

Open Monitor Suspension

Service Instruction for Installation



5442831-4-1EN
Rev 1
© 2015, General Electric Company,
All Rights Reserved

Revision History

Part/Rev	Date	Change Description	Pages
5442831-1-1EN rev 1	November 7, 2012	Creation for Discovery IGS System	42
5442831-2-1EN rev 1	December 14, 2012	New release for FDR3A	44
5442831-3-1EN rev 1	December 11, 2014	Update for 58" LDM display	44
5442831-4-1EN rev 1	September 3, 2015	Update for Backout positions and Gantry Parking	48

ПРЕДУПРЕЖДЕНИЕ (BG)	<p>Това упътване за работа е налично само на английски език.</p> <ul style="list-style-type: none"> • 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)	<p>本维修手册仅提供英文版本。</p> <ul style="list-style-type: none"> • 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)	<p>本服務手冊僅提供英文版本。</p> <ul style="list-style-type: none"> • 倘若客戶的服務供應商需要英文以外之服務手冊，客戶有責任提供翻譯服務。 • 除非已參閱本服務手冊及明白其內容，否則切勿嘗試維修設備。 • 不遵從本警告或會令服務供應商、網絡供應商或病人受到觸電、機械性或其他危險。
警告 (ZH-TW)	<p>本維修手冊僅有英文版。</p> <ul style="list-style-type: none"> • 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)	<p>Ovaj servisni priručnik dostupan je na engleskom jeziku.</p> <ul style="list-style-type: none"> • Ako davatelj usluge klijenta treba neki drugi jezik, klijent je dužan osigurati prijevod. • Ne pokušavajte servisirati opremu ako niste u potpunosti pročitali i razumjeli ovaj servisni priručnik. • Zanimarite li ovo upozorenje, može doći do ozljede davatelja usluge, operatera ili pacijenta uslijed strujnog udara, mehaničkih ili drugih rizika.
VÝSTRAHA (CS)	<p>Tento provozní návod existuje pouze v anglickém jazyce.</p> <ul style="list-style-type: none"> • V případě, že externí služba zákazníkům potřebuje návod v jiném jazyce, je zajištěn překlad do odpovídajícího jazyka úkolem zákazníka. • Nesnažte se o údržbu tohoto zařízení, aniž byste si přečetli tento provozní návod a pochopili jeho obsah. • V případě nedodržování této výstrahy může dojít k poranění pracovníka prodejního servisu, obslužného personálu nebo pacientů vlivem elektrického proudu, respektive vlivem mechanických či jiných rizik.
ADVARSEL (DA)	<p>Denne servicemanual findes kun på engelsk.</p> <ul style="list-style-type: none"> • 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)	<p>Deze onderhoudshandleiding is enkel in het Engels verkrijgbaar.</p> <ul style="list-style-type: none"> • 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 elkészítése.
- Ne próbálja elkezdni használni a berendezést, amíg a karbantartási kézikönyvben leírtakat nem értelmezték.
- Ezen figyelmeztetés figyelmen kívül hagyása a szolgáltató, működtető vagy a beteg áramütés, mechanikai vagy egyéb veszélyhelyzet miatti sérülését eredményezheti.

AÐVÖRUN (IS)	<p>Þessi þjónustuhandbók er aðeins fánleg á ensku.</p> <ul style="list-style-type: none"> Ef að þjónustuveitandi viðskiptamanns þarfnast annas tungumáls en ensku, er það skylda viðskiptamanns að skaffa tungumálþjónustu. Reynið ekki að afgreiða tækið nema að þessi þjónustuhandbók hefur verið skoðuð og skilin. Brot á sinna þessari aðvörun getur leitt til meiðsla á þjónustuveitanda, stjórnanda eða sjúklings frá raflosti, vélrænu eða öðrum áhættum.
AVVERTENZA (IT)	<p>Il presente manuale di manutenzione è disponibile soltanto in lingua inglese.</p> <ul style="list-style-type: none"> 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)	<p>このサービスマニュアルには英語版しかありません。</p> <ul style="list-style-type: none"> 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)	<p>본 서비스 매뉴얼은 영어로만 이용하실 수 있습니다.</p> <p>고객의 서비스 제공자가 영어 이외의 언어를 요구할 경우, 번역 서비스를 제공하는 것은 고객의 책임입니다.</p> <p>본 서비스 매뉴얼을 참조하여 숙지하지 않은 이상 해당 장비를 수리하려고 시도하지 마십시오.</p> <p>본 경고 사항에 유의하지 않으면 전기 쇼크, 기계적 위험, 또는 기타 위험으로 인해 서비스 제공자, 사용자 또는 환자에게 부상을 입힐 수 있습니다.</p>
BRĪDINĀJUMS (LV)	<p>Šī apkopes rokasgrāmata ir pieejama tikai anglju valodā.</p> <ul style="list-style-type: none"> 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.
İSPĒJIMAS (LT)	<p>Šis eksploatavimo vadovas yra tik anglų kalba.</p> <ul style="list-style-type: none"> 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)	<p>Denne servicehåndboken finnes bare på engelsk.</p> <ul style="list-style-type: none"> 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.

AVISO
(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 elétricos, mecânicos ou outros.

ATENȚIE
(RO)

Acest manual de service este disponibil doar în limba engleză.

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

ОСТОРОЖНО!
(RU)

Данное руководство по техническому обслуживанию представлено только на английском языке.

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

UPOZORENJE
(SR)

Ovo servisno uputstvo je dostupno samo na engleskom jeziku.

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

UPOZORNENIE
(SK)

Tento návod na obsluhu je k dispozícii len v angličtine.

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

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

This page left intentionally blank.

Table of Contents

1	Introduction	11
1.1	Disclaimer	12
1.2	Pre-Installation	12
1.3	Spare Parts.....	12
1.4	Reference Documents	13
2	Safety & Regulatory Requirements	14
3	Interconnections Schematics	15
3.1	Power/Signal Schematic	15
3.2	Grounding Schematic	16
4	GE Discovery System Outputs.....	17
4.1	C1 Cabinet outputs to be used	17
4.2	Large Display cabinet outputs to be used	19
5	Installation Procedure.....	20
5.1	Pre-requisites.....	20
5.2	Suspension Installation.....	20
5.3	Monitors Installation	21
5.4	Cabling	24
5.5	Infrared Receiver Installation	29
5.6	Finalization.....	29
6	Grounding Tests.....	30
7	Leakage Current Measurement	31
7.1	Pre-requisites.....	31
7.2	Test Equipment.....	31
7.3	Test Procedure.....	32
7.4	Table to fill	33
8	Appendices.....	35
8.1	Appendix 1: Weight for the maximum load calculation.....	35
8.2	Appendix 2: 19" B&W Video Coax Cable Wiring Instructions	36

8.3	Appendix 3: 19" Power Cable Specification.....	37
8.4	Appendix 4: I/R Cable Specification	37
8.5	Appendix 5: Large Display Power & Video Cables	37
8.6	Appendix 5: Room layout overview	38
8.7	Appendix 7: Tables to fill for Logbook.....	45

1 Introduction

The Discovery™ IGS product with the Open Suspension option allows customers to power two B&W 19" monitors, up to 4 additional in-room 19" monitors (B&W or Color), and up to 2 Large Display (LD) monitors (8 Megapixels) on one or several Open Suspension of their choice, in addition or in replacement of the standard Mavig Suspension usually provided with the system. Third party monitors from external sources can also be installed on these suspensions, but are not powered by the system.

This document lists the GE mandatory requirements in order to provide safe system operation and provides the installation instructions. This Service manual shall be considered an addition to the Service Manual and Pre-Installation Manual of the system.

DISCLAIMER: The association of the Discovery™ IGS system and the purchaser's suspension(s) is not covered by the GEHC product certification.

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

General Information

1.1 Disclaimer

GE specifically disclaims any and all liability arising out of or relating to the use or performance of the monitor suspension (including cables) including, and without limitation, any liability or claims relating to patient injury, death, or the reliability of such monitors suspension.

The mechanical installation of the Open Suspension is fully under the customer and the installer responsibility.

The electrical installation of the third party monitors is fully under customer and installer responsibility.

The installer is responsible for ensuring that all requirements from this document are met.

1.2 Pre-Installation

It is the customer responsibility to ensure that the Open Suspension and its cables are installed prior to the GE equipment (gantry, table, cabinet) to ensure that standard GE Service Process can be followed during system installation. Monitors installation and connections to the GE equipment shall only be made in presence of a GE service representative.

It is recommended that the vendor contacts GE Service representative and reviews the site planning details before the suspension is installed. The position of each suspension in the exam room shall be planned following the recommendations from the chapter Room Layout of the Discovery™ IGS systems Pre-Installation Manual, in order to reduce the risk of collision between any fixed part of the suspension and the gantry or table (see illustrations in Appendix §9.6 for gantry and table range of motions).

In addition, the position of each suspension in the exam room shall be compatible with the maximum cable length that shall not exceed 36m (between C1 Cabinet and GE 19" monitors or between LD Cabinet and LD monitor).

Note: GE will not be responsible for any delay in installation if the suspension is not mounted and its cables routed before GE parts arrive on site.

1.3 Spare Parts

The customer is responsible for providing and replacing any parts of the Open Suspension and of the third party monitors.

1.4 Reference Documents

Document:
Discovery™ IGS systems - Service Manual
Discovery™ IGS systems - Pre-Installation Manual

2 Safety & Regulatory Requirements

It is the customer responsibility to ensure that the following requirements are met.

- Each suspension shall not be electrically motorized for up/down motion.
- Each suspension shall comply with the IEC 60601-1 standard and the applicable standards enforced in the country of installation (e.g. when installed in a European Community country, the suspension(s) shall be CE marked). In addition, for North America each suspension shall comply with UL/Canada deviations.
- Each suspension shall be manually adjustable in height and the force to be applied to lift the suspension when fully equipped shall not exceed 200 N in static in the vertical axis, in order to mitigate the risk of patient jammed between table and monitor suspension when the table is lifted up.
- Each suspension shall be installed in order to mitigate the risk of suspension fall on patients and the risk of collisions with the gantry, the table or any other suspension.
- Each suspension shall be attached to the ceiling in accordance to the manufacturer's instructions. It shall withstand the maximum suspension load with safety factors in accordance to applicable standards (at least 4x).
- Each suspension shall be compatible with the Environmental Requirements chapter of the Pre-Installation Manual of the system.
- When the system is installed in an operating room (OR configuration), each suspension shall be compatible with OR environmental constraints.



NOTICE

IT IS MANDATORY TO EXECUTE THE GROUNDING CONTINUITY MEASUREMENTS AS DEFINED IN SECTION 7.

