Discovery CT590 RT
Optima CT580
Discovery RT

Installation Manual
Book 1 of 2: Mechanical Installation

OPERATING DOCUMENTATION

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Rev 23
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Book 1 of 2: Mechanical Installation

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Effectivity

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

- Discovery CT590 RT
- Optima CT580
- Discovery RT

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。 • 如果客户的维修服务人员需要非英文版本，则客户需自行提供翻译服务。 • 未详细阅读和完全理解本维修手册之前，不得进行维修。 • 忽略本警告可能对维修服务人员、操作人员或患者造成电击、机械伤害或其他形式的伤害。
警告 (ZH-HK)	本服務手冊僅提供英文版本。 • 倘若客戶的服務供應商需要英文以外之服務手冊，客戶有責任提供翻譯服務。 • 除非已參閱本服務手冊及明白其內容，否則切勿嘗試維修設備。 • 不遵從本警告或會令服務供應商、網絡供應商或病人受到觸電、機械性或其他的危險。
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 .
BRDINJUMS (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. • Zanemarivanje ovog upozorenja može dovesti do povređivanja servisera, rukovaoca ili pacijenta usled strujnog udara ili mehaničkih i drugih opasnosti.
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.
DIKKAT (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 GE 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 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. GE 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 GE, 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.

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 GEMS PQR Process to report all omissions, errors, and defects in this publication.

Revision History

Revision	Date	Reason for change
23	11/29/21	**Chapter 1:** • Add System Installation-Alignment Tool 5824714. • Add OpenOC Z8G4 Host Computer information. • Add new anchoring 5874830-2 for Gantry and Table, based on SN2632323 **Chapter 2:** • Add OpenOC Z8G4 Host Computer information. **Chapter 4:** • Add Section for alarm tape attaching, based on SN2592906. **Chapter 5:** • Add note for option installation without DVD. • Update distance between External Axial and Internal Axial to 240.0 mm ± 1.0 mm. **Chapter 7:** • Add Z8G4 Host Computer port label. • Add RSvP information.
22	10/23/20	**Chapter 1:** • Add Installation-Alignment Tool information. • Update PDU contactor information. • Update Console and PDU seismic information. **Chapter 2:** • Update Console interconnect and PC port label for Z840 • Add Optional Long Cable information. • Update PDU contactor information
21	12/07/18	**Importation Precautions** Update Damage In Transportation. **Chapter 1:** • Add OpenOC16 Console packaging removal and seismic installation information. **Chapter 2:** • Add OpenOC16 Console connections. **Chapter 5:** • Update figures for system config screen to add Security button. • Add figure for OpenOC16 Console Boot-up Flow Chart. **Chapter 7:** • Update figures for system config screen to add Security button.
20	08/16/17	**Chapter 1:** • Add 5/8" Drill Bushing 5315833-2 for 650lb Table. **Chapter 2:** • Update Console Connection according to design input.

Revision	Date	Reason for change
19	03/01/17	**Chapter 1:** • Delete blue cradle handle from table color kit, and update section 4.15 title to Cradle Lable Replacement. • Update section 9.7 to Console Cover Installation. **Chapter 2:** • Add Z840 information in NIO16 Console connections. **Chapter 5:** • Update OC Reconfig information in Section 2.6. • Add new sections for Data Privacy Configuration and Initial Setup of EA3 Administrator Account. • Add boot-up flow chart for Z840 in Section 2.10. **Chapter 7:** • Add network connections for Z840.
18	05/11/16	**Chapter 2, Section 5.0** • Update Z800 mouse information, from USB mouse to PS2 mouse. • Add keyboard overlay attaching information. • Update GSCB cable connections. • Add PMT-22 media tower.
17	12/07/15	Add Product Name for Discovery RT. **Chapter 1:** Update Anchor information according to DOC1687529. **Chapter 3:** Update Gantry LV Power Pan test points in Table 3-2. **Chapter 6:** Add Section 5.0 RTP (Radiotherapy Treatment Planning) Alignment Test Procedure.
16	06/02/15	**Chapter 1:** Section 4.15: Added section 4.15 for Cradle Handle Replacement Section 4.16.3: Added new anchor information
15	10/10/14	**Chapter 2:** Section 2.0: Added Long and short cable kit for new power pan on Table 2-3 Section 7.0: Added Simplified Power Pan Connection Information **Chapter 3:** Section 1.0: Added Simplified Power Pan Figure 3-2 **Chapter 8:** Section 1.0: Deleted leakage check section, Enclosure Leakage and System Chassis Leakage Test refer to service methods **Functional Check** chapter.
14	02/14/14	**Chapter 6:** Added Section 6.5.1 for Image Performance Verification Methods Selection Added Section 6.5.2 for Image Performance Verification (without QA2 Protocol)
13	11/04/13	**Chapter 2:** Section 4.3.2: Updated command before 11BW46.3 SP2.2 Installation

Revision	Date	Reason for change
12	10/22/13	**Chapter 2:** Section 4.3.1: Added Connecting LCD monitor with FX1800 Graphic card on TIO console Section 4.7: Updated Figure 2-15 TIO OC Interconnect with FX1800 Graphic Card Section 5.4: Added Figure 2-26 NIO OC Interconnect with FX1800 Graphic Card
11	09/16/13	**Chapter 1:** Section 8.0: Corrected TS1 connection on Table 1-4 **Appendix B:** Added Section 2.0 for Aurora Table Assembly and Adjustment procedure
10	06/26/13	**Chapter 2:** Section 4.0: Added TIO USB Connector Location with FX1800 graphic card Section 5.2 PMT-20 Phase in Section 5.6 Added new AC BOX (5412524-2) information **Chapter 7:** Section 6.0 Added Declaring Remote Hosts on the CT System on SUSE system
9	03/15/13	Change table name from "**GT650lbs to High capacity table**" on whole manual according to RA requirements
8	11/19/12	**Chapter 2:** Updated Section 5.0 NIO16 Console Connections Section 9.0: Updated Figure 2-27 PDU Cable Connections - Front Updated Figure 2-29 Circuit Breaker Panel Updated section 9.1.2 Panel - Circuit Breakers Updated Table 2-15 Panel Circuit Breaker Descriptions Updated section 9.1.6 Gantry & Console Power Connections (120V) Updated Figure 2-33 Gantry & Console Power Connections **Appendix B:** Updated Appendix B FWS Assembly and Adjustment **Chapter 6**: Section 6.0: Updated section 6.5 20cm QA Phantom Image Series Image Performance Verification
7	02/23/12	**Chapter 2:** Section 5.0: Updated 5.1 GSCB, Keyboard, Trackball & Mouse Installation Section 5.3: Updated Connecting the LCD Monitor **Chapter 5:** Section 1.0: Updated Figure 5-8 GSCB Emergency Stop Button on NIO16 Console for IEC3 requirements Section 4.0: Updated 4.4.1 Check And Install System Warning Labels for IEC3 requirements Updated Figure 5-25 GSCB Volume Controls on NIO16 Console for IEC3 requirements

Revision	Date	Reason for change
6	11/08/11	The following changes are from SPR HCSDM00107061 **Chapter 2:** Section1.2: Updated Table 2-3 System Interconnect Cables Section 5.2: Updated Figure 2-15 Media Tower Connections Updated Connecting the Media Tower Section 5.3: Updated Connecting the LCD Monitor **Chapter 5:** Section 2.8: Updated Save System State
5	07/14/11	**Chapter 1:** Section 4.15: Delete the GT650lbs table bushing drill Section 4.17: Update Figure 1-42 Typical Floor Anchor **Chapter 2:** Add the Section 5.0 for NIO16 console connection
4	12/03/10	**Chapter 2:** Section 4.2: Added new Media Tower connection
3	08/26/10	**Chapter 1:** Section 9.6: Added TIO power switch adjustment **Chapter 5:** Section 4.10.4: Updated T/G interference values **Chapter 6:** Change the Air Ratio Cal operation before any scan Section 6.4: Updated scan protocol when using 48cm phantom
2	04/13/10	Changed the whole Document Title due to 8 slices phase in **Chapter 2:** Section 4.2: Delete the MOD Option Section 4.8: Updated TIO Interconnect diagram per ECR 2100064
1	12/18/09	Initial Release.

Book 1 TOC

Table of Contents: Book 1

Section 4.0
Install and Level Gantry/Table 35

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Preface
Publication Conventions

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

Section 1.0
Safety & Hazard Information

1.1 Text and Character Representation

Within this publication, different paragraph and character styles have been used to 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 that have been adapted form GEMS' global document standard (2119696-100). They include paragraph prefixes and modified text styles.

CAUTION
Pinch Points
Loss of Data
Sharp Objects

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

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

DANGER
EXCESSIVE VOLTAGE
CRUSH POINT

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

- **ELECTROCUTION**
- **CRUSHING**
- **RADIATION**

WARNING
ROTATING EQUIPMENT
BARE WIRES

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

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

NOTICE
Equipment Damage Possible

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

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

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

1.2 Graphical Representation

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

ELECTRICAL

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

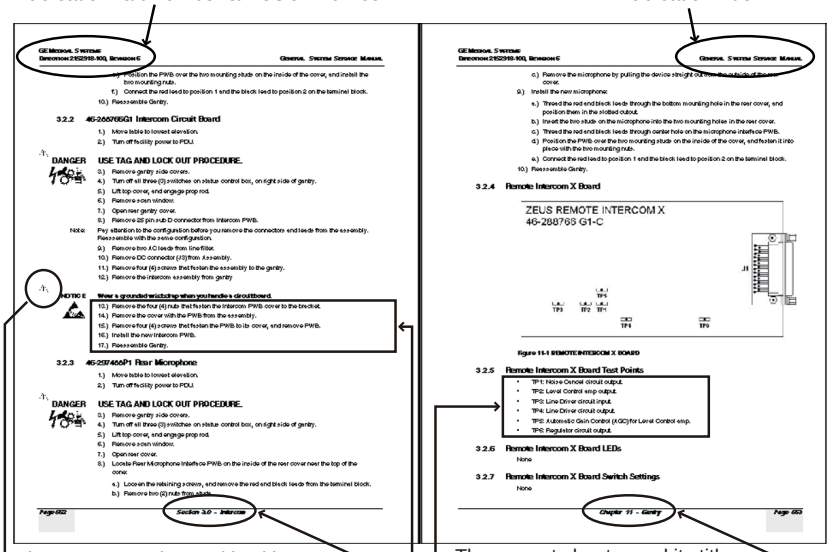
Purpose: Introduces and provides meaning as to the information contained within the chapter, section or subsection, such as used at the beginning this chapter for example.

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

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

- **Record data collected from the procedures in this chapter into Form e4879 when directed.**
- **Only use the Installation manual that existed in SIMS content viewer. Any other revisions of this manual may not exactly match your system.**

Section 1.0
Installer/FE Notices

1.1 General Safety Guidelines

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

1.2 Shipping, Warehouse, and Transportation Warning

- This gantry is designed to be moved using the shipping dollies and should not be lifted or moved using a lift truck under the gantry frame.
- Do not hoist gantry or table using dollies.

1.3 International Shipments

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

1.4 On Site Warning (Mechanical Installation Team)

This system requires a gantry bearing gap inspection *before* electrical calibration is started. See Gantry Bearing Gap Inspection, on page 43.

1.5 Service Actions

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

Section 2.0 Introduction

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

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

2.1 Floor and Room Preparation

2.1.1 Preparation

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

The Discovery and Optima RT system has a total floor load of approximately 3119 kg (6869 lbs). About 2561 kg (5642 lbs), including patient, is concentrated in the table-gantry assembly. Refer to the *Pre-installation Manual* for more information.

2.1.2 Flooring

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

Limitations include:

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

If you have to remove the gantry covers in order to move the gantry into the room, refer to Appendix A, for the cover removal procedure. Please read the caution statement on page 183 before removing the gantry covers.

2.2 Overview

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

The process you will be following is:

1.) Use the room-layout template to determine the general position of the gantry and table.
2.) Move the gantry into position.
3.) Level gantry.
4.) Use the laser tool to position the table relative to the gantry.
5.) Level the table to the gantry, and anchor the system.
6.) Complete the mechanical installation.

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

2.3 Pre-Installation Template

Always use the room-layout template (in two pieces) during installation. The gantry and table will not be properly aligned if existing holes are used. The template shows the location of the gantry and table anchor holes.

This Room Layout Template (5164728) is shipped with the system. It may also be ordered via the Web, from Coakley-Tech.

If system is shipped without the room-layout template, you can use the system installation-alignment tool (5824714) to determine equipment layout and anchoring locations, it is ordered via the web GEMS BUY, from QZMX.

2.4 Required Common Tools and Supplies

The following tools and supplies are required for installation of the scanner.

WRENCHES

- Standard and Metric combination wrench sets
- Standard and Metric Hex Key (Allen wrench) sets
- ½" , 3/8" and 5/8” (for High capacity table) drive torque wrench: 0-100 N-m (0-100 ft.-lb.) Must be calibrated yearly.

SOCKETS AND EXTENSIONS

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

SCREW DRIVERS

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

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

DRILL BITS

- ½" masonry bit, 5/8" masonry bit (for High capacity table), min. 8" long USA – 18" optional (for rear table hole)
- 3" (76mm) hole saw with 1/4" (6mm) masonry bit (to remove flooring)

POWER TOOLS

- 3/8” or ½" drill, cordless or electric
- Reciprocating Saw (Sawzall or equivalent) and assorted blades.
- Hammer Drill & BIt (8" min, 12" max)
- Sears 17740 Shop vacuum or equivalent, with “**HEPA**” or dry wall dust filter (Sears part number 17918) or equivalent
- 25’ Extension power cords
- 4 1/2" grinder with cut off wheel

HAND TOOLS

- Ball-Peen Hammer (1lb or 2lb)
- Tongue & Groove Pliers (large)
- Cable cutters (35-052, IDEAL)
- Framing Square (e.g., Empire 16" x 24" aluminum square)
- Diagonal Cutting Pliers, Small
- Large pry bar, 3’
- 4', 2’ & 9" torpedo levels (see Table 1-1: Recommended Levels)
- Laser level (see Table 1-1: Recommended Levels)

Table 1-1 Recommended Levels

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

GE TOOLS (GE SUPPLY)

RT Alignment Kits (p/n 5148193-2).

Or the full alignment tool kit (p/n 5272090-2) for VCT, BSD, RT16, HD.

Note: RT Gantry Laser Bar (p/n 5129589-2 is included in above kit.)

ELECTRICAL TOOLS

- DVM

- Continuity tester

PERSONAL SAFETY EQUIPMENT

- Safety shoes*
- Safety glasses*
- Gloves
- LOTO Kit (supplied)*
- Hearing Protection*
- 6' & 8 ' Step ladder

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

Note: A box labeled Installation Support Kit is shipped with each system. It contains paint, masking tape, cleaners, towels, and other materials needed to install this CT scanner.

Section 3.0
Delivery and Inventory Procedure

3.1 Delivery Procedure

3.1.1 System Transportation - Temperature Extremes

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

Temperature: 0º to +120º F (-18º to +49º C)

Humidity: 20% to 80%

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.

3.1.2 Stored Systems

If your system have been stored for more than three months, you will need to complete a visual inspection, looking for damage due to improper storage. Check for the latest software revisions, options, and component changes. Contact the OLC or CT support central for additional information.

3.1.3 Working with the Mover

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

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

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

3.1.4 Floor Protection

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

3.1.5 Equipment Delivery Route

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

3.1.6 Removing Gantry Dollies and Covers

Refer to Appendix A, for the dolly and cover removal procedures. Please read the caution statement on page 183 before removing the gantry covers.

3.1.7 Check for Shipping Damage

Check for the following damage, which may have occurred during shipping:

- Equipment damage: paint scrapes and cover damage.
- Damage to hospital property: floors, door frames and walls.

If damage is found—or items are missing in shipment—notify the appropriate service personnel:

- For item(s) missing in shipment or short shipped, contact the install specialist to have the item(s) shipped.

- Report damaged items to:
  - (800) 548-3366, Option 6 — Bill Kennedy, or
  - (262) 544-3744 — John Carini, CT Manufacturing, John.Carini@med.ge.com.

  For further details, see DAMAGE IN TRANSPORTATION, on page 9.

3.1.8 A1 Breaker

NOTICE **The site MUST have a main disconnect with Lockout/Tagout capability.**

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

Figure 1-1 Sample A1 Breaker

3.1.9 Installation Support Kits

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

Cleaning supplies must be purchased locally.

3.1.10 Installation Conditions

1.) A Final Site Print is REQUIRED.

2.) The room size must match the print.

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

3.) **Do Not** start the installation process if the site is under construction:

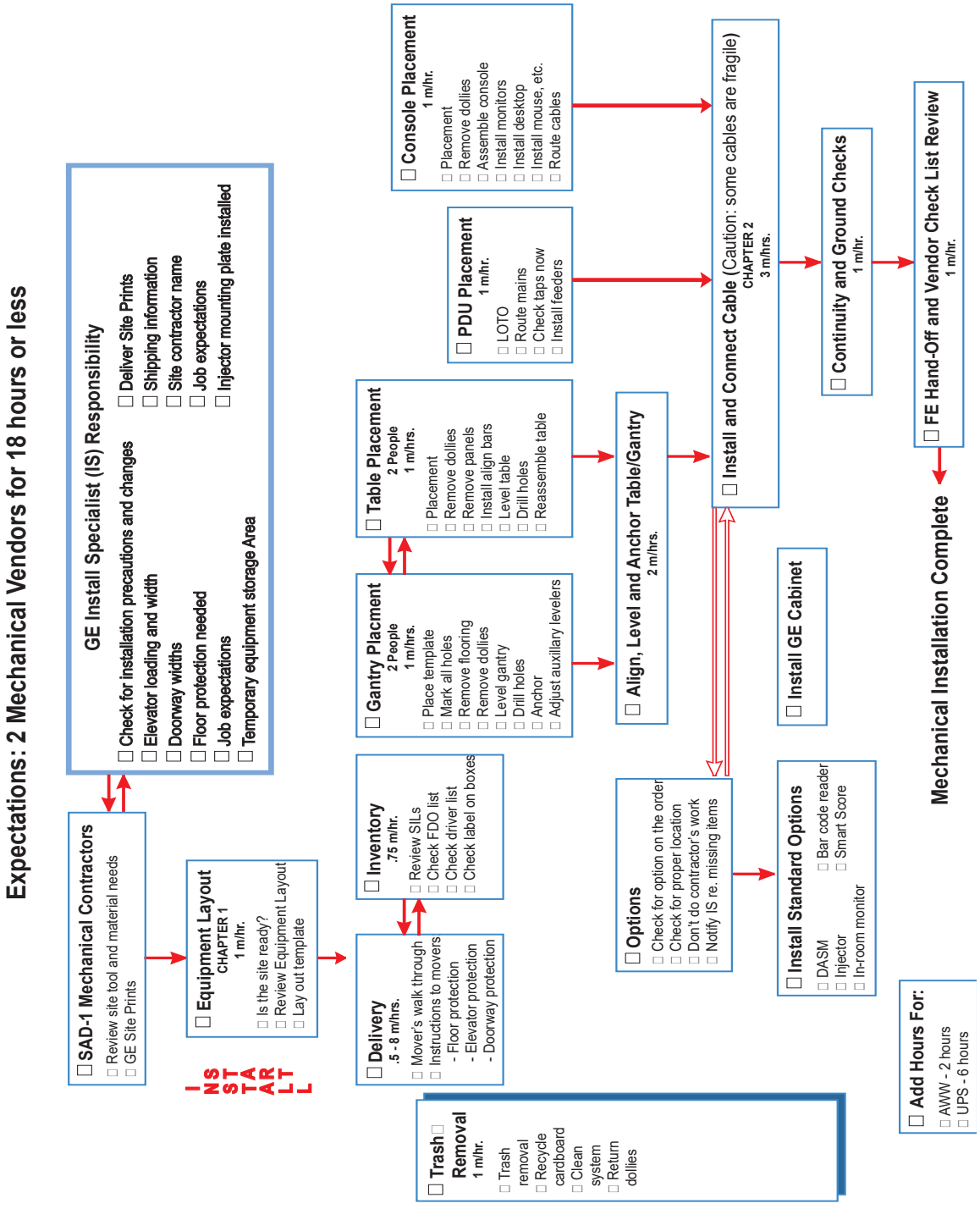
- In the Room
- In the Scan Area

Refer to the *Pre-Installation Manual* for additional details.

4.) A customer Anchoring Plan is required, if there is anything other than a 102 mm (4") minimum concrete floor. GE employees shall only install the anchors supplied with this system.

3.2 Mechanical Block Diagram

Figure 1-2 Mechanical Installation Block Diagram



Section 4.0
Install and Level Gantry/Table

4.1 Lay the Floor Template

The Room Layout Floor-Template (5164728) is shipped with the system. If system is shipped without the floor-template, you can order the System Installation-Alignment Tool (5824714) via the tool pool for Gantry/Table installation and alignment.

You can download ***Common CT Installation and Alignment Procedure (5851435-1EN)*** *from SIMS Content Viewer for details procedure.*

4.1.1 Tools Required

- Standard Install Tool Kit
- Install Support Kit
- GE Site Print
- Installation Manual
- Floor Template for your system
- 4’ Level
- Chalk line
- China marker

4.1.2 Time & Personnel

- 1.0 Hour Labor on site
- 2 Engineers

4.1.3 Safety

CAUTION **Potential for injury**

Gantry Presents a Variety of Mechanical and Electrical Hazards. Use Appropriate Safety Procedures When Working on the System.

4.1.4 Establish the Room Layout

OVERVIEW

Place the main unit of the temperature and humidy tool in the control room and the remote unit in the scan room. Monitor environmental conditions at the installation site by recording the temperature and humidity of each room at the end of each day.

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.

Clean the area. Free the mounting surface 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 china 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. This will be used as a reference when positioning the table.

PROCEDURE

1.) Lay out the two (2) pieces of the floor template. Start with the table template, then place the gantry template over the top of the table template. Align per the GE print.

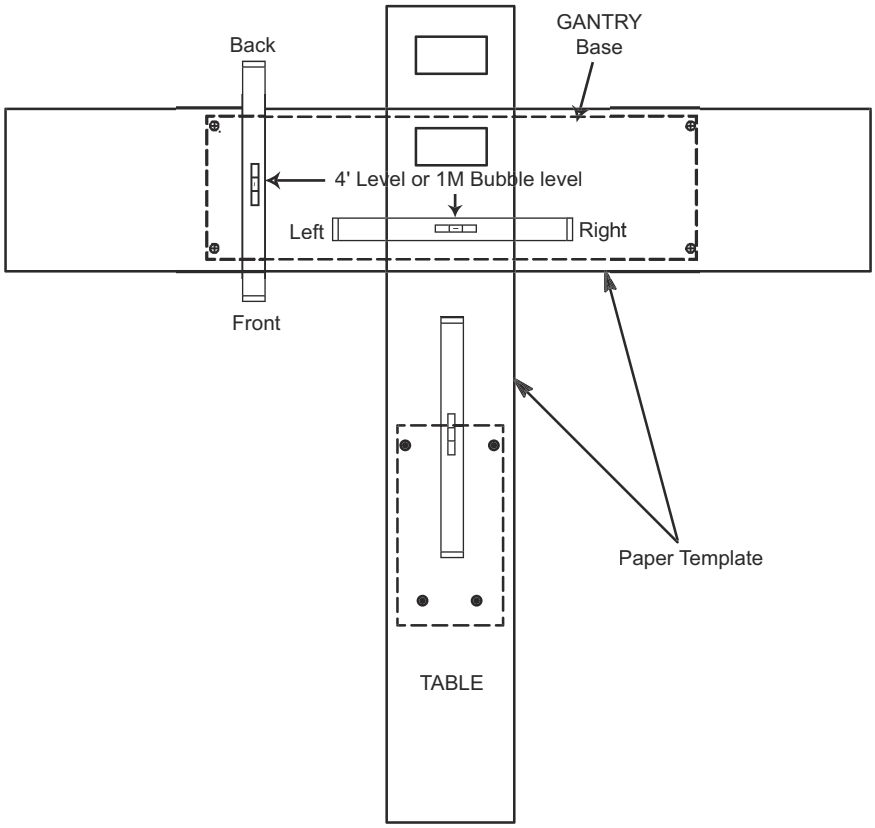
2.) Tape the templates together, making sure that the table and gantry center lines are matched. Then tape the template to the floor.

3.) Recheck the position of the gantry in the room per the GE print. If all is per the GE print, continue. If not, realign per the print.

4.) 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 152 mm (6”) of clearance between any existing floor penetration and the new gantry position.

5.) Check floor levelness, as shown in Figure 1-3, prior to removing this template. The floor must meet the minimum levelness specification: 6 mm (1/4”) over 3 m (10 ft).

Figure 1-3 Check Floor Level



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

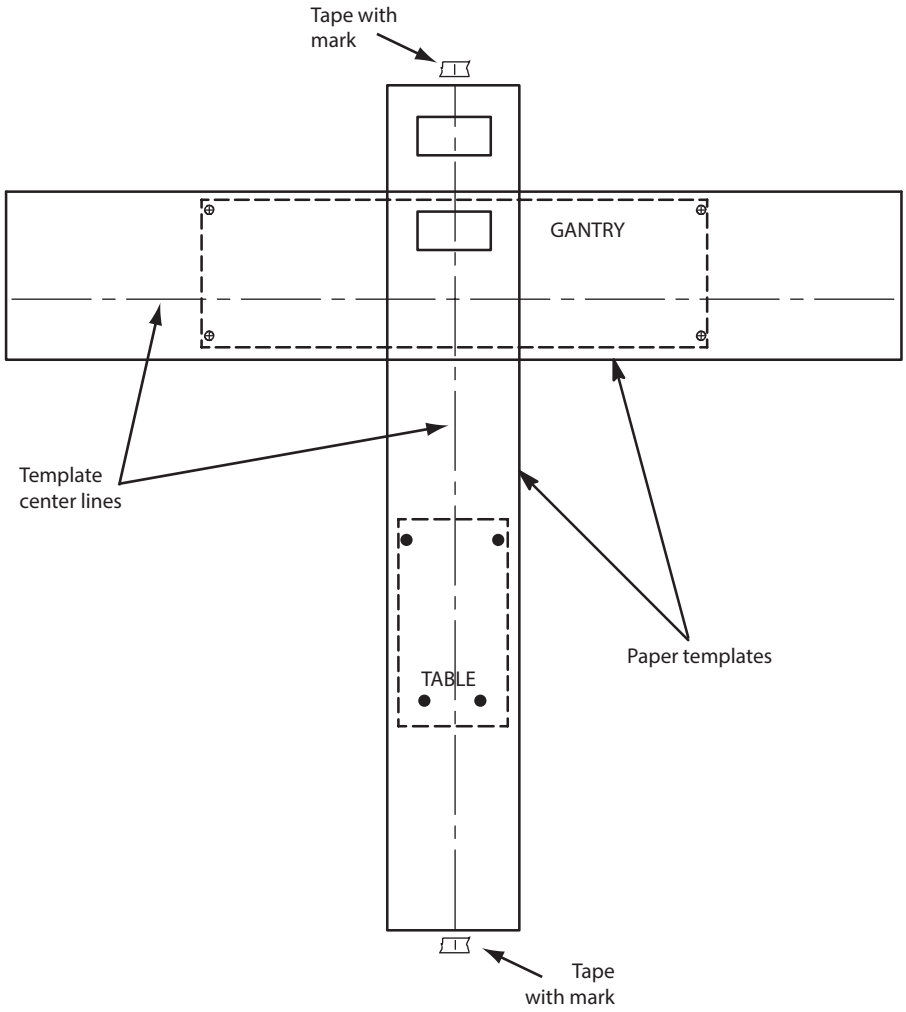
Before you drill or cut any flooring, make sure the appropriate hospital personnel have approved the location of the table/gantry.

Any repositioning must meet all regulatory requirements to be completed.

6.) Check with customer for approval of the gantry/table placement.

7.) Place tape on the floor along the table template center line at both ends of the table template (behind the gantry and at the foot of the table.) Mark the tape to indicate the center line. These marks will be used to snap a chalk line in a later step. See Figure 1-4.

Figure 1-4 Center Line with Marks



8.) Use a center punch to mark hole centers for each of the eight (8) leveling pad/anchor locations per Figure 1-5. However, before moving on to the next step, see Step 10 and its note for an alternative method.

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.

9.) Remove the floor template.

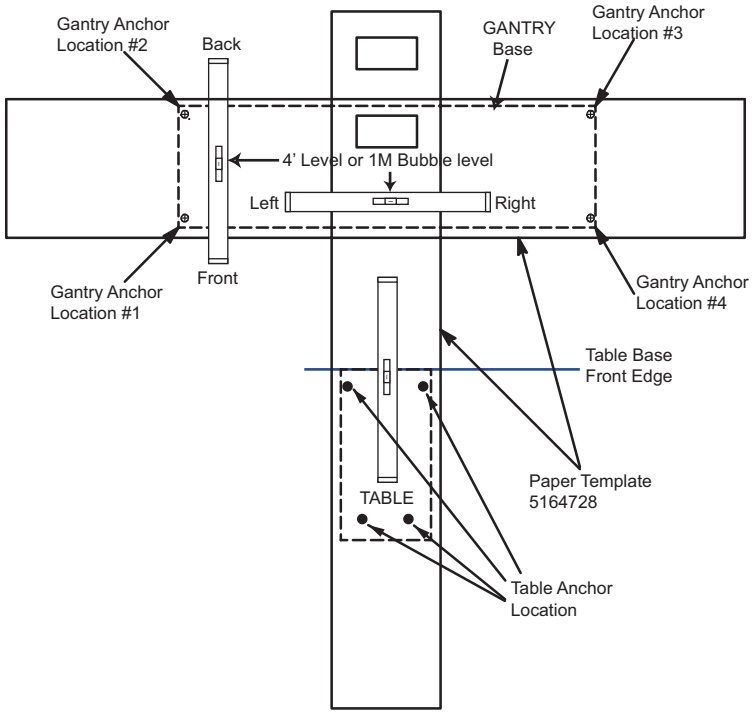
10.) Cut tiles (or other resilient flooring) around all holes punched in the template for the gantry and table.

Note: A fast way to remove flooring is to use a 4” hole saw with a 1/4” masonry bit to cut through the flooring at each leveler pad location.

11.) 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.

NOTICE **All documentation in this manual is based on mounting the table / gantry on a 4" concrete floor only.**

Figure 1-5 Anchor Hole Locations



- Snap a chalk line using the marks that were made on the tape at the ends of the table template.

4.2 Position the Gantry

4.2.1 Gantry Prep - For Access Greater Than 28"

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

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

4.2.2 Gantry Prep - For Access Less Than 28"

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

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

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

Note: Use Floor Protection for this process.

a.) Lower the gantry to the floor so that the gantry is resting on the floor.

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

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

d.) Raise the gantry so that it is once again off of the floor.

4.2.3 Gantry Positioning - All Sites

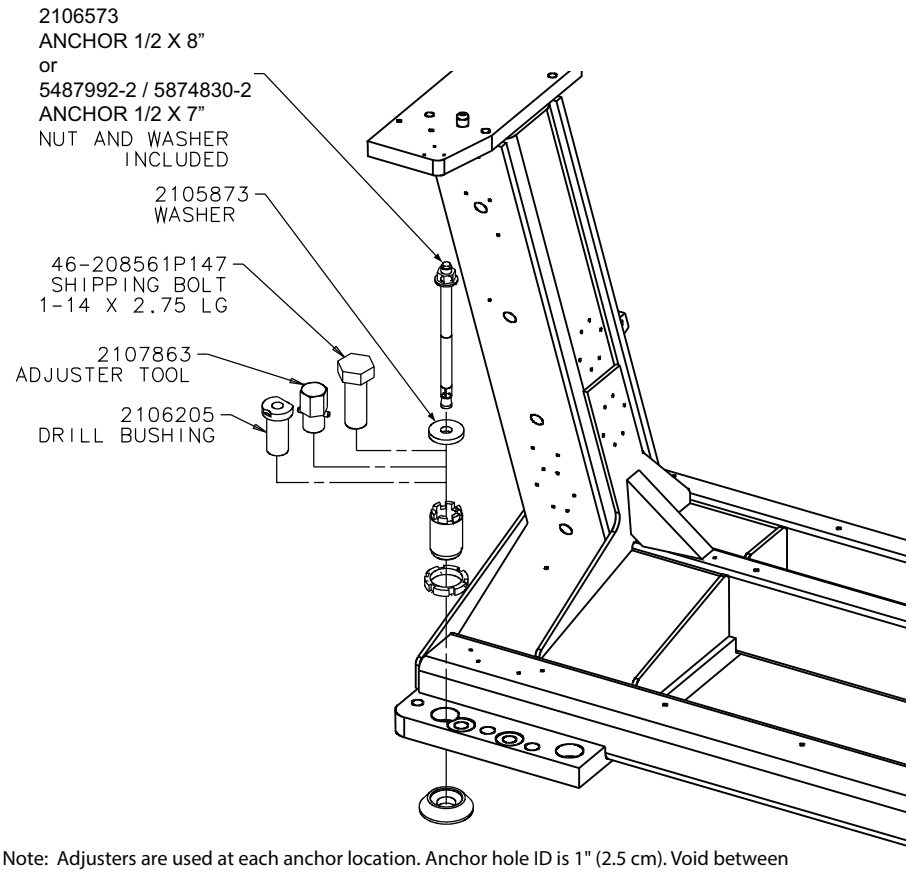
1.) Position the gantry over the floor cutouts appropriately.

a.) Locate the four (4) leveling pads, and position each of them beneath its associated adjuster. A ½" ratchet and 1-½" socket are required to loosen the gantry shipping bolts.

b.) Use the dollies to evenly lower the gantry, until it is just off of the floor (approximately $^{3}/_{4}$" or 20 mm). Use a ½" ratchet to raise and lower the dollies.

c.) Carefully rotate the Gantry into the correct position over cutouts in the floor.

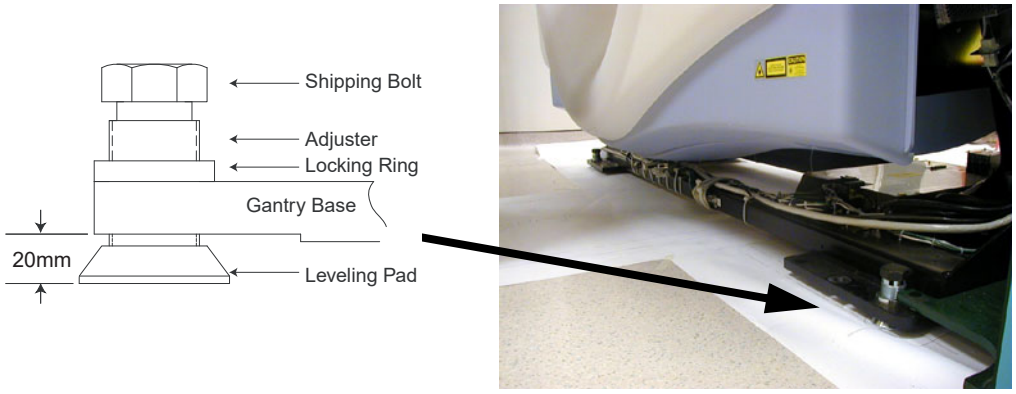
Figure 1-6 Gantry Base Installation Hardware



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

2.) Loosen the locking rings and shipping bolts so you can fine-tune the leveling pads to compensate for slight variations in the floor surface.

Figure 1-7 Gantry and Table Base Leveling Pads (Starting Positions)



3.) Position the gantry so that the adjusters are centered over their respective holes scribed earlier into the floor cutouts.

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

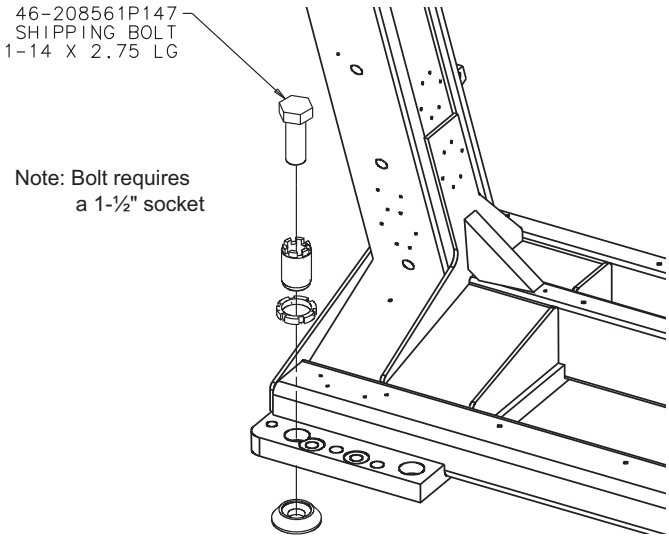
4.) Using a ½" ratchet, gently lower the gantry until it rests on the floor, over the marked areas.

5.) Using a 14mm hex socket, remove the dollies from the gantry by removing the three dolly bolts found at both ends of the gantry (Figure 1-8).

Figure 1-8 Gantry Dolly Bolts

6.) Remove the (4) gantry shipping bolts, using a 1½" socket.

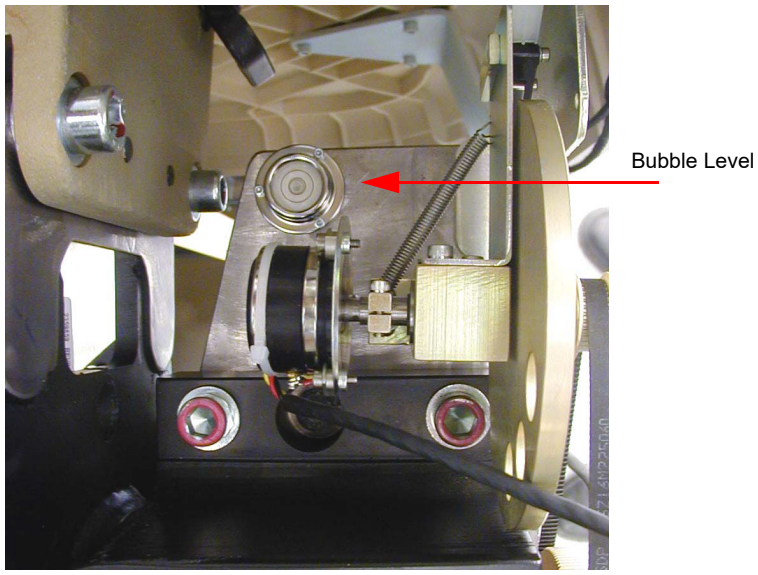
Figure 1-9 Gantry Shipping Bolts



4.3 Level the Gantry

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

Figure 1-10 Gantry Bubble Level



Bubble levels are located on both ends of the gantry stationary base. They're located on the stationary base near a point where the rotating structure pivots mount to the base structure. (See Figure 1-10.) The gantry is properly leveled when the bubble is centered. (See Figure 1-12, on page 42.)

1.) **Remove adjuster #1 lock ring** and only loosen all the other (#2, #3 and #4) adjuster lock rings. This can be done by using a spanner wrench 2110003 (the spanner wrench can be found in the alignment toolkit). Check to make sure auxiliary levelers do not cause interference.

2.) Systematically turn each of the gantry's adjusters (locations 1, 2, 3 and 4 in Figure 1-11 or Figure 1-11) until both bubble levels are centered left to right, and front to back.

- Begin by turning each adjuster no more than 1 turn at a time.
- Use the adjuster tool, $1^{1}/_{8}$" socket, and the ½" drive ratchet to turn each adjuster. (Refer to Figure 1-6, on page 39.)

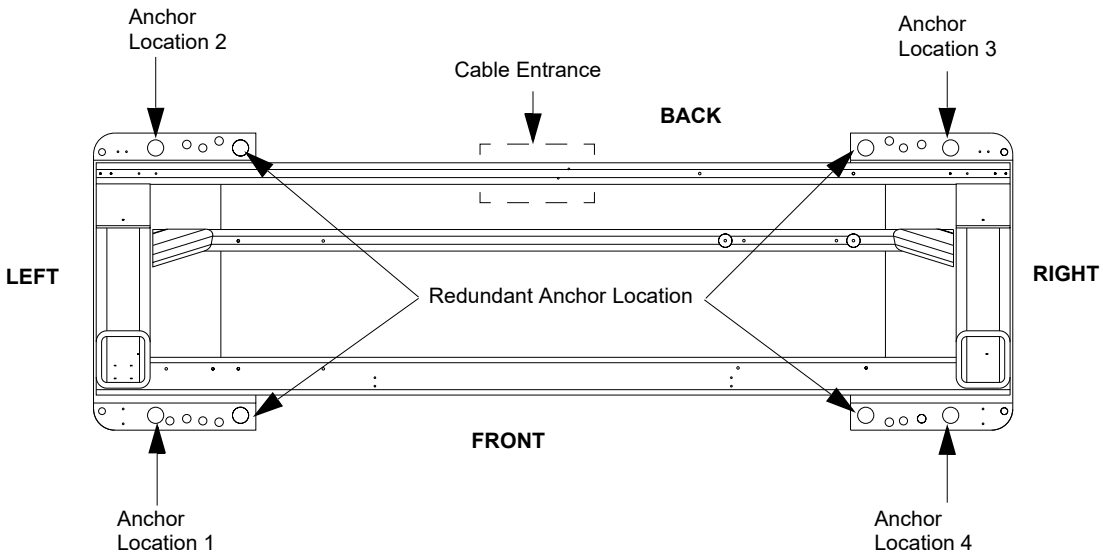
Systematic Procedure for Leveling gantry follows:

1.) Level the left side from front to back by turning adjusters #1 and #2.

2.) Level the right side from front to back by turning adjusters #3 and #4.

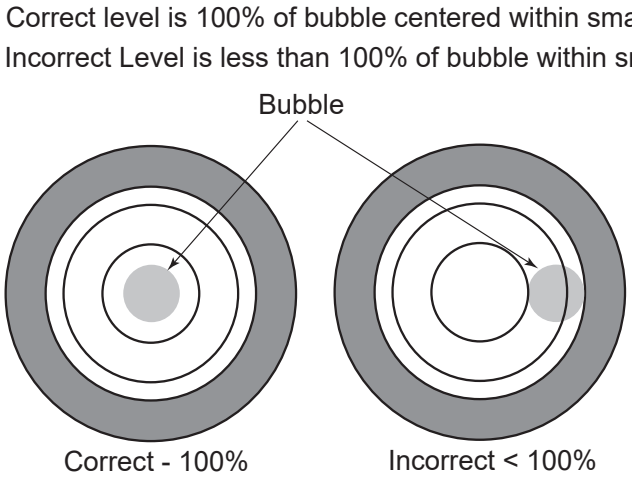
3.) Level the side (right or left) that is higher with respect to the other side. Turn both adjusters on a side equally until that side is level. The side should now also be level.

Figure 1-11 Gantry Base "Adjuster" Locations — Top View



3.) When the bubble levels are centered (Figure 1-12), 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**.

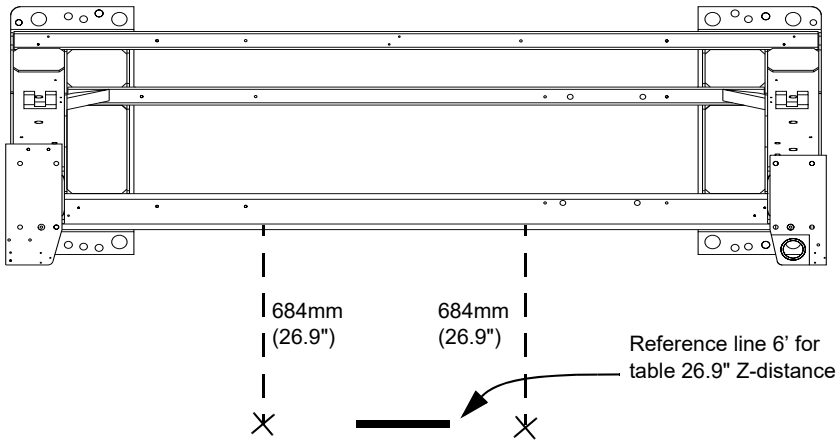
Figure 1-12 Bubble Level Centering



4.) 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 152 mm (6") of distance from any existing floor penetration to the new gantry anchor positions.

5.) Place mark on tape on floor 684 mm (26.9") from center of front rail.

Figure 1-13 Table Base Reference Line and Marks



4.4 Gantry Cover Removal

Remove the scan window and the top and back gantry covers according to the appropriate sections in Appendix A, on page 183.

4.5 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.

4.5.1 Personnel Requirements

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

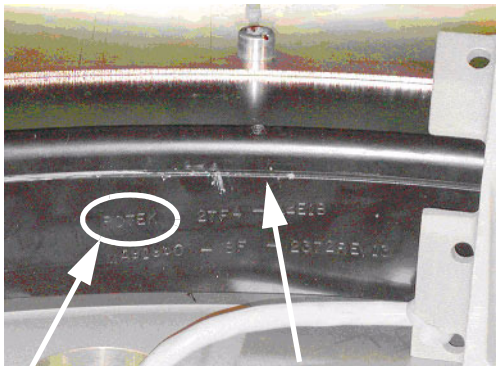
4.5.2 Tools and Test Equipment

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

4.5.3 Damage Indicators

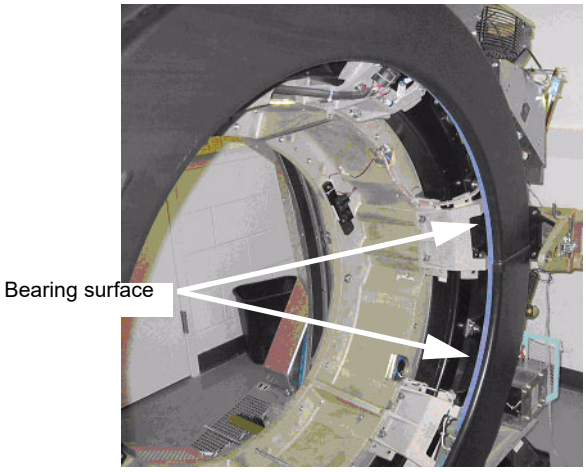
On the inside edge of the black-colored bearing assembly, a mark similar to that shown in Figure 1-14 will be seen, if this is a Rotek bearing.

Figure 1-14 Gantry Bearing - Rotek Label



The mark has a serial number in the same format as:
ROTEK 2TF4-44E1B-MA91960-8F-2372-REV13.
The gap to be inspected is shown in Figure 1-15 next to the serial number.

Figure 1-15 Gantry Bearing

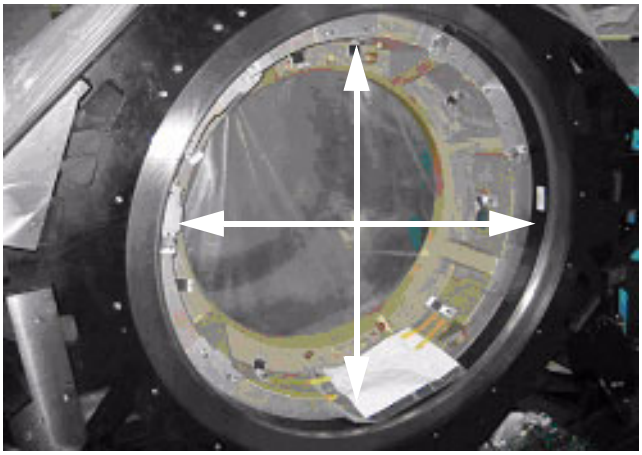


On most systems, a change in the bearing gap does not cause the gantry to make unusual sounds, unless the gap is severe. If the gantry is badly damaged and the gap is severe, it can cause operation issues. Some systems are shipped with shock indicators that must be returned to Milwaukee.
A severe failure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

4.5.4 Procedure

1.) Remove the scan window following the procedure in appendix A, Section 6.0, on page 200
2.) Remove the top and rear gantry covers, following the procedures in Appendix A, Section 2.0, on page 185 and Section 4.0, on page 195
3.) Use a 2.5mm hex wrench as a tool to measure the gap at the positions shown in Figure 1-16. The location of gantry components does not matter. Simply measure four (4) locations 90 degrees apart from each other.

Figure 1-16 Inspection Locations

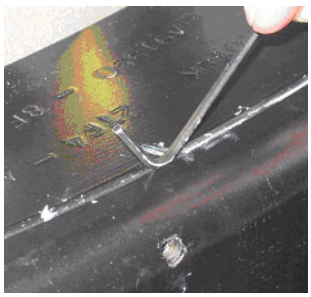


4.) If the 2.5mm hex wrench easily fits without effort in the gap, the gap is out of spec. Figure 1-17 shows a gap that is too large. Figure 1-18 shows a gap that is good. Notice that the hex wrench does not fit in the gap in Figure 1-18 but does in Figure 1-17.

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

Figure 1-17 Gap Too Large

Figure 1-18 Gap Is Good



5.) Replace the top and rear gantry covers, following the procedures in Appendix A, Section 2.0, on page 185and Section 4.0, on page 195.

6.) Replace the scan window, following the procedures in Appendix A, Section 6.0, on page 200.

4.5.5 Finalization - Mechanical Installers

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

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

4.5.6 FE Service Action Required

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

The site FE should:

1.) Open a bearing inspection dispatch.

2.) Follow the inspection procedure described in this section.

3.) Record the bearing inspection results.

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

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

To enter a damaged in shipping claim, go to this web site:

http://egems.med.ge.com/edq/home.jsp

4.5.7 FE Inspection Completion

1.) After the Gantry Bearing Inspection passes, complete the opened service dispatch with the following information:

- Gantry Serial Number
- Gantry Type
- System ID
- Site Name
- Installation date
- Was the Gantry transported to the site in the shipping crate? (Yes/No)
- Was the Gantry lifted or hoisted, were riggers used, or was the Gantry delivered via flatbed wrecker? (Yes/No)
- Number of locations that fail the gap inspection if any: _____

2.) Close the service dispatch.

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

4.6 Install Gantry Alignment Laser and Bracket

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

1.) Rotate the gantry by hand until the collimator face plate is at the 5 o'clock position.

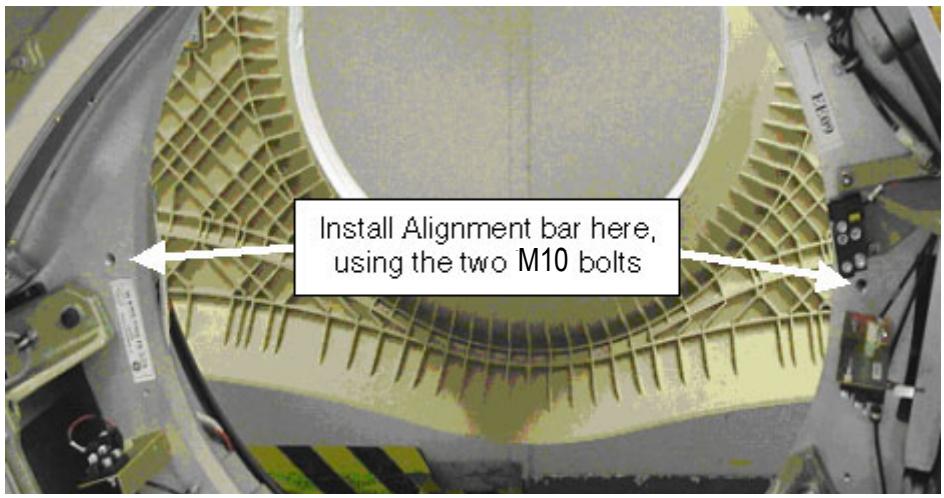
Note: With power OFF, the gantry movement is tight.

DO NOT pin the gantry during this alignment process.

2.) With the top and back gantry covers removed, locate the two M10 bolt holes as shown in Figure 1-19. These bolt holes will be used to attach the laser tool to the gantry.

- The bolts can be installed using a 8mm Allen wrench. Be careful not to bump the alignment light; the mounting space is tight near the alignment light. Tighten until both bolts are snug.
- Do not drop bolts or the bar on the collimator faceplate. Attach the bar as shown in Figure 1-19.
- Use a 9" (minimum) level placed on the attached bar to level the bar by rotating the gantry.

Figure 1-19 Alignment Bar Installation Location



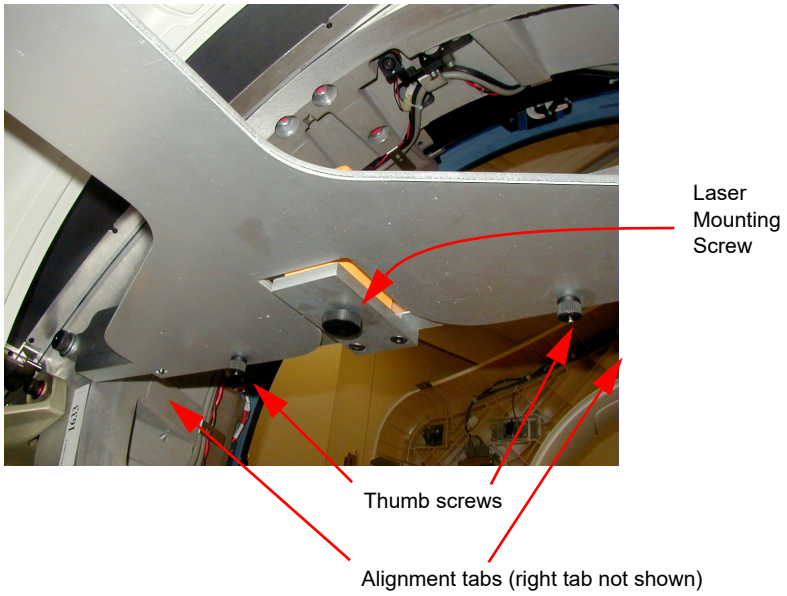
CAUTION **Potential for injury.**

DO NOT look into the laser.

Use appropriate safety procedures when working with lasers.

3.) Attach the laser centering plate onto the laser mounting bar as shown in Figure 1-20. The plate is attached from under the alignment bar using two fixed locators and two thumb screws.

Figure 1-20 Attach Laser Center Plate

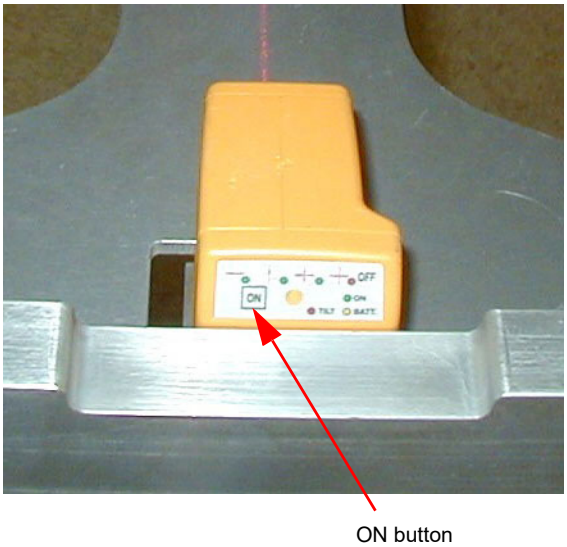


4.) When done, insert the laser and turn on the laser using the controls on the back.

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

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

Figure 1-21 Laser On Button

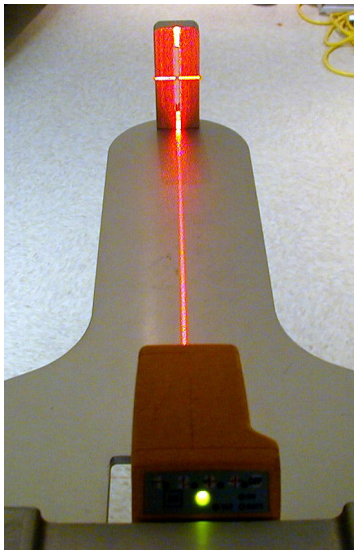


6.) Align the laser by carefully rotating the laser base assembly so that the "I" beam shines through the alignment sight mounted on the end of the alignment plate.

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

7.) Use the locking screw on the bottom of the alignment bar to secure the laser to the bar, as shown in Figure 1-22. When done the laser should fit snugly without moving on the mounting bracket.

