

Open Monitor Suspension

Service Instruction for Installation



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Revision History

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ПРЕДУПРЕЖДЕНИЕ Това упътване за работа е налично само на английски език.

(BG)

- 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。

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- 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。

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(ZH-HK)

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- 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. <ul style="list-style-type: none"> 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 <ul style="list-style-type: none"> Kui klienditeeninduse osutaja nõuab juhendit inglise keest erinevas keeles, vastutab klient tõlketeenuse osutamise eest. Ärge üritage seadmeid teenindada enne eelnevalt käesoleva teenindusjuhendiga tutvumist ja sellest aru saamist. Käesoleva hoiatusse eiramine võib põhjustada teenuseosutaja, operaatori või patsiendi vigastamist elektrilöögi, mehaanilise või muu ohu tagajärvel.
VAROITUS (FI)	Tämä huolto-ohje on saatavilla vain englanniksi. <ul style="list-style-type: none"> Jos asiakkaan huoltohenkilöstö vaatii muuta kuin englanninkielistä materiaalia, tarvittavan käänöksen hankkiminen on asiakkaan vastuulla. Älä yritä korjata laitteistoa ennen kuin olet varmasti lukenut ja ymmärtänyt tämän huolto-ohjeen. Mikäli tästä varoitusta ei noudateta, seurausena 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. <ul style="list-style-type: none"> 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. <ul style="list-style-type: none"> 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)	To παρόν εγχειρίδιο σέρβις διατίθεται μόνο στα αγγλικά. <ul style="list-style-type: none"> 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 kizárolag angol nyelven érhető el. <ul style="list-style-type: none"> Ha a vevő szolgáltatója angoltól eltérő nyelvre tart igényt, akkor a vevő felelőssége a fordítás elkészítése. Ne próbálja elkezdeni használni a berendezést, amíg a karbantartási kézikönyvben leírtakat nem értelmeztek. 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 fáanleg 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 angļu 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.
ISPĖJIMAS (LT)	<p>Šis ekspluatavimo vadovas yra tik angļų kalba.</p> <ul style="list-style-type: none"> Jei kliento paslaugų tiekėjas reikalauja vadovo kita kalba – ne angļų, suteikti vertimo paslaugas privalo klientas. Neméginkite atlīkti įrangos techninės priežiūros, jei neperskaitėte ar nesupratote šio ekspluatavimo 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. <ul style="list-style-type: none"> 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. <ul style="list-style-type: none"> 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. <ul style="list-style-type: none"> 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.
ATENȚIE (RO)	Acest manual de service este disponibil doar în limba engleză. <ul style="list-style-type: none"> Dacă un furnizor de servicii pentru clienti necesită o altă limbă decât cea engleză, este de datoria clientului să furnizeze o traducere. Nu încercați să reparați echipamentul decât ulterior consultării și înțelegerea 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. <ul style="list-style-type: none"> 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. <ul style="list-style-type: none"> 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. <ul style="list-style-type: none"> 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 obsluhu a neporozumiete mu. Zanedbanie tohto upozornenia môže spôsobiť zranenie poskytovateľa služieb, obsluhujúcej osoby alebo pacienta elektrickým prúdom, mechanické alebo iné ohrozenie.

ATENCION (ES)	<p>Este manual de servicio sólo existe en inglés.</p> <ul style="list-style-type: none">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)	<p>Den här servicehandboken finns bara tillgänglig på engelska. .</p> <ul style="list-style-type: none">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 förstått 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)	<p>Ta servisni priročnik je na voljo samo v angleškem jeziku.</p> <ul style="list-style-type: none">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)	<p>Bu servis kılavuzunun sadece ingilizcesi mevcuttur.</p> <ul style="list-style-type: none">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 uyarıyla uyulmaması, elektrik, mekanik veya diğer tehlikelerden dolayı teknisyen, operatör veya hastanın yaralanmasına yol açabilir.

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1 Introduction

The Innova™ IGS 620 and Innova™ IGS 630 products with the Open Suspension option allow the customer to install the following monitors on one or several Open suspensions of his choice, in addition or in replacement of the standard Mavig Suspension usually provided with the system:

- four 19" monitors and up to 6 additional 19" monitors for Innova videos and 2 additional 19" color monitors for external devices (e.g. AW)

or

- two 19" monitors and 1 LDM (8MP monitor), and up to 4 additional 19" monitors for Innova videos and 2 additional 19" color monitors for external devices (e.g. AW) and an additional LDM.

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 as an addition to the Service Manual and Pre-Installation Manual of the system.

DISCLAIMER: The association of the Innova™ IGS 620 and Innova™ IGS 630 system and the purchaser's suspension(s) is not covered by the GEHC product certification.

2 General Information

2.1 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.

2.2 Pre-Installation

It is the customer responsibility to ensure that the Open Suspension and its cables are installed prior to the GE equipment (LC and LP gantries, 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 Innova™ IGS 620 and Innova™ IGS 630 system Pre-Installation Manual, in order to reduce the risk of collision between any fixed part of the suspension and the gantries 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 Frontal or C1 Lateral 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.

2.3 Spare Parts

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

2.4 Reference Documents

Document:

Innova™ IGS 620, Innova™ IGS 630 system - Service Manual

Innova™ IGS 620, Innova™ IGS 630 system - Pre-Installation Manual

3 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 gantries, 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.



NOTICE

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

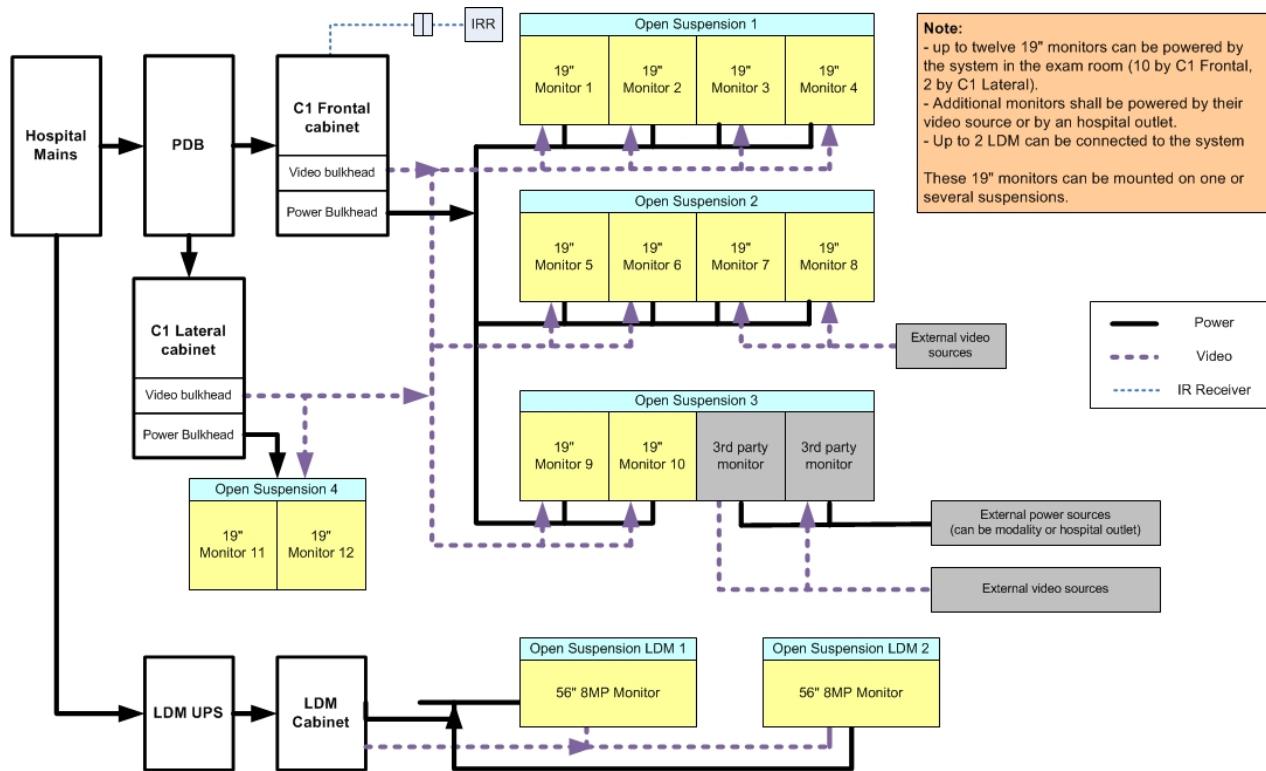


NOTICE

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

4 Interconnections Schematics

4.1 Power/Signal Schematic



Note: The maximum length of the power and video cables between the C1 Frontal or C1 Lateral 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.