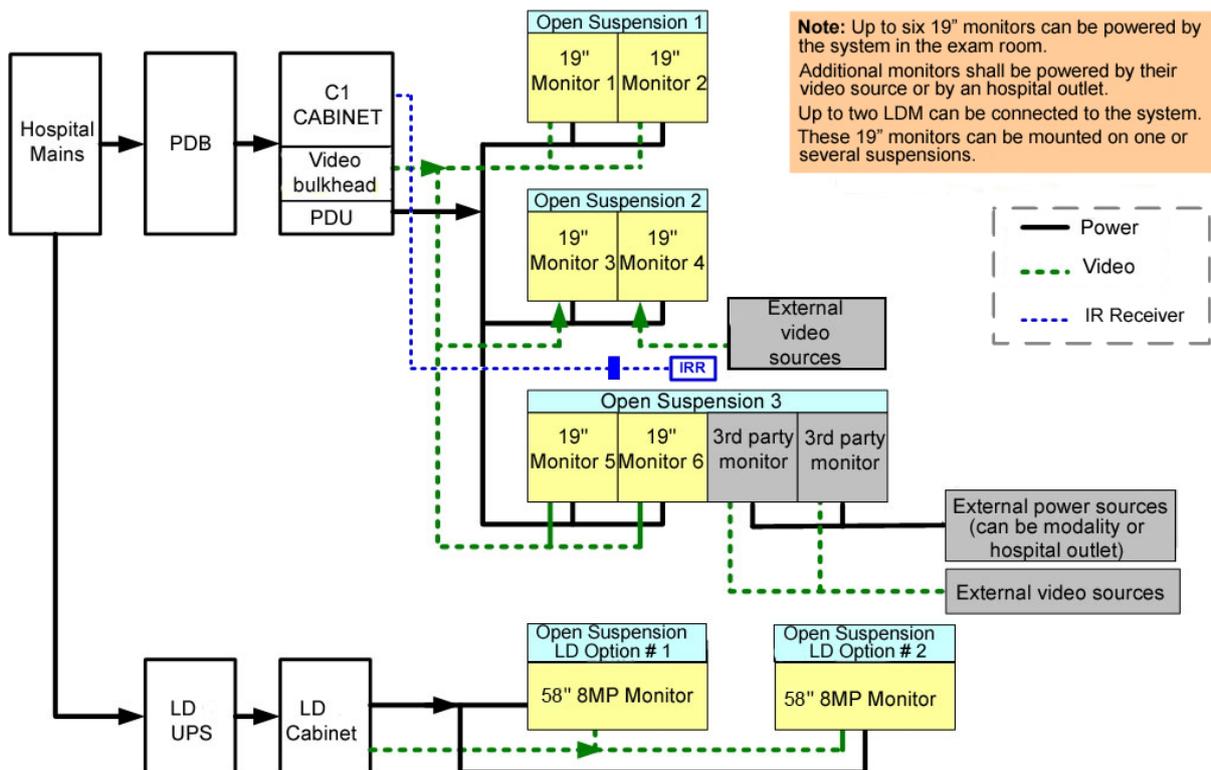


NOTICE

IT IS MANDATORY TO EXECUTE THE LEAKAGE CURRENT MEASUREMENTS AS DEFINED IN SECTION 8.

3 Interconnections Schematics

3.1 Power/Signal Schematic



Note: The maximum length of the power and video cables between the C1 cabinet and each 19" monitor shall be 36 meters, including the cable length inside the suspension. For GE 19" monitors, 24m or 36m cables can be ordered.

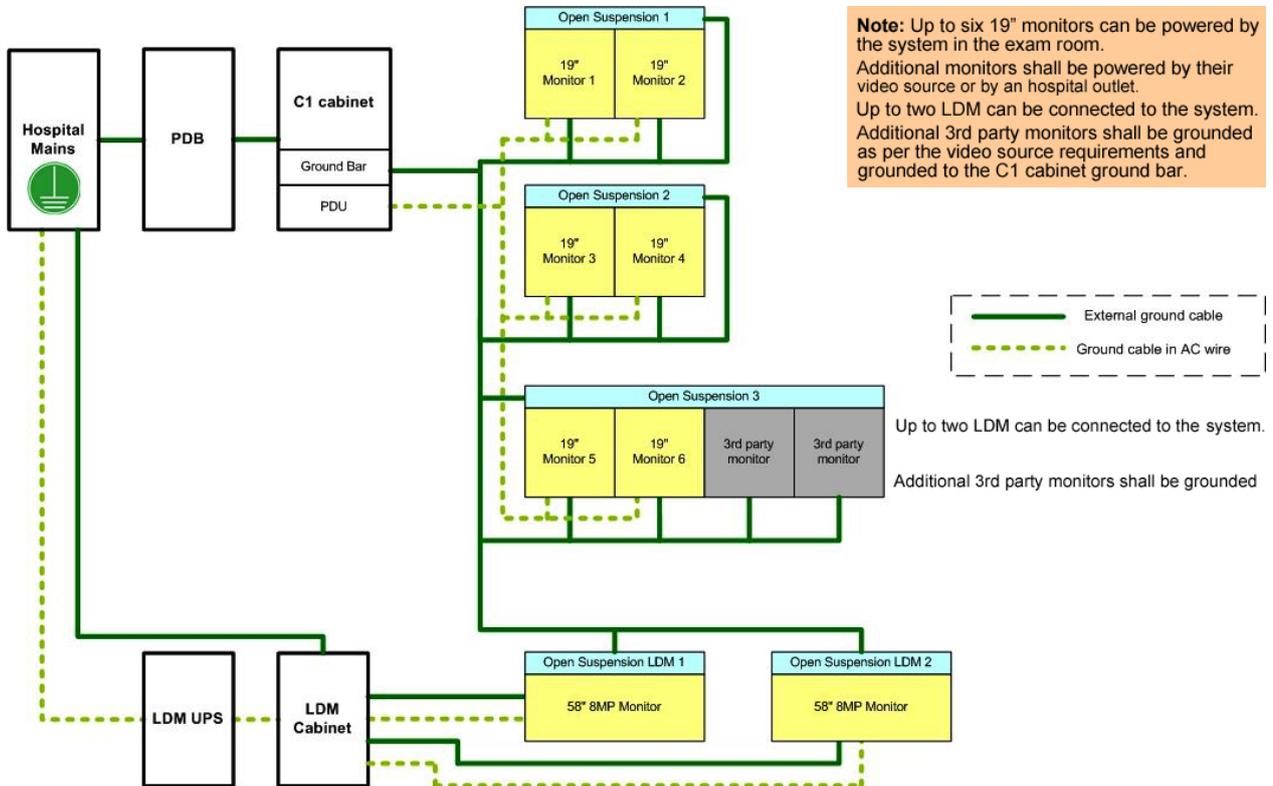
Note: Power and video cables for Large Display Monitor are provided by GE and have only a 36 meters length between the Large Display cabinet and each 58" monitor.

The sets of cables provided with this option include the two cables required to connect the IR Receiver to the C1 Cabinet.

Refer to Chapter 6 for detailed cabling information.

3.2 Grounding Schematic

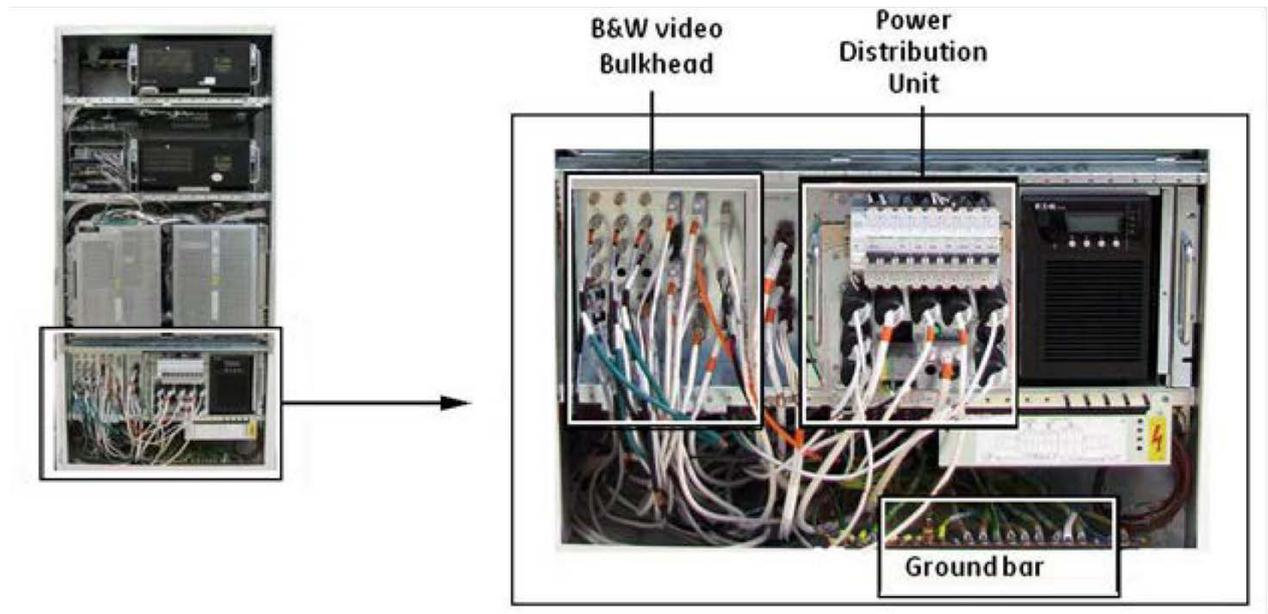
Here is an example of grounding schematic with 3 open suspensions and 2 optional Large Display monitors:



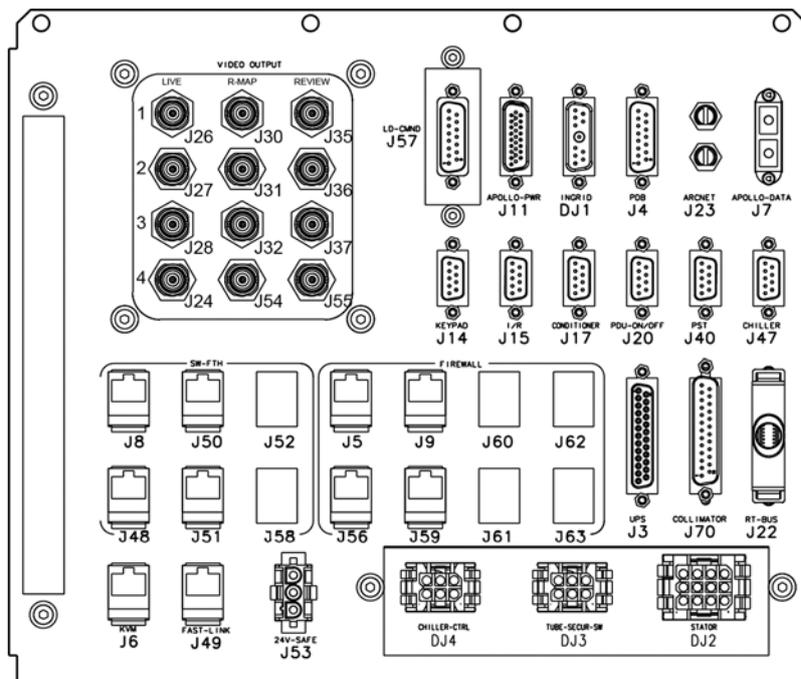
Note: Refer to Chapter 6 for detailed cabling information.