Figure 1-22 Laser Centering



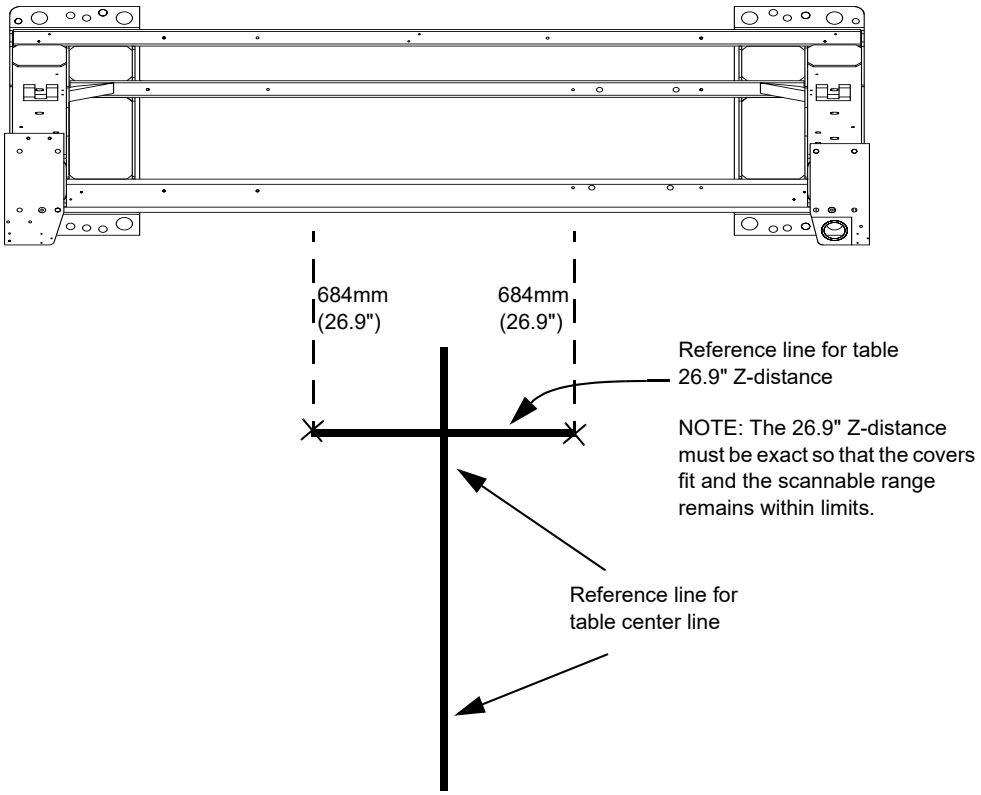
Note: The laser can, but should not, move when tightening. Use caution to prevent any movement. Any movement can result in drilling the table anchor holes in the wrong location.

8.) After the laser is centered, notice that the laser beam also appears on the back wall. Place a piece of masking on the wall at and carefully mark a line on the laser line. This line will later be used in the table alignment. This line is also useful in determining if the laser unit moves during the alignment process.

9.) Remove the alignment centering plate and store in the alignment case.

10.) Using a chalkline, mark a table center line on the floor along the laser light shining on the floor.

Figure 1-23 Table Center Line



11.) Recheck the table-to-gantry reference line for 684mm (± 6mm) [26.9" (± .25")] Z-distance. Refer to Figure 1-23

12.) Turn off the laser but do not remove.

4.7 Table Prep and Set-up

NOTICE **Review the table installation and leveling video for this procedure.**

Tools Required

- Standard Install Tool Kit
- 1-½", 1-¼", ¾" sockets
- 40-41mm (1-5/8") socket
- 10mm and 14mm hex socket bits

Time and Personnel

- 1.5 hour labor on site
- 2 Engineers

SAFETY

CAUTION **Potential for Electric Shock.**

Equipment is Energized.

Follow appropriate safety procedures when working with an energized system.

CAUTION **Potential for Injury.**

Table will tip if not anchored on the dolly.

Make certain that Table is adequately secured to the dolly.

CAUTION **Potential for Injury.**

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

Exercise caution when moving the table on the dolly.

PROCEDURE

CAUTION **Potential for Injury.**

Table will tip if not anchored on the dolly.

Make certain that Table is adequately secured to the dolly.

1.) Remove all the transportation packaging and boxes, except dollies, from the table. (See Figure 1-24.) 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 1-24 Remove Table Packing

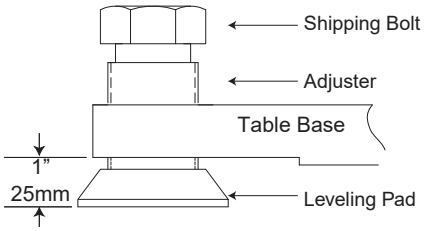
2.) Unpack the items and locate all of the items needed to install the table.

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 25 mm (1"). (See Figure 1-25.)

Figure 1-25 Table Base Leveling Pads (Starting Positions)



5.) Use a 1-5/8" socket and ½" ratchet to loosen the shipping bolt.

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.

Figure 1-26 Adjusters and Lock Rings

Back

Front

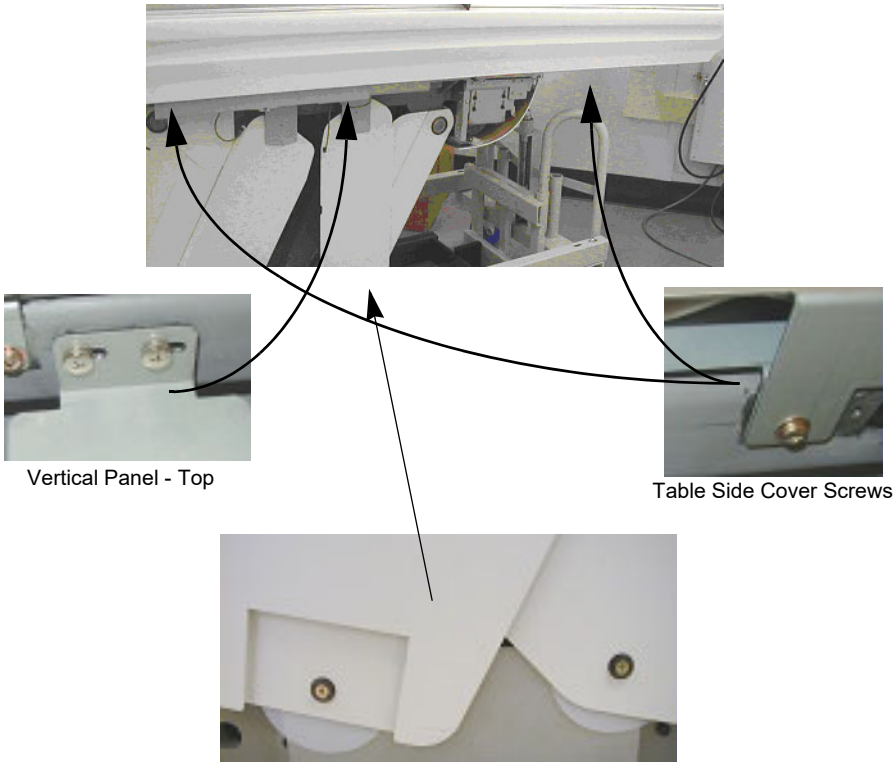
4.8 Table Cover Removal

1.) Remove the table right side cover, as shown in Figure 1-28.

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 1-27 Table Covers



2.) The table is normally shipped with some of the side/vertical panels removed. If installed, remove the four side panels, using a Pozi drive #1 screwdriver.

3.) Carefully lay the side panels on protective padding out of the way.

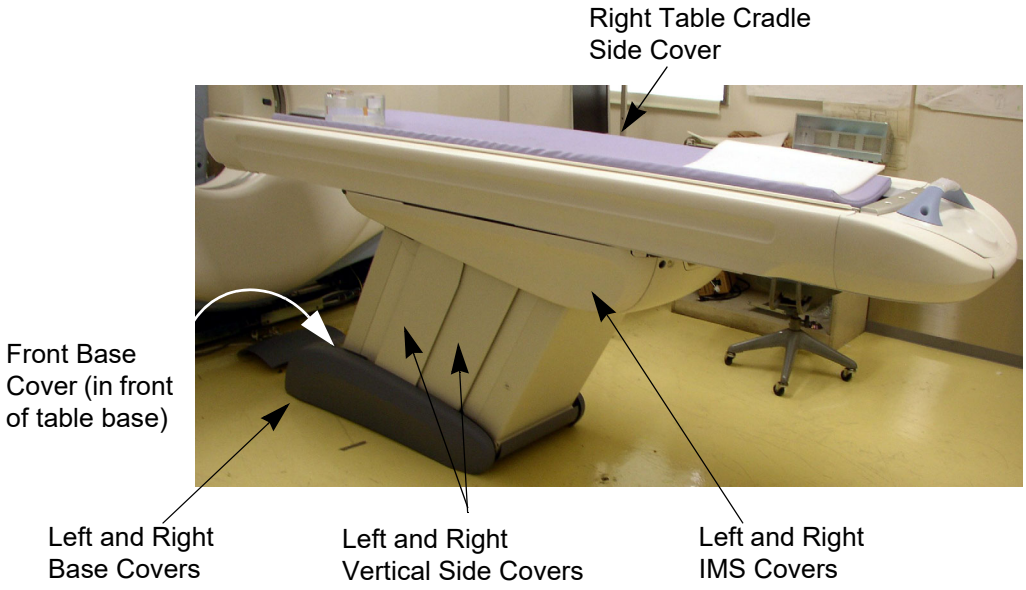
4.) Make sure that all four of the table levelers are on the floor. The table should set on the four levelers with the dollies still installed.

5.) Carefully center the four levelers over the 102 mm (4") floor cutouts.

6.) Check that the front table base center line is on the chalk table center line.

7.) If still present, remove all of the packing materials and the table cradle pad from the table cradle.

Figure 1-28 Table Covers



4.9 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.

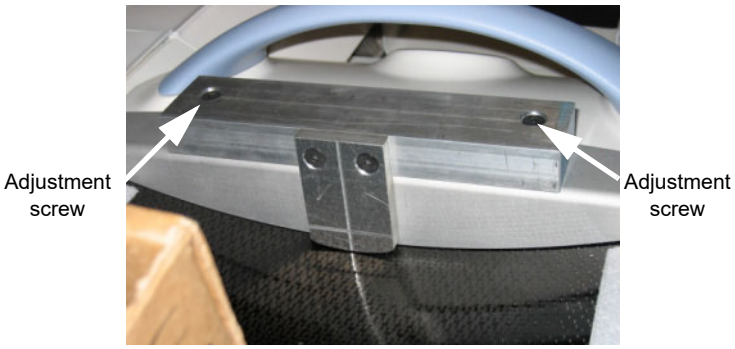
2.) Place the accessory strips on the floor and reinstall the nylon screws into the accessory rail for safe keeping.

Figure 1-29 Accessory Rail Screw

4.10 Install the Table Cradle Laser Alignment Plates

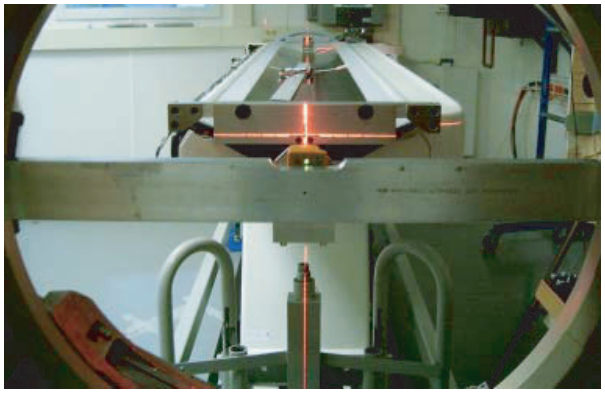
1.) Locate the aluminum accessory tray mounting plate with the three holes on the rear of the cradle. Fit the rear alignment target into the two mounting holes as shown in Figure 1-30. Use the adjustment screw to adjust the fit as needed. See Figure 1-30. The fit should be snug, without play, when you are finished.

Figure 1-30 Cradle Rear Laser Alignment Tool



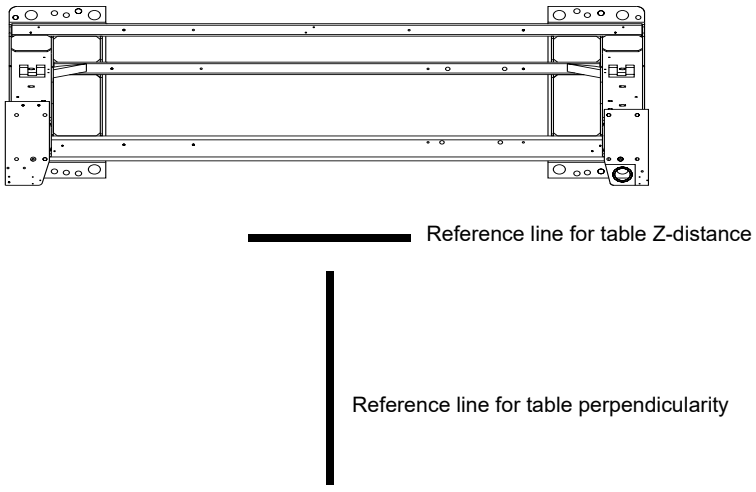
2.) Check that the table base is centered over the table center line, and the base is on the 26.9" (± .25") line made on the floor.

Figure 1-31 Rear Laser Alignment Tool - Installed



3.) Lower the table to the floor using the dollies, making sure to maintain the 684mm (± 6mm) [26.9" (± .25")] distance.

Figure 1-32 Two Reference Lines



4.11 Level the Table

4.11.1 Basic Information

4.11.1.1 Tools Required

- Standard Install Tool Kit
- ¾”, 1-¼”, 1-½” and 1-5/8” sockets
- 8mm, 10mm, and 14mm hex socket bits
- Laser Alignment Kit
- Johnson Professional 4’ level
- Johnson Professional 2’ level

4.11.1.2 Time and Personnel

- .5 hour labor on site
- 2 Engineers

4.11.1.3 Alignment Conditions

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

4.11.1.4 Alignment Specifications

- Mechanical base alignment must be perpendicular within 0.14 degrees from gantry zero (±1.5mm) as measured in this procedure.
- Table cradle travel (X axis) must be perpendicular 0.14 degrees from gantry (Y axis) zero (± 1.5mm) as measured in this procedure.
- Table cradle must be level in all directions ± 0.0625" (centered within the lines on a Johnson Professional level).
- All table adjusters should be preset to a minimum of 20 mm (3/4") down from the table base to make adjustment easier. Based on floor levelness and your experience, a different preset height may work better.

4.11.2 Level and Center the Table to the Gantry

NOTICE **Avoid leaning on the cradle during this procedure.**

DO NOT pin the gantry during this alignment process.

This procedure as described is for systems mounted on 4" concrete floors only!

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

1.) Have the table side panels removed, a ratchet, 1-1/8” socket, and a 2 foot level ready to use.

2.) Turn on the laser "I" beam (vertical beams) by pressing the **ON** button 2 times.

Note: Step 3 through Step 7 are for perpendicular positioning of the cradle to the gantry.

3.) The table on the dollies should be resting on the floor, and the laser beam visible on the cradle. The laser light should now shine down the cradle onto the rear vertical target. Moving the table on the dollies by raising and lowering makes it easier to center the table right to left.

Note: When using the table dolly to move the table, be sure that the shipping bolts are still attached to the adjuster leveler feet. This prevents the adjuster levelers from gripping on the floor adhesive, making it difficult to move.

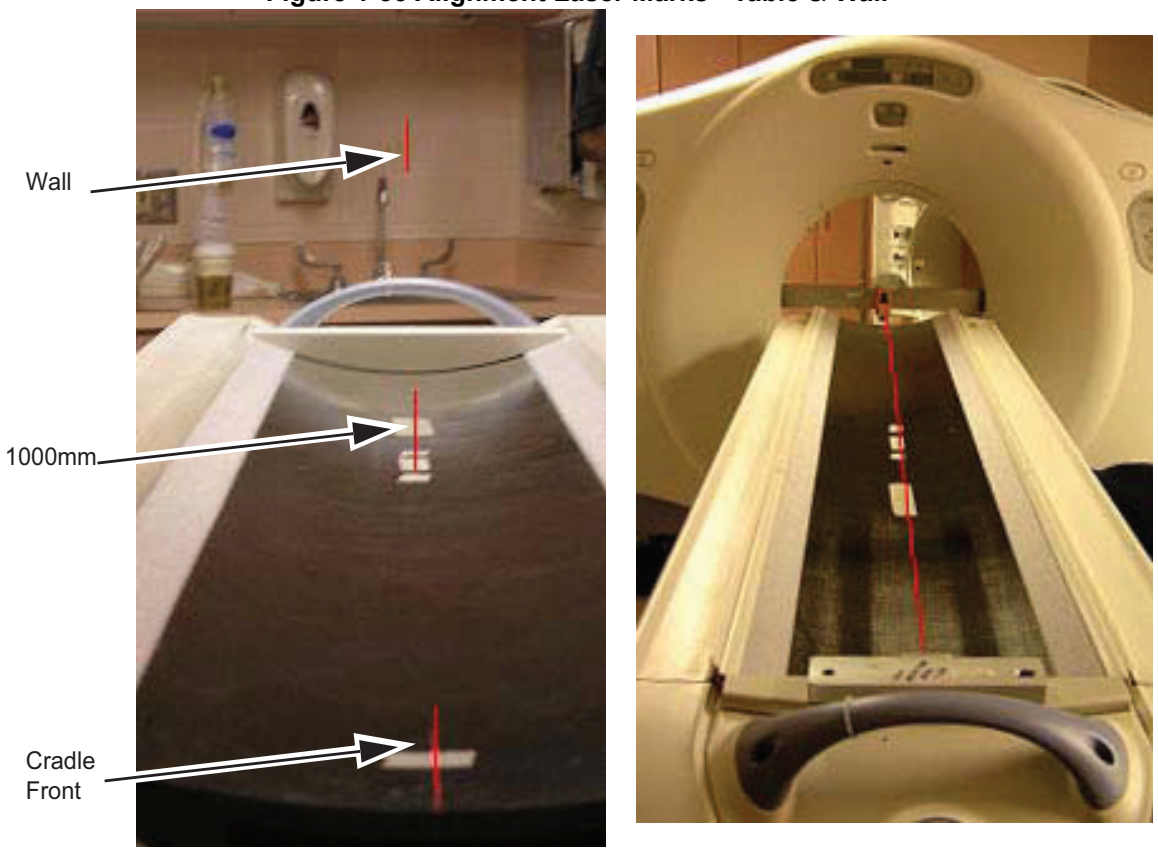
4.) Move the table so that the base is roughly centered over the scan center line, the front edge of the table base is on the 26.9" (± .25") line, and the table is resting on the floor. Check that the leveling feet are centered in the cutout circles.

5.) Carefully move the table so that the cradle front center line and the back target are aligned. You may need to raise the table to move the table. When aligned, lower the table to the floor.

6.) If not already done - Measure 1000mm from the front of the cradle, and place a piece of tape under the laser center line. Carefully mark a line along the laser line.

7.) The laser beam should now connect the cradle front centerlines, the 1000 mm cradle center line, onto the rear alignment tool vertical center and finally onto the alignment centering mark placed on the wall. The centering alignment line on the wall is used to be sure the laser is still centered. If the alignment line on the wall is NOT on the original mark, readjust the laser and repeat the above steps. See Figure 1-33.

Figure 1-33 Alignment Laser Marks - Table & Wall



Note: Step 8 through Step 10 are for front-to-back and side-to-side leveling of the cradle.

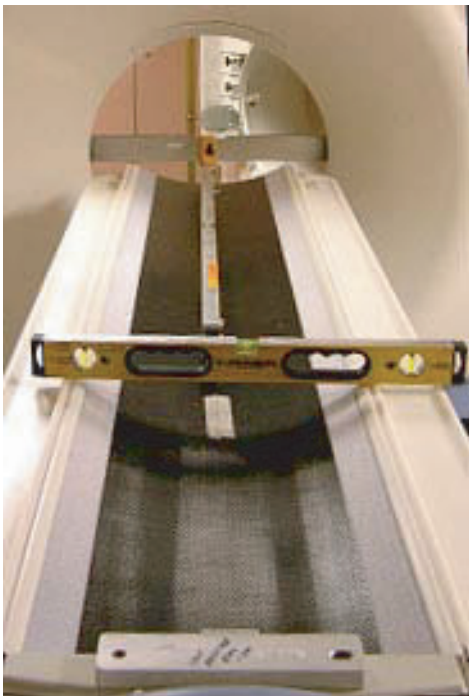
8.) The table should be completely on the floor and resting on all 4 levelers. Carefully remove one side of the table dolly, taking care not to bump or move the table. Ether side and/or end of the table dolly assembly can be removed.

CAUTION **Potential for Injury.**

In the ship position, the table tips easily!

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

Figure 1-34 Alignment Laser Marks - Table & Wall



9.) Raise or lower the table as needed using the front and rear levelers and level the cradle horizontally in the front and back locations.

a.) First, horizontally across the cradle at the front of the cradle.

b.) Second, horizontally across the cradle at the 1000mm mark on the cradle.

c.) When the cradle is roughly level in both locations, leave the level on the cradle horizontally.

10.) Level the cradle front to back using a 4' level placed in the center of the cradle. These two leveling actions often conflict and a few iterations may be required.

This process is complete when:

- The cradle is still centered on the front, mid, and rear marks.
- The cradle is leveled horizontally (across table) front and back (with the bubble centered between the lines.)
- The bubble is centered between the lines in the Y direction along the length of the cradle.
- The laser is still centered on the wall center line.
- The table is still on the 26.5" line and the levelers are not resting on the flooring.
- The laser is the same as in Step 7.

Note: The leveling process may take several iterations of Step 1 through Step 10. Patience and accuracy is required to properly complete this process.

11.) When completed, turn off the laser tool.

Note: Do not remove the table dollies.

4.12 Gantry Tilt Zero Alignment Check

4.12.1 Manufacturing Shipping Specification

Must be 90 degrees ± 0.25 degrees

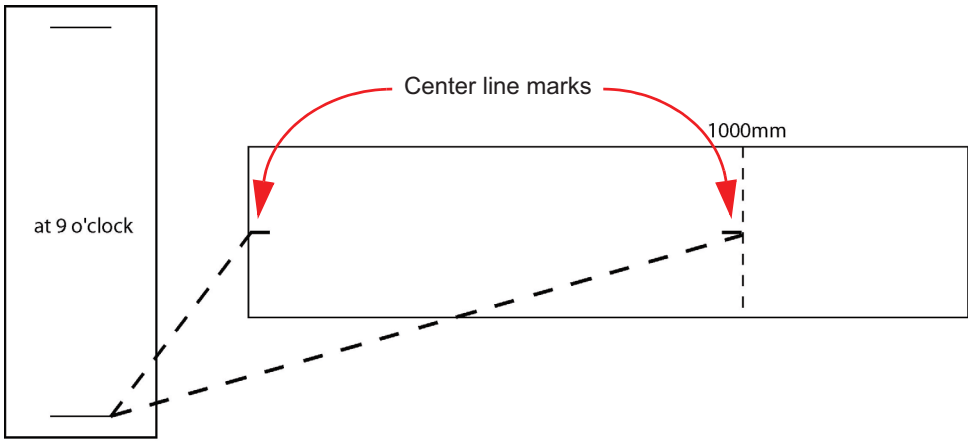
4.12.2 Test

Use an angle indicator mounted on a flat surface of the gantry to determine if the gantry is at 90 degrees (vertical).

4.13 Cradle/Table Parallel Check

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

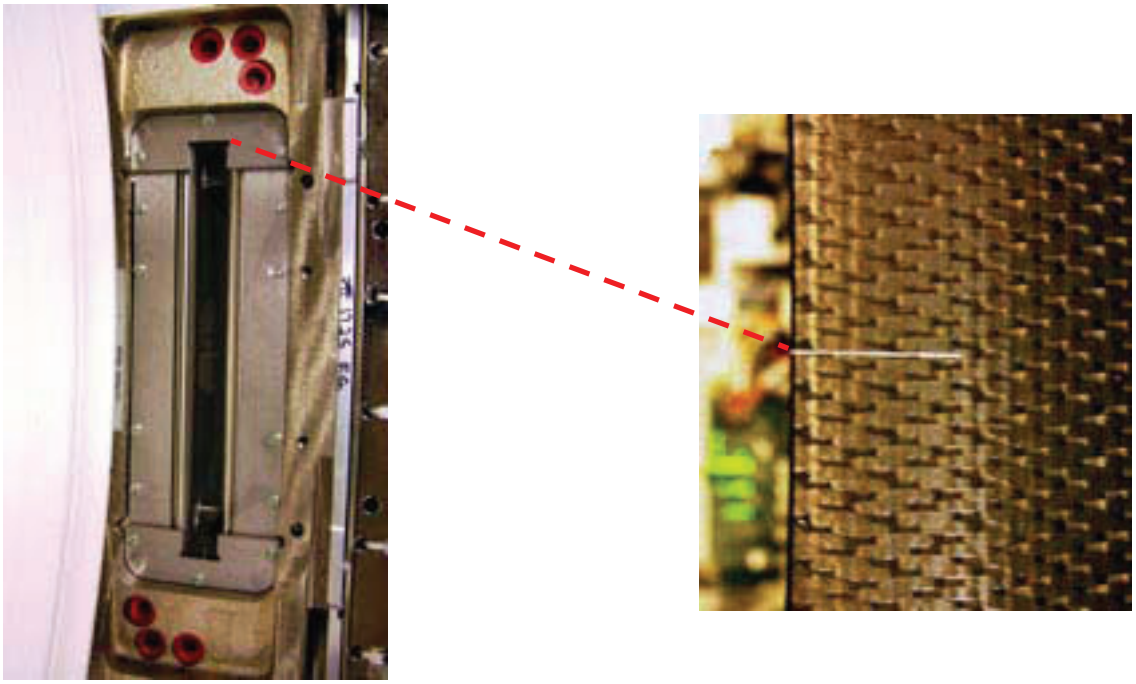
Figure 1-35 First Cradle/Table Parallel Check



2.) Measure the distance from the front top corner of the collimator face plate to the mark at the center front of the cradle. See Figure 1-35, Figure 1-36 and Figure 1-37. Note all measurements in Table 1-2.

Figure 1-36 Collimator Face Plate to Front of Table - Overview

Figure 1-37 Collimator Face Plate to Front of Table - Detail

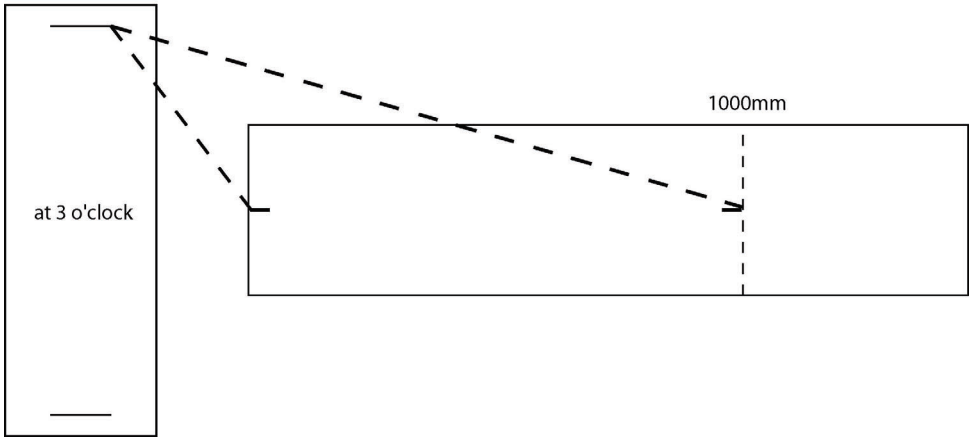


3.) Measure the distance from the same point of the collimator face plate to the center point on the cradle at the 1000mm mark. See Figure 1-35.

4.) Rotate the collimator to the 3 o'clock position. Confirm with a level.

5.) Repeat Step 2 and Step 3. See Figure 1-38.

Figure 1-38 Second Cradle/Table Parallel Check



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

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

Table 1-2 Alignment Worksheet

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

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

4.14 Tighten the Lock Rings

1.) Re-check gantry bubble levels.

2.) Re-check that each of the eight adjuster is loaded by attempting to turn it.

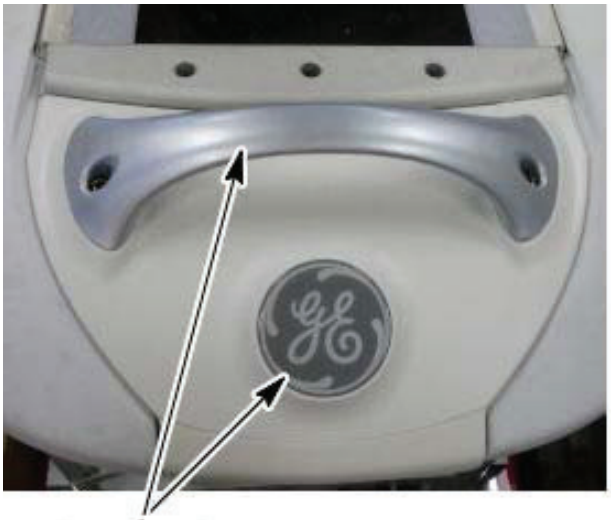
CAUTION **Eye protection is required when using a hammer and chisel.**

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

4.15 Cradle Lable Replacement

Table color kit is supplied with Table and contains blue color logo label. Replace metallic color logo label with supplied one.

Figure 1-39 Metallic Cradle Label



4.16 Drill Anchor Holes

WARNING **POTENTIAL FOR PATIENT INJURY.**

IMPROPERLY SECURED TABLE MAY TIP, DISLODGING PATIENT.

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

4.16.1 Notes to Mechanical Installers

4.16.1.1 Note 1: Basic Anchoring Information

GE provided floor anchors are designed for use ONLY on concrete floors that meet the 4-inch concrete floor requirement. Supplied floor anchors must be installed by a trained contractor, and shall be set to a minimum depth of 3-inches at each anchor point. ANY anchors having more than 1-inch of thread showing above the nut, when torque is set to 55 lb.-ft for GT1700,

60 lb.-ft for High capacity table. shall have a second anchor installed in the closest adjacent hole. This is because the minimum anchor engagement length in the concrete was not met. The second anchor shall be installed to the standard depth and torque specification. **Do not cut anchor bolts that extend longer than the 1-inch limit.**

4.16.1.2 Note 2: Alternate Anchoring

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

4.16.1.3 Note 3: Non-Concrete Floors

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

4.16.1.4 Note 4: GE Notification

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

4.16.2 Requirements

4.16.2.1 Tools Required

- Standard Install Tool Kit
- Hammer Drill
- ½" x 12" Drill Bit (Metric equivalent must not be used)
- ½" Drill Bushing (shipped in install support kit)
- 5/8" x 12" Drill Bit (Metric equivalent must not be used) - **For High capacity table**
- 5/8" Drill Bushing (shipped in system shipping collector) - **For High capacity table**

- Vacuum with HEPA or drywall dust filter
- Vacuum Hole Attachment – to clean debris from the holes
- PPE

4.16.2.2 Time and Personnel

- .5 hour labor on site
- 2 Engineers

4.16.3 Drilling Procedure

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

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

NOTICE
Potential for Equipment Damage from Dust

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

NOTICE

High Capacity Table use the 5/8" drill bit and 5/8" drilling bushing (5315833-2). Identify the Table type by part number 5272966-2 on Rating Plate.

2.) Locate the hammer drill and ½" X 12" drill bit. The ½" bit will be used to drill all eight (8) table and gantry anchor holes. You must use the drilling bushing to drill all table and gantry holes. All primary holes can be drilled with the gantry covers installed.

Note: **For High Capacity Table: The 5/8" drill bit and 5/8" drilling bushing (5315833-2) must be used to drill the four (4) table anchor holes.**

NOTICE

There are two types of anchors used in this product depending on the manufacturing date.
Make sure which anchors is shipped with system before starting drilling procedure.
For Table anchoring, use the anchors which are shipped with the Table.

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

3.) Apply a piece of adhesive tape (see Figure 1-40) which will then provide a visual means of making sure the proper hole depth has been reached.

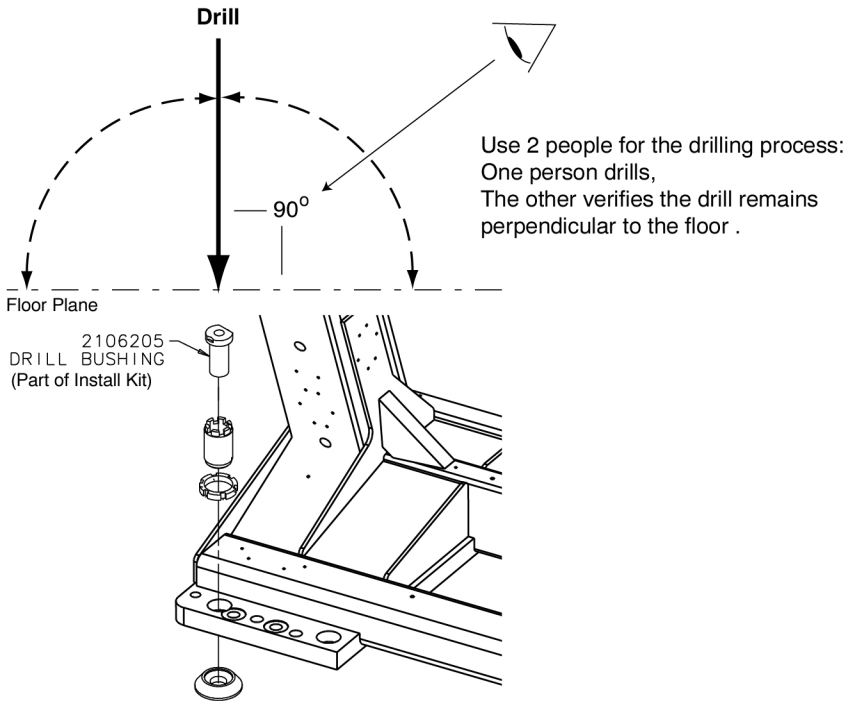
Figure 1-40 Drill Bit

Table 1-3 Drill Depth Gauge Mark Tape Location

	Gantry and GT1700 Table		Gantry and Table	High Capacity Table Anchor
	Anchor: 2106573	**Anchor: 5487992-2**	**Anchor: 5874830-2**	**Anchor: 5314211**
1	95mm (3-3/4 inches)	85mm (3-3/8 inches)	85mm (3-3/8 inches)	100mm (4 inches)
2	Adhesive Tape	Adhesive Tape	Adhesive Tape	Adhesive Tape

4.) Use a piece of tape to mark the drill bit depth of 190 mm (7-1/2”) from the tip of the masonry drill bit. Use the ½” bit to drill all eight (8) anchor holes to a specified depth as measured from the top of the drill bushing. Review Figure 1-41 and Figure 1-42 prior to drilling.

Figure 1-41 Drilling Position



5.) Place appropriate protection to prevent damage and dust contamination to electronic assemblies.

6.) Place the drill bushing inside each adjuster, to keep the hole vertical and centered within the adjuster.

- Use the drill bushing to center the anchor holes in all adjuster locations, to provide maximum lateral alignment capacity when you center the cradle on isocenter during subsequent system testing.
- Take care not to injure yourself on the gantry cover brackets.

7.) Drill the holes perpendicular to the floor.

Important - Follow these guidelines when drilling anchor holes:

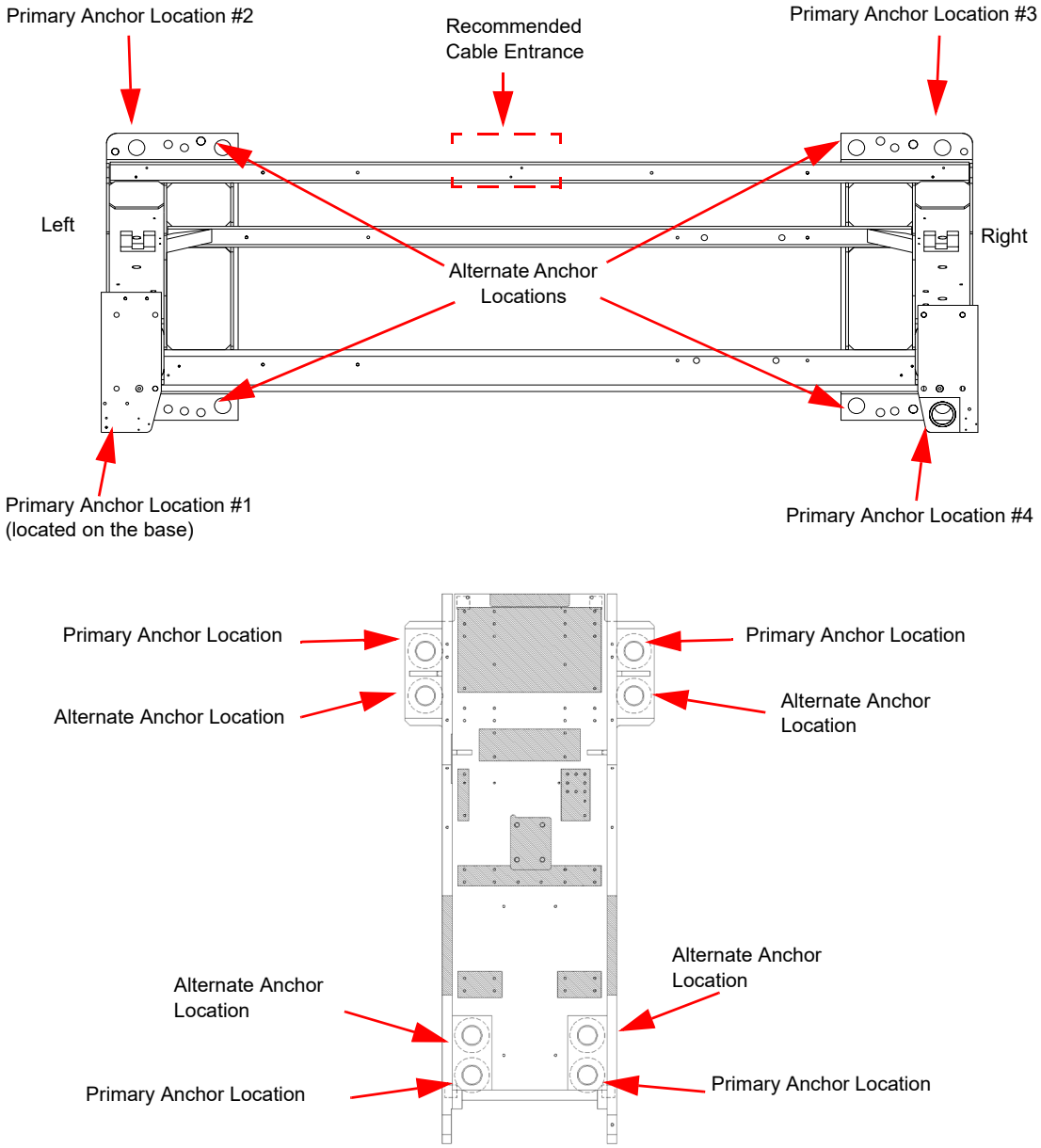
- While one person drills the holes, position a second person to watch the relationship between the drill bit and floor. Make sure the bit remains absolutely perpendicular to the floor throughout the drilling operation.
- Always use the mechanical guide when drilling.
- Stop drilling every 15 or 20 seconds and clear the hole of debris. This lets the drill bit cool and helps to prevent binding of the drill bit.
- Vacuum while drilling to keep gantry and table as free of dust contamination as possible. Place the funnel tip or long extension tip inside the hole.

  A drywall dust filter must be used on the vacuum.
- Drill each hole until the mark on the drill bit is even with the top of the drill bushing. All holes must have a depth specified in Table 1-3, as measured from the top of the adjuster to the bottom of the hole. (See Figure 1-80, on page 96.) Use an upside-down anchor to check the hole depth.

8.) Recheck the depth of all holes by inserting an anchor backward into the hole. A 13 mm (1/2”) or less should be showing. Re-drill if needed.

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

Figure 1-42 Anchor Locations



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

4.17 Alternate Anchor Holes

If you cannot use one of the adjuster anchor holes due to structural interference, such as reinforcement bars in the concrete, you must use one of the alternate anchor locations, as shown in Figure 1-42. You must also move the respective leveler(s) and pad(s) to the new alternate location(s) and re-drill.

Note: Do not remove the adjuster to move to the alternate anchor hole.

- The gantry requires a minimum of four (4) anchors, one (1) in each corner.
- The table requires a minimum of four (4) anchors, one (1) at location.

If you must use an alternate anchor hole in the gantry, you must remove the gantry covers to drill the holes. See Appendix A Removal & Installation of Covers, on page 183 for gantry cover removal.

WARNING **POTENTIAL FOR PATIENT INJURY.**

IMPROPERLY-SECURED TABLE MAY TIP, DISLODGING PATIENT.

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

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

Note: GE is not responsible for anchoring methods other than those listed in the pre-installation manual.

Provided floor anchors are designed for use ONLY on concrete floors that meet the concrete floor requirements as Table 1-4.

All other anchoring methods must be installed and determined to meet the stated GE minimum load requirements, at the customer's expense, by their structural contractor.

Note: If the installers cannot set at least four anchors for the table and gantry, the installer must inform the customer that the minimum anchoring cannot be met, and a structural engineering contractor is required to determine the anchoring method, install the anchors, and certify that their anchoring meets the stated GE minimum load requirement and torque specifications.

Table 1-4 Gantry and GT1700 Table Mounting Requirements

MOUNTING REQUIREMENTS	ANCHOR P/N: 2106573	ANCHOR P/N: 5487992-2 / 5874830-2
Minimum Floor Thickness:	102 mm (4 in.)	102 mm (4 in.)
Recommended Drilling Depth:	91 mm (3.58 in.)	85 mm (3.35 in.)
Minimum Anchor Embedment:	78 mm (3.07 in.)	75 mm (2.95 in.)
Available Alternate Anchor Locations:	Yes	Yes
Shipped Anchor Size:	203 mm (8 in.)	178 mm (7 in.)
Alternate Anchoring Methods:	Yes (see notes, above)	Yes (see notes, above)
FLoor Levelness Requirement:	6 mm (0.24 in.) over 3 m (10 ft.)	6 mm (0.24 in.) over 3 m (10 ft.)

Table 1-5 Gantry and High Capacity Table Mounting Requirements

MOUNTING REQUIREMENTS	ANCHOR (GANTRY)		ANCHOR (TABLE)	ANCHOR (GANTRY AND TABLE)
	2106573	5487992-2	5314211	5874830-2
Minimum Floor Thickness:	102 mm (4 in.)	102 mm (4 in.)	110 mm (4.33 in.)	102 mm (4 in.)
Recommended Drilling Depth:	91 mm (3.58 in.)	85 mm (3.35 in.)	100 mm (3.94 in.)	85 mm (3.35 in.)
Minimum Anchor Embedment:	78 mm (3.07 in.)	75 mm (2.95 in.)	90 mm (3.54 in.)	75 mm (2.95 in.)
Available Alternate Anchor Locations:	Yes	Yes	Yes	Yes
Shipped Anchor Size:	203 mm (8 in.)	178 mm (7 in.)	216 mm (8.5 in.)	178 mm (7 in.)
Alternate Anchoring Methods:	Yes (see notes, above)	Yes (see notes, above)	Yes (see notes, below)	Yes (see notes, above)
Floor Levelness Requirement:	6 mm (0.24 in.) over 3 m (10 ft.)	6 mm (0.24 in.) over 3 m (10 ft.)	6 mm (0.24 in.) over 3 m (10 ft.)	6 mm (0.24 in.) over 3 m (10 ft.)

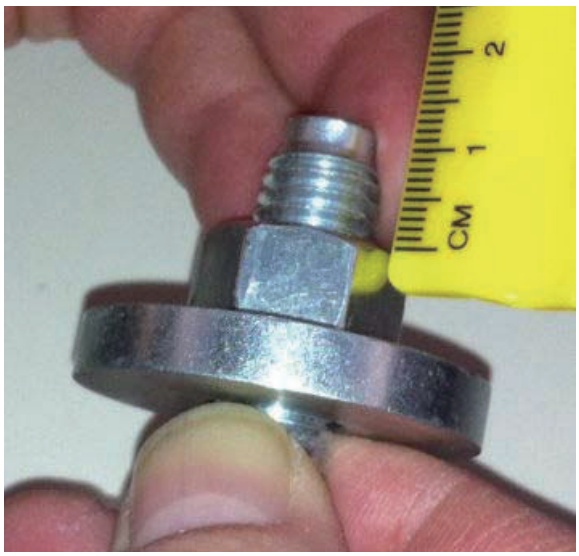
4.18 Install the Anchors

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

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

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

Figure 1-43 Anchor Preparation-set nut at 13.0 mm



2.) Place another nut on the anchor and thread it on far enough so it is flush with the top of the anchor. This nut will protect the threads.

3.) Insert an anchor into each anchor hole in the gantry and set the anchors with a hammer. The washer should touch the leveling screw if the anchor is installed and set properly.

Remove the nuts placed on the anchors to protect the end threads.

Figure 1-44 Gantry and GT1700 Table with 8-in Anchor (P/N 2106573)

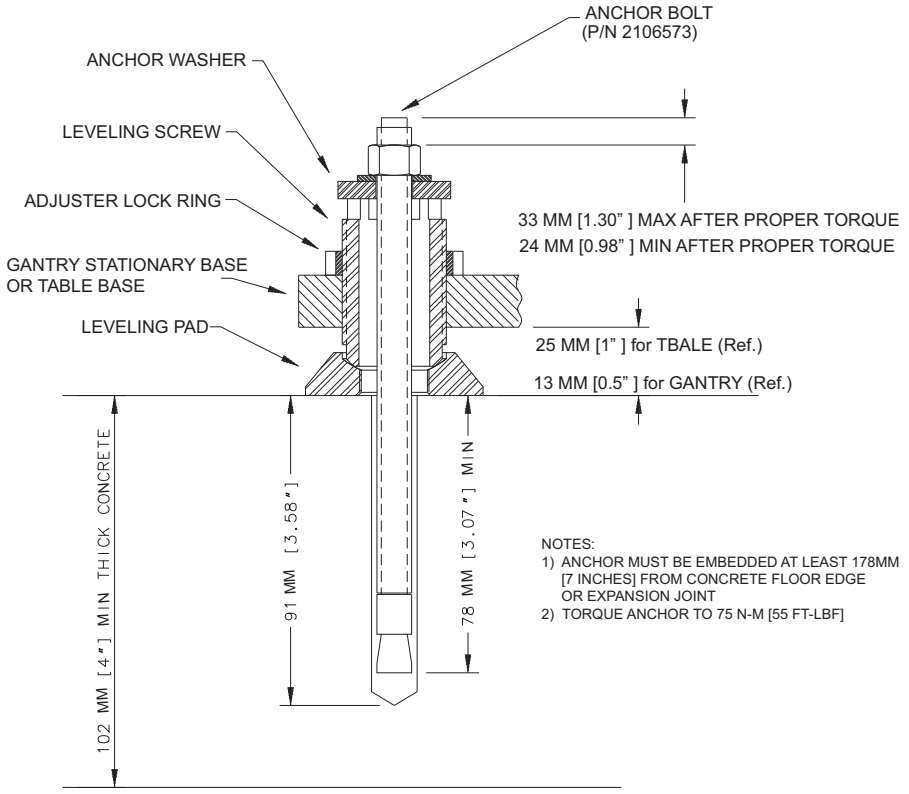
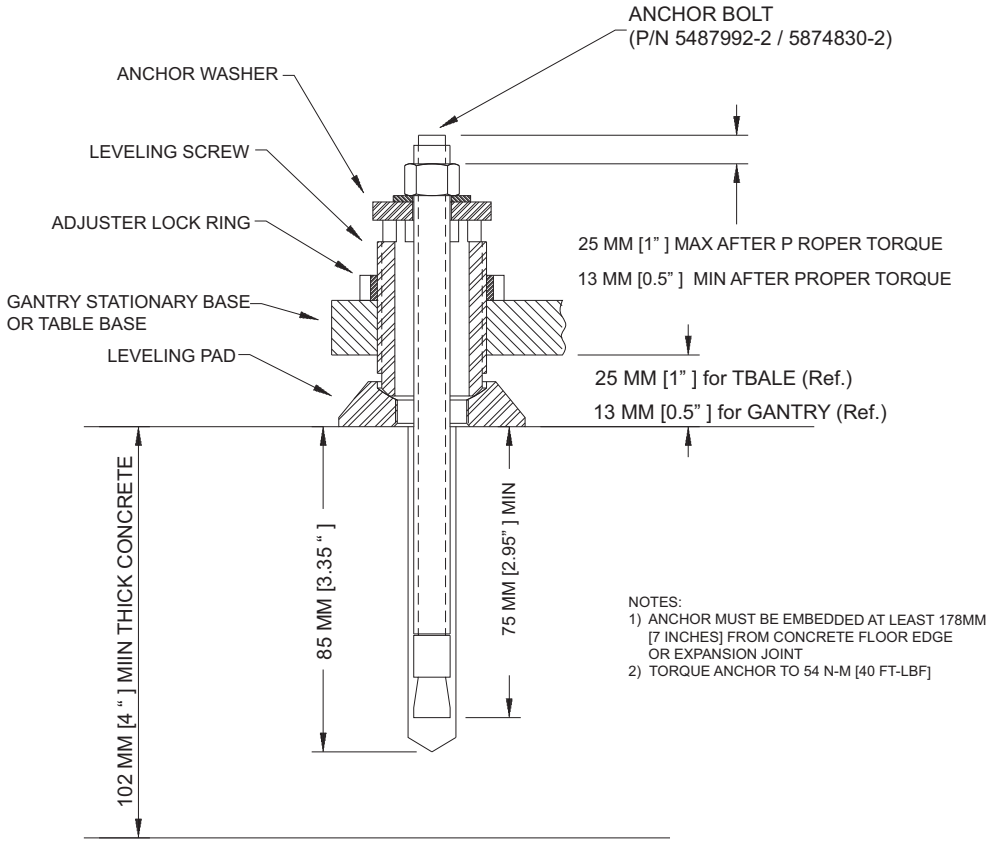
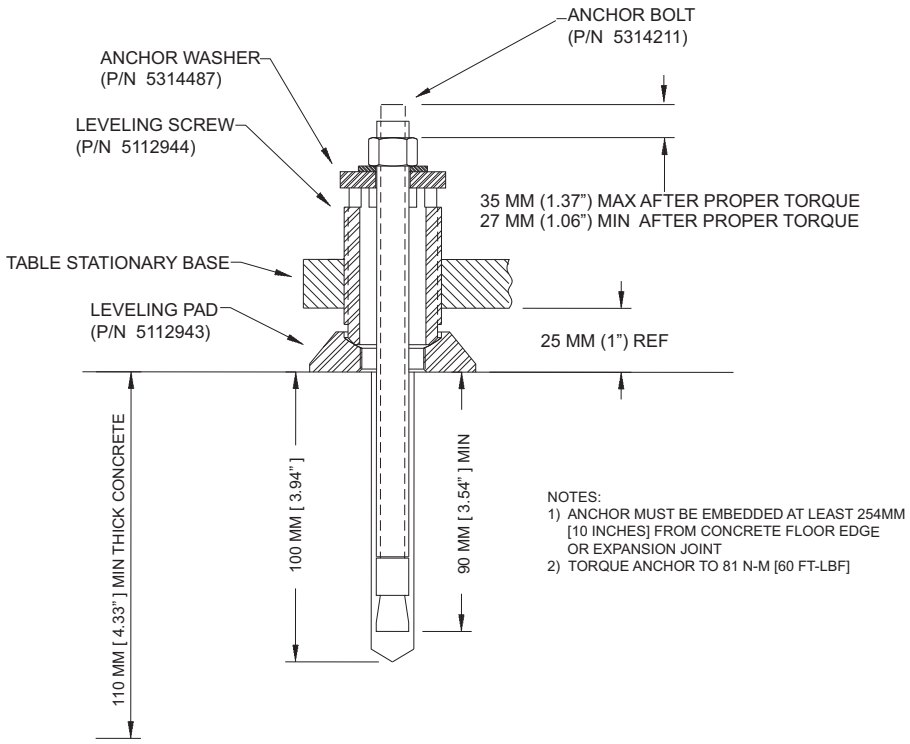


Figure 1-45 Gantry and Table with 7-in Anchor (P/N 5487992-2 / 5874830-2)



Recommended - Use “Hilti Kwik-Bolt II” anchors P/N 5314211 (5/8" dia. by 8" long) for High capacity table, please refer to Figure 1-46.

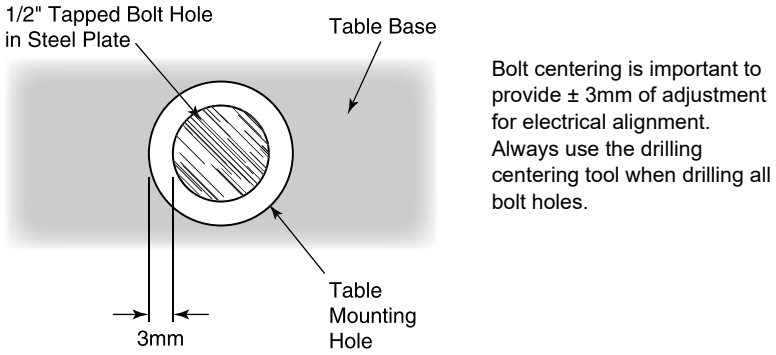
Figure 1-46 Typical Floor Anchor, High capacity table



4.) Assemble the anchors before you install them.
   a.) Remove the nut and washer from the anchor.
   b.) Add a ¼" thick washer (PN 2105873) for GT1700 and washer (PN 5314487) for High capacity table under the regular anchor washer.
   c.) Reassemble the anchor washer and nut and position nut so top is flush with threads of anchor.
5.) Use the anchor seating tool to hammer anchors into the holes.
6.) Adjust all eight (8) anchor bolts until tight.

Figure 1-47 Table Base Anchor Assembly

Figure 1-48 Center tapped holes under mounting holes in table base



4.19 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 4.13, on page 59. If re-leveling is required, repeat this procedure. Using the bubble levels, make adjustments as required to maintain required alignment.

2.) Once alignment has been verified, torque all mounting bolts.

Tighten the location #1 through #8 anchors and torque to:

- 75 N-m (55 ft.-lb.) for 8-inch Anchor (P/N 2106573), Gantry and GT1700 Table
- 54 N-m (40 ft.-lb.) for 7-inch Anchor (P/N 5487992-2 / 5874830-2), Gantry and GT1700 Table
- 81 ± 6 N-m (60 ± 5 ft.-lb.) for High Capacity Table Anchor (P/N 5314211)

3.) Remove the laser tools.

4.) Reinstall all the removed table panels and hardware.

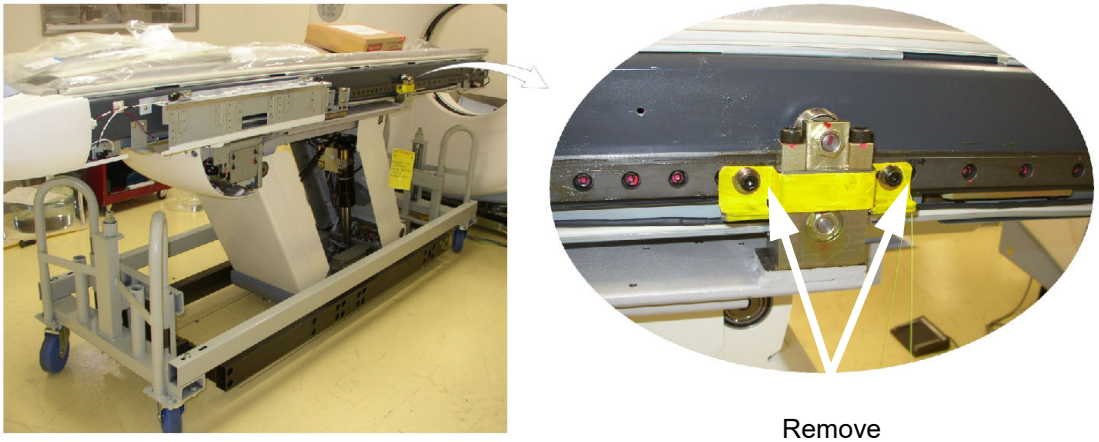
5.) Reinstall the gantry rear cover.

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

4.20 Remove the IMS Shipping Lock

1.) Remove the right top cover of the table.
2.) A yellow shipping lock is located on the right side of the table.
3.) Unscrew the two bolts and remove the shipping lock.