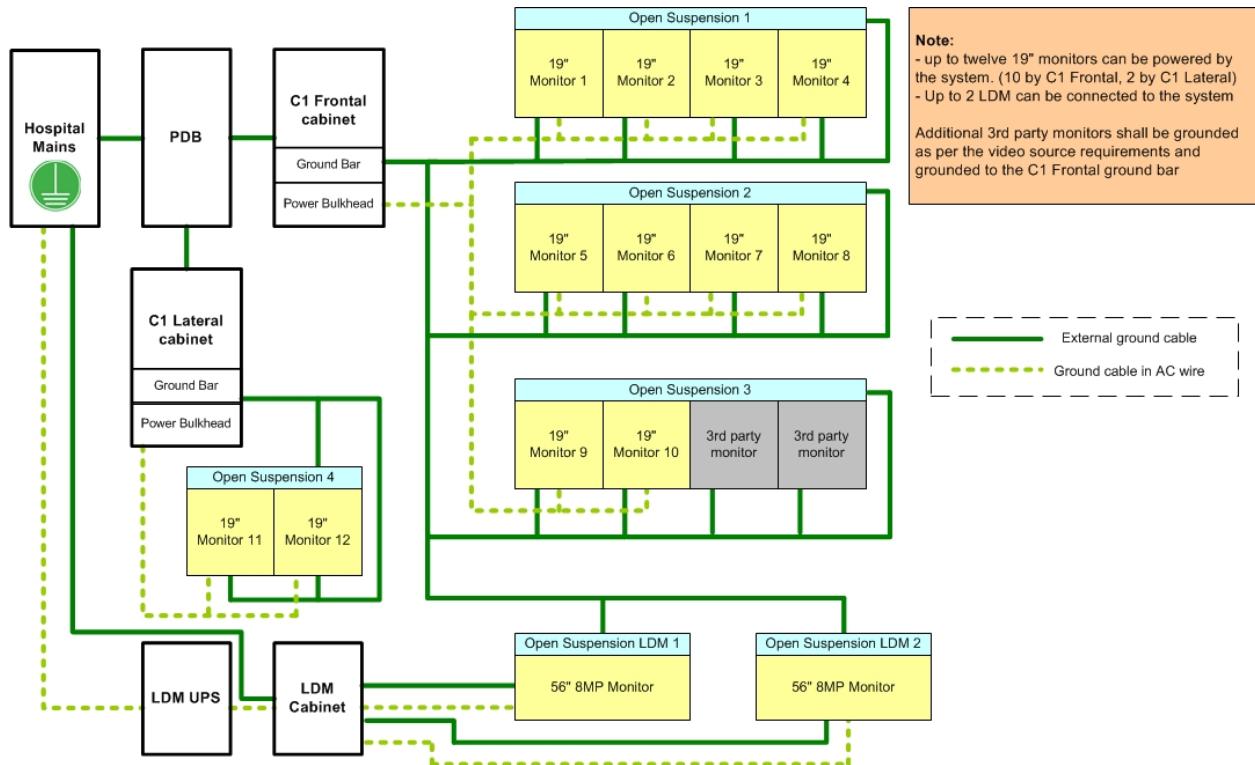
Note: Power and video cables for Large Display Monitor are provided by GE and have only a 36 meters length between the Large Display cabinet and each Large Display monitor.

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

Refer to Chapter 6 for detailed cabling information.

4.2 Grounding Schematic

Here is an example of grounding schematic with 4 Open suspensions and 2 optional Large Display monitors:

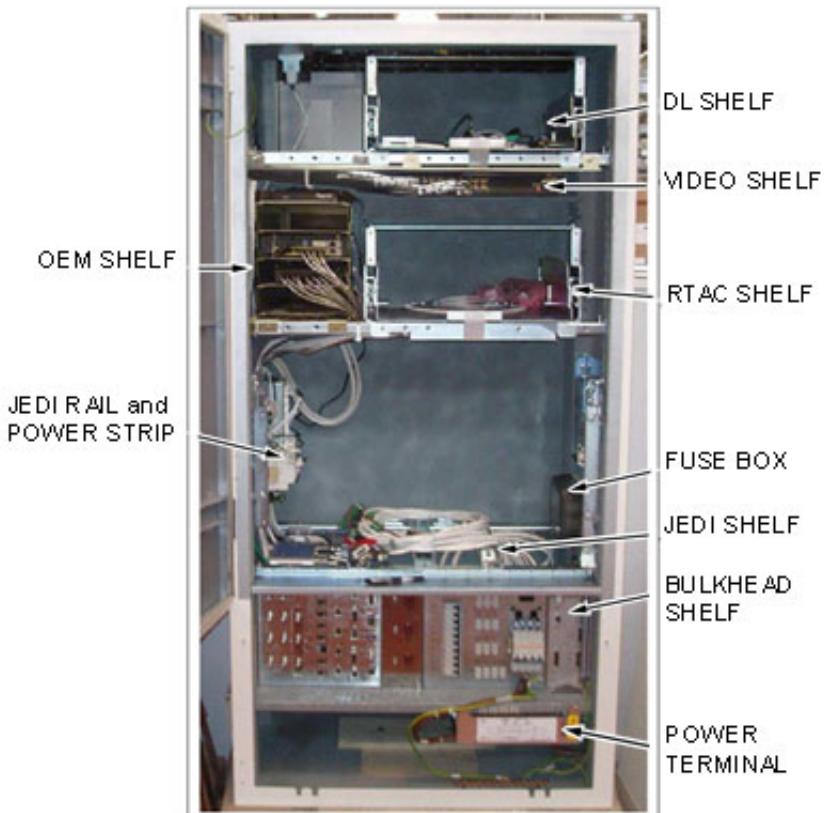


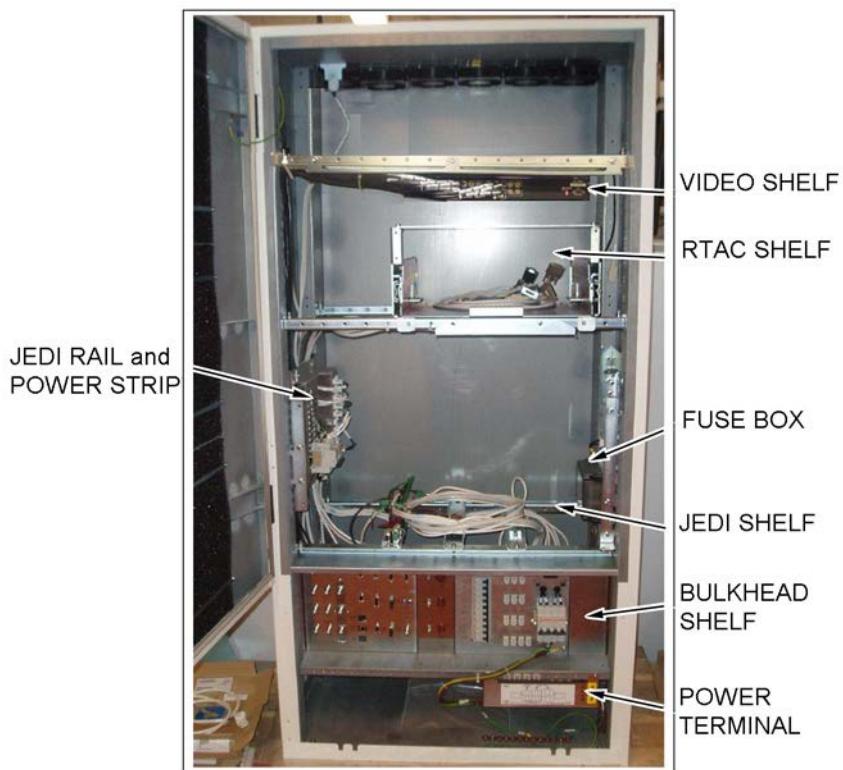
Note: Refer to Chapter 6 for detailed cabling information.

5 GE System Outputs

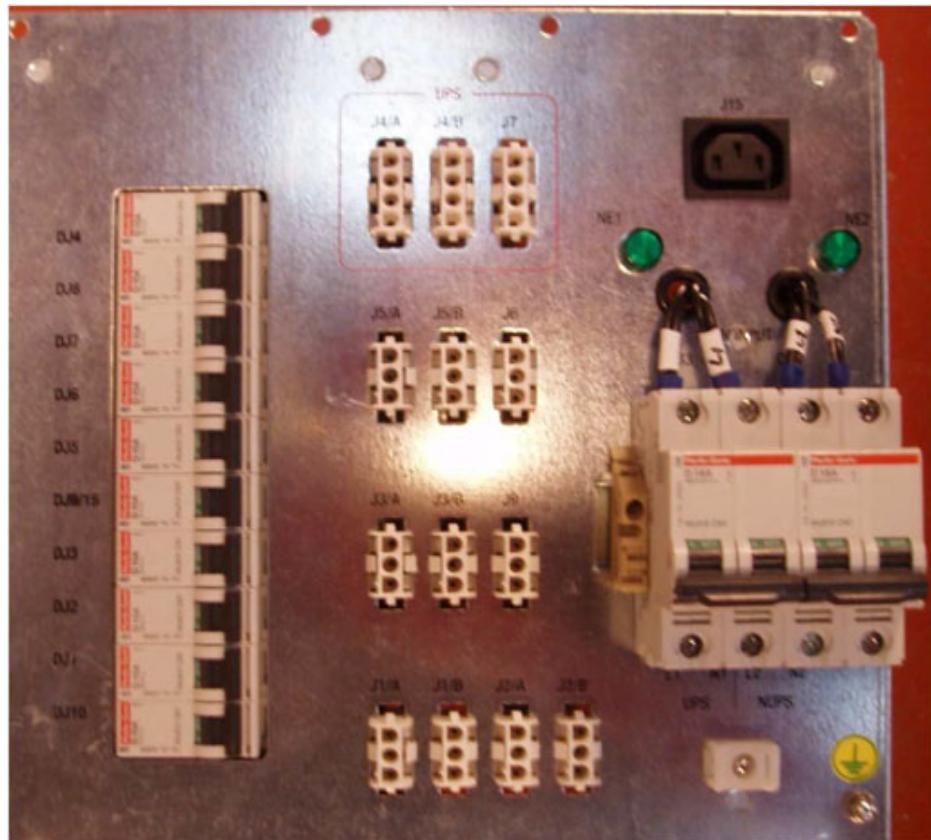
5.1 C1 Frontal and Lateral Cabinet outputs to be used

