol.

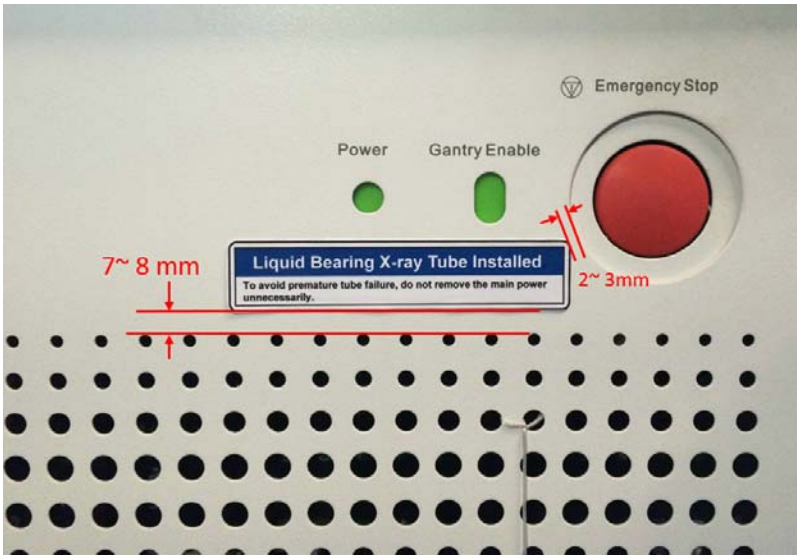
4.1.1 Label of PDU and Main Power Switch Panel

5790196 - Need stick on two places, one is used on PDU front panel, the other one stick on the front of main power switch panel.

Note: This is a collector of multi-language labels, sample shown is in English, FE MUST select the label in appropriate language to stick.

1.) Stick one label 5790196 on PDU front cover. (Please select the label in appropriate language to stick)

Stick the label on PDU location as shown below, right side of label should have a gap of 2~3mm from the edge of Emergency Stop round area.



2.) Stick another label 5790196 on main power switch panel.

Select appropriate language label 5790196 for your customer site.

Stick the label on main power switch panel location as shown below (example), it should be just below (and near to) power switch so that it can be easily noticed by user.

3.) Extra labels are not installed on the system and can be discarded.

Chapter 4
System Covers: Installation & Alignment

Section 1.0 Process Overview

Cover install process overview:

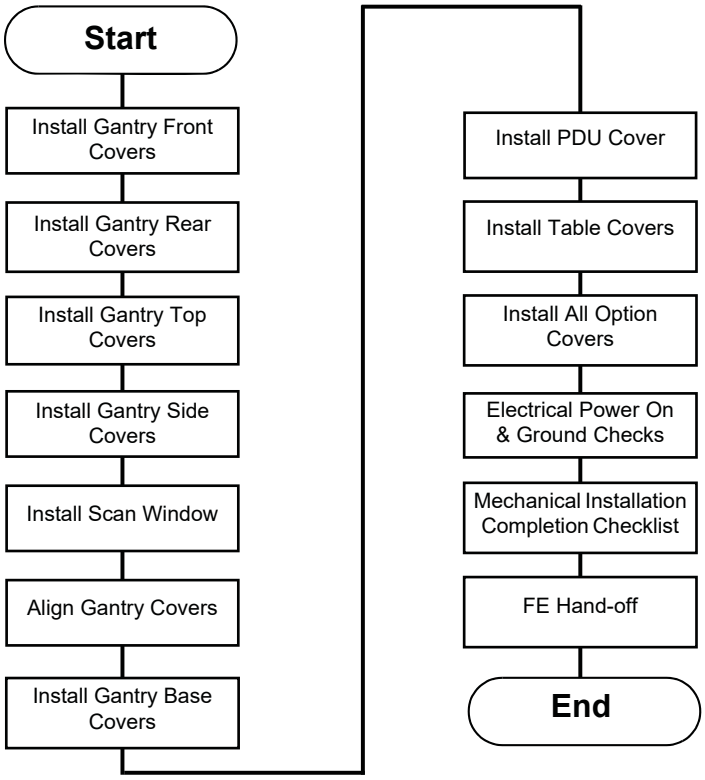


Figure 4-1 Cover Installation Flowchart

1.1 Gantry Front Cover Installation

Refer to Appendix A for the detailed procedure.

1.) Move the gantry to the vertical position and the front cover next to the gantry.
2.) Lift the cover onto the stud and attach the front cover:
3.) Remove the dolly; disassemble it and store it safely away for later use.
4.) Reattach the cables to the cover.

1.2 Gantry Rear Cover Installation

Refer to Appendix A for the detailed procedure.

1.) Attach the rear cover:

1.3 Gantry Bore Cover 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 4-2 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.

1.4 Gantry Top Covers

1.4.1 Installation

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 the cover using 2 Phillips screws.

2.) Repeat the same step for the other side.

1.5 Gantry Side Covers

1.5.1 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.

2.) Use hex wrench to secure the side cover to front cover by turning the bolts a quarter turn.

1.6 Gantry Strap Installation

The following procedure is applied if customer requests to install the gantry strap.

1.) Cut any tie-wrap and remove two gantry strap from the inside of the front cover.

Figure 4-3 Location of Strap

2.) Remove a nylon nut, a spacer and a fastener from the front cover.

3.) Relocate the spacer to outside of the front cover, and install the faster, spacer and nylon nut.

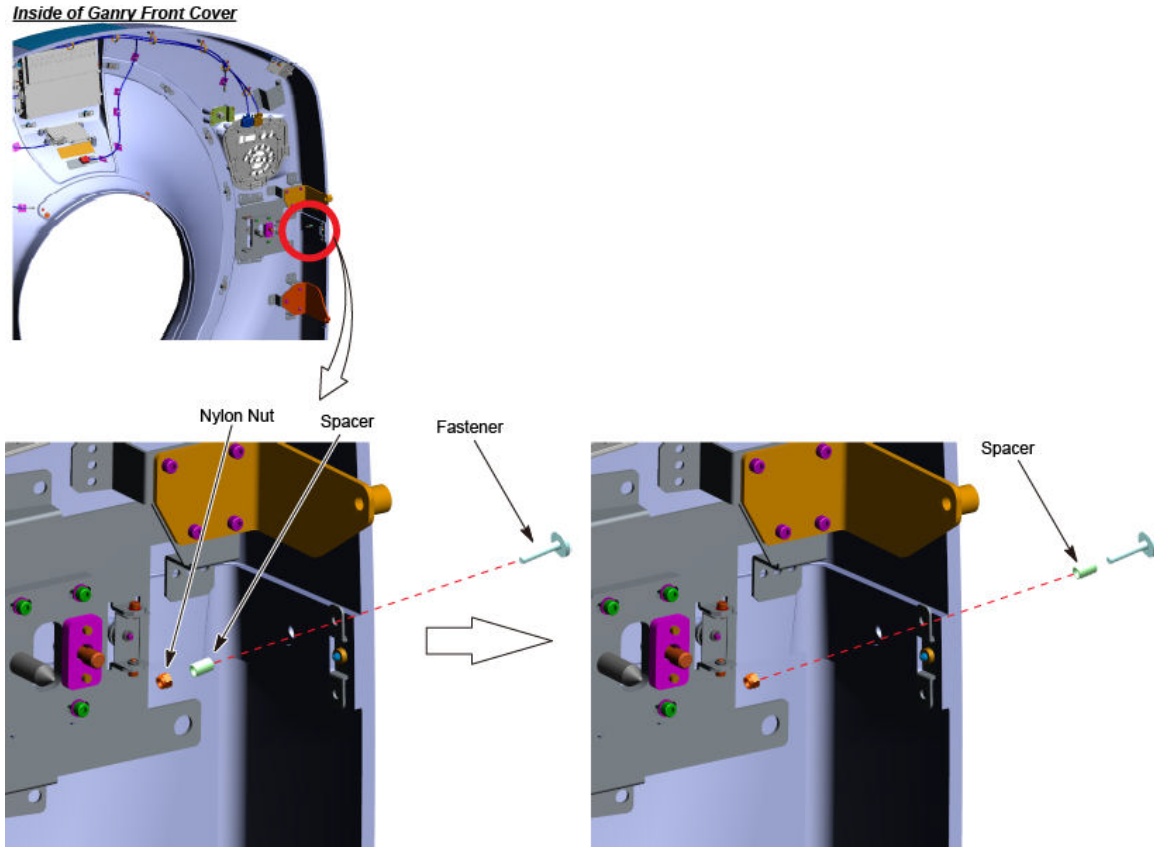


Figure 4-4 Relocation of Spacer

4.) Attach the strap to the fastener.

Figure 4-5 Strap Attachment

5.) In a similar way, install the gantry strap to the other side.

1.7 Scan Windows

1.7.1 Installation

Note: The front and rear covers must be installed before installing the scan window.

1.) Shape the scan window as shown in Figure 4-6, and nest the scan window at the bottom of the opening between the front and rear covers, (Figure 4-7) with the rivets in the 6 o'clock position. Remember the rivets must be in the 12 o'clock position when the mylar window is fully installed.

2.) After you complete the initial seating of scan window, let the window slowly unfold, and work both sides of the window into position, starting at the bottom and finishing at the top.

3.) Make sure you position the window with the rivets at the 12 o'clock position, and the mylar window slit at either the 3 or 9 o'clock position.

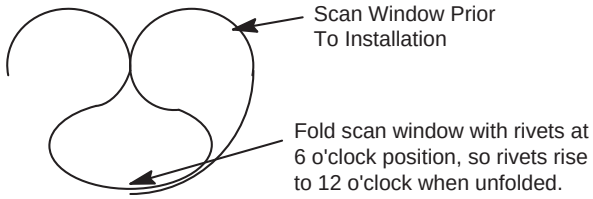


Figure 4-6 Install Scan Window

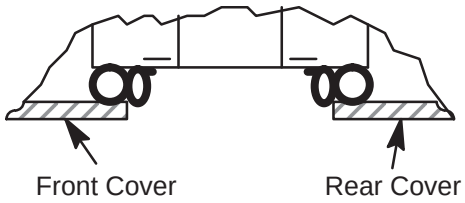


Figure 4-7 Scan Window Nested Between Front and Rear Cover

1.8 Install Gantry Base Covers

1.8.1 Tools Required

3mm and 8mm hex wrenches

1.8.2 Procedure

Assembly Sequence

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 16, 2, 3 as shown and tighten.

2.) Assemble (2) Bulkheads (Item14) to (2) Brackets (Item 13) using (4) Hardware Items 3 & 4. Assemble (2) Brackets (Item 10) and (2) Brackets (Item 13) to Gantry Base using (8) Hardware Items 1, 2 & 3. Finger tighten hardware with bracket moved outward to end slots (Item 10). Install side covers (Item 6 & 7) on properly aligned with front cover. Remove side covers, tighten fasteners and replace side covers using hardware (1) Item 16, & 2, & 3, and (2) Item 15 on each cover and tighten.

3.) Assemble last Bracket (Item 11) loosely to gantry base with (2) hardware Items 1, 2 & 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 & 3 tightening all fasteners. Lock latch.

4.) Place cover Item 9 on gantry base aligned to covers 8 & 9. Lock both latches.