4 GE Discovery System Outputs

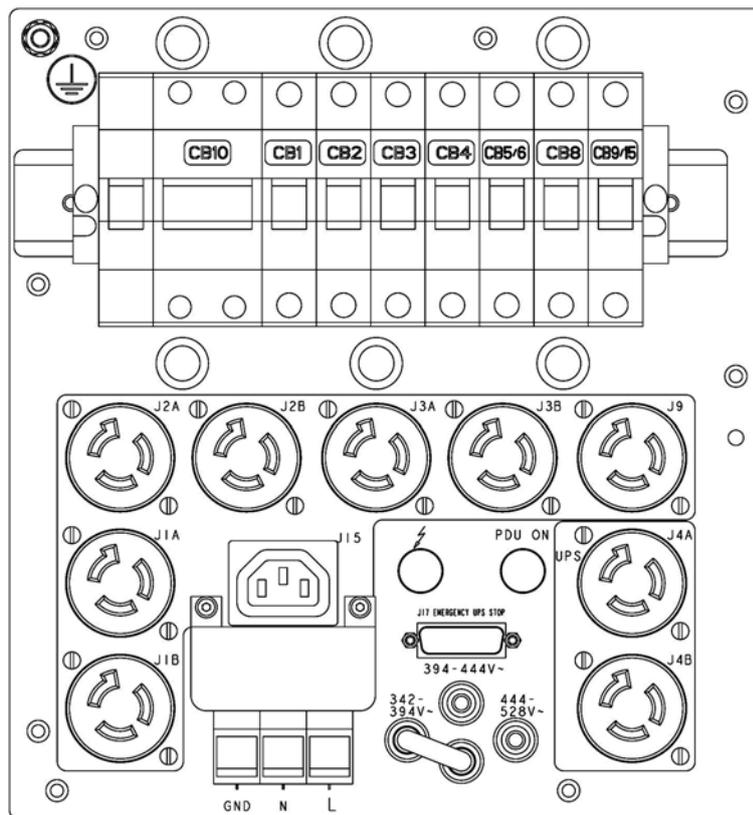
4.1 C1 Cabinet outputs to be used



C1 Cabinet Video Bulkhead



C1 Cabinet Power Distribution Unit



Video bulkhead outputs:

Connector	Description	Comments
J26	LIVE 1 (Monitor Suspension Live Fluoro Monitor 1)	Mandatory exam room monitor
J27	LIVE 2 (Control Booth Live Fluoro Monitor 2)	Mandatory control room monitor
J28	LIVE 3 (Optional)	
J24	Large Display monitor LIVE 1	
J30	ROADMAP 1 (Monitor Suspension Road Map Monitor)	Mandatory exam room monitor
J31	ROADMAP 2 (Control Booth Roadmap Slave Monitor)	
J32	ROADMAP 3 (Road Map Monitor Option)	
J54	ROADMAP 4 (for Large Display Option)	
J35	REVIEW 1 (Review monitor 1)	
J36	REVIEW 2 (Review monitor 2)	
J37	REVIEW 3 (Review monitor 3) (not used)	
J55	REVIEW 4 (for Large Display Option)	

4.2 Large Display cabinet outputs to be used

Refer to the following the GE Job Card for Large Display cabinet outputs details:

- IST0324 - Large Display Cabinet Installation

5 Installation Procedure



A MAXIMUM OF SIX 19" B&W AND COLOR MONITORS IN EXAM ROOM CAN BE POWERED BY THE SYSTEM (PDU J9 OUTPUT). DO NOT POWER MORE THAN SIX 19" B&W AND COLOR MONITORS IN EXAM ROOM.



NO OTHER EQUIPMENT (THIRD PARTY MONITORS, SURGICAL LIGHTS OR OTHER DEVICE) SHALL BE POWERED BY THE CONNECTOR J9 OR ANY OTHER POWER SOURCE FROM THE SYSTEM: OTHER CONNECTOR OF THE PDU, CONTROL ROOM POWER STRIP OR MULTIPLE SOCKET OUTLET OF THE SUSPENSION IF IT IS POWERED BY THE SYSTEM.

Up to two optional Large Display monitors can be connected to the system.

Note: Large Display monitors are connected to a Large Display cabinet, providing power and video signals to these monitors.

5.1 Pre-requisites



THE LOCKOUT TAGOUT (LOTO) PROCEDURES MUST BE APPLIED TO ENSURE FULL SAFETY DURING SERVICE INTERVENTION.

REFER TO THE LOCKOUT TAGOUT (LOTO) PROCEDURES OF EACH SUSPENSION TO DO THE LOTO FOR THE MECHANICAL AND ELECTRICAL ENERGIES.

REFER TO THE CORRESPONDING PROCEDURES OF THE DISCOVERY SERVICE MANUAL BEFORE INSTALLATION.

- REG0120 - Electrical Lockout Tagout procedures.
- REG0122 - Large Display Option Lockout Tagout Procedures.

5.2 Suspension Installation

The suspension installation shall be done under the customer's responsibility, following the suspension manufacturer's installation instructions (through the Service Manual or Operator Manual provided with the suspension).

The GE Field Engineer shall verify the following points:

- The load on each suspension must be compatible with the suspension acceptable maximum load. The weight of the GE monitors and IR receiver are given in Appendix 1.
- Ground studs shall not be put on an insulated surface such as anodized or painted one and shall be marked with the Protective Earth symbol (IEC 60417-5019 symbol).

5.3 Monitors Installation

The monitors shall be installed on the Open Suspension following the installation instructions of the suspension and fixed following the installation instructions of the monitors. After monitors' installation, the suspension balance shall be checked. If needed, it shall be adjusted following the installation instructions of the suspension.



NOTICE

FOR THE LARGE DISPLAY MONITOR INSTALLATION ON THE SUSPENSION, LIFTING THE MONITOR MANUALLY REQUIRES AT LEAST THREE PERSONS.

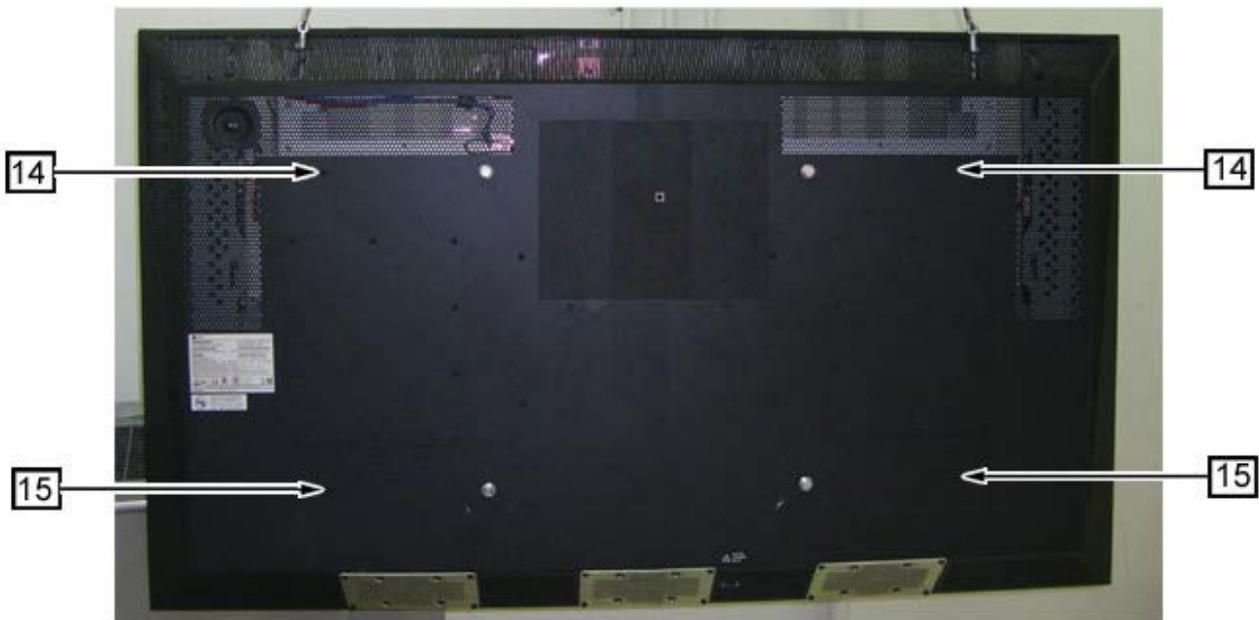
5.3.1 Type of fixation

19" monitors: standard VESA 100 x 100 mm. Use the supplied screws or four M4 x 10 screws.



4x M4 screws
Max insertion depth: 10 mm

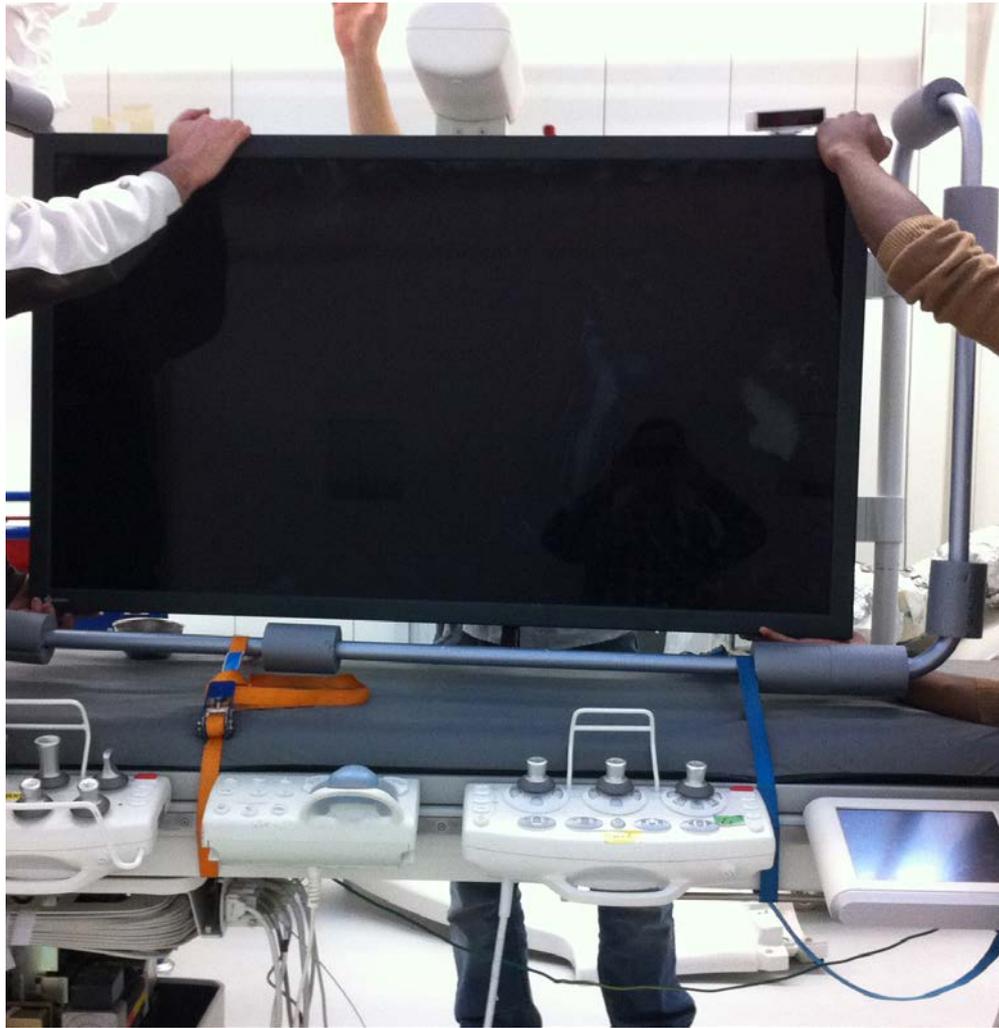
Large Display (58") monitors: standard VESA 400 x 400 mm. Use the supplied screws or four M8 screws.