C1 Frontal Cabinet overview:

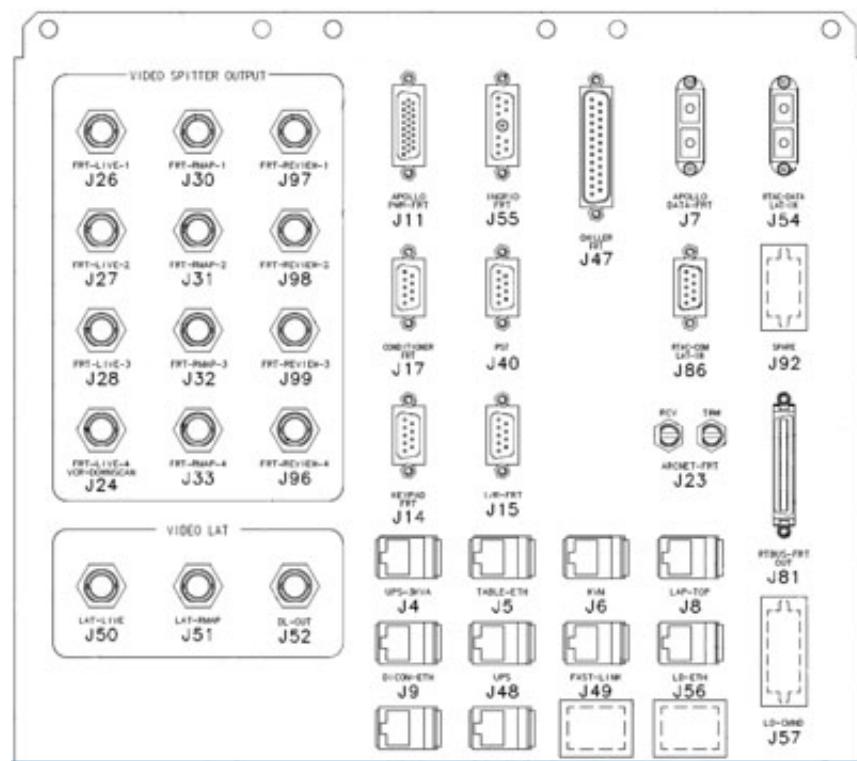


C1 Lateral Cabinet overview:

Power distribution Bulkhead (same on C1 Frontal Cabinet and C1 Lateral Cabinet):



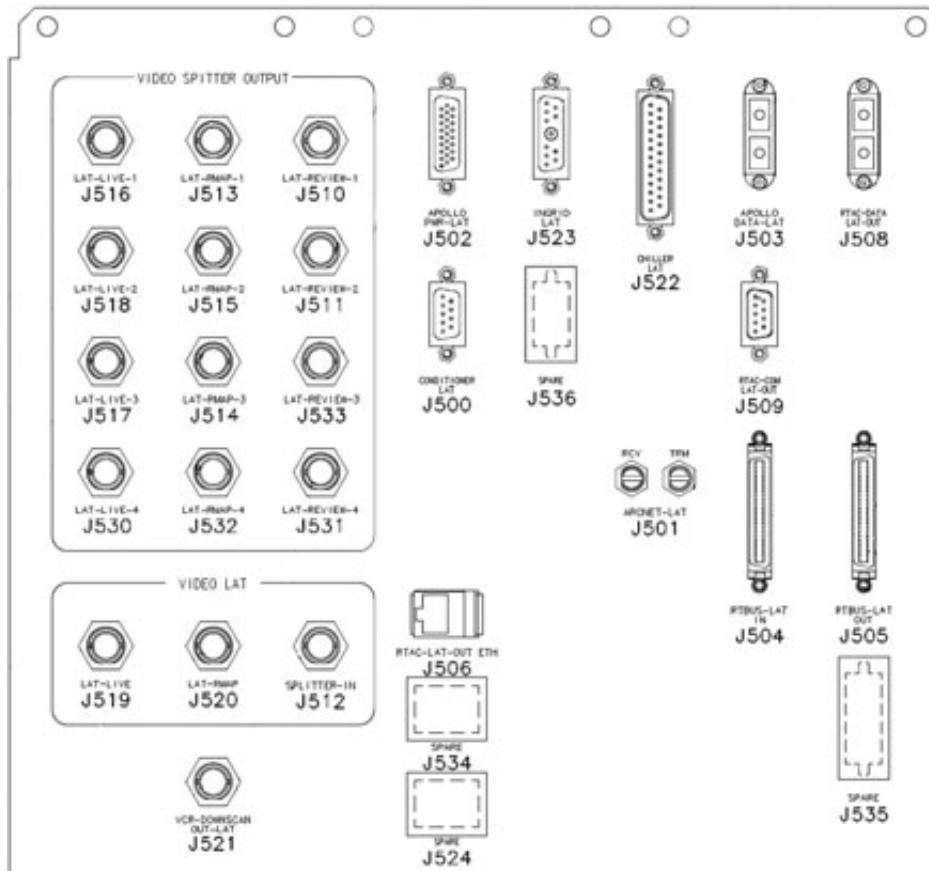
C1 Frontal video bulkhead:



Connector	Description	Comments
J26	FRONTAL LIVE 1 (Monitor Suspension Frontal Live Fluoro Monitor 1)	Mandatory exam room monitor
J27	FRONTAL LIVE 2 (Control Booth Live Fluoro Monitor 2)	Mandatory control room monitor
J28	FRONTAL LIVE 3 (Optional)	
J24	FRONTAL VCR DOWNSCAN or Large Display monitor FRONTAL LIVE 1	
J30	FRONTAL ROADMAP 1 (Monitor Suspension Frontal Road Map Monitor)	Mandatory exam room monitor
J31	FRONTAL ROADMAP 2 (Control Booth Frontal Roadmap Slave Monitor)	
J32	FRONTAL ROADMAP 3 (Frontal Road Map Monitor Option)	
J33	FRONTAL ROADMAP 4 (for Large Display Option)	
J97	FRONTAL REVIEW 1 (Frontal Review monitor 1)	
J98	FRONTAL REVIEW 2 (Frontal Review monitor 2)	

Connector	Description	Comments
J99	FRONTAL REVIEW 3 (Frontal Review monitor 3) (not used)	
J96	FRONTAL REVIEW 4 (for Large Display Option)	

C1 Lateral video bulthead:



Connector	Description	Comments
J516	LATERAL LIVE 1 (Monitor Suspension Lateral Live Fluoro Monitor 1)	Mandatory exam room monitor
J518	LATERAL LIVE 2 (Control Booth Live Fluoro Monitor 2)	Mandatory control room monitor
J517	LATERAL LIVE 3 (Optional)	
J530	LATERAL VCR DOWNSCAN or Large Display monitor LATERAL LIVE 1	

Connector	Description	Comments
J513	LATERAL ROADMAP 1 (Monitor Suspension Lateral Road Map Monitor)	Mandatory exam room monitor
J515	LATERAL ROADMAP 2 (Control Booth Lateral Roadmap Slave Monitor)	
J514	LATERAL ROADMAP 3 (Lateral Road Map Monitor Option)	
J532	LATERAL ROADMAP 4 (for Large Display Option)	
J510	LATERAL REVIEW 1 (Lateral Review monitor 1)	
J511	LATERAL REVIEW 2 (Lateral Review monitor 2)	
J533	LATERAL REVIEW 3 (Lateral Review monitor 3) (not used)	
J531	LATERAL REVIEW 4 (for Large Display Option)	

5.2 Large Display cabinet outputs to be used

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

- IST0324 - Large Display Cabinet Installation

6 Installation Procedure



A MAXIMUM OF TWELVE 19" B&W AND COLOR MONITORS IN THE EXAM ROOM CAN BE POWERED BY THE SYSTEM (10 BY C1 FRONTAL, 2 BY C1 LATERAL). DO NOT POWER MORE THAN TWELVE 19" B&W AND COLOR MONITORS IN THE EXAM ROOM.