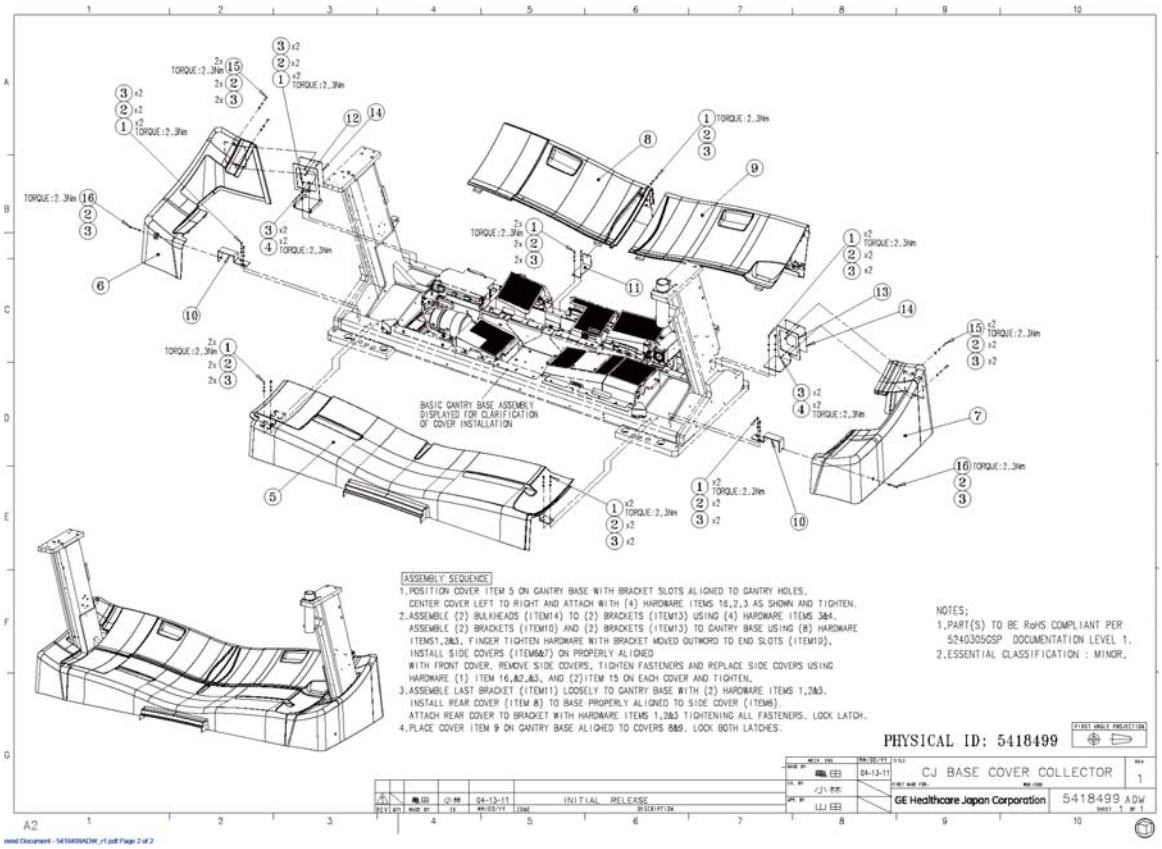


Figure 4-8 Gantry Base Covers Installed

1.9 Install Footswitch Covers

1.9.1 Tools Required

3mm and 8mm hex wrenches

1.9.2 Footswitch Covers Installation

1.) Install the footswitch cover using three (3) screws (see Figure 4-9).

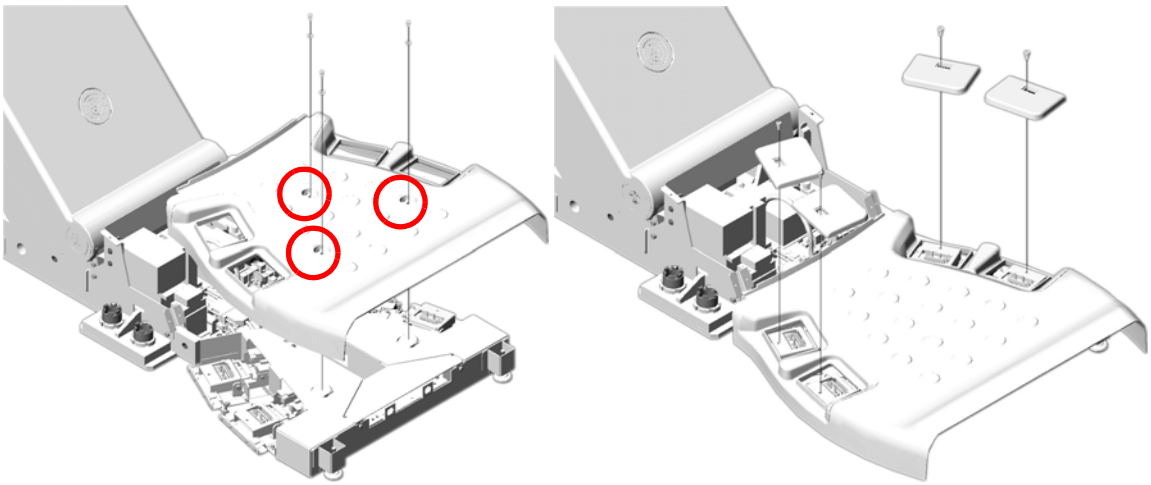


Figure 4-9 Footswitch Cove Installation

2.) Install cover caps on each pad.

Figure 4-10 Footswitch Pad Caps

3.) Install the four (4) pads onto the footswitch assembly.

Section 2.0 Table Cover Installation (GT1700V)

2.1 Side Covers

1.) Remove screws (2) on tape switch.
2.) Remove back under-side covers (2) plus black screws.
3.) Undo the 2 red/black connectors.
4.) Remove all six (6) 4mm hex-head screws.

2.2 Install Panels

2.2.1 Top Panel #1

1.) Install two (2) 4mm hex-head screws. Leave them loose until the bottom screws are installed.
2.) Install 6nd wire using one (1) 4mm hex-head screw.

2.2.2 Bottom Panel #1

1.) Install white washer between grey base and panel. Insert Phillips screw into the bushing.
2.) Tighten top screws. (Torque 8 lb-in)

Note: Second panel over laps the first panel

2.2.3 Top Panel #2

1.) Install two (2) 4mm hex-head screws. Leave them loose until the bottom screws are installed.
2.) Install 6nd wire using one (1) 4mm hex-head screw.

2.2.4 Bottom Panel #2

1.) Insert white washer between grey base and panel. Insert Phillips screw into the bushing.
2.) Tighten Phillips screws. Tighten top screws.

2.3 Re-install Side Panel

1.) Install with two (2) Phillips screws. Reconnect cable.

2.4 Table Side Covers Install

1.) With the side covers toward table front, align the tabs on the cover with the slots on the table.
2.) Slide the cover toward the table until it stops.
3.) Slide the cover toward the back of the table to lock the cover in place.
4.) Install the two (2) 4mm hex-head screws on each end to secure cover. (1700 Table: Install one (1) screw.)

2.5 Table Side Covers Removal

1.) Remove the two (2) 4mm hex-head screws that secure the side cover. (1700 Table: Remove one (1) screw)

2.) Slide the cover toward the gantry until the locking tabs disengage and the cover is free.
3.) Pull the cover away from the table to remove.
4.) Store in a safe place.

Section 3.0 Table Covers Installation (Lite Table)

3.1 Table Base Cover

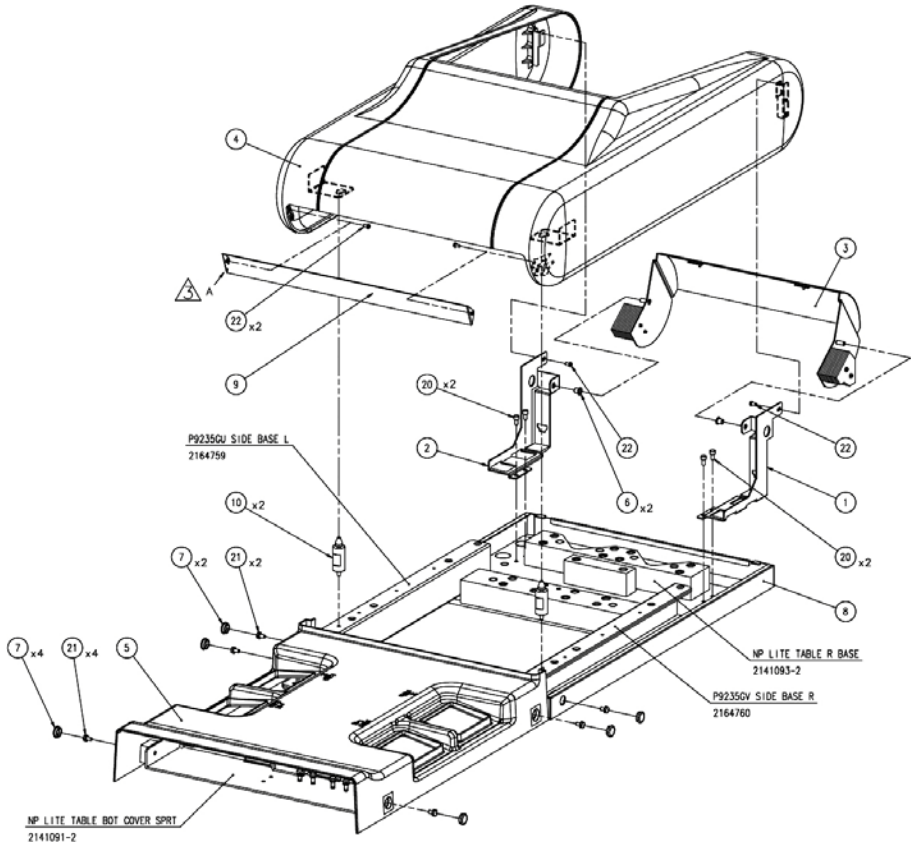


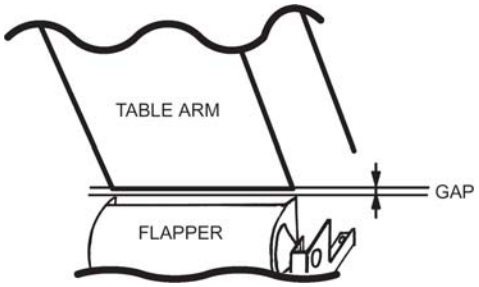
Figure 4-11 Table Base Cover

3.2 Flapper Installation

1.) Insert two (2) plastic rings into the left side of flapper and the right side of flapper.

2.) Attach two flapper brackets to the flapper.

3.) Tighten it to the Table rear bottom by four (4) support bracket screws. There is a gap between the flapper and the table arm as shown in the Illustration below. When the flapper is installed on the table base, the left gap and the right gap must be equal using four (4) support bracket screws.



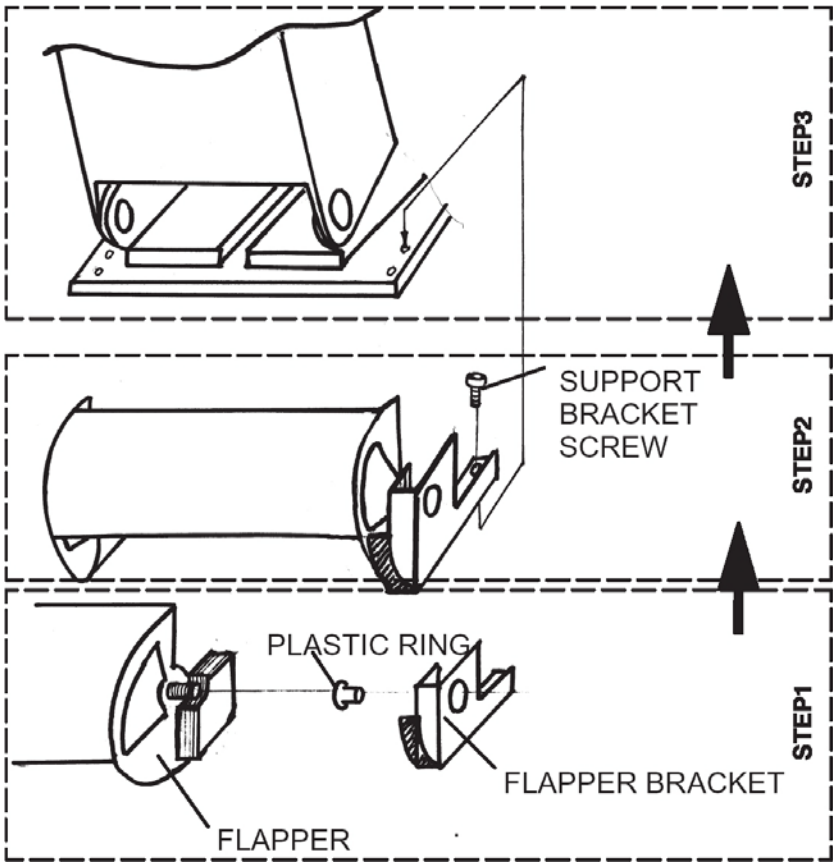


Figure 4-12 Installing the Table Flapper

3.3 Skirt Cover installation

1.) Attach Skirt Cover to flapper brackets.
2.) Mount Skirt Cover to table bracket with two screws.

Figure 4-13 Installing Skirt Cover

3.4 Bottom cover installation

1.) Install the front bottom cover using four screws. After installation, install the screw caps onto the screws.
2.) Install the foot switch pedals using four socket screws. After installation, install the screw caps onto the screws.
3.) Install the rear bottom cover so that its tabs are aligned with the frame pins.
4.) Pull the cover rearwards, then mount it using two screws.
5.) After installation, install the screw caps onto the screws.