Top (14) and bottom (15) mounting holes for Large Display Monitor

Note: The installation of the LDM on the suspension frame can be made easier if you follow the recommendations below:

1. Have 3 persons lifting the LDM monitor while a fourth one inserts the screws and secure the LDM on the back.
2. Attach the suspension frame to the table without damaging the table top, UIF or accessories in order to avoid lifting the LDM monitor too high (see Illustration below).
3. Lift the LDM monitor using a tool such as the one recommended for the CMS installation (Genie Lift), the LDM being suspended to the forks using the parts provided with the install kit (p/n 5418782) delivered with the LDM.



5.4 Cabling

5.4.1 Interconnection Box

When an Interconnection box is present on the Open Suspension:

- The video cables shielding continuity shall be maintained.
- No live part shall be accessible.



FOR THE LARGE DISPLAY OPTION, NO INTERCONNECTION BOX SHALL BE USED FOR THE VIDEO CABLES.

5.4.2 19" Monitors



NOTICE

THE B&W 19" MONITORS PROVIDED WITH THE SYSTEM FOR THE DISPLAY OF THE REGULATORY INFORMATION (LIVE AND ROADMAP) SHALL BE ACCESSIBLE AND VISIBLE AT FLUOROSCOPIST WORKING POSITION.



NOTICE

WHEN THE LARGE DISPLAY OPTION IS PRESENT, THE TWO B&W 19" MONITORS PROVIDED WITH THE SYSTEM FOR THE DISPLAY OF THE REGULATORY INFORMATION (LIVE AND ROADMAP) SHALL BE ACCESSIBLE AND VISIBLE AT FLUOROSCOPIST WORKING POSITION IN LESS THAN ONE MINUTE. THOSE BACKUP MONITORS MAY BE MOUNTED EITHER AT THE BACK OF THE LARGE DISPLAY MONITOR SUSPENSION OR ON ANOTHER MONITOR SUSPENSION.



NOTICE

ONLY THE 19" B&W MONITORS (P/N 5492442) PROVIDED BY GE SHALL BE POWERED BY THE SYSTEM (C1 CABINET).

5.4.2.1 Power and grounding

Monitors power input:



Ground connection:



The power cables shall be provided by the installer and shall respect the following characteristics. Only this type of cable will guarantee the safety of the installation:

- The connector on the monitor side shall be IEC 320 Male Plug (over molded).
- The cable shall be 3 x 2.5 mm² minimum of any UL type 300V cable. The maximum length shall be 36 meters between the C1 cabinet and each monitor.
- The connector on cabinet side shall be: HUBELL Twist Lock HBL4570C. It shall be connected to J9 on the PDU of C1 cabinet.

See Appendix 3 of this document for the wiring of the cable on cabinet side.

**NOTICE**

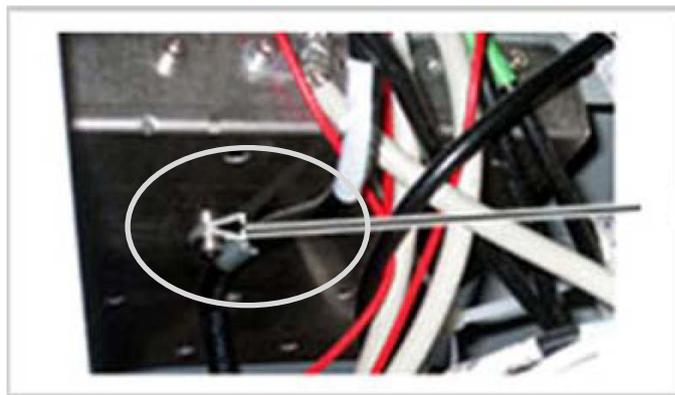
EACH B&W OR COLOR 19" MONITOR SHALL BE GROUNDED WITH AN ADDITIONAL PROTECTIVE EARTH CABLE BETWEEN THE MONITOR AND THE GROUND BAR LOCATED AT THE BOTTOM OF THE C1 CABINET. THIS CABLE SHALL HAVE THE FOLLOWING CHARACTERISTICS:

- AWG10 minimum, 600V of any UL type.
- The maximum length shall be 36 meters between the C1 cabinet and each monitor.

5.4.2.2 Video (B&W Monitors)

It is recommended to use the video cables provided by GE from the cabinets to the monitors. If needed, additional cables shall be provided by the installer and shall respect the following characteristics to guarantee the image quality performances and EMC compliance.

- The cables shall be coax RG59U / KX-6 type, AWG24, double shielded, UL approved 300V. The maximum length shall be 36 meters between the C1 cabinet and each monitor.
- The connectors mounted at each extremity of these cables shall be BNC 75 ohms (ref 221185-9 AMP/TYCO or equivalent).
- These cables shall be preferably one-piece cables.
- The shield of the coax cable shall be grounded with clamps on the monitor side and on the cabinet side, as on the pictures below. Pay attention that if GE cables are used, clamps are not provided.

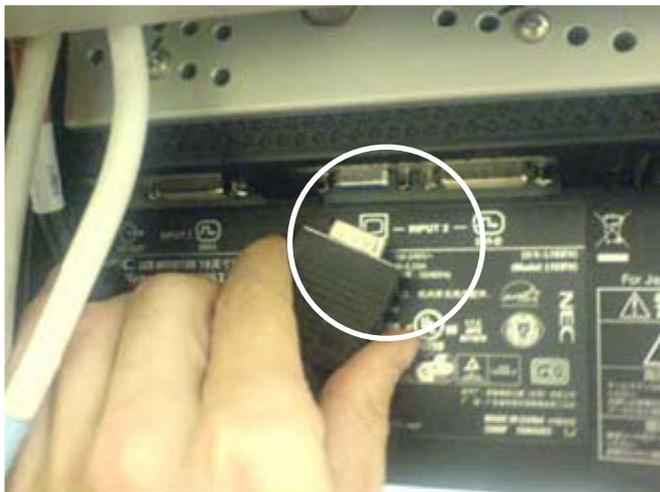


The video cable shall be connected to the input below:



See Appendix 2 of this document for the wiring instructions of the video cable.

5.4.2.3 Video (Color Monitors)



The video cables shall be provided by the installer, and shall be 15 pin VGA.

5.4.3 Large Display Monitors



NOTICE

ONLY THE CABLES PROVIDED BY GE SHALL BE USED TO CONNECT THE LARGE DISPLAY MONITOR. THE CONNECTION OF THE ADDITIONAL GROUND WIRE FROM THE LARGE DISPLAY CABINET TO THE MONITOR IS MANDATORY.

The GE Field Engineer shall connect the GE Large Display cabinet following the Job Card cabling instructions:

- IST0324 - Large Display Cabinet Installation

The Large Display Monitor shall be connected following the job card cabling instructions:

- IST0321 - Large Display Monitor installation on suspension (not all sections are applicable)

In case of a secondary Large Display Monitor, it shall be connected following the job card cabling instructions:

- IST0325 - Large Display Monitor Installation on articulating arm wall mount (not all sections are applicable)

To avoid damage to the video cables, the minimum bending radius of these cables shall be 35 mm.

The cables for Large Display are provided by GE. See Appendix in §9.5 for detailed characteristics.

5.4.4 Third Party Monitors



THIRD PARTY MONITORS INSTALLED ON THE SUSPENSION MUST NOT BE POWERED BY THE SYSTEM.



DANGEROUS VOLTAGE MAY BE PRESENT AT THE INPUT OF THESE MONITORS, EVEN WHEN PDB IS OFF.



THIRD PARTY MONITORS MUST BE GROUNDED TO C1 CABINET GROUND BAR BY AN ADDITIONAL GROUND WIRE, AWG10 MINIMUM, AND 600V OF ANY UL TYPE.



THIRD PARTY MONITORS SHALL BE CERTIFIED IEC60601-1 OR IEC60950.

Refer to the installation manual of the monitor or video source for power and video cabling requirements.

5.4.5 Suspension Grounding



ALL ACCESSIBLE CONDUCTIVE PARTS OF EACH SUSPENSION SHALL BE GROUNDED BY A DEDICATED GROUND WIRE CONNECTED TO THE C1 CABINET GROUND BAR.

5.5 Infrared Receiver Installation

If installed on the monitor suspension, the infrared remote control receiver should be installed on top of the suspension, with the front surface tilted down of 15 degrees as a default position. It is recommended to use self-adhesive Velcro tape (size: 50 mm x 200 mm) to fix the receiver on the suspension.

The cable for the infrared receiver is provided GE and only GE cable shall be used to guarantee the safety of the installation.

See Appendix in §9.4 for detailed characteristics.

Note: Always use the short IRK interface cable (P/N 2390547) to connect the IR Receiver. This cable shall be plugged on the suspension side and not on C1 cabinet side.

Note: If the short IRK cable cannot be routed inside the suspension, the IR Receiver can be mounted on another location independent of the suspension itself. In this case, it shall not be mounted in the patient environment.

5.6 Finalization



MAKE SURE THERE ARE NO POTENTIAL CABLE PINCHES AND SHARP EDGES WHEN ROUTING THE CABLES INSIDE THE SUSPENSIONS.

6 Grounding Tests



NOTICE

IT IS MANDATORY TO EXECUTE THESE GROUNDING CONTINUITY MEASUREMENTS AT THE END OF INSTALLATION IN ORDER TO GUARANTEE THE SAFETY OF THE PATIENT AND THE OPERATOR. THE RESULTS SHALL BE REPORTED INTO THE LOGBOOK.

For all the ground connections introduced by the open suspension:

- Check that the ground wires are screwed correctly on each monitor, on each suspension and on each ground bar (pay attention to the ground cables connected between cabinets and monitor suspensions).
- Check that the ground cabling is compliant with the ground schematic provided in this document.

Perform the ground measurement between the following points as defined in the paragraph 3.3 *Grounding impedance measurement of the CHK0103 JC - Grounding and Neutral Continuity Check for detailed instructions:*

- Between C1 Cabinet ground bar and each suspension metallic part.
- Between C1 Cabinet ground bar and each 19" monitor (B&W and color).
- Between C1 Cabinet ground bar and each Large Display monitor.
- Between C1 Cabinet ground bar and each third party monitor.

The measured value for each measurement shall be less than 0.1 ohms.

Report the results in the Discovery™ IGS systems Logbook.