NO OTHER EQUIPMENT (THIRD PARTY MONITORS, SURGICAL LIGHTS OR OTHER DEVICE) SHALL BE POWERED BY THE SYSTEM: C1 FRONTAL OR LATERAL POWER DISTRIBUTION BULKHEADS, 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.

6.1 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 Innova™ IGS 620, Innova™ IGS 630 SERVICE MANUAL BEFORE INSTALLATION:

- REG0049 - Lockout Tagout Procedures.
- REG0122 - Large Display Option Lockout Tagout Procedures.

6.2 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, IR receiver and Dimentor Display module 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).

6.3 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.

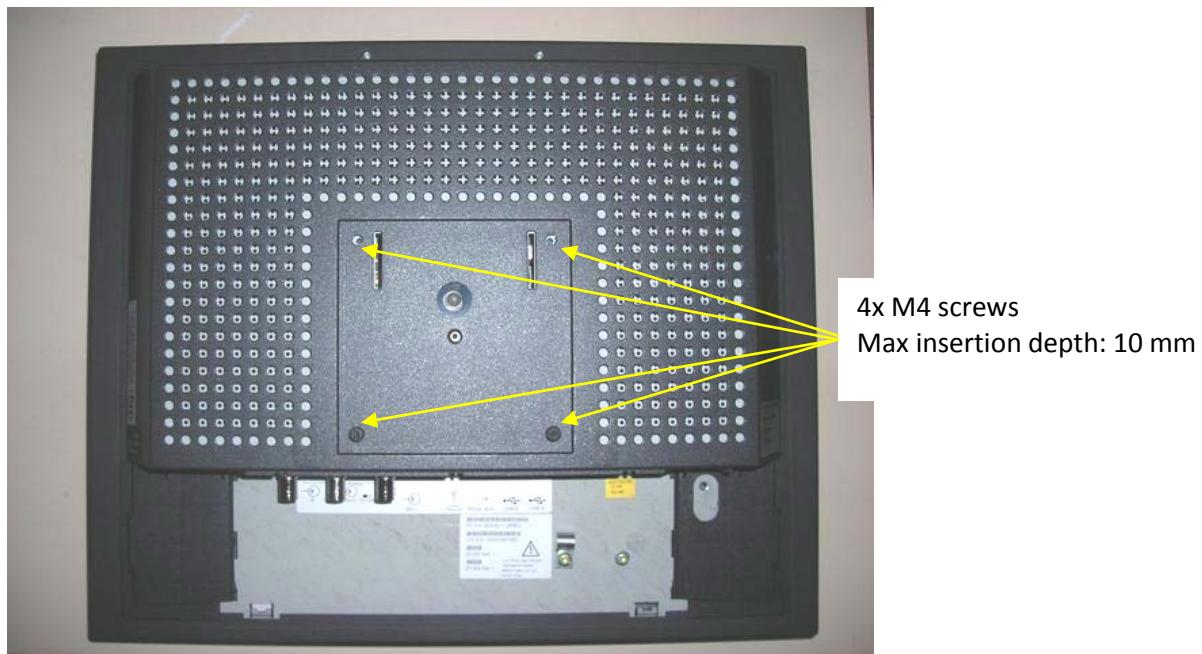


NOTICE

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

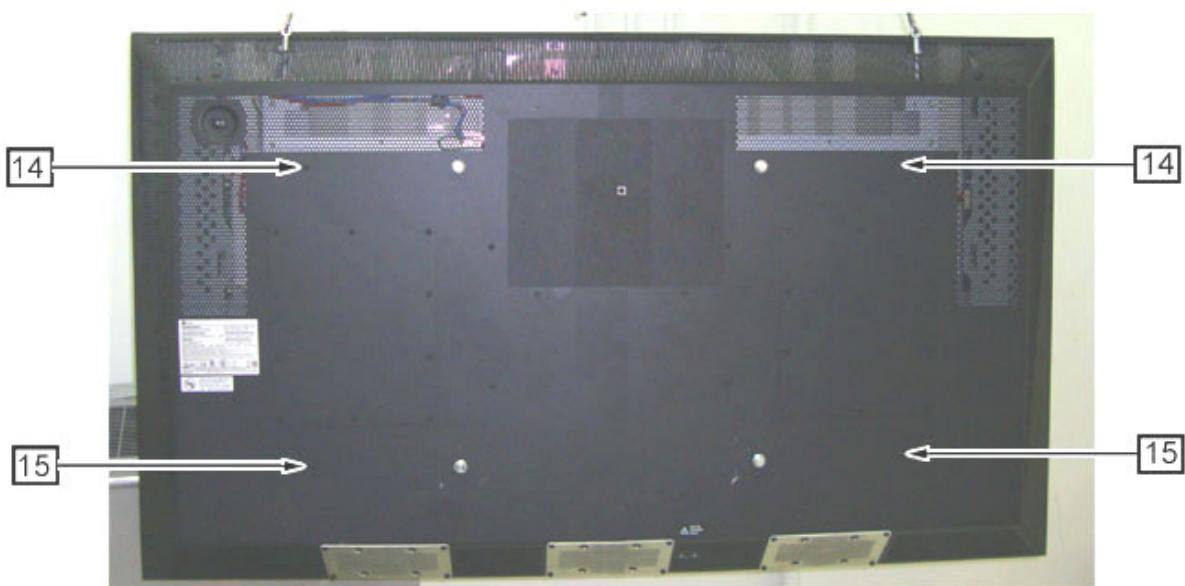
6.3.1 Type of fixation - 19" monitor

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



6.3.2 Type of fixation – Large Display monitor

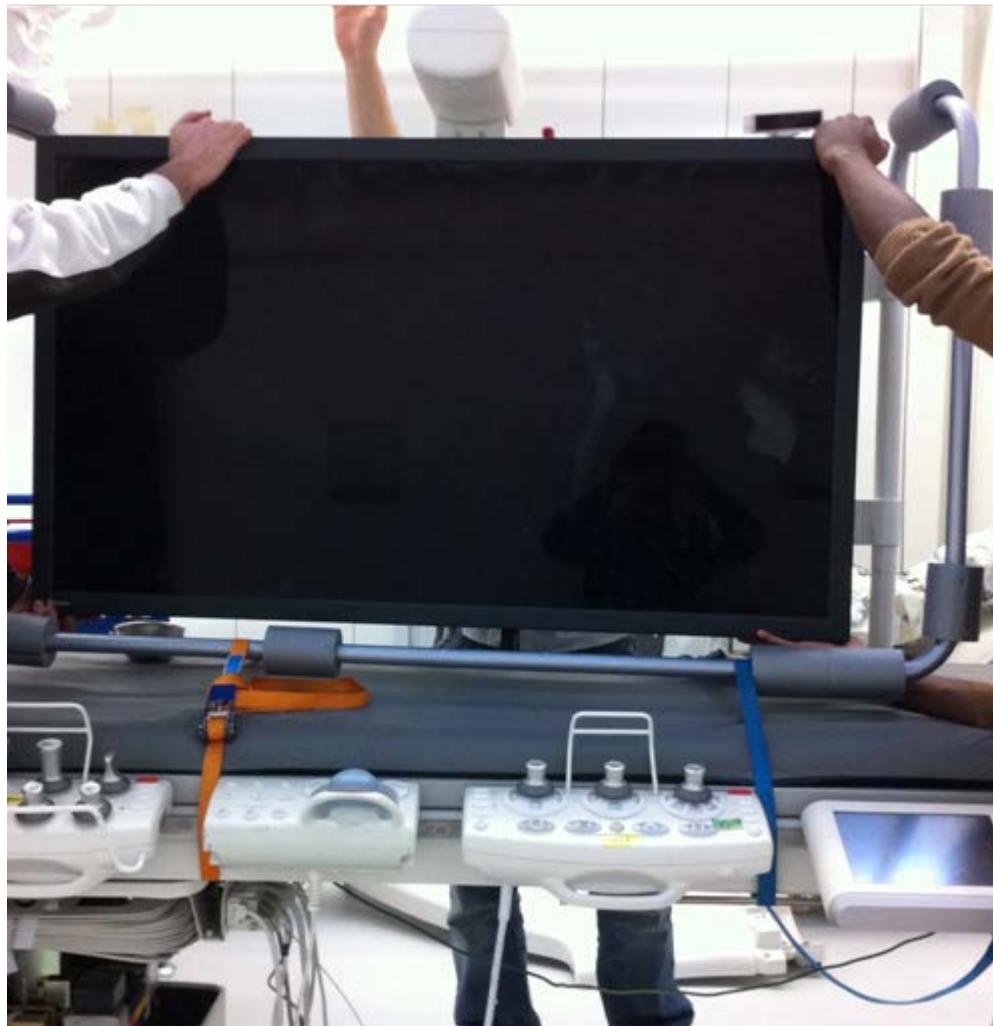
Large Display monitors: standard VESA 400 x 400 mm. Use the supplied screws or four M8 screws.



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 secures 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.



6.4 Cabling

6.4.1 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.

6.4.2 19" Monitors



NOTICE

THE FRONTAL AND LATERAL LIVE MONITORS ARE MANDATORY IN THE CONTROL ROOM (RESPECTIVELY CONNECTED TO J27 OF THE C1 FRONTAL VIDEO BULKHEAD AND J518 OF THE C1 LATERAL VIDEO BULKHEAD).