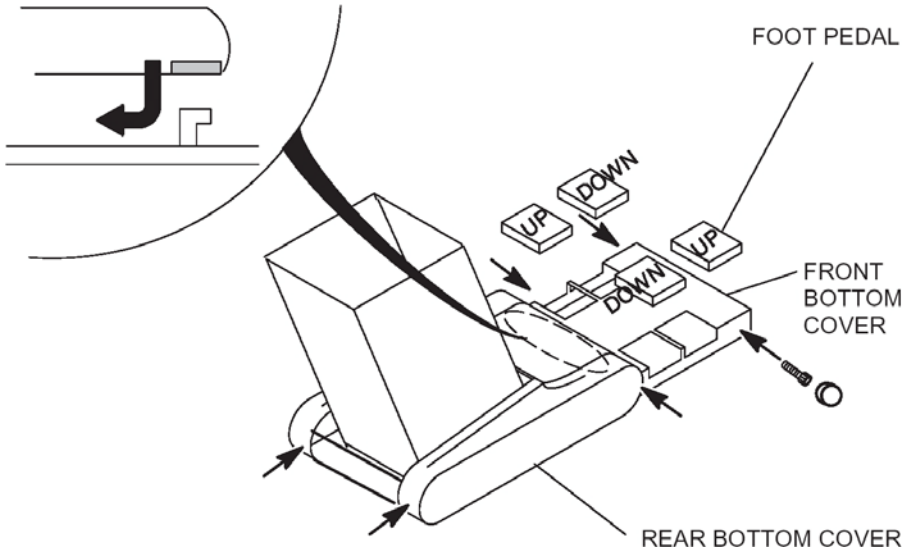


Figure 4-14 Installing the Bottom Covers

Section 4.0 Install All Option Covers

Follow the instructions that came with each of your optional components.

Section 5.0 Electrical Power On & Ground Checks

WARNING **THIS PROCEDURE MEASURES POTENTIALLY HAZARDOUS VOLTAGES. USE AND FOLLOW LOCKOUT/TAGOUT PROCEDURES.**

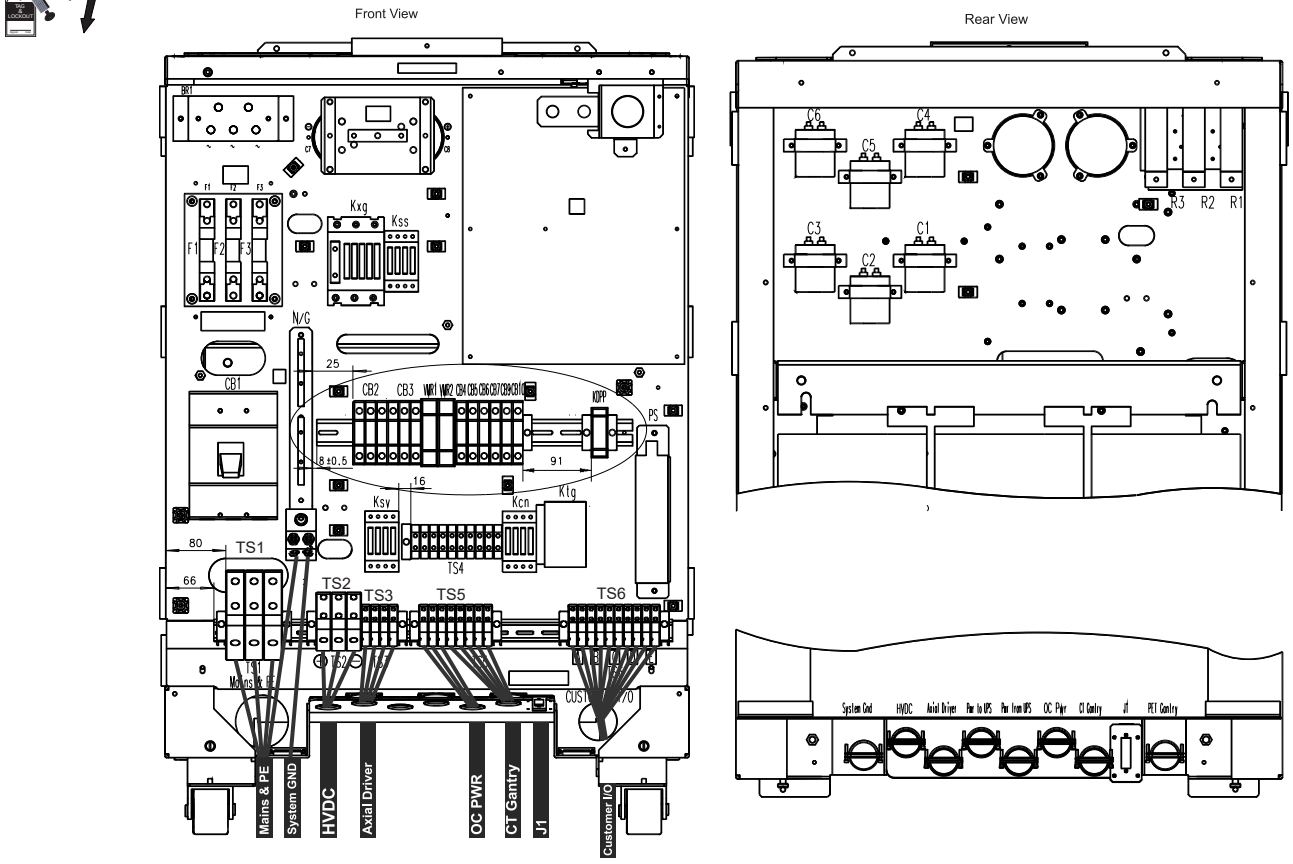
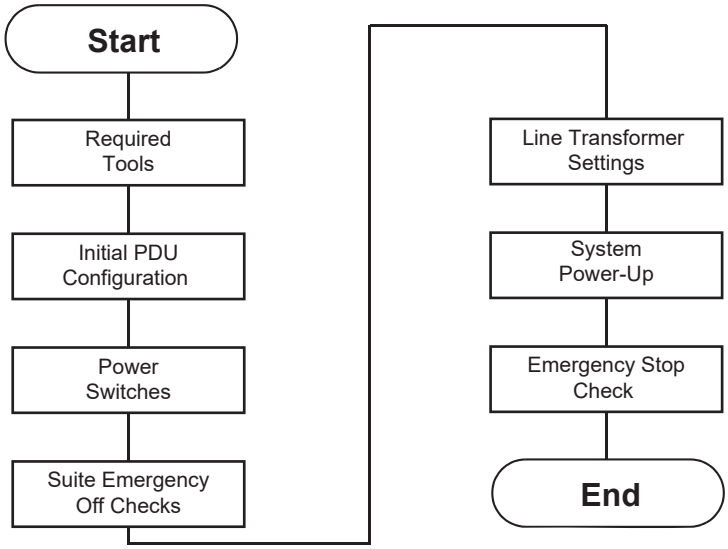


Figure 4-15 NGPDU

5.1 Introduction and Flowchart



5.2 Electrical Power On & Ground Checks Process Overview

5.3 Required Tools

- Multimeter with a rating of at least 1000 volts
- Multimeter leads with a rating of at least 1000 volts

5.4 Initial PDU Configuration

WARNING **THIS PROCEDURE MEASURES POTENTIALLY HAZARDOUS VOLTAGES. USE AND FOLLOW LOCKOUT/TAGOUT PROCEDURES.**

5.4.1 Circuit Breakers

Set all PDU, gantry, console, and table circuit breakers to OFF.

5.4.2 Relay Board

1.) Set SW 2 to the Auto-Off position.

2.) When the system is powered, three lamps should be "ON". (Refer to Figure 4-16.)

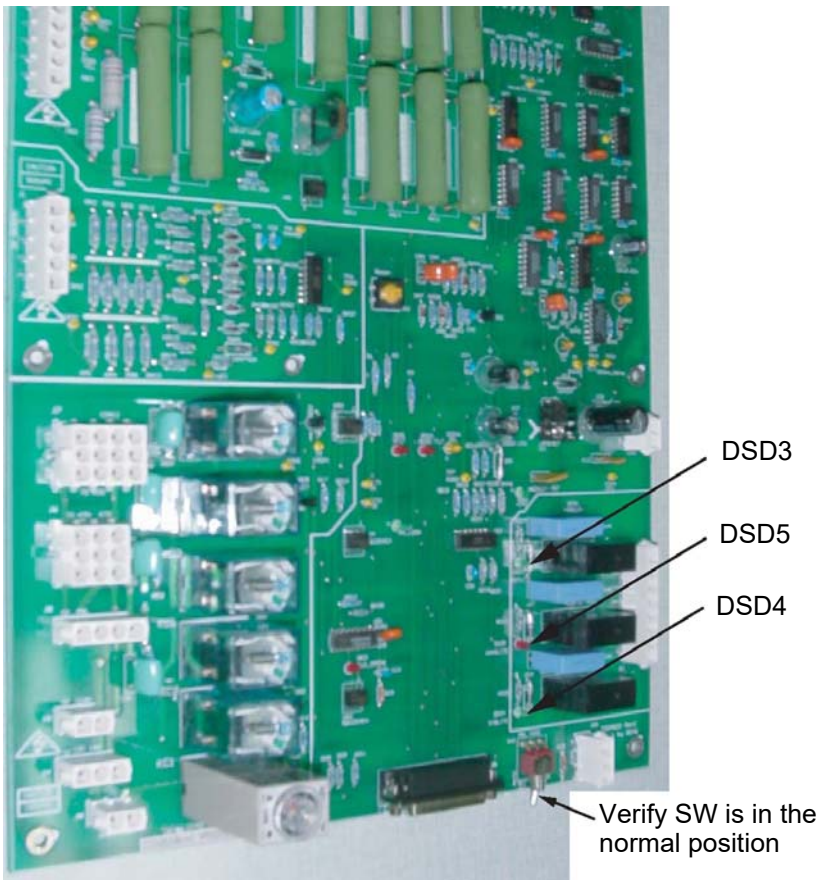


Figure 4-16 NGPDU Control Board

5.4.3 Power Switches

Turn OFF all system power switches at their subsystems.

- Gantry power pan breaker
- All gantry service switches
- Table base power
- Console power

5.4.4 Hardware and Connection Check

Use this step to check mechanical connections and tighten anything that may have shaken loose during shipment. Verify all hardware and connections in the PDU are securely fastened.

- PDU
- Gantry
- Table
- Console

5.4.5 Covers

Install, or verify the presence of, all the lexan safety covers for the PDU.

5.5 Suite Emergency Off Checks SEO

WARNING **ONLY PERFORM THIS PROCEDURE IF YOU ARE USING PROPER PPE. 480 VOLTS MAYBE PRESENT. VERIFY ALL PERSONNEL HAVE CLEARED THE SYSTEM BEFORE YOU TURN ON WALL POWER.**

1.) Turn wall power ON to the PDU.

Note: Do not stand in front of the main disconnect to turn on power.

2.) Press the suite emergency off button and verify it turns off wall power to the PDU.
(Typically, this red palm button is located on the wall close to the console, within the scan suite.)

3.) Verify that all "Emergency Off" buttons are working properly.

4.) Leave power "OFF".

5.6 Line Transformer Settings

5.6.1 Requirements

1.) The PDU is shipped configured for 480VAC.
2.) Complete only if your site uses a voltage other than 480VAC.
3.) If PDU is configured for 480VAC, go to 5.7. Otherwise, proceed to Section 5.6.2.

WARNING **MAKE SURE YOU TURNED OFF, TAGGED AND LOCKED THE MAIN WALL POWER BEFORE YOU CHANGE TAPS. FAILURE TO DISCONNECT POWER AT MAIN INPUT MAY RESULT IN ELECTROCUTION. TURN OFF WALL POWER TO CONNECT OR MOVE METER LEADS, OR TO REMOVE OR INSTALL COVERS. WEAR APPROPRIATE ELECTRICAL PPE.**

5.6.2 Line Input Conditions

1.) Monitor the No Load Line to Line Voltage at L1, L2, L3, during the workday. Do not record this data during "brown out" conditions.

2.) After you determine the nearest nominal line, verify the tap connections match (refer to Table 4-1 and Figure 4-17 for tap locations).

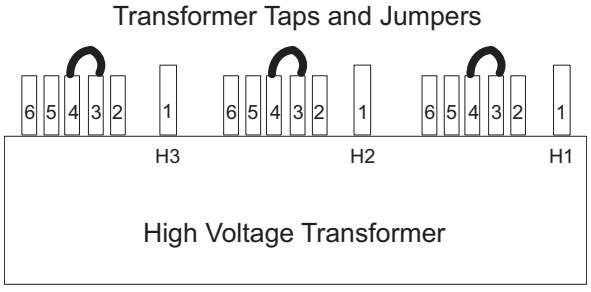


Figure 4-17 PDU Tap Positions (Rear)

Note: **Taps should be shipped as shown for 480 VAC only. For all others, you must move the taps. The tap check should be completed by the mechanical installer.**

3.) Verify that the No Load Line to Line Voltage never falls outside the corresponding minimum and maximum values listed in Table 4-1.

4.) Use a 0-750 AC voltmeter of 3/4% accuracy to measure the line-to-line voltages at L1, L2, & L3.