7 Leakage Current Measurement



NOTICE

THIS LEAKAGE CURRENT MEASUREMENT IS A MANDATORY PROCEDURE THAT SHALL BE DONE AT THE END OF INSTALLATION IN ORDER TO GUARANTEE THE SAFETY OF THE PATIENT AND THE OPERATOR. THE TABLE SHALL BE FILLED WITH THE RESULTS AND BOUND INTO THE LOGBOOK.

7.1 Pre-requisites

Leakage current test results are dependent of cabling and ground connections, all system cabling must be checked with the System MISMAPS and Installation Job Cards.

The measure shall be executed in the worst conditions configuration:

- Make sure that the Table, Gantry and cabinets are not grounded by other cables than those provided by GE.
- In case of multiple exclusive options, the most critical option (regarding leakage current) must be used.
- No equipment shall be fixed to the table rail (TSUIs or other accessory): they shall be placed on the table. The table mount injectors shall be out of the table.
- When the system is equipped with the InnovaSense option, make sure that Capacitive Sensors are installed and 20°/s rotation speed is enabled.

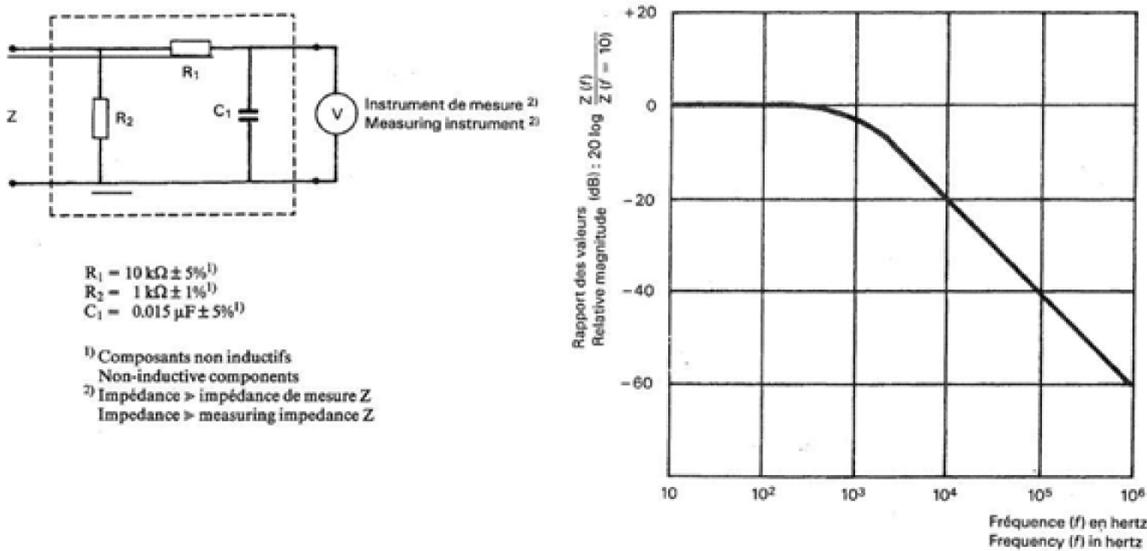
The equipment shall be operated in Normal Conditions during the measurement. The complete system shall be energized and in full operating conditions with maximum functions activated.

7.2 Test Equipment

Tables to be filled:

Equipment	Model type and S/N	Next calibration date
True RMS Digital Voltmeter (DVM) ($\pm 1.5\%$)		
Standard IEC Measurement Device (MD) ($\pm 1\%$)		

Example of measurement device (MD cell):



Note: The Dale 601/601E (46-328406G1) from Dale Technology or the ESA612 Electrical Safety Analyzer from Fluke can be used for this measure (or any other equivalent device which measuring circuit conforms to above IEC60601 MD specifications).
 Be sure to read the tool user’s manual and understand all instructions, in particular those related to the selection of the measuring mode, current range and patient load which shall comply with IEC 60601-1 recommendations.

7.3 Test Procedure

The measurement shall be done when the system is in standby mode, and with the following movements:

- Move the table upwards to its highest position and simultaneously move the detector lift upwards (using the detector button on smart box).
- Move the table downwards to 0cm, then tilt table 15° down (Trendelenburg position). Move longitudinally towards head stop, then simultaneously move slowly the longitudinal axis to the table foot and tilt to the horizontal position.

It is not necessary to perform X-ray during the leakage current measurement.

In case a MD cell is used, the voltmeter shall be used in MAX mode following the current direction, successively in AC and DC mode.

For every measurement, the operator shall perform movements to reach the maximum absolute value. The leakage current value in μA is a direct reading of the voltmeter display in mV.

7.4 Table to fill

Measures between the following components and each suspension:

- **Stdby**= system in standby
- **Mvts**= system in movements as defined in the previous paragraph
- **Susp**= monitor suspension

Test criteria: the measured value shall be < 65µA.

Note: Do not fill the tables in this section. Refer to section 9.7 Appendix 7 to fill the tables, extract the corresponding pages from the binder and add them to the Discovery™ IGS systems Logbook.

From	To	Measured value (µA)								PASS /FAIL / NA
		Suspension 1		Suspension 2		Suspension 3		Suspension 4		
		Stdby	Mvts	Stdby	Mvts	Stdby	Mvts	Stdby	Mvts	
Right Table Rail	Each metallic part of the enclosure of each suspension.									
	Each monitor installed on each suspension.									
Gantry	Each metallic part of the enclosure of each suspension.									
	Each monitor installed on each suspension.									
TSSC	Each metallic part of the enclosure of each suspension.									
	Each monitor installed on each suspension.									

Measures between each suspension:

Test criteria: the measured value shall be < 65µA.

From	To	Measured value (µA)								PASS / FAIL / NA
		Suspension 1		Suspension 2		Suspension 3		Suspension 4		
		enclosure	monitors	enclosure	monitors	enclosure	monitors	enclosure	monitors	
Susp 1	Each metallic part of the enclosure of each suspension.									
	Each monitor installed on each suspension.									
Susp 2	Each metallic part of the enclosure of each suspension.									
	Each monitor installed on each suspension.									
Susp 3	Each metallic part of the enclosure of each suspension.									
	Each monitor installed on each suspension.									

Report the results in the Discovery™ IGS systems Logbook.

8 Appendices

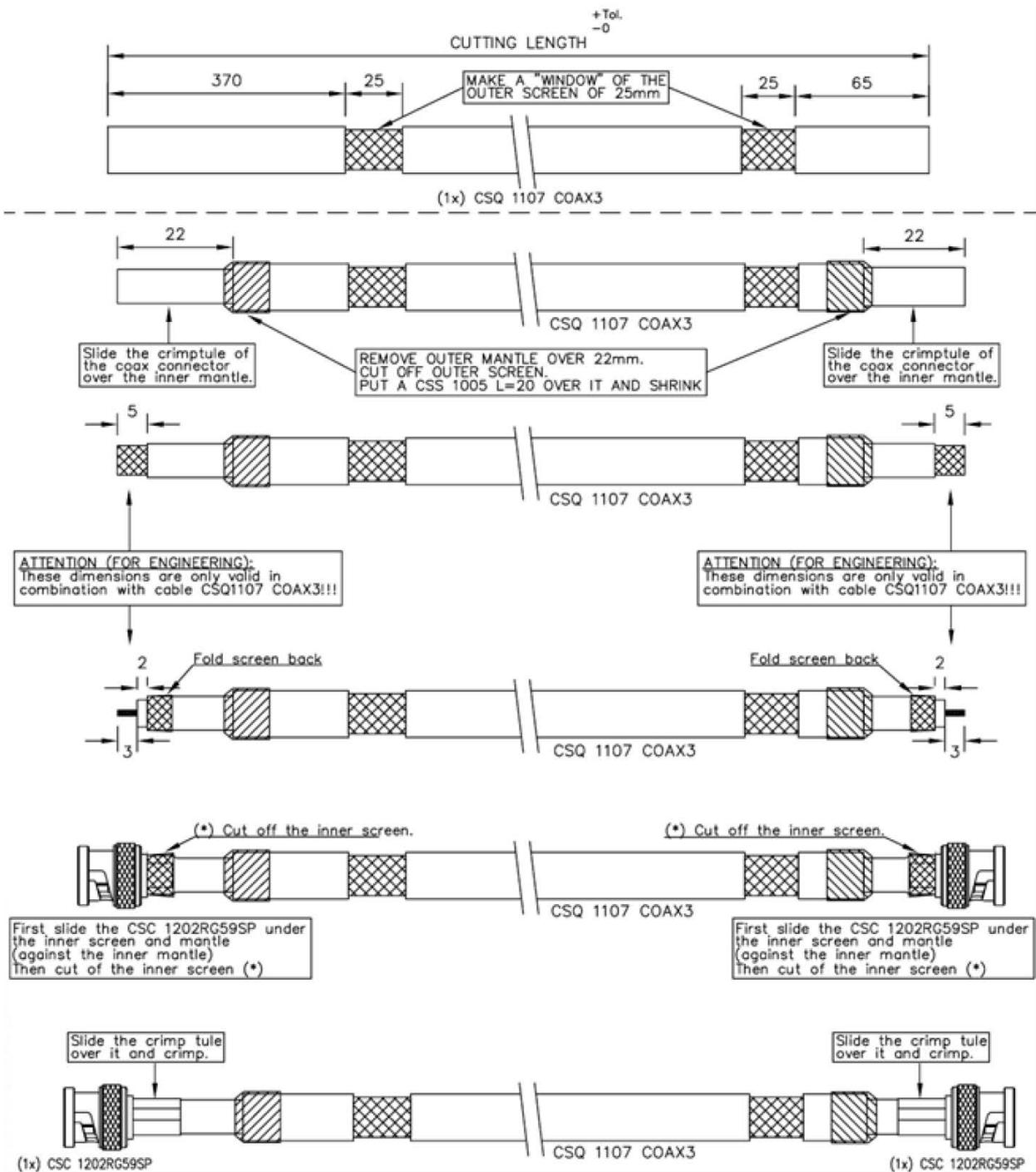
8.1 Appendix 1: Weight for the maximum load calculation

Dimensions are given for information.