Without LDM:

THE FRONTAL LIVE AND ROADMAP MONITORS (RESPECTIVELY CONNECTED TO J26 AND J30 OUTPUTS OF THE C1 FRONTAL VIDEO BULKHEAD) AND THE LATERAL LIVE AND ROADMAP MONITORS (RESPECTIVELY CONNECTED TO J516 AND J513 OUTPUTS OF THE C1 LATERAL VIDEO BULKHEAD) ARE MANDATORY IN THE EXAM ROOM. THESE MONITORS ARE USED FOR THE DISPLAY OF THE REGULATORY INFORMATION AND SHALL BE ACCESSIBLE AND VISIBLE AT THE FLUOROSCOPIST WORKING POSITION.

With LDM:

FRONTAL AND ROADMAP MONITORS (RESPECTIVELY CONNECTED TO J26 AND J30 OUTPUTS OF THE C1 FRONTAL VIDEO BULKHEAD) ARE MANDATORY IN THE EXAM ROOM. THESE MONITORS ARE USED FOR THE DISPLAY OF THE REGULATORY INFORMATION AND SHALL BE ACCESSIBLE AND VISIBLE AT THE FLUOROSCOPIST WORKING POSITION IN LESS THAN ONE MINUTE. THOSE BACKUP MONITORS CAN BE MOUNTED EITHER AT THE BACK OF THE LDM SUSPENSION OR ON ANOTHER SUSPENSION.



NOTICE

ONLY THE 19" B&W (P/N 5492442) AND COLOR MONITORS (P/N 5148721-3) PROVIDED BY GE SHALL BE POWERED BY THE SYSTEM (C1 FRONTAL AND LATERAL CABINETS).

6.4.2.1 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 Frontal and Lateral C1 Cabinets and each monitor.
- The connector on cabinet side shall be: Mate-N-Lok male connector 3P (AMP Tyco P/N 350766-1).

The power shall be provided through the following connectors:

- C1 Frontal J1/A: This connector can power up to eight 19" monitors.
- C1 Frontal J5/A and J5/B: These connectors can each power up one 19" monitor, or two 19" monitors can be powered by only one connector, and the other shall not be used.

- C1 Lateral J5/A and J5/B: These connectors can each power up one 19" monitor, or two 19" monitors can be powered by only one connector, and the other shall not be used.

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



NOTICE

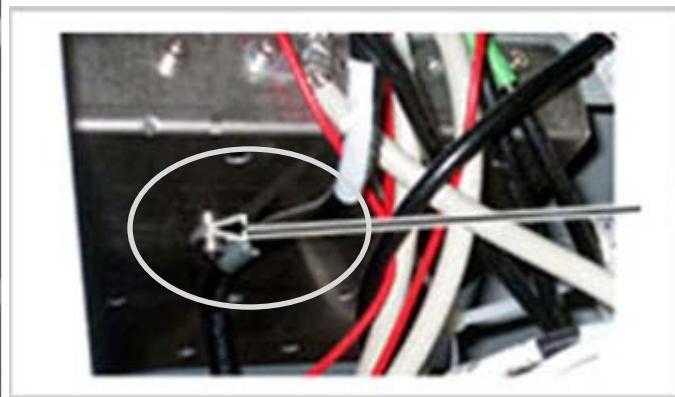
EACH 19" MONITOR (B&W OR COLOR) POWERED BY THE C1 FRONTAL SHALL BE CONNECTED TO THE C1 FRONTAL GROUND BAR BY A DEDICATED GROUND CABLE (IE NOT THE ONE IN THE POWER CABLE), EACH 19" MONITOR (B&W OR COLOR) POWERED BY THE C1 LATERAL SHALL BE CONNECTED TO THE C1 LATERAL GROUND BAR BY A DEDICATED GROUND CABLE. 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.

6.4.2.2 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 Frontal and Lateral 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.

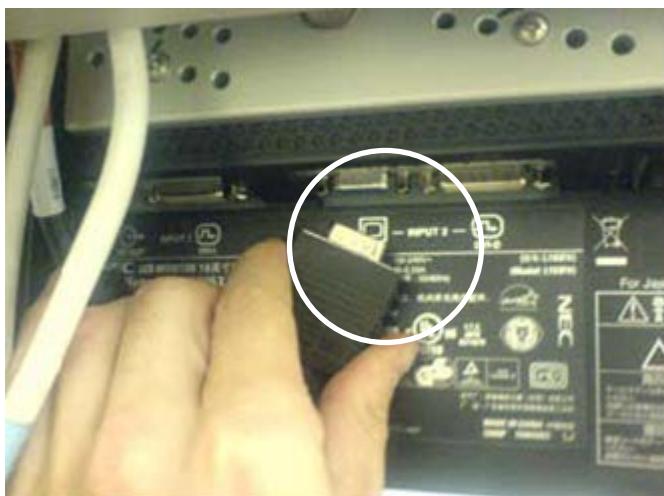


The video cable shall be connected to the input below:



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

6.4.2.3 Video (Color Monitors)



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

6.4.3 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.

6.4.4 Third Party Monitors



WARNING

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



WARNING

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



NOTICE

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



NOTICE

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.

6.4.5 Suspension Grounding



NOTICE

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

6.5 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 Frontal 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.

6.6 Finalization



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

7 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 § 4.3 *Grounding resistance measurement* of the CHK0061 Job Card - Grounding and Neutral Continuity Check:

- Between PDB ground bar and each suspension metallic part.
- Between PDB ground bar and each 19" monitor (B&W and color).
- Between PDB ground bar and each Large Display monitor.
- Between PDB 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 Innova™ IGS 620, Innova™ IGS 630 system Logbook.

8 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.

8.1 Pre-requisites

Leakage current test results are dependent of cabling and ground connections, all system cabling must be checked with the System Mischarts 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 (TSUs 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.

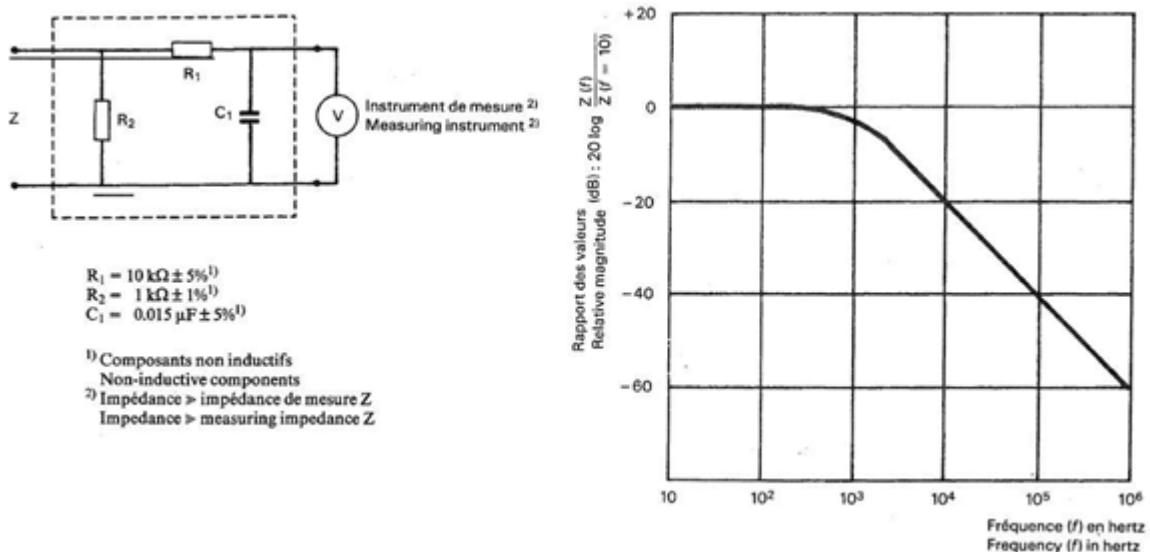
The equipment shall be operated in Normal Conditions during the measurement. The complete system shall be energized and in full operating conditions with maximum functions activated.

8.2 Test Equipment

Table 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.

8.3 Test Procedure

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

Omega IV and V Table:

- Move the table and the detector lift of the LC Positioner simultaneously according to the following pattern:
 - table upwards/detector upwards
 - table downwards/detector downwards
 - table upwards/detector downwards
 - table downwards/detector upwards

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.

8.4 Tables 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 Innova™ IGS 620, Innova™ IGS 630 system 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 LC	Each metallic part of the enclosure of each suspension.										
	Each monitor installed on each suspension.										
Gantry LP	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 Innova™ IGS 620, Innova™ IGS 630 system Logbook.