- Verify the highest line-to-line voltage does not exceed 1.02 times the lowest voltage.
- **Example:** If the lowest voltage equals 474, the highest voltage should not exceed 474 x 1.02 = 483.5 volts.

WARNING **THIS PROCEDURE MEASURES POTENTIALLY HAZARDOUS VOLTAGES. USE AND FOLLOW LOCKOUT/TAGOUT PROCEDURES.**

No Load Line to Line Voltages		Tap Connections (All 3 phases must have same the configuration)		
Nominal	**Maximum Range (10%)**	**Phase A Connection**	**Phase B Connection**	**Phase C Connection**
480V*	432 to 528*	3-4*	3-4*	3-4*
460V	414 to 506	3-5	3-5	3-5
440V	396 to 484	3-6	3-6	3-6
420V	378 to 462	2-4	2-4	2-4
400V	360 to 440	2-5	2-5	2-5
380V	342 to 418	2-6	2-6	2-6
240V**	216 to 264**	1-4**	1-4**	1-4**
220V**	198 to 242**	1-5**	1-5**	1-5**
200V**	180 to 220**	1-6**	1-6**	1-6**

* Factory Default

** 2326492-3 PDU only

Table 4-1 PDU Line Tap Connections

Record system voltages here:

Phase A: _____ Phase B: _____ Phase C: _____

5.7 System Power-Up

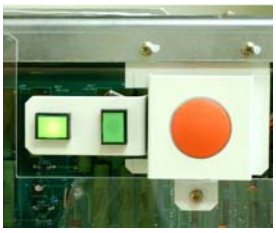
CAUTION **Verify all personnel have cleared the system before you turn on wall power.**

1.) Turn ON the A1 breaker panel.

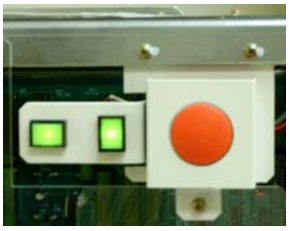
Note: Do not stand in front of the main disconnect to turn on power.

2.) Turn ON all system power switches and breakers (PDU, gantry, table, console).

- All PDU breakers
- Make sure that the on/off button (on the front PDU panel) is ON for console power.



PDU Power Switch Off



PDU Power Switch On

- Gantry power pan breaker
- All gantry service switches
- Table base power
- Console power (Check internal breaker.)

Note: (16BW45.x or later)
User Logon screen will appear during system start up.

SUB-SYSTEM POWER-UP

1.) Turn ON switch S3 in the table (120VAC 24-hour power).
2.) Turn the gantry **120 - 208VAC** to ON. (Light should turn on.)
3.) Turn **AXIAL DRIVE ENABLE** ON. (Light should turn on.)
4.) Turn **HV DC ENABLE** ON. (Light should turn on.)
5.) Push the Service Switch Panel reset button. (See Figure 4-18)

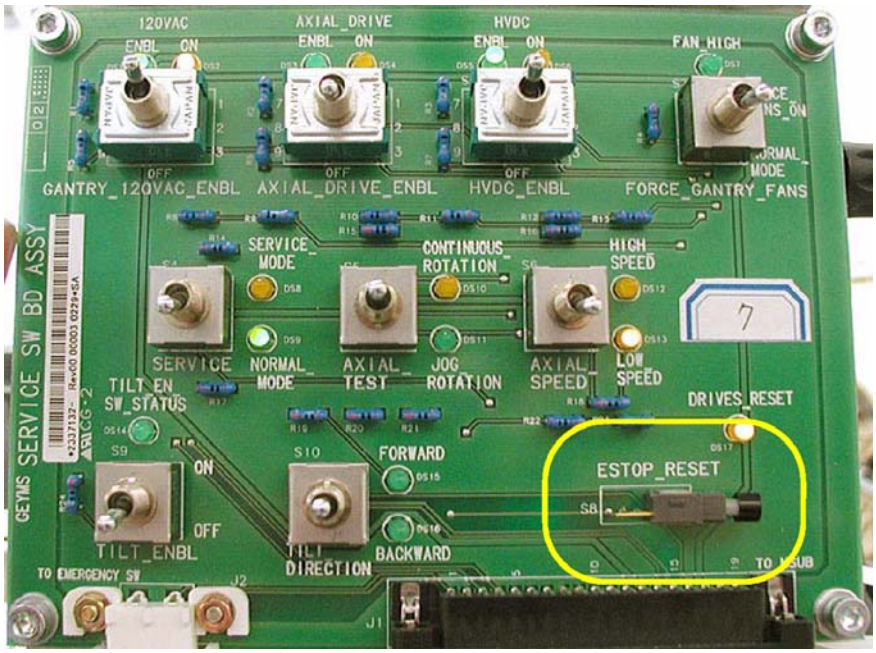


Figure 4-18 Service Switch Panel

AXIAL ENABLE SWITCH TEST

1.) Unplug all top cover fan plugs.
2.) Turn OFF axial drive enable switch **AXIAL_DRIVE** on the Service Switch Panel.

Note: For the initial condition, do NOT leave the tube at the 2:30 position.

3.) Clear the gantry area for rotation.

4.) Press the alignment light push button.

5.) Verify that the gantry did not rotate.

ROTATION SAFETY CHECKLIST

1.) Manually rotate the gantry 360 degrees.

- Listen for any interference between the rotating and stationary parts. (Correct any interference problems.)
- Listen for any loose parts. (Tighten parts as needed.)

2.) Turn ON all enable switches.

WARNING **MAKE SURE THERE ARE NO OBSTRUCTIONS AROUND THE GANTRY. PRESSING THE ALIGNMENT LIGHT PUSHBUTTON WILL CAUSE THE GANTRY TO ROTATE.**

3.) Press the alignment light push button.

4.) Verify that the gantry rotates.

5.) Turn off the laser light.

6.) Perform a 2-second X-ray OFF scan.

NOTICE **During the scan, it may be necessary to enter the scan room to obtain a better listening position. If so, keep a finger on one of the four E-STOP buttons (on the gantry), to quickly stop the gantry, if necessary.**

a.) From the console, click on the SERVICE DESKTOP icon.

b.) Select DIAGNOSTICS.

c.) Select DIAGNOSTIC DATA COLLECTION

d.) Set the scan time to 4.00 seconds and rotating X-ray Off.

e.) Select ACCEPT.

f.) Leave the door open. (This makes it easier to hear any loose or interfering parts.) The gantry should spin for approximately 45 seconds

* Listen for any interference between the rotating and stationary parts. (Correct any interference problems.)
* Listen for any loose parts. (Tighten parts as needed.)

g.) After completing the 4-second scan, repeat Step a through Step f, with the following scan times:

* 2.0 second scans
* 1.0 second scans
* 0.7 second scans
* 0.5 second scans

7.) Confirm all enabled switches are on then install removed covers.

5.8 Install PDU Covers

5.8.1 Time and Personnel

Required Persons	Preliminary Reqs	Procedure	Finalization
1 (FE or mechanical supplier)		10 minutes labor on-site	

5.8.2 Tools and Test Equipment

- Medium +blade screw driver
- Medium -blade screw driver

5.8.3 Procedure

1.) Confirm that the plastic safety shield is still in position and secured to the PDU.
   - If it is not, install the shield using the remover hardware.
   - Position the front cover so that the bottom is resting on the two guide pins located on the bottom of the PDU chassis.

2.) Raise the cover into place and use the two thumb screws on the top of the front cover to secure it. Screws should be tight, but do not over tighten them.

3.) Place the top cover on the PDU.

4.) Slide the cover toward the front of the PDU until the cover latches.

Using a +blade screw driver, tighten the screws. Do not over tighten them.

5.8.4 Emergency Stop Check

1.) Use the gantry push-buttons to advance the cradle about 0.5m (2ft) from the home position.

2.) Press one of the E-STOP buttons on the gantry.

3.) Make sure the TABLE POWER shuts off, and the green LED flashes.

4.) Depress one of the table elevation buttons, to verify the emergency stop disabled table elevation.

5.) Depress one of the cradle drive buttons, to verify the emergency stop disabled the cradle drive.

6.) Press one of the **RESET** buttons to turn on X-RAY DRIVES POWER. (120 VAC LED stops flashing.)

7.) Press the other E-STOP button on the gantry.
   a.) Make sure the Table Power shuts off.
   b.) Manually move the cradle to the home position to make sure the cradle clutch released.
   c.) Make sure the cradle latches securely in the home position.

8.) Press one of the **RESET** buttons to turn on X-RAY DRIVES POWER.

9.) Press one of the four table tape switches to make sure the table down motion stops. Repeat with the three remaining table tape switches.

10.) Press the console emergency stop switch; make sure the Table Power shuts off.

11.) Press one of the **RESET** buttons to turn on X-RAY DRIVES POWER. (See Figure 4-19).

Figure 4-19 Reset buttons on Gantry Switch

Note: Emergency Stop buttons are located on the front of the gantry (2 in all), as noted in Figure 4-20. Additionally, emergency stop buttons are provided on the Operator Console GSCB and PDU (see Figure 4-21).

Figure 4-20 Gantry Emergency Stop Button Positions

Figure 4-21 GSCB Emergency Stop Button

Section 6.0 Mechanical Installation Completion Checklist

System-Level

- ❑ FE Service cabinet moved to the location shown on the site print
- ❑ All covers installed and aligned
- ❑ All options installed on the table and gantry
- ❑ All packing materials and boxes returned to the lean cart
- ❑ All service items placed in the service cabinet.

Optional and Regional

Seismic mounting installed, if required in your area.

Site Clean Up

- ❑ All customer items placed on a cabinet or on a counter and labeled customer material.
- ❑ All system service tools placed in the GE service cabinet.
- ❑ System software and options left on the lean cart in the software tray
- ❑ System cleaned and nicks repaired
- ❑ Installation site cleaned and all trash properly disposed.

Dolly Return

- ❑ Return of dollies and lean carts arranged for and pick-up made.

Paperwork

- ❑ Mechanical installation section of the GE Form e4879 completed
  - √ Room information recorded on the GE Form e4879
  - √ Table gantry alignment completed per the installation manual
  - √ Table gantry anchoring completed per the installation manual
- ❑ GE Healthcare personnel notified that the mechanical installation is completed
- ❑ All installation issues have been addressed and or documented so FE can follow-up as needed.

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Appendix A
Gantry Cover Removal and Dolly Setup

Section 1.0 Gantry Cover Removal

NOTICE **Follow ALL required safety and PPE procedures customary for your organization, when working on this product.**

1.1 Time & Personnel

Required Persons	Preliminary Reqs	Procedure	Finalization
1	Not Applicable		

1.2 Tools and Test Equipment

- Front and rear cover dollies
- Hex wrench set

1.3 Procedures

1.3.1 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

1.3.2 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.

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-2.

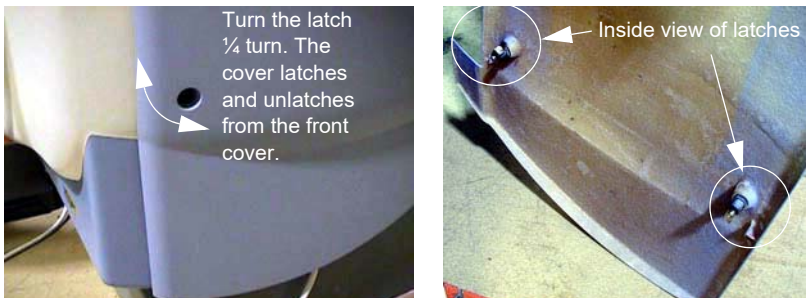


Figure A-2 Side Cover Latches

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-3. Once removed, the service switches should be exposed.

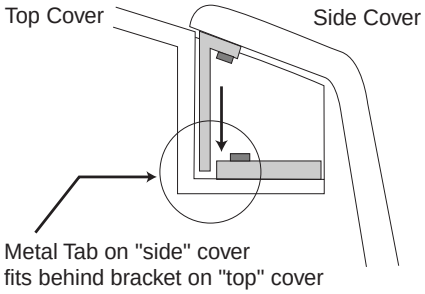


Figure A-3 Side and Top Cover Clasp

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-4.