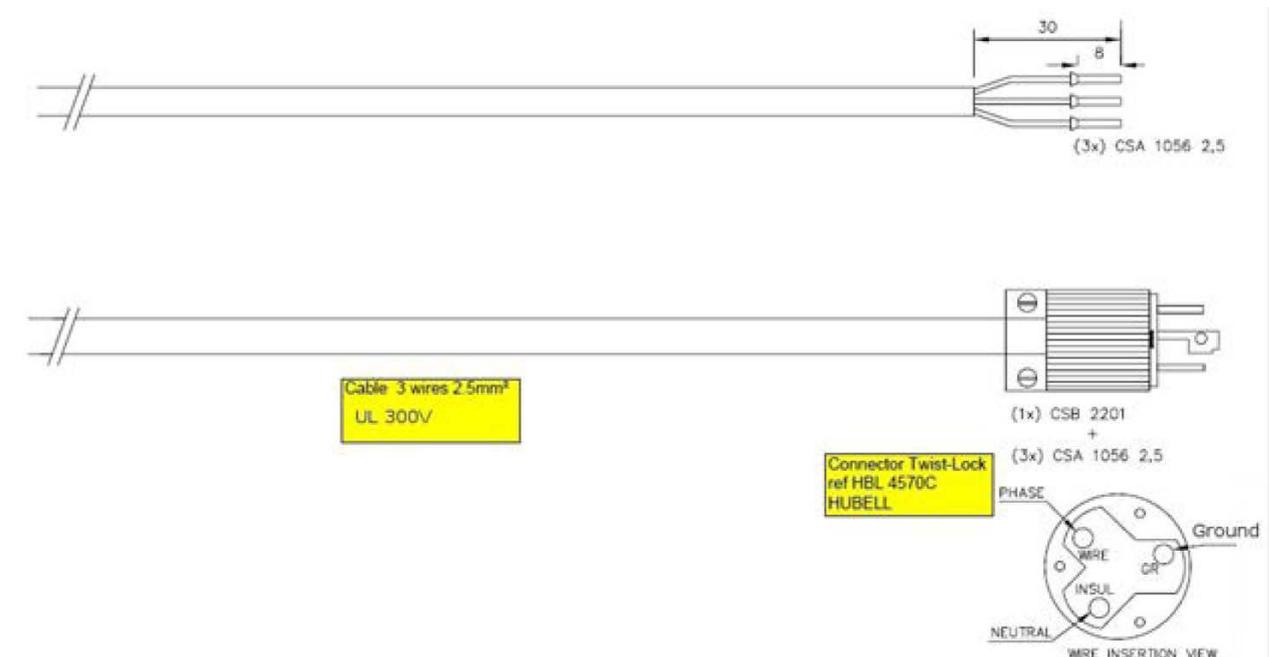
Part	Max Weight	Dimensions (W x H x D)
19" monitor (B&W)	6.3 Kg	422.5 mm x 348.5 mm x 95 mm
19" monitor (COLOR)	6.3 Kg	422.5 mm x 348.5 mm x 95 mm
Large Display monitor (58" monitor)	51 Kg	1317 mm x 775 mm x 145 mm
IR Receiver module	0.3 Kg	112 mm x 31 mm x 76 mm (+/-1 mm)

Note: The weight of the length of cables routed inside the monitor suspension has to be taken into account for the computation of overall equipment weight.

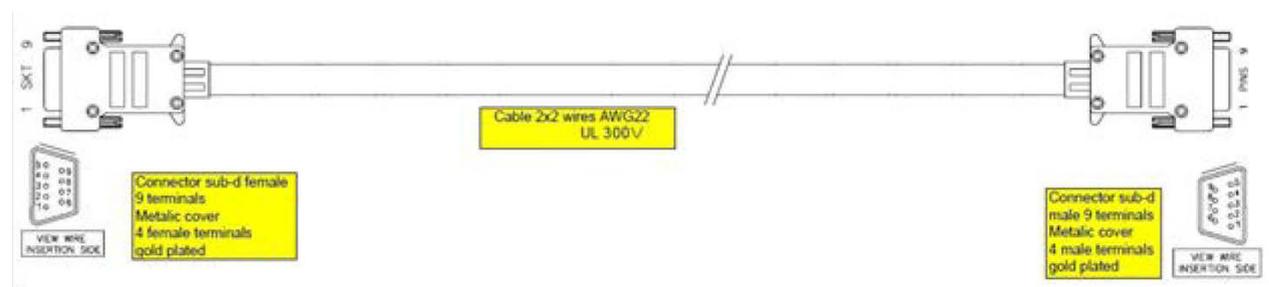
8.2 Appendix 2: 19" B&W Video Coax Cable Wiring Instructions



8.3 Appendix 3: 19" Power Cable Specification



8.4 Appendix 4: I/R Cable Specification



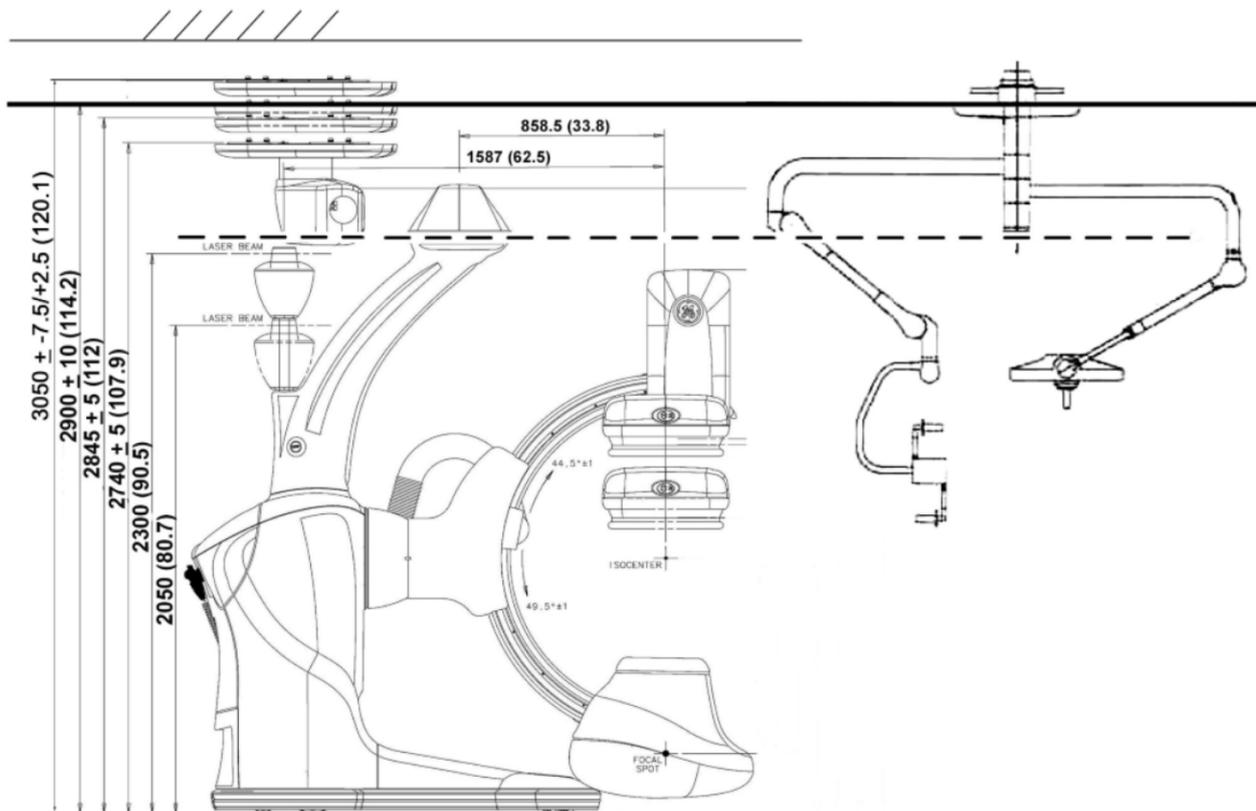
8.5 Appendix 5: Large Display Power & Video Cables

Large Display cables characteristics are:

- Video: 4x Ethernet cables with RJ45 connector
- Power: IEC 320 plug on monitor side

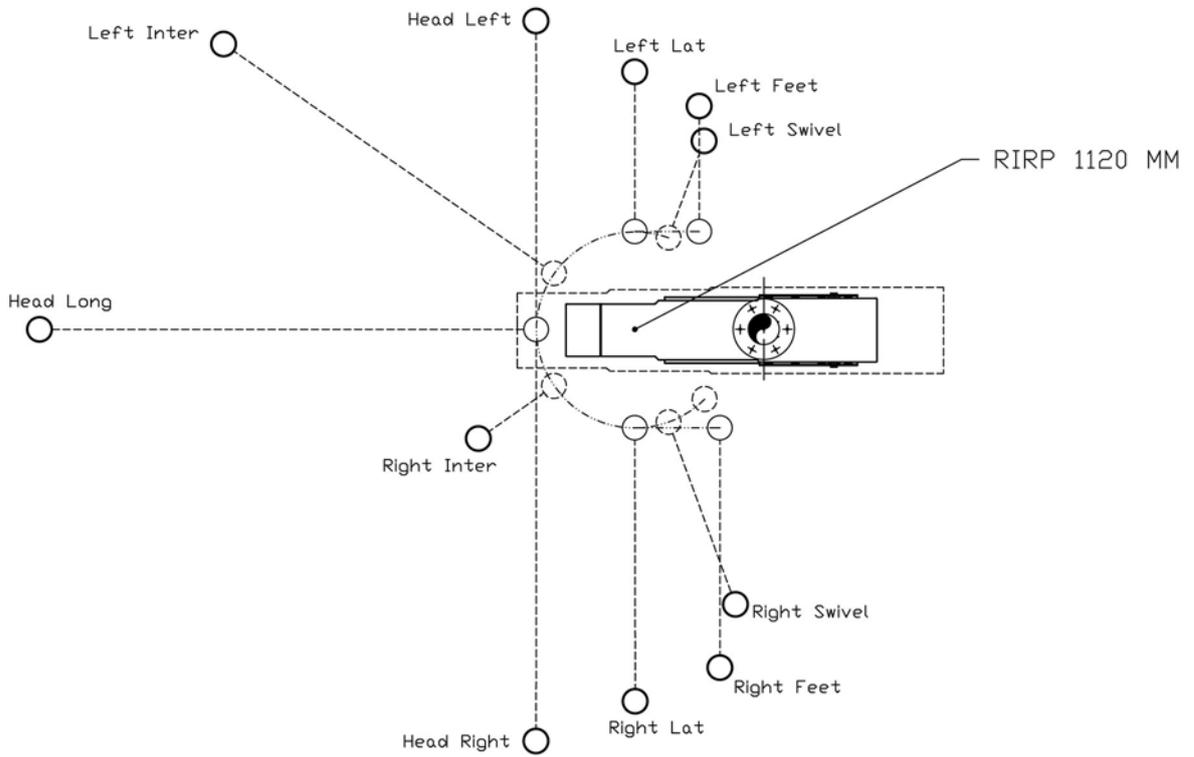
8.6 Appendix 5: Room layout overview

The following illustrations are given for informational purpose only. Please refer to the Pre-Installation Manual of Discovery™ IGS systems for more details.