9 Appendices

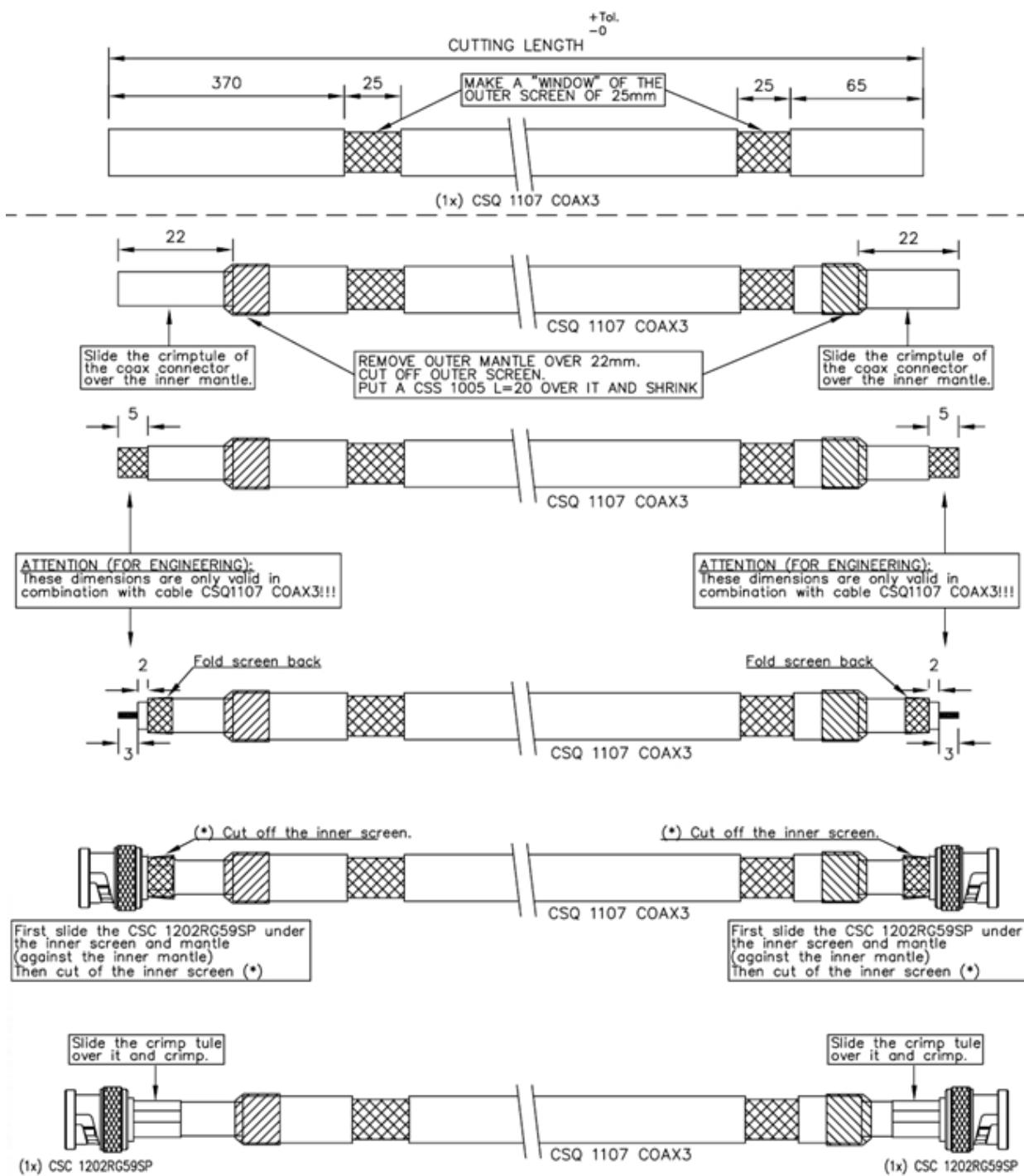
9.1 Appendix 1: Weight for the maximum load calculation

Dimensions are given for information.

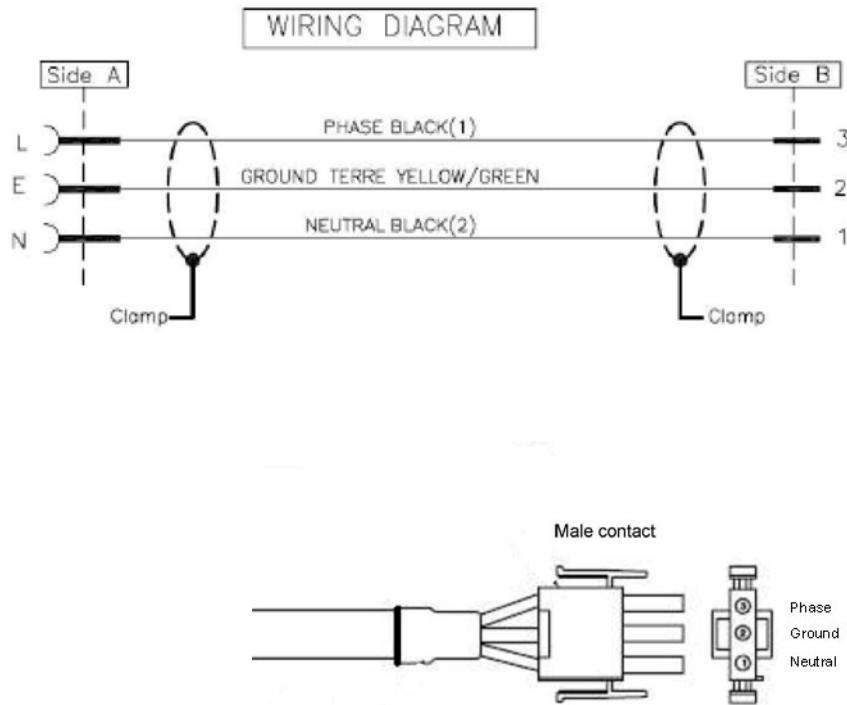
Part	Max Weight	Dimensions (W x H x D)
19" monitor (B&W)	6.3 Kg	422.5 mm x 348.5 mm x 95 mm
19" monitor (COLOR)	6.3 Kg	422.5 mm x 348.5 mm x 95 mm
Large Display monitor	51 Kg	1317 mm x 775 mm x 145 mm
IR Receiver module	0.3 Kg	112 mm x 31 mm x 76 mm (+/-1 mm)
Dimentor Display module	1.0 Kg (+/- 0.1 Kg)	210 mm x 146 mm x 58 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.

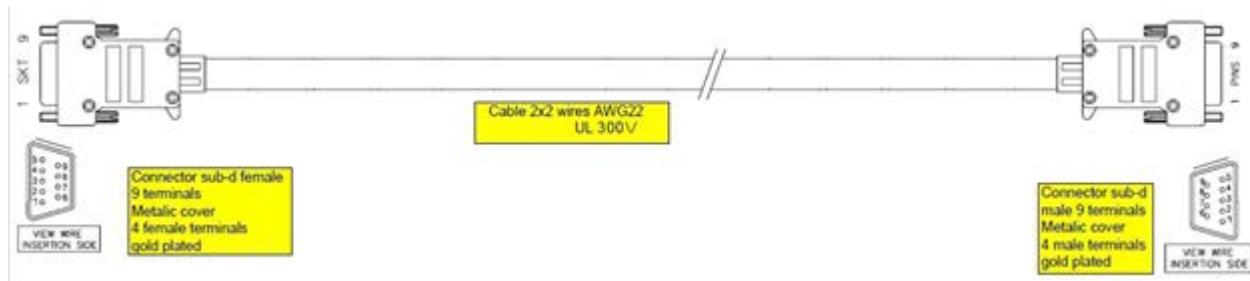
9.2 Appendix 2: 19" B&W Video Coax Cable Wiring Instructions



9.3 Appendix 3: 19" Power Cable Specification



9.4 Appendix 4: I/R Cable Specification



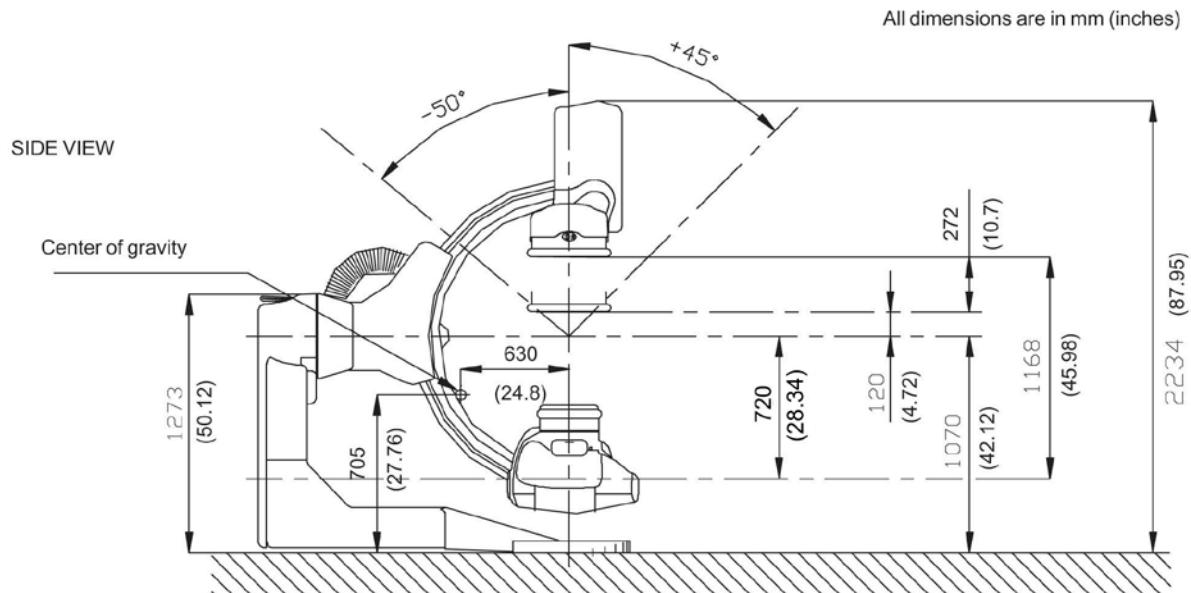
9.5 Appendix 5: Large Display Power & Video Cables