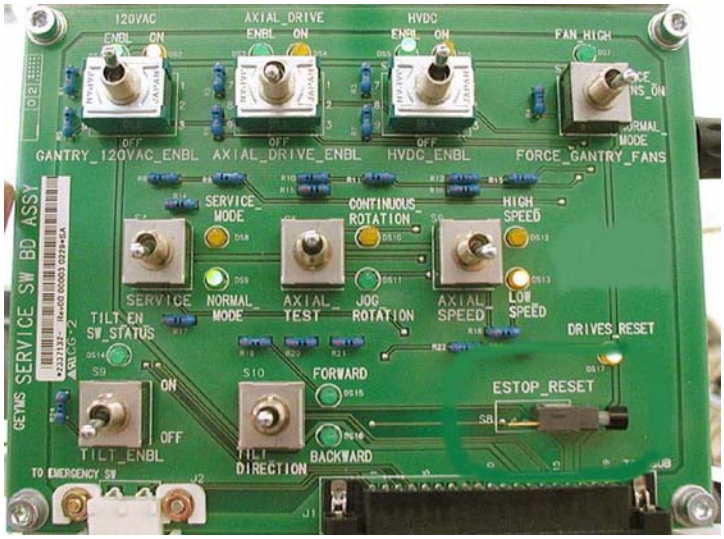


Figure A-4 Service Switch Panel

5.) Repeat Steps 1and 2 for the left side cover.

1.3.3 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.

1.) Remove the gantry right side cover.

NOTICE **Always turn OFF the HVDC before the 120 VAC. Turning OFF 120 VAC power before HVDC power can result in equipment damage.**

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-5.

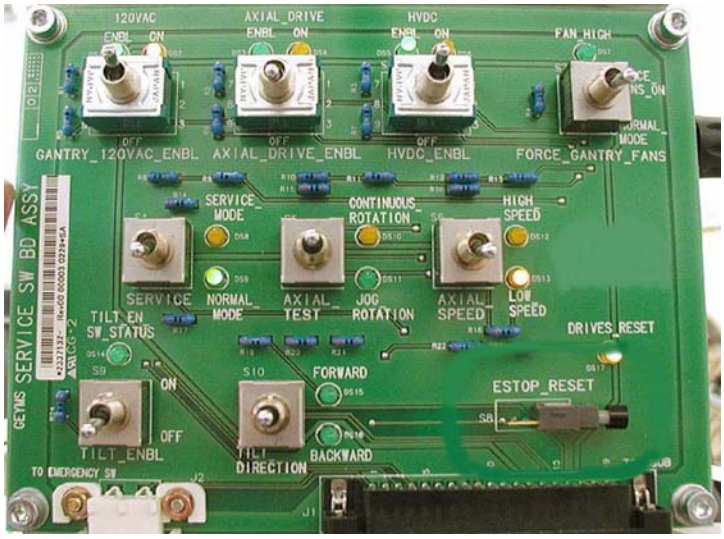


Figure A-5 Service Switch Panel

3.) Unscrew two screws that secure the top cover with Philip top screwdriver.

Figure A-6 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.

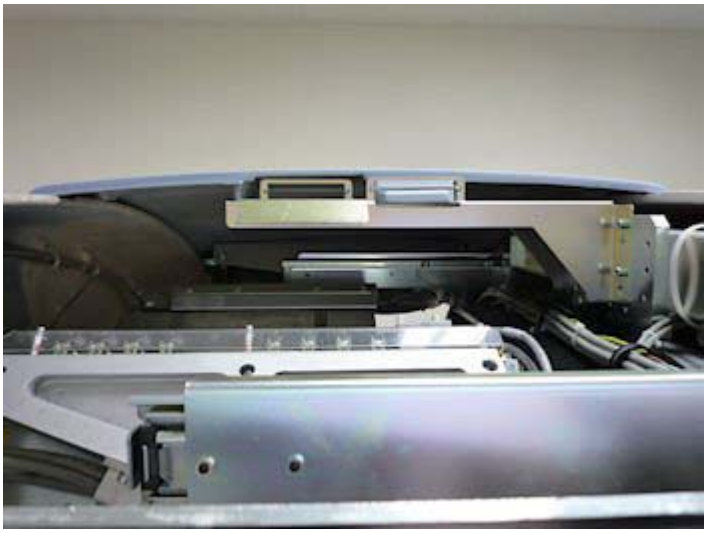


Figure A-7 Top Cover Tabs and Bracket

6.) Lift the cover clear and repeat the above steps for the other cover.

1.3.4 Gantry Front Cover

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.

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-8 and Figure A-9.
   - 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.

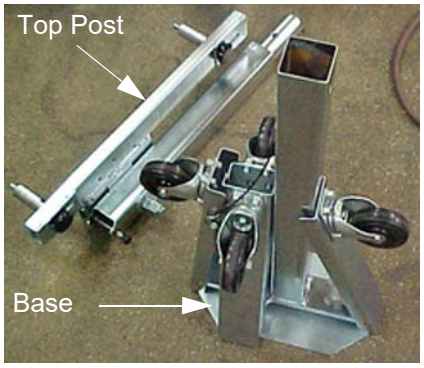
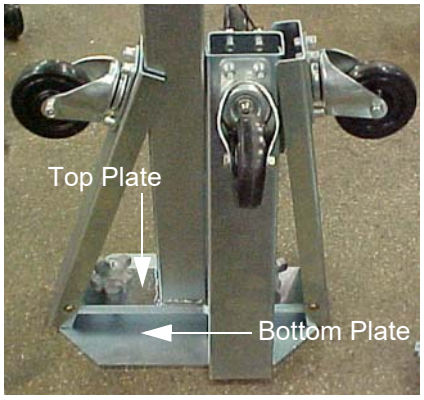


Figure A-8 Front Cover Dolly in Storage Mode



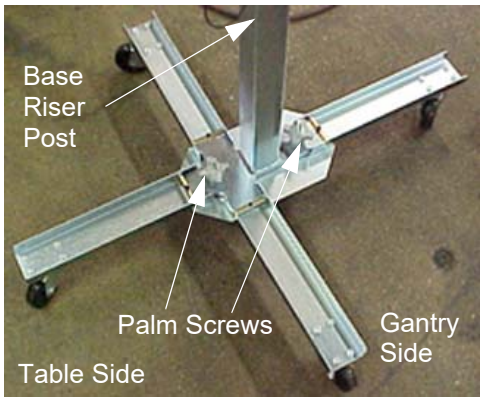


Figure A-9 Front Cover Dolly Base Assembly

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-9.

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.

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-10).

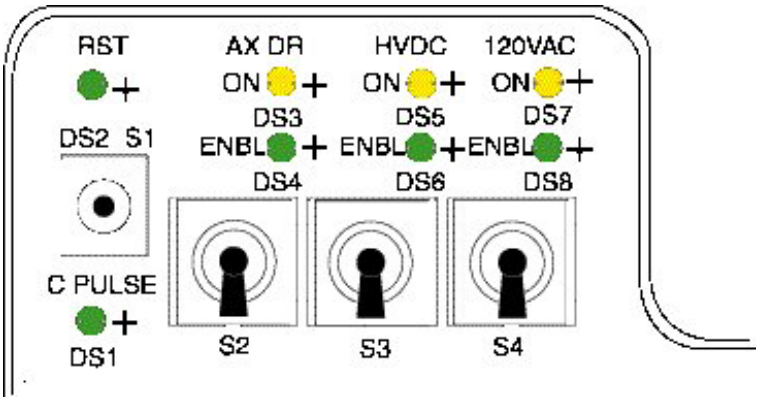


Figure A-10 STC Power Switches

4.) Verify the three (3) power switches have been turned **OFF** (see Figure A-11).

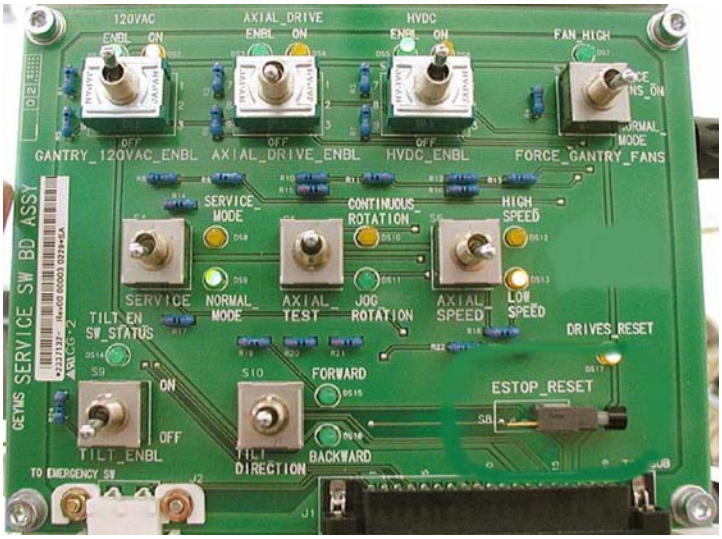


Figure A-11 Service Switch Panel

5.) Assemble the front cover dolly.

a.) Tighten the two (2) shoulder bolts to the gantry securely. This makes cover installation easier (see Figure A-12).

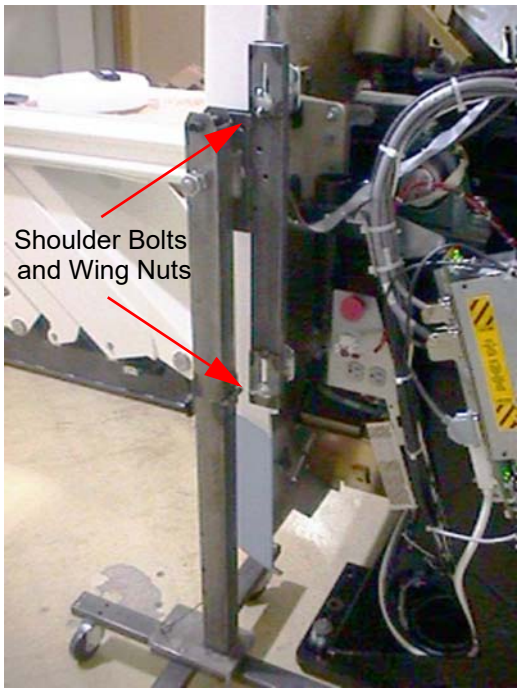


Figure A-12 Front Side Dolly

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-13 Front Cover Cables

7.) Remove the Mylar (scan) window.

8.) Remove front cover.

a.) Disengage upper cantrell bracket on right side of the cover.

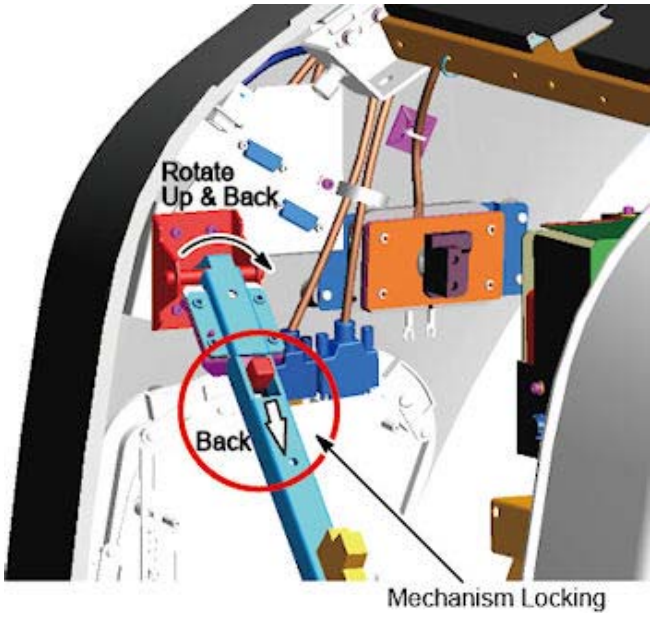


Figure A-14 Releasing Cover Brackets

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-15. You may find it helpful to lift "up" on the cover to align the stud while attaching the rubber retaining straps.

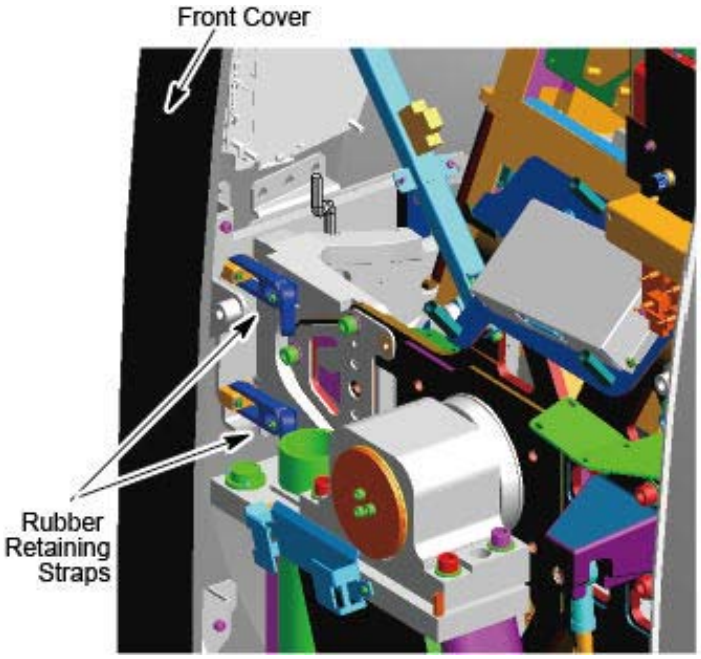


Figure A-15 Rubber Retaining Straps and Cover Locking Mechanism

b.) Disengage the left side of the front cover.