Figure 1-49 IMS Shipping Lock



4.21 Removing Table Shipping Dollies

4.21.1 Requirements

4.21.1.1 Tools Required

- Standard Install Tool Kit
- 10mm Hex Socket Bit

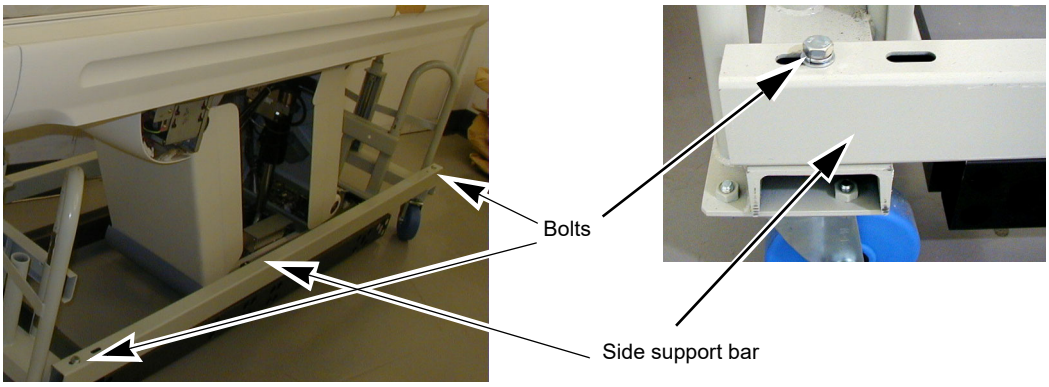
4.21.1.2 Time and Personnel

- .5 hour labor on site
- 1 Engineer

4.21.2 Procedure

1.) Remove the white table dolly support bars on the top of the dolly from each side. Refer to Figure 1-50.

Figure 1-50 Dolly Bolts



2.) Determine which direction is easiest for removing the dolly from the room. We will remove the dolly shipping rail so that the dolly can be rolled out of the room.

3.) There are two table shipping bolts on each end of the black shipping rails that hold the dolly together. Choose the rail on the opposite side of the direction that you plan to use to move the dolly out of the room.

4.) Using a 10mm hex socket, remove the two bolts on each end of the dolly frame. Refer to Figure 1-51.

Figure 1-51 Dolly Bolts

Wide view

Remove these 2 bolts

5.) On the long black side rail, there are two 14mm bolts holding the table to the dolly on each side: one near the back of the table base and one in the front of the table base. Refer to Figure 1-52 and Figure 1-53.

Figure 1-52 Dolly Side Panels - Back Bolt

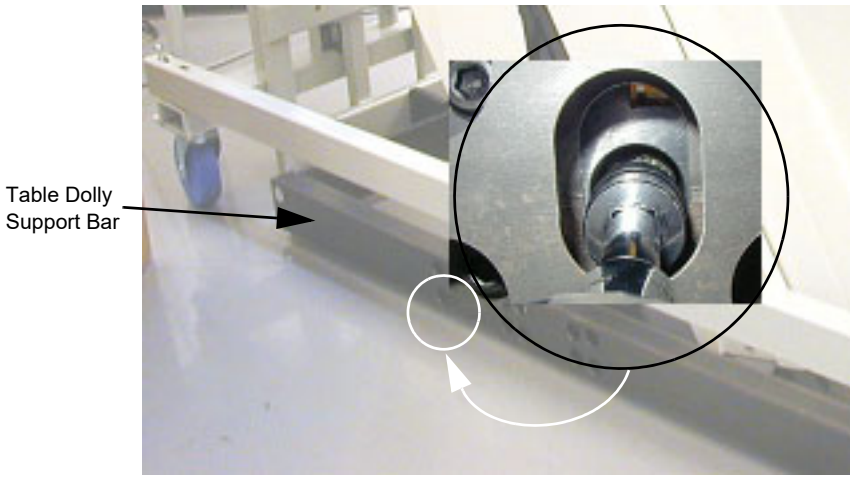
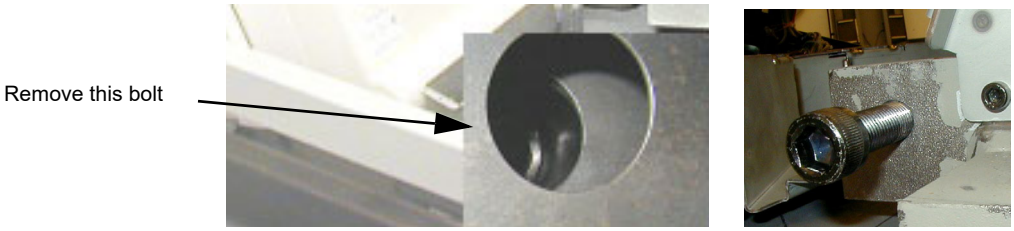


Figure 1-53 Dolly Side Panels - Front Bolt



6.) Roll the dolly away from the table.

7.) Remove the remaining side rail of the dolly from the other side of the table following step 5.

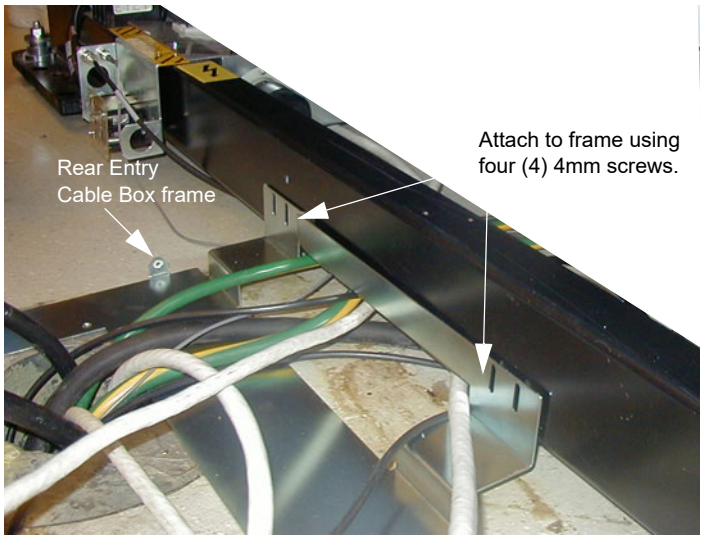
8.) Reassemble the dolly.

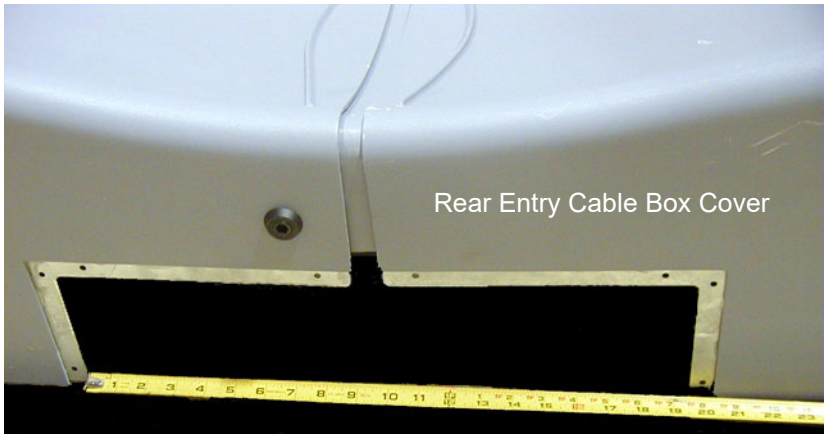
Section 5.0
Rear Entry Cable Box

A rear entry cable box (B7850RC) 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.

The rear entry cable box frame attaches to the gantry base. See Figure 1-54.

Figure 1-54 Rear Entry Cable Box





The filler plate may need to be cut in order to fit the rear cable box into the cover opening. Use the supplied white molding around the filler plate.

Section 6.0
Install Table Footswitch Assembly

6.1 Requirements

6.1.1 Tools Required

- Standard Install Tool Kit

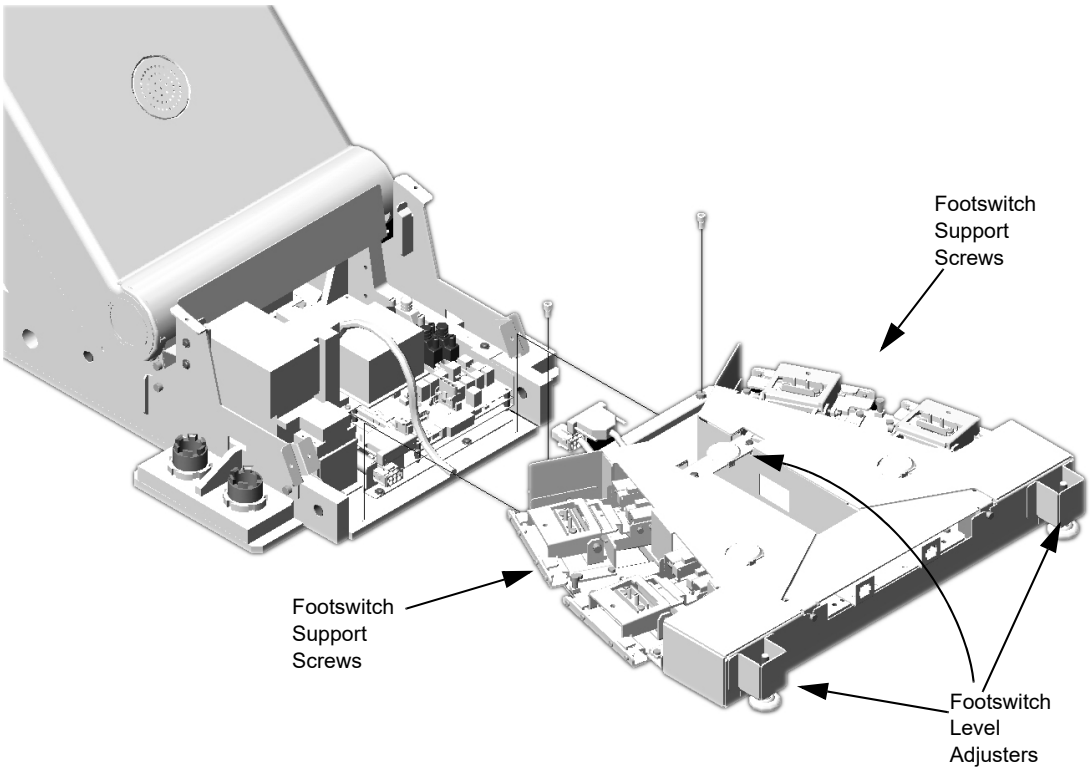
6.1.2 Time and Personnel

- 1 hour labor on site
- 1 Engineer

6.2 Procedure

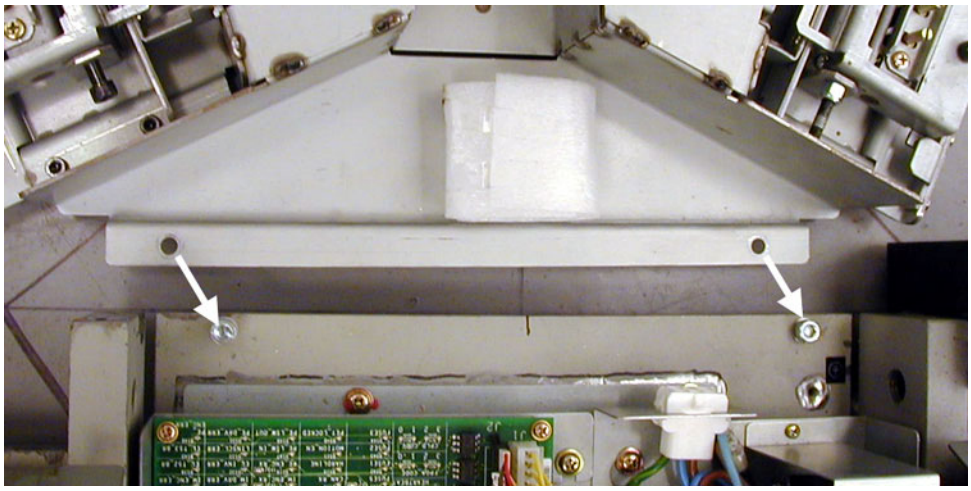
After Table positioning is completed and anchors installed, install the footswitch assembly as shown in Figure 1-55 following the steps below.

Figure 1-55 Footswitch Assembly Installation



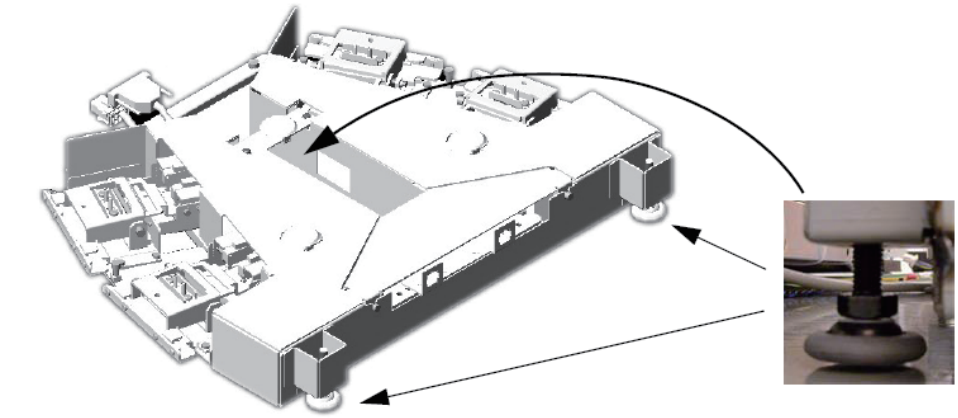
1.) Using two (2) M6 bolts, attach the footswitch assembly to the Table base.

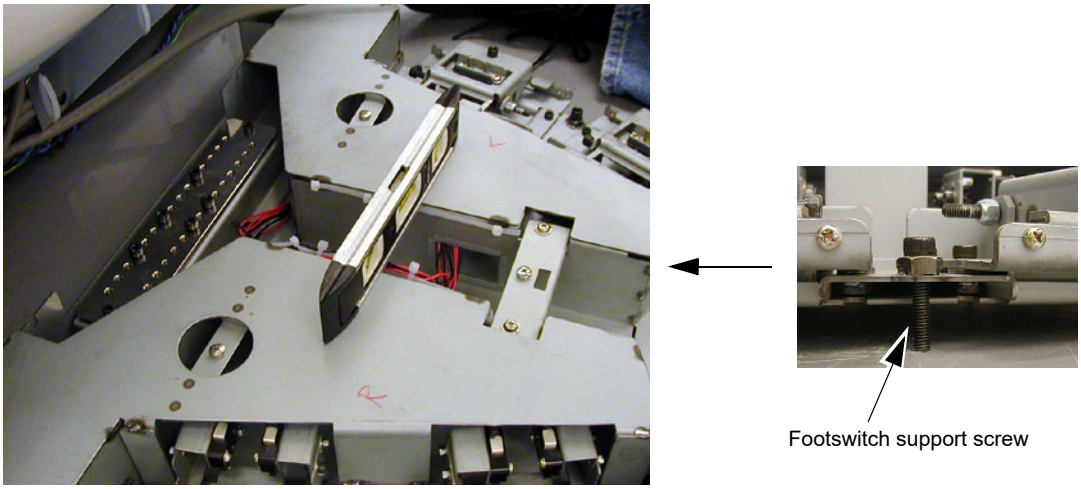
Figure 1-56 Attach Footswitch



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

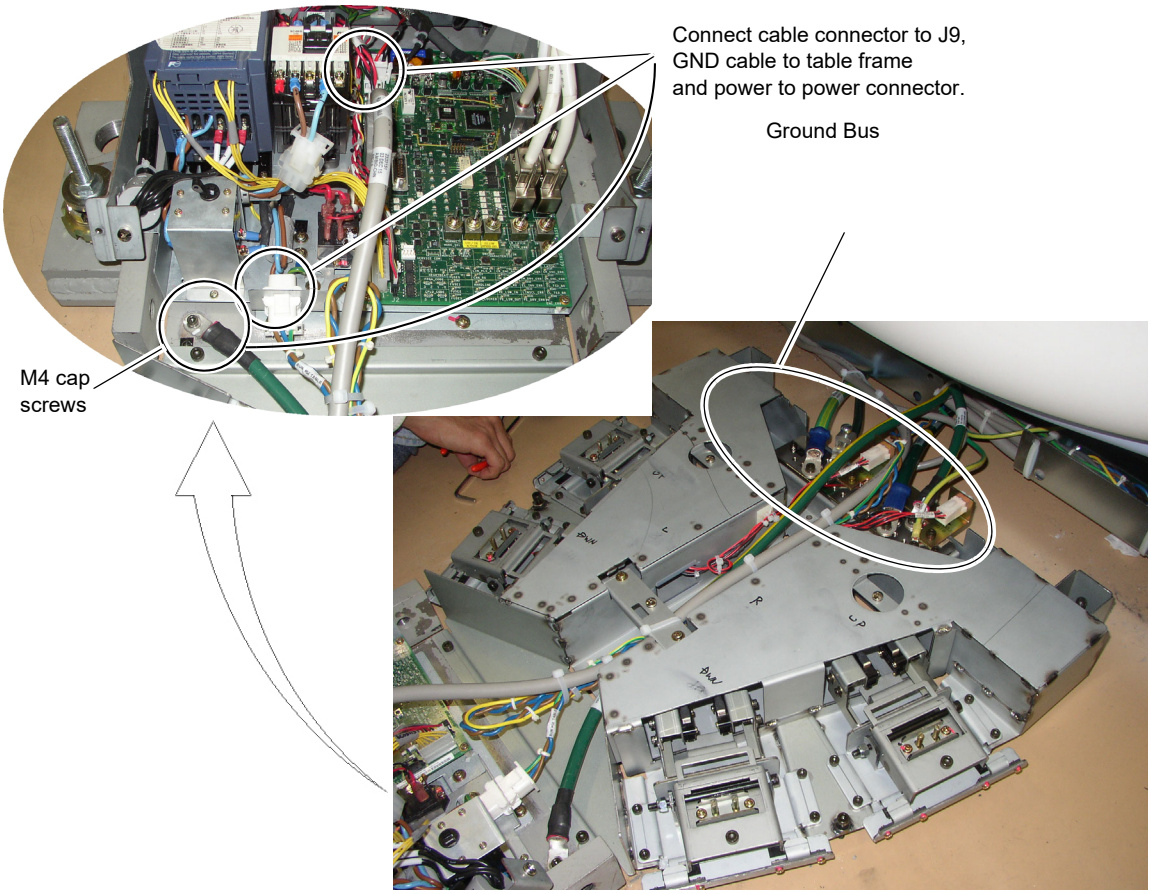
Figure 1-57 Level Footswitch





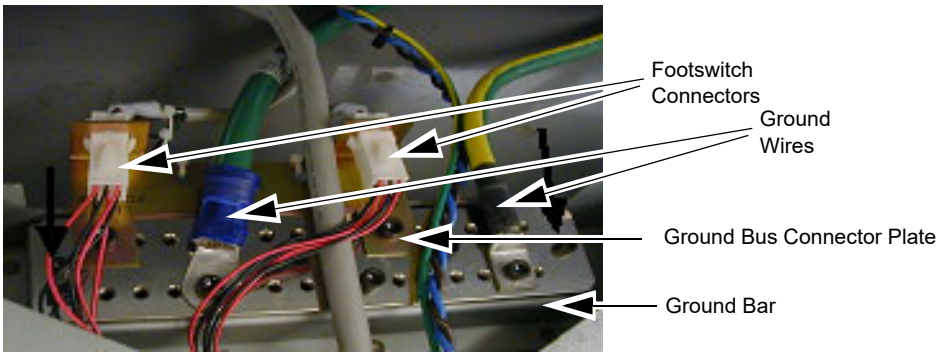
3.) Route the power cables from the gantry as shown in Figure 1-58.

Figure 1-58 Footswitch Assembly Cable Wiring



4.) Connect the ground bus connector plate.

Figure 1-59 Footswitch Ground/Bus Bar



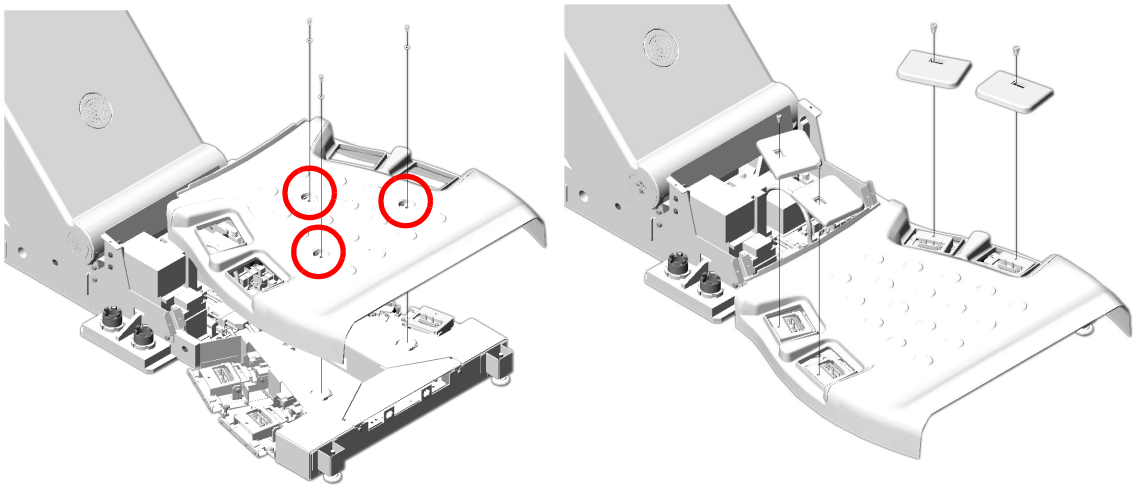
5.) Connect the ground wires (not all shown in Figure 1-59) to the installed ground bus:

Table	#2
Gantry	#1/0
Console	#2
PDU	#1/0
Power Pan	#10

6.) Install the footswitch pedal bracket onto the installed ground bus bar.

7.) Install the footswitch cover using three (3) screws (see Figure 1-60).

Figure 1-60 Footswitch Cover Installation



8.) Install cover caps on each pad.

Figure 1-61 Footswitch Pad Caps

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

10.) Install Table handle and label the GE logo on the table. See Figure 1-62. GE logo label is in the GT Blue Color Kit (B70232CA for GT1700, B70212CA for GT2000 or GT HC), together with the cradle pad, cradle extender pad.

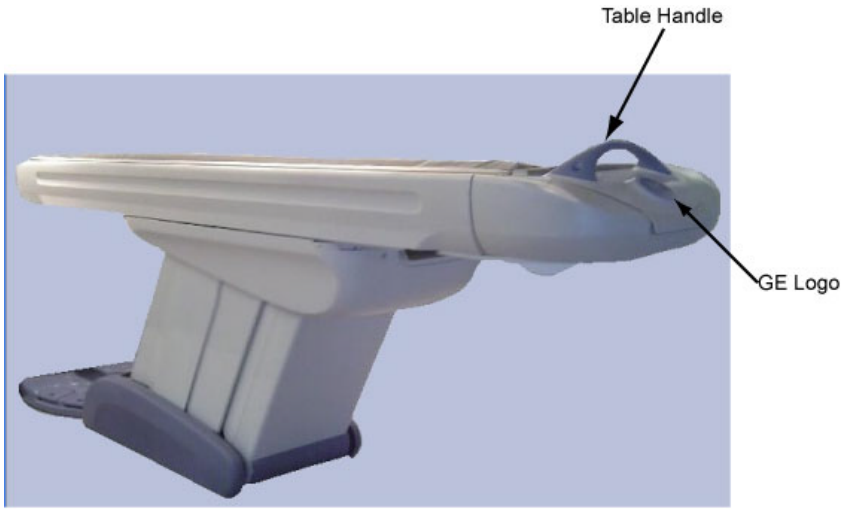
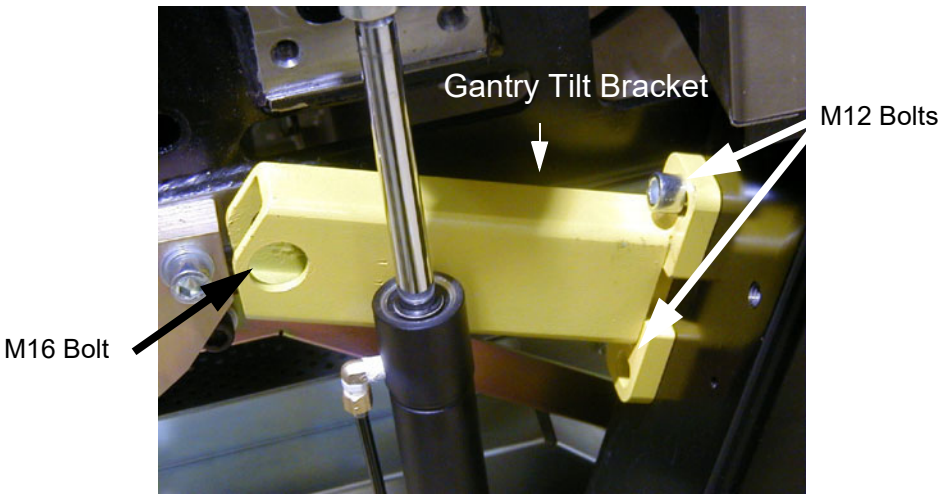


Figure 1-62 Table Handle

Section 7.0
Remove Gantry Tilt Bracket

Figure 1-63 Gantry Tilt Bracket Removal



1.) Refer to Figure 1-63. 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

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 14 mm Hex wrench.

5.) Remove the bracket.

6.) Close the gantry covers and reinstall the scan window.

7.) Store brackets in the gantry base.

Section 8.0
Position the Power Distribution Unit

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.

NOTICE

Connecting the primary incoming power is performed by the customer's electrical contractor.

1.) Remove all the transportation packaging, delivery the PDU to the scan room or the control room and close to the PDB.

2.) Roll the PDU into position on its permanently mounted casters. Leave at least 155 mm (6") between the PDU and back wall to allow cooling air to circulate.

WARNING

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

Table 1-6 Contractor Connections

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

3.) 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 1-64 Flexible Conduit for PDU Power

4.) Locate the hole cover plate in Box 1 and attach the flexible metal conduit to the PDU.

5.) Cut the three phase and 1/0 ground wire to size.

6.) Observe incoming phases (L1, L2 and L3) and insert bare leads into each location on TS1. Torque to specification, see Figure 1-65.

Figure 1-65 TS1 Power Torque Values

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

7.) Insert vault ground into PDU vault ground plug. Torque to specification, see Figure 1-66.

Figure 1-66 Ground Torque Values

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

8.) Observe cable mark and insert bare leads into each location on TS6. Torque to specification, see Figure 1-67.

Figure 1-67 Warning Light and Door SW Connections

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

Table 1-7 PDU TS6 Connections

Connection or Wall Box	AWG #	Connection From	Connection To PDU	Installed & Checked
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	

9.) Tighten all fasteners securely.

Table 1-8 PDU Terminal Torque Values

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

Section 9.0
Install Operator Console

9.1 Unpack TIO/NIO Console

1.) Remove all items from the console.

2.) Remove all packing materials and discard.

3.) Place the step-board under the front edge of the skid and step on it to raise the front edge of the skid as in Figure 1-68.

Figure 1-68 Step-board used to raise front edge of skid

4.) Remove the two front cushions from the bottom of the skid. Refer to Figure 1-69

Figure 1-69 Cushion on bottom of skid

5.) Lift up on the strap on the front of the step-board (Figure 1-68) to lower the skid. Remove the step-board.

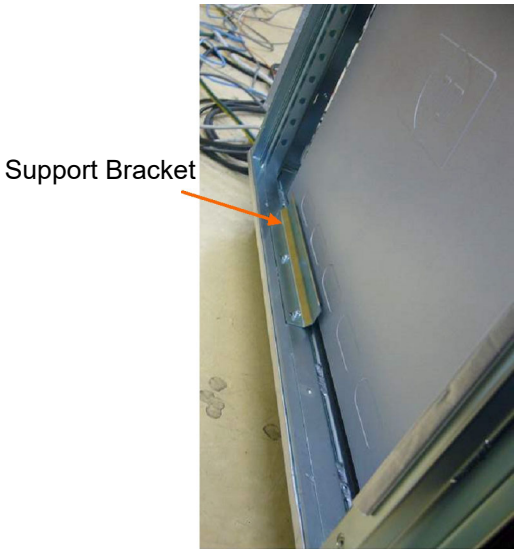
6.) Ensure the console stabilizers are in line with the notched portion at the front of the skid. This will allow enough clearance to smoothly roll the console down the ramps.

7.) Move console to installation location.

9.1.1 Remove the Host PC support Bracket

1.) Remove the Host PC Support Bracket from left side of TIO / NIO16 (refer to Figure 1-70).

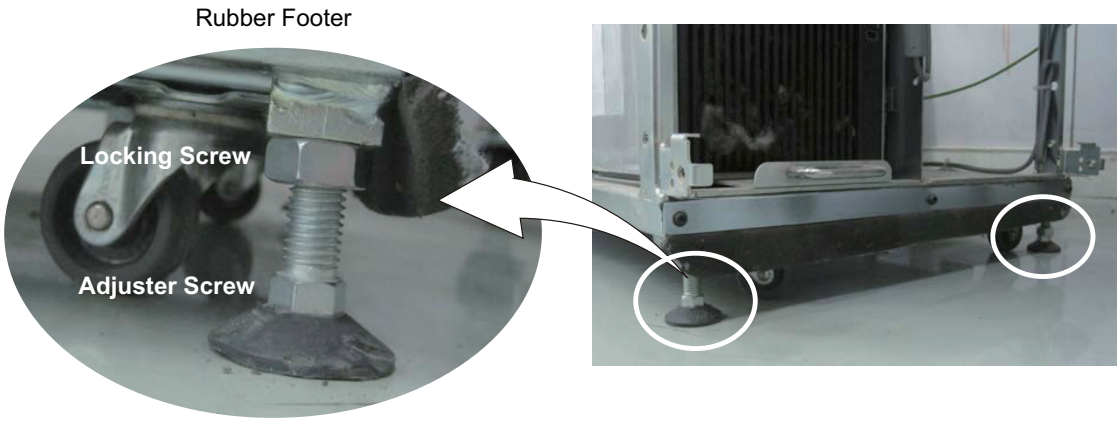
Figure 1-70 Host PC Support Bracket



9.1.2 Footer Adjustment

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

Figure 1-71 Rubber Footers Adjustment

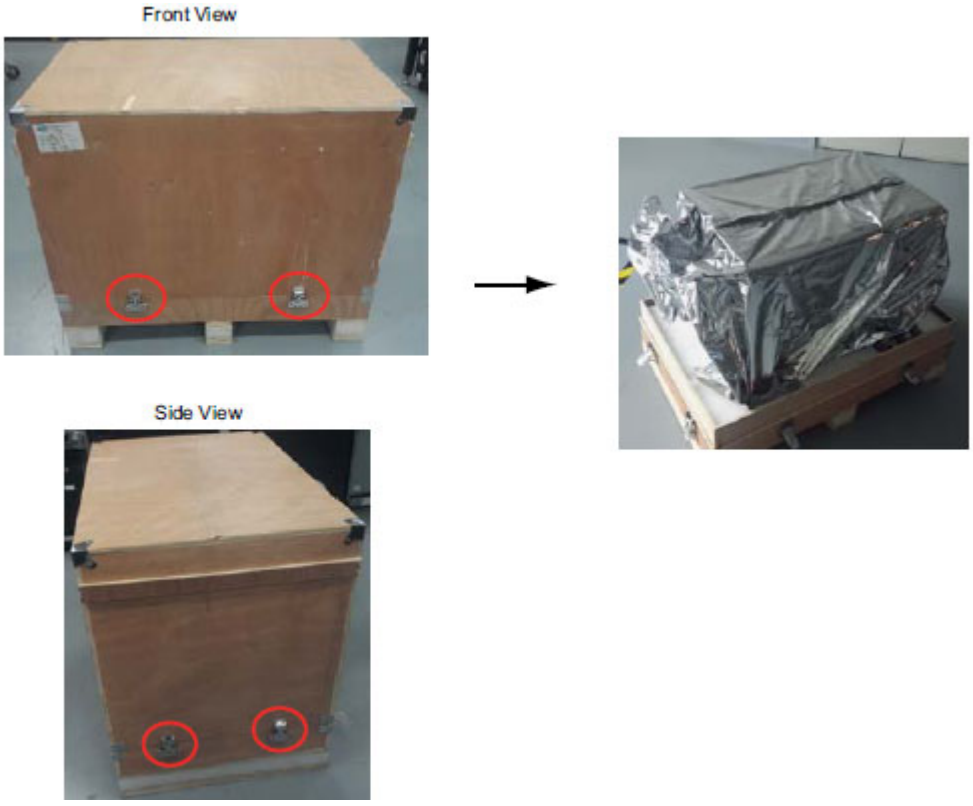


9.2 Unpack OpenOC16 Console

1.) Unpack console packaging.

a.) Release eight latches and remove the packaging cover.

Figure 1-72 Console Packaging Removal

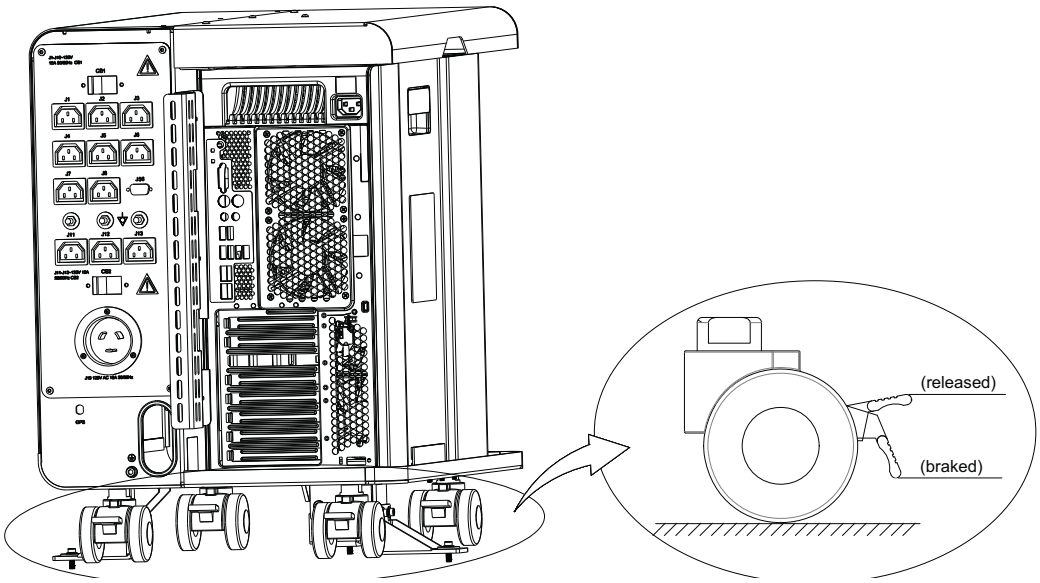


b.) Remove all packaging and discard per local requirement.

2.) Move console to installation location.

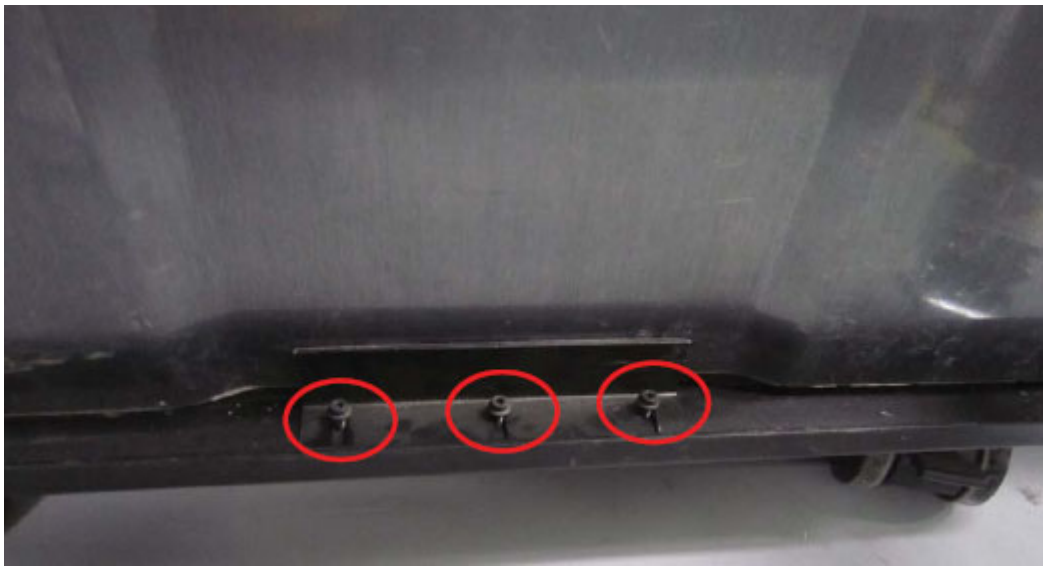
3.) Adjust console position, and then pedal four brakes to prevent console from sliding.

Figure 1-73 Brake



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

Figure 1-74 Side Access Panel



9.3 Install GPU Card (If applicable)

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

9.4 Install Operating Table

9.4.1 Install FWS table (5168666-3) and Monitor Arms

1.) Assemble FWS table.
Refer to Appendix B, Section 1.0 for details of FWS and monitor arms assembly.

2.) Install LCD Monitor and install monitor arms.

3.) Place the FWS table at one side of the console.

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

9.4.2 Install Optima Desk (5371587)

1.) If your system has the Optima Desk, place the desk in the control room.

2.) Attach the cable hooks and console stopper by the M4 screws.

9.4.3 Install Aurora SWS Table (5449758-2)

1.) If your system has the SWS Table, assemble SWS Table.
Refer to Appendix B, Section 2.0 for details of Aurora Table assembly.

2.) Place the table in the control room.

9.5 Peripherals Placement

1.) Place keyboard, SCIM/ GSCB
2.) Locate and unpack the Media tower.
3.) Place the Media tower on the FWS table.

9.6 Console Cover Installation

Install the Console cover and adjust the Console power switch bracket as necessary.

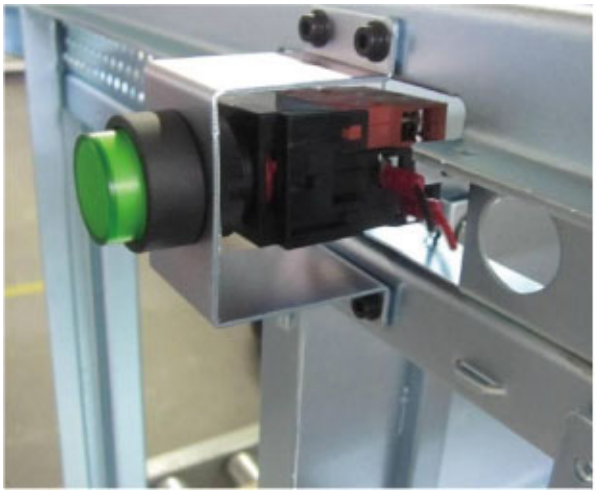
1.) Install the **TIO cover**.
Refer to Service Methods-->Replacement-->True-In-One Console--> *True-In-One Console Cover Removal and Installation procedure*.
Install the **NIO cover**.
Refer to Service Methods-->Replacement-->NIO16 Console--> Replacement-->Console Cover Removal and Installation.

2.) Power Switch Adjust.

If the Console Power Switch cannot fit properly and could not function well, adjust the Console Power Switch bracket by adding or removing the adjustment plate of the power switch bracket as below illustration.

Two additional adjustment plate are stick inside console between ICOM and AC Outlet box.

Figure 1-75 TIO/NIO Console Power Switch



Section 10.0
Seismic Mounting

10.1 Console

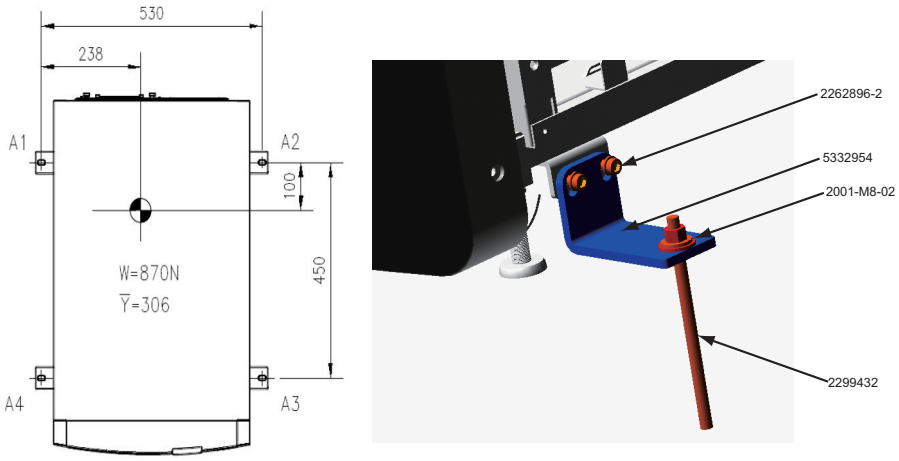
- **TIO Console**

Console seismic brackets and FWS mounting brackets included in Console Seismic Kit (B73762CA).

Fix LCD monitor, tower and keyboard with the velcro tape by using 46-136246P14 and 46-136246P21.

If site specifications require seismic mounting, use ½" bolts to mount the brackets to the floor. Refer to Figure 1-76 for hole placement.

Figure 1-76 Seismic True-In-One Console Mounting Hole Locations



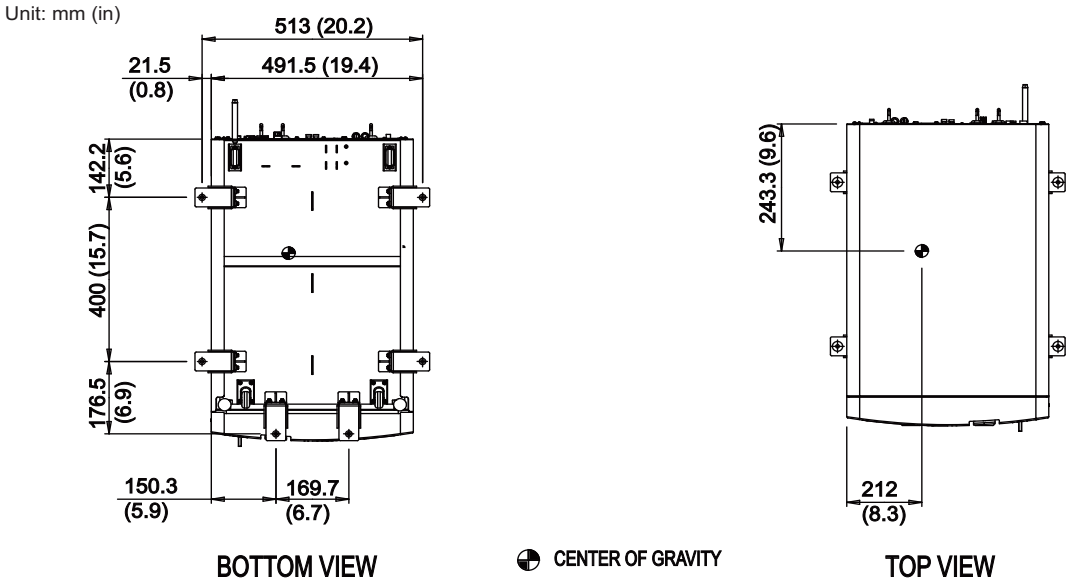
- **NIO Console**

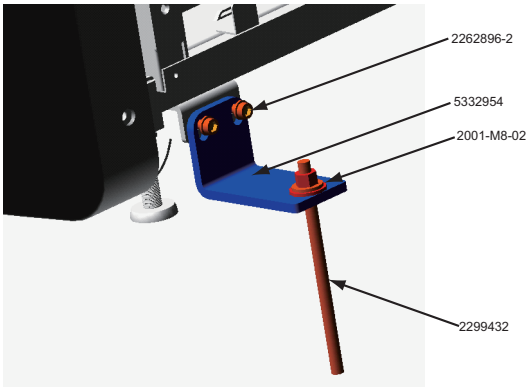
Fix LCD monitor, tower and keyboard with the velcro tape by using 46-136246P14 and 46-136246P21.

If site specifications require seismic mounting, use ½" bolts to mount the brackets to the floor. Refer to Figure 1-77 for hole placement. Console seismic brackets included in Console Seismic Kit (5394347-2).

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

Figure 1-77 Seismic NIO16 Console Mounting Hole Locations





- **Open Console**

Fix LCD monitor, tower and keyboard with the velcro tape by using 46-136246P14 and 46-136246P21.

If site specifications require seismic mounting, the customer may require different anchoring methods based on local requirements. Anchor type, size and torque shall be defined by the customer. Refer to Figure 1-78 for hole placement. The console seismic brackets (5357148-3), M6 screws (2262896-30) and M8 washers (2001-M8-02) are included in console seismic kit (5812703-2) that is shipped with console.

Figure 1-78 Seismic OpenOC16 Console with Z840 Mounting Hole Locations

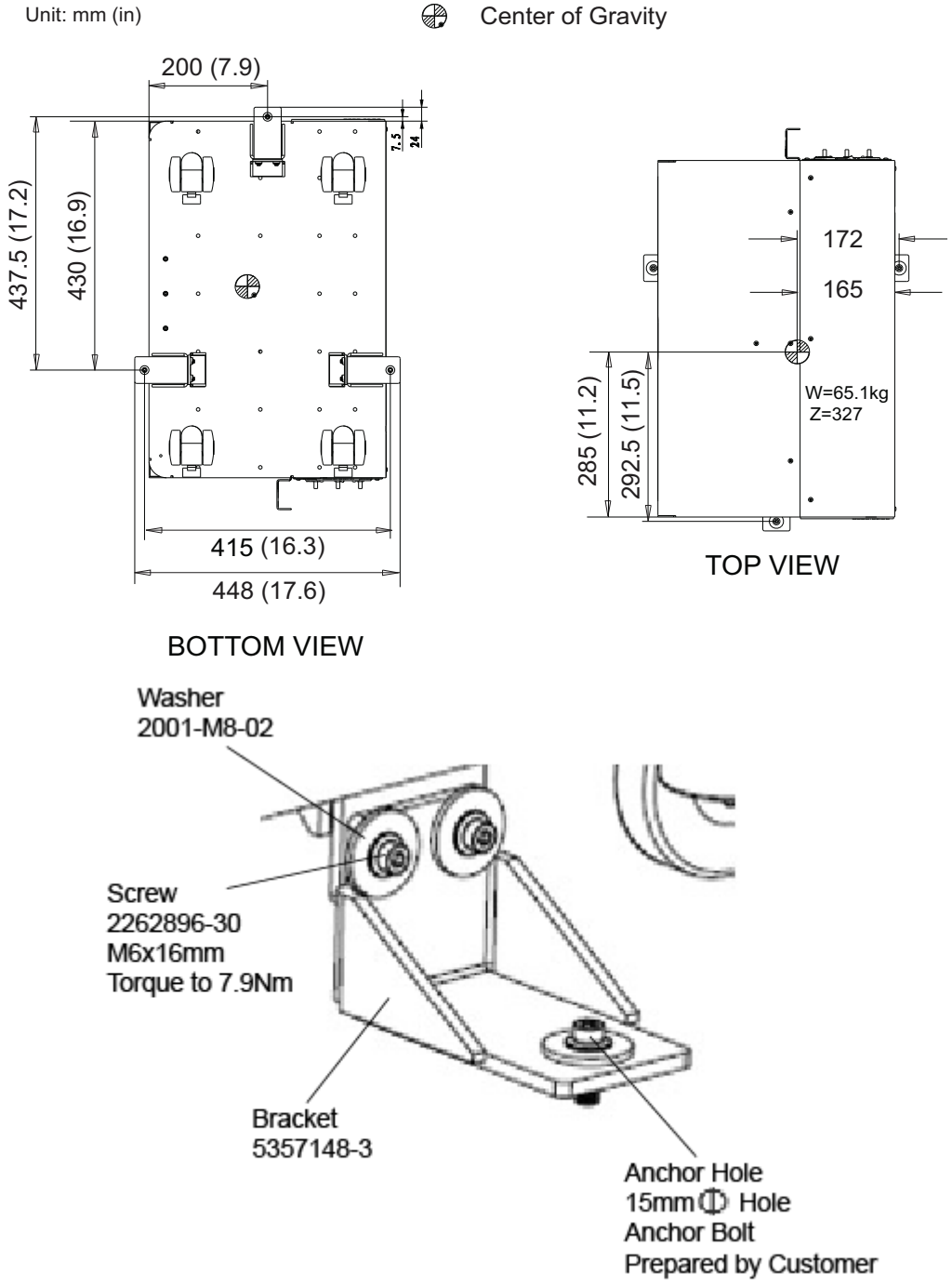
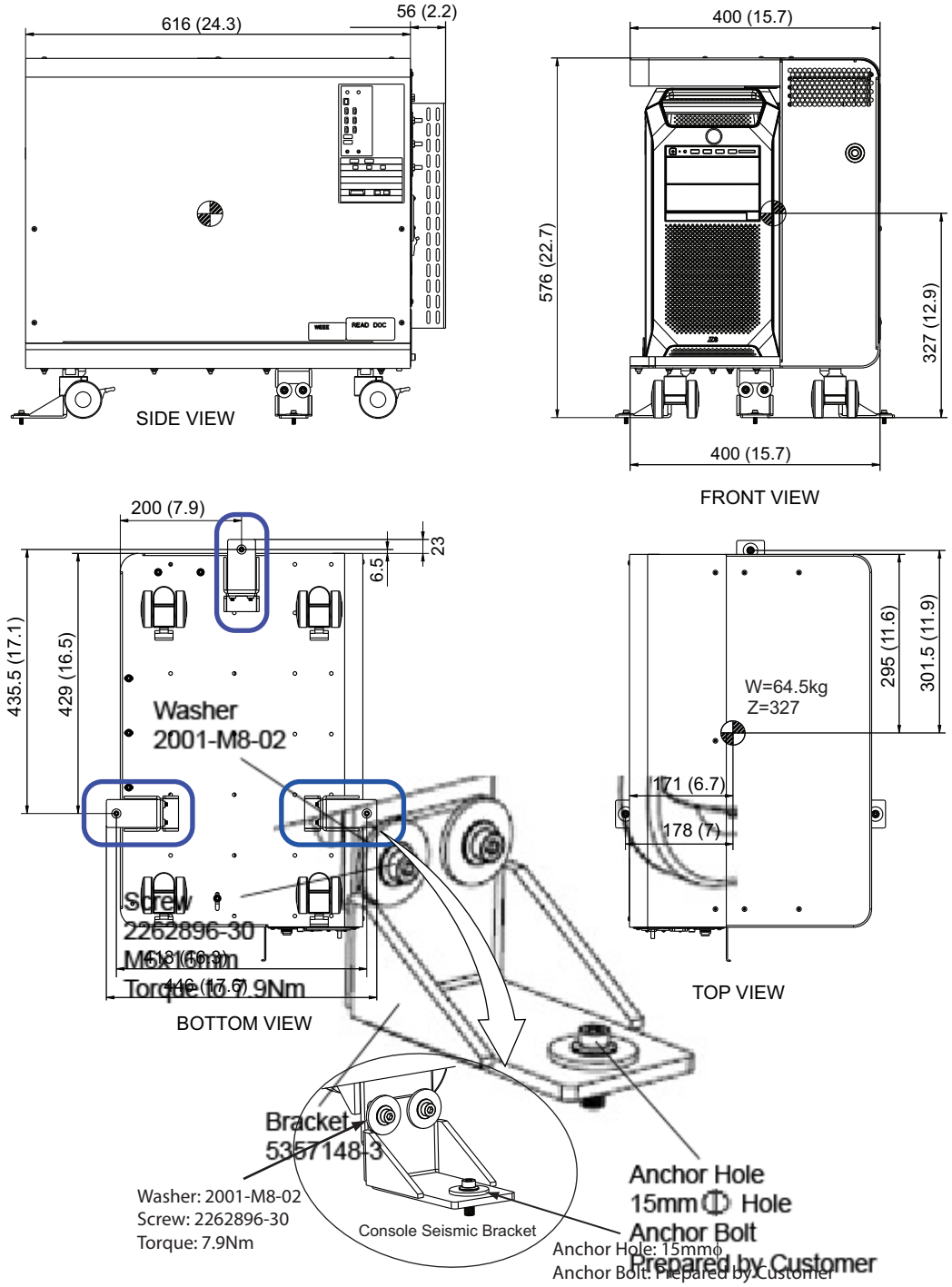


Figure 1-79 Seismic OpenOC16 Console with Z8G4 Mounting Hole Locations



10.2 Power Distribution Unit

If site specifications require seismic mounting, use the PDU seismic brackets (2354563-2) and the PDU shipping kit (5453382-2) that were shipped with PDU. Refer to Figure 1-81 for mounting hole locations, and mount 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 1-80 Seismic PDU Mounting Hole Locations

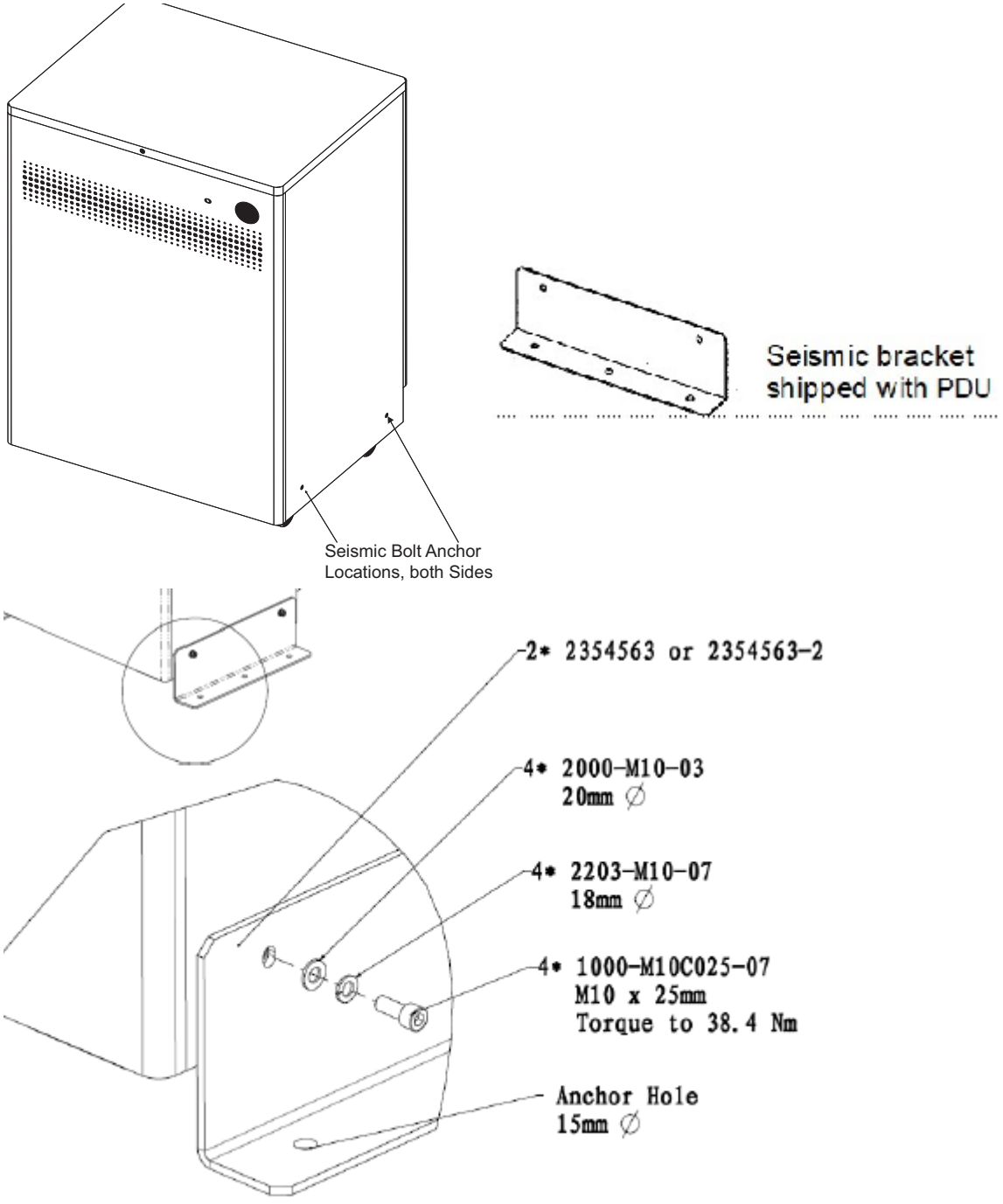
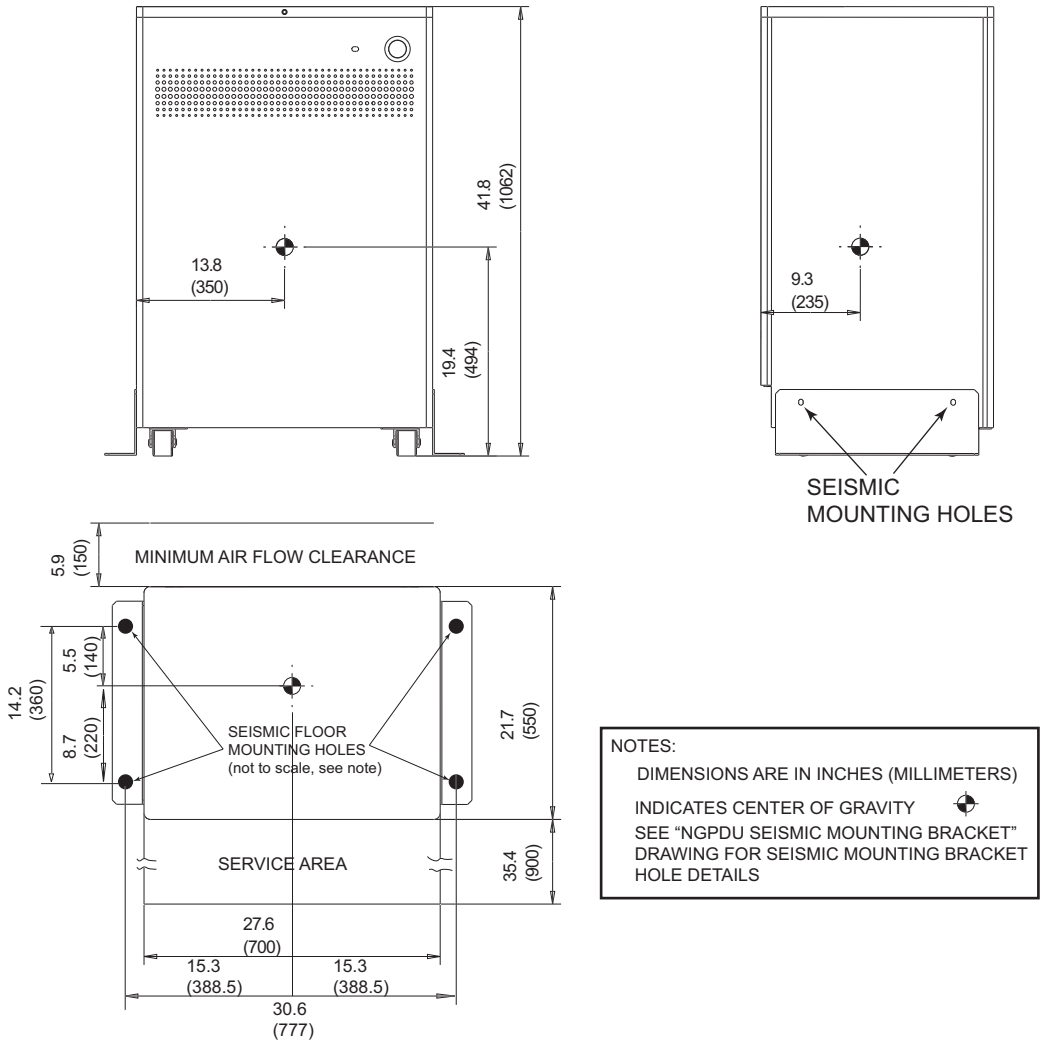


Figure 1-81 Seismic PDU Mounting Hole Locations



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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 e4879 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.**

Note: Use dry cleaning for electro components.