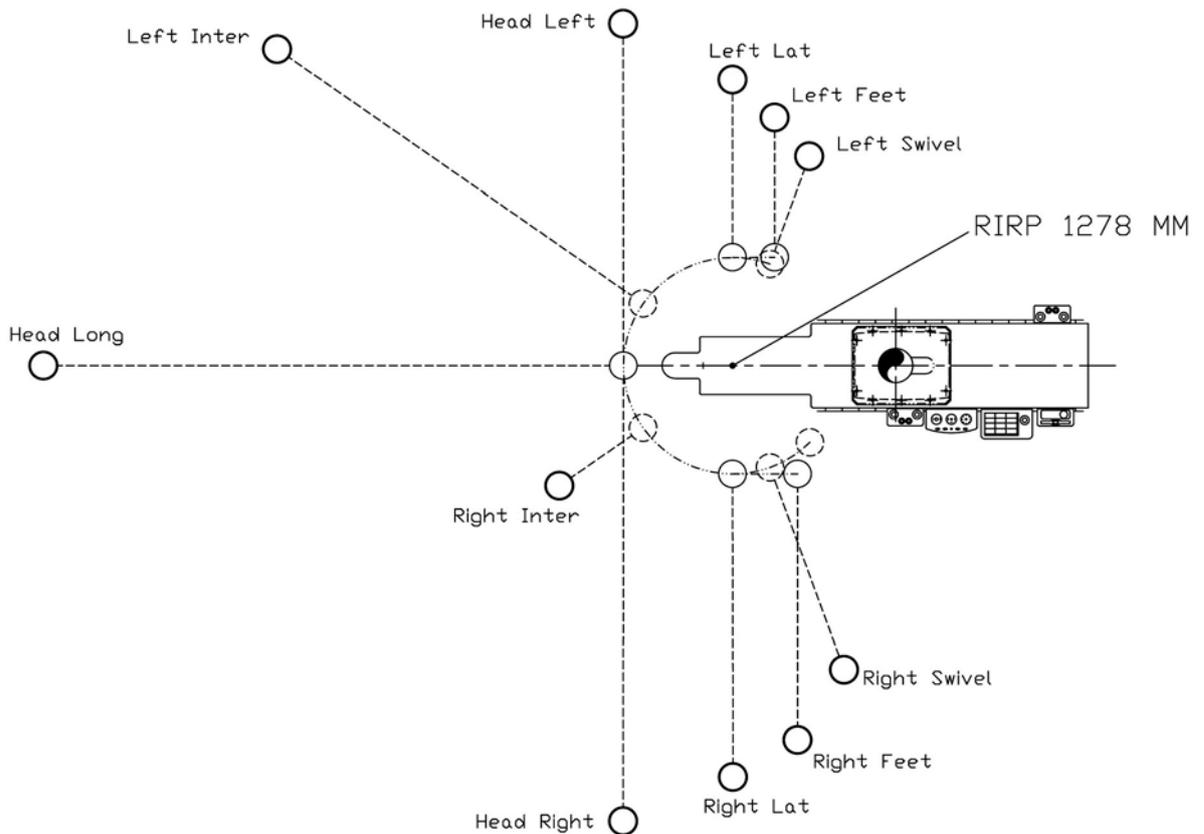


All dimensions in mm (inches)

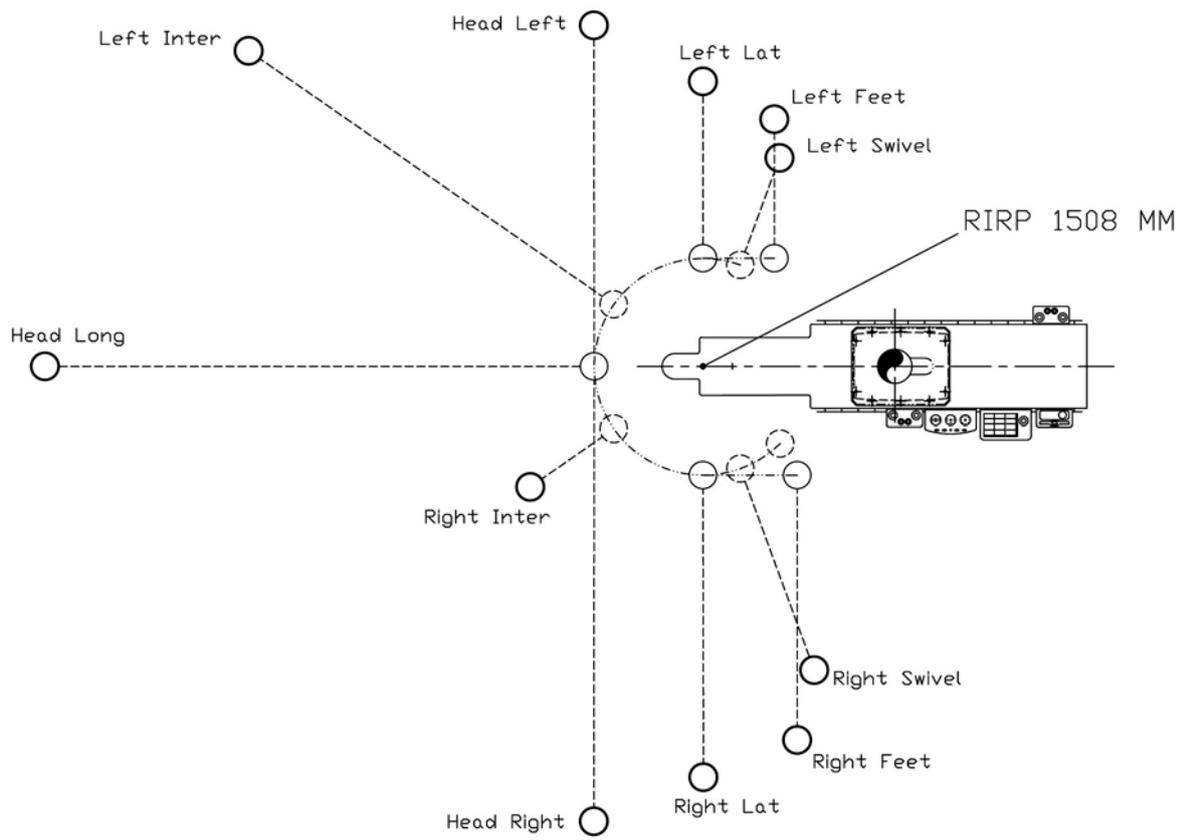
Potential collision between laser, detector lift and mast/chain



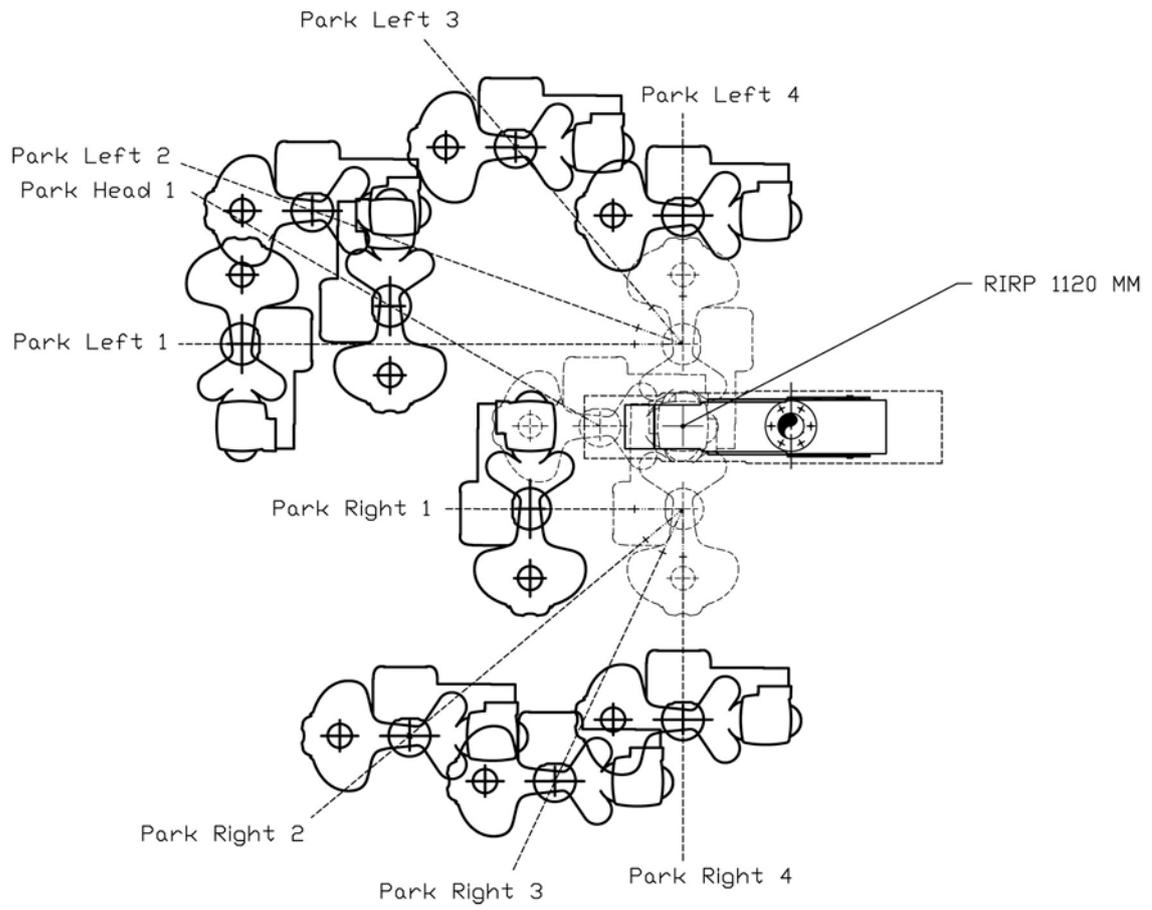
Backout positions (RIRP 1120 mm)



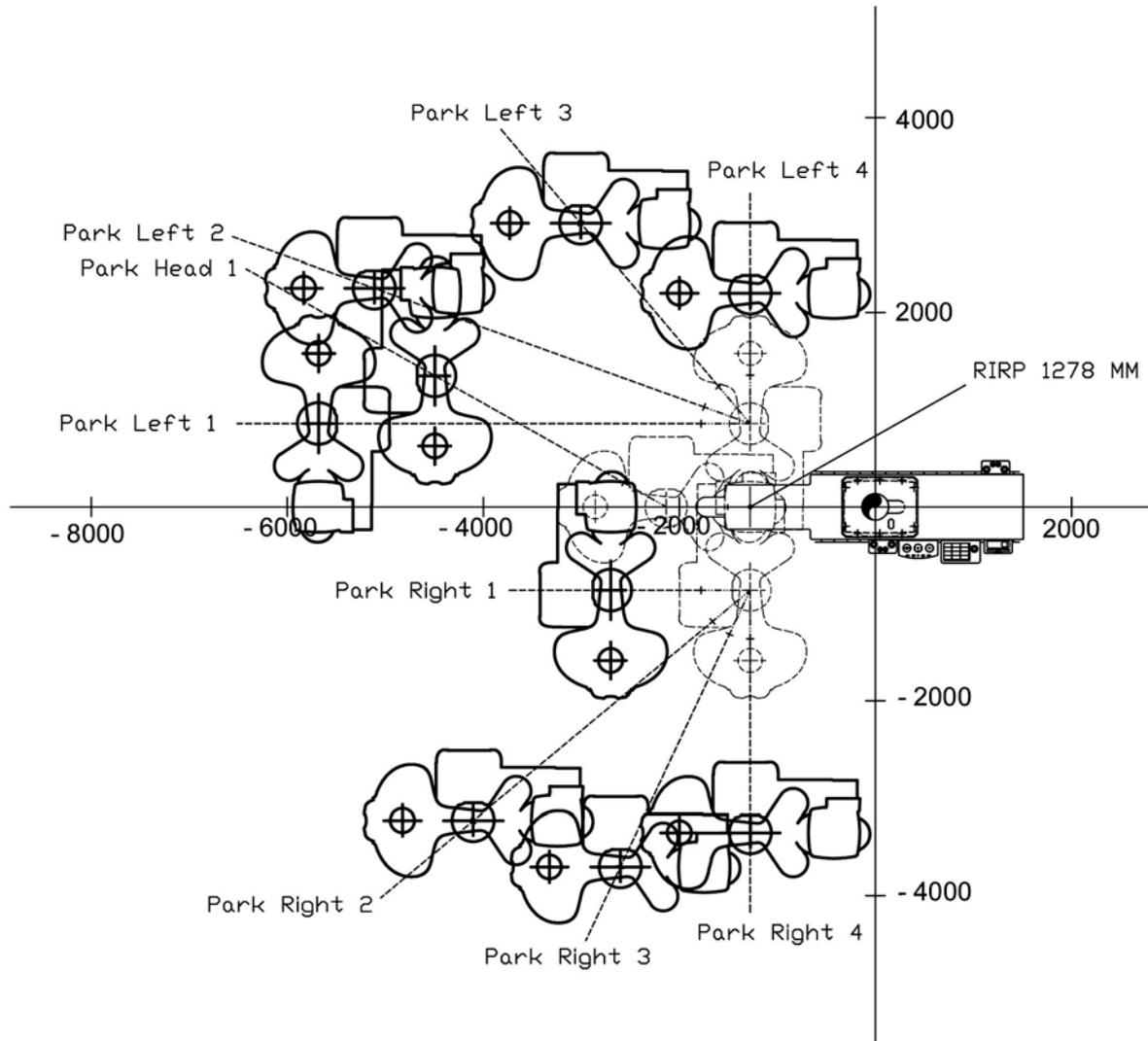
Backout positions (RIRP 1278 mm)