A.) Remove the small cover from the front cover.

B.) Loosen M12 screw.

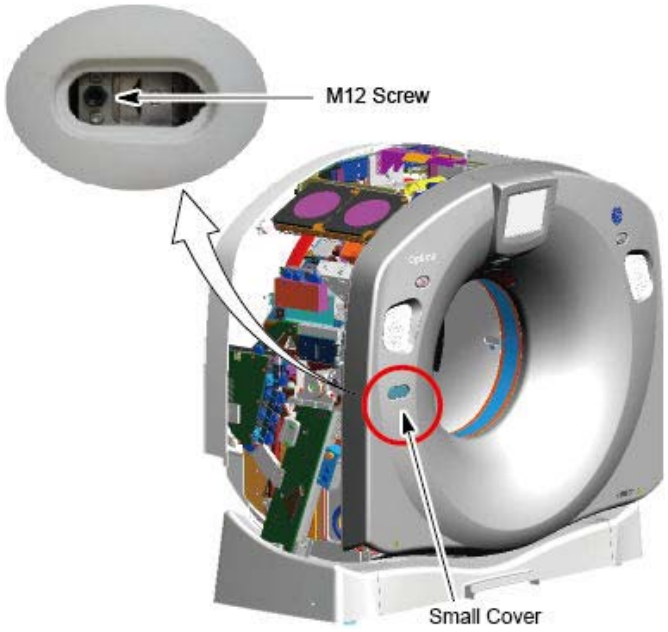


Figure A-16 Disengage the Left Side of the Front Cover

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-17).

Figure A-17 releasing Front Cover Dolly Hinge

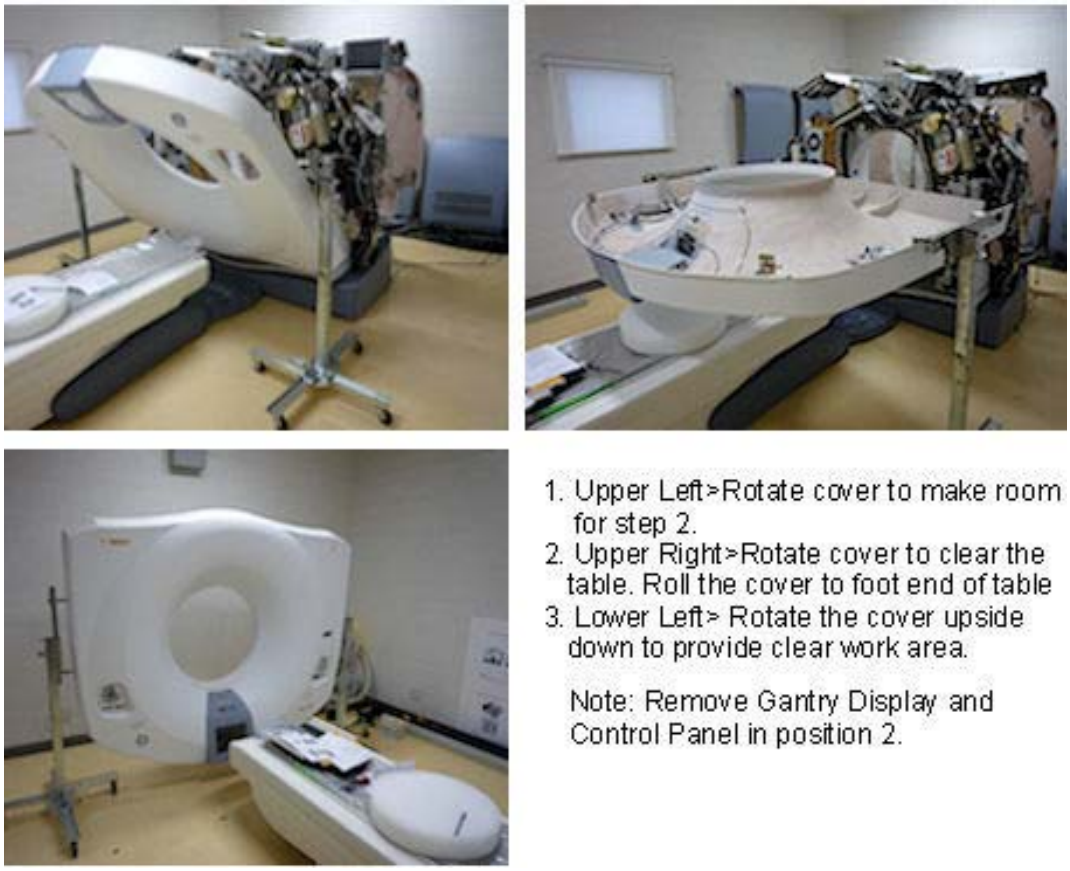


Figure A-18 Front Cover Removal Sequence

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-19).

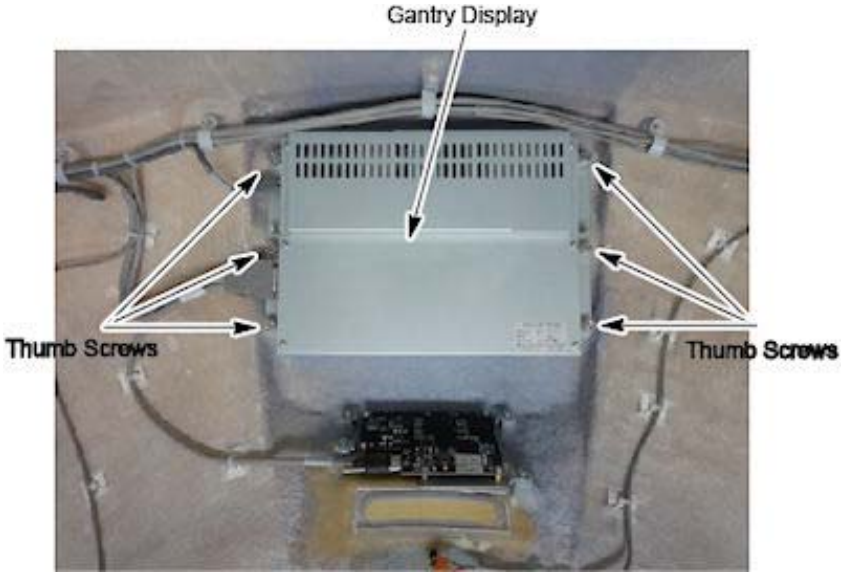


Figure A-19 Gantry Display Removal

b.) Loosen two lock screws of the rear cover.

Figure A-20 Lock Screws of the Rear Cover

c.) Side the rear cover backward.

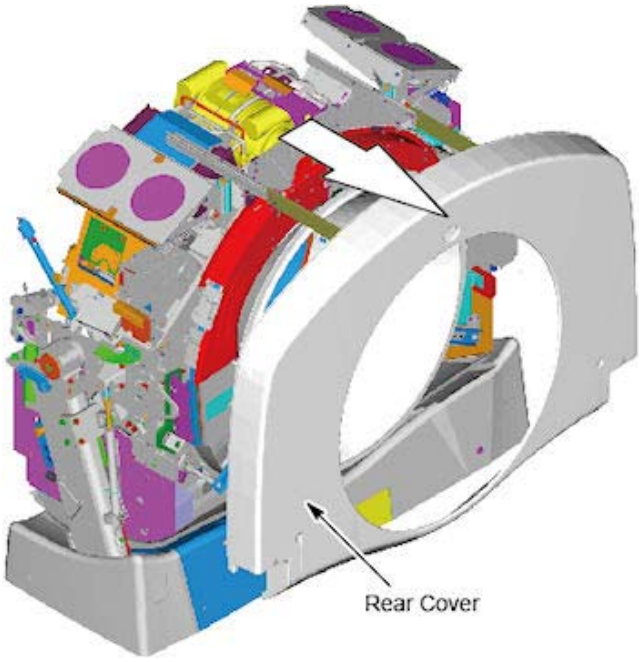


Figure A-21 Rear Cover Slide

d.) Loosen the lock screw of the right top fan of the gantry, and rotate the right top fan.

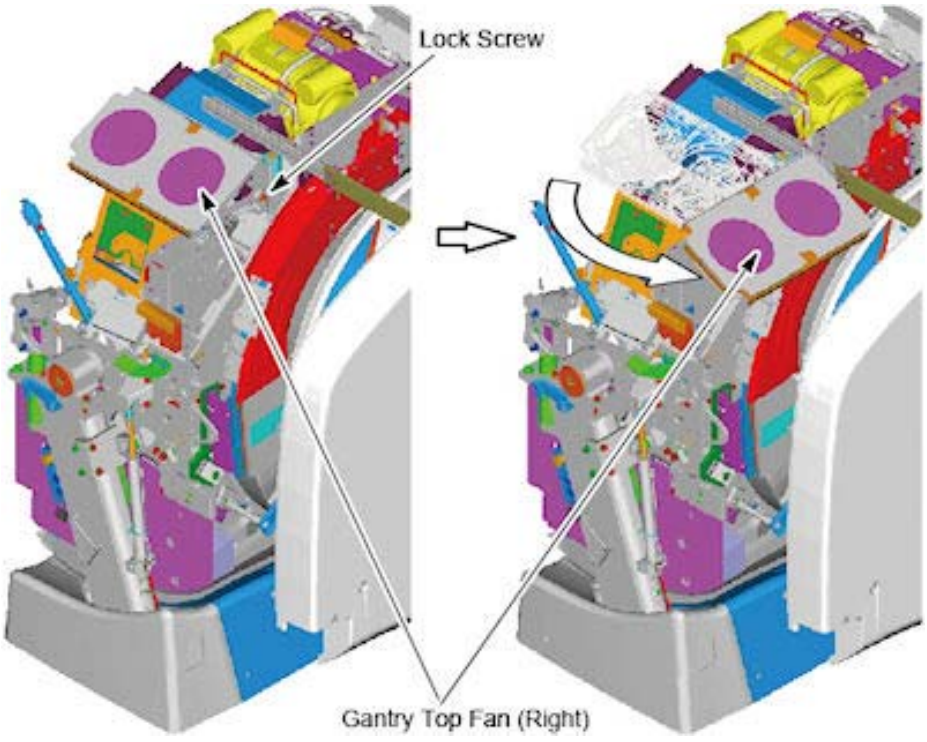


Figure A-22 Top Fan Rotation

e.) Place the Display in the bracket on the right side of the gantry. (see Figure A-23)

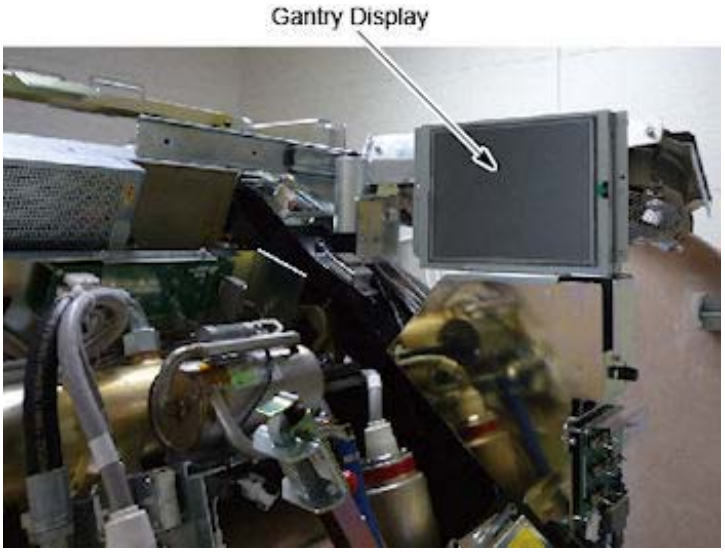


Figure A-23 Gantry Display Service Mounting Location

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-24. 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.

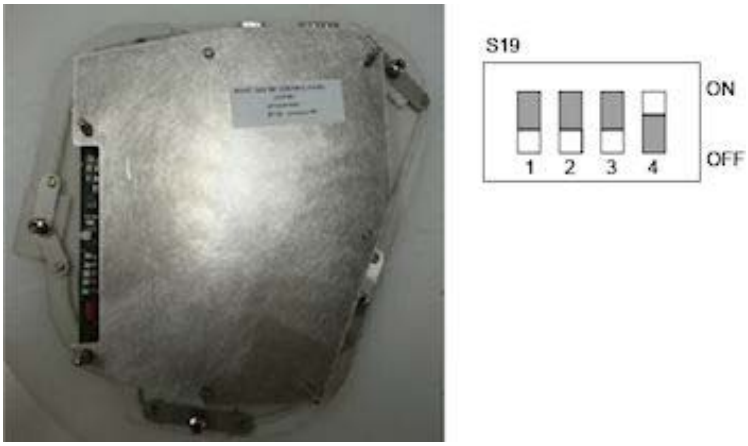


Figure A-24 Dip Switch S19 - 4 Setting

c.) Align the ball studs with their associated receivers and snap into place.