Section 1.0 Introduction

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

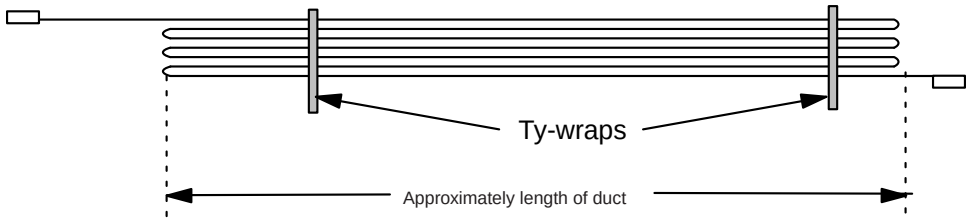
- Try to run the system cables after the contractor completes the contractor supplied wiring.
- All ground wires and other contractor wiring should be complete to the point of equipment placement.

NOTICE **Potential for Equipment Damage.**

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

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.

1.1 System Component Identification

Identify all system cables by the system component designators listed in Table 2-1 on page 100. Each end of a system cable has a label, and may have a color near the connector, (refer to Table 2-2 on page 100) to indicate the component and the jack identifier of the component.

Table 2-1 System Component Identifiers

DESIGNATOR	SYSTEM COMPONENT
CT2	Gantry
CT1	Patient Table
PM	Power Distribution Unit
OC	Operator Console (Console Computer)
WL	X-Ray ON Warning Light

1.2 Cable Color Identifiers

The ends of the cables may be marked with a piece of blue, yellow, red, or orange colored tape to help with the cable installation. Table 2-2 on page 100 lists the subcomponent, and corresponding color.

Table 2-2 Cable Color Identifiers

SUBCOMPONENT	COLOR
Gantry	Blue
Table	Yellow
PDU	Red
Console Computer	Orange

Table 2-3 System Interconnect Cables

RUN NO.	DESCRIPTION	PART NUMBER					
		For GOC or TIO Console		For NIO16 Console		For NIO16/OpenOC16 Console with Simplified Power Pan	
		LONG CABLES (KIT 2281840-4)	SHORT CABLES (KIT 2281840-5)	LONG CABLES (KIT 2281840-13)	SHORT CABLES (KIT 2281840-14)	LONG CABLES (KIT 5438124)	SHORT CABLES (KIT 5443710)
1	Facility MDP to Room Disconnect (A1)	cust. supplied	cust. supplied	cust. supplied	cust. supplied	cust. supplied	cust. supplied
2	Room Disconnect (A1) to PDU	cust. supplied	cust. supplied	cust. supplied	cust. supplied	cust. supplied	cust. supplied
3	Room Disconnect (A1) to System E-Off	cust. supplied	cust. supplied	cust. supplied	cust. supplied	cust. supplied	cust. supplied
4	PDU to Room Warning Light(s)	cust. supplied	cust. supplied	cust. supplied	cust. supplied	cust. supplied	cust. supplied
5	PDU to Scan Room Door Switch	cust. supplied	cust. supplied	cust. supplied	cust. supplied	cust. supplied	cust. supplied
50	HVDC Power Cable - PDU to Gantry	2343529	2343529-2	2343529	2343529-2	2343529	2343529-2
51	HVAC Power Cable - PDU to Gantry	2343530	2343530-2	2343530	2343530-2	2343530	2343530-2

Table 2-3 System Interconnect Cables (Continued)

RUN NO.	DESCRIPTION	PART NUMBER					
		For GOC or TIO Console		For NIO16 Console		For NIO16/OpenOC16 Console with Simplified Power Pan	
		LONG CABLES (KIT 2281840-4)	SHORT CABLES (KIT 2281840-5)	LONG CABLES (KIT 2281840-13)	SHORT CABLES (KIT 2281840-14)	LONG CABLES (KIT 5438124)	SHORT CABLES (KIT 5443710)
52	LVAC Power Cable - PDU to Gantry	2343528	2343528-2	2343528	2343528-2	2343528-3	2343528-4
53	LVAC Power Cable - PDU To Operator's Console	2343531	2343531-2	2343531	2343531-2	2343531	2343531-2
54	LVAC Power Cable - Gantry to Table	n/a	n/a	n/a	n/a	n/a	n/a
55	Ground, PDU to Raceway	2371450	2371450-2	2371450	2371450-2	2371450	2371450-2
56	Ground, Raceway to Console	2371450-3	2371450-4	2371450-3	2371450-4	2371450-3	2371450-4
60	LVAC Power Cable - PDU to Optional UPS	-	-	-	-	-	-
61	LVAC Power Cable - UPS Disconnect Panel to PDU	-	-	-	-	-	-
90	LVAC Power Cable - PDU to PET	-	-	-	-	-	-
100	Signal Cable - Gantry to PDU	2333152	2333152-2	5120646	5120646-2	5120646	5120646-2
101	Signal Cable - Gantry to Console	2333150	2333150-2	5419981	5419981-2	5419981	5419981-2
102	Signal Cable (Ethernet) - Gantry to Console	2352714-2	2352714-3	2373436-2	2373436-3	2373436-2	2373436-3
103	Data Cable (Fiber Optic) - Gantry to Console	2117848-2	2117848-7	5432019	5432019	5432019	5432019
104	Signal Cable - Gantry to Table	n/a	n/a	n/a	n/a	n/a	n/a
110	Signal Cable - UPS Control to Room Disconnect (A1)	-	-	-	-	-	-
111	Signal Cable - UPS Control to UPS Disconnect Panel	-	-	-	-	-	-

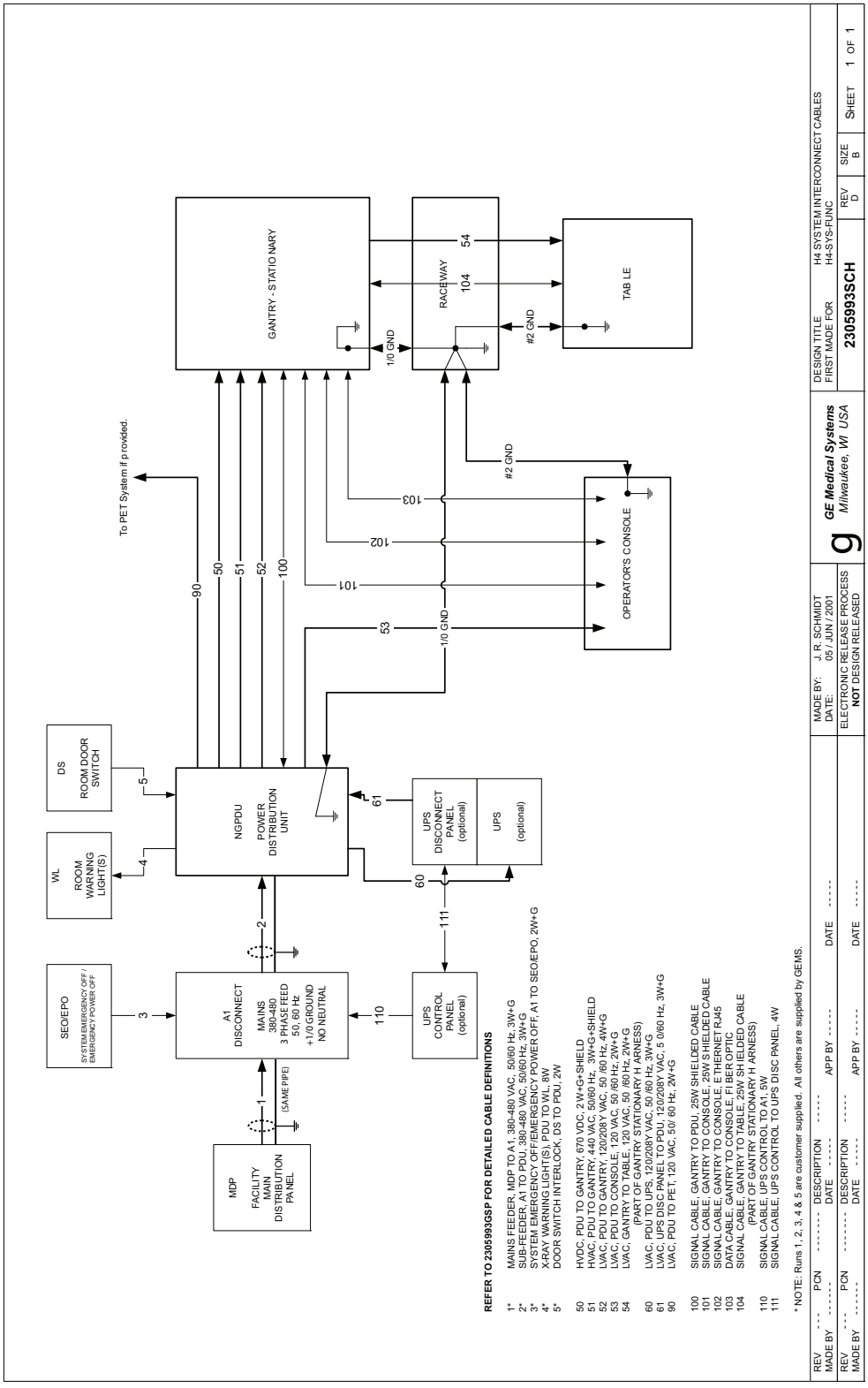
NOTICE **Shortening Power Cables is NOT recommended; especially if the appropriate crimping tool and ferrules are not employed.**

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

NOTICE **Excess cables can not 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
Contractor Connections

Table 2-4 Contractor PDU Connections

CONNECTION OR WALL BOX	AWG #	CONNECTION FROM	CONNECTION TO PDU	INSTALLED AND CHECKED
A1	#1	Load - T1	TS-1 L1	
	#1	Load - T2	TS-1 L2	
	#1	Load - T3	TS-1 L3	
	#1/0	GND	TS-1 GND **(Do NOT connect anything to neutral point.)**	
WL (Warning light) *See Figure 2-77, on page 168.*	#14	LV Source -1	TS6 1	
	#14	LV Source -2	TS6 2	
	#14	X-Ray ON Light -1	TS6 3	
	#14	X-Ray ON Light -2	TS6 4	
	#14	Sys-ON Light -1	TS6 5	
	#14	Sys-ON Light -2	TS6 6	
	#14	Ready Light -1	TS6 7	
	#14	Ready Light -2	TS6 8	
DS (Scan Room Door Switch)	#14	Door SW-1	TS6 9	
	#14	Door SW-2	TS6 10	

Note: Add #2 ground wire.

IMPORTANT: Add AWG #2 ground wire from Table frame to Table/Gantry raceway ground bar (as shown in Figure 2-2).

WARNING

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

☐ Check box when complete.

Section 4.0
True-In-One Console Connections

4.1 SCIM, Keyboard, Trackball & Mouse Installation

1.) Route the keyboard cable under the SCIM, as shown in Figure 2-3.

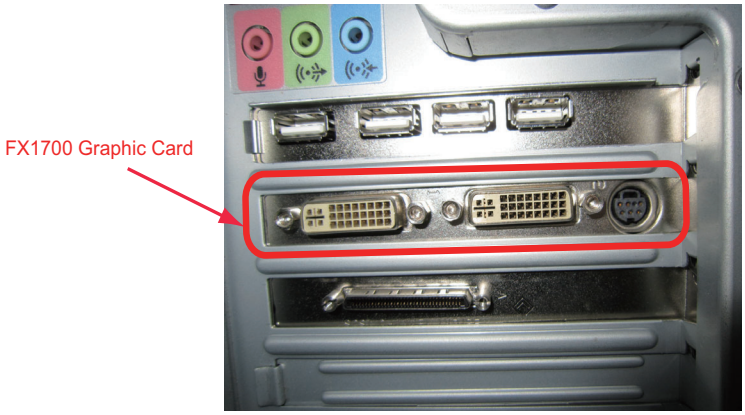
Figure 2-3 SCIM control with keyboard cable routed through SCIM

NOTICE **Potential for equipment damage.**

Never connect a mouse or keyboard with the Host Computer power "ON". Doing so can destroy components within the Host Computer.

2.) Connect the keyboard and mouse to the ports on the USB connector of xw8600 (Figure 2-4). If the mouse is a PS2 type, connect it to mouse port on the rear of host computer.

Figure 2-4 TIO USB Connector Location with FX1700 graphic card



USB Connection on TIO Console with FX1700 Graphic Card:

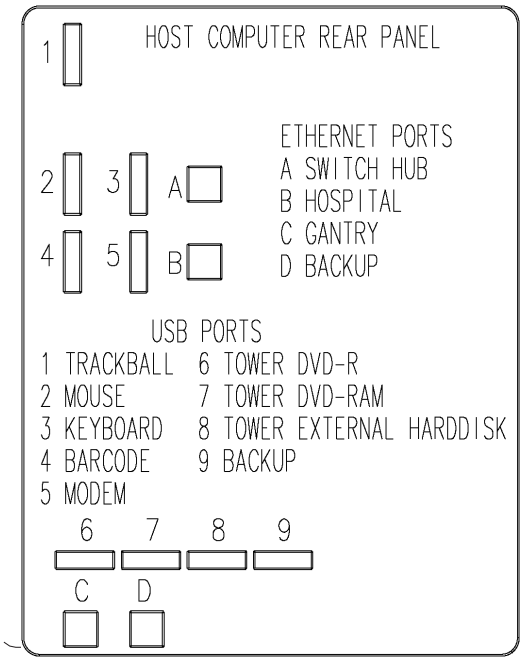
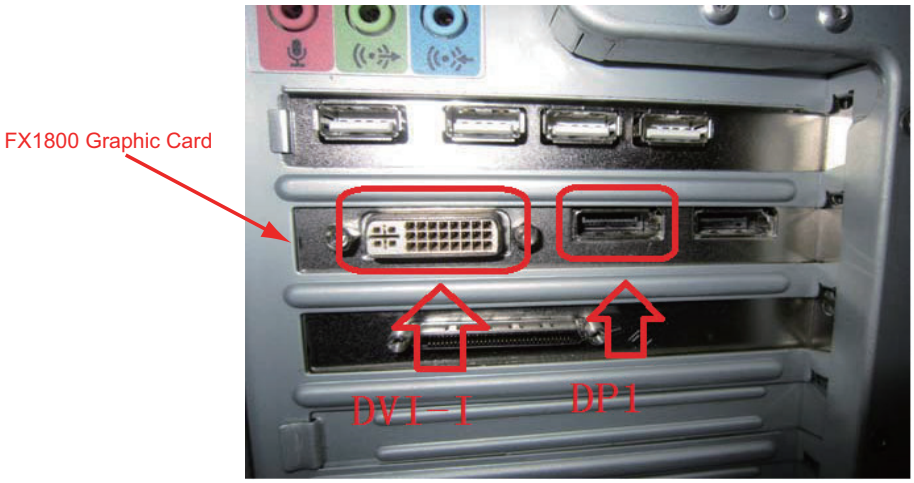
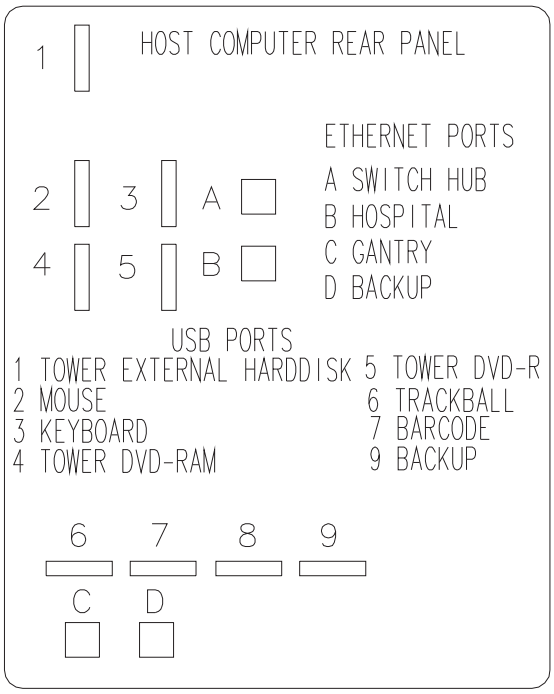


Figure 2-5 TIO USB Connector Location with FX1800 graphic card



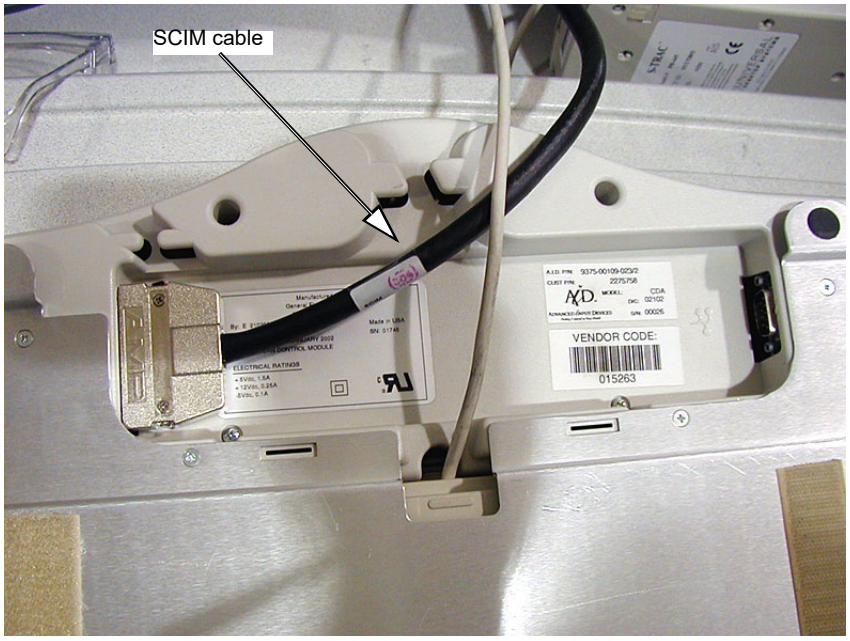
USB Connection on TIO Console with FX1800 Graphic Card:



3.) Connect the SCIM cable to the SCIM as shown in Figure 2-6. (Note the cable routing.)

Note: Make sure the SCIM connector fits snug. Some molding may need to be removed to allow the cable to fit snug.

Figure 2-6 SCIM bottom, showing cables and keyboard mounting bracket



4.) Select and install the proper overlay with the appropriate language for your system: (1) with Tilt or (2) without tilt.
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.

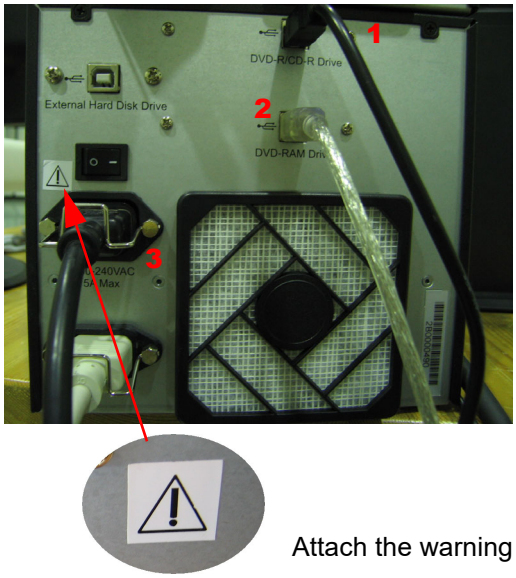
5.) The keyboard should attach to the SCIM using the supplied Velcro strip and fit snugly against the SCIM when finished, as shown in Figure 2-7.

Figure 2-7 SCIM connected to the keyboard with the US English tilt overlay installed

4.2 Connecting the Media Tower

4.2.1 Media Tower (5270510-3) Connection

Figure 2-8 Media Tower Connections shown



1.) DVD-R/CD-R Drive
2.) DVD-RAM Drive
3.) Power into the Media Tower

Attach the warning label

Check the box when each step is completed:

1.) ❒ Connect the three USB cables to the rear of the media tower. Each USB Cable is labeled, plug the labeled cable end into the correct connector.

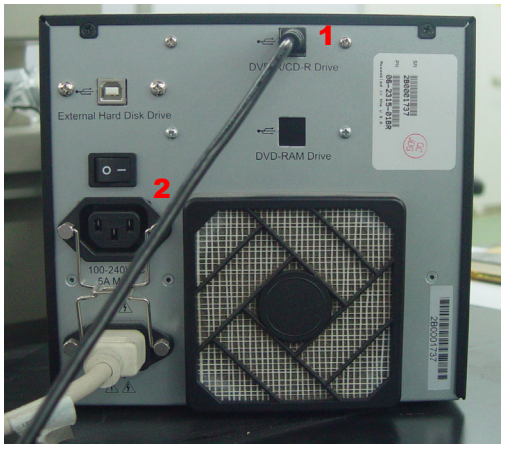
2.) ❒ Connect the power cable to the rear of the media tower.

3.) ❒ Attach the warning label beside the DVD-R connector.

4.2.2 Media Tower (5270510-10, -11) Connection

Figure 2-9 Media Tower Front View

Figure 2-10 Media Tower Connections shown



1.) DVD-R/CD-R Drive
2.) Power into the Media Tower

4.2.3 Media Tower (5270510-20, -21, -22) Connection

Media Tower (5270510-20, -21, -22) Connection refer to section 5.2 - Connecting the Media Tower

4.3 Connecting the Monitor

4.3.1 Connecting the Monitor with FX1700 Graphic Card

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 connector. Do not force the connector in the wrong way, otherwise the pins might bend.

1.) Place the LCD monitors.

2.) Connect Scan Monitor and Image Monitor as followings:

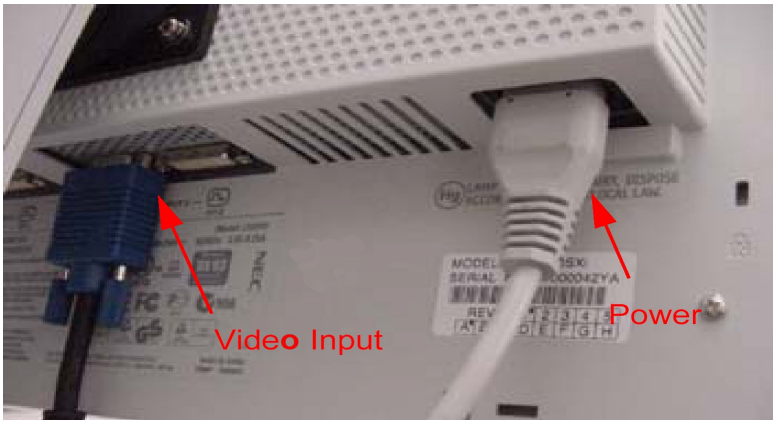
Scan Monitor

- Video cable from Console Host RGBHV (A) to Monitor D-SUB (HD15)
- Power cable from Console power panel outlet
- Route through the cable keeper

Image Monitor

- Video cable from Console Host RGBHV (B) to Monitor D-SUB (HD15)
- Power cable from Console power panel outlet
- Route through the cable keeper

Figure 2-11 Monitor Connections



3.) Connect the power cord to the monitor.

4.3.2 Connecting the Monitor with FX1800 Graphic Card

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.

Connect Scan Monitor and Image Monitor as following:

Scan Monitor

- Video cable from Console Host DP1 to Monitor DVI
- Power cable from Console power panel outlet
- Route through the cable keeper

Figure 2-12 Video Cable and Power Cable

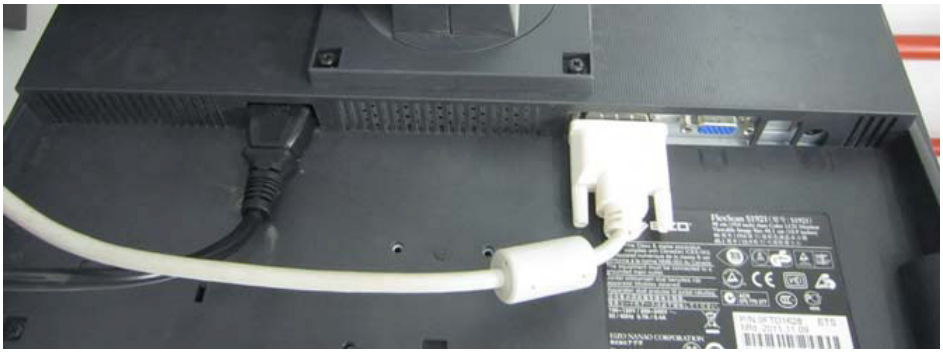


Image Monitor

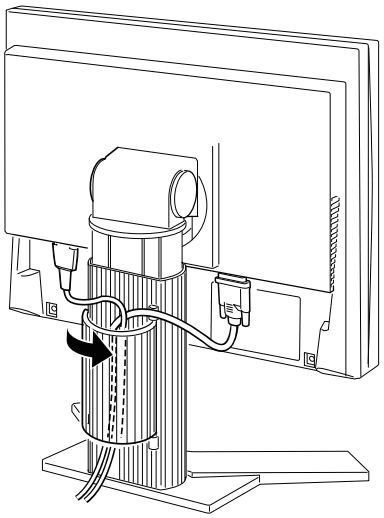
- Video cable from Console Host DVI-I to Monitor D-SUB
- Power cable from Console power panel outlet
- Route through the cable keeper

Figure 2-13 Video Cable and Power cable

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

Table 2-5 Monitor Cables

Figure 2-14 Cable Routing and Keeper



NOTICE

There is the exist issue that scan and image monitors display reverse on TIO (True-In-One) console + FX1800 graphics card (PN: 5700000-24) before 11BW46.3 SP2.2 installation.

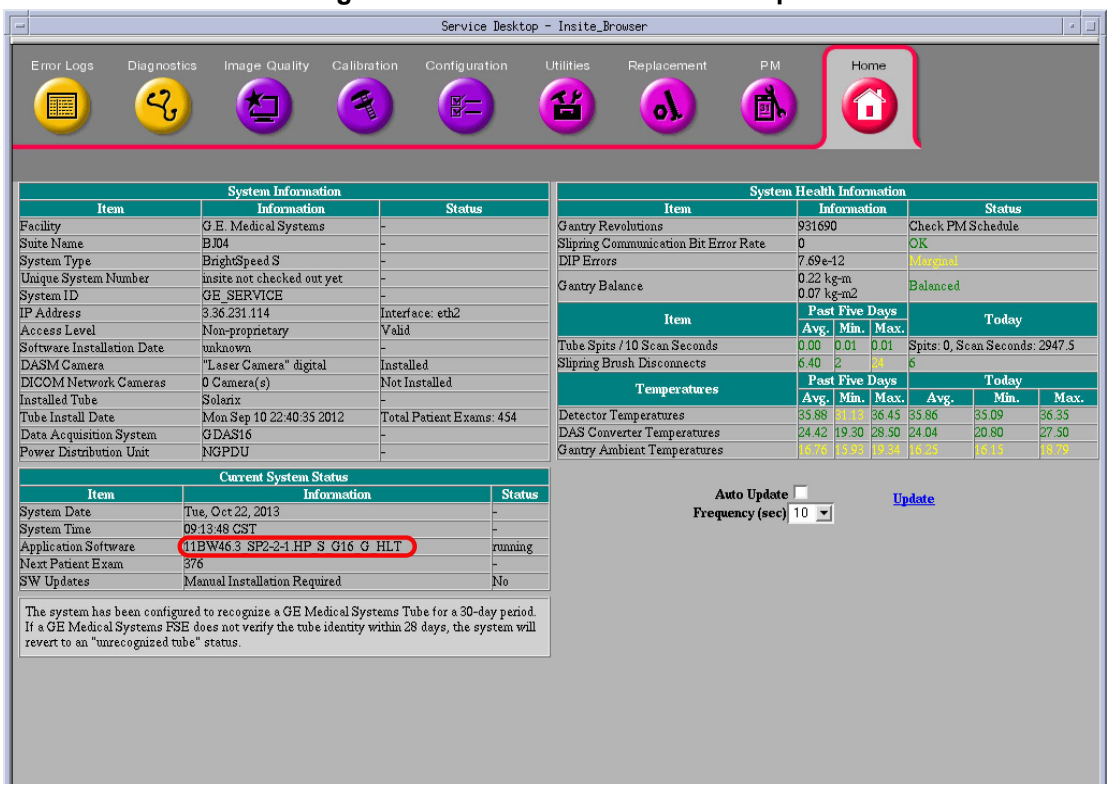
At first, check the software version string by following methods to confirm whether 11BW46.3 SP2.2 has been installed or not.

a.) Open a Unix Shell and type the following command, for example as below:

```
{ctuser@hostname} swhwinfo
11BW46.3_SP2-2-1.HP_S_G16_G_HLT
```

b.) Look at the Common Service Desktop Home Page.

Figure 2-15 Common Service Desktop



- **Prior to 11BW46.3 SP2.2 Installation**

There is a workaround for the scan and image monitors display reverse issue as followings:

a.) Open a shell, and then input the command below:

```
{ctuser@hostname} su -
Password: #bigguy
[root@hostname]#cd /etc/X11
[root@hostname X11]#cp xorg.conf.clean xorg.conf.clean.backup.date
(date=Current date)
[root@hostname X11]#cp xorg.conf xorg.conf.backup.date (date=Current date)
[root@hostname]#BaseMonitorOpts Device0 TwinViewOrientation LeftOf
[root@hostname]#cp /etc/X11/xorg.conf /etc/X11/xorg.conf.clean
cp: overwrite `/etc/X11/xorg.conf.clean'? y
```

b.) Reboot the system.

- **After 11BW46.3 SP2.2 Installation**

Skip above command input and perform the section 4.3.3 - LCD Video Monitor Setup for LCD Monitor Setup.

4.3.3 LCD Video Monitor Setup

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

4.4 Power Panel Connections

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

1.) Connect the console power cable to the console power panel.

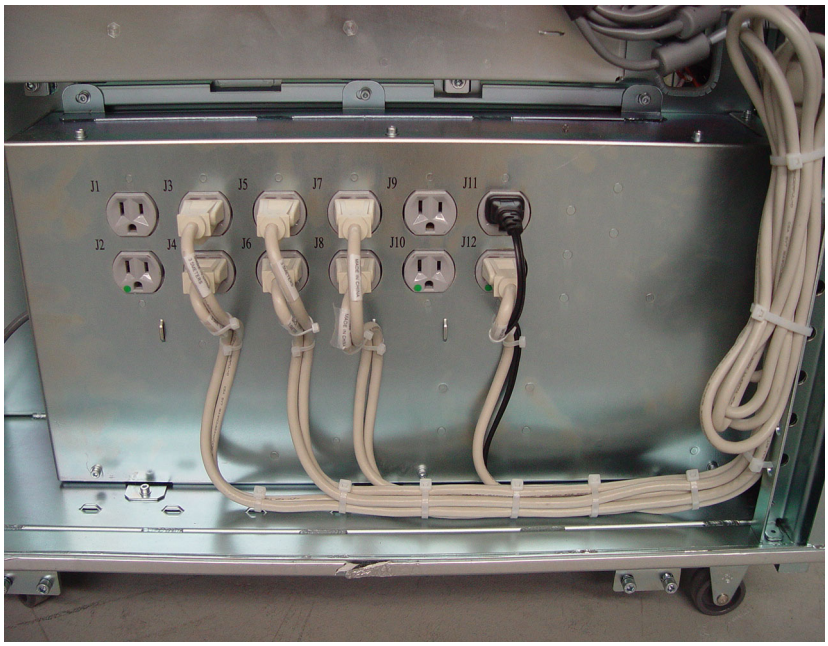
2.) Connect console component power cords as listed in Table 2-6. (“J numbers” increment from top to bottom, left to right)

Table 2-6 Power Panel Outlet Assignments

J#	DEVICE	J#	DEVICE
J1		J10	
J2		J11	Fan
J3	Monitor	J12	Host
J4	Monitor	J13	
J5	Media Tower	J14	
J7	Hub	J15	
J8	ICOM	J16	
J9			

Figure 2-16 Power Connections

Figure 2-17 Power Panel Outlet



4.5 Modem Option

If you have a modem to install, do it now. Place the modem on top of the console desktop. Power supply of the Modem shall be located inside the console. Hook up the power, phone, or USB line as shown in drawing which is located in the back cover of the console.

NOTICE

Only global Modem with Serial port can be used on True-In-One console, connect the serial USB converter cable to modem at first, then connect to USB port on the Host Computer inside of the True-In-One console.

Attach the warning label at the top of the modem.

4.6 LAN Connections

Plug LAN cable into HSP port of xw8600 (refer to Figure 2-4).

4.7 TIO OC Interconnect

Figure 2-18 TIO OC Interconnect with FX1700 Graphic Card

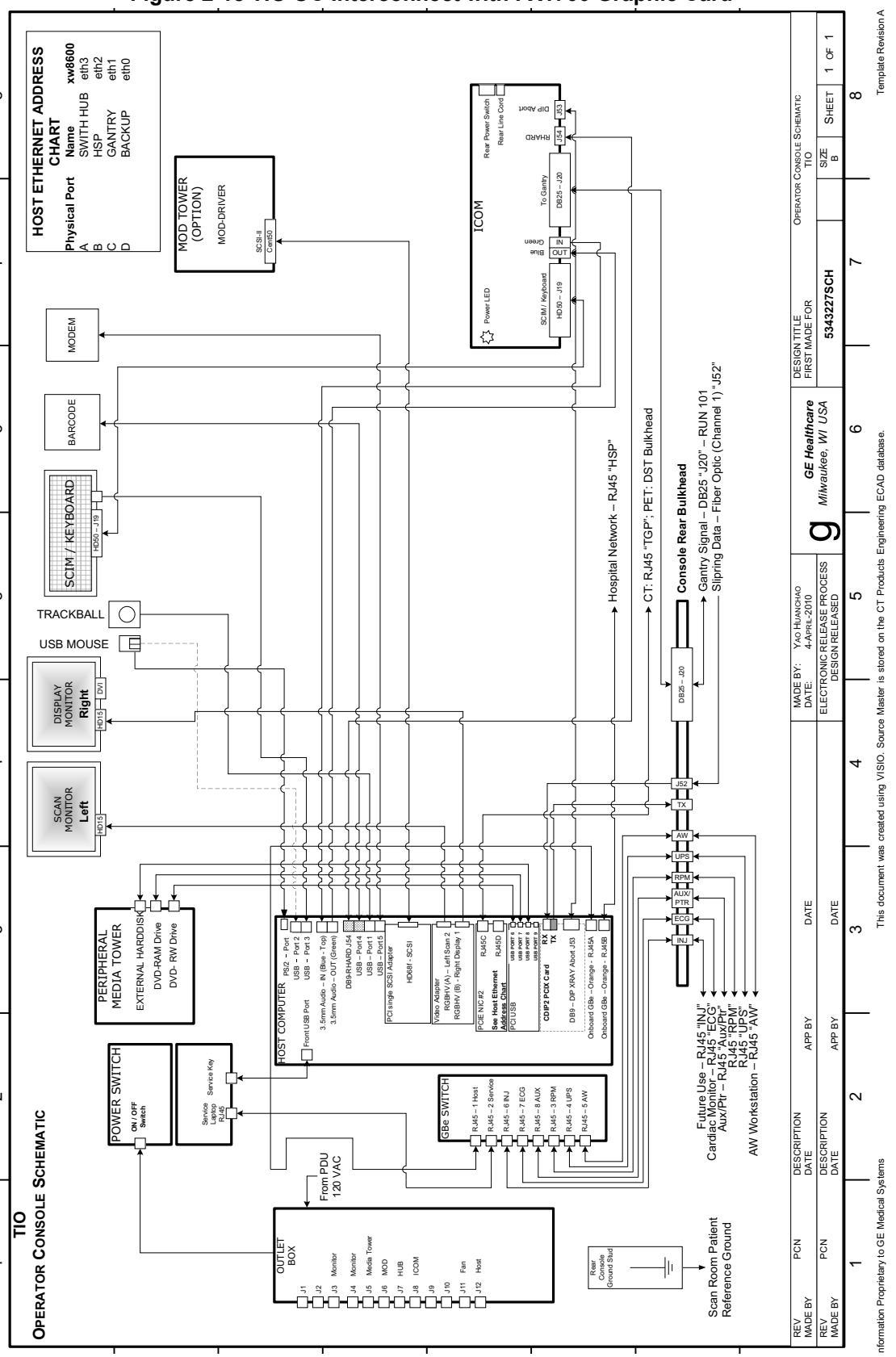
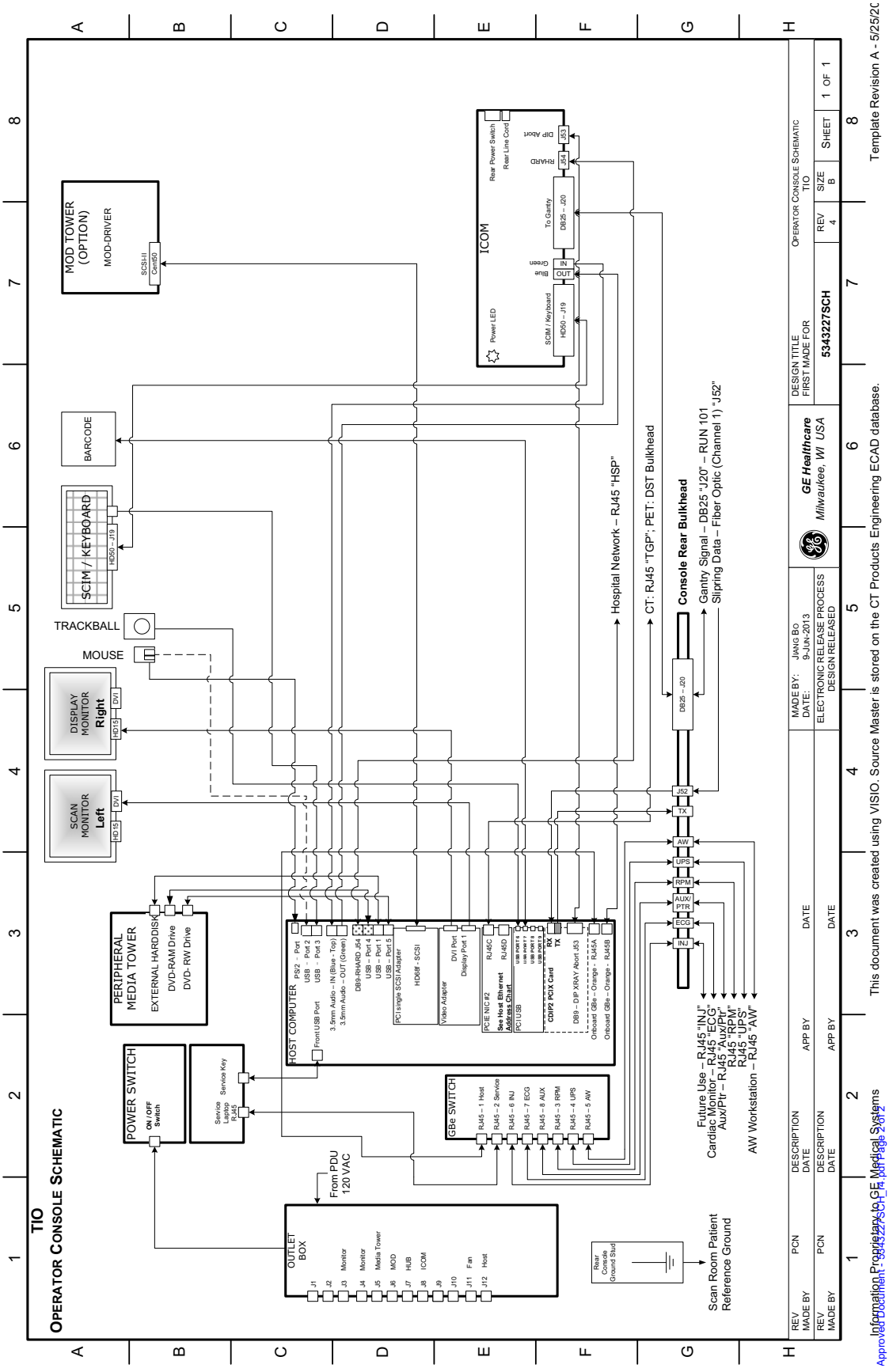


Figure 2-19 TIO OC Interconnect with FX1800 Graphic Card



Section 5.0
NIO16 Console Connections

PART #	DESCRIPTION	CONNECT TO	QUANTITY	LENGTH	
				MM	INCHES
5366514-2	USB Extension Cable **(Z800)**	Keyboard	1	3560 ± 30	140.16 ± 1.18
5431909	USB Extension Cable **(Z840)**	Keyboard	1	3500 ± 50	137.80 ± 1.97
5450275	PS2 Extension Cable **(Z800)**	Mouse	1	3500 ± 50	137.80 ± 1.97
5458346	USB Extension Cable **(Z840)**	Mouse	1	3500 ± 50	137.80 ± 1.97
5332107-2	DVI to D-SUB VIDEO CABLE	Monitor	1	3000 ± 20	118.11 ± 0.79
5408703	DP to DVI cable, 3 meter **(Z800)**	Monitor	1	3000 ± 50	118.11 ± 1.97
5408703-2	DP to DVI cable, 3 meter **(Z840)**	Monitor	1	3000 ± 20	118.11 ± 0.79
5315370	CABLE, USB TYPE A-B	PMT media Tower, DVD-RW/USB external HDD	2	2000	78.74
5432953-2	Power Cable, Peripheral Tower to NIO AC Box, IEC C14 to C13 Connectors	PMT media Tower	1	3050 ± 50	120 ± 1.97
5432953-3	Power Cable, Display monitor to NIO AC Box, IEC C14 to C13 Connectors	Monitor	1	3050 ± 50	120 ± 1.97
5432953-4	Power Cable, Scan monitor to NIO AC Box, IEC C14 to C13 Connectors	Monitor	1	3050 ± 50	120 ± 1.97

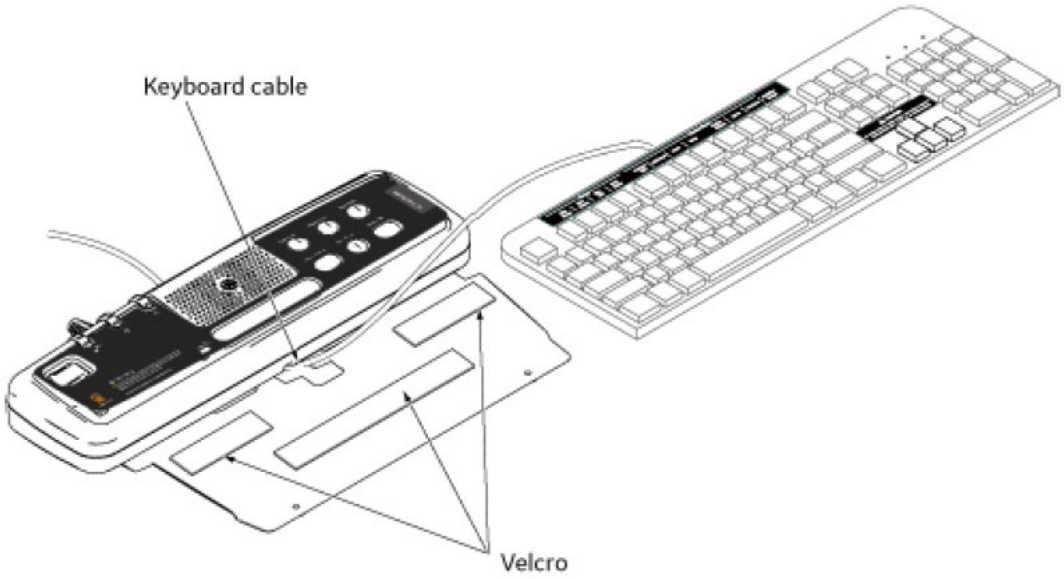
Table 2-7 GE Supplied Cables List for NIO16 Console

5.1 GSCB, Keyboard, Trackball & Mouse Installation

1.) Install the GSCB to the metal plate by using four screws.

2.) Route the keyboard cable under the GSCB and attach the keyboard to the GSCB metal plate with velcro strip and fit snugly against the GSCB.

Figure 2-20 GSCB and Keyboard



NOTICE **Potential for equipment damage.**

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

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

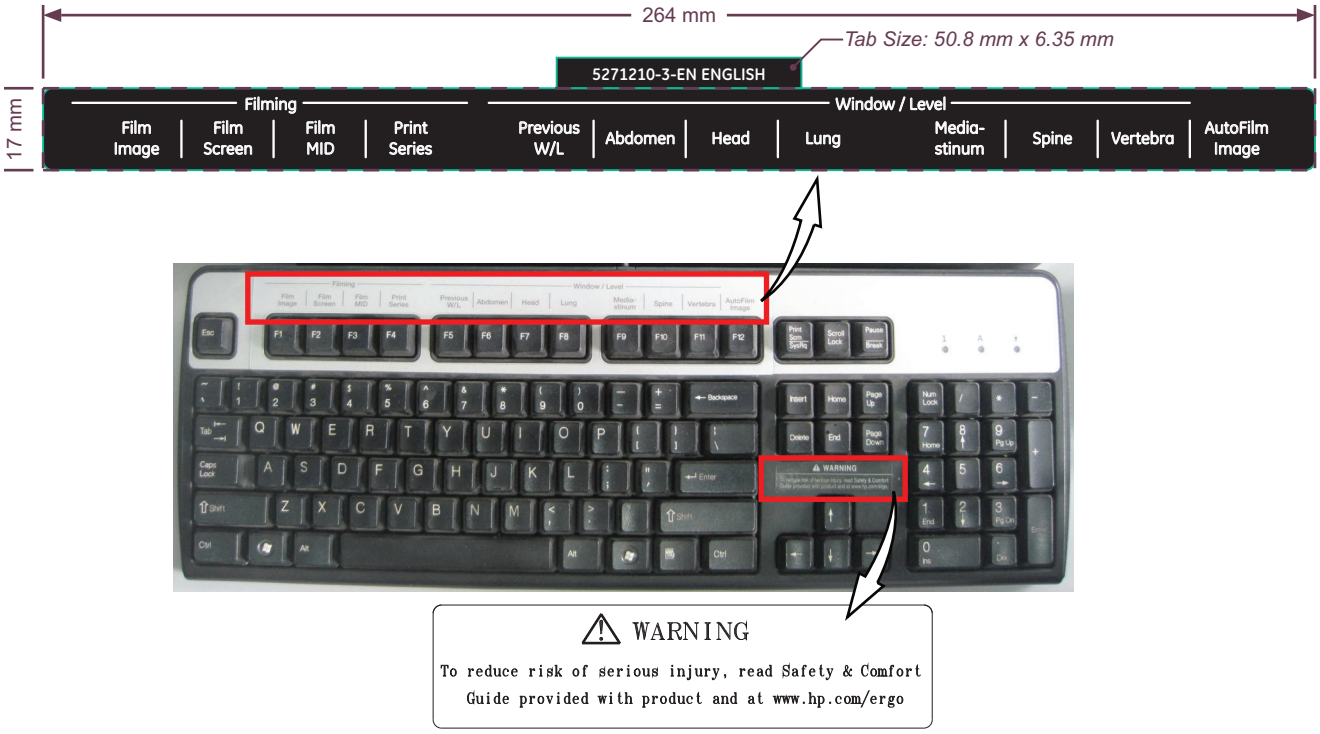
DESCRIPTION	PART NUMBER	CABLE LENGTH	QTY
PS2 Ext Cable (Mouse) for Z800	5450275	3500 mm	1
USB Ext Cable (Mouse) for Z840	5458346	3500 mm	1
USB Ext Cable (Keyboard) for Z800	5366514-2	3560 mm	1
USB Ext Cable (Keyborad) for Z840	5431909	3500 mm	1

Table 2-8 Keyboard and Mouse Extension Cables

4.) Select the local language keyboard overlay and GSCB film from the keyboard collector (5431062-1-xx) to attach.

- Select the keyboard overlay and warning label from the keyboard collector (5324605-xx) to attach. (See Figure 2-21)

Figure 2-21 Keyboard Overlay and Warning Label Attaching (English)



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

Figure 2-22 GSCB Film with Tilt/E-Reset

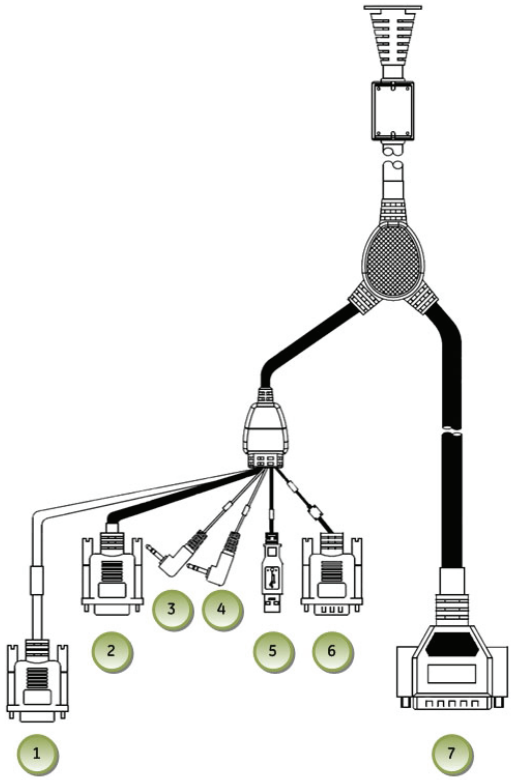
Note: Verify that none of the buttons get caught and stuck under the overlay.
Pay close attention to the prescribed tilt button on systems with the tilt feature.

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->OpenOC16 Console->GSCB Troubleshooting***.

5.) Route the GSCB cable and connect connectors according to Figure 2-23 and Table 2-9.

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

Figure 2-23 GSCB Cable (5404262)



#	ITEM	DESCRIPTION
1	GSCB - DB9/F Black	Host Computer DIP Serial Port
2	GSCB - DB9/F Gray	Host Computer RS232
3	GSCB - Green Audio	Host Computer Audio Out (Green)
4	GSCB - Blue Audio	Host Computer Audio In (Blue)
5	GSCB - USB	Not Used
6	GSCB - DB9/M Black	AC Box J56
7	GSCB - DB25/M Black	TGP Gantry Cable

Table 2-9 GSCB Cable (5404262)

5.2 Connecting the Media Tower

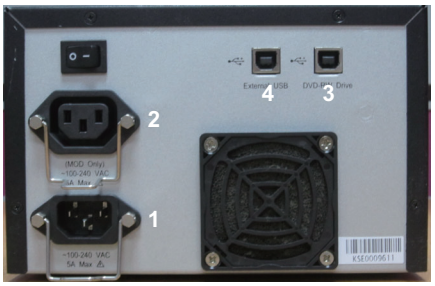
1.) Media Tower Connection (5270510-10, -11), refer to section 4.2.2 - Media Tower (5270510-10, -11) Connection

2.) Media Tower Connection (5270510-20, -21, -22), refer to Figure 2-24.