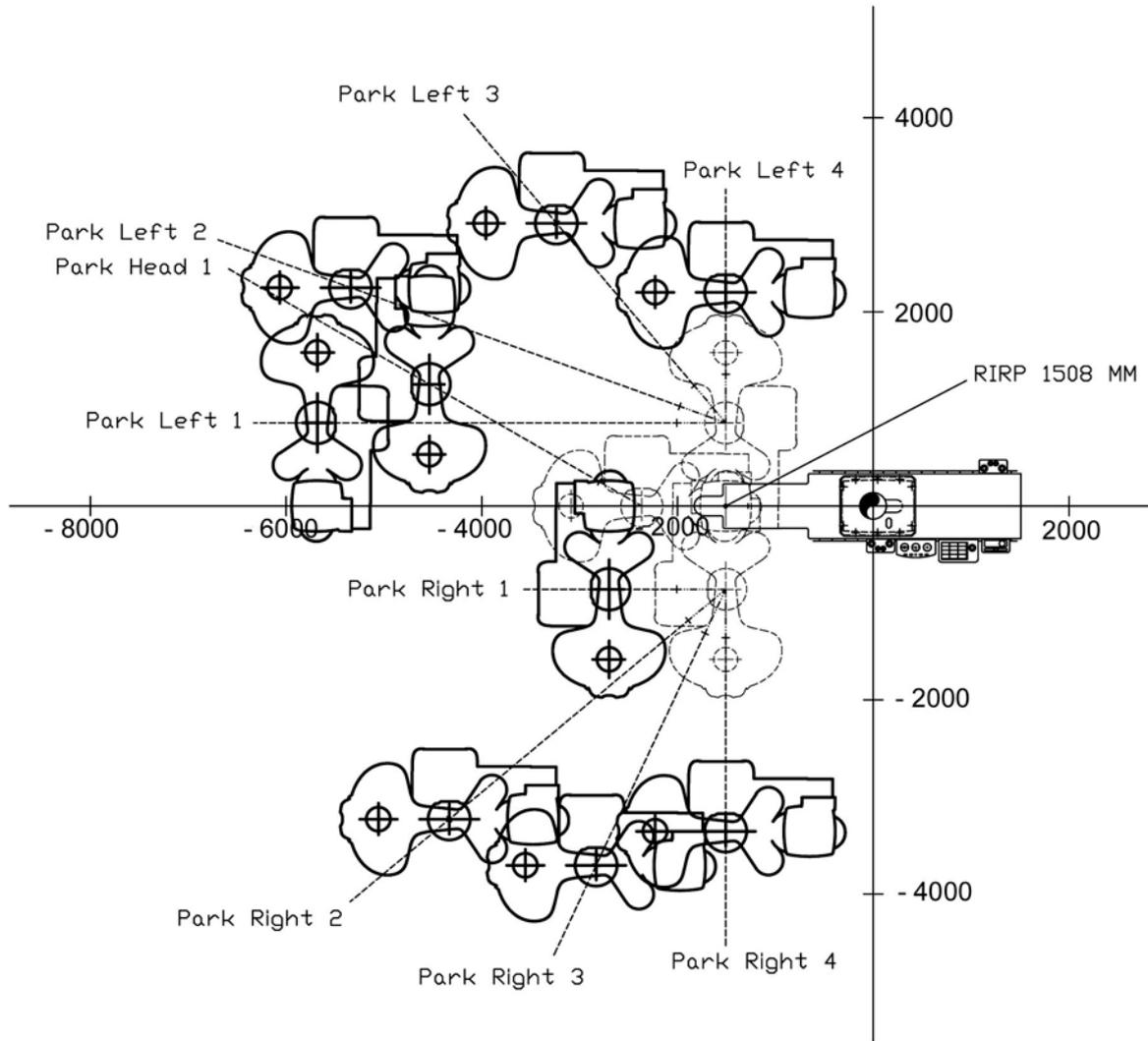
Backout positions (RIRP 1508 mm)



Gantry Parking (RIRP 1120 mm)



Gantry Parking (RIRP 1278 mm)



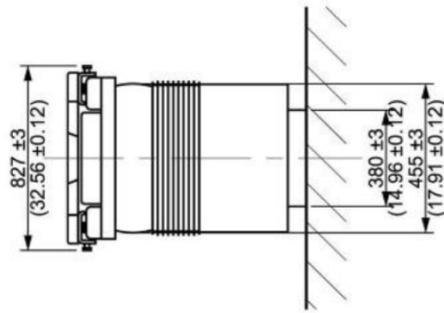
Gantry Parking (RIRP 1508 mm)

**FRONT VIEW
(HEAD END)**

All dimensions are in mm (inches)

NOTE

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



SIDE VIEW

TOP VIEW

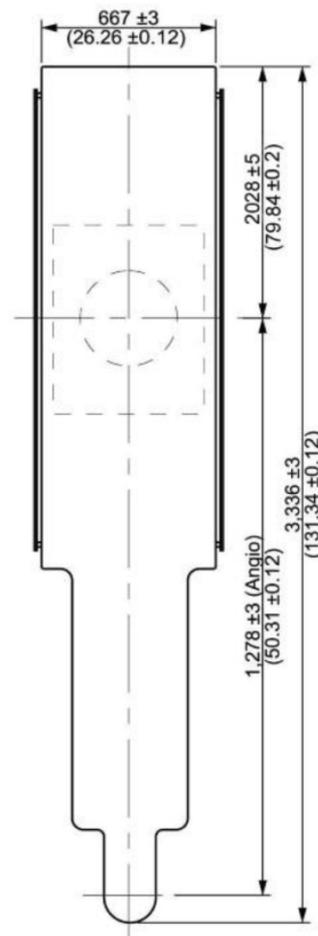
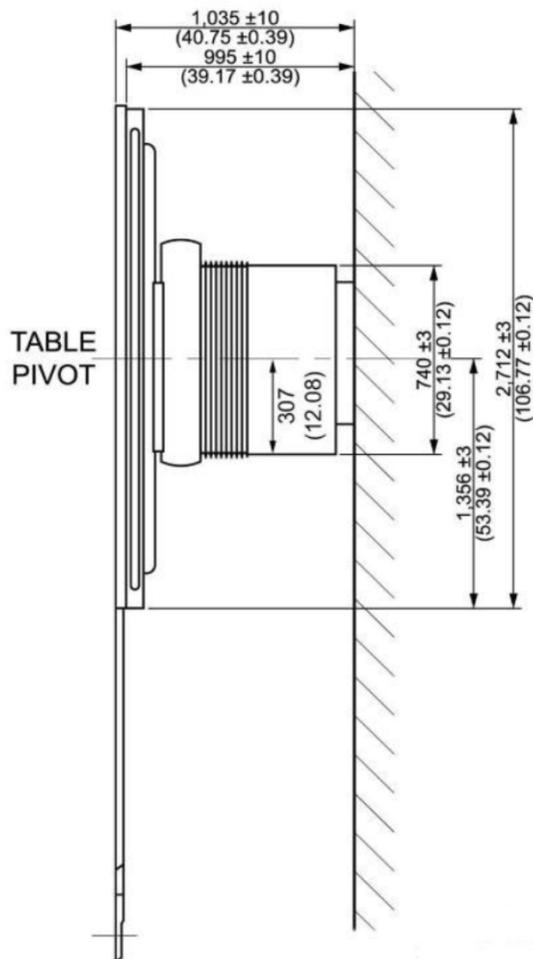


Table dimensions

8.7 Appendix 7: Tables to fill for Logbook

Fill the following tables as required in section 8 Leakage Current Measurement, take out pages 41 to 42 from the binder and place these pages in the Discovery™ IGS systems Logbook, in Chapter 14 - Appendix.

Measures between the following components and each suspension:

- **Stdby**= system in standby
- **Mvts**= system in movements as defined in the previous paragraph
- **Susp**= monitor suspension

Test criteria: the measured value shall be < 65µA.

From	To	Measured value (µA)								PASS /FAIL / NA
		Suspension 1		Suspension 2		Suspension 3		Suspension 4		
		Stdby	Mvts	Stdby	Mvts	Stdby	Mvts	Stdby	Mvts	
Right Table Rail	Each metallic part of the enclosure of each suspension.									
	Each monitor installed on each suspension.									
Gantry	Each metallic part of the enclosure of each suspension.									
	Each monitor installed on each suspension.									
TSSC	Each metallic part of the enclosure of each suspension.									
	Each monitor installed on each suspension.									

Measures between each suspension:

Test criteria: the measured value shall be < 65µA.

From	To	Measured value (µA)								PASS / FAIL / NA
		Suspension 1		Suspension 2		Suspension 3		Suspension 4		
		enclosure	monitors	enclosure	monitors	enclosure	monitors	enclosure	monitors	
Susp 1	Each metallic part of the enclosure of each suspension.									
	Each monitor installed on each suspension.									
Susp 2	Each metallic part of the enclosure of each suspension.									
	Each monitor installed on each suspension.									
Susp 3	Each metallic part of the enclosure of each suspension.									
	Each monitor installed on each suspension.									

This page left intentionally blank.

© 2015 General Electric Company. All rights reserved
General Electric Company
283, rue de la Minière
78530, Buc
FRANCE

www.gehealthcare.com