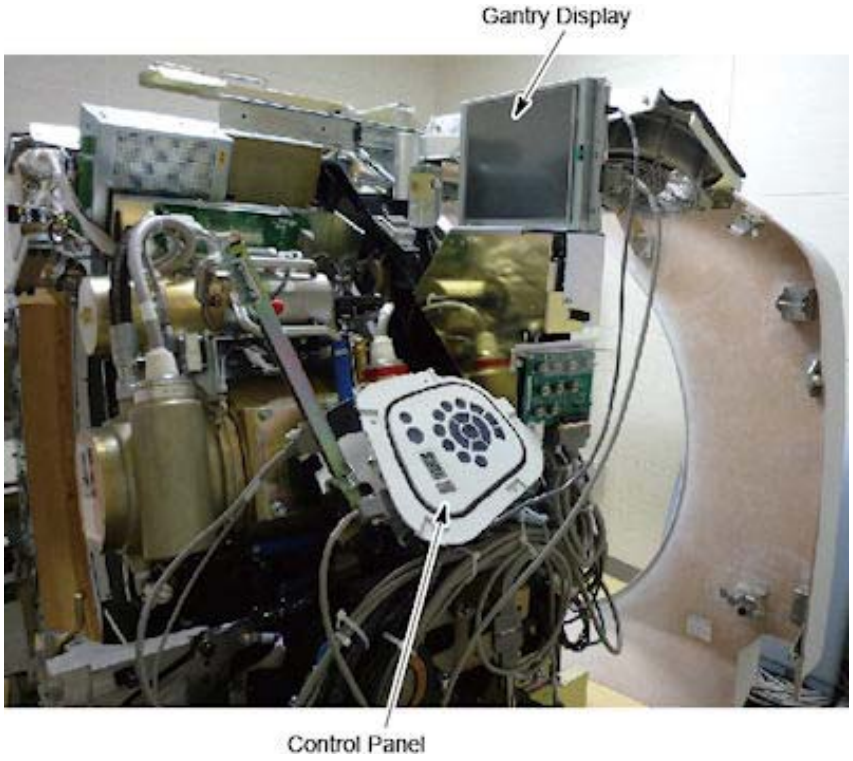


Figure A-25 Control Panel Service Position

d.) Connect FCVR BKHD J1 cable to terminator located on the cantrell arm. See Figure A-26.

Figure A-26 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.

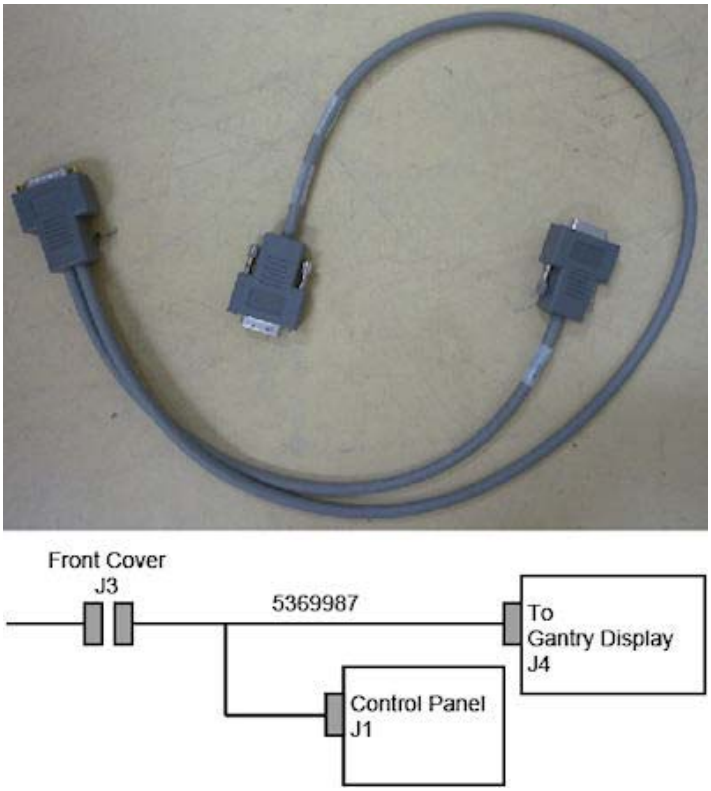


Figure A-27 FRT CVR J3 Cable

1.3.5 Bore Cover Removal

1.) Remove gantry side covers, top covers and Mylar window. Refer to each cover's removal procedure.

2.) Remove gantry rear 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-28 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-29)

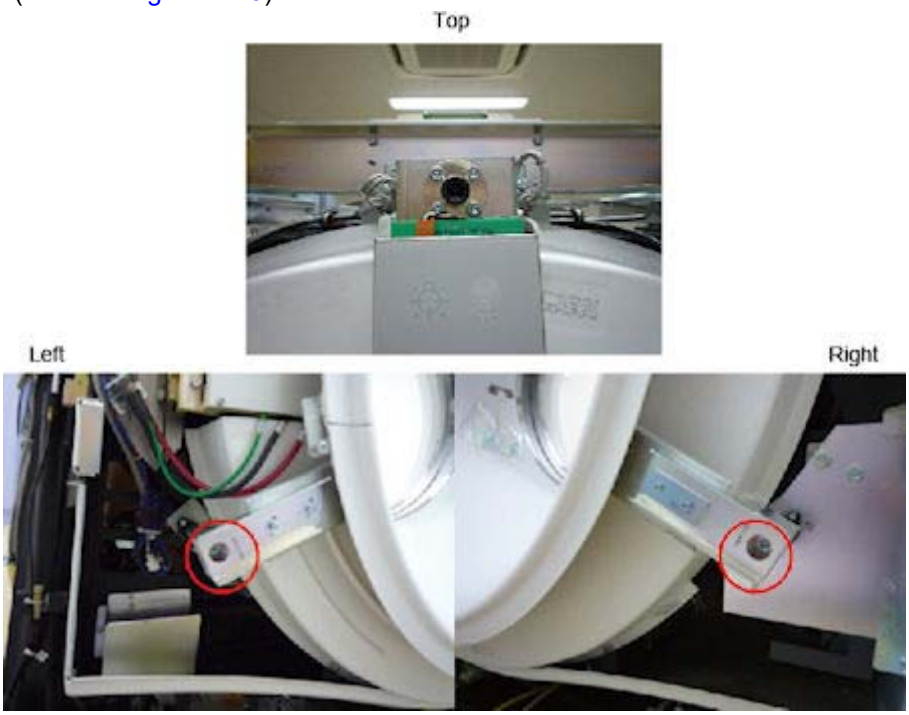


Figure A-29 Screws of Bore Cover

5.) Pull up safety pin small knob on the bore cover top bracket and rotate 1/4 turn to keep the safety pin disengaged.

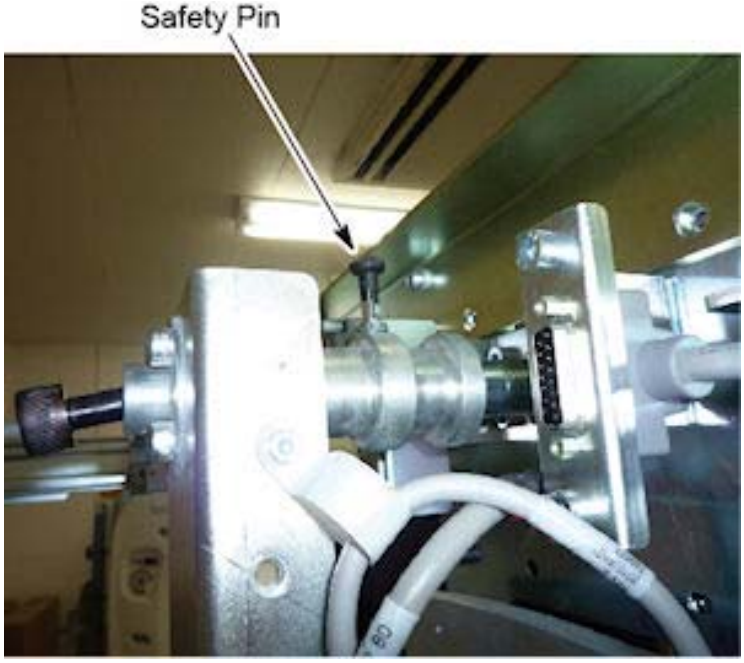


Figure A-30 Safety Pin

6.) With two persons, pull out the bore cover from the gantry stationary brackets and place it on the floor.

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.**

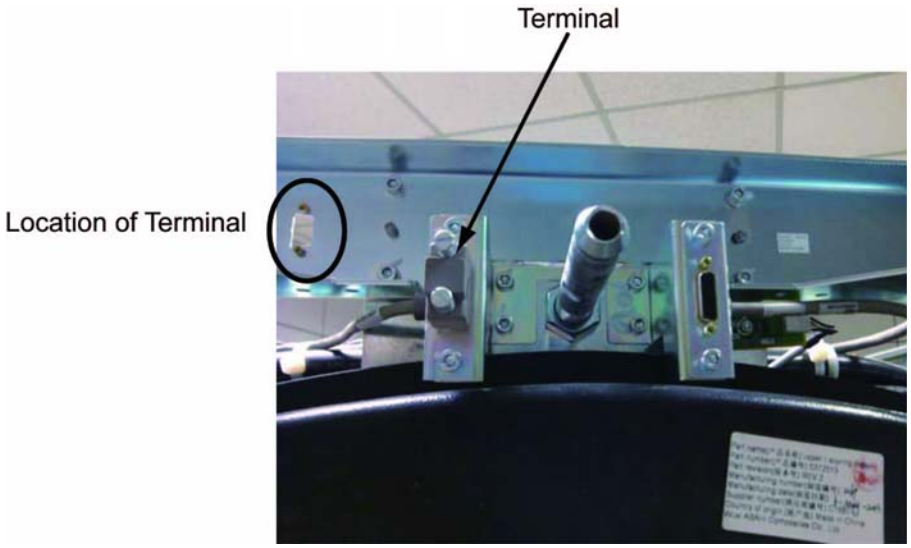


Figure A-31 Location of Terminal

1.3.6 Gantry Rear Cover

Sliding 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-32 Rear Cover Unlatch

3.) Slide out the rear cover by pulling the cover backward.

Figure A-33 Rear Cover

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.
   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.

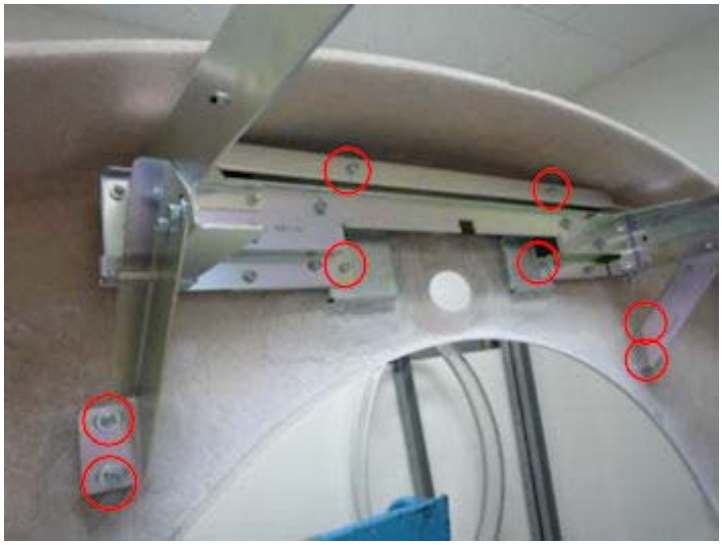


Figure A-34 8 Screws of Rear Cover

Figure A-35 Removed Rear Cover

3.) Move cover away from gantry as needed.

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Appendix B
Pictorial Representation of Required Tools

Use the following guide as a reference, if you are unsure of a tool listed in Section 2.2, on page 25.

Table B-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.

Table B-1 Required Tools (Continued)

TOOL NAME	PICTURE	EXAMPLE PART NUMBER*
Drill		Sears Industrial: $^{3}/_{8}$" or $^{1}/_{2}$" (9-27859)
Drill Adapter		Sears Industrial: 3" X $^{3}/_{8}$" (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 ½" (9-44133)
Gloves		Sears Industrial: Large (9-40502)
Hammer Drill		Sears Industrial: ½" (9-27205)
Hex Bit Set		Sears Industrial: ¼" (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 B-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.