Figure 2-24 Media Tower Connections (5270510-20, -21, -22)

Front View

Rear View



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

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

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

Table 2-10 Media Tower Cables

5.3 Connecting the LCD Monitor

NOTICE **Equipment Damage Possible**

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

5.3.1 Connect Scan Monitor and Image Monitor for EIZO LCD:

Scan Monitor

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

Figure 2-25 Video Cable and Power Cable

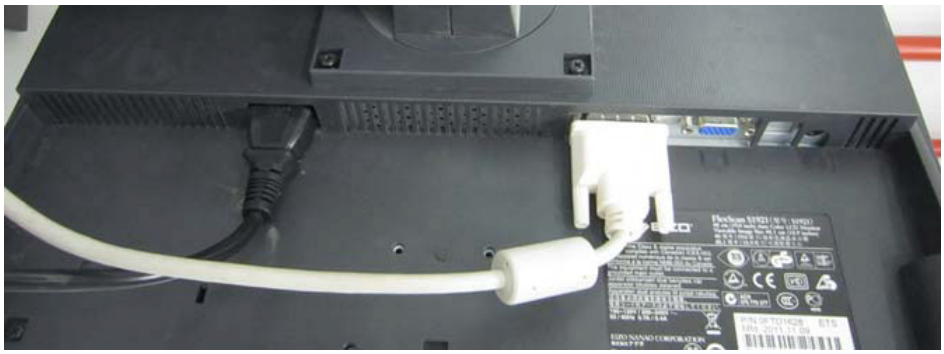


Image Monitor

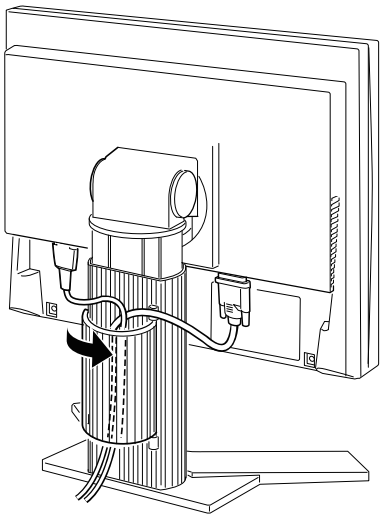
- Video cable from Console Host PC DVI-I to Monitor D-SUB (VGA)
- Power cable from Console AC Box J9
- Route through the cable keeper

Figure 2-26 Video Cable and Power cable

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

Table 2-11 Monitor Cables

Figure 2-27 Cable Routing and Keeper



5.3.2 Connect Scan Monitor and Image Monitor for HP LCD:

Figure 2-28 HP E190i LCD Monitor Connections

A	Power Cable Connection
B	DVI Video Connection – Prescription / Scan Monitor (left)
C	D-Sub (VGA) Video Connection – Display / Image Monitor (right)

Scan Monitor

- Video cable from Console Host PC DP to Monitor DVI
- Power cable from Console AC Box J10
- Route through the cable keeper

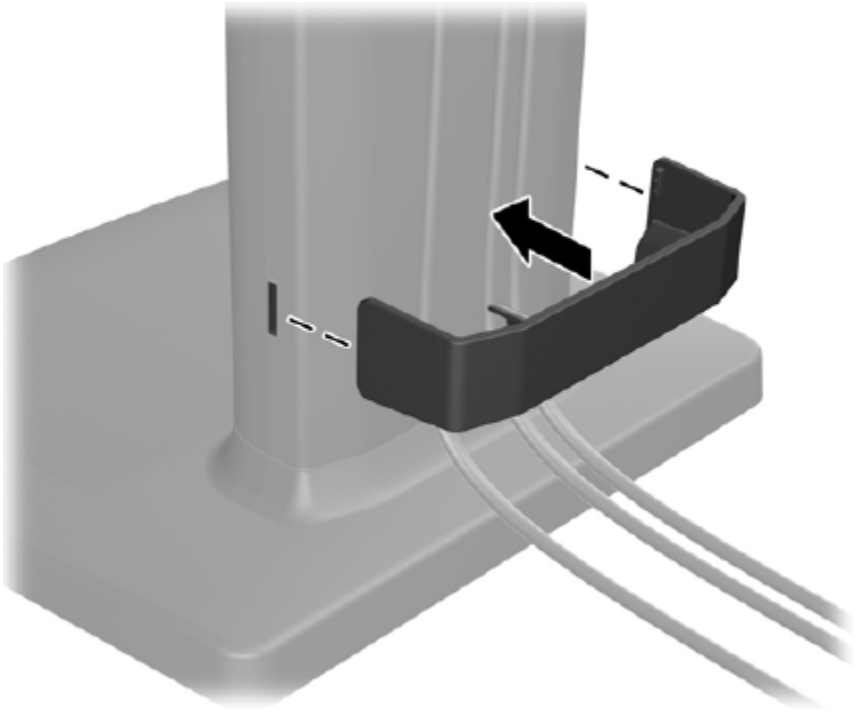
Image Monitor

- Video cable from Console Host PC DVI to Monitor D-SUB (VGA)
- Power cable from Console AC Box J9
- Route through the cable keeper

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

Table 2-12 Monitor Cables

Figure 2-29 Cable Routing and Keeper



5.3.3 LCD Video Monitor Setup

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

5.4 NIO Console Interconnect

Figure 2-30 NIO OC Interconnect for Z800

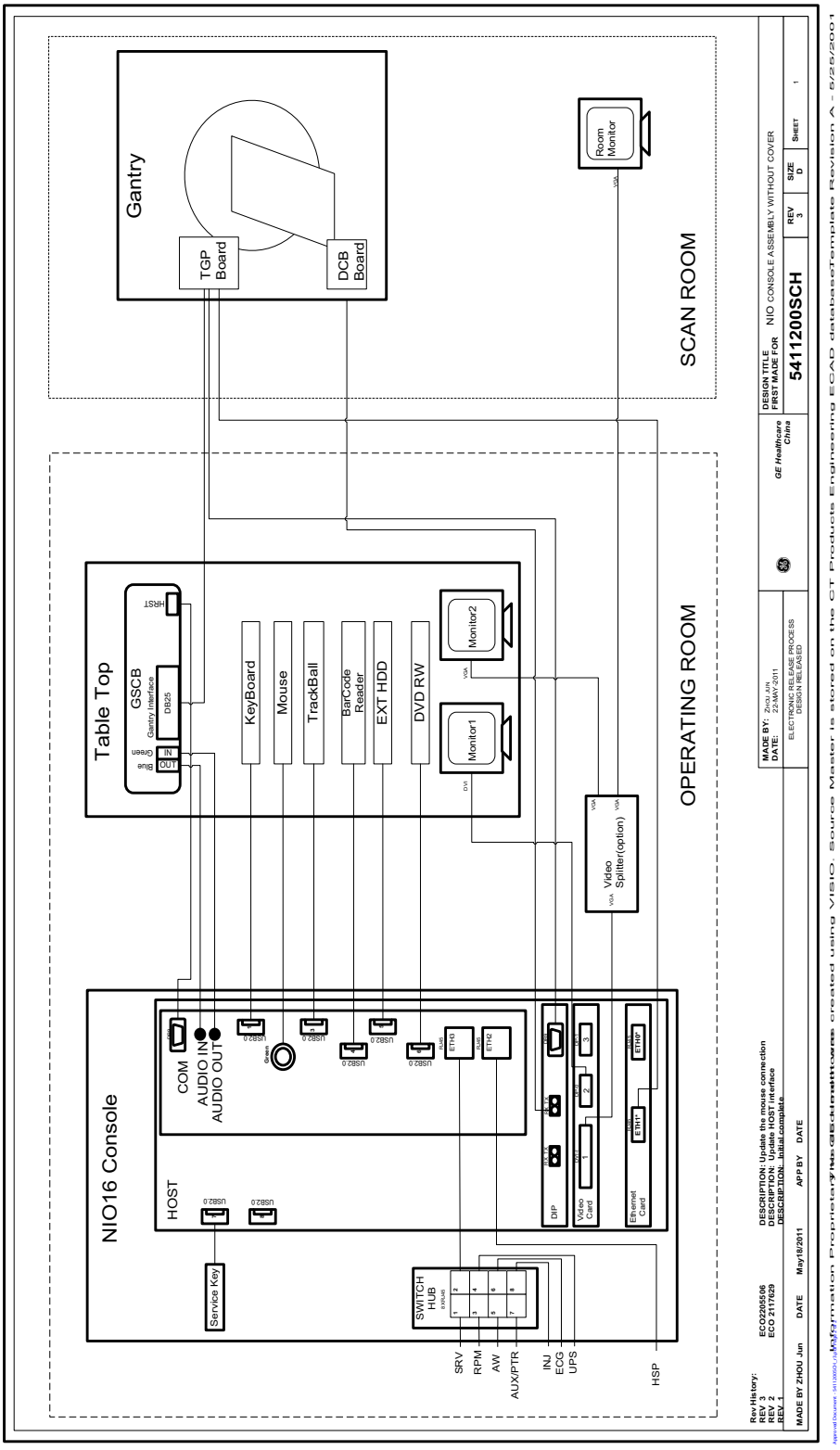
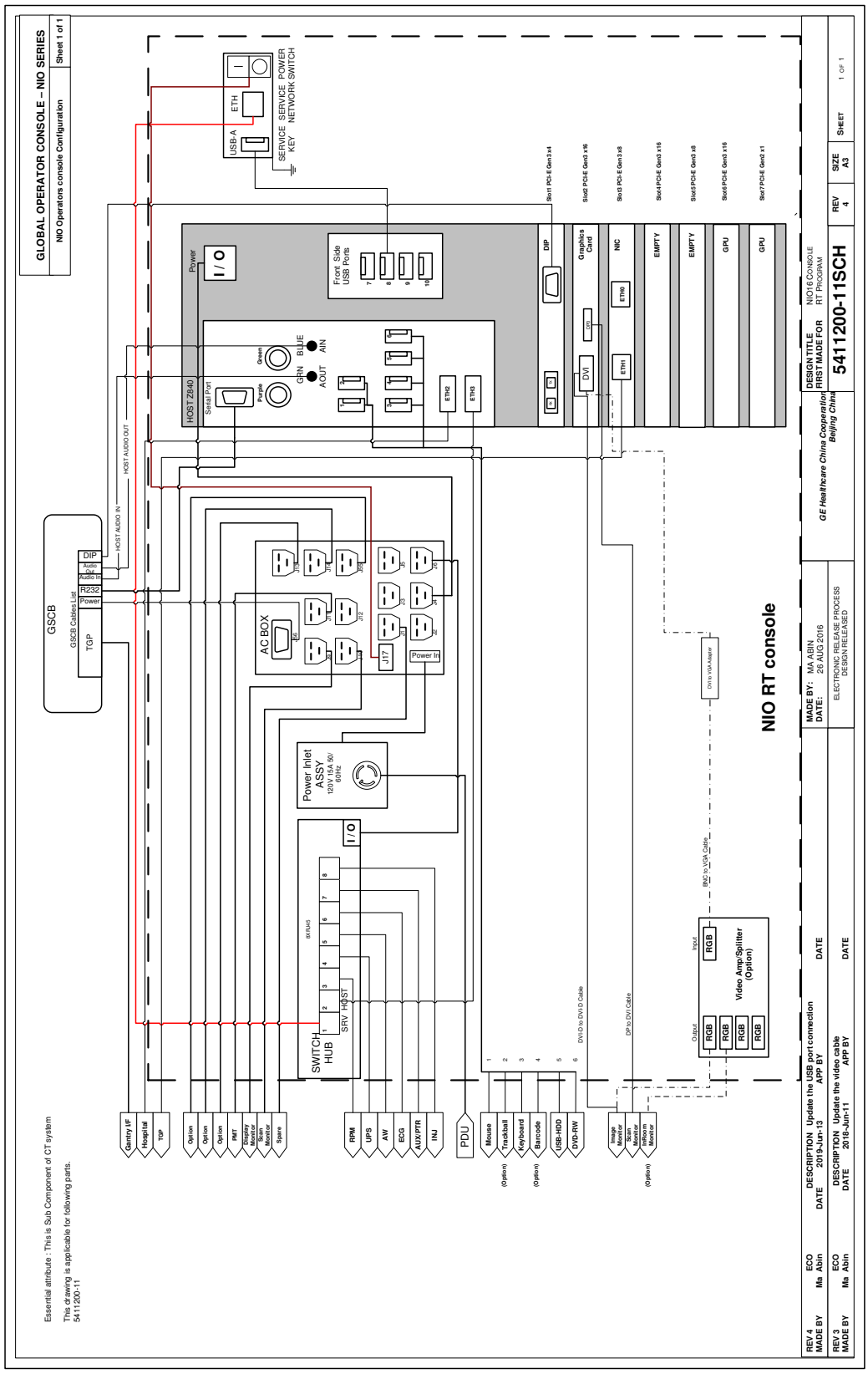


Figure 2-31 NIO OC Interconnect for Z840



5.5 Host Computer Connections

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

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

Figure 2-32 NIO Rear View with 5412524 AC BOX

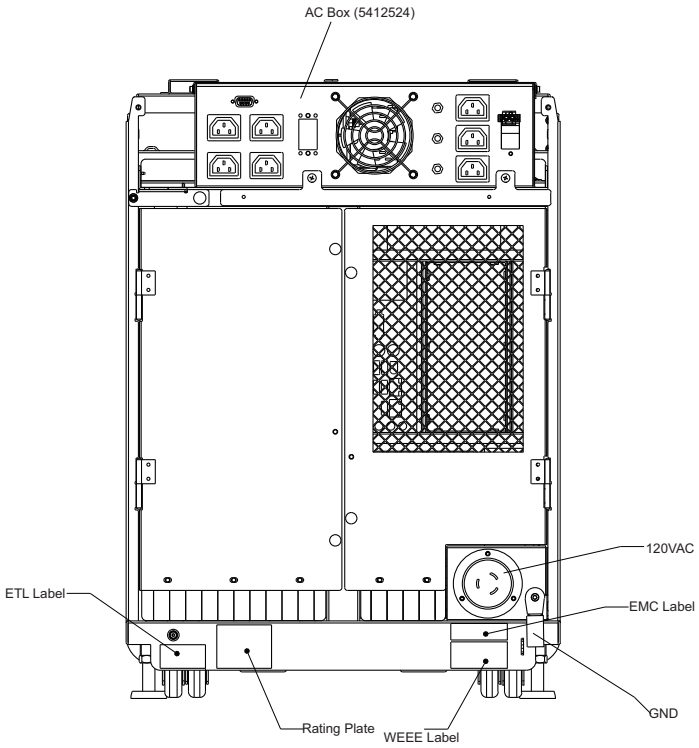
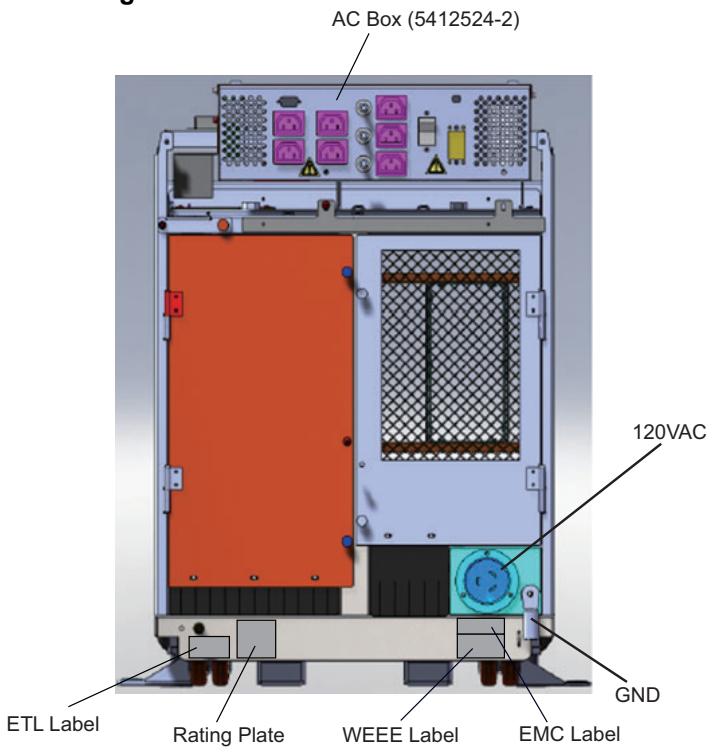


Figure 2-33 NIO Rear View with 5412524-2 AC BOX



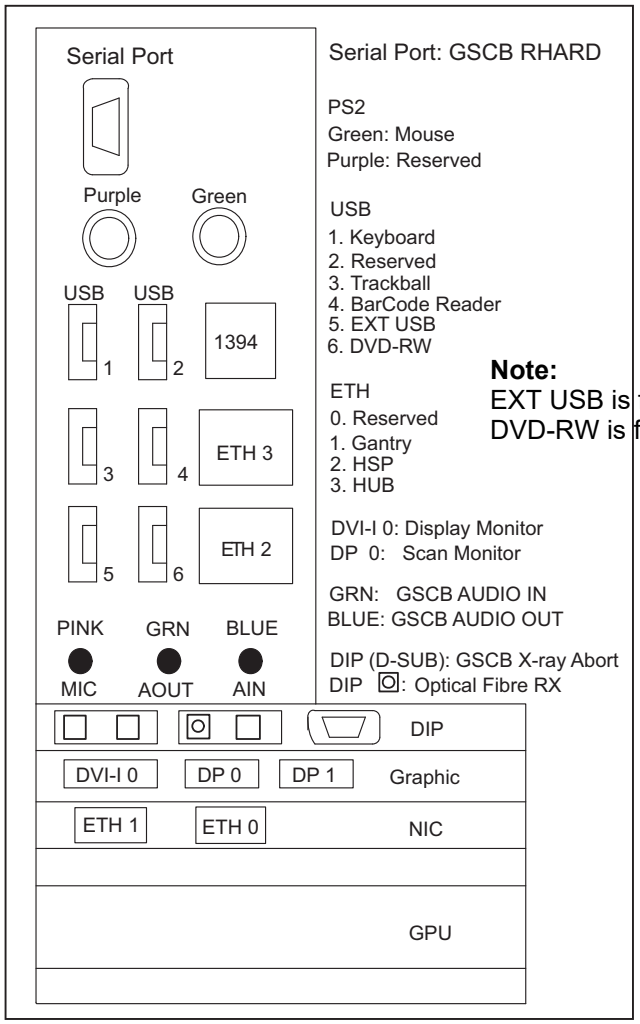
2.) Connect the power cable and ground cable to the console rear panel.

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

Table 2-13 Console Cable Connections

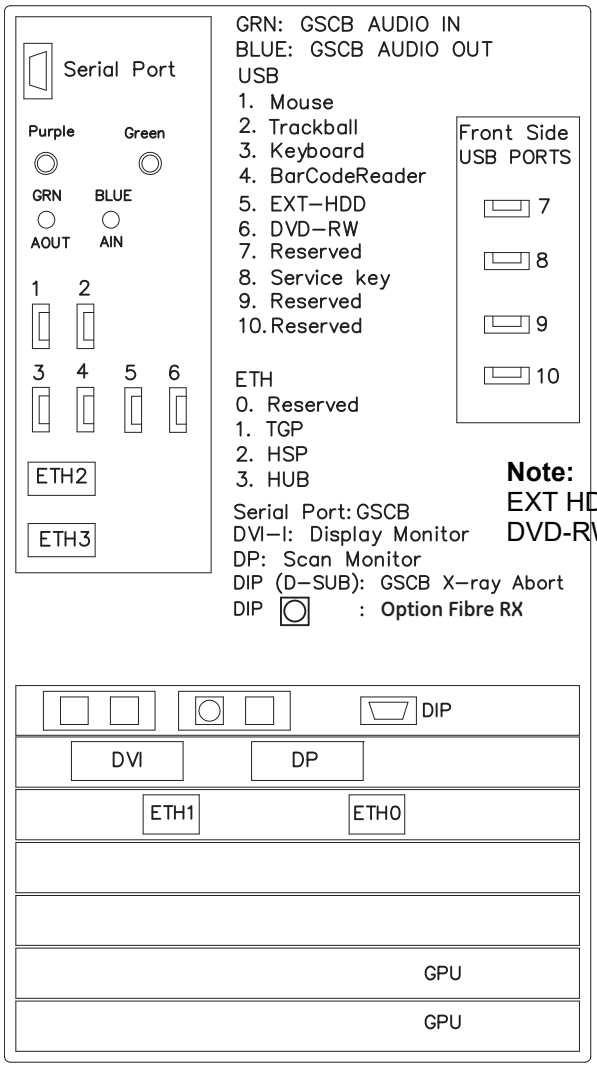
3.) Connect the all cables (see Table 2-7) to the rear of Host Computer referring to the drawing below (Figure 2-34 and Figure 2-35).The drawing is also printed on the right rear door of the console.

Figure 2-34 Z800 Host Computer Connections



Note:
EXT USB is for Media Tower External HDD Drive
DVD-RW is for Media Tower DVD Drive

Figure 2-35 Z840 Host Computer Connections



Note:
EXT HDD is for Media Tower External HDD Drive
DVD-RW is for Media Tower DVD Drive

5.6 Optional Long Cable Connections

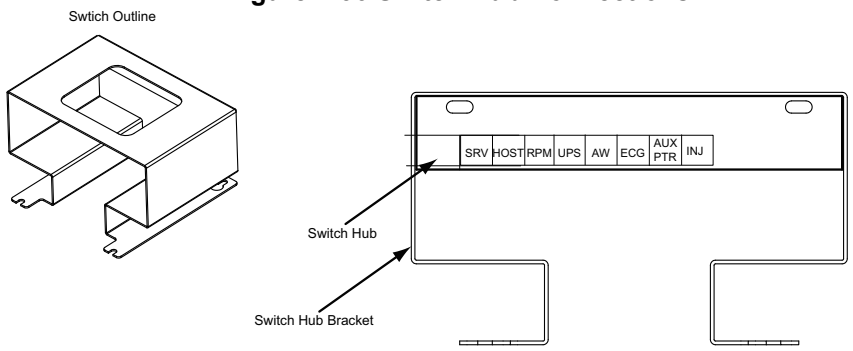
In most cases the Console peripherals such as Monitors, Keyboard, Mouse and GSCB will be mounted to, or placed on top of the Console Unit. In some cases these items may be placed to a short distance away from the actual Console Unit on a counter top or other surface requiring additional extension cables.

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

5.7 Switch Hub Connections

Switch Hub located left side the console rear panel. Plug cables into Switch Hub on console.

Figure 2-36 Switch Hub Connections



5.8 AC Box Connections

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

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

1.) Connect the console power cable and ground cable to the console power panel.

2.) Connect console component power cords as listed in Table 2-14. (“J numbers” increment from top to bottom, left to right)

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

Table 2-14 AC Box Outlet Assignments

Figure 2-37 AC Box (5412524) Connections

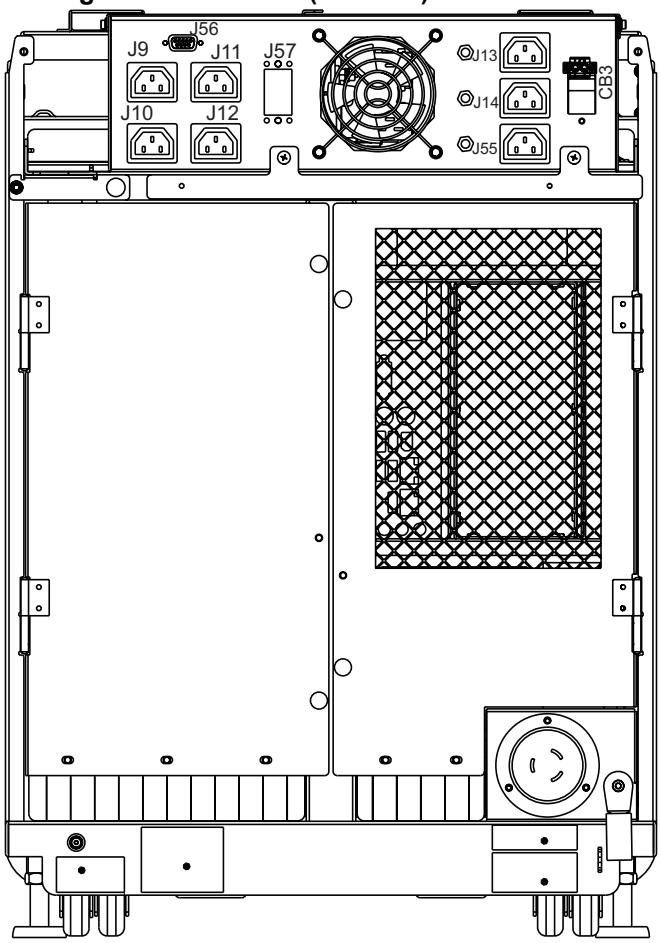
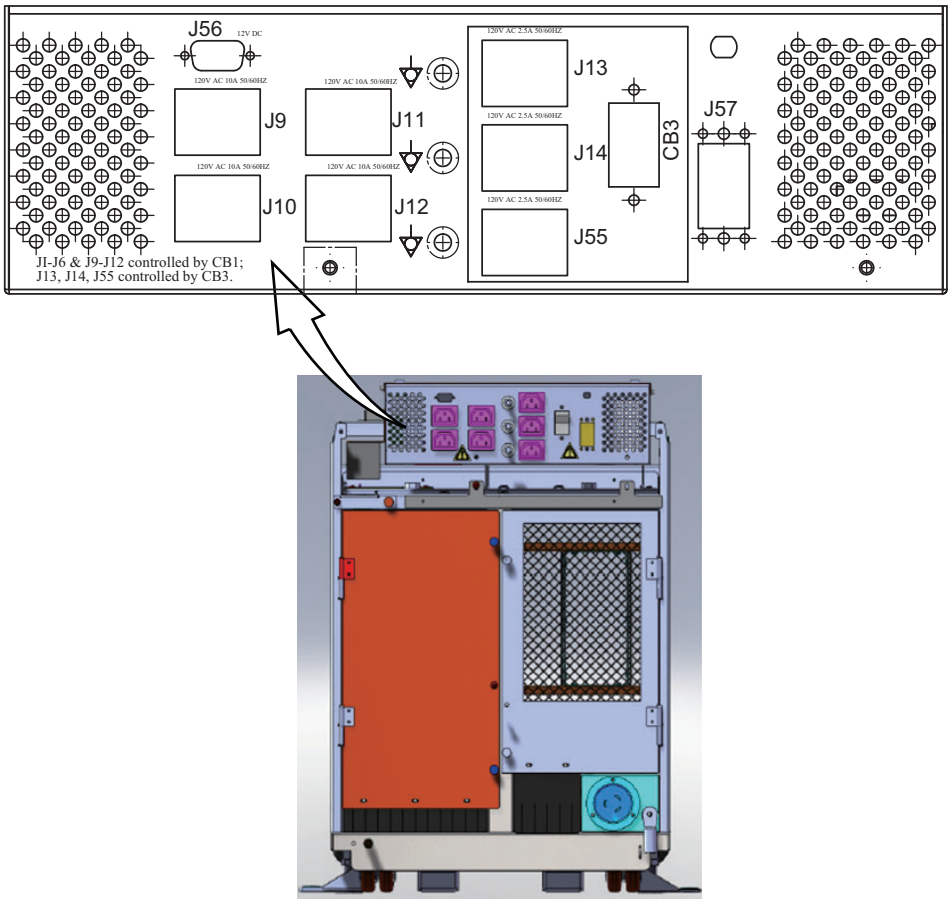


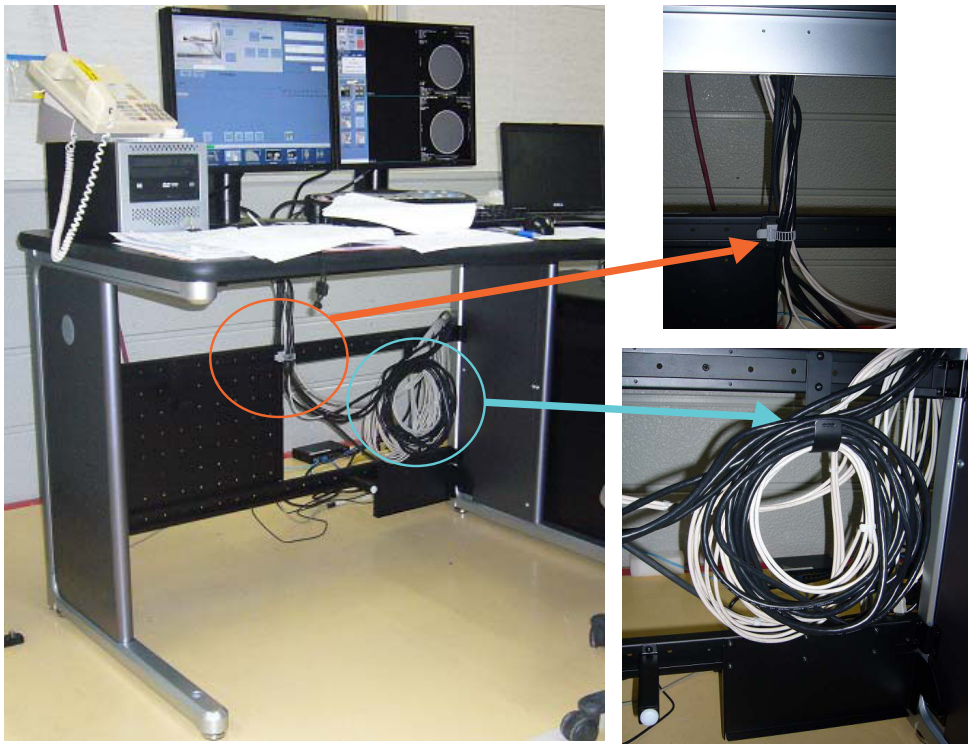
Figure 2-38 AC Box (5412524-2) Connections



5.9 Cable Arrangement

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

Figure 2-39 Example: Cable Arrangement



Section 6.0
OpenOC16 Console Connections

PART #	DESCRIPTION	CONNECT TO	QUANTITY	LENGTH	
				MM	INCHES
5431909	USB Extension Cable	Keyboard	1	3500 ± 50	137.80 ± 1.97
5458346	USB Extension Cable	Mouse	1	3500 ± 50	137.80 ± 1.97
5641358	DVI-D to DVI-D Cable, 3 meter	Display Monitor	1	3000 ± 150	118.11 ± 5.9
5408703-2	DP to DVI cable, 3 meter	Scan Monitor	1	3000 ± 50	118.11 ± 1.97
5315370	CABLE, USB TYPE A-B	PMT Media Tower, DVD-RW/USB External HDD	2	2000	78.74
5432953-6	Power Cable, Peripheral Tower to OpenOC16 Console	PMT Media Tower	1	3050 ± 50	120 ± 1.97
5478299-6	Power Cable, Display monitor to OpenOC16 Console	Display Monitor	1	3050 ± 50	120 ± 1.97
5478299-5	Power Cable, Scan monitor to NIO OpenOC16 Console	Scan Monitor	1	3050 ± 50	120 ± 1.97

Table 2-15 GE Supplied Cables List for OpenOC16 Console with Z840

Part #	Description	Connect to	QUANTITY	LENGTH	
				MM	INCHES
5431909	USB EXTENSION CABLE	Keyboard	1	3500 ± 50	137.80 ± 1.97
5458346	USB EXTENSION CABLE	Mouse	1	3500 ± 50	137.80 ± 1.97
5408703-2	DP to DVI cable, 3 meter	Monitor	2	3000 ± 50	118.11 ± 1.97
5795077	Mini DP to DP Dongle	Monitor (Adapter)	2	250	
5478299-6	Power Cable, Display monitor to Open Chassis Console	Display Monitor	1	3050 ± 50	120 ± 1.97
5478299-5	Power Cable, Scan monitor to Open Chassis Console	Scan Monitor	1	3050 ± 50	120 ± 1.97

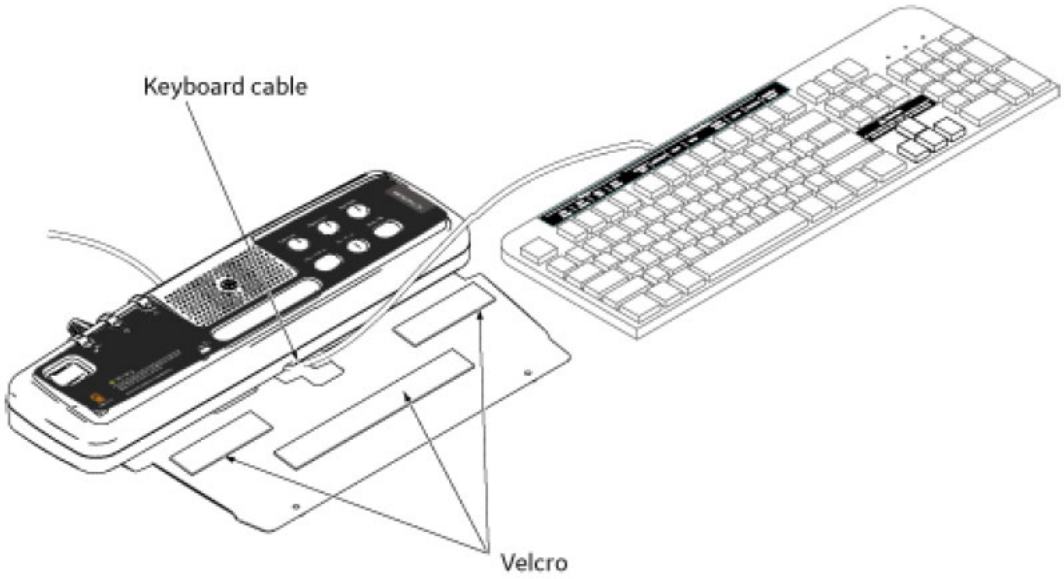
Table 2-16 GE Supplied Cables List for OpenOC16 Console with Z8G4

6.1 GSCB, Keyboard & Mouse Installation

1.) Install the GSCB to the metal plate by using four screws.

2.) Route the keyboard cable under the GSCB and attach the keyboard to the GSCB metal plate with velcro strip and fit snugly against the GSCB.

Figure 2-40 GSCB and Keyboard



3.) Route the keyboard and mouse cables to OpenOC16 console.
If the length of keyboard and mouse cables is not enough, add the following extension cables (shipped with OC collector).

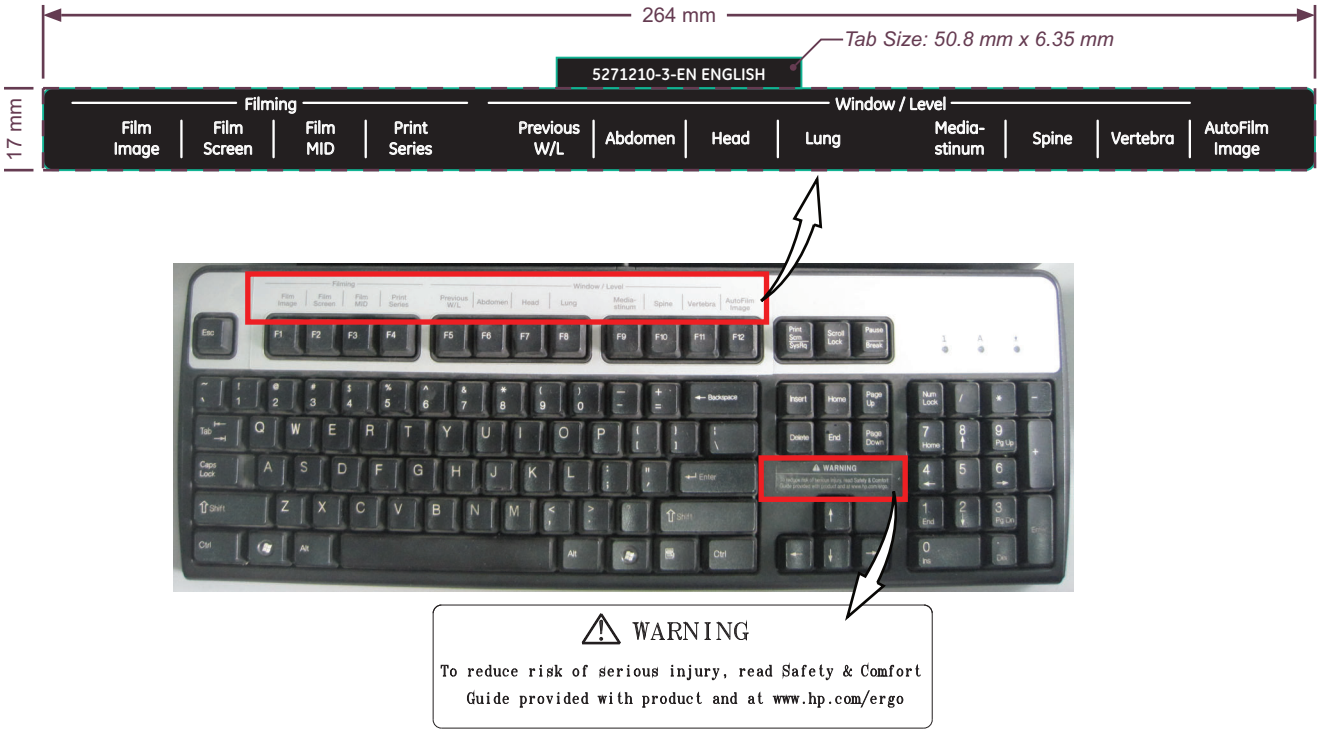
DESCRIPTION	PART NUMBER	CABLE LENGTH	QTY
USB Ext Cable (Keyboard)	5431909	3500 mm	1
USB Ext Cable (Mouse)	5458346	3500 mm	1

Table 2-17 Keyboard and Mouse Extension Cables

4.) Select the local language keyboard overlay and GSCB film from the keyboard collector (5431062-1-xx) to attach.

- Select the keyboard overlay and warning label from the keyboard collector (5324605-xx) to attach. (See Figure 2-41)

Figure 2-41 Keyboard Overlay and Warning Label Attaching (English)



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

Figure 2-42 GSCB Film with Tilt/E-Reset

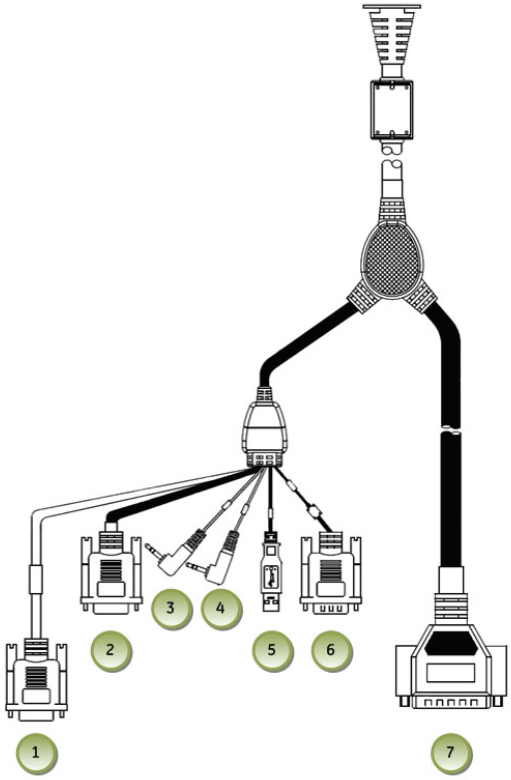
Note: Verify that none of the buttons get caught and stuck under the overlay.
Pay close attention to the prescribed tilt button on systems with the tilt feature.

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->OpenOC16 Console->GSCB Troubleshooting***.

5.) Route the GSCB cable and connect connectors according to Figure 2-43 and Table 2-18.

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

Figure 2-43 GSCB Cable Connections



#	ITEM	DESCRIPTION
1	GSCB - DB9/F Black	Host Computer DIP Serial Port
2	GSCB - DB9/F Gray	Host Computer RS232
3	GSCB - Green Audio	Host Computer Audio Out (Green)
4	GSCB - Blue Audio	Host Computer Audio In (Blue)
5	GSCB - USB	Not Used
6	GSCB - DB9/M Black	AC Box J56
7	GSCB - DB25/M Black	TGP Gantry Cable

Table 2-18 GSCB Cable Connections

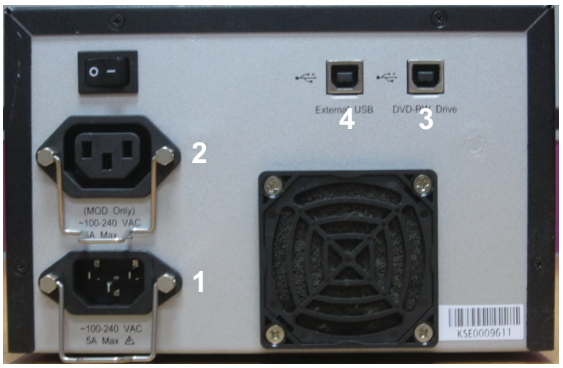
6.2 Peripheral Media Tower

6.2.1 Media Tower (5270510-22, Standard for Console with Z840 Host Computer)

Figure 2-44 Media Tower

Front View

Rear View



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

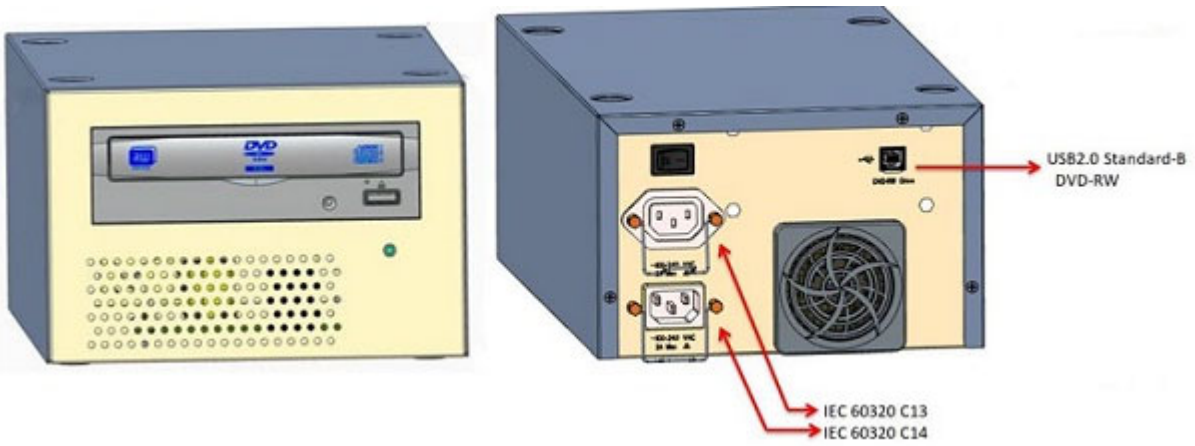
Connect the power cable to the rear of the media tower. Use the following cables for connection.

DESCRIPTION	PART NUMBER	CABLE LENGTH	QTY
USB Cable (PMT)	5315370	2000 mm	2
Power Cable, Peripheral Tower to **OpenOC16 Console (with Z840)** AC Box	5432953-6	3050 mm	1

Table 2-19 Media Tower Cables

6.2.2 Media Tower (5270510-23, Option for Console with Z8G4 Host Computer)

Figure 2-45 DVD Media Tower



Connect the following cables to the rear of the media tower.

DESCRIPTION	PART NUMBER	CABLE LENGTH	QTY
USB Cable (PMT)	5315370	2000 mm	1
Interconnect Power Cord to **OpenOC16 Console (with Z8G4)** AC Box	5466460-4	3050 mm	1

Table 2-20 Media Tower Cables

6.3 Connecting the LCD Monitor

NOTICE **Equipment Damage Possible**

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

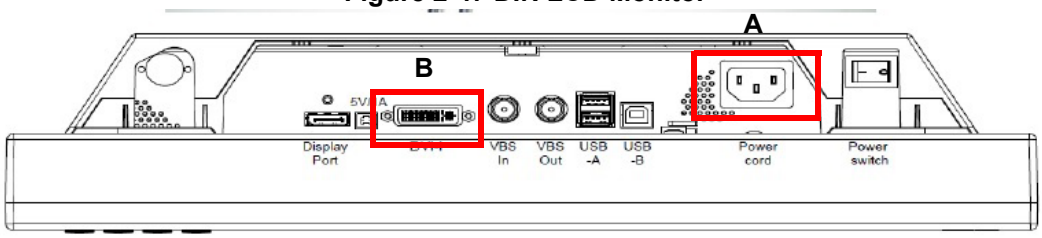
6.3.1 Connecting the Scan Monitor and Display/Image Monitor for Z840 Host PC

DESCRIPTION	PART NUMBER	CABLE LENGTH	QTY
Scan Monitor Power Cable	5478299-5	3050 mm	1
Scan Monitor Video Cable	5408703-2	3000 mm	1
Display/Image Monitor Power Cable	5478299-6	3050 mm	1
Display/Image Monitor Video Cable	5641358	3000 mm	1

Table 2-21 Monitor Cables

Figure 2-46 HP LCD Monitor

Figure 2-47 DIN LCD Monitor



ITEM	DESCRIPTION
A	Power Cable Connection
B	DVI Video Connection - Scan (Left) - Display / Image (Right)

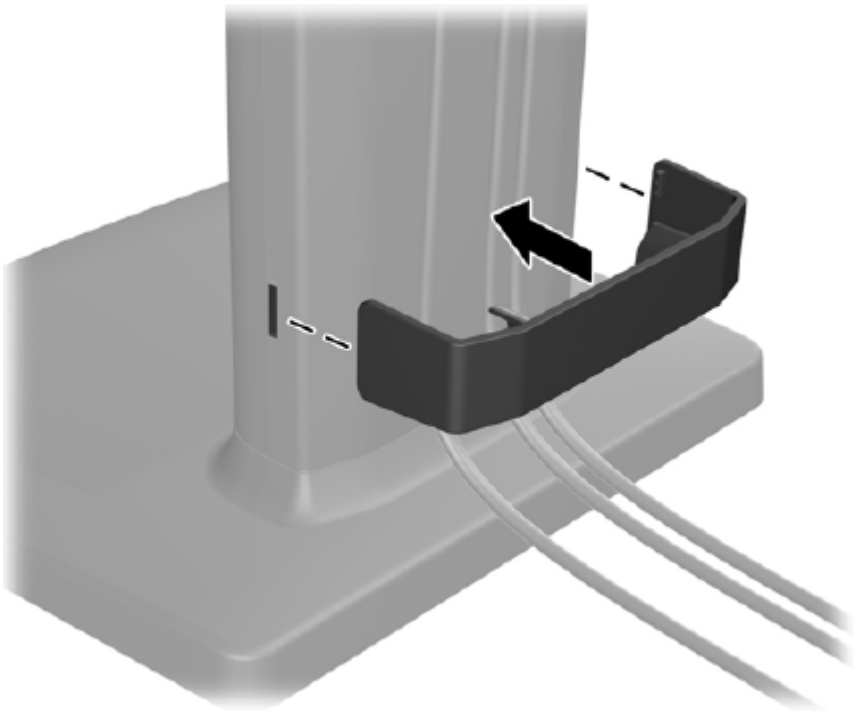
Scan Monitor

- Video cable from Console Host DP0 to Monitor DVI
- Power cable from Console AC Box J1
- Route through the cable keeper

Image Monitor

- Video cable from Console Host DVI to Monitor DVI
- Power cable from Console AC Box J2
- Route through the cable keeper

Figure 2-48 Cable Routing and Keeper



6.3.2 Connecting the Scan Monitor and Display/Image Monitor for Z8G4 Host PC

Figure 2-49 EIZO LCD Monitor DVI Connector

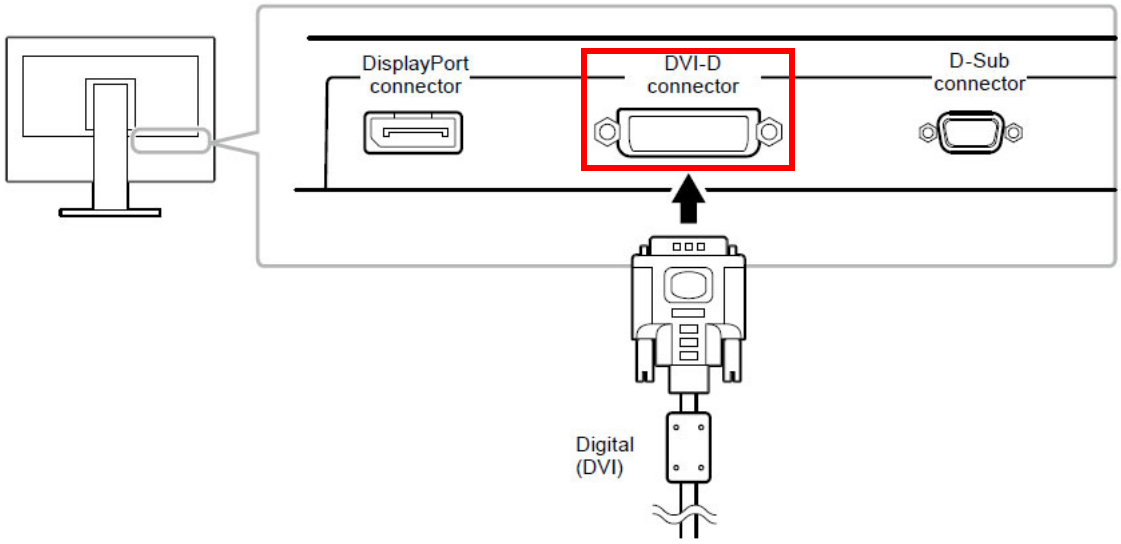
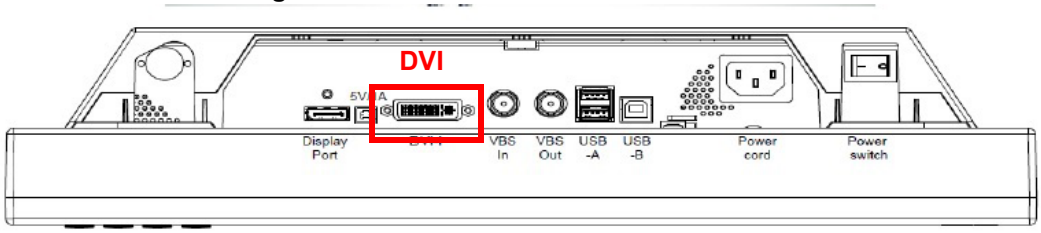


Figure 2-50 DIN LCD Monitor DVI Connector



Scan Monitor

- Video cable from Console Host DP2 to Monitor DVI
- Power cable from Console AC Box J1
- Route through the cable keeper

Image Monitor

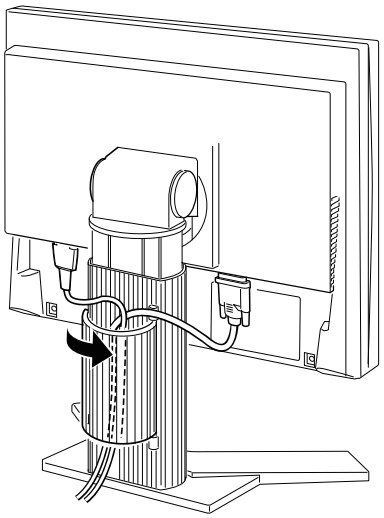
- Video cable from Console Host DP1 to Monitor DVI
- Power cable from Console AC Box J2
- Route through the cable keeper

Note: Connect two Mini DP - DP Dongle cables (5795077) to monitor video cables (5408703-2).

DESCRIPTION	PART NUMBER	CABLE LENGTH	QTY
Scan Monitor Power Cable	5478299-5	3050 mm	1
Image Monitor Power Cable	5478299-6	3050 mm	1
Scan/Image Monitor Video Cable	5408703-2	3000 mm	2
Mini DP - DP Dongle Cable	5795077	250 mm	2

Table 2-22 Monitor Cables

Figure 2-51 Cable Routing and Keeper



6.3.3 LCD Video Monitor Setup

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

6.4 OpenOC16 Console Interconnect

Figure 2-52 OpenOC16 with Z840 Host Computer Interconnect

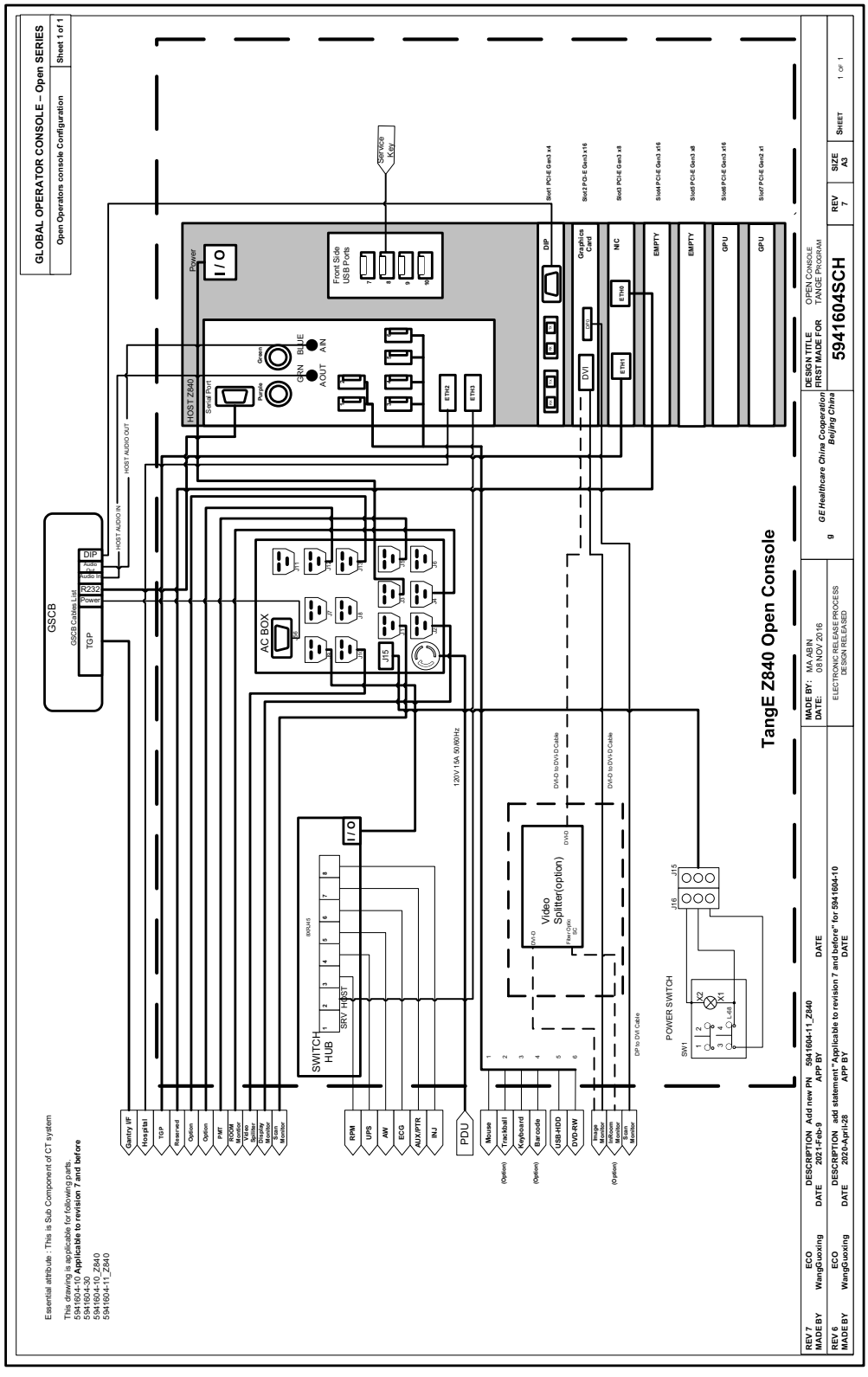
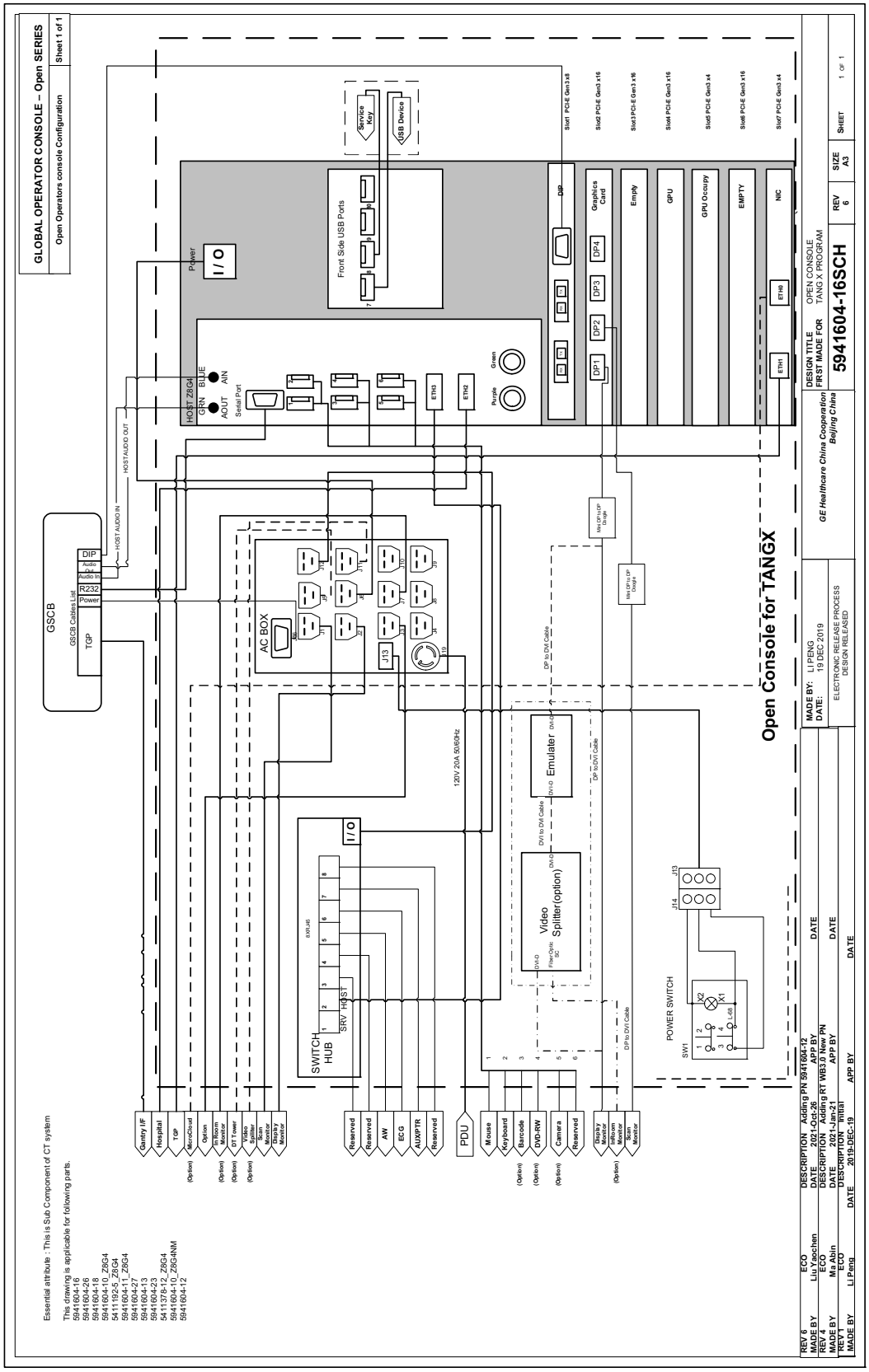


Figure 2-53 OpenOC16 with Z8G4 Host Computer Interconnect



6.5 Host Computer Connections

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

Figure 2-54 OpenOC16 Console with Z840 Rear View

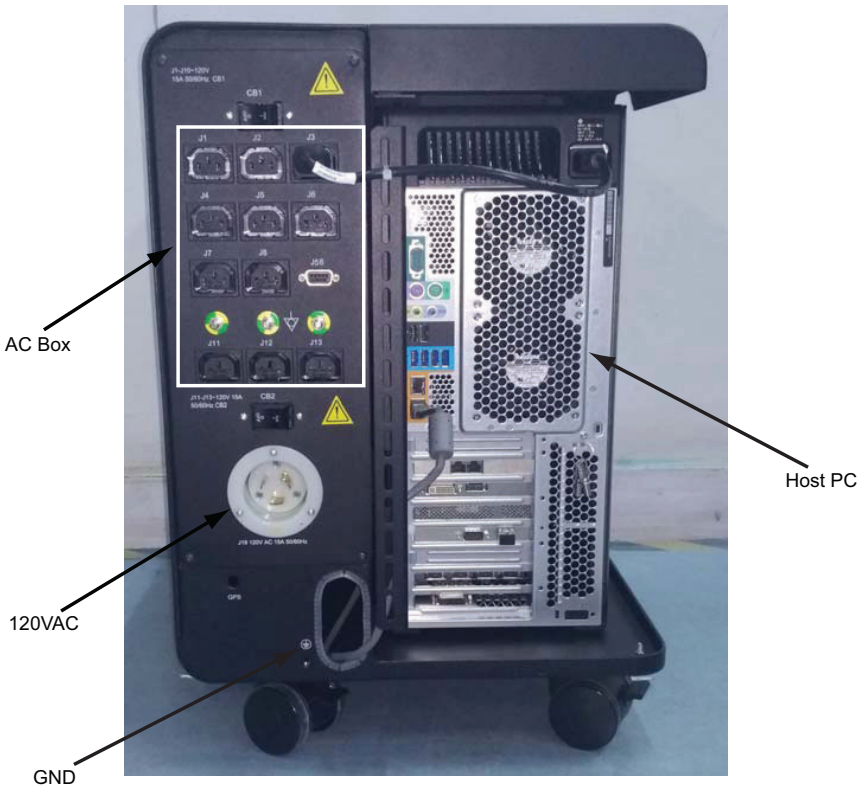
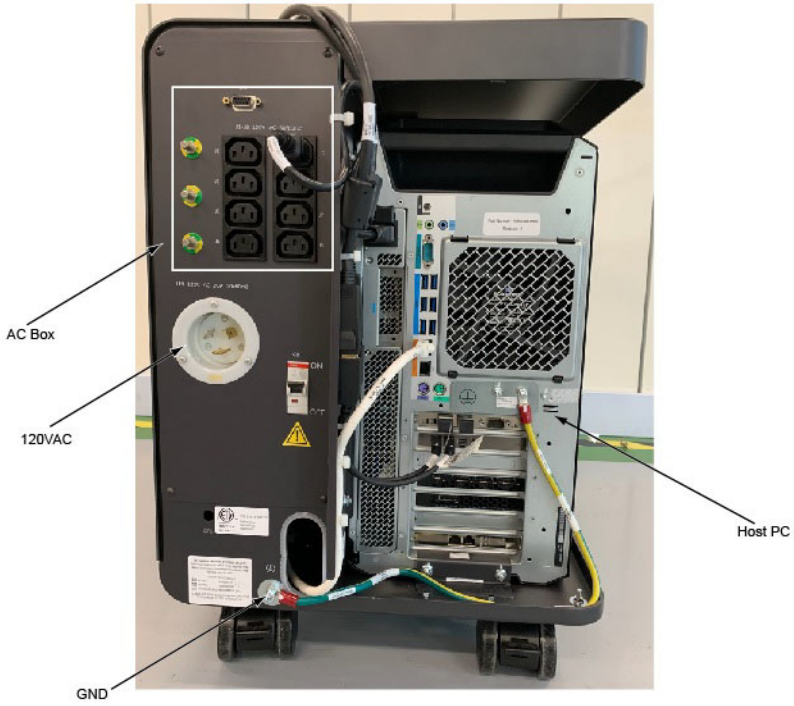


Figure 2-55 OpenOC16 Console with Z8G4 Rear View



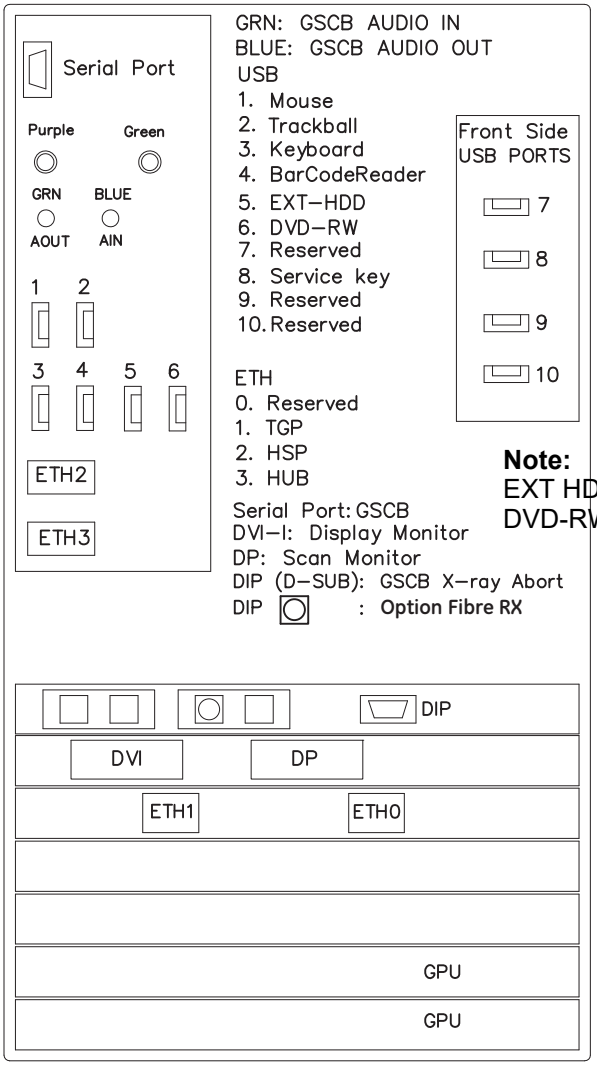
1.) Connect the power cable and ground cable to the console rear panel.