Large Display cables characteristics are:

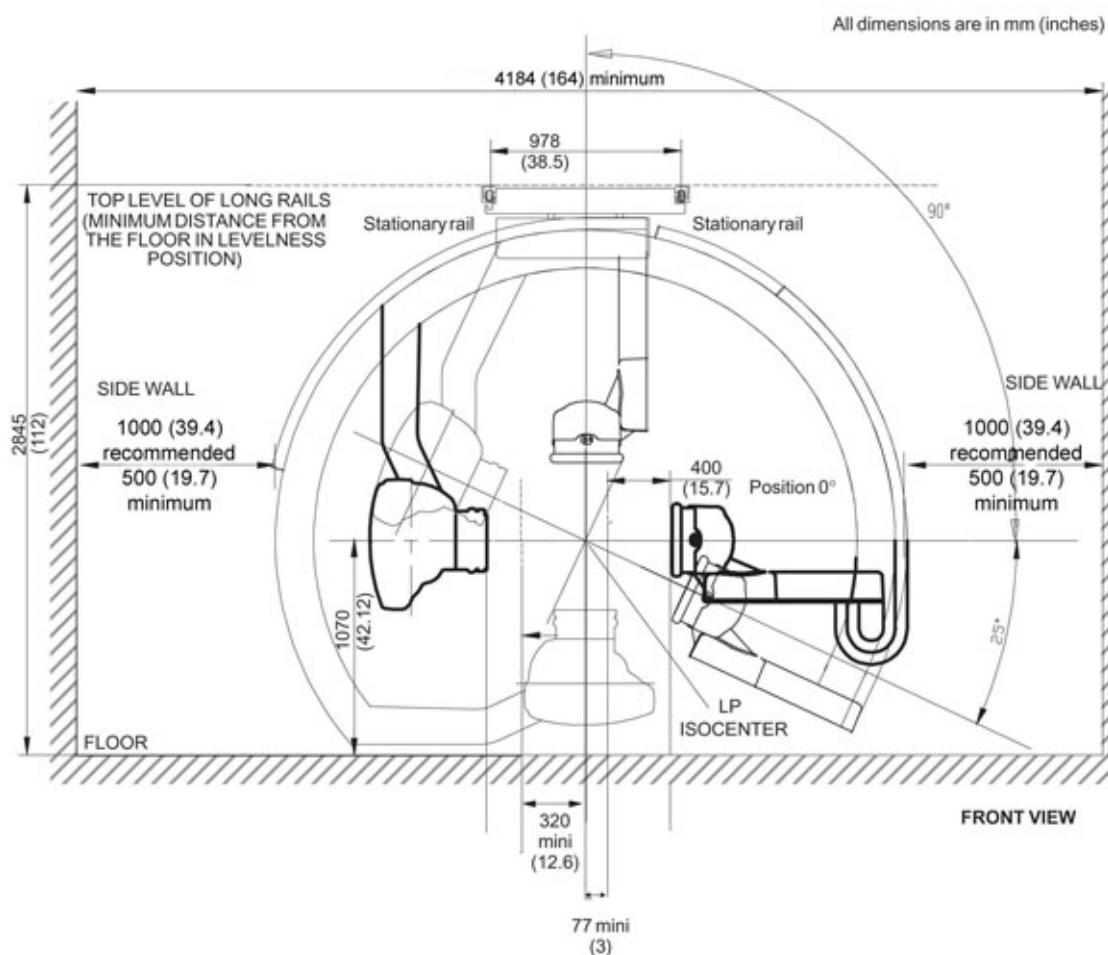
- Video: 4x Ethernet cables with RJ45 connector
- Power: IEC 320 plug on monitor side

9.6 Appendix 6: Room layout overview

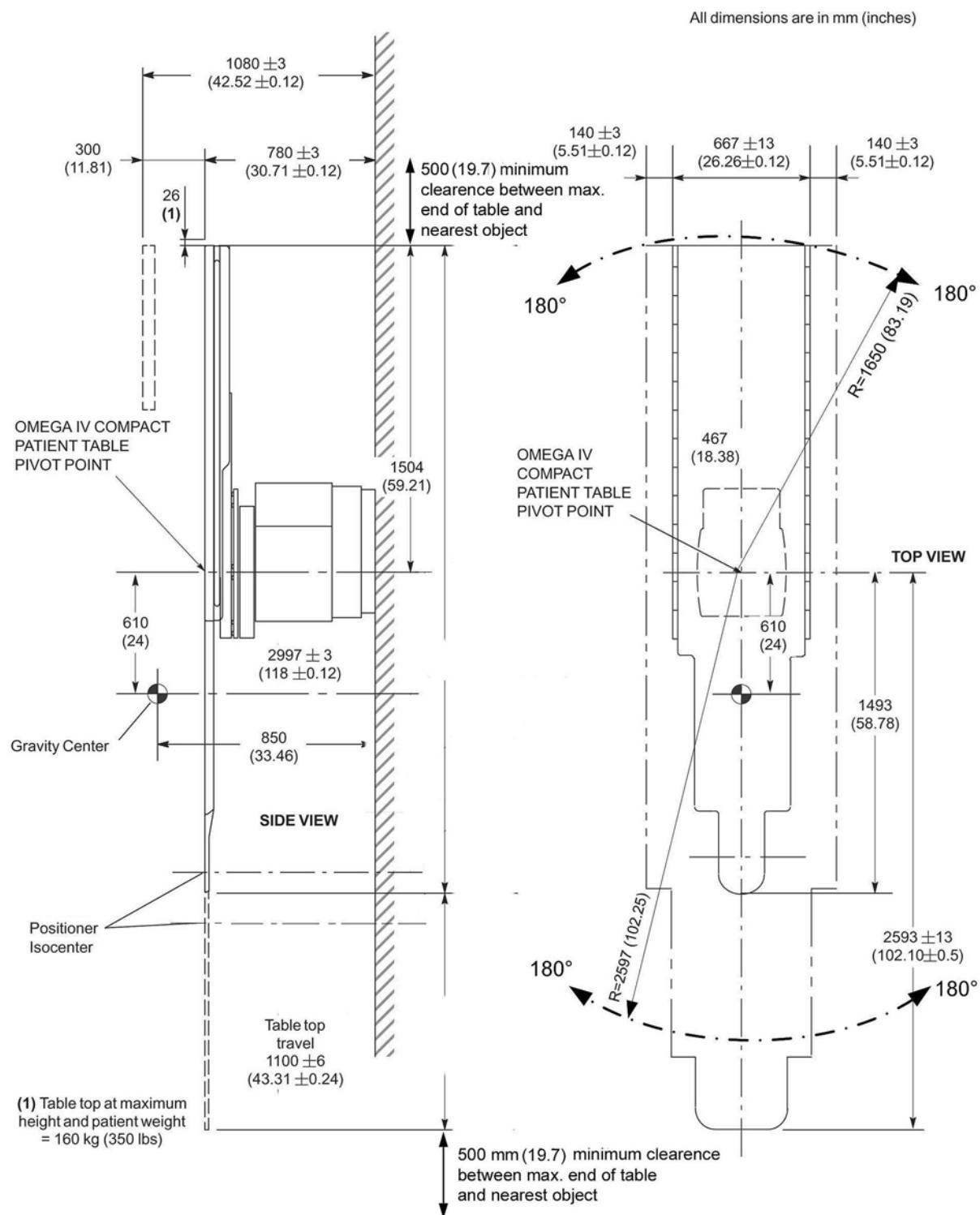
The following illustrations are given for informational purpose only. Please refer to the Pre-Installation Manual of Innova™ IGS 620, Innova™ IGS 630 system for more details.