Table B-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 C
Operating Table Installation and Adjustment

Section 1.0
Smart Workspace Table Assembly and Adjustment

This section describe the Smart Workspace table assembly and adjustment procedure

1.) Remove all the transportation packaging from the Smart Workspace 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.

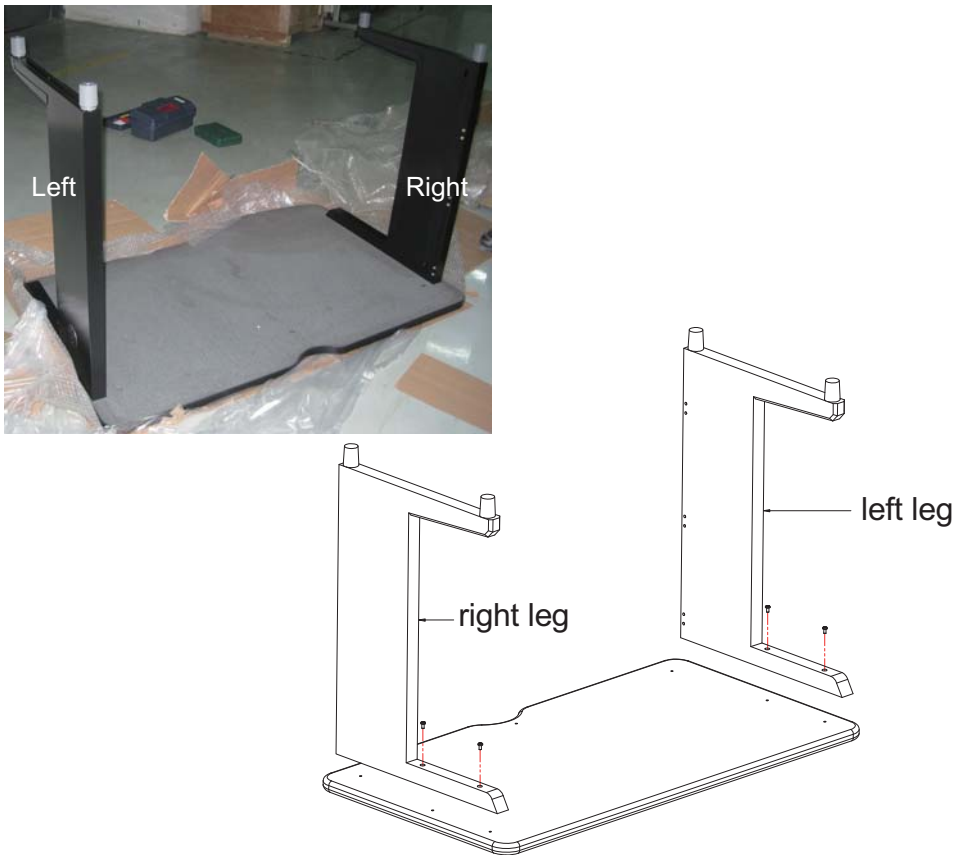

Figure C-1 Table Legs Installation

3.) Prepare crossbar and two beams.

Figure C-2 Cross and Beams

4.) Install the upper crossbar by screwing seven screws, three screws for tabletop, four screws for left and right legs.

Figure C-3 Crossbar Installation

5.) Install two beams to the left and right legs as shown in Figure C-4. Note to keep all screws loose.

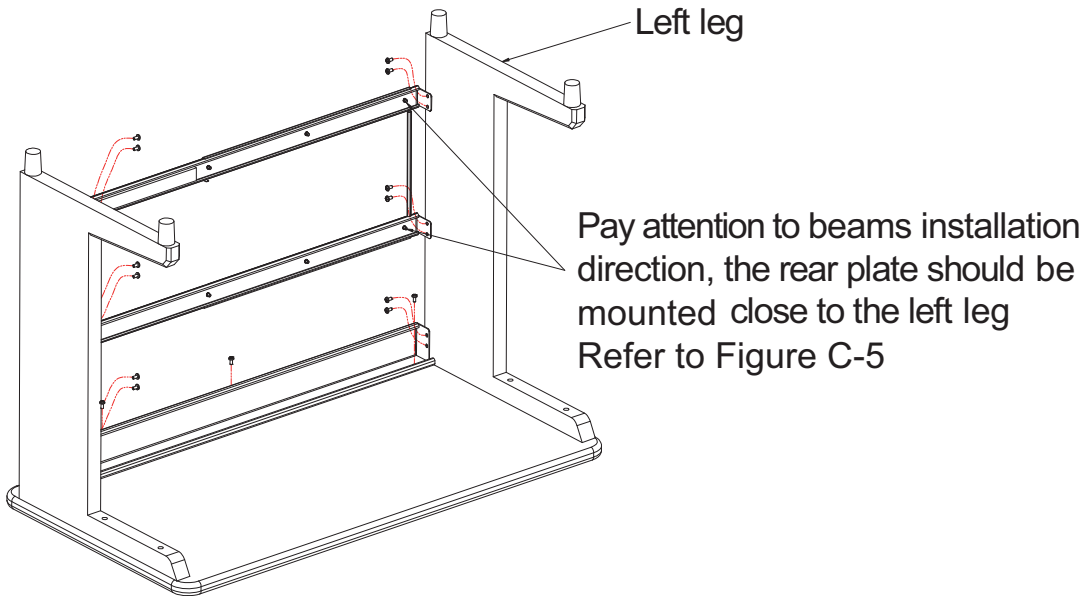

Figure C-4 Beams Installation

6.) Mount the rear plate on two beams by screwing 6 screws.

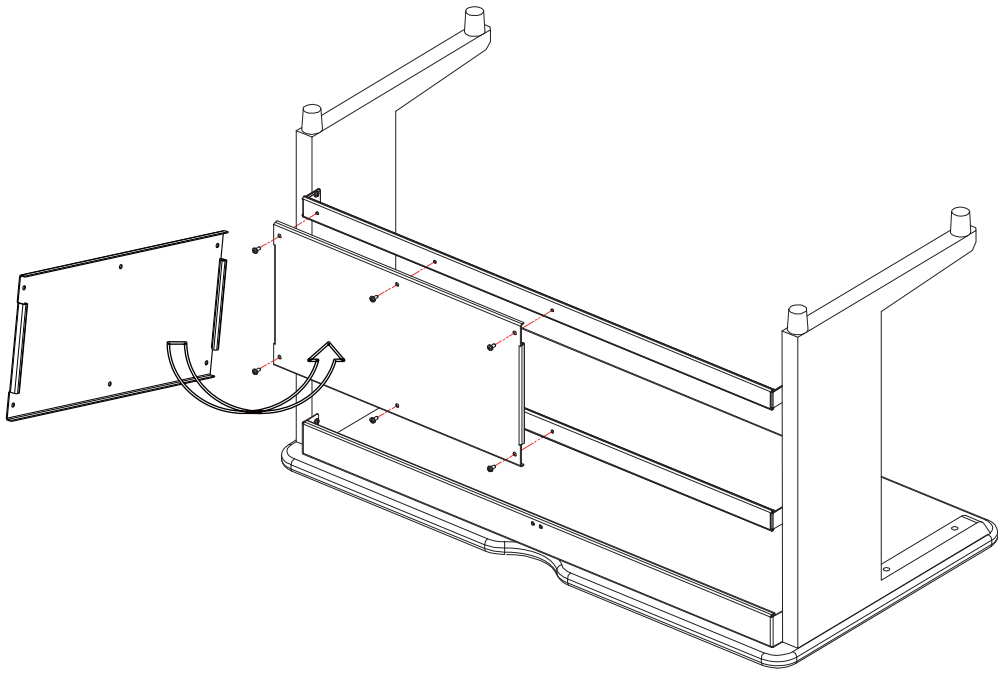

Figure C-5 Rear Plate Installation

7.) Tighten all screws.

8.) Stick EVA A on the teams and EVA B on the right leg as shown in Figure C-6.

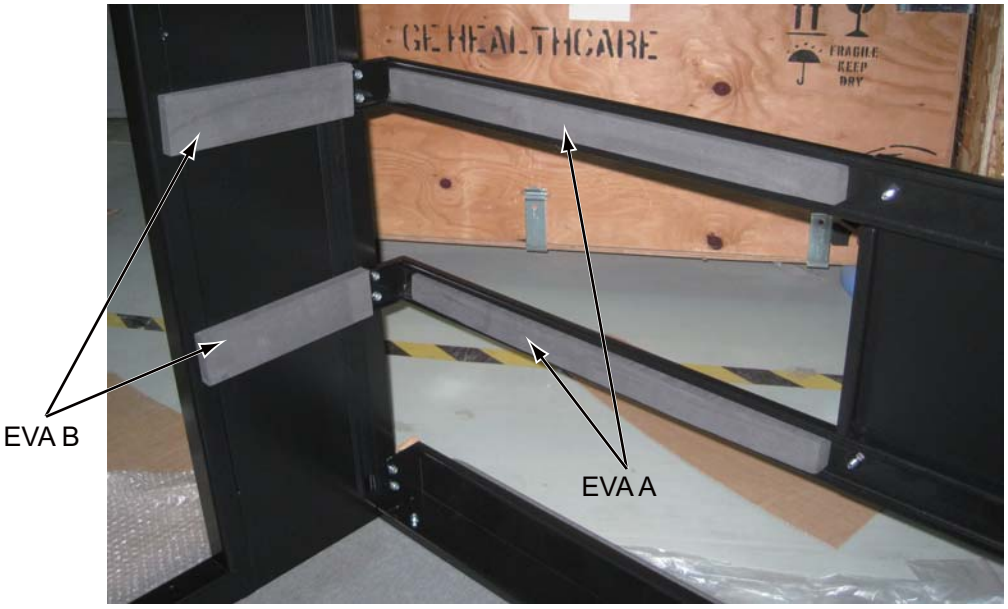

Figure C-6 EVA Attaching

9.) Overturn the table, then place monitors and route cables to the table.

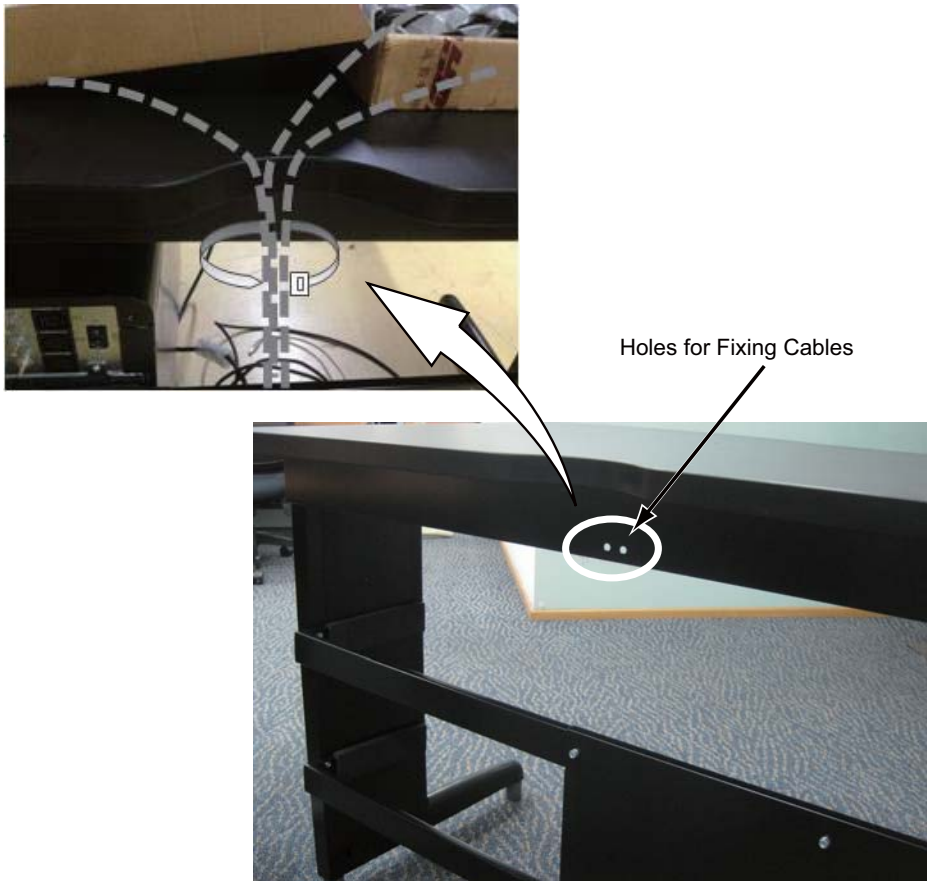

Figure C-7 Route cables to the table

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