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

Table 2-23 Console Cable Connections

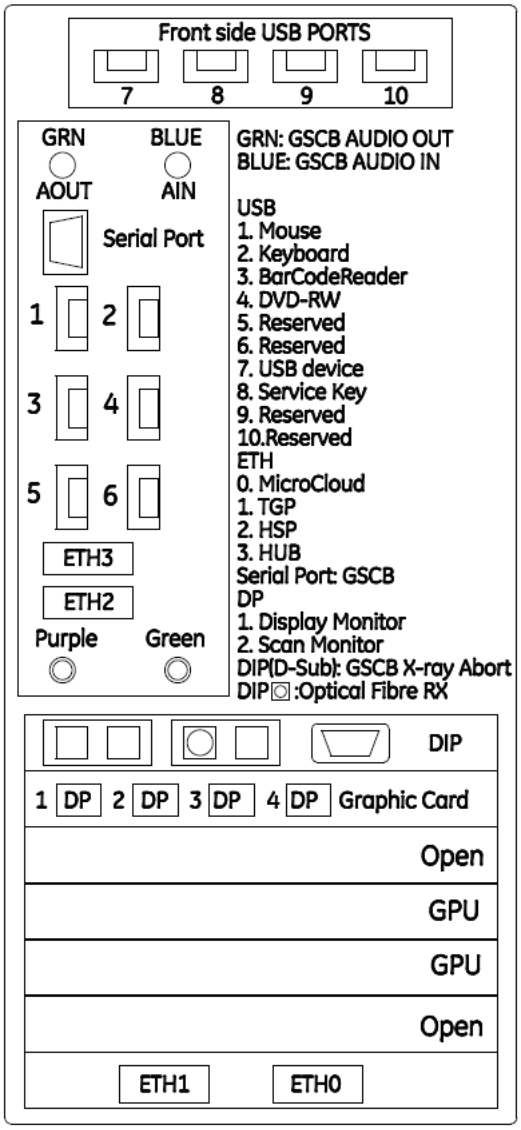
2.) Connect the all cables (see Table 2-15 and Table 2-16) to the rear of Host Computer referring to the drawing below (Figure 2-56 and Figure 2-57).The drawing is also printed on the right rear door of the console.

Figure 2-56 Z840 Host Computer Connections



Note:
EXT HDD is for Media Tower External HDD Drive
DVD-RW is for Media Tower DVD Drive

Figure 2-57 Z8G4 Host Computer Connections



6.6 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.

6.7 Network Switch Hub Connections

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

Figure 2-58 Network Switch Hub Location

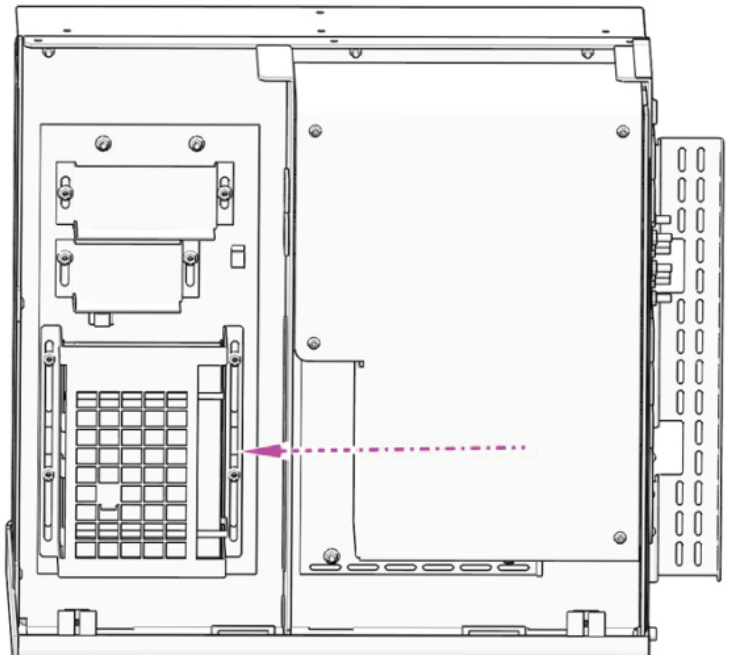
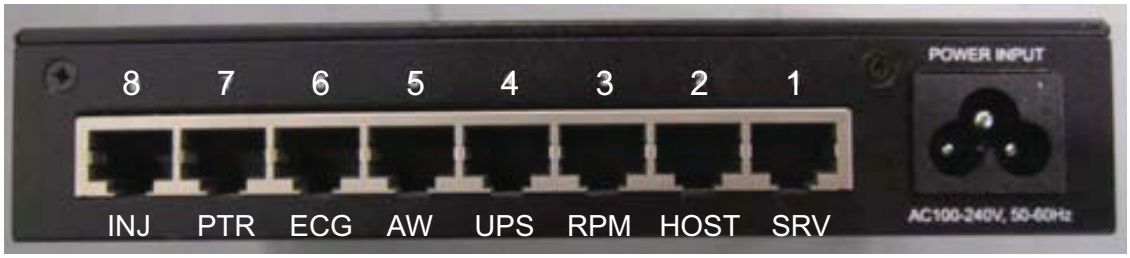


Figure 2-59 Network Switch Hub Connections



6.8 AC Box Connections

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

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

6.8.1 AC Box Assembly (5412524-6) for Z840 Host Computer

1.) Connect the console power cable and ground cable to the console power panel.

2.) Connect console component power cords as listed in Table 2-24. ("J numbers" increment from top to bottom, left to right)

NUMBER	DESCRIPTION
J1	Scan Monitor Power Connection
J2	Display Monitor Power Connection
J4	In-Room Monitor Connection
J5	Peripheral Media Tower Power Connection
J10	Video Splitter
J12	RPM Power Connection
J13	Injector Power Connection
J56	GSCB Power Connection

Table 2-24 AC Box Outlet Assignments

Figure 2-60 OpenOC16 Console AC Box

6.8.2 AC Box Assembly (5412524-10) for Z8G4 Host Computer

1.) Connect the console power cable and ground cable to the console power panel.

2.) Connect console component power cords as listed in Table 2-25. (“J numbers” increment from top to bottom, left to right)

NUMBER	DESCRIPTION
J1	Scan Monitor Power Connection
J2	Display Monitor Power Connection
J7	In-Room Monitor Connection
J11	Video Splitter
J12	Switch Hub
J56	GSCB Power Connection

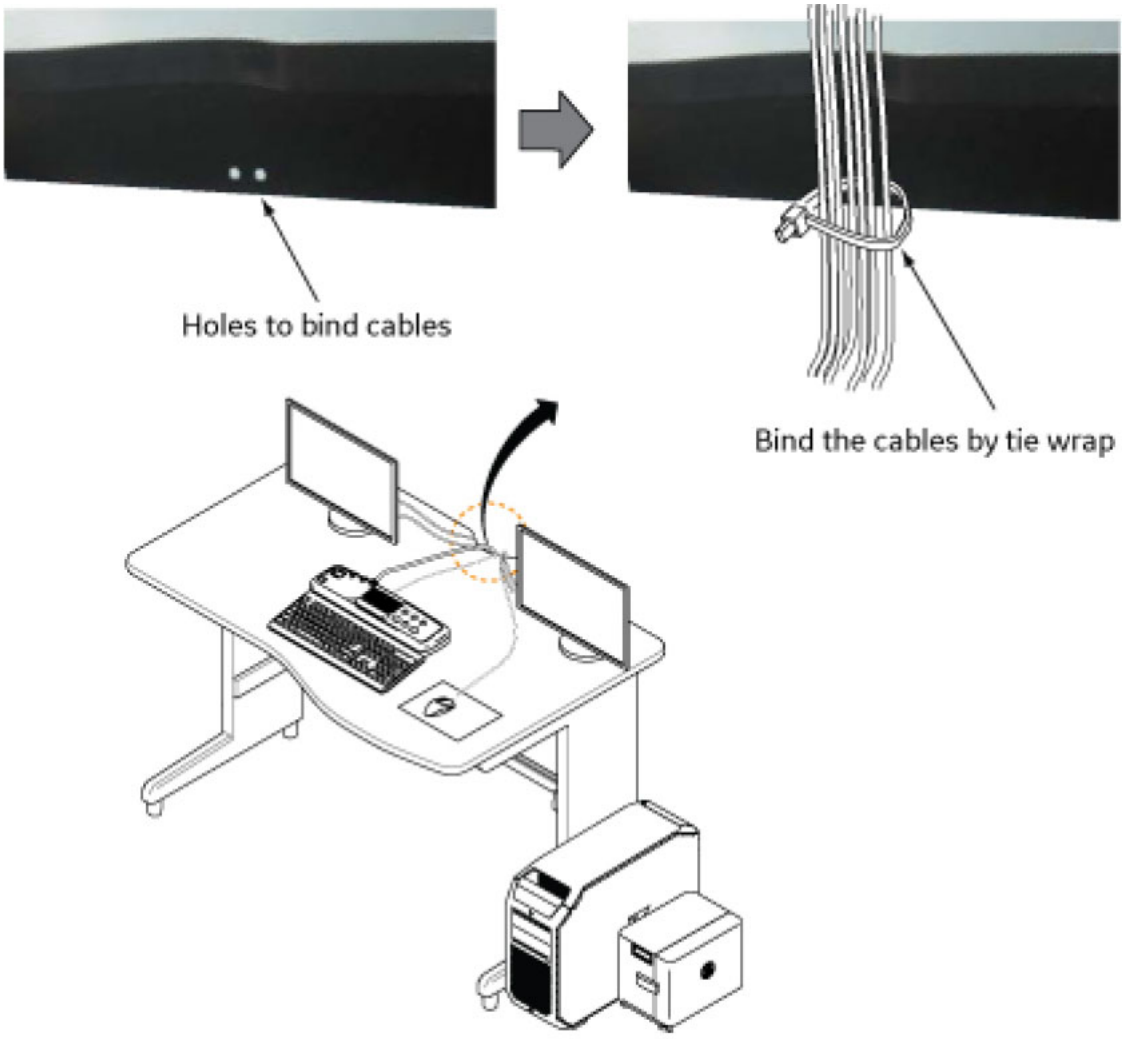
Table 2-25 AC Box Outlet Assignments

Figure 2-61 OpenOC16 Console AC Box

6.9 Cable Arrangement

1.) Route the keyboard, mouse, GSCB and monitor cables.
2.) Arrange the cables appropriately by using the cable clamps equipped on the console tables.

Figure 2-62 Cable Arrangement



Section 7.0
Install Options

7.1 Install Optional Bar Code Reader

Follow the installation procedures in the Bar Code Reader box.

When finished neatly dress all cables.

7.2 Install Optional Remote Monitor

Follow the installation procedures in the Remote Monitor box.

7.3 Install Cardiac Gating IVY Monitor and Stand Option

Refer to the instruction shipped with the option. This option is attached to the Gantry Option Interface, and should only be mounted on the non-motor side of the gantry. Neatly dress all cables along the gantry base so that the base covers fit properly.

Note: For Gantry with GOB, Monitor power will plug into the wall. For Gantry with IPC board, Monitor power will plug into the Gantry.

7.4 Install Respiratory Gating Option

Refer to the instruction shipped with the option. This option is attached to the Gantry Option Interface, and should only be mounted on the non-motor side of the gantry. Neatly dress all cables along the gantry base so that the base covers fit properly.

Note: For Gantry with GOB, Monitor power will plug into the wall. For Gantry with IPC board, Monitor power will plug into the Gantry or Console.

7.5 Install Injector Option

Follow the instructions shipped with the option. If this is a ceiling-mounted option, check that the plate is installed correctly with the holes in the correct location.

Note: For Gantry with GOB, Injector power will plug into the wall. For Gantry with IPC board, Injector power will plug into the Gantry.

7.6 Customer Accessories (Head Holders and Extender)

Open the boxes and installed the appropriate language warning labels.

The head holders are shipped with shims installed to assure proper fit. Check that shims are included and a pair is installed. The holder should fit snugly.

7.7 Install Service Cabinet (Optional)

The service cabinet you receive may ship disassembled. Assembly takes about 1.5 hours.

1.) Assemble the cabinet following the instructions located in the cabinets shipping box.

2.) When you complete assembly, place the cabinet in the location shown on the site print.

3.) Place all service materials shipped with the system in the service cabinet.

7.8 Install UPS

Follow the instructions shipped with the UPS option. The option ships with two sets of instructions, a GE set and a Powerware set.

The GE set instructs you to install the connections between the UPS and the PDU and between UPS and the A1.

Please refer to *UPS Installation manual (Dir 5174051-100 or 5821322-1EN) on service methods->Installation->Option.*

Note: A GE A1 Disconnect with UPS controls is required for this option.

The Powerware set instructs you to internally connect the batteries and do a power-up check. to both manuals for additional guidance.

WARNING **LOCKOUT/TAGOUT IS REQUIRED WHEN WORKING IN THE A1 DISCONNECT.**

Section 8.0
Gantry Cable Connections

Gantry Cable Connections

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

Table 2-26 Gantry Cable Connections

TO	FROM	CABLE DESCRIPTION
Gantry Power Pan	PDU	HVDC
Gantry Power Pan	PDU	440VAC
Gantry Power Pan	PDU	120VAC
Gantry Power Pan	Console	Fiber - *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
TGPU/TGPG (J9)	Console	Control
TGPU/TGPG (J11)	PDU	Control

1.) If using a rear cable entry box (B7850RC), install it now, before routing cables to gantry.

NOTICE **Potential for equipment damage.**

Observe correct polarity when connecting the high voltage DC power. Reversing these leads will result in serious equipment damage. The HVDC positive conductors have red insulation and are labeled “ONE.” The HVDC negative conductors have black insulation and are labeled “TWO.” Lead “ONE” must be connected to lead “ONE,” and lead “TWO” must be connected to lead “TWO.”

Observe correct phase rotation when connecting the axial motor power. Phases one, two and three should be connected top to bottom.

2.) Install the cables to the Gantry power pan. The power pan is located on the rear of the Gantry at its base. See Figure 2-63, Figure 2-64, and Figure 2-66 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 2-63 Gantry Power Pan Connections

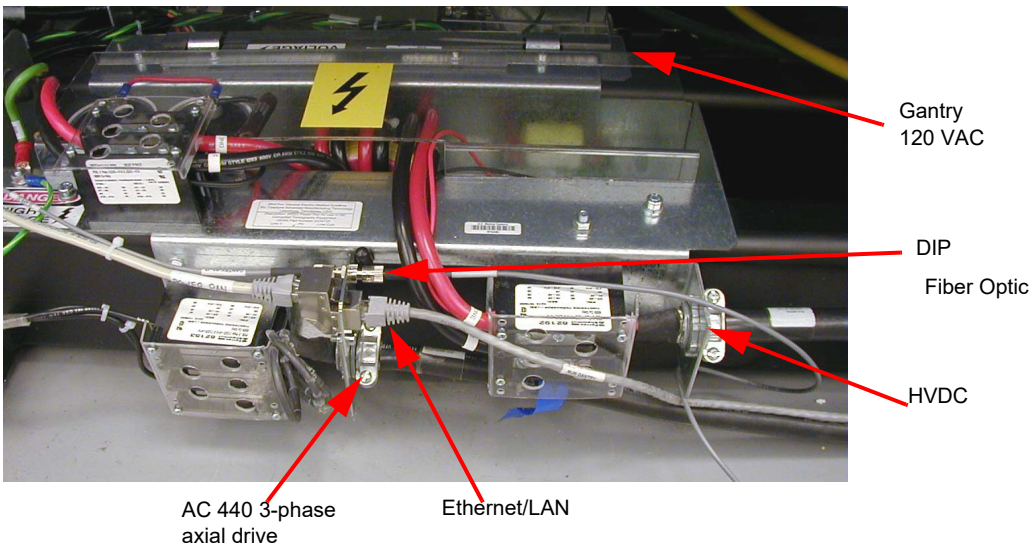


Figure 2-64 Gantry Power Pan

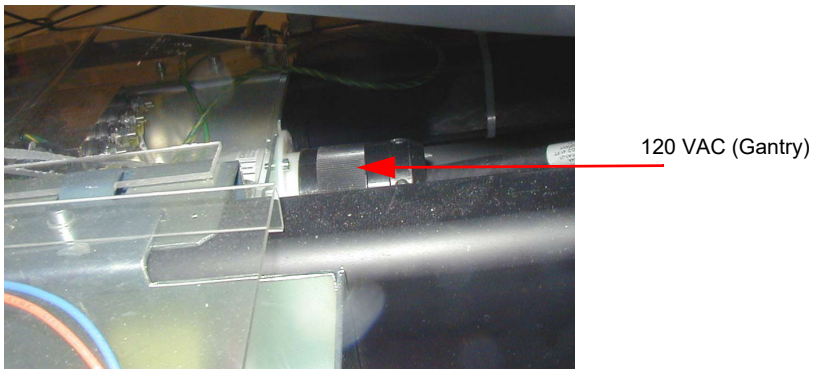
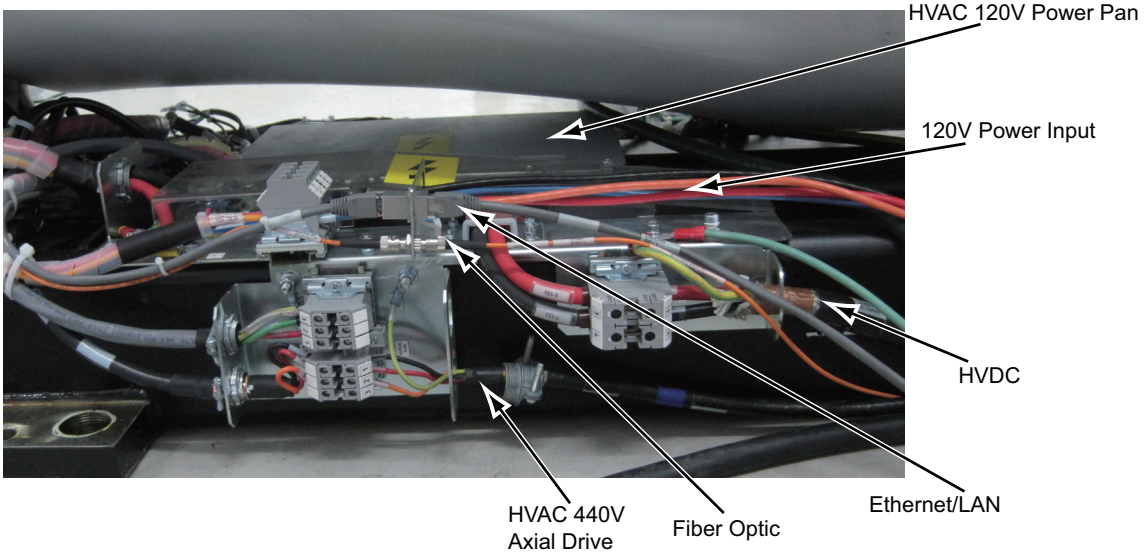
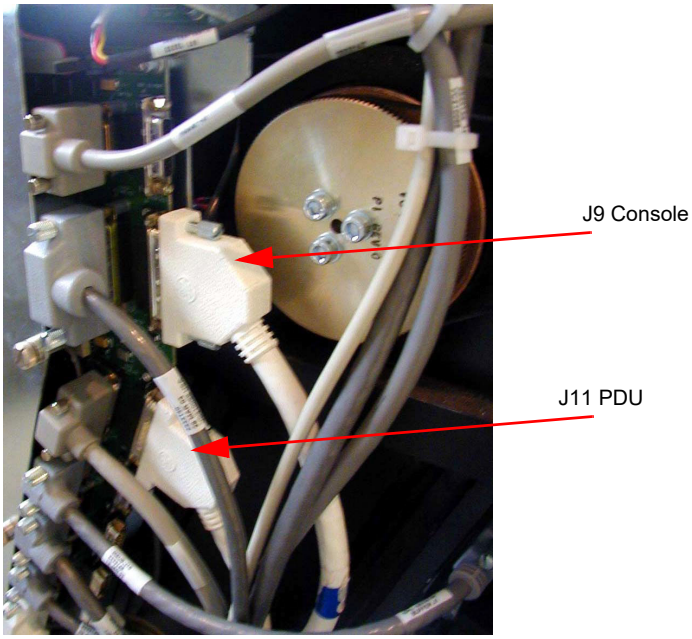


Figure 2-65 Simplified Power Pan Connections



3.) Install cables to the Gantry TGPU/TGPG.

Figure 2-66 TGPU/TGPG Connections



4.) If the system has respiratory gating cable for respiratory options, run the cable between gantry IPC board and respiratory device in the control room.

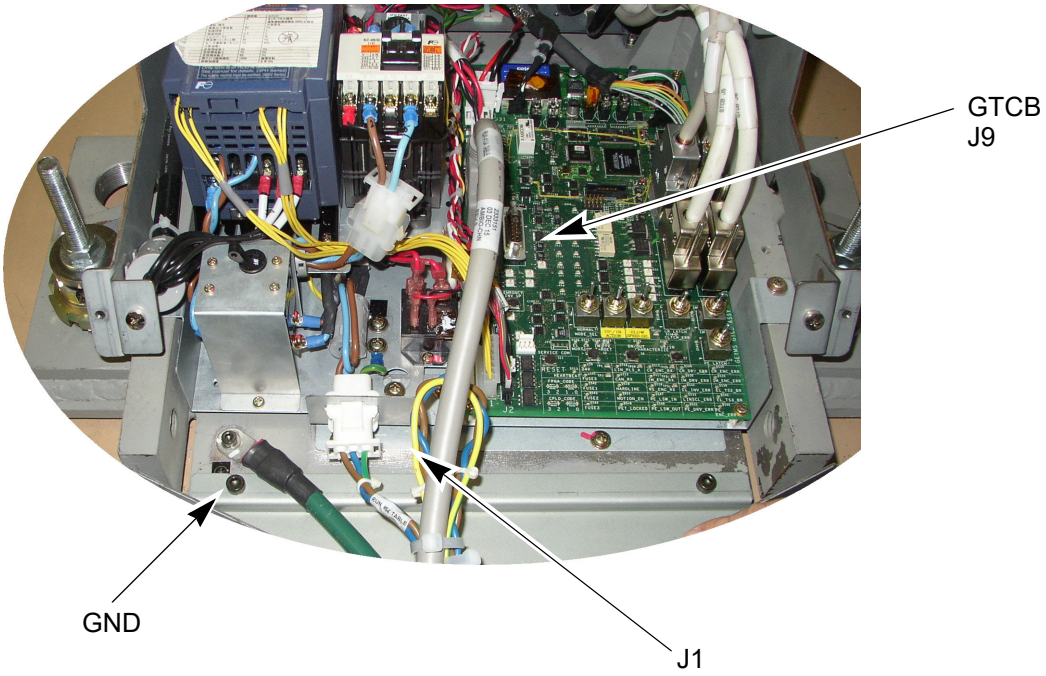
Section 9.0
Table Connections

Pull and connect the following cables:

Table 2-27 Table Cable Connections

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

Figure 2-67 Table Connections



Note: You may need to add the table ground cable.

☐ Check box when complete.

Section 10.0
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.**

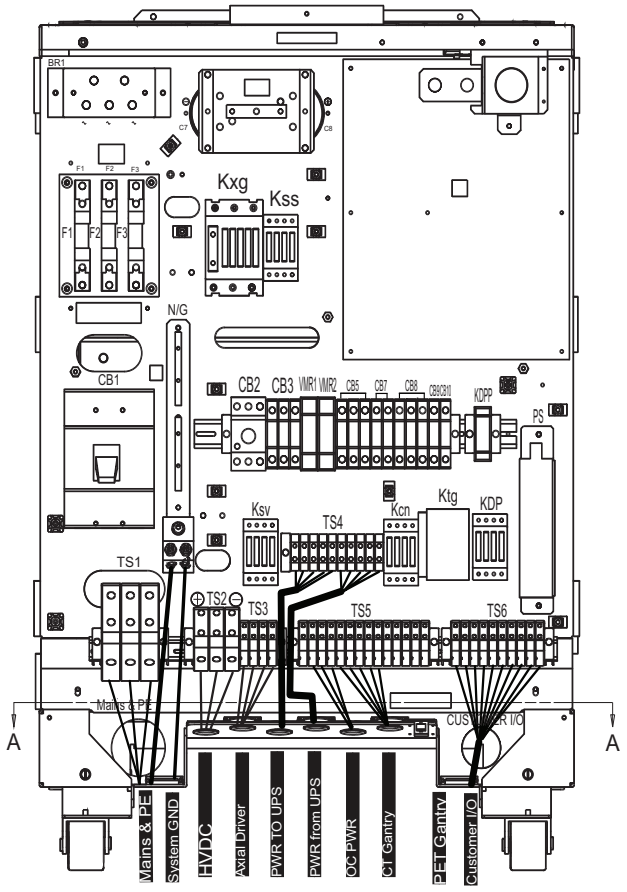
Do apply power to the PDU until all work has been completed and all PDU covers are in their proper place.

10.1 NGPDU

As seen in Figure 2-68, 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 2-68 for reference. The PDU has been designed to have cables routed into the PDU from its behind and/or from beneath it.

Figure 2-68 PDU Cable Connections - Front

NGPDU (Covers Removed)(2326492-60,61)



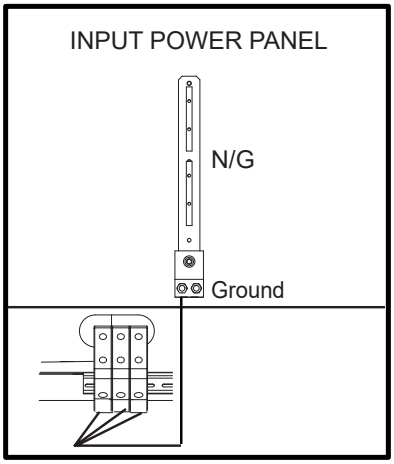
Front View

HVDC	TS2-1	Red
	TS2-2	Green
	TS2-3	Black
Axial	TS3-1	Black
	TS3-2	Red
	TS3-3	Orange
	TS3-4	Grn/Yellow
OC 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

10.1.1 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 2-69 Input Power Panel Connections



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

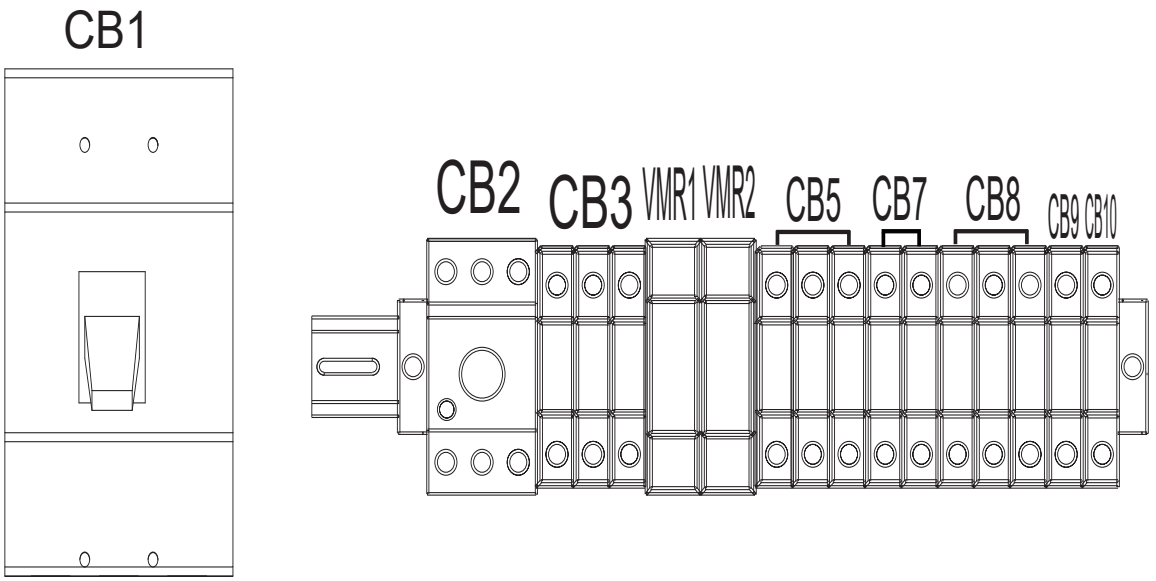
Figure 2-70 Power Torque Values

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

10.1.2 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 2-71 Circuit Breaker Panel



By design, when CB3 is in the “OFF” position, circuit breakers 5, 7, 8, 9 and 10 are switched “OFF”. CB3 is essentially in series with these breakers.

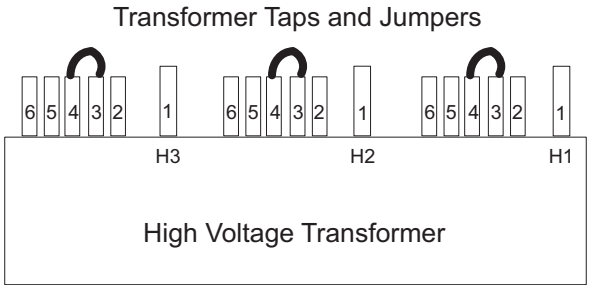
Table 2-28 Panel Circuit Breaker Descriptions

CIRCUIT BREAKER	DESCRIPTION
CB2	Circuit Protection (Axial Drive)
CB3	Fully Winding Protection (Master power of CB5, 7, 8, 9 and 10), 120 and 208 VAC
CB5	CT Gantry / CT Gantry option / PET Gantry
CB7	Operator Console
CB8	R3 Power
CB9	NGPDU Control Power Supply / Power monitor relay
CB10	Power monitor relay

10.1.3 Transformer (480VAC) Taps

Verify that the transformer taps are set properly. The transformer taps are set to 480 VAC operation at the factory.The taps should be set as shown in Figure 2-72.

Figure 2-72 PDU Tap Positions for 480 volt operation



Note: **Taps should be shipped as shown for 480 VAC only. For all others, you must move the taps to correct position according to Table 2-29.**

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 2-29 PDU Line Tap Connections for tap locations)

3.) Verify that the No Load Line to Line Voltage never falls outside the corresponding minimum and maximum values listed in Table 2-29)

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

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

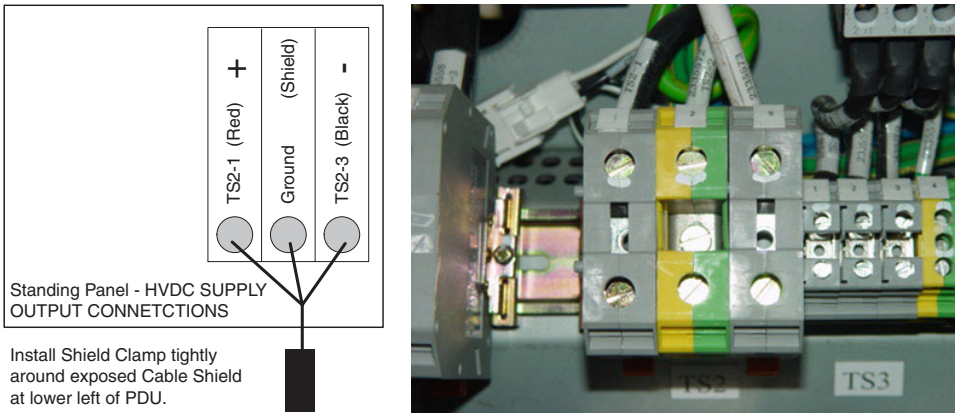
NO LOAD **Line to Line Voltages**		**TAP CONNECTIONS** **(All 3 phases must have same the configuration)**		
Nominal	Maximum Range (10%)	Phase A Connection	Phase B Connection	Phase C Connection
480V*	432 to 528*	3-4*	3-4*	3-4*
460V	414 to 506	3-5	3-5	3-5
440V	396 to 484	3-6	3-6	3-6
420V	378 to 462	2-4	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				

Table 2-29 PDU Line Tap Connections

10.1.4 HVDC Connection (TS2)

Connect the internally shielded HVDC cable to TS2 on the standing panel. See Figure 2-68 for the location of the connector and Figure 2-73 for details. Observe polarities and grounds.

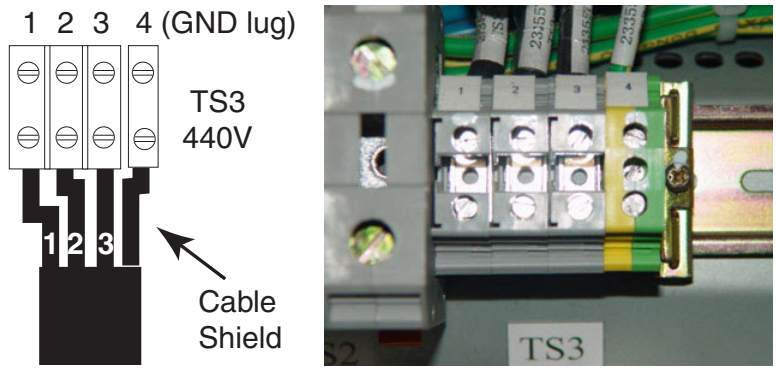
Figure 2-73 HVDC Connection



10.1.5 440V Connection (TS3)

Connect the internally shielded 440V cable from the gantry to TS3 on the panel. See Figure 2-68 for the location of the connector and Figure 2-74 for details. Observe the labels on the cable leads for proper identification and orientation.

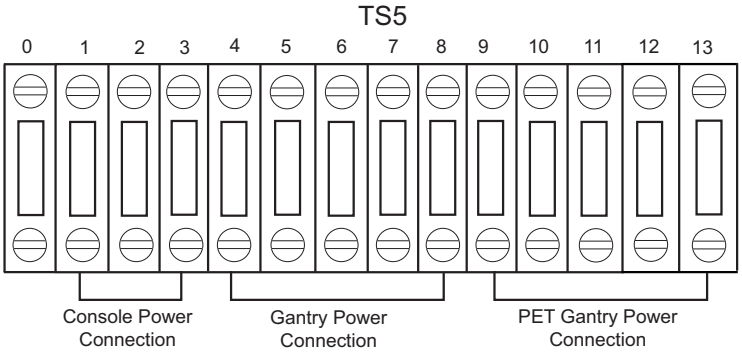
Figure 2-74 440VAC Connection



10.1.6 Gantry & Console Power Connections (TS5, 120V)

Both Gantry and Console power cables come pre-terminated. Plug the console power cable wires to TS5, 1-3 and the gantry power cable wires TS5, 4-8 as shown in Figure 2-75.

Figure 2-75 Gantry & Console Power Connections



10.1.7 Console Power Cable Re-termination

Power cable re-termination should be used as a last result. Short and long cables are available.

1.) Carefully remove the power plug and **record the color of the wires** in Table 2-30. The terminals are labelled X, W and G on the plug.

Table 2-30 Console Power Cable Termination

TERMINAL	X	W	G
Description	Hot	Neutral	Ground
Color			

2.) Cut the cable to desired length and dress ends.

3.) Re-install the power plug, according to the orientations recorded in Table 2-31.

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

Table 2-31 Resistance Verification Points

FROM PDU PLUG	TO CONSOLE PLUG END	
CB1 -11 (Black) (J5 Phase X (Brown))	Phase X (Brown)	☐ Check box when complete
A3 Neutral Buss Bar (Blue) (J5 -13 Phase W)	Phase W (Blue) Neutral	☐ Check box when complete
A3 Ground Buss Bar (J5 -22 Ground Green)	Ground (Green) Ground Green screw	☐ Check box when complete

10.1.8 PDU Control Cable

The PDU control cable comes pre-terminated and should not be re-terminated in the field. Excess cable length must be stored. Simply plug the cable into “J2” on the “A4” panel. Secure it by using the fasteners intergrated into cable’s connector shell.

10.1.9 System Ground Connection

Connect the ground wire (green with a yellow strip) from the Table/Gantry raceway ground bus to the system ground lug in the PDU. See Figure 2-68, and Figure 2-76 below.

Figure 2-76 PDU System Ground Connection

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

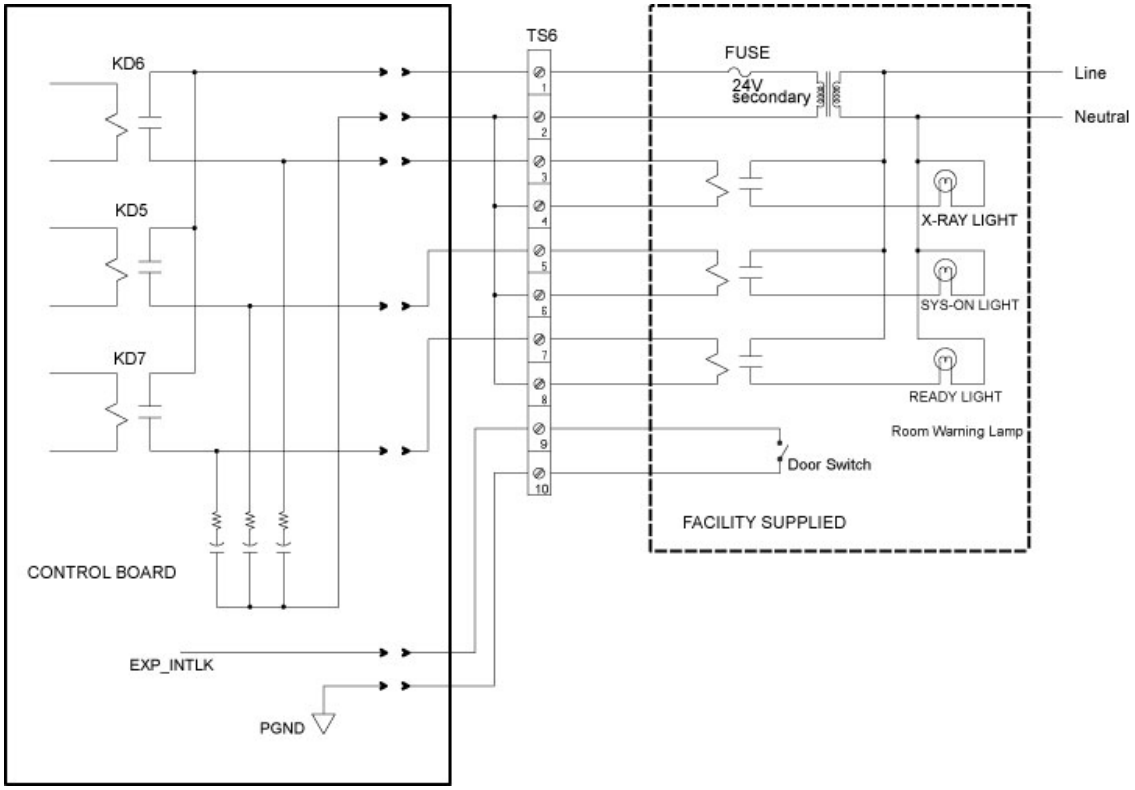
10.1.10 Warning Light & Door Interlock Connections

10.1.10.1 Warning Light Configuration & Connection

1.) Warning Light is controlled by signals from the system.

2.) This step is site specific. The PDU by default is configured for “no” external warning light connection. If you have external warning lights, see Figure 2-77 for proper connection.

Figure 2-77 Typical TS6 Warning Light & Door Interlock Connections



It is recommended that you use the four (4) wire method of adding a X-ray warning light to a room, as shown in Figure 2-77. When using this method, you:

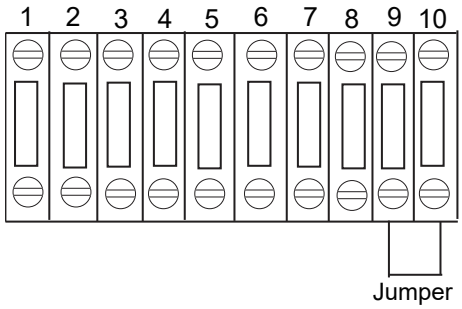
- Minimize EMC interference.
- Increase contact life of the relay used in the PDU.

10.1.10.2 Door Interlock Connections

Door interlocks are used to prevent X-Rays from being generated when the scan room door is open.

The Door Interlock circuitry in the PDU is shipped from the factory engaged. This means the system cannot generate X-ray until disengaged. A short must exist between pins 9 & 10 for X-ray to be generated. Using a small piece of wire, short pins 1 and 2 together. See Figure 2-78.

Figure 2-78 Without a Door Interlock

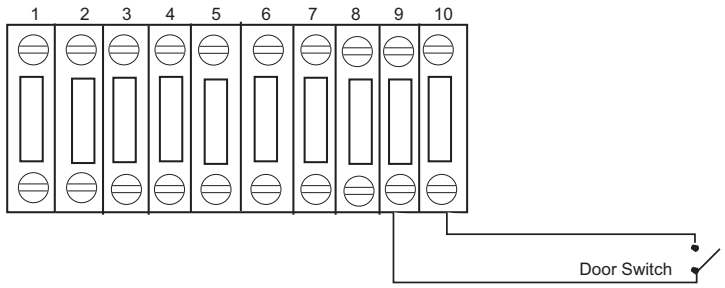


If not using a door switch, add a jumper.

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

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

Figure 2-79 With a Door Interlock



10.1.11 Torque Value

Tighten all fasteners securely.

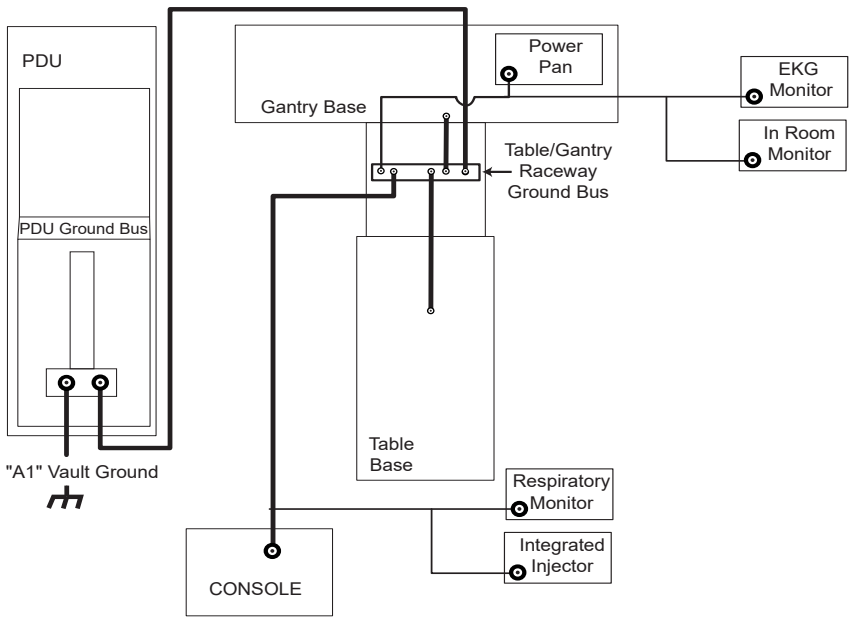
Table 2-32 PDU Terminal Torque Values

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

Section 11.0
System Ground Connections

As seen in Figure 2-80, the Table/Gantry raceway ground bus is used to centralize all system grounding. The system ground is tied to vault ground at the PDU, through its chassis.

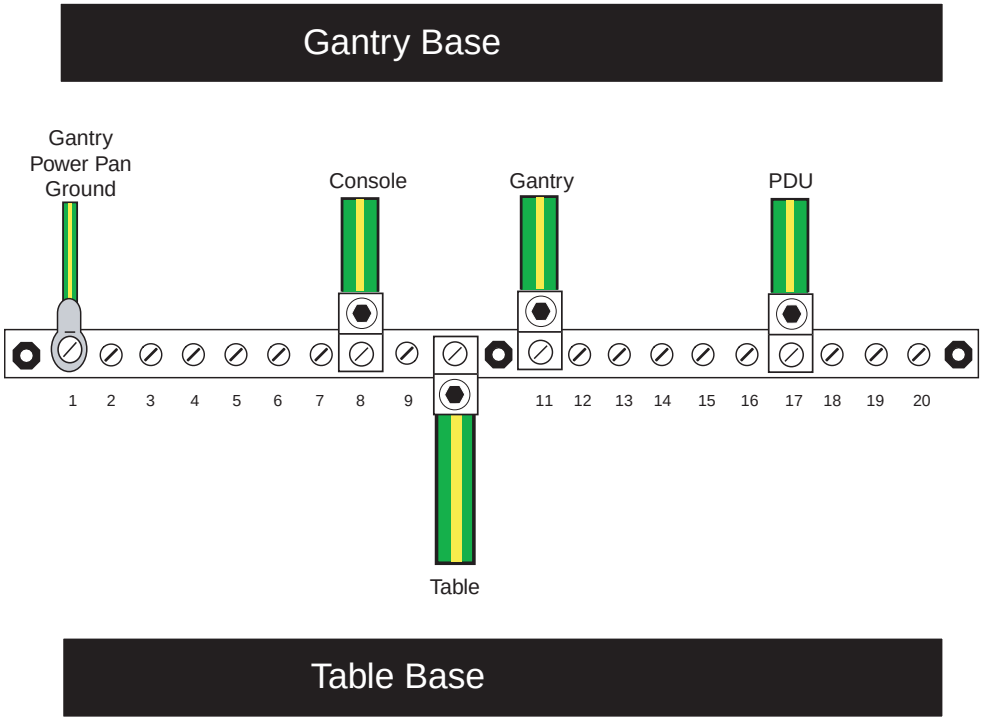
Figure 2-80 CT System Ground Connections



The gantry is tied to system ground at a number of points. It is important that all of these ground connections are securely made. See Figure 2-81.

Check that the terminals will not be loosened, by moving or swinging the cables rather strongly by hand.

Figure 2-81 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 2-33, below.

Table 2-33 System Ground Connections

AWG #	CONNECTION TO	CONNECTION TO
#1/0	PDU	Power Main
#1/0	Gantry (Power Pan)	Raceway
#2	Console	Raceway
#1/0	Gantry	Raceway
#2	Table (frame)	Raceway
#1/0	PDU	Raceway

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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:

- **When instructed, record data collected from the procedures in this chapter on GE Form e4879. For more information about this form, see Section 8.0 of Chapter 4.**
- **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 & Ground Checks (Mechanical Contractor)

Use this section to check cable and ground connections.

1.1 Tools Required

- Digital VOM
- 30 ft of #18 wire
- 600 VAC meter leads

1.2 Procedure

Reference Figure 3-1: Front View of NGPDU, with Covers Removed on page 175 and Figure 3-2: Gantry Power Pan on page 176.