Frontal Positioner Dimensions - Side View

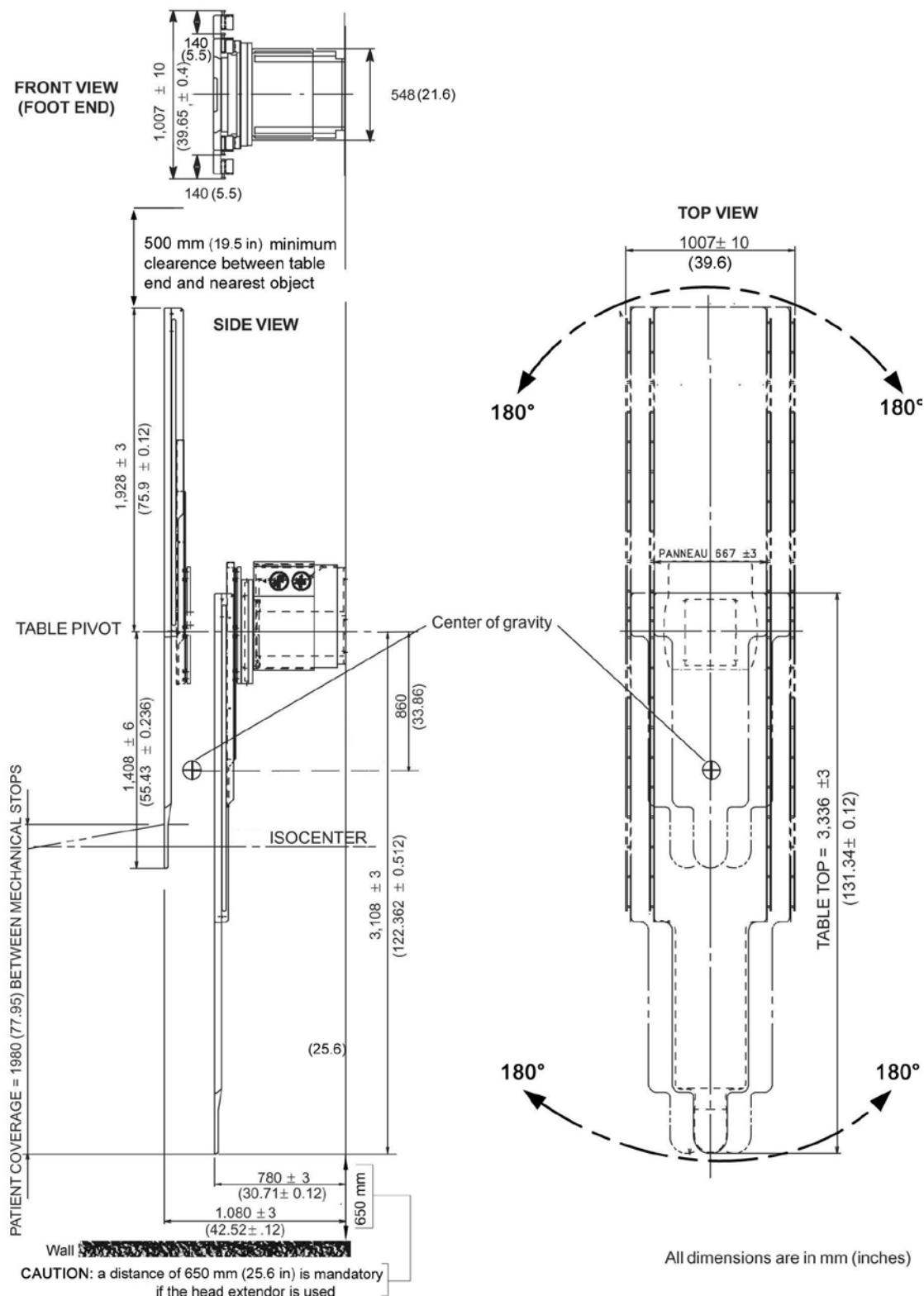


Lateral Positioner Dimensions - Front View



Note: The 500 mm (19.7 in) minimum clearance between the **table foot end** and nearest object must take into account any table devices installed on the table end rail. If there are any devices installed on the table foot end, the width of these devices must be added to the existing 500 mm (19.7 in) to maintain absolute minimum distance of 500 mm (19.7 in).

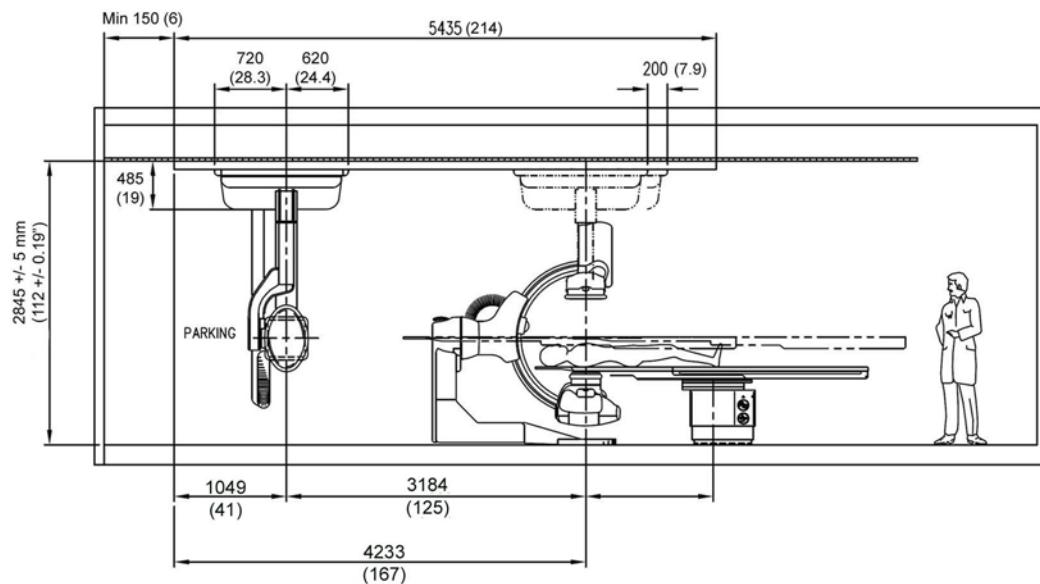
Omega IV Table dimensions



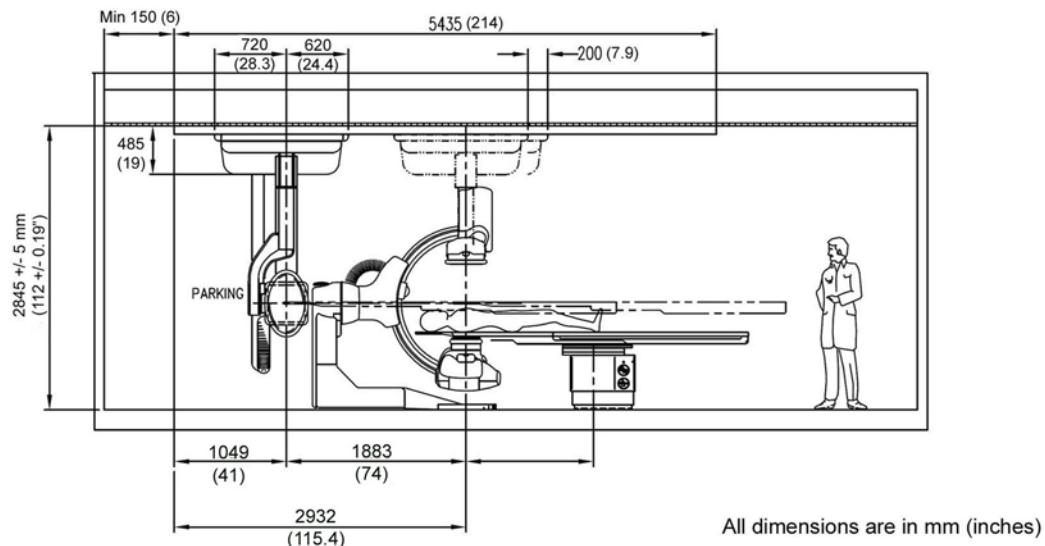
Note: The 500 mm (19.7 in) minimum clearance between the **table foot end** and nearest object must take into account any table devices installed on the table end rail. If there are any devices installed on the table foot end, the width of these devices must be added to the existing 500 mm (19.7 in) to maintain absolute minimum distance of 500 mm (19.7 in).

Omega V Table dimensions

Recommended and max parking position distance



Min parking position distance



Frontal and Lateral Positioner and Omega Patient Table Relative Positions – Side View

- Note:**
- (1) For Frontal Gantry isocenter to Table distance, refer to Table 1.
 - (2) In case of Lateral Gantry Off iso feature installed, the Lateral Gantry will work in the range - 200 mm (7.9 in) and 200 mm (7.9 in) from isocenter.
 - (3) Lateral Gantry parking not allowed at patient foot end.

Table1: Patient Table – Frontal Gantry isocenter distances

TYPE OF TABLE	ANGIO / CARDIO	CARDIO / NEURO
Omega IV	NA	1395 mm (54.9 in)
Omega V – non motorized	1278 mm (50.3 in)	1395 mm (54.9 in)
Omega V - motorized	1278 mm (50.3 in)	1395 mm (54.9 in)

9.7 Appendix 7: Tables to fill for Logbook

Fill the following tables as required in section 8 Leakage Current Measurement, take out pages 45 to 46 from the binder and place these pages in the system Logbook, in Chapter 13 - 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 LC	Each metallic part of the enclosure of each suspension.										
	Each monitor installed on each suspension.										
Gantry LP	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.										

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