WARNING **USE AND FOLLOW LOCKOUT/TAGOUT PROCEDURES; LOCK OUT WALL POWER.**

1.) Remove all System Power at the A1 Mains Disconnect Panel. Follow Lockout/Tagout procedures.
2.) Put the UPS in the Service Position.
3.) Remove the PDU A3 input power panel cover.
4.) Verify, with a voltmeter, that mains power is disconnected.
5.) Verify that less than 1 ohm of resistance exists between the following ground connections:

Table 3-1 Mains Connections to PDU

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

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

Table 3-2 Resistance Verification Points

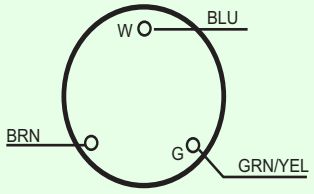
FROM	SIGNAL NAME (COLOR)	TO	
PDU TS2-1	+HVDC (Red)	Gantry HV Power Pan TS1-1	☐ Check box when complete
PDU TS2-2	HVDC Ground (Green/Yellow)	Gantry Power Pan Chassis	☐ Check box when complete
PDU TS2-3	-HVDC (Black)	Gantry HV Power Pan TS1-2	☐ Check box when complete
PDU Ground Bus	HVDC shield	Gantry 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 A1J1 Filter Ground Stud	☐ Check box when complete

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

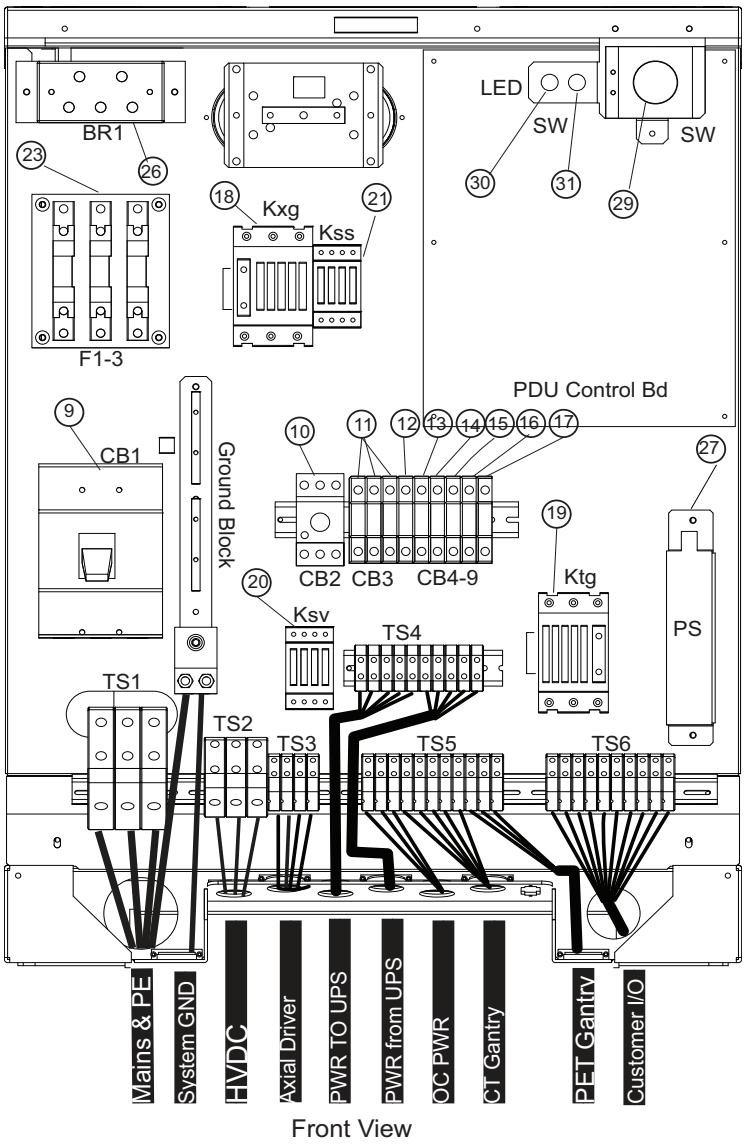
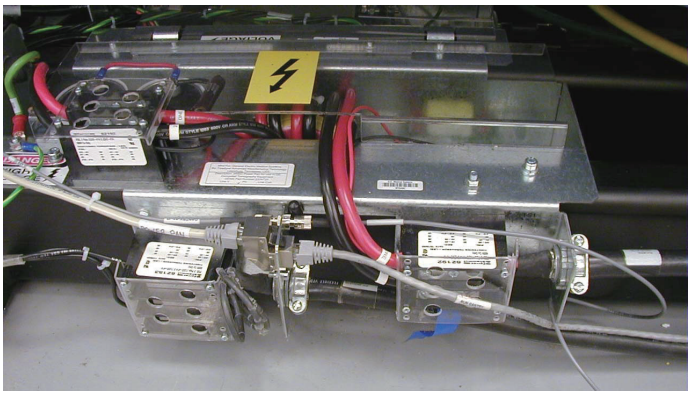
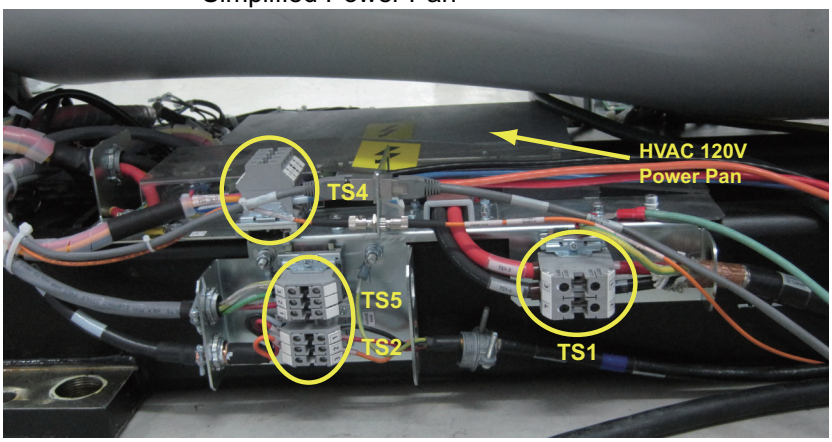


Figure 3-2 Gantry Power Pan

Old Power Pan



Simplified Power Pan



WARNING **TURN OFF ALL PDU CIRCUIT BREAKERS.**

7.) Set an ohmmeter to the lowest scale. Check between the following points for shorts to ground. Verify no continuity exists between the following points:

Table 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

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

Table 3-4 Resistance Verification - Site Ground

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

Section 3.0
Axial Head Holder Shim Installation

3.1 Overview

This procedure applies to following Table Types:

High Capacity	All head holders
GT1700	All head holders

3.2 Requirements

Table 3-5 Personnel Requirements

REQUIRED PERSONS	PRELIMINARY REQS	PROCEDURE	FINALIZATION
1	10 mins	15 mins	5 mins

Table 3-6 Tools and Test Equipment

ITEM	QTY	EFFECTIVITY	PART#	MANUFACTURER
Stand FE Tool Kit	1	-	-	-

Table 3-7 Replacement Parts

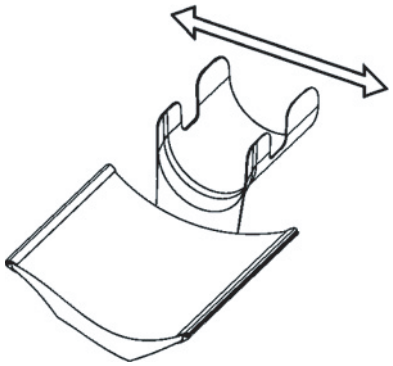
ITEM	QTY	EFFECTIVITY	PART#	MANUFACTURER
Shim Kit	1	-	-	-

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

3.3 Required Conditions

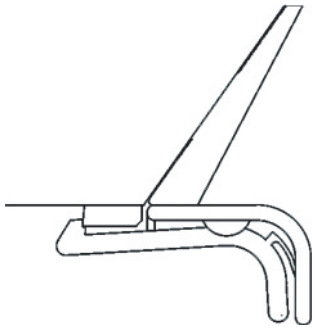
Check head holder for a tight fit. If the head holder fit is loose, follow this procedure.
Introduction:

- Some Axial Head Holders have a large free-play in the horizontal direction which could potentially lead to motion and therefore image artifacts.
- Installation of the 2327335 rubber shim kit can minimize this motion.

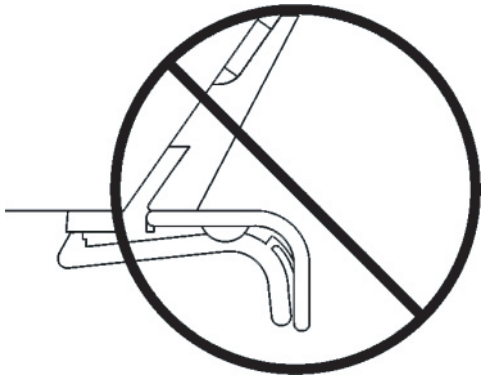


Notes before Selecting Shim Thickness:

- While selecting the best shim size, do not attach the rubber shim yet using the adhesive on the back. It is best to use a piece of tape to hold on the shim in order to see if the size is correct.
- Selecting a shim size that is too thick may result in:
  - Difficulty latching the head holder properly. The head holder must latch so that a patient is not injured.
  - Damage to the plastic latch or the plastic screws that secure it.



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

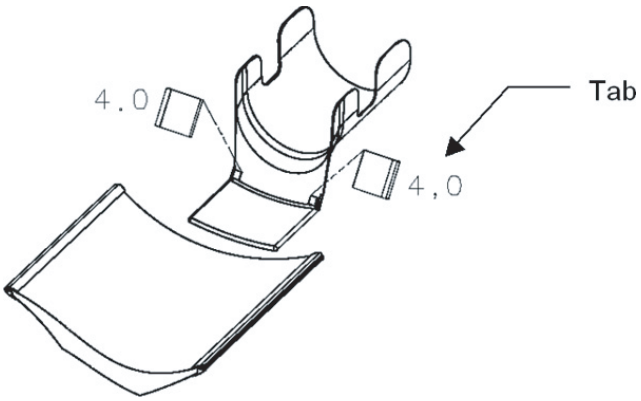


Wrong - Head Holder is NOT latched after installing shims

3.4 Procedure

1.) First place the two 4.0mm shims (thickest size) onto both edges of the head holder as shown (use a piece of tape to temporarily secure them)

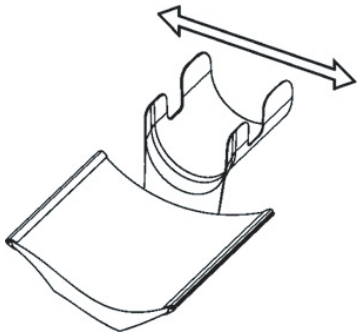
- The shim must be placed with the tab facing out
- The thickness is printed on the shim



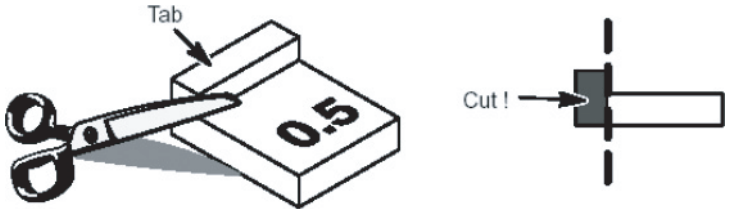
2.) Insert the head holder into the cradle

3.) Check if the head holder is latched onto the cradle at the first step of the plastic latch mechanism. (The head holder does not need to be latched onto the second step)

4.) Check if the head holder has a small free-play in the horizontal direction



5.) If the rubber is too thick, repeat steps 1-4 using a thinner shim (3.5, 3.0...0.5mm) until the head holder is latched (without excessive force) and fits securely in the cradle.If the thinnest shim (0.5mm) is too tight, the tab can be cut off to reduce the thickness



6.) Clean off the surfaces where the shims will mount using alcohol.

7.) Peel off the paper from the back of the selected shims and attach with the tabs facing out. Hold each shim with your fingers for a few seconds to attach it to the head holder.

3.5 Finalization

Review latching of head holder with customer after installation

Section 4.0
Mechanical Installation Completion Checklist

Complete the Mechanical Installation section of the GE e4879 and turn it over to your site FE. The electronic file DOC# for the checklist is found on Service Methods 5366638-8EN from SIMS Content Viewer. The electronic checklist is also located in the downloadable forms directory of the SIMS Content Viewer.

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Appendix A
Removal & Installation of Covers

Section 1.0
Gantry Side Covers

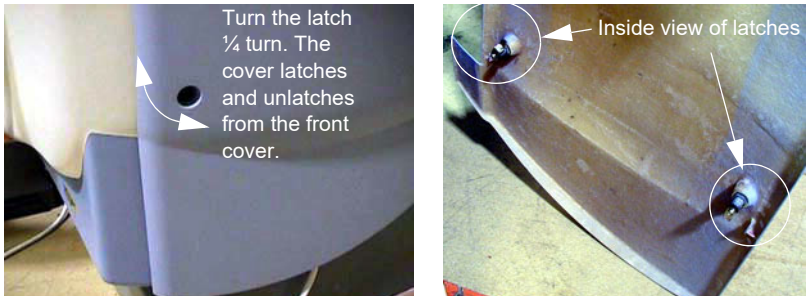
1.1 Side Cover Removal

1.) Lower table to home (lowest) position.

CAUTION **Potential for injury if covers removed and power is left "ON".**
Always remove the right side cover first, and turn OFF power at the Service Switch Panel.

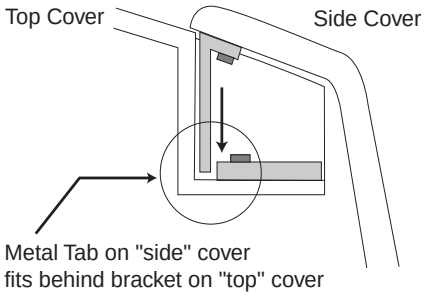
2.) Use an 8mm Hex wrench to unlatch the side cover from the front cover. See Figure A-1.

Figure A-1 Side Cover Latches



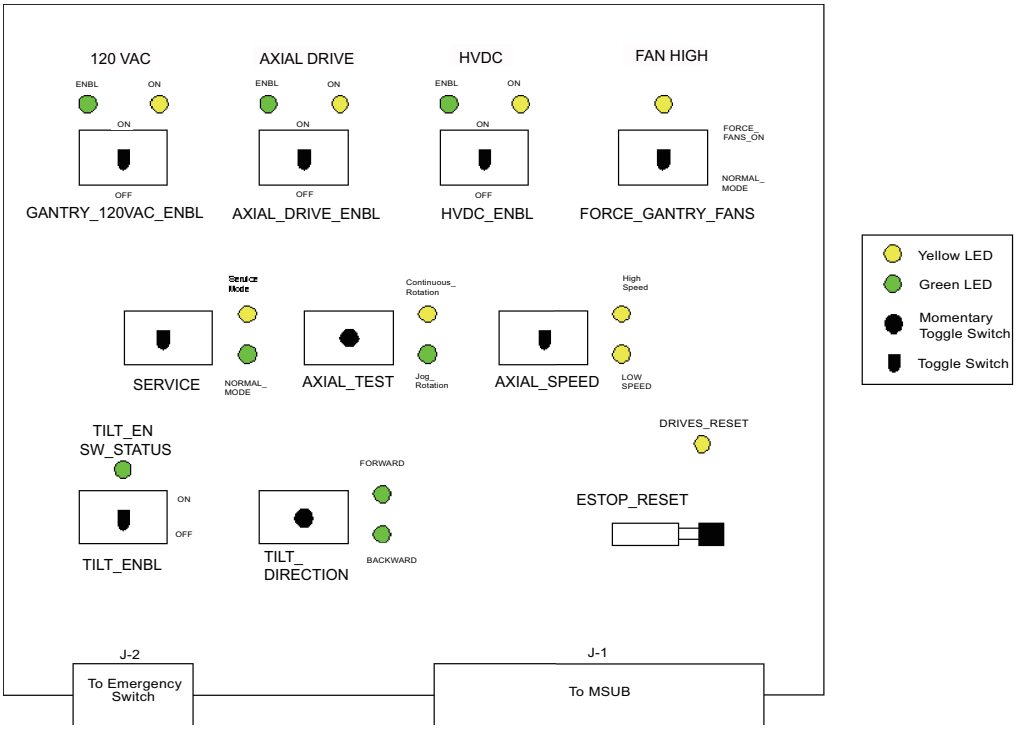
3.) Remove the right side cover by lifting it upward to release the two (2) latches, located on the top edge of the cover. Once removed, the MSUB/TGP left side should be exposed.

Figure A-2 Side and Top Cover Clasp



4.) Turn OFF the **120 VAC**, **AXIAL DRIVE** and **HVDC** power switches on the gantry service switch panel (see Figure A-3).

Figure A-3 Gantry Service Switches



5.) Repeat steps 1-3 for the left side cover.

1.2 Side Cover Installation

1.) To install a side cover, place it over the top cover and let the two (2) side cover latches slide behind the metal tabs, located on the top cover. See Figure A-2.

2.) Use Hex wrench to secure the side cover to front cover by turning the bolts a quarter turn. See Figure A-1.

Section 2.0
Gantry Top Covers

2.1 Top Cover Removal

CAUTION **Potential for Shock.**

Voltage may be present. Potential for injury if covers removed and power is left ON.

Always remove the right side cover first, and turn OFF power at the service switches.

1.) Remove the gantry right side cover (see Gantry Side Covers Removal and Re-install).

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). See Figure A-3.

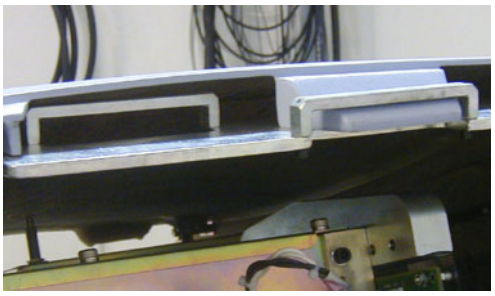
3.) Disconnect the power cable that connects the fans on the top cover to the gantry.

Note: The cooling fans are now mounted on the top covers.

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. See Figure A-4.

Figure A-4 Top Cover Tabs and Bracket



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

2.2 Top Cover Installation

The top cover consists of two (2) pieces. Install the front and rear gantry covers, if not already installed. See Section 3.0 on page 186, and Section 4.0 on page 195.

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.

2.) Take the other top cover and align the tabs on the cover with its associated bracket. Lift and slide the cover into place.

3.) Connect the cable from the fans to the gantry.

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

4.) Turn on the three (3) power switches.

5.) Ensure fans work properly.

6.) Re-install the gantry side covers.

Section 3.0
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.

3.1 Front Cover Dolly Setup

DANGER **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.**

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-5 and Figure A-6.

- 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-5 Front Cover Dolly in Storage Mode

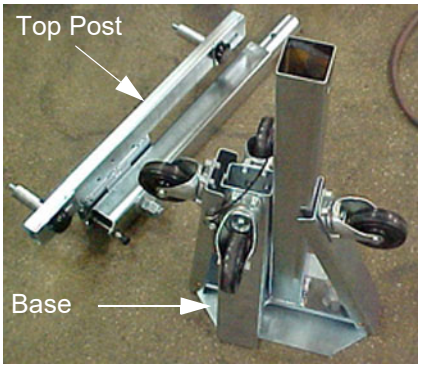
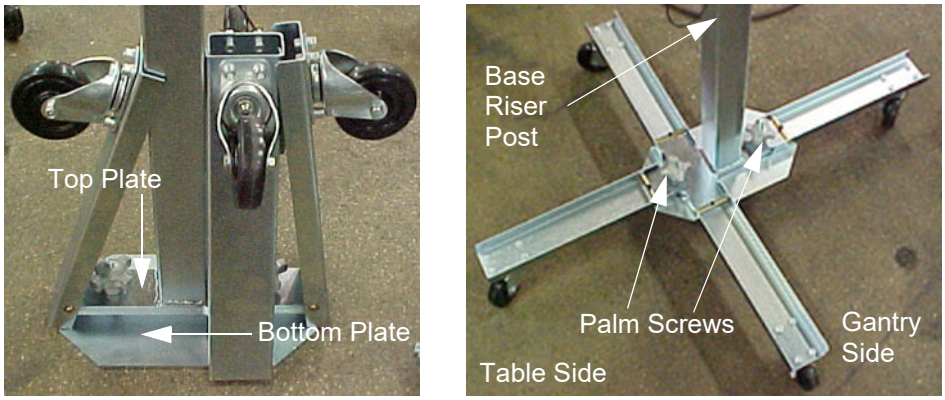


Figure A-6 Front Cover Dolly Base Assembly



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-6.

WARNING **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.

3.2 Removal

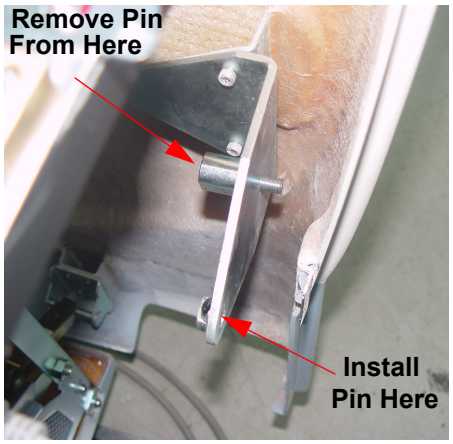
1.) Position the table at its lowest position.

2.) Remove gantry side and top covers, if you have not already done so. See Section 1.0 on page 183. Make sure that the three (3) power switches have been turned off. See Figure A-3.

3.) Assemble the front cover dolly.

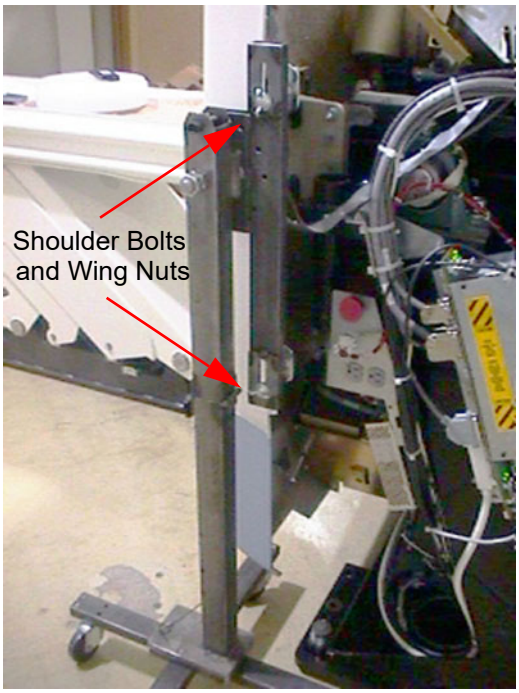
a.) Change the extension pin location on gantry front cover bracket. See Figure A-7.

Figure A-7 Extension Pin location



b.) Tighten the two (2) shoulder bolts to the gantry securely. This will make cover installation easier. See Figure A-8.

Figure A-8 Front Side Dolly



c.) Attach side dolly to the shoulder bolts and secure assembly with two (2) wing nuts.

d.) Repeat steps a, b and c to assemble the other side dolly.

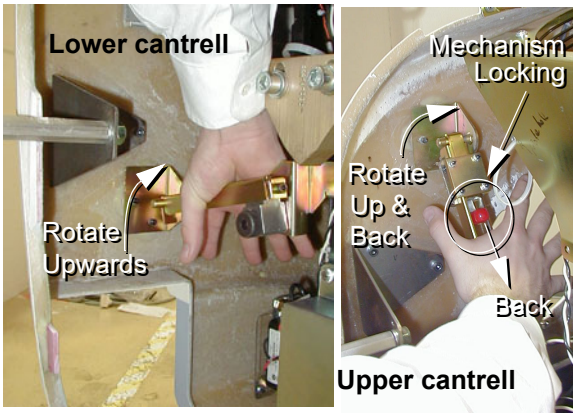
4.) Detach front cover J3 and J2 and front cover BKHD J1 cables.

5.) Remove front cover

a.) Disengage upper and lower cantrell brackets on both sides of the cover.

1.) Using steady but firm pressure, lift each of the lower cantrell brackets from their associated retainers. See Figure A-9.

Figure A-9 Releasing cover brackets

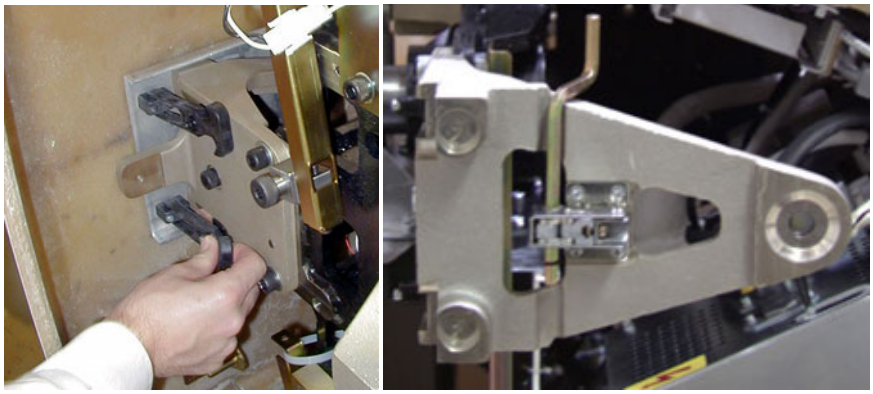


2.) Disengage the locking mechanism on the upper cantrell brackets by using your thumb to slide the trigger (red lever) back. This will release the locking mechanism and allow the cantrell to be rotated upwards with steady and firm pressure.

b.) Disengage the rubber retaining straps on both sides. You may find it helpful to lift “up” on the cover to align the stud while attaching the rubber retaining straps.

c.) Also lift and rotate cover locking arm to unlocked position.

Figure A-10 Rubber retaining straps and Cover Locking mechanism



6.) Rotate front cover away from gantry.

a.) Move front cover away from gantry giving enough space (about 5 feet) between front 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-11.

Figure A-11 releasing Front Cover Dolly Hinge

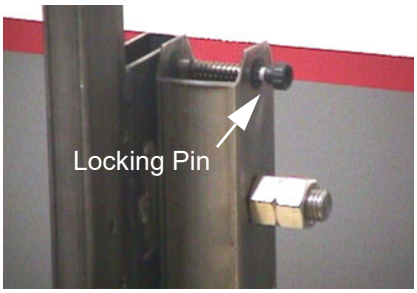
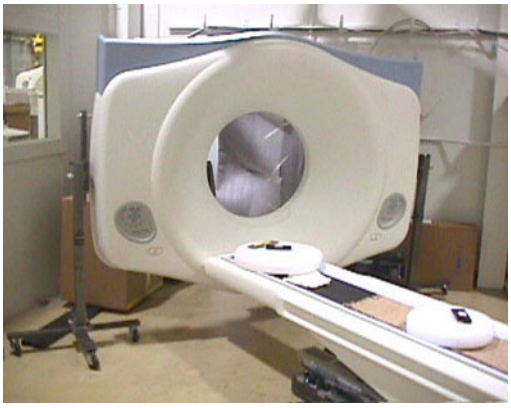


Figure A-12 Front Cover Removal Sequence



1. Upper Left>Rotate cover to make room for step 2.
2. Upper Right>Rotate cover to clear the table. Roll the cover to foot end of table.
3. Lower Left> Rotate the cover upside down to provide clear work area.
   Note: Remove Gantry Display and Control Panel in position 2.

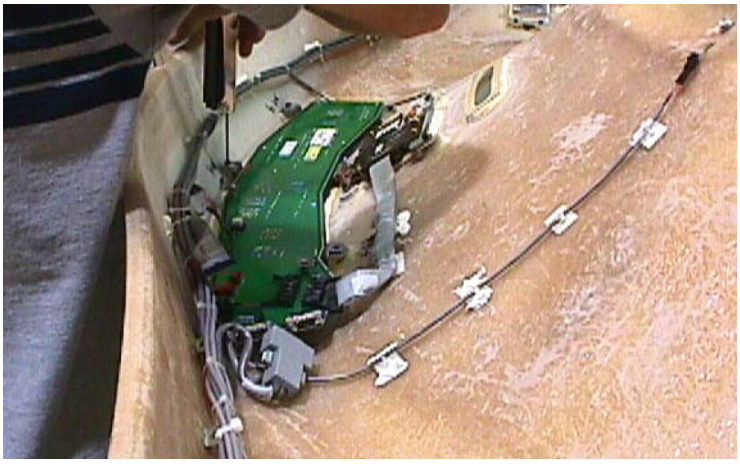
7.) Rotate the cover horizontally and move it back and over the table to a safe location. Once in a safe location, you may over-rotate the cover full vertically but upside down.

8.) Remove the gantry display and one (1) of the cover's control assemblies, and place them into the service positions.

a.) Remove the gantry display and place it into its service position.

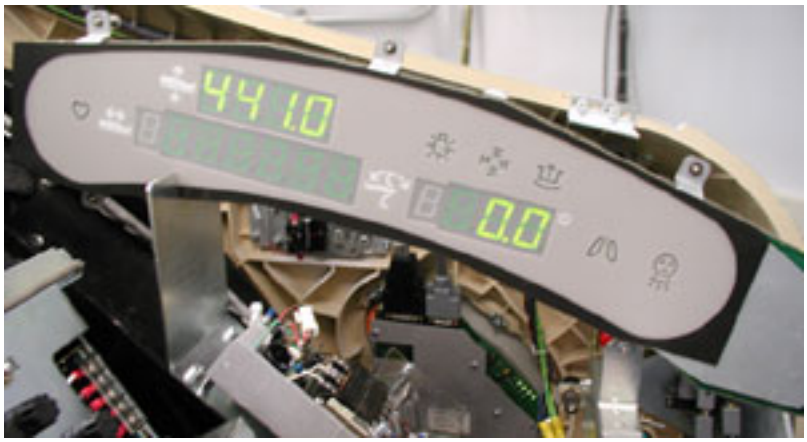
* The gantry display is held in place with (5) thumb screws. Use a flat-blade screwdriver to remove the Display. Reference Figure A-13.

Figure A-13 Gantry Display Removal



* Place the Display in the bracket on the right side of the gantry. See Figure A-14.

Figure A-14 Gantry Display Service Mounting Location

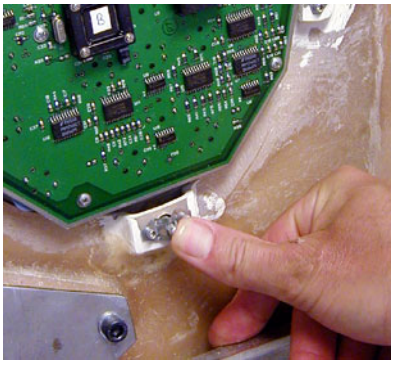


* Disconnect the cabling at the right rear gantry cover. Only (1) cable will connect to the Gantry Display. Connect the cable taken from the rear cover to the display.

b.) Remove a gantry control and place it into its service position.

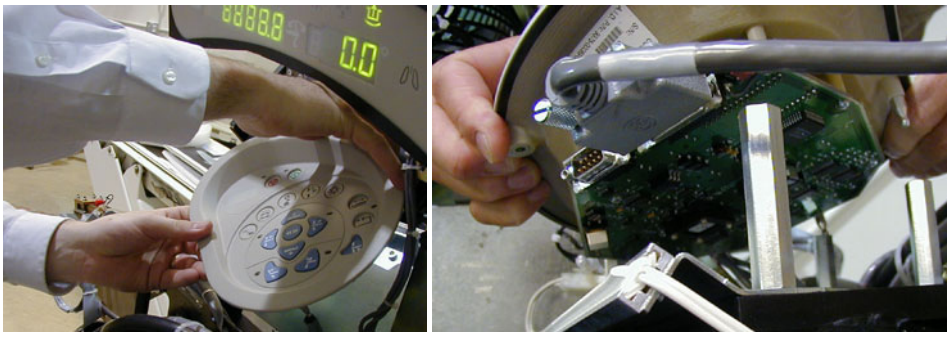
1.) Press on each ball stud until the panel is released. Keep one hand on the control panel at all times to prevent it from dropping to the floor.

Figure A-15 Gantry control panel removal



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

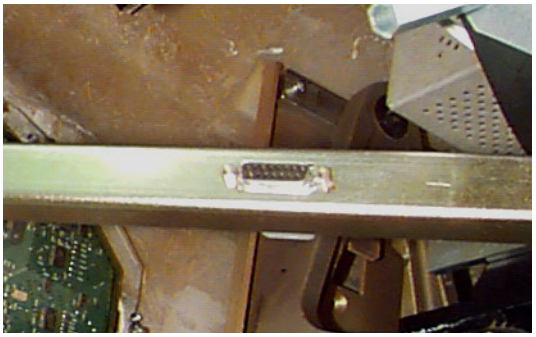
Figure A-16 Control panel service position



3.) Connect cable to terminator located on the cantrell arm. Reference Figure A-17.

Note: There are 3 cables, each of which is unique. The ribbon cable is not used in the Service configuration. The other 2 cables will only fit in the terminator or the control panel, not both.

Figure A-17 Gantry Service Mode Cable Terminator



3.3 Installation

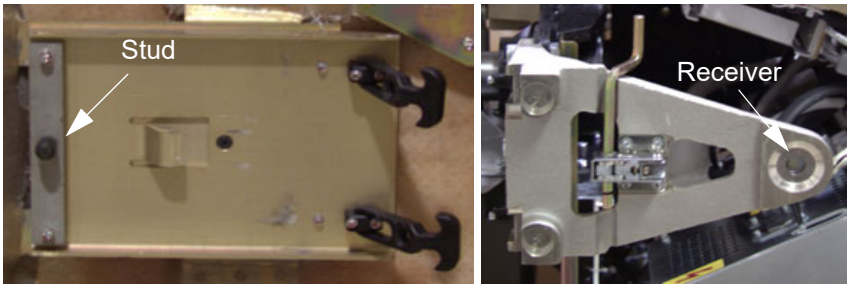
1.) Remove the gantry display and control assembly from their service positions and re-attach them to the gantry cover.
   a.) Disconnect cables from Display and Gantry Control Panels.
   b.) Install Gantry Display in front cover. Secure the 5 thumbscrews. With a flat-blade screw driver gently tighten past finger tight.
   c.) Install the gantry control panel making sure the ball studs are secure within the receivers.
   d.) Re-attach cables.
2.) Rotate gantry back to its vertical position.

NOTICE **Potential for front cover damage.**

When you put rotate the gantry back to its vertical position, make sure not to scratch the front cover with the edge of the table cradle.

3.) Attach the front cover.
   a.) Align the studs on both sides of the front cover with each associated receiver. Receiver is located on the gantry frame.

Figure A-18 Cover stud and Mounting bracket receiver



b.) Insert the stud on one side into its associated receiver and attach the rubber retaining straps.Then insert the stud on the other side into its associated receiver and attach its rubber retaining straps.

You may find it helpful to lift “up” on the cover to align the stud while attaching the rubber retaining straps.

4.) Re-attach upper and lower cantrell brackets on both sides.

a.) Remove upper Cantrell brackets from service position and rotate them into position over their associated retaining pins. See Figure A-19.

Figure A-19 Service position of upper and lower cantrell brackets

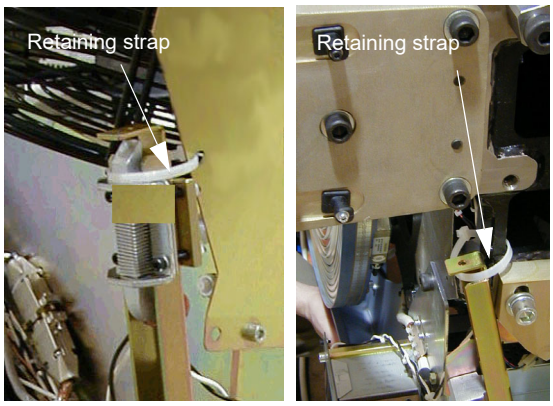
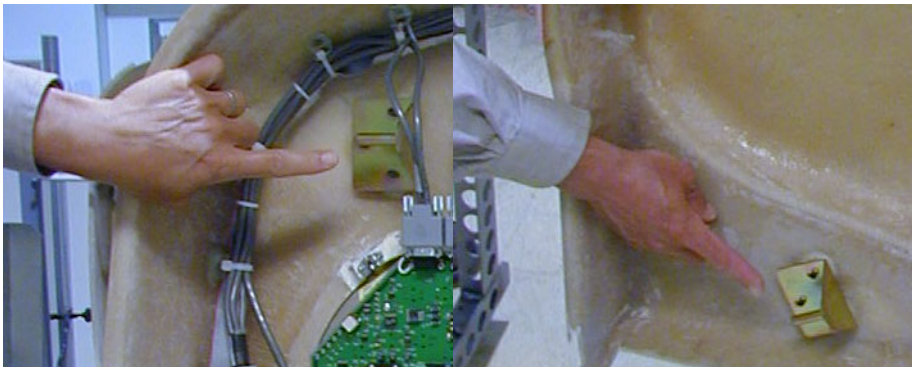
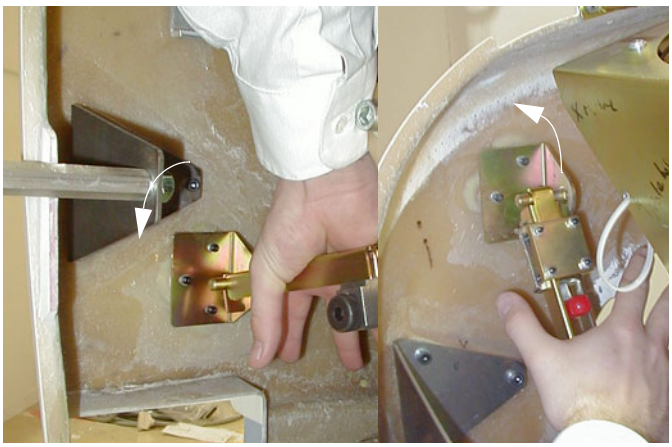


Figure A-20 Cover retaining pins (top and bottom)



Press down firmly on the bracket and snap it into place. The locking mechanism on each upper bracket should lock the bracket securely into place. Do this on both sides. See Figure A-21.

Figure A-21 Locking the cover brackets into place

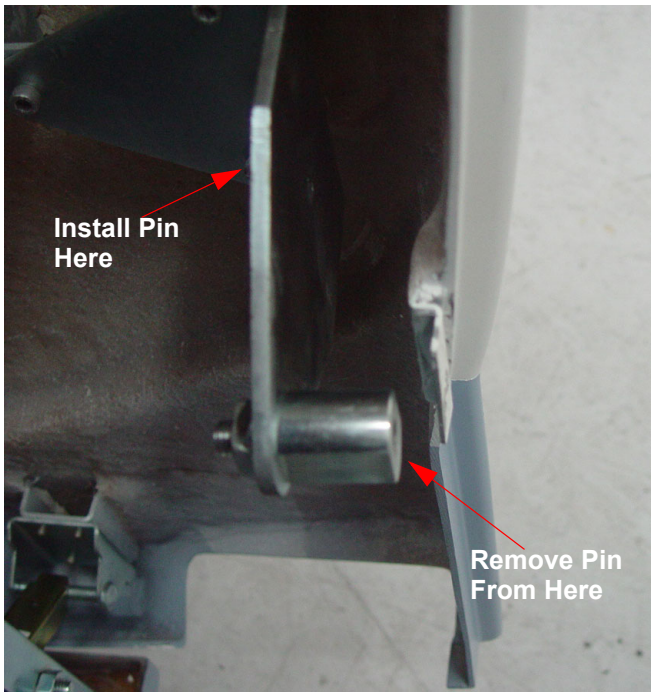


b.) Remove lower cantrell brackets from service position (see Figure A-19), and rotate them into position over their associated retaining pins. Press down firmly on the bracket and snap it into place. See Figure A-21.

Note: Mis-adjustment of the cantrell brackets can cause misalignment of the top and side covers. The upper and lower cantrell brackets do not require adjustment during normal use.

5.) Remove dolly, changed the extension pin location on the gantry front cover bracket, See Figure A-22. Disassemble and store safety away for later use.

Figure A-22 Remove dolly



6.) Re-attach cables to cover.

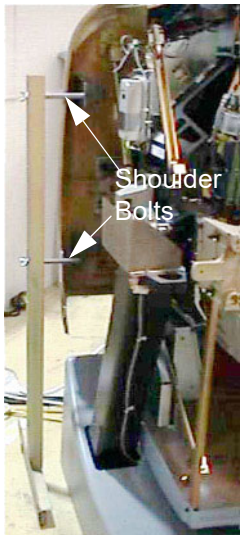
Section 4.0
Gantry Rear Cover

4.1 Removal

1.) Assemble the rear cover dolly.

a.) Tighten the two (2) shoulder bolts to the rear cover.

Figure A-23 One side of the Rear cover dolly



b.) Fit side dolly through the shoulder bolts and secure assembly with two (2) wing nuts. See Figure A-23.

c.) Repeat steps a and b for the other side dolly.

CAUTION **Potential for injury if covers removed and power is left "ON".**

2.) Disconnect cables on the right side of the rear cover.

3.) Remove rear cover.

a.) Disengage upper and lower cantrell brackets on both sides of the rear cover.

1.) Using steady but firm pressure, lift each of the lower cantrell brackets from their associated retainers. See Figure A-9.

2.) 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 both sides.

4.2 Installation

1.) Position cover in back of gantry

2.) Attach the rear cover

a.) Align the studs on both sides of the rear cover with the receivers located on the gantry frame.

b.) Insert the stud on one side into its associated receiver and attach the rubber retaining straps.Then insert the stud on the other side into its associated receiver and attach its rubber retaining straps.

Note: You may find it helpful to lift “up” on the cover to align the stud while attaching the rubber retaining straps.

3.) Reattach upper and lower cantrell brackets on both sides.

a.) Remove upper cantrell brackets from service position and rotate them into position over their associated retaining pins. Press down firmly on the bracket and snap it into place. The locking mechanism on each upper bracket should lock the bracket securely into place. Do this on both sides.

b.) Remove lower cantrell brackets from service position and rotate them into position over their associated retaining pins. Press down firmly on the bracket and snap it into place.

Note: Adjustment of the cantrell brackets can cause misalignment of the top and side covers. The upper and lower cantrell brackets do not re-quire adjust during normal use.

4.) Remove dolly, disassemble and store safely away.

5.) Re-attach cables to cover.

6.) Re-install the mylar (scan) window. Carefully bend the scan window and place it into the channel (groove) provided in the covers.

Figure A-24 Installing the mylar window

Section 5.0
Gantry Cover Alignment Adjustment Guide

5.1 Overview

This section explains the adjustment capability available for the Gantry covers and guidelines for performing adjustments.

5.2 Tools Required

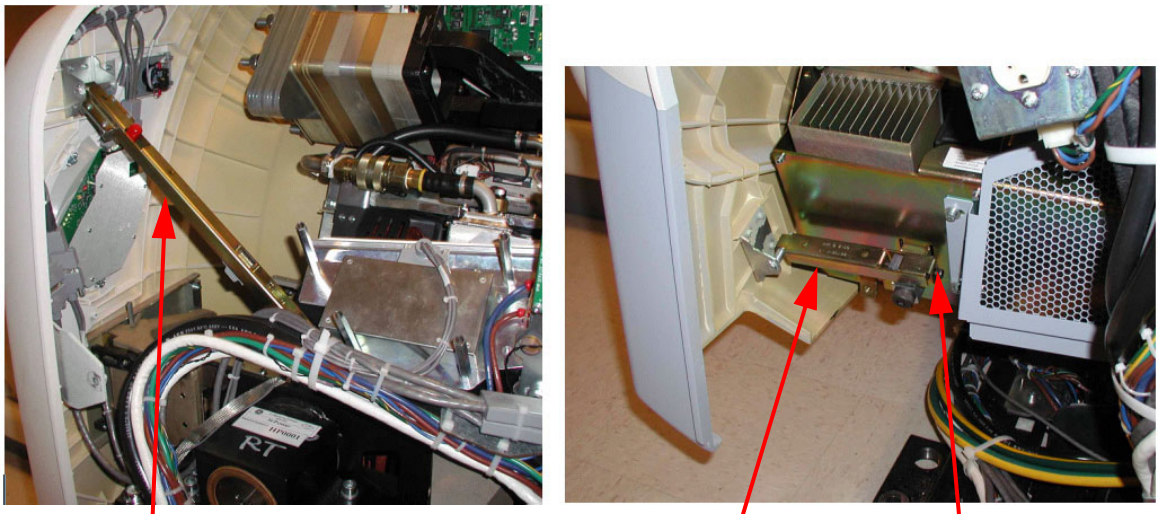
3mm, 5mm, 8mm, Hex wrenches

5.3 Adjustment Guide

5.3.1 Front/Rear Cover adjustment

The front and rear covers are held in a fixed vertical position by the cover locking mechanisms at the vertical middle of each cover on each side. The only adjustment capability is found on each of the cover cantrells (see Figure A-25, one near each corner of the front and rear covers. Adjustments are best done at zero tilt.

Figure A-25 Cantrells



1.) Remove the Gantry side covers using a 8mm hex wrench to release the bottom latches. Refer to Section 1.0 on page 183, for further details.

2.) Disable gantry rotation, 120VAC and HVDC via the service switch panel.

3.) Disconnect the fan power via the white molex connector (one for each top cover). Remove the top covers by lifting up and pulling to the side of the gantry.

4.) Remove the scan window to avoid creases or kinks during cover movements.

5.) Using a 5mm hex wrench, adjust the bolt on the gantry end of the cover cantrells (see Figure A-25) to lengthen or shorten the cantrell arm that will push or pull the cover corner. The distance

between the inside edges of the front and rear covers will be typically 27" + 1/8” (689mm). Distance should remain the same as measured along the inside edges from top to bottom with both covers hanging level as seen with a level on the inside vertical edge.

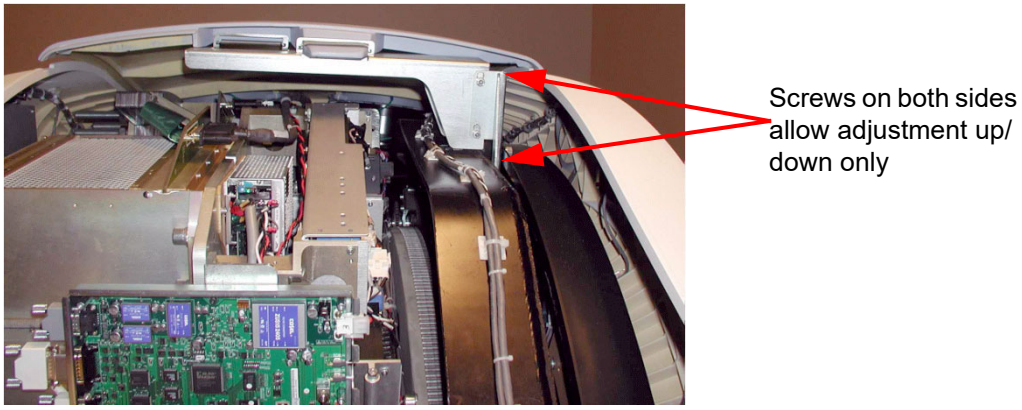
5.3.2 Scan Window

Position the scan window in the opening to verify that it seats all the way around with no gaps. The scan window should seat easily if the front and rear covers have been adjusted properly. If not, go back and readjust such that the scan window seats properly. There is no easy solution other than adjusting and looking for fit.

5.3.3 Top Cover Adjustment

The top covers rest in a top bracket that is mounted to the stationary gantry frame and subsequently just rest on top of the front/rear covers. There are also two alignment fingers on the outer edge of the top covers that need to sit in brackets on the front/rear covers.

Figure A-26 Top Cover Bracket

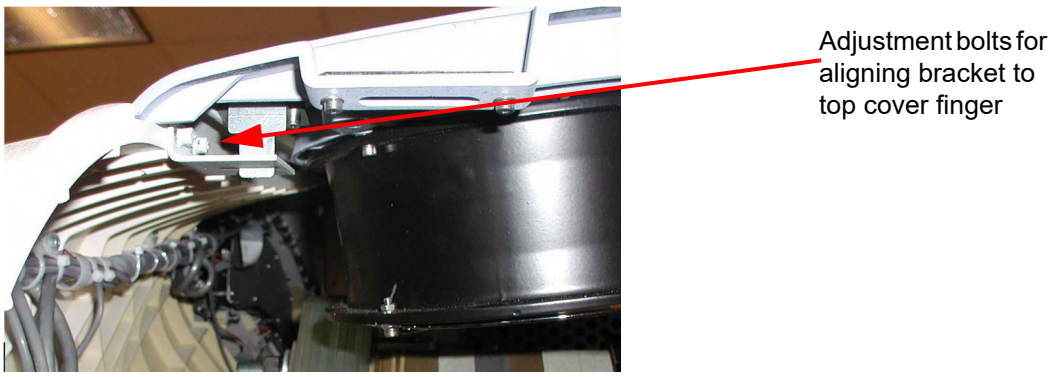


1.) Set the top covers back on the gantry and look for proper fit. The top covers should rest on the front/rear covers all along the edges. If they do then skip the rest of this section.

2.) If the top covers do not rest on the gantry at the top then lift them back off and use a 5mm hex wrench to loosen the bolts that hold the top cover bracket for adjusting vertical alignment to allow the top covers to rest on the front and rear covers.

3.) The brackets on the front/rear covers for the fingers on the outer edge of the top covers are adjustable using a 3mm hex wrench and sliding the bracket till it lines up with the top cover finger. (See Figure A-27)

Figure A-27 Top Cover Fingers



4.) Verify the top cover tapered edges fit over the lip along the top edge of the front/rear covers. If not, go back to Section 5.3.1 and readjust the cantrells as necessary.

5.) When done adjusting the top covers, reconnect the fan power molex connections.

5.3.4 Side Covers

The side covers just hang from the top covers by two fingers that are not adjustable. When set into the top covers, the side covers should hang straight down with the tapered edges fitting over top of the lip of the front/rear covers.

5.3.5 Finish

1.) Re-Enable gantry rotation via the Axial Enable switch on the service switch panel.

2.) Replace the side covers and latch using a 8mm hex wrench on the side cover bottom latches.

3.) Run an axial scan to ensure proper system operation prior to turning system back over to the customer.

Section 6.0
Gantry Scan Window

6.1 Remove Scan Window

1.) Grab the window at the top and pull firmly downward.

2.) Continue to pull until the top of the scan window makes contact with the bottom portion of the scan window.

3.) Hold the top and bottom portions of the scan window together, 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.

Figure A-28 Scan Window Removal

6.2 Install Scan Window

1.) Install the front and rear covers.

2.) Deform the scan window, as shown in Figure A-29, and nest the scan window at the bottom of the opening between the front and rear covers, (Figure A-30) with the rivets in the 6 o'clock position installation position. Remember the rivets must be in the 12 o'clock position when the mylar window is fully installed.

3.) 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.

4.) 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 A-29 Install Scan Window

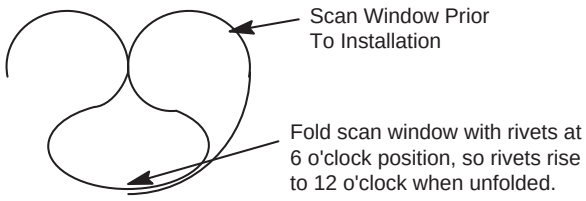
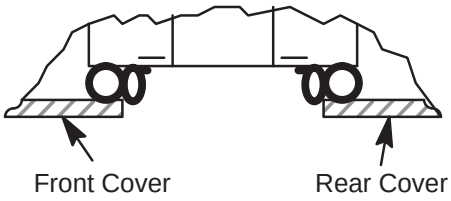


Figure A-30 Scan Window Nested Between Front and Rear Cover



Section 7.0
Gantry Base Covers

Refer to Figure A-31 for the following assembly sequence.

Note: Tighten means torque to 2.3 Nm

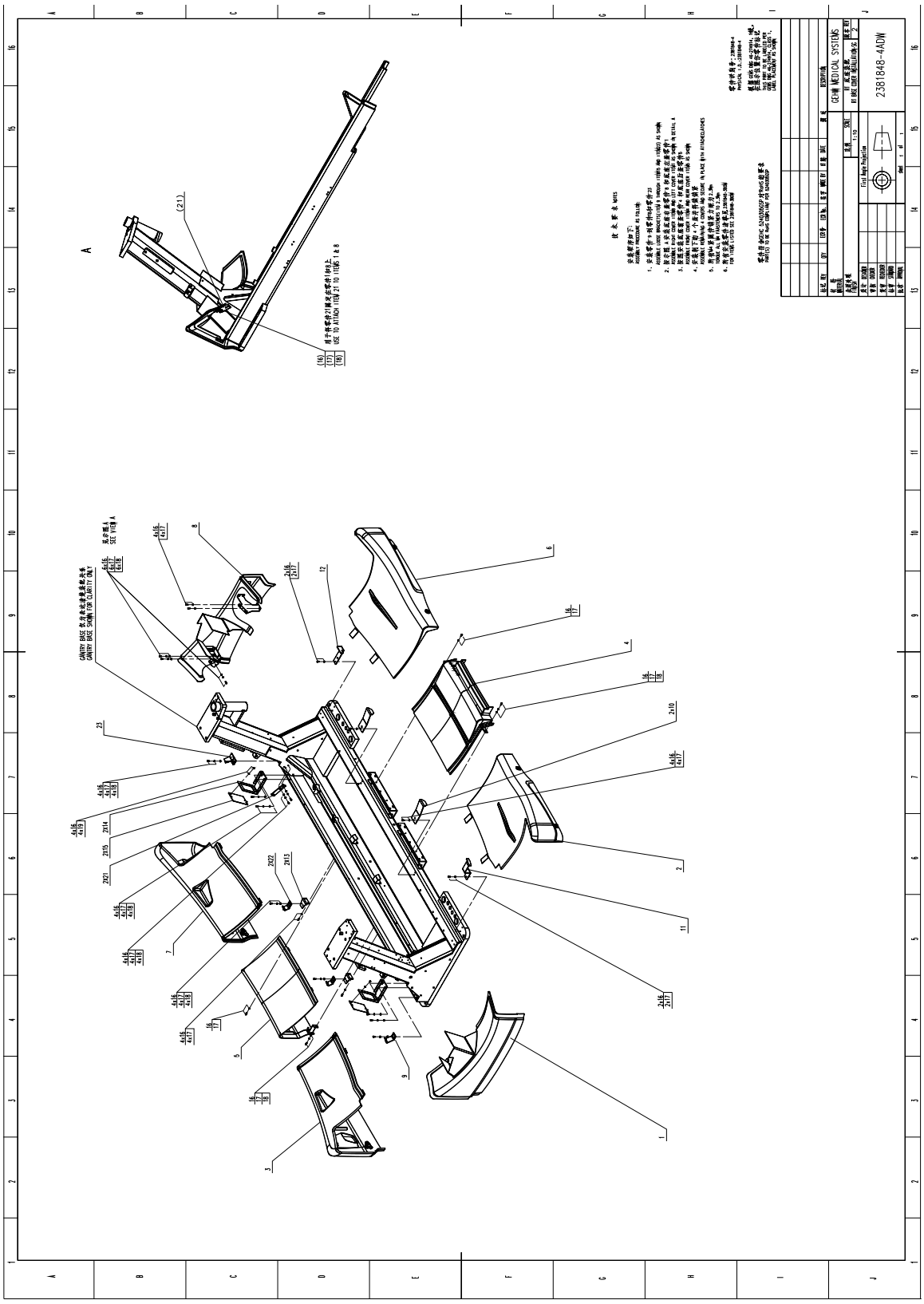
1.) Assemble two (2) brackets (item 11) to front cover (item 5), using four (4) hardware items 1, 2 and 3. Align leg of brackets parallel to front edge of cover and tighten. Position cover on gantry base, with bracket slots aligned to gantry holes. Center cover left to right, and attach with four (4) hardware items 1, 2 and 3, as shown, and tighten.

2.) Assemble two (2) brackets (item 12) and two (2) brackets (item 13) to gantry base, using eight (8) hardware items 1, 2 and 3. Finger tighten hardware with brackets moved outward to end of slots. Install side covers (items 6 & 7) on base, pushing brackets (items 12 & 13) inward until properly aligned with front cover. Remove side covers, tighten fasteners and replace side covers, using two (2) hardware items 1, 2 and 3 and one item 4 on each cover, and tighten.

3.) Assemble last bracket (item 13) loosely to gantry base with two (2) hardware items 1, 2 and 3. Assemble latch (item 10) to rear cover (item 8), oriented as shown. 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 and 4, tightening all fasteners. Lock latch (item 10).

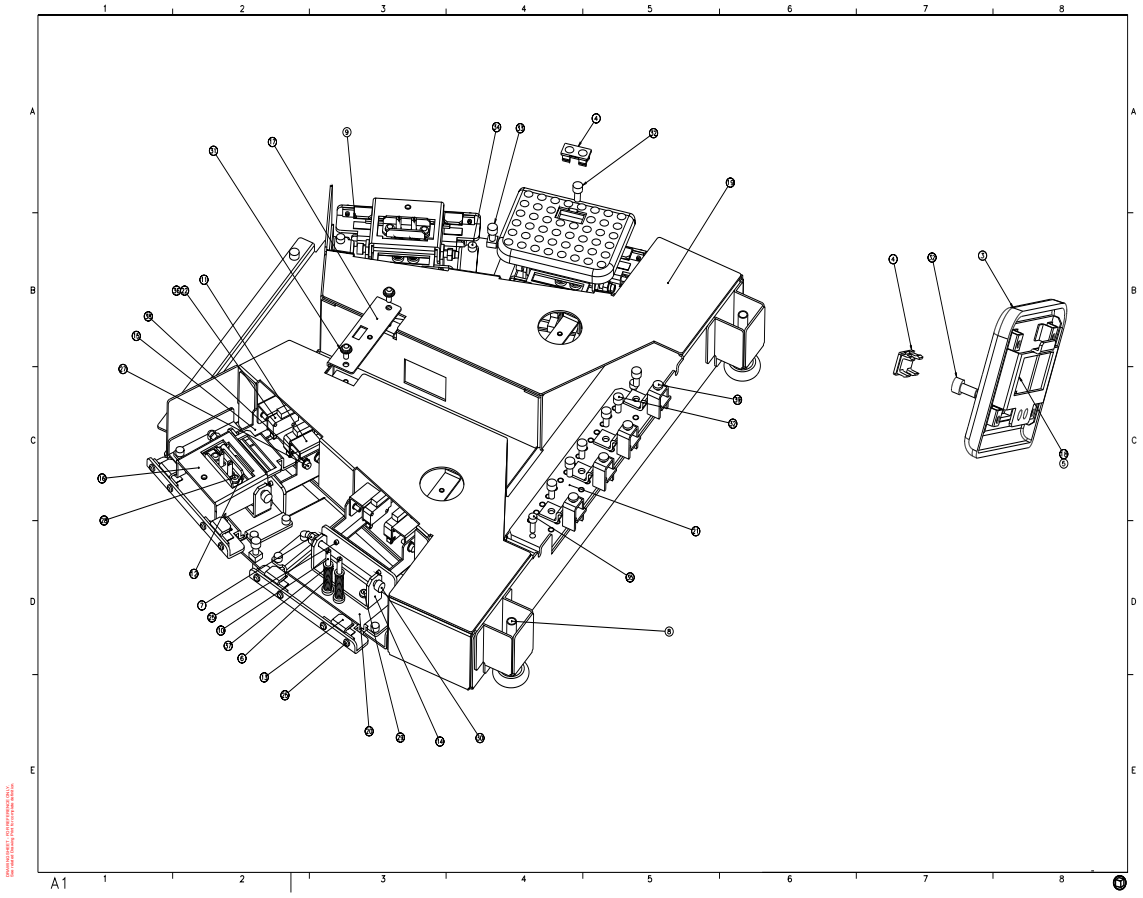
4.) Assemble two (2) latches (item 10) to rear cover (item 9), oriented as shown. Place cover on gantry base, aligned to covers 7 and 8. Lock both latches.

Figure A-31 Gantry Base Covers - RT



Section 8.0
Footswitch Covers

Figure A-32 Table Footswitch Assembly



Section 9.0
CT UMI Tilting Dolly

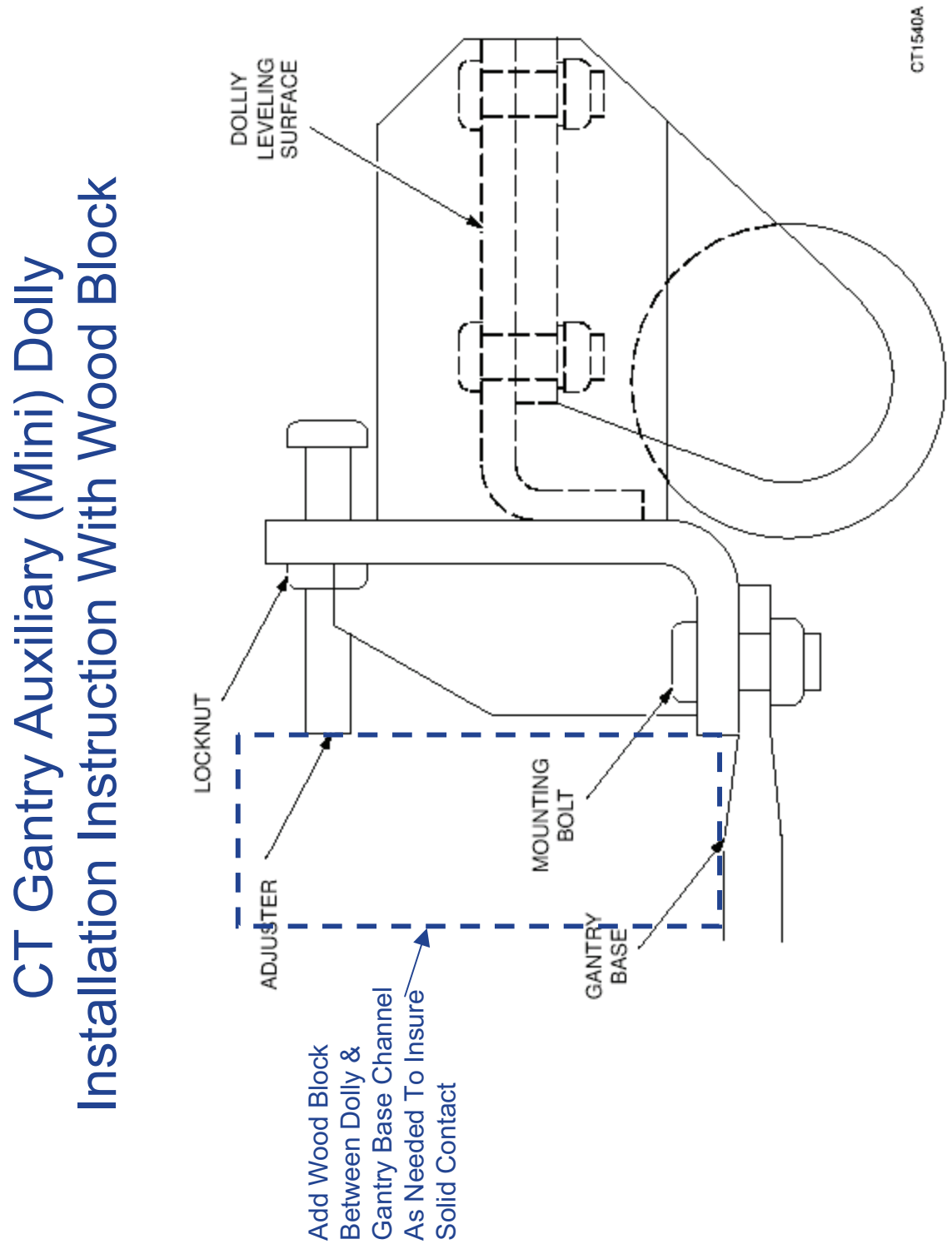
9.1 Installation Procedure

1.) Remove dolly side rails.
2.) Remove two inboard caster towers, and install and pin them at gantry end of dolly.
3.) Elevate all caster towers until their casters contact the floor.
4.) Remove gantry end HSA dolly end, replace dolly pins in the frame receptacles, retain HSA dolly end.
5.) Retrieve and attach pickers to gantry end of table with 16 millimeter (mm) by 40 mm cap screws.
6.) Remove and retain spacers and nuts from 16mm x 240 mm SHCS. Retain for return.
7.) Remove foot end HSA dolly end, replace dolly pins in the frame receptacles, retain HSA dolly end.
8.) Remove and retain 5/16 inch diameter pivot lock pin. Note that this pin is slightly smaller than all other pins used on the dolly, and the only pin that will work well at the pivot.
9.) Remove and retain the sheet metal component at each side of the base weldment and both screws.
10.) Pivot frame open and surround table, maintaining approximate equal clearance between the frame and table on each side. The caster towers may require adjustment to allow ease of movement.
11.) Pivot frame back to approximately square.
12.) Attach and pin lifting arms to pickers.
13.) Carefully and squarely align the 16 mm x 240 mm SHCS to the table. Caster tower adjustments may be required.
14.) Thread the 16 mm x 240 mm SHCS into table until their threads extend inboard of the base weldment.
15.) Remove side cover bracket.
16.) Attach and pin arm separator in place.
17.) Insert pivot lock pin.
18.) Attach and pin HSA dolly ends. Some height adjustments may be required. Insure dolly pins are fully seated.
19.) Remove, stow, and pin caster towers. They may need adjustments to ease pin insertion.
20.) Attach and pin side rails. Be alert for pinch points of fingers between the side-rail and lifting arm. Best results are often achieved by pinning one side-rail before inserting the second.
21.) Manually rotate jack screw to take up play at pickers.
22.) Elevate HSA dolly ends for transport.

9.2 Tilting the Dolly

1.) Verify the blue handle/foot end is 14.5 inches away from the rectangular tunnel in the leg. If not:
   a.) Remove the shroud on the patient's left side
   b.) Detach the transit arm travel limiter
   c.) Verify the table transit lock is positioned correctly
   d.) Reattach the shroud on the patient's left side
2.) Lower HSA dolly ends until table is in contact with floor.
3.) Unpin, remove, and retain side rails, replace pins place pins in a convenient location on HSA dolly end.
4.) Attach and pin all caster towers in active positions. Height adjustments may be required to ease pin insertion.
5.) Elevate caster towers until their casters are in contact with floor.
6.) Remove HSA dolly ends and replace dolly pins in receptacles in frame.
7.) Elevate caster towers to appropriate height. A good target is to elevate until the dolly pins clear the floor, and are supported by their rings.
8.) Rotate jackscrew to tilt table.
   a.) Regularly observe the clearance between the table and the floor; adjust caster towers to maintain an effective distance of approximately one inch, depending on the surfaces and thresholds to be traversed.
   b.) Regularly observe the clearance between the pivot pin of the frame and the table. Excessive rotation of the table may cause the rounded "sweep" of the table to contact the frame, and subsequently damage the table.

Section 10.0
Gantry Auxiliary (Mini) Dolly Installation w/Wood Block



Appendix B
Operating Table Installation and Adjustment

Section 1.0
FWS Assembly and Adjustment

1.1 Instruction

Freedom WorkSpace (FWS) is an optional console table with better ergonomic performance. The monitor arm is designed to adjust quickly and easily.
Before assembly go through this section and checklist with the FWS to have an overview.

- Assemble worksurface
  - Assemble table base and worksurface
  - Assemble drawer
- Install Seismic Kit (if need)
- Install monitors
  - Mount pole onto table surface
  - Install monitor with monitor arms
  - Install monitor arms on the pole
  - Route cables
- Adjust the monitors for customer use

1.2 Procedure

1.2.1 Assemble Worksurface (For FWS 5168666-2)

1.) Carefully remove the base assembly from the packaging material.

2.) Attach the crossbrace with the two inner-leg cover and secure the crossbrace to the down leg with six M6 x 10 screws (Figure B-2).

Figure B-1 Worksurface Assembly

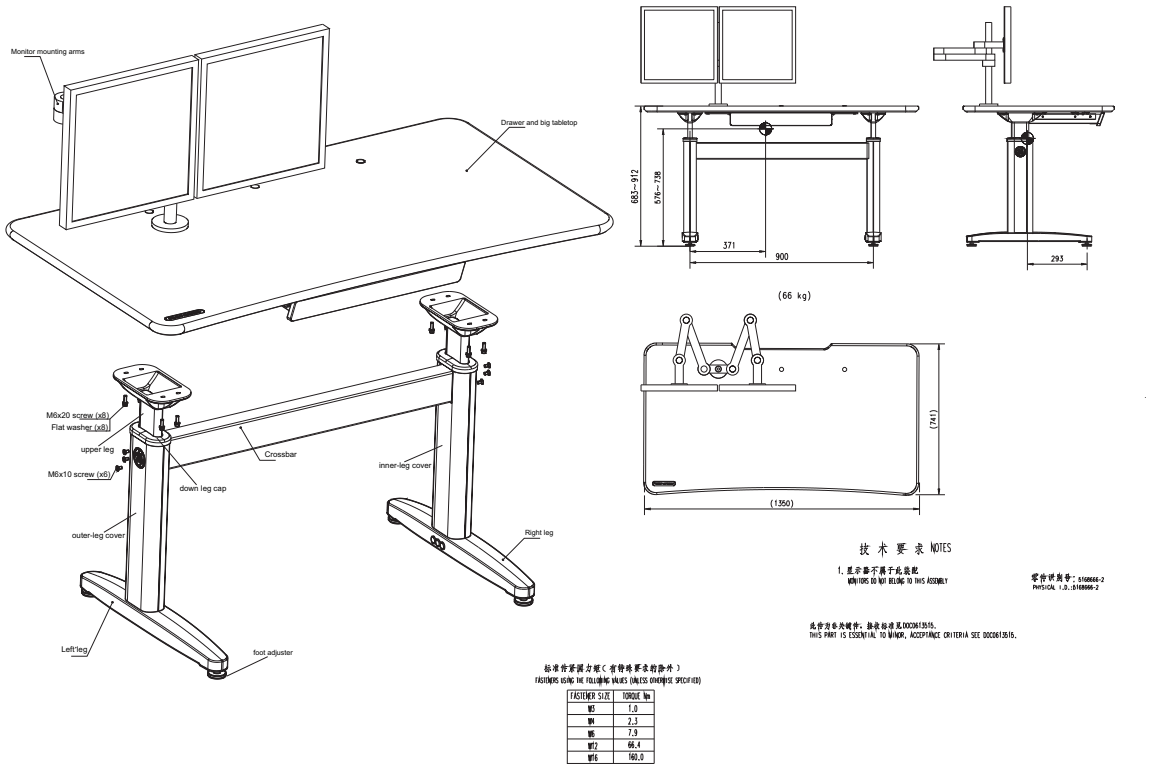
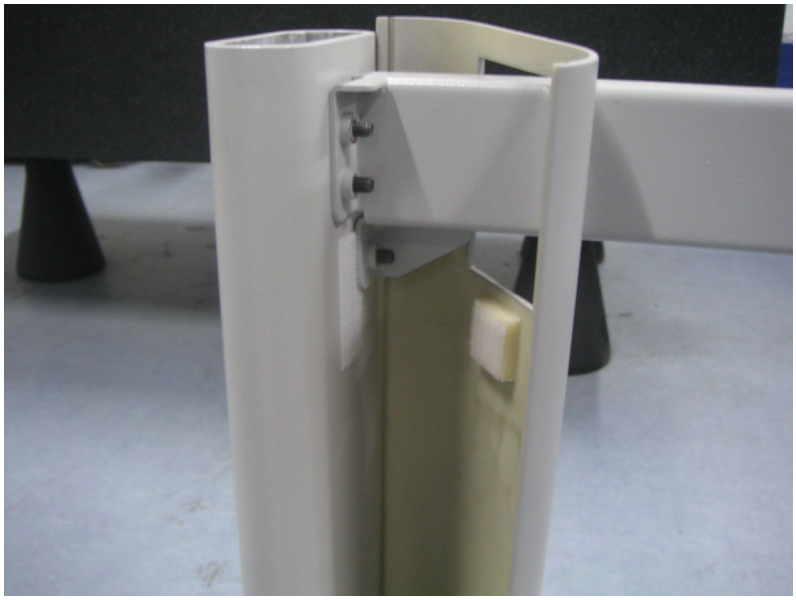


Figure B-2 Inner-Leg Cover

3.) Press the inner-leg cover to secure with the adhesive pad (Figure B-3).

Figure B-3 Inner-Leg Cover and Adhesive Pad



4.) Install upper legs to down legs.

a.) Install down leg cap to the down legs (Figure B-4).

b.) Insert upper legs into down legs, adjust to desired height by attaching the upper legs' screws to appropriate down legs' holes. Figure B-5 shows an example of attaching upper legs at the fifth and seventh holes from the bottom upward. In this case, the height of worksurface would be 785mm.

c.) Secure the upper legs with four M6 x 20 screws each leg.

Figure B-4 Down Leg Cap

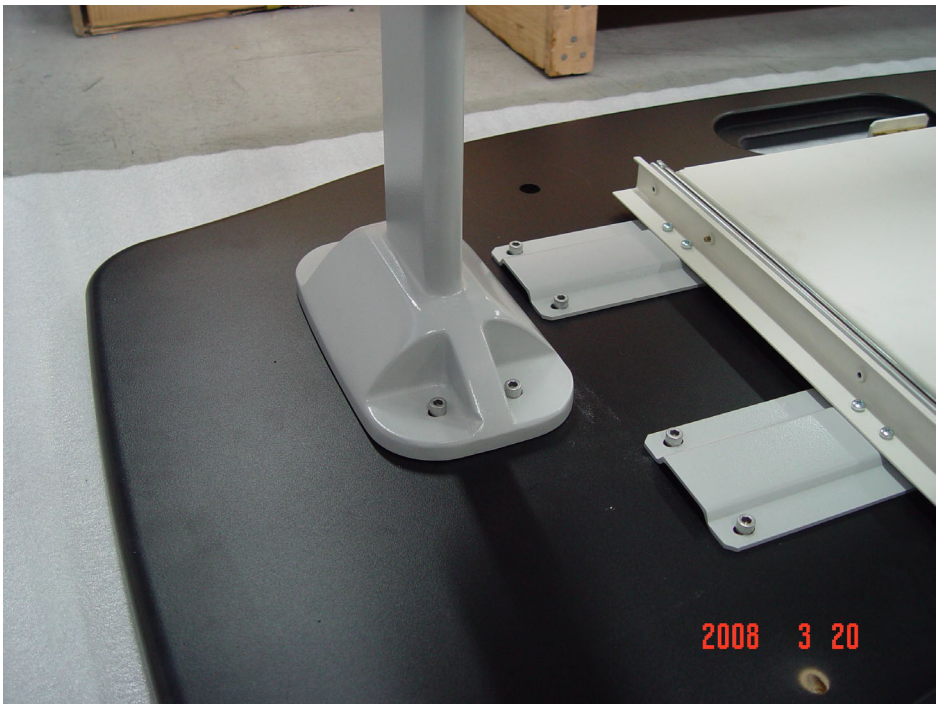
Figure B-5 Down Leg and Screws

5.) Insert outer-leg cover and inner-leg cover into down leg slot. Then push down the upper cover to fix them.(Figure B-6).

Figure B-6 Outer and Inner Leg Covers

6.) Place the worksurface upside down on a clean, soft surface to prevent scratching. Invert the table base onto the worksurface, taking care to align the holes with the pre-drilled holes in the worksurface. Secure the table base to the worksurface with eight M6 x 20 screws (Figure B-7).

Figure B-7 Table base and Worksurface

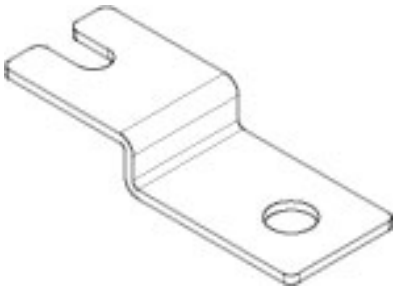


7.) Carefully turn the table assembly to the upright position. Insert hole cover into one of the two holes in the worksurface, the other hole would be used for monitor installation.

8.) The four adjustable glides may be raised or lowered to accommodate varying floor surfaces. Lift the leg off the floor and turn the glide clockwise or counterclockwise to adjust.

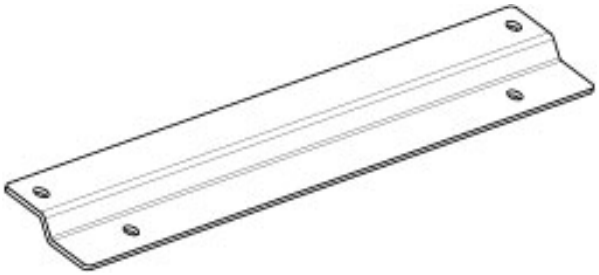
1.2.2 Install Seismic Kit (For FWS 5168666-2)

There are two kinds of anti seismic brackets as shown in below figure.



FWS anti seismic bracket

(Part No.: 5380721)



FWS anti seismic bracket

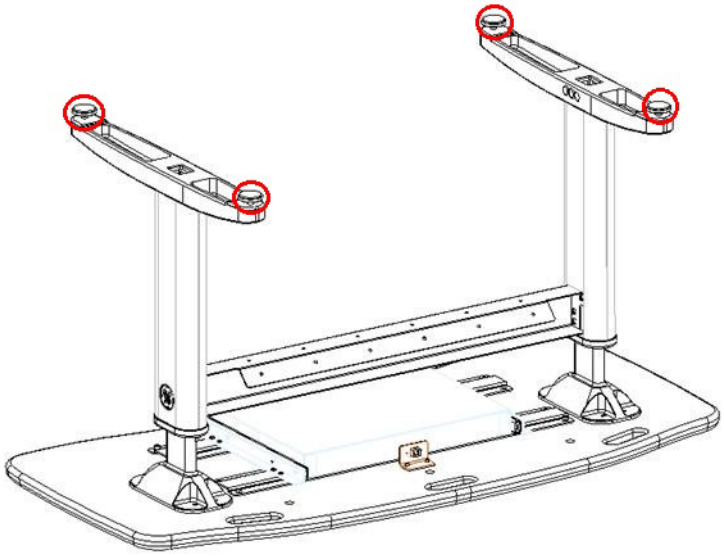
(Part No.: 5451608)

If site specifications require seismic mounting, follow below steps:

- **For anti seismic bracket 5380721**

1.) Turn over the Freedom WorkSpace (FWS), loosen the four foot adjusters as Figure B-8 shown.

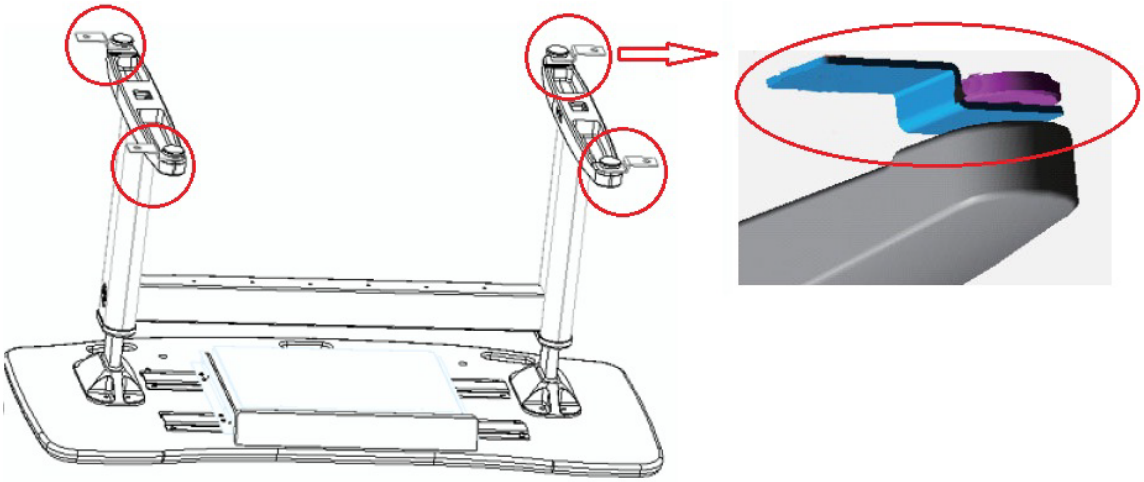
Figure B-8 Loosen four foot adjusters



2.) Insert the anti seismic brackets (5380721) between the adjusters and foots, then tighten the adjusters again, as Figure B-9 shown.

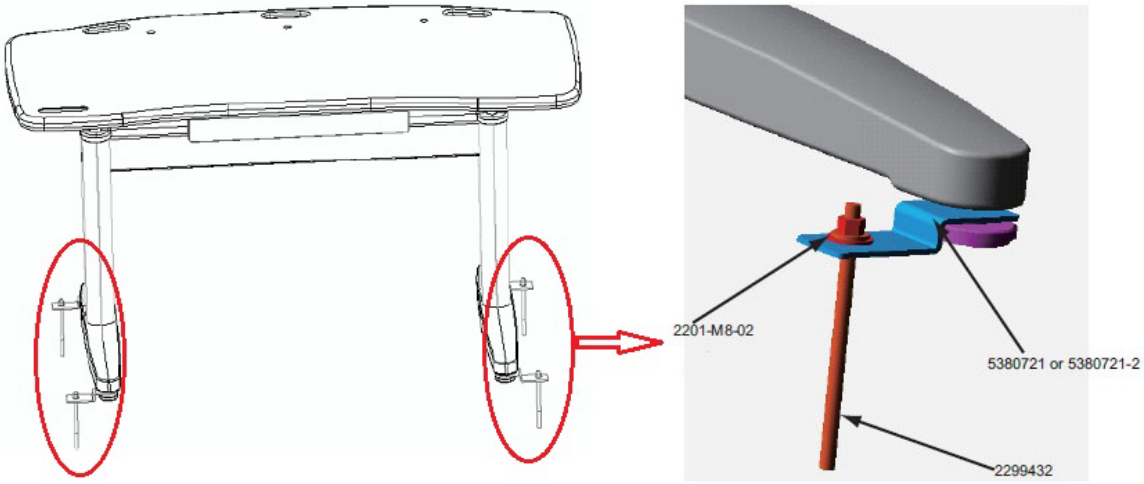
Note: Pay attention to the up down direction of the anti seismic brackets during installation, the side of bracket that used to mount to the floor shall be flush with the foot adjuster.

Figure B-9 Insert brackets between adjuster and foot



3.) Turn the Freedom WorkSpace (FWS) to the upright position, use anchors to mount the brackets to the floor, as shown in Figure B-10.

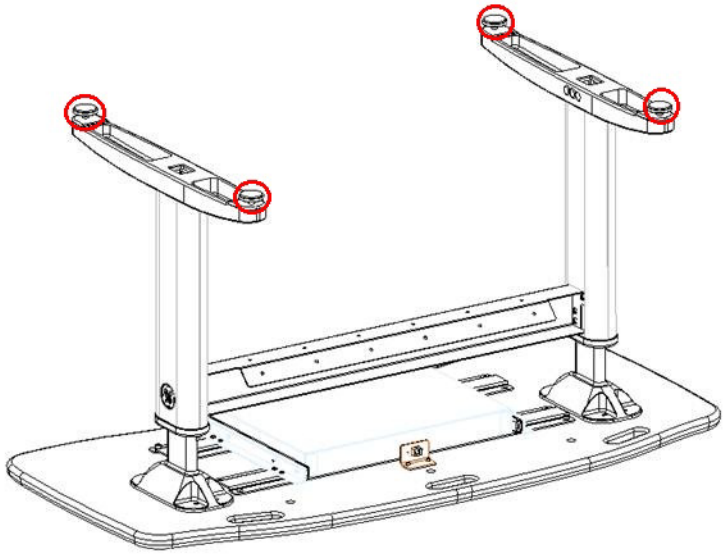
Figure B-10 Mount brackets to floor



- **For anti seismic bracket 5451608**

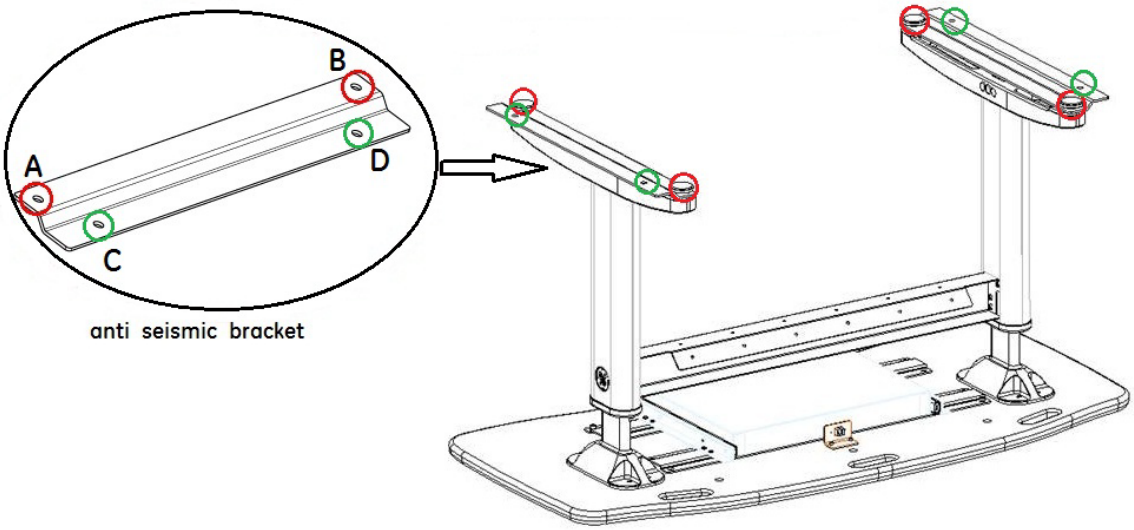
1.) Turn over the Freedom WorkSpace (FWS), loosen and remove the four foot adjusters as Figure B-11 shown.

Figure B-11 Loosen and remove four foot adjusters



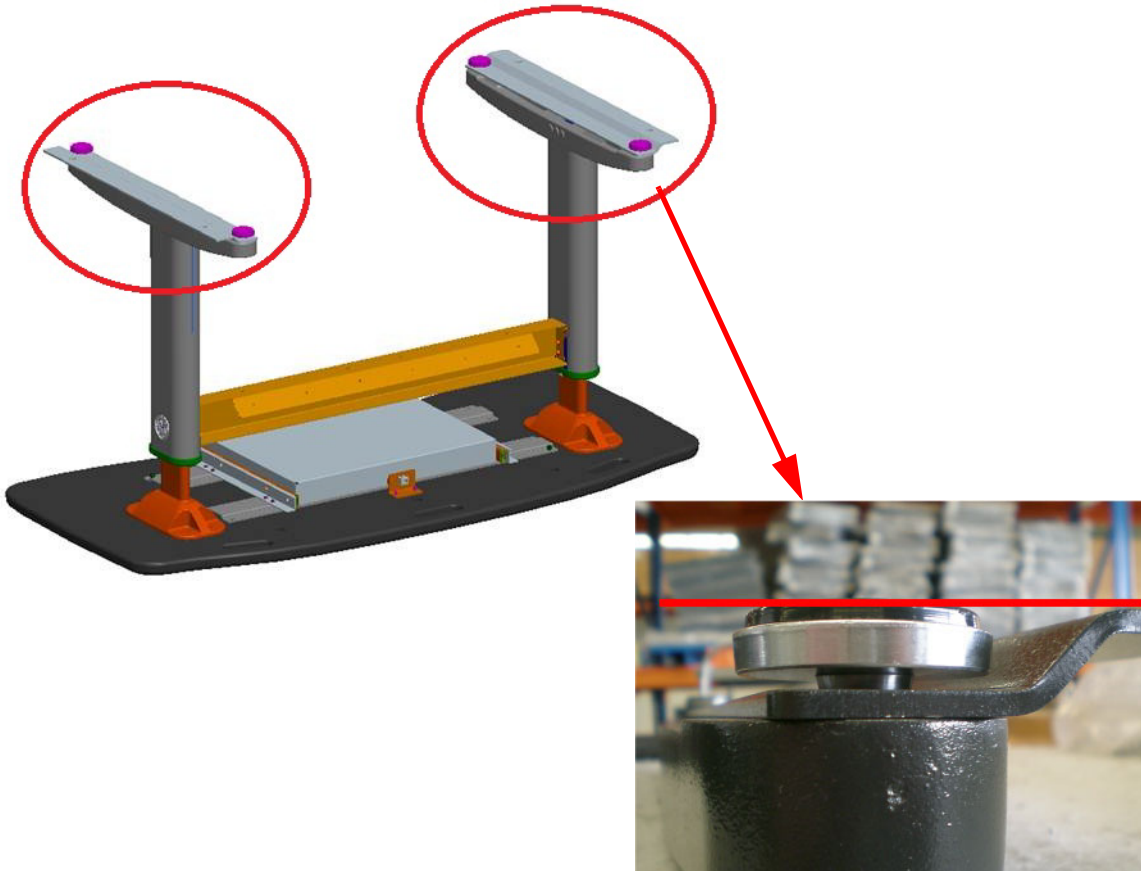
2.) Install two anti seismic brackets (5451608) to each down leg with the foot adjusters, hole A and B on bracket shall be used, and hole C and D are used for mounting the bracket to the floor, as shown in Figure B-12.

Figure B-12 Install the anti seismic brackets



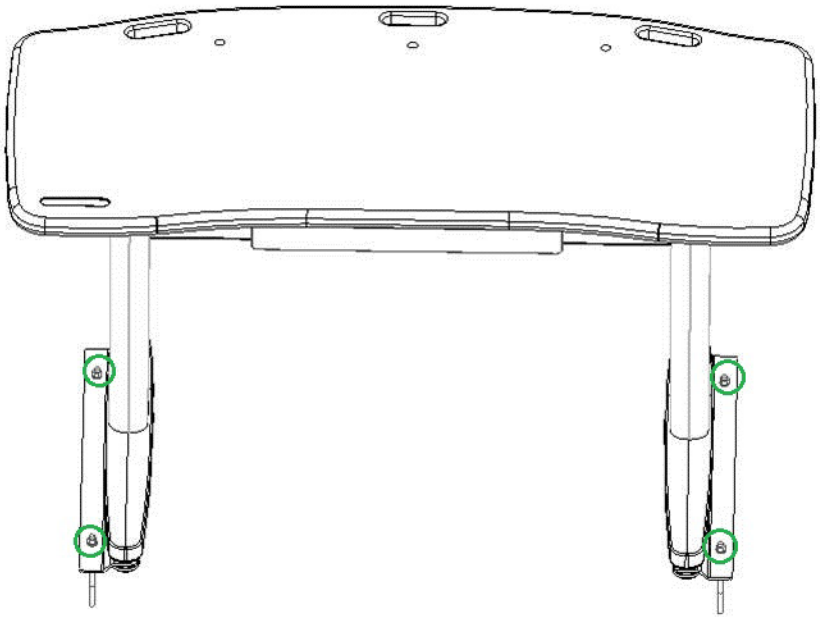
Note: Pay attention to the up down direction of the anti seismic brackets during installation, the side of bracket that used to mount to the floor shall be flush with the foot adjuster, and the holes reserved for mounting the brackets to floor shall be on the outside of each down leg, as shown in Figure B-13.

Figure B-13 Installation direction of anti seismic brackets



3.) Turn the Freedom WorkSpace (FWS) to the upright position, use anchors provided by customer to mount the brackets to the floor, as shown in Figure B-14.

Figure B-14 Mount brackets to floor



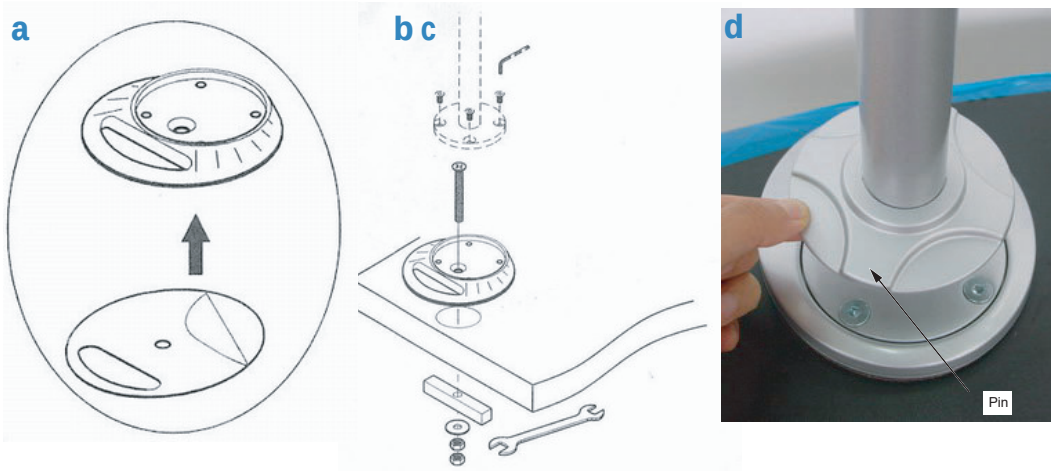
1.2.3 Install Monitors

Note: For more information, refer to the materials shipped with the FWS.

Figure B-15 (FWS 5168666-2)

1.) Mount the pole on the worksurface. (See Figure B-15 and Figure B-16)
   a.) Adhesive the pad under the grommet mount.
   b.) Use large bolt to go through parts.
   c.) Fix the clamp on the desk with 4 screws.
   d.) Put the screw plate cover through the pole. Check the pin position with the screw.

Figure B-16 Pole Mounting



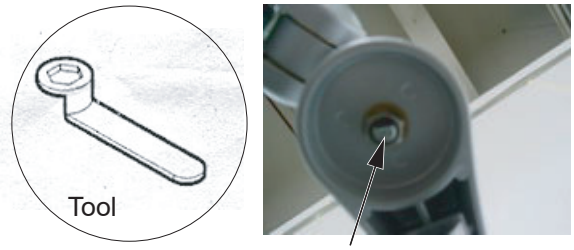
2.) Change configuration of the monitor arms for site.

a.) Three configurations for customer to select, see pictures below:

Figure B-17 Three configurations

b.) If B or C is selected, disengage the not-to-used arm by unscrewing the junction bolts and reconfigure the arms.

Figure B-18 Junction Bolt

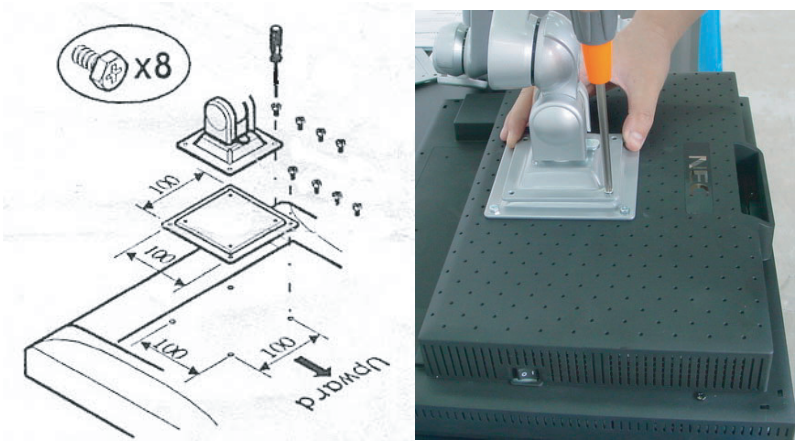


3.) Secure cable covers onto monitor arms. Cable covers should open backward the customer.

Figure B-19 Monitor Arms

4.) Mount the monitors to the arm.

Figure B-20 Monitor Installation



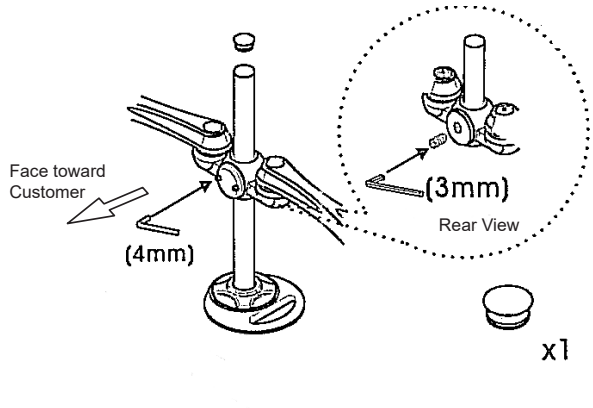
5.) Mount arms with pole. (Figure B-21)

a.) Loosen two screws slightly. Put the arm into the pole and adjust it to the suitable position. Middle joint mount (two large allen screws) of the monitor arms should face toward the customer.

b.) Tighten up the pole with 4mm and 3mm allen keys.

c.) Put in the plug on top of the pole.

Figure B-21 Arm Installation



6.) Put extra hole covers onto the holes not used. (Figure B-21)

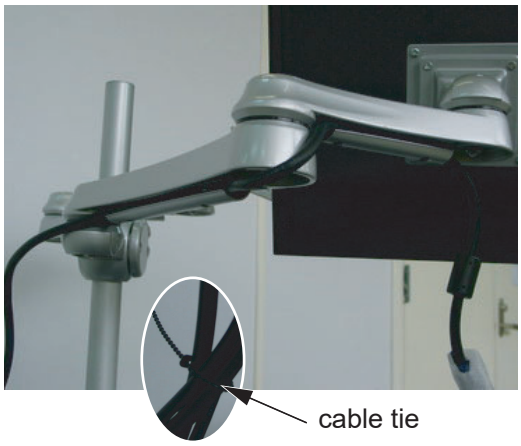
7.) Route cables.

a.) Extended Cables Kit (5160577) for FWS is used to connect monitors, keyboard, mouse, SCIM and trackball. Connection is same with short cables, see Section Section 4.0, on page 104, Console Connections.

b.) Thread monitor cables through cable covers.

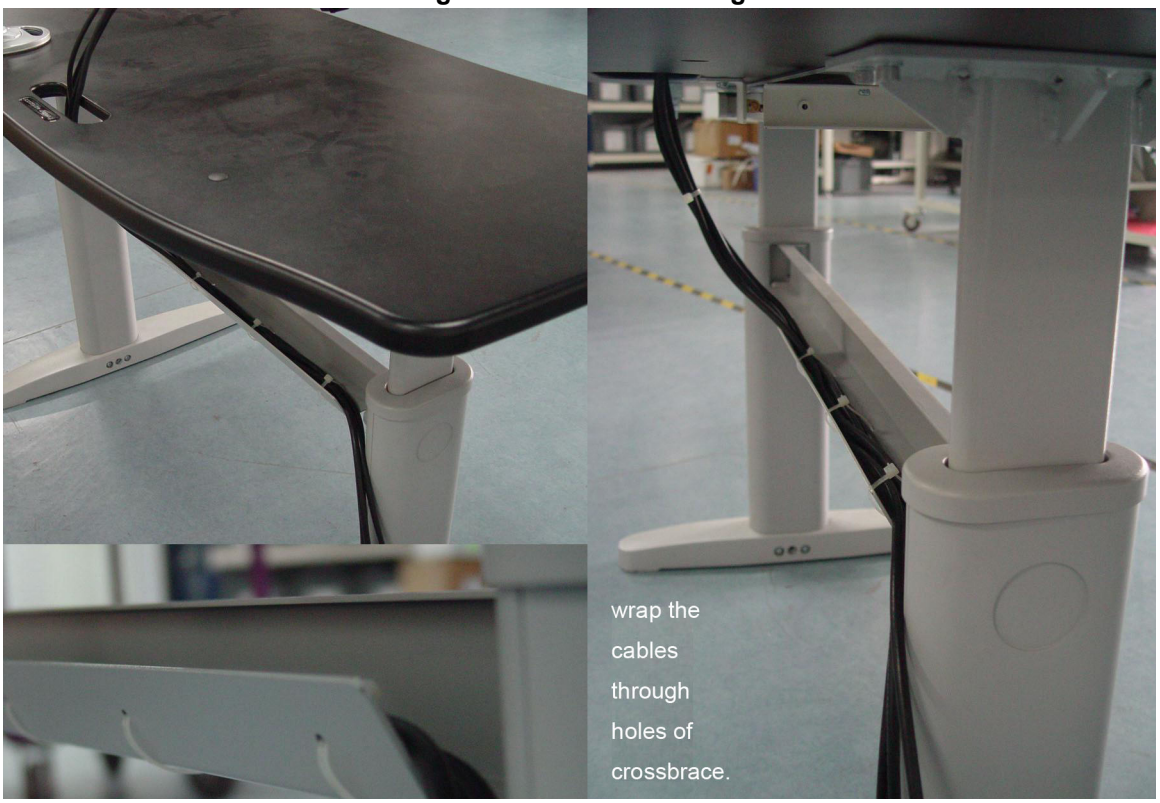
c.) Use cable tie to wrap the cables together or wrap the cables with pole.

Figure B-22 Cable Fixing



8.) Route cables (for FWS 5168666-2), thread cables through worksurface and use cable tie to wrap them together to the back slot of crossbrace (Figure B-23).

Figure B-23 Cable Routing



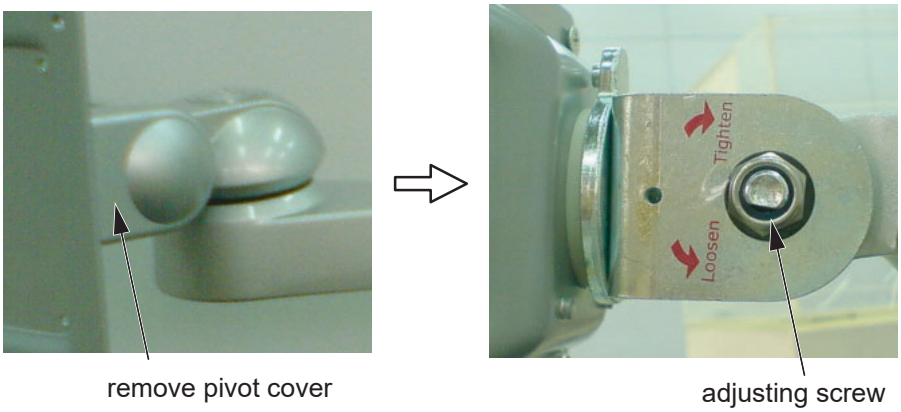
1.3 Monitor Adjustment

1.) Position the arms for ergonomic viewing. For optimum ergonomic viewing set top of monitor screen 1" below eye height. With monitor and arm properly supported, loosen screw and adjust up or down to desired height. Retighten to secure arm to pole.

2.) Adjust monitor tilt: Tilt monitor back and forth through entire pivot range of motion. If it does not stay in place or movement in one direction is stiff, pivot needs adjustment - see below (pivot cover is removed). Adjust until monitor stays in place and tilting forces, up or down, are equal.
Increase tilt lifting force: Turn screw clockwise.
Decrease tilt lifting force: Turn screw counterclockwise.

Figure B-24 Adjusting Screw

side view



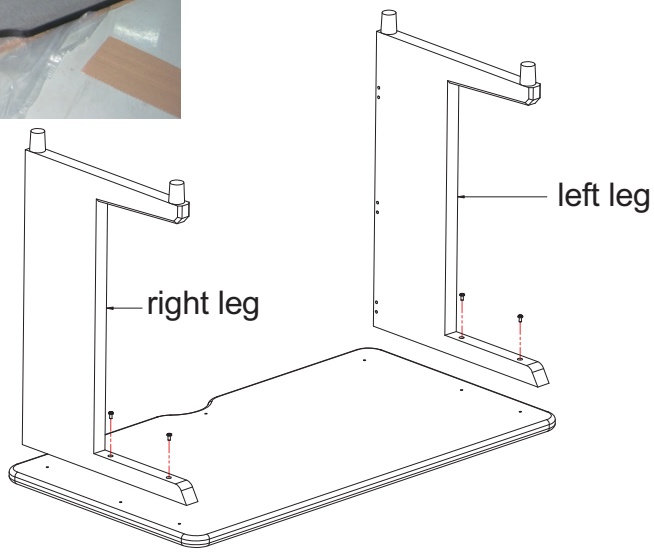
Section 2.0
Aurora Table Assembly and Adjustment

Aurora table is an optional console table.

1.) Remove all the transportation packaging from the Aurora Table, use the packing material as cushion and carefully put tabletop on it to avoid scratches.

2.) Assembly the left and right legs to the tabletop by screwing 4 screws.

Figure B-25 Table Legs Installation



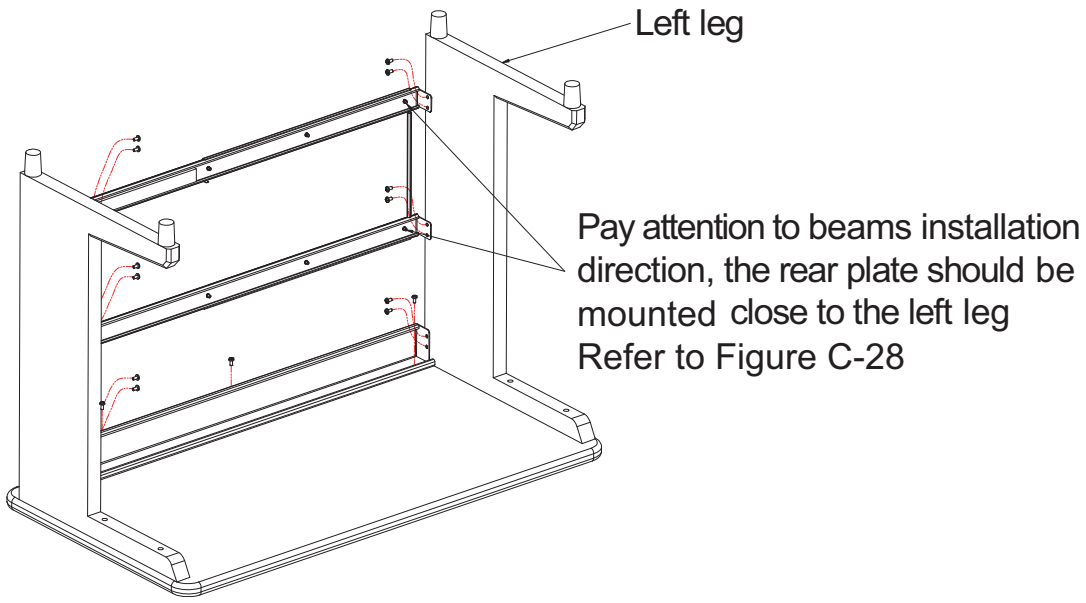
3.) Prepare crossbar and two beams.

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

Figure B-26 Crossbar Installation

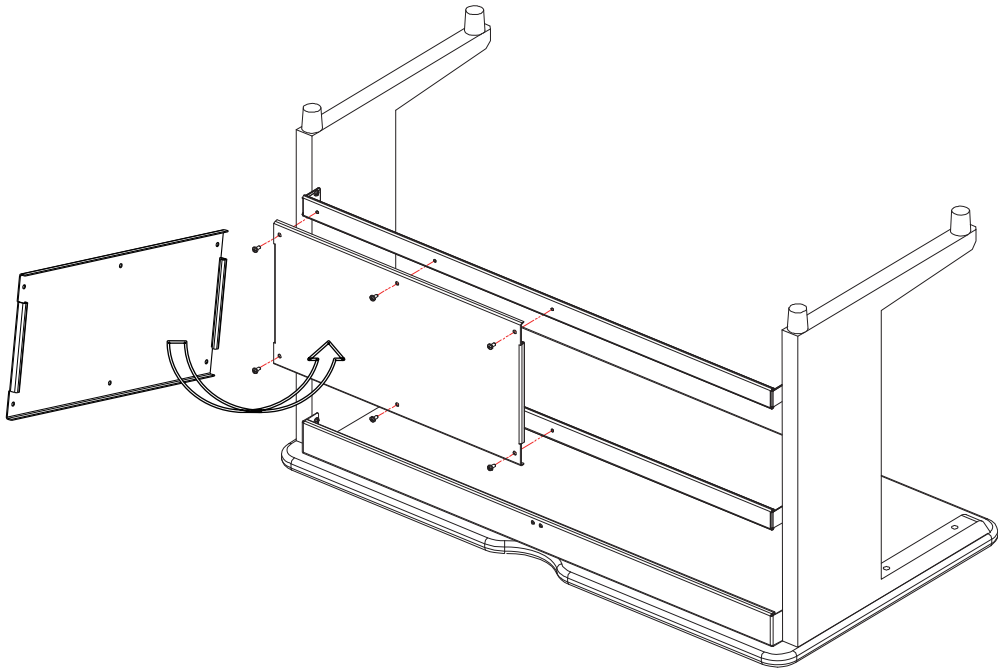
5.) Install two beams to the left and right legs as shown in Figure B-27. Note to keep all screws loose.

Figure B-27 Beams Installation



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

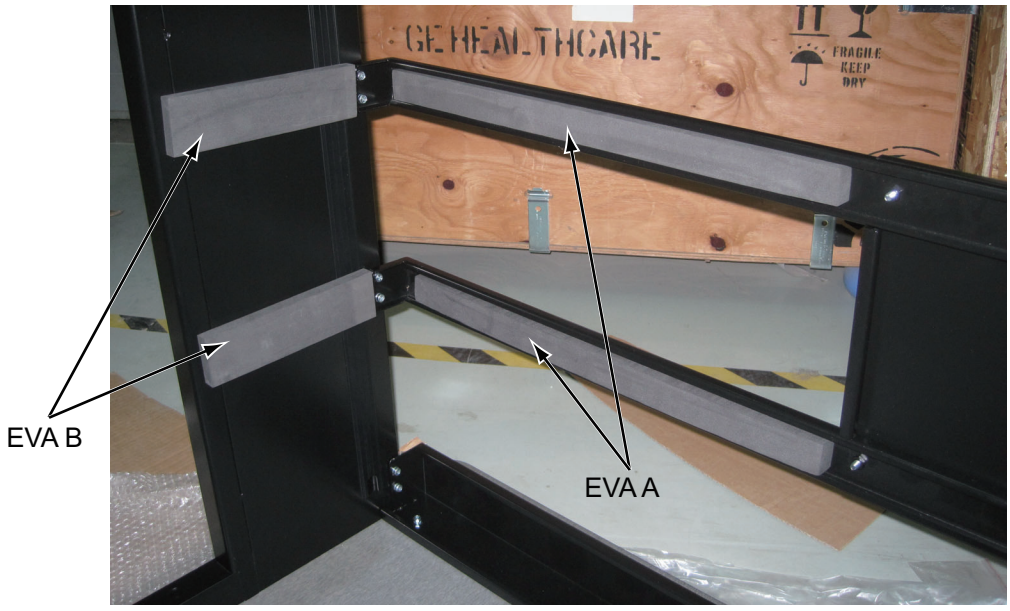
Figure B-28 Rear Plate Installation



7.) Tighten all screws.

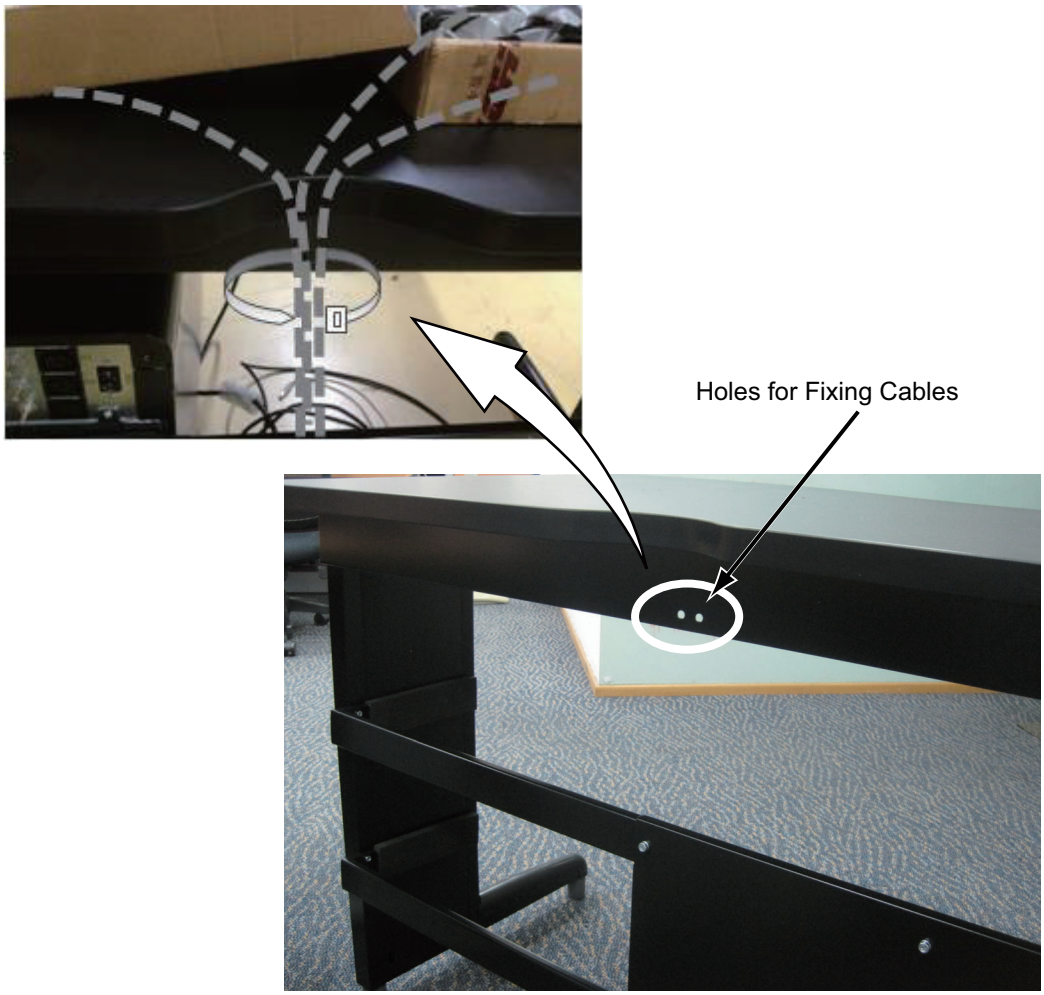
8.) Stick EVA A on the teams and EVA B on the right leg as shown in Figure B-29.

Figure B-29 EVA Attaching



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

Figure B-30 Route cables to the table



Appendix C
Pictorial Representation of Required Tools

Use the following guide as a reference, if you are unsure of a tool listed in Section 2.4, on page 29.

Table C-1 Required Tools

TOOL NAME	PICTURE	EXAMPLE PART NUMBER*
Adapter		Sears Industrial: $^{3}/_{8}$" to $^{1}/_{2}$" (9-4258)
Ball-Peen Hammer		Sears Industrial: 1lb/2lb (9-38465)
Canned Air		Miller Stephenson: Aero Duster (MS-222N)
Clamp on Amp Meter		Sears Industrial: 9-WTAD105
Combination Wrench Set		Sears Industrial: U.S. Standard & Metric (9-44048)
Cordless Screwdriver		Sears Industrial: 9-MU65401
Deep Well Socket		Sears Industrial: $^{3}/_{4}$" X $^{3}/_{8}$" (included with 9-34496)
Dental Pick		
Diagonal Cutting Pliers		Sears Industrial: Small (9-45077)

* Part Numbers given for reference only. GEMs does not endorse any tool brand name.

Table C-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. GEMs does not endorse any tool brand name.

Table C-1 Required Tools (Continued)

TOOL NAME	PICTURE	EXAMPLE PART NUMBER*
Level		Sears Industrial: 4’ (9-39856)
Masonry Bit		
Open-End Wrench (Thin or Standard Tappet)		Snap-on: 10mm (SRSM10) & 21mm (LTAM2124)
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)
Sockets		Sears Industrial: 1 $^{1}/_{8}$" X $^{1}/_{2}$" (9-47516)

* Part Numbers given for reference only. GEMs does not endorse any tool brand name.

Table C-1 Required Tools (Continued)

TOOL NAME	PICTURE	EXAMPLE PART NUMBER*
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. GEMs does not endorse any tool brand name.

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